

RT4-5gp object module
V.31-25

Programming manual

2016

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General information

RT4-5gp object device is designed for gathering information from the security panel, it's processing and transmitting to the Central Unit.

Device has two general purpose inputs, AC control input and two outputs, that can function either like PGMs or activated outputs.

Device communication port is designed for connecting different kinds of security panels and gathering full information from them.

RT4-5gp also monitors it's power level and transmits alarm message to the Central Unit if power level is lowered..

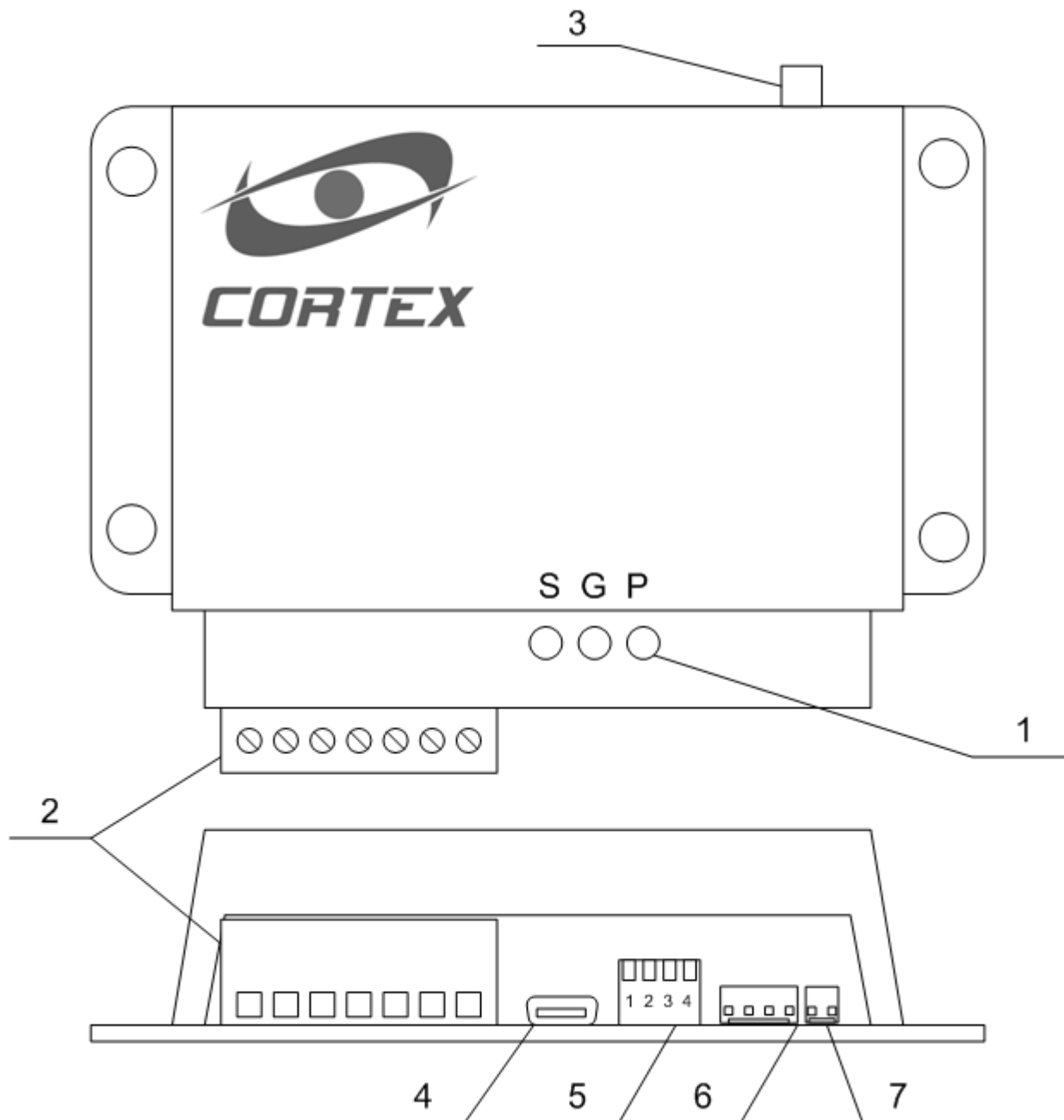
Device features

- Ability to transmit information using SMS messages and GPRS network;
- Ability to connect device to the **RT4-5se** PF transmitter to backup SMS messages;
- Event log for 254 messages;
- USB-port for device programming;
- Ability to remotely configure module parameters via GPRS;
- Indication of the GSM signal strength and operating mode;
- Indication of the power status and message transmitting;
- 2 general purpose inputs;
- Power supply monitoring input;
- 2 programmable outputs;
- Communication port for Security panels connection;
- Supports 3 users + installer;
- Two switchable message modes: "User" and "Modem"; ;
- Periodic channel test;

Technical information

GSM-protocol	E-GSM 900/1800/GPRS
GSM-modem	Quectel
SIM interface	3 and 1,8 V
Number of users	3+1
Output capacity	1A
Maximum voltage on closed output	15V
Maximum voltage on closed inputs	15V
Power supply	11 – 15V
Input current (at 12V power supply)	50mA
Input current in GPRS mode	300mA
Dimensions	120x80x30mm

Module appearance



Indication LEDs



Terminal block for power supply and external device connection



GSM antenna connector



USB-port for device programming



Dip-Switch for operating mode switching



Communication port for security panel connection



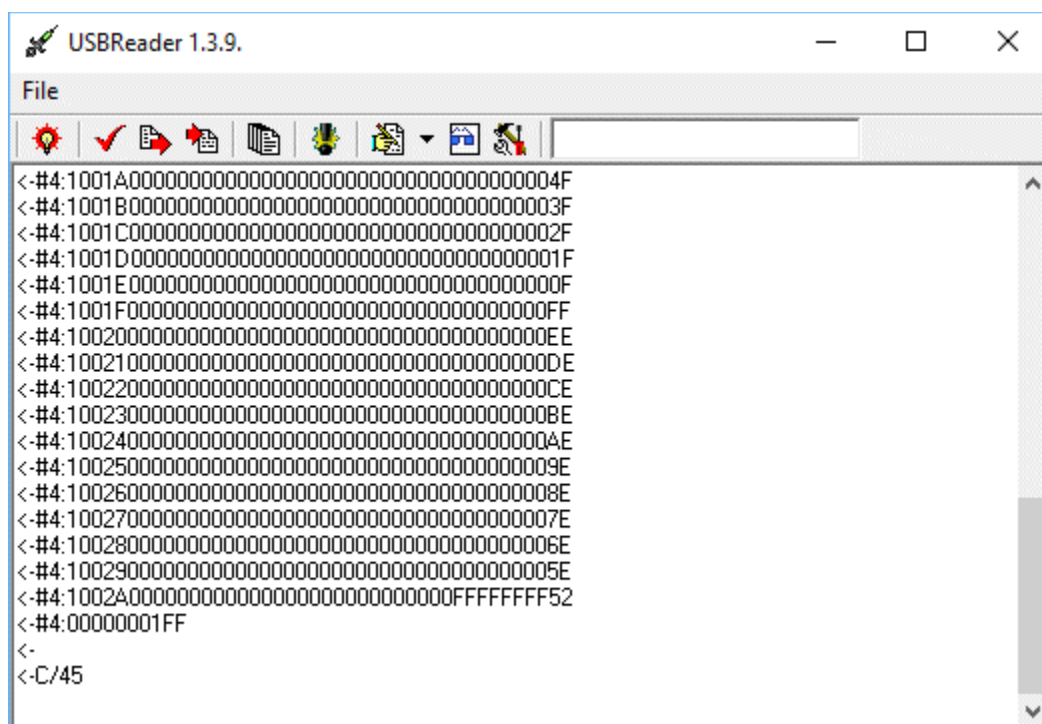
RT4-5se transmitter connection port

Programming using USB port

In order to program device parameters You will need **USB_Reader** software version **1.3.9** or higher.

USB_Reader software: general information

USB_Reader software is designed for programming module parameters, configuring user permissions and message sending addresses, event log downloading, and code table uploading. Main software window is shown on the Pic.1.



Software main window.

Getting ready for programming and software configuration

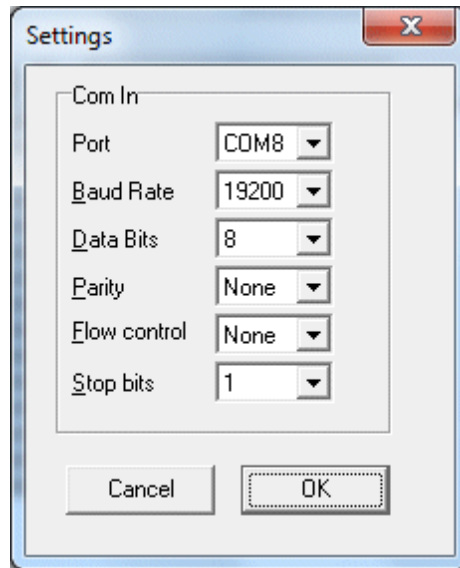
Device programming is made using **USB_Reader** software via PC USB-port.

When You are connecting device to the PC for the first time, You will have to install drivers, so device would be recognised correctly.

When You connected the device to the PC, operating system might ask You to install drivers. In that case, You have to select the option to manually select the drivers and select the path to the **drv** folder. After the drivers are installed, You can start device programming.

To activate device programming mode, simply connect it to the USB-port. After **S** indicator turns red, you can start device programming.

In software settings You will need to specify number of the port that will be used to connect to the module. Settings window can be opened by pressing  icon (Settings).



Port settings window.

In this window You have to choose port number that will be used to connect to the module. It is recommended to leave other options in the default state as shown in the picture.

It is recommended that port number would be lower than 10. If by default port number was set higher than 10, you can change it in the “Device manager”.

If connection to the module was successful, “Ready” icon will look the following way: . Otherwise it will look like this: .

USB_Reader software: Event log download.

Using the software, You can download device event log for further processing.

Log contains up to 254 events. To download log, press  icon. Than specify the path to the folder, where you want to save you .log file, choose a name for it and press **Save**.

To open saved file, press  icon and specify the path to the file.

USB_Reader software: event table upload.

In case You need to update the code tables for security panels information decoding, You have to use  icon. After You pressed it, specify the path to the .hex file that was provided by the developer and press **Open**.

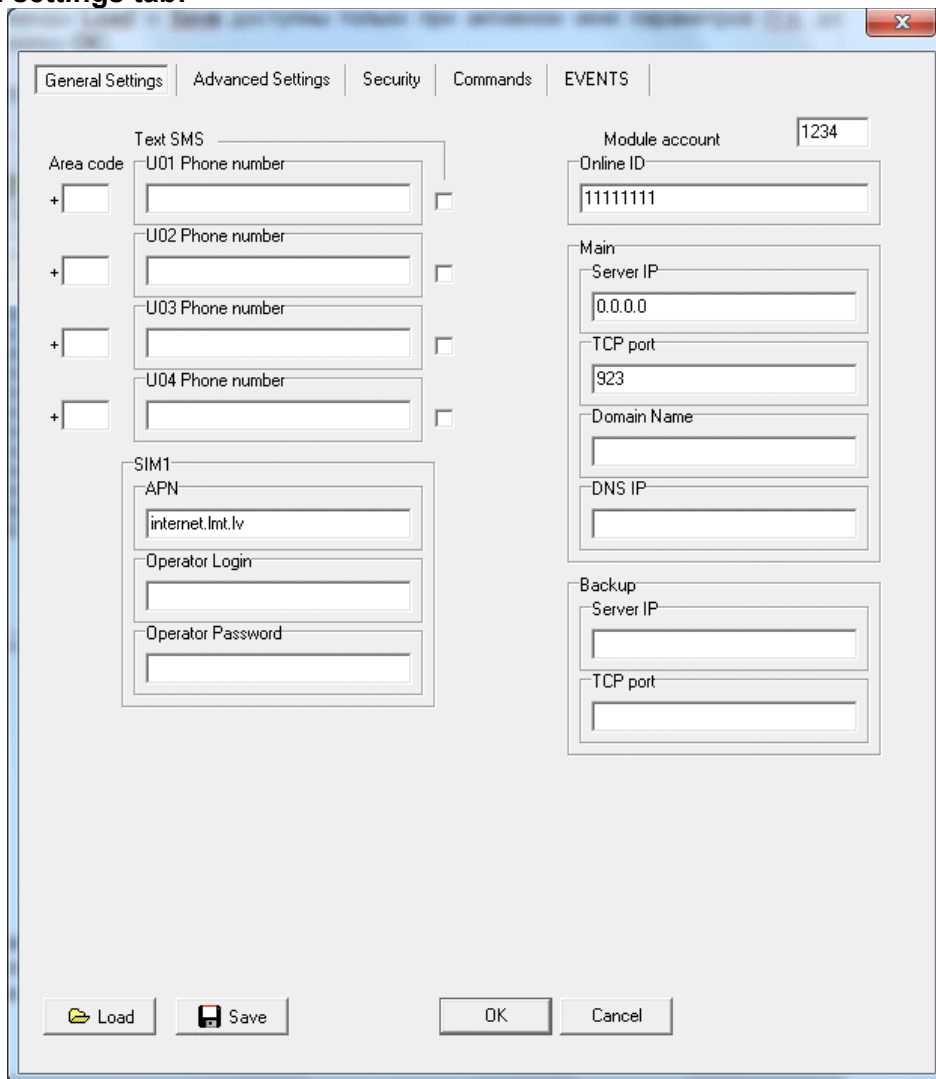
USB_Reader software: module programming

Module programming is initiated from the main menu **File/Read** or by pressing  icon. When initiated, all the current settings are downloaded from the module and displayed in the programming window. Programming window consists of five tabs:

- 1) General settings – general module parameters
- 2) Advanced settings – additional module parameters
- 3) Security – activation and change of the security code
- 4) Commands – user permissions
- 5) Events – message sending options

After you finished configuring module parameters, press **OK**. In that case, new parameters will be saved into module. To save this configuration into the file, press **Save** and specify file name and save path. To load previously saved configuration file, press **Load** and select the file to load parameters from. **Load** and **Save** commands are only available when programming window is active (before You press **OK**).

General settings tab:



In this tab You can configure module account and Online ID, user phone numbers and server address.

Parameter description is given in the table below.

Table 1. Module general settings.

Parameter	Default value	Description
U01 Tlf number	not specified	First user (Central Unit) phone number
U02 Tlf number	not specified	Second user phone number
U03 Tlf number	not specified	Third user phone number
U04 Tlf number	not specified	Installer phone number
Area code	not specified	Area code for each of the phone numbers
Text SMS checkboxes	not active	Checkboxes determine SMS message format for each of the users. Active - "User", deactivated - "Modem".
SIM1: APN	Internet.lmt.lv	APN for establishing GPRS connection. Information is provided by your mobile operator.
SIM1: Operator Login	not specified	User name for authorisation, when establishing GPRS connection. Information is provided by your mobile operator.
SIM1: Operator Password	not specified	Password for authorisation, when establishing GPRS connection. Information is provided by your mobile operator.
Module account	1234	Module account, used for it's identification. Must be unique for every module.
Online ID	11111111	Identification number, when working in GPRS mode. Must be unique for every module. It is highly recommended to set it the same as module SIM phone number.
Main: Server IP	0.0.0.0	Server IP address
Main: TCP port	923	TCP port that will be used to connect to server.
Main: Domain name	not specified	Domain name
Main: DNS IP	not specified	DNS server IP address
Backup: Server IP	-	Reserved for future use
Backup: TCP port	-	Reserved for future use

Advanced settings tab:

General Settings | **Advanced Settings** | Security | Commands | EVENTS

Firmware version: v.31-23
EEPROM ID: 31
Zones response time: 20 *25 ms (1..65535)
Size of Phone number: 8 (1..16)
Test time value: 144 *10min (1..255)
Bat low const: 145 (0..255)
Bat norm const: 165 (0..255)
SIM PIN: 0000

Query time in online: 30 s (15..255)
Attempts for activating GPRS: 2 (0..25)
Reconnect time for online: 3 min (1..255)
Attempts for reconnect online: 255 min (1..255)

OUT1 config
☐ User controlled
☒ GSM Trouble
☐ GPRS Trouble

OUT2 config
☒ User controlled
☐ GSM Trouble
☐ GPRS Trouble

☒ Force Offline if bat low
☐ Force Offline if AC fail

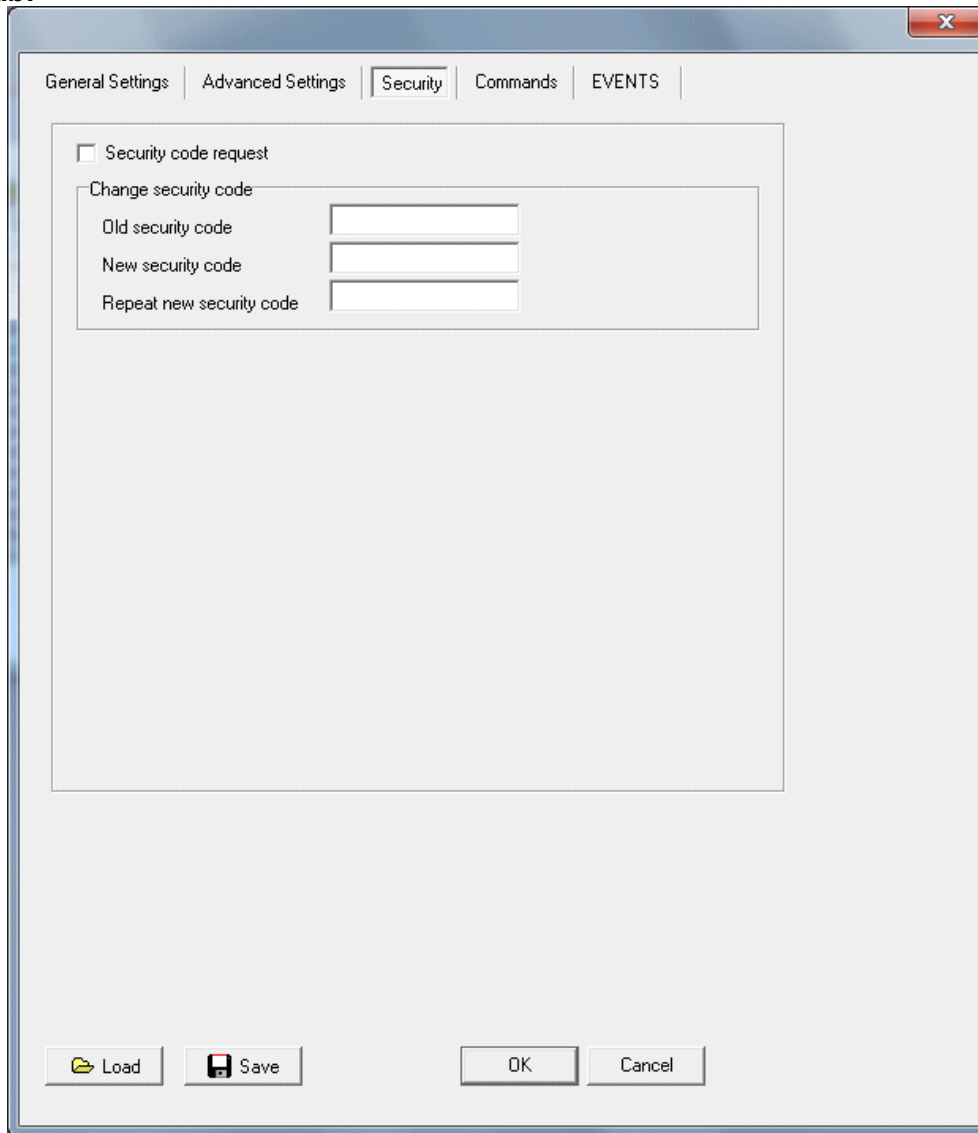
Load Save OK Cancel

In this tab You can configure output functions, additional module and GPRS parameters .
Parameter description is given in the table below.

Table 2. Additional module settings.

Parameter	Default value	Description
Firmware version	-	Firmware version. Information field.
EEPROM ID	-	Internal firmware version. Information field.
Zones response time	500 msec.	Input reaction time for status change.
Size of tlf number	8	Number of symbols that will be used to determine user number. 0 – full number.
Test time value	24 h	Time between periodical test messages.
Bat low const.	140 a.u.	Voltage value (in arbitrary units) that determines the low battery state. When lower - “Low battery” message is generated.
Bat norm const.	160 a.u.	Voltage value (in arbitrary units) that determines the normal battery state. When higher - “Battery restored” message is generated.
OUT1 Config	User controlled	First output function configuration. Three options available: User controlled – output is activated by a command from the user, GSM Trouble — output is activated when GSM network is lost, GPRS Trouble — output is activated when module failed to connect to the GPRS
OUT2 Config	User controlled	Second output function configuration. Three options available: User controlled – output is activated by a command from the user, GSM Trouble — output is activated when GSM network is lost, GPRS Trouble — output is activated when module failed to connect to the GPRS
Force offline if bat low	active	When active, module stops working in GPRS mode if power supply voltage value is low.
Force offline if pwr fail	not active	When active, module stops working in GPRS mode if power supply control input is active.
Query time in online	30 sec	GPRS connection with server test period.
Attempts for activating GPRS	2	Number of attempts to establish GPRS connection.
Reconnect time for online	3 min	Time interval between attempts to connect to the server.
Attempts to reconnect online	255	Not used in current version.

Security tab:



The screenshot shows a software window with a tabbed interface. The 'Security' tab is selected, showing options to enable security code requests and change the security code. The 'Change security code' section contains three input fields for old, new, and repeated new security codes. At the bottom are buttons for Load, Save, OK, and Cancel.

General Settings | Advanced Settings | **Security** | Commands | EVENTS

☐ Security code request

Change security code

Old security code

New security code

Repeat new security code

Load Save OK Cancel

In this tab You can activate security code request and change security code.

Security code request checkbox, when active, will activate security code request when trying to configure module parameters with the **USB_Reader** or **TLF_Server** software.

Change security code area is used to change security code:

Old security code – current security code (default - 1234)

New security code – new security code

Repeat new security code – repeat new security code

Commands tab:

General Settings
Advanced Settings
Security
Commands
EVENTS

	Code	U1	U2	U3	U4	Reply
Status Request	0	✓	✓	✓	✓	✓
OUT1 Activate	1	✓	✓		✓	✓
OUT1 Deactivate	2	✓	✓		✓	✓
OUT1 Activate on xxx sec	1.xxx	✓	✓		✓	✓
OUT2 Activate	3	✓	✓		✓	✓
OUT2 Deactivate	4	✓	✓		✓	✓
OUT2 Activate on xxx sec	3.xxx	✓	✓		✓	✓
Set Current State As "Normal"	00.ssss	✓			✓	✓
Ext. Transmitter Test Request	80	✓			✓	
1 Phone Number Request	81	✓			✓	✓
2 Phone Number Request	82	✓			✓	✓
3 Phone Number Request	83	✓			✓	✓
4 Phone Number Request	84	✓			✓	✓
Erase Phone Number 2	92	✓			✓	✓
Erase Phone Number 3	93	✓			✓	✓
Erase Phone Number 4	94	✓			✓	✓
Set/Change Phone Num. 1	91.<PhNum>	✓			✓	✓
Set/Change Phone Num. 2	92.<PhNum>	✓	✓		✓	✓
Set/Change Phone Num. 3	93.<PhNum>	✓		✓	✓	✓
Set/Change Phone Num. 4	94.<PhNum>	✓			✓	✓
Module's Config Change	99.<Par>	✓			✓	✓
Module's Account Change	95.<old><new>	✓			✓	✓
Force Module OnLine	87.ssss	✓			✓	
Force Module OffLine	86.ssss	✓			✓	

Load
 Save
OK
Cancel

As You can see, on the left side are listed commands, that are supported by the module, and in the columns to the right, You can allow (✓) or restrict () the use of the command to the user (**U1** – **U3**). Also You can allow or restrict confirmation reply about command execution (**Reply**). In the **Code** column are shown command texts.

Command description is given in the table below.

Table 3. Commands supported by module

Command	Description
Status Request	Request module status (displays currently activated inputs and outputs)
OUT 1 Activate	Activate Output 1
OUT 1 Deactivate	Deactivate Output 1
OUT 1 Activate on xxx sec	Activate Output 1 for set number of seconds (255 max.)
OUT 2 Activate	Activate Output 2
OUT 2 Deactivate	Deactivate Output 2
OUT 2 Activate on xxx sec	Activate Output 2 for set number of seconds (255 max.)
Set Current State As "Normal"	Module sets current state of all it's inputs as "Normal"
Ext. Transmitter Test Request	Initialize test message transmission (only in GPRS mode)
1 Phone Number Request	Request phone number of the first user (master)
2 Phone Number Request	Request phone number of the second user
3 Phone Number Request	Request phone number of the third user
4 Phone Number Request	Request phone number of the fourth user (installer)
Erase Phone Number 2	Delete second user phone number
Erase Phone Number 3	Delete third user phone number
Erase Phone Number 4	Delete fourth user phone number
Set/Change Phone Number 1	Set or change phone number of the first user (master)
Set/Change Phone Number 2	Set or change phone number of the second user
Set/Change Phone Number 3	Set or change phone number of the third user
Set/Change Phone Number 4	Set or change phone number of the fourth user (installer)
Module's Config Change	Configure module parameters using SMS messages
Module Account Change	Change module account
Force Module OnLine	Activate Online mode
Force Module OffLine	Deactivate Online mode

EVENTS tab:

	U1	U2	U3	U4
IN 1 Alarm	✓	✓		
IN 1 Restore	✓	✓		
IN 2 Alarm	✓	✓		
IN 2 Restore	✓	✓		
Battery Low	✓			
Battery Restore	✓			
Acc 220 Fail	✓			
Acc 220 Ok	✓			
Ser. Port Communication Error	✓			
Ser. Port Communication Restore	✓			
Module Ready to Work	✓			
Test Message	✓			
Messages from Serial Port	✓	✓		
GPRS on SIM1 Error	✓			
Connection to Server Error	✓			
Module Forced OffLine	✓			

Load Save OK Cancel

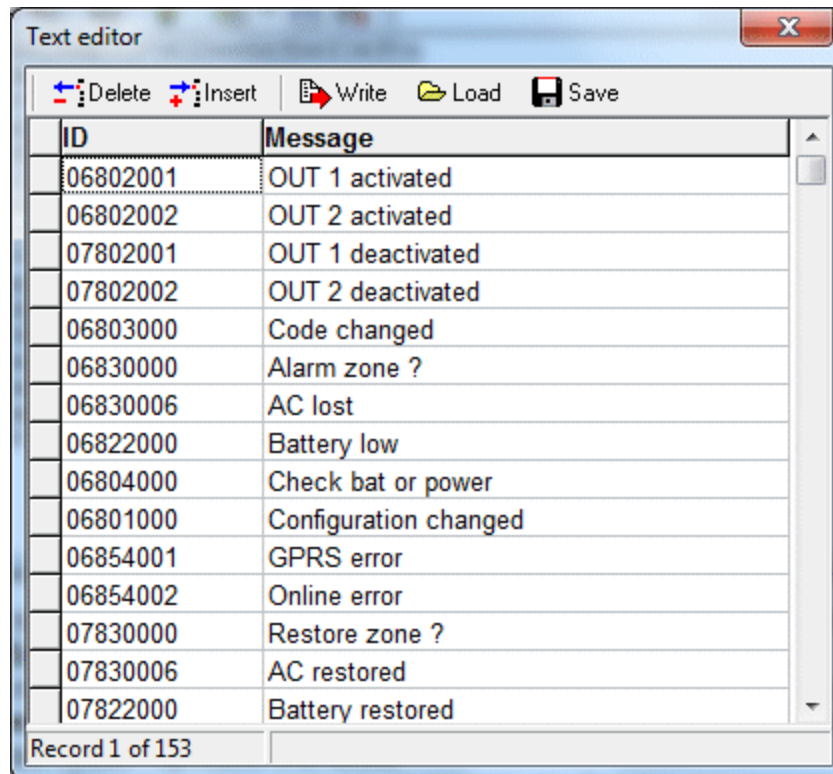
As You can see, on the left side are listed events, that are generated by the module, and in the columns to the right, You can allow (✓) or restrict () the sending of the current event message to the user (U1 – U3).

Event description is given in the table below.

Table 4. Module events

Event	Description
IN 1 Alarm	Zone 1 alarm
IN 1 Restore	Zone 1 restore
IN 2 Alarm	Zone 2 alarm
IN 2 Restore	Zone 2 alarm
Battery Low	Power supply voltage is low
Battery Restore	Power supply voltage is restored
AC 220 Fail	Power supply control input alarm
AC 220 OK	Power supply control input restore
Ser. Port Communication Error	Communication port error
Ser. Port Communication Restore	Communication port restore
Module Ready To Work	Module powered up and ready to work
Test Message	Periodic test message
Messages from Serial Port	Events received from security panel via serial port
GPRS on SIM1 Error	Failed to connect to GPRS
Connection to Server Error	Failed to connect to server
Module Forced OffLine	Forced exit from GPRS

USB_Reader software: text table editor



Text editor is opened by pressing  icon. Editor contains two columns: in ID column You have to enter event code and in the Message column – this event description.

To add another row, press  icon.

To delete existing row, select one of the cells in this row and press .

To upload table into the module, press  button.

To load existing table from file, press  and choose desired **.hex** file.

To save the table into the file, press  icon and specify path and file name.

USB_Reader software: configuration template creation

Software allows creating configuration file without directly connecting the module to the PC.

To do so, press  icon.

After that, software will open window that is identical to the window that is described in the “**USB_Reader software: module programming**” paragraph. The only difference is that all the parameters will have zero value.

After configuring all parameters as You need, save module configuration into the file by pressing **Save** and specifying file name and path.

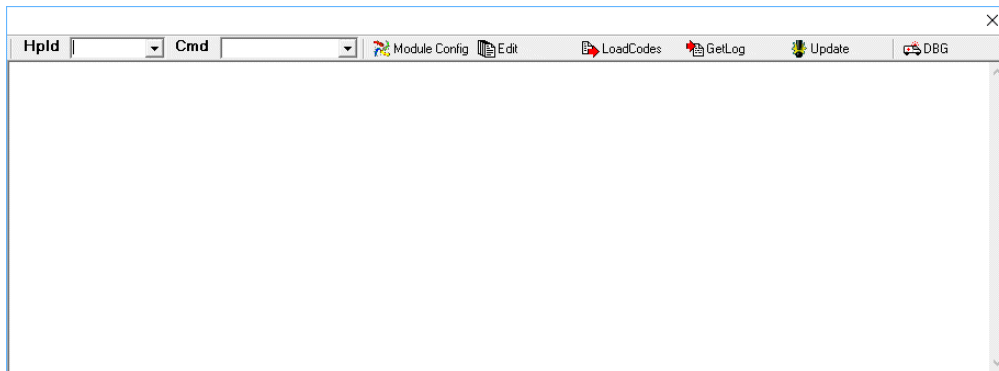
To load previously saved configuration file, press **Load** and select the file to load parameters from.

Module programming using GPRS.

To program module via GPRS, You will need **TLF_Server** software version **1.14.3** or higher.

TLF_Server software: module configuration.

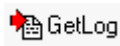
To start module programming, in the main program window You must press  icon. Device control window will open:



In this window, press  icon, and in RPT_ID drop-down menu select Online ID of the module You wish to configure and press OK. After that a configuration window will open, that is fully identical to the window described in the “**USB_Reader software: module programming**” paragraph.

After all the changes is made press Ok. New configuration will be uploaded into the module and it will reload with the new parameters.

TLF_Server software: Event log download.

Log contains up to 254 events. To download log, press  icon. Than specify the path to the Using the software, You can download device event log for further processing.

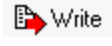
folder, where you want to save you .log file, choose folder, where you want to save you .log file, choose a name for it and press **Save**.

TLF_Server software: event table upload.

In case You need to update the code tables for security panels information decoding, You have to use  icon. After You pressed it, specify the path to the .hex file that was provided by the developer and press **Open**.

TLF_Server software: text table editor.

Text editor is opened by pressing  icon. After that a configuration window will open, that is fully identical to the window described in the “**USB_Reader software: text table editor**” paragraph.

After all the changes is made press  icon. New configuration will be uploaded into the module and it will reload with the new parameters.

Programming module using SMS.

Module allows changing part of it's parameters via SMS. By default this function is allowed to the first user and installer (4-th user). List of general programmable parameters is shown in the **Table 5**.

For the full list of commands see Installation manual.

Table 5. Parameters, programmed via SMS

Command	Description	Example	Default value
91.xx...xx	Set or change first user phone number	91.21234567	-
92.xx...xx	Set or change second user phone number	92.21234567	-
93.xx...xx	Set or change third user phone number	93.21234567	-
94.xx...xx	Set or change installer phone number	94.21234567	-
99.Txxx	Time period between test messages xxx – *10 minutes. Maximum - 255	99.T72 (from 1 to 255)	144
99.I<IP>	Change server IP address	99.I211.21.211.2	-
99.A <access point>	Change APN	99.Ainternet.lmt.lv	internet.lmt.lv
99.DI<IP>	Change DNS server IP address	99.DI211.21.211.1	
99.DI	Change module to the "connecting to IP address" mode	99.DI	
99.DD<domain name>	Change domain name	99DDalarm.cortex.lv	
99.P<port>	Change server port	99.P925	925
99.O<sec>	Time between GPRS connection tests. Minimum -15, maximum - 255	99.O15	30
99.M<min>	Time between reconnection attempts Maximum - 255	99.M3	2
99.Y1<login>	Change login for authentication at operator Maximum – 8 symbols	99.Ylogin	-
99.Y2<password>	Change password for authentication at operator Maximum – 8 symbols	99.Ypassword	-
99.Nx	Set number of symbols for phone number identification Maximum - 16	99.N8	8
99.C1	Show module general settings	99.C1	-
99.C2	Show module additional settings	99.C2	-
99.C3	Show mobile operator and GSM signal strength	99.C3	-
95.xxxxyyyy	Change module account xxxx – security code, yyyy – new account	95.12345678	1234
96.xxxxyyyy	Change module security code xxxx – old security code, yyyy – new security code	96.12345678	1234
99.C ddMMyyhhmmss	Date and time configuration (dd – day, MM – month, yy – year, hh – hours, mm – minutes, ss - seconds)	99.C140410132142	-
99.Wxxxx	Change module Online-identificator. xxxx – identificator (maximum 15 digits)	99.W4876	11111111