The GC-61 GSM communicator
Installation manual

The GC-61 communicator is designed for communication with an alarm receiving centre via a GSM network. The communicator receives data from a control panel via a simulated telephone line. Report codes are transmitted from a control panel to the GC-61 in Contact ID format. A SIM card determines the GSM network used. This manual is valid for version HZ61008.

The GSM module, when installed in the alarm control panel, enables:

- Data transfer to one or two Alarm Receiving Centres (ARC)
- Remote control and programming of the communicator via SMS instruction messages from a mobile phone or from Jablotron's SMS website
- Programming of the communicator via Jablotron's website www.GSMlink.cz
- Phone calls using a telephone set attached to the communicator (via the GSM network)
- An SMS terminal can be used for the easy and convenient receiving and sending of SMS messages

1. Installation

The communicator can be installed into an alarm control panel or into a metallic box with a TAMPER switch.

a) **Disconnect** the control panel's **power** supply (both AC and backup battery). If the control panel has been previously used before this installation, enter programming mode before disconnecting the power supply.

b) We recommend you to **disable the SIM card PIN code protection** before you insert it into the dialler. Use a mobile phone to perform this task (if you have a NOKIA phone, select: Menu, Settings, Security settings, PIN code request, Off). If you insist on using a PIN, enter PIN 1234.

c) **Open the SIM card holder** (by sliding it in the direction shown in the figure 1 below and **insert the SIM card** into the holder **and close it** by sliding it back.

d) Attach the communicator into the control panel case or metallic box

e) Connect the **GSM antenna** (never switch the power supply on without a proper antenna)

f) Connect a **telephone set** to the PHONE connector (or to the PHONE terminals) together with the SMS terminal if desired. Only one telephone set can be attached to the dialler. The PHONE output of the dialler should never be connected to any other telephone network.
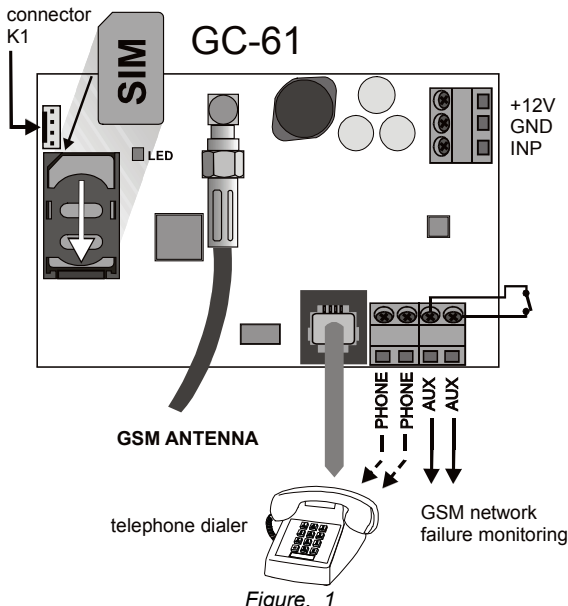

Figure. 1

g) The AUX output is switched on if the GSM network is not available for 15 minutes. AUX can be used as an alarm terminal. (normally open dry contact, max. 100mA / 60V) – see the figure 1

h) It is possible to connect an external device (tamper, alarm output etc.) to the INP input. When activated (by disconnection from GND), then an activation event will be sent to the ARC (in CID protocol "1") and a deactivation event will be sent after reconnecting INP to the GND.

i) **Connect the control panel's power supply.** The LED will start flashing once every 2 seconds when it has successfully registered to the GSM network (within 1 minute).

If the LED starts flashing quickly, the module was not able to connect to the GSM network. In this case, switch off the control panel power. Remove the SIM card and insert it into a mobile phone to confirm whether it is possible to connect to the network at this location. You can also select a desired network manually if this option is available. Ensure that the SIM card does not request a PIN code (or the PIN code is set to 1234) Once the SIM card works in the mobile phone, insert it back into the GSM dialler and repeat step i). If the GSM signal is weak in this area, change the location of the GSM antenna before you try to re-establish the connection. The level of GSM signal can be checked by the SMS command "DINFO".

j) After connection to the GSM network you can call directly from the attached telephone.

k) Set all the parameters for Alarm Receiving Centre communication.

l) **Programming of the GSM dialler** is possible by entering programming sequences via a mobile phone or an attached SMS terminal. The most convenient programming method however is via the www.GSMlink.cz website.

2. Alarm Receiving Centre communication setting:

The dialler can report events to two different Alarm Receiving Centres (ARCs). Each ARC has its own setting sequences that differ in parameter **p** (p=1 for ARC1 and p=2 for ARC2). Primary and backup telephone or IP numbers can be set for each ARC. The dialler uses Ademco Contact ID format and it is also equipped for the future use of GPRS data transfers. The product is ready to report events to an ARC based on either landline or GSM data transfer.

The GC-61 re-sends original report codes – the content is not modified except the Account ID. The communicator forwards original CID protocol report codes with separator constants 18 and 98 to the ARC (the constants are converted to 18 during forwarding). Otherwise, their contents are not altered except for the installation number, which is set according to communicator settings. The time of a sent event is generated by the GC-61. The system time is set when the first SMS is received by GC-61.

Every SMS command must begin with a service access code. Several setting sequences can be sent within a single SMS. Sequences must be separated by a comma or space.

2.1. Digital dialler setting

The digital dialler must be set to:
    format : **Contact ID**
    ARC telephone number (DTMF): **002**

2.2. GPRS setting

GPRS data communication can be used for transmitting events to an ARC or for connection to the web page www.gsmlink.cz (see section 3). GPRS must be activated on the SIM card. It is also necessary to set the name and APN in the communicator (for detailed information ask your GSM provider).

GPRS xxx,yyy,zzz,

where:

xxx	is the APN
yyy	is a the user name (when not used, insert a space)
zzz	is a password (when not used, insert a space)

Example: If the name and password are not required and the APN is "internet", then the sequence is: **0000 GPRS internet, , ,**

2.3. Setting the service remote access code

PG0 xxxxxxxx

Where:

    xxxxxxxx is a numerical code of 1 to 8 figures
Default setting: 0000 (4 zeros)

2.4. Entering ARC phone numbers (IP addresses)

Primary and back up telephone numbers can be entered for each ARC:

Primary number:	**PG1p xx....x**
Back up number:	**PG2p xx....x**

where:

| | **p** | 1 = ARC1, 2 = ARC2 |
| | **xxx...x** | is a telephone number (max. 20 digits) or an IP address plus port beginning with a #. The IP plus port must be specified by exactly 4x3 + 5 = 17 digits using zeros for left-hand bit stuffing, if necessary. |

Examples:

(a) 123456789 can be entered as the ARC2 primary number by entering: **0000 PG12 123456789.**

(b) IP address 192.168.1.123 together with port 8080 are set as the ARC1 primary number by entering **PG11#192 168 001 123 08080**.

Default setting: No phone number or IP address is set.

2.5.   Account ID setting

An ARC uses this ID number for alarm system identification:

PG3p zzzz

where:

| | **p** | 1=ARC1, 2=ARC2 |
| | **zzzz** | is the account ID number (z = numbers from 0 to 9 or A=F1, B=F2, C=F3, D=F4, E=F5 a F=F6, hexadecimal) |

Default setting: *ID is* **0000** *for both ARCs*

Note: When an Account ID for ARC1 and ARC2 are not set, it will be set according to the first received event from a control panel.

2.6.   Selecting the ID number

It is possible to select the ID number of the GC-61 or the ID number of the attached landline communicator for transmission to an ARC.

PG94 x

where:

x=0   The ID number of the GC-61 is used for alarm system identification.

x=1   The ID number of the attached landline communicator is used for alarm system identification.

Default setting*: x=0*

Notes:

The setting can only be done by SMS.

The events from the GC-61 (e.g. triggering its own input), are transferred with an ID number according to the PG3p zzzz settings.

2.7.   Format setting

This sequence is used to select the communication format:

PG4p x

where:

| | **p** | 1=ARC1, 2=ARC2 |
| | **x** | is the protocol type – see table |

Default setting*: Contact ID for both ARC's*

Protocol	Type	x
Contact ID	DTMF	0
Jablotron SMS	*SMS type*	1
Jablotron GPRS	*GPRS type*	2

2.8.   Disabling ARC communication

If you need to temporarily disable all ARC reporting, you can do this, while retaining your settings:

PG5p 1 all reports to ARC *p* enabled

PG5p 0 all reports to ARC *p* disabled

where:

| | **p** | 1=ARC1, 2=ARC2 |

Default setting: *all ARC reports disabled.*

2.9.   ARC 2 as a back-up for ARC1

ARC 2 can serve as an optional back-up for ARC data transfer if ARC1data transfer fails. When the first event is transferred to the back-up monitoring station (ARC2) a "tel. line #1 communication fault" event will be reported.

PG62 0 ARC1 and ARC2 are two independent stations

PG62 1 ARC 2 works as a transfer back-up

When 081 is selected, the ARC 2 settings are used only if ARC 1 transfer fails .

Default setting: two independent ARC's.

2.10.   ARC re-dialling interval setting

If the dialler is activated it attempts to make a connection (alternating between the primary and the back-up telephone number). If it is not possible to make a connection, a dialling pause is initiated. After this interval the dialler will re-attempt to make a connection. The interval can be set in the following way:

PG7p t

where:

| | **p** | 1 = ARC1, 2 = ARC2 |
| | **t** | is the pause duration x 5 minutes (i.e.1 = 5 minutes, 2 = 10 min,..., 9 = 45 minutes etc) |

Default setting*: 5 minutes for both ARCs*

2.11.   Interval of periodic test

Periodic tests are sent by the GC-61. These events do not depend on a connected control panel. The following sequence sets the time interval between periodic test messages:

PG8p hh:mm

where:

	p	1 = ARC1, 2 = ARC2
	hh	is hours
	mm	is minutes

Default setting*: the periodic test is not sent – 00:00 is set*

2.12.   INP input CID code setting

When the INP input is used for transmission to an ARC, it is necessary to set CID code for the required event. Enter the following sequence:

PG91 xxxyyzzz

where:

	xxx	is the event (e.g. alarm – 130, tamper – 137, arm/disarm – 401 etc.)
	yy	is the number of the subsystem
	zzz	is the number of event source

Example*: if you enter PG91 13001123, then on activation of the INP input, the report –" alarm to subsystem 01, event source 123" will be sent to the ARC.*

Default setting: no report is transferred.

2.13.   Phone number prefix setting.

In some countries it is necessary to use "00" instead of the "+" character as a prefix at the beginning of a phone number to be able to send SMS message. If required, enter this sequence:

PG92 xx

Where:

| | **xx** | is the prefix which will be used instead of "+" |

Enter PG92 to reset to the default setting.

Default setting: "+".

2.14.   Reset to the default setting

When the SMS "**reset**" is sent to the GC-61, the factory default setting will be restored. A hardware reset can also be performed as follows:

Switch off the power supply, connect the two middle pins of the K1 connector and restore the power supply. The hardware reset is indicated by fast LED flashing.

2.15.   Reset – GSM module

When the command **gsm** is sent to the GSM module it will disconnect from and then reconnect to the GSM network. This function is useful when it is necessary to switch the mobile device off and on (e.g. when the SIM card has been unblocked by the mobile operator).

2.16.   Appliance remote control by SMS (AUXON, AUXOFF)

These commands can be used to control the AUX output (e.g. switch a telephone line to the control panel). The switching event is sent to an ARC. The AUX is also switched on if a GSM network is not available for 15 minutes.

To switch on the AUX output, send the SMS text: **AUXON**

To switch off the AUX output, send the SMS text: **AUXOFF**

3. Web server remote access

3.1. Settings via the GSMLink web server

The GSMLink server allows a user to read and change the control panel and dialler configurations. Data transfer is done by sending an SMS or by GRPS.

The number of SMSes sent is optimised to minimize costs. GPRS data transfer can also be used, but must be activated on the SIM card.

3.2. GSMLink Website Registration

The www.gsmlink.cz website: To register your system use the registration code printed on the warranty certificate (the code has the form xxxx-xxxxx-xxxx and it is unique to each system).

You can ask for the registration code by using the **DINFO** SMS command. After sending the SMS from your mobile phone: (remote access code) DINFO "**0000 DINFO**", you will receive an SMS reply with the registration code and the level of the GSM signal.

4. User features of the GSM communicator

The GC-61 can be also used as a GSM network gateway. It cannot be used as an ARC communicator in this mode. The 10k resistor must be removed from PHONE terminals.

4.1. Phone calls from the attached telephone set

After the GSM module is connected to the GSM network, an attached phone can be used to make calls. If you pick up the phone, you will hear a dial tone. Simply dial the number you want to call (as if you are dialling from a normal fixed line phone). You can also dial the GSM communicator's phone number from another phone, and its attached phone will ring as a normal land line phone would.

Note: some telephone sets are sensitive to the GSM radio signal. For this reason you may hear a buzzing noise in the telephone receiver when calling. If the noise is disturbing, change the location of the phone set (try to keep it as far as possible from the GSM dialler antenna). Usually it is possible to find a suitable location for the phone with a minimum level of interference.

4.2. Function of the attached SMS terminal

The communicator has a telephone connector, which can be used for connection to an MT-77 Piccolo terminal. A detailed description is in the separate manual enclosed with the Piccolo terminal.

Setting:

- For sending SMSes to mobile phones it is necessary to set the SMS centre 1 to "1111".
- By sending SMSes to telephone number "001", the control panel can be controlled using SMS instructions

Notes:

When displaying the caller's telephone number (CLIP), the telephone number is shown in international format (e.g.00420212345678).

5. Additional information

5.1. Procedure for report data transfer:

If the communicator is activated to send reports it will:

- Send information to ARC1 (to the primary number, if it fails the backup number will be used); this process is repeated twice.
- Send information to ARC2
- If communication with the ARC is unsuccessful, the communicator will try to send it again after a pause set by sequence PG7. The GC-61 has a memory for 128 events.

5.2. LED indicator

- If the LED is flashing, the dialler is not registered to the GSM network
- If the LED is flashing in short bursts:

Once in 2 seconds =normal status

Twice in 2 seconds = the balance resistor has not been detected

- If the LED is on – communication with a GSM network is occurring.

5.3. ARC communication

If the GC-61 is being used for the first time or any parameters have been changed then the first successful communication with an ARC will result in a short ring on the connected telephone set (if there is one).

When the GC-61 receives 10 report codes from the control panel then the GC-61 will suspend communication with the control panel and the received report codes will be sent to an ARC. The command **MO** can be used to read the current status of the GSM dialler. The dialler will reply with an SMS showing the level of GSM signal, GPRS status, and whether data transfer to ARCs is successful or not.

Example: After sending the MO instruction, the communicator will reply with the SMS: Alarm system reports: Control panel status: GSM:7,GPRS OK,MS1 NOT,MS2 OK

5.4. Setting SMS

When an SMS command has been processed correctly, the GC-61 sends back a confirmation SMS e.g.:
„ Settings stored: PG11 123456789"
Or in the case of error:
„ Wrong settings"

5.5. Telephone line supervision

When a 10 kΩ resistor is attached to the **PHONE** terminals, the telephone line is balanced. When the balancing resistor is connected to the control panel, the connection between the GC-61 and the control panel is supervised. If the telephone line is disconnected for 30 s, the GC-61 will send a report to an ARC.

6. Specification

Power supply	*12V DC*
Stand-by consumption	*50 mA*
Maximum consumption (during communication)	*1 A*
Operating bands	*E-GSM / GPRS 900/1800MHz*
Output power	*2 W for GSM900, 1 W for GSM1800*
AUX terminals	*dry contact, max. 60 V / 100 mA*
Environmental classification (−10 to 40°C)	*II*
EMC	*ETSI EN 301489-1, ETSI EN 301489-7 EN 55022, EN 5030-4*
Emissions	*ETSI EN 301419-1 and EN 301511*
Caller identification (CLIP)	*ETSI EN 300 089 V3.1.1(2000-12)*

JABLOTRON ALARMS a.s. hereby declares that the GC-61 is in a compliance with the relevant Union harmonisation legislation: Directives No: 2014/53/EU, 2014/35/EU, 2014/30/EU, 2011/65/EU. The original of the conformity assessment can be found at www.jablotron.com - Section Downloads.

Note: Dispose of batteries safely depending on battery type and local regulations. Although this product does not contain any harmful materials we suggest you return the product to the dealer or directly to the manufacturer after use.

7. A brief list of programming instructions

Function	Sequence	Available setting	Default setting
APN setting for GPRS communication	GPRS xxx,yyy,zzz,	xxx is the APN, yyy is a user name, zzz is a password	Internet
Service access code	PG0 xxxxxxxx	xxxxxxxx is the code, 8 digits maximum	0000
ARC main telephone	PG1p xxxxx	p =1 for ARC1, p =2 for ARC2 xxxx = tel. number (max. 20 digits) or	Erased
ARC back up telephone number	PG2p xxxxx	a # followed by an IP address plus port which must be specified by exactly 4x3 + 5 = 17 digits using zeros for left-hand bit stuffing, e.g. PG11#12304506708908080	Erased
Account ID	PG3p zzzz	p =1 for ARC1, p =2 for ARC2 zzzz is the account ID, 8 digits maximum	Erased
Selecting the ID number	PG94 x	x=0 the ID number of the GC-61 is used for alarm system identification. x=1 the ID number of the attached landline communicator is used for alarm system identification.	the ID number of the GC-61 is used
Communication format	PG4p x	p =1 for ARC1, p =2 for ARC2 x=0…Contact ID, x=1...Jablotron SMS, x=2...Jablotron GPRS	Jablotron GPRS
ARC Report switch	PG5p y	p =1 for ARC1, p =2 for ARC2 y=0... report is disabled, y=1...report is enabled	y=0
Use ARC2 as a backup of ARC1	PG62 y	y=0...two independent ARCs, y=1...ARC2 is backup for ARC1	y=0
ARC redialling pause	PG7p t	p=1 ARC1, p=2 ARC2 t=1 to 9 (x 5minutes)	5 minutes
ARC connection surveillance report frequency	07 p hh mm	p=1 ARC1, p=2 ARC2 hh mm = hours minutes, 9999=24hr. after last report	24hr. after the last report
INP input CID code setting	PG-91 xxxyyzzz	xxx is a report code, yy is the number of the subsystem, zzz is the event source	Erased
Phone number prefix setting	PG-92 xx	xx is the phone number prefix	"+"
AUX switch control	AUXON, AUXOFF	AUXON switches the AUX output on, AUXOFF switches the AUX output off	-

8. Wiring diagram for the GC-61 – Security grade 3

Fig. 2 shows the wiring diagram for the GC-61, which is connected to a control panel. The GSM simulated line is the primary communication link with a telephone line serving as a backup using the AUX output (see the chapter 2.15). The system checks the connection between the GC-61 and the control panel by means of the tamper wiring. In addition the telephone line is balanced by a 10 kΩ resistor. The resistor is attached to the PHONE terminal.
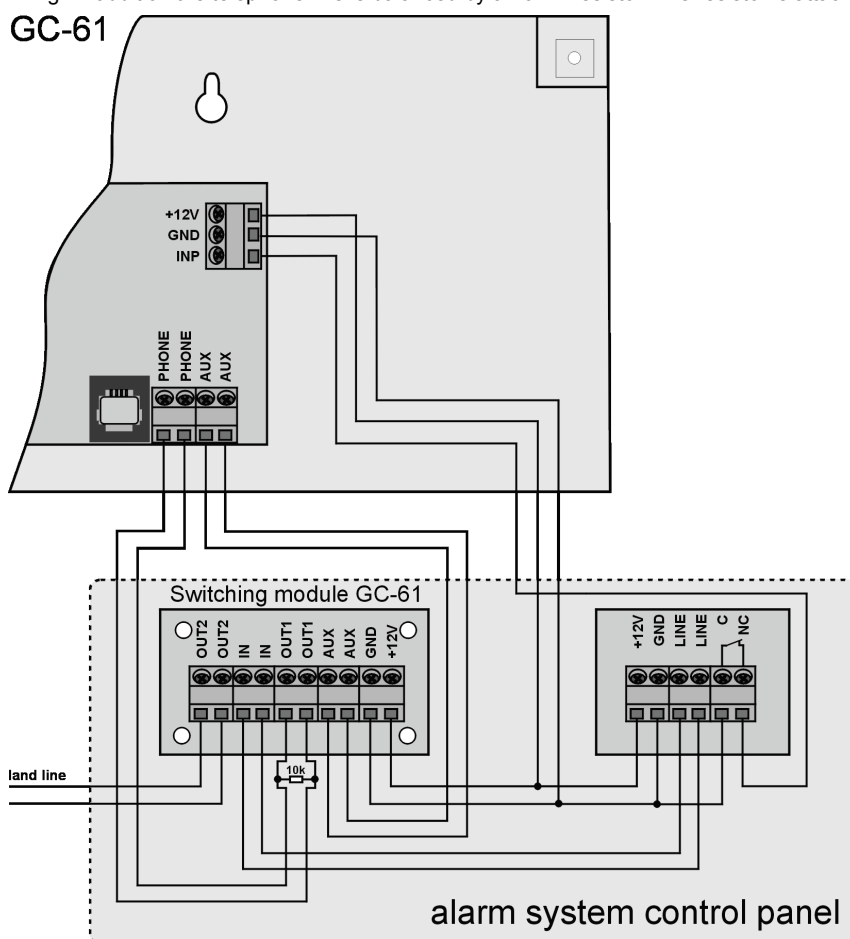

Figure. 2