

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

Hardware Type	Firmware Version	
	Minimum	Recommended
RX1250	6.02	8.xx
GX1230	6.02	8.xx



Airlink Configuration

Setting up the IP Address & TCP/IP Port

17:10 0 1:0 * </th <th> 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 </th>	 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
17:15 Il=0	4. Select 4 Interfaces
17:27 7 L1=7 * AB Interfaces 7 L2=7 * * AB Interface Port Device AB Interface Port Device AB MEA Out 1 - - - NMEA Out 2 - - - Export Job - - - Hidden Pt - - - Tilt - - - Meteo - - - CONT EDIT CTRL -	 From the CONFIGURE Interfaces screen, highlight the Real-Time interface and press the F3 (EDIT) button.



17:12 I1:0 I:0 II:0	 Select Rover from the R-Time Mode field and the appropriate real-time data type from the R-Time Data field. Select the port to which the modem is connected from the Port field. Select the appropriate reference sensor and antenna from the Ref Sensor and Ref Antenna fields, as shown.
12:23 pm 0:6:8 DONFIGURE 13 Internet Interface X Port MARNING: 956 Dev This port is already ID Real-Time interface. Set Do you wish to close the Use Real-Time interface? (configured to be used by the interface for the i	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.
17:19 Interfaces Interfaces Interface Interface Port Device Real-Time ASCII Input - ASCII Input - NMEA Out 1 - NMEA Out 2 - Export Job - Hidden Pt - Tilt - Meteo - EDIT CTRL	10. Access the network settings for the Real-Time interface by pressing F4 (CTRL).
17:19 Ite 0 Ite 0 <td< td=""><td> 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 <u>RTK Data Products</u> tab on the MaCORS website for both the IP address and a Port number for the real-time data product that is desired). </td></td<>	 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 <u>RTK Data Products</u> 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 Edit Stati Name Number	8 L2=0 8 A MaCORS 64.28.83.185/10000	Example: • For MaCORS enter: 64.28.83.185/10000
Protoco1	04.28.85.185/10000	 Press Enter button
Use Coords	: No 🕩	14. Press F1(STORE).
ABCDE FGHI	J KLMNO PQRST UVWXY Z*?/	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

17:10 Ileo Ileo	 After modem successfully initializes, our next step is to configure the real-time corrections. 1. From the Main Menu, select Config 2. Select Interfaces
17:19 Interfaces Interface Port Interface Port Real-Time 1 ASCII Input - ASCII Input - NMEA Out 1 - NMEA Out 2 - Export Job - Hidden Pt - Tilt - Meteo - CONT EDIT CTRL	 Highlight the Real-Time interface and Press F3(EDIT)
17:12 It=0 It=0	4. Press the F2(ROVER) key.





17:20 II:0 II:0	 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
19:30 7 11:7 <	 The connection can also be made in the Survey program. Here again, press the Shift key and then press the F4(CONEC) key.
17:29 11:7	 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

Hardware Type	Firmware Version	
	Minimum	Recommended
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

12:15 pm 13 6:9 1 ATX1230 13 R:4 1 1 10:10 10:00 0 0 0 1 Survey 2 Programs 3 Manage 1 Survey 2 Programs 3 Manage 4 Convert 5 Config 6 Tools 4 Convert 5 Config 6 Tools	 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
12:17 pn 6.9 GPS1200 13 Scaffguration: RVER 1 Survey Settings 2 2 Instrument Settings 3 3 General Settings 4 4 Interfaces A T	4. Select 4 Interfaces
17:27 Interfaces Interfaces Interfaces Interface Port Device AB ASCII Input - ASCII Input - NMEA Out 1 - NMEA Out 2 - Export Job - Hidden Pt - Tilt - Meteo - CONT EDIT	 From the CONFIGURE Interfaces screen, highlight the Internet interface and press the F3 (EDIT) button.



17:28 Image: Constitute of the second se	 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).
03:59 pm CONFIGURE G:0 *	 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)
18:15 Image: Construct of the second sec	12. Press F1 (CONT) to return to the Internet Interface Screen
17:11 Image: Second	From the Interfaces screen: 13. Highlight the Internet interface and press the F4 (CTRL) button.



$\frac{18:20}{\text{CONFIGURE}} \bigoplus_{7} 7 12=7 \bigoplus_{12=7} 8 \bigoplus_{8} 2 A B$ $\frac{18:20}{\text{CONFIGURE}} \bigoplus_{7} 7 12=7 \bigoplus_{12=7} 8 \bigoplus_{8} 2 A B$	14. Set the APN : to isp.cingular
Device : Manufact ModelId	15. Press F1 (CONT) .
APN : isp.cingular (cont) :	
CONT CODES	
17:11 Interfaces Interface Port Device Real-Time NET1 ASCII Input Internet NMEA Out 1 - Export Job - Hidden Pt - SmartAntennaBT 1 ATX1230 Internet Clip Siemens MC75 ASCII Remote - A 1	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.
12:22 pm 0:9 CONFIGURE 13 Real-Time Mode: Rover R-Time Data: RTCM v3 Port Internet	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.
ID Address : Ref Sensor : Unknown 小 Ref Antenna : ADVNULLANTENNA小	 Select Rover from the R-Time Mode field and the appropriate real-time data type from the R-Time Data field.
CONT ROVER SRCH DEVCE	18. Set the Port field to one of the Net ports, normally Net 1. The Device field will default to Internet.
Interface Port Interface Port Device Real-Time NET1 Internation ASCII Input - NMEA Out 1 Export Job Hidden Pt - SmartAntennaBT	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.
Internet Clip Siemens MC75 ASCII Remote A T CONT EDIT CTRL	20. Once all of the Real-time settings are correct, press the F1 (CONT) button to return to the CONFIGURE Interfaces screen.
	 Access the network settings for the Real-Time interface by pressing F4 (CTRL).



17:40 CONFIGURE 7 2 L2=7 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	22. Select User as Client.
Set NET Port General Ranges Name Net 1	23. Set Auto CONEC to No.
User : Client (1) Server : 64.28.83.185 IP Address : 64.000 Auto CONEC : No (1) CONT : A (1)	24. Highlight the Server field and press the ENTER key and press F2 (NEW) to create a New Server entry.
21:50 5:0 * </th <td>25. Name the server and enter in the correct Domain Name of the new server; (please check the <u>RTK Data Products</u> tab on the MaCORS website for both the IP address and a Port number for the real-time data product that is desired).</td>	25. Name the server and enter in the correct Domain Name of the new server; (please check the <u>RTK Data Products</u> tab on the MaCORS website for both the IP address and a Port number for the real-time data product that is desired).
STORE 2	(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





17:12 Ilt 8 A CONFIGURE Ilt 8 Ilt 8 Ilt 8 Additional Rover Options Ilt 8 Ilt 8 Ilt 8 Additional Rover Options Ilt 8 Ilt 8 Ilt 8 Ilt 8 Additional Rover Options Ilt 8	 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.
19:09 II:7 II:7 CONFIGURE 7 I2:7 Interfaces Interface Interface Port Device Real-Time Real-Time NET1 ASCII Input - ASCII Input - SmartAntennaBT 1 - Internet Clip MultiTech AllTel ASCII Remote - HELP HOME END CONEC QUIT	 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.
19:30 7 12.7 1 1 1 Survey Code Annot Map X X X Point ID : 505 Antenna Ht : 0.0000 m 3D CQ :	 The connection can also be made in the Survey program. Here again, press the Shift key and then press the F4(CONEC) key.
17:29 III:7 III:7 <td< th=""><th> When the survey is done, press the Shift key and then press the F4(DISCO) key. </th></td<>	 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

llendurene Tune	Firmware Version		
Haraware Type	Minimum	Recommended	
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





$\frac{17:15}{\text{CONFIGURE}} \bigoplus_{13}^{4} \stackrel{6=9}{\text{R=4}} \stackrel{\$}{\cancel{5}} \stackrel{*}{\cancel{5}} \stackrel{\checkmark}{\cancel{5}} \stackrel{\ast}{\cancel{5}} \stackrel{\ast}{\cancel{3}} \stackrel{\ast}{\cancel{3}} \stackrel{\ast}$	6.	Select Yes
Internet : Yes 🔶 🔺	7.	Select Blu
Port : Bluetooth 2 Device : <bluetooth 2=""> ID Address:</bluetooth>	8.	Press the
IP Address: Dynamic 파트		
User ID :		
CONT SRCH DEVCE		
17:14 CONFIGURE ⊕ 13 8=4 51 8 5 5 5	9.	Select you
Name Type	10.	Press the
<bluetooth 2=""> <bluetooth 2=""> Notorola Phone GSM</bluetooth></bluetooth>		shown to
Nokia Phone GSM Siemens Phone GSM	11.	Press the
Sony Ericsson GSM		Internet D
	40	D I
CONT NEW EDIT DEL MORE	12.	CONFIGUI
		00111001
17:15 CONFIGURE ⊕ 13 R= 4 約 8 2 2 1		
Edit Device:Motorola Phone X Name : Motorola Phone		
Type : GSM GPRS/Internet: Yes 아이		
Baud Rate : 115200		
Parity : None小 Data Bits : 8小		
Stop Bit : 1 Flow Control : RTS/CTS아		
 a û		
STORE ATCMD DEFLT		
	13.	Set the IP
Internet Interface		
Internet :	14.	On your B
Port : Bluetooth 2 11 Device : Motorola Phone		to "Discov
ID Address:		manual)
IP Address: Dynamic 아 Set IP Adr: 192.168.1.3	15	Pross the
User ID :	10.	discovere
CONT SRCH DEVCE		the make
	40	D I

- 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



12:23 CONF Intern	IGURE) 13 ⁶ R=	8 ``` ∎≸1 4 ` ∎≸1	.* % %	
Port		0.5.0		Clin.	<u></u>
Dev ID Th Co IP Set Do Use Re (co Pas:	is por nfigur al-Tim you w al-Tim	t is a ed to e inte ish to e inte	lready be use rface. close rface?	d by 1 the	:he ♪
			NO		YES

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
- **%** G= 9 17:17 Interfaces Interface Real-Time ASCII Input NMEA Out 1 Export Job Hidden Pt SmartAntennaBT 1 ATX1230 Internet BT 2 Motorola Phone ASCII Remoteŵ CONT EDIT CTRL
- 17:17
 Image: Second state state

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
18:29 Image: Ger 7 Image	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.
ASCII Input NMEA Out 1 Export Job Hidden Pt	23. Highlight the Real-Time interface and press the F3 (EDIT) button.
ATAT230 Internet BT 2 ASCII Remote- CONT EDIT	This takes you to the CONFIGURE Real-Time Mode screen.
$\frac{12:22 \text{ pm}}{\text{CONFIGURE}} \bigoplus_{13}^{4} 6=9 \bigoplus_{R=4}^{4} \bigotimes_{13}^{4} \bigotimes_{R=4}^{4} \bigotimes_{13}^{4} \bigotimes_{13}$	The CONFIGURE Real-Time Mode screen contains the settings that define how you receive RTK correction data.
R-Time node: Kover↓ R-Time Data: RTCH v3 ↓ Port Image: State of the state	24. Select Rover from the R-Time Mode field and the appropriate real-time data type from the R-Time Data field.
Ref Sensor : Unknown ↔ Ref Antenna : ADVNULLANTENNA ↔ CONT ROVER SRCH DEVCE	25. Set the Port field to one of the Net ports, normallyNet 1. The Device field will default to Internet.
$17:51$ $CONFIGURE \begin{array}{c} & & & & & \\ \hline 11 & & & & \\ \hline 11 & & & & \\ \hline 12 & & & & \\ \hline 12 & & & & \\ \hline 14 & & & & \\ \hline 15 & & & & \\ \hline 16 & & & & \\ \hline 17 & & & & \\ \hline 18 & & & & \\ \hline 18 & & & & \\ \hline 18 & & & & \\ \hline 19 & & & & \\ \hline 19 & & & & \\ \hline 10 & & & \\ \hline 1$	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.
Real-Time NET1 Internet ASCII Input - - NMEA Out 1 - - Export Job - - Hidden Pt - - SmartAntennaBT 1 ATX1230 Internet BT 2	27. Once all of the Real-time settings are correct, press the F1 (CONT) button to return to the CONFIGURE Interfaces screen.
ASCII Remote	28. Access the network settings for the Real-Time interface by pressing F4 (CTRL).



17:40 ↓ <th>29. Select User as Client.</th>	29. Select User as Client.
General Ranges Name : Net 1 User : Client∳	30 . Set Auto CONEC to No .
Server : None>	31. Highlight the Server field and press the ENTER key and press F2 (NEW) to create a New Server entry.
21:50 10 5=0 10 5=0 10 5=0 10	32. Name the server and enter in the correct Domain Name of the new server; (please check the <u>RTK</u> <u>Data Products</u> tab on the MaCORS website for both the IP address and a Port number for the real-time data product that is desired).
TCP/IP Port : 40000	33. Press F1(STORE).
STORE a û	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

12:28 pm + 13 R. 0 X ATX1230 + 13 R. 0 X Isin Watto Image: 1 X Isin Watto Imag	 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
17:51 CONFIGURE 0:7 ℃ 10:2 ℃ 10:2 ℃ Interfaces × × × × Interface Port Device × Real-Time NET1 Internet × ASCII Input - - × ASCII Input - - - ASCII Input - - - SmartAntenna BT 1 ATX1230 - Internet BT 2 Motorola Phone - ASCII Remote - - - CONT EDIT CTRL -	 Highlight the Real-Time interface and Press F3 (EDIT)
11:12 Image: General state of the sta	4. Press the F2(ROVER) key.



11:23 0:8 12 8:8 1 1:5 1:5 Additional Rover Options Additional Rover Options X Additional Rover Options X General NTRIP CrdSys Accept Ref Any Received I Ref Stn ID 0 Ref Network MAX II Send User ID No II User ID 1 02980 User ID 2 02980 Arr CONT GGA	 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*
17:19 13 6:9 1 2 2 <t< td=""><td> 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. </td></t<>	 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.
17:51 CONFIGURE Image: Gerage for the second se	 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.
19:30 T IIII T IIIII T SURVEY T IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	 The connection can also be made in the Survey program. Here again, press the Shift key and then press the F4(CONEC) key.



17:29 SURVEY	+ 7 L2= 7	1 * i 🎐
Survey: SIM	TEST	2
Point ID	Annot Map :	555
Antenna Ht	:	2.0000 m
3D CQ		0.0081 m

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

Handurana Tana	Firmware Version		
naraware Type	Minimum	Recommended	
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

12:15 pn 13 6:9 1 ATX1230 13 R:4 1 1 Pain Conu Image: Conu Image: Conu Image: Conu Image: Conu 1 Survey 2 Programs 3 Manage I Image: Convert 5 Config 6 Tools I Image: Convert 5 Config 6 Tools Image: Convert 5 Config 6 Tools	 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
12:17 pn 6:9 GPS1200 13 R:4 Sonfiguration: RVER 1 Survey Settings X 2 Instrument Settings X 3 General Settings X 4 Interfaces A T CONT A T	4. Select 4 Interfaces
17:27 Interface CONFIGURE 7 12:7 1 Interfaces X Interface Port Device Real-Time - - ASCII Input - - NMEA Out 1 - - NMEA Out 2 - - Export Job - - Hidden Pt - - Tilt - - Meteo - - CONT EDIT CTRL	 From the CONFIGURE Interfaces screen, highlight the Internet interface and press the F3 (EDIT) button.



$\begin{array}{c c} 17:28 \\ \hline CONFIGURE \\ \hline $	6. Select Yes from the Internet field.
Internet : Yes III▲ Port : Port 1 III Device : Siemens MC75	 Select the port to which the modem is connected from the Port field.
IP Address: Dynamic 小 Set IP Adr: 192.168.1.3 User ID :	8. Press the F5 (DEVCE).
03:59 pm CONFIGURE R+0 M = 0 M GRRS Intermet Beyices	From the GPRS Internet Devices screen
NameTypeAirLink CDMAModem •Motorola PhoneGSMMultiTech AllTelCDMAMultiTech BellCDMAMultiTechVerizonCDMANokia PhoneGSMSiemens HC45GSMSiemens HC75GSI •CONTNEWEDITDELMOREMORE	 9. Highlight your modem (Siemens MC75) and press the F3 (EDIT) key.
18:23 CONFIGURE ⊕ 7 L1= 7 ★	This takes you to the Edit Device screen
Lait Device:Stemens MC75 Name : Stemens MC75 Type : GSM GPRS/Internet: Yes	 Press the F5 (DEFLT) key to ensure that your modem's default settings are loaded.
Baud Rate115200 ParityNone Data Bits8 Stop Bit1 Flow ControlRTS/CTS	11. Press F1 (CONT)
STORE ATCMD DEFLT	
12:19 pm CONFIGURE + 13 R-4 A S S S S Stitleden AT Sermand Lines	12. Press the F6 (PAGE) key to the GPRS/Internet tab
SM/CSD GPRS/Internet nit 1 : AT&FE0\Q3&C1&D0^MAT+CR cont) : EG=1^MAT^^SSYNC=1^M cont) :	 Press the F4 (ATCMD) key to set the AT Command Lines
nit 2 : AT+CGDCONT=1,"IP","^N" cont) : ^H cont) : onnect : ATD*99#^H	14. Change the Connect: field to read ATD*99#^M
ΩÂ.	15 . Press E1 (STORE) to return to the Edit Device







12:22 pm Part of the second secon	 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.
17:11 Interfaces Interface Out Interface Port Real-Time NET1 ASCII Input - ASCII Input - SmartAntennaBT 1 ATX1230 Internet Clip Siemens MC75 ASCII Remote - ONT EDIT	 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).
17:40 II=7	28. Select User as Client.29. Set Auto CONEC to No.
Server : <none> IP Address : TCP/IP Port : Auto CONEC : No A û CONT : PAGE</none>	30. Highlight the Server field and press the ENTER key and press F2 (NEW) to create a New Server entry.



21:50 CONFIGURE	4% Σ= 0 ₩ 10 G= 0	\$] ^{\$}	° ∠ 💽 2 🥏 🖣	
Edit Server Name	: MaC	ORS	<u>×</u>	
64.28.83.185	5			
FCP/IP Port	:		10000	
STORE				

 Name the server and enter in the correct Domain Name of the new server; (please check the <u>RTK Data Products</u> 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

12:28 pm 13 13 13 14 15 15 Pains No 1 13 16 16 16 16 1 Survey 2 Programs 3 Manage 16 16 16 4 Convert 5 Config 6 Tools 17 CONT A D CONT A D	 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
18:42 7 11:7 1 1 Enterface Port Device 1 Interface Port Device 1 Real-Time - - 1 ASCII Input - - - NHEA Out 1 - - - Export Job - - - Hidden Pt - - - SmartAntenna - - - Internet Clip HultiTech AllTel - Q01a û - - -	 Highlight the Real-Time interface and Press F3(EDIT)
11:12 Image: General state of the sta	4. Press the F2(ROVER) key.



11:23 G:8 Image: Second s	 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*
17:12 Image: Second	 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.
19:09 Interfaces CONFIGURE 7 Interfaces X Interface Port Device Real-Time Real-Time NET1 Interface V ASCII Input - ASCII Input - SmartAntenna T1 Internet Clip ASCII Remote - HELP HOME END CONEC QUIT	 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.
19:30 SURVEY 7 12:7 11:7	 The connection can also be made in the Survey program. Here again, press the Shift key and then press the F4(CONEC) key.



17:29 SURVEY	+ 7 L2= 7	1 * i 🎐
Survey: SIM	TEST	2
Point ID	Annot Map :	555
Antenna Ht	:	2.0000 m
3D CQ		0.0081 m

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

	Firmware Version		
Haraware Type	Minimum	Recommended	
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

12:15 ps 13 6:9 1 CATX1230 13 8:4 1 Pain Pensi Image: Constraint of the second o	 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
12:17 pn GPS1200 GPS1200 H3 Rest H Configuration: ROVER 1 Survey Settings 2 Instrument Settings 3 General Settings 4 Interfaces	4. Select 4 Interfaces
17:27 7 L1=7 * AB Interfaces 7 L2=7 AB Interface Port Device Real-Time - - ASCII Input - - NMEA Out 1 - - NMEA Out 2 - - Export Job - - Hidden Pt - - Tilt - - Meteo - - CONT EDIT CTRL -	 From the CONFIGURE Interfaces screen, highlight the Internet interface and press the F3 (EDIT) button.



12:19 pm CONFIGURE 13 R=4 1 S	
Port : Clip-or Device : MultiTechVerizon ID Address:	a <u>111</u> n <u>∳∮</u> n -
IP Address: Dynamic Set IP Adr: 192.168.1.3 User ID :	c ∳∳ 3
CONT SRCH DEVCE	Α τ
12:23 pm CONFIGURE 13 R= 4 8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
12:23 pm CONFIGURE 13 R=4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
12:23 pm G=8 CONFIGURE 13 Internet Interface Port Dev MARNING: 956 Configured to be used by the	

ĸ,

Port

C1ip

EDIT

X

Αû

Devic

ATX1230

MultiTechVerizon

12:12 pm

Interfaces

Real-Time ASCII Input

NMEA Out 1 Export Job

Hidden Pt SmartAntennaBT 1

Internet

CONT

ASCII Remote

face

- 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 <u>RTK</u> <u>Data Products</u> 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

12:28 pm + 13 R 0 1 1 1 1 R ATX1230 + 13 R 0 1 1 1 1 R Isin Webu Isin Webu Isin Webu Isin Webu <td< th=""><th> 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 </th></td<>	 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
12:11 pm 0 6=8 1	 Highlight the Real-Time interface and Press F3(EDIT)
11:12 Image: General state of the sta	4. Press the F2(ROVER) key.



11:23 Image: General Stress of the stres	 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*
17:12 CONFIGURE Image: Configure for the second	 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.
12:11 pm CONFIGURE 12 R=4 1 R=4 1 R=4 Interface Port Device Interface Port Internet ASCII Input - Internet ASCII Input - - Hidden Pt - - SmartAntenna BT 1 ATX1230 - Internet Clip AultiTechVerizon ASCII Remote - - Aû CONT EDIT CTRL	 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.
19:30 II:7	 The connection can also be made in the Survey program. Here again, press the Shift key and then press the F4(CONEC) key.



17:29 SURVEY	+ 7 L2= 7	1 * i 🎐
Survey: SIM	TEST	2
Point ID	Annot Map :	555
Antenna Ht	:	2.0000 m
3D CQ		0.0081 m

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



CDMA Modem Activation

Programming via HyperTerminal

Connect To	 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
Area code: 770 Phone number: Connect using: COM3 OK Cancel	 you also connect the power supply to the cable. Access Microsoft HyperTerminal from your computer's Start Menu: Start > All Programs > Accessories > Communications > HyperTerminal.
	 Name the new connection and select COM3 or any suitable serial port for communication.
	4. Click the OK button.
COM3 Properties ? X Port Settings	5. Set the port's communication settings as follows:
Bits per second: 115200 V Data bits: 8 V Parity: None V Stop bits: 1 V	 Baud rate/Bits per second: 115200 Data bits: 8 Parity: None Stop bits: 1 Flow control: RTS/CTS or Hardware
Flow control: Hardware	6. Click the OK button.
Restore Defaults	Note: You may also want to set HyperTerminal with
OK Cancel Apply	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=NNNNNNNNNCCR> OK AT+WCMT=1<cr> OK</cr></cr>	 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=31000NNNNNNNNNCCR> OK AT+WCMT=1<cr> OK</cr></cr>	 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







CDMA Modem Activation

Programming via SmartWorx

12:11 pm 0:8* 0:8* 0:12* <t< th=""><th> 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. </th></t<>	 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. 	
12:11 pm 6=8 12 8=4 1 <	Even though the modem is going to be used as the Internet device, it should be programmed through the Real-Time interface.	
Port : Clip-on小 Device : MultiTechVerizon ID Address :	 Highlight the Real-Time interface and press the F3 (EDIT) button. 	
Ref Sensor : Unknown Ref Antenna : Unknown MA T CONT ROVER SRCH DEVCE	 Select the port to which the modem is connected from the Port field and press the F5 (DEVCE) button. 	
12:12 pm Image: General system CONFIGURE 13 Betics Image: GSM Others Radios Modems/GSM Others Name Type	 Choose the MultiTech Verizon modem from the Modems/GSM tab of the device list and press the F1 (CONT) button. 	
Motorola VZW MultiTech AllTel MultiTech Bell CDMA MultiTechVerizon Nokia Phone Siemens M20 Siemens M20 Siemens M20 CONT NEW EDIT DEL MORE PAGE	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.	
	 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. 	



12:16 pm 6:8 ************************************	 In the CONFIGURE Interfaces screen, highlight the Real-time interface and press the F4 (CTRL) button.
Station : <u><none></none></u> Number : Auto CONEC No <u></u>	 Press the Shift + F4 (CMND) buttons to access the CONFIGURE Send Command to Device screen.
HELP INFO REG CMND QUIT	
12:18 pm 13 6=9 1 8 1 <td< th=""><th> 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. </th></td<>	 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.
CONT SEND CLEAR	 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)
	 If your MDN and MIN are the same, advance to Step 12 to complete programming.
12:20 pm 5:9 *	 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.
CONT SEND CLEAR	 AT+WSPC=1,000000 (this initiates programming) AT+WIMI=31000 <i>immediately followed by your</i> 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-Teich Systems model number located on the modem's label. Do no give your product or device name and number. Examples of Multi-Teich model numbers: MTCBA-xx, MTSMC and MTMMC

Your CDMA carrier will give you three numbers for each modern. Record these numbers

 they are needed in order to use your modern:

An MDN Number – Your 10-digit phone number. An MSD Number – Another 10-digit number. An MSL Number – Your 6-digit lock code. Also called a Service Programming Code (SPC).

Activate your modern by entering a series of AT commands.

Step	AT Command	Nodem Response	Comment
1.	AT+WSPC=1,xxxxxx <a>	OK	"scoccax" le your programming code (your MSL).
2.	AT+WMDN=nnnnnn <cr></cr>	OK	"nnnnnnnn" is your phone number (your MDN).
3.	AT+WCMT=1 <a>	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+W\$PC=1,xxxxxx <cr></cr>	OK	"xxxxxx" is your programming code (your MSL).
5.	AT+WIMI=MCC09 commosour <cr></cr>	OK	"souncescent" in 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></cr>	OK	Commits the changes to memory.

The modern 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.



Part Number 82003640 5/13/05 www.multitech.com

