GSM Gate Control 20

INSTALLATION AND APPLICATION MANUAL

for module version V1.0 and newer

Manual version: 1.2 24.08.2017

1 Functions

- Remote control of automated gates, barriers or other controllable electric devices by free GSM call
- Control of 2 different gates using caller identification and caller ID blocking
- Possibility to register up to 20 users
- Forwards the gate control panel's fault reports or other contact events in SMS
- SMS restriction
- Forwards incoming SMS messages (for usage with pre-pay cards)
- Programming and status query by SMS

2 Under Voltage Lock Out (UVLO) function

The product is provided with built-in automatic power disconnection (Under Voltage Lock Out) function. Depending on the product type, if the supply voltage drops below 8.4…8.2V, the module turns off automatically and it turns back on when the supply voltage is at least 11.2…11.4V.

The minimum supply voltage level required to turn the module on is 11.2…11.4V! After turned on with supply voltage higher than 11.2…11.4V, the module can operate stably even at lower supply voltage, but not lower than 8.4…8.2V.

If the module is powered from a power supply provided with a backup battery and there is no other electrical load on the battery when charging fails (e.g. in case of a power cut), while the battery discharges, the module turns off automatically at 8.4…8.2V voltage level.

Thereafter, if the battery is in good condition, it can regenerate and can reach the terminal voltage of 11.2…11.4V where the module turns back on, then the battery may discharge again below 8.4…8.2V. This may result a continuous switching on and off cycle that lasts until the battery can no longer regenerate to the 11.2…11.4V voltage level. If this phenomenon occurs, the battery is flat and it should be replaced.

3 Operation

- **Control / operation of relay outputs**

The device can control 2 relay outputs, out of which one can be controlled by call using caller identification and the other one using caller ID blocking.
Maximum 20 user phone numbers can be registered to control output NO1 by free GSM call, using caller identification. For this it is necessary to enable caller identification service at your GSM service provider on the SIM card inserted in the module, as well as the caller must send the caller ID when calling. When the module receives a control call, it identifies the callers phone number, rejects the call and activates the appropriate relay output.

The control without caller ID can be done by unlimited users (registered users too), since this does not require user registration. In this case the module activates output NO2. To block caller ID sending, dial **#31#** block code before the module's phone number (e.g. #31#+3630….). When using both outputs, regarding handling it is easier if the user adds the module's phone number to the mobile's phonebook in both formats (e.g. +3630…. and #31#+3630…).

Attention! By blocking the caller ID <u>anyone</u> can control output NO2 (not only the registered users)! It is recommended to use this option only for low security applications, since an incoming call to the wrong number can also activate the output! For added security, do not publish the module's phone number.

However, by using the option of blocked caller ID makes possible control of both outputs separately by free GSM call by the same user. For instance, this makes possible controlling a garage door (using caller identification) and separately an entrance gate (by blocking the caller ID) that requires low security.

If the control call is received from a phone number which is not registered in the settings, but the caller sends the caller ID (unauthorized number), then the module rejects the call and does not activate any of the outputs.

If the output is set as "timed", it becomes closed for the configured period of time when it is activated. In case that the maximum activation time is not sufficient for the desired control, it is possible to activate the output by first call and deactivate by a second call. This is called bistable mode. If the output is set as "bistable", it switches its state by each control call.

- **Operation of the contact inputs**

The two contact inputs (IN1 and IN2) can be used to forward e.g. fault reports of the gate's control panel (or other application). When the inputs are activated, the module sends the **ALARM1!** respectively **ALARM2!** message in SMS to the phone number configured with the **REPORT** command. The messages are factory default and cannot be modified. The type of the inputs is normally open (N.O. – activate by closing) by default, which can be modified in the settings as needed. The activation sensitivity of the inputs is 1 second by default – must be activated for at least 1 second for SMS sending. The type and sensitivity of the inputs can be modified in the settings. The restoration sensitivity of the inputs cannot be modified, the default value is 1 second. This means that the input reacts to a newer activation input with 1 second delay after restoration.

- **Forwarding of incoming SMS messages**

The module forwards the SMS messages (e.g. balance information in case of pre-pay card) received on its SIM card to the phone number configured with the **REPORT** command. After forwarding it deletes the message from the SIM card. If no phone number is set, the module deletes all incoming messages without forwarding. A forwarded message looks as follows:
SMS forward from *the sender's phone number***:** *forwarded message*.

- **SMS restriction**

To avoid emerging of eventual extra SMS costs caused by e.g. a faulty sensor connected to an input, the module restricts the number of the SMS messages to be sent by activation of the contact inputs. By default, the module allows sending maximum 1 SMS per input between two controlling calls. The next call resets the counter. This restriction can be modified or turned off in the settings using the **SMSLIMIT** command.

- **Status query**

It is possible to request status report from the module in SMS. For status query send the **PWD=***password***#STATUS?#** command in SMS to the module's phone number. The module will send an answer with containing the actual status:

SIGNAL (0-10)=9	GSM signal value on 0-10 scale
INTYPE1=NO;	Type of input 1 (NO/NC – normally open/normally closed)
IN1=3;STATUS=IDLE	Sensitivity and status of input 1 (ALARM/IDLE)
INTYPE2=NC;	Type of input 2 (NO/NC – normally open/normally closed)
IN2=5;STATUS=ALARM	Sensitivity and status of input 2 (ALARM/IDLE)
REL1=3;STATUS=OFF	Activation period of time and status of output 1 (ON/OFF)
REL2=FIX;STATUS=ON	Activation period of time and status of output 2 (ON/OFF)
SMSLIM=1	Actual SMS restriction setting

4 Settings

Configuration of the module is possible by sending the appropriate commands in SMS to the module's phone number. It is possible to send more commands (settings) in the same SMS, but the length of the message must not exceed 140 characters! Each message must begin with the password using the **PWD=***password***#** command and each command must end with **#** character, else the module does not apply the modifications. The following table contains the configuring and query commands:

PWD=*1111***#**	Entering the password – necessary at the beginning of each message! (Default password: 1111)
PWC=*new password***#**	Changing the password. The password must consist of 4 alphanumeric non-accented characters (A…z, 0...9)
TEL=*phone number***#**	Adding new user (phone number)
DEL=*phone number***#**	Deleting a user (phone number)
REL1=*X***#**	Output 1 activation time: substitute parameter *X* with the desired period of time – value between 1…1000 (seconds) or with parameter **FIX** for bistable mode (default: 1s)
REL2=*X***#**	Output 2 activation time: substitute parameter *X* with the desired period of time – value between 1…1000 (seconds) or with parameter **FIX** for bistable mode (default: 1s)
INTYPE1=*X***#**	Type of input IN1: substitute *X* with the desired setting: **NO** =normally open or **NC** =normally closed (default: NO)
INTYPE2=*X***#**	Type of input IN2: substitute *X* with the desired setting: **NO** =normally open or **NC** =normally closed (default: NO)
IN1=*X***#**	Sensitivity of input IN1: substitute parameter *X* with the desired sensitivity – value between 1…1000 (seconds) (default: 1s)
IN2=*X***#**	Sensitivity of input IN2: substitute parameter *X* with the desired sensitivity – value between 1…1000 (seconds) (default: 1s)
REPORT=*phone number***#**	Adding phone number for SMS sending and forwarding
REPORT=#	Deleting the SMS sending/forwarding phone number
SMSLIMIT=*X***#**	SMS restriction per input: substitute *X* with the desired setting: value between 1…50 (pcs). To disable the restriction substitute *X* with 0. (default: 1)
TEL?#	Requesting registered phone numbers
STATUS?#	Requesting module status

Example:
Adding 2 users, modifying activation time of output 1 to 3 seconds and switching output 2 to bistable mode:

PWD=*1111***#TEL=***+36301111111***#TEL=***+36202222222***#REL1=***3***#REL2=FIX#**

- **Response of the module to SMS commands**

After receiving commands, the module sends the following response messages:

Module response	Meaning
Wrong password	The entered password is invalid
Password changed	The password has been changed successfully
3 user(s) added	3 phone numbers added successfully
User removed	Phone number deleted successfully
User not found to delete	The phone number to be deleted is not found
Rel1 mode set OK	Output 1 mode changed
Invalid Rel1 time	The activation time set for output 1 is invalid
Rel1 time OK	The activation time of output 1 set successfully
Input type OK	Type of the input modified successfully
Intype error	Input type error, invalid parameter
Input sens. OK	Input sensitivity modified successfully
Invalid input sens.	Input sensitivity error, invalid value
Report nr. OK	Phone nr. For SMS sending/forwarding modified
SMS limit OK	SMS restriction value modified
SMS limit=50!	Invalid SMS restriction value, therefore set to 50
No SMS limit	SMS restriction disabled
CMD error	Command type mismatch
Empty phonebook	No users found

- **Restoring factory default settings (reset)**

To restore the factory default settings including the password and erase all users follow the steps below:

1. The module should be powered down and the SIM card inserted
2. Close input IN1
3. Power up the module (LED signals: continuous green, flashing red)
4. After 5 seconds flashing is inverted (continuous red, flashing green)
5. Open input IN1
6. After 5 seconds green and red flash together
7. Close input IN1 again and wait until the module connects to the GSM network (this is indicated by continuous green flashing)

5 LED signals

Flashing green	Connected to GSM, idle
Continuous green	Processing SMS command, modifying the settings
Alternate red and green flash	SMS command error
Flashing red	Phone start/restart in progress
Continuous red	Searching GSM network / SIM error

6 Connection diagram
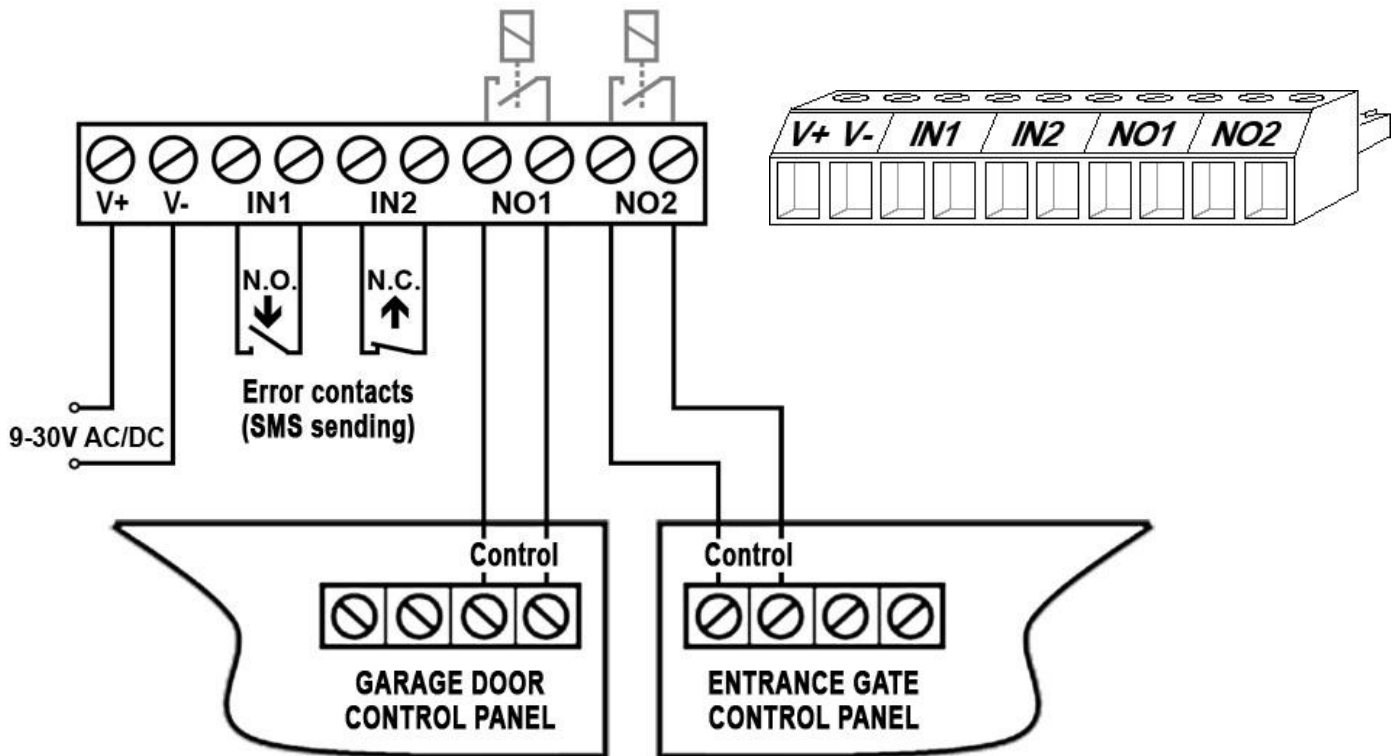
V+   Supply voltage 9-30V AC/DC (min. 400mA)
V-   Supply voltage negative polarity (GND)
IN1 Input 1 (NO or NC)
IN2 Input 2 (NO or NC)
NO1 Relay output 1 (normally open)
NO2 Relay output 2 (normally open)

7 Installation guide

7.1 Mounting

- Measure the GSM signal strength with your mobile phone. It may happen that in the desired place of installation the signal strength is not satisfactory. In this case you can move the module somewhere else before installation.
- Do not mount the module where it can be affected by strong electromagnetic disturbances, e.g. in the vicinity of electric motors etc.
- Do not mount the module in wet places or in places with a high degree of humidity.
- Connecting the antenna: the GSM antenna can be connected to the FME-M connector. The antenna supplied with the module provides good transmission under normal reception circumstances. In case of having signal strength problems or/and wave interference (fading), use other type of antenna or find a more suitable place for the module.
- Inserting the SIM card: the SIM cover can be removed by pressing it horizontally on the marked edge towards the LED display. Insert the SIM card here.

7.2 Putting into operation

- **Disable PIN code request, voicemail and missed call notification service on the SIM card.**
- **Enable caller identification and caller ID sending service on the SIM card at the GSM service provider.**
- Make sure the SIM card is inserted properly into its socket.
- Make sure the antenna is fixed properly into the FME connector.
- Make sure the wiring is done as specified above.
- Power up the module (9-30V AC/DC). Make sure the power supply is sufficient for the operation of the module. The quiescent current of the module is 40mA, but during communication it may reach up to 400mA.

8 Technical information

8.1 Technical specification

Supply voltage:	9-30V AC/DC
Nominal consumption:	40mA @ 12VDC, 20mA @ 24VDC
Maximum consumption:	400mA @ 12VDC, 200mA @ 24VDC
Max. load of relay outputs:	5A @ 24V AC/DC
Operating temperature:	-20ºC - +70ºC
Transmission frequency:	GSM 900/1800 MHz
GSM phone type:	Simcom SIM800F
Dimensions:	84 x 72 x 32mm
Weight:	200g (300g packed)

8.2 Package contents

- GSM Gate Control 20 + terminal block
- GSM 900/1800MHz antenna
- User's guide, warranty card