



Mobile Locating System

User Manual

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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 ID: KXU-SEEK01

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimal 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.

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:

- Locate misplaced equipment
- Remotely identify inventory
- Find equipment scheduled for maintenance
- Remote inventory of valuable assets

Special Features:

- 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

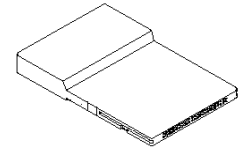
Tags

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.



Installing Software

To install the Seeker application on your Pocket PC from the software and documentation CD:

1. Using your sync cable or cradle, connect your Pocket PC to the computer. For additional information, see the documentation that came with your Pocket PC.
2. Insert the software and documentation CD into the drive on the computer.
3. Using Microsoft Windows Explorer or My Computer, navigate to **x:**, where **x** is the CD drive letter.
4. Double-click **setup.exe**.
5. Follow the instruction on the computer screen to finish the installation.

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



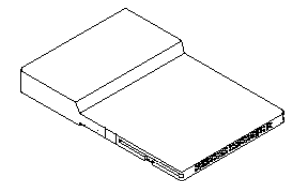
Windows Installation Software

Installing Receiver Card

Insert the Receiver card into the compact flash slot on the Pocket PC. Be sure the card is seated properly in the compact flash connector.

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

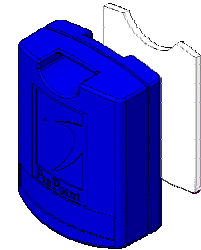
The Receiver Card includes an LED to indicate power and data arriving from the Pocket PC.



Receiver Card

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.



Tag 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

• Notes

- Before installing the tags make sure to program them to the correct department and tag ids. See the section Programming Tags for further details.
- You may also use other means of attaching a tag to your resources. For example, a loop mount zip tie.

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 as the signal will be blocked.
- Perform a test for tag reception by performing a search after mounting.
- Do not block the sounder hole or tag volume will be decreased.
- Try to make the tags light visible when mounting on the resource.

Starting the Application

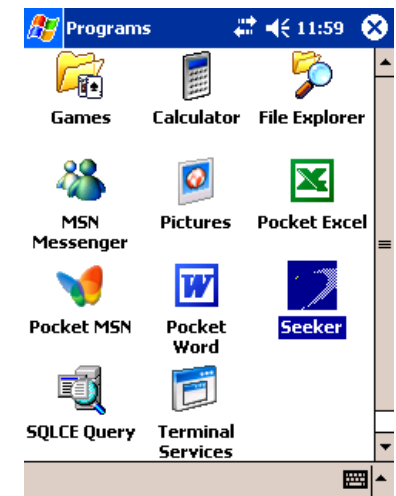
To start the Seeker application:

1. Tap **Start->Programs->Seeker**

If this is the first time the application has been run on this Pocket PC the local SQL CE databases will be created. A progress bar will be displayed during 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.



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.

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.

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

- **Notes**

- 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 Offline



Main Window Online

Performing Finds

Online / Offline

The Find Tags window can appear in one of three modes.

Working offline using Resource Names

The user 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

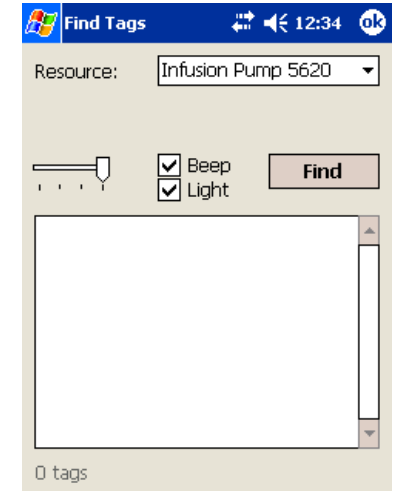
The user selects the location they are currently occupying and the tag to find. When tags are received they are matched to a record in the local database. The database information is used to provide additional details about the tag and asset. Department searches can not be performed when working online.

Working offline using Dept and Tag

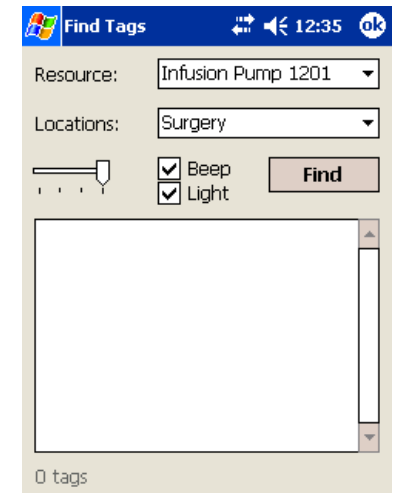
The user must select a department and a tag. In offline mode the user can select a department and then “any” tag or a specific tag in the tag combo.

- **Notes**

- 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.



Find Tags Offline using Resource Names



Find Tags Online using PinPoint Data

Selecting a Find

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

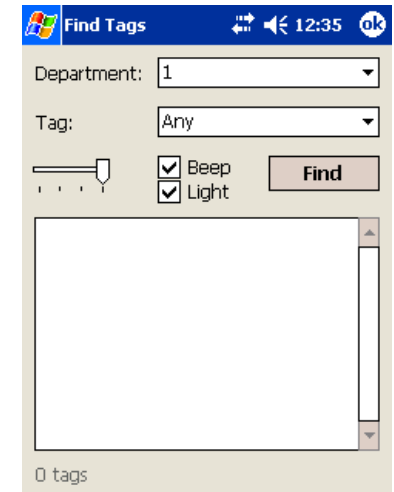
To find a tag:

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

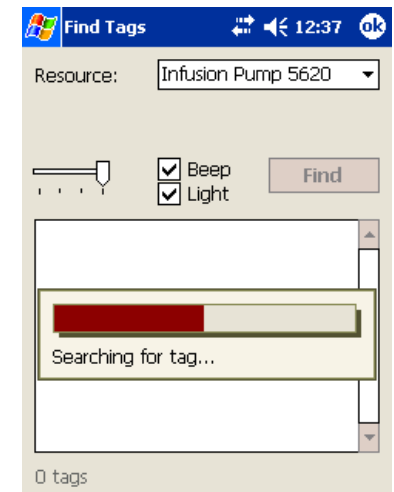
During the search a progress bar will be displayed. The tag count in the lower left corner will be incremented as tags are received. Once all the tags are received the progress bar will indicate “Complete” and the tag list will be filled with the tags received.

• Notes

- Adjusting the **Power Output** increases and decreases the range at which tags will respond. A lower output setting will decrease the number of tags that respond to a find.
- When using resource names select the resource name from the **Resource** box then click **Find**.
- Only one mobile reader at a time should perform a search.



Find Tags Offline using Department and Tag ID



Progress Bar During Search

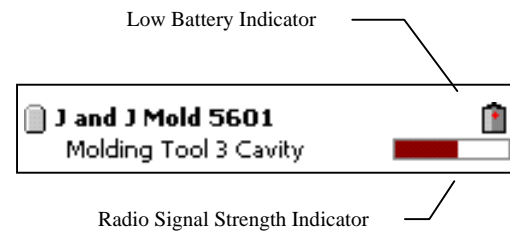
Find Results

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.

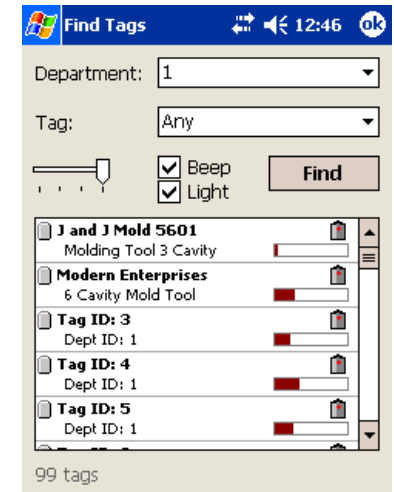
If the tag has a low battery an icon will appear above the signal strength bar.

Each entry can be interpreted as follows:

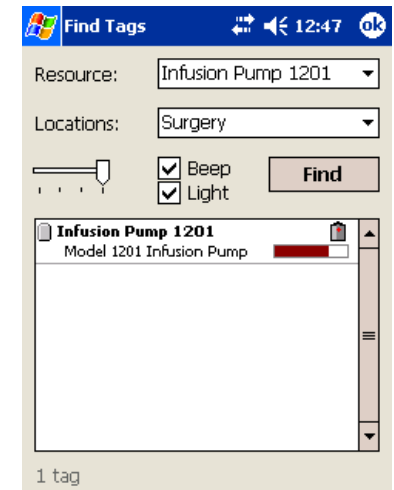


• Notes

- 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 Offline using Department and Tag ID



Find Tags Online using PinPoint 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.

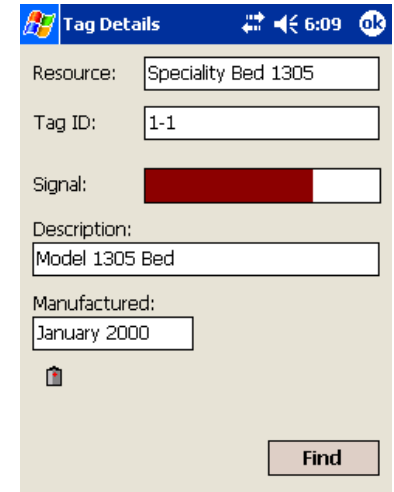
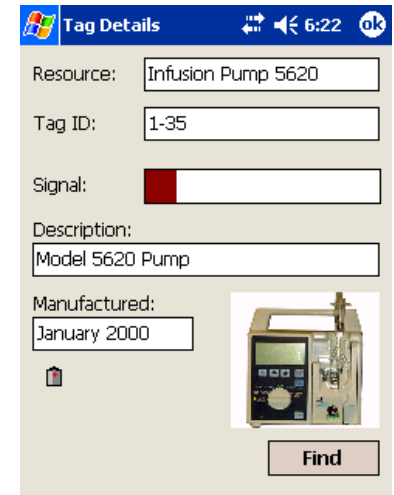
In online mode the tag id, resource, manufacturing date, low battery status, signal strength and description are displayed. The resource and description come from the database.

To further determine a tags location:

1. Click **Find** to search for this specific tag.
2. The RSSI bar graph will be updated with a new signal strength value.
3. The tag will beep and light based on the checkbox selections from the previous find.

- **Notes**

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



Viewing 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.

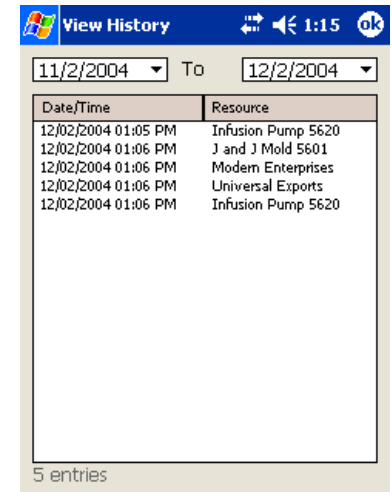
The historical records can be filtered using the Date Time Picker. Sequences of records from a start to an end date can be displayed.

To select a start and end date:

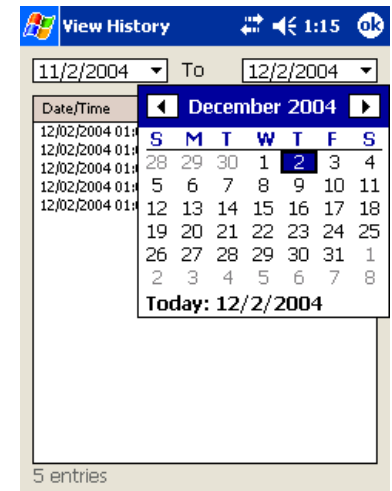
1. Click **Start Date** arrow to display the Date Picker.
2. Select **Start Date** from the Date Picker.
3. Click **End Date** arrow to display a second Date Picker.
4. Select **End Date** from the Date Picker.
5. History List will update with the new range of values.
6. The number of records returned by the date range is displayed in the lower left corner.

- **Notes**

- View History window defaults to today's date for both start and end.
- If searches become too slow the current history table can be cleared from the **Settings** window.
- The resource name will be displayed if it was available.



View History



Selecting a Date Range

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:

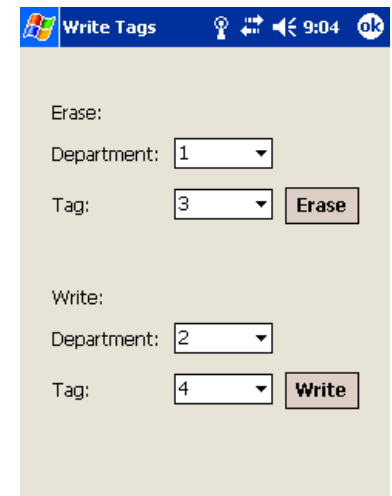
1. In the **Department** box, select a department id.
2. In the **Tag** box, select a tag id.
3. Click **Erase**.
4. Tag should beep indicating it has been erased.

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.

• Notes

- Be sure to affix a label to the tag indicating its new department and tag ids.
- The initial id of a tag can be determined by looking at the serial number label.
- Be careful not to program two tags with the same department and tag id.



Write/Erase Tags

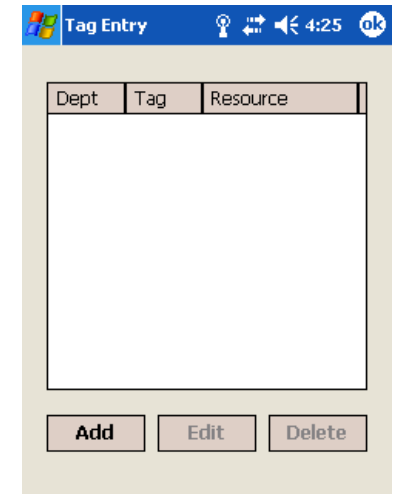
Tag Entry

Add Tags

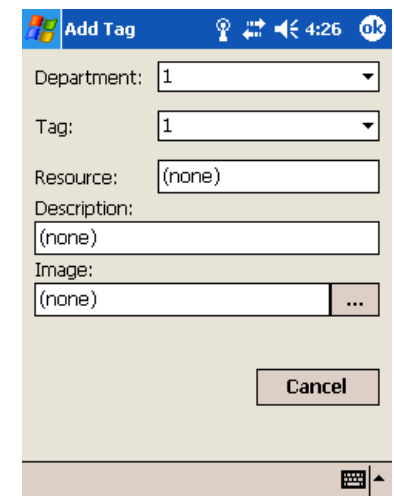
It is much easier to search for a resource if we can associate it with its attached tag. The Tag Entry window performs the association between the tag and its resource.

To associate a tag with a resource:

1. Click **Add**. The Add Tag window will appear.
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



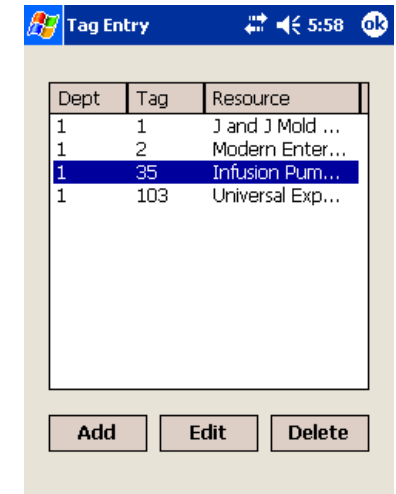
Add Tag

Edit 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 will appear.
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 tag association.

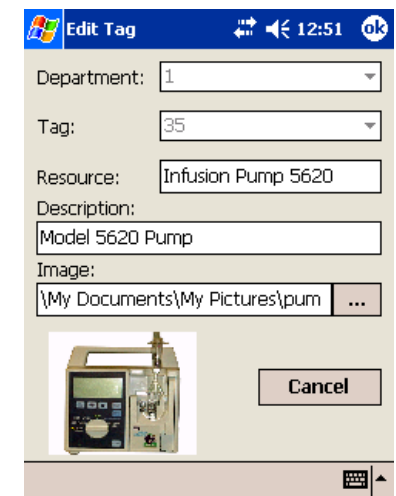


Tag Entry

Delete Tags

To delete a tag resource association:

1. In the **Tag Entry** list, select an item to delete.
2. Click **Delete**. The item will disappear from the list.



Edit Tag

Integrating with Mobile Resource Manager

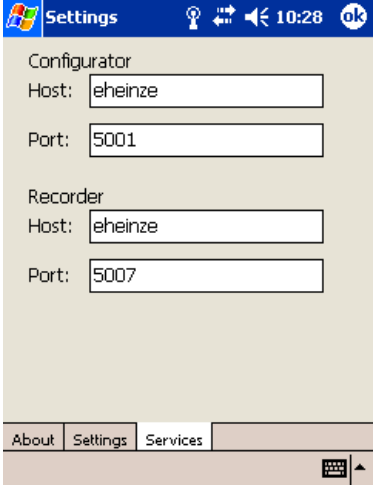
Services Settings

The PinPoint Services are required when integrating with the database. The settings Services tab allows the user 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 download or upload is selected from the main window the Pocket PC communicates through the network connection and retrieves the SQL Server tables.

To find the correct Configurator and Recorder host names and port see your PinPoint Administrator.

To enter a host name and port:

1. In the **Host** box, type the machine name of the computer hosting the service.
2. In the **Port** box, type the port number used by the service.



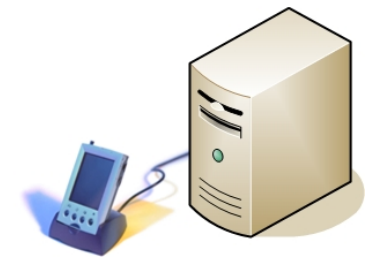
Settings

Configurator
Host: eheinze
Port: 5001

Recorder
Host: eheinze
Port: 5007

About Settings Services

Settings Services



Downloading

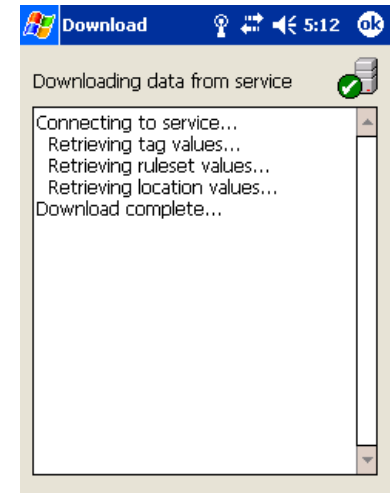
All the tables required for operation of online mode are retrieved from the Configurator Service. A dialog is displayed that shows the status of each table as it is downloaded.

To download from the PinPoint Mobile Resource Manager:

1. Be sure the application is in Working Online mode.
2. Click **Download** from the Main Window.

- **Notes**

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



Download window

Uploading

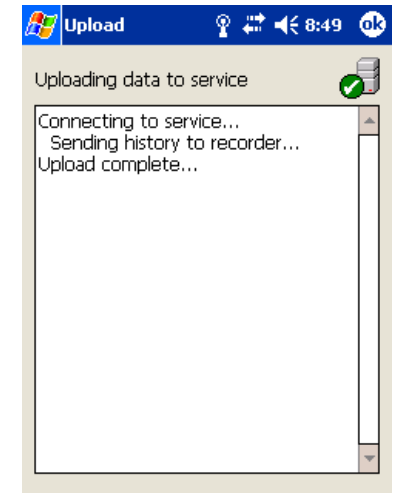
Each time a tag is received a record is created in the History table in the SQL CE Server Seeker database. This record includes a timestamp, tag id, and location (if online) and other relevant information. To make this information visible to the entire PinPoint system the information must be uploaded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

To upload to the PinPoint Mobile Resource Manager:

1. Be sure the application is in Working Online mode.
2. Click **Upload** from the Main Window.

- **Notes**

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



Upload window

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.

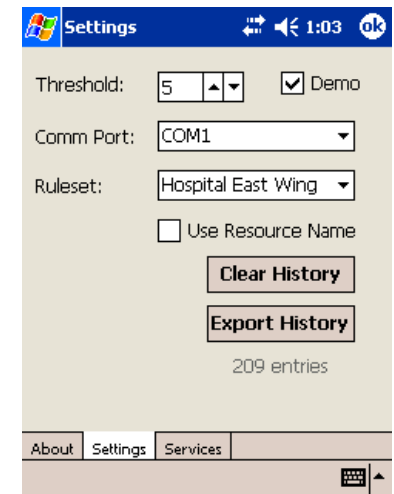
Comm Port – In cases where the application does not automatically discover the compact flash receiver card the comm port can be manually selected.

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.

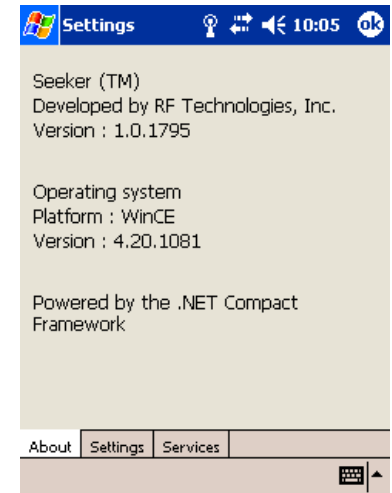


Settings window

System Information

Displays the application version and operating system version.

- **Notes**
 - When calling technical support be sure to have this information available.



Settings About

Frequently Asked Questions

What should I do 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.

What should I do 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.

What should I do if 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**.

How do I view and analyze 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.

How do I get 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.

How do I select 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.

Why do tags sometimes 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.

Specifications

Mobile Reader

Hand Held 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

Audible Beeper and Light

Remote Programming of Department and Tag ID

Service and Repair

If you encounter problems with your equipment, please contact us for assistance. Call 1-800-669-9946. If your equipment appears to be defective, a technician will issue a Return Merchandise Authorization Number for prompt repair or replacement.

To return merchandise

1. Obtain a Return Merchandise Authorization form by calling Customer Service at 1-800-669-9946.
2. Include a copy of your invoice and a copy of the Return Merchandise Authorization form in your shipment. Be sure to retain a copy of the Return Merchandise Authorization form for your records.
3. Merchandise must be well-packaged, shipped prepaid, and insured for your protection. Be sure to retain a copy of the tracking label from your package.
4. Please write the Return Merchandise Authorization Number on the outside of the package.
5. Ship to:
RF Technologies, Inc.
Attention: Repair Department
3125 North 126th Street
Brookfield, WI 53005

Warranty

RF Technologies, Inc. (herein referred to as “Seller”), warrants to the Buyer that the RF Technologies, Inc. (Code Alert/Safe Place/Sensatec) System (herein referred to as “Product”) will be free from defects in material and workmanship for a period of one (1) year from date of sale and title, and will conform to the Seller’s quotation.

Transmitter battery life is one (1) year or as quoted for sale. Battery is covered by a limited warranty prorated over the life of the battery. The Battery warranty only applies to battery life and does not include casings or clamps, which is one (1) year as stated elsewhere in this warranty.

This warranty is a limited warranty and it is the only warranty made by Seller. Seller’s sole obligation under this warranty shall be limited to repairing or replacing any part, which, within one (1) year from the date of sale, is returned to the factory, shipment prepaid, and upon examination by Seller, shall disclose to have been defective. Alternatively, Seller may, at its sole option, instead elect to refund the purchase price paid for the defective product. The criteria for all testing shall be Seller’s applicable product specifications utilizing factory specified calibration and test procedures and instruments. No allowance shall be made for local repair bills or expenses without the prior written approval of Seller. If Seller elects to replace any part, such replacement will not extend the life of this warranty. Seller reserves the right to use refurbished parts for warranty repairs or replacements. Buyer’s failure to pay the purchase price in full by the due date will void all warranties for the product.

Warranty coverage does not include, and Seller disclaims any liability for, any defect or performance deficiency (including failure to conform to product descriptions or specifications) which results, in whole or in part, from (1) improper storage, handling, maintenance or installation of the Product by Buyer, its employees, agents, or contractors, (2) absence of any product, component, or accessory recommended by Seller, but omitted at Buyer’s direction, including but not limited to transmitters and banding materials not tested and approved, (3) any design, specification, or instruction changed by Buyer, its employees, agents, or contractors, (4) failure to comply with any applicable instructions or recommendations of Seller, including installation procedures, (5) physical damage occurring to transmitters or other components after receipt and acceptance by buyer, or (6) any components, systems, process, or equipment not sold or provided by Seller, or (7) acts of God, acts of civil or military authority, fires, floods, strikes, or other labor disturbances, war, riot, or other causes beyond the reasonable control of the Seller.

The preceding paragraphs set forth Buyer's exclusive remedies and Seller's sole liability for claims based on the failure of the products to meet any warranty, whether the claim is in contract, warranty, tort (including negligence and strict liability), or otherwise, and however instituted, and upon the expiration of the applicable warranty period of such liability shall terminate. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY KIND, WHETHER OR NOT FORESEEABLE OR IN CONTEMPLATION OF THE PARTIES, EVEN IF SELLER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

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