



# GSM TC35i Modem Unit

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## 1. INTRODUCTION

This GSM Modem Unit is designed to protect and control a Siemens TC35i GSM modem for use with a Skye MiniMet weather station or DataHog datalogger.

There are several power options for the GSM modem unit, each described in detail in the following chapters. In brief, the unit can be powered by a mains supply or alternatively by a 12V supply in remote installations. A standard 12V vehicle battery can be used alone, or with a solar power recharge system for maintenance free operation.

Usually the GSM modem is active 24 hours a day, enabling the user to communicate at any time. In the UK we are able to offer a power saving option which consists of a telephone activator device (pager). The pager can be called at any time to switch on power to the TC35i modem for a set period chosen by the user.

We advise that the PC which dials up the GSM Modem unit and Skye datalogger is fitted with a good quality, Hayes compatible hardware modem. Cheaper 'home /internet' use modems can be unreliable in unattended use and may be the cause of data communication errors.

## 2. INSTALLATION

The Siemens TC35i modem is for use with a 900 or 1800 MHz GSM cellular telephone system only. An airtime contract with your local network provider is required, this contract must have a Data telephone number (this is sometimes in addition to a Voice and Fax number, or can be a Data only type contract). A SIM card is required with the contract, no hardware or handset is needed, the TC35i modem is your hardware.

Check with the network provider that the Data service uses RLP (Radio Link Protocol) and that it is non-transparent communication. This is important for error-free data communication.

Before installing the airtime contract SIM card in the TC35i modem, please make sure all power to the unit is off. Open the lid of the GSM Modem Unit by unscrewing the four corner screws. Locate the small 'black box' which is the Siemens TC35i modem. There is a small black tray marked SIM on the side of the TC35i modem itself. Push the little yellow button beside it to release the tray, insert the SIM card (it will only go in one way) and replace the tray, pushing fully home. Carefully replace the clear lid, checking the 'O' ring seal is unobstructed, and tighten the four retaining screws.

Detailed installation instructions with diagrams for positioning the entire GSM Modem Unit on a mast or pole can be found in the instruction manual entitled 'Installation Manual for DataHogs and MiniMets'.

**IMPORTANT** - when installing do not connect the battery or switch on mains power until last. Applying power to the TC35i modem when there is no aerial attached cause damage to the modem.

Once attached to the pole or mast, ensure that all appropriate cables are fully connected to their respective fittings (aerial, datalogger, solar panel etc. and battery or mains power last of all,) not forgetting to make sure that all cable gland exits from the base of the housing have been tightened. Secure all excess cable to prevent movement and chafing.

The housing itself has a waterproof 'O' ring seal on the clear lid. When removing and replacing this lid, ensure no dirt, grit or other obstruction can damage the 'O' ring and its sealing properties. It is also important not to trap any water or moisture inside the box, so avoid removal of the lid in wet weather if possible.

Once the unit has been initially set up, it should automatically continue to function, unattended, without problem.

### 3. INITIAL SET UP OF POWER SUPPLY OPTIONS

#### 3.1 24 Hour Operation

In most cases the GSM unit constantly powers the TC35i modem so that it remains active 24 hours a day, for access at any time. This means that the modem is on 'standby' to receive a call at any time.

The power option link should be set to short Jumper 2 for 24 hour operation, please see Figure 2 for details. This should have already been set in factory ready for your use.

This is true of mains powered systems, 12V battery powered systems or solar powered systems. Once the installation is complete and power is applied, no further action is necessary.

#### 3.2 Low Power Telephone Activated Operation (UK option only)

This low power GSM option incorporates a telephone pager device. Each time the pager is telephoned, power to the TC35i modem is activated automatically for a short time. This enables the user to contact the datalogger any time, day or night, with total flexibility, whilst not requiring to keep the modem powered and on 'standby' 24 hours a day.

The power option link should not be set to short any Jumper for Low Power operation, please see Figure 2 for details. This should have already been set in factory ready for your use.

The user can choose how long he wishes the modem to be active for, after the initial pager call. Settings of 15 minutes, 30 minutes or 1 hour can be chosen.

To set the desired activation period, a second electronic Jumper link must be positioned appropriately. Firstly, open the lid of the GSM housing unit. There is a label along the inside of the right hand side of the box (see Figure 1).

Half way along the label is a section marked PAGER 'ON' / TEST PERIOD LINK SETTINGS. Below this section of the label, on the electronics board, are six gold pins with a blue plastic link connector across two of the pins. Position the blue link connector as shown in the label diagram to select the chosen 'pager on' time period.

Carefully replace the GSM housing lid, checking the 'O' ring is clear, and tighten the four retaining screws.

## 4. SYSTEM CHECK PROCEDURE

After initial installation and set up, it is advisable to make a check that the system is operating correctly before returning to the office and testing via the PC.

### 4.1 24 Hour Operation

In this standard mode the system will become active as soon as the power is applied so it is important that all other connections are made before power is finally switched on, or the battery finally connected.

Open the lid of the GSM Modem Unit, check for a red LED light in the bottom right hand corner of the electronics board. This LED is also marked on the label fixed to the right hand side of the GSM housing box, as MODEM ACTIVE WHEN LIT (see Figure 1).

When this red LED is lit, the modem is powered and active, ready for remote communication. Try telephoning the GSM data number to connect to the weather station. If possible, get a colleague to dial from the office PC. If not, dial manually and listen for a series of fax-like noises as the modem tries to communicate. Do n't forget to hang up!

Carefully replace the GSM housing lid, checking the 'O' ring is clear, and tighten the four retaining screws.

If it is necessary to dismantle the system in the future, do the reverse of the installation and disconnect the battery or mains power supply before disconnecting any other connection. As soon as power is removed the red LED 'modem active' light will go out.

### 4.2 Low Power Telephone Activated Operation (UK option only)

Firstly, open the lid of the GSM Modem Unit. Check that the aerial is properly attached and the mains power or 12V battery is connected before attempting to switch power on to the system.

In the centre of the electronics board are two push buttons, one blue (START) and one red (CANCEL).

The blue START button initiates the system and the modem will be powered and switched on. The time the modem will remain active is set by the same blue link connector used to set the pager on activation time (see Section 3.2.)

The red CANCEL button deactivates the system and will power down and switch off the modem.

When the blue START button is pressed, the red LED light in the bottom right hand corner of the electronics board will light up. This LED is also marked on the label fixed to the right hand side of the GSM housing box, as MODEM ACTIVE WHEN LIT (see Figure 1).

When this red LED is lit, the modem is powered and active, ready for remote communication. Try telephoning the GSM data number to connect to the weather station. If possible, get a colleague to dial from the office PC. If not, dial manually and listen for a series of fax-like noises as the modem tries to communicate. Do n't forget to hang up!

Carefully replace the GSM housing lid, checking the 'O' ring is clear, and tighten the four retaining screws.

NOTE - NEVER disconnect any cables, plugs or connectors when the red 'MODEM ACTIVE' LED is lit. This could lead to permanent damage of the TC35i modem unit. Use the red CANCEL button to deactivate the modem before disconnecting.

## 5. 12V BATTERY POWER SUPPLY CHECK

Where applicable, it is advisable to occasionally check the status of the 12V battery. This can be done quickly and easily in the field. (It is also possible to check battery status remotely via the PC, please see software manual for details).

At the base of the GSM modem unit box are 4 cable inputs and a small black button. Press and hold the black button, while viewing the vertical column of coloured LED lights through the centre of the clear lid.

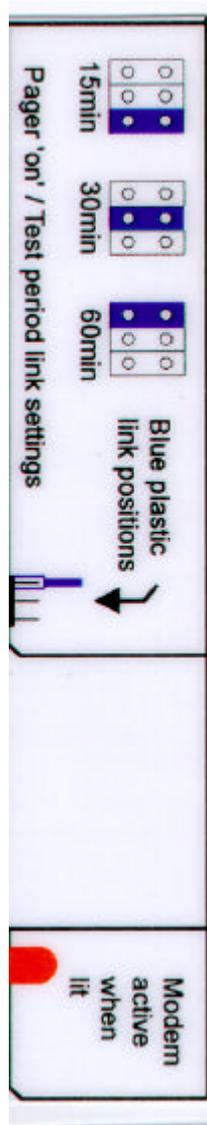
If the LED display lights show green, the battery is well charged and the system will continue to operate normally.

If the LED display shows orange or red, the battery requires charging or replacing. If a solar panel is fitted, check the cable connecting the panel to the GSM housing for damage. If the battery is several years old, it may simply need replacing.

If the LED display does not light up, either the battery requires charging or replacing, or perhaps the white cable running from the battery to the GSM unit may be damaged.

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FIGURE 1 - Label as on right hand side inside GSM Modem Unit



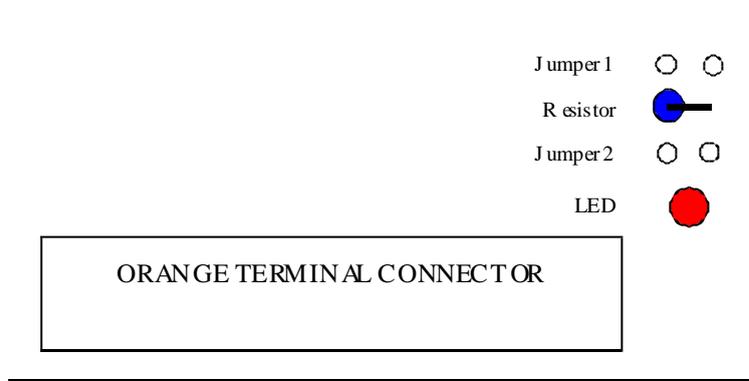
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## FIGURE 2 - Modem Power Control

The GSM Housing box encloses the GSM modem itself, plus electronics for controlling the modem, the power supply and solar power regulator.

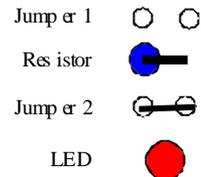
There are 'power on' options for timed operation, permanently on or permanently off. These 3 options are controlled by a set of jumper pins on the PCB as shown below.

First locate the 2 sets of jumper pins just above the LED marked 'modem on when lit' in the bottom right hand corner of the box, next to the large orange terminal connector. There is a black jumper provided to enable a short across the jumper pins as required.



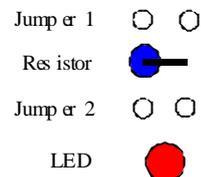
### 24 HOUR OPERATION

Power to the GSM modem is permanently ON when Jumper 2 is shorted:



### LOW POWER TELEPHONE ACTIVATED OPERATION (UK ONLY)

Power to the GSM modem is in TIMER MODE (available only when a pager or clock is fitted) when Jumper 1 or 2 are NOT shorted:



### POWER PERMANENTLY OFF

Power to the GSM modem is permanently OFF when Jumper 1 is shorted: This option is useful for servicing etc.

