CQ-64GSMrf guard control device

v.1.1

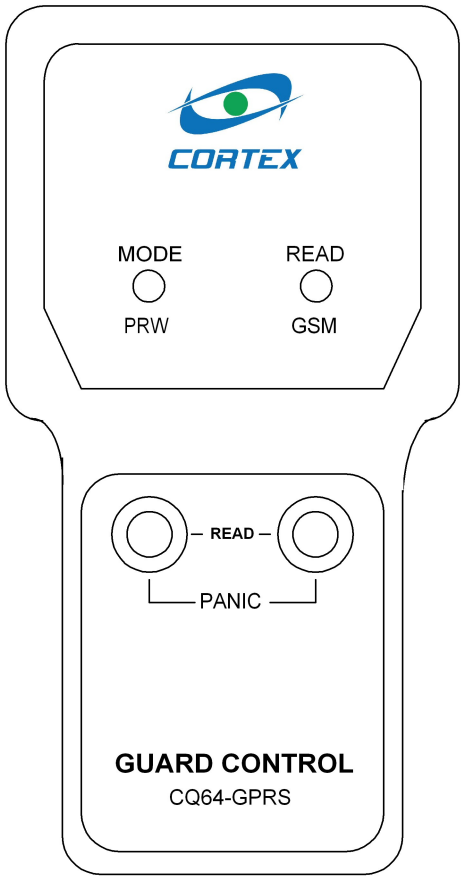
User manual

2011

General information

CQ-64GSMrf device allows controlling the guard, who patrols perimeter or territory.

CQ-64GSMrf device is designed to work with RF-ID tags and allows registering up to 64 route tags to monitor up to 4 different routes and up to 16 guard tags.



CQ-64GSMrf device is able to form and transmit messages to two registered users using GPRS-channel and SMS-messages. The first user can receive information through GPRS-channel or by SMS, the second - only by SMS.

First activation and indication

Before turning on the device you have to buy and activate SIM-card, turn PIN request on and set it's PIN as "0000". After that you can insert SIM into device.

To turn the device on you have to press the right button on the device. After turning on and during initialization GSM LED blinks green once per second and MODE LED blinks red two times per second. When device is ready to work GSM LED starts to blink green once every 3 seconds and MODE LED blinks once every 6 seconds. Color of the MODE LED depends on the battery charge.

After successful initialization you can program the device:

First you have to program phone numbers, that device will send SMS to. To do so you have to send an SMS messages to the device with the following text: **<ID>,91<phone number>** to program the first number and **<ID>,92<phone number>** to program the second number. **<ID>** - unique 4-digit device ID.

After that you have to program settings for GPRS activation and connecting to WinSC program. List of necessary commands is shown in the “GPRS-connection settings” paragraph.

Than you have to set device working mode using **<ID>,93*<mode number>** command. For more information about working modes see in the “Device working modes” paragraph.

After that program the amount of patrol routes using **<ID>,93#<route amount>** command. For more information about working modes see in the “Patrol routes programming” paragraph.

After programming route amount you have to program RF-ID tags for every route. To do so you have to select each route using **<ID>,93R<route number>** command and program RF-IDs with **<ID>,99RP** command. More information about working modes see in the “RF-ID

programming" paragraph.

If the device will be used by 2 or more guards you might want to additionally program guard tags. It can be done by sending **<ID>,99RS** command to the device. More information about working modes see in the “Guard RF-ID programming” paragraph.

After that, if needed, you can activate and configure the calendar. To turn the calendar on send **<ID>,93C+** command, to configure it - **<ID>,93CRxxxxxxx** and **<ID>,93C*xxxxxxx** commands. For more information about working modes see in the “Calendar” paragraph.

After all that is done the devise is ready to work.

To turn off the device send a **<ID>,OFF** command. Device will send an acknowledge message and turn off**.**

Attention!: battery charging must be made **only** at +5°C - +40°C. Otherwise battery may be damaged.

Indication

LED	Indication	Description
READ/GSM	Blinks green once every 3 seconds	GSM coverage OK. Device turned on and working properly.
READ/GSM	Blinks once per second	No GSM coverage
READ/GSM	Constant red	Ready to read RF-ID tag
MODE/PWR	Blinks green once every 6 seconds	High battery level. Device turned on and working properly.
MODE/PWR	Blinks yellow once every 6 seconds	Medium battery level. Device turned on and working properly.
MODE/PWR	Blinks red once every 6 seconds	Low battery level. Device turned on and working properly.
MODE/PWR	Constant red	Battery is charging
MODE/PWR	Constant green	Battery is fully charged. Charger is plugged in
MODE/PWR	Constant yellow	RF-ID programming mode is on
MODE/PWR	Red for 1 second + short sound signal	Failed to read RF-ID tag.
MODE/PWR	Red for 1 second + long sound signal	Error while reading RF-ID tag or tag not registered.
MODE/PWR	Green for 1 second + triple sound signal	RF-ID tag successfully read

RF-ID tag reading and sending panic message

To read a RF-ID tag you have to press any of two buttons and put upper part of the device near the tag (1-2 centimeters). When the button is pressed READ/GSM LED will turn red and you have 5 seconds to read the tag.

If the tag is successfully read than MODE/PWR LED will turn green for one second and triple sound signal will occur.

If device failed to read the tag, MODE/PWR LED will turn red for one second and short sound signal will occur. In that case repeat the operation.

To send a panic message you have to simultaneously press both buttons and hold them for one second.

GPRS-connection settings

In order for the device to connect to the WinSC program and send information using GPRS channel you have to set the following parameters:

GPRS mode activation – set by a **<ID>,89Gx** command, where <ID> - unique 4-digit device ID and x can be either "+" (the first user receives information via GPRS) or ”-“ (the first user receives information via SMS).

IP-address – set by the **<ID>,89Ixx** command, where <ID> - unique 4-digit device ID and xx – IP-address of the computer with installed WinSC program.

APN - set by the **<ID>,89Axx** command, where <ID> - unique 4-digit device ID and xx – access point name (32 symbols maximum).

TCP port – set by the **<ID>,89Pxx** command, where <ID> - unique 4-digit device ID and xx – TCP port number (5 digits maximum).

Login for GPRS access (if used by mobile operator) – set by the **<ID>,89Y1xx** command, where <ID> - unique 4-digit device ID and xx - login (8 symbols maximum).

Password for GPRS access (if used by mobile operator) – set by the **<ID>,89Y2xx** command, where <ID> - unique 4-digit device ID and xx - password (8 symbols maximum).

Number of attempts to connect to the software – set by the **<ID>,89Rxx** command, where <ID> - unique 4-digit device ID and xx – number of attempts (from 1 to 255).

Time between reconnect attempts – set by the **<ID>,89Mxx** command, where <ID> - unique 4-digit device ID and xx – time between reconnect attempts in minutes (from 1 to 255).

DNS-server IP-address (if used) – set by the **<ID>,89DIxx** command, where <ID> - unique 4-digit device ID and xx - IP-address.

Domain name (if used) – set by the **<ID>,89DDxx** command, where <ID> - unique 4-digit device ID and xx – domain name 32 symbols maximum).

Device working modes

Device has four working modes.

Mode one:

Route point control.

In this mode device sends a message every time a registered RF-ID tag is read. Message contains device account, guard tag number and route tag number.

If no guard tags are registered it’s number in the message will be 00.

To activate this mode you have to send the **<ID>,93*1** command to the device.

Mode two:

Strict route control.

In this mode device analyses the route and sends a message only if the route has been violated.

Device analyses order of RF-ID readings and time interval between the readings. In case if readings is made in the wrong order or time interval between readings is exceeded a message is

sent.

To activate this mode you have to send the **<ID>,93*2** command to the device.

Mode three:

The third mode is a compilation of the first two modes. Device sends messages in both cases when the tag is read and when the route is violated.

To activate this mode you have to send the **<ID>,93*3** command to the device.

Mode four:

The fourth mode allows setting time, when to start patrolling, duration of the patrol, time interval between patrols and number of patrols per day.

The fourth mode parameters are set using **<ID>,98Taaaa,bbbb,cccc,d** command, where <ID> - unique 4-digit device ID, aaaa – time, when to start the first patrolling, bbbb – patrolling duration, cccc – time between patrolling, d – number of patrolling (if 0 – not counted).

In this mode, when the patrolling time comes, the device will turn on the sound signal. In 5 minute time the guard must start the patrolling and read the first tag. If that‘s not done, the device will form and send an alarm message. During the time, programmed in the device, guard must read all the programmed RF-ID tags. After each reading device forms a message that contains device account, guard tag number and route tag number. Order of readings and time between them are not analyzed. If the guard didn’t read all programmed tags in time device forms a message, where the quantity of the missed tags are shown.

Attention: to function correctly, the device must have date and time set in it. To set the date and time you have to send any SMS message to the device. If the device was turned off or the battery was fully discharged the date and time will be lost and you will have to send the message again.

Attention: Patrolling duration must be at least 10 minutes shorter that time between patrolling.

To activate this mode you have to send the **<ID>,93*4** command to the device.

RF-ID tag registration

Guard tag programming.

There are three modes to program a tag:

1. RF-ID tag programming. This mode is activated by the **<ID>,99RS** command, where <ID> - unique 4-digit device ID. When this command is received MODE LED will turn yellow and all previously registered tags are deleted from the memory. After the LED turned yellow you have 30 seconds to read an RF-ID tag in order to register it. After registering the tag the countdown starts from the beginning. If in 30 seconds time no tag was read - **CQ-64GSMrf** leaves programming mode.
2. RF-ID tag adding. This mode is activated by the **<ID>,99RSA** command, where <ID> - unique 4-digit device ID. When this command is received MODE LED will turn yellow. After the LED turned yellow you have 30 seconds to read an RF-ID tag in order to register it. Registered tag will be added to the end of the list without deleting previously programmed tags. After registering the tag the countdown starts from the beginning. If in 30 seconds time no tag was read - **CQ-64GSMrf** leaves programming mode.
3. RF-ID tag replacing. This mode is activated by the **<ID>,99RSRxx** command, where <ID> - unique 4-digit device ID and xx – number of the tag you want of replace. When this command is received MODE LED will turn yellow. After the LED turned yellow you have 30 seconds to read an RF-ID tag in order to register it. This tag will de saved as the number given in the command. In case there are no registered tag with this number an error message will be formed. After registering the tag the countdown starts from the beginning. If in 30 seconds time no tag was read - **CQ-64GSMrf** leaves programming mode.

In case you are trying to register already registered key, MODE LED will turn red for one second and you will hear a long sound signal.

Route tag programming.

Route tags are programmed only for the route activated at the moment.

There are three modes to program a tag:

4. RF-ID tag programming. This mode is activated by the **<ID>,99RP** command, where <ID> - unique 4-digit device ID. When this command is received MODE LED will turn yellow and all previously registered tags are deleted from the memory. After the LED turned yellow you have 30 seconds to read an RF-ID tag in order to register it. After registering the tag the countdown starts from the beginning. If in 30 seconds time no tag was read - **CQ-64GSMrf** leaves programming mode.
5. RF-ID tag adding. This mode is activated by the **<ID>,99RPA** command, where <ID> - unique 4-digit device ID. When this command is received MODE LED will turn yellow. After the LED turned yellow you have 30 seconds to read an RF-ID tag in order to register it. Registered tag will be added to the end of the list without deleting previously programmed tags. After registering the tag the countdown starts from the beginning. If in 30 seconds time no tag was read - **CQ-64GSMrf** leaves programming mode.
6. RF-ID tag replacing. This mode is activated by the **<ID>,99RPRxx** command, where <ID> - unique 4-digit device ID and xx – number of the tag you want of replace. When this command is received MODE LED will turn yellow. After the LED turned yellow you have 30 seconds to read an RF-ID tag in order to register it. This tag will de saved as the number given in the command. In case there are no registered tag with this number an error message will be formed. After registering the tag the countdown starts from the beginning. If in 30 seconds time no tag was read - **CQ-64GSMrf** leaves programming mode.

In case you are trying to register already registered key, MODE LED will turn red for one second and you will hear a long sound signal.

Route programming

CQ-64GSMrf can store up to 4 patrolling routes.

Depending on configuration you can have 1, 2 or 4 active routes. However, overall number of registered tags is constant - 64. So if you have 1 active route, than maximum number of tags in it will be 64, if 2 active routes – 32 each, 4 routes – 16 each.

Route programming is made using SMS.

To program the number of the active routes you have to send the **<ID>,93#x** command, where <ID> - unique 4-digit device ID and **x** can take the following values: 1 – one route, 2 – two routes, 3 – four routes.

Attention! When you change the number of the active routes all registered tags are deleted.

To choose a route you have to send the following command: **<ID>,93Rx** where <ID> - unique 4-digit device ID and **x** – route number.

To set the time interval for the strict route control (the second mode) you have to send the **<ID>,99Txx.hhmm,yy.hhmm** command, where <ID> - unique 4-digit device ID, xx and yy tag numbers, hhmm – time interval in hours and minutes.

If you have to change the time interval for only one tag than the command may look like this: **<ID>,99Txx.hhmm**

Attention! Tag numbers may differ if you use two or more routes:

If you use two routes, than the tag numbers in the first route will be from 01 to 32, and in the second – from 33 to 64.

If you use four routes, than the tag numbers in the first route will be from 01 to 16, in the second – from 17 to 32, in the third – from 33 to 48, in the fourth – from 49 to 64.

If you want to set the same interval for all the tags you can use the **<ID>,99T00.hhmm** command, where <ID> - unique 4-digit device ID and **hhmm** - time interval in hours and minutes.

Calendar

Calendar allows automatically switch routes and work modes depending on the day of the week.

For every day you can set a work mode and a route.

To turn the calendar on send the **<ID>,93C+** command, to turn off - **<ID>,93C-**

To set working mode switch you have to send the following command **<ID>,93C*xxxxxxx** where <ID> - unique 4-digit device ID and xxxxxxx – seven-digit code. In this code the digit represents working mode (1 – first mode, 2 – second mode, 3 – third mode, 4 – fourth mode) and it's position day of the week (1 – Monday, 2 – Tuesday, etc.).

To set working mode switch you have to send the following command **<ID>,93CRxxxxxxx** where <ID> - unique 4-digit device ID and xxxxxxx – seven-digit code. In this code the digit represents working mode (1 – first route, 2 – second route, 3 – third route, 4 – fourth route) and it's position day of the week (1 – Monday, 2 – Tuesday, etc.).

By default for all days of the week are set the 1-st work mode and the 1-st route.

Attention: If the device was turned off or the battery was fully discharged the date and time will be lost and you will have to send any SMS message to the device in order to reset them.

Settings request

Settings request command is a special command that is designed for using with mobile phone only. Answer to this command cannot be decoded by WinSC software and must be received on mobile phone only.

To request settings you have to send the **<ID>,S** command, where <ID> - unique 4-digit device ID.

As an answer device will send a message with it's settings. Message will have the following form:

<account>,**<number of active routes>**,**<calendar status>**,**<route settings in calendar>,<mode settings in calendar>,<activated route>**,**<activated mode>**,**<current guard tag>**,**<last activated tag>**,**<battery state>**

<account> - Device 4-digit account.

<number of active routes> - May take on three values: #1 – one route, #2 – two routes, #3 – four routes.

<calendar status> - May take on two values: C+ - calendar activated, C- - turned off.

<route settings in calendar> - displayed as **CR**<route settings for each day>.

<mode settings in calendar> - displayed as **C***<mode settings for each day>.

<activated route> - Shows currently active route. Displayed as **R**<route number>.

<activated mode> - Shows currently activated working mode. Displayed as *<mode number>..

<current guard tag> - Displayed as **S**<guard tag number>. If no guard tags are registered it will be **S00**.

<last activated tag> - Displayed as **P**<tag number>.

<battery state> - Displayed as B<battery state>. This value can change from 99 (maximum) to 0 (minimum).

Control and programming

To program and control the device you have to send a special SMS message from any mobile phone. Every message must contain the unique 4-digit device ID.

All messages send to the device must start from the ID, after which a comma must be placed. Message text must be entered without spaces.

When device receives the message, it analyzes it and in case if command is typed wrong sends back the "E801000" message. If the command processed successfully, "R801000" message will be sent. Only exception is the tag programming messages. If the device successfully entered programming mode – no message is send.

Command list is shown below:

Command	Description	Example
<ID>,91<phone number>	Register the 1-st user number	1111,91+37121234567
<ID>,91	Delete the 1-st user number	1111,91
<ID>,92<phone number>	Register the 2-nd user number	1111,92+37121234567
<ID>,92	Delete the 2-nd user number	1111,92
<ID>,95<account>	Change device account. Default - 1234	1111,954321

Command	Description	Example
<ID>,OFF	Turn off the device	1111,OFF
<ID>,89G+	Enable GPRS	1111,89G+
<ID>,89G-	Disable GPRS	1111,89G-
<ID>,89I<IP-address>	Set IP-address	1111,89I211.21.211.21
<ID>,89A<APN>	Set APN	1111,89Ainternet
<ID>,89Y1<login>	Set login for GPRS access	1111,89Y1login
<ID>,89Y2<password>	Set password for GPRS access	1111,89Y2password
<ID>,89P<port>	Set TCP-port	1111,89P925
<ID>,89R<attempts>	Set number of attempts to connect to software. Maximum 255.	1111,89R2
<ID>,89M<minutes>	Set time interval between connection attempts. Maximum 255.	1111,89M1
<ID>,89DI<IP-address>	Set DNS-server IP-address	1111,89DI211.21.211.21
<ID>,89DD<domain name>	Set domain name	1111,89DDdomenname
<ID>,98Taaaa,bbbb,cccc,d	Configure 4-th mode preferences	1111,98T0900,0230,0400,3
<ID>,93#<number of routes>	Set number of active routes	1111,93#2
<ID>,93*<mode number>	Change active mode	1111,93*1
<ID>,93R<route number>	Change active route	1111,93R3
<ID>,93C+	Turn calendar on	1111,93C+
<ID>,93C-	Turn calendar off	1111,99C-
<ID>,93C*xxxxxxx	Set modes for each day of the week	1111,93C*1123122
<ID>,93CRxxxxxxx	Set routes for each day of the week	1111,93CR1134211
<ID>,99Txx.hhmm	Set time interval	1111,99T03.0030
<ID>,99RS	Enter guard tag registration mode	1111,99RS
<ID>,99RSA	Enter guard tag adding mode	1111,99RSA
<ID>,99RSRxx (where xx – tag number. 2 symbols obligatory)	Enter guard tag replacement mode	1111,99RSR01
<ID>,99RP	Enter tag registration mode	1111,99RP
<ID>,99RPA	Enter tag adding mode	1111,99RPA
<ID>,99RPRxx (where xx – tag number. 2 symbols obligatory)	Enter tag replacement mode	1111,99RPR01

Device messages in the WinSC software

Depending on the message delivery mode, messages are sent in two different protocols. SMS-messages are sent in **Contact ID** protocol, GPRS-messages - **SIA-IP**.

Massages consist of the following elements:

Account - **CQ-64GSMrf** account

Partition – duty guard number. If no Guard tags are registered than it will be 00.

Event code.

SMS message code	GPRS message code	Description
E120000	1120000	Panic button pressed
E302000	1302000	Battery low
R302000	3302000	Battery OK
R308000	3308000	Device is turned on
E308000	1308000	Device is turned off
R7000xx	37000xx	RF-ID tag is activated, where xx – tag number
R800000	3800000	Duty guard changed
E801000	1801000	Wrong command
R801000	3801000	Command successfully executed
E137000	1137000	Tamper alarm
R137000	3137000	Tamper restore
E705000	1705000	Guard didn’t go patrolling in time
E7060xx	17060xx	Partial patrolling, where xx – amount of missed tags
E707000	1707000	Date/time lost
R707000	3707000	Date/time restored
E704000	1704000	Multiple pressing of the read button
R7030xx	37030xx	Patrolling started from tag xx, where xx – tag number
E7010xx	17010xx	Route violation in the xx point, where xx – tag number
R7010xx	37010xx	Route restored at xx point, where xx – tag number
E7020xx	17020xx	Time interval exceeded for point xx, where xx – tag number
E80200x	180200x	Route number set as x, where x – route number code
E80300x	180300x	Mode x activated, where x – mode number
E80400x	180400x	Route x activated, where x – route number