

Leica SurvCE Training



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1.0 Introduction

Objectives

In this exercise you will learn how to connect Leica SurvCE to an ATX1230 Smart Antenna.

GPS measured points are always stored based on the global geocentric datum known as WGS 1984. Most surveys require coordinates in a local grid system, for example, based on a country's official mapping datum or an arbitrary grid system used in a particular area such as a construction site. To convert the WGS 1984 coordinates into local coordinates, a coordinate system is required. Part of the coordinate system is the transformation used to convert coordinates from the WGS 1984 datum to the local datum.

We do this inside the **Localization** function.

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At the end of the exercise you should be able to perform the following on Leica SurvCE:

- Establish communication between Leica SurvCE and an ATX1230 GPS.
- Create a Localization file in Leica SurvCE.

Getting Started

We need to have set up the GX1230 (see Exercise 12) over one of our control points and created a reference file. We can then connect to the ATX1230 and localize to the job.

2.0 Configuring the ATX1230 Rover

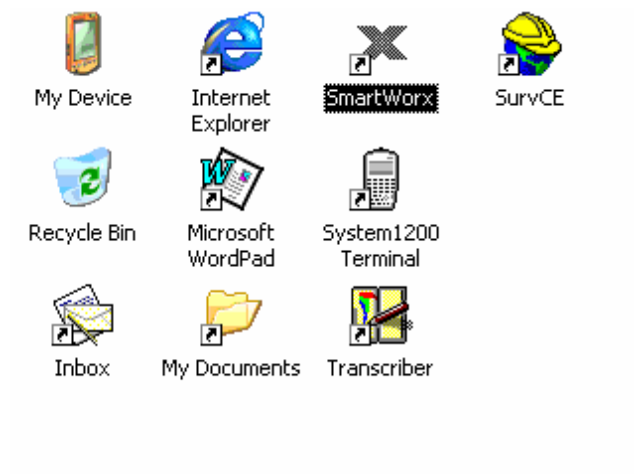
Objective

We need to configure Leica SurvCE to communicate with the ATX1230 SmartRover

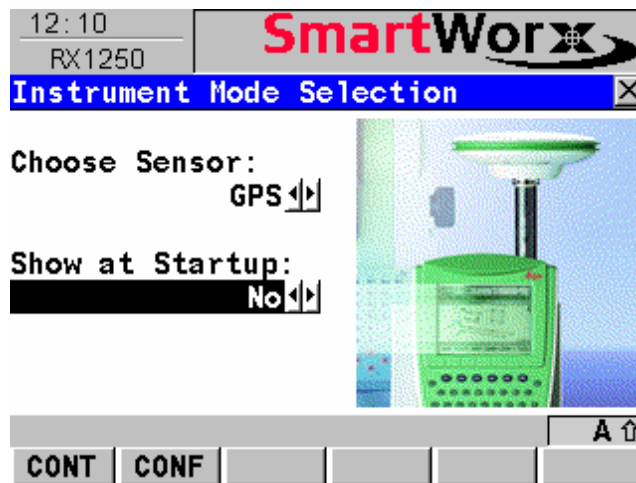
Getting started

- Insert a battery into the ATX1230 antenna
- Attach the ATX1230 Antenna to the range pole.
- Attach the RX1250 Controller to the GHT56 holder
- Attach the Intuicom Radio modem into the GHT56 holder
- Attach the radio antenna to the Intuicom radio modem
- Insert a battery into the back of the GHT56 holder
- Attach the GHT56 holder the range pole
- Extend the range pole to it's full height of 2 meters
- Press the ON/OFF button on the ATX1230 antenna

Configuring Communication inside SmartWorx



Double tap the **SmartWorx** icon on the desktop to open SmartWorx.



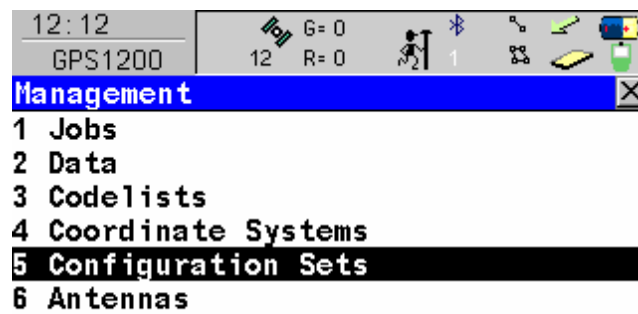
SmartWorx may have opened automatically when you first powered on the RX1250. If this screen appears change **Show at Startup** to **No**.

Press **F1** for **CONT** to continue

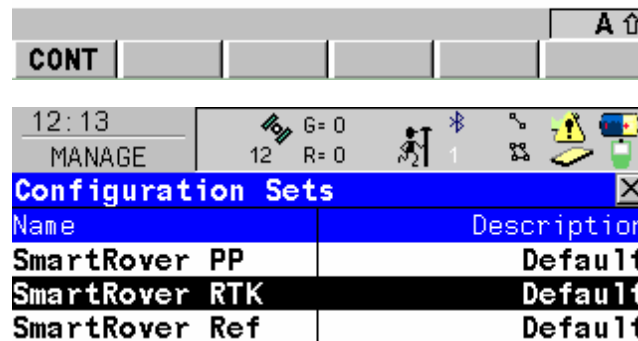
Selecting the Configuration Set



Select **3 Manage**

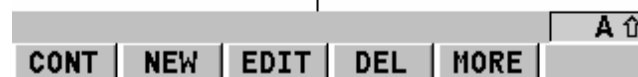


Select **5 Configuration Sets**



Select **SmartRover RTK**

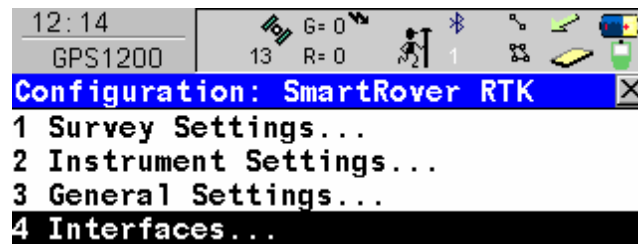
Press **F1 CONT** to accept the configuration set.



Configuring the Communication interface

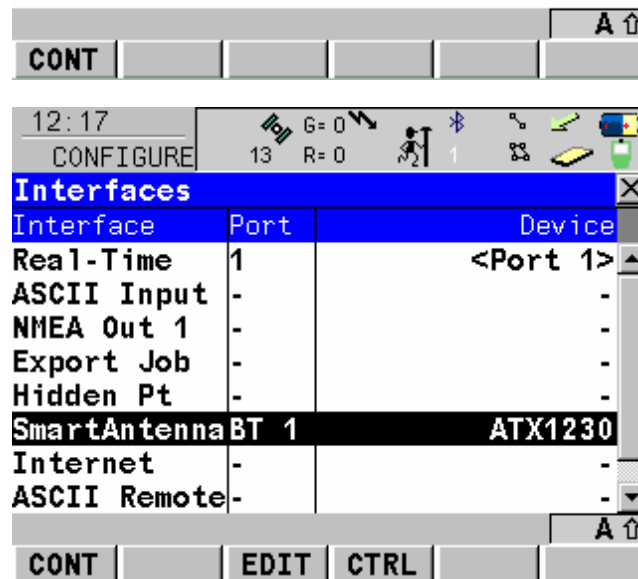


Select **5 Config**



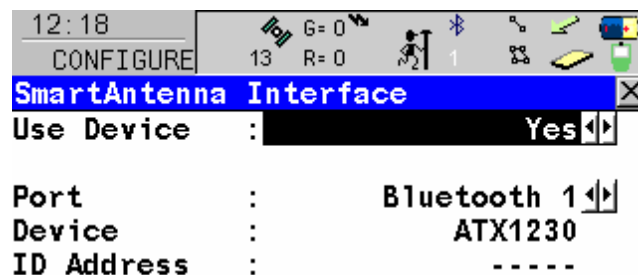
Select **4 Interfaces**

Establishing BT communication



Select **SmartAntenna**

Select **F3 EDIT**



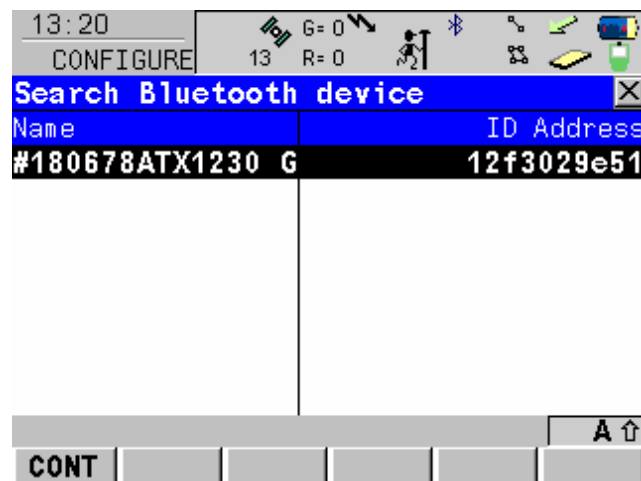
Use Device should read **Yes**

The port selected should be **Bluetooth 1**

The device selected should be **ATX1230**

Press **F4 SRCH**

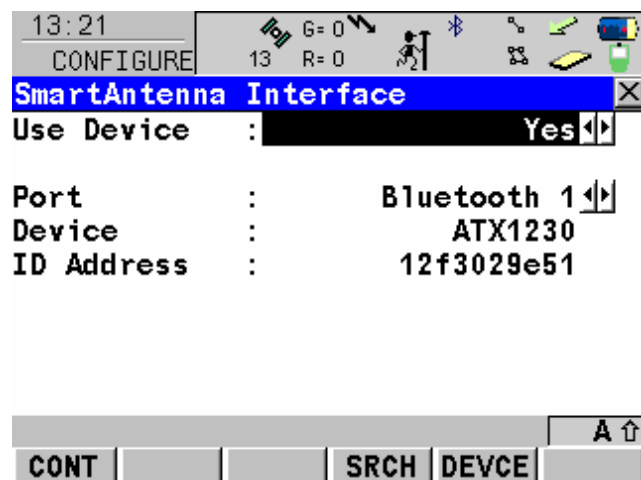




After searching, a list of devices found will be displayed. Note that **180678** is the serial number of the **ATX1230** that I am establishing communication with.

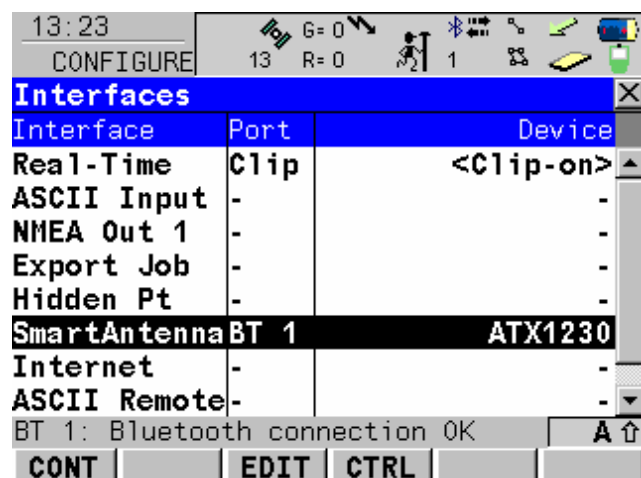
Verify that you have selected the proper ATX1230.

Press **F1 CONT**



The ID Address of the unit will be displayed.

Press **F1 CONT**



The  icon in the upper portion of the screen indicates successful BT communication has been established.

Press **F1 CONT**

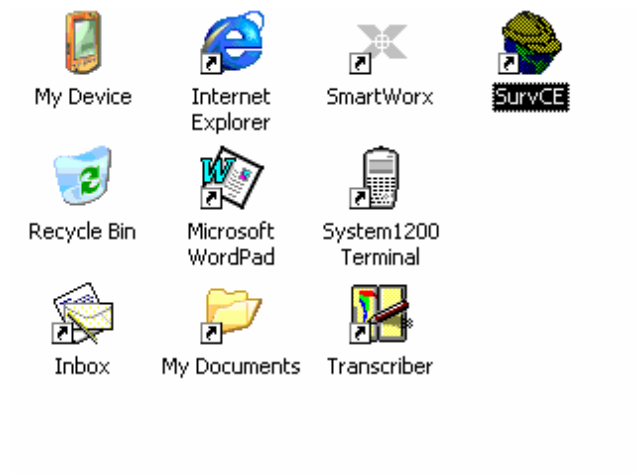
Note: For any BT device you plan to use with SmartWorx (i.e. cellular phone for network corrections), you must make the connection from this screen.



Press the **SHIFT** key on the keyboard of the RX1250.

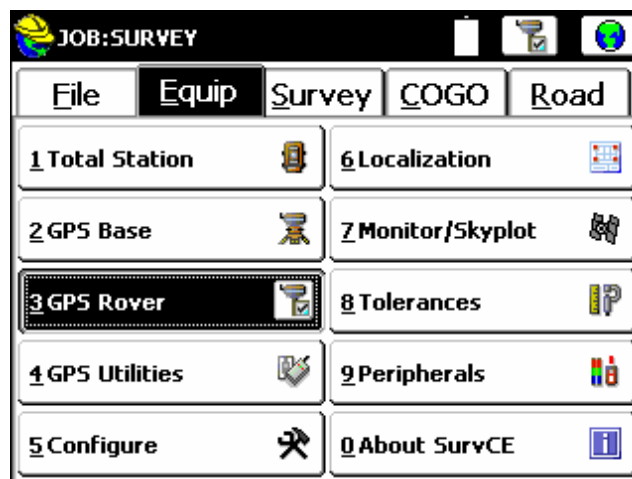
Select **F5 MINIM** to minimize SmartWorx

Configuring Communication inside SurvCE

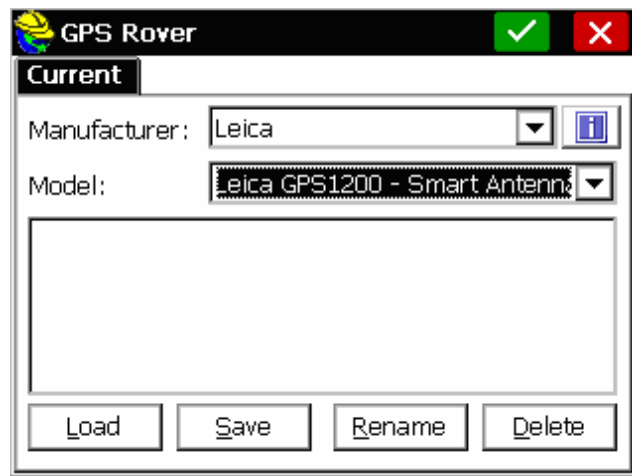


Double tap the **SurvCE** icon on the WinCE desktop.

Configuring the Rover antenna



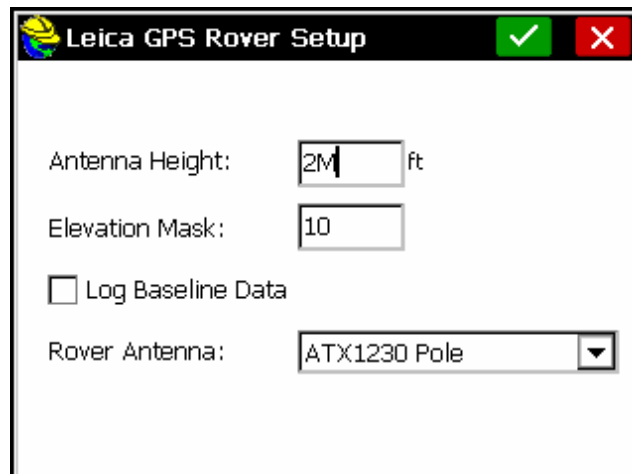
On the **Equip** menu tab tap **GPS Rover** or press 3 on the keyboard.



On the **Current** tab let's choose:

- **Leica Manufacturer**
- **Leica GPS1200 – Smart Antenna Model**

Press the  key on the RX1250 or tap the  on the screen to continue.



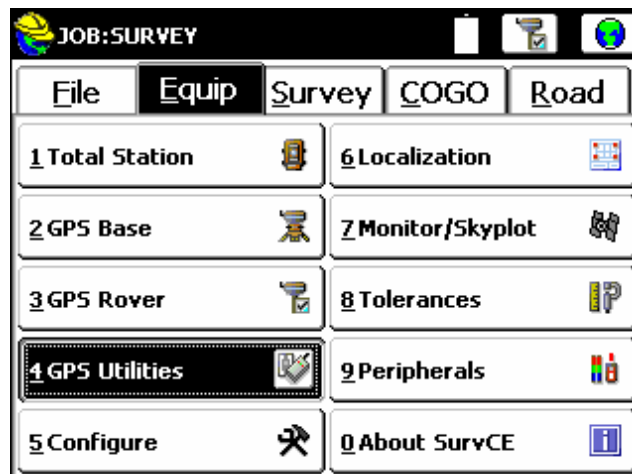
We are using a 2m pole, so let's enter

- **2M Antenna Height**
- **10 Elevation Mask**
- **ATX1230 Pole Rover Antenna**

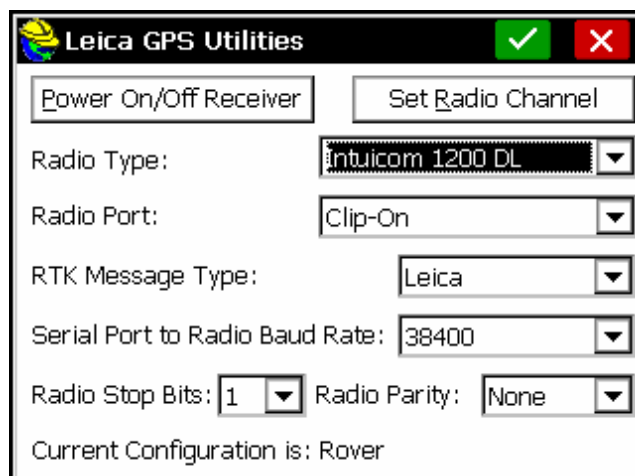
Note that when converting units Leica SurvCE is not case sensitive.

Tap the  on the screen to continue.

Configuring the Radio Communication



On the **Equip** menu tab tap **GPS Utilities** or press **4** on the keyboard.



Leica GPS Utilities

Power On/Off Receiver Set Radio Channel

Radio Type: **Intuicom 1200 DL**

Radio Port: **Clip-On**

RTK Message Type: **Leica**

Serial Port to Radio Baud Rate: **38400**

Radio Stop Bits: **1** Radio Parity: **None**

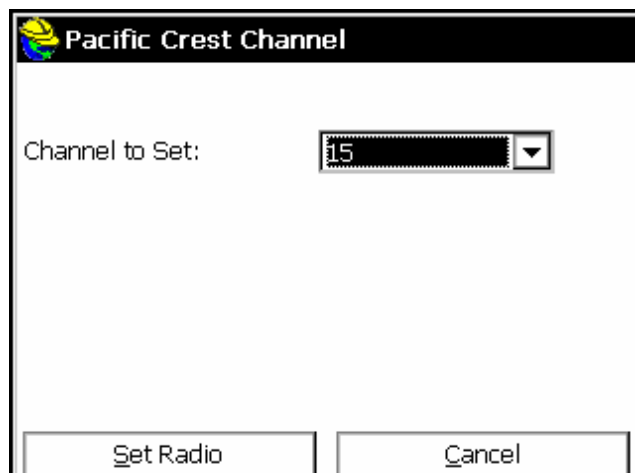
Current Configuration is: Rover

Configure the following:

- **Intuicom 1200 DL** Radio Type
- **38400** Serial Port to Radio Baud Rate
- **Clip-On** Radio Port
- **Leica** Type
- **1** Radio Stop Bits
- **None** Radio Parity

Tap the **Set Radio Channel** button.

Configuration of radio as a Rover Radio



Pacific Crest Channel

Channel to Set: **15**

Set Radio Cancel

Intuicom radio's can be configured to transmit or receive. Configuration changes are made through changes to the channel setting.

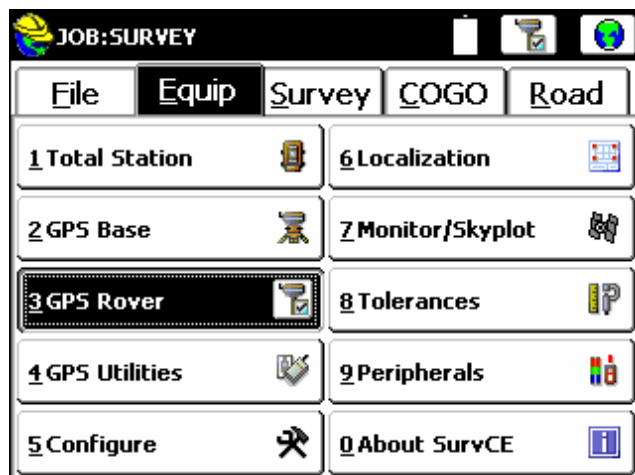
Set the channel to 15 to configure the unit as a receiver.

Tap the **Set Radio Button**.

You will be returned to the previous screen. Tap the **Set Radio Channel** button again and **select the channel assigned to you by your instructor**. Tap the **Set Radio** button.

On the **Equip** menu tab tap **GPS Rover** or press **3** on the keyboard.

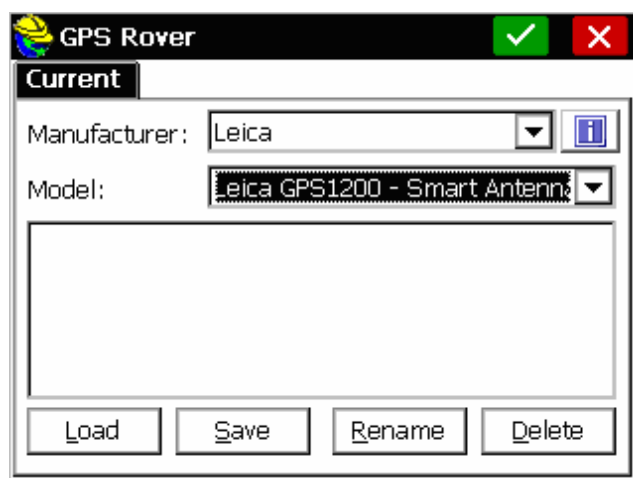
Saving the Configuration



JOB: SURVEY

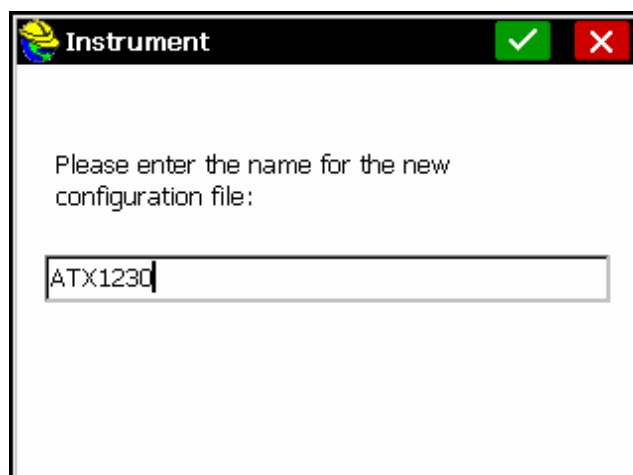
File **Equip** Survey COGO Road

1 Total Station	6 Localization
2 GPS Base	7 Monitor/Skyplot
3 GPS Rover	8 Tolerances
4 GPS Utilities	9 Peripherals
5 Configure	0 About SurvCE



The screenshot shows the 'GPS Rover' window with a title bar containing a green checkmark and a red X. The 'Current' tab is selected. Below the tab, there are two dropdown menus: 'Manufacturer:' set to 'Leica' and 'Model:' set to 'Leica GPS1200 - Smart Antenna'. Below these is a large empty text area. At the bottom, there are four buttons: 'Load', 'Save', 'Rename', and 'Delete'.

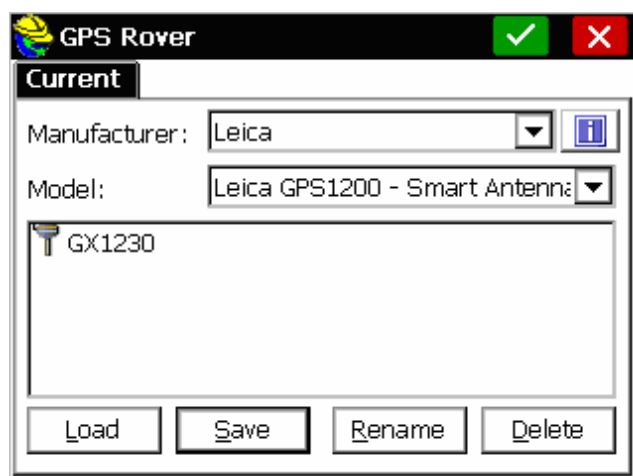
Tap the **Save** button.



The screenshot shows the 'Instrument' window with a title bar containing a green checkmark and a red X. The text 'Please enter the name for the new configuration file:' is displayed above a text input field. The input field contains the text 'ATX1230'.

Name the configuration **ATX1230**.

Press the  key on the RX1250 or tap the  on the screen to accept the name.

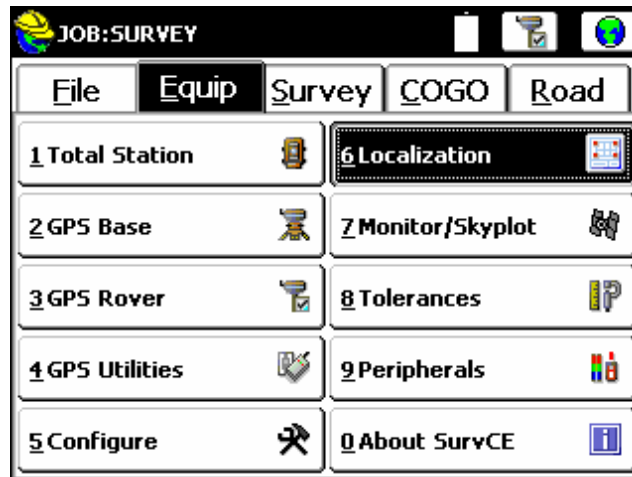


The screenshot shows the 'GPS Rover' window with a title bar containing a green checkmark and a red X. The 'Current' tab is selected. Below the tab, there are two dropdown menus: 'Manufacturer:' set to 'Leica' and 'Model:' set to 'Leica GPS1200 - Smart Antenna'. Below these is a large text area containing the text 'GX1230' with a small antenna icon to its left. At the bottom, there are four buttons: 'Load', 'Save', 'Rename', and 'Delete'.

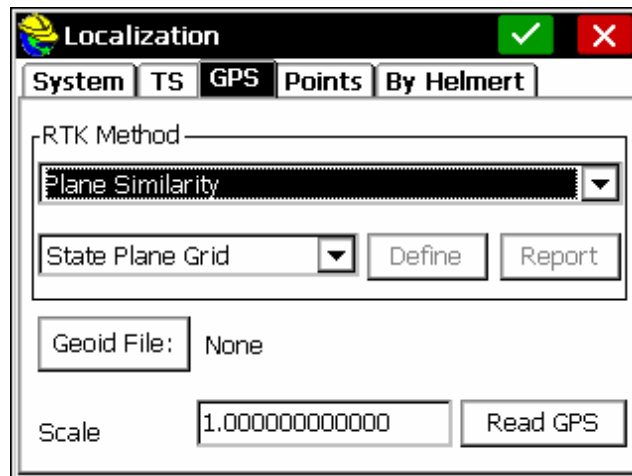
Tap the  on the screen to close the window.

The Rover is configured and the configuration has been saved.

Building the Localization



On the **Equip** menu tab tap **Localization** or press the **6** key on the keyboard.

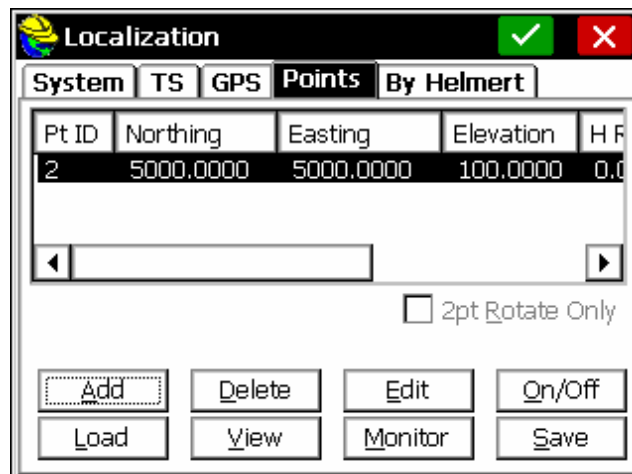


On the **GPS** tab select the following:

- **Plane Similarity** RTK Method
- **State Plane Grid**
- **None** Geoid File
- **1.0000** Scale

Tap the **Points** tab.

Adding Points to a localization file



The only point we have in our localization file is point currently occupied by our GPS Base reference station.

Move to another point that you would like to add to the localization file and tap the **Add** button.

There are three ways to select the point from our file. We can tap the  icon to select the point from a list, tap the  icon to select the point graphically, or simply enter the point number in the **Point From File** box.

Select the point you wish to add.

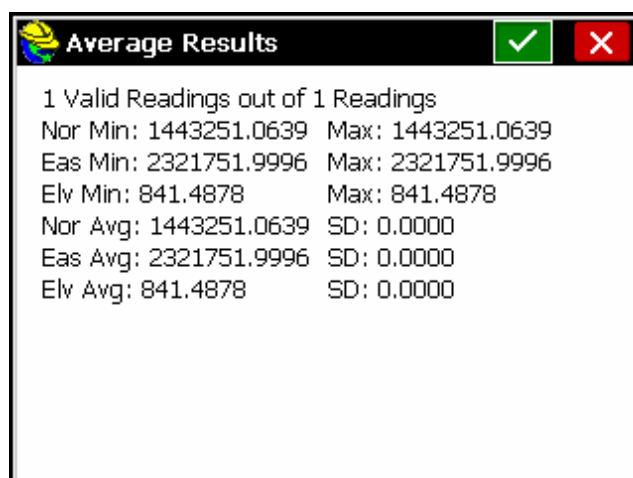
Tap the  on the screen to accept the point.

Tap the  on the screen to **Read GPS**.

Leica SurvCE will allow you to average up to 999 readings for the transformation position.

We are using **Leica** equipment, so 1 sample will be sufficient.

Tap the  on the screen to continue.



Average Results

1 Valid Readings out of 1 Readings

Nor Min: 1443251.0639 Max: 1443251.0639

Eas Min: 2321751.9996 Max: 2321751.9996

Elv Min: 841.4878 Max: 841.4878

Nor Avg: 1443251.0639 SD: 0.0000

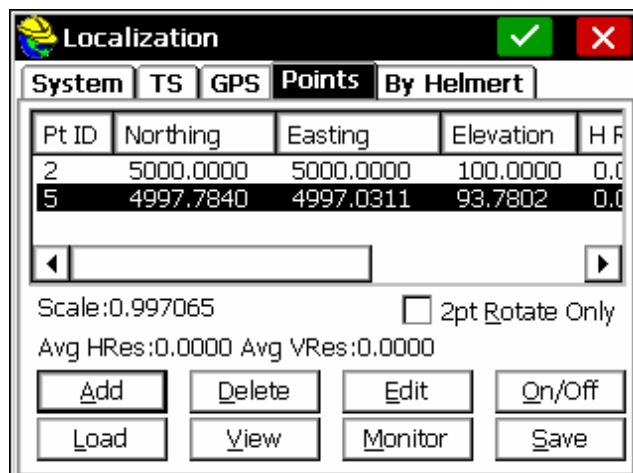
Eas Avg: 2321751.9996 SD: 0.0000

Elv Avg: 841.4878 SD: 0.0000

A screen similar to this one will be displayed.

Tap the  on the screen to discard the reading and try again, or tap the  on the screen to continue.

Tap the  on the screen to continue.



Localization

System TS GPS Points By Helmert

Pt ID	Northing	Easting	Elevation	H F
2	5000.0000	5000.0000	100.0000	0.0
5	4997.7840	4997.0311	93.7802	0.0

Scale: 0.997065 ☐ 2pt Rotate Only

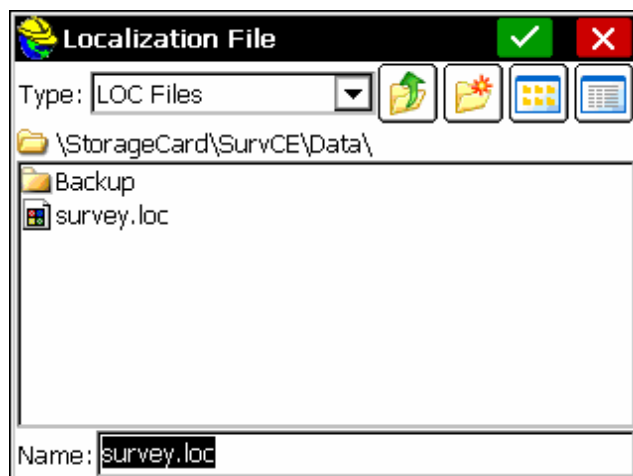
Avg HRes: 0.0000 Avg VRes: 0.0000

Add Delete Edit On/Off

Load View Monitor Save

The point has been added to the localization file.

Tap the **Save** button to save the change.



Localization File

Type: LOC Files

\StorageCard\SurvCE\Data\

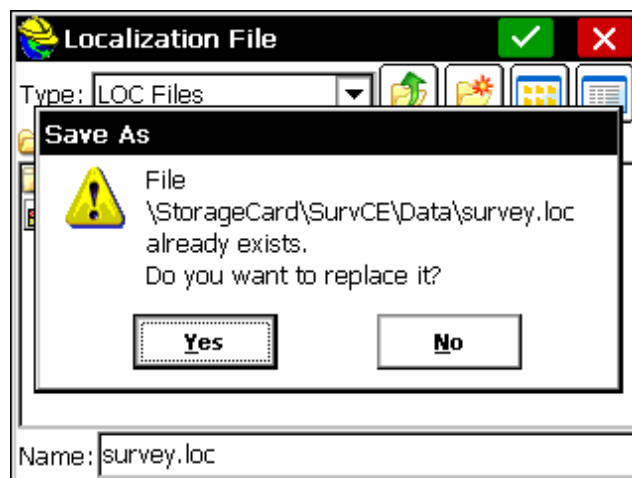
Backup

survey.loc

Name: survey.loc

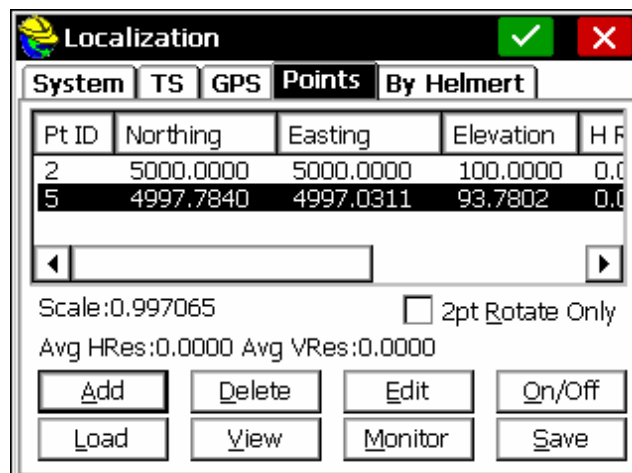
The existing file name is used as the default name for the file. We have the option of changing the name of the file before we save it, but we will continue to use the same for this file as we add more points to the file.

Tap the  on the screen to continue.



Leica SurvCE warns of potential file overwrite situations.

Tap the **Yes** button.



Tap the  on the screen to continue.

You may continue to add points to your localization file. Using five strategically chosen points is recommended.