# MC75A ENTERPRISE DIGITAL ASSISTANT INTEGRATOR GUIDE

# MC75A
# ENTERPRISE DIGITAL ASSISTANT
# USER GUIDE

72E-133624-03

Rev. A

April 2015

# Revision History

Changes to the original guide are listed below:

| Change | Date | Description |
|---|---|---|
| -01 Rev. A | 03/12/10 | Initial release. |
| -02 Rev. A | 05/2011 | Add MC75A HF RFID support. |
| -03 Rev. A | 04/2015 | Zebra rebranding. |
| | | |
| | | |

# TABLE OF CONTENTS

**Chapter 2: Accessories**



**Chapter 3: ActiveSync**

# ABOUT THIS GUIDE

## Introduction

This *Integrator Guide* provides information about using the MC75A Enterprise Digital Assistant (EDA) and accessories.

***NOTE*** Screens and windows pictured in this guide are samples and can differ from actual screens.

### Documentation Set

The documentation set for the MC75A provides information for specific user needs, and includes:

- **MC75A Quick Start Guide** - describes how to get the MC75A EDA up and running.
- **MC75A Enterprise Digital Assistant User Guide** - describes how to use the MC75A EDA.
- **MC75A Enterprise Digital Assistant Integrator Guide** - describes how to set up the MC75A EDA and accessories.
- **Microsoft® Windows Mobile 6.0 Applications User Guide** - describes how to use Microsoft developed applications.
- **Application Guide** - describes how to use Zebra developed sample applications.
- **Enterprise Mobility Developer Kit (EMDK) Help File** - provides API information for writing applications.

# Configurations

This guide covers the following configurations:

| Configuration | Radios | Display | Memory | Data Capture | Operating System | Keypads |
|---|---|---|---|---|---|---|
| MC75A0 | WPAN: Bluetooth<br>WLAN: 802.11a/b/g | 3.5” VGA Color | 256 MB RAM/ 1 GB Flash | 1D laser scanner, 2D imager or camera | Windows Mobile 6.5 Classic | Numeric or QWERTY keypads |
| MC75A6 | WPAN: Bluetooth<br>WLAN: 802.11a/b/g<br>WWAN: HSDPA<br>GPS: SiRF III | 3.5” VGA Color | 256 MB RAM/ 1 GB Flash | 1D laser scanner, 2D imager or camera | Windows Mobile 6.5 Professional | Numeric, DSD, QWERTY, AZERTY or QWERTZ keypads |
| MC75A8 | WPAN: Bluetooth<br>WLAN: 802.11a/b/g<br>WWAN: EVDO<br>GPS: SiRF III | 3.5” VGA Color | 256 MB RAM/ 1 GB Flash | 1D laser scanner, 2D imager or camera | Windows Mobile 6.5 Professional | Numeric, DSD, QWERTY, AZERTY or QWERTZ keypads |
| MC75A6 HF RFID | WPAN: Bluetooth<br>WLAN: 802.11a/b/g<br>WWAN: HSDPA<br>GPS: SiRF III | 3.5” VGA Color | 256 MB RAM/ 1 GB Flash | 1D laser scanner, 2D imager or camera | Windows Mobile 6.5 Professional | Numeric or QWERTY keypads |

## Software Versions

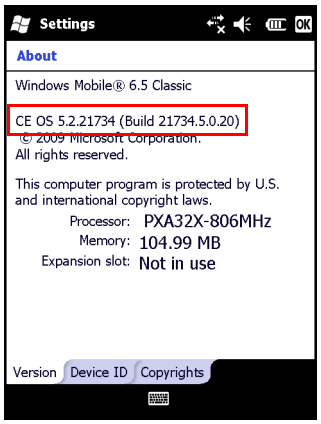
This guide covers various software configurations and references are made to operating system or software versions for:

- Adaptation Kit Update (AKU) version
- OEM version
- BTExplorer version
- Fusion version

### AKU Version

To determine the Adaptation Kit Update (AKU) version:

Tap **Start** > **Settings** > **System** folder > **About** icon > **Version** tab.

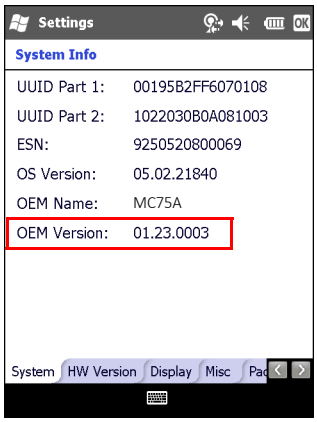



The second line lists the operating system version and the build number. The last part of the build number represents the AKU number. For example, *Build 18552.0.7.5* indicates that the device is running AKU version *0.7.5*.

### OEM Version

To determine the OEM software version:

Tap **Start** > **Settings** > **System** folder > **System Info** icon > **System** tab.




### BTExplorer Software

***NOTE*** To view the BTExplorer version information, the StoneStreet One Bluetooth stack must be enabled. Refer to the *MC75A Enterprise Digital Assistant Integrator Guide* for more information.

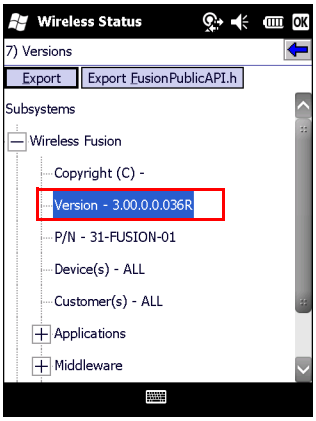
To determine the BTExplorer software version:

Tap **Start** > **BTExplorer** icon > **Show BTExplorer**> **Menu** > **About**.


### Fusion Software

To determine the Fusion software version:

Tap **Start** > **Wireless Companion** icon > **Wireless Status** icon > **Versions**.




## Chapter Descriptions

Topics covered in this guide are as follows:

- *Chapter 1, Getting Started* provides information on MC75A configurations and accessories, charging the battery, and resetting.
- *Chapter 2, Accessories* describes the accessories available for the MC75A and how to set up power connections and battery charging capabilities, where applicable.
- *Chapter 3, ActiveSync* provides instructions on installing ActiveSync and setting up a partnership between the MC75 and a host computer.
- *Chapter 4, Application Deployment for Mobile 6* provides information for provisioning and deploying applications to the MC75A.
- *Chapter 5, MC75A6 - GSM Configuration* explains how to verify MC75A6 service on an Enhanced Data rates for Global Evolution (EDGE) wireless network and establish settings.
- *Chapter 6, MC75A8 - CDMA Configuration* explains how to configure MC75A8 service on an CDMA wireless network and establish settings.

- *Chapter 7, Interactive Sensor Technology Configuration* describes how to configure interactive sensing technology of the MC75A.
- *Chapter 8, Wireless Applications* describes how to configure the wireless LAN connection.
- *Chapter 9, Maintenance and Troubleshooting* includes instructions on cleaning and storing the MC75A, and provides troubleshooting solutions for potential problems during MC75A operation.
- *Appendix A, Technical Specifications* includes tables listing the technical specifications for the MC75A and its accessories.
- *Appendix B, Bluetooth Configuration* provides registry settings for configuring Bluetooth software.

## Notational Conventions

The following conventions are used in this document:

- "MC75A" refers to all configurations of the MC75AX mobile computer.
- *Italics* are used to highlight the following:
  - chapters and sections in this and related documents
  - dialog box, window, and screen names
  - drop-down list and list box names
  - check box and radio button names
  - icons on a screen.
- **Bold** text is used to highlight the following:
  - key names on a keypad
  - button names on a screen.
- Bullets (•) indicate:
  - action items
  - lists of alternatives
  - lists of required steps that are not necessarily sequential.
- Sequential lists (e.g., those that describe step-by-step procedures) appear as numbered lists.

## Related Documents and Software

The following documents provide more information about the MC75A.

- *MC75A Quick Start Guide*, p/n 72-127677-xx
- *MC75A Windows Mobile 6 Regulatory Guide*, p/n 72-130201-xx
- *MC75A Enterprise Digital Assistant User Guide*, p/n 72E-133503-xx
- *Microsoft® Applications for Mobile and CE 6 User Guide*, p/n 72E-108299-01-xx
- *Application Guide*, p/n 72E-68901-xx
- *Enterprise Mobility Developer Kits (EMDKs),* available at: http://www.zebra.com/support.
- Latest ActiveSync software, available at: http://www.microsoft.com.

For the latest version of this guide and all guides, go to: http://www.zebra.com/support.

## Service Information

If you have a problem with your equipment, contact Zebra support for your region. Contact information is available at: http://www.zebra.com/support.

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

- Serial number of the unit
- Model number or product name
- Software type and version number

Zebra responds to calls by email, telephone or fax within the time limits set forth in support agreements.

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

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

# CHAPTER 1 GETTING STARTED

## Introduction

This chapter provides information about the MC75A, accessories, charging the MC75A, and resetting the MC75A.

## Unpacking the MC75A

Carefully remove all protective material from the MC75A and save the shipping container for later storage and shipping. Verify that you received the following equipment:

- MC75A
- Lithium-ion battery
- Battery cover/strap assembly
- Tethered stylus
- Regulatory Guide
- Quick Start Guide.

Inspect the equipment. If any equipment is missing or damaged, contact the Zebra support immediately. See *Service Information on page xviii* for contact information.

## Getting Started

To start using the MC75A for the first time:

- Install the main battery.
- Charge the MC75A.
- Power on the MC75A.
- Configure the MC75A.

Charge the main battery before or after it is installed. Use one of the spare battery chargers to charge the battery (out of the MC75A), or one of the cradles to charge the battery installed in the MC75A.

## Installing the Main Battery

***NOTE*** The MC75A ships with either a 1950 mAh or a 3600 mAh battery. An optional 4800 mAh battery is available.

To install the main battery.

1. Insert the battery, top first, into the battery compartment in the back of the MC75A.

***NOTE*** Position the battery correctly, with the battery charging contacts on top of the charging contacts in the battery compartment.

2. Press the battery down into the battery compartment until the battery release latch snaps into place.

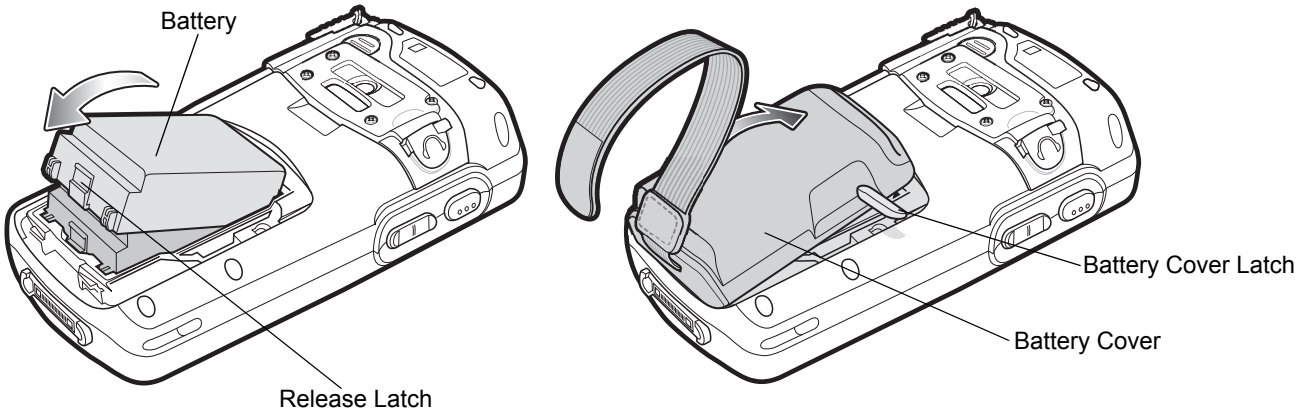



**Figure 1-1** *Inserting the Battery*

3. With the battery cover latches open, insert the cover, bottom first, then press down on the top of the cover.
4. Close the battery cover latches on either side of the battery cover.
5. Insert the handstrap through the handstrap slot, then tighten and press down to secure.

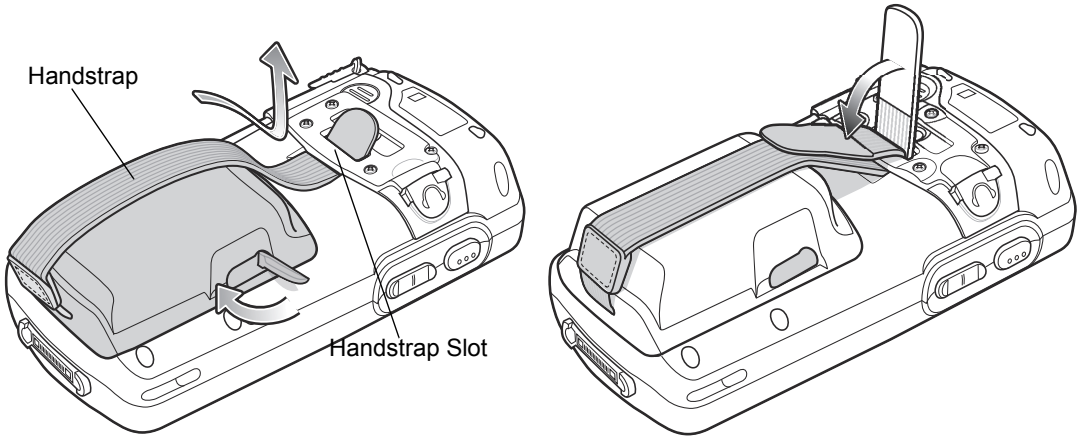



**Figure 1-2** *Inserting the Handstrap*

The MC75A powers up after inserting the battery and replacing the battery cover.

## Charging the Battery

***CAUTION*** Ensure that you follow the guidelines for battery safety described in *Battery Safety Guidelines on page 9-2*.

### Charging the Main Battery and Memory Backup Battery

Before using the MC75A for the first time, charge the main battery until the amber Charging/Battery Status LED remains lit (see *Table 1-2 on page 1-4* for charge status indications). To charge the MC75A, use a cable or a cradle with the appropriate power supply. For information about the accessories available for the MC75A, see *Chapter 2, Accessories*.

The MC75A is equipped with a memory backup battery which automatically charges from the fully-charged main battery. When using the MC75A for the first time, the backup battery requires approximately 36 hours to fully charge. This is also true any time the backup battery is discharged, which occurs when the main battery is removed for several hours. The backup battery retains RAM data in memory for at least 15 minutes (at room temperature) when the MC75A's main battery is removed. When the MC75A reaches a very low battery state, the combination of main battery and backup battery retains RAM data in memory for at least 48 hours.

To charge the main battery, use either a charging cable or a cradle. For cable and cradle setup and charging procedures *see* *Chapter 2, Accessories*.

- Single Slot USB/Serial Cradle
- Four Slot Ethernet Cradle
- Four Slot Charge Only Cradle
- Vehicle Cradle.

To charge the main battery:

1. Connect the charging accessory to the appropriate power source.
2. Insert the MC75A into a cradle or attach to a cable. The MC75A begins charging. The Charging/Battery Status LED blinks amber while charging, then turns solid amber when fully charged. See *Table 1-2* for charging indications.

*Table 1-1* lists the charge times for each available battery:

**Table 1-1** *Battery Charge Times*

| Battery Size | Charge Time |
|---|---|
| 1950 mAh | Changes in less than four hours. |
| 3600 mAh | Changes in less than eight hours. |
| 4800 mAh | Changes in less than ten hours. |

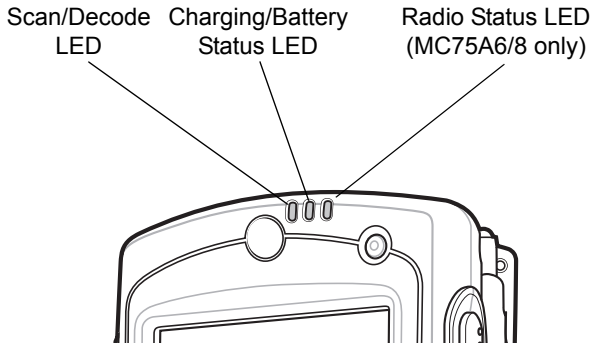



**Figure 1-3** *LED Indicators*

**Table 1-2** *LED Charge Indicators*

| Charging/Battery Status LED | Indication |
|---|---|
| Off | MC75A is not charging.<br>MC75A is not inserted correctly in the cradle or connected to a power source.<br>Charger/cradle is not powered. |
| Slow Blinking Amber<br>(1 blink every 2 seconds) | MC75A is charging. |
| Solid Amber | Charging complete.<br>Note: When the battery is initially inserted in the MC75A, the amber LED flashes once if the battery power is low or the battery is not fully inserted. |
| Fast Blinking Amber<br>(2 blinks/second) | Charging error, e.g.:<br>• Temperature is too low or too high.<br>• Charging has gone on too long without completion (typically eight hours). |

### Charging Spare Batteries

See *Chapter 2, Accessories* for information on using accessories to change spare batteries.

### Charging Temperature

Charge batteries in temperatures from 0°C to 40°C (32°F to 104°F). Note that at temperatures above 35°C (95°F), charging is intelligently controlled by the MC75A and the charging accessory in order to ensure safe operation and optimize long-term battery life.

To accomplish this, for small periods of time, the MC75A or accessory alternately enables and disables battery charging to keep the battery at acceptable temperatures. The MC75A or accessory indicates when charging is disabled due to abnormal temperatures via its LED. See *Table 1-2*.

## Powering On the MC75A

Press the **Power** button to turn on the MC75A. If the MC75A does not power on, perform a warm boot. See *Resetting the MC75A on page 1-5*.

When turning the MC75A on for the first time, the splash screen displays for about five minutes as the MC75A initializes its flash file system, then the calibration window appears. Note that these windows also appear upon cold boot.

***NOTE*** When the MC75A powers up after inserting a battery for the first time, the device boots and powers on automatically.

### Calibrating the Screen

***NOTE*** The Calibration screen can be accessed by pressing **Blue** key - **BKSP** key or tapping **Start** > **Settings** > **Screen** > **Align Screen** button.

To calibrate the screen so the cursor on the touch screen aligns with the tip of the stylus:

1. Remove the stylus from its holder on the back of the MC75A.
2. Tap the screen to begin.
3. Carefully press and briefly hold the tip of stylus on the center of each target that appears on the screen.
4. Repeat as the target moves around the screen.

### Checking Battery Status

To check the charge status of the main battery or backup battery in the MC75A, tap **Start** > **Settings** > **Power** icon to display the **Power** window.

To save battery power, tap the **Advanced** tab and set the MC75A to turn off after a specified number of minutes.

## Resetting the MC75A

There are three reset functions, warm boot, cold boot and clean boot. A warm boot restarts the MC75A by closing all running programs. A cold boot also restarts the MC75A, and also initializes some drivers. Data saved in flash memory or a memory card is not lost. A clean boot resets the MC75A to factory defaults.

Perform a warm boot first. If the MC75A still does not respond, perform a cold boot.

### Performing a Warm Boot

Hold down the **Power** button for approximately five seconds. As soon as the MC75A starts to perform a warm boot release the **Power** button.

### Performing a Cold Boot

To perform a cold boot:

1. Simultaneously press the **Power** button and the 1 and 9 keys.
2. The MC75A initializes.

### Performing a Clean Boot

***CAUTION*** A clean boot should only be performed by an authorized system administrator. You must connect the MC75A to AC power during a clean boot.

Removing AC power from the MC75A during a clean boot may render the MC75A inoperable.

A clean boot resets the MC75A to the factory default settings. All data in the **Application** folder is retained. You must download the Clean Boot Package file from the Support Central web site (http://www.zebra.com/support) and install on the MC75A.

To perform a clean boot:

1. Download the Clean Boot Package from the Support Central web site (http://www.zebra.com/support). Follow the instructions included in the package for installing the package onto the MC75A.
2. Simultaneously press the **Power** button and the **1** and **9** keys.
3. Immediately, as soon as the device starts to boot and before the splash screen is visible, press and hold the right scan button.
4. Insert the MC75A into a powered cradle.
5. The MC75A updates and then re-boots.
6. Calibrate the screen.

## Waking the MC75A

The wake-up conditions define what actions wake up the mobile computer after it has gone into suspend mode. The mobile computer can go into suspend mode by either pressing the Power button or automatically by Control Panel time-out settings. To set the wake up conditions tap **Start** > **Setting** > **Power** icon > **Wakeup** tab.

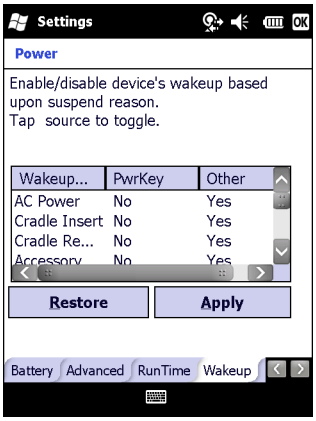



**Figure 1-4** *Power Wakeup Tab*

These settings are configurable and the factory default settings are shown in *Table 1-3* are subject to change/update.

**Table 1-3** *Wake-up Default Settings*

| Condition for Wake-up | Power Button | Automatic Time-out |
|---|---|---|
| AC power is applied to the MC75A. | No | Yes |
| The MC75A is inserted into a cradle. | No | Yes |
| The MC75A is removed from a cradle. | No | Yes |
| The MC75A is connected to a USB cable. | Yes | Yes |
| Mobile computer is disconnected from a USB device. | No | Yes |
| Mobile computer is connected from a USB Host device. | No | No |
| A key is pressed. | No | Yes |
| The scan button is pressed. | No | Yes |
| The screen is touched. | No | No |
| Audio Jack | No | No |
| Audio Btn | Yes | No |
| A Bluetooth device tries to communicate with the MC75A. | Yes | Yes |
| On Motion | No | Yes |
| The MC75A is connected to a serial accessory. | No | Yes |
| Incoming phone call | Yes | Yes |

## Micro Secure Digital (microSD) Card

The microSD card slot provides secondary non-volatile storage. The slot is located on the side of the MC75A (see *Figure 1-5*). Refer to the documentation provided with the card for more information, and follow the manufacturer's recommendations for use.

***CAUTION*** Follow proper ESD precautions to avoid damaging the SD card. Proper ESD precautions include, but are not limited to, working on an ESD mat and ensuring that the operator is properly grounded.

To install the microSD card:

1. Remove the memory card cover on the side of the MC75A by loosening the two captive screws.

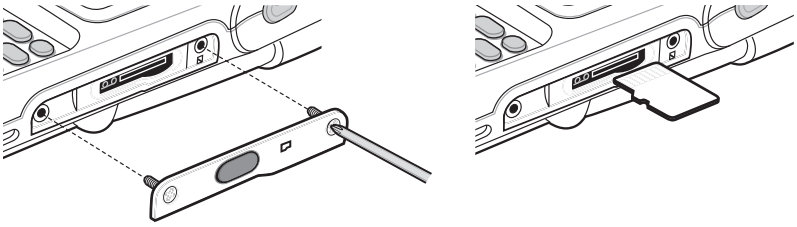


**Figure 1-5** *Card Installation*

2. Insert the card with the card contacts facing up, until you feel a click.
3. Replace the memory card cover and tighten the screws.

To remove an microSD card:

1. Remove the memory card cover by loosening the screws.

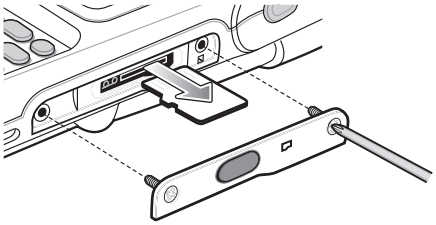


**Figure 1-6** *Card Removal*

2. Carefully press and release the card to eject it.
3. Remove the card from the card slot.
4. Replace the memory card cover and tighten the screws.

## Replacing the Main Battery

5. If the MC75A is in suspend mode, press the red **Power** button to wake the device.
6. Press the red **Power** button to suspend the MC75A.
7. Wait for red Decode LED to turn on and then turn off.
8. Open the battery cover latches on either side of the battery cover.

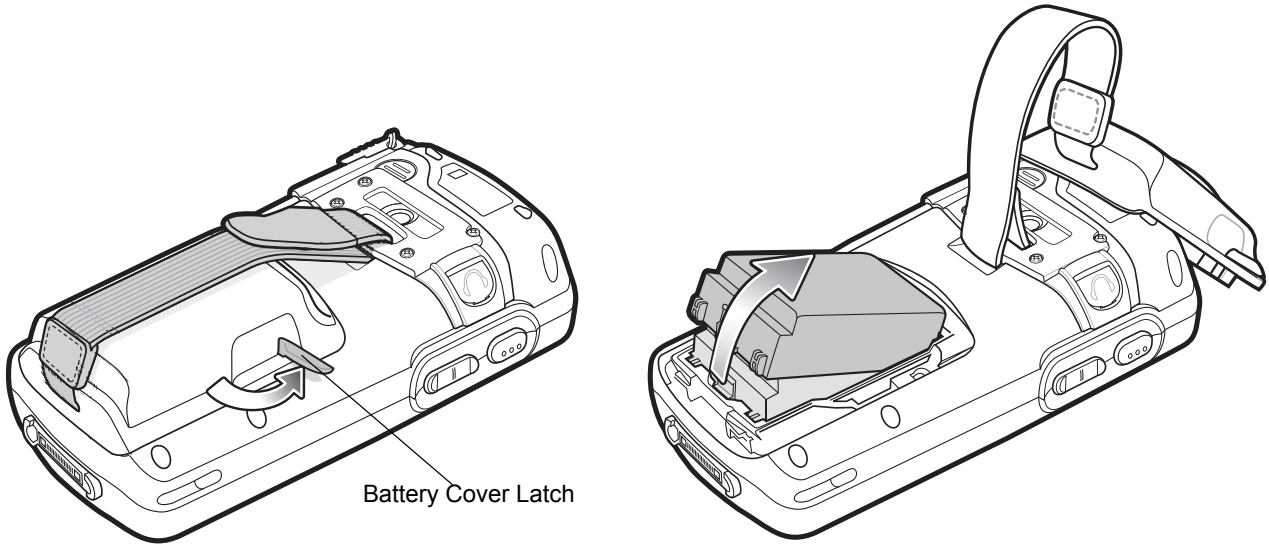



**Figure 1-7** *Removing the Battery Cover*

9. Lift the top of the battery cover and remove.
10. Press the battery release latch on the bottom of the battery to unlock, and lift the battery out of the well.
11. Insert the replacement battery, top first, into the battery compartment in the back of the MC75A.
12. Press the battery down into the battery compartment until the battery release latch snaps into place.

> ***NOTE*** Position the battery correctly, with the battery charging contacts on top of the charging contacts in the battery compartment.

13. With the battery cover latches open, insert the cover, bottom first, then press down on the top of the cover.
14. Close the battery cover latches on either side of the battery cover.
15. Press the red Power button to power on the MC75A.

# Installing SAM Cards in MC75A6 HF RFID

The MC75A6 HF RFID uses Security Authentication Module (SAM) cards to store encryption keys. To install SAM cards:

1. Press the red **Power** button to suspend the MC75A.
2. Using a torx (T5) screwdriver, remove four screws securing the plate to the back housing.

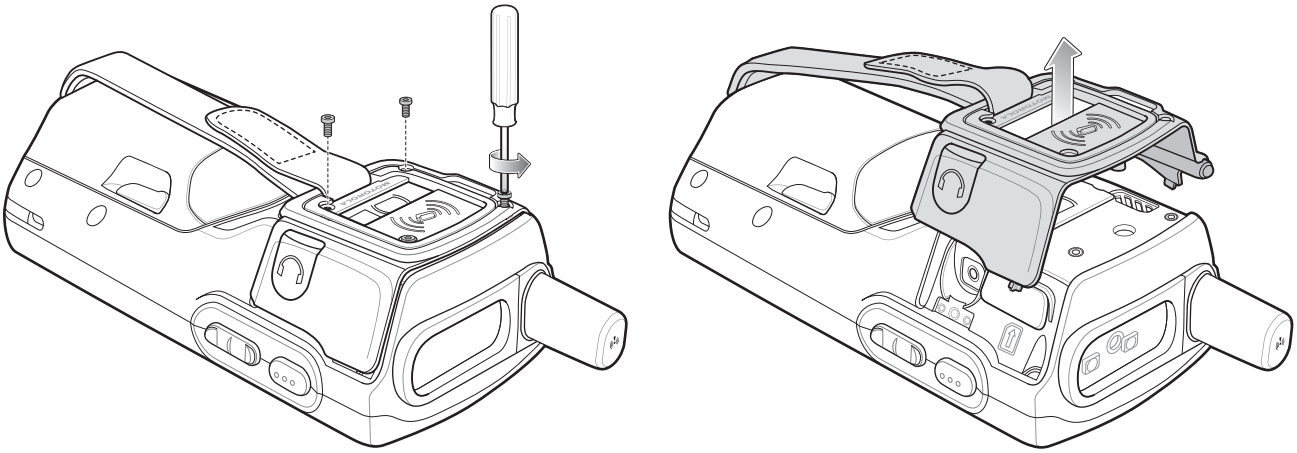


**Figure 1-8** *Remove Plate*

3. Lift plate off the back housing.
4. Remove the plug covering the SAM slots.

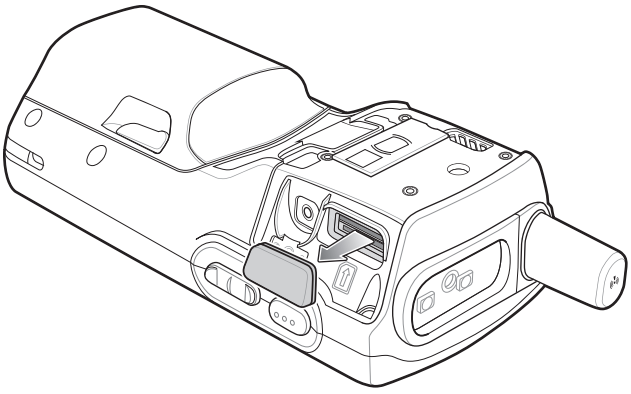


**Figure 1-9** *Remove Plug*

5. Insert a SAM card into one of the slots with the contacts facing down (front of the device).

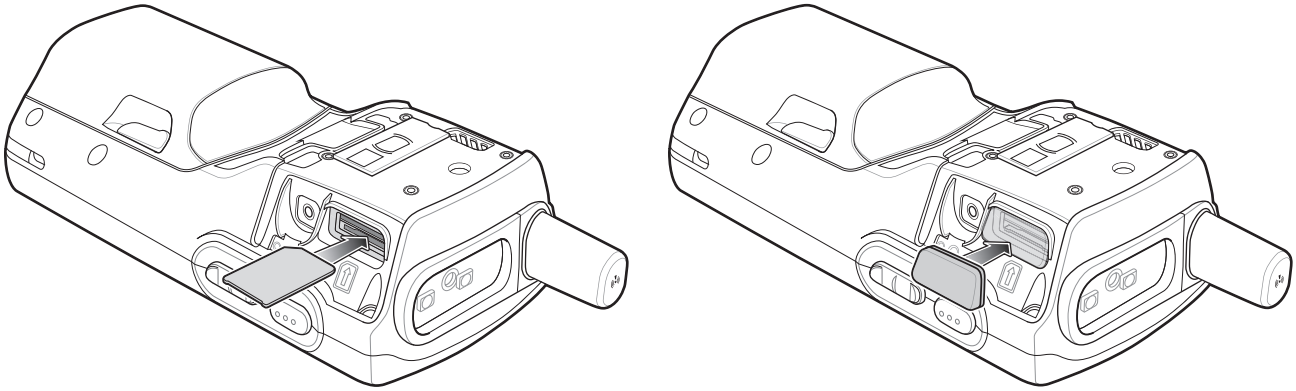


**Figure 1-10** *Insert SAM Card*

6. Replace the plug.
7. Align the plate onto the back housing.

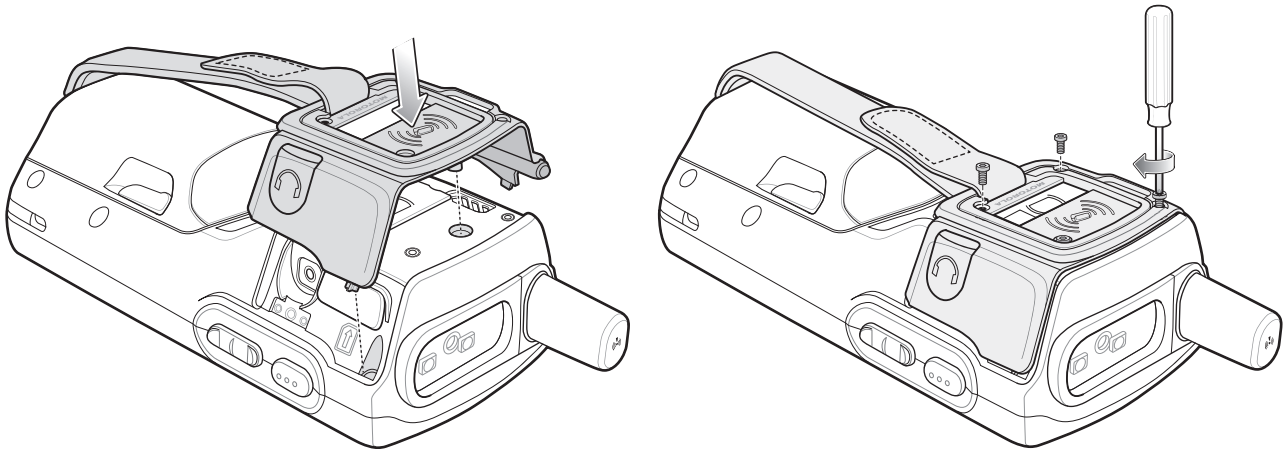


**Figure 1-11** *Replace Plate*

8. Secure the plate to the back housing using the four torx (T5) screws.
9. Perform a warm boot.

## Removal

1. Press the red **Power** button to suspend the MC75A.
2. Using a torx (T5) screwdriver, remove four screws securing the plate to the back housing.
3. Lift plate off the back housing.
4. Remove the plug covering the SAM slots.
5. Press the SAM card in until it ejects.
6. Remove the SAM card.

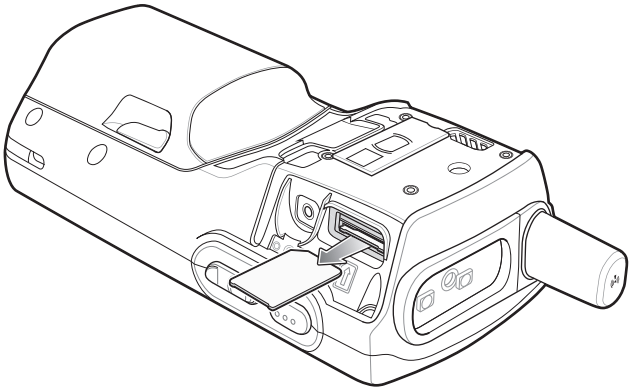


**Figure 1-12** *Remove SAM Card*

7. Replace the plug.
8. Align the plate onto the back housing.
9. Secure the plate to the back housing using the four torx (T5) screws.
10. Perform a warm boot.

# CHAPTER 2 ACCESSORIES

## Introduction

This chapter provides set up information for various accessories of the MC75A. *Table 2-1* lists all accessories available for the MC75A.

**Table 2-1** *MC75A Accessories*

| Accessory | Part Number | Description |
|---|---|---|
| **Cradles** | | |
| Single Slot USB/Serial Cradle | CRD7X00-1000RR | Charges the MC75A main battery and a spare battery. Synchronizes the MC75A with a host computer through either a serial or a USB connection. |
| Four Slot Ethernet Cradle | CRD7000-4000ER | Charges the MC75A main battery and connects the MC75A with an Ethernet network. |
| Four Slot Charge Only Cradle | CRD7X00-4000CR | Charges up to four MC75A devices. |
| VCD7000 Vehicle Cradle | VCD7X00-P000R | Installs in a vehicle and charges the MC75A main battery and a spare battery. Provides serial data communication between an MC75A and an external device. |
| **Chargers** | | |
| Four Slot Spare Battery Charger | SAC7X00-4000CR | Charges up to four MC75A spare batteries. Includes an MC75A shim. |
| Serial Charging Cable | 25-102776-01R | Provides power to the MC75A and serial communication with a host computer. |
| USB Charging Cable | 25-102775-01R | Provides power to the MC75A and USB communication with a host computer. |
| Charge Only Cable | 25-95214-02R | Provides power to the MC75A. |
| Auto Charge Cable | 25-70979-02R | Charges the MC75A using a vehicle’s cigarette lighter. |

**Table 2-1** *MC75A Accessories (Continued)*

| Accessory | Part Number | Description |
|---|---|---|
| **Cables** | | |
| DEX Cable | 25-76793-01R | Connects the MC75A to a vending machine. |
| Modem Dongle | MDM9000-100R | Provides modem connectivity to the MC75A. |
| Modem Inverter Cables | 25-70924-03R | Connects the MC75A to the modem dongle. |
| O'Neil Printer Cable | 25-91519-01R | Printer cable for O'Neil printers. |
| Zebra Printer Cable | 25-91518-01R | Printer cable Zebra Road Warrior printers. |
| Zebra Printer Cable | 25-91515-01R | Printer cable for Zebra QL printers. |
| **Miscellaneous** | | |
| Magnetic Stripe Reader (MSR) | MSR7000-100R | Snaps on to the MC75A and adds magstripe read capabilities. |
| Debit Card Reader | DCR7X00-100R | Allows easy data capture with the swipe of a magnetic stripe card and personal identification number (PIN) entry using a numeric keypad. |
| Snap-on Mobile Payment Module with Chip and PIN | DCR7X00-200R | Allows easy data capture with magnetic stripe cards, EMV compliant Chip and PIN cards and personal identification number (PIN) entry using a numeric keypad. |
| Biometric Reader | MC7XFPR-01R | Contains a finger print reader. |
| Biometric Reader | MC7XFPSCR-01R | Contains a finger print reader, a contact smart card reader and a contactless smart card reader. |
| Spare 3600 mAh lithium-ion battery | BTRY-MC7XEAB00 | Replacement 3600 mAh battery. |
| Spare 4800 mAh lithium-ion battery | BTRY-MC7XEAB0 H | Optional 4800 mAh battery. |
| Battery Kit for 3600 mAh battery | BTRY-KT-1R5X-MC7XR | Replacement 3600 mAh battery and battery door. |
| Battery Kit for 4800 mAh battery | BTRY-KT-2R5X-MC7XR | Replacement 4800 mAh battery and battery door. |
| Headset | 50-11300-050R | Use in noisy environments. |
| Belt Mounted Rigid Holster | SG-MC70011110-01R | Clips onto belt to hold the MC75A when not in use. |
| Fabric Holster | SG-MC75AX21215 -01R | Soft holder for added protection. |
| Stylus | Stylus-00002-03R | Replacement stylus (3-pack). |

**Table 2-1** *MC75A Accessories (Continued)*

| Accessory | Part Number | Description |
|---|---|---|
| Wall Mounting Kit | 8710-050006-01R | Use for wall mounting the four slot cradles. |
| Screen Protector | KT-129195-03R | Package of 3 screen protectors. |
| Software | - | *Enterprise Mobility Developer Kits (EMDKs),* available at: http://www.zebra.com/support. |

# Single Slot USB/Serial Cradle

This section describes how to set up and use a Single Slot USB/Serial cradle with the MC75A. For USB communication setup procedures see *Chapter 3, ActiveSync*.

The Single Slot USB/Serial Cradle:

- Provides 5.4 VDC power for operating the MC75A.
- Synchronizes information between the MC75A and a host computer. See *Chapter 3, ActiveSync* for information on setting up a partnership between the MC75A and a host computer.
- Charges the MC75A's battery.
- Charges a spare battery.

## Setup

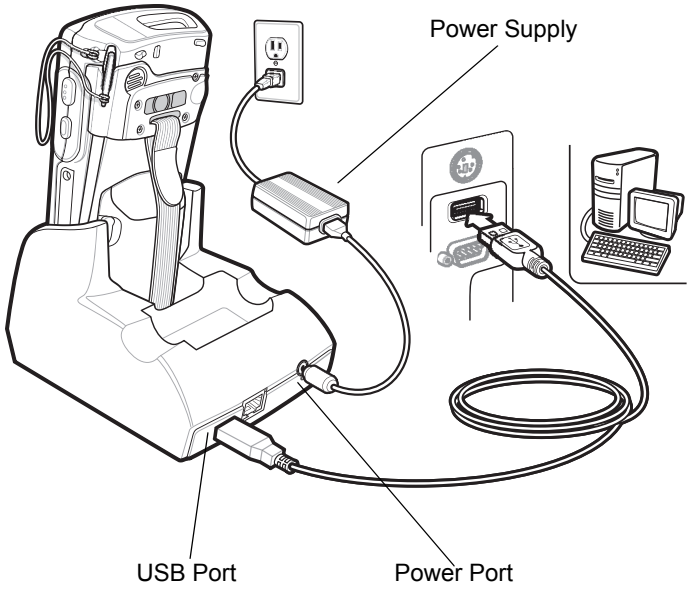



**Figure 2-1** *Single Slot USB/Serial Cradle Power and USB Connections*

## Charging the MC75A Battery

Connect the cradle to power. Insert the MC75A into the MC75A slot to begin charging.

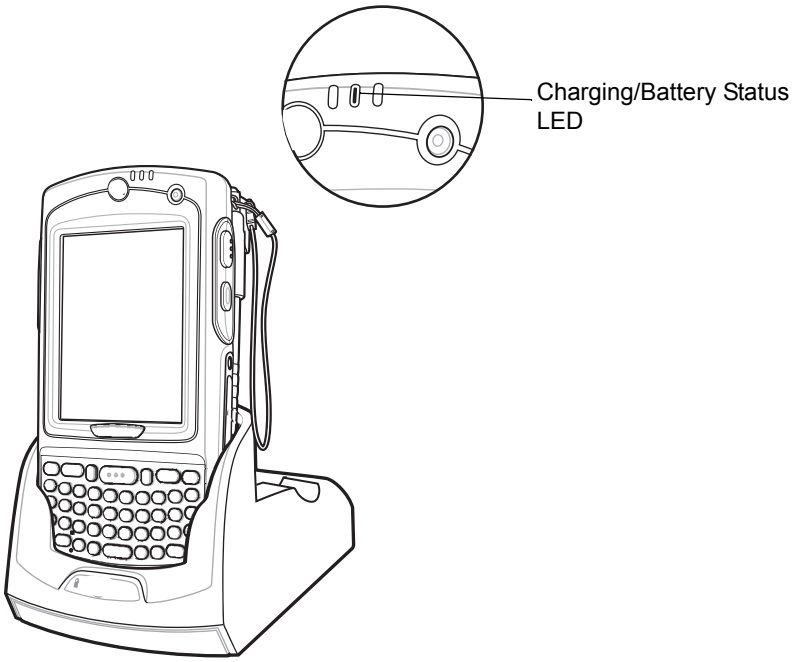



**Figure 2-2** *MC75A Battery Charging*

## Charging the Spare Battery

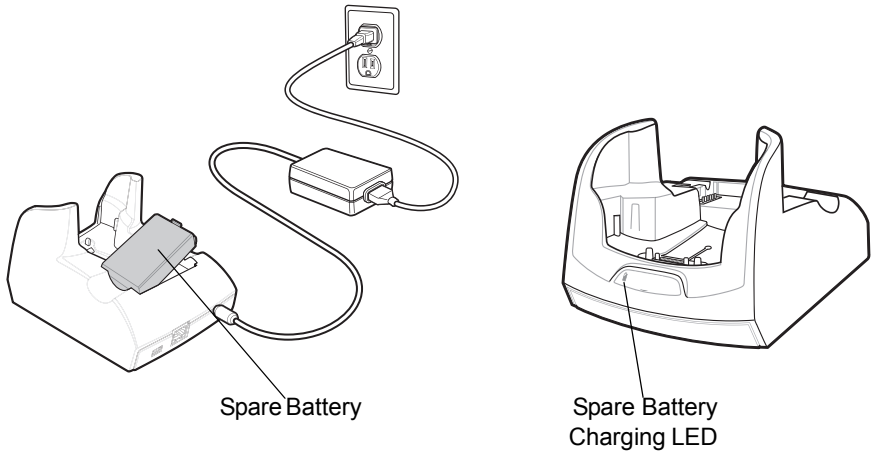



**Figure 2-3** *Spare Battery Charging*

## Battery Charging Indicators

The Single Slot USB/Serial Cradle charges the MC75A's main battery and a spare battery simultaneously.

The MC75A's Charge LED indicates the status of the battery charging in the MC75A. See *Table 1-2 on page 1-4* for charging status indications.

The spare battery charging LED on the cradle indicates the status of the spare battery charging in the cradle. See *Table 2-2* for charging status indications.

The 3600 mAh battery fully charges in approximately five hours and the 4800 mAh battery fully charges in approximately seven hours.

### Charging Temperature

Charge batteries in temperatures from 0°C to 40°C (32°F to 104°F). Charging is intelligently controlled by the MC75A.

To accomplish this, for small periods of time, the MC75A or accessory alternately enables and disables battery charging to keep the battery at acceptable temperatures. The MC75A or accessory indicates when charging is disabled due to abnormal temperatures via its LED. See *Table 1-2 on page 1-4* and *Table 2-2*.

**Table 2-2** *Spare Battery LED Charging Indicators*

| Spare Battery LED (on cradle) | Indication |
|---|---|
| Slow Blinking Amber | Spare battery is charging. |
| Solid Amber | Spare battery is fully charged. |
| Fast Blinking Amber | Charging error. |
| Off | Not charging. |

# Four Slot Ethernet Cradle

This section describes how to set up and use a Four Slot Ethernet cradle with the MC75A.

The Four Slot Ethernet cradle:

- Provides 5.4 VDC power for operating the MC75A.
- Connects the MC75A (up to four) to an Ethernet network.
- Simultaneously charges up to four MC75As.

You cannot ActiveSync using the Four Slot Ethernet cradle. To ActiveSync with a host computer, use the SIngle Slot USB/Serial cradle, USB Charging cable or Serial Charging cable.

## Setup

Connect the Ethernet cradle to a power source and to an Ethernet switch, router, or hub, or a port on the host device.

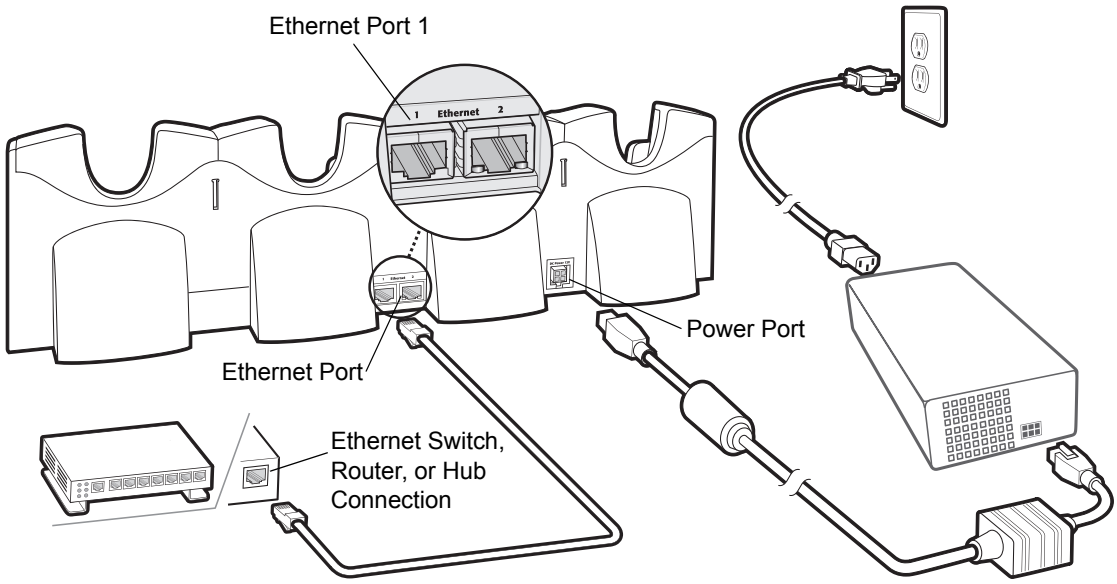



**Figure 2-4** *Four Slot Ethernet Cradle Connection*

## Daisychaining Ethernet Cradles

Daisychain up to seven Ethernet cradles to connect several cradles to an Ethernet network. Use either a straight or crossover cable. Daisychaining more than four Ethernet cradles can lead to reduction in bandwidth.

To daisychain more than one Ethernet cradle:

1. Connect power to each Ethernet cradle to daisychain.
2. Connect an Ethernet cable to Port 1 of the first cradle as shown in *Figure 2-4*.
3. Connect a second Ethernet cable between Port 2 of the first cradle, and Port 1 of the second cradle.
4. Connect additional cradles as described in Step 3.

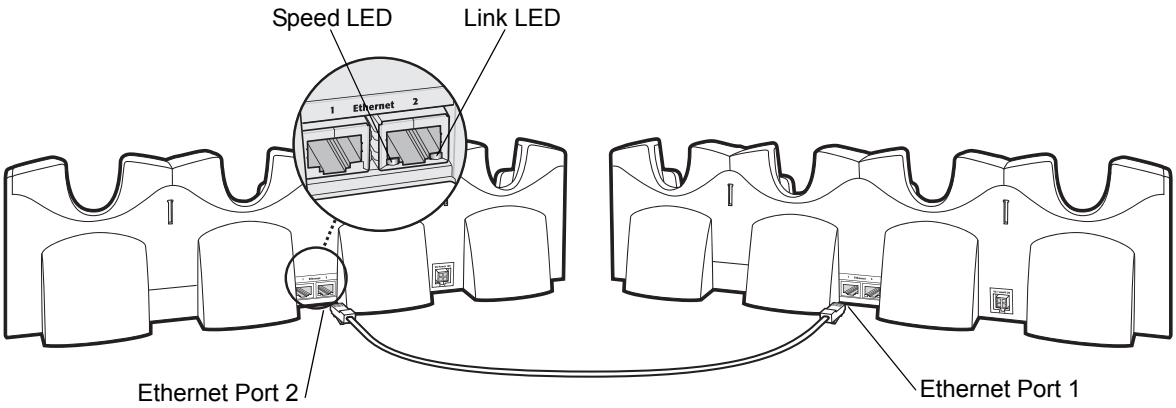



**Figure 2-5** *Daisychaining Four Slot Ethernet Cradles*

### Bandwidth Considerations when Daisychaining

Each cradle added to the daisychain impacts the bandwidth provided to the inserted MC75As, particularly when the MC75As attempt to send and receive at data rates that exceed the bandwidth provided to the chain (typically 100 Mbps). If an MC75A in a daisychained cradle does not use its bandwidth, that bandwidth is allocated to other inserted MC75As.

*Table 2-3* shows available bandwidth, based on 100 Mpbs, for the maximum number of daisychained cradles, with each attempting transmission at the maximum data rate.

**Table 2-3** *Daisychaining Bandwidth*

| Daisychained Cradles | Bandwidth Allocation For Each Ethernet Cradle (bits/sec) | Bandwidth Allocation For Each Mobile Computer (bits/sec) |
|---|---|---|
| Cradle 1 | 100,000,000 | 20,000,000 |
| Cradle 2 | 20,000,000 | 4,000,000 |
| Cradle 3 | 4,000,000 | 800,000 |
| Cradle 4 | 800,000 | 160,000 |
| Cradle 5 | 160,000 | 32,000 |
| Cradle 6 | 32,000 | 6,400 |
| Cradle 7 | 6,400 | 1,280 |
| *** The maximum bandwidth capacity for the mobile computer is 12,000,000 bits/sec.<br>** Depending on the application, allocated bandwidth may not be adequate.<br>Note: 100 Mbps is the theoretical maximum. This rate is never actually achieved in any Ethernet installation.** | | |

## Ethernet Cradle Drivers

The MC75A includes Ethernet cradle drivers that initiate automatically when you place the MC75A in a properly connected Four Slot Ethernet cradle. After inserting the MC75A, configure the Ethernet connection:

1. Tap **Start** > **Settings** > **Connections** tab >**WiFi** icon. The **Configure Network Adapters** window appears.

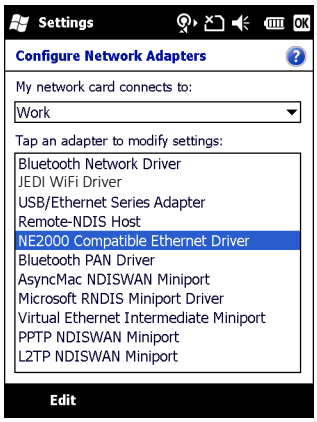



**Figure 2-6** *Configure Network Adapters Window*

2. In the **My network card connects to:** drop-down list, select the appropriate connection.
3. In the **Tap an adapter to modify settings:** list, select **USB/Ethernet Series Adapter**.

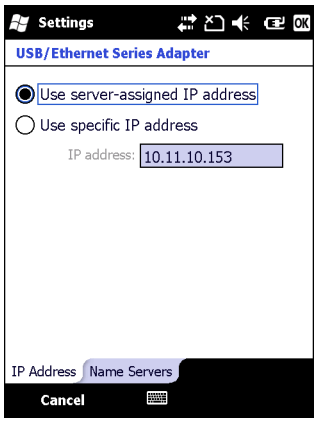



**Figure 2-7** *IP Address Tab*

4. In the **IP address** window, select the appropriate radio button:
   - **Use server-assigned IP address**

     or
   - **Use specific IP address**. Enter the IP address, Subnet mask, and Default gateway, as needed.
5. Tap the **Name Servers** tab.

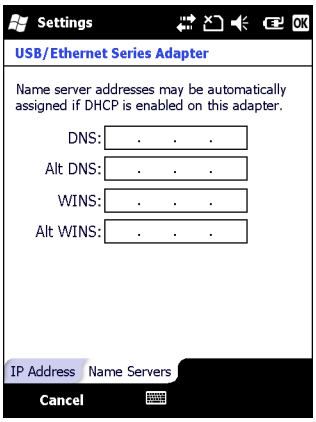



**Figure 2-8** *Name Servers Tab*

6. Enter the appropriate DNS, Alt DNS, WINS, and Alt WINS server addresses.
7. Tap **ok**.
8. Tap **ok** to exit.

## Charging and Communication

Insert the MC75A into a slot to begin charging.

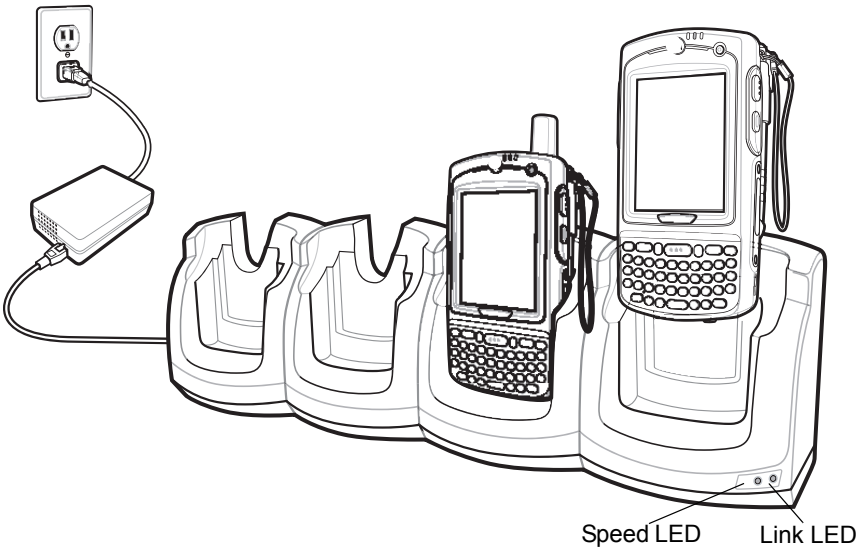



**Figure 2-9** *MC75A Battery Charging*

## LED Charging Indicators

### Charge LED

The MC75A's charge LED shows the status of the battery charging in the MC75A. See *Table 1-2 on page 1-4* for charging status indications.

The 3600 mAh battery fully charges in approximately five hours and the 4800 mAh battery fully charges in approximately seven hours.

### Speed LED

The cradle's green Speed LED lights to indicate that the transfer rate is 100 Mbps. When it is not lit it indicates that the transfer rate is 10Mbps.

### Link LED

The cradle's yellow Link LED blinks to indicate activity, or stays lit to indicate that a link is established. When it is not lit it indicates there is no link.

### Charging Temperature

Charge batteries in temperatures from 0°C to 40°C (32°F to 104°F). Charging is intelligently controlled by the MC75A.

To accomplish this, for small periods of time, the MC75A or accessory alternately enables and disables battery charging to keep the battery at acceptable temperatures. The MC75A or accessory indicates when charging is disabled due to abnormal temperatures via its LED. See *Table 1-2 on page 1-4*.

# Four Slot Charge Only Cradle

This section describes how to set up a Four Slot Charge Only cradle with the MC75A.

The Four Slot Charge only cradle:

- Provides 5.4 VDC power for operating the MC75A.
- Simultaneously charges up to four MC75As.

***NOTE*** You cannot ActiveSync using the Four Slot Charge Only cradle. To ActiveSync with a host computer, use the Single Slot USB/Serial cradle, USB Charging cable or Serial Charging cable.

## Setup

Connect the Four Slot Charge Only cradle to a power source.

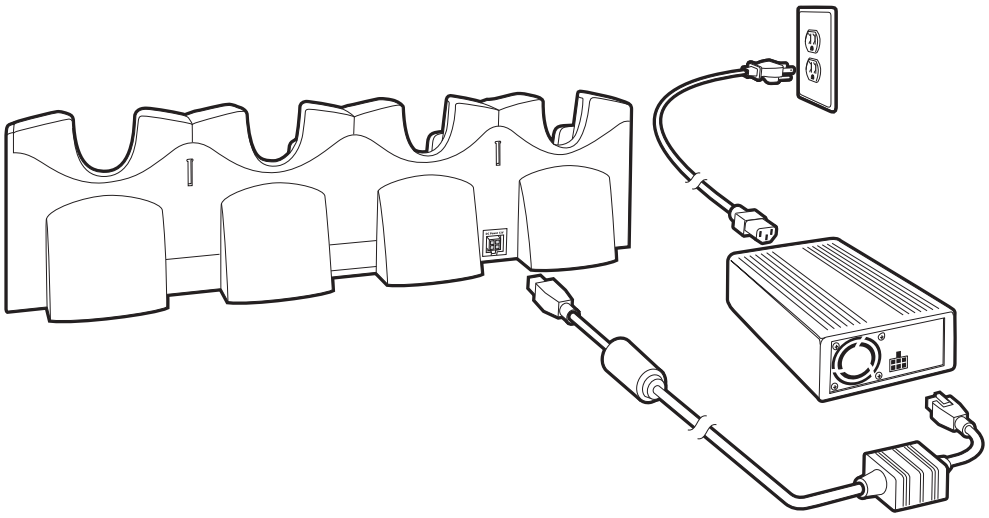


**Figure 2-10** *Four Slot Charge Only Cradle Power Connection*

### Charging Temperature

Charge batteries in temperatures from 0°C to 40°C (32°F to 104°F). Charging is intelligently controlled by the MC75A.

To accomplish this, for small periods of time, the MC75A or accessory alternately enables and disables battery charging to keep the battery at acceptable temperatures. The MC75A or accessory indicates when charging is disabled due to abnormal temperatures via its LED. See *Table 1-2 on page 1-4*.

## Wall Mount Bracket

Use the optional Wall Mount Bracket to mount a four slot cradle to a wall. To attach the Wall Mount Bracket:

1. Use the Wall Mount Bracket as a template and mark the locations of the four mounting screws.

> ***NOTE*** Use fasteners appropriate for the type of wall and the Wall Mount Bracket mounting slots. The Wall Mount Bracket mounting slots are designed for a fastener with a #8 pan head.

2. Mount the fasteners to the wall. The screw heads should protrude about a half of an inch from the wall.
3. Slip the Wall Mount Bracket over the screw heads and slide the bracket down over the screw heads.
4. Tighten the screws to secure the bracket to the wall.

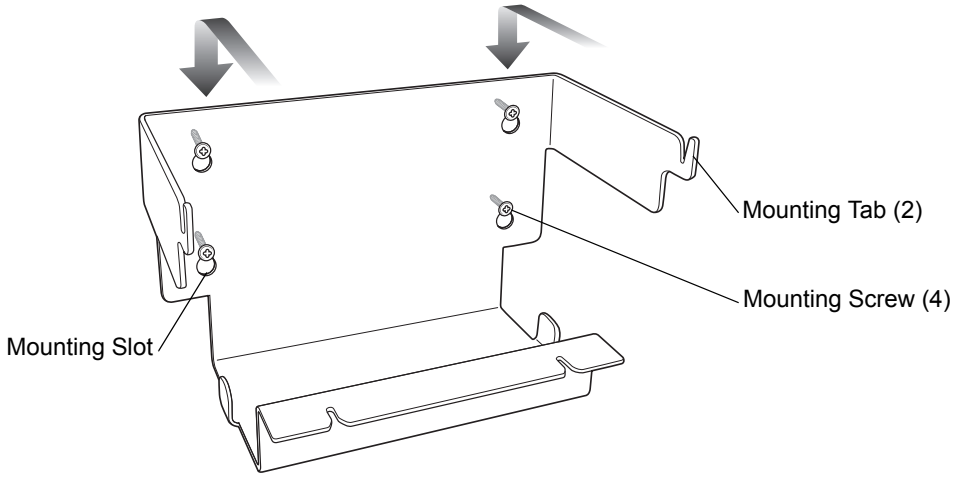



**Figure 2-11** *Wall Mount Bracket*

To mount a four slot cradle:

1. Screw the supplied fasteners into the bottom of the four slot cradle. The screw heads should protrude about a quarter of an inch from the cradle.

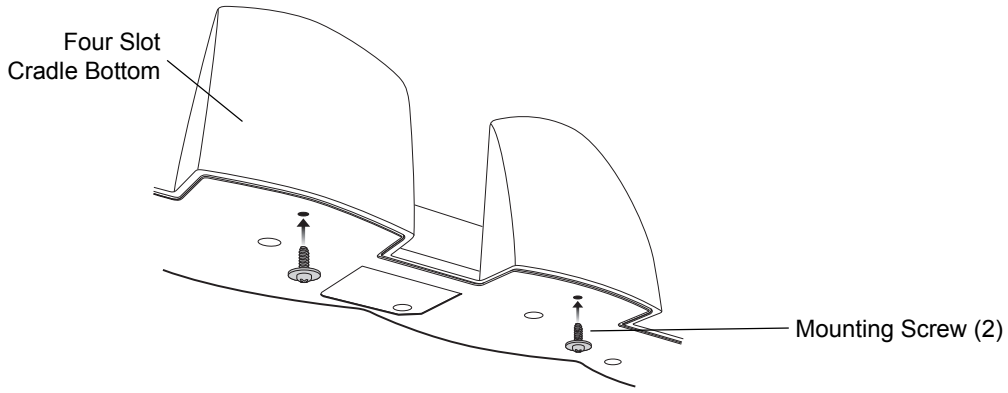



**Figure 2-12** *Cradle Mounting Screws*

2. Align the Wall Mount Bracket mounting tabs with the mounting slots in the back of the four slot cradle. Slip the two mounting tabs into mounting slots.
3. Swing the four slot cradle down onto the mounting bracket and align the mounting screws so that they fit into the screw slots.

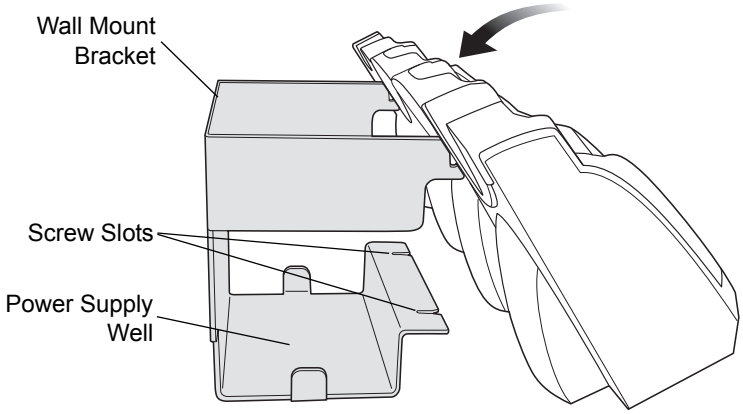



**Figure 2-13** *Wall Mount Bracket*

4. Tighten the mounting screws to secure the four slot cradle to the bracket.

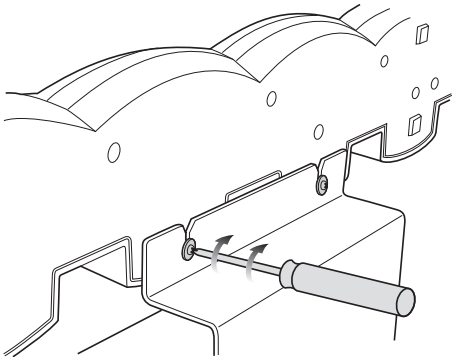


**Figure 2-14** *Mounting Screws*

5. Connect power (see *Figure 2-4 on page 2-7*). The power supply should be located in the power supply well.

# VCD7X00 Vehicle Cradle

This section describes how to set up a VCD7X00 vehicle cradle.

Once installed in a vehicle, the cradle:

- holds the MC75A securely in place
- provides power for operating the MC75A
- provides a serial port for data communication between an MC75A and an external device (e.g., a printer)
- re-charges the battery in the MC75A
- re-charges a 3600 mAh or 4800 mAh battery.

## Requirements

For mounting:

- four #8-32 self-locking nuts
- four #8 washers
- a drill with a #6 drill bit (.204”).

For power connection:

- power input cable (included), p/n 25-61987-01R
- UL Listed in-line fuse rated 250V, 5A (included), must be used if not connecting to vehicle’s fuse panel
- in-line fuse holder (included), must be used if not connecting to vehicle’s fuse panel.

For serial connection:

- DB9 female serial cable (some devices may require null modem).

For communication:

- an MC75A
- host computer setup and MC75A setup (as determined by the application you are using).

## Connector Ports

There are two connection ports on the bottom of the vehicle cradle:

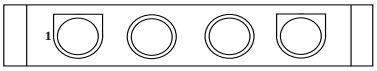
**Table 2-4** *Vehicle Cradle Connection Ports*

| Ports | Function |
|---|---|
| Serial | Standard RS 232 port used for direct connection to the serial device using a serial cable. |
| Power | Used for connecting to vehicle power using the power input cable. |

### Connector Pin-Outs

**Table 2-5** *Power Input Cable*

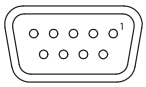
| Pin | Signal |
|---|---|
| 1 | Chassis ground (Black Wire) |
| 2 | Chassis ground (Bare Wire) |
| 3 | V+ (Red Wire) |
| 4 | V+ (Red Wire) |



Connector on Power Cable

**Table 2-6** *Serial Cable*

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | DCD | 5 | GND |
| 2 | RxD | 6 | DSR |
| 3 | TxD | 7 | RTS |
| 4 | DTR | 8 | CTS |
| 5 | GND | 9 | 5V_OUT |



Connector on Serial Cable

***CAUTION*** ROAD SAFETY - Do not use the MC75A while driving. Park the vehicle first. Always ensure the MC75A is fully inserted into the cradle. Do not place it on the seat or where it can break loose in a collision or sudden stop. Lack of proper insertion may result in property damage or personal injury. Zebra is not responsible for any loss resulting from the use of the products while driving. Remember: Safety comes first.

## Mounting the Cradle

***CAUTION*** Only mount the Vehicle Cradle in a vertical position with the release level at the top or in a horizontal position with the MC75A display facing up. Never mount the vehicle cradle on the side or upside down or on a wall that can be subject to impact or collision of greater than 40Gs, in accordance with SAE J1455 Section 4.10.3.5

1. Select a mounting location for the cradle. It should be flat, and must provide adequate support for the cradle.

***NOTE*** If using the GPS functionality of the MC75A mobile computer, ensure that the vehicle cradle is positioned so that the MC75A has a clear unobstructed view of the sky.

2. Prepare the mounting surface to accept four #8-32 studs, using the mounting template below. Drill four holes with a #6 drill bit.

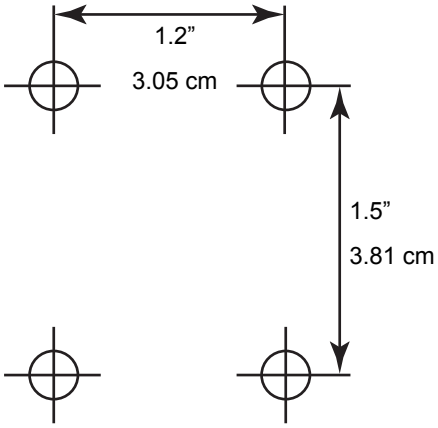



**Figure 2-15** *Vehicle Cradle Mounting Template*

3. Position the cradle on the mounting surface.
4. Fasten it using four #8 washers and four #8-32 self-locking nuts.

***CAUTION*** Do not install a VCD7000 Vehicle Cradle on or near an air bag cover plate or within an aerobic zone. Also, do not install it in a location that affects vehicle safety or driveability.

## Power Connection

Please read all of the following instructions before beginning.

***WARNING!*** **A properly trained technician must perform the power connection. Improper connection can damage your vehicle, cradle or MC75A. Refer to the vehicle’s Owner’s Manual for instructions for removing power.**

To connect the cradle to power:

***CAUTION*** When setting up connection for this cradle, only use the power input cable provided with this cradle.

1. Locate the vehicle power source.

***NOTE*** The ideal location for connecting the vehicle cradle power input cable would be an accessory output in your vehicle’s fuse panel. The vehicle cradle should be added to a circuit with a maximum load capacity for the cradle and the original circuit. Refer to the vehicle’s *Owner’s Manual* for identification of the circuit. If a fused output is not available, the vehicle cradle must be installed with the provided in-line fuse holder and UL Listed 5A fuse. The fuse protects the vehicle from an electrical short on the power line to the cradle.
To use the cradle to charge the MC75A and spare battery when the vehicle’s ignition is off, connect the cradle to unswitched power. This will affect the vehicle’s battery charge.

2. Route the power input cable from the cradle's power port to the connection point for the vehicle's power source.

**CAUTION** The means of routing and securing the power input cable from the cradle through to the vehicle power source is extremely important. Hazards associated with improper wiring can be severe. To avoid unintentional contact between the wire and any sharp edges, provide the cable with proper bushings and clamping where it passes through openings. If the wire is subjected to sharp surfaces and excess engine vibration, the wiring harness insulation can wear away, causing a short between the bare wire and chassis. This can start a fire.
To avoid any mishaps, all wiring should be routed away from moving parts, high temperature areas and any contaminants.

3. When using the supplied in-line fuse holder (which must be used if not connecting to vehicle's fuse panel):
   a. Ensure the fuse holder contains a 5A UL Listed slow-blow fuse.
   b. Splice the fuse holder to the end of the red V+ wire, as shown above. Make the distance from the fuse to the power connection point as short as possible.

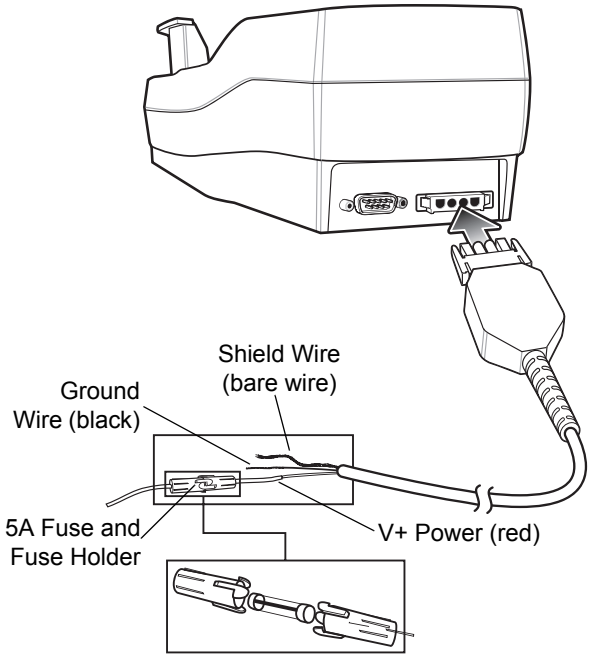



**Figure 2-16** *Vehicle Cradle Power Connection*

4. Prepare the cable termination.
   a. Red wire: connect to a +12/24 V vehicle power source.
   b. Black wire and Shield wire: connect to vehicle ground wire or chassis ground.

**NOTE** How the cable terminates depends on the vehicle. If the vehicle has a power output connector, then you must attach a mating connector to the end of the power cable. You may be able to connect to a fuse panel with a simple blade terminal or commercially available connector. Consult the vehicle *Owner's Manual* for information on how to access the power supply in the vehicle.

5. Connect the power input cable into the power port on the cradle.

To see if the cradle has power, insert the MC75A. The Charging LED on the MC75A blinks slowly to indicate charging and turns solid amber when the battery is completely charged. See *Table 1-2 on page 1-4* for other indications.

## Serial Device Connection

The MC75A has a serial port on the bottom. When the MC75A is inserted into the cradle, it connects to the cradle's serial port. The MC75A can then use the cradle's serial port to communicate with an external device.

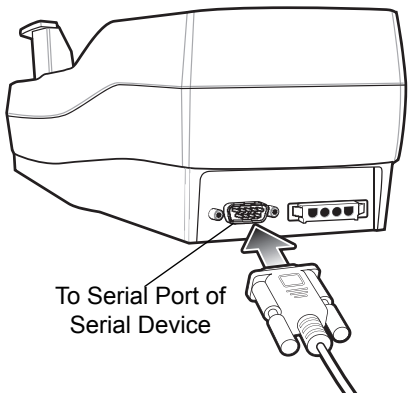



**Figure 2-17** *Vehicle Cradle Serial Connection*

To provide serial communications between an MC75A and a serial device, connect one end of the 9-pin serial cable into the serial port on the cradle, and the other end into the serial port on the serial device.

***NOTE*** Some devices may require a null modem serial cable.

To begin communication:

1. Insert the MC75A into the cradle.
2. To initiate communication, make appropriate selections on the MC75A, as determined by the application you are using.

***CAUTION*** Removing the MC75A during data communication disrupts communication between the MC75A and the attached device.

## Charging the MC75A Battery

Insert the MC75A into the vehicle cradle to begin charging. A click indicates that the MC75A button release locking mechanism is enabled and the MC75A is locked in place.

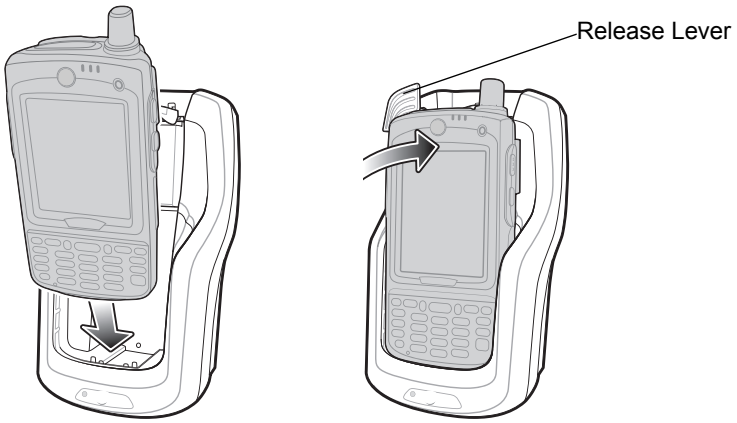



**Figure 2-18** *MC75A Battery Charging*

***CAUTION*** Ensure the MC75A is fully inserted in the cradle. Lack of proper insertion may result in property damage or personal injury. Zebra is not responsible for any loss resulting from the use of the products while driving.

### Removing the MC75A

To remove the MC75A, hold back the release lever on the cradle and pull the MC75A up and out of the cradle.

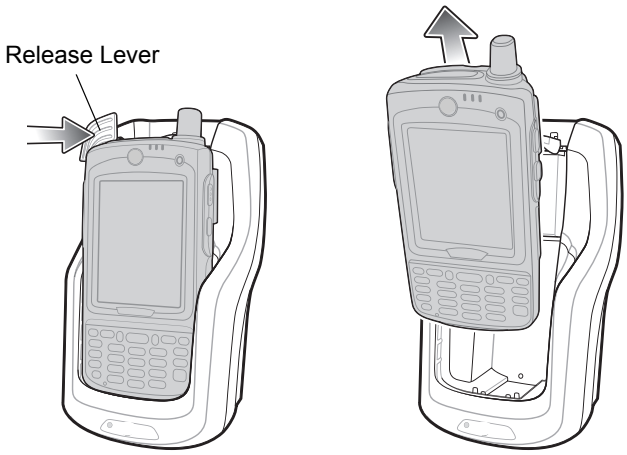



**Figure 2-19** *Removing the MC75A*

## Charging the Spare Battery

Insert a spare battery to begin charging:

1. Lift the battery release lever.

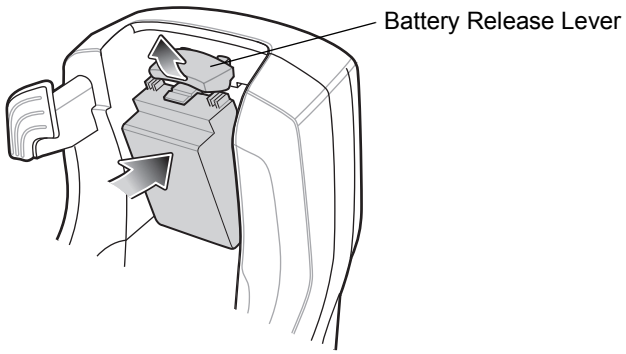



**Figure 2-20** *Inserting the Spare Battery*

2. Insert the spare battery in the spare battery charging slot in the cradle with the charging contacts facing up and to the rear of the cradle.
3. Release the battery release lever. The battery release lever locks the spare battery into place.

To remove a spare battery, hold back the battery release lever and lift the battery from the spare battery slot.

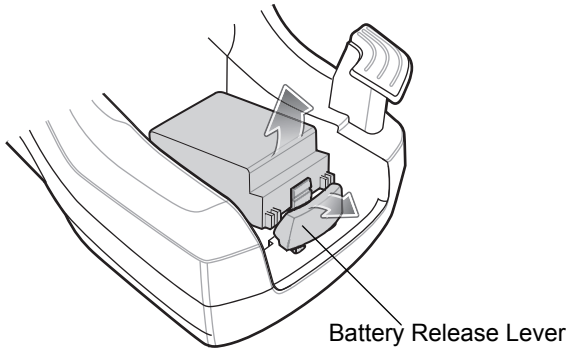



**Figure 2-21** *Removing the Spare Battery*

## Battery Charging Indicators

The Vehicle Cradle charges the MC75A's main battery and a spare battery simultaneously.

The MC75A's charge LED indicates the status of the battery charging in the MC75A. See *Table 1-2 on page 1-4* for charging status indications.

The spare battery charging LED on the cradle indicates the status of the spare battery charging in the cradle. See *Table 2-7* for charging status indications.

The 3600 mAh battery fully charges in approximately five hours and the 4800 mAh battery fully charges in approximately seven hours.

**Table 2-7** *Vehicle Cradle Spare Battery LED Charging Indicators*

| Spare Battery LED (on cradle) | Indication |
|---|---|
| Slow Blinking Amber | Spare battery is charging. |

**Table 2-7** *Vehicle Cradle Spare Battery LED Charging Indicators (Continued)*

| Spare Battery LED (on cradle) | Indication |
|---|---|
| Solid Amber | Spare battery is fully charged. |
| Fast Blinking Amber | Charging error. |
| Off | Not charging. |

### Charging Temperature

Charge batteries in temperatures from 0°C to 40°C (32°F to 104°F). Charging is intelligently controlled by the MC75A.

To accomplish this, for small periods of time, the MC75A or accessory alternately enables and disables battery charging to keep the battery at acceptable temperatures. The MC75A or accessory indicates when charging is disabled due to abnormal temperatures via its LED. See *Table 1-2 on page 1-4* and *Table 2-7*.

# Four Slot Battery Charger

This section describes how to use the Four Slot Battery Charger to charge up to four MC75A spare batteries.

## Battery Shim Installation

Before charging a spare battery, snap the MC75A shim into the battery slot as shown in *Figure 2-22*.

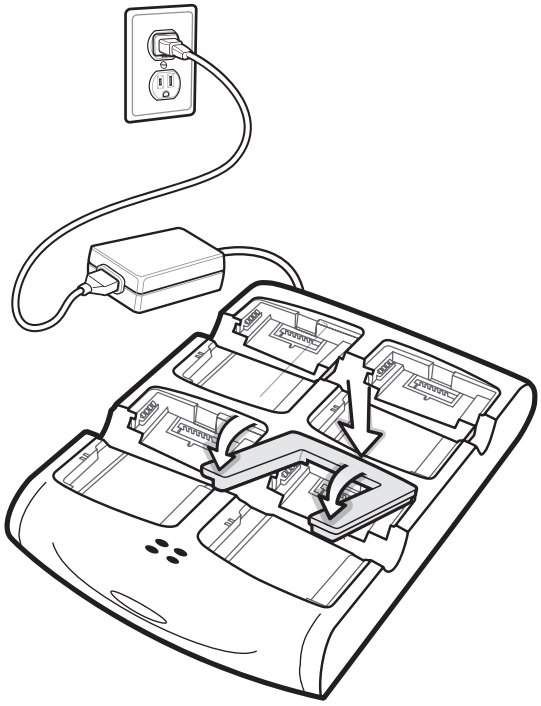


**Figure 2-22** *Spare Battery Shim Installation*

***NOTE*** To purchase additional shims, contact your local account manager or Zebra. Part number: KT-76490-01R.

## Spare Battery Charging

1. Connect the charger to a power source.
2. Insert the spare battery into a spare battery charging well and gently press down on the battery to ensure proper contact.

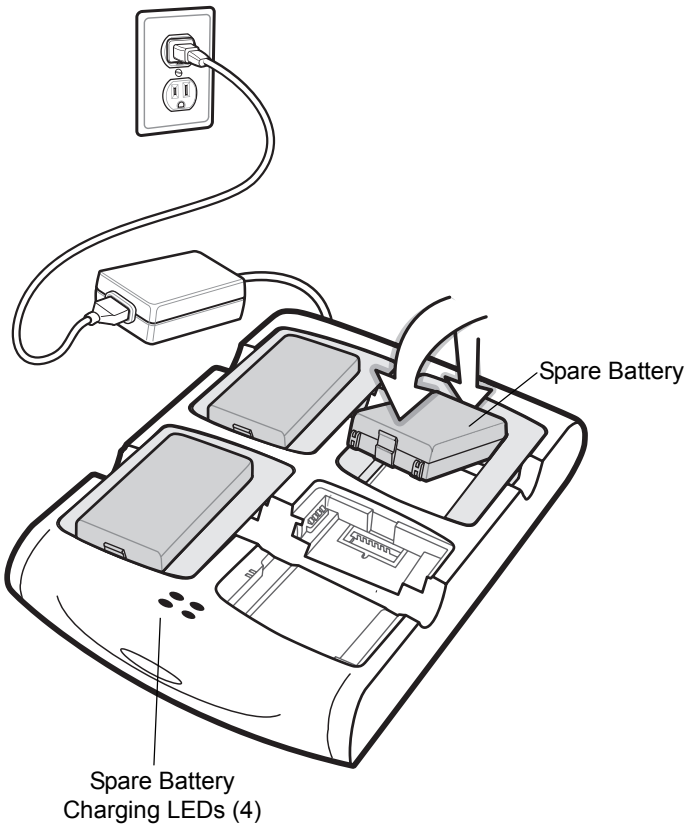



**Figure 2-23** *Four Slot Spare Battery Charger*

## Battery Charging Indicators

An amber LED is provided for each battery charging well. See *Table 2-8* for charging status indications. The 3600 mAh battery fully charges in approximately five hours and the 4800 mAh battery fully charges in approximately seven hours.

### Charging Temperature

Charge batteries in temperatures from 0°C to 40°C (32°F to 104°F). Charging is intelligently controlled by the charger in order to ensure safe operation and optimize long-term battery life.

To accomplish this, for small periods of time, the charger alternately enables and disables battery charging to keep the battery at acceptable temperatures. The charger indicates when charging is disabled due to abnormal temperatures via its LED. See *Table 2-8*.

**Table 2-8** *Spare Battery LED Charging Indicators*

| LED | Indication |
|---|---|
| Off | No spare battery in slot; spare battery not placed correctly; cradle is not powered. |
| Fast Blinking Amber | Error in charging; check placement of spare battery. |
| Slow Blinking Amber | Spare battery is charging. |
| Solid Amber | Charging complete. |

# Cables

This section describes how to set up and use the cables. The cables are available with a variety of connection capabilities.

The following MC75A communication/charge cables are available:

- Serial (RS232) Charge cable (9-pin D female with power input receptacle)
- USB Client Charge cable (standard-A connector and a barrel receptacle for power)
- Auto charge cable
- DEX cable
- Modem inverter cable
- Charge only cable.

The following printer cables are available directly from Zebra.

- O'Neil Printer cable
- Zebra Printer cable.

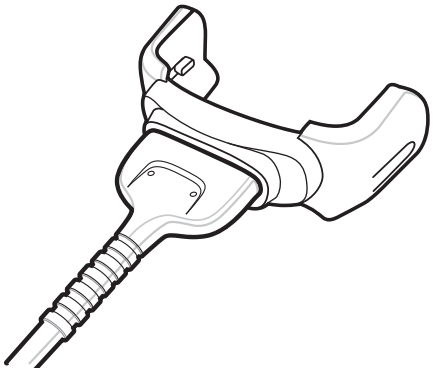


**Figure 2-24** *Cables (MC75A Connector)*

The communication/charge cables:

- Provide the MC75A with operating and charging power.
- Synchronize information between the MC75A and a host computer. With customized or third party software, it can also synchronize the MC75A with corporate databases.
- Provide serial connection through the serial pass-through port for communication with a serial device, such as a host computer. For communication setup procedures, see *Communication Setup on page 2-26*.
- Provide USB connection through the USB pass-through port for communication with a USB device, such as a host computer. For communication setup procedures, see *Communication Setup on page 2-26*.

Dedicated printer cables provide communication with a printer.

## Setup

The MC75A communication/charge cables can connect with a serial/USB device, such as a printer or host computer, through its serial or USB port.

## Battery Charging

The communication/charge cables can charge the MC75A battery and supply operating power.

To charge the MC75A battery:

1. Connect the communication/charge cable power input connector to the approved power source.
2. Slide the bottom of the MC75A into the connector end of the communication/charge cable and gently press in until it latches into the MC75A. The MC75A amber Charge LED indicates the MC75A battery charging status. The 3600 mAh battery fully charges in approximately five hours and the 4800 mAh battery fully charges in approximately seven hours. See *Table 1-2 on page 1-4* for charging status indications.
3. When charging completes, remove the cable by gently pulling the MC75A and the cable apart.

## LED Charge Indications

The amber Charge LED on the MC75A indicates battery charging status. See *Table 1-2 on page 1-4* for charging status indications.

### Charging Temperature

Charge batteries in temperatures from 0°C to 40°C (32°F to 104°F). Charging is intelligently controlled by the MC75A.

To accomplish this, for small periods of time, the MC75A alternately enables and disables battery charging to keep the battery at acceptable temperatures. The MC75A indicates when charging is disabled due to abnormal temperatures via its LED. See *Table 1-2 on page 1-4*.

## Communication Setup

To connect an MC75A communication/charge cable to a serial or USB device:

1. Connect the serial/USB end of the MC75A communication/charge cable to the communication port of the device.
2. Connect the MC75A connector end of the cable to the MC75A. For more information on communication setup procedures, see *Chapter 3, ActiveSync*.

# CHAPTER 3 ACTIVESYNC

## Introduction

To communicate with various host devices, install Microsoft ActiveSync (version 4.5 or higher) on the host computer. Use ActiveSync to synchronize information on the mobile computer with information on the host computer. Changes made on the mobile computer or host computer appear in both places after synchronization.

✓ ***NOTE*** When a mobile computer with Windows Mobile 6 is connected to a host computer and an ActiveSync connection is made, the WLAN radio (if applicable) is disabled. This is a Microsoft security feature to prevent connection to two networks at the same time.

ActiveSync software:

- Allows working with mobile computer-compatible host applications on the host computer. ActiveSync replicates data from the mobile computer so the host application can view, enter, and modify data on the mobile computer.
- Synchronizes files between the mobile computer and host computer, converting the files to the correct format.
- Backs up the data stored on the mobile computer. Synchronization is a one-step procedure that ensures the data is always safe and up-to-date.
- Copies (rather than synchronizes) files between the mobile computer and host computer.
- Controls when synchronization occurs by selecting a synchronization mode, e.g., set to synchronize continually while the mobile computer is connected to the host computer, or set to only synchronize on command.
- Selects the types of information to synchronize and control how much data is synchronized.

## Installing ActiveSync

To install ActiveSync on the host computer, download version 4.5 or higher from the Microsoft web site at http://www.microsoft.com. Refer to the installation included with the ActiveSync software.

# Mobile Computer Setup

***NOTE*** Microsoft recommends installing ActiveSync on the host computer before connecting the mobile computer.

The mobile computer can be set up to communicate either with a USB connection. *Chapter 2, Accessories* provides the accessory setup and cable connection information for use with the mobile computer. The mobile computer communication settings must be set to match the communication settings used with ActiveSync.

1. On the mobile computer tap **Start** > **Programs** > **ActiveSync** icon. The **ActiveSync** window appears.

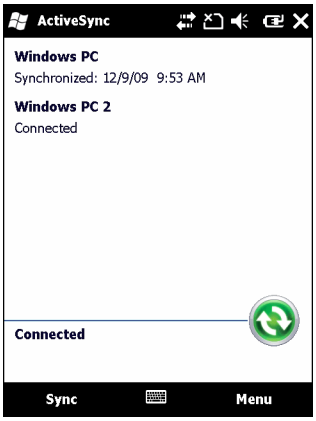



**Figure 3-1** *ActiveSync Window*

2. Tap **Menu** > **Connections**.
3. Select the connection type from the drop-down list.
4. Tap **OK** to exit the **Connections** window and tap **OK** to exit the **ActiveSync** window.
5. Proceed with installing ActiveSync on the host computer and setting up a partnership.

# Setting Up an ActiveSync Connection on the Host Computer

To start ActiveSync:

1. Select **Start** > **Programs** > **Microsoft ActiveSync** on the host computer. The **ActiveSync** Window displays.

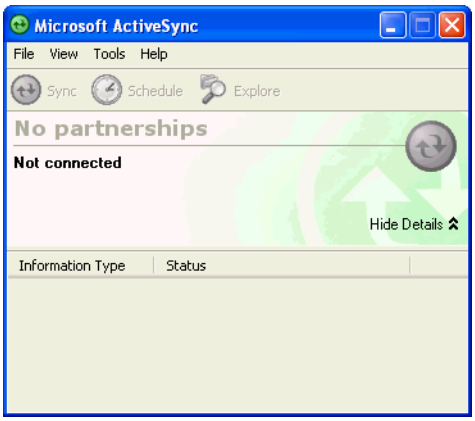



**Figure 3-2** *ActiveSync Window*

***NOTE*** Assign each mobile computer a unique device name. Do not try to synchronize more than one mobile computer to the same name.

2. In the **ActiveSync** window, select **File** > **Connection Settings**. The **Connection Settings** window appears.


**Figure 3-3** *Connection Settings Window*

3. Select the appropriate check box for the type of connection used.
4. Select the **Show status icon in Taskbar** check box.
5. Select **OK** to save any changes made.

## Synchronization with a Windows Mobile 6 Device

***NOTE*** When a mobile computer with Windows Mobile 6 is connected to a host computer and an ActiveSync connection is made, the WLAN radio (if applicable) is disabled. This is a Microsoft security feature to prevent connection to two networks at the same time.

To synchronize with a Windows Mobile 6 device:

1. If the **Get Connected** window does not appear on the host computer, select **Start** > **All Programs** > **Microsoft ActiveSync**.

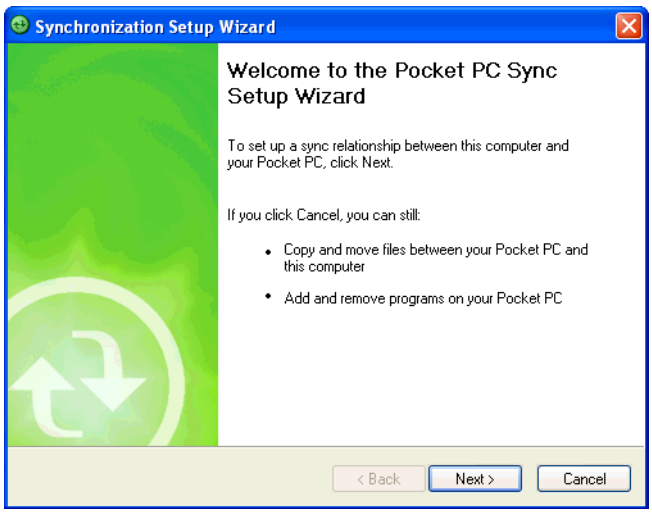



**Figure 3-4** *Synchronization Setup Wizard Window*

2. Click **Next**.

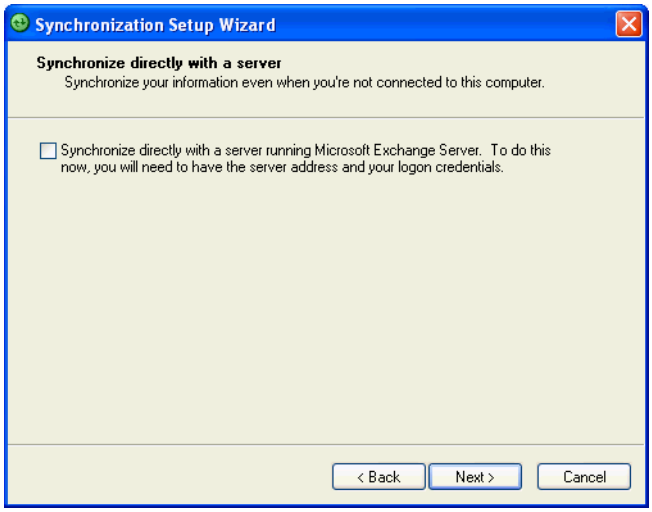



**Figure 3-5** *Synchronization Directly With a Server Window*

3. Select the check box to synchronize with a server running Microsoft Exchange if applicable.
4. Click **Next**.

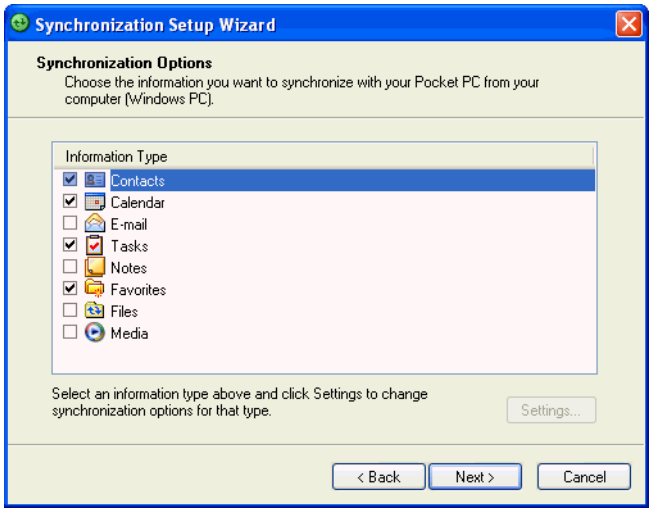



**Figure 3-6** *Synchronization Option Window*

5. Select the appropriate settings and click **Next**.

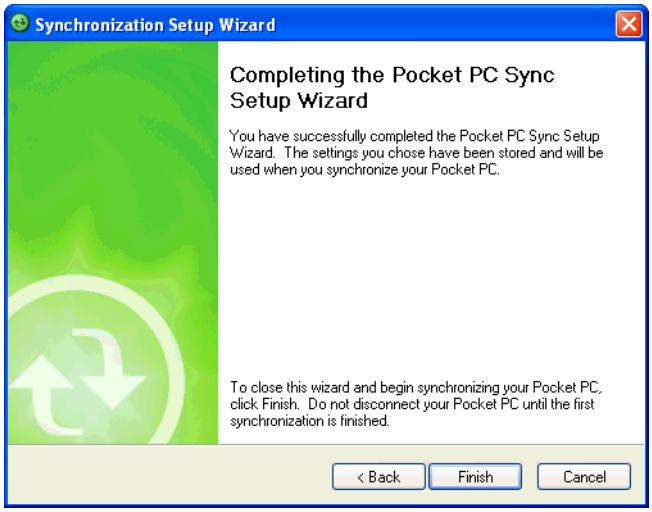



**Figure 3-7** *Wizard Complete Window*

6. Click **Finish**.

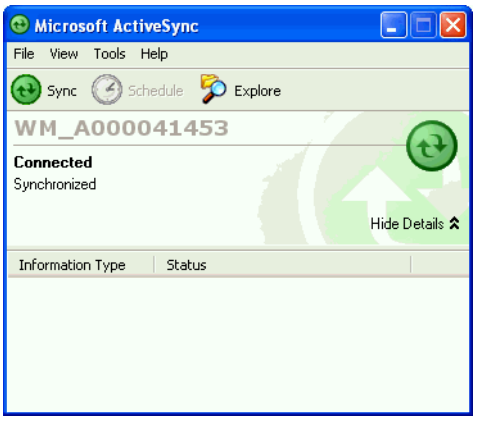



**Figure 3-8** *ActiveSync Connected Window*

During the first synchronization, information stored on the mobile computer is copied to the host computer. When the copy is complete and all data is synchronized, the mobile computer can be disconnect from the host computer.

***NOTE*** The first ActiveSync operation must be performed with a local, direct connection. Windows Mobile retains partnerships information after a cold boot.

For more information about using ActiveSync, start ActiveSync on the host computer, then see ActiveSync Help.

# CHAPTER 4 APPLICATION DEPLOYMENT FOR MOBILE 6

## Introduction

This chapter describes new features in Windows Mobile 6 including new security features, how to package applications, and procedures for deploying applications onto the MC75A.

## Security

The MC75A implement a set of security policies that determine whether an application is allowed to run and, if allowed, with what level of trust. To develop an application, you must know the security configuration of the device, and how to sign an application with the appropriate certificate to allow the application to run (and to run with the needed level of trust).

### Application Security

Application security controls the applications that can run on the MC75A.

- Trusted - All applications must be digitally signed by a certificate on the MC75A.
- Prompted - User is prompted to allow unsigned applications to run.
- Open - All applications run.

Developers can include their own certificates and provision the device to “trusted.”

### Digital Signatures

Digital signatures provide a way to authenticate the author of EXEs, DLLs, and packages. Digitally signed applications give users confidence that an application comes from where they think it comes from. For example, if an end-user downloads an update package from the internet that is digitally signed with Zebra's software certificate, they are assured that the package is authentic and that it was created by Zebra. By enforcing the use of digital signatures, users can also prevent malicious applications from executing on the MC75A. For example, users can provision the MC75A to only execute “trusted” applications (digitally signed).

Zebra ships all Windows Mobile 6 based products in an “open” state, which means all signed and unsigned applications should work. However, customers can still reconfigure their MC75As to operate in the “trusted”

mode. This means that only applications signed with a certificate from the Privileged Execution Trust Certificate Store can run.

To support the broadest number of deployments, third-party software developers should perform the following when releasing software for a Windows Mobile 6 devices:

- Sign all their EXEs & DLLs with their private key
- Provide the corresponding public certificate to end-users so that it can be installed into Privileged Execution Trust Certificate Store.

If the software is installed via a .CAB file, developer should also:

- Sign the .CAB file with their private key
- Provide the corresponding public certificate to end-users so that it can be installed into SPC Certificate Store.

### Locking Down a Mobile Computer

Like most configuration options in Windows Mobile 6, security settings are set via XML provisioning. For example, to enforce the “trusted” model and only allow applications signed with a privileged certificate to run, use the following provisioning document:

```
<wap-provisioningdoc>
<characteristic type=”SecurityPolicy”>
        <!-- Disallow unsigned apps -->
<parm name= “4102” value= “0”/>

<!-- No Prompt -->
<parm name= “4122” value= “1”/>
</characteristic>
</wap-provisioningdoc>
```

For more information on various security options, refer to the Security Policy Settings topic in the latest Windows Mobile documentation.

### Installing Certificates

Use XML provisioning to query and delete certificates from certificate stores. To add a new certificate the Privileged Execution Trust Certificate Store, use the following sample provisioning document:

```
<wap-provisioningdoc>
<characteristic type= “CertificateStore”>
<characteristic type= “Privileged Execution Trust Authorities”>
<characteristic type= “657141E12FA45786F6A57CA6464032D4B3A55475”>
<parm name= “EncodedCertificate” value= “
This is sample text. This is sample text. This is sample text. This is sample text.
This is sample text. This is sample text. This is sample text. This is sample text.
This is sample text. This is sample text. This is sample text. This is sample text. = “/>
</characteristic>
</characteristic>
</characteristic>
</wap-provisioningdoc>
```

To create your own provisioning document with real certificate information:

1. Obtain a certificate from a security provider such as VeriSign.
2. Double-click on the certificate file (.CER) to open it.
3. Click on the *Details* tab and locate the *Thumbprint* field.
4. Copy the contents of the *Thumbprint* field and replace the value in the XML example above.
5. Click the **Copy to File…** button.
6. Click **Next** to start the Certificate Export Wizard.
7. Select *Base-64 encoded X.509 (.CER)* and then click **Next**.
8. Set the File Name to CertOutput.xml and click **Next**.
9. Click **Finish** to export the certificate.
10. Open the exported file, CertOutput.xml, in a text editor (i.e., NotePad).
11. Copy the contents of the file (excluding the first line, last line, and CR/LF) and replace the value of the *“EncodedCertificate”* parameter in the xml example above.

## Device Management Security

You can control access to certain device settings and security levels, such as installing applications and changing security settings. Refer to the *Windows Mobile Version 6 Help* file for information on device management security.

## Remote API Security

The Remote API (RAPI) enables applications that run on a desktop to perform actions on a remote device. RAPI provides the ability to manipulate the file system on the remote device, including the creation and deletion of files and directories. By default, Zebra ships with RAPI in the restricted mode. Certain tools, such as

RAPIConfig, may not work properly. Refer to the *Windows Mobile Version 6 Help* file for finding information on Remote API security policies.

# Packaging

***NOTE*** Applications compiled for Windows Mobile 6 are not backward-compatible with previous versions.

Packaging combines an application's executable files into a single file, called a package. This makes it easier to deploy and install an application to the MC75A. Package new applications and updates, such as new DLL files, as CAB files, then deploy them to Mobile 6 devices. Refer to the *Microsoft Windows Mobile 6 Help* file for information on CAB files.

# Deployment

To install applications onto the MC75A, developers package the application and all required files into a CAB file, then load the file onto the MC75A using one of the following options:

- Microsoft ActiveSync 4.1 or higher
- Storage Card
- MSP 3.X
- AirBEAM
- Image Update (for updating the operating system).

Refer to the *Microsoft Windows Mobile 6 Help* file for information on CAB files.

## Installation Using ActiveSync

To install an application package:

- Connect the MC75A to a host computer using ActiveSync. See *Chapter 3, ActiveSync* for more information.
- Locate the package file on the host computer.
- In ActiveSync on the host computer, open *Explorer* for the MC75A.
- Copy the CAB file from the host computer to the \temp directory on the MC75A.
- On the MC75A, navigate to the \temp directory.
- Tap on the application CAB file. The application installs on the MC75A.

## Installation Using Storage Card

To install an application package:

- Copy the package CAB file to a storage card using an appropriate storage card reader.
- Install the storage card into the MC75A. See *Micro Secure Digital (microSD) Card on page 1-7* for more information.
- On the MC75A, open **File Explorer**.

- Open the *Storage Card* directory.
- Tap the package CAB file. The application installs on the MC75A.

## Installation Using AirBEAM

The AirBEAM Smart Client provides backward-compatible legacy AirBEAM functionality and backward-compatible legacy MSP 2.x Level 2 Agent functionality.

Refer to the AirBEAM Smart Windows CE Client Product Reference Guide, p/n 72-63060-01, for instructions for AirBEAM Smart client.

## MSP 3.X

The MSP 3 Client Software is a set of software components that come pre-installed on the MC75A. The MSP 3 Client software consists of the following components:

The RD Client provides support for MSP 3 Staging functionality, provides support for the MSP 3 Legacy Staging process, and provides support for backward-compatible legacy MSP 2.x Legacy Staging functionality.

The MSP 3 Agent provides MSP 3 Provisioning functionality and Control functionality when used with MSP 3.2 Control Edition.

Refer to the Mobility Services Platform 3.2 User's Guide, p/n 72E-100158-xx, for instructions for using the Rapid Deployment and MSP3 Agent clients.

## Image Update

Windows Mobile 6 contains an Image Update feature that updates all operating system components. All updates are distributed as update packages. Update packages can contain either partial or complete updates for the operating system. Zebra distributes the update packages on the Support Central Web Site, http://www.zebra.com/support.

To update an operating system component, copy the update package to the MC75A using one of a variety of transports, including ActiveSync, an microSD memory card, or MSP. Then, initiate the update using one of the following methods:

- Double-tap the package file in *File Explorer* (similar to extracting a CAB file)
- Perform a special boot sequence that initiates the update.

***NOTE*** The MC75A must have at least 5 MB of free space to perform an OS update.

To initiate an update:

1. Go to the Support Central web site, http://www.zebra.com/support.
2. Download the appropriate update package.
3. Copy the update package to either the \temp directory on the MC75A, or to a storage card.
4. Connect the MC75A to AC power. See *Chapter 2, Accessories*.
5. Simultaneously press the **Power** button and the **1** and **9** keys.
6. Immediately, as soon as the device starts to boot and before the splash screen is visible, press and hold the right scan button.

7. The Update Loader application first looks for a file on a storage card. If it does not find it, it looks in the \temp directory.

   When it finds the appropriate file, it loads the package onto the MC75A. A progress bar displays until the update completes.

8. The MC75A re-boots.

9. The calibration screen appears.

**NOTE** When initiating an update via a boot sequence, the update loader looks for updates first on the root of an installed microSD card and then in the \temp folder on the MC75A's persistent storage volume. A response file, pkgs.lst, indicates which files to update. In most cases, Zebra provides this pkgs.lst file with the update and you should only modify it when updating a splash screen partition. See *Creating a Splash Screen* for more information.

### Creating a Splash Screen

Use a bitmap file to create a customized splash screens for the MC75A. Use Image Update with a bitmap file, rather than a package file, to update the splash screen.

To create a custom splash screen:

1. Create a .bmp file using a graphic program with the following specifications:
   - Size: 592 x 480.
   - Colors: 16 bits per pixel (65536 colors) for color displays.
2. Modify the bitmap file and save.

To load the splash screen on the MC75A:

1. Create a text file named pkgs.lst which contains the name of the bmp file. For example, *mysplash.bmp*.
2. Copy the bmp file and the pkgs.lst file to one of the following:
   - SD card root directory
   - MC75A's \temp directory
   - MC75A's \Windows directory.
3. If using an SD card, insert the SD card into the MC75A.
4. Perform a cold boot.
5. Press the trigger or side scan button for 5 seconds while booting to invoke the Update Loader and install the splash screen.

## XML Provisioning

To configure the settings on an MC75A, use XML provisioning. To install an XML provisioning file on the MC75A, create a Cabinet Provisioning File (CPF). A CPF file is similar to a CAB file and contains just one file: _setup.xml. Like a CAB file, the CPF extension is associated with WCELoad.EXE. Opening a CPF extracts the XML code and uses it to provision and configure the MC75A. The user receives an e-mail notification indicating success or failure.

XML provisioning provides the ability to configure various features of the MC75A (i.e., registry and file system). However, some settings require security privileges. To change registry settings via a CPF file, you must have

certain privileges (roles). Some registry keys require you to simply be an *Authenticated User*, while other registry keys require you to be a *Manager*. Refer to the *Microsoft Windows Mobile 6 Help* file, *Metabase Settings for Registry Configuration Service Provider* section, for the default role settings in Windows Mobile 6.

For those registry settings that require the *Manager* role, the CPF file must be signed with a privileged certificate installed on the device. Refer to the *Microsoft Windows Mobile 6 Help* file and the *Windows Mobile 6 SDK* for instructions and sample test certificates.

## Creating an XML Provisioning File

To create a .cpf file:

1. Create a valid provisioning XML file named _setup.xml using an XML editor or the tools supplied with Visual Studio 2005. (For example, use the SampleReg.xml sample created in the *RegMerge* section and rename it _setup.xml.) Ensure the file contains the required parameters for the operation. Refer to the *Microsoft Windows Mobile 6 Help* file for information.
2. In the Windows Mobile 6 tools directory on the desktop computer (typically \Program Files\Windows CE Tools\wce500\Windows Mobile 6 Pocket PC SDK\Tools), run the Makecab.exe utility, using the following syntax to create a .cpf file from the _setup.xml file:

   MakeCab.exe /D COMPRESS=OFF _setup.xml myOutCpf

   ***NOTE*** COMPRESS=OFF is required for backward compatibility with Pocket PC.
3. Optionally, use the Authenticode tools to sign the .cpf file.
4. Tap the filename to install.
5. Certain applications and settings require a cold boot to take affect. In these cases, cold boot the MC75A. Refer to the *Windows Mobile Version 6 Help* file for more information.

## XML Provisioning vs. RegMerge and Copy File

Prior to Windows Mobile 6, Zebra used two drivers (RegMerge and CopyFiles) to update the registry and to copy files during a cold boot. With Mobile 6, Zebra recommends using XML provisioning instead. RegMerge and CopyFiles are supported for backward compatibility but Zebra may eliminate support in the future. The following sections provide examples of how RegMerge and CopyFiles were used, and how to perform the same function using XML provisioning.

### RegMerge

RegMerge.dll is a built-in driver that allows updating the registry during a clean boot. RegMerge runs very early in the boot process and looks for registry files (.reg files) in certain Flash File System folders (i.e., \Application) during a clean boot. It then merges the registry changes into the system registry located in RAM.

The following example uses RegMerge to set a registry key:

SampleReg.reg

```
[HKEY_LOCAL_MACHINE\Hardware\DeviceMap\Backlight]
“BacklightIntensity”=dword:00000036
```

The following example uses XML provisioning to perform the same task:

SampleReg.xml

```
<wap-provisioningdoc>
    <characteristic type= “Registry”>
        <characteristic type= “HKLM\Hardware\DeviceMap\Backlight”>
            <parm name= “BacklightIntensity” value= “54” datatype= “integer” />
        </characteristic>
    </characteristic>
</wap-provisioningdoc>
```

### CopyFiles

CopyFiles copies files from one folder to another on a clean boot. During a clean boot CopyFiles looks for files with a .CPY extension in the root of the Application FFS partition. These files are text files containing the source and destination for the desired files to copy, separated by “>”.

The following example uses CopyFiles to copy a file from the \Application folder to the \Windows folder:

SampleCpy.cpy

```
\Application\example.txt > \Windows\example.txt
```

The following example uses XML provisioning to perform the same task:

SampleCpy.xml

```
<wap-provisioningdoc>
    <characteristic type= “FileOperation”>
        <characteristic type= “\Windows” translation= “filesystem”>
            <characteristic type= “MakeDir”/>
            <characteristic type= “example.txt” translation= “fileystem”>
                <characteristic type= “Copy”>
                    <parm name= “Source” value= “\Application\example.txt” translation= “filesystem”/>
                </characteristic>
            </characteristic>
        </characteristic>
    </characteristic>
</wap-provisioningdoc>
```

## Storage

Mobile 6 contains three types of file storage:

- Random Access Memory (RAM)
- Persistent Storage
- Application folder.

## Random Access Memory

Executing programs use RAM to store data. Data stored in RAM is lost upon a warm boot. RAM also included a volatile file storage area called *Cache Disk*.

### Volatile File Storage (Cache Disk)

Windows Mobile 6 memory architecture uses persistent storage for all files, registry settings, and database objects to ensure data is retained even after a power failure. Persistent storage is implemented using Flash memory technology which is generally slower than volatile RAM memory. In certain situations the speed of the operation is more important than the integrity of the data. For these situations, Zebra has provided a small volatile File Storage volume, accessed as the *Cache Disk* folder. Disk operations to the *Cache Disk* folder are much faster than to any of the persistent storage volumes, but data is lost across warm boots and power interruptions. Note that a backup battery powers RAM memory, including the *Cache Disk*, when you remove the main battery for a short period of time.

The MC75A uses the *Cache Disk* for temporary data that can be restored from other sources, for example, for temporarily “caching” HTML web pages by a browser or generating formatted files to send to a printer. Both situations benefit from the increased speed of the cache disk, but you can restore the data if needed.

DO NOT use the *Cache Disk* as a method to improve application performance. Analyze applications that perform slower in persistent storage to optimize disk access. Common areas for optimization include minimizing the number of reads and writes to a file, removing unneeded debug logging, and minimizing file flushing or closing files.

## Persistent Storage

Windows Mobile 6 protects all data and applications from power-related loss. Because Windows Mobile 6 mounts the entire file system and registry in persistent storage (rather than using RAM), MC75A devices provide a reliable storage platform even in the absence of battery power.

Persistent storage provides application developers with a reliable storage system available through the standard file system and registry APIs. Persistent storage is optimized for large reads and writes; therefore, applications reading and writing data in large chunks tend to outperform those applications reading and writing small blocks of data. Data in persistent storage is lost upon a clean boot.

Persistent storage contains all the directories under the root directory except for Application, Cache Disk, and Storage Card (if a storage card is installed). Persistent storage is approximately 700 MB (formatted).

## Application Folder

The Application folder is a super-persistent storage that is persistent even after a clean boot. Accessing data in the Application folder is slower than accessing persistent storage. The Application folder is used for deployment and device-unique data. For example, network profiles can be stored in the Application folder so that connection to the network is available after a cold boot. The Application folder is approximately 110 MB (formatted).

# System Configuration Manager

System Configuration Manager (SCM) is a utility that runs on the development computer and is used to create configuration files. These files, when deployed to an MC75A, set configuration parameters for that device. The configurable options for a MC75A are defined in an XML file that is available on the Support Central (http://www.zebra.com/support) for that MC75A. SCM is also available on Support Central.

SCM eliminates the potential user errors that occur when manually editing registry settings.

## File Types

SCM uses three types of files:

- System Configuration Template (.SCT) files are XML files that define the configurable parameters for a device.
- Registry Configuration Service Provider XML files for device provisioning.
- CAB Provisioning Format (.CPF) file which is a .CAB archive that contains the provisioning XML. This file is downloaded to the MC75A and merged upon a cold boot.

## User Interface

SCM's user interface consists of a tree control on the left side of the window which displays all the configuration categories, and a data grid table on the right which displays all the configurable controls for the selected category. *Figure 4-1* shows the main window for a device's .sct file.

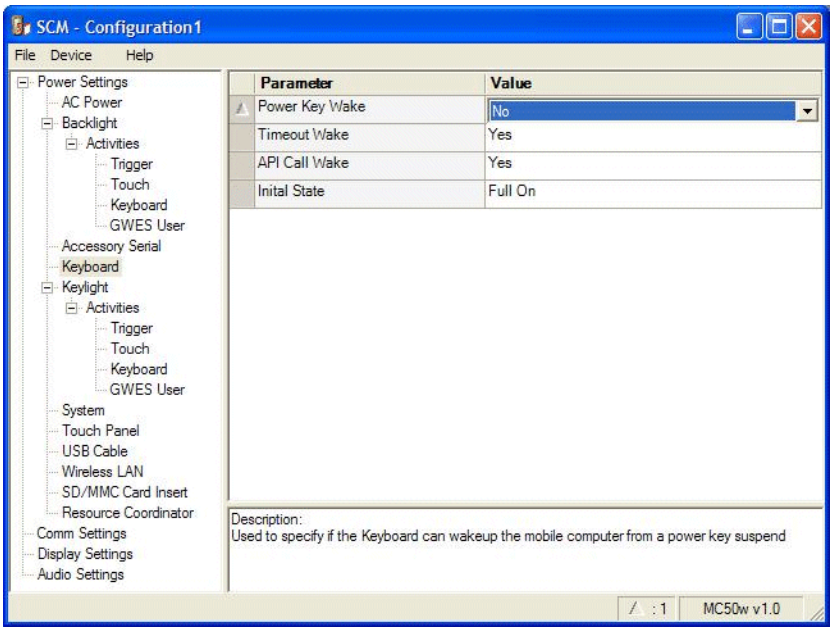



**Figure 4-1** *Main SCM Window*

### Menu Functions

Use the main menu to access the program functionality described in *Table 4-1*.

**Table 4-1** *SCM Menu Functions*

| Menu Item | Description |
|---|---|
| File Menu | |
| Open Config File | Open a saved configuration file (.SCD). |
| Save Config Changes | Save changes to the currently loaded configuration file. |
| Restore All Defaults | Restore all parameter values to the default state. The default values are stored in a System Configuration template file (i.e., MC75Aw.sct). |
| Export Changes to .xml | Export the changed parameter values to an XML file. |

**Table 4-1** *SCM Menu Functions (Continued)*

| Menu Item | Description |
|---|---|
| Export Changes to .cpf | Export the changed parameter values to an CPF file. |
| Export all to .xml | Export all the parameter values to an XML file. |
| Export all to .cpf | Export all the parameter values to an CPF file. |
| Exit | Exit System Configuration Manager. |
| Device Menu | |
| Device type | Change the current device type template. Each template (available from the Support Central) must reside in the SCM directory. |
| Help Menu | |
| About | Display the *About* dialog which shows the application version. |

### Parameter State Indicators

The first column of the data table displays parameter state indicators. The state indicators display one of the states in *Table 4-2* for a particular parameter:

**Table 4-2** *Parameter Status Indicators*

| Icon | Indicator | Description |
|---|---|---|
|  | Modified | This parameter was changed from its initial factory setting. |
|  | Invalid | This parameter is not valid for the selected device type. This can occur when a configuration file for one type of device is loaded and the device type is changed using the *Device* menu. Values marked “invalid” are not included in an exported. |

### Window Status Bar

The SCM status bar found on the bottom right corner of the window contains the items in *Table 4-3* from left to right:

**Table 4-3** *Window Status Bar Items*

| Status Bar Item | Description |
|---|---|
| Invalid Count | Number of parameters not valid for the selected device. |
| Modified Count | Number of parameters modified from the factory defaults. |
| Device Type | Device type - version. |

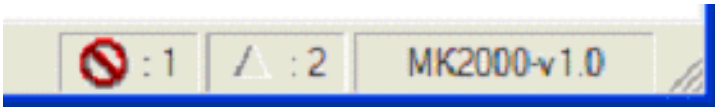



**Figure 4-2** *Sample Status Bar*

The sample status bar in *Figure 4-2* shows that the current configuration file contains 1 Invalid Parameter and 2 Modified Parameters.

### File Deployment

The CPF file created by the SCM export function must be deployed to the MC75A.

1. Optionally, use the Authenticode tools to sign the .cpf file.
2. Make the .cpf file read-only, then copy it to the MC75A.
3. Tap the filename to install.
4. Certain applications and settings require a cold boot to take affect. In these cases, cold boot the MC75A. Refer to the *Windows Mobile Version 6 Help* file for more information.

## Enterprise Mobility Developer Kits

The Enterprise Mobility Developer Kit (EMDK) family of products allows you to write applications that take advantage of the capture, move and manage capabilities of the MC75A. Go to the Support Central (http://www.zebra.com/support) to download the appropriate developer kit.

# CHAPTER 5 MC75A6 - GSM CONFIGURATION

## Introduction

This chapter explains how to verify MC75A6 service on an Global System for Mobile communications (GSM) wireless network and establish settings.

GSM networks deliver mobile voice and data services, such as Short Message Service (SMS)/Text Messaging, with full roaming capabilities across the world. High-speed Downlink Packet Access (HSDPA) enabled networks offer Internet-based content and packet-based data services. This enables services such as internet browsing, e-mail on the move, powerful visual communications, multimedia messages, and location-based services.

When using the MC75A as a phone, services can include speed dialing, call tracking, voice mail, call forwarding, conference calling, and caller ID, depending on the type of service.

Also use the integrated phone as a modem to connect the MC75A to an ISP or work network. The GSM enabled MC75A can connect to the Internet or work network using Cellular Line, or using the modem specified by the mobile phone service provider.

***NOTE*** Before using an MC75A on a wireless network, first select a provider, establish a voice and data-enabled service plan, and configure the MC75A (where applicable). Refer to the *MC75A User Guide* for information on how to use the phone and services.

## Quick Startup Steps

To use the MC75A for phone and data connections:

1. Install the MC75A main battery. See *Installing the Main Battery on page 1-2*.
2. Fully charge the main battery and backup battery. See *Charging the Battery on page 1-3*.
3. Press the red **Power** button to suspend the MC75A.
4. Remove the battery.
5. Lift the SIM cover using the stylus tip.

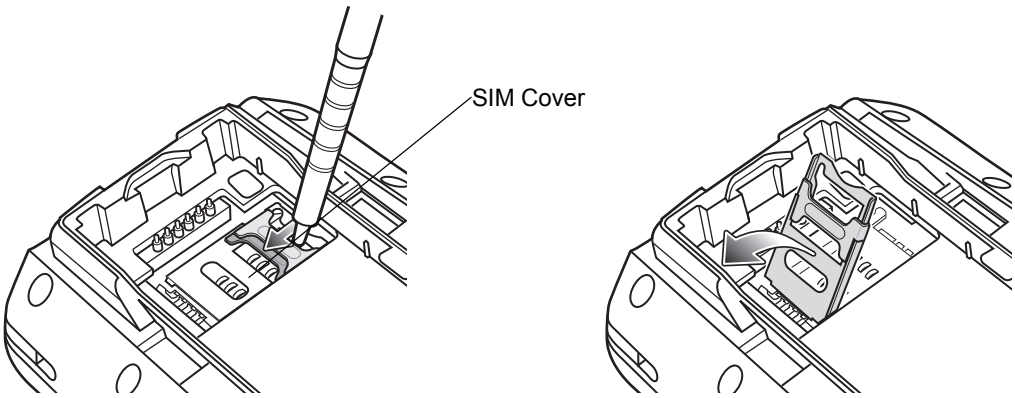



**Figure 5-1** *Lifting the SIM Cover*

6. Insert the SIM card, as shown in *Figure 5-2*, with the cut edge of the card facing out and the contacts facing down.

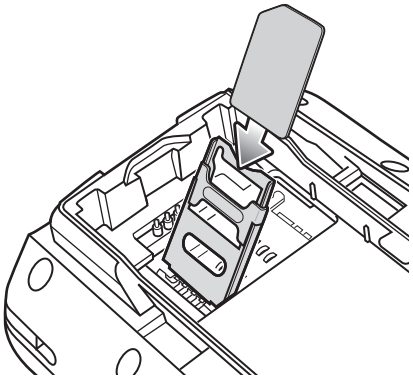


**Figure 5-2** *Inserting the SIM Card*

7. Lower the SIM cover and use the stylus to slide it in place.
8. Replace the battery and battery cover.
9. Press the red **Power** button.
10. Tap **Start** > **Phone** > **Menu** > **Options** > **Network** tab and verify that the service provider appears in the **Current network:** field. If the service provider name does not appear see *Chapter 9, Maintenance and Troubleshooting* for more information.
11. Make a call to verify connection.
12. Start the MC75A.
13. Ensure network coverage ( *page 5-3*).
14. Configure a data connection ( *page 5-4*).

***NOTE*** Data connection configuration is pre-packaged with T-Mobile service. Other service providers may require data connection configuration.

15. Configure settings ( *page 5-8*).
16. Use the phone.

# MC75A6 Service Verification

MC75A6 phone and data services require a live SIM card, obtained from a service provider, installed in the MC75A phone. The SIM card has embedded circuitry on one side of its surface which, when inserted into an MC75A phone, provides phone service. The SIM card provides a phone number, determines the features or services available to the subscriber, and identifies the subscriber to the network.

In addition to SIM card installation, the MC75A may require various settings to operate as a phone with data connection features.

## Ensuring Network Coverage

1. Ensure an activated SIM card, from the phone service provider, is installed in the MC75A.

***NOTE*** The SIM card must be enabled to connect to the network.

2. Verify active phone and data services by tapping to display the **Phone** dialog. The Carrier name appears in the dialog box.

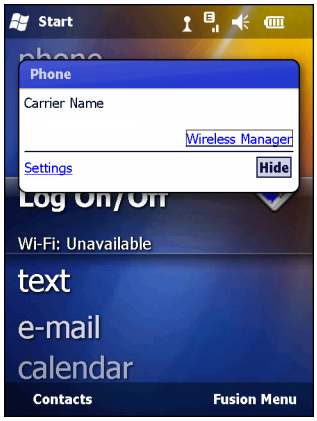



**Figure 5-3** *Connectivity Dialog*

3. Verify SIM card functionality:
   a. Tap **Start** > **Settings** > **Personal folder** > **Phone** icon > **Network** tab.

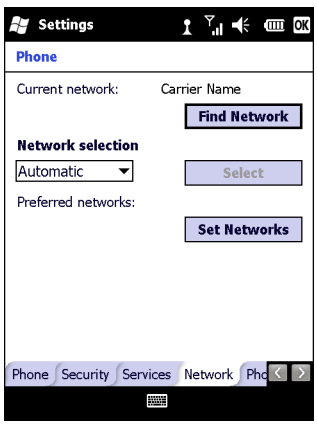



**Figure 5-4** *Phone Settings Window - Network Tab*

b. Ensure the service provider's network appears in the **Current network:** field.

c. If the network does not appear, tap **Find Network**. If the network still does not appear, verify that the SIM card was installed correctly. If it was, and no network appears, contact the service provider.

## Configuring a Data Connection

A data connection allows Internet access across a wireless network.

To set up a new data connection:

1. Acquire an Access Point Name (APN) from the service provider.
2. Tap **Start** > **Settings** > **Connections** tab > **Connections** icon > **Tasks** tab.

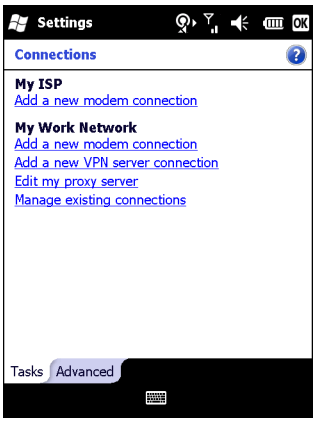



**Figure 5-5** *Connections Window*

3. Under **My ISP** select **Add a new modem connection**.

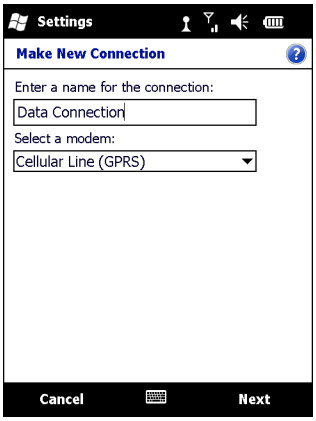



**Figure 5-6** *Connections Window - Make New Connection*

4. Enter a connection name in the *Enter a name for the connection:* text box.
5. Select **Cellular Line (GPRS)** from the **Select a modem:** drop-down list.
6. Tap **Next**.

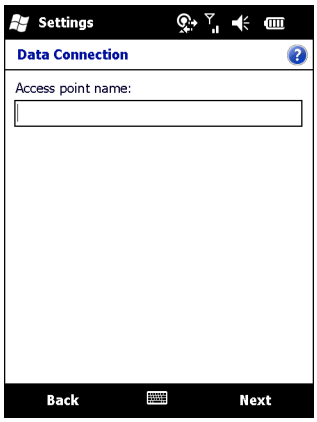



**Figure 5-7** *Connections Window - Access Point Name*

7. Enter the APN from the service provider in the **Access point name:** text box.
8. Tap **Next**.

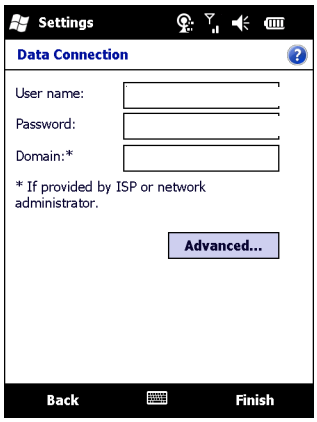



**Figure 5-8** *Connections Window - User Name & Password*

9. Enter a username in the User name text box, if required by the service provider.
10. Enter a password in the Password text box, if required by the service provider.
11. Enter a domain name in the Domain text box, if required by the service provider.
12. Tap **Finish**.
13. Tap **OK** to exit **Connections**.

## Establishing a Data Connection

1. Ensure a SIM card is installed in the MC75A.
2. Configure a GPRS data connection. See *Configuring a Data Connection on page 5-4*.
3. Tap the connectivity icon G, E or H at the top of the screen.


**Figure 5-9** *Connectivity Dialog Box*

4. Tap **Settings**.
5. Tap **Connections** icon.
6. Tap **Managing existing connections**.
7. Tap and hold on the data connection until a menu appears.

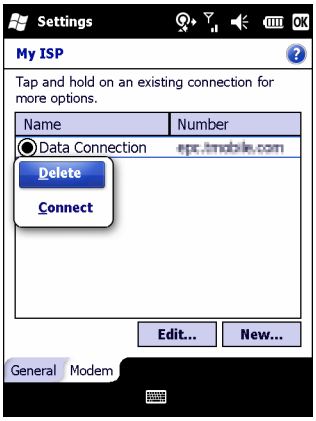



**Figure 5-10** *Data Connection*

8. Select **Connect**.


**Figure 5-11** *Connecting Using GPRS*

9. If the SIM card is protected with a Personal Identification Number (PIN), a dialog box pops up requesting the appropriate PIN to unlock the SIM card. In this case, enter the PIN and tap **OK**.

***NOTE*** Place emergency calls at any time, without entering a PIN or a SIM card.

10. When a connection is established, launch **Internet Explorer** to browse the Internet or launch an applicable application.

## Ending a Data Connection

To cancel a data connection in progress, tap **Cancel** in the **Connecting...** dialog window.

To end an established data connection:

1. Tap, G , E or H to display the **Connectivity** dialog box.


**Figure 5-12** *Connectivity Dialog Box*

2. Tap **Disconnect**.

***NOTE*** Tapping **Disconnect** during an active data transfer (e.g., downloading a web page) automatically reconnects the connection. You cannot disconnect the connection until the data transfer is complete.

# MC75A6 Settings

Use the **Phone Settings** window to customize settings, such as the ring type and ring tone for incoming calls, security options, and other options depending on the type of service.

## Phone

Use the **Phone** tab to customize ring type, ring tone, keypad tone, and security options.

Tap **Start** > **Settings** > **Personal folder** > **Phone** icon > **Phone** tab

or

**Start** > **Phone** > **Menu** > **Options** > **Phone** tab.

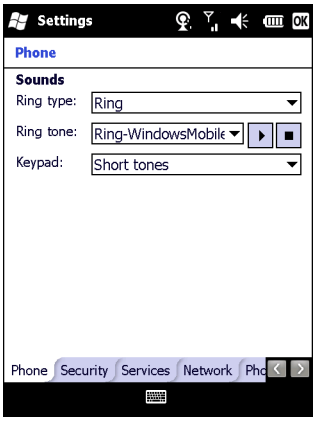



**Figure 5-13** *MC75A Phone Window - Phone Tab*

### Sounds

1. **Phone Number** automatically displays on the **Phone** tab when a live SIM card is installed.
2. Select a ring type from the **Ring type:** drop-down list. The ring type changes the way the MC75A rings when you receive an incoming call. Regardless of the ring type selected, a dialog box appears on the MC75A's display for incoming calls.
3. Select a ring tone for incoming calls from the **Ring tone:** drop-down list. To hear a sample of the selected ring tone, tap ▶. Tap ■ to end the ring tone.

   ***NOTE*** To use custom .wav, .mid, or .wma files as ring tones, use ActiveSync on the host computer to copy the file to the /Windows/Rings folder on the MC75A. Then select the sound from the ring tone list.

4. Select a keypad tone from the **Keypad:** drop-down list. This selection determines the tone that sounds when entering a phone number on the keypad.

   Select **Short tones** or **Long tones** to specify the duration of the sound when you press a number on the keypad. Select **Off** to disable tones.

   ***NOTE*** Turning off sounds saves power and prolongs battery life.

## Security

### *Enabling a PIN*

***NOTE*** Place emergency calls at any time, without requiring a PIN or a SIM card.

To require a PIN when using the phone:

1. From the **Phone** tab (*Figure 5-13*), select the **Require PIN when phone is used** check box under **Security**.

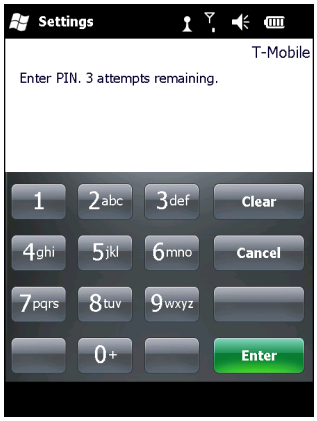



**Figure 5-14** *Enter PIN*

2. Use the touch keypad to enter a four to eight digit PIN.
3. Tap **Enter** to enable the PIN and return to the **Phone** tab.

### *Changing a PIN*

***CAUTION*** If you enter an incorrect PIN, the message “SIM PIN incorrect: Try again” appears. After three consecutive incorrect attempts, the SIM card is blocked. The phone does not allow you to attempt to enter your PIN again and you must obtain a PIN Unblock Key from your service provider.

1. From the **Phone** tab (*Figure 5-13*), tap **Change PIN**.
2. Use the touch keypad to enter the current PIN.
3. Tap **Enter**.
4. Use the touch keypad to enter a new four to eight digit PIN.
5. Tap **Enter**.
6. Reenter the new PIN for confirmation and tap **Enter**.
7. Tap **OK** to confirm the change.

### *Disabling a PIN*

1. From the **Phone** tab (*Figure 5-13*), deselect the **Require PIN when phone is used** check box.
2. Use the touch keypad to enter the current PIN.
3. Tap **Enter**.
4. Tap **OK** to confirm the change.

5. Tap **OK** to exit settings.

## Services

Use the *Services* tab to configure settings for subscribed phone services. For example, block certain types of incoming and/or outgoing calls ( *page 5-10*), disclose the caller's identity when making outgoing calls ( *page 5-11*), forward incoming calls to a different phone number ( *page 5-11*), receive notification of incoming calls when a phone session is in use ( *page 5-12*), and set up voice mail and short message service ( *page 5-12*).

1. Tap **Start** > **Settings** > **Personal folder** > **Phone** icon > **Services** tab.

   or

   **Start** > **Phone** > **Menu** > **Options** > **Services** tab.

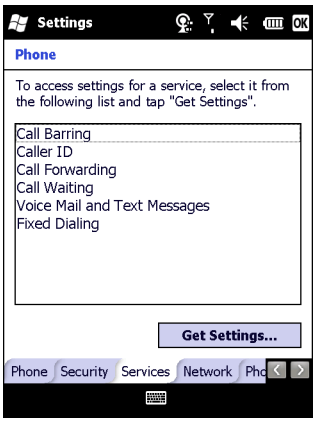



**Figure 5-15** *MC75A Phone Window - Services Tab*

2. Select a service from the list and tap **Get Settings...** .
3. Change services settings as follows.

### Call Barring (Call Blocking)

Use call barring to block certain types of incoming and/or outgoing calls. Select the type of incoming and/or outgoing calls to block.

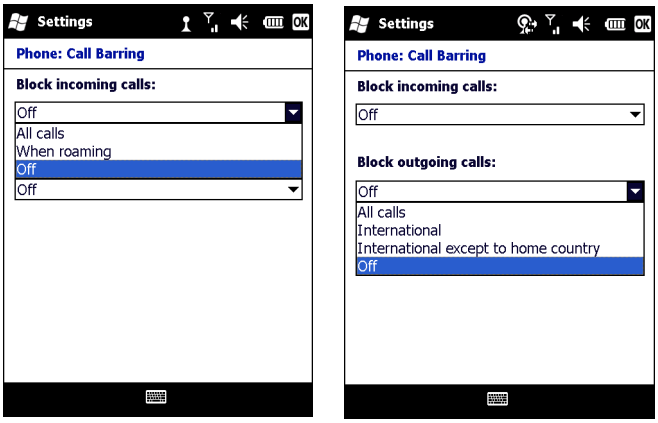



**Figure 5-16** *Call Barring/Call Blocking*

## Caller ID

Enable caller ID to reveal the identity of the person making an outgoing call. Select the **Everyone** radio button to always display the caller ID. Select the **No one** radio button to prevent the caller's identity from appearing to others.

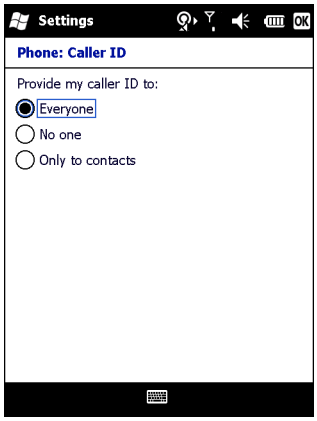



**Figure 5-17** *Caller ID*

## Call Forwarding

***NOTE*** Call Forwarding may not be available on all networks. Check with your service provider for availability.

Use call forwarding to forward incoming calls to a different phone number.

- To forward all calls to a different phone number:
  - select the **Forward all incoming phone calls** check box.
  - enter the phone number to receive forwarded calls in the **To:** text box.
- To forward incoming calls to a different phone number based on a specific situation, select one or more of the check boxes under **Forward phone calls only if:**.
  - **No answer:** enter the phone number to receive forwarded calls only when the phone cannot be answered. Then select a time period from the **Forward after:** drop-down list. Options are 5, 10, 15, 20, 25, and 30 seconds.
  - **Unavailable:** enter the phone number to receive forwarded calls only when the phone is turned off or the user is unreachable.
  - **Busy:** enter the phone number to receive forwarded calls only when the line is busy.

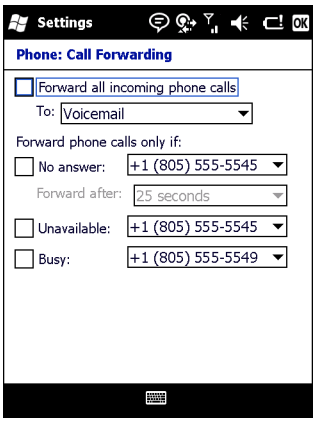



**Figure 5-18** *Call Forwarding*

## Call Waiting

***NOTE*** Call Waiting may not be available on all networks. Check with your service provider for availability.

Call waiting notifies you of an incoming call when the phone is in a phone session. Select the **Notify me** radio button to enable call waiting. Select the **Do not notify me** radio button to disable call waiting.

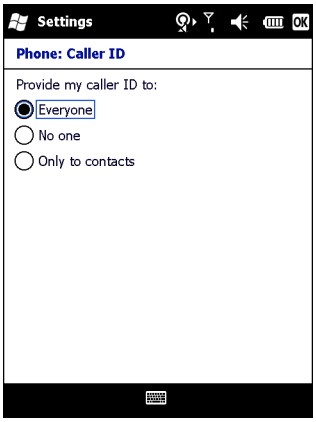



**Figure 5-19** *Call Waiting*

## Voice Mail and Text Messages

To use voice mail and send short messages, enter the voice mail and/or text message phone number in the appropriate text boxes.


**Figure 5-20** *Voice Mail and Text Messages*

### Fixed Dialing

Use Fixed Dialing to restrict the phone to dial only the phone number(s) or area code(s) specified in a Fixed Dialing list.

1. Select **Fixed Dialing** and tap **Get Settings**.

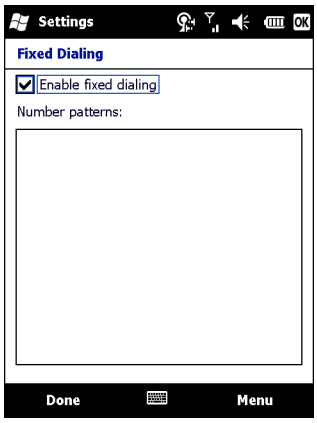



**Figure 5-21** *Fixed Dialing Window*

2. Select the **Enable fixed dialing** check box.
3. To add a number to the list, tap **Menu** > **Add**.
4. Enter the phone number or area code to restrict and tap **Done**.
5. Repeat steps 3 and 4 to add more numbers, and tap **Done** twice when complete.
6. Enter **PIN2** and tap **Done**.

## Network

Use the **Network** tab to view available networks, determine the order in which the phone accesses another network if the current network is unavailable, and specify whether to change networks manually or automatically. The current network remains active until it's changed, the signal is lost, or the SIM card is changed.

The network the MC75A currently uses appears in the **Current network:** field at the top of the window.

## Changing Networks Manually

1. Tap **Start** > **Settings** > **Personal folder** > **Phone** icon > **Network** tab

   or

   **Start** > **Phone** > **Menu** > **Options** > **Network** tab.

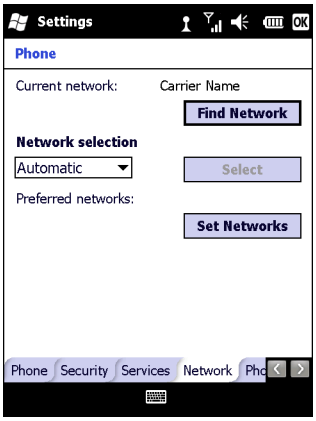



**Figure 5-22** *MC75A Phone Window - Network Tab*

2. From the **Network selection** drop-down list, select **Manual**.

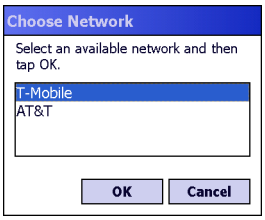



**Figure 5-23** *Choose Network*

3. From the **Choose Network** window, select the network to use.
4. Tap **OK**.

## Viewing Available Networks

To view all wireless networks available:

1. Tap **Start** > **Settings** > **Personal folder** > **Phone** icon > **Network** tab.

   or

   **Start** > **Phone** > **Options** > **Network** tab.

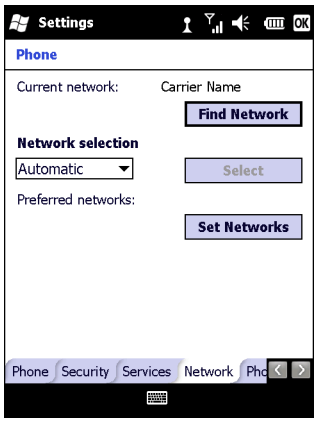



**Figure 5-24** *MC75A Phone Window - Network Tab*

2. Tap **Find Network**.

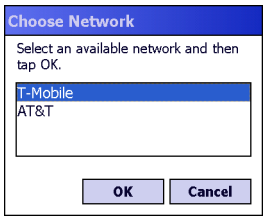



**Figure 5-25** *Choose Network*

3. From the **Choose Network** window, select the network to use.
4. Tap **OK**.

## Setting Preferred Networks

Set networks in a preferred order of access. Setting preferred networks allows the MC75A to access a second preferred network if the first is unavailable.

1. Tap **Start** > **Settings** > **Personal folder** > **Phone** icon > **Network** tab

   or

   **Start** > **Phone** > **Menu** > **Options** > **Network** tab.

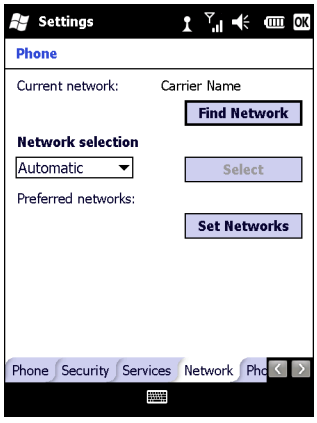



**Figure 5-26** *MC75A Phone Window - Network Tab*

2. Tap **Set Networks** to view all available networks.

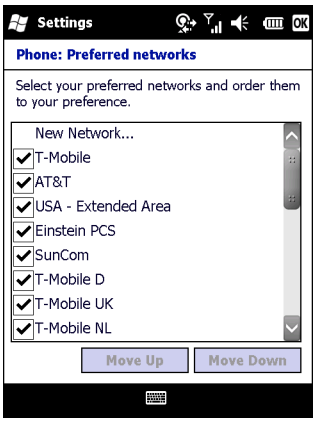



**Figure 5-27** *Preferred Networks*

3. Select the preferred networks by tapping one or more check boxes.
4. Tap **Move Up** and **Move Down**, as necessary, to place the selected networks in the preferred order.
5. Tap **OK** to send the new settings to the network.
6. From the **Network** tab, select **Automatic** from the **Network selection** drop-down list.
7. Tap **OK** to exit settings.

## Phone Info

Use the *Phone Info* tab to view hardware and software information about the phone.

1. Tap **Start** > **Settings** > **Personal folder** > **Phone** icon > **Phone Info** tab

   or

   **Start** > **Phone** > **Menu** > **Options** > **Phone Info** tab.

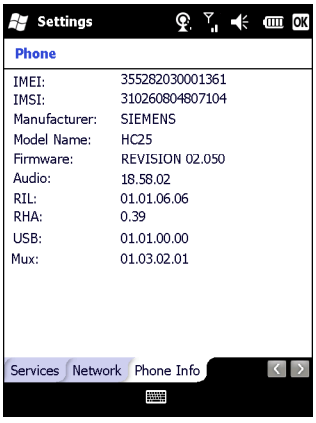



**Figure 5-28** *MC75A Phone Window - Phone Info Tab*

2. Tap **OK** to exit settings.

## Network Time Synchronization

The MC75A can be configured to synchronize the clock with the time from the carrier network. A registry key on the MC75A has to be created to enable this feature.

Using a registry editor, navigate to the following:

[HKEY_LOCAL_MACHINE\SOFTWARE\Symbol\RIL\RHA\HC25]

Create the following key:

“SyncSystemTime”=dword:00000001

where:

dword:0 = disabled

dword:1 = enabled

After setting the registry key, warm boot the MC75A.

## Enhanced Operator Name String

The MC75A is enabled to download and display the name of the GSM network currently logged in to. Four registry keys on the MC75A have to be edited to disable this feature.

Using a registry editor, navigate to each of the following:

[HKEY_LOCAL_MACHINE\Software\Microsoft\RIL]

[HKEY_LOCAL_MACHINE\Software\Microsoft\RIL\Configurations\GSM_HC25]

[HKEY_LOCAL_MACHINE\Comm\Cellular\Ril]

[HKEY_LOCAL_MACHINE\Comm\Cellular\Ril\Configurations\GSM_HC25]

Edit the following key:

“EonsEnable”=dword:1

where:

dword:0 = disabled

dword:1 = enabled (default)

After setting the registry key, warm boot the MC75A.

## Service Provider Name Display

The reg key (“UseServiceProviderName”) originally was used to fix the dual-line SIM card issue with value 2. But for the Italian Post, the value 1 should be used to show the virtual carrier name (Poste Mobile).

[HKEY_LOCAL_MACHINE\Software\Microsoft\RIL]

“UseServiceProviderName”=dword:1

where:

dword:0 = Display network provider name

dword:1 - Display service provider name (default)

dword:2 - Display both network provider and service provider name

# CHAPTER 6 MC75A8 - CDMA CONFIGURATION

## Introduction

This chapter explains how to activate an MC75A8 on a Code Division Multiple Access (CDMA) wireless network and establish settings.

CDMA is a form of wireless multiplexing in which data (e.g., Short Message Service) can be sent over multiple frequencies simultaneously, optimizing the use of available bandwidth. In an CDMA system data is broken into packets, each of which are given a unique identifier, so that they can be sent out over multiple frequencies and then re-built in the correct order by the receiver.

When using the MC75A as a phone, services can include speed dialing, call tracking, voice mail, call forwarding, conference calling and caller ID, depending on the type of service.

The integrated phone in the MC75A can also be used as a modem to connect the MC75A to an ISP or work network. The MC75A can connect to the Internet or work network using Cellular Line, or using the modem specified by the mobile phone service provider.

***NOTE*** Before the MC75A can be used on a CDMA wireless network, a provider must be selected, a voice and data-enabled service plan must be established and the MC75A must be properly configured (where applicable).

Refer to the *MC75A User Guide* for information on how to use the phone and services.

## Quick Startup Steps

To start using the MC75A for phone and data connections:

1. Install the main battery (*Installing the Main Battery on page 1-2*).
2. Activate the phone (*CDMA Phone Activation on page 6-2*).
3. Configure settings (*CDMA Settings on page 6-8*).
4. Use the phone.

# CDMA Phone Activation

CDMA phone service is available from a number of service providers including Sprint® and Verizon Wireless®. In addition to service activation for each provider, various settings may be required for the MC75A to operate as a phone. There can be different Activation Wizards depending upon the carrier. Verizon Wireless and Sprint use an automatic activation processes. All other carriers use the manual activation process.

## Verizon Wireless Activation

The **Activation Wizard** allows automatic activation. To activate the MC75A using the automated service, the MC75A attempts to call the network on a special number that automatically downloads the phone number and identification codes from the network.

Verizon Wireless automatically downloads the provisioning data. This process is invisible to the user and occurs once, after account activation, during the first data connection attempt.

***NOTE*** After an MC75A is provisioned for Verizon Wireless service, it is strongly recommended that no other service provider loads are downloaded to the MC75A and no changes are made to any of the provisioning information.

To activate the phone using the Verizon Wireless automated service:

1. Ensure the MC75A is in a strong signal area.
2. The Activation Wizard automatically starts whenever the phone is turned on. If the wizard does not appear, tap **Start** > **Phone** > **Menu** > **Activation Wizard...** .

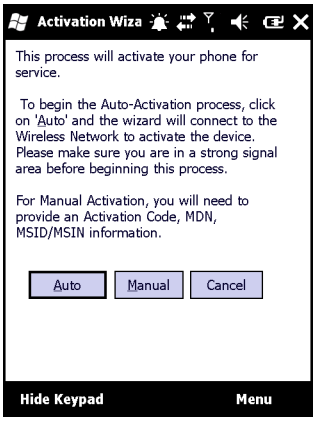



**Figure 6-1** *Verizon Activation Wizard*

3. Tap **Auto** to connect to the Verizon Wireless Network to automate activation. Automated activation provides all required codes and identification numbers over the network. No additional activation setup is required.
4. Tap **Finish** to close the **Activation Wizard**.

***NOTE*** If activation was not successful, contact the service provider.

5. The phone can be used in approximately four hours, depending on the network provider load.

# Sprint Activation

## Automatic Activation

To activate the phone using Sprint service:

1. Ensure the MC75A8 is in a strong signal area.
2. The Activation Wizard automatically starts whenever the phone is turned on.

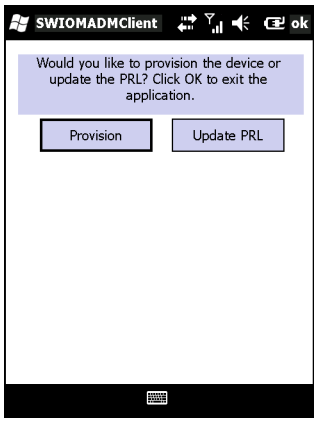



**Figure 6-2** *Activation Wizard*

3. Tap **Provision**. If communication with the network is successful, a confirmation window appears.

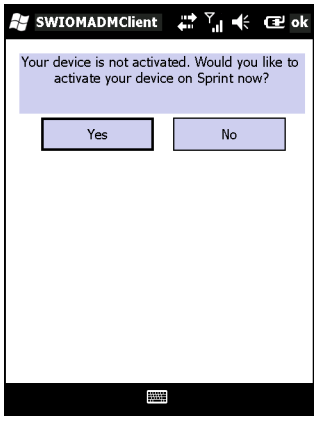



**Figure 6-3** *Activation Wizard Confirmation Window*

4. Tap **Yes**.
5. Automatic provisioning begins. Upon successful activation, a confirmation window appears.

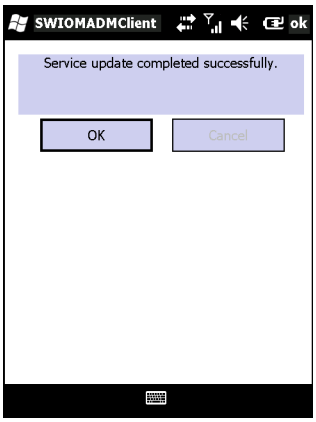



**Figure 6-4** *Provisioning Complete*

If activation is unsuccessful, a window appears to re-try the activation process. Tap **Yes** to try again.

6. Tap **OK** to close the application.

***NOTE*** If activation was not successful, contact the service provider.

## Manual Activation

To manually activate the phone:

1. Ensure the MC75A8 is in a strong signal area.
2. Tap **Start** > **Phone** > **Menu** > **Activation Wizard**... .

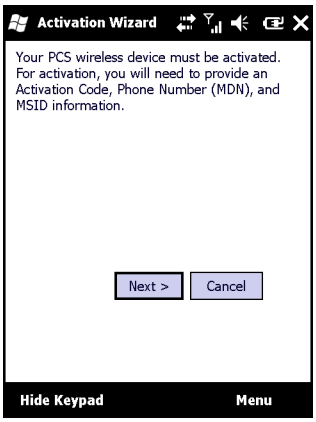



**Figure 6-5** *Activation Wizard*

3. Tap **Next >**.

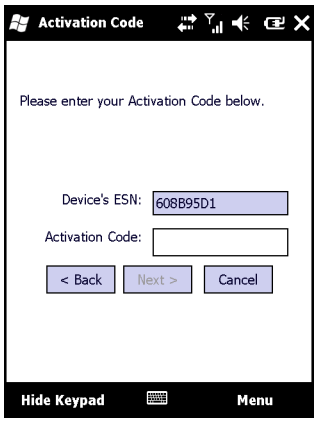



**Figure 6-6** *Activation Wizard - Enter Activation Code*

4. Enter the 6-digit activation code from your service provider.
5. Tap **Next >**. If the activation code is incorrect, an error dialog box appears.

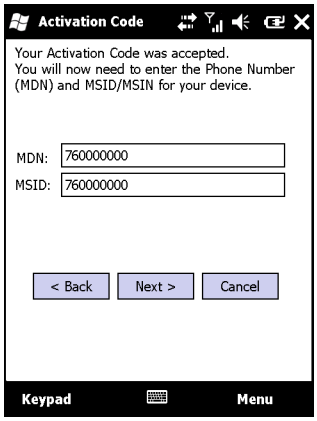



**Figure 6-7** *Activation Wizard - MDN and MSID*

6. Enter the MDN and MSID. The MDN and MSID are the area code and phone number received from the service provider.
7. Tap **Next >**. A confirmation dialog box appears.

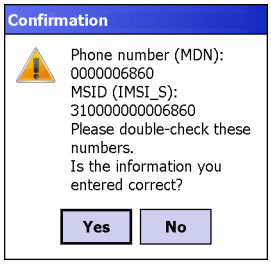



**Figure 6-8** *Activation Wizard - Confirmation*

8. Verify that the MDN and MSIN numbers entered are correct, tap **Yes** to confirm. The **Congratulations!** window appears.

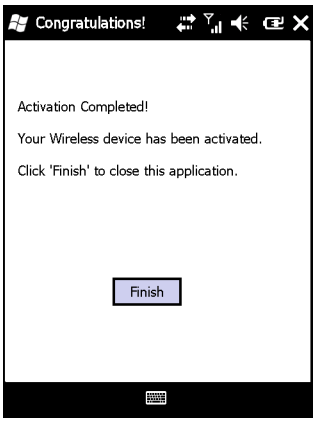



**Figure 6-9** *Activation Wizard - Activation Complete*

9. Tap **Finish** to complete activation.

***NOTE*** If activation was not successful, contact the service provider.

## Activation Test

To test the service.

1. Tap **Start** > **Phone**.

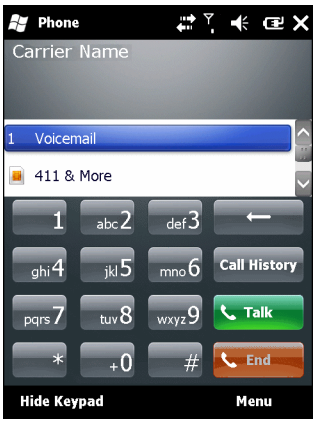



**Figure 6-10** *Phone Window - Example*

2. Ensure the carrier name displays on the window.
3. Make a voice call to ensure activation was successful.

***NOTE*** If activation was not successful, contact the service provider.

## Establishing a Data Connection

***NOTE*** Ensure that you have data service activated with your service provider.

A data connection allows Internet access across a wireless network. Data connection is pre-packaged with service accounts.

To verify active data service:

1. Tap **Start** > **Internet Explorer**.
2. In the address bar, enter a URL for a web site.
3. Tap to display the **Connectivity** dialog. The dialog box displays the data connection information.


**Figure 6-11** *Data Connection*

# CDMA Settings

Use the **Phone Settings** window to customize CDMA phone settings, such as the ring type and ring tone for incoming calls and other options depending on the type of service.

## Phone

Use the **Phone** tab to customize ring type, ring tone and keypad tone when entering phone numbers.

1. Tap **Start** > **Settings** > **Personal** folder > **Phone** icon > **Phone** tab.

   or

   **Start** > **Phone** > **Menu** > **Options** > **Phone** tab.

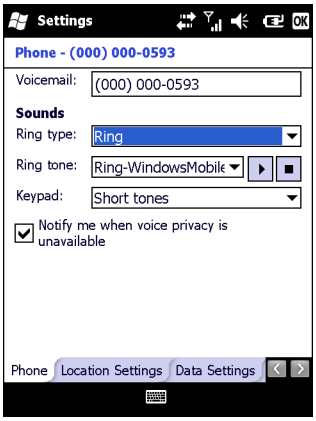



**Figure 6-12** *Phone Window - Phone Tab*

2. Phone and voicemail phone numbers automatically display when phone service is activated.
3. Select a ring type from the **Ring type:** drop-down list. The ring type changes the way the MC75A rings to notify the user of an incoming call. Regardless of the ring type selected, a dialog box appears on the display for incoming calls.
4. Select a ring tone for incoming calls from the **Ring tone:** drop-down list. To hear a sample of the selected ring tone, tap ▶. Tap ■ to end the ring tone.

   ***NOTE*** To use custom .wav, .mid or .wma files as ring tones, use ActiveSync on the host PC to copy the file to the /Windows/Rings folder on the MC75A. Then, select the sound from the ring tone list.

5. Select a keypad tone from the **Keypad:** drop-down list. This selection determines the tone that sounds when entering a phone number on the keypad.
   a. Select **Short Tones** for a tone that sounds only for one or two seconds.
   b. Select **Long Tones** for a continuous sound for as long as the number on the keypad is pressed.
   c. Select **Off** to disable tones.
6. Tap **Other Settings...** to set additional sounds and notifications for the MC75A.
7. Select the **Notify me when voice privacy is unavailable** check box to receive a message when dialing.
8. Tap **ok** to exit settings.

   ***NOTE*** Turning off sounds saves power and prolongs battery life.

## Location Settings

Use the **Location** tab to allow the network to detect the position of the MC75A's radio.

1. Tap **Start** > **Settings** > **Personal** folder > **Phone** icon > **Location Settings** tab.

   or

   **Start** > **Phone** > **Menu** > **Options** > **Location Settings** tab.

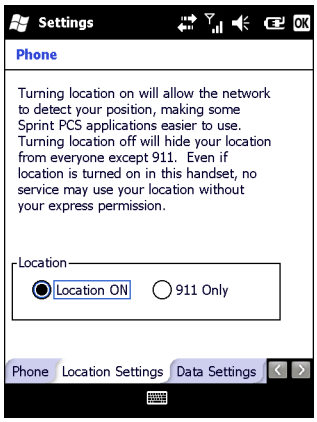



**Figure 6-13** *Phone Window - Location Tab (Typical)*

2. Select the **Location ON** radio button to allow the network to detect the position of the MC75A's radio.

   or

   Select the **911 Only** button to turn off location detection, hiding the location of the radio from all but 911 emergency service.

3. Tap **ok** to confirm **Location ON** or **911 Only**.

4. Tap **ok** again to exit settings.

## Data Settings

### Verizon Wireless Data Settings

Use the **Data** tab to reset connection settings for national access.

1. Tap **Start** > **Settings** > **Personal** folder > **Phone** icon > **Data Settings** tab.

   or

   **Start** > **Phone** > **Menu** > **Options** > **Data Settings** tab.

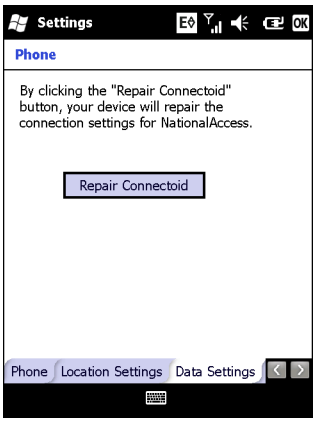



**Figure 6-14** *Phone Window - Verizon Data Tab*

2. Tap **Repair Connectoid** to reset connection settings for National Access.
3. Tap **Yes**.
4. Tap **ok**.
5. Tap **ok** to exit settings.

## System Settings

Use the **System Settings** tab to select roaming options.

Tap **Start** > **Settings** > **Personal** folder > **Phone** icon > **System Settings** tab.

or

Tap **Start** > **Phone** > **Menu** > **Options** > **System** tab.

### Verizon System

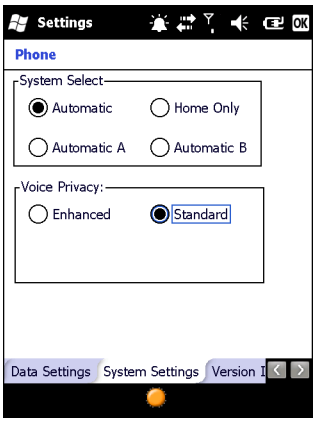



**Figure 6-15** *Phone Window - System Settings Tab - Verizon*

1. System Select allows the user to change the system roaming preference of the radio in order to control the type of network the radio can lock onto for service.
   - Select the **Automatic** radio button to allow the radio to lock onto networks based on the provisioning of the radio.

- Select the **Automatic A** or **Automatic B** radio button to allow the radio to lock onto an A or B network carrier, respectively, if no other network can be found that matches the radio's provisioning.
- Select the **Home Only** radio button to prevent the radio from locking on any network that is considered a roaming network.

2. Voice Privacy allows the user to enable or disable voice privacy.
   - Select the **Enhanced** radio button to trigger the network to use voice privacy whenever the current network supports it. When in a call, if network privacy is being used, a voice privacy icon is displayed in the user interface.
   - Select the **Standard** radio button to prevent voice privacy from being used when in a call.
3. Tap **ok** to exit settings.

## Version Information

Use the **Version Information** tab to view phone number and version information.

1. Tap **Start** > **Settings** > **Personal** folder > **Phone** icon > **Version Information** tab.

   or

   **Start** > **Phone** > **Menu** > **Options** > **Version Information** tab.

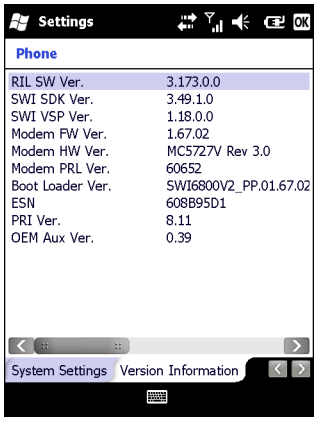



**Figure 6-16** *Phone Window - Version Information Tab*

2. Tap **ok** to exit settings.

## Services

Depending on the type of subscribed phone services, the following services may be available: call barring, caller ID, call forwarding, call waiting, voice mail and Short Message Service (SMS).

### Call Barring (Call Blocking)

Call barring blocks certain types of incoming and/or outgoing calls. This service is setup when an account is opened with the service provider.

### Caller ID

Caller ID provides a way for people to know the identity of the person making an outgoing call. To disable caller ID and block the outgoing phone number:

1. Enter *67 on the phone keypad.
2. Enter the phone number to call.

***NOTE*** *67, followed by the phone number, must be entered on a call-by-call basis to block the outgoing phone number.

### Call Forwarding

***NOTE*** Call Forwarding may not be available on all networks. Check with your service provider for availability.

Use call forwarding to forward incoming calls to a different phone number. To enable call forwarding and send calls to another phone number:

1. Enter *72 on the phone keypad.
2. Enter the area code and phone number of the phone to accept the forwarded calls.
3. Tap **Talk**.
4. A beep sounds indicating activation.
5. Tap **End**.

To disable call forwarding:

1. Enter *73 (Verizon Wireless) on the phone keypad.
2. Tap **Talk**.
3. A beep sounds indicating deactivation.
4. Tap **End**.

### Call Waiting

***NOTE*** Call Waiting may not be available on all networks. Check with your service provider for availability.

Call waiting notifies the user of an incoming call when the phone is in a phone session. This service is setup when an account is opened with the service provider.

### Voice Mail and Short Message Service (SMS)

This service is setup when an account is opened with the service provider.

## Network Time Synchronization

The MC75A can be configured to synchronize the clock with the time from the carrier network. A registry key on the MC75A has to be created to enable this feature.

Using a registry editor, navigate to the following:

[HKEY_LOCAL_MACHINE\SOFTWARE\Symbol\RIL\RHA\MC5725]

Create the following key:

“SyncSystemTime”=dword:00000001

where:

dword:0 = disabled

dword:1 = enabled

After setting the registry key, warm boot the MC75A.

# CHAPTER 7 INTERACTIVE SENSOR TECHNOLOGY

## Introduction

This chapter provides information for configuring the Interactive Sensor Technology (IST) settings. IST settings can be accessed:

- Tap **Start** > **Settings** > **System** > **IST Settings** icon.
- Tap the **IST Settings** icon in the Command bar (if the classic Today screen is configured).

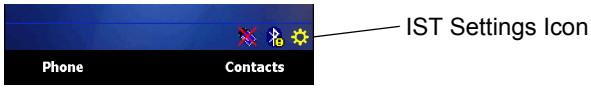



**Figure 7-1** *IST Settings Icon*

### IST Menu

Use this menu to access the configuration settings listed in *Table 7-1*. An enabled options is indicated with a check mark next to the option.

**Table 7-1** IST Tray Icon Menu Items

| Menu Item | Description |
|---|---|
| Configure IST | Opens the **IST Settings** window. |
| Hide | Removes **IST Settings** icon from the Command bar. |

**Table 7-1** IST Tray Icon Menu Items *(Continued)*

| Menu Item | Description |
|---|---|
| Wake Up On Motion | Wakes the MC75A from suspend mode if it was placed in suspend mode due to inactivity. |
| Keep Alive On Motion | Prevents going into suspend mode motion is detected. See *Keep Alive On Motion on page 7-3* for more information. |
| Auto Display Orientation | Enables auto display orientation. See *Display Tab on page 7-4* for more information. |

## General Tab

Use the **General** tab to view IST software information and control the display of the **IST Setting** icon.

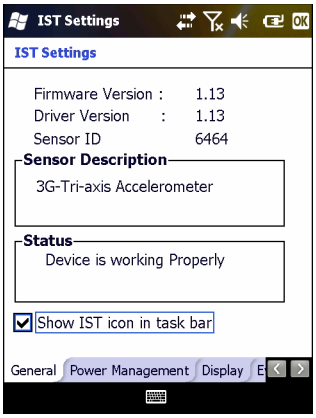



**Figure 7-2** *General Tab*

**Table 7-2** *IST General Tab Information*

| Item | Description |
|---|---|
| Firmware Version | Displays the version information of IST device firmware. |
| Driver Version | Displays the version information of IST driver. |
| Sensor ID | Displays identification tag of the sensor. |
| Sensor Description | Displays a description of the sensor. |
| Status | Displays status information of the IST device. If the IST is not working properly it displays the error message. |
| | **Device working Properly** - Normal state.<br>**IST Hardware not present** - When there is no response from IST hardware. Please contact service department.<br>**Need calibration** - Device is not calibrated. Contact your system administrator. |
| Show IST service icon in task bar | Enables the **IST Setting** icon to display in the Command bar. |

# Power Management Tab

Use the **Power Management** tab to configure power management settings.

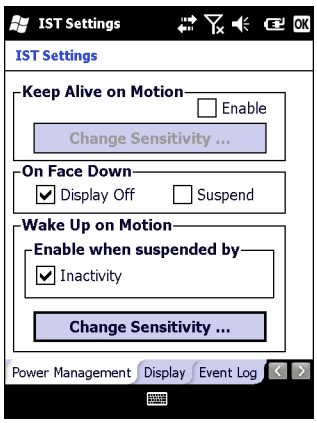



**Figure 7-3** *Power Management Tab*

## Keep Alive On Motion

Select the **Enabled** checkbox to prevent the MC75A from going into suspend mode while it is in motion. The motion sensitivity is configurable. To set the sensitivity, tap the **Change Sensitivity…** button.

***NOTE*** There is no time out defined for suspend due to IST inactivity. To aggressively manage power, while there is no motion, set the MC75A suspend time out to a very short time using system power settings. This setting suspends the MC75A when there is no motion activity or any other activity within this set time out.

## On Face Down

The **On Face Down** section provides configurable options to control what happens when the MC75A is placed with the display face down.

Select the **Display Off** checkbox to turn off the backlight when the MC75A is placed face-down. The backlight automatically powers on when the MC75A is tuned face-up.

Select the **Suspend** checkbox to suspend the MC75A when it placed face-down. To wake the MC75A use the controls listed in the **Wake Up on Motion** section below.

## Wake Up on Motion

The **Wake Up on Motio**n section provides configurable options for waking the MC75A from suspend mode by shaking the MC75A.

Select **Inactivity** checkbox to allow IST to wake the MC75A when it was suspended due to inactivity.

Use the **Change Sensitivity…** button to configure the sensitivity settings.

## Setting Sensitivity

Use the slider to set the sensitivity. A low setting indicates that a harder shake (faster movement) is required for the IST to initiate a wake up action. The sensitivity can be set from “0” to “10” and when the sensitivity is set to lower values a simple shake/motion can be detected by IST. A high setting allows IST to issue a wake up action when an easier movement to the MC75A is detected. Shake the MC75A to test the set sensitivity. An audio sound is heard and a message is displayed on screen when the shaking level reaches the set sensitivity level.

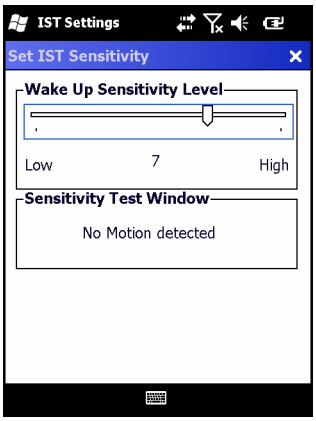



**Figure 7-4** *Set IST Sensitivity Window*

## Display Tab

Use the **Display** tab configure display interaction settings.

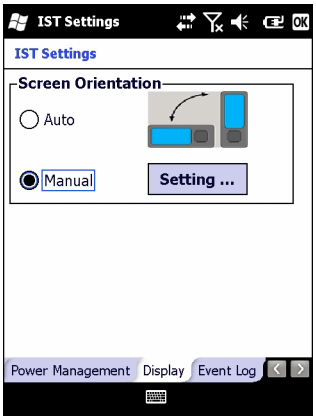



**Figure 7-5** *Display Tab*

The Auto Orientation parameter controls the display rotation according to the MC75A orientation. Select the **Auto** radio button to enable this feature. Auto orientation is disabled by default.

Select the **Manual** radio button to manually select screen orientation. Tap the **Setting** button to display the **Screen Orientation** window. Select the orientation and then tap **OK**.

## Event Log Tab

Use the **Event Log** tab to display the event details. This feature in IST mainly focuses on abuse by dropping the device.

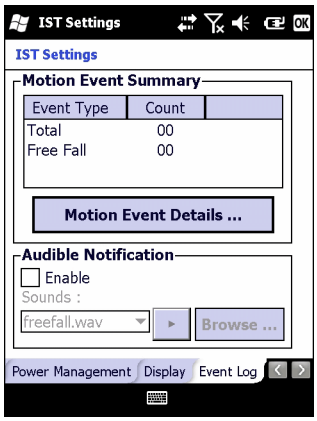



**Figure 7-6** *Event Log Tab*

The **Motion Event Summery** list displays a summary of the event report. To view the full report tap the **Motion Event Details…** button.

Use the Audible Notification panel to enable playing of a wave file when the MC75A is dropped. Select a desired .wav file from the Sounds: drop-down list.

## Motion Event Details

The **Motion Event Detail** list displays the date and time, duration and the type of the drop event. This event list can display up to last 32 motion events. A drop event is registered when the MC75A drops 1.07 m (42 in.) in normal operation and 1.27 m (50 in.) in suspend mode.

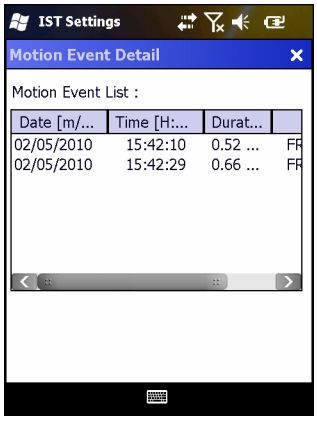



**Figure 7-7** *Motion Event Detail Window*

# CHAPTER 8 WIRELESS APPLICATIONS

## Introduction

Wireless Local Area Networks (LANs) allow mobile computers to communicate wirelessly and send captured data to a host device in real time. Before using the MC75A on a WLAN, the facility must be set up with the required hardware to run the wireless LAN and the MC75A must be configured. Refer to the documentation provided with the access points (APs) for instructions on setting up the hardware.

***NOTE*** 802.11d is enabled by default. When enabled, the AP must be configured the same in order to connect.

To configure the MC75A, a set of wireless applications provide the tools to configure and test the wireless radio in the MC75A. Refer to the *Wireless Fusion Enterprise Mobility Suite User Guide for Version X.XX* for information on configuring wireless profiles; where X.XX is the Fusion version. Go to http://www.zebra.com/support for the latest version of this guide. See *Software Versions on page xiv* to determine the Fusion version on the MC75A.

Tap **Start** > **Wireless Companion** folder > **Wireless Launch** icon to open the **Wireless Launcher** window. The applications available are:

- Enable/Disable Radio
- Find WLANs
- Manage Profiles
- Manage Certs
- Manage PACs
- Options
- Wireless Status
- Wireless Diagnostics
- Log On/Off.


**Figure 8-1** *Wireless Applications Window*

## Signal Strength Icon

The **Signal Strength** icon appears on the Home screen and in the task tray when using the Classic Home screen.

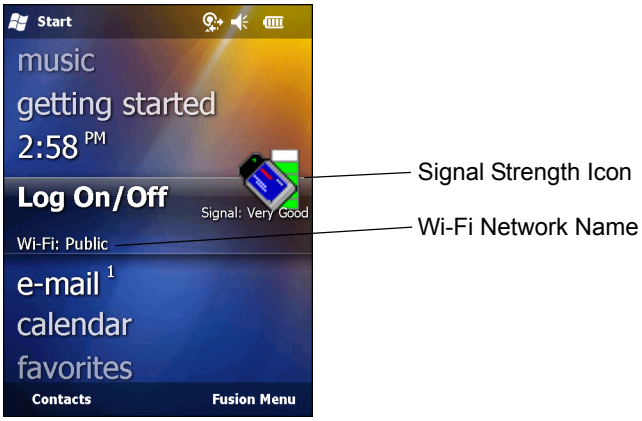



**Figure 8-2** *Home Screen*

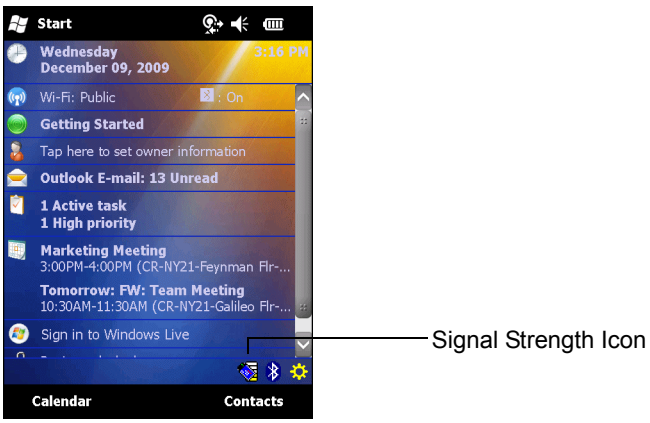



**Figure 8-3** *Classic Home Screen*

The icon indicates the MC75A's wireless signal strength as follows:

**Table 8-1** *Signal Strength Icons Descriptions*

| Icon | Status | Action |
|---|---|---|
|  | Excellent signal strength | Wireless LAN network is ready to use. |
|  | Very good signal strength | Wireless LAN network is ready to use. |
|  | Good signal strength | Wireless LAN network is ready to use. |
|  | Fair signal strength | Wireless LAN network is ready to use. Notify the network administrator that the signal strength is only “Fair”. |
|  | Poor signal strength | Wireless LAN network is ready to use. Performance may not be optimum. Notify the network administrator that the signal strength is “Poor”. |
|  | Out-of-network range (not associated) | No wireless LAN network connection. Notify the network administrator. |
|  | No wireless LAN network card detected | No wireless LAN network card detected, Wireless LAN disabled or radio disabled. Notify the network administrator. |
| None | No wireless LAN network card detected or Wireless LAN disabled | No wireless LAN network card detected or Wireless LAN disabled or radio disabled. Notify the network administrator. |

## Turning the WLAN Radio On and Off

To turn the WLAN radio off, tap the connection icon at the top of the screen and select **Wireless Manager**. Tap the Wi-Fi bar to turn off the radio.


**Figure 8-4** *Disable Radio*

To turn the WLAN radio on, tap the connection icon at the top of the screen and select **Wireless Manager**. Tap the Wi-Fi bar to turn on the radio.


**Figure 8-5** *Enable Radio*

# CHAPTER 9 MAINTENANCE AND TROUBLESHOOTING

## Introduction

This chapter includes instructions on cleaning and storing the MC75A, and provides troubleshooting solutions for potential problems during MC75A operation.

## Maintaining the MC75A

For trouble-free service, observe the following tips when using the MC75A:

- Do not scratch the screen of the MC75A. When working with the MC75A, use the supplied stylus or plastic-tipped pens intended for use with a touch-sensitive screen. Never use an actual pen or pencil or other sharp object on the surface of the MC75A screen.

  Zebra recommends using a screen protector, p/n KT-129195-03R.
- The touch-sensitive screen of the MC75A is glass. Do not drop the MC75A or subject it to strong impact.
- Protect the MC75A from temperature extremes. Do not leave it on the dashboard of a car on a hot day, and keep it away from heat sources.
- Do not store or use the MC75A in any location that is dusty, damp, or wet.
- Use a soft lens cloth to clean the MC75A. If the surface of the MC75A screen becomes soiled, clean it with a soft cloth moistened with a diluted window-cleaning solution.
- Periodically replace the rechargeable battery to ensure maximum battery life and product performance. Battery life depends on individual usage patterns.

- A screen protector is applied to the MC75A. Zebra recommends using this to minimize wear and tear. Screen protectors enhance the usability and durability of touch screen displays. Benefits include:
  - Protection from scratches and gouges
  - Durable writing and touch surface with tactile feel
  - Abrasion and chemical resistance
  - Glare reduction
  - Keeping the device's screen looking new
  - Quick and easy installation.

## Removing the Screen Protector

A screen protector is applied to the MC75A. Zebra recommends using this to minimize wear and tear. Screen protectors enhance the usability and durability of touch screen displays.

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

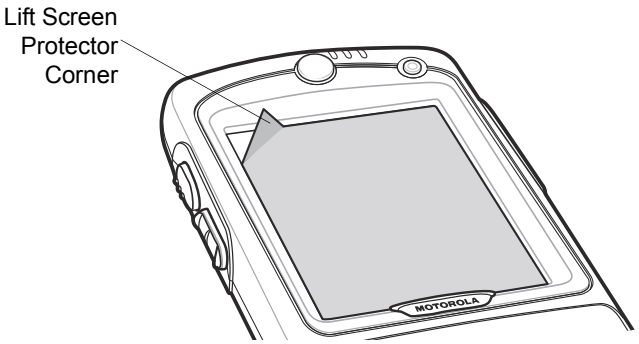



**Figure 9-1** *Removing the Screen Protector*

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

***NOTE*** Not using a screen protector can affect warranty coverage. To purchase replacement protectors, contact your local account manager or Zebra. These include screen protector installation instructions. Part number: KT-129195-03R Screen Protector 3/pk.

## Battery Safety Guidelines

- The area in which the units are charged should be clear of debris and combustible materials or chemicals. Particular care should be taken where the device is charged in a non commercial environment.
- Follow battery usage, storage, and charging guidelines found in the user's guide.
- Improper battery use may result in a fire, explosion, or other hazard.
- To charge the mobile device battery, the battery and charger temperatures must be between +32°F and +104°F (0°C and +40°C)

- Do not use incompatible batteries and chargers. Use of an incompatible battery or charger may present a risk of fire, explosion, leakage, or other hazard. If you have any questions about the compatibility of a battery or a charger, contact Zebra support.
- For devices that utilize a USB port as a charging source, the device shall only be connected to products that bear the USB-IF logo or have completed the USB-IF compliance program.
- To enable authentication of an approved battery, as required by IEEE1725 clause 10.2.1, all batteries will carry a Zebra hologram. Do not fit any battery without checking it has the Zebra authentication hologram.
- Do not disassemble or open, crush, bend or deform, puncture, or shred.
- Severe impact from dropping any battery-operated device on a hard surface could cause the battery to overheat.
- Do not short circuit a battery or allow metallic or conductive objects to contact the battery terminals.
- Do not modify or remanufacture, attempt to insert foreign objects into the battery, immerse or expose to water or other liquids, or expose to fire, explosion, or other hazard.
- Do not leave or store the equipment in or near areas that might get very hot, such as in a parked vehicle or near a radiator or other heat source. Do not place battery into a microwave oven or dryer.
- Battery usage by children should be supervised.
- Please follow local regulations to promptly dispose of used re-chargeable batteries.
- Do not dispose of batteries in fire.
- Seek medical advice immediately if a battery has been swallowed.
- In the event of a battery leak, do not allow the liquid to come in contact with the skin or eyes. If contact has been made, wash the affected area with large amounts of water and seek medical advice.
- If you suspect damage to your equipment or battery, contact Zebra support to arrange for inspection.

# Cleaning

***WARNING!*** **Avoid exposing this product to contact with hot oil or other flammable liquids. If such exposure occurs, unplug the device and clean the product immediately in accordance with these guidelines.**

***CAUTION*** Always wear eye protection.

Read warning label on compressed air and alcohol product before using.

If you have to use any other solution for medical reasons please contact Zebra for more information.

## Materials Required

- Alcohol wipes
- Lens tissue
- Cotton tipped applicators
- Isopropyl alcohol
- Can of compressed air with a tube.

# Cleaning the MC75A

## Housing

Using the alcohol wipes, wipe the housing including keys and in-between keys.

## Display

The display can be wiped down with the alcohol wipes, but care should be taken not to allow any pooling of liquid around the edges of the display. Immediately dried the display with a soft, non-abrasive cloth to prevent streaking.

## Scanner Exit Window

Wipe the scanner exit window periodically with a lens tissue or other material suitable for cleaning optical material such as eyeglasses.

## Connector

1. Remove the main battery from mobile computer. See *Installing the Main Battery on page 1-2*.
2. Close battery door.
3. Dip the cotton portion of the cotton tipped applicator in isopropyl alcohol.
4. Rub the cotton portion of the cotton tipped applicator back-and-forth across the connector on the bottom of the MC75A. Do not leave any cotton residue on the connector.
5. Repeat at least three times.
6. Use the cotton tipped applicator dipped in alcohol to remove any grease and dirt near the connector area.
7. Use a dry cotton tipped applicator and repeat steps 4 through 6.
8. Spray compressed air on the connector area by pointing the tube/nozzle about ½ inch away from the surface.

***CAUTION*** Do not point nozzle at yourself and others, ensure the nozzle or tube is away from your face.

9. Inspect the area for any grease or dirt, repeat if required.

# Cleaning Cradle Connectors

To clean the connectors on a cradle:

1. Remove the DC power cable from the cradle.
2. Dip the cotton portion of the cotton tipped applicator in isopropyl alcohol.
3. Rub the cotton portion of the cotton tipped applicator along the pins of the connector. Slowly move the applicator back-and-forth from one side of the connector to the other. Do not let any cotton residue on the connector.
4. All sides of the connector should also be rubbed with the cotton tipped applicator.
5. Spray compressed air in the connector area by pointing the tube/nozzle about ½ inch away from the surface.

6. Ensure that there is no lint left by the cotton tipped applicator, remove lint if found.

***CAUTION*** Do not point nozzle at yourself and others, ensure the nozzle or tube is away from your face.

7. If grease and other dirt can be found on other areas of the cradle, use lint free cloth and isopropyl alcohol to remove.
8. Allow at least 10 to 30 minutes (depending on ambient temperature and humidity) for the alcohol to air dry before applying power to cradle.

   If the temperature is low and humidity is high, longer drying time is required. Warm temperature and dry humidity requires less drying time.

## Cleaning Frequency

The cleaning frequency is up to the customer's discretion due to the varied environments in which the mobile devices are used. They may be cleaned as frequently as required. However when used in dirty environments it may be advisable to periodically clean the scanner exit window to ensure optimum scanning performance.

# Troubleshooting

## MC75A

**Table 9-1** *Troubleshooting the MC75A*

| Problem | Cause | Solution |
|---|---|---|
| MC75A does not turn on. | Lithium-ion battery not charged. | Charge or replace the lithium-ion battery in the MC75A. |
| | Lithium-ion battery not installed properly. | Ensure battery is installed properly. See *Installing the Main Battery on page 1-2*. |
| | System crash. | Perform a warm boot. If the MC75A still does not turn on, perform a cold boot. See *Resetting the MC75A on page 1-5*. |
| Rechargeable lithium-ion battery did not charge. | Battery failed. | Replace battery. If the MC75A still does not operate, perform a warm boot, then a cold boot. See *Resetting the MC75A on page 1-5*. |
| | MC75A removed from cradle while battery was charging. | Insert MC75A in cradle. The 3600 mAh battery fully charges in less than six hours. |
| | Extreme battery temperature. | Battery does not charge if ambient temperature is below 0°C (32°F) or above 40°C (104°F). |
| Cannot see characters on display. | MC75A not powered on. | Press the **Power** button. |
| During data communication, no data transmitted, or transmitted data was incomplete. | MC75A removed from cradle or disconnected from host computer during communication. | Replace the MC75A in the cradle, or reattach the communication cable and re-transmit. |
| | Incorrect cable configuration. | See the system administrator. |
| | Communication software was incorrectly installed or configured. | Perform setup. Refer to the *MC75A Integrator Guide* for details. |
| No sound. | Volume setting is low or turned off. | Adjust the volume. Adjust the volume. Refer to the *MC75A User Guide*. |

**Table 9-1** *Troubleshooting the MC75A (Continued)*

| Problem | Cause | Solution |
|---|---|---|
| MC75A shuts off. | MC75A is inactive. | The MC75A turns off after a period of inactivity. If the MC75A is running on battery power, set this period from 1 to 5 minutes, in one-minute intervals. If the MC75A is running on external power, set this period to 1, 2, 5, 10, 15, or 30 minutes.<br>Check the **Power** window by selecting **Start** > **Settings** > **System** *tab* and tapping the **Power** icon. Select the **Advanced** tab and change the setting for a longer delay before the automatic shutoff feature activates. |
| | Battery is not inserted properly. | Insert the battery properly. See *Installing the Main Battery on page 1-2*. |
| | Battery is depleted. | Replace the battery. |
| Tapping the window buttons or icons does not activate the corresponding feature. | Screen is not calibrated correctly. | Re-calibrate the screen. See *Calibrating the Screen on page 1-5*. |
| | The system is not responding. | Warm boot the system. See *Resetting the MC75A on page 1-5*. |
| A message appears stating that the MC75A memory is full. | Too many files stored on the MC75A. | Delete unused memos and records. If necessary, save these records on the host computer (or use an SD card for additional memory). |
| | Too many applications installed on the MC75A. | Remove user-installed applications on the MC75A to recover memory. Select **Start** > **Settings** > **System** tab and tap the *Remove Programs* icon. Select the unused program and tap **Remove.** |
| MC75A keeps powering down to protect memory contents. | The MC75A's battery is low. | Recharge the battery. |
| | The internal Bluetooth radio is powered on for a long time. | Because this mode requires battery power, power it off when not needed. Using the SetDeviceState() API (refer to the *SMDK Help File*), set the Bluetooth to D4 power state. |

**Table 9-1** *Troubleshooting the MC75A (Continued)*

| Problem | Cause | Solution |
|---|---|---|
| The MC75A does not accept scan input. | Scanning application is not loaded. | Load a scanning application on the MC75A. See the system administrator. |
| | Unreadable bar code. | Ensure the symbol is not defaced. |
| | Distance between exit window and bar code is incorrect. | Place the MC75A within proper scanning range. |
| | MC75A is not programmed for the bar code. | Program the MC75A to accept the type of bar code being scanned. |
| | MC75A is not programmed to generate a beep. | If the MC75A does not beep on a good decode, set the application to generate a beep on good decode. |
| | Battery is low. | If the scanner stops emitting a laser beam upon a trigger press, check the battery level. When the battery is low, the scanner shuts off before the MC75A low battery condition notification.<br>Note: If the scanner is still not reading symbols, contact the distributor or Zebra. |
| Cannot connect to service provider. | SIM not installed properly. | Re-install SIM card. |

## Bluetooth Connection

**Table 9-2** *Troubleshooting Bluetooth Connection*

| Problem | Cause | Solution |
|---|---|---|
| MC75A cannot find any Bluetooth devices nearby. | Too far from other Bluetooth devices. | Move closer to the other Bluetooth device(s), within a range of 10 meters. |
| | The Bluetooth device(s) nearby are not turned on. | Turn on the Bluetooth device(s) to find. |
| | The Bluetooth device(s) are not in discoverable mode. | Set the Bluetooth device(s) to discoverable mode. If needed, refer to the device's user documentation for help. |
| When trying to connect a Bluetooth phone and MC75A, the phone thinks a previously paired MC75A is used. | The phone remembers the name and address of the MC75A it last paired with via the Bluetooth radio. | Manually delete the pairing device and name from the phone. Refer to the phone's user documentation for instructions. |

## Single Slot USB/Serial Cradle

**Table 9-3** *Troubleshooting the Single Slot USB/Serial Cradle*

| Symptom | Possible Cause | Action |
|---|---|---|
| LEDs do not light when MC75A or spare battery is inserted. | Cradle is not receiving power. | Ensure the power cable is connected securely to both the cradle and to AC power. |
| | MC75A is not seated firmly in the cradle. | Remove and re-insert the MC75A into the cradle, ensuring it is firmly seated. |
| | Spare battery is not seated firmly in the cradle. | Remove and re-insert the spare battery into the charging slot, ensuring it is firmly seated. |
| MC75A battery is not charging. | MC75A was removed from cradle or cradle was unplugged from AC power too soon. | Ensure cradle is receiving power. Ensure MC75A is seated correctly. Confirm main battery is charging under **Start** > **Settings** > **System** > **Power**. The 3600 mAh capacity battery fully charges in less than five hours. |
| | Battery is faulty. | Verify that other batteries charge properly. If so, replace the faulty battery. |
| | The MC75A is not fully seated in the cradle. | Remove and re-insert the MC75A into the cradle, ensuring it is firmly seated. |
| | Ambient temperature of the cradle is too warm. | Move the cradle to an area where the ambient temperature is between 0°C and 35°C. |
| Spare battery is not charging. | Battery not fully seated in charging slot. | Remove and re-insert the spare battery in the cradle, ensuring it is firmly seated. |
| | Battery inserted incorrectly. | Re-insert the battery so the charging contacts on the battery align with the contacts on the cradle. |
| | Battery is faulty. | Verify that other batteries charge properly. If so, replace the faulty battery. |
| | Ambient temperature of the cradle is too warm. | Move the cradle to an area where the ambient temperature is between 0°C and 35°C. |
| During data communication, no data transmits, or transmitted data was incomplete. | MC75A removed from cradle during communication. | Replace MC75A in cradle and retransmit. |
| | Incorrect cable configuration. | See the system administrator. |
| | Communication software is not installed or configured properly. | Perform setup as described in *Chapter 3, ActiveSync*. |

## Four Slot Ethernet Cradle

**Table 9-4** *Troubleshooting the Four Slot Ethernet Cradle*

| Symptom | Cause | Solution |
|---|---|---|
| Battery is not charging. | MC75A removed from the cradle too soon. | Replace the MC75A in the cradle. The 3600 mAh capacity battery fully charges in less than five hours. Tap **Start** > **Settings** > **System** > **Power** to view battery status. |
| | Battery is faulty. | Verify that other batteries charge properly. If so, replace the faulty battery. |
| | MC75A is not inserted correctly in the cradle. | Remove the MC75A and reinsert it correctly. Verify charging is active. Tap **Start** > **Settings** > **System** > **Power** to view battery status. |
| | Ambient temperature of the cradle is too warm. | Move the cradle to an area where the ambient temperature is between 0°C and 35°C. |
| During communication, no data was transmitted, or transmitted data was incomplete. | MC75A removed from cradle during communication. | Replace MC75A in cradle and retransmit. |
| | MC75A has no active connection. | An icon is visible in the status bar if a connection is active. |

## Vehicle Cradle

**Table 9-5** *Troubleshooting the Vehicle Cradle*

| Symptom | Possible Cause | Action |
|---|---|---|
| MC75A battery charging LED does not light up. | Cradle is not receiving power. | Ensure the power input cable is securely connected to the cradle's power port. |
| MC75A battery is not recharging. | MC75A was removed from the cradle too soon. | Replace the MC75A in the cradle. The 3600 mAh capacity battery fully charges in less than five hours. |
| | Battery is faulty. | Replace the battery. |
| | MC75A is not placed correctly in the cradle. | Remove the MC75A from the cradle, and re-insert correctly. If the battery still does not charge, contact customer support.<br>The MC75A battery charging LED slowly blinks amber when the MC75A is correctly inserted and charging. |
| | Ambient temperature of the cradle is too warm. | Move to an area where the ambient temperature is between 0°C and 35°C. |

**Table 9-5** *Troubleshooting the Vehicle Cradle*

| Symptom | Possible Cause | Action |
|---|---|---|
| No data transmitted, or transmitted data was incomplete. | MC75A removed from cradle during communication. | Replace MC75A in cradle and retransmit. |
| | No null modem cable was used. | Some external devices require a null modem cable. Retransmit using a null modem cable. |
| | Incorrect cable configuration. | See the system administrator. |
| | Cable missing or disconnected. | Re-connect cable. |

## Four Slot Spare Battery Charger

**Table 9-6** *Troubleshooting the Four Slot Spare Battery Charger*

| Symptom | Possible Cause | Action |
|---|---|---|
| Battery not charging. | Battery was removed from the charger or charger was unplugged from AC power too soon. | Re-insert the battery in the charger or re-connect the charger's power supply. The 3600 mAh capacity battery fully charges in less than five hours. |
| | Battery is faulty. | Verify that other batteries charge properly. If so, replace the faulty battery. |
| | Battery contacts not connected to charger. | Verify that the battery is seated in the battery well correctly with the contacts facing down. |
| | Ambient temperature of the cradle is too warm. | Move the cradle to an area where the ambient temperature is between 0°C and 35°C. |

## Cables

**Table 9-7** *Troubleshooting the Cables*

| Symptom | Possible Cause | Action |
|---|---|---|
| MC75A battery is not charging. | MC75A was disconnected from AC power too soon. | Connect the power cable correctly. Confirm main battery is charging under **Start** > **Settings** > **System** > **Power**. The 3600 mAh capacity battery fully charges in less than five hours. |
| | Battery is faulty. | Verify that other batteries charge properly. If so, replace the faulty battery. |
| | The MC75A is not fully attached to power. | Detach and re-attach the power cable to the MC75A, ensuring it is firmly connected. |

**Table 9-7** *Troubleshooting the Cables (Continued)*

| Symptom | Possible Cause | Action |
|---|---|---|
| During data communication, no data transmits, or transmitted data was incomplete. | Cable was disconnected from MC75A during communications. | Re-attach the cable and retransmit. |
| | Incorrect cable configuration. | See the system administrator. |
| | Communication software is not installed or configured properly. | Perform setup as described in *the Chapter 3, ActiveSync.* |

## Magnetic Stripe Reader

**Table 9-8** *Troubleshooting the Magnetic Stripe Reader*

| Symptom | Possible Cause | Action |
|---|---|---|
| MSR does not read card. | MSR removed from MC75A during card swipe. | Reattach MSR to MC75A and reswipe the card. |
| | Faulty magnetic stripe on card. | See the system administrator. |
| | MSR application is not installed or configured properly. | Ensure the MSR application is installed on the MC75A. Ensure the MSR application is configured correctly. |
| MC75A battery is not charging. | MC75A was removed from MSR or MSR was unplugged from AC power too soon. | Ensure MSR is receiving power. Ensure MC75A is attached correctly. Confirm main battery is charging under **Start** > **Settings** > **System** > **Power**. The 3600 mAh capacity battery fully charges in less than five hours. |
| | Battery is faulty. | Verify that other batteries charge properly. If so, replace the faulty battery. |
| | The MC75A is not fully attached to the MSR. | Detach and re-attach the MSR to the MC75A, ensuring it is firmly connected. |
| During data communication, no data transmits, or transmitted data was incomplete. | MC75A detached from MSR during communications. | Reattach MC75A to MSR and retransmit. |
| | Incorrect cable configuration. | See the system administrator. |
| | Communication software is not installed or configured properly. | Perform setup as described in *Chapter 3, ActiveSync.* |

# APPENDIX A TECHNICAL SPECIFICATIONS

## Technical Specifications

The following tables summarizes the intended operating environment and technical hardware specifications for the MC75A and accessories.

## MC75A

**Table A-1** *MC75A Technical Specifications*

| Item | Description |
|---|---|
| **Physical Characteristics** | |
| Dimensions | MC75A0:<br>Length: 15.2 cm (6.00 in.)<br>Width: 8.4 cm (3.30 in.)<br>Depth: 4.4 cm (1.70 in.)<br>MC75A6/8:<br>Length: 17.78 cm (7.0 in.)<br>Width: 8.4 cm (3.30 in.)<br>Depth: 4.4 cm (1.70 in.) |
| Weight | MC75A0:<br>364 g (12.84 oz) - with 1950 mAh battery<br>398g (14.04 oz) - with 3600 mAh battery<br>MC75A6/8:<br>389 g (13.72 oz) - with 1950 mAh battery<br>423 g (14.92 oz) - with 3600 mAh battery |
| **Note 1: Total output power can be either USB or serial or a combination of both that cannot exceed 200 mA.** | |

**Table A-1** *MC75A Technical Specifications (Continued)*

| Item | Description |
|---|---|
| Display | Transflective color 3.5” VGA with backlight, TFT-LCD, 65K colors, 480 W x 640 L (VGA size) |
| Touch Panel | Glass analog resistive touch |
| Backlight | LED backlight |
| Main Battery | Rechargeable Lithium Ion 3.7V, 1950, 3600 or 4800 mAh Smart Battery |
| Backup Battery | NiMH battery (rechargeable) 15 mAh 2.4V (not user-accessible) |
| Expansion Slot | User accessible microSD slot with SDHC support (with secure cover). |
| Network Connections | Ethernet (via cradle)<br>Full-speed USB, host or client, Bluetooth |
| Notification | Vibrator and LED |
| Keypad Options | Numeric, DSD, QWERTY, AZERTY and QWERTZ |
| Audio | VoWWAN; VoWLAN; TEAM Express compliant; support for wired and wireless (Bluetooth) headsets; headset, handset and speaker phone modes |
| **Performance Characteristics** | |
| CPU | Marvell PXA320 processor at 806 MHz |
| Operating System | MC75A0: Microsoft® Windows Mobile™ 6.5 Classic<br>MC75A6/8: Microsoft® Windows Mobile™ 6.5 Professional |
| Memory | 256MB RAM/1GB FLASH |
| Interface/Communications | RS-232, USB 1.1, IrDA |
| Output Power (Note 1) | USB: 5 VDC @ 200 mA max.<br>Serial: 5 VDC @ 200 mA max. |
| **User Environment** | |
| Operating Temperature | -10°C to 50°C (14°F to 122°F) |
| Storage Temperature | -40°C to 70°C (-40°F to 158°F) - without battery |
| Charging Temperature | 32°F to 104°F / 0° C to 40° C |
| Humidity | 95% non-condensing |
| Drop Specification | Multiple 1.5 m (5 ft.) drop to concrete, at room temperature 23°C (73°F).<br>Multiple 1.2 m (4 ft.) drop to concrete, over operating temperature range.<br>Meets and exceeds applicable MIL-STD 810G. |
| Tumble | 1,000 0.5 m (1.6 ft.) tumbles (2,000 drops); per applicable IEC tumble specifications. |
| Electrostatic Discharge (ESD) | +/-15kVdc air discharge, +/-8kVdc direct discharge, +/-8kVdc indirect discharge |

**Note 1: Total output power can be either USB or serial or a combination of both that cannot exceed 200 mA.**

**Table A-1** *MC75A Technical Specifications (Continued)*

| Item | Description |
|---|---|
| Sealing | IP54 per applicable IEC sealing specifications. |
| **Wireless WAN Data and Voice Communications** | |
| Wireless Wide Area Network (WWAN) radios | **MC75A6:** GSM: HSDPA (850, 900, 1800, 1900 and 2100 MHz)<br>**MC75A8:** CDMA: EVDO Rev A (800 and 1900 MHz) |
| GPS | Integrated, Autonomous and Assisted-GPS (A-GPS) through SUPL; SiRFstarIII GSC3f/LP choppiest. |
| **Wireless LAN Data and Voice Communications** | |
| Wireless Local Area Network (WLAN) radio | Tri-mode IEEE® 802.11a/b/g |
| Data Rates Supported | 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps |
| Operating Channels | Chan 8-169 (5040 – 5845 MHz)<br>Chan 1-13 (2412-2472 MHz) Chan 14 (2484 MHz) Japan only<br>Actual operating frequencies depend on regulatory rules and certification agency |
| Security | WPA2, WEP (40 or 128 bit), TKIP, TLS, TTLS (MS-CHAP), TTLS (MS-CHAP v2), TTLS (CHAP), TTLS-MD5, TTLS-PAP, PEAP-TLS, PEAP (MS-CHAP v2), AES, LEAP, CCXv4 certified; FIPS 140-2 certified |
| Spreading Technique | Direct Sequence Spread Spectrum (DSSS) and Orthogonal Frequency Division Multiplexing (OFDM) |
| Antenna | Internal for WLAN and Bluetooth |
| Voice Communication | Integrated Voice-over-IP ready (P2P, PBX, PTT), Wi-Fi™-certified, IEEE 802.11a/b/g direct sequence wireless LAN |
| **Wireless PAN Data and Voice Communications** | |
| Bluetooth | Class II, v 2.1 with EDR; on-board chip antenna. |
| **Wireless HF RFID Communication** | |
| Frequency Range | 13.56 MHz |
| Read Range | 0 - 5 cm (0 - 1.96 in.) |
| Supported Card Types | **ISO 14443-A:** MIFARE® (Classic, UltraLight, DESFire)<br>**ISO 14443-B:** Calypso® (GTML, GTML2, CD21, CD Light, CDS3, CD97, CD97BX, TanGO, Celego-Citi, CT2000), ASK: (CTS256, CTS512), ST Microelectronics: SRI FeliCa®<br>**ISO 15693:** NXP I.Code SLI, TI Tag-it |
| SAM Slots (2) | ISO7816 compliant for encryption keys |
| **Note 1: Total output power can be either USB or serial or a combination of both that cannot exceed 200 mA.** | |

**Table A-1** *MC75A Technical Specifications (Continued)*

| Item | Description |
|---|---|
| **Data Capture Specifications** | |
| Options | 2D imager, 1D linear, color camera |
| **Linear 1D Scanner (SE950) Specifications** | |
| Optical Resolution | 0.005 in. minimum element width |
| Roll | +/- 30° from vertical |
| Pitch Angle | +/- 65° from normal |
| Skew Tolerance | +/- 60° from normal |
| Ambient Light | Sunlight: 8,000 ft. candles (86,112 Lux)<br>Artificial Light: 450 ft. candles (4,844 Lux) |
| Shock | 2,000 +/- 5% G |
| Scan Rate | 50 (+/- 6) scans/sec (bidirectional) |
| Scan Angle | 46.5° (typical) |
| Laser Power | 1.0 mW nominal |
| **2D Imager Engine (SE4500) Specifications** | |
| Field of View | Horizontal - 40°<br>Vertical - 25° |
| Optical Resolution | 752X 480 V pixels (gray scale) |
| Roll | 360° |
| Pitch Angle | +/- 60° from normal |
| Skew Tolerance | +/- 60° from normal |
| Ambient Light | 9,000 ft. candles (96,900 Lux) |
| Shock | 2,000 +/- 5% G |
| Focal Distance from Front of Engine | Near: 5 inches<br>Far: 9 inches |
| Aiming Element (VLD) | 655 nm +/- 10 nm |
| Illumination Element (LED) | 625 nm +/- 5 nm |
| **Camera Specifications** | |
| Resolution | 2 Mega pixel with auto focus and flash |
| **Note 1: Total output power can be either USB or serial or a combination of both that cannot exceed 200 mA.** | |

## MC75A COM Port Definitions

**Table A-2** *MC75A COM Port Definitions*

| COM Port | Definition |
|---|---|
| COM0 | Available |
| COM1 | Accessory port |
| COM2 | Available |
| COM3 | IRComm |
| COM4 | Raw IrDA |
| COM5 | BTVCOM |
| COM6 | USBVCOM |
| BTS6 | Bluetooth (Radio I/O) |
| COM7 | Available |
| COM8 | GPSId (GPSMux) |
| COM9 | BTVCOM |

## MC75A Pin-Outs

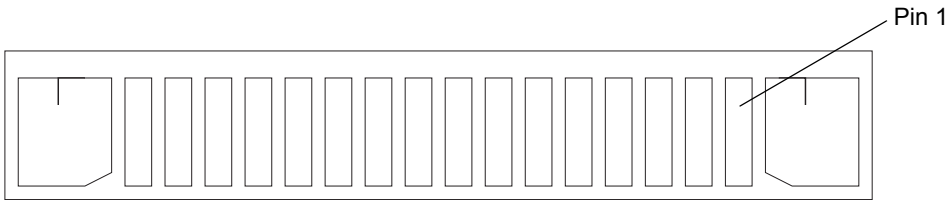



**Figure A-1** *External Connector*

**Table A-3** *External Connector Pin-Outs*

| Pin | Description |
|---|---|
| 1 | Power Gnd |
| 2 | CRADLE_DETECT |
| 3 | RS232_DCD/TRIGGER |
| 4 | USB_D- |
| 5 | USB_D+ |
| 6 | USB_Gnd |
| 7 | USB_Vbus |
| 8 | USB_ID |

**Table A-3** *External Connector Pin-Outs (Continued)*

| Pin | Description |
|---|---|
| 9 | RS232_TXD |
| 10 | RS232_RXD |
| 11 | RS232_RTS |
| 12 | RS232_CTS |
| 13 | RS232_DTR |
| 14 | RS232_DSR |
| 15 | External_5.0V_Out |
| 16 | External DC In_5.4V |

# MC75A Accessory Specifications

## Single Slot USB/Serial Cradle

**Table A-4** *Single Slot USB/Serial Cradle Technical Specifications*

| Feature | Description |
|---|---|
| Dimensions | Length: 14.54 cm (5.72 in.)<br>Width: 11.05 cm (4.35 in.)<br>Height: 9.10 cm (3.58 in.) |
| Weight | 196 g (6.9 oz) |
| Input Power | 12 VDC |
| Power Consumption | 30 watts |
| Interface | USB, Serial |
| Operating Temperature | 0°C to 50°C (32°F to 122°F) |
| Storage Temperature | -40°C to 70°C (-40°F to 158°F) |
| Charging Temperature | 0°C to 40°C (32°F to 104°F) |
| Humidity | 5% to 95% non-condensing |
| Drop | 76.2 cm (30.0 in.) drops to vinyl tiled concrete at room temperature |
| Electrostatic Discharge (ESD) | +/- 15 kV air<br>+/- 8 kV contact |

## Four Slot Ethernet Cradle

**Table A-5** *Four Slot Ethernet Cradle Technical Specifications*

| Feature | Description |
|---|---|
| Dimensions | Length: 46.78 cm (18.42 in.)<br>Width: 11.00 cm (4.33 in.)<br>Height: 13.70 cm (5.39 in.) |
| Weight | 1079 g (2.38 lb) |
| Input Power | 12 VDC |
| Power Consumption | 100 watts |
| Interface | Ethernet |
| Operating Temperature | 0°C to 50°C (32°F to 122°F) |
| Storage Temperature | -40°C to 70°C (-40°F to 158°F) |
| Charging Temperature | 0°C to 40°C (32°F to 104°F) |
| Humidity | 5% to 95% non-condensing |
| Drop | 76.2 cm (30.0 in.) drops to vinyl tiled concrete at room temperature |
| Electrostatic Discharge (ESD) | +/- 15 kV air<br>+/- 8 kV contact |

## Four Slot Charge Only Cradle

**Table A-6** *Four Slot Charge Only Cradle Technical Specifications*

| Feature | Description |
|---|---|
| Dimensions | Length: 46.78 cm (18.42 in.)<br>Width: 11.00 cm (4.33 in.)<br>Height: 13.70 cm (5.39 in.) |
| Weight | 1079 g (2.38 lb) |
| Input Power | 12 VDC |
| Power Consumption | 100 watts |
| Operating Temperature | 0°C to 50°C (32°F to 122°F) |
| Storage Temperature | -40°C to 70°C (-40°F to 158°F) |
| Charging Temperature | 0°C to 40°C (32°F to 104°F) |
| Humidity | 5% to 95% non-condensing |
| Drop | 76.2 cm (30.0 in.) drops to vinyl tiled concrete at room temperature |
| Electrostatic Discharge (ESD) | +/- 15 kV air<br>+/- 8 kV contact |

## Four Slot Battery Charger

**Table A-7** *Four Slot Battery Charger Technical Specifications*

| Feature | Description |
|---|---|
| Dimensions | Length: 21.00 cm (8.27 in.)<br>Width: 15.50 cm (6.10 in.)<br>Height: 3.47 cm (1.37 in.) |
| Weight | 386 g (13.6 oz) |
| Input Power | 12 VDC |
| Power Consumption | 30 watts |
| Operating Temperature | 0°C to 50°C (32°F to 122°F) |
| Storage Temperature | -40°C to 70°C (-40°F to 158°F) |
| Charging Temperature | 0°C to 40°C (32°F to 104°F) |
| Humidity | 5% to 95% non-condensing |
| Drop | 76.2 cm (30.0 in.) drops to vinyl tiled concrete at room temperature |
| Electrostatic Discharge (ESD) | +/- 15 kV air<br>+/- 8 kV contact |

## Magnetic Stripe Reader

**Table A-8** *Magnetic Stripe Reader (MSR) Technical Specifications*

| Feature | Description |
|---|---|
| Dimensions | Length: 7.87 cm (3.1 in.)<br>Width: 8.38 cm (3.3 in.)<br>Height: 3.56 cm (1.4 in.) |
| Weight | 48 g (1.7 oz) |
| Interface | Serial with baud rate up to 19,200 |
| Format | ANSI, ISO, AAMVA, CA DMV, user-configurable generic format |
| Swipe Speed | 5 to 50 in. (127 to 1270 mm) /sec, bi-directional |
| Decoders | Generic, Raw Data |
| Mode | Buffered, unbuffered |
| Track Reading Capabilities | Tracks 1 and 3: 210 bpi<br>Track 2: 75 and 210 bpi, autodetect |
| Operating Temperature | 0°C to 50°C (32°F to 122°F) |
| Storage Temperature | -40°C to 70°C (-40°F to 158°F) |

**Table A-8** *Magnetic Stripe Reader (MSR) Technical Specifications (Continued)*

| Feature | Description |
|---|---|
| Humidity | 5% to 95% non-condensing |
| Drop | 1.22 m (4 ft.) drops to concrete |
| Electrostatic Discharge (ESD) | +/- 15 kV air<br>+/- 8 kV contact |

# APPENDIX B BLUETOOTH CONFIGURATION

The MC75A supports both the Microsoft Bluetooth stack and the StoneStreet One Bluetooth stack. Only one Bluetooth stack can be used at a time. By default, the Microsoft Bluetooth stack is enabled. A registry key on the MC75A can be modified to enable the StoneStreet One stack and disable the Microsoft stack.

Using a registry editor, navigate to the following:

[HKEY_LOCAL_MACHINE\Software\SymbolBluetooth

Edit the following key:

“SSStack”=dword:1

where:

0 = enable Microsoft stack and enable StoneStreet One stack (default)

1 = enable StoneStreet One stack and disable Microsoft stack

After setting the registry key, warm boot the MC75A.

# GLOSSARY

## A

**ActiveSync.** ActiveSync is a data synchronization program developed by Microsoft for use with Windows Mobile operating systems.

**AFH.** Adaptive Frequency Hopping

**AKU.** (Adaptation Kit Update) Updates to the Windows Mobile operating system.

**API.** (Application Programming Interface) An interface by means of which one software component communicates with or controls another. Usually used to refer to services provided by one software component to another, usually via software interrupts or function calls

**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.

**AZERTY.** A standard keyboard commonly used on French keyboards. “AZERTY” refers to the arrangement of keys on the top row of keys.

## B

**Bar Code.** A pattern of variable-width bars and spaces which represents numeric or alphanumeric data in machine-readable form. The general format of a bar code symbol consists of a leading margin, start character, data or message character, check character (if any), stop character, and trailing margin. Within this framework, each recognizable symbology uses its own unique format. See **Symbology**.

**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.

**Bits per Second (bps).** Bits transmitted or received.

**Bluetooth.** A wireless protocol utilizing short-range communications technology facilitating data transmission over short distances.

**boot or boot-up.** The process a computer goes through when it starts. During boot-up, the computer can run self-diagnostic tests and configure hardware and software.

**bps.** See **Bits Per Second**.

**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.

## C

**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.

**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.

**Cold Boot.** A cold boot restarts the mobile computer and initializes some drivers.

**COM port.** Communication port; ports are identified by number, e.g., COM1, COM2.

**Cradle.** A cradle is used for charging the terminal battery and for communicating with a host computer, and provides a storage place for the terminal when not in use.

## D

**DCP.** See **Device Configuration Package**.

**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.

**Depth of Field.** The range between minimum and maximum distances at which a scanner can read a symbol with a certain minimum element width.

**Device Configuration Package.** The Device Configuration Package provides the flash partitions, Terminal Configuration Manager (TCM) and the associated TCM scripts. With this package hex images that represent flash partitions can be created and downloaded to the mobile computer.

**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.

## E

**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.

**EMDK.** Enterprise Mobility Developer's Kit.

**ESD.** Electro-Static Discharge

## F

**FHSS** (Frequency Hopping Spread Spectrum)**.** A method of transmitting radio signals by rapidly switching a carrier among many frequency channels, using a pseudorandom sequence known to both transmitter and receiver.

**File Transfer Protocol (FTP).** A TCP/IP application protocol governing file transfer via network or telephone lines. See **TCP/IP.**

**Flash Memory.** Flash memory is nonvolatile, semi-permanent storage that can be electronically erased in the circuit and reprogrammed.

## H

**Hard Reset.** See **Cold Boot**.

**Hz.** Hertz; A unit of frequency equal to one cycle per second.

**Host Computer.** A computer that serves other terminals in a network, providing such services as computation, database access, supervisory programs and network control.

# I

**IDE.** Intelligent drive electronics. Refers to the solid-state hard drive type.

**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**.

**Input/Output Ports.** I/O ports are primarily dedicated to passing information into or out of the terminal's memory. Series 9000 mobile computers include Serial and USB ports.

**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.

**Internet Protocol Address.** See **IP**.

**I/O Ports.** interface The connection between two devices, defined by common physical characteristics, signal characteristics, and signal meanings. Types of interfaces include RS-232 and PCMCIA.

**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.

**IPX/SPX.** Internet Package Exchange/Sequential Packet Exchange. A communications protocol for Novell. IPX is Novell's Layer 3 protocol, similar to XNS and IP, and used in NetWare networks. SPX is Novell's version of the Xerox SPP protocol.

**ISM.** Industry Scientific and Medical

# K

**Key.** A key is the specific code used by the algorithm to encrypt or decrypt the data. Also see, **Encryption** and **Decrypting**.

# L

**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 scanner.** A type of bar code reader that uses a beam of laser light.

**LCD.** See **Liquid Crystal Display**.

**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.

**Light Emitting Diode.** See **LED**.

**Liquid Crystal Display (LCD).** A display that uses liquid crystal sealed between two glass plates. The crystals are excited by precise electrical charges, causing them to reflect light outside according to their bias. They use little electricity and react relatively quickly. They require external light to reflect their information to the user.

# M

**MC.** Mobile Computer.

**MDN.** Mobile Directory Number. The directory listing telephone number that is dialed (generally using POTS) to reach a mobile unit. The MDN is usually associated with a MIN in a cellular telephone -- in the US and Canada, the MDN and MIN are the same value for voice cellular users. International roaming considerations often result in the MDN being different from the MIN.

**MIN.** Mobile Identification Number. The unique account number associated with a cellular device. It is broadcast by the cellular device when accessing the cellular system.

**Mobile Computer.** In this text, *mobile computer* refers to the MC75 wireless computer. It can be set up to run as a stand-alone device, or it can be set up to communicate with a network, using wireless radio technology.

# N

**Nominal.** The exact (or ideal) intended value for a specified parameter. Tolerances are specified as positive and negative deviations from this value.

**NVM.** Non-Volatile Memory.

# O

**Open System Authentication.** Open System authentication is a null authentication algorithm.

## P

**PAN.** Personal area network. Using Bluetooth wireless technology, PANs enable devices to communicate wirelessly. Generally, a wireless PAN consists of a dynamic group of less than 255 devices that communicate within about a 33-foot range. Only devices within this limited area typically participate in the network.

**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.

## Q

**QWERTY.** A standard keyboard commonly used on North American and some European keyboards. “QWERTY” refers to the arrangement of keys on the top row of keys.

**QWERTZ.** A standard keyboard commonly used on German keyboards. “QWERTZ” refers to the arrangement of keys on the top row of keys.

## R

**RAM.** Random Access Memory. Data in RAM can be accessed in random order, and quickly written and read.

**RF.** Radio Frequency.

**ROM.** Read-Only Memory. Data stored in ROM cannot be changed or removed.

**Router.** A device that connects networks and supports the required protocols for packet filtering. Routers are typically used to extend the range of cabling and to organize the topology of a network into subnets. See **Subnet**.

**RS-232.** An Electronic Industries Association (EIA) standard that defines the connector, connector pins, and signals used to transfer data serially from one device to another.

## S

**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: 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.

**SDK.** Software Development Kit

**Shared Key.** Shared Key authentication is an algorithm where both the AP and the MU share an authentication key.

**Soft Reset.** See **Warm Boot**.

**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.** A subset of nodes on a network that are serviced by the same router. See **Router**.

**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, PDF417, etc.).

## T

**TCP/IP.** (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. 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. 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.

**Telnet.** 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.

**Terminal.** See **Mobile Computer**.

**Terminal Emulation.** A “terminal emulation” emulates a character-based mainframe session on a remote non-mainframe terminal, including all display features, commands and function keys. The VC5000 Series supports Terminal Emulations in 3270, 5250 and VT220.

**TFTP.** (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.

**Tolerance.** Allowable deviation from the nominal bar or space width.

**Transmission Control Protocol/Internet Protocol.** See **TCP/IP.**

**Trivial File Transfer Protocol.** See **TFTP.**

## U

**UDP.** 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.

**UPC.** 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.

## V

**Visible Laser Diode (VLD).** A solid state device which produces visible laser light.

## W

**Warm Boot.** A warm boot restarts the mobile computer by closing all running programs. All data that is not saved to flash memory is lost.

# INDEX

## A



## B

## F



## G



## H



## I



## K



## L



## M



## N



## O

## T



## U



## V



## W



## X



## Z

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