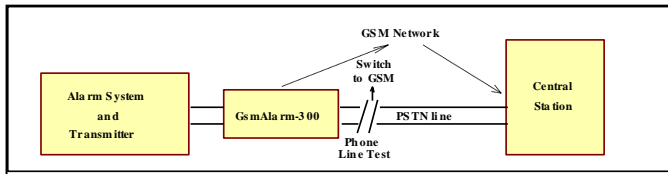# 1. GENERAL DESCRIPTION

GsmAlarm-300 provides for reliable double-sided security system communication with the central station through GSM network.

In the case of wire telephone line failure, GsmAlarm-300 automatically switches the security system telephone output to the integrated GSM module and the data is relayed to the security panel through GSM network.

GsmAlarm-300 may be used with any types of security systems, maintaining audible data transfering protocols: FSK (10 to 300 bauds), DTMF etc.

GsmAlarm-300 is operable in any GSM network of 900/1800 MHz.

GsmAlarm-300 may have up to 4 users. Users may call the GsmAlarm-300 number and control the system from their phones using DTMF instructions as follows:

- ✓ connect to the GSM service provider's operator and learn balance of the SIM card account;

- ✓ ask for SMS, carrying programmed numbers of the users, SMS center and GSM operator's information;

- ✓ ask for SMS, carrying information about GsmAlarm-300 communication quality and power source voltage.
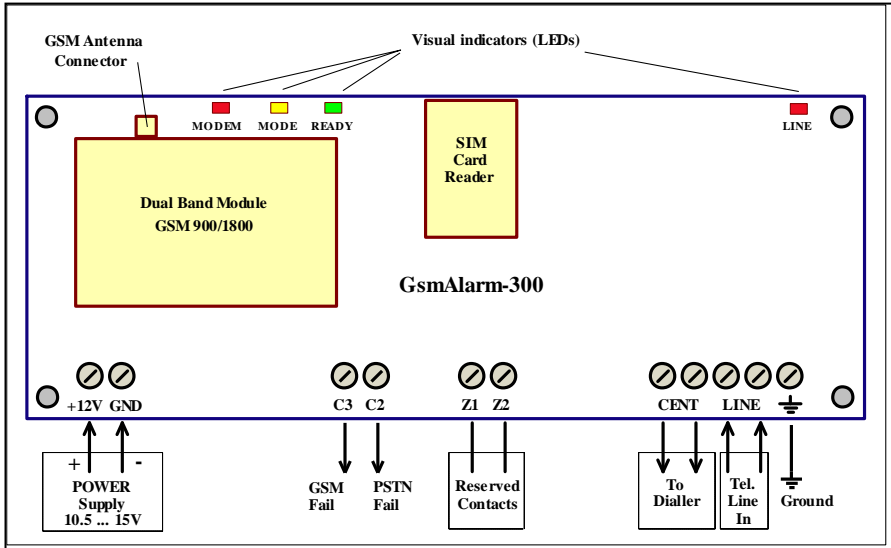
Caling user is identified by his phone number. If the call comes not from the user's phone, the call is immediately cancelled. In order to check system operation, user shall briefly call GsmAlarm number. GsmAlarm-300 within 10-20 seconds answers the caller with a brief ringer tone.

All the GsmAlarm-300 user numbers, SMS center number and brief information number are programmed by a single SMS with an 8-character password in the beginning of such SMS.

GsmAlarm-300 has a GSM communication failure alarm output as well as a wire line (PSTN) failure alarm output.

GsmAlarm-300 is very easy to install. State of the device may be quickly evaluated using indication of 4 LEDs.

2. INSTALLATION

2.1 CABLING AND CONNECTING

2.1.1. Connect antenna to GSM module. Antenna shall be positioned as far from the GsmAlarm-300 module as possible. No winded antenna cable is recommended to be left near the GsmAlarm-300.

2.1.2. Insert a SIM card with PIN code OFF.

2.1.3. Connect the **CENT** contacts to the security centrale telephone line input. During testing, parallel ordinary phone device with tone dial may be connected.

2.1.4. Connect the contacts +12V and GND to the protection system power source.

2.1.5. Contacts LINE are used to connect the wire telephone line. The telephone line is advised to connect later - in the end of adjustment.

2.1.6. The contact **C2** (PSTN Fail) - MOSFET "open drain" output - is used to warn about the telephone line (PSTN) failure. This output is activated (connected with the ground wire GND) in the case of telephone line failure after 15 seconds.

2.1.7. The contact **C3** (GSM Fail) – MOSFET "open drain" output - is used to warn about GSM communication failure. This output is activated (connected with the ground wire GND) in the case of GSM communication failure after 15 seconds.

2.1.8. Reserve contacts **Z1** and **Z2** inside the GsmAlarm-300 module are free and may be used to connect additional wires (e.g. tamper circuitry).

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2.1.9.   In order to protect the device against electrical discharges, connect the contact **Ground** to ground wire of the building by a separate wire.

2.2.   PURPOSE OF THE LEDs

2.2.1.   **MODEM** (red) - indicates GSM module operation state.
- Out - GSM module is not in use.
- Continuously On - GSM module is in use, but there is no GSM operator network registration.
- Blinking once a 2-3 seconds - GSM module is in use, GSM operator network registration is present - everything is OK.

2.2.2.   **MODE** (yellow) - indicates GsmAlarm-300 operation mode.
- Out - system is not active.
- Continuously On - **CENT** line is active (handset is lifted).
- Blinking once a second - outgoing call, speech mode or SMS is being sent.
- Blinking more frequently than once a second - incoming call.
- Blinking very rapidly - correct DTMF or SMS instruction confirmation.

2.2.3.   **READY** (green) system state indicator.
- Out - system is not operating.
- Blinking - system is operating, but no SMS center nor a single user number have been programmed.
- Continuously On - system is ready for work.

2.2.4.   **LINE** (red) - wire telephone line indicator
- Out - no wire line (**LINE**), communicating through GSM network.
- Continuously On - wire line (**LINE**) is present, communicating through wire line.

3. PROGRAMMING

GsmAlarm-300 may be used without additional programming, however in order to employ all its features, we advise to program the SMS center number, at least one user telephone number and GSM operator's information brief number. Then the user is enabled to
check SIM card account balance, as well as to control the system by DTMF and SMS instructions.

3.1   SMS CENTER AND USER NUMBER PROGRAMMING

In order to program SMS center and user numbers, send GsmAlarm-300 a SMS with the following contents:

**AAAAAAAA SMSNR:123456789 ALRNR1:123456789 ALRNR2:123456789
ALRNR3:123456789 ALRNR4:1234546789 SRVNR:1234**

AAAAAAAA is an 8-digit SMS password, necessary to enter in the beginning of each SMS. Manufacturer has programmed it as AAAAAAAA. User may change this password as he wants (see **3.2**).

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ALRNR1 - **ALRNR4** - user numbers. GsmAlarm-300 may be called exclusively from these numbers. Calls from another numbers are ignored and cancelled immediately.

SVRNR - brief service number, used to check SIM card account balance. When user calls the GsmAlarm-300 number and enters the correct code (four asterisks), GsmAlarm-300 calls the programmed brief number and connects user with operator. Then user shall push the button, specified by the operator and receive information of the GsmAlarm-300 SIM card account balance.

If programmed correctly, user gets a SMS with newly programmed numbers.

3.2   CHANGING SMS PASSWORD

In order to change manufacturer-programmed SMS password, send GsmAlarm-300 the following SMS:

AAAAAAAA PASSW:ABCDefgh

AAAAAAAA - old password.

PASSW - password change instruction.

ABCDefgh - new SMS password. It must have 8 digits!

If programming instruction is executed successfully, user gets a confirmation SMS with new password.

3.2   INFORMATION SMS

In order to receive a SMS carrying programmed numbers and password, send GsmAlarm-300 the following SMS:

AAAAAAAA NRINFO

In order to receive a SMS carrying information about GSM signal strength and power source voltage, send GsmAlarm-300 the following SMS:

AAAAAAAA PRINFO

4. POSSIBLE PROBLEMS AND THEIR CAUSES

After swithing on the GsmAlarm-300 power source, device becomes fully operable within 15-30s.

GsmAlarm-300 starts working, after:
- **MODEM** LED is blinking once a 2-3s;
- **READY** LED is continuouslu on.

Find out the problem with the means of LED indications.

LED state	Possible causes
No LED is on.	No power source voltage
MODEM LED is continuously on, **READY** and **MODE** LEDs are Off.	1. No SIM card. 2. PIN code is not off. 3. No GSM antenna is connected. 4. Poor communication quality with GSM operator.
READY LED is blinking.	No SMS or user numbers are programmed.

5. CONTROL WITH DTMF INSTRUCTIONS

By calling GsmAlarm-300, user may control the system with DTMF instructions. GsmAlarm-300 answers after 3-4 calling tones, user hears three confirming tones.

DTMF instruction	Purpose
****	Connection with GSM operator, account balance checking. Note: this command is operating only if the brief number **SRVNR** has been programmed and if GSM operator conference communication service is on!
91*	Request to send SMS carrying SMS password and programmed numbers.
92*	Request to send SMS carrying information about signal quality and power source voltage.

6. PARAMETER RESET TO MANUFACTURER's VALUES

In order to reset the system parameters into the manufacturer's values (SMS password: AAAAAAAA, all numbers deleted), perform as follows:
- switch off power source;
- insert RESET jumper;
- switch on power source, wait for **MODEM** LED to become On;
- switch off power source;
- take off RESET jumper.

7.   TECHNICAL SPECIFICATIONS

Wire line emulator	
Emulation of a regular telephone line	Dialling: DTMF only
Wire line input	
Input impedance	>1 MΩ
Checking of line voltage	continuous
Line identification voltage	>6 V
Outputs C2 (GSM Fail) and C3 (PSTN Fail)	
Type	MOSFET, open drain
Active state	Connected with GND
Inactive state	Open contact
Maximum commutated current	200mA
Maximum commutated voltage	20 V
Resistance in active level	<40 Ω
GSM module	
Operation frequency	900/1800 MHz
Maximum RF output power	2W/1W
Wire line - GSM commutator	relay
Power source voltage	10.5 ... 15V, DC
Current consumption	
Non-activated state, wire line is on	<80 mA
Non-activated state, wire line is off	<60 mA
SMS sending or speech mode	<330 mA
Dimensions	140 x 58 x 16 mm