



FR68 Series Mobile Computer User Guide



**FR68 Series Mobile Computer
User Guide**

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Revision History

Changes to the original manual are listed below:

Change	Date	Description
-01 Rev. A	2009/06/02	Initial release.

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About This Guide

Introduction

This guide provides information about using the FR68 Series 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 FR68 Series provides information for specific user needs, and includes:

- **FR68 Series Quick Start Guide** - describes how to get the FR68 Series up and running.
- **FR68 Series User Guide** - describes how to use the FR68 Series.

Configurations

This guide covers the following configurations:

Configuration	Radios	Display	Memory	Data capture	Operating system	Keypads
FR6876	WLAN: 802.11b/g WPAN: Bluetooth WWAN: HSDPA GPS: AGPS	2.8" QVGA Color	128 MB RAM/ 256 MB Flash	1D laser scanner, camera	Windows Mobile 6.1 Professional	Alphanumeric keypad
FR6874	WLAN: 802.11b/g WPAN: Bluetooth WWAN: GSM GPS: AGPS	2.8" QVGA Color	128 MB RAM/ 256 MB Flash	1D laser scanner, camera	Windows Mobile 6.1 Professional	Alphanumeric 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
- Phone 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*.

Phone Software

To determine the Phone software version:

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

Chapter Descriptions

Topics covered in this guide are as follows:

- [Chapter 1, Getting Started](#) provides information on getting the FR68 Series up and running for the first time.
- [Chapter 2, Using the FR68 Series](#) provides basic instructions for using the FR68 Series, including powering on and resetting the FR68 Series, and entering and capturing data.
- [Chapter 3, Using GPS Navigation](#) provides information about GPS navigation with the FR68 Series.
- [Chapter 4, Using Bluetooth](#) explains Bluetooth functionality on the FR68 Series.
- [Chapter 5, ActiveSync](#) synchronizes information on the mobile computer with information on the host computer
- [Chapter 6, Using the Phone](#) provides basic instructions for using the FR68 Series phone.
- [Chapter 7, GSM Configuration](#) provides basic GSM settings for using the FR68 Series phone.
- [Chapter 8, Accessories](#) describes the available accessories and how to use them with the FR68 Series.
- [Chapter 9, Maintenance & Troubleshooting](#) includes instructions on cleaning and storing the FR68 Series, and provides troubleshooting solutions for potential problems during FR68 Series operation.
- [Appendix A, Technical Specifications](#) provides the technical specifications for the FR68 Series.

Notational Conventions

The following conventions are used in this document:

- “EDA” refers to the Motorola FR68 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

- *FR68 Series Quick Start Guide*, p/n 72-119042-01.
- *FR68 Series Windows Mobile 6.1 Regulatory Guide*, p/n 72-119054-01.
- *Microsoft® Applications for Mobile 6.1 User Guide*, p/n 72E-108299-xx.
- 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
- Model number or product name
- 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 FR68 Series and explains how to install and charge the batteries, replace the strap, and power on the FR68 Series for the first time.

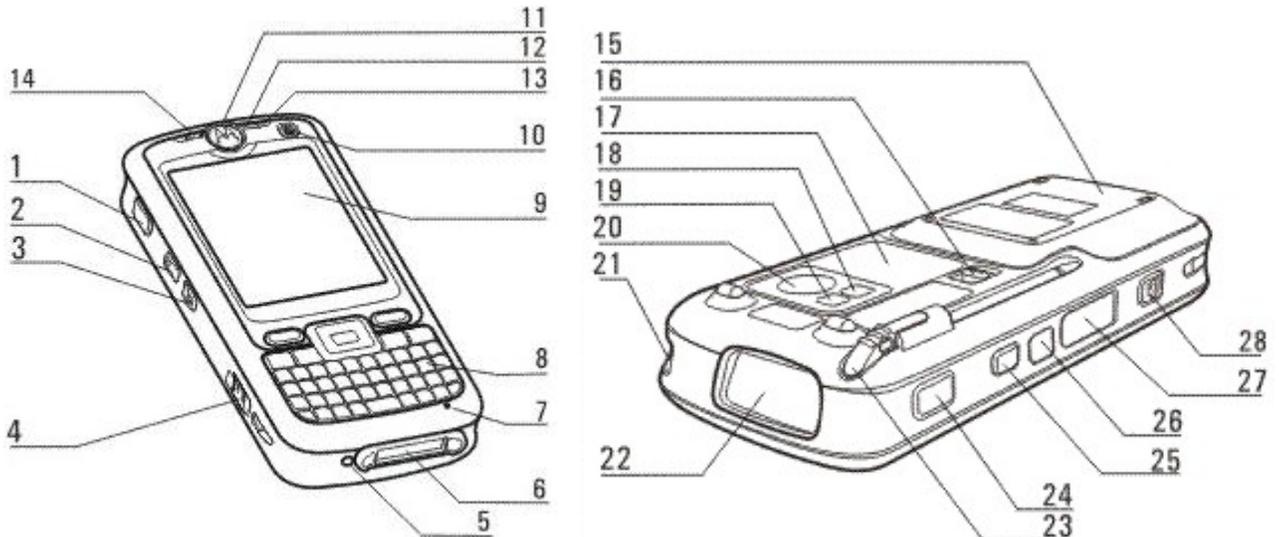


Figure 1-1 Front View and Rear View

- | | | | |
|----------------------|------------------|----------------------|-------------------------|
| 1. Scan Button | 2. Up Button | 15. Battery Door | 16. Door Latch |
| 3. Down Button | 4. Headset Jack | 17. Speaker | 18. Camera Flash |
| 5. Reset Button | 6. I/O connector | 19. Self-view Mirror | 20. Camera |
| 7. Microphone | 8. Keypad | 21. Tether Point | 22. Scanner Exit Window |
| 9. Touch Screen | 10. Power Button | 23. Stylus | 24. Scan Button |
| 11. Scan/decode LED | 12. Charging LED | 25. Hold Key | 26. IrDA Window |
| 13. Radio Status LED | 14. Receiver | 27. Memory Card Slot | 28. Camera Button |

Unpacking

Carefully remove all protective material from the FR68 Series and save the shipping container for later storage and shipping.

Verify that you received the following:

- FR68 Series EDA
- 1950 mAh Lithium-ion battery
- Battery door assembly
- FR68 Series Cradle Adaptor Clip
- Tethered stylus
- Protective screen protector, 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 13](#) for contact information.

Accessories

[Table 1-1](#) lists the accessories available for the FR68 Series.

Table 1-1 *FR68 Series Accessories*

Part Number	Description
Cradle	
CRD7X00-1000RR	Single Slot USB Cradle with spare battery charging
Charging	
SAC7X00-4000CR	MC75 4 Slot Battery Charger. Can also be used with MC3000 Batteries. Requires power supply (KT-14000-148R) and 3 Wire GROUNDED AC line cord.
SAC7X00-400CR	4-Slot Battery Charger "Toaster" for MC75 and MC3000. Charges spare standard and high capacity batteries. Includes Shim for MC75, Power Supply (KT-14000-148R) and US AC Line Cord (23844-00-00R).
SAC7X00-401CR	4-Slot Battery Charger "Toaster" for MC75 and MC3000. Charges spare standard and high capacity batteries. Includes Shim for MC75 and Power Supply (KT-14000-148R). Must purchase 3 Wire AC line cord separately.
KT-14000-148R	KT-14000-148R - Provides power to the Single Slot Cradle (CRD5500-1000UR) and Four Slot Battery Charger (SAC5500-4000CR). Order country specific three wire grounded AC line cord separately.
50-14000-249R	AC power supply with barrel jack. Allows for charging of an MC55 terminal without a cradle. Requires USB (25-108022-01R) or Charge only (25-112560-02R) cable. Order country specific two wire AC power line cord separately.
BTRY-MC7XEAB00	FR68 Li-Ion Battery, 3600 mAh
BTRY-MC7XEAB0E	FR68 Li-Ion Battery, 1950 mAh
MN3800AAAPBL	FR68 Series 1950 mAh battery door
MN3800BAAPBL	FR68 Series 3600 mAh battery door
25-118702-01R	FR68 Series Auto Charge Cable (Cigarette Lighter Adapter)
Cables	
25-68596-01R	USB ActiveSync cable for cradle to the host system.
25-118703-01R	FR68 Series USB Charging
25-118706-01R	FR68 Series Charge Only Cable
Miscellaneous	
KT-76490-01R	Battery adapter (shim for 4 slot charge only; packet of 5)

Table 1-1 FR68 Series Accessories (Continued)

Part Number	Description
MN3800AAAPCD	FR68 Series Cradle Adaptor Clip – Adapts FR68 Series mobile computer to the cradle. Pack of 3.
MN3800BAAPCD	FR68 Series Cradle Adaptor Clip – Adapts FR68 Series mobile computer to the cradle. Pack of 10.
MN3800AAAPST	FR68 Series spare stylus with tether. Pack of 3.
MN2800AAAPSC	Screen protector for 2.8" QVGA display. Pack of 3.
90-17C28-001R	Hands free headset (earbud).

Getting Started

To start using the FR68 Series for the first time:

- Install the SIM card
- Install the main battery.
- Charge the FR68 Series.
- Power on the FR68 Series.
- Configure the FR68 Series.

Installing the SIM Card

GSM phone service requires a Subscriber Identification Module (SIM) card, or smart card. Obtain this card from your service provider. The card fits into the FR68 Series and can contain the following information:

- Mobile phone service provider account details.
- Information regarding service access and preferences.
- Contact information, which can be moved to **Contacts** on the FR68 Series.
- Any additional services to which you have subscribed.

✓ **NOTE** For more information about SIM cards, refer to the service provider's documentation.

To install the SIM card (located under battery):

1. With SIM card contacts facing down, slide SIM card into SIM card slot.

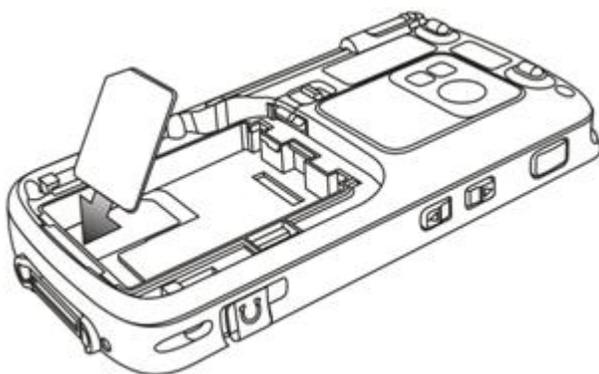


Figure 1-2 Installing the SIM Card

2. Install the battery. See [Installing the Main Battery on Page 18](#) for more information.

3. Press the red **Power** button.
4. Tap **Start > Phone > Menu > Options > Network** tab and verify that the service provider appears in the **Current network:** field.
5. Make a call to verify connection.

Installing the Main Battery

✓ **NOTE** The FR68 Series ships with a 1950 mAh battery. An optional 3600 mAh battery is available.

To install the main battery:

1. Insert the battery, bottom first, into the battery compartment in the back of the FR68 Series.

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

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

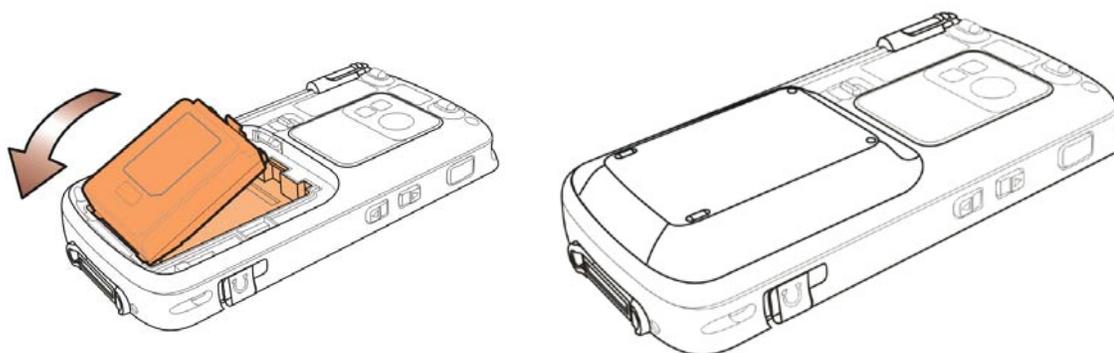


Figure 1-3 *Installing the Battery*

3. With the battery door latch open, insert the cover, bottom first, then press down on the top of the cover (The latch will lock the cover automatically when the cover is installed properly).

The FR68 Series power up after inserting the battery and replacing the battery door.

Removing the SIM Card

1. Remove the battery door.
2. Remove the battery.
3. With finger, press and hold the slot lock down.
4. Using other hand, remove the SIM card from the slot.
5. Replace the battery.
6. Replace the battery door.

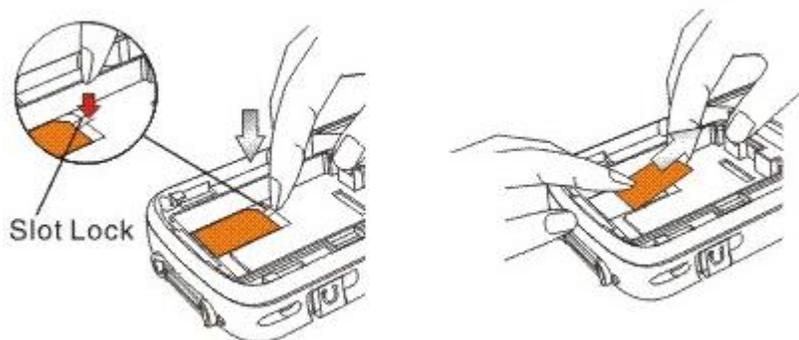


Figure 1-4 Removing the SIM Card

Removing the Battery

1. Remove the battery door.
2. Wait for five seconds.
3. Remove the battery.

Charging the Battery



CAUTION Ensure that you follow the guidelines for battery safety described in [Battery Safety Guidelines on Page 120](#).

Charging the Main Battery and Memory Backup Battery

Before using the FR68 Series for the first time, charge the main battery until the green Charging/Battery Status LED remains lit (see [Table 1-2 on Page 20](#) for charge status indications). To charge the FR68 Series, use a cable or a cradle with the appropriate power supply. For information about the accessories available for the FR68 Series, see [Chapter 8, Accessories](#).

The FR68 Series is equipped with a memory backup battery which automatically charges from the fully-charged main battery. When using the FR68 Series for the first time, the backup battery requires approximately 36 hours to fully charge. This is also true any time the backup battery is discharged, which occurs when the main battery is removed for several hours. The backup battery retains RAM data in memory for at least 15 minutes (at room temperature) when the FR68 Series' main battery is removed. When the FR68 Series reaches a very low battery state, the combination of main battery and backup battery retains RAM data in memory for at least 48 hours.

To charge the main battery, use either a charging cable or a cradle.

- Single Slot USB/Serial Cradle.

To charge the main battery:

1. Connect the charging accessory to the appropriate power source.
2. Insert the FR68 Series into a cradle or attach to a cable. The FR68 Series begins charging. The Charging/Battery Status LED blinks amber while charging, then turns solid green when fully charged. See [Table 1-2 on Page 20](#) for charging indications.

The 1950 mAh battery is fully charged in less than four hours, and the 3600 mAh battery, in approximately six hours.

Table 1-2 LED Charge Indicators

Charging/Battery Status LED	Indication
Off	FR68 Series is not charging. FR68 Series is not inserted correctly in the cradle or connected to a power source. Charger/cradle is not powered.
Slow blinking amber	FR68 Series is charging.
Solid green	Charging complete. Note: When the battery is initially inserted in the FR68 Series, the amber LED flashes once if the battery power is low or the battery is not fully inserted.
Fast blinking red	Charging error, e.g.: <ul style="list-style-type: none"> ● Temperature is too low or too high. ● Charging has gone on too long without completion (typically eight hours).
Single blinking amber (when device is turned on)	Battery depleted.
Fast blinking amber	Battery over-temperature condition.

Charging Spare Batteries

See [Chapter 8, Accessories](#) for information on using accessories to change spare batteries.

Charging Temperature

Charge batteries in temperatures from 0°C to 45°C (32°F to 113°F). Charging is intelligently controlled by the FR68 Series.

To accomplish this, for small periods of time, the FR68 Series or accessory alternately enables and disables battery charging to keep the battery at acceptable temperatures. The FR68 Series or accessory indicates when charging is disabled due to abnormal temperatures via its LED. See [Table 1-2 on Page 20](#).

Powering On the FR68 Series

Press the **Power** button to turn on the FR68 Series.

When turning the FR68 Series on for the first time, the splash screen displays for about a minute as the FR68 Series initializes its flash file system, then the calibration window appears. Note that these windows also appear upon cold boot.

✓ **NOTE** When the FR68 Series powers up after inserting a battery for the first time, the device boots and powers on automatically.

Calibrating the Screen

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

1. Remove the stylus from its holder on the back of the FR68 Series.
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

To check the charge status of the main battery in the FR68 Series, tap **Start > Settings > System tab > Power** icon to display the **Power** window.

To save battery power, tap the **Advanced** tab and set the FR68 Series to turn off after a specified number of minutes.

Micro Secure Digital (microSD) Card

The microSD card slot provides secondary non-volatile storage. The slot is located on the side of the FR68 Series (see [Figure 1-5](#)). Refer to the documentation provided with the card for more information, and follow the manufacturer's recommendations for use.

 **CAUTION** Follow proper ESD precautions to avoid damaging the microSD 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. Power off the FR68 Series.
2. Open the memory card cover on the side of the FR68 Series.

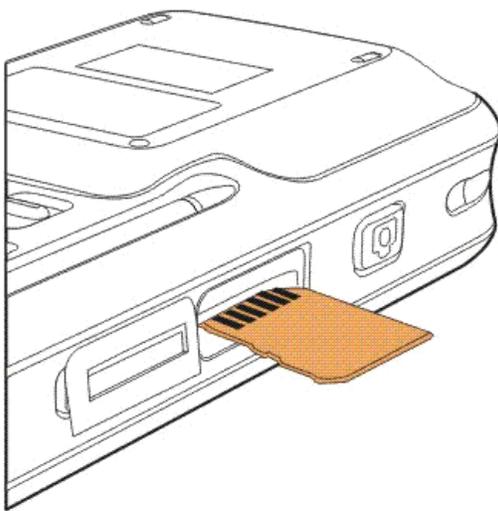


Figure 1-5 *Card Installation*

3. Insert the card with the card contacts facing up and the cut corner on the left, until you feel it clicks into place.
4. Close the memory card cover .

To remove the microSD card:

1. Power off the FR68 Series.
2. Open the memory card cover.
3. Carefully press and release the card to eject it.
4. Remove the card from the card slot.
5. Replace the memory card cover.

Removing the Screen Protector

A screen protector is applied to the FR68 Series. 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.

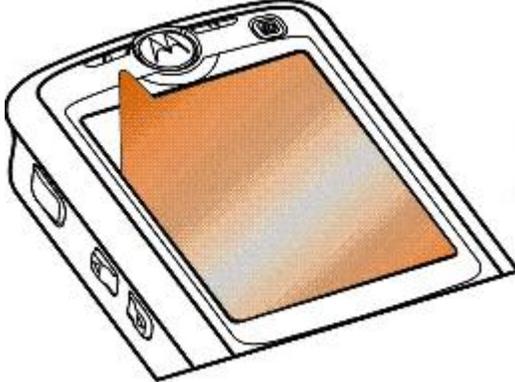


Figure 1-6 *Removing the Screen Protector*



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: MN2800AAAPSC.

Replacing the Main Battery

1. Open the battery door latch on the battery door.
2. Please wait for 5 seconds after the display is off.
3. Lift the top of the battery door and remove.
4. Press the battery release latch on the top of the battery to unlock, and lift the battery out of the well.
5. Insert the replacement battery, bottom first, into the battery compartment in the back of the FR68 Series.
6. Press the battery down into the battery compartment until the battery release latch snaps into place.

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

7. With the battery door latch open, insert the door, bottom first, then press down on the top of the door (The latch will lock the door automatically when the door is installed properly).

The FR68 Series powers up after the battery is inserted and the battery door is replaced.

Battery Management

Observe the following battery saving tips:

✓ **NOTE** The FR68 Series factory default settings for the WWAN and WLAN radios are set to ON.

- Leave the FR68 Series connected to AC power at all times when not in use.
- Set the FR68 Series 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.
- Power off the FR68 Series when charging to charge at a faster rate.

Changing the Power Settings

To set the FR68 Series 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 > Power tab**.
2. Select the **Turn off backlight if device is not used for** check box and select a value from the drop-down list.
3. Select the **Brightness** tab.
4. Use the slider to set a low value for the backlight.
5. Select **ok**.

Turning Off the Radios

Windows Mobile 6.1 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.

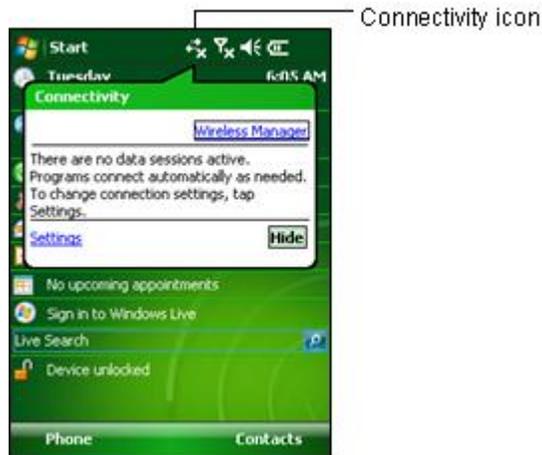


Figure 1-7 Opening Wireless Manager

Select **Wireless Manager**.

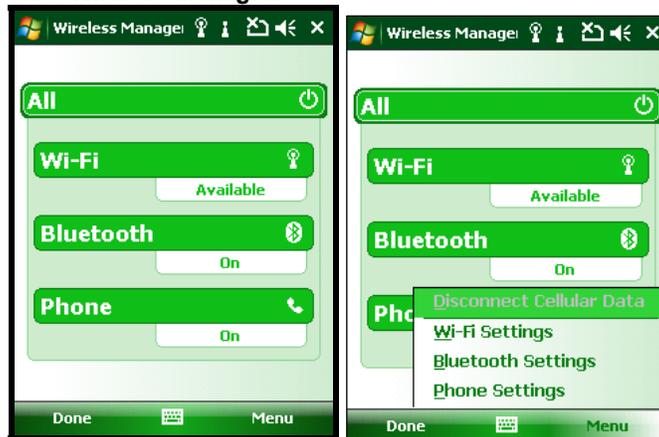


Figure 1-8 Selecting Wireless Manager

✓ **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 the **All** button. To configure settings for a connection, tap **Menu**.

Chapter 2 Using the FR68 Series

Introduction

This chapter explains the buttons, status icons, and controls on the FR68 Series, and provides basic instructions for using the FR68 Series, including powering on and resetting the FR68 Series, and entering and capturing data.

The FR68 Series factory default radio states are:

- Bluetooth - OFF
- Phone - ON
- Wireless LAN - ON.

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.

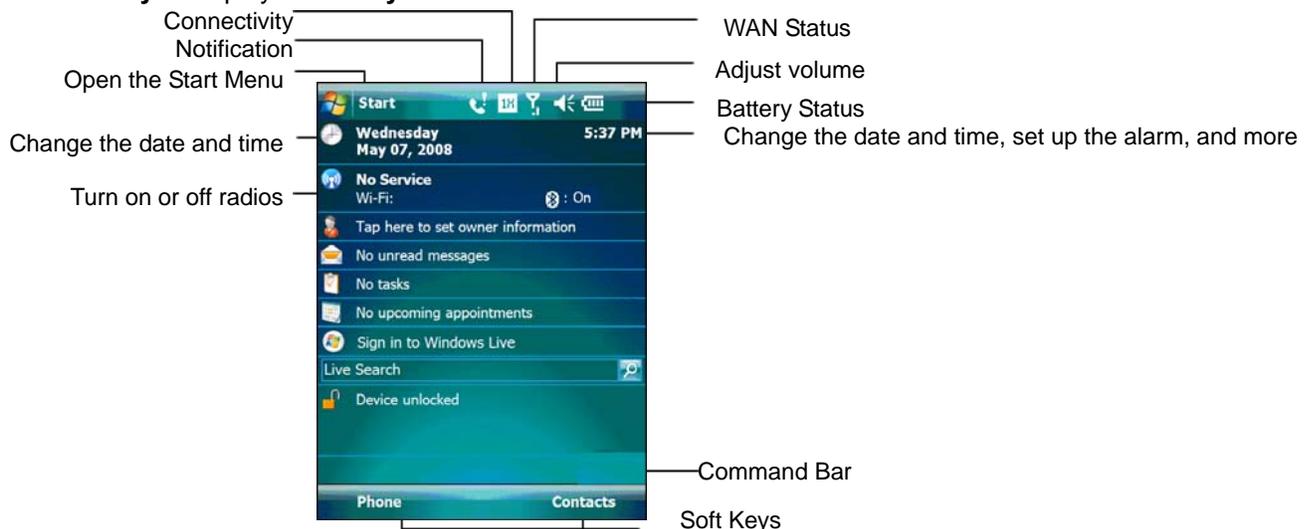


Figure 2-1 Today Screen

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	Backup Battery Low.
		Notification that one or more instant messages were received.
		Notification that one or more e-mail/text messages were received.
		Notification that one or more voice 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.
		WLAN available.
		WLAN in use.
		HSDPA available. (FR6876 only)
		3G available. (FR6876 only)
		GPRS available. (FR6874 and FR6876)
		EGPRS available. (FR6874 and FR6876)

Table 2-1 Status Icons (Continued)

Icon	Function	Description
	WAN	Call missed.
		Dialing while no SIM card is installed.
		Voice call in progress.
		Calls are forwarded.
		Call on hold.
		Speakerphone is on.
		Antenna/signal icon: wireless on/good signal.
		Antenna/signal icon: wireless off.
		Antenna/signal icon: no service or searching.
		HSDPA connecting. (FR6876 only)
		HSDPA in use. (FR6876 only)
		3G connecting. (FR6876 only)
		3G in use. (FR6876 only)
		GPRS connecting. (FR6874 and FR6876)
		GPRS in use. (FR6874 and FR6876)
		EGPRS connecting. (FR6874 and FR6876)
		EGPRS in use. (FR6874 and FR6876)
		Roaming.
		SIM Card not installed. (FR6874 and FR6876)
		Speaker
	All sounds are off.	
	Vibrate is on.	
	Battery	Main battery is charging.
		Battery power completely depleted.
		Main battery is low.
		Main battery level.
	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	Name	Description
	ActiveSync	Active serial connection between the FR68 Series and the host computer.

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 and text messages.
	Phone	Make and receive calls, switch between calls, and set up conference call.
	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
	Games	Bubble Breaker, Solitaire
	Sample AP	ScanWedgeFR, Notify, and Scanner
	ActiveSync	Synchronize information between the FR68 Series and a host computer or the Exchange Server.
	Calculator	Perform basic arithmetic and calculations, such as addition, subtraction, multiplication, and division.
	Camera	Take photos and videos.
	File Explorer	Organize and manage files on your device.
	Getting Started	Display help on how to use some functions
	GPSXtra	Allow you to download GPS data to enhance GPS performance
	Internet Sharing	Connect a notebook computer to the Internet using the FR68 Series' data connection.
	Messenger	Use this mobile version of Windows Live Messenger.
	Notes	Create handwritten or typed notes, drawings, and voice recordings.
	Pictures & Videos	View and manage pictures, animated GIFs, and video files.
	Search	Search contacts, data, and other information on your FR68 Series.
	Task Manager	Show and stop all the tasks on run
	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 preinstalled on the FR68 Series. 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 FR68 Series.
	Menus	Set what programs appear in the Start menu.
	Owner Information	Enter personal information on the FR68 Series.
	Phone	Make and receive calls, switch between calls, and set up Conference Call.
	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.

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

Icon	Name	Description
System Tab		
	802.11d Tools	Enable or disable 802.11d.
	About	View basic information such as the Windows Mobile® version and type of processor used on the FR68 Series.
	Backlight	Set the display backlight time-out and adjust brightness.
	Certificates	See information about certificates installed on the FR68 Series.
	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.
	Device information	Display the FR68 Series' software and hardware information.
	Encryption	Allow files on a storage card to be encrypted. Encrypted files are readable only on your device.
	Enroller	Allow you to get a Certificate from Certificate servers.
	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 FR68 Series.
	Managed Programs	View installation history.
	Memory	Check the device memory allocation status and memory card information and stop currently running programs.
	Power	Check battery power and set the time-out for turning off the display to conserve battery power.

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

Icon	Name	Description
	Regional Settings	Set the regional configuration to use, including the format for displaying numbers, currency, date, and time on the FR68 Series.
	Remove Programs	Remove programs that you installed on the FR68 Series.
	Screen	Change the screen orientation, re-calibrate the screen, and change the screen text size.
	Task Manager	Show and stop all the tasks on run
	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.
Connection Tab		
	Beam	Set the FR68 Series to receive incoming IrDA beams and bluetooth beam.
	Bluetooth	Search for other Bluetooth devices.
	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	Enroll in domain.
	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 FR68 Series' wireless radios and customizes WLAN, Bluetooth and Phone 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 FR68 Series.

Battery Status Indications

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

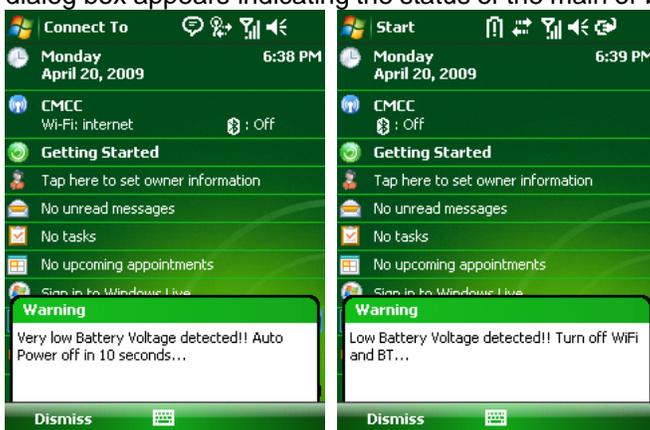


Figure 2-3 *Battery Status Dialog Box*

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.

Power Setting

1. Tap **Start > Settings > System>Power** icon. A power remaining capacity bar appears.

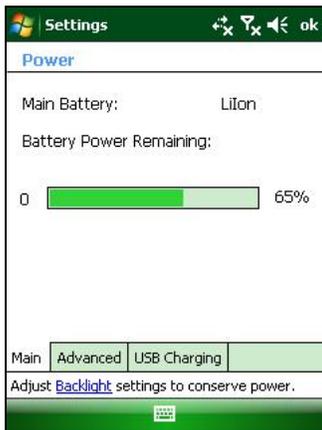


Figure 2-5 Main Tab

2. Select the **Advanced** tab.
3. Select the following options to save the power, and tap **ok**.

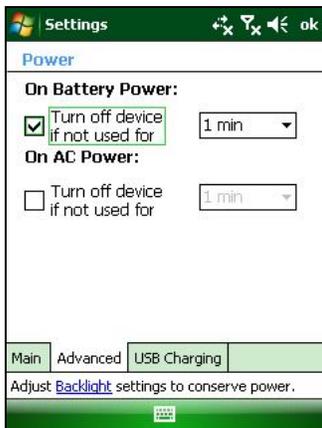


Figure 2-6 Advanced Tab

4. Select the **USB Charging** tab.
5. Select **Slow Charge** or **Fast Charge** radio buttons, and tap **ok**.

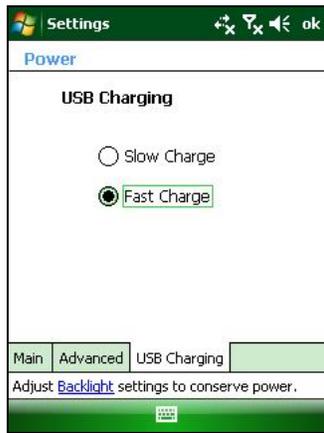


Figure 2-7 USB Charge Tab

Main Battery Temperature Notifications

The temperature notification system displays warnings as the following figures when the temperature within the battery exceeds specific temperature thresholds:

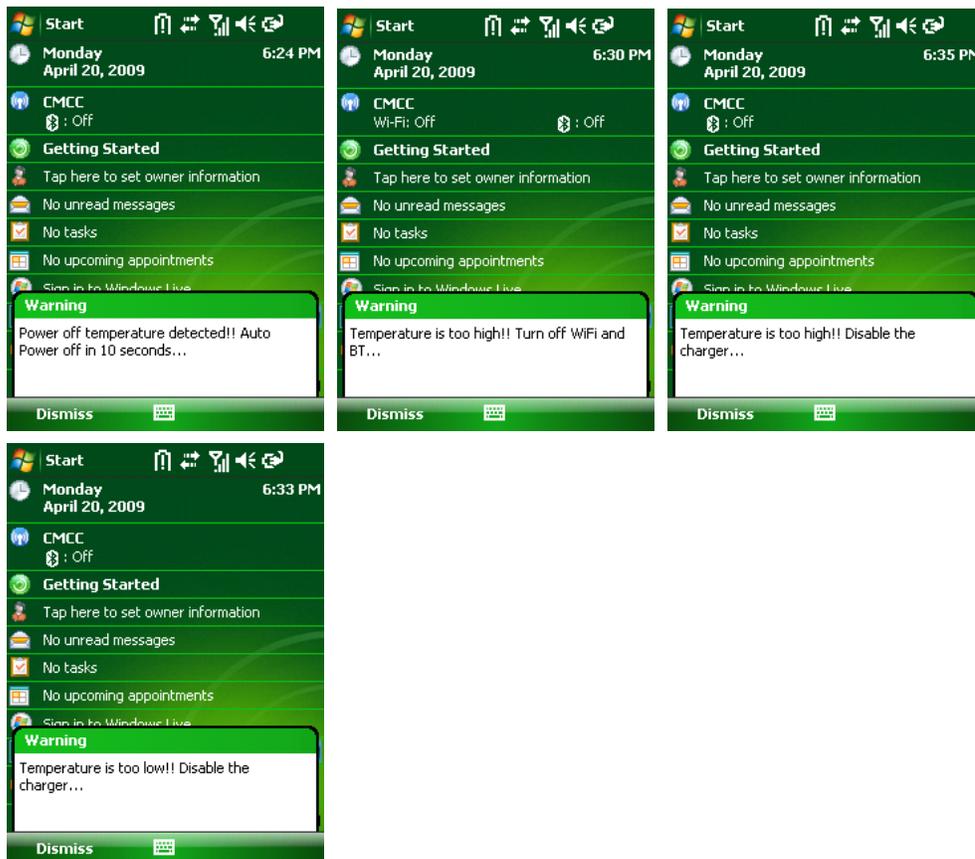


Figure 2-8 Main Battery Temperature Notification

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

LED Indicators

The FR68 Series has three LED indicators. The Scan/Decode LED indicates status for bar code scanning. The Charging/Battery Status LED indicates battery charging and status. The Radio Status LED indicates radio status. [Table 2-8](#) describes the LED indications.

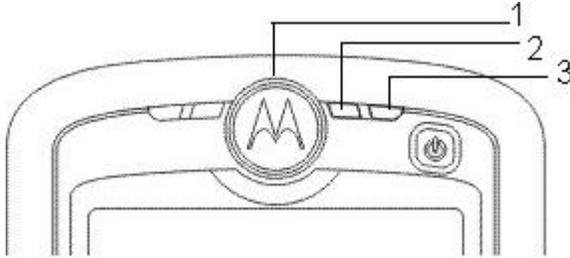


Figure 2-9 LED Indicators

1. Scan/Decode LED
2. Charging LED
3. Radio Status LED

Table 2-6 LED Indications

LED Status	Indication
Scan/Decode LED	
Single blinking green	Barcode was successfully decoded.
Solid red	Laser enabled, scanning in process
System Led (Amber blink)	The behavior of this LED controlled by Microsoft system.
Off	Not enabled
Charging/Battery Status LED	
Off	FR68 Series is not charging. FR68 Series is not inserted correctly in the cradle or connected to a power source. Charger/cradle is not powered.
Slow blinking amber	FR68 Series is charging.
Solid green	Charging complete. Note: When the battery is initially inserted in the FR68 Series, the amber LED flashes once if the battery power is low or the battery is not fully inserted.
Fast blinking amber	Battery over-temperature condition
Fast blinking red	Charging error, e.g.: <ul style="list-style-type: none"> • Temperature is too low or too high. • Charging has gone on too long without completion (typically eight hours).
Single blinking amber (when the device is turned on)	Battery depleted
Radio Status LED	
Slow blinking green	All those radio devices which are powered on are available for receiving / sending data.
Slow blinking red	Any one of the radio devices which is powered on and not available for receiving / sending data.
Off	All radio off

✓ **NOTE** For information about scanning/decoding, see [Data Capture on Page 43](#). For information about WAN radio status and settings, see [Chapter 6, Using the Phone](#).

Resetting the FR68 Series

The reset function is cold boot. A cold boot restarts the FR68 Series, and also resets the clock. Data saved in flash memory or a memory card is not lost. Press the reset button to reboot the device.

Waking the FR68 Series

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 2-9](#) 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
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
The scan triggered is pressed.	No	Yes
The screen is touched.	No	No
Audio Jack	No	No
Audio Btn	No	No
Bluetooth communication	Yes	Yes
Incoming phone call	Yes	Yes

Locking the FR68 Series

Use the Device Lock feature to prevent use of the device. Note that when locked, the FR68 Series does not respond to screen or keypad input.

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

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

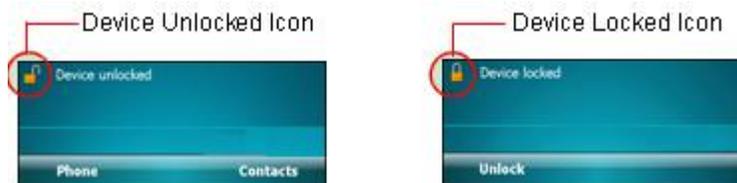


Figure 2-10 Device Locked/Unlocked Icons



Figure 2-11 *Unlock Device Window*

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

- ✓ **NOTE** You can make emergency calls even when the FR68 Series is locked. See [Making an Emergency Call on Page 80](#) for more information.

Keypads

The FR68 Series offers one type of keypad configuration: alpha-numeric.

Alpha-numeric Keypad Configurations

The 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 2-8](#) for key and button descriptions.



Figure 2-12 *QWERTY Keypad Configuration*

Table 2-8 *Alpha-numeric Keypad Descriptions*

Key	Action
<p>Blue Key</p> 	<p>Launches applications (shown on the keypad in blue).</p> <ul style="list-style-type: none"> ● 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: 
<p>Orange Key</p> 	<p>Accesses the secondary layer of characters and actions (shown on the keypad in orange).</p> <ul style="list-style-type: none"> ● 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: 
<p>Talk/End(OK)</p> 	<p>Talk (Green Phone): press to display the phone keypad window or to dial a phone number (from the phone keypad window).</p> <p>End (Red Phone): When the phone keypad window displays, press to stop dialing or end a call. And use this key in conjunction with the Blue key as an OK or close button.</p>

Table 2-8 *Alpha-numeric Keypad Descriptions (Continued)*

Key	Action
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. <ul style="list-style-type: none"> ● 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 and hold the Shift 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:  ● 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.
Backspace 	Produces a backspace.
Enter 	Executes a selected item or function.
Star 	The user has to press the orange key first to get the asterisk.
Start Menu 	Use this key in conjunction with the Blue key to instantly display the Start menu from any application without tapping the screen.

Table 2-9 QWERTY Keypad Input Modes

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

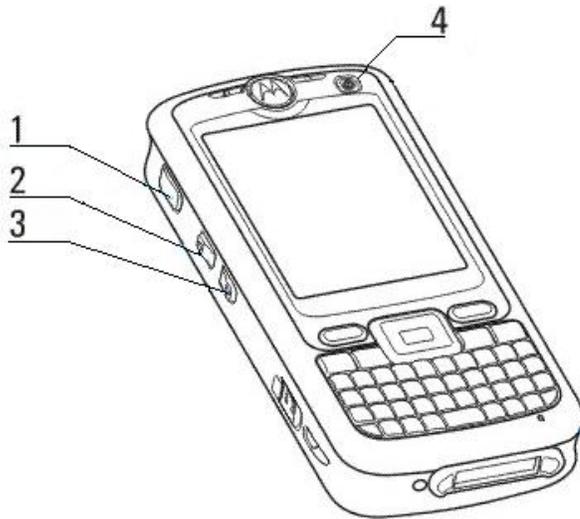
Table 2-9 QWERTY Keypad Input Modes (Continued)

Key	Normal	Shift + Key	Orange + Key	Blue + Key
0	0)	0	0
Mail	Mail	Mail	Mail	Mail
TAB	Tab	Tab	Tab	Tab
SPACE	Space	Space	Space	Space
.	.	>	@	.

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

Function Buttons

The FR68's buttons perform certain functions.

**Figure 2-13** Function Buttons

1. Scan button
 2. Up button
 3. Down button
 4. Power button
- **Power:** Press the red **Power** button to turn the FR68 Series screen on and off. The FR68 Series is in suspend mode when the screen is off. For more information, see [Powering on the FR68 Series on Page 20](#). Press the reset button to reboot the device by performing a cold boot. See [Resetting the FR68 Series on Page 37](#).
 - **Scan:** Press to scan bar codes. See [Data Capture on Page 43](#).
 - **Up/Down:** Press to increase or decrease the FR68 Series' volume.

Stylus

Use the FR68 Series 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 picture. Drag in a list to select multiple items.

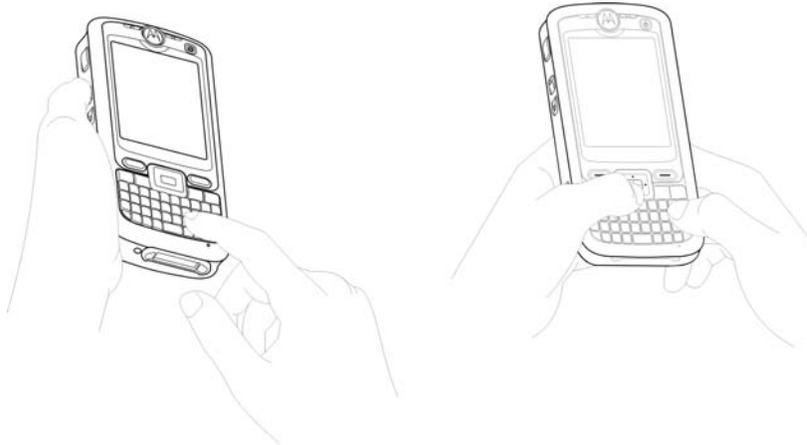


CAUTION

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 2-14](#).



Single-hand Method

Two-hand Method

Figure 2-14 *Entering Data on the Keypad*

Data Capture

The FR68 Series offers one type of data capture option: linear scanning

- ✓ **NOTE** To perform data capture a scanning enabled application must be installed on the FR68 Series. A sample scanning application can be downloaded from the Motorola Support site at: <http://www.motorola.com/enterprisemobility/contactsupport>.

Linear Scanning

FR68 Series 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.

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 special 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 FR68 Series farther away for larger symbols.
- Move the FR68 Series closer for symbols with bars that are close together.

✓ *NOTE* Scanning procedures depend on the application and FR68 Series configuration. An application may use different scanning procedures from the one listed above.

1. Ensure that a scan enabled application is loaded on the FR68 Series.
2. Aim the scan exit window at the bar code.

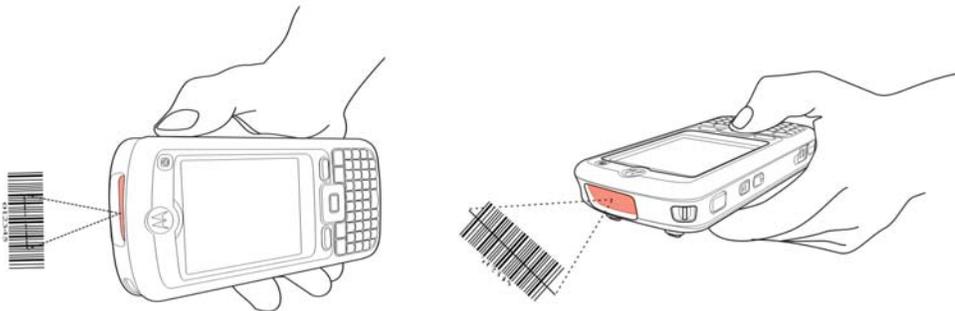


Figure 2-15 *Linear Scanning*

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.

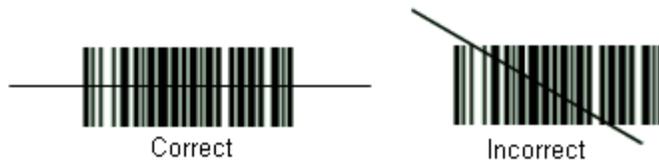


Figure 2-16 *Linear Scanner Aiming Pattern*

Camera Application

Use the **Camera** application to take photos and record videos.

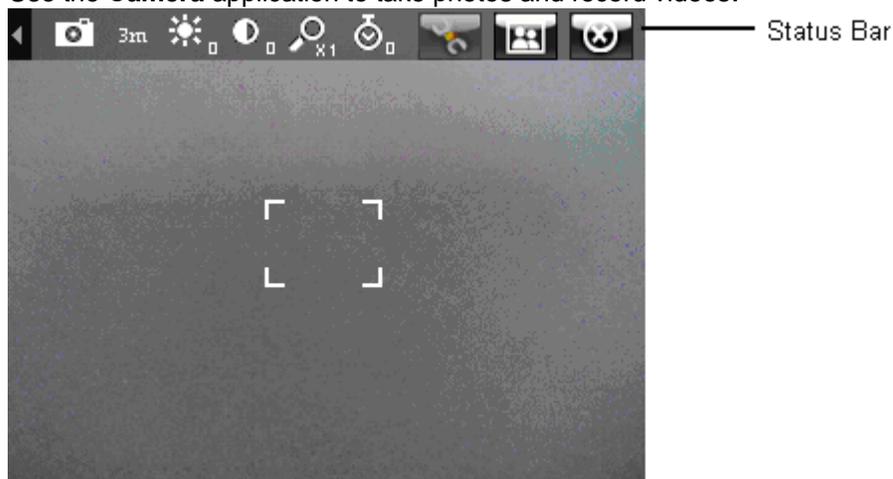


Figure 2-17 Preview screen

Table 2-10 Camera Status Bar

Icon	Description
	Shows and hides the Status Bar.
	Indicates whether still photo or video is enabled.
	Indicates the current resolution setting.
	Indicates the brightness setting.
	Indicates the contrast setting.
	Indicates the zoom level setting. Press the up and down volume buttons on the side of the FR68 to change the zoom level. Photos do not have zoom feature.
	Indicates the timer setting. (Photos only)
	Indicates that video recording is in process.
	Opens the settings control panel.
	Opens the Pictures & Videos application.
	Exits the Camera application.

Settings

Tap the Settings icon in the Status Bar to set settings for the photo or video camera.

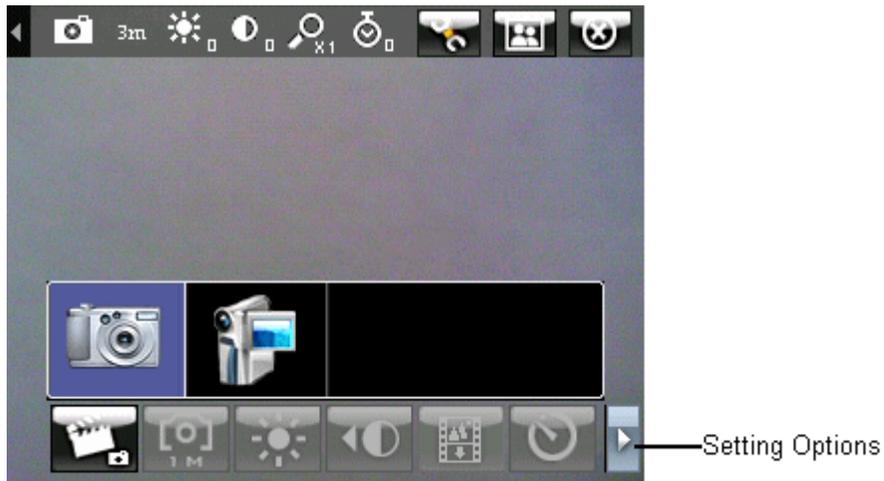


Figure 2-18 Setting Options

Table 2-11 Settings Options

Icon	Description	Options
	Enables either photo or video camera.	Camera icon – Photo Video icon – Video.
	Sets the resolution for photos and video.	For Photos: VGA – 640 x 480 1M – 1 megapixel 1280 x 960 2M – 2 megapixel 1600 x 1200 3M – 3 megapixel 2048 x 1536 For Video: QVGA – 320 x 240
	Sets the brightness settings.	-1 +0 +1 +2 +3
	Sets the contrast settings.	-2 -1 +0 +1 +2
	Sets the image effects.	Color Black and White Antique Negative
	Sets a self-timer. Not applicable for video.	0 seconds 3 seconds 5 seconds 10 seconds
	Sets the lighting condition	Auto Sunny Cloudy Fluorescent lamp

Table 2-11 Setting Options (Continued)

Icon	Definition	Options
	Sets the saturation settings.	144 CCW 72 CCW 0 72 CW 144 CW
	Sets the sharpness settings.	-3 -2 -1 0 +1 +2
	Sets the frequency.	50 Hz 60 Hz
	Sets the location for storing the image or video.	FR68 memory SD memory card
	Enables or disables the shutter sound for photos or the audio for videos.	On Off
	Turn on or off the flash.	On Off

Taking Photos

You can capture photos and save them in the FR68 memory or the storage card.

✓*NOTE* You cannot use the camera if the battery power is less than 30%.

1. Press the **Camera** button on the side of the FR68 or launch the Camera application by tapping **Start > Programs > Pictures & Videos** icon.
2. Tap the **Setting** icon on the **Status** bar to change the settings as required.
3. Press the **Camera** button to capture a picture. The captured picture appears on the display.
4. Three icons appear in the lower left corner of the display.



Tap this icon to save the picture to memory and continue taking pictures.



Tap this icon to delete the picture and to continue taking pictures.



Tap this icon to delete the picture and exit the camera application and return to the **Pictures & Videos** application.

Recording Video

To record video:

1. Press the Camera button on the side of the FR68 or launch the Camera application by tapping **Start > Programs > Pictures & Videos** icon.
 2. Tap the **Setting** icon on the **Status** bar to change the settings as required.
 3. Switch to the video mode.
 4. Press the **Camera** button to start recording. The REC icon appears in the Status bar.
- ✓ *NOTE* The time limit for recording videos is 30 seconds. When the 30 seconds limitation is reached, a message appears on the display and the recording is ended.
- ✓ *NOTE* Press the volume up and down buttons on the side of the FR68 to zoom in and out.
5. Press the **Camera** button again to stop recording and save the video.

Viewing Photos and Videos

- ✓ *NOTE* For detailed information on the Photos and Videos, refer to the Microsoft Applications User Guide for Mobile 6.1, p/n 72E-108299-xx.

To view photos and video clips:

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

Using IrDA

In a Microsoft Windows Mobile program (except Messaging), and Picture & Videos, you can exchange files using either infrared or Bluetooth.

✓*NOTE* You can also beam files (not folders) from the File Explorer window. Tap and hold the item you want to send, then tap Beam File from the pop-up menu.

First activate the beam function before exchanging files with another IrDA device.

To activate the Beam function:

1. Tap **Start**> **Settings**> **Connections** tab>**Beam** icon.
2. Tap Receive all incoming beams check box.

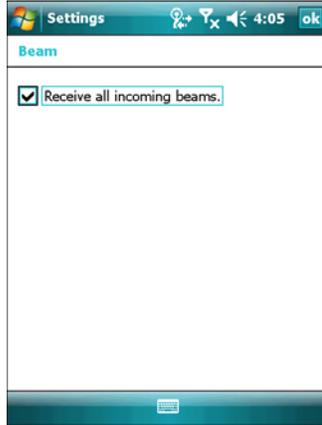


Figure 2-19 *Beam Window*

3. Tap **ok**.

Infrared Connection

Using infrared, you can enable short-range file exchange between your FR68 Series and another IrDA device.

Exchanging Files using IR Connection

Ensure that the IrDA function on both the FR68 Series and the other device are enabled. To send files via IrDA connection:

1. Switch to the program where you created the item you want to send and locate the item in the list.

✓*NOTE* Do not cover or block the IrDA window.

2. Align the IrDA port of the FR68 Series with that of the IrDA device so that they are unobstructed and within a close range.

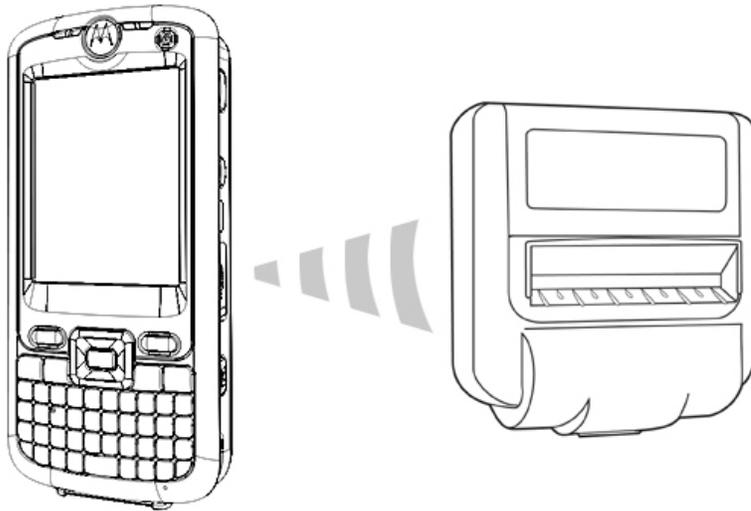


Figure 2-20 Align FR68 Series with IrDA Device

3. Tap and hold the item, then tap Beam [type of item] on the pop-up menu.
4. Tap the device that you want to send the file to.

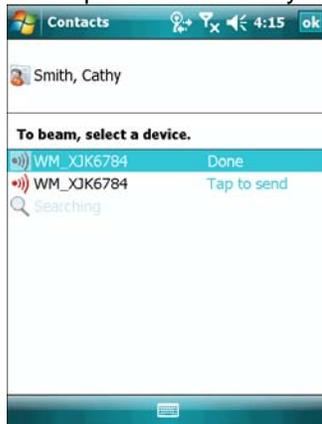


Figure 2-21 Beam Contact

To receive files via IrDA connection:

1. Align the IrDA port of the FR68 Series with that of the other IrDA device so that they are unobstructed and within a close range.

- On the other device, send the file to the FR68 Series.
- When the **Receiving Data** dialog displays, tap **Yes**.



Figure 2-22 Receive File

Using WLAN

With WLAN, you can access the internet.

- Tap **Start**>**Settings**>**Connection** tab>**Wireless Manager** icon>**Menu**. Or tap the operator name on the Today screen.



Figure 2-23 Wireless Manager menu

- Tap **WLAN settings** to enter the configuration screen.



Figure 2-24 Wireless networks configuration

3. Tap the item in the “Network to access” drop box, and select the desired item.

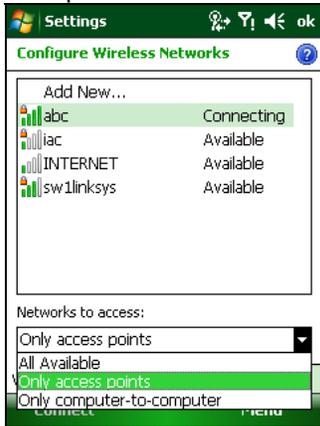


Figure 2-25 Networks to access

4. Tap the Network Adapters tab in the Figure 2-25.

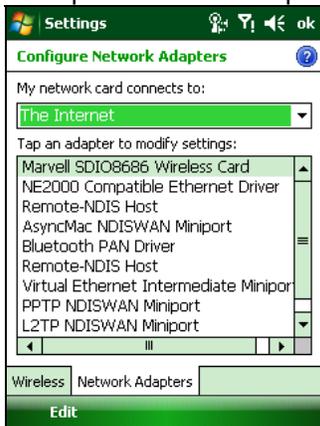


Figure 2-26 Network Adapter

5. In the Figure 2-26, tap **Edit** or tap the “network card connections to”, or tap an adapter to modify the settings.



Figure 2-27 Network Adapter settings modification

6. Tap “Use specific IP address” in the Figure 2-27.

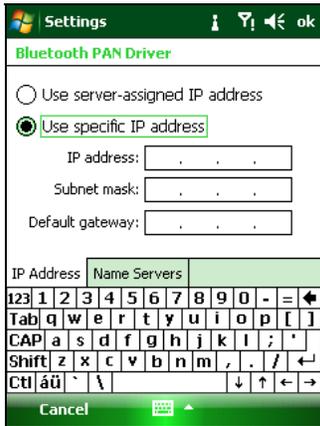


Figure 2-28 IP address setting

7. Tap the Name Servers tab in the **Figure 2-28**.

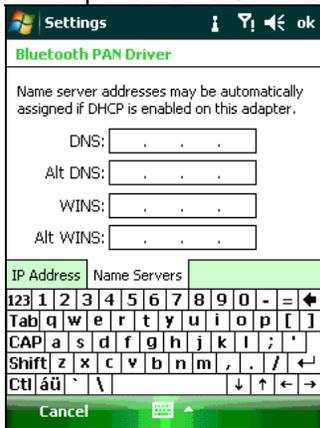


Figure 2-29 Name Servers setting

Adding New Network

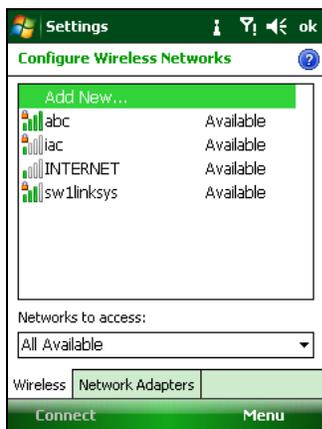


Figure 2-30 Wireless networks configuration

1. Tap **Add New...** in the Figure 2-30.

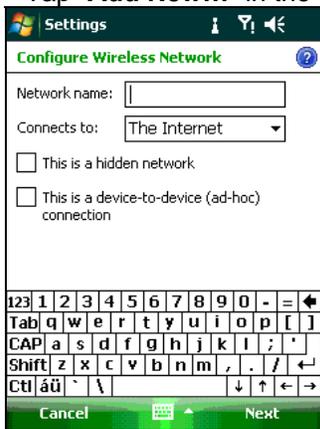


Figure 2-31 *New wireless networks configuration*

✓ *Note:* Only one of the two check box works.

2. Enter the name in the Figure 2-31.



Figure 2-32 *New wireless networks configuration*

3. Tap **Next** in the in the Figure 2-32.

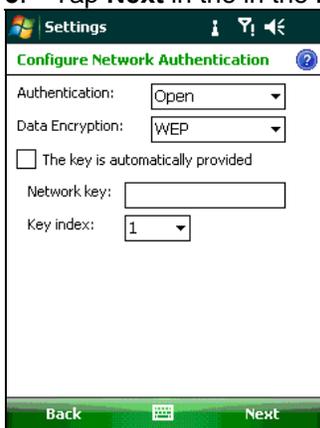


Figure 2-33 *Configure Network Authentication*

4. Tap **Next** in the Figure 2-33.



Figure 2-34 Configure Network Authentication

5. Tap Next in the Figure 2-34.

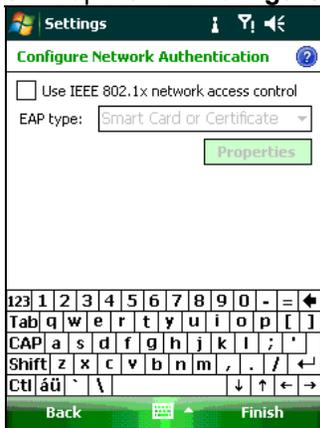


Figure 2-35 Configure Network Authentication

6. In the Figure 2-35, tick the “Use IEEE 802.1x network access control” check box, then tap Finish to finish the network adding.

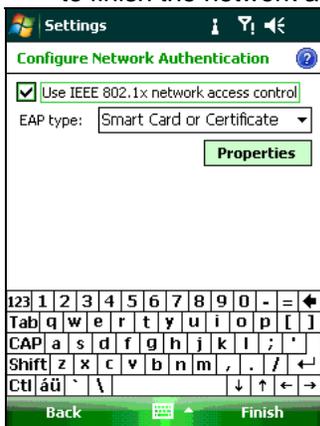


Figure 2-36 Configure Network Authentication

Chapter 3 Using GPS Navigation

Introduction

The FR68 Series includes Global Positioning System (GPS) technology using the Qualcomm chip. GPS technology is based on a worldwide system of GPS satellites orbiting the earth that continuously transmit digital radio signals. These radio signals contain data on the satellites' locations and their exact clock time and are used to determine your location on the earth.



WARNING!

When using the FR68 Series in a vehicle, it is the user's responsibility to place, secure and use in a manner that will not cause accidents, personal injury or property damage or obstruct their view. It is the responsibility of the driver to operate the vehicle in a safe manner, maintain observation of all driving conditions at all times, and not become distracted by the device to the exclusion of safe driving practices. It is unsafe to operate the controls of the device while driving.

Software Installation

Third-party GPS navigation software is required. Evaluation software is available from various suppliers.

If interested in purchasing GPS navigation software check with the GPS software vendor (before purchasing, downloading, or installing any software) to determine that the application is compatible with the FR68 Series. Refer to the application's user guide for application installation and setup information.

FR68 Series GPS Setup

The GPS-enabled FR68 Series uses Microsoft Windows Mobile 6.1, so the operating system automatically manages access to the GPS receiver to allow multiple programs to simultaneously access GPS data.

Ensure that the following settings are set on the FR68 Series:

1. Tap **Start > Settings > System > External GPS** icon.
2. In the **Programs** tab, select *GPD1* from the **GPS program port** drop-down list.

3. In the **Hardware** tab, select **COM6** in the **GPS hardware port** drop-down list.
4. Tap **ok** to close the **Setting** window.

✓ **NOTE** If an application error message appears indicating that the COM port cannot be opened, ensure that a free COM port is selected in the **GPS hardware port** drop-down list.

Operation

Acquiring satellite signals may take a few minutes. It is best to be outside and have a clear, unobstructed view of the sky. Without a clear view, acquisition takes much longer and could result in the FR68 Series being unable to compute the initial position quickly. When operating the device indoors access to the GPS signals may be limited or unavailable.

✓ **NOTE** When using a GPS navigation application, ensure that the FR68 Series does not go into suspend mode. If the FR68 Series suspends then the power to the GPS radio is removed. Upon resume the GPS receiver must reacquire a valid GPS signal, resulting in a delay of positional information.

GPS Maps on microSD Cards

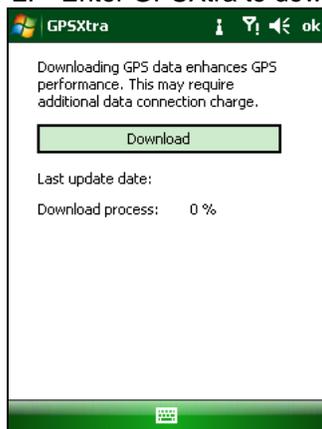
GPS navigation software vendors may sell maps on microSD cards. If using a microSD card with the GPS navigation software:

1. Remove the Memory Card Cover on the side of the FR68 Series.
2. Insert the microSD card into the slot.
3. Replace the Memory Card Cover.

Downloading GPS Data

Use this function to download GPS data to enhance GPS performance. This may require additional charge for data connection.

1. Tap **Start > Program > GPSXtra** icon.
2. Enter **GPSXtra** to download GPS data.



F **Figure 3-1** Download GPS data

Answering a Phone Call While Using GPS

If you receive a phone call while using your GPS navigation software:

1. Answer the phone call by pressing the **Answer** button.
2. Once you end the phone call, press the **End Call** button to resume the audio on the GPS software.

✓ **NOTE** Anytime you are using GPS on the FR68 Series and you receive a phone call, the audio on the GPS navigation software is muted until you finish the call.

Losing the GPS Signal While in a Vehicle

GPS performance on the FR68 Series may be affected if the vehicle has thermal glass windows and windshields, which can block the FR68 Series from receiving a GPS signal from satellites. To improve GPS signal strength, place the FR68 Series where there is a clear view of the sky. A direct line of sight is required between the FR68 Series and the GPS satellites to access information from the satellites.

The Global Positioning System (GPS) is a system that allows the user to track their position anywhere on the earth.

Assisted GPS

GPS can be used in stand-alone or Assisted GPS (A-GPS) modes. A Stand-alone GPS receiver downloads data from GPS satellites. It can take several minutes to get a fix. By using GPS Location servers, A-GPS dramatically improves the performance of the Time To First Fix (TTFF) of GPS receivers by providing them with data that they would ordinarily have to download from the GPS satellites. With the A-GPS data, GPS receivers can operate faster and more reliably.

A-GPS follows the Secure User Plane Location (SUPL) protocol which allows the FR68 Series to communicate with a location server.

Chapter 4 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.

FR68 Series with Bluetooth capabilities can exchange information (e.g., files, appointments, and tasks) with other Bluetooth enabled devices such as phones, and other mobile computers. To use the FR68 Series as a modem, create a dial-up modem connection between a computer and FR68 Series.

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 FR68 Series 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 FR68 Series. 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 to enter **Wireless Manager**. Tap **Bluetooth** icon to change **on** to **off**. The **Bluetooth** icon changes to indicate that Bluetooth is disabled.

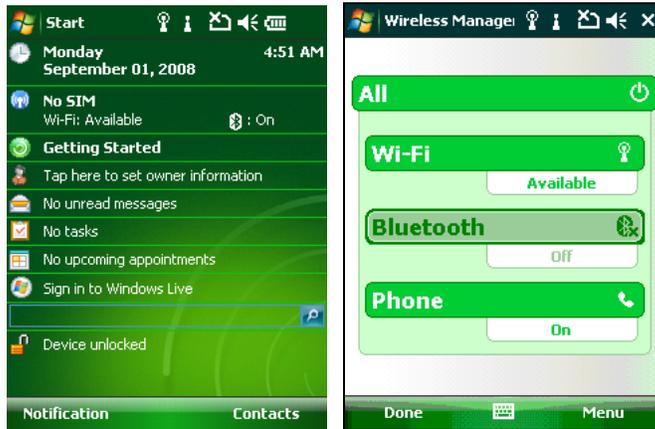


Figure 4-1 *Disable Bluetooth*

Enabling Bluetooth

To enable Bluetooth, tap **Bluetooth** icon to enter **Wireless Manager**. Tap **Bluetooth** icon to change **off** to **on**. The **Bluetooth** icon changes to indicate that Bluetooth is enabled.

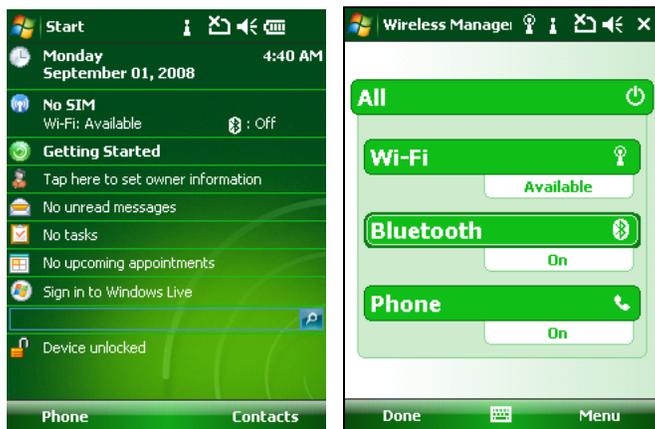


Figure 4-2 *Enable Bluetooth*

Bond New Device(s)

The FR68 Series can exchange information with bonded devices.

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 two devices are within 30 feet (10 meters) of one another.
4. Tap the **Bluetooth** icon to enter **Wireless Manager**. Then tap **Menu**.

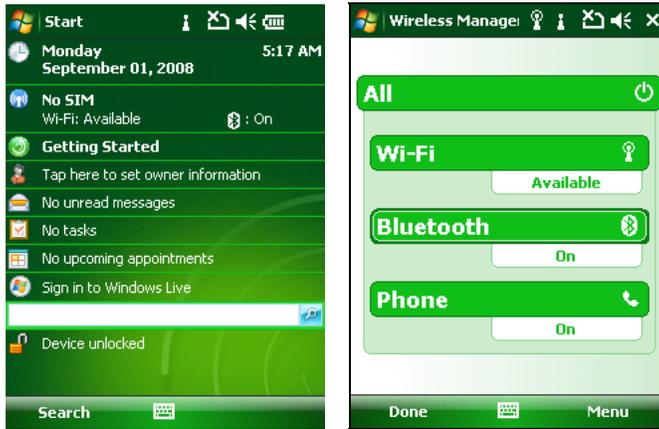


Figure 4-3 Enter Bluetooth Window

5. Tap **Menu** to enter **Settings** window. Then tap **Add new device** to search for Bluetooth devices.

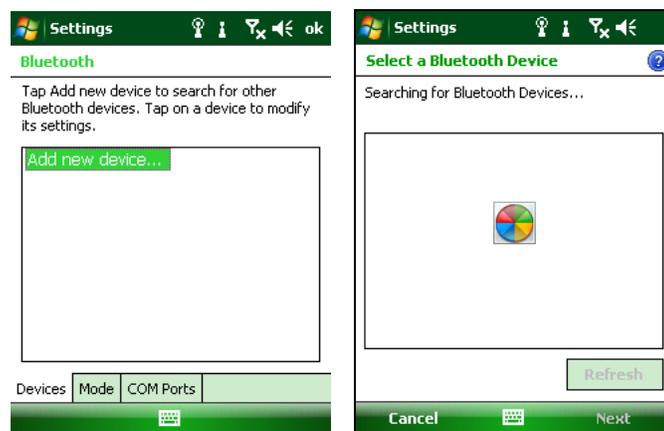


Figure 4-4 Add new device Window

6. After the device appears, you have to select it and then tap **Next**.
7. Enter a passcode to establish a secure connection with other devices. Meanwhile enter the passcode on the target device.



Figure 4-5 Discover Devices Dialog Box

File Transfer Services

To transfer files between the FR68 Series and another Bluetooth enabled device, ensure the FR68 Series is discoverable and connectable.

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

1. Choose one file as below, tap **Menu > Beam picture** Menu.

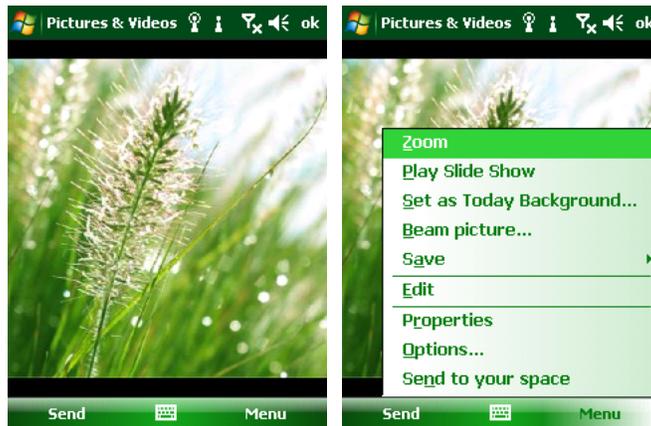


Figure 4-6 Select file

2. Then choose the destination device, and wait till **Done** is showed.

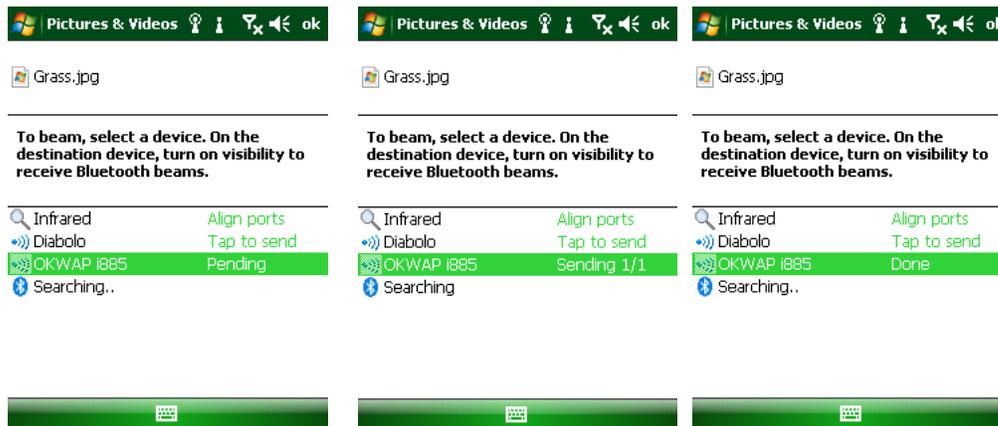


Figure 4-7 Transfer file Window

Bluetooth Settings

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

Device Info Tab

Use the Device Info tab to add and bond new devices. Please refer to Bond new device(s).

Mode Tab

Use the **Mode** tab to configure the FR68 Series' Bluetooth connection modes.

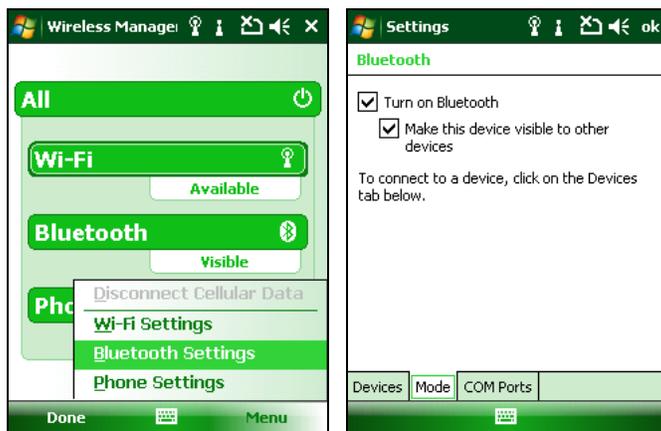


Figure 4-8 Bluetooth Settings - Device Info Tab

1. Before bonding a new device, make sure to turn on Bluetooth.
2. If you want other devices to find your FR68 Series, select “**Make this device visible to other devices**” check box..

COM Ports Tab

Use the **COM Ports** tab set specific outgoing ports for bonded devices.

1. Tap **New Outgoing Port**.

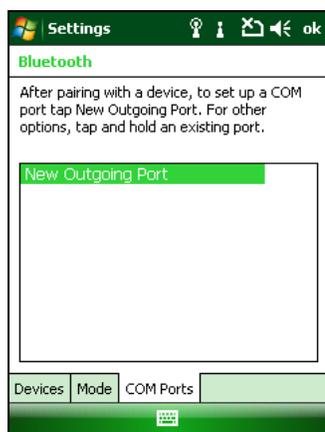


Figure 4-9 Add COM Ports

2. Select the device you want to add. Then tap **Next**.

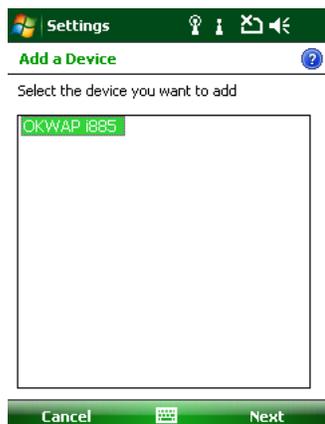


Figure 4-10 *Select device*

3. Select a port from drop-down list. Then tap **Finish**.

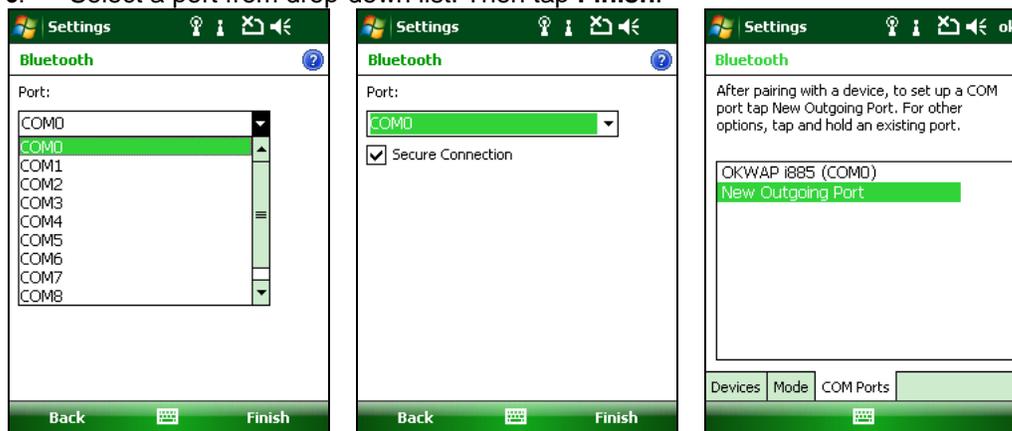


Figure 4-11 *Select a Port for Device*

Chapter 5 ActiveSync

Introduction

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

ActiveSync software:

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

Installing ActiveSync

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

Mobile Computer Setup

The mobile computer can be set up to communicate either with a USB connection. [Chapter 8](#),

Accessories provides the accessory setup and cable connection information for use with the mobile computer. The mobile computer communication settings must be set to match the communication settings used with ActiveSync.

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



Figure 5-1 ActiveSync Window

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

Setting Up an ActiveSync Connection on the Host Computer

To start ActiveSync:

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

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

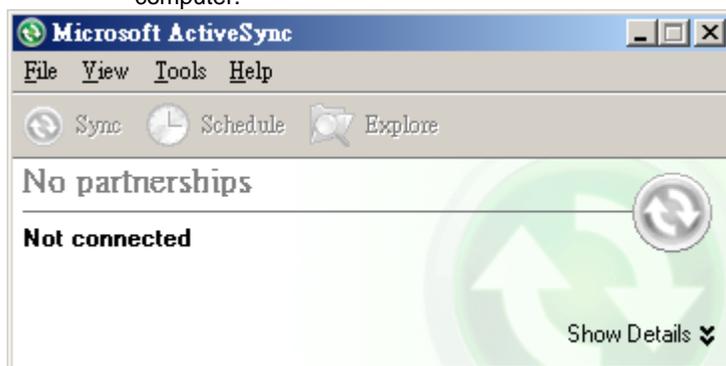


Figure 5-2 ActiveSync Window

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

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



Figure 5-3 *Connection Settings Window*

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

Synchronization with a Windows Mobile 6 Device

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

To synchronize with a Windows Mobile 6 device:

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



Figure 5-4 *Synchronization Setup Wizard Window*

2. Click **Next**.



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

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

4. Click **Next**.

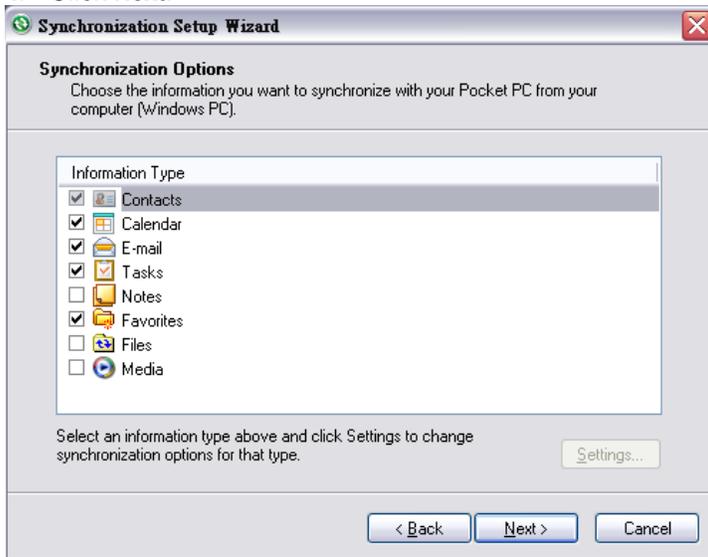


Figure 5-6 *Synchronization Option Window*

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

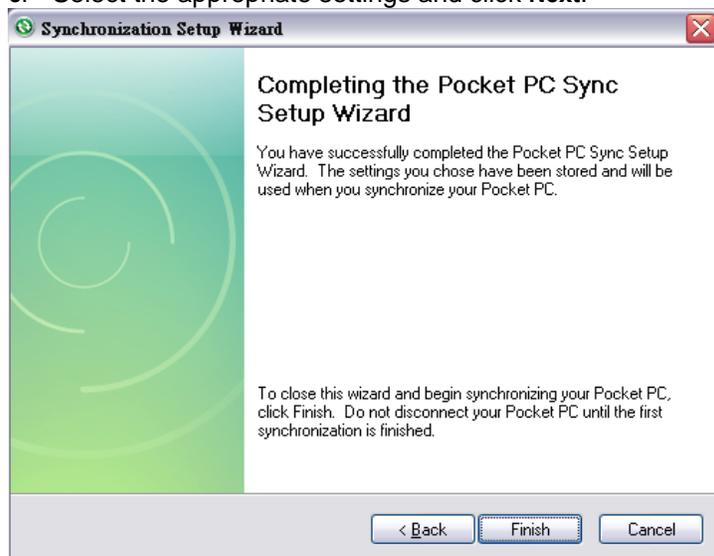


Figure 5-7 Wizard Complete Window

6. Click **Finish**.

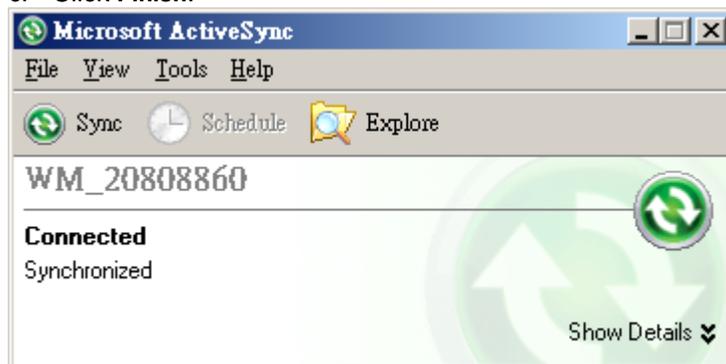


Figure 5-8 ActiveSync Connected Window

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

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

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

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

Chapter 6 Using the Phone

Introduction

Use the FR68 Series to make phone calls, set up speed dials, keep track of calls, and send text messages. Your wireless service provider may also provide other services such as voice mail, call forwarding, and caller ID.

Also use the integrated phone to connect to an ISP or work network in order to browse the Web and read e-mail. Connect to the Internet or work network over High-Speed Downlink Packet Access (HSDPA) (FR6876) using Cellular Line, or using the modem specified by the mobile operator.

Accessing the Phone Keypad

Access the keypad regardless of the program in use. Applications on the FR68 Series can be in use during a call.

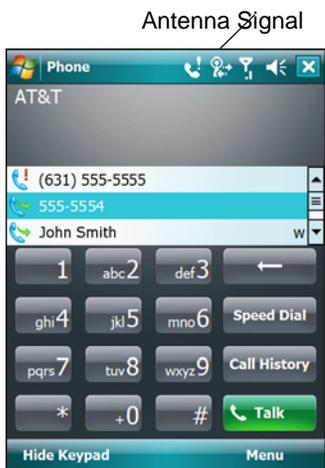


Figure 6-1 Phone Keypads

To access the phone keypad tap **Start > Phone** or press the green phone key on the FR68 Series' keypad.

To receive calls when the FR68 Series is suspended, leave the phone radio turned on and ensure the

FR68 Series is set to wake with any key.

Turning the Phone On and Off

Windows Mobile 6.1 devices include **Wireless Manager**, which provides a simple method of enabling and disabling the phone.

To open **Wireless Manager**, tap the **Connectivity** icon.

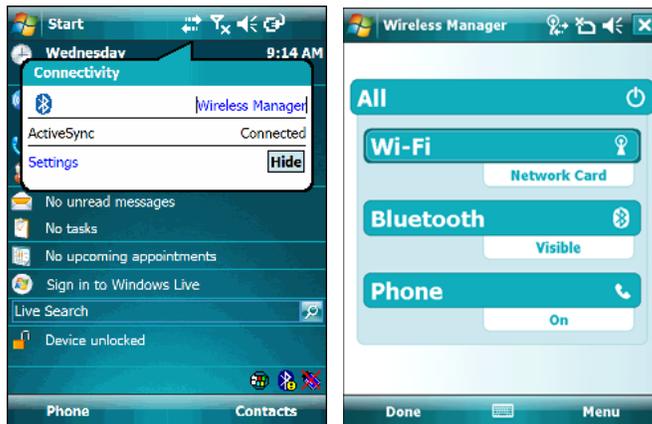


Figure 6-2 Opening Wireless Manager

Select **Wireless Manager**. The **Wireless Manager** window appears. To toggle on or off the phone, tap blue Phone bar.

To configure settings for a connection, tap **Menu > Phone Settings**.

✓ **NOTE** To receive calls when your device is suspended, leave the phone turned on.

Audio Modes

The FR68 Series offers three audio modes for use during phone calls:

- **Handset Mode:** Switches audio to the speaker at the top front of the FR68 Series, so you can use the FR68 Series as a handset. This is the default mode.
- **Speaker Mode:** Use the FR68 Series as if on speaker phone. Tap the **Speaker On** button to activate this mode. Tap the **Speaker Off** button to switch back to handset mode.
- **Headset Mode:** Connect a wired or Bluetooth headset to automatically switch audio to the headset. The FR68 Series defaults to handset mode. When a wired headset is plugged into the FR68 Series audio connector or a Bluetooth headset is configured for use with the FR68 Series, the earpiece and speakerphone are muted and audio is heard through the headset.

✓ **NOTE** While using a Bluetooth headset during a call, the mobile computer will not go into suspend mode.



Handset Mod

Figure 6-3 Audio Modes

Speaker Mode

Headset Mode

Using a Wired Headset

You can use a stereo headset for audio communication when using an audio-enabled application. To use a headset, plug the headset jack into the audio connector on the side of the FR68 Series. Set the FR68 Series' volume appropriately before putting the headset on. Plugging a headset into the jack mutes the speaker.

For the best audio performance, Motorola recommends a 2.5mm jack headset, see [Accessories on Page 16](#).

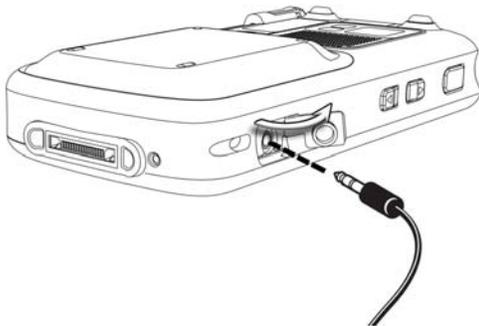


Figure 6-4 Using a Headset

Using a Bluetooth Headset

You can use a Bluetooth headset for audio communication when using an audio-enabled application. See [Chapter 4, Using Bluetooth](#) for information on connecting a Bluetooth headset to the FR68 Series. Set the FR68 Series' volume appropriately before putting the headset on. When a Bluetooth headset is connected the speakerphone is muted.

It is recommended for phone conversations to use the Bluetooth Hands-free profile instead of the Headset profile. See [Chapter 4, Using Bluetooth](#) for more information.

✓ **NOTE** When using a Bluetooth headset during a call, the FR68 Series power button is disabled and the FR68 Series will not go into suspend mode. Once the call is completed, the power button functionality is enabled.

The following dialog box displays when a Bluetooth headset connection is established.



Figure 6-5 WWAN Bluetooth Audio Notification Dialog Box

Adjusting Audio Volume

Use the Volume Control Slider or the keypad keys to adjust the volume of the ringer when not in a call and the audio volume when in a call.



Figure 6-6 Phone Volume Slider

To adjust the volume tap the **Speaker** icon in the **Title** bar. Move the slider up or down to adjust the volume.

- ✓ **NOTE** Adjust the conversation phone volume during a call. Adjusting the volume while not in a call affects the ring and notification sound levels.

Making a Call

- ✓ **NOTE** You can make emergency calls even when the FR68 Series is locked or when a SIM card is not installed. See [Making an Emergency Call on Page 80](#) for more information.

With the FR68 Series, you can make a call from the phone, contacts, speed dial and call history.

Using the Phone

To make a call using the phone keypad:

1. Tap **Start > Phone** or press the green phone key on the FR68 Series' keypad.
2. From the **Phone** keypad, tap the number to call.
3. Tap **Talk**.
4. Tap **End** to stop dialing or end the call.

✓ **NOTE** Alternatively, use the green and red phone keys on the FR68 Series keypad to dial (green) and end (red) calls. If you tap a wrong number, tap Delete key to erase each subsequent digit of a number. To erase the entire number, tap and hold the Delete key.

Using Contacts

Use Contacts to make a call without looking up or entering the phone number. To make a call from Contacts:

1. Tap **Start > Contacts**.
2. From the contact list, tap and hold the contact name.

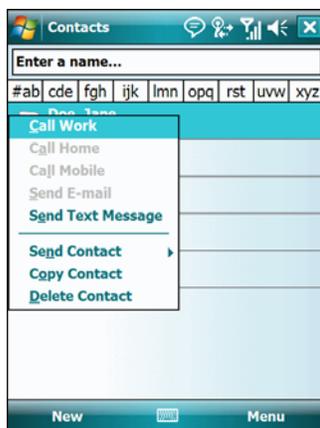


Figure 6-7 *Contacts Menu*

3. Tap **Call Work**, **Call Home** or **Call Mobile**.

✓ **NOTE** To make a call from an open contact, tap the number to call. See On-Device Help for more information about Contacts.

Using Call History

To make a call using Call History:

1. Tap **Start > Phone** or press the green phone key on the FR68 Series' keypad.
2. From the Phone keypad, tap **Call History**.



Figure 6-8 Call History

3. Tap the phone icon next to the number to begin dialing and return to the phone keypad.
4. Tap **End** or press the red phone key on the FR68 Series keypad to stop dialing or end the call.

Making a Speed Dial Call

Use Speed Dial to call someone saved in the speed dial directory. To make a speed dial call:

1. Tap **Start > Phone** or press the green phone key on the FR68 Series' keypad.
2. From the Phone keypad, tap and hold the speed dial location number assigned to a contact. (To dial a one-digit speed dial location number, tap and hold the speed dial number. To dial a two-digit speed dial location number, tap the first digit and then tap and hold the second digit.) or from the Phone keypad, tap **Speed Dial** and tap the speed dial location number of the desired contact in the list.



Figure 6-9 Speed Dial Contact List

3. To stop dialing or end the call, tap **End** or press the red phone key on the FR68 Series keypad.

Making an Emergency Call

Your service provider programs one or more emergency phone numbers, such as 911 or 999, that you can call under any circumstances, even when your phone is locked or the SIM card is not

inserted. Your service provider can program additional emergency numbers into your SIM card. However, your SIM card must be inserted in your phone in order to use the numbers stored on it. See your service provider for additional information.

When the alpha-numeric keypad phone is locked, press the Orange key twice to set the keypad to numeric mode and then enter the emergency number.

✓ **NOTE** Emergency numbers vary by country. Your phone's pre-programmed emergency number(s) may not work in all locations, and sometimes an emergency call cannot be placed due to network, environmental, or interference issues.

Answering a Call

A dialog box appears on the FR68 Series when it receives an incoming call. If the phone is set to ring, a ring tone sounds. Answer or ignore the incoming call.

To answer an incoming call tap **Answer** on the **Phone - Incoming** dialog or press the green phone key on the FR68 Series keypad.

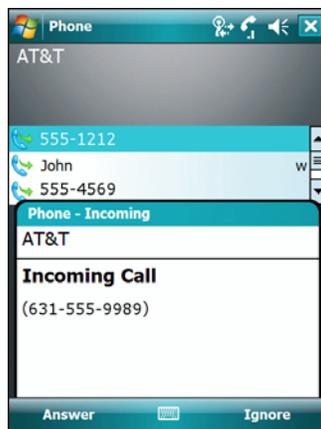


Figure 6-10 Incoming Call

To ignore the incoming call tap **Ignore**. This may send the caller to voice mail, depending on the service provider. Otherwise, this presents busy signal to the calling party.

To end the call, tap **End** or press the red phone key on the FR68 Series keypad.

Incoming Call Features

- If you receive a call while in a call, tap **Wait** to place the call in call waiting.
- You can use other programs on the FR68 Series during a call. To switch back to Phone, tap **Talk** or tap **Start >Phone**. Tap **End** to end the call.
- If a caller isn't in your contact list, create a contact during the call or from Call History by tapping **Menu >Save to Contacts**.
- To terminate a call when a second call comes in and answer the waiting call, tap **End** on the Phone keypad to disconnect the active call, then tap **Answer** or press the **Send** key to answer the waiting call.
- To hold the current call and answer a waiting call, tap **Answer** or press the **Send** key to place the current call on hold and answer the incoming call.
- To put a call on hold to call another number or answer an incoming call, tap **Hold** on an FR68 Series. To move from one call to another, tap **Swap** on an FR68 Series.

Smart Dialing

Smart Dialing makes it easy to dial a phone number. When you start entering numbers or characters, Smart Dialing automatically searches and sorts the contact entries on the SIM card, in Contacts, and the phone numbers in Call History (including incoming, outgoing, and missed calls). You can then select the desired number or contact from the filtered list to dial.

Open the Phone screen, then tap the keys on the Phone keypad that correspond to the phone number or contact to call. The contact panel lists contacts that match the sequence that you entered.

Smart Dialing starts looking for numbers or contacts that match the sequence entered. To find a phone number:

- Enter the first one or two digits to find a phone number in Call History.
- Enter the first three digits or more to find a phone number from the saved Contacts and SIM card.

To find a contact name:

- Enter the first letter of a contact's first name or last name. Smart Dialing searches for the letter starting from the first character of a contact name as well as from the character that appears after a space, dash, or underscore in a contact name. For example, if you tap number "2" which is associated with [a, b, c] on the Phone keypad, contact names such as the following will be considered matches: "Smith, Bernard", "Adams, John", "Carlson, Eileen", "Dillon, Albert", "Childs, Larry", "Cooper, Robert" and "Parks, Celine".
- If the matching list is long narrow down the search further by entering another letter. Using the same example above, tap "3" which is associated with (d, e, f), the matching list is narrowed down to the following names: "Smith, Bernard", "Adams, John", and "Parks, Celine".



Figure 6-11 Finding a Contact

To make a call or send a text message using Smart Dialing:

1. Begin entering the first few numbers or characters.
2. In the Smart Dialing panel, use the up and down arrows on the keypad to navigate to the desired contact or phone number.
3. When the correct contact is selected, press **TALK** to make a voice call.
4. To send a text message to the selected contact, tap **Menu > Send Text Message**.
5. To call a different phone number associated with the selected contact, tap the contact name and select the phone number to call.

Muting a Call

During a call, you can mute the microphone so you can hear the person on the line but he or she cannot hear conversation from the microphone. This is useful when there is conversation or background noise on your end.

To mute or unmute a call:

1. Tap **Start > Phone** or press the green phone key on the FR68 Series' keypad.
2. Make a call.
3. Tap **Mute** on the display to mute the audio. The **Mute** icon appears.



Figure 6-12 Mute Button and Icon

Taking Notes

To create a note during a call, tap **Note** on the display, then enter the note. For more information about creating notes see the Windows On-Device Help.

To access a note created during a call:

1. Tap **Start > Phone** or press the green phone key on the FR68 Series' keypad.
2. From the Phone keypad, tap **Call History**.
3. Tap and hold the number or the **Note** icon for the phone call entry containing the note.

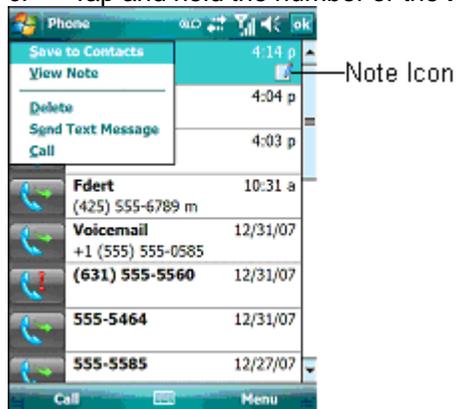


Figure 6-13 Call History - Notes Menu

4. Tap **View Note**.



Figure 6-14 Call History - Notes

5. Tap **ok** to exit.

✓ **NOTE** Also access notes directly from the Notes application by tapping **Start > Notes**.

Using Speed Dial

Create speed dial numbers to dial frequently called numbers with a single tap. Before creating a speed dial entry, ensure the phone number exists in Contacts.

Adding a Speed Dial Entry

To add a speed dial entry from the phone keypad:

1. Ensure the contact and phone number are in the Contacts list.
2. Tap **Start > Phone** or press the green phone key on the FR68 Series' keypad.
3. Tap **Menu > Speed Dial > Menu > New**.



Figure 6-15 Contacts

4. Tap the desired contact name and number in the list.



Figure 6-16 Speed Dial Contact Location

5. In the **Location** field, tap the up/down arrows to select an available location to assign as the new speed dial entry. The first speed dial location is reserved for voice mail.
6. Tap **ok** to add the contact to the speed dial list.



Figure 6-17 Speed Dial Contact List

7. Tap **ok** to exit the **Speed Dial Contact List**.

To add a speed dial entry from the **Contacts** window:

1. Tap **Start > Contacts**.

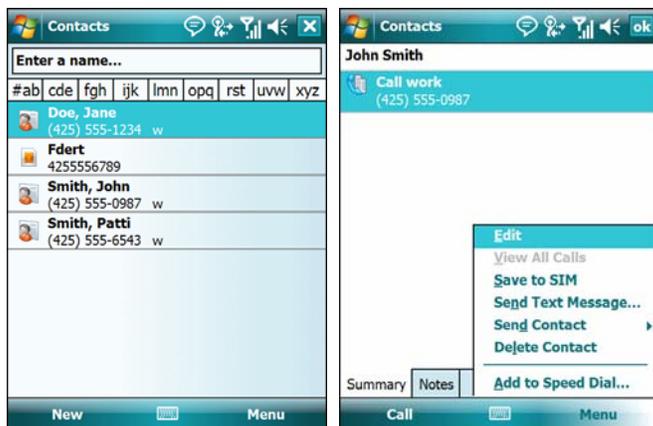


Figure 6-18 Contacts

2. Tap a contact name.

3. Tap **Menu > Add to Speed Dial**.



Figure 6-19 Speed Dial Contact Location

4. Tap the up/down arrows to select an available location to assign as the new speed dial entry. The first speed dial location is reserved for voice mail.
5. Tap **ok**.

Editing a Speed Dial Entry

1. Tap **Start > Phone** or press the green phone key on the FR68 Series' keypad.
2. Tap **Menu > Speed Dial**.

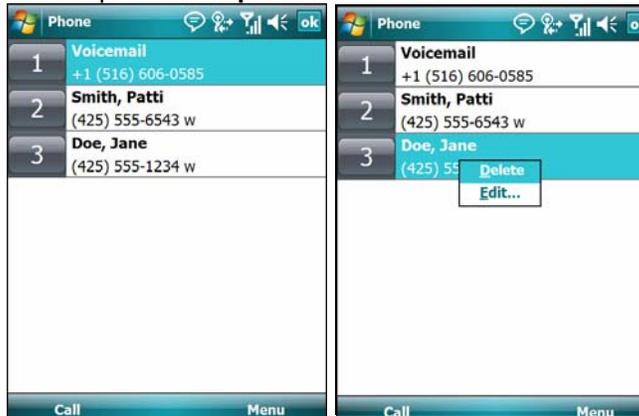


Figure 6-20 Speed Dial Contact List

3. Tap and hold the contact name.
4. Tap **Edit...**
5. Change the name, phone number, or location information.
6. Tap **ok**.

✓ **NOTE** Editing names and phone numbers in **Speed Dial** does not alter contact information in **Contacts (Start > Contacts)**.

Deleting a Speed Dial Entry

1. Tap **Start > Phone** or press the green phone key on the FR68 Series' keypad.
2. Tap **Menu > Speed Dial**.
3. Tap and hold the contact name.



Figure 6-21 Speed Dial Delete Menu

4. Tap **Delete**.
5. Tap **Yes** to confirm permanently deleting the speed dial entry.

✓ **NOTE** Deleting names and phone numbers in *Speed Dial* does not delete the contact information in **Contacts (Start > Contacts)**.

Using Call History

Use Call History to call someone who was recently called, or recently called in. Call History provides the time and duration of all incoming, outgoing, and missed calls. It also provides a summary of total calls and easy access to notes taken during a call. [Table 6-1](#) lists the call history icons that appear in the **Call History** window.

Table 6-1 Call History Icons

Ico	Description
	This icon appears next to the contact information for all outgoing calls.
	This icon appears next to the contact information for all incoming calls.
	This icon appears next to the contact information for all missed calls.

Managing Call History

Change views, reset the call timer, and delete calls to manage the calls stored in Call History.

Changing the Call History View

1. Tap **Start > Phone** or press the green phone key on the FR68 Series' keypad to display the

Phone keypad.

2. From the Phone keypad, tap **Call History**.
3. Tap **Menu > Filter** to show the menu.

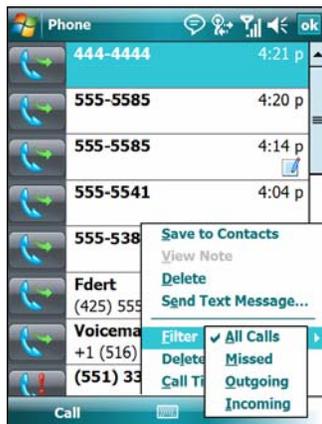


Figure 6-22 Call History - All Calls/Show Menu

4. Select a view type from the menu to display only missed calls, outgoing calls, incoming calls, or calls listed alphabetically by caller name.
5. Tap **ok** to exit the **Call History** window.

Resetting the Recent Calls Counter

1. Tap **Start > Phone** or press the green phone key on the FR68 Series' keypad to display the Phone keypad.
2. From the Phone keypad, tap **Call History**.
3. Tap **Menu**.

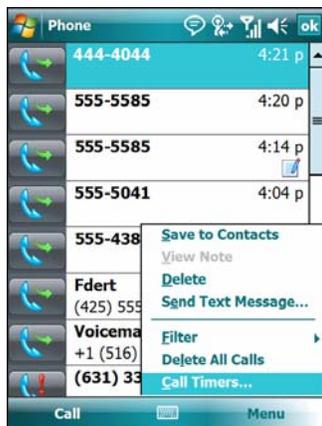


Figure 6-23 Call History - Tools Menu

4. Select **Call Timers...**

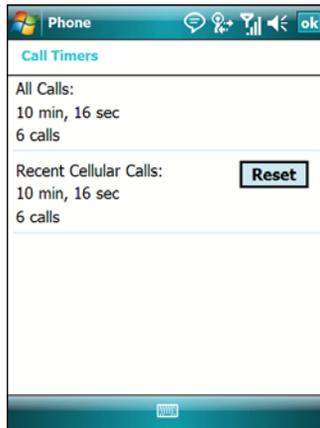


Figure 6-24 Call History - Call Timers

5. Tap **Reset**. (The **All Calls**: counter cannot be reset.)
6. Tap **ok** to exit the **Call Timers** window.

Deleting Call History Items by Call Date

1. Tap **Start > Phone** or press the green phone key on the FR68 Series' keypad to display the Phone keypad.
2. From the Phone keypad, tap **Call History**.
3. Tap **Menu > Call Timers...**

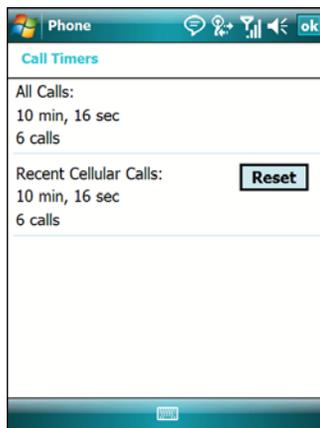


Figure 6-25 Call History - Call Timers

4. In the **Delete call history items older than:** drop-down list select a time period on which to base deletion of stored items.
5. Tap **ok** to exit the **Call Timers** window.

Deleting All Call History Items

1. Tap **Start > Phone** or press the green phone key on the FR68 Series' keypad to display the Phone keypad.
2. From the Phone keypad, tap **Call History**.
3. Tap **Menu**.

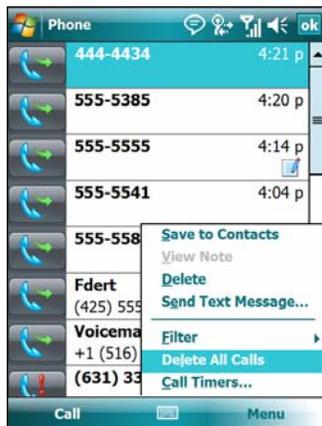


Figure 6-26 Call History - Tools Menu

4. Select **Delete all calls**.

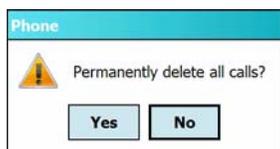


Figure 6-27 Call History - Delete All Dialog

5. Tap **Yes**.
6. Tap **ok** to exit the **Call History** window.

Viewing Call Status

1. Tap **Start > Phone** or press the green phone key on the FR68 Series' keypad to display the Phone keypad.
2. From the Phone keypad, tap **Call History**.
3. Tap an entry. The Call Status window appears.

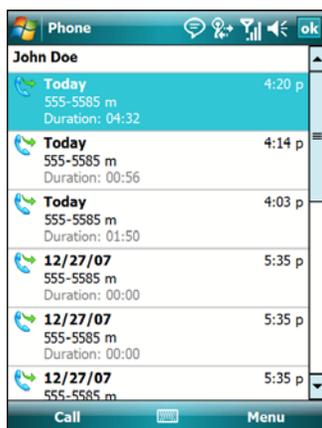


Figure 6-28 Call History - Detail

✓ **NOTE** When more than one call is on the phone line, only the duration of the first call is recorded.

4. Tap **ok** and then **ok** to exit.

Using the Call History Menu

Use the Call History menu to dial voice mail, access the Activation Wizard, save to contacts, view a note, delete a listing, send an SMS, and make a call.

1. Tap **Start > Phone** or press the green phone key on the FR68 Series' keypad to display the Phone keypad.
2. From the Phone keypad, tap **Call History**.
3. Tap and hold an item in the list.

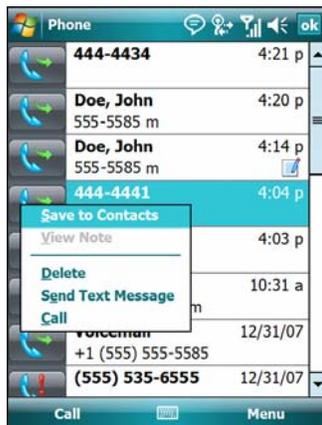


Figure 6-29 Call History - Menu

4. Select an applicable item from the menu, as needed.
5. Depending on the item selected, the appropriate window displays. For example, select **Send SMS** to display the **Inbox** window.
6. Tap **ok** to exit the **Call History** window.

Swapping Calls

To move between two or more phone calls:

1. Tap **Start > Phone** or press the green phone key on the FR68 Series' keypad to display the Phone keypad.
2. Enter the first phone number and press **Talk**. When the call connects, **Hold** appears on the keypad.



Figure 6-30 Call Swapping - Hold

3. Tap **Hold** on to place the first number on hold.
4. Enter the second number and tap **Talk**.



Figure 6-31 *Call Conferencing - Conferencing*

5. Tap **Swap** to move from one call to the other.
6. Tap **End** or press the red phone key on the FR68 Series keypad to end each call.

Conference Call

- ✓ **NOTE** Conference Calling and the number of conference calls allowed may not be available on all services. Please check with your service provider for Conference Calling availability.

To create a conference phone session with multiple people:

1. Tap **Start > Phone** or press the green phone key on the FR68 Series' keypad to display the Phone keypad.
2. Enter the first phone number and press **Talk**. When the call connects, **Hold** appears on the keypad.



Figure 6-34 *Conference Call - Hold*

3. Tap **Hold** to place the first call on hold.
4. Enter the second phone number and tap **Talk**.
5. After the call is answered, tap **Menu > Conference** to place the calls in conference mode.

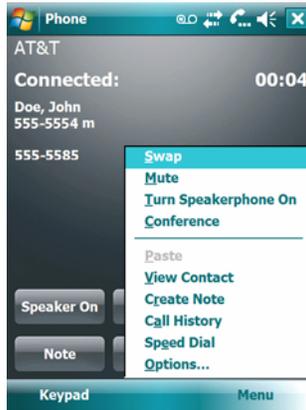


Figure 6-35 *Creating a Conference Call*

6. Tap **Hold** to place the conference on hold.
 7. Enter another phone number and tap **Talk**.
 8. After the call is answered, tap **Menu > Conference** to place all the calls in conference mode.
 9. Repeat steps 6 through 8 for up to six phone numbers.
 10. Tap **End** or press the red phone key on the FR68 Series keypad to end the conference call.
- ✓ **NOTE** To speak privately with one party during a conference call, tap **Menu > Private**. To include all parties again, tap **Menu > Conference**.

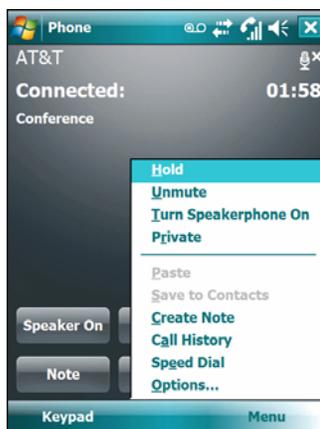


Figure 6-36 *Creating a Private Call*

Text Messaging

Use the **Text Messages** window to send and receive text messages to and from mobile phones. The text can contain words, numbers, or an alphanumeric combination no longer than 160 characters.

Short text messages delivered over mobile networks transmit from the sending FR68 Series, are stored in a central short message center, then forwarded to the destination mobile device. If the recipient is not available, the message is stored and can be sent later.

Viewing Text Messages

To view a text message:

You can view a text message whether the phone is on or off. When the phone is on, you can view a text message from its notification callout. Tap the **text message notification** icon on the navigation bar to display the message.



Figure 6-38 *New Text Message Notification*

The Caller Identification feature matches incoming text message numbers with those stored in **Contacts** so you know who is sending you a message. Furthermore, the **New Text Message** dialog box gives you the option to call the sender or save, dismiss, or delete the message.



Figure 6-39 *New Text Message Options*

When the phone function is off, you can still view received text message in Messaging:

1. Tap **Start > Messaging > Text Messages**, or on the Today screen, tap **Text Messages**.

Tap Text Messages. —————

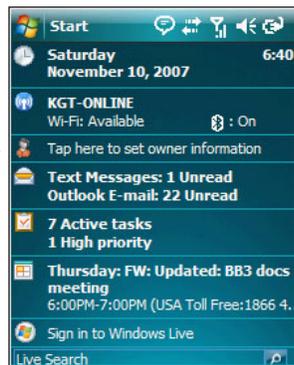


Figure 6-40 Text Messaging on Today Screen

The **Messaging** window appears.

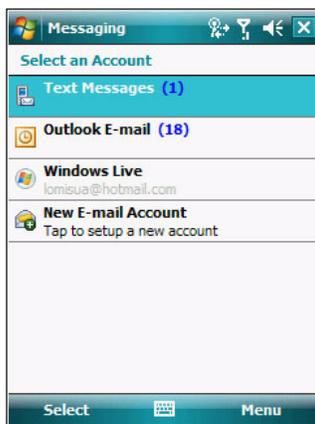


Figure 6-41 Messaging Window

2. In the message list, tap a **Text Messages**.

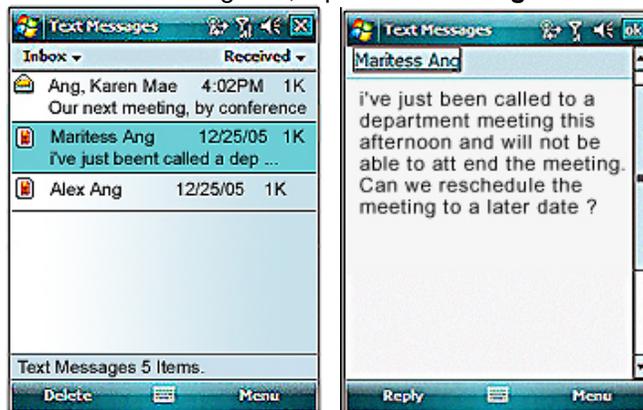


Figure 6-42 Text Messages List

3. Tap **Reply** to reply the message.

✓ **NOTE** If the phone is turned off and you tried to call the sender, send a reply, or forward the message, you are prompted to turn the phone function on.

Sending a Text Message

To create a text message:

1. On the **Phone** screen, select a contact name that you want to send a message to.
2. Tap **Menu > Send Text Message**.



Figure 6-43 Phone Screen Contact List

3. Compose your message.



Figure 6-44 Create Text Message

- The auto-correct feature automatically fixes common spelling errors as you type so your messages are more accurate.
- The character counter lets you see and control the size of the message as you compose.
- If you want to know if your text message was received, tap **Menu > Message Options**, then select the **Request SMS** text message delivery notification check box.

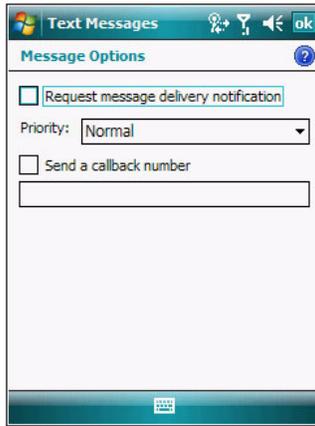


Figure 6-45 *Message Options Window*

4. Tap **Send** when you've finished the message.

If the phone is turned on, your text message is sent. If it's off, you are prompted to turn on the phone. If you do so, the message is sent; otherwise when you tap **ok**, the message is saved in the **Drafts** folder and sent when the phone is turned on.

If you are out of coverage area, the message is saved in the **Drafts** folder and sent when you return to a coverage area.

- ✓ **NOTE** On FR68 devices, the message remains in the **Drafts** folder and has to be manually re-sent when you return to a coverage area.

Chapter 7 GSM Configuration

Introduction

This chapter explains how to verify FR6874 and FR6876 service on an Global System for Mobile communications (GSM) wireless network and establish settings.

GSM networks deliver mobile voice and data services, such as Short Message Service (SMS)/Text Messaging, with full roaming capabilities across the world. High-speed Downlink Packet Access (HSDPA) enabled networks offer Internet-based content and packet-based data services. This enables services such as internet browsing, e-mail on the move, powerful visual communications, multimedia messages, and location-based services. When using the FR6874, FR6876 as a phone, services can include speed dialing, call tracking, voice mail, call forwarding, conference calling, and caller ID, depending on the type of service.

Also use the integrated phone as a modem to connect the FR6874/FR6876 to an ISP or work network. The GSM enabled FR6874, FR6876 can connect to the Internet or work network using Cellular Line, or using the modem specified by the mobile phone service provider.

✓ **NOTE** Before using an FR6874/FR6876 on a wireless network, first select a provider, establish a voice and data-enabled service plan, and configure the FR6874/FR6876 (where applicable). See Chapter 6, Using the Phone for information on how to use the phone and services.

FR6874/FR6876 Service Verification

FR6874/FR6876 phone and data services require a live SIM card, obtained from a service provider, installed in the FR6874/FR6876. The SIM card has embedded circuitry on one side of its surface which, when inserted into an FR6874/FR6876 phone, provides phone service. The SIM card provides a phone number, determines the features or services available to the subscriber, and identifies the subscriber to the network.

In addition to SIM card installation, the FR6874/FR6876 may require various settings to operate as a phone with data connection features.

Ensuring Network Coverage

1. Ensure an activated SIM card, from the phone service provider, is installed in the FR6874/FR6876.

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

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



Figure 7-1 Connectivity Dialog

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

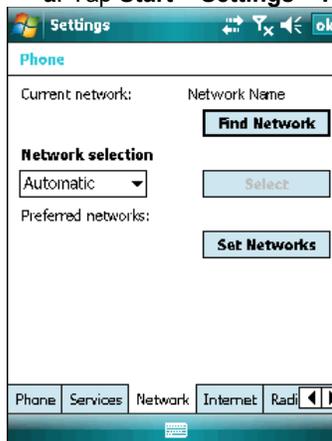


Figure 7-2 Phone Settings Window - Network Tab

- b. Ensure the service provider's network appears in the **Current network:** field.
 - c. If the network does not appear, tap **Find Network**. If the network still does not appear, verify that the SIM card was installed correctly. If it was, and no network appears, contact the service provider.

Configuring a Data Connection

A data connection allows Internet access across a wireless network. To set up a new data connection:

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



Figure 7-3 Connections Window

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



Figure 7-4 Connections Window - Make New Connection

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

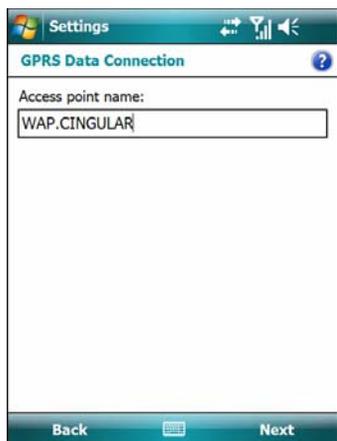


Figure 7-5 Connections Window - Access Point Name

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



Figure 7-6 Connections Window - User Name & Password

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

Establishing a Data Connection

1. Ensure a SIM card is installed in the FR6874/FR6876.
2. Configure a GPRS data connection. See [Configuring a Data Connection on Page 100](#).
3. Tap the connectivity icon , , or  at the top of the screen.

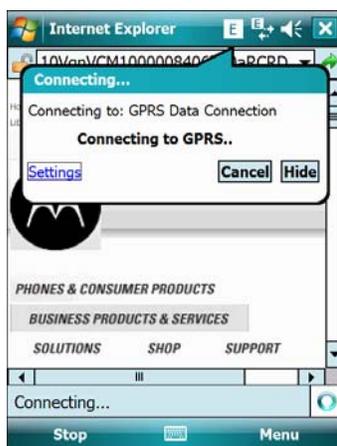


Figure 7-7 Connectivity Dialog Box

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

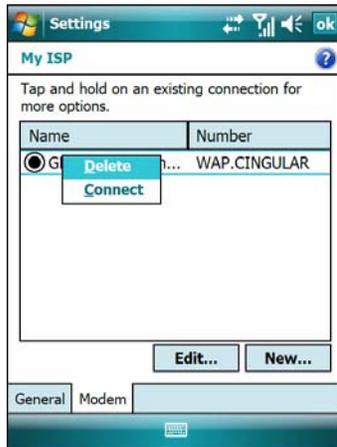


Figure 7-8 Data Connection

8. Select **Connect**.



Figure 7-9 Connecting Using GPRS

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

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

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

Ending a Data Connection

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

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



Figure 7-10 Connectivity Dialog Box

2. Tap **Disconnect**.

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

Settings

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

Phone

Use the **Phone** tab to customize ring type, ring tone, keypad tone, and security options. Tap **Start > Settings > Personal tab > Phone icon > Phone tab** or **Start > Phone > Menu > Options > Phone tab**.



Figure 7-11 FR6874/FR6876 Phone Window - Phone Tab

Sounds

1. **Phone Number** automatically displays on the **Phone** tab when a live SIM card is installed.
2. Select a ring type from the **Ring type:** drop-down list. The ring type changes the way the FR6874/FR6876 rings when you receive an incoming call. Regardless of the ring type selected, a dialog box appears on the FR6874/FR6876's display for incoming calls.

3. Select a ring tone for incoming calls from the **Ring tone:** drop-down list. To hear a sample of the selected ring tone, tap ▶. Tap ■ to end the ring tone.
- ✓ **NOTE** To use custom .wav, .mid, or .wma files as ring tones, use ActiveSync on the host computer to copy the file to the /Windows/Rings folder on the FR6874/FR6876. Then select the sound from the ring tone list.
4. Select a keypad tone from the **Keypad:** drop-down list. This selection determines the tone that sounds when entering a phone number on the keypad.
Select **Short tones** or **Long tones** to specify the duration of the sound when you press a number on the keypad.
Select **Off** to disable tones.
- ✓ **NOTE** Turning off sounds saves power and prolongs battery life.

Security

Enabling a PIN

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

To require a PIN when using the phone:

1. From the **Phone** tab ([Figure 7-11](#)), select the **Require PIN when phone is used** check box under **Security**.



Figure 7-12 Enter PIN

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

Changing a PIN



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

1. From the **Phone** tab ([Figure 7-11](#)), tap **Change PIN**.
2. Use the touch keypad to enter the current PIN.
3. Tap **Enter**.

4. Use the touch keypad to enter a new four to eight digit PIN.
5. Tap **Enter**.
6. Reenter the new PIN for confirmation and tap **Enter**.
7. Tap **ok** to confirm the change.

Disabling a PIN

1. From the **Phone** tab (*Figure 7-11*), deselect the **Require PIN when phone is used** check box.
2. Use the touch keypad to enter the current PIN.
3. Tap **Enter**.
4. Tap **ok** to confirm the change.
5. Tap **ok** to exit settings.

Services

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

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

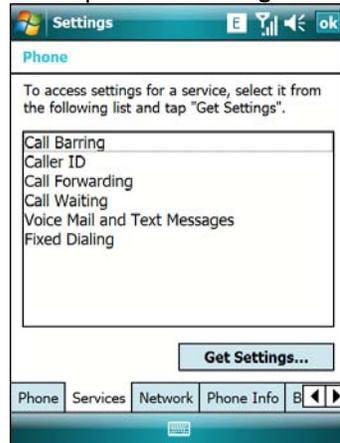


Figure 7-13 FR6874/FR6876 Phone Window - Services Tab

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

Call Barring (Call Blocking)

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

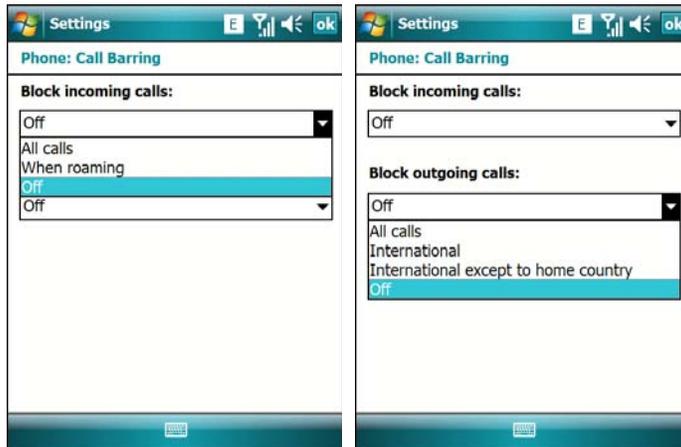


Figure 7-14 Call Barring/Call Blocking

Caller ID

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

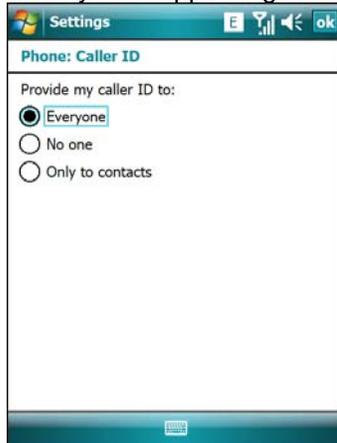


Figure 7-15 Caller ID

Call Forwarding

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

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

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

is turned off or the user is unreachable.

- **Busy:** enter the phone number to receive forwarded calls only when the line is busy.

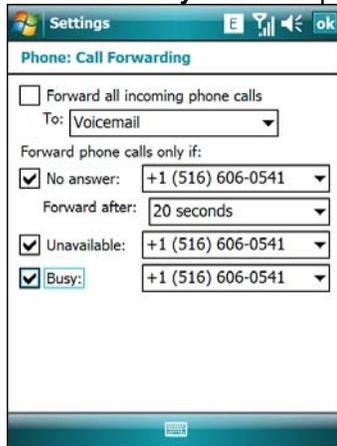


Figure 7-16 Call Forwarding

Call Waiting

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

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

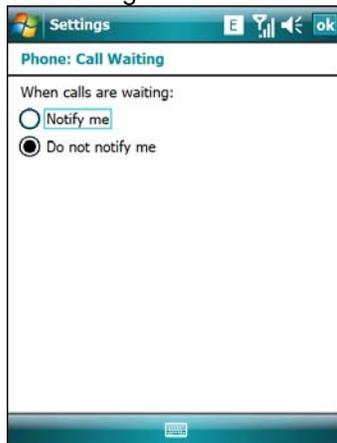


Figure 7-17 Call Waiting

Voice Mail and Text Messages

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



Figure 7-18 *Voice Mail and Text Messages*

Fixed Dialing

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

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

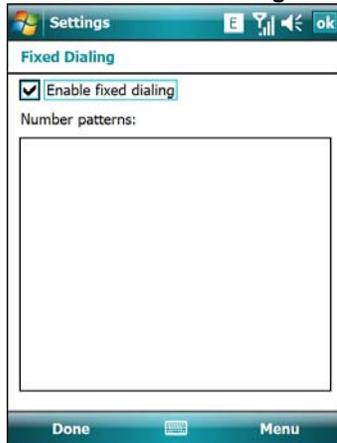


Figure 7-19 *Fixed Dialing Window*

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

Network

Use the **Network** tab to view available networks, determine the order in which the phone accesses another network if the current network is unavailable, and specify whether to change networks manually or automatically. The current network remains active until it's changed, the signal is lost, or the SIM card is changed. The network the FR6874/FR6876 currently uses appears in the **Current network:** field at the top of the window.

Changing Networks Manually

1. Tap **Start > Settings > Personal tab > Phone icon > Network tab** or **Start > Phone > Menu > Options > Network tab**.

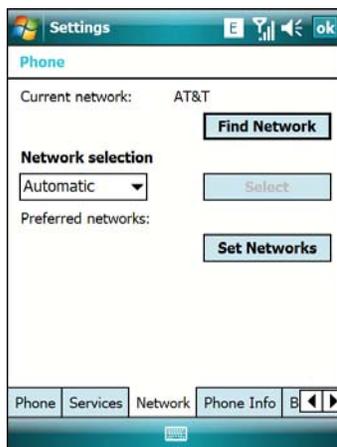


Figure 7-20 FR6874/FR6876 Phone Window - Network Tab

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

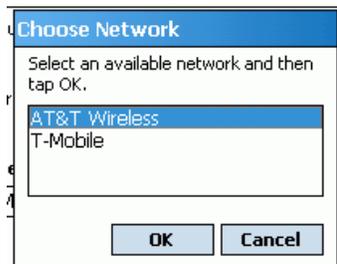


Figure 7-21 Choose Network

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

Viewing Available Networks

To view all wireless networks available:

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

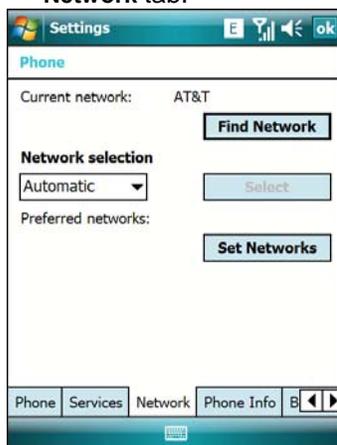


Figure 7-22 FR6874/FR6876 Phone Window - Network Tab

2. Tap Find Network.

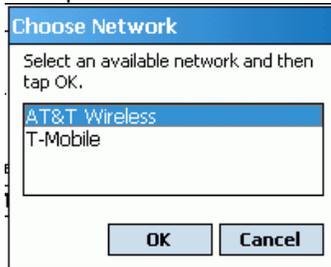


Figure 7-23 Choose Network

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

Setting Preferred Networks

Set networks in a preferred order of access. Setting preferred networks allows the FR6874/FR6876 to access a second preferred network if the first is unavailable.

1. Tap **Start > Settings > Personal tab > Phone icon > Network tab** or **Start > Phone > Menu > Options > Network tab**.

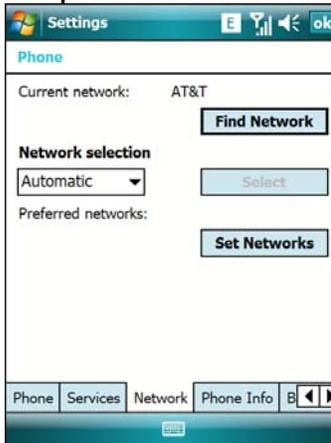


Figure 7-24 FR6874/FR6876 Phone Window - Network Tab

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

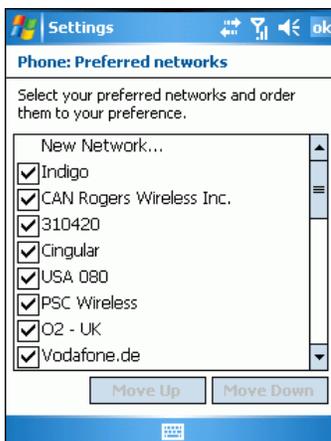


Figure 7-25 Preferred Networks

3. Select the preferred networks by tapping one or more check boxes.

4. Tap **Move Up** and **Move Down**, as necessary, to place the selected networks in the preferred order.
5. Tap **ok** to send the new settings to the network.
6. From the **Network** tab, select **Automatic** from the **Network selection** drop-down list.
7. Tap **ok** to exit settings.

Phone Info

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

1. Tap **Start > Settings > Personal tab > Phone icon > Phone Info tab** or **Start > Phone > Menu > Options > Phone Info tab**.

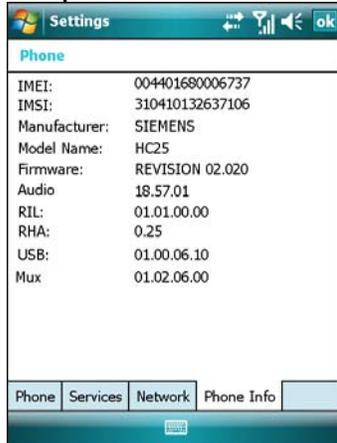


Figure 7-26 FR6874/FR6876 Phone Window - Phone Info Tab

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

Network Time Synchronization

The FR6874/FR6876 can support NITZ (Network Identity and Time Zone) feature, and this feature depends on network carrier.

Chapter 8 Accessories

Introduction

FR68 Series accessories, listed below, provide a variety of product support capabilities.

- Single Slot USB/Serial Cradle - Charges the FR68 Series main battery and a spare battery. Synchronizes the FR68 Series with a host computer through a USB connection.
- Four Slot Battery Charger - Charges spare standard and high capacity batteries.
- Auto Charge Cable - Plugs into a vehicle cigarette lighter to charge the FR68 Series while on the road.
- Charge Only Cable - Provides power to the FR68 Series.
- USB Charging Cable - Provides power to the FR68 Series and USB communication with a host computer.
- Headset - Used in noisy environments.

Single Slot USB/Serial Cradle

This section describes how to use a Single Slot USB/Serial cradle with the FR68 Series.

The Single Slot USB/Serial Cradle:

- Provides 5.4 VDC power for operating the FR68 Series.
- Synchronizes information between the FR68 Series and a host computer.
- Charges the FR68 Series' battery.
- Charges a spare battery.

Charging the FR68 Series Battery

Connect the cradle to power. Insert the FR68 Series into the slot to begin charging.

✓ **NOTE** Insert the adaptor module into the cradle before inserting the FR68 into the cradle..

* It is recommended that this product be charged for 24 hours before the first use to ensure that the internal battery is fully charged.

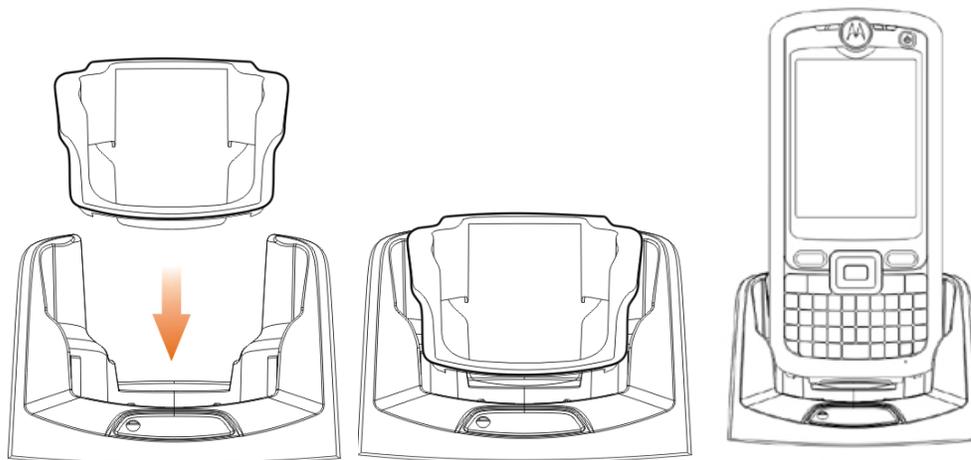


Figure 8-1 FR68 Series Battery Charging

Charging the Spare Battery

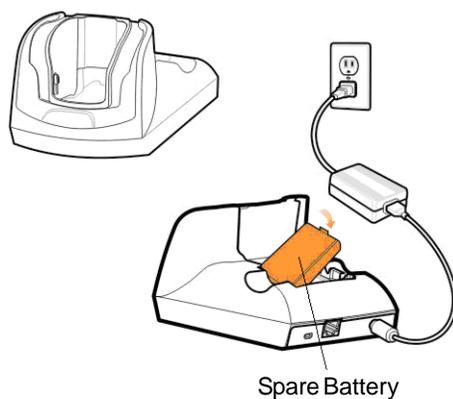


Figure 8-2 Spare Battery Charging

Battery Charging Indicators

The Single Slot USB/Serial Cradle charges the FR68 Series' main battery and a spare battery simultaneously.

The FR68 Series' charge LED indicates the status of the battery charging in the FR68 Series. See [Table 1-2 on Page 20](#) 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 6-1 on Page 115](#) for charging status indications.

The 1950 mAh battery is fully charged in less than four hours, and the 3600 mAh battery, in approximately six hours.

Charging Temperature

Charge batteries in temperatures from 0°C to 45°C (32°F to 114°F). Charging is intelligently controlled by the FR68 Series.

To accomplish this, for small periods of time, the FR68 Series or accessory alternately enables and disables battery charging to keep the battery at acceptable temperatures. The FR68 Series or accessory indicates when charging is disabled due to abnormal temperatures via its LED. See [Table 1-2 on Page 20](#) and [Table 6-1 on Page 115](#).

Table 6-1 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.

Four Slot Battery Charger

This section describes how to use the Four Slot Battery Charger to charge up to four FR68 Series batteries.

FR68 Series Battery Shim Installation

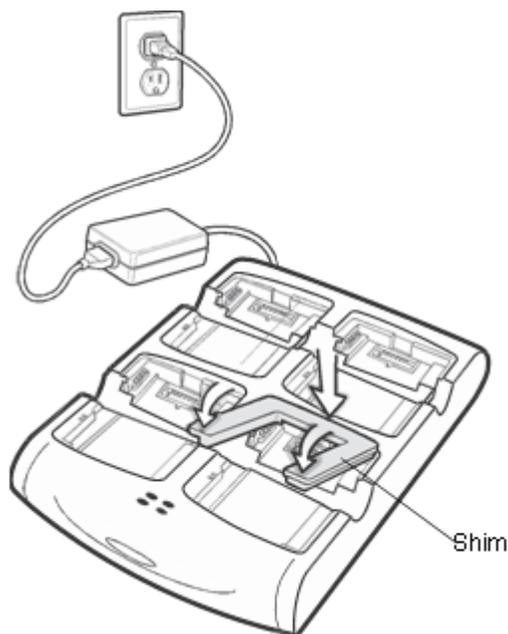


Figure 8-3 FR68 Series Battery Shim Installation

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

Spare Battery Charging

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

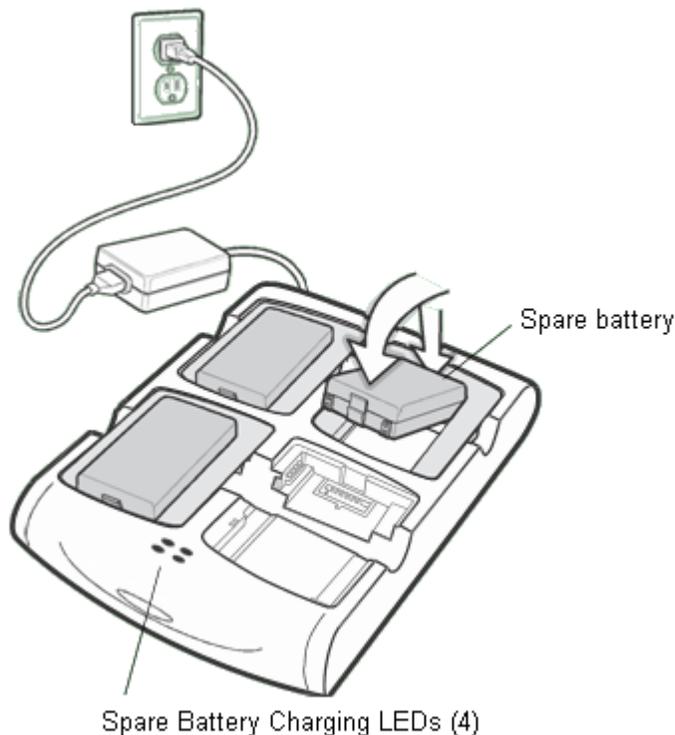


Figure 8-4 Four Slot Battery Charger

Battery Charging Indicators

The charger has an amber LED for each battery charging well. See [Table 6-1 on Page 115](#) for charging status indications. The 1950 mAh battery is fully charged in less than four hours, and the 3600 mAh battery, in approximately six hours.

Charging Temperature

Charge batteries in temperatures from 0°C to 45°C (32°F to 113°F). Charging is intelligently controlled by the FR68 Series.

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 6-2 on Page 118](#).

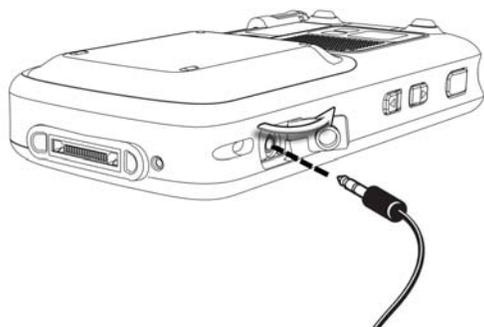
Table 6-2 Spare Battery LED Charging Indicators

LED	Indication
Off	No spare battery in slot; battery is not charging; battery is not inserted correctly in the charger; charger is not powered.
Slow Blinking Amber	Spare battery is charging.
Solid Amber	Charging complete.

Headset

Use the headset to communicate via Voice-Over-IP (VOIP) or for audio playback and telephony applications. To connect the headset, remove the plug from the headset jack at the top of the FR68 Series and insert the headset connector. Contact a Motorola representative for compatible headsets.

For best performance, Motorola recommends a 2.5mm jack headset, p/n 90-17C28-001R.

**Figure 8-5** Headset Connection

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 Client Charge cable (standard-A connector and a barrel receptacle for power)
- Auto charge cable
- Charge only cable.

Communication/charge cables:

- Provide the FR68 Series with operating and charging power when used with the Motorola approved power supply.
- Synchronize information between the FR68 Series and a host computer.
- Provide USB connection through the USB pass-through port for communication with a USB device, such as a host computer.

Battery Charging and Operating Power

The communication/charge cables can charge the FR68 Series battery and supply operating power. To charge the FR68 Series battery:

1. Connect the communication/charge cable power input connector to the Motorola approved power source.
2. Slide the bottom of the FR68 Series into the connector end of the communication/charge cable and gently press in until it latches into the FR68 Series. The FR68 Series amber Charge LED indicates the FR68 Series battery charging status. The 1950 mAh standard battery is fully charged in less than four hours, and the 3600 mAh standard battery, in approximately six hours. See [Table 1-2 on Page 20](#) for charging status indications.
3. When charging is complete, remove the cable by gently pulling the FR68 Series and the cable apart.

LED Charge Indications

The amber Charge LED on the FR68 Series indicates battery charging status. See [Table 1-2 on Page 20](#) for charging status indications.

Charging Temperature

Charge batteries in temperatures from 0°C to 45°C (32°F to 113°F). Charging is intelligently controlled by the FR68 Series.

To accomplish this, for small periods of time, the FR68 Series or accessory alternately enables and disables battery charging to keep the battery at acceptable temperatures. The FR68 Series or accessory indicates when charging is disabled due to abnormal temperatures via its LED. See [Table 1-2 on Page 20](#).

Chapter 9 Maintenance & Troubleshooting

Introduction

This chapter includes instructions on cleaning and storing the FR68 Series, and provides troubleshooting solutions for potential problems during FR68 Series operation.

Maintaining the FR68 Series

For trouble-free service, observe the following tips when using the FR68 Series:

- Do not scratch the screen of the FR68 Series. When working with the FR68 Series, 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 FR68 Series screen.

Motorola recommends using a screen protector, p/n MN2800AAAPSC.

- The touch-sensitive screen of the FR68 Series is glass. Do not drop the FR68 Series or subject it to strong impact.
- Protect the FR68 Series 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 FR68 Series in any location that is dusty, damp, or wet.
- Use a soft lens cloth to clean the FR68 Series. If the surface of the FR68 Series 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 FR68 Series. 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

Battery Safety Guidelines

- The area in which the units are charged should be clear of debris and combustible materials or chemicals. Particular care should be taken where the device is charged in a non commercial environment.
- Follow battery usage, storage, and charging guidelines found in the user's guide.
- Improper battery use may result in a fire, explosion, or other hazard.
- To charge the mobile device battery, the battery and charger temperatures must be between +32 °F and +113 °F (0 °C and +45 °C).
- Do not use incompatible batteries and chargers. Use of an incompatible battery or charger may present a risk of fire, explosion, leakage, or other hazard. If you have any questions about the compatibility of a battery or a charger, contact 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 promptly dispose of used re-chargeable batteries.
- Do not dispose of batteries in fire.
- Seek medical advice immediately if a battery has been swallowed.
- In the event of a battery leak, do not allow the liquid to come in contact with the skin or eyes. If contact has been made, wash the affected area with large amounts of water and seek medical advice.
- If you suspect damage to your equipment or battery, contact 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 FR68 Series

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 Main Battery on Page 22](#).
2. Close battery door.
3. Dip the cotton portion of the cotton tipped applicator in isopropyl alcohol.
4. Rub the cotton portion of the cotton tipped applicator back-and-forth across the connector on the bottom of the FR68 Series. Do not leave any cotton residue on the connector.
5. Repeat at least three times.
6. Use the cotton tipped applicator dipped in alcohol to remove any grease and dirt near the connector area.
7. Use a dry cotton tipped applicator and repeat steps 4 through 6.
8. Spray compressed air on the connector area by pointing the tube/nozzle about ½ inch away from the surface.



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

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

Cleaning Cradle Connectors

To clean the connectors on a cradle:

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



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 the FR68 Series

Table 9-1 *Troubleshooting the FR68 Series*

Problem	Cause	Solution
FR68 Series does not turn on.	Lithium-ion battery not charged.	Charge or replace the lithium-ion battery in the FR68 Series.
	Lithium-ion battery not installed properly.	Install the battery properly. See Installing the Main Battery on Page 18 .
	System crash.	If the FR68 Series does not turn on, perform a cold boot. See Resetting the FR68 Series on Page 37 .

Table 9-1 Troubleshooting the FR68 Series (Continued)

Problem	Cause	Solution
Rechargeable Lithium-ion battery did not charge.	Battery failed.	Replace battery. If the FR68 Series I does not operate, perform a cold boot. See Resetting the FR68 Series on Page 37 .
	FR68 Series removed from cradle while battery was charging.	Insert FR68 Series in cradle. The 3600 mAh battery is fully charged in approximately six hours.
	Extreme battery temperature.	Battery does not charge if ambient temperature is below 0°C (32°F) or above 45°C (113°F).
Cannot see characters on display.	FR68 Series not powered on.	Press the Reset button.
During data communication, no data transmitted, or transmitted data was incomplete.	FR68 Series removed from cradle or disconnected from host computer during communication.	Replace the FR68 Series 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.
No sound.	Volume setting is low or turned off.	Adjust the volume. See Adjusting Volume on Page 33 .
FR68 Series shuts off.	FR68 Series is inactive.	The FR68 Series turns off after a period of inactivity. If the FR68 Series is running on battery power, set this period from 1 to 5 minutes, in one-minute intervals. If the FR68 Series is running on external power, set this period to 1, 2, 5, 10, 15, or 30 minutes. Check the <i>Power</i> 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 Main Battery on Page 18 .

Table 9-1 Troubleshooting the FR68 Series (Continued)

Problem	Cause	Solution
FR68 Series shuts off.	Battery is over-temperature.	Battery temperature >40°C (104°F) or <-10°C (14°F)
Tapping the window buttons or icons does not activate the corresponding feature.	Screen is not calibrated correctly.	Re-calibrate the screen. See Calibrating the Screen on Page 20 .
A message appears stating that the FR68 Series memory is full.	Too many files stored on the FR68 Series.	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 FR68 Series.	Remove user-installed applications on the FR68 Series to recover memory. Select Start > Settings > System tab and tap the Remove Programs icon. Select the unused program and tap Remove .
FR68 Series keeps powering down to protect memory contents.	The FR68 Series' battery is low.	Recharge the battery.
	The internal Bluetooth radio is powered on for a long time.	Because this mode requires battery power, power it off when not needed.
The FR68 Series does not accept scan input.	Scanning application is not loaded.	Load a scanning application on the FR68 Series. See the system administrator.
	Unreadable bar code.	Ensure the symbol is not defaced.
	Distance between exit window and bar code is incorrect.	Place the FR68 Series within proper scanning range.
	FR68 Series is not programmed for the bar code.	Program the FR68 Series to accept the type of bar code being scanned.
	FR68 Series is not programmed to generate a beep.	If the FR68 Series 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 FR68 Series low battery condition notification. Note: If the scanner is still not reading symbols, contact the distributor or Motorola.

Bluetooth Connection

Table 9-2 *Troubleshooting Bluetooth Connection*

Problem	Cause	Solution
FR68 Series 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).
	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 FR68 Series, the phone thinks a previously paired FR68 Series is used.	The phone remembers the name and address of the FR68 Series it last paired with via the Bluetooth radio.	Manually delete the pairing device and name from the phone. Refer to the phone's user documentation for instructions.

Single Slot USB/Serial Cradle

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

Symptom	Possible Cause	Action
LEDs do not light when FR68 Series 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.
	FR68 Series is not seated firmly in the cradle.	Remove and re-insert the FR68 Series 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.
FR68 Series battery is not charging.	FR68 Series is removed from cradle or cradle is unplugged from AC power too soon.	Ensure cradle is receiving power. Ensure FR68 Series is seated correctly. Confirm main battery is charging under Start>Settings>System>Power . The 3600 mAh battery is fully charged in approximately six hours.
	Battery is faulty.	Verify that other batteries charge properly. If so, replace the faulty battery.
	The FR68 Series is not fully seated in the cradle.	Remove and re-insert the FR68 Series into the cradle, ensuring it is firmly seated.
	Ambient temperature of the cradle is too warm.	Move the cradle to an area where the ambient temperature is between 0°C (32°F) and 35°C (95°F).
	Extreme battery temperature.	Battery does not charge if ambient temperature is below 0°C (32°F) or above 45°C (113°F).

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

Symptom	Possible Cause	Action
Spare battery is not charging.	Battery not fully seated in charging slot.	Remove and re-insert the spare battery in the cradle, ensuring it is firmly seated.
	Battery inserted incorrectly.	Re-insert the battery so the charging contacts on the battery align with the contacts on the cradle.
	Battery is faulty.	Verify that other batteries charge properly. If so, replace the faulty battery.
	Ambient temperature of the cradle is too warm.	Move the cradle to an area where the ambient temperature is between 0°C (32°F) and 35°C (95°F).
During data communication, no data transmits, or transmitted data was incomplete.	FR68 Series removed from cradle during communications.	Replace FR68 Series in cradle and retransmit.
	Incorrect cable configuration.	See the system administrator.
	Communication software is not installed or configured properly.	Perform setup.

Four Slot Battery Charger

Table 9-4 *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 is fully charged in approximately 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.
	Ambient temperature of the cradle is too warm.	Move the cradle to an area where the ambient temperature is between 0°C and 35°C.

Cables

Table 9-5 *Troubleshooting the Cables*

Symptom	Possible Cause	Action
FR68 Series battery is not charging.	FR68 Series 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 is fully charged in approximately six hours.
	Battery is faulty.	Verify that other batteries charge properly. If so, replace the faulty battery.
	The FR68 Series is not fully attached to power.	Detach and re-attach the power cable to the FR68 Series, ensuring it is firmly connected.
During data communication, no data transmits, or transmitted data was incomplete.	Cable was disconnected from FR68 Series 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.

Appendix A Technical Specifications

FR68 Series Technical Specifications

The following tables summarize the FR68 Series' intended operating environment and technical hardware specifications.

Table A-1 *FR68 Series Technical Specifications*

Item	Description
Physical Characteristics	
Dimensions	Length: 141.5 mm (5.57 in.) Width: 65.9 mm (2.59 in.) Depth: 23.5 mm (0.93 in.) with a 1950 mAh battery or 27mm (1.06 in.) with a 3600 mAh battery
Weight	252g (8.89 oz) with standard 1950 mAh battery or 280g (9.88 oz) with 3600 mAh battery
Display	2.8" QVGA with backlight, TFT-LCD, 240x320(QVGA)
Touch Panel	Glass analog resistive touch
Backlight	LED backlight
Main Battery	Rechargeable Lithium Ion 3.7V, 1950 mAh battery or optional 3.7V, 3600 mAh battery
Backup Battery	Lithium battery (rechargeable) 25mAh 3V (not user-accessible)
Expansion Slot	microSD slot (SDHC compliant)
Network Connections	High-speed client USB
Notification	Vibrator and LED
Keypad Options	52- key QWERTY
Audio	Speaker, receiver, microphone, headset jack, software support for full duplex record and playback (stereo)
Camera	3.2 megapixel (2048x1536 pixels) auto focus
Performance Characteristics	
CPU	Marvel PXA312 624 MHz
Operating System	Microsoft® Windows Mobile™ 6.1
Memory	128MB RAM/256MB FLASH
Interface/Communications	USB 2.0
Output Power	USB: 5 VDC @ 500 mAh

Table A-1 FR68 Series Technical Specifications (Continued)

Item	Description
User Environment	
Operating Temperature	-10°C to 40°C (14°F to 104°F)
Storage Temperature	-30°C to 60°C (-22°F to 140°F) - without battery
Charging Temperature	0° C to 45° C(32°F to 113°F)
Humidity	90% non-condensing
Drop Specification	4 ft. drop to concrete, 1 drop per 6 sides at ambient temperature23°C (73°F). 3 ft. drop to concrete, 1 drop per 6 sides over operating temperature range.
Electrostatic Discharge (ESD)	±15kV air discharge, ±8kV contact
Sealing	IP54
Wireless WAN Data and Voice Communications	
Wireless Wide Area Network (WWAN) radios	FR6874 and FR6876: GSM: 3G HSDPA (850, 900, 1800, 1900 and 2100 MHz)
GPS	Integrated Assisted-GPS(A-GPS)
Wireless LAN Data	
Wireless Local Area Network (WLAN) radio	Dual-mode IEEE® 802.11b/g
Data Rates Supported	1, 2, 5.5, 6, 9, 11, 12, 24, 36, 48, and 54 Mbps
Operating Channels	Chan 1-13 (2412-2472MHz) Chan 14 (2484 MHz) Japan only Actual operating frequencies depend on regulatory rules and certification agency
Security	Open, Shared Key, WPA, WPA2, WEP, TKIP, AES, EAP (EAP-MD5 CHAP, EAP-TLS, PEAP, EAP-SIM
Spreading Technique	Direct Sequence Spread Spectrum (DSSS) and Orthogonal Frequency Division Multiplexing (OFDM)
Antenna	Internal for WLAN, Bluetooth, GPS, WWAN
Wireless PAN Data and Voice Communications	
Bluetooth	Class II, v 2.0 EDR; on-board chip antenna
Data Capture Specifications	
Options	1D linear
Linear 1D Scanner (SE955 Specifications	
Optical Resolution	0.005 in. minimum element width
Roll	+/- 35 from vertical
Pitch Angle	+/- 65° from normal
Skew Tolerance	+/- 65 from normal
Ambient Light	Sunlight: 10,000 ft.(107640 Lux), Artificial Light: 450ft.(4844Lux)
Shock	2,000 +/- 5% G
Scan Rate	50 (+/- 6) scans/sec (bidirectional)
Scan Angle	47° (+/-3 typical)
Laser Power	1.0 mW nominal

Table A-2 *Data Capture Options*

Item	Description		
Laser	Code 39	Code 128	Code 93
Decode	Codabar	Code 11	Discrete 2 of 5
Capability	Interleaved 2 of 5 supplementals	EAN-8 UPCA Chinese 2 of 5	EAN-13 UPCE UPC/EAN Trioptic 39

FR68 Series Accessory Specifications

Single Slot USB/Serial Cradle

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

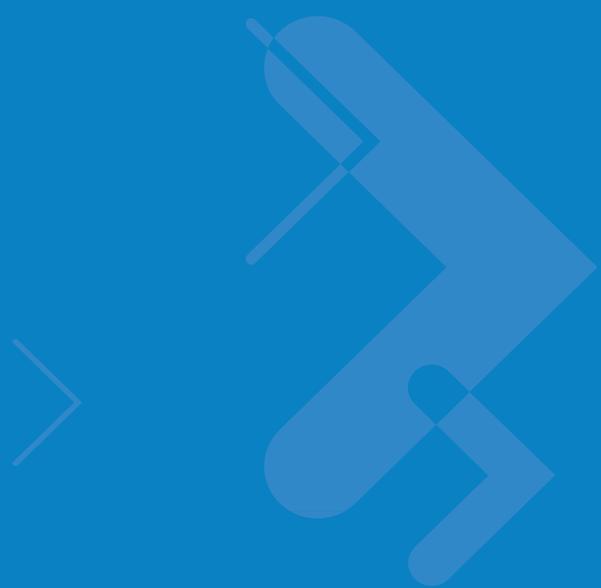
Item	Description
Dimensions	Length: 145.4 mm (5.72 in.) Width: 110.5 mm (4.35 in.) Height: 91 mm (3.58 in.)
Weight	196 g (6.9 oz)
Input Power	12 VDC
Power Consumption	30 watts
Interface	USB, Serial
Operating Temperature	0°C to 50°C (32°F to 122°F)
Storage Temperature	-40°C to 70°C (-40°F to 158°F)
Charging Temperature	0°C to 40°C (32°F to 104°F)
Humidity	5% to 95% non-condensing
Drop	76.2 cm (30.0 in.) drops to vinyl tiled concrete at room temperature
Electrostatic Discharge (ESD)	+/- 15 kV air +/- 8 kV contact

Four Slot Battery Charger

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

Item	Description
Dimensions	Length: 210 mm (8.27 in.) Width: 155 mm (6.10 in.) Height: 34.7 mm (1.37 in.)
Weight	386 g (13.6 oz)
Input Power	12 VDC
Power Consumption	30 watts
Operating Temperature	0°C to 50°C (32°F to 122°F)
Storage Temperature	-40°C to 70°C (-40°F to 158°F)
Charging Temperature	0°C to 40°C (32°F to 104°F)
Humidity	5% to 95% non-condensing
Drop	76.2 cm (30.0 in.) drops to vinyl tiled concrete at room temperature
Electrostatic Discharge (ESD)	+/- 15 kV air +/- 8 kV contact

Glossary



B

Bar. The dark element in a printed bar code symbol.

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**.

Bar Code Density. The number of characters represented per unit of measurement (e.g., characters per inch).

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.

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.

C

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

Decode. To recognize a bar code symbology (e.g., UPC/EAN) and then analyze the content of the

specific bar code scanned.

E

ESD. Electro-Static Discharge

F

Flash Memory

Flash memory is nonvolatile, semi-permanent storage that can be electronically erased in the circuit and reprogrammed. FR68 Series mobile computers use Flash memory to store the operating system (ROM-DOS), the terminal emulators, and the Citrix ICA Client for DOS.

H

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.

High-Speed Downlink Packet Access (HSDPA). A 3G (third generation) mobile telephony communications protocol in the High-Speed Packet Access (HSPA) family, which allows networks based on Universal Mobile Telecommunications System (UMTS) to have higher data transfer speeds and capacity.

I

IEC. International Electrotechnical Commission. This international agency regulates laser safety by specifying various laser operation classes based on power output during operation.

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.

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.

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.

M

MC. Mobile Computer.

Mobile Computer. In this text, *mobile computer* refers to the MC75. 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.

Q

QWERTY. A standard keyboard commonly used on North American and some European PC keyboards. "QWERTY" refers to the arrangement of keys on the left side of the third row of keys.

R

RF. Radio Frequency.

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

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.

Space. The lighter element of a bar code formed by the background between bars.

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.

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