

# Leica SurvCE Training

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## 1.0 Introduction

### Objectives

In this exercise you will learn how to configure GPRS and NTRIP connections.

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.

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

- Establish a connection with the reference network

### 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 CDMA modem within SmartWorx

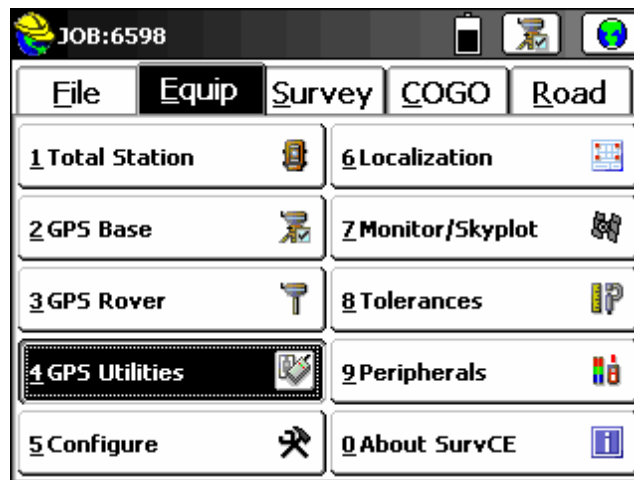
### Objective

We need to configure the communication parameters within SmartWorx

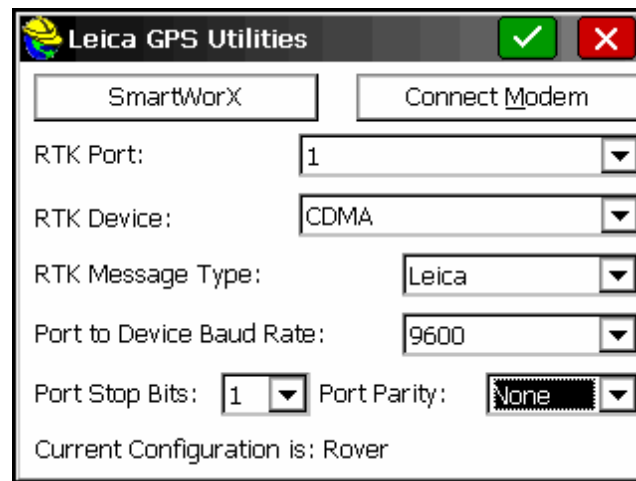
### Getting started

Establish BT communication between the RX1250 and the Smart Antenna.  
Start Leica SurvCE

### Configuring the modem



From the **Equip** tab select **GPS Utilities** or press the **4** key on the RX1250 keyboard.

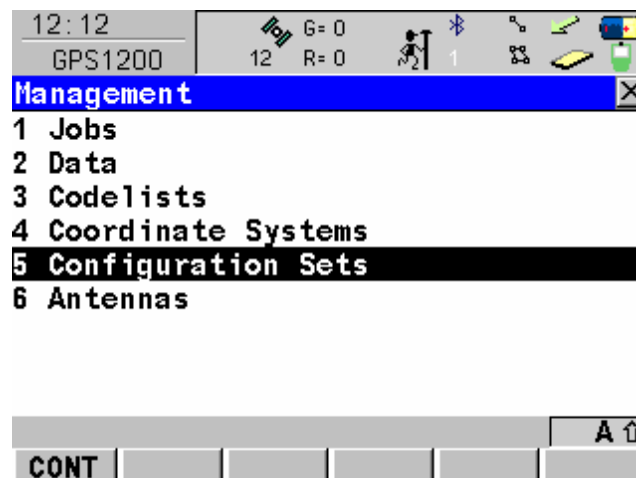


Tap the **SmartWorX** button

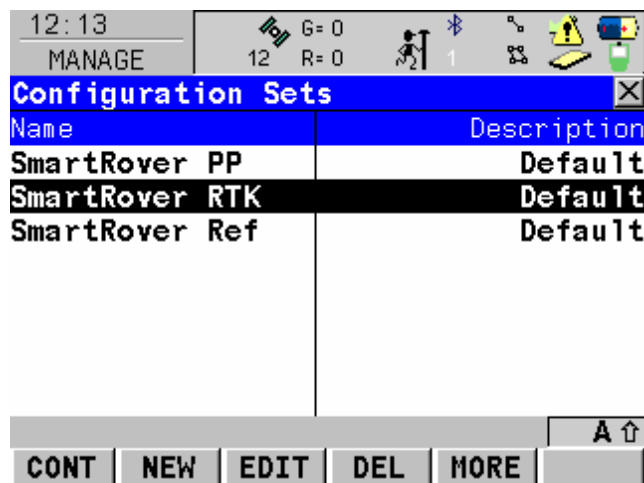
Verifying the  
Configuration  
Set



Select **3 Manage**



Select **5 Configuration Sets**



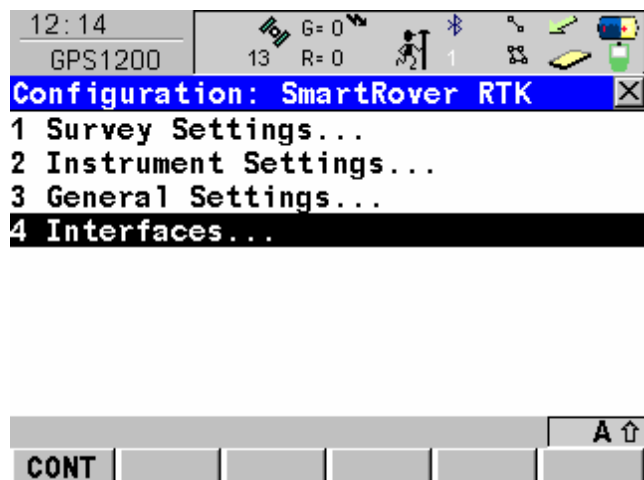
Select **SmartRover RTK**

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

Configuring the Communication interface



Select **5 Config**



Select **4 Interfaces**

Establishing  
Real-Time  
communication

19:30  
CONFIGURE 12 R= 1

| Interface    | Port | Device  |
|--------------|------|---------|
| Real-Time    | -    | -       |
| ASCII Input  | -    | -       |
| NMEA Out 1   | -    | -       |
| Export Job   | -    | -       |
| Hidden Pt    | -    | -       |
| SmartAntenna | BT 1 | ATX1230 |
| Internet     | -    | -       |
| ASCII Remote | -    | -       |

CONT EDIT

Select **Internet**

Select **F3 EDIT**

19:31  
CONFIGURE 12 R= 1

| Internet Interface |                |
|--------------------|----------------|
| Internet :         | Yes            |
| Port :             | Clip-on        |
| Device :           | MultiTech Bell |
| ID Address:        | -----          |
| IP Address:        | Dynamic        |
| Set IP Adr:        | 192.168.1.3    |
| User ID :          | -----          |

CONT SRCH DEVICE

Internet should read  
**Yes**

The port selected should be  
**Clip-On**

Press **F5 DEVICE**

19:46  
CONFIGURE 12 R= 3

| GPRS Internet Devices |           |
|-----------------------|-----------|
| Name                  | Type      |
| <Clip-on>             | <Clip-on> |
| AirLink CDMA          | Modem     |
| Motorola Phone        | GSM       |
| MultiTech AllTel      | CDMA      |
| MultiTech Bell        | CDMA      |
| MultiTechVerizon      | CDMA      |
| Nokia Phone           | GSM       |
| Siemens MC45          | GSM       |

CONT NEW EDIT DEL MORE

Select the appropriate modem  
from the list.

Press **F3 EDIT**

19:50  
CONFIGURE 12 G= 8 R= 3

**Edit Device: MultiTech Bell**

Name : MultiTech Bell  
Type : CDMA  
GPRS/Internet: Yes  
Baud Rate : 115200  
Parity : None  
Data Bits : 8  
Stop Bit : 1  
Flow Control : RTS/CTS

STORE ATCMD DEFLT

Press **F5 DEFLT**

Verify **GPRS/Internet** is set to **Yes**

Press **F1 STORE**

Press **F1 CONT**

19:55  
CONFIGURE 12 G= 8 R= 2

**Internet Interface**

Port : Clip-on  
Device : MultiTech Bell  
ID Address: -----  
IP Address: Dynamic  
Set IP Addr: 192.168.1.3  
User ID : -----  
(cont) : -----  
Password : -----

CONT SRCH DEVICE

Scroll to the bottom of the **Internet Interface** screen.

Choose **Dynamic** IP Address.

**Note:** Whether your modem has a static or a dynamic IP address, SmartWorx will automatically detect and apply the proper address. Since we are in **ROVER** mode we do not need to know the IP address.

If your cellular provider requires a User ID and password you should enter them here. Two lines are provided for User ID. If your User ID is too long to fit on one line use the second line to complete the User ID.

Press **F1 CONT**

20:04  
CONFIGURE 12 G= 8 R= 3

**Interfaces**

| Interface    | Port | Device         |
|--------------|------|----------------|
| Real-Time    | -    | -              |
| ASCII Input  | -    | -              |
| NMEA Out 1   | -    | -              |
| Export Job   | -    | -              |
| Hidden Pt    | -    | -              |
| SmartAntenna | BT 1 | ATX1230        |
| Internet     | Clip | MultiTech Bell |
| ASCII Remote | -    | -              |

CONT EDIT

Highlight **Real-Time**

Press **F3 EDIT**

## Configuring GPRS connection

20:13  
CONFIGURE 13 G=0 R=0 @ 1

**Real-Time Mode**

R-Time Mode: Rover  
R-Time Data: Leica  
Port: Net 1  
Device: Internet  
ID Address: -----  
Ref Sensor: Unknown  
Ref Antenna: Unknown

Verify the following settings:

R-Time Mode: **Rover**  
R-Time Data: **Leica**  
(for this tutorial)  
Port: **Net 1**

**Note:** When using Leica R-time Data it is not necessary to enter the Ref Sensor and Ref Antenna. That information will be supplied from the reference antenna correction string.

Press **F2 ROVER**

BT 1: Waiting to transmit

CONT ROVER SRCH DEVICE

20:16  
CONFIGURE 13 G=0 R=0 @ 1

**Additional Rover Options**

General NTRIP

Accept Ref: Any Received  
Ref Stn ID: --  
Ref Network: i-MAX  
Send User ID: Yes  
User ID 1: user  
User ID 2: password

If you are configuring a GPRS connection:

Accept Ref: **Any Received**  
Ref Network: **i-MAX**

Enter User ID in the **User ID 1** field  
Enter Password in the **User ID 2** field

**Note:** For this illustration, we are using i-MAX network corrections. User ID and password are typically required, but not always.

**Note:** If no User ID and password are required or if making NTRIP connection set Send User ID to **No**

Press **F4 GGA**  
Set GGA Position to **Automatic**

20:32  
CONFIGURE 12 G=7 R=3 @ 1

**Send GGA NMEA**

GGA Position: Automatic

**Note:** This should be set to Automatic whether configuring GPRS or NTRIP corrections.

Press **F1 CONT**

CONT

## Configuring NTRIP connection

21:17  
CONFIGURE 13 G=0 R=0 @ 1

**Additional Rover Options**

General NTRIP

Use NTRIP: Yes

User ID : user  
(cont) : - - - -  
Password: \*\*\*\*\*

Mountpnt: imaxleica

CONT SRCE PAGE

If configuring NTRIP connection apply the following settings:

Use NTRIP: **Yes**

Enter the user name and password and mountpoint supplied by the reference network administrator.

**Note:** If not configuring NTRIP connection set Use NTRIP to **No**

Press **F1 CONT**

Press **F1 CONT**

Press **F4 CTRL**

21:21  
CONFIGURE 12 G=9 R=0 @ 1

**Interfaces**

| Interface    | Port | Device         |
|--------------|------|----------------|
| Real-Time    | NET1 | Internet       |
| ASCII Input  | -    | -              |
| NMEA Out 1   | -    | -              |
| Export Job   | -    | -              |
| Hidden Pt    | -    | -              |
| SmartAntenna | BT 1 | ATX1230        |
| Internet     | Clip | MultiTech Bell |
| ASCII Remote | -    | -              |

BT 1: Bluetooth connection OK

CONT EDIT CTRL

21:23  
CONFIGURE 12 G=0 R=0 @ 1

**Set NET Port**

General Ranges

Name : Net 1  
User : Client

Server : <None>  
IP Address : - - - - -  
TCP/IP Port : - - - - -

Auto CONEC : No

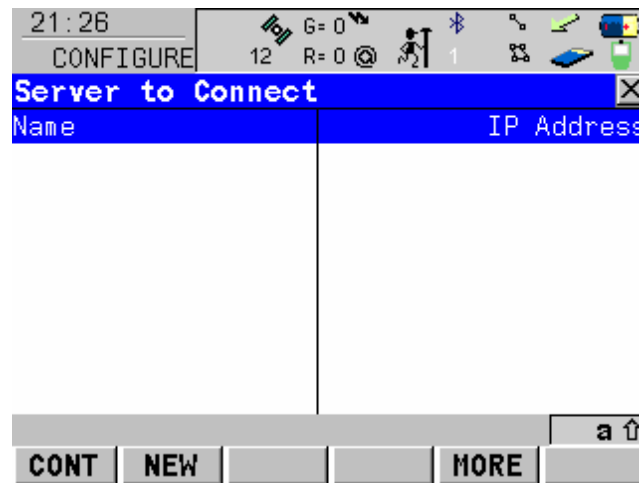
CONT PAGE

Verify User is set to **Client**

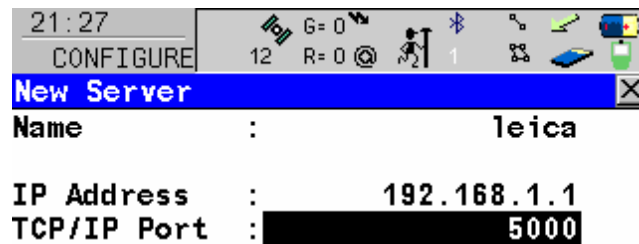
Verify Auto CONEC is set to **No**

Highlight **Server**

Press the  key on the RX1250



Press **F2 NEW**



Enter the server name, IP Address, and TCP/IP Port information supplied to you by the reference network administrator.

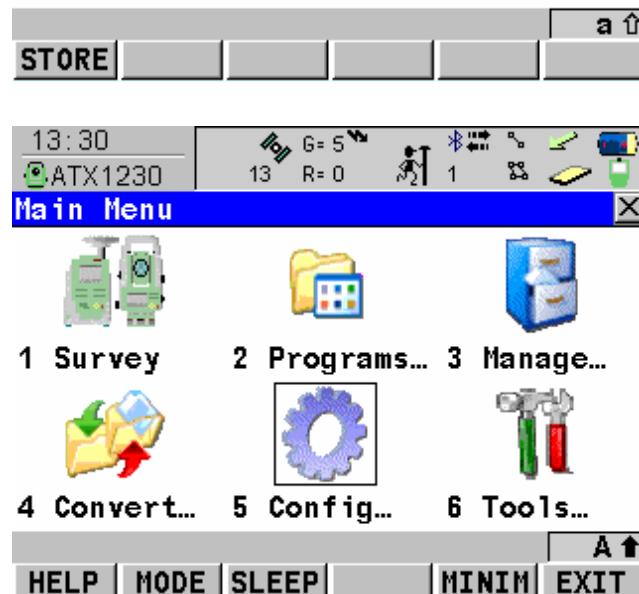
**Note:** The IP Address and TCP/IP Port used in this illustration are not a valid combination.

Press **F1 STORE**

Press **F1 CONT**

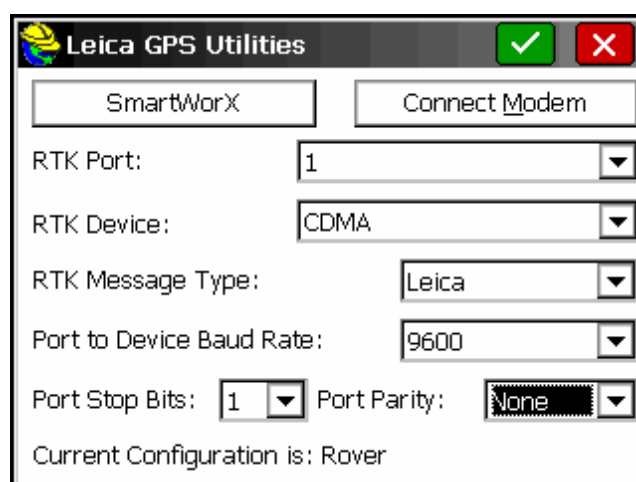
Press **F1 CONT**

Press **F1 CONT**



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

Select **F5 MINIM** to minimize SmartWorx



**Leica GPS Utilities** [Checkmark] [X]

SmartWorX | Connect Modem

RTK Port: 1

RTK Device: CDMA

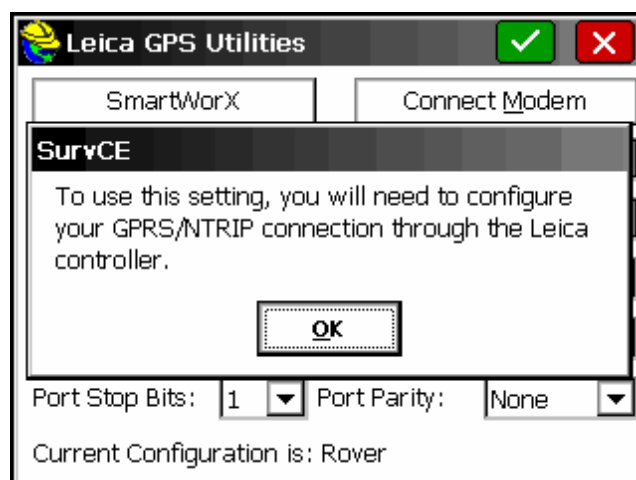
RTK Message Type: Leica

Port to Device Baud Rate: 9600

Port Stop Bits: 1 | Port Parity: None

Current Configuration is: Rover

Set RTK Device to  
**GPRS/NTRIP**



**Leica GPS Utilities** [Checkmark] [X]

SmartWorX | Connect Modem

**SurvCE**

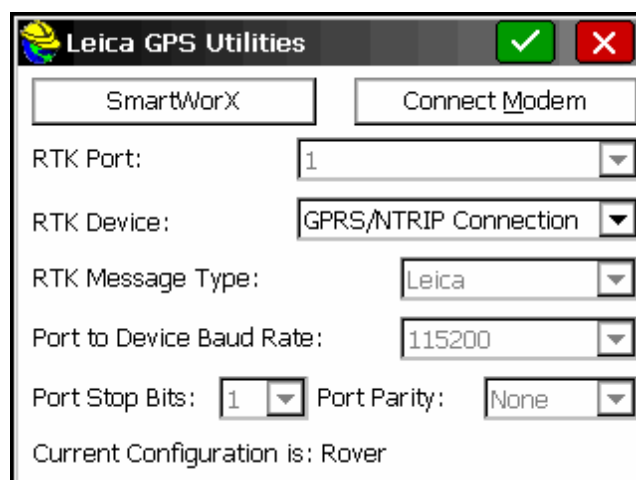
To use this setting, you will need to configure your GPRS/NTRIP connection through the Leica controller.

[OK]

Port Stop Bits: 1 | Port Parity: None

Current Configuration is: Rover

Tap **OK**



**Leica GPS Utilities** [Checkmark] [X]

SmartWorX | Connect Modem

RTK Port: 1

RTK Device: GPRS/NTRIP Connection

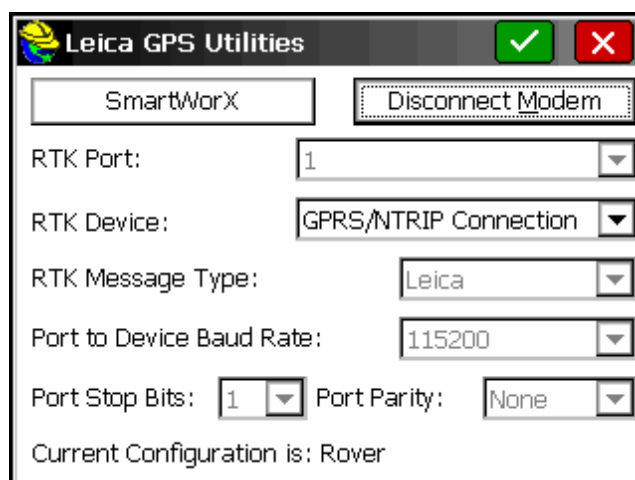
RTK Message Type: Leica

Port to Device Baud Rate: 115200

Port Stop Bits: 1 | Port Parity: None

Current Configuration is: Rover

Tap **Connect Modem**



**Leica GPS Utilities**

SmartWorX Disconnect Modem

RTK Port: 1

RTK Device: GPRS/NTRIP Connection

RTK Message Type: Leica

Port to Device Baud Rate: 115200

Port Stop Bits: 1 Port Parity: None

Current Configuration is: Rover

Tap the  on the screen to continue.



**JOB:6598**

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

**Monitor/Skyplot**

Quality Position SATView SATInfo Ref

Reference Station Coordinates

Pt ID: USCC

Latitude: N 33°58'05.07398"

Longitude: W 84°05'00.69072"

Ellipsoid Hgt: 867.8916

Age of Last Message Received: 1.0s

% of Messages Received: 90.76%

Northing: 1443455.4226

Easting: 2321790.3414

Elevation: 867.6784 Ant Hgt: 0.2133

Utilities Store

Verify the connection by going to the **Equip** tab and tapping **Monitor/Skyplot** or pressing 7 on the RX1250 keyboard.

GPS Utilities and SmartWorx can also be accessed at anytime by going to the **Ref** tab of the **Monitor/Skyplot** dialog box and tapping the **Utilities** button.