Communication module
GSM LT-2

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WARNINGS

For safety reasons, the module should only be installed by qualified personnel.

Prior to installation, please read carefully this manual in order to avoid mistakes that can lead to malfunction or even damage to the equipment.

The module can only work in conjunction with **PSTN subscriber lines**.

Changes, modifications or repairs not authorized by the manufacturer shall void your rights under the warranty.

CAUTION!

Never turn on power supply of the module and telephone without external antenna connected.

The SATEL's goal is to continually upgrade the quality of its products, which may result in alterations of their technical specifications and firmware. The current information on the introduced modifications is available on our website.
Please visit us:
http://www.satel.eu

The following symbols may be used in this manual

i - note;

  - caution.

CONTENTS

1. GSM LT-2 MODULE FEATURES

- Simulation of analog telephone line when using the GSM connection.
- Built-in industrial GSM telephone working in 850/900/1800/1900 MHz cellular telephony networks.
- Capability of remotely checking the status of available resources and the account validity of SIM card installed in the module.
- 4 programmable hardwired inputs (NO, NC) to supervise the status of external devices.
- Bypassing module inputs by means of:
  - inputs,
  - telephone keypad (DTMF),
  - SMS messages,
  - DLOAD10 program.
- Capability of determining the telephone numbers authorized for DTMF or SMS control.
- An output to signal the telephone line trouble and/or problem with logging into GSM network.
- Messaging about the module related events to 4 telephone numbers in the form of:
  - SMS message,
  - CLIP service (toll-free).
- Reporting the module related events to two monitoring stations in Contact ID or Ademco Express format.
- Conversion and retransmission of event codes received from other devices (simulation of the telephone monitoring station).
- Several ways to send event codes to the monitoring station:
  - GPRS transmissions (encrypted),
  - CSD transmissions,
  - SMS messages,
  - AUDIO transmissions.
- Defining the priority of different ways to report events.
- Capability of storing up to 255 events generated by the module or received from the control panel (modules with built-in GSM u-blox LEON-G100 telephone).
- Capability of converting the PAGER type text messages into SMS messages.
- Caller identification.
- Module programming:
  - locally: landline telephone connected to the R-1 and T-1 terminals or computer with the DLOAD10 program installed, connected to the module RS-232 port;
  - remotely: computer with the DLOAD10 program installed, connecting by means of GPRS.
- RS-232 port to allow:
  - local programming by means of computer with the DLOAD10 program installed;
  - connection to the alarm control panel or computer as an external modem;
  - integration with the INTEGRA control panel;
  - working in conjunction with the STAM-1 / STAM-2 monitoring station;
  - updating the module firmware.

- Capability of remotely updating the module firmware by means of GPRS (modules with built-in GSM u-blox LEON-G100 telephone).
- Powered with 12 V DC (±15%).

2. TYPICAL MODULE APPLICATIONS

The extended functionality of GSM module enables it to be used for a variety of applications. This section presents typical examples of its application Some of them are capable of being combined with one other.

2.1 SUPERVISION OF DEVICES / CONTROL OF INPUTS
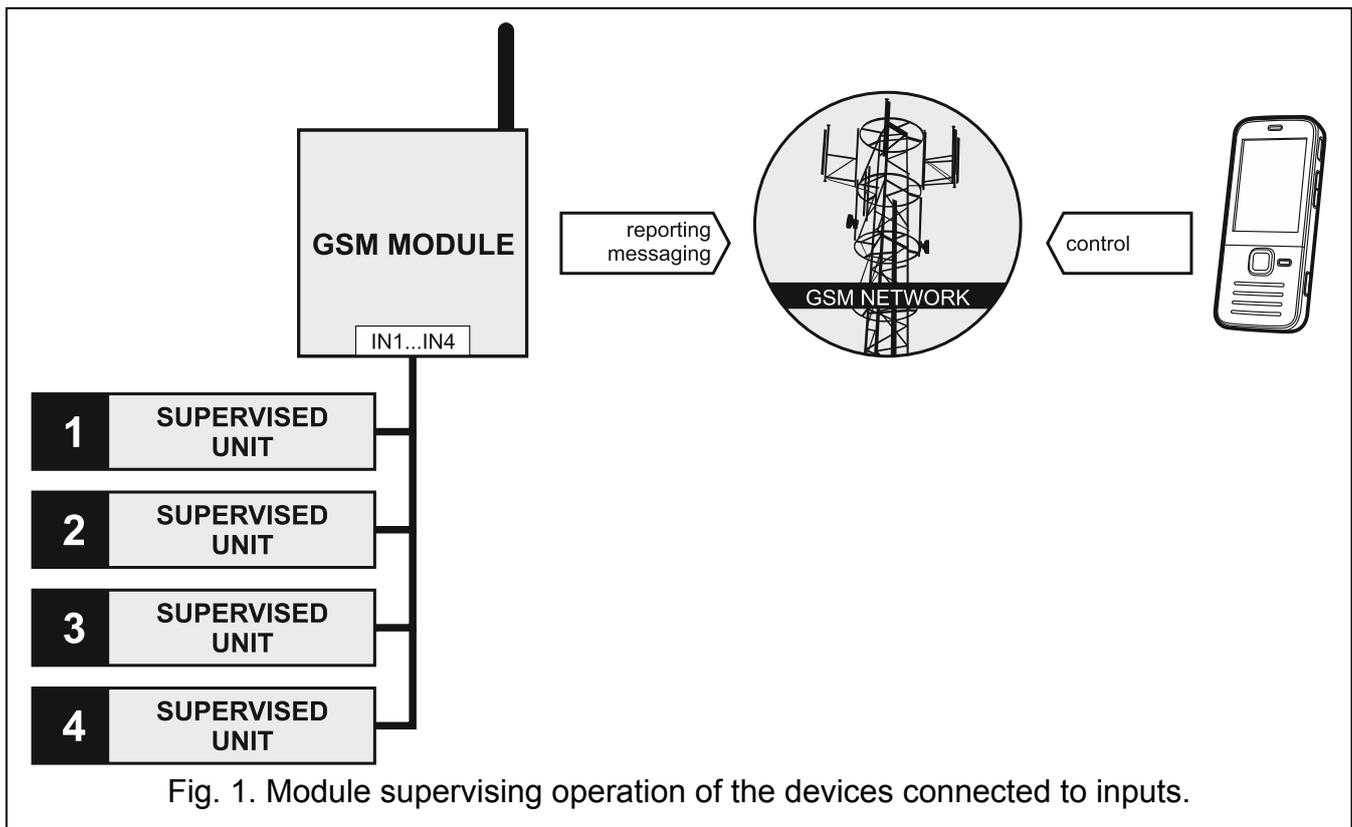
Fig. 1. Module supervising operation of the devices connected to inputs.

The change of status of the input to which the supervised device is connected may result in:

- sending event code to the monitoring station (GPRS / CSD / SMS reporting);
- notification (messaging) about the event by means of SMS or CLIP message.

The inputs can be bypassed locally (by means of buttons, one of the module inputs or the keypad of telephone connected to the telephone line output) or remotely (by means of SMS messages or telephone keypad (DTMF)).

2.2 SIMULATION OF MONITORING STATION

The module can forward the event codes received from the control panel to the monitoring station by means of GSM network. Which reporting link will be used to send the event code and when the module will acknowledge receipt of the code to the control panel depends on the module configuration.

Fig. 2. Module simulating the monitoring station.
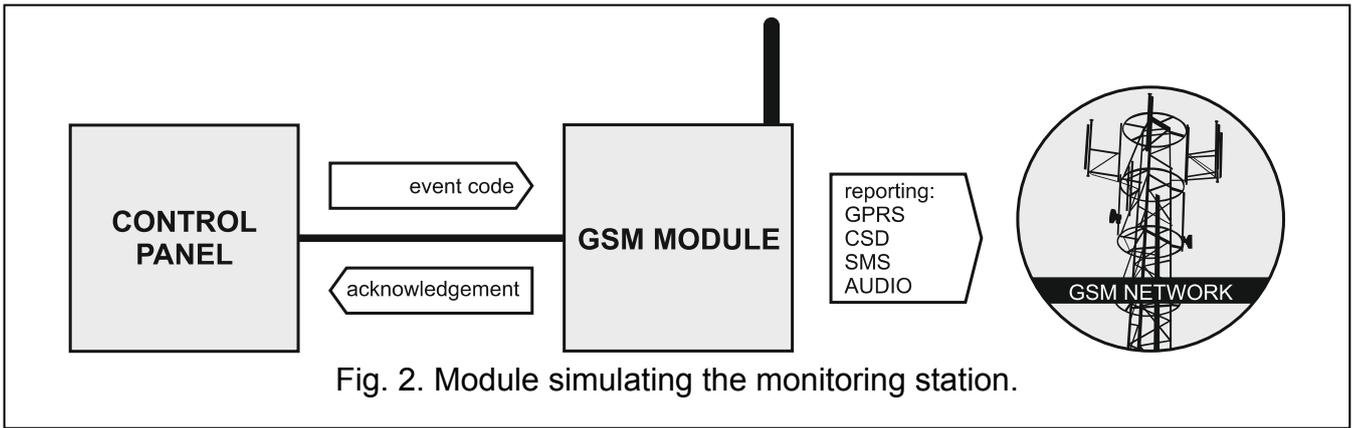
2.3   INTEGRATION WITH INTEGRA CONTROL PANELS

Fig. 3. Module working in conjunction with the INTEGRA control panel.
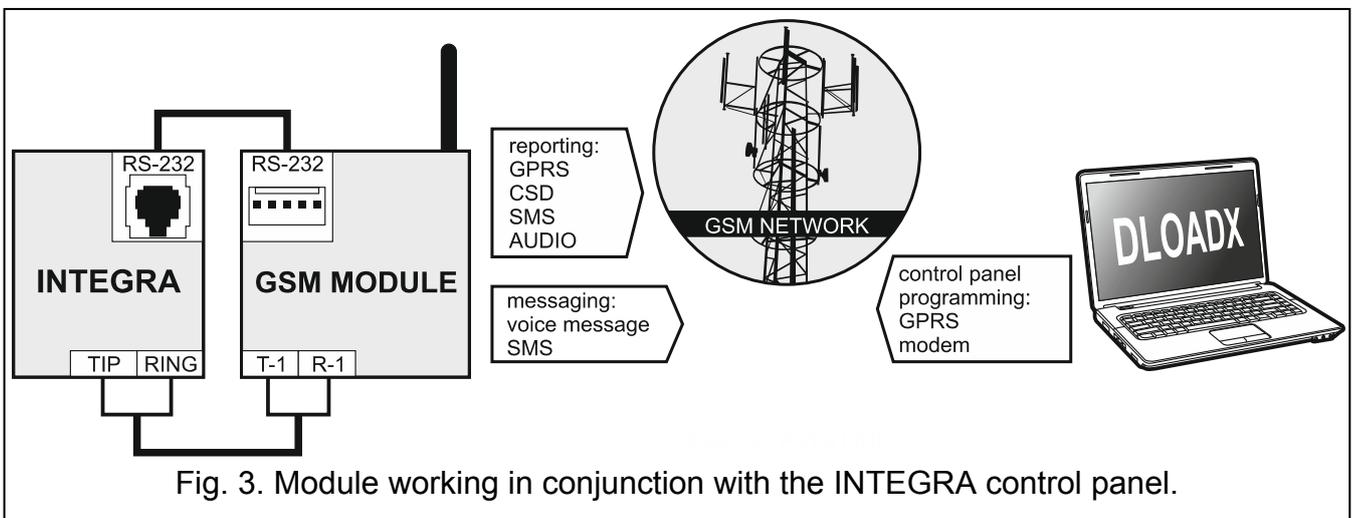
When connected to the INTEGRA control panel, the module offers the following benefits:

− transmission of event codes to the monitoring station via GSM network;

− messaging via GSM network, including SMS messaging (for the INTEGRA Plus control panels, an additional feature is available: messaging by means of SMS messages, whose content corresponds to the description in event log and thus the installer does need to define it);

− remote programming of the control panel from a computer with DLOADX program installed (with a fast data transfer due to GPRS);

− remote management of the alarm system from a computer with GUARDX program installed (with a fast data transfer due to GPRS).

The module can control connection with the INTEGRA control panel.

i   *If communication with the GSM module is to be effected through the RS-232 port, the local programming function in the INTEGRA control panel must be disabled.*

2.4   WORKING IN CONJUNCTION WITH STAM-1 / STAM-2 MONITORING STATION

When connected to the STAM-1 / STAM-2 monitoring station, the module makes it possible to receive event codes sent in the form of SMS or CLIP message. If used in conjunction with the STAM-2 monitoring station, the module also enables the monitoring station to receive CSD data transmissions containing the event codes and to send SMS messages.
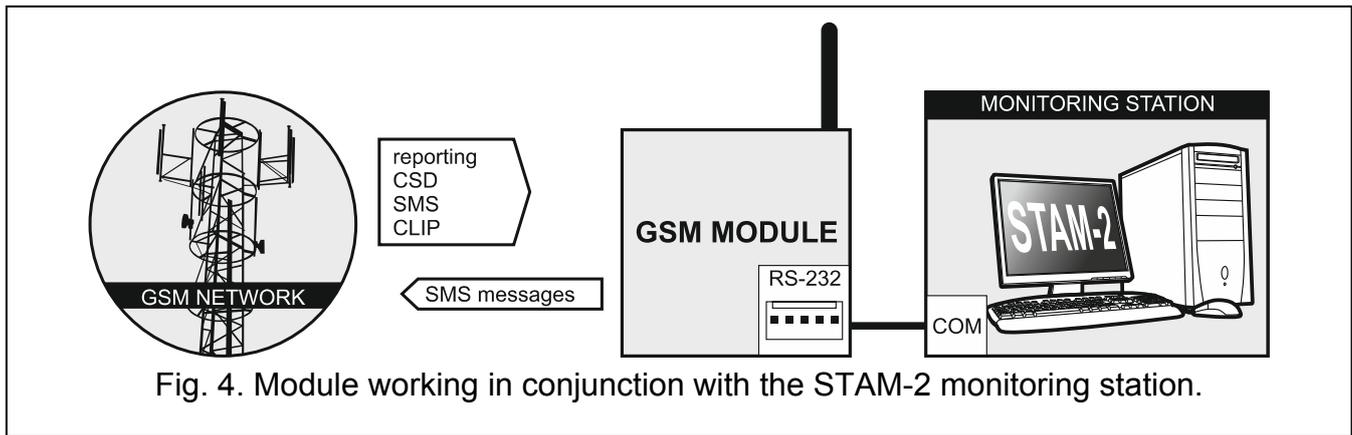
Fig. 4. Module working in conjunction with the STAM-2 monitoring station.

2.5 WORKING IN CONJUNCTION WITH PBX STATIONS

The module can work in conjunction with the Private Branch Exchanges (PBX) as an additional external telephone line. It can be used to make outgoing calls to the mobile phone numbers and thus optimize the costs incurred.

3. DESCRIPTION OF THE MODULE

3.1 DESCRIPTION OF THE ELECTRONICS BOARD

Description of the terminals:

+12V – power supply input (12 V DC ±15%).

GND – common ground.

FLT – OC type output to indicate a problem with login to the GSM network. It activates after about 10 minutes after occurrence of the problem. If active, it is shorted to the common ground. It remains shorted to the common ground until the cause of the trouble disappears. The problem with login to the GSM network may be caused by:

– missing SIM card,

– entered invalid PIN code,

– missing or defective antenna,

– non-availability of GSM service (out of range),

– telephone defect.

Detailed information about the trouble is provided by the on-board LED indicators (see: section "LED indicators").

The output can be connected to a control panel zone or it can directly control operation of the relay.

R-1, T-1 – telephone line output (connection for alarm control panel, telephone set or another device provided with telephone dialer).

i | *When making a telephone call, the module changes the DC voltage polarization on telephone line output (T-1 and R-1 terminals), thus enabling individual charging of the phone calls.*

IN1–IN4 – the module's inputs.
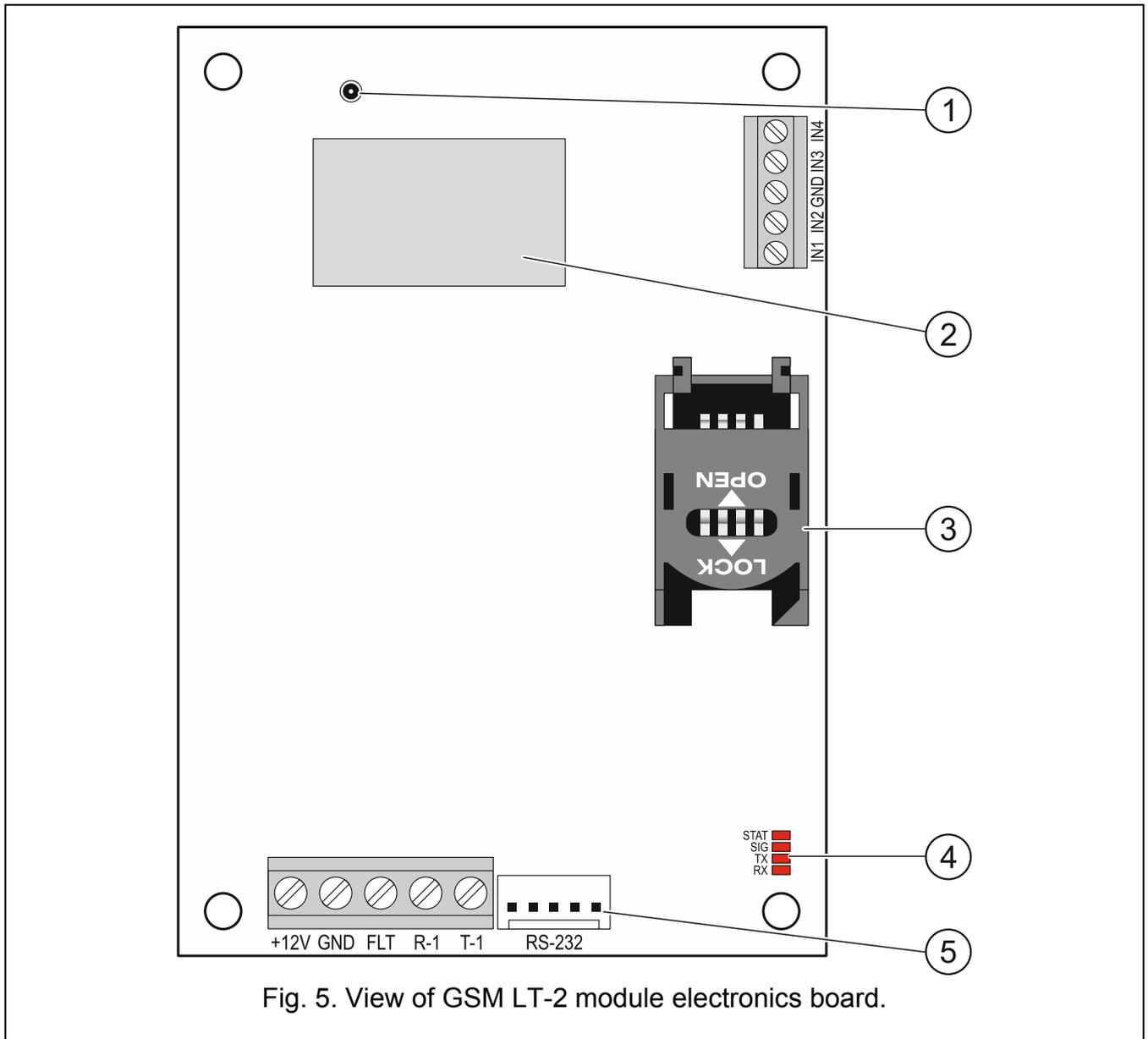
Fig. 5. View of GSM LT-2 module electronics board.

Explanations for Fig 5:

1 - **external antenna connection.**

2 - **GSM industrial telephone.**

3 - **SIM card socket.** It is not recommended that SIM card be inserted into the socket before the card PIN code has been programmed in the module. The GPRS service must be activated in the SIM card installed in the module, if the module is to use the functions requiring the GPRS technology.

4 - **LEDs** (see: section "LED indicators"):

  – STAT LED indicate the module status,

  – SIG LED indicate the level of antenna signal received by GSM telephone,

  – TX and RX LEDs indicate that data are being transferred through the RS-232 port.

5 - **RS-232 port**.

3.2 LED INDICATORS

Shown graphically below is how information is presented by the LED indicators. Each lighting scheme covers about 4 seconds and is repeated after 1 second pause (☐ – LED is OFF; ■ – LED is ON).

STAT indicates the module status:
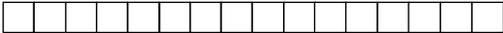
– (LED off) module power off,
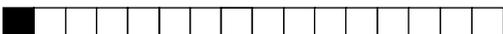
– normal operation of module,

– no communication with GSM telephone,

– invalid PIN code,
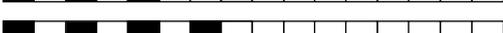
– no PIN code,
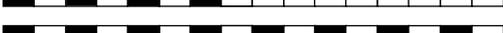
– no SIM card,
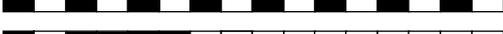
– PUK code required,

– PH-SIM PIN code required,

– PIN2 code required,

– PUK2 code required,

– SIM card busy,

– module restart on switching power on,

– SIM card damaged,

– invalid SIM card,

– other errors,

– active connection.

SIG indicates level of signal received by GSM telephone:

– no GSM network signal,

– level of signal 1,

– level of signal 2,

– level of signal 3,
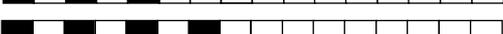
– level of signal 4.

4. INSTALLATION

⚠ **Disconnect power before making any electrical connections.**

It is not advisable to power up the device if the antenna is not connected.

The GSM module should be installed indoors, in spaces with normal air humidity.

The module power supply should have a sufficient output current and be provided with a battery. It is recommended that it be placed at a distance of 3 m or less from the module.

ℹ *When the supply voltage drops below 9.8 V, restart of the module occurs.*

The following installation procedure is recommended:

1. Connect the antenna to the on-board connector. If thick masonry walls, metal partitions etc. at the module installation place reduce the range of radio signal, use an antenna which can be installed at a location some distance from the module, where the correct

level of GSM signal can be obtained. Do not install the antenna in parallel to the low-voltage electrical installation wires, because this may cause interference.

2. Connect the control panel, telephone or another device equipped with telephone dialer to the R-1 and T-1 terminals.

3. Connect the devices whose operation is to be monitored by the module to the input terminals, as required.

4. Connect the power cables to the +12V and GND terminals.

5. Turn on power supply of the module.

6. Using the suitable function, enter the PIN code of SIM card (if required by the SIM card).

7. Turn off power supply of the module.

8. Insert the SIM card into the socket (see: Fig. 6).
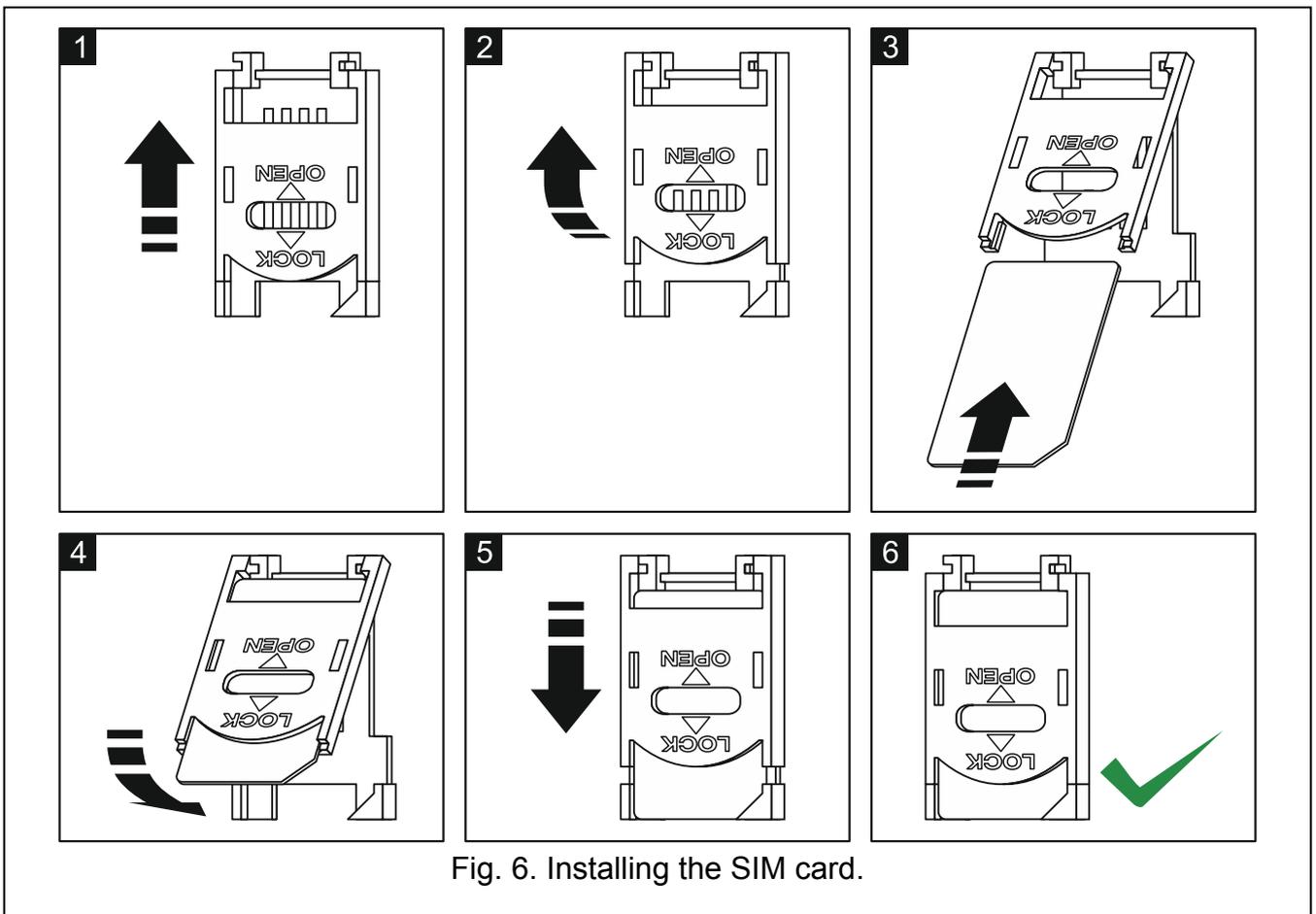
Fig. 6. Installing the SIM card.

9. Turn on power supply of the module. Logging the telephone into the GSM network may take a few minutes.

If the SIM card PIN code is not programmed within 10 minutes of power-up, the telephone line voltage will be turned off.

After the third attempt to use the wrong PIN code, the SIM card will be blocked. To unblock the SIM card, insert it into a mobile phone and enter the PUK code or use the function [16].

10. If the module is to be used as the external modem, connect the module RS-232 port to the suitable port of the device.

5. PROGRAMMING

You can configure the module using the keypad of telephone connected to the R-1 and T-1 terminals, or a computer with suitable software installed (locally and remotely).

5.1 DTMF PROGRAMMING

5.1.1 Programming mode

In order to enter the module programming mode:

1. Take off-hook the telephone connected to the R-1 and T-1 terminals.

2. Using the telephone keypad, enter the following character string: **[******xxxxxx******#]**, where "xxxxxx" is a six-digit access code (see: "Access code" p. 23).

3. Entry into the programming mode will be confirmed by the module with 4 short beeps followed by 1 long beep. It will remain in this mode until you put the phone on-hook.

i   *You can enter the module programming mode irrespective of the sounds which are currently produced in the telephone handset (e.g. the line busy tone, if the SIM card is not installed).*

5.1.2 Starting a function and entering data

In order to run a function, enter its number using the number keys, and then press twice the [*] key (see: "Function list"). Having started the function, you can use the keypad to program the required parameters. To enter digits, use the number keys. You can also enter special characters:

- press in turn the [*] and [1] keys;

* - press twice the [*] key;

+ - press in turn the [*] and [0] key.

Having entered the data, confirm them using the [#] key.

When programming, the following sounds can be heard in the telephone handset:

3 short beeps – correct data;

2 long beeps – incorrect data.

For an overview of the other sounds generated by the module, please refer to the description of functions [14] and [15].

i   *In the case of parameter programming functions, pressing the [#] key just after the function is started will reset the programmed values.*

5.1.3 Function list

i   *Shown in square brackets are key sequences used to start individual functions.*

Shown after the dash is the parameter that can be programmed using the function.

[01]** – 4-digit PIN code of SIM card.

[02]** – telephone number of the short message service center (see: "SMS center no." p. 22).

[03]** – a 6-digit SMS control command to be sent to the module to set the modem format (see: "Set modem format" p. 24).

[04]** – a 6-digit SMS control command to be sent to the module to start the remote modem communication between the INTEGRA control panel and the DLOADX program or between the CA-64 control panel and the DLOAD64 program (see: "Call to service" p. 24).

[05∗∗] – a 6-digit SMS control command to be sent to the module to start the remote modem communication between the INTEGRA control panel and the GUARDX program or between the CA-64 control panel and the GUARD64 program (see: "Call to user" p. 25).

[06∗∗] – a sequence of up to 4 characters (digits: 0-9 and characters: **#**, **∗**, **+**), which – if selected by the device connected to the telephone line output – will cause simulation of the pager station by the module (see: "PAGER station tel. no." p. 23).

[08∗∗] – 2 digits corresponding to transmission standard of the modem with which the GSM module communicates (see: "Modem format" p. 23).

[09∗∗] – parameter defining the data transfer rate through the RS-232 port:
    0 – 4800 bps,
    1 – 9600 bps,
    2 – 19200 bps.

[10∗∗] – parameter defining whether the programmed number of the short message service center is a full international phone number:
    0 – no,
    1 – yes.

[11∗∗] – parameter defining whether the module is to be used as an external modem (see: "Fax/modem" p. 23):
    0 – no,
    1 – yes.

[12∗∗] – a 6-digit access code, necessary to program the module using a telephone set. In the module with factory default settings, the **123456** value is programmed. The code can only be checked in the DLOAD10 program (see: "Access code" p. 23).

[13∗∗] – enter the digits 1234 and confirm using the [#] key to restore the factory settings (see: "Module factory settings " p. 46).

[14∗∗] – on pressing the [#] key, the module will generate beeps (short – S, long – L) to indicate the level of signal received by the GSM antenna:
    LL – no GSM network signal,
    S – level of signal 1,
    SS – level of signal 2,
    SSS – level of signal 3,
    SSSS – level of signal 4.

[15∗∗] – on pressing the [#] key, the module will generate beeps (short – S, long – L) to indicate the module status:
    S – normal operation of module,
    SS – no communication with GSM telephone,
    SSS – invalid PIN code,
    SSSS – no PIN code,
    SSSSSSS – no SIM card,
    SL – PUK code required,
    SSL – PH-SIM PIN code required,
    SSSL – PIN2 code required,
    SSSSL – PUK2 code required,
    LISs (*beeps of decreasing duration*) – SIM card busy,
    LL – module restart on switching power on,
    LLL – SIM card damaged,
    LSLS – invalid SIM card,
    LSSSL – other errors.

[16∗∗] – 8-digit PUK code of the SIM card. If correct, the code will be confirmed after several seconds by 3 short beeps (SSS). The function is only available, if the SIM card is blocked. The module will indicate blocking of the SIM card by means of the STAT LED or beeps in the handset of telephone connected to the phone line output.

> ℹ️ *Entering the PUK code into the module will unblock the SIM card and change its PIN code to that currently stored in the module memory. Before entering the PUK code, make sure that the programmed PIN code is correct.*
>
> *If no PIN code of SIM card has been saved to the module settings, the PUK code will not be accepted.*

[17∗∗] – parameter defining whether voltage at the phone line terminals is to be switched off in case of a GSM phone trouble:
   0 – no,
   1 – yes.

[18∗∗] – parameter defining whether establishing a connection is to be indicated by sound signal:
   0 – no,
   1 – yes.

[19∗∗] – parameter defining the test transmission period:
   0 – no test transmission,
   1 – 2 h 58 min,
   2 – 5 h 57 min,
   3 – 11 h 56 min,
   4 – 23 h 55 min,
   5 – 2 d 23 h 53 min,
   6 – 6 d 23 h 30 min.

   Having entered the parameter, you can either confirm it at once with the [#] key or enter the next parameter to define whether the first test transmission is to be performed at a time randomly selected by the module:
   0 – no,
   1 – yes.

[20∗∗] – parameter defining whether the messaging / test transmission is to have a priority (see: "Messaging priority" p. 25):
   0 – no,
   1 – yes.

[21∗∗] … **[24∗∗]** – telephone number to which the module will be able to send event messages / CLIP test transmissions ([21] – 1. phone number; [22] – 2. phone number; [23] – 3. phone number; [24] – 4. phone number). You can enter from 1 to 16 characters (digits: 0-9 and characters: **#**, ∗, **+**). It is recommended that the phone number be preceded by the country code.

[25∗∗] – 6 digits (ddhhmm) defining the test transmission period. You can program up to 31 days 23 hrs 59 min. Values 00 mean no test transmission.

   Having entered 6 digits, you can either confirm them at once using the [#] key or enter a seventh digit to define whether the first test transmission is to be performed at a time randomly selected by the module (see: "Test transmission every" p. 26):
   0 – no,
   1 – yes.

[26∗∗] – telephone number to which the module will send confirmation of a change in module settings, received in the SMS message (see "Send SMS on change to" p. 25). You can

enter from 1 to 16 characters (digits: 0-9 and characters: **#**, *****, **+**). The entered phone number must be preceded by the country code.

[27**] – 6 digits representing the SMS control command to be sent to module to program the test transmission period (see: "Change test period." p. 25).

[28**] … [31**] – in each function you have to program 6 digits representing the SMS control command to be sent to the module to program the phone number, to which event messages / test transmissions will be sent ([28] – 1. phone number; [29] – 2. phone number; [30] – 3. phone number; [31] – 4. phone number; see also: "Change tel. 1–4" p. 25).

[32**] … [35**] – number of messaging / test transmission retries ([32] – for 1. phone number; [33] – for 2. phone number; [34] – for 3. phone number; [35] – for 4. phone number). You can program values from 1 to 15.

[36**] … [39**] – parameter defining whether the messaging / test transmission is to be confirmed ([36] – to 1. phone number; [37] – to 2. phone number; [38] – to 3. phone number; [39] – to 4. phone number; see also: "Test transmissions" p. 26 and "Send SMS on change to" p. 25):

0 – no,

1 – yes,

2 – yes, and if there is no confirmation, an SMS message will be sent.

[40**] – pressing the [#] key will restore the standard content of all SMS messages to be sent by the module.

[41**] – a sequence of up to 4 digits which will replace the "+" character in the phone number from which the CLIP connection is established to the module.

[42**] – parameter defining the operating mode of the caller identification feature (see: "CLIP" p. 26):

0 – disabled,

1 – FSK,

2 – DTMF.

[43**] – a sequence of 4 characters defining the input types:

  − 1. character – input IN1 (0 – NC; 1 – NO);
  − 2. character – input IN2 (0 – NC; 1 – NO);
  − 3. character – input IN3 (0 – NC; 1 – NO);
  − 4. character – input IN4 (0 – NC; 1 – NO).

[44**] – a sequence of 4 characters defining the times of input restore (see "Input restore IN1–4" p. 28):

  − 1. character – input IN1 (0 – 4 seconds; 1 – 4 minutes);
  − 2. character – input IN2 (0 – 4 seconds; 1 – 4 minutes);
  − 3. character – input IN3 (0 – 4 seconds; 1 – 4 minutes);
  − 4. character – input IN4 (0 – 4 seconds; 1 – 4 minutes).

[45**] … [48**] – input sensitivity ([45] – IN1; [46] – IN2; [47] – IN3; [48] – IN4; see also: "Input sensitivity IN1–4" p. 27). You can program values from 20 to 1275 ms.

[49**] … [52**] – number of violations of the input, after which it will be automatically bypassed ([49] – IN1; [50] – IN2; [51] – IN3; [52] – IN4). You can program values from 0 to 15. Value 0 means no bypassing.

[53**] … [56**] – a sequence of characters defining the time after which the violation counter programmed for the input will be reset ([53] – IN1; [54] – IN2; [55] – IN3; [56] – IN4):

  − 1. character – time unit (0 – seconds; 1 – minutes);

− other characters – value (you can program values from 0 to 127 seconds or minutes; value 0 means violations will be counted without any time limitations).

[57∗∗] … [60∗∗] – a sequence of characters defining how long the input will be bypassed in case of the automatic bypassing ([57] – IN1; [58] – IN2; [59] – IN3; [60] – IN4):

− 1. character – time unit (0 – seconds; 1 – minutes);

− other characters – value (you can program from 0 to 127 seconds or minutes; value 0 means that the input will be bypassed until unbypassed by the user).

[61∗∗] … [64∗∗] – a sequence of 4 characters defining how the input violation messaging will be realized to the given phone number ([61] – IN1; [62] – IN2; [63] – IN3; [64] – IN4):

− 1. character – 1. phone number for messaging (0 – no messaging; 1 – CLIP messaging; 2 – SMS messaging);

− 2. character – 2. phone number for messaging (0 – no messaging; 1 – CLIP messaging; 2 – SMS messaging);

− 3. character – 3. phone number for messaging (0 – no messaging; 1 – CLIP messaging; 2 – SMS messaging);

− 4. character – 4. phone number for messaging (0 – no messaging; 1 – CLIP messaging; 2 – SMS messaging).

[65∗∗] … [68∗∗] – a sequence of 4 characters defining how the input restore messaging will be realized to the given phone number ([65] – IN1; [66] – IN2; [67] – IN3; [68] – IN4). The way of programming is identical as for the functions [61] … [64].

[69∗∗] – a sequence of 4 characters defining how the messaging about the module test transmission will be realized to the given phone number. The way of programming is identical as for the functions [61] … [64].

[70∗∗] – a sequence of 5 characters defining whether the input is a bypassing one (see "Bypassing input" p. 28), or a bypassed one (see "Bypassed inputs" p. 28):

− 1. character – bypassing input (0 – none; 1 – input IN1; 2 – input IN2; 3 – input IN3; 4 – input IN4);

− 2. character – bypassed input IN1 (0 – no; 1 – yes);

− 3. character – bypassed input IN2 (0 – no; 1 – yes);

− 4. character – bypassed input IN3 (0 – no; 1 – yes);

− 5. character – bypassed input IN4 (0 – no; 1 – yes).

[71∗∗] … [74∗∗] – a 6-digit SMS control command to be sent to the module to bypass an input ([71] – IN1; [72] – IN2; [73] – IN3; [74] – IN4; see also "SMS control" p. 29).

[75∗∗] – a 6-digit SMS control command to be sent to the module to bypass all inputs (see "SMS control" p. 29).

[76∗∗] … [79∗∗] – a 6-digit SMS control command to be sent to the module to unbypass an input ([76] – IN1; [77] – IN2; [78] – IN3; [79] – IN4; see also "SMS control" p. 29).

[80∗∗] – a 6-digit SMS control command to be sent to the module to unbypass all inputs (see "SMS control" p. 29).

[81∗∗] – a 6-digit SMS control command to be sent to the module to check the input status (see "SMS control" p. 29).

[82∗∗] … [85∗∗] – a 4-digit DTMF control code to bypass an input ([82] – IN1; [83] – IN2; [84] – IN3; [85] – IN4; see also "DTMF control" p. 29).

[86∗∗] – a 4-digit DTMF control code to bypass all inputs (see "DTMF control" p. 29).

[87∗∗] … [90∗∗] – a 4-digit DTMF control code to unbypass an input ([87] – IN1; [88] – IN2; [89] – IN3; [90] – IN4; see also "DTMF control" p. 29).

[91∗∗] – a 4-digit DTMF control code to unbypass all inputs (see "DTMF control" p. 29).

[92∗∗] – a 4-digit DTMF control code to check the input status (see "DTMF control" p. 29).

[93∗∗] – parameter which defines the ringing time. You can program values from 0 to 99 (see "Ringing time" p. 26).

[94∗∗] – parameter defining whether the module status information is to be attached to the content of SMS message programmed for test transmission (see "Test tr. with GSM status" p. 27):

0 – no,

1 – yes.

[95∗∗] – a sequence of 4 characters defining whether the input can be bypassed from the keypad of telephone connected to the phone line output:

− 1. character – input IN1 (0 – no; 1 – yes);

− 2. character – input IN2 (0 – no; 1 – yes);

− 3. character – input IN3 (0 – no; 1 – yes);

− 4. character – input IN4 (0 – no; 1 – yes).

[96∗∗] – a 6-character (digits: 0-9 and characters: **#**, ∗, **+**) code starting the DTMF local control function (see "Local control tel. no." p. 30).

[97∗∗] – parameter defining whether the module is to execute the reporting function:

0 – no,

1 – yes.

[98∗∗] – parameter defining whether the module is to monitor the status of connection with INTEGRA control panel through the RS-232 port:

0 – no,

1 – yes.

| *i* | *The connection will be monitored for the INTEGRA control panel version 1.06 or later.* |

[99∗∗] – parameter defining whether the module is to answer to CLIP (see: "CLIP answering" p. 26):

0 – no,

1 – yes (reply in CLIP form),

2 – yes (reply in SMS form).

[99∗∗] – enter the digits 7890 and confirm with the [#] key to start the module test mode. It allows you to check the LEDs on the module electronics board for proper functioning. After the test mode is started, the LEDs will go off. Then, each of them (in order: STAT, SIG, TX, RX) will light up for about 1 second and the FLT output will activate. When the LED testing procedure is finished, the module will return to the state from before starting the test mode.

[100∗∗] – duration of the kiss-off tone generated by the module to confirm the event receipt from the control panel. You can program values from the 100 to 2550 ms range (by default: 850 ms; see also "Kiss off time" p. 31).

[101∗∗] – phone number of the simulated monitoring station 1 / phone number to which AUDIO reporting is realized for the monitoring station 1 (see "Tel. Number" p. 33). You can select from 1 to 16 characters (digits: 0-9 and characters: **#**, ∗, **+**).

[102∗∗] – phone number of the simulated monitoring station 2 / phone number to which AUDIO reporting is realized for the monitoring station 2 (see "Tel. Number" p. 33). You can select from 1 to 16 characters (digits: 0-9 and characters: **#**, ∗, **+**).

[105∗∗] – parameter defining the number of unsuccessful attempts to send the event through the given reporting channel, after which the module will attempt to send the event through the next channel. You can program values from 2 to 255 (default: 3).

[106∗∗] – phone number to which SMS reporting is realized for the monitoring station 1. You can enter from 1 to 16 characters (digits: 0-9 and characters: **#**, **∗**, **+**). The phone number entered must be preceded by the country code.

[107∗∗] – phone number to which SMS reporting is realized for the monitoring station 2. You can enter from 1 to 16 characters (digits: 0-9 and characters: **#**, **∗**, **+**). The phone number entered must be preceded by the country code.

[108∗∗] – phone number to which SMS message will be sent if the module fails to send an event to the monitoring station. You can select from 1 to 16 characters (digits: 0-9 and characters: **#**, **∗**, **+**).

[111∗∗] – a sequence of 4 characters defining which GSM frequencies are to be used by the GSM phone installed in the module (the parameter refers to the modules with u-blox LEON-G100 GSM phone):

- 1. character – 850 MHz (0 – no; 1 – yes);
- 2. character – 900 MHz (0 – no; 1 – yes);
- 3. character – 1800 MHz (0 – no; 1 – yes);
- 4. character – 1900 MHz (0 – no; 1 – yes).

You can select any band combination. If you select all four or none, the module will interpret it as all frequencies being available and will select the most suitable one(s).

[112∗∗] – 6 digits representing the SMS control command to be sent to module to restart it.

[113∗∗] – parameter defining the time after which the module, if not used, will restart the phone (see: "Autorestart every" p. 27). You can enter from 1 to 25 hours.

[114∗∗] – a sequence of up to 8 characters (digits: 0-9 and characters: **#**, **∗**, **+**) defining the country code, which should be programmed, if the PAGER type cellular phone numbers to be notified in the control panel are not preceded by it.

[115∗∗] – parameter defining whether the SMS and DTMF control can be executed:

0 – from any phone number,

1 – from authorized phone numbers only (see: "SMS control only from list of messaging tel. numbers" p. 25).

[116∗∗] – a sequence of 5 characters defining the phone numbers to which the module is to send the received SMS messages:

- 1. character – 1. phone number for messaging / test transmission (0 – no; 1 – yes);
- 2. character – 2. phone number for messaging / test transmission (0 – no; 1 – yes);
- 3. character – 3. phone number for messaging / test transmission (0 – no; 1 – yes);
- 4. character – 4. phone number for messaging / test transmission (0 – no; 1 – yes);
- 5. character – phone number for SMS control confirmation (0 – no; 1 – yes).

[117∗∗] – a 6-digit SMS control command to be sent to the module to transfer the network codes – USSD (see: "USSD codes forwarding message" p. 27).

[118∗∗] – a 6-digit SMS control command to be sent to the module to initiate the firmware update process (see: "SMS initiating update" p. 35).

[119∗∗] – a 6-digit SMS control command to be sent to the module to establish communication with the DLOAD10 program (see: "Initiating SMS" p. 34).

[120∗∗] – a 6-digit SMS control command to be sent to the module to establish communication with the DLOADX program (see: "Initiating SMS" p. 35).

[121∗∗] – a 6-digit SMS control command to be sent to the module to establish communication with the GUARDX program (see: "Initiating SMS" p. 35).

5.2 DLOAD10 PROGRAM

The DLOAD10 program version 1.00.039 is required for programming and configuration of the GSM LT-2 module version 2.14. The program is delivered free of charge with the device. Communication between the program and the module can be effected locally or remotely. The module with factory default settings can only be programmed locally.

The program installation file can be found on the CD delivered with the module. You can also download it from the www.satel.eu website. The DLOAD10 program can be installed on the computers running the Windows XP/VISTA/7 operating system.

Access to the program is protected with a password. During its first start-up, the program is accessed with the factory default password: 1234 (you do not need to enter it, just click on the "OK" button).

i   *It is recommended that the factory password (access code) be changed. It can be replaced with any sequence of 16 alphanumeric characters.*

5.2.1   Local programming

1. Connect the module RS-232 port with the computer serial COM port (see: Fig. 7).

Fig. 7. Computer connection to the module RS-232 port. Shown on the left is the PIN-5 plug to be connected into the module connector. Shown on the right is DB-9 female plug (solder side view). A ready cable is offered in the DB9F/RJ-KPL set.
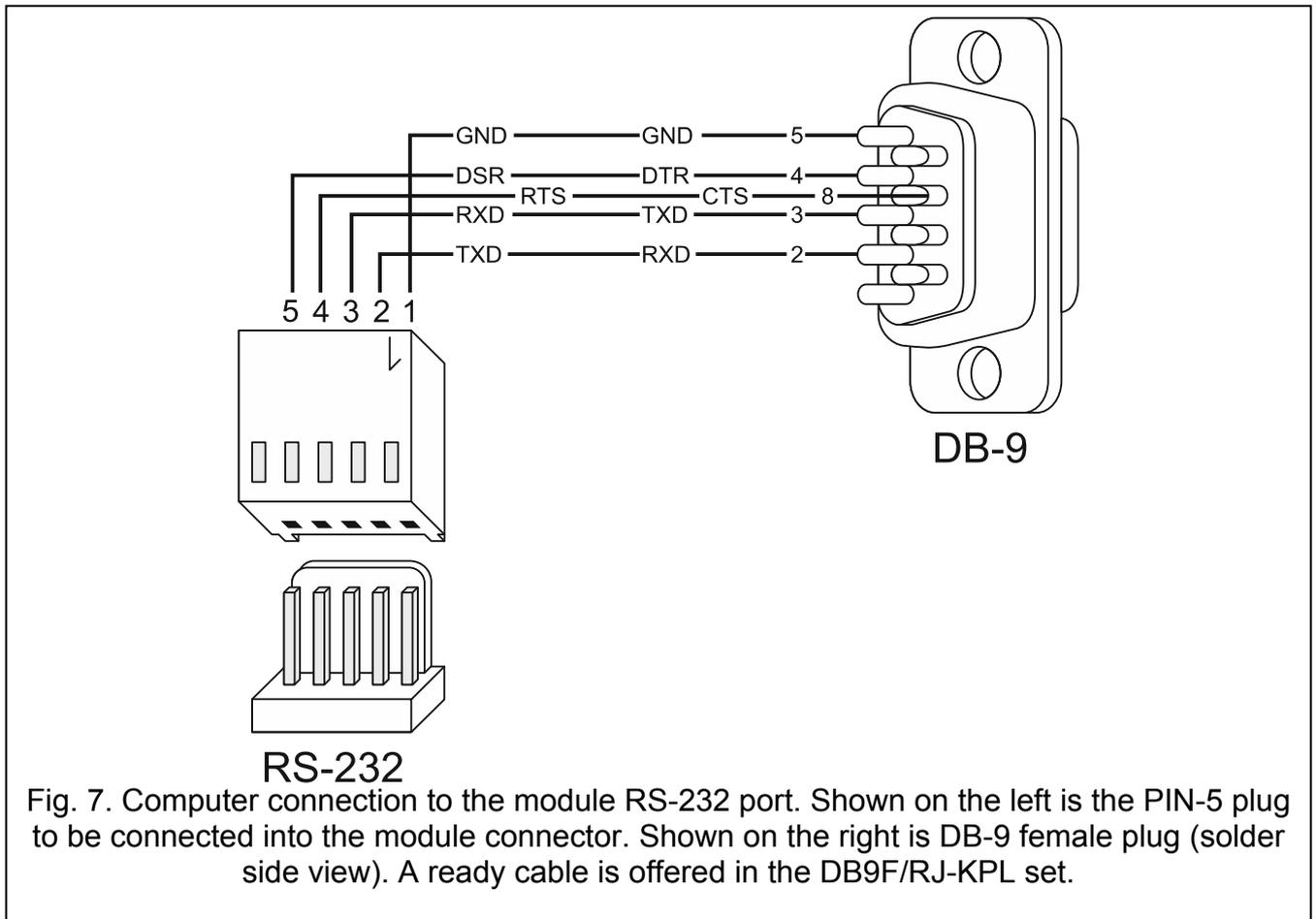
2. In the DLOAD10 program, "File" menu, first select "New device", and then "GSM-4/5/LT module" (see: Fig. 8).

3. Press the ⌨ key. The "Configuration" window will open.
4. Indicate the computer port to which the module is connected (see: Fig. 9).
5. Click on the "OK" button.
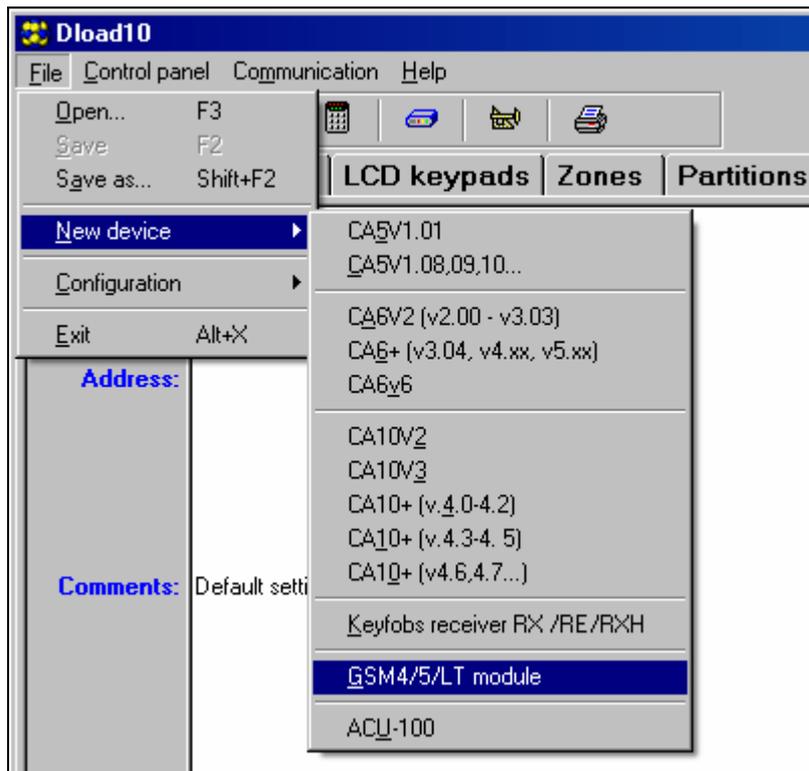
Fig. 8. Selecting the GSM module after starting the DLOAD10 program.
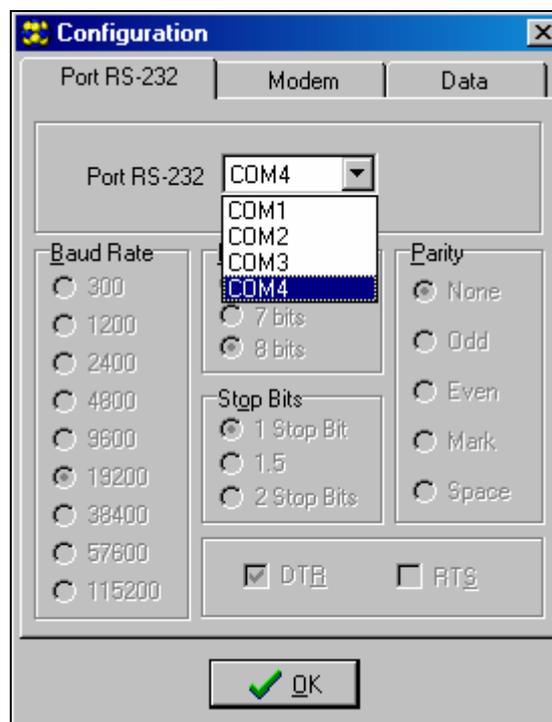
Fig. 9. "Configuration" window.

6. Click on the ▣ button. The module data will be read out. Establishing communication will be indicated in the program window by a suitable message.

7. Program suitable parameters for the module.

8. Click on the ▣ button to write the entered data to the module.

9. The programmed data can be saved as a file to the computer disk.

> *i* *When the programming is completed, disconnect the cable connecting the module to the computer.*

5.2.2   Remote programming

> ⚠ **During remote programming, the module will not execute any other functions requiring the use of GSM telephone.**

> *i* *Most of the parameters required for remote programming of the module can only be programmed using the DLOAD10 program.*

The remote programming is available after the following items have been programmed:

- in the "GSM LT-2" tab:
    - PIN code of the SIM card (if PIN code is required by the card);
    - access point name (APN) for the Internet GPRS connection ("GPRS APN" field);
   - DNS server IP address ("DNS server" field) to be used by the module (you do not need to program the DNS server address, if the computer address will be entered as an IP address, not a name);
    - user name for the Internet GPRS connection ("Username" field);
    - password for the Internet GPRS connection ("Password" field);
- in the "Downloading TCP/IP" tab:
    - the control command that initiate connection with the computer ("Initiating SMS" field);
    - address of the computer from which the module is to be remotely programmed ("Server address" field);
    - whether the module can connect to the computer whose address will be given in the SMS message ("Server from SMS" option);
    - number of the port through which communication between computer and module is to be effected;
    - DLOAD10 key.

The computer running the DLOAD10 program must have the so-called public address (that can be seen directly in the Internet by everybody).

In order to establish communication between the module and the computer do the following:

1. Start the DLOAD10 program.
2. Select the "TCP/IP" in the "Communication" menu. A window will open in which information on server activation will be displayed (see: Fig. 10).
3. Send to the GSM module telephone number an SMS message containing the control command used to start communication with the DLOAD10 program. The module will connect to the computer whose address is programmed in the module.

> *i* *If the "Server from SMS" ("TCP/IP downloading" tab) option is enabled in the modul, you can send a message with the **xxxxxx=aaaa:p.** or **xxxxxx=aaaa:p=** content, where "xxxxxx" is the control command used to initiate communication with the DLOAD10 program, "aaaa" is the address of computer with which communication is to be established by the module, shown as an IP address or as a name, and "p" is the number of network port through which communication with the DLOAD10 program is to take place. The module will connect to the computer whose address was given in the SMS message (the computer address programmed in the GSM module will be ignored). If the control command is correctly indicated in the SMS message, but the other data are incorrect, then the address and port of the server with which*

communication is to be established will be downloaded from the settings programmed in the module.
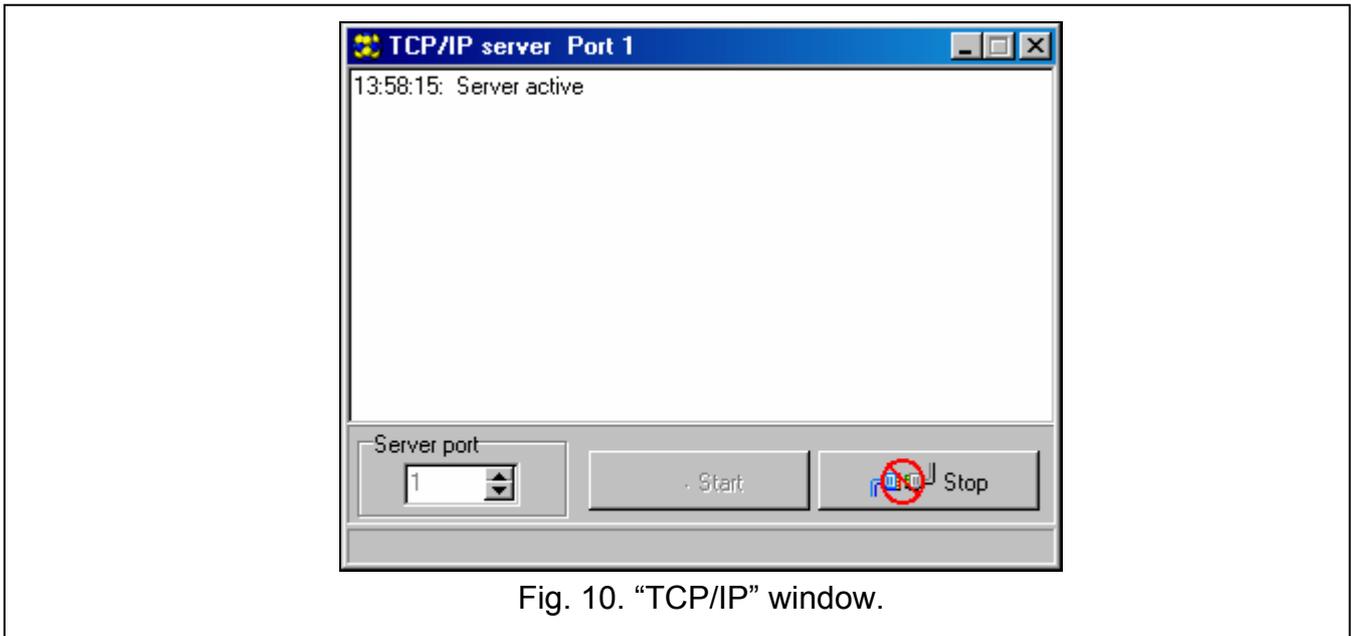
Fig. 10. "TCP/IP" window.

5.2.3   Main menu of DLOAD10 program
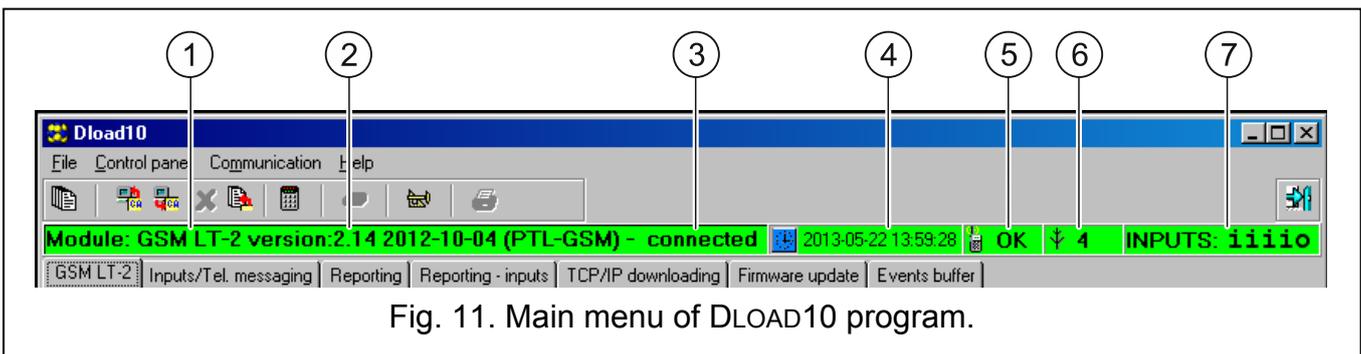
Fig. 11. Main menu of DLOAD10 program.

Explanations for Fig 11:

1 - GSM module type.

2 - module firmware version (version number and build date).

3 - information on the status of communication between module and program.

4 - time and date according to the module clock. When logging into the network, the module updates these data automatically, if the operator whose services are used by the module offers such a function.

5 - information on the GSM telephone status.

6 - level of signal received by the GSM antenna.

7 - information on input status: The symbols illustrate the following input states:

   I   input violated;

   i   input OK;

   b   input bypassed;

   o   FLT output ON;

   o   FLT output OFF.

Przyciski:

Events – button opens the "Events buffer" tab.

Read – button allows reading data from the module.

Write – button allows writing data to the module.

Quit transmission – button makes it possible to cancel the data reading/writing.

Event log read – button allows reading the event log.

ON-LINE mode – button opens the window where you can bypass / unbypass zones. The FLT output status is also displayed in the window.

Configuration – button opens the "Configuration" window.

Exit – button closes the program.

5.2.4   Status bar
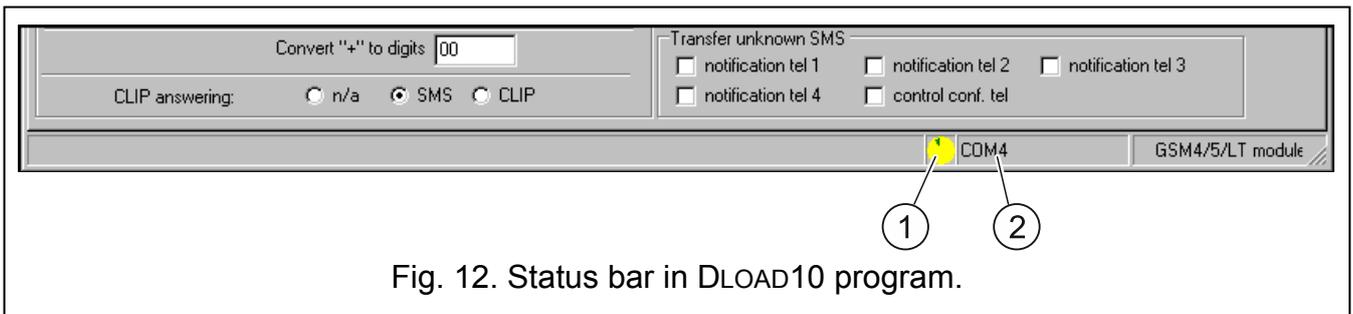
Fig. 12. Status bar in DLOAD10 program.

Explanations for Figure 12:

1 - icon indicating the status of communication with the module:
  – green color – ready to send data;
  – alternating green and yellow color – data transmission in progress;
  – gray color – COM port disabled.

  A click on the icon button in case of communication via the RS-232 port – will enable/disable the COM port.

2 - information on way of communication with the module:
  – COMn (n = COM port number) – communication through the RS-232 port;
  TCP/IP – communication using the GPRS technology.

5.2.5   Changing the program access code

1. In the "File" menu, select "Configuration", and then "Change access code" (see: Fig. 13).
2. Enter the old access code and click on the "OK" button
3. Enter the new access code and click on the "OK" button.
4. Enter again the new access code and click on the "OK" button.

The program allows to get access based on additional codes which can be programmed and for which authority level can be defined (in the "File" menu, select "Configuration", and then "Dload10 users" – see: Fig. 13).
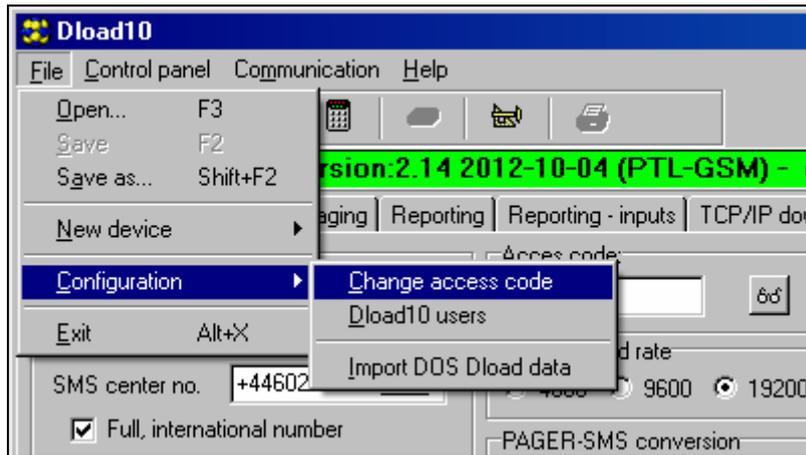
Fig. 13. Functions related to the DLOAD10 program access.

5.2.6 "GSM LT-2" tab

i | *Shown in square brackets are the numbers of functions for the DTMF programming mode.*
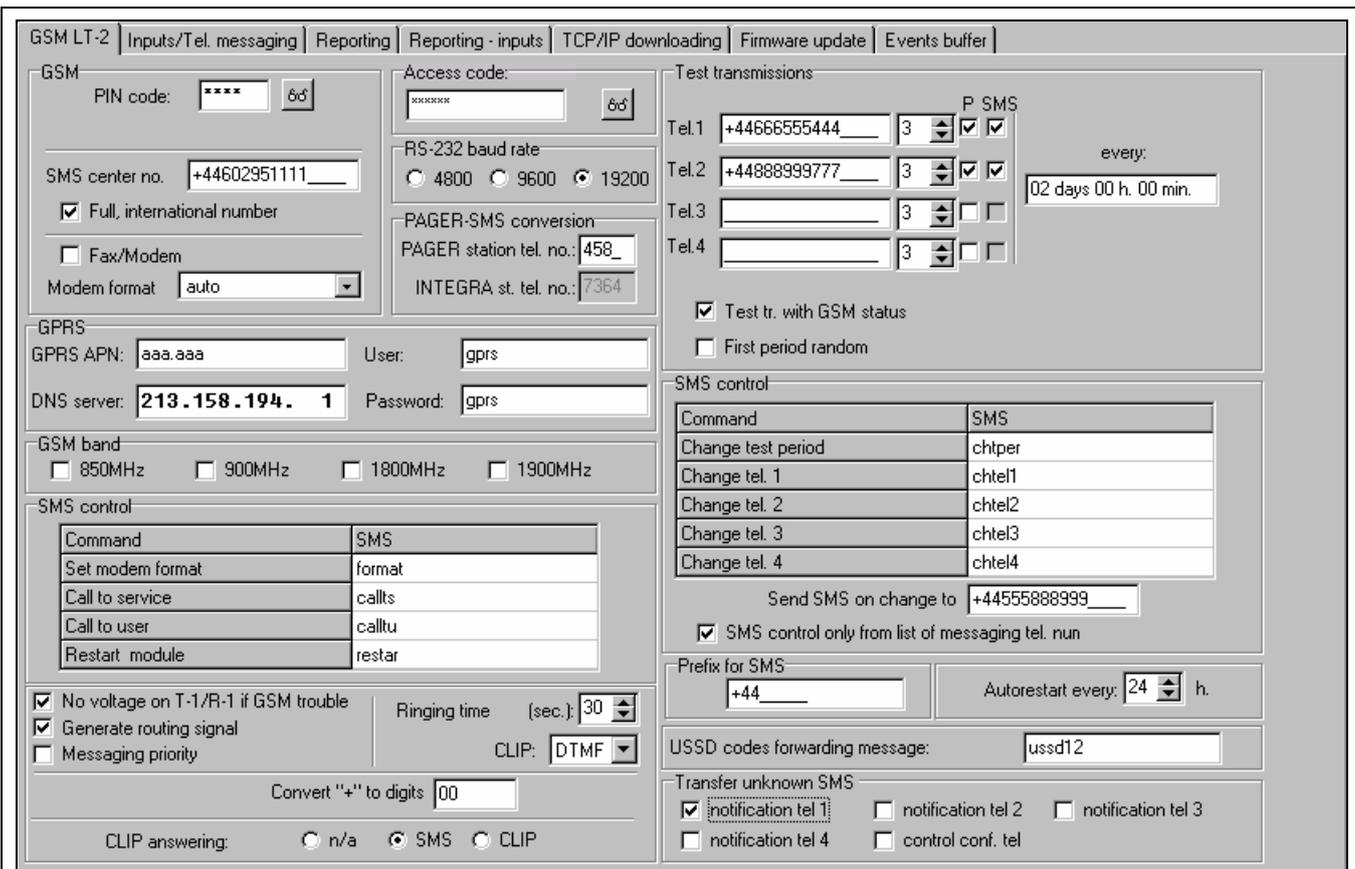
Fig. 14. "GSM LT-2" tab.

PIN code [01] – PIN code of SIM card.

i | *Entering a wrong code may result in blocking the SIM card.*

SMS center no. [02] – telephone number of the short message service center (up to 16 characters). If the number has been written by the operator to the memory of SIM card installed in the device, it need not be entered. In such a situation, the module will

download it automatically. Otherwise, it is necessary to enter the number, if the module is to send SMS messages. It should be remembered that the number written into the module must be suitable for the network in which the SIM card is registered.

Full, international number [10] – if this option is enabled, the SMS center number must be entered as an international number (i.e. including the country code).

Fax/modem [11] – if this option is enabled, the module can be used as an external modem. The module starts working in the modem mode on receiving the AT command, and stops working in this mode when the DTR signal is lost.

i | *Do not enable the "Fax/modem" option, if the module is working in conjunction with the INTEGRA control panel (the control panel is connected to the module RS-232 port).*

Modem format [08] – the transmission standard of the modem with which the GSM module communicates. The format code is to be entered as 2 digits, according to the table below.

format code	modem format for GSM u-blox LEON-G100 telephone
00	auto
04	2400 bps V.22bis
05	2400 bps V.26ter
06	4800 bps V.32
07	9600 bps V.32
12	9600 bps V.34
68	2400 bps V.110/X.31 flag stuffing
70	4800 bps V.110/X.31 flag stuffing
71	9600 bps V.110/X.31 flag stuffing

Tabela 1. Modem format codes for the GSM u-blox LEON-G100 telephone.

Access code [12] – a sequence of 6 alphanumeric characters starting the local DTMF programming function. Entering the sequence from the keypad of telephone connected to the phone line output will enable you to define the module settings. In the module with factory default settings, the value 123456 is preprogrammed. You will be able to see the value when you click on the 🔍 button. If you delete the access code and quit the local programming mode, any next changes in the settings, including the code restoration, will only be possible by means of the DLOAD10 program.

RS-232 baud rate [09] – the rate of data transfer through the RS-232 port.

PAGER station tel. no. [06] – the number after dialing of which by a device connected to the telephone line output the module will simulate the pager station. The further part of the dialed number will be treated as the cellular telephone number to which the PAGER type message will be sent in the form of SMS message. The pager station number can consist of up to 4 characters.

i | *The programmed number must be unique and must not coincide with any other number programmed in the module.*

GPRS APN – access point name for Internet GPRS connection.

DNS server – IP address of DNS server to be used by the module. It is necessary for GPRS communication, when the address of device to which the control panel is to connect (monitoring station, computer with DLOAD10 program) has been entered in the form of a name. If all addresses are entered in the form of an IP address (4 decimal numbers, separated by dots), the DNS server address need not be programmed.

User – user name for Internet GPRS connection.

Password – password for Internet GPRS connection.

> *i* | *The GPRS parameters can only be programmed using the DLOAD10 program.*
>
> *APN, user name and password have to be programmed, if the data transfer using GPRS technology technologii (event codes, programming) is to be available.*

GSM band [111] – the frequency bands which are to be supported by the GSM phone (the parameter applies to modules with GSM u-blox LEON-G100 telephone). There are the following bands to choose from:
- 850 MHz,
- 900 MHz,
- 1800 MHz,
- 1900 MHz.

You can select any number of bands. If all or none of them are selected, the module will recognize that all frequencies are available and will choose the most suitable one(s).

SMS control – the module can be remotely controlled by means of SMS messages containing the suitable control command. You can program the control commands after receiving of which the module will:
- change modem format [03];
- initiate modem communication between INTEGRA / CA-64 control panel and DLOADX / DLOAD64 program [04];
- initiate modem communication between INTEGRA / CA-64 control panel and GUARDX / GUARD64 program [05];
- be restarted [112];
- program the test transmission period [27];
- program the phone numbers for messaging / test transmissions [28]…[31].

> *i* | *The control command may have any content, but it must consist of six alphanumeric characters.*
>
> *The control commands may not contain any diacritical marks.*
>
> *You can use a space character in the control command content, but at least one of the characters must be different from the space character.*

Set modem format [03]

The SMS message sent to the module to set the modem format must have the following form: **xxxxxx=yy**, where "xxxxxx" is the control command and "yy" is the modem format code (see Table 1 p. 23). Having received such an SMS message, the module will change the modem format.

Call to service [04]

The control command can start the remote modem communication between the INTEGRA control panel and the DLOADX program, or between the CA-64 control panel and the DLOAD64 program (this applies to the CA-64 control panel firmware version 1.04.03 or newer, and the DLOAD64 program version 1.04.04 or newer).

The SMS message sent to the module may have the following form: **xxxxxx=yyyy.** or **xxxxxx=yyyy=**, where "xxxxxx" is the control command and "yyyy" is the computer telephone number with which the control panel is to establish communication. If no telephone number is given, the control panel will connect to the number programmed in its memory. If the module receives an SMS message initiating connection with the

INTEGRA control panel, and the access to DLOADX program is blocked, the module will send an appropriate SMS message to the telephone number programmed using the "Send SMS on change to" function (see: p. 25).

Call to user [05]

The control command can start the remote modem communication between the INTEGRA control panel and the GUARDX program, or between the CA-64 control panel and the GUARD64 program (this applies to the CA-64 control panel firmware version 1.04.03 or newer, and the GUARD64 program version 1.04.04 or newer).

The SMS message sent to the module may have the following form: **xxxxxx=yyyy.** or **xxxxxx=yyyy=**, where "xxxxxx" is the control command and "yyyy" is the computer telephone number with which the control panel is to establish communication. If no telephone number is given, the control panel will connect to the number programmed in its memory.

Change test period. [27]

Using the control command, you can program the test transmission period. The SMS message to be sent to the module must have the following form: "**xxxxxx=P**", where "xxxxxx" is the control command, and "P" is the test transmission period:

0 – no test transmission,
1 – 2 h 58 min,
2 – 5 h 57 min,
3 – 11 h 56 min,
4 – 23 h 55 min,
5 – 2 d 23 h 53 min,
6 – 6 d 23 h 30 min.

Change tel. 1–4 [28]…[31]

Using the control command, you can program the phone numbers for messaging / test transmissions. The SMS message sent to the module must have the following form: "**xxxxxx=yyyy.**" or "**xxxxxx=yyyy=**", where "xxxxxx" is the control command and "yyyy" is the new telephone number for messaging / test transmissions. It is recommended that the telephone number be preceded by the country code.

Send SMS on change to [26] – phone number to which the module will send confirmation of execution of the control command received in the SMS message. The message sent by the module will contain information on the current module state (see: section describing the remote control by means of SMS message p. 38). The entered phone number must be preceded by the country code.

SMS control only from list of messaging tel. numbers [115] – if this option is enabled, the SMS and DTMF control is possible from the telephone whose number is:

- one of the numbers to which event message / test transmission is sent (see: p. 26),
- the number to which the SMS message is sent with acknowledgement that the SMS control has been executed (see: "Send SMS on change to" p. 25),
- the number to which the SMS message is sent, if the module fails to send the event code to the monitoring station (see: "Tel. number" p. 33).

No voltage on T-1/R-1 if GSM trouble [17] – if this option is enabled, voltage on the telephone line terminals will be turned off in case of the GSM telephone trouble.

Generate routing signal [18] – if the option is enabled, the connection setup is audibly signaled.

Messaging priority [20] – if the option is enabled and a telephone connection of the device connected to the line output is going on, and an event occurs which is to be messaged by

the module / module will have to send a test transmission, the connection will be terminated. If this option is disabled, messaging / test transmission will only be realized when the device connected to the telephone line output completes the call.

Ringing time (sec.) [93] – the time during which the incoming GSM call can be answered by the device connected to the telephone line output. After this time has elapsed, the call will be rejected or, if the DTMF control codes have been programmed, the control will be available. Values from 0 to 99 seconds can be programmed. Programming the value 0 means that the module will not answer any calls.

> i *It is recommended that the voice mail be disabled.*

CLIP [42] – the module offers the calling line identification presentation feature (Caller ID retransmission). The following options are available:
– - [feature disabled];
– FSK;
– DTMF.

Convert "+" to digits [41] – the digits to which the "+" character will be changed in the telephone number, from which a CLIP connection is established with the module number.

CLIP answering [99] – the module offers the CLIP answering feature, which enables its operation to be monitored. The following options are available:
– n/a – no answer,
– SMS – answer in the form of SMS message with the "Test message" content,
– CLIP – answer in the CLIP form.

Test transmissions – the module can send event messages / test transmissions to four phone numbers, for which the following parameters should be defined:
– phone number [21]…[24] – it is recommended that the number be preceded by the country code.
– number of retries of CLIP messaging / test transmission to the given phone number [32]…[35] – you can program values from 1 to 15.
– confirmation control option, parametr 1 [36]…[39] – if this option is enabled, receiving of the CLIP message / test transmission by the given phone is to be confirmed. In order to confirm the receipt of CLIP message / test transmission, you must reject the module call not earlier than 10 seconds and not later than 20 seconds of hearing the ring in the phone. The confirmation of message / test transmission receipt will make the module stop repeating the call.

> i *If the confirmation control option is disabled, the module will only establish one connection, irrespective of the programmed number of retries.*

– option of SMS message sending if there is no confirmation, parameter 2 [36]…[39] – if this option is enabled, lack of receipt of the CLIP message / test transmission will result in sending an SMS message with content entered for this event to the given phone number.

Test transmission every [19] / [25] – the test transmission can be sent in the form of an SMS message to the selected telephone numbers, can be realized by means of CLIP or sent in the form of event code to the monitoring station. If the test transmission is to be of periodical nature, you have to program every how many days, hours and minutes it is to be sent. The first test transmission will be sent after approximately 30 seconds of saving the settings to the module, and the next one – after expiry of the programmed time. Up to 31 days 23 hours 59 minutes can be programmed. The values 00 mean there will be no test transmission.

Test tr. with GSM status [94] – if this option is enabled, it is possible to obtain information on module input status, current GSM signal level and the content of SMS message programmed for the test transmission (see: "Tel. messaging" p. 29).

First period random [19] / [25] – if this option is enabled, the first test transmission will be made at a time randomly selected by the module. The next transmissions will take place according to the period programmed using the "Test transmission every" function.

Prefix for SMS [114] – the country code which must be programmed, if they not precede the cellular phone numbers for PAGER type messaging in the control panel.

Autorestart every [113] – you can program the time period after which the module, if not used, will restart the telephone. From 1 to 25 hours can be entered. The "use" of the module shall be understood as:

– receiving the module outgoing call,
– occurrence of the incoming call signal,
– receiving confirmation of an SMS message sent by the module,
– receiving an SMS message,
– sending data by the module working as an external modem.

The first telephone restart will take place after the programmed time elapsed from saving the settings to module.

USSD codes forwarding message [117] – the control command which must precede the USSD code in the SMS message sent to the module. The USSD codes enable you e.g. to check the account status of SIM card installed in the module. The SMS message sent to the module must have the following form: "**xxxxxx=yyyy.**" or "**xxxxxx=yyyy=**", where "xxxxxx" is the control command and "yyyy" is the USSD code supported by the operator of GSM network in which the telephone operates (it depends on the SIM card installed in the module). Having received such an SMS message, the module will execute the USSD code contained in it. The answer obtained from the operator is forwarded in the form of SMS message to the telephone number from which the control command was sent.

i	*It is not advisable to use the advanced functions available due to the USSD service if menu is presented in response to the entered code.*

Transfer unknown SMS [116] – the module can forward the received unknown SMS messages (e.g. information received from the GSM provider) to:

– phone numbers to which event messages / test transmissions are sent (see: p. 26),
– phone number to which an SMS message is sent to confirm that the SMS control has been executed (see: "Send SMS on change to" p. 25).

The message content is preceded by the telephone number from which it was sent. For the modules with built-in GSM u-blox LEON-G100 telephone, the message content will be sent in the form of 2 messages, if it contains more than 160 characters, including the message number. For the modules with built-in other telephone model, up to 64 first characters of the received message can be sent.

5.2.7 "Inputs / Tel. messaging" tab

Inputs

Input type IN1–4 [43] – the input can be programmed as 1.NC (normally closed) lub 2.NO (normally open).

Input sensitivity IN1–4 [45] …[48] – the time during which the input must be violated so that the event can be registered by the module. Values from the 20 to 1275 ms range can be programmed.

Input restore IN1–4 [44] – the time counted from the input restore, after which the module will recognize that the normal status of input is restored. You can program 4 seconds or 4 minutes.

Bypassing input [70] – you can indicate one input as bypassing input, i.e. its violation will result in bypassing other inputs of the module. The input restore means the end of bypassing.

Bypassed inputs [70] – you can indicate the inputs which will be bypassed after violation of the bypassing input.

INPUTS:	IN 1	IN 2	IN 3	IN 4
Input type	2:NO	2:NO	2:NO	2:NO
Input sensitivity	200ms	200ms	200ms	200ms
Input restore	4 sec.	4 sec.	4 sec.	4 sec.
Bypassing input	×			
Bypassed inputs		×	×	×
Auto-bypass on alarms	3	3	3	3
Counting period	120 sec.	120 sec.	120 sec.	120 sec.
Auto-bypass duration	24 h.	24 h.	24 h.	24 h.
Manual bypass enabled	×	×	×	×

Tel. messaging

Event	Tel.1	Tel.2	Tel.3	Tel.4	SMS
Input 1 violated	c	c			Input IN1 violation
Input 1 restore	c	c			Input IN1 restore
Input 2 violated			s		Input IN2 violation
Input 2 restore			s		Input IN2 restore
Input 3 violated				s	Input IN3 violation
Input 3 restore				s	Input IN3 restore
Input 4 violated			c		Input IN4 violation
Input 4 restore			c		Input IN4 restore
Test transmission	s	s			Test message

Triggering

Command	SMS	DTMF
Bypass input 1	bypin1	1111
Bypass input 2	bypin2	1122
Bypass input 3	bypin3	1133
Bypass input 4	bypin4	1144
Bypass all inputs	bypali	1155
Unbypass input 1	unbin1	0011
Unbypass input 2	unbin2	0022
Unbypass input 3	unbin3	0033
Unbypass input 4	unbin4	0044
Unbypass all inputs	unbali	0055
Check inputs state	chinst	0000

Local control tel. no. 112345

Fig. 15. "Inputs / Tel. messaging" tab.

Auto-bypass on alarms [49] … [52] – the number of input violations after which it will be automatically bypassed, after the module registers the end of last violation. Values from 0 to 15 can be programmed. Value 0 means no bypass.

Counting period IN1–4 [53] … [56] – the time after which the counter of violations programmed for the given input will be reset. Values from 0 to 127 seconds or minutes can be programmed. Value 0 means that the violations will be counted without time limits.

Auto-bypass duration IN1–4 [57] … [60] – if the input is to be automatically bypassed for a specific time period, it must be indicated. Values from 0 to 127 seconds or minutes can be programmed. Value 0 means that the given input will be bypassed until unbypassed by the user.

Manual bypass enabled [95] – you can indicate the inputs which will be available for bypassing from the keypad of telephone connected to the telephone line output (see: parameter "Local control tel. no." p. 30).

Tel. messaging

For the events about the occurrence of which the module is to notify, you should indicate which telephones and how will be notified. In the DLOAD10 program, you can do so by double clicking on the field corresponding to the telephone number. The following items will be displayed in turn:

blank field – no messaging,

s – SMS message,

c – CLIP.

The module can provide information on:

- – inputs 1...4 violation [61] … [64];
- – inputs 1...4 restore [65] … [68].

Additionally, the test transmission can be performed [69].

For the events about which the module can provide information and for the test transmission, you can program the content of messages which will be used for SMS messaging. The messages may contain up to 32 characters and must not contain diacritical marks.

i | *The content of messages to be used for messaging notifications can be programmed by means of the DLOAD10 program.*

SMS control

The module can be remotely controlled by means of SMS messages containing the suitable control command. You can program the control commands after receiving of which the module will:

- – bypass inputs [71] … [74], [75];
- – unbypass inputs [76] … [79], [80];
- – indicate status of inputs [81].

i | *The control command may have any content, but it must consist of six alphanumeric characters.*

The control commands may not contain any diacritical marks.

You can use a space character in the control command content, but at least one of the characters must be different from the space character.

DTMF control

The module can be remotely controlled by means of the keypad of telephone from which communication with the module has been established. You can program the codes which, if entered will:

- – bypass inputs [82] … [85], [86];
- – unbypass inputs [87] … [90], [91];
- – check status of inputs [92].

The codes used for DTMF remote control must consist of 4 digits.

i | *The DTMF tones may get distorted during transmission, which will impede the control.*

Design of some telephones requires activation of the DTMF feature.

Local control tel. no. [96]

You can program a 6-character code that allow to start the local DTMF control. After entering this code from the keypad of telephone connected to the telephone line output, it will be possible to control the module inputs (see the section describing control from the keypad of telephone connected to the telephone line output p. 38).

5.2.8 "Reporting" tab

i | *Some of the parameters necessary to execute the reporting function can only be programmed using the DLOAD10 program.*

For further reporting related information, please refer to section "Starting the reporting" p. 39.

Fig. 16. "Reporting" tab.

Configuring the reporting

Reporting [97] – if this option is enabled, the module can report to monitoring station.

i | *For the modules with built-in industrial-type GSM telephone other than the u-blox LEON-G100 telephone, enabling the reporting feature will disable the feature of PAGER message conversion into SMS messages.*

INTEGRA presence supervision [98] – if this option is enabled, the status of connection with INTEGRA control panel through RS-232 port is monitored. If loss of connection is found, the module can report it to the monitoring station.

i | *The connection will be monitored for the INTEGRA control panel version 1.06 or later.*

Events buffering – the option is available in the module with built-in GSM u-blox LEON-G100 telephone. If it is enabled:

− each event received from the control panel is acknowledged at once,

− events (both received from the control panel and generated by the module) are recorded in the event log (see: section "Events buffer" tab p. 36).

If the option is disabled, depending on the reporting link, receipt of the event is acknowledged to the control panel by:

− GPRS / CSD / AUDIO – after acknowledgement of the event receipt by the monitoring station;

− SMS – after sending the SMS message.

i | *If the events buffering option is enabled, the event codes are not sent through the AUDIO link.*

Reporting test send all media – if this option is enabled, the module test transmission is sent over all links which have been programmed using the "Priority" function. If the "Events buffering" option is enabled and the test transmission is sent over all links, the "Events buffer" tab will only display the event communicating information about test transmission sent over the reporting link programmed as the last one.

Number of reporting retries before sending other way [105] – the number of unsuccessful retries to send the event over the given reporting link, after which the module will make an attempt to send the event over the next link. You can program values from 2 to 255 (by default: 3).

Kiss off time [100] – duration of the tone generated by the module to acknowledge receipt of the event from the alarm control panel. The entered value must be suitable for the reporting format selected in the control panel. You can program values from the 100 to 2550 ms range (by default: 850 ms).

Reporting station 1 / 2

Station addr. – network address of the monitoring station. It can be entered as an IP address (4 decimal numbers separated by dots) or as a name.

Port – the number of TCP port on which transmission of events to the monitoring station will take place. **The port number must be consistent with that programmed in the monitoring station.**

Station key – a sequence of up to 12 alphanumeric characters (digits, letters and special characters) defining the key with which the data sent to the monitoring station will be encrypted. **It must be consistent with that programmed in the monitoring station**

System identifier – 4 characters (digits or letters from A to F), used to identify the module. They must be programmed, if events generated by the module are to be reported, or in the case of GPRS reporting. The value 0000, which is entered by default, means no identifier.

GPRS key – a sequence of up to 5 alphanumeric characters to identify the module. **It must be consistent with that programmed in the monitoring station** ("ETHM / GPRS key").

Priority

In order to add a reporting link:

1. Press the "Add" button. A drop-down menu with available reporting links will be displayed.
2. Click on the selected reporting link. It will be displayed on the list.
3. Proceed in the same way to select next reporting links.

In order to delete a programmed link:

1. Highlight in the list the selected reporting link which is to be removed.
2. Press the "Remove" button.

In order to change the reporting link priority:

1. Click on the selected reporting link on the list.
2. If it is to be moved one position up, press the [↑] button.
3. If it is to be moved one position down, press the [↓] button.

> *If the module fails to send an event to the selected monitoring station over all the programmed links in turn, it will restart the reporting procedure after 2.5 minutes.*
>
> *If more than one reporting link is selected for the given monitoring station and the event has been successfully sent over a link which is not the first on the list, and the module is to send a next event within less than 7.5 minutes, the event will be sent over the same link. The module will make an attempt to send events, starting from the first reporting link on the list, only after 7.5 minutes have elapsed since sending the last event.*

Telephone numbers

CDS reporting – the telephone number to which events are reported using the CSD technology. It must be preceded by the country code.

> *The CSD data transmission service is usually available in the basic package of services offered by the mobile network operator, however before programming suitable parameters you must make sure if it is possible to use it.*

SMS reporting [106] / [107] – the telephone number to which events are reported using the SMS messages. It must be preceded by the country code.

SMS format

The SMS message format for SMS reporting must be entered, as required by the monitoring station. The SMS message format programmed by default in the module corresponds to the default settings of STAM-2 monitoring station (program version 1.2.0 or newer). If the events are to be sent in the 4/2 format, only identifier and event code are sent (instead of the [←] zone symbol). Question marks will be sent instead of the other special characters of the format.

AUDIO reporting/station simulation

Tel. Number [101] / [102] – the number after dialing of which by the device connected to the telephone line output the module will receive event codes and retransmit them to the monitoring station using the GSM telephone. The method of forwarding the event codes should be determined by selecting the suitable reporting links – see: "Priority" p. 32. If the events are to be sent over the AUDIO link, it must be the whole number of the monitoring station to which the events will be sent.

> *i*   *The programmed number must be unique and must not coincide with any other number programmed in the module.*

Reporting problem messaging

Send SMS – the content of SMS message which will be sent if the "Events buffering" option is enabled and the module fails to send the event to the selected monitoring station. The message can contain up to 32 characters.

Tel. number [108] – the telephone number to which SMS message will be sent if the module fails to send the event to the selected monitoring station.

5.2.9 "Reporting – inputs" tab

Event	S1	S2	Format	CODE	R	Part.	No.		
Input 1 violated	X		CID	400		01	001	Disarm	...
Input 1 restore	X		CID	400	X	01	001	Arm	...
Input 2 violated	X		CID	120		01	002	Panic alarm	...
Input 2 restore	X		CID	120	X	01	002	Panic alarm restore	...
Input 3 violated		X	4/2	AA					...
Input 3 restore		X	4/2	53					...
Input 4 violated		X	4/2	42					...
Input 4 restore		X	4/2	BA					...
Test transmission	X	X	CID	602		00	000	Periodic reporting test	...
Tel. line trouble									...
Tel. line restore									...

Fig. 17. "Reporting – inputs" tab.

The module can report to the monitoring station in the following situations:

– inputs violation IN1 ... IN4;
– inputs restore IN1 ... IN4;
– test transmission.

In the DLOAD10 program, the following parameters should be programmed:

S1 – check the field, if the event is to be sent to the monitoring station 1. Double click to check / uncheck the field.

S2 – check the field, if the event is to be sent to the monitoring station 2. Double click to check / uncheck the field.

Format – the format in which the event code will be sent. Double click to select: 4/2 (Ademco Express) or CID (Contact ID).

CODE – the event code which will be sent to the monitoring station. For the 4/2 format, 2 characters are to be programmed (digits or letters from A to F), and for Contact ID – 3 digits. In the case of Contact ID format, you can use the code editor. To open the window of code editor, click on the [...] button available in the event description field.

R – the event qualifier for Contact ID format, which defines whether it is new event or restore. Double click to check / uncheck the field. If the field is checked, the restore code is sent.

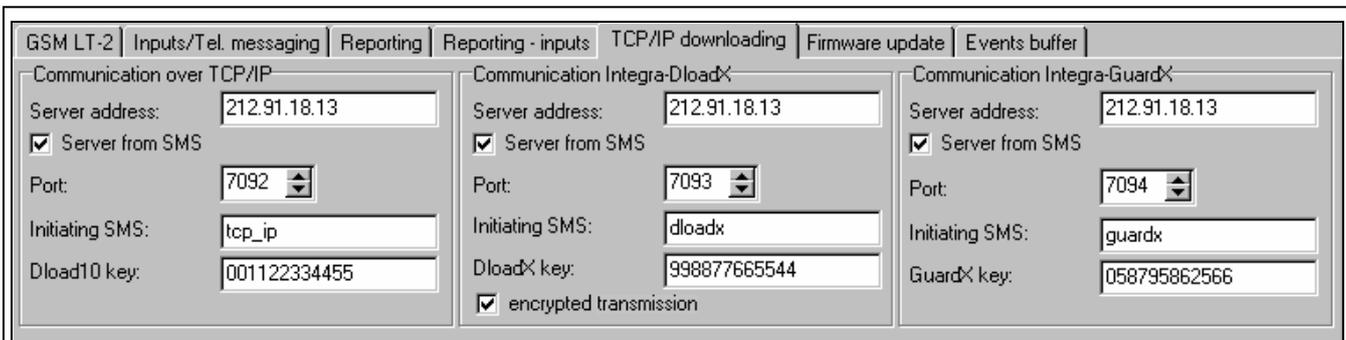**Part.** – partition number (refers to Contact ID format).

No. – number of zone / expander / user (refers to Contact ID format).

Event description – the field used for the Contact ID format. It displays description of the event whose code is entered in the "CODE" field. Additionally, the [...] button for opening the Contact ID code editor is available in the field.

5.2.10 "TCP/IP downloading" tab

i | *Most of the parameters required for correct communication between the module and the DLOAD10, DLOADX and GUARDX programs using the GPRS technology can only be programmed by means of the DLOAD10 program.*

| GSM LT-2 | Inputs/Tel. messaging | Reporting | Reporting - inputs | TCP/IP downloading | Firmware update | Events buffer |

Communication over TCP/IP
Server address: 212.91.18.13
☑ Server from SMS
Port: 7092
Initiating SMS: tcp_ip
Dload10 key: 001122334455

Communication Integra-DloadX
Server address: 212.91.18.13
☑ Server from SMS
Port: 7093
Initiating SMS: dloadx
DloadX key: 998877665544
☑ encrypted transmission

Communication Integra-GuardX
Server address: 212.91.18.13
☑ Server from SMS
Port: 7094
Initiating SMS: guardx
GuardX key: 058795862566

Fig. 18. "TCP/IP downloading" tab.

Communication over TCP/IP

Server address – address of the computer from which the module can be remotely programmed. It can be entered as an IP address or as a name.

Server from SMS – if this option is enabled, the address of server, to which the module is to connect, and the port number can be entered in the content of SMS message initiating the connection. If the address is not entered, the module will connect to the server whose address has been programmed in the module.

Port – the number of port on which the communication between computer and module will take place.

Initiating SMS [119] – the control command that must be included in the SMS message sent to the telephone number of GSM module, so that the module can start the procedure of establishing communication with the DLOAD10 program (communication using the GPRS technology).

Dload10 key – the string of 12 alphanumeric characters (digits, letters and special characters) defining the key with which the data sent to the DLOAD10 program will be encrypted. The module will only establish connection to the program using the correct key.

Communication Integra-DloadX

Server address – the address of computer with the DLOADX program, with which the module (connected to the INTEGRA control panel through RS-232 port) is to communicate using the GPRS technology. It can be entered as an IP address or as a name.

Server from SMS – if this option is enabled, the address of server, to which the module is to connect, and the port number can be entered in the content of SMS message initiating the connection. If the address is not entered, the module will connect to the computer whose address has been programmed in the module.

Port – the number of port on which the communication with the DLOADX program will take place.

Initiating SMS [120] – the control command that must be included in the SMS message sent to the telephone number of GSM module connected to the control panel, so that the module can establish communication with the DLOADX program using the GPRS technology.

DloadX key – the string of 12 alphanumeric characters (digits, letters and special characters) defining the key with which the data sent to the DLOADX program will be encrypted. The module will only establish connection to the program using the correct key.

encrypted transmission – if this option is enabled, the data transmission between module and program will be encrypted. The option must be enabled.

Communication Integra – GUARDX

Server address – the address of computer with the GUARDX program, with which the module (connected to the INTEGRA control panel through RS-232 port) is to communicate using the GPRS technology. It can be entered as an IP address or as a name.

Server from SMS – if this option is enabled, the address of server, to which the module is to connect, and the port number can be entered in the content of SMS message initiating the connection. If the address is not entered, the module will connect to the computer whose address has been programmed in the module.

Port – the number of port on which the communication with the GUARDX program will take place.

Initiating SMS [121] – the control command that must be included in the SMS message sent to the telephone number of GSM module connected to the control panel, so that the module can establish communication with the GUARDX program using the GPRS technology.

GuardX key – the string of 12 alphanumeric characters (digits, letters and special characters) defining the key with which the data sent to the GUARDX program will be encrypted. The module will only establish connection to the program using the correct key.

5.2.11 "Firmware update" tab

Remote update of the module firmware by means of GPRS is possible for modules with the u-blox LEON-G100 industrial GSM telephone.

i *Most of the parameters required to initiate the firmware update process can only be programmed by means of the DLOAD10 program.*

*For information on the firmware update server please visit the **www.satel.eu** site.*

Update server – the address of server to which the module is to connect for firmware update. It can be entered as an IP address or as a name.

Port – the number of server port shown in the form of decimal numbers.

SMS initiating update [118] – the control command that must be included in the SMS message sent to the telephone number of GSM module so as to initiate the firmware update.

Server from SMS – if this option is enabled, the address of server, to which the module is to connect, and the port number can be entered in the content of SMS message initiating the

connection. If the address is not entered, the module will connect to the server whose address has been programmed in the module.
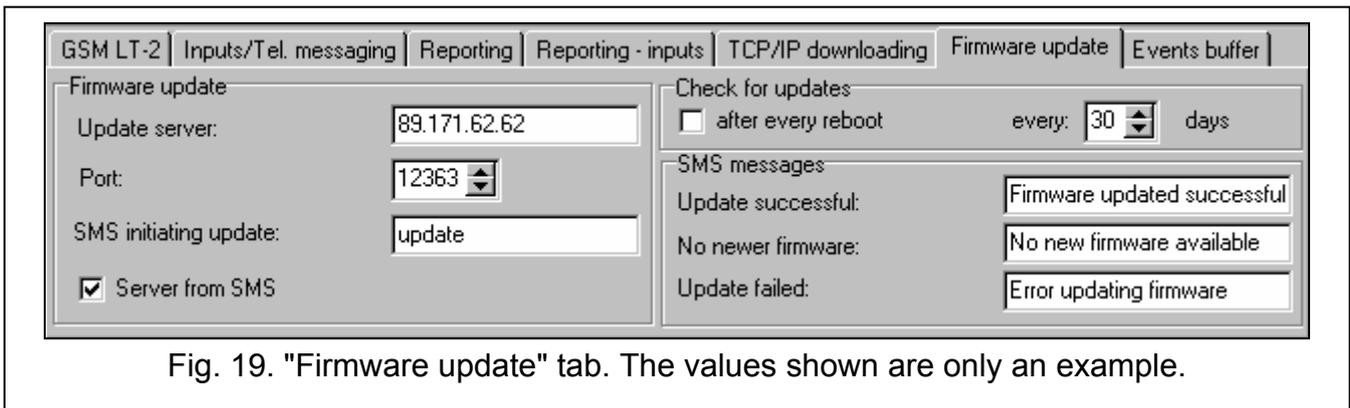

Fig. 19. "Firmware update" tab. The values shown are only an example.

Check for updates

after every reboot – if this option is enabled, the module will connect to the firmware update server after each restart to check whether a new firmware is available.

every… days – if the module is to periodically check for updates, you must indicate every how many days it is to take place. You can program up to 31 days. The value 0 means that that module will not periodically connect to the firmware update server.

SMS messages

Update successful – the SMS message which will be sent after successful update of module firmware.

No newer firmware – the SMS message which will be sent after the module has checked that there is no newer firmware for the module.

Update failed – the SMS message which will be sent after a failed attempt of module firmware update.

i | *The SMS messages that informs about the update result may contain up to 32 characters.*

5.2.12 "Events buffer" tab

The module with built-in u-blox LEON-G100 GSM telephone has a non-volatile memory recording up to 255 events. The events are saved to memory and the "Events buffer" tab is available, if the events buffering option is enabled (see: "Events buffering" p. 31).

The events are presented in the descending order (the newest at top, the oldest at bottom). The individual columns show the following information:

Received – the date when event was received by the module.

Send – the date when event was sent by the module to the monitoring station.

S1 / S2 – reporting status (S1 – monitoring station 1, S2 – monitoring station 2):

   --- – the event is not reported,

   . – the event is waiting to be reported,

   name of reporting link – the event was sent successfully to the monitoring station over the indicated link.

Event code

Description – event description (for events in Contact ID format).

Refresh – use this button to download events from the module.

Fig. 20. "Events buffer" tab.

6. CONTROL

6.1 REMOTE

6.1.1 Tone control from telephone keypad

- Program the "Time of ringing" parameter (see: p. 26).
- Program the control codes (see: section "DTMF control" p. 29).
- If the control availability is to be limited to the telephones whose numbers have been programmed in the module (see: p. 26 i p. 33) – enable the "SMS control only from list of messaging tel. numbers" option (see: p. 25).

To use the control, do the following:

1. Call the GSM module telephone number, wait until the programmed ringing time elapses and after hearing 3 short beeps enter the 4-digit control code. The module will generate a **sequence of 4 beeps**, in which successive beeps illustrate the status of consecutive inputs:

   short beep – input unbypassed,

   long beep – input bypassed;

   If a wrong control code is entered (which is unknown to the module), **2 long beeps** will be generated by the module.

   If you make a mistake when entering the control code, press the [*] or [#] key and re-enter the code. Entering a wrong code three times will result in loss of connection with the module.

2. Enter the next control codes or terminate the connection.

6.1.2   Using SMS

- Program the control commands (see: "SMS control" p. 24 and 29).
- If the control availability is to be limited to the telephones whose numbers have been programmed in the module (see: "Test transmissions" p. 26, "Send SMS on change to" p. 25 and "Tel. number" p. 33) – enable the "SMS control only from list of messaging tel. numbers" option (see: p. 25);
- If module is to confirm execution of the control command by means of SMS message, program the following items:
  - telephone number to which acknowledgements will be sent by the module (see: "Send SMS on change to" p. 25);
  - SMS center number (see: "SMS center no." p. 22).

To use the control:

1. Send the SMS message containing a control command to the telephone number of GSM module.

> *The control command may be just a fragment of the SMS message, but it must be among the first 32 characters. This makes it is possible to write the control command, including the comments, to the telephone memory and send the whole to the module..*
>
> *Several control commands may be included in one SMS message.*

2. After execution of the command, the module will send an SMS message, which can have the following form:

   "IN1=? IN2=? IN3=? IN4=? SIG=? Test: ??d??h??m, T1=?...? T2=?...? T3=?...? T4=?...?"

   where:

   IN1 ÷ IN4 – information on input status [i – input OK; I – input violated; b – input bypassed].

   SIG – current level of signal received by the antenna [digits from 0 to 4].

   Test – information about every what time the test transmission will be sent [currently programmed number of days (d), hours (h) and minutes (m)].

   T1 ÷ T4 – information on phone numbers programmed for messaging / test transmissions.

> *The SMS message confirming execution of the control command can be sent to another telephone number. In such a case the SMS message sent to the module must have the following form: **xxxxxx=yyyy.** or **xxxxxx=yyyy=**, where "xxxxxx" is the control command and "yyyy" is the telephone number to which the message is to be sent back by the module. If the telephone number is to be preceded by the country code, "00" must be used instead of the "+" character.*

6.2   LOCAL

6.2.1   From the keypad of telephone connected to telephone line output

- Define which inputs are to be bypassed manually (see: "Manual bypass enabled" p. 28).
- Program the six-digit code to allow the local bypassing / unbypassing of inputs (see: "Local control tel. no." p. 30).

To use the control:

1. Lift the handset and, using the telephone keypad, enter the control code (see: "Local control tel. no." p. 30). The module will confirm its validity generating 4 short beeps and 1 long beep.

2. Press the [∗] key and the keys corresponding to the 2 digits:

> **the first digit is, respectively**:
>> 1 - bypass input,
>>
>> 2 - unbypass input,
>>
>> 3 - check input status (in response, the device will generate beeps):
>>> **1 short beep – input unbypassed**,
>>>
>>> **3 long beeps – input bypassed**.
>
> **the second digit** is the input number (1...4) or all inputs (0).

3. Execution of the control command will be confirmed with 3 short beeps. If the command is wrong, the module will generate 2 long beeps.

4. Repeat the step 2 operations if the control is to be continued.

5. Hang up to terminate the control.

6.3   CONTROL FROM DLOAD10 PROGRAM

1. Select the "Communication" command on the menu bar to open the menu.

2. Select the "On-line" function in the menu. Alternatively, from the program main window level, press simultaneously the Ctrl+I keys or click on the 🔲 button.

3. The "IN/OT" window will be displayed.

4. Select, using the "Bypass / Unbypass" button, which input is to be bypassed / unbypassed.

7.   STARTING THE REPORTING

The module can send to the monitoring station the following event codes:

- generated by the module (input violation / restore, test transmission);
- received from the alarm control panel connected to the telephone line output;
- received from the alarm control panel connected to the RS-232 port.

The module offers the following forms of event code sending to the monitoring station:

- GPRS – packet data transmission.
- CSD – data transmission.
- SMS – SMS messages. If the event code is sent using an SMS message, the module will not receive the acknowledgement of receipt of the event code by the monitoring station. Therefore, this reporting link should be used as the last one (see p. 32). In the first place, you should use the reporting links which allow the module to receive the acknowledgement of receipt of the event code by the monitoring station.
- AUDIO – GSM voice link. Only events received from the control panel connected to the telephone line output can be sent in this way. Considering the distortions that may occur when sending event codes over the GSM voice link, using this form of transmission is not recommended.

i	*If the "Events buffering" (see: p. 31), option is enabled, the event codes will not be sent over the AUDIO link.*
	The control panel and GSM module can be configured so that the event codes are not received by the module, but only sent over the analog telephone line or GSM network (voice link). The control panel must be connected to the telephone line output and the monitoring station telephone number programmed in it must be different from that

programmed in the module by means of the "Tel. Number" functions (see: p. 33) or the "Reporting" option must be disabled in the module.

7.1 STARTING THE GPRS REPORTING

- Enable the "Monitoring" option.
- Program the system identifier (see: p. 31).
- Select GPRS as the reporting link (see: "Priority" p. 32).
- Enable the event buffering, if the events are to be written to the event log and the module is to acknowledge receipt of events from the control panel before forwarding them to the monitoring station (see: "Events buffering" p. 31).
- If the events buffering option is enabled and the module is to provide information about problems with transmission, enter the content of SMS message (see: "Send SMS" p 33) and telephone number (see: "Tel. number." p. 33) to which the information will be sent.
- Enter the GPRS communication parameters (see: p. 24):
  - name of access point (APN) for the Internet GPRS connection;
  - DNS server IP address which is to be used by the module (you do not need to program the DNS server address, if IP address will be entered for the monitoring station);
  - user name for the Internet GPRS connection;
  - user name for the Internet GPRS connection.

7.1.1 Reporting the module status (GPRS)

1. Configure the parameters of monitoring station(s) (see: p. 31):
   - enter the monitoring station address;
   - enter the number of TCP port on which communication with the monitoring station will take place;
   - enter the encryption key for data sent to the monitoring station;
   - enter the system identifier;
   - enter the GPRS key;
2. Define the rules for reporting the module related events (see: p. 33).

7.1.2 Reporting events from the control panel (GPRS)

Control panel connected only to the telephone line output

1. Program the parameters as described in section "Reporting the module status (GPRS)", it. 1.
2. Enter the telephone number which will also be programmed in the control panel for the monitoring station simulated by the module (see: "Tel. number" p. 33).
3. Define duration of the kiss-off tone generated by the module to acknowledge receipt of the event from the alarm control panel (see: "Kiss off time" p. 31).

Control panel connected to RS-232 port

Parameters related to the monitoring stations will be automatically downloaded from the control panel.

You can enable monitoring of the connection with INTEGRA control panel (see: "INTEGRA presence supervision" p. 31).

7.2   STARTING THE CSD REPORTING

- Enable the "Monitoring" option.
- Select CSD as the reporting link (see: "Priority" p. 32).
- Enable the event buffering, if the events are to be written to the event log and the module is to acknowledge receipt of events from the control panel before forwarding them to the monitoring station (see: "Events buffering" p. 31).
- If the events buffering option is enabled and the module is to provide information about problems with transmission, enter the content of SMS message (see: "Send SMS" p 33) and telephone number (see: "Tel. number" p. 33), to which the information will be sent.

7.2.1   Reporting the module status (CSD)

1. Configure the parameters of monitoring station(s) (see: p. 31):
   - enter the system identifier;
   - enter the telephone number for CSD reporting.
2. Define the rules for reporting the module related events (see: p. 33).

7.2.2   Reporting events from the control panel (CSD)

Control panel connected only to the telephone line output
1. Program the telephone number for CSD reporting (see: p. 32).
2. Enter the telephone number which will also be programmed in the control panel for the monitoring station simulated by the module (see: "Tel. number" p. 33).
3. Define duration of the kiss-off tone generated by the module to acknowledge receipt of the event from the alarm control panel (see: "Kiss off time" p. 31).

Control panel connected to RS-232 port
1. Program the telephone number for CSD reporting (see: p. 32).
2. You can enable monitoring of the connection with INTEGRA control panel (see: "INTEGRA presence supervision" p. 31).

7.3   STARTING THE SMS REPORTING

- Enable the "Monitoring" option".
- Select SMS as the reporting link (see: "Priority" p. 32).
- Enable the event buffering, if the events are to be written to the event log and the module is to acknowledge receipt of events from the control panel before forwarding them to the monitoring station (see: "Events buffering" p. 31).
- If the events buffering option is enabled and the module is to provide information about problems with transmission, enter the content of SMS message (see: "Send SMS" p 33) and telephone number (see: "Tel. number." p. 33), to which the information will be sent.

7.3.1   Reporting the module status (SMS)

1. Configure the parameters of monitoring station(s) (see: p. 31):
   - enter the system identifier;
   - enter the telephone number for SMS reporting;
   - program the SMS message format in which event codes will be sent to the monitoring station.
2. Define the rules for reporting the module related events (see: p. 33).

7.3.2 Reporting events from the control panel (SMS)

Control panel connected only to the telephone line output

1. Program the parameters in the same way as described in section "Reporting the module status (SMS)" it. 1 (you do not need to program the system identifier).
2. Enter the telephone number which will also be programmed in the control panel for the monitoring station simulated by the module (see: "Tel. Number" p. 33).
3. Define duration of the kiss-off tone generated by the module to acknowledge receipt of the event from the alarm control panel (see: "Kiss off time" p. 31).

Control panel connected to RS-232 port

1. Program the parameters in the same way as described in section "Reporting the module status (SMS)" it. 1 (you do not need to program the system identifier).
2. You can enable monitoring of the connection with INTEGRA control panel (see: "INTEGRA presence supervision" p. 31).

7.4 STARTING THE AUDIO REPORTING

i *Only events from the control panel connected to the telephone line output can be sent over the AUDIO link. Events related to the GSM module can not be sent in this way.*

- Enable the "Monitoring" option.
- Disable the "Events buffering" option if it is enabled.
- Select AUDIO as the reporting link (see: "Priority" p. 32).
- Enter the telephone number for AUDIO reporting (see: "Tel. Number" p. 33).

7.5 STARTING THE EVENT REPORTING OVER SEVERAL LINKS

If the events are to be sent using various ways of transmission, do the following:

1. Program the reporting parameters for each of the selected links, as described in previous sections.
2. Define priorities for the selected reporting links (see: "Priority" p. 32).
3. Program the number of failed retries to send the event over selected reporting link, after which the module will make an attempt to send it over the next link (see: "Number of reporting retries before sending other way" p. 31).

8. STARTING THE MESSAGING

The module offers the following forms of messaging:

- SMS – the module provides information about the event by means of an SMS message programmed in the module.
- CLIP – the module provides information about the event calling the programmed telephone numbers and hanging up automatically after maximum 50 seconds. The CLIP allows toll-free messaging. The displayed module telephone number is to be considered as notification of the event.

In order to start the messaging you must enter the telephone numbers which will be notified by the module (see: p. 26).

8.1 STARTING THE SMS MESSAGING

1. Enter the SMS center number, unless it has been written to the SIM card memory by the operator ("SMS center no." p. 22).

2. Define, as required, the rules for messaging about module related events (see: "Tel. messaging" p. 29).

8.2 STARTING THE CLIP MESSAGING

1. If the CLIP messaging is to be realized with confirmation, select confirmation control option (see: p. 26).

2. Specify the number of retries of messaging to the given telephone number (see: p. 26).

3. If the module is to send an SMS message to the selected telephone number if the receipt of notification message is not confirmed, enable the option of sending SMS message when there is no confirmation (see: p. 26).

4. If messaging is to have priority over the ongoing telephone connection of the device connected to the phone line output, enable the "Messaging priority" option (see: p. 25).

5. Define, as required, the rules for messaging about module related events (see: "Tel. messaging" p. 29).

The module will recognize the messaging as successful, if:

- *it receives no number busy information for about 10 seconds since dialing the telephone number;*
- *the call is answered.*

If the mobile phone of the message addressee is turned off or out of the network range, and the voice mail service is not active, an automatic message about the existing situation can be generated in the telephone receiver and no number busy signal is sent back. In such a case the module recognizes the notification message as received, while the user loses CLIP message.

In order to confirm receipt of the message, the connection with module must be rejected not earlier than 10 seconds and not later than 20 seconds since the telephone ring is heard. If the user rejects the connection too early, the module may retry to send the message (see: p. 26).

9. CONVERTING THE PAGER TYPE MESSAGES INTO SMS MESSAGES

The GSM module connected to the device that sends pager messages offers the capability of converting the pager messages into SMS messages.

In the GSM module:

1. Enter the SMS center number, unless it has been written by the operator to the SIM card memory (see: "SMS center no." p. 22).

2. Program the number of pager station (see: "PAGER station tel. no." p. 23).

3. Program the country code, if the telephone numbers in the device are not preceded by it (see: "Prefix for SMS" p. 27).

9.1 WORKING IN CONJUNCTION WITH THE DT-1 DIALER

In the DT-1 dialer:

1. Program the signal parameters for the paging system station according to Table 2.

DT-1		C	1	2	2	A	0	E	0	0	7	A	8

Table 2. Parameters of the paging station signal for the DT-1 dialer.

2. Program the other parameters required to start the PAGER type messaging (see DT-1 dialer manual).

10. SENDING SMS MESSAGES FROM THE TELEPHONE CONNECTED TO TELEPHONE LINE OUTPUT

The GSM module makes it possible to send SMS messages from the landline telephone set, generating the DTMF signals, connected to the telephone line output.

The module can work in 2 modes:

1. Numeric mode:
   − pressing any telephone key from 0 to 9 means entering the corresponding digit into the message;
   − pressing the [∗] key twice means switching over to the text mode.

2. Text mode:
   − three letters correspond to each numeric key (see: Fig. 21);
   − pressing the key means entering the middle letter;
   − pressing in turn the numeric key and [∗] means entering the letter on the left-hand side of the given key;
   − pressing in turn the numeric key and [#] means entering the letter on the right-hand side of the given key;
   − pressing the [0] key means entering a space;
   − pressing in turn the [0] and [∗] keys means entering a dash;
   − pressing the [1] key means entering a dot,
   − pressing in turn the [0] and [#] keys means switching over to the numeric mode.

The message will be sent on pressing the [#] key when the module is in the numeric mode.

Fig. 21. Assignment of alphanumeric characters to telephone keypad.

In order to send an SMS message:
1. Lift the receiver of the telephone connected to the telephone line output.

2. Dial the pager station number programmed in the module (see: "PAGER station tel. no." p. 23), and then the telephone number to which the SMS message is to be sent. The number should be dialed as soon as possible, without time gaps between the successive digits (the country prefix should be entered depending on whether it has been programmed by means of the "Prefix for SMS" function).

3. Two beeps will be generated by the module to acknowledge the number, if correctly received. No acknowledgement or a busy signal mean a dialing error and the necessity to restart the procedure (to make it easier, you can use the "Redial" key).

4. Enter the message according to the above described rules (the time of module waiting for entering the next characters is not limited).

i	*The SMS message sent from a landline telephone set can contain up to 62 alphanumeric characters.*
	Hanging-up when the text is being entered will terminate the SMS message sending process.

11. THE RULES FOR CONVERTING THE NUMBERS

If the calls are realized by the GSM module telephone, the telephone number received from the control panel or a traditional telephone set is subjected to conversion still before being sent over to the GSM module telephone.

1. When dialing the number, the module first checks if its initial digits are consistent with:

   – the pager station number (see: "PAGER station tel. no." p. 23) – the conversion applies to the digits following the pager station number and is limited to adding the prefix before them, if it has been programmed (see: "Prefix for SMS" p. 27),

   – the monitoring station telephone number (see: "Tel. Number" p. 33) – the number conversion is not applicable.

2. 4 seconds after dialing the last digit, the module proceeds to converting the number.

12. INITIATING THE MODULE FIRMWARE UPDATE BY SMS MESSAGE

Send to the telephone number of GSM module an SMS message containing the control command to start the module firmware update (the "SMS initiating update" function, "Firmware update" tab). The module will establish connection to the firmware update server whose address is programmed in the module.

If the "Server from SMS" ("Firmware update" tab) option is enabled in the module, you can send a message with the **xxxxxx=yyyy:zz.** or **xxxxxx=yyyy:zz=** content, where "xxxxxx" is the control command used to start the update, "yyyy" is the address of server with the latest firmware for the module (IP address or name), and "zz" is the server port number. The module will connect to the computer whose address is given in the SMS message. If the control command given in the SMS message is correct, and the other data are wrong, the address and port of the server to which the module is to connect will be downloaded from the settings programmed in the module.

After completion of the update, an SMS message containing information on the result of the process and on the module firmware version will be sent to the telephone number from which the SMS message initiating the firmware update was sent.

13. RESTORING THE FACTORY SETTINGS

13.1 DLOAD10 PROGRAM

1. Select the "Communication" command on the menu bar to open the menu.
2. Select the "Restore default settings" function in the menu. A window will be displayed in which you are to confirm your intention to restore the module factory settings.
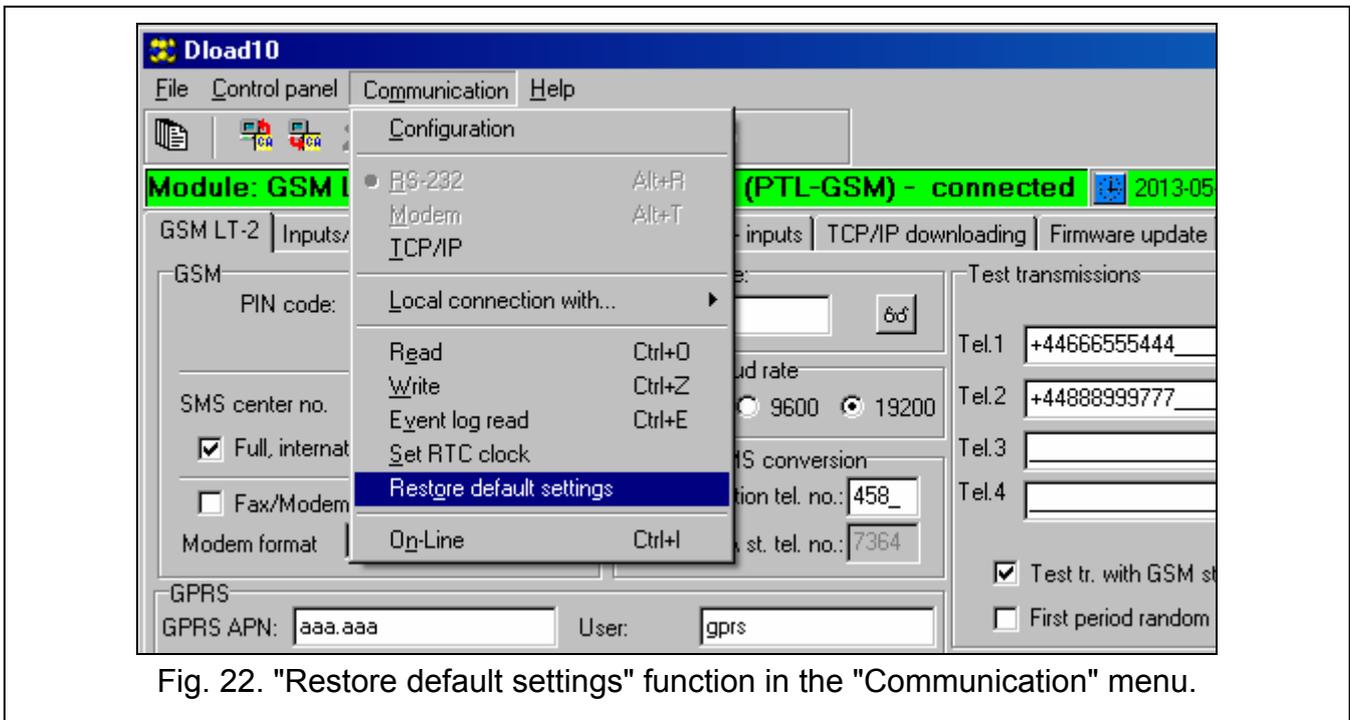
Fig. 22. "Restore default settings" function in the "Communication" menu.

13.2 DTMF PROGRAMMING

Call the function [13**], enter the digits 1234 and confirm using the # key. The factory settings will be restored.

13.3 MODULE FACTORY SETTINGS (DLOAD10)

"GSM LT-2" tab:

  Modem format: auto
  Acces code: 123456
  RS-232 baud rate: 19200 bps
  Enabled options:
    Full, international number
    No voltage on T-1/R-1 if GSM trouble
    Generate routing signal
    Test tr. with GSM status
  Ringing time: 30
  Convert "+" to digits: 00
  CLIP answering: no
  Number of retries: 3
  Autorestart every: 24 h

"Inputs / Tel. messaging" tab:
   Input type IN 1-4: 2.NO
   Input sensitivity IN 1-4: 200 ms
   Input restore IN 1-4: 4 sec.
   Auto-bypass on alarms IN 1-4: 3
   Counting period IN 1-4: 120 sec.
   Auto-bypass duration IN 1-4: 24 h.
   Manual bypass enabled IN 1-4: enabled
   SMS messages: default content for all events
"Reporting" tab:
   Enabled options:
      Events buffering
   Number of reporting retries before sending other way: 3
   Kiss off time: 850 ms
   Send SMS: Monitoring trouble (MS #)
"Reporting – inputs" tab:
   Code programmed for the "Test transmission" event
"TCP/IP downloading" tab:
   Enabled options:
      Server from SMS
      Encrypted transsmision
"Firmware update" tab:
   Enabled options:
      Server from SMS
   SMS messages: standard content.

14. SPECIFICATIONS

Number of inputs...4

Supply voltage .... 12 V DC ±15%

Required minimum output current of power supply unit ....500 mA

Standby current consumption ....60 mA

Maximum current consumption ....250 mA

Current-carrying capacity, FLT outputs..50 mA

Environmental class according to EN50130-5 II

Operating temperature range...-10...+55 °C

Maximum humidity ....93±3%

Electronics board dimensions .... 72 x 104 mm

Weight of device with enclosure..208 g

IMPORTANT:

PIN No.…………………………… **PUK No.** ………………………………………………………

Telephone No. ………………………………………………………………………………………………

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