Topkodas

UAB „Topkodas"

GSM SMS/DIAL security and remote control system

User's guide
Prog. Version GTAUTO v4

APPLICATION

- The module may be applied for remote monitoring and control of vehicles, motorcycles, boats or other transport facilities as well as for their protection via GSM network.
- For remote monitoring of premises and for control via GSM network.
- Remote control of the devices via GSM network
- Access control. Gate/door control.
- Automation of premises, temperature and voltage control.
- GSM thermostat for premisses and heating systems.
- Remote voice listening.

FEATURES

- Adaptive control of alarm system: ARM/DISARM. Not necessary additional key switch. The module may turned ON/OFF by using manufacturer's central lock.
- 6 inputs. Fully programmable zones.
- 2 inputs for arm/disarm the security system. The module can be controlled using standard central lock of a vehicle or using other access control device.
- 4 programmable 1.5 OC outputs for remote control or for fulfilment of selected function.
- 1 output for monitoring of system's state. LED indicator.
- 16 users who receive information about protected object. Reception of information in a form of SMS or via DIAL short call.
- 400 users being able to control gate or electromagnetic lock via free short call.
- ARM/DISARM of the system via free short call.
- ARM/DISARM of the system with the factory remote control central lock.
- Temperature measurement. For temperature control, tracking, alarm and control.
- Voltage measurement. Voltage monitoring and alarm.
- External microphone. Remote voice listening option via external microphone.
- Option to connect BELL for sound alarm.
- System state BUZZER. (Optional output type)
- FLASH feature may be used for direction indicators on arming or disarming or in the event of alarm. (Optional output type)
- Sending of periodical test including system parameters.
- SMS about state of each sensor, alarms, power supply voltage and GSM communication level.
- Built-in GSM module.
- Testing and diagnostic of the module via USB by using program SERA
- Remote set-up via SMS messages.
- Configuration of the module via USB. Standard mini USB cable may be used
- Free configuration program SERA.
- Very compact

Content

1. Safety requirements

Before applying the module in operation please read this user's guide. Any operations, related with mounting of the module and connecting of peripheral devices, should be performed only after unplugging the module from the mains.

2. Application of the device

GSM security module GTAUTO (hereinafter the Module) is applied for transferring of GSM SMS messages to the mobile phone of a user. GTAUTO module may be used for protection of various vehicles. The module may be used for protection of a vehicle or in combination with the vehicle's security system, which has control lock control. The module may be applied for protection of house, garages, cottages, vehicles as well as for access control, gate control, objects' automation, smart house and temperature control. For premises protection and many other applications.

In the event of burglary, the device, depending on programmed operation algorithm, is able to call or to send SMS to up to 16 users. A user is able to hear what is going on premises after answering a call or he may make a call by himself. A user is able to receive an SMS with detailed information about status of each protected zone and number of alarm events. The user is able to control the device via SMS messages only if he knows user's password. If a call is being performed from the telephone number not included in the system's data base, the call is rejected immediately.

The module has system voltage control. If power supply voltage drops below the defined value, a user automatically will be notified via SMS. The SMS message includes voltage of backup battery (System Voltage).

The module has external temperature sensor. A user receives information about temperature alarms and restores via SMS messages. The SMS on voltage of the module and ambient temperature is also available. Temperature may be measured in Celsius and Fahrenheit.

SMS periodical test ensures constant control of the module. The module is able to send periodical test. Test time is programmable. The test will include all essential information: GSM communication strength, system (car battery's) power supply voltage, temperature and IMEI of the module.

GTAUTO module is ideal for remote vehicle start-up. The module compares incoming number with programmed users' numbers and in a case of coincide activates an output or other action and interrupts the call automatically.

All parameters of the module should be configured via PC by using software SERA or in remote manner by sending appropriate SMS including password.

3. Used definitions and terms

- Installer – a person provided with INST (installer's) password.
- *User* - is a person being aware USER password.
- *Authorized user* - is a person whose mobile phone's number is entered in GSM module. Two authorized users with the same rights may be entered into the module.
- *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.
- *Event* - event a user receives the information about.
- *ARM* - status of the security system. The module is in ARM mode
- *DISARM* - status of the security system. The module is in standby mode; only 24h inputs are active.
- *NO* - input type (Normal Open) - this means that the alarm will be send when the input will be connected with ground (-V).
- *NC* - input type (Normal Close) - this means that the alarm will be send when the circuit between input and ground (-V) will be broken.
- *EOL* - (end of line resistor) input type with resistor.
- *Service messages* – ARM/DISARM, test, resetting of the system.
- *DIAL*- the system makes a call to the number specified.
- *Pull-up resistor* - is that it weakly "pulls" the voltage of the wire it is connected to towards +V (or whatever voltage represents logic "high").
- MIC - microphone
- COM – negative power supply terminal.
- *+V* - positive power supply terminal.
- *SSR*- Solid State Relay
- Caller ID - Caller's identification

4. Short description of the operation principle

GTauto (further referred to as the module) transfers messages about events of the security system to the mobile phone of a user via GSM communication channel.

Upon alarm response of the security system, the module will generate SMS message about alarmed sensors: door, capote, shock, fuel tank etc. SMS message is being sent to a user in-line with a short call. This is to reduce the probability that a user will not observe SMS message.

It is possible to send SMS and to call to 16 users. The algorithm of message sending is SMS1,SMS2...SMSn till all SMS messages will be send. After DIAL1,DIAL2....DIALn. All messages are being sent until all users will be

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notified about the event. Preferred messages and texts of these messages should be defined when programming the module.

The module understands when the call is rejected and will not repeat calling. When the module is calling to the user's phone, the user can not reject the call at least 15 seconds. Otherwise the module will understand that the user's number is busy and will try to repeat the call again. In a case the user's number is busy in fact, the module will make repetitive calls following the programmed number of calls. **Note**: Efficiency of this function depends on interpretation of call control by the operator; in some cases the operator may wrongly interpret the call and thus the module will make repetitive calls each 60 seconds, following the programmed number of repetitions (by default 3 repetitions). In such case GSM operator may be changed or simply the amount of DIAL repetitions reduced.

Parameters of the module are set by sending SMS or via PC by using standard miniUSB cable and configuration software SERA, which is available to download at www.topkodas.lt.Page

In order to activate voice listening it is necessary to call from a user's telephone number. When calling, the module will immediately activate voice listening, which will last as long as the user will reject the call or when the module will start performing other commands. Calls from other telephone numbers (of non-authorized users) are ignored.

5. Package content

		Or
GTAUTO module - 1 pcs	System cable - 1pcs	GSM antenna - 1 pcs
	2,2 kOhm resistors - 4 pcs	1 kOhm resistors - 6 pcs
System state indicator (LED), attached on the system cable - 1 pcs	External temperature sensor, attached on the system cable - 1 pcs	External microphone attached on the system cable - 1 pcs
Mini USB cable	Mini CD - 1 pcs: • User's guide in PDF • Program SERA • USB drivers	Shipping Package

Note: Some package content may be optional. Please ask seller for more information.

6. Specifications

Parameters of built-in GSM module:

Quad-band (850/900/1800/1900 MHz)
Sending of SMS messages
Receiving of calls and dialling
Microphone

Outputs:

OUT1 - OUT4 max current -... (-V) 1500 mA.
OUT1-OUT4 are protected from overvoltage, overcurrent and overhearting.
All outputs can be controlled via short call DIAL or via SMS message. This feature may be used for gate opening, ignition locking etc.
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

INI-IN6 inputs:

SMS text for input alarm and restore
Programmable enabling or disabling of inputs;
Input type NC/NO/EOL
Algorithm for zones operation:: *delay, interior, instant, 24 hours, silent, fire*
Response time;
Time of additional response;
Commutation of selected out put

IN7 voltage control (internal power supply voltage input)

Alarm voltage (programmable);
Restore voltage (programmable);
Programming-based voltage calibration;
Power supply voltage range ....from 8.0 V to 16 V.
Measurement scale 0.01V;

Temperature control parameters:

External temperature sensor;
Alarm temperature (programmable);
Restore temperature (programmable);
Programming-based calibration of temperature sensor;
Temperature measurement range ....from -40 ^{o}C to +80 ^{o}C
Measurement system .... Fahrenheit/Celsius
Measurement scale ....0.1 ^{o}C / 0.18 ^{o}F

Module control:

ARM/DISARM of the security system via LOCK/UNLOCK outputs. 6 control algorithms:
Two condition inputs, used
via SMS message
via short call DIAL

Automatic periodical test:

Test sending in a form of SMS message. Sending communication control messages (tests) at time range from 1 to 24 hours after pressing RESET button or after entering into ARM (security) mode. Settings discreetness - one hour.

Power supply voltage:

Nominal power supply voltage ....12.6 V
Power supply voltage range ....9 - 16 V

Consumption current:

In standby mode............... ....less than 30 mA*.
In dialling or SMS sending mode ....less than 300 mA.

Environmental parameters:

Storage temperature range from ....-40 to +85 ^{o}C / -40 iki 185 ^{o}F
Operational temperature range from ....-30 to +75 ^{o}C / from -22 to 167 ^{o}F
Max relative humidity under +40 ^{o}C / 104 ^{o}F 95%

Package weight:...430g
Module weight: 112g
Overall dimensions of the module: ....90x63x32 mm

* Current consumption in idle running depends on inputs connection type, on output state and load.

7. General view of the product and layout of control devices

1. REG (yellow) LED
2. WDG (green) LED
3. MOD (red) LED
4. MiniUSB programming connector
5. RESET button
6. GSM antenna connector
7. SIM card holder of "Push-Push" type
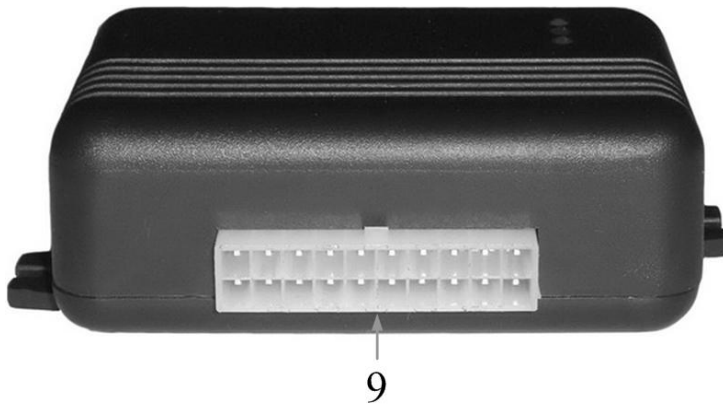
9 Power supply and input/output connector

7-1 Meaning of LEDs

Name	Indication variations	Meaning
External LED on the system cable "ARM state"	Flashes, remains lit for 50ms, turns off for 300ms.	GSM module is in ARM (security) mode.
	Blinking, remains lit for 50ms, turns off for 10s.	GSM module is in DISARM (non-security) mode.
	Off	Program error, processor is out of order, hardware problem or power supply failure.
WDG (green) built-in LED	Blinking, remains lit for 50ms, 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.
	Off	Modem failed to register to the network.
MOD (red) built-in LED	Flashes	Power supply OK and the module is registered to the GSM network.
	Lights continuously	Modem power supply is OK, but the module failed to register to the GSM network.
	Off	Modem power supply failure or it is switched off.
WDG/REG	Turns on each 500 ms	The Bootloader mode In this mode it is possible to update the firmware of the module

7.1. Input/output connector pinouts meaning and layout

Contact No	Name	Wire colour	Description
1	GND	Black	Negative supply voltage (GND)
11	+V	Red	Positive supply voltage Power supply voltage 8-16V
2	Input 1	Green/Yellow	1 zones/input, NC/NO/EOL
12	Input 2	Green	2 zones/input, NC/NO/EOL
3	Input 3	Yellow	3 zones/input, NC/NO/EOL
13	Input 4	Brown	4 zones/input, NC/NO/EOL
4	Input 5	Blue	5 zones/input, NC/NO/EOL
14	Input 6	Orange	6 zones/input, NC/NO/EOL
5	Lock	Black/White	Input for security ARMING
15	Unlock	Black	Input for security DISARMING
6	OUT1	Grey	First output 1500mA. Open Collector.
16	OUT2	Green/Yellow	Second output 1500mA. Open Collector.
7	OUT3	Green	First output 1500mA. Open Collector.
17	OUT4	White	Second output 1500mA. Open Collector.
8	LED(K)	Black/White	ARM/DISARM state LED cathode
18	LED(A)	Black	ARM/DISARM state LED anode
9	Temp+	Black/White	Temperature sensor input
19	Temp-	Black	Temperature sensor input
10	MICP	Black/White	Positive differential input of the microphone.
20	MICN	Black	Negative differential input of the microphone.

8. Users

## 8.1. Control and programming of the module via SMS messages

8.1.1. Installer

Installer is able to execute all (INST) commands available in the table *17-1*. The installer is able to change parameters of the module only with INST password

8.1.2. User

User is able to execute only user's (USER) commands available in the table *17-2*. A User may send SMS request any time and receive parameters of the security system: zones and inputs states, communication strength, temperature etc. SMS messages may be used to control outputs (Out1, Out2, Out3, Out4) and to activate ARM/DISARM mode.. A User is able to control the module only when using USER password.

8.2. Users to receive SMS/DIAL messages

The number of users - up to 16 These users are able to receive messages or/and calls after alarm response of the security system or communication test or system state test messages, which are being generated after alarm response of the security system or following test messages schedule. The number of users - up to 16 It is possible to select, what event SMS to be send to each user.
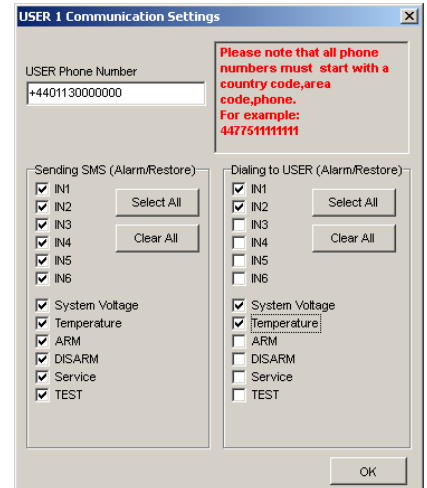
8.3. Remote control. Users who are able to control the module via short call.

The number of users - up to 400 These users are able to control outputs via short call, to activate voice listening and to activate ARM/DISARM mode of the system. Action of the user is free-to-select. The actions to be done by the module, after the telephone number having been recognized, might be assigned to every telephone number.

The following actions may be selected regarding telephone number of each user:
- To activate outputs OUT1,OUT2,OUT3,OUT4 optionally. This function might be used to lock a vehicle's ignition, to start a vehicle and for remote control of other equipment.
- ARM/DISARM security system
- Activate voice listening via external microphone MIC

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9. Temperature control and maintenance Heating and cooling system control

Temperature control with GSM phones GTauto thermostat measure temperature through a probe (that is on system cable) and can drive any of outputs OUT1, OUT2, OUT3 , OUT4 (you can program which) to activate or deactivate the heating/cooling system so to keep the temperature required. This is the way to keep room temperature required. Temperature range is -40 to 80 degrees Celsius or accordingly Fahrenheit. It is possible to set a low temperature alarm and a high temperature alarm. Passage through these thresholds will trigger alarm SMSs. You can choose a temperature hysteresis. If the temperature is too low or too high the Module will send SMS message including warning and actual temperature value. allowing you to take action or a output to be activated to correct the temperature.

For example a user can receive a reporting SMS and also switch output on or off to achieve the requested temperate. This is quite powerful temperature control system not only for residential use but for professional use only.

If your company sells heating on a calories basis, this solution can help you a lot, avoiding energy waste and useless trips to a location.

If you have a house in the mountains and want to make sure temperature is kept correctly. GTauto is a professional solution to implement this decision.

Module can be used to monitor industrial refrigerators, electrical transformers animal farms or any location or machine where temperature control is significant.
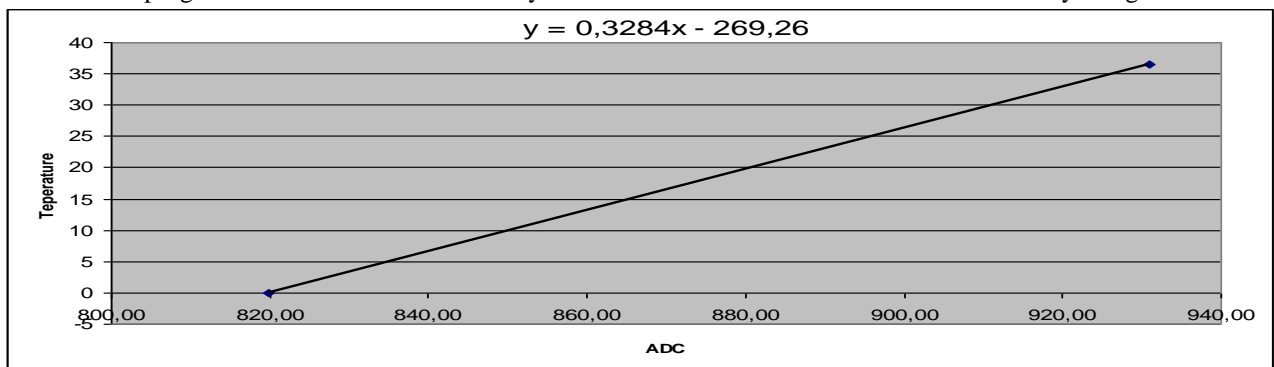
Temperature controller configuration window.
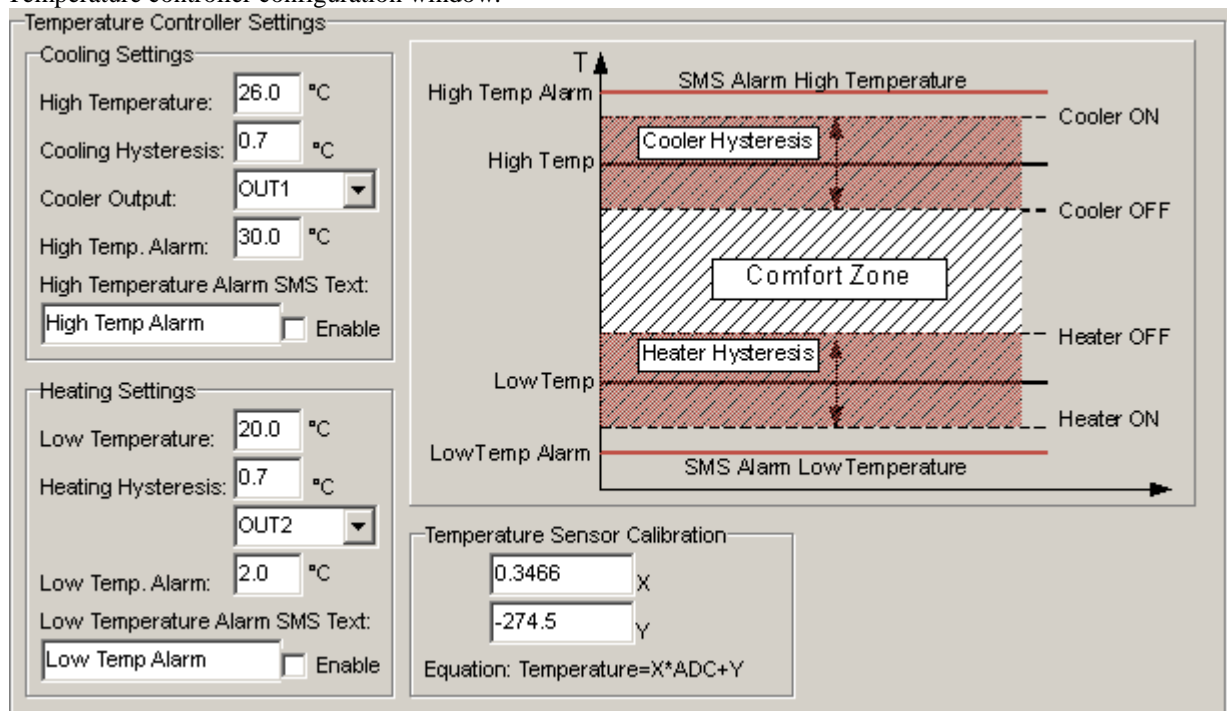
Temperature sensor is connected to the system wire contacts 9 Temp(+) and 19 Temp(-).

Alarm and restore temperature may be changed. Upon temperature alarm, the module will send SMS message to a user. And if setting exist, the module will switch the selected output. It is comfortable to use this function for indoor heating management. In a case of accuracy shortage, temperature sensor may be calibrated additionally.

Following the equation Temperature=X*ADC+Y and by selecting X and Y coefficients. Temperature calibration may be performed in software SERA in testing window. It is necessary to have accurate thermometer in order to measure temperature at least in two points. In testing window to read temperature ADC indications in these points. Following the equation "Temperature=X*ADC+Y" to calculate X and Y coefficients. Calculated X and Y coefficients should be programmed in the module. It is easy to calculate X and Y coefficients in MC Excel by using trendline.

Temperature may be measured in Celsius and Fahrenheit.

9.1. Premisses automation, temperature controller installation and connection diagram

Preparation of the module for operation by using configuration software (pictures and the more detailed info are available in SERA description):

- Define parameters of the outputs. Output state SMS text, output operation description (OUT definition) „CTRL/SMS/DIAL", state type (State mode)- Steady. If necessary output operation might be inverted.
- In the GSM communication window parameters of the users to send SMS and DIAL should be set. Also check boxes should be checked to send SMS and DIAL to a user about temperature alarms.
- In GSM remote control window telephone numbers of users, who will be able to control selected outputs via free short call , should be entered.
- On The "Temperature Controller Settings" window, set the cooler device temperature control settings:
  - o Cooling temperature value "High temperature"
  - o Cooling hysteresis
  - o Select cooler control output (OUT1-OUT4) or disable, if cooler device is not used.
  - o Determine the temperature value at which will be sent an SMS overheat temperature alarm
  - o Determine the temperature at which the value will be sent an SMS temperature alarm
  - o If you want to receive overheat alarm, need to check box "Enable"
- Similar settings are done with heater control options.

In order to control big power alternating current equipment, it is comfortable to use solid state relays.

Standard AC/DC adapter with the voltage 10V-14V and current >=1A might be used to powering the module.

> ⚠ Attention! AC equipment can not 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.

> ⚠ Attention! When controlling devices from the AC network , it is necessary to follow all electrical safety requirements.

Module connection scheme to control heating or cooling equipment:
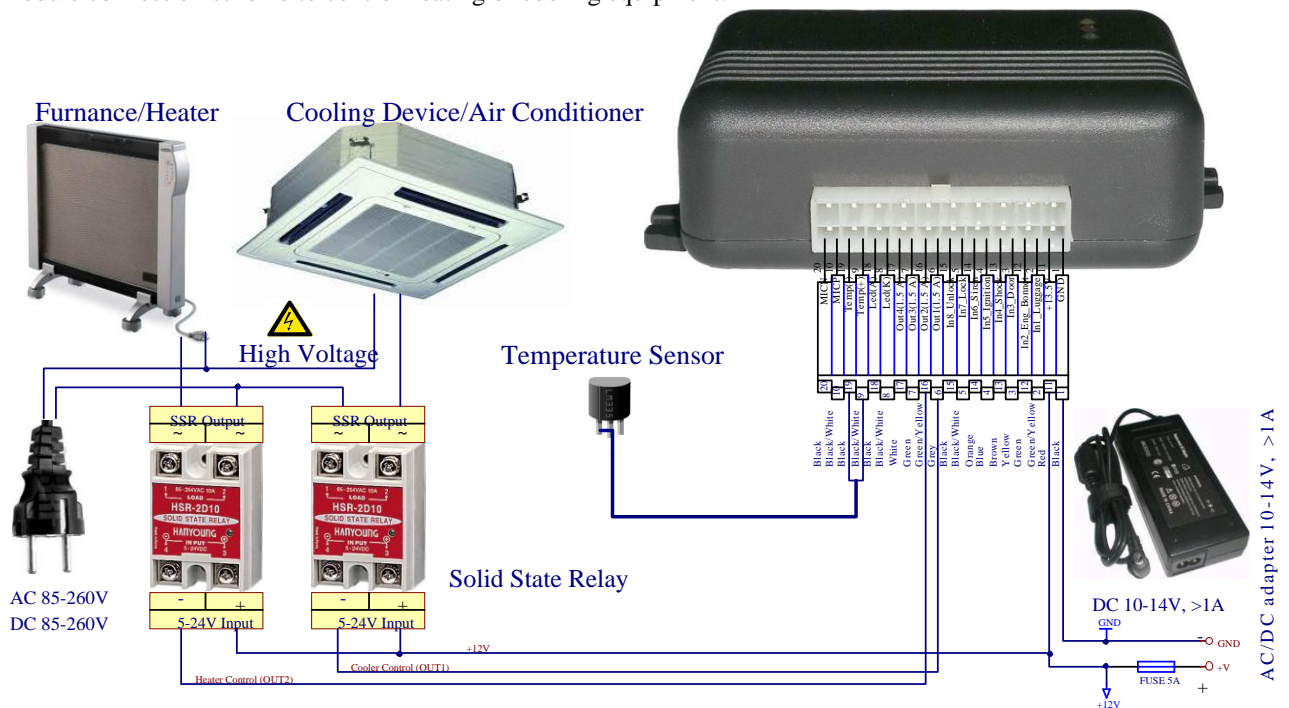
9.2. Remote temperature control via SMS messages

Temperature may be changed in remote manner by using SMS commands.

Overheating temperature value upon reaching which, the following SMS message will be sent: „High temperature alarm".

INST123456 70 35.5#

- INST   - user type (installer)
- 123456 – user code
- space character
- 70 - the command to change overheating temperature alarm value
- space character
- 35.5#   - overheating alarm temperature value. The end symbol #

Freezing temperature value upon reaching which, the following SMS message will be sent: „Low temperature alarm".

INST123456 71 5.5#

Temperature value for freezing equipment control.

INST123456 72 28.5#

Temperature value for heating equipment control.

INST123456 73 21.7#

More information about SMS commands see chapter *17.2*

10. ARM/DISARM of the module

The module can work in ARM mode and DISARM mode. ARM/DISARM state of the module may be changed thus: via short call, via SMS message and by using Lock/Unlock inputs. All modes of ARM/DISARM may supplement each other. For example: The module may be activated via Lock/Unlock inputs, and deactivated via short call or SMS message.

10.1. ARM/DISARM via short call

It is possible for 400 users to activate/deactivate the module via short call. The module will recognize user's number and will automatically cancel the call. Not recognized numbers are being ignored. Information on how to program the user numbers is available in the description of SERA.

10.2. ARM/DISARM by sending SMS message

It is possible to ARM/DISARM of the module by sending SMS message and using USER or INST password. Example of SMS message:

To ARM the system:

USER123456 59 0

To DISARM the system:

USER123456 59 1

More info see *17.2*

10.3. ARM/DISARM by using Lock and Unlock inputs

It is possible to ARM/DISARM the module by using Lock and Unlock inputs. These inputs may be used when it is necessary to control the module via any additional external access control device having NO or NC output:

- Vehicle's central lock signal;
- Access control device, e.g.: RFID, IBUTTON, keyboard;
- It is possible to use switch, button, reed switch etc. for generating of control signal.

Several Lock/Unlock modes are available:

- Mode 1 (V+ Pulse using Lock and Unlock inputs). Lock input sets ARM mode after pulsing or steady signal. Unlock sets DISARM mode. It is comfortable to use 1st or 2nd mode when connecting the

module to the central lock of vehicle. Central lock mostly generates lock and unlock signals with two wires.

- 2nd mode 2 (V- Pulse using Lock and Unlock inputs) similar as 1 mode only inverted.
- 3rd mode 3 (V+ Level using Lock input) used only one Lock input. Unlock input is not used. These modes are comfortable to use when activating/deactivating the system by using switch or other access control device.
- 4th mode (V- Level using Lock and Unlock inputs) similar as 3rd mode is only inverted.
- 5th mode (V+ + >500ms Pulse Lock input) uses only one Lock input. Unlock input is not used. The ARM/DISARM state might be changed via voltage pulse longer than 500ms. The voltage pulse might be generated by using switch or other input control device.
- 6th mode (V+ >500ms Pulse Lock input) similar as 5th mode is only inverted.

1,2,3,4,5,6 see diagrams in annex 2.

Lock and Unlock inputs do not have built-in Pull-Up resistor. When there is no external signal, you need to connect external 2,2K pull-up resistor. The resistor should be connected between power supply positive terminal +V and input. Such event may occur when switch is connected between lock input and ground as shown in Fig. 10-1Fig. 10-1

Example of wiring diagram with two switches. One switch for ARM-ing, another - DISARM-ing. 1st or 2nd modes should be set by using two switches.
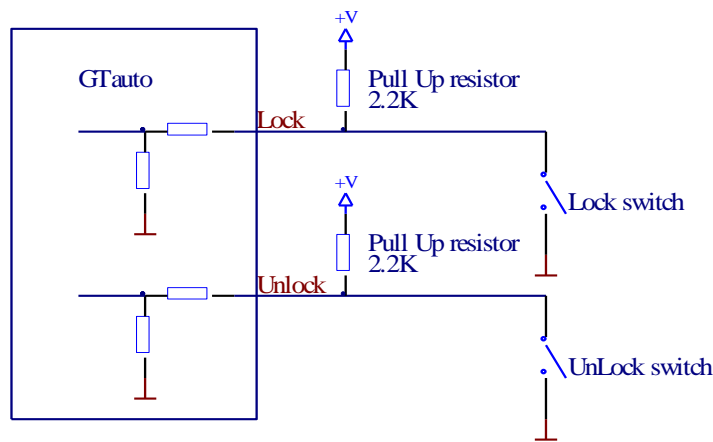
Fig. 10-1

Example of wiring diagram with central lock of vehicle, see annex 1

10.4. Usage of Lock/Unlock IN4, IN6 inputs with lock/unlock feature

Lock/Unlock condition is used when a user does not want the security system to be activated/deactivated, by using door lock or central lock button. In such event the module will analyse signals from door and central lock and will not allow changing ARM/DISARM mode. This feature will protect a vehicle from disabling (DISARMing) the module via the lock or button, in the event of breaking window and pressing central lock button or lock spinning. For lock/unlock blocking condition it is necessary to use IN4 or/and IN6 module inputs. These inputs are configured like additional input function. The following conditions might be set:

- Unlock Blocking condition
- Lock Blocking condition
- Lock/Unlock Blocking condition

GTauto

UnLock Condition

13 IN4

Door lock contact for Unocking

Central lock switch contact in passenger compartment for Unlocking

+V

Lock Condition

14 IN6

Door lock contact for locking

Central lock switch contact in passenger compartment for locking

+V

5 Lock

Lock signal

+V

15 Unlock

UnLock signal

+V

GTauto

+V

Pull Up 2.2K

UnLock Condition

13 IN4

Door lock contact for Unocking

Central lock switch contact in passenger compartment for Unlocking

+V

Pull Up 2.2K

Lock Condition

14 IN6

Door lock contact for locking

Central lock switch contact in passenger compartment for locking

+V

Pull Up 2.2K

5 Lock

Lock signal

+V

Pull Up 2.2K

15 Unlock

UnLock signal

10.5. Automatic arming of the security system "Auto rearm"

If the function „Auto-reARM" is on, the module will automatically return to ARM state, if during „Entry Delay" none of zones was alarmed. This feature is active only if the module was deactivated via telephone DIAL or SMS. This protects from casual disabling of the system via telephone.

10.6. Enabling of the security system via IN6 input. „Force ARMing" function

This feature is comfortable to use when the module operates in parallel with other security system. For example, if default security system is used in a vehicle, thus bell signal may be used for IN6 of the GTAUTO module. If default security system will be alarmed for appropriate reasons and will activate the bell, thus GTAUTO module will automatically turn into ARM state. And will send all information in relation to alarmed sensors. Thus the user gains additional protection from undesirable deactivation of GTAUTO module. This IN6 feature may be disabled.

10.7. "Blocking ARM" IN5 additional feature

This is additional feature IN5, which enables to block activation of ARM State. This feature may be applied in vehicles by connecting IN5 input to ignition. If GTAUTO module was deactivated and after ignition was turn on thus while the ignition will be on, the module would not be able to enter into ARM state. This feature may be disabled.

10.8. Bell confirmation signal by arming/disarming the security system

The siren will generate confirmation signal when arming/disarming the security system, if function „Siren signal on ARM/DISARM" was selected in the software SERA. When the security system is to be turned in ARM mode, the bell will beep once, when in DISARM mode - the bell will beep twice.

11. Module inputs

The module GTAUTO has:
- 6 programmable external inputs (zones).
- 1 temperature sensor input.
- Measuring of power supply voltage. Internal input is visible in programming table.
- 2 control inputs Lock and Unlock, see clause 10.3 .

Each input may be linked with selected output, i.e. to switch selected output depending on output state. This feature enables to apply the module for premisses automation and temperature control. For example: For example,

if temperature drops below the standard limit, the module is able to automatically activate heating system and also to inform a user about critical temperature by sending him an SMS.

11.1. Equivalent input diagrams

Equivalent 1-4 input diagram:
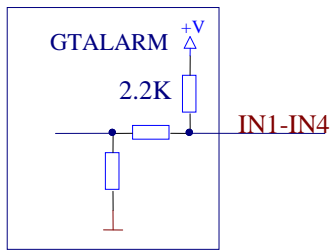
5-6 inputs are used when Pull-Up resistor is not necessary for the input. For example, when signal should be taken from vehicle's bell or ignition or from other device, for which extraneous signal cannot be applied. These inputs do not have internal Pull-Up resistor. Input resistance is 22kOhm. Equivalent diagram of 5-6 inputs:
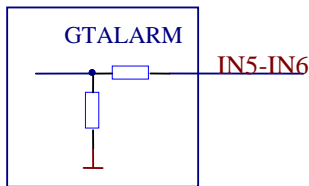
11.2. Sensor connection diagrams

Sensors may be connected following 4 different connection diagrams:
- NC – normally closed contact;
- NO – normally open contact;
- NC/EOL – normally closed with end of line resistor,

line resistor),
- NO/EOL – normally closed with end of line resistor,

resistor),

NOTE. All resistors should be 1 kOm ± 10%. The length of wires for connection of sensors can not exceed 300m and resistance of wire connected to sensor contacts can not exceed 300 Ohms. Resistors should be mounted as near the sensor as possible. Improper connection of resistors system will not work properly. Pull-Up resistors should be 2,2 KOhm.
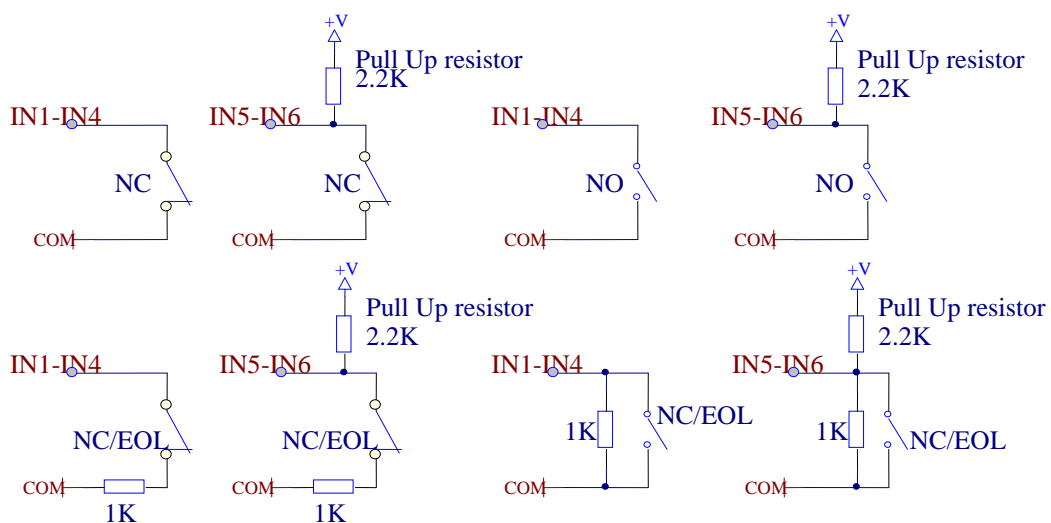
11.3. Input configuration parameters

The following parameters may be set for all inputs:
- Text of SMS messages for alarms and restores. This text will be included when sending SMS message to a user about alarms and restores of zones.
- Input types: NC,NO,EOL. These parameters should be set depending on type of zone connection.
- Definitions of input application:
  - Delay – Entry/Exit zone. Set "Entry delay" and "Exit Delay" are applied for this zone. Such type zones are used for connection of door sensor.
  - Interior – disturbance of this type of the zone will not be responded if alarm of "Delay" type zone occurred and "Entry Dlay" or "Exit Delay" time still have not run out. Such type zones may be used for connection of motion sensor in front of the door. The input will be activated immediately, if the door has not been opened before.
  - Instant – Instant zone. Upon disturbance of this zone, the system will immediately activate burglary alarm.
  - 24 hours - Upon disturbance of this zone, the system will activate burglary alarm not depending whether the security system is in ARM or in DISARM modes. The applications of this type zones are safes, storehouses, tampers of the sensors.
  - Silent - silent zone is always active not depending on whether the security system is ARM or DISARM. Upon disturbance of this zone, SMS messages are being generated but the siren will not be activated. These zones may be applied for voltage, temperature control, AC mains failure control and for alarm of silent panic.
  - Fire - this zone is always active not depending on whether the security system is ARM or DISARM. The zone generates a special siren signal with interruptions. The zone is applied for smoke sensors and for fire alarm.
- Enabling or disabling of zone alarm or restore.
- Input speed – time of the input reaction, this is the time period during which changed input state should remain stable in order to let the module to register alarm or restore input state.
- Repeat time – this is the time period, during which repeated event of the input will be ignored.
- Zone action – switching of selected output (OUT1, OUT2, OUT3, OUT4) in the event of alarm or restore. May be used for object automation. For example, for indoor temperature control. Upon dropping of temperature will critical limit, heater would be switched on automatically.

11.4. Voltage measuring IN7 (internal)

This input is visible only in configuration window of the SERA software of the module. IN7 input is intended for power supply voltage control. If the module is being applied for the security of vehicle, it is very comfortable to follow cat battery voltage. A user will always be alerted that a car battery has been charged or discharged. This the car battery will be protected from full discharge or damage. Alarm and restore voltages are programmable. Voltage measurement may be calibrated additionally.

11.5. Microphone and voice listening

The microphone may be connected to the system wire contacts 10 MICP and 20 MICN. In order to avoid noises, the microphone should be mounted as far as possible from GSM antenna. 400 users are allowed activating voice listening in the objects. In order to allow a user to activate voice listening, it is necessary in user table „GSM remote control" to check the box „MIC".

Note: If a user number is enabled for ARM/DISARM and MIC thus after making a call to the module, the state ARM or DISARM will be changed and also microphone will be activated.

12. Programmable outputs

The module GTAUTO has 4 programmable outputs. Outputs of the module may be used to switch relay, LEDs, siren or other sound device. Current for OUT1 - OUT4 is 1500mA. All outputs are protected from short-circuit, over-voltage and overheating.
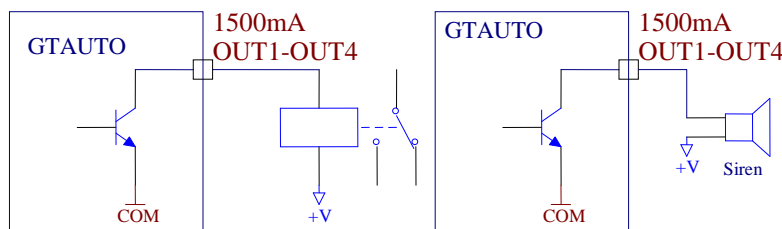
12.1. Equivalent output diagrams

OUT1 - OUT4 outputs is open collector in terms of grounding –V. All outputs have current limitation from 1.5A, also protection from overvoltage and overhearting.

OUT1 - OUT4 equivalent diagram:
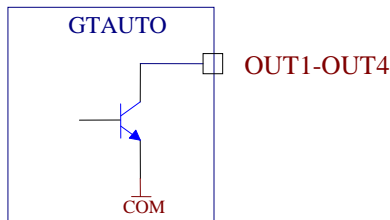
12.2. Output connection diagrams

Examples of output connection diagrams see below:

12.3. Operational output parameters

The following parameters may be set for each output:
- SMS text for ON output state
- SMS text for OFF output state
- Output operation algorithm „OUT def":
  - CTRL/SMS/DIAL – output used for remote control via short call or SMS. E.g. for ignition blocking, for gate control or for remote vehicle starting etc.
  - SIREN – output used for connection of siren. "Siren time" can be changed.
  - BUZER – sound signalling device. In the event of zone alarm - beeps continuously. When security system starts calculating exit delay, the user is able to hear short, repetitive sound signals. When 10 seconds are left till the begging of activation, signals are being repeated each 0.5 seconds. If after expiry of the delay time, all zones remain unalarmed, the system turns into ARM state along with beep sound to confirm the action.
  - ARM state – state of alarm system: ARM/DISARM. May be used for light indication. When the output is set to operate in pulse mode, this feature may be used to close car windows or sunroof on arming. Impulse time should be set 20-30 seconds. On arming the output will generate signal to close windows.
  - Inputs OK- if any of zones is disturbed, the output will be alarmed. This feature is usually used for indication whether all zones are in order.
  - Light Flash – used for connection of light signal. Upon alarm of the security system the light starts blinking. Lights will also blink when arming/disarming the security system. This feature may be applied to connect vehicle direction signals.
- Output inversion;
- Output type level or impulse;
- Output impulse duration. 1-65535 seconds.

13. Timers of the security system

Entry Delay – time period, during which the user after passing Delay zone should manage to disarm the security system.

Exit Delay – time period, during which the user should manage to leave the object and pass Delay zone.

Siren time – Siren switch on time in the event of alarm.

Test time – time of automatic periodical test.

---

14. Automatic periodical test sending

Periodical test may be used for communication control of the module. Test sending time is programmable [Test Time]. Asynchronous periodical test may be programmed. This means that after each activation of the system, test time is being calculated from the beginning „Reset test counter ARMing". Test sending may be disabled by setting time 00.

Periodical test may be used for SIM card's account control. The following parameters of the module are available in a test message: GSM communication strength, power supply voltage, temperature, IMEI number of the module, software version.

15. Messages sending

Messages are being sent in the event of alarm, after ARM/DISARM of the security system (if specified in the configuration), upon test sending time (if specified in the configuration), after changing the module configuration (if specified in the configuration), upon sending request about parameters (command code 80).

SMS about alarm of the security system is doubled with a short telephone call (if specified in configuration).

16. Remote control of the module via SMS messages or via short call

With the help of SMS messages it is possible to control devices connected to outputs Out1, Out2, Out3, Out4. It is possible to ARM/DISARM the security system. Control command for user (USER) are available in the table No 18-2. The amount of users when controlling via SMS is unlimited.

Example of control command when changes the states of all three outputs and inquiry is made to send information via SMS about output states after changing of output states:

> USER123456 51 52 53 80 5

- USER - user type
- 123456 – installer's code;
- space character
- 51- changing of the first output state
- space character
- 52 – changing of the second output state
- space character
- 53 – changing of the third output state
- space character
- 80 – information request command (see table No 3)
- space character
- 5 – to send information via SMS about output states.

More examples of controlling via SMS message see the chapter *17.2*

All outputs may be controlled via short call (the module will automatically reject the call). Up to 400 users may control the module. All users optionally may control outputs Out1, Out2, Out3, OUT4, ARM/DISARM the security system and activate voice listening (MIC).

It is possible to assign to each user that he is able to control. This is comfortable to use a single module for controlling of few gates when several masters are.

17. Preparation to operate

Before or after installation of the module it is necessary to configure its parameters.
SIM card settings may be configured by using only GSM phone.

How to prepare the module to operate:
- Connect system connector and GSM antenna.
- Connect power supply source: 10-15V battery or stabilized 10-15V/1A power supply source.
- Check and if necessary enter SMS message centre number (using GSM phones). Mostly SIM card already has SMS centre number inserted, please skip this step.
- **Remove PIN code request of the SIM card (it can be done using GSM phone).**
- Install SERA configuration program.
- Connect USB cable to the PC and to the module.
- Launch SERA program. Guidelines on how to use SERA program is available in SERA description.
- GSM communication strength, IMEI and SMS centre number are available in Test window (see SERA description).
- Configure telephone numbers to which information should be transferred*;

- Set the numbers to send SMS and to make a call*;
- Set active inputs, which will be used; For example, if the input will not be used, it should be disabled*;
- Set periodicity of communication test (if 00 is entered, the test will not be send);
- Set input parameters.
- Set output OUT1, OUT2, OUT3, OUT4 states (if applied)*;

After inserting SIM card or upon changing parameters of the module, it is necessary to press **RESET** button.

There are two types to configure the module. The first – via SMS messages. The second – via PC, by connecting the module to PC via programming cable. *Full change of parameters is possible only via PC by connecting programming cable..* If possible we recommend to configure the module via PC.

17.1. SIM card

GTAUTO module is not locked with a particular GSM network. This means that a user may use SIM card of any GSM service provider with a possibility to send SMS and to call.

In order to control the module via a short call, SIM card should be have Caller ID option. Usually SIM cards have such option. If your card can not identify a caller, please contact GSM service provide or use another SIM card.

Locate SIM card into a holder. Card's circuitry should look downward and card's key (cut angle) should look upwards. The card holder is of "Push-Push" type. This means that after pushing the card once, it is fixed and after pushing it again - it is released.

Locate SIM card into a holder.
2 Gently push it
3 Fix SIM card.

⚠️ Note: do not locate SIM card with force, because you may damage SIM card holder.

Locate SIM card into a holder. Gently push it Fix SIM card.
Note: do not locate SIM card with force, because you may damage SIM card holder.

17.2. Configuration and control of GSM communication module via SMS messages

Only basic parameters of the module, shown in the table 17-1, may be configured via SMS messages. All parameters of the module may be changed via USB by using configuration software SERA.

Configuration of the module via SMS messages may be performed only with installer's password.

17-1 The table shows configuration and control codes of the module. Configuration of the module may be performed via SMS messages.

Configuration command SMS structure:

> 1. Verifier:
>   INST - Installer's commands. This verifier is used for configuration of parameters of the module.
>   USER – User commands. This verifier is used for module control.
> 2. Installer's or user's password.
> 3. space character
> 4. Command code.
> 5. space character
> 6. Configuration array

One SMS message may include as many commands as one SMS message may cover, i.e. 160 symbols (including spaces).

In such case firstly verifier should be sent, password should be written without space after the verifier and further come command code, parameter, command code, parameters etc. separated with space „_".

The module executes the commands as follows: the first command next after the password and further go all other commands from the left to the right.

17-1 Table of Installer's command codes.

Beginning	Password	Command code.	Command parameters default settings	Examples of command parameters examples	Clarifications
INST	123456	01	none	TelNo#01	Telephone number of users to whom send SMS and to whom make a call (DIAL) up to 16 symbols, the end symbol "#"; after the symbol "#" user priority number 01-16 should be entered.
		02	none	01	Delete selected user's telephone number according to priority number. User ID from 01 to 16
		03	none		Delete telephone numbers of all users
		05	1	4	Several Lock/Unlock modes are available: 0,1,2,3,4,5,6 see diagrams in the annex No3:
		06	24	01	Periodicity of communication test (from 00 am to 00 pm), 00 – no test. In the example test to users will be send each hour.
		07	1	0	LED indication Test, Reg (1-on, 0-off)
		08	11111121	02111133	Input IN1,IN2,IN3,IN4,IN5,IN6, IN7, IN8 modes (0-'delay',1-'interior',2-'instant',3-'24h',4-'silent',5-'fire')
		09	11111221	02111111	Input IN1,IN2,IN3,IN4,IN5,IN6, IN7, IN8 types (0-NO type, 1-NC type, 2-EOL)
		10	1111	0011	Service messages: Arm, Disarm, Reset, Test (1-ON, 0-OFF). In the example service messages Reset and Test will be sent.
		11	11111111	00000101	Input triggering: IN1,IN2,IN3,IN4,IN5,IN6, IN7,IN8 (1-ON, 0-OFF). The example demonstrates triggering of IN6 IN8 IN9 inputs.
		12	11100001	10101101	Input restores: IN1,IN2,IN3,IN4,IN5,IN6, IN7, IN8 (1-ON, 0-OFF). In the example, inputs IN1, IN3, IN5, IN6, IN8, IN9 will be restored.
		21	Alarm Luggage #	Luggage #	IN1 input name changing up to 16 symbols, the end symbol "#"
		22	Alarm Bonnet#	Bonnet #	IN2 input name changing up to 16 symbols, the end symbol "#"
		23	Alarm Door#	Door #	IN3 input name changing up to 16 symbols, the end symbol "#"
		24	Alarm Microwave#	Microwave# Microwave#	IN4 input name changing up to 16 symbols, the end symbol "#"
		25	Ignition On#	Ignition#	IN5 input name changing up to 16 symbols, the end symbol "#"
		26	Siren on#	Siren#	IN6 input name changing up to 16 symbols, the end symbol "#"
		27	Low Battery#	Battery#	IN7 input name changing up to 16 symbols, the end symbol "#"
		31	Rest. Luggage #	Closed Luggage #	IN1 input restore name changing up to 16 symbols, the end symbol "#"
		32	Rest. Bonnet#	Closed Bonnet #	IN2 input restore name changing up to 16 symbols, the end symbol "#"
		33	Rest. Door#	Closed Bonnet #	IN3 input restore name changing up to 16 symbols, the end symbol "#"
		34	Rest. Microwave#	Rest. micr#	IN4 input restore name changing up to 16 symbols, the end symbol "#"
		35	Ignition Off#	Ignition#	IN5 input restore name changing up to 16 symbols, the end symbol "#"
		36	Siren Off#	Siren off#	IN6 input restore name changing up to 16 symbols, the end symbol "#"
		37	Battery Restore#	Battery Restore#	IN7 input restore name changing up to 16 symbols, the end symbol "#"
		40	Out1 ON#	Ignition on#	Out1 output activation text changing up to 16 symbols, the end symbol "#"
		41	Out2 ON#	Locking on#	Out2 output activation text changing up to 16 symbols, the end symbol "#"
		42	Out3 ON #	A.C.on#	Out3 output activation text changing up to 16 symbols, the end symbol "#"
		43	Out4 ON #	IMMO#	Out4 output activation text changing up to 16 symbols, the end symbol "#"
		44	Out1 OFF#	Ignition off#	Out1 output deactivation text changing up to 16 symbols, the end symbol "#"
		45	Out2 OFF#	Locking off#	Out2 output deactivation text changing up to 16 symbols, the end symbol "#"
		46	Out3 OFF #	Kondic. off#	Out3 output deactivation text changing up to 16 symbols, the end symbol "#"
		47	Out4 OFF #	IMMO off#	Out4 output deactivation text changing up to 16 symbols, the end symbol "#"
		48	0000	1111	OUT1, OUT2, OUT3, OUT4 output states: 1 -Inverted, 0-Normal. Example outputs OUT1 OUT2 OUT3 OUT4 are inverted.
		49	0000	1024	Description of output Out1, Out2, Out3,Out4 operation algorithm 0-CTRL,1-SIREN,2-BUZZER,3-ARM state,4-Zones OK,5-Flash. In the above example OUT1 will operate in siren mode; OUT2 – for remote control; OUT3 – to connect buzzer (BUZZER).OUT4- Zones OK
		50	none	1	1-OUT1, 2-OUT2, 3- OUT3, 4- OUT4. Change state of selected OUT output. Output state: changes every time after sending command code. Explanation see below the table.
		51	none	0 or 1	Activates or deactivates OUT1 output. 0 – deactivates, 1 - activates
		52	none	0 or 1	Activates or deactivates OUT2 output. 0 – deactivates, 1 - activates
		53	none	0 or 1	Activates or deactivates OUT3 output. 0 – deactivates, 1 - activates
		54	none	0 or 1	Activates or deactivates OUT4 output. 0 – deactivates, 1 - activates
		59	none	0 or 1	ARM/DISARM command. 0 – DISARM the security system, 1 - ARM the security system
		60	none	TelNo#001#000100	Command to enter new user for remote control via short call. Command parameters: User telephone number, end symbol #, user ID number from 001 to 400, #, dial action 0 – off or 1 - on, sequence OUT1,OUT2,OUT3,OUT4,ARM/DISARM,MIC
		61	none	001	Delete selected user's telephone number according to ID number. User ID from 001 to 400
		62	none		Delete all telephone numbers of remote control users from 001 to 400
		70	30.0#	35.5#	Overheating temperature value upon reaching which, the following SMS message will be sent: „High temperature alarm".

		71	2.0#	10.3#	Freezing temperature value upon reaching which, the following SMS message will be sent: „Low temperature alarm".
		72	26.0#	27.1#	Temperature value for freezing equipment control.
		73	20.0#	21.4#	Temperature value for heating equipment control.
		80	none	1	Send via SMS a part of information regarding configurations of the module: 1. 05…12 command code parameters will be sent; 2. 21…28 command code parameters will be sent; 3. 31…38 command code parameters will be sent; 4. 40…49 command code parameters will be sent; 5. to make a request about output states (Out 1 – Out 4); 6. test request; 7. system state request. input/output states will be sent along with current state of the system (ARM/DISARM).
		90	123456	654321	To change installer's (INST) code (recommended to change before applying the module in operation)
		91	123456	948921	To change user's (USER) code (recommended before applying the module in operation)
		92	none	none	Remote module reset (Reset) by using SMS message

1. Programming of users telephone numbers to send SMS and to make a call:

INST123456 01 37011111111#01

- INST   - user's type (installer)
- 123456 – installer's code;
- space character
- 01- command code (programming of users' numbers);
- space character
- user's telephone number without (+) comprised of country code, operator's code and user's telephone number. the end symbol #;
- 01- user ID number 01-16 In this example the telephone number of 1st user is entered.

After the telephone number has been entered all events of the security system will be sent to a user. Optional events to be send may be selected only when configuring via USB.

2. It is possible to delete telephone numbers one by one according order of priority or all 16 numbers at once:

INST123456 02 15

INST123456 02 15 Delete user's telephone number whose ID number is 15. It is possible to select from 01 to 16.

3. INST123456 03 Delete all 16 users' telephone numbers.

INST123456 03

4. To enter user's telephone number for remote control via short call:

INST123456 60 3701111111#001#000100

- INST   - user's type (installer)
- 123456 – installer's code;
- space character
- 60 – command code (programming of users' telephone numbers for remote control via short call);
- space character
- 3701111111# - user's telephone number without (+) comprised of country code, operator's code and user's telephone number. the end symbol #;
- 001- user ID number; from 001 to 400; In this example the telephone number of 1st user is entered; the end symbol #;
- 000100 – What actions should be done after making call to a user. Sequence from the left to the right: OUT1,OUT2,OUT3,OUT4 ,ARM/DISARM,MIC 0 - active functions, 1- non-active function. In the example, the function ARM/DISARM is selected.

5. Delete user's for remote control via short call telephone number according to ID number or all numbers at once:
Delete user's telephone number whose ID number is 001. It is possible to select from 001 to 400.

INST123456 61 001

Delete all telephone numbers of remote control users from 001 to 400

INST123456␣62

6. Inputs programming

INST123456␣11␣00000111␣12␣01101111␣80␣1

- INST - user's type (installer)
- 123456 – installer's code;
- space character
- 11 – command (see table 17-1)
- space character
- 00000111 – used inputs are calculated from the left to the right. IN1, IN2, IN3, IN4, IN5 alarms are disabled and IN6,IN7, IN8 alarms are enabled.
- space character
- 12 – command (see table 17-1)
- space character
- 01101111 - IN1, IN4 restores are disabled, IN2, IN3, IN5, IN6, IN7,IN8 restores are enabled.
- space character
- 80 – command (see table 17-1)
- space character
- 1 will send command code 05-12 parameters back to SMS sender.
More input parameters may be changed via USB.

7. Programming of input names:

INST123456␣21␣Alarmluggage#␣22␣Alarmcapote#␣23␣Alarmdoor#␣80␣2

8. Output names programming

INST123456␣40␣ignition on.# ␣43␣ignition off.# ␣80␣4

- INST - user's type (installer)
- 123456 – installer's code;
- space character
- 40 – command (see table 17-1)
- space character
- „ignition on.#" name of output state when ignition is on.
- space character
- 43 – command (see table 17-1)
- space character
- „ignition off#" – name of output state when ignition is off.
- space character
- 80 – command (see table 17-1)
- space character
- 4 – will send 40-49 parameters of command codes.

9. Programming of output parameters:

INST123456␣48␣1010␣49␣1053␣80␣4

- INST - user's type (installer)
- 123456 – installer's code;
- space character
- 48 – command – outputs inversion (see table 17-1)
- space character
- 1010 – OUT1 inverted, OUT2 normal, OUT3 inverted., OUT4 normal.
- space character
- 49 – command - description of operation output algorithm (see table 17-1)
- space character
- 1053– OUT1 siren, OUT2 – remote control, OUT3 light signalling device (FLASH), OUT4 ARM state.
- space character
- 80 – command (see table 17-1)
- space character

- 4 – will send 40-49 parameters of command codes.

10. Module control modes (ARM/DISARM) see diagrams*2* in the annex:

> INST123456␣05␣1

- INST - user's type (installer)
- 123456 – installer's code;
- space character
- 05 – command (see table)
- space character
- 1- lock/unlock modes of the module, see diagrams in the see diagrams in the 2 annex

*17-2*Table of users codes.

Beginning	Password	Command code.	Command parameters default settings	Possible commands	Clarifications
USER	123456	50	none	1.2 3.4	1-OUT1, 2-OUT2, 3- OUT3, 4- OUT4. Change state of selected OUT output. Output state: changes every time after sending command code. Explanation see below the table.
		51	none	0 or 1	Activates or deactivates OUT1 output. 0 – deactivates, 1 - activates
		52	none	0 or 1	Activates or deactivates OUT2 output. 0 – deactivates, 1 - activates
		53	none	0 or 1	Activates or deactivates OUT3 output. 0 – deactivates, 1 - activates
		54	none	0 or 1	Activates or deactivates OUT4 output. 0 – deactivates, 1 - activates
		59	none	0 or 1	ARM/DISARM command. 0 – DISARM the security system, 1 - ARM the security system
		80	none	1,2,3,4,5,6,7	Send via SMS a part of information regarding configurations of the module: 1. 01…12 command code parameters will be sent; 2. 21…28 command code parameters will be sent; 3. 31…38 command code parameters will be sent; 4. 40…49 command code parameters will be sent; 5. to make a request about output states (Out 1 – Out 4); 6. test request 7. System state request. will send information on input/output states and system state (ARM/DISARM).

Outputs control via SMS messages:

Output states of the module may also be controlled via SMS messages. Let's assume that vehicle ignition should be blocked, thus the first output should be connected to ignition blocking relay. For outputs control the following commands are used: 50,51,52,53, 54,58

Command "50" changes (inverts) state of selected output. When this command is being sent, output state is being changed, i.e. if output has been deactivated, it is activated and vice versa.

51, 52, 53.54 commands sets preferred output state: if 0 is being sent, the output is being deactivated; if 1 – the output is being activated.

50 and 51, 52, 53.54 commands performs the same action, i.e. changes output states. The user may use command, which are the more convenient for him.

58 command changes the state of selected output for set time limit.

If you wish to change (invert) OUT1- OUT4 states and to receive information about output states, the following message should be sent:

> USER123456␣50␣1␣50␣3␣80␣5

- USER - user type
- 123456 – user code
- space character
- 50 – to change state of selected output;
- space character
- 1 – to change state of first output OUT1;
- space character
- 50 – to change state of selected output;
- space character
- 3 – to change state of first output OUT1;
- space character
- 80 – command (see table)
- space character
- 5 - to send output states. This command is not necessary.

If you wish to activate OUT1 and to deactivate OUT2:

```
USER123456 51 1 52 0 80 5
```

- USER - user type
- 123456 – user code
- space character
- 51- set OUT1 state;
- space character
- 1 – deactivated output;
- space character
- 52- set OUT2 state;
- space character
- 0 – deactivated output;
- space character
- 80 – command (see table)
- space character
- 5 - to send output states. This command is not necessary.

Output control by selecting trigerring time interval:

```
USER123456 58 1#48#
```
(enable OUT1 for 48 seconds)

```
USER123456 58 2#5#
```
(enable OUT2 for 5 seconds)

- USER - user type
- 123456 – user code
- space character
- 58 – command (see table)
- space character
- 1   enable OUT1 output (1-OUT1, 2-OUT2, 3-OUT3, 4-OUT4);
- #
- 48 Output triggering time limit set for 48 seconds. After time limit of 48 seconds OUT1 will be disabled automatically;
- #

ARM/DISARM of the security system via SMS message:

```
USER123456 59 0
```
DISARM the security system

```
USER123456 59 1
```
ARM the security system

It is possible to download test of the module (control message) according to request command:

```
USER123456 80 6
```

- USER - user type
- 123456 – user code
- space character
- 80- information request command (see table 17-1)
- space character
- 6 - text query

Upon sending command SMS (USER123456 80 6) test message will be sent to the number, from which SMS message has been sent.

Below see the example of received test SMS message:

Clarifications:

Signal strength: Numerical values of communication signal level. Corresponds the following meanings (according GSM telephone):

0- very weak signal (communication loss limit);

1...5 - very weak signal (correspond to one bar on the monitor of a mobile phone);

--Test--
Signal strength:
17
System voltage:
13.16V
Temperature:
+26.1 C
IMEI:
356895030001799
HW:GTauto
SW:GTauto v4 110801

6...9 - satisfied signal (correspond to two bars on the monitor of a mobile phone);
10...14 - good signal (correspond to three bars on the monitor of a mobile phone);
15 and more - excellent signal (corresponds to four bars on the monitor of a mobile).

Voltage: Voltage of car battery or other power supply source the module is connected to.

Temperature: temperature sensor's showings (C or F).

IMEI: IMEI number of GSM modem.

HW: hardware version
SW: software version.

System state request according to the command:

> USER123456␣80␣7

- • USER - user type
- • 123456 – user code;
- • space character
- • 80 – command (see table 17-1)
- • space character
- • 7 – command (system state request)

The module will sent two part message to the number the SMS was sent from.
Below you will see the example of received SMS message following request command (USER123456 80 7):
The first of two SMS:

State:ARM	- system state
In1:Luggage closed	- state of the first input
In2:Bonnet closed	- state of the second input
In3:Door closed	- state of the third input
In3:MicrowaveRestore	- state of the forth input
IN5: Ignition OFF .	- state of the third input

| |
|---|
| **System voltage:**
State:ARM
Inputs:
In1:Luggage closed
In2:Bonnet closed
In3:Door closed
In4:MicrowaveRestore
In5:Ignition OFF |

The second of two SMS:

Inputs:	
In6:Siren OFF .	- state of the seventh input
In7:Battery restore .	- state of the eight input
Output states	
Out1 OFF#	- state of the first output
Out2 OFF .	- state of the second output
Out3 OFF .	- state of the third input
Out4 OFF .	- state of forth input

Inputs: **In6:Siren OFF** **In7:Batery restore** **Output states** **Out1 OFF** **Out2 OFF** **Out3 OFF** **Out4 OFF**

The module is considered to be installed properly and communication is reliable, if all messages and calls are received properly and all user command are being executed properly.

17.3. Configuration of the module via PC

The module may be configured and tested via PA by using standard miniUSB cable. This configuration is being performed by using the software "SERA", which you may download at www.topkodas.lt . More info about the module configuration by using SERA program see SERA description.
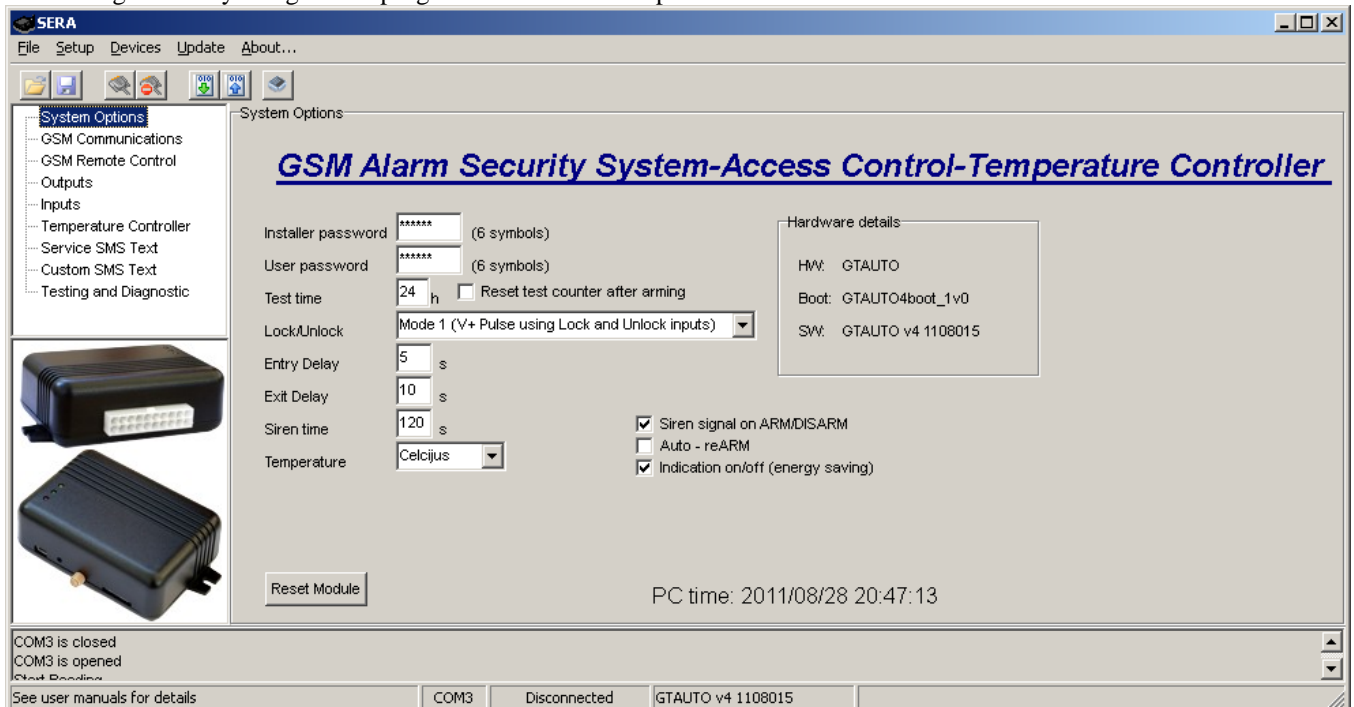
17.4. Installation of the product and connection diagram

The module should be installed in such way to ensure GSM communication. It is necessary to properly select place for GSM antenna. GSM antenna can not be hidden deeply in metal constructions to prevent GSM communication screening. GSM antenna should be mounted as fa as possible from electronic sensors, shock, microwave, microphone, temperature sensors etc., because GSM electromagnetic field may disturb operation of sensors or other electronic devices.

We are not liable for disturbances related with your GSM communication service provider.

Connection diagram is available in the annex, however other connections versions are also possible. Fuses are necessary.

In order to check operation of the module it is necessary to activate used sensors, door, shock sensor etc. and to observe their operation. The user should receive messages a about alarmed zones (depending on programming). If SMS messages have not been received, please check GSM communication and whether the module is configured properly by sending 80 command with 1,2,3,4,5,6,7 parameters. We recommend to check configurations of the module and test with the software SERA.

The module is considered to be equipped properly and communications is reliable, if all sent SMS and calls are properly received as well as all user commands are being performed.

17.5. Installation instruction and connection diagram of security system for house, mini-mobile cottages, boats

It is recommended to use standard motion, fire, glass breaking sensors. For powering of sensors we recommend to use standard 6-8 wires cable for, designed for installation of security system. For sound signalling we recommend to use siren DC12V up to 1500mA. It is recommended to connect the siren to the system by using 2x0,75 sq. mm double insulation cable.

It is possible to supply the security system from stabilized power supply source 10-15V and not less than 1,5A. 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.

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 Hitpoint PB12N23P12Q or similar modified piezoelectric 12V DC, 150mA max Buzzer.
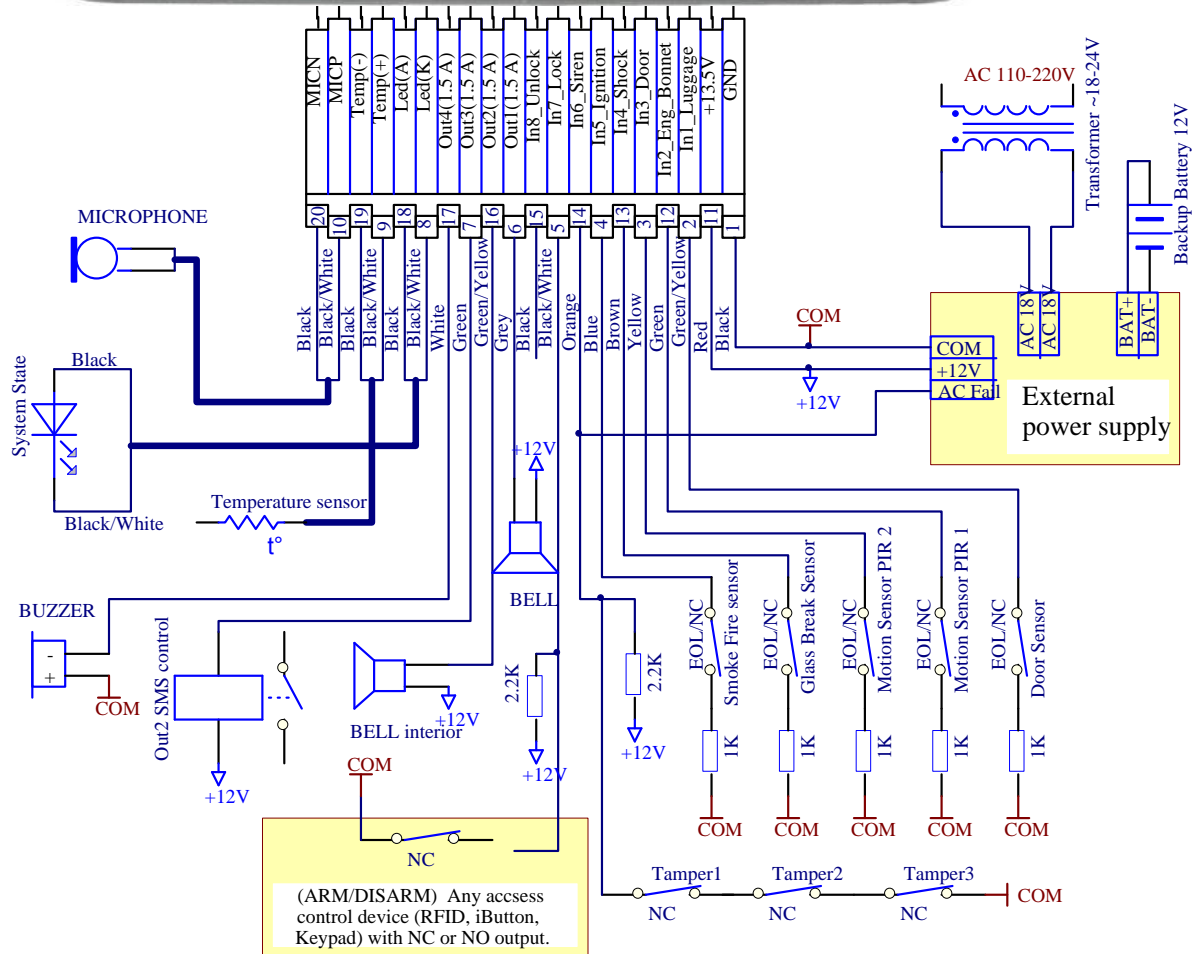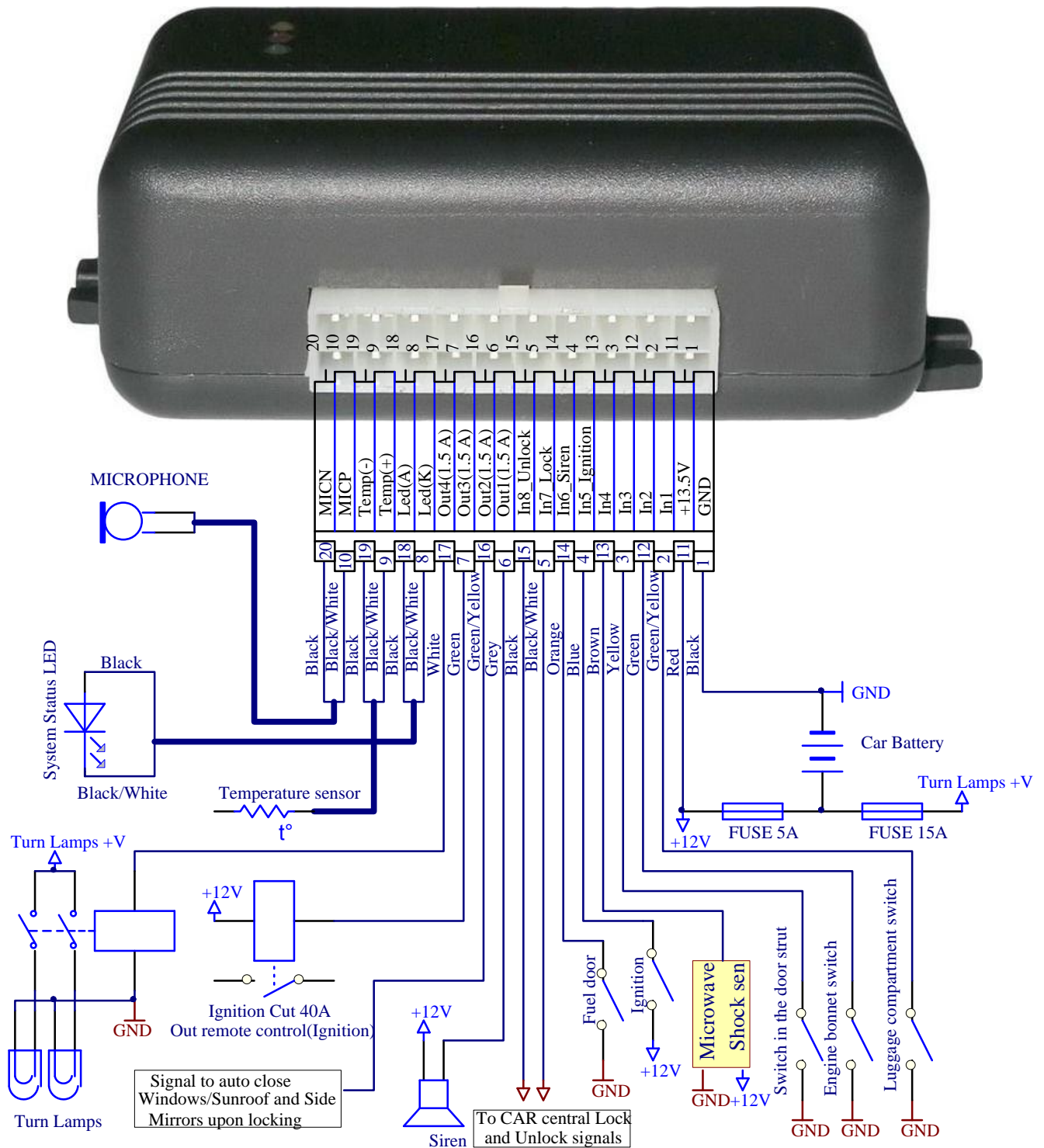
The module configuration blank sample for this diagram you will find after installing configuration program SERA, located in the directory „ConfigTemplates". File name *GTAUTO_v4_Boat_MobileCamper .tcfg*

17.6. Vehicle's GSM messages system Installation manual and connection diagram

The module may be installed in all vehicles with petrol and diesel engines and 12V batteries negative pole of which is connected to car body. The system should be installed in a saloon of vehicle following installation manual of the manufacturer.

The module may be installed in line with already available security system such as GSM SMS pager or as independent separate system for car protection.
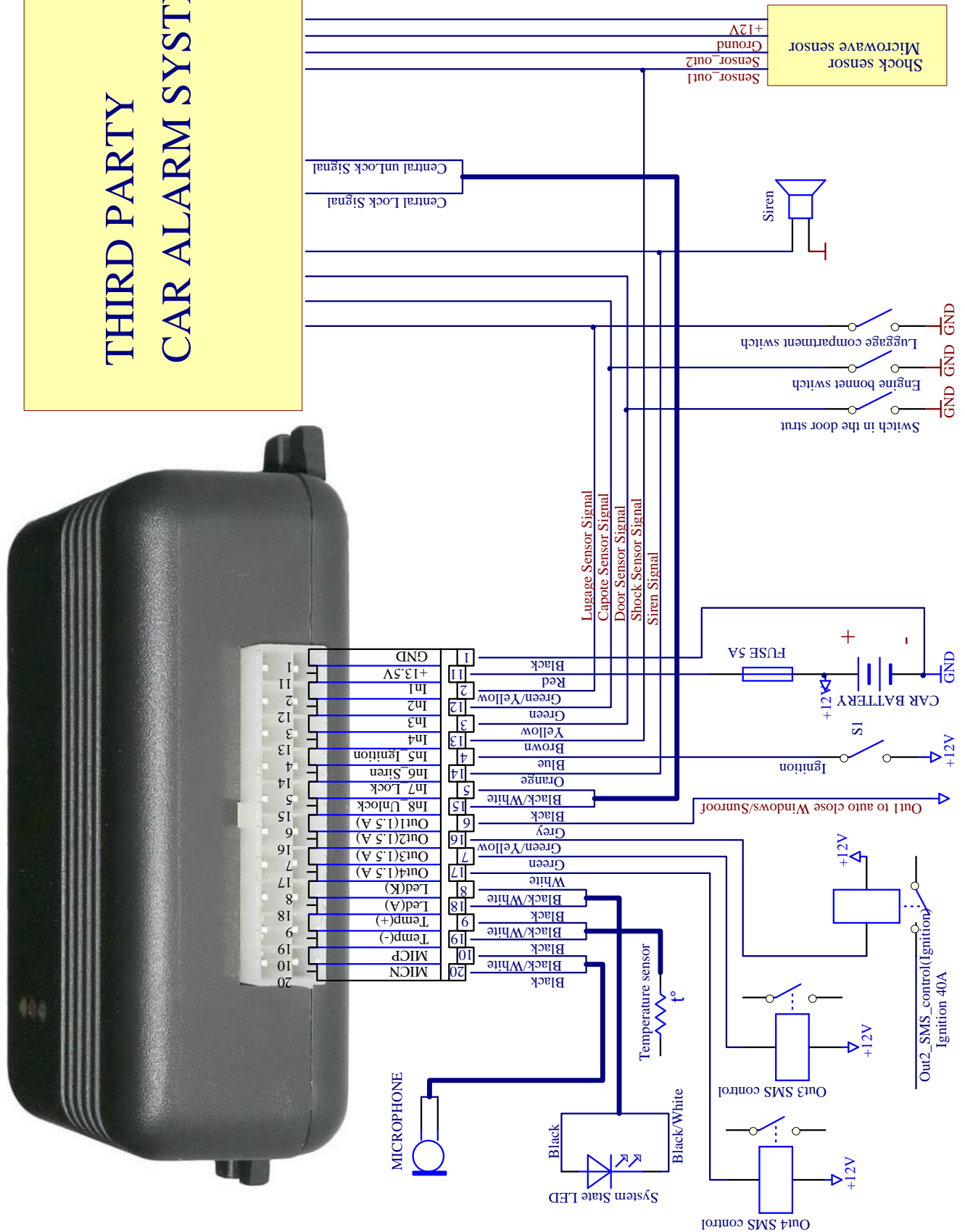
Connection diagram of the module as independent protection system is see below:

The module configuration blank sample for this diagram you will find after installing configuration program SERA, located in the directory „ConfigTemplates". File name *GTAUTO_v4_VehicleAlarm .tcfg*

The connection diagram of the module is in parallel with already available security system

THIRD PARTY CAR ALARM SYSTEM

Microwave sensor
Shock sensor

+12V
Ground
Sensor_out2
Sensor_out1

Central unLock Signal
Central Lock Signal

Siren

Luggage compartment switch
Engine bonnet switch
Switch in the door strut
GND GND GND

Lugage Sensor Signal
Capote Sensor Signal
Door Sensor Signal
Shock Sensor Signal
Siren Signal

FUSE 5A
CAR BATTERY
+12V
GND

Ignition
S1
+12V

Out1 to auto close Windows/Sunroof

+12V

Out2_SMS_control(Ignition)
Ignition 40A

Out3 SMS control
+12V

Out4 SMS control
+12V

Pin	Signal		Pin	Wire
1	GND		1	Black
11	+13.5V		11	Red
2	In1		2	Green/Yellow
12	In2		12	Green
3	In3		3	Yellow
13	In4		13	Brown
4	In5_Ignition		4	Blue
14	In6_Siren		14	Orange
5	In7_Lock		5	Black/White
15	In8_Unlock		15	Black
6	Out1(1.5 A)		6	Grey
16	Out2(1.5 A)		16	Green/Yellow
7	Out3(1.5 A)		7	Green
17	Out4(1.5 A)		17	White
8	Led(K)		8	Black/White
18	Led(A)		18	Black
9	Temp(+)		9	Black/White
19	Temp(-)		19	Black
10	MICP		10	Black/White
20	MICN		20	Black

Temperature sensor
t°

MICROPHONE

Black
Black/White
System State LED

In the saloon of the vehicle the module should be placed in hard-to-reach place. The device should be mounted in a place protected from impact of humidity or other materials causing corrosion as far as possible from heating elements of passengers' saloon and sources of electromagnetic disturbances (auto computer, air conditioning system, relay units).

Do not mount the unit directly to metal parts of the vehicle in order to avoid accumulation of condensate within system block. The module should be mounted thus connectors of wires to be at the bottom side. Wires of the security system can not be laid near moving or hot parts of a vehicle.

For fastening use screws or plastic fastening straps. The battery should be installed in a place protected from impact of humidity or other materials causing corrosion as far as possible from heating elements of passengers saloon.

It is necessary to install fuses mentioned in the diagram. Fuse seat should be installed as near as possible to the car battery.

17.7. Testing and diagnostics

Diagnostics and testing of the module may be performed via USB port with software SERA. The software will show system input, output, GSM states in real time. Thus it would be easier to evaluate whether the module operates as appropriate.
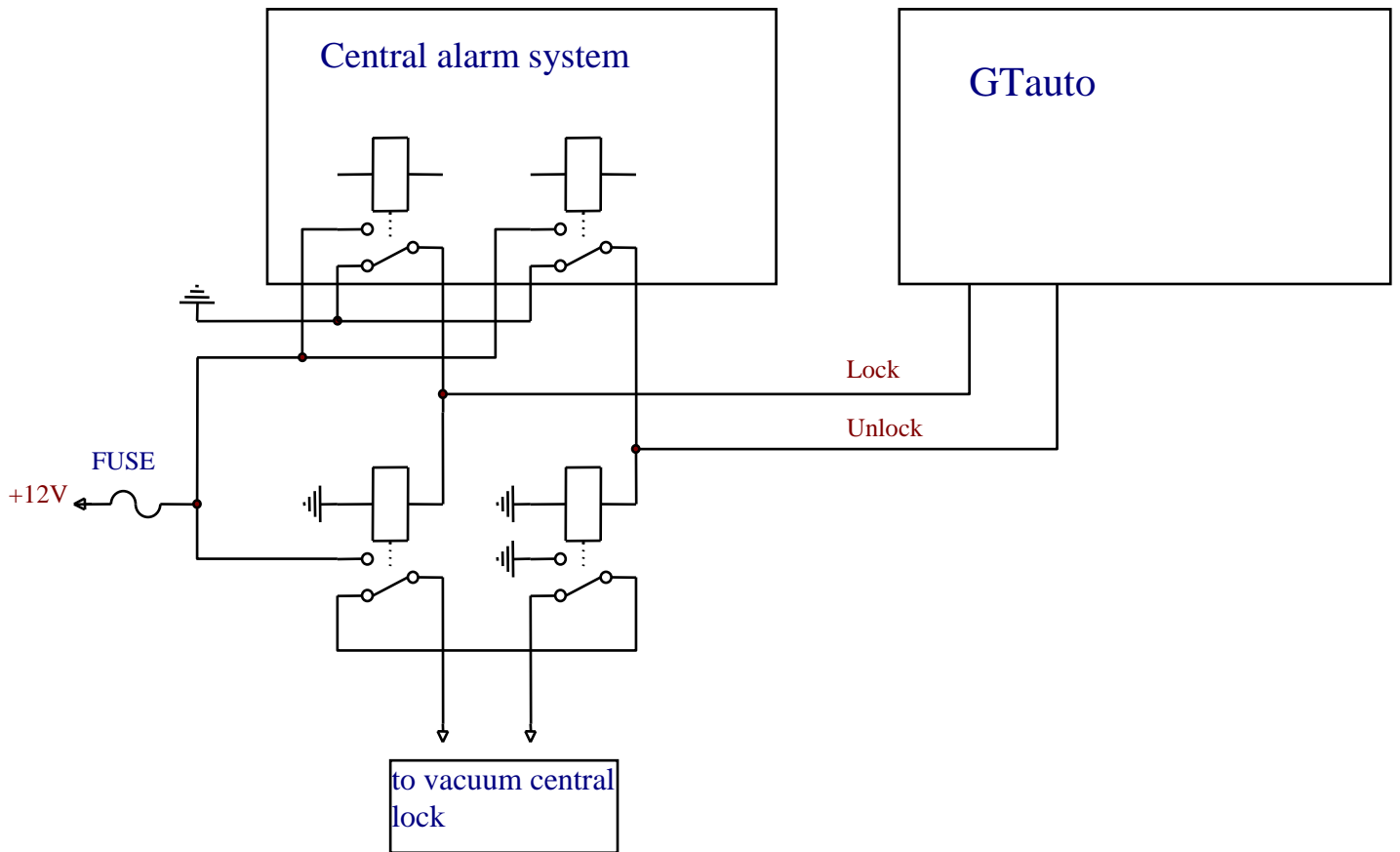

18. Software updating

Updating of firmware version should be performed via PC. The following is necessary:
- mini-USB configuration cable,
- configuration software "SERA",
- the new software version, which may downloaded at www.topkodas.lt .

More about software updating process see user manual of the software „SERA".

Automated GSM security and control system   www.topkodas.lt   30

Annexes

1. **Annex.**

Central alarm system

GTauto

Lock

Unlock

FUSE

+12V

to vacuum central lock

2. Annex