

Installation and user's guide

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**GSM8i 3G and GSM8i RF 3G**

## Quick Guide

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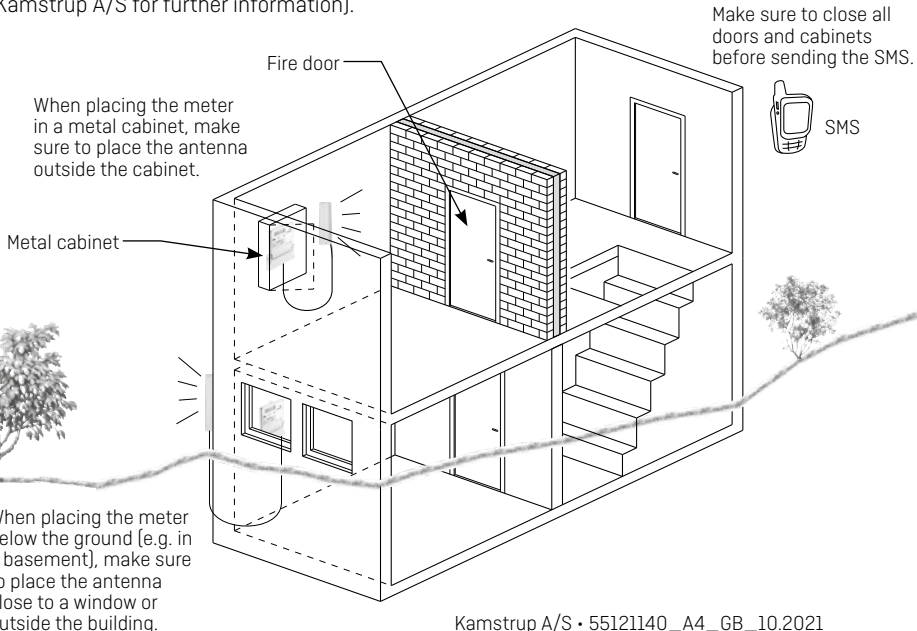
- 1 Read the signal strength on the module's Light Emitting Diodes (LEDs) (Min. two must be switched on).
- 2 If the signal strength is below 2, an external antenna must be installed\*.
- 3 The external antenna must be placed in a location that optimises the reception of the signal. Change the position of the antenna until the best position has been found.
- 4 Before leaving the installation, test the signal strength by SMS (=signal#). Make sure that the meter cabinet and doors are closed before sending the SMS.

\* **An external Triangle antenna must always be mounted on GSM8i RF 3G (Order No.: 6699407 or 6699408)**

## Tips

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- Always install an external antenna when installing the unit in a metal cabinet. The antenna must be placed outside the cabinet.
- Use dual-band GSM antennas to optimise the performance.
- Note that fire doors, concrete and metal plates disturb and weaken the GSM signal.
- It is possible to order directional antennas for areas with very poor signal conditions (please contact Kamstrup A/S for further information).



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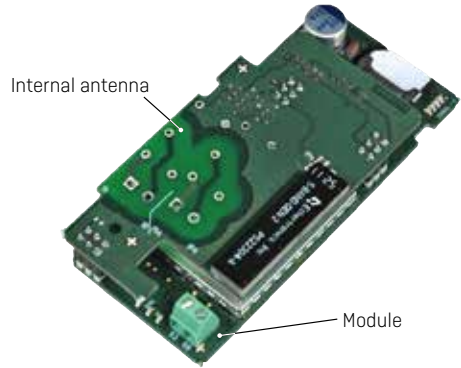
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# 1 Description

## 1.1 Description of GSM8i 3G

The module is designed for mounting in Kamstrup electricity meters.

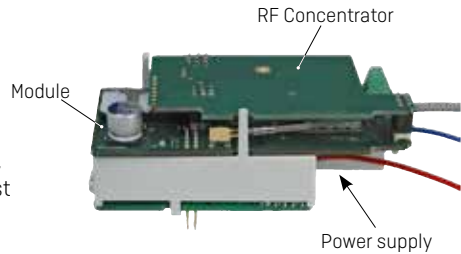
- The module supports both 2G [GSM/GPRS] and 3G [UMTS/HSPA]
- Integrated solution with mounting in the meter's module area.
- Plug-and-play installation with clear indication of the signal strength
- Status/pulse input
- SMS reading of meter and signal strength
- Internal antenna.



## 1.2 Description of GSM8i RF 3G

The GSM8i 3G module can be extended by a complete RF Concentrator. This solution requires an extra power supply and an RF Concentrator module.

However, it is not possible to use the internal antenna when mounting the RF Concentrator and, for this solution, an external Triangle antenna must always be used.



## 1.3 Using GSM8i 3G

The GSM8i 3G module is used in the following meters:

Top number	Article No.	Function	Meter types
681xxxxxxxx	6817xxxxxxxx	Base module	Kamstrup 162 from generation L Kamstrup 382 from generation L Kamstrup 351 from generation B
681xxxxxxxx	6818xxxxxxxx	Base module with RF Concentrator	Kamstrup 162 from generation L Kamstrup 382 from generation L Kamstrup 351 from generation B

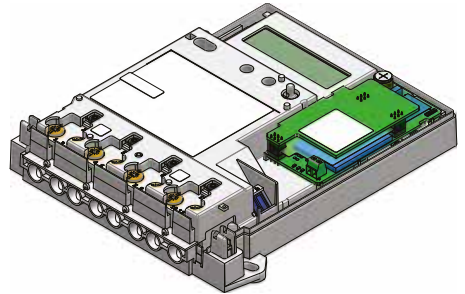
## 2 Mounting GSM8i 3G

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GSM8i 3G, article number 6817xxxxxxx, is supplied via the module connector, and it is prepared for the mounting of an external antenna.

### 2.1 Mounting order

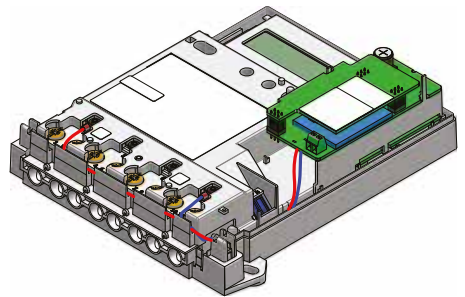
- 1 Dismount the top cover of the meter.
  - 2 Insert the SIM card [see chapter 5 "SIM card", page 8].
  - 3 Place the module in the meter's module area [please check that the eight module pins are all plugged in].
  - 4 When the two diodes in the middle of the module stop flashing, the signal strength is read on the indicator [see paragraph 4.2.4 "Signal strength indicator", page 7].
  - 5 If the signal strength is not acceptable, mount an external antenna [see chapter 6 "Mounting of external antenna (to be ordered separately)", page 8].
  - 6 Before leaving the installation, check the signal strength by sending an SMS [see chapter 10 "SMS commands", page 16].
- If the module does not indicate normal operating conditions (such as sufficient signal strength), refer to chapter 9 "Error detection help", page 15.



## 3 Mounting of GSM8i RF 3G

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GSM8i RF 3G, article number 6818xxxxxxx, is supplied from the meter's phases and thus differs from the GSM8i 3G base module, and an external Triangle antenna must always be mounted.



### 3.1 Mounting order

- 1 Dismount the top cover of the meter.
- 2 Insert the SIM card (see paragraph 5.1 “Mounting the SIM card”, page 8)
- 3 Place the module in the meter’s module area (please check that the eight module pins are all plugged in). Mount the 230 VAC main supply wires as shown in paragraphs 8.2 to 8.6 - please notice the meter type. Be careful to lead the wires as shown on the drawings.
- 4 Mount the external antenna, see chapter 6 “Mounting of external antenna (to be ordered separately)”, page 8.
- 5 When the diodes on the module stop flashing, the signal strength is read on the indicator (see paragraph 4.2.4 “Signal strength indicator”, page 7).
- 6 If the signal strength is acceptable, mount the top cover of the meter. Avoid jamming the antenna cable.
- 7 Before leaving the installation, check the signal strength by sending an SMS (see chapter 10 “SMS commands”, page 16).  
If the module does not indicate normal operating conditions (such as sufficient signal strength), refer to chapter 9 “Error detection help”, page 15.

## 4 Light Emitting Diodes

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The Light Emitting Diodes (LEDs) must provide the installer with sufficient knowledge to make a good installation without using external tools.

**Note that all diodes will turn off after 10 min.  
They can be reactivated by pushing the test button.**

### 4.1 Positioning of LEDs



## 4.2 Start-up

### 4.2.1 Is checking the SIM card



### 4.2.2 Is connecting to the network



### 4.2.3 Connected to 2G/3G network and meter

The network to which the module is connected, 2G and/or 3G, appears from the diodes at the bottom of the module. More than one diode can be turned on. Furthermore, the red METER diode flashes if there is no connection between meter and module because the module has not been inserted correctly.



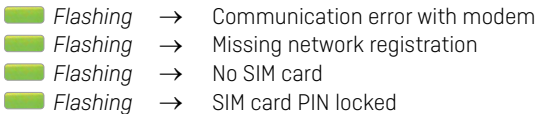
### 4.2.4 Signal strength indicator

When the signal strength is less than 2, an external antenna must be mounted. If an external antenna has already been mounted, it should be repositioned to obtain the required signal strength.



### 4.2.5 Error indication

If one of the diodes flashes, it means the following:



### 4.2.6 External antenna

When mounting an external antenna, the Ext Ant diode turns on. For further details, see chapter 6 "Mounting of external antenna (to be ordered separately)", page 8.



EXT ANT

**Note that all diodes will turn off after 10 min.  
They can be reactivated by pushing the test button.**

## 5 SIM card

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### 5.1 Mounting the SIM card

The unit can be ordered with the SIM card mounted from the factory. Please check that the card has been inserted. The telephone number of the card appears from a label on the side of the module. Kamstrup A/S cannot be held responsible for theft and misuse of SIM cards from GSM8i 3G units.

**When the SIM card holder is opened, the supply to the SIM card is cut off. When the SIM card has been inserted correctly and the holder is closed, the module will restart automatically.**

If the unit is supplied without a SIM card, make sure that it is inserted before using the unit.

The SIM card holder is opened by pushing the bright holder back and carefully tipping up the holder. Next, place the SIM card with the “cut-off” corner in the top left side and with the contacts facing the PCB.



### 5.2 SIM card requirements

The SIM card must fulfil the following requirements:

**3G/GSM/GPRS, DATA/SMS-9.6kb V110,  
PIN code must be disabled, no voice and no pre-paid card can be used.**

## 6 Mounting of external antenna (to be ordered separately)

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**An external antenna must always be mounted on GSM8i RF 3G!**

External antennas with DC resistance between the inner and outer conductors of 10K ohms or less are detected automatically. This applies to the following antennas:

- Mini Triangle antenna [order No. 6699448]
- Triangle antenna [order No. 6699407 or 6699408]
- Directional antenna [order No. 6699456]

When using other antennas, the external antenna is selected manually. This is done in the following way:

By default, the internal antenna has been selected:

The EXT ANT Light Emitting Diode is switched off:

Antenna selection	Button push	EXT ANT Light Emitting Diode
Select external antenna	Push twice	On
Deselect external antenna	Push three times	Off

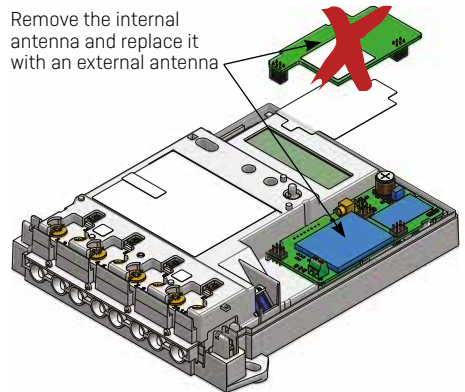
## 7 External antenna on GSM8i 3G

Connect the external antenna to the connector on the module. Be careful to hear a “click” before the two connectors are connected correctly. Place the antenna cable inside the plastic frame of the module and lead the cable out through the cable channel at the bottom of the electricity meter. See picture below.

Pay special attention not to use any tools when mounting the external antenna.

The internal antenna must not be mounted together with the external antenna and must therefore be removed.

Remove the internal antenna and replace it with an external antenna



### IMPORTANT

The external antenna must be mounted as far away from the installation as possible (min. 30 cm). To ensure that the external antenna is mounted in such a way that it optimises the reception conditions, the signal indicator on the module must be followed (see chapter 4 “LEDs”, page 8). Change the position of the external antenna until the best position has been found.

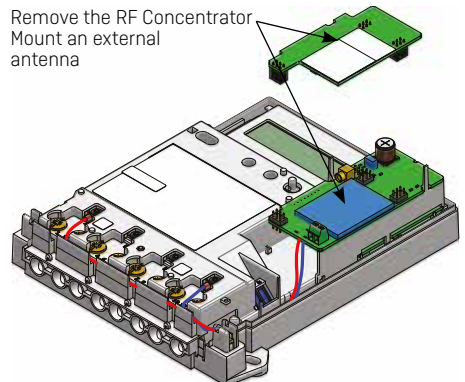
## 8 External antenna on GSM8i RF 3G

Connect the external antenna to the connector on the module. Be careful to hear a “click” before the two connectors are connected correctly. Place the antenna cable inside the plastic frame of the module and lead the cable out through the cable channel at the bottom of the electricity meter. See picture below.

Pay special attention not to use any tools when mounting the external antenna.

The RF Concentrator must be remounted when the external antenna has been mounted.

Remove the RF Concentrator  
Mount an external antenna



### IMPORTANT

The external antenna must be mounted as far away from the installation as possible (min. 30 cm). To ensure that the external antenna is mounted in such a way that it optimises the reception conditions, the signal indicator on the module must be followed (see chapter 4 “LEDs”, page 8). Change the position of the external antenna until the best position has been found.

**Do not mount the external antenna inside cabinets made of metal or other materials that disturb the signal.**

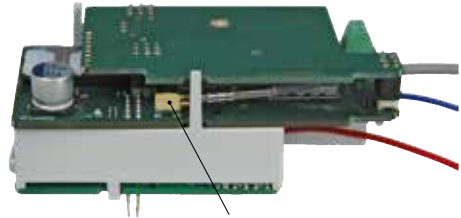
### 8.1 Antenna for GSM8i RF 3G

Always install an external antenna on the GSM8i RF 3G module, and the antenna must be of the type *Triangle* from Kamstrup. Order No. 6699407 or 6699408.

The Triangle antenna covers all the frequency areas for 2G, 3G and RF, and it is therefore the only antenna that can be used for this module.



Triangle antenna for GSM8iRF 3G

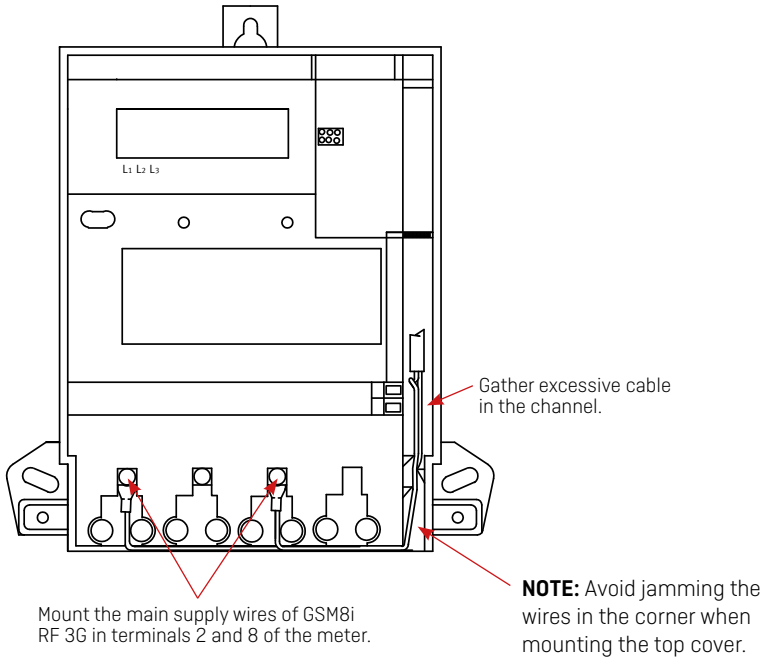


Mounting the Triangle antenna

### 8.2 Mounting GSM8i RF 3G in Kamstrup electricity meters

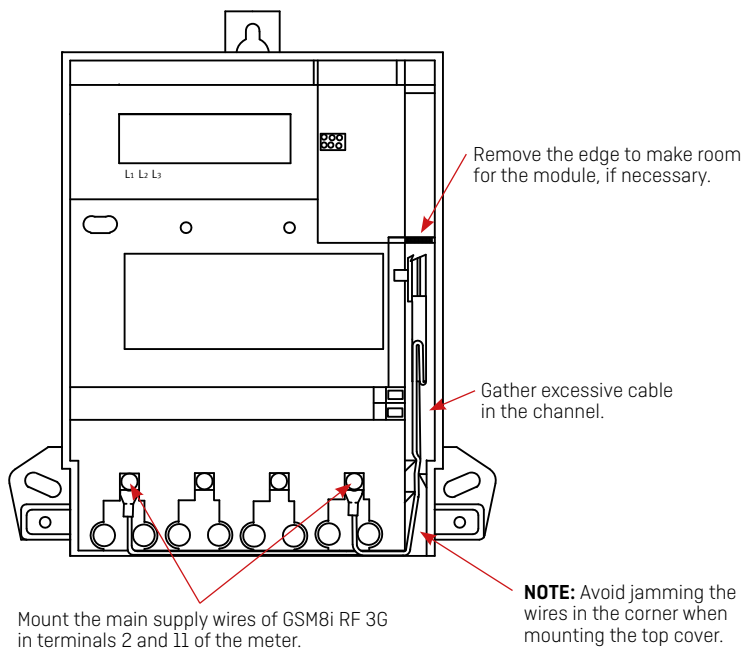
**This paragraph concerns only GSM8i RF 3G as it must be supplied from the meter's phases. It does not concern the base module GSM8i 3G as this is supplied directly from the module connector.**

### 8.3 Kamstrup 382 - type 685-282-zz-zz



To gain access to the screw terminals, carefully tip up the main supply wires. After mounting, carefully put back the main supply wires into the channel.

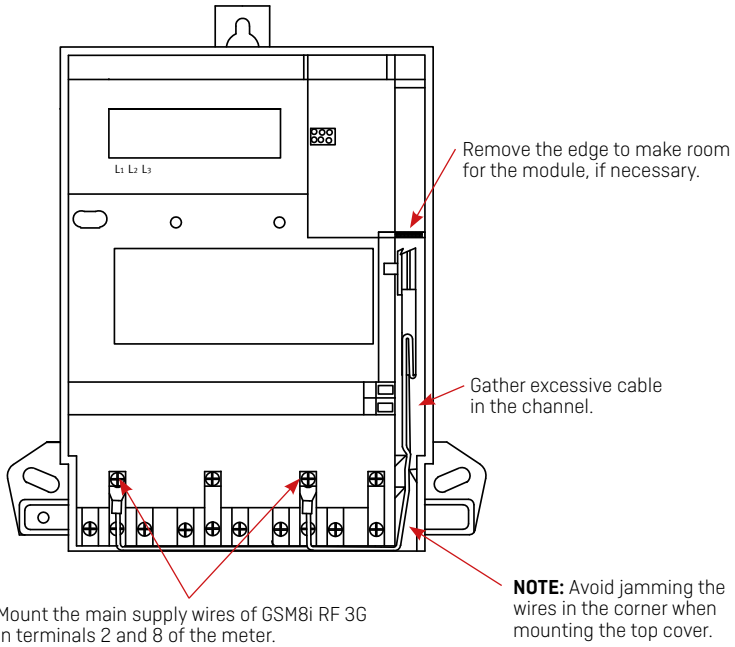
#### 8.4 Kamstrup 382 - type 685-382-zz-zz



Ved målermontage vippes forsyningsledningerne forsigtigt op, så der er adgang til skruesklemmerne.

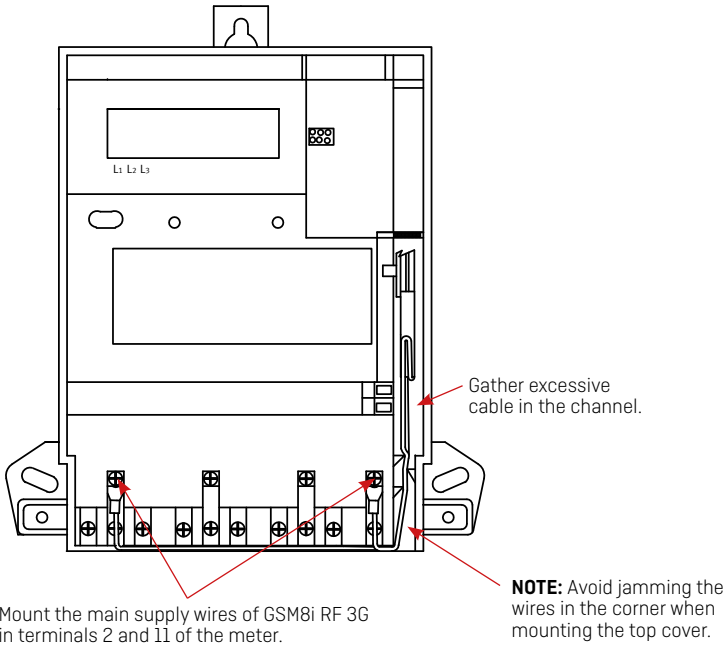
Efter montage lægges forsyningsledningerne forsigtigt ned i kanalen igen.

## 8.5 Kamstrup 351 Combi - type 685-251-xx-xx-xxx



To gain access to the screw terminals, carefully tip up the main supply wires. After mounting, carefully put back the main supply wires into the channel.

## 8.6 Kamstrup 351 Combi - type 685-351-xx-xx-xxx



To gain access to the screw terminals, carefully tip up the main supply wires. After mounting, carefully put back the main supply wires into the channel.

## 9 Error detection help

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**NOTE: SMS commands must be sent in either capital or small letters**

**Note that GSM8i RF 3G must ALWAYS have mounted an external antenna of the type 6699407 or 6699408.**

The METER diode flashes constantly.	The module has no contact with the meter. Check that it has been mounted correctly.
The three diodes at the bottom of the signal indicator flash constantly.	The SIM card has not been inserted correctly or is defective.
The two diodes in the middle of the signal indicator flash constantly.	Cannot connect to the mobile network. This can be caused by no coverage or problems with the SIM card. Mount an external antenna
The GPRS diode does not emit light after start-up.	Ask the telecom supplier if there is a GPRS subscription for the SIM card.
The 3G diode does not emit light after start-up.	Ask the telecom supplier if there is a 3G subscription for the SIM card.
Weak mobile signal	Mount an external antenna. Reposition the antenna to find the optimal position, if required. Note that GSM8i RF 3G must ALWAYS have mounted an external antenna of the type 6699407 or 6699408.
Try to call the unit.	If there is no connection or if the SIM card is not activated, there will typically be a message from the operator
Send an SMS to the modem, e.g. =SIGNAL#	The unit must respond with the signal strength of the module.
Always complete by performing a control reading from the main station.	Call the utility to make sure that meter data have been received.
Defective modem	Enclose a precise description of the error and return to Kamstrup.

## 10 SMS commands

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**NOTE: SMS commands must be sent in either capital or small letters.  
Capital letters and small letters must not be mixed in the same SMS command.**

### READ\_METER - for reading a direct meter (e.g. Kamstrup 382 or 162)

Syntax =READ\_METER#

Example =READ\_METER#

Return reply, correct  
Meter No. 10101010 is read, the meter reading value is 32432 kWh, the power is 343 W, and the meter has operated for 2452 hours.

32432 kWh,  
343 W,  
2452 Hours,  
Meter No: 10101010

Return reply, error NO RESPONSE

### SIGNAL - for reading the signal strength

Syntax, command =SIGNAL#

Example =SIGNAL#

Return reply, correct  
Displays the modem's current signal strength on a scale from 0-4 where 4 is best. The signal strength must be minimum 2

Signal: 2[0-4]LEDS, UMTS

Return reply, error NO RESPONSE

### IOSTATUS - for reading the status of relay output and status/Pulse input

Syntax =IOSTATUS#  
*(Note that there is only one relay output <relay1> and one input <input1> on this module)*

Example =IOSTATUS#

Return reply, correct  
Relay1: 1 Relay2: 0  
Input1: 1 Input2: 0

Return reply, error NO RESPONSE