MICRO INSTRUMENTS
ELECTRONIC - RESEARCH - DEVELOPMENT
www.microinstruments.co.za
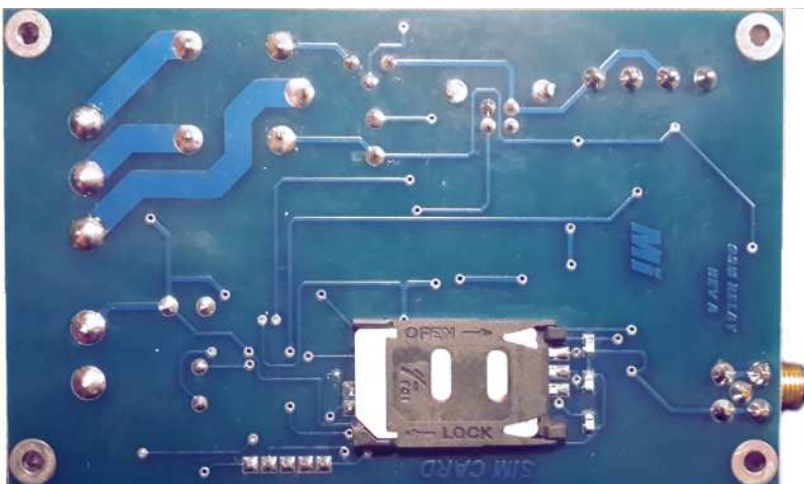Tel : 012 548 1615 / Fax : 0866 16 2222

Pictures and description

1. **User instructions**
2. **Software updates / custom software updates and Downloads**

1: TOP View of GSM Relay board

1: Bottom View of GSM Relay board with SIM-card holder

GSM - Relay   *USB*

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 backups, alarm system etc.

Custom code can be written for customers with different needs over the standard program loaded on date of purchase of the module , customers can re-program the new code onto the device themselves via the on board USB connection. The unit feature a "SELF PROGRAMMABLE" micro Processor (Explained later in the manual)

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.

2 : User Instructions

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

Insert a SIM card on the bottom of the board into the 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.

Powering up the board: connect 12 to 28 VDC on the 2 way terminal marked " POS NEG " 12-24vdc – usually from backup batteries or a power supply if there is no battery backup system.

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.

SMS Commands :

SMS command	OUTPUT RELAY ACTION	REPLY SMS TO SENDER
"Com" or **"Commands"**	N/A	Sends a SMS to user stating all commands accepted via SMS
"Stat" or " Status"	N/A	Returns a SMS showing device Status (Status of both Inputs; Battery input voltage)
"Res" or **"Reset"**	Relay activates for 5 sec	Returns a SMS confirming Reset completed ; (also includes the status of both Inputs and Battery input voltage)
"On"	Relay turns on permanently	Returns a SMS confirming Relay is on (Relay on !)
"Off"	Turn Relay off after it was on	Returns a SMS confirming Relay is Off (Relay Off !)
" **Save"**	N/A	Saves the primary cell number to memory / number will not be lost after total power failure
"Clear"	N/A	Remove the saved primary number from memory
"**add**082........"	N/A	Add a secondary number for notifications and control to the unit
"**wipe**"	N/A	Remove the secondary number from the unit
"I1xxxxxxxxxx (x = user name for input 1-max 10 Characters If name is less than 10 characters fill with spaces	N/A	Assign a user defined name for Input 1 - SMS returned "Input name saved"
"I2xxxxxxxxxx (x = user name for input 2-max 10 Characters If name is less than 10 characters fill with spaces	N/A	Assign a user defined name for Input 2 - SMS returned "Input name saved"
"Erase" delete the user names for Input 1 and Input2 and default back to "INPUT1" and INPUT2" in reply SMS	N/A	Deletes the user assigned names for both inputs and returns a sms " Input names deleted"
Input Auto Reply Jumper J9		
Jumper out	N/A	No action
Jumper in	N/A	Automatically replies with a SMS if any one of the 2 Inputs changes state indicating the state of the inputs and voltage

INPUTS:

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 board source a negative supply for the input – board marked (NEG IP1 - NEG IP2)

As soon as the unit is powered up it takes a sample of the input status (contact between NEG and IP1 and NEG and IP2) and saves this as the normal state. If Auto reply jumper J9 is installed, 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 10 seconds, an SMS will be send every time the status of any input changes for longer than 10 seconds.

If Auto Reply jumper J9 is not installed no SMS's will be send on input status change.

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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 "**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 sms with text "**add082(number)**" to add a secondary number to the unit. SMS with text "**sec num saved**" will be returned to your phone and to the secondary phone number.

The primary number have full control on the unit and can send commands etc to the unit without the secondary number being notified. Any status request or commands list request from the secondary number will result in a sms only to the secondary number , but any operational commands like "**reset**" or "**on**" etc will result in a sms to the Primary and secondary number.

Inputs

Standard the unit will refer to "Input1" and "Input2" in a SMS, the user can change this by sending the following

I1xxxxxxxxxx (Capital letter i with a 1 +10 user characters) eg : I1eskom_ _ _ _ _(_=5spaces at the end) to fill the string as eskom is only 5 characters

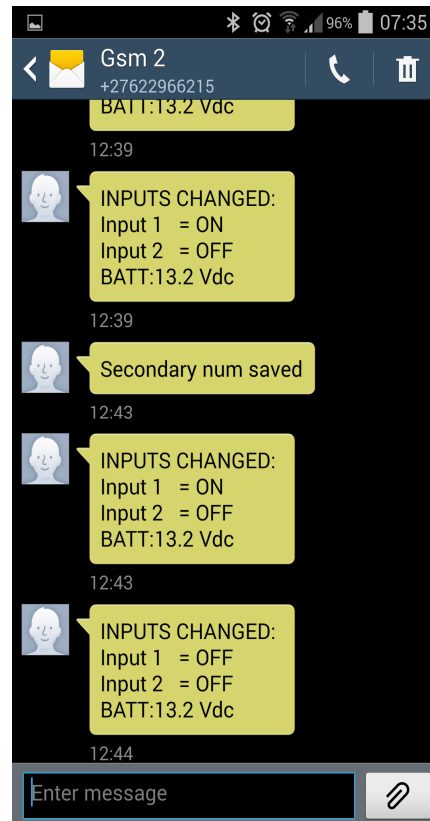Or eg: I1generator_ (_1space at the end)to fill the string – generator is 9 characters
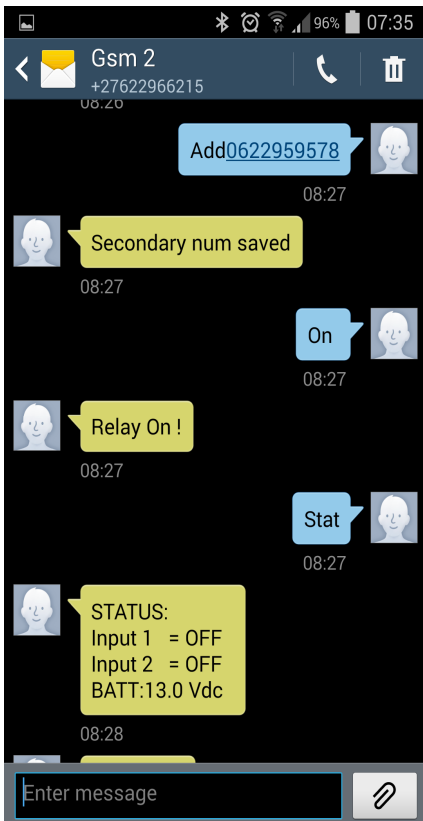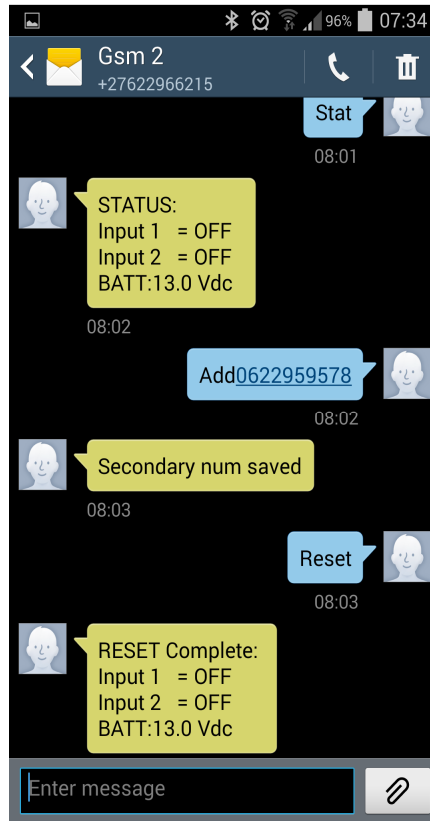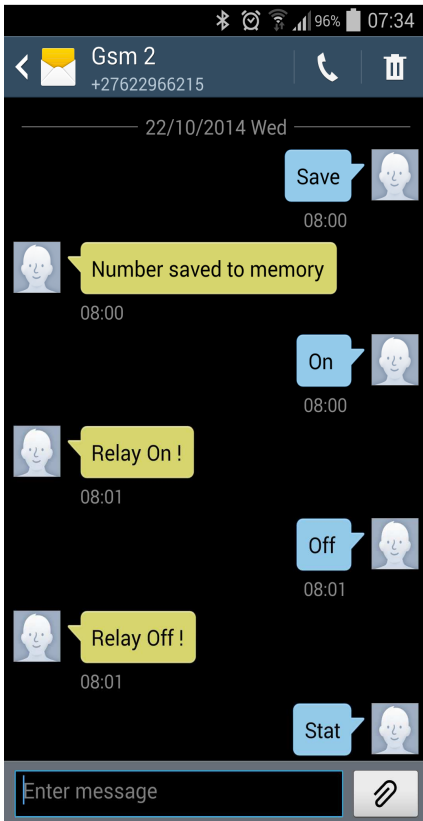
Follow the same sequence for Input 2 renaming

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 SCREENSHOTS

Screen 1

Gsm 2
+27622966215

22/10/2014 Wed

Save
08:00

Number saved to memory
08:00

On
08:00

Relay On !
08:01

Off
08:01

Relay Off !
08:01

Stat

Enter message

Screen 2

Gsm 2
+27622966215

Stat
08:01

STATUS:
Input 1 = OFF
Input 2 = OFF
BATT:13.0 Vdc
08:02

Add0622959578
08:02

Secondary num saved
08:03

Reset
08:03

RESET Complete:
Input 1 = OFF
Input 2 = OFF
BATT:13.0 Vdc

Enter message

Screen 3

Gsm 2
+27622966215

08:26

Add0622959578
08:27

Secondary num saved
08:27

On
08:27

Relay On !
08:27

Stat
08:27

STATUS:
Input 1 = OFF
Input 2 = OFF
BATT:13.0 Vdc
08:28

Enter message

Screen 4

Gsm 2
+27622966215

BATT:13.2 Vdc
12:39

INPUTS CHANGED:
Input 1 = ON
Input 2 = OFF
BATT:13.2 Vdc
12:39

Secondary num saved
12:43

INPUTS CHANGED:
Input 1 = ON
Input 2 = OFF
BATT:13.2 Vdc
12:43

INPUTS CHANGED:
Input 1 = OFF
Input 2 = OFF
BATT:13.2 Vdc
12:44

Enter message

3: Custom Software uploads:

Please visit our website at www.microinstruments.co.za and locate **"MikroBootloader-USB HID"** from the downloads page , download and install the program on your pc.

Once custom code was received for your unit in e-mail save the XXXX.hex file to your desktop.

The Standard code is also available from this page

Have a USB – B cable ready and connected to your a USB port on your pc

STEP1

Make sure the board is not powered from the power input terminals, It will be powered from USB now

Plug the USB-B cable into the USB port on the GSM Relay – the board will power up , your pc will indicate " Installing device driver " wait for the Driver to install successfully. If unsuccessful unplug and re-plug the USB cable to the board after a while, as soon as the Driver has installed successfully, unplug the USB cable from the board.

 STEP2

Run the **MikroBootloader USB HID** program on the pc , as soon as the program is open connect the board with the USB cable , The USB icon on the screen will turn red , you have only 5 seconds to click on **connect** otherwise the micro will automatically disconnect the USB connection – the History window will indicate a connection to the target processor.

STEP3

Click on **Browse for HEX file** button

Locate the XXX.hex file that was saved to the Desktop.

Click on **Begin Uploading -** a progress bar will indicate the status of the file loading **– when completed uploading leave the board connected ,** the processor is now programming itself with the new file that was loaded , the USB will disconnect, as soon as the processor have completed its self-programming the status led will light and network led will flash indicating the board is functional again.

Unplug the USB now, the board can now be powered normally again.

Please contact : info@microinstruments.co.za for any enquiries or custom software applications for the GSM Relay board