RFTECHNOLOGIES™

SEEKER®

Mobile Locating Solution

User Guide

Users must read this guide before using the product.

RFTECHNOLOGIES™

Contents

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 Reader

Interface: Compact Flash

Read Range: 0-300 Feet (outdoor line of sight)

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

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 RF Reader and configure it for the correct communications port. If the application can not find the RF Reader 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 RF Reader LED to determine if the application is communicating with the card. Repeat until the correct port is identified.

Compliance

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.

Industry Canada Compliance

Changes or modifications not expressly approved by RF Technologies could void the user's authority to operate the equipment. The Term "IC" before the radio certification number only signifies that Industry Canada technical specifications were met.

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.

FCC & IC Radiation Exposure Statement for Mobile Devices

This equipment complies with FCC and IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

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 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 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.

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 RF Reader may have come loose in the socket. Remove and reinsert the RF Reader 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.

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 appears. 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.

Integrate with MRM

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

Service Tab

The PinPoint MRM Services are required when integrating the Seeker database with the MRM database.

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

To enter a host name and port in the Seeker software

1. Tap Settings.
2. Tap **Services**
3. In the **Host** box, type the name of the computer hosting the service.
4. In the **Port** box, type the port number used by the service.
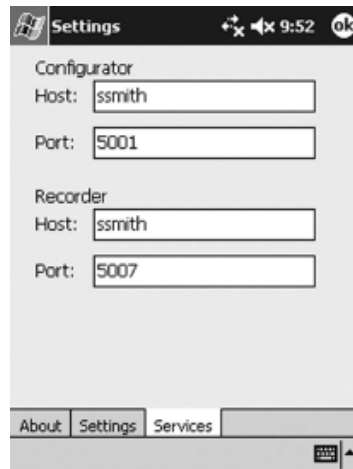
Preface

Introduction

This guide explains the basic features of the Seeker Mobile Locating Solution. This guide is intended for audiences who are using the Seeker Mobile Locating Solution in their facilities.

About this Guide

The Seeker Mobile Locating Solution User Guide is intended for individuals who use the system. It includes detailed information about the Seeker Tags and software.

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 the Seeker Mobile Locating Solution documentation, contact the RF Technologies Technical Publications team at techpubs@rft.com.

Product Warranty

Product Warranty information can be found on the system's CD Rom or with your original system proposal and invoice.

System Overview

The Seeker Mobile Locating Solution is a resource tracking system that uses a Pocket PC and RF Reader to read Radio Frequency Identification (RFID) Tags. The mobile reader is used to "search" an area for "Tags" that are attached to 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 is generated by the Tag so a user can locate the equipment. The beep and light features can be disabled using the Seeker software if desired.

A local database in the mobile reader associates Tags and resources. When a Tag is found, the mobile reader displays the Department Name, Tag ID, resource name, description, and the signal strength. The signal strength provides an estimated distance from the reader to the Tag. A picture of the resource can also be associated with the Tag information.

The Seeker Mobile Locating Solution can be integrated with the PinPoint Mobile Resource Manager (MRM) 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 Solution include

- Locate misplaced equipment
- Remotely identify inventory
- Find equipment scheduled for maintenance

Special Features include

- User-programmable RFID Tags
- Compact size
- 0-100ft range through walls, up to 300ft in open areas.
- Tag beeper and light helps physically locate equipment
- Down-loadable data to host using sync cradle

Settings Tab

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. Increasing the threshold value decreases the Tag read range. The suggested value is 5.

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 1.

Comm Port – In cases were the application does not automatically discover the RF Reader 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 ID boxes. Resource Names come from the local offline Tags database created by the Tag Entry window.
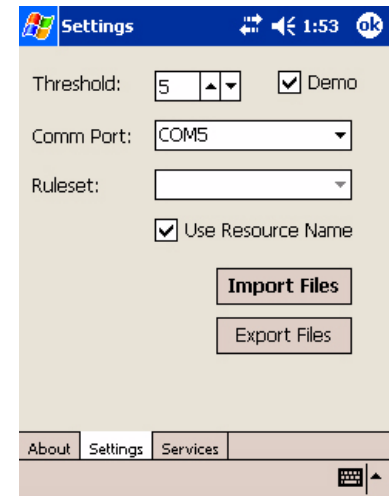
Import and Export Files

Import Files – Imports a CSV file to fill the offline Tags table and Department table in the database.

- Tag Filename: SeekerTags.csv
- Department Filename: SeekerDepartment.csv

Export Files – Exports a CSV file that can be used to archive or transfer the Tag and Department information.

Settings

About Tab

Seeker software information is located on the About tab in the Setting window. It displays the application version and operating system version.
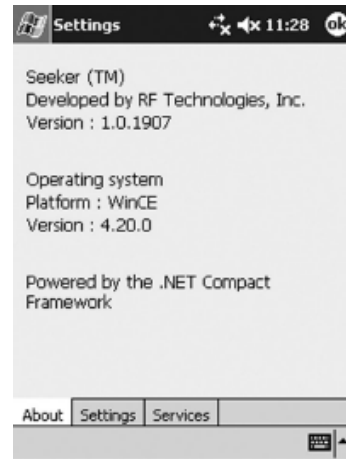
To display Seeker software information

1. Tap Settings from the Main Window.

2. Select the **About** Tab.

   ✔ HELPFUL HINTS
   Be sure to have this information available when contacting the RF Technologies Customer Support Team.

# System Components

The following components comprise the Seeker Mobile Locating Solution.

Tags

Tags are small and can be attached to resources using the adhesive tape that is included with them. Tags can also be mounted with a lanyards (or zip strip) through the lanyard clip opening at the top of the Tag.

When a Tag is found by the Pocket PC, it responds with its unique Tag ID and a status message that indicates its battery condition. Tags can be programmed to beep and flash a light which allows users to gain a rough indication of where the Tag is located.

RF Reader with External Antenna

The Compact Flash (CF) RF Reader with external Antenna includes the receiver circuitry and the microprocessor. The microprocessor helps in decoding the Tag signals to obtain the Department ID, Tag ID, and the status of the Tag. The information is transferred to the Pocket PC using standard CF protocols.
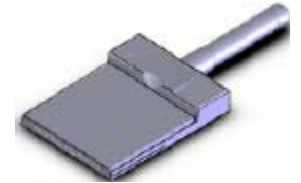
Pocket PC

The Pocket PC includes the Microsoft Pocket PC Operating System. The Pocket PC supports the Compact Flash standard CF+/Type II for the addition of the RF Reader.

Software

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

Seeker Installation

To install the Seeker Software

1. Using a sync cable or cradle, connect your Pocket PC to the computer.
   For additional information, see the documentation that arrived with the Pocket PC.

   NOTE: You must install Active Sync on your computer. See the User Documentation that came with the Pocket PC.

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

3. Double-click **My Computer**.

4. Navigate to the CD drive.

   For example, x:\, where x is the CD drive letter.

5. Double-click **setup.exe**.

6. Follow the instructions on the screen to finish the installation.

   The Seeker software is uploaded to the Pocket PC through the sync cradle.

Installing the RF Reader

To Install the RF Reader

1. Insert the RF Reader into the compact flash slot on the Pocket PC.

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

   ✔ HELPFUL HINTS

   The RF Reader does not require a custom driver and communicates directly with the Seeker application.

   The RF Reader includes a LED to show that it is powered and that it is communicating with the Pocket PC. LED flashes at power-up and when communication begins.
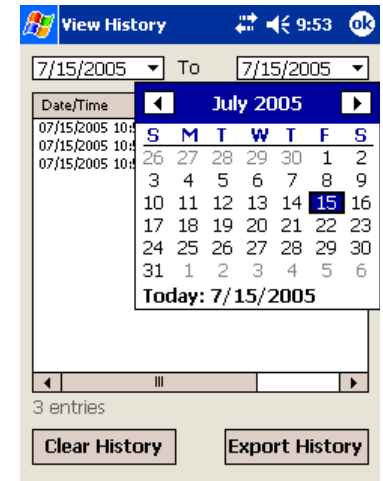
Viewing History

Each time a Tag is received, a record is created in the History table in the Seeker database. The historical records can be viewed in the View History window. Each record is presented with a time stamp 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 also be displayed.

### To select a start and end date

1. Click Start Date arrow to display the Date Picker.

   The 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.

   The History List updates with the new range of values.

5. The number of records returned by the date range appears in the lower left corner.

Clear and Export History

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.
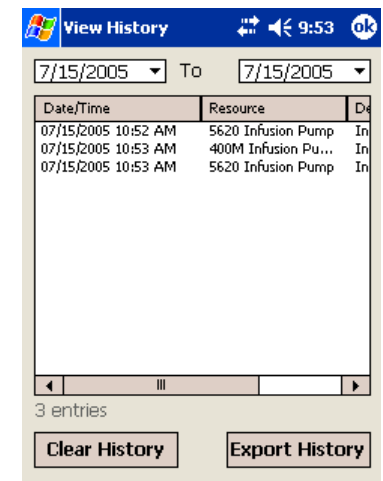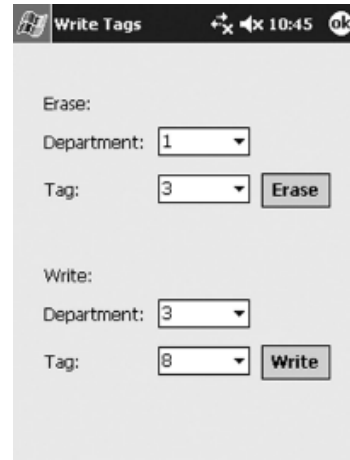
Write Tags

This selection is used for programming tag IDs. Each Tag is manufactured with a unique ID, which is located on the front of the Tag. The last two digits on the label are the default Department ID and Tag ID. This enables Tags to be used without the need to program them immediately.

Department ID   Tag ID

Tags can be regrouped by programming a new Department ID into each Tag. A Tag must be erased before a new Department and Tag ID can be programmed. Any Tag that is erased and receives the "Write" message will take on the new IDs. This means that you must immediately program the new Department and Tag ID into an erased Tag.

To erase a Tag

1. On the Main window, tap Write Tags.
2. In the **Department** drop-down, select a Department ID number.
3. In the **Tag** box, select a Tag ID.
4. Click **Erase**.
5. Tag should beep indicating it has been erased.

   Do Not erase another Tag until you write a new Department and Tag ID to the blank Tag.

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 beeps indicating it has accepted the new values.

   ✔ HELPFUL HINTS

   Do NOT erase more than one Tag at a time.

   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.

Mounting Seeker 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 pad.

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.
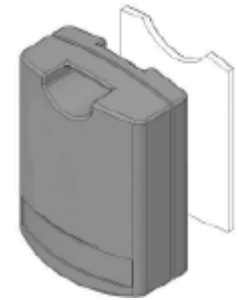
To attach a Tag to a resource using an adhesive pad

1. Obtain the resource to which you want to apply the Tag. The resource surface should be clean, dry and free of condensed moisture.
2. Remove the adhesive plastic guard.
3. Firmly attach the Tag to the resource. Ideal application temperature range is 70°F to 100°F (21°C to 38°C).
4. Press firmly and hold for a couple of minutes to activate the pressure sensitive adhesive.

   After application, the bond strength will increase as the adhesive flows onto the surface. At room temperature approximately 50% of ultimate bond strength will be achieved after 20 minutes, 90% after 24 hours and 100% after 72 hours.

   ✔ HELPFUL HINTS

   Do not place the Tag inside of a metal container because the signal is blocked and the system may not function properly.

   Perform a search after you mount the Tag to test for reception.

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

Using Seeker Software

This section provides detailed information about using the Seeker Software to perform basic finds for resources.

To start the Seeker Software

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

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

2. Once the database and tables are created the Seeker Main window appears.

    During start-up, the Seeker Software searches for the RF Reader and selects the appropriate communication port for operation. If the card cannot be found you may need to use the **Settings** window to try each of the available communication ports until the correct port is found.

The Main Window

This window is the main navigation area. The Main window displayed will depend on whether you have your system set to work offline or online.

Find Tags – Opens a window to select department and Tag IDs or resource name to search for.

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

Write Tags – Writes and erases the Department 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.

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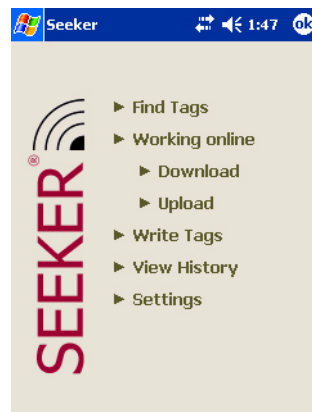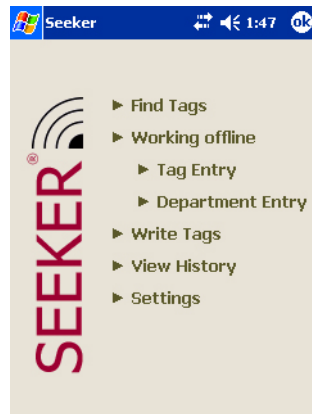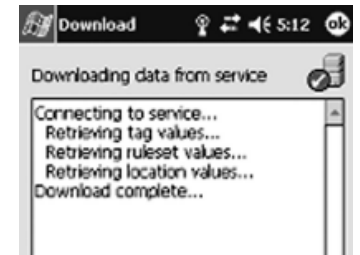
Working Online

In the online mode, two additional selections appear: **Download** and **Upload**. These selections enable the Seeker Software to remain synchronized with the PinPoint Mobile Resource Manager software system.

The Download selection retrieves the ruleset, locations, and Tag tables from the PinPoint Configurator Service. The Upload selection sends the History table, one record at a time, to the PinPoint Recorder Service.

Download Data from MRM

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

To download data from MRM

1. Be sure the Seeker is in Working Online mode.

2. Tap Download from the Main Window

Uploading Data to MRM

Each time a Tag is found, a record is created in the History table in the Seeker database. This record includes a time stamp, Tag ID, and location (if online). In order to make this information visible to the entire PinPoint system, you must upload the information to the PinPoint Recorder Service.
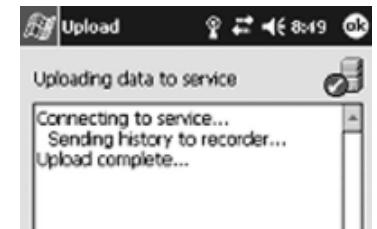
The Recorder Service stores it in the PPDataLog database table.

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.

    Downloading and Uploading data may take some time, please be patient.

Department Entry

The **Department Entry** allows users to enter information about departments used to group Tags.

To add Department information

1. Tap **Add**. The Add Department window appears.

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

3. In the **Name** box, type in the department name.

4. Tap **OK**, to save the department information.
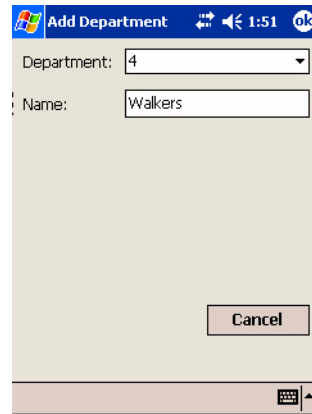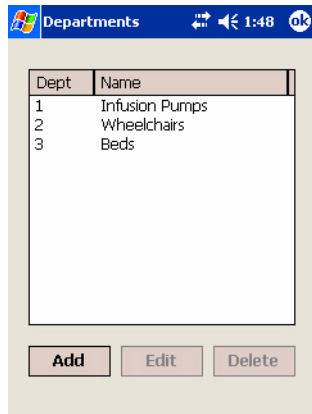
To edit Department information

1. Select the department you wish to edit.

2. Tap **Edit**. The Edit Department window appears.

3. In the **Name** box, edit the department name.

4. Tap **OK**, to save the department information.

To delete Department information

1. Select the department you wish to edit.

2. Tap **Edit**. The Edit Department window appears.

3. In the **Name** box, edit the department name.

4. Tap **OK**, to save the department information.

Find Tags

The Find Tags window appears in one of three modes.

1. Working offline using Resource Names

   You must select a resource to search for by selecting its resource name from the 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.

2. Working offline using Department 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 List (see illustration on top of page 12).

3. 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 (see illustration on bottom of page 12). Department searches can not be performed when working online.
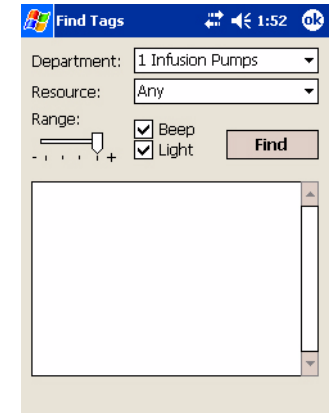
   NOTE: In online mode, the locations and resources are retrieved from the PinPoint Mobile Resource Manager. See the "Integrating with Mobile Resource Manager" in this guide for details.

Selecting a Tag to Find

To find a Tag using Department and Tag

1. In the Department box, select a Department ID.

2. In the **Tag** box, select a Tag ID.

3. Select the **Beep** checkbox, to hear the Tag beep. Select the **Light** checkbox to see the Tag flash.

4. Move the **Range** slider to the right to increase the range.

   Adjusting the **Range** increases and decreases the range at which Tags respond. A lower setting decreases the range that Tags can be read from the RF Reader.

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

To find a Tag using Resource and Locations

1. In the **Resource** box, select the Resource associated with the Tag.

2. If applicable, select the Location from the **Location** box. The Locations are downloaded from the PinPoint Configurator Service.

3. Select the **Beep** checkbox, to hear the Tag beep. Select the **Light** checkbox to see the Tag flash.

4. Move the **Range** slider to the right to increase the range.

   Adjusting the **Range** increases and decreases the range at which Tags respond. A lower setting decreases the range that Tags can be read from the RF Reader.

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

To edit a Tag/resource association

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

2. Tap **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. Next to the Image field, tap the ellipses (…) box to link an image to the entry.

6. Select the bitmap to be used to represent the resource.
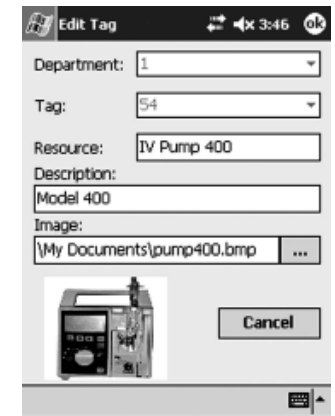
   NOTE: It is best to keep the size of the bitmap or jpeg as small as possible (maximum of 12Kb). Large images may not appear.

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

To delete a Tag/resource association

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

2. Tap **Delete**.

3. The item disappears from the list.

To clean a Seeker Tag after use

1. If necessary, remove the Seeker Tag from the resource.

   You can clean the Tag on the resource if you prefer.

2. Wet a cotton swab or paper towel with Isopropyl Alcohol.

3. Cleanse the Seeker Tag.

4. Cleanse the surface of the resource.

5. Let the Seeker Tag and the resource surface dry before reapplying the Seeker Tag with the adhesive pad.

Working Offline

The Offline mode allows you to find a Tag by its Tag Entry and Department Entry. Each Tag received in this mode is displayed with its Tag ID and Department ID, along with the Receive Signal Strength Indicator (RSSI) at which it was received. The RSSI indicates a relative distance from the reader. If the tag has a low battery, an low battery icon is displayed above the signal strength bar.

**NOTE:** Each Tag received is added to the History Table.

Tag Entry

The **Tag Entry** allows the user to associate a Tag with its resource, Edit resource information, or Delete a Tag/resource association.

To associate a Tag with a resource

1. Tap 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. Next to the Image field, tap the ellipses (…) box to link an image to the entry.
7. Select the bitmap to be used to represent the resource.

NOTE: It is best to keep the size of the bitmap or jpeg as small as possible (maximum of 12Kb). Large images may not appear.

8. Tap **OK**, to save the Tag/resource association.
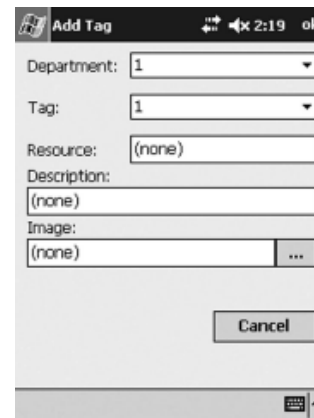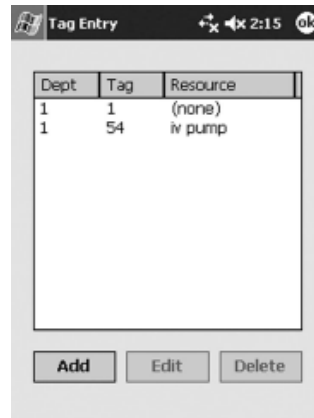
Find Results

Each Tag found is displayed with its Tag ID, Department ID, battery status, and Receive Signal Strength Indicator (RSSI) at which it was received. The RSSI indicates a relative distance from the reader. If the Tag is further away, the RSSI bar graph is lower. Additionally a low battery icon appears above the signal strength bar if the Tag has a low battery.

Low Battery Indicator

Receive Signal Strength Indicator (RSSI)
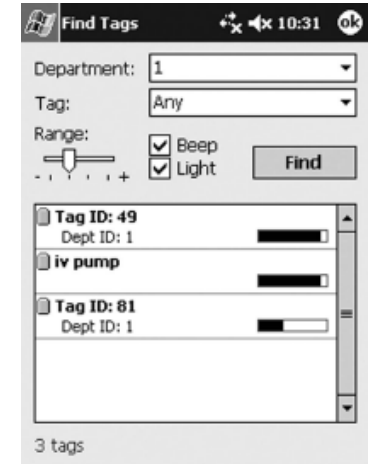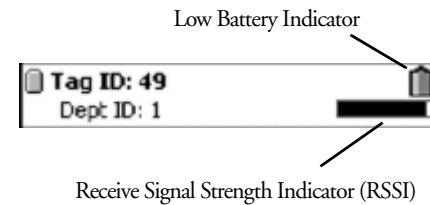
If a resource name and description was entered, the first line of the Tag List will contain the resource name and the second line will contain the description of the resource.

Selecting a Tag in the Tag List displays additional details about the Tag.

Progress Bar

During a search a progress bar is displayed. The Tag count in the lower left corner is increased 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.

Tag Count

The Tag count increases in increments as each Tag is received. The Tags, however, will not be displayed in the Tag List until all Tags are received or the time has expired.

Viewing Tag Details

Selecting a Tag in the Find Tags window displays the Tag Details window.

The Tag Details window provides additional information about the Tag and enables the specified Tag to be found again.

In offline mode, the Tag ID, Department ID, manufacturing date, low battery status, and RSSI are displayed. Additionally, the resource name, description, and resource image are also displayed if available.

In online mode, the Tag ID, resource, manufacturing date, low battery status, RSSI, and description are displayed. The resource and description come from the database.

To further determine the location of a Tag

1. Click Find to search for the specified Tag.

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

    The Tag beeps and lights based on the checkbox selections from the previous find.

NOTE: If the Tag is not found again during a **Find** the RSSI bar turns gray.