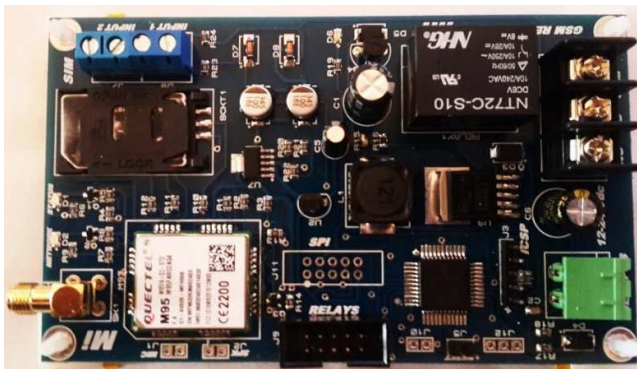


*Innovative Electronics for a changing world*

Pictures and description

1. User instructions
2. Cell phone application instructions

1: TOP View of GSM Relay board



Optional 5 Relay expansion board:



The GSM Relay is a GSM based controllable module from your cell phone with Two (2) inputs and one (1) Relay output. The main idea for the unit was to reset Router boards on a wireless network which became inaccessible through the wireless Network however it can be used for lots of different applications, control any electrical equipment, monitor the voltage of your battery backup system, alarm system etc.

The module reacts on specified command SMS's received, returns SMS's to the user and can also alert the user if anyone of the 2 inputs changes state or the battery runs low

- 1. Automatically detects the supply voltage if 12 or 24 v system**
- 2. Sends SMS if battery falls below 11.5v for a 12 v system and 23.0v if a 24v system**
- 3. Supports 5 numbers – (1 x Primary and 4 x Secondary cell numbers)**
- 4. SMS programmable Input delay(ignore) time for each input**

## **1 : User Instructions**

The GSM Relay comes pre-programmed with our standard version of the GSM Relay Software.

Insert a SIM card into the top SIM card holder and secure the socket, the SIM card pin request must be disabled. Save the phone number of the SIM card to your phone.

Insert the reset jumper (reset at J5 next to microprocessor)

Powering the board: connect 12 to 24 VDC on the 2 way terminal marked " NEG POS " 12-24vdc – usually from backup batteries or a power supply if there is no battery backup system.)

Keep the reset jumper in for 10 seconds , remove the jumper

The Status LED on the board will light up to indicate that the GSM engine have booted up.

After about 3 to 5 seconds the network LED on the board will start flashing indicating a successful connection to a GSM network and after about 5 seconds the network led should blink slowly to indicate that it is in sync with the network and the GSM Relay is now ready to use, allow another 5 sec before communicating with it

Commands.....

**SMS Commands :**

<i>SMS command to send to unit</i>	<i>ACTION</i>	<i>REPLY SMS TO SENDER</i>
<b>"Help"</b>		<b>Returns a list of supported commands</b>
<b>" Save"</b>	Save the primary number to device	<b>"Primary number saved"</b> to primary number
<b>"Add1+2782....."</b> cell number	Add1+.. up to Add4+.. / unit support 4 secondary numbers	<b>"Secondary number 1 saved"</b> to secondary number 1
<b>"Stat" or " Status"</b>		Returns a SMS showing device Status (Status of both Inputs; Battery input voltage and relay status to all saved numbers
<b>"Res" or "Reset"</b>	Relay on the board activates for 8 sec then return to off position	Returns a SMS confirming Reset completed to all saved numbers
<b>"On"</b>	Relay on the board turns on permanently	Returns a SMS confirming Relay is on (Relay on !) to all numbers
<b>"Off"</b>	Relay on the board turns off	Returns a SMS confirming Relay is Off (Relay Off !)to all numbers
<b>"numbers"</b>		Return a list of saved cell numbers on the device – primary number marked with <b>"p"</b>
<b>"Erase"</b>	Remove the <b>saved primary number</b> from memory	Have to send <b>"Save"</b> from new primary number after Erase command
<b>"wipe1"</b>	Wipe1/wipe2/wipe3 or wipe 4	Remove the <b>selected</b> secondary number from the unit
Eg. <b>" i1=eskom "</b>		Assign a user defined name for Input 1 - SMS returned <b>"Input name saved"</b>
Eg. <b>"i2=generator"</b>	N/A	Assign a user defined name for Input 2 - SMS returned <b>"Input name saved"</b>
<b>"ip1t=1"</b>	<b>0</b> up to <b>5</b> – sets a dead time from 0 to 5 minutes after input1 was triggered to ignore input from sending SMS again – <b>0</b> no delay / <b>1</b> = 1min delay etc	Automatically replies with a SMS if the Input changes state indicating the state of the inputs - then run the dead time if programmed to ignore input changes
<b>"ip2t=1"</b>	<b>0</b> up to <b>5</b> – sets a dead time from 0 to 5 minutes after input2 was triggered to ignore input from sending SMS again – <b>0</b> no delay/ <b>1</b> =1 min delay etc	Automatically replies with a SMS if the Input changes state indicating the state of the inputs - then run the dead time if programmed to ignore input changes
<b>"Op1on"</b>	Turns Relay output <b>1 on</b> (Relay expander board"	Return SMS to confirm Output 1 = On
<b>"Op1off"</b>	Turns Relay output <b>1 off</b> (Relay expander board"	Return SMS to confirm Output 1 = Off

“Op2off”	Turns Relay output <b>1 off</b> (Relay expander board”	Return SMS to confirm Output 2 = Off
“Op3on”	Turns Relay output <b>3 on</b> (Relay expander board”	Return SMS to confirm Output 3 = On
“Op3off”	Turns Relay output <b>3 off</b> (Relay expander board”	Return SMS to confirm Output 3 = Off
“Op4on”	Turns Relay output <b>4 on</b> (Relay expander board”	Return SMS to confirm Output 4 = On
“Op4off”	Turns Relay output <b>4 off</b> (Relay expander board”	Return SMS to confirm Output 4 = Off
“Op5on”	Turns Relay output <b>5 on</b> (Relay expander board”	Return SMS to confirm Output 5 = On
“Op5off”	Turns Relay output <b>5 off</b> (Relay expander board”	Return SMS to confirm Output 5 = Off
“All on”	All Relays turn <b>On</b> (Relay expander board)	Return SMS to confirm All outputs is on
“All on”	All Relays turn <b>On</b> (relay Expander board)	Return SMS to confirm All outputs is On
“All off”	All Relays turn <b>Off</b> (Relay expander board)	Return SMS to confirm All outputs is off
Battery low SMS		Automatically send a SMS to the programmed numbers indicating low battery – either at 11.5Vdc for 12v systems or 23.0Vdc for 24V systems

The 2 Inputs is potential free inputs, **no voltages should be injected here.**

**The user must ensure potential free contacts on inputs – eg: Relay contact or switch or jumper**

The inputs on the board is marked (INPUT1 and INPUT2) (top right terminals)

A potential free contact should be made across the 2 inputs of “INPUT1 or INPUT2 “ to trigger them

As soon as the unit is powered up it takes a sample of the input status and saves this as the normal state. As soon as the status of any input changes an SMS will be send to notify the user about the change only if the change in input state persists longer than 3 seconds, an SMS will be send every time the status of any input changes .If the programmable dead time was programmed to the input it will after the 1<sup>st</sup> trigger ignore any further input conditions for the time period programmed and only respond to input changes to send a SMS again after the time have elapsed

Use the programmable dead time to avoid multiple SMS messages being send in case of a device connected to the input with short relay open and close times after each other for instance a PIR alarm detector.

## Cell Number

After power up the GSM Relay send a SMS with text “**save**” to the units number. The number will be saved as the primary number and a SMS with text “**primary number saved**” will be returned to your phone. The primary number have full control on the unit to change input names , add and remove numbers etc.

Send “Add**1**+2782....) cell number to add a secondary number to the unit. SMS with text “**secondary number 1 saved**” will be returned to the secondary phone number. “Add**2**+27...” will add secondary number 2 to the device and up to Add**4**+27.. can be send to the device – support 4 secondary numbers

Once secondary numbers was added to the GSM relay , both primary and secondary numbers have control of the unit , any SMS received from any of the numbers will result in the response SMS from the GSM relay to be send to all numbers

Sending “**Erase**” will delete the primary number

Send “ **Save**” from the new primary number

Sending “**Wipe1**” will delete the secondary number 1 – a confirmation SMS won’t be send to the deleted secondary number

Send “Add**1**+2782.....)” **with** new number to add new secondary 1 number

## Inputs

### Example for input names

Send “**I1=eskom**” , Input 1 name will be saved as “eskom” - user will receive confirmation SMS.

Send “**I2=generator**” , Input 2 name saved as “generator” – user will receive confirmation SMS

Send “Ipt**1**=3” will add a 3minute dead time to the input **1** after it was triggered

Send “Ipt**1**=0” will add 0 minutes dead time to the input **1** after it was triggered - meaning after about 3 seconds if the input changes again another SMS will be send.

Send “Ipt**2**=5” will add 5minutes dead time to Input **2** after it was triggered

Send “ **numbers**” will return a SMS containing all cell numbers listed on the system

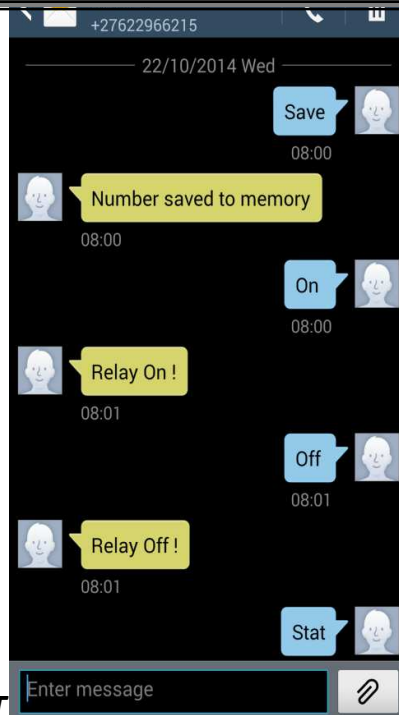
Send “ **Help** “ will return a list of all commands supported by the GSM Relay unit

## Output Relay

10 Amp contact current rating

**Common /Normally Open/Normally Closed** terminals available on board from Relay with 3 way barrier terminal

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OPERATIONAL SCREENSHOT

## Cell phone application

The unit can be controlled via normal SMS commands , however the APP eases control by sending this SMS commands in the background transparent to the user by tapping on a user specified name

To download the free app go to the Android (Google) Play Store and search for the “Mi GSM Relay”

Refer to the in- app help file after installation

Tap the information button on the upper left corner on the home page

Help file is listed on the upper right hand corner of the screen

You can save as many GSM Relays to the app as you need

The relay expansion board can be added or removed for each module by the user at any time

\*\*\*\*The user must first send the “Save” command from the primary cell phone to the GSM -  
Relay via normal SMS function to save the primary number \*\*\*\*

\*\*\*\*The user must first send the “Add1+27.....” command from the primary cell phone to the GSM -  
Relay via normal SMS function to save the secondary 1 number \*\*\*\*

\*\*\*\*The user must first send the “I1=.....” command from the primary cell phone to the GSM -  
Relay via normal SMS function to save the input 1 name \*\*\*\*

\*\*\*\*The user must first send the “I2=.....” command from the primary cell phone to the GSM -  
Relay via normal SMS function to save the input 1 name \*\*\*\*

The app can now be used to interact with the GSM Relay

**Relay 0** is treated as the Relay on the GSM Relay board and **Relays 1 to 5** is on the optional extra Relay expansion board.

Tapping on the “Relay 0” or “Relay 1” etc – “text” - allows the user to specify a name for the specific relay output which can be easily remembered.

The cell phone application eases control to multiple units by saving user configured names for each GSM Relay added to the application as well as user configured names for each relay output.