

# Creating a GPS GSM Network Rover Profile for the Leica GS15 Receiver and Connecting to a GPS Network Data Correction Service Using FieldGenius



February 2, 2011

## Creating a GPS GSM Network Rover Profile

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**Introduction** This guide describes how to create a GPS GSM network rover profile for the Leica GS15 receiver.

**Important Note:** You only need to create a particular profile once. After that FieldGenius will preserve and use this already-created profile. You are also welcome to create more profiles such as for a UHF radio GPS profile, but in this guide we explain how to create a GSM Network GPS profile.

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**Current Version** This guide was written using FieldGenius Version 5.0.4.2 installed on a Viva CS10. If you are using a different version, your screens may look differently than what is displayed in this guide.

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**Before you begin** Have your GS15, data collector with FieldGenius installed, and a SIM card close by. You will need them to complete this guide.

FieldGenius builds 6.0.1.6 or newer do NOT require “Extended OWI” to be enabled.

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## Creating a GPS GSM Network Rover Profile, *continued*

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**SIM Card** The sim card is inserted in a “drawer” in the GSM module as shown below:

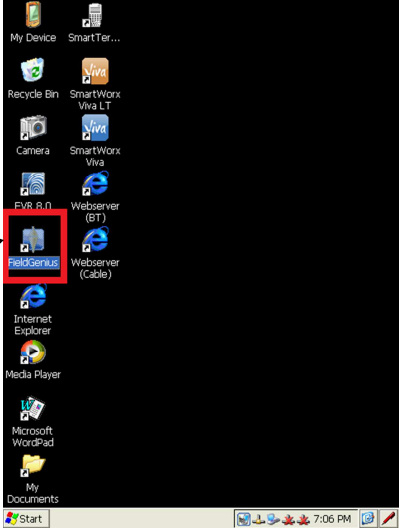

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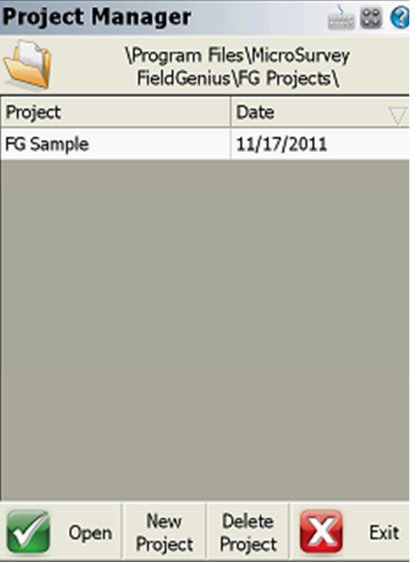
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## Creating a GPS GSM Network Rover Profile, *continued*

Step	Action	Display
<p><b>1</b></p>	<p><b>Note:</b> Don't be alarmed if your display is slightly different from the image on the right. We may have set up our display differently to yours.</p> <ul style="list-style-type: none"> <li>• Turn on your Data Collector.</li> <li>• Double tap the Fieldgenius icon or...</li> <li>• Access the shortcut via Start   Programs</li> </ul> <p>This takes you to the "About" screen.</p>	 


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## Creating a GPS GSM Network Rover Profile, *continued*

Step	Action	Display
<p>2</p>	<p>In the “About” screen:</p> <ul style="list-style-type: none"> <li>• Enter your License Key in the <b>Key</b> field.</li> <li>• Press the <b>Apply Key</b> button when finished.</li> </ul> <p><b>Important Notes:</b> FieldGenius will remember your key, therefore, you will only have to enter your key once. Once a correct key is entered, you will not see this screen again.</p> <p>License Keys are provided by MicroSurvey. If you do not have a key, please contact your local MicroSurvey representative.</p> <p>This takes us to the Project Manager screen.</p>	
<p>3</p>	<p>In the Project Manager screen:</p> <p>Since this is a new installation, we only see the sample project that comes included with FieldGenius. We will create a new project.</p> <ul style="list-style-type: none"> <li>• Tap on the <b>New Project</b> button.</li> </ul> <p>This takes us to the Create New Project screen.</p>	

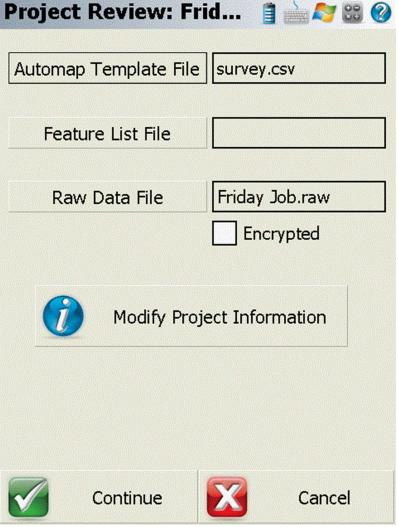
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## Creating a GPS GSM Network Rover Profile, *continued*

Step	Action	Display
4	<p>In the Create New Project screen:</p> <ul style="list-style-type: none"><li>• Enter a name for your new project. In this example, we are calling the project “<i>Friday Job</i>”. You should enter a more appropriate name.</li><li>• Press the <b>OK</b> button when finished.</li></ul> <p>This opens the Project Review screen.</p>	

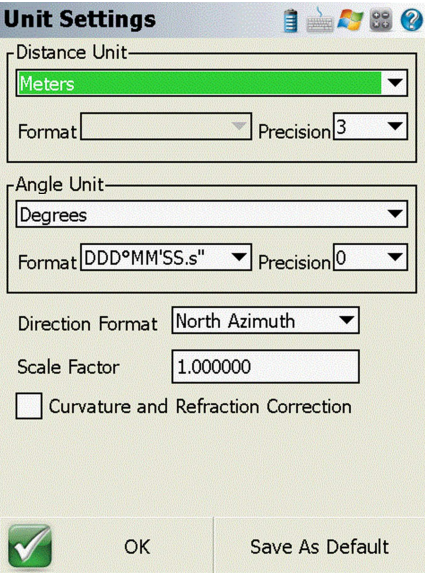
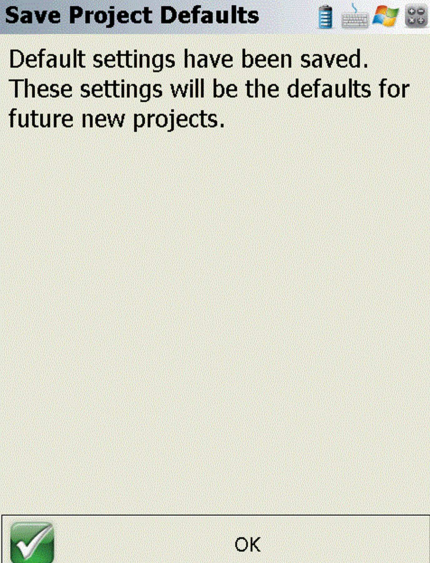
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## Creating a GPS GSM Network Rover Profile, *continued*

Step	Action	Display
<p>5</p>	<p>In the Project Review screen:</p> <p><b>Automap files</b> contain pre-defined descriptions that can be used in FieldGenius. The template library that you select will be copied into the project's folder with a name of <i>yourprojectname</i>_automap.csv, and any changes that you make to the Automap Library will affect only the project library, not the template library.</p> <p>Use the <b>Feature List</b> field to select a feature list that you want to use with the project, for collecting GIS point attributes.</p> <p>The <b>Raw Data File</b> field indicates the name of the raw file that is going to be recorded. You can select a different one by pressing the button and either creating a new raw file or choosing an existing one to open.</p> <p>The <b>Modify Project Information</b> button will take you directly to the Project Information screen. There you can enter notes about the project.</p> <ul style="list-style-type: none"> <li>• Leave these fields as they are.</li> <li>• Press the <b>Continue</b> button.</li> </ul> <p>This takes us to the Unit Settings screen.</p>	

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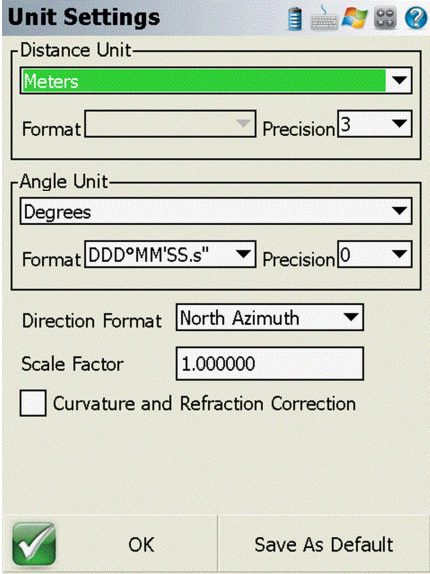
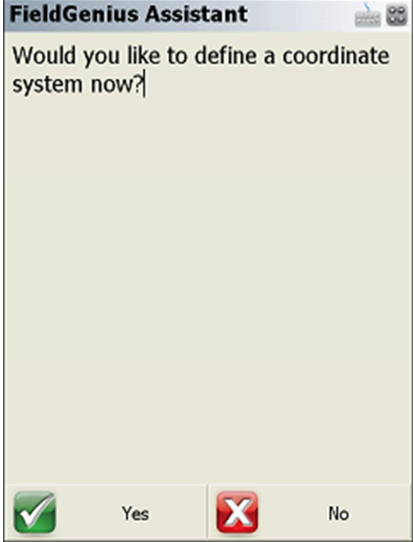
## Creating a GPS GSM Network Rover Profile, *continued*

Step	Action	Display
<p>6</p>	<p>In the Unit Settings screen:</p> <ul style="list-style-type: none"> <li>Select which units you wish to use.</li> </ul> <p><b>Important Note:</b> Once this has been set, you cannot change this project's units again.</p> <p>Since we typically prefer to work in these same units, we will press the <b>Save As Default</b> button. This will make whatever we select here the future default unit setting.</p> <ul style="list-style-type: none"> <li>Press the <b>Save As Default</b> button.</li> </ul> <p>This takes us to the Save Project Defaults screen.</p>	
<p>7</p>	<p>In the Save Project Defaults screen:</p> <ul style="list-style-type: none"> <li>Press the <b>OK</b> button.</li> </ul> <p>This returns us to the Unit Settings screen.</p>	

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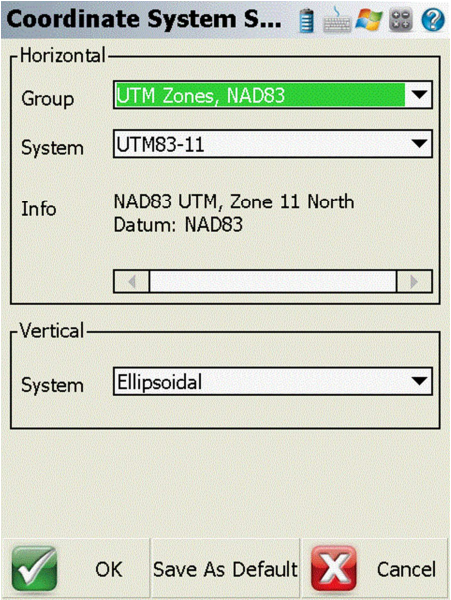
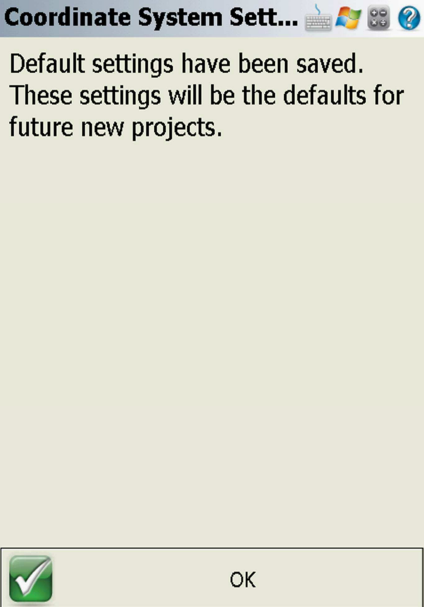


## Creating a GPS GSM Network Rover Profile, *continued*

Step	Action	Display
8	<p>In the Unit Settings screen:</p> <ul style="list-style-type: none"> <li>Press the <b>OK</b> button.</li> </ul> <p>This takes us to the Coordinate System Settings screen.</p>	
9	<p>In the FieldGenius Assistant screen:</p> <p>We are prompted to select a coordinate system.</p> <p><b>Important Note:</b> You must have a coordinate system selected if you wish to work with GPS.</p> <ul style="list-style-type: none"> <li>Tap on the <b>Yes</b> button.</li> </ul> <p>This takes us to the Coordinate System Settings screen.</p>	

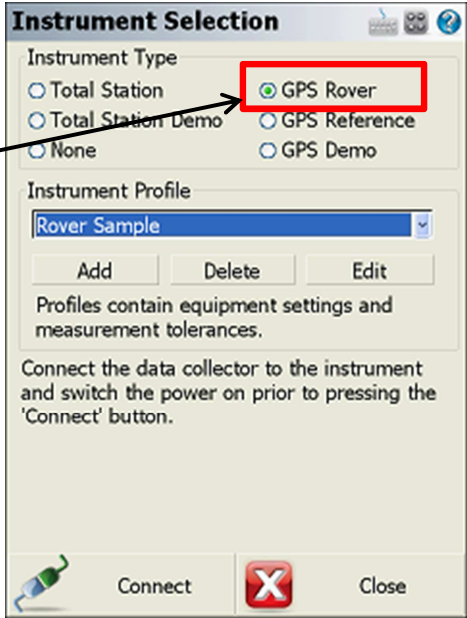
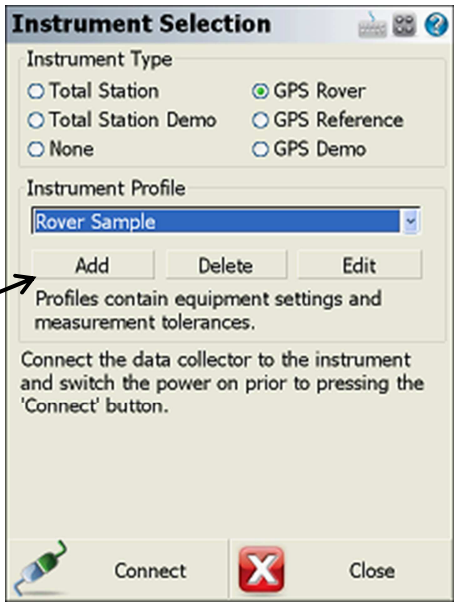
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## Creating a GPS GSM Network Rover Profile, *continued*

Step	Action	Display
<p><b>10</b></p>	<p>In the Coordinate System Settings screen:</p> <ul style="list-style-type: none"> <li>Select the coordinate system you wish to work in.</li> </ul> <p>In this example we will be selecting the <b>UTM83-11 North</b> zone coordinate system with <i>no geoid</i> model.</p> <p>You may wish to save it as default:</p> <ul style="list-style-type: none"> <li>Press the <b>Save As Default</b> button.</li> </ul> <p>This takes us to the Coordinate System Settings screen.</p>	
<p><b>11</b></p>	<p>In the Coordinate System Settings screen:</p> <ul style="list-style-type: none"> <li>Tap on the <b>OK</b> button.</li> </ul> <p>This takes us to the Instrument Selection screen.</p>	


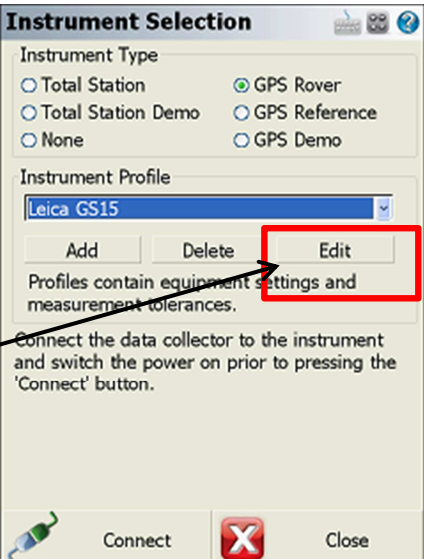
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## Creating a GPS GSM Network Rover Profile, *continued*

Step	Action	Display
<p><b>12</b></p> <p>In the Instrument Selection screen:</p> <ul style="list-style-type: none"> <li>• Tap on the <b>GPS Rover</b> radio button.</li> </ul> <p><b>Note:</b> This is the screen where you can create new instrument profiles or select previously created instrument profiles.</p> <p>This step continues in the Instrument Selection screen.</p>		
<p><b>13</b></p> <p>Continuing in the Instrument Selection screen:</p> <p>Notice the <b>Instrument Profile</b> field is now active.</p> <ul style="list-style-type: none"> <li>• Press the <b>Add</b> button.</li> </ul> <p>This step continues in the Instrument Selection screen.</p>		

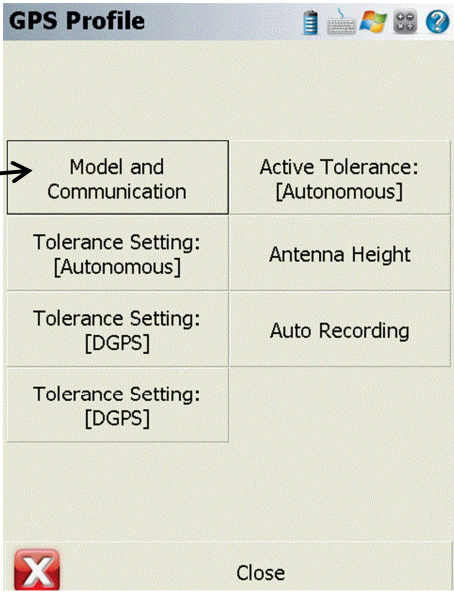
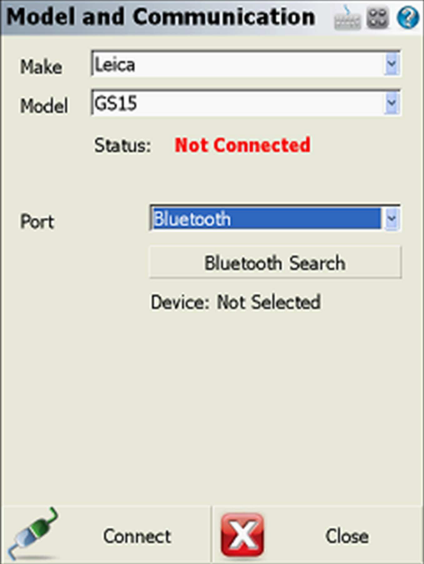
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## Creating a GPS GSM Network Rover Profile, *continued*

Step	Action	Display
<p><b>14</b></p>	<p>Continuing in the Instrument Selection screen:</p> <ul style="list-style-type: none"> <li>Enter a name for your instrument profile in the <b>Instrument Profile</b> field.</li> </ul> <p>Instrument profiles are used to save your particular instrument's settings so that you don't have to remember them or have to set them each time you create a new project or select an instrument to use.</p> <p>In this example, we will call it <i>Leica GS15</i></p> <ul style="list-style-type: none"> <li>Press the <b>Save</b> button.</li> </ul> <p>This saves the profile name and activates more buttons.</p>	 <p>The screenshot shows the 'Instrument Selection' dialog box. Under 'Instrument Type', 'GPS Rover' is selected. The 'Instrument Profile' field contains 'Leica GS15'. The 'Save' button is highlighted with a red box. Below the field are 'Add', 'Delete', and 'Connect' buttons. A note states: 'Profiles contain equipment settings and measurement tolerances. Connect the data collector to the instrument and switch the power on prior to pressing the 'Connect' button.'</p>
<p><b>15</b></p>	<p>Continuing in the Instrument Selection screen:</p> <p>With your newly created instrument profile name in the <b>Instrument Profile</b> field,</p> <ul style="list-style-type: none"> <li>Press the <b>Edit</b> button.</li> </ul> <p>This takes us to the GPS Profile screen.</p>	 <p>The screenshot shows the 'Instrument Selection' dialog box. Under 'Instrument Type', 'GPS Rover' is selected. The 'Instrument Profile' field contains 'Leica GS15'. The 'Edit' button is highlighted with a red box. Below the field are 'Add', 'Delete', and 'Edit' buttons. A note states: 'Profiles contain equipment settings and measurement tolerances. Connect the data collector to the instrument and switch the power on prior to pressing the 'Connect' button.'</p>



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## Creating a GPS GSM Network Rover Profile, *continued*

Step	Action	Display
<p><b>16</b></p>	<p>In the GPS Profile screen:</p> <ul style="list-style-type: none"> <li>• Tap on the <b>Model and Communication</b> button.</li> <li>• Ensure that your GS15 is turned on.</li> </ul> <p>This takes us to the Model and Communication screen.</p>	
<p><b>17</b></p>	<p>In the Model and Communication screen:</p> <ul style="list-style-type: none"> <li>• Ensure that the <b>Make</b> field has <i>Leica</i> selected.</li> <li>• Ensure that the <b>Model</b> field has <i>GS15</i> selected.</li> <li>• Ensure that the <b>Port</b> field is set to <i>Bluetooth</i>.</li> <li>• Press the <b>Bluetooth Search</b> button.</li> </ul> <p>This takes us to the Select Bluetooth Device screen.</p>	

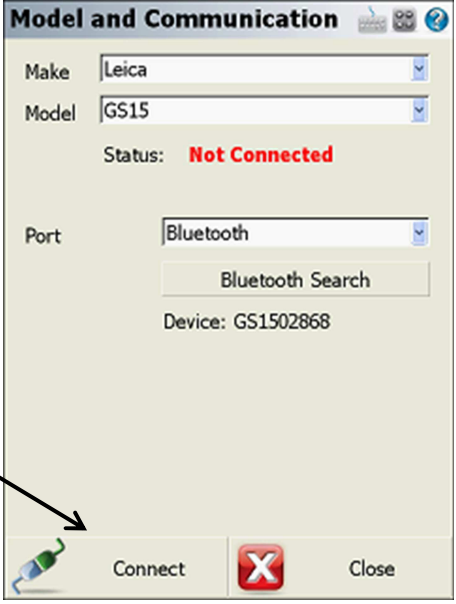
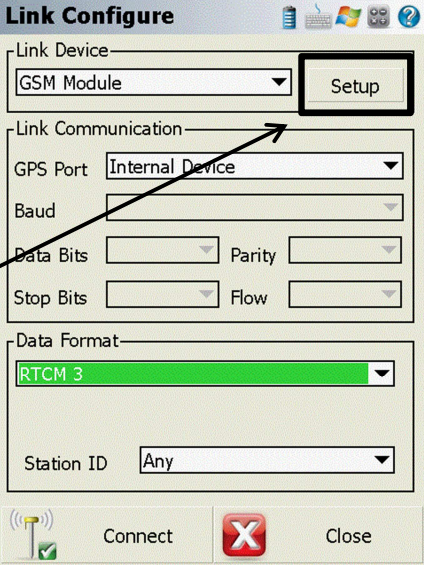
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## Creating a GPS GSM Network Rover Profile, *continued*

Step	Action	Display
<p><b>18</b></p> <p>In the Select Bluetooth Device screen:</p> <p>We see in this screen all of the Bluetooth devices that your data collector has found. If you do not see your GPS receiver, press the <b>Refresh List</b> button and another search will be performed.</p> <ul style="list-style-type: none"> <li>• Tap on your GPS receiver's button. In this example, our receiver is named <i>GS150288</i> (the receiver's serial number).</li> </ul> <p>This takes us to the Bluetooth screen.</p>	 <p><b>Note:</b> Don't be alarmed if your screen does not have the same devices listed in the image above.</p>	
<p><b>19</b></p> <p>In the Bluetooth screen:</p> <p>If your receiver has a Bluetooth PIN enter it here. If the unit does not have a PIN, leave the field empty and press the <b>OK</b> button. In this example our receiver does not require a PIN.</p> <ul style="list-style-type: none"> <li>• Press the <b>OK</b> button.</li> </ul> <p>This returns us to the Model and Communication screen.</p>		

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## Creating a GPS GSM Network Rover Profile, *continued*

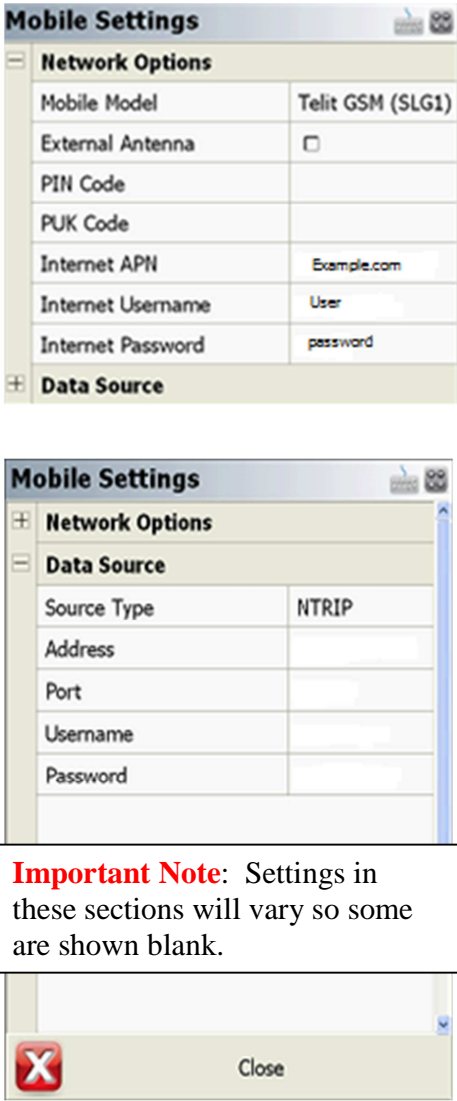
Step	Action	Display
<p><b>20</b></p> <p>In the Model and Communication screen:</p> <p>We see the correct settings for our receiver.</p> <ul style="list-style-type: none"> <li>• Tap on the <b>Connect</b> button</li> </ul> <p>This takes us to the Link Configure screen.</p>		
<p><b>21</b></p> <p>In the Link Configure screen:</p> <ul style="list-style-type: none"> <li>• Ensure that <i>GSM Module</i> has been selected in the <b>Link Device</b> field.</li> <li>• Press the <b>Setup</b> button.</li> </ul> <p>This takes us to the Mobile Settings screen.</p>		

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## Creating a GPS GSM Network Rover Profile, *continued*

### Network vs. NTRIP

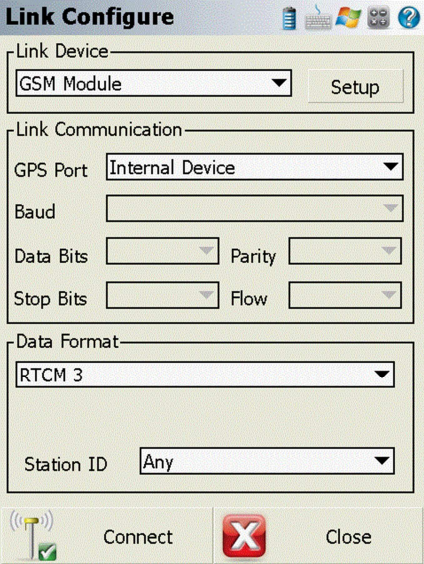
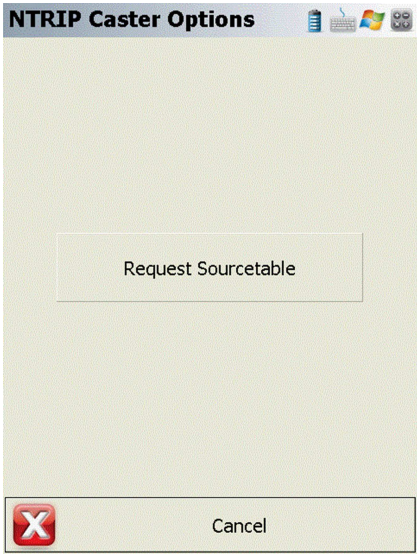
In the **Source Type** field, you have a choice of **NTRIP** or **Network**. [Note: You must tap on the field to activate the context menu to see the choices.] When using a data provider that uses an NTRIP connection, select **NTRIP**. If the data provider does not use NTRIP, then select **Network**.

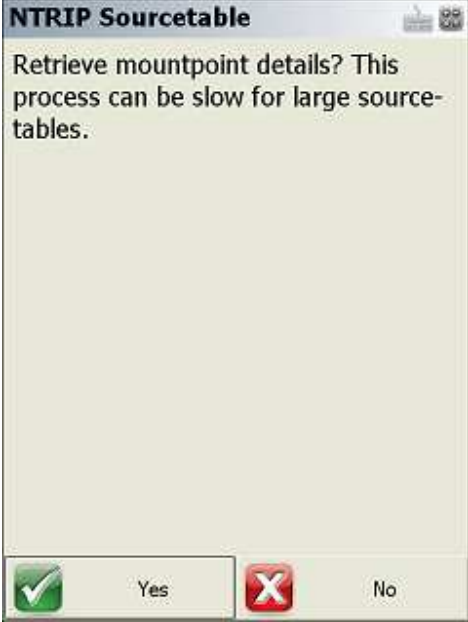
Step	Action	Display
<p>22</p>	<p>In the Mobile Settings screen:</p> <p><i>Inquire with the provider of your SIM card for settings to use in the <b>Network Options</b> section. Passwords and usernames can be “cap sensitive” (see <b>glossary</b>) so enter them exactly as they have been provided.</i></p> <ul style="list-style-type: none"> <li>• Enter your Internet provider’s Access Point Name in the <b>Internet APN</b> field. In this example it is called <i>Example.com</i>.</li> <li>• Enter your <b>Internet Username</b> and <b>Password</b> in their respective fields.</li> </ul> <p><i>Inquire with your GPS network data correction service provider for settings to use in the <b>Data Source</b> section</i></p> <ul style="list-style-type: none"> <li>• Use the <b>Source Type</b> field to select your data source type. In this example we will be using an <b>NTRIP</b> connection.</li> <li>• Enter your <b>address</b>, (IP address) <b>Port</b>, <b>Username</b>, and <b>Password</b> in the appropriate fields.</li> <li>• Press the <b>Close</b> button when finished.</li> </ul> <p>This returns us to the Link Configure screen.</p>	 <p><b>Important Note:</b> Settings in these sections will vary so some are shown blank.</p>

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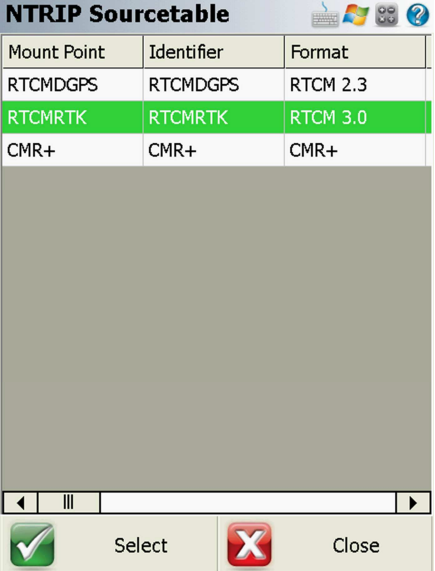
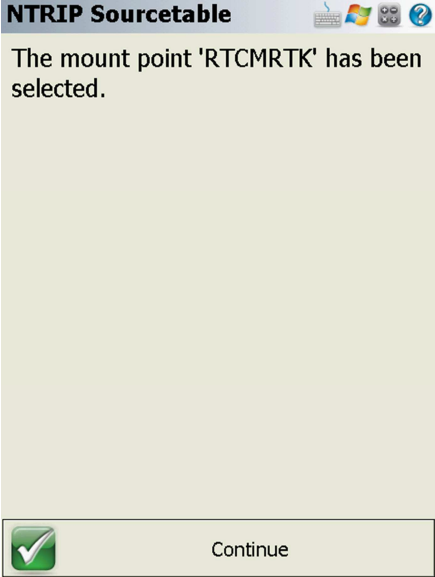


## Creating a GPS GSM Network Rover Profile, *continued*

Step	Action	Display
<p data-bbox="264 479 296 510">23</p>	<p data-bbox="363 479 735 510">In the Link Configure screen:</p> <p data-bbox="363 551 828 869">If you do not select a Data Format option FieldGenius will automatically choose the appropriate format when you connect with the mountpoint. <i>If your area has a large number of mountpoints to choose from you may first wish to read the note on the next page before continuing.</i></p> <ul data-bbox="411 875 786 907" style="list-style-type: none"> <li>• Press the <b>Connect</b> button.</li> </ul> <div data-bbox="248 916 823 1115" style="border: 1px solid black; padding: 5px;"> <p data-bbox="264 927 802 1104"><b>Important Note:</b> Extended OWI must be enabled by your Leica representative. <i>If it is not you will see an error message: “Modem initialization has failed” when you attempt to connect.</i></p> </div> <p data-bbox="363 1122 778 1256">Once FieldGenius has connected with your Network GPS data service, you will be taken to the NTRIP Caster Options screen.</p>	
<p data-bbox="264 1303 296 1335">24</p>	<p data-bbox="363 1303 828 1335">In the NTRIP Caster Options screen:</p> <ul data-bbox="411 1375 815 1767" style="list-style-type: none"> <li>• At this stage, if you are not already outside you should go outside to ensure you have a satellite view, most NTRIP casters require that the receiver provide a rough position before they will send a sourcetable list.</li> <li>• Tap on the <b>Request Sourcetable</b> button.</li> </ul>	

Step	Action	Display
<p>25</p>	<p>You will see this prompt when working with the GS15. This prompt is provided for Leica receivers to allow you to avoid long download times with networks that have many mountpoints.</p> <p><i>But if you select “No” FieldGenius will no longer be able to automatically select the data format for your mountpoint. If you choose “No,” be sure that you have selected the data format that your mountpoint will use in the Link Configure screen. If you are unsure, select “Yes.”</i></p> <ul style="list-style-type: none"> <li>• For this example, tap on <b>No</b>.</li> </ul> <p>This takes us to the NTRIP Sourcetable screen.</p>	

## Creating a GPS GSM Network Rover Profile, *continued*


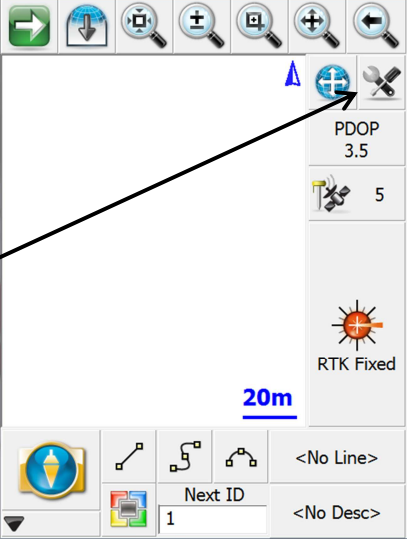
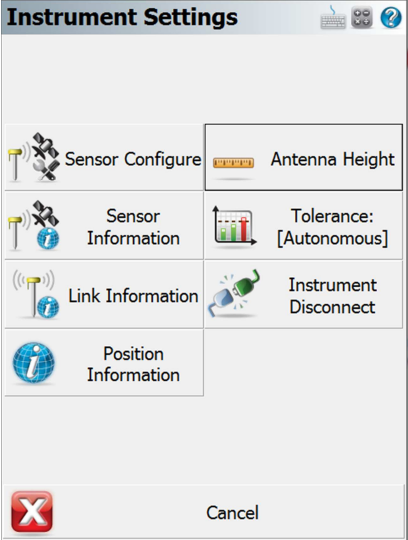
Step	Action	Display												
<p data-bbox="264 479 300 510"><b>26</b></p> <p data-bbox="363 479 788 510">In the NTRIP Sourcetable screen:</p> <p data-bbox="363 586 810 689">Here we are presented with a list of all of the mountpoints our GPS network data provider is offering.</p> <p data-bbox="363 730 801 869"><b>Note:</b> Don't be alarmed if your mountpoint list does not match the screen on the right. Your provider may offer different services.</p> <ul data-bbox="411 949 829 1191" style="list-style-type: none"> <li data-bbox="411 949 829 1120">• Select the mount point you wish to use by tapping on it. In this example we are selecting the <i>RTCM 3.0 RTK</i> mountpoint.</li> <li data-bbox="411 1160 753 1191">• Press the <b>Select</b> button.</li> </ul> <p data-bbox="363 1267 826 1339">You are then taken to the NTRIP Sourcetable acknowledgement screen.</p> <ul data-bbox="411 1379 798 1411" style="list-style-type: none"> <li data-bbox="411 1379 798 1411">• Press the <b>Continue</b> button.</li> </ul> <p data-bbox="363 1594 813 1657">You are now taken to the MapView screen.</p>		 <p data-bbox="874 456 1310 1025"><b>NTRIP Sourcetable</b></p> <table border="1" data-bbox="874 495 1310 622"> <thead> <tr> <th>Mount Point</th> <th>Identifier</th> <th>Format</th> </tr> </thead> <tbody> <tr> <td>RTCMDGPS</td> <td>RTCMDGPS</td> <td>RTCM 2.3</td> </tr> <tr style="background-color: #90EE90;"> <td>RTCMRTK</td> <td>RTCMRTK</td> <td>RTCM 3.0</td> </tr> <tr> <td>CMR+</td> <td>CMR+</td> <td>CMR+</td> </tr> </tbody> </table> <p data-bbox="874 981 1310 1025">Select Close</p>  <p data-bbox="874 1055 1310 1630"><b>NTRIP Sourcetable</b></p> <p data-bbox="874 1099 1310 1160">The mount point 'RTCMRTK' has been selected.</p> <p data-bbox="874 1585 1310 1630">Continue</p>	Mount Point	Identifier	Format	RTCMDGPS	RTCMDGPS	RTCM 2.3	RTCMRTK	RTCMRTK	RTCM 3.0	CMR+	CMR+	CMR+
Mount Point	Identifier	Format												
RTCMDGPS	RTCMDGPS	RTCM 2.3												
RTCMRTK	RTCMRTK	RTCM 3.0												
CMR+	CMR+	CMR+												

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## Creating a GPS GSM Network Rover Profile, *continued*

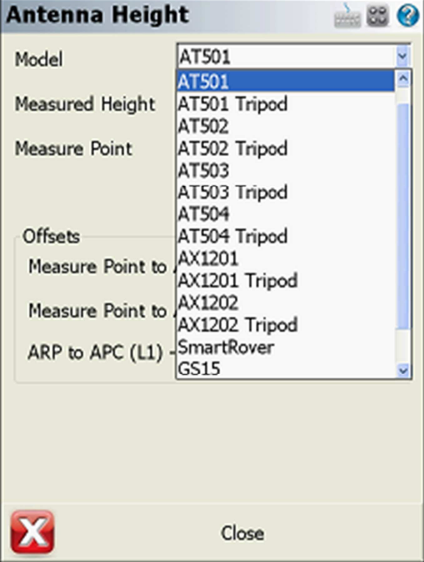
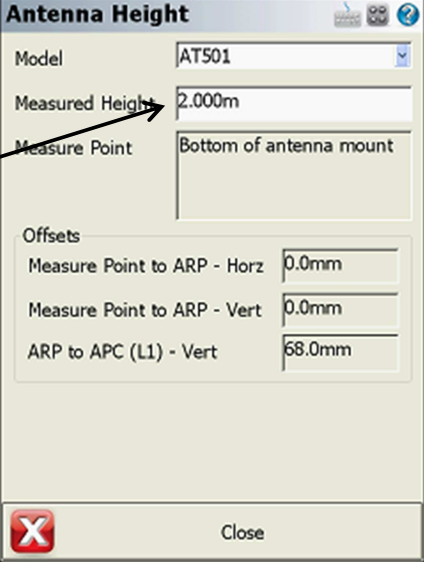
### Correct Antenna

It is wise to ensure that you have the correct antenna height entered and proper antenna model selected before measuring with GPS.

Step	Action	Display
<p>27</p> <p>In the MapView screen:</p> <p>In this example we will enter an Antenna height of <i>2 metres</i> since we are using a fixed 2-metre pole.</p> <ul style="list-style-type: none"> <li>Tap on the <b>Instrument Settings</b>  button.</li> </ul> <p>This takes us to the Instrument Settings screen.</p>		
<p>28</p> <p>In the Instrument Settings screen:</p> <ul style="list-style-type: none"> <li>Tap on the <b>Antenna Height</b> button.</li> </ul> <p>This takes us to the Antenna Height dialog.</p>		






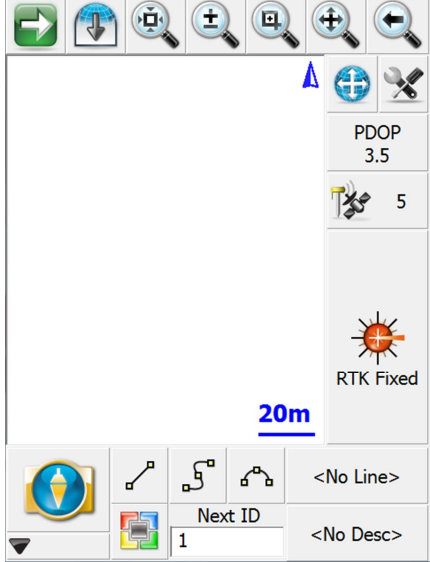
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## Creating a GPS GSM Network Rover Profile, *continued*

Step	Action	Display
<p data-bbox="264 479 300 510">29</p> <p data-bbox="363 479 738 510">In the Antenna Height dialog:</p> <p data-bbox="363 589 815 725">Notice in the <b>Model</b> field you have many preconfigured antenna models to choose from, and <b>User Defined</b>. In this example we selected <b>AT501</b>.</p> <p data-bbox="363 763 807 833"><i>How did I know where to measure my antenna height?</i></p> <p data-bbox="363 873 820 1115">If you look at the <b>Measure Point</b> field; the text informs us that we are measuring to the bottom of the antenna mount. If this field said <b>Height Hook</b> then we would know that this is for a tripod setup (i.e. for the reference).</p> <ul data-bbox="411 1160 826 1552" style="list-style-type: none"> <li>• Select the antenna you wish to use in the <b>Model</b> field.</li> <li>• Enter the height of instrument in the <b>Measured Height</b> field. In this example we are using a fixed 2-metre pole.</li> <li>• Press the <b>Close</b> button when finished.</li> </ul> <p data-bbox="363 1630 786 1693">You are now see to the MapView screen.</p>		 <p data-bbox="874 456 1299 1016">The screenshot shows the 'Antenna Height' dialog box with a dropdown menu for 'Model' containing various antenna models, with 'AT501' selected. The 'Measured Height' field is empty, and the 'Measure Point' field is set to 'Bottom of antenna mount'. The 'Close' button is visible at the bottom.</p>  <p data-bbox="874 1093 1299 1653">The second screenshot shows the 'Antenna Height' dialog box with the 'Model' field set to 'AT501', the 'Measured Height' field set to '2.000m', and the 'Measure Point' field set to 'Bottom of antenna mount'. An arrow points from the text in the Action column to the 'Measured Height' field. The 'Close' button is visible at the bottom.</p>

*Continued on the following page*

## Creating a GPS GSM Network Rover Profile, *continued*

Step	Action	Display
<p><b>30</b></p> <p>In the MapView screen you are ready to start measuring.</p> <p>Some useful features to try out:</p> <p>Tap on  and the “Page” button to see “live” position information from your receiver.</p> <p>Tap on  and “Link Information” to confirm you are receiving a data stream.</p> <p>Tap on  and “Tolerance” to set your GPS tolerances and specify number of measurements to be taken in a set.</p> <p>Note your solution type on the measure button: </p> <p>Tap the measure button to trigger a measurement and store a point. </p>		

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## Creating a GPS GSM Network Rover Profile, *continued*

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**Congratulations** You have successfully created a GPS GSM rover profile.

You then made a connection to your GPS receiver via Bluetooth.

From there you connected to your GPS network correction provider and started receiving network data.

You then entered the correct antenna height and selected the correct antenna model and are ready to start measuring.

**Remember**

- FieldGenius will preserve these settings in your instrument profile. You only have to create this profile once. In other words, you don't have to follow these steps each and every time you want to survey using the GPS receiver and the Internet.
- If you have multiple data collectors running FieldGenius you can copy instrument profiles for all instruments between them by transferring the file msurvey.ini which is found in:  
\\Program Files\\MicroSurvey FieldGenius\\Programs
- If a Bluetooth connection fails it is sometimes useful to repeat steps 17 and 18 from this guide.

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**Glossary**

GPS – Global Positioning System

PIN – Personal Identification Number

GSM – Global System for Mobile Communications

CDMA – Code Division Multiple Access

ISP - Internet Service Provider

NTRIP – Networked Transport of RTCM via Internet Protocol

NTRIP Caster – an HTTP server that accepts request-messages on a single port and then decides where there is streaming data to receive or to send. The caster offers a list of mountpoints that is called a source list or source table.

HTTP: Hypertext Transfer Protocol

SIM - Subscriber Identity Module

RTCM - Radio Technical Commission for Maritime

RTK – Real Time Kinematic

Cap Sensitive – Capitalization Sensitive. Some ISPs or data correction services will not accept a username or password unless it is entered with the letter case exactly as specified (ie: “Password” would not be accepted unless it was entered as “password”)

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