

Quick Reference Guide

Savi Mobile Reader SMR-650P Pod

Version 1.0

First edition December 2002

Part number 805-04416-01 Rev A

Documentation for SMR-650P Pod, version 1.0

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Welcome

The Savi MobileReader SMR-650P Pod is a portable radio frequency identification (RFID) interrogator that communicates with all models of Savi RFID tags. The SMR-650P Pod has a customized Symbol cable and works with a Symbol 8100 or 8146 handheld to provide you with a standalone handheld reader.

Savi Mobile Manager (SMM.cab) is an RFID software application (for Microsoft Pocket PC) that is provided by Savi on a CD.

Note: You **do not have to install** the software if you purchased a Savi-combined Handheld Pod Reader Kit. You **must install** this software on your Symbol 8100 or 8146 handheld if you purchased the Savi Basic Pod Reader Kit.

This software application displays the graphical user interface (GUI) for your SMR-650P Pod. This application communicates with tags and verifies that your SMR-650P Pod is functional. If tags are successfully collected by the SMR-650P Pod, the tag data will be displayed in this application.

Note: Installation and general procedures on how to use SMM.cab will be provided in version 2 of Savi MobileReader SMR-650P Pod Quick Reference Guide

In This Guide

This guide describes the specifications, features, and use of your SMR-650P Pod.

Content

- ◆ This chapter, “Welcome,” provides an introduction to this guide and lists resources you can turn to for additional information.

- ◆ Chapter 2, “SMR-650P Pod Specifications,” provides technical information about your SMR-650P Pod and how to connect it to your Symbol 8100 or 8146.

Conventions

The conventions used in this guide are:

- ◆ Text that you type and keys you press (Ctrl+D) look like this.
- ◆ Placeholders that you replace with actual values appear in *italic*, such as *password* or *www.mysite.com*.
- ◆ Prompts, field names, and other text displayed on screen is **bold**.
- ◆ System messages and code samples look like this.

Other Information Resources

Guides to Read

Other documentation for the Savi SMR-650P Pod includes the following guide, which is available on a CD provided by the Savi Training Department.

- ◆ *Handheld Reader Setup Procedure*

For information about the Symbol device, see www.symbol.com

Contacting Technical Support

If you have trouble with the product, after you have checked your connections and consulted this *Savi MobileReader SMR-650P Pod Quick Reference Guide*, contact Savi Technical Support.

To contact Savi Technical Support:

- ◆ From the United States, telephone 1-888-994-SAVI or 1-800-428-0554 between 8:00 a.m. and 5:00 p.m. U.S. Pacific Standard Time (Greenwich Mean Time minus 8 hours).
- ◆ From Asia, telephone 65-6241-1511 between 9:00 a.m. and 6:00 p.m. (Greenwich Mean Time plus 8 hours).

- ◆ From outside the United States other than Asia, telephone 1-408-743-8000 between 8:00 a.m. and 5:00 p.m. U.S. Pacific Standard Time (Greenwich Mean Time minus 8 hours).
- ◆ Send an e-mail to **help@savi.com**.

Whether you contact Savi by telephone or e-mail, please have the following product information ready, along with the exact sequence of operations (if possible) that caused the problem and the following information available:

- ◆ Site location
- ◆ Incident description
- ◆ Model number and version
- ◆ Serial number

Note: If contacting Technical Support by telephone, please be sure to leave your contact information including name, area code and telephone number, and e-mail address for response.

SMR-650P Pod Specifications

This chapter describes the hardware specifications of the SMR-650P Pod and provides you with a brief description of Symbol 8100/8146 handheld components that are compatible with your mobile interrogator.

SMR-650P Pod Components

The following items are components of the SMR-650P Pod:

- ◆ Customized Symbol cable
- ◆ Rechargeable Lithium-Ion battery (internal and non-removable)

Accessories

An AC Adapter is included with the SMR-650P Pod to recharge the internal battery. A handheld carrying case (Savi model numbers: HCC-650-01 or HCC-650-02) is included with the Savi Basic Pod Reader Kit. You can order this carrying case separately.

Figure 1 SMR-650P Pod Equipment



*SMR-650P Pod with
custom Symbol cable*

Figure 2 SMR-650P Pod with Handheld and Carrying Case



Product Specifications

The following table shows the product specifications for the SMR-650P Pod.

Specification	Description
Physical Characteristics	<p>Length: 2.5 inches (6.4 cm)</p> <p>Width: 3.5 inches (8.9 cm)</p> <p>Height: 1 inch (2.5 cm)</p> <p>Weight: 4.8 ounces (136.08 grams)</p>
Environment	<p>Operating temperature: -4°F to +120°F (-20°C to +49°C) when operating from the internal battery; +32°F to +104°F (0°C to +40°C) when operating while being recharged</p> <p>Humidity: 5 to 95 percent non-condensing at +122°F (+50 °C)</p>
RF Receiver/Transmitter	<p>Ultra High Frequency (UHF) Receiver and Transmitter (Downlink and Uplink):</p> <p>Frequency: 433.92 MHz</p> <p>Range: UHF read/write (symmetrical) range of 200 feet (61 meters) line of site to EchoPoint ST-654, ST-655, and ST-410 tags.</p> <p>EchoPoint Tag Range: 100 feet (30.48 meters) typical for ST-602, ST-604, and ST-645 tags.</p> <p>Modulation: Frequency shift keying, deviation +/- 35 KHz</p> <p>Data Rate: 27.8 Kps, 50% duty cycle</p> <p>Air Protocol: Savi EchoPoint Air Protocol 2.1 (two-way UHF commands and seal extension commands)</p> <p>Data Coding: Manchester</p> <p>Rx Signal Strength Indicator (RSSI): Use of RSSI logic enables SMM to implement a search function that can keep all tags within range.</p> <p>RF Communication : Orange LED flashes to indicate receipt of valid packet.</p>

LF Transmitter for Tag Commissioning	Low Frequency Transmitter (Downlink): Frequency: 123 KHz for SMR-650P-111 model Range: Up to 4 feet (1.22 meters) Modulation: Amplitude shift keying (on-off) Data Rate: 1.6 Kps, 50% duty cycle Air Protocol: Savi EchoPoint Air Protocol 1.1 Data Coding: Pulse Code Modulation RF Communication: Orange LED flashes to indicate receipt of valid packet.
Network	Interface: Interface back to network requires handheld to be enabled with wireless or wired docking station. Protocol: Universal Data Appliance Protocol (UDAP) used to communicate with Savi Site Manager.
Memory	On board non-volatile memory of 32 KB for tag data buffering.
Tag Compatibility	All Savi RFID tags.
Interfaces	-Captive cable with Symbol proprietary boot interface. Cable is approximately 16 inches (40.64 cm) in length. -Reset pin
Antenna	Integrated UHF: Omni-directional PCB loop antenna. Integrated (LFT): Ferrite Core
Shock and Vibration	Shock: Drop from 4 feet (1.22 meters) height on the plywood floor in accordance to IEC 68 Series (MIL-STD-810E Method 516.4 Category 10). Vibration: Non-operation MIL-STD-810E Method 516.4 Category 10
Protection Type	Sealed to IP42 (protection against objects larger than 1mm (.04 inches) in diameter and protection from water falling as much as 15 degrees from vertical)

Power	<p>Primary: Rechargeable and non-replaceable Li-Ion battery (3.7V @ 420mAh up to approximately 500 recharging cycles (80% or more of full battery capacity)).</p> <p>Battery Capacity: Approximately 3 to 4 days of continuous operation on the basis of the following usage:</p> <ul style="list-style-type: none">-8 hours per day with a single tag interrogation every 30 seconds (120 times in 1 hour).-Transmitter is active for 300 ms during single interrogation.-UHF Receiver is active for 10 seconds during each interrogation <p>Charging: 2 hours to charge Li-Ion battery with AC adapter. AC adapter has an input of 110 / 220 VAC and an output of 5V +/- 10% regulated at minimum 300mA.</p> <p>NOTE: Inactive DTR line or disconnected serial link will automatically put unit in standby mode to conserve battery life.</p> <p>Battery Status LED: Green status LED indicates various battery operating modes.</p>
Regulatory Approvals	<p>Radiated Emission (Intentional):</p> <p>U.S. emission standards as contained in FCC Part 15 and European Community emission standards as contained in EN 300 220-1 (433 MHz) and EN 300 330 (123 KHz and 132 KHz)</p> <p>Electromagnetic Immunity:</p> <p>ESD compliance: Exposed to 8 kV air discharge or 4 kV contact discharge in accordance with EN 301 489-1</p> <p>Radiated Immunity (unintentional): European Community immunity standards as contained in EN 301 489-1</p> <p>Safety approval:</p> <p>AC adapter: U.S. UL 1950 and European EN 60950</p>
Pod Mounting	<p>Handheld carrying case (Savi model number: HCC-650-01) attaches SMR-650P Pod to a Symbol 8100. Includes shoulder strap.</p>
Software Requirements	<p>Savi Mobile Manager (SMM.cab) software required.</p>

SMR-650P Pod Communication

The SMR-650P Pod has both UHF and low frequency transmitters that communicate with all Savi RFID tags via the integrated antenna. The UHF transmitter sends commands and write information to these Savi RFID tags. When in UHF mode, this mobile reader will support two modes of collection: single and continuous mode.

When your mobile reader is in single UHF mode, you can only perform one tag collection within your radius. When your mobile reader is in continuous UHF mode, you can perform multiple tag collections while moving through a facility.

You would use the LF transmitter to put ST-654 tags to sleep mode to prevent unwanted interrogations (performed when the SMR-650P Pod is in UHF) and to preserve tag battery life.

SMM.cab is a Savi-provided software that must be loaded onto your Symbol 8100 or 8146 handheld. It works in conjunction with the handheld and SMR-650P Pod and displays the tag information for tags that have been interrogated, collected, or scanned. Tags are interrogated when the SMR-650P Pod is in UHF mode, collected when the SMR-650P Pod is in UHF or LF mode, and scanned when SMR-650P Pod is in LF mode.

Through the Symbol handheld, **SMM.cab** interfaces with the wireless and wired LAN to allow you to download and upload information to and from the database.

SMR-650P Pod with Symbol 8100 and 8146

The SMR-650P Pod is compatible with the Symbol 8100 and 8146 handheld, which are Windows Pocket PC devices with two keyboard options: 37 and 47 alphanumeric keyboards. The Symbol 8100 and 8146 handhelds feature a backlight for the keypad.

The following Symbol 8100 and 8146 models are compatible with the SMR-650P Pod:

- ◆ PDT-8100-B2A94000
- ◆ PDT-8100-J4BA3000


- ◆ PDT-8146-B2A930US
- ◆ PDT-8146-B2A940US
- ◆ PDT-8146-J4BA40WW

Note: For more information regarding Symbol products, please refer to the Symbol Web site.

This section provides you with general information on how to operate a Symbol 8100 or 8146 keypad.

Backlight Control

To turn the backlight on or off:

1. Press and hold .

Symbol 8100 and 8146 Keypad

Figure 3 shows the keypad of the Symbol 8100 or 8146 that is used with the SMR-650P Pod.

Figure 3 Symbol 8100 and 8146 Keypad



Keys Unique to Symbol 8100 and 8146



Power/Suspend Key

This key is the power/suspend button. Pressing this key when the display is on will place the handheld in suspend mode, and after a moment, blank the display.

Resume Key

All buttons on the Symbol 8100 or 8146 have the secondary function of operating as a resume key. Press any button to turn the power back on when the handheld is in sleep or suspend mode. Sleep mode is automatically turned on when the handheld has not been in use for two minutes.



Shift Key

Pressing the shift key will cause the next key to be entered in upper case. Note that only the next key will be upper case. Each successive upper case entry requires pressing the shift key.



Function Key

Most of the keys on the keypad have a secondary function that can be accessed with the function key. For example, the + symbol is printed above the N key on the keypad, which means that you can access the + symbol using the function key.

Press the function key, and then press the key to generate this secondary code. Only the next key will be affected; you must press the function key once for each secondary key code entry.

To enter +=, you would follow these steps:

1. Press  .
2. Press the N key.

3. Press .

4. Press the **O** key.



Backspace Key

This key deletes the character to the left of the cursor.

Reset Pinhole

The reset pinhole is located on the back panel of the SMR-650P Pod. Inside the pinhole is a reset button, which is designed to reboot the SMR-650P Pod.

Connections and Reset Functions

The custom Symbol cable of the SMR-650P Pod connects to a handheld port, located at the bottom of the handheld. The SMR-650P Pod has a handheld carrying case to allow you to hold both units (handheld and reader) in one hand.

Located on the back panel of the SMR-650P Pod is a reset pinhole that allows you to reset the SMR-650P Pod if the unit does not seem to be communicating with Savi RFID tags.

Note: Before performing a reset, examine the connections between the SMR-650P Pod and the Symbol 8100 or 8146 handheld. Verify that the SMR-650P Pod has a fully charged battery. The SMR-650P Pod may be functional, but your unit may not be connected properly.

Figure 4 SMR-650P Pod Connection and Carrying Case Usage



Connecting the SMR-650P Pod and Using the Carrying Case

To connect the SMR-650P Pod and use its accompanying carrying case:

1. Insert the Symbol 8100 or 8146 into the boot of the custom cable.
2. With the back of the carrying case facing towards you, unbutton and unzip the case for the handheld. Unzip the pocket for the SMR-650P Pod.
3. Slide the Symbol 8100 or 8146 and connected SMR-650P Pod into the case.
4. Zip and button the back of the case.
5. Insert the SMR-650P Pod into the pocket and zip it into place.
6. Open the velcro flaps on the side panel. Insert the cable of the SMR-650P Pod, so that it is inside the flap. Close the velcro flap.
7. Put the strap over your neck to prevent the handheld and SMR-650P Pod from slipping from your hands (picture not shown).

Resetting the SMR-650P Pod

To reset the SMR-650P Pod:

1. Use the tip of an unfolded paper clip (or similar object without a sharp tip) to gently press the reset button inside the pinhole on the back panel of the SMR-650P Pod.

Batteries

The SMR-650P Pod has a Lithium-Ion internal battery that is not replaceable. This battery is recharged when using the AC adapter that Savi has provided.

Figure 5 Charging the Internal Battery

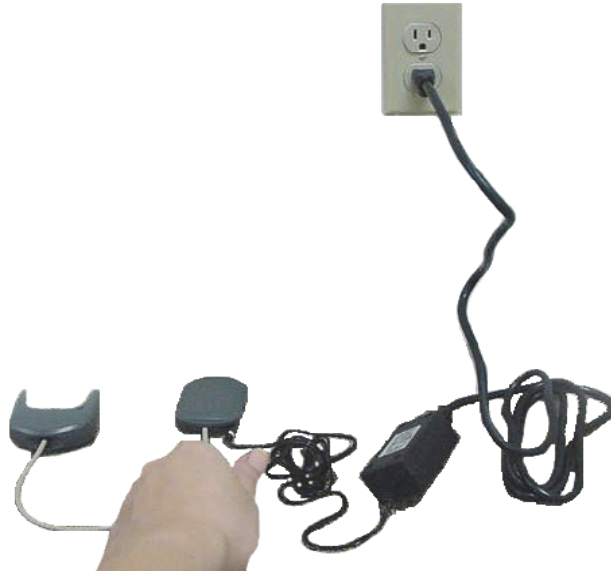


Figure 6 Charging the Handheld in the Carrying Case



Recharging the Battery of the SMR-650P Pod

To recharge the battery:

1. Ensure that your SMR-650P Pod is not connected to a handheld.

Note: In order to recharge the Symbol 8100 handheld, the boot of the custom cable must be removed. Please refer to your Symbol 8100 user manual to recharge the handheld.

Note: Savi recommends that the SMR-650P Pod is not connected to a handheld to confirm that the unit is not operating while it is charging. Operating the SMR-650P Pod while recharging may compromise the battery charge time.

2. Plug the AC adapter into an active power unit.
3. Connect the other end of the AC Adapter to the SMR-650P Pod.

Note: The battery is fully charged after two hours.

Recharging the Handheld Unit in the Carrying Case

To recharge the Symbol 8100 or 8146 handheld unit in the carrying case:

1. Ensure that your SMR-650P Pod is not connected to a handheld.
2. Unbutton and unzip the back of the carrying case.
3. Insert your handheld into its docking station.
4. Plug the docking station AC adapter into an active power unit.
5. Connect the other end of the AC adapter to the docking station.

Battery Status Green LED

You can determine the percentage of battery power based on the activity of the green LED on the SMR-650P Pod.

Table 1-1 Battery Status Green LED

Wall Adapter	Application Running (COM Port Open)	Green LED Activity Pattern	Percentage of Available Battery Power
Plugged in	Not applicable	flash, flash, off for two seconds, flash, flash, off for two seconds	Less than 90%
Plugged in	Not applicable	flash, off for two seconds, flash, off for two seconds	Greater than 90%
Unplugged	Yes	flash, off for five seconds, flash, off for five seconds	Greater than 20%
Unplugged	Yes	flash, flash, off for five seconds, flash, flash, off for five seconds	Less than 20%
Unplugged	No	No activity. Light is completely off.	0%

