



GSM module G7

User manual

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1 GSM module G7 (firmware ver. 1.26)

G7 is a universal wireless communicator for transferring messages of security control panel to monitoring station through GSM network.

- Transfers information through the primary communication channel. When this connection is failed G7 automatically turns to its back-up communication channel for finishing transmission.
- Channels of primary and back-up communication can be set one of these channels GPRS, CSD or SMS.
- Indicates operation and level of connection to GSM network.
- Alarm transmission to monitoring station by 2 IP addresses and 2 GSM numbers.
- Messaging to up to 4 mobile phones by freely customized text SMS.
- Programmable input can be used for beginning of alarm transmission via GSM while landline is failed
- Remote changing a state of PGM.
- Possibility to get electrical signal while communicator loses GSM connection.
- Remote configuration by GPRS connection is possible.
- Remote firmware upgrade by GPRS connection is fully supported.
- Multilingual configuration program.
- Easy installation by 4-wire serial connection.

2 Principles of operation

GSM module G7 transfers information of control panel to monitoring station over chosen GSM channel. There is possible to choose one of these channels GPRS, CSD or SMS. If established primary connection has failed, G7 will repeatedly attempt to restore it for *n* times (number of attempts (*n*) can be set). If the module G7 fails to restore connection, the module will automatically connect to established back-up channel and transfer the unsent messages through it. Duration of connection or attempts to connect to the back-up channel can be set, after which the G7 tries again to connect to the primary channel.

GSM module G7 sends polling signals *PING* for testing of communication. Messaging to monitoring station corresponds to codes of Contact ID table.

Messages receivers: program *IPcom*, receiver *RL10*, multi-channel receiver *RM10*, CSD/SMS receiver *GM5*.

Module can transform the data of security control panel to text SMS messages and send them to up to 4 mobile phones. Texts of SMS messages (name of object, user names, partition names, event descriptions) are changeable and may be changed by requirements of the User.

GSM module G7 is able to operate as backup alarm communicator. In this case it is wired to the control panel that communicates using the Contact ID format through landline. G7 is steady connected to GSM network and transfers alarm transmission via GSM/GPRS when landline connection is failed only.

PGM of module G7 is able to operate in several modes.

- It is possible to set that state of PGM changes when module loses its primary and/or backup connection to GSM network. How to set this feature see chapter 7.1.8.
- It is possible to set that state of PGM can be changed by sending SMS (see Annex 4.). How to set this feature see chapter 7.1.8.

GSM module G7 is compatible with:

- Common bus: *DSC* PC585, PC1565, PC5020, PC1616, PC1832, PC1864.
PYRONIX MATRIX 424, MATRIX 832, MATRIX 832+, MATRIX 6, MATRIX 816.
GE CADDX NX-4, NX-6, NX-8.
- Serial output: *PARADOX* SPECTRA SP5500, SP6000, SP7000, 1727, 1728, 1738.
PARADOX MAGELLAN MG5000, MG5050.
PARADOX DIGIPLX EVO48, EVO192, NE96, EVO96.
PARADOX ESPRIT E55, 728ULT, 738ULT.
- Telephonic communicator of control panel
i.e. when control panel is connected to module G7 through the C11 interface.
- Outputs (PGM),

i.e. module is compatible with other manufacturers control panels through alarm inputs while input expansion module CZ6 interconnects module and control panel.

3 Package content

- GSM module G7 (the SIM card is not included),
- GSM straight antenna,
- Velcro type stick-on (two-sided x10 cm).

4 Specifications

Power supply	DC 12,6 ± 3 V
Current	up to 60 mA (stand-by running mode) up to 250 mA (transmitting mode)
Frequency	850/900/1800 MHz
Primary transmission channel to CMS	selectable GPRS or CSD or SMS
Back-up transmission channel to CMS	selectable GPRS or CSD or SMS
Alarm reporting to CMS	corresponds to codes of Contact ID table
Alarm reporting to 4 mobile phones	by text SMS
Memory	60 messages
Input	1 (type of NC), programmable
PGM	1 (type of OC, switching 30V DC and 100 mA)
Operating environment	from -10 °C to 50 °C, relative air humidity 80% when +20 °C
Dimensions	85 x 65 x 25 mm

5 Description of the module G7

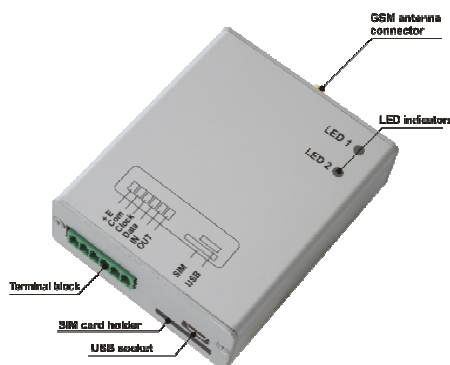


Figure 1.

GSM antenna connector
LED indicators
Terminal block
SIM card holder
USB socket


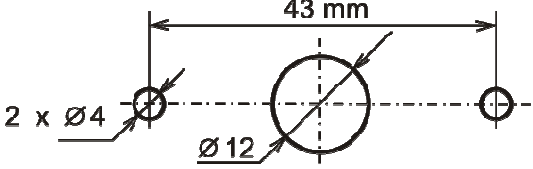
5.1 Terminal block description

Clamp	Meaning
+E	+12V supply clamp
Com	Common (device ground) clamp
Clock	Synchronizing signal clamp
Data	Data signal clamp
IN	Input clamp (type of NC)
OUT	Output clamp (type of OC)

5.2 Meanings of light indication

LED1	LED2	Meaning
OFF	Red flashing	No SIM card
Yellow ON	OFF	Configuration mode
Yellow ON	Fast green flashing	Firmware is downloaded into primary memory
Green flashing	Red flashing	Firmware is downloaded into read only memory (ROM)
Yellow flashing	OFF	Registering to GSM network
Yellow ON	Red ON	Communication has failed
Yellow ON	Green ON	Data transmitting mode
Green ON	Green ON	Stand-by running mode
Green ON	Red and green flashing by arrangement	Number of red flashes indicates GSM signal level

6 Installation

Action	Explanation
1. Set up operation parameters.	see chapter "Module configuration"
2. Put activated SIM card into a holder as shown in the <i>Figure 2</i> .	 <p>Notes:</p> <ol style="list-style-type: none"> 1. Ask your GSM provider about SIM card properties. 2. Disable PIN code request.
3. Fit to control panel housing.	<p>Drill module fitting holes on control panel housing.</p> 
4. Screw on the GSM antenna.	
5. Wire to control panel.	See Annex1. Wiring diagrams
6. Switch on power supply.	
7. According to LED indications, check GSM signal level and test data transmission.	<p>Note:</p> <p>If GSM signal level is not sufficient, connect other type of GSM antenna.</p>

7 Module configuration

Operational parameters of GSM module G7 can be set, read, modified and updated by using configuration program *G7config*. Configuration is possible by two methods: when module G7 is on-site connected to PC by USB cable and when module G7 is remotely connected to program *IPcom* by GPRS connection.

7.1 Setting of operation parameters by USB cable connection

7.1.1 Run the configuration program *G7config* by clicking its icon. Window opens as in the *Figure 3*.

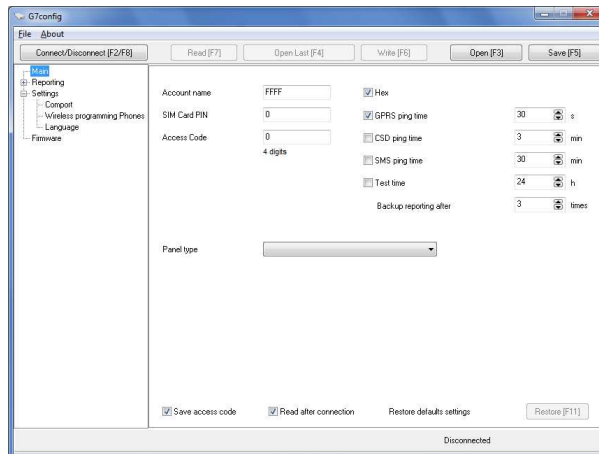


Figure3 View of window when G7config starts

- 7.1.2 Connect module G7 to PC by using USB cable (see *Figure 4*). Connect to additional power supply source if power supply is not sufficient.



Figure4 Type of USB cable

- 7.1.3 Choose the dialog language in the window **Main/Settings/Language** (see *Figure 5*).

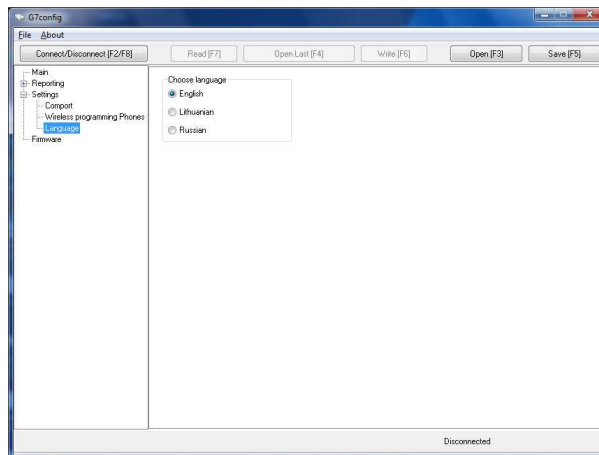


Figure5 View of window Language

- 7.1.4 The window **Main/Settings/Comport** (see *Figure 6*) is intended for setting parameters of comport.

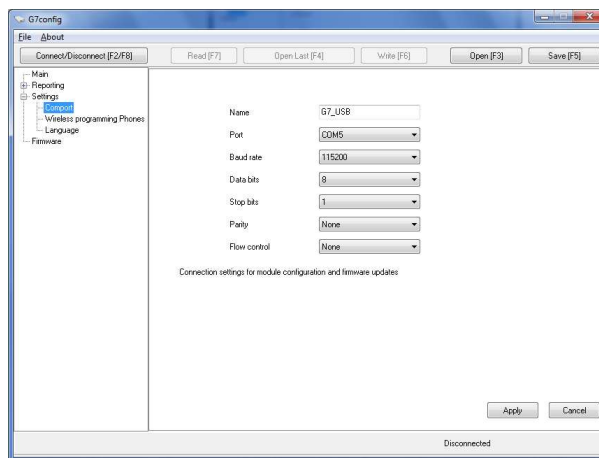


Figure6 View of window Comport

- Textbox **[Name]**. Write name of comport, if it is necessary (e.g. G7_USB).
- Pull down menu **[Port]**. Select comport which module G7 is connected to (e.g. COM5).
- Pull down menu **[Baud rate]**. Select the 115200.
- Pull down menu **[Data bits]**. Select the 8.
- Pull down menu **[Stop bits]**. Select the 1.
- Pull down menu **[Parity]**. Select the None.
- Pull down menu **[Flow control]**. Select the None.
- Click icon **[Apply]** to apply settings.

- 7.1.5 Click icon **[Connect/Disconnect]** (see *Figure 7*).



Figure7. Connect/Disconnect button position

- 7.1.6 Click icon **[Read]** for reading existing parameters. Enter access code (default 1234) in the appeared window (see *Figure 8*) for allowing configuration.



Figure 8 Access Code request window

- 7.1.7 If it is necessary click icon **[Open]** or function key **[F3]** for opening saved configuration file (click icon **[Open Last]** or function key **[F4]** for opening the last saved configuration file).
- 7.1.8 The window **Main** (see *Figure 9*) is intended for entering common parameters of module G7.

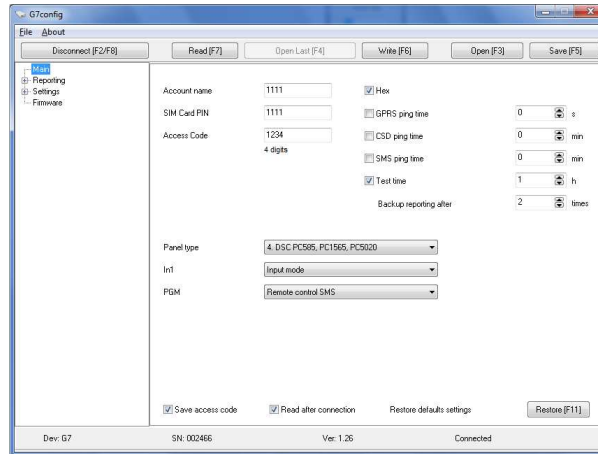


Figure 9 View of window Main

- Textbox **[Account]**. Enter an account number of object. Check box **[Hex]** for allowing entering number in hexadecimal format.
- Textbox **[SIM Card PIN]**. Enter SIM card PIN code. If PIN code request is disabled, leave it default or blank.
- Textbox **[Access Code]**. Enter the new access code (default 1234).
- Pull down menu **[Panel type]**. It is intended for establishing firmware interface with control panel that reports will be transferred. From the pull down list select the type of connected control panel while module G7 is connected to. How to wire, see **Annex1. Wiring diagrams**. When it is necessary to transfer reports from telephonic communicator of control panel, select the element **INTERFACE C11** from the pull down list. In this case the peripheral interface C11 must interconnect module G7 and telephonic communicator of control panel. When the input expander CZ6 interconnects module G7 and control panel, select the element **INTERFACE Cx** from the pull down list.
- Pull down menu **[IN1]**. It is intended for setting of input operation. When element **[Input mode]** is selected, input operates as input of NC type. In this case, module G7 transfers alarm message when input circuit is damaged. This mode is used for connecting **Panic Button**. When element **[Backup mode]** is selected, module G7 will operate as backup alarm communicator although it will be steady connected to GSM network. It will transfer reports of control panel via GSM/GPRS when state of input IN circuit changes in IN=1=NO (input IN should be wired to COM circuit). When state of input IN circuit changes in IN=0=NC, alarm transmission via GSM/GPRS is stopped.
- Pull down menu **[PGM]**. It is intended for setting of PGM operation. When element **[Remote Control SMS]** is set, it is possible to change state of PGM by sending SMS (see Annex 4.). When one of element **[Lost Primary channel]** or **[Lost Secondary channel]** or **[Lost Both channels]** is set, status of PGM changes during disconnecting time.
- Checkboxes **[GPRS, CSD, SMS ping time]**. Choose polling signal **PING** transmission channel to monitoring receiver (check require box) and enter a **PING** transmission period nearby checked box.
- Checkbox **[Test time]**. Choose a **TEST** signal transmission to monitoring receiver. Check the checkbox **[Test time]** and enter a **TEST** signal transmission period nearby checked box.
- Box **[Backup reporting after]**. Enter the number of attempts by which module tries to restore primary communication. Module will start to connect to a back-up channel for reporting if G7 doesn't restore primary communication.

- Check the box [**Save access code**] in order to PC will be able to remember the access code.
- When the box [**Read after connection**] is checked, configuration parameters will be automatically read after connection.
- Click the icon [**Restore**] in order to restore default parameters.

7.1.9 The window **Reporting/GPRS&GSM reporting** (see *Figure 10*) is intended for selecting of primary and back-up data transmission; setting both network and monitoring receiver parameters.

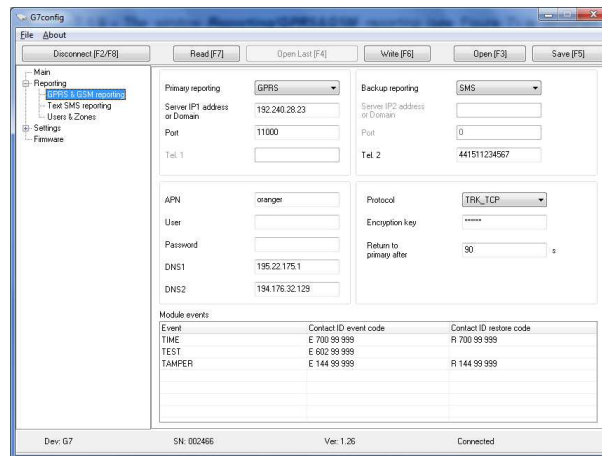


Figure 10. View of window GPRS&GSM reporting

- Pull down menu [**Primary reporting**]. Select primary data transmission channel. Choose one of these GPRS or CSD or SMS connections.
- Pull down menu [**Backup reporting**]. Select back-up data transmission channel. Choose one of these GPRS or CSD or SMS connections.
- If both boxes [**Server IP address or Domain**] and [**Port**] are active, enter IP address and Comport of receiver. If box [**Tel**] is active, enter GSM number of CSD/SMS receiver (rule: sign + is default, country code, code of network operator, local number).
- Enter access point name in the box [**APN**]. Fill fields [**User Name**], [**Password**], [**DNS1**] and [**DNS2**] by request of GSM/IP service provider or leave them blank.
- Pull down menu [**Protocol**]. Select data transmission protocol. It depends on monitoring receiver type.

It is recommended to choose one of these protocols TRK_TCP or TRK_UDP for enabling data transmission by protocols TCP/IP and UDP/IP. Transmitting by protocol TCP/IP, operating system forms message receiving acknowledgement whereas transmitting by protocol UDP/IP, receiving program sends message receiving acknowledgement.

- Textbox [**Encryption key**]. Enter a 6-digit data encryption code. Note: this key has to be the same as data decryption code entered into monitoring receiver.
- Textbox [**Return to primary after**]. Enter duration of connection to the back-up channel. When this time has expired, module will start to restore connection to primary channel.
- List [**Module events**] shows events description. These events are generated by the module G7. For modifying and activating alarm/restore codes of events *TIME*, *TEST*, *TAMPER*, double click on chosen cell and fill the appeared window [**Event code**] (see *Figure 11*).



Figure 11. View of window Event code

- 7.1.10 Sending a specified form SMS message from a phone, which number is in this list allows activation of GPRS connection between module and program *IPcom*. Fill the phonebook in the window **Settings/Wireless programming Phones** (see *Figure 12*).

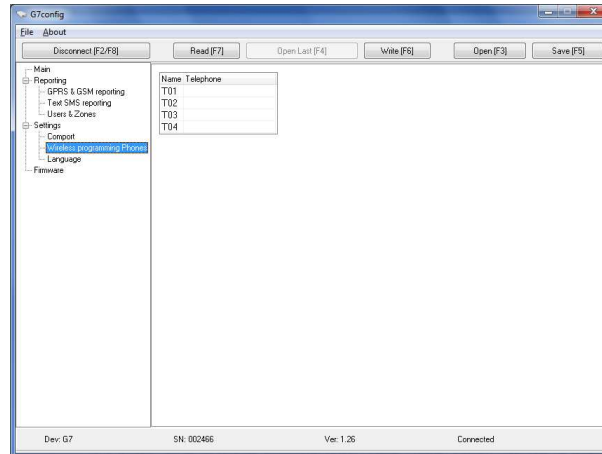


Figure 12 View of window *Wireless programming Phones*

- Enter up to 4 phone numbers [**T01**], [**T02**], [**T03**], and [**T04**] (rule: sign + is default, country code, code of network operator, local number. No dashes, no spaces).
 - If fields are left blank, this allows activation of GPRS connection by sending SMS out of every mobile phone.
- 7.1.11 The window **Reporting/Text SMS reporting** (see *Figure 13*) is designed for entering parameters when G7 transfers alarm messages to mobile phone by text SMS.

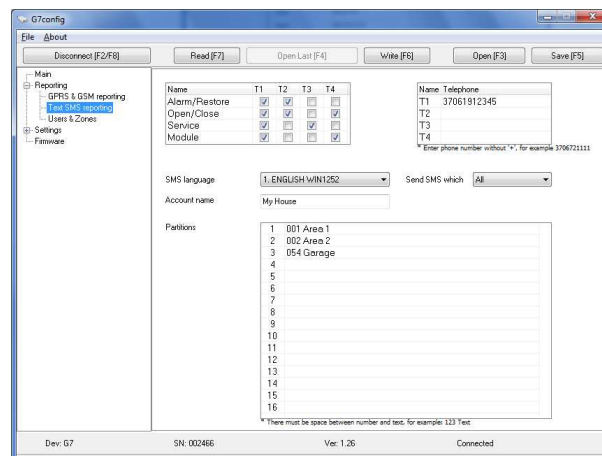


Figure 13 View of window *Text SMS reporting*

- Check the boxes in table Name and specify distribution of messages by their type and phone numbers of subscribers, i.e. to whom and what kind of messages should be transferred.

In example (see *Figure 13*) all messages are transferred into the phone of subscriber **T1**; Security system alarms/restores and messages about its arming/disarming are transferred into the phone of subscriber **T2**; Security system service alerts only are transferred into the phone of subscriber **T3**; Messages about Security system arming/disarming along with module G7 operating alerts are transferred into the phone of subscriber **T4**.

- Fill the phonebook while entering phone numbers **T1**, **T2**, **T3** and/or **T4**. Number entering rule is written below the phonebook.
- Head your object while writing name into the box [**Account name**]. This name will be shown in the texts of SMS messages. (i.e. *My House*).
- If Security system is divided into several independently arming sections (*Partitions*), head these sections and enter particular names into the list [**Partitions**]. Partition names will be shown in the texts of SMS messages. (i.e. *Garage*). There might be described from 1 to 16 partitions while entering these names along with exact three-digit serial number of particular partition of entire Security system (001-999).

Note: Row filling rule: three-digit serial number of particular partition (i.e. *003*, *032*, *754*, *999*), space, name of partition (i.e. *Garage*).

- Select the desirable message filter from the list [**Send SMS which**]. If the filter [**Described Only**] is selected, Security system events that described in the list [**Users & Zones**] (see Figure 14) will be sent to subscriber who is able to receive messages about Security system alarming/restoring. If the filter [**All**] is selected, Security system events' filtering is disabled.
- Pull down menu [**SMS Language**]. Select the alphabet of SMS messages patterns, which will be sent after control panel alarm.

7.1.12 Fill lists in the window **Reporting/Users&Zones** for finishing creation of SMS messages texts that will be transferred to mobile phone (see Figure 14).

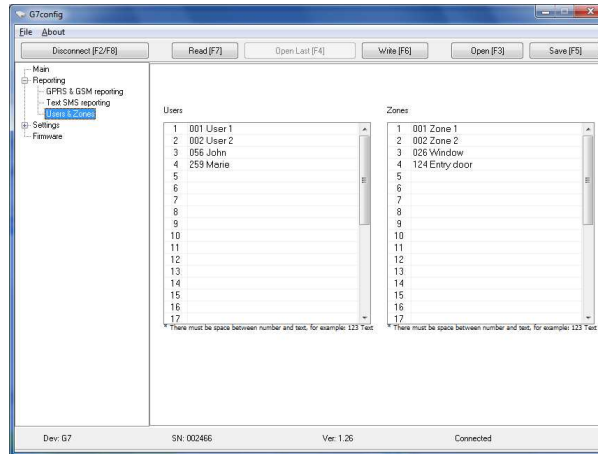


Figure 14 View of window Users & Zones

- Fill the list [**Users**]. Enter person names that are able to arm/disarm Security system by their personal codes. These true names will be shown in the texts of SMS messages (i.e. *John*, *Marie*). There might be entered from 1 to 32 person names while entering these names along with exact three-digit serial number of particular code of entire Security system (001-999).

Note: Row filling rule: three-digit serial number of particular code (i.e. 003, 032, 754, 999), space, person name.

- Head the security zones. Enter these names into the list [**Zones**]. These true names will be shown in the texts of SMS messages. (i.e. *Window*, *Entry door*). There might be entered from 1 to 32 zone names while entering these names along with exact three-digit serial number of particular zone of entire Security system (001-999).

Note: Row filling rule: three-digit serial number of particular zone (i.e. 003, 032, 754, 999), space, zone name.

7.1.13 Click on icon [**Write**] (or function key [**F6**]) for setting parameters into module G7 memory.

7.1.14 Click on icon [**Save**] (or function key [**F5**]) for saving parameters file with extension ".gsf".

7.1.15 Click on icon [**Disconnect**] (or function key [**F8**]) for disconnecting module G7 and program *G7config*.

7.2 Firmware on-site update

7.2.1 Run the configuration program *G7config*.

7.2.2 Connect module G7 to PC by using USB cable. Connect to additional power supply source if power supply is not sufficient.

7.2.3 Set parameters of comport in window **Main/Settings/Comport** (baud rate 115200 b/s, 8-N-1-N).

7.2.4 Click icon [**Connect/Disconnect**].

7.2.5 Click icon [**Read**] for reading existing parameters. Enter access code to allow configuration in the appeared window (default 1234).

7.2.6 Open the window **Main/Firmware** (see *Figure 15*).

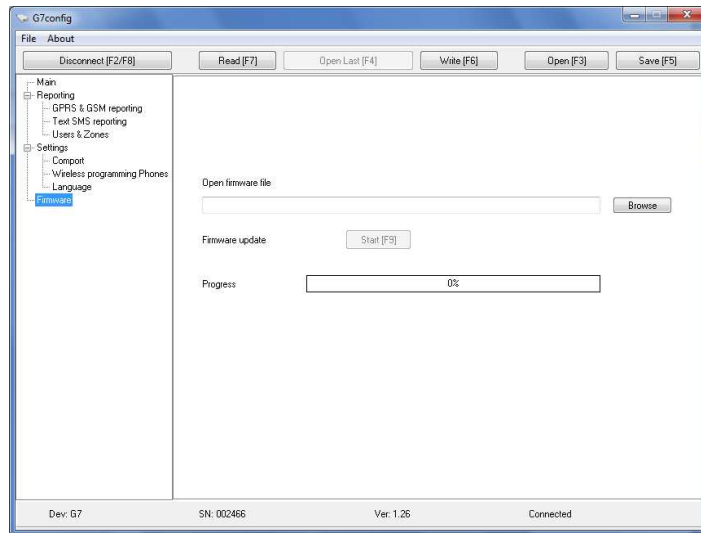


Figure 15. View of window Firmware

- 7.2.7 Click icon [**Browse**] and select the way to updating file with extension “.prg”.
- 7.2.8 Click icon [**Start**] or button F9 for running updating process.
- 7.2.9 Appeared inscription *Firmware version is up to date* means the firmware written into primary memory.
- 7.2.10 Click icon [**Disconnect**] or button F2.
- 7.2.11 Pull USB cable out of USB plug of module G7. Connect USB cable to module G7 once again. Indicator LED1 starts green flashing and LED2 starts red flashing.
- 7.2.12 Indicator LED1 yellow will switch on and LED2 switch off when process of downloading into ROM has expired. Now module G7 has already changed its firmware version.
- 7.2.13 Click icon [**Disconnect**] if configuration is finished.

7.3 Setting on operation parameters remote over GPRS.

7.3.1 Activate GPRS connection between program *IPcom* and the module G7.

Remote configuration can be done by using program *G7config*, when there is an active GPRS connection between program *IPcom* and the module G7. Send an SMS message in appropriate structure to activate GPRS connection. Module will only respond to SMS messages if it receives a message from a phones which numbers are entered into *Main/Settings/Wireless programming Phones* list. If the discussed above list is blank, module will respond to SMS in an appropriate form structure any mobile phone. When G7 receives this message, it activates the on-line GPRS connection with program *IPcom*.

SMS structure:

```
CONNECT_space 1234_space SERVER=100.100.100_space PORT=1000_space APN=provider_space
USR=user_space PSW=psw_space ENCR=enc
```

Description:

- write the initial command (word “CONNECT”),
- write the 4-digit configuration access code (default 1234),
- write the word “SERVER=” and receiver IP address from which the configuration will be done (instead of symbols “100.100.100.100” written in example),
- write the word “PORT=” and Comport of receiver from which the configuration will be done (instead of “1000”),
- write the word “APN=” and access point name (APN) (instead of “provider”),
- write the word “USR=” and APN User name if required by the provider (instead of “user”),
- write the word “PSW=” and APN Password, if required by the provider (instead of “psw”),
- write the word “ENCR=” and 6-digit data encryption code (default 123456) (instead of “enc”).

Notes:

- The word `space` means space interval between symbols.

- If provider does not require **APN**, **User name** and **Password**, send the SMS message by such structure:

CONNECT_space 1234_space SERVER=100.100.100.100_space PORT=1000_space APN=_space USR=_space PS W=_space ENCR=enc

- 7.3.2 After the SMS has been sent, open the main window of program *IPcom* and select the row of module whose parameters will be set (see *Figure 16*).

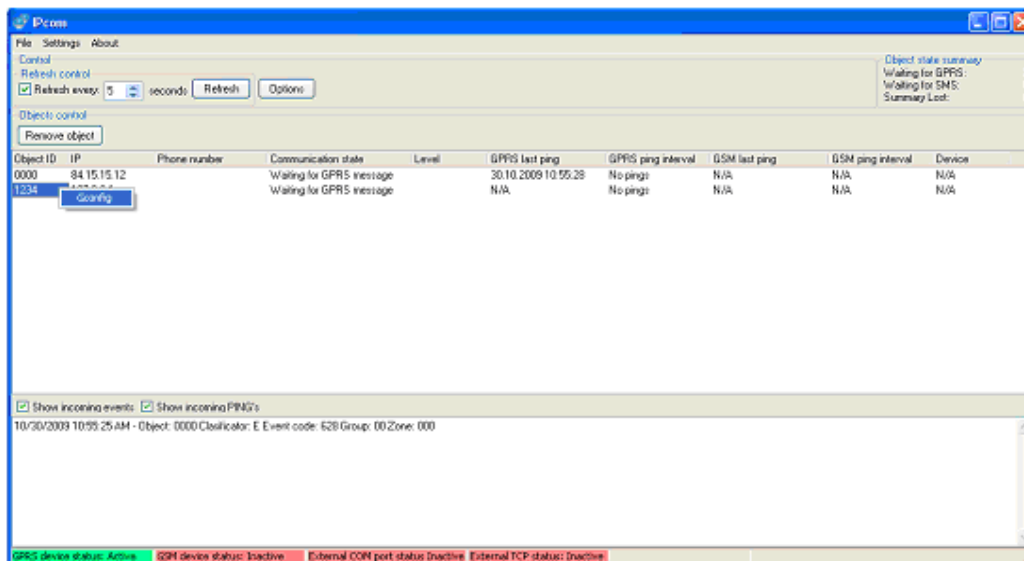


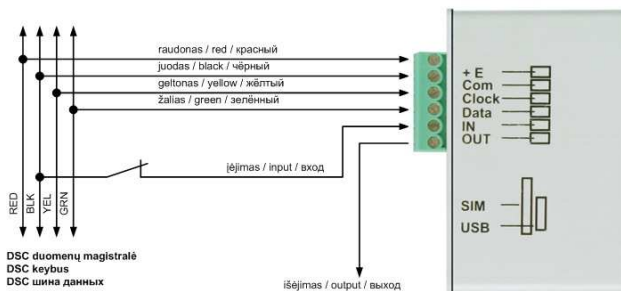
Figure 16 View of program *IPcom* window

- 7.3.3 Run configuration program *G7config* by right clicking on the appeared icon [**G7config**] (see *Figure 16*).
- 7.3.4 Click icon [**Connect**] in the tool bar when the *G7config* window will appear. Word Connected/Disconnected indicates the state of GPRS connection.
- 7.3.5 Configuration procedure is the same as when module is connected to PC on-site using USB cable. Filling fields and selecting parameters is necessary (see down from chapter 7.1.7).

7.4 Firmware remote update.

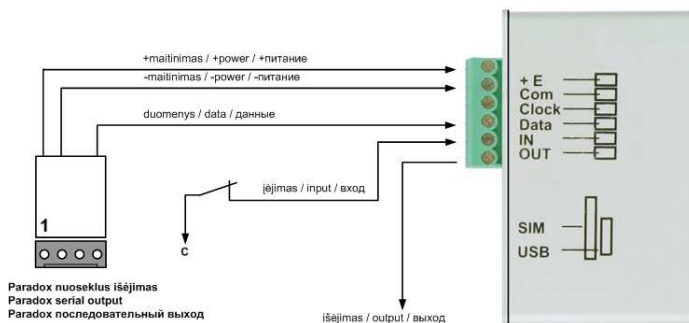
- 7.4.1 Activate GPRS connection between the module G7 and program *IPcom* (see chapter 7.3.1).
- 7.4.2 Run configuration program *G7config* (see chapter 7.3.1).
- 7.4.3 Click icon [**Connect/Disconnect**].
- 7.4.4 Click icon [**Read**] for reading existing parameters. Enter access code to allow configuration in the appeared window (default 1234).
- 7.4.5 Open *G7config* window **Firmware** (see *Figure 12*).
- 7.4.6 Click icon [**Browse**] and select the way to updating file with extension “.prg”.
- 7.4.7 Click icon [**Start**] or button **F9** for running updating process.
- 7.4.8 Appeared inscription *Firmware version is up to date* means the firmware is written into primary memory.
- 7.4.9 Click icon [**Disconnect**] when **Process** bar fills up.
- 7.4.10 Wait until the new firmware will be written. Process takes 1-3 minutes until module connects again.
- 7.4.11 Configure the module G7 (see chapter 7.1.8) or click icon [**Disconnect**] if configuration is finished.

8 Annex 1. Wiring diagrams



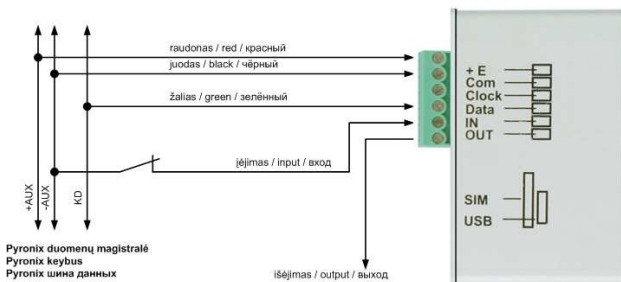
Wiring diagram 1

Compatible with *DSC* control panels (PC1616, PC1832, PC1864 PC585, PC1565, PC5020).



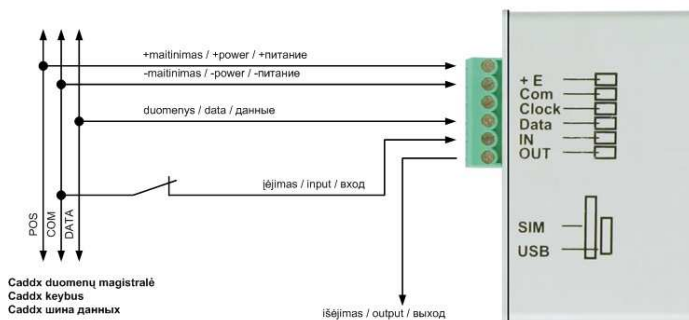
Wiring diagram 2

Compatible with *Paradox* control panels (SPECTRA SP5500, SP6000, SP7000, 1727, 1728, 1738, MAGELLAN MG5000, MG5050, DIGIPLEX EVO48, EVO192, EVO96, NE96, ESPRIT E55, 728ULT, 738ULT).



Wiring diagram 3

Compatible with *Pyronix* control panels (MATRIX 424, MATRIX 832, MATRIX 832+, MATRIX 6, MATRIX 816).



Wiring diagram 4

Compatible with *GE Caddx* control panels (NX-4, NX-6, NX-8).

9 Annex 2. Module G7 events

Event description	Event code	
	Alarm	Restore
Test message	E 602	-
Timer is set yes/no	E 700	R 700
Connection with control panel failed/restored	E 702	R 702
PING by SMS	E 750	-
Connection with GSM network failed/restored	E 751	R 751
PING via GPRS	E760	-
GPRS connection failed/restored	E 761	R 761
PING via CSD	E 770	-
Input alarm/restore, while it is set as Standard input	E 144 99 999	R 144 99 999

10 Annex 3. Configuration program *G7config* installation

Configuration program *G7config* requires OS *MS Windows 2000 / XP / Vista / Win7*.

Download file *G7config_setup.exe* from www.trikdis.lt and follow the installation wizard.

USB driver installation. *Microchip* USB drivers are required for module G7 USB connection to PC. If *Microchip* USB driver has never been installed to PC before, copy file *mchpcdc.inf* from www.trikdis.lt. *Windows New Hardware Wizard* window will appear. To finish the drivers' installation choose "Yes, this time only", click Next and follow the installation wizard.

11 Annex 4. SMS commands

Text of single SMS	Definition
OUTPUT 1234 ON	Command "set NC type of PGM"
OUTPUT 1234 OFF	Command "set NO type of PGM"
OUTPUT 1234 PULSE=005	Command "set NC type of PGM for eg. 5 seconds"
RESET 1234	SMS is intended for restarting the module G7 remotely
	The sequence of numbers 1234 is a default access code (see chapter 7.1.6). Use the code You set

12 Annex5. SMS messages description.

Control panel forms event in Contact ID code	G7 transforms event into Contact ID code	Description	
		Text in single SMS message	Meaning in Contact ID 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