User Manual for the

GP1/DL6 GSM Modem System

GSM-UM-1.1

Delta-T Devices

Notices

Copyright

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CE Conformity

Meets the intent of the EMC Directive 89/336/EEC.
See *GSM-BX1 & GP1-DL6 Network Regulatory Information. PDF*
in the **Product Documentation** folder of the **Delta-T Software and Manuals CD**.

Design Changes

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

User Manual Version: GSM-UM-1.1   Dec 4 2006

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and/or

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for connecting to
logger(s) via
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Introduction

The GSM Modem System provides battery powered GSM modem communications for GP1 and DL6 loggers. Three power options are available:

- Solar powered internal rechargeable lead-acid battery (**GSM-BX1/SP**)
- Internal lead-acid battery with timer (**GSM-BX1/IB**)
- Timer and cabling for an external lead-acid battery (**GSM-BX1/EB**).

The weatherproof box has an external connector for plugging in **GP1** or **DL6** loggers via the GP1 network cabling system. At least one network cable is required.

Cable glands are provided for:

- cable to external battery (**GSM-BX1/EB)**
- optional signal cable for triggering transmission of SMS text messages
- optional external antenna cable.

Inside are mounting points for the modem, battery, and solar regulator option.

A DIN rail with terminal connectors and a fuse holder is provided. It also takes the optional timer.

Antenna

If mobile phone reception is good the modem can be fitted with a stub antenna.
If reception is poor then the external antenna option will provide better reception.

Logger cabling

A GP1 network extension cable is required to connect a logger to the modem box.
A single GP1 logger may be connected via a type **GP1-EXT** extension cable.
Each DL6 logger requires at least a type **GP1/DL6-M8** cable.
Up to ten GP1 or DL6 loggers may be connected with suitable cabling.
These cables also distribute power from the Modem System battery to GP1 loggers.
See also: *Install Loggers* on page 19

Software

Once the Modem System is fully installed, each logger can be accessed, either from a PC with a suitable telephone link, using the **DeltaLINK-PC** software, or a GSM-enabled Pocket PC using **Pocket DeltaLINK**.
Modems supplied by us are pre-programmed - but you will have to purchase and install your own *data-enabled* SIM card in the modem.

A modem configuration utility **GSMConfig** is installed on your PC with DeltaLINK.
It can be used to set up **text messaging** or to **configure** the modem or **test** the modem.
The GSM modem can be configured to send a text message to a mobile phone, when triggered by a logger control relay. It requires a 2-core cable from the logger to the modem box DIN rail terminals.

Unpacking

Check your contents against your order and any packing lists.
All GSM Modem Box Systems include the Basic GSM Modem Box:

Basic GSM Modem Box

- Siemens TC35i modem
- Plastic Modem Box, sealed to IP66, fitted with:
  GP1 network cable connector (5 pole M8 female),
  3 cable glands for:
  > external battery or solar power cable,
  > optional signal cable for triggering transmission of SMS text messages,
  > and optional external antenna cable,

  PTFE breather, DIN rail with terminals and 3A fuse holder, Desiccant bag.
- PC-modem serial cable **GSM-RS-DB9** to configure the modem from a PC.

GSM Modem Box (solar power) type GSM-BX1/SP

In addition to the Basic GSM Modem Box, this
includes:

- 30W solar panel
- Solar Panel Mounting Bracket and U-bolts
- Solar regulator/charger
- 10Ah sealed lead acid battery.
- 2 m power cable with flying leads

GSM Modem Box (internal battery) type GSM-BX1/IB

In addition to the Basic Modem Box, this includes:

- 10Ah sealed lead acid battery.
- Timer

GSM Modem Box (without battery) type GSM-BX1/EB

In addition to the Basic Box and Modem, this includes:

- Timer

This does not include a battery or external battery cable.

Accessories

The following optional extras may also have been supplied:

External antenna for TC35i modem with 5m cable	GSM-ANT-1	
Internal stub antenna for TC35i modem	GSM-ANT-2	
Spares Kit	GSM-SK1	
Mounting Kit for GSM Modem Box	GSM-MK1	
Spare rechargeable 10 Ah lead acid battery	LBAT4	
Battery charger	LBC4	
Mains lead for battery charger	LBC4-ML-UK LBC4-ML-EU LBC4-ML-US	
Solar Panel power kit	GSM-SOL4	
GP1 comms and power extension cable XX = 1m, 5m, 10m, or 25m	GP1-EXT-XX	
GP1 control line cable	GP1-CC-100	
GSM external battery cable	GP1-EPC-02	
DL6 M12 cable to M8 connector	GP1/DL6-M8	
4-way GP1 network expansion block	GP1-EB/4	

Also required for all systems

You will also need to provide:
- *Data enabled* SIM card from a local mobile phone service provider
- GP1/DL6 extension and/or network cable(s) for your logger(s)
- GP1 and/or DL6 logger(s) running firmware v1.30 or later
- PC with a telephone modem, running DeltaLINK-PC v2.2 or later

See also the *Accessories* on page 8.

To obtain the latest DeltaLINK version

Link to http://delta-t.co.uk/software-download.html.

To Upgrade DeltaLINK-PC firmware

To upgrade your firmware, from the PC **Start** menu select **Programs, DeltaLINK-PC**, **Firmware Upgrade**, and follow the on-screen instructions.

Getting started

The Modem Box is shipped preassembled, apart from the battery, the antenna, and any external cabling.
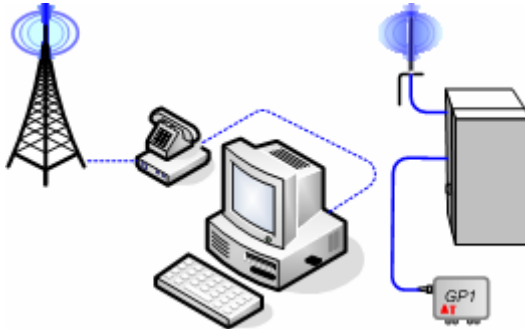
Set up at your bench first!

Use of the optional GSMConfig modem configuration software will require you to temporarily connect the PC directly to GSM Box with a serial cable.
So, if possible, set up and test the system next at your desk PC **before** installing it in the field.

Fit a SIM card

You must locally obtain and fit a data-enabled SIM card.

1. Obtain a **data-enabled** SIM card with a phone number.
2. Remove the modem from the GSM box by undoing two M3 x 35mm screws
3. Find the SIM card slot and press the adjacent button to eject the card holder.
4. Fit the data enabled SIM card
5. Refit the modem in the box.

Locate SIM card eject button

Install the antenna

Which antenna? Use internal antenna **GSM-ANT-2** where mobile phones work OK. If reception is poor try using external antenna **GSN-ANT-1** mounted high up and clear of obstructions.

Internal antenna
Screw the right angle stub antenna into the FME connector as shown, with the antenna vertical.

External antenna
Undo and extract the rubber O ring from the cable gland, Push it over the cable, and reassemble as shown.
Screw the FME connector into the modem. For optimum reception mount the antenna vertically and high up.

155mm

275 mm

31 mm

45 mm

29 mm

36 mm

Supply power to the modem

The modem will need power before you can configure, test or use it.
Unpack and fit the internal battery or your own external battery.

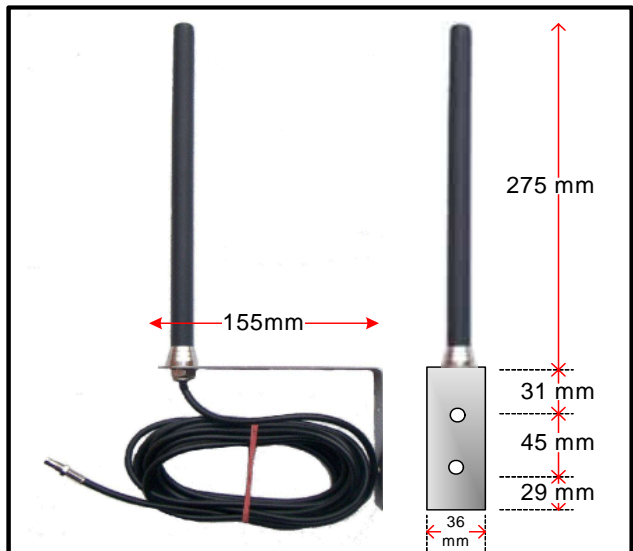For **wiring schematics** - see Wiring Diagrams on page 21

Use of the Timer

If using the Timer, temporarily set it ON, to provide
continuous power when setting up or testing the Siemens
GSM modem.

To turn the power on, toggle the **Manual** button on the
Timer until the red LED lights.

About the Timer

Battery power is wired via the Timer to provide intermittent
power to the modem.

Chose when and for how long you would like to
communicate with loggers,
e.g. once per day for one hour from 14:00.

See also Battery Life Considerations on page 20

For *wiring instructions* see the diagram on the side of the Timer.

For *programming instructions* see the separate *DIN rail Timer Instruction Manual.*

Notes:
The timer may also be used with the solar panel – possibly of value in regions where
sunlight is insufficient for your needs.
Text messaging cannot occur when modem power is off.
The timer is itself powered from the GSM modem battery but also has its own battery
back-up.

The power distribution at the DIN rail is also configured to provide continuous external
power for GP1 loggers. You may disable this if you like.
See: *How to disconnect the external power supply to GP1 loggers* on page 19
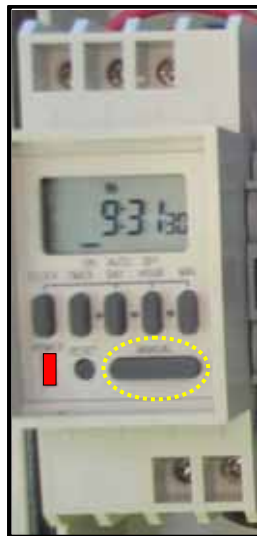
Configure, Test or Add Text Message to modem

This section describes how to use the GSM modem configuration software **GSMConfi**g to:

■ Configure the modem
■ Test your modem connection
■ Add a text message for sending to a mobile phone

Note: If your modems is supplied by Delta-T it will be preconfigured and ready to use. If you have no need for the text messaging option then you may skip this section and go to "Create a modem connection in DeltaLINK" on page 16.

To configure the modem:

You will need a PC with RS232 serial port or USB RS232 adapter.

1. Disconnect the modem from serial cable in the GSM System box and connect it directly to your PC serial port using PC-modem serial cable **GSM-RS-DB9**.
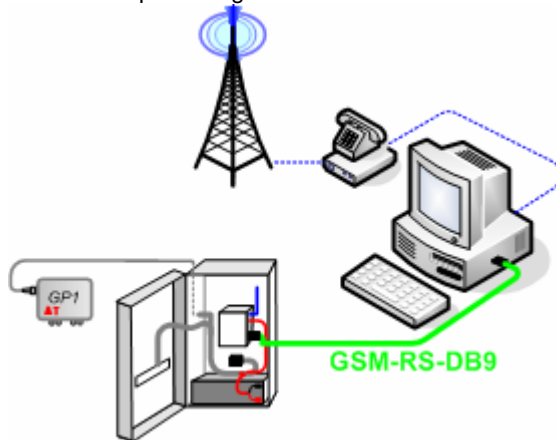
2. From the PC **Start** menu select **Programs, DeltaLINK-PC**, **GSMConfig utility**.
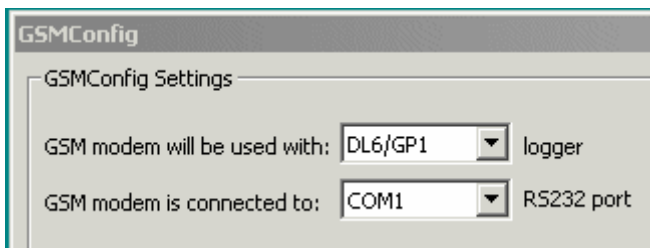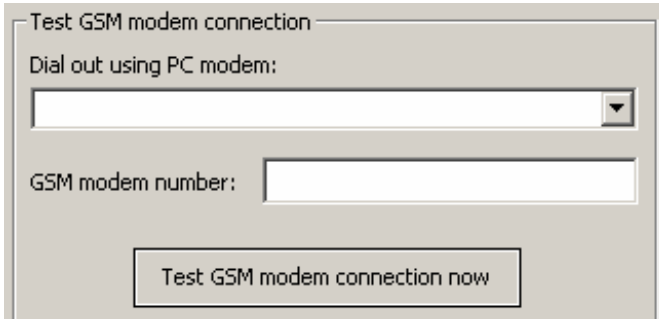
3. Set **GSM Modem will be used with** to **DL6/GP1.**
4. Set **GSM modem is connected to** the PC serial port that you are using.
5. Click **Configure modem now**.
   Click **Help** for additional on-screen instructions.

To test your modem connection:

Complete stage 1-4 on page 13 then

5. Connect your PC modem to a telephone line, enter connection details as shown:

6. Click **Test GSM modem connection now**
    Watch as the program runs through its test sequence and reports its progress.
    Click **Help** for additional on-screen instructions.
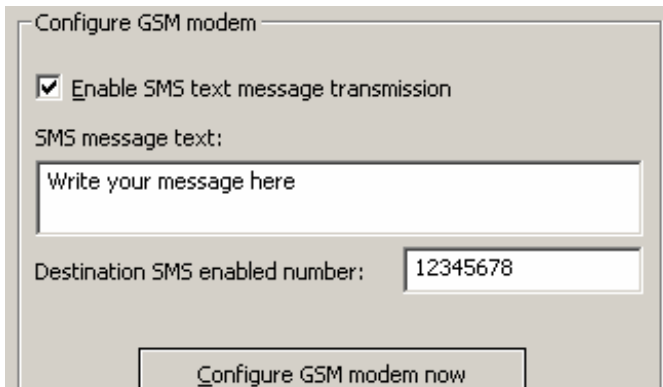
To set up text messaging:

The Modem System uses the logger's relay channel to trigger transmission of a text message to the mobile number (This section assumes you have programmed the message and number into the modem using **GSMConfig** as described above.)

A   Enable text messaging

Complete stage 1-4 on page 13 then

5. Click **Enable SMS text message transmission**, and enter text messaging settings.

6. Click **Configure GSM modem now.**
    Click Help for additional on-screen instructions.

B   Test the text message configuration

1.   Reconnect the GSM modem to the Modem System cable,
     and ensure it's powered up.
2.   Briefly connect together the two DIN rail terminals (green and yellow wires)
     e.g. with a piece of bent wire. This simulates a contact closure in the logger relay.
     Within a minute or two you should receive a text message at your mobile number.

C   Program the logger's relay

*Refer to the GP1 or DL6 Quick Start Guide and DeltaLINK online Help for information
about programming the logger.*
In a **Standard GP1** or **DL6 program**, enable the **Alarm relay** or **Advanced control
relay** option, and enter details in the Alarm or Control tab, and click on **Apply** to send
the program to the logger.

D   Connect the logger's relay

Connect the logger relay channel to the text message control lines (green and yellow)
in the modem box via 2 black DIN rail terminals as shown, using a 2-core signal cable.

2-wire control line from logger - signals modem to send text message
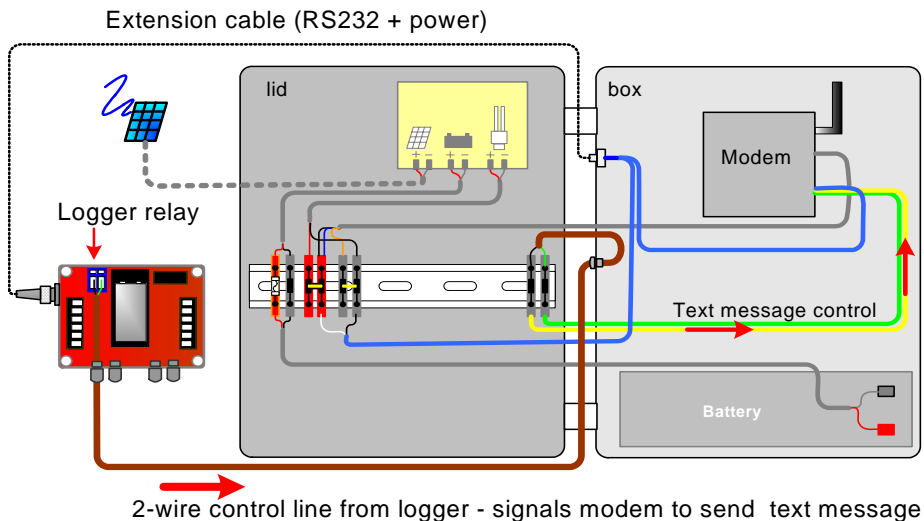
E   Test the program and relay connection:

Before starting logging:
1.   Connect the logger to your PC, start **DeltaLINK** and select the **Sensors** window
2.   Connect up and place sensors in conditions which should cause a text message
     transmission.
     You should hear the relay click and receive a text message shortly after.

Notes on Text Messaging behaviour

- *The modem will not send text messages if it is not powered!
  e.g. if using the Timer and the Timer is off.*

- *GP1 and DL6 logger's have one relay only, so if you use the relay to trigger text messaging you will not be able to use it for other control purposes – unless you wish to receive a text message each time the relay switches.*

- *When logging, the logger only checks the condition that controls the relay when a logging interval arrives.
  Normally, this system sends a single text message each time the condition becomes true. To send the same message repeatedly for as long as the condition remains true, select the **Advanced** control relay option and select the **Enable pulsing** option in the **Control** tab.*

- *You can't send different messages for different alarm conditions.*

Create a modem connection in DeltaLINK

Create a *connection* in DeltaLINK for each logger connected to the Modem System.
1. Connect a logger to the Modem System using a suitable extension cable.
   See also page 19
2. Start **DeltaLINK** and click **Cancel** when it tries to connect to a logger.
3. Select **File, New, Connection**.
4. In the **Connection** dialog, click **New**…
5. In the **Connection Properties** dialog, enter a descriptive name for your connection, e.g. "GP1 logger on 07890 123456" and select **Telephone modem** in the **Connect to logger using** list.
6. If you are intending to network more than one logger to the Modem System, enable **Networked**, and enter the logger's type and serial number.
7. In the **Details** tab, select the name of your PC modem, enter the telephone number of your Modem System, and click **OK**.
8. DeltaLINK will now dial and connect to your logger.

You can later select the connection that you have just created to connect to the same logger again.

Install Modem Box

All modem boxes are supplied with 4 bolts and brackets to attach the box to a plate or wall. For attaching to a post use the **Mounting Kit** type GSM-MK1.

The box may be bolted directly to a vertical surface via four M5 threaded brass inserts on the back of the box, (156mm apart horizontally and 253mm apart vertically).

Four stainless steel wall mounting brackets are also provided (as standard) to simplify mounting against a solid wall.

If using the solar charger note it must be mounted vertically.

If using the internal antenna, careful placement of the box may assist signal reception.

Mounting Kit for GSM Modem Box type GSM-MK1.

Use this, with the U-bolts provided, for attaching to a post or mast.

Install Solar Panel (option)

Warnings

Observe the warnings given in the solar panel guide and the Solsum solar charge controller.

Cover the panel before wiring it up to prevent electric shocks from bare wires.

Observe the polarity requirement of both the solar panel and the Solsum regulator.

Note the Solsum regulator provides diode and fuse protection for the panel but is not protected from the wrong polarity.

Mount the Solsum solar charge controller vertically.

This usually means ensure the Modem Box is vertical.

Showing a GP1 logger (at top), solar panel and GSM Modem Box, each fixed to a post using U-bolts and mounting brackets.

Considerations when mounting solar panels

Observe the warnings above, of course.

Tilt it to the angle of latitude, or in high latitudes up to 10 degrees more, to capture more light early in the day.

You may wish to place the panel to shield your GSM Modem Box and or logger from the sun.

Do not site an air temperature or RH sensor directly above the panel, rising hot air may distort ambient readings.
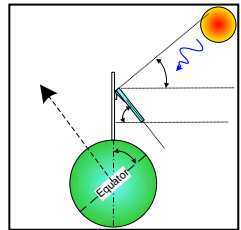
Assembly

Mounting bracket, bolts, cabling and U bolts are provided

- Assemble the two halves of the solar panel bracket with the bolts provided.
  See also: *SX20-40 Single Module Mounting Kit*
- Attach that to a mast (not provided)
- Add the solar panel,
  See also: Solar panel *Instruction Sheet* and a separate *Appendix* and *Wiring diagram* and *Warnings* on back of Solar Panel.
- Cover it to exclude light.
- Attach the power cable from the Solsum solar charger/regulator to the screw terminals on the back of the solar panel, as indicated in the wiring diagram on the back of the solar panel. (Brown=positive, blue=negative)
  See also: *Solar Charge Controllers* Instructions for the Solsum 6.6c

Install logger(s)

For a GP1 you will need a cable of type **GP1-EXT-xx** to connect to the Modem Box.
For a DL6 you will need a cable of type **GP1/DL6-M8**.

Connecting multiple loggers to the GSM Modem Box

The GSM modem can connect to up to 10 GP1 or
DL6 loggers via the GP1 network cable using the
4-way expansion block **GP1-EB/4** (right).
Factors to consider:

- the maxiumum permitted length of extension
  cable,
- the effect of multiple GP1 loggers and logging
  frequency on the GSM Modem Box battery life.

Network Cabling Options

GP1-EXT-xx
1, 5,10 or 25 m extension cable
5-pin M8 male, 5-core cable to M8 female

loggers

GSM-BX1/xx
GSM Modem Box

GP1-EB/4
4 way junction box.
5-pin M8 male, 2m 5-core
cable, four M8 female sockets
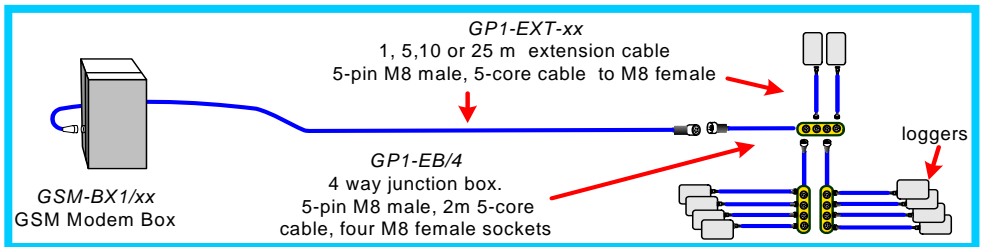
Example of a network cabling scheme with GSM Modem Box.

*See also: **Using multiple loggers on a Network**.*
*Location: From the **Start** menu select **Programs, DeltaLINK-PC, Document Library.***

Maximum permitted length for extension cables

The key factor is the **total cumulative cable length for all loggers** added together,
which can be up to 60m with the Siemens TC35i modem. So you could have one
logger at 60m, or two each on 30m, or ten on 6m each, and so on.

Effect of GP1 loggers on the GSM Modem Box battery life

GP1 loggers will take some power from the GSM Box battery even when not logging.
Their impact on battery life is shown under **Battery Life Considerations** on page 20.

How to disconnect the external power supply to GP1 loggers

The supply of external power to GP1 loggers via the external cabling network from the
GSM Modem Box battery can be disconnected at the DIN rail.
Disconnect the cable labelled External Power. It has "black" and "white" wires and is
clearly indicated in the **Wiring schemes** on pages 21 to 22.

Battery life Considerations

		Days Without Sun[1]			
		Data on demand[2]		2/24hr access slot[3]	
modem acitivity/day[4]		10 min	20 min	10 min	20 min
Loggers[5]	logging frequency				
0	n/a	21	19	97	57
1	1/hr	21	18	89	55
1	1/min	20	17	71	47
10	1/hr	18	16	53	39
10	1/min	12	11	21	19

This table may help you judge how frequently to log readings and download data. These are approximate figures; performance will depend on local factors.

Notes

1: Number of days the 10Ahr battery in the GSM Modem Box may last before it needs recharging.

It assumes 0.7 sun-hours (kilowatt-hrs/m^2/day) typical for mid Scotland
See also http://www.solar4power.com/map11-global-solar-power.html for maps of solar insolation.

Each logger is assumed connected to 2 ML2 sensors each taking 20 mA when read.

2: Modem and GP1 external cabling network continuously powered i.e. not using a timer.

3: Assumes timer is configured so that the modem is powered for 2 hours in every 24. External GP1 cabling network is powered continuously.

4: One day's worth of GP1 data (logged every 1sec) should download via GSM (i.e. at 9600 baud) in under 7 minutes. A full GP1 may take 26 minutes.

5: Number of GP1 loggers connected to the GSM Modem Box which are taking external power from the GSM Modem battery.
GP1 loggers take their power from the highest available voltage source. An external 12V battery will always be higher than their internal battery.
DL6 loggers cannot take external power and so have no impact.

External power to the GP1 loggers via the extension cabling may be disabled at the DIN rail in the Modem Box, leaving the loggers to rely on their internal batteries

Wiring Diagrams

Wiring scheme for GSM-BX1/SP… Solar Power
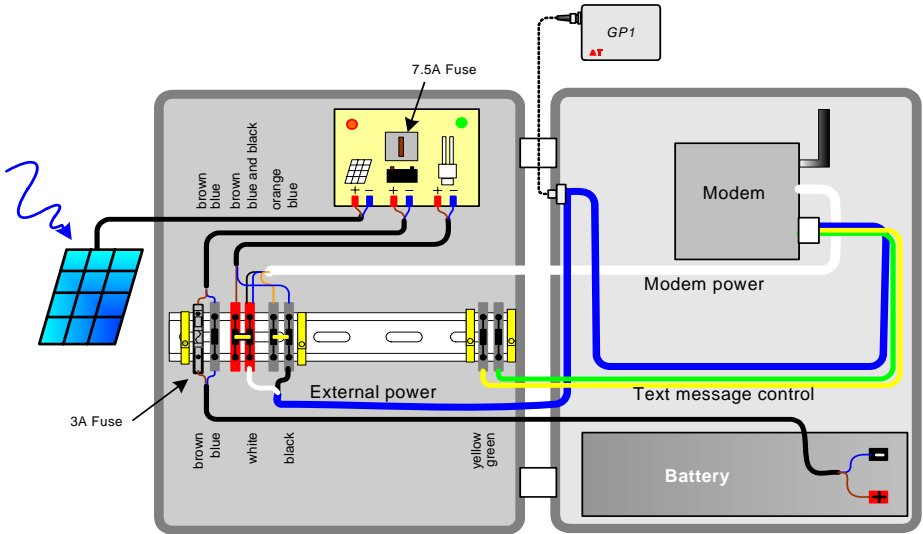
Wiring scheme for Solar Power and Timer
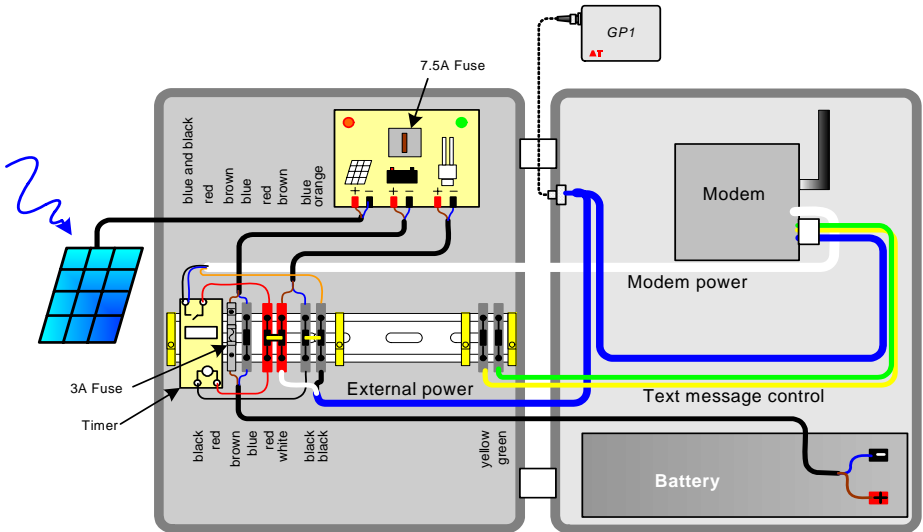
Wiring scheme for GSM-BX1/EB… External Battery

black and blue
red
red
red
orange

Modem

Modem power

External power

Text message control

Timer

black
red
brown
red
white
Blue and black
black

yellow
green

Battery

GP1-EPC-02
External battery cable
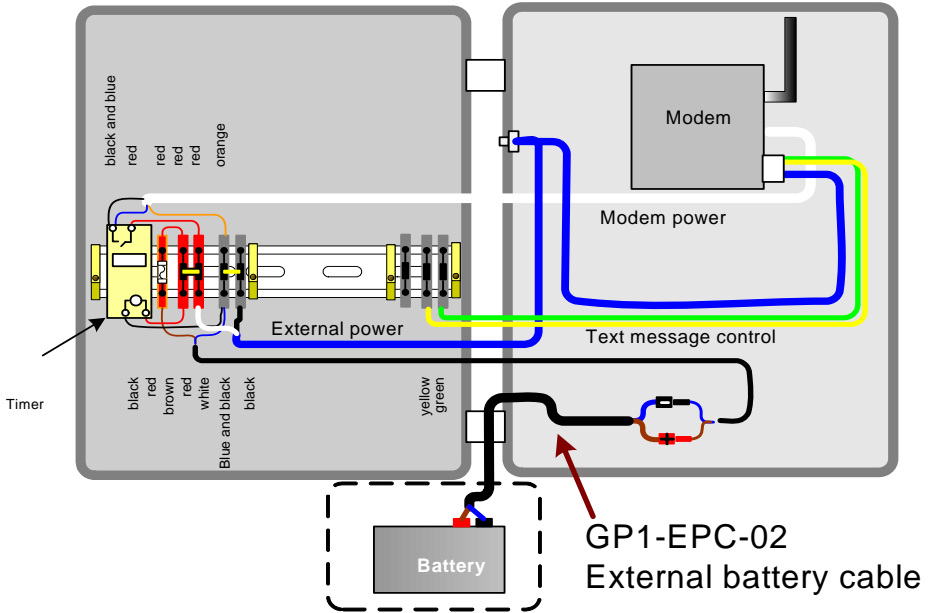
Wiring scheme for GSM-BX1/ IB…Internal Battery

black and blue
red
red
red
orange

Modem

Modem power

3A Fuse

Timer

External power

Text message control

black
red
brown
red
white
Blue and black
black

yellow
green

Battery
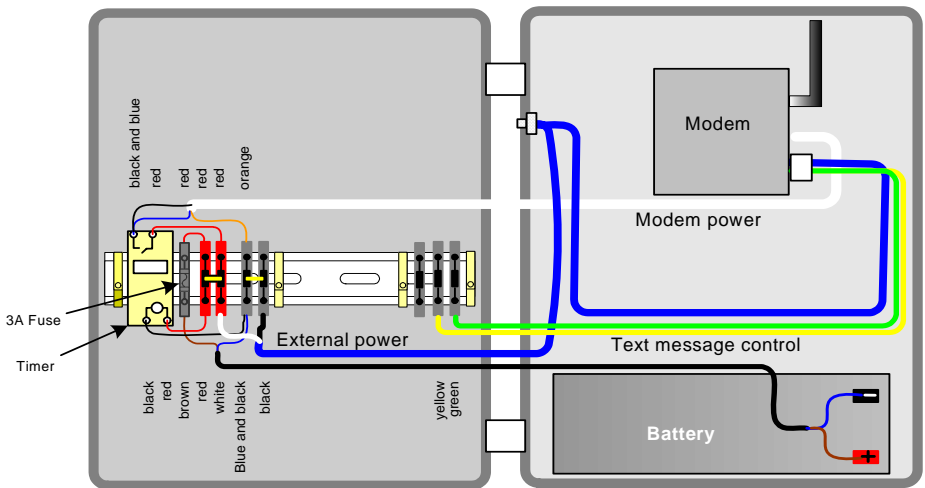
Other Documents

In DeltaLINK-PC Document Library
In particular see:
GP1 Network Quick Start Guide

📄	DL6 Control Panel, DeltaLINK and Timestamp Issues.pdf
📄	Dual rate soil moisture recording with DeltaLINK.pdf
📄	Product Usage.pdf
📄	Release Notes.PDF
📄	Using dial-up modems with DeltaLINK.pdf
📄	Using linearization table files with DeltaLINK.pdf
📄	Warranty, Service and Technical Support.pdf
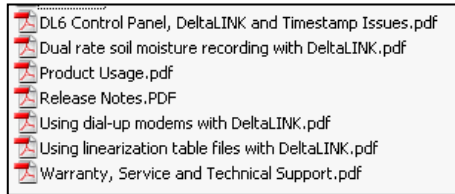
DeltaLINK Library Documents

See also the **Delta-T Software and Manuals CD**

Other manufacturers
The following documents and instructions are supplied with individual system components by the respective manufacturers (and may change without notice).

Solar Charge Controllers supplied with Solsum 6.6c

SX20-40 Single Module Mounting Kit Instructions SM-421A Issued with solar panel bracket.
Instruction Sheet and a separate *Appendix* issued with Solar Panel Wiring diagram on back of Solar Panel.

DIN Rail Timer Instruction Manual supplied with digital Timer.

Specifications

GSM Modem Box (solar power) GSM-BX1/SP	Solar powered Siemens TC35i terminal modem + in box with battery. 30W solar panel with mounting bracket, 2 m cable via solar regulator to 10Ah sealed lead acid battery, mounted with modem in plastic box (sealed to IP66, flame resistant to UL94-5VA, UV stabilised), fitted with 5 pin M8 female connector and cable harness for GP1 and DL6 loggers, 3 cable glands for (1) optional GP1 relay-modem control signal for text messages, (2) external solar panel (3) optional external modem antenna, and breather for battery outgassing. DIN rail and terminals. Desiccant bag. 2m modem configuration cable GSM-RS-DB9. NB Antenna, type GSM-ANT-1 (external) or GSM-ANT-2 (internal) must be ordered separately. Does not include mounting post or mast for solar panel
GSM Modem Box (int battery) GSM-BX1/IB	Siemens TC35i terminal modem in box with 10Ah sealed lead acid battery with timer (note 2) to preserve battery life. Mounted in plastic box (sealed to IP66, flame resistant to UL94-5VA, UV stabilised), fitted with 5 pin M8 female connector and cable harness for GP1 and DL6 loggers, 3 cable glands for (1) optional GP1 relay-modem control signal for text messages, (2) optional external solar panel (3) optional external modem antenna, and breather disc for battery outgassing. DIN rail with terminals and 3A fuse. Desiccant bag. 2m modem configuration cable GSM-RS-DB9. NB Antenna, type GSM-ANT-1 (external) or GSM-ANT-2 (internal) must be ordered separately.
GSM Modem Box (without batt) GSM-BX1/EB	Siemens TC35i terminal modem in box with timer (note 2) to preserve external battery life. Mounted in plastic box (sealed to IP66, flame resistant to UL94-5VA, UV stabilised), fitted with 5 pin M8 female connector and cable harness for GP1 and DL6 loggers, 3 cable glands for (1) optional GP1 relay-modem control signal for text messages, (2) external battery (3) optional external modem antenna, and breather for battery outgassing. DIN rail with terminals and 3A fuse. Desiccant bag. 2m modem configuration cable GSM-RS-DB9. NB Antenna, type GSM-ANT-1 (external) or GSM-ANT-2 (internal) must be ordered separately. See also: External battery cable (optional accessory)
Note 1: **Antennae**	NB Antenna, type GSM-ANT-1 (external) or GSM-ANT-2 (internal) must be ordered separately - for Siemens TC35i modem, FME connector. For use in areas where mobile phones work OK. If reception is poor try using external antenna with ground plane mounted high up and clear of obstructions

Note2: **Timer**	Programmable digital 7-day timer with LCD. Prolongs battery life by only turning on modem when needed. Turn on modem just once a week or up to 8 times a day, and for durations of 1 minute to 24 hours. Lithium battery for internal backup. Operates from -10 to +55C.
Note 3: **GP1 Extension Cabling**	GP1 cabling extension system connects to the modem box. It permits serial comms with multiple GP1 and DL6 loggers, and also supplies power but ONLY to GP1 loggers, not DL6s. Minimum cable requirement for GP1 is 1m extension cable. Minimum cable requirement for DL6 is 1.5m M8 to M12 DL6 comms cable type GP1/DL6-M8
Note 4: **Modem Configuration Software**	All modem systems, GP1 and DL6 loggers are supplied with modem configuration software on CD, (also available from our website). To configure your modem you will need modem configuration cable GSM-RS-DB9.
Note 5: **Text messaging**	The cable harness includes 2 leads, green and yellow, connected to DIN rail terminals for triggering GSM modem text messaging via a logger relay. To use it the user needs to supply an external 2-core signal cable from logger to modem box.
Note 6 **Mounting**	The box may be bolted directly to a vertical surface via four M5 threaded brass inserts on the back of the box, (156mm apart horizontally and 253mm apart vertically). In addition four stainless steel wall mounting brackets & bolts are provided to simplify mounting against a solid wall. For attaching to a post you need the Mast Mounting Accessory.
Internal antenna for TC35i modem GSM-ANT-2	Quad band right angle stub mount antenna for Siemens TC35i terminal modem, FME connector. For use in areas where mobile phones work OK.
External antenna for TC35i modem GSM-ANT-1	External quad band GSM modem aerial with wall mounting bracket and 5m coaxial cable, for remote mounting of antenna, FME female connector on cable for TC35i modem. For use in areas where mobile phone reception may be more difficult.
Mounting kit for GSM Modem Box GSM-MK1	Fixings for mounting GSM Modem Box onto tubular masts or poles.
Spares kit for GSM Modem Box GSM-SK1	3 off 3A fuses for DIN rail. 3 off 7.5A fuses for charger/regulator. 2x 25 gm activated clay desiccant bags, 50cm spiral wrap, 5 cable ties. Spare DIN rail cable, 3 blanking plugs for cable glands.

Rechargeable battery LBAT4	12V 10Ah sealed lead acid battery with spade terminals. Supplied as standard with GSM-BX1/IB and GSM-BX1/SP Modem Box.
Battery charger for LBAT4 LBC4	Mains battery charger for 10Ah lead acid battery. Input voltage range 100 -240V AC 3A. For indoor use only. NB Suitable mains connection lead must be ordered separately.
Solar panel for GSM modem box GSM-SOL4	30W solar panel with mounting kit including U-clamps, regulator/charger and cabling for connection to GSM Modem Box. Supplied as standard with GSM-BX1/SP Modem Box. NB Does not include mounting post or mast.

Environmental specifications

	Min °C	Max °C	IP rating	Notes
GSM Box PBT/PC blend, UV stabilised	-40	70	IP66	Protected against dust and temporary flooding
TC35i modem	-20	55	IP40	5-80% RH non condensing
Lead acid battery				
Charge	0	40		25-85%RH
Discharge	-15	50		
Storage	-15	40		
Timer	-10	55	None	Indoor use only
Solar Panel	-40	85	IP54	Junction box IP54
Solar charger/regulator	-25	50	IP22	
Extension Cabling				
Static	-30	90	IP68	Black PUR cable
when flexing	-5	90	IP68	

Electromagnetic Compatibility (EMC)

This product meets the intent of the EMC Directive 89/336/EEC.
For a certificate of conformity see:
GSM-BX1 & GP1-DL6 Network Regulatory Information.pdf in the
Product Documentation folder of the ***Delta-T Software and Manuals CD***.

Care and Safety

Batteries

Any external lead acid batteries (i.e. external to any data logger) should have an in-line 3A fuse to protect the GP1 network extension cables.

Only use one external battery. The GSM modem, including any GP1 network should never have more than one battery connected (one may be present in the GSM modem box!)

Only use our approved lead acid batteries (which minimise outgassing) in the GSM box. Other lead acid batteries should be mounted together with the regulator/charger in a separate well-ventilated enclosure provided by the user.

Do not charge any external battery (including one in the GSM modem box) via any of the M8 to M8 5-core extension cables (to protect them from any accidental short circuit currents).

Do not power the GSM modem via any M8 to M8 5-core extension cable (The modem may use 2-3A on start up).

Solar power

To prevent shocks **cover the solar panel** before connecting or disconnecting wiring.
The solar regulator/charger must be installed vertically for correct operation.
The solar panel wires MUST have the correct polarity (brown + and blue -)

Desiccant

A desiccant bag is provided with the GSM box to buffer humidity changes inside the box and prevent condensation. Replace or regenerate this annually.

Technical Support

Terms and Conditions of sale

Our Conditions of Sale (ref: COND: 1/00) 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 our 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 supplying replacement 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, we much prefer to have such returns discussed with us in advance and we may, at our 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, our 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 our 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 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 from our works. These can normally be despatched within a few working days of receiving an order.

Spare parts and accessories for sensors or other 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 agreement of Delta-T or our distributor.

On receipt at Delta-T, the goods will be inspected and the user informed of the likely cost and delay. We normally expect to complete repairs within a few working days 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.

Technical Support

Technical Support is available on Delta-T products and systems. Users in countries that have a Delta-T Distributor or Technical Representative should contact them in the first instance.

Technical Support questions received by Delta-T will be handled by our Tech Support team. Your initial enquiry will be acknowledged immediately with a "T number" and an estimate of time for a detailed reply. Make sure to quote our T 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

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