

# SECURECOM

## SC-GPRS

Alarm monitoring communicator for Contact ID reporting  
to SIA DC09 (IP) receivers

Manual v1.3



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## 1. Short functional description of device

The SC-GPRS device translates and forwards the Contact ID reports from any alarm panel to monitoring station through GPRS network to SIA DC-09 receivers, according to SIA DC-09 standard.

The data transfer is done in the GPRS system of the mobile network, in the form of TCP/IP or UDP packets. Only the CONTACT ID formatted reporting codes, can be interpreted and forwarded to monitoring, by the device. In addition it contains 2 inputs and it can also be used as a Stand-alone communicator, to transmit two independent status signals, using the device's contact inputs.

### 1.1. Main features

- Simulation of telephone line for intruder alarm system
- 2 contact inputs with independent signaling
- Capability of 2 independent monitoring receivers
- UDP or TCP/IP protocol transmission
- Configuration via USB using the PC software found in the communicator storage

### 1.2. Technical specification

- Power supply 9-30V (DC)
- Consumption 300mA (max.) / 100mA (in idle state)
- Generated phone line values
  - Line voltage 48V
  - Loop current 25mA
  - Load impedance 100-470 Ohm
  - Dial tone 425Hz
- Operating temperature 0...+70°C
- Dimensions 40x75x15mm
- GPRS mode Quad Band (Class 12)

## 2. Product layout



Sign	Part	Description
1	ANTENNA CONNECTOR	<b>GSM network antenna</b> Connector type: SMA, Impedance: 50 ohm, Frequency: 900/1800 MHz
2	SIM CARD HOLDER	<b>For mobile network connection</b> Type: GSM voice band card, Dimension: 2FF mini SIM
3	LED status display	<b>The LED status signals</b>
4	USB CONNECTOR	<b>For parameters setting</b> , the communicator must be connected to the computer through USB port. Type: USB mini-B
5	DC POWER (+12V/COM)	<b>Main power supply</b> Rated voltage: DC 9-30V, Rated current: max. 500mA
6	Communication line (TIP/RING)	<b>Simulated landline for the alarm control panel's TIP/RING input</b> Line voltage: 48V, Loop current: 25mA, Impedance: 300ohm
7	INPUTS (Z1, Z2)	<b>Contact Input (to negative supply "COM" ) for transmission of the signal of external switches</b>

### 3. Connection

In order to operate properly, the device must be equipped with a valid SIM card (GPRS data type) and the external antenna must be connected to the antenna connector. Use the supplied antenna or any other GSM antenna that suits the needs for installation. The SIM card should be inserted to the card holder “door” (the moving part of card holder), as shown on picture. The Door must be pushed toward the PCB until completely “closed”, i.e. the two parts of card holder are overlapping, and after that the card holder should be LOCKED, by pulling the holder “door” toward the terminals (as marked on the holder). The locking of card holder gives a click sound. If the card was not placed properly as it should be, the card holder door can not be locked and turning the PCB in horizontal position with card holder toward the ground will cause the holder to open. In this case, the device will not operate properly, and may cause the damaging of SIM card. Please be sure that the SIM card is placed properly before powering up the device.

**Warning: The SIM card should never be removed or added while the device is powered up.**

#### 3.1. Power supply

SC-GSM communicators can be powered from USB connection for programming only (downloading of settings). For normal operation required the external power (connected to terminals **+12V** and **COM**). The device will be functional with any power voltage between 9 and 30 V DC is applied to the terminals.

#### 3.2. Emulated phone line

The **TIP** and **RING** terminals of the SC-GPRS device provides an emulated phone line. Connect these terminals where the PSTN (regular phone line) is supposed to be connected to the device that will use this communicator. In case of connecting to alarm panel, use the INCOMING LINE terminals, (usually marked with TIP/RING or T/R, or Ti/Ri...).

#### 3.3. Trigger inputs

There are 2 CONTACT inputs on device, marked as **Z1** and **Z2**. These inputs are used to trigger to send a specified *Contact ID* code to the monitoring station. These inputs are triggered when connected to the **COM**, i.e. to the supply negative line. When connecting the device to an alarm panel, if the power is supplied from alarm panel (connected to its AUX terminals) these inputs can be directly connected to PGM outputs of alarm panel, that are “open collector” type, since when activated, these outputs provide a shortcut to the panel ground. With such connection, no other wiring is required. If the PGM is REELAY type (two connection points), than one pole of the output relay must be connected to the same place with the communicator **COM** terminal, and the other to **Z1** or **Z2**, in balance with programming.

Connect the device with USB cable to a windows PC (Compatibility: Windows 7, 8.1, and 10), and a new drive will be installed. When connected to that machine for first time, the driver will be installed first, then the new drive will be found. This drive is the flash memory of SC-GSM device, and contains the software and this manual. You can run the software from device, or copy it to your PC and run it from there. When the device is powered through terminals, the USB cable can be plugged or unplugged at any time, it will not affect the device. The windows machine might require a proper closing of USB connection before unplugging the cable.

## 4. Configuration of device

### 4.1. Setup program connection

If the device is password protected or a wrong type of device is connected on USB port, the PASSWORD field is displayed. If a wrong password is entered, the software will display the status fields only Settings are not displayed and can not be changed. This mechanism prevents unauthorized access to device settings.

As the software successfully connects to the device, it reads out the device and shows the status, device version and actual settings in device (marked red on following picture):

The screenshot shows the 'SecureCom GPRS' application window. On the left, there are icons for file operations: a folder, a document with a green arrow, and a device with a green arrow. Below these is a 'Device State' table with the following data:

Device State	
SIM status:	missing
GSM signal (0-31):	0
GPRS connection:	APN error
Monitoring station 1:	FAILED
Monitoring station 2:	FAILED
Line state:	OFFHOOK
Last station:	MS2
Z1:	IDLE
Z2:	IDLE

Below the table is a 'Last events:' section with a text area. At the bottom of the window, two status boxes are highlighted: 'USB: Connected' and 'Firmware version 3.22 GPRS'. The main area is divided into 'Device settings' and 'Monitoring station' sections.

**Device settings**

**Modem and GPRS**

PIN code	
GPRS APN	
User	
Password	

**Z1**

Sensitivity	0.1 sec
Contact type	NO
Event code	130
Reporting	MS1

**Z2**

Sensitivity	0.1 sec
Contact type	NO
Event code	131
Reporting	MS1

**Monitoring station 1**

IP address	
Port	
Protocol	TCP
SIA prefix	
Object identifier	
Replace obtained identifier	NO
Dialed number by alarm system	
Link test period	3 min

**Monitoring station 2**

IP address	
Port	
Protocol	TCP
SIA prefix	
Object identifier	
Replace obtained identifier	NO
Dialed number by alarm system	
Link test period	3 min

In case that software does not show a “connected” status or the firmware version, the USB connection was not made properly. Please select a different USB port check the USB cable. If the problem persists, the device USB driver might be in conflict with some other driver in windows, restart the windows or try the connection on another machine.

### 4.2. Moving data between the PC and the device

Reading out data from the device happens automatically as soon as connection is established. Settings can be saved to PC or loaded from PC file. These icons are used to handle the settings data:



(File\_reading / File\_saving / Download to device)

**IMPORTANT NOTICE:** *if a new settings file is loaded or ANY setting is modified on software screen, all data needs to be downloaded onto the device. You can make all required changes in software, and then download data. Changes that were not downloaded will be terminated when the software is closed or the connection is cut (cable unplugged).*

### 4.3. Device code lock (protection)

The device can be locked with a security code. By default, there is no code but once entered, the code will be required for each connection. After connecting, the new code can be entered with the icon:



After connecting via USB, if the device was set with a code, the software requests to enter the device code. If you cancel the code entry, the software will display only the status and no settings can be red or edited. After closing re-starting the software, the code entry box is displayed again. Only after the right code was entered, the software will be fully functional, presenting the whole window with all settings displayed and editable.

**WARNING:** *If the password is lost or forgotten, only way to access to device setting is with **FACTORY DEFAULT**. For that procedure, the device must be sent to appropriate service*

### 4.4. Device Status

Status of the SIM card, network and connection to GPRS ( APN) are presented instantly, at the “Module state “ field. As soon as the Monitoring station parameters are entered, the device will try to send a “check in” signal, and present the status (OK or Failed) for sending to that that Monitoring station (MS1 and MS2). Also the status of two inputs is displayed in same field.

This part is ALWAYS VISIBLE, even when the device is protected with code lock. These are the possible values of the fields in the status view:

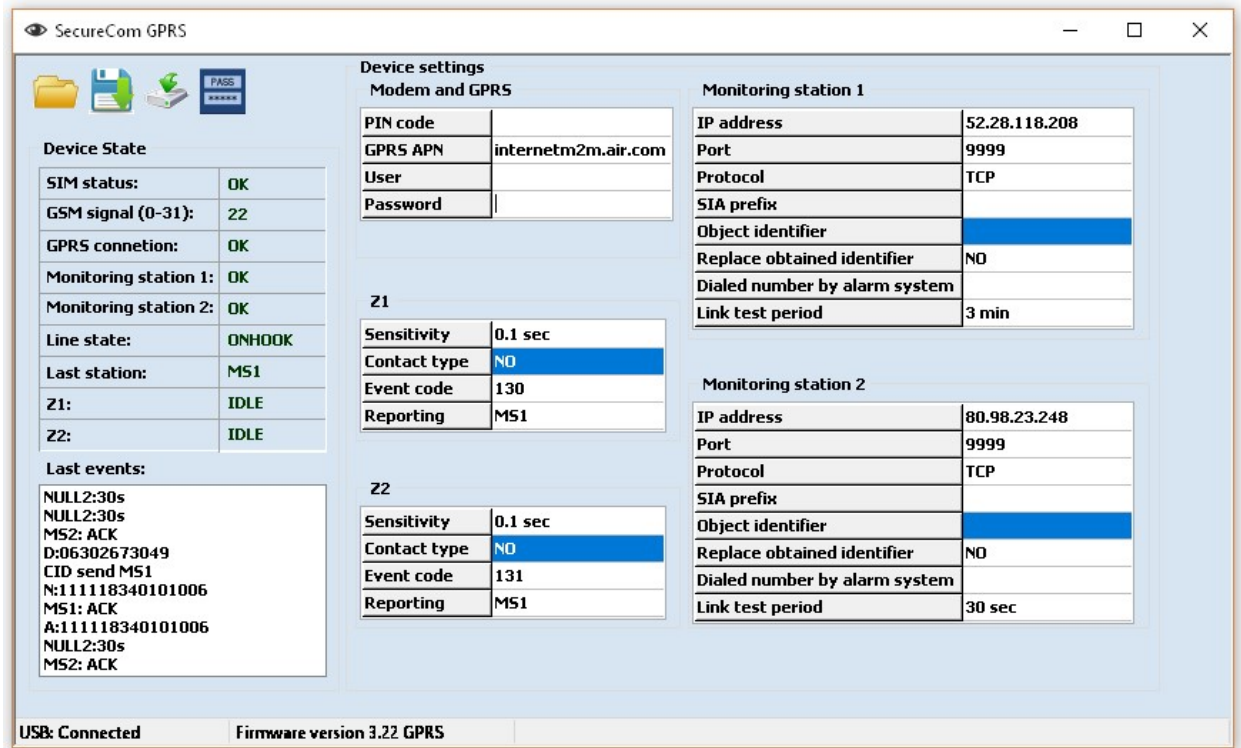
Device State	
SIM status:	OK
GSM signal (0-31):	22
GPRS connection:	OK
Monitoring station 1:	OK
Monitoring station 2:	FAILED
Line state:	ONHOOK
Last station:	MS1
Z1:	IDLE
Z2:	IDLE
Last events:	
NULL1:30s MS1: ACK NULL1:30s MS1: ACK D:06302673049 CID send MS1 N:111118340101006 MS1: ACK A:111118340101006 NULL1:30s	

Field name	Options (description)
<b>SIM status</b>	Waiting (connecting...)/ OK / PIN request
<b>GSM signal</b>	A value between 0 and 31, (12-16 is minimal for reliable functionality)
<b>GPRS connection</b>	Cellular data connection (OK/Error -> is linked if the APN is appropriate)
<b>Monitoring station 1</b>	Connection status of MS1 (OK/ Failed)
<b>Monitoring station 2</b>	Connection status of MS2 (OK/ Failed)
<b>Line state</b>	ONHOOK / OFFHOOK (emulated phone line idle / active)
<b>Last station:</b>	The destination of the last successful report (MS1 or MS2)
<b>Z1 input state</b>	IDLE / ACTIVE (Input Z1 idle / active)
<b>Z2 input state</b>	IDLE / ACTIVE (Input Z2 idle / active)
<b>Communicational event messages:</b>	
<b>D:</b>	The number dialed by the alarm control panel
<b>CID</b>	The CONTACT ID code sequence sent by the alarm control panel
<b>Z1:A</b>	Activated input one
<b>Z1: R</b>	Input one got back to default
<b>NULL1:30</b>	Test report to Monitoring Station 1 is 30 sec
<b>MS1: ACK</b>	The device got Kissoff from MS1 receiver for test report
<b>N:1111...</b>	The device sent a new CID code to receiver
<b>N:1111...</b>	The device got Kissoff from MS1 receiver for new CID code



## 4.5. Parameter settings

All settings from device will be displayed as soon as device is connected. In case of unstable reading, disconnect the device and connect it again. It will result a new reading and displaying of settings that are valid in device.



These parameters are available:

1. **Modem and GPRS** Settings of network connection
  - a. **PIN code** Enter the PIN code for the SIM card, if necessary
  - b. **GPRS APN** Access Point Name provided by GSM operator
  - c. **User** User name provided by GSM operator, if necessary
  - d. **Password** Password provided by GSM operator, if necessary
  
2. **INPUT1 , INPUT2** Independent signalling contact inputs
  - a. **Sensitivity** Minimum length of time of physical contact
  - b. **Contact type** NC type input must be disconnected from the ground to activate  
NO type input must be shorted to ground to activate
  - c. **Event code** CID event code that will be sent when input is activated
  - d. **Reporting** Destination monitoring receivers in possible logical order  
(only MS1, MS1 and MS2, MS1 or MS2, only MS2)
  
3. **Monitoring station 1 and 2**
  - a. **IP address** IP address of monitoring receiver
  - b. **Port** Dedicated port number for monitoring receiver
  - c. **Protocol** UDP or TCP/IP
  - d. **SIA prefix** Needed if the alarm system object identifier is 4 character,  
and the monitoring software expects 6 characters



e. <b>Object identifier</b>	The communicator individual identifier
f. <b>Replace obtained identifier</b>	When the communicator receiving the CID format from the alarm system and before send it to the monitoring receiver, is to replaces the own identifier in event code.
g. <b>Dialed number by alarm system</b>	If the dialed number fits this value, the communicator sends the received CID report to this Monitoring Station. If these fields are BLANK, MS1 is primary and MS2 is backup.
h. <b>Link test period</b>	Periodic test data report to the monitoring receiver. Device will send a „test report” to that receiver in intervals set in this field

## 5. Operating logic for alarm reporting

1. Reporting from alarm panel starts with a „hook off” of the line state. This means that the alarm panel has „picked up” the phone line and is checking for it’s presence. If communicator finds everything all right and is able to accept the signal, it will provide a regular „line free” free signal. If something is wrong and communicator is not able to forward the information, it will give a „line busy” signal.

Typically, „busy” signal” means that a SIM card is missing or bad, PIN code is wrong, or none of receivers can be reached.

2. Alarm panel dials the phone number and waits for the ”handshake” signal from receiver. If the dialed phone number fits to a value in field „Dialed number by alarm system” (for MS1 OR MS2, if both are available), or if that field is BLANK, the communicator will provide the „handshake” signal and the alarm panel will transmit the CID message.

3. When the CID code is received, the communicator will send the report to the appropriate MS, selected with the phone number dialed by alarm system. If the „Dialed number by alarm system” field is blank, then the report will be sent to MS1, as long as it is available- only when MS1 is not available ( receiver can not be reached), the message is sent to MS2.

4. The „account number”, i.e object identifier in the message that is sent to receiver will differ from the one received from alarm panel, if the „replace panel identifier” field is selected „yes”. In that case, the Identifier will be changed to the value set in „object identifier”.

5. When the report is sent to receiver, it forwards it to monitoring software and it returns the „acknowledge”, a receipt for the message. The reciver sends the „acknowledge” to the communicator, and it transmits the „acknowledge” tone to the alarm panel. Since the response time of the alarm panel for acknowledge is short, the alarm panel will repeat the CID message before the acknowledge is received from monitoring station. The device waits the end of repeated message and transmits the acknowledge.

6. After receiving the acknowledge, the alarm panel starts transmitting the next CID code if there are more reports to be sent, and the procedure is repeated from point

## 6. Parameters setting by SMS messages

Informations about the device and changes of the most important settings can be sent through SMS. The format of the message should be:

parameter=value\*

More commands can be sent in one message, but every command must finish with character \* (therefore, the message also must finish with this character)

parameter1=value1\*parameter2=value2\*...

For example: APN=internet\*IP1=82.65.128.185\*

Here is the list of parameters that can be changed with explanation for the name:

**INFOSMS:** Phone number to which the incoming messages will be forwarded

**APN:** apn

**USR:** username (for the APN)

**PWD:** password ( for the APN)

**IP1:** IP adress of the MS1 receiver

**PORT1:** receiving port of the MS1 receiver

**IP2:** IP adress of the MS2 receiver

**PORT2:** receiving port of the MS2 receiver

The RESET command is special, it can not be combined with other commands, therefore the message for reset must be like this:

RESET\*

You can also request the status information from the device, with following command:

?\*

The device will reply with a SMS message that contains the information, in following format:

SIGNAL: 21

GPRS: OK

MS1: OK

MS2: ERROR

( These values are EXAMPLE)

## 7. LED indicators

The following LED indicators show the functional status of the communicator.

In case of error RED TROUBLE LED is continuously ON, while GREEN LED is flashing according to the code of the error reason. In "Idle state", when everything is „Normal" only the GSM STATUS LED will be ON. If the GSM Signal is below the requested level, this LED will blink. If some fault is valid, red TROUBLE will lit continuously, while green LED shows the cause of the fault with blinks.

### NORMAL OPERATION

■ AS comm	■ AS comm	■ AS comm
■ MS comm	■ MS comm	■ MS comm
■ GSM stat	■ GSM stat	■ GSM stat
■ TROUBLE	■ TROUBLE	■ TROUBLE
Idle state	Reporting to monitoring receiver	Alarm system in communication

### GSM NETWORK FAILURE

■ AS comm	■ AS comm	■ AS comm
■ MS comm	■ MS comm	■ MS comm
■ GSM stat 3 flashing	■ GSM stat 2 flashing	■ GSM stat 1 flashing
■ TROUBLE	■ TROUBLE	■ TROUBLE
SIM card missing or wrong	PIN missing or wrong	Poor GSM signal strength

### GPRS network failure

■ AS comm	■ AS comm	■ AS comm	■ AS comm
■ MS comm 4 fl.	■ MS comm 3 fl.	■ MS comm 2 fl.	■ MS comm 1 fl.
■ GSM stat	■ GSM stat	■ GSM stat	■ GSM stat
■ TROUBLE	■ TROUBLE	■ TROUBLE	■ TROUBLE
APN missing	Wrong APN or GPRS network fault	Missing IP / Port or object ID	Wrong IP address