
# GSM module *G10*

*(v.1.XX)*

## User manual

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## Safety requirements

Please read this manual carefully before using the security module *G10*.
Security module *G10* should be installed and maintained by qualified personnel, having specific knowledge regarding the functioning of GSM devices and safety requirements. The device must be disconnected from external power supply source before starting device installation.
Module *G10* should be mounted in places with restricted access and in safe distance from any sensitive electronic equipment. The device is not resistant to mechanical effects, dampness and hazardous chemical environment.

## Liability restrictions

- When buying the Device, the Buyer agrees that the Device is a part of a security system of premises, which sends messages about security system status. The Device, when installed, does not diminish the probability of burglary, fire, intrusion or other breach of premises.
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- UAB „TRIKDIS" is not responsible for any direct or indirect damages incurred by the Buyer and/or User of the Device due to loss of electricity.
- UAB „TRIKDIS" is not liable if Device firmware versions were not updated by the Buyer and/or the User on time.
- User manual of the Device can contain technical inaccuracies, grammatical or typographical errors. UAB "TRIKDIS" reserves the right to correct, update and/or change information in the installation manual.

# GSM module *G10*

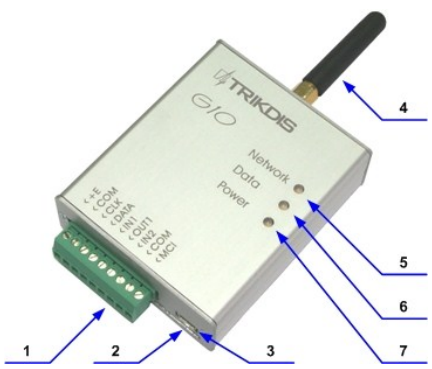
Module *G10* is designed to transmit messages from security control panel in a secured object to an alarm receiving centre (ARC) through a GSM network. Module features:

- Messages to ARC can be transmitted through GPRS, with SMS messages or dialled in DTMF tones;
- Messages are sent through a communication channel set as primary and in case of this connection failure – through a backup channel;
- Even though the GPRS connection with two servers will be lost, information can be sent in SMS messages;
- Sent messages correspond to *Contact ID* protocol codes;
- SMS messages can be sent to 4 user mobile phones;
- Output *OUT1* status can be controlled remotely;
- Operating parameters and firmware version can be updated remotely;
- Operating parameters are set with program *G10config*.

## Operation

When connected to a DSC, Caddx, Paradox or Pyronix security control panel data bus, the module receives its messages and transmits them to an alarm receiving centre (ARC) over set communication channel. If a message fails to be transmitted through this communication channel, the module can send the message through a backup channel.
If there are set 2 IP addresses in module and module loses GPRS connection with them, information can be sent to ARC in SMS messages.
The module can send messages to specified recipients about breaking/restoring external circuit of inputs *IN1* and *IN2*.
The module can periodically send signals *PING* for controlling the connection.
Messages can be sent with SMS messages to 4 mobile phones. There is possible assign understandable text to every security control panel event.
Module output *OUT1* state will change when connection with server of ARC fails/restores or when the module receives an SMS message containing of command to change its output state.

## Outside view




1 – Terminal block
2 – SIM card holder
3 – USB socket
4 – GSM antenna
5 – indicator “Network”
6 – indicator “Data”
7 – indicator “Power”

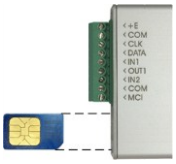
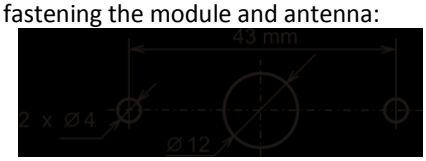
### Terminal block description

| *Contact* | *Purpose* |
|---|---|
| +E | +12V power supply clamp |
| COM | Common clamp |
| CLK | Synchronizing signal clamp |
| DATA | Data signal clamp |
| *IN1* | 1st input clamp (NC type) |
| *OUT1* | Output clamp (OC type) |
| *IN2* | 2nd input clamp (NC type) |
| COM | Common clamp |
| MCI | Provided for future use |

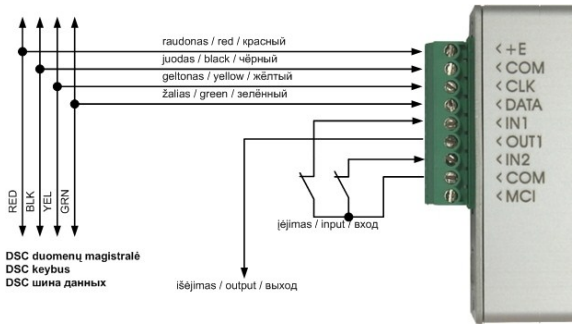
### Light indication

| *LED* | *Operation* | *Description* |
|---|---|---|
| ***Network*** displays connection with GSM network status | Green ON | Module is connected to GSM network |
| | Yellow ON | Message is being sent |
| | Green flashing | Connecting to GSM network |
| | Yellow flashing | Number of yellow flashes represent GSM signal strength |
| ***Data*** displays data buffer status | Green ON | Unsent messages present in module memory |
| | Red ON | Unable to be sent messages |
| | Green flashing | Messages are being received from the control panel |
| | Red flashing rapidly | SIM card error |
| | Red flashing | Module configuration is incorrect |
| ***Power*** displays power supply status, functioning of microcontroller and programming status. | Green flashing | Power supply is sufficient, microcontroller is functioning |
| | Yellow flashing | Power supply is not sufficient (≤11,5 V), microcontroller is functioning |
| | Green and yellow flashing in turn | Programming mode |

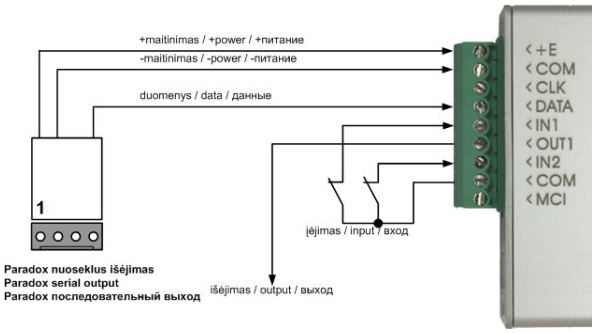
# Installation

| *Actions* | *Notes* |
|---|---|
| 1. Set module operating parameters | Follow information in chapter **Setting Operating Parameters**. |
| 2. Insert an activated SIM card  | Contact a GSM service provider in order to receive a SIM card. We do not recommend using *pay as you go* (prepaid) SIM cards. |
| 3. Fasten the module to the security control panel metal casing by using either M3x6 screws or adhesive fastening tape | The location and dimensions of holes to be drilled in the casing for fastening the module and antenna:   |
| 4. Screw the GSM antenna on. | |
| 5. Connect the module to the security control panel according to wiring diagrams given below. | See chapter **Wiring diagrams**. |
| 6. Turn on the system power supply. | |
| 7. Check GSM signal strength according to light indication. | Sufficient GSM signal strength is level 5 (five yellow flashes of indicator ***Network***). If GSM signal strength is not sufficient, use other antenna type. |
| 8. Check if the module sends messages according to its configuration. | The message must be sent and received at the specified IP address site. If messages are sent to a mobile phone, check if all SMS messages are received. |

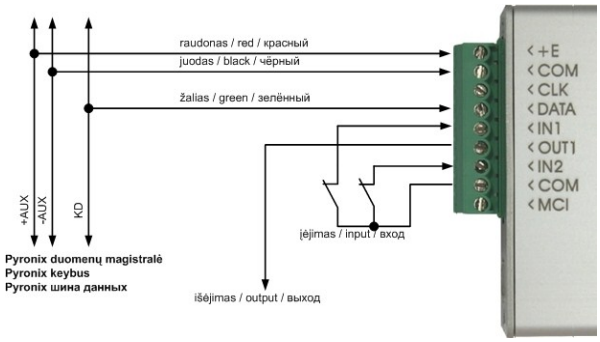
## Wiring diagrams



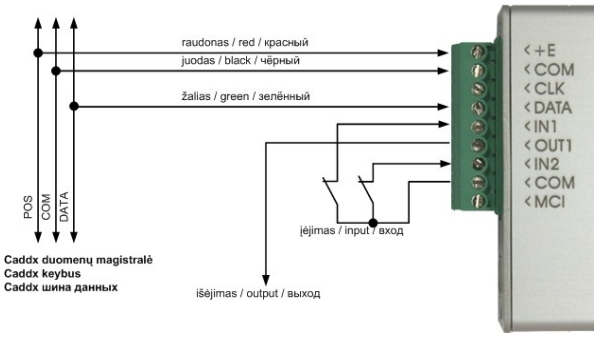

Wiring diagram to *DSC* Power Series security control panels: PC1616, PC1832, PC1864 PC585, PC1565, PC5020.



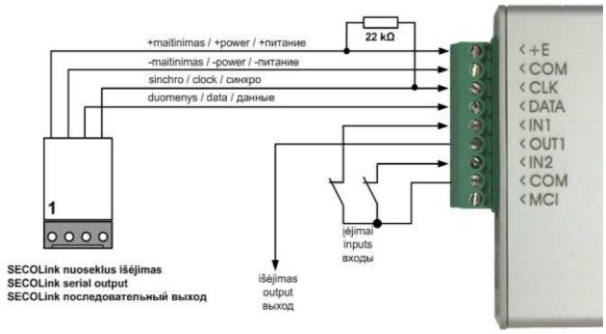

Wiring diagram to *Paradox* security control panels:
SPECTRA SP5500, SP6000, SP7000, 1727, 1728, 1738,
MAGELLAN MG5000, MG5050,
DIGIPLEX EVO48, EVO192, EVO96, NE96,
ESPRIT E55, 728ULT, 738ULT.




Wiring diagram to *Pyronix* Matrix Series security control panels:
MATRIX 424, MATRIX 832, MATRIX 832+, MATRIX 6, MATRIX 816.




Wiring diagram to *Caddx* security control panels:
NX-4, NX-6, NX-8.




Wiring diagram to *SECOLink* security control panels: PAS8xx.

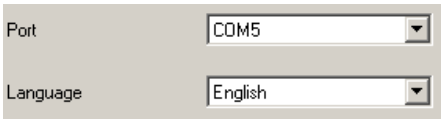
## Setting of operating parameters

Module *G10* operating parameters are set with computer program *G10config.* Program can be found in website www.trikdis.lt.

1. Connect the module *G10* with a computer using a USB cable.

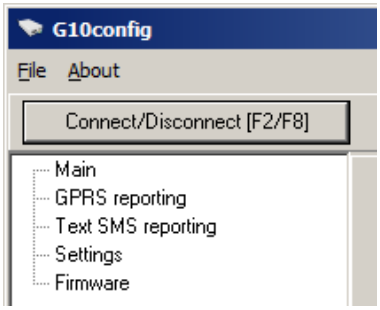
**Note:** USB drivers must be installed in the computer. If the module is connected to a computer for the first time, MS Windows OS should open the window ***Found New Hardware Wizard*** for installing USB drivers. Download the USB driver file *USB_COM.inf* for MS Windows OS from the website www.trikdis.lt. In the wizard window select the function ***Yes, this time only*** and press the button ***Next***. When the window ***Please choose your search and installation options*** opens, press the button ***Browse*** and select the place where the file *USB_COM.inf* was saved. Follow the remaining wizard instructions to finish the USB driver installation.

2. Start the program *G10config*.
3. Select the program directory ***Settings***.




In the drop-down list ***Port*** select the port to which the module is connected.
**Note:** specific port to which the device is connected will appear only when the device is properly connected.
In the drop-down list ***Language*** select the desired program language.

4. Press the button ***Connect/Disconnect [F2/F8]***



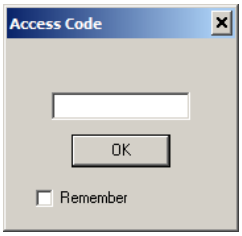

When the module *G10* is connected to a computer, module LED ***Power*** should flash green and yellow in turn. Program *G10config* status bar should indicate connection status as ***Connected*** and the following information about the connected module:

Dev: G10 Module type

SN: 000174 Module serial number

Ver: 1.33 Firmware version installed in the module

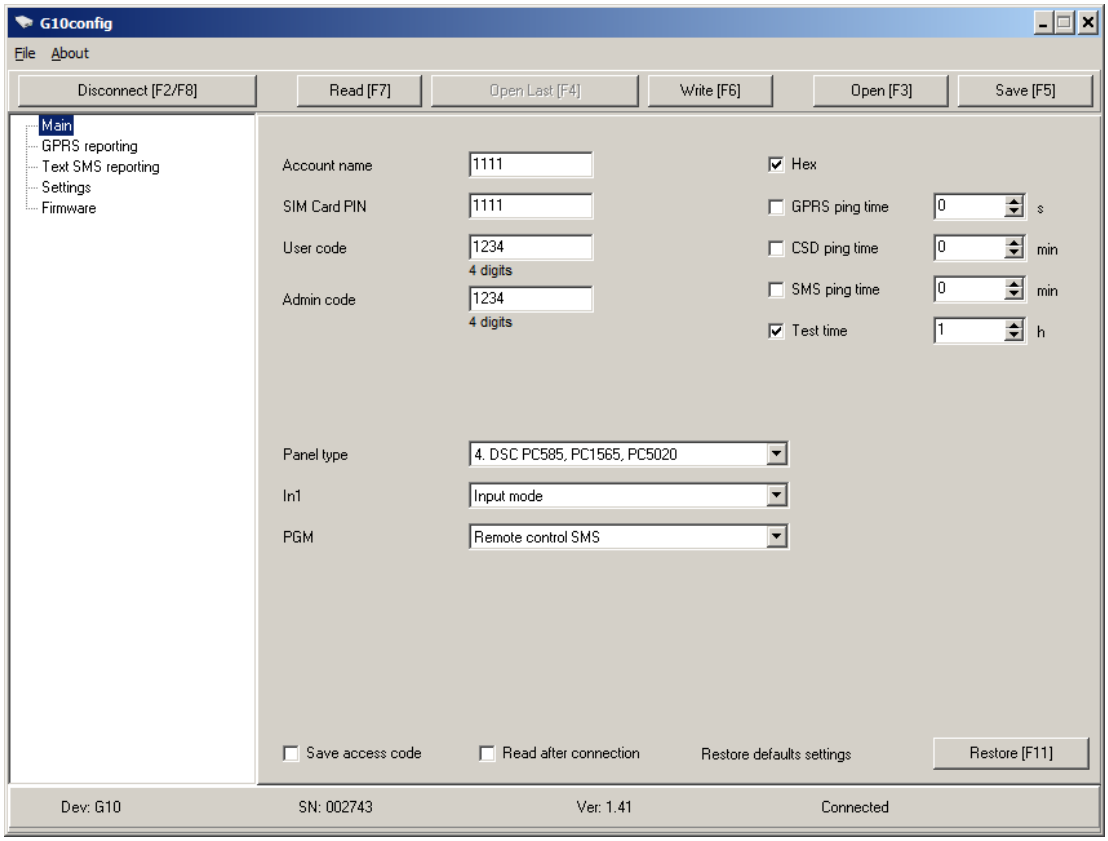
5. Press the button ***Read [F7]***




When the window ***Access code*** opens, enter *the* access code (default access code is ***1234***) and press the button ***OK***.

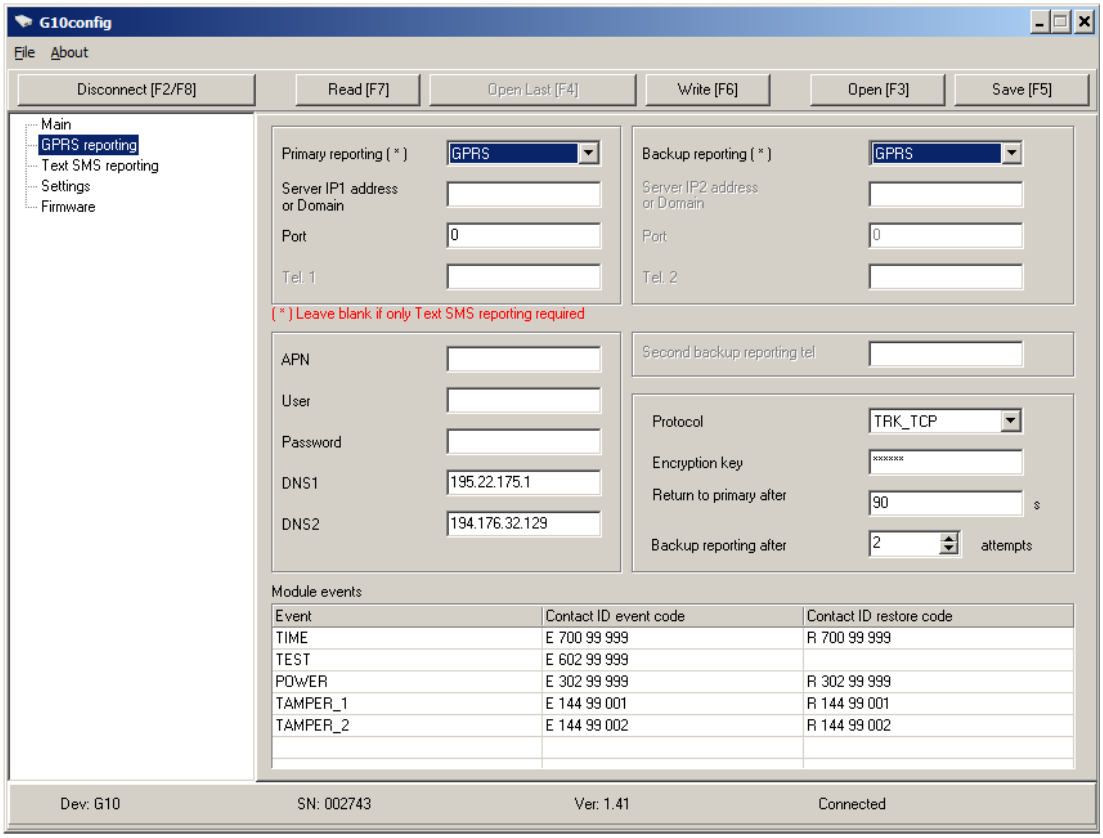
If you want for the program to remember your access code, check the box ***Remember***. The window ***Access code*** will not open when connecting to the module for the next time.

Select the program directory ***Main*** and set the following parameters:




| | |
|---|---|
| ***Object ID*** | Section for entering a 4-digit object identification code; |
| ***SIM Card PIN code*** | Section for entering a SIM card PIN code. Leave this field blank if PIN code request is disabled; |
| ***User code*** | Section for entering a *User* code. When connected using a *User* code, only those module parameters can be changed, which change were allowed by the *administrator*; |
| ***Admin code*** | Section for entering an *administrator* code. When connected using an *Administrator* code, all module parameters can be changed and access to parameter change for persons connecting with the *User* code can be restricted. |
| ***Panel type*** | Select the security control panel type, which is connected to the module *G10.* If one of an interface *C11 or C14* or *CZ6* is connected to the module, select the option ***INTERFACE C11, C14, CZ6***; |
| ***IN1*** | When the option ***24h zone*** is selected in the drop-down list, module will transmit a message with a code set in the table ***Module events*** after braking/restoring input *IN1* external circuit. When the option ***Backup mode*** is selected, transmitting security control panel messages will be allowed after breaking input *IN1* external circuit; |
| ***PGM*** | If the option ***Remote control SMS*** is selected in the drop-down list, the module will change its output state after receiving an SMS message containing a control command (See chapter ***Remote output state control***). If the option ***Lost Primary channel*** is selected, output state will change to the opposite after losing communication through the primary channel. When the option ***Lost Secondary channel*** is selected, output state will change to the opposite after losing communication through the backup channel. If the option ***Lost Both channels*** is selected, output state will change to the opposite after losing communication through the primary and backup channels; |
| ***GPRS PING time*** | Time interval according to which the module sends signals *PING* for checking GPRS connection; |
| ***CSD PING time*** | Time interval according to which the module dials signals *PING* for checking GSM connection; |
| ***SMS PING time*** | Time interval according to which the module sends signals *PING* for checking transmitting over SMSC; |
| ***Test time*** | Time interval according to which the module sends its ***Test*** message; |

The directory ***GPRS***. Enter the parameters needed for reporting to an alarm receiving centre (ARC):




***Primary reporting*** The section is for setting a primary communication channel, through which the module will transmit messages to an alarm receiving centre (ARC).

If ***GPRS*** is selected, IP1 address (or domain name) of ARC and a port number of the server must be specified in the corresponding boxes ***Server IP1 address or Domain*** and ***Port***.

If ***DATA*** is selected, enter telephone number of PSTN line receiver of ARC in the box ***Tel.1***, to which module will dial messages in DTMF tones. The telephone number must be entered with international country code without the "+" (plus) sign.

If ***SMS*** is selected, enter telephone number of the SMS receiver of ARC in the box ***Tel.1***, to which module will send with SMS messages. The telephone number must be entered with international country code without the "+" (plus) sign.

***Backup reporting*** The section is for setting a backup communication channel, through which the module will transmit messages if connection through the primary communication channel has been lost.

If ***GPRS*** is selected, IP2 address (or domain name) of ARC and a port number of the server must be specified in the corresponding boxes ***Server IP2 address or Domain*** and ***Port***.

If ***DATA*** is selected, enter telephone number of PSTN line receiver of ARC in the box ***Tel.2***, to which module will dial messages in DTMF tones. The telephone number must be entered with international country code without the "+" (plus) sign.

If ***SMS*** is selected, enter telephone number of the SMS receiver of ARC in the box ***Tel.2***, to which module will send with SMS messages. The telephone number must be entered with international country code without the "+" (plus) sign.

***Second backup reporting tel.*** Telephone number of SMS receiver of ARC, to which the module will send SMS messages if the module has lost GPRS connection with two servers. This option is allowed only if both primary and backup communication channels are selected as ***GPRS***. The telephone number must be entered with international country code without the "+" (plus) sign.

***Protocol*** The drop-down list is for selecting a protocol for encrypting messages;

***Encryption key*** The section is applied for entering a 6-digit key for encrypting messages. This key has to be identical to a decryption password entered in a server program *IPcom*.

***Return to primary after*** This option is used when both primary and backup channels are set. There must be entered the duration of time for sending messages though the backup communication channel after losing the primary connection;

***Backup reporting after*** This option is used when both primary and backup channels are set. There must be entered the number of attempts to transmit information through the primary communication channel after which the module will connect to the backup communication channel.

***APN*** *Access point name* for connecting to the GSM operator's network;

***User*** *User name* for connecting to the GSM network (Login);

***Password*** *Password* for connecting to the GSM network;

***DNS1, DNS2*** Default addresses must be left if GSM network operator did not provide other values.

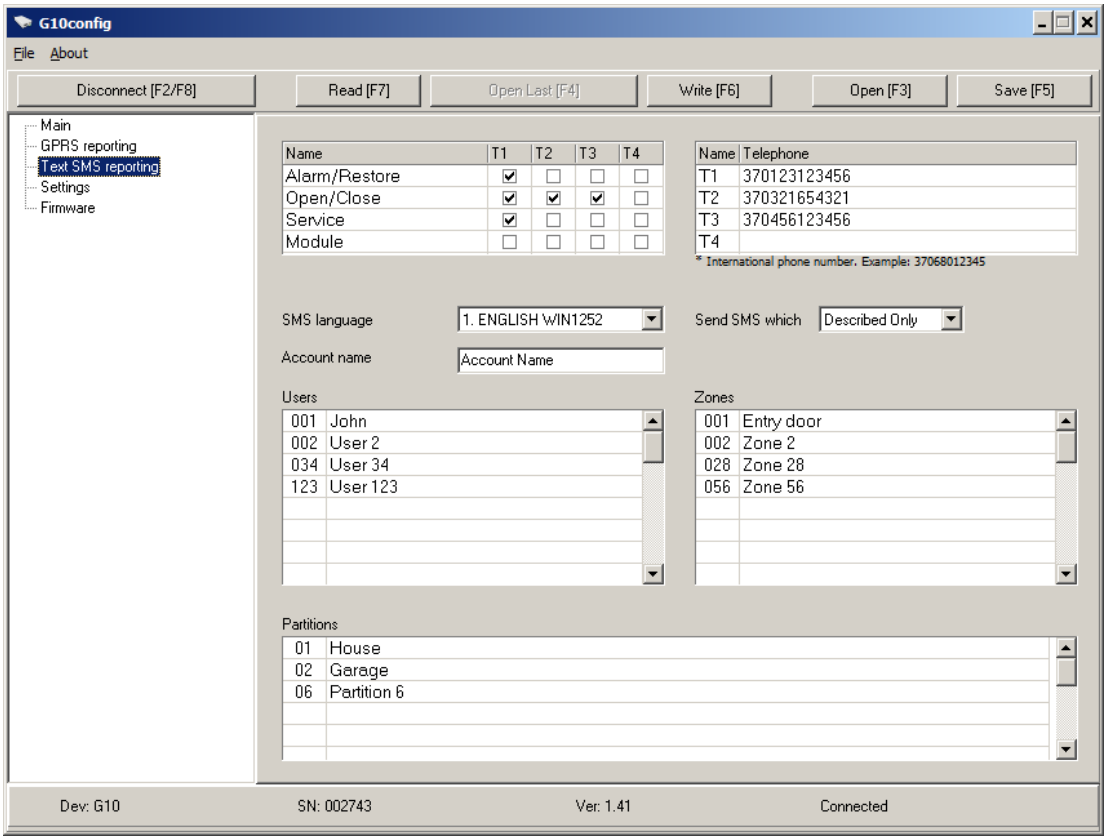
Administrator of an alarm receiving centre must provide the IP address, port, telephone numbers, encryption protocol, key and other parameters needed for connection with the ARC.

APN, name and password should be provided by the GSM network operator from which you have received the SIM card.

***Module events*** The table presents module events after which occurring messages will be sent. Event code can be changed by double-clicking the cell ***Contact ID event code*** or ***Contact ID restore code*** and by entering exact values in a newly opened window (for setting entered values press the button ***OK*** in newly opened window).

| *Module events* | *E event description* | *R event description* |
|---|---|---|
| **TIME** | Internal clock of the module is not set | Internal clock of the module is set |
| **TEST** | Periodical module *Test* message | |
| **POWER** | Power supply voltage is lower than 11,5 V | Power supply voltage has restored to 12,6 V |
| **TAMPER_1** | Input *IN1* external circuit is broken | Input *IN1* external circuit is restored |
| **TAMPER_2** | Input *IN2* external circuit is broken | Input *IN2* external circuit is restored |

In the directory ***Text SMS to user*** enter the parameters, which are necessary to send SMS messages to users:




***Telephone*** The list is for entering telephone numbers of the users to which SMS messages will be sent (***T1, T2, T3, T4***). Numbers must be entered with international country code without the "+" (plus) sign;

***Name*** By selecting the check boxes, SMS message sending condition to user can be set:

***Alarm/Restore*** - SMS messages will be sent if the security system is alarmed/restored (events with code E/R 1xx);

***Open/Close*** - SMS messages will be sent if the security system is armed/disarmed (events with code E/R 4xx);

***Troubles*** - SMS message will be sent if system troubles occur (events with code E/R 3xx);

***Tests*** - System *Test* will be sent in SMS message (events with code E 602);

***SMS encoding*** Here can be set desirable SMS text character encoding;

***Send SMS*** When ***All*** is set, SMS messages will be sent to user about all events of security control panel. When ***Described Only*** is set, module will send SMS messages about events in described zones only;

***Object ID*** Field where the object name might be entered. It will be included in the SMS message;

| | |
|---|---|
| ***Users*** | Table entries are linked with codes of users, who can arm / disarm the security system. User who arms / disarms security system by entering its own code, his or her name will be included in the SMS message; |
| ***Zones*** | Table entries are linked with events in zones under protection. When zone is disturbed/restored entered zone name will be included in the SMS message; |
| ***Partitions*** | If the security system is divided into several independent protected areas, the table entries are linked with these areas. When area zone is disturbed / restored entered area name will be included in the SMS message. |

6. Press the button ***Write [F6]*** and values entered in the program *G10config* windows will be uploaded to the module *G10*.
7. Press the button ***Disconnect [F8]*** and unplug the USB cable from the USB socket.

***Save [F5]*** By pressing this button values entered to the program *G10config* will be saved to the computer. A file with extension *.gst* will be created. It can be used later as a template to configure other modules.

***Restore [F11]*** Press this button if is necessary to restore default (factory) operating parameters. Press the button ***Yes*** when request window opens.

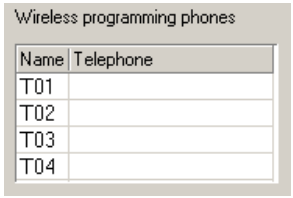
## Firmware version upgrading

When the manufacturer adds new features to the module *G10*, firmware of the previously bought module can be updated:

1. Download the latest *G10_xxx.prg* update file from the website www.trikdis.lt.
2. Connect the module *G10* to a computer and start the program *G10config*. Open directory ***Firmware*** and select the file *G10_xxx.prg* saved in the computer.
3. Press the button ***Start [F9].*** Wait until file uploading bar ***Progress*** reaches 100%, then press the button ***Disconnect [F8]*** and unplug the USB cable.
4. Plug the USB cable back in. Firmware updating process starts. This may take 60-90 seconds. Wait until indicator ***Data*** stops flashing green, and then press the buttons ***Connect [F2]*** and ***Read [F7]***. The new firmware version will be displayed in *G10config* program status bar.

## Setting of configuration remotely

In order to set module *G10* operating parameters remotely a SMS message with the particular syntax must be sent by GSM number of SIM card put in the module *G10*. When the module *G10* receives this SMS message it opens GPRS communication session with software *IPcom*.




If during the previous setting module operating parameters were being entered GSM number of authorised person in the list *G10config / Settings / Wireless programming phones,* the module *G10* will open GPRS communication session, if it receives SMS message with particular syntax from authorized person‘s phone.

**SMS message text structure** (word $_{space}$ means space between SMS text symbols):

CONNECT$_{space}$1234$_{space}$SERVER=100.100.100.100$_{space}$PORT=1000$_{space}$APN=provider$_{space}$USR=name$_{space}$PSW=psw$_{space}$ENCR=enc

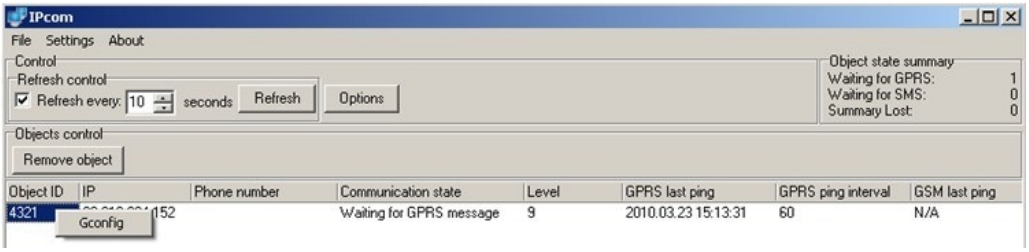
**Note:** entering values use capital letters!

**Description of syntax:**

| | |
|---|---|
| CONNECT | Enter the word “CONNECT” means starting command; |
| 9874 | Enter your 4-digit access code to module parameter configuration (default is 1234); |
| SERVER=value | Enter the word “SERVER=” + enter IP address of the IP receiver, from which module operating parameters will be configured; |
| PORT=value | Enter the word “PORT=” + enter port of the receiver, from which module operating parameters will be configured; |
| APN=value | Enter the word “APN=” + enter the GPRS access point name of network where SIM card is operating. If GSM service provider doesn’t require any value must be entered, just leave ...$_{space}$APN=$_{space}$... in SMS; |
| USR=value | Enter the word USR= + enter the *User name* of GPRS access point name of network where SIM card is operating. If GSM service provider doesn’t require any value must be entered, just leave ...$_{space}$USR=$_{space}$... in SMS; |
| PSW=value | Enter the word “PSW=” + enter the *Password* of GPRS access point name of network where SIM card is operating. If GSM service provider doesn’t require any value must be entered, just leave ...$_{space}$PSW=$_{space}$... in SMS; |
| ENCR=value | Enter the word “ENCR=” + enter the 6-digit messages decrypting key which is set in IP receiver (default is 123456). |

Order of actions after the message is sent:

1. Open the window of software *IPcom* and select the object ID, which operating parameters of transmitting module should be changed. To select, right click on the ID number.
2. Open the configuration program *G10config*. Left click on the icon *G10config* has been appeared beside the selected ID number.
3. Click on the button ***Connect*** in the opened program *G10config* tool bar. GPRS connection status “*Connected*” must be indicated in the program’s status bar. Click the button ***Read [F7]*** on, old configuration to be displayed.
4. Further actions are identical as when the module is connected to a computer with a USB cable. Just set the desirable values of module operating parameters in the opened program *G10config* windows.
5. After entering desirable values click the button ***Write [F6]*** on, the values to be set in the module *G10*. Just close the program *G10config* and GPRS communication session closes too.




## Firmware version upgrading remotely

Connect the module *G10* with the program *G10config* remotely (See previous chapter how to connect remotely).

1. Open the program *G10config* (See previous chapter how to open the configuration program)
2. Press the button ***Connect***.
3. To read the parameters set in the module press the button ***Read***.
4. Open the window ***Firmware*** and with clicking on the button ***Browse*** select the latest version of the firmware file. Press the button ***Start***.
5. Wait until the firmware will be written into the module processor memory. This may take 1-3 minutes, after which the module will reconnect to the program *G10config*.
6. Set the module operating parameters in the same way as described while connected via USB port.

## Remote PGM output switching

In order to change the state of output *OUT1*, send an SMS message to the SIM card number of the module. Examples of SMS messages are provided in the table below.

**Notes:**

- If the list ***Wireless programming phones*** is empty, module will change its output state after receiving an SMS message from any mobile phone. If telephone numbers are entered in the list, module output state can be changed only from these phones;
- Output state can be changed when output *OUT1* operating mode is set to ***Remote control SMS***;
- SMS messages have to be written in capital letters only!

| *SMS message text* | *Meaning* | *Note* |
|---|---|---|
| OUTPUT␣1234␣ON | Output state is changed to *ON* | Instead of numbers *1234* enter your *Administrator* or *User* code<br><br>Key "␣" means space tab. Spaces in notified places must be entered. |
| OUTPUT␣1234␣OFF | Output state is changed to *OFF* | |
| OUTPUT␣1234␣PULSE=005 | Output state is changed to ON for time period given in seconds | |
| RESET␣1234 | Restart module | |

## Technical specification

| | |
|---|---|
| Power supply voltage | DC 12,6 ± 3 V |
| Used current | 60–100 mA (stand-by),<br>Up to 250 mA (transmitting) |
| GSM modem frequency | 850 / 900 / 1800 MHz |
| Memory | Up to 60 messages |
| Inputs | 2, NC type |
| Output | 1 OC type, commutating up to 30 V voltage and current up to 1 A |
| Setting configuration | Through the USB port |
| Operating environment | From -10 °C to 50 °C, with relative air humidity 80% when +20 °C |
| Dimensions | 65 x 79 x 25 mm |

## Package contents

| | |
|---|---|
| Module *G10* | 1 pc. |
| Two-sided adhesive tape (10 cm) | 1 pc. |

**Note:**

CRP2 cables and GSM antennas of desired type are collected by the additional request.

## ANNEX 1. Non-alarm events transmitted to ARC

| *Event description* | *Event code* | | *Notes* |
|---|---|---|---|
| | *Activated* | *Restored* | |
| Device TEST message | E 602 | - | |
| Time is specified<br>yes / no | E 700 | R 700 | Not specified |
| Connection with the security panel<br>lost / restored | E 702 | R 702 | |
| PING signal through SMS channel | E 750 | - | |
| Connection by SMS channel:<br>lost / restored | E751 | R 751 | |
| PING signal through GPRS channel | E 760 | - | |
| Connection by GPRS channel:<br>lost / restored | E 761 | R 761 | |
| PING signal dialled in DTMF tones | E 770 | - | |
| 1st NC input<br>Activated / restored | E 144 99 999 | R 144 99 999 | Input mode |

## ANNEX2. Texts of SMS messages which are sent to mobile phone after occurring particular event

| *Control panel CID code* | *Sent as* | *Text* | |
|---|---|---|---|
| | | *Existing* | *In CID standard* |
| E/R 100 | E 100 | MEDICAL PANIC ALARM | Medical Alarm |
| | R 100 | | |
| E/R 110, 115 | E 110 | FIRE PANIC ALARM | Fire Alarm |
| | R 100 | | |
| E/R 120 | E 120 | PANIC ALARM | Panic Alarm |
| | R 120 | | |
| E 121 | | DURESS ALARM | Duress Alarm |
| E/R 130, 144 | E 130 | ALARM | Burglary Alarm |
| | R130 | Alarm restore | Burglary Alarm restore |
| E/R 301 | E 301 | AC Power failure on control panel | AC Loss |
| | R 301 | AC Power failure restored on control panel | AC Loss restore |
| E/R 302, 309 | E 302 | Battery Power failure on control panel | Low System battery |
| | R 302 | Battery Power restored failure on control panel | Low system Battery restore |
| E/R 321 | E 321 | Bell trouble on control panel | Bell 1 |
| | R 321 | Bell trouble restore on control panel | Bell 1 restore |
| E/R 351 | E 351 | Phone Line trouble on control panel | Telco 1 fault |
| | R 351 | Phone Line trouble restored on control panel | Telco 1 fault restore |
| E/R 400, 401, 406, 451 | E 401 | OPEN by | Open by user |
| | R 401 | CLOSE by | Close by user |
| E/R 408 | E 408 | Quick DISARM | Quick DISARM |
| | R 408 | Quick ARM | Quick ARM |
| E 602 | E 602 | Periodic Test | Periodic test report |