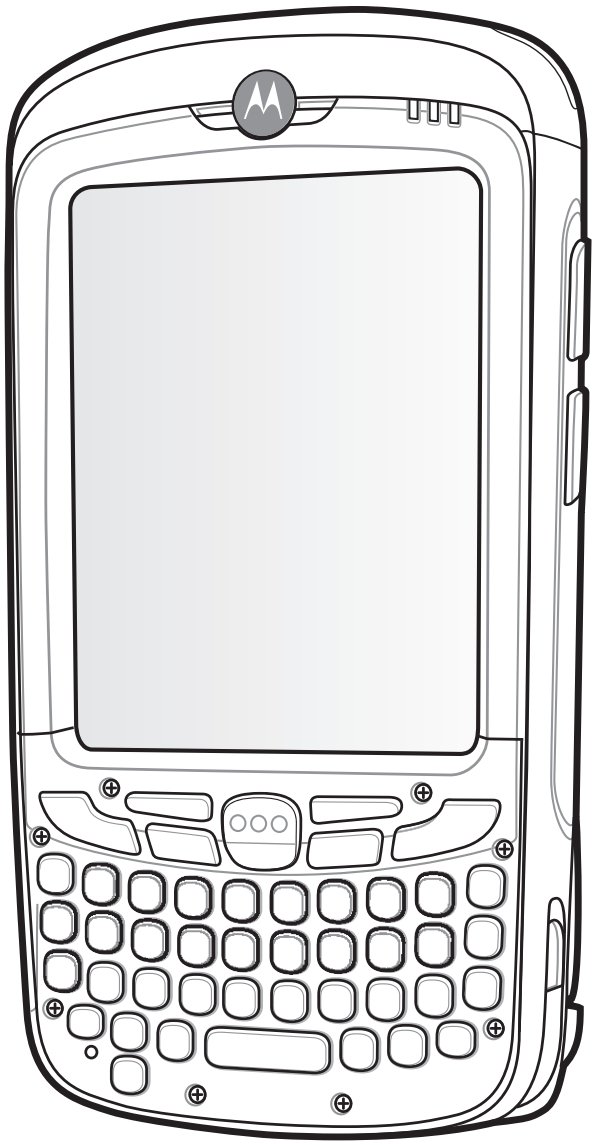
MC55 Enterprise Digital Assistant

User Guide



MC55 Enterprise Digital Assistant User Guide

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Patents

This product is covered by one or more of the patents listed on the website: www.motorola.com/enterprisemobility/patents.

Revision History

Changes to the original manual are listed below:

Change	Date	Description
-01 Rev. A	12/15/08	Initial release.

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About This Guide

Introduction

This guide provides information about using the MC55 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 MC55 provides information for specific user needs, and includes:

- **MC55 Quick Start Guide** - describes how to get the MC55 EDA up and running.
- **MC55 User Guide** - describes how to use the MC55 EDA.
- **MC55 Integrator Guide** - describes how to set up the MC55 EDA and accessories.
- **Microsoft® Applications for Windows Mobile 6 User Guide** - describes how to use Microsoft developed applications.
- **Enterprise Mobility Application Guide** - describes how to use Enterprise Mobility 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 Options	Operating System	Keypads
MC5590	WLAN: 802.11a/b/g WPAN: Bluetooth v2.0 EDR	3.5" QVGA Color	128 MB RAM/ 256 MB Flash	1D laser scanner, 2D imager, 1D laser scanner and camera or 2D imager and camera	Windows Mobile 6.1 Classic	Numeric, Alphanumeric, QWERTY, QWERTZ, AZWERTY or PIM keypad

Software Versions

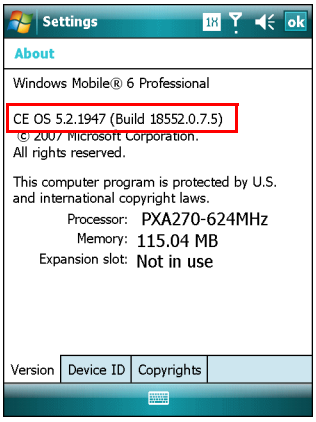
This guide covers various software configurations and references are made to operating system or software versions for:

- 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** tab > **About** icon > **Version** tab.

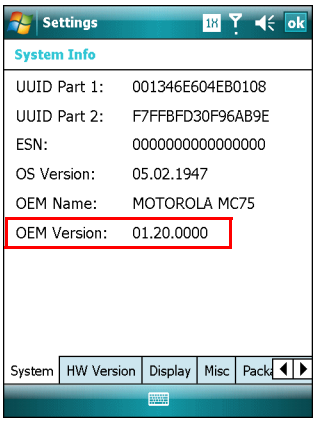


The second line lists the operating system version and the build number. The last part of the build number represents the AKU number. For example, *Build 18552.0.7.5* indicates that the device is running AKU version *0.7.5*.

OEM Version

To determine the OEM software version:

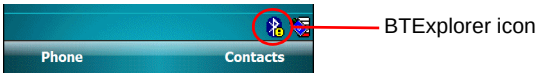
Tap **Start** > **Settings** > **System** tab > **System Information** icon > **System** tab.



BTExplorer Software

To determine the BTExplorer software version:

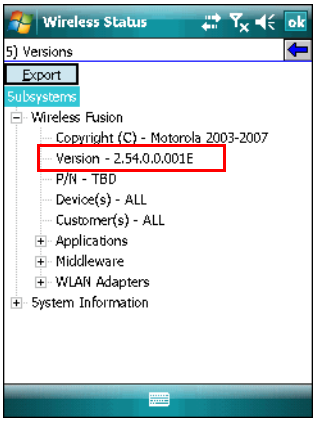
Tap **BTExplorer** icon > **Show BTExplorer**> **Menu** > **About**.



Fusion Software

To determine the Fusion software version:

Tap **Wireless Strength** icon > **Wireless Status** > **Versions**.



Chapter Descriptions

Topics covered in this guide are as follows:

- *Chapter 1, Getting Started* provides information on getting the MC55 up and running for the first time.
- *Chapter 2, Using the MC55* provides basic instructions for using the MC55, including powering on and resetting the MC55, and entering and capturing data.
- *Chapter 3, Using Bluetooth* explains Bluetooth functionality on the MC55.
- *Chapter 4, Accessories* describes the available accessories and how to use them with the MC55.
- *Chapter 5, Maintenance & Troubleshooting* includes instructions on cleaning and storing the MC55, and provides troubleshooting solutions for potential problems during MC55 operation.
- *Appendix A, Technical Specifications* provides the technical specifications for the MC55.
- *Appendix B, Voice Quality Manager* provides information on Voice Quality Manager software.

Notational Conventions

The following conventions are used in this document:

- “EDA” refers to the Motorola MC55 series of hand-held computers.
- *Italics* are used to highlight the following:
  - Chapters and sections in this and related documents
  - Icons on a screen.
- **Bold** text is used to highlight the following:
  - Dialog box, window, and screen names
  - Drop-down list and list box names
  - Check box and radio button names
  - 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

- *MC55 Quick Start Guide*, p/n 72-108862-xx.
- *MC55 Windows Mobile 6 Regulatory Guide*, p/n 72-108860-xx.
- *MC55 Integrator Guide*, p/n 72E-108861-xx.
- *Microsoft® Applications for Windows Mobile 6 User Guide*, p/n 72E-108299-xx
- *Enterprise Mobility Application Guide*, p/n 72E-68901-xx
- *Enterprise Mobility Developer Kits (EMDKs),* available at: http://www.motorola.com/enterprisemobility/support.
- Latest ActiveSync software, available at: http://www.microsoft.com.

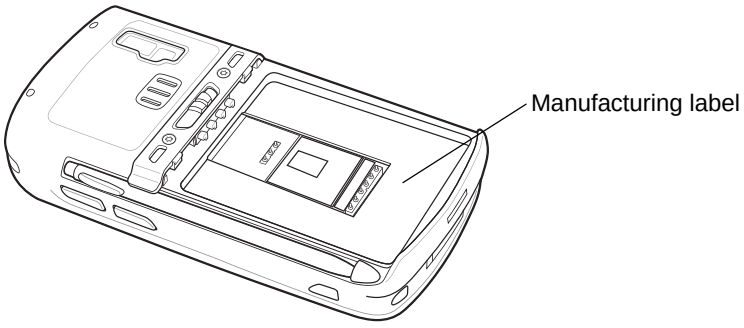
For the latest version of this guide and all guides, go to: http://www.motorola.com/enterprisemobility/manuals.

Service Information

If you have a problem with your equipment, contact Motorola Enterprise Mobility support for your region. Contact information is available at: http://www.motorola.com/enterprisemobility/contactsupport.

When contacting Enterprise Mobility support, please have the following information available:

- Serial number of the unit (found on manufacturing label)
- Model number or product name (found on manufacturing label)
- Software type and version number.



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

If your problem cannot be solved by Motorola Enterprise Mobility Support, you may need to return your equipment for servicing and will be given specific directions. Motorola 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 Enterprise Mobility business product from a Motorola business partner, contact that business partner for support.

Chapter 1 Getting Started

Introduction

This chapter lists the parts and accessories for the MC55 and explains how to set up the MC55 for the first time.

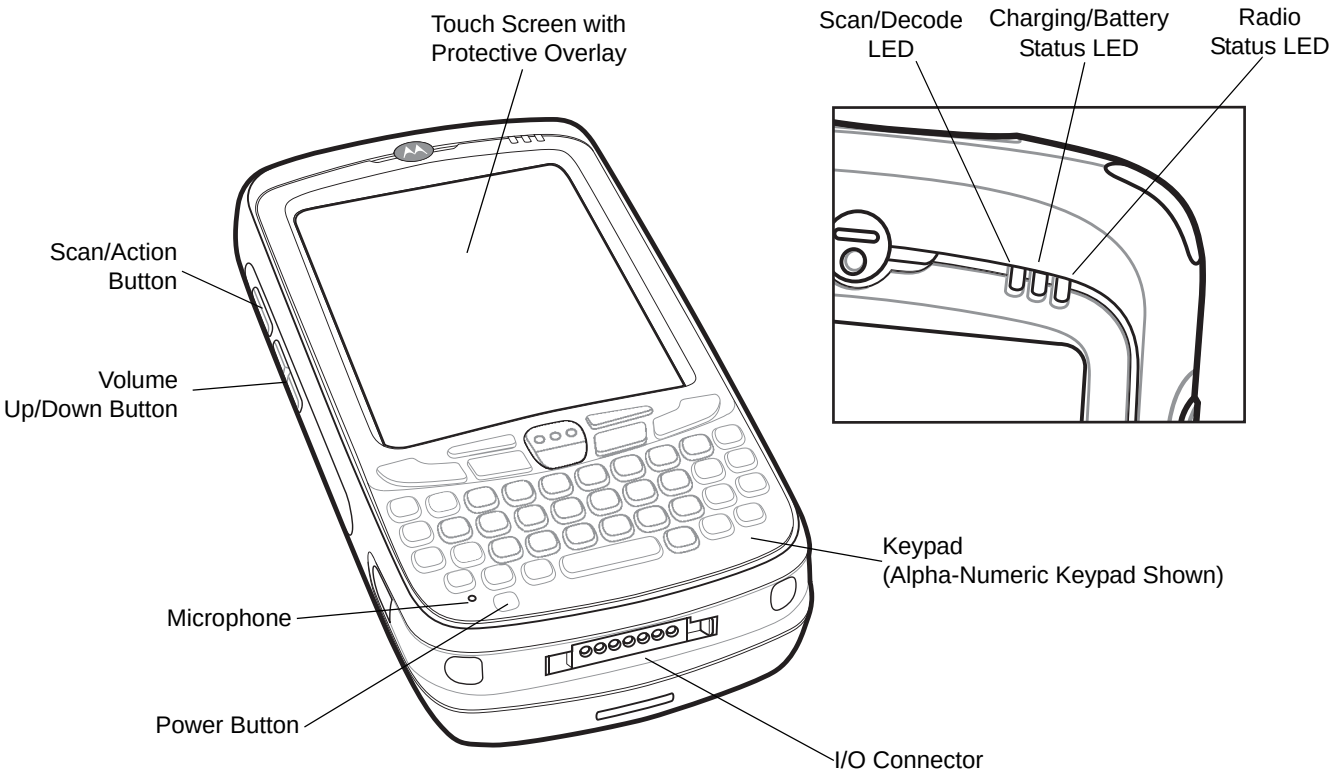


Figure 1-1 *MC55 Front View*

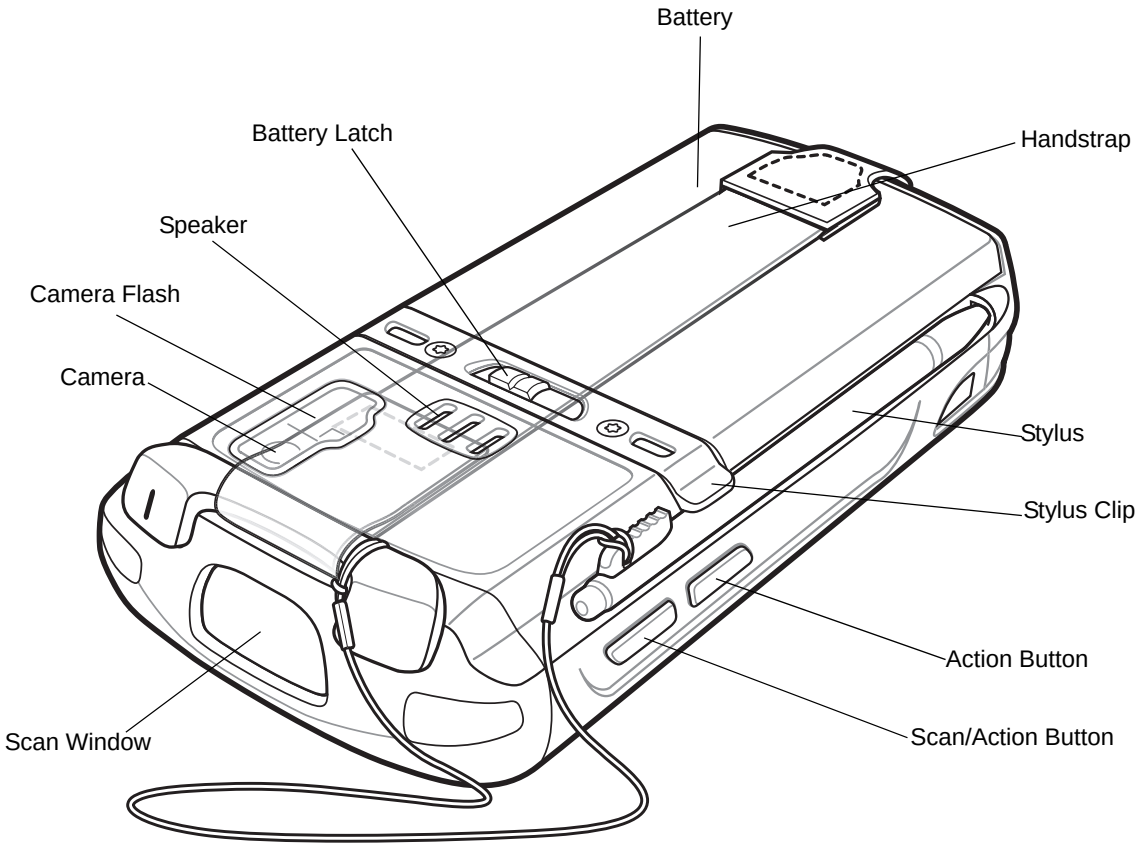


Figure 1-2 *MC55 Rear View*

Unpacking

Carefully remove all protective material from the MC55 and save the shipping container for later storage and shipping.

Verify that you received the following:

- MC55 EDA
- 2400 mAh Lithium-ion battery
- stylus with tether (installed)
- Protective overlay, installed on display window
- Regulatory Guide
- Quick Start Guide.

Inspect the equipment for damage. If any equipment is missing or damaged, contact the Motorola Enterprise Mobility Support center immediately. See *page xv* for contact information.

Prior to using the MC55 for the first time, remove the protective shipping film that covers the scan window, display and camera window.

Accessories

Table 1-1 lists the accessories available for the MC55 EDA.

Table 1-1 *MC55 Accessories*

Accessory	Part Number	Description
Cradles		
Single Slot USB Cradle	CRD5500-1000UR	Charges the MC55 main battery and a spare battery. Synchronizes the MC55 with a host computer through a USB connection.
Four Slot Charge Only Cradle	CRD5500-4000CR	Charges up to four MC55 devices.
Vehicle Holder	VCH5500-1000R	Mounts to a vehicle's windshield or dashboard and holds the MC55 while in a vehicle.
Chargers		
Four Slot Spare Battery Charger	SAC5500-4000CR	Charges up to four MC55 battery packs.
USB Charging Cable	25-108022-01R	Provides power to the MC55 and USB communication with a host computer.
Charge Only Cable	25-112560-01R	Connects to a power supply to provide power to the MC55.
Auto Charge Cable	VCA5500-12R	Charges the MC55 using a vehicle’s cigarette lighter.
Miscellaneous		
Spare 2400 mAh lithium-ion battery	BTRY-MC55EAB00	Replacement 2400 mAh battery.
Spare 3600 mAh lithium-ion battery	BTRY-MC55EAB02	Optional 3600 mAh battery.
Belt Mounted Rigid Holster	SG-MC5511110-01R	Clips onto belt to hold the MC55 when not in use.
Fabric Holster	SG-MC5521110-01R	Soft holder for added protection.
Stylus	KT-119150-03R KT-119150-50R	Replacement stylus (3-pack). Replacement stylus (50-pack).
Spring Loaded Stylus	STYLUS-00001-03R STYLUS-00001-10R	Optional spring loaded stylus (3-pack). Optional spring loaded stylus (10-pack).
Wall Mounting Kit	8710-050006-01R	Use for wall mounting the four slot cradles.
Screen Protector	KT-67525-01R	Package of 3 screen protectors.
Software	-	*Enterprise Mobility Developer Kits (EMDKs),* available at: http://support.symbol.com.

Getting Started

To start using the MC55 for the first time:

- Install a microSD card (optional)
- Install the main battery pack.

- Charge the MC55.
- Power on the MC55.

Installing a microSD Card

The microSD card slot provides secondary non-volatile storage. The slot is located under the battery pack. 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. Lift rubber access door.
2. Slide the SIM card holder door up to unlock.
3. Lift SIM card holder door.

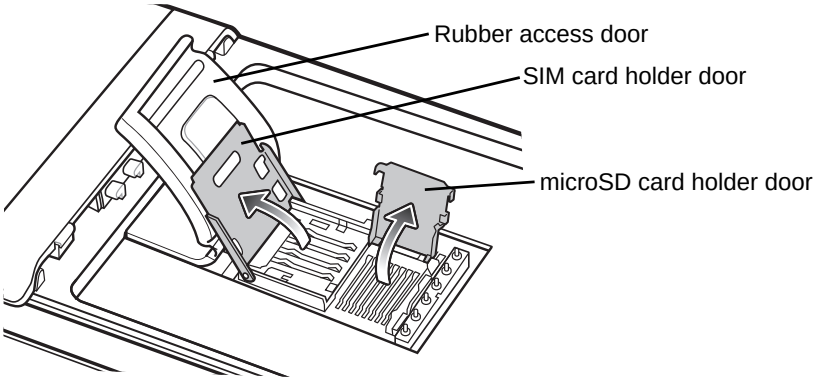


Figure 1-3 *Lift SIM Slot Holder Door*

4. Lift microSD card holder door.
5. Insert the microSD card into card holder door ensuring that the card slides into the holding tabs on each side of the door.

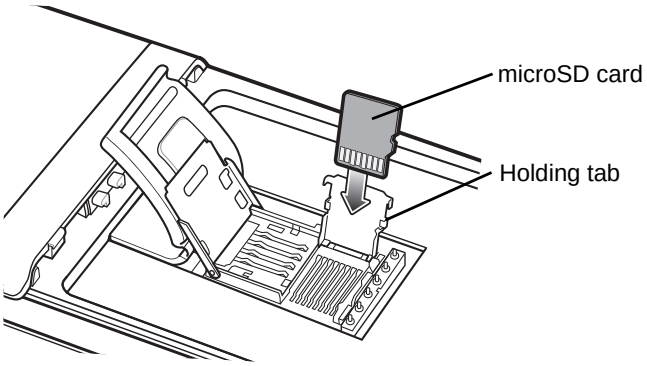


Figure 1-4 *Insert microSD Card in Holder*

6. Close the card holder door and push down until it is securely in place.

7. Close SIM card holder door and slide downuntil it is securely in place.
8. Close rubber access door.

Installing the Battery

NOTE The MC55 ships with a 2400 mAh battery. An optional 3600 mAh battery is available. It is not required to remove the handstrap when installing the battery.

To install the battery.

1. Insert the battery, bottom first, into the battery compartment in the back of the MC55.
2. Press the battery down into the battery compartment until the battery release latch snaps into place.

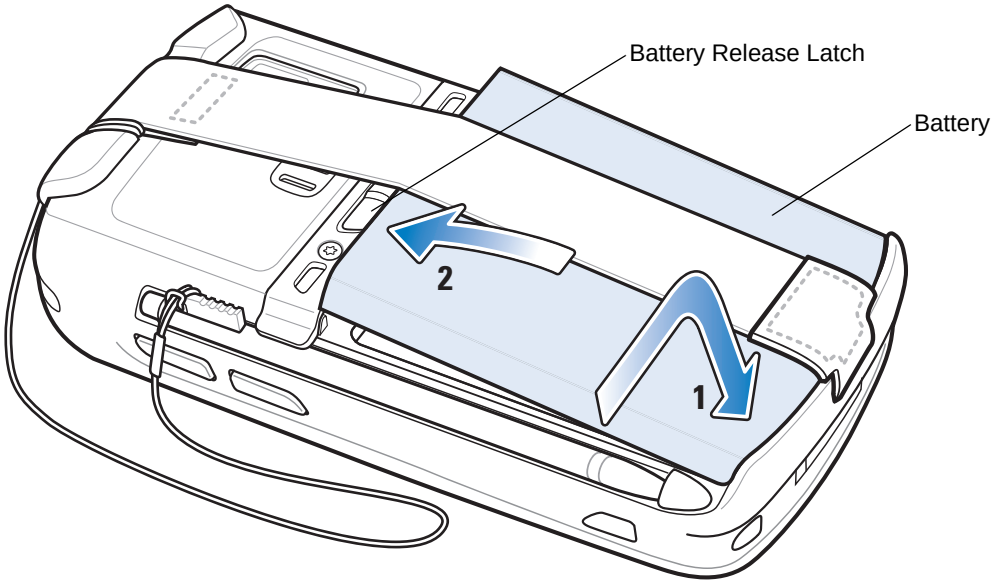


Figure 1-5 *Inserting the Battery*

The MC55 powers up automatically after inserting the battery if the battery has been charged previously.

Charging the Battery

CAUTION Ensure that you follow the guidelines for battery safety described in *Battery Safety Guidelines on page 5-2*.

Charging the Main Battery

Before using the MC55 for the first time, charge the main battery until the amber Charging/Battery Status LED remains lit (see *Table 1-2 on page 1-6* for charge status indications). To charge the MC55, use a cable or a cradle with the appropriate power supply. For information about the accessories available for the MC55, see *Chapter 4, Accessories*.

For cable and cradle setup and charging procedures refer to the *MC55 Integrator Guide*.

- USB Charging Cable
- Charge Only Cable

- Single Slot USB Cradle
- Four Slot Charge Only Cradle.

To charge the main battery:

1. Connect the charging accessory to the appropriate power source.
2. Insert the MC55 into a cradle or attach to a cable. The MC55 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.

The 2400 mAh battery fully charges in less than four hours and the 3600 mAh battery charges in less than six hours.

Table 1-2 *LED Charge Indicators*

Charging/Battery Status LED	Indication
Off	MC55 is not charging. MC55 is not inserted correctly in the cradle or connected to a power source. Charger/cradle is not powered.
Slow Blinking Amber (1 blink every 2 seconds)	MC55 is charging.
Solid Amber	Charging complete. Note: When the battery is initially inserted in the MC55, the amber LED flashes once if the battery power is low or the battery is not fully inserted.
Fast Blinking Amber (2 blinks/second)	Charging error, e.g.: • Temperature is too low or too high. • Charging has gone on too long without completion (typically eight hours).
Single Blink Amber (when Power button pressed)	Battery depleted.
Blinking Amber (when Power button pressed)	Battery over-temperature condition.

Charging Spare Batteries

See *Chapter 4, 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 charging is intelligently controlled by the MC55.

To accomplish this, for small periods of time, the MC55 or accessory alternately enables and disables battery charging to keep the battery at acceptable temperatures. The MC55 or accessory indicates when charging is disabled due to abnormal temperatures via its LED. See *Table 1-2*.

Powering On the MC55

After inserting the battery or when turning the MC55 on for the first time, the splash screen displays for about a minute as the MC55 initializes its flash file system, then the calibration window appears. Note that these windows also appear upon cold boot.

Calibrating the Screen

NOTE The Calibration screen can be accessed by pressing **Blue** key - **Backspace** key.

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 side of the MC55.
2. Carefully press and briefly hold the tip of stylus on the center of each target that appears on the screen.
3. Repeat as the target moves around the screen, then tap the screen to continue.

Checking Battery Status

NOTE To check battery status, remove the MC55 from any AC power source (cradle, cables, etc.)

To check the charge status of the main battery in the MC55, tap **Start** > **Settings** > **System** tab > **Power** icon to display the **Power** window.

To save battery power, tap the **Advanced** tab and set the MC55 to turn off after a specified number of minutes.

Replacing the Battery

1. Press the red **Power** button to suspend the MC55.
2. Slide the battery latch to the right to release the battery. The battery ejects slightly.

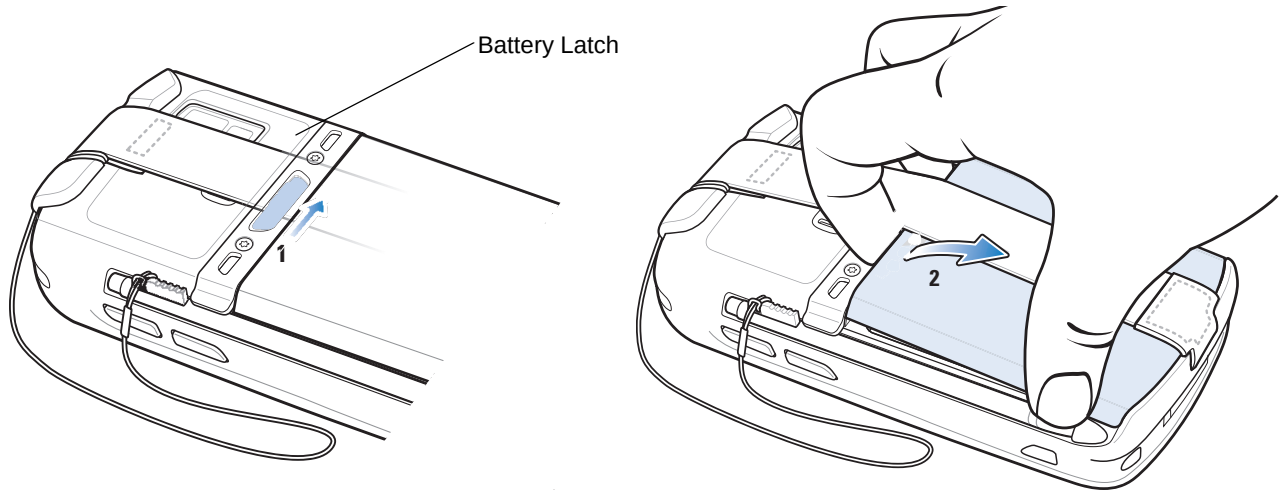


Figure 1-6 *Removing the Battery*

3. Lift the battery from the MC55.
4. Insert the replacement battery, bottom first, into the battery compartment in the back of the MC55.
5. Press the battery down until the battery release latch snaps into place.

The MC55 powers up after inserting the battery.

Removing the microSD Card

To remove an microSD card:

1. Press the red **Power** button to suspend the MC55.
2. Remove the battery.
3. Lift the rubber access door.
4. Slide SIM card holder door to the left.
5. Lift SIM Card holder door.
6. Lift the microSD card holder door.
7. Remove microSD card from holder.
8. Close microSD card holder door.
9. Close SIM card holder door.
10. Slide SIM card holder door to the right to lock into place.
11. Close the rubber access door.
12. Replace the battery.

Battery Management

Observe the following battery saving tips:

- Leave the MC55 connected to AC power at all times when not in use.
- Set the MC55 to turn off after a short period of non-use.
- Set the backlight to turn off after a short period of non-use.
- Turn off all wireless activities when not in use.

Changing the Power Settings

To set the MC55 to turn off after a short period of non-use:

1. Tap **Start** > **Settings** > **System** tab > **Power** icon > **Advanced** tab.
2. Select the **On battery power: Turn off device if not used for** check box and select a value from the drop-down list.
3. Select **ok**.

Changing the Backlight Settings

To change the backlight settings in order to conserve more battery power:

1. Tap **Start** > **Settings** > **System** tab > **Backlight** icon > **Battery Power** tab.
2. Select the **Disable backlight if device is not used for** check box and select a value from the drop-down list.
3. Select the **Brightness** tab.
4. Tap the **Disable backlight** check box to turn off the display backlight, or use the slider to set a low value for the backlight.
5. Select **ok**.

Changing the Keypad Backlight Settings

To change the keypad backlight settings in order to conserve more battery power:

1. Tap **Start** > **Settings** > **System** tab > **Keylight** icon > **Battery Power** tab.
2. Select the **On battery power: Disable keylight if device if not used for** check box and select a value from the drop-down list.
3. Select the **Advanced** tab.
4. Tap the **Disable keylight** check box to turn off the keypad backlight.
5. Select **ok**.

Turning Off the Radios

Windows Mobile 6 devices include **Wireless Manager**, which provides a simple method of enabling, disabling, and configuring all the device's wireless capabilities in one place.

To open **Wireless Manager**, tap the **Connectivity** icon or tap **Wireless Manager** on the **Today** screen.

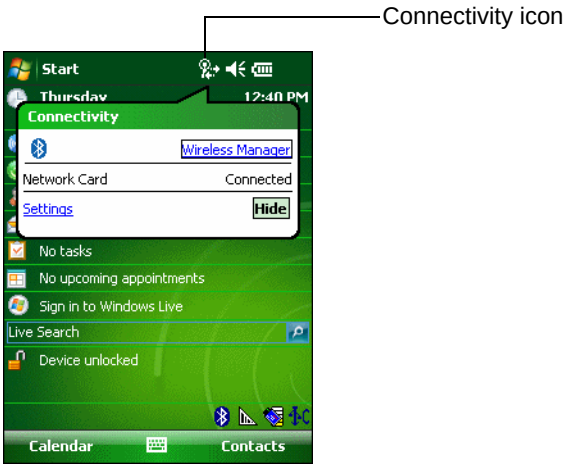


Figure 1-7 *Opening Wireless Manager*

Select **Wireless Manager**.

Figure 1-8 *Wireless Manager Window*

NOTE Wireless connection options vary depending upon configurations.

To enable or disable a wireless connection, tap the specific button.

To enable or disable all wireless connections, tap and hold the **All** button.

To configure settings for a connection, tap **Menu**.

Figure 1-9 *Wireless Manager Menu*

Handstrap Replacement

Removal

To remove a handstrap from the MC55:

1. Pull up on the handstrap to remove the handstrap bracket from the end cap.

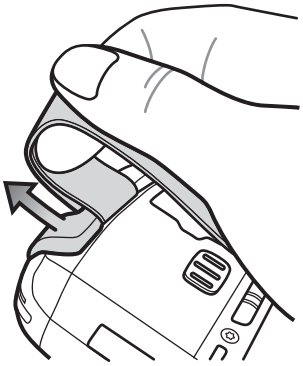


Figure 1-10 *Handstrap bracket Removal*

2. Remove the battery.
3. Using a small flat screwdriver, push the head of the screwdriver between the handstrap pin and the bottom of the housing as shown below.
4. Pry the handstrap and pin up and out of the handstrap mount area.

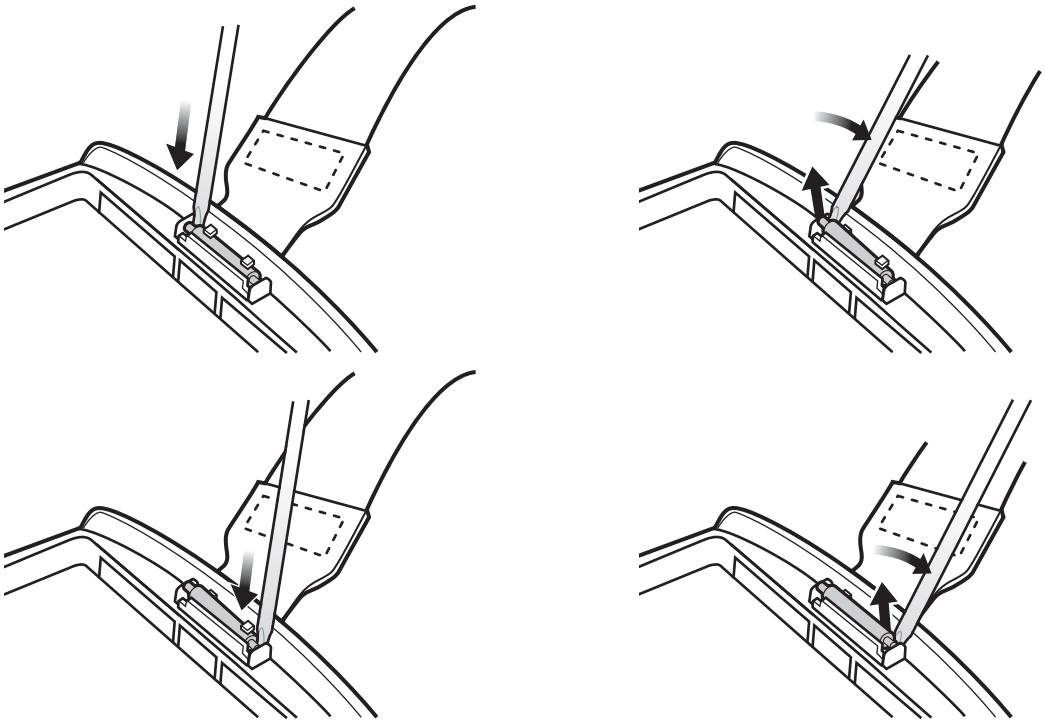


Figure 1-11 *Handstrap and Pin Removal*

5. Repeat for the other side of the handstrap.

6. Remove pin from the handstrap.

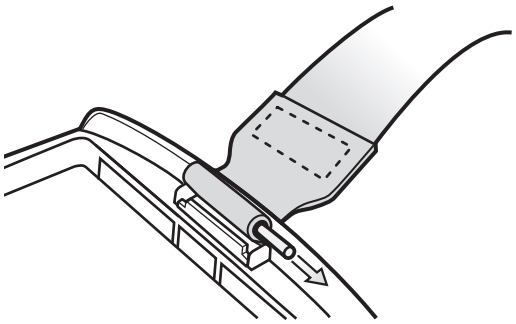


Figure 1-12 *Pin Removal*

7. Pull handstrap through handstrap slot.

Installation

To install a new handstrap:

1. Feed bottom end of handstrap into handstrap slot on the bottom of the MC55.

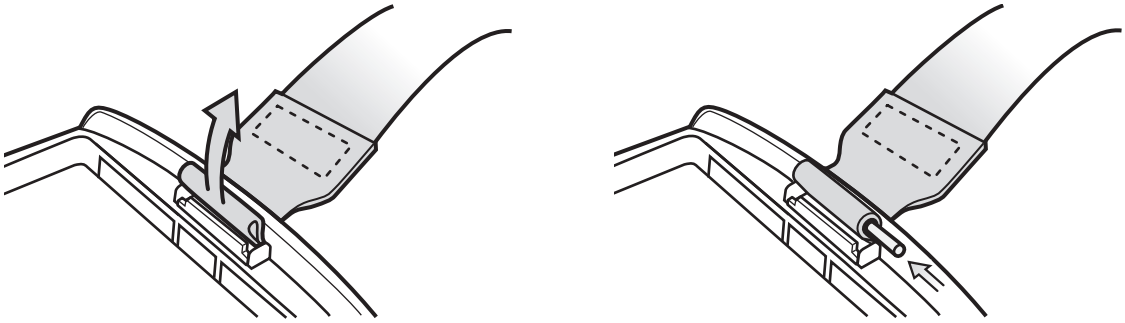


Figure 1-13 *Feed handstrap into Handstrap Slot*

2. Slide pin into bottom of handstrap.
3. Center the pin in the handstrap loop.
4. Pull handstrap so that the pin and bottom of handstrap slid into position in the mounting area.

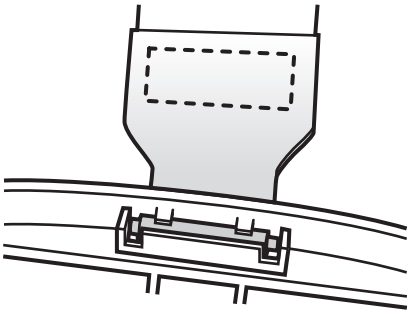


Figure 1-14 *Pin and handstrap in Mounting Area*

5. Slide handstrap mount through the loop at the top of handstrap.

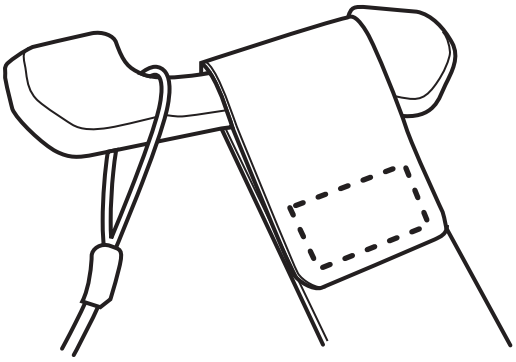


Figure 1-15 *Slide Handstrap and Tether Over Handstrap Mount*

6. Slide tether loop over handstrap mount
7. Align handstrap mount with mounting holes at the top of the MC55.

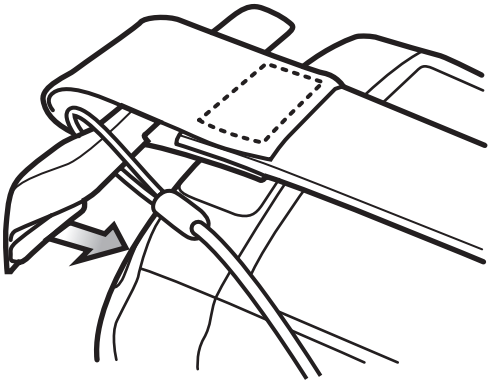


Figure 1-16 *Align Mount Bracket with Holes in End Cap*

8. Push the handstrap mount down until it snaps into position.

Chapter 2 Using the MC55

Introduction

This chapter explains the buttons, status icons, and controls on the MC55, and provides basic instructions for using the MC55, including powering on and resetting the MC55, and entering and capturing data.

Today Screen

The Today screen displays important information, such as upcoming appointments and status indicators. Tap a section on the screen to open the associated program. Alternatively, tap **Start** > **Today** to display the **Today** screen.

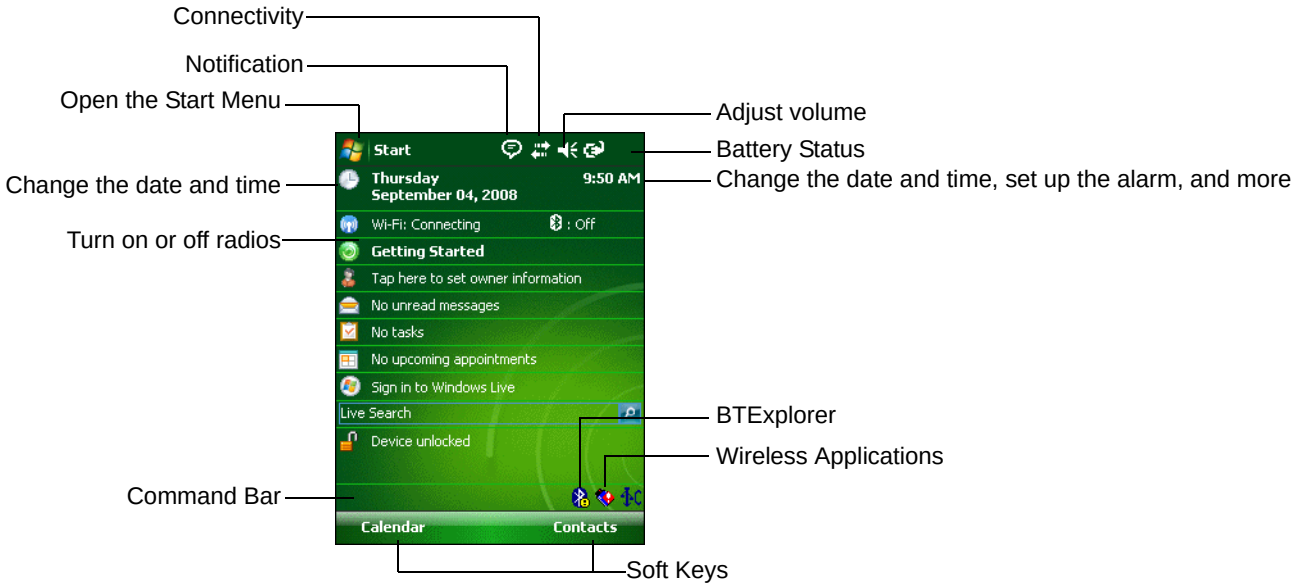


Figure 2-1 *Today Screen*

To customize the **Today** screen, tap **Start** > **Settings** > **Today** icon. Use the **Appearance** tab to customize the background and the **Items** tab to change the list and order of items that appear on the screen.

Status Icons

The Navigation bar at the top of the screen can contain the status icons listed in *Table 2-1*.

Table 2-1 *Status Icons*

Icon	Function	Description
	Notification	Notification that one or more instant messages were received.
		Notification that one or more e-mail/text messages were received.
		There are more notification icons than can be displayed. Tap to display remaining icons.
		Indicates a reminder of an upcoming calendar event.
	Connectivity	Connection is active.
		Connection is not active.
		Synchronization is occurring.
		Wi-Fi available.
		Wi-Fi in use.
	Speaker	All sounds are on.
		All sounds are off.
	Battery	Main battery is charging.
		Main battery level.
		Main battery is low or very low.
		Battery power critically low.
	Time and Next Appointment	Displays current time in analog or digital format.

The command bar at the bottom of the screen can contain the task tray icons listed in *Table 2-2*.

Table 2-2 *Task Tray Icons*

Icon	Description	
	Wireless connection status	Indicates WLAN signal strength.
	Out-of-network range (not associated)	Indicates no wireless LAN network connection. Notify the network administrator.
	No wireless LAN network card detected	Indicates Wireless LAN disabled or radio disabled. Notify the network administrator.
	Bluetooth Enabled	Indicates the Bluetooth radio is on.

Table 2-2 *Task Tray Icons (Continued)*

Icon	Description	
	Bluetooth Disabled	Indicates the Bluetooth radio is off.
	Bluetooth Connection	Indicates the Bluetooth radio is connected to another Bluetooth device.
	ActiveSync	Indicates an active serial connection between the MC55 and the host computer.
	USB Client Mode	Indicates that the MC55 is in USB Client mode.
	USB Host Mode	Indicates that the MC55 is in USB Host mode.

Programs

Table 2-3 lists the default programs on the **Start** menu.

Table 2-3 *Programs in the Start Menu*

Icon	Name	Description
	Office Mobile	Use the complete suite of Microsoft® Office applications for your mobile device. Excel Mobile - Create new workbooks or view and edit Microsoft® Excel® workbooks. OneNote Mobile - Create new notes or view existing notes. PowerPoint Mobile - View Microsoft® PowerPoint® slides and presentations. Word Mobile - Create, view, and edit Microsoft® Word documents.
	Calendar	Keep track of appointments and create meeting requests.
	Contacts	Keep track of friends and colleagues.
	Internet Explorer Mobile	Browse Web and WAP sites as well as download new programs and files from the Internet.
	Messaging	Send and receive e-mail.
	Help	See Help topics for the current screen or program.

Table 2-4 lists programs that are listed in the Programs window.

Table 2-4 *Programs in Program Window*

Icon	Name	Description
	ActiveSync	Synchronize information between the MC55 and a host computer or the Exchange Server.
	AirBEAM	Allows specially designed software packages to be transferred between a host server and the MC55. Refer to the *MC55 Integrator Guide* for more information.
	BTExplorer	Manages Bluetooth connections.
	Calculator	Perform basic arithmetic and calculations, such as addition, subtraction, multiplication, and division.
	File Explorer	Organize and manage files on your device.
	GetGood	Link to download Good Mobile Messaging software.
	Getting Started	Provides quick links for setting the devices clock, setting up e-mail, setting a device password, setting a background image and transferring music.
	Internet Sharing	Connect a notebook computer to the Internet using the MC55's data connection.
	Messenger	Use this mobile version of Windows Live Messenger.
	MSP Agent	Interacts with MSP agents to collect monitoring and asset information to enable the configuration, provisioning, monitoring and troubleshooting of the MC55. Refer to the *MC55 Integrator Guide* for more information.
	Notes	Create handwritten or typed notes, drawings, and voice recordings.
	Pictures & Videos	View and manage pictures, animated GIFs, and video files.
	Rapid Deployment Client	Facilitates software downloads from a Mobility Services Platform Console FTP server to the MC55. Refer to the *MC55 Integrator Guide* for more information.

Table 2-4 *Programs in Program Window (Continued)*

Icon	Name	Description
	Remote Desktop Mobile	Log onto Windows NT server type computers and use all of the programs that are available on that computer from the MC55.
	Search	Search contacts, data, and other information on your MC55.
	Task Manager	Enables viewing of memory and CPU allocations and stops running processes.
	Tasks	Keep track of your tasks.
	Windows Live	Use this mobile version of Windows Live™ to find information on the web.
	Windows Media	Play back audio and video files.

Settings

Table 2-5 lists control applications pre installed on the MC55. Tap **Start** > **Settings** to open the **Settings** window.

Table 2-5 *Settings in the Setting Window*

Icon	Name	Description
Personal Tab		
	Buttons	Assign a program to a button.
	Input	Set options for each of the input methods.
	Lock	Set a password for the MC55.
	Menus	Set what programs appear in the Start menu.
	Owner Information	Enter personal information on the MC55.

Table 2-5 *Settings in the Setting Window (Continued)*

Icon	Name	Description
	Sounds & Notifications	Enable sounds for events, notifications, and more, and set the type of notification for different events.
	Today	Customize the appearance and the information to be displayed on the Today screen.
System Tab		
	About	View basic information such as the Windows Mobile® version and type of processor used on the MC55.
	Backlight	Set the display backlight time-out and adjust brightness.
	Certificates	See information about certificates installed on the MC55.
	Clock & Alarms	Set the device clock to the date and time of your locale or to a visiting time zone when you're traveling. Alarms can also be set at specified days and times of a week.
	Customer Feedback	Submit feedback on the Windows Mobile 6.1 software.
	Encryption	Allow files on a storage card to be encrypted. Encrypted files are readable only on your device.
	Error Reporting	Enable or disable the device's error reporting function. When this function is enabled and a program error occurs, technical data about the state of the program and your computer is logged in a text file and delivered to Microsoft's technical support if you choose to send it.
	External GPS	Set the appropriate GPS communication ports, if required. You may need to do this when there are programs on your device that access GPS data or you have connected a GPS receiver to the MC55.
	Keylight	Set the keypad backlight time-out.
	Managed Programs	Lists applications that have been installed remotely by your system administrator.
	Memory	Check the device memory allocation status and memory card information and stop currently running programs.

Table 2-5 *Settings in the Setting Window (Continued)*

Icon	Name	Description
	Power	Check battery power and set the time-out for turning off the display to conserve battery power.
	Regional Settings	Set the regional configuration to use, including the format for displaying numbers, currency, date, and time on the MC55.
	Remove Programs	Remove programs that you installed on the MC55.
	Screen	Change the screen orientation, re-calibrate the screen, and change the screen text size.
	System Info	Displays the MC55's software and hardware information.
	Task Manager	Enables viewing of memory and CPU allocations and stops running processes.
	Windows Update	Link to Microsoft's web site and update Windows Mobile® on your device with the latest security patches or fixes. Do not use. Obtain updates from Motorola.
Connections Tab		
	Beam	Set the device to receive incoming IrDA beams. (Not supported on the MC55.)
	Connections	Set up one or more types of modem connections for your device, such as phone dial-up, GPRS, Bluetooth, and more, so that your device can connect to the Internet or a private local network.
	Domain Enroll	Make your device an AD domain member for device management and security.
	USB to PC	Enables or disables the enhanced network connectivity.
	Wi-Fi	Setup wireless network connection and customize settings.
	Wireless Manager	Enables or disables the MC55's wireless radios and customizes Wi-Fi and Bluetooth settings.

Adjusting Volume

To adjust the system volume using the **Speaker** icon in the navigation bar:

1. Tap the **Speaker** icon. The **Volume** dialog box appears.

Figure 2-2 *Volume Dialog Box*

2. Tap and move the slide bar to adjust the volume.
3. Select the **On** or **Off** radio button to turn the volume on or off.

You can also adjust the system volume using the **Sounds & Notifications** window, or use the **Up/Down** button on the side of the MC55.

Battery Status Indications

Battery icons appear on the navigation bar indicating the battery power level. When the main battery power falls below a predetermined level the icon indicates the status and a battery dialog box appears indicating the status of the battery.

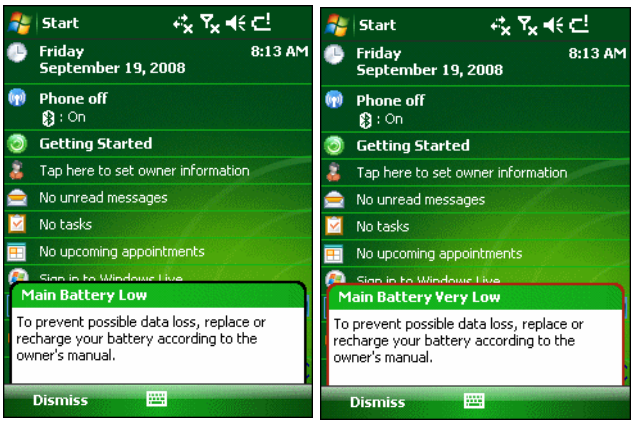


Figure 2-3 *Battery Status Dialog Box*

The **Battery** icon always appears in the **navigation bar** when the Today screen is visible. The icon indicates the battery power level. The message displays until the **Dismiss** button is pressed.

Figure 2-4 *Battery Icon on the Title Bar*

Also view the battery status using the **Power** window. Either:

- Tap the **Battery** icon
- Tap **Start** > **Settings** > **System** tab > **Power** icon.

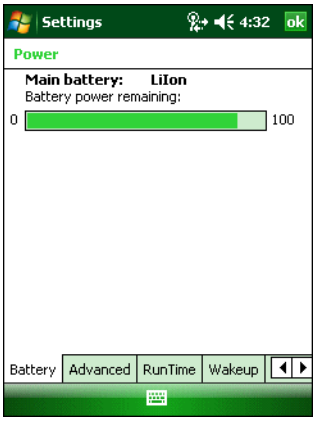


Figure 2-5 *Settings Power Window*

Battery Reserve Options

If the charge of the battery reaches a critical threshold, the MC55 shuts down. This threshold can be changed but affects the amount of time that data can be retained.

1. Tap **Start** > **Settings** > **System** tab > **Power** icon > **RunTime** tab. A warning message appears.

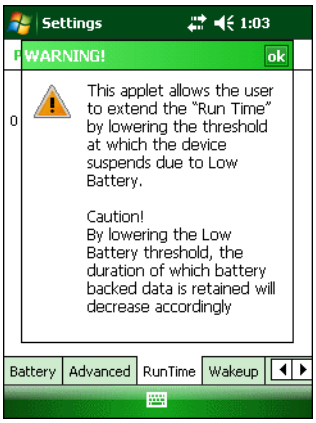


Figure 2-6 *Warning Message*

2. Read the warning message and tap **ok**.

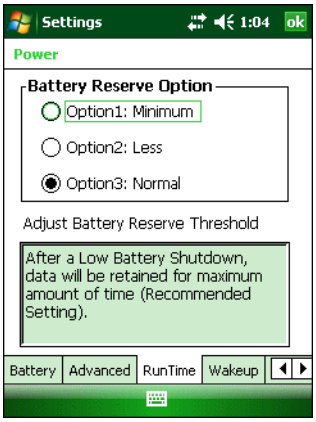


Figure 2-7 *RunTime Tab*

3. Select one of the **Battery Reserve Options**.
   - **Option 1: Minimum** - After a low battery shutdown, data will be retained for minimum amount of time. Battery should be replaced immediately to avoid data loss.
   - **Option 2: Less** - After a low battery shutdown, data will be retained for less than normal amount of time.
   - **Option 3: Normal** - After a low battery shutdown, data will be retained for maximum amount of time.
4. Tap **ok**.

Main Battery Temperature Notifications

The temperature notification system implements three levels of notification when the temperature within the battery exceeds specific temperature thresholds:

- **Level 1: Temperature Watch**; this level is similar to main battery low warning. It indicates that the battery temperature has reached the first threshold level. The user should move to an environment within proper operating temperature.
- **Level 2: Temperature Warning**; this level is similar to main battery very low warning. It indicates the battery temperature has reached the second threshold level. The user should stop using the MC55.
- **Level 3: Temperature Error**; this level indicates the battery has reached an unusable temperature threshold and immediately suspends the MC55. This level does not have any graphical notification associated with it.

Figure 2-8 *Main Battery Temperature Watch Dialog Box*

Figure 2-9 *Main Battery Temperature Warning Dialog Box*

NOTE The **Temperature Warning** dialog box remains visible until you tap **Hide**.

LED Indicators

The MC55 has two LED indicators. The Scan/Decode LED indicates status for scanning. The Charging/Battery Status LED indicates battery charging and status. *Table 2-6* describes the LED indications.

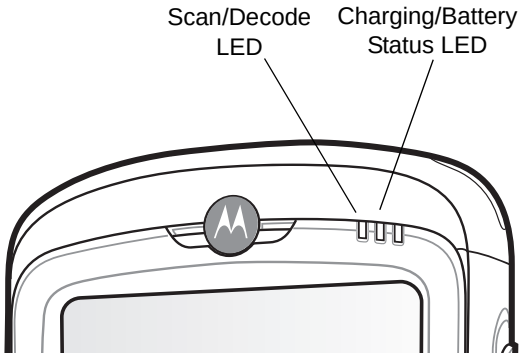


Figure 2-10 *LED Indicators*

Table 2-6 *LED Indications*

LED State	Indication
Scan/Decode LED	
Solid Green	Successful decode/capture.
Solid Red	Laser enabled, scanning/imaging in process.
Off	Not enabled.
Charging/Battery Status LED	
Slow Blinking Amber	Main battery in MC55 is charging.
Solid Amber	Main battery in MC55 is fully charged.

Table 2-6 *LED Indications (Continued)*

LED State	Indication
Fast Blinking Amber	Charging error.
Off	Not charging.
Single Blink Amber (when Power button pressed)	Battery depleted.
Blinking Amber (when Power button pressed)	Battery over-temperature condition.

NOTE For information about scanning/decoding, see *Data Capture on page 2-31*.

Resetting the MC55

There are two reset functions, warm boot and cold boot. A warm boot restarts the MC55 by closing all running programs. A cold boot also restarts the MC55, and also resets the clock. Data saved in flash memory or a memory card is not lost.

If the MC55 is not functioning properly, perform a warm boot first. If the MC55 still does not respond, perform a cold boot.

Performing a Warm Boot

Hold down the red **Power** button for approximately five seconds. As soon as the MC55 starts to boot release the **Power** button.

Performing a Cold Boot

To perform a cold boot:

- On a numeric keypad, simultaneously press the red **Power** button and the 1 and 9 keys.
- On an alphanumeric keypad, simultaneously press the red **Power** button and the W1 and C9 keys.

Waking the MC55

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. These settings are configurable and the factory default settings are shown in *Table 2-7* are subject to change/update.

Table 2-7 Wake-up Default Settings

Condition for Wake-up	Power Button	Automatic Time-out
AC power is applied.	No	Yes
Mobile computer is inserted into a cradle.	No	Yes

Table 2-7 Wake-up Default Settings (Continued)

Condition for Wake-up	Power Button	Automatic Time-out
Mobile computer is removed from a cradle.	No	Yes
Mobile computer is connected to a USB device.	No	Yes
Mobile computer is disconnected from a USB device.	No	Yes
A key is pressed.	No	Yes
The scan triggered is pressed.	No	Yes
The screen is touched.	No	No
Bluetooth communication	Yes	Yes

Locking the MC55

You can lock the MC55 by disabling key presses and screen tap or by requiring a password.

Keypad Locking

Locking the MC55 turns off keyboard and touch screen functionality. This is helpful when the MC55 is turned on and you want to prevent accidental key presses.

To lock the device, tap the **Device unlocked** icon. The icon changes to locked.

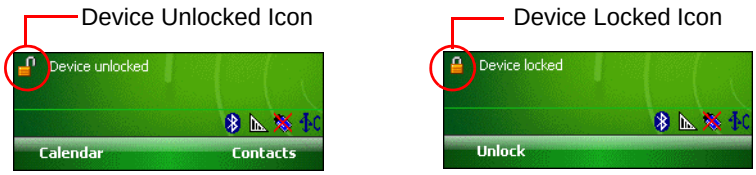


Figure 2-11 *Device Locked/Unlocked Icons*

To unlock the device and free it for use, tap **Unlock**.

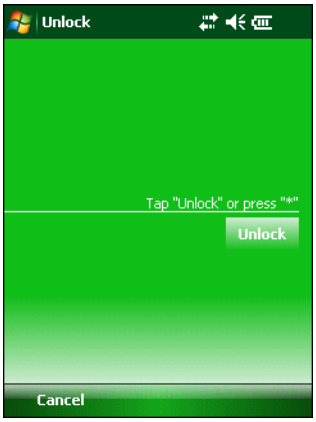


Figure 2-12 *Unlock Device Window*

Tap **Unlock** on the **Unlock** window.

NOTE You can make emergency calls even when the MC55 is locked. See *Making an Emergency Call on page 5-6* for more information.

Password Locking

Use the **Password** window to set a password to disable unauthorized access to the MC55.

NOTE If the device is configured to connect to a network, use a strong (difficult to figure out) password to help protect network security. Password cracking tools continue to improve and the computers used to crack passwords are more powerful than ever.

1. Tap **Start** > **Settings** > **Personal** tab > **Lock** icon > **Password** tab.

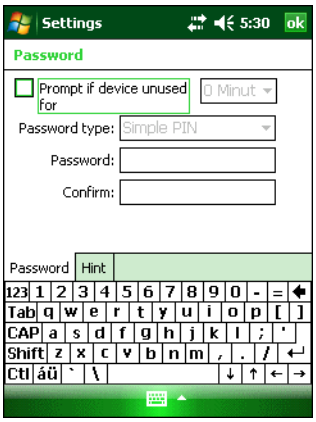


Figure 2-13 *Password Window - Password Tab*

2. Select **Prompt if device unused for** check box to enable password protection.
3. From the drop-down list, select a time value for the protection to take affect after non-use.
4. From the **Password type:** drop-down list, select either **Simple PIN** or **Strong alphanumeric**.
5. For a simple password, enter a four-digit password in the **Password** field.
   For a stronger password:

a. Enter a seven character password in the **Password:** field. A strong password must contain at least seven characters and contain at least three of the following: uppercase and lowercase letters, numerals, and punctuation.

b. Re-enter the password in the **Confirm:** field.

6. Tap **ok**.

7. To set a hint to remember the password, tap the **Hint** tab.

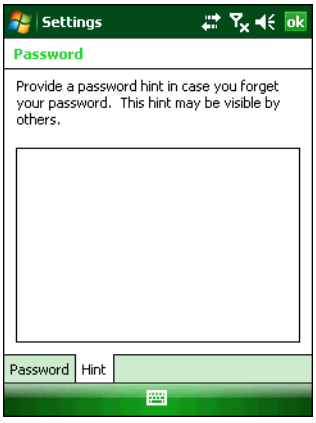


Figure 2-14 *Password Window - Hint Tab*

8. In the text box, enter a hint for a password reminder.

9. Tap **ok**.

When the MC55 is not used for a period of time and the user tries to access the device, the Password window appears.

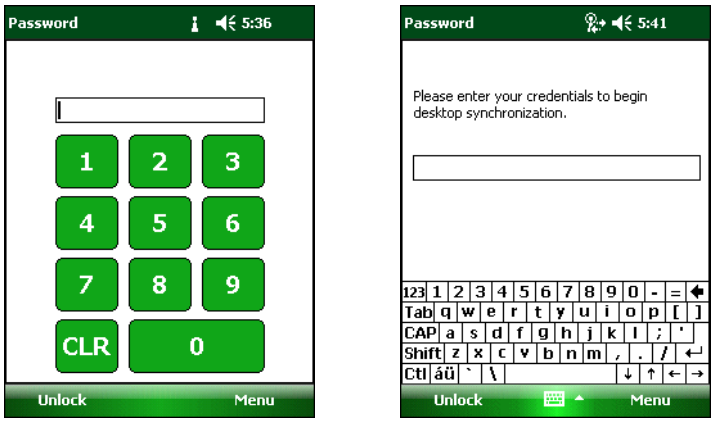


Figure 2-15 *Enter Password Windows*

Enter the password to un-lock the device.

Tap **Unlock**.

Keypads

The MC55 offers two types modular keypad configurations: Numeric and alpha-numeric.

Numeric Keypad Configuration

The numeric keypad contains application keys, scroll keys, and function keys. The keypad is color-coded to indicate the alternate function key (blue) values. Note that an application can change keypad functions so the MC55's keypad may not function exactly as described. See *Table 2-8* for key and button descriptions and *Table 2-9 on page 2-18* for the keypad's special functions.

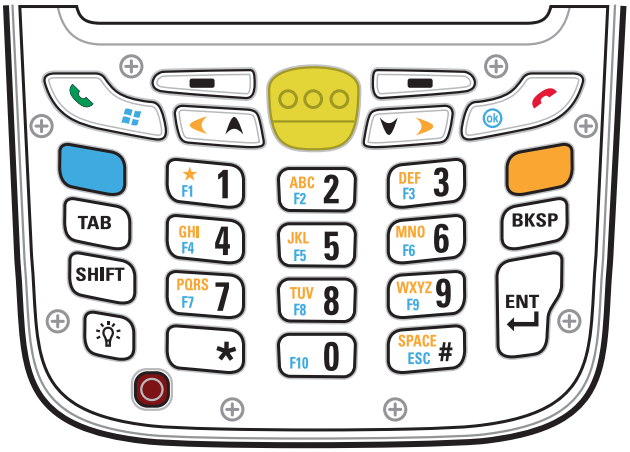


Figure 2-16 *MC55 Numeric Keypad*

Table 2-8 *MC55 Numeric Keypad Descriptions*

Key	Description
Blue Key	Use this key to launch applications or access items (shown on the keypad in blue). Press the Blue key once to activate this mode, followed by another key. A single press displays the following icon at the bottom of the screen, until a second key is pressed:
Orange Key	Use this key to access the secondary layer of characters and actions (shown on the keypad in orange). Press the Orange key once to lock the keypad into Alpha state. A single press displays the following icon at the bottom of the screen: Press the Orange key a second time to return to the normal state. Press the Orange key, then the Shift key to add a temporary shift (that applies only to the next key pressed) to the orange lock state. This displays the following icon at the bottom of the screen:

Table 2-8 *MC55 Numeric Keypad Descriptions (Continued)*

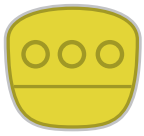
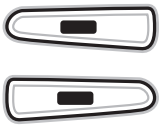
Key	Description
Talk/Start Menu	Use this key in conjunction with the Blue key to instantly display the *Start* menu from any application without tapping the screen. This function is user programmable. To use a key as an application key (APP key) on the keyboard, create and install a new keyboard remap table. However, to remap the green phone key as APP keys through the registry, create an XML provisioning file that includes the following entry: <characteristic type="HKLM\Hardware\DeviceMap\KYBD"> <parm name="GreenKeyOverride" value="*xx*" datatype="integer" /> [where *xx* is the new APP key code] Provision the file to the MC55 to send an APP key code, instead of the original key code, upon pressing the green phone key. Refer to the *MC55 Integrator Guide* for information on creating XML provisioning files.
Scan (yellow) 	Activates the scanner/imager in a scan enabled application.
End/OK	End (Red Phone): press when the phone keypad window displays to stop dialing or end a call. Use this key in conjunction with the Blue key as an OK or close button. This function is user programmable. To use a key as an application key (APP key) on the keyboard, create and install a new keyboard remap table. However, to remap the red phone keys as APP keys through the registry, create an XML provisioning file that includes the following entry: <characteristic type="HKLM\Hardware\DeviceMap\KYBD"> <parm name="RedKeyOverride" value="*yy*" datatype="integer" /> [where *yy* is the new APP key code] Provision the file to the MC55 to send an APP key code, instead of the original key code, upon pressing the red phone key. Refer to the *MC55 Integrator Guide* for information on creating XML provisioning files.
Scroll Up and Left	Moves up one item. Moves left one item when pressed with the Orange key.
Scroll Down and Right	Moves down one item. Moves right one item when pressed with the Orange key.
Soft Keys 	Accesses the command or menu above it on the screen.

Table 2-8 *MC55 Numeric Keypad Descriptions (Continued)*

Key	Description
Star	Produces an asterisk in default state. Press and release the blue key, then press the Star key to open the *Start* menu.
Alphanumeric	In default state, produces the numeric value on the key. In Alpha state, produces the lower case alphabetic characters on the key. Each key press produces the next alphabetic character in sequence. For example, press and release the Orange key and then press the ‘4’ key once to produce the letter ‘g’; press and release the Orange key and then press the ‘4’ key three times to produce the letter ‘i’. Press the SHIFT key in Alpha state to produce the upper case alphabetic characters on the key. For example, press and release the Orange key, press and release the SHIFT key, and then press the ‘4’ key once to produce the letter ‘G’; press and release the Orange key, press and release the SHIFT key and then press the ‘4’ key three times to produce the letter ‘I’.
Backspace	Produces a backspace.
SHIFT	Press and release the SHIFT key to activate the keypad alternate SHIFT functions. A single press displays the following icon at the bottom of the screen, until a second key is pressed: Press the Orange key, then the Shift key to add a temporary shift (that applies only to the next key pressed) to the orange lock state. This displays the following icon at the bottom of the screen:
Enter	Executes a selected item or function.

Table 2-9 *Numeric Keypad Input Modes*

Key	Numeric Mode			Orange Key (Alpha Lowercase Mode)				Orange + Shift Keys (Alpha Uppercase Mode)			
		Blue+ Key	SHIFT + Key	1st Press	2nd Press	3rd Press	4th Press	1st Press	2nd Press	3rd Press	4th Press
1	1	F1	!	*	*	*	*	*	*	*	*
2	2	F2	@	a	b	c		A	B	C	

Note: An application can change the key functions. The keypad may not function exactly as described.

Table 2-9 *Numeric Keypad Input Modes (Continued)*

Key	Numeric Mode			Orange Key (Alpha Lowercase Mode)				Orange + Shift Keys (Alpha Uppercase Mode)			
		Blue+ Key	SHIFT + Key	1st Press	2nd Press	3rd Press	4th Press	1st Press	2nd Press	3rd Press	4th Press
3	3	F3	#	d	e	f		D	E	F	
4	4	F4	$	g	h	i		G	H	I	
5	5	F5	%	j	k	l		J	K	L	
6	6	F6	^	m	n	o		M	N	O	
7	7	F7	&	p	q	r	s	P	Q	R	S
8	8	F8	*	t	u	v		T	U	V	
9	9	F9	(	w	x	y	z	W	X	Y	Z
0	0	F10	)	.				>			
Up	Up	Up	Hilight Up	Left				Left			
Down	Down	Down	Hilight Down	Right				Right			
Enter	Action	Action	Action	Action				Action			

Note: An application can change the key functions. The keypad may not function exactly as described.

Alpha-numeric Keypad Configurations

The three types of alpha-numeric keypads produce the 26-character alphabet (A-Z, both lowercase and uppercase), numbers (0-9), and assorted characters. The keypad is color-coded to indicate which modifier key to press to produce a particular character or action. The keypad default is alphabetic, producing lowercase letters. See *Table 2-10* for key and button descriptions and *Table 2-11 on page 2-23* for the keypad's special functions.

Figure 2-17 *QWERTY Keypad Configuration*

Figure 2-18 *AZERTY Keypad Configuration*

Figure 2-19 *QWERTZ Keypad Configuration*

Table 2-10 *Alpha-numeric Keypad Descriptions*

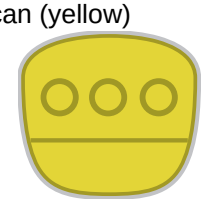
Key	Action
Blue Key	Press the Blue key once to activate this mode temporarily, followed by another key. This displays the following icon at the bottom of the screen, until a second key is pressed: Press the Blue key twice to lock this mode. This displays the following icon at the bottom of the screen: Press the Blue key a third time to unlock. Press and hold the Blue key while selecting a sequence of keys to activate this mode temporarily. This displays the following icon at the bottom of the screen as long as the key is pressed:
Orange Key	Accesses the secondary layer of characters and actions (shown on the keypad in orange). Press the Orange key once to activate this mode temporarily, followed by another key. This displays the following icon at the bottom of the screen, until a second key is pressed: Press the Orange key twice to lock this mode. This displays the following icon at the bottom of the screen: Press the Orange key a third time to unlock. Press and hold the Orange key while selecting a sequence of keys to activate this mode temporarily. This displays the following icon at the bottom of the screen as long as the key is pressed:
Talk/Start Menu	Use this key in conjunction with the Blue key to instantly display the *Start* menu from any application without tapping the screen. This function is user programmable. To use a key as an application key (APP key) on the keyboard, create and install a new keyboard remap table. However, to remap the green phone key as APP keys through the registry, create an XML provisioning file that includes the following entry: <characteristic type="HKLM\Hardware\DeviceMap\KYBD"> <parm name="GreenKeyOverride" value="*xx*" datatype="integer" /> [where *xx* is the new APP key code] Provision the file to the MC55 to send an APP key code, instead of the original key code, upon pressing the green phone key. Refer to the *MC55 Integrator Guide* for information on creating XML provisioning files.
Scan (yellow) 	Activates the scanner/imager in a scan enabled application.

Table 2-10 *Alpha-numeric Keypad Descriptions (Continued)*

Key	Action
End/OK	End (Red Phone): press when the phone keypad window displays to stop dialing or end a call. Use this key in conjunction with the Blue key as an OK or close button. This function is user programmable. To use a key as an application key (APP key) on the keyboard, create and install a new keyboard remap table. However, to remap the green phone key as APP keys through the registry, create an XML provisioning file that includes the following entry: <characteristic type="HKLM\Hardware\DeviceMap\KYBD"> <parm name="RedKeyOverride" value="*yy*" datatype="integer" /> [where *yy* is the new APP key code] Provision the file to the MC55 to send an APP key code, instead of the original key code, upon pressing the red phone key. Refer to the *MC55 Integrator Guide* for information on creating XML provisioning files.
Scroll Up and Left	Moves up one item. Moves left one item when pressed with the Orange key.
Scroll Down and Right	Moves down one item. Moves right one item when pressed with the Orange key.
Soft Keys	Accesses the command or menu above it on the screen.
Shift	Changes the state of the alpha characters from lowercase to uppercase. • Press the Shift key to activate this mode temporarily, followed by another key. This displays the following icon at the bottom of the screen, until a second key is pressed: • Press the Shift key twice to lock this mode. This displays the following icon at the bottom of the screen: Press the Shift key a third time to unlock.
Backlight	Turns the display backlight on and off.
Backspace	Produces a backspace.

Table 2-10 *Alpha-numeric Keypad Descriptions (Continued)*

Key	Action
Enter	Executes a selected item or function.
Star	Produces an asterisk.
au	Creates special characters.

Table 2-11 *QWERTY Keypad Input Modes*

Key	Normal	Shift + Key	Orange + Key	Blue + Key
Q	q	Q	*	q
W	w	W	1	w
E	e	E	2	e
R	r	R	3	r
T	t	T	+	t
Y	y	Y	_	y
U	u	U	-	u
I	i	I	=	i
O	o	O	“	o
P	p	P	áü	p
A	a	A	#	a
S	s	S	4	s
D	d	D	5	d
F	f	F	6	f
G	g	G	(	g
H	h	H	)	h
J	j	J	/	j
K	k	K	:	k

Note: An application can change the key functions. The keypad may not function exactly as described.

Table 2-11 *QWERTY Keypad Input Modes (Continued)*

Key	Normal	Shift + Key	Orange + Key	Blue + Key
L	l	L	‘	l
Backspace	Backspace	Backspace	Backspace	Backspace
Shift	Shift	Shift-Lock	Shift	Shift
Z	z	Z	7	z
X	x	X	8	x
C	c	C	9	c
V	v	V	%	v
B	b	B	&	b
N	n	N	!	n
M	m	M	?	m
,	,	<	@	,
ENTER	Enter	Enter	Enter	Enter
0	0	>	0	.
TAB	Tab	Tab	Back tab	Tab
SPACE	Space	Space	Space	Space
Backlight	Backlight	Backlight	Backlight	Backlight
. (Period)	.	>	.	.

Note: An application can change the key functions. The keypad may not function exactly as described.

Table 2-12 *AZERTY Keypad Input Modes*

Key	Normal	Shift + Key	Orange + Key	Blue + Key
A	a	A	*	a
Z	z	Z	1	z
E	e	E	2	e
R	r	R	3	r
T	t	T	+	t
Y	y	Y	_	y
U	u	U	-	u
I	i	I	=	i
O	o	O	“	o

Note: An application can change the key functions. The keypad may not function exactly as described.

Table 2-12 *AZERTY Keypad Input Modes (Continued)*

Key	Normal	Shift + Key	Orange + Key	Blue + Key
P	p	P	áü	p
Q	q	Q	#	q
S	s	S	4	s
D	d	D	5	d
F	f	F	6	f
G	g	G	(	g
H	h	H	)	h
J	j	J	/	j
K	k	K	:	k
L	l	L	‘	l
Backspace	Backspace	Backspace	Backspace	Backspace
Shift	Shift	Shift-Lock	Shift	Shift
W	w	W	7	w
X	x	X	8	x
C	c	C	9	c
V	v	V	%	v
B	b	B	&	b
N	n	N	!	n
M	m	M	?	m
,	,	<	@	
Enter	Enter	Enter	Enter	Enter
0	0	>	0	.
TAB	Tab	Tab	Back tab	Tab
SPACE	Space	Space	Space	Space
Backlight	Backlight	Backlight	Backlight	Backlight
. (Period)	.	>	.	.

Note: An application can change the key functions. The keypad may not function exactly as described.

Table 2-13 *QWERTZ Keypad Input Modes*

Key	Normal	Shift + Key	Orange + Key	Blue + Key
Q	q	Q	*	q
W	w	W	1	w
E	e	E	2	e
R	r	R	3	r
T	t	T	+	t
Z	z	Z	_	z
U	u	U	-	u
I	i	I	=	i
O	o	O	“	o
P	p	P	áü	p
A	a	A	#	a
S	s	S	4	s
D	d	D	5	d
F	f	F	6	f
G	g	G	(	g
H	h	H	)	h
J	j	J	/	j
K	k	K	:	k
L	l	L	‘	l
Backspace	Backspace			
Shift	Shift			
Y	y	Y	7	y
X	x	X	8	x
C	c	C	9	c
V	v	V	%	v
B	b	B	&	b
N	n	N	!	n
M	m	M	?	m
,	,	<	@	,

Note: An application can change the key functions. The keypad may not function exactly as described.

Table 2-13 *QWERTZ Keypad Input Modes (Continued)*

Key	Normal	Shift + Key	Orange + Key	Blue + Key
ENTER	Enter	ENTER	ENTER	Enter
0	0	>	0	.
TAB	Tab	Tab	Back tab	Tab
SPACE	Space	Space	Space	Space
Backlight	Backlight	Backlight	Backlight	Backlight
. (Period)	.	>	.	.

Note: An application can change the key functions. The keypad may not function exactly as described.

Special Character Key

NOTE Special characters are only available on the alpha-numeric keypad configurations.

To add special characters using the MC55 **áü** key, type the related character first, then press the Orange twice followed by the **áü (P)** key. Continue pressing the **áü** key until the special character displays. To modify an existing character, move the cursor to the right of the character then press the Orange key twice and then press the **áü** key until the special character replaces the original character. *Table 2-14* lists the special characters you can generate.

Table 2-14 *Special Characters*

Key	Special Characters		Key	Special Characters
a	à á â ä å ą ã ă æ		A	A À Á Â Ä Å Ą Ã Ă Æ
c	ç ć č ©		C	ÇĆČ©
d	đ		D	Đ
e	è é ê ë ę		E	È É Ê Ë Ę
i	ì í î ï		I	Ì Í Î Ï
l	ł		L	L Ł
n	ñ		N	Ñ
o	ò ó ô õ ö ő ø œ		O	Ò Ó Ô Õ Ö Ő Ø Œ
p	þ ¶		P	þ ¶
r	®		R	®
s	ş š ß		S	Ş Š ß
t	ţ		T	Ţ
u	ù ú û ü ű		U	Ù Ú Û Ü Ű
y	ý		Y	Ý
z	ź ż		Z	Ź Ż

Table 2-14 *Special Characters (Continued)*

Key	Special Characters		Key	Special Characters
$	€ £ ¥		/	\ |
“	' « ' »		(	[{ < «
)	] } > »		+	± & - _
!	¡ ? ¿		.	: , ;
*	#		@	~ %
%	^		,	; . :
#	*		&	- _ + ±
_	+ ± & -		‘	« » "
?	¿ ! ¡		:	, ; .
-	_ + ± &			

Function Buttons

The MC55's buttons perform certain functions.

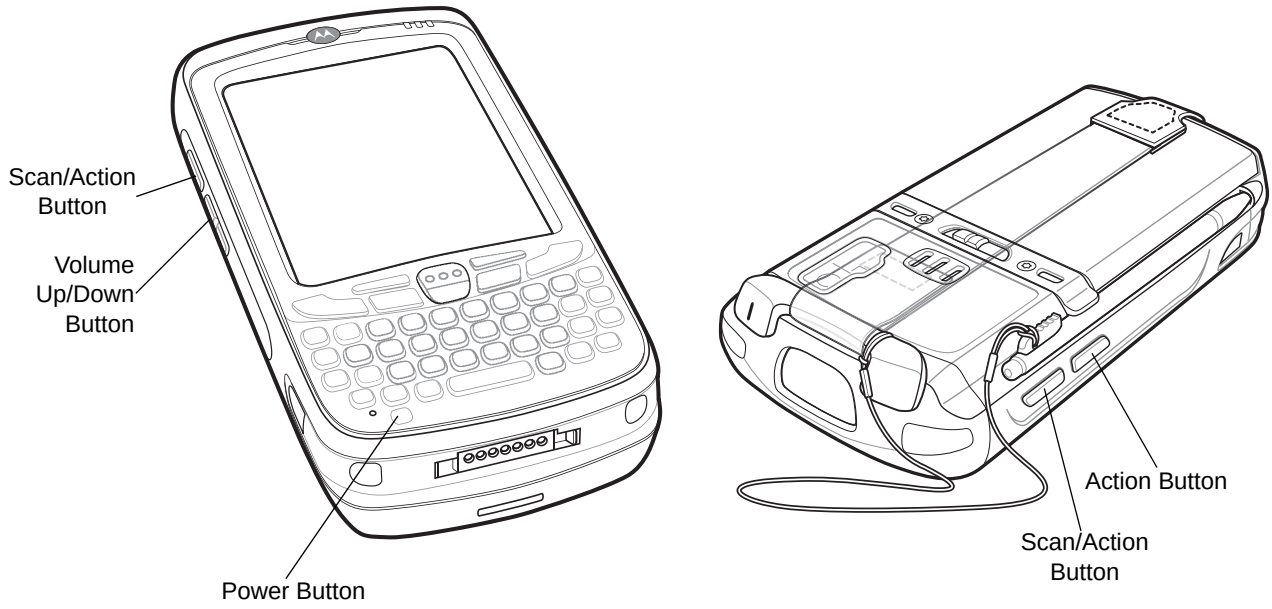


Figure 2-20 *Function Buttons*

- **Power**: Press the red **Power** button to turn the MC55 screen on and off. The MC55 is in suspend mode when the screen is off. For more information, see *Powering On the MC55 on page 1-6*. Also use the **Power** button to reset the MC55 by performing a warm or cold boot. See *Resetting the MC55 on page 2-12*.
- **Scan/Action:** Press to scan bar codes or capture images. See *Data Capture on page 2-31*.

  Or, press to open an application or perform a function. See the *Microsoft® Applications for Mobile 6 User Guide* to set an application to open.
- **Volume Up/Down**: Press to increase or decrease the MC55's volume.
- **Action:** Press to open an application or perform a function. See the *Microsoft® Applications for Windows Mobile 6 User Guide* to set an application to open.

Stylus

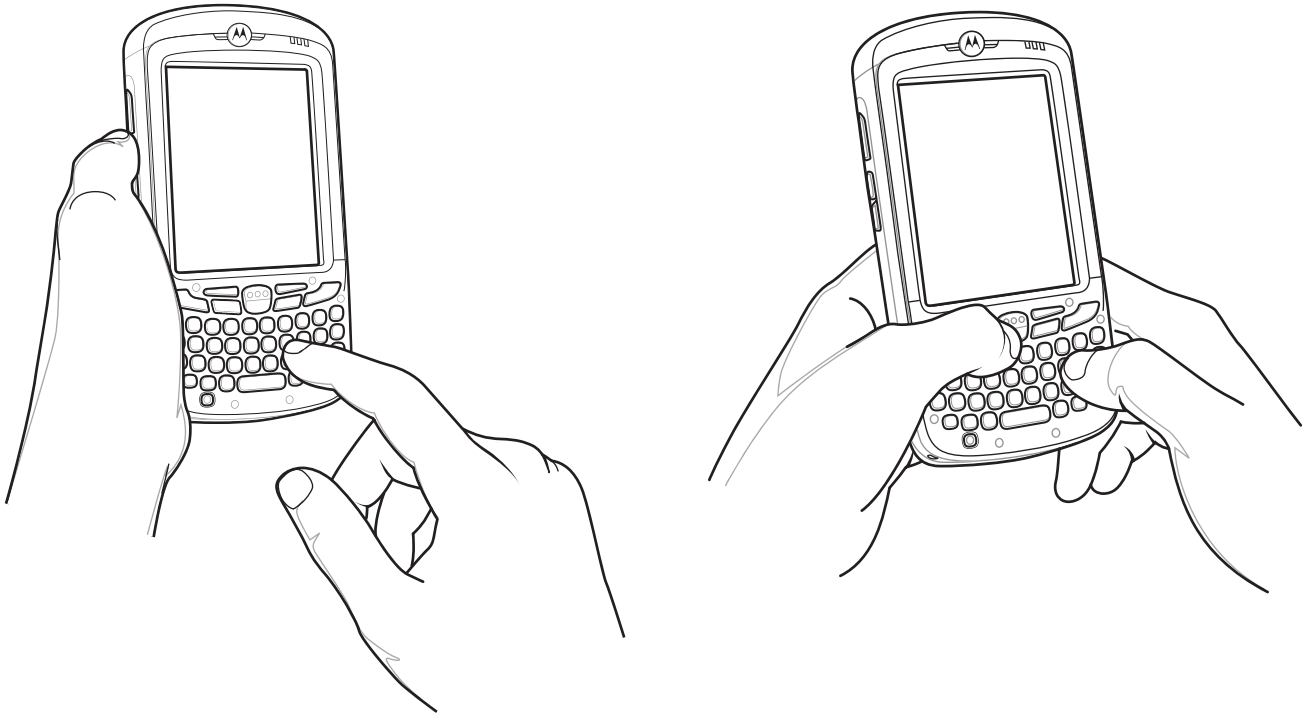
Use the MC55 stylus to select items and enter information. The stylus functions as a mouse.

- Tap: Touch the screen once with the stylus to press option buttons and open menu items.
- Tap and Hold: Tap and hold the stylus on an item to see a list of actions available for that item. On the pop-up menu that appears, tap the action to perform.
- Drag: Hold the stylus on the screen and drag across the screen to select text and images. Drag in a list to select multiple items.

CAUTION To prevent damage to the screen, do not use any device other than the Motorola-provided stylus.

Entering Data

When entering data on the keypad, use either the single-hand method or the two-hand method as shown in *Figure 2-21*.



Single-hand Method

Two-hand Method

Figure 2-21 *Entering Data on the Keypad*

Data Capture

The MC55 offers three types of data capture options:

- Linear scanning
- Imaging
- Digital camera.

NOTE To perform data capture a scanning enabled application must be installed on the MC55. A sample scanning application can be downloaded from the Motorola Support site at http://support.symbol.com.

Linear Scanning

MC55 with an integrated linear scanner have the following features:

- Reading of a variety of bar code symbologies, including the most popular linear, postal, and 1-D code types.
- Intuitive aiming for easy point-and-shoot operation.

Imaging

MC55 with an integrated imager have the following features:

- Omnidirectional reading of a variety of bar code symbologies, including the most popular linear, postal, PDF417, and 2D matrix code types.
- The ability to capture and download images to a host for a variety of imaging applications.
- Advanced intuitive laser aiming for easy point-and-shoot operation.

The imager uses digital camera technology to take a digital picture of a bar code, stores the resulting image in its memory, and executes state-of-the-art software decoding algorithms to extract the data from the image.

Operational Modes

MC55 with an integrated imager support three modes of operation, listed below. Activate each mode by pulling the trigger or pressing the **Scan** button.

- **Decode Mode**: In this mode, the MC55 attempts to locate and decode enabled bar codes within its field of view. The imager remains in this mode as long as you hold the trigger, or until it decodes a bar code.

NOTE To enable Pick List Mode, download the Control Panel applet from the Support Central web site at http://support.symbol.com. Pick List can also be set in an application using a API command.

- **Pick List Mode**: This mode allows you to selectively decode a bar code when more than one bar code is in the MC55's field of view. To accomplish this, move the aiming crosshair over the required bar code to decode only this bar code. This feature is ideal for pick lists containing multiple bar codes and manufacturing or transport labels containing more than one bar code type (either 1D or 2D).
- **Image Capture Mode**: Use this mode to capture an image within the MC55's field of view. This is useful for capturing signatures or images of items like damaged boxes.

Digital Camera

MC55 with an integrated digital camera have the following features:

- Omnidirectional reading of a variety of bar code symbologies, including the most popular linear, postal, PDF417, and 2D matrix code types.
- Advanced intuitive aiming for easy point-and-shoot operation.

The camera uses digital camera technology to take a digital picture of a bar code, stores the resulting image in its memory, and executes state-of-the-art software decoding algorithms to extract the data from the image.

Scanning Considerations

Typically, scanning is a simple matter of aim, scan, and decode and a few quick trial efforts master it. However, consider the following to optimize scanning performance:

- Range

  Any scanning device decodes well over a particular working range — minimum and maximum distances from the bar code. This range varies according to bar code density and scanning device optics.

  Scanning within range brings quick and constant decodes; scanning too close or too far away prevents decodes. Move the scanner closer and further away to find the right working range for the bar codes being scanned.

- Angle

  Scanning angle is important for promoting quick decodes. When laser beams reflect directly back into the scanner from the bar code, this specular reflection can “blind” the scanner.

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

- Hold the MC55 farther away for larger symbols.
- Move the MC55 closer for symbols with bars that are close together.

NOTE Scanning procedures depend on the application and MC55 configuration. An application may use different scanning procedures from the one listed above.

Linear Scanning

1. Ensure that a scan enabled application is loaded on the MC55.
2. Aim the scan window at the bar code.

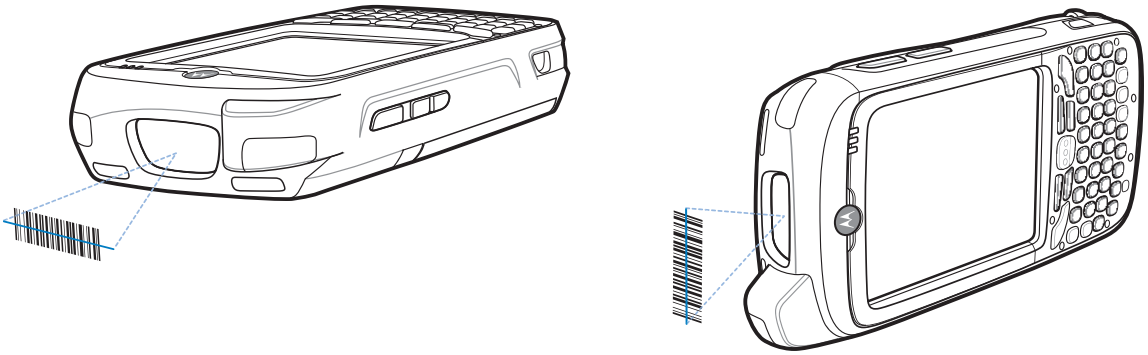


Figure 2-22 *Linear Scanning*

3. Press the scan button. Ensure the red scan beam covers the entire bar code. The Scan/Decode LED lights red to indicate that scanning is in process, then lights green and a beep sounds, by default, to indicate the bar code was decoded successfully.

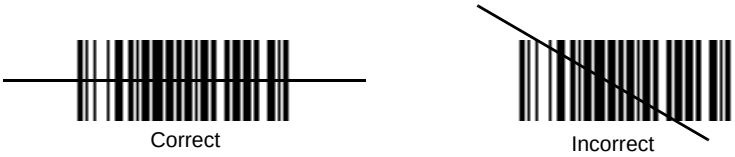


Figure 2-23 *Linear Scanner Aiming Pattern*

Imager Scanning

1. Ensure that a scan-enabled application is loaded on the MC55.
2. Aim the scan window at the bar code.

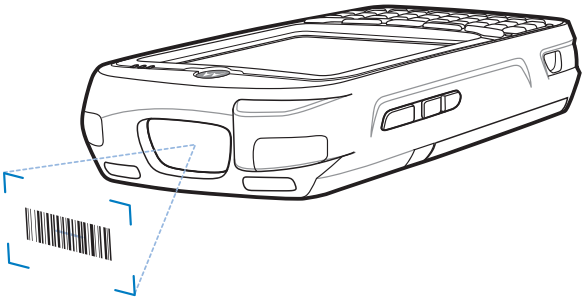


Figure 2-24 *Imager Scanning*

3. Press the scan button. The red laser aiming pattern turns on to assist in aiming. Ensure the bar code is within the area formed by the brackets in the aiming pattern. The Scan/Decode LED lights red to indicate that scanning is in process, then lights green and a beep sounds, by default, to indicate the bar code was decoded successfully. Note that when the MC55 is in Pick List Mode, the imager does not decode the bar code until the crosshair touches the bar code.

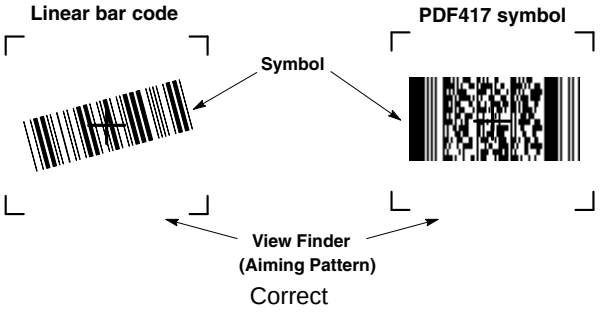


Figure 2-25 *Imager Aiming Pattern: Bar Code Centered*

Figure 2-26 *Imager Aiming Pattern: Bar Code Not Centered*

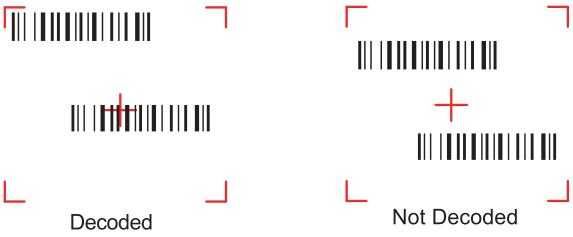


Figure 2-27 *Pick List Mode with Multiple Bar Codes in Aiming Pattern*

4. Release the scan button.

NOTE Imager decoding usually occurs instantaneously. The MC55 repeats the steps required to take a digital picture (image) of a poor or difficult bar code as long as the scan button remains pressed.

Digital Camera Scanning

1. Ensure that a scan-enabled application is loaded on the MC55.
2. Aim the camera lens on the back of the MC55 at a bar code.
3. Press and hold the scan button. A preview window appears on the display window with a red aiming reticle in the center. The Scan/Decode LED lights red to indicate that scanning is in process.

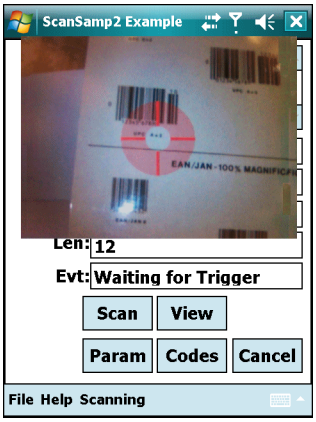


Figure 2-28 *Sample Scan Application with Preview Window*

4. Move the MC55 until the red aiming reticle is over the bar code to scan.
5. The Scan/Decode LED lights green and a beep sounds, by default, to indicate the bar code was decoded successfully.

Using Voice-Over-IP

The MC55 supports Voice over IP over WLAN (VoWLAN) using Motorola or third party voice clients. The MC55 can communicate using VoIP either using the MC55 audio outputs, including back speaker phone, front receiver or handset, and Bluetooth headset.

It is recommended that the wireless network use the 802.11a (5 GHz) band for voice applications. Using the 5 GHz band avoids some noise sources that may occur on the 802.11b/g (2.4 GHz) band due to wireless interference.

When using a Bluetooth headset with the MC55 and VoWLAN, it is required to use the Bluetooth Headset profile instead of Hands-free profile. Use the buttons on the MC55 to answer and end calls. See *Chapter 3, Using Bluetooth* for information on setting up a Bluetooth Headset Profile.

Taking Photos

To take a photo:

1. Tap **Start** > **Programs** > **Pictures & Videos** icon.
2. Tap **Camera** on the command bar.
3. Check the image on the view finder, adjust if necessary.
4. Press the **Enter** key to take the picture. Hold the MC55 still until the shutter sound is heard.

Recording Video

To record a video clip:

1. Tap **Start** > **Programs** > **Pictures & Videos** icon.
2. Tap **Camera** on the command bar.
3. Tap **Menu** > **Video** to set shooting mode to video.

   The available recording time displays on the screen.

   NOTE By default, the time limit for recording videos is set to 30 seconds.

4. Press the **Enter** key to begin recording.

   Recording stops when you press the **Enter** button again.

Viewing Photos and Videos

To view photos and video clips:

1. Tap **Start** > **Programs** > **Pictures & Videos** icon.
2. Tap the picture or video clip to view.

Chapter 3 Using Bluetooth

Introduction

Bluetooth-equipped devices can communicate without wires, using frequency-hopping spread spectrum (FHSS) radio frequency (RF) to transmit and receive data in the 2.4 GHz Industry Scientific and Medical (ISM) band (802.15.1). Bluetooth wireless technology is specifically designed for short-range (30 feet/10 meters) communication and low power consumption.

MC55s with Bluetooth capabilities can exchange information (e.g., files, appointments, and tasks) with other Bluetooth enabled devices such as phones, printers, access points, and other mobile computers. To use the MC55 as a modem, create a dial-up modem connection between a computer and MC55.

Motorola mobile computers with Bluetooth technology use the StoneStreet Bluetooth stack. To program Bluetooth within the MC55 refer to the Enterprise Mobility Developer Kit (EMDK) Help.

Adaptive Frequency Hopping

Adaptive Frequency Hopping (AFH) is a method of avoiding fixed frequency interferers, and can be used with Bluetooth voice. All devices in the piconet (Bluetooth network) must be AFH-capable in order for AFH to work. There is no AFH when connecting and discovering devices. Avoid making Bluetooth connections and discoveries during critical 802.11b communications. AFH for Bluetooth consists of four main sections:

- Channel Classification - A method of detecting an interference on a channel-by-channel basis, or pre-defined channel mask.
- Link Management - Coordinates and distributes the AFH information to the rest of the Bluetooth network.
- Hop Sequence Modification - Avoids interference by selectively reducing the number of hopping channels.
- Channel Maintenance - A method for periodically re-evaluating the channels.

When AFH is enabled, the Bluetooth radio “hops around” (instead of through) the 802.11b high-rate channels. AFH coexistence allows Motorola mobile computers to operate in any infrastructure.

The Bluetooth radio in this MC55 operates as a Class 2 device power class. The maximum output power is 2.5mW and the expected range is 32.8 feet (10 meters). A definition of ranges based on power class is difficult to obtain due to power and device differences, and whether one measures open space or closed office space.

NOTE It is not recommended to perform Bluetooth wireless technology inquiry when high rate 802.11b operation is required.

Security

The current Bluetooth specification defines security at the link level. Application-level security is not specified. This allows application developers to define security mechanisms tailored to their specific need. Link-level security occurs between devices, not users, while application-level security can be implemented on a per-user basis. The Bluetooth specification defines security algorithms and procedures needed to authenticate devices, and if needed, encrypt the data flowing on the link between the devices. Device authentication is a mandatory feature of Bluetooth while link encryption is optional.

Pairing of Bluetooth devices is accomplished by creating an initialization key that is used to authenticate the devices and create a link key for them. Entering a common PIN number in the devices being paired generates the initialization key. The PIN number is never sent over the air. By default, the Bluetooth stack responds with no key when a key is requested (it is up to user to respond to the key request event). Authentication of Bluetooth devices is based-upon a challenge-response transaction. Bluetooth allows for a PIN number or passkey that is used to create other 128-bit keys used for security and encryption. The encryption key is derived from the link key used to authenticate the pairing devices. Also worthy of note is the limited range and fast frequency hopping of the Bluetooth radios that makes long-distance eavesdropping difficult.

Recommendations are:

- Perform pairing in a secure environment
- Keep PIN codes private and don't store the PIN codes in the mobile computer
- Implement application-level security.

Turning the Bluetooth Radio Mode On and Off

Turn off the Bluetooth radio to save power or if entering an area with radio restrictions (e.g., an airplane). When the radio is off, other Bluetooth devices cannot see or connect to the MC55. Turn on the Bluetooth radio to exchange information with other Bluetooth devices (within range). Communicate only with Bluetooth radios in close proximity.

NOTE To achieve the best battery life turn off radios not in use.

Disabling Bluetooth

To disable Bluetooth, tap **Bluetooth** icon > **Disable Bluetooth**. The **Bluetooth** icon changes to indicate that Bluetooth is disabled.

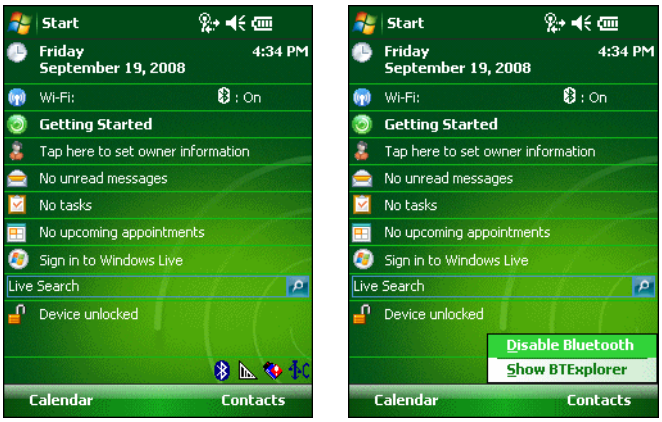


Figure 3-1 *Disable Bluetooth*

Enabling Bluetooth

To enable Bluetooth, tap **Bluetooth** icon > **Enable Bluetooth**. The **Bluetooth** icon changes to indicate that Bluetooth is enabled.

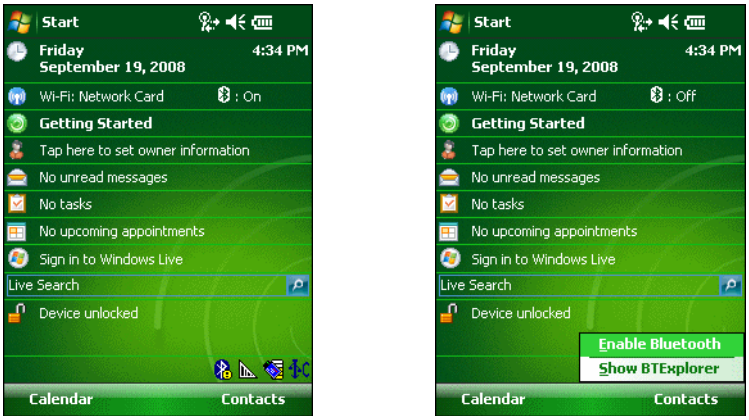


Figure 3-2 *Enable Bluetooth*

Bluetooth Power States

Cold Boot

Performing a cold boot on the MC55 turns off Bluetooth after initialization (which takes a few moments). It is normal to see the **Bluetooth** icon appear and disappear, as well as a wait cursor, when initialization proceeds in all modes.

Warm Boot

Performing a warm boot on the MC55 turnsoff Bluetooth.

Suspend

Suspending the MC55 turns off Bluetooth.

NOTE If there is an active Bluetooth connection between the MC55 and another Bluetooth device, the MC55 will not timeout. However, if the user presses the Power button on the MC55, the MC55 will suspend and upon receiving data from a remote Bluetooth device, the MC55 will wake from suspend mode. For example, headset redial or Bluetooth scanner sending data to the MC55.

Resume

When the MC55 resumes, Bluetooth turns on if it was on prior to suspend.

Modes

The BTExplorer application has two modes for managing Bluetooth connections: Wizard Mode and Explorer Mode. The Wizard Mode is for novice Bluetooth users and the Explorer Mode is for experienced Bluetooth users. To switch between modes, select **View** > **Wizard Mode** or **View** > **Explorer Mode**.

Wizard Mode

Wizard Mode provides a simple process for discovering and connecting to Bluetooth devices.

NOTE Switching between Wizard Mode and Explorer Mode closes all active connections.

Wizard Mode shows the devices and services in a simple Favorites view created by following the step-by-step wizard.

Explorer Mode

The **Explorer Mode** window is easy to navigate and provides greater control to users familiar with Bluetooth. The menu bar provides quick access to the options and tools used to connect to devices. To access Explorer Mode, tap **View** > **Explorer Mode**.

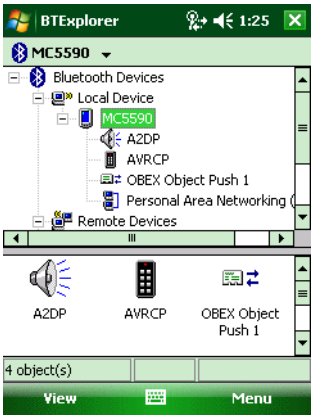


Figure 3-3 *Explorer Mode Window*

You can also use the “tap and hold” technique to view available options. Scroll bars and view options are similar to those on the Windows desktop. The tree structure lists the following sub-items:

- Local Device - This device
- Remote Device - Other Bluetooth devices
  - Trusted Devices - Bonded (paired) Bluetooth devices
  - Untrusted Devices - Discovered devices that are not bonded
- Favorites - Selected services that are set as *Favorite* for quick access.

NOTE Switching between Wizard Mode and Explorer Mode closes all active connections.

Discovering Bluetooth Device(s)

The MC55 can receive information from discovered devices without bonding. However, once bonded, the MC55 and a bonded device exchange information automatically when you turn the Bluetooth radio on. See *Bonding with Discovered Device(s) on page 3-18* for more information.

To find Bluetooth devices in the area:

1. Ensure that Bluetooth is enabled on both devices.
2. Ensure that the Bluetooth device to discover is in discoverable and connectable modes.
3. Ensure that the require profile is enabled on the MC55. See *Profiles Tab on page 3-28* for more information.
4. Ensure that the two devices are within 30 feet (10 meters) of one another.
5. Tap the **Bluetooth** icon and select **Show BTExplorer**. The **BTExplorer** window appears.

NOTE If favorite connections have already been created, the **Favorites** screen displays. If no favorite connections have been created, the **New Connection Wizard** screen displays.

6. Tap **Menu** > **New Connection**.The **New Connection Wizard** appears.

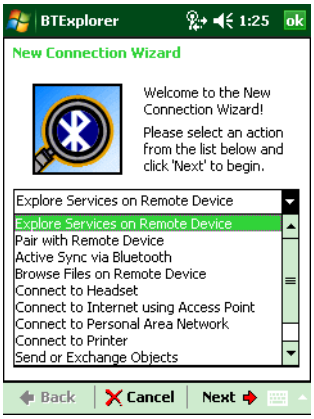


Figure 3-4 *BTExplorer Window*

7. Select **Explore Services on Remote Device** or another from the drop-down list and tap **Next**.

   The following actions are available in the drop-down list (actions may vary depending upon configurations):

   - Explore Services on Remote Device
   - Pair with a Remote Device
   - Active Sync via Bluetooth
   - Browse Files on Remote Device
   - Connect to Headset
   - Connect to Internet using Access Point
   - Connect to Personal Area Network
   - Connect to Printer
   - Send or Exchange Objects

- Associate Serial Port.

NOTE If a device discovery action has not been previously performed, a device discovery is automatically initiated. If a device discovery has previously been performed, the device discovery process is skipped, and the previously found list of devices displays. To start a new device discovery, tap and hold in the window and select **Discover Devices** from the pop-up menu.

8. **BTExplorer** searches for Bluetooth devices in the area.

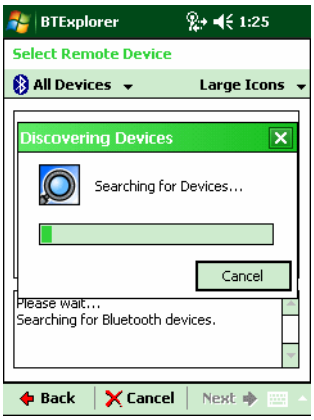


Figure 3-5 *Discover Devices Dialog Box*

The discovered devices display in the **Select Remote Device** window.

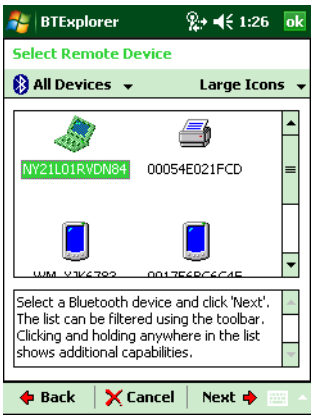


Figure 3-6 *Select Remote Device Window*

9. Select a device from the list and tap **Next**. The MC55 searches for services on the selected Bluetooth device.

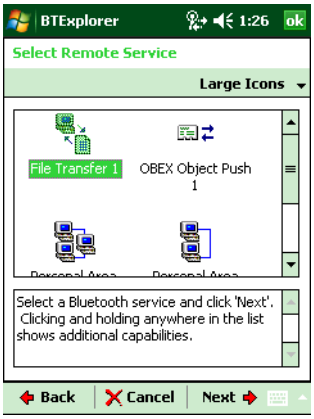


Figure 3-7 *Device Services*

NOTE If the MC55 discovers a service but the service is not supported, the service icon is grayed-out.

10. Select a service from the list and press **Next**. The **Connection Favorite Options** window appears.

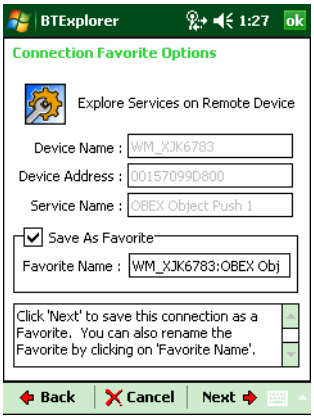


Figure 3-8 *Connection Favorite Options Window*

11. In the **Favorite Name** text box, enter a name for this service that will appear in the **Favorite** window.
12. Tap **Next**. The **Connection Summary** window appears.
13. Tap **Connect** to add the service to the **Favorite** window and connect to the service.

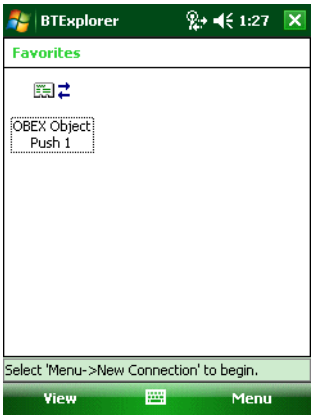


Figure 3-9 *Favorites Window*

Available Services

NOTE Some devices might not require a PIN. This depends upon the device's authentication.

The MC55 offers the following services:

- File Transfer Services
- OBEX Object Push Services
- Headset Audio Gateway Services
- Serial Port Services
- Personal Area Networking Services.

See the following sections for information on these services.

File Transfer Services

NOTE Shared folders are a security risk.

To transfer files between the MC55 and another Bluetooth enabled device:

1. Ensure the MC55 is discoverable and connectable. See *Device Info Tab on page 3-20*.
2. Ensure that OBEX File Transfer profile is enabled on the MC55. See *Profiles Tab on page 3-28* for more information.

NOTE If favorite connections have already been created, the **Favorites** screen displays. If no favorite connections have been created, the **New Connection Wizard** screen displays.

3. Use the **Connection Wizard** to search for a Bluetooth device.
4. Select the device and tap **Next**. The **Select Remote Service** window appears.
5. Tap **Next**. The **Connection Favorite Options** window appears.
6. Tap **Next**. The **Connection Summary** window appears.

7. Tap **Connect**. The remote device's accessible folders appear.

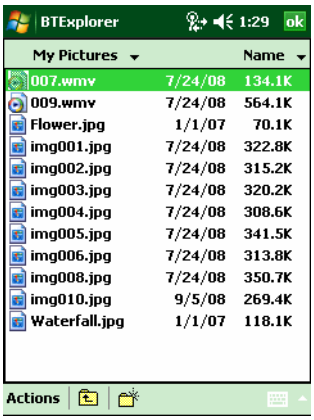


Figure 3-10 *File Transfer Window*

8. Double-tap the file to copy. The **Save Remote File** window appears.

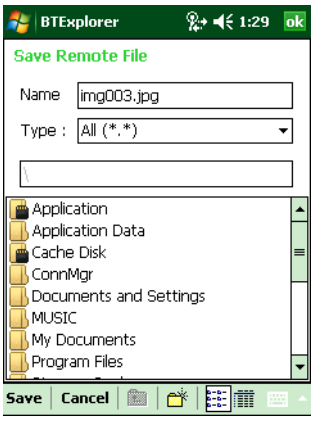


Figure 3-11 *Save Remote File Window*

9. Tap and hold on the file. A pop-up menu appears.
10. Select the action to perform:
    - **New** - create a new file or folder on the remote device
    - **Delete** - delete the selected file on the remote device.
    - **Get File** - copy the file from the remote device to the MC55.
    - **Put File** - copy a file from the MC55 to the remote device.

Creating a New File or Folder

To create a new folder or file on the remote device:

1. Tap and hold on the screen and select **New** > **Folder** or **New** > **File**. The **Create New Folder** or **Create New File** window appears.
2. Enter the name for the new folder or file.
3. Tap **OK** to create the new folder or file on the remote device.

Deleting a File

To delete a file from the remote device:

1. Tap and hold on the file to delete and select **Delete**.
2. In the **Delete Remote Device File** dialog box tap **Yes**.

Getting a File

To copy a file from a remote device:

1. Double-tap or tap and hold on the file and select **Get**. The **Save Remote File** window appears.
2. Navigate to the directory to save the file.
3. Tap **Save**. The file is transferred from the remote device to the MC55.

Copying a File

To copy a file to a remote device:

1. Tap **Action** > **Put**. The **Send Local File** window appears.
2. Navigate to the directory to save the file and select a file.
3. Tap **Open**. The file copies from the MC55 to the remote device.

Connecting to the Internet Using an Access Point

This section explains how to access a Bluetooth-enabled LAN access point (AP) for a network connection. Use Internet Explorer to connect to a server.

1. Ensure the MC55 is discoverable and connectable. See *Device Info Tab on page 3-20*.
2. Ensure that the **Personal Area Networking** profile is enabled on the MC55. See *Profiles Tab on page 3-28* for more information.
3. Use the **Connection Wizard** to search for a Bluetooth AP.

NOTE If favorite connections have already been created, the **Favorites** screen displays. If no favorite connections have been created, the **New Connection Wizard** screen displays.

4. Select the **Personal Area Network** or **Network Access** service and select **Connect** from the pop-up menu. The MC55 connects with the access point.
5. Tap **Start** > **Internet Explorer**. The **Internet Explorer** window appears.
6. In the address field, enter an internet address and tap the **Enter** button. The web page loads.

NOTE Network Access profile is not supported.

Object Exchange Push Services

Object Exchange (OBEX) is a set of protocols that allows sharing objects such as Contacts or pictures using Bluetooth.

To exchange contact information with another Bluetooth enabled device:

1. Ensure the MC55 is discoverable and connectable. See *Device Info Tab on page 3-20*.
2. Ensure that the **OBEX Object Push** profile is enabled on the MC55. See *Profiles Tab on page 3-28* for more information.

> ***NOTE*** If favorite connections have already been created, the **Favorites** screen displays. If no favorite connections have been created, the **New Connection Wizard** screen displays.

3. Use the **Connection Wizard** to search for a Bluetooth device.
4. Select the device and tap **Next**.
5. Select the **OBEX Object Push** service and select **Connect**. The **OBEX Object Push** window appears.
6. In the **Action** drop-down list, select one of the following options: **Send Contact Information**, **Swap Contact Information**, **Fetch Contact Information**, or **Send a Picture**.

Sending a Contact

To send a contact to another device:

> ***NOTE*** Prior to sending and receiving contacts, a default contact must be set up before attempting to send a contact.

1. Tap and hold on **OBEX Object Push** and select **Connect**. The **OBEX Object Push** window appears.

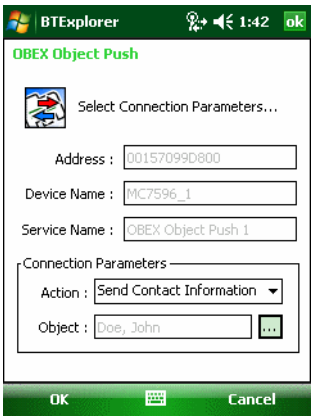


Figure 3-12 *OBEX Object Push Window*

2. In the **Action:** drop-down list, select **Send Contact Information**.
3. Tap … . The **Select Contact Entry** window appears.

Figure 3-13 *Select Contact Entry Window*

4. Select a contact to send to the other device.
5. Tap **OK**.
6. Tap **OK** to send the contact to the other device and display a confirmation dialog box on the other device to accept the contact. A **Send Contact** dialog appears.
7. Tap **Ok**.

Swapping Contacts

To swap contacts with another device:

NOTE Prior to swapping contacts, a default contact must be set up before attempting to send a contact.

1. Tap and hold on **OBEX Object Push** and select **Connect**. The **OBEX Object Push** window appears.

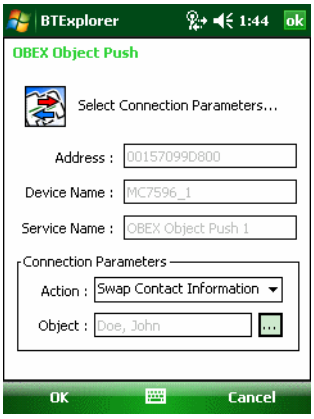


Figure 3-14 *OBEX Object Push Window*

2. In the **Action:** drop-down list, select **Swap Contact Information**.
3. Tap ... . The **Select Contact Entry** window appears.

Figure 3-15 *Select Contact Entry Window*

4. Select a contact to send to the other device.
5. Tap **OK**.
6. Tap **OK** to swap contacts with the other device and display a confirmation dialog box on the other device to accept the contact.
7. Tap **Ok**.

Fetching a Contact

To fetch a contact from another device:

NOTE Prior to sending and receiving contacts, a default contact must be set up before attempting to send a contact.

1. Tap and hold on **OBEX Object Push** and select **Connect**. The **OBEX Object Push** window appears.

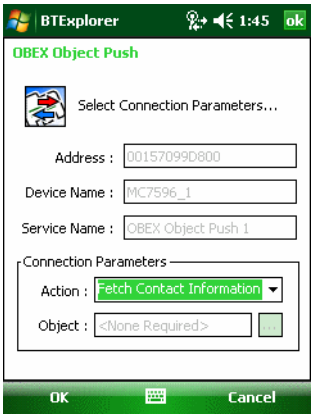


Figure 3-16 *OBEX Object Push Window*

2. In the **Action:** drop-down list, select **Fetch Contact information**.
3. Tap **OK**. The contact on the other device is copied.

Sending a Picture

To send a picture to another device:

1. Tap and hold on **OBEX Object Push** and select **Connect**. The **OBEX Object Push** window appears.

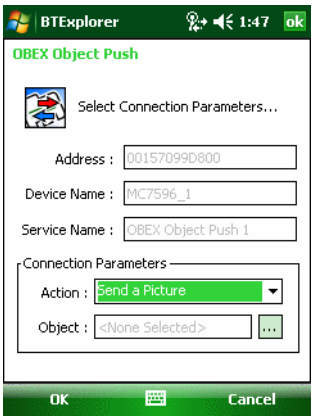


Figure 3-17 *OBEX Object Push Window*

2. In the **Action:** drop-down list, select **Send A Picture**.
3. Tap ... . The **Send Local Picture** window appears.

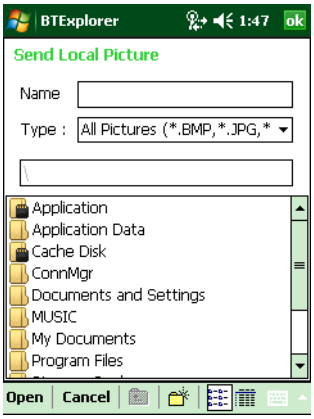


Figure 3-18 *Send Local Picture Window*

4. Navigate to the picture to send to the other device.
5. Tap **Open**.
6. Tap **OK** to send the picture to the other device and display a confirmation dialog box on the other device to accept the picture. A **Send Picture** dialog appears.
7. Tap **Ok**.

Headset Services

To connect to a Bluetooth headset:

NOTE Newer Bluetooth headsets are device dependant and remember the last device they connected to. If problems occur while connecting to the headset, place the headset in discovery mode. Refer to the headset user manual for more information.

1. Ensure the MC55 is discoverable and connectable. See *Device Info Tab on page 3-20*.

2. Ensure that the **Headset** profile is enabled on the MC55. See *Profiles Tab on page 3-28* for more information.
3. Use the **Connection Wizard** to search for a Bluetooth headset.
4. Select the device and tap **Next**.
5. Select the **Headset** service name and select **Connect**. The MC55 connects to the headset. Refer to the headset user manual for instructions on communicating with a Bluetooth device.

> ***NOTE*** When using a Bluetooth headset with Headset Services, you cannot accept or end a call from the headset. You must accept or end a call on the MC55.

6. Press the communication button on the headset. This routes both system and WAN call audio to the headset.
7. When a call is received on the MC55, tap the **Accept** button to answer the call.
8. Press the communication button on the headset to route the audio back to the MC55.

Serial Port Services

Use the wireless Bluetooth serial port connection as you would a physical serial cable connection. Configure the application that will use the connection to the correct serial port.

To establish a serial port connection:

1. Ensure the MC55 is discoverable and connectable. See *Device Info Tab on page 3-20*.
2. Use the **Connection Wizard** to search for a Bluetooth serial device.
3. Select the device and tap **Next**. The **Connection Favorite Options** window appears.
4. In the **Local COM Port:** drop-down list select a COM port.
5. Tap **Finish**.

ActiveSync Using Serial Port Services

> ***NOTE*** By default, COM ports COM5, COM9, COM11, COM21, COM22 and COM23 are Bluetooth virtual ports. If an application opens one of these ports, the Bluetooth driver activates and guides you through a Bluetooth connection.

Use the wireless Bluetooth serial port connection for ActiveSync just as you would a physical serial cable connection. You must configure the application that will use the connection to the correct serial port.

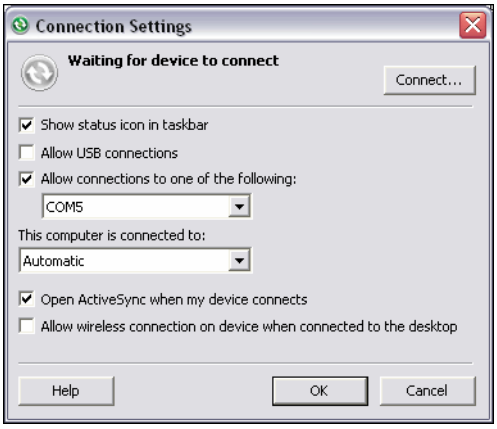


Figure 3-19 *ActiveSync Connection Settings Window on PC*

To establish an ActiveSync connection:

1. Ensure the MC55 is discoverable and connectable. See *Device Info Tab on page 3-20*.
2. Ensure that the **Sync** profile is enabled on the MC55. See *Profiles Tab on page 3-28* for more information.
3. Use the **Connection Wizard** to search for a Bluetooth device, such as a PC. In the drop-down list select **ActiveSync via Bluetooth**.
4. Select the device and tap **Next**. The **Connection Favorite Options** window appears.
5. Tap **Connect**. The **Remote Service Connection** window appears.

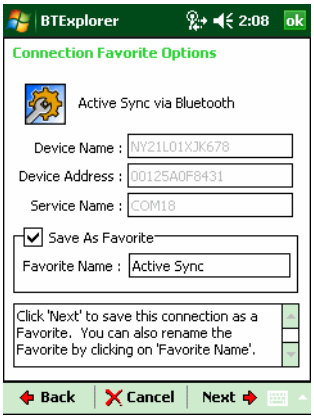


Figure 3-20 *Remote Service Connection Window*

6. In the **Service Type** drop-down list, select **Active Sync**.
7. Tap **OK**. The MC55 connects the PC and an ActiveSync session begins.
8. Tap **Finish**. The Connection Favorite Options window appears.
9. To end the session, tap the ActiveSync icon in the **Favorite** window and select **Disconnect** from the pop-up window.

Personal Area Network Services

NOTE This profile supports Ad-hoc and PAN User. Network Access Profile is not supported.

Connect two or more Bluetooth devices to share files, collaborate, or play multi-player games. To establish a Personal Area Network connection:

1. Ensure the MC55 is discoverable and connectable. See *Device Info Tab on page 3-20*.
2. Ensure that the **Personal Area Networking** profile is enabled on the MC55. See *Profiles Tab on page 3-28* for more information.
3. Use the **Connection Wizard** to search for a Bluetooth device.
4. Select the device and tap **Next**. The **Connection Favorite Options** window appears.
5. Tap **Next**. The **Connection Summary** window appears.
6. Tap **Connect**. The MC55 connects to the Bluetooth device.

Bonding with Discovered Device(s)

A bond is a relationship created between the MC55 and another Bluetooth device in order to exchange information in a secure manner. Creating a bond involves entering the same PIN on the two devices. After creating a bond and turning on the Bluetooth radios, the devices recognize the bond and can exchange information without re-entering a PIN.

To bond with a discovered Bluetooth device:

NOTE If favorite connections have already been created, the **Favorites** screen displays. If no favorite connections have been created, the **New Connection Wizard** screen displays.

1. Tap the **Bluetooth** icon and select **Show BTExplorer**. The **BTExplorer** window appears.
2. Tap **Menu** > **New Connection**. The **New Connection Wizard** window appears.
3. In the drop-down list, select **Pair with Remote Device**.
4. Tap **Next**. The **Select Remote Device** window appears.

NOTE Devices discovered previously are listed to save time. To start a new device discovery, tap and hold on the list area and select **Discover Devices** from the pop-up menu.

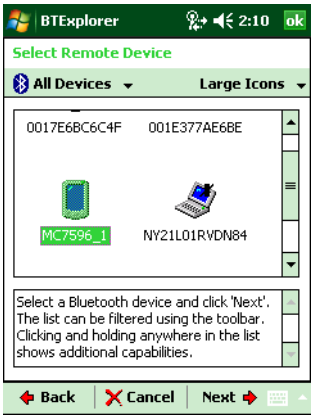


Figure 3-21 *Select Remote Device Window*

5. Select a device from the list and tap **Next**. The **PIN Code Request** window appears.

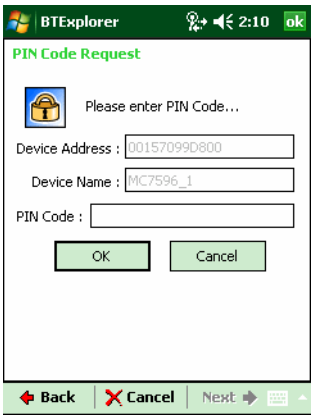


Figure 3-22 *Connection Favorite Options Window*

6. In the **PIN Code** field, enter the PIN code.
7. Tap **OK**. The **Pairing Status** window displays.

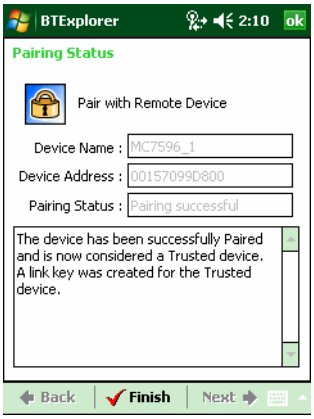


Figure 3-23 *Pairing Status Window*

8. Tap **Finish**. The devices are successfully paired. The device name moves to the **Trusted Devices** window.

Deleting a Bonded Device

To delete a device no longer needed:

1. Tap the **Bluetooth** icon and select **Show BTExplorer**. The **BTExplorer** window appears.
2. Tap **Menu** > **Trusted Devices**. The **Trusted Devices** window appears.
3. Tap and hold on the device select **Delete Link Key** in the pop-up menu.
4. A confirmation dialog appears. Tap **Yes**.

Accepting a Bond

When a remote device wants to bond with the MC55, enter a PIN when requested to grant permission.

1. Ensure that the MC55 is set to discoverable and connectable. See *Bluetooth Settings on page 3-20*. When prompted to bond with the remote device the **PIN Code Request** window appears.

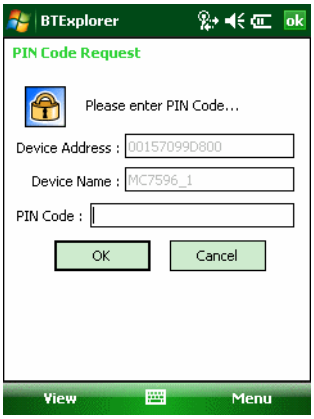


Figure 3-24 *PIN Code Request Window*

2. In the **PIN Code:** text box, enter the same PIN entered on the device requesting the bond. The PIN must be between 1 and 16 characters.
3. In the **Device Name:** text box, edit the name of the device requesting the bond, if desired.
4. Tap **OK** to create the bond. The MC55 can now exchange information with the other device.

Bluetooth Settings

Use the **BTExplorer Settings** window to configure the operation of the **BTExplorer** application. Tap **Menu** > **Settings**. The **BTExplorer Settings** window appears.

Device Info Tab

Use the **Device Info** tab to configure the MC55's Bluetooth connection modes.

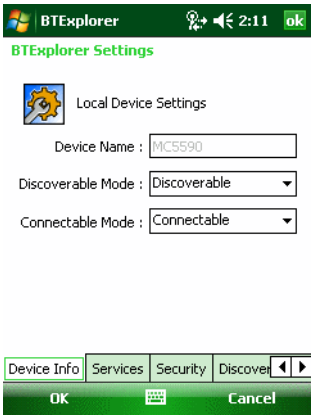


Figure 3-25 *BTExplorer Settings - Device Info Tab*

Table 3-1 *Device Info Tab Data*

Item	Description
Device Name	Displays the name of the MC55.
Discoverable Mode	Select whether or not the MC55 is discoverable by other Bluetooth devices.
Connectable Mode	Select whether or not the MC55 is connectable by other Bluetooth devices.

Services Tab

Use the **Services** tab to add or delete Bluetooth services.

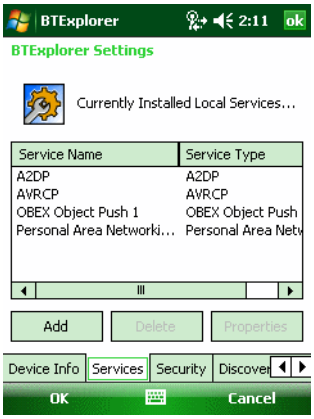


Figure 3-26 *BTExplorer Settings - Services Tab*

To add a service:

1. Tap **Add**. The **Add Local Service** window displays.

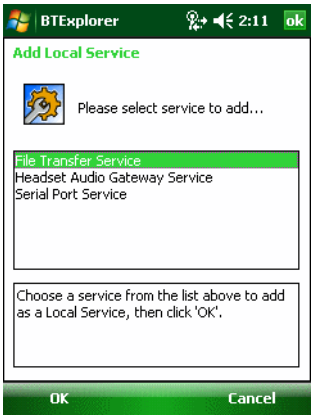


Figure 3-27 *Add Local Service Window*

2. In the list, select a service to add.
3. Tap **OK**. The **Edit Local Service** window displays for the selected service.
4. Select the appropriate information and then tap **OK**. See the following sections for information on the available services.

File Transfer Service

File transfer allows other Bluetooth devices to browse files.

Figure 3-28 *BTExplorer Settings - File Transfer Information*

Table 3-2 *File Transfer Information Data*

Item	Description
Service Name	Displays the name of the service.
Service Security	Select the type of security from the drop-down list. Options are **None**, **Authenticate**, or **Authenticate/Encrypt**.
Root Directory	Select the directory that other Bluetooth devices can access.
File Permissions	Select the file permissions for the selected directory. Check the appropriate box to grant read access, write access, and delete access.

Headset Audio Gateway Service

Headset Service Audio Gateway allows connection to headset devices.

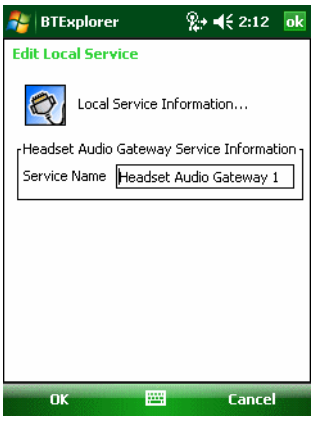


Figure 3-29 *BTExplorer Settings - Headset Audio Gateway*

Table 3-3 *Headset Audio Gateway Data*

Item	Description
Service Name	Lists the name of the audio service.

OBEX Object Push Service

OBEX Object Push allows other Bluetooth devices to push contacts, business cards, pictures, appointments, and tasks to the MC55.

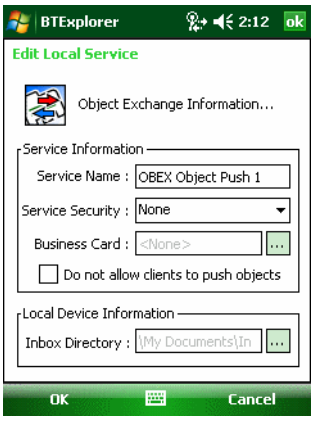


Figure 3-30 *BTExplorer Settings - OBEX Exchange Information*

Table 3-4 *OBEX Exchange Information Data*

Item	Description
Service Name	Displays the name of the service.

Table 3-4 *OBEX Exchange Information Data*

Item	Description
Service Security	Select the type of security from the drop-down list. Options are **None**, **Authenticate**, or **Authenticate/Encrypt**.
Do not allow clients to push objects	Disables clients from pushing objects to the MC55.
Inbox Directory	Select a directory where another Bluetooth device can store files.

Personal Area Networking Service

Personal Area Networking hosts a Personal Area Network which allows communication with other Bluetooth devices.

Figure 3-31 *BTExplorer Settings - Personal Area Networking*

Table 3-5 *Personal Area Networking Data*

Item	Description
Service Name	Displays the name of the service.
Service Security	Select the type of security from the drop-down list. Options are **None**, **Authenticate**, or **Authenticate/Encrypt**.
Support Group Ad-Hoc Networking	Select to enable Ad-Hoc networking.

Serial Port Service

Serial port allows other Bluetooth devices to access COM ports.

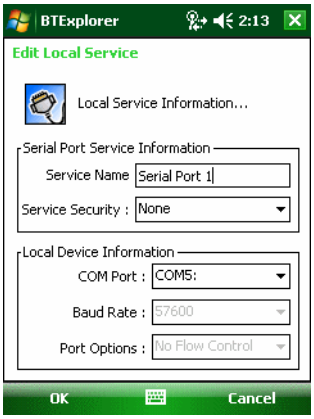


Figure 3-32 *BTExplorer Settings - Serial Port Services*

Table 3-6 *Serial Port Services Data*

Item	Description
Service Name	Displays the name of the service.
Service Security	Select the type of security from the drop-down list. Options are **None**, **Authenticate**, or **Authenticate/Encrypt**.
Local COM Port	Select the COM port.
Local Baud Rate	Select the communication baud rate.
Local Port Options	Select the port option.

Security Tab

Security settings allows you to set global security policies for Bluetooth. Note that these settings are only active on local Services that are set to Authenticate or Authenticate/Encryption. You can set authentication on local Services under the Services tab.

To adjust the security settings for an individual service, select the **Services** tab first, then select the individual service, then **Properties**.

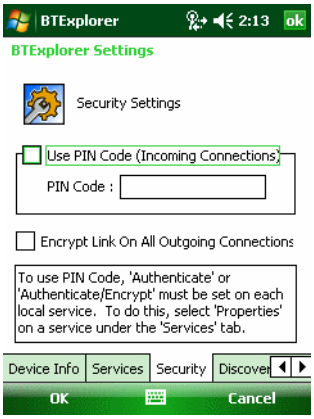


Figure 3-33 *BTExplorer Settings - Security Tab*

NOTE To use PIN Code, select **Authenticate** or **Authenticate/Encrypt** from the Service Security drop-down list on each local service.

Table 3-7 *Security Tab Data*

Item	Description
Use PIN Code (Incoming Connection)	Select for automatic use of the PIN code entered in the **PIN Code** text box. It is recommended not to use this automatic PIN code feature. See *Security on page 3-2* for more information.
PIN Code	Enter the PIN code.
Encrypt Link On All Outgoing Connections	Select to enable or disable encryption on all outgoing connections to other Bluetooth devices.

Discovery Tab

Use the **Discovery** tab to set and modify discovered devices.

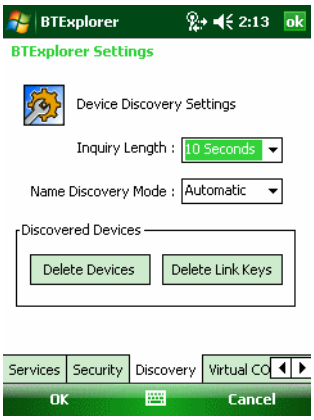


Figure 3-34 *BTExplorer Settings - Discovery Tab*

Table 3-8 *Discovery Tab Data*

Item	Description
Inquiry Length	Sets the amount of time the MC55 takes to discover Bluetooth devices in the area.
Name Discovery Mode	Select either **Automatic** or **Manual** to automatically attempt to discover a Bluetooth device's name after finding the device.
Discovered Devices - Delete Devices	Deletes all discovered devices and link keys from memory.
Discovered Devices - Delete Linked Keys	Removes all pairing from remote Bluetooth devices, and makes them all un-trusted.

Virtual COM Port Tab

Virtual COM Port defines which COM ports BTExplorer attempts to use for virtual COM ports. Check the appropriate checkbox to use the port as a virtual COM port. When finished, choose **Apply** to enforce changes, or **Revert** to restore the original settings.

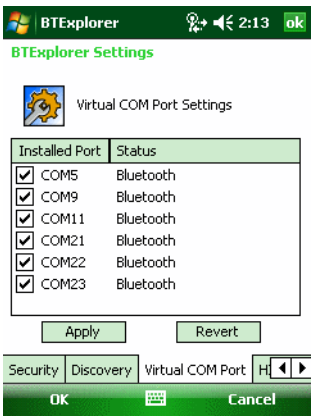


Figure 3-35 *BTExplorer Settings - Virtual COM Port Tab*

Table 3-9 *Virtual COM Port Tab Data*

Item	Description
COM5:Bluetooth	Enable or disable COM Port 5.
COM9:Bluetooth	Enable or disable COM Port 9.
COM11:Bluetooth	Enable or disable COM Port 11.
COM21:Bluetooth	Enable or disable COM Port 21.
COM22:Bluetooth	Enable or disable COM Port 22.
COM23:Bluetooth	Enable or disable COM Port 23.

HID Tab

Use the **HID** tab to select The Human Interface Device Profile programming interface defines the protocols and procedures to be used to implement HID capabilities.

Provides support for devices such as mice, joysticks, keyboards.

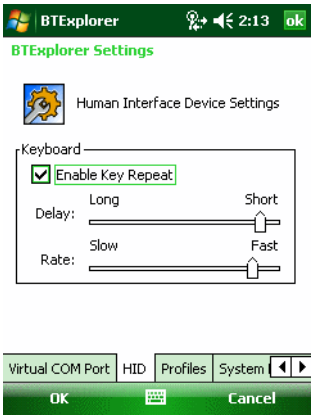


Figure 3-36 *BTExplorer Settings - HID Tab*

Table 3-10 *HID Tab Data*

Item	Description
Enable Key Repeat	Enables key repeat functionality.
Delay	To increase key repeat delay, drag the **Delay** slider to the right. To decrease key repeat delay, drag the **Delay** slider to the left.
Rate	To increase key repeat speed, drag the **Rate** slider to the left. To decrease key repeat speed, drag the **Rate** slider to the right.

Profiles Tab

Use the **Profile** tab to load or remove Bluetooth services profiles. If a profile is not used, it can be removed to save memory.

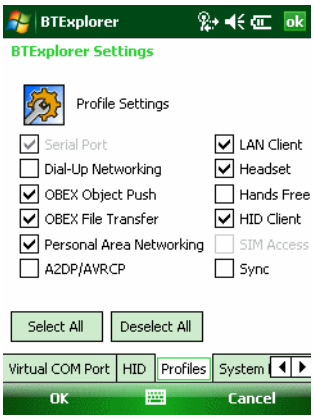


Figure 3-37 *BTExplorer Settings - Profile Tab*

1. Tap a check box next to the profile to load (activate).

The Serial Port profile is always active and cannot be removed.

2. Tap **Select All** to select all profiles or tap **Deselect All** to deselect all profiles.
3. Tap **Apply** to activate the profiles and then **Close** to exit the application.

System Parameters Tab

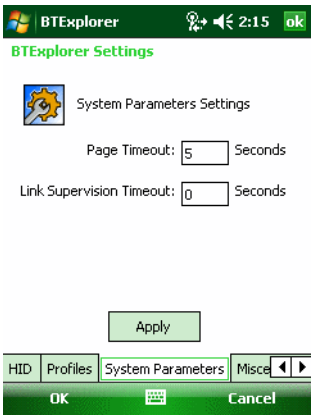


Figure 3-38 *BTExplorer Settings - System Parameters Tab*

Table 3-11 *System Parameters Tab Data*

item	Description
Page Timeout	Sets the amount of time the MC55 searches for a device before moving on the next device.
Link Supervision Timeout	Sets the amount of time that the MC55 will wait for a device to come back into range after it has gone out of range. If the device does not come back into range by the set time, the MC55 drops the connection.

Miscellaneous Tab

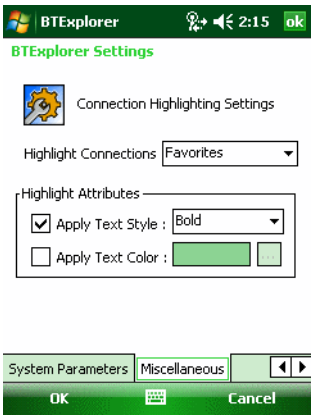


Figure 3-39 *BTExplorer Settings - Miscellaneous Tab*

Table 3-12 *Miscellaneous tab Data*

Item	Description
Highlight Connections	Select the connection type to highlight when connected. In the Wizard Mode, the only options are *Favorites* or *None*. In the Explorer Mode the options are **None**, **Tree View Only**, **List View Only**, or **Tree and List View**.
Apply Text Style	Select the text style to apply to the connection text.
Apply Text Color	Select the text color to apply to the connection text.

Chapter 4 Accessories

Introduction

MC55 accessories, listed below, provide a variety of product support capabilities.

- Four Slot Charge Only Cradle - Charges up to four MC55 devices.
- Single Slot USB Cradle - Charges the MC55 main battery and a spare battery. Synchronizes the MC55 with a host computer through a USB connection.
- Vehicle Holder - Provides an alternative mounting for the MC55 in a vehicle. Requires the Auto Charge cable for charging the MC55 battery.
- Four Slot Battery Charger - Charges standard and high capacity batteries.
- Auto Charge Cable - Plugs into a vehicle cigarette lighter to charge the MC55 while on the road.
- USB Charging Cable - Provides power to the MC55 and USB communication with a host computer.
- Charge Only Cable - Provides power to the MC55.
- Belt Mounted Rigid Holster - Holds the MC55 when not in use.
- Belt Mounted Soft Holster - Holds the MC55 when not in use.

Single Slot USB Cradle

This section describes how to use a Single Slot USB cradle with the MC55. For USB communication setup procedures refer to the *MC55 Integrator Guide.*

The Single Slot USB Cradle:

- Provides 5.4 VDC power for operating the MC55.
- Synchronizes information between the MC55 and a host computer. Refer to the *MC55 Integrator Guide* for information on setting up a partnership between the MC55 and a host computer.
- Charges the MC55's battery.
- Charges a spare battery.

Charging the MC55 Battery

Connect the cradle to power. Insert the MC55 into the slot to begin charging.

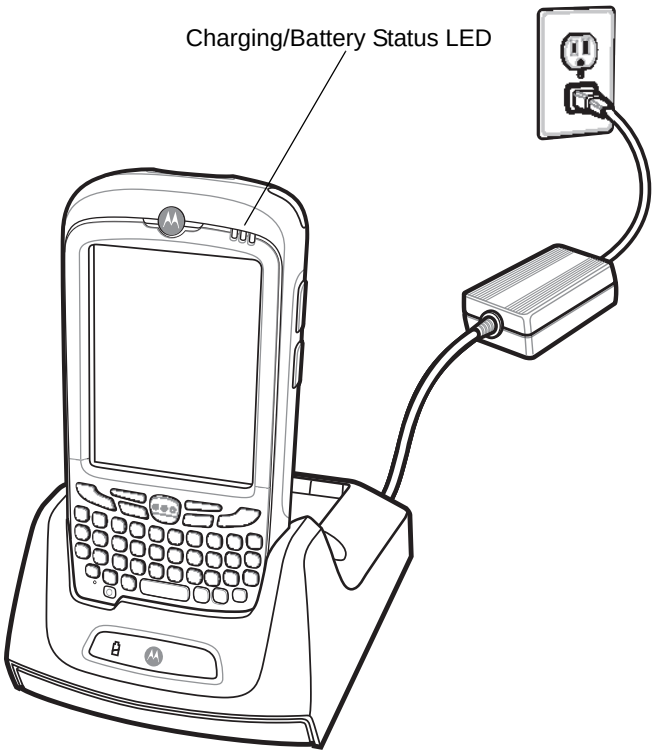


Figure 4-1 *MC55 Battery Charging*

Charging the Spare Battery

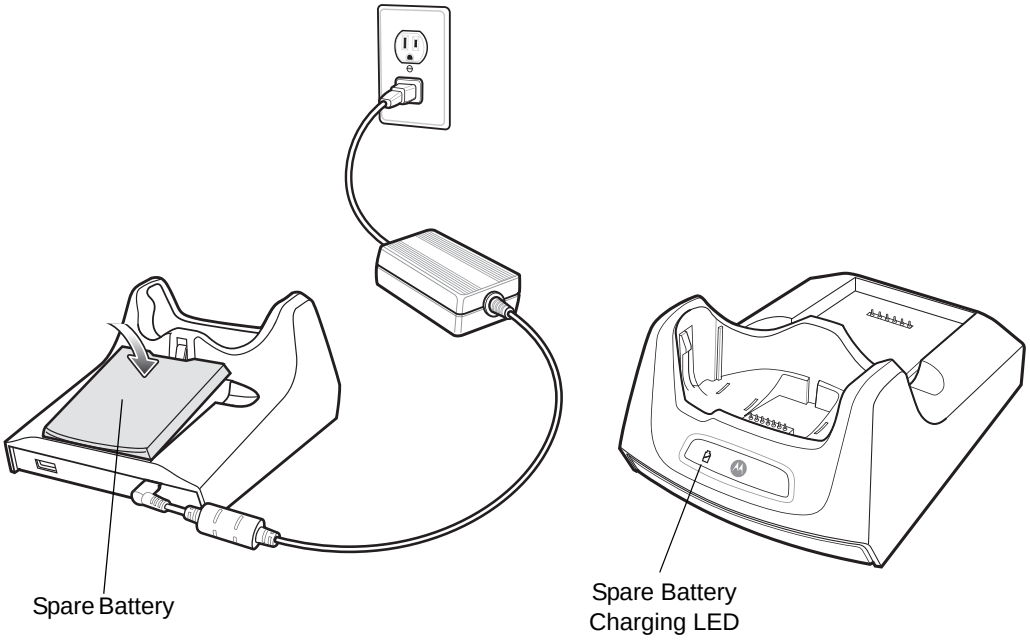


Figure 4-2 *Spare Battery Charging*

Battery Charging Indicators

The Single Slot USB Cradle charges the MC55's main battery and a spare battery simultaneously.

The MC55's charge LED indicates the status of the battery charging in the MC55. See *Table 1-2 on page 1-6* 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 4-1* for charging status indications.

The 2400 mAh battery fully charges in less than four hours and the 3600 mAh battery fully charges in less than six hours.

Charging Temperature

Charge batteries in temperatures from 0°C to 40°C (32°F to 104°F). Charging is intelligently controlled by the MC55.

To accomplish this, for small periods of time, the MC55 or accessory alternately enables and disables battery charging to keep the battery at acceptable temperatures. The MC55 or accessory indicates when charging is disabled due to abnormal temperatures via its LED. See *Table 1-2 on page 1-6* and *Table 4-1*.

Table 4-1 *Spare Battery LED Charging Indicators*

Spare Battery LED (on cradle)	Indication
Off	Battery is not charging; battery is not inserted correctly in the cradle; cradle is not powered
Slow Blinking Amber	Spare battery is charging.
Solid Amber	Charging complete.
Fast Blinking Amber	Charging error.

Four Slot Charge Only Cradle

This section describes how to set up and use a Four Slot Charge Only cradle with the MC55.

The Four Slot Charge Only cradle:

- Provides 5.4 VDC power for operating the MC55.
- Simultaneously charges up to four MC55 devices.

Charging

Insert the MC55 into a slot to begin charging.

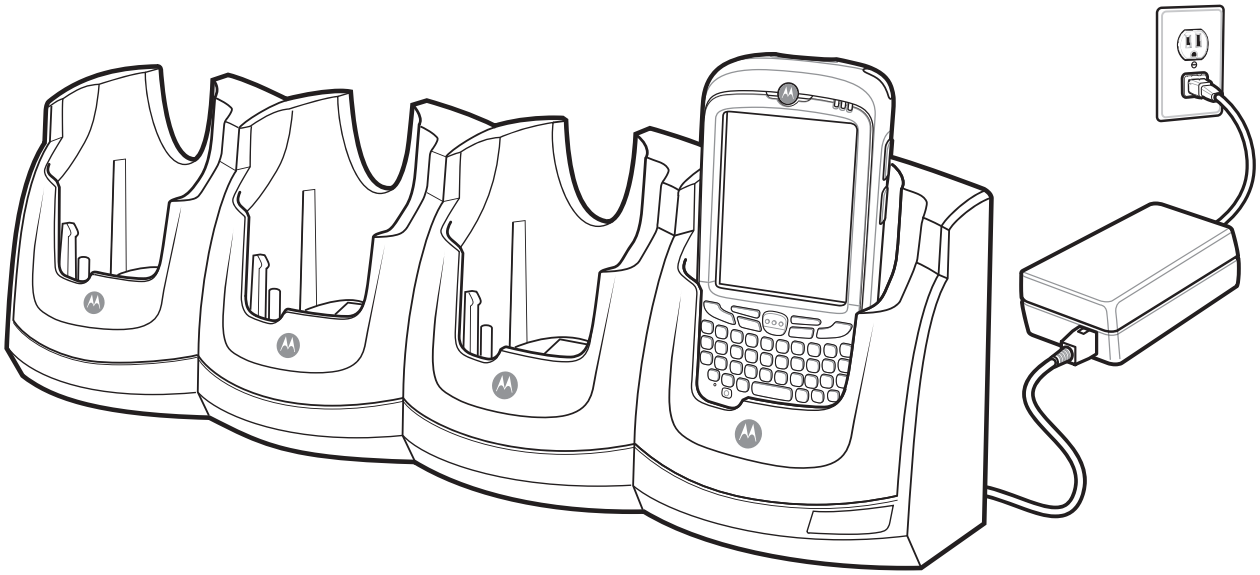


Figure 4-3 *MC55 Battery Charging*

Battery Charging Indicators

The MC55's charge LED shows the status of the battery charging in the MC55. See *Table 1-2 on page 1-6* for charging status indications.

The 2400 mAh battery fully charges in less than four hours and the 3600 mAh battery fully charges in less than six hours.

Charging Temperature

Charge batteries in temperatures from 0°C to 40°C (32°F to 104°F). Charging is intelligently controlled by the MC55.

To accomplish this, for small periods of time, the MC55 or accessory alternately enables and disables battery charging to keep the battery at acceptable temperatures. The MC55 or accessory indicates when charging is disabled due to abnormal temperatures via its LED. See *Table 1-2 on page 1-6*.

Four Slot Battery Charger

This section describes how to use the Four Slot Battery Charger to charge up to four MC55 batteries.

Battery Charging

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

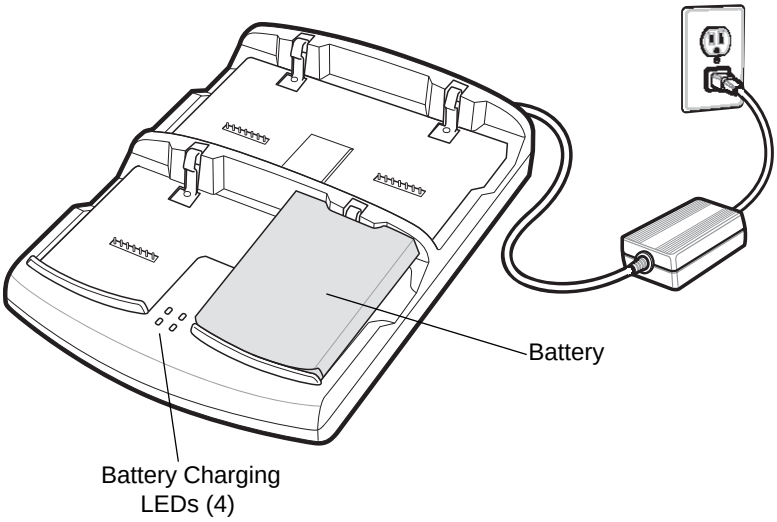


Figure 4-4 *Four Slot Battery Charger*

Battery Charging Indicators

The charger has an amber LED for each battery charging well. See *Table 4-2* for charging status indications. The 2400 mAh battery fully charges in less than four hours and the 3600 mAh battery fully charges in less than six hours.

Charging Temperature

Charge batteries in temperatures from 0°C to 40°C (32°F to 104°F). Charging is intelligently controlled by the MC55.

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 4-2*.

Table 4-2 *Battery LED Charging Indicators*

LED	Indication
Off	No battery in slot; battery is not charging; battery is not inserted correctly in the charger; charger is not powered.

Table 4-2 *Battery LED Charging Indicators (Continued)*

LED	Indication
Slow Blinking Amber	Battery is charging.
Solid Amber	Charging complete.
Fast Blinking Amber	Charging error.

Cables

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

The following communication/charge cables are available:

- USB Charging cable
  - Provide the MC55 with operating and charging power when used with the Motorola approved power supply.
  - Synchronize information between the MC55 and a host computer. With customized or third party software, it can also synchronize the MC55 with corporate databases.
- Charge Only cable
  - Provide the MC55 with operating and charging power when used with the Motorola approved power supply.
- Auto Charge cable.
  - Provide the MC55 with operating and charging power when used with the Motorola approved power supply.

Battery Charging and Operating Power

The communication/charge cables can charge the MC55 battery and supply operating power.

To charge the MC55 battery:

1. Connect the communication/charge cable power input connector to the Motorola approved power source.
2. Slide the bottom of the MC55 into the connector cup end of the communication/charge cable and gently press in until it latches into the MC55.
3. Slide the two locking tabs up until they both lock into position.

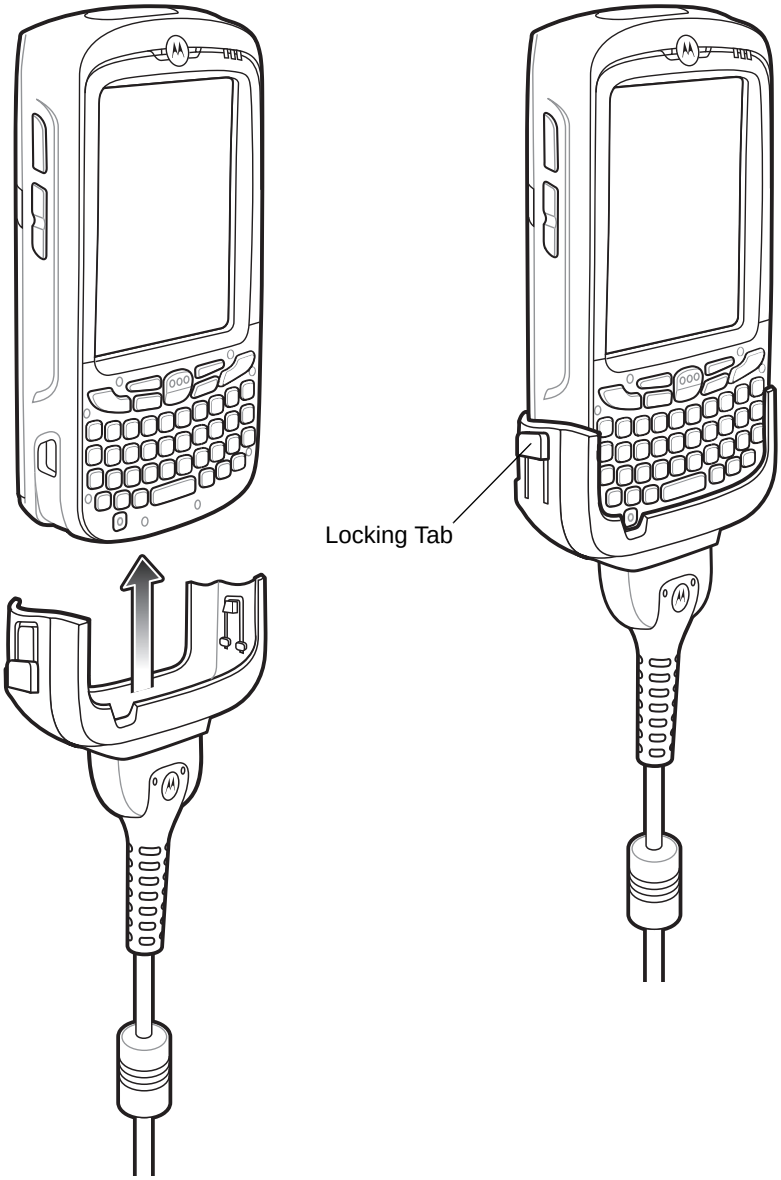


Figure 4-5 *Cable Cup Locking Tabs*

The MC55 amber Charge LED indicates the MC55 battery charging status. The 2400 mAh standard battery charges in less than four hours and the 3600 mAh standard battery charges in less than six hours. See *Table 1-2 on page 1-6* for charging status indications.

4. When charging is complete, push the two locking tab down and remove the cable from the MC55.

LED Charge Indications

The amber Charge LED on the MC55 indicates battery charging status. See *Table 1-2 on page 1-6* 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 MC55.

To accomplish this, for small periods of time, the MC55 or accessory alternately enables and disables battery charging to keep the battery at acceptable temperatures. The MC55 or accessory indicates when charging is disabled due to abnormal temperatures via its LED. See *Table 1-2 on page 1-6*.

Vehicle Holder

WARNING! **Some countries prohibit the mounting of any electronic device in any location on the vehicle dashboard. Be sure to check your local laws acceptable mounting areas before installing the auto mounting kit.**

Installation Reminders

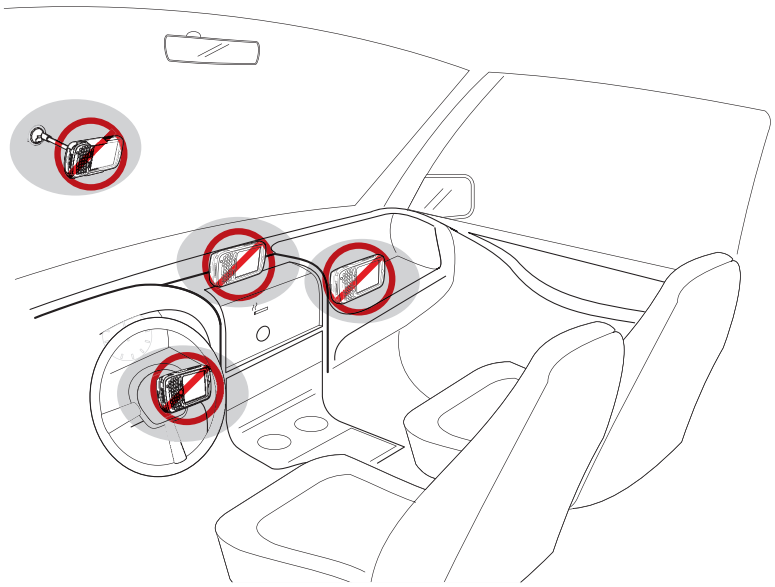


Figure 4-6 *Vehicle Holder Mounting*

- Do not mount the vehicle holder where it will obscure the driver's view of the road.
- Do not mount the vehicle holder near the driver seat air bag deployment area.
- Do not place the MC55 on top of the dashboard or anywhere without securing it in the vehicle holder.
- Do not mount the vehicle holder near the passenger seat air bag deployment area.
- Install the vehicle holder on the surface of your vehicle that is reasonably flat and free of dirt and oil.

Device Mounting Precautions

- Some countries prohibit the mounting of any electronic device in any location on the vehicle dashboard. Be sure to check your local laws acceptable mounting areas before installing the vehicle holder.
- The heating and cooling cycle of a vehicle's interior will in some cases loosen the adhesion of the suction cup. Check the vacuum seal of the vehicle mount kit for adequate adhesion each time you use the unit, and reinstall if necessary.
- If the vehicle holder has problems staying on, clean the plastic suction cup with alcohol, then reinstall.

Installation

Install the vehicle mount on the surface of your vehicle that is reasonably flat and free of dirt and oil. Clean the mounting surface with a glass cleaner and a clean cotton cloth. Install the vehicle mount on the windshield or other flat car surface using the supplied mounting disc.

Assembly

1. Insert the vehicle holder's cradle plate to the holes on the back of the cradle.
2. Push the cradle down until both parts are engaged.

Windshield Installation

1. Fix the suction cup mount to the selected area with the suction lever facing up.

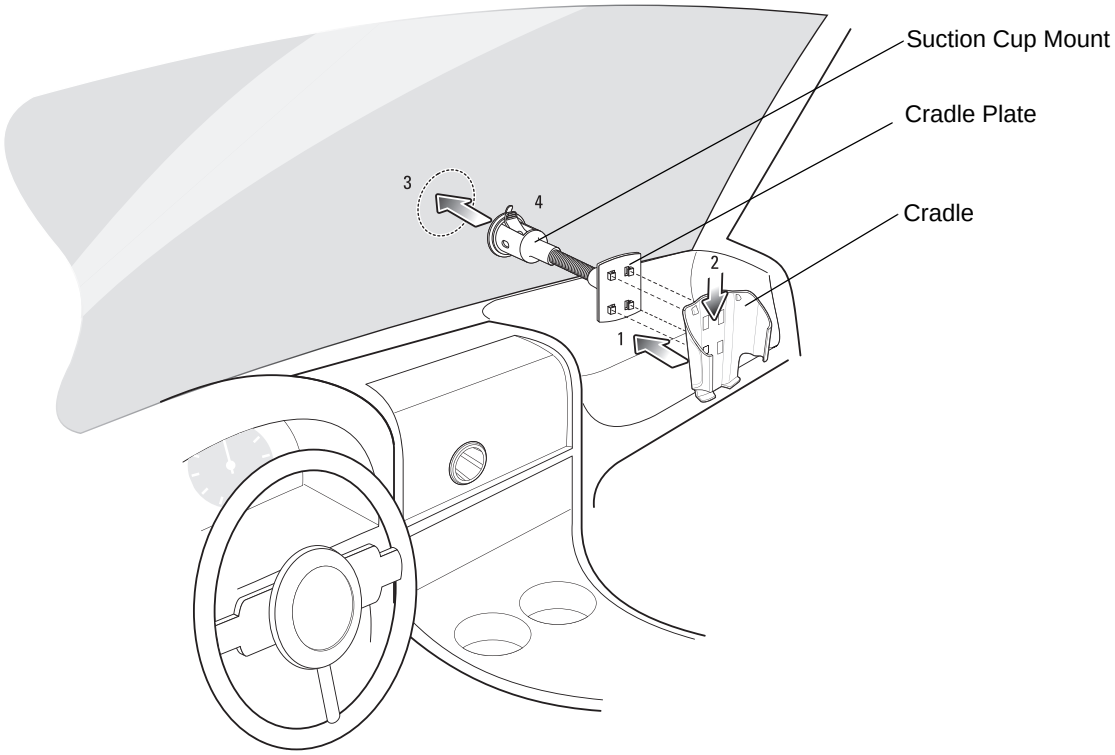


Figure 4-7 *WindshieldInstallation*

2. Flip the lever down to create a vacuum between the suction cup and the mounting surface.
3. Make sure that the suction bond is strong enough before proceeding to the next step.
4. Slide the MC55 into the cradle.

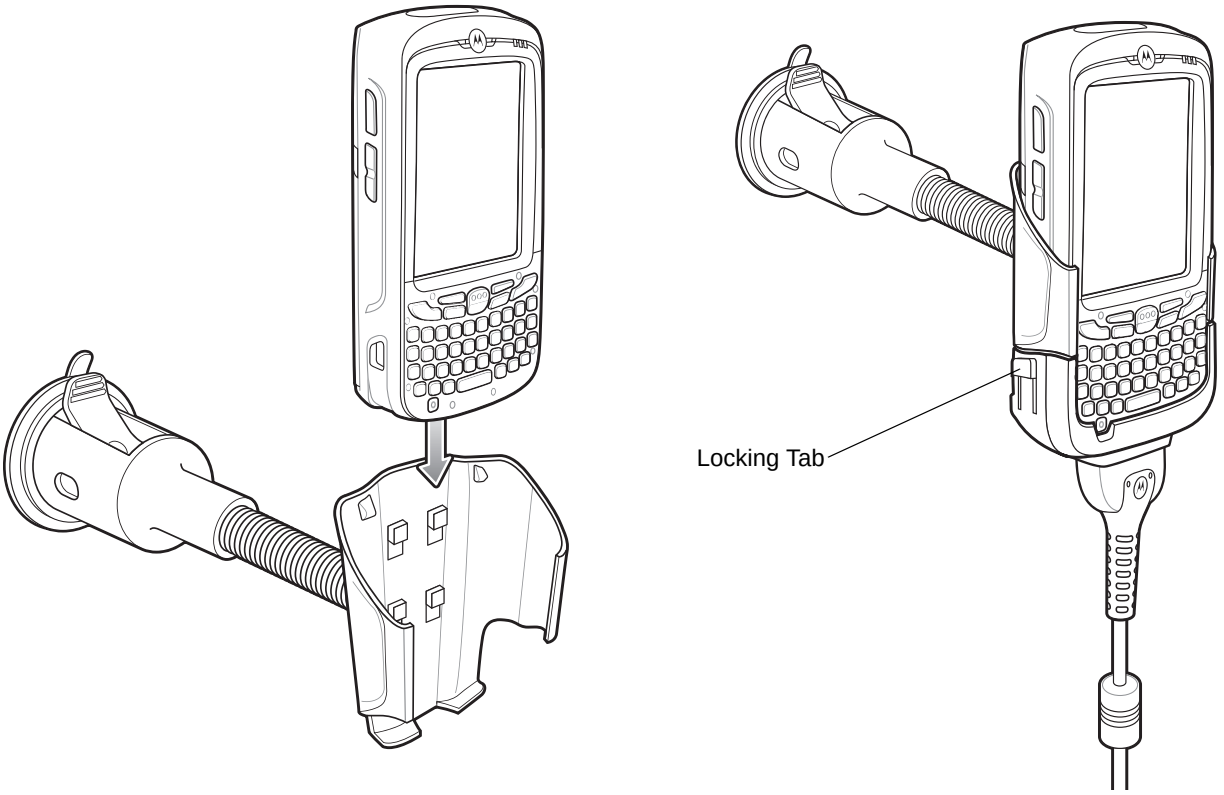


Figure 4-8 *Insert MC55 into Vehicle Holder*

5. Connect the auto charger cable to the MC55 and slide the two locking tabs up to secure the cable cup to the MC55.
6. Connect the other end to the cigarette lighter socket.

   The LED indicator on the right side of the touch screen lights up orange during charging.

Flat Surface Installation

1. Remove the plastic sheet on the bottom of the mounting disc.
2. Place the disc, sticky side down, on a clean flat surface.

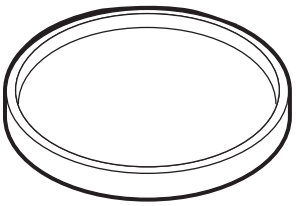


Figure 4-9 *Mounting Disc*

3. Fix the suction cup mount to the disc with the suction lever facing up.
4. Flip the lever down to create a vacuum between the suction cup and the disc.
5. Make sure that the suction bond is strong enough before proceeding to the next step.
6. Slide the MC55 into the cradle.

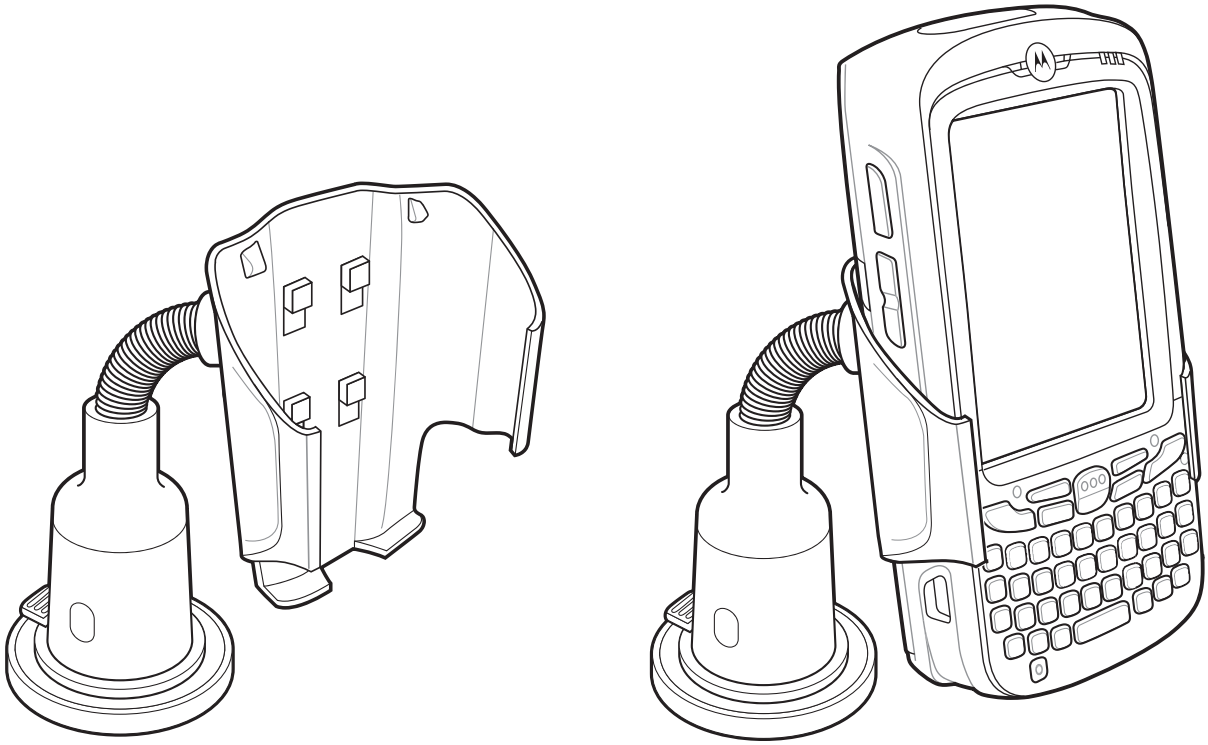


Figure 4-10 *Vehicle Holder Mounted on Flat Surface*

7. Connect the auto charger cable to the MC55 and slide the two locking tabs up to secure the cable cup to the MC55.
8. Connect the other end to the cigarette lighter socket.

   The LED indicator on the right side of the touch screen lights up orange during charging.

Chapter 5 Maintenance & Troubleshooting

Introduction

This chapter includes instructions on cleaning and storing the MC55, and provides troubleshooting solutions for potential problems during MC55 operation.

Maintaining the MC55

For trouble-free service, observe the following tips when using the MC55:

- Do not scratch the screen of the MC55. When working with the MC55, 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 MC55 screen.

  Motorola recommends using a screen protector, p/n KT-67525-01R.
- The touch-sensitive screen of the MC55 is glass. Do not to drop the MC55 or subject it to strong impact.
- Protect the MC55 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 MC55 in any location that is dusty, damp, or wet.
- Use a soft lens cloth to clean the MC55. If the surface of the MC55 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 MC55. Motorola 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 MC55. Motorola 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.

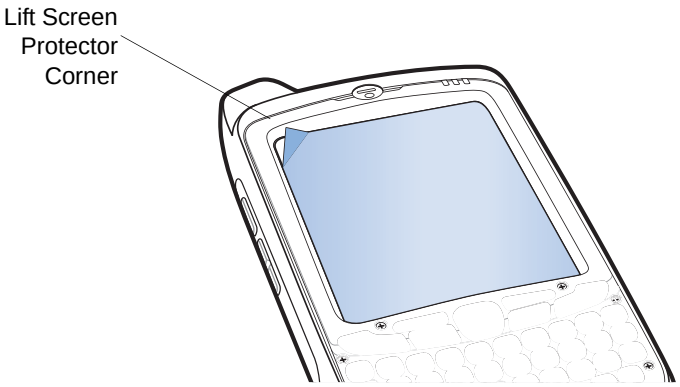


Figure 5-1 *Removing the Screen Protector*

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 Motorola, Inc. These include screen protector installation instructions. Part number: KT-67525-01R 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 ºF and +104 ºF (0 ºC and +40 ºC)
- 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 Motorola Enterprise Mobility 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 Motorola hologram. Do not fit any battery without checking it has the Motorola 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 properly dispose of used re-chargeable batteries.
- Do not dispose of batteries in fire.
- 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 Motorola Enterprise Mobility support to arrange for inspection.

Cleaning

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 Motorola for more information.

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.**

Materials Required

- Alcohol wipes
- Lens tissue
- Cotton tipped applicators

- Isopropyl alcohol
- Can of compressed air with a tube.

Cleaning the MC55

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 dry 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 *Replacing the Battery on page 1-7*.
2. Dip the cotton portion of the cotton tipped applicator in isopropyl alcohol.
3. Rub the cotton portion of the cotton tipped applicator back-and-forth across the connector on the bottom of the MC55. Do not leave any cotton residue on the connector.
4. Repeat at least three times.
5. Use the cotton tipped applicator dipped in alcohol to remove any grease and dirt near the connector area.
6. Use a dry cotton tipped applicator and repeat steps 4 through 6.
7. 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.
8. 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. CAUTION: do not point nozzle at yourself and others, ensure the nozzle or tube is pointed away from your face.

6. Ensure that there is no lint left by the cotton tipped applicator, remove lint if found.
7. If grease and other dirt can be found on other areas of the cradle, use lint free cloth and 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

MC55

Table 5-1 *Troubleshooting the MC55*

Problem	Cause	Solution
MC55 does not turn on.	Lithium-ion battery not charged.	Charge or replace the lithium-ion battery in the MC55.
	Lithium-ion battery not installed properly.	Install the battery properly. See *Installing the Battery on page 1-5*.
	System crash.	Perform a warm boot. If the MC55 still does not turn on, perform a cold boot. See *Resetting the MC55 on page 2-12*.
Rechargeable lithium-ion battery did not charge.	Battery failed.	Replace battery. If the MC55 still does not operate, perform a warm boot, then a cold boot. See *Resetting the MC55 on page 2-12*.
	MC55 removed from cradle while battery was charging.	Insert MC55 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.	MC55 not powered on.	Press the **Power** button.

Table 5-1 *Troubleshooting the MC55 (Continued)*

Problem	Cause	Solution
During data communication, no data transmitted, or transmitted data was incomplete.	MC55 removed from cradle or disconnected from host computer during communication.	Replace the MC55 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 *MC55 Integrator Guide* for details.
No sound.	Volume setting is low or turned off.	Adjust the volume. See *Adjusting Volume on page 2-8*.
MC55 shuts off.	MC55 is inactive.	The MC55 turns off after a period of inactivity. If the MC55 is running on battery power, set this period from 1 to 5 minutes, in one-minute intervals. If the MC55 is running on external power, set this period to 1, 2, 5, 10, 15, or 30 minutes. 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 depleted.	Replace the battery.
	Battery is not inserted properly.	Insert the battery properly. See *Installing the Battery on page 1-5*.
Tapping the window buttons or icons does not activate the corresponding feature.	Screen is not calibrated correctly.	Re-calibrate the screen. Press **Blue** key - **Backspace** key or tap **Start** > **Settings** > **System** tab > **Screen** icon > **Align Screen** button.
	The system is not responding.	Warm boot the system. See *Resetting the MC55 on page 2-12*.
A message appears stating that the MC55 memory is full.	Too many files stored on the MC55.	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 MC55.	Remove user-installed applications on the MC55 to recover memory. Select **Start** > **Settings** > **System** tab and tap the **Remove Programs** icon. Select the unused program and tap **Remove.**
The Charging/Battery Status LED flashes with the Power button is pressed and the MC55 does not turn on.	The MC55's battery is low.	Recharge the battery.

Table 5-1 *Troubleshooting the MC55 (Continued)*

Problem	Cause	Solution
Camera application does not launch.	DataWedge application running.	Stop DataWedge application. Tap **Start** > **Settings** > **System** > **Task Manager**. Select DataWedge application and tap **End Task**.
The MC55 does not decode with reading bar code.	Scanning application is not loaded.	Load a scanning application on the MC55. See your system administrator.
	Unreadable bar code.	Ensure the symbol is not defaced.
	Distance between exit window and bar code is incorrect.	Place the MC55 within proper scanning range.
	MC55 is not programmed for the bar code.	Program the MC55 to accept the type of bar code being scanned. Refer to the EMDK or Control Panel application.
	MC55 is not programmed to generate a beep.	If the MC55 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 MC55 low battery condition notification. Note: If the scanner is still not reading symbols, contact the distributor or Motorola.

Bluetooth Connection

Table 5-2 *Troubleshooting Bluetooth Connection*

Problem	Cause	Solution
MC55 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 MC55, the phone thinks a previously paired MC55 is used.	The phone remembers the name and address of the MC55 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 Cradle

Table 5-3 *Troubleshooting the Single Slot USB Cradle*

Symptom	Possible Cause	Action
LEDs do not light when MC55 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.
	MC55 is not seated firmly in the cradle.	Remove and re-insert the MC55 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.
MC55 battery is not charging.	MC55 was removed from cradle or cradle was unplugged from AC power too soon.	Ensure cradle is receiving power. Ensure MC55 is seated correctly. Confirm main battery is charging under **Start** > **Settings** > **System** > **Power**. The 3600 mAh battery fully charges in less than six hours.
	Battery is faulty.	Verify that other batteries charge properly. If so, replace the faulty battery.
	The MC55 is not fully seated in the cradle.	Remove and re-insert the MC55 into the cradle, ensuring it is firmly seated.
	Extreme battery temperature.	Battery does not charge if ambient temperature is below 0°C (32°F) or above 40°C (104°F).
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.
During data communication, no data transmits, or transmitted data was incomplete.	MC55 removed from cradle during communications.	Replace MC55 in cradle and retransmit.
	Communication software is not installed or configured properly.	Perform setup as described in the *MC55 Integrator Guide.*

Four Slot Battery Charger

Table 5-4 *Troubleshooting The Four Slot 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 battery fully charges in less than six 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.

Cables

Table 5-5 *Troubleshooting the Cables*

Symptom	Possible Cause	Action
MC55 battery is not charging.	MC55 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 battery fully charges in less than six hours.
	Battery is faulty.	Verify that other batteries charge properly. If so, replace the faulty battery.
	The MC55 is not fully attached to power.	Detach and re-attach the power cable to the MC55, ensuring it is firmly connected.
During data communication, no data transmits, or transmitted data was incomplete.	Cable was disconnected from MC55 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 *MC55 Integrator Guide.*

Appendix A Technical Specifications

MC55 Technical Specifications

The following tables summarize the EDA's intended operating environment and technical hardware specifications.

MC55

Table A-1 *MC55 EDA Technical Specifications*

Item	Description
Physical Characteristics	
Dimensions	Height: 14.7 cm (5.78 in.) Width: 7.7 cm (3.03 in.) Depth: 2.7 cm (1.06 in.)
Weight	315 g (11.1 oz.) with 2400 mAh battery 338 g (11.9 oz.) with 3600 mAh battery
Display	Transflective color 3.5" QVGA with backlight, TFT-LCD, 65K colors, 240 W x 320 L
Touch Panel	Glass analog resistive touch
Backlight	LED backlight
Battery Pack	Rechargeable Lithium Ion 3.7V, 2400 mAh Smart battery Optional 3600 mAh Smart battery
Expansion Slot	User accessible microSD slot.
Network Connections	Full-speed USB, host or client, Bluetooth and WiFi. USB host mode available with appropriate cables only.
Notification	LED and audible alert

Table A-1 *MC55 EDA Technical Specifications (Continued)*

Item	Description
Keypad Options	26 key numeric 44 key QWERTY, 44 key AZERTY, 44 key QWERTZ PIM
Audio	Speaker, receiver, microphone, software support for full duplexcapability, Bluetooth stereo.
Performance Characteristics	
CPU	XScale™ Bulverde PXA270 processor at 520 MHz
Operating System	Microsoft® Windows Mobile™ 6.1 Classic
Memory	128MB RAM/256MB Flash
Interface/Communications	USB 1.1 Full-speed
Output Power	USB: 5 VDC @ 200 mA max.
User Environment	
Operating Temperature	-10°C to 50°C (14°F to 122°F)
Storage Temperature	-20°C to 60°C (-4°F to 140°F)
Charging Temperature	32°F to 104°F / 0° C to 40° C
Humidity	95% non-condensing
Drop Specification	4 ft. drop to concrete.
Tumble	250 0.5 m (1.6 ft.) tumbles (500 drops)
Electrostatic Discharge (ESD)	+/-15kVdc air discharge, +/-8kVdc direct discharge, +/-8kVdc indirect discharge
Sealing	IP54
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) (4920 – 4980 MHz) Japan only Chan 1-13 (2412-2472 MHz) Chan 14 (2484 MHz) Japan only Actual operating frequencies depend on regulatory rules and certification agency
Security	WPA2, WPA, 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
Spreading Technique	Direct Sequence Spread Spectrum (DSSS) and Orthogonal Frequency Division Multiplexing (OFDM)

Table A-1 *MC55 EDA Technical Specifications (Continued)*

Item	Description
Antenna	Internal for WLAN
Voice Communication	Voice-over-IP ready (with P2P, PBX, PTT clients), Wi-Fi™-certified, IEEE 802.11 a/b/g direct sequence wireless LAN
Wireless PAN Data and Voice Communications	
Bluetooth	Class II, v 2.0 EDR; on-board antenna.
Data Capture Specifications	
Options	1D laser scanner 2D imager 1D laser scanner and color camera 2D imager and 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) 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 (SE4400) Specifications	
Field of View	Horizontal - 32.2° Vertical - 24.5°
Optical Resolution	640 H x 480 V pixels (gray scale)
Roll	360°
Pitch Angle	+/- 60° from normal
Skew Tolerance	+/- 50° from normal
Ambient Light	Total darkness to 9,000 ft. candles (96,900 Lux)
Shock	2,000 +/- 5% G
Focal Distance from Front of Engine	Near: 5 inches Far: 9 inches

Table A-1 *MC55 EDA Technical Specifications (Continued)*

Item	Description
Aiming Element (VLD)	650 nm +/- 5 nm
Illumination Element (LED)	635 nm +/- 20 nm
Camera Specifications	
Resolution	2 Mega pixel with flash and auto focus.

Table A-2 *Data Capture Options*

Item	Description		
Laser Decode Capability	Code 39	Code 128	Code 93
	Codabar	Code 11	Discrete 2 of 5
	Interleaved 2 of 5	EAN-8	EAN-13
	MSI	UPCA	UPCE
	UPC/EAN supplementals	Coupon Code	Trioptic 39
	Webcode	Chinese 2 of 5	GS1 DataBar
	GS1 DataBar Truncated	GS1 DataBar Limited	GS1 DataBar Stacked
	GS1 DataBar Expanded	GS1 DataBar Expanded Stacked	
	GS1 DataBar Stacked Omni		

Table A-2 *Data Capture Options (Continued)*

Item	Description		
Imaging Decode Capability	Code 39 Codabar Discrete 2 of 5 EAN-13 UPC/EAN supplementals Webcode Composite C Macro PDF-417 Data Matrix US Planet Canadian 4-state Chinese 2 of 5 microQR GS1 DataBar Truncated GS1 DataBar Expanded GS1 DataBar Stacked Omni	Code 128 Code 11 MSI UPCA Coupon Code TLC39 Micro PDF-417 (Macro) Micro PDF-417 Maxi Code UK 4-state Japanese 4-state USPS 4-state (US4CB) GS1 DataBar GS1 DataBar Limited GS1 DataBar Expanded Stacked	Code 93 Interleaved 2 of 5 EAN-8 UPCE Trioptic 39 Composite AB PDF-417 QR Code US Postnet Australian 4-state Dutch Kix Aztec GS1 DataBar Stacked
Camera Decode Capability	Code 39 Codabar Discrete 2 of 5 EAN-13 UPC/EAN supplementals Webcode Composite C Macro PDF-417 Data Matrix US Planet Canadian 4-state GS1 DataBar GS1 DataBar Truncated GS1 DataBar Expanded GS1 DataBar Stacked Omni	Code 128 Code 11 MSI UPCA Coupon Code TLC39 Micro PDF-417 (Macro) Micro PDF-417 Maxi Code UK 4-state Japanese 4-state GS1 DataBar Limited GS1 DataBar Expanded Stacked	Code 93 Interleaved 2 of 5 EAN-8 UPCE Trioptic 39 Composite AB PDF-417 QR Code US Postnet Australian 4-state Dutch Kix GS1 DataBar Stacked

MC55 Accessory Specifications

Single Slot USB Cradle

Table A-3 *Single Slot USB Cradle Technical Specifications*

Feature	Description
Dimensions	Height: 7.1 cm (2.80 in.) Width: 11.0 cm (4.33 in.) Depth: 15.0 cm (5.91 in.)
Weight	210 g (7.41 oz)
Input Voltage	12 VDC
Power Consumption	30 watts
Interface	USB
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 +/- 8 kV contact

Four Slot Battery Charger

Table A-4 *Four Slot Battery Charger Technical Specifications*

Feature	Description
Dimensions	Height: 4.7 cm (1.85 in.) Width: 15.5 cm (6.10 in.) Depth: 21.0 cm (8.27 in.)
Weight	384 g (13.55 oz)
Input Voltage	12 VDC
Power Consumption	30 watts
Operating Temperature	0°C to 40°C (32°F to 104°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)

Table A-4 *Four Slot Battery Charger Technical Specifications (Continued)*

Feature	Description
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 +/- 8 kV contact

Four Slot Charge Only Cradle

Table A-5 *Four Slot Charge Only Cradle Technical Specifications*

Feature	Description
Dimensions	Height: 13.7 cm (5.39 in.) Width: 46.8 cm (18.43 in.) Depth: 9.9 cm (3.90 in.)
Weight	1115 g (39.33 oz)
Input Voltage	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 +/- 8 kV contact

Cables

Table A-6 *USB Charging Cable Technical Specifications*

Feature	Description
Length	161.9 cm (63.74 in.)
Operating Temperature	-10°C to 50°C (14°F to 122°F)
Storage Temperature	-40°C to 70°C (-40°F to 158°F)
Humidity	10% to 95% non-condensing
Electrostatic Discharge (ESD)	+/- 15 kV air +/- 8 kV contact

Table A-7 *Charge Only Cable Technical Specifications*

Feature	Description
Length	28.0 cm (11.00 in.)
Operating Temperature	-10°C to 50°C (14°F to 122°F)
Storage Temperature	-40°C to 70°C (-40°F to 158°F)
Humidity	10% to 95% non-condensing
Electrostatic Discharge (ESD)	+/- 15 kV air +/- 8 kV contact

Table A-8 *Auto Charge Cable Technical Specifications*

Feature	Description
Length	169.0 cm (66.54 in.)
Input Voltage	12 - 24 VDC
Operating Temperature	-10°C to 50°C (14°F to 122°F)
Storage Temperature	-40°C to 70°C (-40°F to 158°F)
Humidity	10% to 95% non-condensing
Electrostatic Discharge (ESD)	+/- 15 kV air +/- 8 kV contact

Appendix B Voice Quality Manager

Introduction

The Voice Quality Manager (VQM) is a software package that resides on the MC55. VQM enables a set of features for Voice over WLAN (VoWLAN) calls. The VQM user interface is designed to be intuitive and easy to use, so complex tasks such as enabling the Acoustic Echo Canceller (AEC) while a call is in progress are done with very little or no user intervention. Most applications launch VQM when started. If the application does not launch VQM automatically, the user will have to launch VQM manually.

Features

The VQM software:

- Improves the voice transmission quality without using additional battery power.
- Turns on the AEC for VoWLAN calls automatically, without user intervention.
- Prioritizes the outgoing audio IP packets.
- Provides user-selectable audio modes (speakerphone and handset) with a single tap of the VQM icon. A VQM icon in the title bar of the device indicates the audio mode currently in use.
- Network Driver Interface Specification (NDIS) 5.1 compliant.

Enabling VQM

To enable VQM:

1. Tap **Start** > **Programs** > **File Explorer**.
2. Navigate to the **Windows** folder.
3. Locate the file **VQMAudioNotify**.
4. Tap the filename to enable VQM.

Audio Modes

The MC55 can be in any one of the seven different audio modes. The mode is visually indicated by the VQM icon on the title bar.

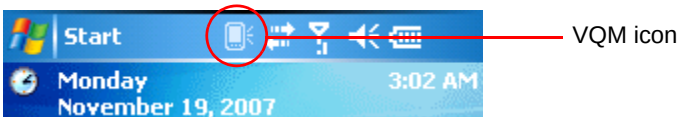


Figure B-1 *VQM Icon in Title Bar*

The VQM icon indicates that the device is in speakerphone mode without Acoustic Echo Cancellation (indicated by the gray VQM icon). The audio modes and their corresponding VQM title bar icons are:

Table B-1 *VQM Icons*

Icon	Description
	Speakerphone with Acoustic Echo Cancellation.
	Speakerphone without Acoustic Echo Cancellation.
	Handset with Acoustic Echo Cancellation (device is in handset mode only while on a call).
	Bluetooth headset while on a call (Acoustic Echo Cancellation is not enabled for Bluetooth headsets). White icon.
	Bluetooth headset while not on a call. Gray icon.

Changing Audio Modes

Depending upon the audio mode being used, the mode can be changed by tapping the VQM icon in the title bar. The audio mode can only be changed only while the user is on a call.

The table below lists the current audio mode and the subsequent audio mode after tapping the VQM icon.

Table B-2 *Changing Audio Modes*

Audio Mode before Tapping VQM Icon	Audio Mode after Tapping VQM Icon
Speakerphone	Handset
Handset	Speakerphone
Bluetooth headset	Speakerphone

If the audio mode is set to speakerphone and the user taps the VQM icon, the audio mode changes to handset.

If the user is using a Bluetooth headset, tapping the VQM icon un-pairs the Bluetooth headset from the device causing the audio to be routed to the default mode. In VQM 2.5, there is no way to go back to the Bluetooth headset using the VQM icon if it is un-paired The only way to reconnect the Bluetooth headset to the device is by using the BTExplorer application.

If the user taps the VQM icon when a wired headset is connected to the mobile device, the audio mode does not change. The audio continues to get routed to the wired headset.

If the user taps the VQM icon while not on a call there is not change to the audio mode.

Tap and hold the VQM icon in the title bar to display a notification dialog box that contains:

- AEC: The Acoustic Echo Canceller status
- DSCP Marked Packets: The number of outbound voice packets that have been recognized and marked as high priority by VQM.
- VQM Version: The VQM version number.

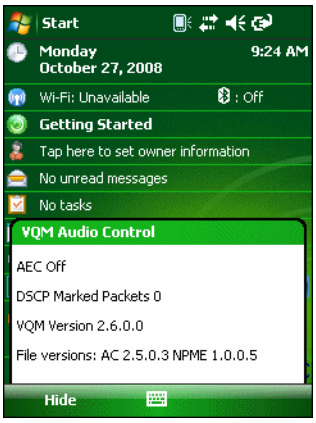


Figure B-2 *VQM Audio Control Dialog Box*

Voice Packet Prioritization

IP soft phones transmit voice packets in the same manner as any other application that sends data over the network. On a network with different types of traffic, voice packets are given the same priority as any other traffic, and therefore may be subject to delays.

WiFi Multi-media (WMM) is a solution to this problem. WMM is a specification that supports prioritizing traffic, and “higher-priority” packets can be given preferential treatment.

To make use of WMM, the devices that generate traffic must mark their packets as high or normal priority in a field in the IP packet called Differentiated Services Code-Point (DSCP). The wireless infrastructure, which must be configured to support WMM, gives a higher priority to packets that have been marked as high priority through DSCP marking by the devices that generate traffic.

VQM detects if there is an ongoing VoWLAN call, and if so, marks outgoing voice packets (Only outgoing voice packets can be marked. The incoming voice packets have already been through the network, so it makes no sense to mark them.) as high-priority using DSCP. This enables WMM-compatible wireless infrastructure to treat the voice packets preferentially. This results in fewer delays for voice packets, which in turn improves the call quality.

Limitations

- There is no VPN support in VQM.
- Only the Avaya softphone is currently supported.

Acoustic Echo Cancellation

Acoustic Echo occurs during a voice call when the audio from the earpiece enters the microphone of the same device. This results in the person at the other end hearing back a delayed version of his/her own voice (“Echo”). Needless to say, “Echo” is not desirable, and needs to be suppressed. This is the functionality performed by the Acoustic Echo Canceller (AEC). There are two approaches to suppressing the Echo:

- Turn the Acoustic Echo Canceller (AEC) on permanently. This approach is not very efficient because the device consumes more power when the AEC is on.
- Turn the Acoustic Echo Canceller (AEC) on only when there is an ongoing call.

VQM follows the second of the two approaches mentioned above.

VQM automatically turns on the Acoustic Echo Canceller (AEC) when the mobile device is in a VoWLAN call. When the call is terminated, VQM turns the AEC off. Note that the AEC is turned on for speakerphone and handset modes and does not get turned on for wired headset and Bluetooth headset modes. The AEC is not required for wired headset because the audio volume is quite low (because of the proximity of the earpiece to the ear), and therefore it is very unlikely for the audio from the earpiece to go in to the mouthpiece. Bluetooth headsets typically have an Echo Canceller built in. Turning the AEC on only while on a call saves battery power, compared to leaving the AEC turned on permanently.

The AEC is not turned on for Cellular calls because the WWAN phone application has a built-in echo canceller.

Disabling VQM

To disable VQM perform a warm boot.

Glossary

A

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

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

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

AFH. Adaptive Frequency Hopping

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

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: (“-”, “$”, “:”, “/”, “,” and “+”).

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 erases all user stored records and entries.

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.

Decryption. Decryption is the decoding and unscrambling of received encrypted data. Also see, **Encryption** and **Key**.

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

Device Configuration Package. The Symbol Device Configuration Package provides the Product Reference Guide (PRG), 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

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.

FHSS (Frequency Hopping Spread Sprectrum)**.** 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.

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

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. MC55 mobile computers include 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. The connection between two devices, defined by common physical characteristics, signal characteristics, and signal meanings. Types of interfaces include RS-232 and USB.

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 MC55. 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 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**.

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.

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