VEHICLE
TRACKING SYSTEMS

OPERATION GUIDE

Navigation User Terminal

iON ULC

Table of Contents

1. Introduction

This document contains information on preparation procedures for operating the iON ULC navigation user terminal.

Version	Date	Prepared by	Revisions
1.0	29.06.2015	V. Golovin	Main document
1.0.1	10.07.2015	V. Golovin	Mounting guidelines added (2)
1.2	13.07.2015	V. Golovin	Changes: Document name
1.2.1	10.08.2015	V. Golovin	Added: "The diagrams of connecting relay to an output" (3.4), "Alarm Button and Any Contact-Sensor Connection" (3.5)
1.2.2	10.09.2015	V. Golovin	Added: Location command (5.4)
1.2.3	29.01.2016	V. Golovin	Changes: Technical Specifications (1.2)
1.2.4	30.08.2016	V. Golovin	Changes: GPS/GLONASS indication (2.2)
1.3	09.09.2016	V. Golovin	Changes: Updated sections about configurator application (4.1-4.6), data packages (5.2, 5.3), list of commands (5.4)
1.4	06.10.2016	V. Golovin	Changes: Added message format from server to device (5.2)
1.5	21.12.2016	V. Golovin	Changes: Updated sections about new configurator application (4.1-4.4, 4.3.1-4.3.6, 4.4.1-4.4.3)
1.5.1	06.03.2017	V. Golovin	Changes: correction in formula (5.3), enlarged commands description (5.4)
1.5.2	13.03.2017	V. Golovin	Changes: correction in data package format (5.2)
1.5.3	10.11.2017	V. Golovin	Changes: parameters of commands: send_data, send_data_on_parking, smart_tracking_delta (5.4)

1.1. Cautions and Recommendations

Before proceeding to the device use, please read the safety rules described in this section.

CAUTION! The device uses the cellular technology and can cause radio interference to medical and other equipment. Thus, if you are in the area where use of cellular devices is not allowed, switch off the controller.

CAUTION! The controller can cause interference to cardiac pacemakers or hearing aids. Switch off the device in hospitals and medical centres.

CAUTION! Switch off the device if you are in the area of blasting operations. The controller can cause interference when the operations are under way. Thus, follow the instructions and directions in such areas.

1.2. Technical Specifications*

Key Features	
Navigation receiver	GPS/GLONASS
Frequency bands	GSM/GPRS 900/1800 MHz (850/900/1800/1900 MHz — on request)
Antennas	built-in GPS/GLONASS antenna
	built-in GSM antenna
Flash-memory	10000 records
Built-in accelerometer	three-axis
Electrical Specifications	
Power supply voltage	9 to 40 V
Maximum voltage rating in a long-term mode	55 V
Current consumption in various modes (at 24V power voltage), max	• 75 mA (operating mode, the battery is charged) • 210 mA (operating mode, the battery is discharged) • 3.4 mA (6.1 mA at 12 V) (sleep mode)
Built-in battery	Li-Pol, 500 mAh
Connectors and Interfaces	
Connectors	Microfit 8
Interfaces	analog input 0…30 V (for example, for connection of an analog liquid level sensor)
	discrete input
	discrete output ("open controller")
Physical Specifications	
Dimensions	93.8 × 73.6 × 20 mm
Weight, max	90 g
Gross weight, max	120 g
Operating temperature	-35°C to +80°C

* technical specifications are subject to change by the manufacturer without prior notice

1.3. Package Contents

The supply package of the iON ULC navigation user terminal includes*:

#	Name	Quantity
1	Navigation user terminal	1 pce
2	8-pin interface connector	1 pce
3	Terminal wire for the interface connector	8 pcs
4	3A fuse	1 pce

* the package collection and contents are subject to change by the manufacturer without prior notice

1.4. Device Overview

1.4.1. Device Overview and Purpose

iON ULC is a navigation user terminal (NUT) designed to install in the monitored object, collect, store and transmit data to a server for its further processing. The navigation terminal receives location and time data from the GPS/GLONASS satellites. The collected data is transmitted to the server via the GSM network using the GPRS packet-switched service. The user can access the server data through the dispatching software.

It is necessary to remember that iON ULC is just a constituent part of the tracking system. The navigation terminal itself is responsible for data collection and transmission from the monitored object to the server where the data is processed and provided to an end user.

Overall, the tracking system enables you to complete a wide range of tasks:

- safety issues — vehicle travel data, operating disturbances, etc.;
- efficiency improvement — control over a vehicle use only in authorized operations, efficiency analysis of the performed tasks;
- ensuring operation transparency — all data on vehicle travels, fuel flow and other data is transmitted to the server and available online;
- statistical data collection - in the process of vehicle operation an end user is provided with various data which can simplify and even improve efficiency of performing tasks. Moreover, this data helps to make calculations of different economy-related measurements.

1.4.2. The Navigation Terminal Features

The iON ULC navigation terminal as a part of the tracking system fulfils the following functions:

- fixes the vehicle position (space coordinates) using GPS/GLONASS module;
- determines direction changes and turns using the built-in accelerometer;
- collects data from the sensors:
  - liquid level sensors;
  - temperature sensors;
  - etc.

The navigation terminal functions (continued):

- data collection from an input;
- external devices control via the general-purpose outputs;
- data transmission from the terminal to a user server;
- transmitted data storage in case of connection failure;
- data transmission to the server in the event of alarm button activation;
- SMS and user commands processing.

1.4.3. The Tracking System Operation Diagram

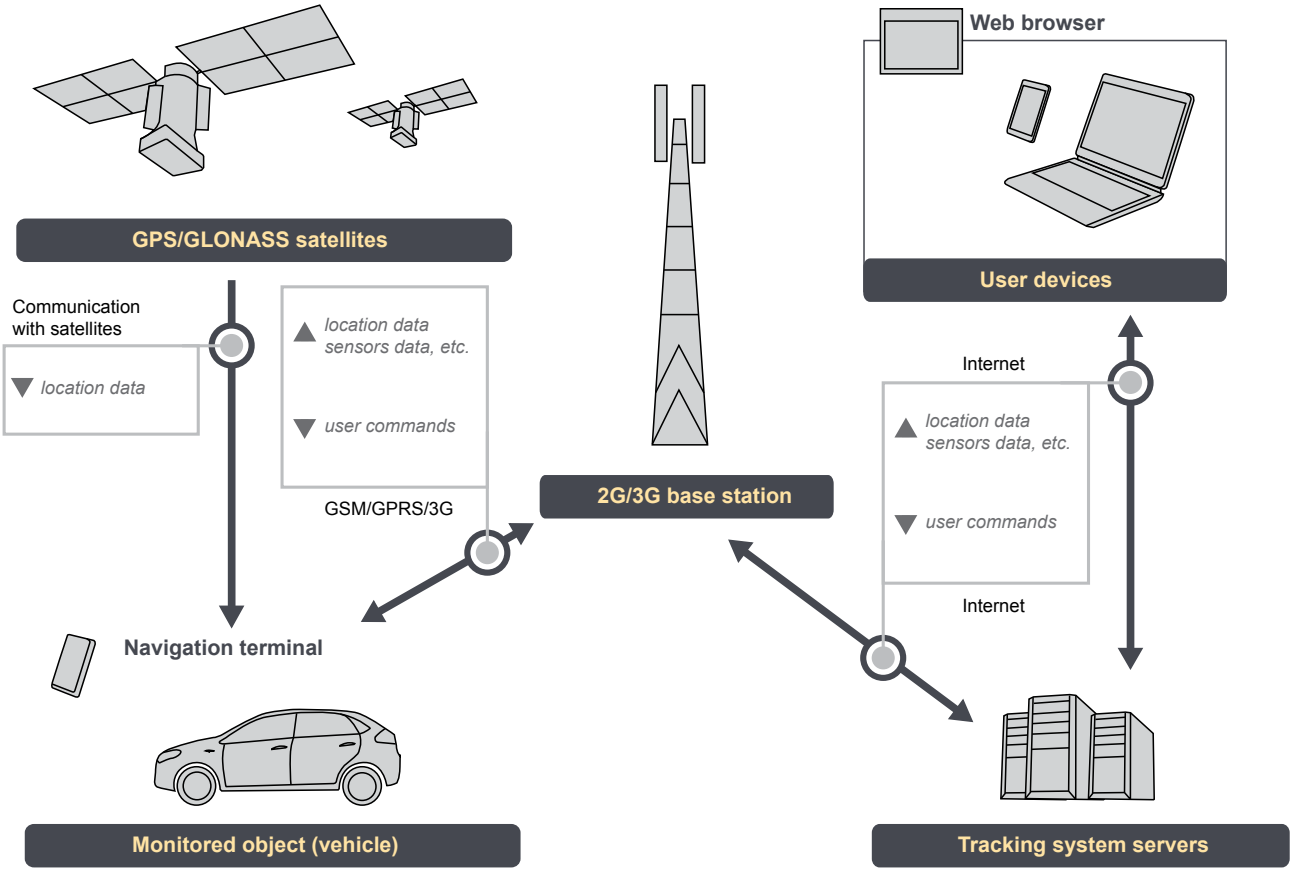


Fig. 1.1. The tracking system operation diagram

1.4.4. The Navigation Terminal Connectors

iON ULC is a compact device encased in plastic housing connectible to external power as well as to various external devices and sensors.

The interface connector, indicators and access to a SIM card are placed outside while antennas and batteries are inside.

The terminal connectors and interfaces are shown in the figure:

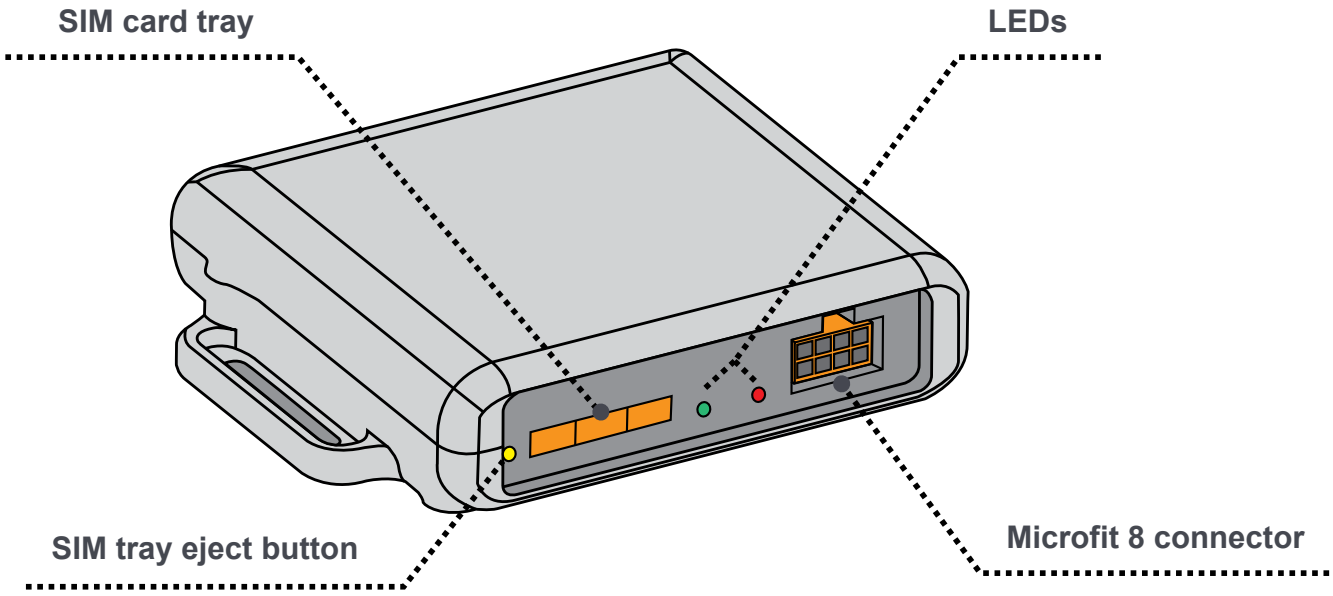


Fig. 1.2. The iON ULC navigation terminal view

1.4.5. The Navigation Terminal System

The navigation terminal structure diagram:

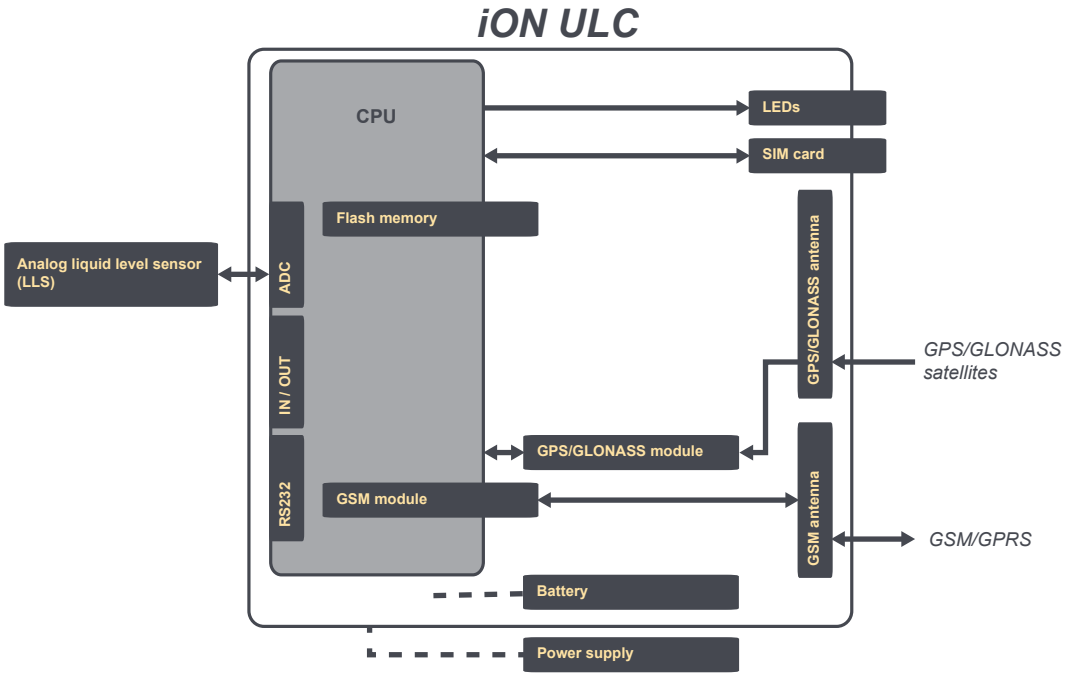


Fig. 1.3. The iON ULC navigation terminal structure diagram

1.4.6. Power-Saving Modes and Built-in Battery

The iON ULC user terminal uses a 500 mAh Li-Pol battery ensuring the system operation if no external power is supplied. The terminal is fitted with a configurable power-saving mode.

1.5. Dimensional Drawing

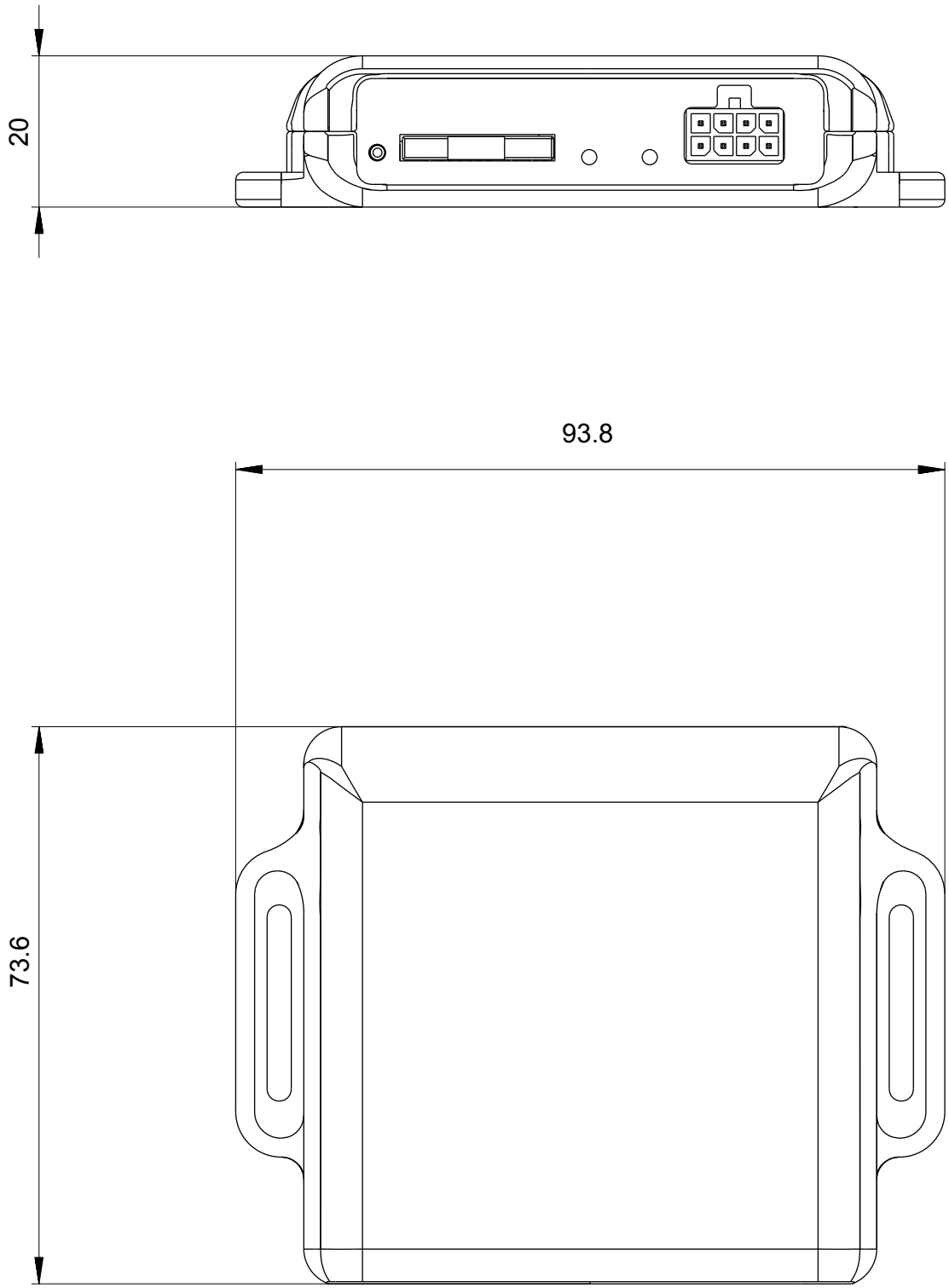


Fig. 1.4. iON ULC dimensional drawing

2. Device Preparation Procedures

This section has information on preparation and installation of the iON ULC navigation user terminal in a vehicle.

Before installing the device in a vehicle, you need to configure it using the **iON_ULC_Configurator.exe** configuration manager. The device can be configured during the mounting process, for example, using a laptop connected to the device over the RS232 interface via the Microfit 8 connector. For more details about the configuration manager, see Section 4.

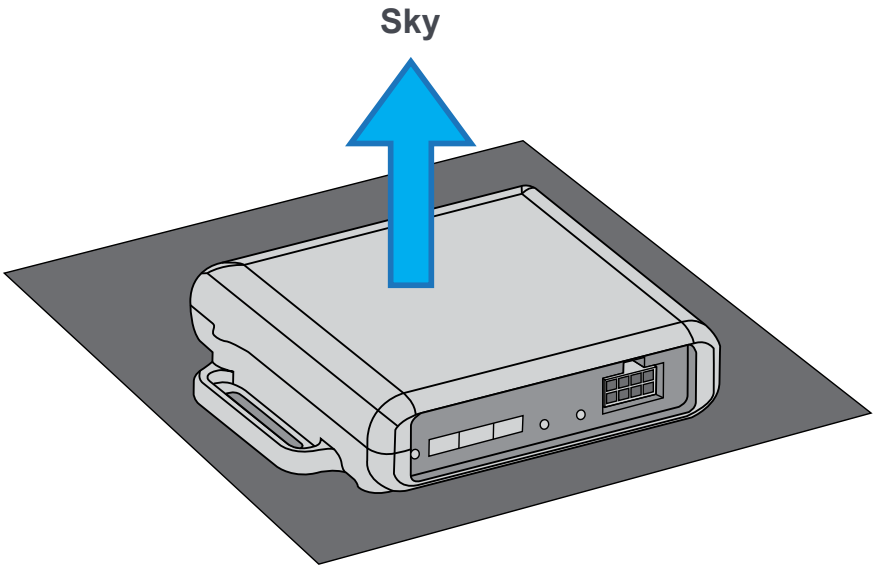
Preliminary device preparation is as follows:
- SIM card installation;
- setting parameters in the configurator.

Device installation:
- connecting power and external sensors (if required);
- operation check;
- device mounting.

Various power and external devices connection diagrams can be found in Section 3.

The navigation terminal is equipped with an indication system (Section 2.5) to check the operation of different components. In addition, you can check the terminal operation using the configuration manager, the “Status” tab (Section 4).

Mounting Guidelines
Mounting procedure requires the devices to be positioned horizontally with the logo facing upwards.



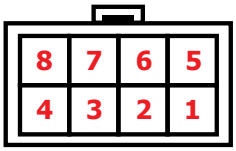
2.1. Connecting the Device to Vehicle Onboard Power System

The terminal is supplied with 8 wires to connect power, transmit data from sensors and other devices.

The description of FFC connector pins is shown in the table:

Pin	Signal	Description
1	GND	Ground (negative)
2	RxD	RS232 – receive data
3	TxD	RS232 – transmit data
4	GND	Ground (negative)
5	VCC	Power (positive)
6	INPUT	Input
7	Output	Output
8	ADC	Analog input

Board connector
(Microfit 8
interface connector)



2.2. Indicators

The iON ULC indicators are placed on the front side between the SIM slot and the interface connector. More detailed information on the indication system is given in the table:

Indicator	GSM	GPS/ GLONASS
	1	2
Color	green	red
LED is off	Device is off	No signal from positioning systems is detected
On 0.1 sec → Pause 0.1 sec	Device loading	
On 0.1 sec → Pause 0.5 sec	Searching SIM card	Positioning systems signal is received
On 0.5 sec → Pause 0.5 sec	Waiting for GSM registration	
On 1.5 sec → Pause 0.5 sec	Registration to GSM network is complete, waiting for connection to the server	
LED is on	Registration to GSM network is complete, device is connected to server	
On 0.5 sec → Pause 3.0 sec	Device is in sleep mode	

3. Device Connection

This section presents various diagrams of device power connection, sensor and other external devices connection, etc.

Diagrams:

Connecting power without a battery cutoff switch
Connecting power with a battery cutoff switch
Connecting the LLS with an analog output
The diagram of connecting relay to an output
Alarm Button and Any Contact-Sensor Connection

3.1. Connecting Power without a Battery Cutoff Switch

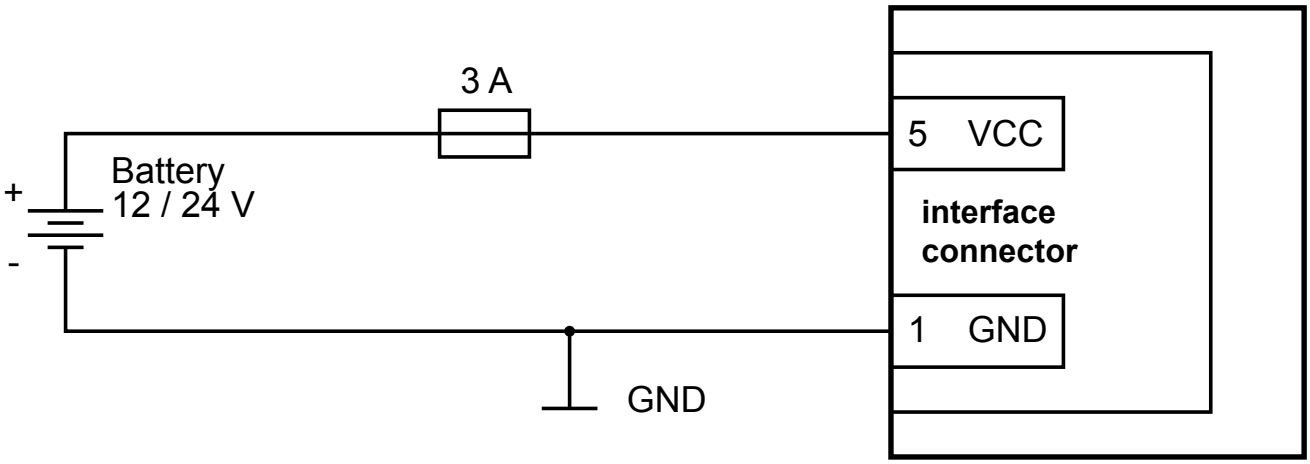


Fig. 3.1. The diagram of connecting power without a battery cutoff switch

3.2. Connecting Power with a Battery Cutoff Switch

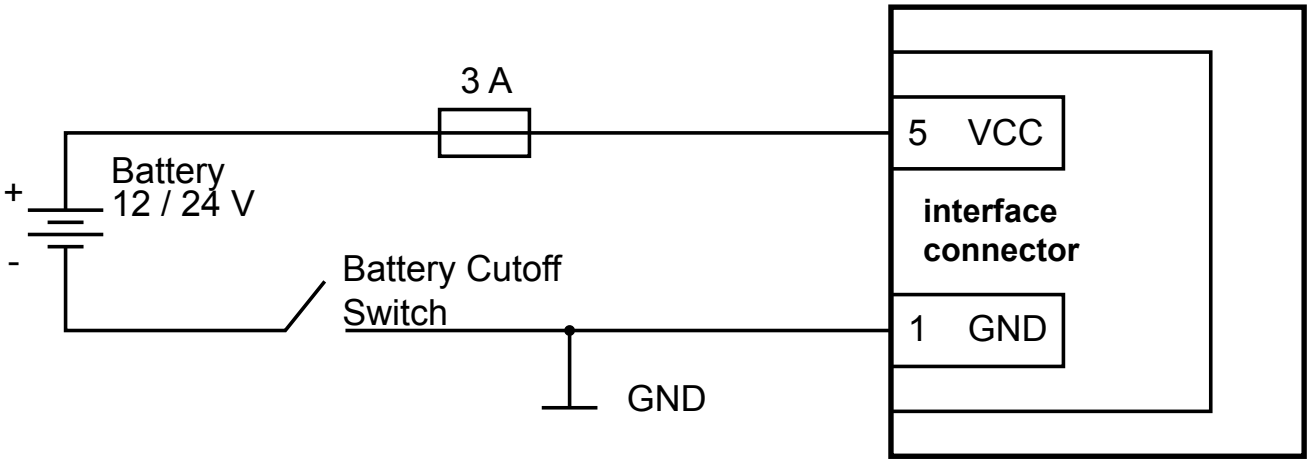


Fig. 3.2. The diagram of connecting power with a battery cutoff switch

3.3. Connecting the LLS with an Analog Output

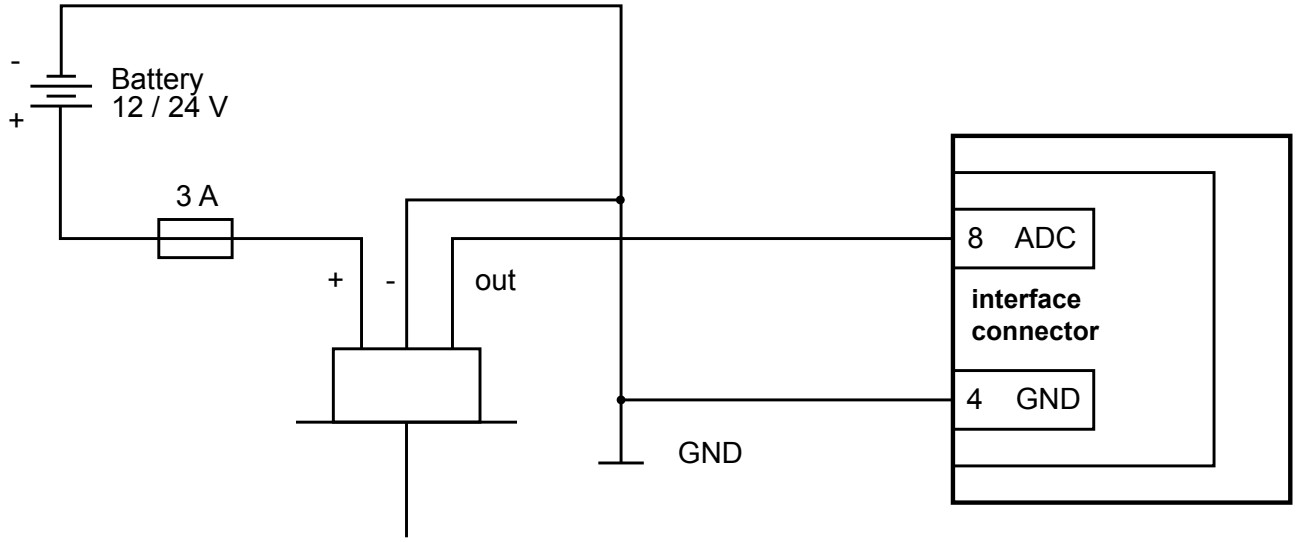


Fig. 3.3. The diagram of connecting the LLS with an analog output

3.4. The diagrams of connecting relay to an output

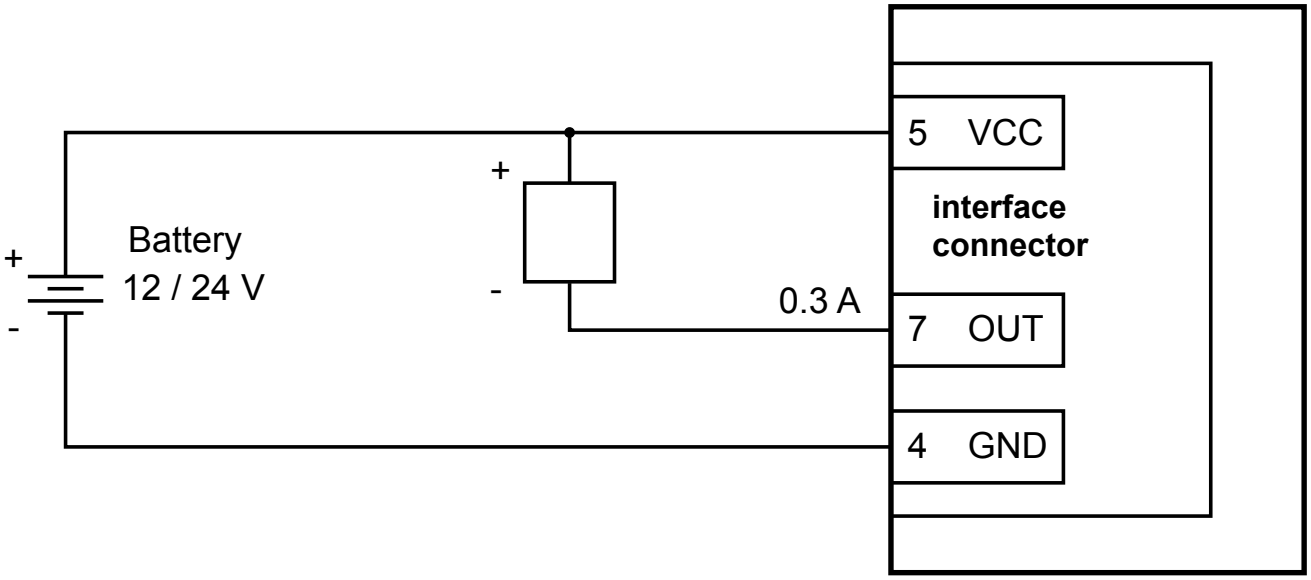


Fig. 3.4. The diagram of connecting relay to an output

3.5. Alarm Button and Any Contact-Sensor Connection

The diagram for the devices with the version number 1.1. Hardware version is printed on the label, “HW”.

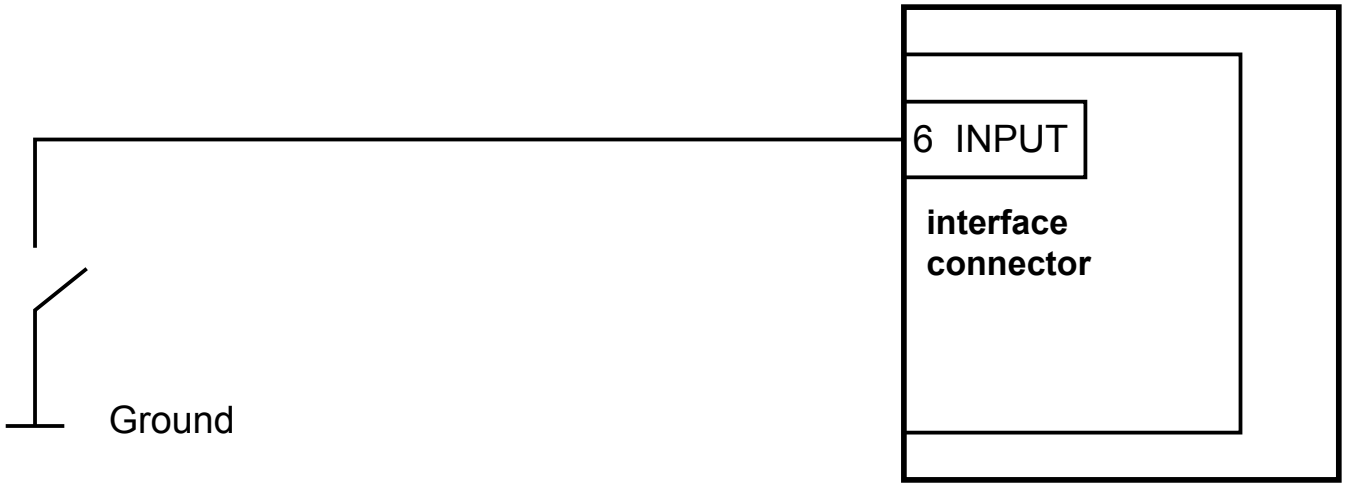


Fig. 3.5. Alarm Button and Any Contact-Sensor Connection (HW1.1)

The diagram for the devices with the version number 1.0. Hardware version is printed on the label, “HW”.

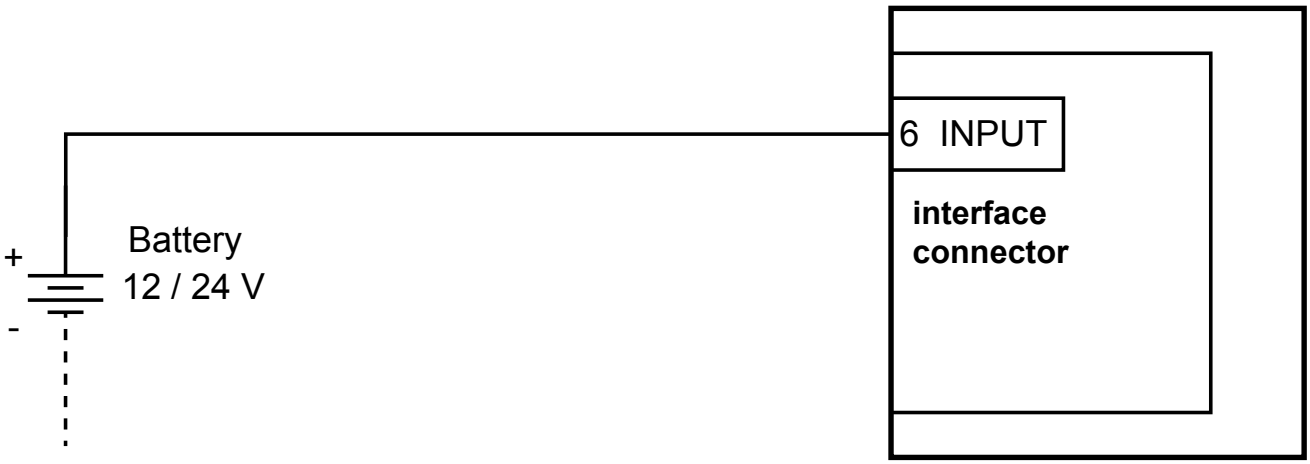


Fig. 3.6. Alarm Button and Any Contact-Sensor Connection (1.0)

4. Device Configuration Using the Configurator

4.1. Connection device to PC

To connect the device to a PC, you need to connect the device connector pins to the DB9 Female connector in the following way:

Microfit 8 connector (ULC)		DB9-F connector (PC)	
Pin	Signal	Signal	Pin
2	RxD	TxD	3
3	TxD	RxD	2
4	GND	GND	5
Microfit 8 connector (ULC)		External power supply	
1	GND	Ground (negative)	-
5	VCC	Power (positive)	-

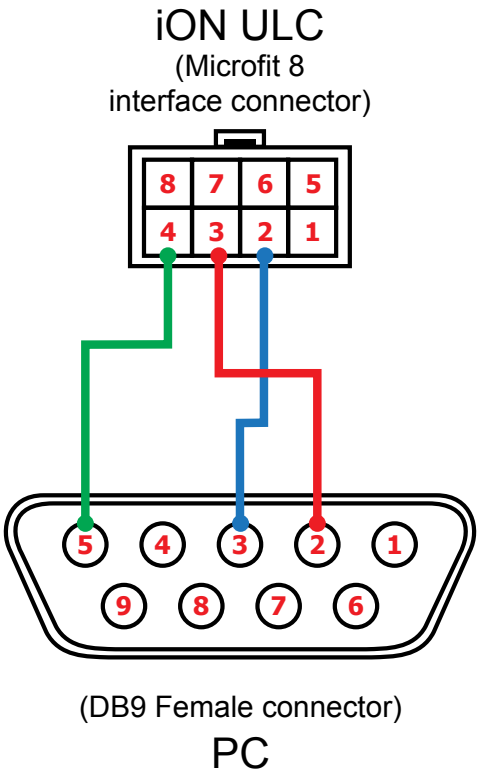


Fig. 4.1. Microfit 8 — DB9 connection diagram

4.2. Overview

The configurator program is an application, in which all the managing elements are grouped by their tasks.

When you initialize the configurator the list of the devices connected to the computer will open:

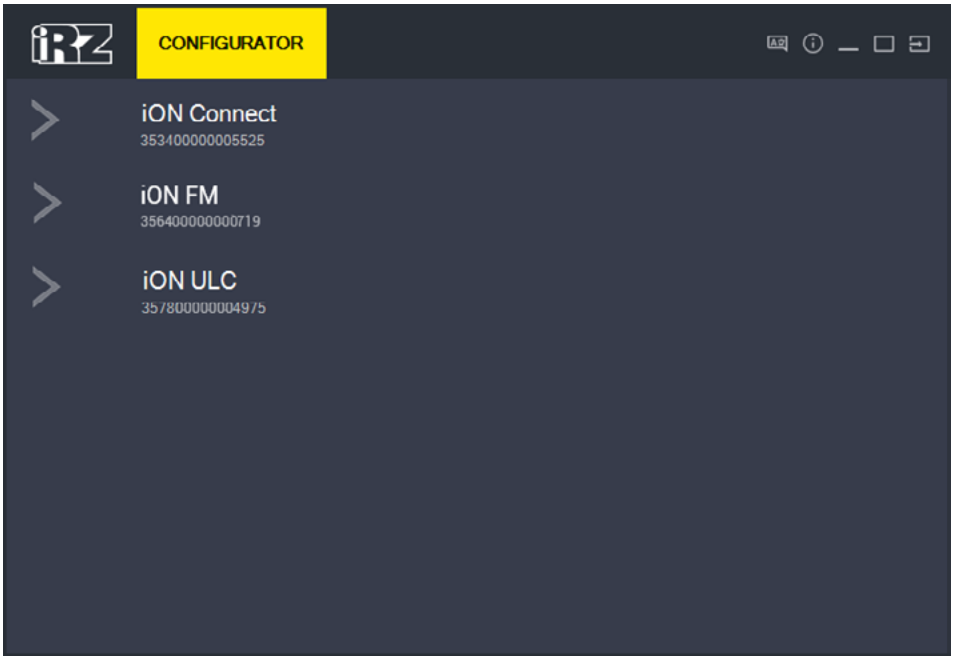


Fig. 4.2. List of Devices

To access the settings, click on the device from the list to which you want to connect.

After selecting the device, opens several tabs with information and configurations:

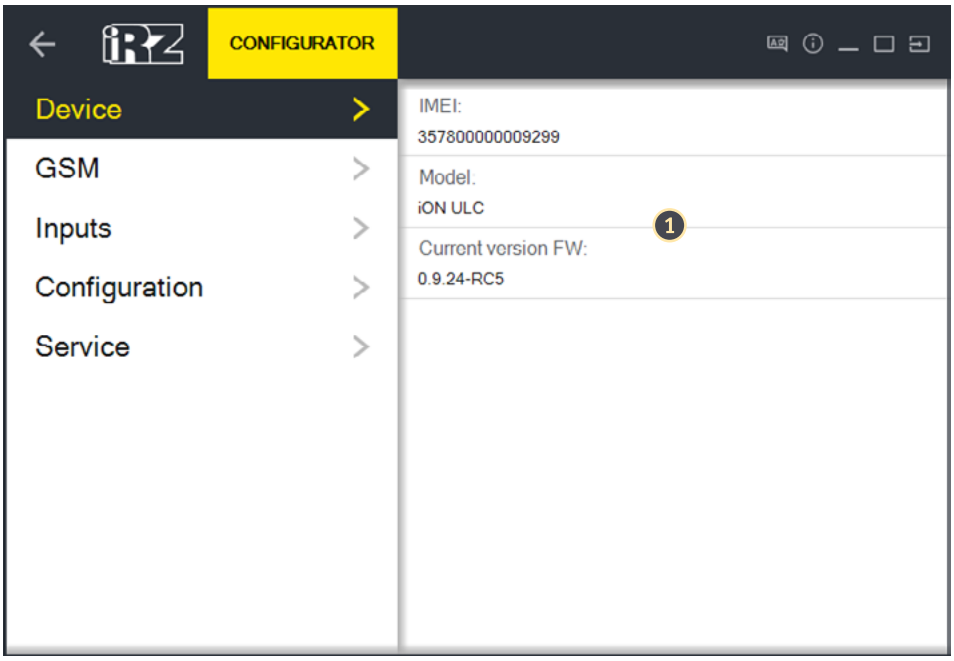


Fig. 4.3. "Devices" tab

Mark	Element	Description
	"Device" tab	General information about device: IMEI, model, firmware version, etc.
	"GSM" tab	Information about SIM card and functioning of GSM connection
	"Inputs" tab	Information about state of device's inputs and diagnostic information: device temperature, external and internal voltage.
	"Configuration" tab	Configurations of the device
	"Service" tab	Firmware update, password change, execution of service commands for the device, loading and saving the configuration.
1	Working area	Working area of the selected tab.
	Arrow to go back	Go back to the previous level.
	Language selection	Change language.
	About software	Information about the program
	Language selection	Change the language.
	Expand/Collapse	Change the parameters of the program's window
	Exit	Exit from the program

4.3. Terminal Configuration

To access the configuration of the device, select the **Configuration** tab. The settings are grouped by topics:

Tab	Function
Server	Configuration of the connection with the servers of the monitoring system.
SIM configuration	Configuration of the SIM cards in the device.
Track points	Configuration of the tracking points saving.
Powersaving	Configuration of the power saving modes.
GNSS	Navigation parameter configuration of the device
General	Various settings

The button is used for the reading of the device configuration. The button **Save** is used to save the changes made in the configuration.

To change the parameters in the configuration of the device:

1. Change the needed parameters (you can change parameters in several tabs at once);
2. Click on the **Save** button.

4.3.1. “Server” tab

The **Server** tab is used for the configuration of the connection with the servers of the monitoring system.

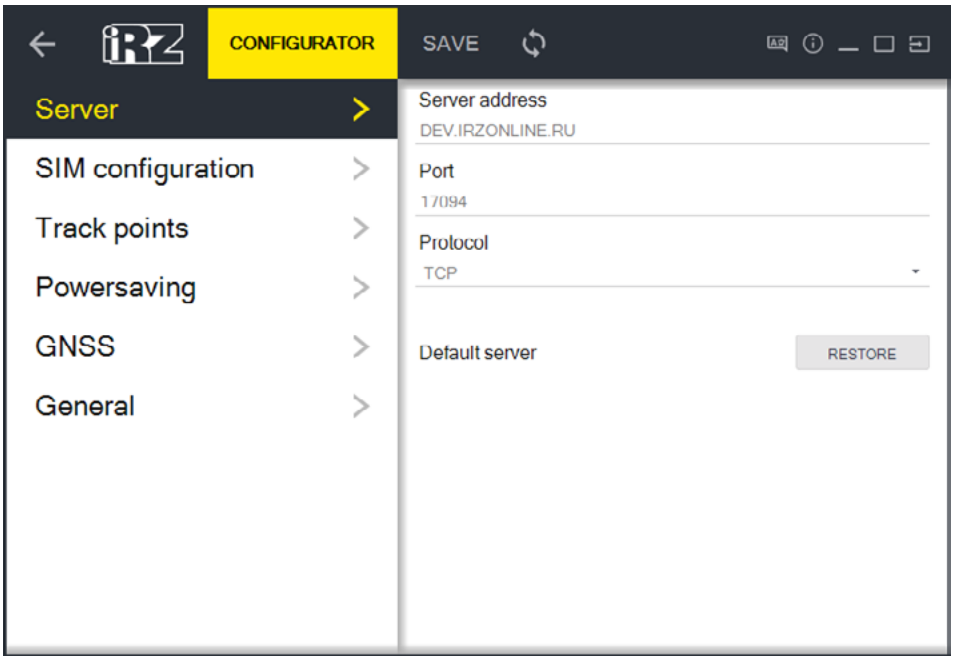


Fig. 4.4. “Server” tab

For the configuration of the connection you need to specify the IP address or the DNS name, its port and protocol.

Example:

Parameter	Example
Server address	dev.irzonline.ru
Port	17094
Protocol	TCP

The **Restore** button installs the default server parameters.

4.3.2. “SIM configuration” tab

The **SIM Configuration** tab is used for the configuration of the SIM cards in the device.

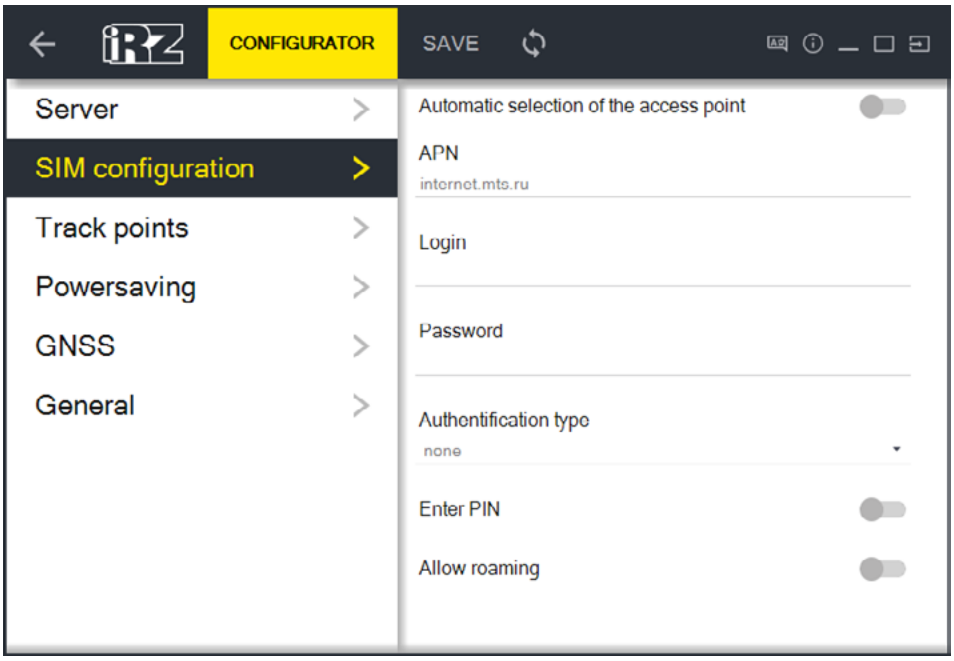


Fig. 4.5. “SIM configuration” tab

The following configurations are available:

Parameter	Description
Automatic selection of the access point	Enable/disable the automatic selection of the access point. If the parameter is disabled, then the APN, login and password need to be entered manually.
Enter PIN	Enable/disable the entry of the PIN code for the SIM card. If in the SIM card the PIN code is set, then it is needed to be enabled, and below will appear a window for its entry.
Allow roaming	Enable/disable the permission of the SIM card to work in roaming.

4.3.3. “Track points” tab

The **Track Points** tab is used for the configuration of the navigation tracking points.

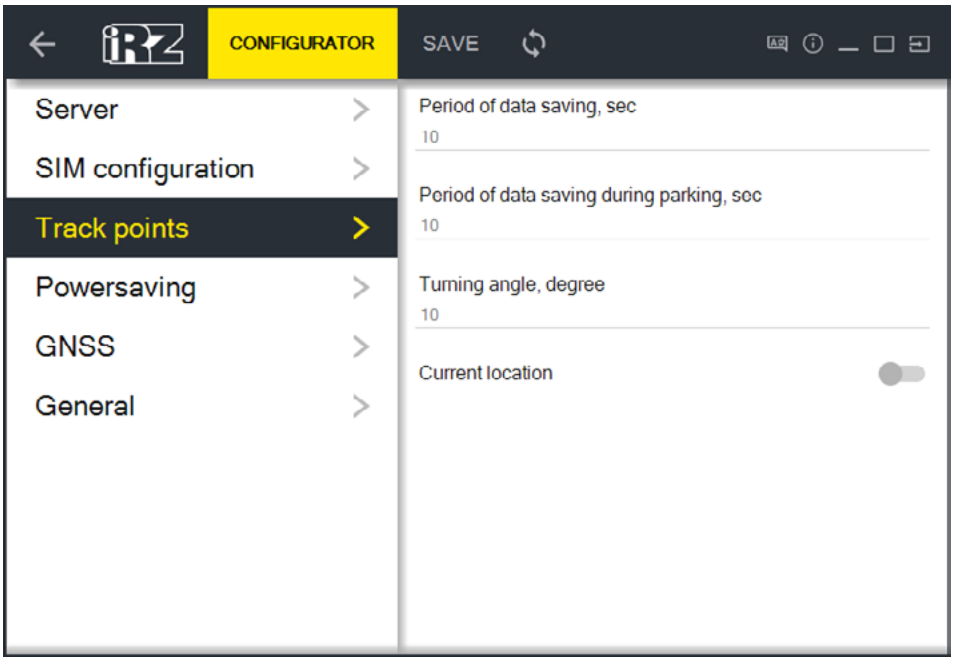


Fig. 4.6. “Track points” tab

The following configurations are available:

Parameter	Description
Period of data saving time	Period in seconds, which specifies the interval of time after which the device will save the coordinates of the current position. This information will be used for the construction of the track. For example, 120 — every 2 minutes the device will save the coordinate of the current position in its database.
Period of data saving during parking	Period in seconds, which specifies the interval after which the data will save, when it is registered that the vehicle is in parking. For example, 600 - every 10 minutes data will be sent from sensors and external devices to be saved in the database.
Turning angle degree	Turning angle in degrees, above which a coordinate of the current position will be saved by the device. For example, 15 — when the direction is shifted by 15 degrees or more, the coordinate of the current position will be saved in the device’s database.
Current location	Period in seconds, which specifies the interval of time after which the terminal will send the data for the display of the location in real time. For example, 30 — every 30 seconds the coordinates of the current location will be sent to the server.

4.3.4. “Powersaving” tab

The **Powersaving** tab is used for the configuration of the power saving modes.

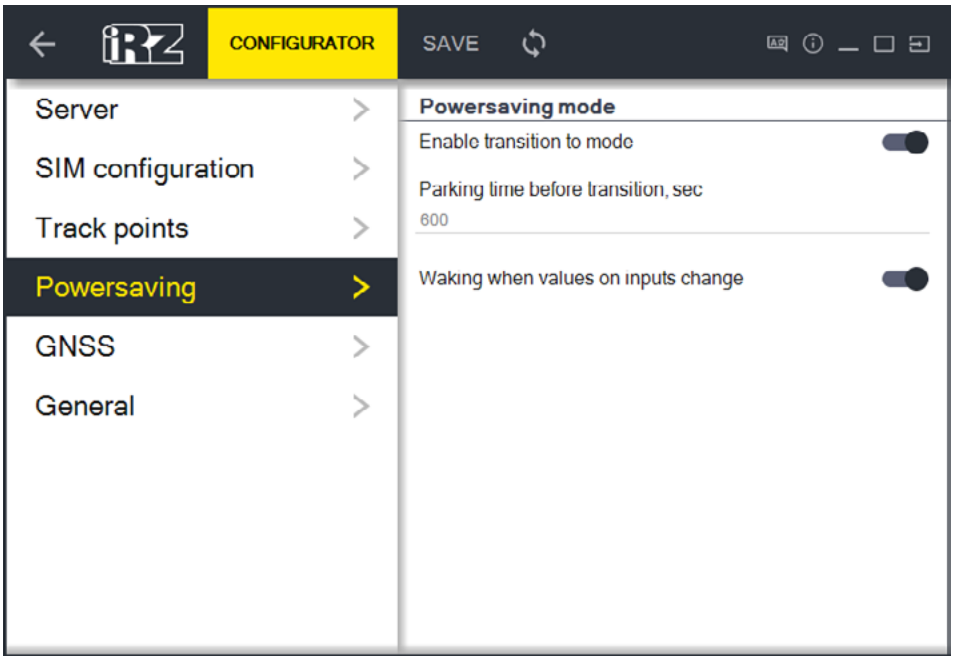


Fig. 4.7. “Powersaving” tab

The following configurations are available:

Parameter	Description
Powersaving mode:	
Enable transition to mode	Enable/disable the transition of the device to “Power saving mode”.
Parking time before transition	Time of parking event in seconds, after which the device will switch to power-saving mode.
Other:	
Waking when values on inputs change	Enable/disable exit from powersaving mode when value on inputs change.

4.3.5. "GNSS" tab

The tab **GNSS** is used for the configuration of navigation system parameters.

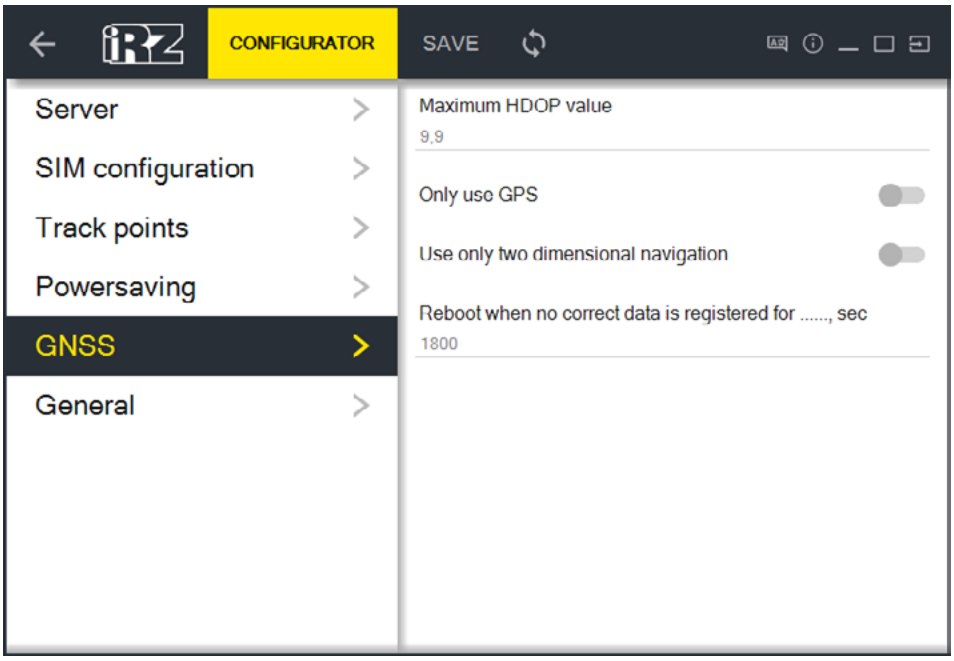


Fig. 4.8. "GNSS" tab

The following configurations are available:

Parameter	Description
Maximum HDOP value	HDOP value received from the navigation receiver, which threshold if exceded – the geographical data packet sent to the server will be marked as invalid.
Only use GPS	Enable/disable the use of only GPS navigation system for coordinates.
Use only two dimensional navigation	Switch the use of 2D and 3D navigation for location.
Reboot when no correct data is registered for …, sec	Reboot the navigation module, if correct data is not received during the said threshold, in seconds.

4.3.6. “General” tab

The **General** tab is used for the configuration of different system parameters of the device.

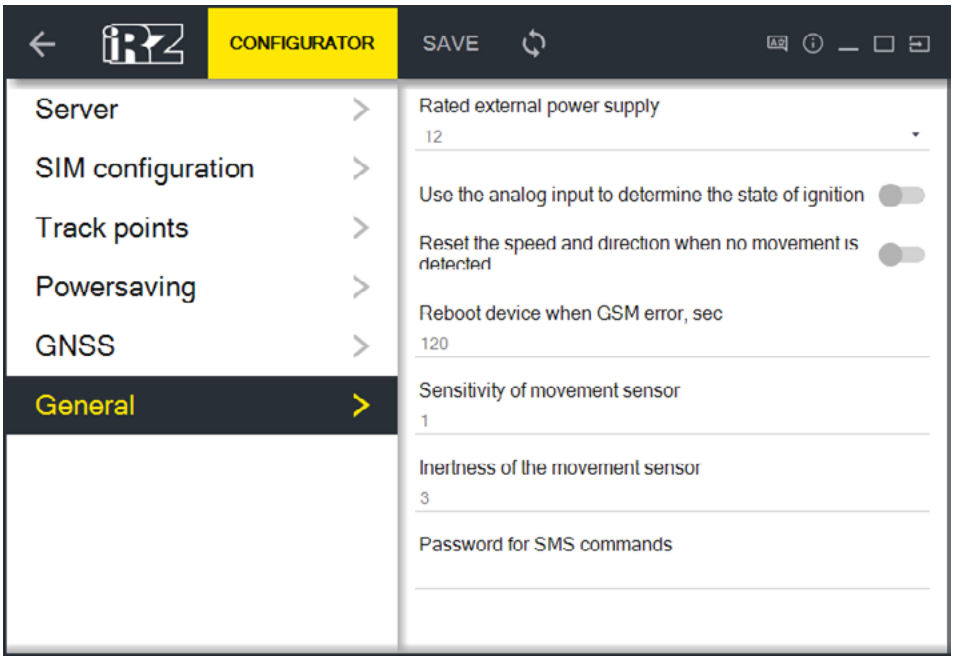


Fig. 4.9. “General” tab

The following configurations are available:

Parameter	Description
Rated external power supply	Here you can set up the power supply of the vehicle – 12 or 24 V.
Use the analog input to determine the state of ignition	Enable/disable the use of the analog input for ignition status.
Reset the speed and direction when no movement is detected	Enable/disable the reset of the speed and direction parameters. If movement of the vehicle is not detected, then speed and direction will be sent to the server as null. The enabling of this option can filter the error of speed and direction before sending them to the server, when the vehicle is parked.
Reboot device when GSM error	Period in seconds, after which the device will reboot, if a GSM connection error is detected.
Sensitivity of movement sensor	Sensitivity of the accelerometer for detection of the vehicle movement. The greater sensitivity value, the less the accelerometer will react to influence.
Inertness of the movement sensor	Delay in seconds (from 0 to 65535) to movement detection. To eliminate false movements by movement sensors.
Password for SMS commands	SMS message password, used when sending command to the device.

4.4. Service configuration of the terminal

In the **Service** tab can be configured different service configuration of the terminal – installation and changing of the password, firmware update, sending of service commands and other.

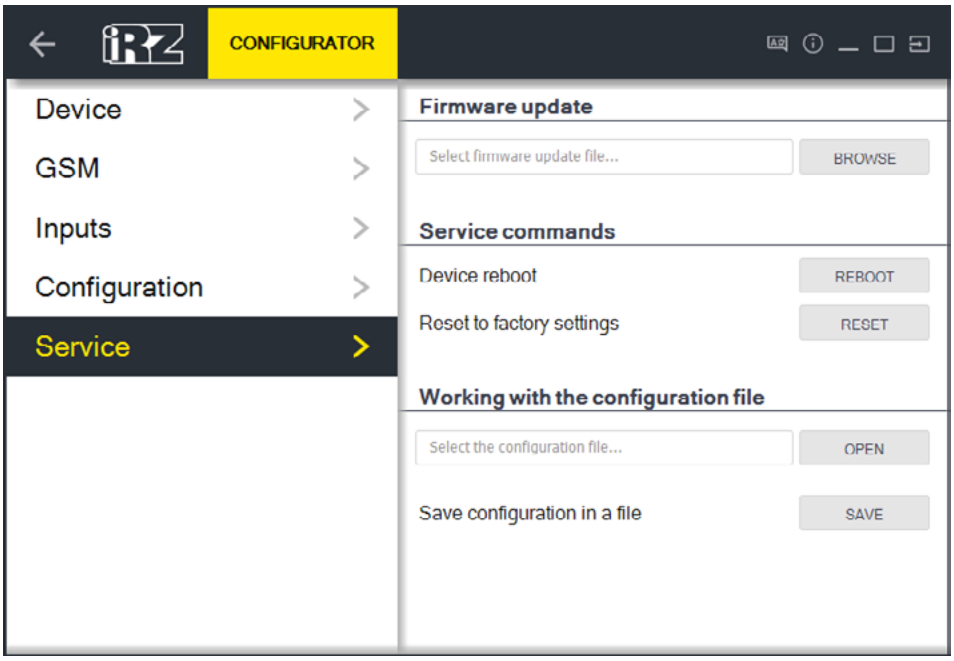


Fig. 4.10. "Service" tab

4.4.1. Firmware Update

To update the firmware:

❶ Click on the **Browse** button in the **Firmware update** section;
❷ Select the file with the update, which you want to install in the device;
❸ Click on the **Update** button.

WARNING! While the firmware of the device is being updated, you must wait until the update finished before unplugging it, otherwise the device might get damaged!

4.4.2. Service Commands

Also in the **Service** tab are available several important service commands:

Parameter	Description
Device reboot	Reboots the device
Reset to factory settings	Resets the settings of the device to defaults

4.4.3. Working with the Configuration File

The settings made in the configurator program can be saved in a separate file, to quickly restore them from this file.

To save the settings:
❶ Click on the **Save** button in front of the **Save Configuration in a File** field;
❷ Name the file and select the saving path;
❸ Click the **Save** button.

To load the settings:
❶ Click on the **Open** button;
❷ Select the file with the settings, which need to be installed in the device;
❸ Click on the **Open** button.

5. Remote Control and Integration

Two ways of device remote control are available: via SMS messages (with or without password) or over data communication network via connection to a server.

5.1. Generating an SMS Message

Format of a message from user to device
Value query — password:command
Example of an APN query:

```
secret:apn
```

Value setting — password:command=value
Example of APN setting:

```
secret:apn=internet.mts.ru
```

Format of a message from device to user
Response to a value query — command=value
Response to a value setting — OK or ERROR

After completing the values setting, save settings using the "save" command, and besides, it is recommended to reboot the device by the "reboot" command.

By default, the device has no password for remote control, thus the SMS text with a command will start from the colon character - ":".
The list of commands can be found in Section 5.4.

5.2. Generating a Message Packet to Transmit over the Internet

Format of a message from user to device

Identifier: F0 / F1 — 1 byte.

Random index: 01 — 1 byte, a response packet from the device will enable the index to verify with a server.

Command: string, command. To query current parameter value, send a command without parameters. To set a new value, send a command with the parameter separated by the "=" symbol.

Length: various.

Value query — F0 01 <command>

Example:

F0 01 <CMD>

Example of APN query:

F0 01 apn

Value setting — F0 01 <command=value>

Example of APN setting:

F0 01 apn=internet

Format of a message from device to server

Identifier: F0

Response length for identifier F0:

1B, starting from the 3rd byte (36 34 54 03 02 D9 C5 01 SERVER_PORT=9090 0A OK)

Response length for identifier F1:

00 1B, starting from the 3rd byte (36 34 54 03 02 D9 C5 01 SERVER_PORT=9090 0A OK)

IMEI: 36 34 54 03 02 D9 C5

Random index: 01

Response: SERVER_PORT=9090 0A OK

Length — specified in the packet (2nd byte).

Example:

F0 1B 36 34 54 03 02 D9 C5 01 SERVER_PORT=9090 0A OK

F0 1B 36 34 54 03 02 D9 C5 01 OK

F1 00 1B 36 34 54 03 02 D9 C5 01 SERVER_PORT=9090 0A OK

Value query:

F0 01 SERVER_PORT

Response:

F0 1B 36 34 54 03 02 D9 C5 01 SERVER_PORT=9090 0A OK

Setting a new value:

F0 01 SERVER_PORT=12544

Response:

F0 0A 36 34 54 03 02 D9 C5 01 OK

5.3. Data Format to Transmit over the Internet. Integration.

Data packet E6 / 82*
Length: 32 bytes.

Example:

E6 36 34 54 03 02 D9 C5 23 C6 3F 24 12 06 AA F6 05 82 0A 63
04 00 C6 02 15 21 18 0C 0E 0E 1F 19

Packet identifier: E6 — 1 byte
IMEI: 36 34 54 03 02 D9 C5 — 7 bytes (3 + 4 bytes), where the first 3 bytes are the first 7 IMEI digits, the last 4 bytes are the last 8 digits. 0x363454 = 3552340, 0x0302D9C5 = 50518469, in total IMEI = 355234050518469
Then payload is followed (see below).

Data packet E7 / 83*
Length: various.

Example:

E7 02 36 34 54 03 02 D9 C5 23 C6 3F 24 12 06 AA F6 05 82 0A
63 04 00 C6 02 15 21 18 0C 0E 0E 1F 19 23 C6 3F 24 12 06 AA
F6 05 82 0A 63 04 00 C6 02 15 21 18 0C 0E 0E 1F 1A

Packet identifier: E7 — 1 byte.
The number of payload packets: 02 — 1 byte.
IMEI: 36 34 54 03 02 D9 C5 — 7 bytes (3 + 4 bytes), where the first 3 bytes are the first 7 IMEI digits, the last 4 bytes are the last 8 digits. 0x363454 = 3552340, 0x0302D9C5 = 50518469, in total IMEI = 355234050518469
Then payload is followed (see below).

* **NOTE:**
Packages 82 and 83 need a confirmation of reception from the server, said confirmation should be in the form of any Byte except the ones being used as identificators.

Payload
Length: 24 bytes.

Latitude: 23 C6 3F 24 — 4 bytes, signed integer in minutes-degrees multiplied by 100000. 0x23C63F24 = 600194852 = 6001.94852
Longitude: 12 06 AA F6 — 4 bytes, signed integer in minutes-degrees multiplied by 100000. 0x1206AAF6 = 302426870 = 3024.26870
Speed: 05 — 1 byte, integer in knots 0x05 = 5 * 1.852 = 9.26 km/h
Direction: 82 — 1 byte, integer in degrees divided by 2, 0x82 = 130 * 2 = 260
The number of satellites: 0A — 1 byte, integer, 0x0A = 10
HDOP: 63 — 1 byte, integer, HDOP value multiplied by 10, 0x63 = 99 / 10 = 9.9
Status data: 04 — 1 byte, binary, 0x04 = 0 0 0 0 0 1 0 0

Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1
status "ignition"	indication of point Real-time	exit the sleep mode by an accelerometer	GPS fix	motion by accelerometer	battery charge enabled	input state	output state

Analog input valuea: 00 C6 — 2 bytes, integer, in millivolts.
Onboard voltage: 02 15 — 2 bytes, integer, in millivolts.
Temperature: 21 — 1 byte, integer, the device temperature is in Celsius degrees, 0x21 = 33
Date and time: 18 0C 0E 0E 1F 19 — 6 bytes, each byte is an integer, "date, month, year, hours, minutes, seconds" 0x18 = 24; 0x0C = 12; 0x0E = 14; 0x0E = 14; 0x1F = 31; 0x19 = 25 = "24 December 2014 14:31:25" time by UTC.

5.4. List of Supported Commands

Command	Values
main_power	Nominal external voltage power: 12 or 24 (Section 4.3.6)
enable_powersave	Disable or enable powersaving mode: 0 — disabled or 1 — enabled (Section 4.3.4)
powersave_timer	Time, after which the device will switch to powersaving mode.: 1 to 65535 (Section 4.3.4)
wakeup_on_io	Configuration of exit from powersaving mode when inputs value change: 0 — disabled or 1 — enabled (раздел 4.3.4)
adc_ignition	Enable/disable use of analog input as ignition: 0 — disabled or 1 — enabled
accm_sensitivity	Sensitivity of accelerometer for movement detection on vehicle: from 1 to 65535 (the bigger the value - the less the accelerometer reacts to movement)
accm_threshold_timer	Delay in second for movement detection: 1 to 65535 s (Section 4.3.6)
sms_password	SMS password for commands for device: Line of latin symbols (Section 4.3.6)
apn	Acess Point to Internet connection: latin character string
apn_username	APN user name: latin character string
apn_password	APN password: latin character string
apn_authtype	APN type of authentification: 0 — with no authentication, 1 — pap or 2 — chap
gsm_reset	Reset device if GSM error occur: 1 to 65535
allow_roaming	Enable or disable roaming: 0 — enabled or 1 — disabled (Section 4.3.2)
server_addr	Server address: latin character string (Section 4.3.1)
server_port	Server port: 1 to 65535 (Section 4.3.1)
server_proto	Server protocol: 0 — TCP or 1 — UDP (Section 4.3.1)
send_data	Data sending interval: 10 to 65535 s (Section 4.3.1)
send_data_on_parking	Interval for data sending on parking (ignition is off, no movement): 10 to 65535 s (Section 4.3.3)
smart_tracking_delta	Send additional data to the server when the direction changes by the values from the navigation receiver more than: 0 — disabled, 10 to 359 degree (Section 4.3.3)

Command	Values
override_speed_accm	Enable/disable changing the speed value to “0” from the navigation receiver when transferring to server if there is no movement: 0 — disabled or 1 — enabled
enable_realtime	Send data from the current coordinates together with the old (saved data)after the connection is restored: 0 — disabled or 1 — enabled (Section 4.3.3)
maximum_hdop	HDOP values (0 or 99 — disabled, 1-98), received from the navigation receiver, the excess of which will make the geodata package marked as “invalid”: 0 or 99 — disabled, 1 to 98. Send required value multiplied by 10 (HDOP = 1.5, value = 15) (Section 4.3.5)
reboot	Device rebooting
save	Saving current configuration
in	Input value query
out	Output value query: 0 — disabled or 1 — enabled
adc	Analog input value query
ign	Ignition value query
status	Device status query
gps_only	The use of only GPS satellites for positioning: 0 — disabled or 1 — enabled (Section 4.3.5)
gnss_2d_navi	The use of only 2D navigation for positioning (without altitude): 0 — disabled or 1 — enabled (Section 4.3.5)
gnss_reset	Reboot the navigation receiver if valid data is not received for the followinh time: 1 to 65535 (Section 4.3.5), 900 by deafault
location	location (coordinates) of device

Terms and Abbrevations

Abbrevations	Expansion
GLONASS	Global Navigation Satellite System
NUT	Navigation User Terminal
GPRS	General Packet Radio Service, a packet-based mobile data service for cellular communications
GPS	Global Navigation Satellite System
GSM	Global System for Mobile Communications
Li-Pol	Lithium-ion polymer battery