

# **GTM1**

## **Installation & Programming Manual**

**Security, monitoring, control and automation system**

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This manual includes steps to install, set up and use your system.

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## Features of the module GTM1

- Communication via SIA IP DC09 protocol
- 2G Quad-band (850/900/1800/1900 MHz)
- or 4G LTE modem

## MARKETS:

Chemical Injection  
 Light oil separator  
 Cold Room Regulation  
 Ice Vending Machines  
 Commercial Dishwashing Equipment  
 Smart Home  
 Building Security - Access Control Systems

## COULD BE USED TO:

Turn pumps on and off to inject chemicals  
 Read levels of chemicals in storage tanks  
 Report low levels of chemicals to home office for refilling  
 Pressure and temperature monitoring  
 Level control  
 Control of pumps and valves  
 Precisely regulate temperature in refrigerated  
 Monitor temperature with up to 32 high accuracy temperature sensors  
 Ventilation control  
 Monitoring of the doors  
 Energy management as well as humidity and temperature control  
 Programming at a distance  
 Events history readings  
 Receive alarm events via SMS, App notifications  
 Access control via mobile, web app, free short call, SMS, iButton keys, RFID cards, Wiegand keypad

## INPUTS:

- **IO1 and IO2 programmable selectable input or output**
- IO1: 0-30V
- IO2: 0-30V
- **IO3/D0 programmable selectable**
- IO3/D0: 0-30V analog input (zone or sensor)
- IO3/D0: 0-20mA 4-20mA current loop sensor
- 2-wire Smoke Detector (Fire current loop)
- IN1/D1: 0-30V
- **1W programmable selectable**
- Digital input (Max 3.3V!!!)
- Dallas 1-wire bus
- Aosong 1-wire bus
- **Wiegand keypad inputs: IO3/ D0 or IN1/D1**

## OUTPUTS:

- OUT1 (1A)
- OUT2 (1A)
- **Programmable selectable outputs**
- IO1 (1A)
- IO2 (1A)
- IO3 (20mA)
- 1W, 10mA, Max voltage 3.3V!
- **Output state indication LED FN**
- **Power supply DC 10-30V AC 12-24V Maks 0,5A**
- **AUX+ 10-30V/1A**
- **+5V (power source output for sensors, wired to 1 wire bus)**

Up to 32 sensors, temperature, humidity etc.

- Built-in access control features
- In-field firmware upgradeable via USB and SERA2 software
- Events log buffer. 2048 events
- Program remote controls using the master or installer codes
- Up to 800 users remote controls with mobile, web app.
- Up to 800 users remote controls with iButton or RFID keycard
- Up to 800 user code. To control with Wiegand keyboard.
- Unlimited control via SMS.
- Push button software reset

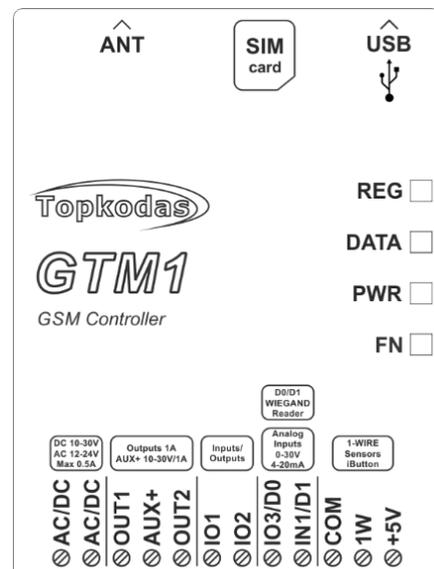


Fig 1 Module GTM1

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# 1 General information about the module GTM1

## 1.1 Specifications

### Parameters of built-in GSM module:

- Quad-band (850/900/1800/1900 MHz)
- *Optional 3G, 4G LTE bands*
- Sending of SMS messages
- Receiving of calls and dialing
- Data download/upload via GPRS network

### Outputs:

OUT1 (1A)

OUT2 (1A)

### Programmable selectable outputs

IO1 (1A)

IO2 (1A)

IO3 (20mA)

1W, 10mA, Max voltage 3.3V!

### Output state indication LED FN

- All outputs can be controlled via short call DIAL or via SMS message, mobile, web app. This feature may be used for gate opening.
- Output alarm parameters may be programmed.
- Programmable algorithms for outputs operation: CTRL/SMS/DIAL, SIREN, BUZER, ARM state, Zones OK, Light Flash, inverting, pulse mode

### Inputs:

#### IO1 and IO2 programmable selectable input

IO1: 0-30V

IO2: 0-30V

#### IO3/D0 programmable selectable

IO3/D0: 0-30V analog input (zone or sensor)

IO3/D0: 0-20mA 4-20mA current loop sensor

2-wire Smoke Detector (Fire current loop)

#### IN1/D1: 0-30V

#### 1W programmable selectable

Digital input (Max 3.3V!!!)

Dallas 1-wire bus

Aosong 1-wire bus

#### Wiegand keypad inputs: IO3/ D0 ir IN1/D1

- SMS text for input alarm and restore
- Available to control up to 32 sensors
- Programmable enabling or disabling of inputs;
- Burglary alarm zones. Input type NC/NO/EOL/EOL+TAMPER 5.6K + 5.6K
- Algorithm for zones operation: delay, interior, instant, 24 hours, silent, fire
- Response time;
- Time of additional response;
- Commutation of selected output

### Digital input/ output 1W:

- Programmable optional digital input or output
- Max. Voltage 3.3V
- Dallas 1-Wire Bus, DS18B20, DS1990A
- Aosong 1-Wire bus Humidity Sensor AM2302 DHT22 AM2305 AM2306 AM2320 AM2321
- Wiegand interface DATA0/ DATA1, RFID reader, Keyboard.
- The total length of the bus from 10 to 100m.

### Module control:

#### ARM/DISARM of the security system via:

- „Key switch“ input level or pulse mode.
- SMS message 800 users
- short call DIAL 800 users
- Maxim-Dallas iButton key (iButton DS1990A – 64 Bit ID)) 800 users.
- Wiegand keypad code or RFID keycard or key fob 800 users
- Mobile, web app

#### 5V power source output for Dallas 1-Wire Bus, DS18B20, DS1990A, Aosong 1-Wire bus Humidity Sensor AM2302 DHT22 AM2305 AM2306 AM2320 AM2321

- Voltage 5V
- Current limit 100mA

#### AUX+ 10-30V/1A

#### Output state indication LED FN

#### Automatic periodical test:

- Test sending in a form of SMS message. Periodicity for communication control messages (tests) from 1 to 99 nights and days according to selected time. Or fixed periodical interval 1-99999 minutes.

#### Power supply voltage:

- DC 10-30V
- AC 12-24V
- Max. Allowed ripple voltage 100mV
- Min 0.5A

### Consumption current:

- In standby mode less than 50 mA.
- In dialing or SMS/GPRS sending mode less than 300 mA.

### Events Log:

Nonvolatile flash events log 2048 events

### Environmental parameters:

- Storage temperature range from -40 to +85 °C / -40 to 185 °F
- Operational temperature range from -30 to +75 °C / from -22 to 167 °F
- Max relative humidity under +40 °C / 104 °F 95%

### Package weight 90g

### Module weight: 70g

### Overall dimensions of the module:

73x62x26mm

## 1.2 Used definitions and terms

Term	Description
Alarm Log	Contains information about alarms that are currently active on the system or information about alarms that have been raised and then resolved on the system. This log can be useful in analyzing problems and trends in the system.
Arming/Disarming	A process of enabling/disabling system's security.
Authorized user	It is a person whose mobile phone's number is entered in Progate module. Several authorized users with the same rights may be entered into the module.
Backup battery	The secondary power source of the system. In case of a main power failure, the backup battery will take over.
Bell squawk	If enabled, the siren/bell indicates the completed system arming and disarming process (except the arming in STAY mode). After the system is successfully armed, the siren/bell will emit 2 short beeps and 1 long beep after the system is disarmed. By default, the parameter is disabled.
Bypass/Activate Zone	Zone bypassing allows the user to deactivate a violated zone and arm the system without restoring the zone. If a bypassed zone is violated or restored during exit/entry delay, or when then system is armed, it will be ignored. The zone will remain bypassed until the system is disarmed. Zones can only be bypassed and activated when the system is not armed.
Caller ID	Caller's identification
COM	Negative power supply terminal.

Configuration	Programming of the settings, which will define the operation of the item. For example, user's telephone numbers, set-up of periodicity for sending SMS message, input names etc.
CMS	Central monitoring station
DIAL	The system makes a call to the number specified.
Diagnostic Tool	When using Configuration tool software, you may monitor system inputs/ outputs, view changes of peripheral devices, instantly configure necessary options, for example, enabling/disabling PGM outputs, etc.
Entry Delay	The system initiates the entry delay countdown if a Delay type zone is violated. The countdown is indicated by short beeps emitted by keypad buzzer and by steady beep emitted by system's buzzer. The indication is intended to advise the user that the system should be disarmed. If the system is disarmed before the entry delay expires, no alarm will be caused.
EOL	(End of line resistor) input type with resistor.
Event	The information that the user receives.
Event Log	A list of system events that is uploaded from the device's memory to the configuration software for further analysis. The system logs all information about system configuration, system actions and info messages.
Exit Delay	A period of time intended for user to leave the secured area. The system begins the countdown after the arming process initiation.
Fault	A specific problem or error that prevents the system from working properly. The system comes equipped with self-diagnostic feature allowing to indicate the presence of any system fault and send SMS text message notification to the listed user phone number.
iButton key	A unique 64-bit ID code containing chip enclosed in a stainless steel tab usually implemented in a small plastic holder. The module supports up to 800 iButton keys each holding a unique identity code (ID), which is used for system arming and disarming.
Installer	a person provided with INST (installer's) password
Master/User Code	Allows to carry out system arming/ disarming as well as minor system configuration and control
Normally closed (NC)	It is a switch that passes current until actuated.
Normally open (NO)	It is a switch that must be actuated to pass current.
Periodic Test Event	Provides the following information on alarm system: date & time, status (armed/disarmed), GSM signal strength, mains power supply status, temperature value measured by primary and secondary temperature sensors (if any).
Pull-up resistor	Is that it weakly "pulls" the voltage of the wire it is connected to towards +V (or whatever voltage represents a logic "high").
PGM output	A PGM output is a programmable output that toggles to its set up state when a specific event has occurred in the system or if the user has initiated the PGM output state change manually.
Ping period	Sets period of time defining how often the module sends ping data packet to the server.
Service messages	ARM/DISARM, test, resetting of the system.
SSR	Solid State Relay
SMS forward	System can re-sent all incoming SMS messages to the specified users. It is useful if the GSM operator of the inserted SIM card sends some useful information (SIM card validation or payment account status and etc.) or it is necessary to monitor all incoming SMS messages by specified user.
User	It is a person being aware USER password.
Zone	Detection devices such as motion detectors and door contacts are connected to the alarm system's zone terminals.
Zone state/status	Zone status is a position of a certain zone being enabled or disabled. Meanwhile, zone state points out the condition of a certain zone, which can either be violated (i.e. In case of alarm) or restored.
+V	Positive power supply terminal.

### 1.3 Package content

Table 1 Standard package content



GTM1 module – 1 pcs



Shipping Package - 1 pcs



Package content may be vary without a notice. Ask the seller before buying!

Table 2 Additional, under request package content



5.6 kOhm resistors - 4 pcs 100 Ohm resistors – 2 pcs	Spaces for PCB installation - 4 pcs	TPS12 13.7V/1.8A AC/DC Mini Switching Power Supply with battery charging	Wiegand keypad & RFID reader
			
iButton DS1990A-F5+ key	iButton probe with LED indicator	GSM antenna with cable	GSM antenna - 1 pcs
			
Humidity sensor AM2305	Water Proof DS18B20 Temperature Probe with 1m cable	Temperature sensor DS18B20	Humidity sensor AM2320
			
Humidity sensor DHT22 (AM2302)	Mini USB cable		

### 1.4 General view of the module

Figure 2 General view of the module Progate

**!** Do not locate SIM card with force, because you may damage SIM card holder

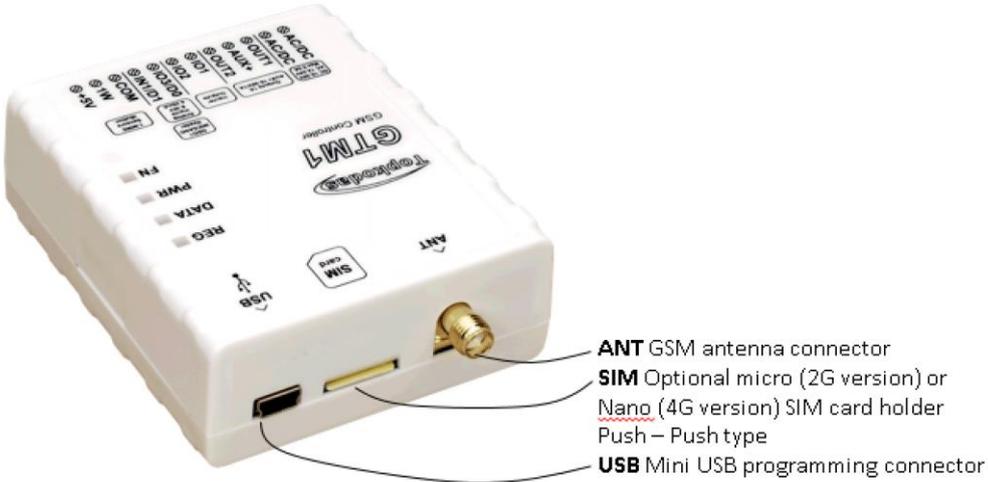


Figure 3 General view of the module

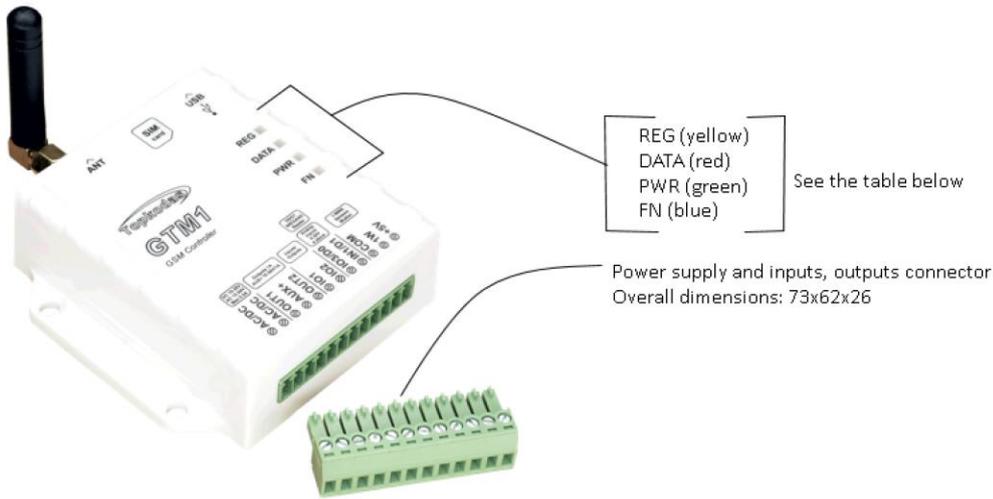


Figure 4 General view of the module

## 1.5 Meaning of LEDs and contacts

Table 3 Meaning of LEDs

Name	Indication variations	Meaning
PWR (green) built-in LED	Watchdog heart beat blinking, remains lit for 50ms, and turns off after 1000ms.	The module is functioning.
	Off	The module is out of order or no voltage
REG (yellow) built-in LED	Lights continuously	Modem has been registered to the network
	Flashes, remains lit for 50ms, turns off for 300ms	Modem is being registered to the GSM network.
	Blinking fast, remains lit for 50ms turns off for 50ms	PIN code of SIM card error. PIN code request should be removed
	Off	Modem failed to register to the network.
DATA (red) built-in LED	Lights continuously	The memory of the module contains unsent reports to the user or to the server.
	Off	All reports has been send.
FN (blue) built-in LED	ON	Selected output or input ON
	OFF	Selected output or input OFF

Table 4 Terminal block. Contacts.

Name	Optional functions and Description	
	AC/DC	DC
	AC	12-24V
	Max	0.2A
OUT1 OUT2	Outputs	1A
AUX+		10-30V, 1A
I/O1-I/O2	Programmable functions	Input with 10K resistor to the VD+ (Pull UP)
		Output 1A
	Max available voltage	Analog voltage input 0-30V
IO3/ D0	Programmable functions	0-30V analog input (zone or sensor)
		Output
	Max available voltage	2-wire smoke detector (fire current loop)
		0-20mA, 4-20mA current loop sensor
IN1/D1	Programmable functions	30V
		0-30V input
		Input with 10K resistor to the VD+ (Pull UP)
		The zone for security system NC/NO/EOL/EOL+Tamper
	Max available voltage	Wiegand (1) interface, RFID reader, keypad
COM	Negative supply terminal for keyboard(s), indicators and sensors.	

1W	Programmable functions	Digital output (Max 3.3V)
		Digital input (Max 3.3V)
		Dallas 1-Wire bus. DS18B20, DS1990A
		Aosong 1-Wire bus. Humidity Sensor AM2302, DHT22, AM2305, AM2306
	Max available voltage	+3,3V
	Max available current	10mA
+5V	Power output for external temperature, humidity sensors	
	Max available voltage	+5V
	Max available current	100mA

## 1.6 Configuration methods

### SMS text messages



In order to configure and control the device by SMS text message, send the text command to the PROGATE SIM card from one of the listed administrator phone numbers.

### Sera2 software



Sera2 software is intended for PROGATE configuration locally via USB port or remotely via 2G/3G/4G network. This software simplifies system configuration process. Sera2 software is free, which you can download from our website: [topkodas.lt](http://topkodas.lt)

### Remote connection



The system will NOT transmit any data to monitoring station while configuring the system remotely via 2G/3G/4G TLE network connection. However, during the remote connection session, the data messages are queued up and will be transmitted to the monitoring station after the configuration session is over.



Sera2 software provides remote system configuration ability using Topkodas Cloud server via GPRS.

## 1.7 System Access codes

Table 5 Default passwords and explanation

Password	Default	How to find and how to change	Explanation
SIM card PIN	1234	SERA2> System Options> General system options	It is automatically ignored if pin request in SIM card is disabled
Installer Password	000000	SERA2> System Options> General system options	This password allows you to enter programming mode, where you can program all features, options, and commands of the module.
SMS User Password	123456	SERA2> System Options> General system options	This code allows you to utilize arming method, as well as program user codes.
User password of GSM operator	123456	SERA2> GSM Communications> GPRS/IP/TCP/UDP	User password of GSM operator network where SIM card inserted in the module is operating.
App Key	123456	SERA2> GSM Communications> Sera Cloud Service	"APP Key" in module must be same as Remote connection password via [cloud app] also in [SERA remote] default: 123456
Installer code (for SMS control and configuration)	000000	INST000000_090_PSW 090= command code (Change of installer's code) PSW = New Installer's password.	6-digit password used for system configuration, control and request for information.
User code (for SMS control and configuration)	123456	INST000000_091_PSW Change user's code 091= command code (Change user's code) PSW = New user's password.	6-digit password used for system control and request for information.
Master password (Keybutton code)	1234 or 123456 (if selected 6 digit)	in user table SERA2> Users/ Access control 6 or 4 digit code selected: System Options> General system options> User Access Code Format	Control functions for all newly associated keys will be assigned according to MASTER key. For example: If MASTER key will control Out1, all newly associated keys will also control Out1.

## 1.7.1 AppKey

1. **Change default App Key (Default 123456).** Sera2> GSM Communication> Sera Cloud Service
2. **Enter App Key for the remote connection via Sera2.** Go to Sera2> Settings Enter the same App Key as in the Sera2> GSM Communication> Sera Cloud Service

Enter App Key for the remote connection via Cloud service. Go to <https://cloud.topkodas.lt/index.php> > Settings

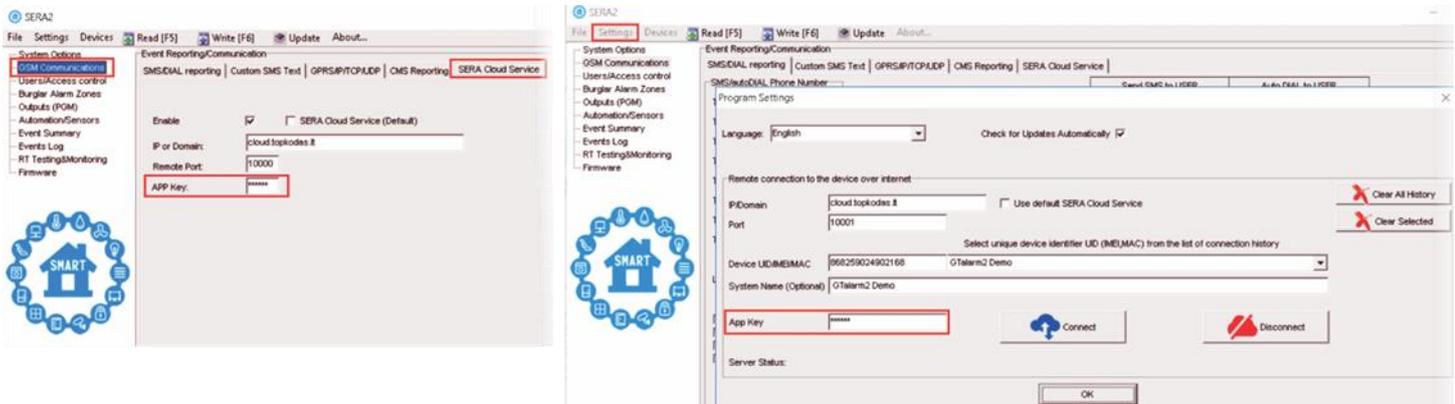


Figure 5 GSM Communication> Sera Cloud Service> App Key and Settings> App Key

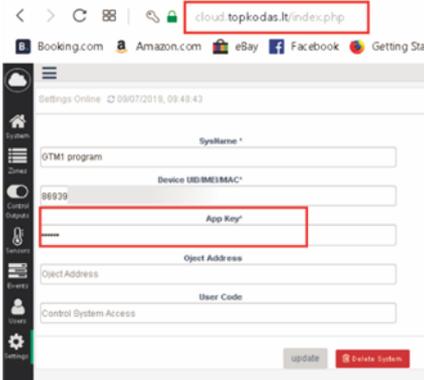


Figure 6 <https://cloud.topkodas.lt/index.php>> Settings > App Key

## 1.7.2 Installer and User passwords

If you want to edit existing configuration,

- You have to read it (press "Read" in the command line)
- Edit settings
- Write edited configuration (press "Write" in the command line)

**The password for remote and SMS configuration.** Installer Password (Default: 000000). This password used for remote configuration or for configuration via SMS messages with INST code

**The password for remote control or for control via SMS messages.** SMS user password: 123456. The password used for remote control of the module or control of the module via SMS messages with USER code

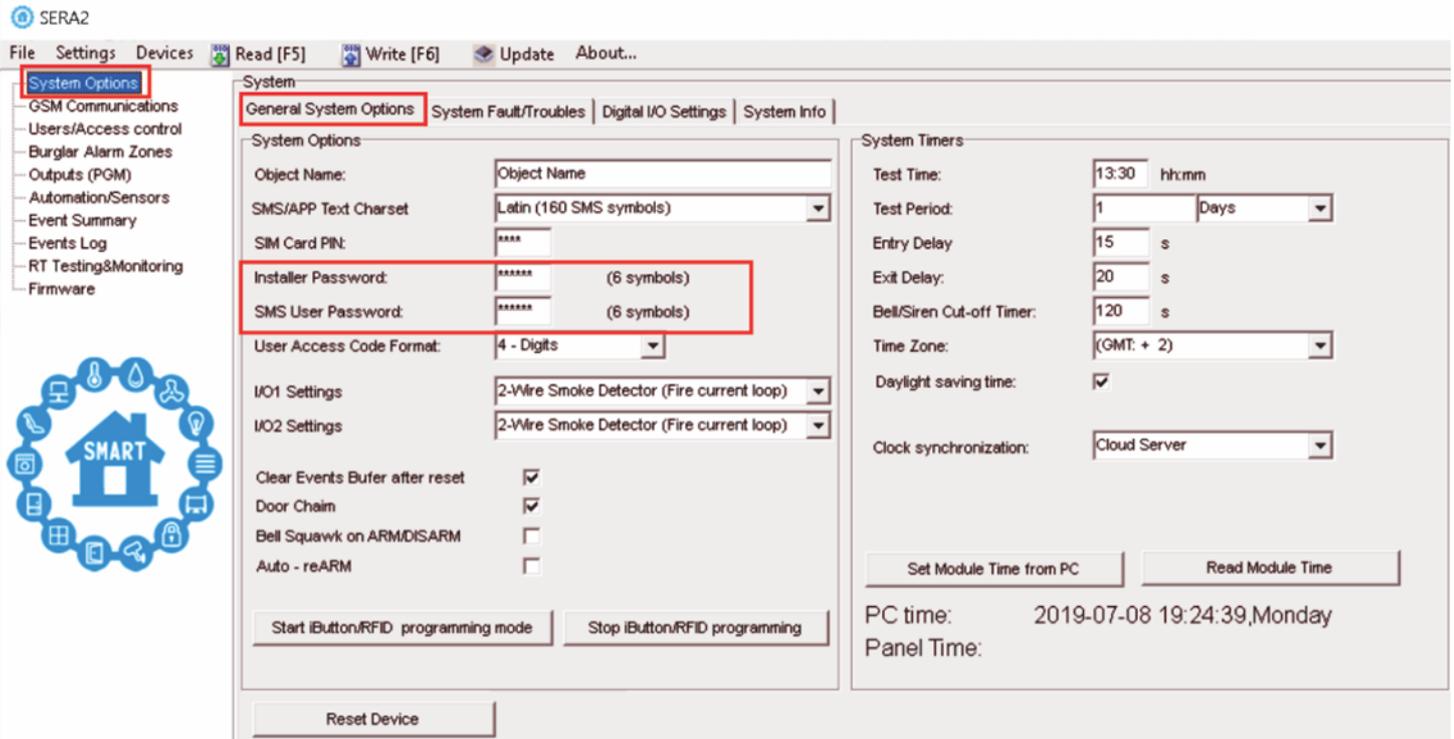


Figure 7 System Options > General System Options

### 1.7.3 Master code for access control via keypad

If you want to edit existing configuration,

- You have to read it (press "Read" in the command line)
- Edit settings
- Write edited configuration (press "Write" in the command line)

**Master Code for access control via keypad.** Default Master code: 1234 or 123456

1. Select 6 or 4 digits user access code format. Sera2> System Options> General System Options>User Access Code Format
2. Enter 6 or 4 digits codes in the Sera2> Users/ Access control > Keyb Code

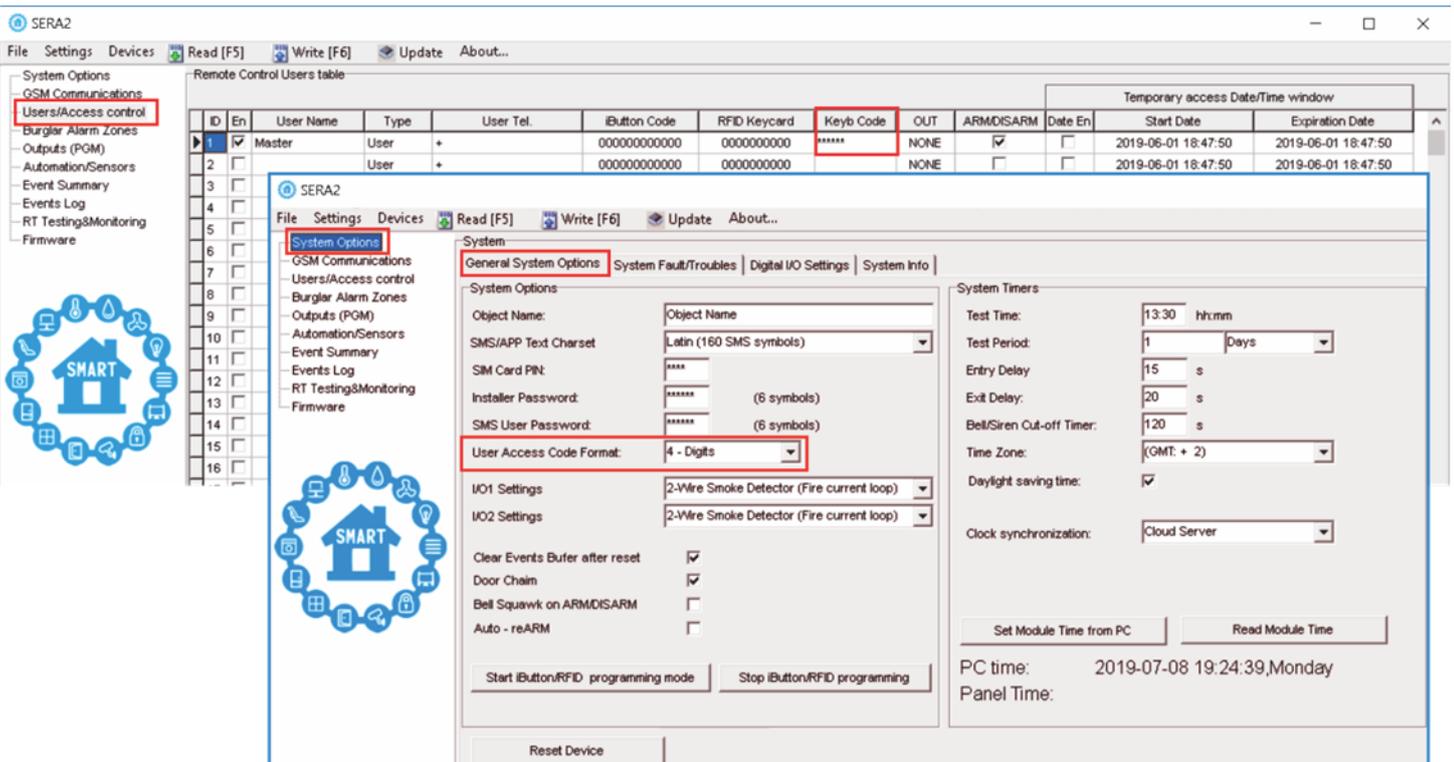


Figure 8 User/ Access control and System Options > General System Options

## 2 QUICK START. First steps to prepare GTM1 module and SERA2 software.

### Preparation procedure of the module PROGATE.

Connect the GSM antenna to the antenna connector.

Insert the SIM card in the SIM card holder.

Ensure that PIN request function is disabled.

Ensure that mobile internet service (mobile data) is enabled if mobile app or IP connection with CMS will be used.

Connect power supply.

Connect the module to the computer via mini USB cable.

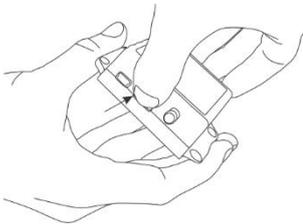


Figure 10 Insert SIM card

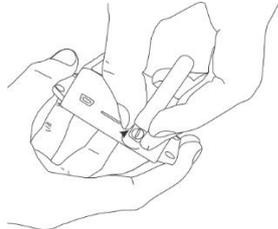


Figure 9 Screw GSM antenna

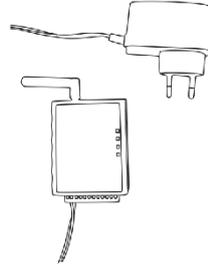


Figure 11 Connect power supply

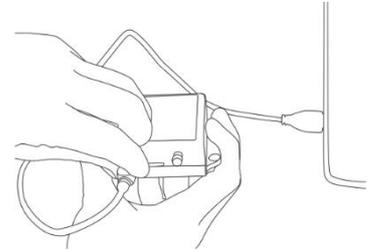


Figure 12 Connect the module to the computer



**CALL TO THE MODULE FROM YOUR MOBILE  
YOU WILL RECEIVE SMS FROM THE MODULE**

### Install configuration software SERA2.

Go to the <http://topkodas.lt/> website and download SERA2 software.

Open the folder containing installation of the software SERA2. Click the file „SERA2 setup.exe“

If installation directory of the software is OK, press [Next]. If you would like to install the software in the other directory press [Change], specify other installation directory and then press “next”.

- Check if the correct data are entered and press Install
- After successful installation of the software SERA2, press [Finish]

## 3 Fastening

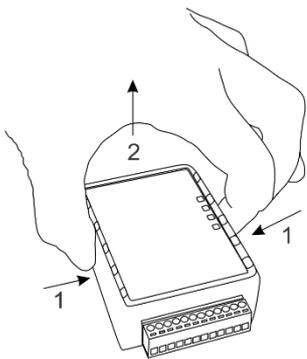


Figure 13 Remove the top lid

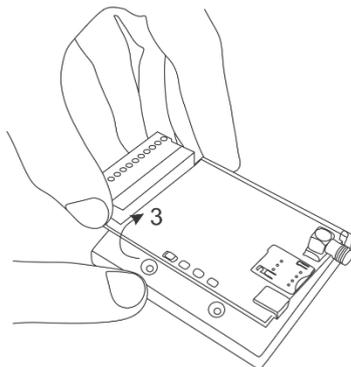


Figure 15 Remove the PCB board

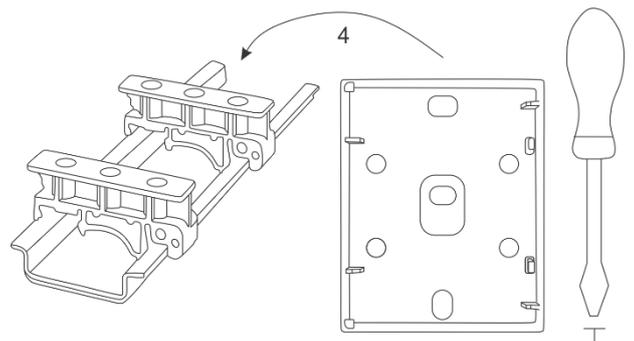
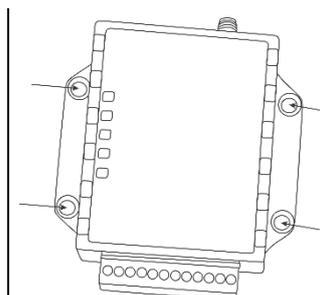


Figure 14 Fasten the base of the case

1. Remove the top lid.
2. Remove the PCB board.
3. Fasten the base of the case in the desired place using screws. DIN rail standard.



Fasten the base of the case in the desired place using screws.

Figure 16 Fasten the base of the case

## 4 Installation

This Installation & Programming manual provides the basic installation, wiring and programming information required to program the module Progate and connect all third party devices to the module.



Disconnect power supply before wiring!

The correct wiring procedure is as follows:

- Make sure power is turned off;
- Make wiring connections to the terminals;
- Apply power.

### 4.1 Power supply, Battery Wiring

Power supply DC 10-30V AC 12-24V Max 0.2A. It is necessary to calculate max current of power supply. The current of the alarm system is the current used by sensors, relays, siren and other devices. It is most convenient to use power supply source applied for power supply of security systems with the option to connect backup lead battery. It is recommended to mount remote control relays into sockets. Sockets may be easily fixed in metal box. It is necessary to select relays according to preferred voltage and current.

#### Prepare the module GTM1

- Insert SIM card
- Screw GSM antenna

#### The example how to configure the module GTM1 for AC failure, restore function

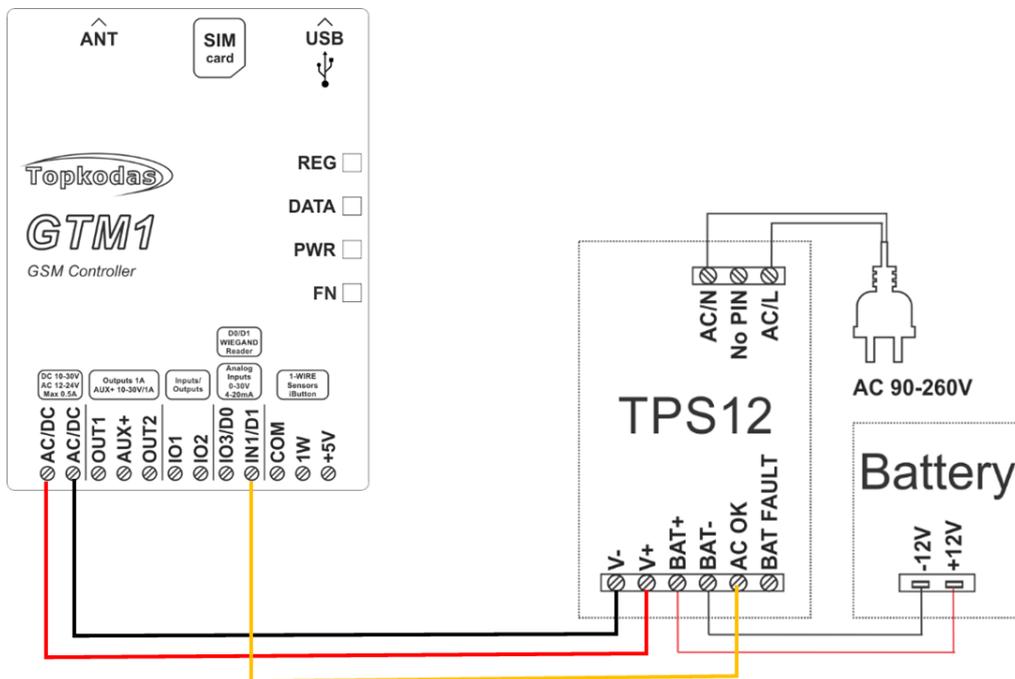


Figure 17 Power supply, battery wiring

#### How to configure the module GTM1 for AC failure, restore function



If you want to edit existing configuration, You have to read it (press "Read" in the command line)  
Edit settings, Write edited configuration (press "Write" in the command line)

Connect the module to the computer via mini USB cable  
 Start free configuration program Sera2  
 You will find it in <https://www.topkodas.lt/> website  
 HELP & SUPPORT> Downloads

Go to SERA2> Inputs/ Burglar Alarm Zones  
 Double click on the 4th row

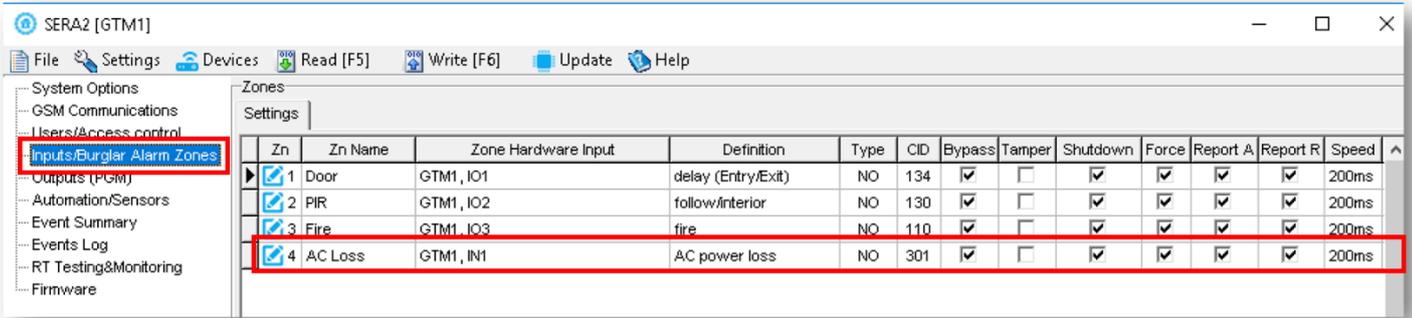


Figure 18 SERA2> Inputs/ Burglar Alarm Zones

Enter the required parameters.

Press "Write" icon (in the command line.)

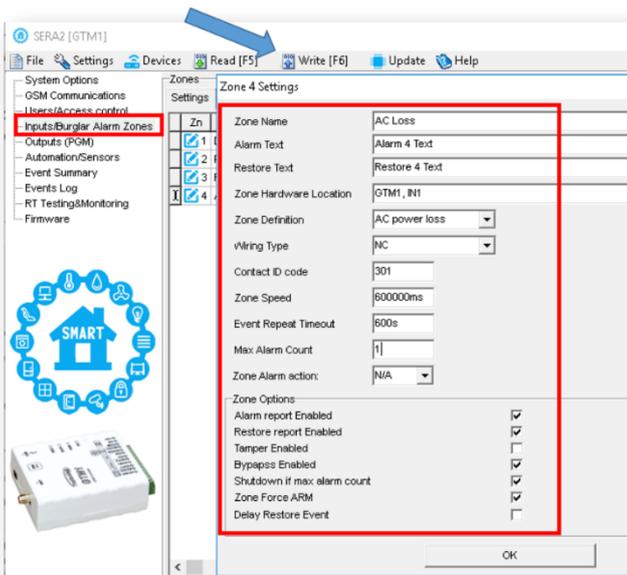


Figure 19 SERA2> Inputs/ Burglar Alarm Zones. Double click on the selected line

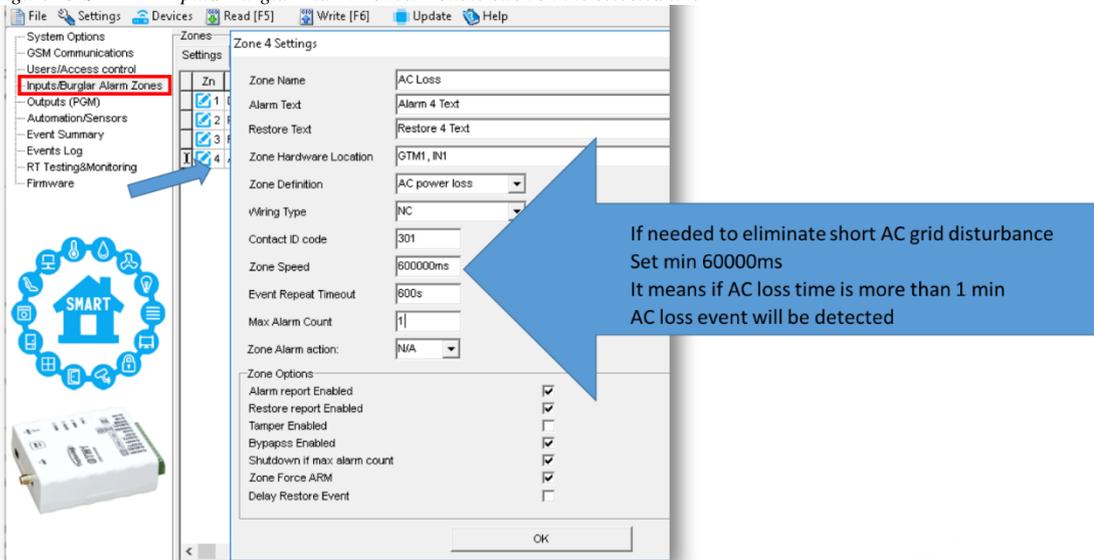


Figure 20 SERA2> Inputs/ Burglar Alarm Zones. Double click on the selected line

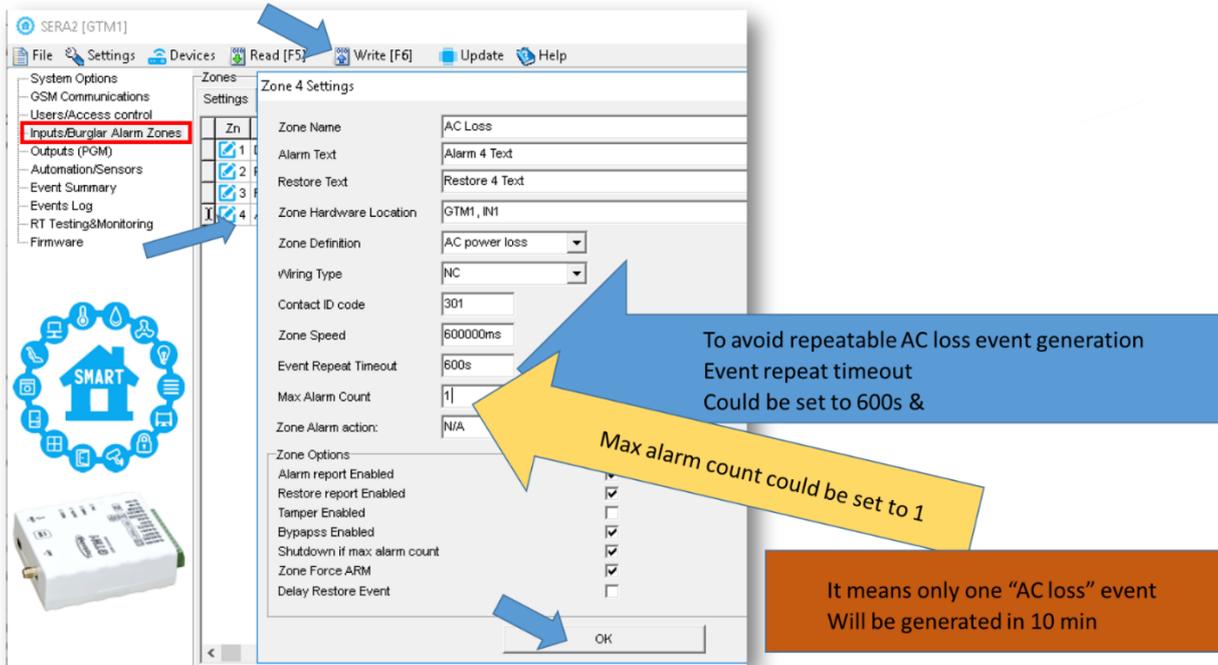


Figure 21 SERA2> Inputs/ Burglar Alarm Zones. Double click on the selected line

**How to set SMS alarm funktion**

Go to SERA2> GSM Communication> SMS/ DIAL reporting

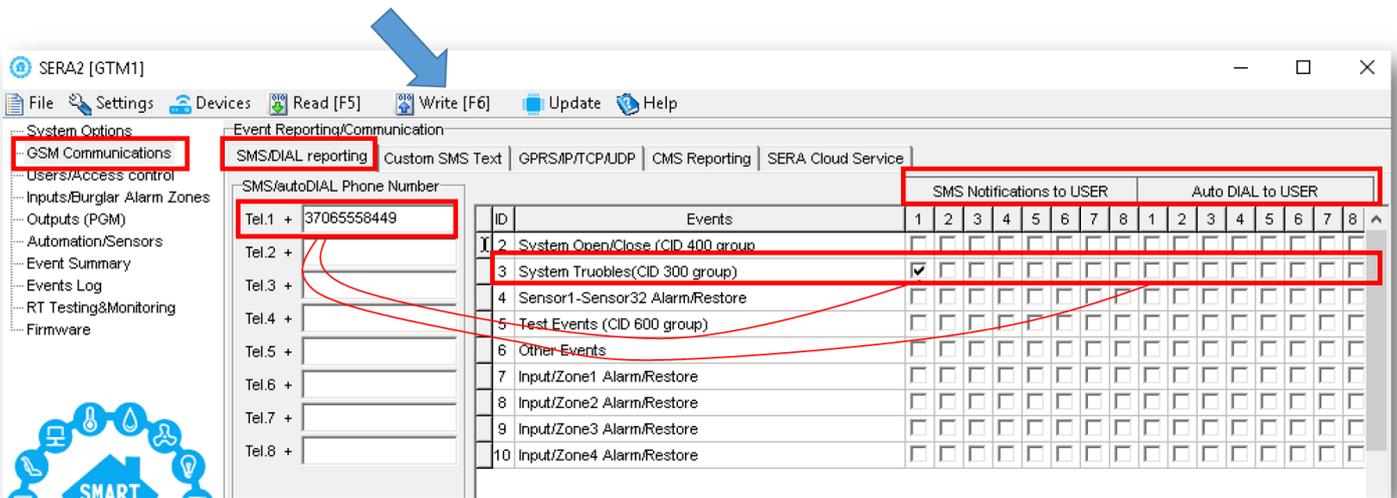


Figure 22 SERA2> GSM Communication> SMS/ DIAL reporting

SERA2> System Options> System Fault/ Troubles

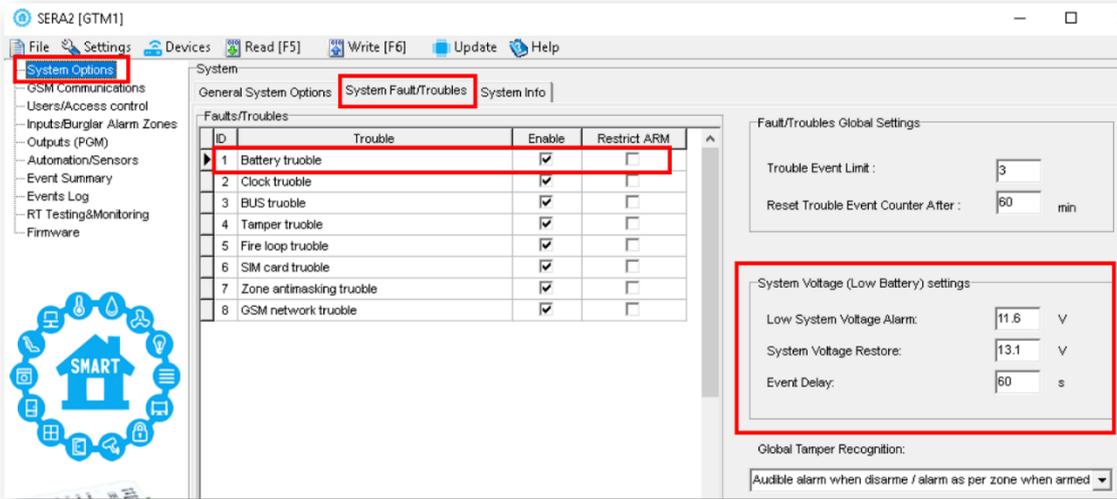


Figure 23 SERA2> System Options> System Fault/ Troubles

Go to SERA2> GSM Communication> Custom SMS text

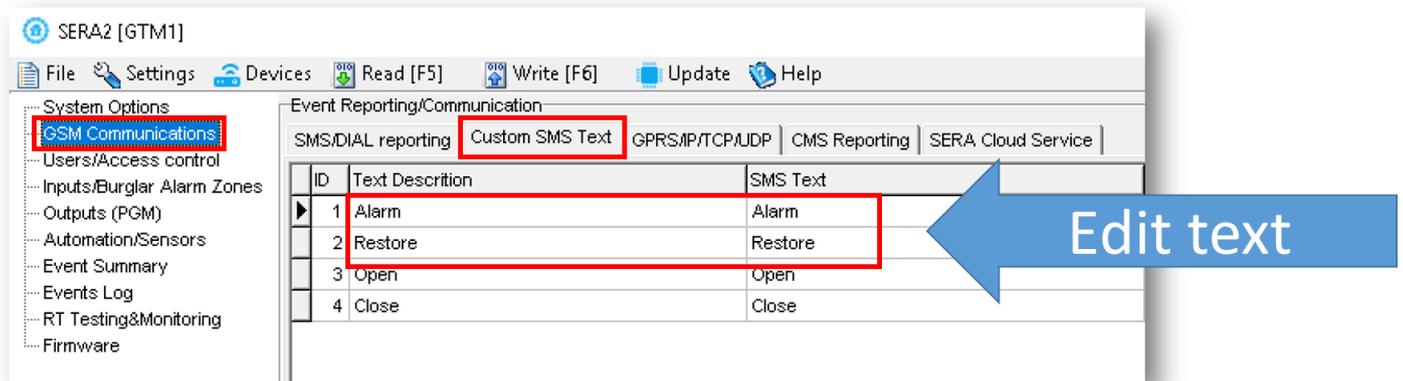
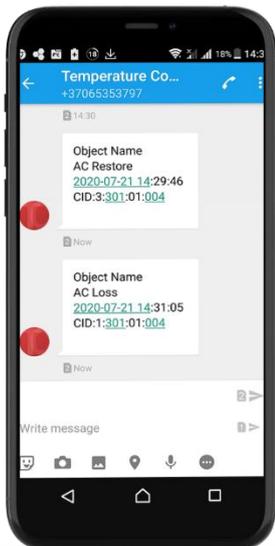


Figure 24 SERA2> GSM Communications> Custom SMS Text



Power supply TPS12 installation manual: [https://topkodus.it/Downloads/TPS12\\_UM\\_EN.pdf](https://topkodus.it/Downloads/TPS12_UM_EN.pdf)  
 Power supply TPS12 : [https://topkodus.it/Downloads/GTAlarm2\\_TPS12\\_AN\\_EN.pdf](https://topkodus.it/Downloads/GTAlarm2_TPS12_AN_EN.pdf)

**!** AC equipment cannot be connected directly to the module. It is necessary to use a special relays or other methods, which are in compliance with electrical safety requirements. When controlling devices from the AC network, it is necessary to follow all electrical safety requirements.

## 4.2 Inputs

### IO1 and IO2 programmable selectable input or output

- IO1: 0-30V
- IO2: 0-30V

### IO3/D0 programmable selectable

- IO3/D0: 0-30V analog input (zone or sensor)
- Output
- IO3/D0: 0-20mA 4-20mA current loop sensor
- 2-wire Smoke Detector (Fire current loop)

IN1/D1: 0-30V

### 1W programmable selectable

- Digital input (Max 3.3V!!!)
- Dallas 1-wire bus
- Aosong 1-wire bus

Wiegand keypad inputs: IO3/ D0 or IN1/D1

### 4.2.1 4-20mA sensors



#### PREPARE the module GTM1

- Insert SIM card
- Screw GSM antenna
- Connect analog current sensor as in the diagram
- Connect the power supply
- Connect the module to the computer via mini USB
- Install SERA2 software.
  - You will find it in <https://www.topkodas.lt/> website
  - (HELP & SUPPORT> Downloads)
  - Open SERA2
- Go to **SERA2> System Options> General System Options**
- **Set I/O3 Settings > 0-20mA, 4-20mA Current Loop Sensor**
- Press **“Write”** icon (in the command line)

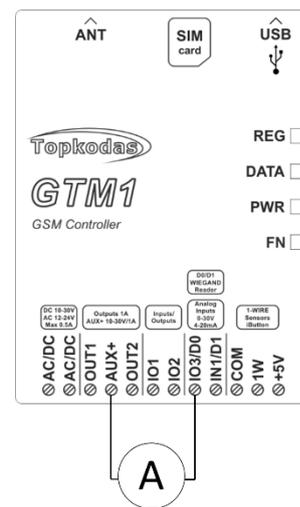
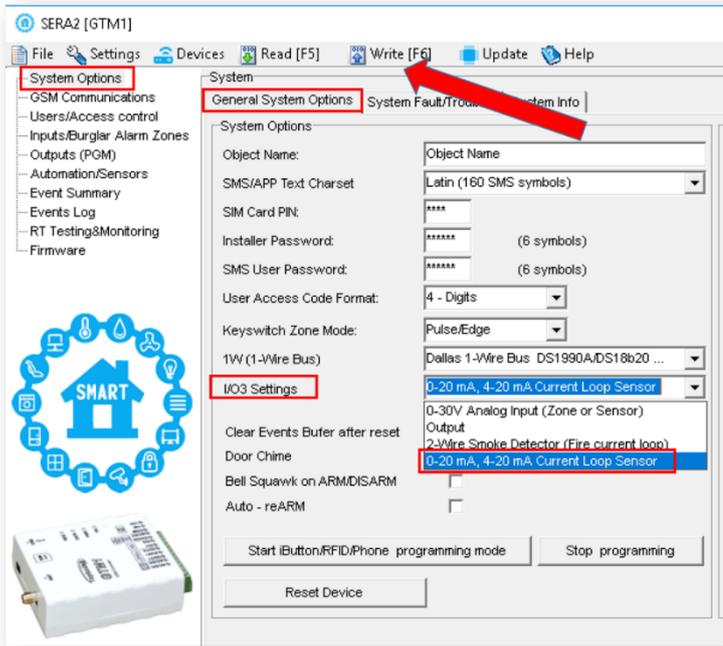


Figure 25 Example of 4-20mA sensor wiring



If you want to edit existing configuration, You have to read it (press “Read” in the command line)  
Edit settings, Write edited configuration (press “Write” in the command line)



- Go to SERA2> Automation/ Sensors
- Select GTM1, Input IO3, 0-20 mA
- Press "Write" in the command line

Figure 26 SERA2> System Options> General System Options

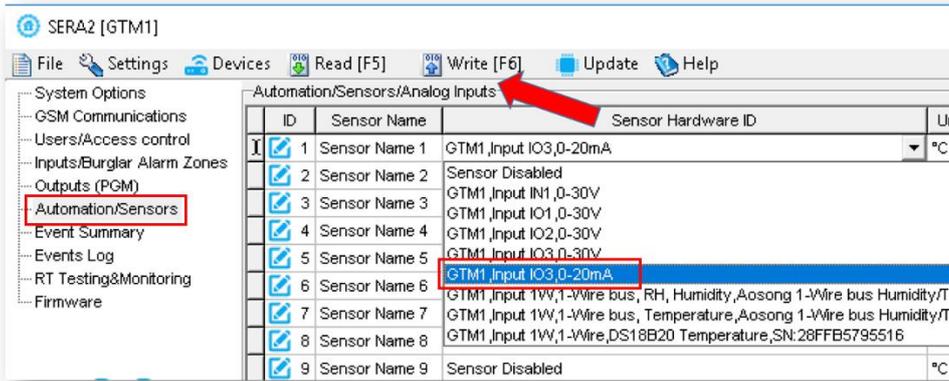


Figure 27 SERA2> Automation/ Sensors

Double click on the line

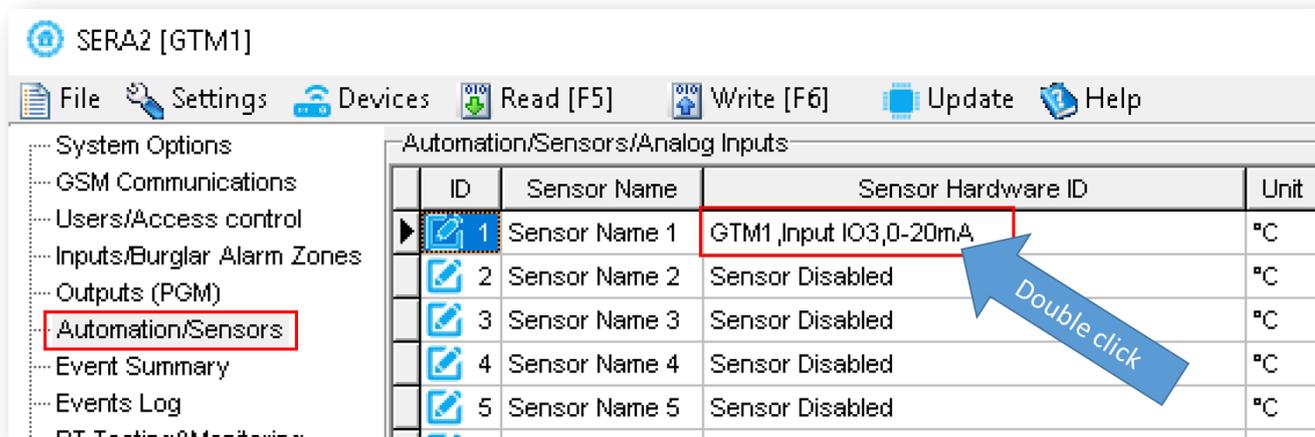


Figure 28 SERA2> Automation/ Sensors. Double click on the selected line

- Change default settings under your requirements
- Press "Write" in the command line
- Sensor calibration is possible

Contact manufacture for calibration file (email: [info@topkotas.lt](mailto:info@topkotas.lt))

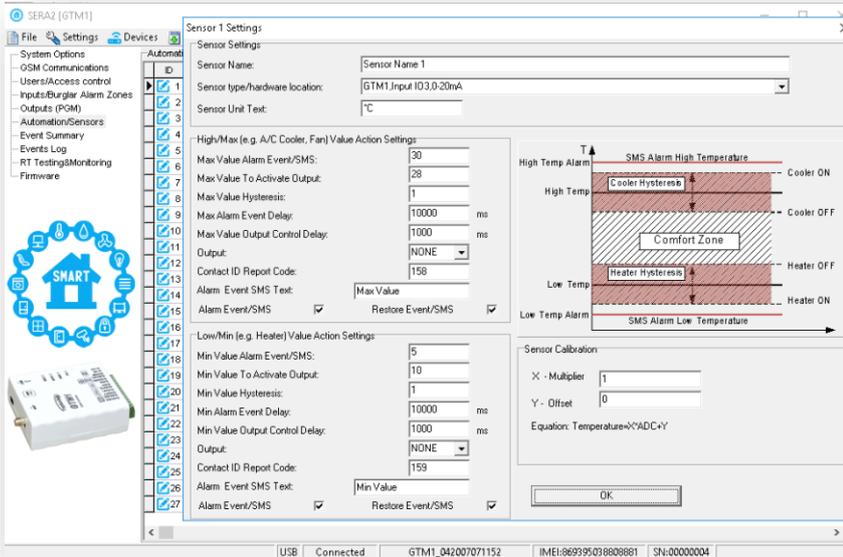


Figure 29 SERA2> Automation/ Sensors



**Please visit:**

- How to activate output, when defined value is reached?
- How to test the system: hardware status & real time sensor values, event list.
- How to read event log from internal memory of the module?
- How to set SMS alarms?
- How to change temperature scale from Celsius to Fahrenheit

**4.2.2 Humidity sensors AM2302/DHT22/AM2305/AM2306/AM2320/AM2321**

Module should work with following sensors: Aosong 1-Wire bus Humidity Sensor AM2302, DHT22, AM2305, AM2306. Also a new smaller sensor exists AM2320 & AM2321.

Table 6 Sensors AM2302, AM2320/AM2321 specification

Manufacturers' Specification		
	AM2302	AM2320/AM2321
Operating Range	0–100	0–100
Absolute accuracy (%RH, 25°C)	±3% (10-90%) ±5% (<10, >90%)	±3% (10-90%) ±5% (<10, >90%)
Repeatability (%)	±0.3	±0.1
Long term stability (% per year)	0.5	0.5
1/e Response (sec)	5	5
Voltage supply (V)	3.3–5.5	3.1–5.5(AM2320) 2.6–5.5(AM2321)

The table lists values taken from datasheets. The Aosong data sheets do not specify maximum tolerances for most parameters, just 'typical' values. It would therefore seem that any particular device is not guaranteed to meet these specifications. For all the other devices the numbers above are the maximum tolerances and most also offer better 'typical' specifications.

Each AM2302 sensor connects on separate bus line to digital input D1 (Digital I/O D1 in Sera2). Total up to 1 AM2302 Aosong (Guangzhou) humidity sensor could be connected to GTM1

Steps to start AM2320 and AM2302 sensors:

Prepare the module GTM1

- Insert SIM card
- Screw GSM antenna
- Connect AM2320 or AM2302 to the 1W according connection diagram.

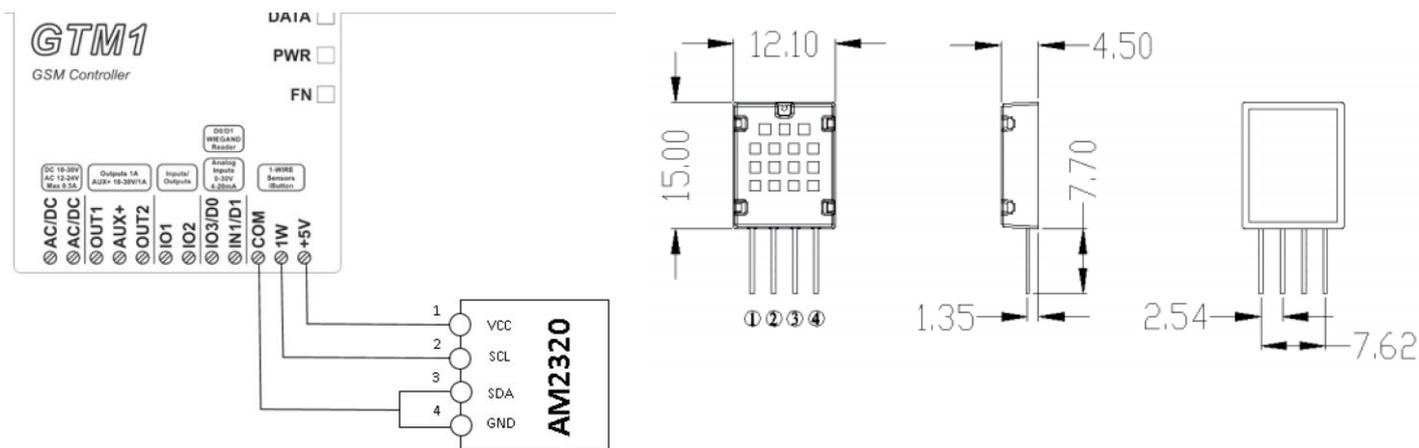


Figure 30 AM2320 connecting diagram

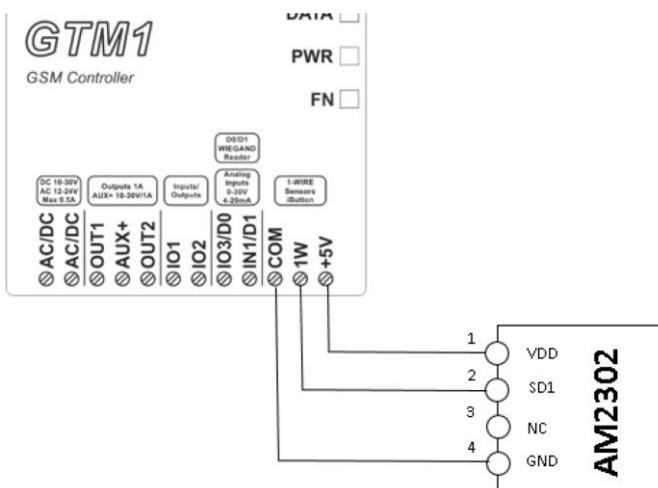


Figure 31 AM2302 connecting diagram



If you want to edit existing configuration, You have to read it (press "Read" in the command line)  
 Edit settings, Write edited configuration (press "Write" in the command line)

- **Connect the module to the computer via mini USB cable**
- **Connect the power supply.**
- **Start free configuration program Sera2**
- You will find it in <https://www.topkotas.lt> website
- HELP & SUPPORT> Downloads
  
- **Go to SERA2> System Options> General System Options window.**
- **Set 1W (1-Wire Bus)> Aosong 1 Wire bus Humidity/ Temperature Sensor AM2302...**
- Press **"Write"** in the command line
- Press **"Read"** in the command line

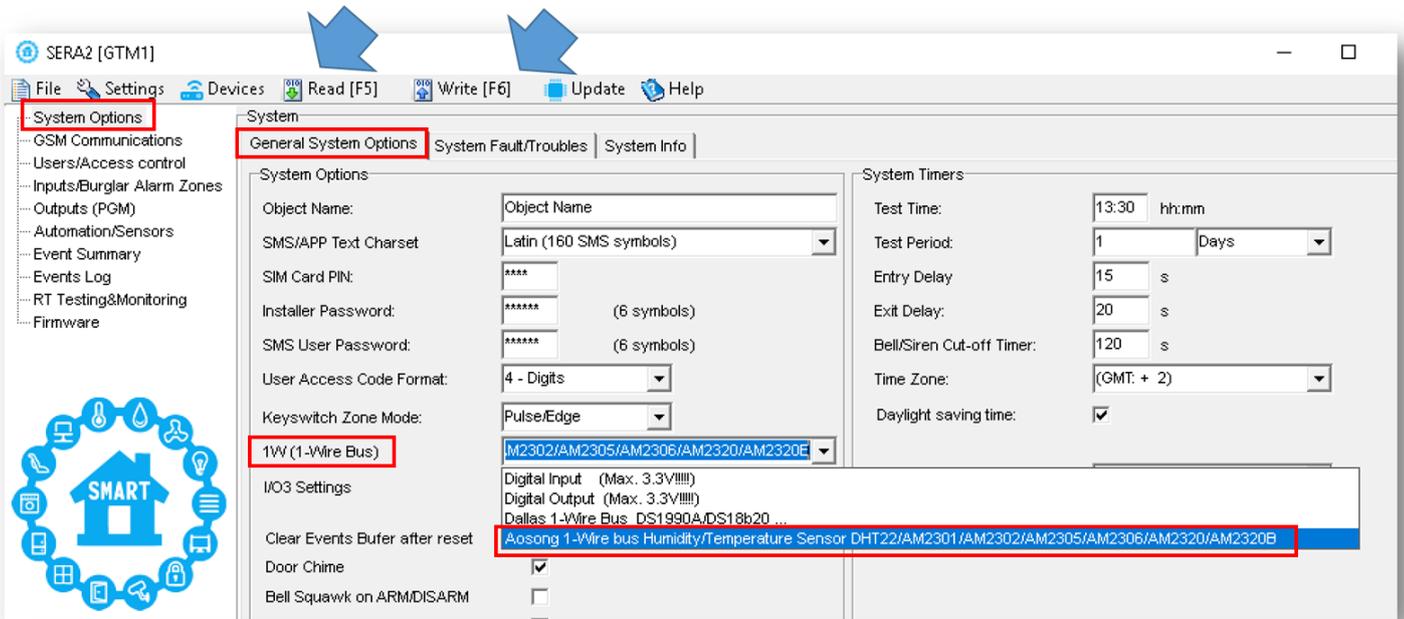


Figure 32 SERA2> System Options> General System Options

- Go to SERA2> Automation/ Sensors window. The sensor will appear in the list automatically.
- Double click on the selected sensor's line.

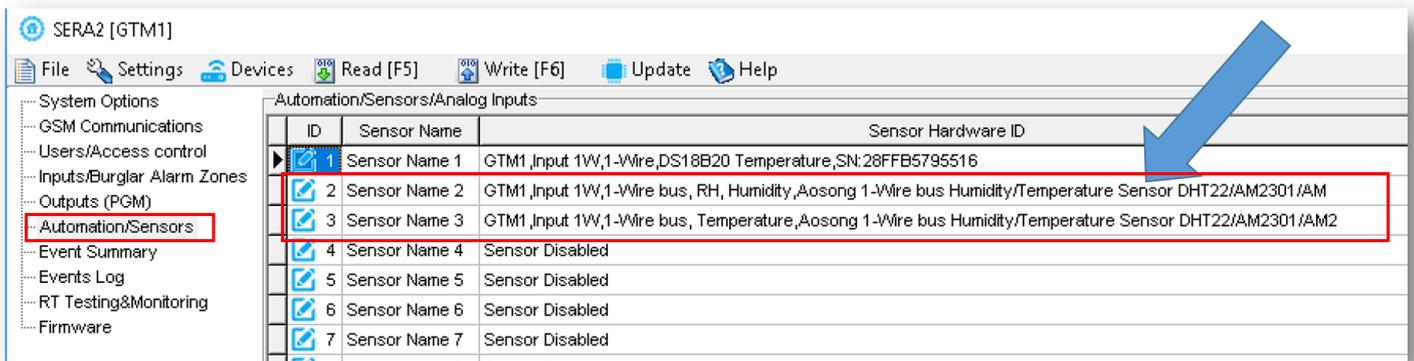


Figure 33 SERA2> Automation/ Sensors

- Set other parameters of the sensor MIN, MAX values Units etc.
- Press "Write" in the command line

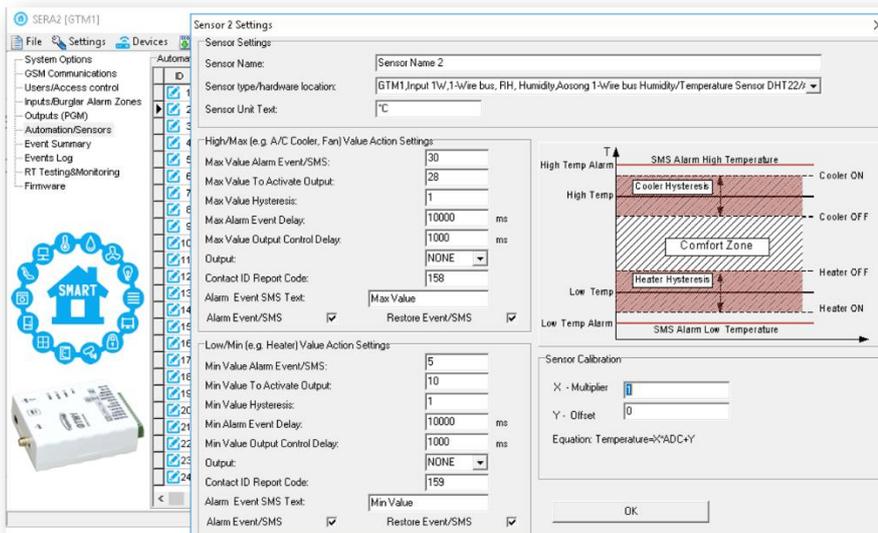


Figure 34 SERA2> Automation/ Sensors

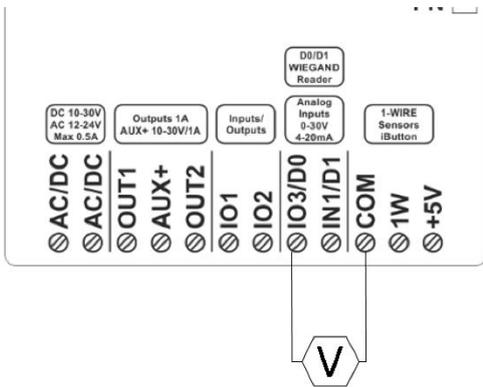


Please visit:

- How to activate output, when defined value is reached?
- How to test the system: hardware status & real time sensor values, event list.
- How to read event log from internal memory of the module?
- How to set SMS alarms?
- How to change temperature scale from Celsius to Fahrenheit

### 4.2.3 Analog inputs 0-30V

**!** If you want to edit existing configuration, You have to read it (press "Read" in the command line)  
 Edit settings, Write edited configuration (press "Write" in the command line)



Analog 0-30V sensors could be connected to IO3, IN1

Steps to start analog sensors:

Connect analog voltage sensors to IO3, IN1 according connection diagram.

If sensor connected to **IO3**, go to SERA2> System Options> General System options

**Set IO3 to 0-30V Analog Input (Zone or Sensor)**

Press "Write" in the command line

If analog inputs sensors is **not in use**, the inputs should be **disabled** in "Zones" or "Sensor" window.

Analog sensors should be calibrated and parameters should be set in the **SERA2> Automation/Sensors** window. Go to SERA2> Automation / Sensors, **double click** on the selected line. Sensors calibration is possible by changing multiplier, offset. When all changes has been done, the configuration should be written to module, by pressing **write** icon.

Figure 350-30V sensor connecting diagram

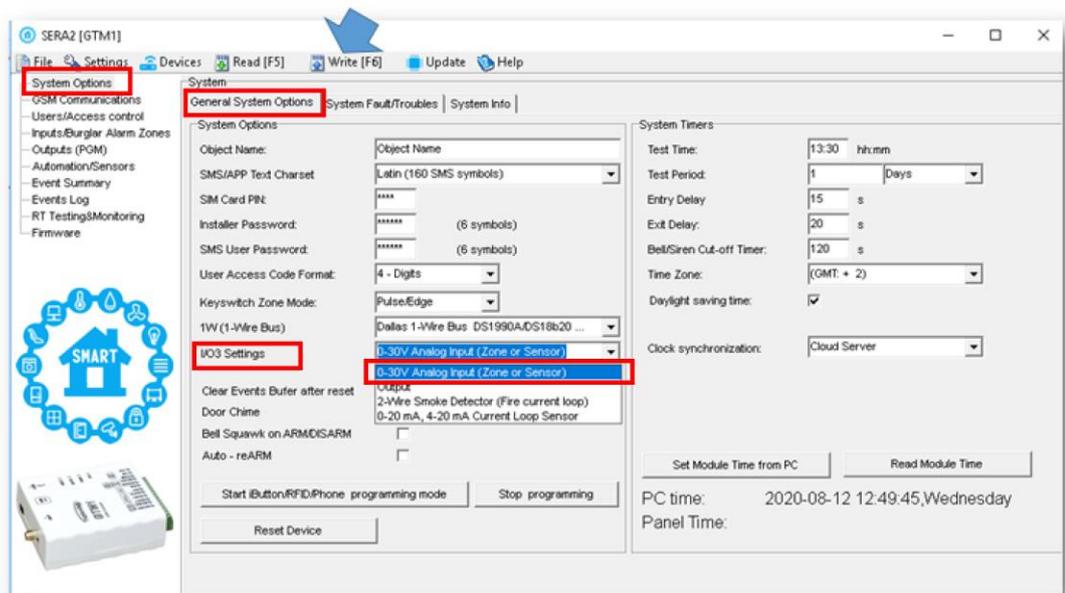


Figure 36 SERA2> System Options> General System Options IO3 Settings> 0-30V Analog Input (Zone or Sensor)

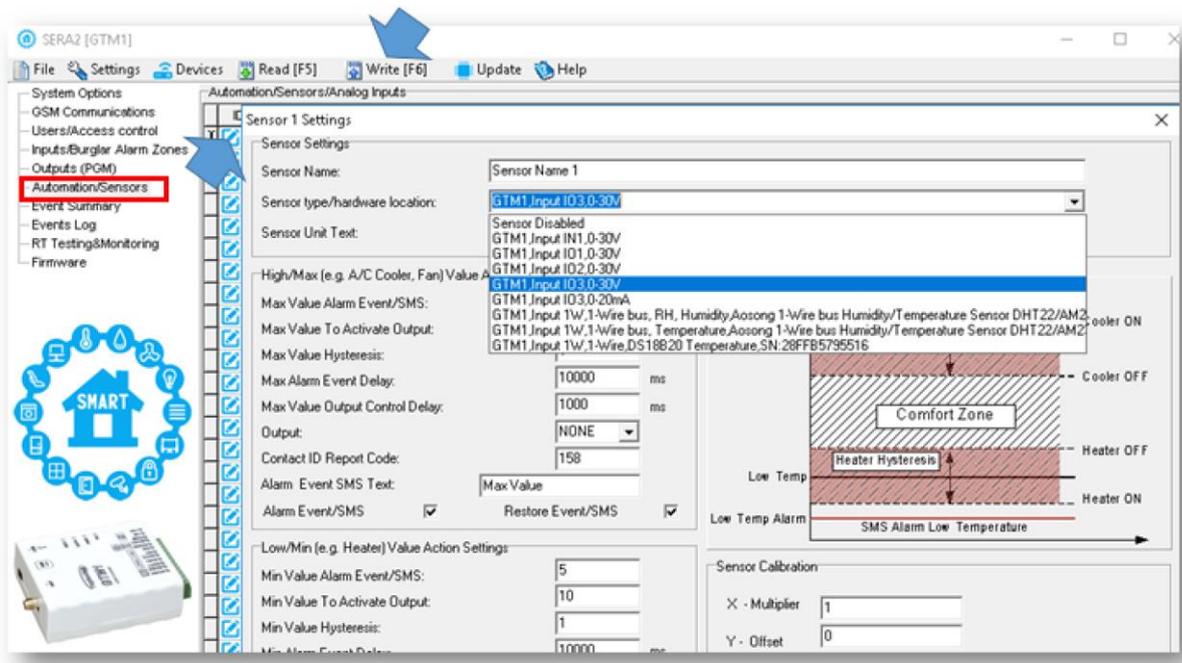


Figure 37 SERA2> Automation/ Sensors Double click on the selected line

! Any automation voltage analog sensors 0-10V, can be connected to IN1-IN4 (has internal pull up resistor 5.1K) , and I/O1, I/O2



**Please visit:**

- How to activate output, when defined value is reached?
- How to test the system: hardware status & real time sensor values, event list.
- How to read event log from internal memory of the module?
- How to set SMS alarms?
- How to change temperature scale from Celsius to Fahrenheit

#### 4.2.4 Temperature sensors Dallas 1-wire DS18B20 installation & recommendations



The DS18B20 digital thermometer provides 12-bit Celsius temperature measurements. The DS18B20 communicates over a 1-Wire Each DS18B20 has a unique 64-bit serial code, which allows multiple DS18B20s to function on the same 1-Wire bus. Thus, it is simple to use one to control many DS18B20s distributed over a large area. Applications that can benefit from this feature include HVAC environmental controls, temperature monitoring systems inside buildings, equipment, or machinery, and process monitoring and control systems.

**Applications/Uses**

- Consumer Products
- Industrial Systems
- Thermally Sensitive Systems
- Thermometers
- Thermostatic Controls

**Key Features**

- Measures Temperatures from -55°C to +125°C (-67°F to +257°F)
- ±0.5°C Accuracy from -10°C to +85°C
- Each Device Has a Unique 64-Bit code.

**Prepare the module GTM1**

- Insert SIM card
- Screw GSM antenna

**Connect temperature sensor DS18B20 to the 1W** according connection diagram.

[It is possible to connect up to 32 temperature sensors DS18B20]

DS18B20 connection with a long distance UTP or FTP cable

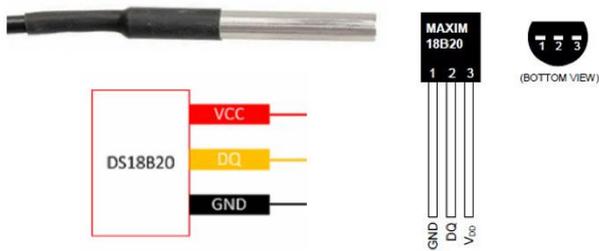
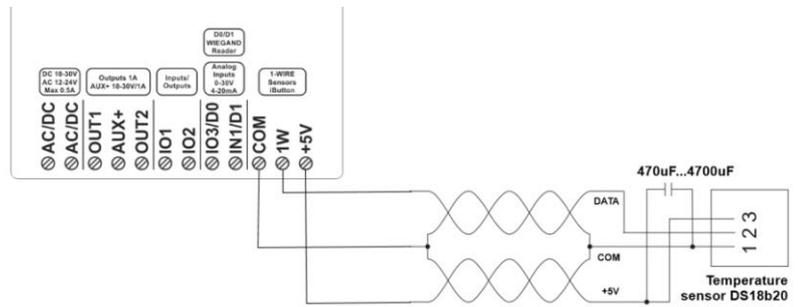
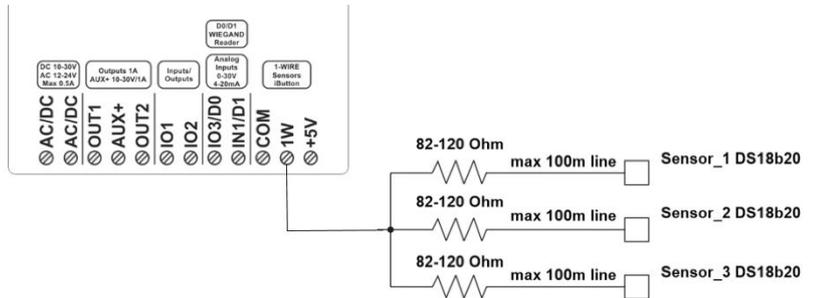


Figure 38 DS18B20 sensor



If you need to connect more sensors to 1W

- Connect them as a star or serial.
- Each line should be separated by 82-120 Ohm resistor



The resistor must be as close as possible to the contacts of the module GTM1.

#### 4.2.5 Temperature sensors Dallas 1-wire DS18b20 programming



If you want to edit existing configuration, You have to read it (press "Read" in the command line)  
Edit settings, Write edited configuration (press "Write" in the command line)

- Connect the module to the computer via mini USB cable
- Connect the power supply.
- Start free configuration program SERA2

You will find it in <https://www.topkodus.lt/> website  
HELP & SUPPORT> Downloads

- Go to **SERA2> System Options> General System Options** window.
- **Set 1W (1-Wire Bus)> Dallas 1-Wire Bus DS18b20...**
- Press **"Write"** in the command line
- Press **"Read"** in the command line

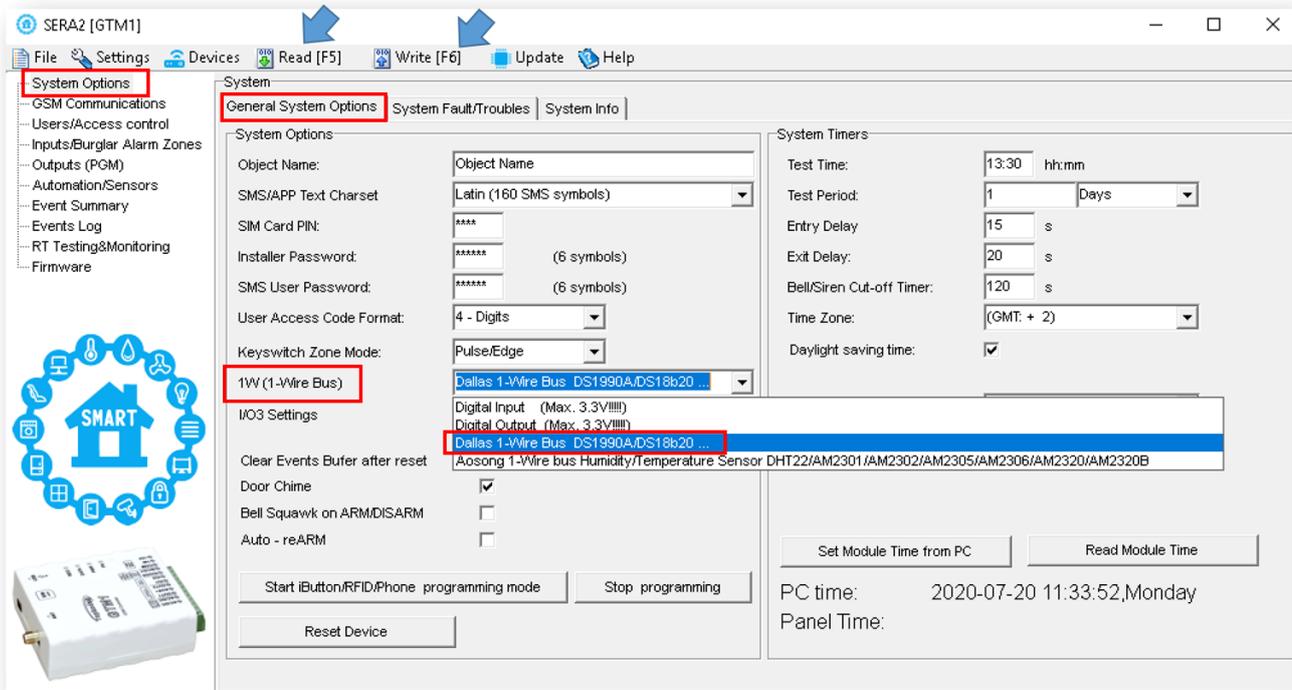


Figure 39 SERA2> System Options> General System Options

- Go to **SERA2> Automation/ Sensors** window. The sensor will appear in the list automatically.
- **Double click on the selected sensor's line.**

- **Set other parameters** of the sensor MIN, MAX, alarm values etc.
- Press **"Write"** in the command line

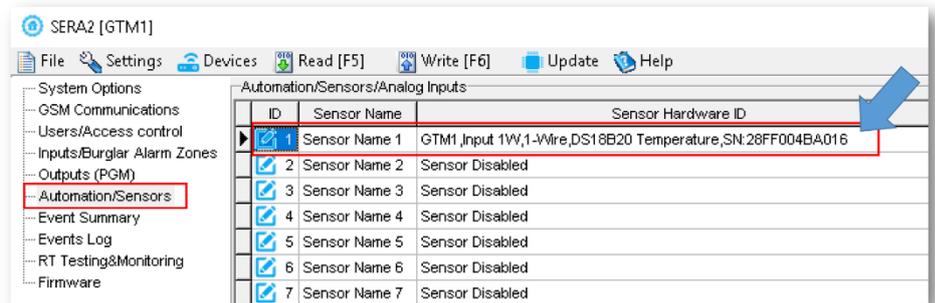


Figure 40 SERA2> Automation/ Sensors



**Please visit:**

- How to activate output, when defined value is reached?
- How to test the system: hardware status & real time sensor values, event list.
- How to read event log from internal memory of the module?
- How to set SMS alarms?
- How to change temperature scale from Celsius to Fahrenheit

Using cat 5 cable is best and will make it easier to maintain a working 1-wire network when you expand and add more sensors. The data and ground should use one twisted pair, for example blue/blue-white. A single wire from another pair is used for the 3.3 volt supply.

Don't double up wires on the assumption that this lowers resistance and is a 'good thing', it actually alters the impedance of the network and makes it less reliable. All unused wires in the cat 5 cable should be left unconnected (don't connect them to ground).When running a 1-Wire bus, Dallas recommend that you use an unshielded Cat5 cable for the bus. Do not use shielded cable as the capacitance increase will upset the network.

If you intend to have a large 1-Wire network, it is important that you design the network correctly, otherwise you will have problems with timing/reflection issues and loss of data. You must connect each sensor to a single continuous cable which loops from sensor to sensor in turn (daisy chain). This will reduce potential miss-reads due to reflections in the cable. Each sensor should have a maximum of 50mm (2") of cable connected off this main network. Even when using this method, connecting more than 10-15 sensors will still cause problems due to loading of the data bus. To minimize this effect, place a 100-120Ω resistor in series in the data line of each sensor before connecting to the network. The total length of the bus from 10 to 100m. Depending of cable quality sensors number on bus, and environment noise. There is possibility to connect up to 32 devices.

Begin the installation by mounting additional devices in the cabinet using the stand-offs provided, then mount the cabinet in a dry, protected area with access to unstitched AC power. Install hardware in the sequence indicated in the following pages. Do NOT apply power until installation is complete.

 All circuits are classified UL power limited except for the battery leads. Minimum 1/4" (6.4mm) separation must be maintained at all points between power limited and non-power limited wiring and connections.

#### 4.2.6 How to change temperature scale from Celsius to Fahrenheit

 If you want to edit existing configuration, You have to read it (press "Read" in the command line)  
Edit settings, Write edited configuration (press "Write" in the command line)

1. Go to SERA2> Automation/ Sensors (double click on the sensor's line).
2. Enter Y (offset) and X (multiplier) values.
3. Change the units to Kelvin or Fahrenheit in the SERA2> Automation/ Sensors (double click on the sensor's line).

Y(offset)=273.15, X(multiplier)=1

**Celsius to Fahrenheit conversion**

Y(offset)=32, X(multiplier)=1.8

**Celsius to Kelvin conversion**



Refer to: **Error! Reference source not found.**

#### 4.2.7 How to activate output, when defined value is reached?

 If you want to edit existing configuration, You have to read it (press "Read" in the command line)  
Edit settings, Write edited configuration (press "Write" in the command line)

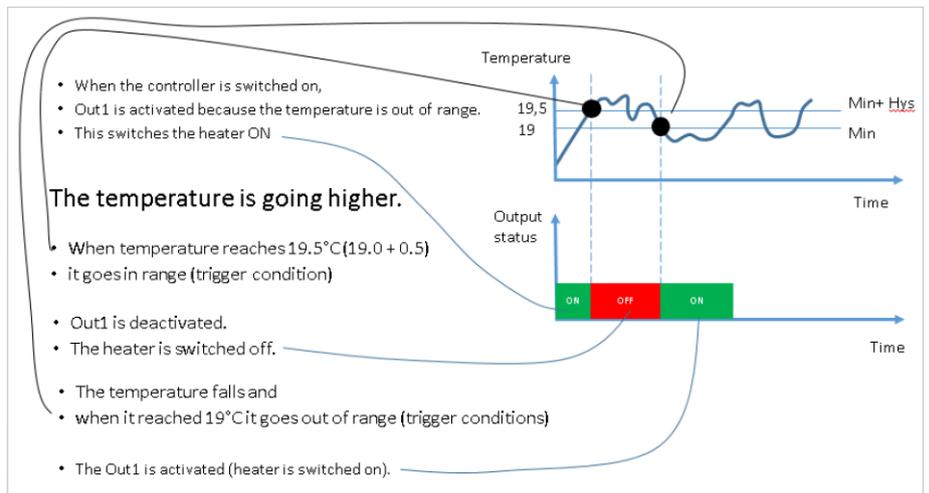
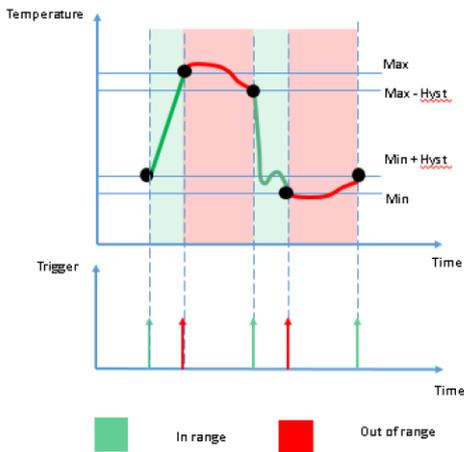
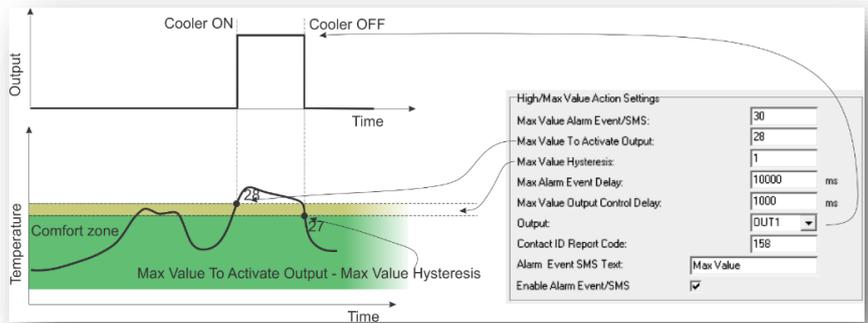
It is possible to set:

**trigger conditions** (“Min”, “Max” and “Hys.”) and **wanted action.**  
**SMS alarm event values**

**Hysteresis** (“Hys”) is used to prevent from excessively triggering when the value fluctuates around the trigger point.

**Example:**

The wanted minimum temperature is 19°C.  
 So sensor1: Min=19 and Hysteresis=0.5



**4.2.8 How to test the system: hardware status & real time sensor values, event list.**

**Real time hardware status**

Go to SERA2> RT Testing & Monitoring > Hardware  
 Press “Start Monitoring”

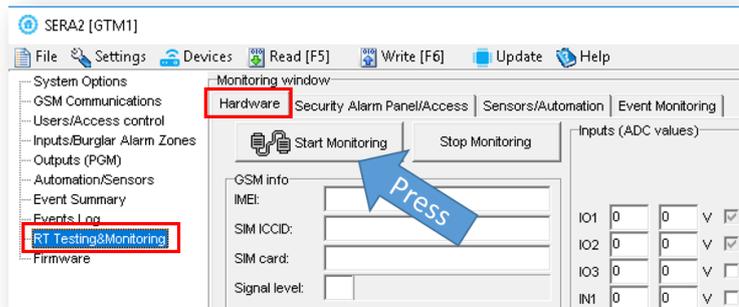


Figure 41 SERA2> RT Testing & Monitoring> Hardware

**Real time sensor values**

Go to RT Testing & Monitoring> Sensors Automation

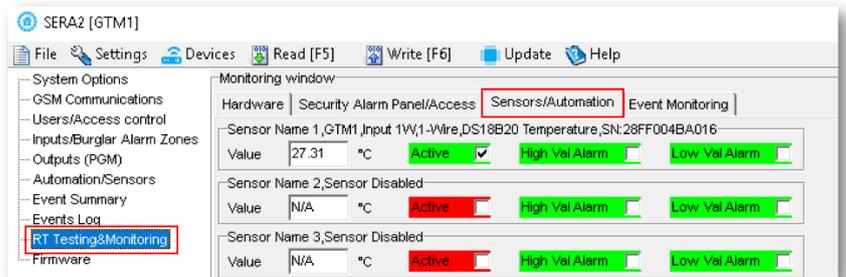


Figure 42 RT Testing & Monitoring> Sensors/ Automation

## Real time events list

Go to SERA2>  
RT Testing & Monitoring> Event Monitoring

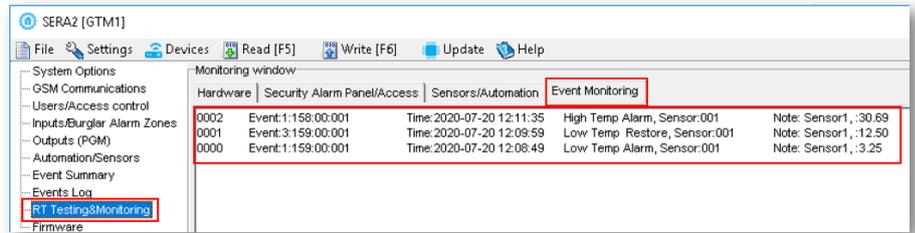


Figure 43 SERA2> RT Testing & Monitoring> Event Monitoring

## 4.2.9 How to read event log from internal memory of the module?

### Read events log

Go to SERA2> Events Log  
Press "Read Event Log" button



Figure 44 SERA2> Event Log

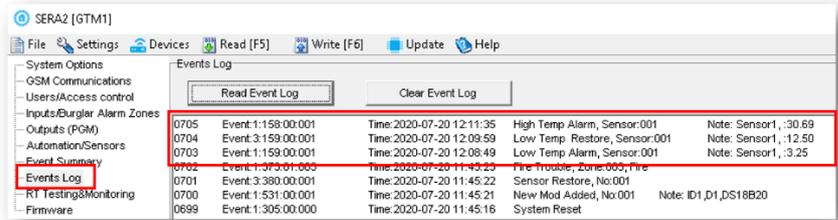


Figure 45 SERA2> Event Log

## 4.2.10 How to set SMS alarms?



If you want to edit existing configuration, You have to read it (press "Read" in the command line)  
Edit settings, Write edited configuration (press "Write" in the command line)

### Alarm SMS to the mobile phone

Go to SERA2> GSM Communication > SMS/ DIAL reporting  
Enter your phone number  
Mark alarm events  
Press "Write" in the command line

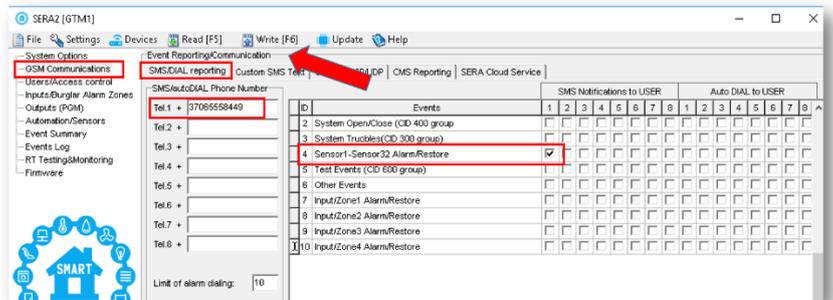


Figure 46 SERA2> GSM Communication> SMS DIAL Reporting

## 4.2.11 Burglar Alarm sensor zones wiring EOL NO NC



The module GTM1 has:

- IN1/D1: 0-30V
- IO1and IO2 programmable selectable input or output
- IO1: 0-30V
- IO2: 0-30V
- IO3/D0 programmable selectable
- IO3/D0: 0-30V analog input (zone or sensor)
- IO3/D0: 0-20mA 4-20mA current loop sensor
- 2- wire Smoke Detector (Fire current loop)

Inputs can be used or use it as security system's zones with selectable type: NC/NO/EOL/EOL+TAMPER.

**i** It is recommended to use standard motion, fire, and glass breaking sensors. For powering of sensors we recommend to use standard 6-8 wires cable for, designed for installation of security system.

**INSTALLATION:**

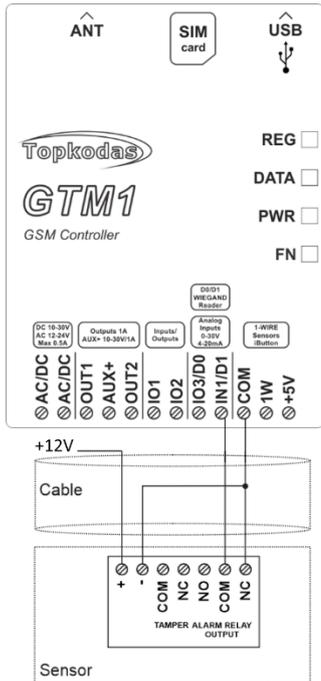
The correct wiring procedure is as follows:

- Make sure power is turned off;
- Make wiring connections to the terminals;
- Apply power.

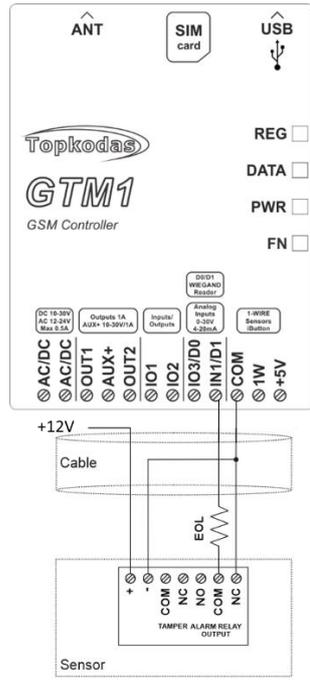
**Prepare the module GTM1:**

- Insert SIM card
- Screw GSM antenna
- Connect the sensors as in the diagrams:

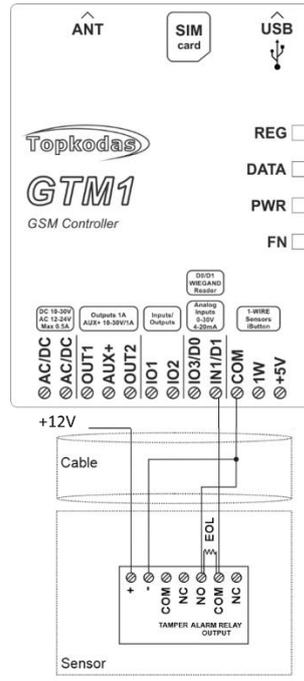
NC Contacts, No EOL



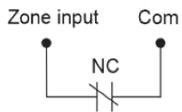
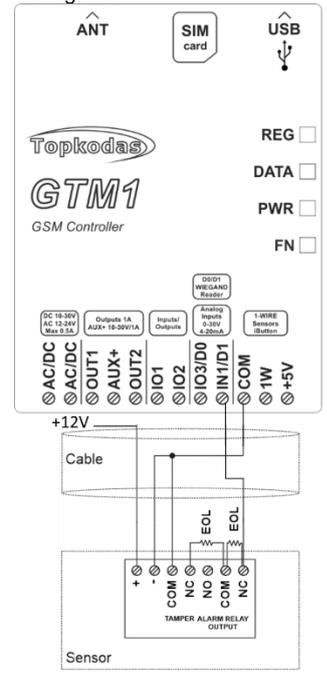
NC, With EOL



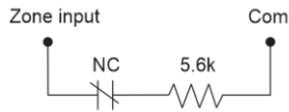
NO, With EOL



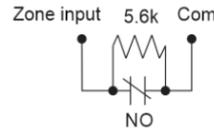
NC With EOL Wire Fault Recognition



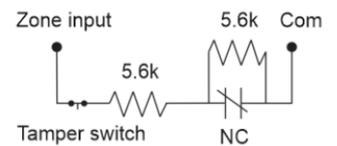
NC Contacts, No EOL



NC, With EOL



NO, With EOL



NC With EOL Wire Fault Recognition

**PROGRAMMING:**

**!** If you want to edit existing configuration, You have to read it (press "Read" in the command line) Edit settings, Write edited configuration (press "Write" in the command line)

**STEP by STEP:**

- Connect the module to the computer via mini USB cable
- Connect the power supply.
- Start free configuration program SERA2

You will find it in <https://www.topkodas.lt/> website

**HELP & SUPPORT> Downloads**

- If you use IO1, IO2, IO3/DO as inputs for security system sensors
- You have to disable IO1, IO2, IO3/DO in Output window
- Press "Write" icon in the command line

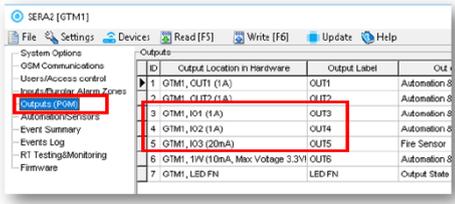


Figure 47 SERA2> Outputs (PGM)

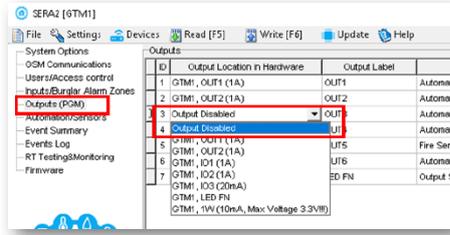


Figure 48 SERA2> Outputs (PGM)

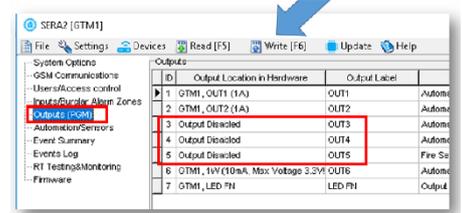


Figure 49 SERA2> Outputs (PGM)

**In addition:**

- If you use IO3/D0 as inputs for security system sensors
- You have to set IO3 Settings to 0-30V Analog Input (Zone or sensor)
- In SERA2> System Options> General System Options window Press "Write" icon

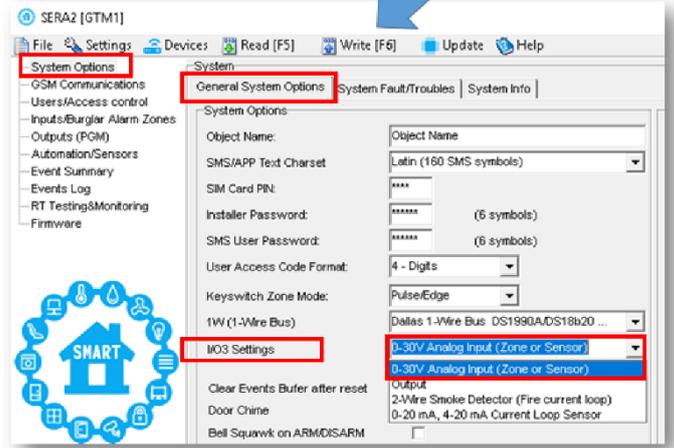


Figure 50 SERA2> System Options> General System Options

Go to

- SERA2> Inputs/ Burglar Alarm Zones window
- Double click on the selected line
- Edit default settings
- Press "Write" in the command line

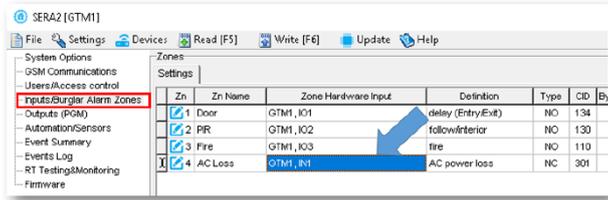


Figure 52 SERA2> Inputs/ Burglar Alarm Zones

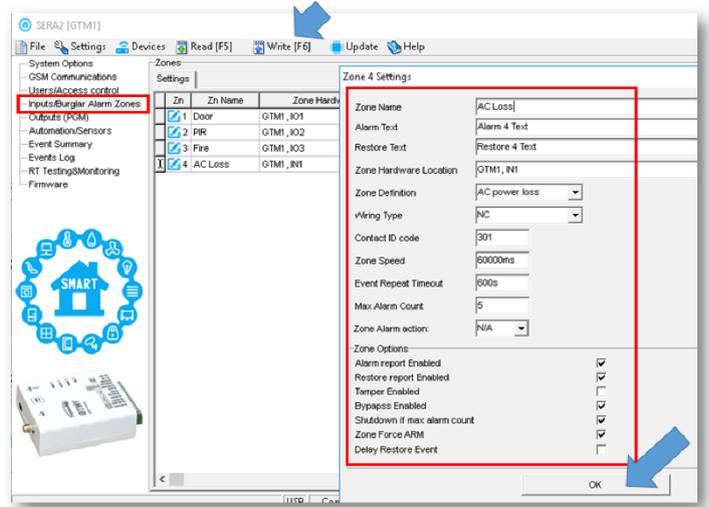


Figure 51 SERA2> Inputs/ Burglar Alarm Zones

## 4.2.12 Fire alarm and Smoke sensors

### 4.2.12.1 Guidelines for Locating Smoke Detectors and CO Detectors



The following information is for general guidance only and it is recommended that local fire codes and regulations be consulted when locating and installing smoke and carbon monoxide alarms.

**Smoke Detectors.** Research indicates that all hostile fires in homes generate smoke to a greater or lesser extent. Detectable quantities of smoke precede detectable levels of heat in most cases. Smoke alarms should be installed outside of each sleeping area and on each level of the home.

Additional smoke alarms beyond those required for minimum protection be installed. Additional areas that should be protected include: the basement; bedrooms, especially where smokers sleep; dining rooms; furnace and utility rooms; and any hallways not protected by the required units.

On smooth ceilings, detectors may be spaced 9.1m (30 feet) apart as a guide. Other spacing may be required depending on ceiling height, air movement, the presence of joists, uninsulated ceilings, etc.

- Do not locate smoke detectors at the top of peaked or gabled ceilings; dead air space in these locations may prevent smoke detection.
- Avoid areas with turbulent air flow, such as near doors, fans or windows. Rapid air movement around the detector may prevent smoke from entering the unit.
- Do not locate detectors in areas of high humidity.
- Do not locate detectors in areas where the temperature rises above 38°C (100°F) or falls below 5°C (41°F).

Where required by applicable laws, codes, or standards for a specific type of occupancy, approved single- and multiple-station smoke alarms shall be installed as follows:

- (1) In all sleeping rooms and guest rooms.

(2) Outside of each separate dwelling unit sleeping area, within 6.4 m (21 ft) of any door to a sleeping room, the distance measured along a path of travel.

(3) On every level of a dwelling unit, including basements.

(4) On every level of a residential board and care occupancy (small facility), including basements and excluding crawl spaces and unfinished attics.

(5) In the living area(s) of a guest suite.

(6) In the living area(s) of a residential board and care occupancy (small facility).

**CO Detectors.** Carbon monoxide gas moves freely in the air. The human body is most vulnerable to the effects of CO gas during sleeping hours. For maximum protection, a CO alarm should be located outside primary sleeping areas or on each level of your home.

The electronic sensor detects carbon monoxide, measures the concentration and sounds a loud alarm before a potentially harmful level is reached.

Do NOT place the CO alarm in the following areas:

- Where the temperature may drop below -10°C or exceed 40 °C.
- Near paint thinner fumes.
- Within 5 feet (1.5 meters) of open flame appliances such as furnaces, stoves and fireplaces.
- In exhaust streams from gas engines, vents, flues or chimneys.
- In close proximity to an automobile exhaust pipe; this will damage the detector.

**Progate.** Begin the installation by mounting additional modules in the cabinet using the stand-offs provided, then mount the cabinet in a dry, protected area with access to un switched AC power. Install hardware in the sequence indicated in the following pages. Do NOT apply power until installation is complete.

#### 4.2.12.2 [4-Wire] Smoke detector Wiring



Connect the 4-wire smoke detectors and a relay as shown in the figure below. Install the 4-wire smoke detectors with 18 gauge wire. If power is interrupted, the relay causes the control panel to transmit the Fire Loop Trouble report. To reset (unlatch), connect the smoke detector's negative (-) to a PGM.



If you want to edit existing configuration, You have to read it (press "Read" in the command line)  
Edit settings, Write edited configuration (press "Write" in the command line)

**The parameters of the zone should be defined as a "Fire Zone".** If a line short occurs or the smoke detector activates, whether the system is armed or disarmed, the control panel will generate an alarm. If the line is open, the "Zone Fault" report code is sent to the monitoring station or to the user, if programmed.

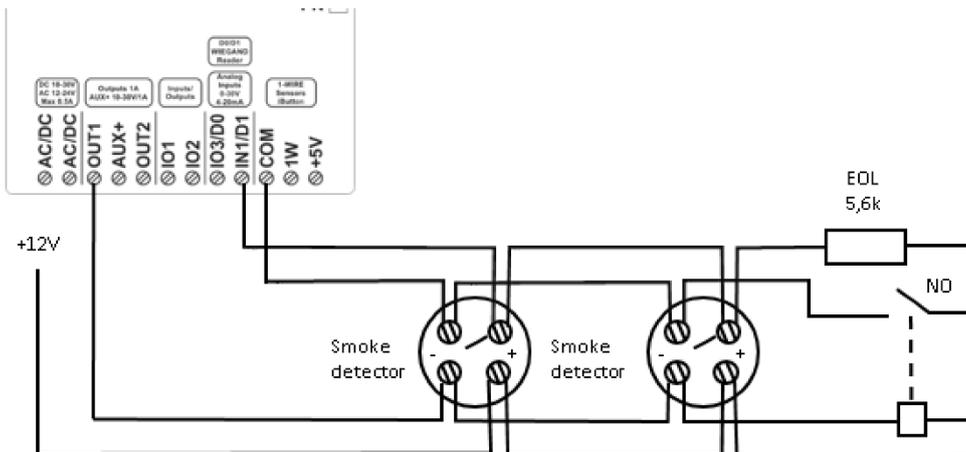


Figure 53 4-Wire Smoke Detector Installation

- Go to SERA2> Inputs/ Burglar Alarm Zones
- Double click on the selected line
- Set Zone Definition to “fire”
- Set required parameters
- Press “Write” in the command line

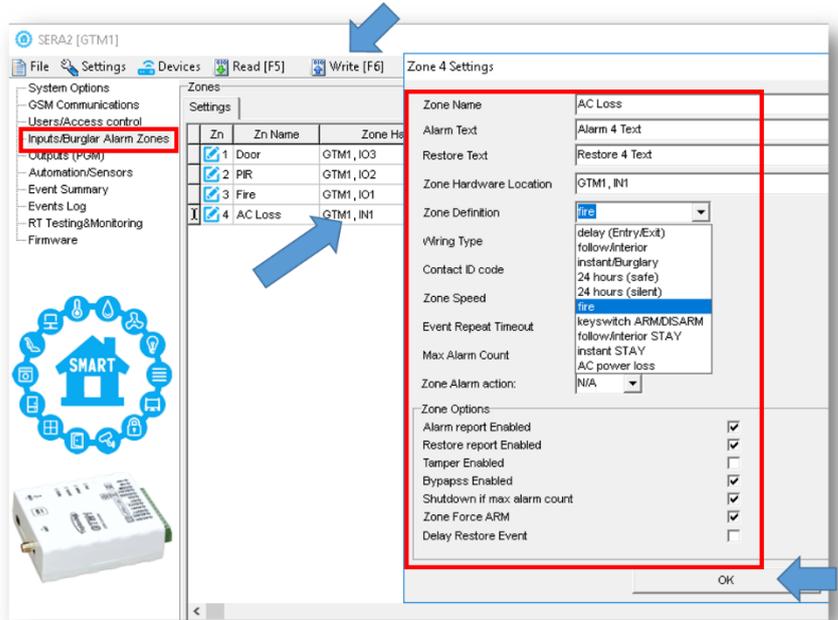


Figure 54 Burglar Alarm Zones window

#### 4.2.12.3 2-Wire] Smoke Detector Wiring to I/O Inputs



The 2-wire Smoke zone on the module is the only zone in the system that can have 2-wire smoke detectors as Fire Alarm initiating devices. This zone is an end-of-line EOL 2.2K resistor type and can accommodate up to 30 compatible 2-wire smoke detectors. The zone is fixed as a 2-wire smoke zone. I/O 2-wire smoke zone is trouble supervised zone. The zone wiring is supervised by the control panel.

The parameters of the zone should be defined as a “Fire Zone”. I/O1 and I/O2 can be defined as a 2-wire smoke detector input if a line short occurs or the smoke detector activates, whether the system is armed or disarmed, the control panel will generate an alarm. If the line is open, the “Zone Fault” report code is sent to the monitoring station or to the user, if programmed.

**!** If you want to edit existing configuration, You have to read it (press “Read” in the command line)  
 Edit settings, Write edited configuration (press “Write” in the command line)

1. Connect the [2-wire] smoke detector (current sensor) to the I/O1, I/O2 inputs as in the wiring diagram.
2. Connect the power supply.
3. Install SERA2 software.
4. Connect sensors to the module as in the diagram.
5. Set required parameters
6. Press “Write” in the command line.

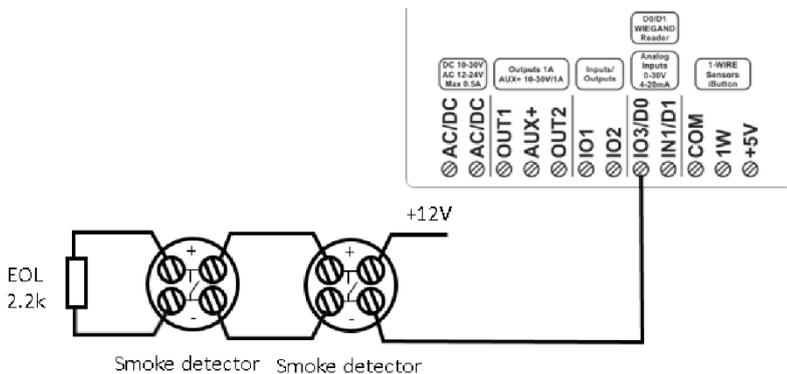


Figure 55 [2-Wire] Smoke Detector settings

- If IO3 will be used as fire zone
- Go to SERA2> System Options> General System Options
- Set I/O3 to "2- wire Smoke Detector (fire current loop)
- Press "Write" in the command line
- Go to SERA2> Outputs (PGM)
- IO3 should be set to "Fire Sensor"

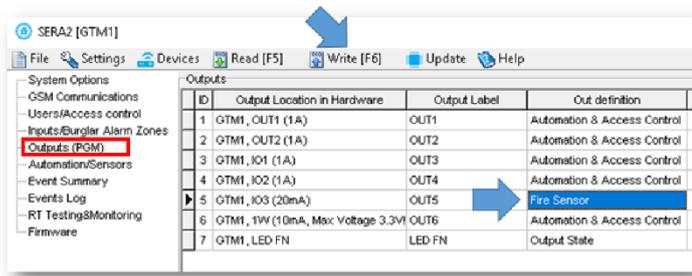


Figure 57 SERA2> Outputs (PGM)

- Go to SERA2> Inputs/ Burglar Alarm Zones
- Set Zone Definition to "fire"
- Set the required parameters
- Press "Write" in the command line

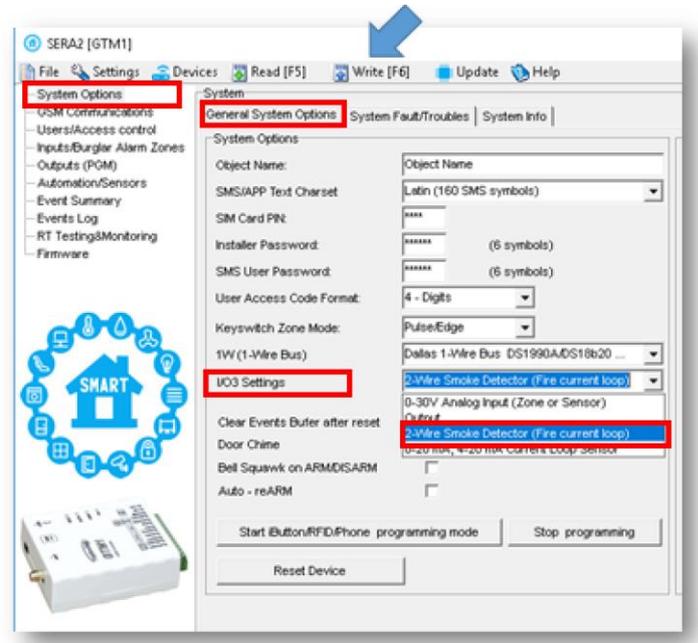


Figure 56 SERA2> System Options> General System Options

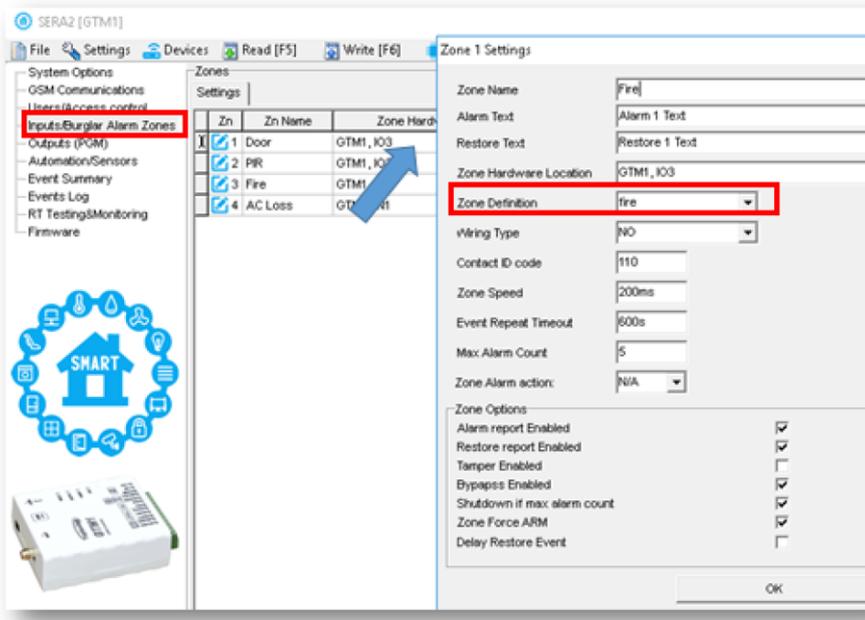


Figure 58 SERA2> Inputs/ Burglar Alarm Zones

### 4.3 Alarms to the mobile phone & to the Central Monitoring Station



If you want to edit existing configuration, You have to read it (press "Read" in the command line)  
 Edit settings, Write edited configuration (press "Write" in the command line)

#### ALARMS TO THE MOBILE PHONE

Go to

- SERA2>GSM Communication> SMS/DIAL reporting
- Enter Your phone number
- Mark alarm events
- Press “Write” in the command line

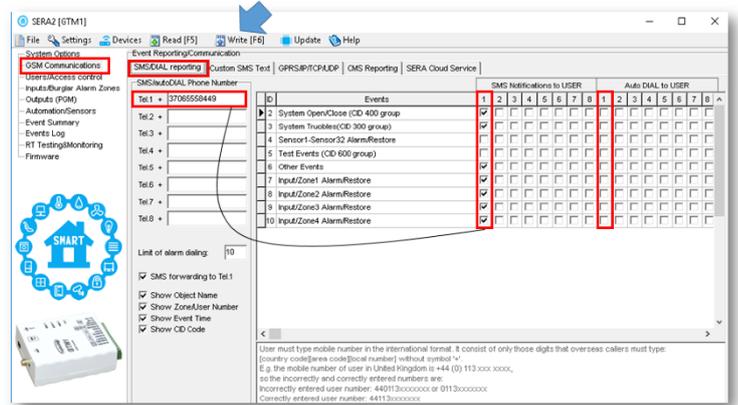


Figure 59 SERA2> GSM Communication> SMS DIAL Reporting

## ALARMS TO THE CENTRAL MONITORING STATION:

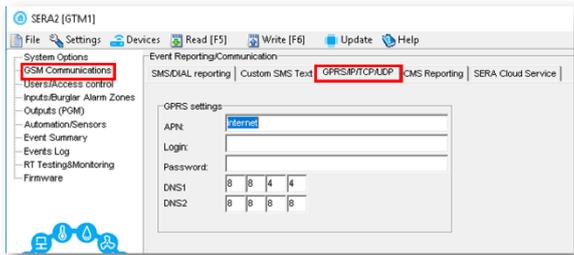


Figure 61 SERA2> GSM Communication>GPRS/IP/TCP/UDP

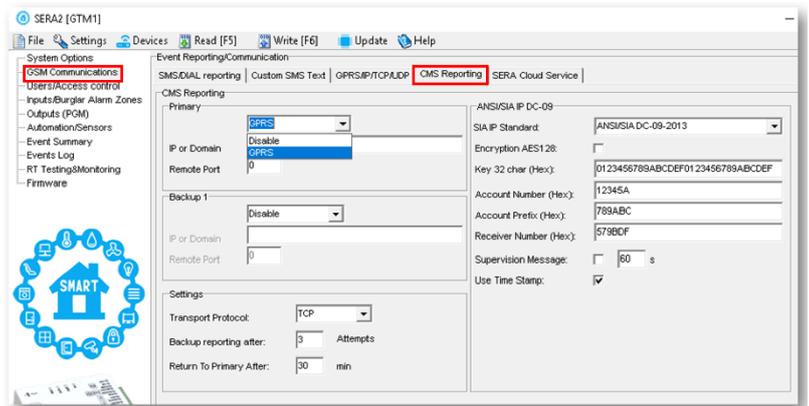


Figure 60 SERA2> GSM Communication> CMS Reporting

## 4.4 Test the security system

Go to

- SERA2> RT Testing & Monitoring > Hardware
- Press “Start Monitoring” button

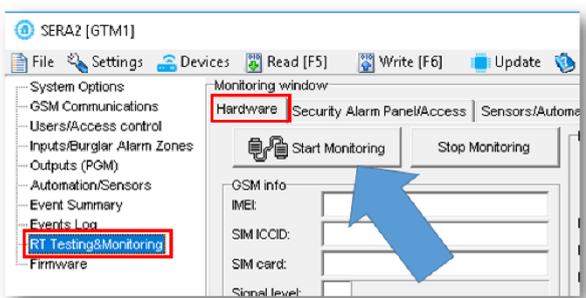


Figure 63 SERA2> RT Testing & Monitoring> Hardware

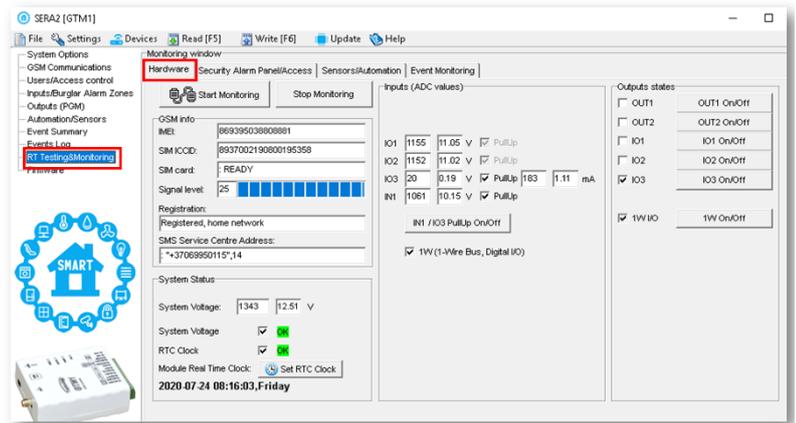


Figure 62 SERA2> RT Testing & Monitoring> Hardware

- Go to SERA2> RT Testing & Monitoring > Security Alarm Panel/Access
- You will see the real time status

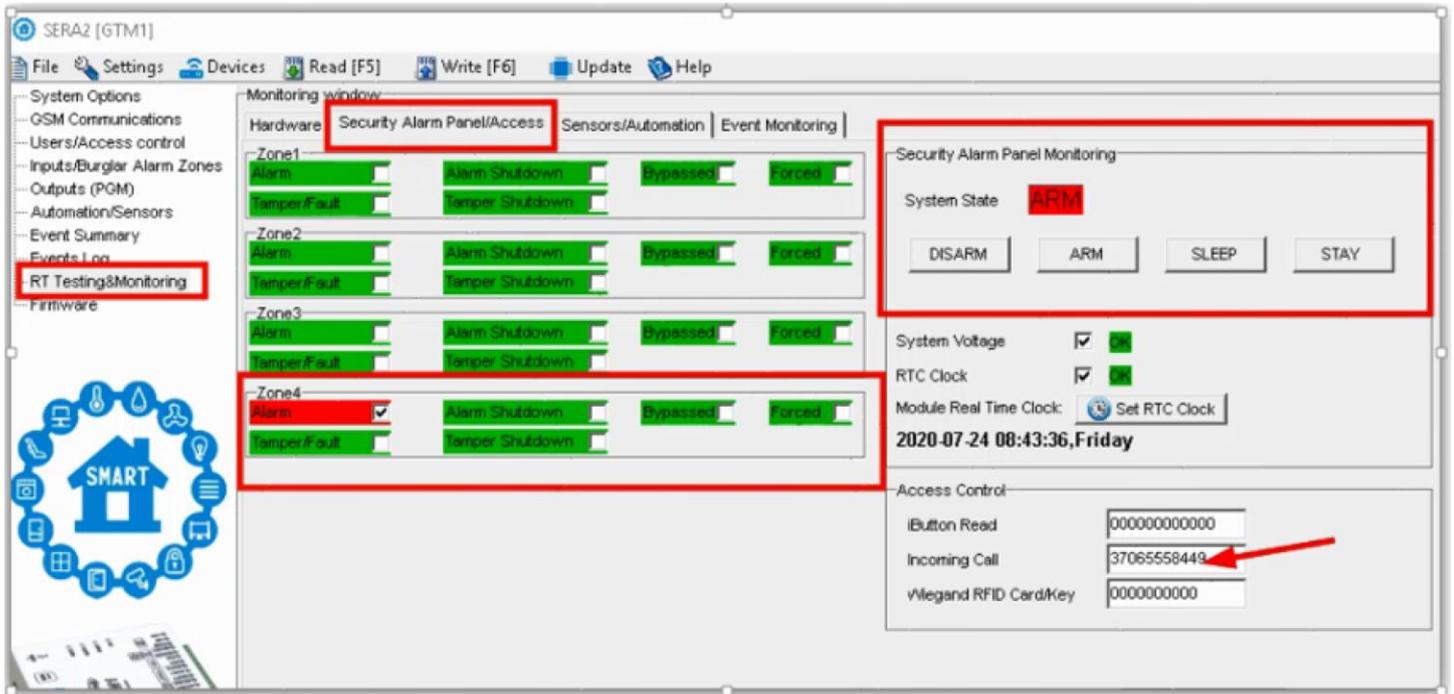


Figure 64 SERA2> RT Testing & Monitoring> Security Alarm Panel/ Access

## 4.5 Event Monitoring

Go to

- SERA2> RT Testing & Monitoring> Event Monitoring
- You will see real time events list

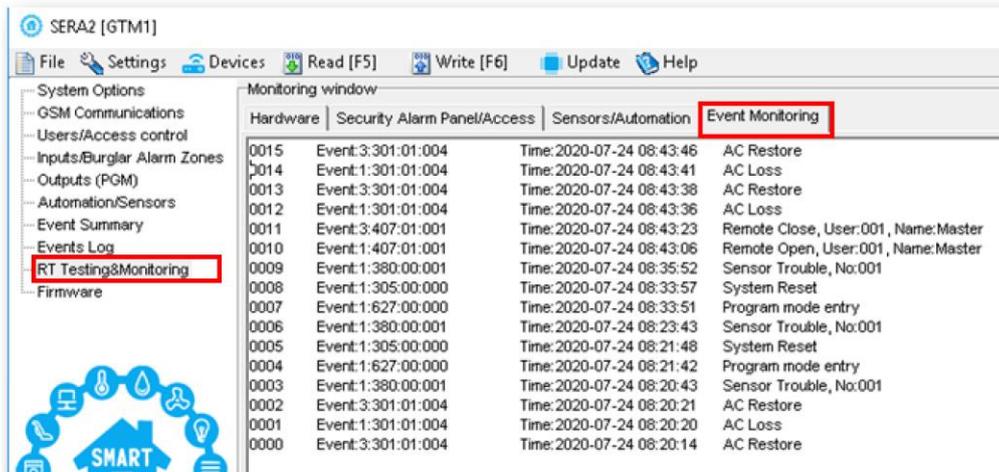


Figure 65 SERA2> RT Testing & Monitoring> Event Monitoring

## 4.6 Read events log

Go to

- SERA2> Events Log
- Press "Read Event Log" button



Figure 66 SERA2> Events Log

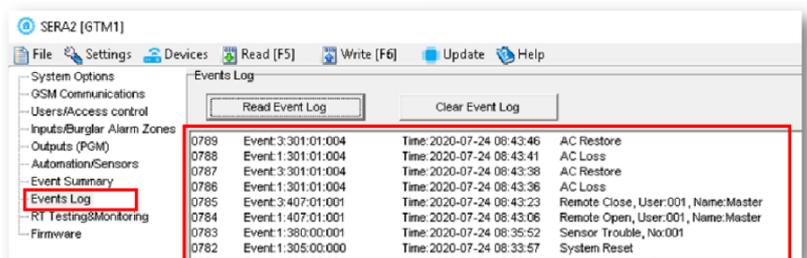


Figure 67 SERA2> Events Log

## 4.7 Outputs



The output toggles to its set up state when a specific event has occurred in the system. The output can be used to open/ close garage doors, activate lights, heating, watering and much more.

**i** Each output has a name that can be customized by the user. Typically, the name specifies a device type connected to a determined output, for Example: Lights

**!** If the output is not in used, it must be disabled. Once the output is disabled, it can no longer be turned ON or OFF unless it is enabled again.

**i** It is possible to instantly turn ON an individual output for a determined time period and automatically turn it OFF when the time period expires.

### 4.7.1 Output PGM wiring. Bell, Relay, Led Wiring

Output switch to ground when activated from the module. Connect the positive side of the device to be activated to the VD+ terminal. Connect the negative terminal to the selected output.

1. Connect devices to the selected outputs as shown in the figures below. For sound signaling we recommend to use siren DC 12V up to 1500mA. It is recommended to connect the siren to the system by using 2 x 0,75 sq. mm double insulation cable. Auxiliary BUZZER is recommended to be installed inside the premises not far from the entrance. Buzzer operates together with the main siren also when the system starts calculating the time to leave the premises and the time till alarm response of the security system after entering the premises (see clause 7.1). It is possible to use buzzer of hit point PB12N23P12Q or similar modified piezoelectric 12V DC, 150mA max Buzzer

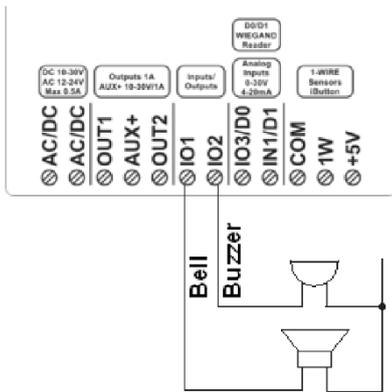


Figure 68 Bell, buzzer connection to I/O1, I/O2

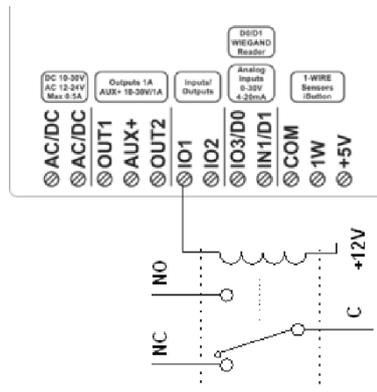


Figure 69 Relay connection to I/O1, I/O2

**Output mode: timer, steady, pulse count.**

The output action can automatically switch ON or OFF under the following conditions:

- System armed or disarmed, -
- Alarm begins or stops, -
- Temperature falls below the set MIN value,
- Temperature rises above the set MAX value,
- Zone violated, Zone restored.

The user can also set a custom text, which will be sent by SMS text message to user phone number when the automatic PGM output action is carried out.

**!** If you want to edit existing configuration, You have to read it (press "Read" in the command line) Edit settings, Write edited configuration (press "Write" in the command line)

**Set output's parameters step by step:**

1. Go to SERA2 > Outputs
2. Enter the required parameters.
3. If the output is not in used, it should be disabled
4. Press "Write" icon.

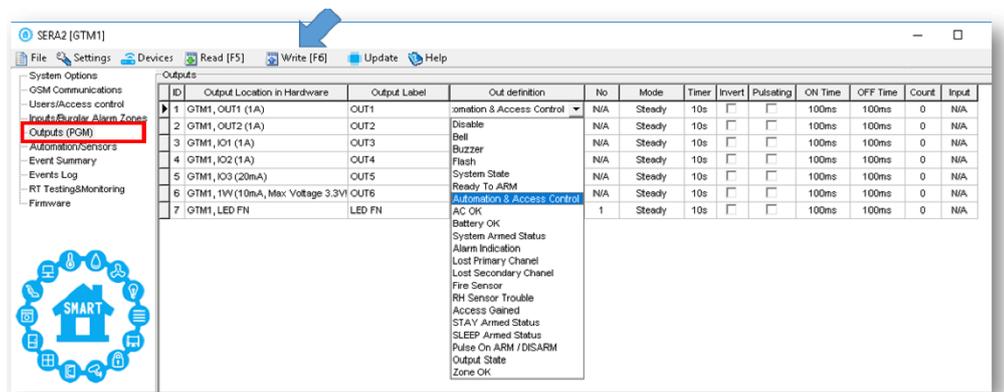


Figure 70 Outputs (PGM) window

## 4.7.2 Control Outputs via SMS

USER123456\_021\_N#ST

### Activate or deactivate selected output N.

021= command code (Activate or deactivate selected output N)

N = output number

ST= output mode: 0 – deactivated output, 1- activated output

## 4.7.3 Control Outputs via short call, iButton, RFID

## 4.7.4 Control Outputs via app

## 4.7.5 Output programming



If you want to edit existing configuration, You have to read it (press "Read" in the command line)  
Edit settings, Write edited configuration (press "Write" in the command line)

### Quick start outputs

1. Install SERA2 software. For more information look at [SERA2 Uploading/Downloading Software](#)
2. Connect the module to the computer via mini USB cable.
3. Go to Outputs (PGM) window in the SERA2 software
4. Parameters of the selected output should be set:

output operation description (OUT definition): disable, bell, buzzer, flash, system state, ready, automation/ CTRL, AC OK, battery OK, ARM/ DISARM, alarm indication, lost primary channel, lost secondary channel, fire sensor, RH sensor trouble.

5. State type: flash, timer, steady mode.
6. If necessary output operation might be inverted.
7. Write configuration by pressing write icon

The screenshot shows the SERA2 [GTM1] software interface. The 'Outputs (PGM)' window is active, displaying a table of output configurations. A blue arrow points to the 'Write [F6]' button in the top toolbar. The table lists 7 outputs with their locations, labels, definitions, and parameters.

ID	Output Location in Hardware	Output Label	Out definition	No	Mode	Timer	Invert	Pulsating	ON Time	OFF Time	Count	Input
1	GTM1, OUT1 (1A)	OUT1	Automation & Access Control	N/A	Steady	10s	<input type="checkbox"/>	<input type="checkbox"/>	100ms	100ms	0	N/A
2	GTM1, OUT2 (1A)	OUT2	Disable	N/A	Steady	10s	<input type="checkbox"/>	<input type="checkbox"/>	100ms	100ms	0	N/A
3	GTM1, IO1 (1A)	OUT3	Bell	N/A	Steady	10s	<input type="checkbox"/>	<input type="checkbox"/>	100ms	100ms	0	N/A
4	GTM1, IO2 (1A)	OUT4	Buzzer	N/A	Steady	10s	<input type="checkbox"/>	<input type="checkbox"/>	100ms	100ms	0	N/A
5	GTM1, IO3 (20mA)	OUT5	Flash	N/A	Steady	10s	<input type="checkbox"/>	<input type="checkbox"/>	100ms	100ms	0	N/A
6	GTM1, 1W (10mA, Max Voltage 3.3V)	OUT6	System State	N/A	Steady	10s	<input type="checkbox"/>	<input type="checkbox"/>	100ms	100ms	0	N/A
7	GTM1, LED FN	LED FN	Ready To ARM	1	Steady	10s	<input type="checkbox"/>	<input type="checkbox"/>	100ms	100ms	0	N/A

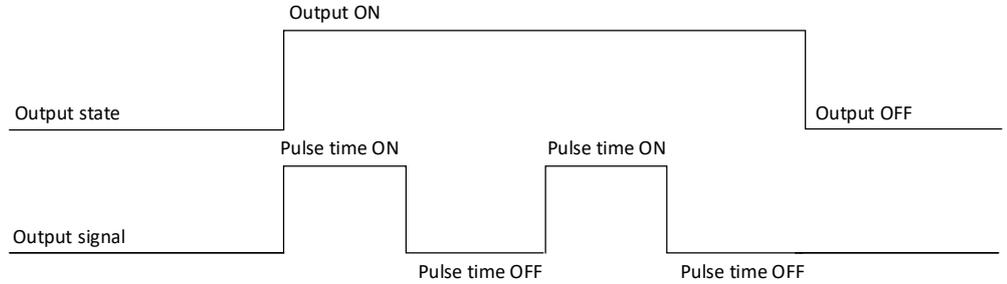
The 'Out definition' dropdown for the selected output (ID 7) shows the following options:

- Automation & Access Control
- AC OK
- Battery OK
- System Armed Status
- Alarm Indication
- Lost Primary Chanel
- Lost Secondary Chanel
- Fire Sensor
- RH Sensor Trouble
- Access Gained
- STAY Armed Status
- SLEEP Armed Status
- Pulse On ARM / DISARM
- Output State
- Zone OK

Figure 71 Outputs (PGM) window

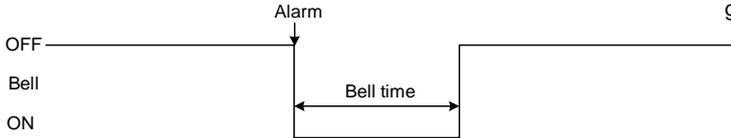
**Outputs can be set as timers.**

1. When output is activated for "Out Timer" time interval,
2. Relay contact start changing state from ON (pulse time ON) to OFF (Pulse time Off)
3. This cycle will repeat until output is deactivated.



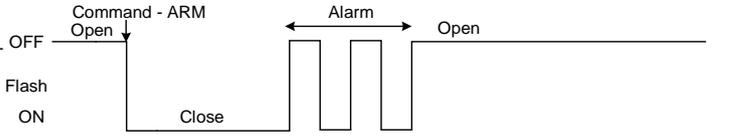
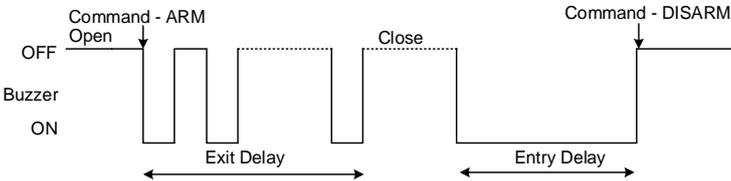
**Bell:** Output for connection of audible sounder (siren). After the alarm system actuation a continuous or pulse (fire) signal is generated.

**ARM/DISARM:** Output for connection of light indicator of the alarm system status. When the alarm system is on a continuous signal is generated.



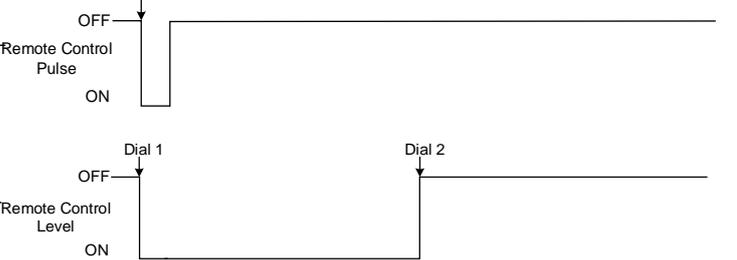
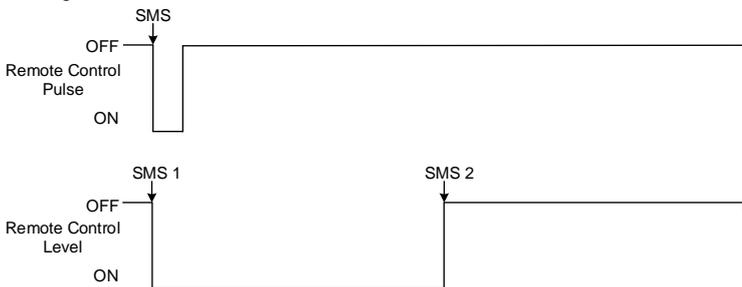
**Buzzer:** Output for connection of audio indicator. After the alarm system activated a pulse signal is generated within Exit Delay time, and continuous signal - within Entry Delay time or when the alarm system is disturbed. When the alarm system is turned off, operates like keyboard buzzer.

**Flash:** Output for connection of light indicator. When the alarm system is on, a continuous signals generated, and if the alarm system is disturbed - pulse signal. Signal is terminated by turning off the alarm system.



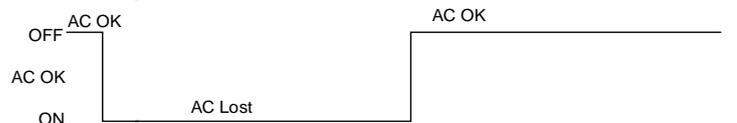
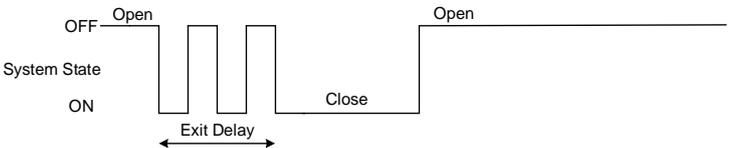
**Remote Control:** Output designed for connection of electrical devices which will be controlled by SMS message or phone call a) control by SMS message

**Remote Control b) control by phone call**



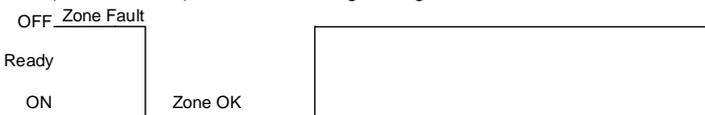
**System State:** Output for connection of light indicator of the alarm system status. Within Exit Delay time a pulse signal is generated, and when the alarm system activated – continuous. Signal is terminated by turning off the alarm system.

**AC OK:** Output for connection of indicator about control panel supply from alternating current



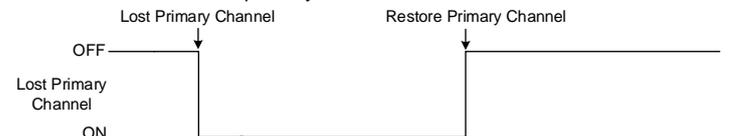
**Ready:** Output for connection of light indicator of input statuses. If all zones are clear (none violated), a continuous signal is generated.

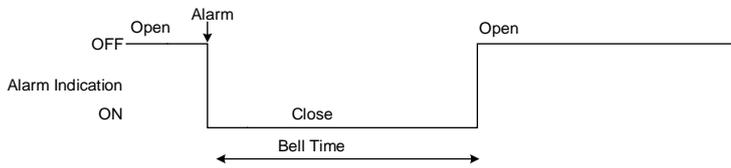
**Battery OK:** Output for connection of indicator about control panel supply from battery.



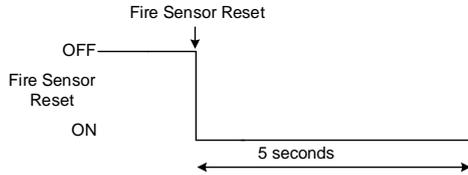
**Alarm indication:** Output for connection of light indicator showing alarm status of the alarm system. After the alarm system actuation a continuous signal is generated.

**Lost Primary Channel:** Output where a continuous signal is generated when communication with primary channel was lost.





**Fire Sensor Reset:** Output for reset of fire sensor operation. Its status changes 5 sec. and returns to the initial one.



**Lost Secondary Channel:** Output where a continuous signal is generated when communication with secondary channel was lost.



#### 4.7.6 Access control output with logging

**!** If you want to edit existing configuration, You have to read it (press “Read” in the command line)  
 Edit settings, Write edited configuration (press “Write” in the command line)

#### Access Control:

- Go to SERA2> Users/ Access Control> Users
- Enter your phone number
- Mark ARM/DISARM
- (ARM/DISARM the system via free short call)
- Press “Write”

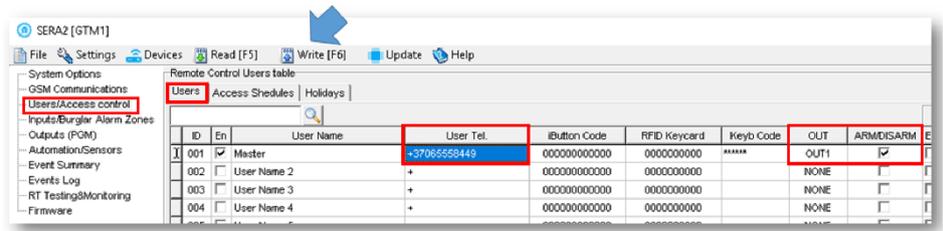


Figure 72 SERA2> Users/ Access Control> Users

It is possible to set: temporary access and access schedules

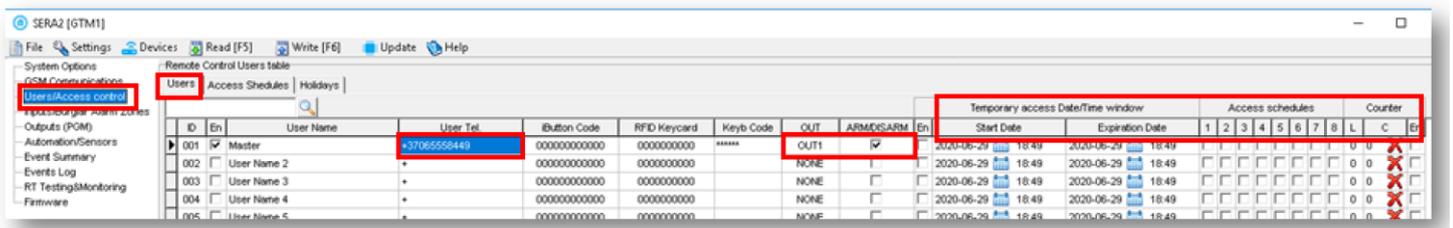


Figure 73 SERA2> Users/ Access Control> Users

Set output definition to [Access Gained] . Sera2>Outputs

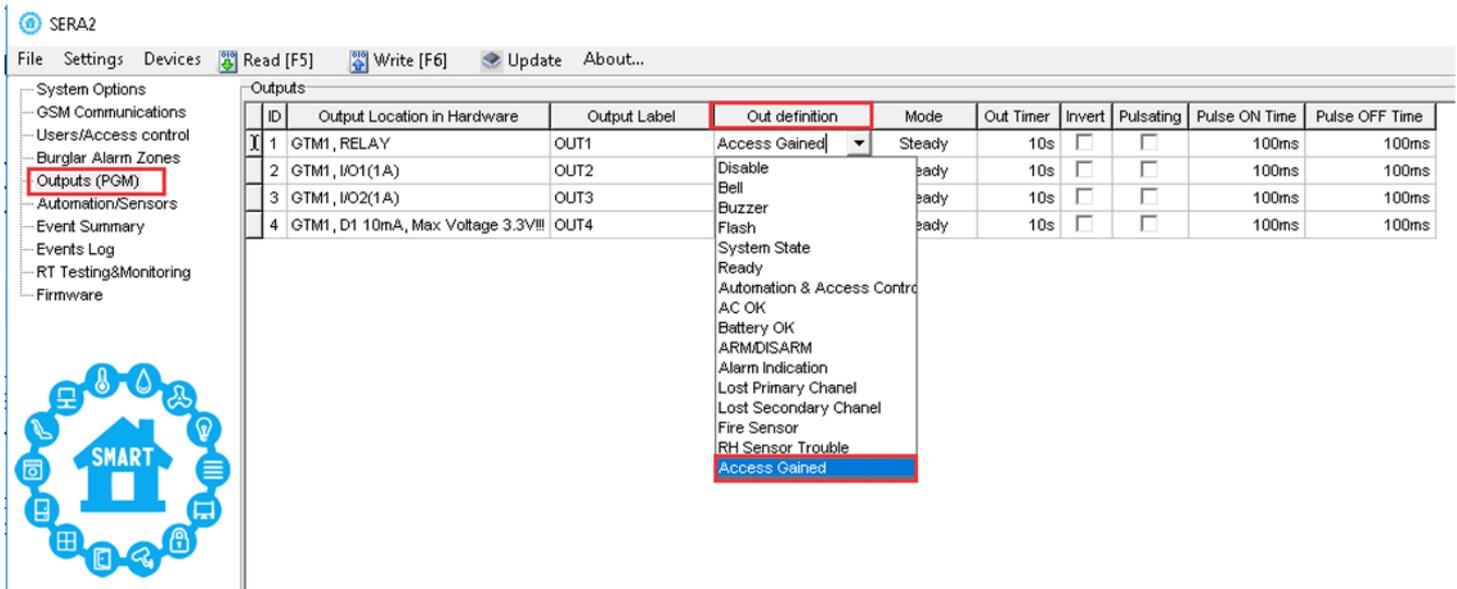


Figure 74 Outputs (PGM) window

This output could be controlled as following:

- If the user has right to ARM/DISARM system, it always has access to this output.
- If the user has not the right to ARM/DISARM the system (field near ARM/DISARM is not marked (Sera2> User/ Access control)), the user can access this output only if system is Disarmed.

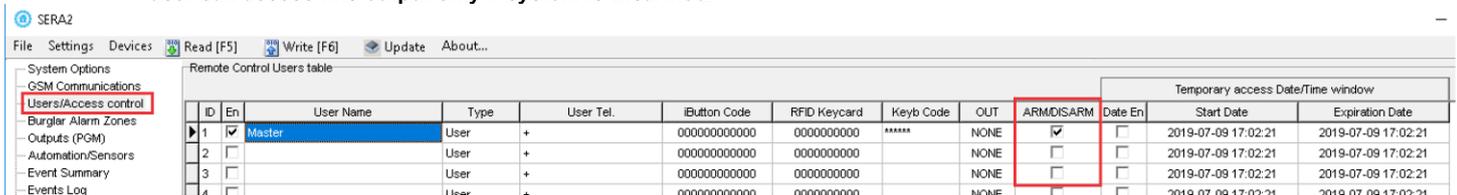


Figure 75 User/ Access control window

- If access is granted by user, 421 event Access granted is stored into the log. If not Access denied event 422 is stored to the log (Sera2> Events Log)
- if output will have definition [Automation / CTRL] it also can be controlled by user in any way but it will not generate 421 and 422 events

Event log e.g.

1853 Event:1234:1:401:01:001 Time:2017-08-20 14:42:36 Note: , Open by User, User:001, Name:Master  
 1852 Event:1234:1:422:00:001 Time:2017-08-20 14:41:41 Note: , Access Gained by, User:001, Name:Master  
 1851 Event:1234:1:406:01:001 Time:2017-08-20 14:41:27 Note: , Cancel, User:001, Name:Master



Outputs can be controlled in "Automation & Access control", "Access Gained" modes.

- If you need to control outputs by short call or SMS, go to Sera2> Users/ Access control window and enter phone numbers of users, who will be able to control selected outputs via free short call.

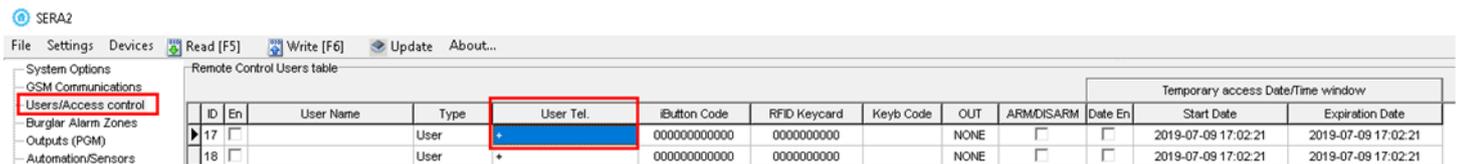


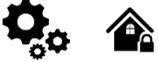
Figure 76 Users/ Access control window

- Write configuration by pressing write icon
  - In order to control big power alternating current equipment, it is comfortable to use solid state relays.



Refer to: **Error! Reference source not found.**

## 4.8 Access control. Arming/Disarming methods



### Arming process:

- **If ready** (no violated zone/tamper), **the system will arm.**
- **If unready** (violated zone/tamper is present), the system will not arm and **provide a list of violated zones/tampers** by SMS text message to user phone number. In such case the user **must restore all violated zones and tampers** before arming the system. Alternatively, the violated zones can be **bypassed, disabled or a Force** attribute enabled, and the tampers can be disabled when arming. The system initiates the exit delay countdown intended for the user to leave the secured area.



The alarm will be caused even if a tamper is violated while the system is disarmed



Due to security reasons it is highly recommended to restore the violated zone/tamper before arming the system.

### Access control methods is defined in Sera2> User/ Access control window

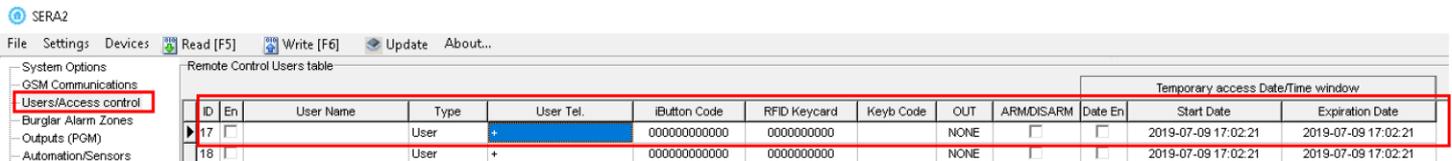
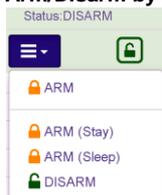


Figure 77 Users/ Access control window

### Arm/Disarm by mobile, web app



Tap the ARM, ARM (Stay), ARM (Sleep), DISARM in the mobile, web app> System window

### Arm/Disarm by call

It is possible to arm, disarm the system and turn OFF the alarm by dialing the system's phone number from any of 800 available user phone numbers. The system **ignores any incoming calls from a non-listed phone number**. **The phone call is free of charge** as the system rejects it and carries out arming/disarming procedure afterwards. If there is more than one listed user dialing to the system at the same time, the system will accept the incoming call from the user who was the first to dial while other user (-s) will be ignored. To disable/enable arming or disarming for certain listed user phone numbers, please mark near ARM/DISARM in the "Users & Remote control" window

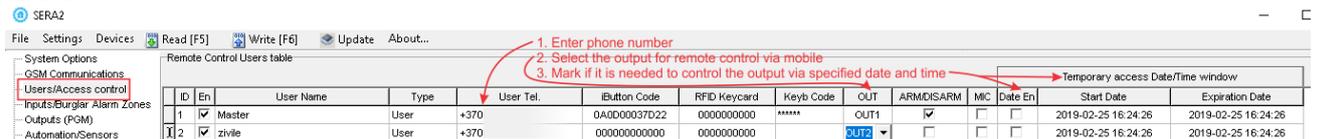


Figure 78 ARM/ DISARM by call settings

### Arm/Disarm via SMS



#### Enter user phone number in the Sera2> Users/ Access control list

The system **rejects the SMS text messages containing wrong SMS password** even from a listed user phone number. To arm the system by SMS text message, send the following text to the system's phone number **USER 123456\_030\_ST**  
 030= command code (Change security system's mode (ARM/DISARM/STAY/SLEEP)  
 ST = Security system mode 0-DISARM, 1-ARM ,2-STAY ,3-SLEEP

### Arm/Disarm by keypad

To arm/ disarm the system by Wiegand Keypad, enter User/Master Code

To cancel the arming process: Enter the user/master code again during exit delay countdown.

Disarming the System and Turning OFF the Alarm To disarm and turn OFF the alarm, enter any out of available user codes or master code using the number keys on the keypad.

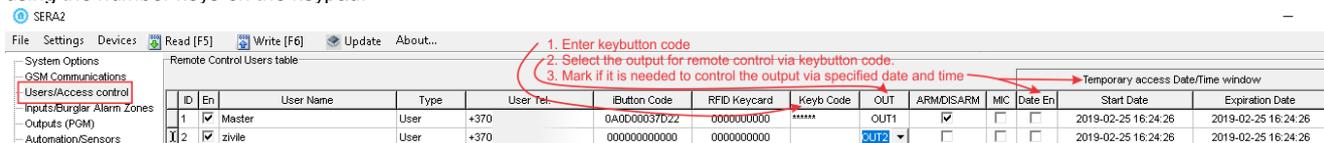


Figure 79 ARM/DISARM by keypad settings



### Arm/Disarm by iButton key

To arm or disarm the system and turn OFF the alarm, touch the iButton key reader by any of 800 available iButton keys. When the iButton is touched to the iButton key reader for arming/ disarming, the system will proceed arming/ disarming process.

ID	En	User Name	Type	iButton Code	RFID Keycard	Key Code	OUT	ARM/DISARM	MIC	Date En	Start Date	Expiration Date
1	<input checked="" type="checkbox"/>	Master	User	000000FBC52E	0000000000	*****	OUT1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2019-02-25 16:24:26	2019-02-25 16:24:26
2	<input checked="" type="checkbox"/>	zivile	User	000000000000	0000000000		OUT2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2019-02-25 16:24:26	2019-02-25 16:24:26

Figure 80 ARM/DISARM by iButton code settings



**Arm/Disarm by RFID key card, keyfob**

To arm/ disarm the system with RFID keycard, touch 1 of 800 RFID keycard to the Wiegand keypad. When the RFID keycard is touched to the reader for arming/ disarming, the system will proceed arming/ disarming process.



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 Refer to: **Error! Reference source not found.**

## 4.8.1 Wiegand Keypad & RFID Card Reader, iButton Probe Wiring & Programming



**Wiegand keypad specifications:**  
 26bit Wiegand (Default);  
 8bit key press code

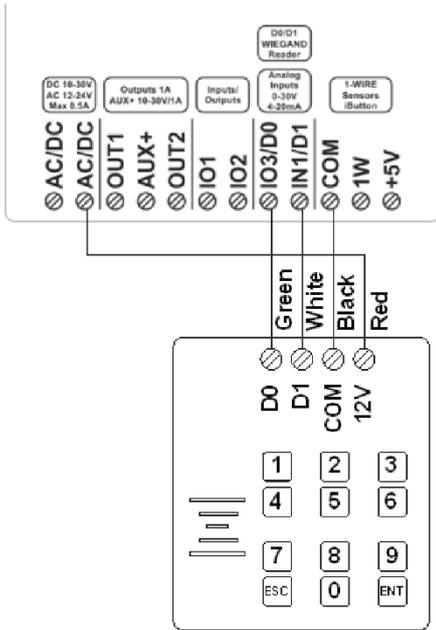


Figure 81 Wiegand keypad wiring

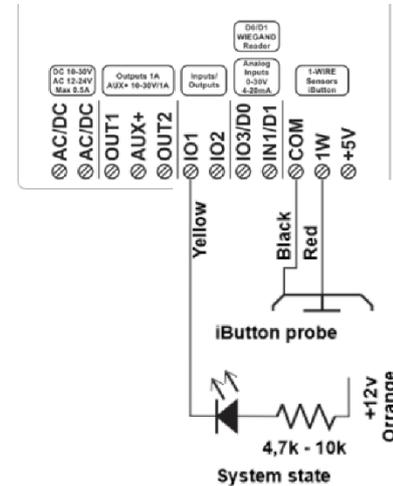


Figure 82 iButton probe connecting diagram

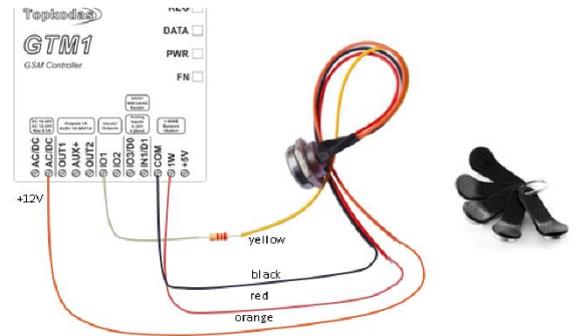


Figure 83 iButton probe connection

ID	Output Location in Hardware	Output Label	Out definition	No	Mode	Timer	Invert	Pulsating	ON Time	OFF Time
1	GTM1, OUT1 (1A)	OUT1	Automation & Access Control	N/A	Steady	10s	<input type="checkbox"/>	<input type="checkbox"/>	100ms	100ms
2	GTM1, OUT2 (1A)	OUT2	Automation & Access Control	N/A	Steady	10s	<input type="checkbox"/>	<input type="checkbox"/>	100ms	100ms
3	GTM1, IO1 (1A)	OUT3	System State	N/A	Steady	10s	<input type="checkbox"/>	<input type="checkbox"/>	100ms	100ms
4	GTM1, IO2 (1A)	OUT4	Disable	N/A	Steady	10s	<input type="checkbox"/>	<input type="checkbox"/>	100ms	100ms
5	GTM1, IO3 (20mA)	OUT5	Bell	N/A	Steady	10s	<input type="checkbox"/>	<input type="checkbox"/>	100ms	100ms
6	GTM1, 1W (10mA, Max Voltage 3.3V)	OUT6	Buzzer	N/A	Steady	10s	<input type="checkbox"/>	<input type="checkbox"/>	100ms	100ms
7	GTM1, LED FN	LED FN	System State	1	Steady	10s	<input type="checkbox"/>	<input type="checkbox"/>	100ms	100ms

Figure 84 SERA2> Outputs (PGM)



If you want to edit existing configuration, You have to read it (press "Read" in the command line)  
 Edit settings, Write edited configuration (press "Write" in the command line)

## Wiegand keypad programming

Go to SERA2> System Options> General System Options  
Press "Start iButton/ RFID/Phone programming mode"

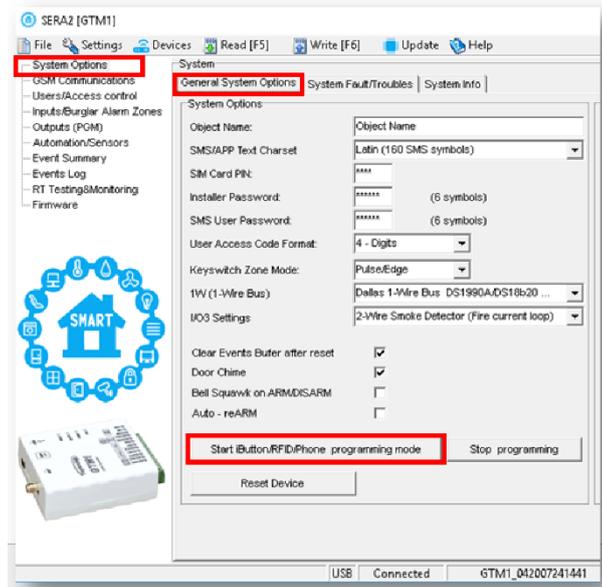


Figure 85 SERA2> System Options> General System Options

Go to SERA2> Users/ Access control  
Touch RFID cards to the reader  
Go to SERA2> System Options> General System Options  
Press "Stop Programming" button

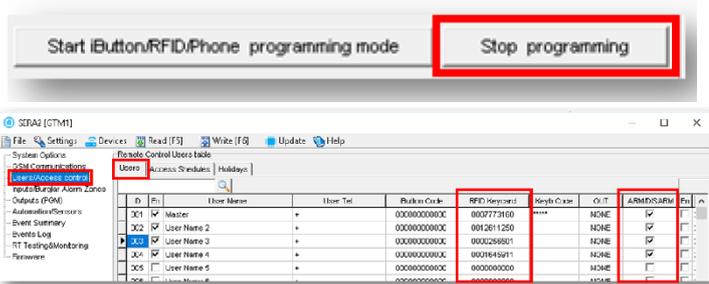


Figure 86 SERA2> Users/ Access Control> Users

Go to SERA2> RT Testing & Monitoring> Hardware  
Press "Start Monitoring" button  
Go to SERA2> RT Testing & Monitoring> Security Alarm Panel/  
Access  
You will see real time system status

## 4.8.2 Enter iButton, RFID, Phone numbers to the memory of the module



If you want to edit existing configuration, You have to read it (press "Read" in the command line)  
Edit settings, Write edited configuration (press "Write" in the command line)

## iButton probe programming

Go to SERA2> System Options> General System Options  
Set 1W (1- Wire Bus) to Dallas 1-Wire Bus DS1990A/ DS18b20  
Press "Write" in the command line

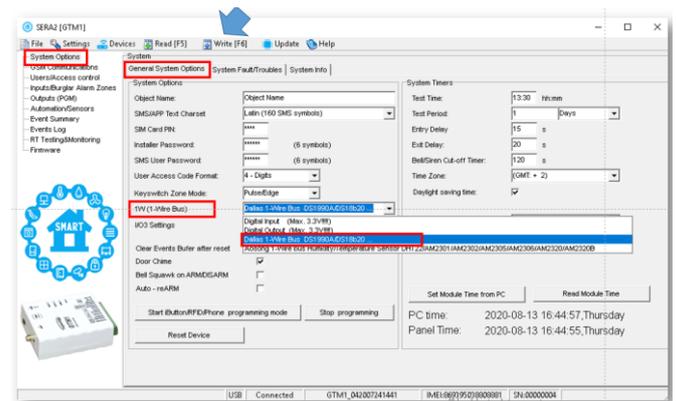


Figure 87 SERA2> System Options> General System Options

Go to SERA2> System Options> General System Options  
Press "Start iButton/ RFID/Phone programming mode"

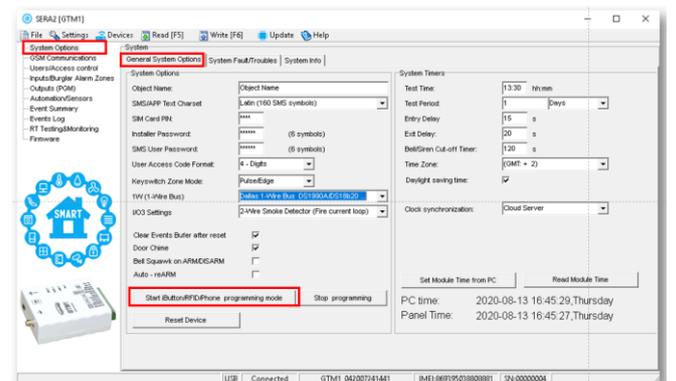


Figure 88 SERA2> System Options> General System Options

Go to SERA2> Users/ Access control  
Touch iButton keys to the probe  
Go to SERA2> System Options> General System Options  
Press "Stop Programming" button

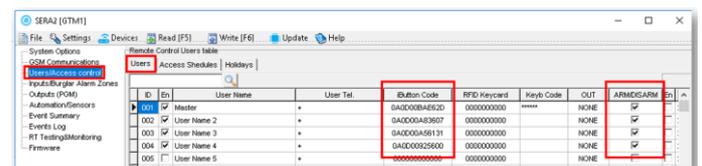
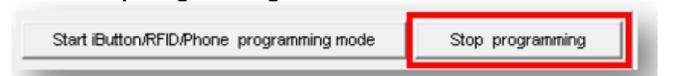


Figure 89 SERA2> Users/ Access Control> Users

Go to SERA2> RT Testing & Monitoring> Hardware  
Press "Start Monitoring" button  
Go to SERA2> RT Testing & Monitoring> Security Alarm Panel/  
Access  
You will see real time system status

### First steps:

Connect iButtons or RFID reader to the module.  
Insert SIM card;  
Screw GSM antenna;  
Connect power supply;  
Connect the module to the computer.

### Configurations methods:

Start automatic learning mode via mini USB cable (Sera2 software).  
Start automatic learning mode via SMS command INST000000 063 1  
Enter Keycard numbers manually via mini USB cable (Sera2 software).  
Start automatic learning mode remotely via Sera2 software.

#### Start automatic learning mode via mini USB cable (Sera2 software).

Go to Sera2> System Options> General system Options.  
Select Dallas 1- Wire Bus (for iButton keys)  
Press "Write"  
Press "Start iButton/ RFID/ Phone programming mode."  
Go to Sera2> Users/ Access control window.  
Touch RFID keycards, iButton keys to the reader.  
RFID keycard, iButton key numbers will appear in the list.  
Go to System Options> General system Options and  
Press "Stop programming" or wait until it will stop automatically.

Edit setting in the Users/ Access control window.  
Press "Write"  
Go to RT Testing & Monitoring> Hardware.  
Press "Start Monitoring"  
Go to RT Testing & Monitoring> Security Alarm Panel/ Access

#### Start automatic learning mode via SMS command INST000000 063 1

Send SMS message: INST000000 063 1  
You will receive the message: iButton/RFID/Caller ID Learning Mode is Swithed ON  
Touch RFID keycards to the RFID reader.  
Sent the message: INST000000 063 0  
You will receive the message: iButton/RFID/Caller ID Learning Mode Stopped

#### INST000000\_063\_S

INST = Install. Configuration of the parameters.  
000000= Installer's password  
\_ = Space character  
063= command code (iButton keys learning/deleting mode)  
\_ = Space character  
S=iButton keys entering/deletion mode.  
0- Disable iButton keys learning mode,  
1- Enable iButton keys learning mode,  
2- iButton keys deleting mode,

Delete these keys from memory, which will be touched to the reader.



**Before activating the RFID learning mode via SMS, the module must have the appropriate System Options> General System Options settings**

#### Enter Keycard numbers manually via mini USB cable (Sera2 software).

Go to Sera2> System Options> General system Options.  
Select Dallas 1- Wire Bus (for iButton keys)  
Press "Write"  
Go to Sera2> Users/ Access control.  
Enter RFID keycard, iButton key numbers  
Edit other settings  
Press "Write"  
Go to RT Testing & Monitoring> Hardware  
Press "Start Monitoring"  
Go to Security Alarm Panel/ Access"  
Touch the keycard to the RFID reader and iButton keys to the probe

#### Start automatic learning mode remotely via Sera2 software.

Start Sera2 software  
Press "Connect remotely" button  
Enter required parameter.  
(Default App Key is 123456)  
Press "Connect"  
Go to Sera2> System Options> General system Options.  
Select Dallas 1- Wire Bus (for iButton keys)  
Press "Write"  
Press "Start iButton/RFID/Caller ID Learning Mode"  
Touch RFID keycards, iButton keys to the reader  
Press "Stop programming" button  
Or wait until the learning mode will stop automatically

## 4.9 How to set clock synchronization?

### If you received SMS messages with wrong date/ time, you need to set clock synchronization correctly

You can select **clock synchronization** via:

#### **GSM modem**

- (If you will not use mobile app and cloud service)

#### **Cloud Server**

- (If you will use mobile app)
- SIM card must have data available
- Insert the SIM card in your smart phone and check is the internet available

#### **Or disable** clock synchronization

#### **Clock synchronization via GSM modem**

- Go to SERA2> System Options> General System Options
- Set Clock synchronization via GSM modem
- Press "Write" in the command line

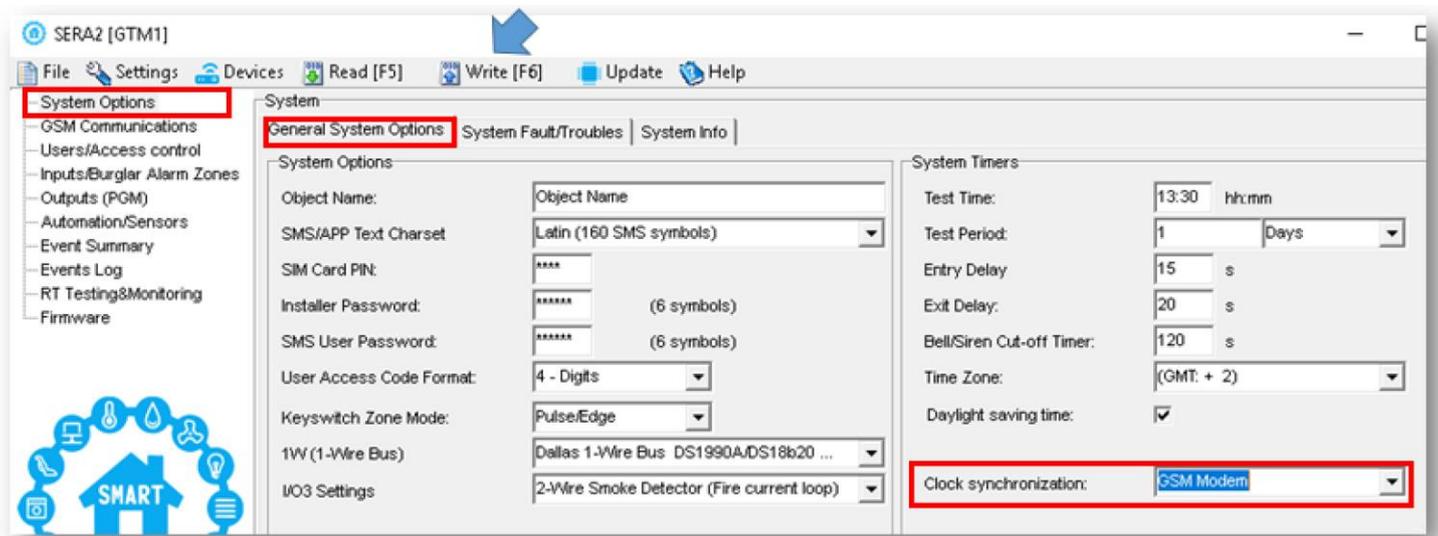


Figure 90 SERA2> System Options> General System Options

### Clock synchronization via Cloud server

- Go to SERA2> GSM Communication> SERA Cloud Service
- Enable SERA Cloud Service

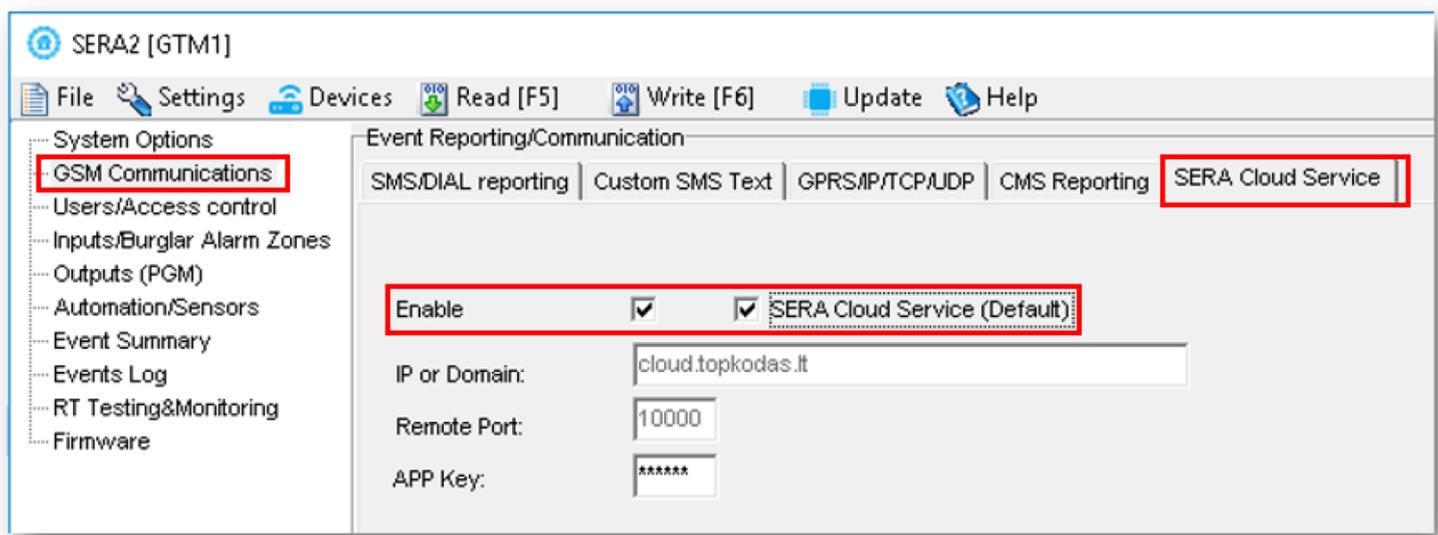


Figure 91 SERA2> GSM Communication> SERA Cloud Service

- Go to SERA2> System Options> General System Options
- Set Clock synchronization via Cloud Server
- Press "Write" in the command line

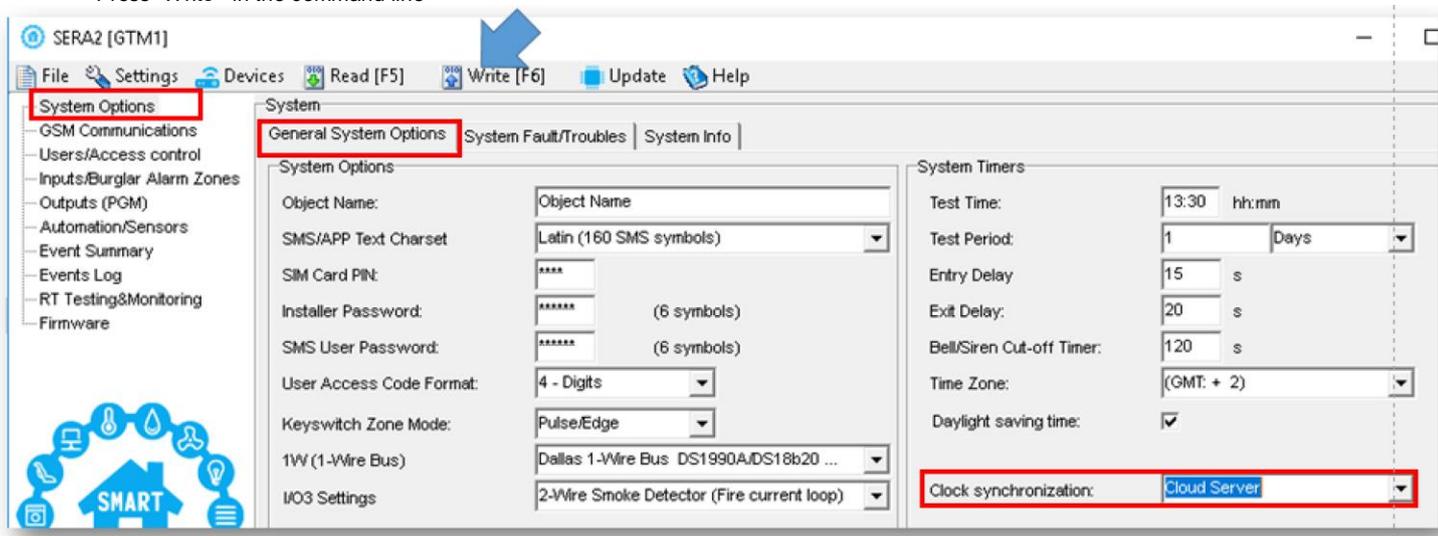


Figure 92 SERA2> System Options> General System Options

## If you want to edit existing configuration,

- You have to read it (press "Read" in the command line)
- Edit settings
- Write edited configuration (press "Write" in the command line)

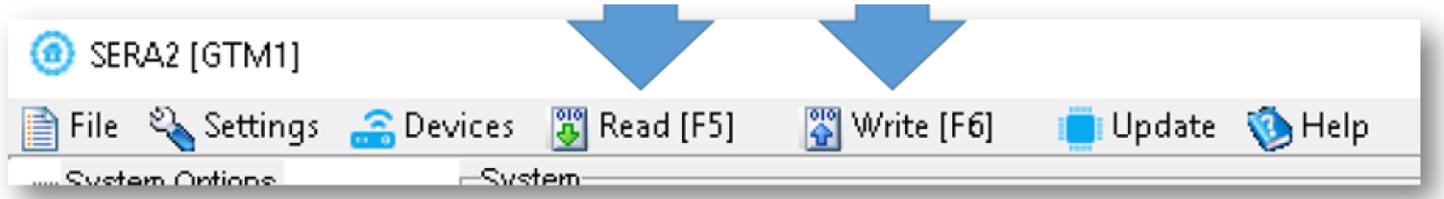


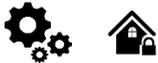
Figure 93 SERA2 Command line

## 5 Programming

In order to configure and control the system by SMS text message, send the text command to the Progate phone number from one of the listed user phone numbers. More

SERA2 software configuration tool is intended for the module Progate configuration locally via USB port or remotely via GPRS network. This software simplifies system configuration process by allowing to use a personal computer in the process.

### 5.1 SERA2 Uploading/Downloading Software



We recommend programming the module Progate with SERA2 software

1. Open the folder containing installation of the software SERA2. Click the file „SERA2 setup.exe“
2. If installation directory of the software is OK, press [Next]. If you would like to install the software in the other directory press [Change], specify other installation directory and then press next>.
3. Check if the correct data are entered and press Install
4. After successful installation of the software SERA2, press [Finish]

Start the software SERA2. Go to „Start“> „All programs“> „SERA2“> „SERA2 “ or go to installation directory and click „SERA2.exe“.

#### Connection of the module to your PC

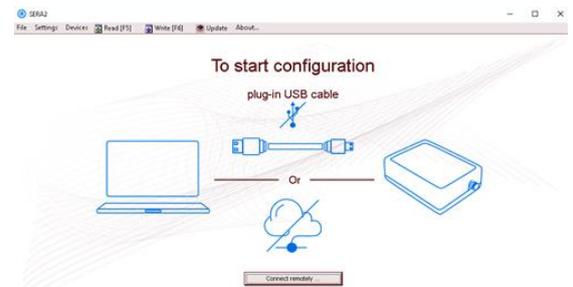


Figure 94 How to start configuration with Sera2 software



Power supply: DC 10-33V, AC 12-24V, Max 0.2A. The module should have inserted SIM card (with replenished account and removed PIN CODE REQUEST). Module must be connected to the PC via mini USB cable

#### Work with the software SERA2

If you are sure that the module is fully connected to PC and power supply, please go to Devices > Progate



Figure 95 Command line



Each time after configuring the module press Write  icon thus the software SERA2 will write configuration changes into the module! Wait until progress bar line will indicate that the configuration has been written successfully

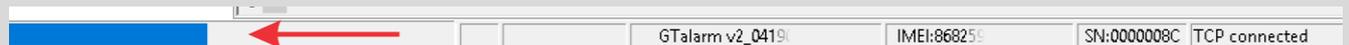


Figure 96 Progress bar

**After configuration of the module, all settings may be saved at PC.** It enables to save time, when next time the same configuration will be used – it will not be necessary again to set the same parameters. If you want to save that is already recorded by the module, firstly you must read configuration of the module. **Press Read  icon.** In order to save configuration go to **File ** then press "Save As" or "Save". Enter configuration parameter in the displayed table and press „OK“

**In order to start saved configuration go to File then press Open.** It allows to copy the same programmed content into as many modules as required.



If you want to receive software updates, go to Settings and mark "Check for Updates Automatically". When new update will be available, the program will inform you, and you have to start the update. After that you have to connect the module to the computer via mini USB cable. You have to write this update to the module Progate by pressing "Update" in the bottom line in SERA2 software.

If you want to update the module manually, got to "About" and press "Check for updates"

**If you need to contact the seller with the questions about the configuration, you have to:**



Press "Read" icon first to read the configuration from the module, the press "File>Save us" and save the configuration.



Save the Events Log file and send these files with the question to the seller.

These steps will let better understand the problem and will reduce the time to find the solution.



An unlimited number of modules can be configured remotely on the same computer at the same time. The configuration reading and writing speed does not decrease because the processes are running in parallel. Many Sera2 programs could be opened and used at the same time.



Figure 97 Press about in the command line

## 6 Recommendations for the user & installer



What should you do, if you noticed, that **there is Sensor trouble in the "Event Log" window?**

0009	Event:1234:1:110:01:006	Time:2017-02-14 08:51:41	Note: , Fire Alarm, Zone:006
0010	Event:1234:1:380:00:001	Time:2017-02-14 08:53:30	Note: , Sensor Trouble, Zone:001

Figure 98 Sera2> Events Log window

1. It is comfortable to use "RT Testing&Monitoring" window. Red field indicates sensor's troubles.
2. Go to Automation/ Sensors window, disabling this sensor and press "Write". Maybe there is the problem with sensor's connection to the module.
3. If the problem still exist, please read, save and send the configuration to the seller. Describe what and how is connected to zone: 001 and send this information to the seller.

## 7 Remote control and configuration using SMS Commands



Users allowed:

Control outputs,  
Arm/disarm the system or select stay, sleep mode  
Bypass zones  
Set the time of the module  
Request zone test and system state  
Forward messages to other number

Installers allowed:

Control outputs  
Arm/disarm the system or select stay, sleep mode  
Bypass zones  
Set the time of the module  
Request zone test and system state  
Forward messages to other number  
Enter/ deleting user phone numbers  
Set periodical test,  
Set GPRS network settings  
Remote control via Internet  
Activate/ deactivate connection to the remote control server.  
Enter/ deleting iButton keys  
Change sensor's values  
Request module configuration information  
Change user, installer password

Installer code – 6-digit password used for system configuration, control and request for information. By default, installer code is 000000, which is highly recommended to change.

User code – 6-digit password used for system control and request for information. By default, installer code is 000000, which is highly recommended to change.



The module could be controlled only by these users, whose phone numbers entered in the memory of the module

- Identification:
- INST – Install used for module's configuration.
- Installer's or user's password.
- space character
- Command code.
- space character
- First configuration array
- space character
- Second configuration array
- etc.

- Identification:
- USER – User used for module's control.
- Installer's or user's password.
- space character
- Command code.
- space character
- First configuration array
- space character
- Second configuration array
- etc.

## 8 The table of installers commands



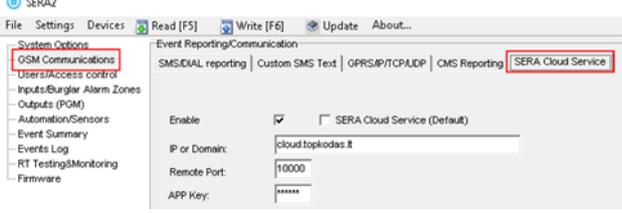
SMS commands with **correct INST password** can be send from any phone number. Keep INST password in secret!



SMS configuration is allowed only with Latin characters. Unicode is not allowed.

Table 7 The table of installers commands

<p><code>INST000000_001_N#TEL#SMS#DIAL#System</code> <code>open close</code></p>	<p><b>Programming of users telephone numbers to send SMS and to make a call if the event occur:</b>  001= programming user's tel. numbers for DIAL and send SMS  N = user ID number 1-8  TEL = user's telephone number (max 16 digits) without (+) country code, operator's code and user's telephone number included. The end symbol #;  SMS = event filter for sms. 1- send event, 0- don't send event. Sequence of the events 1.2.3...n For example: 001000  DIAL = event filter for DIAL. 1-DIAL if the event occur, 0-don't DIAL Sequence of the events 1.2.3...n For example: 101000  #= delimiter</p> <p><b>e.g.: INST000000 001 1#3706666666#0001000000#0000011111#</b></p> <p>Event filter eiliskumas:  1-reserved  2-system open close  .....  .....  10-Input/Zone4 Alarm/Restore</p>
<p><code>INST000000_002_ID</code></p>	<p><b>Delete user's phone number according the user ID number. Phone number used for receive user's information.</b>  002= command code (deleting user's numbers according the user ID number)  ID = user ID number from 1 to 8</p>
<p><code>INST000000 004 ID#TEL#OUT#OPT#NAME#</code></p>	<p><b>To enter user's telephone number for remote control via short call</b></p> <p><b>USER NAME-only Latin characters is allowed inside SMS</b>  004= command code (enter user's telephone number for remote control via short call)  ID = user ID number 001-800  TEL = user's telephone number (max 16 digits) without (+) comprised of country code, operator's code and user's telephone number. the end symbol #;  OUT= output number, that will be controlled, 1-10.  OPT = DIAL function: 0 – disabled 1 – enabled, Sequence from the left to the right</p> <p><b>OPT:</b>  <b>1-ARM/DIARM</b>  <b>2-Reserved (GTlarm2 =MIC)</b></p>
<p><code>INST000000 005 TEL#</code></p>	<p><b>To delete user's phone number for remote control, according phone number</b>  005= command code (delete user's phone number for remote control, according phone number)  TEL = user's phone number (max 16 digits) without (+) comprised of country code, operator's code and user's telephone number. User's phone number must be the same as in the memory of the module.</p>
<p><code>INST000000_006_N</code></p>	<p><b>Delete user's phone number whose ID number is N.</b>  006= command code (Delete user's phone number according user's ID number )  N = user's ID number from 001 to 800.</p>
<p><code>INST000000_007_P#PER#HH:mm#</code></p>	<p><b>Automatic periodical test settings</b>  007= command code (Automatic periodical test)  P= 0-test disabled, 1- test period by 24 hours, 2- period by minutes  PER= automatic test sending period from 1 to 99999 days or minutes  HH-hours 0-23 ,</p>

	<p>mm- minutes 0-59</p> <p><b>e.g. INST000000 007 2#1#14:50#</b> The test will be send every 1 minute</p>
<p><b>INST000000_008_APN#LOGIN#PSW#</b></p>	<p><b>GPRS network settings</b>  008= command code (GPRS network settings)  APN=31 symbols  LOGIN=31 symbols  PSW=31 symbols</p>
<p><b>INST000000 009 ADDR#PORT#</b></p> <p><b>INST000000 009 ADDR#PORT#PING#</b></p>	<p><b>SERA cloud Service Parameters</b>  009= command code (Remote control of the module over the Internet)  ADDR = the format of IP address xxx.xxx.xxx.xxx (the numbers from 0 to 255 should be separated by dot or domain text length of up to 47 characters)  PORT= TCP port number from 1 to 65535  Default parameters is in the picture below. We recommend do not change these parameters.</p> 
<p><b>INST000000_010_E</b></p>	<p><b>To activate the connection to the remote control server</b>  010= command code (To activate the connection to the remote control server)  E= 1-enabled, 0-disabled</p>
<p><b>INST000000_019_N#P</b></p>	<p><b>To change the operation algorithm of the output</b>  019= command code (To change the operation algorithm of the output)  N = output number from 1 to 10  P = output operation algorithm. 0 – output disabled, 1 – Bell, 2- buzzer, 3- flash led, 4- system state LED, 5-LED „system ready“, 6- Automation &amp; access control, 7- AC OK, 8 – Battery OK, 9- ARM/DISARM 10-alarm indication, 11- Lost Primary chanel 12- Lost secondary chanel 13- Fire sensor 14-RH Sensor trouble , 15- Access Gained</p>
<p><b>INST000000_020_N</b></p>	<p><b>Invert output state</b>  020= command code (outputs inversion)  N = output number from 1 to 10.</p>
<p><b>INST000000_021_N#ST</b></p>	<p><b>Output activation or deactivation</b>  021= command code (Output activation or deactivation)  N = output number 1-10  ST = output mode 0 – OFF, 1- ON</p>
<p><b>INST000000_022_N#TIME#</b></p>	<p><b>Output activation for the time interval</b>  022= command code (Output activation for the time interval)  N = output number 1-10  TIME = 0-999999 Time interval in seconds for the output activation.</p>
<p><b>INST000000_030_ST</b></p>	<p><b>Change security system's mode (ARM/DISARM/STAY/SLEEP)</b>  030= command code (Change security system's mode)  ST = 0-DISARM, 1-ARM, 2-STAY, 3-SLEEP</p>
<p><b>INST000000_031_ZN#BYP</b></p>	<p><b>Zone bypassing by sms command</b>  031= command code (Zone bypassing)  ZN = zone number from 1 to 32  BYP= 1 – zone bypass 0- zone active.</p>
<p><b>INST000000_063_S</b></p>	<p><b>iButton keys learning/deleting mode</b>  063= command code (iButton keys learning/deleting mode)  S=iButton keys entering/deletion mode.  0-Disable iButton/RFID keys learning mode  1-Enable iButton/RFID keys learning mode  2- iButton/RFID keys deleting mode. To delete these keys from memory, which will be touched to the reader</p>
<p><b>INST000000_070_N#VALUE #</b></p>	<p><b>Programming of max sensors value upon reaching, the SMS message with „High Alarm“ text will be sent</b>  070= command code (max sensors value upon reaching which, the SMS message with „High Alarm“ text will be sent)  N = sensor number  VALUE= Format 0000.00 High Alarm Value</p>
<p><b>INST000000_071_N#VALUE #</b></p>	<p><b>Programming of minimal sensors value upon reaching the SMS message with „Low Alarm“ text will be sent</b>  071= command code (min sensors value upon reaching which, the SMS message with „Low Alarm“ text will be sent)  N = sensor number  VALUE = Format 0000.00 Low Alarm Value</p>
<p><b>INST000000_072_N#VALUE#</b></p>	<p><b>Programming of sensor max value upon reaching the selected output will be activated. For example cooling equipment</b>  072= command code (sensor max value upon reaching the selected output will be activated.)  N = sensor number</p>

	VALUE= Format 0000.00 sensor max value upon reaching, the selected output will be activated.
<code>INST000000_073_N#VALUE#</code>	<b>Programming of sensor min value upon reaching the selected output will be activated.</b> For example heating equipment 073= command code (sensor min value upon reaching the selected output will be activated.) N = sensor number VALUE= Format 0000.00 Sensor min value upon reaching which, the output will be activated.
<code>INST000000 090 NEW_INST_PSW</code>	<b>Change installer's password</b> (Installers password should be changed before exploitation of the module) 090= command code (Change of installer's password) NEW_INST_PSW = New Installer's password.
<code>INST000000 091 NEW_USER_PSW</code>	<b>Change user's password</b> (User's password should be changed before exploitation of the module) 091= command code (Change user's password) NEW_USER_PSW = New user's password.
<code>INST000000_092</code>	<b>Remote reset of the module via SMS messages</b> 092= command code (Remote reset of the module via SMS messages )
<code>INST000000 093 yyyy/MM/dd#HH:mm#</code>	<b>Time of the module setting via SMS message</b> 093= command code (Time of the module setting via SMS message) Time format of the module: yyyy/MM/dd#HH:mm# yyyy -year MM-month 1-12 dd - day of the month 1-31 HH-hours 0-23 mm- minutes 0-59
<code>INST000000_094_TEL#SMS</code>	<b>SMS from the module forwarding to the other phone number</b>  <b>SMS from the module forwarding to the other phone number</b> <b>094= command code (SMS from the module resending to the other phone number)</b> <b>TEL = phone number to which will be forwarded sms textSMS = sms text that will be send to the referred number.</b> <b>TEL=861611111111 local number arba international format e.g. +370616111111</b>  <b>INST000000 094 +370616111111#Hello</b>  <b>SMS text =Latin Charset</b> SMS from the module forwarding to the other phone number094= command code (SMS from the module forwarding to the other referred phone number)TEL = phone number to which will be forwarded sms textSMS = sms text that will be send to the referred number  TEL=861611111111 local number arba international format e.g. +370616111111 INST000000_094_+370616111111#Hello international must be with '+' local without+' SMS text =Latin Charset After this commands could not be other commands like: 094 SMS 030 1 because all messages will be forwarded to other numer "SMS 030 1"
<code>INST 000000_095_E</code>	<b>Zone Walk Test request</b> 095= command code (Zone Test request) E = 1- test request activated, 0- test request deactivated When zone is activated, the bell generates the sound, ARM/DISARM system automatically turn off this function
<code>INST000000 096</code>	<b>Fire sensors reset.</b>
<code>INST000000_100_N</code>	<b>System state request:</b> 100= command code (System state request) N = System state request type 1- System test request, Request information about the module (: IMEI, FW, LEVEL etc.) 2- the values of active sensors request 3 -Request about active zone states 4 -Request about output states 5 - System state request. The module will send information on input/output states and system state (ARM/DISARM/STAY).

## 9 The table of users commands



The phone number must be in the **Sera2> Users/ Access control** list if USER123456 commands will be used  
If the phone number is not in the list, the sms commands from this phone number will be blocked.



SMS configuration is allowed only with Latin characters. Unicode is not allowed.

SERA2

File Settings Devices Read [F5] Write [F6] Update About...

System Options  
GSM Communications  
**Users/Access control**  
Inputs/Burglar Alarm Zones  
Outputs (PGM)  
Automation/Sensors

Remote Control Users table											Temporary access Date/Time window		
ID	En	User Name	Type	User Tel.	iButton Code	RFID Keycard	Keyb Code	OUT	ARM/DISARM	MIC	Date En	Start Date	Expiration Date
1	<input checked="" type="checkbox"/>	Master	User	+37000000000	00000000000	000000000	*****	NONE	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2019-02-25 16:24:26	2019-02-25 16:24:26
2	<input type="checkbox"/>		User	+	00000000000	000000000		OUT1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2019-02-25 16:24:26	2019-02-25 16:24:26

Table 8 The table of user's commands

<b>USER123456_020_N</b>	<p>Change state of selected OUT output to the inverted state. Output state changes every time after sending command code. 020= command code (Change state of selected OUT output to the inverted state.) N = output number from 1 to 10.</p>
<b>USER123456_021_N#ST</b>	<p><b>Activate or deactivate selected output N.</b> 021= command code (Activate or deactivate selected output N) N = output number from 1 to 10. ST= output mode: 0 – deactivated output, 1- activated output</p>
<b>USER123456_022_N#TIME#</b>	<p><b>Output activation for the time interval</b> 022= command code (Output activation for the time interval) N = output number 1-10 TIME = 0-999999 Time interval in seconds for the output activation.</p>
<b>USER123456_030_ST</b>	<p><b>Change security system's mode (ARM/DISARM/STAY/SLEEP)</b> 030= command code (Change security system's mode (ARM/DISARM/STAY/SLEEP) ST = Security system mode 0-DISARM, 1-ARM, 2-STAY, 3-SLEEP</p> <p>Enter user phone number in <b>the Sera2&gt; Users/ Access control</b> list</p>
<b>USER123456_031_ZN#BYP</b>	<p><b>Zone bypassing by sms command</b> 031= command code (Zone bypassing) ZN = zone number from 1 to 32 BYP= 1 – zone bypass 0- zone active.</p>
<b>USER123456_094_TEL#SMS</b>	<p><b>SMS from the module forwarding to the other phone number</b> 094= command code (SMS from the module resending to the other phone number) TEL = phone number to which will be forwarded sms text SMS = sms text that will be send to the referred phone number</p>
<b>USER123456_100_N</b>	<p><b>System state request:</b> 100= command code (System state request) N = System state request type 1- System test request, Request information about the module (: IMEI, FW, LEVEL etc.) 2- the values of active sensors request 3 -Request about active zone states 4 -Request about output states 5 - System state request. The module will send information on input/output states and system state (ARM/DISARM/STAY).</p> <p><b>Only for the firmware versions &gt; 190926</b></p>

## 10 APP configuration

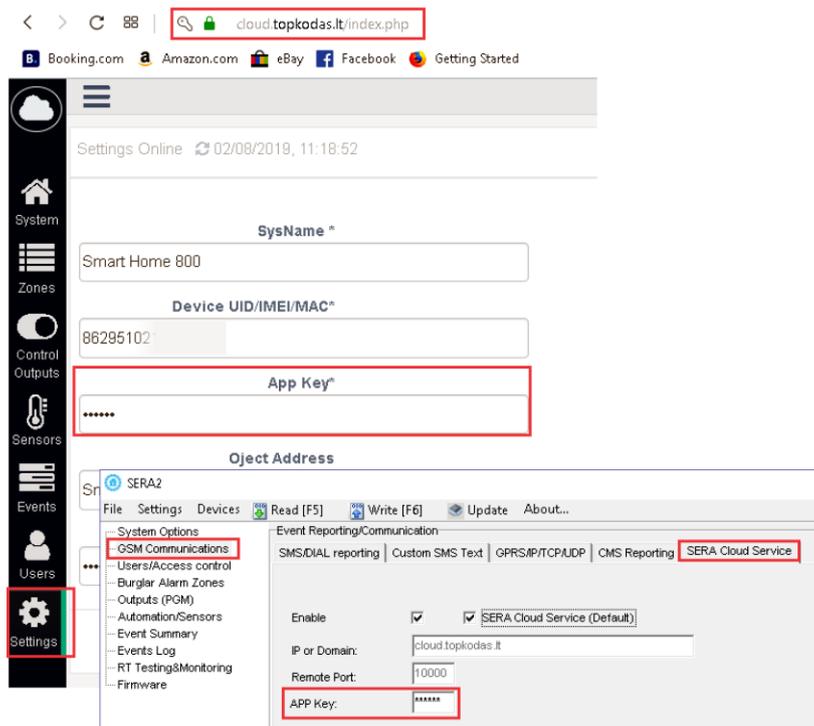


Figure 99 <https://cloud.topkodos.lt/index.php>> Settings and GSM Communications> Sera Cloud Service windows

App key in module and APP must be the same. IMEI (device UID) you can find on the modem of the module or in SERA program System Options> System info.

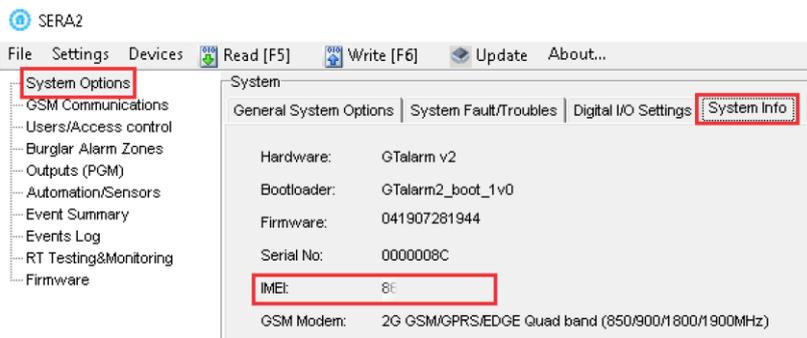


Figure 100 System Options> System Info window

## 11 Warranty Terms and Conditions

### SAFETY INSTRUCTIONS FOR SERVICE PERSONS

Use the following list as a guide to find a suitable place for Progate module:

- Locate the module near a power outlet.

- Select a place that is free from vibration and shock.

- Place the module on a flat, stable surface and follow the installation instructions:

Do NOT locate the module where persons can walk on the secondary circuit cable(s).

Do NOT connect the module to electrical outlets on the same circuit as large appliances.

Do NOT select a place that exposes the module to direct sunlight, excessive heat, moisture, vapors, chemicals or dust.

Do NOT install the module near water (e.g., bathtub, wash bowl, kitchen/laundry sink, wet basement, or near a swimming pool).

Do NOT install the module and its accessories in areas where there is a risk of explosion.

Do NOT connect the module to electrical outlets controlled by wall switches or automatic timers.

AVOID sources of radio interference.

AVOID setting up the equipment near heaters, air conditioners, ventilators, and/or refrigerators.

AVOID locating module close to or on top of large metal objects (e.g., metal wall studs).

Safety Precautions Required During Installation

- NEVER install the module during a lightning storm.

- Ensure that cables are positioned so that accidents cannot occur. Connected cables must not be subject to excessive mechanical strain.

- The power supply must be Class II, FAIL SAFE with double or reinforced insulation between the PRIMARY and SECONDARY circuit/ENCLOSURE and be an approved type acceptable to the local authorities. All national wiring rules shall be observed.

**Limited Warranty**

UAB "Topkodas" warrants the original purchaser that for a period of twelve months from the date of purchase, the product shall be free of defects in materials and workmanship under normal use. During the warranty period, UAB "Topkodas" shall, at its option, repair or replace any defective product upon return of the product to its factory, at no charge for labor and materials. Any replacement and/or repaired parts are warranted for the remainder of the original warranty or ninety (90) days, whichever is longer. The original purchaser must promptly notify UAB "Topkodas" in writing that there is defect in material or workmanship, such written notice to be received in all events prior to expiration of the warranty period. There is absolutely no warranty on software and all software products are sold as a user license under the terms of the software license agreement included with the product. The Customer assumes all responsibility for the proper selection, installation, operation and maintenance of any products purchased from UAB "Topkodas". In such cases, UAB "Topkodas" can replace or credit at its option.

#### **International Warranty**

UAB "Topkodas" shall not be responsible for any customs fees, taxes, or VAT that may be due.

#### **Warranty Procedure**

To obtain service under this warranty, please return the item(s) in question to the point of purchase. All authorized distributors and dealers have a warranty program. Anyone returning goods to UAB "Topkodas" must first obtain an authorization number. UAB "Topkodas" will not accept any shipment whatsoever for which prior authorization has not been obtained.

#### **Conditions to Void Warranty**

This warranty applies only to defects in parts and workmanship relating to normal use. It does not cover:

- Damage incurred in shipping or handling;
- Damage caused by disaster such as fire, flood, wind, earthquake or lightning;
- Damage due to causes beyond the control of UAB "Topkodas" such as excessive voltage, mechanical shock or water damage;
- Damage caused by unauthorized attachment, alterations, modifications or foreign objects;
- Damage caused by peripherals (unless such peripherals were supplied by UAB "Topkodas".);
- Defects caused by failure to provide a suitable installation environment for the products;
- Damage caused by use of the products for purposes other than those for which it was designed;
- Damage from improper maintenance;
- Damage arising out of any other abuse, mishandling or improper application of the products.

#### **Items Not Covered by Warranty**

- (i) Freight cost to the repair center;
- (ii) Products which are not identified with UAB "Topkodas" product label and lot number or serial number;

Products disassembled or repaired in such a manner as to adversely affect performance or prevent adequate inspection or testing to verify any warranty claim.

Under no circumstances shall UAB "Topkodas" be liable for any special, incidental, or consequential damages based upon breach of warranty, breach of contract, negligence, strict liability, or any other legal theory. Such damages include, but are not limited to, loss of profits, loss of the product or any associated equipment, cost of capital, cost of substitute or replacement equipment, facilities or services, down time, purchaser's time, the claims of third parties, including customers, and injury to property. The laws of some jurisdictions limit or do not allow the disclaimer of consequential damages. If the laws of such a jurisdiction apply to any claim by or against UAB "Topkodas", the limitations and disclaimers contained here shall be to the greatest extent permitted by law. Some states do not allow the exclusion or limitation of incidental or consequential damages, so that the above may not apply to you.

#### **Disclaimer of Warranties**

UAB "Topkodas" neither assumes responsibility for, nor authorizes any other person purporting to act on its behalf to modify or to change this warranty, nor to assume for it any other warranty or liability concerning this product.

#### **WARNING:**

UAB "Topkodas" recommends that the entire system be completely tested on a regular basis. However, despite frequent testing, and due to, but not limited to, criminal tampering or electrical disruption, it is possible for this product to fail to perform as expected.

#### **Out of Warranty Repairs**

UAB "Topkodas" will at its option repair or replace out-of-warranty products which are returned to its factory according to the following conditions. Anyone returning goods to UAB "Topkodas" must first obtain an authorization number. UAB "Topkodas" will not accept any shipment whatsoever for which prior authorization has not been obtained. Products which UAB "Topkodas" determines to be repairable will be repaired and returned. A set fee which UAB "Topkodas" has predetermined and which may be revised from time to time, will be charged for each unit repaired. Products which UAB "Topkodas" determines not to be repairable will be replaced by the nearest equivalent product available at that time. The current market price of the replacement product will be charged for each replacement unit.

#### **WARNING - READ CAREFULLY**

##### **Note to Installers**

This warning contains vital information. As the only individual in contact with system users, it is your responsibility to bring each item in this warning to the attention of the users of this system.

##### **System Failures**

This system has been carefully designed to be as effective as possible. There are circumstances, however, involving fire, burglary, or other types of emergencies where it may not provide protection. Any alarm system of any type may be compromised deliberately or may fail to operate as expected for a variety of reasons. Some but not all of these reasons may be:

- Inadequate Installation

The module must be installed properly in order to provide adequate protection.

- Criminal Knowledge

This system contains security features which were known to be effective at the time of manufacture. It is possible for persons

With criminal intent to develop techniques which reduce the effectiveness of these features. It is important that a system be reviewed periodically to ensure that its features remain effective and that it be updated or replaced if it is found that it does not provide the protection expected.

- Access by Intruders

Intruders may enter through an unprotected access point, circumvent a sensing device, evade detection by moving through an area of insufficient coverage, disconnect a warning device, or interfere with or prevent the proper operation of the system.

- Power Failure

Control units, intrusion detectors, smoke detectors and many other security devices require an adequate power supply for proper operation. If a device operates from batteries, it is possible for the batteries to fail. Even if the batteries have not failed, they must be charged, in good condition and installed correctly. If a device operates only by AC power, any interruption, however brief, will render that device inoperative while it does not have power. Power interruptions of any length are often accompanied by voltage fluctuations which may damage electronic equipment. After a power interruption has occurred, immediately conduct a complete system test to ensure that the system operates as intended.

- Failure of Replaceable Batteries

Ambient conditions such as high humidity, high or low temperatures, or large temperature fluctuations may reduce the expected battery life. While each transmitting device has a low battery monitor which identifies when the batteries need to be replaced, this monitor may fail to operate as expected. Regular testing and maintenance will keep the system in good operating condition.

- Compromise of GSM network

Signals may not reach the receiver under all circumstances which could include metal objects placed on or near the radio path or deliberate jamming or other inadvertent signal interference.

- System Users

A user may not be able to operate a panic or emergency switch possibly due to permanent or temporary physical disability, inability to reach the device in time, or unfamiliarity with the correct operation. It is important that all system users be trained in the correct operation of the module and that they know how to respond when the system indicates an alarm

- **Smoke Detectors**

Smoke detectors may not properly alert occupants of a fire for a number of reasons, some of which follow. The smoke detectors may have been improperly installed or positioned. Smoke may not be able to reach the smoke detectors, such as when the fire is in a chimney, walls or roofs, or on the other side of closed doors. Smoke detectors may not detect smoke from fires on another level of the residence or building.

Every fire is different in the amount of smoke produced and the rate of burning. Smoke detectors cannot sense all types of fire is equally well. Smoke detectors may not provide timely warning of fires caused by carelessness or safety hazards such as smoking in bed, violent explosions, escaping gas, and improper storage of flammable materials, overloaded electrical circuits, and children playing with matches or arson.

Even if the smoke detector operates as intended, there may be circumstances when there is insufficient warning to allow all occupants to escape in time to avoid injury or death.

- **Motion Detectors**

Motion detectors can only detect motion within the designated areas as shown in their respective installation instructions. They cannot discriminate between intruders and intended occupants. Motion detectors do not provide volumetric area protection. They have multiple beams of detection and motion can only be detected in unobstructed areas covered by these beams. They cannot detect motion which occurs behind walls, ceilings, floor, closed doors, glass partitions, glass doors or windows. Any type of tampering whether intentional or unintentional such as masking, painting, or spraying of any material on the lenses, mirrors, windows or any other part of the detection system will impair its proper operation.

Passive infrared motion detectors operate by sensing changes in temperature. However their effectiveness can be reduced when the ambient temperature rises near or above body temperature or if there are intentional or unintentional sources of heat in or near the detection area. Some of these heat sources could be heaters, radiators, stoves, barbecues, fireplaces, sunlight, steam vents, lighting and so on.

- **Warning Devices**

Warning devices such as sirens, bells, horns, or strobes may not warn people or waken someone sleeping if there is an intervening wall or door. If warning devices are located on a different level of the residence or premise, then it is less likely that the occupants will be alerted or awakened. Audible warning devices may be interfered with by other noise sources such as stereos, radios, televisions, air conditioners or other appliances, or passing traffic. Audible warning devices, however loud, may not be heard by a hearing-impaired person.

- **GSM network**

If GSM network are used to transmit alarms, it may be out of service for certain periods of time.

- **Insufficient Time**

There may be circumstances when the system will operate as intended, yet the occupants will not be protected from the emergency due to their inability to respond to the warnings in a timely manner. If the system is monitored, the response may not occur in time to protect the occupants or their belongings.

- **Component Failure**

Although every effort has been made to make this system as reliable as possible, the system may fail to function as intended due to the failure of a component.

- **Inadequate Testing**

Most problems that would prevent the module from operating as intended can be found by regular testing and maintenance. The complete system should be tested weekly and immediately after a break-in, an attempted break-in, a fire, a storm, an accident, or any kind of construction activity inside or outside the premises.

- **Security and Insurance**

Regardless of its capabilities, the module Progate is not a substitute for property or life insurance. The module Progate also is not a substitute for property owners, renters, or other occupants to act prudently to prevent or minimize the harmful effects of an emergency situation.