Universal Phone GPRS/GSM Communicator

"TelCom GPRS"

Version 4.0

Brief technical description

1. Purpose.

- the module connects to the output for telephone communicator of the control panel by two-wire line;

- transmits the information from the control panel, intended for broadcast via telephone to the telephone receiver (Sur-Gard or similar) in the monitoring centre by GSM/GPRS/SMS channel, by mimicking a phone line for the control panel;

2. Modes of operation of the GSM module (configures one of the following modes):

- by voice: after touring the phone number, sent via tone dialling from the control panel, creates transparent audio channel for two-way data exchange between the control panel and standard telephone receiver in the monitoring centre;
- GPRS: the data are transmitted through pre-open GPRS session to the server with specialized software installed in the monitoring center;
- GPRS/SMS: the data are transmitted through pre-open GPRS session to the server with specialized software installed in the monitoring center and in the absence of communication with the server - via SMS to 6 preset numbers; the first of these GSM numbers must be in the monitoring center;
- SMS: the data are transmitted via SMS to 6 preset numbers; the first of these GSM numbers must be in the monitoring center;
- System III unencrypted;
- System III crypted;

3. Basic functions and parameters:

- the received by the phone data is sent to the centre depending on the selected mode (voice or digital);
- the GPRS session is maintained constantly open and continuously (at a certain configurable interval) incoming inquiries from the server;
- availability of primary and backup server: at loss of communication with the main, automatically establishes a connection with the backup;
- in the absence of GPRS connection (with the corresponding configuration) is sent SMS to 6 specify GSM numbers;
- 128 bit AES data encryption over GPRS;
- configuring the parameters for GPRS/SMS communication: from a PC or via SMS; when configuring via SMS acknowledgment is returned to the first programmed in the memory GSM number;

- four LEDs for indication of the operating modes:
  - status of the GSM module: green “GSM”;
  - status of the communication with the control panel: red “Ln”
  - data transmission: yellow “Dt”
  - status of the communication with the server: blue “Status”.
- 5 (3) binary digit (binary) LED indication on the PCB about the level of GSM radio signal (CSQ);
- at a problem with the GSM communication the module is disconnected, to indicate failure (trouble) in the control panel;
- hardware reset to factory settings: if at powering on of the module are connected by jumper the two middle terminals of the connector for programming “Prg”; in the execution of the command remains illuminated only the LED “Dt” for about 10 sec .;
- ability to send a test signal in the mode GPRS/SMS, GPRS or SMS after a call from a phone number, contained in the memory of the module (the test is sent to the number from which the call is coming);
- all calls to the module will be refused, and all received SMS-s without the appropriate configuration code will be deleted;
- SMS-s are sent to six GSM numbers: one (the first) is to the monitoring centre to which SMS-s are encrypted, and five client with a Latin text to be displayed on the GSM handset;
- the text for the client is in the following format:

7777 18 1 393 01 000 3, Alarm, Event 393, Part. 01, Zone 000 или
7777 18 3 393 01 000 3, Restore, Event 393, Part. 01, Zone 000 ,

where:

7777 18 1 393 01 000 3	is the message itself,
Alarm or Restore	is the type of the message,
Event 393	is the code of the event (393),
Part. 01	is the number of the partition (01),
Zone 000	is the zone number (000)

- the events, adopted by the panel are divided into two groups: alarms (opening) and recovery (closed); depending on the configuration may be sent SMS-es only for alarms or for all events;
- buffer memory for incoming data from the panel - 8 events; after filling of the buffer, the module stops to return confirmation to the panel;
- rate of the communicating on UART: 9600 bps;
- In a prepaid card monitors its status (available limit in time and money);

4. Protocols of announcement.

- in voice mode: all available in the control panel and the monitoring center (implemented is a transparent sound channel);
- in digital mode: Contact ID

5. Programmable parameters (from a PC or via SMS).

- mode of operation:
  1). Voice (telephone) to the telephone receiver.
  2). GPRS.
  3). GPRS or SMS.
  4). SMS.
  5). System III unencrypted.
  6). System III encrypted.
  7). Test.
- ability to send a test signal in active mode GPRS / SMS, GPRS or SMS after a call from a phone number contained in the memory of the module (the test is sent to the number from which the call is coming);
- configuring a GPRS session: APN, PDP
- IP addresses and ports of the servers (primary and backup);
- time out: for the GPRS session and for changing the server;
- configuration code from a PC and SMS;
- up to 6 GSM numbers for sending SMS: one (the first) to the monitoring centre, which is encrypted SMS, and five client;
- options for selecting GSM numbers for sending SMS on specific attribute groups: two groups - only alarms, or all events;
- duration of waiting time (in seconds) before the module to send a signal “handshake” to the panel;
- the serial number is a unique serial number of the module and is programmed by the customer.

The configuration of the module is discussed in more detail in another description.

6. LED indication:

- status of the GSM module: green “GSM”:
  - does not light up - the module is not turned on;
  - flashes: 64ms on / 800 ms off: has not detected network;
  - flashes: 64ms on / 3000 ms off: has detected network;
  - flashes: 64ms on / 300 ms off: GPRS communications.
- immediately after the power supply: briefly (7-8 seconds) light up all LEDs, except the green LED “GSM”; thereafter remain glowing only the three green LEDs for the duration of turning on the GSM module;

- in hardware reset to factory settings (if at powering up of the module are connected with jumper the two middle terminals of the connector for programming “Prg”) remains illuminated for about 10 sec. only the LED “Dt”;

➢ test of the telephone communicator of the control panel and emptying of the buffer: turned off all LEDs;

➢ after turning on of the GSM module all LEDs go off and remains only the indication of the green the LED “GSM”, which flashes depending on the status of the module;

➢ test of the the GSM module: flashed simultaneously the red and yellow LEDs; during malfunctions they remain blinking, after some time the module is reset;

➢ searching for a SIM card: all LEDs flashing: the three green, the yellow, the red and the blue; they remain flashing for about 15 seconds. at unsuccessful connection with the GSM network due to missing SIM card, after which the module is reset; they go off after successfully finding of the SIM card;

➢ searching for a network: appear running lights from the green LEDs (from “4” to “2”) with tact of half second and the green LED “GSM” flashes: 64ms on/800 ms off;

➢ level of the GSM radio signal (CSQ): glow the respective green LEDs “4”, “3”, “2” and “1” and the yellow LED “Dt”: the summary indications of the illuminating LEDs, such as for the LED “4” is added 16, for “3” is added 8, for “2” - 4, for “1” - 2 and for “Dt” - 1; the resulting number from 0 to 31 shows the signal level as the best is 31; the module works well in indications over 20;

➢ the indication of the level of the GSM radio signal is not active upon submission of the line to the control panel (when is lit the red LED “Ln”) and when searching for and at presence of GPRS session;

➢ in the presence of a GPRS session with the server is lit blue LED “1”;

➢ submission of the line to the control panel (the red LED “Ln” is lit);

➢ receiving data from the control panel: flashes (briefly off) the red LED “Ln”;

➢ confirmation of data obtained from the control panel (sending from the module signals “Handshake” and “Kissoff”): briefly lights up the yellow LED “Dt”;

➢ transmission of data to the server: briefly lights up the yellow LED “Dt”;

➢ data transmission via SMS: briefly lights up the yellow LED “Dt”;

7. Power supply - + 12V control panel (from + 10V to + 15V).

8. Requirements for the SIM card:

- to be removed the option to request the PIN code when turning on;
- to be deactivated the voice mail;
- to be erased all incoming SMS-s.

9. If at power up “Test” mode is activated after emptying the buffer it will be automatically deactivated. In this mode, with an open line the LED “Line” is lit continuously, and the LED “Data” flashes in confirming the received data.

<u>Caution:</u> If is active “Test” mode, the module will not start normal communication until it empty the buffer of the control panel.

10. If the parameter for interval between requests from the module to the server in System III is less than 10 it is taken value of 10 seconds.