GSM Remote Monitoring

Operating and installation instructions

GC 055

GSM, GPRS Programmable Communicator
Transmits input conditions/Controls outputs
Measures analogue data
Access control system/Dallas chips
Audio input / output

LEVEL®
SYSTEMS

Contents

1. Caution

GC 055 is a device for wireless data transmission, its activity may affect other electronic devices that are prone to interference. The functionality of GC055 can also be affected by sources of electromagnetic interference (contactors, relays) located near the device.

Only qualified personnel may install or repair this product. The device is not waterproof. Operation is possible only in a dry environment.

Disclaimer:
Use of the GC 055 communicator is at the discretion of the user. LEVEL, Ltd. shall not be liable for any damage arising from the use of this communicator.

2. Safety

We recommend you follow these tips in order to prevent damage to property or injury to persons. Do not install or use in areas where the use of radio equipment is forbidden.

Installation and configuration can only be performed by qualified personnel, or a person who has sufficient knowledge of this equipment and its safety requirements. All related (connected) devices, PC, power supply and peripherals must be in accordance with the requirements of the EN 60950-1 standard.

Place the unit so that the LEDs are visible to the operator. These LEDs provide information about the operating modes and status. In the case of equipment failure, switch off and call the qualified personnel.

3. Description

GC 055 Communicator is a compact alarm, monitoring and control unit for electronic devices with SMS, GSM / GPRS communication and the possibility to control by calling.

The unit is programmed using a PC and software control panel via a USB connector It contains 7 binary inputs (one is internal and monitors power supply voltage, inputs 1 to 4 can be used as analogue), 3 outputs - open transistor collector (outputs 1 and 2 inputs are combined with binary inputs 6 and 7), one power relay (230 V / 5 A), one LED indicator on the panel controllable by program, Dallas bus for connection of access chip/card readers, thermometers and input/output expanders.

Examples of use:
GSM detector - conveys information about changes of input state via SMS
GSM home alarm - alarm with GSM communicator
GSM remote control - such as opening gates by ringing
Access identification system - using the Dallas chips for registering attendance
Measurement and control of analogue values
The reading of consumption meters and status via SMS / GPRS

4. Technical Parameters

Power supply	10 to 24 Vss / 1A, power consumption <30 mA at 12 V
GSM	850, 900, 1800, 1900 Mhz SIM card Plug-in 1,8 V (only the newest type) Antenna connector GSM - SMA
Communication	Calling, SMS, CSD data, GPRS
SMS	Outgoing SMS alarm SMS queries the status of digital and analogue inputs SMS configuration change SMS launch on operators behalf
CSD data (modem connection)	Edit configuration Reading measured values Reading the event memory Control of outputs Upgrade firmware
GPRS connection	GPRS Class 10 support for static and dynamic IP and VPN UDP protocol, security option - AES 128-bit All functions such as CSD data
Memory report	Flash 512 kB
7x binary inputs	Input max. 30 Vdc (inputs 1 to 4 can be used as analog inputs 0-10 V)
4x outputs	Output current max. 0.5 A (outputs 1 and 2 are combined with binary inputs 6 and 7)
1x LED outputs	Can be controlled by configuration
1x Dallas input	Max. connection wire length 100 m
Audio input	3,5 mm jack, 50 kOhm, 2,2 V
Audio output	3,5 mm jack, 16 Ohm, 3,2 V
USB	Mini USB for connecting to PC - configuration, upgrade firmware
Real time clock RTC	Date and time battery back up
Protection class	IP 20
Measurements	52 x 90 x 57 mm
Weight	150 g
Design	Plastic - attachment at TS 35 DIN-rail
Working temp. range	-25 to +65 °C

5. Design

The GC 055 design is in a plastic box suitable for mounting on a TS 35 DIN-rail. If the GC 055 is placed in a metal cabinet, the GSM antenna must extend outside the cabinet. The antenna cable cannot be adjusted. If the length of the antenna is insufficient, order an antenna with a longer cable.

5.1. Assembly accessories and optional extras

Accessories included with GC 055

| 13007040 | GC 055, GSM antenna 3dB SMA magnet 5m cable |

Accessories which can be purchased

SA 012 830	Power adapter for DIN rail (10-14VDC / 1,25 A) 1.5 module width
CB 170 020	Mini USB cable
ED 060 500	Identification reader for Dallas chips
ED 060 550	Dallas identification chip
ED 060 100	Dallas temperature sensor (-40 to 130°C)
ED 055 002	Backup battery for DIN rail (Lipol,12V, 1,2Ah), width 3 modules
ED 055 208	Expander 8 inputs, gnd activation, width 3 modules
ED 055 218	Expander 8 inputs, +voltage activation, width 3 modules
ED 055 308	Expander 8 outputs, open collector, max. 200 mA, width 3 modules
ED 055 314	Expander 4 relay outputs, 230 V / 5 A

5.2. Dimensions

The width of the GC 055 is three modules on a TS 35 DIN rail.
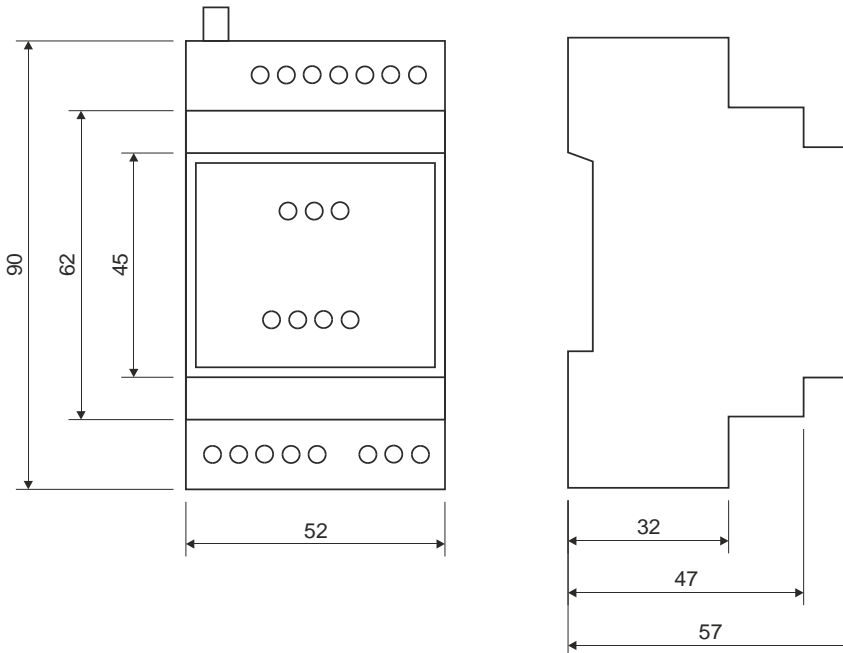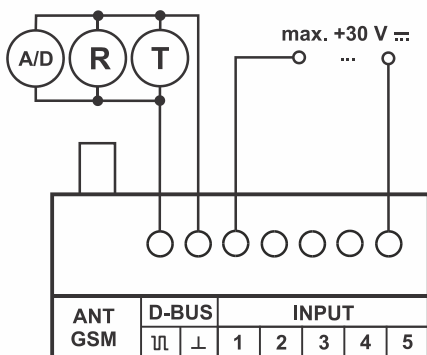
5.3. Front panel
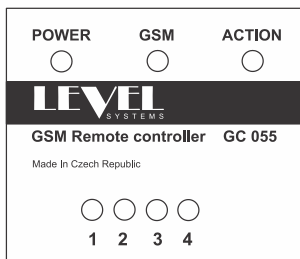
The front panel of GC 055 is equipped with seven LED indicators. The 'Action' LED is controlled by the configuration. The 'GSM' LED indicates the GSM status (Section 7.2).

LED 1-4 indicates state of output - the LED is lit when the output is active, the output is earthed.

6. Connection of inputs - outputs

## 6.1. Connection to the upper row of connectors

The top part of GC 055 is equipped with an SMA type GSM connector. If the GC 055 has a metal casing, then the GSM antenna should be outside the enclosed space.

From the Dallas bus it is possible to simultaneously connect up to 10 input devices (thermometers, A/D converters, expanders) and an unlimited number of readable access chips. It is necessary to maintain the polarity of the connected device.

Inputs 1-4 are analogue voltage with a measuring range of 0 to 30V DC maximum.

6.2. Connection to the lower row of connectors
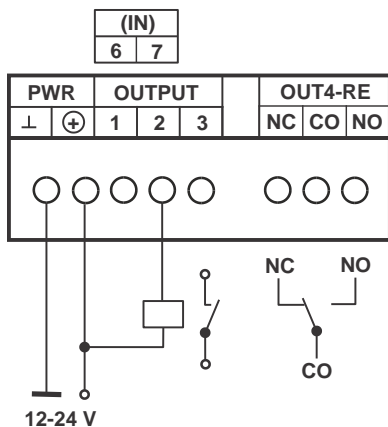
The lower part is equipped with connectors for connecting a supply voltage in the range between 12-24V DC.

Outputs in the active state are earthed (log. 0). The maximum allowable output current is 0.5 A. The auxiliary relay to the output is for connecting against the (+) terminal of the power supply. Output 4 may be the same as GC 075 and fitted with an internal relay. Load capacity of the relay is 230V / 5 A.
Outputs 1 and 2 can be used as analogue inputs No. 6 and 7

7. Installation - Configuration

7.1. Installing the SIM card

Before inserting the SIM, disconnect the power to GC 055. Inserting the SIM card into the device whilst in use is not advised.

Use the notches on the sides of the front panel and a suitable tool (weak screwdriver) to gently pry open the cover of the front panel. Open the SIM card holder using slight pressure in the direction of the arrow (open). Place the SIM into the open door of the holder so that the notch on the SIM matches the recess in the substrate holder. Close the SIM card holder and secure with gentle pressure in the direction of the arrow (close). The SIM card must not be locked with a PIN or the account frozen by the provider. It must also have sufficient credit and possibly with GPRS data services activated.

7.2. LED Indicators

| GSM – Yellow LED	
0,5 s / 0,5 s	No GSM signal or no SIM card
1× short / 10 s	Low power mode – No GPRS context
1× short / 4 s	Normal power mode – No GPRS context
1× short / 2 s	Moving to low power mode – No GPRS context
2× short / 10 s	Low power mode – Linked to GPRS
2× short / 4 s	Normal power mode – Linked to GPRS
2× short / 2 s	Moving to low power mode – Linked to GPRS
ACTION – Red LED	
	Controlled by the configuration
POWER – Green LED	
1× short / 2 s	Power on
OUT – Yellow LED	
	On = active output (output is earthing, relay closed)

7.3. Connecting via PC

A mini USB connector located under the front panel cover is used to connect the GC 055 to a PC. Before connecting the GC 055 to a PC, the software - Level Utility - must be installed on the PC, which can be downloaded from the manufacturer's website (www.level.systems - "Downloads" section). After connecting the GC 055 to the PC, the device will be installed on the PC.

7.4. IDE - Control Panel

Level IDE - Control panel is a software tool for configuring the product line GC 05x and GC 07x and allows you to view the current status and download the report. In Basic parameters you need to select Unit type - GC 055.

Example of configuration - sending SMS with text "Alarm" to phone number 777888999 at rising edge of pulse on input 1.
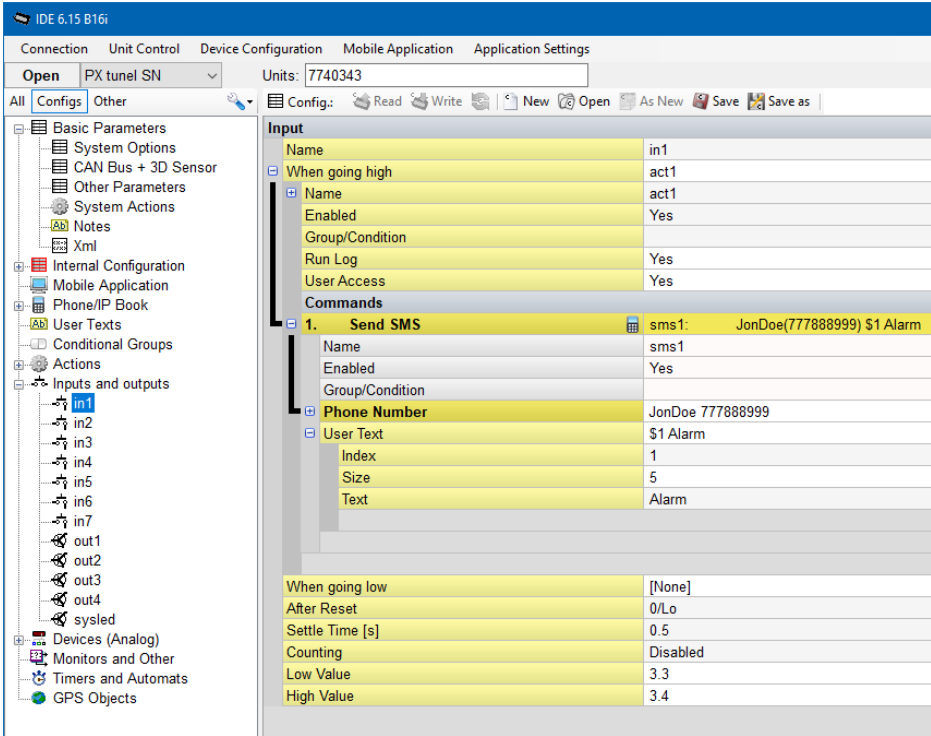
8. SMS - editing configuration - control

Via SMS you can't create a new configuration for the device, but only edit the existing configuration for the device (eg phone number in the phone book). For a list of available SMS commands, see the software Help Control Panel in the Appendices. Setup and operation is done through SMS messages sent to the phone number of the SIM card in the communicator.

The shape of the control SMS:

PASSWORD command1 parameter1 command2 parameter2 command3 parameter3 command4 parameter4

PASSWORD	maximum 8 characters a-z and 0-9. Factory setting is 'picola'.
space	
COMMAND	command name for the desired configuration
space	
PARAMETER	value? for enquiry or. (full stop) to delete values

One SMS message can contain up to 4 commands with parameters. The communicator will confirm the execution of commands by sending an SMS. Lower and upper case letters are only distinguished in the password.

For remote access to GC 055 via GPRS it is necessary to set the APN (Access Point Name) to connect to the Internet.

Setting the APN provider	
SMS	password APN x
Reply	APN „x"
Value x	apn provider
Set password x	-

Setting the access point name APN - only for selected foreign providers	
SMS	password GPRSNAME x
Reply	gprsname „x"
Value x	APN login name
Set password x	-

Setting APN password - only for selected foreign providers	
SMS	password GPRSPSW x
Reply	gprspsw „x"
Value x	Password for APN
Set password x	-

SMS to establish a GPRS connection	
SMS	password CALLR @IP_adresa,port,UDP,1
Reply	CALLR @IP_adresa,port,UDP,1

After receiving the SMS GC 055 will send UDP packets to the IP address and port. The IP address must be a fixed and public, routeable port to the PC where the conenction is to be made. The port must be enabled in the firewall on the PC. In the Control Panel, you need to wait for connections on the appropriate UDP port. For settings and procedures, see the software Help IDE - Control Panel.

It is also possible to use the Tunnel - Connection Server from Level for remote access. No public IP address is required for this connection. Access to this service is available on request from technical support.

Changing the password	
SMS	password PSW x
Reply	psw x
Value x	new password – maximum 8 characters a-z and 0-9
Set password x	picola

Launch action	
SMS	password name of action
Reply	name of action

Via SMS you can run any action in the configuration.

Query the status of analogue inputs	
SMS	password ains
Reply	ains ain1= 0.00;ain2= 0.00;ain3= 0.00;ain4= 0.00;ain5= 0.00;ain6= 0.00;ain7= 0.00;power=11.64
	the voltage at the input [V]

Query the status of outputs	
SMS	password outs
Reply	outs out1=1,out2=1,out3=1,out4=1,led1=1,
	output value is given binary (0 = connected to ground, the relay is closed, LED lit)

9. Maintenance

The GC 055 Communicator requires no maintenance. We recommend regular monitoring of the external backup battery for 1 year if the battery is installed.

Update Firmware
The current firmware is part of the IDE - Control Panel software. Download and install the "Level Utility" at www.level.sytems in the "Downloads" section. In the IDE - Control panel software, establish a connection to the GC 055 via USB cable or GPRS and perform a firmware update in IDE - Unit Control - Upgrade firmware. Before performing the firmware upgrade, we recommend that you perform a configuration backup.

Warranty conditions

The warranty period is 24 months from date of purchase.

Warranty repairs will be made within ten working days from receipt of the defective goods in LEVEL, provided that the spare parts are in stock. If not, the user will be offered an alternative solution until the repair is completed.

Warranty repairs will be carried out in the company and the warranty period shall be extended by the duration of the repairs. The manner of return transport will be determined by our service technician.

No warranty is given in the case of loss or replacement of the warranty, or if the product is damaged by natural disaster, during transport, improper placement, improper use, if the device in used in unsuitable conditions, or in the case of removing or breaking the sealing labels.

The warranty does not apply to consumables - batteries, ink ribbons, etc.. It does not apply to faults caused by installed software or interference. The company is not responsible for any losses arising from device failure.

The warranty does not apply to malfunction due to external conditions such as changes in legislation, changes in GSM networks, changes of power supply, etc.

The warranty applies after submitting a fully completed warranty card and a device for repair, including accessories. A duplicate warranty will not be issued, the customer is responsible for its accuracy and originality.

Warranty certificate

Name of Product :	Type :

Serial number :	Date of purchase:

Distributor :
Address, telephone No., stamp :
Signature:

Accepted for repair	Despatch date	Description of fault