GSM module *G10C*

(v.1.3X)

Installation manual

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Safety requirements

Please read this manual carefully before using the security module *G10C*.
Security module *G10C* should be installed and maintained by qualified personnel, having specific knowledge regarding the functioning of GSM devices and safety requirements.
Module *G10C* 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.

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- 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 *G10C*

Module *G10C* is designed for transmitting security system messages to a monitoring station through a GSM connection. Module features:

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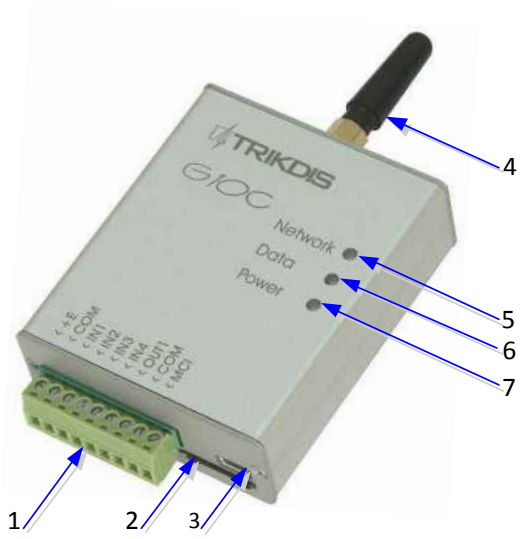
- Messages to the monitoring station can be transmitted in on of following modes or through GPRS connection or with SMS messages or in DTMF tones;
- Messages can be sent through a primary communication channel and if it fails – through a backup channel;
- Even if GPRS connection with two servers is lost, information can be sent with SMS messages;
- Sent messages correspond with *Contact ID* protocol codes;
- The module can send SMS messages to 4 user mobile phones;
- Input status can be controlled constantly or when control is activated;
- Output *OUT1* status can be controlled remotely;
- Operating parameters and firmware version can be updated remotely;
- Operating parameters are set with the program *G10config*.

Description of module operation

- Module *G10C* is connected to security control panel PGM outputs and can be set to operate in one of the two modes:
  a) *Constant input control mode* (***24 h***). After the security control panel has changed the state of its PGM output, module input circuit is also disturbed. The module *G10C* immediately sends a report about this event to the monitoring station. When the security control panel restores its PGM output status, the status of module input external circuit is also restored. The module will send a report about this event. A general wiring diagram is given in Fig. 1.
  b) *Activated input control mode* (***Control panel***). When this mode is selected, input *MCI* operates as an input status controller. While input *MCI* is connected with *COM*, disturbances in the circuits of inputs *IN1...IN4* are allowed and reports about them are not created. After the circuit of input *MCI* is broken, the module will send a report informing that input status is controlled and disturbances in the circuits of inputs *IN1...IN4* are no longer allowed. When input status is controlled by input *MCI* and circuits of the inputs *IN1...IN4* are disturbed, the module will send reports about these disturbances/restorations.
- Module *G10C* has five inputs. When operating in **24 h** mode, module *MCI* input is the fifth *NC* type input, and when operating in mode ***Control panel***, it operates as a controller for the other four inputs.
- The module can send messages about the disturbances/normalisations of input *IN1…IN4* and *MCI* external circuits to the monitoring station through a specified connection channel. If the message transmission through this channel fails, the module may send them through a backup channel.
- When two server IP addresses are set and the module loses connection with both of them, it can send information to the monitoring station with SMS messages.
- The module can periodically send signals *PING* for connection control.
- The reports can be sent with SMS messages up to four mobile phones. A user-friendly SMS message text can be assigned for every module input event.
- Module output *OUT1* status will change when connection with the monitoring station server has been lost/restored or when the module has received an SMS message changing its output status.

Module components



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

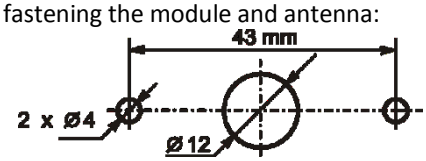
Terminal block description

Contact	*Description*
+E	+12V power supply clamp
COM	Common clamp
IN1	1st input clamp (NC type)
IN2	2nd input clamp (NC type)
IN3	3rd input clamp (NC type)
IN4	4th input clamp (NC type)
OUT1	Output clamp (OC type)
COM	Common clamp
MCI	5th input, programmable (NC type)

Light indication

LED	*Operation*	*Description*
Network presents connection with GSM network status	Green ON	Module is connected to a 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 presents data exchange	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	Module configuration is incorrect
	Red flashing	SIM card error
Power presents 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

Module installation steps

Actions	*Notes*
1. Set the operating parameters for the module.	Follow recommendations in chapter **Setting operating parameters**.
2. Insert an active SIM card. 	Contact a GSM service provider regarding the 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 the 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. If messages are sent to a mobile phone, check if all SMS messages are received.

Wiring diagrams

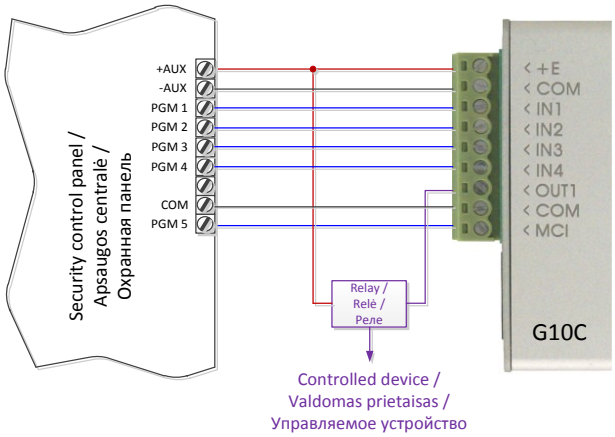


Fig. 1. General wiring diagram for connection to the security control panel, when constant input status control mode (***24 h***) is set.

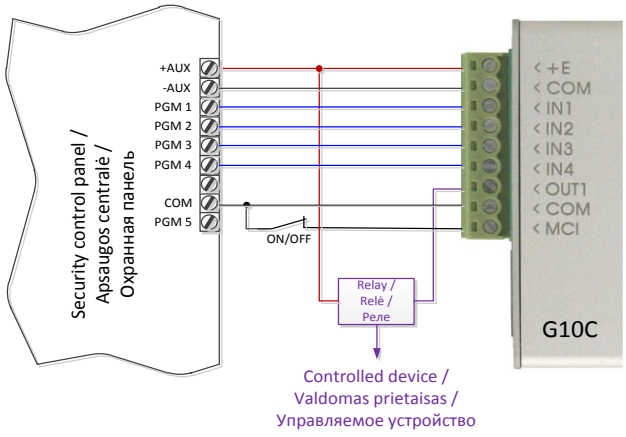


Fig. 2. General wiring diagram, when activatable input status control mode *(**Control panel**) is set.*

Setting operating parameters

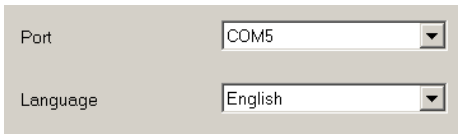
Module *G10C* operating parameters are set with computer program *G10config.* Program can be found in website www.trikdis.lt.

1. Connect the module *G10C* 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 a ***Found New Hardware Wizard*** window 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 a new window ***Please choose your search and installation option"*** will open, 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.

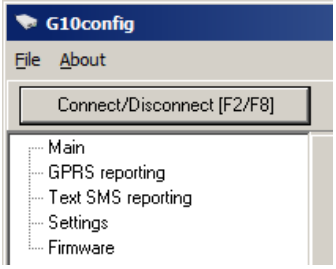
2. Start the program *G10config*.

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.

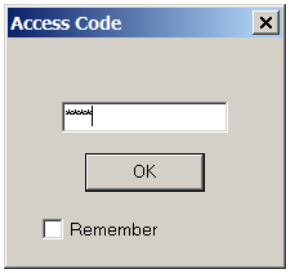
4. Press the button ***Connect/Disconnect [F2/F8]***.



When the module *G10C* is connected to a computer, module LED ***Power*** indicator should flash green and yellow in turn. Program G10config status bar should indicate connection status ***Connected*** and display the following information about the connected module:

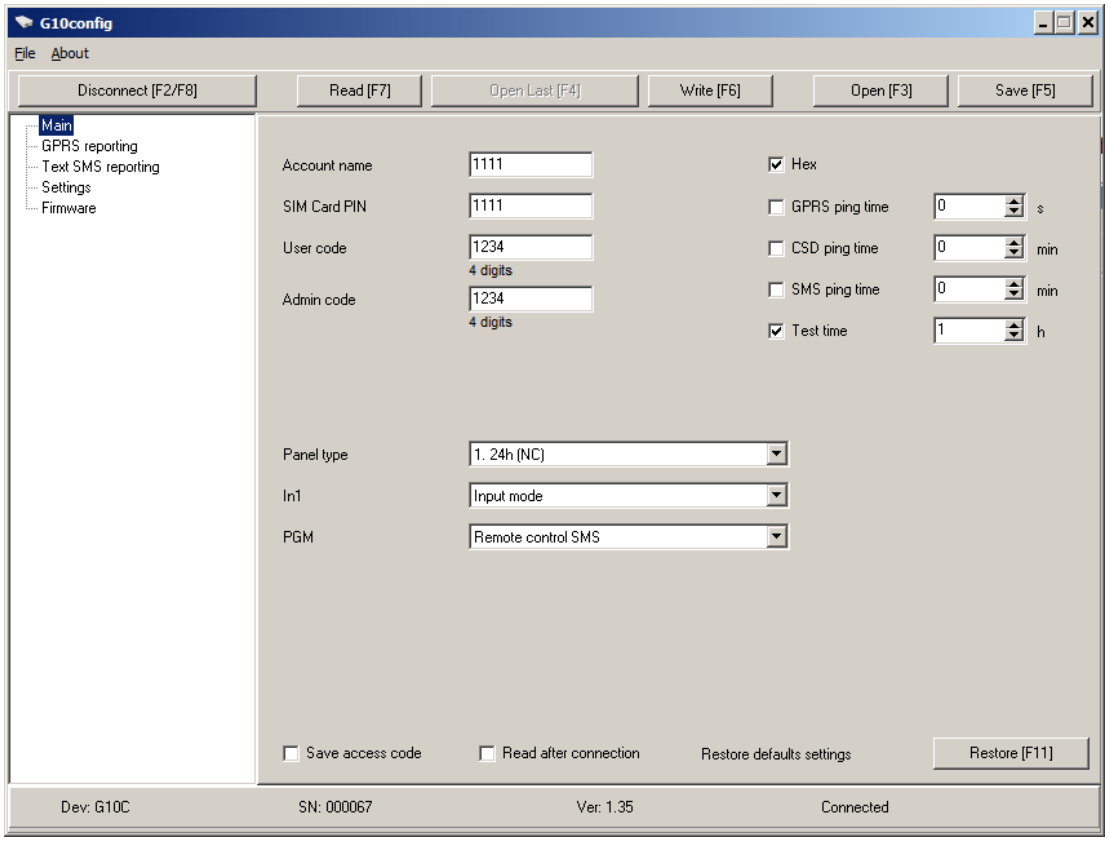
Dev: G10C	Module type
SN: 000174	Module serial number
Ver: 1.33	Firmware version installed in the module

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***. Then the ***Access code*** window 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 the 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 was 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 also access to parameter change can be restricted for persons connecting with the *User* code.

Operates with control panel Select in the list the operating mode of the module *G10C*, according to which the status of module inputs, which are connected to the security control panel PGM outputs, is controlled. If ***24h*** is selected, input status will be constantly controlled. If ***Control Panel*** is selected, you will be able to turn the input control on or off;

IN1 *Function is not used*;

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 control of the module***). 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;

Start sending PGM *Function is not used*;

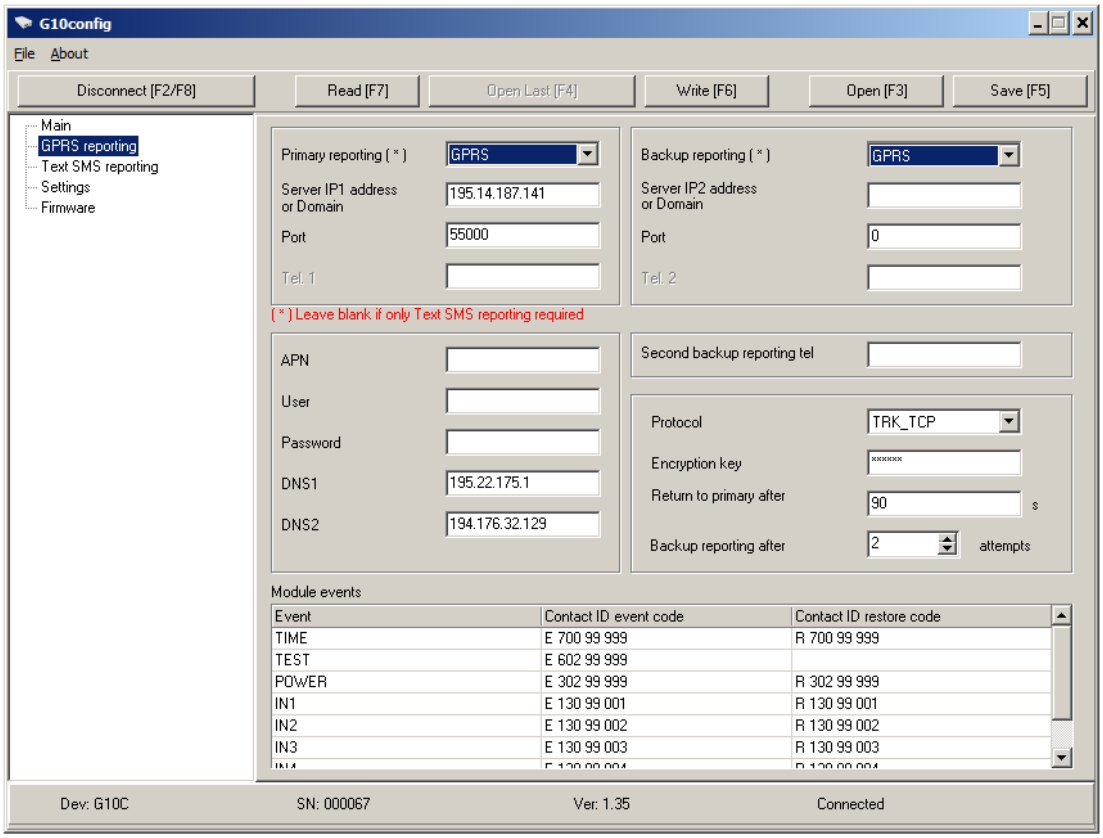
GPRS PING time Time interval according to which the module will send messages for GPRS connection control to the monitoring station;

CSD PING time *Function is not used*;

SMS PING time Time interval according to which the module will send SMS messages to the monitoring station to check the connection;

Test time Time interval according to which the module will send Test connection control message to the monitoring station;

In the directory ***GPRS*** enter the parameters for connection with the monitoring station:



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 the monitoring station, to which SMS messages will be sent, when the module has lost GPRS connection with both servers. This option is allowed, when both the primary and the backup connection channels are selected as ***GPRS***. The telephone number should be entered with international country code but without the "+" (plus) sign.

Protocol Drop-down list for selecting a protocol for encrypting messages;

Encryption key Section for entering a 6-digit key for encrypting messages sent to the monitoring station. The password must be same as the password entered in a server program *IPcom*.

Return to primary after Used if both the primary and backup channels are selected for connection with the monitoring station. Enter in the section the duration of time for sending messages though the backup communication channel, when connection through the primary channel has failed;

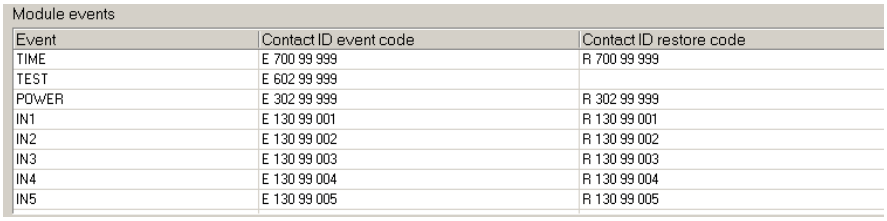
Backup reporting after Used if both the primary and backup channels are selected for connection with the monitoring station. Enter in the section the number of attempts to transmit information through the primary communication channel, after which the module will connect to the backup communication channel.

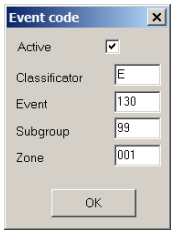
Monitoring station administrator should provide the IP addresses, port and telephone numbers, encryption protocol and key with other parameters necessary for connecting with the monitoring station.

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	Leave the default values in the sections.

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

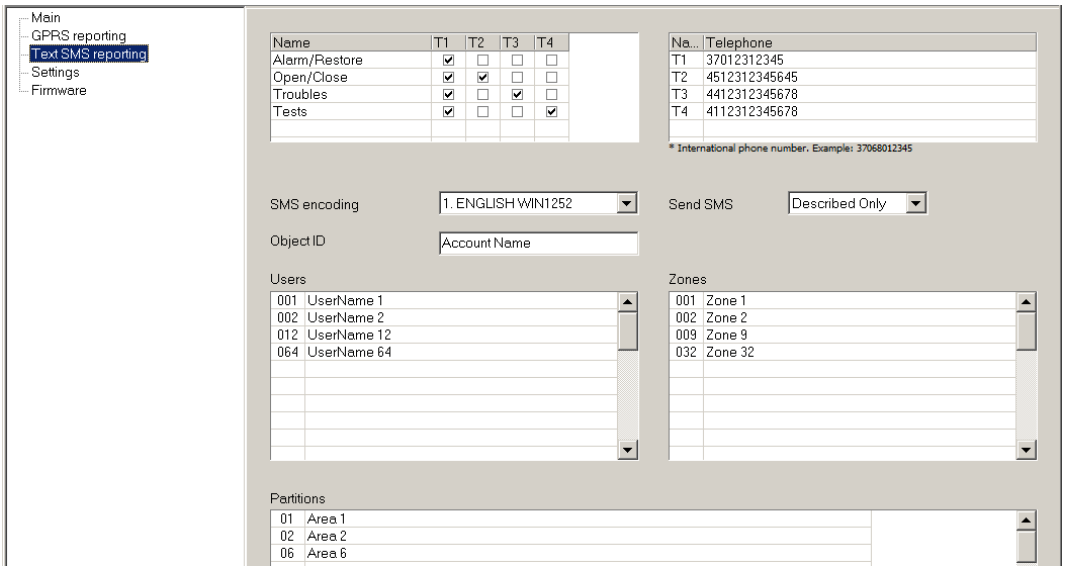
Module events — Events are given in the table, about which the module will also send messages. Event code can be changed by double-clicking the cells ***Contact ID event code*** or ***Contact ID restore code*** and by entering exact values in the newly opened window. After entering the values press the button ***OK***.





Module events	*Default „E" event description*	*Default „R" event description*
TIME	Internal clock of the module is not set	Internal clock of the module is set
TEST	Periodic module *Test* message	
POWER	Power supply voltage is lower than 11,5 V	Power supply voltage has restored to 12,6 V
IN1	Input *IN1* external circuit is disturbed	Input *IN1* external circuit has restored
IN2	Input *IN2* external circuit is disturbed	Input *IN2* external circuit has restored
IN3	Input *IN3* external circuit is disturbed	Input *IN3* external circuit has restored
IN4	Input *IN4* external circuit is disturbed	Input *IN4* external circuit has restored
IN5	Input *MCI* external circuit is disturbed	Input *MCI* external circuit has restored

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



Telephone	Telephone numbers of the users should be entered in fields ***T1, T2, T3, T4*** to which SMS messages will be sent. The telephone number should be entered with international country code but without the "+" (plus) sign;
Name	Choose by selecting the check boxes, about which events messages will be sent to users;
Alarm/Restore	SMS messages will be sent, when an input circuit is disturbed, which events are described in the table ***Module events*** with E 1xx xx xxx and R 1xx xx xxx codes (security system alarm: fire, burglary, trespass, assault and etc.);
Open/Close	SMS messages will be sent, when an input circuit is disturbed, which events are described in the table ***Module events*** with E 4xx xx xxx and R 4xx xx xxx codes (security system arm/disarm);
Troubles	SMS messages will be sent, when an input circuit is disturbed, which events are described in the table ***Module events*** with E 3xx xx xxx and R 3xx xx xxx codes (security system troubles);
Tests	SMS messages will be sent, when an input circuit is disturbed, which events are described in the table ***Module events*** with E 6xx xx xxx code (security system *Test* messages);
SMS encoding	Choose in the list the preferred encoding for the text in SMS messages;
Send SMS	When ***All*** is chosen, SMS messages will be sent to users about all module external circuit events. When ***Described Only*** is chosen, SMS messages will be sent to users only about those external circuit events, which are described;
Object ID	Enter the object name. It will be included in the message sent to user;

Users	Function is not used;
Zones	Entries in the table are associated with PGM output events controlled by the security control panel. When a connected module input circuit is alarmed/restored, its description entered in the table will be included in the SMS message;
Partitions	*(1)* If the security system is divided into several individually protected areas and *(2)* if control panel PGM output events shall mark events in these areas, then entries in the table are associated with these events. If a connected module input circuit is alarmed/restored, the name of the partition entered in the table will be included in the SMS message;

6. Press the button ***Save [F6]*** and values entered in the program *G10config* windows will be uploaded to the module *G10C*.
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* can be saved in the computer. A new file with extension *.gst* will be created. It can be used later as a template for configuring other modules.
Restore [F11]	Button for restoring default (factory) operating parameters of the module *G10C*. Press the button ***Yes*** when request window opens.

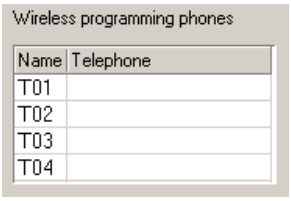
Updating module firmware version

When the manufacturer adds new features to the module *G10C*, firmware of the previously bought module can be updated:

1. Download the latest *G10C_vx.xxx.prg* update file from the website www.trikdis.lt.
2. Connect the module *G10C* to a computer and start the program *G10config*. Open directory ***Firmware update*** and select the file *G10C_vx.xxx.prg* saved in the computer.
3. Press the button ***Start [F9].*** Wait until file uploading bar ***Progress*** is full, and then press the button ***Disconnect [F8]***. Unplug the USB cable.
4. Plug the USB cable back in. Firmware update process may take 60-90 seconds. Wait until indicator ***Data*** will stop flashing green and press the buttons ***Connect [F2]*** and ***Read [F7]***. The new version of the module firmware will be displayed in *G10config* program status bar.

Setting of configuration remotely

In order to set module *G10C* operating parameters remotely a SMS message with the particular syntax must be sent by GSM number of SIM card put in the module *G10C*. When the module *G10C* 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 *G10C* 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

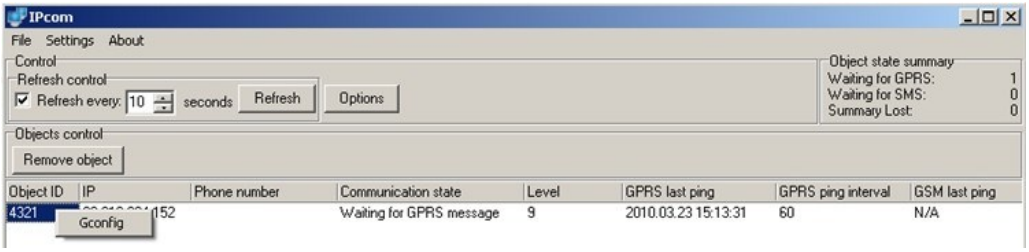
Note: entering values use capital letters!

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 *G10C* 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 control of the module

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

Notes:

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

SMS message text	*Description*	*Note*
OUTPUT␣1234␣ON	Output status is changed to *ON*	Instead of numbers *1234* enter the *Administrator* or a *User* code. Symbol „␣“ indicates a space in SMS message text.
OUTPUT␣1234␣OFF	Output status is changed to *OFF*	
OUTPUT␣1234␣PULSE=005	Output status is changed to ON for a time period entered in seconds	
RESET␣1234	Module is restarted	

Technical parameters

Power supply voltage	DC 12,6 ± 3 V
Used current	60–100 mA (stand-by) Up to 250 mA (transmitting)
GSM modem frequency	850 / 900 / 1800 MHz
Memory	Up to 60 messages
Inputs	4+1, NC type
Output	1 OC type, commutating a direct 1 A current with 30 V voltage
Setting configuration	Through the USB port
Operating environment	From -10 °C to 50 °C, with relative air humidity 80% with +20 °C
Dimensions	65 x 79 x 25 mm

Package contents

Module *G10C*	1 pc.
Adhesive fastening tape (10 cm)	1 pc.

Note:
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 yes / no	E 700	R 700	Not specified
Connection with the security panel lost / restored	E 702	R 702	
PING signal through SMS channel	E 750	-	
Connection by SMS channel: lost / restored	E751	R 751	
PING signal through GPRS channel	E 760	-	
Connection by GPRS channel: lost / restored	E 761	R 761	
PING signal dialled in DTMF tones	E 770	-	
1st NC input 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