User Manual for

GPRS Modem

Delta-T Devices Ltd

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CE conformity

The CE marking identifies this product as complying with all relevant directives in the European Union (EU). For use with the GP1, DL6 or GP2 Logger this may include one or more of the following products:

Product	**Description**	**Standards**
Modem	FTX009	Refer to pages 109,110,116 & 117 of AirLink FXT Series Manual v6.1 on the Delta-T Software and Manuals DVD
Solar regulator	Steca Solsum6.6F	2004/108/EC (EMC) 2006/95/EC (Low voltage directive)
Solar panel	BP SX series	IEC 61215

If the equipment is used with any non Delta-T products it is the responsibility of the user to ensure the EMC compliance of any such measuring systems.

Design changes

Delta-T Devices Ltd reserves the right to change the designs and specifications of its products at any time without prior notice.

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Contents

Scope of This Document

These instructions describe the use of a GPRS modem in the following systems;_

GPRS Use with a GP2 logger:
MD-GPRS-1: GPRS modem kit for mounting with GP2 Logger into M-ENCL-B2 metal enclosure.
The GP2 logger is mounted *inside* the metal enclosure

GPRS Use with GP1 or DL6 loggers:
GPRS-BX1/B: polymer Modem Box with GPRS and battery
GPRS-BX1/SP: polymer Modem Box with GPRS, solar power & battery.
The GP1 or DL6 logger(s) are mounted *outside* the box

Other Documents

You may also need to refer to the following:

- GP2 User Manual
- GP1 Quick Start Guide
- DL6 Quick Start Guide
- Network Cabling for GP1 and DL6
- Deltalink 3.1 or later on-line Help
- Steca Solsum 6.6F Operating Manual
- Solar Panel Manufacturer's Instructions
- SOL 4 Solar Panel Mounting Bracket Assembly Notes
- Sierra Wireless AirLink FXT Series User Guide v6.1

Introduction

Summary

1. Install the modem configuration software on your PC.
2. Install the right SIM card.
3. Provide power to the modem.
4. Connect modem to the PC with the mini USB cable.
5. Obtain the SIM card information.
6. Run the GPRS Config software and configure the modem for use with the SIM card.
   Once that is done, the modem connects to the internet and the logger is online.
   Remove cable from PC to modem.
7. Tell the logger's PC software DeltaLINK how to connect to the logger via the internet.

The logger, if selected, now appears directly connected to DeltaLINK and is ready to use.
The internet has become like just another wire connecting the logger to your PC.

Support for GP1, DL6 or GP2 loggers

The same GPRS device is used by these loggers but the cabling and mounting arrangements for each is slightly different, as shown below.

GPRS modem installed with a GP2 logger controller in an M-ENCL-B2 metal enclosure with SOL-4 solar power charger/regulator and LBAT4 battery.

GPRS modem installed in a GPRS-BX1/SP polymer Modem Box with SOL-4 solar power charger/regulator and LBAT4 battery.

The modem power comes from an LBAT 4 battery shown in the bottom of both boxes.

Delta-T supplies these systems fully wired up so you don't have to worry about wiring.

The wiring arrangements are covered in later sections of this manual, one for each logger type.

Next the instructions cover configuring the modem and then setting up the DeltaLINK logger software. These are largely the same for whichever logger you use.

Health and Safety

Installation

The solar panels should be covered to exclude light before starting the installation.

Batteries

Batteries that are prone to give off explosive gases at any stage of their charge or discharge cycle must not be mounted in the enclosure without sufficient additional ventilation.

Do not use non-approved batteries or other battery charger/regulators in un-ventilated enclosures.

For optimum thermal protection the Solsum solar charger/regulator should be installed in the same housing as any external battery.

See also Warnings in the M-ENCL-B User Manual

Installing GPRS with a GP1, DL6 or GP2 logger

Requirements

1) **DeltaLINK** software version 3.1 or later.
2) **GPRS Config** software
3) PC with an internet connection.
4) A **SIM** card. The SIM card needs to be **GPRS enabled** and have a "**fixed public IP-Address**". Please contact your SIM provider to obtain this.
   Once you have received your SIM card, contact your SIM provider for the "APN" details as well as the assigned "fixed public IP-Address", which will look something like

   APN: "apn.simprovider.com"
   APN Username: "user"
   APN Password: "password"
   IP-Address: 192.168.0.1

   These details will be needed later on, to connect to the modem and for the modem to connect to the internet.
   See also page 13
5) **MD-GPRS-1:** GPRS modem kit including mini USB cable and GP2 Logger mounted in an M-ENCL-B2 metal enclosure.
   or
   GPRS-BX1/B or **GPRS-BX1/SP** GPRS Modem Box including mini USB cable
6) A source of power is required for the modem, such as the **LBAT4** and **SOL4** solar power system.
   At 13.2V the modem's average consumption is up to 166mA (1.2A peak) when communicating with DeltaLINK, and 3-8mA otherwise.

Modem Parts

Figure 1 Modem parts

Parts and wiring used with GP2 Loggers

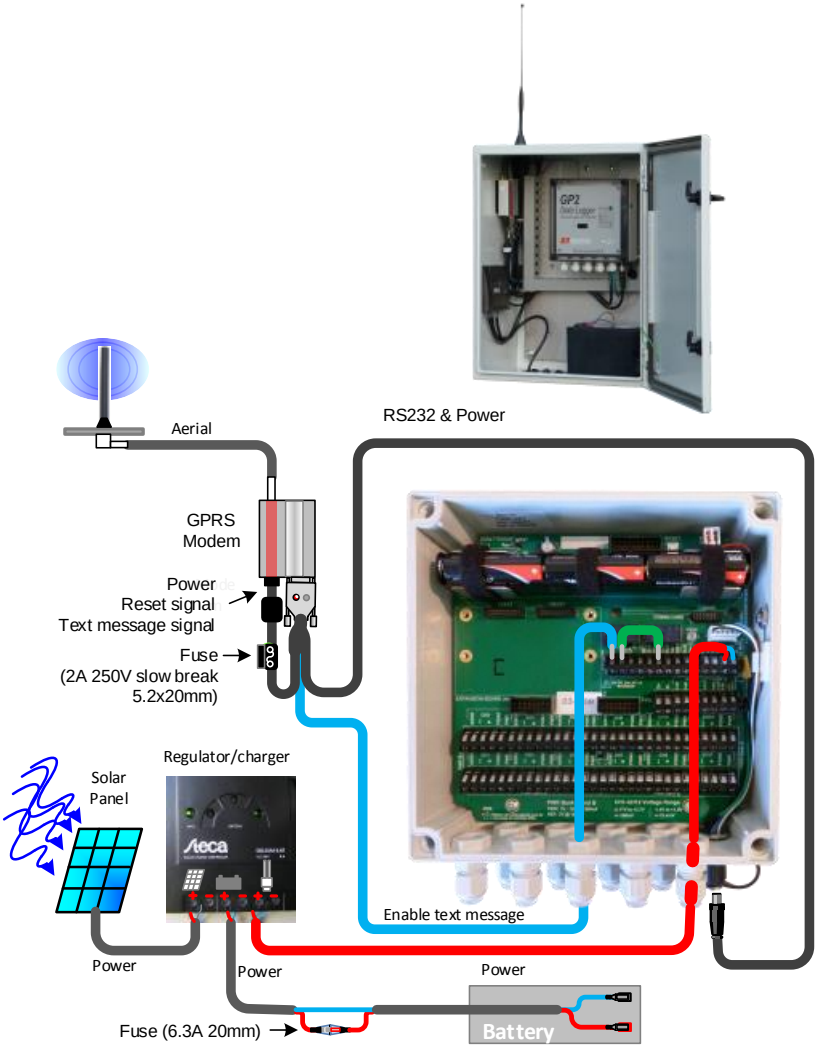


Figure 2 Top: GP2 Logger/Controller in M-ENCL-B2 enclosure with GPRS modem, cabling, aerial, SOL4 solar power regulator and LBAT4 battery. At bottom: Wiring scheme. See also page 31.

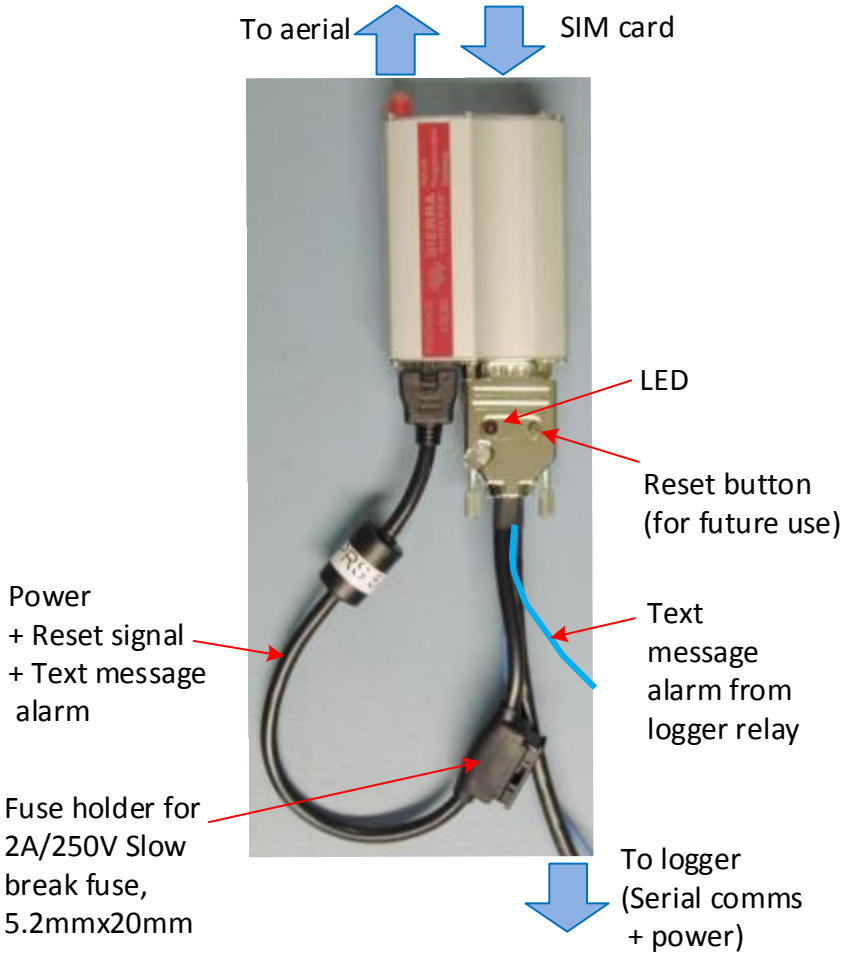


Figure 3 GP2-GPRS Cable harness functions.
See also Fig 1 and page 31.

Note : The cable harness is different for GP1 and DL6 loggers using the GPRS Modem Box, see page 33.

Parts and wiring used with GP1 and DL6 loggers

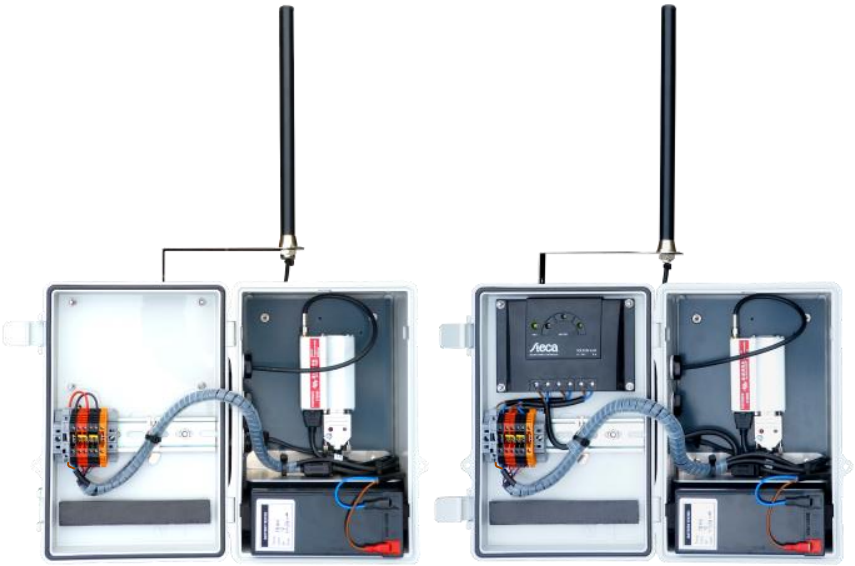
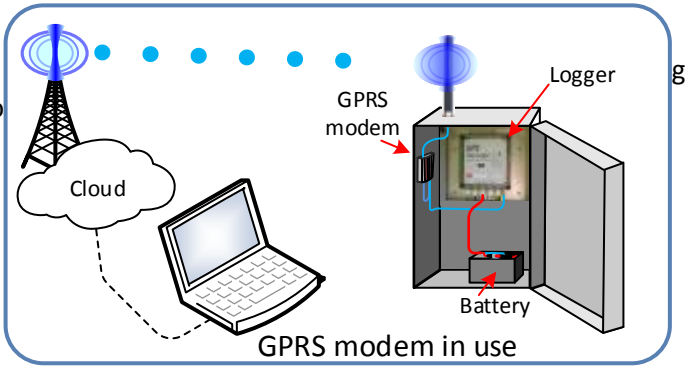


Figure 4 Showing the layout of the GPRS modem in the GPRS Modem Box options, with or without solar power.
Left : GPRS-BX1/B with battery.
Right: GPRS-BX/SP solar power option, with solar power regulator /charger, solar panel (not shown) and battery.

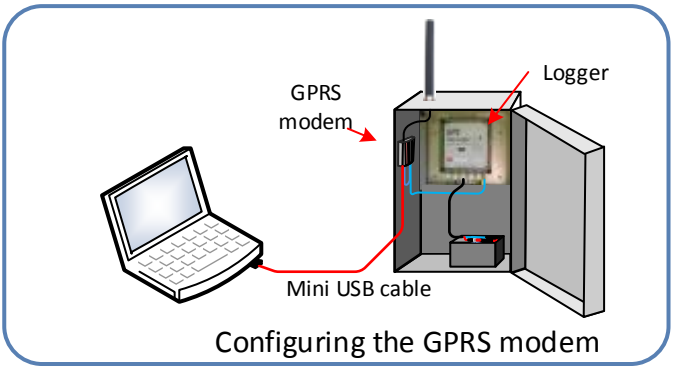
This GPRS Modem Box system is used with one or more externally connected GP1 or DL6 loggers via a GP1 network cable.
See also ***GPRS Modem Box Wiring Harness*** on pages 33 & 34 .

Overviews: In Use and When Configuring

Figure 5 g the GPRS mo



GPRS modem in use



Configuring the GPRS modem

1: Install the Modem Software

Run the GPRS Config Setup.exe program, which can be found on the Delta-T Software and Manuals DVD or online at Delta-T.

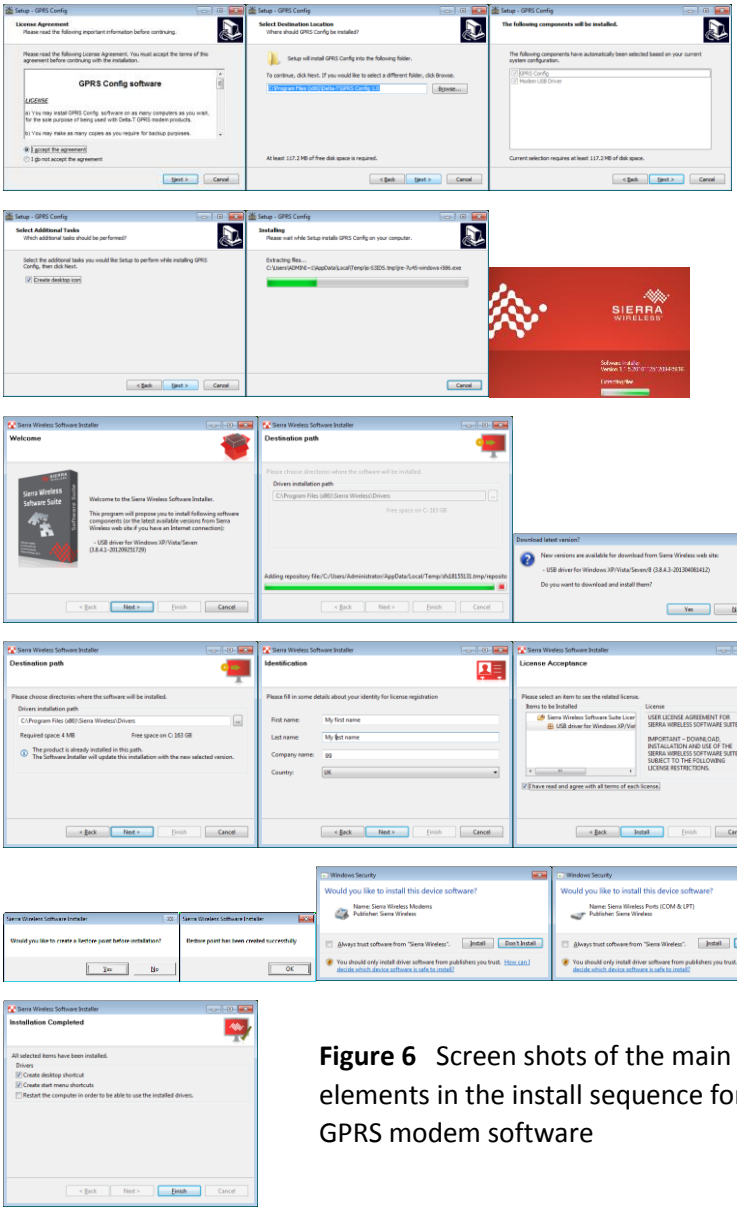
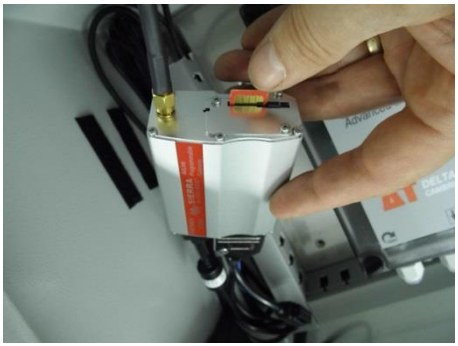


Figure 6 Screen shots of the main elements in the install sequence for the GPRS modem software

2: Install SIM Card

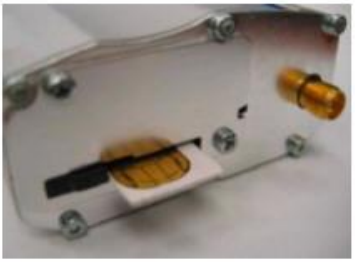
2.1 Ensure the SIM card meets the requirements on page 8.

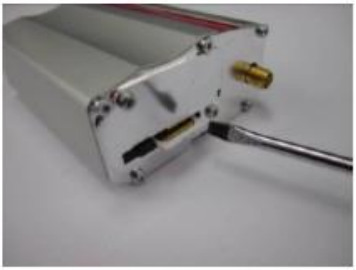
2.2 Insert your SIM card into the modem as shown. The modem is attached using velcro and is easily removed for access.



Note the orientation of the SIM and also pay attention that you close the latch over the SIM card.

The latch is the little black slider to the left of the SIM card slot.





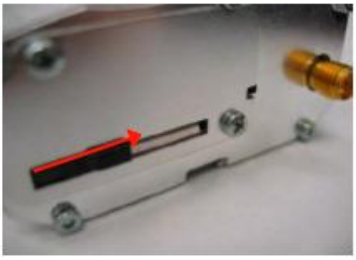
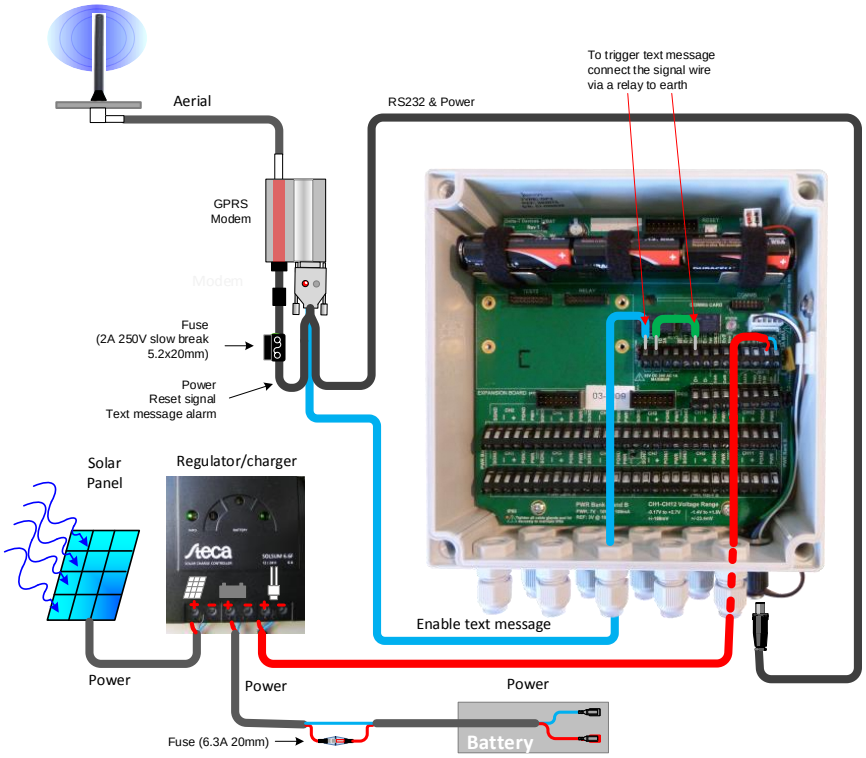


Figure 7 Adding a SIM card

3: Ensure the modem is powered.

Connect the battery to provide power to the modem.



Powering the modem when using GP2 Loggers

Figure 8 Typical power and signal cabling scheme for use with a GP2 logger controller.

Figure 8 shows the GPRS powered by a GP2 logger via the GP2 serial cable. This particular GP2 is being itself powered from an external battery via a solar power regulator.

WARNING: Cover the solar panel when wiring up the system, as it will be live.

Power may also be supplied directly to the GP2 serial cable as shown in the GP2 network cabling diagram on page 31.

Powering the modem when using GP1 or DL6 Loggers

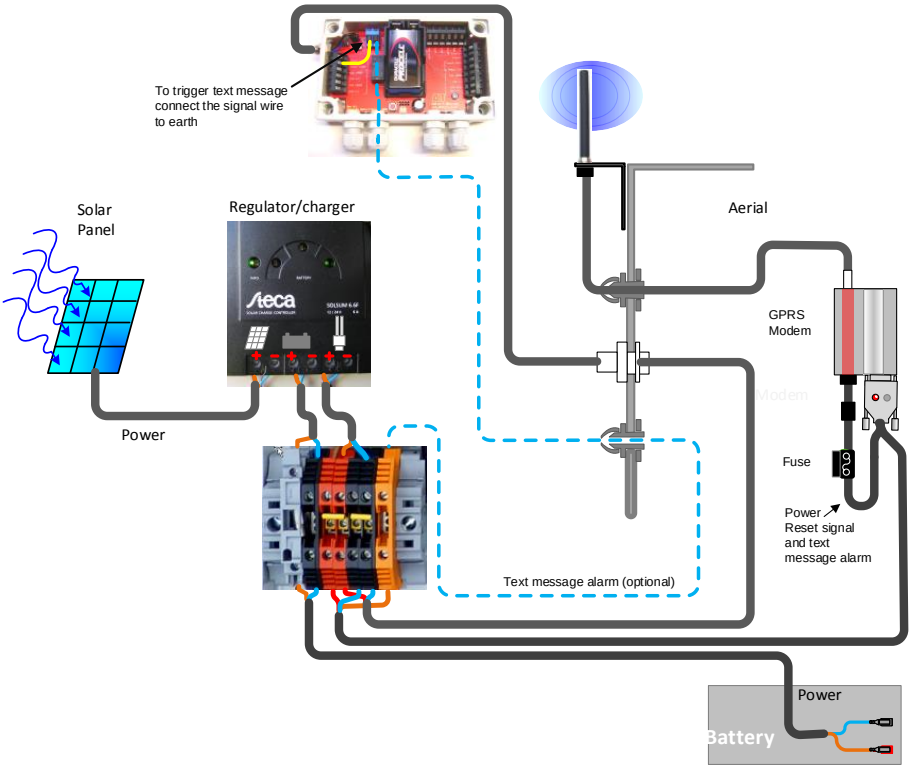


Figure 9 Cabling scheme using the GPRS Modem Box type GPRS-BX1/SP for use with GP1 or DL6 loggers.

or indirectly via the solar regulator charger. From the DIN rail it connects to both the modem and also to the external 8-way GP1 network cable socket built into the side of the Modem Box.

This means that the battery power is also accessible to any GP1 or DL6 logger externally connected on the GP1 cabling network. (If you don't want this to

happen, the wiring at the DIN rail can easily be altered. See Cable harness wiring scheme on page 33)

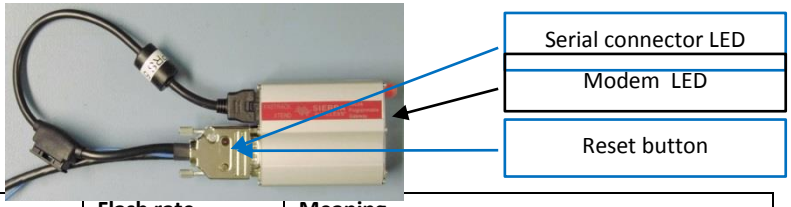
2.1 Check the Modem Flashes.

Check to see the Modem LED start to flash next to the SIM card. This indicates that the modem is powered and it is trying to initialise the SIM card and connect to the GPRS network.

Modem LED Flashing Codes

LED state	Flash rate	Meaning
Permanently ON	ON continuously	Modem is ON but not registered on a network
Slow flash	ON 200ms, OFF 2s	Modem is ON and registered on a network (idle mode)
Very quick flash	ON 100 ms, OFF 200 ms	Modem is ON, but the software downloaded is corrupted or incompatible (BAD software)
OFF	OFF	Modem either OFF, or Flash disabled when modem is asleep.

Serial Connector LED Flash Codes

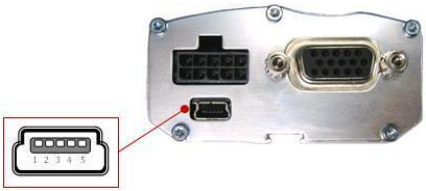


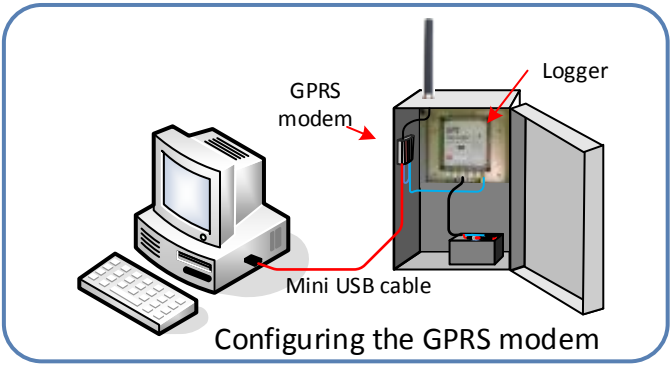
LED state	Flash rate	Meaning
Flashing	On 0.5s, OFF 0.5s	Modem is initialising
Flashing slowly	On 0.5s, OFF 9s	Modem connected to GPRS network and waiting for someone to connect from the outside

Quick Flashing	On 0.5s, OFF 0.1s	Something on the internet is connected to the modem and communicating with the logger
OFF	OFF	Modem software is not running correctly, or power is off.

4: Insert the USB cable

This is inserted into the GPRS modem (just under the black connector (opposite side from the SIM card) and connect the modem directly to a PC.
(There is no need to remove any other cables from the GPRS modem).
You may notice Windows installing the modem. (This should happen automatically once the GPRS software has been installed)





Configuring the GPRS modem

5: Obtain SIM Card Information

Make sure you have obtained the following 5 pieces of information:

- APN (Access point name)
- APN user name
- APN password
- The SIM card's fixed IP address
- The Port number

The information will look something like this...
Example…

APN: "apn.simprovider.com"
Username: "user"
Password: "password"
IP-Address: 192.168.0.1 (used in DeltaLINK)
Port number: 8080

Note on APN details and IP address

The SIM card needs to be GPRS enabled and have a "fixed public IP-Address".
Please contact your SIM card provider to ensure you can obtain this.
Once you have received your SIM card, contact your SIM provider for the "APN" details as well as the assigned "fixed public IP-Address", which will look something like the example given above.

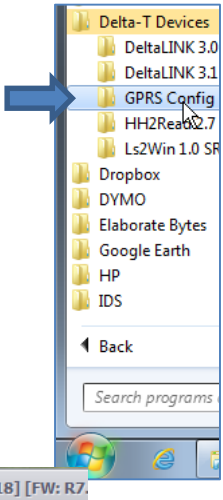
Note on the port number:

If you are connected to a larger network that has a firewall and other network policies, you will probably need to speak to your **network administrator** to determine what "Port" you can use to connect out to the internet and to the modem. Otherwise you can use a default port like 8080 or similar.

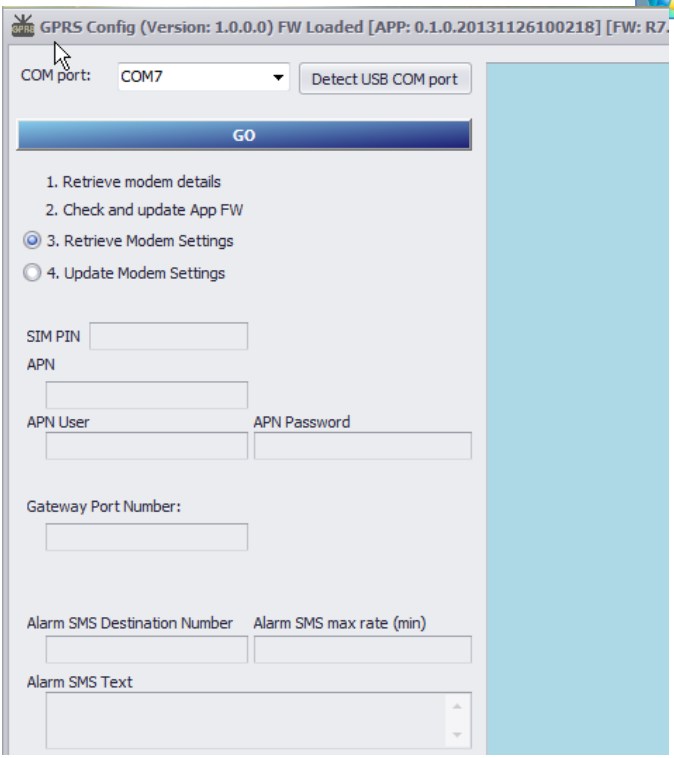
6: Run the GPRS Config Utility Software

6.1 Run the GPRS Config Utility

This can be found from your Start menu in the Delta-T Devices program group.

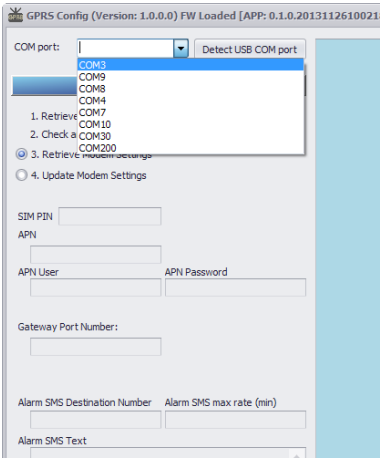


At start up the title bar contains version information.

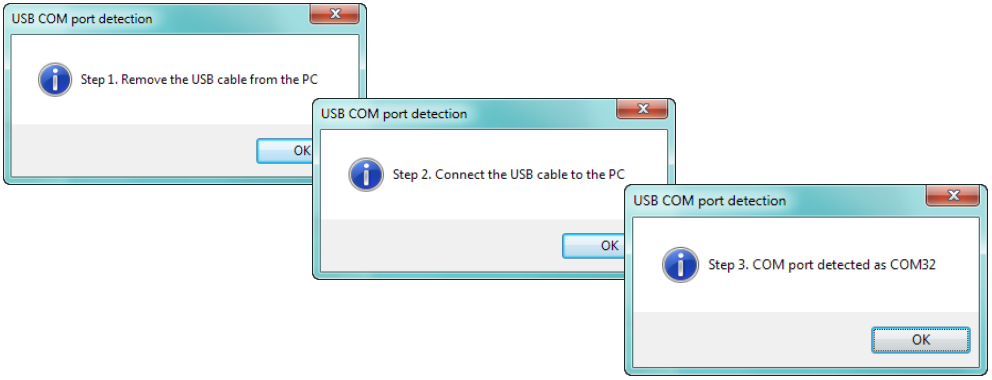


6.2 Select the COM port for your modem.

If you know what it is, just select it from the drop-down list.



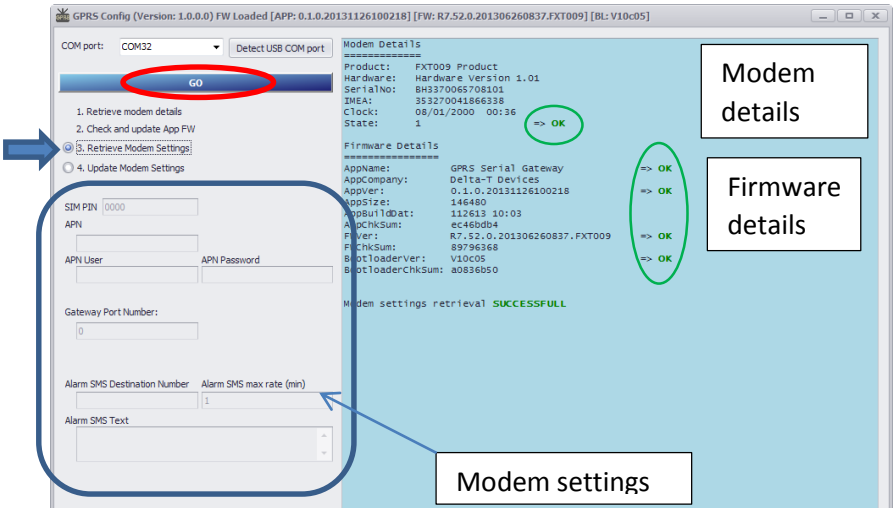
Alternatively use the "**Detect USB COM port**" button.
Follow the instructions and the application will detect your modem and update the COM port setting.



If it cannot detect the USB COM port it will say so.
Check the modem is powered and that the cable is securely attached to the modem and PC.
Alternatively re-install the modem USB driver software by repeating step 1 on page 13

6.3 Click the GO button

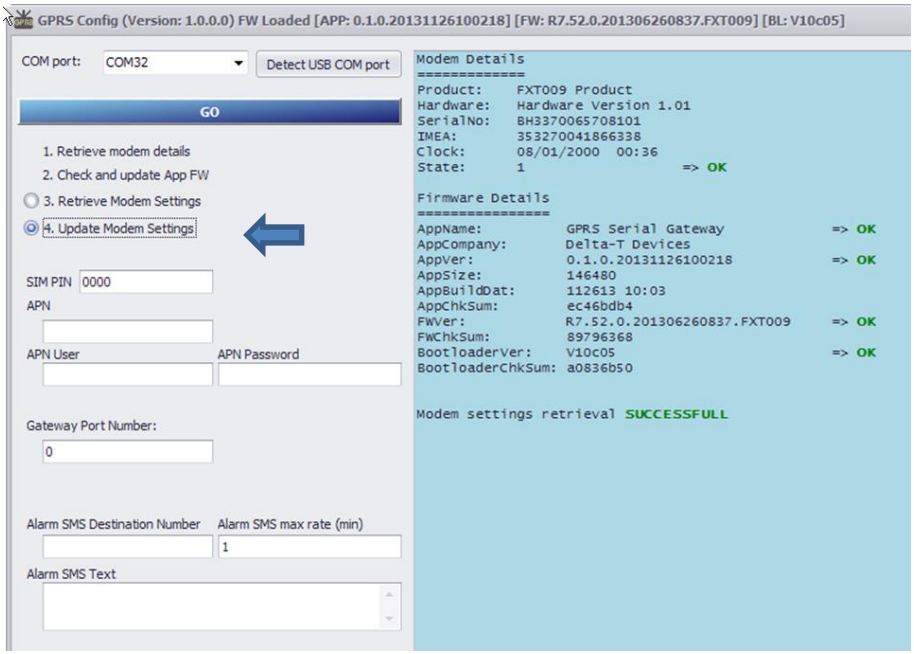
This will retrieve the modem details, check the firmware version and also retrieve the current modem settings.
If this is a new modem, the modem settings (shown on the left) may be empty - as shown in the example below.



Other details retrieved from the modem are shown on the right in the blue panel.
Note that in the above image, all the checks are **OK** and green.
If there is a problem, then you will be prompted to correct it.
Follow the instructions to resolve the issue.

6.4 Update Modem Settings

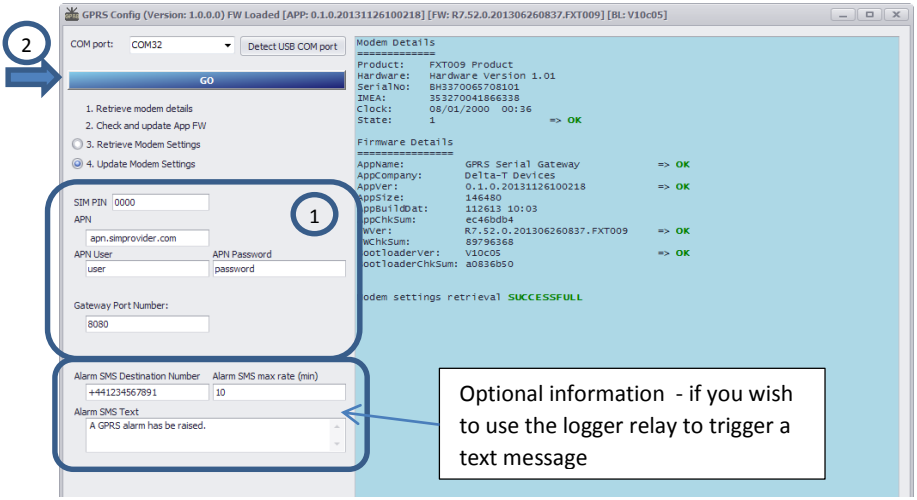
Select the **Update Modem Settings** radio button to enable changes to be made to the text box fields, as shown below.



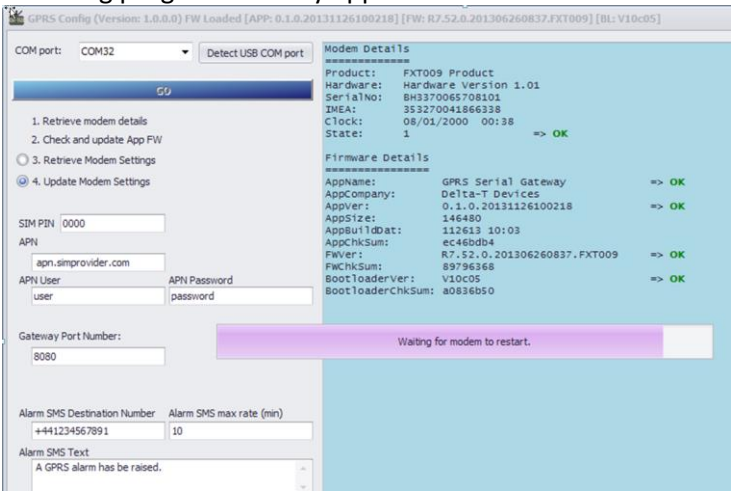
For more information on each field, hover the mouse over the editable area and a hint should be displayed as below.

6.5 Enter your modem details

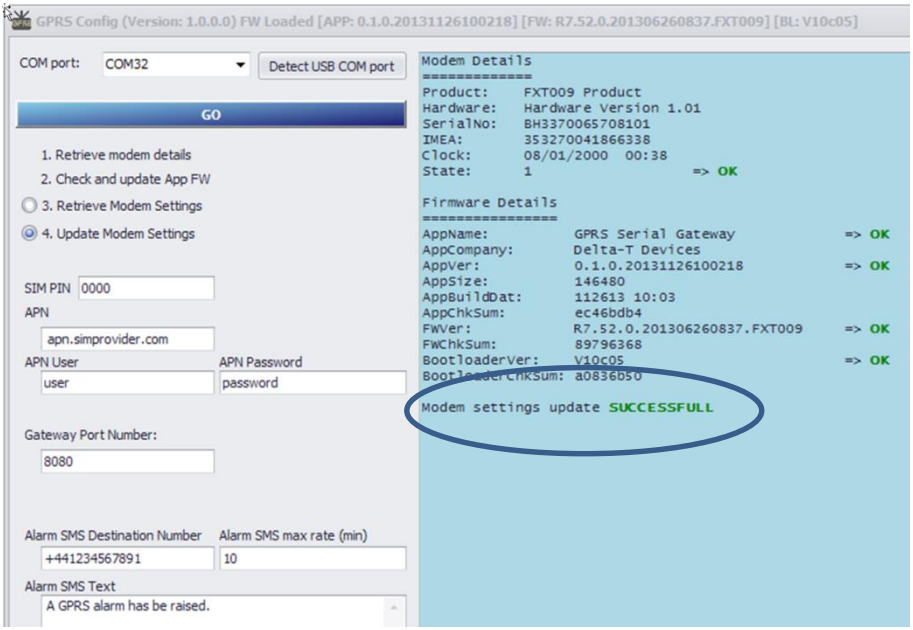
Enter the details as provided by your SIM card provider and your network administrator and press GO.
See also page 20.



On clicking “GO” your modem should be updated and the following progress bar may appear



Below your modem has been updated. Note the green "**SUCCESSFUL**" text in the blue box

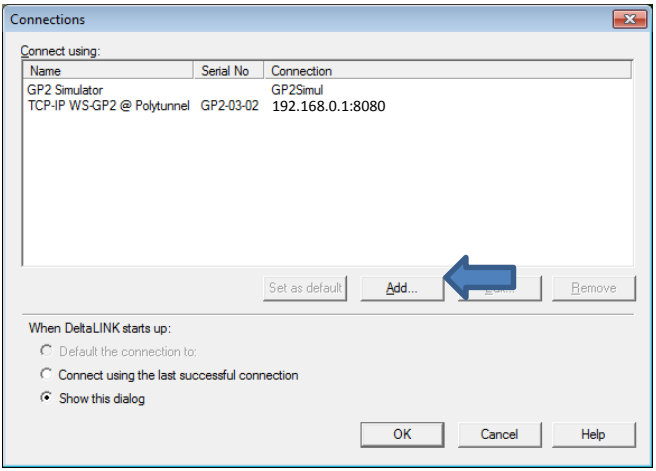


Your modem is now configured and you can proceed to try and connect to it from DeltaLINK.

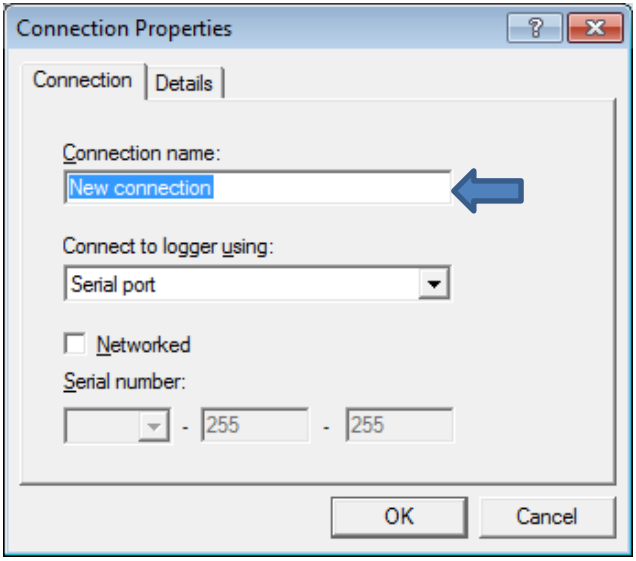
7: Set up DeltaLINK

7.1 Check you have DeltaLINK version 3.1 or later on your PC

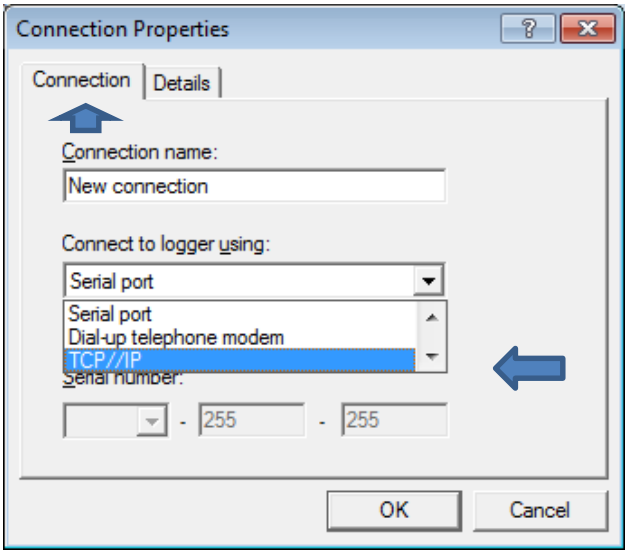
7.2 Start DeltaLINK



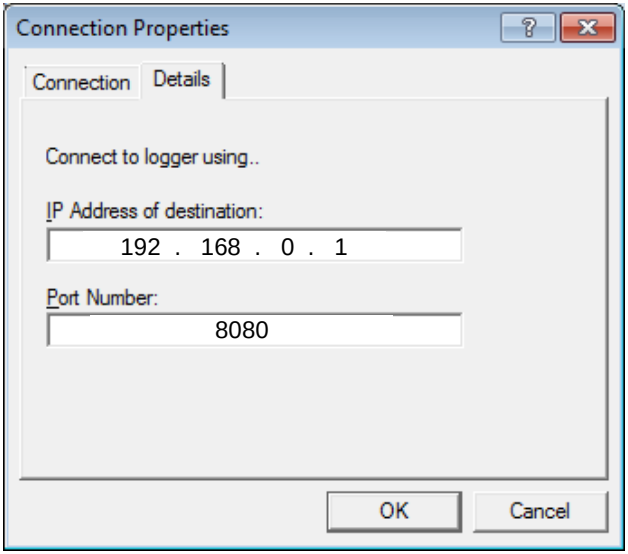
7.3 In **Connections** select **Add** to display the **Connection Properties** and give your **Connection** a name



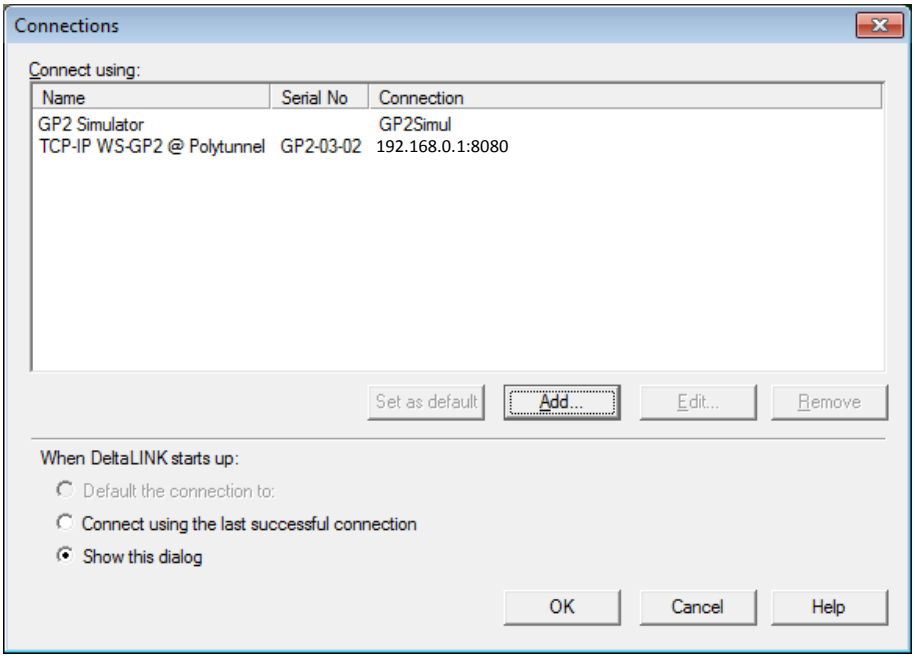
7.4 On the **Connectons** tab, in **Connect to Logger using** select **TCP/IP** from the drop down list.



7.5 On the **Details** tab enter the **IP address** of the SIM card and the **Port Number (see page 20)** and **OK.**

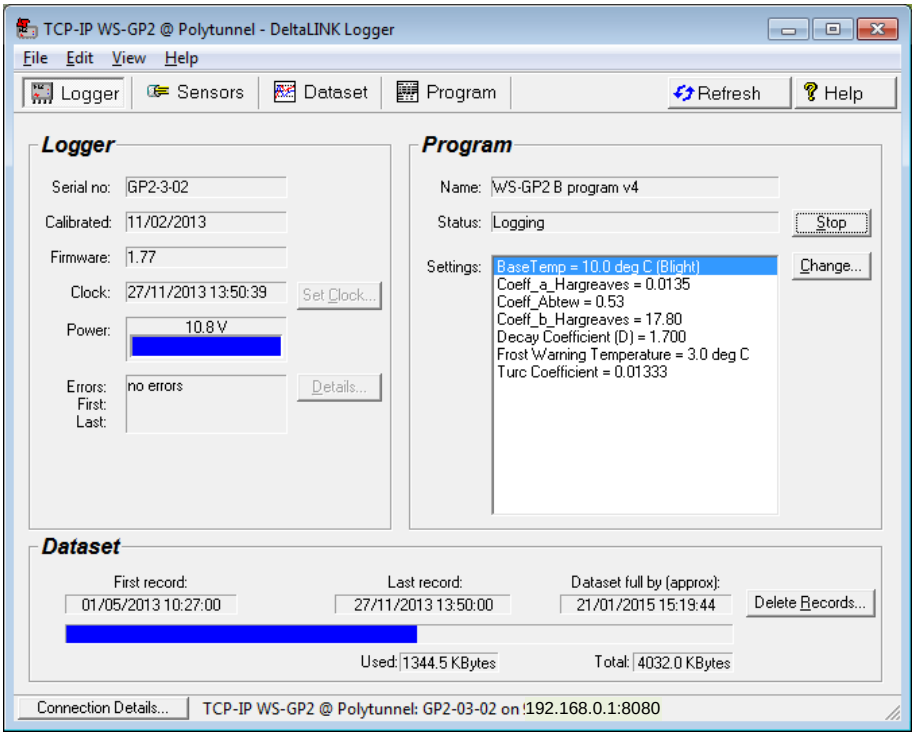


Your new connection should now appear in the list of connections.
In the example below we have called our connection
“TCP/IP WS-GP2 @ Polytunnel”



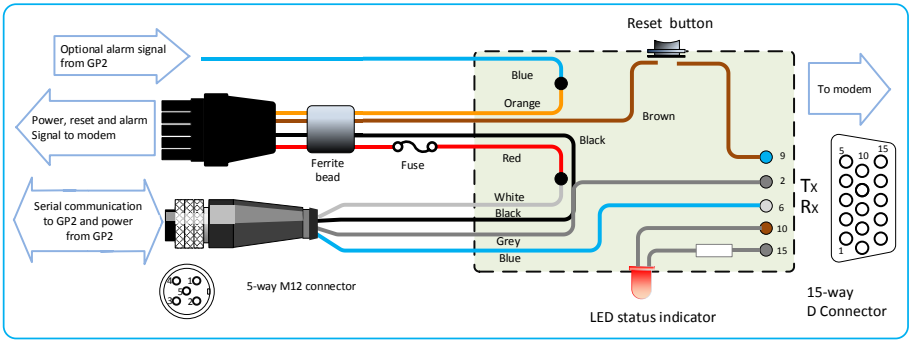
7.6 Click on the connection name and **OK.**

This tells DeltaLINK to connect to your logger.
In the example below you can see DeltaLINk has successfully connected over the internet to a GP2 logger serial number 3-02. This is one of several GP2 loggers connected to this GPRS modem via GP2 network cabling at our test site.

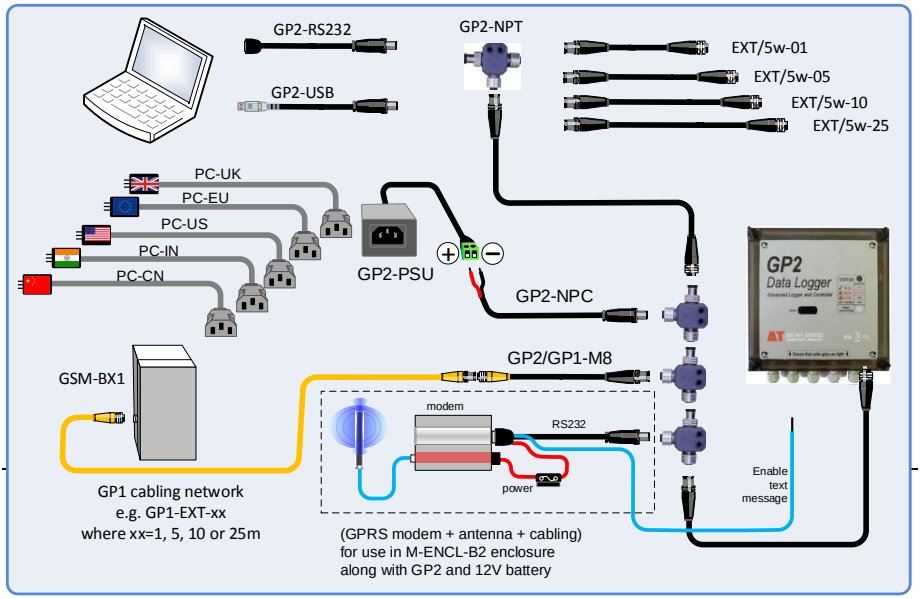


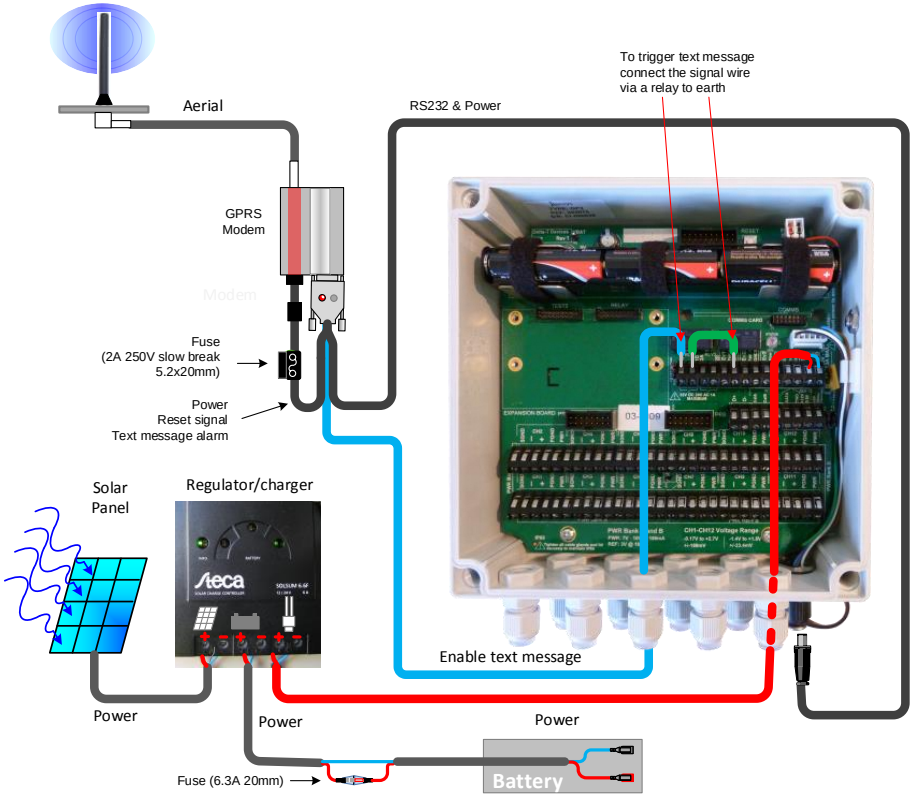
Wiring

GPRS-GP2 Modem Cable Harness Wiring



GP2 Network cabling Options with GPRS Modem




To trigger text message
connect the signal wire
via a relay to earth
Aerial
RS232 & Power
GPRS
Modem
Modem
Fuse
(2A 250V slow break
5.2x20mm)
Power
Reset signal
Text message alarm
Solar
Panel
Regulator/charger
Enable text message
Power
Power
Power
Fuse (6.3A 20mm)
Battery

GPRS Modem Box Wiring Harness

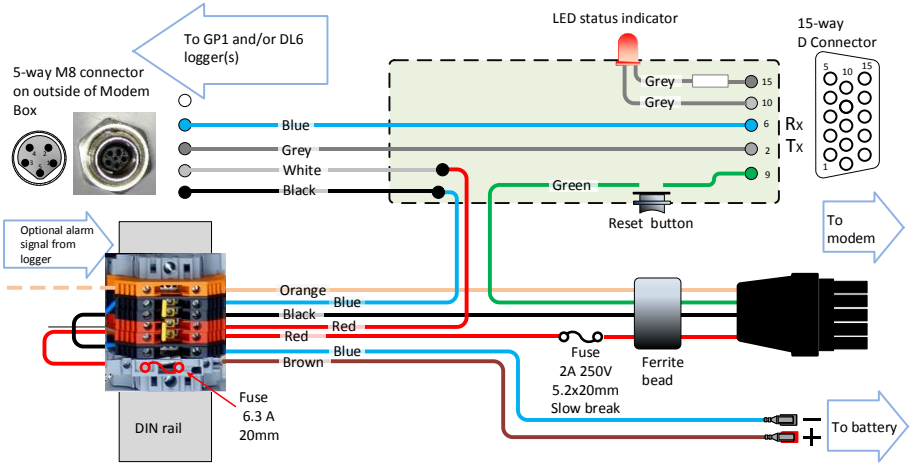


Figure 11 Cable harness wiring scheme for Modem Box **GPRS-BX1/B.** This connects to an LBAT4 battery for power via a fuse on the DIN rail.

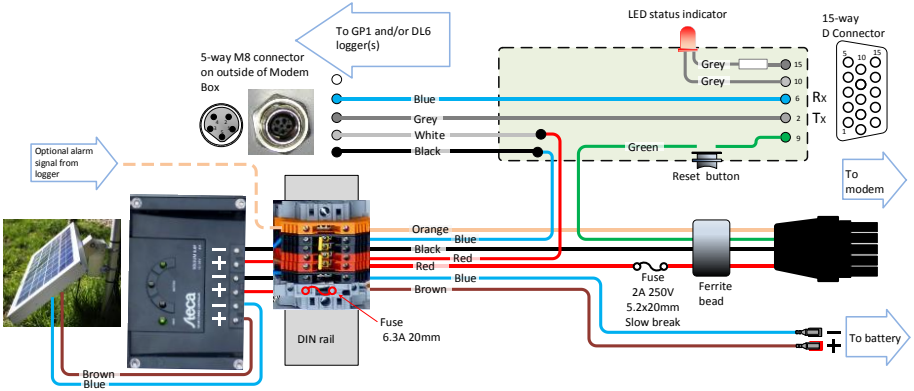


Figure 12 Cable harness wiring scheme for Modem Box **GPRS-BX1/SP**. This has a fuse and the solar regulator/charger between the battery and the modem.

GPRS Modem Box Wiring with GP1 Logger

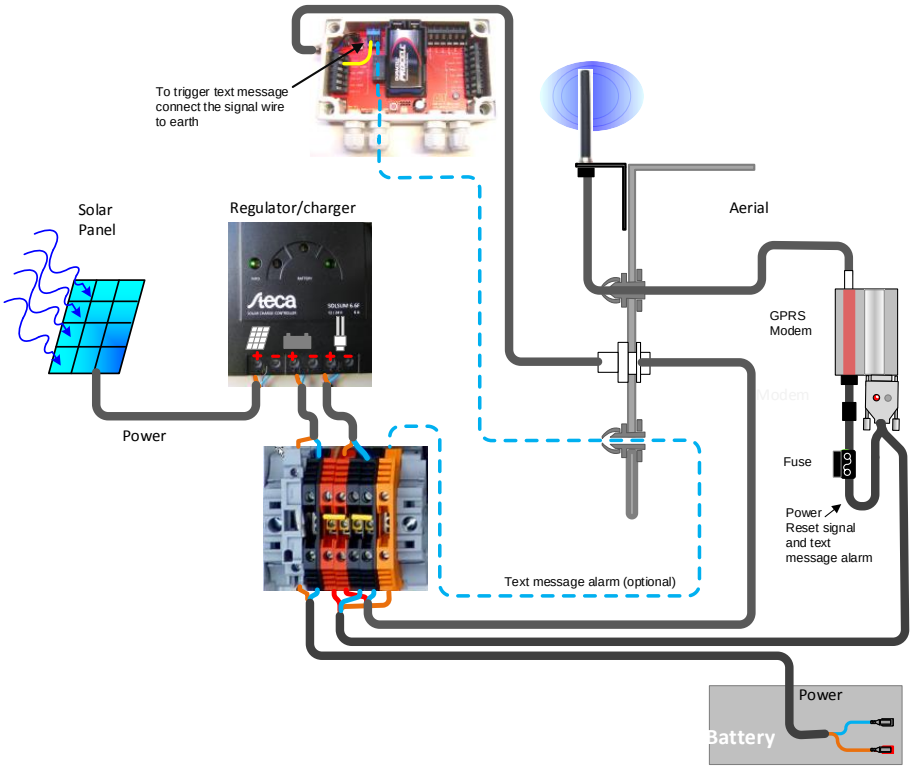


Figure 13 Wiring Scheme using Modem Box GPRS-BX1-SP which includes solar power, showing a GP1 logger connected

Warranty and Service

Terms and Conditions of Sale

Our Conditions of Sale (ref: COND: 1/07) set out Delta-T's legal obligations on these matters. The following paragraphs summarise Delta-T's position but reference should always be made to the exact terms of our Conditions of Sale, which will prevail over the following explanation.

Delta-T warrants that the goods will be free from defects arising out of the materials used or poor workmanship for a period of **twelve months** from the date of delivery.

Delta-T shall be under no liability in respect of any defect arising from fair wear and tear, and the warranty does not cover damage through misuse or inexpert servicing, or other circumstances beyond their control.

If the buyer experiences problems with the goods they shall notify Delta-T (or Delta-T's local distributor) as soon as they become aware of such problem.

Delta-T may rectify the problem by replacing faulty parts free of charge, or by repairing the goods free of charge at Delta-T's premises in the UK during the warranty period.

If Delta-T requires that goods under warranty be returned to them from overseas for repair, Delta-T shall not be liable for the cost of carriage or for customs clearance in respect of such goods. However, Delta-T requires that such returns are discussed with them in advance and may at their discretion waive these charges.

Delta-T shall not be liable to supply products free of charge or repair any goods where the products or goods in question have been discontinued or have become obsolete, although Delta-T will endeavour to remedy the buyer's problem.

Delta-T shall not be liable to the buyer for any consequential loss, damage or compensation whatsoever (whether caused by the negligence of the Delta-T, their employees or distributors or otherwise) which arise from the supply of the goods and/or services, or their use or resale by the buyer.

Delta-T shall not be liable to the buyer by reason of any delay or failure to perform their obligations in relation to the goods and/or services if the delay or failure was due to any cause beyond the Delta-T's reasonable control.

Service, Repairs and Spares

Users in countries that have a Delta-T distributor or technical representative should contact them in the first instance.

Spare parts for our own instruments can be supplied and can normally be despatched within a few working days of receiving an order.

Spare parts and accessories for products not manufactured by Delta-T may have to be obtained from our supplier, and a certain amount of additional delay is inevitable.

No goods or equipment should be returned to Delta-T without first obtaining the return authorisation from Delta-T or our distributor.

On receipt of the goods at Delta-T you will be given a reference number. Always refer to this reference number in any subsequent correspondence. The goods will be inspected and you will be informed of the likely cost and delay.

We normally expect to complete repairs within one or two weeks of receiving the equipment. However, if the equipment has to be forwarded to our original supplier for specialist repairs or recalibration, additional delays of a few weeks may be expected. For contact details see below.

Technical Support

Users in countries that have a Delta-T distributor or technical representative should contact them in the first instance.

Technical Support is available on Delta-T products and systems. Your initial enquiry will be acknowledged immediately with a reference number. Make sure to quote the reference number subsequently so that we can easily trace any earlier correspondence.

In your enquiry, always quote instrument serial numbers, software version numbers, and the approximate date and source of purchase where these are relevant.

Contact Details:

Tech Support Team
Delta-T Devices Ltd
130 Low Road, Burwell, Cambridge CB25 0EJ, UK
email: tech.support@delta-t.co.uk
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