GeoLoc

GPS TRACKING SYSTEM

USER MANUAL

TABLE OF CONTENTS

INTRODUCTION

General Information about System

GeoLoc GPS Tracking System (hereinafter the System) is designed for monitoring mobile or stationary objects (vehicles, equipment, workers, competitors, children, pets, etc.).

Tracking of objects includes:

- watching the location of objects and their movements on the map;
- monitoring changes in certain object parameters, e.g. speed, fuel level, temperature, etc.;
- object management (command execution, automatic task execution) and drivers (texts, calls, appointments);
- receiving notifications about changes in the object status;
- monitoring object movement along a given route;
- interpretation of information retrieved from the object in various reports (tables, graphs);
- and much more.

Special devices are used for tracking, such as trackers or programs installed on smartphones of tracked objects. With a certain frequency, the devices receive their location and transmit information over the GSM network to the tracking server. It is possible to connect sensors and other equipment (temperature, pressure, equipment status, fuel level sensors; alarm, etc.) to trackers via analog and digital inputs.

Basic Concepts of System

This section briefly describes the terms used below and provides a list of the main concepts of the system.

Object (tracked object) is a vehicle, person, animal, a piece of equipment or another moving or stationary object that is being tracked. In the GeoLoc system, an object is characterized by a unique object identification code in the system (ID, IMEI). Each object has its name, icon, description of the type of equipment used, connected sensors, etc.

Trend is a description of additional data retrieved from objects. It includes the data source (number and type of input), the minimum and maximum values received, the type of installed equipment (ignition indication device, alarm button, fuel level meter, etc.) Trends often describe sensors connected to devices.

Geozones (geographical zones) are certain areas on the map that the user is interested in and thus they require special attention. They help control the object movement within certain areas or beyond. Geozones have a wide set of styles for displaying on the map. They can limit the movement speed.

A geozone can look like a circle with a random radius, a polyline (e.g. a certain street, route) or a polygon (a city or enterprise premises).

In addition to visual enrichment of the map, geozones can be used in reports and notifications. They can also act as control points when creating routes.

A group is a number of objects, geozones, or drivers classified by some attribute. Groups help filter objects when searching and structuring system concepts.

An event or alarm is the information about a change in the object status. An event in the system is generated based on the data retrieved from an object (various sensors readings, location, speed, etc.). For example: speeding, fuel draining, pressing the alarm button, etc.

Notifications. The GeoLoc satellite monitoring system allows configuring receiving notifications about various alarms (for example, speeding, object location, sensor readings, etc.). Information about current and archived alarms is available in the system web interface and can be e-mailed or texted to the user additionally.

A route is a sequence of geozones (control points) that the tracked object has visited or is to visit. You can set certain time periods of movement between geozones. The route can be used to control the movement of public transport, delivery services, etc.

Task is the requirement of being in a certain place at a given time. A certain position (its coordinates), geozone or the starting point of the route can be the task performance location. An example of a task can be a requirement for a vehicle to be in a certain place at a certain time for loading, or taking the route for a bus.

Keys and labels are data storage media that uniquely identify their owner (driver) or vehicle. Identification takes place at the moment of their contact with the reader. This functionality will be useful for organizations where several drivers use the same vehicle, but will only be available for devices with an RFID reader or i-Button (or any other equipment for driver identification).

Drivers. GeoLoc allows creating a list of drivers allowed to drive the transport. If the object equipment supports the driver identification by keys and labels (for example, iButton, RFID label), the system in turn will allow linking the information about the object movements to drivers, identify their violations, score penalties.

Shift is a description of the working hours of the personnel including the start and end of work, working days. This information is used to track the use of equipment outside of working hours. You can set several shifts.

Command is a request sent to the object to perform an action, e.g. take a photo, change the device settings , block the engine and much more. The set of commands supported by the object depends on the hardware and its configuration.

Each **user** or **account** of the system has a unique name (login), email address and password. With this data, users can log in to the system, control their objects (end user) or manage the system itself (administrator, integrators).

Access rights are the ability to observe certain elements of the system and perform certain actions on them. First of all, access rights apply to such elements of the system as accounts (users), objects, geozones. Access rights are assigned individually to each user by the service administrator or by the system during the user registration. Access rights can be changed in the control panel interface on the Users tab. A related concept is the **user role**, that is a set of user access rights.

There are 5 main **user roles in the system:**

Observer; a user can only monitor the current status and location of objects.

Demonstration; a user can view all data from objects, but has no right to edit them.

User is a role with full rights to the elements belonging to him/her. The User can manage all the parameters of their objects, can set alerts, geozones, etc., but does not have access to other accounts.

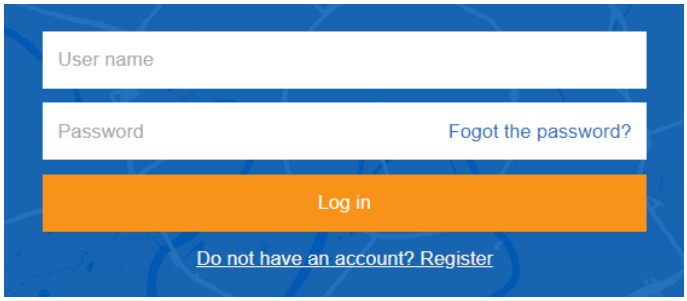
Integrator is a role that includes user functions and, additionally, allows creating other users and manage their parameters and objects.

Administrator is a role that has full access to system settings and all accounts.

GETTING STARTED

User Account

The user must enter a user name (or e-mail) and password to access the user account.

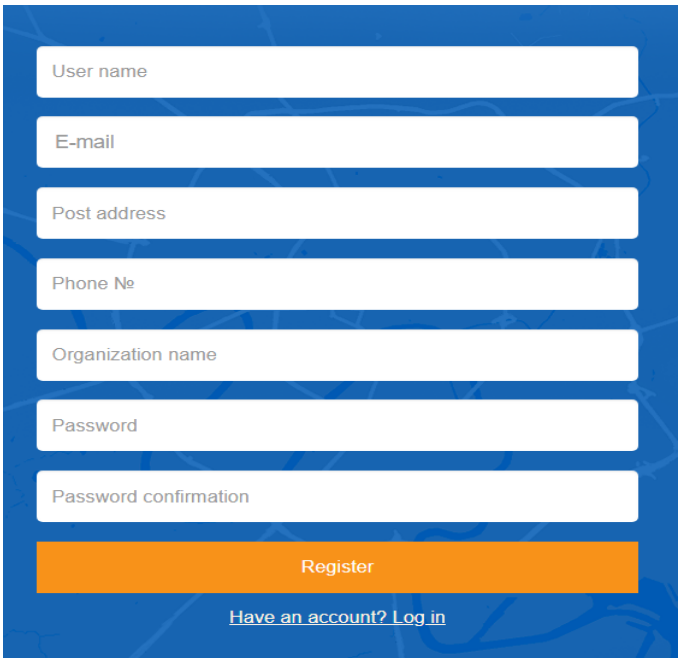


The user can create an account either independently or by contacting the system administrator for help.

User Independent Registration

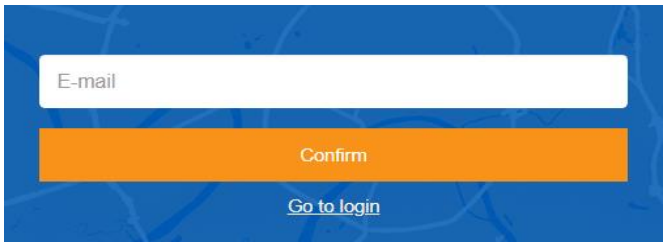
If the system administrator has allowed independent registration, the user can create an account by filling out the form on the web interface login page, entering all the necessary details, including a password and a valid e-mail address that can be used as a login to access the platform. After the user completes registration, they will be e-mailed with a link to confirm the e-mail address.

The user account will be blocked until the user confirms the e-mail by clicking on the link.



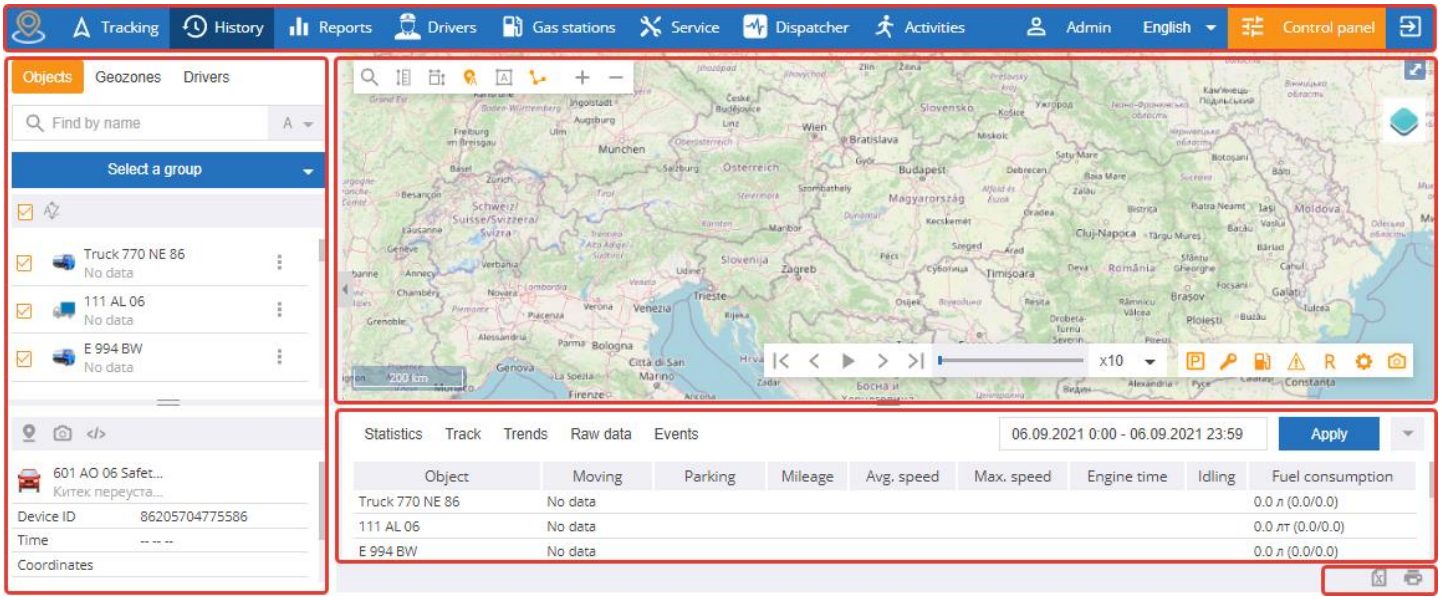
Restoring Access to System

If the user forgets their password, they can restore it by "Forgot your password?" on the login page. In this case, the user will be required to enter the e-mail address stated during registration and follow the link e-mailed by the system.



USER INTERFACE

Structure



In summary, the following basic elements can be distinguished in the interface structure:

- Top panel.

  The top panel shows the tracking service provider logo, the list of the main menu sections available to the current user, the authorized user name, and the current system language. Clicking on the language

allows changing the system language. The button which redirects to the system control panel and a log out button are also on the top panel.

- Map. The map is available when working in the Tracking, History, and other sections. As a rule, it takes up almost all the screen. It displays tracking objects, their movements, geozones, etc.
- Workspace. It is located on the left. It helps perform various actions with certain system elements and generates some queries.
- Bottom (information) panel. It contains various data on the operation of the object (time moving, mileage, fuel consumption, etc.) in different sections.
- Additional tools panel. Depending on the contents of the window, the panel contains varying tools; however, there are the universal ones:

 demonstrates empty records. It can show or hide empty records in reports, ratings, etc.

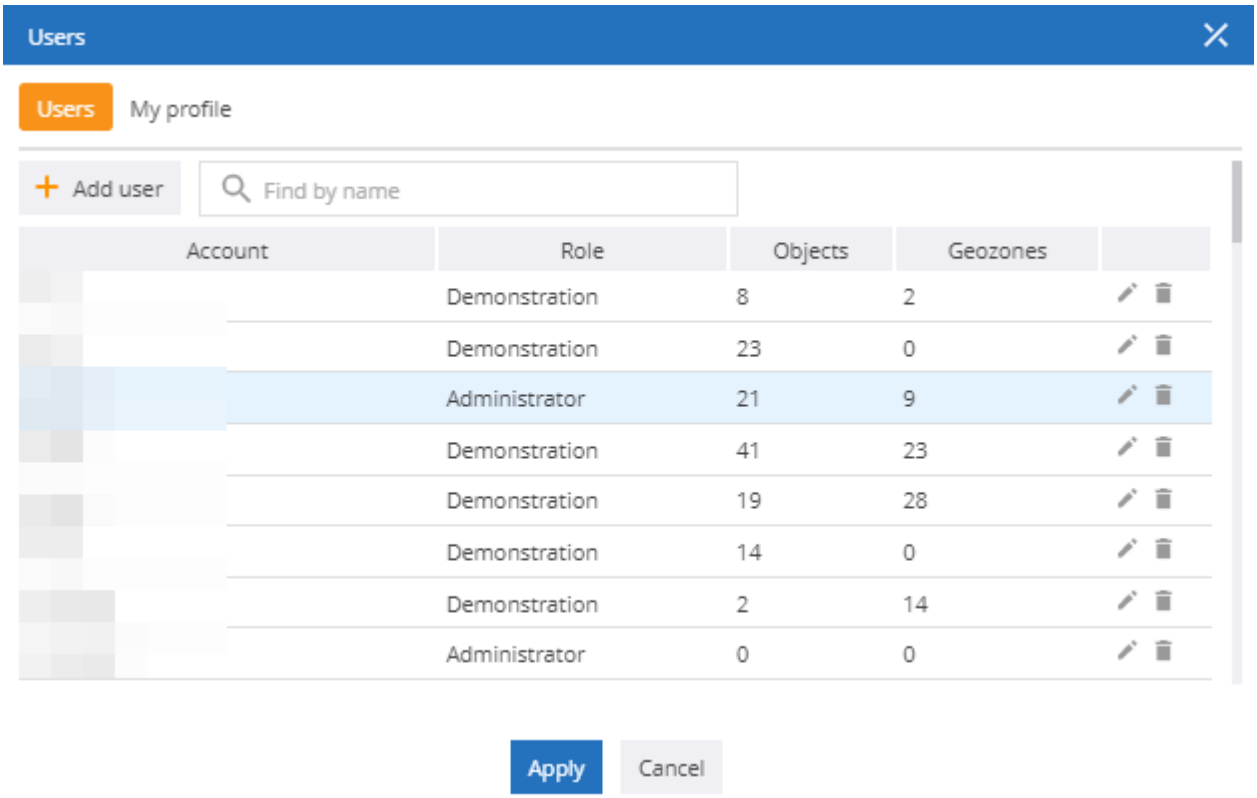
 exports data to an Excel spreadsheet.

 prints data.

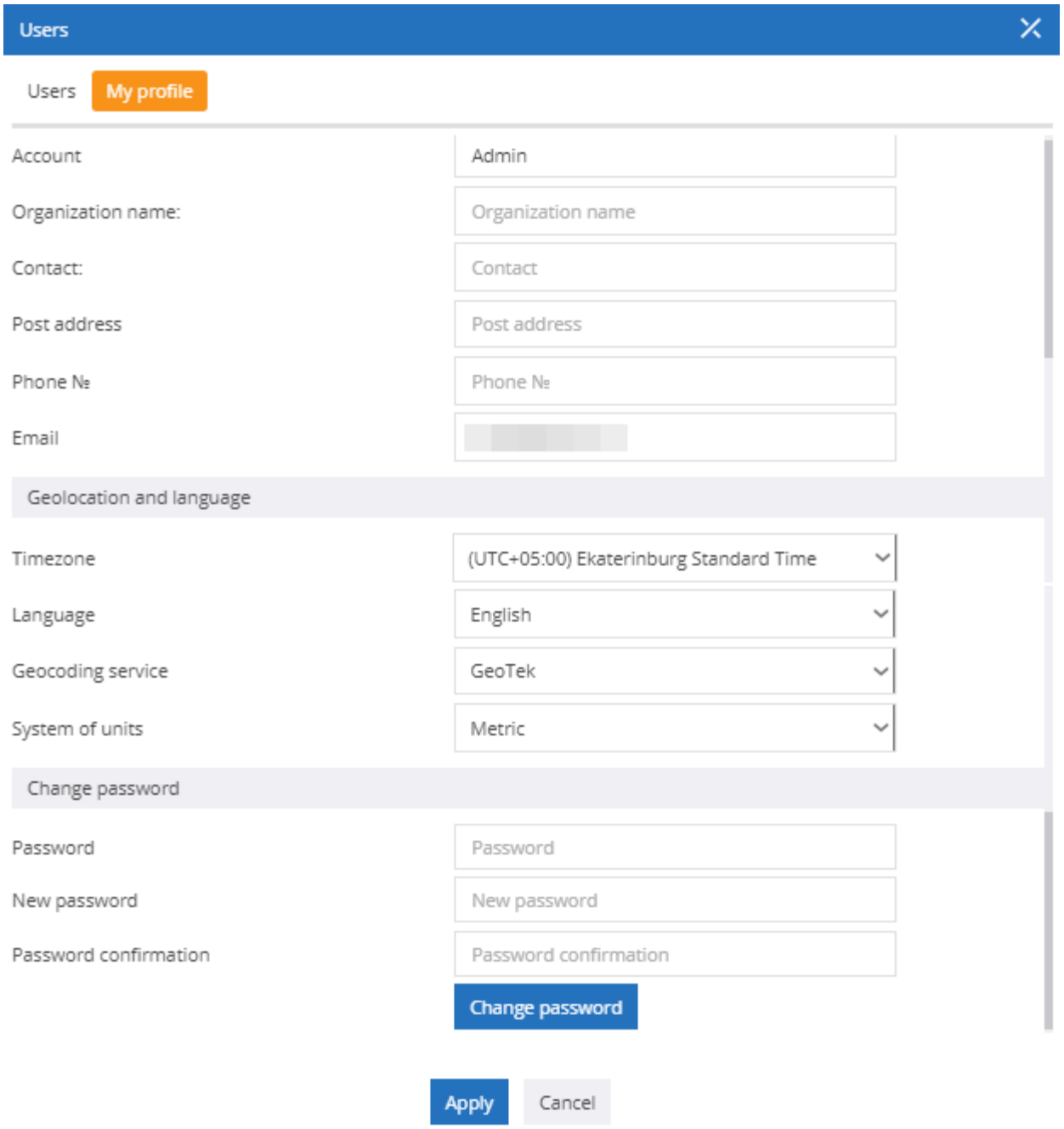
Switching Users. Profile

Click on the name of the authorized user to open a window with two tabs, Users and My profile.

The Users tab contains a list of users specifying their role in the system and the number of objects and geozones they have created. Click on the user name to switch the user. The tab also allows adding new users to the list and edit existing ones. These functions are described in more detail in the control panel in the Users section.



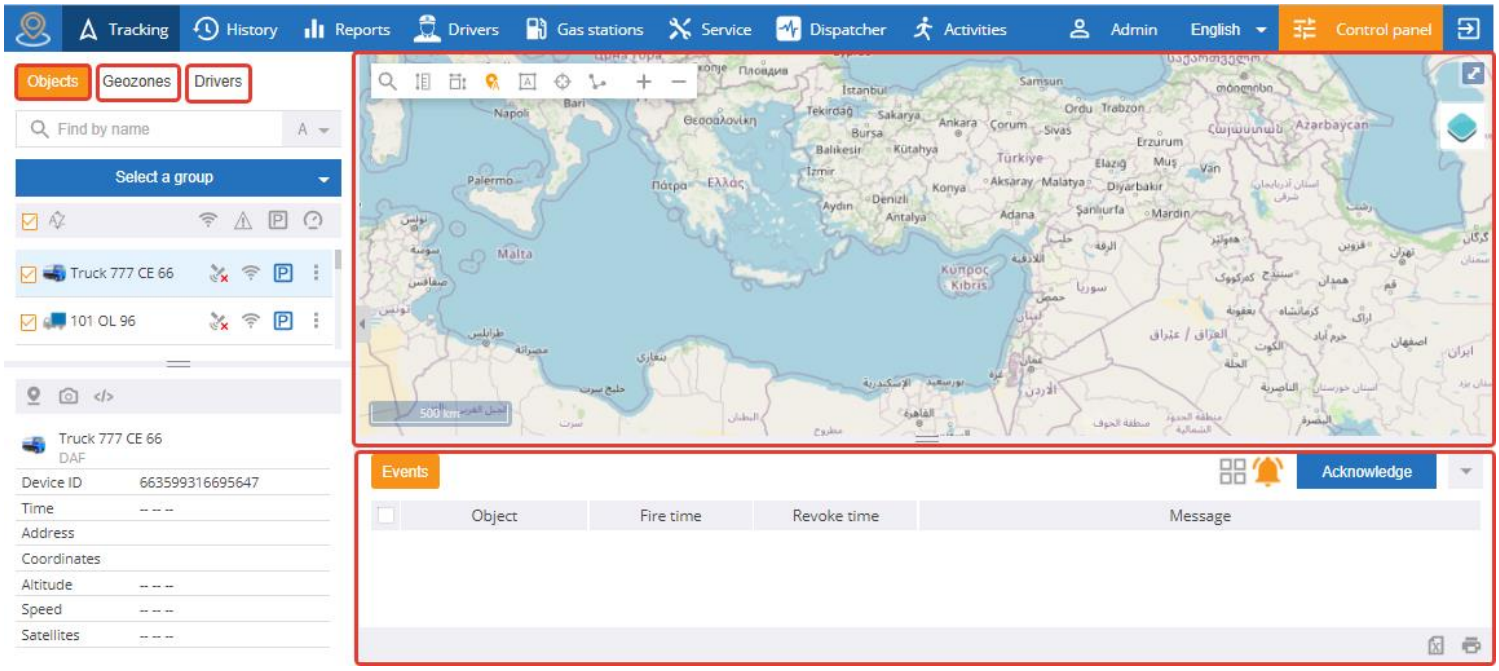
The My Profile tab opens the authorized user profile setting window.


Users
Users
My profile
Account
Admin
Organization name:
Organization name
Contact:
Contact
Post address
Post address
Phone №
Phone №
Email
Geolocation and language
Timezone
(UTC+05:00) Ekaterinburg Standard Time
Language
English
Geocoding service
GeoTek
System of units
Metric
Change password
Password
Password
New password
New password
Password confirmation
Password confirmation
Change password
Apply
Cancel

SYSTEM SECTIONS

Tracking

This section allows tracking the current real time status of the object. The user can see the current location of each object, its speed, the state of equipment installed, etc. The current alarms list is displayed in this section. The Figure below demonstrates the section.



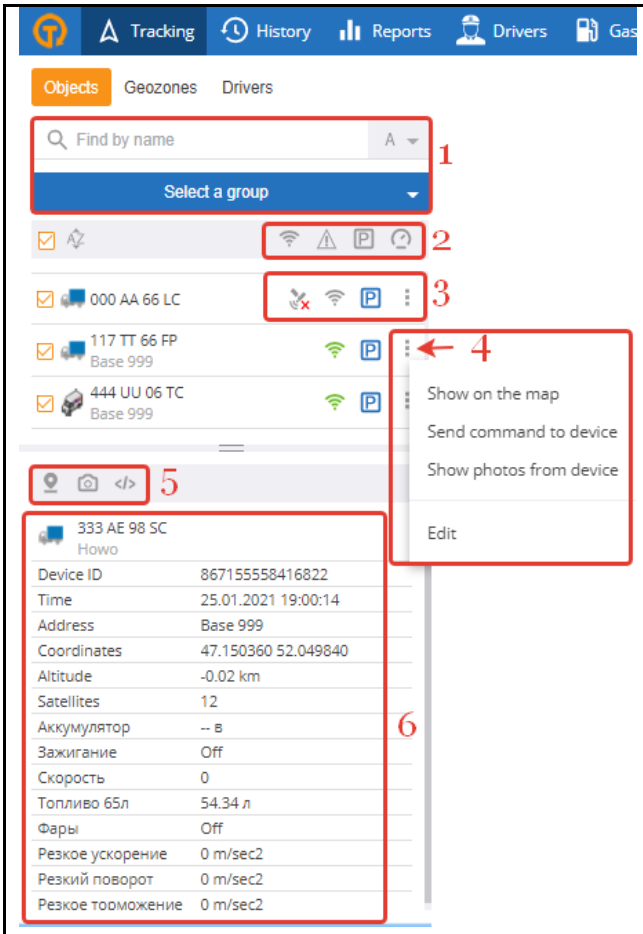
The working area contains the following elements:

- Objects;
- Geozones;
- Drivers;
- Map;
- Events (Alarms).

Objects

This tab displays the system objects list. When working with objects, tools for searching, filtering, grouping objects and displaying the object status are available.

When selecting an object, detailed information about it is available.



1. The Search Objects and Group Objects window.
2. The panel for filtering objects allows the following:

– only show objects currently connected to the service;

– only show objects having an alarm;

– only show parked objects (vehicles);

– only show moving objects.

3. Display of the object current status beside the object name:

– connected to the server (online);

– not connected to the server (offline);

– the object is moving: the icon changes according to the speed of movement;

– the object is idle with the engine started;

– the object is parked/not moving;

– the object location is recorded using a mobile network tower (LBS).

– the current object location is not recorded.

The set of possible statuses depends on the equipment the object has.

4. Opens a context menu with additional functions (show the object on the map, send a command to the device, show photos from the device and edit object data).
5. Additional tools panel for interacting with the selected object:

– show the object on the map;

– show photos from the device;

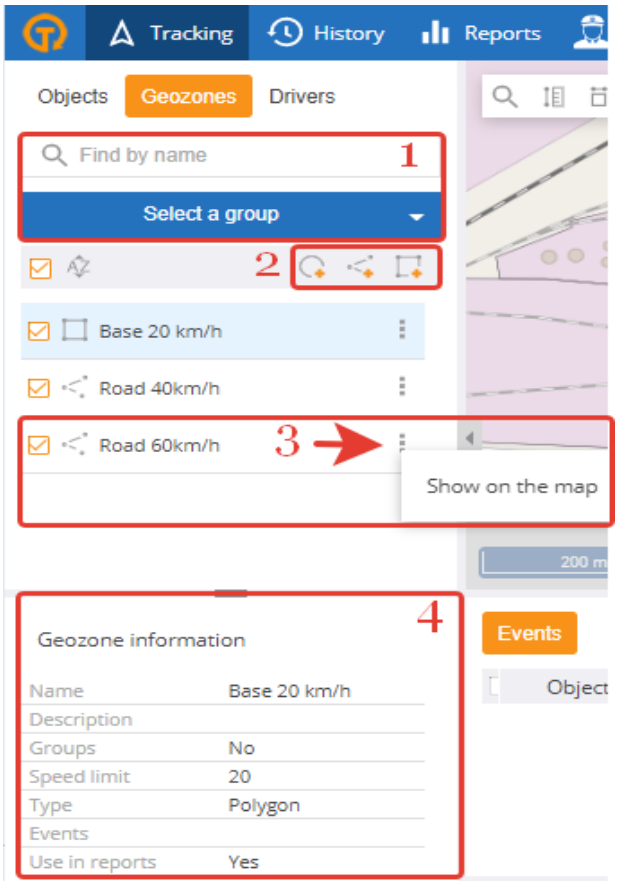
– send a command to the device.

6. Detailed information.

This box shows detailed information about the object current status, including its location, the state of the inputs, etc.

Geozones

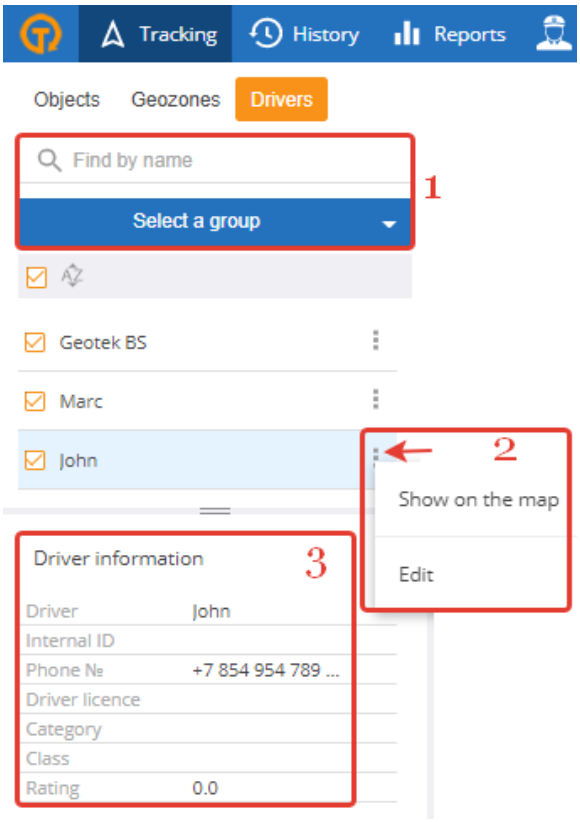
This tab allows working with geozones in the system. When working with geozones, tools for creating, searching, filtering and grouping geozones are available. When a geozone is selected, the map is centered on it and more detailed information about the selected geozone is displayed under the list of geozones. Use checkboxes to control the display of geozones on the map.



1. Field for searching and grouping geozones;
2. Quick creation of a new geozone. A fully-featured geozone editor is available in the control panel;
3. Menu of the geozone;
4. Panel for displaying detailed information about the selected geozone.

Drivers

This tab has an interface which is almost identical to the Geozones tab and contains a list of drivers registered in the system.



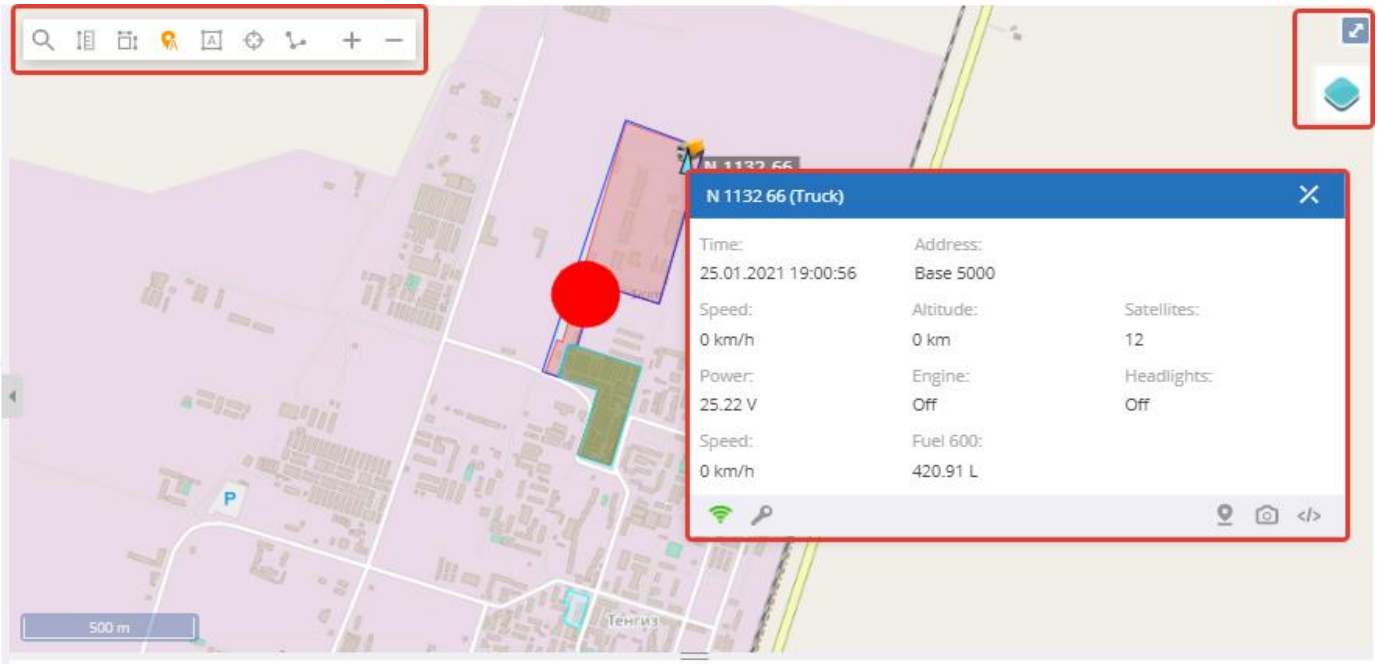
1. Search box by driver name and selection of a group for drivers;

2. The ability to show and edit driver information on the map;

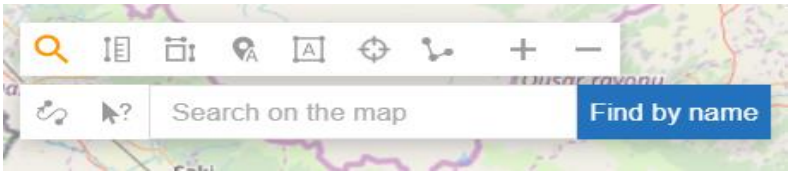
3. Driver information panel.

Map

The map shows the current position of the selected object. If the user hovers the mouse over an object, a context help window appears with the name of the selected object. Click the mouse on the object to open a pop-up window with detailed information about the object status.



For convenience, the map area contains a number of tools.
The main toolbar of the map is located in the top left corner of the map.



– displays an additional field for **searching objects on the map** by address or POI names. Click on this icon to reveal additional tools:

– **Build a route**. The tool is used to build a route along the roads between two selected points and calculates the distance between them.

– **Information about the point**. Click first on the tool, then on an object on the map to learn its address.

– **Measurement of the distance between points on the map.**

– **Measurement of the area of a polygon.**

– Object names are displayed on the map.

– Displays the geozone names on the map.

– Keeps the selected object within the map frame.

– Draws the object "trail". When this tool is activated, the selected moving object previous 2 minute track will be displayed on the map.

– **Map scale.** Zoom in/out of the map scrolling the mouse or using this tool.

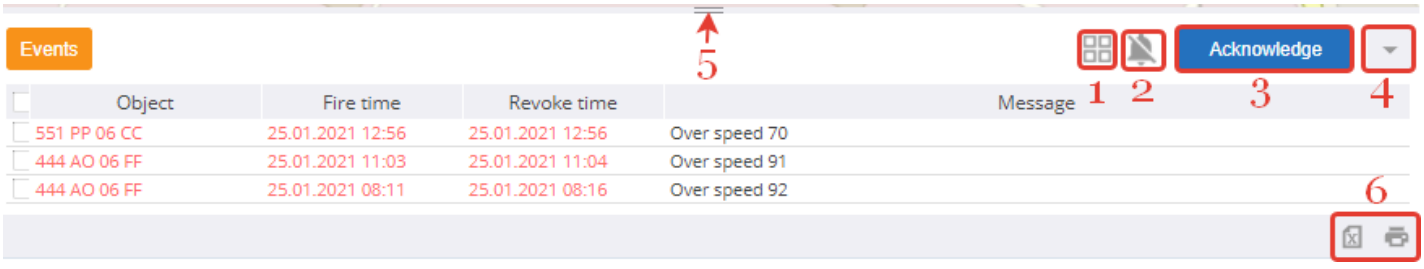
There are additional tools for working with it in the top right corner of the map.

– Selects the map background. The list of supported maps is determined by the administrator and may contain Google, Yandex, Bing, OSM, other maps.

– Makes the map full screen.

Events (Alarms)

The panel below the map shows events and alarms related to tracked objects. Each entry is accompanied by the object name to which the event belongs, the time of event activation and deactivation.



Use icon 1 to only display events for active objects.

Use icon 2 to turn on or off the sound of notification about active events.

Acknowledge

Use button 3 to confirm that the user has received the selected notifications. After confirmation, the events disappear from the list but remain available when viewing the History and Reports sections.

Use icon 4 to expand/hide this panel or change its size by pulling its upper border 5 .

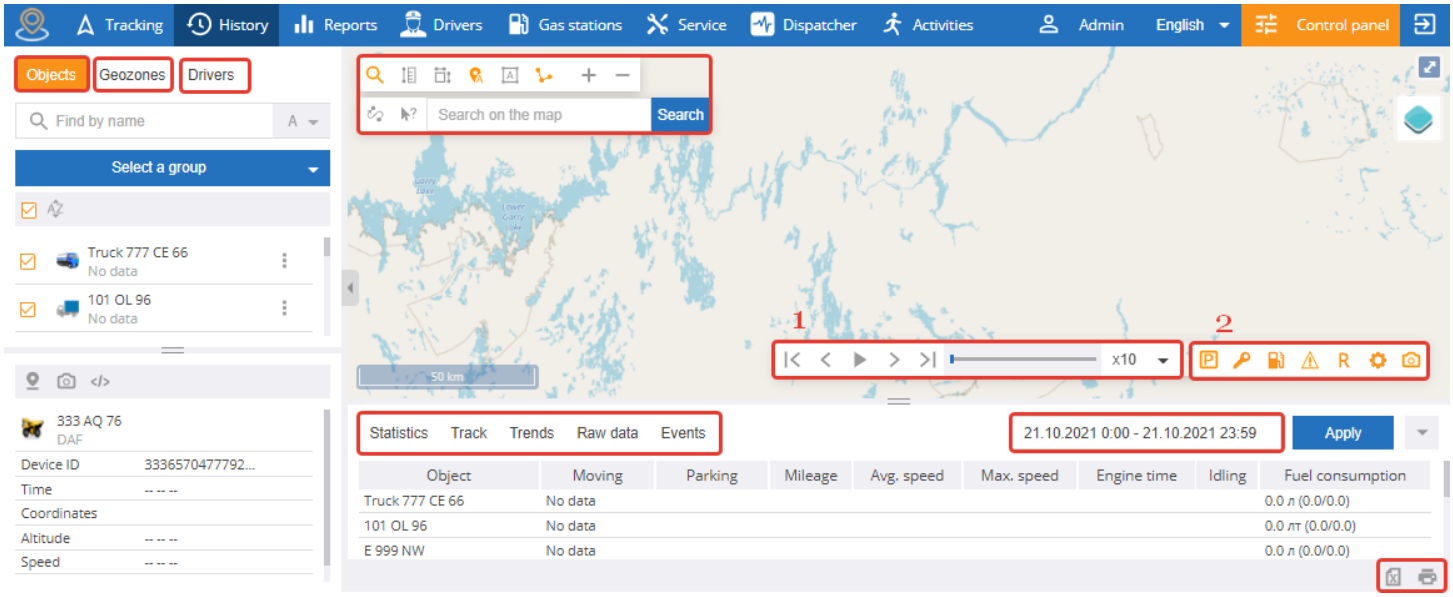
There are icons 6  in the bottom right corner. Click on them to export the data on events to an MS Excel file or to print.

History

The interface of this menu section is identical to the interface of the Tracking section; the main difference is how the data is displayed on the map and in the lower panel.

The section allows viewing and analyzing the history of the selected object movement, statistics, events during the selected time period. Set the period within one month using the calendar.

The Figure below demonstrates the section.



It shows the map with the features described in the Tracking section above (see Map).

There are Objects, Geozones, Drivers tabs on the working panel to the left of the map with the same functions as in the previous section.

The functions on the panel in the bottom right corner of the map are specific for the History section:

1. Track playback. Use the buttons to go to the beginning/end of the track, to the previous/next point, to FF objects during a specified time period, to pause the track playback.

2. Enable/disable the display of the following information on selected objects on the map:

– **parking** displays the object parkings on its route. This parameter is set by Min. Parking Time or by enabling the parameter Identify Parking by Ignition in the object properties.

– **ignition events** displays the locations where the vehicle was started;

– **fuel events** displays fuel filling and draining locations;

– **alarms** displays alarms;

– **compliance events** displays events when values exceed the permitted range;

– **equipment operation events** displays sites where controlled equipment on the object was started;

– **photos** displays photos from the object on the selected route.

When switching to the track history view, these event markers displayed on the map are enabled by default.

The panel below the map contains the following tabs that display information about the operation of objects and sensors installed on them:

- Statistics;
- Track;
- Trends;
- Data;
- Events.

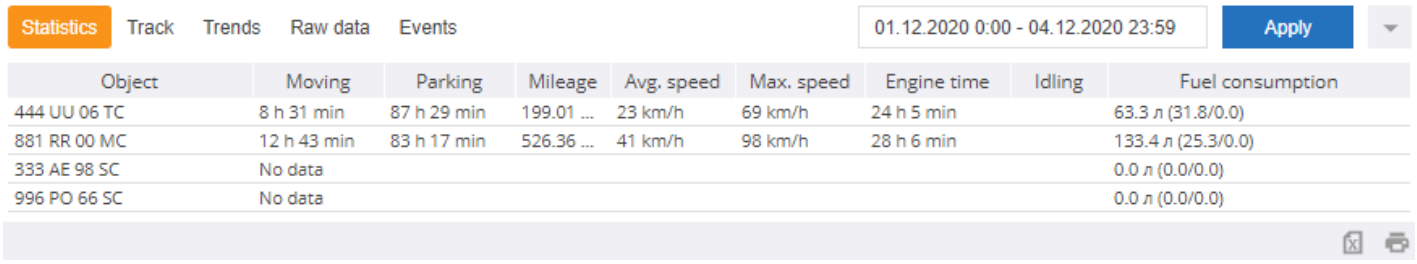
Set the desired time period to display any information on objects.

Use the corresponding icons in the lower right corner to export to MS Excel or print information from these tabs (except for Trends).

Let's take a closer look at each of the tabs.

Statistics

It shows statistics for each selected object, including its parking and movement time, average/maximum speed, mileage, fuel consumption, etc.



Object	Moving	Parking	Mileage	Avg. speed	Max. speed	Engine time	Idling	Fuel consumption
444 UU 06 TC	8 h 31 min	87 h 29 min	199.01 ...	23 km/h	69 km/h	24 h 5 min		63.3 л (31.8/0.0)
881 RR 00 MC	12 h 43 min	83 h 17 min	526.36 ...	41 km/h	98 km/h	28 h 6 min		133.4 л (25.3/0.0)
333 AE 98 SC	No data							0.0 л (0.0/0.0)
996 PO 66 SC	No data							0.0 л (0.0/0.0)

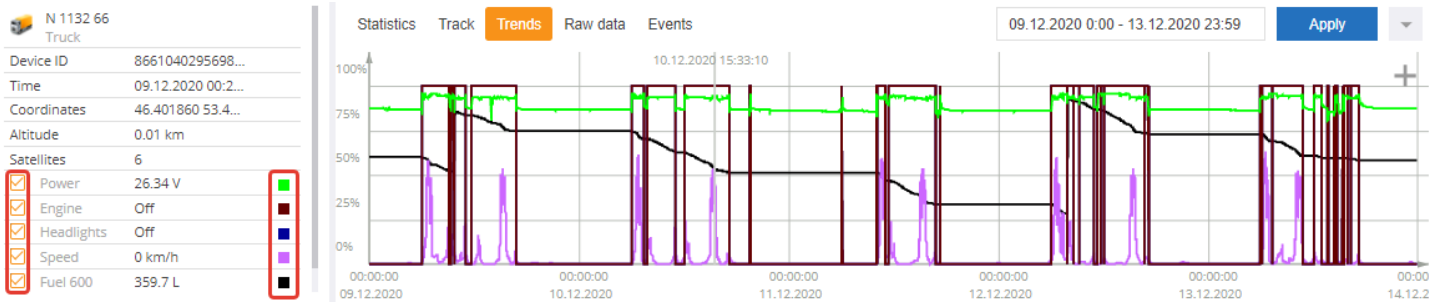
Track

This tab allows viewing detailed tabulated information about the track which is only displayed for the selected object. The object status is shown: moving /parked, the initial/final time of the status, the duration of the status, the distance the object has traveled, its average / maximum speed during the specified time and state. Speed is not displayed for the parked status.

Type	Start	Finish	Duration	Mileage	Avg. speed	Max. speed
Parking	13.07.2020 00:00	13.07.2020 11:11	11 h 12 min			
Moving	13.07.2020 11:11	13.07.2020 11:15	3 min 50 sec	0.30 km	5 km/h	20 km/h
Parking	13.07.2020 11:15	13.07.2020 11:54	38 min 57 sec			
Moving	13.07.2020 11:54	13.07.2020 12:01	7 min 19 sec	0.90 km	7 km/h	25 km/h
Parking	13.07.2020 12:01	13.07.2020 23:59	11 h 58 min			
Total				1.20 km	6 km/h	25 km/h

Trends

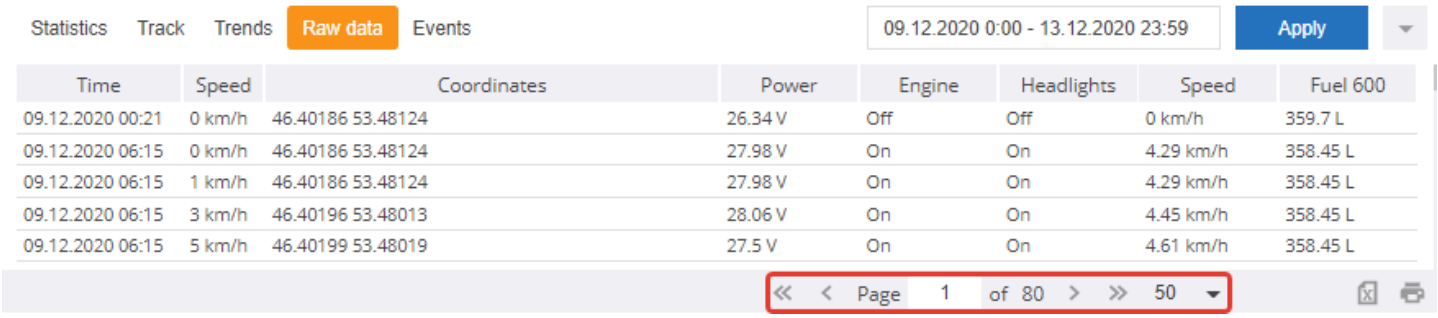
The graph shows the values of various sensors installed on the selected object (engine temperature sensor, fuel level sensor, etc.) and data on speed, ignition, and other parameters.



Check the checkboxes in the panel on the left to enable/disable the display of the parameters (fuel data, ignition on/off, engine power, etc.) for a particular object. The colored box opposite a certain parameter corresponds to the color of the curve on the graph.

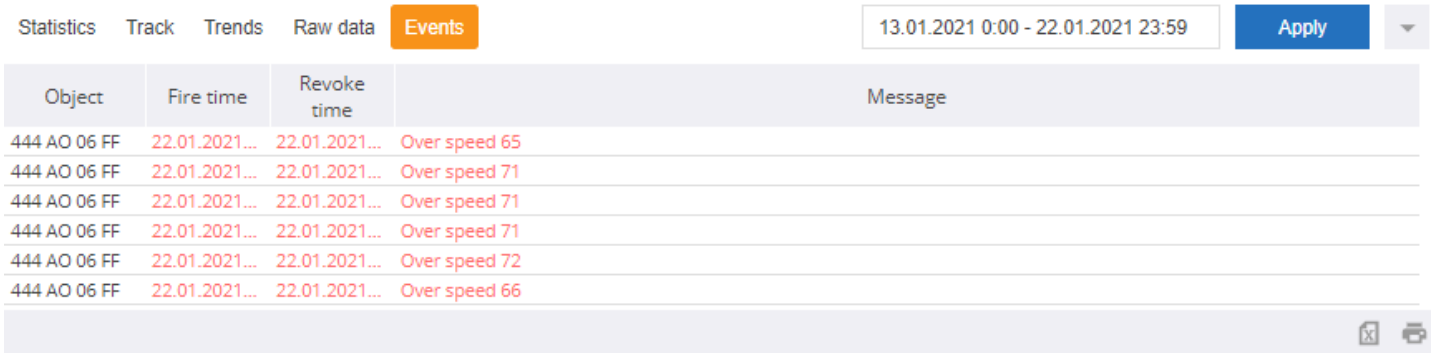
Data

This tab displays tabulated information about the selected object at each point of the track. Each line contains the point time and coordinates, object speed, trend values. Click on a line to move the selected object on the map to the corresponding point.



Events

A list of all events happening to the selected object during a specified period of time is shown here. Unlike this section, the Tracking section only shows the events about which the user has not yet been notified.

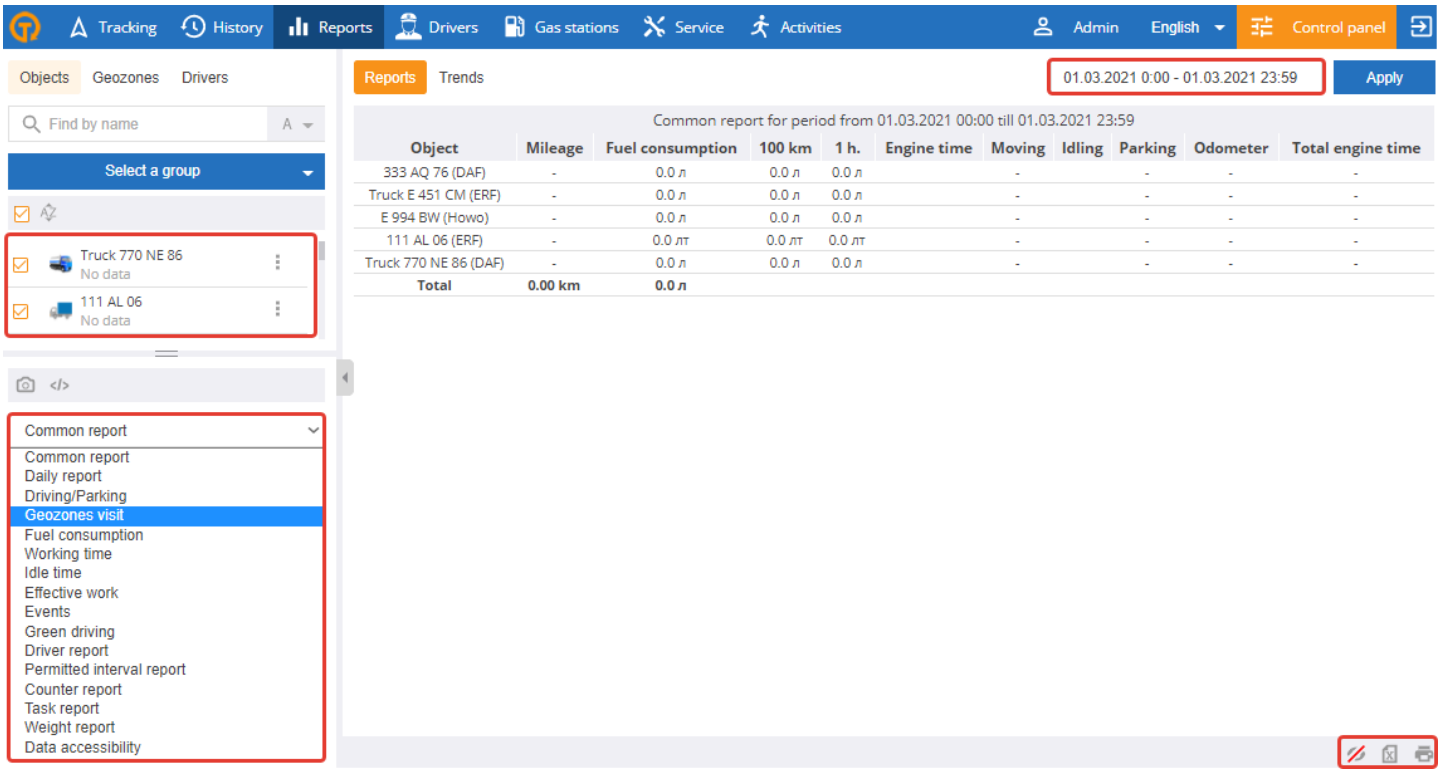


Reports

Use this menu section to generate reports on the operation of the system objects the user is interested in. Select the objects, the type of report and the time period for which the report will be generated. Some reports have additional options or filters that allow changing the returned data. Additionally, view trends in graphic presentation by clicking on the Trends tab.

Certain sensors are required to be installed on the object (fuel sensors, mileage/hours meters, flow meter, etc.) to generate a part of the report or to build a trend for certain parameters. For example, equipment status sensors (ignition) are required to generate a report on the equipment operation.

Click the corresponding icons in the lower right corner to export any report to MS Excel or print it.



Do the following to generate a report:

- Select the objects in the workspace which you want to be included in the report.
- In the top right corner of the screen, select the report period.
- Select the report type below.
- If necessary, change the settings and filters of the report and click Apply .

Viewing data as a trend

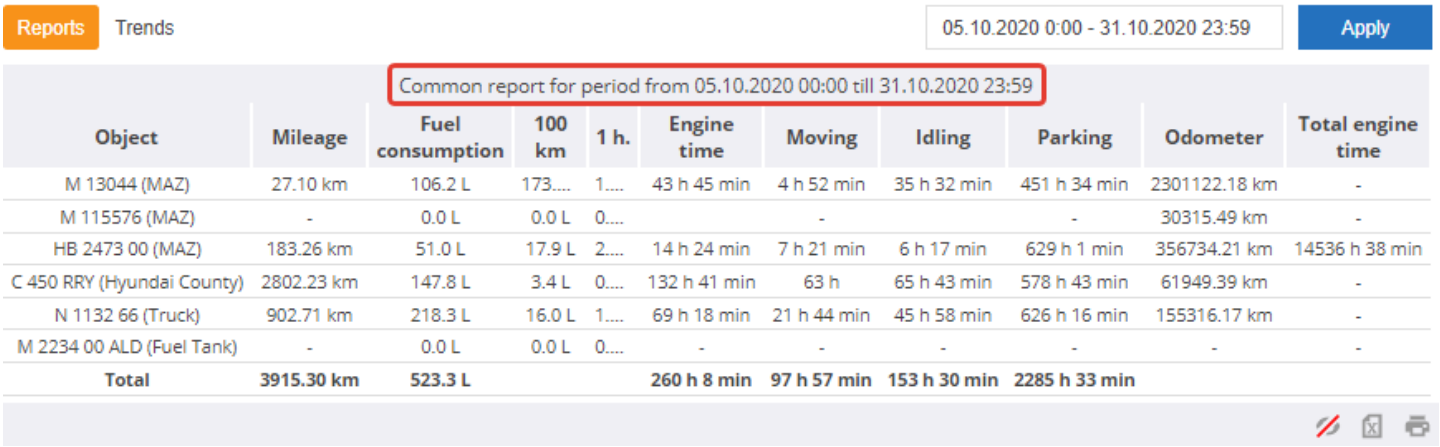
Use the Trends tab to view and analyze trend values during a selected time period. At the same time, you can see the values of several trends from different objects.You will see the entire selected time period by default; click in the top right corner of the Trends tab to shorten the period.

There is a list of trends with an indication of the object to which they belong, the trend scale and the values on the cut-off under the graphs. Checkboxes allow controling the visibility of the trend.

Types of reports

1. Common report

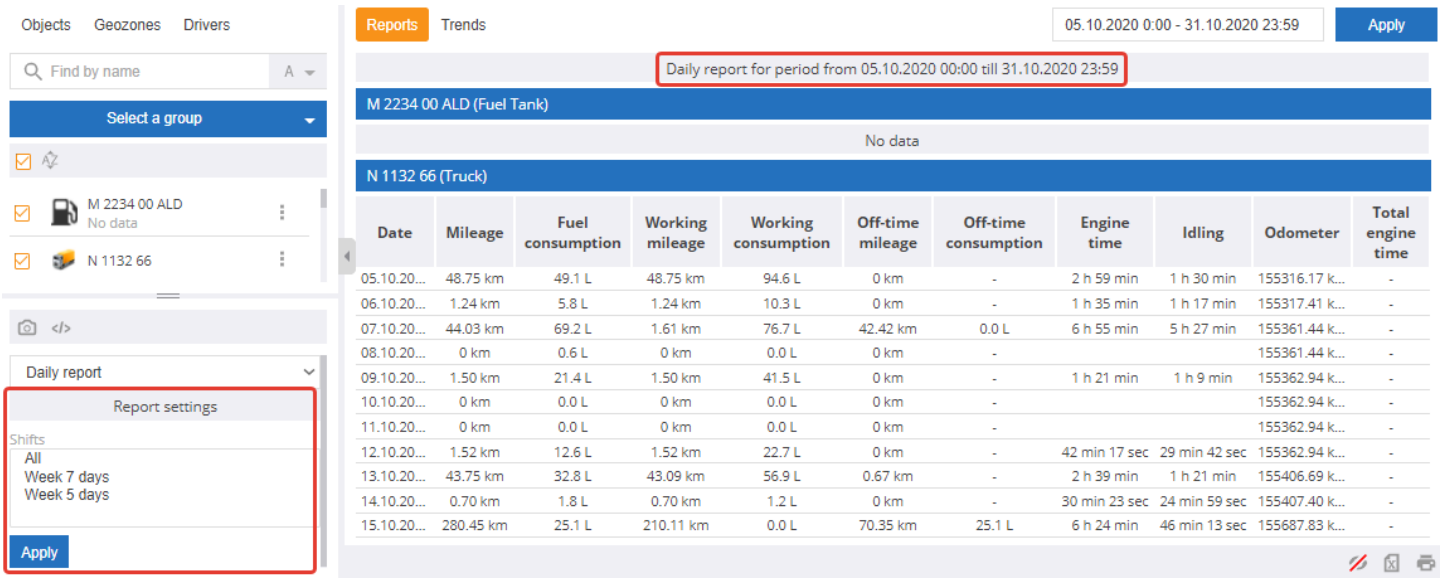
It shows the total readings for the main parameters of the objects in the system, namely: mileage, fuel consumption per 100 km/h, the location of the moving or idle object, parking time and odometer readings.



Object	Mileage	Fuel consumption	100 km	1 h.	Engine time	Moving	Idling	Parking	Odometer	Total engine time
M 13044 (MAZ)	27.10 km	106.2 L	173....	1....	43 h 45 min	4 h 52 min	35 h 32 min	451 h 34 min	2301122.18 km	-
M 115576 (MAZ)	-	0.0 L	0.0 L	0....		-		-	30315.49 km	-
HB 2473 00 (MAZ)	183.26 km	51.0 L	17.9 L	2....	14 h 24 min	7 h 21 min	6 h 17 min	629 h 1 min	356734.21 km	14536 h 38 min
C 450 RRY (Hyundai County)	2802.23 km	147.8 L	3.4 L	0....	132 h 41 min	63 h	65 h 43 min	578 h 43 min	61949.39 km	-
N 1132 66 (Truck)	902.71 km	218.3 L	16.0 L	1....	69 h 18 min	21 h 44 min	45 h 58 min	626 h 16 min	155316.17 km	-
M 2234 00 ALD (Fuel Tank)	-	0.0 L	0.0 L	0....	-	-	-	-	-	-
Total	**3915.30 km**	**523.3 L**			**260 h 8 min**	**97 h 57 min**	**153 h 30 min**	**2285 h 33 min**		

2. Daily report

It shows daily data during the selected period, including mileage, fuel consumption, odometer readings, etc. Filter the presentation by shifts in the report settings.

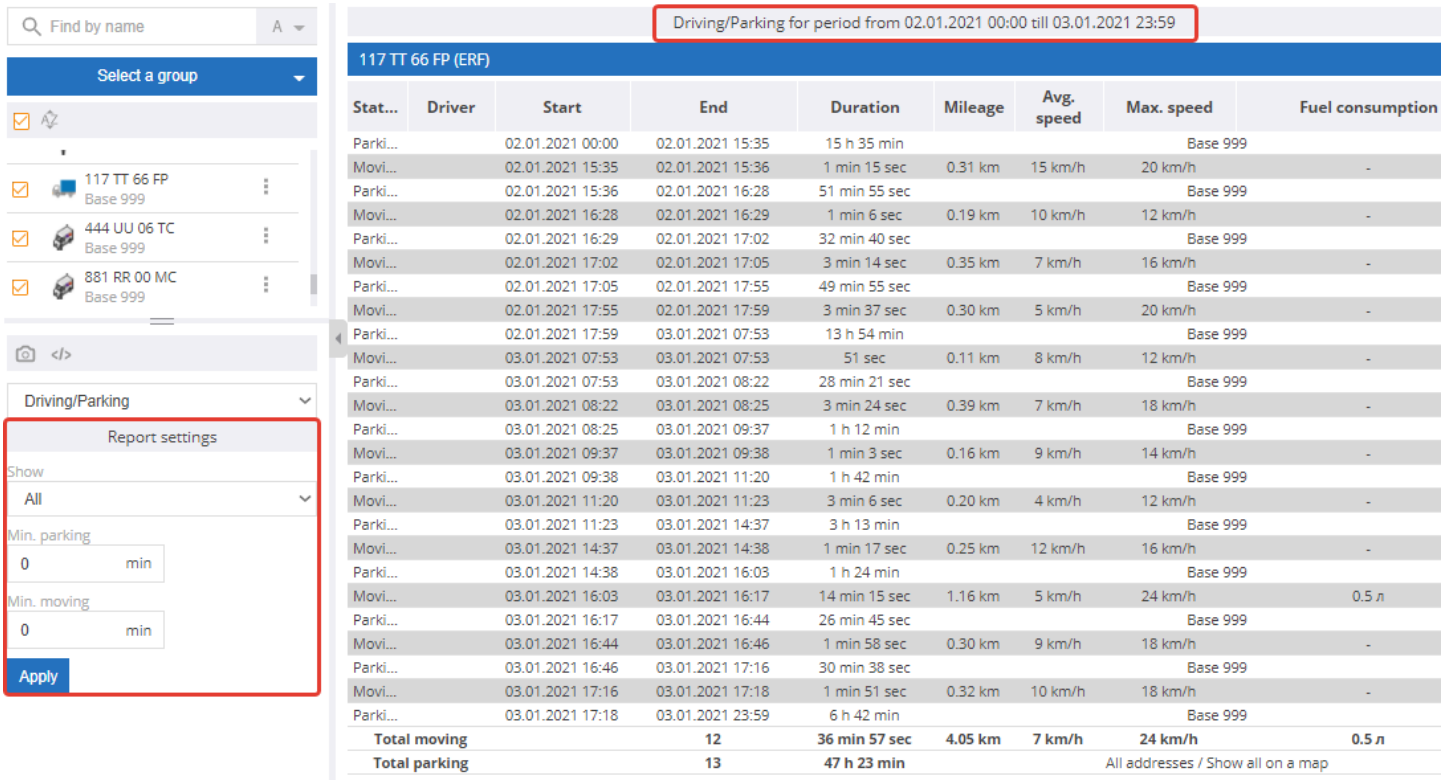


Date	Mileage	Fuel consumption	Working mileage	Working consumption	Off-time mileage	Off-time consumption	Engine time	Idling	Odometer	Total engine time
05.10.20...	48.75 km	49.1 L	48.75 km	94.6 L	0 km	-	2 h 59 min	1 h 30 min	155316.17 k...	-
06.10.20...	1.24 km	5.8 L	1.24 km	10.3 L	0 km	-	1 h 35 min	1 h 17 min	155317.41 k...	-
07.10.20...	44.03 km	69.2 L	1.61 km	76.7 L	42.42 km	0.0 L	6 h 55 min	5 h 27 min	155361.44 k...	-
08.10.20...	0 km	0.6 L	0 km	0.0 L	0 km	-			155361.44 k...	-
09.10.20...	1.50 km	21.4 L	1.50 km	41.5 L	0 km	-	1 h 21 min	1 h 9 min	155362.94 k...	-
10.10.20...	0 km	0.0 L	0 km	0.0 L	0 km	-			155362.94 k...	-
11.10.20...	0 km	0.0 L	0 km	0.0 L	0 km	-			155362.94 k...	-
12.10.20...	1.52 km	12.6 L	1.52 km	22.7 L	0 km	-	42 min 17 sec	29 min 42 sec	155362.94 k...	-
13.10.20...	43.75 km	32.8 L	43.09 km	56.9 L	0.67 km	-	2 h 39 min	1 h 21 min	155406.69 k...	-
14.10.20...	0.70 km	1.8 L	0.70 km	1.2 L	0 km	-	30 min 23 sec	24 min 59 sec	155407.40 k...	-
15.10.20...	280.45 km	25.1 L	210.11 km	0.0 L	70.35 km	25.1 L	6 h 24 min	46 min 13 sec	155687.83 k...	-

3. Driving/Parking

It shows a list of periods of movement and parking of objects with summarized statistics. At the end of the report, totals are calculated for each object when it was moving and idle and other parameters (mileage, speed, fuel consumed).

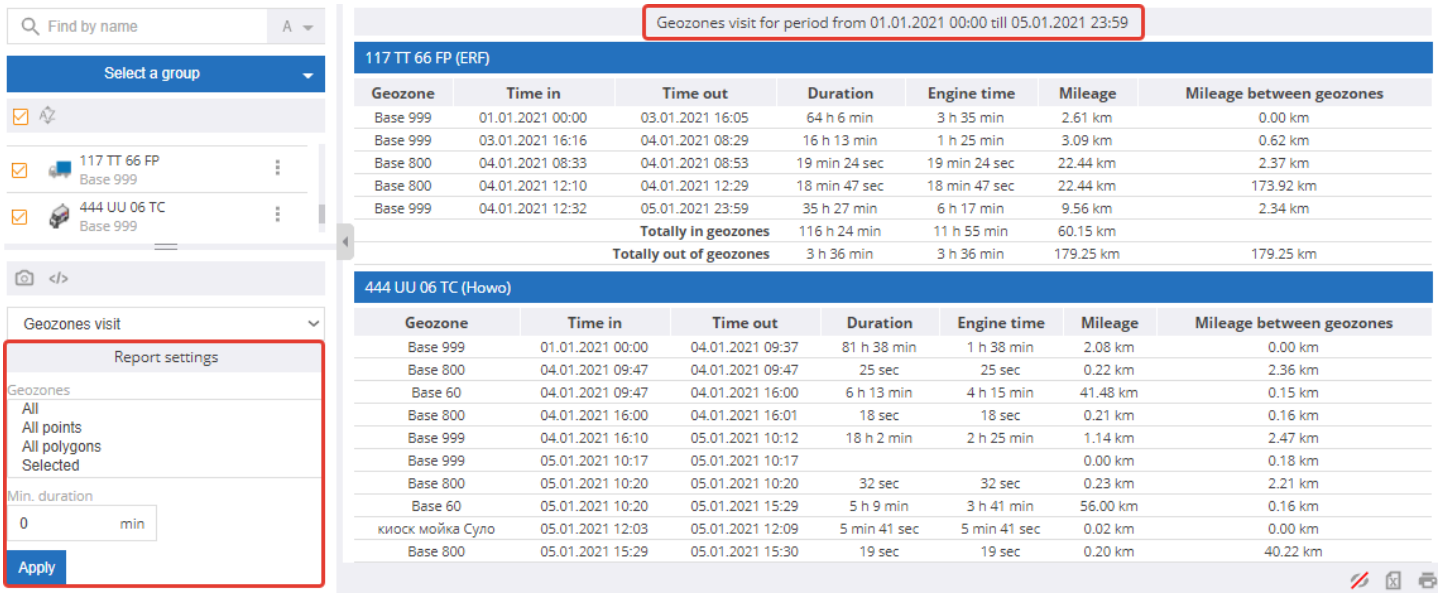
State the minimum parking time and the minimum driving time for the objects to be displayed in the report settings.



Stat...	Driver	Start	End	Duration	Mileage	Avg. speed	Max. speed	Fuel consumption
Parki...		02.01.2021 00:00	02.01.2021 15:35	15 h 35 min			Base 999	
Movi...		02.01.2021 15:35	02.01.2021 15:36	1 min 15 sec	0.31 km	15 km/h	20 km/h	-
Parki...		02.01.2021 15:36	02.01.2021 16:28	51 min 55 sec			Base 999	
Movi...		02.01.2021 16:28	02.01.2021 16:29	1 min 6 sec	0.19 km	10 km/h	12 km/h	-
Parki...		02.01.2021 16:29	02.01.2021 17:02	32 min 40 sec			Base 999	
Movi...		02.01.2021 17:02	02.01.2021 17:05	3 min 14 sec	0.35 km	7 km/h	16 km/h	-
Parki...		02.01.2021 17:05	02.01.2021 17:55	49 min 55 sec			Base 999	
Movi...		02.01.2021 17:55	02.01.2021 17:59	3 min 37 sec	0.30 km	5 km/h	20 km/h	-
Parki...		02.01.2021 17:59	03.01.2021 07:53	13 h 54 min			Base 999	
Movi...		03.01.2021 07:53	03.01.2021 07:53	51 sec	0.11 km	8 km/h	12 km/h	-
Parki...		03.01.2021 07:53	03.01.2021 08:22	28 min 21 sec			Base 999	
Movi...		03.01.2021 08:22	03.01.2021 08:25	3 min 24 sec	0.39 km	7 km/h	18 km/h	-
Parki...		03.01.2021 08:25	03.01.2021 09:37	1 h 12 min			Base 999	
Movi...		03.01.2021 09:37	03.01.2021 09:38	1 min 3 sec	0.16 km	9 km/h	14 km/h	-
Parki...		03.01.2021 09:38	03.01.2021 11:20	1 h 42 min			Base 999	
Movi...		03.01.2021 11:20	03.01.2021 11:23	3 min 6 sec	0.20 km	4 km/h	12 km/h	-
Parki...		03.01.2021 11:23	03.01.2021 14:37	3 h 13 min			Base 999	
Movi...		03.01.2021 14:37	03.01.2021 14:38	1 min 17 sec	0.25 km	12 km/h	16 km/h	-
Parki...		03.01.2021 14:38	03.01.2021 16:03	1 h 24 min			Base 999	
Movi...		03.01.2021 16:03	03.01.2021 16:17	14 min 15 sec	1.16 km	5 km/h	24 km/h	0.5 л
Parki...		03.01.2021 16:17	03.01.2021 16:44	26 min 45 sec			Base 999	
Movi...		03.01.2021 16:44	03.01.2021 16:46	1 min 58 sec	0.30 km	9 km/h	18 km/h	-
Parki...		03.01.2021 16:46	03.01.2021 17:16	30 min 38 sec			Base 999	
Movi...		03.01.2021 17:16	03.01.2021 17:18	1 min 51 sec	0.32 km	10 km/h	18 km/h	-
Parki...		03.01.2021 17:18	03.01.2021 23:59	6 h 42 min			Base 999	
Total moving			**12**	**36 min 57 sec**	**4.05 km**	**7 km/h**	**24 km/h**	**0.5 л**
Total parking			**13**	**47 h 23 min**			All addresses / Show all on a map	

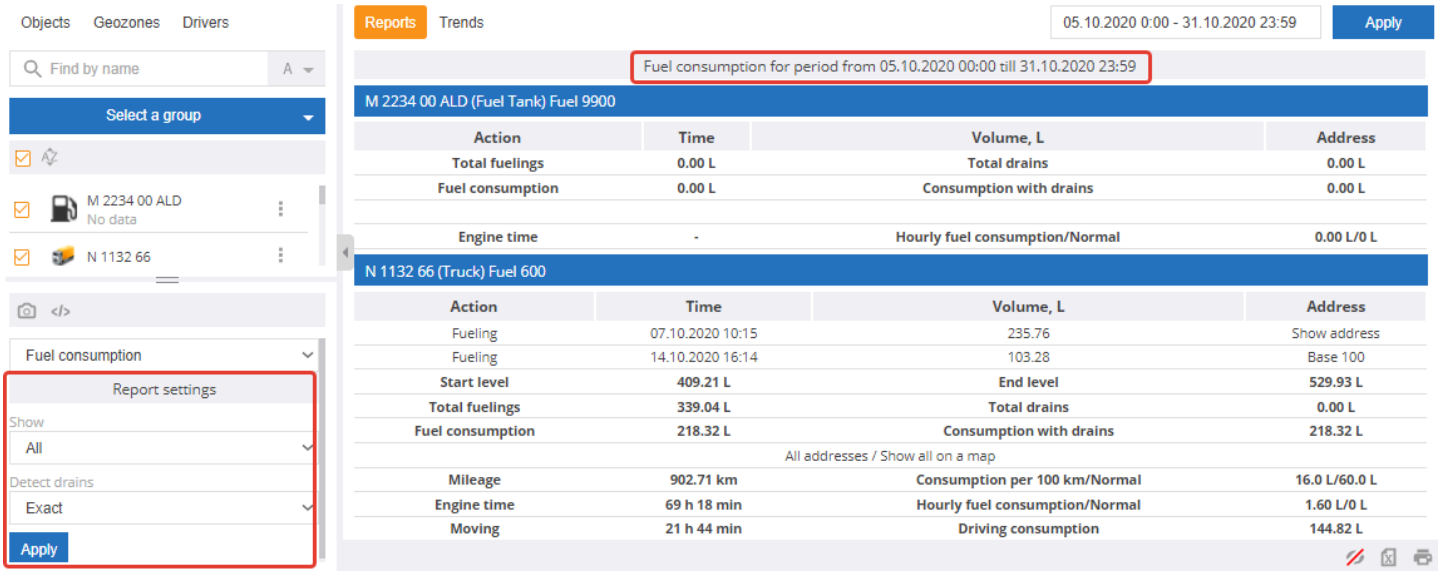
4. Visits to Geozones

This report shows the geozones visited by the object. If the object has visited no geozones, the report will be empty. Filter the geozones to be displayed and set the minimum visit time in the report settings.



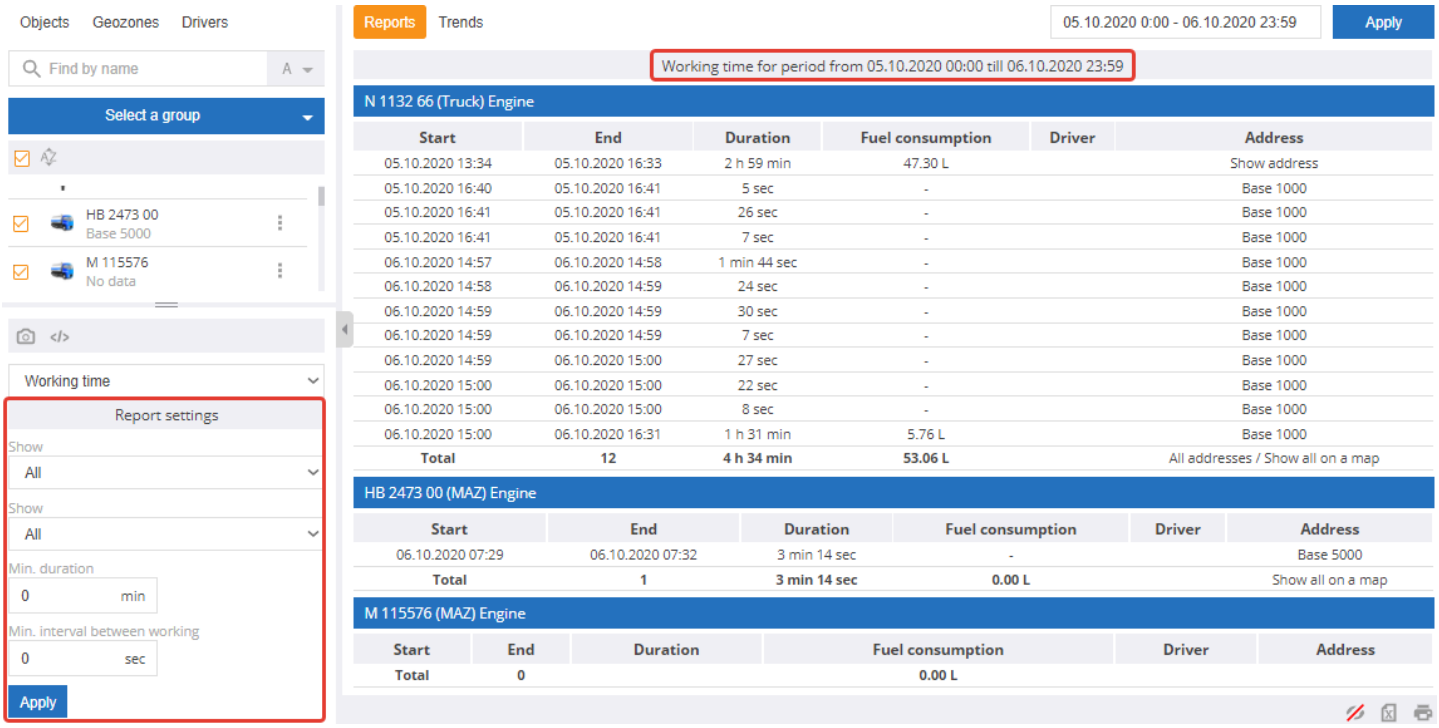
5. Fuel consumption

This report displays data on refueling/draining, initial/final fuel level, mileage, engine hours (engine running time), the addresses of the location of the moving or idle object. The report is only displayed if there is a fuel/flow sensor installed on the object. Filter only refills or only drainings to be displayed in the settings, and also filter both definite and probable drainings to be displayed.



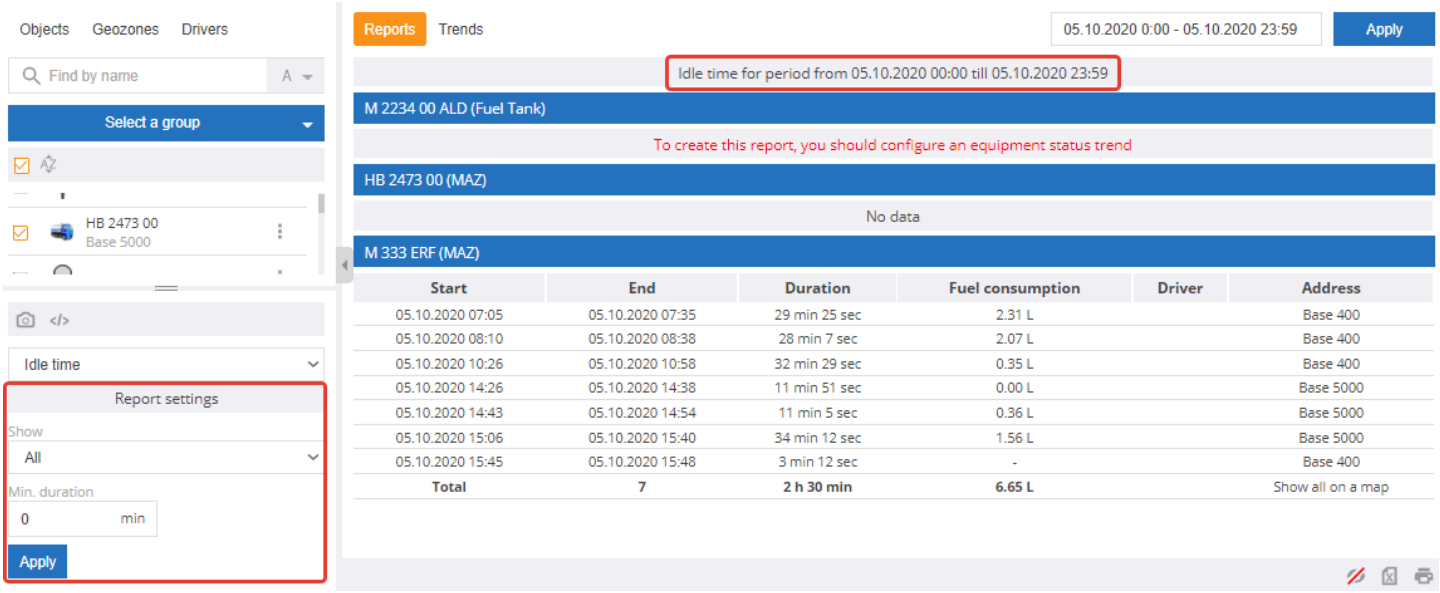
6. Working time

This report shows the start/end of the working time of the equipment (engine, crane, drilling rig, etc.) and indicates the location of the object.



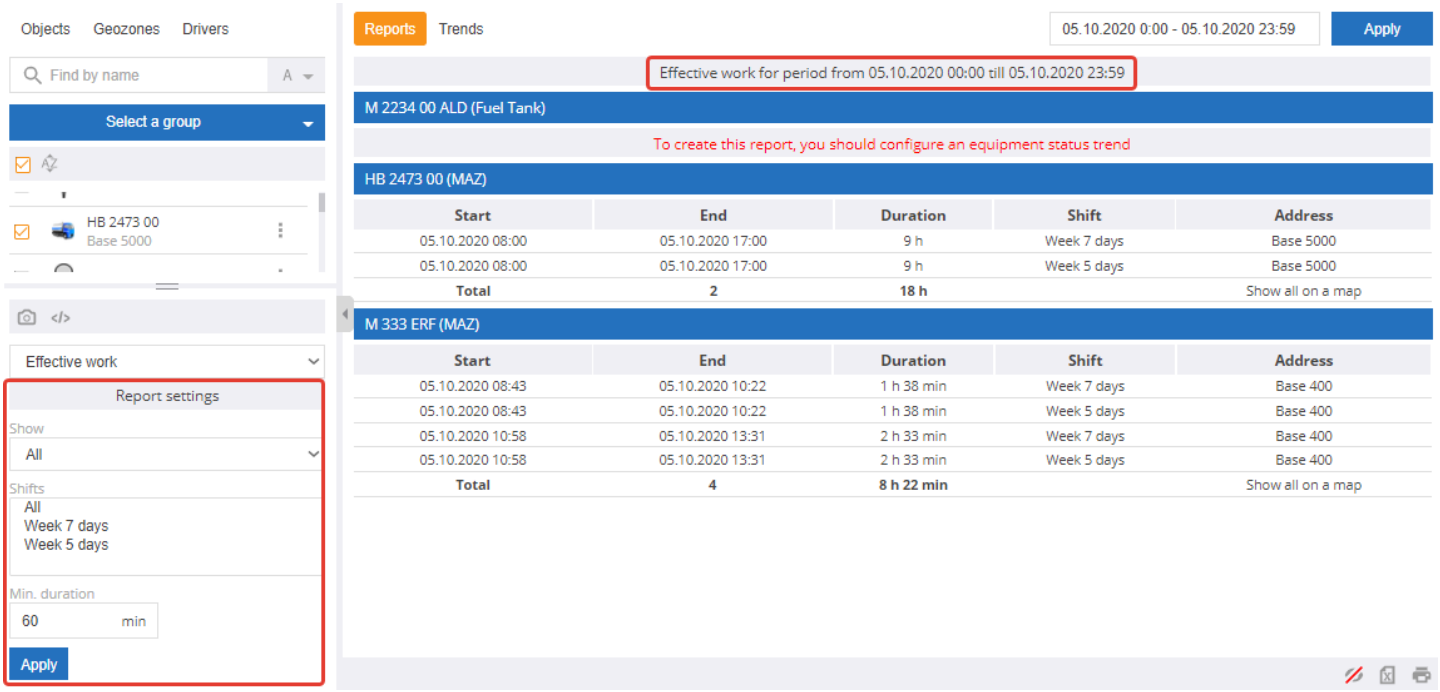
7. Idle time

This report shows the start/end time of idle operation of the engine, and also indicates the address of the location of the object. Configure the equipment status trend to generate the report. The report can only display idle work in or outside geozones, or the minimum duration of work.



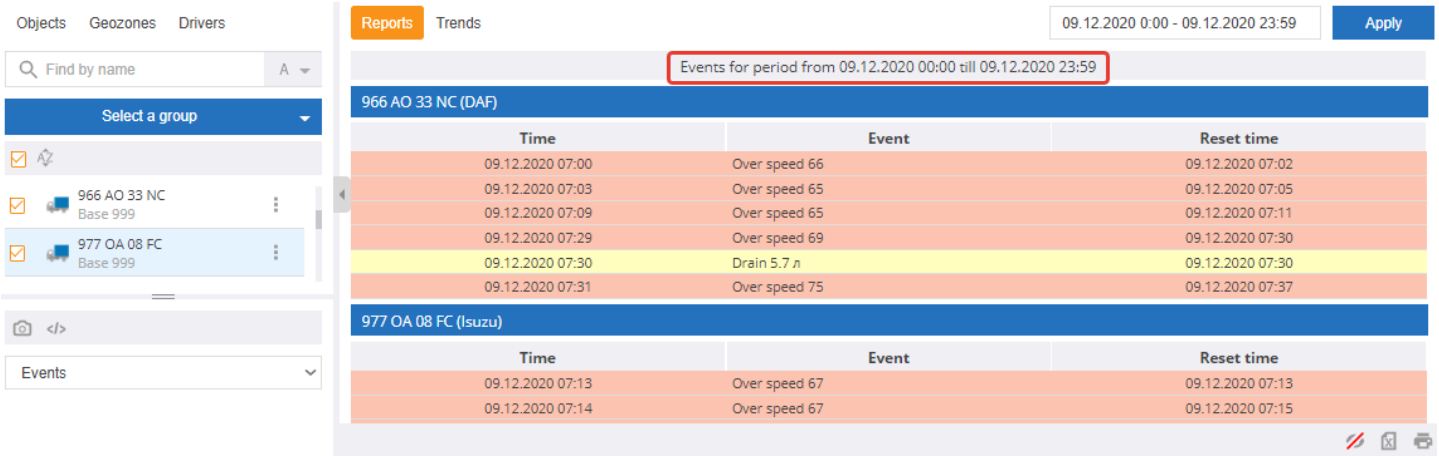
8. Effective work

This report shows effective work of vehicles. Set the equipment status trend and shifts to generate the report. Configure the settings so that the report only displays effective work in or outside geozones, or the minimum idle period. The settings also allow sorting the presentation by shifts.



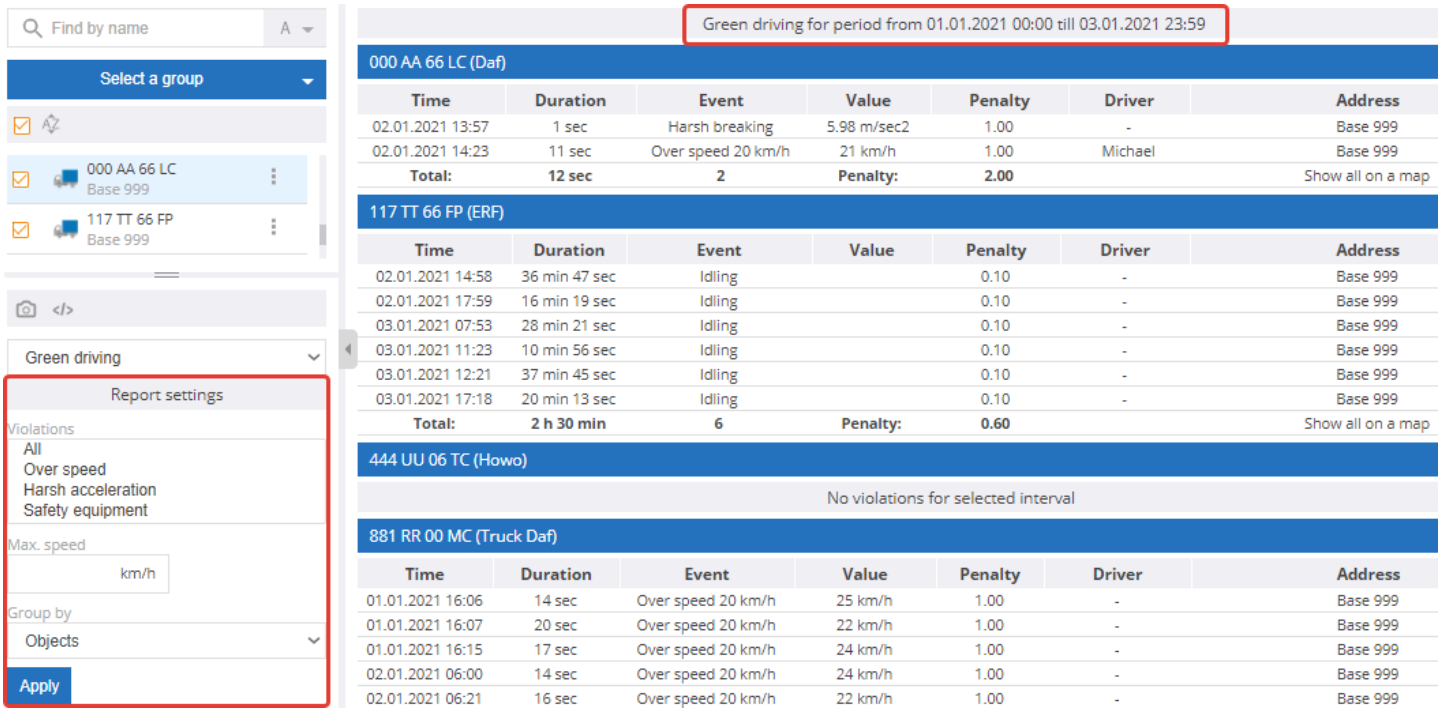
9. Events

This report shows the time of activation and deactivation of events.



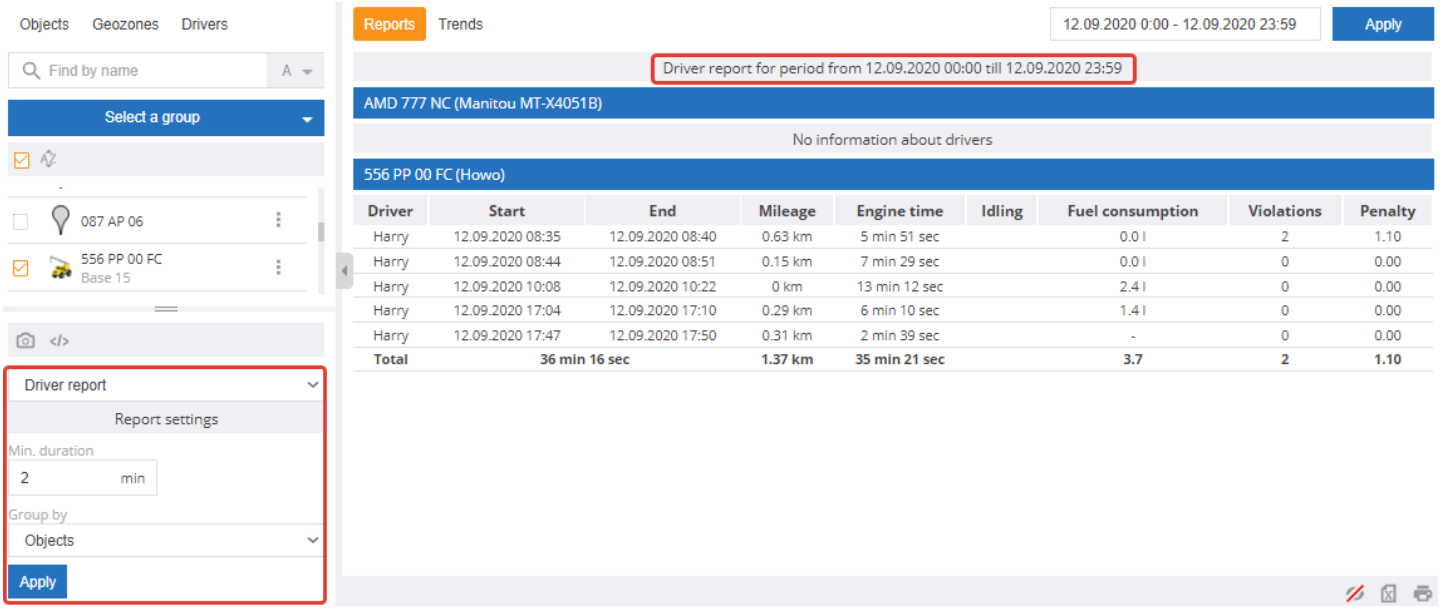
10. Green driving

This report demonstrates the moment and the address at which a driver has committed a violation, such as speeding, sudden acceleration/braking. The report also displays information about the location of the idle object. Filter presentation by type of violation, set the maximum permitted speed and display by objects or by drivers in the settings.



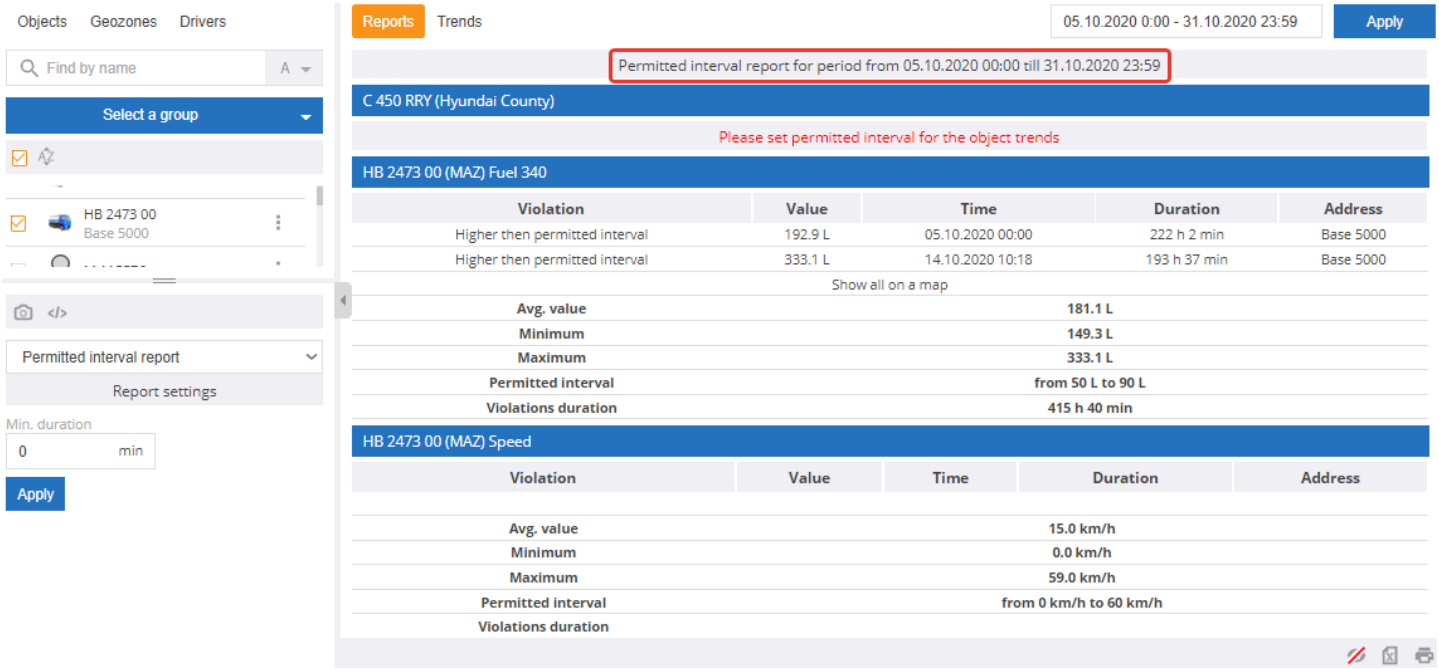
11. Driver report

This report displays data on drivers, such as start/end driving time, mileage, driving hours, fuel consumption, and number of violations scoring a penalty. This report is generated only if the driver has a key. Set the minimum driving time and sort the presentation by objects and drivers in the settings.



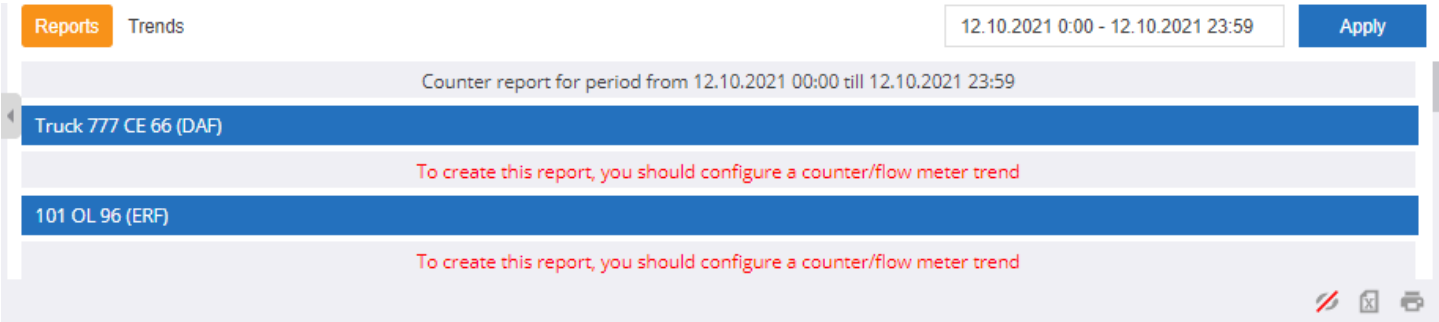
12. Permitted interval report

This report demonstrates when the object complies with or violates the maximum permitted ranges of parameters (temperature in the refrigerator, tire pressure, etc.). Set the permitted parameter ranges for the object in the trend settings to display the report.



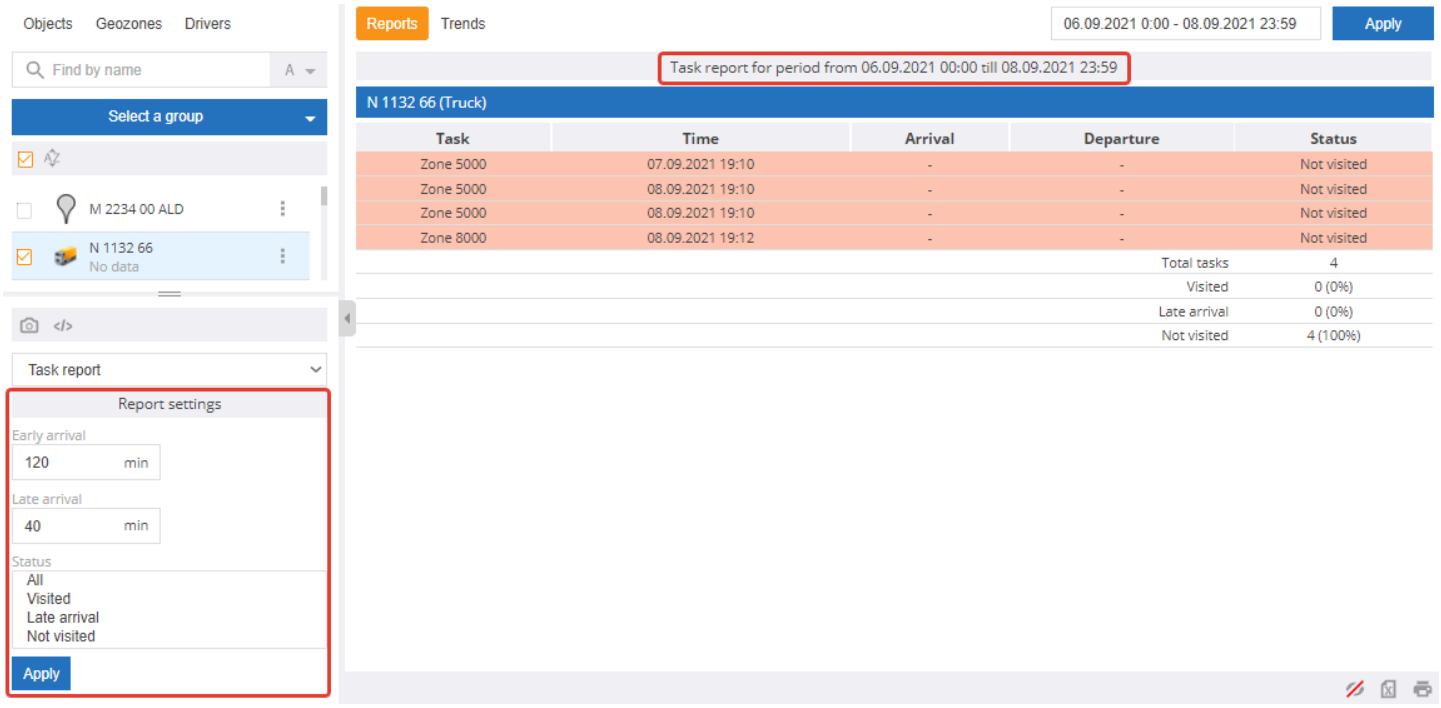
13. Counter report

This report displays the data from the devices installed on the object (mileage/hours meters, flow meter, etc.). Configure the meter/counter trend to generate this report.



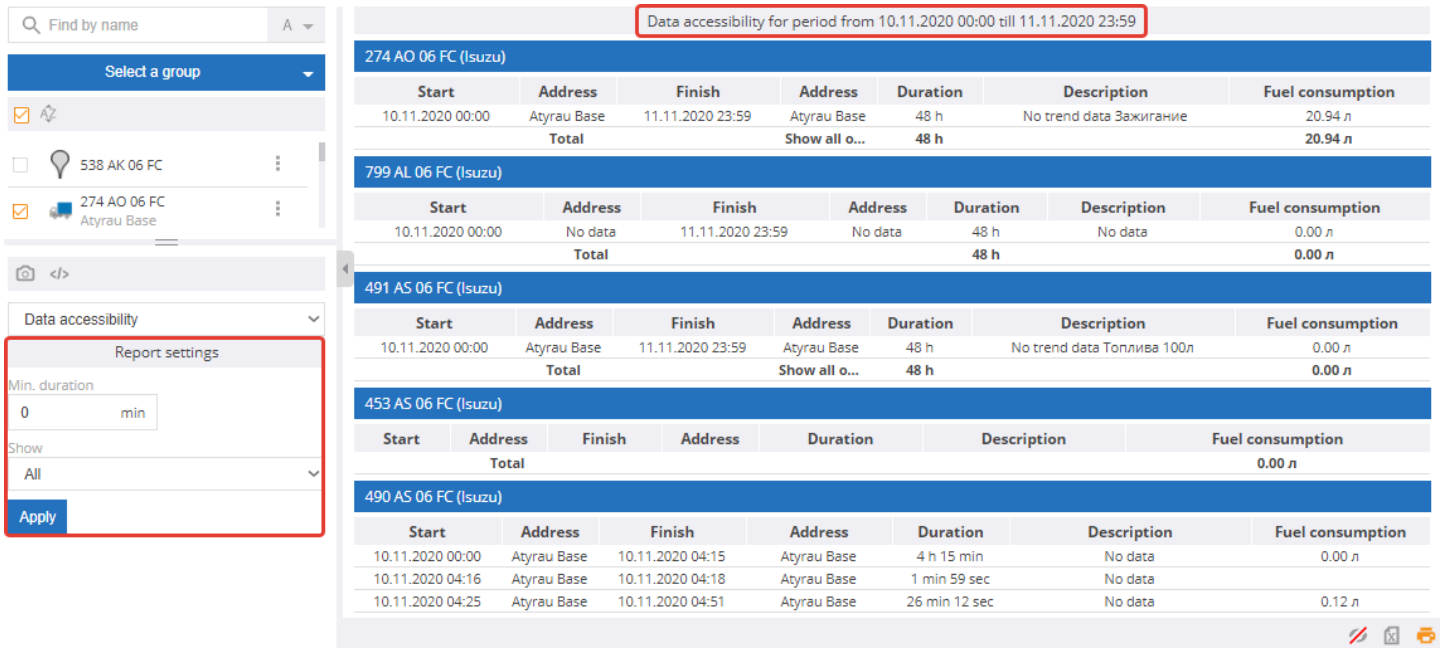
14. Task report

This report displays the tasks assigned, completion status or the state of the task to be completed as percent. Specify the time and filter by status in the settings.



15. Data accessibility

This report is intended to analyze if the installation and configuration of equipment is proper and allows monitoring the equipment. The report shows the periods when the data from sensors, about location, etc. did not arrive.



Drivers

This section contains information about the work of drivers. Mileage, driving hours and violations are recorded here for drivers rather than objects.

The section contains the following subsections:

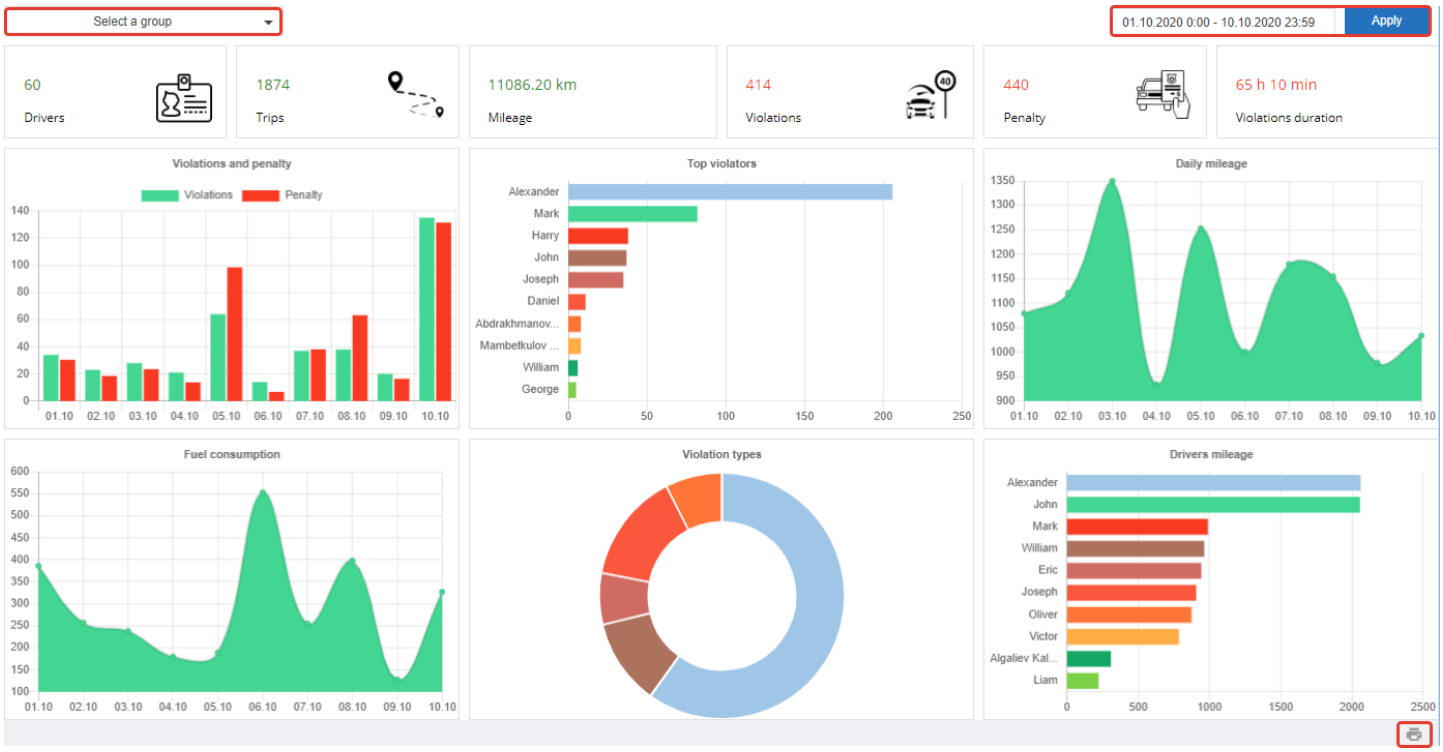
- Trends (graphs);
- Rating;
- Analytics;
- Reports.

Trends

The Drivers section opens on the Trends subsection by default. Here the information on the user's drivers is summarized as graphs and diagrams, including the total number of drivers, their trips, violations (with their types and durations) and penalties. This subsection also presents the information on mileage and fuel consumption.

Sort the information by driver groups and select the time period at the top of the screen.

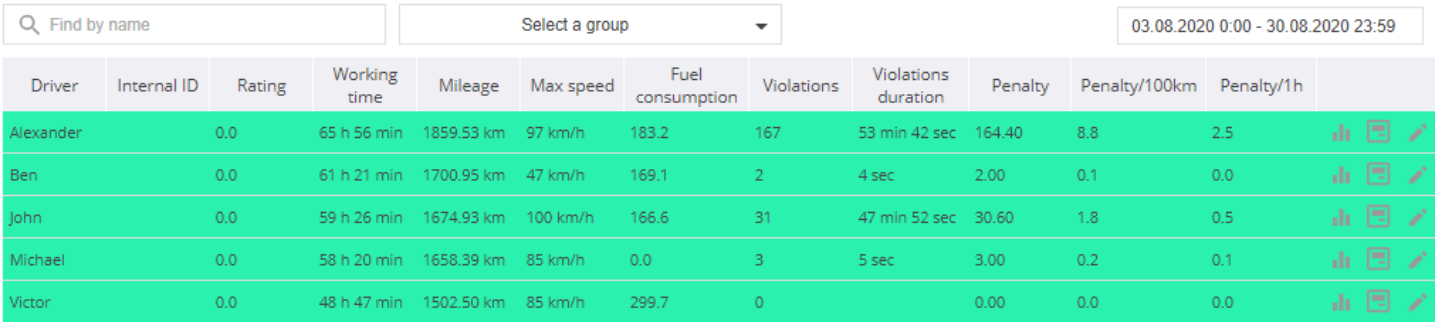
Print the information on the screen by clicking the corresponding icon at the bottom on the right.



Rating

In the center of the screen there is a list of all the user's drivers with their basic statistics (rating, driving time, maximum speed, number and duration of violations, etc.).

The drivers on the list are sorted according to their rating (violations) in the system; first come the driver with the lowest rating.



Driver	Internal ID	Rating	Working time	Mileage	Max speed	Fuel consumption	Violations	Violations duration	Penalty	Penalty/100km	Penalty/1h
Alexander		0.0	65 h 56 min	1859.53 km	97 km/h	183.2	167	53 min 42 sec	164.40	8.8	2.5
Ben		0.0	61 h 21 min	1700.95 km	47 km/h	169.1	2	4 sec	2.00	0.1	0.0
John		0.0	59 h 26 min	1674.93 km	100 km/h	166.6	31	47 min 52 sec	30.60	1.8	0.5
Michael		0.0	58 h 20 min	1658.39 km	85 km/h	0.0	3	5 sec	3.00	0.2	0.1
Victor		0.0	48 h 47 min	1502.50 km	85 km/h	299.7	0		0.00	0.0	0.0

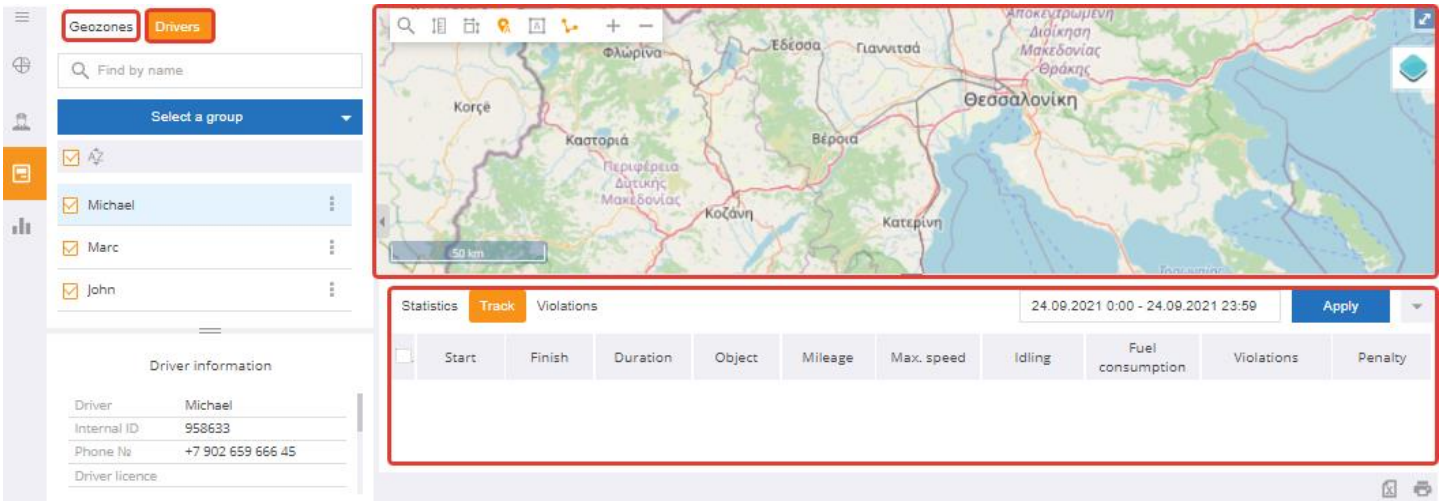
The driver rating is calculated on the basis of the driver penalty settings set in the control panel. See the Drivers (Driver rating) section in the control panel for more information about the rating and its calculation.

Click icons  opposite each driver to open the Reports or Analytics menu subsections related to the selected driver or to edit the information about them.

Analytics

This subsection allows viewing the driver's movement on the map, the geozones visited, observe their track and view related statistics.

The Analytics subsection interface is similar to the same of the History section.



The working area contains the following elements:

- Geozones;
- Drivers;
- Map;
- Bottom panel.

Geozones and **Drivers** tabs contain a list of geozones and drivers added to the system by the user. These tabs have the interface and functionality similar to the corresponding tabs in the Tracking section.

The **map** area contains a number of tools described in detail in the Tracking and History sections.

The following tabs are displayed on the **bottom panel** (under the map), showing information about drivers and sensor readings:

Statistics

The tab displays a report on each driver for the selected time period. The report includes data on their driving hours, mileage, fuel consumption, violations, etc.

Statistics | Track | Violations | 02.11.2020 0:00 - 29.11.2020 23:59 | Apply

Driver	Internal ID	Rating	Working time	Mileage	Max speed	Fuel consumption	Violations	Violations duration	Penalty
Harry		0.0	31 h 48 min	39.36 km	19 km/h	174.2	58	10 h 35 min	46.30
Daniel		0.0	27 h 41 min	110.05 km	17 km/h	0.0	2	12 sec	2.00
George		0.0	51 h 31 min	230.52 km	35 km/h	0.0	378	1 h 44 min	378.00
Liam		0.0	121 h 29 min	470.09 km	28 km/h	0.0	382	1 h 48 min	382.50

Track

The tab displays data about the movements of the selected driver. Each driver's track is accompanied by data on the vehicle, mileage, fuel consumption, violations, etc.

Statistics | Track | Violations | 02.11.2020 0:00 - 28.11.2020 23:59 | Apply

Start	Finish	Duration	Object	Mileage	Max. speed	Idling	Fuel consumpti...	Violations	Penalty
02.11.2020 19:49	02.11.2020 19:50	1 min 44 sec	LD 555 D	0.42 km	20 km/h		-	1	1.00
02.11.2020 19:51	02.11.2020 19:51	20 sec	LD 555 D	0.08 km	16 km/h		-	0	0.00
02.11.2020 19:53	02.11.2020 19:53	34 sec	LD 555 D	0.12 km	13 km/h		-	0	0.00
02.11.2020 19:55	02.11.2020 19:59	3 min 26 sec	LD 555 D	0.58 km	17 km/h		-	4	4.00
02.11.2020 19:59	02.11.2020 20:05	6 min 4 sec	LD 555 D	0.89 km	17 km/h		0.0 lt	2	2.00

Violations

The tab contains a list of violations of the selected driver. Each description of the violation is accompanied by its time, vehicle data, penalty score and address.

Statistics | Track | Violations | 02.11.2020 0:00 - 28.11.2020 23:59 | Apply

Time	Duration	Object	Event	Value	Penalty	Address
02.11.2020 19:50	33 sec	LD 555 D	Over speed 15 k...	20 km/h	1.00	Base 15
02.11.2020 19:58	10 sec	LD 555 D	Over speed 15 k...	17 km/h	1.00	Base 15
02.11.2020 19:58	5 sec	LD 555 D	Over speed 15 k...	17 km/h	1.00	Base 15
02.11.2020 19:58	6 sec	LD 555 D	Over speed 15 k...	16 km/h	1.00	Base 15
02.11.2020 19:58	12 sec	LD 555 D	Over speed 15 k...	16 km/h	1.00	Base 15
02.11.2020 20:03	4 sec	LD 555 D	Over speed 15 k...	16 km/h	1.00	Base 15

Reports

This subsection allows generating various reports on drivers' work. The interface of the section is similar to that of the Reports section. Please read the description of the reports below.

Daily report is the most complete report for each day of the selected period, containing mileage, driving hours, the object idle operation period, driver's maximum speed, violations and penalties.

Click on the icon  opposite the driver to open the Analytics subsection on the Track tab where data for the selected period for this driver is shown.

08.11.2020 0:00 - 08.11.2020 23:59 Apply

Daily report for period from 08.11.2020 00:00 till 08.11.2020 23:59

Harry

Date	Mileage	Working time	Max. speed	Idling	Fuel consumption	Violations	Penalty	
08.11.2020	2.48 km	2 h 36 min	15 km/h	41 min 44 sec	18.40	1	0.1	
Total	2.48 km	2 h 36 min	15 km/h	41 min 44 sec	18.40	1	0.1	

Daniel

Date	Mileage	Working time	Max. speed	Idling	Fuel consumption	Violations	Penalty	
08.11.2020	4.98 km	55 min 26 sec	15 km/h		0.00	0	0.0	
Total	4.98 km	55 min 26 sec	15 km/h		0.00	0	0.0	

Violations is a report containing details about the driver's violations. Specific types of violations (hard driving, speeding, etc.), their total number, penalty score, driving hours and mileage are listed here. The information in this report is also presented for each day of the selected period.

08.11.2020 0:00 - 09.11.2020 23:59 Apply

Violations for period from 08.11.2020 00:00 till 09.11.2020 23:59

Harry

Date	Mileage	Working time	Violations						Penalty
			Total	Harsh driving	Safety belt	Lights	Idling	Overspeed	
08.11.2020	2.48 km	2 h 36 min	1	0	0	0	1	0	0.1
09.11.2020	1.94 km	1 h 53 min	1	0	0	0	1	0	0.1
Total	4.43 km	4 h 29 min	2	0	0	0	2	0	0.2

Daniel

Date	Mileage	Working time	Violations						Penalty
			Total	Harsh driving	Safety belt	Lights	Idling	Overspeed	
08.11.2020	4.98 km	55 min 26 sec	0	0	0	0	0	0	0.0
09.11.2020	7.35 km	1 h 51 min	1	0	0	0	0	1	1.0
Total	12.34 km	2 h 47 min	1	0	0	0	0	1	1.0

Trips is the report partially duplicating the above information. It shows however, among other things, the start and end time of the trip, the name of the object and fuel consumption per 100 km/h.

08.11.2020 0:00 - 09.11.2020 23:59 Apply

Trips for period from 08.11.2020 00:00 till 09.11.2020 23:59

Daniel

Start	Finish	Duration	Object	Mileage	Max. speed	Idling	Fuel consumption	Consumption per 100 km/1h	Violations	Penalty
Rest						Base 15				
08.11.2020 20:32	08.11.2020 21:28	55 min 26 ...	LD 555 D	4.98 km	15 km/h		0.00	0.00/0.00	0	0
Rest	22 h 17 min					Base 15				
09.11.2020 19:45	09.11.2020 21:36	1 h 51 min	LD 555 D	7.35 km	17 km/h		0.00	0.00/0.00	1	1
Rest						Base 15				
Total		2 h 47 min		12.34 km	17 km/h		0.00	0.00/0.00	1	1.00

Show all on a map

Fuel consumption is a daily report about the mileage, operating time of the object, its name, idle operation period and fuel consumption (total and per 100 km/h).

06.08.2020 0:00 - 07.08.2020 23:59 Apply

Fuel consumption for period from 06.08.2020 00:00 till 07.08.2020 23:59

Mark

Date	Mileage	Working time	Idling	Fuel consumption	Consumption per 100 km/1h	Objects
06.08.2020	118.75 km	4 h 20 min		15.44	13.00/0.00	096 YE 07
07.08.2020	47.96 km	2 h 1 min		6.03	12.57/0.00	096 YE 07
Total	166.70 km	6 h 21 min		21.47	12.88/0.00	

Michael

Date	Mileage	Working time	Idling	Fuel consumption	Consumption per 100 km/1h	Objects
06.08.2020	111.29 km	4 h 10 min		0.00	0.00/0.00	631 AO 06
07.08.2020	107.34 km	4 h 11 min		0.00	0.00/0.00	631 AO 06

Gas stations

This section is intended for companies that have their own stations for refueling vehicles. Both mobile and stationary gas stations with equipment compatible with the system are supported.

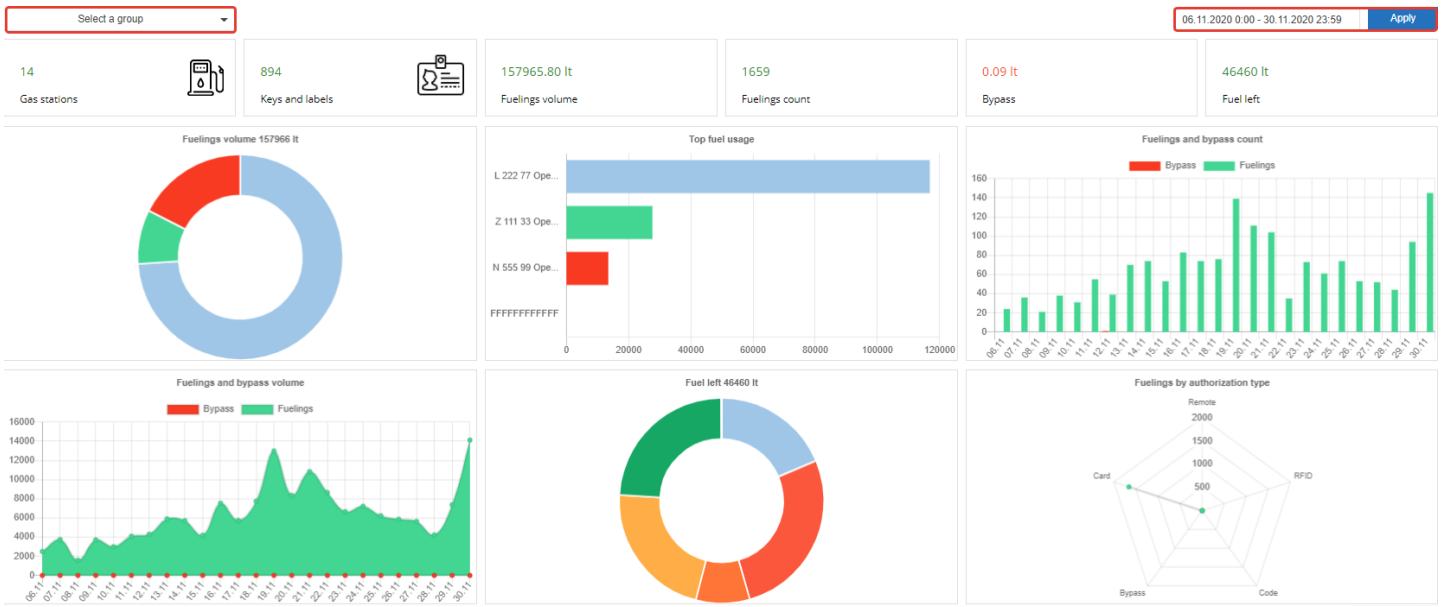
There is a menu on the left that contains three subsections:

- Gas stations;
- Reports;
- Fuel tanks.

Gas stations

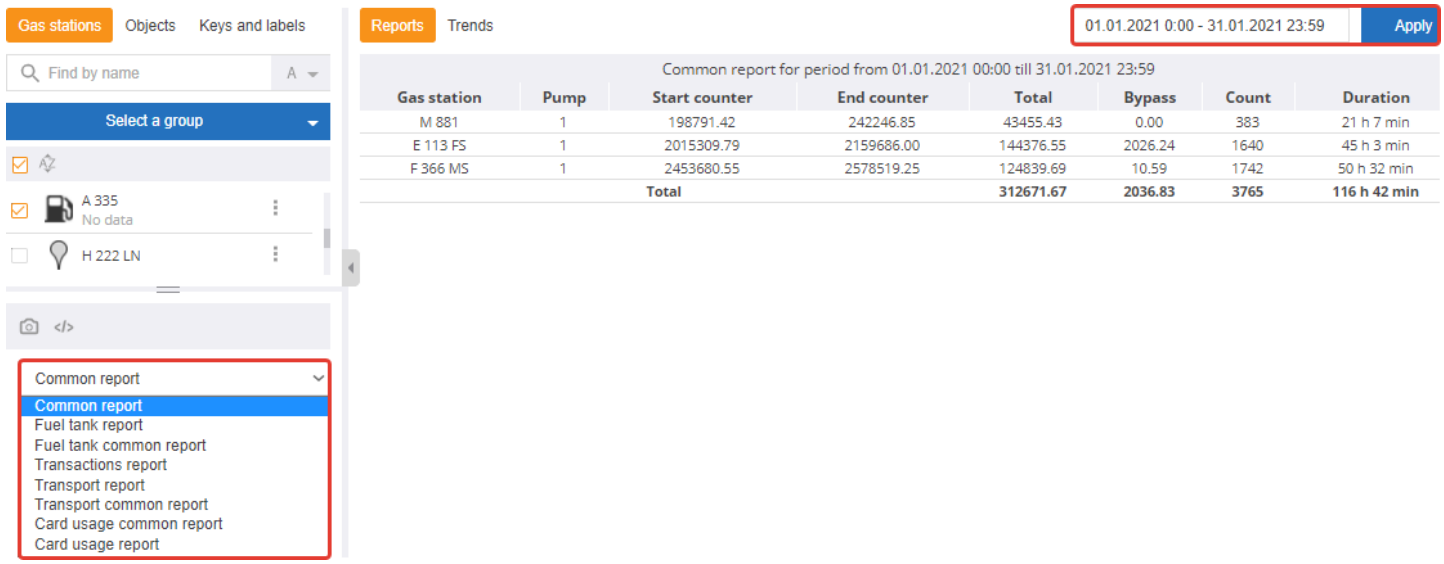
The information on the user's gas stations is summarized as a diagram here, i.e. the total number of gas stations, the number of keys and labels, the number and volume of refuelings, the remaining fuel and so on.

Filter information by object groups and select the time period at the top of the screen.



Reports

This subsection shows data on refueling the objects as graphs (trends) and various reports. The interface of the section is similar to that of the Reports section. Please read the description of the reports below.



Common report

This report shows the total readings for the main gas station parameters in the system, such as the initial and final value of the fuel meter reading, total fuel consumption, bypass, duration of refueling.

Common report for period from 01.01.2021 00:00 till 31.01.2021 23:59

Gas station	Pump	Start counter	End counter	Total	Bypass	Count	Duration
M 881	1	198791.42	242246.85	43455.43	0.00	383	21 h 7 min
E 113 FS	1	2015309.79	2159686.00	144376.55	2026.24	1640	45 h 3 min
F 366 MS	1	2453680.55	2578519.25	124839.69	10.59	1742	50 h 32 min
		Total		**312671.67**	**2036.83**	**3765**	**116 h 42 min**

Fuel tank report

This report demonstrates information about gas stations, such as their time, volume and address. It also shows the initial and final fuel levels in each tank of each gas station. The report is only displayed if there is a fuel/flow sensor installed at the gas station. If additional devices are available, they allow tracking the fuel temperature and density in the tanks.

Fuel tank report for period from 01.01.2021 00:00 till 10.01.2021 23:59

F 366 MS (Fuel Tank 6) Storage tank

Action	Time	Volume	Temperature	Density	Address
Fueling	02.01.2021 17:49	9789.62 lt	-	-	Base 100
Fueling	03.01.2021 15:09	4008.61 lt	-	-	Show address
Fueling	04.01.2021 15:40	7442.28 lt	-	-	Base 100
Fueling	05.01.2021 15:02	6699.85 lt	-	-	Base 100
Fueling	06.01.2021 16:43	6539.10 lt	-	-	Base 100
Fueling	07.01.2021 15:30	7413.53 lt	-	-	Show address
Fueling	08.01.2021 16:26	598.22 lt	-	-	Base 100
Fueling	08.01.2021 16:33	6290.26 lt	-	-	Base 100
Fueling	10.01.2021 15:58	4349.95 lt	-	-	Base 100
Start level	**9927.63 lt**		**End level**		**10117.50 lt**
Total fuelings	**53131.42 lt**		**Fuel consump...**		**52941.55 lt**

Fuel tank common report

This report shows the general gas station tank parameters, such as the initial and final fuel level, the volume of refueling and fuel consumption.

Fuel tank common report for period from 01.01.2021 00:00 till 10.01.2021 23:59

Tank	Start level	End level	Fuelings volume	Fuel consumption
E 113 FS/Storage tank	5598.51 lt	4522.22 lt	23791.05 lt	19644.60 lt
E 113 FS/Storage tank. 2	5154.55 lt	4119.67 lt	19730.56 lt	20650.09 lt
E 113 FS/Storage tank.3	4846.42 lt	3720.31 lt	19761.89 lt	11872.91 lt
F 366 MS/Storage tank	9927.63 lt	10117.50 lt	53131.42 lt	46347.00 lt
F 113 LS/Storage tank.1 4830л	-	-	0.00 it	0.00 it
F 113 LS/Storage tank.2 5290л	-	-	0.00 it	0.00 it
F 113 LS/Storage tank.3 5927л	-	-	0.00 it	0.00 it
Total	**25527.11 it**	**22479.70 it**	**116414.92 it**	**98514.60 it**

Transactions report

This report shows all operations at each gas station with details about time, duration, volume and location.

Transactions report for period from 30.12.2020 00:00 till 31.12.2020 23:59

F 366 MS (Fuel Tank 6)

Check	Operator	Object	Time	Duration	Pump	Requested	Volume	Limit	Counter	Fuel level	Inventory №	Odometer	Address
10955	H 2253 06		30.12.2020 00:13	2 min 36 sec	1	1.00	78.94	0	2439658.5	4095.00	0000	0	Show address
10956	H 2253 06		30.12.2020 00:15	1 min 35 sec	1	1.00	47.34	0	2439705.75	4095.00	0000	0	Show address
10957	H 2253 06		30.12.2020 00:20	2 min 16 sec	1	1.00	54.08	0	2439759.75	4095.00	0000	0	Show address
11037	H 2253 06		30.12.2020 18:59	1 min 28 sec	1	1.00	36.39	0	2446173.5	4095.00	0000	0	Show address
11038	H 2253 06		30.12.2020 19:02	2 min 38 sec	1	1.00	71.50	0	2446245	4095.00	0000	0	Show address
11039	H 2253 06		30.12.2020 19:35	2 min 19 sec	1	1.00	56.38	0	2446301.5	4095.00	0000	0	Base 300
11040	H 2253 06		30.12.2020 19:38	47 sec	1	1.00	6.49	0	2446308	4095.00	0000	0	Base 300
11041	H 2253 06		30.12.2020 19:39	1 min 19 sec	1	1.00	39.32	0	2446347.25	4095.00	0000	0	Base 300
11042	H 2253 06		30.12.2020 19:42	2 min 24 sec	1	1.00	59.17	0	2446406.5	4095.00	0000	0	Show address
11043	H 2253 06		30.12.2020 19:44	1 min 29 sec	1	1.00	49.56	0	2446456	4095.00	0000	0	Show address
11155	H 2253 06		31.12.2020 22:32	1 min 40 sec	1	1.00	103.78	0	2453680.5	4095.00	0000	0	Show address
	Total		**201**	**6 h 17 min**			**14101.28**						All addresses / Show all on a map

Transport report

This type of report gives information about refueling for each specific object: how many times, at what time, where and what volume was refueled. The report also shows data on the gas station where the object was refueled, the refueling limits set for the object, odometer readings (if the necessary sensors are installed), and so on.

Transport report for period from 01.01.2021 00:00 till 31.01.2021 23:59

E 111 SD (ERF)

Time	Gas station	Operator	Requested	Volume	Check	Limit	Odometer	Address
20.01.2021 15:24	AZS Post 77	Driver 12	1.00	55.93	12436	0	0	Base 990
23.01.2021 14:13	AZS Post 77	Driver 12	1.00	60.74	12586	0	0	Base 990
25.01.2021 16:30	AZS Post 77	Driver 12	1.00	37.01	12685	0	0	Base 990
Total			**3**	**153.68**			**Show all on a map**	

Transport common report

This report shows general information about each object (including gas stations) with their mileage, engine hours, idle operation period, driving time, fuel volumes.

Transport common report for period from 01.01.2021 00:00 till 31.01.2021 23:59

Object	Mileage	Engine time	Idling	Moving time	Fuel consumption	LLS volume	Station volume
AZS Post 77	0.00 km	-	-		0.00 lt	0.00 lt	102197.96
MFT 444 SS 08 LS (Mobile Fuel Tank 8)	2521.33 km	-	-	114 h 32 min	2832.32 lt	10708.46 lt	-
MFT 806 TT 56 LS (Fuel Tank 6)	3.45 km	-	-	18 min 7 sec	0.00 lt	0.00 lt	-
A 446 ACL ERF (ERF)	118.87 km			21 h 11 min	0.00 lt	0.00 lt	-
A 795 FC ERF (ERF)	2100.89 km	88 h 40 min	32 h 25 min	54 h 59 min	681.78 лт	692.17 лт	-
Total	**4744.55 km**	**88 h 40 min**	**32 h 25 min**	**191 h**	**3514.10 лт**	**11400.63 лт**	**102197.96 лт**

Card usage common report

This report contains general information about the use of fuel cards, refueling, established limits.

Card usage common report for period from 24.01.2021 00:00 till 31.01.2021 23:59

Card	Volume	Count	Duration	Limit	Balance
K 444 PN ERF					50 lt
777 BS 77 ERF	33.00 lt	1	51 sec		33 lt
555 NS 88 ERF (Isuzu)	43.77 lt	1	3 min 34 sec		79 lt
000 CL 66 ERF (Toyota Hil...	58.00 lt	1	1 min 25 sec		111 lt
110 MS 77 ERF (Isuzu)	51.28 lt	1	1 min 20 sec		105 lt
555 BK 08 ERF (Toyota Hil...	55.00 lt	1	1 min 17 sec		83 lt
000 EL 55 ERF	46.95 lt	1	1 min 18 sec		105 lt
Total	**288.00 lt**	**6**	**9 min 45 sec**		

Card usage report

This report shows details on gas stations for each card. It provides the information about the place, time and volume of refueling, the check number, the refueling limit set for the object, odometer readings.

Card usage report for period from 01.01.2021 00:00 till 31.01.2021 23:59

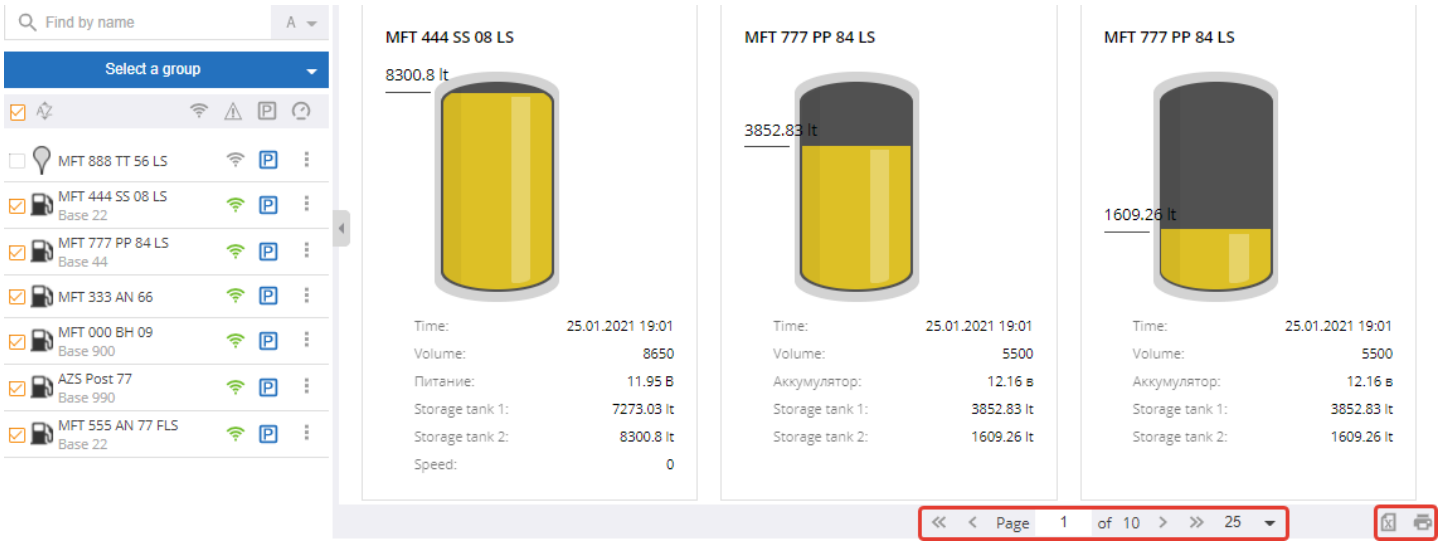
000 EL 55 ERF

Time	Gas station	Requested	Volume	Check	Limit	Odometer	Address
21.01.2021 17:26	AZS Post 77	1 lt	58.45 lt	12496	0 lt	0	City
25.01.2021 16:38	AZS Post 77	1 lt	46.95 lt	12686	0 lt	0	City
Total	**2**		**105.40 lt**			**Show all on a map**	

Fuel tanks

This section displays data grouped by gas station fuel tanks. A graphic image of the fuel tank illustrates the fuel level in it. The time stamp and the values of all trends related to the fuel tank accompany each tank image.

Select gas stations whose information is to be displayed on the screen by checking the boxes. The information on the screen can be immediately exported to an MS Excel file or printed.



Service

This section is intended for accounting and planning of maintenance work on user's objects. It allows adding scheduled tasks (insurance renewal, maintenance, wheel and oil replacement, etc.), setting their frequency and monitoring their implementation. This section also allows creating reports on the work completed and calculating the cost of maintenance of objects. The system allows creating reminders about scheduled work in the way similar to notifications about the object events. For more information, see the Notifications section in the control panel.

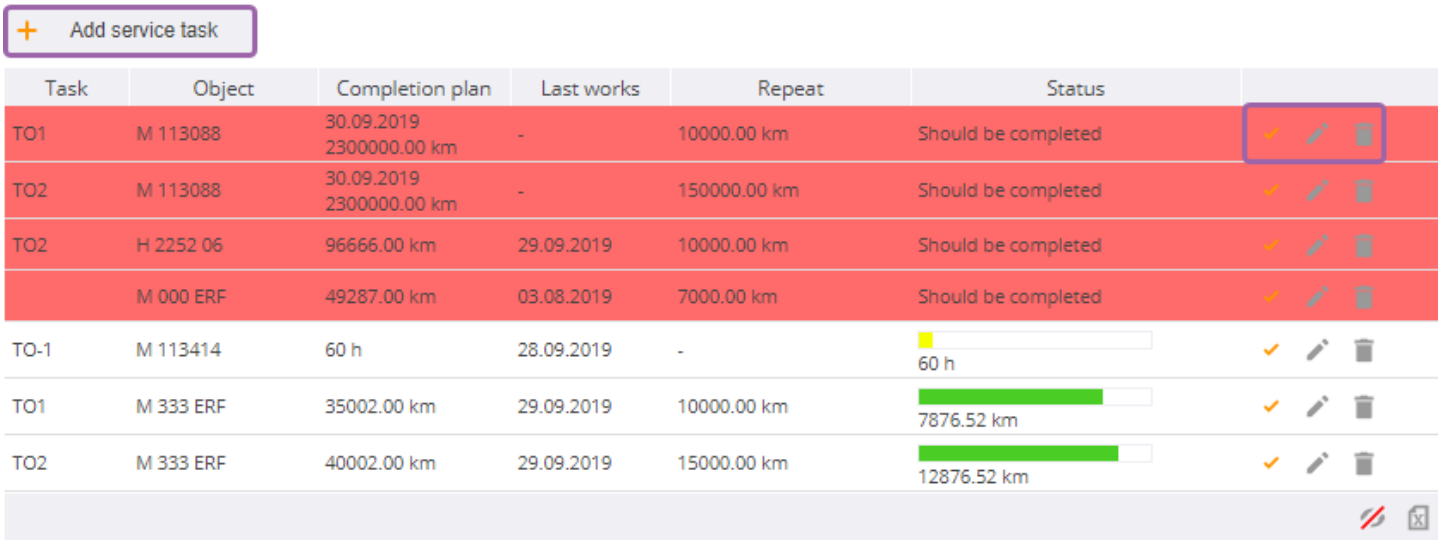
The Service section menu is on the left of the screen. The menu is collapsed by default, but it can be expanded.

The menu contains the following subsections:

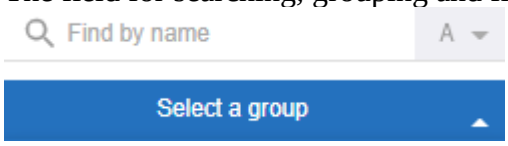
- Service tasks
- Completed work
- Reports

Service tasks

This subsection displays information about scheduled maintenance activities (tasks). The name of the task, the object for which it is to be performed, implementation plan, previous implementation, set frequency of the task and its status are displayed here.



The field for searching, grouping and filtering objects is on the left.

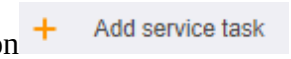


There are three icons in the task list opposite each of them:


– mark the task completed. Specify the name of the work performed, its cost, duration and other information in the expanding window;


– edit task;

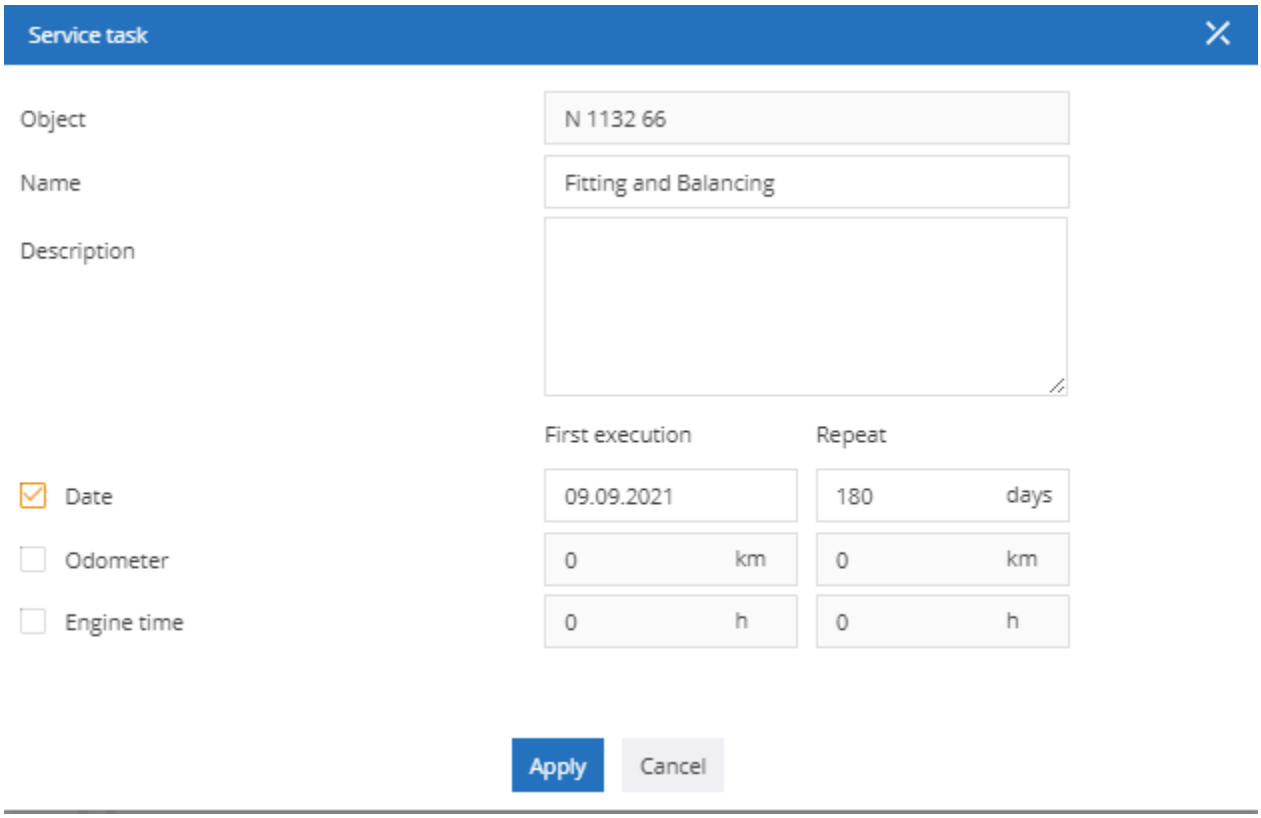

- delete task.

Select an object and click on the icon 

to add a new task.

Click on this button to open a window asking to specify the task essential features (name, description, deadlines, etc.).

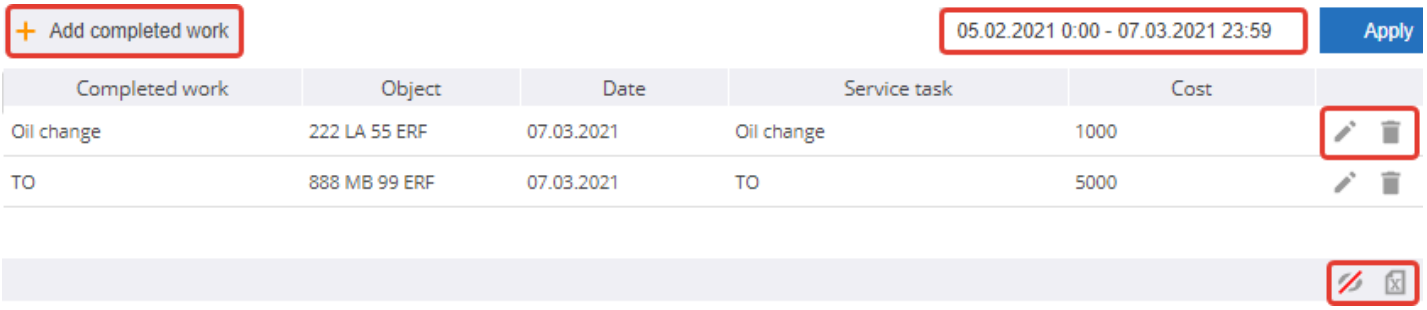
Check the boxes to make the corresponding input fields active (date, odometer, driving hours). They help determine the moment of the initial completion of the task, and, if any, of its repetition. E.g. additionally to the direct indication of a certain date, specify that the first (and/or subsequent) task is to be performed when the odometer readings reach a given value or a given number of hours.



After adding, the task will be displayed on the screen in the general list.

Completed work

Unlike the previous subsection, this one records information about the work already completed. The following information about the work completed is entered here, such as the type of work, the object in respect of which it has been performed, the date of the work, the service task, the cost of the work. Select the time range for which to display information about the work completed in the top right corner.



There are icons on the right for editing information about completed works or deleting it. Also, like in the Service Tasks subsection, there is a search field and grouping of selected objects, a panel for displaying objects by the selected filter.

By clicking on the corresponding icons in the bottom right corner, you can hide empty graphs or export the information on the screen to an MS Excel file.

Reports

This subsection reports information about the work completed. The interface of the section is similar to that of the Reports section. Please read the description of the reports below.

Common report

This report contains the data of the object in respect to which there are completed service tasks, information about the date of completion of the work, its duration and cost.

Common report for period from 08.02.2021 00:00 till 10.03.2021 23:59

Object	Date	Completed work	Duration	Cost
222 LA 55 ERF	07.03.2021 00:21	Oil change	1 h	1000
888 MB 99 E...	07.03.2021 00:22	TO	3 h	5000
	Total		**4 h**	**6000**

Completed work

This report shows the work performed separately for each object. Even if there is no information about the work performed in respect to an object, the object will be shown in this report regardless. You can hide empty lines using the icon  in the bottom right corner.

Completed works for period from 08.02.2021 00:00 till 10.03.2021 23:59

555 NO 88 ERF

Object	Date	Completed work	Duration	Cost
	Total			**0**

222 LA 55 ERF

Object	Date	Completed work	Duration	Cost
222 LA 55 ERF	07.03.2021 00:21	Oil change	1 h	1000
	Total		**1 h**	**1000**

888 MB 99 ERF

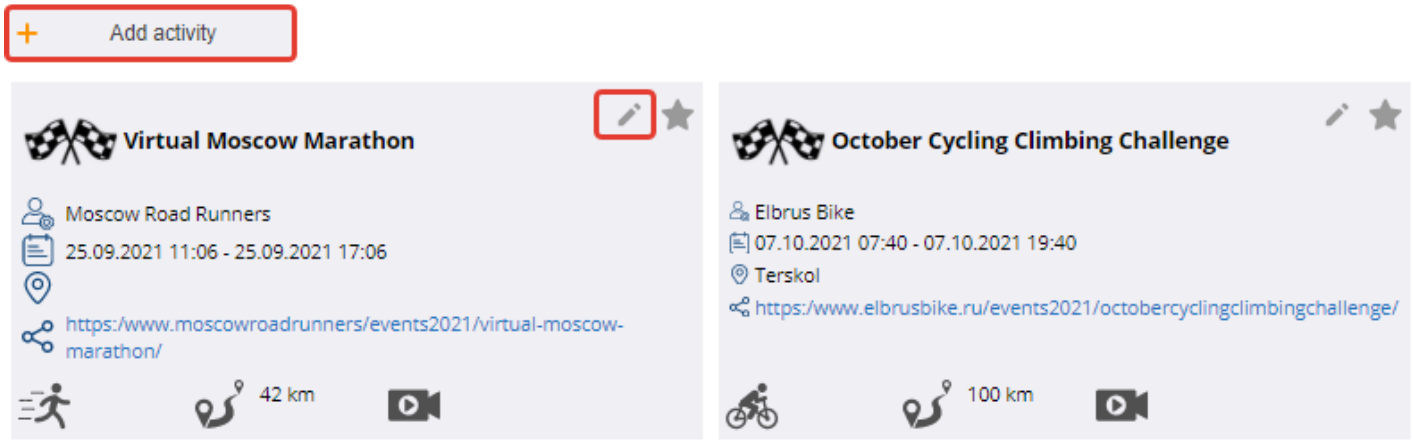
Object	Date	Completed work	Duration	Cost
888 MB 99 ERF	07.03.2021 00:22	TO	3 h	5000
	Total		**3 h**	**5000**

Activities

This menu item helps tracking the movement of objects within the framework of certain activities (races, trials, marathons, games, etc.).

This section assumes that activity organizers post announcements of upcoming races or games, and potential participants can add their devices to the list of tracked ones. During the time declared by the organizer as the time of the activity, the objects will be available for tracking by a short link. And the tracks of the participants will be available via the same link for analysis and summing up later.

The Figure below demonstrates the section.



All upcoming and past activities added to the system are displayed here, including their essentials such as the name, organizer, dates and venue, link to the website, type (running, cycling, orienteering, etc.) and distance.

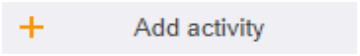
The icon is a short link to the activity broadcast. Such broadcast is available both to users of the service in this section and to other persons if the activity organizers post it in their social networks, on event websites, etc.

Select the desired time range in the top right corner in the window 

. This, in particular, allows viewing information about activities that have already finished.

Add activity

The relevant activity organizer can make it available for viewing and participation. To do this, click on the button and add it to the system.



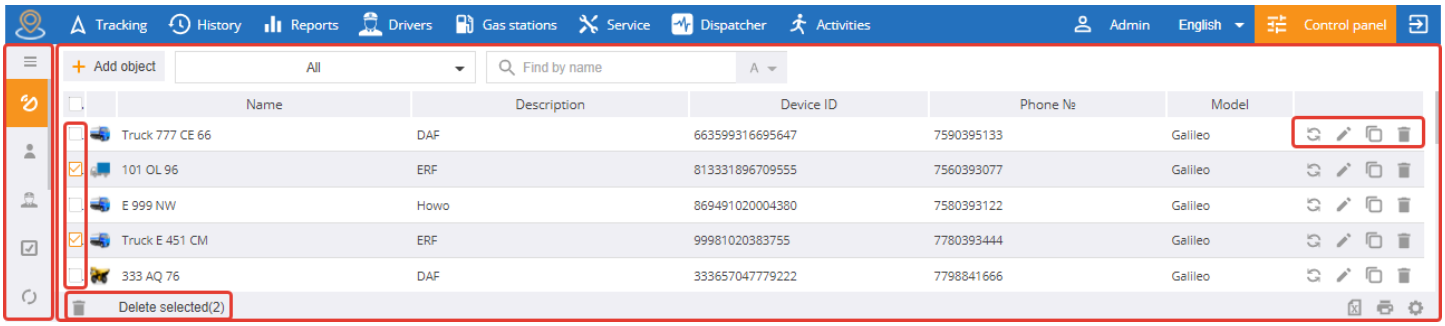
Enter the activity name, date, venue, distance and type (running, cycling, orienteering, etc.) in the window that opens. The information provided will announce the activity and allow potential participants to learn about upcoming activities and join them.

Join

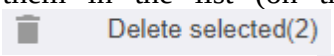
A participant who wants to join the activity and add their device to the broadcast can click to add it to the list of tracked objects. Click on the icon to open the dialog for selecting objects to be added to tracking. In a similar way remove previously connected user objects from the list of tracked ones during the activity.

CONTROL PANEL

The GeoLoc satellite tracking system is controlled via the control panel, which is accessed from the panel on the top. The control panel is available to users ranked not lower than User.



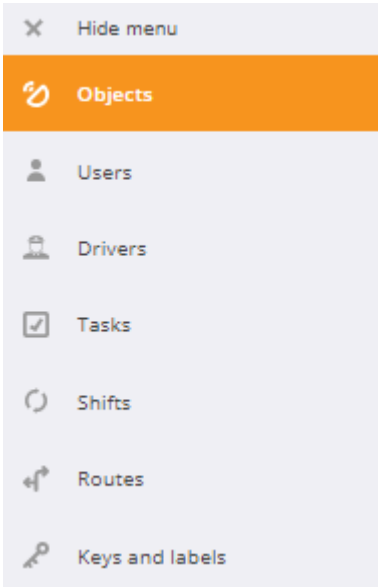
The control panel consists of two areas: the navigation menu on the left for switching between editors of different system elements (objects, users, notifications, etc.), and the workspace taking up the rest of the space. It displays a list of existing system elements and buttons for editing them and adding new ones. For all lists, editing and deleting elements is also available (both as a group and separately). To delete items as a group, tick them in the list (on the left in the element line), and then click at the very bottom of the list.



There is also the  icon at the bottom on some tabs (Objects, Users and Geozones) which opens additional functions of the section, such as import, diagnostics, etc.

Structure

By default, the control panel opens on the Objects section tab. Go to any of the following sections using the navigation menu:

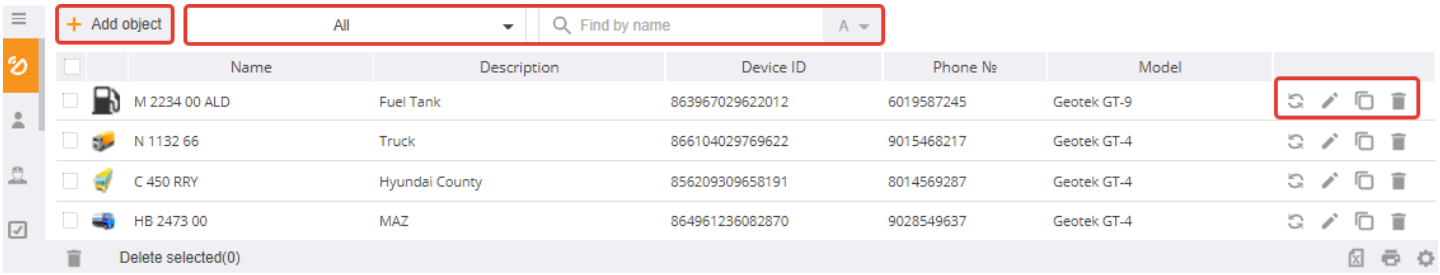


- Objects;
- Users;
- Drivers;
- Tasks;
- Shifts;
- Routes;
- Keys and labels;
- Commands;
- Geozones;
- Notifications;
- Server.

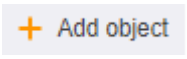
Let's take a closer look at each of them.

Objects

To create, view and manage objects, go to the Objects section. This will display a list of objects available to a specific user. For the end user, the visible list of objects is limited, containing either the objects that the user themself created (entered into the system) or that they have the right to observe.

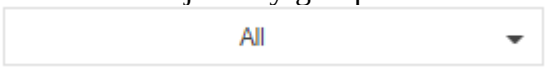


Adding new object

Click to add new objects 

There is a search box allowing searching the object (by name, IMEI/ID, phone number, device type) in the list of the objects in the workspace, which makes the search simple.

Filter objects by groups here. The object group editor is available from the object group selection menu.



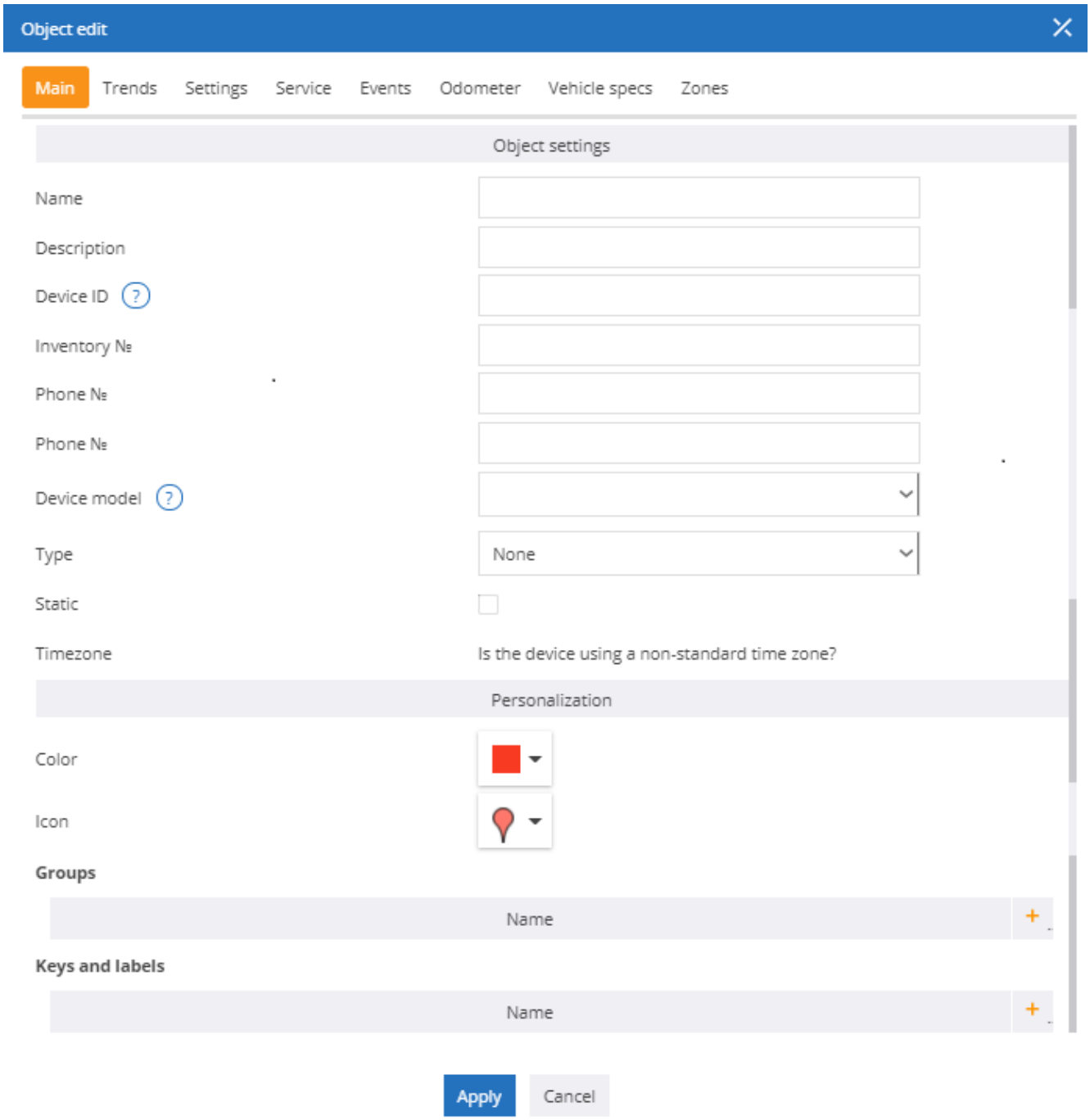
The following tools are available in the workspace next to each object in the list:

- Synchronize keys. Allows synchronizing keys with this object. This function is described in more detail in the Keys and Labels (Key Synchronization) section.
- Edit. The dialog for editing each object can also be summoned in other sections (Tracking, History, etc.) from the object context menu.
- Copy. Duplication is an alternative way to create new objects. This is helpful if you need to create an object with the same properties and settings. In the new object card, only two boxes are to be filled in, Name and ID.
- Remove. Remove each individual item from the objects list.

The object editing dialog contains a lot of settings that are grouped using tabs. The information about each tab and explanations about the purpose of the main parameters are below.

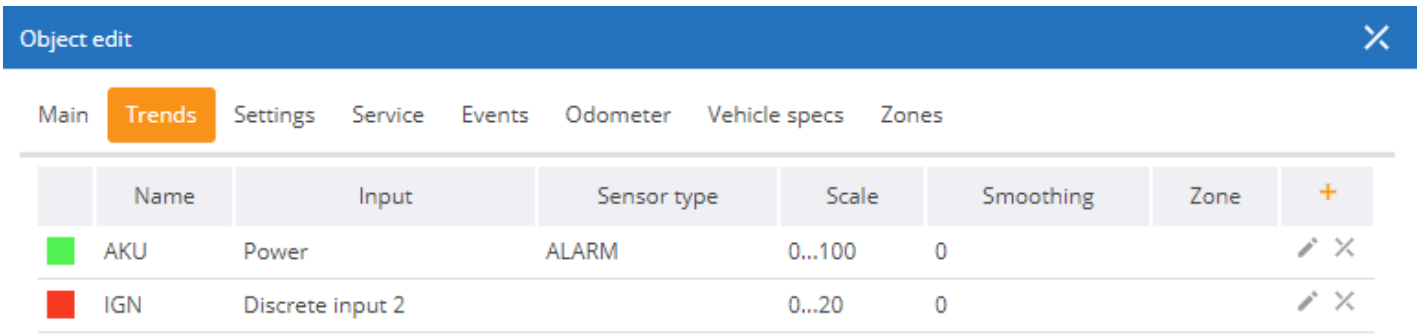
Main

The tab contains general information about the object, such as the object ID, name, comment (description), the numbers of the SIM cards installed, the equipment model, the time zone configured in the device. It also shows the data for the object visualization, such as its icon, track color, group affiliation, etc.



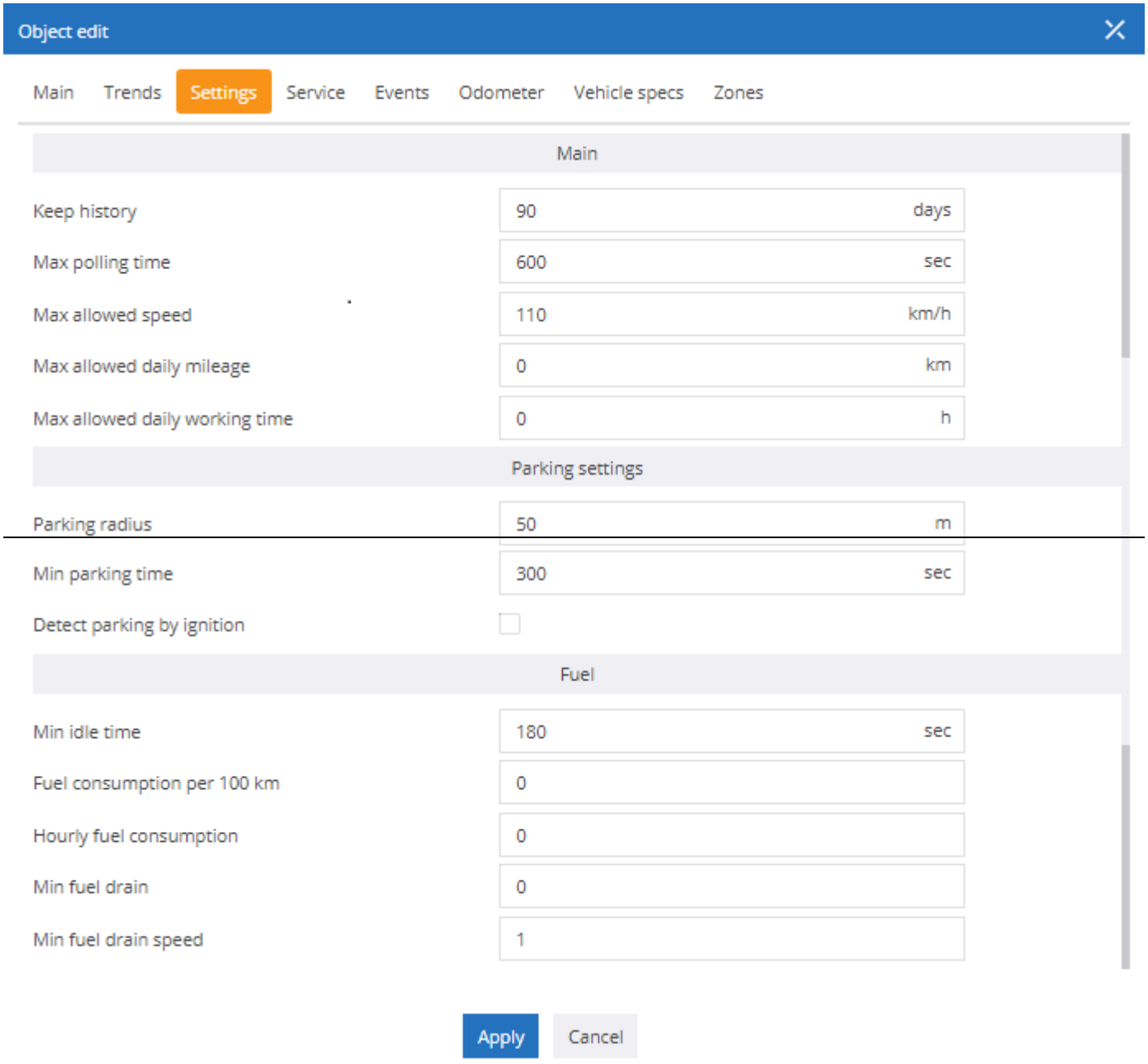
Trends

This tab allows configuring the object trends and contains a list of all previously added trends with their name, connection type and other essential information. Trend configuration dialog allows retrieving full information about the trend and editing it. Configuring trends is described in detail in section Working with objects.



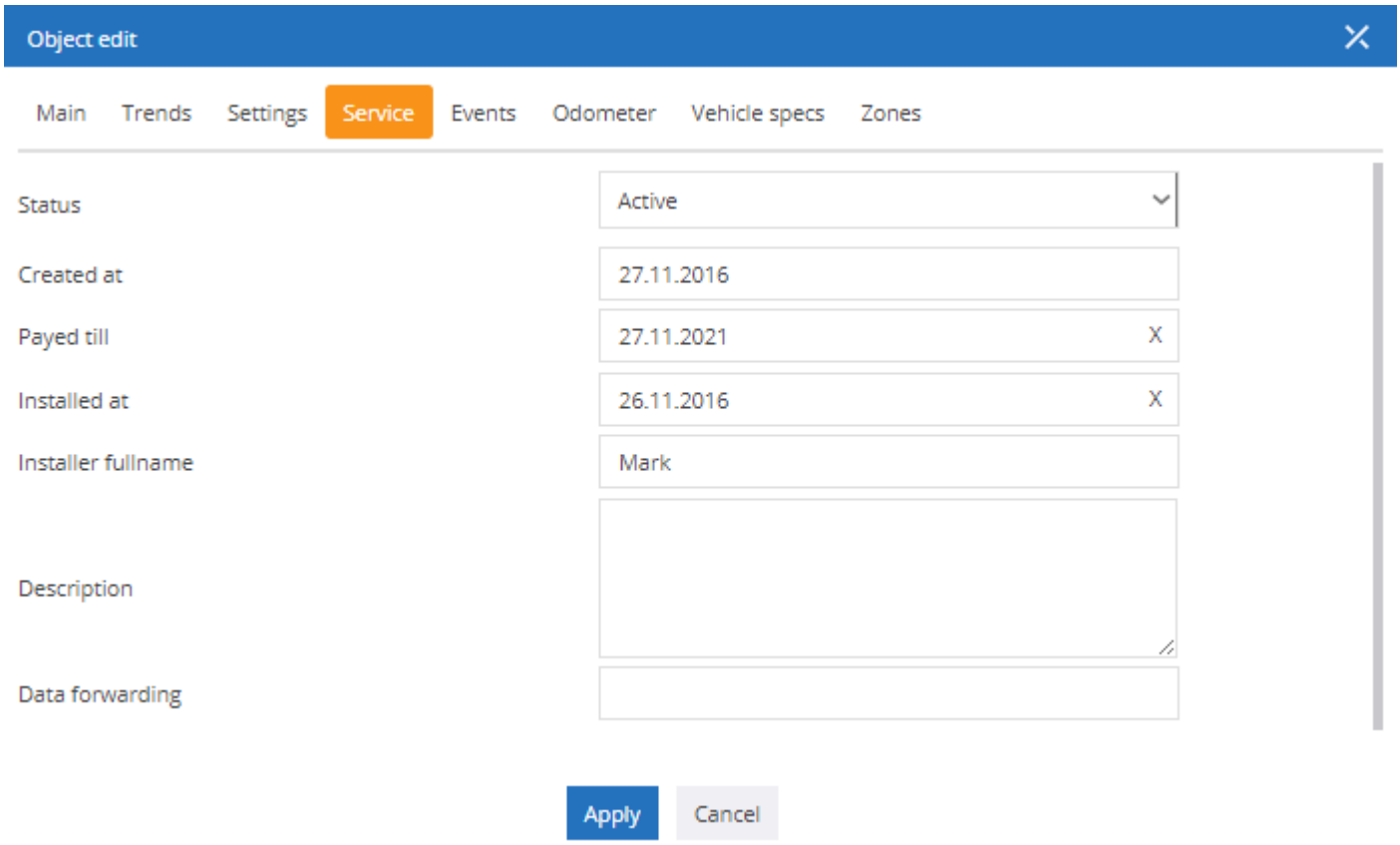
Parameters

This tab allows setting various object parameters, such as data storage time, maximum permitted speed, minimum parking time, etc. For some specific parameters, comments are immediately given about their purpose.



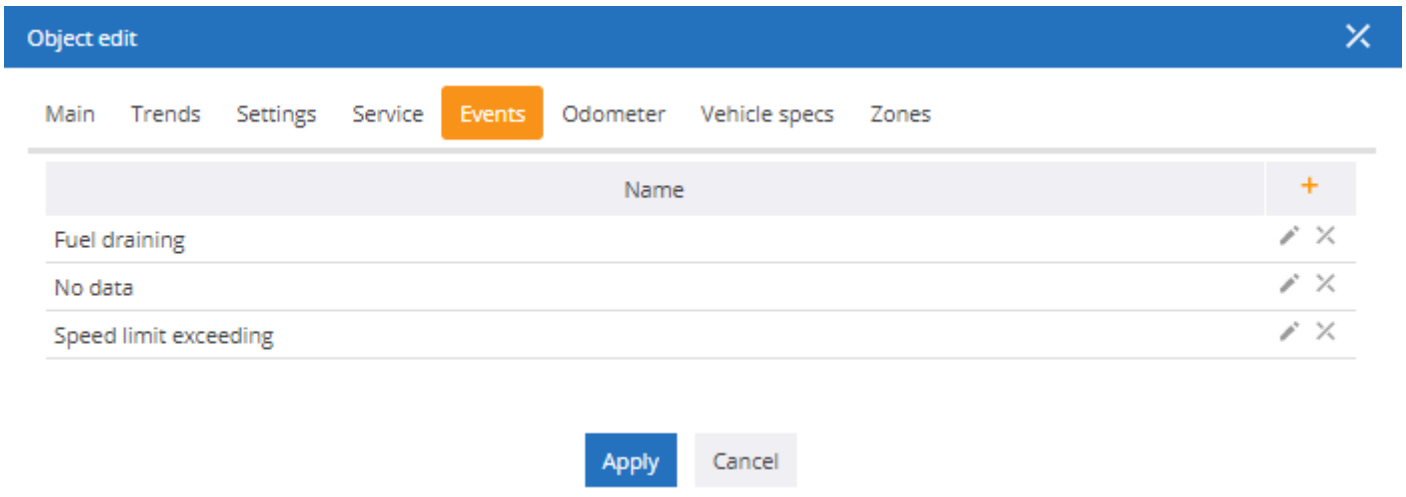
Service

It contains information for the maintenance of the facility's equipment, such as the installation date, service engineer's name, comments on the operation of the equipment. Additionally, the object status (active, under repair, locked, etc.) and parameters for sending data to third-party systems can be configured (see the GeoLocForwarder Manual). This tab is not available for users ranked lower than the Integrator.



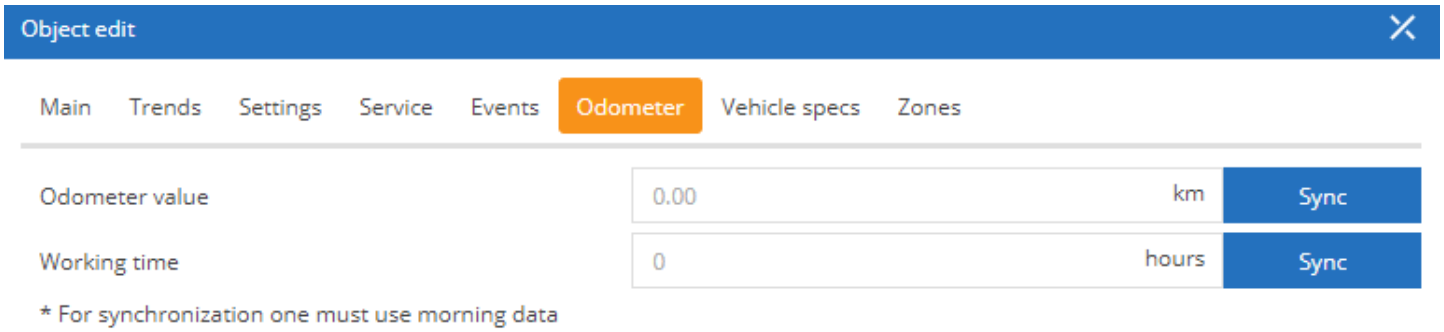
Events

The tab allows managing user notification rules that apply to the object. Note that no events other than critical ones will be generated for the object until at least one notification rule is associated with it.



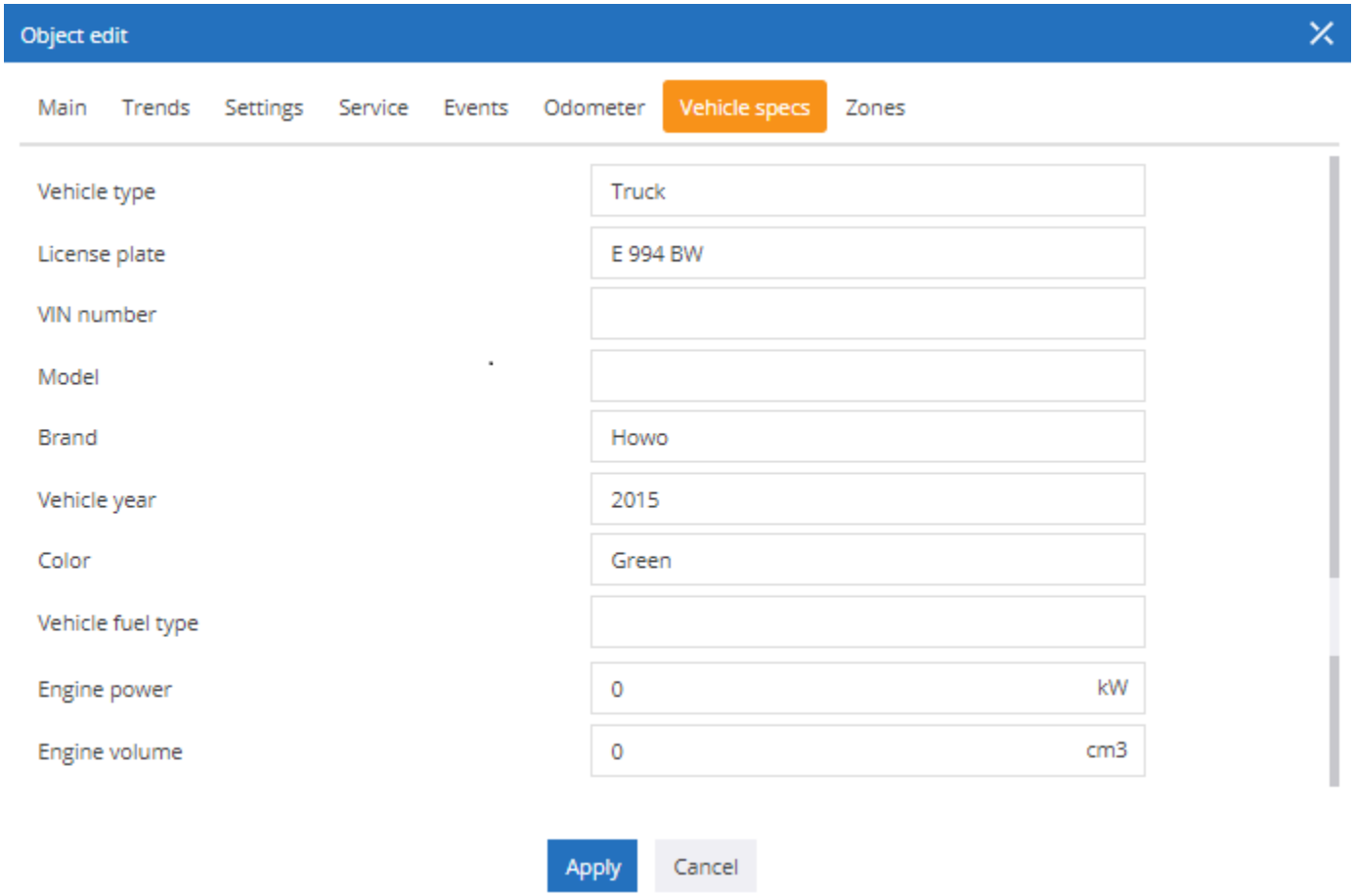
Odometer

This tab allows setting the current values of the odometer and the hour meter. The data is set as of the beginning of the current day and is used as initial values for further calculations. The data can be adjusted later by setting new values.



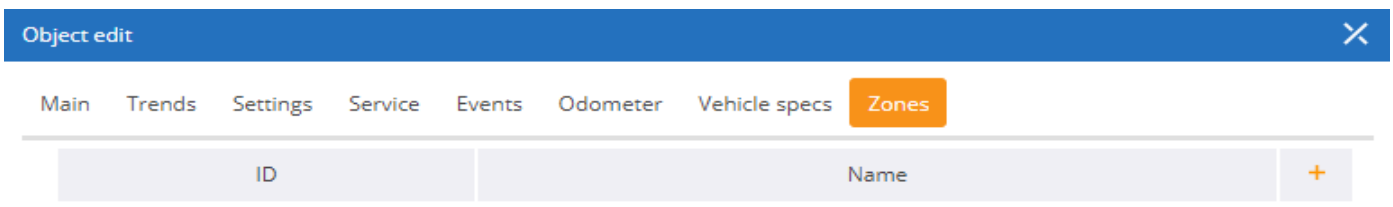
Vehicle Specs

This tab contains technical reference data about the user's vehicle, such as its make, model, fuel type, engine volume and power, etc.



Zones

This tab allows setting the zones that the object consists of (if any). Rooms in the building, fuel tanks on the same object can be set as zones. Information about the object zones allows grouping trends displayed in the relevant sections and reports. Trends and zones can be associated in the trend editor.



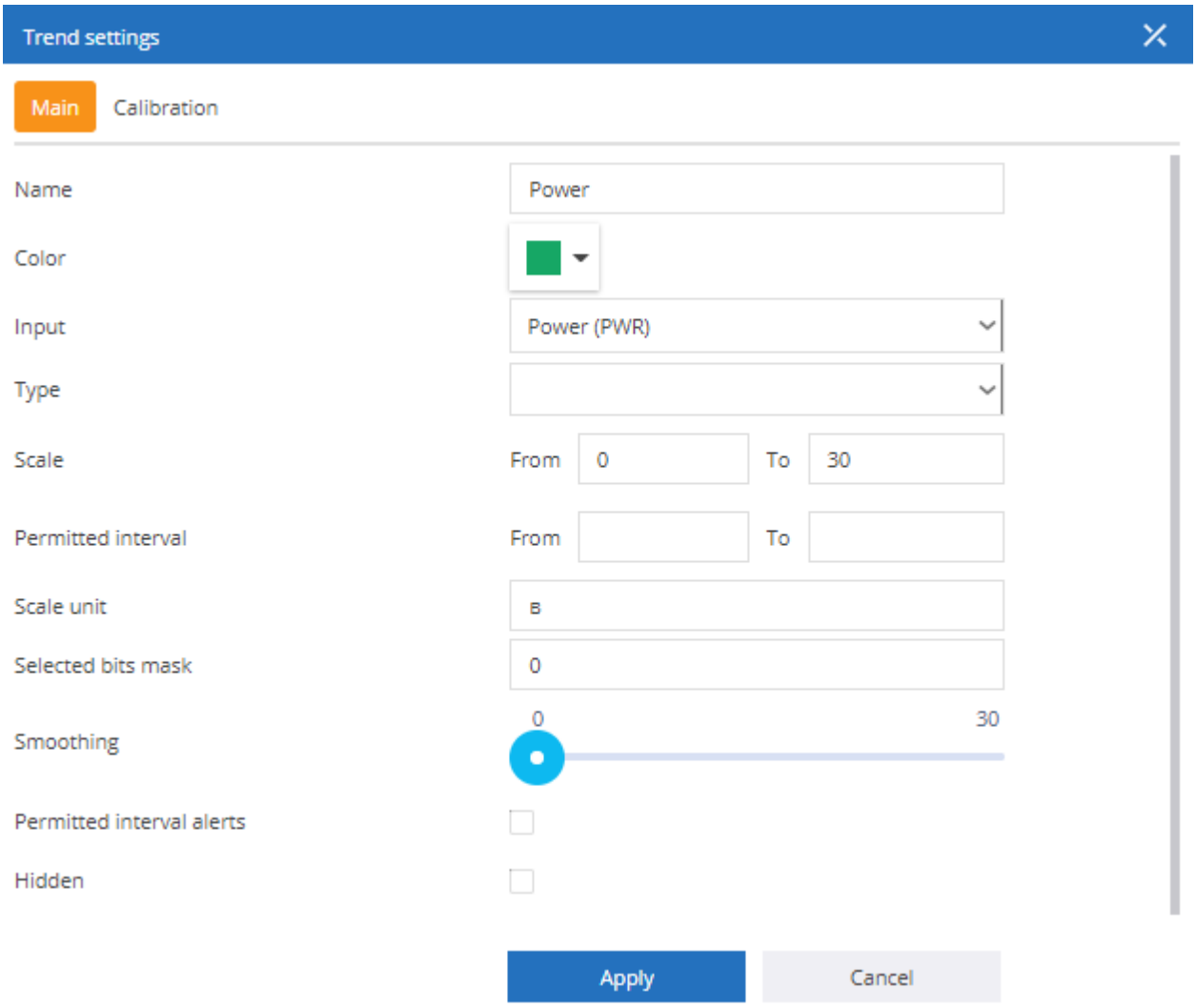
Working with objects

Configuring trends

Summon the trend configuration dialog from the object trend settings dialog to add a new trend or edit an existing one.

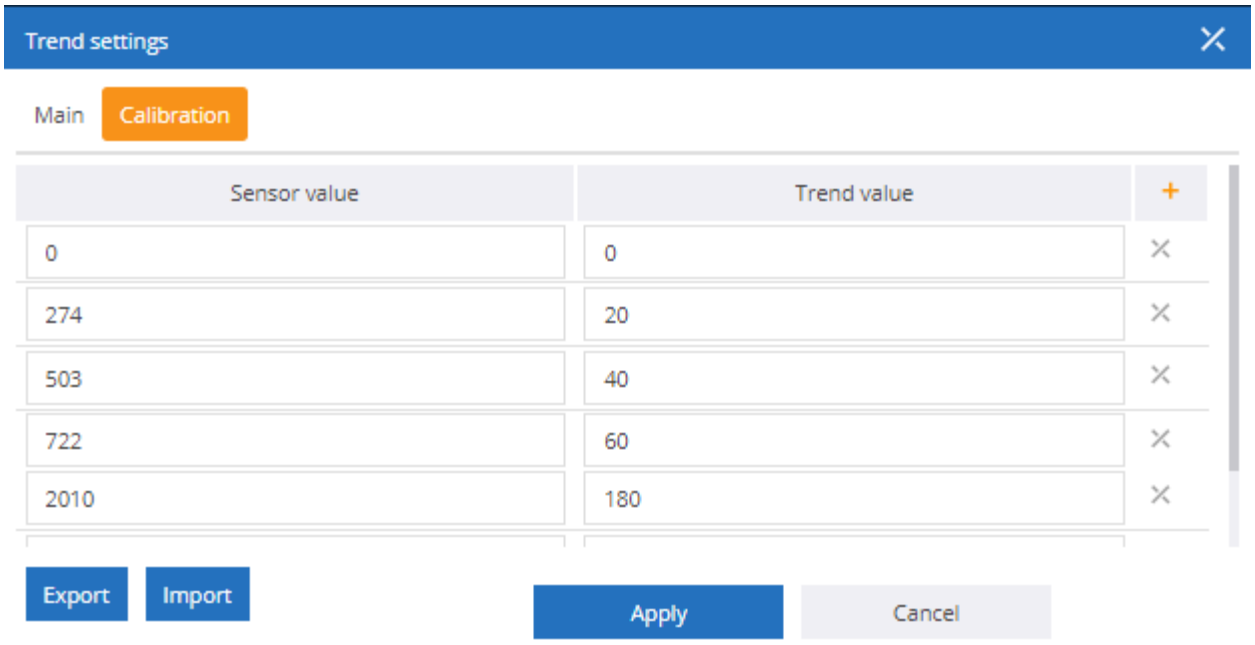
The **Main** tab contains the main trend parameters including its name, color, units of measurement. Let's look at the other trend parameters below:

- The *Input* field is used to select the data source for the trend (digital input/analog input/power, etc.). Some of the inputs have numbers, for example, a discrete input. Use the hardware documentation to select the input.
- Trend measurement *scale* or minimum and maximum permitted trend values. Note that values outside the limits of the scale will be discarded.
- *Smoothing*. It allows setting the degree of averaging trend points.
- *Permitted interval alerts*. Set this parameter to enable notifications when the trend value exceeds the permitted limits.
- *Hidden*. Set this option to hide this data in the Tracking and History menus.



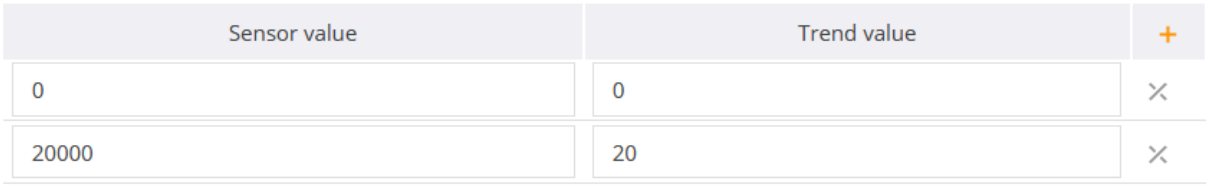
The **Calibration** tab allows configuring the conversion of raw sensor data into user's values. This function is required to convert e.g. fuel level sensor data from voltage to liters or to convert units of measurement (e.g.

from degrees Celsius to degrees Fahrenheit). The completed calibration table can be immediately exported to or imported from an MS Excel file.

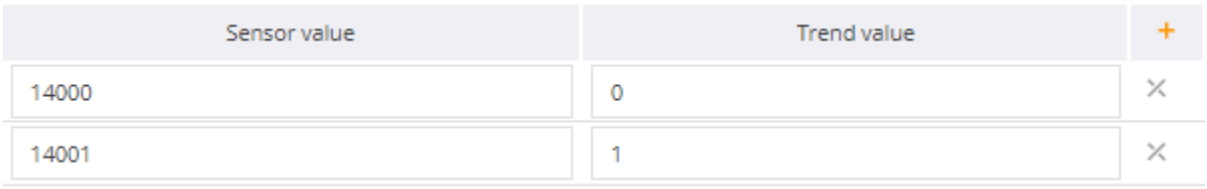


In order to understand how to work with the calibration table, let's have a look at some examples:

1. The power supply data of the equipment is retrieved in mV; the maximum permitted value is 20V. The calibration table translating the data into V will read the following:



2. The power supply data of the equipment is retrieved in mV, the maximum permitted value is 20,000 mV. When the ignition is started, the voltage rises above 14V. The calibration table allowing to retrieve information about the ignition status from the voltage, will read the following:



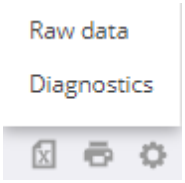
3. The fuel level unit sends data in the range from 0 (0L) to 3460 (150L). All other values are incorrect. The trend scale is set to be 0 ... 150 L. The calibration table, which will convert the fuel level unit data to L and discard incorrect values, may read the following:

Sensor value	Trend value	+
0	0	×
1027	50	×
2067	100	×
3460	150	×
3461	-1	×

* -1 is a number that is obviously outside the trend range.

Data

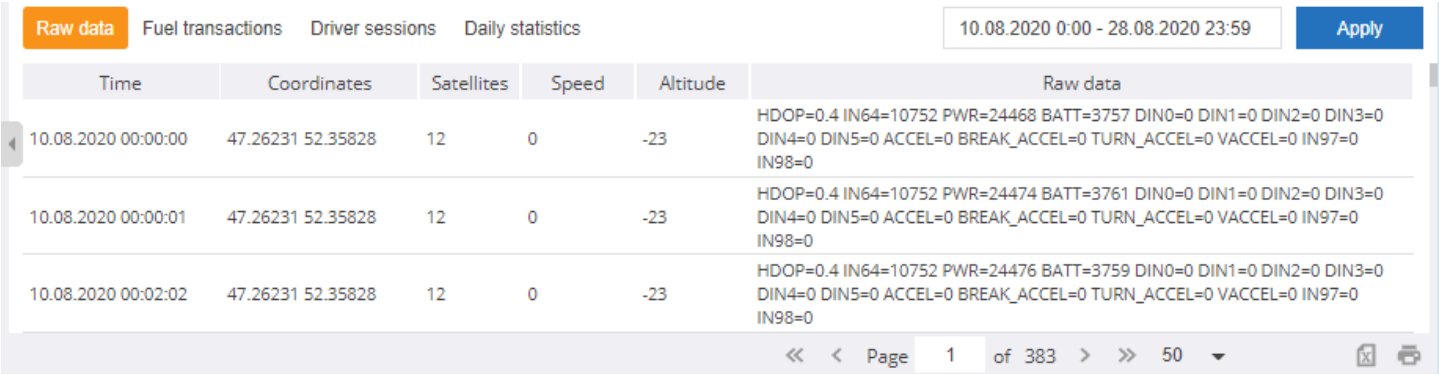
This section allows analyzing the data coming from the object equipment and the basic data that the system builds on their basis. It provides both raw data retrieved from the devices, daily statistics and calculations of driving sessions. The section can be accessed from the object control panel by clicking on  in the bottom right corner.



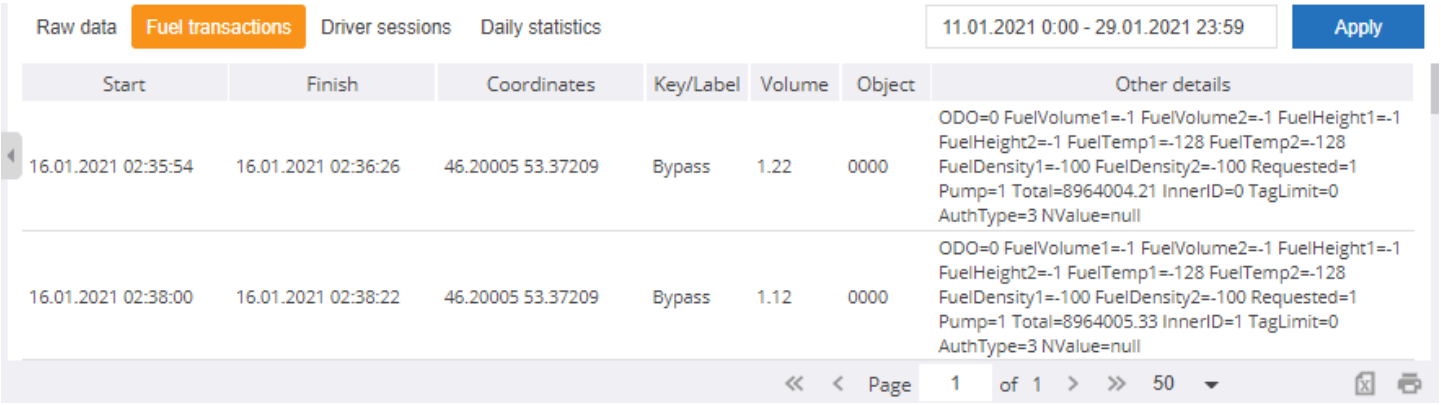
A menu with two sections opens:
– data;
– diagnostics.

All data in the Data section is grouped into 4 tabs that display relevant information about the selected object for the selected time period.

The **Data** tab contains navigation data and sensor data retrieved from devices without filtering, smoothing, etc.



The **Fuel Transactions** tab shows information about the transactions of Gas stations equipped with the appropriate equipment.

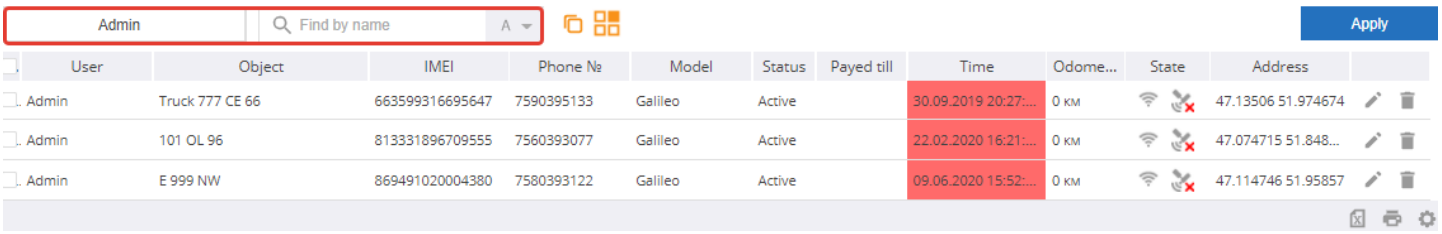


The **Driver Sessions** tab displays statistics calculated by the system about drivers' trips on the object.

The **Daily statistics** tab shows statistics on the selected object grouped by day: duration of movement and parking, duration of operation and idle state, fuel consumption, etc.

Diagnostics.

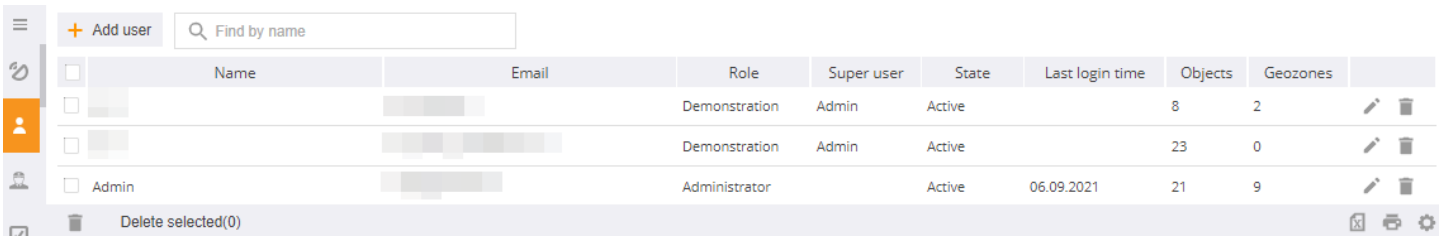
This section contains information about the state of the equipment on user objects, their status, the time when the latest data was received, the state of the main sensors, etc. The section is to help the administrator and the object owner diagnose equipment and monitor equipment operability en masse. This section can be accessed from the object control panel or from the user control panel.



The window for filtering data by the object name and owner and additional tools that allow managing the visibility of objects is above the list of objects. Edit and delete objects if necessary directly from the general list using the corresponding icons .

Users

The **Users** section manages users in the system. Integrators and administrators can view the available list of users here, change their parameters, passwords and status.

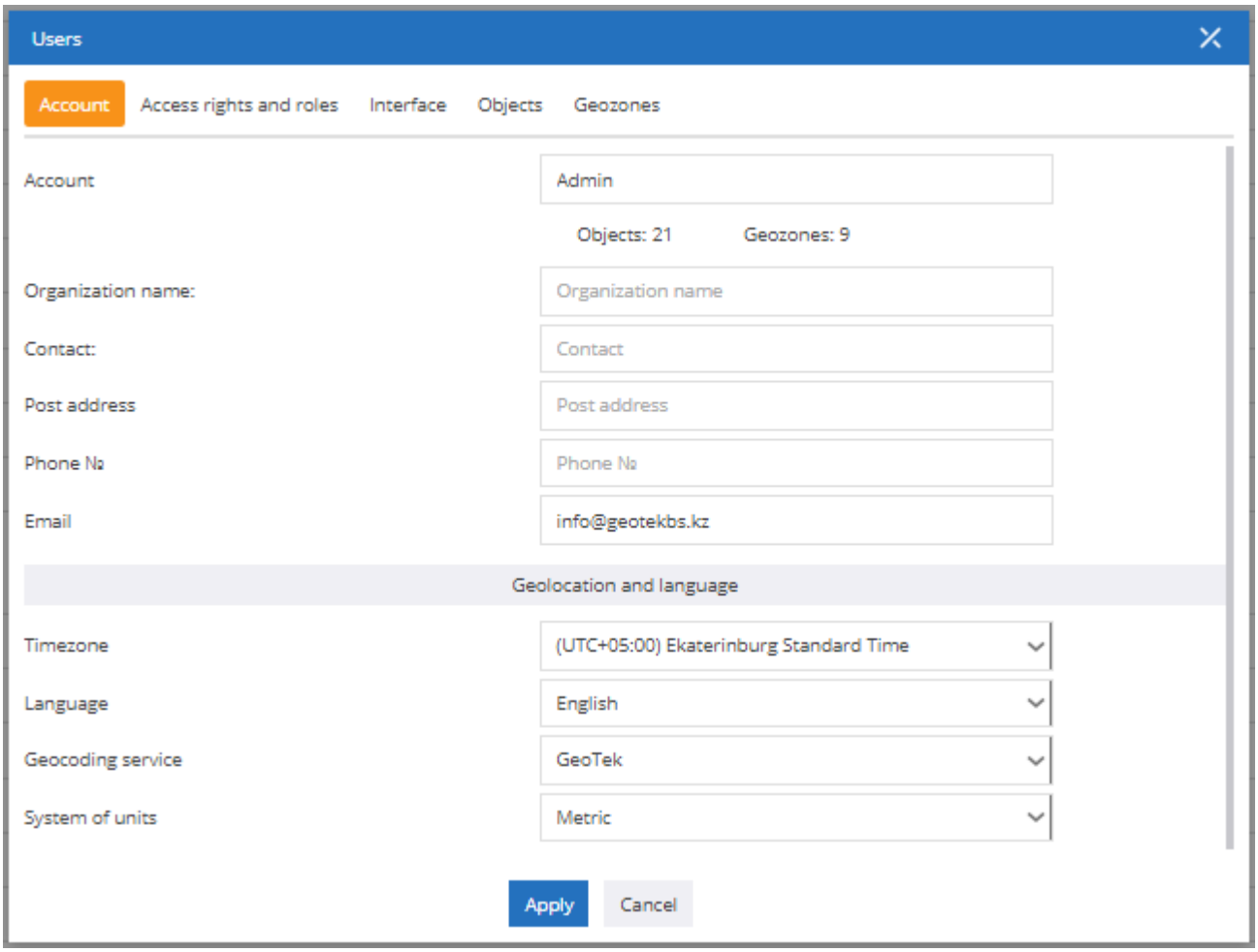


Adding a new user to the system

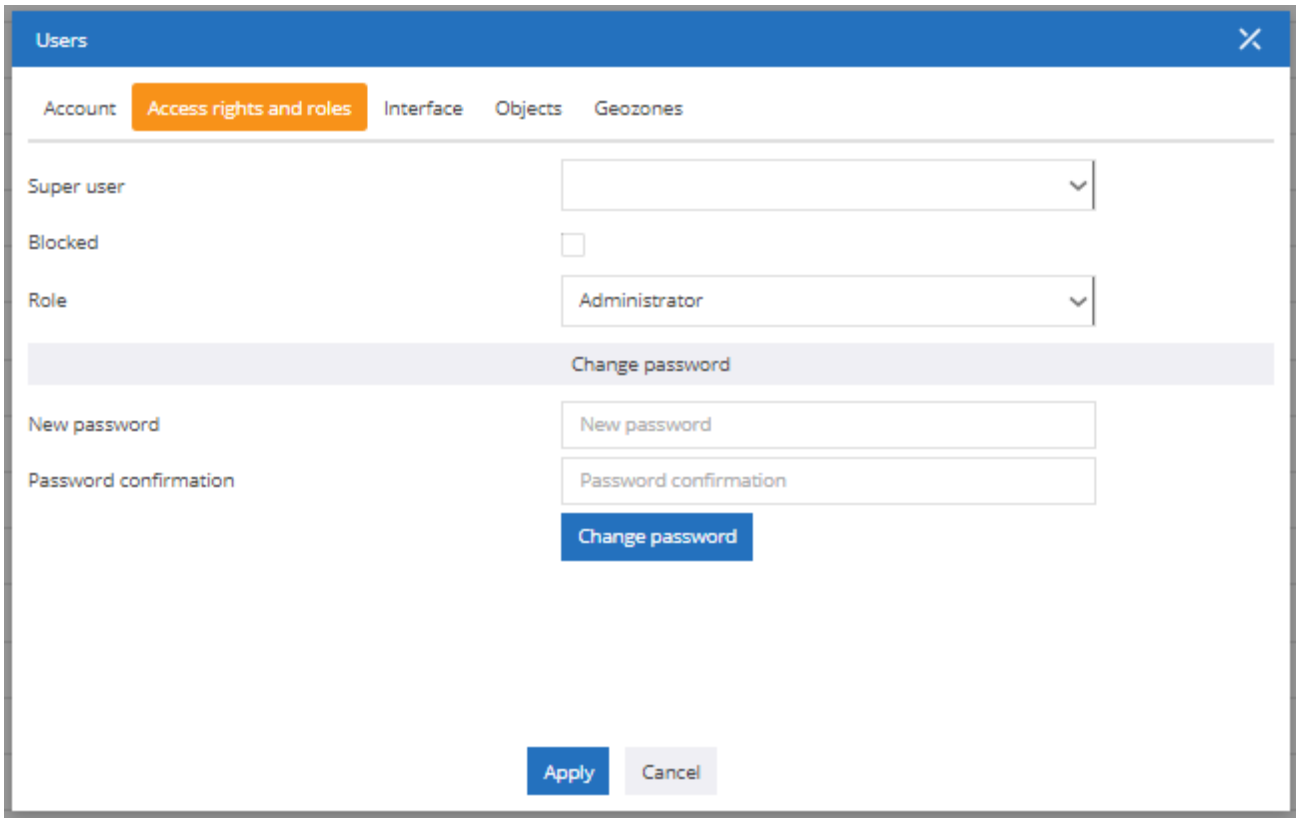
Add a new user and edit existing ones via the user editing dialog. Click on the corresponding icon to open it.

The dialog contains tabs that allow changing settings, the system interface for this user, user rights, tabs which control the ownership and visibility of user's objects and geozones.

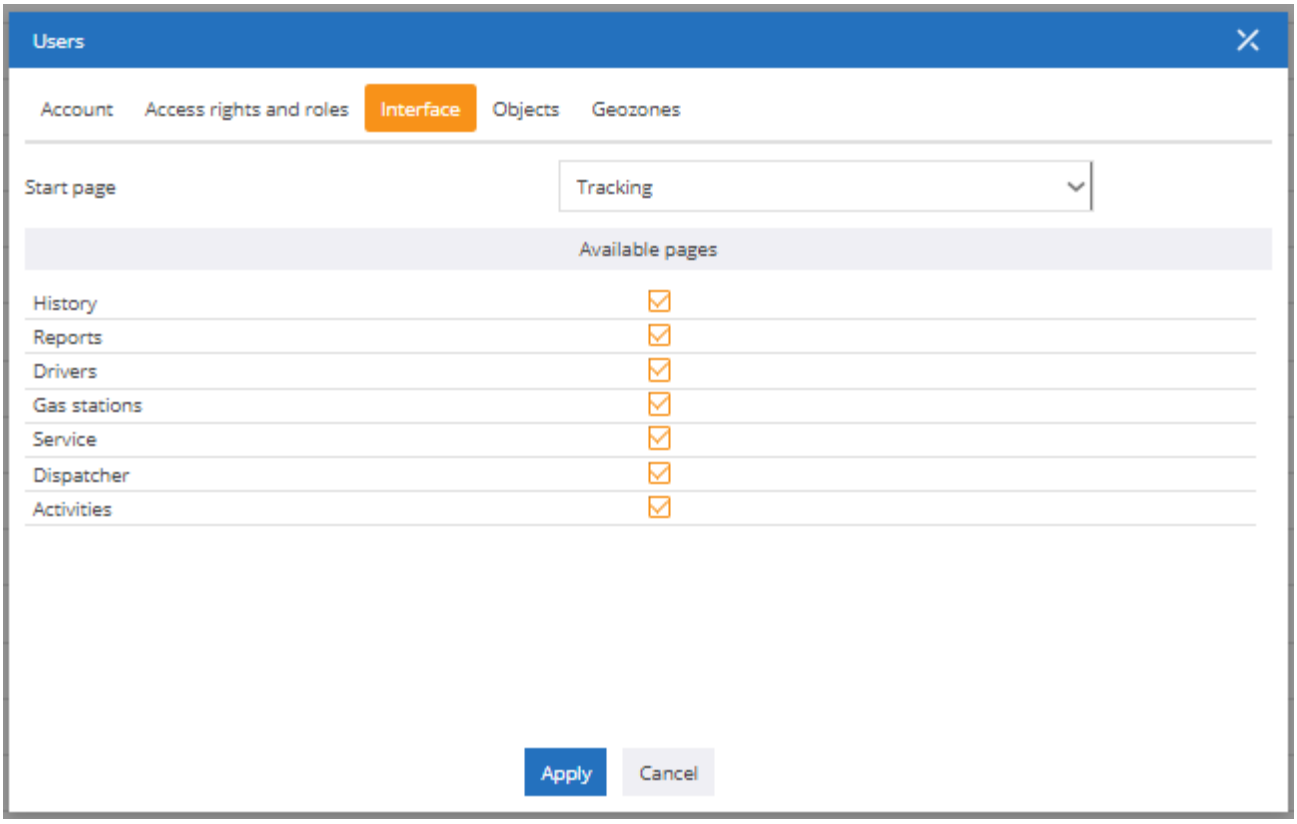
The **User** tab contains basic details about the user: account name, e-mail address, contact details, time zone, language, etc.



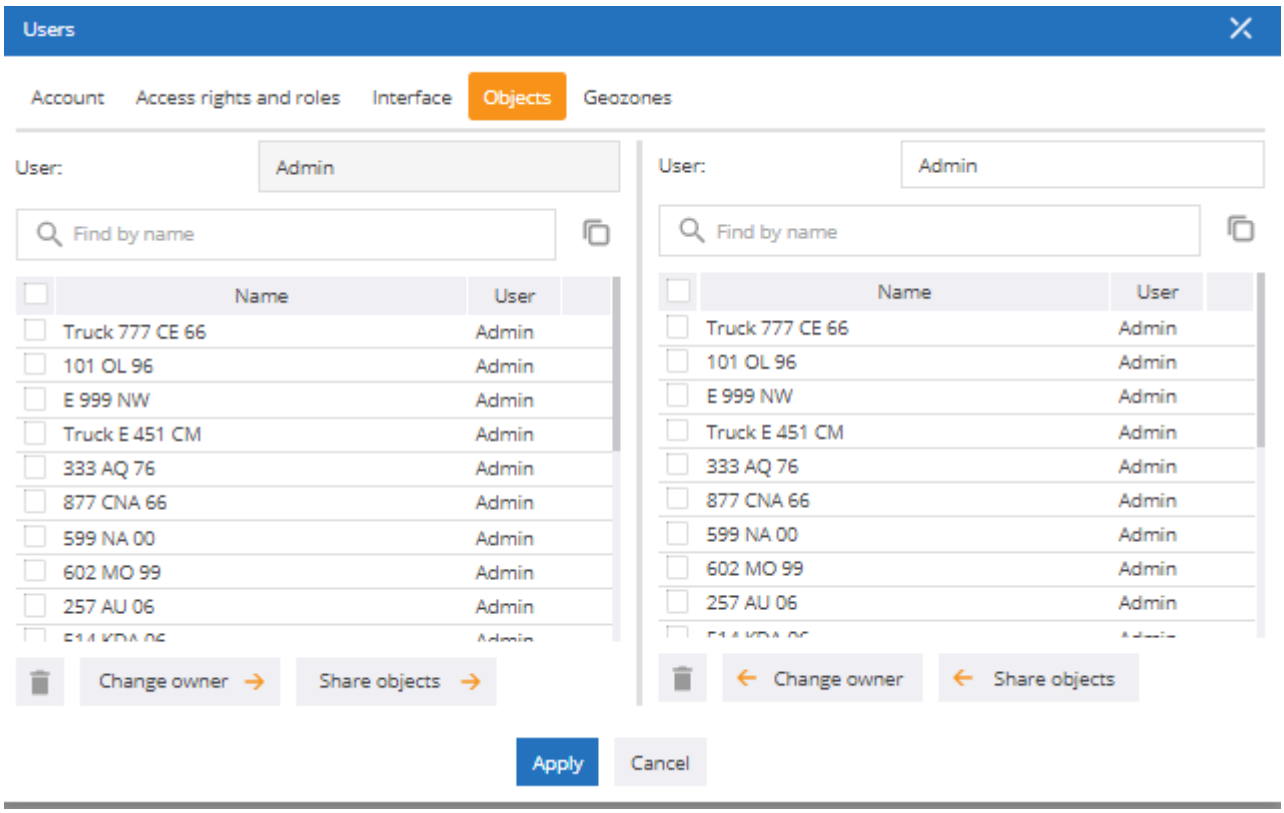
Use the **Rights and roles** tab to configure the user role, change the superuser, lock the account and change the password.

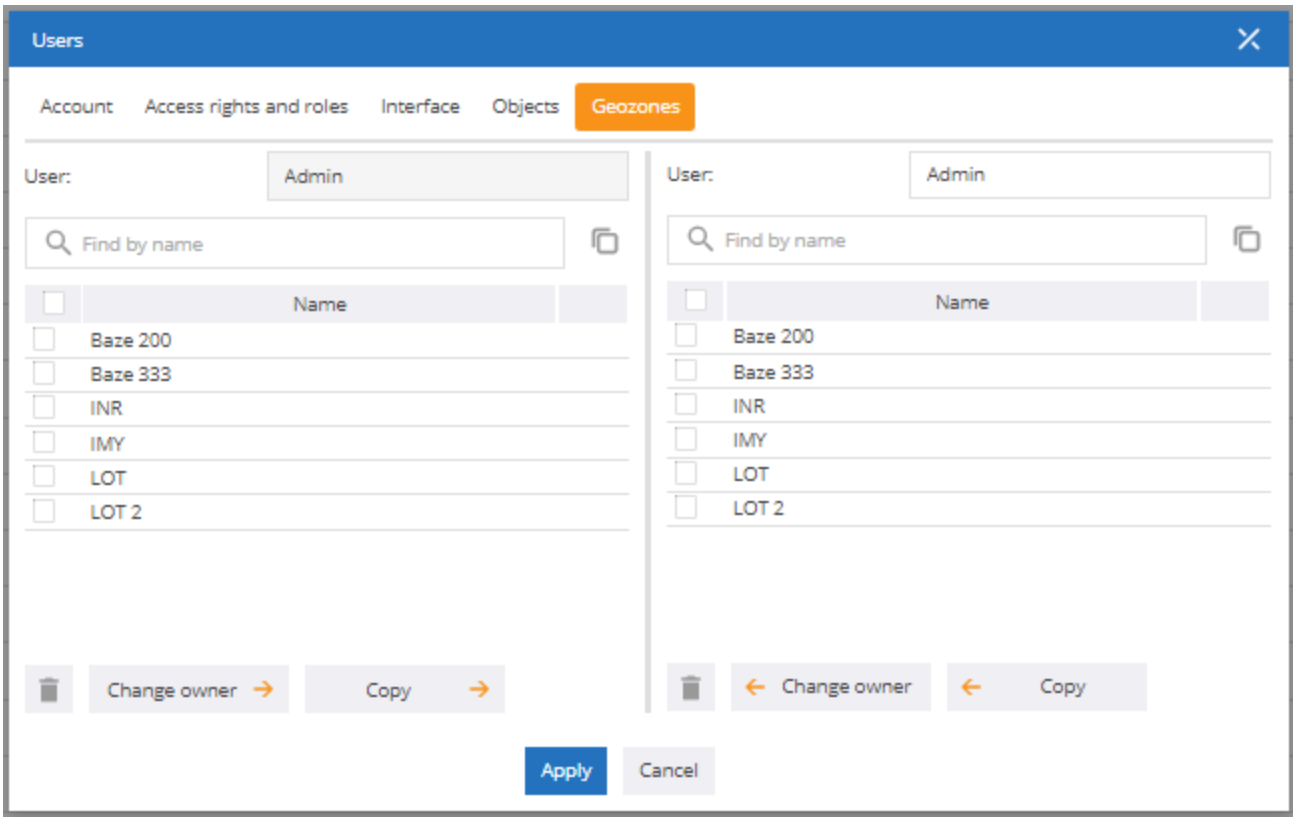


Select the initial page on which the system will open for a specific user on the **Interface** tab. It also disables tabs that the user is not interested in (history, gas stations, service).



The **Objects** and **Geozones** tabs have a similar interface and are to transfer/display system elements (objects, geozones) between users. Visually, the tabs are separated into two halves; the left part of the dialog displays the objects available to the user being edited, and the right one allows selecting another user and see their objects. Having selected objects, the user can change their owner in both directions or create a copy of the object/geozone for another user.



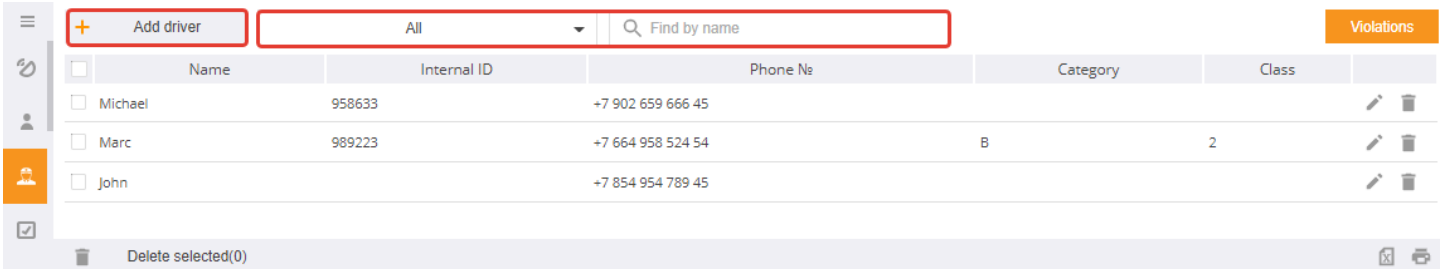


The system elements transferred to the user for viewing cannot be deleted or changed by them. Their name, comment and icon to display within this account can only be changed.

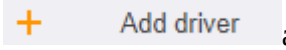
Drivers

This section is for adding and editing user's drivers. Provided that this section is filled in, the system allows you to keep records of each driver's violations and statistics. If the equipment supports the use of keys, each driver can be associated with keys that identify them.

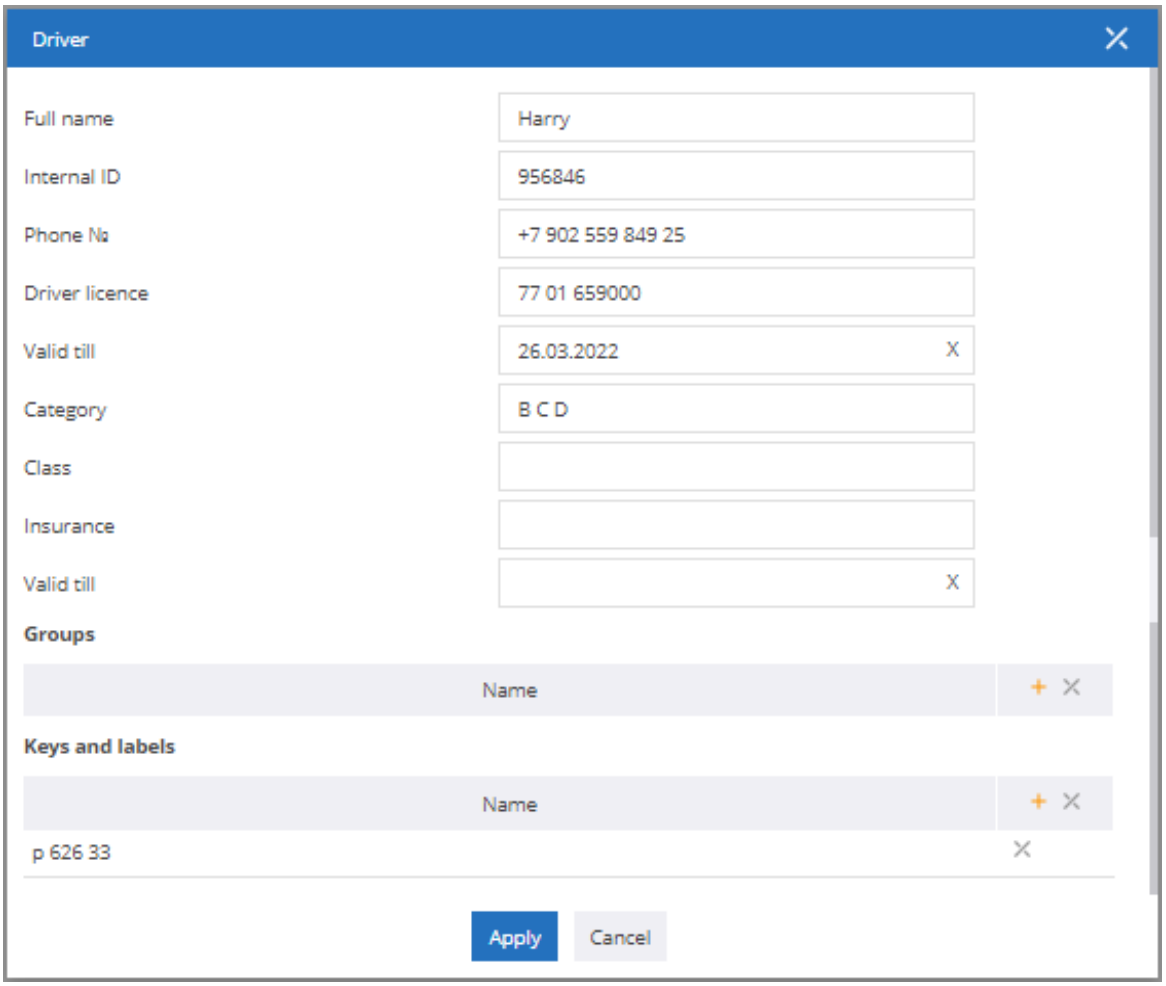
This section displays a list of drivers already logged into the system. To simplify the search for drivers, a filter by name or group can be applied to them.



Adding a new driver to the system

Click on the icon 

and enter all the necessary driver's data in the window that opens to add them to the system.



When drivers are added to the system or further edited, they are grouped and assigned specific keys and labels in their card. Every driver can have multiple keys pre-created in section

Keys and labels.

To finish, click the button and the driver Apply will be displayed in the general list.

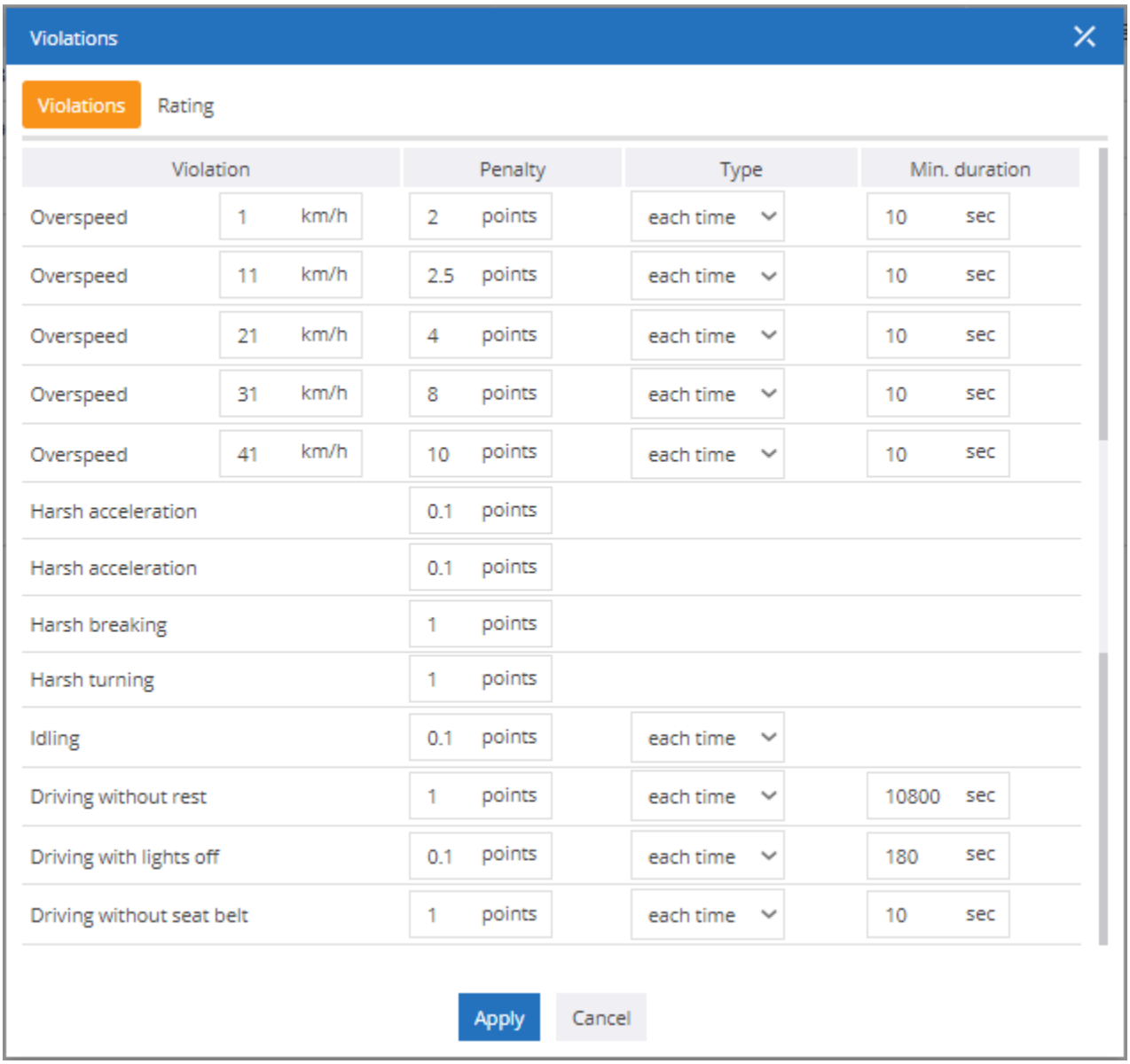
There are also the icons to edit and delete the selected driver to the right of them.

Driver rating

There is a system of penalties for drivers in GeoLoc. It allows tracking various violations and add penalty points to the driver's score. The penalty points are the basis for the drivers' rating. The less points a driver has, the higher his rating is.

Click on the Violations button to open a window with the default penalty system.

The **Violations** tab configures penalties for all types of violations, as well as the minimum duration of the violations scored. It allows choosing whether to fine the driver per a violation or for its duration. The user can change the system of penalties at their discretion.



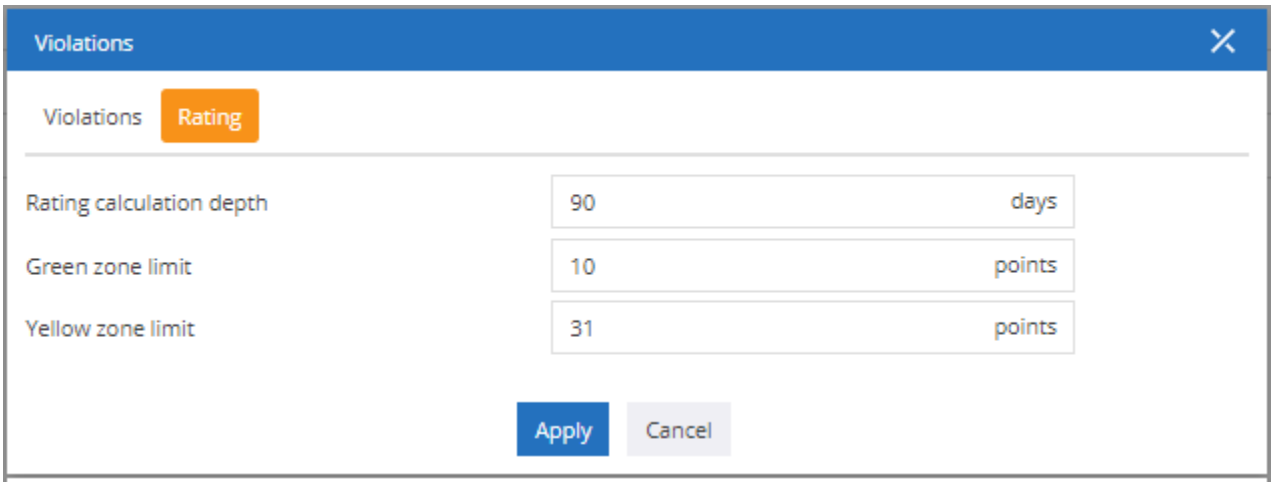
There are several speeding graphs here. The penalty varies depending on how much the driver exceeded the speed limit. The speed limit is set for an object (a specific object cannot travel at a speed higher than the limit set by the user) and geozone (the speed exceeding the speed limit set in the selected geozone is not allowed) in the system.

There are also such violations as sudden acceleration, sudden braking, sudden turning. Setting the minimum duration is not possible for such violations as well as choosing whether the penalty is scored per violation or for the violation duration. Only the number of penalty points can be set.

Driving without rest means that the driver cannot drive non-stop for more than a set number of hours.

It also allows fining the driver for when the vehicle is standing with the engine started, for driving with the lights off and driving without a seat belt fastened.

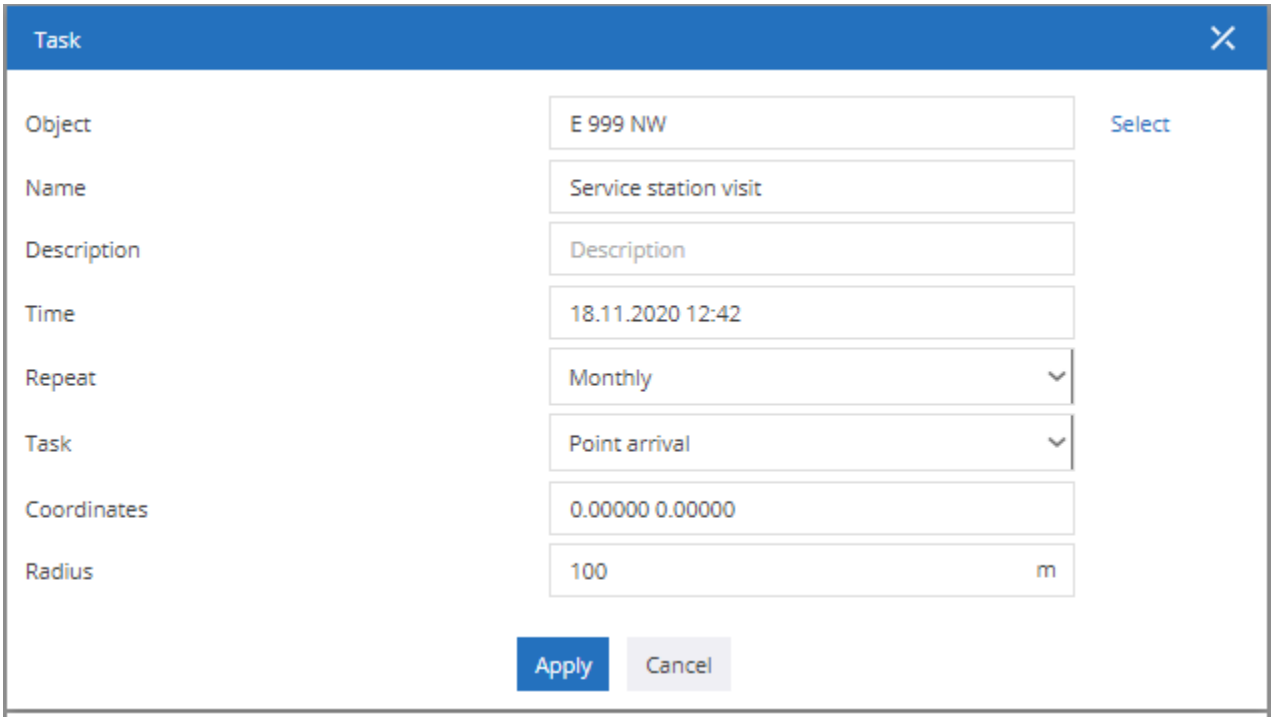
Use the **Rating** tab to adjust the drivers' rating gradation. The rating calculation depth determines the time period for which the rating will be calculated. By default, it is 90 days.



Green and yellow zones illustrate the driver's rank in the general list of user's drivers according to their rating. The zones boundaries are set by default as 10 and 31 penalty points, respectively, but the user can change these. The drivers with the highest rating are in the green zone. Drivers will be highlighted in the color of the zone they are in on the Drivers tab of the top panel of the GeoLoc system interface. Drivers whose penalty score exceeds the maximum permitted in the yellow zone are in the red zone with the lowest rating and will be highlighted in red.

Tasks

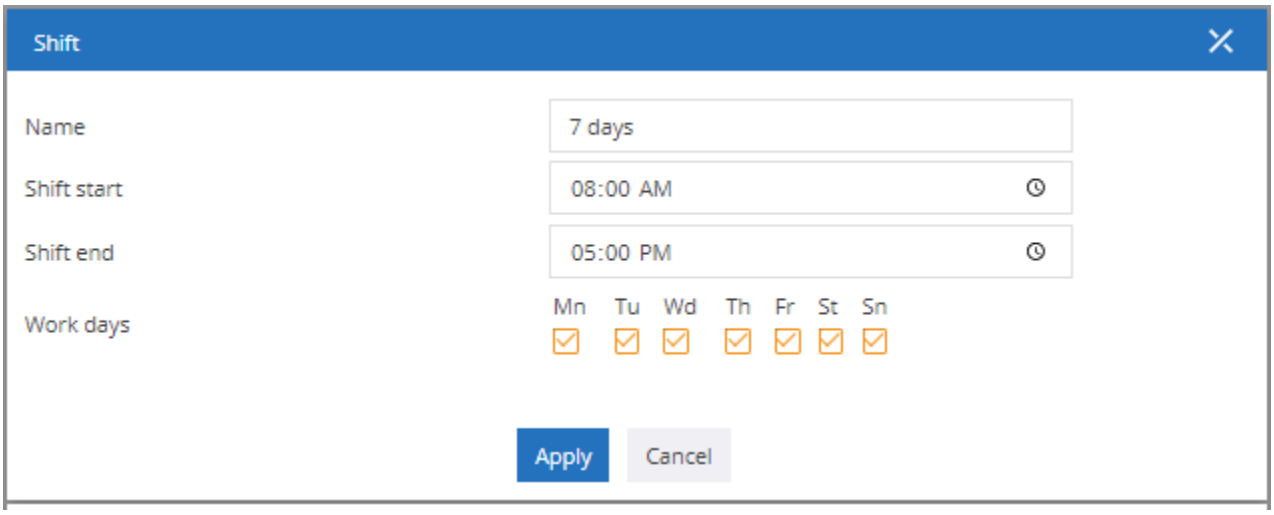
Assign tasks to objects in this section, such as staying in or arriving at a certain place or taking a given route at a certain time. Tasks can be one-off or recurrent. Each task is configured in the task settings dialog.



Depending on the selected task type (arrival at a point, arrival at a geozone, taking a route), a choice of a point on the map or a choice from a list of geozones or a route will be offered. If the task is not completed, the user can receive a notification about it. The task completion report is available in the Reports section.

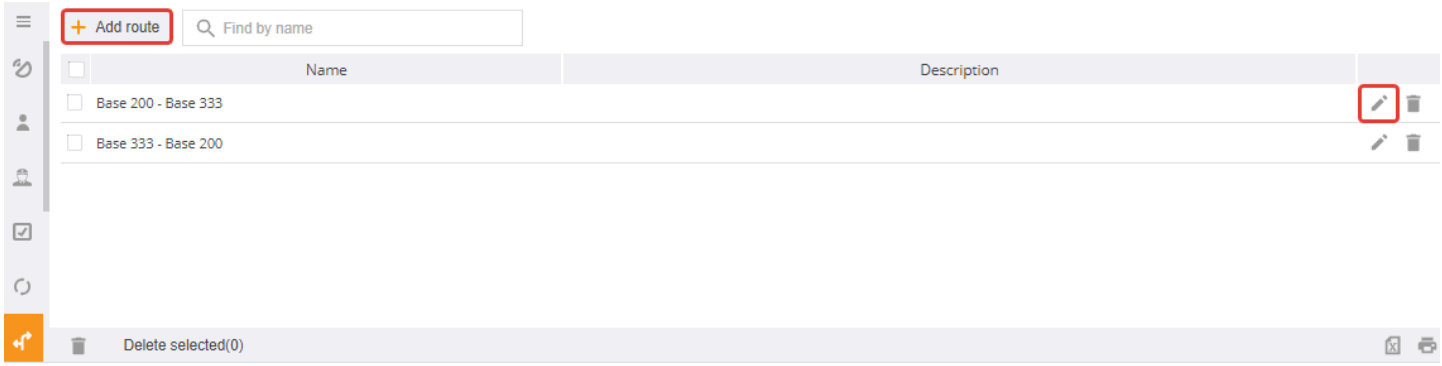
Shifts

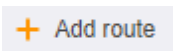
This section is for setting up the working hours of the user's personnel. Add one or more shifts with their names, start/end times and days of the week. This information is necessary so that the relevant reports display correct records about the object operation (transport working mileage or effective work).



Routes

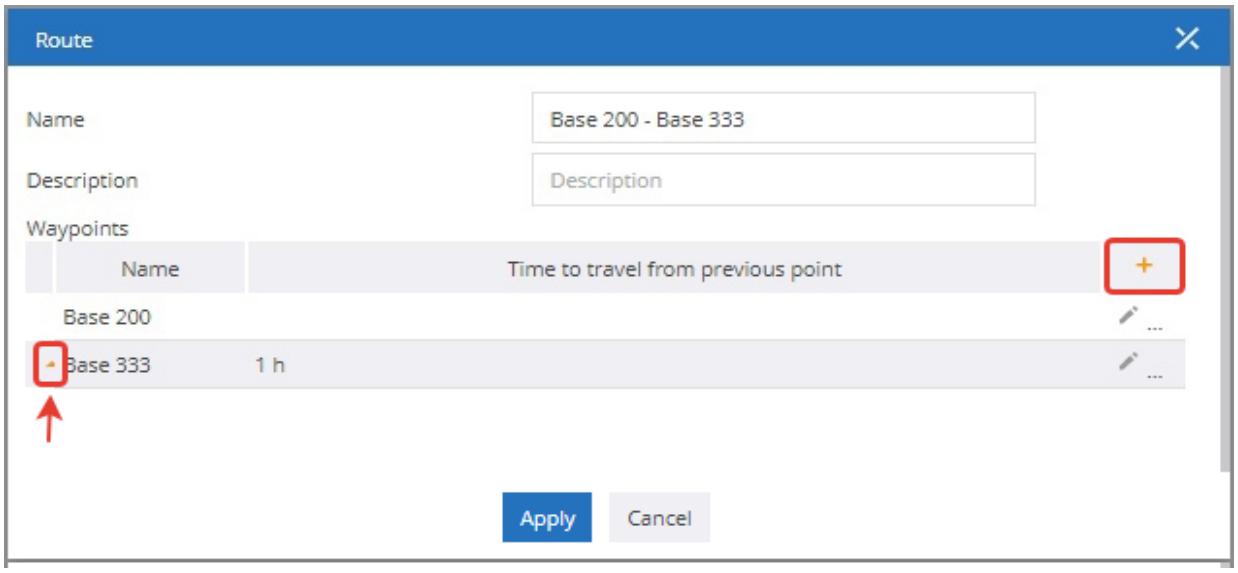
Set the object routes necessary for the user to perform certain tasks in this section. A route is a sequence of object stops/waypoints with an indication of the travel time between them. Only geozones created by the user can act as waypoints. An example of a route is the movement of regular transport between settlements or the delivery of goods from a store to customers.



Adding a route is done by clicking on the 

icon or using the route editing dialog containing the name and description of the route, as well as a sequence of waypoints indicating the travel time from the previous point.

Waypoints and movement durations are added in the window that opens when you click on the  icon Change the sequence of points using the arrows in the first column of the table.



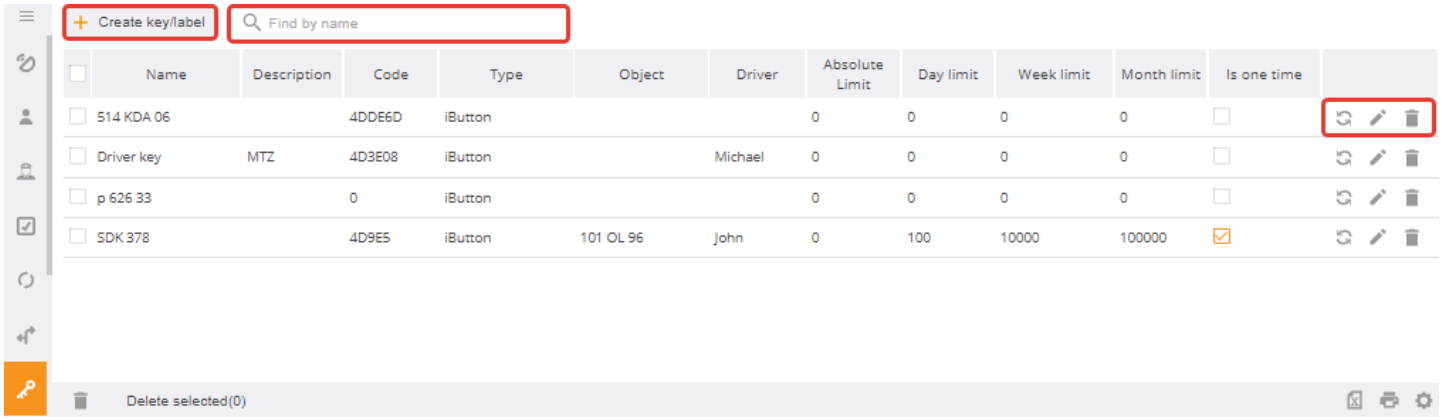
Keys and labels

This section is about keys (labels) identifying drivers. Each key (label) has its own individual identifier, with which the object (equipment on vehicles, gas stations, etc.) identifies the driver. If the equipment supports such a function, the driver cannot start the vehicle without placing his key on the reader first. At a gas station, the driver will also not be able to fill up the vehicle without placing his key on the fuel controller.

The key can be associated with an object or driver. Identification of the driver by his key is necessary to collect statistics directly by drivers. For this purpose, the "driver's session" concept is used. It starts on the moment when the driver places his key card on the reader and finishes when the engine is turned off. This way, mileage, driving hours, fuel consumption, penalties are scored for a certain driver who was driving at a certain time.

For the object to work correctly, it must know which keys it should accept. To do this, register the keys in the device settings or send the keys using commands through the GeoLoc system.

For some of the equipment in the GeoLoc system, sending key data to the device via synchronization is implemented. Synchronization of gas stations and keys occurs constantly to account for the fuel a certain driver or object are already provided with.

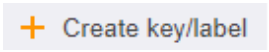


The list of available keys (labels) takes the main part of the screen. In it, you can search by name using the search box 

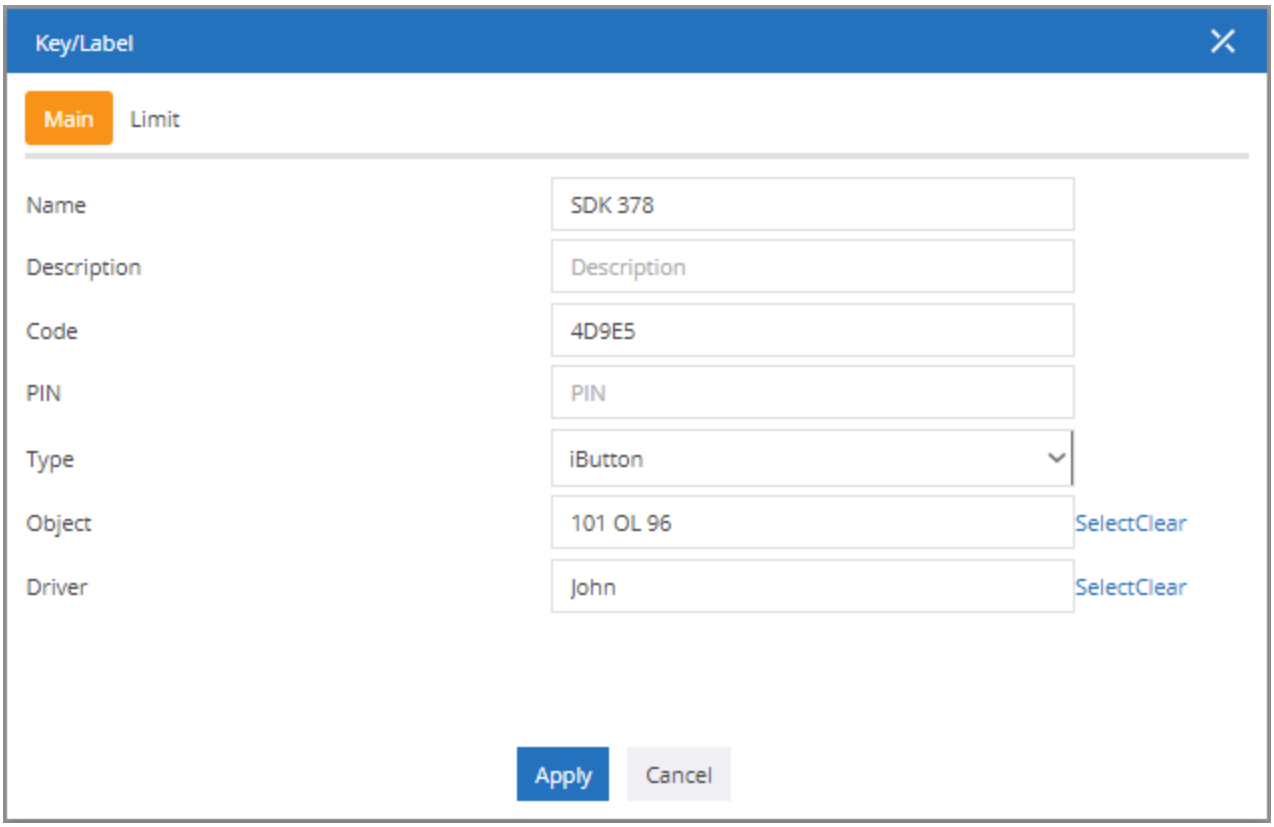
, as well as delete, edit and synchronize data. 

Creating keys and labels

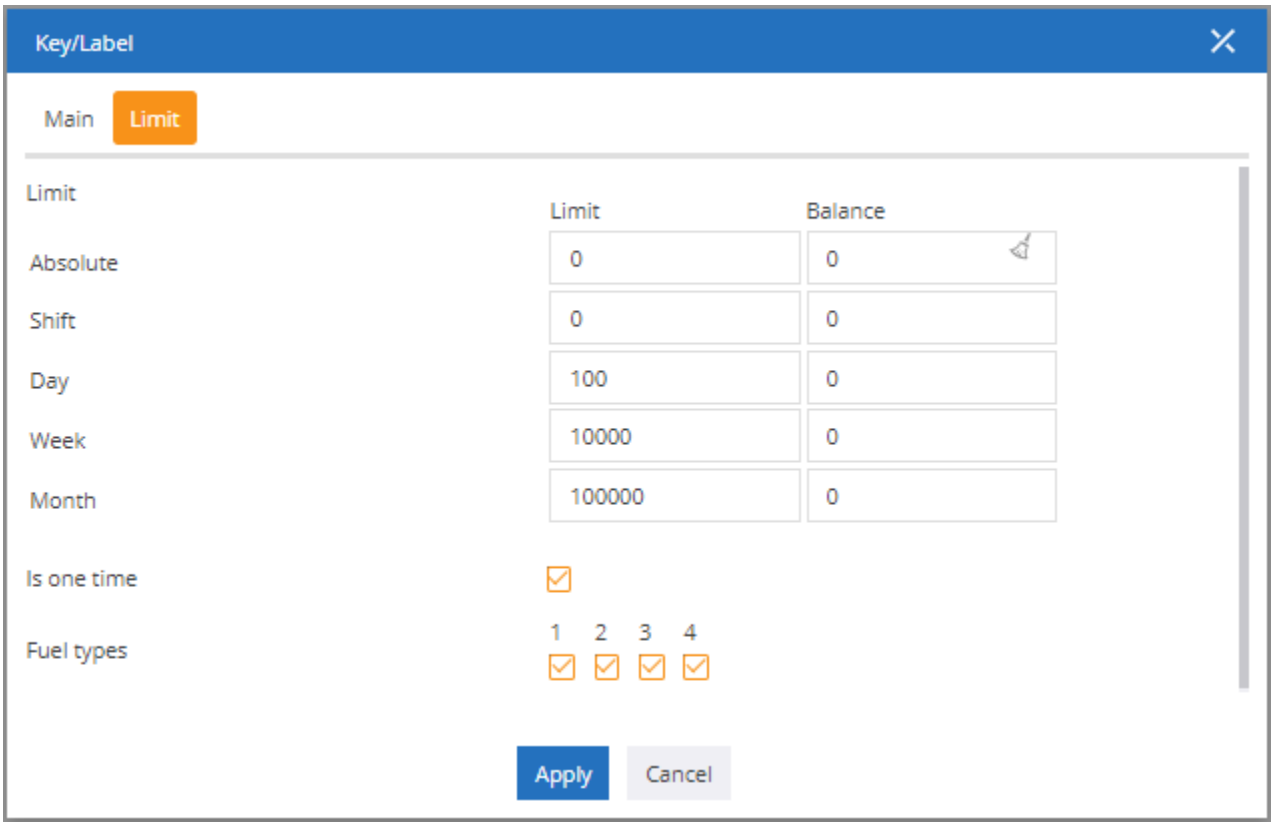
In order to add a new key (label) to the system, do the following:

- Click on the 

icon .
- In the Basic window that opens, specify the necessary information (name, key/label description, PIN code, key type (iButton, RFID, code), and also select the objects and drivers available to the user to which this key will be assigned.



- Next click on the Limit tab to set the required limit for the fuel. Select a general restriction, for a shift, day, week or month here. This function is only used at gas stations to control fuel provision.



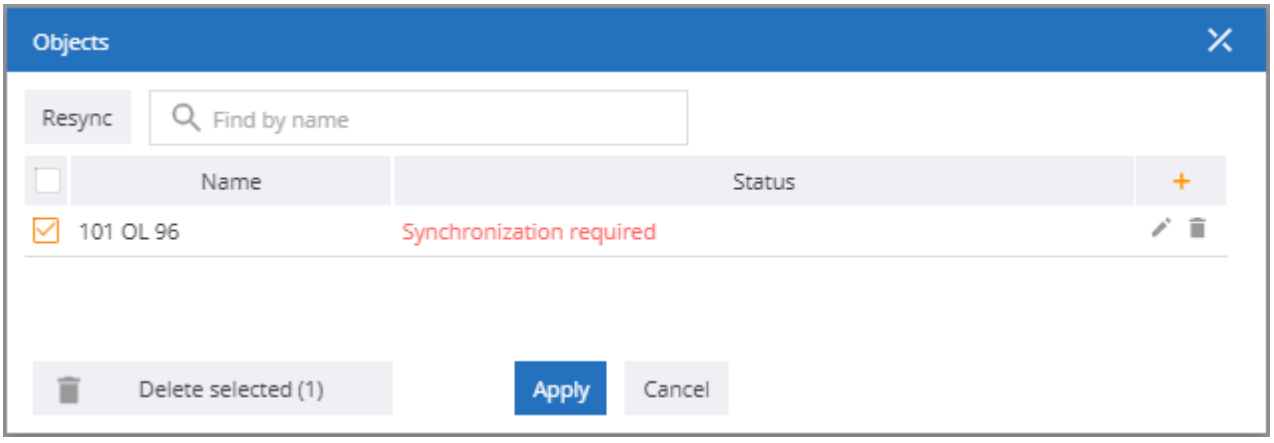
- Then click on the Apply button and the created key/label will appear in the list in the center of the screen.

Key Synchronization

Synchronization is used to associate a key and a specific object and synchronize its parameters. Bind a key to an object or driver when adding a key to the system or use a synchronization tool by accessing it from a list of created keys.

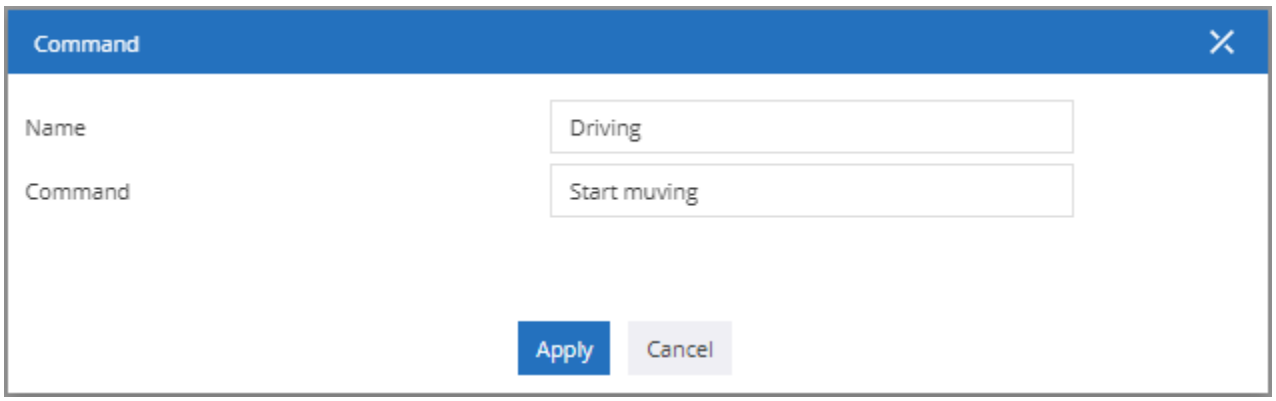
Open the synchronization dialog by clicking on the icon in the keys list .

The dialog that opens lists the objects with which the keys are synchronized. Objects can be added to and deleted from the list; however, keep in mind that these operations take time and the result of them will be available later. The current synchronization status is available in the status column.



Commands

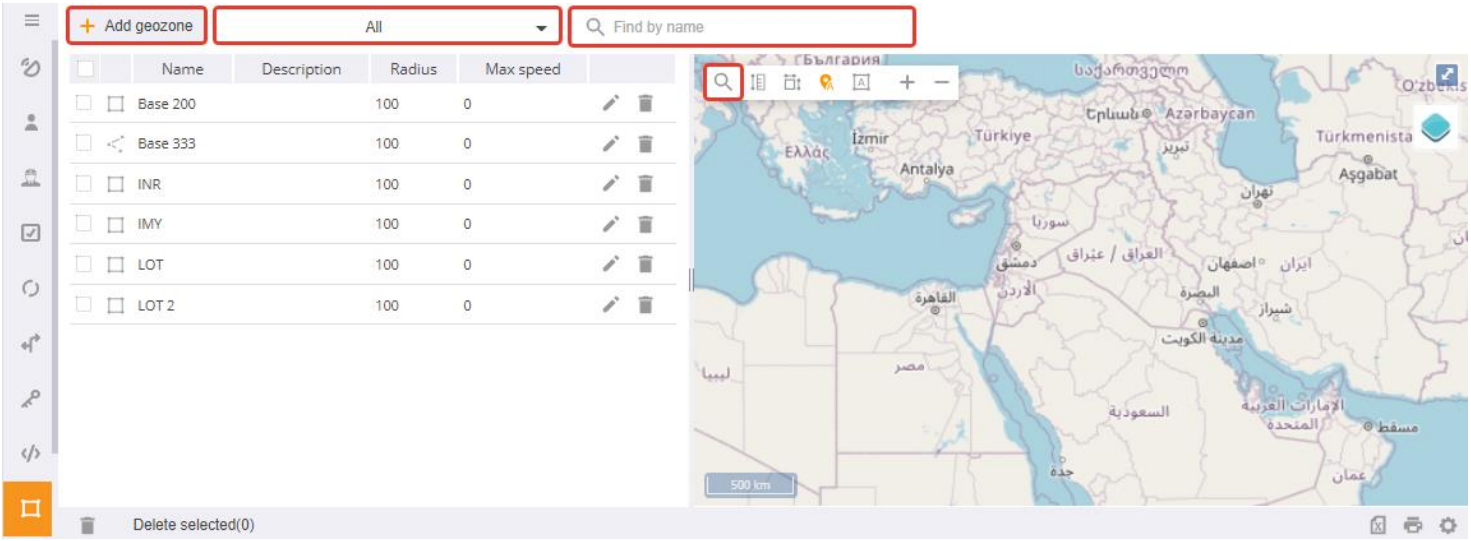
This section is to create command templates in order to send them to devices installed on user objects. The list and format of commands supported by the equipment is to be checked with the device manufacturer. The user ranked not lower than Integrator can create templates.



Send commands from the context menu in the Tracking, History, Reports sections when working with objects or when events occur (see the Notifications section in the control panel).

Geozones

Go to the Geozones tab in the control panel menu to access the tools for creating and editing geozones. It opens a list of geozones available to the user and windows for searching and sorting geozones. When selecting a geozone, the map is centered on it.

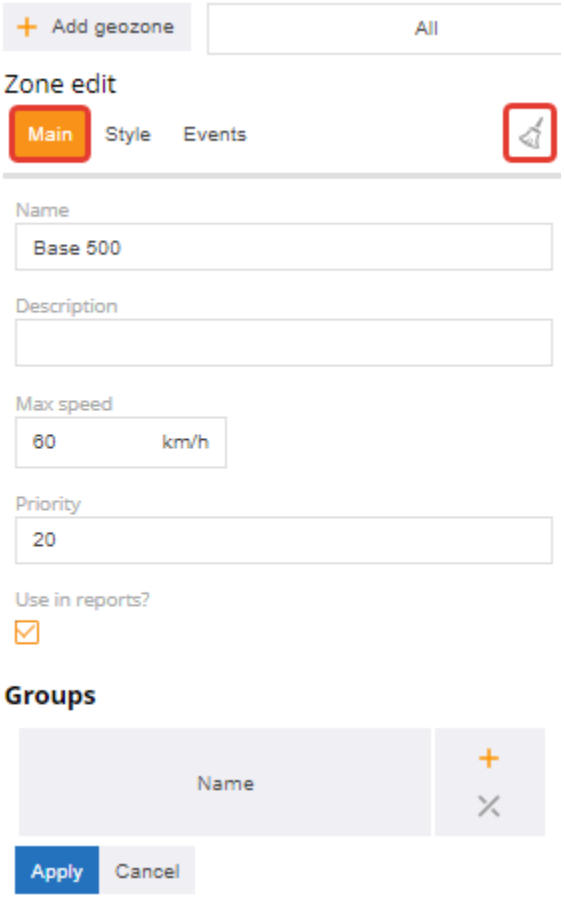


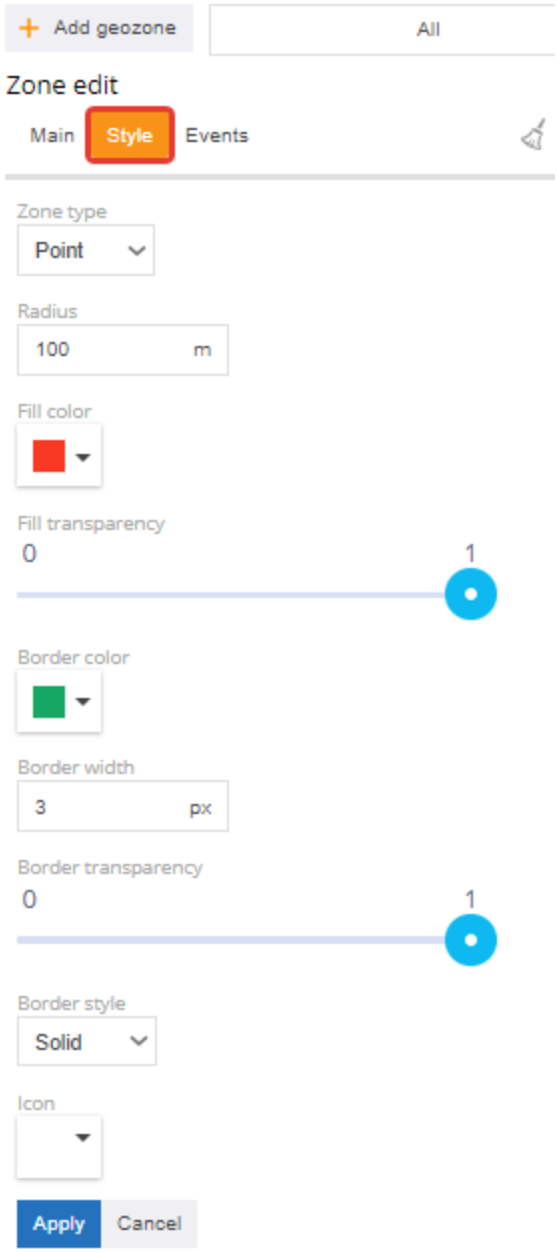
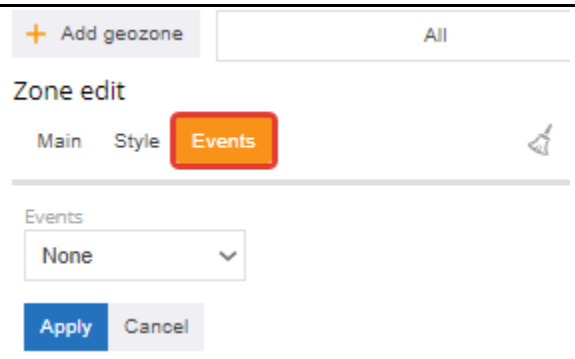
Creating geozones

Adding a new geozone to the system begins with searching for the desired area on the map. To do this, use the search tool . Then click on + Add geozone.

Enter the necessary information in the window on the Basic tab (geozone name and description, maximum speed of movement in it, geozone group, etc).
To generate events when objects enter/exit the zone, specify this in the event parameters.

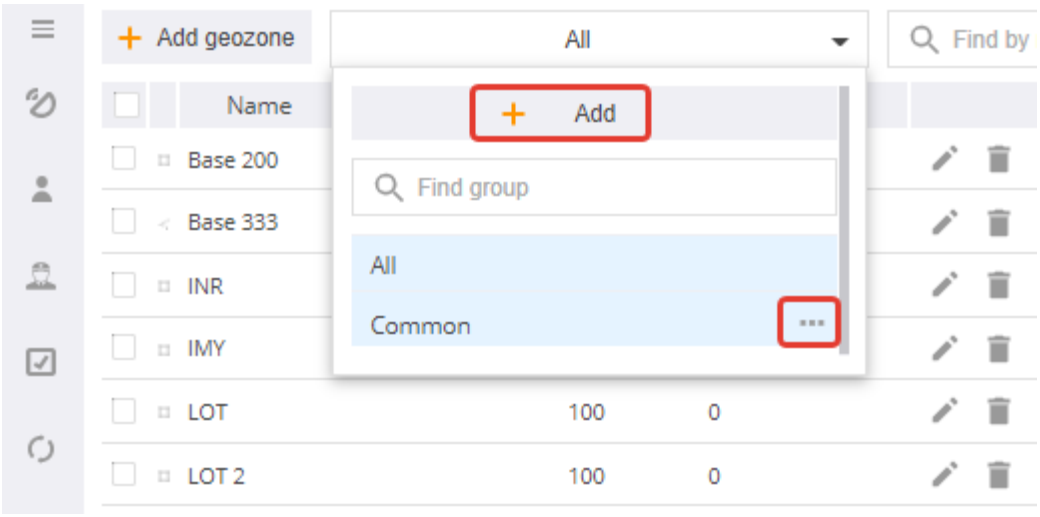
The  icon allows erasing the geozone from the map and start drawing it again.



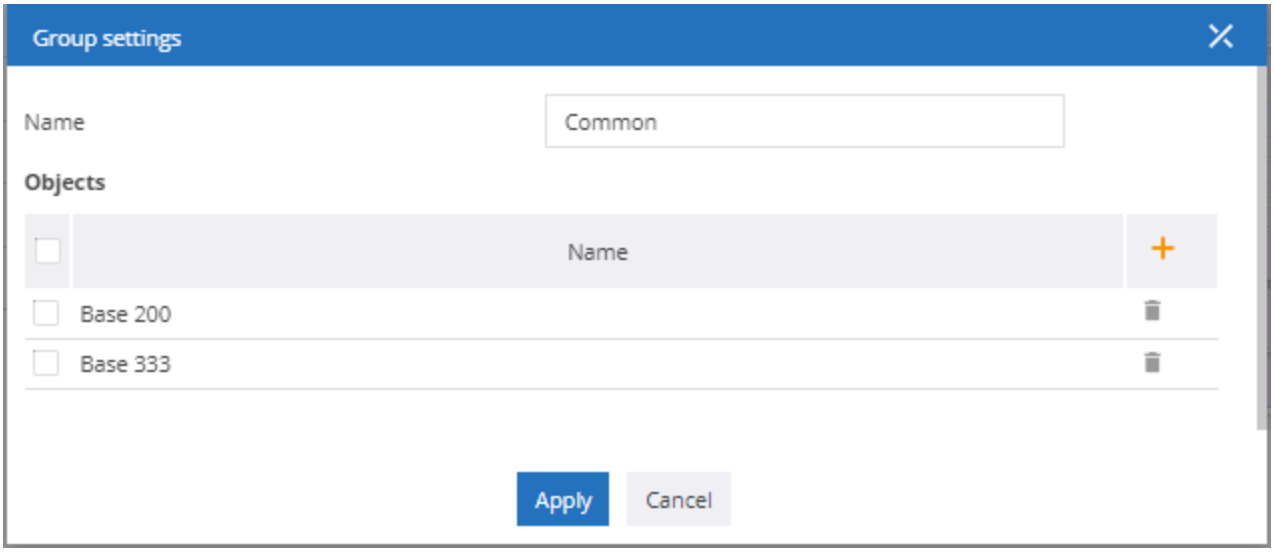
On the Style tab, select the type of geozone (e.g. point, polyline or polygon) and draw the geozone on the map: ➢ ***A point*** is a geographical area around a given point in the form of a circle with an arbitrary radius (the user sets the radius and center of the circle). ➢ ***A polygon*** is an area bounded by an arbitrary polygon with any number of vertices. ➢ ***A polyline*** is a sequence of points connected by segments into one continuous line. The polyline forms a corridor of a certain width set by the Radius parameter. The same tab allows setting the style of drawing a geozone on the map: fill color and transparency, geozone framing line color, width and transparency, icon, etc. Thus, it allows grouping geozones for easier visualization on the map. For example, offices can be painted red, warehouses can be blue and parking lots green.	
The Events tab contains notification settings for entering/exiting the zone. Notifications can be created for all objects or for selected ones only. Add the necessary objects to the list of objects on the tab.	

Click on Apply to complete the creation of the geozone.

Editing and grouping geozones



Click on + Add or enter the group menu in the group filter to create new geozone groups and edit them. Change the group name and the list of geozones included in it in the group settings dialog.



Click on ⚙ to open an additional menu where you can import or export geozones via a kml file.

Notifications

Configure the conditions under which the system responds to events and sends notifications about them to the specified person in the Alerts tab in the Control Panel.

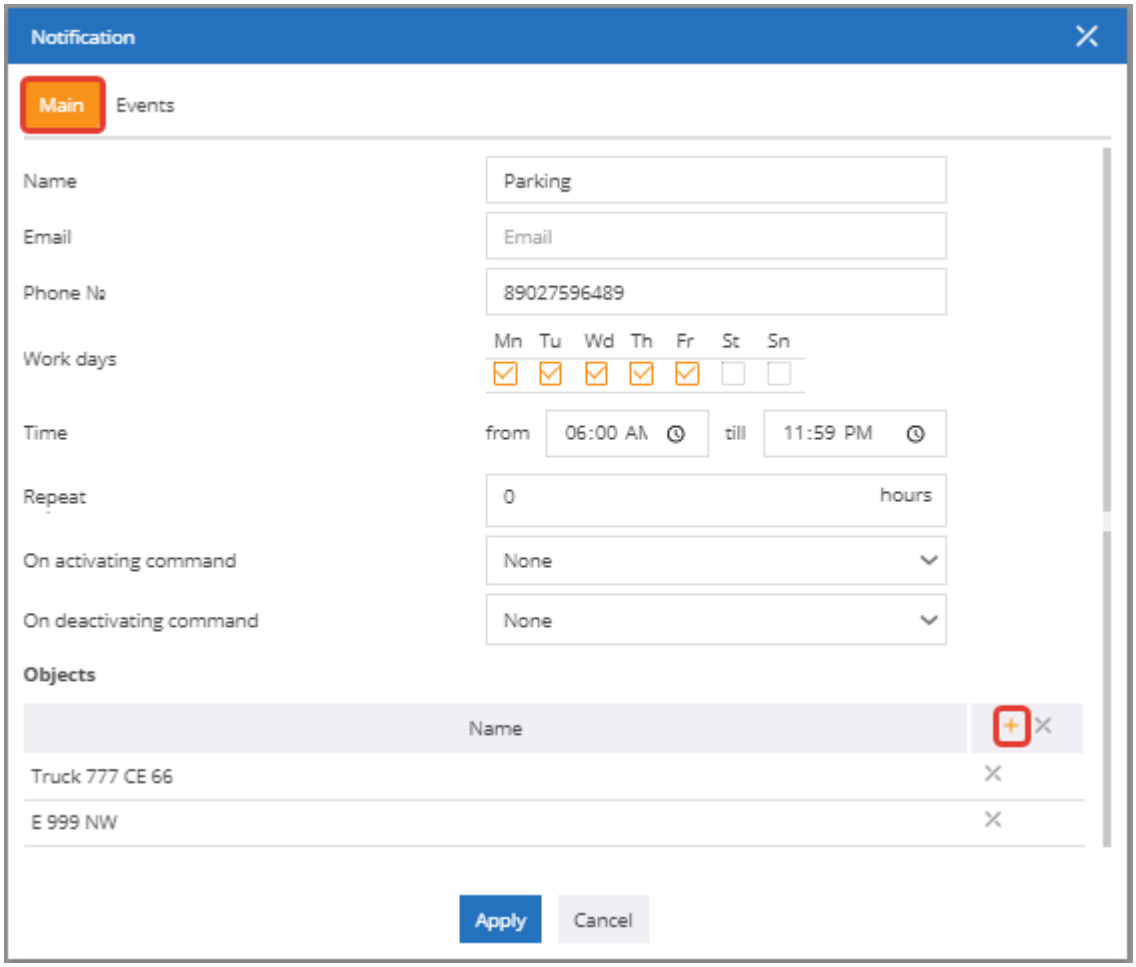
When the server receives data from the device, it checks whether the conditions set by the user are true or false for this data. If it is true, the server generates an event, registers it and immediately texts or e-mails the user.

The system can notify the user of any object states of interest (speeding, entering the geozone, draining fuel, task completion/failure to complete, etc.).

Creating Notifications

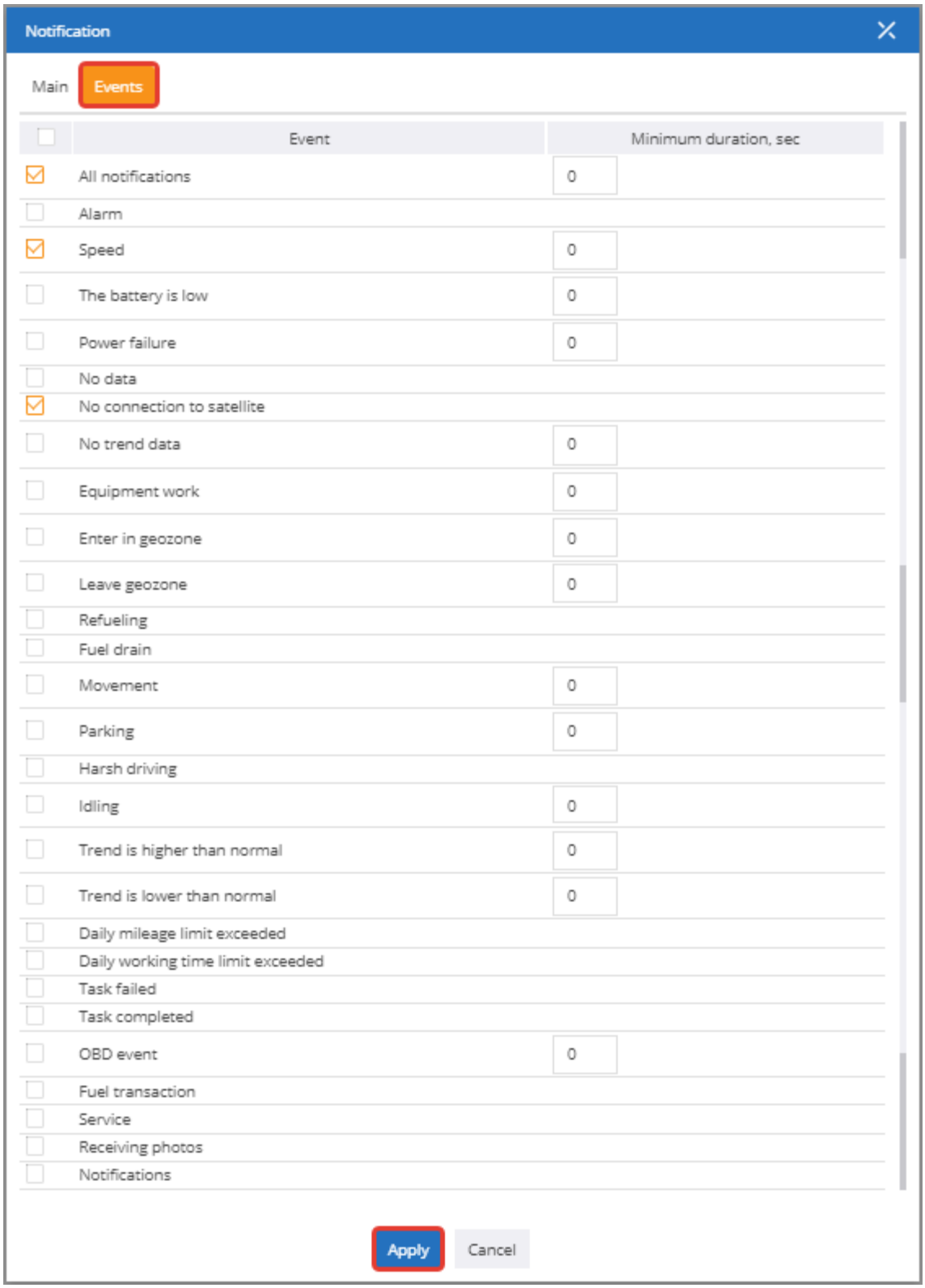
See the description of the process of creating notifications below.

- Press the + Add notification button.
- In the window that opens, on the Main tab, name the notification and specify all the necessary details, including the e-mail and phone number to which the alerts will be addressed, the days of the week and the time at which the alerts are to be sent, as well as the frequency of repetitions.
- Click on + to select the objects for which you want to set notifications.



● Then select the event types (e.g. pressing the alarm button, speed control, lack of communication with the satellite, etc.) on the Events tab and specify the minimum duration of the selected event.

The control parameters for the selected alert type, e.g controlled geozone, speed limits, maximum permitted idle time, are set in the Objects section of the control panel.



- Press the Apply button. The notification will appear in the list.

Click on located to the right of the notification to edit already created alerts from the list of alerts.

Check the notification checkbox and click on the trash bin icon opposite the notification or at the bottom of the screen under the list to delete the notification.

Server

The Server tab is available to users ranked Administrator and allows changing system settings.

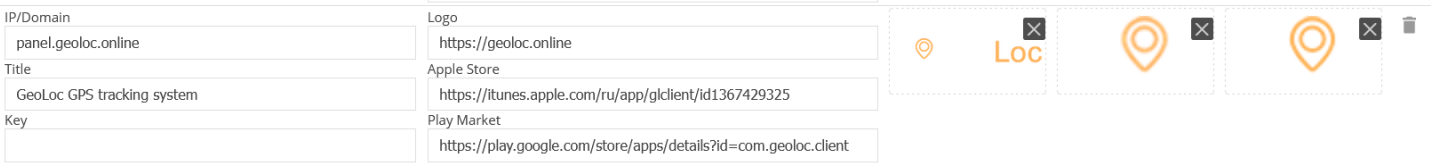
The tab contains several sections:

- Domains
- Maps
- Geocoders

Let's take a closer look at each of them.

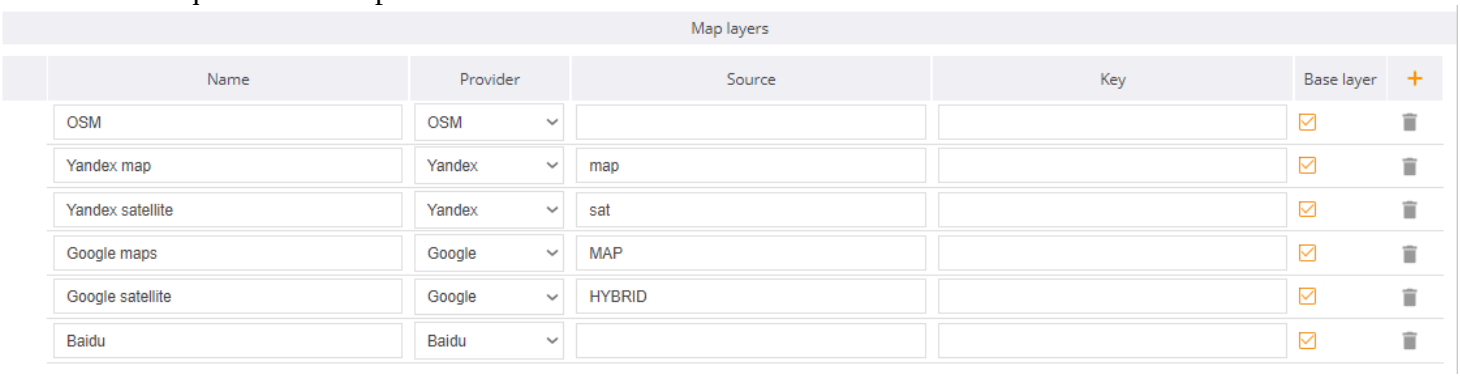
Domains

This section allows configuring the domain name and related data, i.e. the title, logo, favicon, links to the iOS and Android mobile application and so on. Each domain record is duplicated with a license key, which is provided by technical support.



Maps

This section generates a list of maps available for use in such sections of the system as Tracking and History. It is possible to use OSM, Google, Baidu, WMS, and other map formats. License keys that are used to authenticate requests can be specified.



Geocoders

It gives access to selection of a geocoding service which allows obtaining the geographical coordinates of an object for its address, calculate routes, convert GSM tower data into coordinates. Set a key to access the geocoder here.