



MaCORS Quick Guide

Rover Configuration & Activation for
Leica Geosystems System 1200 &
Airlink Modem

This Quick Guide outlines configuring the Leica Geosystems System 1200 Rovers & Airlink modem to work with MaCORS.

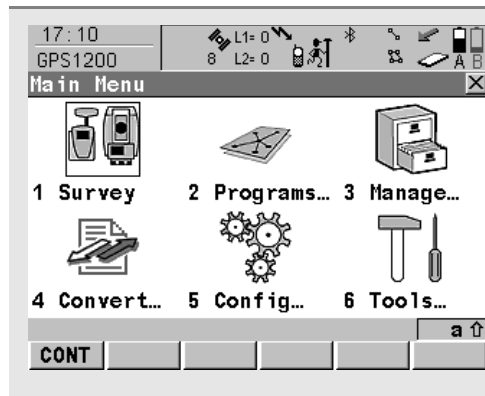
- **Configuring the Real Time Interface**
- **Configuring the MaCORS corrections**

Firmware Requirements

<i>Hardware Type</i>	<i>Firmware Version</i>	
	<i>Minimum</i>	<i>Recommended</i>
RX1250	6.02	8.xx
GX1230	6.02	8.xx

Airlink Configuration

Setting up the IP Address & TCP/IP Port

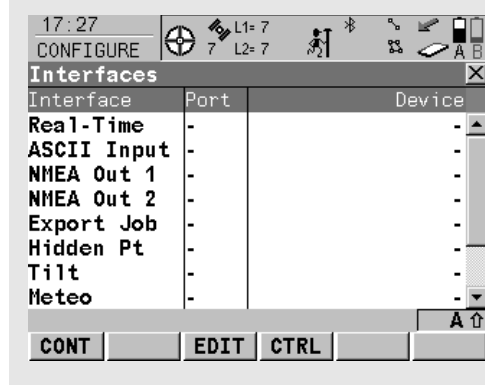


Since this device is actually going to be used as the Internet device, we now need to reconfigure the Internet and Real-time interfaces.

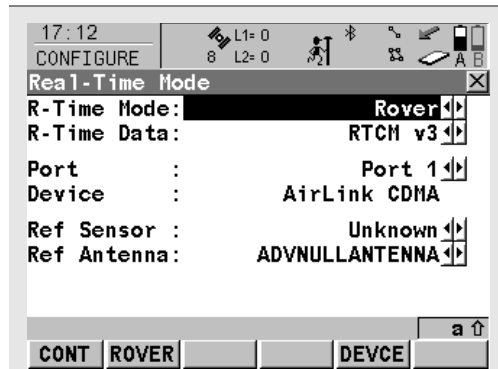
1. Attach your modem to **Port 1** or **3** (GX1230) or to the **Clip-on Port** (SmartRover) on the sensor.
2. Press the **ON (PROG)** button to turn on the sensor
3. Select **5 Config...** from the Main Menu



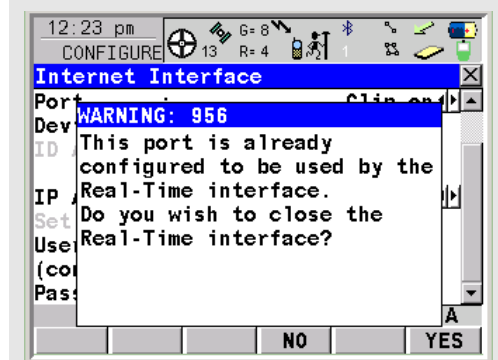
4. Select **4 Interfaces...**



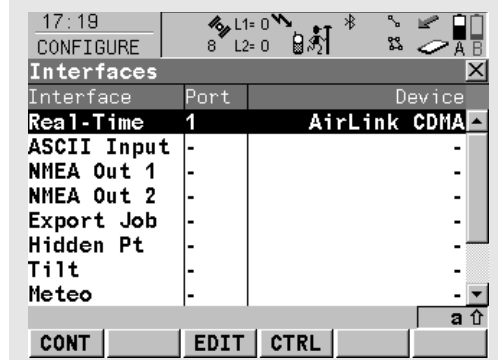
5. From the **CONFIGURE** Interfaces screen, highlight the **Real-Time** interface and press the **F3 (EDIT)** button.



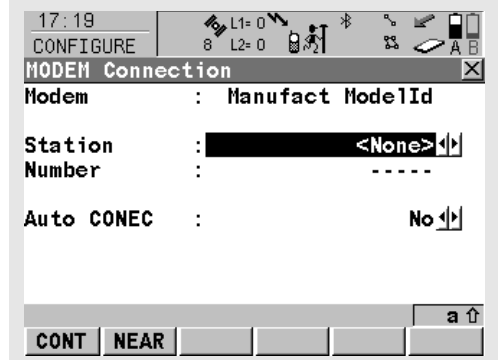
6. Select **Rover** from the **R-Time Mode** field and the appropriate real-time data type from the **R-Time Data** field.
7. Select the port to which the modem is connected from the **Port** field.
8. Select the appropriate reference sensor and antenna from the **Ref Sensor** and **Ref Antenna** fields, as shown.



9. Once all of the Internet settings are correct, press the **F1 (CONT)** button. If you receive a “Warning 956” message, press the **F6 (YES)** button to close the Real-Time Interface. That will be reconfigured in the next step.



10. Access the network settings for the Real-Time interface by pressing **F4 (CTRL)**.



11. Highlight **Station:** and hit the **Enter** button
12. Select **F2 (NEW)**
13. Name the server and enter in the correct IP address of the new server; (please check the [RTK Data Products](#) tab on the MaCORS website for both the IP address and a **Port** number for the real-time data product that is desired).

17:18
CONFIGURE

8 L1= 0
L2= 0

Edit Station to Dial

Name MaCORS

Number 64.28.83.185/10000

Protocol

Use Coords: No

ABCDEF GHIJ KLHNO PQRST UVWXY Z*?/

Example:

- For MaCORS enter: 64.28.83.185/10000
- Press **Enter** button

14. Press **F1(STORE)**.

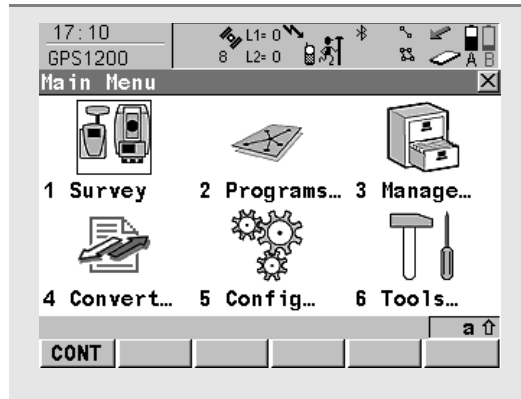
15. Once all of the interfaces have been properly configured, press the **F1 (CONT)** button to return to the Main Menu.

NOTE: You will need to verify that the R-Time Data in step 6, the Port number in step 13 and the Ref Network type in step 5 of the next section all correspond. The recommended settings are:

- R-Time Data: RTCM v3
- Port: 10000 (MAX corrections for all of MaCORS)
- Ref Network: MAX

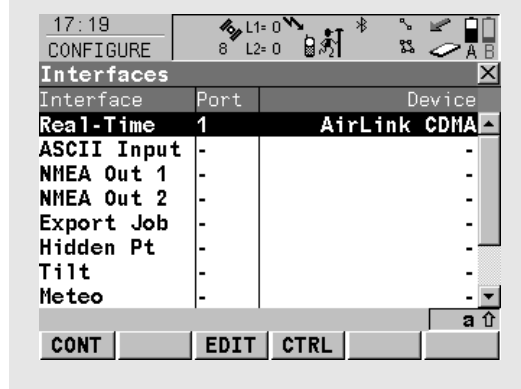
MaCORS Corrections

Configuring the MaCORS corrections

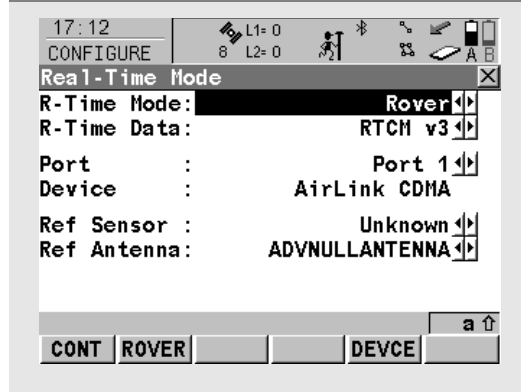


After modem successfully initializes, our next step is to configure the real-time corrections.

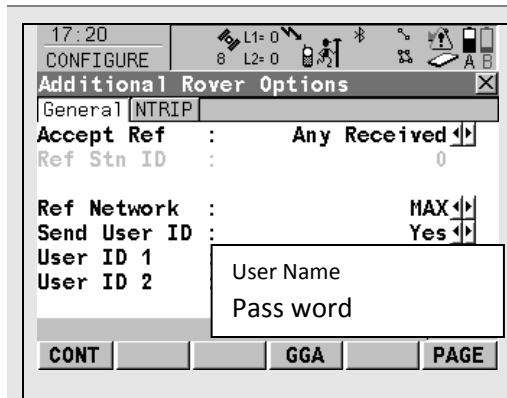
1. From the Main Menu, select **Config...**
2. Select **Interfaces...**



3. Highlight the **Real-Time** interface and Press **F3(EDIT)**

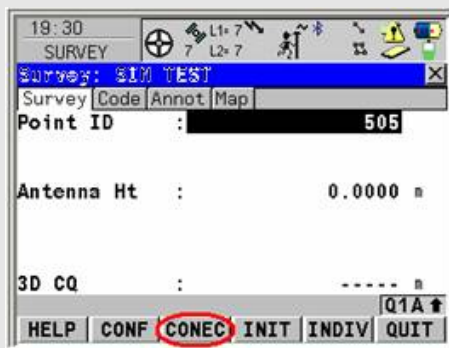


4. Press the **F2(ROVER)** key.

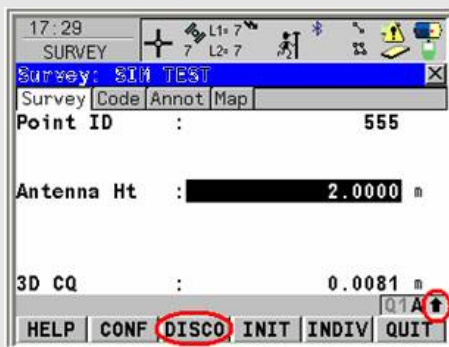


5. In the **Additional Rover Options General** page set:

- **Accept Ref** to **Any Received**
- **Ref Network** as **appropriate**
- Send **User ID** as **Yes**
- Enter **User ID** and **Password** provided by MaCORS
- Press **F5(GGA)** and set to **Automatic**
- Press **F1(CONT)** back to **Main Menu**
-



6. The connection can also be made in the Survey program. Here again, press the **Shift** key and then press the **F4(CONEC)** key.



7. When the survey is done, press the **Shift** key and then press the **F4(DISCO)** key.



MaCORS Quick Guide

Rover Configuration & Activation for
Leica Geosystems System 1200 &
GFU24 Modem with AT&T Service

This Quick Guide outlines configuring the Leica Geosystems System 1200 Rovers & the GFU24 modem with AT&T Service to work with MaCORS.

- **Getting Started**
- **Configuring the Internet Interface**
- **Configuring the MaCORS corrections**

Firmware Requirements

<i>Hardware Type</i>	<i>Firmware Version</i>	
	<i>Minimum</i>	<i>Recommended</i>
RX1250	6.02	8.xx
GX1230	6.02	8.xx

Getting Started

There are a few steps that need to be taken prior to activating your AT&T modem.

1. First, make sure you have the following equipment:

- 744754 GFU24 GSM modem from Leica
- 734756 GAT5 antenna from Leica

And

- GX1230 or RX1250/GHT56 Smart Rover from Leica
 - SmartWorx firmware v5.5 or higher
-

Next you'll need to set up an account with AT&T and purchase a wireless data plan. A plan with unlimited data transfer is recommended.

2. Obtain a SIM card with the appropriate data plan from your local AT&T representative:

- Company Name
 - Contact Person
 - Business Address/Shipping Address
 - Business Phone Number
 - Federal Tax ID Number
-

GFU24 Configuration

Setting up the Domain Name / IP Address & TCP/IP Port

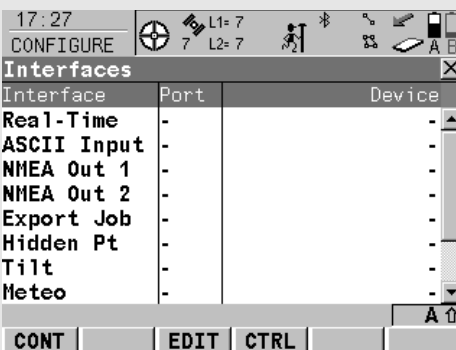


Since this device is actually going to be used as the Internet device, we now need to reconfigure the Internet and Real-time interfaces.

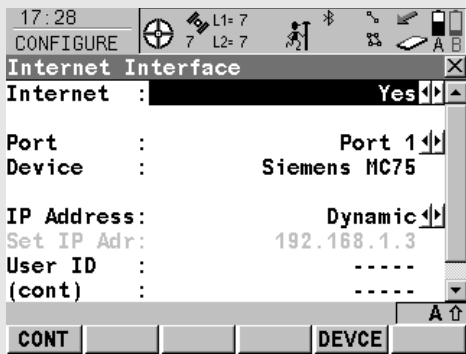
1. Attach your modem to **Port 1** or **3** (GX1230) or to the **Clip-on Port** (SmartRover) on the sensor.
2. Press the **ON (PROG)** button to turn on the sensor
3. Select **5 Config...** from the Main Menu



4. Select **4 Interfaces...**



5. From the **CONFIGURE** Interfaces screen, highlight the **Internet** interface and press the **F3 (EDIT)** button.



6. Select **Yes** from the **Internet** field.
7. Select the port to which the modem is connected from the **Port** field.
8. Press the **F5 (DEVCE)**.

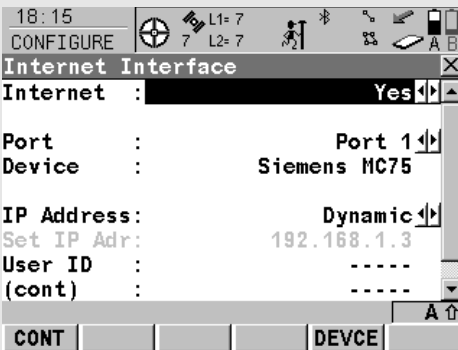


From the GPRS Internet Devices screen

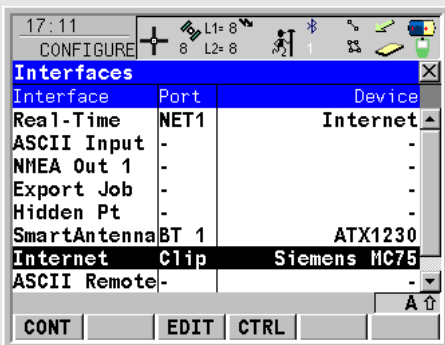
9. Highlight your modem (**Siemens MC75**) and press the **F3 (EDIT)** key.

This takes you to the Edit Device screen

10. Press the **F5 (DEFLT)** key to ensure that your modem's default settings are loaded.
11. Press **F1 (CONT)**

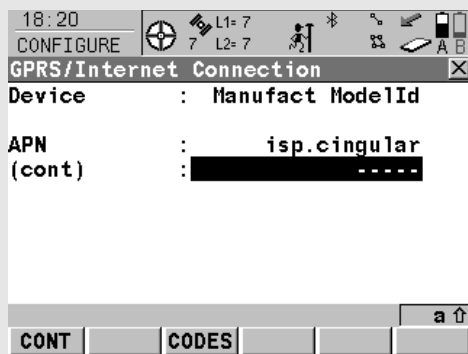


12. Press **F1 (CONT)** to return to the Internet Interface Screen



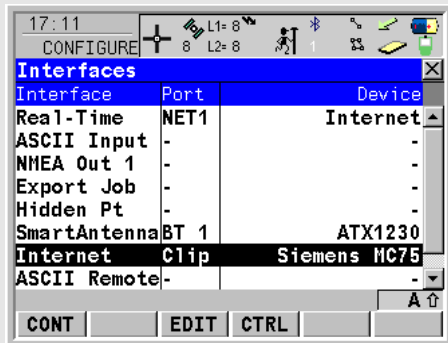
From the Interfaces screen:

13. Highlight the **Internet** interface and press the **F4 (CTRL)** button.



14. Set the **APN** : to **isp.cingular**

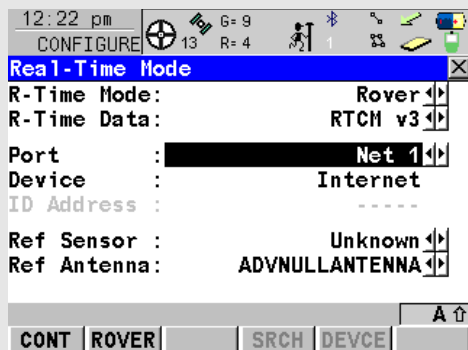
15. Press **F1 (CONT)**.



Now that the Internet interface is properly configured, the only remaining step is to configure the Real-Time interface to receive RTK corrections via the internet connection.

16. Highlight the Real-Time interface and press the **F3 (EDIT)** button.

This takes you to the CONFIGURE Real-Time Mode screen.



The CONFIGURE Real-Time Mode screen contains the settings that define how you receive RTK correction data. These settings will vary depending on your particular reference network so contact your local Leica representative with specific questions.

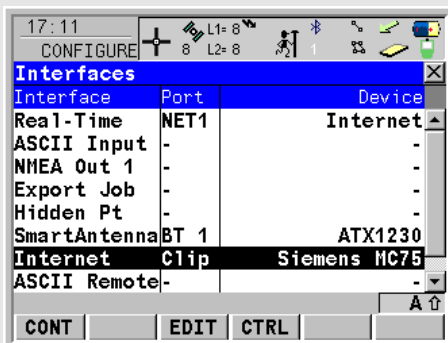
17. Select **Rover** from the **R-Time Mode** field and the appropriate real-time data type from the **R-Time Data** field.

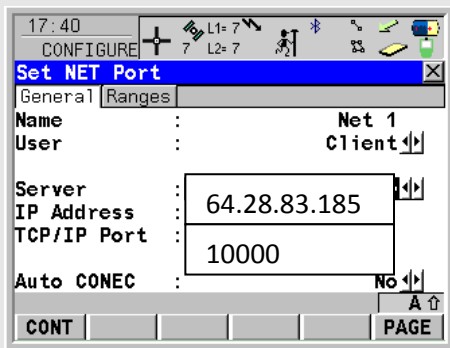
18. Set the **Port** field to one of the **Net** ports, normally **Net 1**. The **Device** field will default to **Internet**.

19. Select the appropriate reference sensor and antenna from the **Ref Sensor** and **Ref Antenna** fields. Note that these refer to the reference station, not your rover receiver's sensor and antenna.

20. Once all of the Real-time settings are correct, press the **F1 (CONT)** button to return to the CONFIGURE Interfaces screen.

21. Access the network settings for the Real-Time interface by pressing **F4 (CTRL)**.

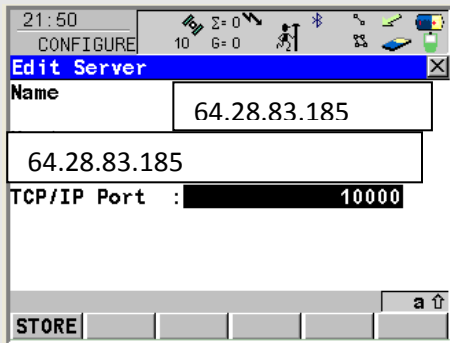




22. Select **User** as **Client**.

23. Set **Auto CONEC** to **No**.

24. Highlight the **Server** field and press the **ENTER** key and press **F2 (NEW)** to create a New Server entry.



25. Name the server and enter in the correct Domain Name of the new server; (please check the [RTK Data Products](#) tab on the MaCORS website for both the IP address and a **Port** number for the real-time data product that is desired).

(GX1230 Users will need to input the IP address instead of the Domain Name)

26. Press **F1(STORE)**.

27. Once all of the interfaces have been properly configured, press the **F1 (CONT)** button to return to the Main Menu. It is recommended that you power off the sensor and then restart. Upon start-up, the modem should initialize, register and connect to the internet within a minute or so.

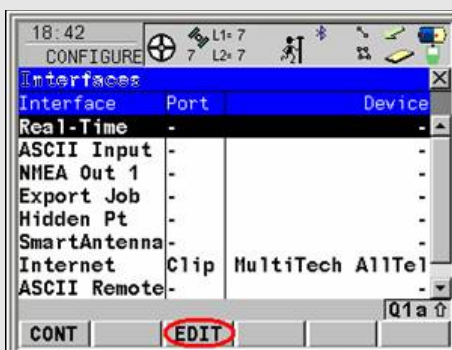
MaCORS Corrections

Configuring the MaCORS corrections

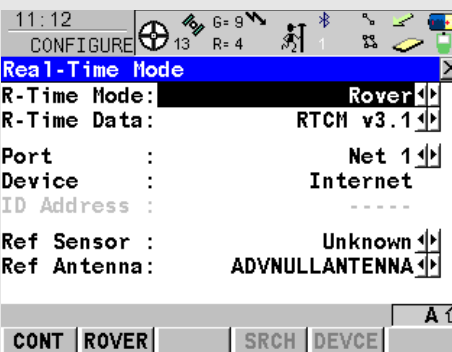


After successfully connecting to the internet, our next step is to configure the real-time corrections.

1. From the Main Menu, select **Config...**
2. Select **Interfaces...**



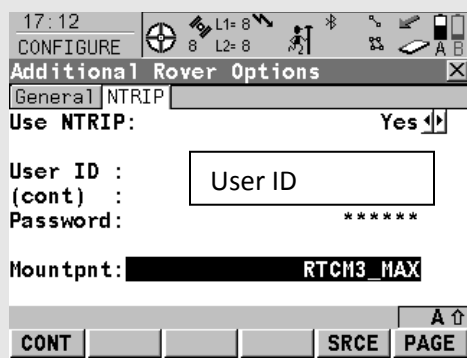
3. Highlight the **Real-Time** interface and Press **F3(EDIT)**



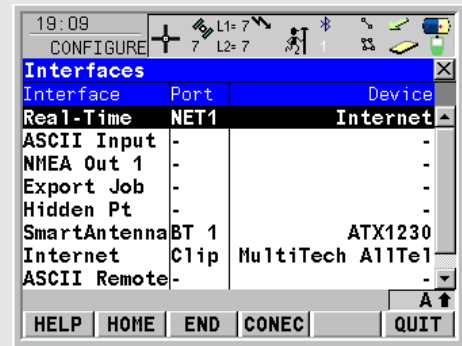
4. Press the **F2(ROVER)** key.



5. In the **Additional Rover Options General** page set:
 - a. **Accept Ref to Any Received**
 - b. **Ref Network as appropriate**
 - c. Send **User ID as No**
 - d. User IDs default to Serial Number of the receiver
 - e. Press **F5(GGA)** and set to **Automatic**
 - f. Press **F6(PAGE)** to the NTRIP tab *MaCORS Info*

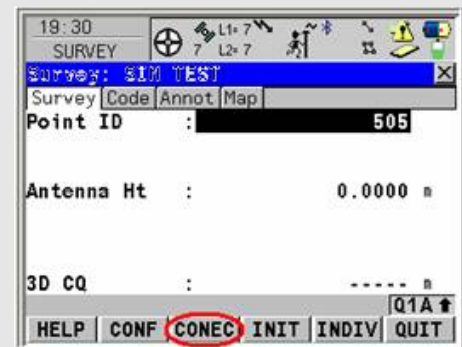


6. In the **Additional Rover Options NTRIP** page set:
 - g. Use **NTRIP** to **Yes**
 - h. Enter **User ID** and **Password** provided by MaCORS
 - i. Press **F5(SRCE)** and select the desired **Mountpnt**
 - j. Press **F1(CONT)** back to **Interfaces** page.

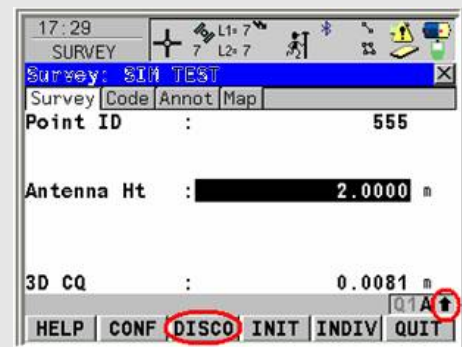


7. In the **Interfaces** page press the **Shift** key and then press the **F4(CONEC)** key.

Waves should appear above the @ symbol, and the arrow should be moving to indicate that the modem is connected to the MaCORS and is receiving corrections.



8. The connection can also be made in the Survey program. Here again, press the **Shift** key and then press the **F4(CONEC)** key.



9. When the survey is done, press the **Shift** key and then press the **F4(DISCO)** key.



MaCORS Quick Guide

Rover Configuration for the Leica
Geosystems SmartRover using a
Bluetooth Cell Phone

This Quick Guide outlines configuring the Leica Geosystems SmartRover using a Bluetooth Cell Phone to work with MaCORS.

- **Configuring the Internet Interface**
- **Configuring the MaCORS corrections**

Firmware Requirements

<i>Hardware Type</i>	<i>Firmware Version</i>	
	<i>Minimum</i>	<i>Recommended</i>
RX1250	6.02	8.xx
GX1230	6.02	8.xx

Getting Started

Most carriers require a special data plan when using a Bluetooth Cell Phone as a modem for a secondary device. Please contact your local wireless carrier and ask them about Cell Phone data plans that include the tethering option.

Please note not all Bluetooth Cell Phones will work properly with the Leica Geosystems SmartRover. If you need more detailed assistance, please contact your local Leica Geosystems Representative.

Bluetooth Cell Phone Configuration

Setting up the Domain Name / IP Address & TCP/IP Port

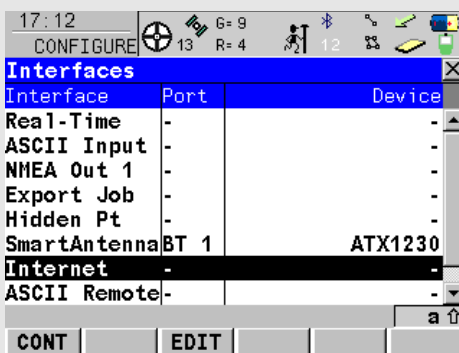


Since this device is actually going to be used as the Internet device, we now need to reconfigure the Internet and Real-time interfaces.

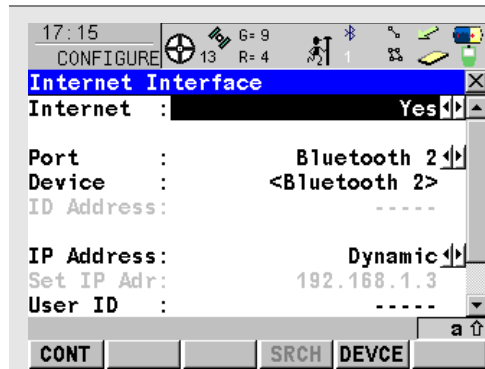
1. Power on your Bluetooth Cell Phone.
2. Press the **ON (PROG)** button to turn on the sensor
3. Select **5 Config...** from the Main Menu



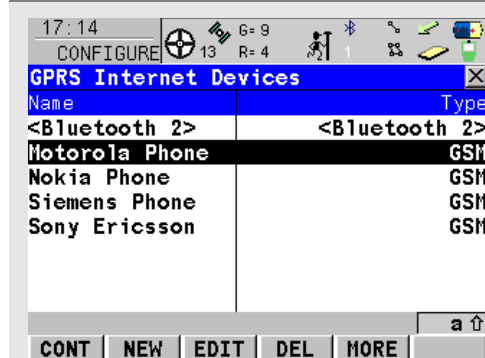
4. Select **4 Interfaces...**



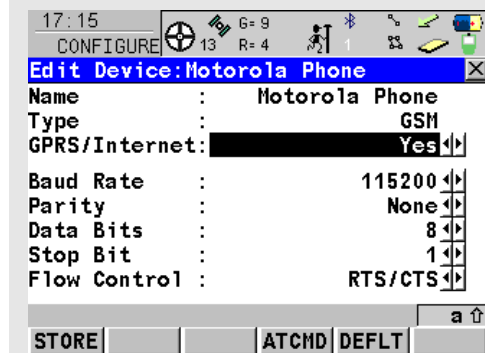
5. From the **CONFIGURE** Interfaces screen, highlight the **Internet** interface and press the **F3 (EDIT)** button.



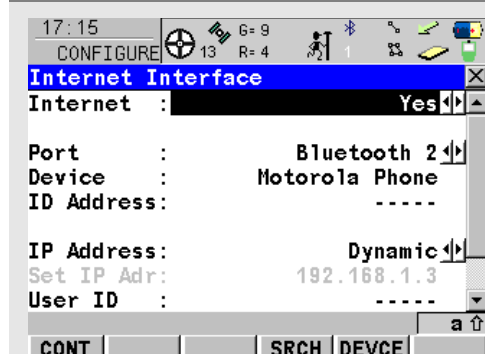
6. Select **Yes** from the **Internet** field.
7. Select **Bluetooth 2** from the **Port** field.
8. Press the **F5 (DEVCE)** button.

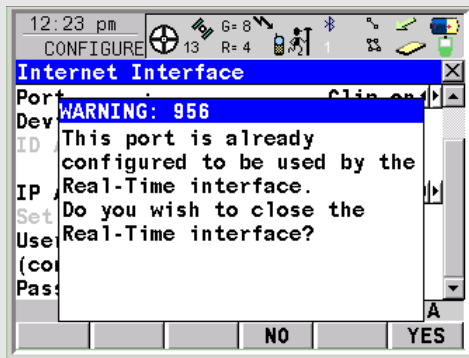


9. Select your phone model from the device list.
10. Press the **F3 (EDIT)** button and verify the setting as shown to the left
11. Press the **F1 (STORE)** button to return to the GPRS Internet Devices screen
12. Press the **F1 (CONT)** button to return to the CONFIGURE Internet Interface screen



13. Set the **IP Address** field to **Dynamic**
14. On your Bluetooth Cell Phone, navigate to your Bluetooth settings and make sure the phone is set to "Discoverable" (please see your phone's manual)
15. Press the **F4 (SRCH)** button, when the RX1250 has discovered the Bluetooth Cell Phone, it will display the make and serial number of the phone
16. Press the **F1 (CONT)** button to return to the CONFIGURE Internet Interface screen





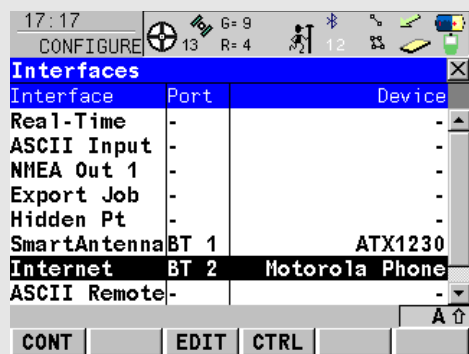
17. If you receive a “Warning 956” message, press the **F6 (YES)** button to close the Real-Time Interface. That will be reconfigured in the next step

18. On the cell phone, a dialog box will appear prompting for a pairing code

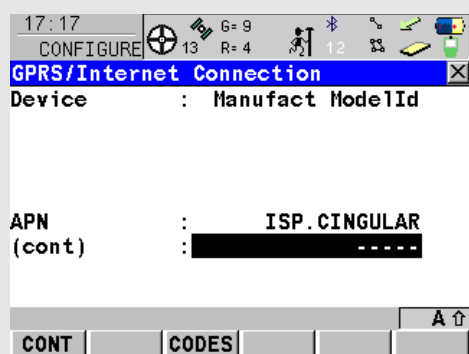
- Enter “0000” to pair the device

19. On the RX1250, a dialog box will appear prompting for a pairing code

- Enter “0000” to pair the device



20. Press the **F4 (CTRL)** button



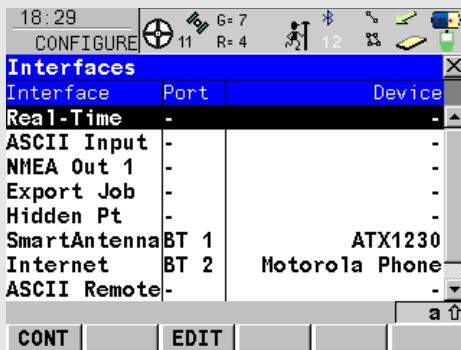
21. Enter the appropriate APN address in the **APN** field base on your service provider

- AT&T Wireless aka Cingular Wireless
APN: ISP.CINGULAR
- T-Mobile
APN: internet2.voicestream.com
- Rogers AT&T Wireless (Canada)
APN: internet.com

Note: The APN may often take up both lines of the provided field; use the **(CONT)** field to

continue the APN

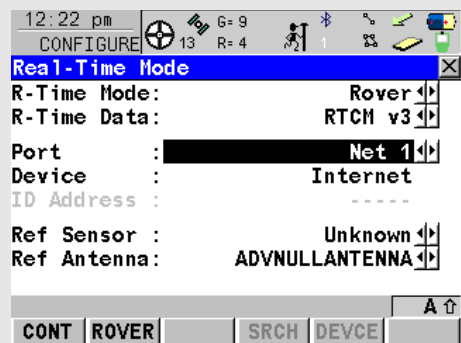
22. Press the **F1 (CONT)** button to return to the CONFIGURE Interface screen



Now that the Internet interface is properly configured, the only remaining step is to configure the Real-Time interface to receive RTK corrections via the internet connection.

23. Highlight the Real-Time interface and press the **F3 (EDIT)** button.

This takes you to the CONFIGURE Real-Time Mode screen.



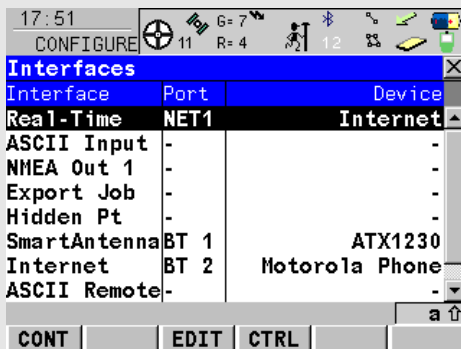
The CONFIGURE Real-Time Mode screen contains the settings that define how you receive RTK correction data.

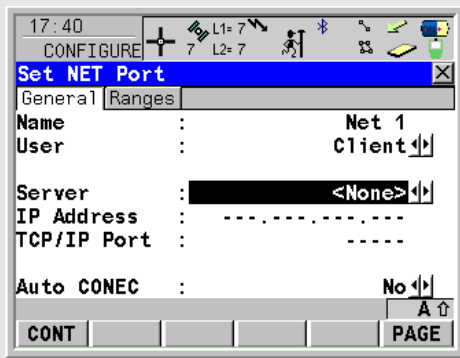
24. Select **Rover** from the **R-Time Mode** field and the appropriate real-time data type from the **R-Time Data** field.
25. Set the **Port** field to one of the **Net** ports, normally **Net 1**. The **Device** field will default to **Internet**.

26. Select the appropriate reference sensor and antenna from the **Ref Sensor** and **Ref Antenna** fields. Note that these refer to the reference station, not your rover receiver's sensor and antenna.

27. Once all of the Real-time settings are correct, press the **F1 (CONT)** button to return to the CONFIGURE Interfaces screen.

28. Access the network settings for the Real-Time interface by pressing **F4 (CTRL)**.

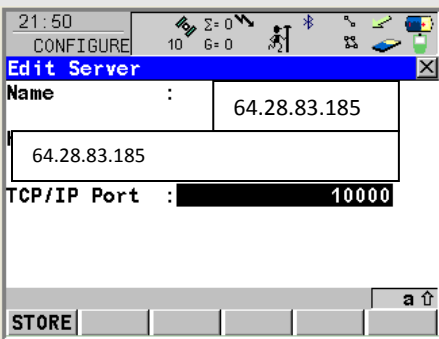




29. Select **User** as **Client**.

30. Set **Auto CONEC** to **No**.

31. Highlight the **Server** field and press the **ENTER** key and press **F2 (NEW)** to create a New Server entry.



32. Name the server and enter in the correct Domain Name of the new server; (please check the [RTK Data Products](#) tab on the MaCORS website for both the IP address and a **Port** number for the real-time data product that is desired).

33. Press **F1(STORE)**.

34. Once all of the interfaces have been properly configured, press the **F1 (CONT)** button to return to the Main Menu. It is recommended that you power off the sensor and then restart. Upon start-up, the modem should initialize, register and connect to the internet within a minute or so.

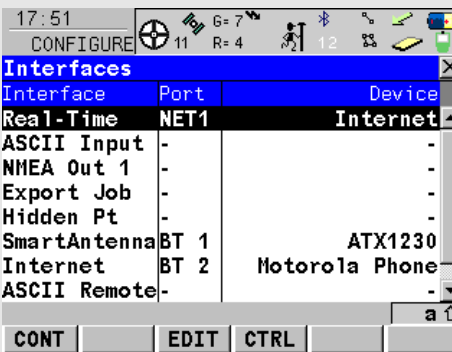
MaCORS Corrections

Configuring the MaCORS corrections

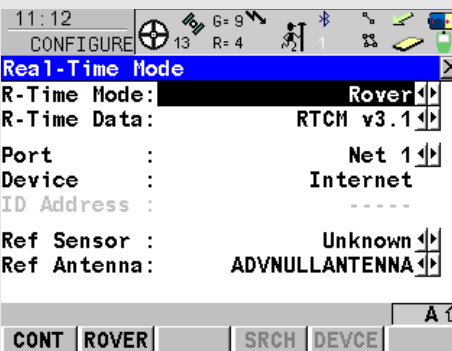
After successfully connecting to the internet, our next step is to configure the real-time corrections.



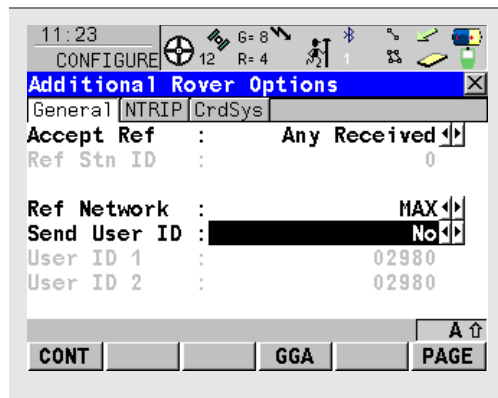
1. From the Main Menu, select **Config...**
2. Select **Interfaces...**



3. Highlight the **Real-Time** interface and Press **F3 (EDIT)**

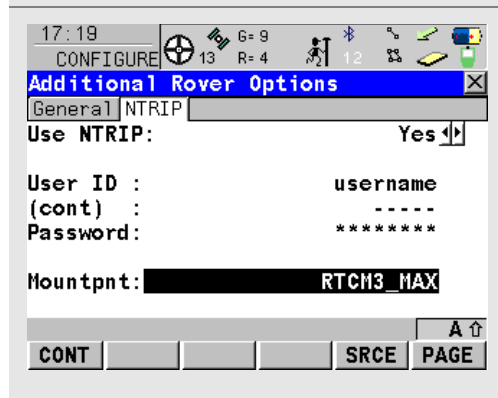


4. Press the **F2(ROVER)** key.



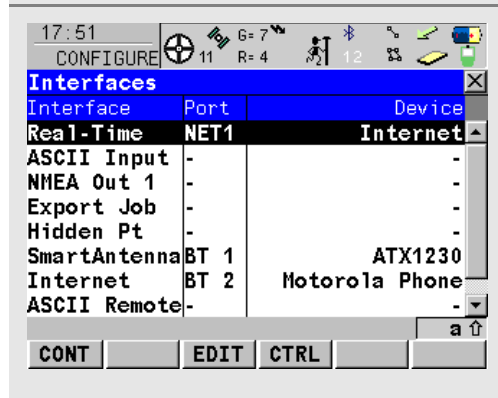
5. In the **Additional Rover Options General** page set:

- **Accept Ref to Any Received**
- **Ref Network as appropriate**
- **Send User ID as No**
- User IDs default to Serial Number of the receiver
- Press **F5(GGA)** and set to **Automatic**
- Press **F6(PAGE)** to the NTRIP tab *MaCORS Info*



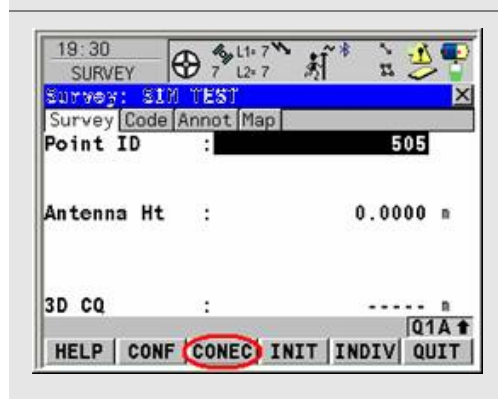
6. In the **Additional Rover Options NTRIP** page set:

- Use **NTRIP to Yes**
- Enter **User ID** and **Password** provided by MaCORS
- Press **F5(SRCE)** and select the desired **Mountpnt**
- Press **F1(CONT)** back to **Interfaces** page.

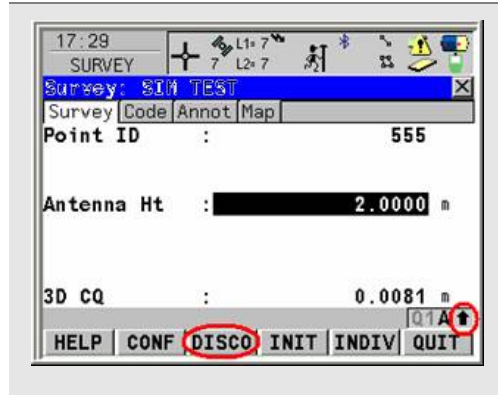


7. In the **Interfaces** page press the **Shift** key and then press the **F4(CONEC)** key.

Waves should appear above the @ symbol, and the arrow should be moving to indicate that the modem is connected to the MaCORS and is receiving corrections.



8. The connection can also be made in the Survey program. Here again, press the **Shift** key and then press the **F4(CONEC)** key.



9. When the survey is done, press the **Shift** key and then press the **F4(DISCO)** key.



MaCORS Quick Guide

Rover Configuration & Activation for
Leica Geosystems System 1200 &
GFU24 Modem with T-Mobile Service

This Quick Guide outlines configuring the Leica Geosystems System 1200 Rovers & the GFU24 modem with T-Mobile Service to work with MaCORS.

- **Getting Started**
- **Configuring the Internet Interface**
- **Configuring the MaCORS corrections**

Firmware Requirements

<i>Hardware Type</i>	<i>Firmware Version</i>	
	<i>Minimum</i>	<i>Recommended</i>
RX1250	6.02	8.xx
GX1230	6.02	8.xx

Getting Started

There are a few steps that need to be taken prior to activating your T-Mobile modem.

1. First, make sure you have the following equipment:

- 744754 GFU24 GSM modem from Leica
- 734756 GAT5 antenna from Leica

And

- GX1230 or RX1250/GHT56 Smart Rover from Leica
 - SmartWorx firmware v5.5 or higher
-

Next you'll need to set up an account with AT&T and purchase a wireless data plan. A plan with unlimited data transfer is recommended.

2. Obtain a SIM card with the appropriate data plan from your local AT&T representative:

- Company Name
 - Contact Person
 - Business Address/Shipping Address
 - Business Phone Number
 - Federal Tax ID Number
-

GFU24 Configuration

Setting up the Domain Name / IP Address & TCP/IP Port

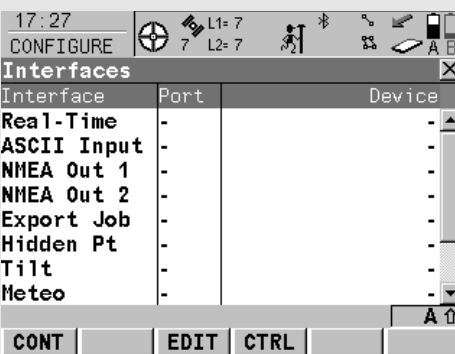


Since this device is actually going to be used as the Internet device, we now need to reconfigure the Internet and Real-time interfaces.

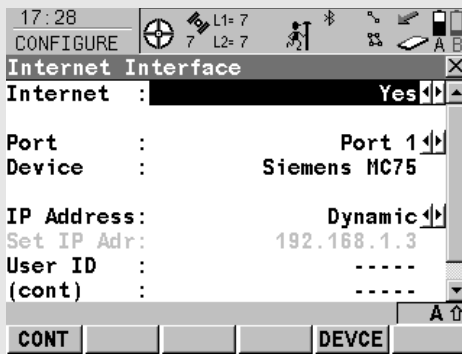
1. Attach your modem to **Port 1** or **3** (GX1230) or to the **Clip-on Port** (SmartRover) on the sensor.
2. Press the **ON (PROG)** button to turn on the sensor
3. Select **5 Config...** from the Main Menu



4. Select **4 Interfaces...**



5. From the **CONFIGURE** Interfaces screen, highlight the **Internet** interface and press the **F3 (EDIT)** button.

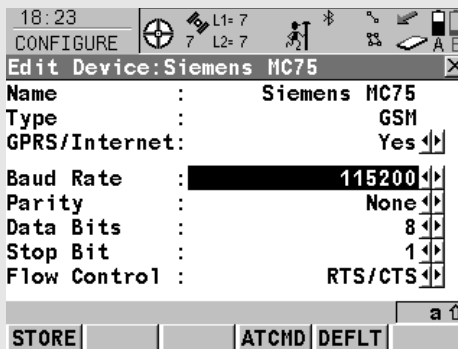


6. Select **Yes** from the **Internet** field.
7. Select the port to which the modem is connected from the **Port** field.
8. Press the **F5 (DEVCE)**.



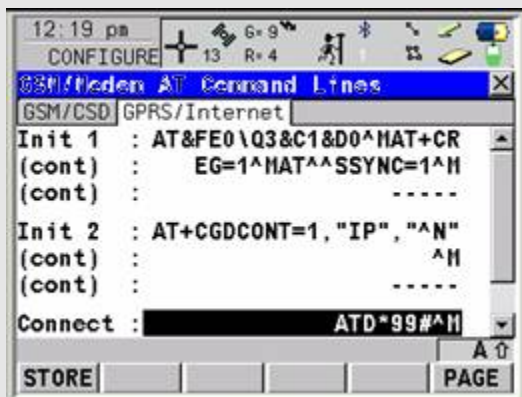
From the GPRS Internet Devices screen

9. Highlight your modem (**Siemens MC75**) and press the **F3 (EDIT)** key.

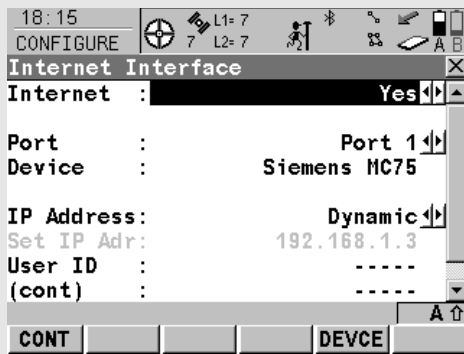


This takes you to the Edit Device screen

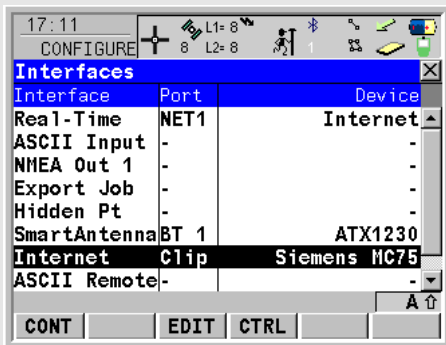
10. Press the **F5 (DEFLT)** key to ensure that your modem's default settings are loaded.
11. Press **F1 (CONT)**



12. Press the **F6 (PAGE)** key to the **GPRS/Internet** tab
13. Press the **F4 (ATCMD)** key to set the AT Command Lines
14. Change the **Connect:** field to read **ATD*99#^M**
15. Press **F1 (STORE)** to return to the **Edit Device** screen



- 16. Press **F1 (STORE)** to return to the **Internet Device** screen
- 17. Press **F1 (CONT)** to return to the Internet Interface Screen
- 18. Press the **F1** key until you return to the Interfaces screen.

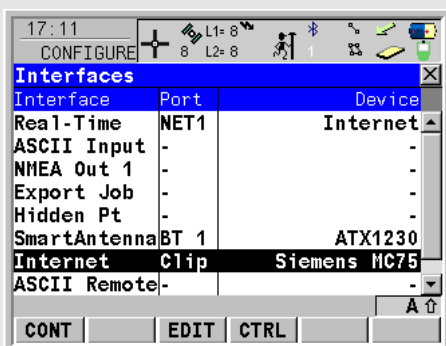


From the Interfaces screen:

- 19. Highlight the **Internet** interface and press the **F4 (CTRL)** button.



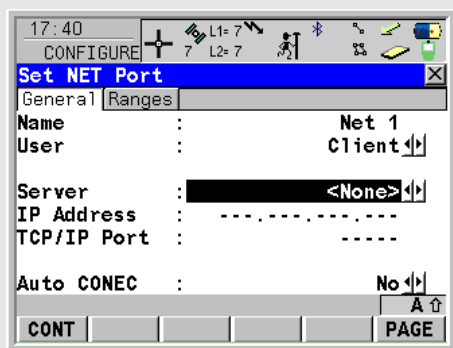
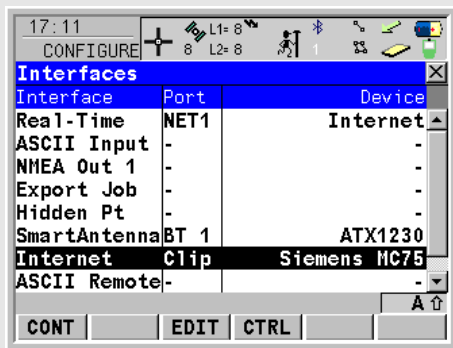
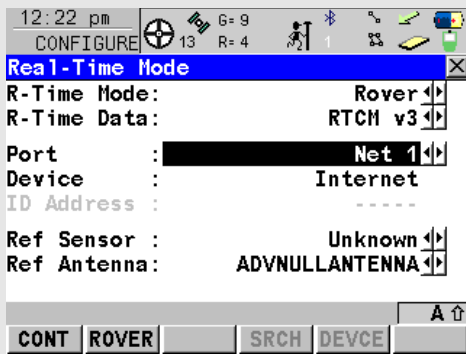
- 20. Set the **APN** : to ***99#**
- 21. Press **F1 (CONT)**.



Now that the Internet interface is properly configured, the only remaining step is to configure the Real-Time interface to receive RTK corrections via the internet connection.

- 22. Highlight the Real-Time interface and press the **F3 (EDIT)** button.

This takes you to the CONFIGURE Real-Time Mode screen.



The CONFIGURE Real-Time Mode screen contains the settings that define how you receive RTK correction data. These settings will vary depending on your particular reference network so contact your local Leica representative with specific questions.

23. Select **Rover** from the **R-Time Mode** field and the appropriate real-time data type from the **R-Time Data** field.

24. Set the **Port** field to one of the **Net** ports, normally **Net 1**. The **Device** field will default to **Internet**.

25. Select the appropriate reference sensor and antenna from the **Ref Sensor** and **Ref Antenna** fields. Note that these refer to the reference station, not your rover receiver's sensor and antenna.

26. Once all of the Real-time settings are correct, press the **F1 (CONT)** button to return to the CONFIGURE Interfaces screen.

27. Access the network settings for the Real-Time interface by pressing **F4 (CTRL)**.

28. Select **User** as **Client**.

29. Set **Auto CONEC** to **No**.

30. Highlight the **Server** field and press the **ENTER** key and press **F2 (NEW)** to create a New Server entry.

21:50
CONFIGURE 10 Σ=0 G=0

Edit Server

Name : MaCORS

64.28.83.185

TCP/IP Port : 10000

STORE

31. Name the server and enter in the correct Domain Name of the new server; (please check the [RTK Data Products](#) tab on the MaCORS website for both the IP address and a **Port** number for the real-time data product that is desired).

(GX1230 Users will need to input the IP address instead of the Domain Name)

32. Press **F1(STORE)**.

33. Once all of the interfaces have been properly configured, press the **F1 (CONT)** button to return to the Main Menu. It is recommended that you power off the sensor and then restart. Upon start-up, the modem should initialize, register and connect to the internet within a minute or so.

MaCORS Corrections

Configuring the MaCORS corrections

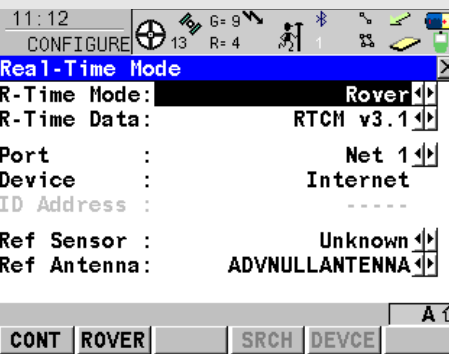
After successfully connecting to the internet, our next step is to configure the real-time corrections.



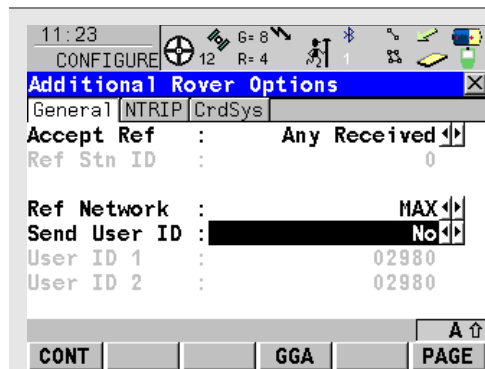
1. From the Main Menu, select **Config...**
2. Select **Interfaces...**



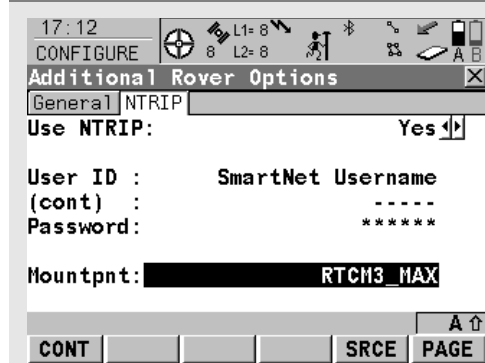
3. Highlight the **Real-Time** interface and Press **F3(EDIT)**



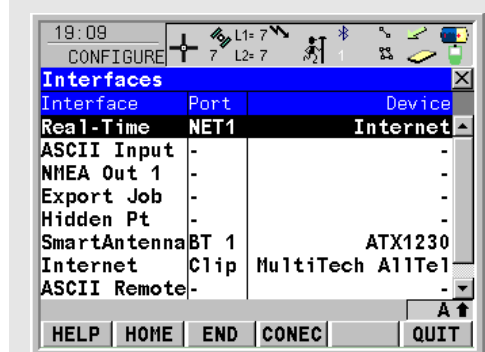
4. Press the **F2(ROVER)** key.



5. In the **Additional Rover Options General** page set:
 - a. **Accept Ref to Any Received**
 - b. **Ref Network as appropriate**
 - c. Send **User ID as No**
 - d. User IDs default to Serial Number of the receiver
 - e. Press **F5(GGA)** and set to **Automatic**
 - f. Press **F6(PAGE)** to the NTRIP tab *MaCORS Info*

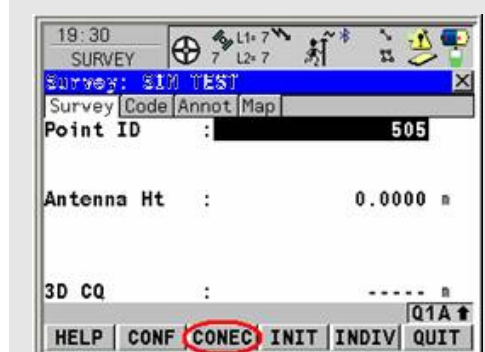


6. In the **Additional Rover Options NTRIP** page set:
 - g. Use **NTRIP to Yes**
 - h. Enter **User ID** and **Password** provided by MaCORS
 - i. Press **F5(SRCE)** and select the desired **Mountpnt**
 - j. Press **F1(CONT)** back to **Interfaces** page.

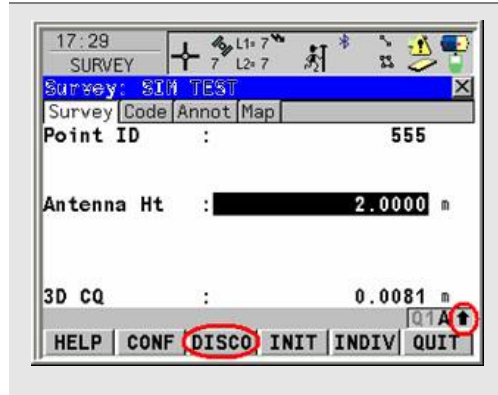


7. In the **Interfaces** page press the **Shift** key and then press the **F4(CONEC)** key.

Waves should appear above the @ symbol, and the arrow should be moving to indicate that the modem is connected to the MaCORS and is receiving corrections.



8. The connection can also be made in the Survey program. Here again, press the **Shift** key and then press the **F4(CONEC)** key.



9. When the survey is done, press the **Shift** key and then press the **F4(DISCO)** key.



MaCORS Quick Guide

Rover Configuration & Activation for
Leica Geosystems System 1200 &
GFU19 Modem with Verizon Service

This Quick Guide outlines configuring the Leica Geosystems System 1200 Rovers & the GFU19 modem with Verizon Service to work with MaCORS, along with two procedures for activating and programming the modem

- **Getting Started**
- **Configuring the Internet Interface**
- **Configuring the MaCORS corrections**
- **Programming via HyperTerminal**
- **Programming via SmartWorx**

Firmware Requirements

<i>Hardware Type</i>	<i>Firmware Version</i>	
	<i>Minimum</i>	<i>Recommended</i>
RX1250	6.02	8.xx
GX1230	6.02	8.xx

Getting Started

There are a few steps that need to be taken prior to activating your Verizon CDMA modem.

1. First, make sure you have the following equipment:

- 744754 GFU19 CDMA modem from Leica
- 734756 GAT5 antenna from Leica

And

- 8216523 programming cable from Leica
- Computer with a serial port

Or

- GX1230 or RX1250/GHT56 Smart Rover from Leica
- SmartWorx firmware v5.5 or higher

Note: If programming via HyperTerminal, you'll need the programming cable and computer; if programming via SmartWorx, you'll need either the Smart Rover or GX1230 receiver.

Next you'll need to set up an account with Verizon and purchase a wireless data plan. A plan with unlimited data transfer is recommended.

2. Obtain the Electronic Serial Number (ESN) from the label on your GFU19 modem. Provide this, along with the following information to your local Verizon representative:

- Company Name
- Contact Person
- Business Address/Shipping Address
- Business Phone Number
- Federal Tax ID Number

Once your account has been setup, you will receive two numbers, an MDN and an MIN. These numbers are linked to your modem's ESN and must now be programmed into your modem.

For complete Activation instructions please refer to Page 11.

GFU19 Configuration

Setting up the Domain Name / IP Address & TCP/IP Port

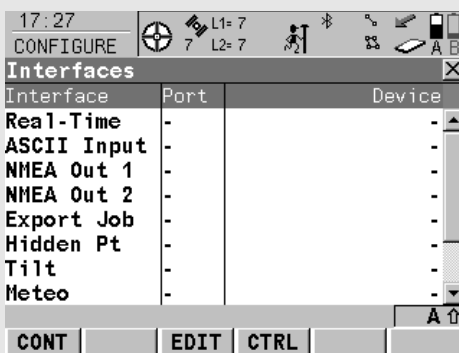


Since this device is actually going to be used as the Internet device, we now need to reconfigure the Internet and Real-time interfaces.

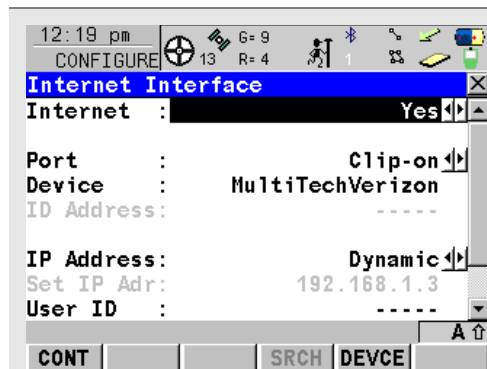
1. Attach your modem to **Port 1** or **3** (GX1230) or to the **Clip-on Port** (SmartRover) on the sensor.
2. Press the **ON (PROG)** button to turn on the sensor
3. Select **5 Config...** from the Main Menu



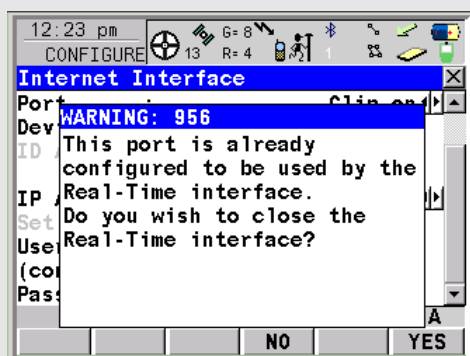
4. Select **4 Interfaces...**



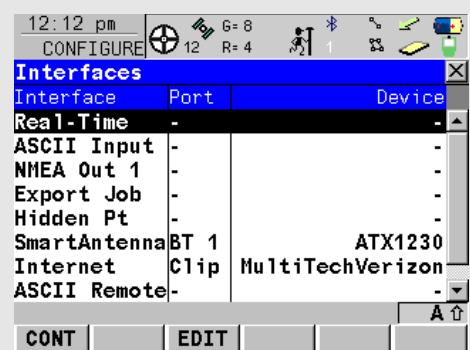
5. From the **CONFIGURE** Interfaces screen, highlight the **Internet** interface and press the **F3 (EDIT)** button.



6. Select **Yes** from the **Internet** field.
7. Select the port to which the modem is connected from the **Port** field.
8. If the **Device** field is not already set to **MultiTech Verizon**, press the **F5 (DEVCE)** button and select it from the device list. Press the **F1 (CONT)** button to return to the CONFIGURE Internet Interface screen.



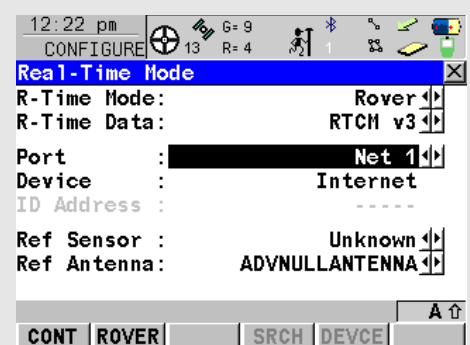
9. Set the **IP Address** field to **Dynamic**.
10. Once all of the Internet settings are correct, press the **F1 (CONT)** button. If you receive a "Warning 956" message, press the **F6 (YES)** button to close the Real-Time Interface. That will be reconfigured in the next step.



Now that the Internet interface is properly configured, the only remaining step is to configure the Real-Time interface to receive RTK corrections via the internet connection.

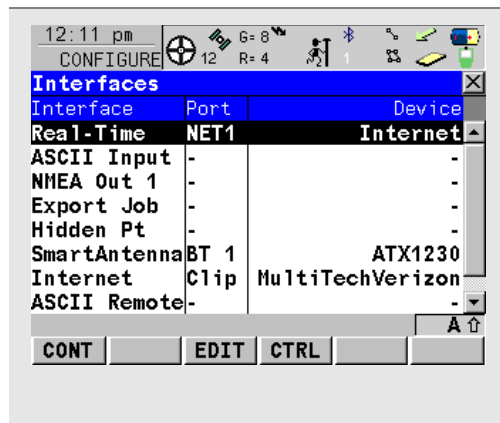
11. Highlight the Real-Time interface and press the **F3 (EDIT)** button.

This takes you to the CONFIGURE Real-Time Mode screen.



The CONFIGURE Real-Time Mode screen contains the settings that define how you receive RTK correction data. These settings will vary depending on your particular reference network so contact your local Leica representative with specific questions.

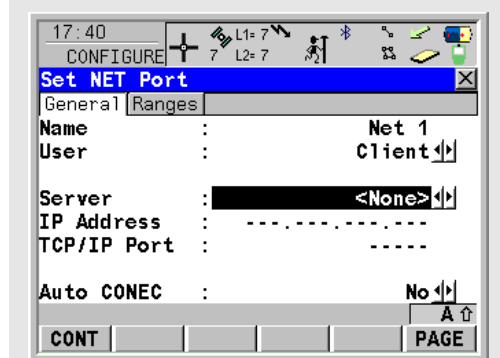
12. Select **Rover** from the **R-Time Mode** field and the appropriate real-time data type from the **R-Time Data** field.
13. Set the **Port** field to one of the **Net** ports, normally **Net 1**. The **Device** field will default to **Internet**.
14. Select the appropriate reference sensor and



antenna from the **Ref Sensor** and **Ref Antenna** fields. Note that these refer to the reference station, not your rover receiver's sensor and antenna.

15. Once all of the Real-time settings are correct, press the **F1 (CONT)** button to return to the CONFIGURE Interfaces screen.

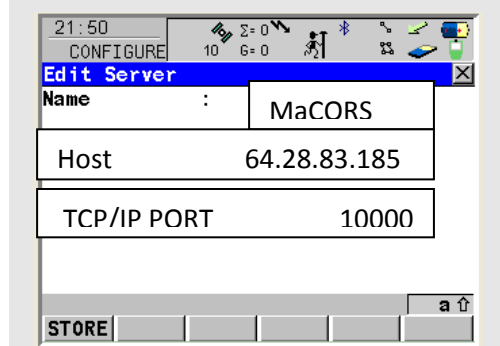
16. Access the network settings for the Real-Time interface by pressing **F4 (CTRL)**.



17. Select **User** as **Client**.

18. Set **Auto CONEC** to **No**.

19. Highlight the **Server** field and press the **ENTER** key and press **F2 (NEW)** to create a New Server entry.



20. Name the server and enter in the correct Domain Name of the new server; (please check the [RTK Data Products](#) tab on the MaCORS website for both the IP address and a **Port** number for the real-time data product that is desired).

(GX1230 Users will need to input the IP address instead of the Domain Name)

21. Press **F1(STORE)**.

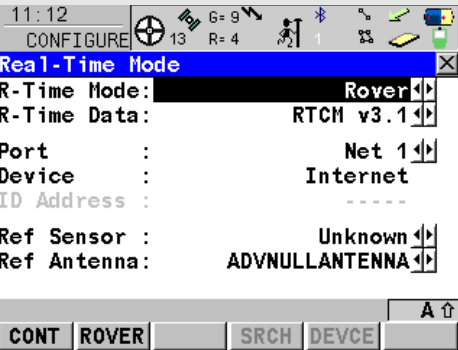
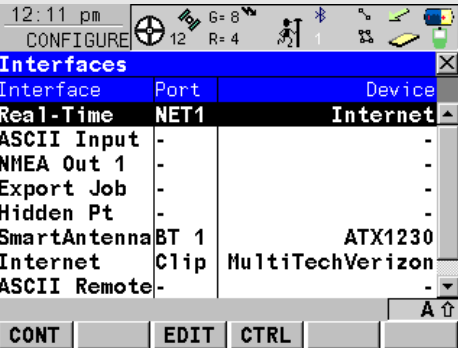

22. Once all of the interfaces have been properly configured, press the **F1 (CONT)** button to return to the Main Menu. It is recommended that you power off the sensor and then restart. Upon start-up, the modem should initialize, register and connect to the internet within a minute or so.

MaCORS Corrections

Configuring the MaCORS corrections

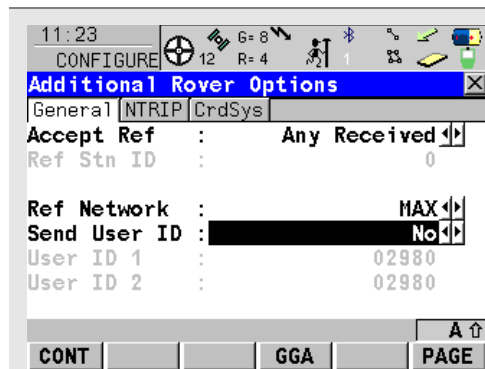
After successfully connecting to the internet, our next step is to configure the real-time corrections.

1. From the Main Menu, select **Config...**
2. Select **Interfaces...**
3. Highlight the **Real-Time** interface and Press **F3(EDIT)**
4. Press the **F2(ROVER)** key.



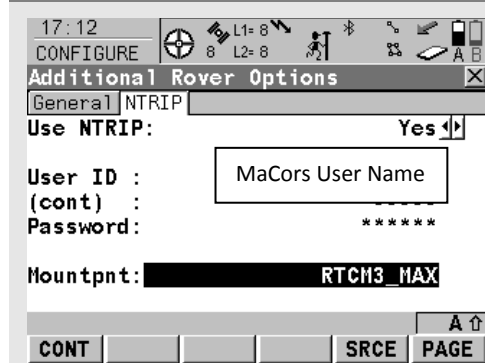
Interface	Port	Device
Real-Time	NET1	Internet
ASCII Input	-	-
NMEA Out 1	-	-
Export Job	-	-
Hidden Pt	-	-
SmartAntenna	BT 1	ATX1230
Internet	Clip	MultiTechVerizon
ASCII Remote	-	-

R-Time Mode:	Rover
R-Time Data:	RTCM v3.1
Port :	Net 1
Device :	Internet
ID Address :	-----
Ref Sensor :	Unknown
Ref Antenna:	ADVNULLANTENNA



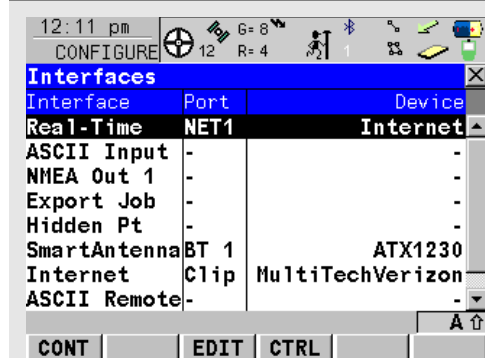
5. In the **Additional Rover Options General** page set:

- **Accept Ref to Any Received**
- **Ref Network as appropriate**
- Send **User ID as No**
- User IDs default to Serial Number of the receiver
- Press **F5(GGA)** and set to **Automatic**
- Press **F6(PAGE)** to the NTRIP tab *MaCORS Info*



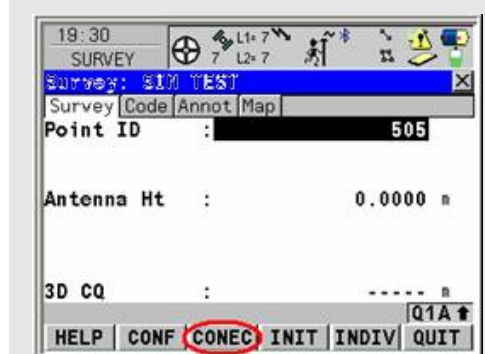
6. In the **Additional Rover Options NTRIP** page set:

- **Yes to Use NTRIP**
- Enter **User ID** and **Password** selected during MaCORS Registration
- Press **F5(SRCE)** and select the desired **Mountpnt**
- Press **F1(CONT)** back to **Interfaces** page.

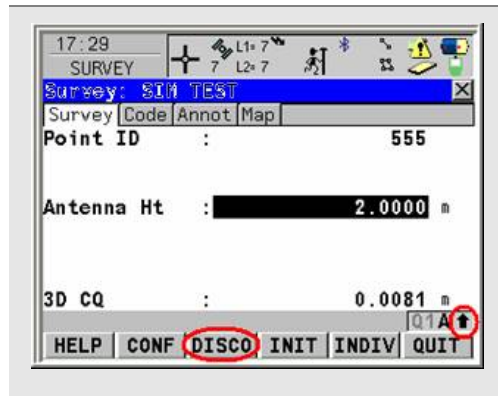


7. In the **Interfaces** page press the **Shift** key and then press the **F4(CONEC)** key.

Waves should appear above the @ symbol, and the arrow should be moving to indicate that the modem is connected to the MaCORS and is receiving corrections.



8. The connection can also be made in the Survey program. Here again, press the **Shift** key and then press the **F4(CONEC)** key.



9. When the survey is done, press the **Shift** key and then press the **F4(DISCO)** key.

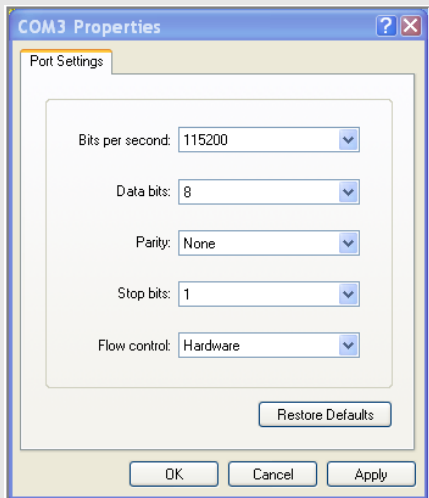
CDMA Modem Activation

Programming via HyperTerminal



The first method for programming your GFU19 is to connect it to a computer and use Microsoft's HyperTerminal program. To program the modem using SmartWorx, please advance to Step 11 on Page 5.

1. Connect the modem to the computer's serial port using the 8216523 programming cable. Make sure you also connect the power supply to the cable.
2. Access Microsoft **HyperTerminal** from your computer's Start Menu: **Start > All Programs > Accessories > Communications > HyperTerminal**.
3. Name the new connection and select **COM3** or any suitable serial port for communication.
4. Click the **OK** button.



5. Set the port's communication settings as follows:
 - Baud rate/Bits per second: **115200**
 - Data bits: **8**
 - Parity: **None**
 - Stop bits: **1**
 - Flow control: **RTS/CTS or Hardware**
6. Click the **OK** button.

Note: You may also want to set HyperTerminal with

Character Echoing by accessing the following menu choices: File > Properties > Settings > ASCII Setup and select Echo typed characters.

```
ATE1
AT+WSPC=1,000000<CR>
OK
AT+WMDN=NNNNNNNNNN<CR>
OK
AT+WCMT=1<CR>
OK
```

7. In the HyperTerminal programming screen, enter the following commands. Press the **Enter** key after each command and wait 10 seconds before entering the next.

- **AT+WSPC=1,000000** (this initiates programming)
- **AT+WMDN=your 10-digit MDN** (no dashes or spaces)
- **AT+WCMT=1** (this saves the changes to memory)

Note: Enter each command exactly as shown above. After each entry, the response from the modem should be **OK**. Wait 10 seconds before entering the next command.

```
ATE1
AT+WSPC=1,000000<CR>
AT+WIMI=31000NNNNNNNNNN<CR>
OK
AT+WCMT=1<CR>
OK
```

If your MDN and MIN are the same, your modem is now programmed. Advance to Step 23 on Page 7. If you have a different MIN, you'll need to enter one more set of commands.

8. In the HyperTerminal screen, enter the following commands in the same manner as before. Press the **Enter** key after each entry and wait 10 seconds before entering the next command.

- **AT+WSPC=1,000000** (this initiates programming)
- **AT+WIMI=31000 immediately followed by your 10-digit MIN** (no spaces or dashes)
- **AT+WCMT=1** (this saves the changes to memory)

Again, after each entry, the response should be **OK**. Wait 10 seconds after entering the final command

9. In the HyperTerminal programming screen, enter the following commands.

- **ATD*22899;** (INCLUDE SEMICOLON) Starts OTA activation

During the activation you may see the following messages

displayed

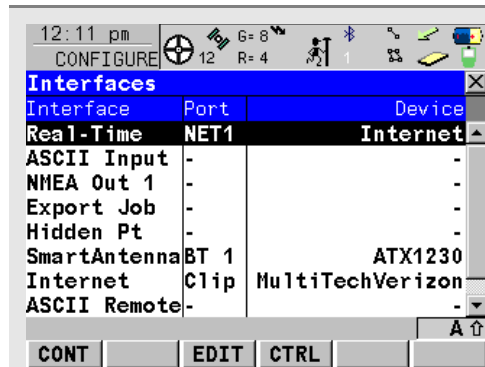
- **+WOTS: "SPL unlocked"**
- **+WOTP: "PRL download OK"**
- **+WOTM: "MDM download OK"**
- **+WOT2: "Programming Successful"**

Your modem is now ready for use!

End the HyperTerminal connection and disconnect the modem. Your modem should now be activated and programmed with your MDN and MIN. Please advance to Step 23 on Page 7 to configure the Internet Interface and connect using this device.

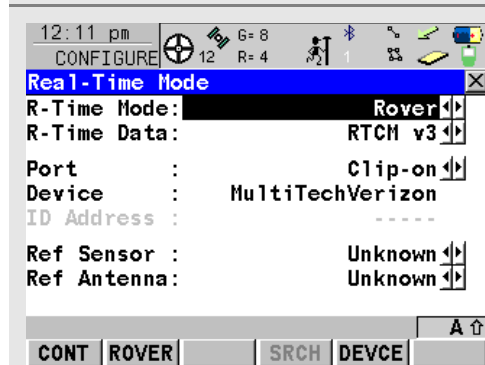
CDMA Modem Activation

Programming via SmartWorx



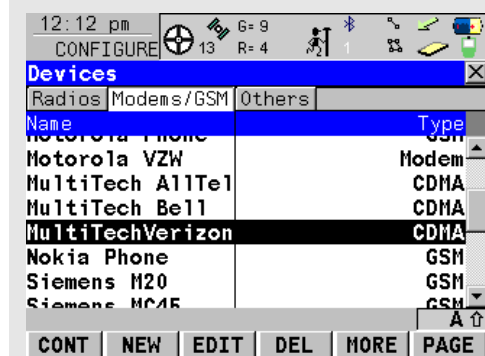
You can also program and activate a GFU19 modem using SmartWorx, Leica's onboard software.

1. First, connect the modem to the Clip port on a SmartRover (RX1250 and GHT56) or one of the communication ports on a GX1230 and power on the receiver.
2. From the Main Menu, select **5 Config...** then **4 Interfaces**.



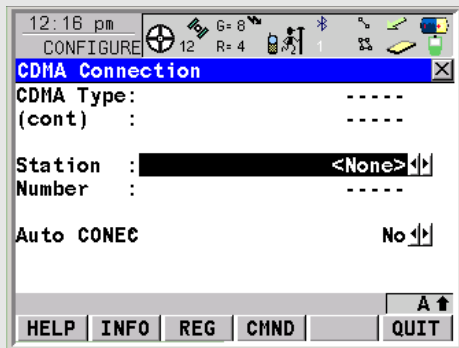
Even though the modem is going to be used as the Internet device, it should be programmed through the Real-Time interface.

3. Highlight the Real-Time interface and press the **F3 (EDIT)** button.
4. Select the port to which the modem is connected from the **Port** field and press the **F5 (DEVCE)** button.
5. Choose the **MultiTech Verizon** modem from the Modems/GSM tab of the device list and press the **F1 (CONT)** button.



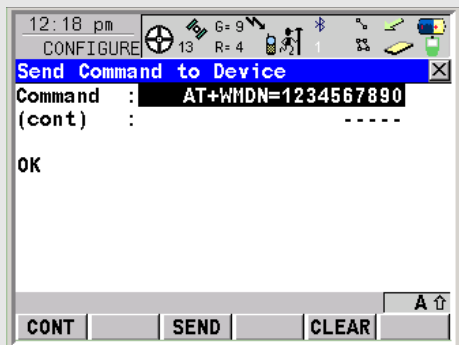
Note: If the MultiTech Verizon modem isn't visible, you may need to restore the default devices by pressing the **Shift + F5 (DEFLT)** buttons. If the MultiTech Verizon device is still not available, you can select the MultiTech Alltel instead.

6. Once the device has been assigned to the appropriate port, press the **F1 (CONT)** button until you return to the CONFIGURE Interfaces screen. The other Real-Time settings are irrelevant for now.



7. In the CONFIGURE Interfaces screen, highlight the Real-time interface and press the **F4 (CTRL)** button.

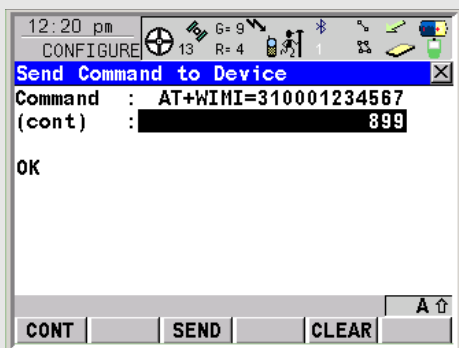
8. Press the **Shift + F4 (CMND)** buttons to access the CONFIGURE Send Command to Device screen.



9. In the CONFIGURE Send Command to Device screen, enter the following AT commands exactly as shown in the **Command** field (use the **(cont)** field for commands over 20 characters). Press the **F3 (SEND)** button after each command and wait 10 seconds before entering the next. The response should be **OK** after each command.

- **AT+WSPC=1,000000** (this initiates programming)
- **AT+WMDN=your 10-digit MDN** (no dashes or spaces)
- **AT+WCMT=1** (this saves the changes to memory)

10. If your MDN and MIN are the same, advance to Step 12 to complete programming.



11. If your MIN is different than your MDN you'll need to enter the next set of commands as well. Enter them in the same manner as before, pressing the **F3 (SEND)** button after each and waiting 10 seconds before entering the next.

- **AT+WSPC=1,000000** (this initiates programming)
- **AT+WIMI=31000 immediately followed by your 10-digit MIN** (no spaces or dashes)
- **AT+WCMT=1** (this saves the changes to memory)

12. Wait 10 seconds after entering the last command and then enter the final OTA programming code. Press **F3 (SEND)** button after entry and wait.

- **ATD*22899;** (INCLUDE SEMICOLON) Starts OTA activation

During the activation you may see the following messages displayed

- **+WOTS: "SPL unlocked"**
- **+WOTP: "PRL download OK"**
- **+WOTM: "MDM download OK"**
- **+WOT2: "Programming Successful"**

Your modem is now ready for use!

Press the **F1 (CONT)** button to return to the CONFIGURE Interfaces screen. Your modem should now be activated and programmed with your MDN and MIN. Please advance to Step 23 on Page 7 to configure the Internet Interface and connect using this device.

Appendix

Important:

If asked for this number, give the Multi-Tech Systems model number located on the modem's label. Do not give your product or device name and number.

Examples of Multi-Tech model numbers: MTCBA-xx, MTSMC and MTMMC

- Your CDMA carrier will give you three numbers for each modem. Record these numbers – they are needed in order to use your modem:

An **MDN** Number – Your 10-digit phone number.

An **MSID** Number – Another 10-digit number.

An **MSL** Number – Your 6-digit lock code. Also called a Service Programming Code (SPC).

- Activate your modem by entering a series of AT commands.

Step	AT Command	Modem Response	Comment
1.	AT+WSPC=1,xxxxxx<cr>	OK	"xxxxxx" is your programming code (your MSL).
2.	AT+WMDN=nnnnnnnnnn<cr>	OK	"nnnnnnnnnn" is your phone number (your MDN).
3.	AT+WCMT=1<cr>	OK	Commits the changes to memory.

If your **MDN** and **MSID** are identical, then you can skip steps 4, 5, and 6.

Wait 10 seconds before issuing the next command.

4.	AT+WSPC=1,xxxxxx<cr>	OK	"xxxxxx" is your programming code (your MSL).
5.	AT+WIMI=MCC00xxxxxxxx<cr>	OK	"xxxxxxxx" is your MSID (or MIN). The value of MCC depends on your country. For Mobile Country Codes, refer to ITU-T Recommendation E.212
6.	AT+WCMT=1<cr>	OK	Commits the changes to memory.

The modem should now be ready to originate and answer calls. In addition to the above steps, some carriers may also require an over the air update to enable packet switched data operation. Check with your carrier for details.

Contacting Multi-Tech Systems

If you have any questions or problems, contact Technical Support at Multi-Tech Systems at 800-972-2439 or 763-717-5863.



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