

- Remote Control From a Mobile Phone
- Standalone Dual Band GSM Telemetry Controller.
- 2 Digital Inputs (Volt Free)
- 2 Relay Outputs rated at 240 volts 12 Amps.
- Automatically Sends SMS message when input activated to up to 5 mobiles per input.
- Outputs controlled by SMS text message.
- Request Status via SMS.
- Accepts all major SIM Cards.
- IP65 Rated Enclosure.
- Easy to Install and Configure (no PC required).
- Dual Band Modem GSM / GPRS (Telit)



## Applications

- Remote control by GSM Mobile phone.
- Remote Maintenance, warnings / Alarms.
- Irrigation Systems.
- Remote system monitoring.
- Plant Maintenance.
- Security Systems
- Alert / Panic caller

## Ordering Information

PART No	DESCRIPTION
250R1	GSM Telemetry System with integrated GPS module
PSU12V1AIN	Power Supply, 110-230Vac (IEC Input), O/P 12Vdc, 900mA

---

## **User Manual**

<b>1. Definitions.....</b>	<b>2</b>
<b>2. SIM card .....</b>	<b>3</b>
<b>3. Input and output circuits .....</b>	<b>3</b>
<b>4. Output Relays .....</b>	<b>4</b>
<b>5. Power up .....</b>	<b>4</b>
<b>6. Power Loss .....</b>	<b>4</b>
<b>7. User Set-Up of 250 .....</b>	<b>4</b>
<b>8. User Set-Up Commands .....</b>	<b>5</b>
<b>9. Control Commands .....</b>	<b>7</b>
<b>10. Messages generated by the unit.....</b>	<b>9</b>
<b>11. Technical Specifications .....</b>	<b>10</b>

### **1. Definitions**

The following definitions are used throughout this document and generally in connection with the control unit.

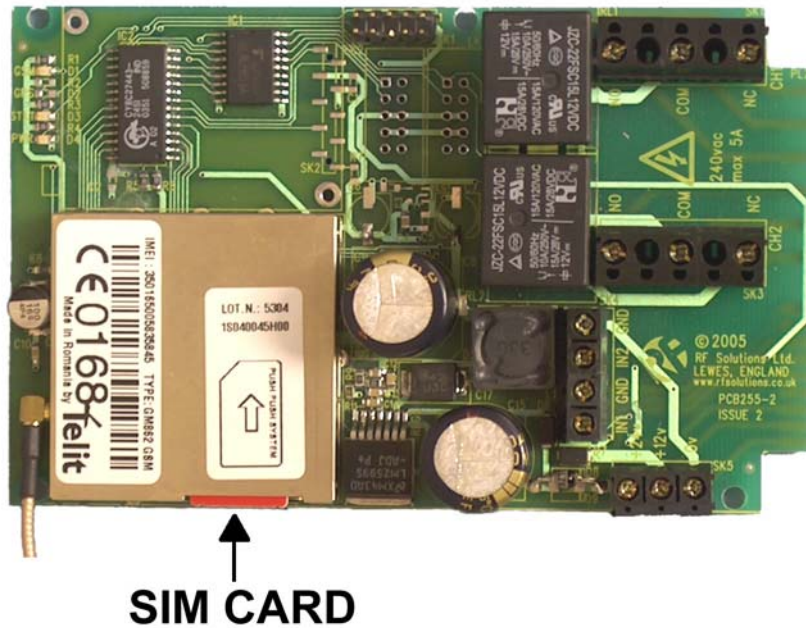
- Message** An SMS ('text') message sent from one mobile station to another.  
~ Denotes a 'space' in the format of a message.  
**Alphanumeric.** Characters in the range A to Z (upper and lower case), numbers in the range 0 – 9.  
**Mobile.** A mobile telephone that is used to send and receive SMS messages.

## 2. SIM card

The unit will accept SIM cards of most types subject to the following restrictions.

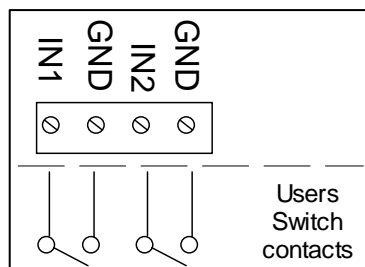
1. Only 3 Volt SIM cards will be correctly read and older 5 Volt types will be ignored.
2. Some types of pay-as-you-go SIM cards may require regular call activity (once every six months) to remain registered.
3. SIM cards that have been protected by means of a PIN (in a mobile phone) will not operate in the unit.
4. Incoming voice calls to the SIM card should be barred before it is used in the GSM 250 unit to avoid any error messages being sent back to the user. This can be achieved by calling the service provider.
5. The message memory of the SIM card should be clear before it is fitted to the 250 unit.

The SIM card should be inserted into the side of the module (marked Telit). The PCB may need to be removed from the enclosure in order to insert the SIM card.



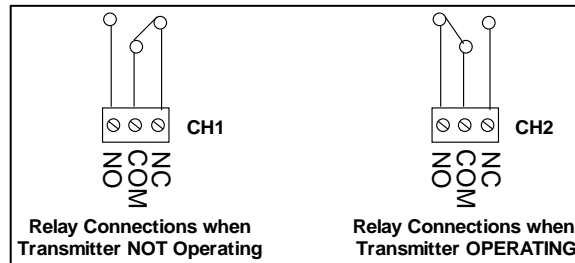
## 3. Input and output circuits

The two inputs are provided via screw terminals GND/IN1 and GND/IN2 terminals. These two volt-free digital inputs are designed to be actuated by contact 'switch' closures across the input pins.



## 4. Output Relays

Two relay outputs are provided, which when activated provide a 'switch' output as below.



## 5. Power up

The 250 unit can be powered from 12 or 24Vdc, a mains power supply is also available.

Connecting to the 3 pin terminal block provides the 250 with power.

On power up the PWR LED will illuminate steady green.

The GSM engine takes several seconds to warm-up. The GSM LED may flash when the GSM engine is active.

The GSM will come on after several seconds and should start to blink, indicating that the GSM modem has registered with the network and that the unit is ready to accept user commands. The STAT LED blinks whenever there is GSM activity, I.E. the unit is sending or receiving a text.

## 6. Power Loss

In the event of power loss to the 250 the unit will maintain the user configured data entered during the User set-up sequence, as this information is stored in non-volatile memory. However the status of the relays will be lost.

## 7. User Set-Up of 250

Prior to usage, it is necessary to program the 250 unit with the following parameters. (Some are optional)

Note that the User Password **is** case sensitive but the commands are **not** case sensitive and will be converted into upper case before the unit handles them. This means that any user command responses, which echo the original command will do so in upper case.

All commands are sent as text messages from a mobile phone.



## 8. User Set-Up Commands

PLEASE NOTE: ~ Denotes a 'space' in the format of a message

Command	Description	Command Syntax	Example
<b>Unit Password</b> (UPW)	<p>The string &lt;UNIT PW&gt; is an alphanumeric string containing from 4 to 10 characters.</p> <p>Selection of the UPW must be completed within 5 minutes from power applied. Setting the UPW is carried out by sending a text message to the unit.</p> <p>If for any reason the unit password is lost or miss-entered the user must remove all power to the unit for 1 minute, when power is reapplied the user may then use the UPW command to set a new unit password.</p>	UPW~<UNIT PW>	Command: UPW~Password38  Response: UPW~OK
<b>Unit Identity</b> (UID) (Optional)	<p>The &lt;UNIT ID&gt; is an alphanumeric string consisting 4 to 10 characters.</p> <p>This string of characters sets the 'identity' of the 250 unit, and is included in any response to identify the 250 unit to the user</p>	<UNIT PW>~UID~<UNIT ID>	Command: Password38~UID~Identity7  Response: Identity7~UID~OK
<b>Input number-to-text</b> (INUM) (Optional)	<p>This command sets the mobile number that the SMS Text message is sent to when input 1 or 2 is changed.</p> <p>The number must be in full international format including country code and leading zeros.</p> <p>Note the country code for the United Kingdom is 44.</p> <p>Note the 250 can store up to 5 mobile number per input.</p>	<UNIT PW>~INUMn~<num to text>  n=1 for input1 n=2 for input 2	Command: Password38~INUM1~0033612345678  Response: Identity7~INUM1~0033612345678~OK  This example selects a French mobile (country code 33) with national number 06 12 34 56 78 (leading 0 omitted), this number will be text if IN1 changes state.



User Setup Commands cont..

PLEASE NOTE: ~ Denotes a 'space' in the format of a message

Command	Description	Command Syntax	Example
<b>Power Failure number-to-text</b> (PNUM) <i>(Optional)</i>	This command is used to identify the mobile number which is to be text if power has be removed from the 250. PNUM can store up to 5 mobile numbers.	<UNIT PW>~PNUMn~<number to text>  Where n=1 for power fail	Command: Password38~PNUM1~0033612345678
<b>Deleting numbers-to-text</b>	If either of INUMn or PNUM contain a mobile number that is already present in the phone number list then this number will be deleted. After deletion a text will be sent to the user to confirm the deletion of that number.	<UNIT PW>~x~<num to text>  Where x represents either INUMn or PNUM1	Command: Password38~PNUM1~0033612345678  Response: UID~PNUM1~<0033612345678>~deleted
<b>Output delay time</b>  (ODEL)  <i>(Optional)</i>	This command sets an activation time of the relay outputs. The default is to remain on following an ON command and turn off following an OFF command.  If 't' is set to a value from 1 to 9 then this sets the number of seconds for which the output remains on after an ON command. The OFF command is then ignored. If 't' is set to '0', then the output returns to default setting	<UNIT PW>~O DELn~t  n=Relay number t=Delay time (seconds)	Command: Password38~ODEL1~7  Response: Identity7~ODEL1~7~OK
<b>Response on/off</b>  (RESPONSE)  <i>(Optional)</i>	This command is used to control the responses that are to be sent from the unit following receipt and carrying out of a command.  NOTE: messages which specifically demand a response such as requests for input status will always be responded to as will the UPW, UID and RESP~OFF messages.  The default setting is for the response messages to be turned of.	<UNIT PW>~RESPONSE~x  x=ON or OFF	Command: Password38~RESPONSE~ON  Response: Identity7~RESPONSE~ON~OK



## 9. Control Commands

PLEASE NOTE: ~ Denotes a 'space' in the format of a message

Command	Description	Command Syntax	Example
<b>Activate and deactivate outputs</b>  (OUT)	This command is used to turn a relay output on or off.	<UNIT PW>~OUTn~x  n=Relay number = 1 or 2 x=Relay Status = ON, OFF	Command: Password38~OUT1~ON  Response: Identity7~OUT1~ON~OK
<b>Retrieve status of inputs and outputs</b>  (STATUS)	This command requests that the status of the inputs and outputs be returned to this caller.	<UNIT PW>~STATUS	Command: Password38~STATUS  Response: Identity7~IN1ON~IN2OFF~OUT1ON~OUT2ON
<b>Retrieve unit settings</b>  (SETTINGS)	This command requests that the settings of the unit be returned to the caller.	<UNIT PW>~SETTINGS	Command: Password38~SETTINGS  Response: Identity7~SETTINGS~ODEL1~2~ODEL2~0



## Control Commands Cont...

PLEASE NOTE: ~ Denotes a 'space' in the format of a message

<b>Retrieve saved numbers to text for INUMn</b>	This command requests the mobile phone numbers for input 1 or 2 (INUMn) to be returned to this caller.	<UNIT PW>~ SETTINGS~INUMn	Command: Password38~settings~INUM1  Where n=1 for input1 or n=2 for input 2  Response:  <UNIT ID>~SETTINGS~INUM1~<numbers to text> For example:  Identity7~SETTINGS~INUM1~0033124557784
<b>Retrieve saved numbers to text for PNUM1</b>	This command requests the mobile phone numbers to text in the event of power failure to be returned to this caller.	<UNIT PW>~ SETTINGS~PNUM1	Command: Password38~settings~PNUM1  Response:  <UNIT ID>~SETTINGS~PNUM1~<numbers to text>  For example:  Identity7~SETTINGS~PNUM1~0033124557784





### 10. Messages generated by the unit

PLEASE NOTE: ~ Denotes a 'space' in the format of a message

Message	Description	Message Syntax	Example
<b>Change Of Status Of Inputs</b>  (IN)	<p>This message reports a change of input state to the designated mobile number (set using the INUM command). A message is sent with the following format.</p> <p>A change of input will only be 'valid' after 5mSecs Where the 250 unit is processing an SMS messages then the response time could be up to 250mS.</p>	<p>&lt;UNIT ID&gt;~INn~x</p> <p>n=input channel =1 or 2 x=inpuct status=ON or OFF</p>	Identity7~IN1~ON
<b>Error in received message</b>  (!!ERROR!!)	<p>When an incoming SMS contains an error in the message format, no action will be taken by the unit other than to send an error message back to the calling mobile along with a copy of the erroneous message itself.</p>	<p>&lt;UNIT ID&gt;~m~!!ERROR!!</p> <p>m=Your Message Returned</p>	Identity7~UPW~OUTn~OFF~!!ERROR!!
<b>Text user after power reset: (FAILED)</b>	<p>Texts will be sent to mobile phone numbers stored in PNUM on reboot after a power failure or reset (when power is reapplied).</p> <p><i>Note this feature is enabled or disabled by simply either having mobile phone numbers in PNUM or not.</i></p>	<p>&lt;UNIT ID&gt;~ Reboot~power~had~failed</p>	Identity7~Reboot~power~had~failed

## 11. Technical Specifications

Storage Temperature: -10 to +70° Celsius. Operating Temperature: 0 to +55° Celsius.  
Enclosure Dimensions: 145 x 90 x 45mm  
PCB Dimensions: 124 x 78mm

<b>Electrical Characteristics</b>	<b>Min</b>	<b>Typical</b>	<b>Max</b>	<b>Dimension</b>	<b>Notes</b>
Supply Voltage for 12Vdc	11	12.0	14	V	
Supply Voltage for 24Vdc	23	24.0	26.0	V	
Supply Current for 250:					
Idle	35	44	100	mA	1
Operating	200	370	1000	mA	2
Mains rated Relay Rating (230Vac)		5	12	A	3

### Notes

1. Refers to maximum supply current required with all components idle.
2. Refers to peak supply current required with all components operating. In practice internal reservoir capacitance limits the instantaneous peak current to less than 500 mA.
3. The relay contacts in this unit are for functional switching only and must not be used for isolation purposes.

For more information or general enquiries, please call;

***R F Solutions Ltd.,***

***Unit 21, Cliffe Industrial Estate,***

***Lewes, E. Sussex. BN8 6JL.***

***England.***

***Email : sales@rfsolutions.co.uk***

***http://www.rfsolutions.co.uk***

***Tel: +44 (0)1273 898 000 Fax: +44 (0)1273 480 661***

*RF Solutions is a member of the Low Power Radio Association.*

Information contained in this document is believed to be accurate, however no representation or warranty is given and no liability is assumed by R.F. Solutions Ltd. with respect to the accuracy of such information. Use of R.F.Solutions as critical components in life support systems is not authorised except with express written approval from R.F.Solutions Ltd.