SEEKER™

Mobile Locating System

User Guide

Users must read this Guide before using the product

Contents

Federal Communication Commission (FCC) Compliance

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Changes or modifications not expressly approved by the party responsible for compliance voids the user's authority to operate the equipment.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Specifications

Pocket PC

Operating System: Pocket PC 2003

Recommended Processor: 400MHz (or higher)

Recommended Memory: 64MB Main Memory (or higher)

Must have at least one Compact Flash slot

Operating Time (Battery Life): See Pocket PC Manual

RF Transceiver Card

Interface: CompactFlash

Read Range: 0-500 Feet

Frequency: 433 MHz

Compliance: FCC Part 15

Capacity: 240 Dept. & 240 Tags

Total Capacity: 57,600 Tags

Software

PinPoint Seeker Application

Integrates with PinPoint Mobile Resource Manager Software version 3.5 or higher.

Tag

Dimensions: 1.9" x 1.38" x 0.7"

Battery Life: 2 Years

Power Source: 3.6V Lithium Battery

Frequency: 433 MHz

Compliance: FCC Part 15

Water Resistant

If the application starts reacting slowly?
* The history table may be too large to provide adequate performance. Check the number of entries in the history table by opening the **Settings** window. If the number of entries is over 10,000 entries you may want to **Clear History**.

Viewing and analyzing data on another machine
* The history table can be exported to a Comma Separated Values (CSV) file. This file can then be viewed by spreadsheet applications such as Microsoft Excel. To export a CSV file open the Settings window. Click Export History. A save file dialog will appear. Save the file to a known location. Retrieve the file through the sync cradle and Microsoft Active-Sync application explorer. See the Pocket PC documentation for details on using Active-Sync.

Tags appear and disappear during consecutive searches from the same area
* Certain tags may be just outside of the consistent read range of the mobile reader. The environment may also affect the consistency of searches. Metal walls and other construction materials can adversely affect the read range of searches.

Getting the tag to sound or flash
* The beeper and light are controlled by checkboxes on the Find Tags window. Make sure the correct selections are made before performing a search.

Selecting the correct communications port
* In most cases the Seeker application will detect the Plug and Play ID of the Receiver Card and configure it for the correct communications port. If the application can not find the Receiver Card it is possible to manually configure the communications port. Open the Settings window. In the Communication Port box, select a comm port ID. Attempt to perform a Find operation from the Find Tags window. Check the status of the Receiver Card LED to determine if the application is communicating with the card. Repeat until the correct port is identified.

Important Warnings

It is important for your facility to implement and enforce the following warnings in order to keep all equipment functioning properly.

⚠ **WARNING: Installation and Configuration**

It is the responsibility of the facility to follow the installation instructions carefully and to use the components and supplies specified by RF Technologies, Inc. for all (Safe Place® and Code Alert®) installations.

Failure to use the components and supplies specified by RF Technologies, Inc. may result in equipment and/or system failure.

⚠ **WARNING: User Training**

It is the responsibility of the facility to implement structured training procedures for all employees using the system. Only users who have received adequate training on the use of the system should use the system.

Failure to adequately train employees may cause system failure due to user error. In addition, incorrect use of the equipment may also result in system failure.

⚠ **WARNING: System Maintenance and Testing**

It is the responsibility of the facility to establish and facilitate a regular maintenance schedule of your (Safe Place® and Code Alert®) system. This includes regular inspection, testing, and cleaning.

Failure to provide regular maintenance and testing of these products may result in equipment and/or system failure.

⚠ **WARNING: Failure to follow the Warnings and Cautions in this guide voids any or all Product Warranties.**

⚠ **WARNING: If you do not already have procedures in place, you must establish procedures for your staff to follow in the event of Infant System alarms. Existing procedures may require modification to incorporate the Infant System alarms. Failure to create or modify these procedures can result in unnecessary patient agitation.**

Preface

Introduction

This guide explains the basic features of Seeker System. This guide is intended for audiences who are using the Seeker System in their facilities for a basic understaing of the the Seeker System functionality.

About this Guide

The Seeeker User Guide is intended for users who apply, clean, and care for Infant Transmitters. It includes detailed information about the Infant Transmitters and minimizing false alarms

Contact Information

For more information about RF Technologies, Inc. products go to www.rft.com. For technical support, contact (800) 669-9946 or (262) 790-1771. For questions or comments about PinPoint Seeker documentation, contact the RF Technologies Technical Publications team at techpubs@rft.com.

Product Warranty

Product Warranty information can be found on the with your original system proposal and invoice.

Seeker Software Information

This information is located on the About Tab in the Setting window. It displays the application version and operating system version.

To display Seeker software information

1   Tap **Settings** from the Main Window.

2   Select the **About** Tab.

> ✔ **HELPFUL HINTS**
>
> Be sure to have this information available when contactingthe RF Technologies Customer Support Team.

Troubleshooting

Use the following Troubleshooting tips.

If the Pocket PC application no longer responds:

*   Reboot the Pocket PC with a hard-reset. Typically a hard-reset can be performed by pressing a recessed reset button on the Pocket PC. Consult the Pocket PC user manual for the location of the reset button.

*   It is also possible that the battery is nearing expiration in the mobile reader. Consult the Pocket PC user Manual for details on replacing or recharging the battery.

*   The receiver card may have come loose in the socket. Remove and reinsert the receiver card in the compact flash socket.

If the Pocket PC does not communicate with the MRM Services

*   Make sure that the host name and port are properly entered on the Settings Services tab. Make sure that the services are running on their respective host machines.

Additional Settings

You can specify the polling threshold value, the communications port, and the locations ruleset from this window.

Threshold – Indicates the minimum signal strength required for a tag to be displayed in the tag list.

Demo – When in demo mode each Find operation will return a tag in the tag list. This can be used for training and demonstration purposes. Tags returned are always in department one.

Comm Port – In cases were the application does not automatically discover the compact flash receiver card the comm port can be manually selected.

Ruleset – Select the ruleset to be used to retrieve locations from the PinPoint Configurator Service. Once selected the user must perform another download to retrieve the locations.

Use Resource Name – When selected the Find Tags window will display the Resource name box instead of the department and tag boxes. Resource Names come from the local offline tags database created by the tag Entry window.

Clear History – Clears the local storage History table by deleting all of its entries. Should be performed when record retrieval becomes slow during history views.

Export History – Creates a CSV file of the current history data. Displays a File Save Dialog window.

System Overview

The Seeker Mobile Locating System is an asset tracking system utilizing a mobile reader to allow remote reading of RFID tags. The Seeker mobile reader consists of a Pocket PC with a custom receiver card installed. The mobile reader is used to "search" an area for "tags" which are attached to various resources. The reader can find an individual tag, or search for all tags with a specific department id. When a tag is within range of the mobile reader an audible beep and light can be generated by the tag so a user can locate the equipment within the area being searched. The beep and light features can be disabled if desired.

A local database in the mobile reader creates associations between the resources and the tags. When a tag is found the mobile reader will display the department id, tag id, resource name, description and the signal strength which provides an estimated distance from reader to tag.

A picture of the resource can also be associated with the tag information.The Seeker Mobile Locating System can be combined with the PinPoint Mobile Resource Manager software to provide extended visibility to the data captured through the reader. Information from the mobile reader can be uploaded to the PinPoint databases and then viewed by PinPoint applications. Additionally, utilization and location reports can be generated using captured data from the mobile reader.

Uses for the System include
  * Locate misplaced equipment
  * Remotely identify inventory
  * Find equipment scheduled for maintenance
  * Remote inventory of valuable assets

Special Features include
  * User-programmable RFID tags
  * Compact size
  * 0-100ft range through walls, up to 500ft in "clear air"
  * Tag beeper and light helps physically locate equipment
  * Down-loadable data to host using sync cradle

System Components

The following components comprise the Seeker system.

Tags

Tags are small in size and can be attached to resources using the included adhesive tape. When a tag is found by the mobile reader it responds with its unique id and a status message indicating its battery condition. Tags can be instructed to beep and flash a light when found allowing users to gain a rough indication of where the tag is located.

Receiver Card

The CompactFlash receiver card includes the receiver circuitry and the microprocessor for decoding the tag signals to obtain the department id, tag id and the status of the tag. The information is then transferred to the Pocket PC.

Pocket PC

The Personal Digital Assistant (PDA) includes the Microsoft Pocket PC Operating System. The PDA supports the CompactFlash standard CF+/Type II for the addition of the receiver card.

Software

The software and documentation are provided on a CD-ROM.

Downloading Data from MRM

All the tables required for operation of online mode are retrieved from the Configurator Service. A dialog is displayed that shows the status of each table as it is downloaded.

To download data from MRM

1   Be sure the Seeker is in **WorkingOnline** mode.

2   Tap **Download** from the Main Window.

✔ **HELPFUL HINTS**

The PinPoint Services host name and port must be entered in the Settings Services tab.

Uploading Data from MRM

Each time a Tag is received, a record is created in the History table in the Seeker database. This record includes a timestamp, tag id, and location (if online) and other relevant information. To make this information visible to the entire PinPoint system the information must be uploaded to the PinPoint Recorder Service. The Recorder Service will then store it in the PPDataLog database table.

To upload data to MRM

1.   Be sure the application is in **Working Online** mode.

2.   Tap **Upload** from the Main Window.

✔ **HELPFUL HINTS**

The PinPoint Services host name and port must be entered in the Settings Services tab.

Integrating with MRM

You can easily integrate the Seeker database with the PinPoint Mobile Resource Manager software. This is a feature option that comes with the Seeker. For more information, contact RF Technologies, Inc. at (800) 669-9946 or (262)790-1771.

Service Settings

The PinPoint Services are required when integrating with the MRM database. The Services Tab in the Seeker application enables you to configure the host name and port the PinPoint Services. A network connection is created when the Pocket PC is placed in sync cradle. When download or upload selected from the main window, the Pock communicates through the network connection and retrieves the data. To find the correct Configurator and Recorder host names and port, see your PinPoint MRM Administrator.

To enter a host name and port

1 Tap Settings.

2 Tap Services

3 In the Host box, type the machine name of the computer hosting the service.

4 In the Port box, type the port number used by the service.
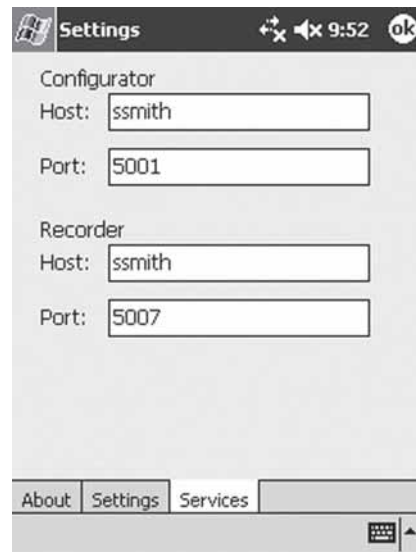
Seeker Installation

Installing Software

To install the Seeker Software

1. Using your sync cable or cradle, connect your Pocket PC to the computer.

   For additional information, see the documentation that arrived with the Pocket PC.

2. Insert the software and documentation CD into the drive on the computer.

3. Using Microsoft Windows Explore or My Computer, navigate to x:\, where x is the CD drive letter.

4. Double-click setup.exe.

5. Follow the instruction on the screen to finish the installation.

   The Seeker application will be uploaded to the Pocket PC through the sync cradle.

Installing the Receiver Card

To Install the Receiver Card

• Insert the Receiver card into the compact flash slot on the Pocket PC.

   Be sure the card is fit properly in the compact flash connector.

   The Receiver Card does not require a custom driver and should communicate directly with the Seeker application.

Mounting Tags

The Seeker Tag can be attached using an adhesive pad that can be purchased with the Tag. The following section provides detailed steps about applying the Tag using the adhesive.

To apply the adhesive pad to the Tag

1. Remove an adhesive pad from the strip of paper.

2. Turn the Tag onto its front.

3. Line the adhesive pad up with the back of the Tag.

4. Apply the adhesive pad.

5. Verify that the pad is applied correctly and is not hanging over the sides of the Tag.
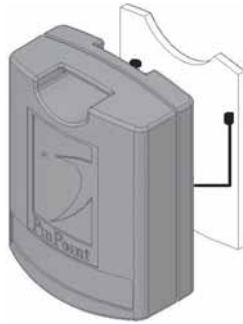
To attach a Tag to a resource using an adhesive pad

1. Obtain the asset to which you want to apply the tag.

2. Remove the adhesive plastic guard.

3. Firmly attach the tag to the asset.

4. Press firmly on the tag to verify that it adhered to the asset

   You can use other ways to attach a tag to a resource. For example, a loop mount zip tie.

NOTE: Before mounting the tags be sure to program them to reflect the correct department and tag IDs. See *Programming Tags* for more information.

Mounting Suggestions

- The front of the tag should face the expected position from which searches will be performed.

- Do not place the tag inside of a metal container because the signal will be blocked.

- Test for Tag reception by performing a search after you mount the Tag.

- Do not block the sounder hole on the Tag or tag volume is decreased.

- Perform a search to verify that the audible tone is loud enough and that the light is visible.

Editing Tags

It is much easier to search for a resource if we can associate it with its attached tag. The Tag Entry window performs the association between the tag and its resource.

To associate a tag with a resource

1. In the **Tag Entry** list, select an item to edit.

2. Click **Edit**.

   The Edit Tag window appears.

3. In the **Resource** box, type the name for this resource.

4. In the **Description** box, type a description for this resource.

5. Click **…** to open the Save Dialog window.

6. Select the bitmap to be used to represent the resource.

7. Click **OK**, to save the changes.

Deleting Tags

To delete a tag resource association

1. In the **Tag Entry** list, select an item to delete.

2. Click **Delete**.

   The item disappears from the list.

Using the Seeker Software

This section provides detailed information about using the Seeker Software to Find Tags, Add Tags, etc.

To start the Seeker Software

1. On the Pocket PC, tap **Start**->**Programs**->**Seeker**.

   If this is the first time the you have used the Seeker application on this Pocket PC, a progress bar is displayed becaduring the creation of the database and tables.

   Once the database and tables have been created the Seeker Main window will appear.

   During start-up the application will search for the receiver card and select the appropriate communication port for its operation. If the card can not be found it may be necessary to use the **Settings** window to select and try each of the available communication ports until the correct one is found.

Programs

The Main Window

This window is the main navigation area.

Find Tags – Window to select department and tag ids or resource name to search for.

Work Online/Offline – Determines if the mode of operation for the application. This determines which database is used.

Write Tags – Writes and erases the dept and tag ids in a tag.

View History – Records of each find are stored in the Pocket PC. This utility is used to review these archival records.

*Main Window Offline*

Adding Tags

It is much easier to search for a resource if we can associate it with its attached tag. The Tag Entry window performs the association between the tag and its resource.

To associate a tag with a resource

1. Click **Add**.

   The Add Tag window appears.

2. In the **Department** box, select a department ID.

3. In the **Tag** box, select a tag id.

4. In the **Resource** box, type the name for this resource.

5. In the **Description** box, type a description for this resource.

6. Click **…** to open the Save Dialog window.

7. Select the bitmap to be used to represent the resource.

8. Click **OK**, to save the tag association.
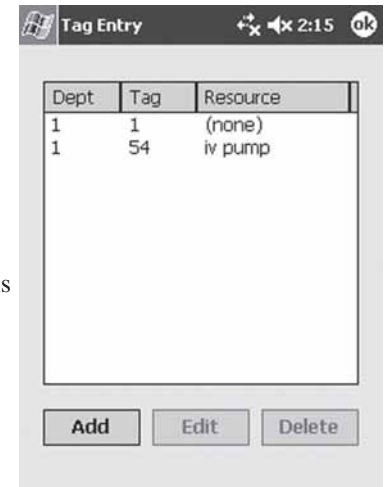
Tag Entry

Audible Beeper and Light

Remote Programming of Department and Tag ID

Add Tag

Programming Tags

To assist in categorizing assets and performing efficient searches the tags can be grouped by programming a department id into each tag. A tag must be blank before a new department and tag id can be programmed into them. Any tag that is blank and receives the write message will have the new ids set into them.

To erase a tag

1. On the Main window, tap **Write Tags**.

2. In the **Department** drop -down, select a department ID number.

2. In the **Tag** box, select a tag id.

3. Click **Erase**.

4. Tag should beep indicating it has been erased.

To write to a blank tag

1. In the **Department** box, select a new department id.

2. In the **Tag** box, select a new tag id.

3. Click **Write**.

4. Tag should beep indicating it has accepted the new values.

✔ **HELPFUL HINTS**

Be sure to attach a label to the Tag that indicates its new department and Tag ID.

The initial Tag ID can be determined by looking at the serial number label.

DO NOT program two Tags with the same department and Tag ID.

Settings – Changes settings such as threshold, ruleset selection, clearing the history, and exporting the history to a CSV file.

Working in Online and Offline Mode

- In the offline mode the **Tag Entry** selection is made available. The Tag Entry window makes the association between a tag and its resource.

- In the online mode two additional selections will appear: **Download** and **Upload**. These selections assist in staying synchronized with a PinPoint Mobile Resource Manager software system.

Main Window Online

Finding Resources

The Find Tags window appears in one of three modes.

Working offline using Resource Names

You must select a resource to search for by selecting its resource name from Resource box. Department searches can not be performed when using the resource names.

To operate in this mode select the **Use Resource Names** checkbox in the **Settings** window.

Working online using PinPoint Data

You select the location they are currently occupying and the tag to find. When tags are received they are matched to a record in the local database. The database information is used to provide additional details about the tag and asset. Department searches can not be performed when working online.

Working offline using Dept and Tag

Select a department and a tag. In offline mode the user can select a department and then "any" tag or a specific tag in the tag combo.

NOTE: In online mode the locations and resources are retrieved from the PinPoint Mobile Resource Manager. Consult the section Integrating with Mobile Resource Manager for details.

Selecting a Tag to Find

In offline mode the user can select a department and then "any" or a specific tag in the Tag box.

To find a tag

1. In the **Department** box, select a department id.

2. In the **Tag** box, select a tag id.

3. Select the **Beep** check box, to hear the tag beep. Select the **Light** check box to see the tag flash.

4. Move the **Power Output** slider to the right to increase the output range.

   Adjusting the **Power Output** increases and decreases the range at which tags respond. A lower output setting decreases the number of tags that respond to search.

5. Click **Find** to start searching for tags.

During a search a progress bar is displayed. The tag count in the lower left corner will be incremented as tags are received. Once all the tags are received the progress bar will indicate "Complete" and the tag list will be filled with the tags received.

- When using resource names select the resource name from the **Resource** box then click **Find**.
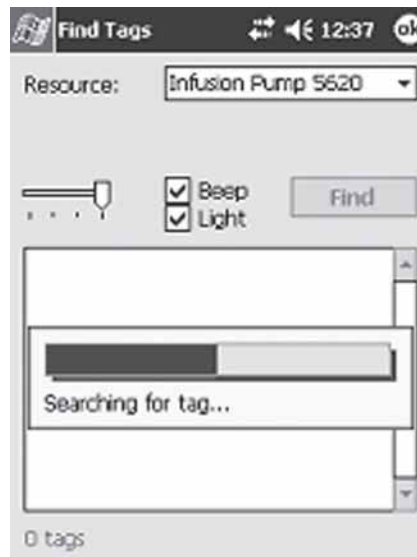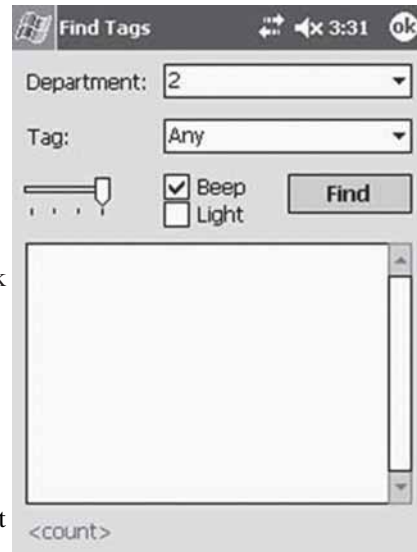
NOTE: Only one mobile reader at a time should perform a search.

Viewing Tag History

Each time a tag is received a record is created in the History table in the SQL CE Server Seeker database. The historical records can be viewed through the View History screen. Each record is presented with a timestamp of when the tag was found and the resource name or department/tag id.

The historical records can be filtered using the Date Time Picker. Sequences of records from a start to an end date can be displayed.

To select a start and end date

1. Click **Start Date** arrow to display the Date Picker.
   View History window defaults to today's date for both start and end.

2. Select **Start Date** from the Date Picker.

3. Click **End Date** arrow to display a second Date Picker.

4. Select **End Date** from the Date Picker.

5. History List will update with the new range of values.

6. The number of records returned by the date range is displayed in the lower left corner.

Select a Date Range
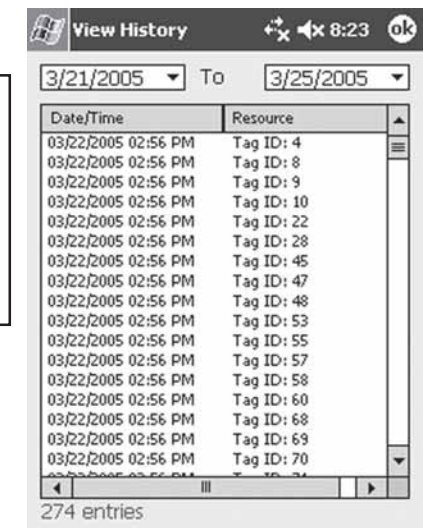
✔ **HELPFUL HINTS**

If searches become slow you can clear the histroy table from the **Settings** window.

The resource name is displayed if it is available.


View History

Find Results

Each Tag received is displayed with its tag id, dept id, battery status and the radio signal strength indication (RSSI) at which it was received. The RSSI indicates a relative distance from the reader. If the tag has a low battery an icon will appear above the signal strength bar.

Low Battery Indicator

Radio Signal Strength Indicator (RSSI)

Find Tags Offline
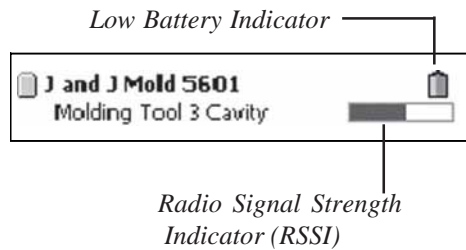
If a resource name and description is available the first line of the tag list entry will contain the resource name and the second line will contain the description of the resource.

Selecting a tag in the tag list displays further details about the tag.
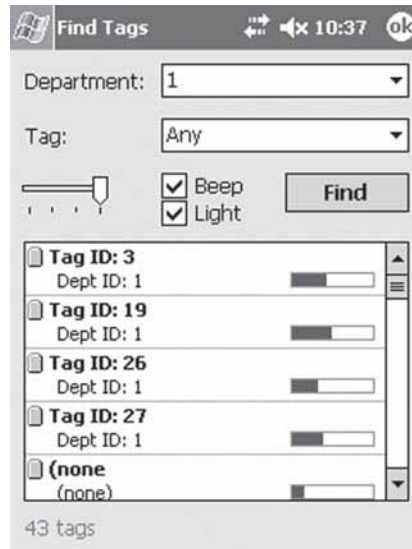
Find Tags Online
Using MRM Data

Viewing Tag Details

Selecting a tag in the list displays the Tag Details window.

The Tag Details window provides additional information about the tag and allows the specific tag to be found again.

In offline mode the tag id, department id, manufacturing date, low battery status, and the signal strength are displayed. If available the resource name, description, and resource image will be displayed.

In online mode the tag id, resource, manufacturing date, low battery status, signal strength and description are displayed. The resource and description come from the database.

Tag Details Offline

To further determine the location of a Tag

1. Click **Find** to search for this specific tag.

2. The RSSI bar graph will be updated with a new signal strength value.

    The tag will beep and light based on the checkbox selections from the previous find.

NOTE: If the tag is not found again during a **Find** the signal strength bar will turn light gray.

Tag Details Online