



RT4-5gp object module

V.1.3

User manual

General information

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

Device has two general purpose inputs, one power control input and two outputs that can be configured either as activated outputs, or as PGM outputs.

You can connect different control panels to the device communication port, and receive full information from the connected panel.

RT4-5gp also monitors the state and level of it's power supply and in case of trouble reports it to the Central unit.

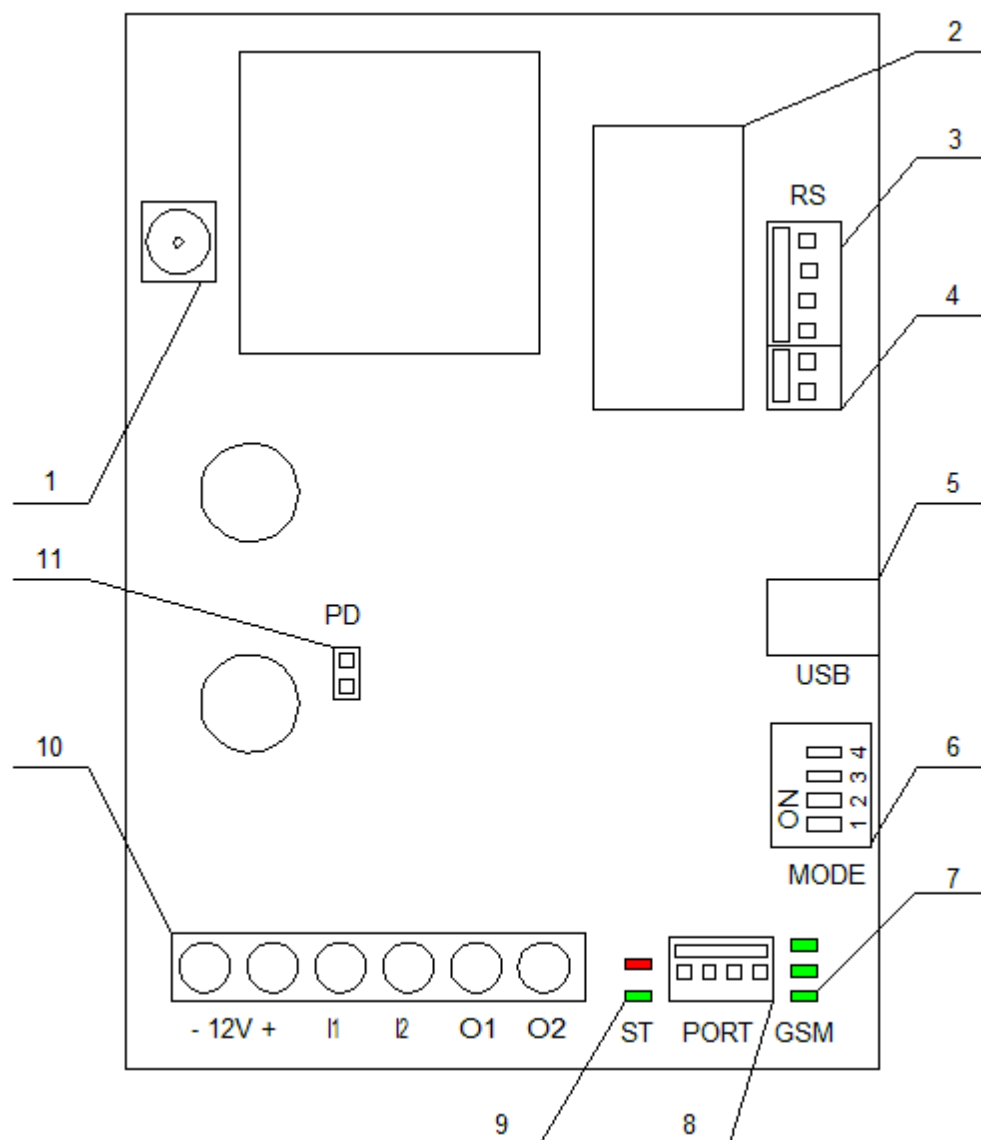
Device preferences

- Ability to transmit information via SMS and GPRS;
- Allows connection of the radio transmitter to backup SMS-messages;
- Internal log for 63 events;
- USB-port for programming module settings;
- Allows remote programming via GPRS;
- GSM signal strength and working mode indication;
- Power supply ant message transmitting indication;
- 2 general purpose inputs;
- Power supply monitoring input;
- 2 programmable outputs;
- Communication port for security panel connection;
- Supports 3 users + installer;
- 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
Output capacity	1A
Maximum voltage on closed output	15V
Maximum input voltage	15V
Supply voltage	11 – 15V
Input current (at 12V supply)	50mA
Input current in GPRS mode	300mA
Overall dimensions	100x66x20mm

Module appearance



1. GSM antenna connector
2. SIM holder
3. Radio transmitter connector
4. Power supply monitoring input
5. USB-port
6. Dip-Switch for changing communication mode
7. GSM-signal and working mode indicator
8. Communication port for security panel connection
9. Power and transmitting indicators
10. Terminal block for power supply and external device connection
11. Jumper to control input load

User configuration

You can program four phone numbers into the device. The first three numbers are user numbers, and the fourth is the installer's number. Installer doesn't receive any SMS-messages (excluding replies on some commands) and has full rights to control and program the module. Installer's rights are hardcoded and cannot be changed.

In order for module to function correctly numbers of the first user and installer must be programmed. Other two numbers can be added if needed. First users and installer's numbers can be the same.

Device inputs and outputs.

Device inputs can be loaded to «0» or to «+». Choice is made using **PD** jumper. If jumper is removed, inputs are loaded to «+» (reacts to «0»/«break» signals), if set – loaded to «0» (reacts to «+»/«break» signals). Maximum voltage on the input - **+15V**.

By default both inputs are programmed as NO.

If you need to change input type, you have to connect all external device, make sure they are in the normal state and send the following command to the module: **00.xxxx** where xxxx – module security code. After receiving this command, module will set all input state as normal.

220V monitoring input strictly loaded to «+» (reacts on «0»/«break» signals) and is programmed as NC.

Device outputs can work either as manually activated outputs or PGM outputs.

Manually activated output is activated and deactivated using SMS-message. You can also activate it on time.

PGM-output can react to the following troubles: GSM-signal lost, cannot connect to server or cannot establish GPRS connection.

Outputs are configured using **USB_Reader** software. By default – manually activated.

First start and general programming.

Make sure that no phone numbers are saved in the SIM memory and the SIM card is activated. If PIN request is activated, make sure it is set as „0000”. After that you can insert the SIM into module.

After that you can start module programming. Module is programmed using **USB_Reader** software. To turn on programming mode, just connect the USB cable and power the module. When red **ST** indicator will turn on you can start programming.

First you must program installer's and the first user's numbers, module account and, if you are going to use module in GPRS mode, server IP-address, TCP-port, APN and module Online ID. In order for the module to work correctly with TLF_Server and WinSC software, OnlineID must be set the same as the module telephone number (without international code).

In case if it is not possible to use **USB_Reader** software, you can program the module using SMS messages.

To do so, power the module and, after successful initialization (green ST indicator is on), send to the module the following message: **94.xx...xx** where **xx...xx** – installer's phone number (if the phone is registered with the international code, you must use + before it).

After that, installer will receive “**Reply SECURITY CODE**” message. Installer must reply to that message with the module security code (default – 1234). It must be done within 10 minutes after receiving the message. Otherwise phone number will be deleted from the device memory and you will have to start all over. If the number is successfully programmed, installer will receive „**OK**” message.

Note! If the installer's phone is not programmed, module will ignore all SMS-messages except for **94.xx...xx**.

After programming installer's number, you have to program first user's (Central Unit) number. To do so, send from installer's phone the following message **91.xx...xx** where **xx...xx** – first user's phone number (if the phone is registered with the international code, you must use + before it).

Then you have to change device account. To do so, send from installer's phone the following message **95.xxxxyyyy** where **xxxx** – module security code (default – 1234) and **yyyy** – new account.

After that you can program the module to connect to the TLF_Server software. Full comand list is set in the "Working in GPRS mode" paragraph.

Indication

Red ST indicator	
Blinking fast	Incorrect information on the communication port
Constantly on	Programming mode is on
Green ST indicator	
Constantly on	Power ok
Blinks once per second	Input voltage low
Blinking fast	Sending message
3 GSM indicators	
1 indicator blinking fast	No GSM signal
1 out of three indicators is on, blinking once every three seconds	GPRS connection established. Low GSM signal
2 out of three indicators are on, blinking once every three seconds	GPRS connection established. Medium GSM signal
All three indicators are on, blinking once every three seconds	GPRS connection established. High GSM signal
1 out of three indicators blinks once every three seconds	Module in SMS-mode. Low GSM signal
2 out of three indicators blink once every three seconds	Module in SMS-mode. Medium GSM signal
All three indicators blink once every three seconds	Module in SMS-mode. High GSM signal

Setting communicator working mode

RT4-5gp has five different communication port modes.

- **Serial interface mode (Serial BUS).**

To activate this mode you have to set the following combination on the dip-switch:

Switch: ☐ ☐ ☐ ☐ ☐ - OFF
☒ - ON

In this mode you can connect interface modules to the interface port, for acquiring information from control panels. In this mode all the messages are transmitted in the same format they are generated by the device, connected to the port (no conversion into ContactID format are made). When connecting security panel to the device in this mode, make sure that their accounts are identical.

- **Esprit mode.**

To activate this mode you have to set the following combination on the dip-switch:

Switch: ☐ ☒ ☐ ☐ ☐ - OFF
☒ - ON

In this mode you can connect **PARADOX ESPRIT 7x8** (V 3.00 and higher) security panel. Panel is connected via its specialized serial port. All the panel's messages are converted into ContactID format (see table 6). All messages are transmitted with the **RT4-5gp** account.

- **Magellan mode.**

To activate this mode you have to set the following combination on the dip-switch:

Switch: ☐ ☒ ☒ ☐ ☐ - OFF
☒ - ON

In this mode you can connect **PARADOX** panels of the **E**, **SP** and **MG** series. Panel is connected via its specialized serial port. All the panel's messages are converted into ContactID format (see table 6). All messages are transmitted with the **RT4-5gp** account.

- **DCS 1**

To activate this mode you have to set the following combination on the dip-switch:

Switch: ☒ ☒ ☐ ☐ ☐ - OFF
☒ - ON

In this mode communication port is connected to the Key-BUS line of the one- and two-partitioned DSC security panels. All messages are transmitted with the **RT4-5gp** account.

- **DSC 2**

To activate this mode you have to set the following combination on the dip-switch:

Switch: ☒ ☐ ☒ ☐ ☐ - OFF
☒ - ON

In this mode communication port is connected to the Key-BUS line of the DSC security panels that has more than two partitions. All messages are transmitted with the **RT4-5gp** account.

Message format

Module events and events from the security panels in modes 2 -5 are always transmitted in ContactID format.

In WinSC software messages are looking the following way:

Partitions=PP EventCode=EEEEZZZ

F – Event type idintificator: E — alarm/disarming, R — restore/arming.

EEE – Event code.

PP – Partition. Module own messages are transmitted with partition 99.

ZZZ – Zone/User number.

On the mobile phone information is displayed the wollowing way:

FF, AAAA,EEEPZZZ:<date>-<time>*<CS>

FF – Event type idintificator: 06 — alarm/disarming, 07 — restore/arming.

AAAA - Account

EEE – Event code.

PP –Partition. Module own messages are transmitted with partition 99.

ZZZ – Zone/User number.

<CS> - Check sum.

Messages that are transmitted via communication port in the first mode are not converted into ContactID and their format depends on the connected device type.

Connecting RT4-5se radio transmitter

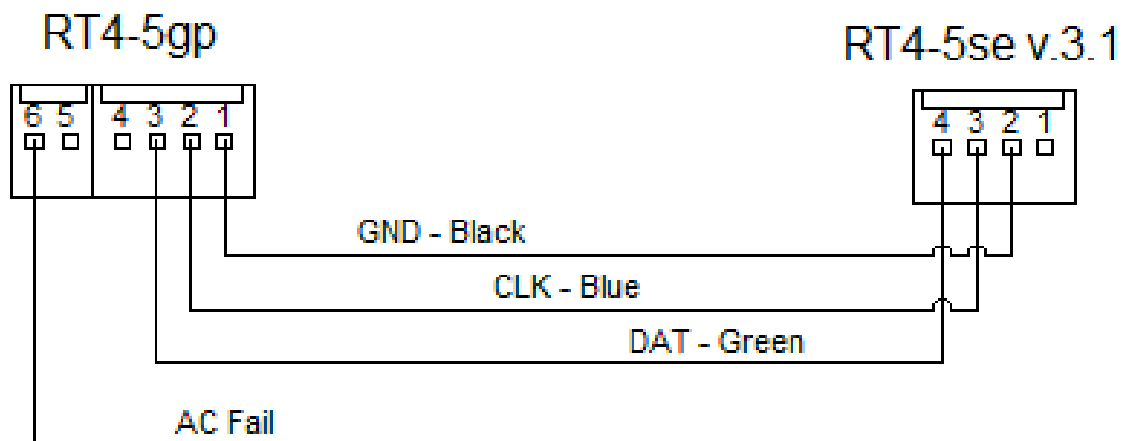
You can connect RT4-5se radio transmitter to the RT4-5gp.

Radio transmitter is used as a backup channel when GPRS connection is lost.

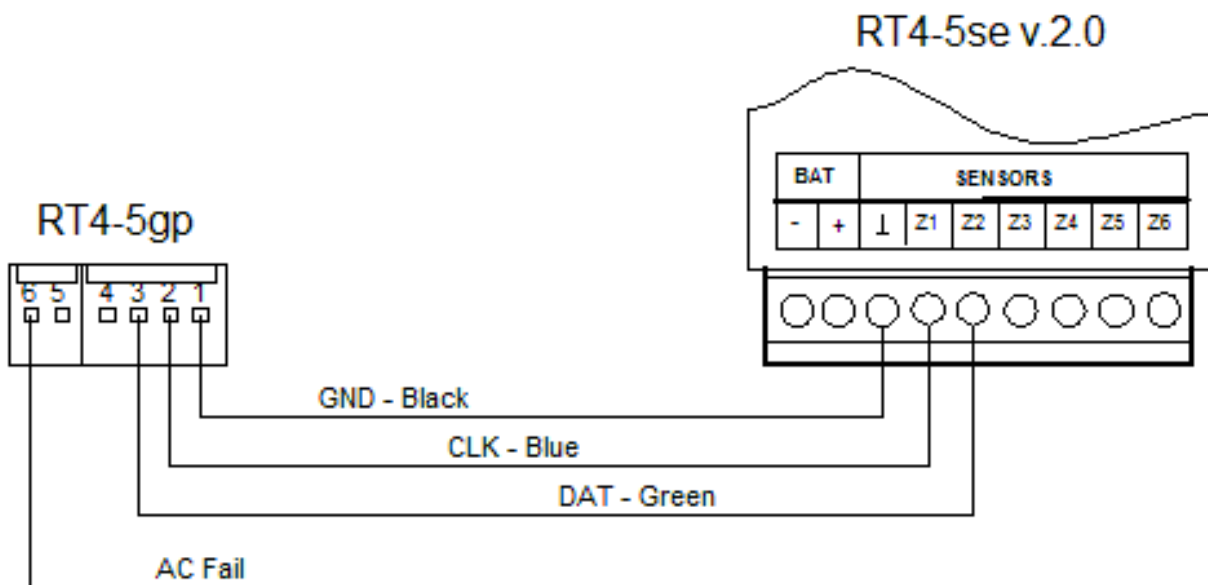
Message via radio channel is transmitted simultaneously with the sending of the SMS-message to the first user, therefore you must make sure that all messages are enabled for the first user. Otherwise some messages may be lost.

In the RT4-5se radio transmitter version 2.0, jumper for mode selection must connect two upper contacts.

In the RT4-5se version 3.1, the first working mode must be enabled (SerialBUS – all switches on the Dip-Switch are turned off).

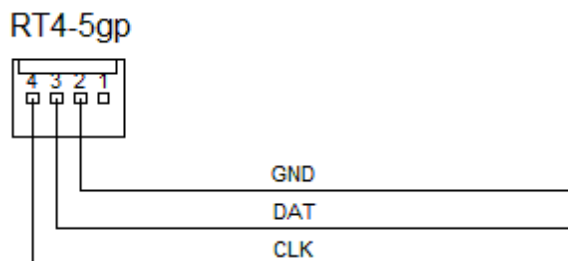


Connection of the RT4-5se v.3.1 transmitter

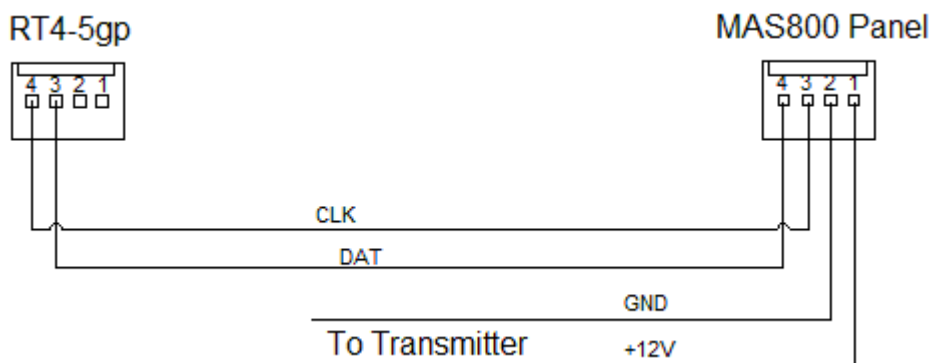


Connection of the RT4-5se v.2.0 transmitter

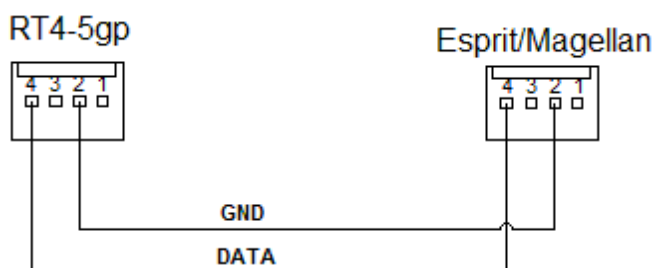
Connecting the external devices



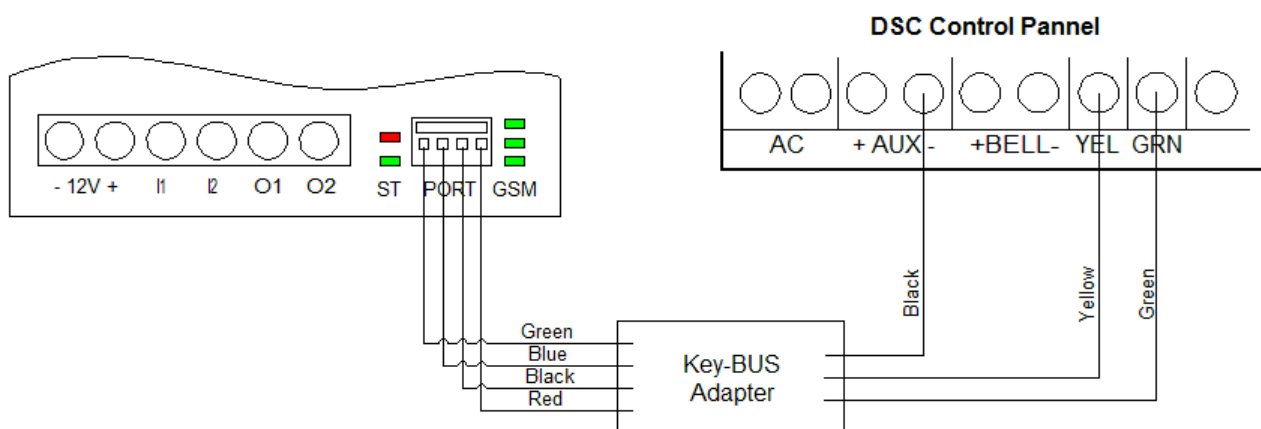
Interface module connection (1-st mode)



Connecting security panel of the MAS800 system(1-st mode)



Connecting Esprit and Magellan panels (2-nd and 3-rd modes)



Connecting to the Key-BUS line of the DSC panel (4-th and 5-th modes)

Working in SMS mode.

You should pay attention to the accuracy of the commands sent to the module. In case of lost or redundant symbol (including spaces) command will be ignored.

Working with the phone numbers of the defined length.

Module can define phone number by the specified number of digits, instead of the whole number. Symbol count starts from the end of the number. Maximum number of symbols is 16, "+" is not counted. Number of symbols is set using 99.Nx command, where x – number of symbols. If you will send 99.N0 command – module will work only with fully specified phone numbers. By default number length is set as 8.

This option can be configured using **USB_Reader** software.

Working in GPRS mode.

Using GPRS, module can directly transmit information into WinSC software.

Attention! In GPRS mode, module ignores any SMS messages, received from the first user, and doesn't send him any SMS.

GPRS-settings

In order for module to work correctly in GPRS mode you must configure the following parameters: **APN** (Access point name to connect to the GPRS service), Central Unit **IP-address**, Central Unit **TCP PORT**, **Online ID** (module online identifier), Central unit **Domain name** (if used), Central Unit **DNS Server IP** (if used). These parameters can be configured using **USB_Reader** software or by sending a command to the module:

99.I <IP>	IP-address
99.A <access point>	APN
99.P <port>	TCP-port
99.R <attempts>	Number of attempts to connect to server
99.W <ID>	Online identifier
99.M <min>	Time between attempts to connect to server
99.DI <IP>	IP-address of DNS server (if used)
99.DD <domain name>	Domain name (if used)

You can configure the module to automatically go into GPRS mode and connect to server after powering on. To do so, you have to set "**Attempts For Reconnect Online**" parameter in **USB_Reader** software as 255 (see Programming manual) or send a **99.R255** message to the module (see table 4).

Forced exit from GPRS mode

For power saving purposes module can exit GPRS mode if there are troubles with power supply. You can specify conditions on which module will exit GPRS. Those can be specified either by **USB_Reader** software, or by the following SMS commands:

99.F0 – Don't exit GPRS unless command **86**.<security code> is received

99.F1 – Exit GPRS if power low.

99.F2 – Exit GPRS if 220V lost.

99.F3 – Exit GPRS if power low or 220V lost.

In this option is enabled and the battery is low and/or power is lost (depends on the settings), the module will send **E804000** message when an attempt to turn GPRS mode on is made.

Mobile operator authorization for GPRS activation.

In case if for GPRS activation you need to authorize with the mobile operator, you have to specify login and password.

Those can be specified either by **USB_Reader** software, or by the following SMS commands:

©Korteks

Līksnas iela 7, Rīga, Latvija, Tel./fakss: (+371) 6 7505603, (+371) 6 7505604

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E-mail: info@cortex.lv, <http://www.cortex.lv>

Login is set by the **99.Y1xxxx** command, where xxxx – login. Password is set by the **99.Y2xxxx** command, where xxxx – password. Number of symbols in login and password must not exceed 8. If you have to delete login or password send the following commands to the module: **99.Y1**(delete login) and **99.Y2** (delete password).

Online identifier

In order to send a message to the module from the **WinSC** software, you have to assign a unique ID for it. In order for module to work correctly with the **TLF_Server** and **WinSC** software, ID would be the same as module phone number (without international code).

Attention! ID must only contain digits and be maximum 15 symbols long.

You can set online ID either by using **USB_Reader** software, or by sending **99.Wxxxx** message, where xxxx – identifier.

By default online ID is set as 11111111.

By sending **99.Wi** command, you can set GSM-modem IMEI as module Online ID.

Possible errors

- If failed to establish GPRS connection:

E854001 command

Possible causes: wrong APN setting or inavailability of this service at the current mobile operator.

- If failed to connect to software or Central unit:

E854002 command

Possible causes: wrong IP, TCP PORT settings. Firewall restrictions on the Central Unit.

Module registration in the WinSC software

In order to work correctly module must be registered in the software the following way:

The screenshot shows the 'WSC - Editor' window. The 'Editor' tab is active, displaying configuration fields for a radio transmitter and a list of events. The 'Radio' block includes fields for Tx Address (3991), Slot (0), Channel (2), and Device type (Tx). The 'Phone' block includes fields for Account (1234), Line (GSM), Channel (1), and Phone (26632248). The 'Transm. test time' is set to 25:00, 'Object test time' to 25:00, 'Reminder timeout' to 01:00, and 'Mainten. period MM:DD' to 00:00. Below these fields are 'Mail' and 'Settings' buttons. The 'Events' tab is also visible, showing a list of events with columns for NR, Partition Nr, Event code, M, T, Message, rEv, and R. The events list includes various alarm types such as 'Wireless zone [E] battery OK', 'Armed by RCU [E]', 'Armed by user [E]', 'AutoArm by timer [E]', 'Zone [E] unby pass', 'Fire zone [E] unby pass', '24Hr zone [E] unby pass', 'Burglary zone [E] unby pass', 'End of fire test. User [E]', and 'End of walk test. User [E]'. A legend at the bottom of the window identifies event codes: P-Panic, F-Fire, B-Bur, T-Trbl, W-PWR, A-Arm, D-DArm, R-Restore, E-Event, and S-Tst.

NR	Partition Nr	Event code	M	T	Message	rEv	R
1	??	R3840??		R	Wireless zone [E] battery OK		N
1	??	R4000??		A	Armed by RCU [E]		N
1	??	R4010??		A	Armed by user [E]		N
1	??	R4030??		A	AutoArm by timer [E]		N
1	??	R5700??		E	Zone [E] unby pass		N
1	??	R5710??		E	Fire zone [E] unby pass		N
1	??	R5720??		E	24Hr zone [E] unby pass		N
1	??	R5730??		E	Burglary zone [E] unby pass		N
1	??	R6040??		E	End of fire test. User [E]		N
1	??	R6070??		E	End of walk test. User [E]		N

In the **Radio** block you must enter parameters of the radio transmitter that is connected to the RT4-5gp. If transmitter is not connected, this block can be ignored.

TxAddress – transmitter number.

Channel – number of the receiving channel (Central Unit).

Slot – slot that the receiver is connected to.

Device type – must be set as Tx.

In the **Phone** block you must enter RT4-5gp parameters.

Account – Device account. Every device must have it's own unique account.

Channel – number of the receiving (IP Client).

Line – must be set as GSM

Phone – Phone number of the RT4-5gp. Without international code.

Transm.test time – radio transmitter test period. If transmitter is not connected must be set as 00:00.

Object test time – RT4-5gp/security panel test period

Reminder timeout – with this time period not restored alarm events from the "Alarm list" window will be repeated.

Into the **Events** and **TLF Events** tabs you have to load RT4-5gp decoding cards.

If the radio transmitter is not connected to the RT4-5gp than **Events** tab may be left blank.

Enclosure 1. Terminal block pins.

Table 1

Pin	Name	I/O	Description
1	12V-	I	Power supply
2	12V+	I	
3	I1	I	First alarm input
4	I2	I	Second alarm input
5	O1	O	Output 1
6	O2	O	Output 2

Enclosure 2. Module control commands.

Table 2

Command	Description	Reply	By default allowed to:
0	Request status	/Status/: ¹	All
1	Activate Out 1	E802001	U1, U2, U4 ²
2	Deactivate Out 1	R802001	U1, U2, U4
1.xxx	Activate Out 1 on time (xxx – minutes)	E802001	U1, U2, U4
3	Activate Out 2	E802002	U1, U2, U4
4	Deactivate Out 2	R802002	U1, U2, U4
3.xxx	Activate Out 2 on time (xxx – minutes)	E802002	U1, U2, U4
081.xxxx	Restart module (xxxx – security code)	R308000	U1, U4
85	Restart GPRS mode to apply new settings (only in GPRS mode)	---	Server

Notes:

- 1) Status is a list of all active modes and alarms.
- 2) U1, U2, U3, U4 – User numbers; **U1 – Master, U4 - Installer**

Enclosure 3. Module configuration commands.

Table 3

Command	Description	Reply	By default allowed to:
00.xxxx	Set current state as normal (xxxx – module security code)	/Status/	U1, U4
81	Request master phone number	/TLF number/	U1, U4
82	Request 2-nd user phone number	/TLF number/	U1, U4
83	Request 3-rd phone number	/TLF number/	
84	Request installer's phone number	/TLF number/	
92	Delete 2-nd user phone number	E801000	U1, U4
93	Delete 3-rd phone number	E801000	U1, U4
94	Delete installer's phone number	E801000	U1, U4
91.xx...xx¹	Change master phone number	E801000	U1, U4
92.xx...xx	Change 2-nd user phone number	E801000	U1; U2
93.xx...xx	Change 3-rd phone number	E801000	U1; U3
94.xx...xx	Change installer's phone number ²	E801000	U1; U4
95.xxxxxyyyy	Change module account xxxx – security code, yyyy – new account	E803000	U1, U4
96.xxxxxyyyy	Change security code xxxx – old code, yyyy – new code	E803000	U1, U4
87.xxxx	Turn on GPRS-mode (xxxx - module security code)	Depending on result	U1, U4
99.C ddMMyyhhmmss³	Set time and date (dd – day, MM – month, yy – year, hh – hours, mm – minutes, ss - seconds)	E801000	U1, U4
99.Wxxxx	Set module online ID. xxxx – identifier (15 digits max.)	E801000	U1, U4
99.Txxx	Set test period (xxx – time *10 minutes. Max. - 255)	E801000	U1, U4
99.I<IP>	Set server IP-address	E801000	U1, U4
99.DI<IP>	Set DNS-server IP-address (if used)	E801000	U1, U4
99.DD<Domain name>	Set domain name (if used) ⁴	E801000	U1, U4
99.A <access point>	Set APN	E801000	U1, U4

Command	Description	Reply	By default allowed to:
99.P<port>	Set TCP-port	E801000	U1, U4
99.R<tries>	Number of attempts to connect to server. Max. - 255	E801000	U1, U4
99.O<sec>	GPRS channel test period Min - 15. Max - 255	E801000	U1, U4
99.M<min>	Time between attempts to reconnect to server Max - 255	E801000	U1, U4
99.Y1<login>	Set login for GPRS service Max – 8 symbols	E801000	U1, U4
99.Y2<password>	Set password for GPRS service Max – 8 symbols	E801000	U1, U4
99.Nx	Set number of symbols for number recognition. Max - 16	E801000	U1, U4
99.C1	Show module online configuration	/Configuration/	U1, U4
99.C2	Show module general configuration	/Configuration/	U1, U4
99.C3	Show operator and GSM-signal strength ⁵	/Configuration/	U1, U4

Notes:

1. Phone numbers can be registered either with international code or without it. Inf international code is used than it must contain «+» before it (for example, Latvia: +371xxxxxxx, Estonia: +372xxxxxxx, Russia: +7xxxxxxxxxx). Maximum phone length – 15 digits.
2. When changing installer, new installer will receive **Reply SECURITY CODE** message. New installer must reply with a security code within 10 minutes. Otherwise old phone number will remain registered.
3. Date and time are added to every message. To receive the correct time you either have to activate GPRS mode or send this SMS-message.
Attention! After restarting module time and date will be lost and you will have to set them again.
4. If you need to stop using domain name and start using IP-address again, just delete DNS-server IP-address. You can do so by sending **99.DI** message.
5. Normal signal strength - 15-20 points, good – 20-30.

Enclosure 4. Module events.

Event code in WinSC software	SMS-message on mobile phone	Description	By default sent to:
E802001	06,<account>80299001	Out 1 activated	Command sender
E802002	06,<account>80299002	Out 2 activated	Command sender
R802001	07,<account>80299001	Out 1 deactivated	Command sender
R802002	07,<account>80299002	Out 2 deactivated	Command sender
E830001	06,<account>83099001	Alarm! Zone 1	U1, U2
E830002	06,<account>83099002	Alarm! Zone 2	U1, U2
R830001	07,<account>83099001	Zone 1 restored	U1, U2
R830002	07,<account>83099002	Zone 2 restored	U1, U2
E850000	06,<account>85099000	220V lost	U1
R850000	07,<account>85099000	220V restored	U1
E822000	06,<account>82299000	Battery low	U1
R822000	07,<account>82299000	Battery restored	U1
E823000	06,<account>82399000	Test message	U1
R808000	07,<account>80899000	Module ready to work	U1
E854002:	06,<account>85499002	GPRS connection error	U1
E854001	06,<account>85499001	Failed to connect to server	U1
E804000	06,<account>80499000	Forced exit from GPRS-mode	U1
E801000	06,<account>80199000	Module configuration changed	Command sender
E803000	06,<account>80399000	Account/Security code changed	Command sender
E833020	06,<account>83399020	Communication port failed	U1
R833020	07,<account>83399020	Communication port restored	U1

Enclosure 5. Event codes for Esprit security panel

Event code	Description
E100000	Auxiliary alarm
E115000	Fire alarm
E120000	Panic
E121000	Duress alarm
E1300xx	Alarm! Zone xx, where xx - zone number
R1300xx	Zone xx restored, where xx - zone number
E1370xx	Tamper alarm! Zone xx, where xx - zone number
R1370xx	Tamper restore. Zone xx, where xx - zone number
E301000	AC fail
R301000	AC restore
E302000	Battery low
R302000	Battery restore
E312000	Power supply over current limit
R312000	Power supply restore
E321000	Bell trouble
R321000	Bell OK
E351000	Telephone line fail
R351000	Telephone line restore
R354000	Communication restore
E373000	Fire zone trouble
R373000	Fire zone restore
E401000	Special disarming
R401000	Special arming
E4010xx	Disarmed by user xx, where xx - user number
R4010xx	Armed by user xx, where xx - user number
E405000	Auto-arm canceled
E406000	Alarm canceled
E421000	Keypad lockout
E452000	Late open/close
E459000	Recent closing
E456000	Partial arming
E5700xx	Zone bypass, where xx - zone number
E602000	Periodic test
E626000	Date/time loss
E625000	Date/time restore
E627000	Programming mode entry

Enclosure 6. Event codes for Magellan security panel

Event code	Description
E100000	Auxiliary alarm
E1000xx	Medical alarm, where xx - user number
E1100xx	Fire zone alarm, where xx - zone number
R1100xx	Fire zone restore, where xx - zone number
E115000	Fire alarm
E120000	Panic
E121000	Duress alarm
E1300xx	Alarm! Zone xx, where xx - zone number
R1300xx	Zone xx restore, where xx - zone number
E1370xx	Tamper alarm. Zone xx, where xx - zone number
R1370xx	Tamper restore. Zone xx, where xx - zone number
E1430xx	Module trouble, where xx - module address
R1430xx	Module restore, where xx - module address
E1450xx	Wireless module tamper alarm, where xx - module address
R1450xx	Wireless module tamper restore, where xx - module address
E301000	AC fail
R301000	AC restore
E302000	Battery low
R302000	Battery restore
E305000	System reset
E308000	System shutdown
E312000	Power supply over current limit
R312000	Power supply restore
E321000	Bell trouble
R321000	Bell restore
E333000	Expansion module trouble
R333000	Expansion module restore
E338000	Expansion module low battery
R338000	Expansion module battery restore
E341000	Expansion module tamper alarm
R341000	Expansion module tamper restore
E342000	Expansion module AC lost
R342000	Expansion module AC restore
E344001	RF jamming
E344002	GSM jamming
R344001	RF restored
R344002	GSM restored

E350000	GSM – no service
E350001	IP – no service
R350000	GSM - service restored
R350001	IP - service restored
E351000	Telephone line 1 fail
R351000	Telephone line 1 restore
E352000	Telephone line 2 fail
R352000	Telephone line 2 restore
E354001	Communication fault (voice report)
E354002	Communication fault IP1 (GPRS)
E354003	Communication fault IP2 (GPRS)
E354004	Communication fault IP1
E354005	Communication fault IP2
R354000	Communication restored
R354001	Communication restored (voice report)
R354002	Communication restored IP1 (GPRS)
R354003	Communication restored IP2 (GPRS)
R354004	Communication restored IP1
R354005	Communication restored IP2
E373000	Fire zone trouble
R373000	Fire zone restore
E3800xx	Sensor trouble, where xx - sensor number
R3800xx	Sensor restore, where xx - sensor number
E381000	Loss of supervision — RF
E381001	Loss of supervision — GSM
E381002	Loss of supervision — IP
R381000	Supervision restore — RF
R381001	Supervision restore - GSM
R381002	Supervision restore – IP
E3840xx	Wireless sensor battery low, where xx - sensor number
R3840xx	Wireless sensor battery restore, where xx - sensor number
E400000	Open after alarm (Winload/keyswitch)
E4000xx	Open after alarm, where xx - user number
R400000	Special closing
E401000	Disarmed (Winload/keyswitch)
E4010xx	Disarmed, where xx - user number
R4010xx	Armed, where xx - user number
R403000	Auto-arming
E405000	Auto-arm canceled

R408000	Quick arm
R409000	Arming using Keyswitch
E406000	Alarm canceled (Winload/keyswitch)
R4060xx	Alarm canceled by user, where xx - user number
E421000	Keypad lockout
E452000	Late open/close
E456000	Partial arming
E4580xx	Disarmed using StayD, where xx - zone number
E459000	Recent closing
E531000	Module added
E532000	Module deleted
E5700xx	Zone bypass, where xx - zone number
E602000	Periodic test
E625000	Date/time restore
E626000	Date/time lost
E627000	Programming mode entry
E628000	Programming mode exit
E654000	System inactivity

Enclosure 7: Key-BUS event codes

Event code	Description
E1300xx	Alarm! Zone xx, where xx - zone number
R1300xx	Zone xx restored, where xx - zone number
E100000	Auxiliary alarm
R100000	Auxiliary alarm restored
E115000	Fire alarm
R115000	Fire alarm restored
E120000	Panic
R120000	Panic restored
E111000	2-wire smoke detector alarm
R111000	2-wire smoke detector restore
E121000	Duress alarm
E139000	Intrusion verify
E143000	Expansion module trouble
R143000	Expansion module restore
E1450xx	Expansion module tamper alarm, where xx — module address
R1450xx	Expansion module tamper restore, where xx — module address
E301000	AC lost

R301000	AC restore
E302000	Battery low
R302000	Battery restore
R305000	System reset (Cold start)
E321000	Bell trouble
R321000	Bell restore
E3330xx	Module fail, where xx - module address
R3330xx	Module restore, where xx - module address
E351000	Telephone line fail
R351000	Telephone line restore
R354000	Communication restore
E373000	Fire zone trouble
R373000	Fire zone restore
E3830xx	Zone xx tamper alarm, where xx - zone number
R3830xx	Zone xx tamper restore, where xx - zone number
E384000	Wireless key battery low
R384000	Wireless key battery restore
E3840xx	Wireless sensor battery low, where xx - sensor number
R3840xx	Wireless sensor battery restore, where xx - sensor number
E400000	Special opening
R400000	Special closing
E4010xx	Disarmed by user xx, where xx - user number
R4010xx	Armed by user xx, where xx - user number
E402040	Disarmed with master code
R402040	Armed with master code
E405000	Auto-arm canceled
E406000	Open after alarm
E421000	Keypad lockout
E459000	Recent closing
E470000	Partial arming
E601000	System test
E602000	Periodic test
E627000	Programming mode entry
E628000	Programming mode exit