GCR-16 with internal modem

GXR user manual appendix J

Document Revision

Author	STT
Checked	SER, RIA
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Version	Action
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1. Introduction

☞ | *Dear Valued GeoSIG Customer, thank you for purchasing this product.*

These Instruments have been optimised to meet the requirements of the majority of customers out of the box and may have even be delivered tailored to your needs. In any case, to be able to get the most out of our product, please carefully study this manual, its appendices and referenced manuals, as well as any other documents delivered with it.

This is a reliable and easy to use device, and at the same time a sophisticated product, which requires care, attention and know-how in configuring, installing, operating and maintenance.

This manual describes the setup of the GCR-16 with internal modem step by step. It is based on the standard GXR User manual. It is highly recommended to read the GXR user manual before starting with this appendix.

The GCR-16 with internal modem has the following two new options:

- Send text messages (SMS) on event to two different numbers.
- On/Off button from the outside of the GCR-16.

2. Preparations

Before you start to configure and install the GCR-16 please ensure that the following material is ready:

- Running GeoSIG instrument (GCR-16)
- GSM modem (SIEMENS TC-35) inside the GCR-16
- Valid SIM card with GSM Data mode activated (to be checked with provider)
- Latest GeoDAS software
- GeoSIG RS-232 cable
- Fully operational Analog or GSM modem for computer side (in- or external)

Now please ensure that the following points are done:

- SIM card pin code is disabled
- Antenna is connected to the instrument
- Sensor is connected to the instrument
- The GMS modem inside the GCR-16 has got three cables attached (power, antenna and RS-232)
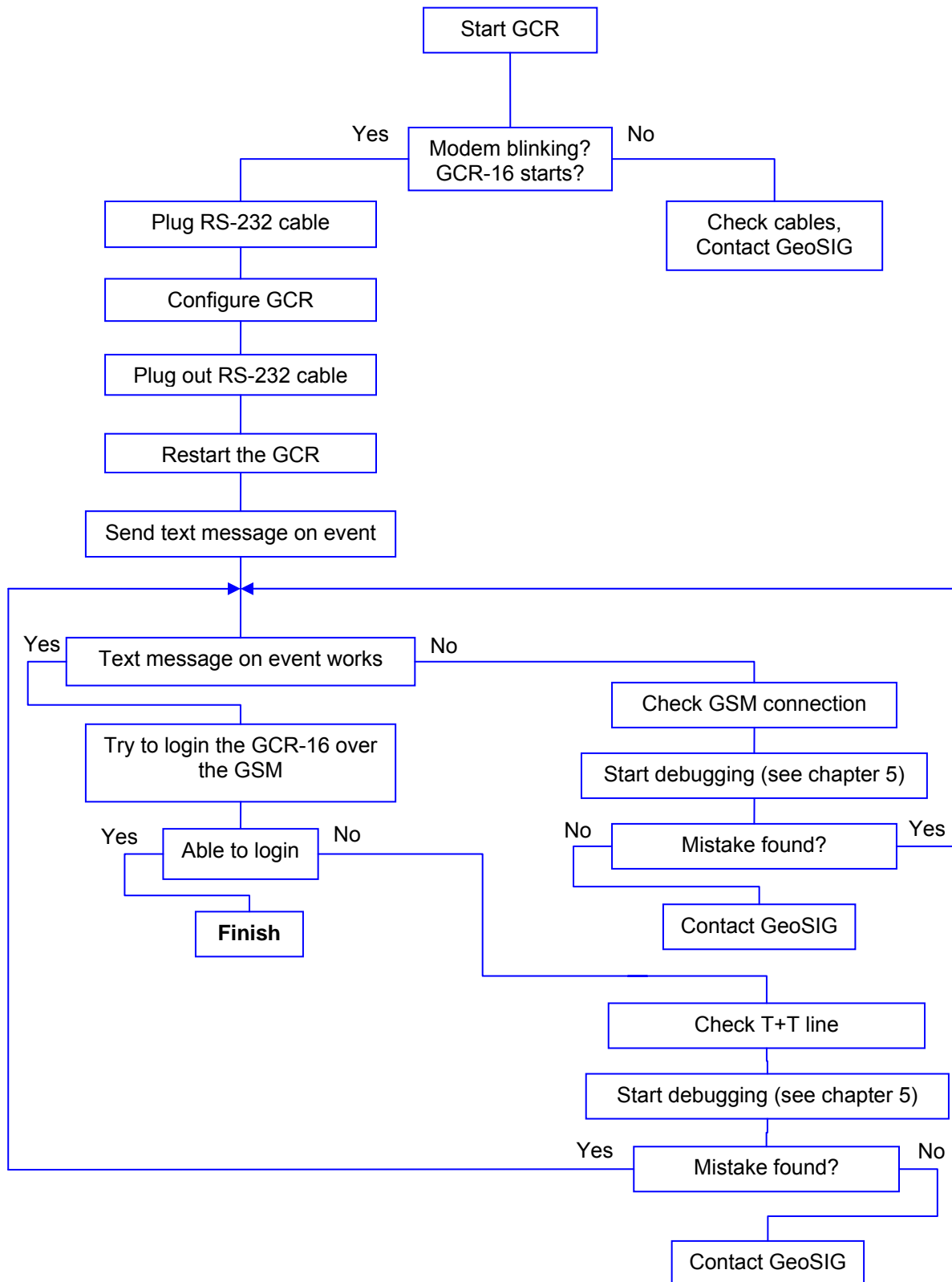
2.1. On/Off switch

There are two on/off switches, one inside of the housing, another one outside of the housing. It is important to know that they are parallel to each other. This means that if the inside switch is turned on, you can not turn the instrument off from the outside. This a security so it can be avoided that the instrument is turned off from the outside by accident.

The following table shows the logic:

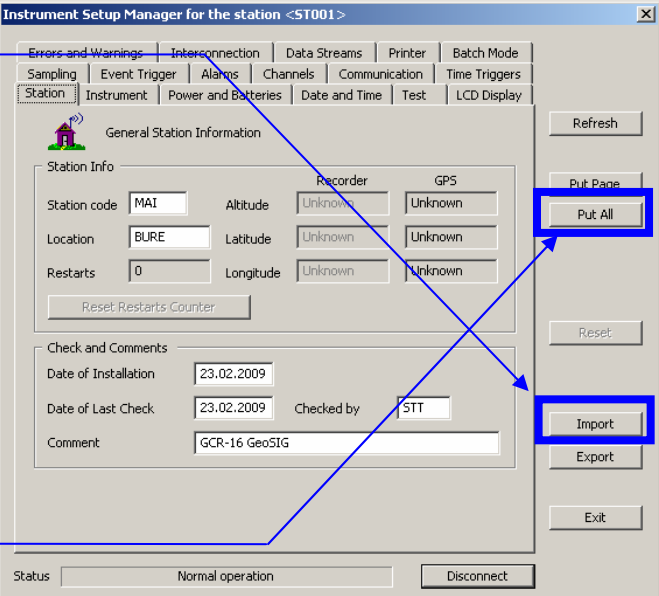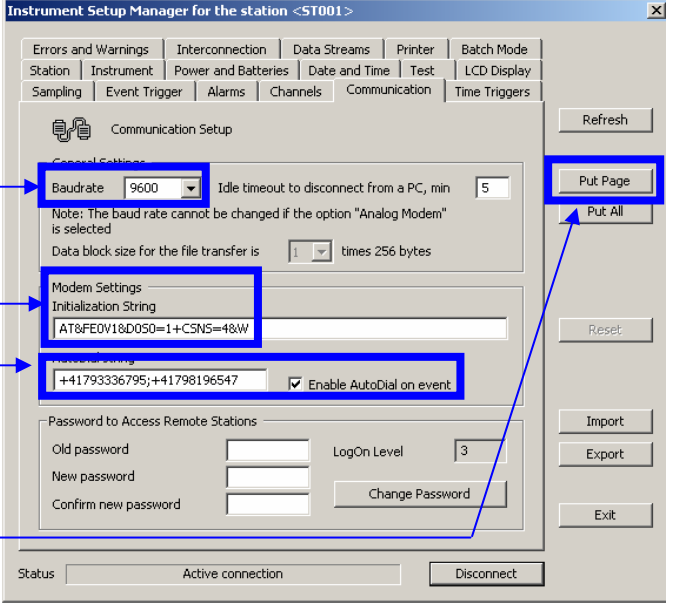| Switch inside	Switch outside	GCR
On	On	On
On	Off	On
Off	On	On
Off	Off	Off

2.2. Process overview

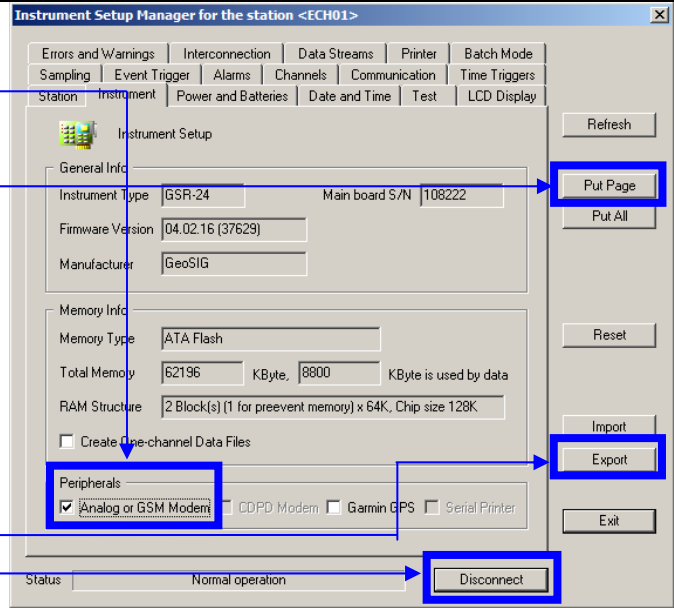The following chart shows the process how to install a GCR-16 with an internal modem.

3. Configuration

3.1. GCR side configuration

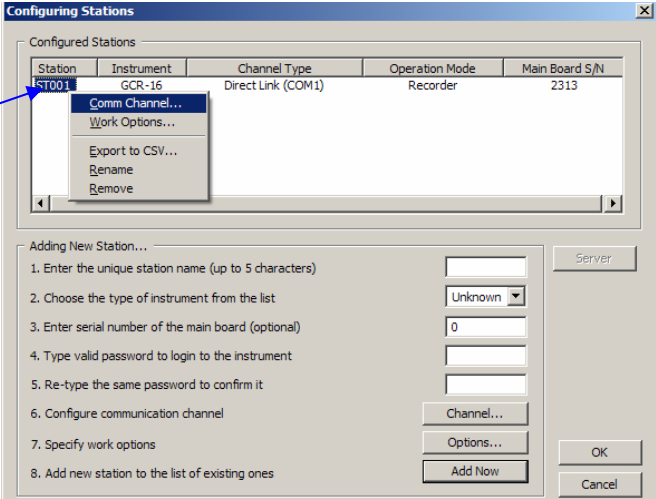|	
Start the GCR	
Make sure the modem inside the GCR is powered, you can see this from the LED on the modem. There are the following different modes: **After power on:** LED is on for 2 s **Power down:** LED off **Network search, no SIM card is inserted, PIN not disabled or no GSM network is available** LED flashed fast **Standby** LED flashes slowly **Active connection** LED permanently on	
Login to the GCR station and open the Instrument Setup Manager window.	
Import the .ist file that was supplied from GeoSIG. Press the PUT ALL button to save all the changes.	Instrument Setup Manager for the station <ST001> Errors and Warnings | Interconnection | Data Streams | Printer | Batch Mode Sampling | Event Trigger | Alarms | Channels | Communication | Time Triggers Station | Instrument | Power and Batteries | Date and Time | Test | LCD Display General Station Information Station Info Recorder GPS Station code MAI Altitude Unknown Unknown Location BURE Latitude Unknown Unknown Restarts 0 Longitude Unknown Unknown Reset Restarts Counter Check and Comments Date of Installation 23.02.2009 Date of Last Check 23.02.2009 Checked by STT Comment GCR-16 GeoSIG Refresh Put Page **Put All** Reset **Import** Export Exit Status Normal operation Disconnect

Go to COMMUNICATION tab.

Baudrate must be set to **9600** bauds.

Change the Initialization-string to.
AT&FE0V1&D0S0=1+CSNS=4&W

Enable Auto-Dial, for sending text messages at an event. Up to two numbers can be written in to the box. These two numbers will receive a text message in case of an event. This is the format:
+41□□□□□□□□□;+41□□□□□□□□□

Press the PUT PAGE button to save the change. This must be done after every change; otherwise the changes will be discarded.

Go to INSTRUMENT tab.

Tick the ANALOG or GSM Modem

Press the PUT PAGE button to save the change. This must be done after every change; otherwise the changes will be discarded.
A message will come, notice and press "okay". Then the instrument will restart

Check the LCD display of the GSR until it start to operate normally (restart is finished). Then press the button CONNECT.

If needed the settings can be exported to a .ist file to the hard drive by clicking on EXPORT and giving a suitable filename.
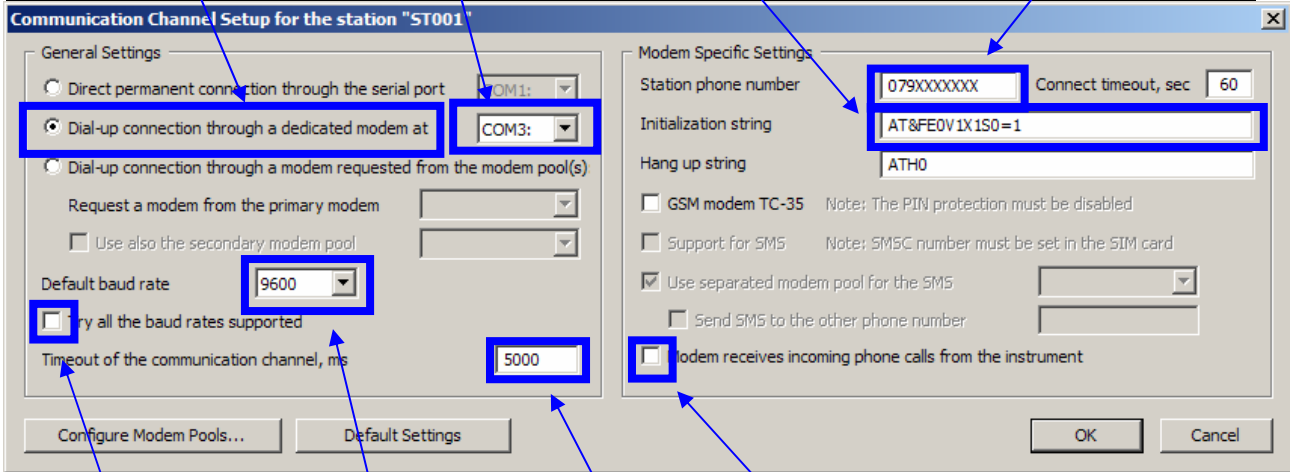
Review the settings.	
Logout by pressing the DISCONNECT button.	
Plug out the RS-232 cable	
Restart the GCR-16	

☞ If the RS-232 cable is not **unplugged** the modem will not be initialised at the restart, it won't send text messages and it won't be able to communicate over the GSM network.

3.2. PC side configuration

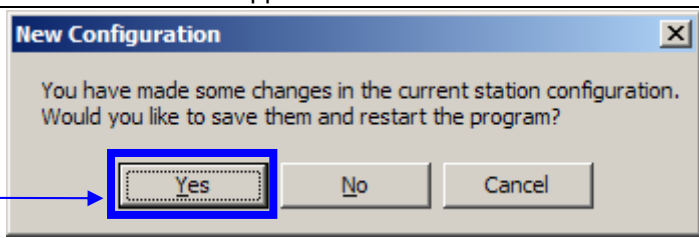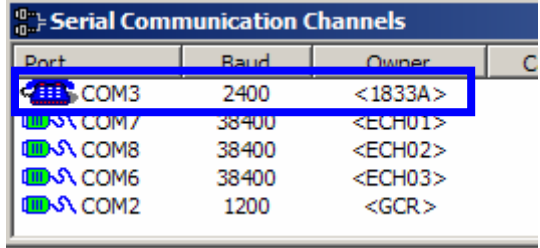|	
Connect PC modem to T+T line	
Connect PC modem to the COM Port of your PC (if external)	
☞ **Please don't use USB external modems, they are mostly not working.**	
Start GeoDAS	
In menu, select SETTINGS / CONFIGURE STATIONS. In the list, select your station and do a right click on its name. Select COMM CHANNEL:	

Select DIAL-CONNECTION through a dedicated modem	Select the COM port where the modem is attached to the PC.	Update the modem initialization string. (see below)	Enter the phone number of the GCR station, without using a "+" (see below)

Communication Channel Setup for the station "ST001"

General Settings
- Direct permanent connection through the serial port — COM1:
- ⊙ Dial-up connection through a dedicated modem at — COM3:
- Dial-up connection through a modem requested from the modem pool(s)
  - Request a modem from the primary modem
  - Use also the secondary modem pool
- Default baud rate — 9600
- Try all the baud rates supported
- Timeout of the communication channel, ms — 5000

Configure Modem Pools...   Default Settings

Modem Specific Settings
- Station phone number — 079XXXXXXX   Connect timeout, sec — 60
- Initialization string — AT&FE0V1X1S0=1
- Hang up string — ATH0
- GSM modem TC-35   Note: The PIN protection must be disabled
- Support for SMS   Note: SMSC number must be set in the SIM card
- ☑ Use separated modem pool for the SMS
- Send SMS to the other phone number
- Modem receives incoming phone calls from the instrument

OK   Cancel

Disable TRY ALL THE BAUDS RATE	Select 9600 bauds	Enter 10'000 for the timeout.	Disable auto-answer of the modem.

Initialization strings for GCR16: **AT&FE0V1&D0S0=1**

Phone number: Mostly it's not possible to type in a number beginning with "+", so please just leave the country code away, With some modems it's needed to use a "T" in front of the number for example: T0791112233.

Review the configuration.	
Press the OK button.	The window will disappear.
Press again OK in the station list window. A warning message indicates you that the GeoDAS program will have to restart according to the change you performed. Press YES button.	 **New Configuration** You have made some changes in the current station configuration. Would you like to save them and restart the program? Yes No Cancel
In the SERIAL COMMUNICATION CHANNELS a modem at the selected COM port should be visible.	 **Serial Communication Channels** Port | Baud | Owner | C COM3 | 2400 | <1833A> COM7 | 38400 | <ECH01> COM8 | 38400 | <ECH02> COM6 | 38400 | <ECH03> COM2 | 1200 | <GCR>

4. Connect to the instrument

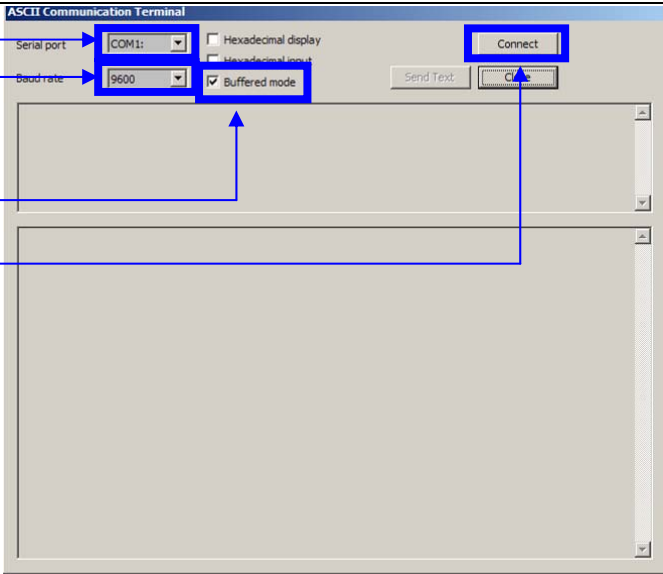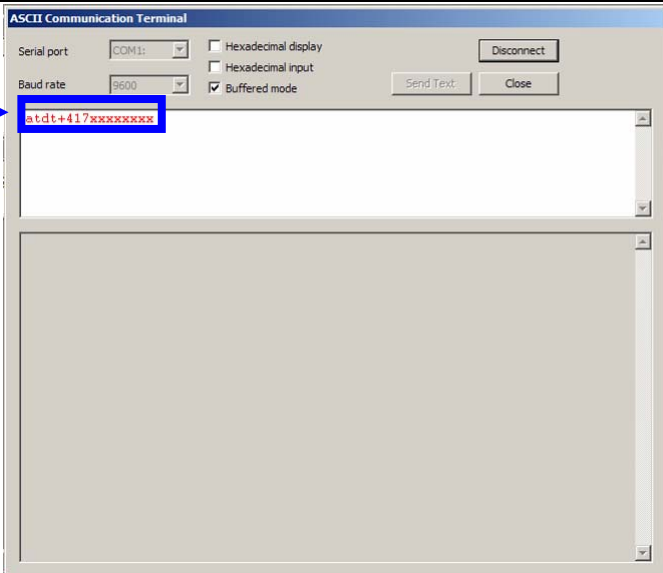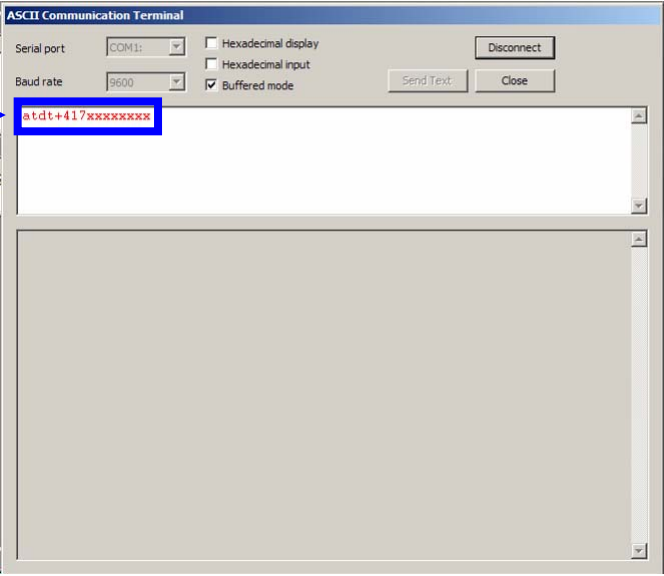|	
In the station list, select the station you configured for modem operation. Press the CONNECT button.	
Modem dials and GCR modem answers the call. The serial communication channels window will show the call progress.	
Wait until the modem link is established.	
Check communication works well. Check the modems LED's for activity.	
Display the instrument setup manager window. Go to DATE AND TIME tab. Check that the time is correct and regularly updating.	
Go to the TEST tab.	Try to record a sensor test. Be sure that RECORD A TEST PULSE is enabled.
Close the window by pressing the EXIT button.	
Open the EVENT MANAGER window	Download the sensor test you created.
Press the disconnect button.	Modem hangs up automatically

5. Debugging

If there are any problems with the GSM communication, please check the following points;

- Modem is powered (LED blinks slowly)
- SIM card inserted
- SIM card pin is disabled
- GCR-16 has been restarted with the RS-232 **plugged out** after the configuration
- RS-232 cable is still plugged out
- GCR-16 is turned on
- T+T line on the PC works

5.1. Check PC side

To be sure that the T+T line and the modem at the PC are working, please follow the steps below:

Open the GeoDAS terminal TOOLS / TERMINAL.	
Select the serial port where the modem is connected by example COM3. Select the BAUD RATE 9600 Enable the BUFFER MODE modus Press CONNECT	
To test the T+T line simply call any phone, for example your cell phone. Type atdtxxxxxxxxx (where xx is your number). 👉 **Most modems will not work if you type a "+", so just write two "0" instead of a "+".** Then press ENTER. This command will make the modem calling the number, if it doesn't work please check the line. To end the call type **+++,** wait a few second and type ATH and press ENTER.	
If the previous step worked, please continue with the next step	

If the modem at the GCR-16 is correctly initialized, it should pick up any incoming calls after the first "ring".	**ASCII Communication Terminal** Serial port COM1: — Hexadecimal display — Hexadecimal input — Disconnect Baud rate 9600 — ✓ Buffered mode — Send Text — Close atdt+417xxxxxxxx
Please type atdtxxxxxxxx (where xx is the number of the GCR-16 SIM card).	
In the field below you should see the following: **Connected 9600**	
If you get the response: **No dial tone** the T+T line is not working.	
If you get the response: **Busy** then the GSM modem connected to the GCR-16 has probably no connection (antenna gets no signal), in this case you will either need a stronger antenna, or you have to place the instrument to another location.	
If you get **NO CARRIER** detected, something is wrong with the modem configuration (on computer side or on GCR side).	

5.2. Check the GCR side

To check the line of the GCR please enable the ATD (auto dial on event) and type a valid number, as described above.	
Logout and plug out the RS-232 cable	
Shake the sensor to make an event	
The GCR-16 should now send a text message within about 30 seconds (depending on your post event time).	Note: This will only work if the ATD tick is enabled and a correct number is typed in.
If the GCR-16 doesn't send the text message please double check the points mentioned above. If it still doesn't work, please contact GeoSIG	