

AUTOMARSHAL

Automarshall

Version 2.22

USER MANUAL

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Automatic number plate recognition technology based software complex for entry and access control of vehicles at check points.

Version 2.22

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Introduction

Present User Guide is designated for Automarshall SW 2.22 and later and is aimed at user of the Operation System Microsoft Windows 7 and upward, who is familiar with basic concepts and who is skilled in working with given operation system. Terms used in present documentation have derived from the operation system user guide, to which we recommend referring should any questions regarding interpretation of the above terms arise.

Terms and Abbreviations

HSC	Hardware-Software Complex.
SW	Software.
MV	Motor Vehicle.
IPU	Inductive Pickup Sensor.
VNP	Vehicle Number Plate.
D-WDR	Digital Wide Dynamic Range option in a camera. Given function allows simultaneous reception of high-quality video images of bright and dark areas of a single camera shot.
Sens-up, DSS	Digital Slow Shutter is used for better sensitivity of camera due to slowing down option. It allows for significant enhancement of the camera sensitivity properties even in intense darkness due to the increased storage time of camera matrix. Sens-up value limits the maximum storage time accounting for conditions at site. The lower level of illumination, the higher Sens-up value (up to 256x) shall be set up. Therefore, the camera automatically, not exceeding the preset maximum value, controls storage time in the matrix depending of the level of illumination at site.
JPEG	Storage format of graphic images in a digital form, allowing for compression of data.
PNG	Bitmap storage format of graphic data allowing for loss-free compression of data.
BMP	Standard format of Windows graphic files. BMP-files are stored without compression.
ECM	Electronic Calculating Machine.
PC	Personal Computer.
OS	Operating System.
FFmpeg	A set of free open source libraries that allow to record, convert and transfer digital audio and video recordings in various formats. It includes libavcodec, a library for audio / video encoding and decoding, and libavformat, a library for multiplexing and demultiplexing into a media container.
RTSP	A real-time streaming protocol (abbreviated RTSP) is an application protocol designed for use in the systems that work with multimedia data (multimedia content, media content) and allows to remote control the data flow from the server, providing the ability to execute such commands as start (start), pause (pause) and stop (stop) the broadcast (play) of multimedia content, as well as time access to files located on the server.
VLC media player	A free cross-platform media player developed by the VideoLAN project.

HTTP

HyperText Transfer Protocol — “Hypertext Transfer Protocol”, an application protocol for data transfer initially in the form of hypertext documents in the “HTML” format, is currently used to transfer arbitrary data. HTTP is based on the client-server technology.

1. Main Technical Parameters of Automarshall HSC

No	Parameters	Note	Value		
1.	Number of connected cameras	Determined by license	up to 8		
2.	Maximum acceptable speed of vehicle	Determined by license	up to 30 Km / hr ^a up to 150 Km / hr		
3.	Illumination in control zone	in daytime upon normal external conditions	no illumination is required		
		in nighttime and twilight time	illumination of at least 100 lux (dark light and halogen spotlight may be used)		
4.	Recognition possibility ^b	in daytime	at least 95%		
		in nighttime with artificial illumination of at least 100 lux	at least 92%		
5.	Distance from the video camera to the control zone	Depends on the choice of camera and lens			
6.	Angle of camera inclination / rotation	Not more than 30°			
7.	Roll images of the vehicle's number horizontally	Not more than 15°			
8.	Width of control zone	up to 3 m at a resolution of the camcorder 640x480 up to 7 m at a resolution of the camcorder 1280x720			
9.	System requirements	Operating system:			
		<ul style="list-style-type: none"> Windows 7 SP1/8.1/10 (x32/x64) Windows Server 2012R2/2016 			
		Recognition channels (connected video cameras)	up to 2	up to 4	up to 8
		CPU	Core i3-4XXX	Core i5-4XXX	Core i7-4XXX
		RAM	4 Gb	8 Gb	16 Gb
GHz	2.7 – 3.5 GHz	2.7 – 3.5 GHz	2.7 – 3.5 GHz		
		Free USB-connector for protection key			
		Monitor: resolution 1280x720 or more			
10.	Requirements for video cameras	Resolution from 640x480, the possibility of setting a fixed exposure time 1/500 sec, 1/1000 sec or exposure limit. Diaphragm Automatic DC or P-Iris. The minimum illumination in the CB mode is 0.01 lux or less (accumulation modes and SENS-UP are switched off)			

^aUpon use of video cameras and optical systems with parameters required for reliable recognition of number plates at high speeds of motor vehicles

^bIt is applicable to number plates meeting the requirements of the Russian State Standard regarding cleanness of the number plates; upon use of the optical scheme and provided relevant quality of input image, meeting the requirements enclosed in the user guide.

2. Scope of Software

2.1. Purpose

Automarshal – is a software (SW) designated for recognition of vehicle number plates.

Two model types of SW Automarshal are released:

- for vehicle speed of up to 30 km/h (parking lots, checkpoints, car washes, etc.);
- for vehicle speed of up to 270 km/h (highways).

Table 2.1. Recognition of vehicle number plates for the following countries is supported:

Abkhazia	Spain	Poland
Azerbaijan	Italy	Russian Federation
Armenia	Kazakhstan	Romania
Belarus	Qatar	Tajikistan
Belgium	Kyrgyzstan	Turkey
Bulgaria	Kuwait	Uzbekistan
Great Britain	Latvia	Ukraine
Hungary	Lithuania	Finland
Germany	Luxembourg	France
Hong Kong	Moldova	Montenegro
Greece	Mongolia	Czech Republic
Donetsk People's Republic	Netherlands	Estonia
Israel	UAE	South Korea

Number of video cameras connected to a single computer and eligible countries are determined depending of the *license*.

Software functionality is easily extended by additional software modules.

2.2. Functions

Functionality of the basic version of SW:

- Getting video from video cameras;
- Recognition of vehicle registration plates (number plates) on video images;
- Keeping the log of passed vehicles, saving their images with the option of entry review and editing;
- Maintenance of the number plate user lists with the option of manual uploading of the list from files of *.xls, *.xlsx и *.csv formats;
- Up to 8 number plate recognition channels (8 video cameras) on one computer;
- Automatic checking of the recognized number plates by user lists;
- Audio visual notification of the operator upon coincidence of the recognized number plate with the entry in number plate user lists;
- MV search in the log by customized criteria, generation and printing out of the search results report;

- Creation of the access lists for automotive control of the access gate accounting for the recognition results of the number plate of approached vehicle.

3. Software Execution Terms

3.1. Hardware Requirements

Operating system:

- Windows 7SP1/8.1/10 (x32/x64)
- Windows Server 2012R2/2016

For vehicle speed up to 30 km / h

Recognition channels (connected video cameras)	up to 2	up to 4	up to 8
Processor	Core i3-4XXX	Core i5-4XXX	Core i7-4XXX
RAM	4 Gb	8 Gb	16 Gb
Ghz	2.7GHz	2.7GHz	2.7GHz

For vehicle speed up to 270 km / h

Recognition channels (connected video cameras)	1	up to 2	up to 4	
Processor	Core i5-6XXX	Core i7-6XXX	Core i7-5960X Core i7-6950X	
RAM	4 Гб	8 Гб	16 Гб	
Ghz	3.5 GHz	3.5 GHz	3.5 GHz	

Free USB-connector for protection key.

Monitor: resolution 1280x720 or more.

Note: when choosing a computer for Automarshal SW, we recommend that you follow the following logic: each processor requires one processor core for analysis. If you need to analyze more than 8 channels, we recommend using servers based on Intel Xeon processors, for example.

- Intel® Xeon® Processor E5-4660 v4 - (# of Cores/# of Threads) 16/32
- Intel® Xeon® Processor E5-4667 v4 - (# of Cores/# of Threads) 18/36
- Intel® Xeon® Processor E5-2699 v4 - (# of Cores/# of Threads) 22/44

By the amount of RAM - a recommendation of 2 GB per 1 video camera.

*Processor configurations are applied for recognition of number plates in video stream with resolution of 1280X720 pixels.

3.2. Software Requirements

The following standard software components, which may be downloaded for free from the official Microsoft websites, shall be installed on the computer for operation of the SW:

- Microsoft .NET Framework 4.5 or later (included with the operating system)
- VLC player version 2.2.6 or higher

3.3. Requirements for Personnel

User (system administrator and/or operator) shall have working experience in operation system MS Windows 7 and higher, and shall familiarize himself (herself) with present user guide prior to software operation.

Required level of qualification of the company's personnel shall be determined by the company's director and reflected in the approved provisions on structural subdivisions and services of the company and /or job duties of the personnel.

4. Installation/Update/Deletion of SW

4.1. Installation of SW Automarshal. Possible Errors upon Installation and Run of SW

1. SW is delivered in form of archive with exe-file and auxiliary SW required for operation of SW Automarshal.
2. Unpack the received archive. Unpacked folder includes:
 - Redist Folder – contains SW required for correct operation of Automarshal.
 - Documentation – Automarshal user guide, file with system requirements and file whatnew.txt, containing description of changes in SW versions.
 - SW Distribution Kit.
3. The Automarshal software is protected from unauthorized use with the USB dongle.

The license protection by using the USB dongle includes two components: USB dongle for software protection and the license file.

The license file shall be installed as software on the same PC where the USB dongle is installed. Only one USB dongle for the Automarshal software protection can be installed on the same server.

The edge of the USB dongle shall have the mark with stating the series and number of the dongle (for example, 1B9Z 312C5169 312C5169).

The license file shall have the *.lic extension and shall match the USB dongle: the dongle number shall coincide with the number in the license file name.

In case of expanding the license (increasing the number of channels, adding options), the change of the USB dongle is not required, you just need to install a new license file.

A USB dongle is not bound to certain computer. For example, to transfer the software from computer A to computer B, you need to take the USB dongle out the computer A and install it on computer B, upon that the Automarshal software on computer A will stop to work.

4.1.1. Installation



- Prior to SW setup, it is recommended to close all running applications allowing for installation of SW without computer reboot.
- Install all available OS Windows updates. If OS contains any updates requiring Windows restart, it is recommended to restart OS prior to installation of SW Automarshal.
- Administrator rights are required for installation and use of SW in OS MS Windows 7 SP1.



- DBMS Microsoft SQL Server Compact is installed by default.
- Maximum size of DB in Microsoft SQL Server Compact is 4 GB.

For SW Installation:

1. Run automarshal.setup.exe.

Name	Date modified	Type
Redist	6/20/2018 10:20 AM	File folder
automarshal.setup.x64.exe	6/19/2018 6:16 PM	Application
automarshal2.ru.pdf	6/19/2018 6:12 PM	Adobe Acrobat Document
readme.txt	6/9/2018 4:47 PM	Text Document
whatsnew.txt	6/14/2018 12:28 PM	Text Document

Figure 4.1.1.1

Automarshal Setup Wizard window will appear on the screen.

Version of installed SW and packages of auxiliary SW will be specified in the opened window.

Auxiliary SW may be installed separately; setup files may be found in Redist folder.

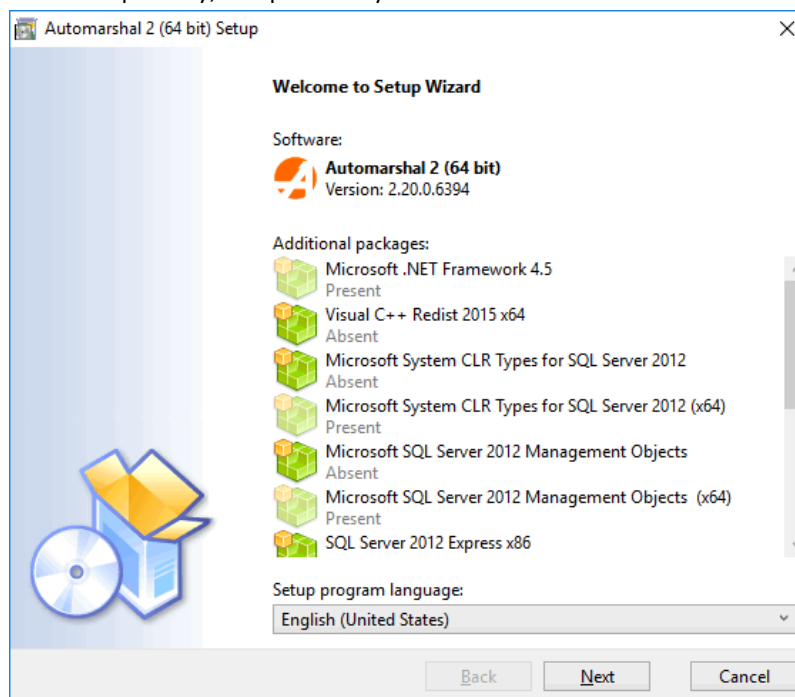




Figure 4.1.1.2

Pale green icon  on the left from the name of auxiliary SW means that such SW was already installed on your PC and would not be installed again.

Bright green icon  on the left from the name of auxiliary SW means that software is not found in your PC, and upon selection of "Full Setup" option it will be installed in the system.

2. To continue installation, choose program language from the drop-down menu and press **Next** button.
3. Acknowledge yourself with the License Agreement. Afterwards, set the flag to **I agree with the terms of License Agreement** and press **Next** button.

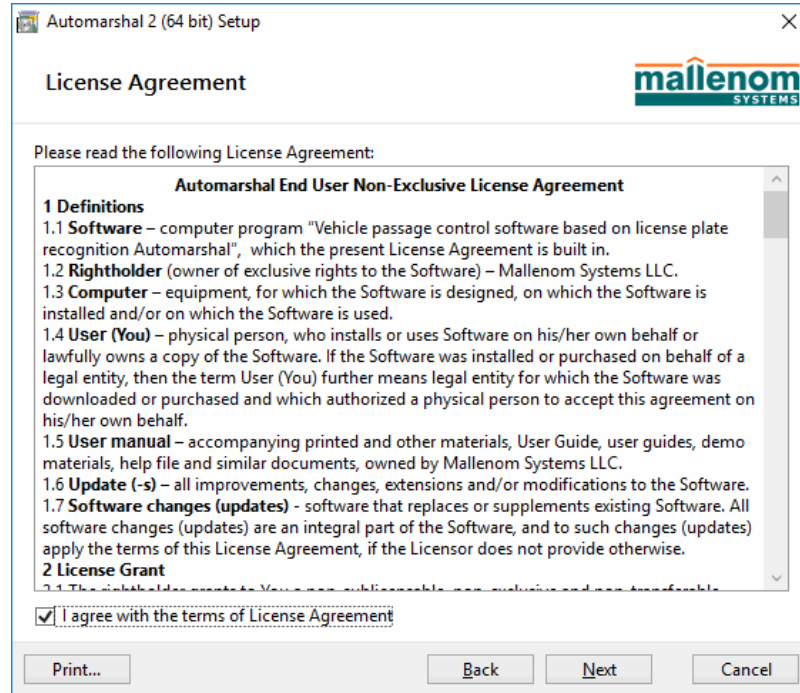


Figure 4.1.1.3

4. Next, select offered license type in the Setup Wizard:

- **Specify the license file** - specify path to the license file on your computer;
- **Install license file later or use trial version** - license file may be later added to folder with installed SW or trial version of SW may be run (*for more details, see Clause 4.1.3*).

Choose license type to continue setup and press **Next** button.

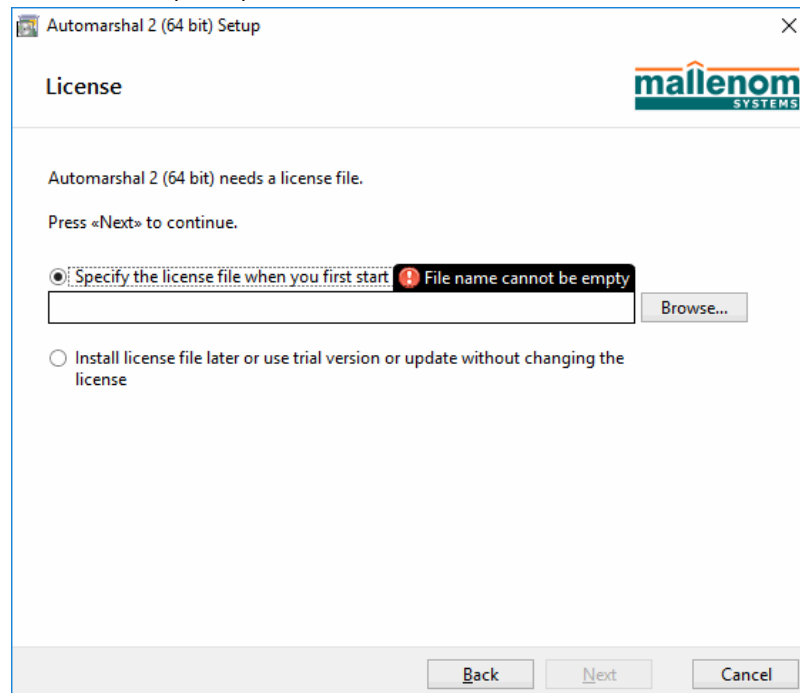


Figure 4.1.1.4

5. Setup type will be offered in the next window:

- **Custom** – allows choosing components to be installed on your PC;
- **Complete** - installation of all software components, including auxiliary SW.



“Complete” Setup is recommended upon the initial setup of SW.

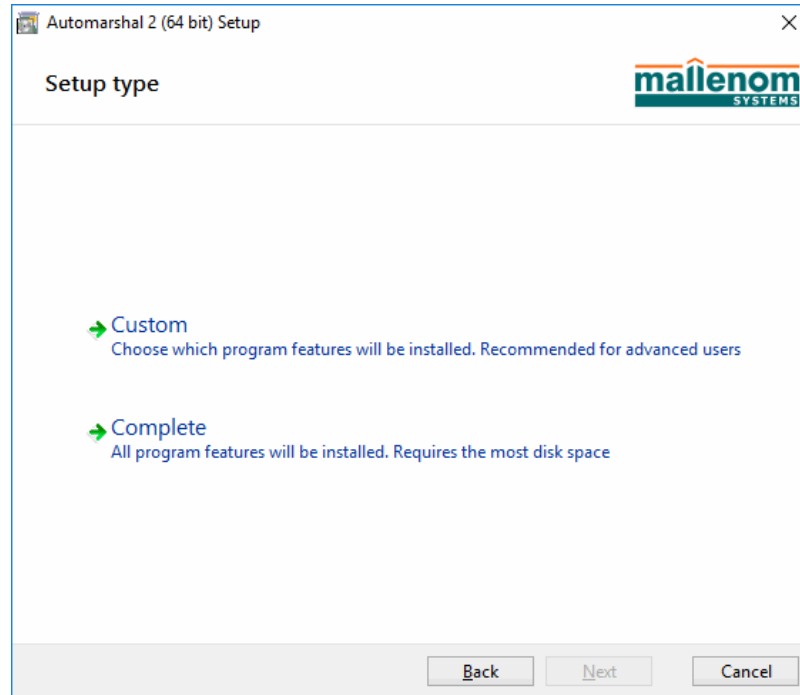


Figure 4.1.1.5

Choose the appropriate option and press **Next** button.

6. Next, select the required database type and the installer will automatically proceed to the next step.

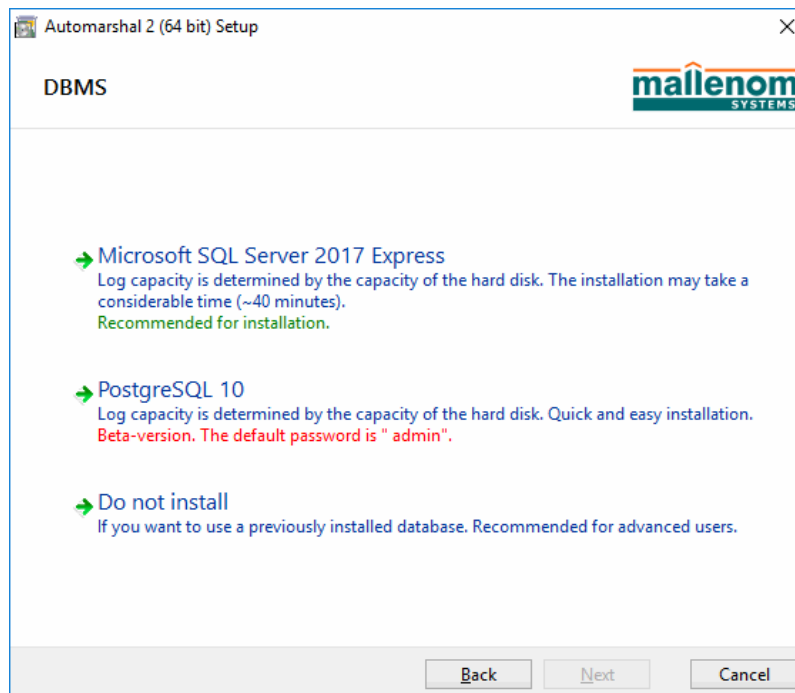


Figure 4.1.1.6

The PostgreSQL database is available as of Automarshal 2.20.

7. In the following window, you may select folder to be installed on your PC.

%ProgramFiles%\Automarshal 2 was selected by default.

To continue setup, press **Next** button.

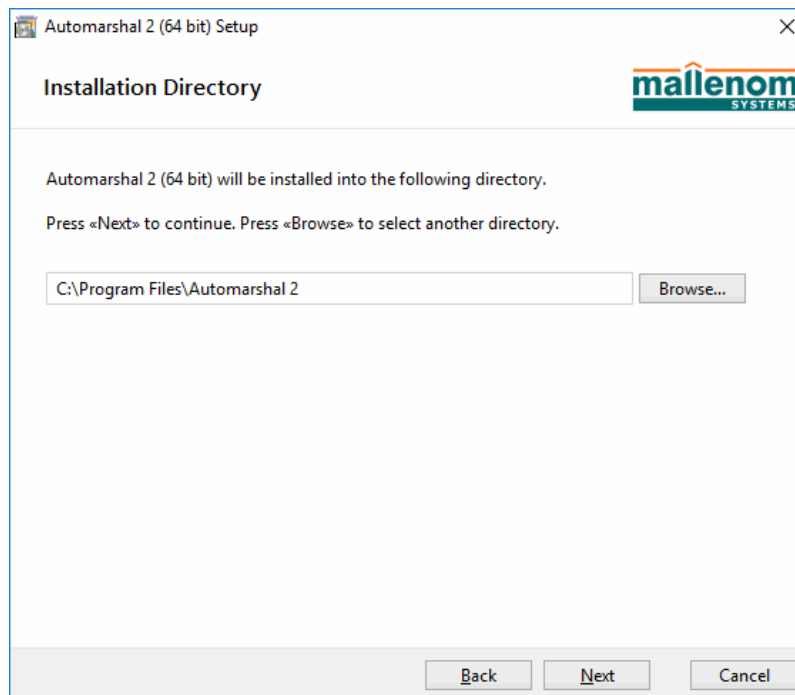


Figure 4.1.1.7

8. Press **Start** button to setup SW.

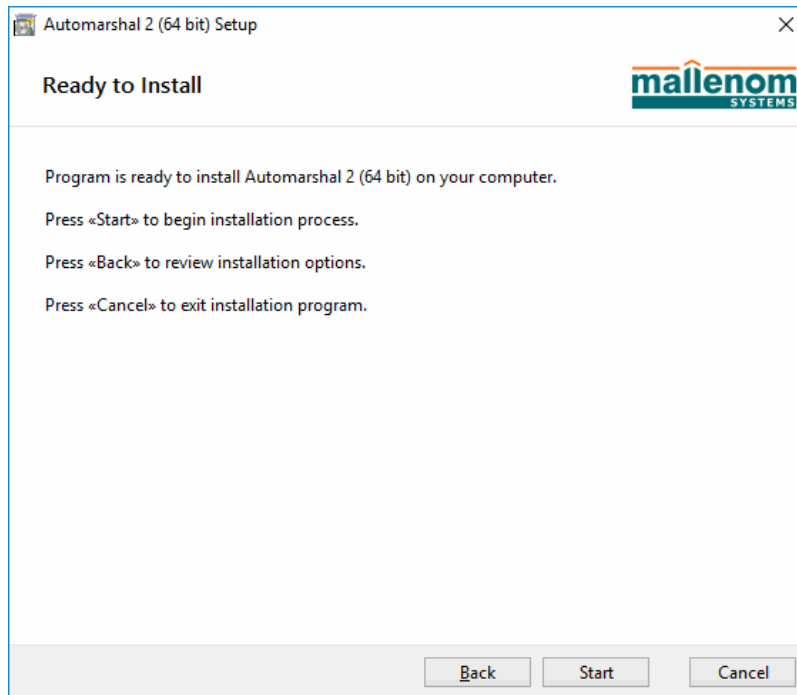


Figure 4.1.1.8

Wait until setup is completed.

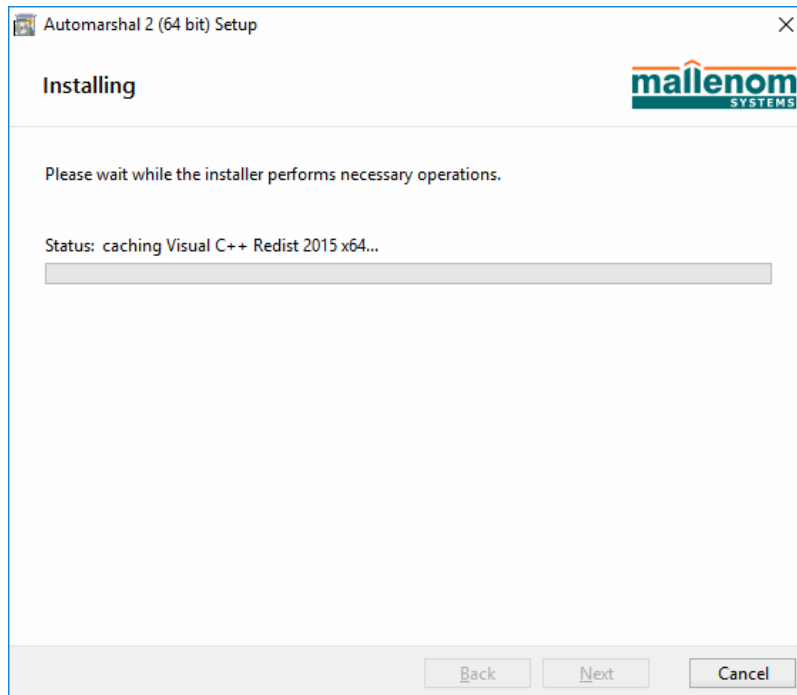


Figure 4.1.1.9

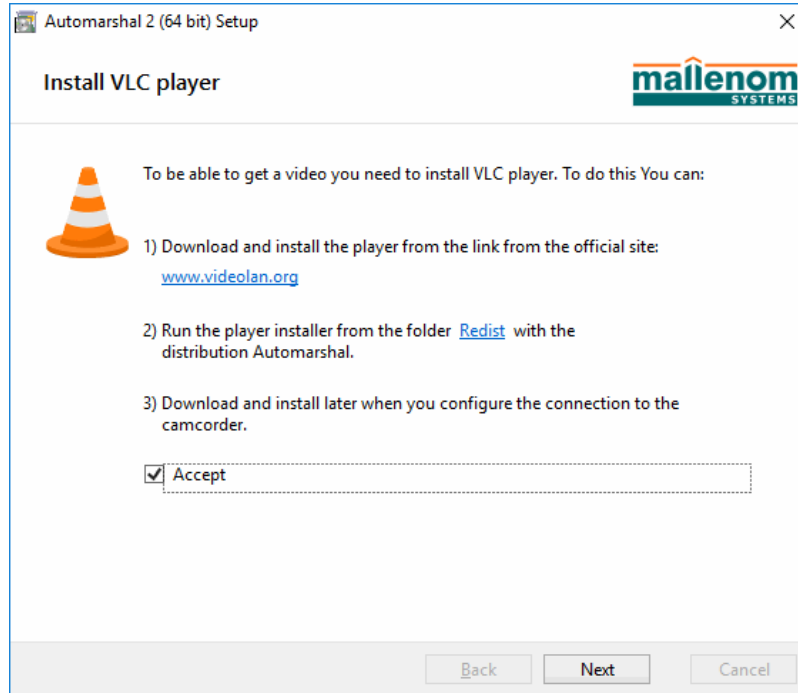


Figure 4.1.1.10

9. When setup is complete, Setup Wizard will offer you running SW.

If required, set / remove flag to /from **Launch Automarshal** and press **Finish** button.

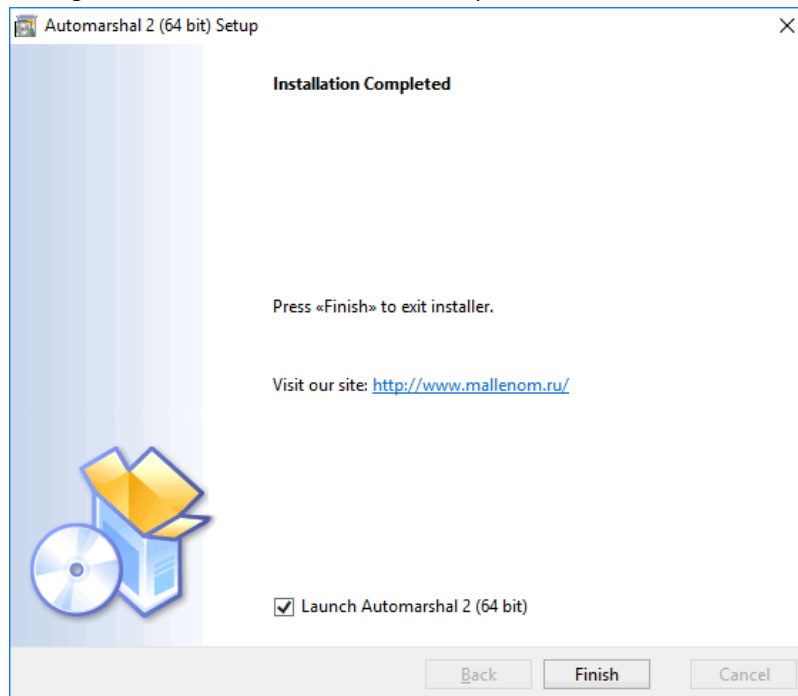


Figure 4.1.1.11

4.1.2. Activation after Software Setup

If the license file was not selected during installation, an error will be displayed upon software run as shown on the screenshot.

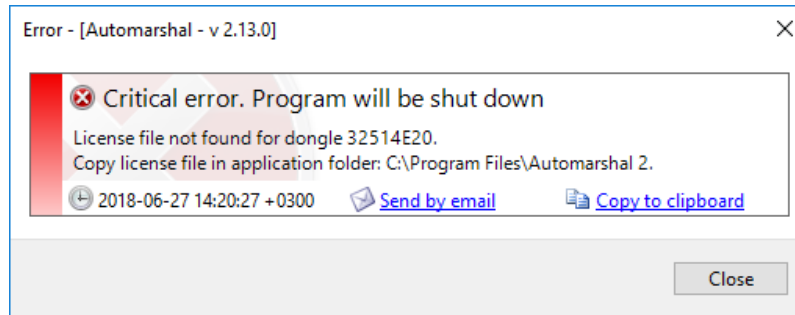


Figure 4.1.2.1

- Manually copy license file to folder with installed SW.
- Run SW Automarshal.

4.1.3. Activation of the Trial Version

Trial version represents full-function SW Automarshal, with the following parameters specified in the license:

- 2 recognition channels at vehicle speed of up to 150 km/h and 1 video surveillance channel;
- All supported countries.
- All additional software modules.

Period of use of the trial version is limited to 15 days starting from the software activation. At expiration of the above term, software would not operate without hardware key.

Basic configuration, list of auxiliary options and their cost are available at website <http://automarshal.net>.



To activate the trial version, you need a PC, on which Automarshal has not been previously installed, and an Internet connection.

To activate the trial version while installing the Automarshal software, select the “Install licence file later or use trial version” or “Trial Version” option.

Following installation of Automarshal , perform the following actions for activation of the trial version of SW:

1. Run SW Automarshal by double-clicking the left mouse button on software icon at the desktop or select relevant application in Startup menu.
2. On the screen, additional window offering you to activate trial version of SW will appear.

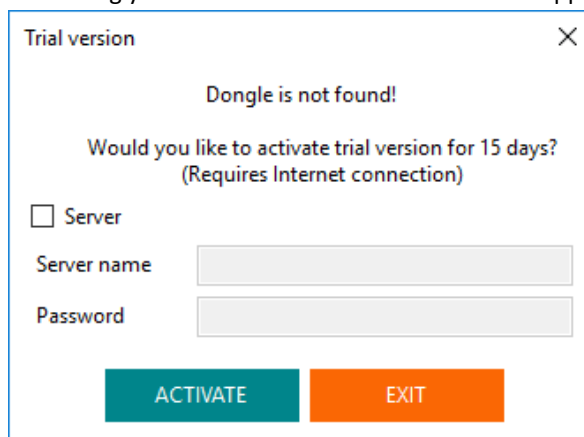


Figure 4.1.3.1

If you use a proxy server, set the flag at “Use proxy” and specify the parameters for connecting to the server: enter the server name and password, or enter the “login:password@ip_address” line in the server name field, where “login:password” shall be your login and password, ip_address – address of the proxy server.

To continue activation, press **Activate** button.

3. When activation process is completed, window with indication of the number of days left until expiration of the trial version of Software will appear on the screen.

To close information window, press **OK** button.

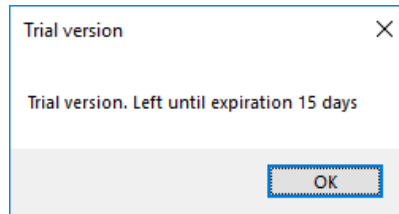


Figure 4.1.3.2

Afterwards, main window of SW Automarshall will be opened.

Upon SW run during the trial period, notification with the number of days left until expiration of the trial version of SW will be displayed on the screen.

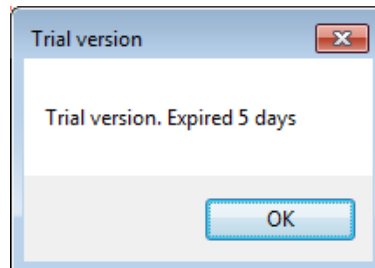


Figure 4.1.3.3

4.1.4. Possible Errors upon SW Setup and Run

1. Trial period of software use is terminated.

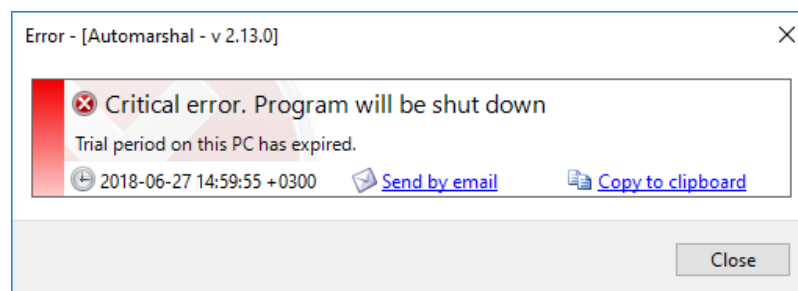


Figure 4.1.4.1

- Trial period for use of Automarshall terminated;
- Check whether hardware key is inserted in USB port;
- Check whether setup drivers are available as follows:
 - Run Device Manager tool (Run/Execute (line at the bottom of the menu), enter devmgmt.msc and press Enter);

- Check availability of devices shown below (Guardant dongles):

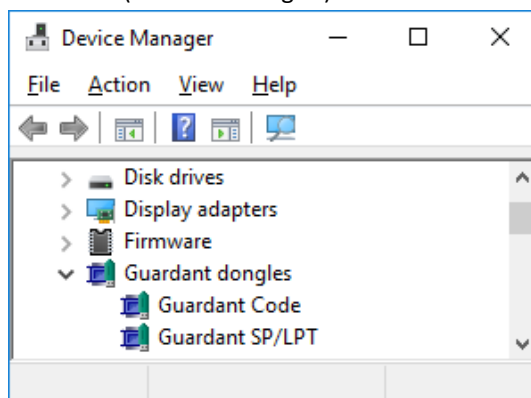


Figure 4.1.4.2

- If indicated devices are not found, reinstall protection key driver.

2. No hardware key is found

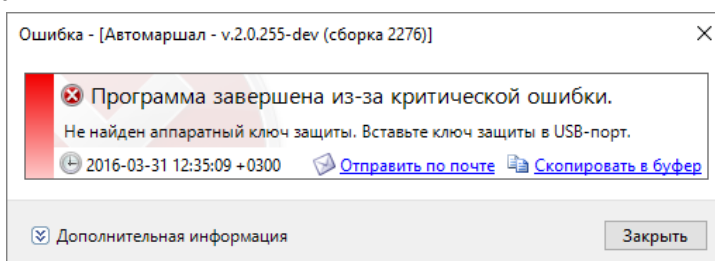


Figure 4.1.4.3

See **Clause 1. Trial period of software use terminated..**

3. License file for key Nr. 0000000 is not found

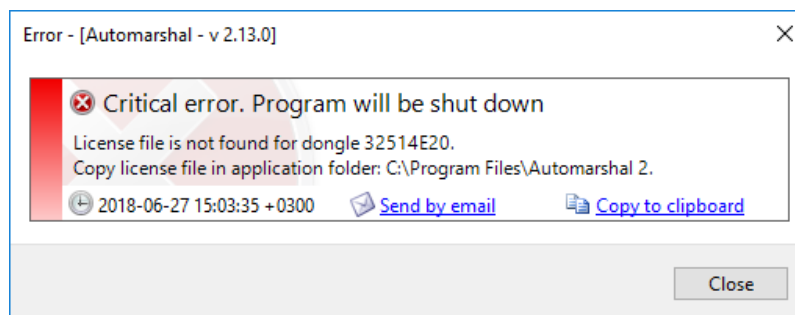


Figure 4.1.4.4

- Check whether license file recar_00000000.lic is available in folder with installed SW;
- If file is not found, manually copy license to the specified directory;
- If error keeps occurring, seek for technical support.

4. Either prerequisite is not installed

a. .NET Framework Platform Initialization Error.

If Microsoft .NET Framework 4.5 is not installed on your PC, the following error message will be displayed:

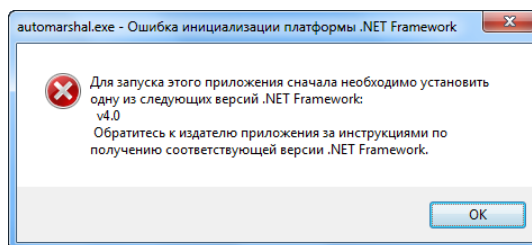


Figure 4.1.4.5

To eliminate such error, setup Microsoft .NET Framework 4.5.

The link for downloading of Microsoft .NET Framework 4.5 is available at:

<http://www.microsoft.com/en-us/download/details.aspx?id=40779>



If OS Windows 7 is installed on your computer, Microsoft .NET Framework is setup separately.

b. Trial period of software use terminated

See **Clause.1. Trial period of software use terminated.**

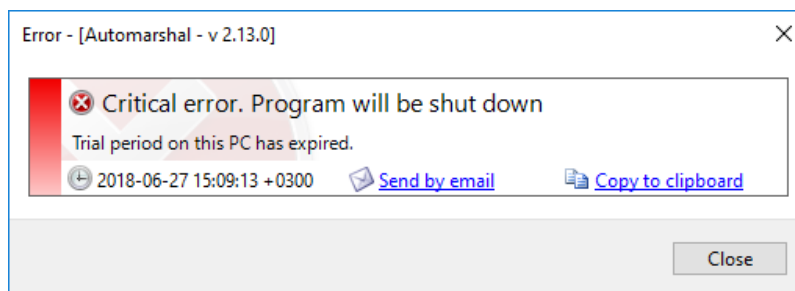


Figure 4.1.4.6

c. Database connection is not configured

If Microsoft SQL Server 2012/2014 Express/Microsoft SQL Server Compact is not installed on your PC, the following error message will be displayed:

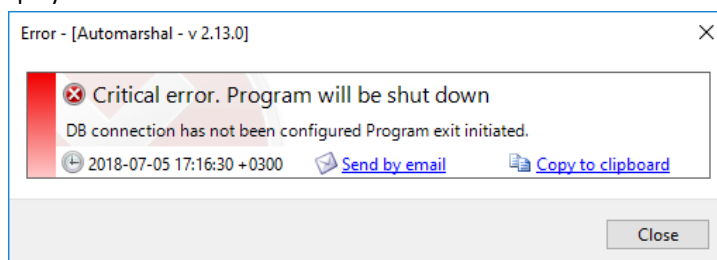


Figure 4.1.4.7

To eliminate given error, install Microsoft SQL Server 2012/2014 Express.

The link for downloading of Microsoft SQL Server 2012 Express is available at:

<https://www.microsoft.com/en-us/download/details.aspx?id=29062>

d. Distributable Package Visual C++ is not installed

If distributable Package Visual C++ for Visual Studio 2015 is not installed on your PC, the following error message will be displayed:

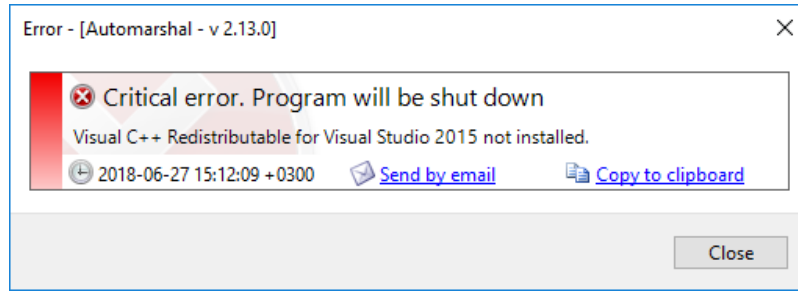


Figure 4.1.4.8

To eliminate given error, install distributable package Visual C++ for Visual Studio 2015.

The link for downloading of the distributable package Visual C++ for Visual Studio 2015 is available at:

<https://www.microsoft.com/en-us/download/details.aspx?id=48145>



All required prerequisites:

- Microsoft .NET Framework 4.5;
[\[http://www.microsoft.com/en-us/download/details.aspx?id=40779\]](http://www.microsoft.com/en-us/download/details.aspx?id=40779)
- Microsoft Visual C++ 2015 Redistributable x86/x64;
[\[https://www.microsoft.com/en-us/download/details.aspx?id=48145\]](https://www.microsoft.com/en-us/download/details.aspx?id=48145)
- Guardant Dongle Driver;
[\[http://www.guardant.com/support/download/drivers/\]](http://www.guardant.com/support/download/drivers/)
- Microsoft SQL Server Compact;
[\[https://www.microsoft.com/en-us/Download/details.aspx?id=17876\]](https://www.microsoft.com/en-us/Download/details.aspx?id=17876)
- Microsoft SQL Server 2012 Express.
[\[https://www.microsoft.com/en-us/download/details.aspx?id=29062\]](https://www.microsoft.com/en-us/download/details.aspx?id=29062)

5. Insufficient free disk space

- For startup and correct operation of Automarshall , at least 5 GB of free space is required at hard drive (provided use of SQL server of at least 12 GB).

There are several ways to eliminate given problem:

- Cleaning of Disk C by Windows software tools;
- Deletion of temporary Windows files;
- Deletion of temporary files in browser;
- Deletion of personal files and folders.

For more details on each of the above options go to website:

<https://support.microsoft.com/en-us/help/17421/windows-free-up-drive-space>

6. Installation was interrupted by antivirus program

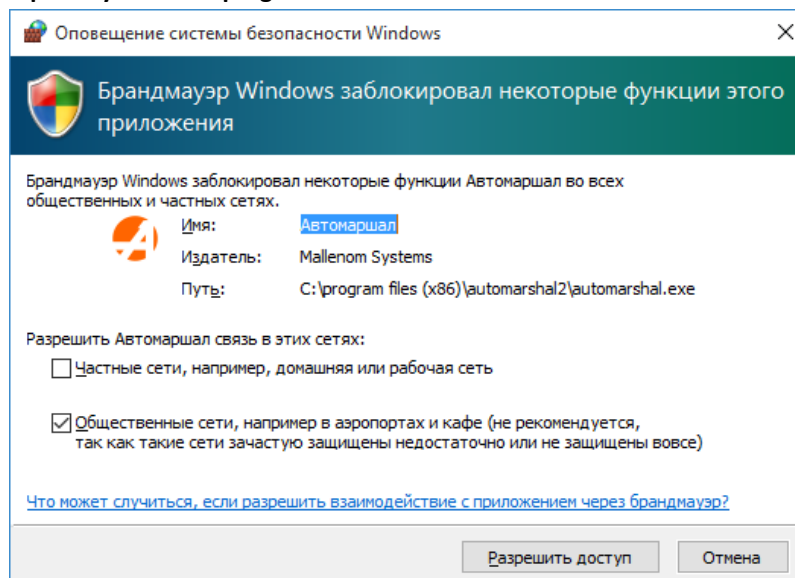


Figure 4.1.4.9

- Add SW Automarshal in exceptions list of Windows firewall or antivirus of other producer

For instance:

- ESET NOD32 Antivirus;
- Kaspersky Antivirus;
- Antivirus Dr.Web for Windows;
- Avast Pro Antivirus 2015;
- McAfee AntiVirus Plus, etc.

7. One more copy of SW is run

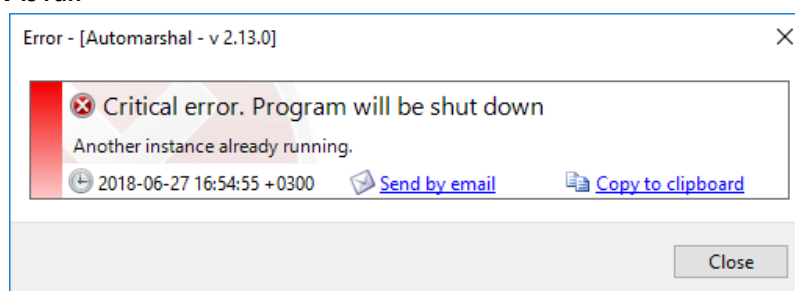


Figure 4.1.4.10

- You run software several times. Close non-required windows and wait until software run.

8. Automarshal Database Maintenance Program is activated

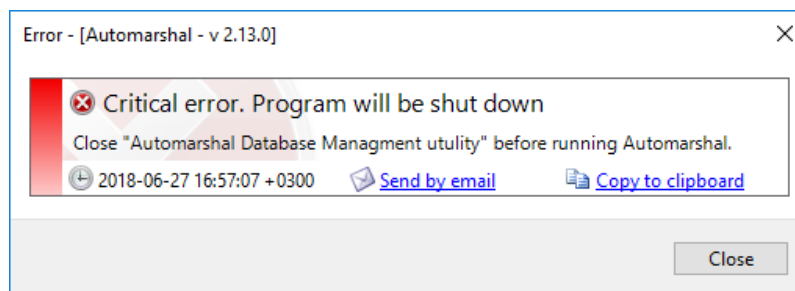


Figure 4.1.4.11

- You run SW Automarshal with currently running Automarshal Database Maintenance Program. Close Automarshal Database Maintenance Application and run SW Automarshal again.

4.1.5. Activation and removal of the software protection key

4.1.5.1. Activation of the software protection key

To activate the software key, follow the steps below:



The license number and serial number are given for example.

1. Install the Automarshal software.
2. Copy the license file 8000B6EA.lic to the directory with the installed program. By default, it is C folder: \Program Files \Automarshal 2
3. Run the GuardantActivationWizard.exe activation utility. It shall be sent via email together with the license file, product serial number and software key.

The utility can be downloaded from here: <http://support.mallenom.ru/attachments/download/464/GuardantActivationWizard.exe>

4. In the opened window, specify the location of the 8000B6EA.grvd file and click the “Next” button.

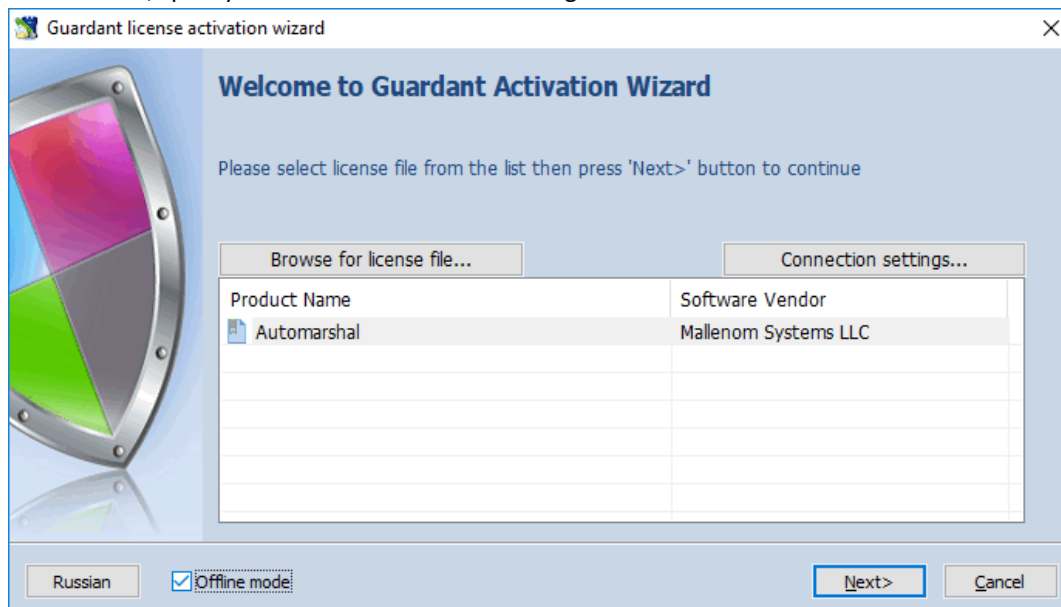


Figure 4.1.5.1.1

5. Enter the serial number and click the “Next” button.

The example of a serial number: *S/N: s23kUO-rgLJ06-OL0ion-fGrbee-9aZwRC-6Zxa6p-caU1fU-zx6muQ-sINGP#-q2AIBC.*

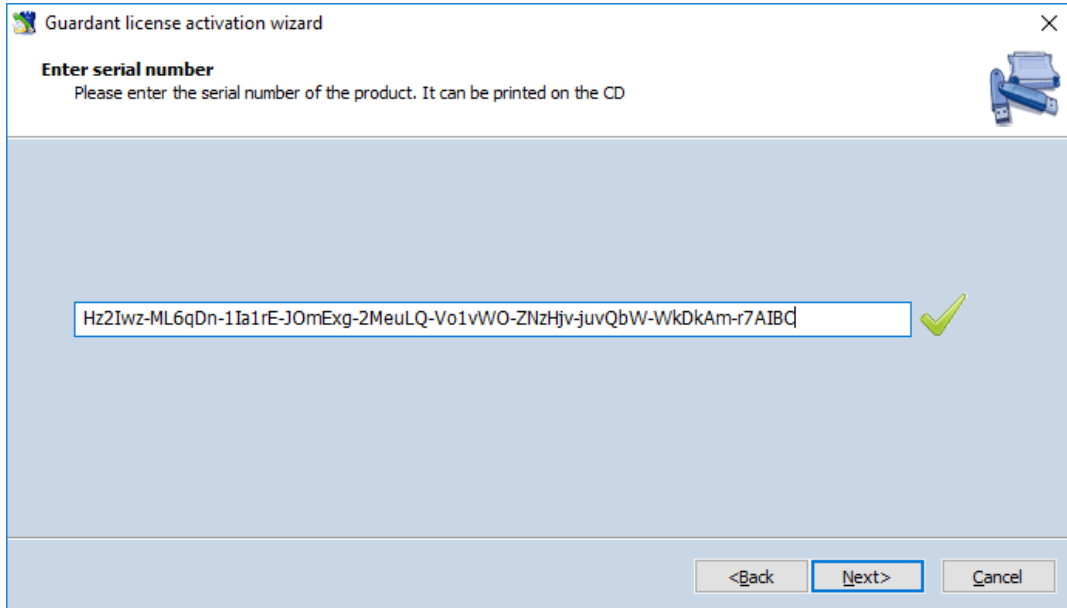


Figure 4.1.5.1.2

6. If the license has been activated successfully, the message of it will be displayed on the screen. To close the utility, click the “Finish” button.

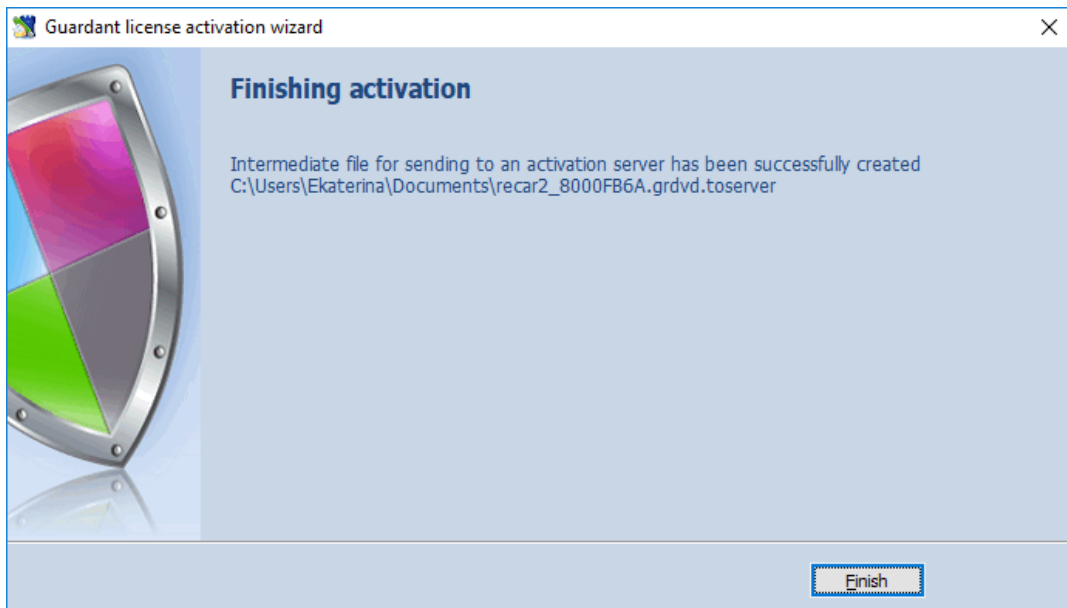


Figure 4.1.5.1.3

7. Check the activation of the key. To do this, open the Control Panel → Guardant drivers → Diagnostics. In the opened window, click the “Diagnostics” button.

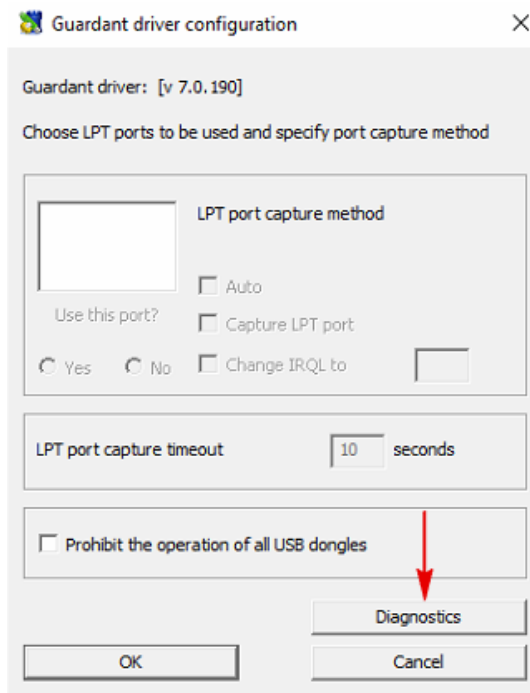


Figure 4.1.5.1.4

In the “Guardant diagnostics utility” window, click the “Forced search” button. The key with your number shall be identified.

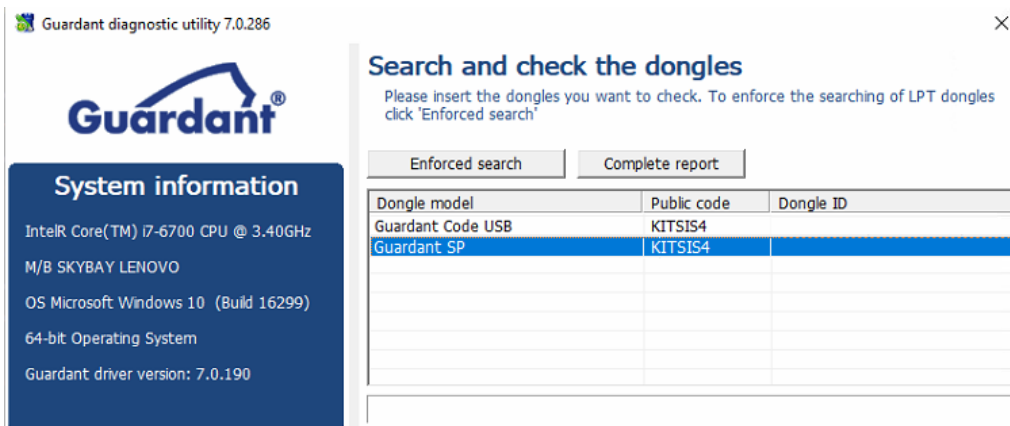


Figure 4.1.5.1.5

4.1.5.2. Removal of the software protection key

Go to the Control Panel; for the more convenient viewing and searching switch the “View by:” from “Categories” to “Small icons”.

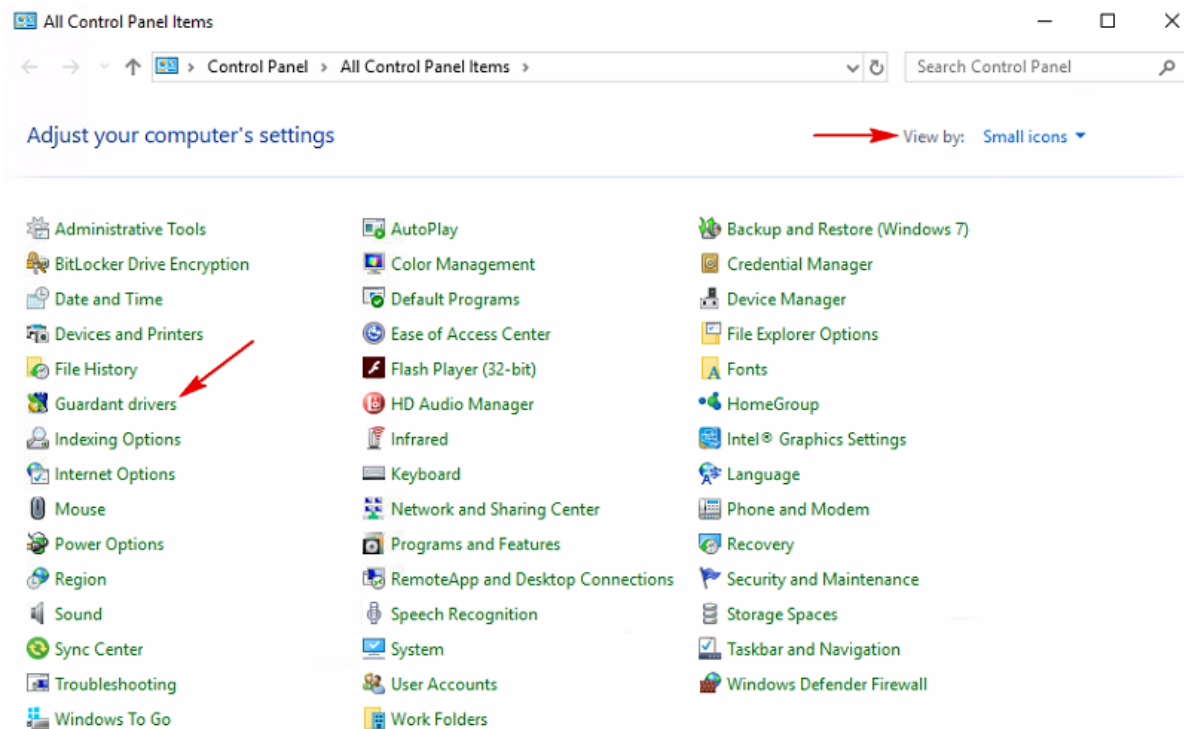


Figure 4.1.5.2.1

Find “Guardant drivers” in the list, double-click with the left mouse button to open the “Guardant driver configuration” window, click the “Diagnostics” button (Figure 4.1.5.2.2).

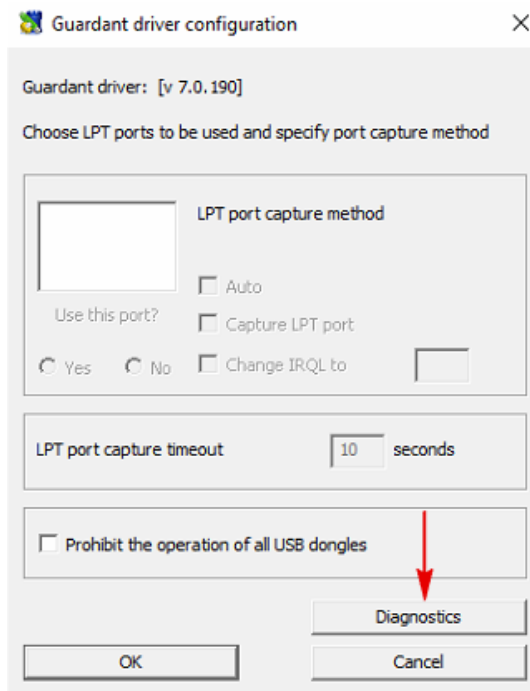


Figure 4.1.5.2.2

After the short verification, the window where the keys registered in the system are displayed has to open (Figure 4.1.5.2.3). Number 1 is the software key, number 2 – physical USB key. Select the Guardant SP option, right-click and select the “Remove Guardant SP dongle from the system” option. Thus, only Guardant Code USB shall remain in the system.

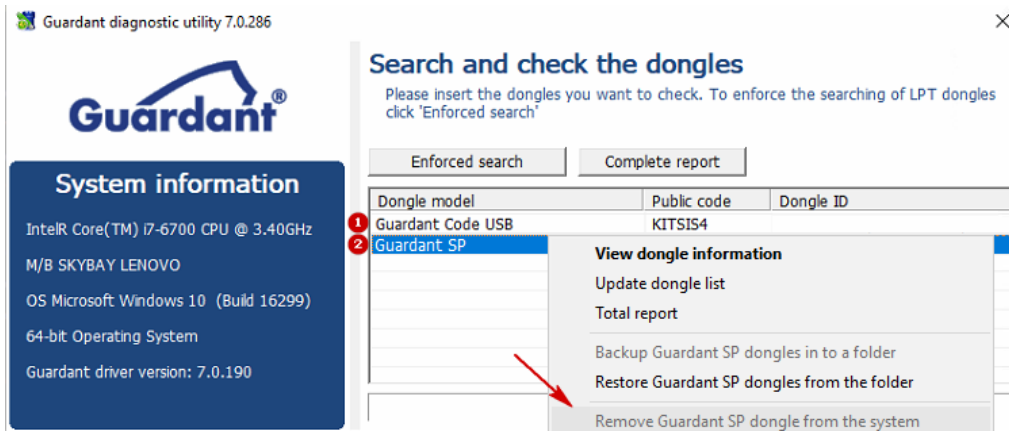


Figure 4.1.5.2.3

The window for confirmation of the action has to open. Click “Yes”.

So, the removal of the inactive keys has finished. Close the “Guardant driver configuration” window.

4.2. Restoration/Deletion of SW Automarshal



Prior to SW restart, it is recommended to create back-up copy of the DB and SW settings.

Run Setup Wizard by double-clicking the left mouse button on file automarshal.setup.exe.

In the displayed window:



– means that SW indicated on the right side of the icon is already installed on your PC and will not be installed again upon setup of SW Automarshal.



– means that SW indicated on the right side of the icon is not installed on your PC and will be installed upon complete setup of SW.



Figure 4.2.1

Press **Next** button.

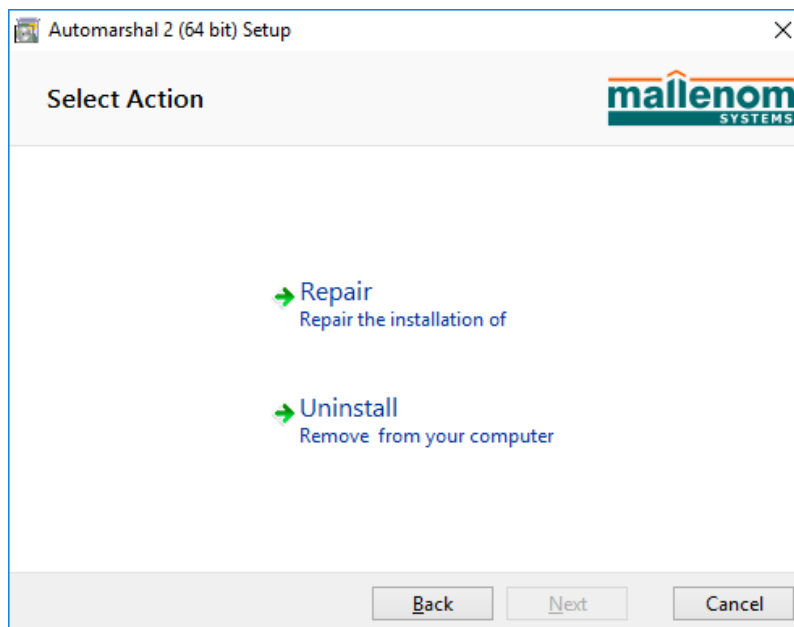


Figure 4.2.2

Choose the most suitable option in the opened window:

- **Repair;**
- **Delete.**

4.2.1. Restoration of Software

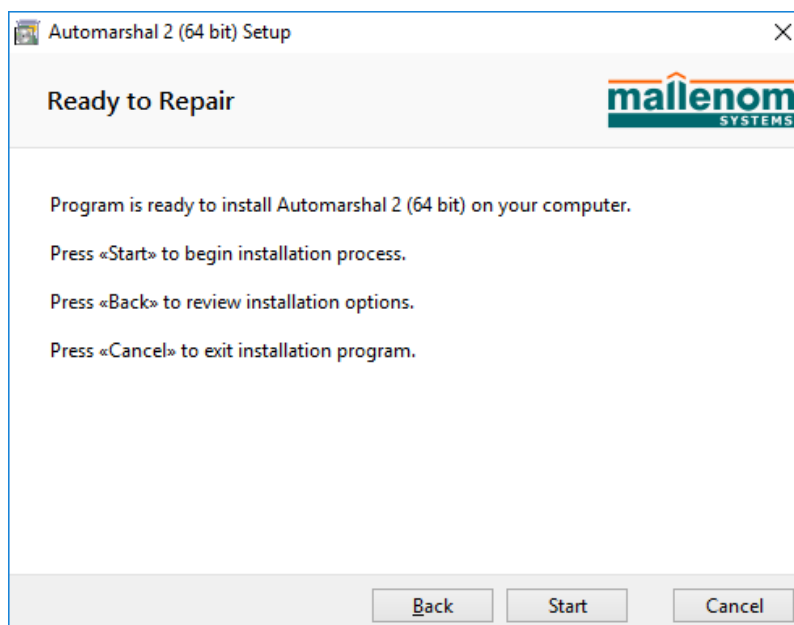


Figure 4.2.3

By pressing the **Restore** button, window offering restoration of SW Automarshal will be opened.

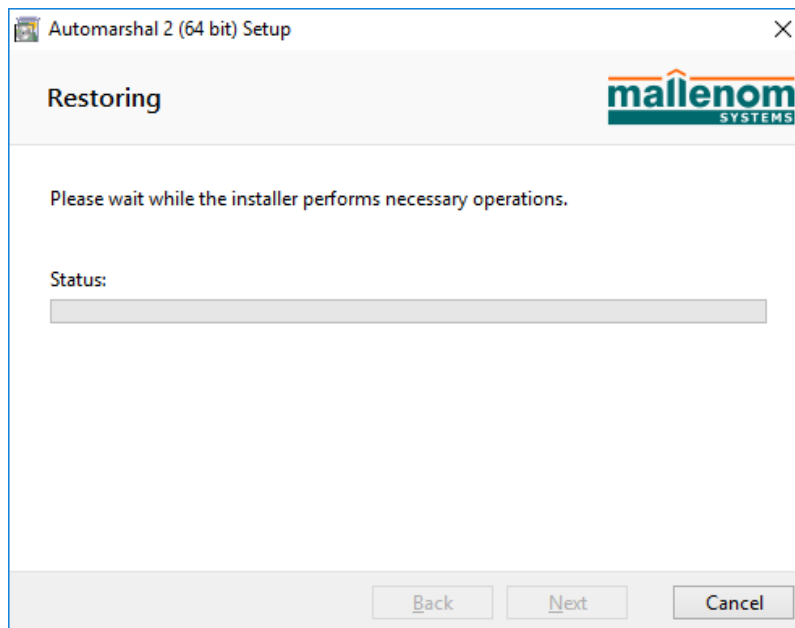


Figure 4.2.4

If you want to retrieve errors occurred during the last setup session by restoration of the missing and damaged files, icons and log entries, press **Start** button.

By pressing **Back** button, you will go back to selection of options (Change, Restore and Delete), and by pressing **Cancel** button you will exit the software.

4.2.2. Deletion of Software

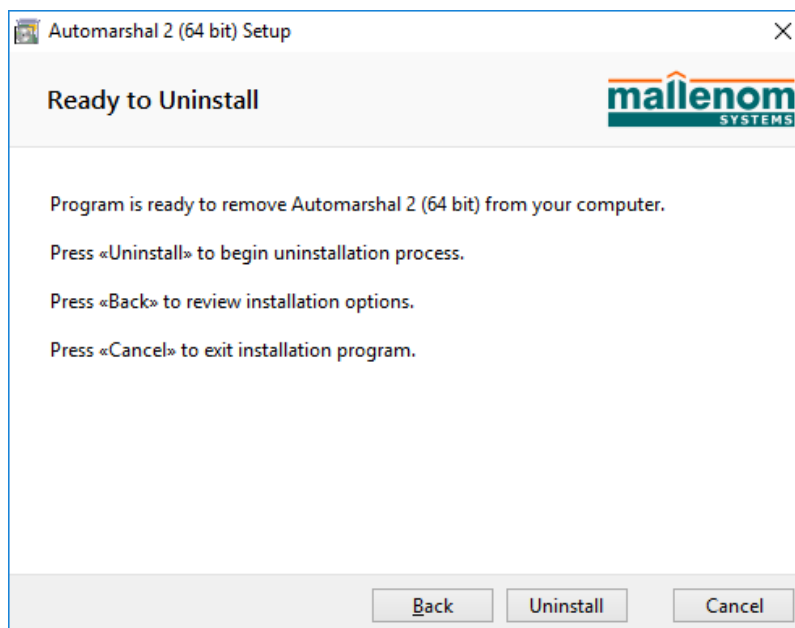


Figure 4.2.5

By pressing **Uninstall** button, window offering deletion of SW Automarshal will be displayed on the screen.

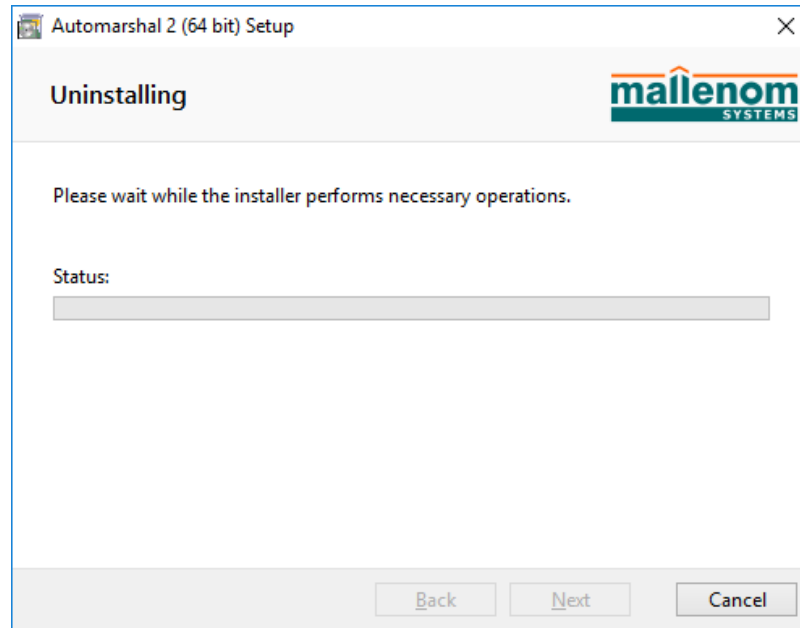


Figure 4.2.6

To delete SW Automarshal from your PC, press **Uninstall** button.

Or press **Back** button to choose options;

Or press **Cancel** button to exit the software.

5. Execution of the Software


5.1. Software Run



Prior to software run, insert the dongle into USB-port of the computer.

At any time it is recommended to startup the system with the administration rights.

Prior to the initial startup of the software, check availability of preset software tools specified in **Clause 3.2** of present User Guide.

To run the software, double-click the left mouse button on software icon on a desktop .

If DB is incorrectly configured, the following message will appear upon startup of the software:

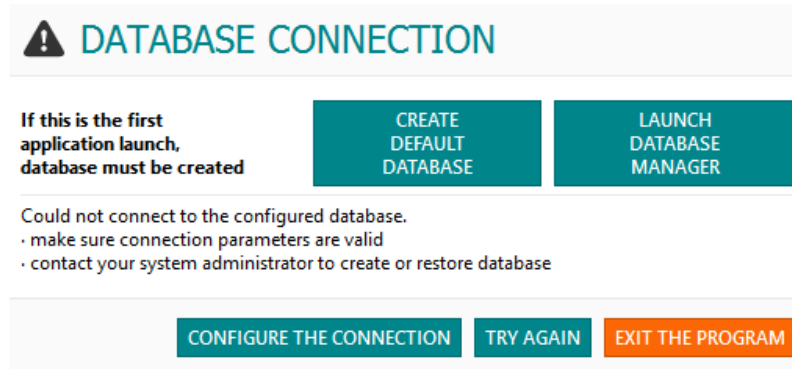


Figure 5.1.1

- Upon pressing the button **Create Default Database**, file `DB default.mdf` will be created in folder `%ProgramData%\Mallenom\Automarshal\Database`.

With parameters set by default:

- Provider - Microsoft SQL Server Express;
- Database - `%ProgramData%\Mallenom\Automarshal\Database\default.mdf`.
- If you want to connect to previously created DB, press **Configure the Connection** button.

Enter DB connection settings in window **Setup Connection** and press **OK** button. Provider **Microsoft SQL Server** is selected by default. Should any problems arise, refer to software administrator

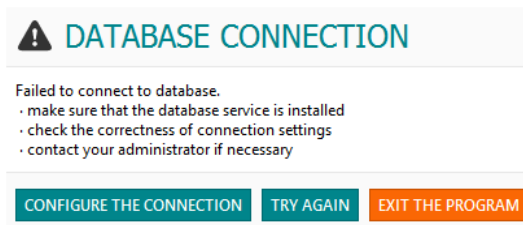


Figure 5.1.2

- DB connection may be manually setup with the use of **Automarshal Database Management** utility.

To do that, press **Launch Database Manager** button. **Automarshal Database Management** utility is shown on the screenshot below.

Creation, deletion, updating, and creation of back-up copies are performed by **Automarshal Database Management** utility. If present operations are required, please refer to software administrator.

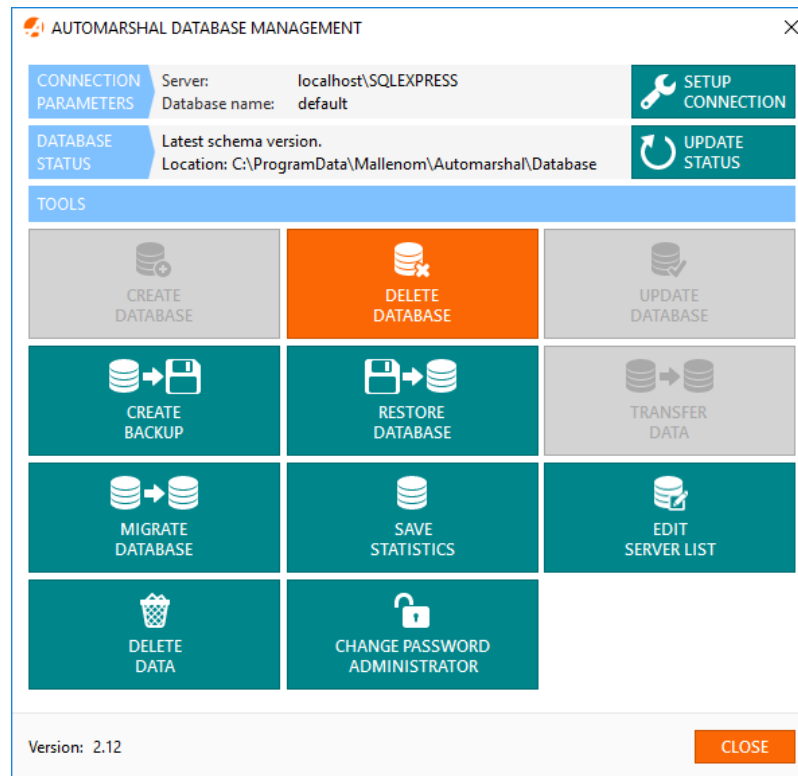


Figure 5.1.3



For more details regarding the use and options of the utility refer to **Automarshal Database Management User Guide**.

- When pressing **Try Again** button, SW Automarshal would attempt to connect once again to Database MS SQL Server.
- To exit the software, press **Exit the Program** button.

5.2. Software Interface

Upon initial startup of the software, main window of the software will be opened on the screen.

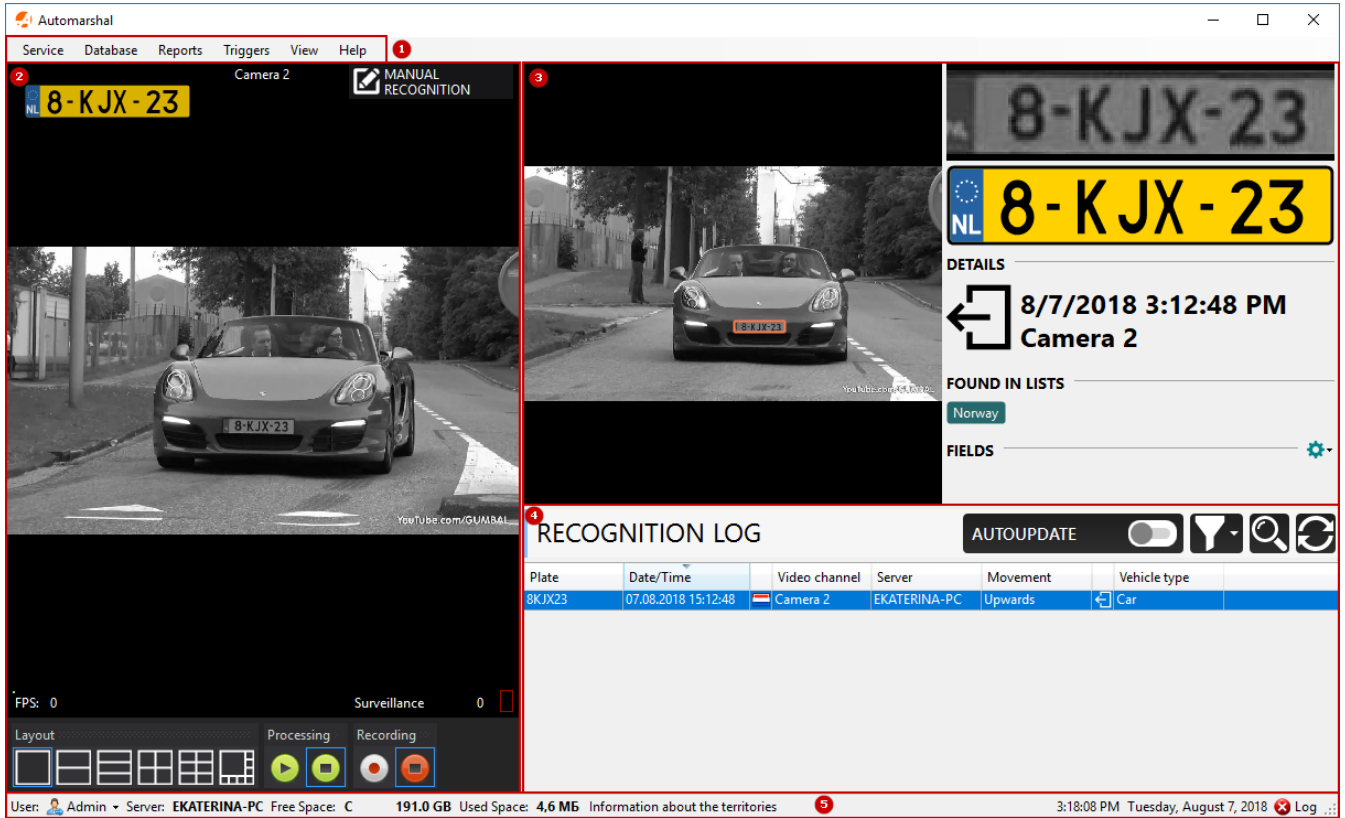


Figure 5.2.1

1. Horizontal menu is located in the upper part of the software; for more details see **Clause 5.2.1. Upper Menu**.
2. Video player displaying video from the selected camera is located in the upper part of the software. Recognized number plate of passed vehicle will be displayed in the upper corner of video.

Figure 5.2.2

For more details on video-player properties, please refer to **Clause 5.2.2. Video-player**.

3. Information window is displayed on the right side of the software and contains photo of vehicle with recognized number plate, image of the number plate in white frame, and details of the recognized number plate.

An example is illustrated on the screenshot below:

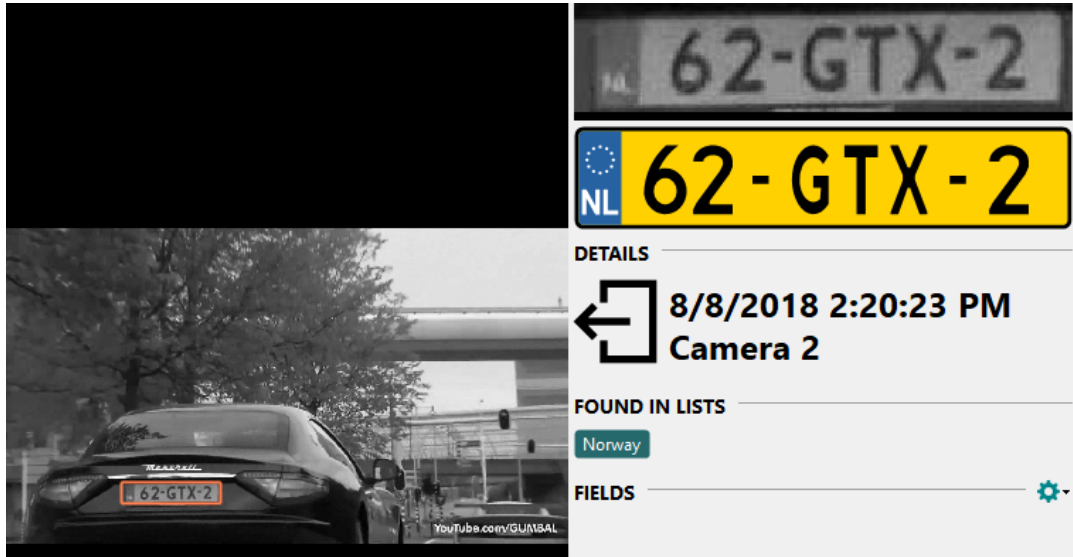


Figure 5.2.3

For more details on information window, please refer to **Clause 5.2.3. Information Window.**

4. **Recognition Log** .is located under the information window. It contains details of the recognized vehicle number plate. For more details on log options, please refer to **Clause 7.2 Recognition Log**.

RECOGNITION LOG							AUTOUPDATE <input type="checkbox"/>				
Plate	Date/Time	Video channel	Vehicle list (company)	Movement	Vehicle type						
62GTX2	✓ 08.08.2018 14:20:23	Camera 2	Norway	Upwards	Car						
96KVB7	✓ 08.08.2018 14:20:11	Camera 2		Downwards	Car						
JKHJ18	✓ 08.08.2018 14:20:06	Camera 2		Downwards	Car						
3HJ188	✓ 08.08.2018 14:20:06	Camera 2		Downwards	Car						
3KHJ18	✓ 08.08.2018 14:20:01	Camera 2		Upwards	Car						
26TNT5	✓ 08.08.2018 14:19:48	Camera 2		Upwards	Car						
85SXV1	✓ 08.08.2018 14:19:42	Camera 2		Downwards	Car						

Figure 5.2.4

5. Status Bar locates in the lower menu of the software and reflects the name of current user, server, as well as date and time. For more details, please refer to **Clause 5.2.4. Status Bar**.

5.2.1. Upper Menu

5.2.1.1. Service

Such options as Video Stream Play/Stop, move to settings window, change the user or exit the software may be performed from the Main **Service** Menu.

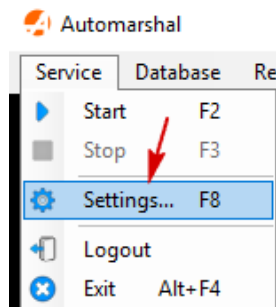


Figure 5.2.1.1

- *Start (or button F2)* – play video.
- *Stop (or button F3)* – stop video.
- *Options (or button F8)* – software settings window is opened.
- *Logout* – logout of current user. For more details on user authorization, please refer to **Clause 7.1.** of present User Guide.
- *Exit (or button Alt+F4)* – exit the software.

5.2.1.2. Database – Recognition Log

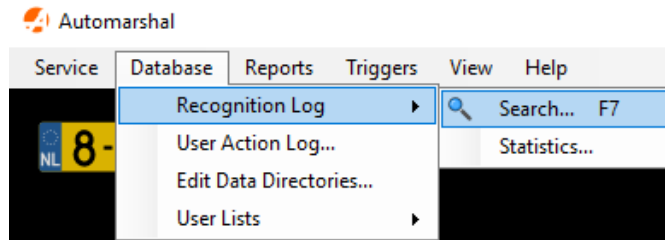


Figure 5.2.1.2

- *Search (of button F7)* – opens search and reporting window. For more details, refer to **Clause 7.3. Search.**
- *Statistics* – review of statistics by days, by vehicle number plate.

Database – User Action Log

Opens user actions window.

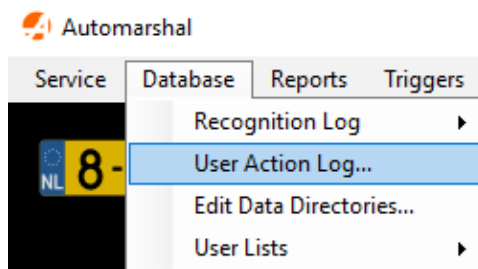


Figure 5.2.1.3

5.2.1.3. Reports

This tool is available starting from version 2.6.

Select quick report from the main **Reports** menu.

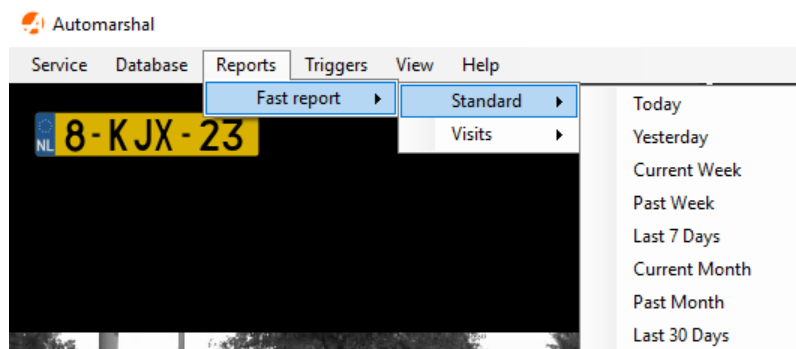


Figure 5.2.1.4

Report type can be selected from the drop-down menu, and then the report period:

- Today;
- Yesterday;
- Current Week;
- Past Week;
- Last 7 Days;
- Current Month;
- Past Month;
- Last 30 Days;

5.2.1.4. Triggers

This tool is available starting from version 2.6.

All registered triggers can be viewed in main **Triggers** menu.

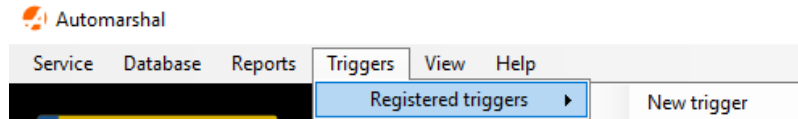


Figure 5.2.1.5

5.2.1.5. View

View tab of the menu allows:

1. viewing information on operation progress of the software. For this purpose, select **Logs** option in submenu or press button **F12**.

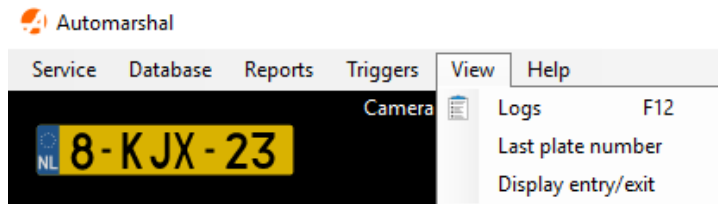


Figure 5.2.1.6

Example of Automarshall event log is shown on a screenshot:

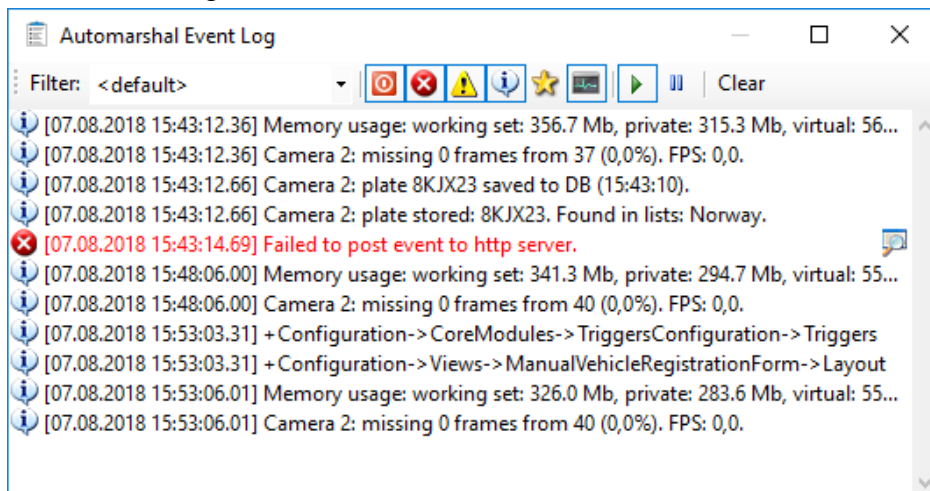


Figure 5.2.1.7

2. opening window, which displays the last recognized number plate. To do that, select **Last Plate Number**.

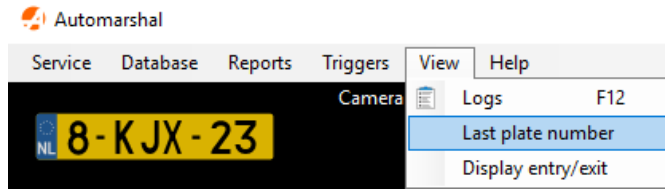


Figure 5.2.1.8

By double-clicking the left mouse button, window with the **Last Recognized Plate Number** will be displayed in full-screen mode.

Example of given window is shown on the screenshot below:



Figure 5.2.1.9

3. Viewing entry/exit.



Figure 5.2.1.10

4. To display front/rear number plate (see Section 6.5.25 “Front and rear number plate” of the Manual), select **View → Display front/rear plate**:

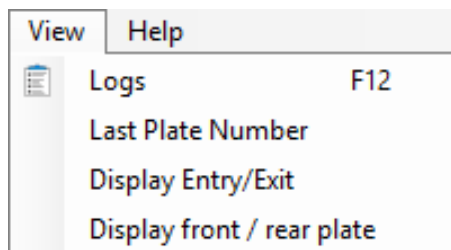


Figure 5.2.1.11

5.2.1.6. Help. About the Program

Select **Help – About the Program** to review information on:

- Version of SW Automarshal ;
- Technical support of SW Automarshal ;
- Copyrights.

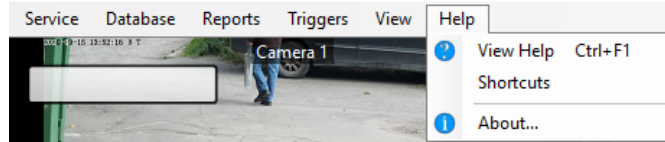


Figure 5.2.1.12

1. Information regarding SW version

The following information is provided in section **Version**:

- *version* – version number of SW Automarshal ;
- *date* – version release date;
- *license* – date/ day count until expiration of the license

2. Information on technical support of the SW

The following information is provided in **Technical Support** Section:

- Free maintenance until XX.XX.XXXX



Free technical maintenance is provided within one year since purchase of SW Automarshal .

- **Generate a Report** button is used for generation of the information about operation of the software for technical support service.
- Contact details of the technical support service: *phone number, e-mail, and website.*

AUTOMARSHAL
vehicle access control

Version
Version: 2.13.1-beta05 (x64)
Date: 07.08.2018

License
Owner: Малленом Систе...
Key number: 36fb6993
Unlimited

Copyright
© «Mallenom Systems», LLC.
All rights reserved.

Technical support
Generate report...
Phone: +7 (8202) 20-16-39
E-mail: support@mallenom.ru
Site: support.mallenom.ru
www.automarshal.net

mallenom
SYSTEMS

Figure 5.2.1.13

3. Shortcuts

Information about hotkeys - select Help → Keyboard shortcuts

Action	Key
Main	
View Help	Ctrl + F1
Start	F2
Stop	F3
User Lists	F4
Edit User Lists	F5
Search Vehicle	F6
Open Search Window	F7
Open Settings Window	F8
Logs	F12
Manual Recognition	
Camera 1	Ctrl + 1
Camera 2	Ctrl + 2
Camera 3	Ctrl + 3
Camera 4	Ctrl + 4
Camera 5	Ctrl + 5
Camera 6	Ctrl + 6
Camera 7	Ctrl + 7
Camera 8	Ctrl + 8

Close

Figure 5.2.1.14

5.2.2. Video-Player

Video-player displaying video stream from the selected camera is located in the left part of the software.

Video channel is located in the central part of the player. Recognized number plate of passed vehicle is displayed on the left of video image.

See example on the screenshot below:

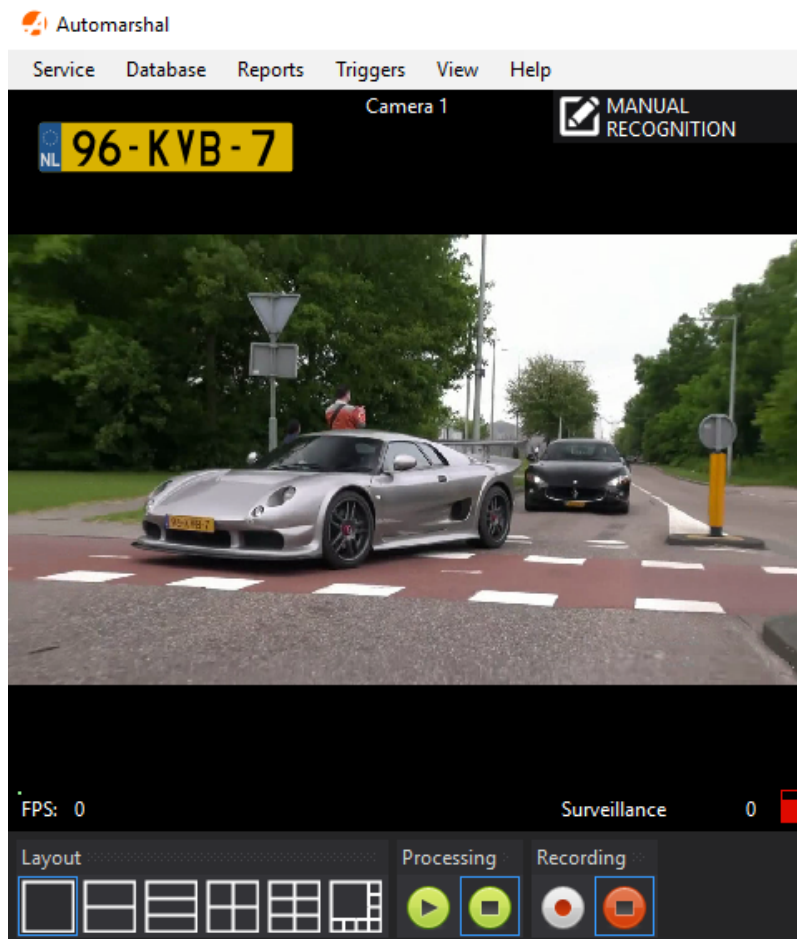


Figure 5.2.2.1

Control buttons are located in the lower menu of the software.



Figure 5.2.2.2

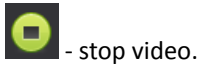
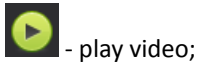
Layout

In video-player window you may set number and position of video cameras. Maximum number of cameras is 8.

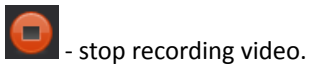
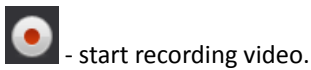


Figure 5.2.2.3

Processing



Recording



By default, folder in which video shall be recorded is **C:\Users\Public\Videos**.

To indicate other folder, in which video will be saved, go to **Other** tab in Program Settings. For more details refer to **Clause 6.5** of present User Guide.

Block Skip Indicator

Block Skip Indicator is located in the right lower corner of Video-Player. It may be turned on/off through the context menu by selecting: *Display over video/Processing progress*.



Figure 5.2.2.4

Given Indicator shows what percentage of shots the software fails to make (misses).

If software processes all or almost all shots, the **indicator** would turn **green**.

If the **indicator** turns **red**, its contrast and brightness will indicate the percentage of missed shots.

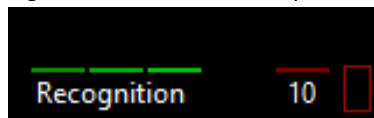


Figure 5.2.2.5

The higher the percentage of shots, the more likely is that this or that motor vehicle would be missed. Missed shots are result of insufficient capacity of your PC (mainly processor), on which software is installed, or are due to “unsuccessful” settings of the recognition algorithm. To eliminate the gap, algorithms shall be additionally set up, and if the problem still exists, it is recommended to replace your PC by more powerful one.

Context Menu

By the right-click on the video player you can open the context menu where you can customize the elements displayed over the video or go to the settings.

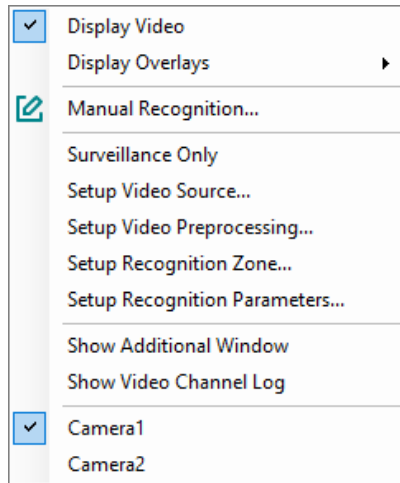


Figure 5.2.2.6

The elements settable for displaying over the video are shown in Figure 5.2.2.7.

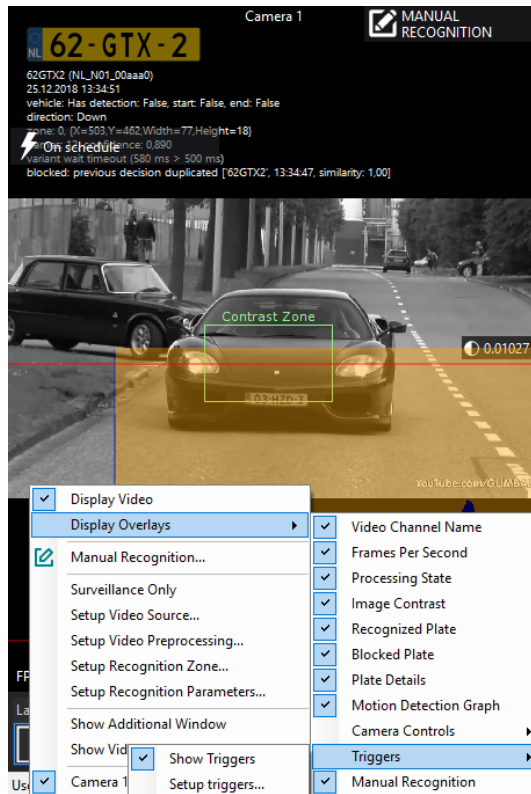


Figure 5.2.2.7

Context menu may be deactivated; for more details see **Clause 6.5. Miscellaneous..**

5.2.3. Information Window

The information window contains the information about the recognized vehicle: photo of the vehicle with the recognized plate, close-up view of the vehicle plate and detailed information about the recognition and vehicle plate.

Figure 5.2.3.1 shows the example of the information window.

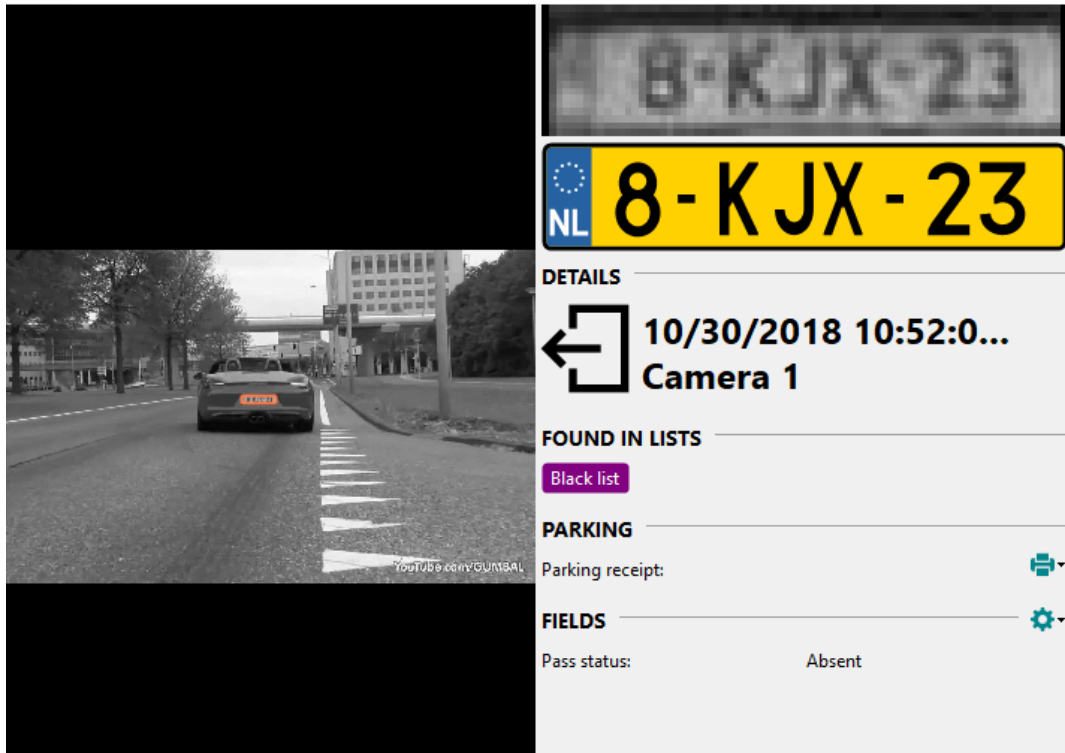


Figure 5.2.3.1

The information window displays the following information:

DETAILS – the direction of travel, date and time and the camera from which the recognition has been made.

FOUND IN LISTS – color and name of the list in which the vehicle plate is included. If you click on the list name, the “User Lists” window has to open, where you can read and edit the information on this vehicle plate.

PARKING: Parking receipt – allows you to view and print a parking receipt manually. This section is displayed in the information window only if the “Tariffication” plugin is enabled.

FIELDS – the information on selected additional fields. In Figure 5.2.3.1, the “Pass status” additional field is selected for display. To select other fields, click the “Select additional fields for display” button and select the needed additional fields from the drop-down list (Figure 5.2.3.2).

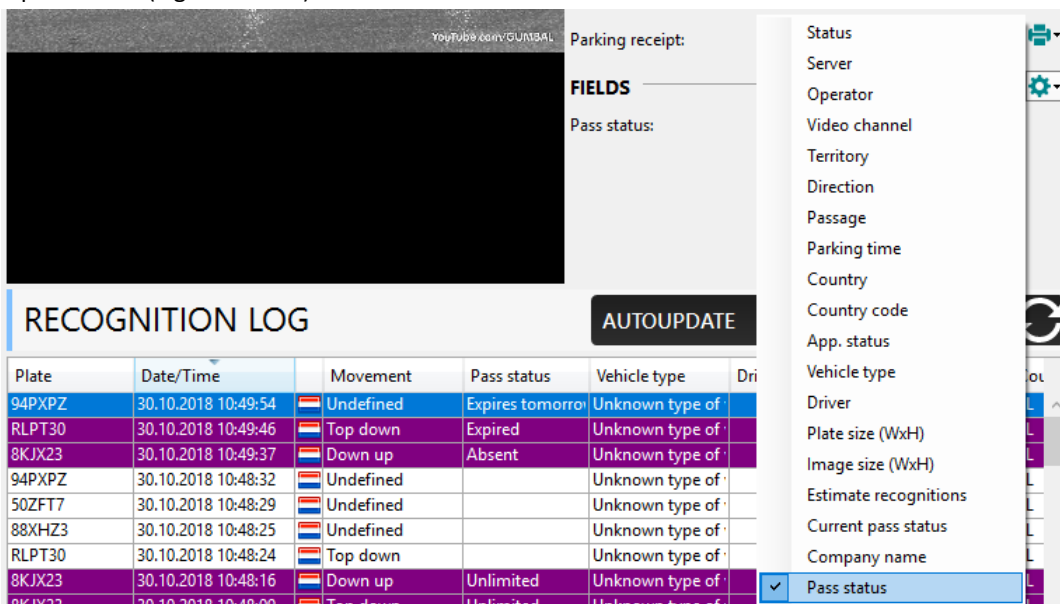


Figure 5.2.3.2

You can view and edit any record of the Recognition Log in the “Edit record” window. To open this window, select the needed line in the Recognition Log and double-click it by the left mouse button; or right-click the record and select “Edit” from the drop-down menu.

The example is shown in the screenshot:

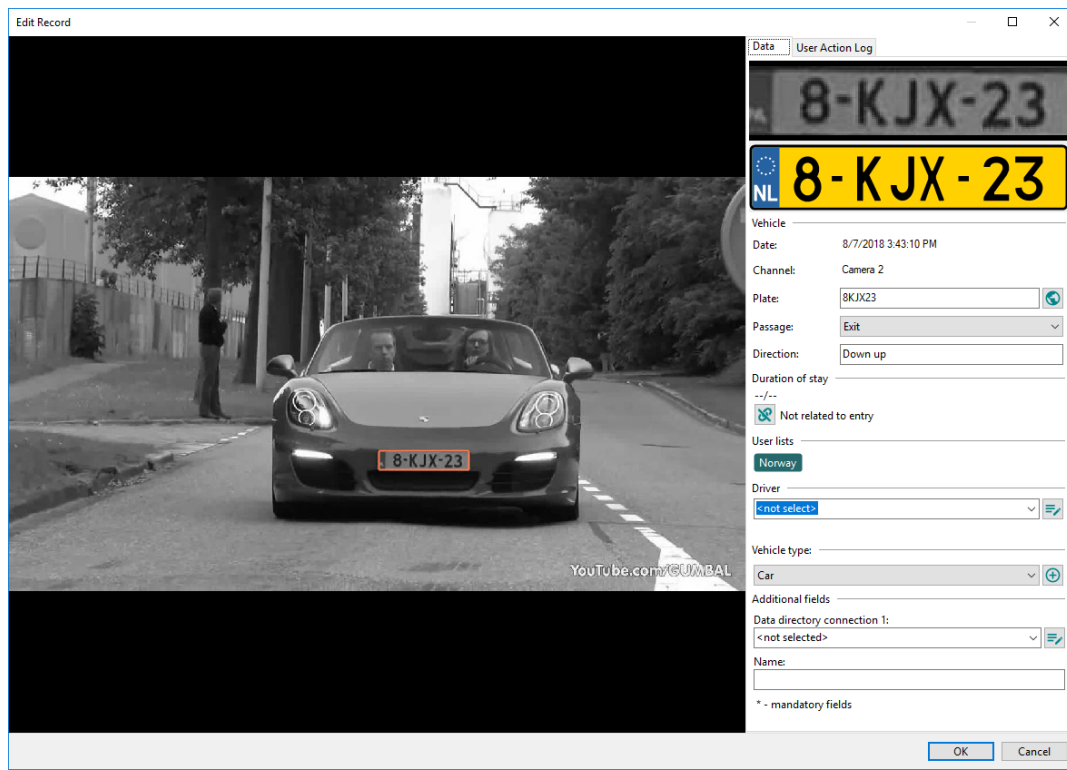


Figure 5.2.3.3

- **Date** – date and time of plate recognition.
- **Video channel** – camera which recognized vehicle number plate.
- **Plate** – number plate of the recognized vehicle.
- **Direction** – movement direction of MV in a shot (entry, exit).
- **Duration of stay** – if the recognized plate number is associated with the exit/entry, then the information about the associated record will be indicated in this line.

The **Edit** button allows to manually set/break the link between the selected entry and another entry/exit of the vehicle.

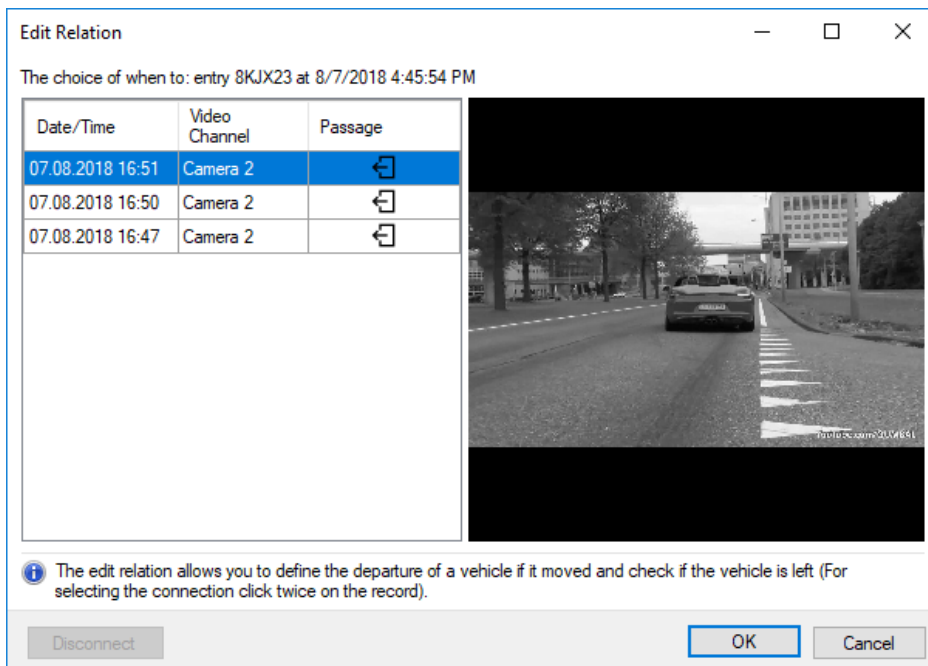


Figure 5.2.3.4

After the link has been modified, the date of change, the modification itself and user name will be indicated in the Registration Log.

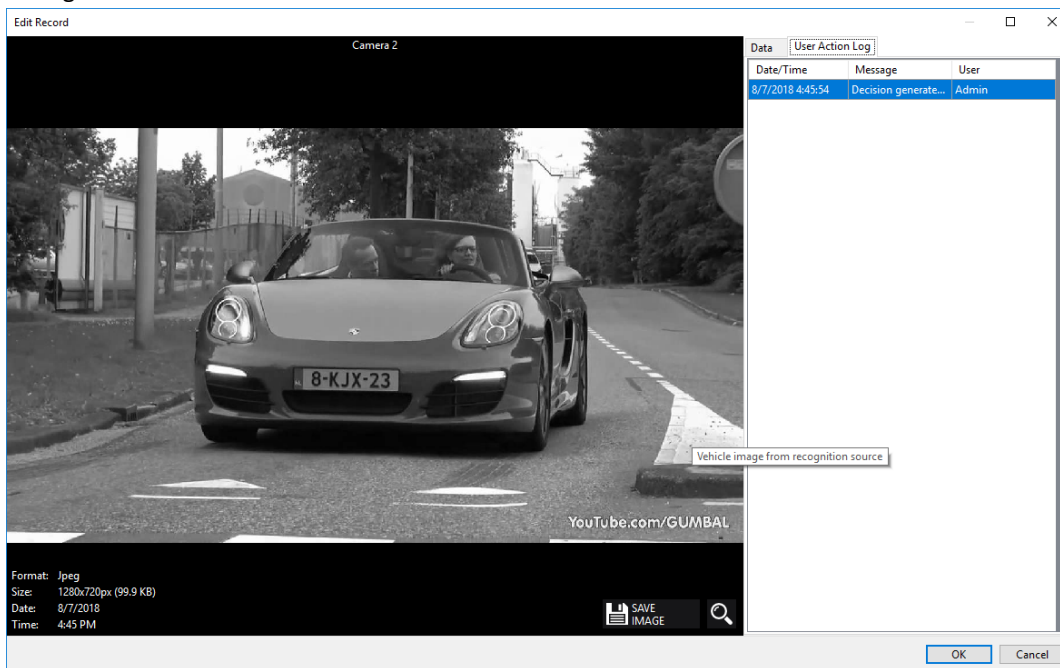


Figure 5.2.3.5

- **User List** – if the recognized plate number is found in some of the user lists (Black, White, etc.), then in User lists window the list name will be indicated (and highlighted with the specified color) to the right of the vehicle image.
- **Additional fields** – in this field additional information on the vehicle can be specified.

The screenshot shows a software window titled 'User Action Log' with a 'Data' tab. At the top, there is a placeholder for an image that says 'NO IMAGE'. Below this is a yellow license plate with the text '8-KJX-23' and the Dutch flag 'NL'. The form contains the following fields:

- Vehicle** section:
 - Passage: Entry (dropdown)
 - Direction: Downwards (text field)
 - Duration of stay: 9 min., 20 sec.
 - Not related to exit (checkbox, checked)
- User lists** section:
 - Norway (button)
- Driver** section:
 - <not select> (dropdown)
- Vehicle type** section:
 - Car (dropdown)
- Additional fields** section:
 - Data directory connection 1: Sawdust (dropdown)
 - Name: (text field)

* - mandatory fields

Figure 5.2.3.6

5.2.4. Status Bar

Status Line or **Status Bar** is located in the lower part of the software window.

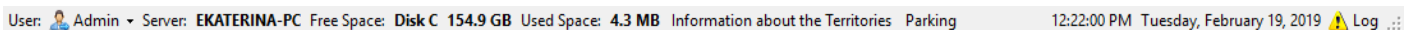


Figure 5.2.4.1

Current user name: **User: Admin** and server name **Server: EKATERINA-PC** is displayed in the left side of the line. Click on the server name to open the information window (Figure 5.2.4.2)

The "Server Information" window displays:

- The database to which Automarshal is currently connected.
- Statistics of the current server - the number of records and recognition data, how many plates have been recognized manually, automatically and how many drives have been made.

Passage - related entries about the entry and exit of the vehicle.

- Additional settings - allow to configure the timeout for executing a query to the database and the period of auto-update of the log.
- Migration - a block of information about the migration process appears only when data transfer from one database to another has been started.

To update the information, click the Update button.

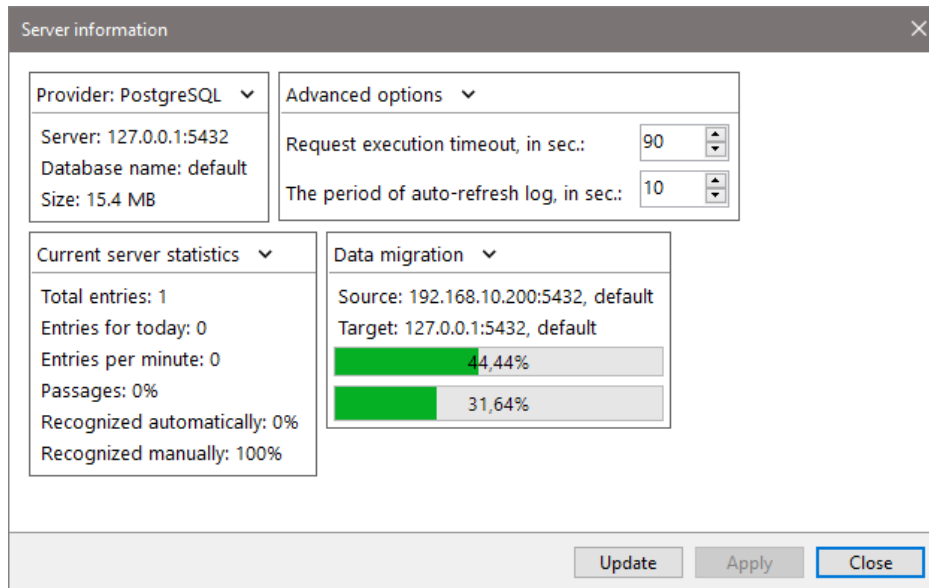




Figure 5.2.4.2

Status Bar also contains the following details:

- Free space on disk C: **Disk C 190.9 GB** ;
- Size of Automarshal 2 database: Automarshal : **Used Space: 4.7 MB** .

If icon  appears opposite to word *Used Space*, it means that DB is almost full and shall be cleaned.

If icon  appears opposite to word *Used Space* it means that DB is overloaded (recognized numbers would not be stored in the DB) and it shall be cleaned.



For more details on working with database (creation, deletion, etc.), see Clause 8. DB Maintenance Utility.

Date and time is reflected on the right part of the Status Bar and is synchronized with computer time.

Status Bar allows opening Software Operation Protocol (window, in which software operation is described in detail). In order to do that, click the left mouse button on word **Protocol**.

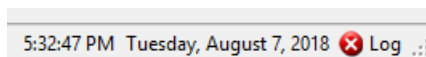


Figure 5.2.4.3

An icon, which will be displayed next to word **Protocol** shows maximum level of severity of the protocol entry following the last opening/closing of SW Automarshal Operation Protocol.

Statistics on territories – “Statistics on territories” window, where general information of vehicles entries, exits, and parking spaces in the territory are displayed, if they were previously set up.

If the territories are not set up, an empty window “Statistics on territories” and warning “Territories are not created” will appear after clicking (Figure 5.2.4.4).

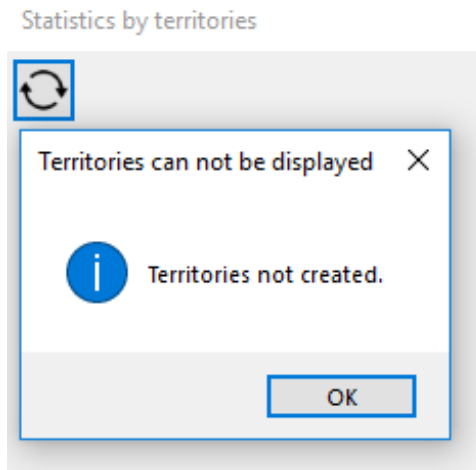



Figure 5.2.4.4

If the territory is set up, the following information will be displayed (Figure 5.2.4.5):

The image shows a software window titled "Statistics on territories" with a refresh button in the top-left corner. Below the title bar is a table with 11 columns and 1 row of data. The columns are: Territory, Entries without Exit, Entries with Exit, Exits without Entry, Undefined, Drivers in the territory, Passengers in the territory, Total people in the territory, Free place count, Number of allocated spaces for user lists, and Total spaces. The data row shows values for "Territories 1": 182, 137, 67, 10, 115, 0, 115, -167, 7, and 15.

Territory	Entries without Exit	Entries with Exit	Exits without Entry	Undefined	Drivers in the territory	Passengers in the territory	Total people in the territory	Free place count	Number of allocated spaces for user lists	Total spaces
Territories 1	182	137	67	10	115	0	115	-167	7	15

Figure 5.2.4.5

Use "Update" button in the window opened to renew information .

Parking – it is a window with the gathered information on parking spaces in the territories and spaces allocated for the lists in each territory.

If no parking spaces are allocated in the lists, "No data" message will be displayed in "Lists" column. If parking spaces are allocated in the lists, such spaces will be grouped in "Lists" column by corresponding vehicle types.

"Free" field is available for editing, that may become necessary in case incorrect number plate recognition has been made and, therefore, the number of free spaces does not correspond to the fact.

Parking ×

Territory	Vehicle Type	User List	Allocated space	Used Space	Free Space
Territory 1	Truck	Collapse ▼	5	0	5
		Suppliers A	3	0	3
		< out of the user list >	2	0	2
Territory 1	Car	Expand ▶	10	0	10

Figure 5.2.4.6

6. Program Settings

6.1. Safety

6.1.1. Roles

In order to switch to user right differentiation settings select **Service – Settings** in main menu. In Security section select Roles tab.

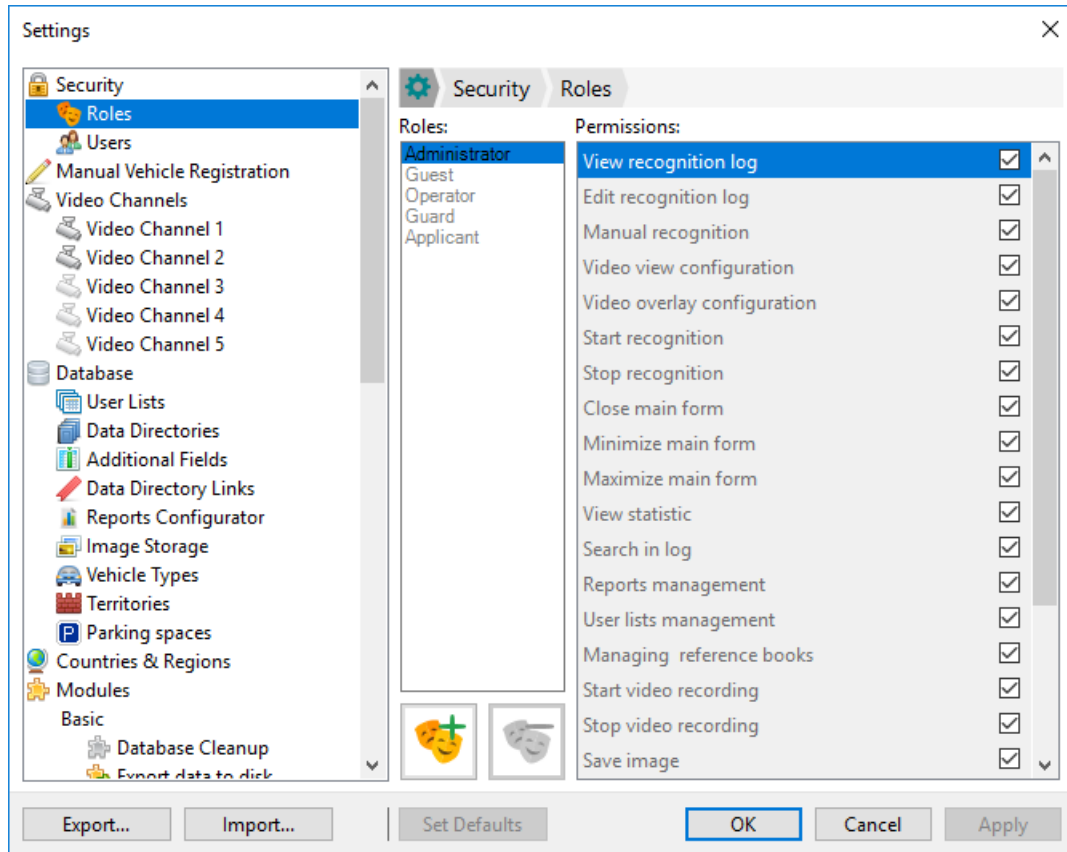



Figure 6.1.1.1

Roles in gray are the default roles, they are not available for editing or deletion.

Adding new role

To add a new role press .

In the window appeared enter the name of the new role and select a preset that will be used to grant permissions.

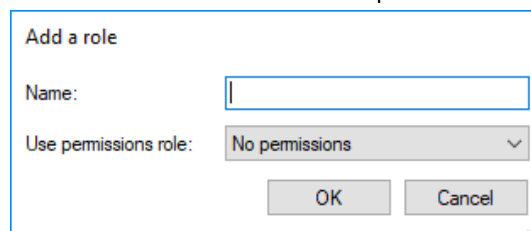


Figure 6.1.1.2

Now, a new role will appear in the list.

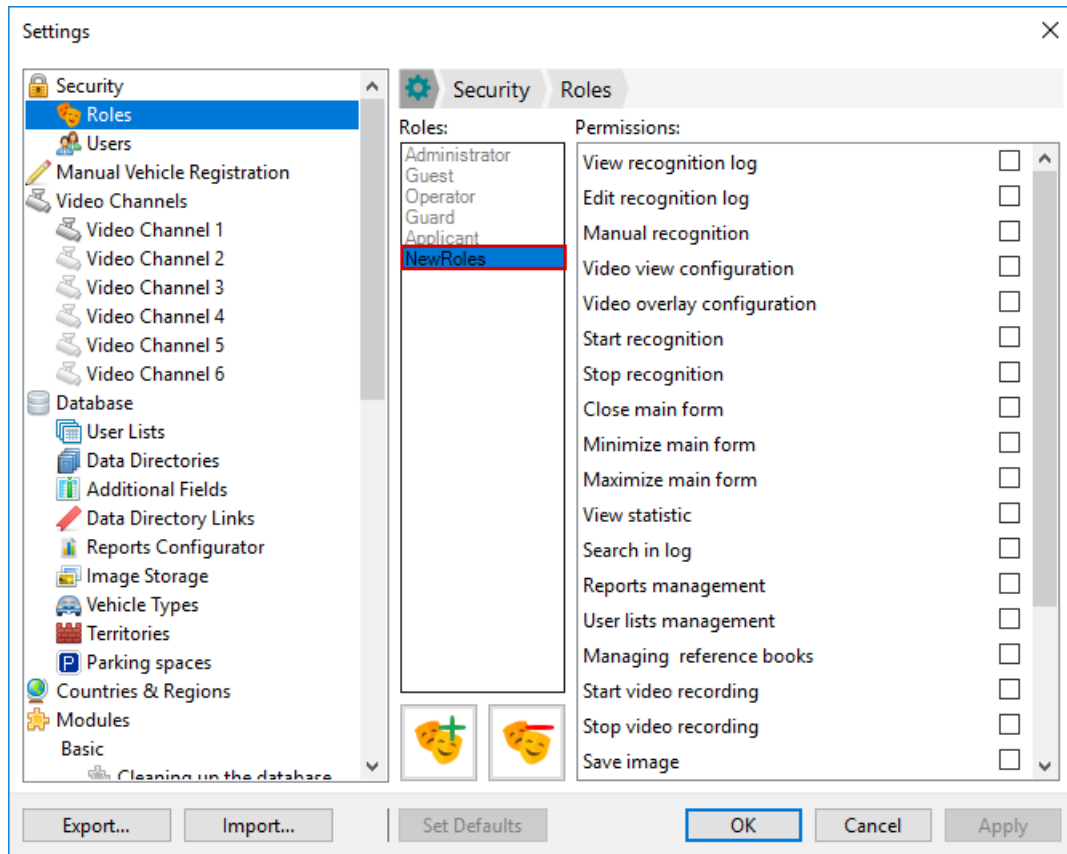



Figure 6.1.1.3

Click the new role and flag the actions you would like to permit for this role, then press Apply.

Deleting role

To delete a role, select the role you would like to delete and press .

6.1.2. Users

To move to user right segregation settings, choose option **Service** → **Settings** in the main menu. Choose **Users** tab in **Security Section**.

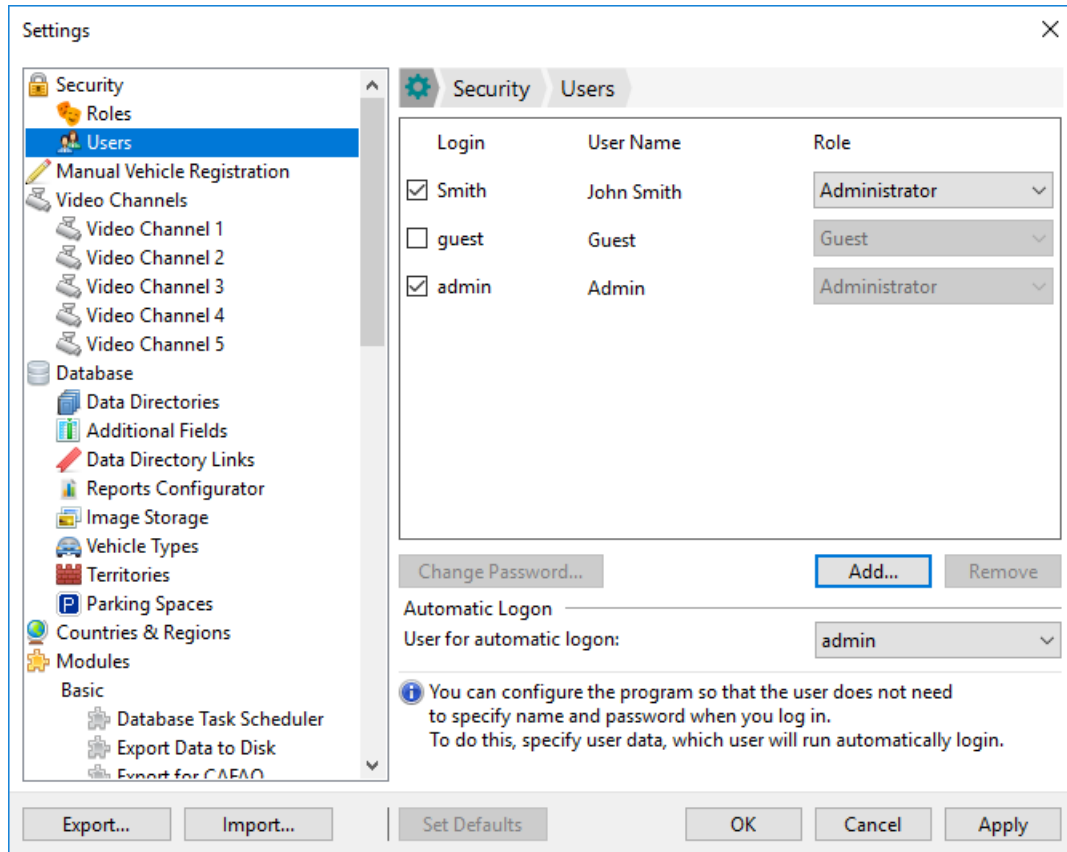


Figure 6.1.2.1

6.1.2.1. User Table

1	2	3	4
Login	User Name	Role	
<input type="checkbox"/> guest	Guest	Guest	
<input checked="" type="checkbox"/> Ivanov	Ivanov A.A.	Operator	
<input checked="" type="checkbox"/> admin	Admin	Administrator	

Figure 6.1.2.2

1. Login

User name shall contain only Latin symbols and Arabic numerals with length of at least 4 symbols.

2. User Name

Full user name, for instance, John Smith.

3. Role

The system involves several roles with different access rights: Administrator, Operator, Security Guard and Guest. For more details see table **Roles and Rights**.

4. Allow/Prohibit access

If tick is placed on the right of the role, entry of such user is allowed, if no tick is placed, the access is prohibited.

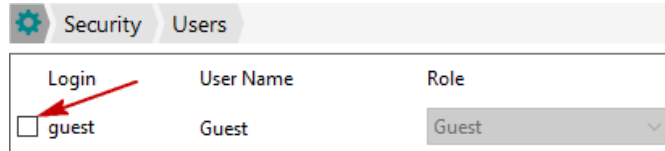


Figure 6.1.2.3

SW Automarshall implements multilevel access rights distribution system based on user accounts. The system uses four roles with different access rights, for more details see the Exhibit **Roles and Rights**. User list operates only within the limits of given server upon creation of the database. It shall be accounted for upon initial program setup based on several services.

Exhibit. Roles and Rights

	Administrator	Guest	Operator	Guard	Applicant
View recognition log	+	+	+	+	
Edit recognition log	+		+		
Manual recognition	+		+	+	
Video view configuration	+		+		
Video overlay configuration	+		+		
Start recognition	+		+		
Stop recognition	+		+		
Close main form	+		+		
Minimize main form	+	+	+		
Maximize main form	+		+		
View statistic	+		+		
Search in log	+		+	+	
Reports management	+		+	+	
Create user lists	+		+		
Delete user lists	+		+		
Edit user lists	+		+		
View user lists	+		+		
Managing reference books	+		+		
Start video recording	+				
Stop video recording	+		+		
Save image	+		+		

View user action log	+		+		
View information windows	+		+		
Execute triggers	+		+	+	
Delete record	+				
Close validation form	+				
Web-client: Add guest passes	+		+	+	+
Web-client: Video surveillance	+	+	+	+	
Web-client: View a list of servers	+	+	+	+	+
Web-client: Filtering by user lists	+	+	+	+	
Web-client: Receipt print	+		+	+	

Two users are created in the system by default:

- **Administrator**

User name/password: admin/admin

- **Guest**

User name/password: guest/no password

The **Guest** is used to review recognition log only

6.1.2.2. Adding a new user

To add a new user, follow the steps below:

- Press **Add** button:
- In the opened window fill up the following fields: **User Name, Password, Confirmation of password and Full Name**

Figure 6.1.2.4



- User Name shall contain at least 4 symbols. Latin symbols and Arabic numerals are allowed..
- “Password” fields are optional.

- Afterwards, press **OK** button.

User Name, Full name (If specified) shall be reflected in the **Users** Table.

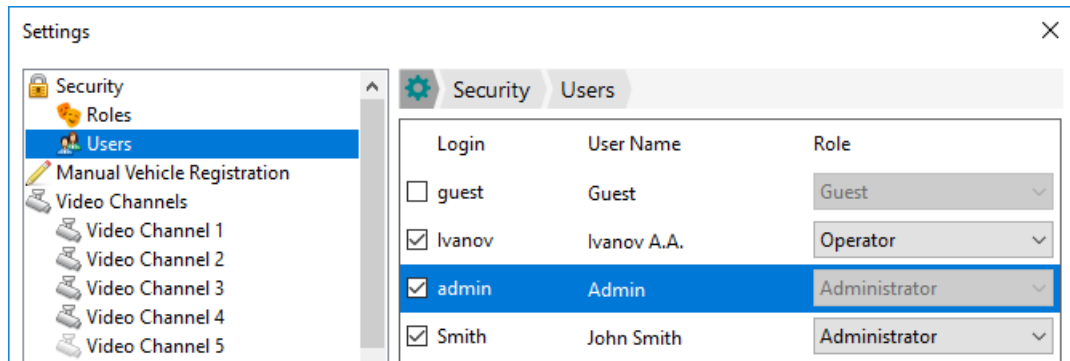


Figure 6.1.2.5

- Select user role from the drop-down list (user line, **Role** column).

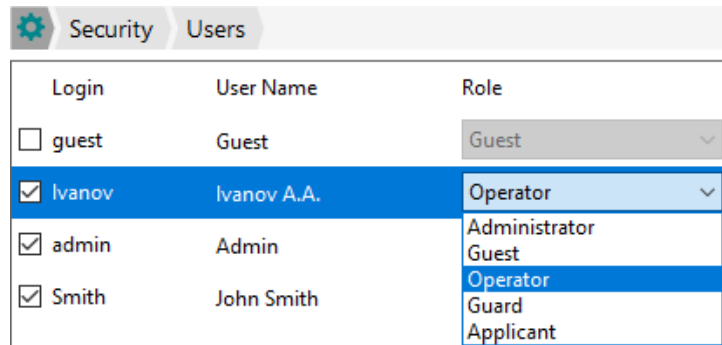


Figure 6.1.2.6

- Check access permission for given user name (tick shall be placed).
- Verify that you have permission to log on to the system under this user (must be ticked).

To save changes, press **Apply** button.

If the fields are incorrectly completed, the following warning will be displayed on the screen:

- User name shall contain at least 4 and at most 25 characters.

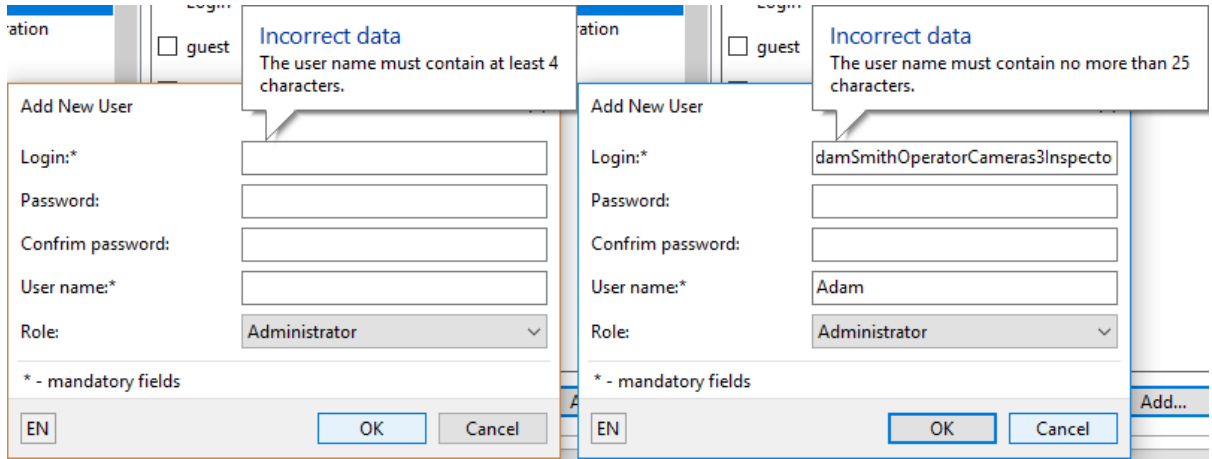


Figure 6.1.2.7

- User name contains unacceptable symbols. Only Latin symbols and Arabic numerals are allowed.

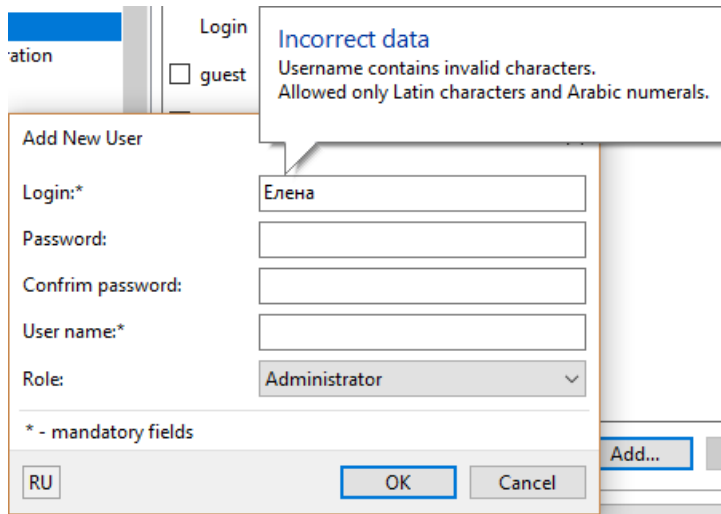


Figure 6.1.2.8

- Password and Confirmation of password fields must coincide.

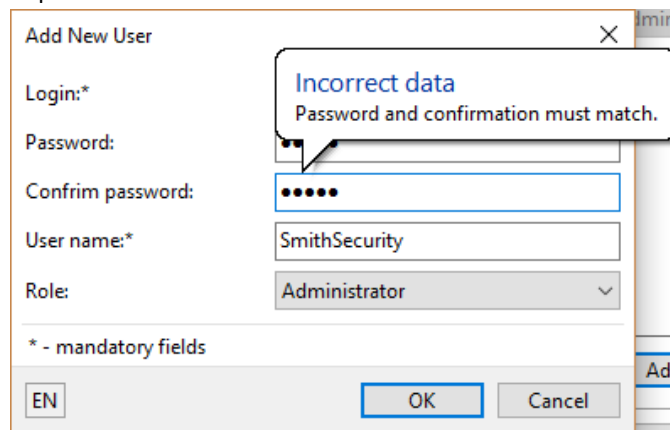


Figure 6.1.2.9

- User with given name already exists.

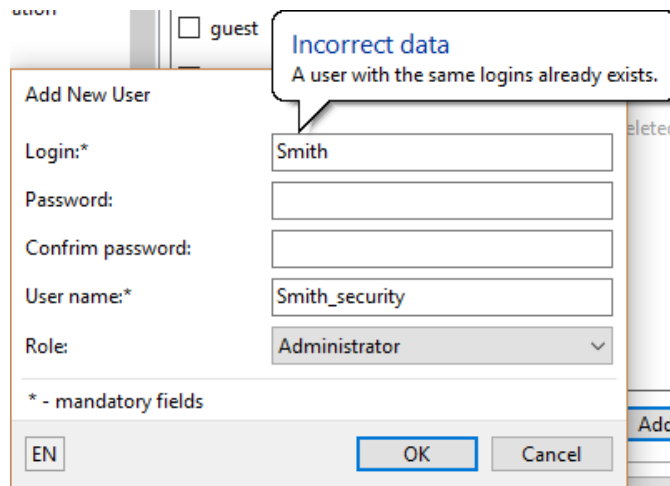


Figure 6.1.2.10

- User name field cannot be empty.

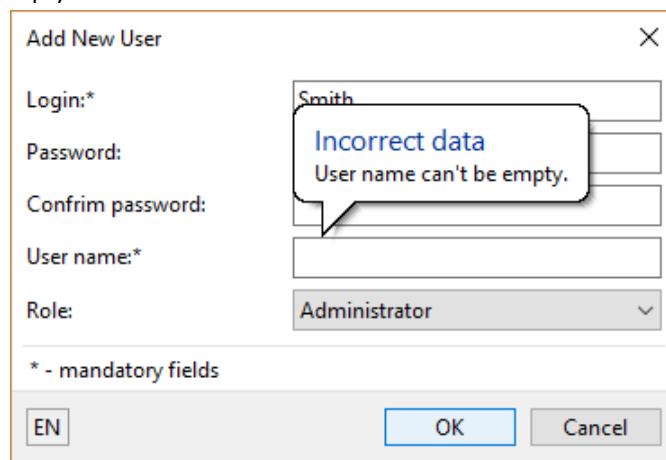


Figure 6.1.2.11

6.1.2.3. User Details Editing

1. Change user password

To change user password, perform the following actions:

- Highlight relevant user in Table **Users**.
- Press **Change Password** button:
- In the opened window enter **New Password** and its **Confirmation**.

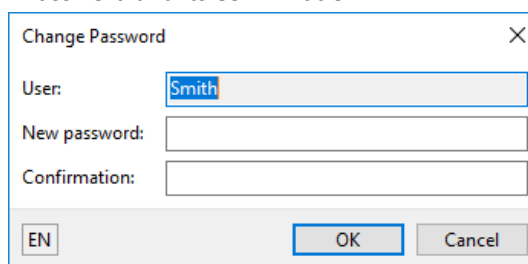


Figure 6.1.2.12

- To save changes, press **OK** button.



- Password may contain Latin symbols and Arabic numerals.
- To cancel user password, leave both fields (“Password” and “Confirmation”) empty.

2. Change full user name

To change full user name, perform the following actions:

- Highlight relevant user in Table **Users**.
- Double-click the left mouse button on column **Full Name**
- Enter new full name of the user.
- To save changes, press **Apply** button.

3. Change user role

To change User Role, perform the following actions:

- Highlight relevant user in Table **Users**.
- Double-click the left mouse button on relevant cell in column **Roles**. Choose the required **role** in the drop-down list.
- To save changes, press **Apply** button.

4. Permission/Prohibition of user access to the system

To permit access, place tick in the appropriate box in Table **Users**, to prohibit access – untick the box.

6.1.2.4. Deletion of User



- After deletion of the user, new user with the same name may not be created.
- Deletion is irreversible operation.

To delete the user, perform the following actions:

- Highlight relevant user in Table **Users**.
- Press **Remove** button:

You may not delete users created by default (Administrator and Guest).

- In the opened window confirm or cancel deletion of the user:

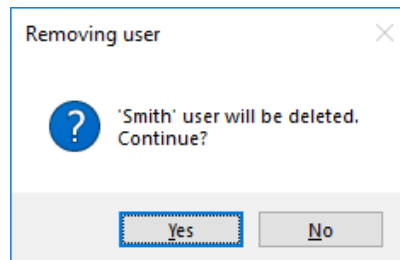


Figure 6.1.2.13

After user delete it is impossible to create similar account. All deleted users are still displayed in the user table, although they are editable, fully deletable from the system or recoverable. Inability to create duplicate account is due to the system stores the information about all actions performed from this account.

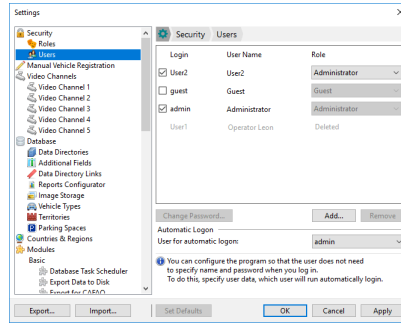


Figure 6.1.2.14

6.1.2.5. Automatic system entry



Automatic entry function serves for the user convenience. However, it may threat safety. If automatic entry option is set of your PC, all users having physical access to the computer may access the program.

To run automatic entry, perform the following actions:

- Select relevant User from the drop-down list **User for Automatic Logon**:

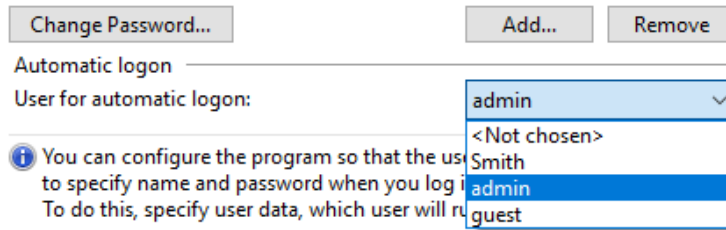


Figure 6.1.2.15

- Press **Apply** button.
- Indicate **Password** and **Confirmation** in the opened window. Press **OK**.

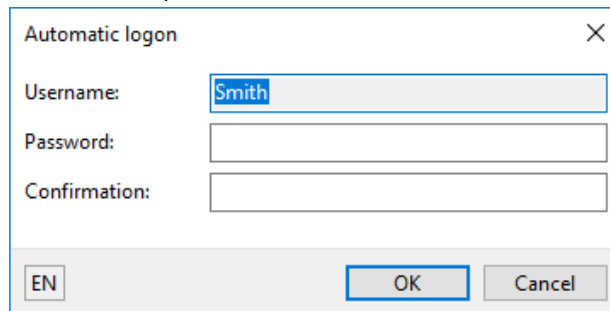


Figure 6.1.2.16

6.1.3. User groups

User groups allow to set up user access to the lists.

These settings are relevant for working with the lists through a web-client.

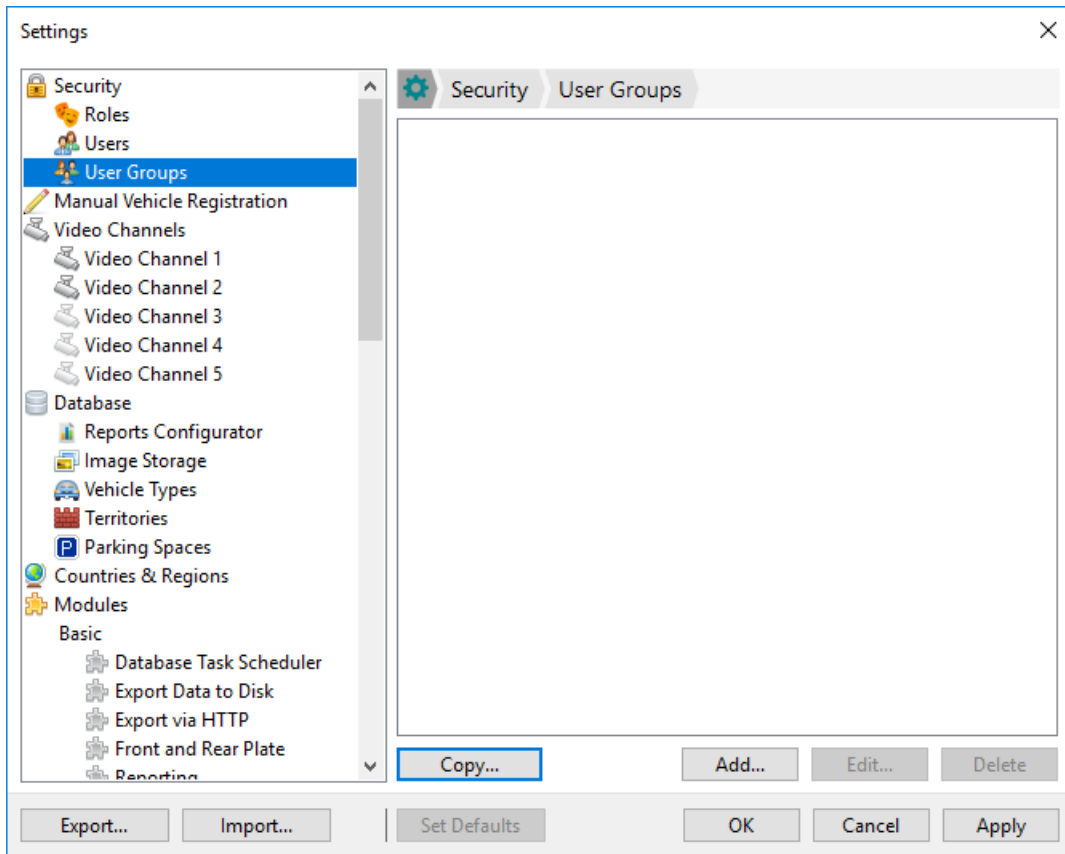


Figure 6.1.3.1

Access permission settings are made by adding the roles, users and lists to the groups with specified permissions.

Click “Add” to go to the group creation.

Numbers in the Figure 6.1.3.2 indicate the important interface elements of the “Add Group” window:

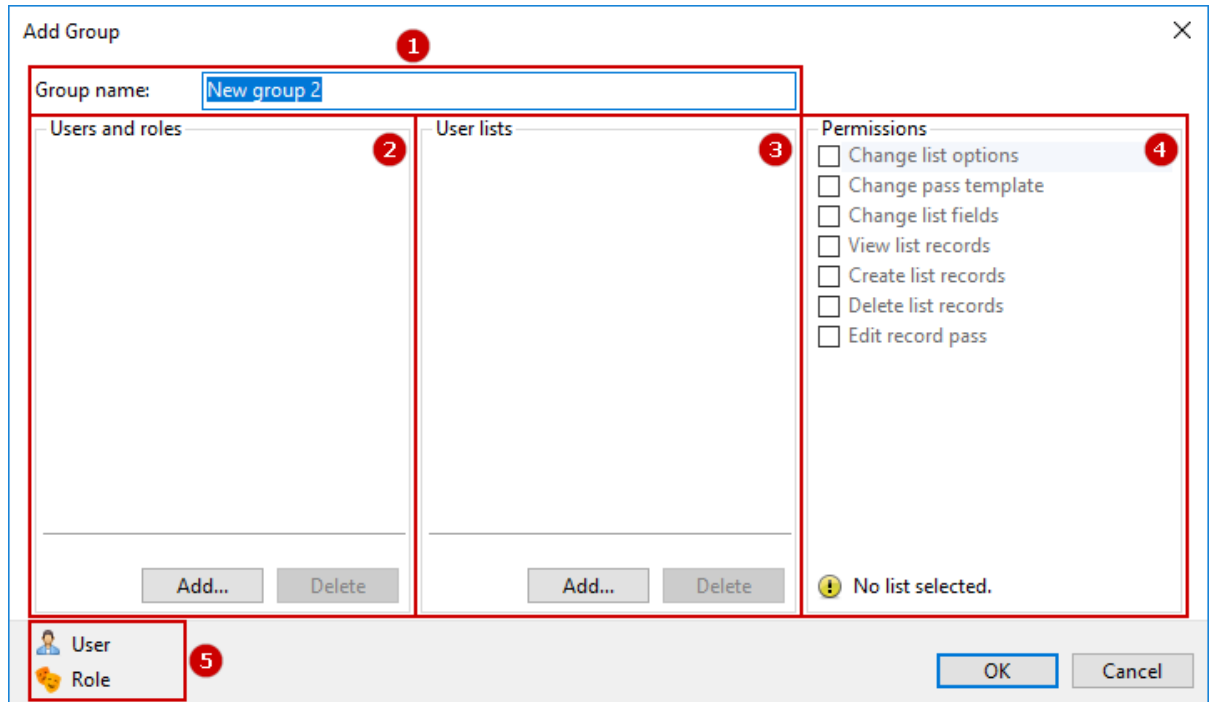


Figure 6.1.3.2

1. **Name** – indicate the group name. For instance, permissions to the “Suppliers” list.

It is not allowed to create groups with the same name.

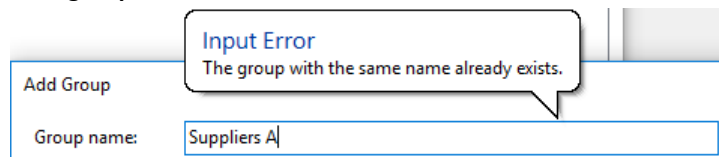


Figure 6.1.3.3

2. **Users and Roles**

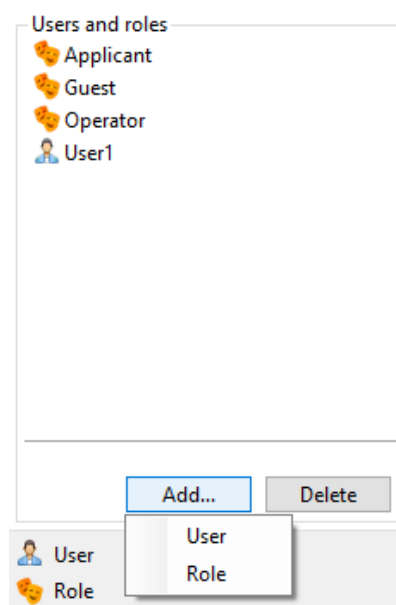


Figure 6.1.3.4

Click “Add” and select the desired option from the drop-down list. Both roles and users can be added to the group.

Access settings can be provided separately to each user, or to all users based on their roles.

Roles and users can be added to different groups, even when they already belong to any other groups.

Add User

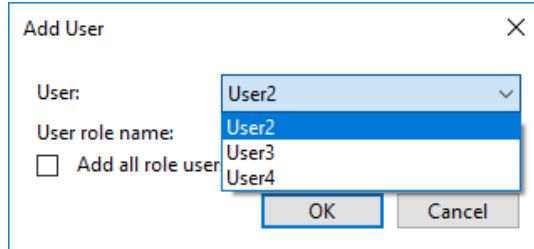


Figure 6.1.3.5

Users can be added one at a time, or as a group based on the user’s role, using the “Add all role users” checkbox.

Add Role

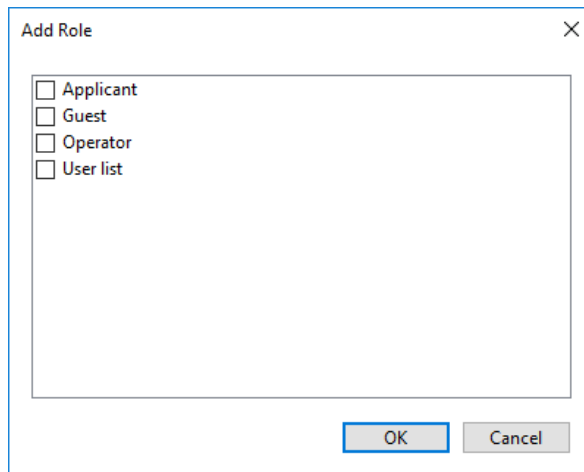


Figure 6.1.3.6

Roles become available for adding only in case there is a user with such role. If the role is not listed in the “Add Role” window, then it is either already added to this group, or there are no users with such role.

Administrator role is not accessible to add to the group, as the administrator has all permissions.

The roles shall have necessary permissions to work with the lists in order to keep group permissions working.

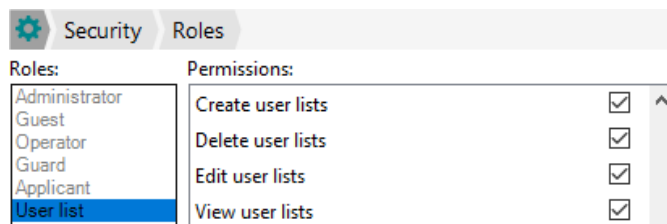


Figure 6.1.3.7

To delete users or roles from the group, select required string in the list and click “Delete”.

3. User Lists

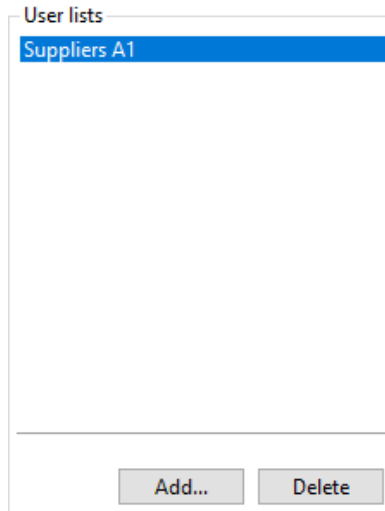


Figure 6.1.3.8

Click “Add” and in the “Add List” window that opens select the lists, which the access shall be set up to.

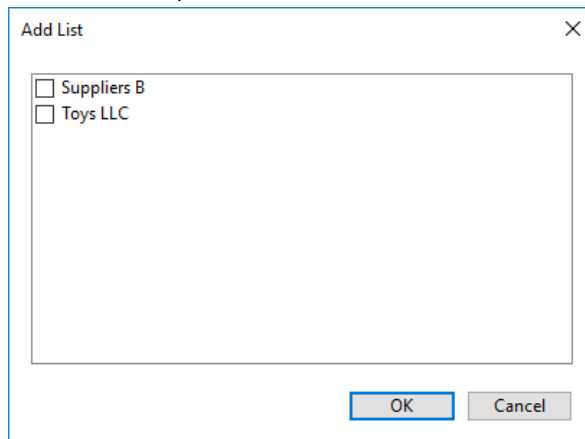


Figure 6.1.3.9

To delete lists from the group, select the list required and click “Delete”.

Lists can be added to different groups, even if they have already been added to other groups.

4. Permissions

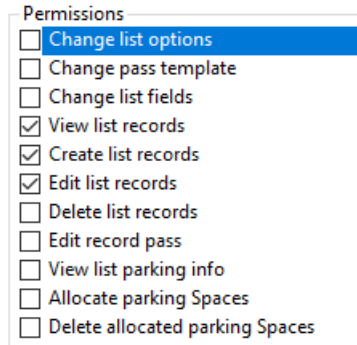


Figure 6.1.3.10

Permission settings become available after lists adding to the group only.

Change list options – access to change the list name, default vehicle type for this lost and list color.

Parameters

List Name
Suppliers A1

Vehicle type
Unknown vehicle type (Default) ▼

List Color

CANCEL APPLY

Figure 6.1.3.11

Change pass template – access to change the pass template for the list.

Validity

Not limited

Period

Template

Valid from
28.06.2019 09:00:00

Valid till
28.06.2019 23:59:59

CANCEL NEXT

Figure 6.1.3.12

Change list fields – access to edit list fields.

View list records – access to view list entries.

Create list records – access to add entries to the list. In case user does not have permissions to create entries, the “+” button will not be displayed on the list edit page.

Edit list records – access to edit list entries. In case user does not have permissions to edit entries, the required menu button will become inactive.

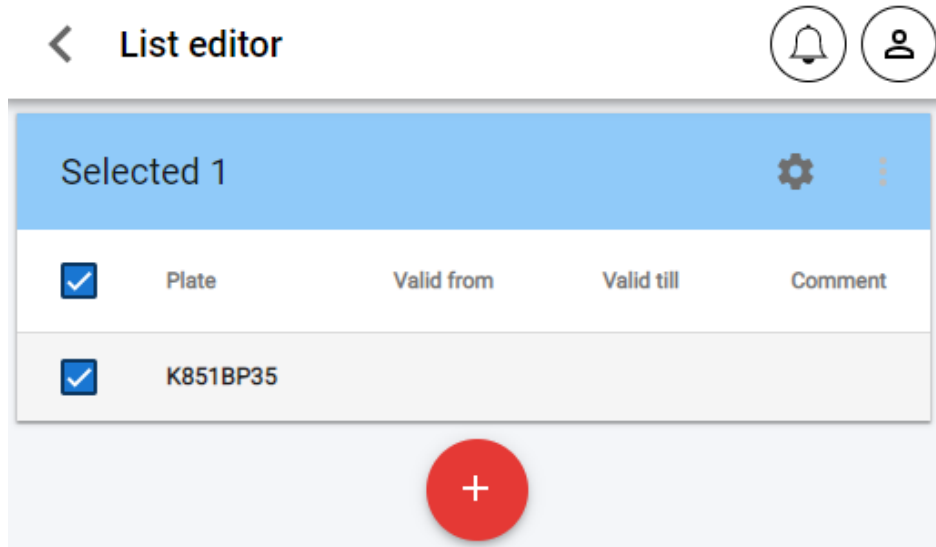


Figure 6.1.3.13

Delete list records – access to delete list entries. In case does not have permissions to delete entries, the corresponding button will not appear in the drop-down menu.

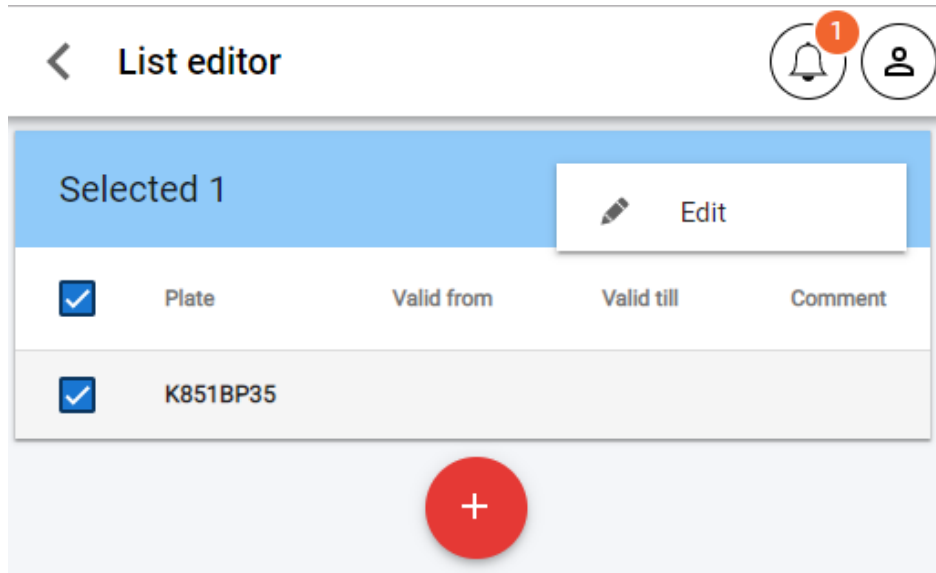


Figure 6.1.3.14

Edit record pass – it is an access to the record pass editing. If user does not have permissions to edit pass, then “Pass” button will be inactive when adding or editing records in the list.

Plate *

Vehicle type
Car ▼

PASS CANCEL APPLY

Figure 6.1.3.15

View list parking is an access to view the list of parking spaces.

Allocate parking spaces is an access to change parking spaces for the list. If the user does not have rights to create records, then the “+” button will not be displayed on the page for editing parking spaces in the list.

Delete parking spaces is an access to delete allocated parking spaces. If the user does not have rights to delete records, then the corresponding button will not be in the list parking menu.

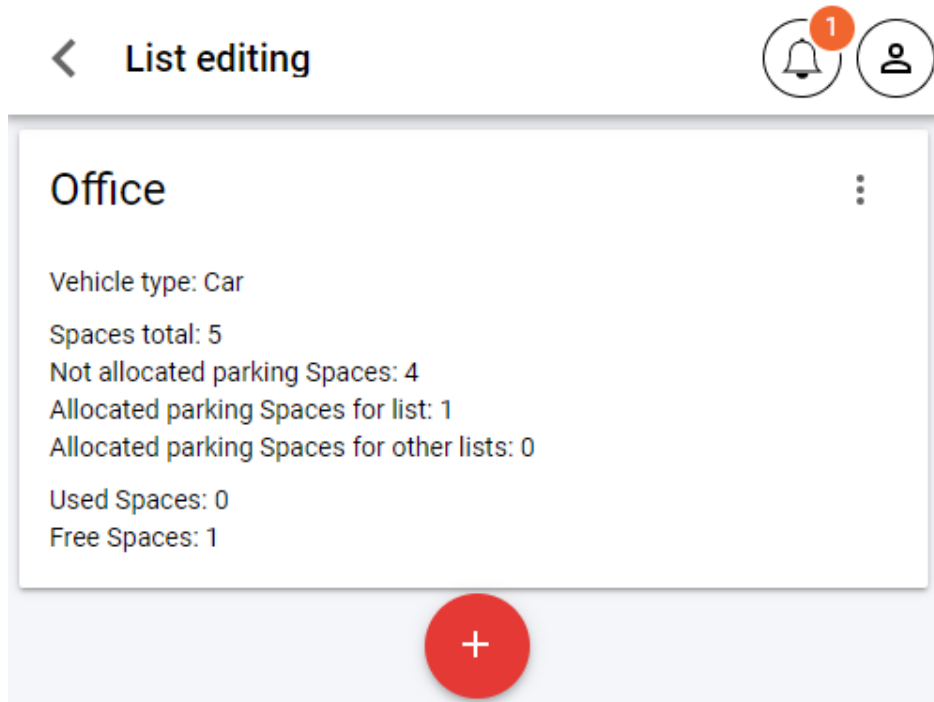


Figure 6.1.3.16

User permissions for the list are specified in the “List information” block of the “List editor” section.

List information

Fazer

Permissions:
 Edit fields: No
 Edit parameters: No
 Edit pass template: No
 View records: No
 Add records: No
 Edit list records: No
 Delete records: No
 Edit record pass: No
 View list parking: Yes
 Allocate parking spaces: Yes
 Delete parking spaces: Yes

Figure 6.1.3.17

If user does not have necessary permissions to act with the list, then corresponding actions will become inactive.

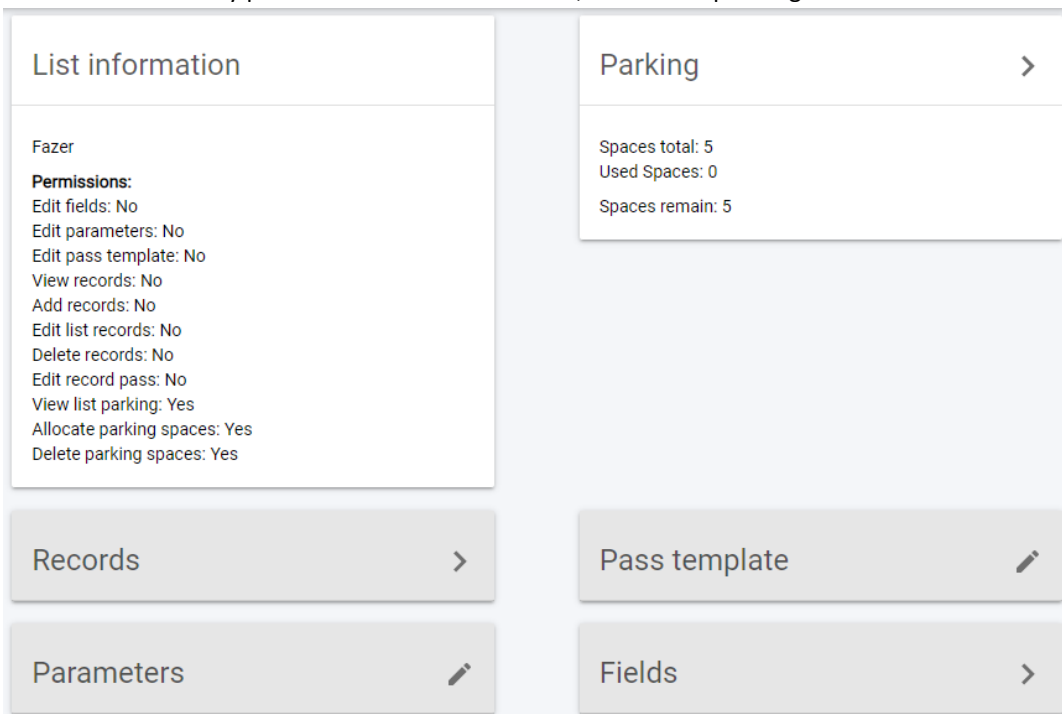


Figure 6.1.3.18

! No list selected – if after assignment of permissions to delete the list from the group, the permission stings will not be saved.

5. **Legend** – it is a tooltip that helps to visually distinguish the added roles and users in the “Users and Roles” field.

Click “OK” to save changes or “Cancel” to exit the window without changes applying. If changes were made to the group, a window will be displayed to confirm the actions.

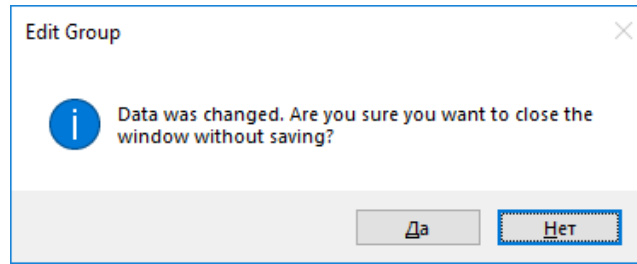


Figure 6.1.3.19

Added group is displayed in the list of user groups.

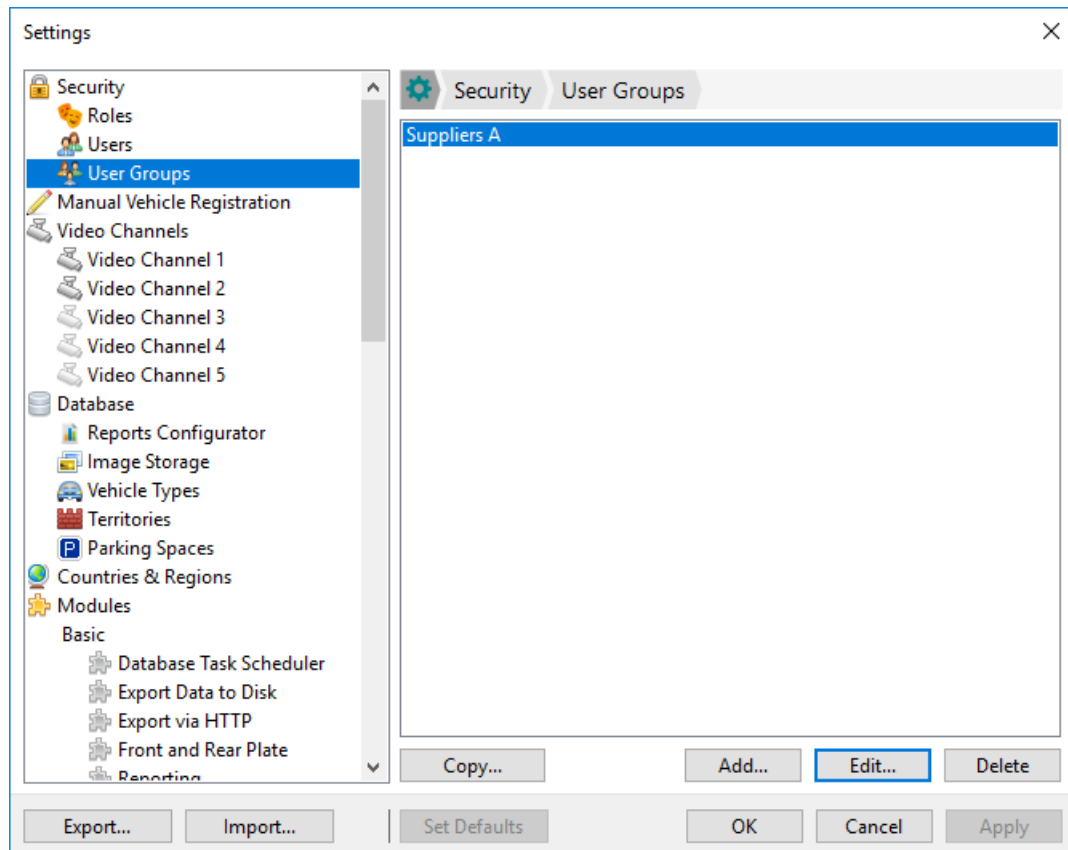


Figure 6.1.3.20

To edit a group, select it in the list and click “Edit”.

To delete a group, select it in the group and click “Delete”.

The “Copy” button duplicates the group selected with its settings. This will help to simplify the task, when several groups with similar permissions are necessary to be set up. When copying, the “Edit Group” window will open, and the word “Copy” will be added to the group name.

6.2. Video channels

The “Video Channels” section allows to view types of video channels (video processing and video surveillance channels) and to go to their settings. To go to the settings, left double-click the required video channel or switch to the side menu.

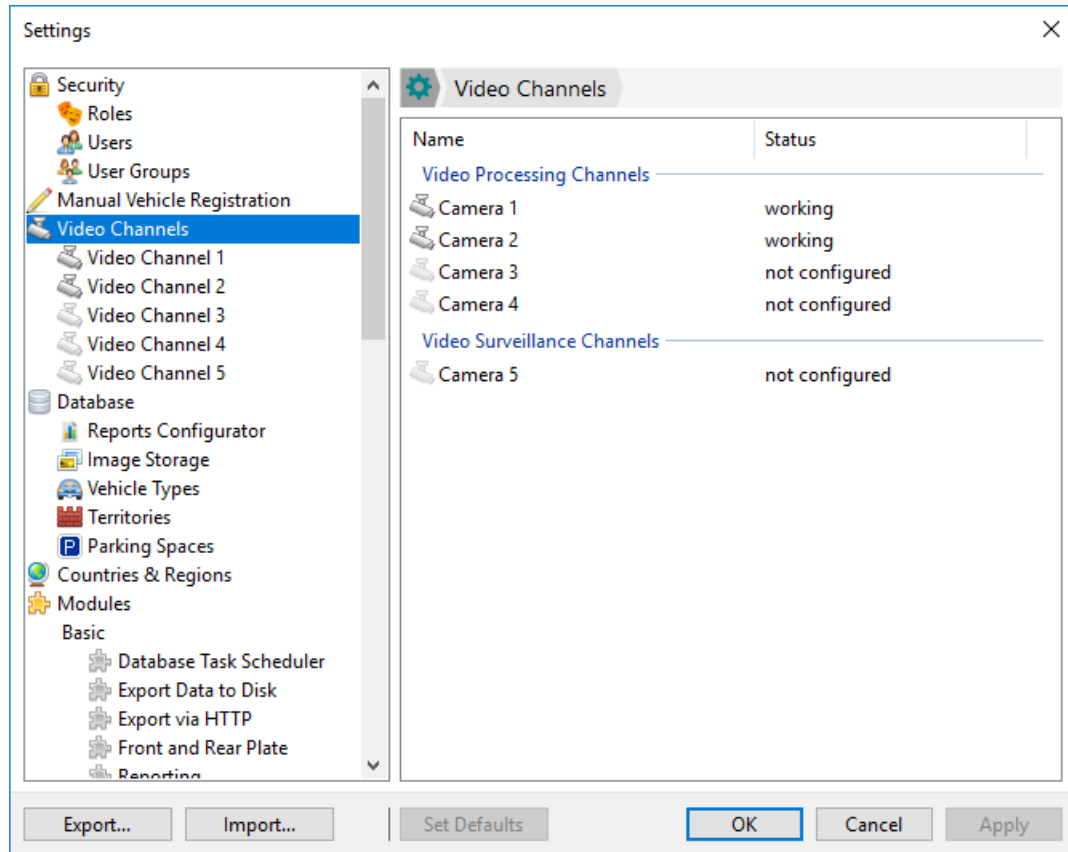


Figure 6.2.1

6.2.1. Video

6.2.1.1. Video sources

In order to set up a video source, follow instructions below:

1. In the main menu, select **Service** and select **Settings** in drop-down menu;
2. In the next window select **Video Channels** section and select (highlight) the required **Video Channel**, e.g. **Video Channel 1**;
3. The right pane of the window contains the video channel settings. Select **Video** section;
4. Click **Select** button, as shown below.

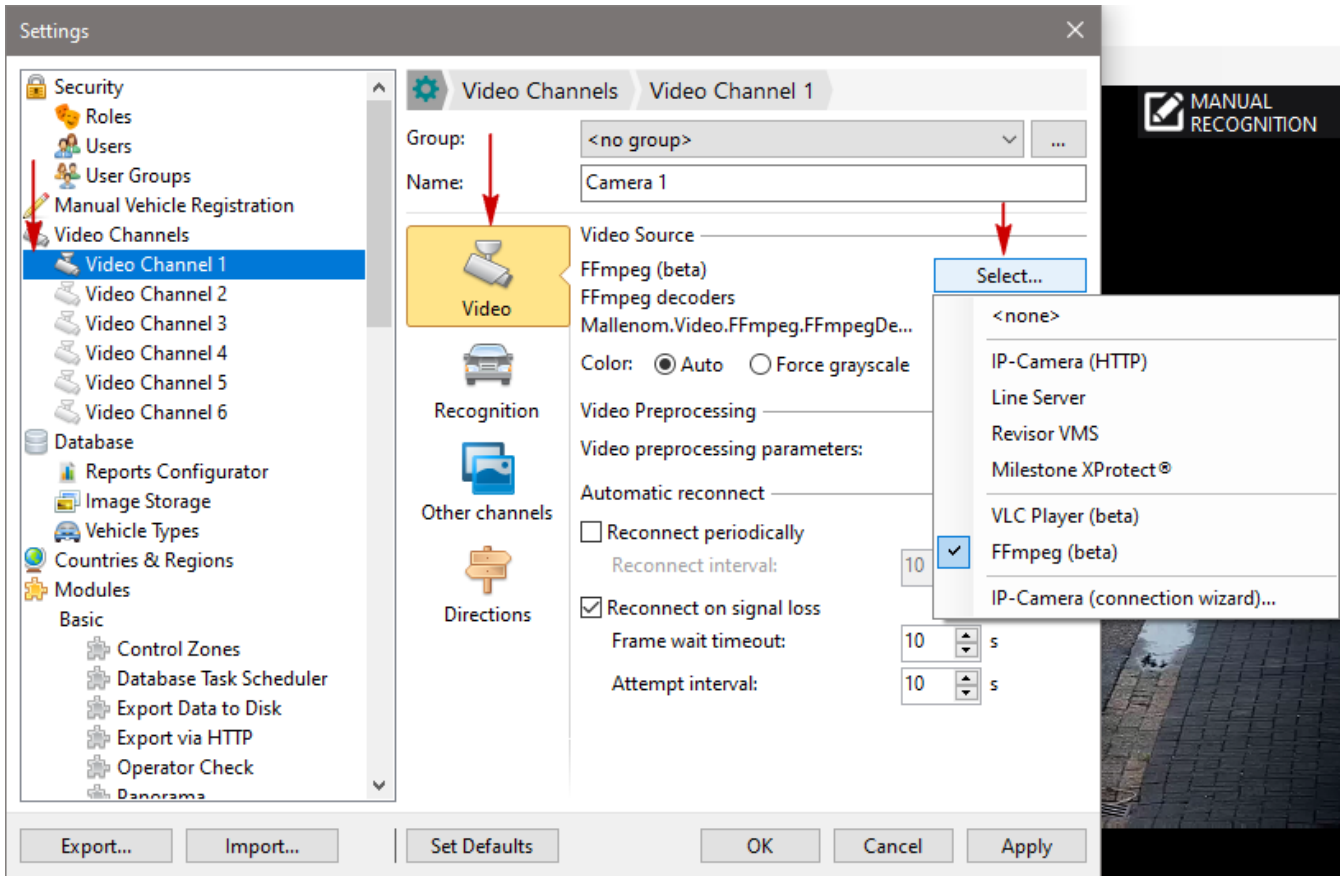


Figure 6.2.1.1.1

5. From the drop-down list, select the required video source:

- **IP-camera (HTTP)** — enable JPEG/MJPEG-compressed video feed from HTTP-protocol-based camera;
- **Milestone XProtect Server** — enable video feed from Milestone Xprotect CCTV camera;
- **Revisor VMS Server** — enable video feed from Revisor VMS CCTV camera;
- **Line Server** — enable video feed from Line CCTV camera;
- **VLC Player (beta)** — play video feed from camera using VLC Player;
- **FFmpeg Video Source** — play video feed from camera using FFmpeg decoder;
- **IP-camera (connection wizard)** — search for network camera and enable its video feed.

6. Once the required video source is selected, click **Setup...** button.

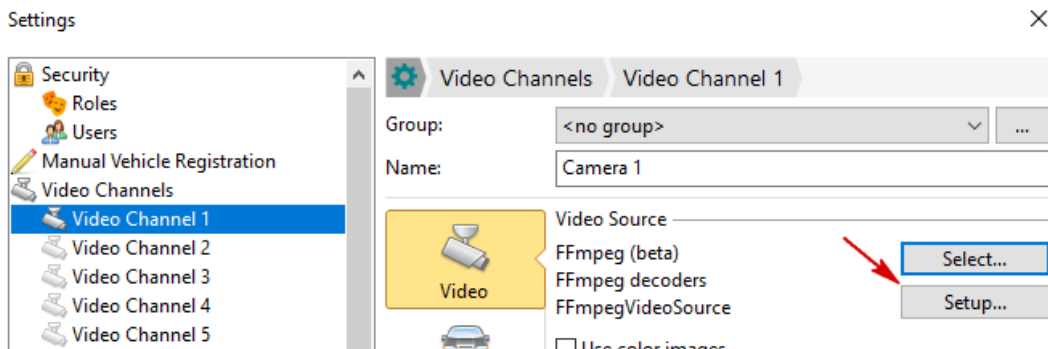


Figure 6.2.1.1.2

If necessary, enable Use color images option.

Use of color images increases the load on processor. For detailed configuration of each video source, see below.

IP-camera (HTTP)

In the IP-camera (HTTP) source configuration window (see image), enter parameters for connection to the camera:

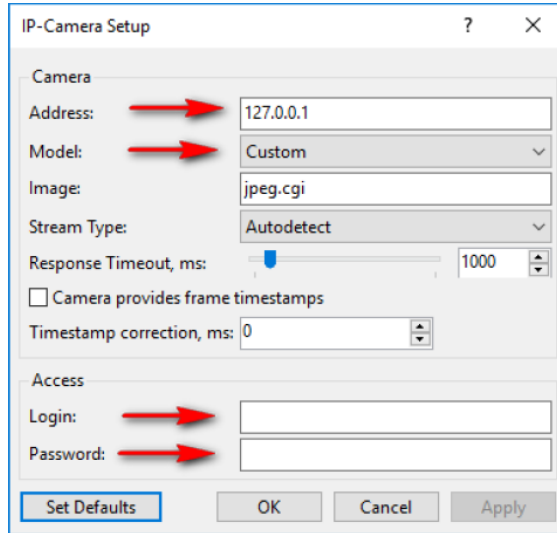


Figure 6.2.1.1.3

- *Address* — camera IP address.
- *Model*.

Select camera model from drop-down list. If it does not contain the required camera model, then select User model.



- *Image* — full address of image displaying the video from this IP-camera.

If you have selected User camera model, you will need to complete this field manually.

Depending on the camera type, you may need to complete the following fields:

- *Stream type*;
- *Login and password*.

In order to save the changes, press Apply and OK, to discard the changes – click Set Defaults or Cancel.

In the lower section of the main software window press **Stop**  then **Start** .

This will enable the camera feed.

If there is no feed, check the camera connection parameters.

Milestone XProtect Server

PC shall have Milestone XProtect video surveillance system installed and configured.

In the Milestone XProtect Server source configuration window (see image), enter the line for connection to the server:

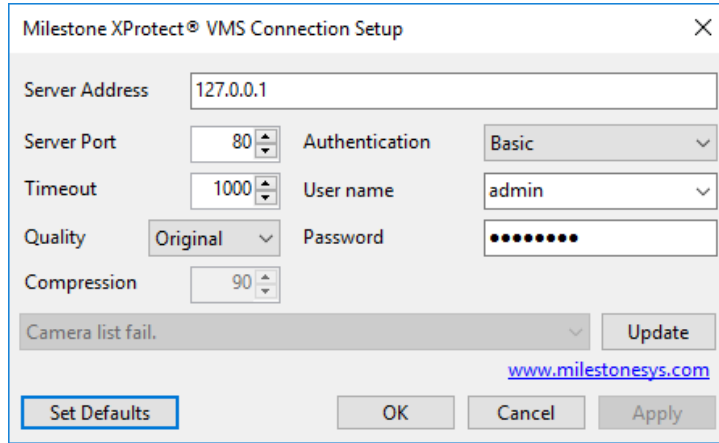


Figure 6.2.1.1.4

- *Server address and Server port* — IP address and port of server where Milestone XProtect is located.
- *Authentication* — method of authentication: *Basic* or *WindowsDefault*.

If WindowsDefault is selected, the default account (User name and password) will be used.

- *Server User name and Password.*
- *Timeout* — Milestone XProtect Server connection attempt for the time specified.
- *Quality.*

Camera image compression ratio. If set to 100, the image will be fed in full original quality. If set to below 100, the image quality will be reduced.

The ratio may be set within the range of 0 to 100. The default quality ratio is 100.

- *Camera.*

To access the camera list, click Update, then select the required camera from the drop-down list.

In order to save the changes, press Apply and OK, to discard the changes – click Set Defaults or Cancel.

In the lower section of the main software window press Stop then Start.

This will enable the camera feed.

If there is no feed, check the server connection parameters.

Revisor VMS Server

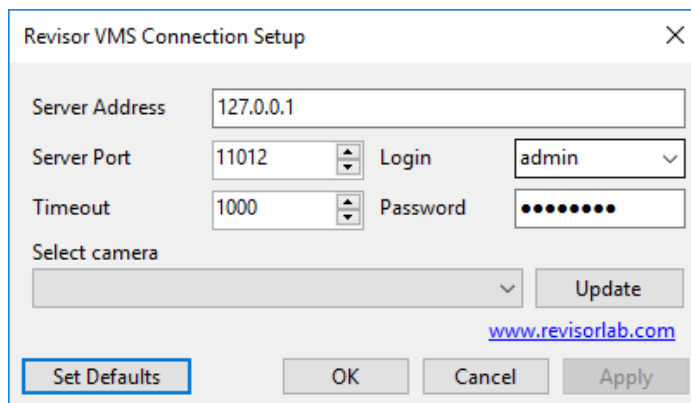


Figure 6.2.1.1.5

In the server *Server address* field, enter PC IP, where Revisor VMS Server is installed.

In the *Server Port* field, enter server port.

In the *login* and *password* fields, enter login and password, if they are entered on the server itself.

If all data are correct, then, after clicking *Update* you will see the list of cameras for connection. Select the required camera and click *Apply* and then *OK*.

Line Server

You must have Line / Observer software installed and configured on your PC.

In the **Line Server** source configuration window (see image), enter parameters for connection to the server:

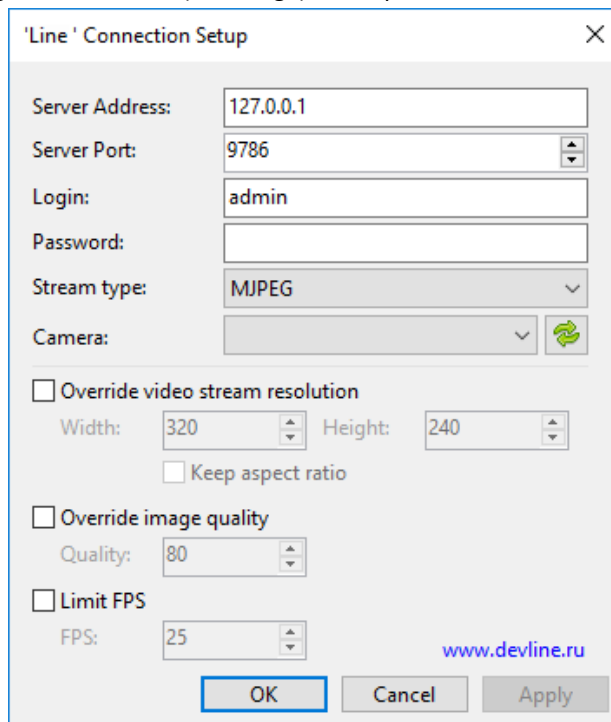



Figure 6.2.1.1.6

- *Server address and Server port* — IP address and port of server where Line Server is located.
- *Login and Password* to server.
- *Stream type* — *MJPEG* or *JPEG*.
- *Camera*.

To select a camera, click **Update Camera List** , and select the required camera from the drop-down list.

- *Override Video Stream Resolution*.

Flag the required video feed resolution (in pixels).

In order to save the width-to-height resolution ratio, check *Keep aspect ratio* option.

This option is disabled by default.

- *Override image quality.*

This option is required to change the image quality.

Check this option and change the quality (1 to 100).



This option is disabled by default and is set to 80.

- *Limit FPS*

Check this option to manually set the framerate for video feed.

This option is disabled by default.

In order to save the changes, press **Apply** and **OK**, to discard the changes – click **Set Defaults** or **Cancel**.

In the lower section of the main software window press **Stop**  then **Start** .

This will enable the camera feed.

If there is no feed, check the server connection parameters.

VLC Player (beta)

- You shall have VLC Player matching the software bit version (x86/x64) installed on your PC.
- If VLC Player is not installed on your PC, the software will offer to install it.

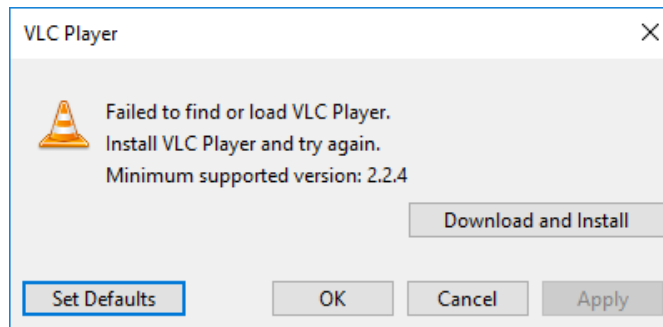


Figure 6.2.1.1.7

Click the **Download and Install** button.

VLC Player installation window will appear. Follow the installation instructions.

Once VLC Player is installed, a window will open. Enter Video Stream URI (line for camera connection over RTSP protocol) in this window.

For instance:

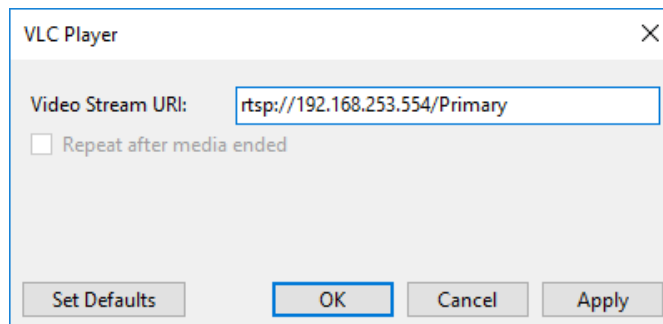




Figure 6.2.1.1.8

The Repeat after media ended option is used to repeat video file playback.

In order to save the changes, press **Apply** and **OK**, to discard the changes – click **Set Defaults** or **Cancel**.

In the lower section of the main software window press **Stop**  then **Start** .

This will enable the camera feed.

If the file is not played, check the camera connection line and VLC Player version.

FFmpeg video source

Once VLC Player is installed, a window will open. Enter video Stream URI (line for camera connection over RTSP protocol) in this window.

For instance:

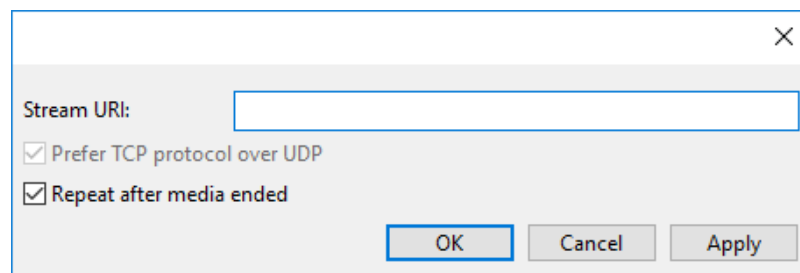




Figure 6.2.1.1.9

The *Repeat after media ended* option is used to repeat video file playback.

The *Prefer TCP protocol over UDP* option allows to improve the compatibility with certain models of IP cameras manufactured in China.

In order to save the changes, press **Apply** and **OK**, to discard the changes – click **Set Defaults** or **Cancel**.

In the lower section of the main software window press **Stop**  then **Start** .

This will enable the camera feed.

If the file is not played, check the camera connection line and VLC Player version.



This video source may not operate correctly with IP cameras manufactured in China. If you experience any inconveniences with this video source, it is recommended to switch to VLC video source.

IP-camera (connection wizard)



Program settings Configuration wizard database is incomplete.

It may contain no data to connect to your camera.

1. In the **IP-camera (connection wizard)** source configuration window select:

- **Authorization is not required** if no login and password are required to access camera; click **Next**.
- **Login and password** are required if login and password are required to access camera.

Complete **Login** and **Password** fields, then click **Next**.

For instance,

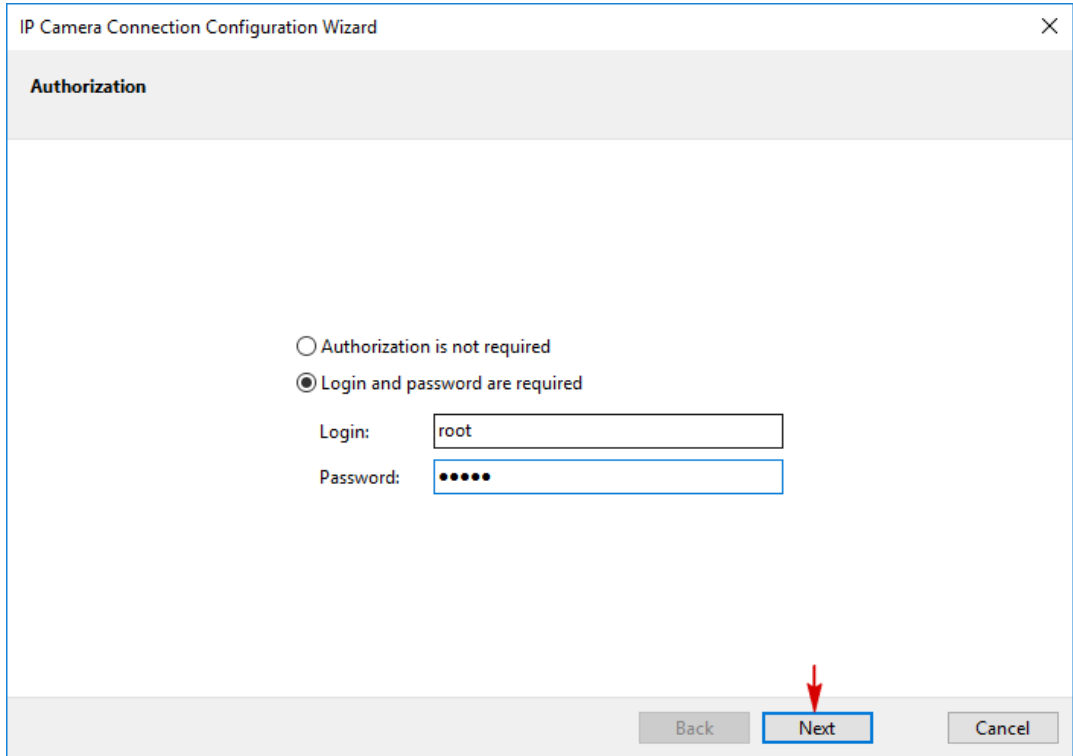


Figure 6.2.1.1.10

2. In the **Camera Search** window:

- If you know camera IP address, enter it in the **Camera Address** field and click **Next**.

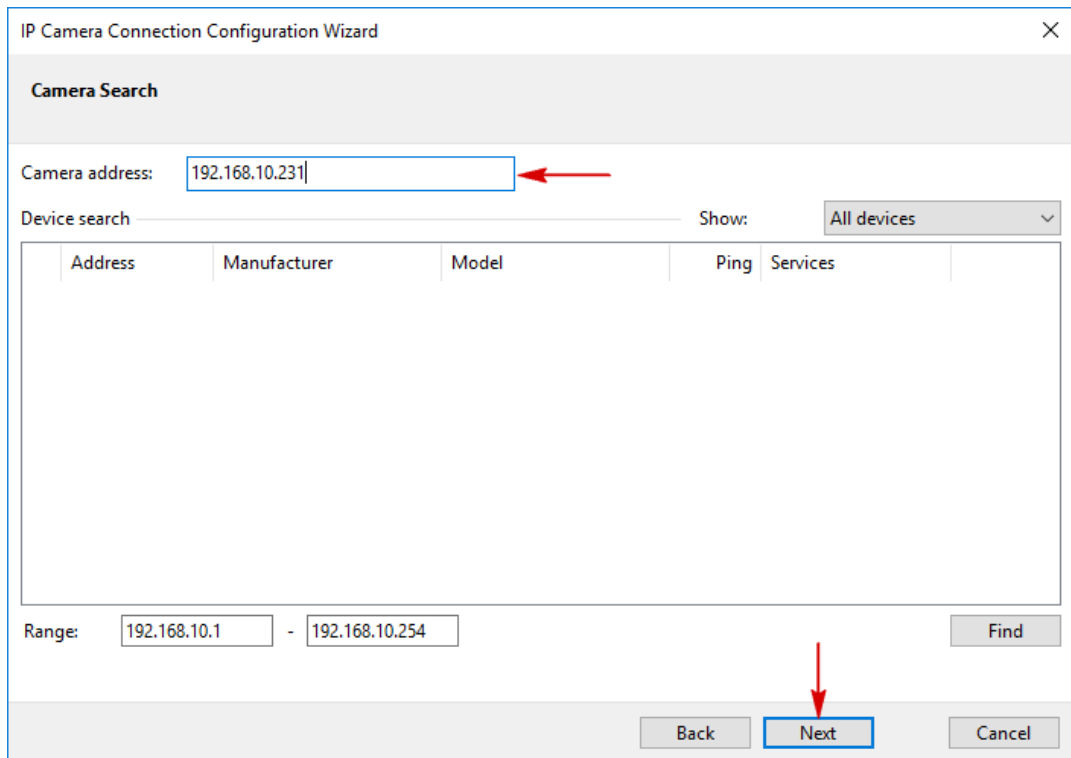


Figure 6.2.1.1.11

It will automatically open the window for checking services on a device with the address entered.

- If you do not know camera IP address, use the function of **search of IP devices in the network**.

To do so, select the search range and click **Find**.



Figure 6.2.1.1.12

In a window below, the search bar will appear. Time of search depends on the number of devices within the network.

The current subnet will be automatically entered. If necessary, the value may be changed manually.

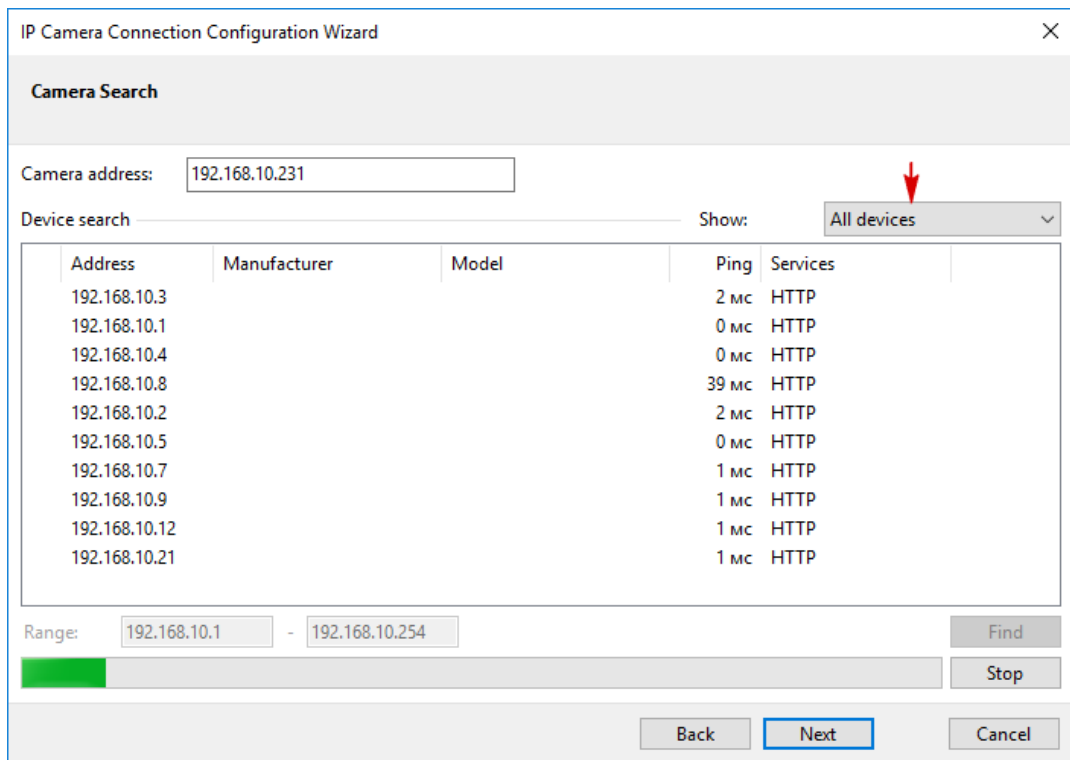


Figure 6.2.1.1.13

You may not wait for search completion and select a device from the list of found results.



- **Devices found include not only cameras. A clear sign that a device found is a camera is indication in Service column of ONVIF and/or RTSP protocols.**
- **If a camera supports ONVIF protocol, camera manufacturer and model will be automatically identified.**
- **You may use a convenient function of filtering the searched devices. You may search for all network devices or video cameras only.**

Double-clicking IP address will allow to copy it in the Camera Address; now click Next.

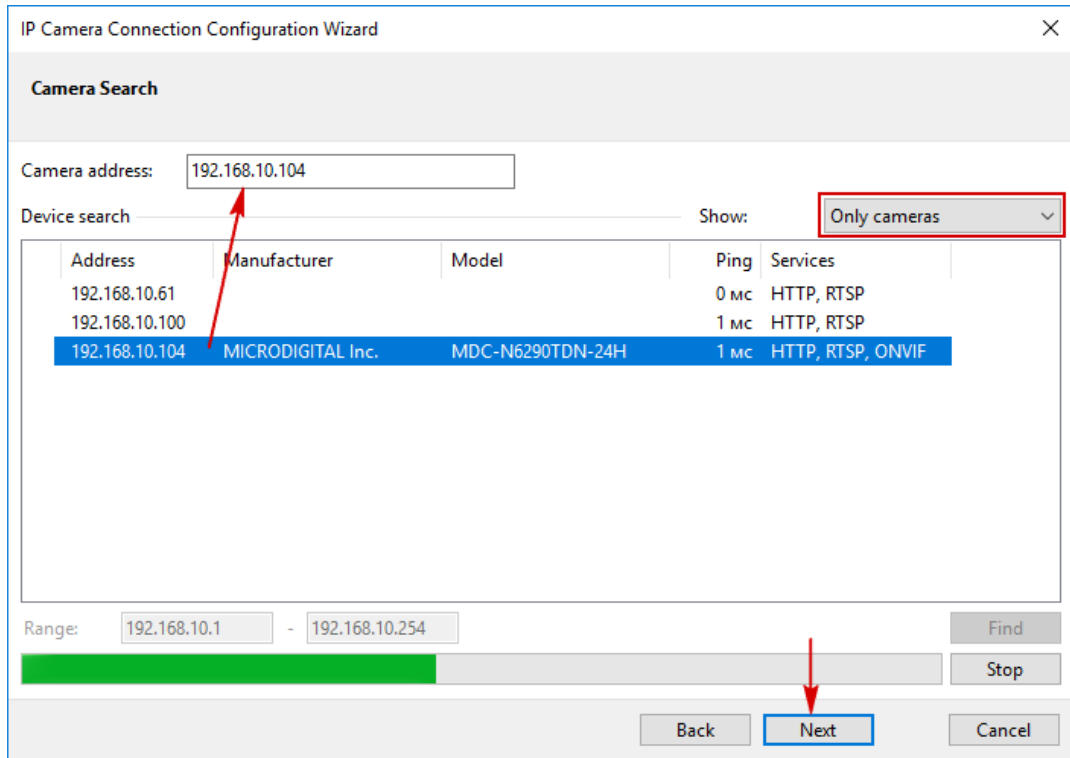


Figure 6.2.1.1.14

3. In the **Camera Model Selection** window:

- If the selected camera supports **ONVIF** protocol, skip the next step by clicking **Next**.
- Otherwise, select camera **manufacturer** and/or **model** from the list and click **Next**.

To speed-up the process, you may use the search window, where you can enter camera manufacturer or model.

- If you do not know camera model, you may use the function of automatic identification of model.

To do so, select camera manufacturer and click **Detect Model** button:

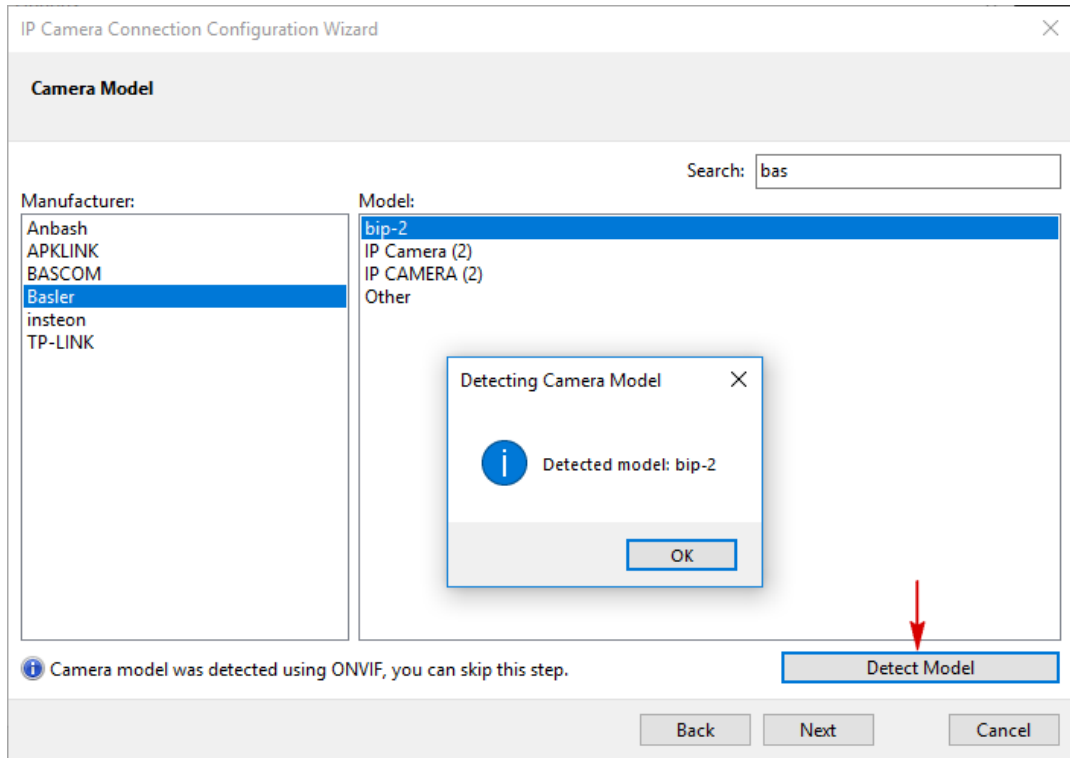


Figure 6.2.1.1.15

The list of cameras is incomplete. If you have an unpopular camera model, it may not be in the list.

4. In the Connection String window, you will be offered various options for the lines for your camera.

Entered information obtained from the camera over ONVIF protocol from the database.

Select the line from the list or enter data for manual connection, then click **Check**.

- If the connection check is successful, a *No Errors Found* message will be displayed.

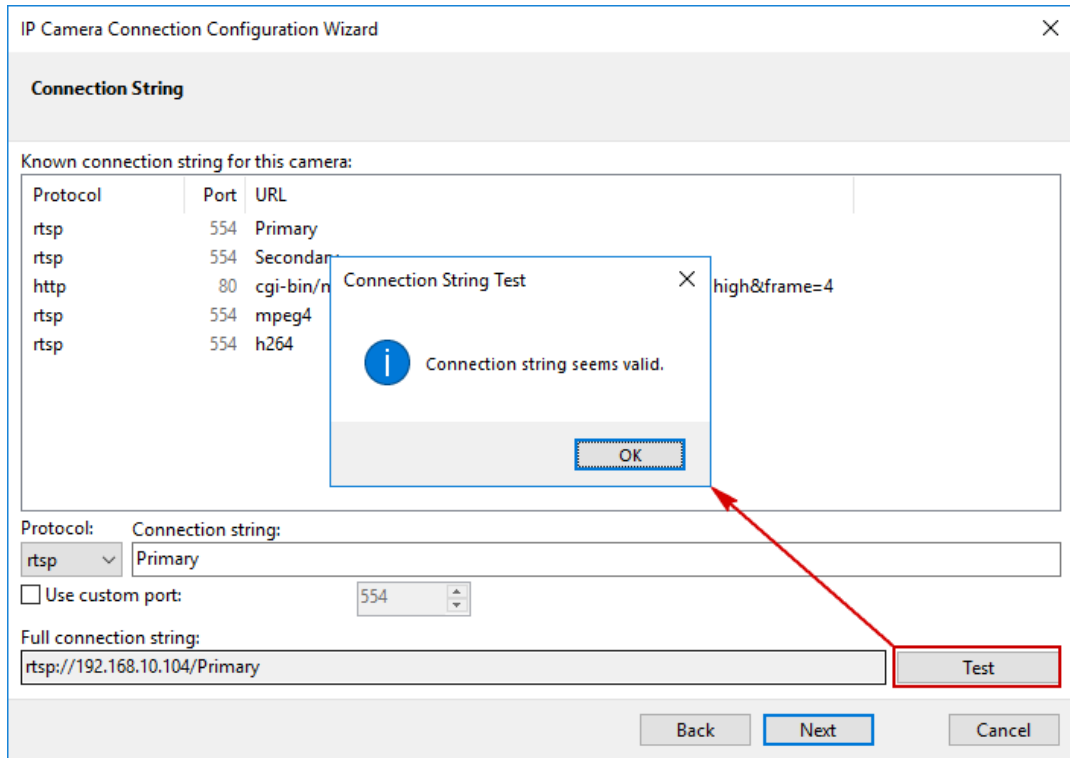


Figure 6.2.1.1.16

Click **Next** to proceed to next step.

- A line may be erroneous, as the database is incomplete. In this event, a *Connection line is not appropriate for this camera* message will be displayed.

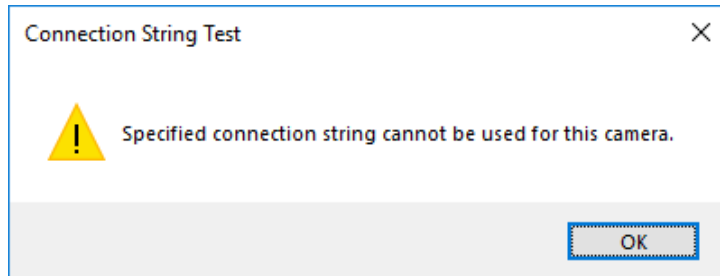


Figure 6.2.1.1.17

5. Select connection technology from the options offered:

- **HTTP (JPEG/MJPEG)** — feed JPEG/MJPEG-compressed video from camera over HTTP;
- **DirectShow** — play video feed from camera using DirectShow technology. Requires **K-Lite Codec Pack Mega** installed (for details, see *Video source, p. 2 IP-camera (RTSP) on PC*).
- **VLC Player** — play video feed from camera using VLC Player. Requires the latest version of VLC Player installed on PC, player bit version shall match the software bit version (for details, see *Video source, p. 10 VLC Player (beta)*).

If any option is locked, then the camera does not support such type of connection.

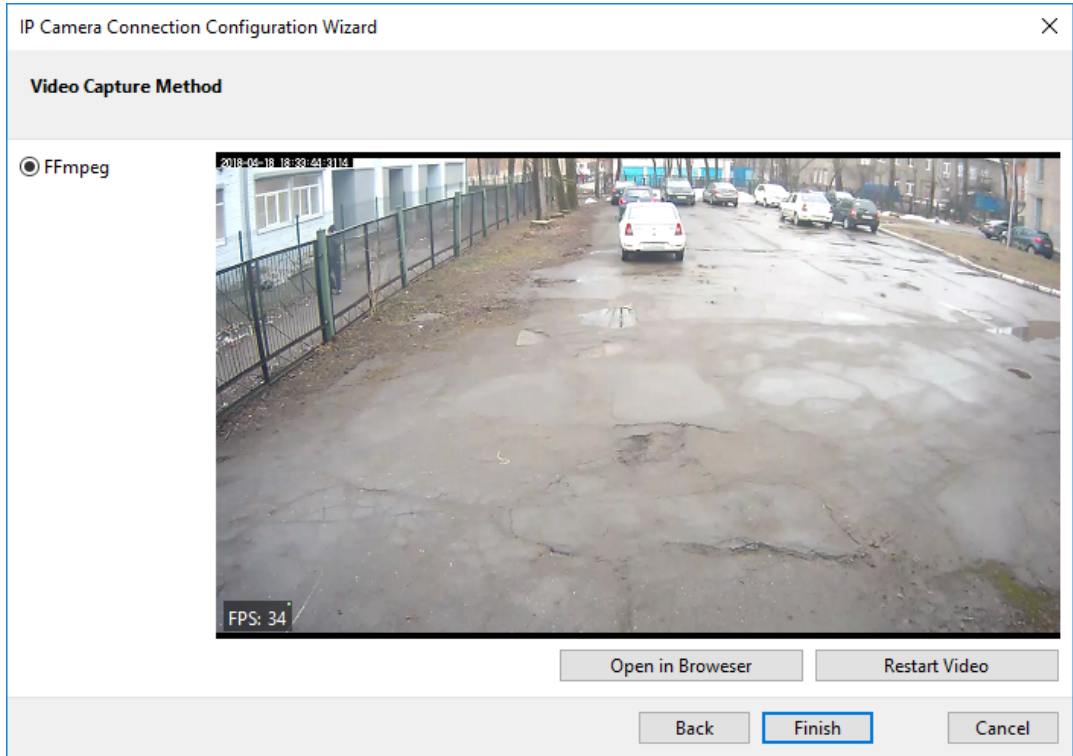


Figure 6.2.1.1.18

If an *Video Stream Error* message is displayed, then K-Lite Codec Pack Mega or VLC Player is not installed/installed incorrectly, respectively (for details, see *Video source*).

Install the required software separately.

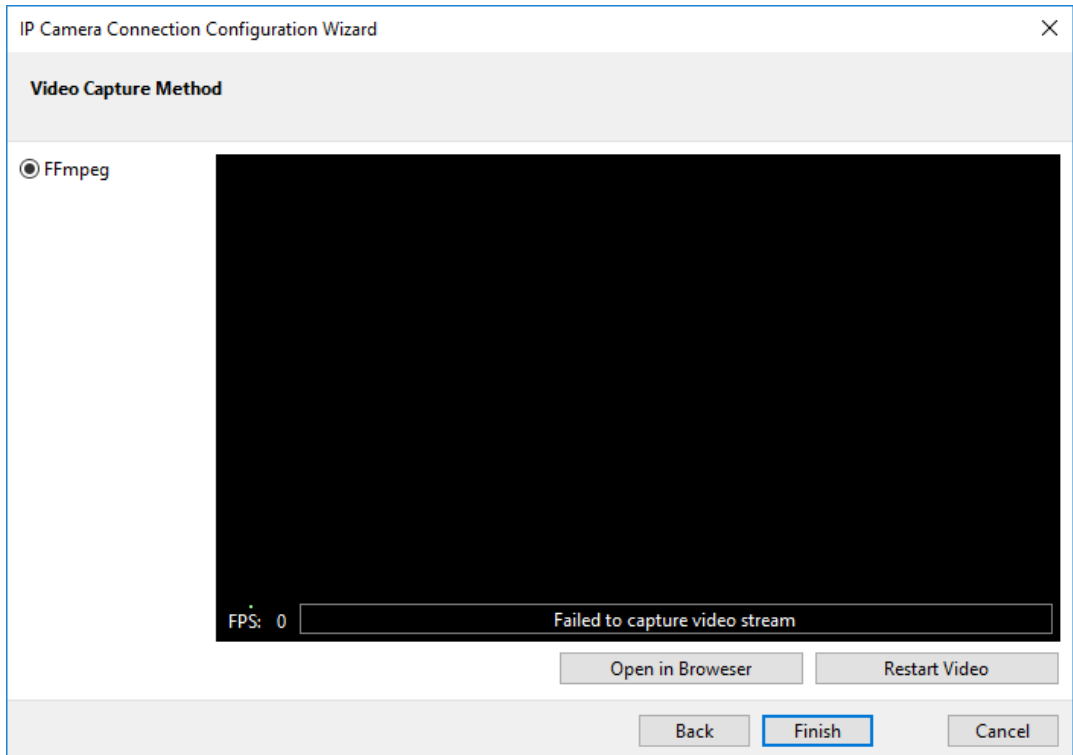


Figure 6.2.1.1.19

In the same window you may open the camera in the browser or restart the video feed upon resetting the camera.

Press Finish to complete.

6.2.1.2. Video preprocessing

For the correct operation of the system, a near-horizontal position of the number plate on the image is required. Sometimes the location and settings of the camera do not allow to achieve this. In addition, complicated optical distortions occur when using wide-angle lenses. In such situations, the option of video preprocessing should be used to correct the received frames. As a result, all images from the camera will be automatically brought to the form, which is optimal for recognition.

Using preprocessing increases the processor load. We do not recommend using preprocessing without adequate knowledge in the field of image analysis and recognition.

To configure video preprocessing, follow these steps:

1. Select the Service in the top menu and Settings in the drop-down menu;
2. In the window that opens, select the Video channels section and select (highlight) the required Video channel, for example, Video channel 1;
3. In the right part of the window there are video channel settings. Select the Video section;
4. Click the Setup button next to the Video preprocessing parameters field, see the figure below.

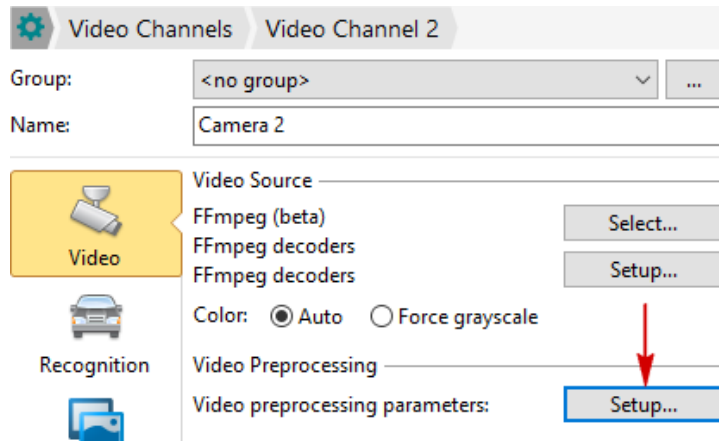


Figure 6.2.1.2.1

5. The video preprocessing window contains settings for the frame geometry.

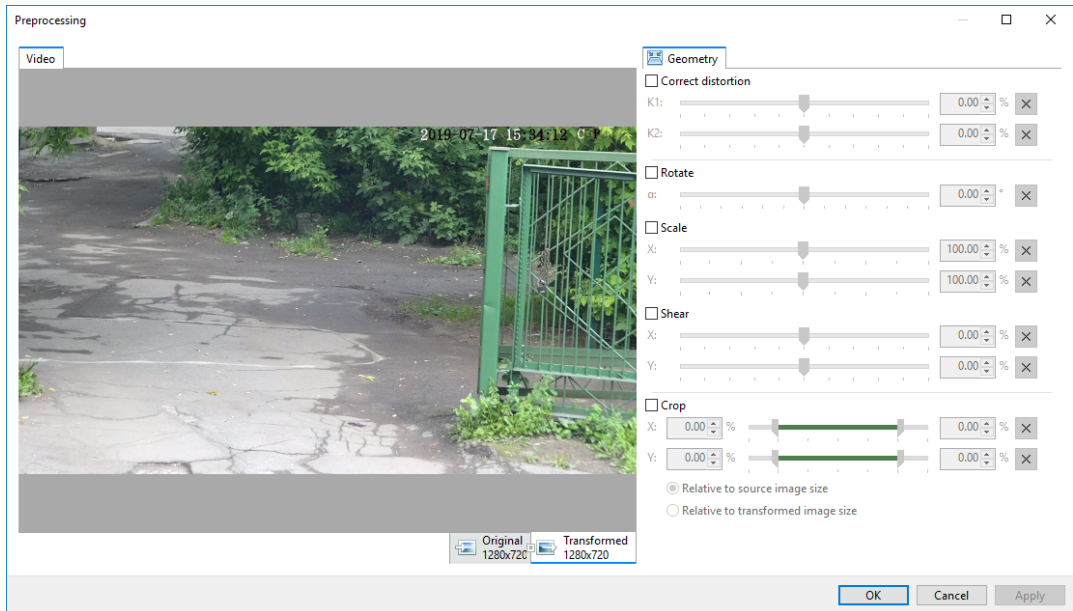


Figure 6.2.1.2.2

Geometry

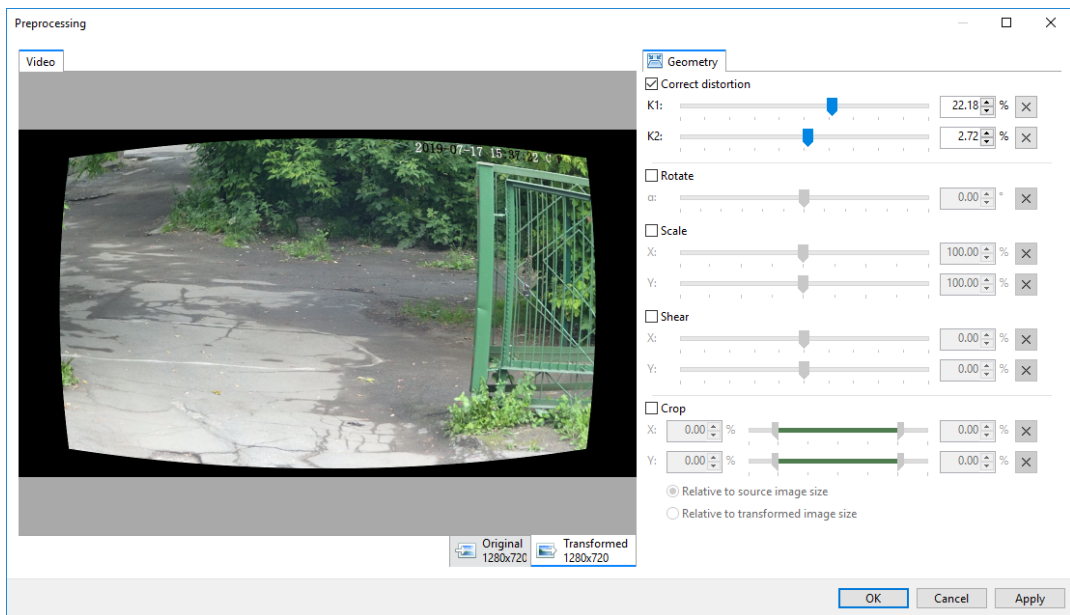


Figure 6.2.1.2.3

1. Elimination of distortion

Distortion is a violation of the similarity between the object and its image. Used to correct distortion from a camera lens.

By adjusting the parameters K1 and K2, you can eliminate distortion, if any; or simulate it, if not.

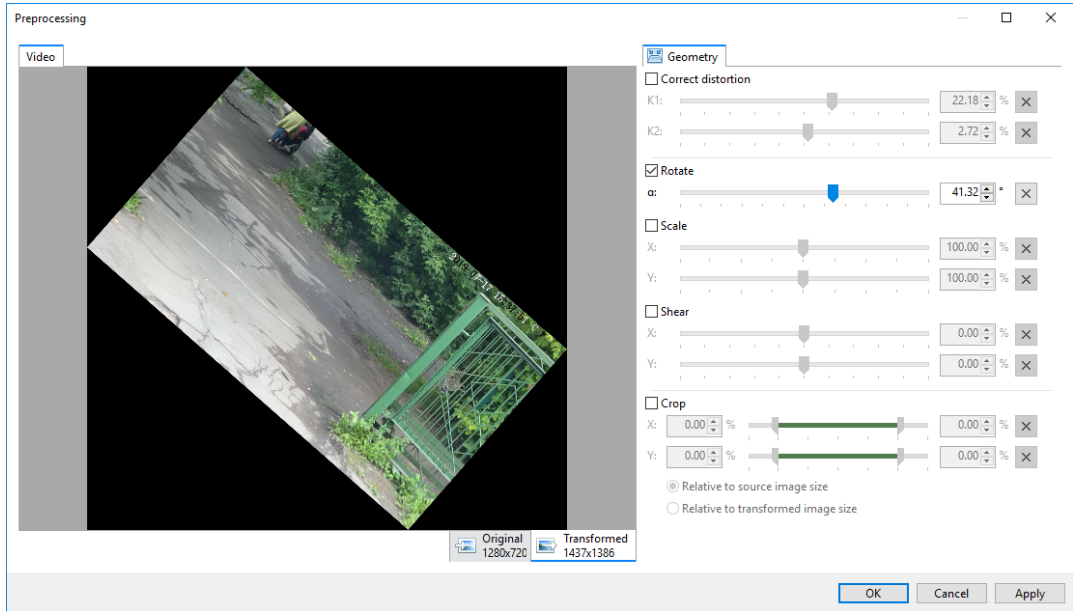


Figure 6.2.1.2.4

2. **Rotation**

Rotates the image clockwise by a specified angle. The image is rotated about the anchor point.

Figure 6.2.1.2.5

- Provides n-fold stretching along the X and Y axes. If the resulting image is larger than the original, then only a part of the image that is comparable to the original size will be analyzed. Moreover, what part of the image will be analyzed depends on the choice of the anchor point.

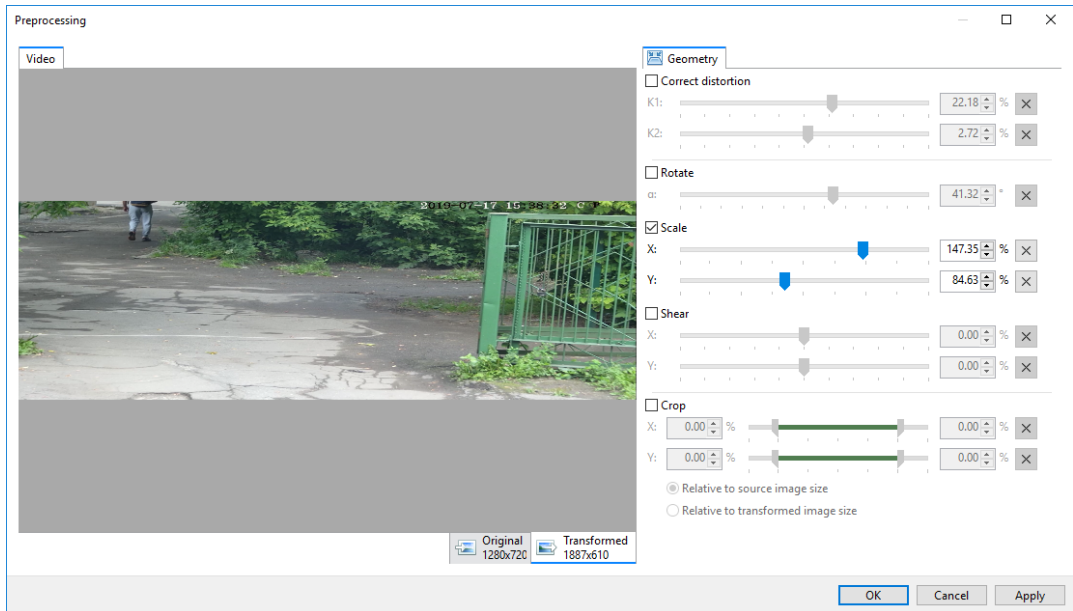


Figure 6.2.1.2.6

- Converts a rectangular image to a parallelogram.

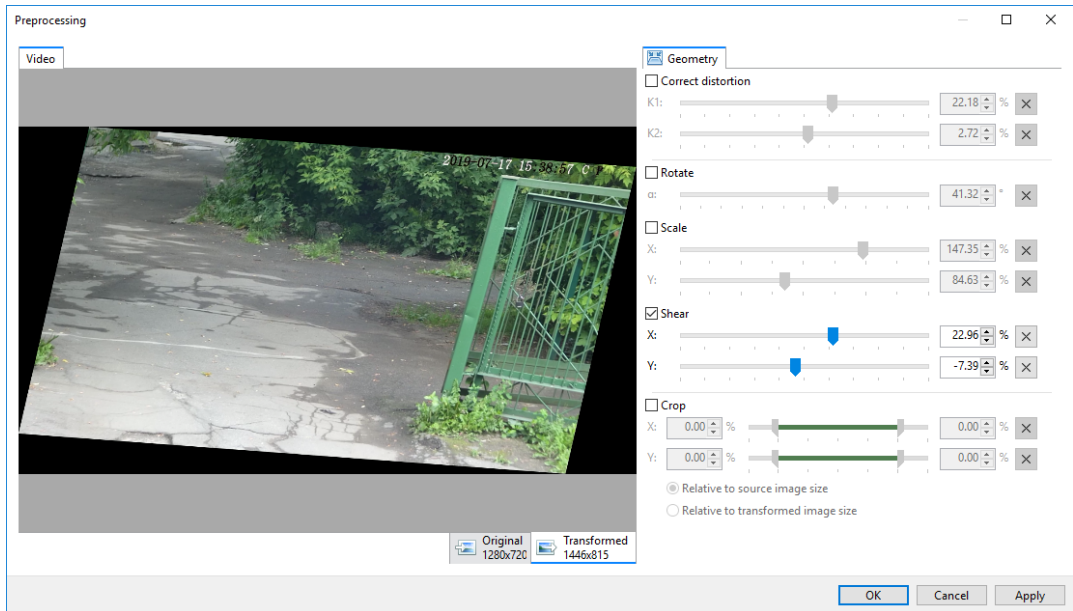


Figure 6.2.1.2.7

5. Removes the specified number of percentages in the X and Y axes from the image.

The frame can be cropped relative to the size of the original image or relative to the size of the image converted using the above settings.

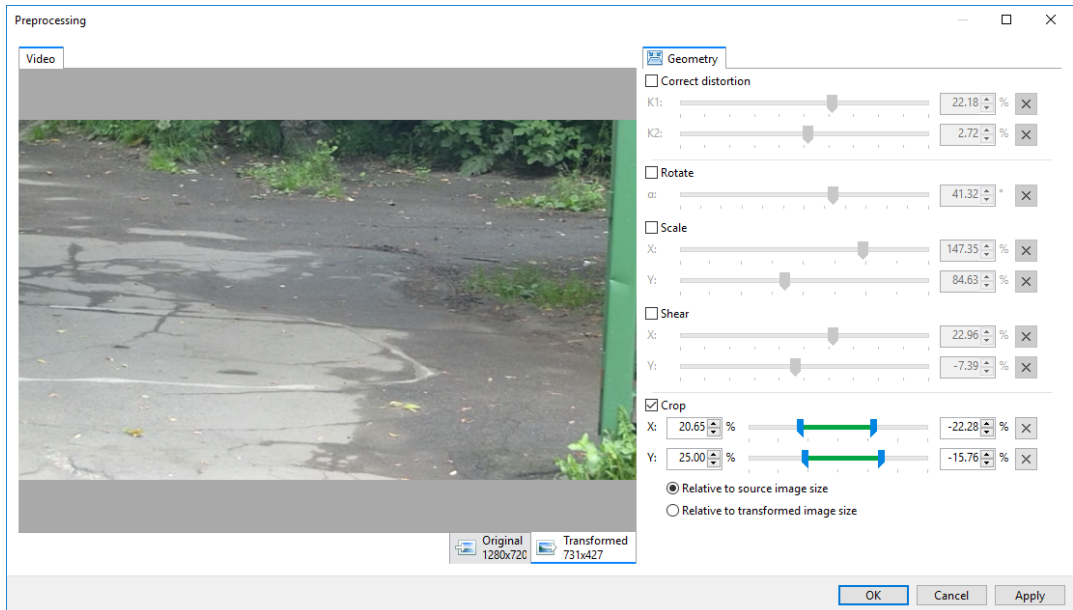


Figure 6.2.1.2.8

Grid - when enabled, displays a grid over the video to simplify configuring the video preprocessing parameters.

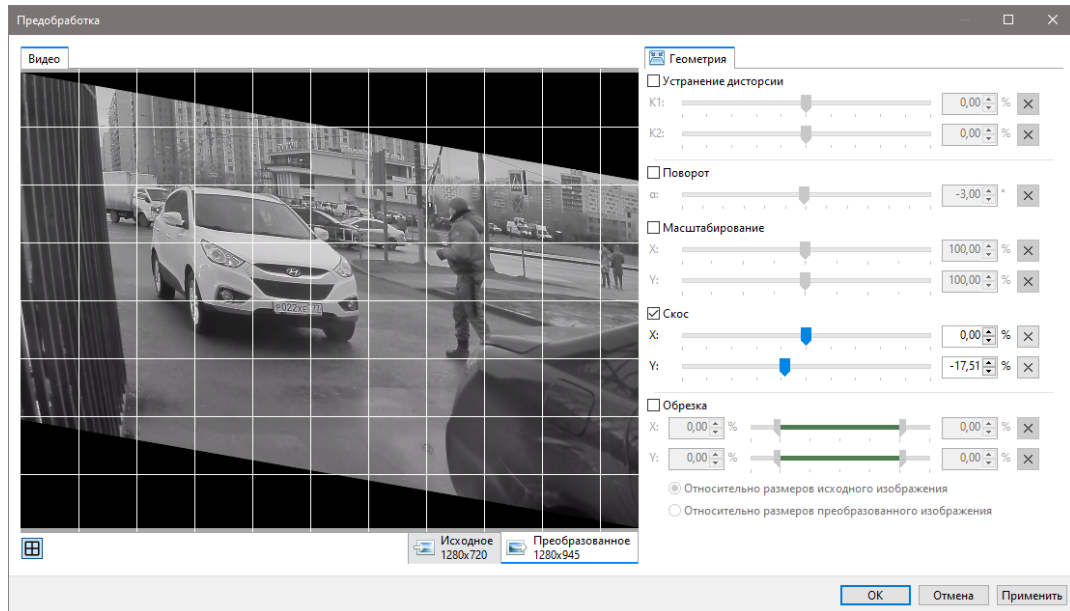


Figure 6.2.1.2.9

When the settings are disabled, their parameters are saved.

Click the **Apply** button to save the changes.

To reset, either disable the necessary settings, or use the button at the end of the lines with adjustable parameters.

6.2.1.3. Automatic reconnect

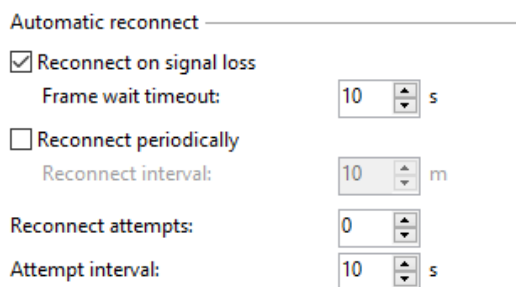


Figure 6.2.1.3.1

This section contains the parameters for reconnection to the camera in the event of signal loss.

- *Reconnect on signal loss.*

If a frame was received from the camera, and after it for the set number of seconds (Frame wait timeout) the next frame was not received, a reconnection will be attempted.

Frame wait timeout varies from 1 to 999 seconds.

Default is 10 seconds.

- *Reconnect periodically.*

After a set number of minutes (Reconnect interval), software will reconnect to camera.

This option is disabled by default; to enable it, check the *Reconnect periodically* option.

Reconnect interval varies from 1 to 999 minutes.

Default is 10 minutes.

- *Reconnect attempts.*

Number of attempts of reconnection to camera.

Varies from 0 to 100.

Default is 0.

- *Attempt interval.*

Interval between reconnection attempts.

Varies from 1 to 999 seconds.

Default is 10 seconds.

6.2.2. Recognition

6.2.2.1. Surveillance only

The **Surveillance Only** option allows to disable recognition on the selected video channel. In order to disable recognition on video channel, follow instructions below:

1. Select a **Video Channel**, e.g. **Video Channel 1**;
2. Check the **Surveillance Only** option;

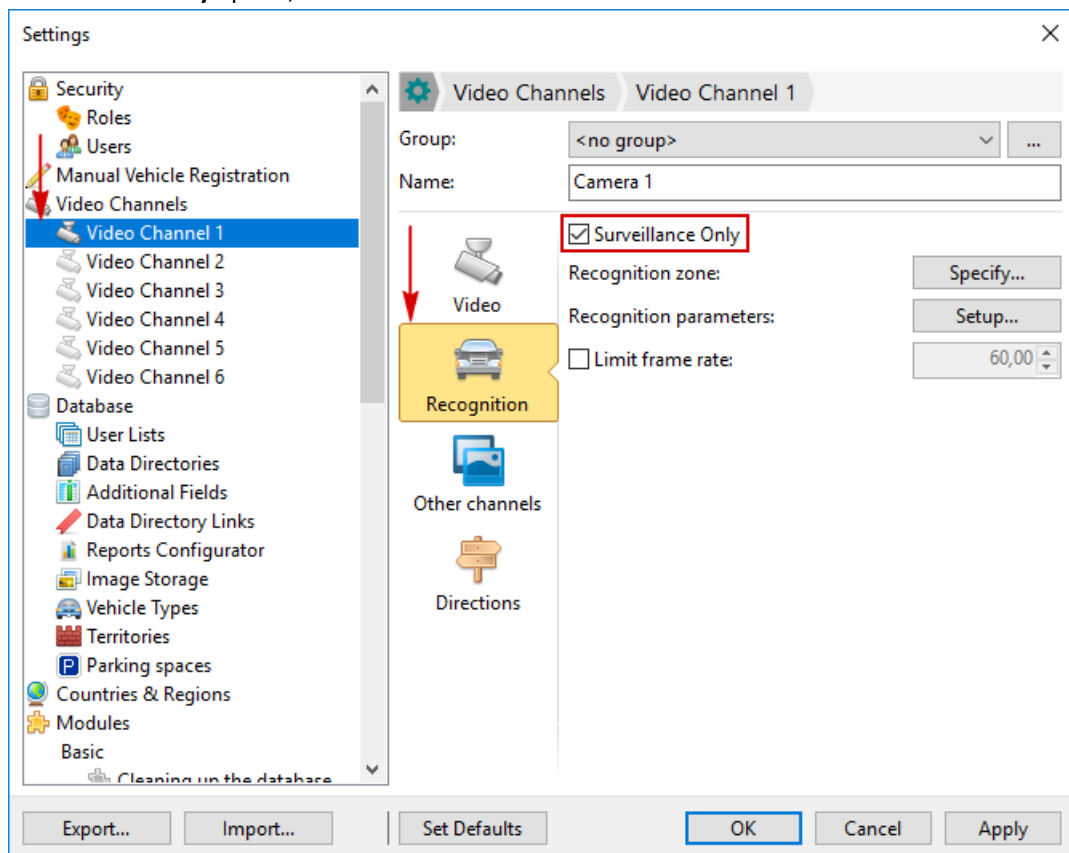


Figure 6.2.2.1

3. To save changes, click **Apply** in the lower section of the window.

6.2.2.2. Recognition zone

To adjust the recognition zone and size of plates, follow instructions below:

1. In the main menu, select **Service** and select **Settings** in drop-down menu;
2. In the next window select **Video Channels** section and select (highlight) the required **Video Channel**, e.g. **Video Channel 1**;
3. The right pane of the window contains the video channel settings. Select **Recognition** section;
4. Click **Specify** button next to **Recognition Zone** field, see figure below.

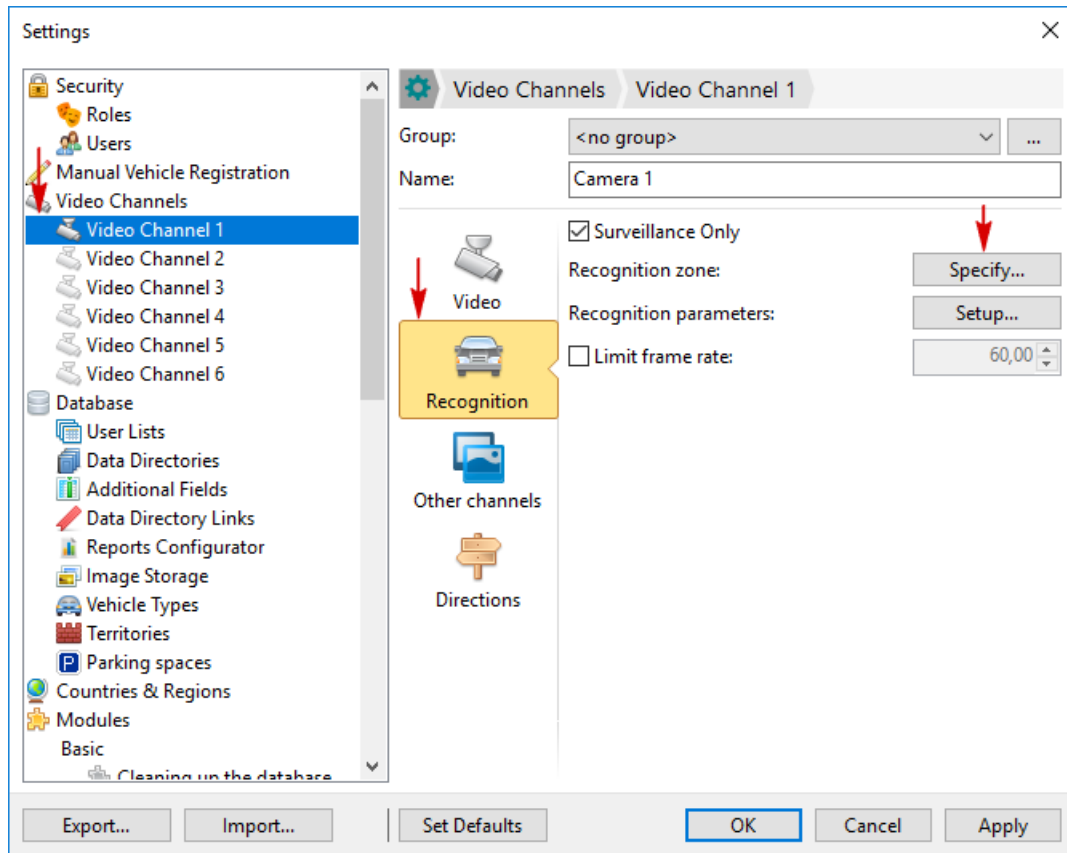


Figure 6.2.2.2

5. The next window, **Recognition Zone and Plate Size Setup**, contains the following settings:

- Image source;
- Recognition Zone Size;
- Plate Size;
- Recognition.

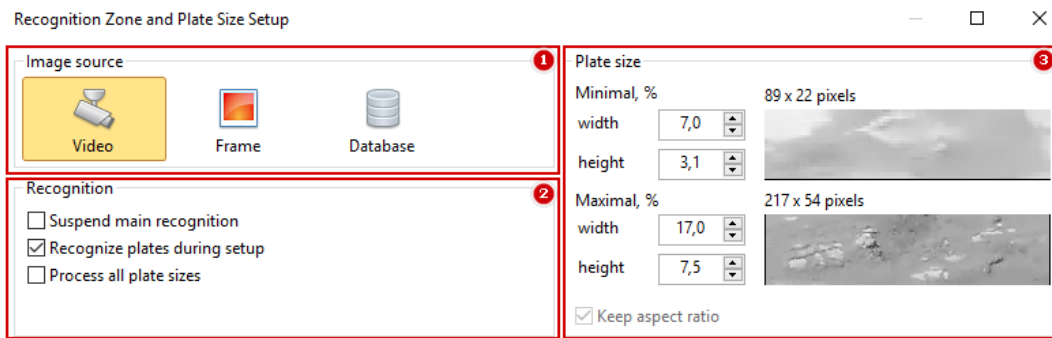


Figure 6.2.2.3

1. Image source

This function is designed for adjustment of the recognition zone.

The main setup applies to the camera feed (**Video** tab).

Additionally, you may use the license plate images (**Frame** tab) or screenshots from the Recognition Log (**Database** tab).

- **Video** (*enabled by default*)

When **Video** tab is selected, a camera feed will be displayed when adjusting the recognition zone.

- **Frame**

Used for adjustment of additional parameters, if a vehicle cannot be placed in front of the camera.

The image may either be inserted from clipboard or by opening a previously saved file (*.bmp; *.jpg; *.png).

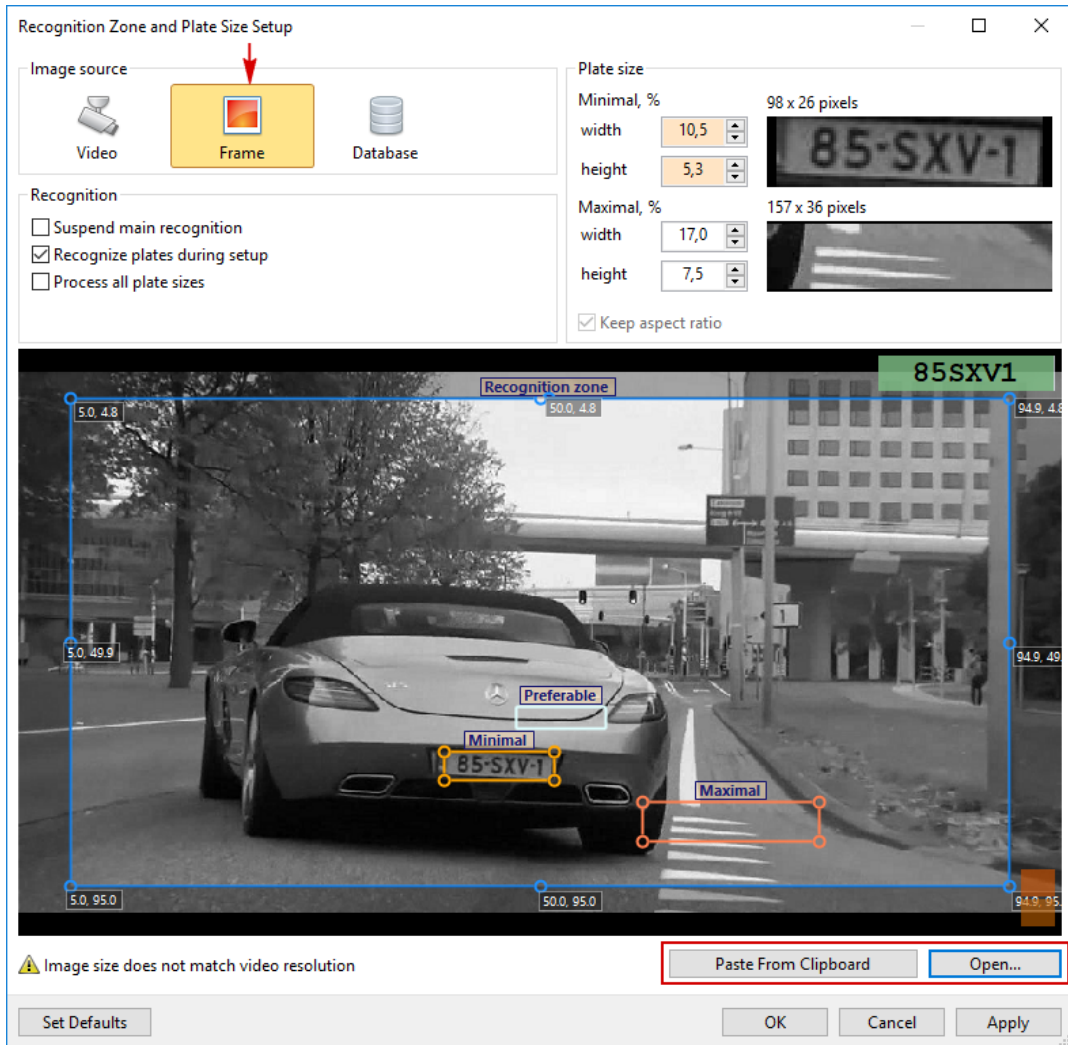


Figure 6.2.2.4



Image size must match the resolution of camera feed, otherwise the adjustment will not be accurate.

- **Database**

Used for adjustment of additional parameters, if a vehicle cannot be placed in front of the camera.

When this tab is selected, the images from the Recognition Log (database) will be loaded in the **Recognition Zone and Plate Size Setup** window.

To browse the images, use **Previous** and **Next** buttons.

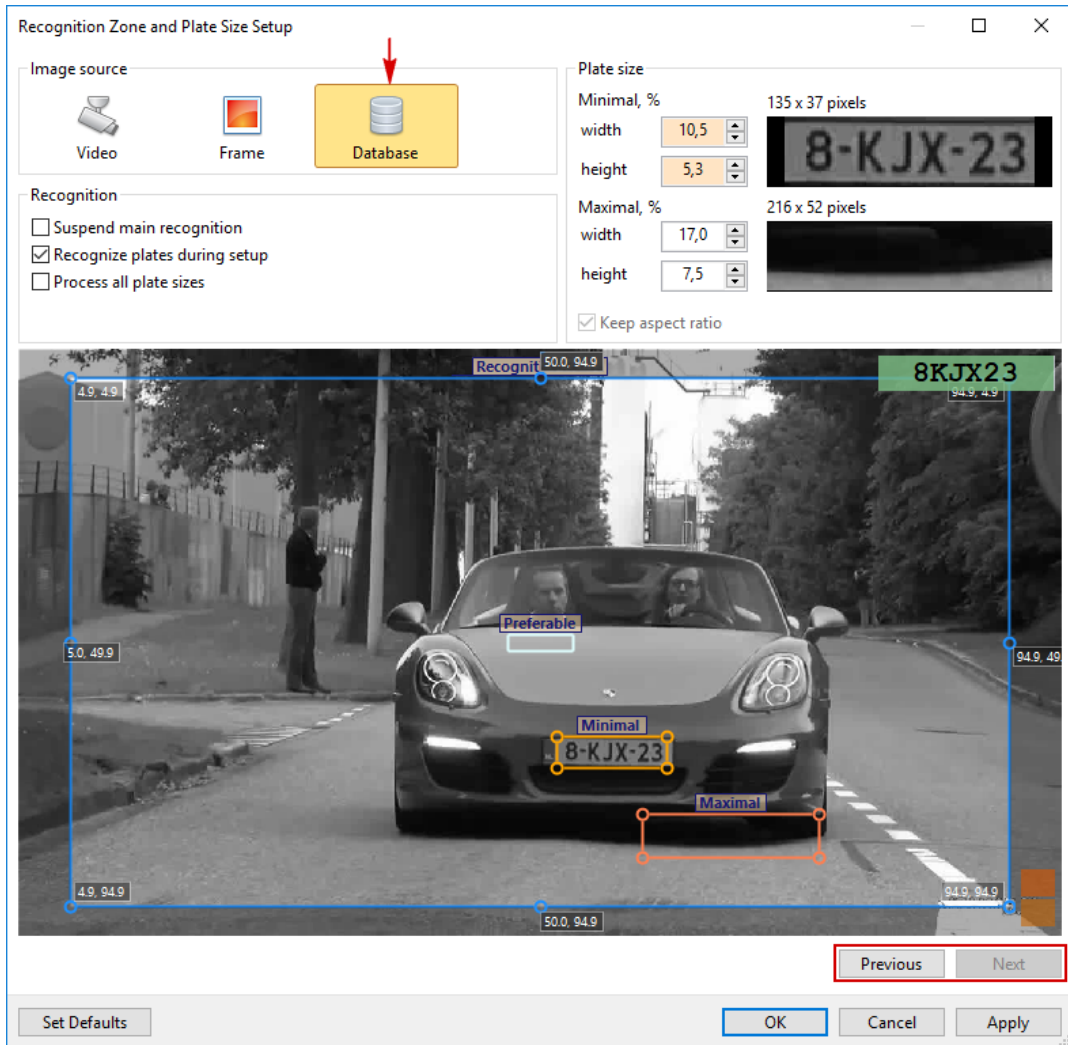


Figure 6.2.2.5

2. Recognition Zone Size




By default, the recognition zone is set to almost entire frame and is defined by a blue dotted line.

You may move the box by dragging it with a mouse or by setting the required values in menu.

The margins are set in percent for convenience. For instance, when changing the camera resolution, you will not be required to readjust the recognition zone box.

Margin values are entered in the appropriate fields from a keyboard or with arrows increasing/decreasing the parameter value.

In order to adjust the recognition zone, use the mouse to select the **Recognition Zone** box; the box color will change to red.

Hover the mouse cursor over the box edge, and when it changes to , , , hold the left mouse button and drag the box edge/entire box to the right/left/up/down until the edge is in the right position. Release the mouse button.

Adjust the Frame **Recognition Zone** by clipping the areas with no vehicle movement, see figure.

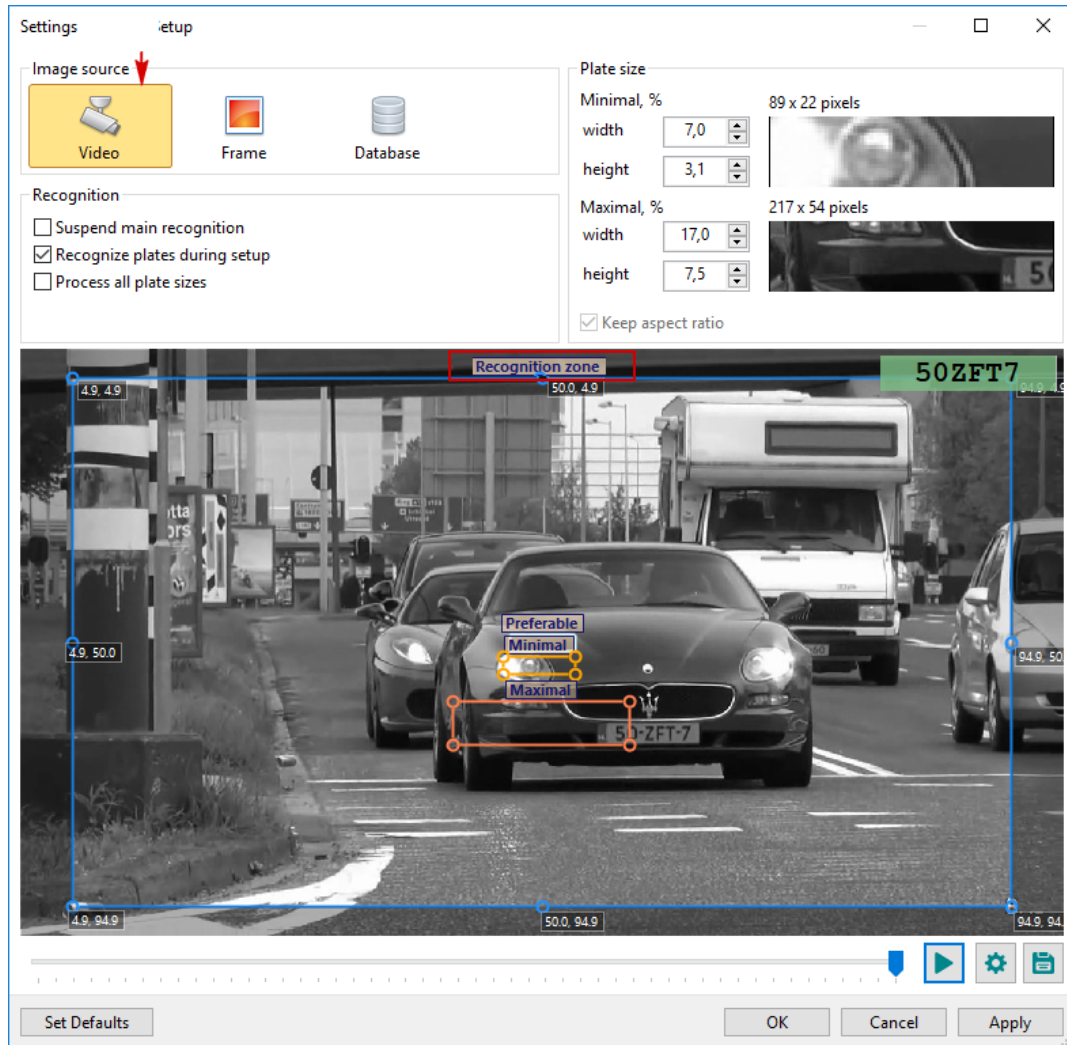


Figure 6.2.2.6

The smaller the area selected, the less the load on the processor.

3. Plate Size

Since the license plates in the top and bottom section of the frame can be of different sizes, you need to enter two sets of width/height values. The size can be adjusted both manually by entering the numbers in the appropriate fields and by using the image box.

To pause video and conveniently position the frame, use the **Pause Video Capture** button  and use the slider to navigate the frames in the buffer, see figure below.

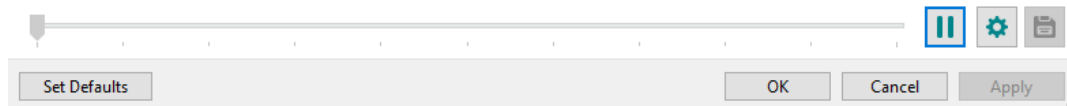


Figure 6.2.2.7

Then use the Minimal box to define the minimum size of the plate in the frame.

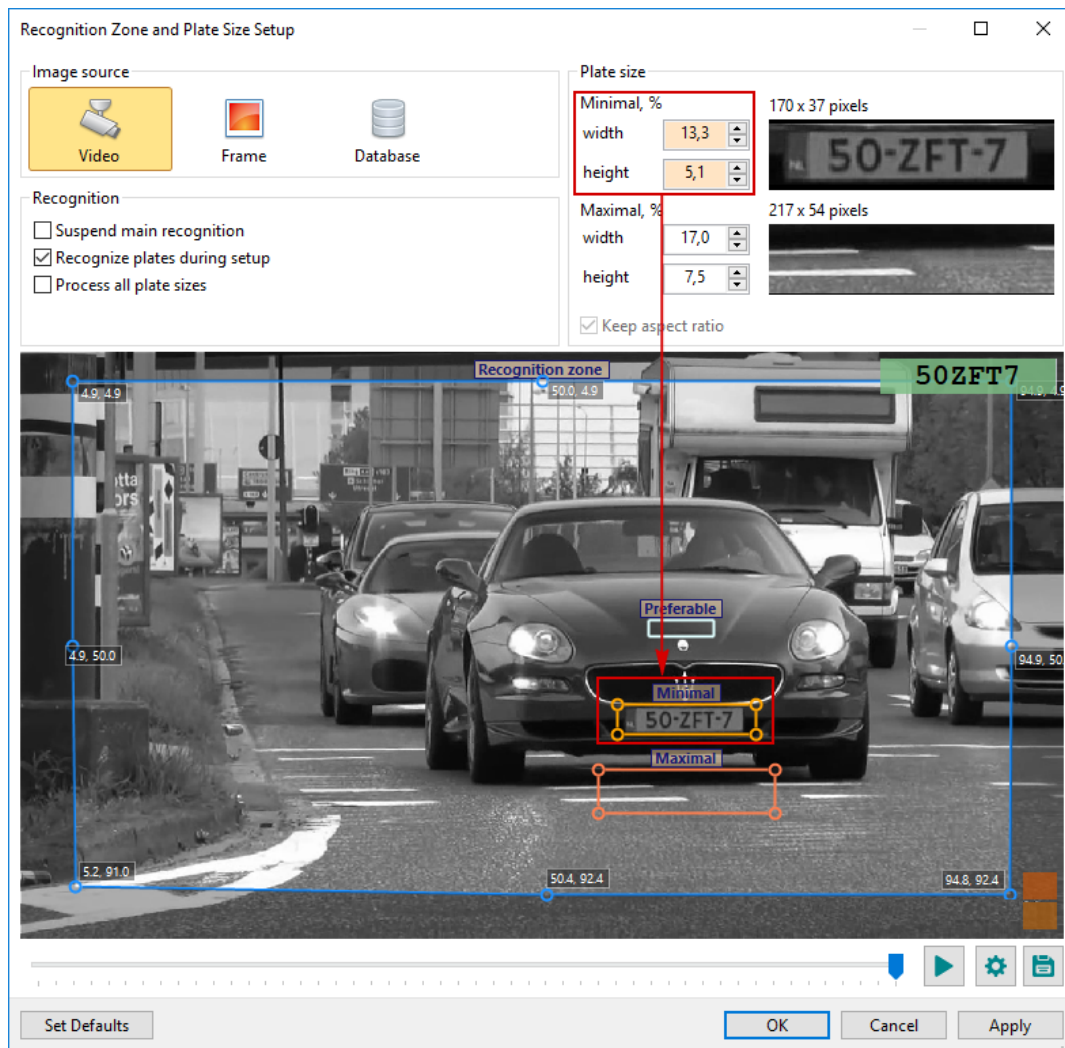


Figure 6.2.2.8

Using the **Maximal** box, define the maximum size of the plate in the frame.

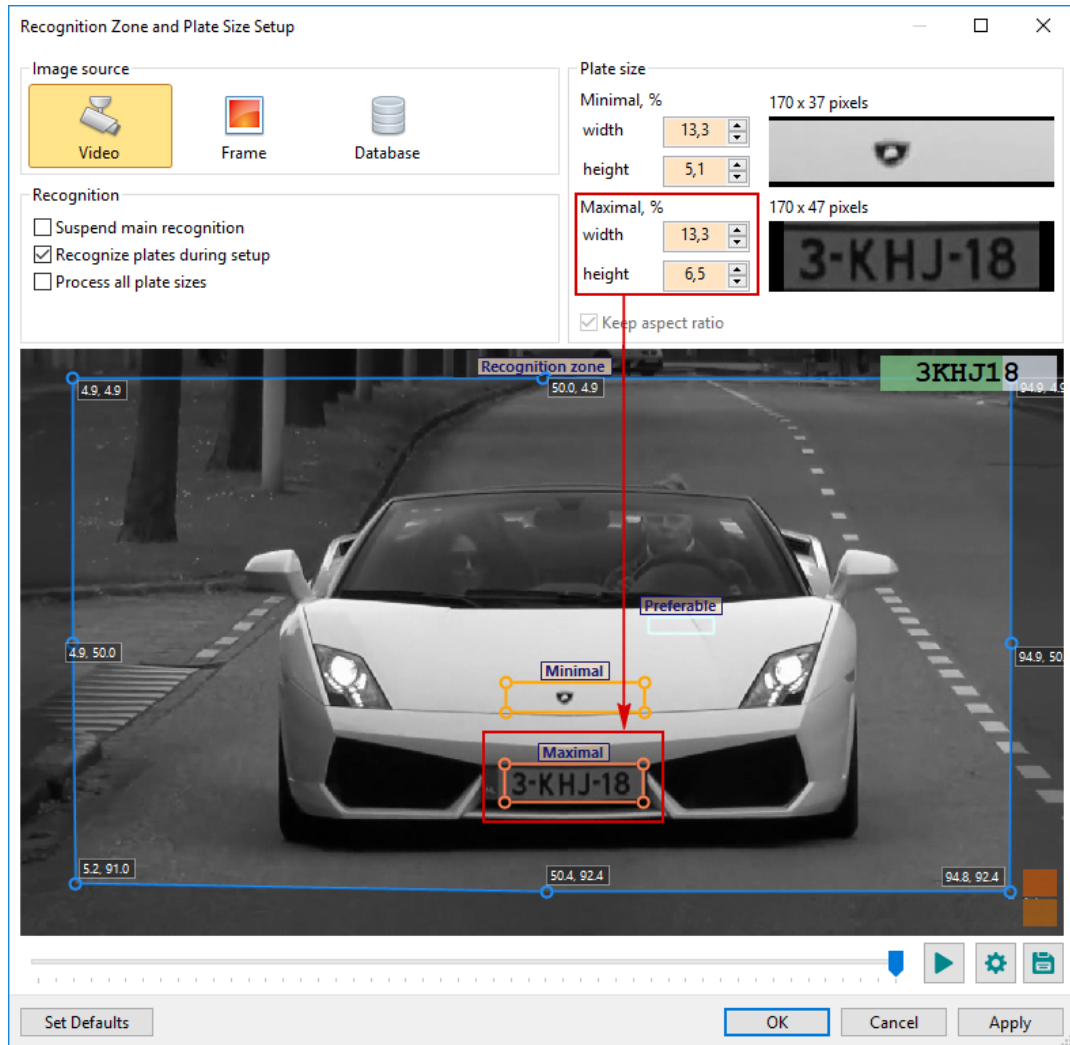


Figure 6.2.2.9

- The size of license plates is set in percent for convenience. For example, if you change camera resolution, you will not need to reconfigure the plate box edges.
- For convenience of defining the size of plates in the **Acceptable Plate Size** section (next to the minimal/maximal plate size settings), an enlarged image of the boxed area will be displayed.

When the size of the vehicle license plate on the image does not change as the vehicle moves (a camera is installed opposite to the license plate at a low height), you can only configure one license plate box.

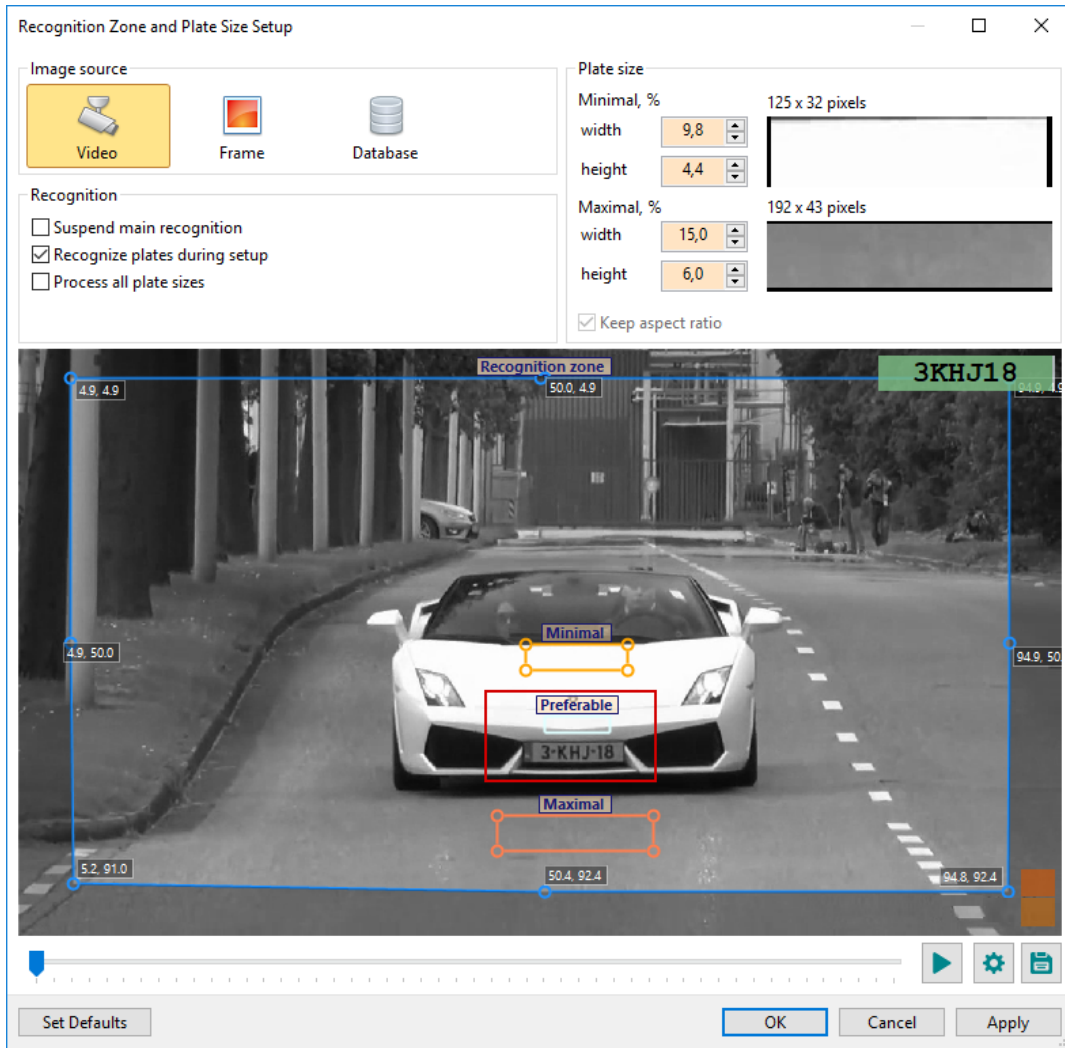


Figure 6.2.2.10

Note: the size of the vehicle license plate in the video feed must not exceed the acceptable size of plates (set using the plate size box), otherwise the plate will not be viewed by the system.

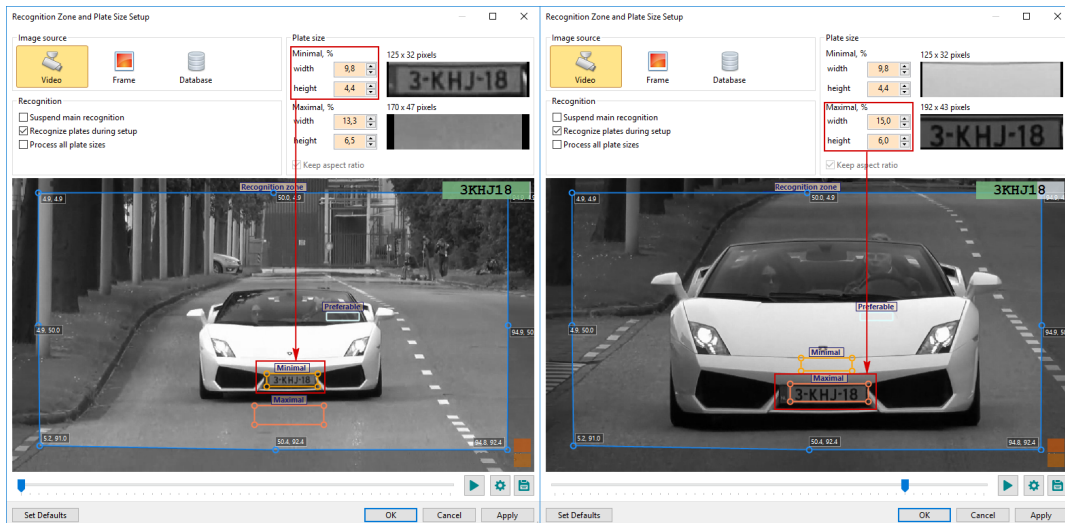


Figure 6.2.2.11

The **Keep Aspect Ratio** parameter is needed to change the width and height of the box to 4:1 when adjusting the plate size (this parameter is enabled by default).

4. Recognition

- When the **Suspend Main Recognition** option is enabled, the license plates of vehicles recognized in the **Recognition Zone and Plate Size Setup** section will not be written to the database.
- When the **Recognize Plates During Setup** option is enabled (enabled by default), it enables review of the recognized number in a current frame.

Recognition options are shown in the upper right corner of the screenshot, see figure.

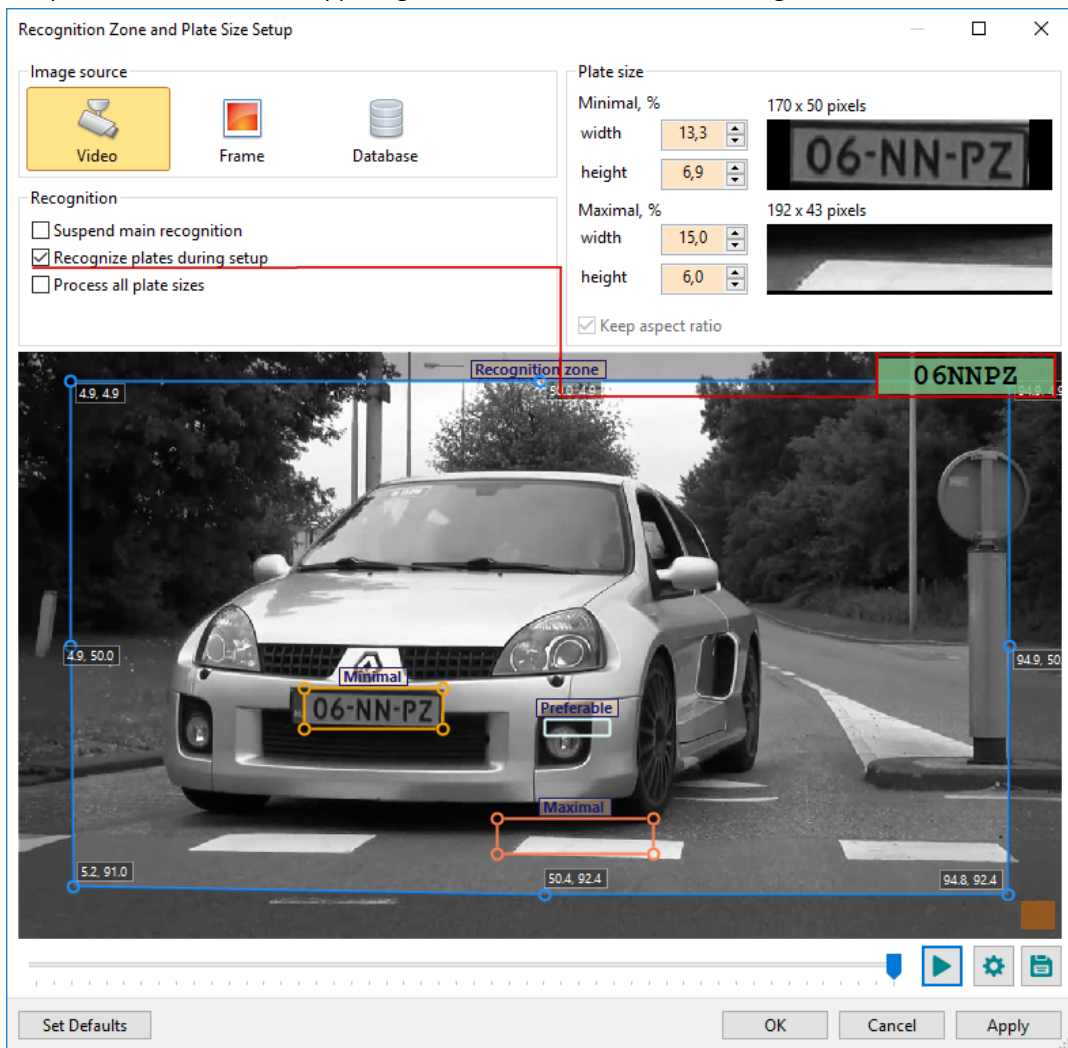


Figure 6.2.2.12

Colored bar gives the assessment of system's certainty in correctness of recognition of license plate in an image. The longer the green section of the bar, the more the system is certain of correct recognition of this type of plate.

- When the **Process All Plate Sizes** parameter is enabled, the system will attempt to find and recognize the plates of all acceptable sizes.

The lower section of the **Recognition Zone and Plate Size Setup** window contains the settings:

- **Frame Buffer Setup** 

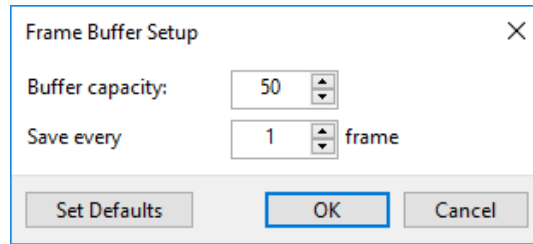


Figure 6.2.2.13

Allows to configure the number of frames from the camera that will be stored in video buffer.

Default is: Number of frames: 10; Save every 1st frame.

- **Save Current Frame to Disk**  — saves the screenshot to the specified folder as *.bmp; *.jpg; *.png image.

Once all set up is performed in the **Recognition Zone and Plates** window, click **Apply** and **OK** to save current settings and close the window.

To reset new settings to default, click **Set Defaults** button.

6.2.2.3. Recognition parameters

These parameters must be configured with Show Status enabled and Surveillance Only disabled.

Configuration may be considered to be completed if upon entering in the frame of a vehicle with readable license plate the system reaches the Resolving status.

To adjust the recognition parameters, follow instructions below:

1. In the main menu, select **Service** and select **Settings** in drop-down menu;
2. In the next window select **Video Channels** section and select (highlight) the required **Video Channel**, e.g. **Video Channel 1**;
3. The right pane of the window contains the video channel settings. Select Recognition section;
4. Click **Setup** button next to **Recognition Parameters** field, see figure below.

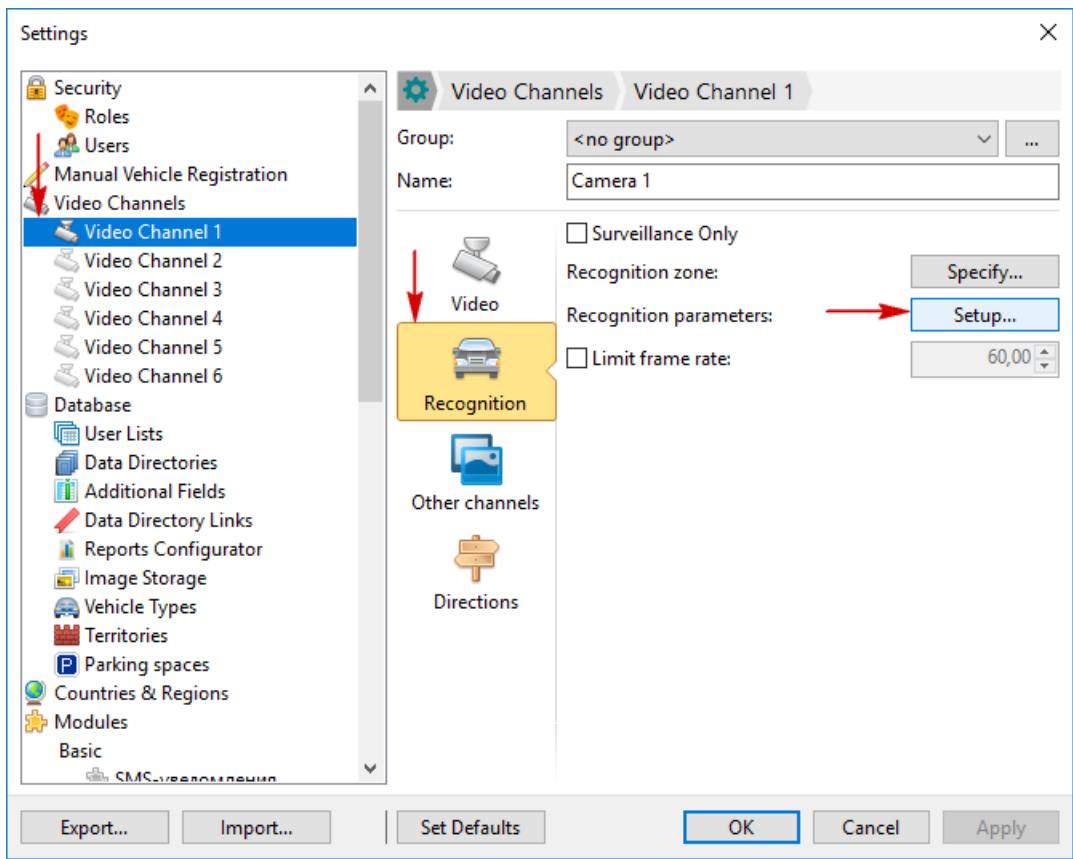


Figure 6.2.2.14

5. Parameter configuration window contains the following tabs:

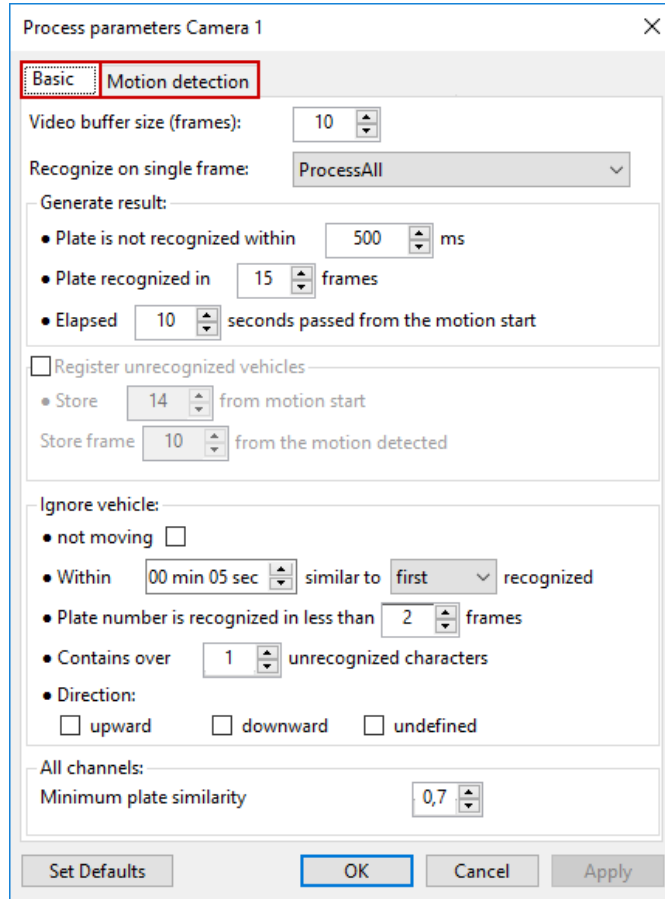


Figure 6.2.2.15

a. **Basic**

Allow to configure the basic parameters of recognition algorithms for the specified video channel.

- *Video buffer size in frames: ...*

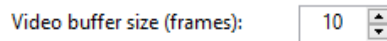


Figure 6.2.2.16

Processor may lack resources, in this case the system may skip a number of frames leaving them unprocessed, which reduces the quality of recognition. Video buffer allows to save unprocessed frames in memory and process them as the load on processor reduces. Video buffer size is selected experimentally, depending on the PC capacity and intensity of motor traffic. Since the buffer stores frames in RAM, its large size may cause an insufficient memory error.

Video buffer size may be varied from 1 to 99 frames.

Default is 5 frames.

- *Recognize on Single Frame ...*

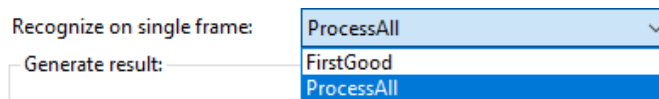


Figure 6.2.2.17

Defines how many license plates must be recognized on a single frame.

– First Recognized Zone – if only one vehicle plate may be present in the frame.

– Process All Zones – if several vehicle plates may be present in a frame simultaneously.

Default is Process All Zones.

- *Generate result:*

Generate result:

- Plate is not recognized within ms
- Plate recognized in frames
- Elapsed seconds passed from the motion start

Figure 6.2.2.18

Recognition algorithm consolidates the results of recognition from several consecutive frames and generates the final result in the form of recognized license plate. These parameters allow to configure the process of generating the final result. The final result is generated when any of the following conditions are met:

- *Plate is not recognized within ... ms*

If, after the last recognition, during the set interval (in milliseconds) no other plate was recognized, the final result will be generated.

May be set within 1 to 99999 milliseconds.

Default is 500 milliseconds.

- *Plate recognized in ... frames*

If a plate was recognized in the set number of frames, the final result will be generated.

May be set within 1 to 100 frames.

Default is 30 frames.

- *Elapsed ... seconds passed from the motion astart*

The final result will be generated not later than the set interval of time from the moment of detection of motion start.

May be set within 1 to 600 seconds.

Default is 10 seconds.

- If a plate is not recognized, save empty record:

Register unrecognized vehicles

- Store from motion start
- Store frame from the motion detected

Figure 6.2.2.19

Enable if you need to record vehicles with license plate unrecognized (empty record). Empty record is only made if the following condition is met:

- *Motion detected in more than ... frames*

Motion must be present in the set number of frames or more.

May be set within 1 to 999 frames.

Default is 14 frames.

- *Store frame ... from motion Start*

Empty record will contain this frame since the motion start.

May be set within 1 to 999 frames.

Default is 10th frame.

- *Ignore vehicle:*

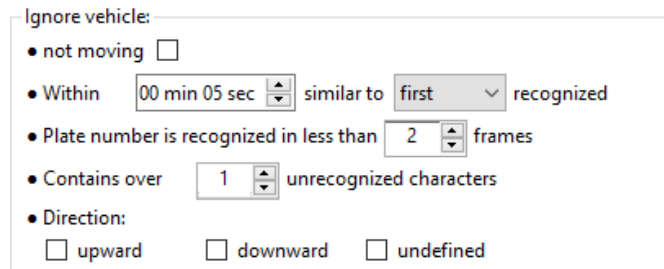


Figure 6.2.2.20

Do not record plate if any of the following conditions is met:

- *not moving*

If a license plate does not move in the frame, it is not recorded.

This option is disabled by default.

- *Within ... sec. similar to first (last) recognized plate*

If the plate is recognized again within the set time interval, it is not recorded.

Prevents duplication of plates if the vehicle passes through a checkpoint for long.

If a **similar to first recognized plate** option is enabled, the locking time interval will start after the first recognized plate.

If a **similar to last recognized plate** option is enabled, the locking time interval will restart after each plate recognition.

May be set within 0 to 60 minutes.

Default is 5 seconds.

- *Plate number is recognized in less than ... frames*

If a plate is recognized less than a set number of times, it will not be recorded. The higher this value, the less the probability of recording of "false" numbers, but the higher the chance to miss a vehicle.

May be set within 1 to 999 frames.

Default is 2 frames.

- *contains over ... unrecognized characters*

If a plate contains the characters that cannot be recognized, and their number exceeds the set one, it will not be recorded.

May be set within 0 to 10 characters.

Default is 2 characters.

- *moves along the frame in direction:*

The image of the license plate in the process of vehicle passage moves along the frame in one of the directions. Typically, it is downward or upward. Mostly, algorithms allow to determine the direction of movement and not to record a vehicle that moves in an improper direction.

- upward: do not record vehicles moving upwards in the frame.

- downward: do not record vehicles moving downwards in the frame.

- undefined: do not record vehicles, movement of which was not defined.

- *General parameters for all channels:*



Figure 6.2.2.21

Configuring parameters that are the same for all Video Channels.

Minimum Plate Similarity.

Defines the ratio of characters that may differ on two compared license plates to consider them the same.

May be set within 0 to 1.

Default is 0.5.

b. Motion detection

Vehicle in the frame is detected by an in-built motion detection algorithm. It defines the image frames containing moving objects and sends them for further processing while skipping frames with no movement. Sensitivity settings define how much an image must change to take such change for a movement.

In order to notify that the frames show movement, signals from peripheral devices may be used.

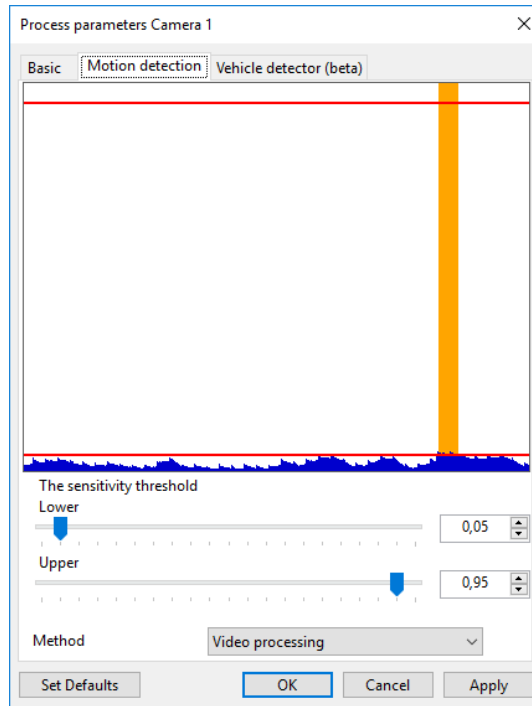


Figure 6.2.2.22

To select the in-built motion detection algorithm, select **Video processing** in the **Method** field.

To select the motion detection method based on the incoming signals from peripheral devices, select the **External plugin** value.

To select the mixed method of motion detection, select **Video processing** or **External plugin**.

To make system recognize plates on each frame, select **Disabled**.

The system must spend most of the time in *No motion* state, and change it only when a vehicle or another large object moves in the frame. If the system does not switch from *No motion* state even when a vehicle appears in the frame, increase the algorithm sensitivity, and, on the opposite, if a system does not switch to *No motion* state with no major changes in the frame, reduce the sensitivity.

For the ease of configuration, the system builds the image change intensity chart for the last 10-15 seconds of operation. Highlighted in orange are the frames, in which the motion will be detected at the set sensitivity threshold. Thresholds are indicated by horizontal red lines.

IV. Limit frame rate

- For slow channels, the frame rate must not exceed 6 frames per second.

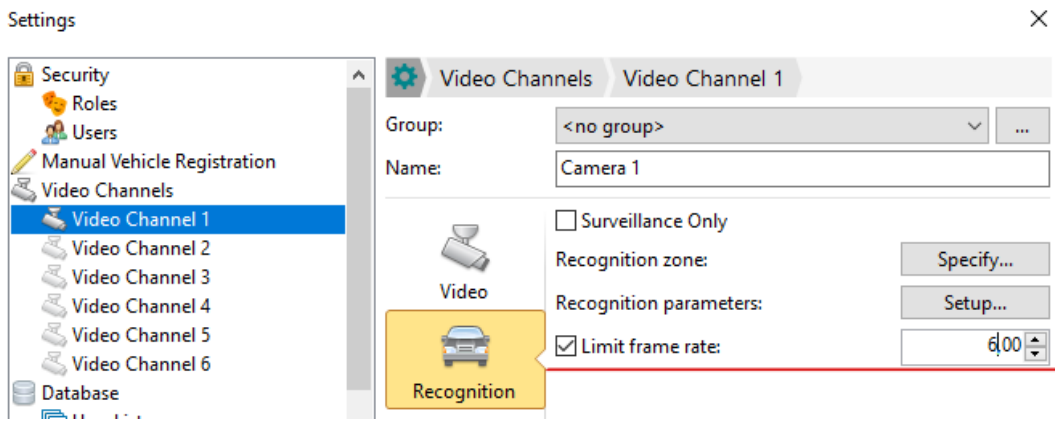


Figure 6.2.2.23

- For fast channels, the frame rate will be limited to 60 frames per second.

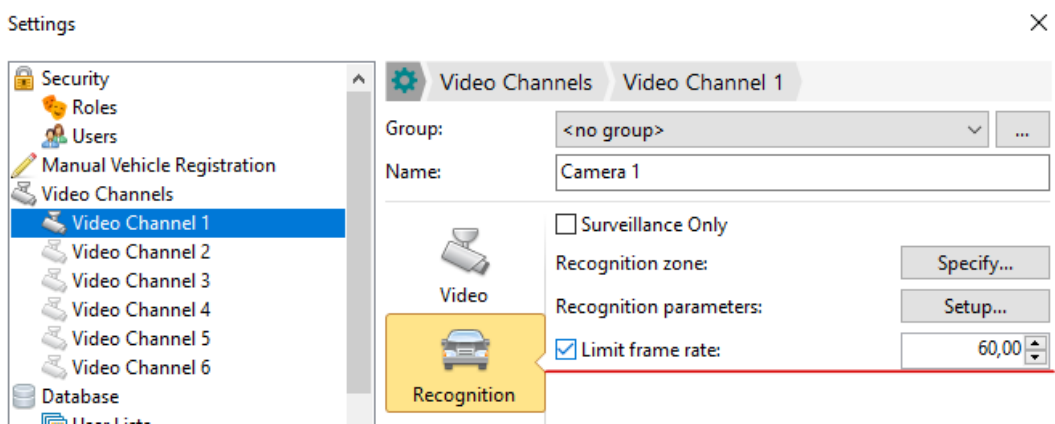


Figure 6.2.2.24

6.2.3. Other channels

For each video channel, you may select, from what other camera images must be saved upon recognition of license plate by the main channel camera.

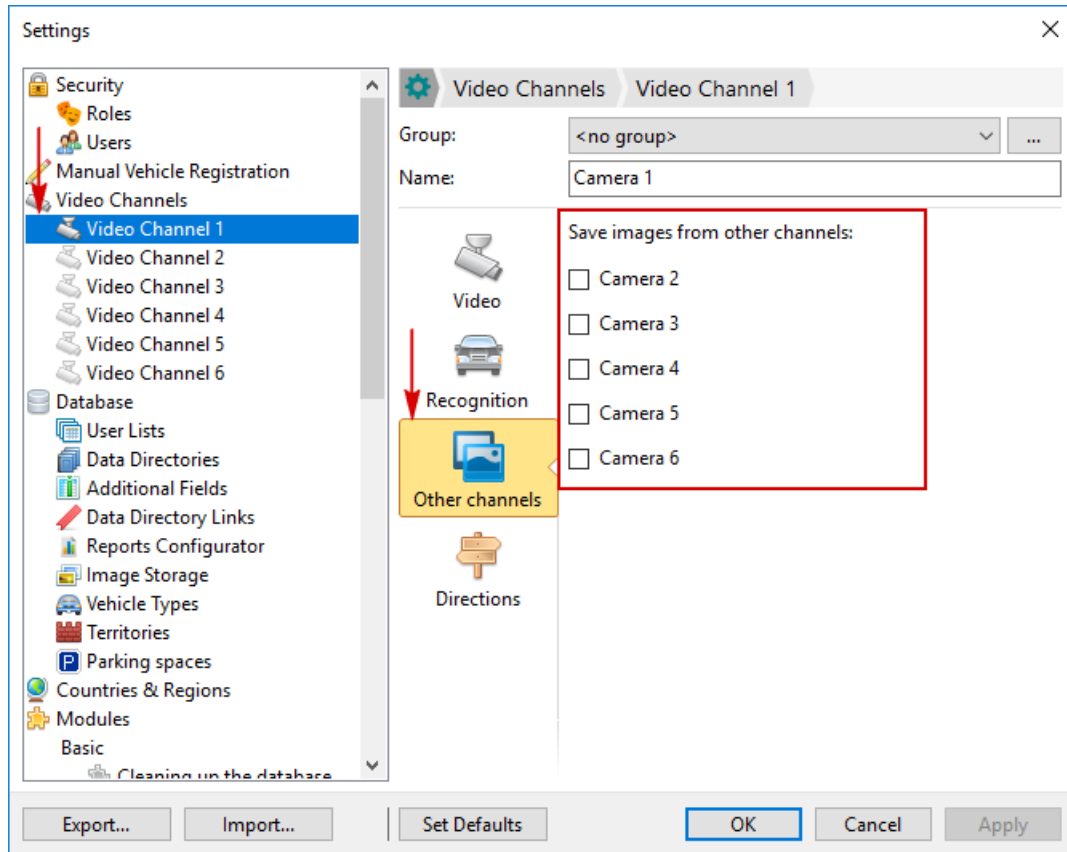


Figure 6.2.3.1

To do so, select the required Video Channel and go to Other Channels section.

Select and check the cameras you wish to save images from. To view the saved image, highlight the record line in the Recognition Log and click an arrow in the image view window. Switch back to the main image by clicking this button again.

6.2.4. Directions

For each video channel you may set the direction of vehicle movement in the frame (depending on vehicle movement downwards or upwards).

To do so, select the required Video Channel and go to Directions section.

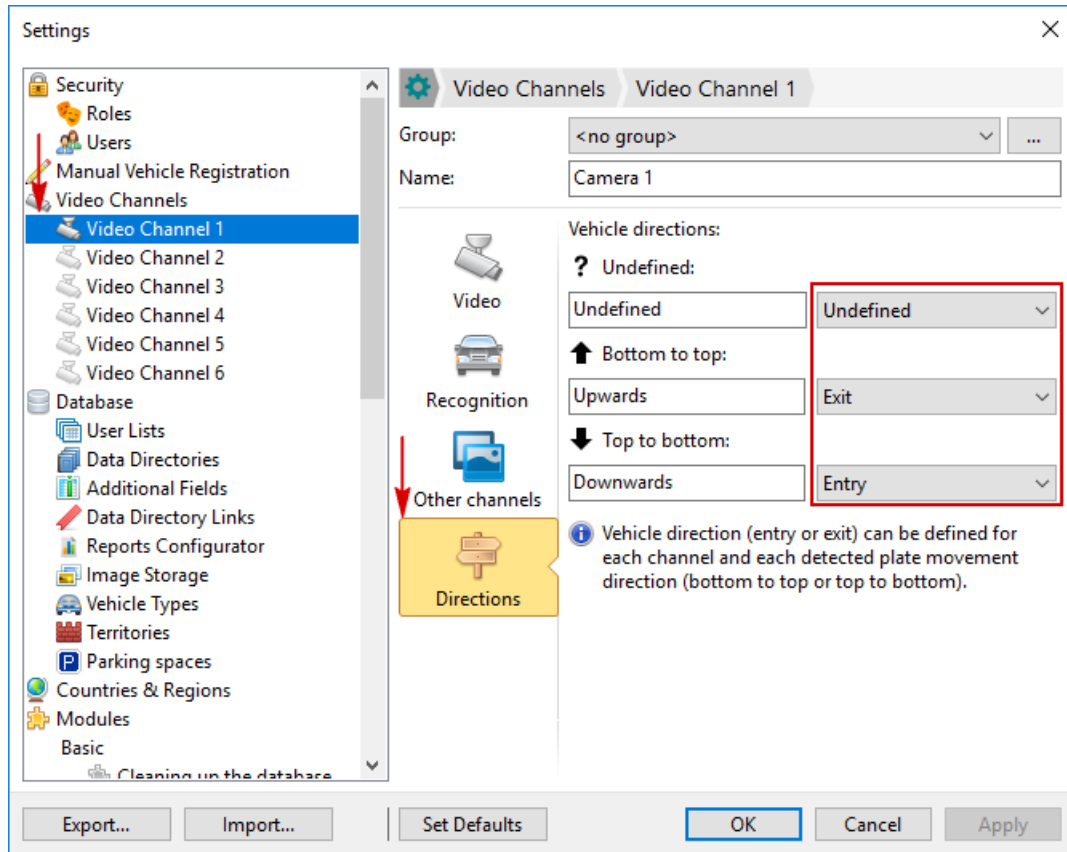


Figure 6.2.4.1

For each license plate direction in the frame (e.g. Top to bottom or Bottom to top) specify the direction of vehicle movement (e.g. entry to the territory or exit from the territory).

Entry to / Exit from the territory icons will be shown in the Recognition Log, as well as the duration of stay of a vehicle on the territory.

See example on screenshot.

RECOGNITION LOG						AUTOUPDATE <input type="checkbox"/>
Plate	Date/Time	Video channel	Duration of stay	Movement		
96KVB7	25.04.2018 16:41:25	Camera 2	3 min., 35 sec.	Upwards	↕	
62GTX2	25.04.2018 16:40:43	Camera 2	1 min., 57 sec.	Upwards	↕	
03HZD3	25.04.2018 16:40:32	Camera 2	1 min., 37 sec.	Upwards	↕	
03HZD3	25.04.2018 16:38:54	Camera 2		Downwards	↕	
62GTX2	25.04.2018 16:38:46	Camera 2		Downwards	↕	
96KVB7	25.04.2018 16:37:50	Camera 2		Downwards	↕	
8KJX23	25.04.2018 16:33:41	Camera 2		Undefined	?	
8KJX23	25.04.2018 16:31:16	Camera 2		Upwards	↕	

Figure 6.2.4.2

6.2.5. Parking monitoring channels

This type of video channels is designed for vehicle recognition and monitoring in their parking spaces at the car park.

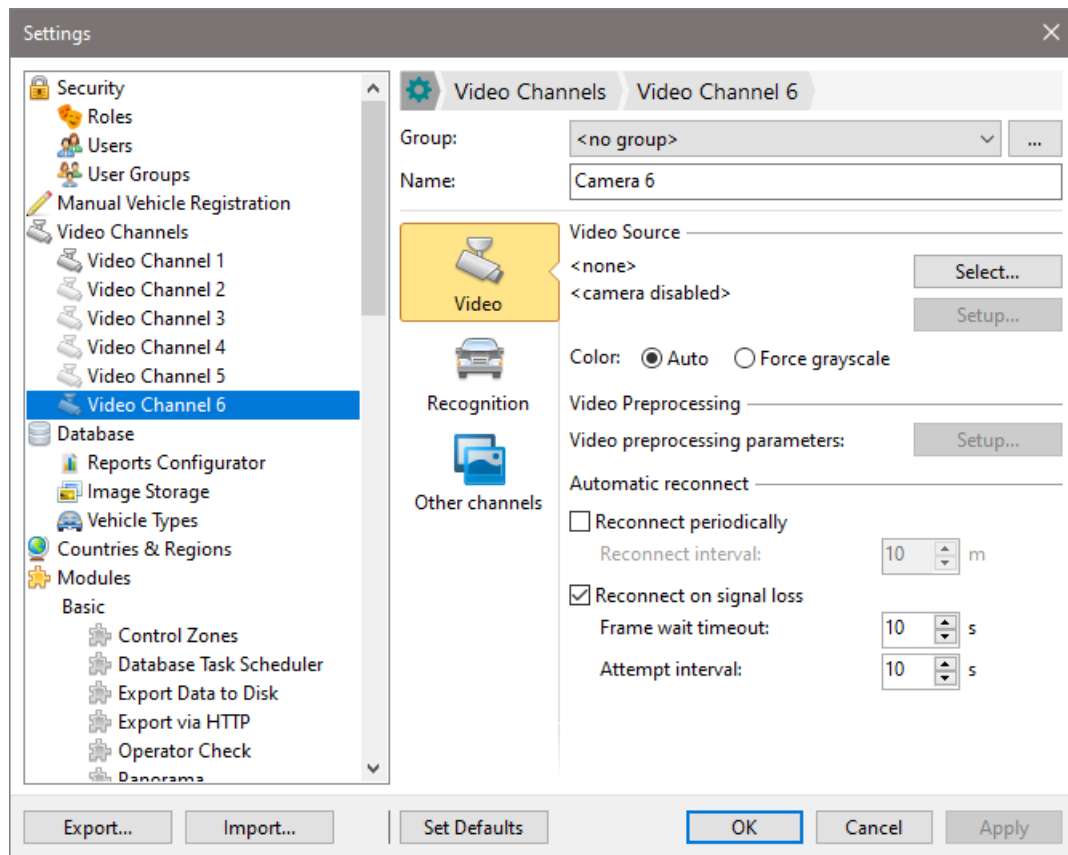


Figure 6.2.5.1

The principle of operation of the parking monitoring channel is as follows: every N seconds, the vehicle license plate is recognized in the frame. When a vehicle is detected in the frame for the first time, “Entry” will be recorded in the Recognition log. When the vehicle disappears from the frame, “Exit” will be recorded in the Recognition log. The time difference between entry and exit of the vehicle will be used to calculate the duration of its stay in the parking lot.

The recognition period in seconds and the number of frames to be processed are set in the recognition settings.

Configuration

To configure the recognition parameters, do the following:

1. In the Settings menu, choose the parking monitoring video channel;
2. In the video channel settings, go to the Recognition section;
3. Click the Setup button to go to the settings of the recognition parameters.

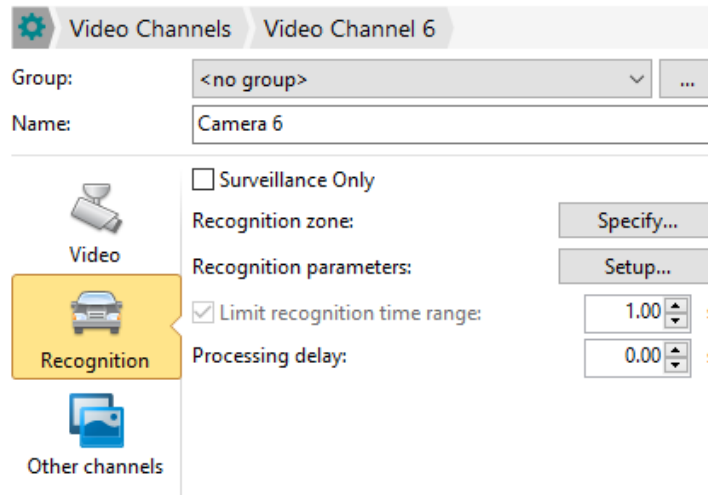


Figure 6.2.5.2

The “Parking monitoring” tab contains the following recognition parameters settings:

Generate entry decision

Entrance decision is generated if the recognized license plate is detected the first time on the set sequence of frames, taken at a given interval. In this case, a record is made in the Recognition log with the set direction of movement “Entry”.

Generate exit decision

Exit decision is generated if the license plate for which the entrance decision was previously generated was not detected on the set sequence of frames, taken at a given interval. In this case, a record with the direction of movement “Exit” is made in the Recognition log.

The current frame is used as the frame linked to the recognized number plate, while the coordinates of the license plate are absent.

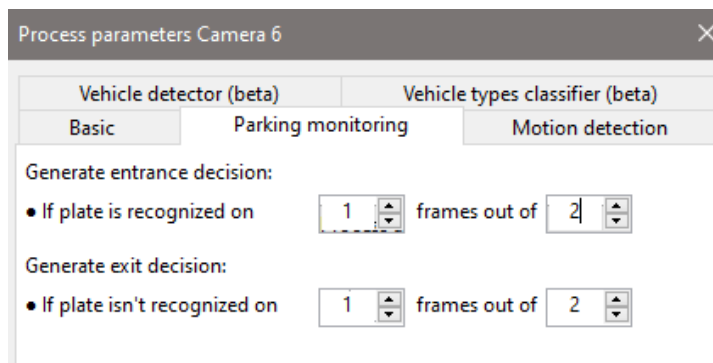


Figure 6.2.5.3

The T value is set in the video channel settings by the "Limit recognition time range" parameter.

Recognition time range T is a value inversely proportional to the frame processing frequency (FPS), i.e. $T = 1 / FPS$. The minimum value is 1 second.

There is no option to disable the recognition time range limitation.

6.3. Database

6.3.1. User Lists

6.3.1.1. Creating and configuration of lists and their structure

Number plates are possible to be grouped into user lists.

In the upper “Database” menu transit to → “User Lists” → “Manage User Lists” or use F4 hotkey for call-in of “Manage User Lists” window (Picture 6.3.1.1).

Attention! All user lists actions performed in this window will be saved in Database only once the “Apply” button is pressed.

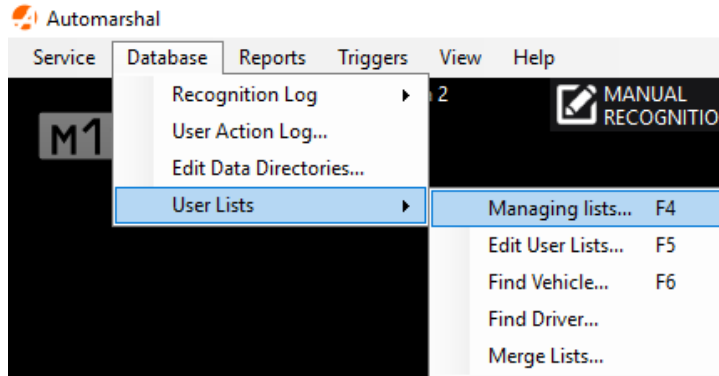


Figure 6.3.1.1

In figure 6.3.1.2 crucial interface elements of “Manage User Lists” window are marked by the numbers:

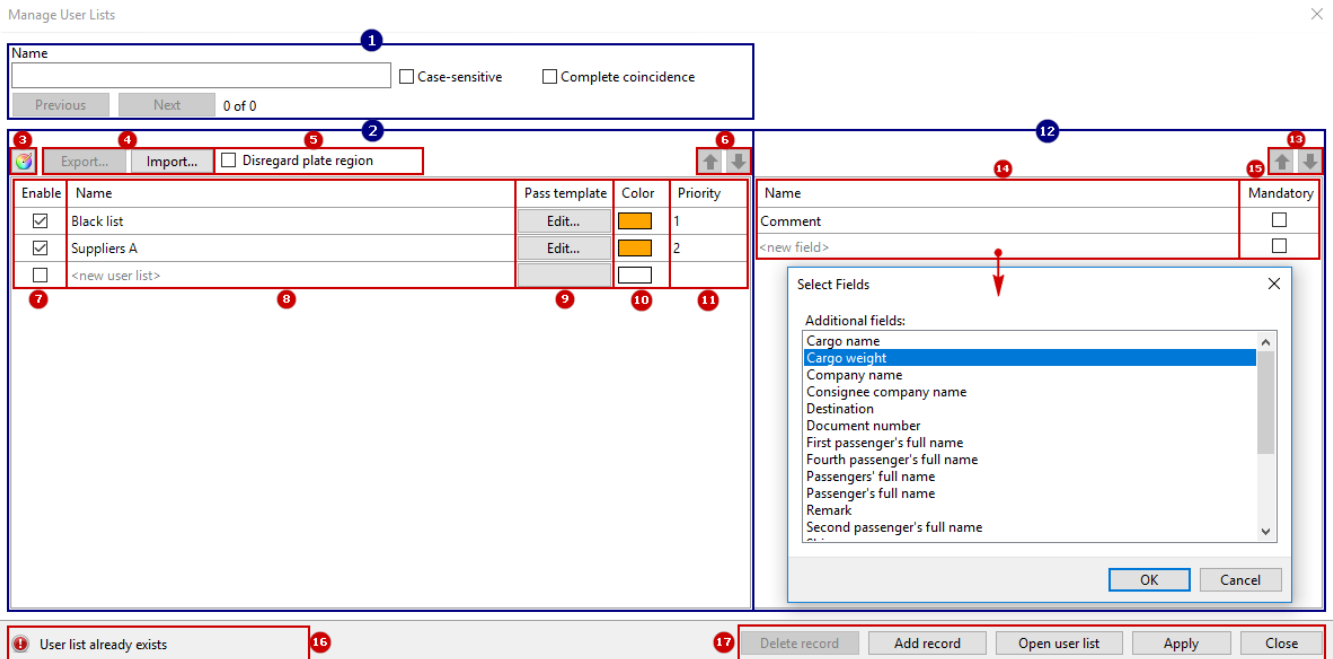


Figure 6.3.1.2

1. Search Bar

Start to enter the name in “Name” string to search the list.

Search criteria:

- Case-sensitive – case sensitivity.
- Exact-match – full correspondence to the list name.

Search results are highlighted in green.

“Previous/Next” buttons allow to switch between search results.

2. User Lists Table

3. Setting of the List Color by Default

This window allows to set up the color, that will be assigned to the list by default when it is created.

4. Import and Export of the Lists

See Section 6.3.1.2. **Import and Export of the Lists for details.**

5. Disregard Plate Region (for Russian plates only)

This setting allows the system to disregard region code for the number plates registered. It is useful in case the problems with region code recognition arise.

Figure 6.3.1.3 shows the example of incorrect number plate recognition. When “Disregard Plate Region” flag is set, the system will let the vehicle enter the territory, as the first part of the plate matches the user list.

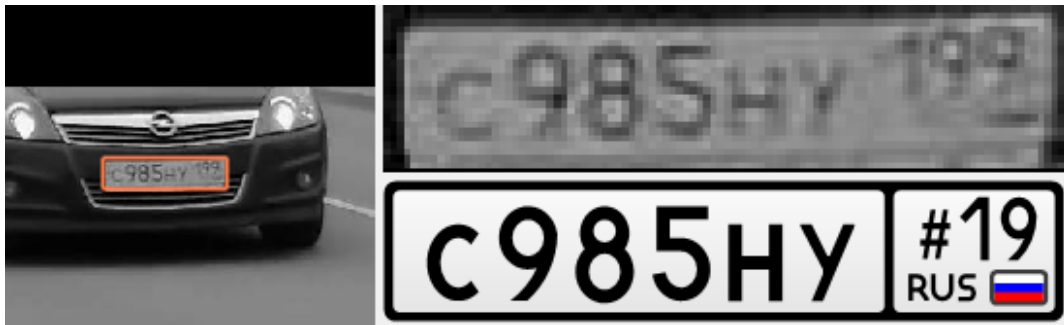


Figure 6.3.1.3

6. Lists Priority Variations

It revises the list priority upwards or downwards, as well as its location in among other lists in “User Lists Management” window.

7. List State: On / Off

If the list state is “Off”, the system does not work with this list (for instance, the list is not displayed in recognition log, passes are not active, etc.).

8. Name of the Lists

All user lists register. Click “new user list” string to add a list and enter its name. Double click the required string to edit the list name.

9. Pass Template

It allows to set up the pass template for all number plates in the list by default.

Figure 6.3.1.4

10.List Color

Setting and display of the lists color.

11.Lists Priority

12.Additional Fields Table

13.Additional Fields Priority Variations

It determines the order of additional fields display.

14.Additional Fields

It includes the register of additional fields for the list.

To add new field, select the list, then double click "new field" string in the list of additional fields to open "Select Fields" window.

One and the same additional field cannot be added twice in one list.

Fields by default and those added by the user are available for additional fields selection. Go to "Additional Fields" section of "Settings" menu to add new fields (Figure 6.3.1.5). For details see Section **6.3.3. Additional Fields**.

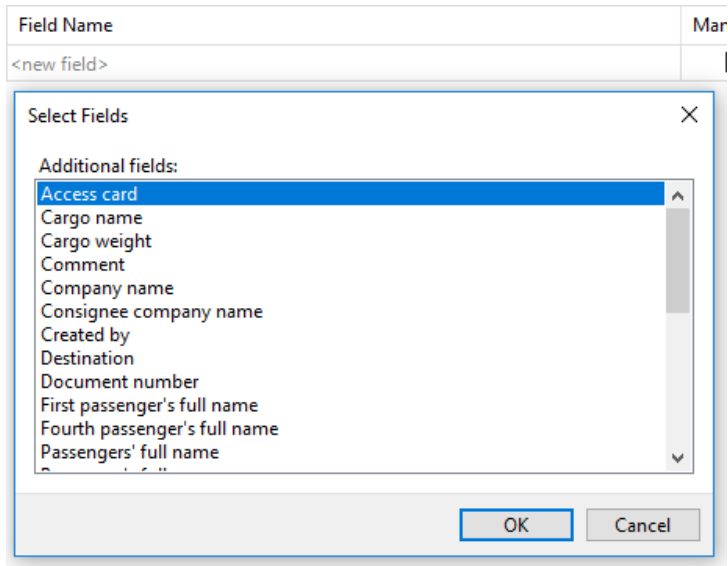


Figure 6.3.1.5

15.Mandatory Field

When filling in the user list, the field marked by flag cannot be empty.

16.User List Already Exists

Two lists with identical name shall not be used. List name is case-sensitive.

17.Buttons:

Delete Record — to delete a record, select user list to be deleted or additional list field.

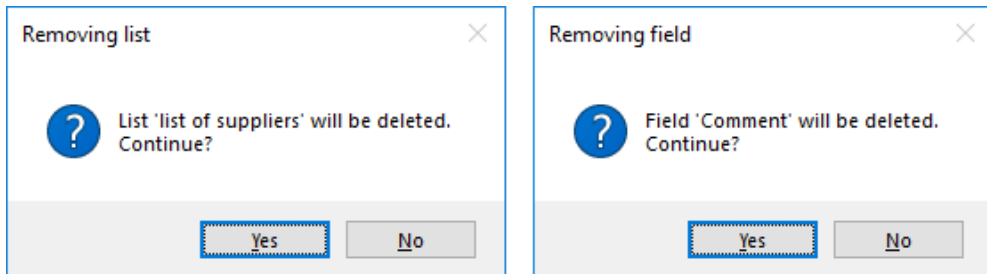


Figure 6.3.1.6

Add Record — it moves the cursor to the string of list adding in the user lists table. After the button is pressed, enter the list name.

Open User List — it opens “User Lists” window, which such actions as adding, deletion, and editing of the list records are available in.

Apply — it is used to save modifications and changes made to the database.

Close — it closes the window of user lists management. When closing the window without saving the changes made, the confirm box will appear (Figure 6.3.1.7).

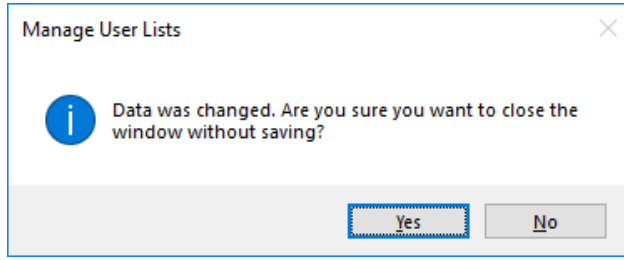



Figure 6.3.1.7

6.3.1.2. Import and Export Lists

Automarshal allows user lists import and export.

Import

To import user lists, click “Import” (Figure 6.3.1.8), then click “Select filetype” .

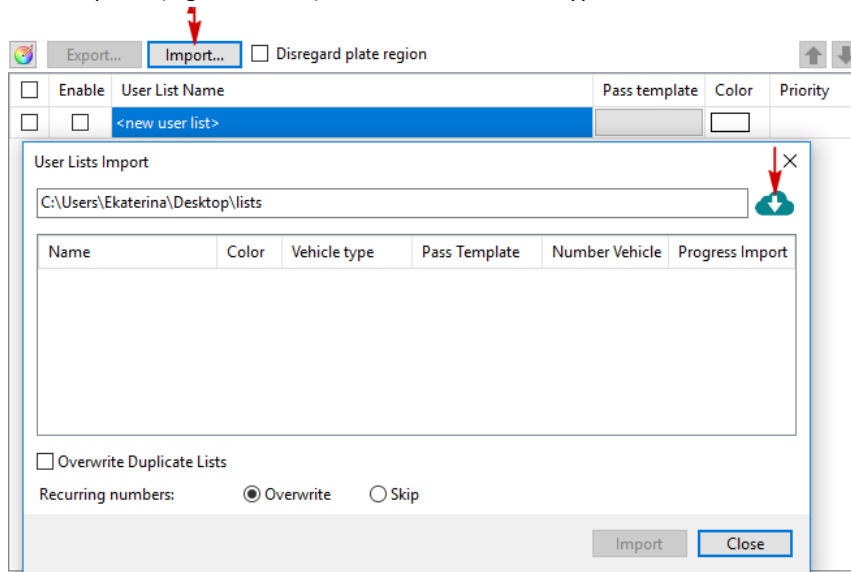


Figure 6.3.1.8

The following filetypes are supported for import and export: *.xml, *.csv, *.xlsx (Figure 6.3.1.9).

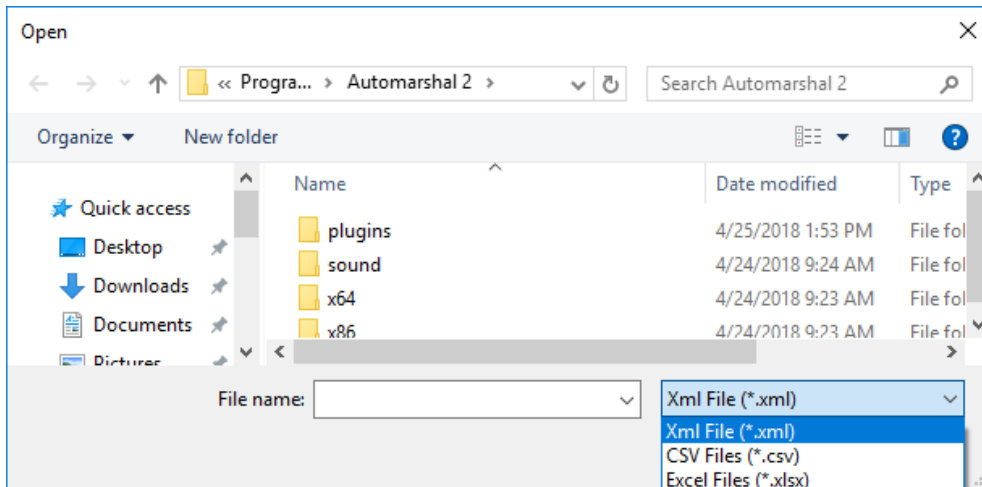


Figure 6.3.1.9


The *.xml format allows to import and export lists along with the records about the passes issued, when there is a necessity to transfer lists with passes only, but not the whole database.

Now Automarshall 2.19 allows to concurrently import several lists. Place the list files in one folder before import initiation. All files shall be of the same format. For example, in Figure 6.3.1.10, all four lists selected were in *.xml format.

The lists selected will be displayed in the table with adjustable parameters. When importing, it is possible to set up list color, specify vehicle type by default and set pass template for each list.

To select parameter for “Vehicle Number Plate” field is only possible when importing the *.xlsx and *.csv files. When importing the *.xml file, this field will be inactive, the system will automatically select the field with vehicle number plate.

Apply to all lists – this string settings are applied to all lists in the table.

black list  – is a warning, indicating that a list with the same name already exists in Automarshall. Check the box “Overwrite Duplicate Lists” to add records from imported list to the list already existing in Automarshall.

Append entries to lists means to add entries from the imported list to the list already existing in Automarshall.

Overwrite duplicate lists means to remove entries from the list already existing in Automarshall and to make the entries from the list imported.

Duplicate number plates:

- **Overwrite** – the system will transfer duplicate plate numbers from the list already existing in the program to the imported one;
- **Skip** – the system will leave duplicate number plates in the list already existing in the program.

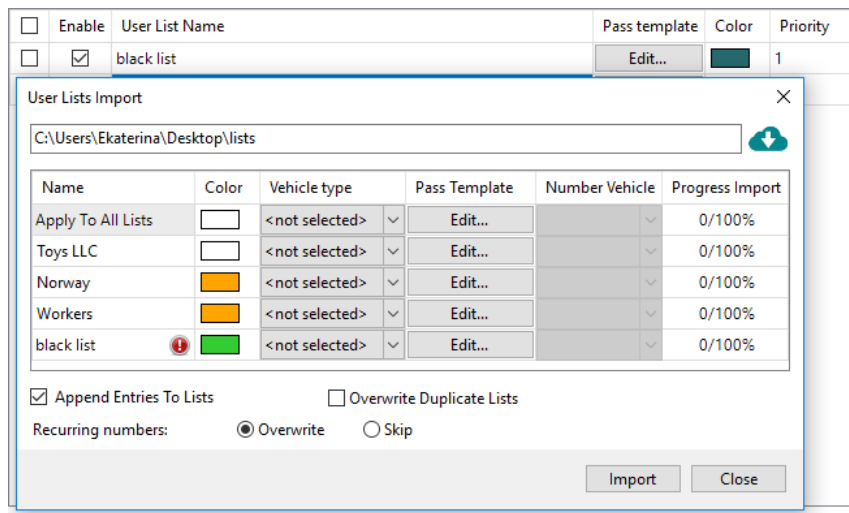


Figure 6.3.1.10

Before importing the list, verify the file contents for duplicate number plates. If the list contains strings with repeated vehicle number plates, the system will select only one. For example, Figure 6.3.1.11 – the system will select only the first string of two duplicate strings, all other information will be ignored and skipped and will not be recorded in the list.

B425KM11	170,28
B425KM11	11791,78

Figure 6.3.1.11

Click "Import". Download speed depends on the size of the file downloaded. Download progress can be observed in the "Lists Import" window (Figure 6.3.1.11).

Import is completed, when all lists in the "Import Progress" field have status "Complete", and button "Import" becomes active.

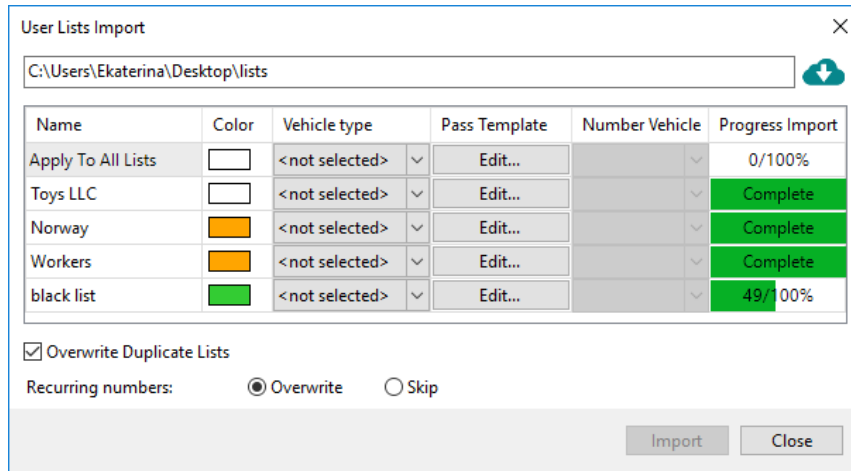


Figure 6.3.1.12

To stop download, click "Close" and confirm the action in the window that opens (Figure 6.3.1.13).

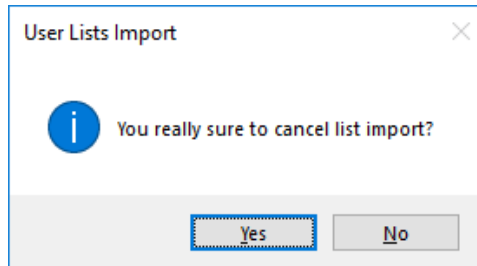


Figure 6.3.1.13

Import Errors

File import may be interrupted due to errors in the file. Point to the progress bar with the status "Error" in order to view screen tips, full text of the error is available in the protocol, accessed via F12 hotkey.

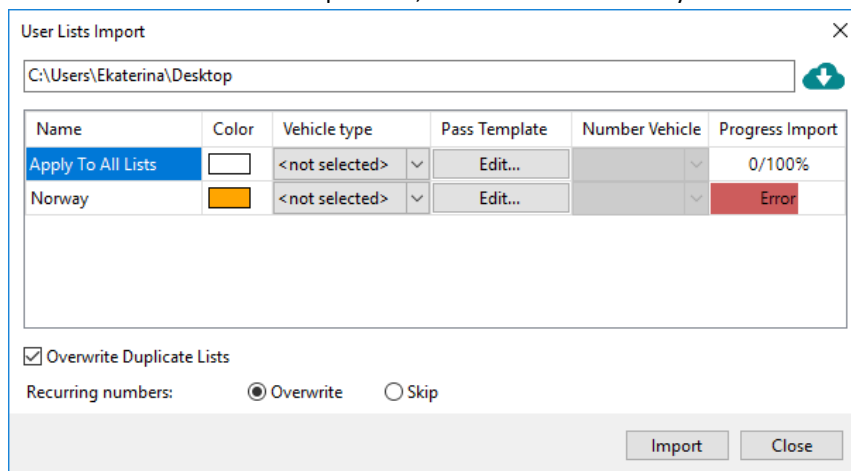


Figure 6.3.1.14

The following errors are possible:

- File contains an untitled column;
- File contains columns with the same name;
- Incorrect file encoding;
- File contains an empty column;
- File is used by another program during import;
- Code in the *.xml file is damaged or contains errors;
- Filed with vehicle number plate is not filled in the text of the *.xml file.

In case any errors occur while importing the list, verify the file contents and correct the errors indicated.

Export

For export, select the list and click “Export” (Figure 6.3.1.15). In the window that opens, specify the path to the folder, which the files shall be saved into, and the extension of the files exported. Click “Export” and wait until the lists export is completed.

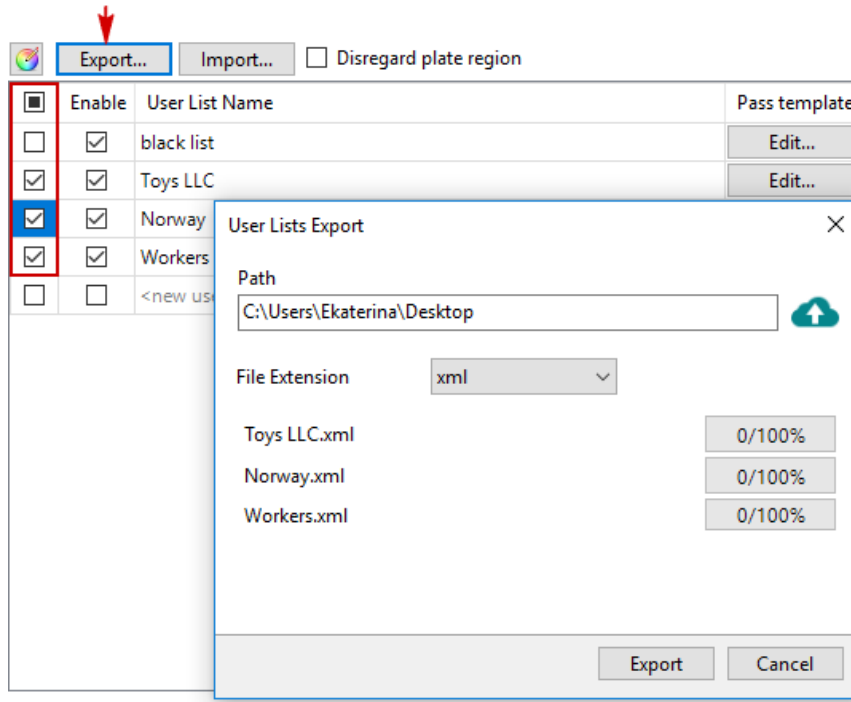


Figure 6.3.1.15

Lists export is completed, when the progress bar is 100% full (Figure 6.3.1.16).

Passes are saved in the *.xml files only

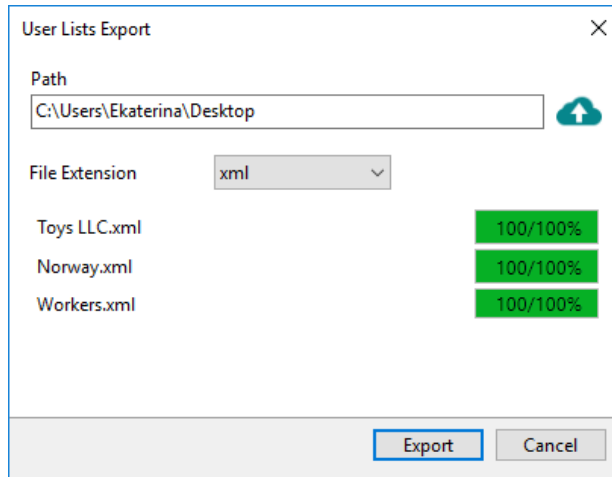


Figure 6.3.1.16

6.3.1.3. Completing and editing lists

To fill in user lists, click “Open User List” (Figure 6.3.1.17).

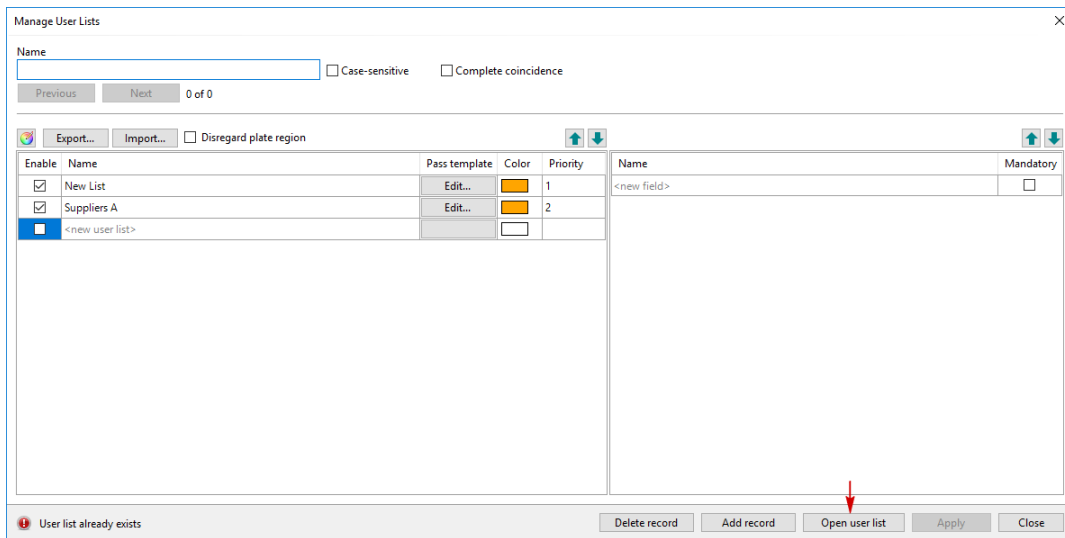


Figure 6.3.1.17

In the next window, User Lists (figure 6.3.1.18), the tabs containing the Vehicles List, Drivers List, Parking lists are available for completing and editing. For more information on Parking list, see Territories and Configuring Territory Places.

To add a record to the list, select the required list and click Add Records.

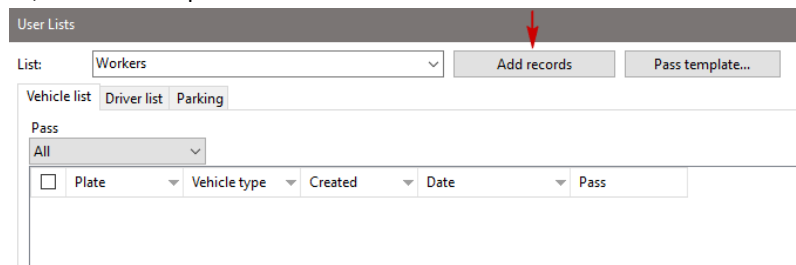


Figure 6.3.1.18

It will open the Add New Vehicles window (figure 6.3.1.19). Workers List with three standard fields Plate, Vehicle Type and Pass is selected for editing as the settings for this list did not add any additional fields.

In an image under the plates, the following fields are marked:

1. User List – enables switching between the created lists right in the window for adding new records.
2. Default Vehicle Type – to be completed in Setup menu, allows to select the vehicle type for the entire list.
3. Configure passes for the selected list.

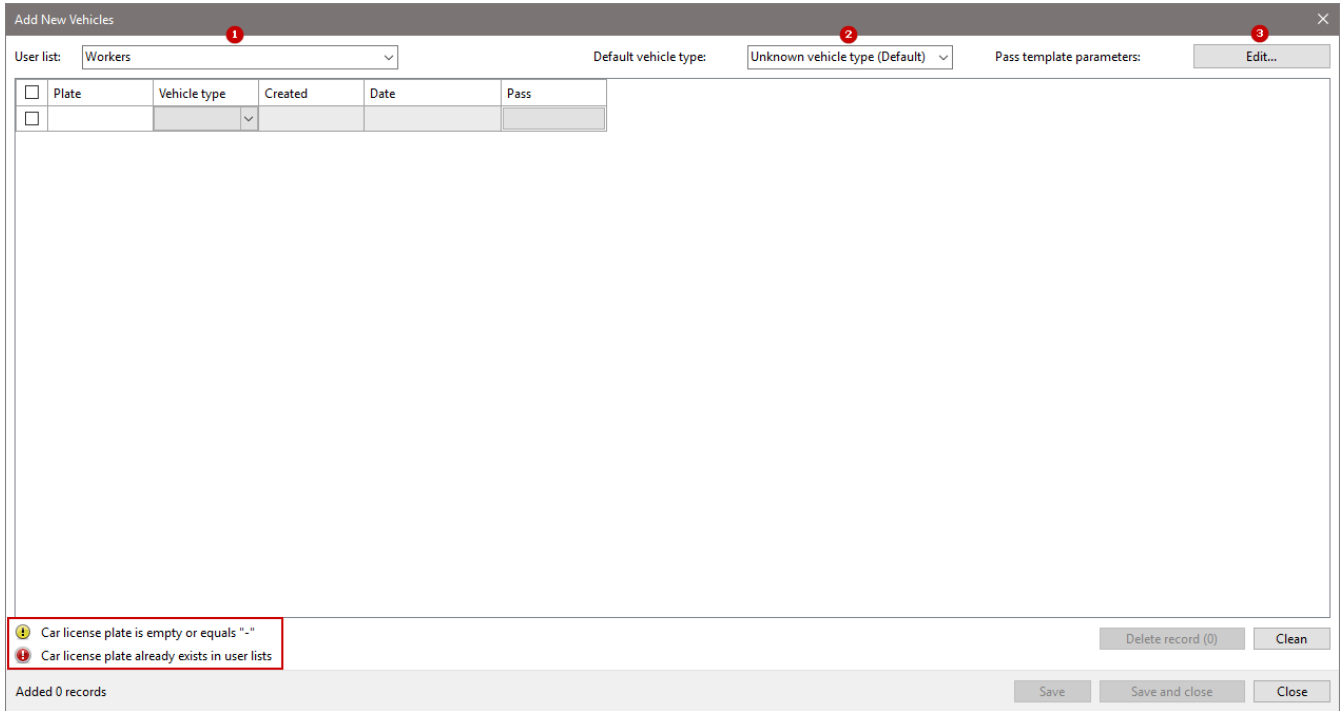


Figure 6.3.1.19

Double-left-click an empty field in Plate column to add a record. A new line for completion will appear as the current is completed. For each line, you may separately configure passes and vehicle type.

In an example (figure 6.3.1.20), a new record is made in the Black List.

To delete records, use one of the following options. For deleting:

- of each record separately, highlight a line in such a way as to make a cell fully turn blue and use Delete key on the keyboard;
- of all or some of records, highlight the lines by placing flags in the first field, and click Remove Record (n), where n is a number of highlighted lines;
- of all records in the window, click Clean.

To save records to the list, click Save, and all added lines from Add New Vehicles window will disappear after adding to the list, or click Save and Close, which will return you to the user list window.

Close button will close the window without saving and adding the records to the list.

Do not switch between the lists in Add New Vehicles window without saving your records as switching to another list will cancel all new records made to the current list.

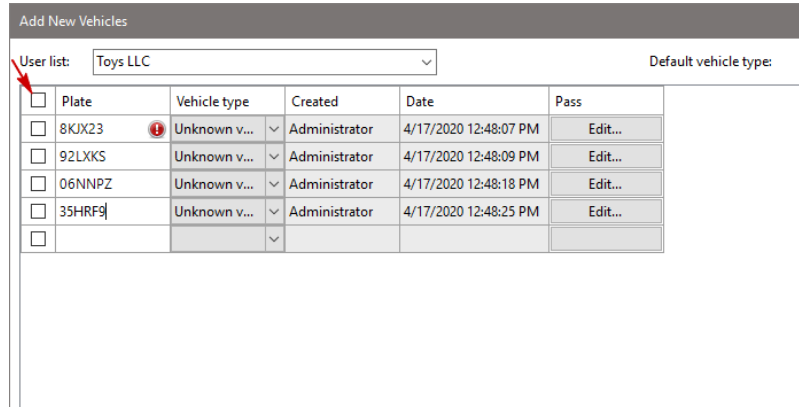


Figure 6.3.1.20

In the Plate field you may see a warning of duplicate plate – an entered plate number is already in this or another list. When attempting to add such plate, a warning will be displayed (figure 6.3.1.21) prompting to remove the entered plate from other lists and move it to the current.

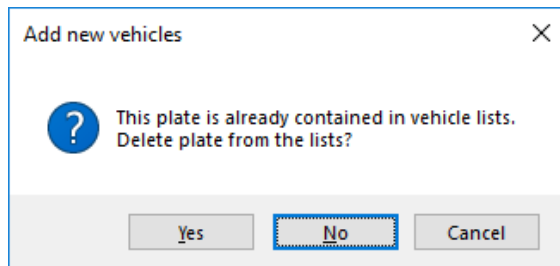


Figure 6.3.1.21

When attempting to save a new record containing a plate that is present in this or another list, a prompt will be displayed (figure 6.3.1.22).

Yes – the application will save all correct records and enter them in the list, and will remove incorrect ones.

This prompt will also be displayed if any fields flagged as mandatory are not completed.

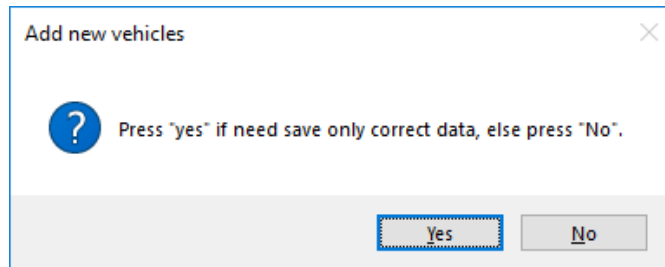


Figure 6.3.1.22

In the Company Name field, a warning is displayed as in Settings menu this field was flagged as Mandatory (figure 6.3.1.23) for completion.

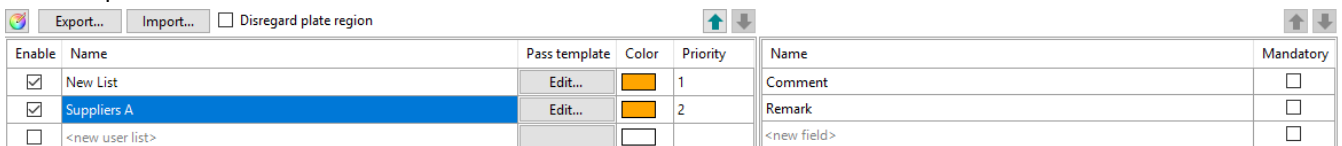


Figure 6.3.1.23

Information may be added by copying one or several columns from Excel spreadsheet. For example, in Figure 6.3.1.24 the columns in the table are highlighted and copied.

Plate	Vehicle type	Created by	Creation date	Comment	Cargo
85SXV1	Truck			scania	Sawdust
62GTX2	Truck			scania	Sand
8KJX23	Truck			scania	Crushed stone
92LXKS	Truck			scania	Crushed stone
ZBXJ08	Truck			scania	Crushed stone

Figure 6.3.1.24

To insert the copied information in the Automarshal list, select a cell in Plate field so as to make it turn blue (figure 6.3.1.25) and press Ctrl+V key combination.

Important: the cell selected in Automarshal corresponds to the beginning of the list to be copied. That is, if you copy information with the initial field "Plate", then it is necessary to select the cell in this field, if you select, for example, a cell in the "Comment" field, then all information will be copied starting from this field.

With the help of copying you can quickly fill in the "Vehicle type" field. Figure 6.3.1.24 shows that for all vehicles type "Cargo" is set and the same type of vehicle is displayed after copying in figure 6.3.1.25. Thus, copying is possible only if this type of vehicle is configured in Automarshal. If the vehicle type was not set, then the field "Vehicle type" will be "not selected".

The fields created by linking to the directory (for details, see section **6.3.2 Directories**) can be filled in the same way. If the data is stored in the directory, then when copying, it will be substituted into the cells of the corresponding additional field. If the directory does not have these values, then in the cell of the additional field will be "not selected".

When copying the data, fields "Vehicle type" and directory link fields are case sensitive. So, if in vehicle types there is a record, for example, "Cargo", then when copying, the "cargo" data will not be taken into account.

The fields "Created by" and "Creation date" are filled in by the system and are not editable for users.

When copying multiple columns from excel, you must consider the order of additional fields in

Automarshal and always leave free columns for the fields "Created by" and " Creation date " (Figure 6.3.1.24).

Data from the user list can be copied. In Figure 6.3.1.26 two lines with additional fields are highlighted in blue, when copying, for example, to the excel table, the data will be entered in the same form and order. Skip data is not copied.

<input type="checkbox"/>	Plate	Vehicle type	Created	Date	Comment	Cargo	Pass
<input type="checkbox"/>	85SXV1	Truck	Administrator	4/17/2020 12:54:58 PM	scania	Sand	Edit...
<input type="checkbox"/>	62GTX2	Truck	Administrator	4/17/2020 12:55:03 PM	scania	Sawdust	Edit...
<input type="checkbox"/>	92LXKS	Truck	Administrator	4/17/2020 12:55:20 PM	scania	Crushed stone	Edit...
<input type="checkbox"/>	ZBXJ08	Truck	Administrator	4/17/2020 12:55:27 PM	scania	Crushed stone	Edit...
<input type="checkbox"/>							

Figure 6.3.1.25

Vehicles List, once records are added, looks as follows (figure 6.3.1.26):

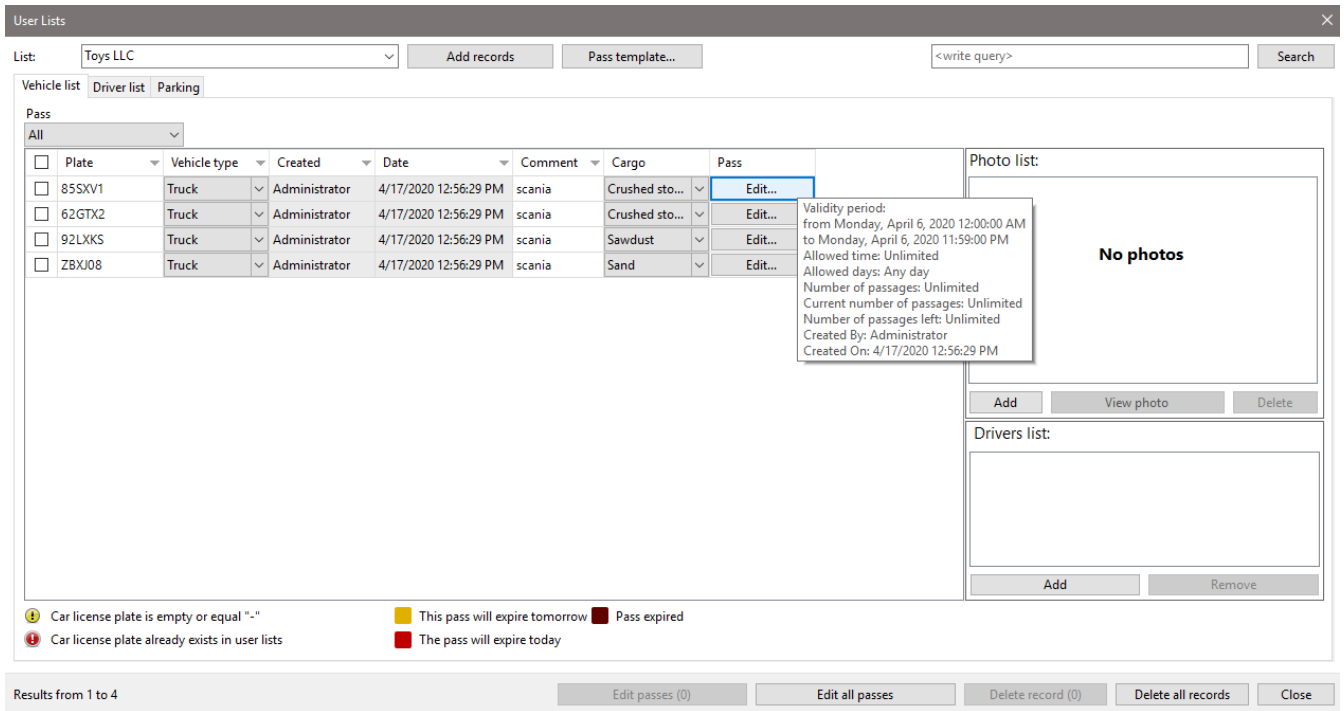


Figure 6.3.1.26

Data from the user list can be copied. In Figure 6.3.1.26 two lines with additional fields are highlighted in blue, when copying, for example, to the excel table, the data will be entered in the same form and order. Skip data is not copied.

In this field, you can edit and delete records made in the list. To edit, double-click the required field, and if the cell contains inadmissible value, a corresponding warning will be displayed. The value in Vehicle Type field may be selected from the values entered in Settings menu.

A search list option is available in the upper right corner. Search parameters may be any. For example, you may perform the search by a single letter "l" – the list will show only the positions, where such letter is used. In a search in an example shown in figure 6.3.1.26, a record will be shown containing the license plate "68ZVJ4" and comment "SKODA".

The search is not case sensitive, and for searching for the license plate the language, in which numbers are entered, is irrelevant.

To edit permits, use one of the options described below:

- to configure permits separately for each record click Edit button in Pass field;
- to edit several records, check the required lines and click Edit Passes (n), where n is the number of selected records;
- to edit permits for all records click Edit All Passes.

If a permit is configured, the Edit button in Pass field will be highlighted with one of three colors, and in the bottom of the window (figure 6.3.1.26) there will be a key to pass color code; these colors are not editable. Hover the mouse over Edit button in Pass field to get a pop-up help on configured permit.

Entry filter upon the pass state is available in "User List" window: All, Active, Unlimited, Not exist, Expires Today, Expires Tomorrow, Expired.

To delete records, use one of the options described below:

- select a required cell so as to make it turn blue and press Delete key on the keyboard; a dialog will pop-up (figure 6.3.1.27) requesting confirmation;

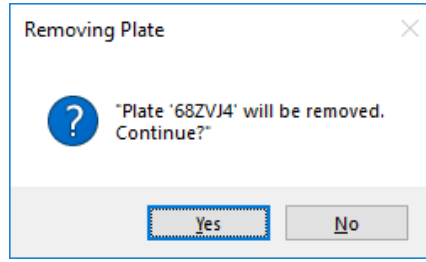


Figure 6.3.1.27

- check the required lines and click Removing Records (n), where n is a number of highlighted records; before deletion, a dialog will pop-up (figure 6.3.1.28) requesting confirmation;

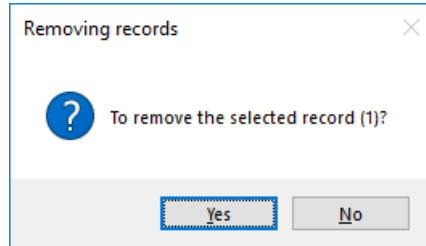


Figure 6.3.1.28

- use Remove All Records, before deletion, a dialog will pop-up (figure 6.3.1.29) requesting confirmation;

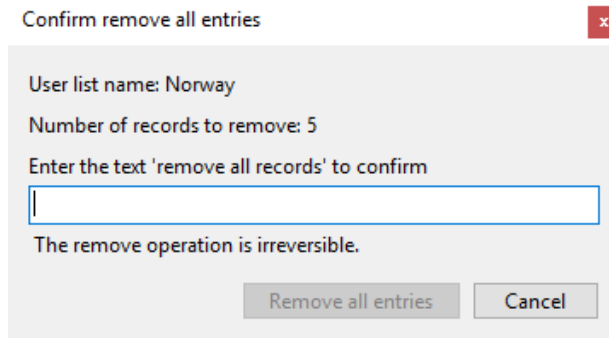


Figure 6.3.1.29

In the User Lists window (figure 6.3.1.26), a picture of a vehicle and list of drivers may be added for each record.

Check the required record in the list or select any cell for this record and click Add (figure 6.3.1.30).

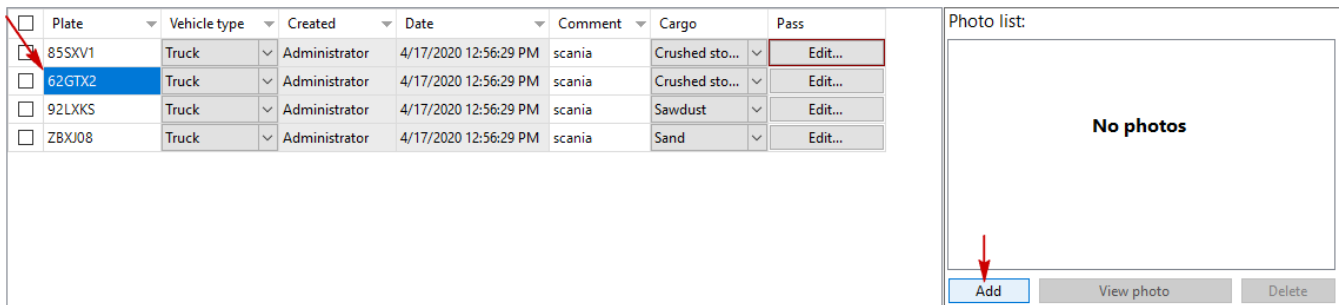


Figure 6.3.1.30

If a record is not selected, a warning will be displayed (figure 6.3.1.31).

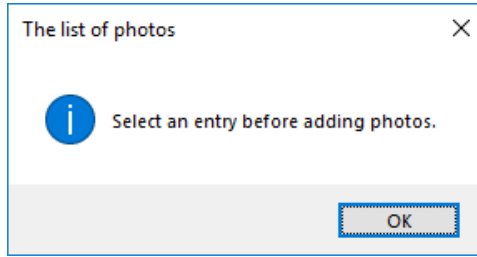


Figure 6.3.1.31

The following file formats are supported: *.jpg, *.png, *.bmp, *.jpeg. To each record several vehicle pictures can be attached. The pictures attached are shown as thumbnails in the list of pictures. Select a picture and click View Image (figure 6.3.1.32) to enhance the picture.

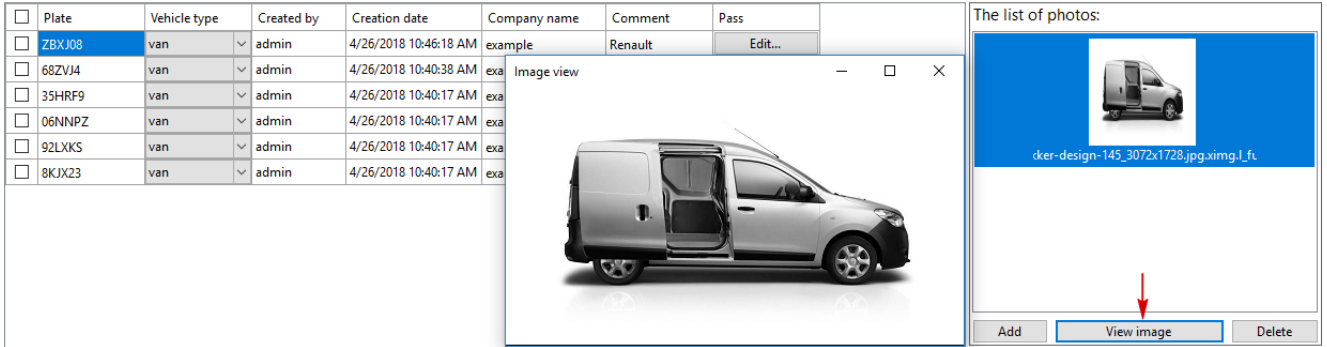


Figure 6.3.1.32

To add drivers for a vehicle, you will need to complete the Drivers List; go to the corresponding tab in the user lists (figure 6.3.1.33). By default, this section is empty. Available for completion are Full Name, Document number, Phone Number and Access is Allowed, for which the entry prohibition is set or removed.

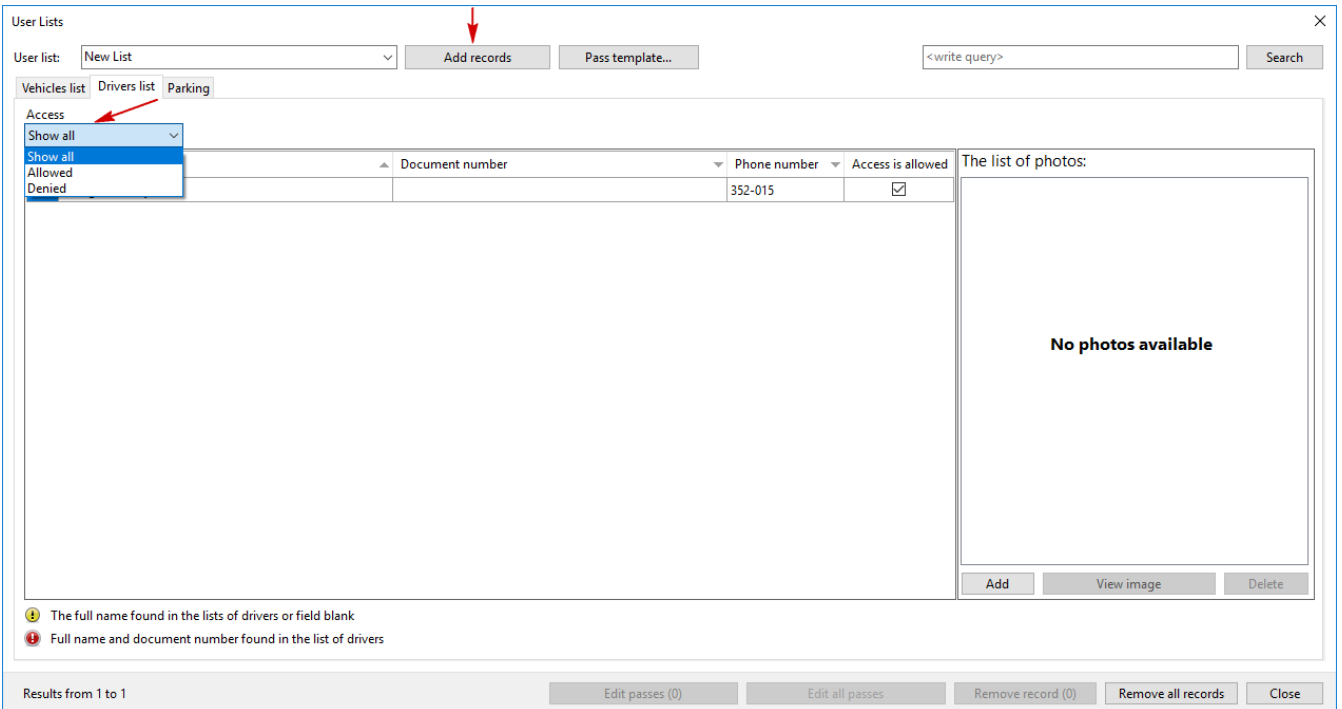


Figure 6.3.1.33

For each driver several pictures can be added. Sorting by access is available for the list (highlighted in figure 6.3.1.33). Searching, deleting and editing are similar to Vehicles List tab.

Go to Vehicles List. To add a vehicle for a driver, click Add, and in the Drivers List window select and add the required driver (figure 6.3.1.34).

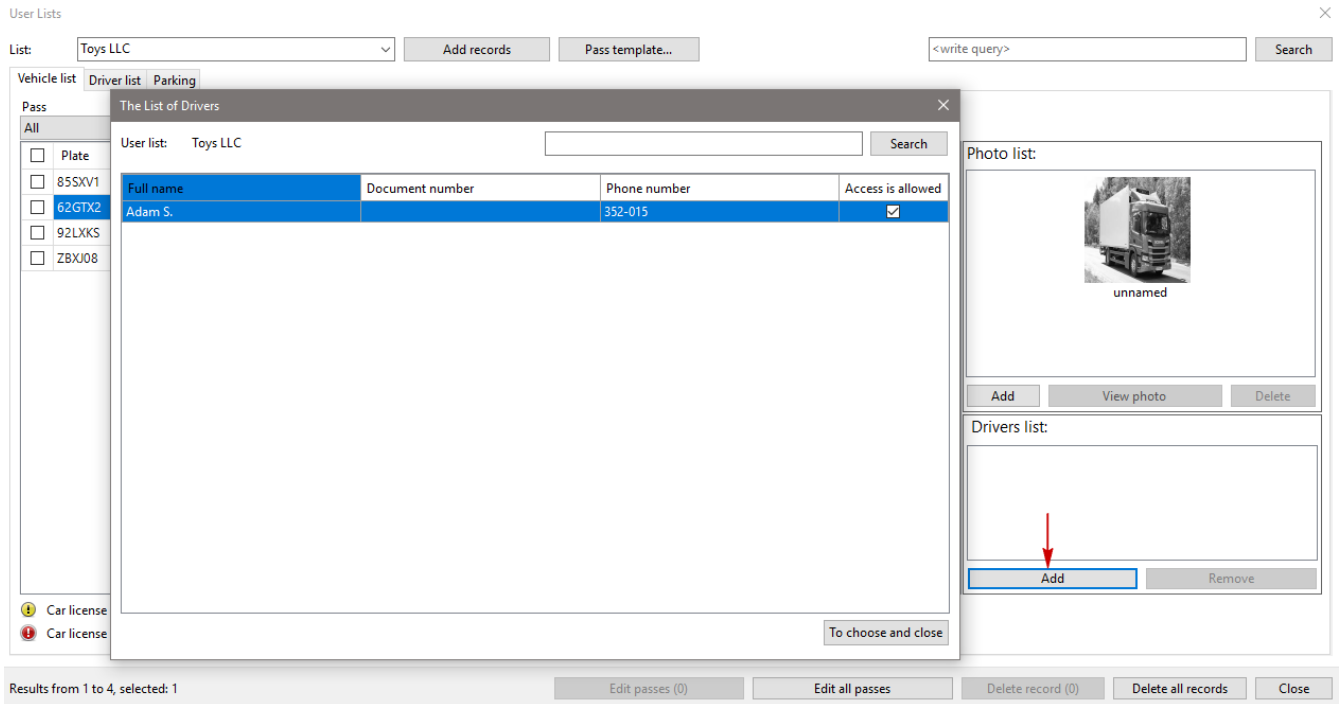


Figure 6.3.1.34

Several drivers may be added for a vehicle and specified, which of them will be selected by default (figure 6.3.1.35) during automatic recognition.

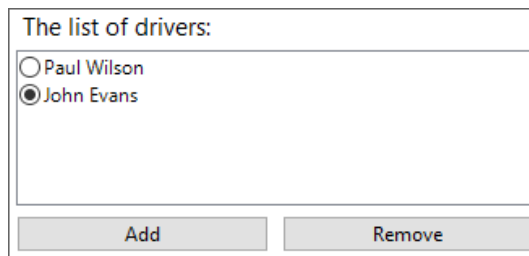


Figure 6.3.1.35

You can move entries between lists by right-clicking on the line with the desired entry and selecting the list to which you want to transfer the record (Figure 6.3.1.36).

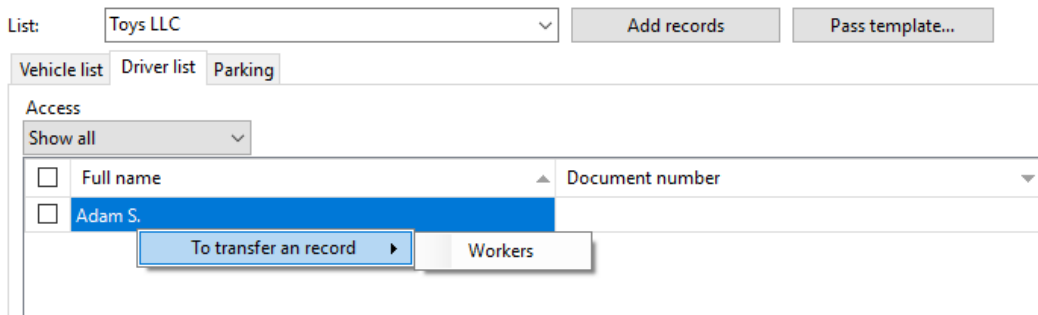


Figure 6.3.1.36

During the transfer, a window will open to confirm the action (figure 6.3.1.37).

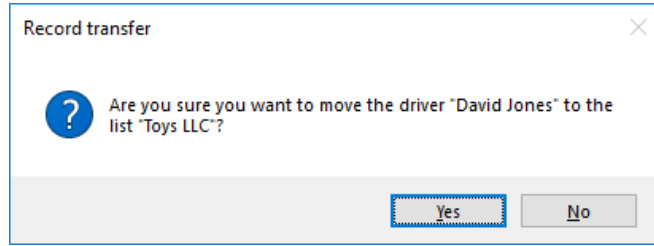


Figure 6.3.1.37

The transfer of records is also available in Vehicles list (Figure 6.3.1.38).

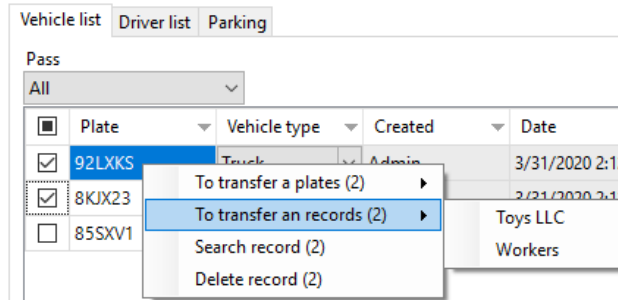


Figure 6.3.1.38

To transfer a plate – A number plate is transferred discarding additional fields content.

To transfer an entry – An entry is transferred saving additional fields content. If an entry is transferred to the list, which does not contain additional fields required, such additional fields will be auto-added to the end list, and the fields data will be saved.

Search records – to search for several records in the user list, select them and use the drop-down menu, or enter in the search bar the numbers required, separated by commas

Delete records – deletes records selected in the list.

If you move the record to Vehicles list, a warning window will open, indicating that additional data fields will be removed (Figure 6.3.1.39).

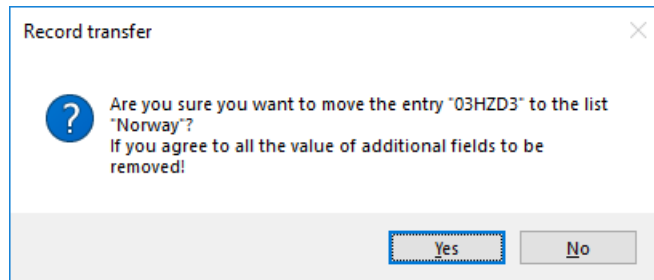


Figure 6.3.1.39

6.3.1.4. Quick addition of records to the list

Data can be added to the list through the recognition log. To do so, right-click a record in the recognition log and select Add to Vehicle List... in the context menu (figure 6.3.1.40).

RECOGNITION LOG		
Plate	Date/Time	Video channel
E747BH35	20.03.2019 09:54:52	Camera 4
C311HC197		a 3
C311HC197		a 4
K090AO35		a 3
K090AO35		a 4
B948XY35		a 4
B948XY35		a 3
K885EM35		a 4
K885EM35		a 3
K885EM35		a 3

Figure 6.3.1.40

"Quick Adding" window will open. Select the list, which the number plate from recognition log is required to be added to, and fill in additional list fields, then click "Add" (Figure 6.3.1.41).

Quick Adding
✕

List: Suppliers A

Plate:

Vehicle type: Car

Comment:

Remark:

Add
Cancel

Figure 6.3.1.41

6.3.1.5. Other operations with lists

You can search through all lists and combine them with each other (figure 6.3.1.42).

"Find vehicle" and "Find driver" - the search is performed for all lists created in the Automarshall.

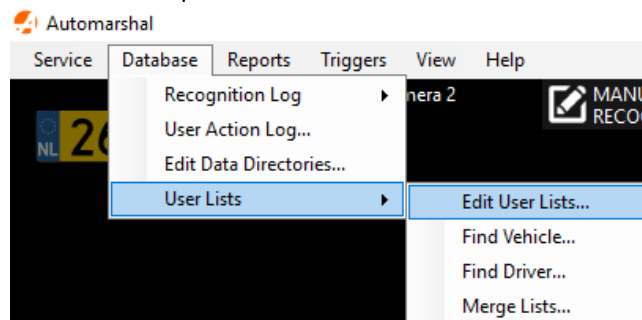


Figure 6.3.1.42

Find vehicle

To go over to search in the top menu, open the "Database" tab → "User Lists" → "Find Vehicle...".

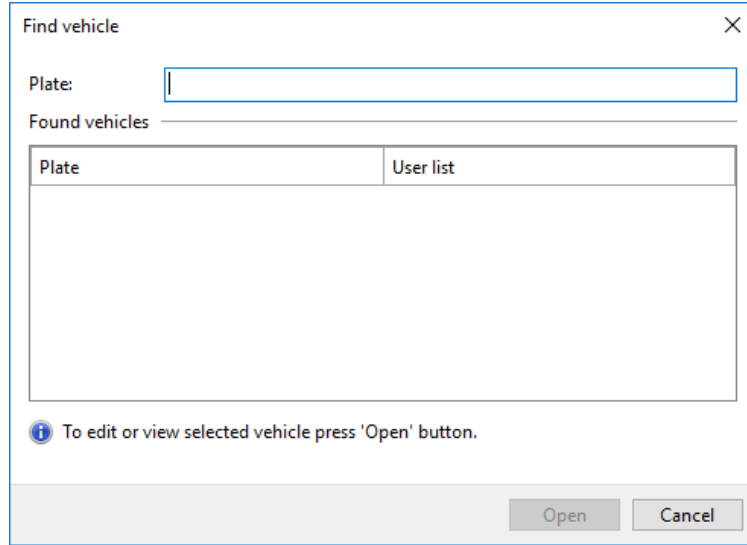


Figure 6.3.1.43

Search is done by numbers and letters of English and Russian alphabets (Figure 6.3.1.44), case insensitive. The search results are displayed in the Found Vehicles window, the vehicle plate and the list in which it is displayed. Each line of the search result is highlighted with the color of the list, in which the vehicle was found.

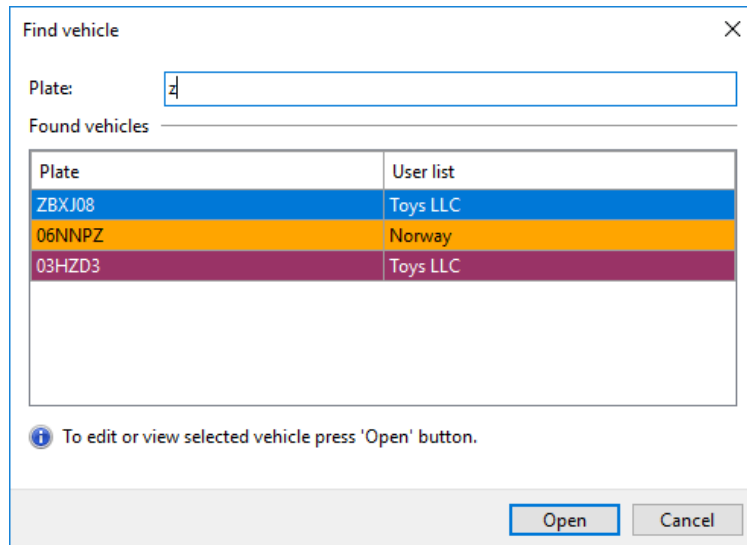


Figure 6.3.1.44

To view or edit the selected record, click Open. The User Lists Editing window on Vehicles List tab will open, with the record for which the transition was made displayed in it.

Find driver

To go over to search in the top menu, open the "Database" tab → "User lists" → "Find driver ...".

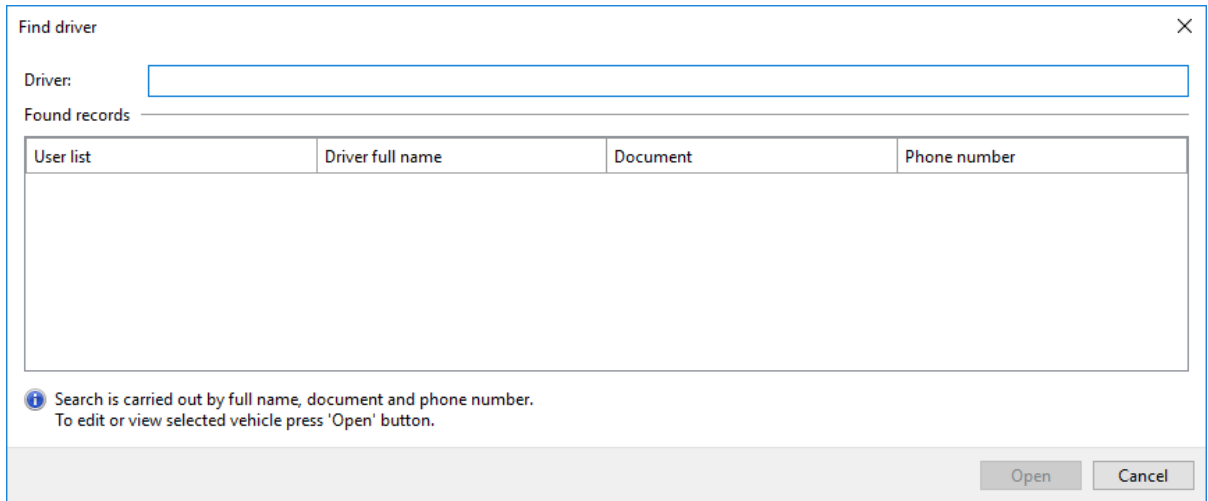


Figure 6.3.1.45

Search is done by driver's name, document and phone number. The results are displayed in Found records filed, each line is highlighted with the color of the list, in which the driver was found (Figures 6.3.1.46 and 6.3.1.47).

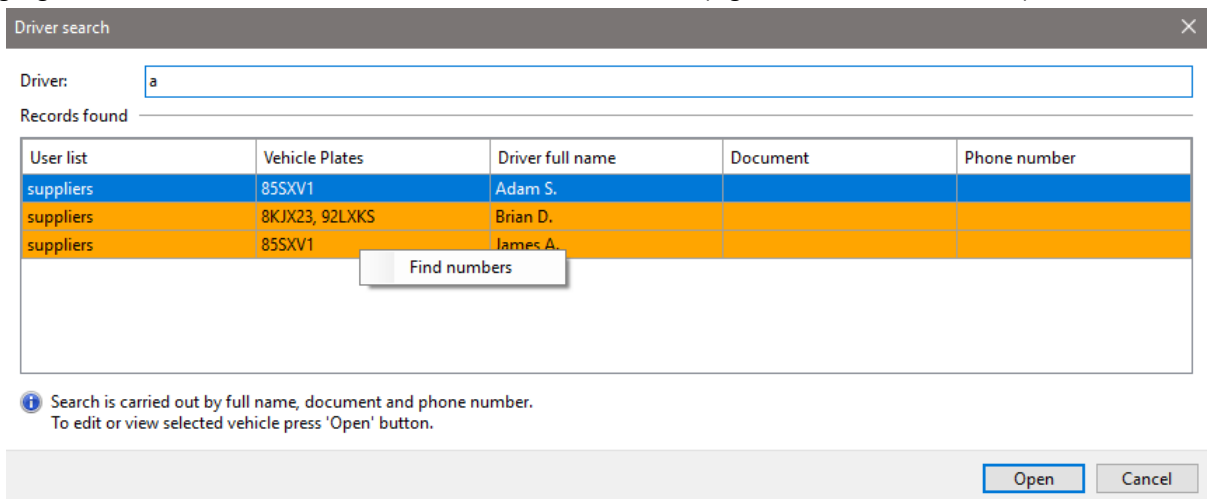


Figure 6.3.1.46

To go to the list of drivers, select the line desired in the search results and click "Open".

To go to the vehicle numbers found, right-click the string with the result desired and select "Find numbers" in the drop-down menu (Figure 6.3.1.47).

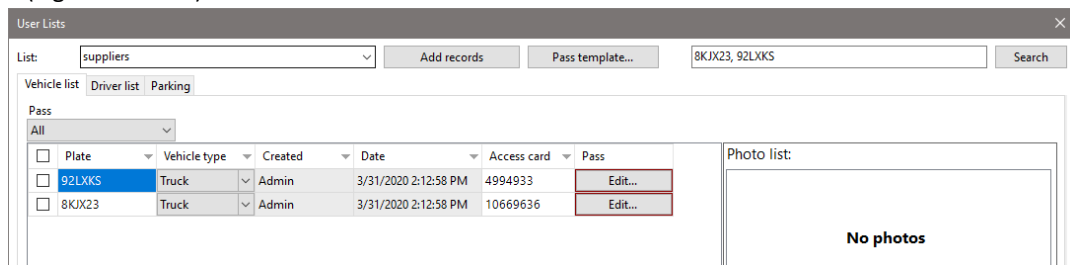


Figure 6.3.1.47

To view or edit the selected record, click Open. The User Lists Editing window on Drivers List tab will open, with the record for which the transition was made displayed in it.

Merging lists

To switch to merging lists, open the "Database" tab → "User Lists" → "Merge Lists ..." in the top menu.

In the opened window, two fields are displayed: on the left - current lists marked with the selected color; on the right - lists to be merged.

The "List Name" field is used to search for lists.

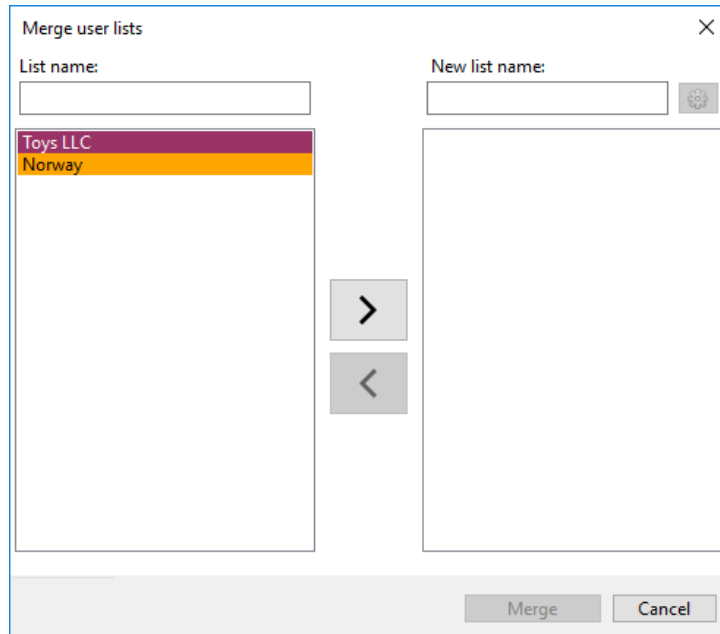


Figure 6.3.1.48

To merge the lists, select two or more and use the button with the "right" pointer to move the selected lists to the right field (figure 6.3.1.49). From the right field, the list can be moved back by using the button with the pointer "left", or by pressing the Delete button on the keyboard.

In the New List Name field, the name of the list that was moved first is automatically added. The name can be set independently.

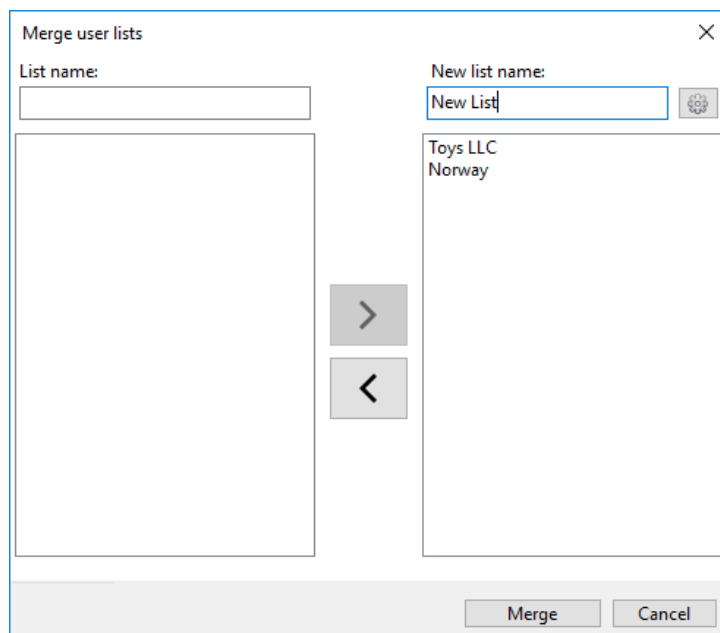



Figure 6.3.1.49

Open the advanced settings (Figure 6.3.1.50) by clicking the gear button next to the New List Name field . In the opened window, you can set default vehicle type for the list, select list color and set up a pass template for the list. To save the selected settings, click the Save Settings button.

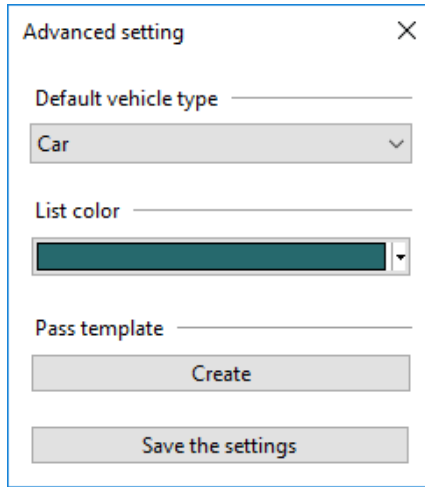


Figure 6.3.1.50

To merge lists, click Merge button and wait for the merge process to complete.

Attention! This is an irreversible action!

6.3.2. Manage Data Directories

Data Directory contains static, frequently used information. For instance, cargo type. It is used to prevent errors, that could occur at manual fill in of the additional fields.

Open “Database” in the top menu → “Manage Data Directories” (Figure 6.3.2.1).

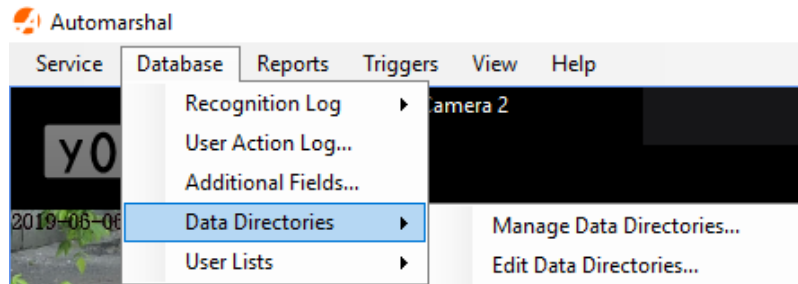


Figure 6.3.2.1

Create and Set up Directories and their Structure:

Number in Figure 6.3.2.2 indicate important interface elements:

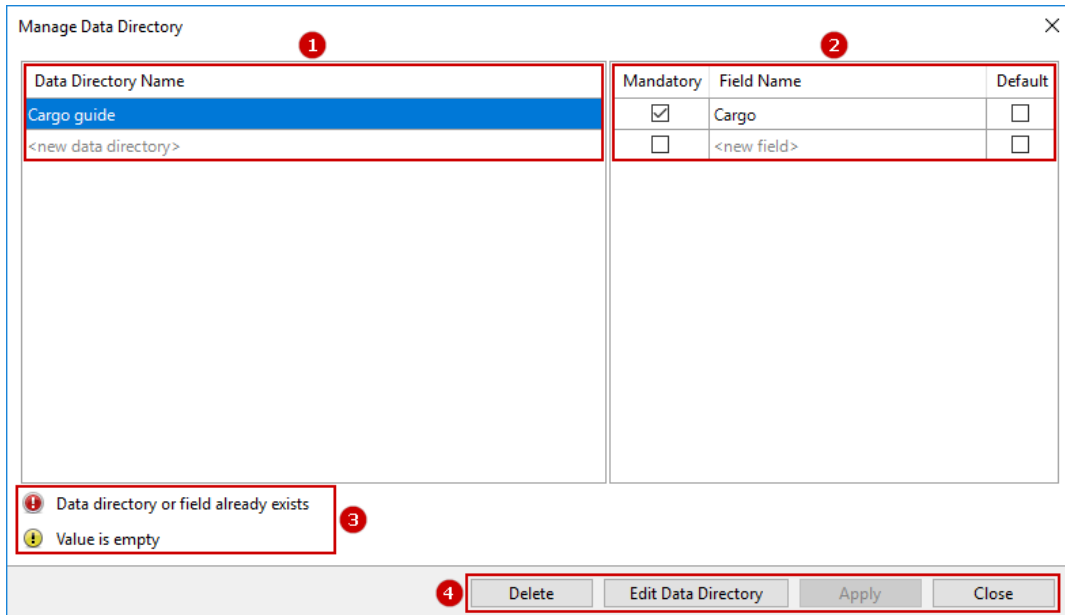


Figure 6.3.2.2

1. All Directories.

To add new directory, click the “New Directory” string and enter directory name. To edit directory name, left double-click the desired string.

2. Directory Fields.

To add new directory field, click the “New Directory” string and enter directory name. To edit directory name, left double-click the desired string.

The “Mandatory (Field)” checkbox affects directory editing field, this field shall be obligingly filled in.

The “Default (Field)” checkbox affects manual check window, the first value from the drop-down list will be selected by default.

3. Warnings:

Directories with the same names cannot be created. When several directories with the same name are created, a corresponding warning will be displayed in the “Name” field. When saving in the system, there will be only one directory, all fields of such directories will be saved in one.

Several (multiple) fields with the same name cannot be created for one directory. When saving in the system, there will be only one field of those, that were created with the same name.

Directory of directory field cannot be created without a name. Such data will not be saved.

It is impossible to proceed to directory entries editing, if it does not have any field.

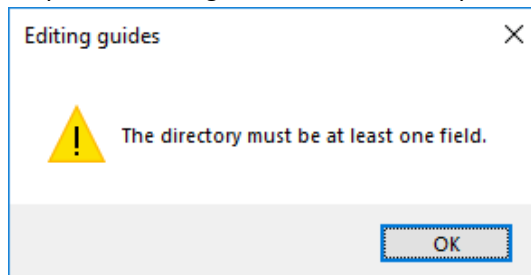


Figure 6.3.2.3

If incorrect data are saved, a window will appear to confirm the action (Figure 6.3.2.4).

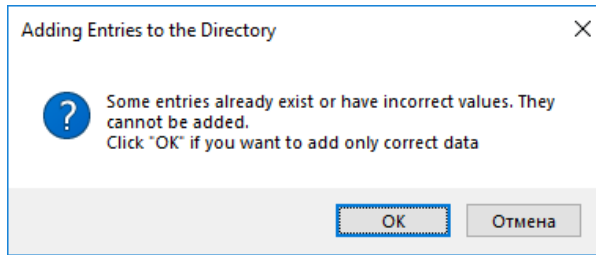


Figure 6.3.2.4

4. **Buttons:**

Delete — to delete, select directory that is required to be deleted, or directory field.

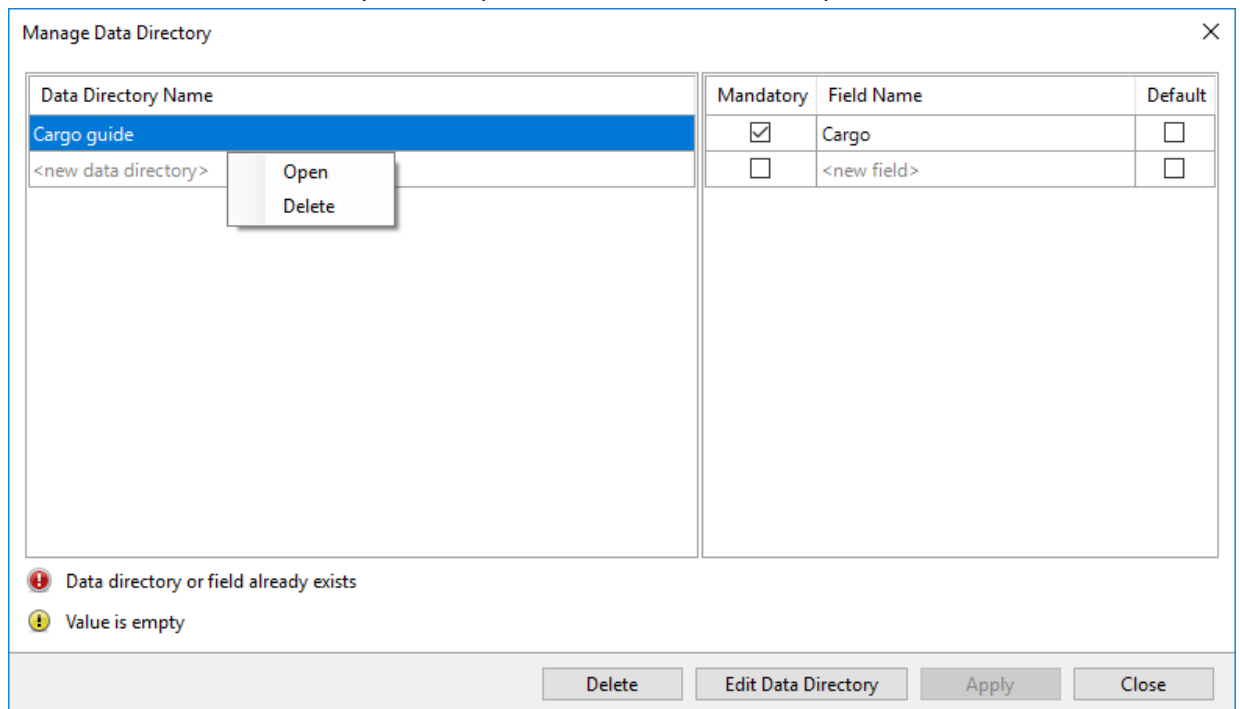


Figure 6.3.2.5

When deleting directory or directory fields, a window will be displayed to confirm the action.

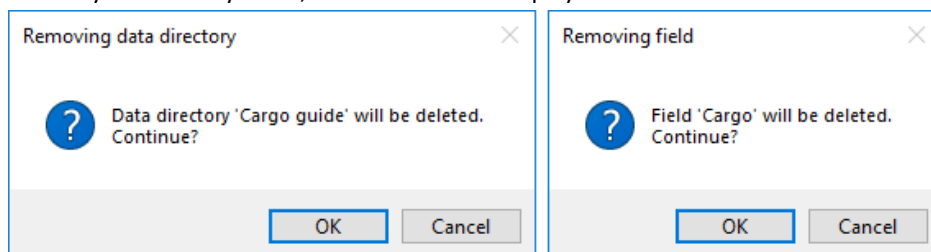


Figure 6.3.2.6

Directory field cannot be deleted, if it has a link to additional field of the user list.

Edit Directory — to open the “Manage Data Directories” window, from which it becomes possible to fill in directory fields, as well as to edit and delete field contents. It is also possible to open directory entry editing window from the drop-down menu by the right-click on directory name.

Apply — to save changes to the database.

Close — to close “Manage Data Directories” window. When closing the window without changes saving, a window will be displayed to confirm the action.

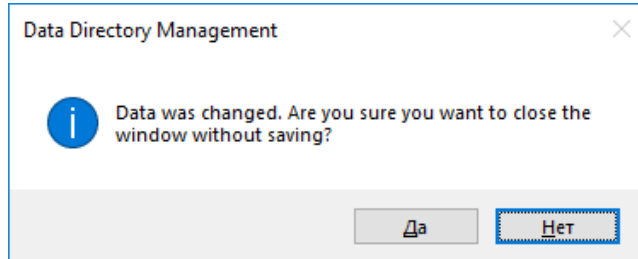


Figure 6.3.2.7

After the directory has been created, it is necessary to set up the links between fields and user lists. To set up such links, proceed as follows:

In the top menu open “Database” → “Manage Additional Fields” (Figure 6.3.2.8).

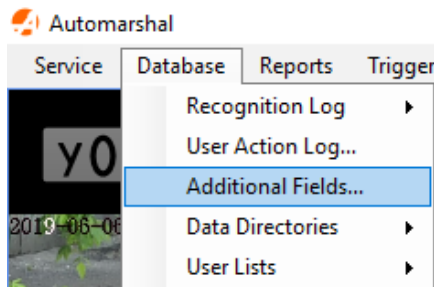


Figure 6.3.2.8

In the “Manage Additional Fields” window that opens, create an additional field to link with directory, or use one of the previously created.

For the field selected click “Link” (Figure 6.3.2.9).

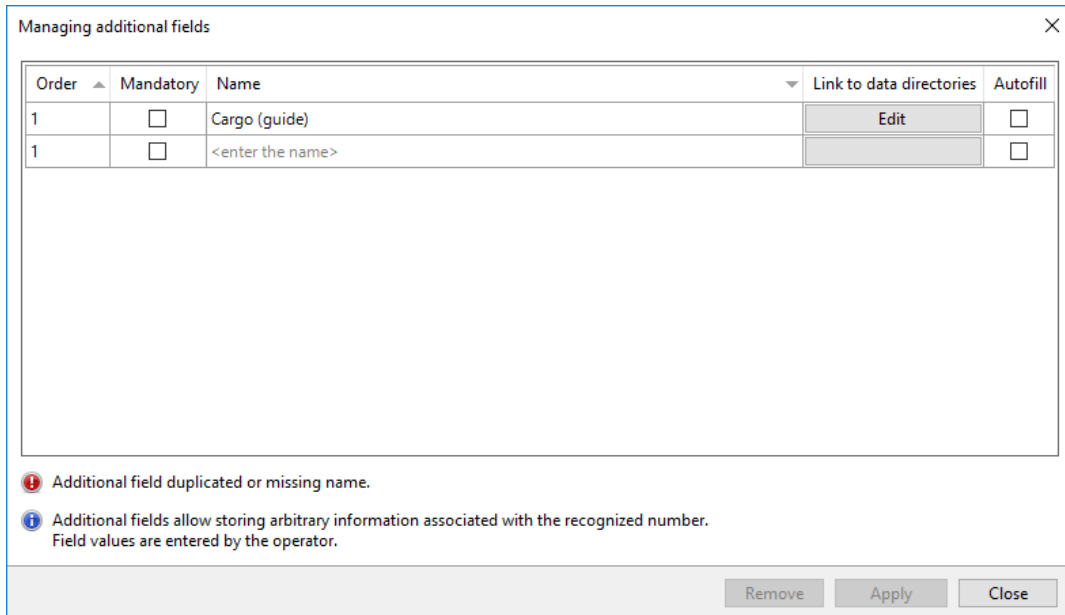


Figure 6.3.2.9

In the “Set up Additional Field Link” window that opens, select directory and then the directory field, which the link is required to be set up with (Figure 6.3.2.10). When all actions are completed, click “Save” to apply the changes.

Directory is accessible for editing from the “Set up Additional Field Link” window, click “Edit Directory” to do this.

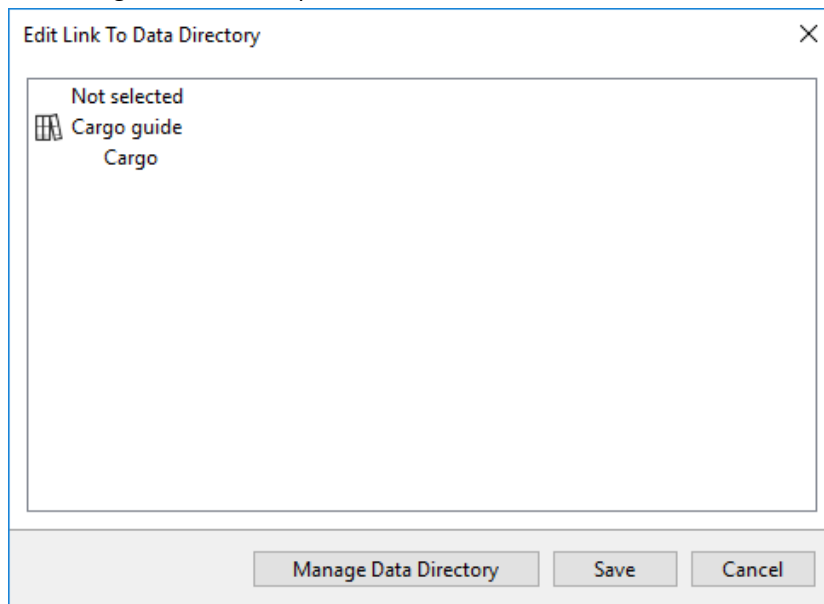


Figure 6.3.2.10

When the link between directory fields and user list fields is set up, the link icon will appear next to the name of corresponding field (Figure 6.3.2.11). When you hover over the icon, a brief information will appear.



Figure 6.3.2.11

Right-clicking the field with the link set up, a drop-down menu will appear that allows to quickly open the directory, to go to directory editing section in the “Manage Data Directory” window and to delete the link set up with directory field. First three strings of the drop-down menu are inactive for additional fields without any link set up.

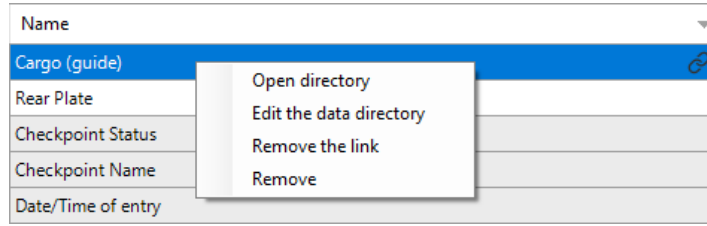


Figure 6.3.2.12

It is not allowed to create a link of one directory field with two and more additional fields of the user list simultaneously. When trying to create a link for the field with already set up link, a window will appear to confirm the action (Figure 6.3.2.13).

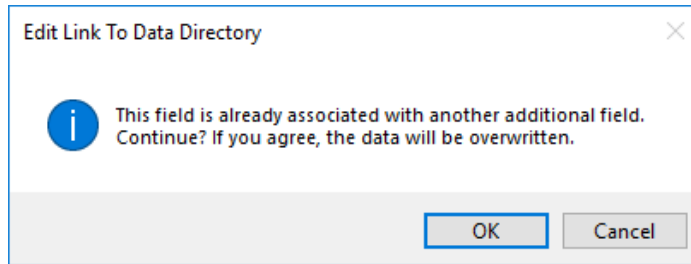


Figure 6.3.2.13

Directory field cannot be deleted, if it has a link to additional field of the user list. Remove the link first.

Fill in and edit the directory

To fill in the directories, go to “Database” in the top menu → “Data Directories” → “Edit Data Directories” or go to the “Manage Data Directories” window → “Open Data Directory”.

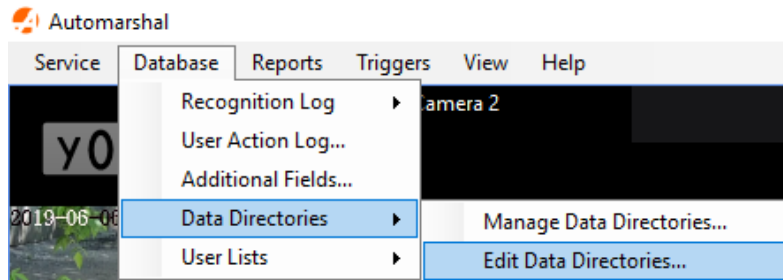


Figure 6.3.2.14

Select the required directory and click “Add Records”.

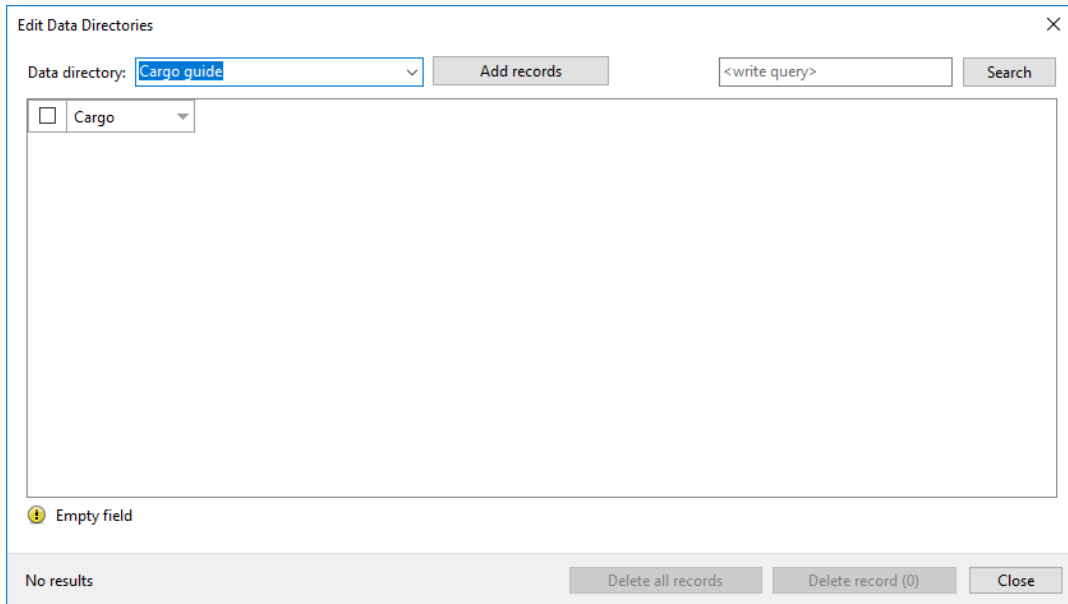


Figure 6.3.2.15

The “Add Records to Directory” window will open (Figure 6.3.2.16). To add a record, double left-click the empty field in required column. New blank string will automatically appear while the current string is filling in.

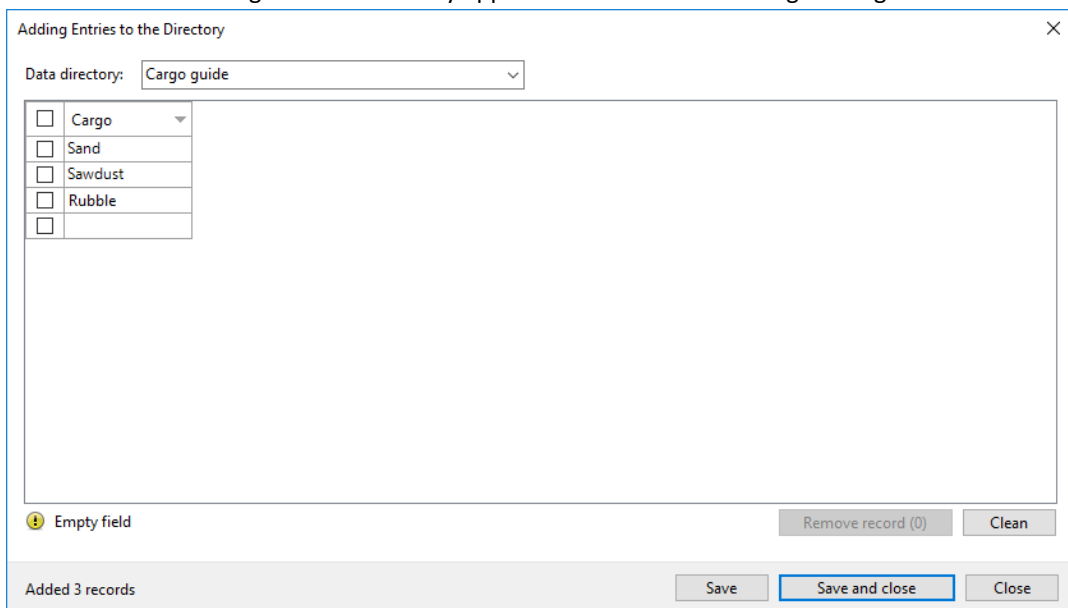


Figure 6.3.2.16

To save records in directory, use the following buttons:

Save – it transfers the records added to directory without closing the “Add Records to Directory” window.

Save and Close – it transfers the records added to directory and closes the “Add Records to Directory” window.

To delete records from the “Add Records to Directory” window, use the following buttons:

Clean – it deletes all records made.

Delete record – it deletes the records selected.

Close – it closes the window without saving the records made.

Added records will be displayed in directory (Figure 6.3.2.17).

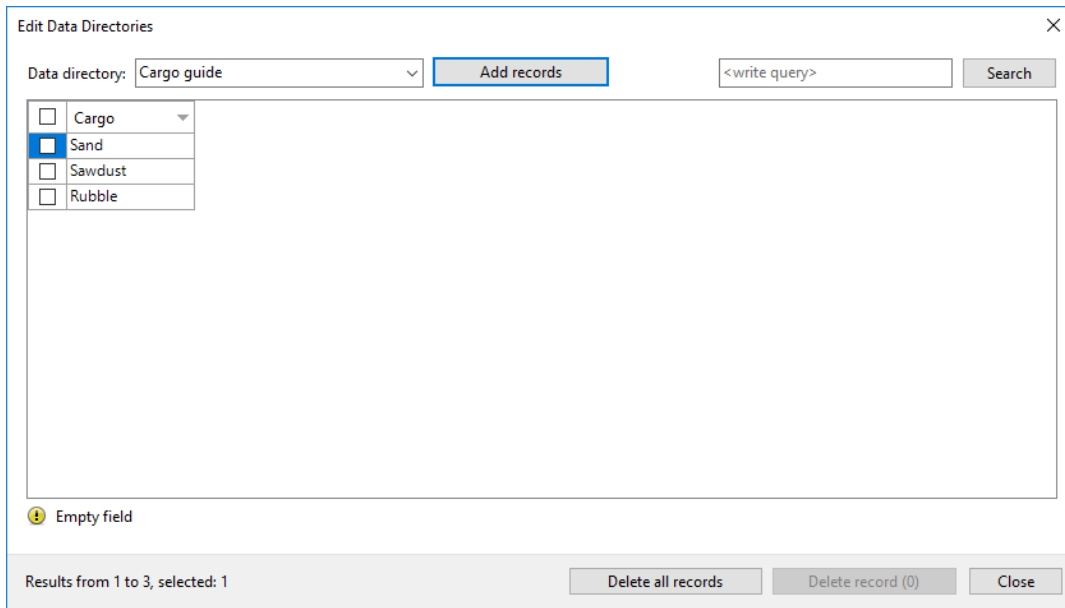


Figure 6.3.2.17

When the directory is set up, add the additional field linked to directory field and user list.

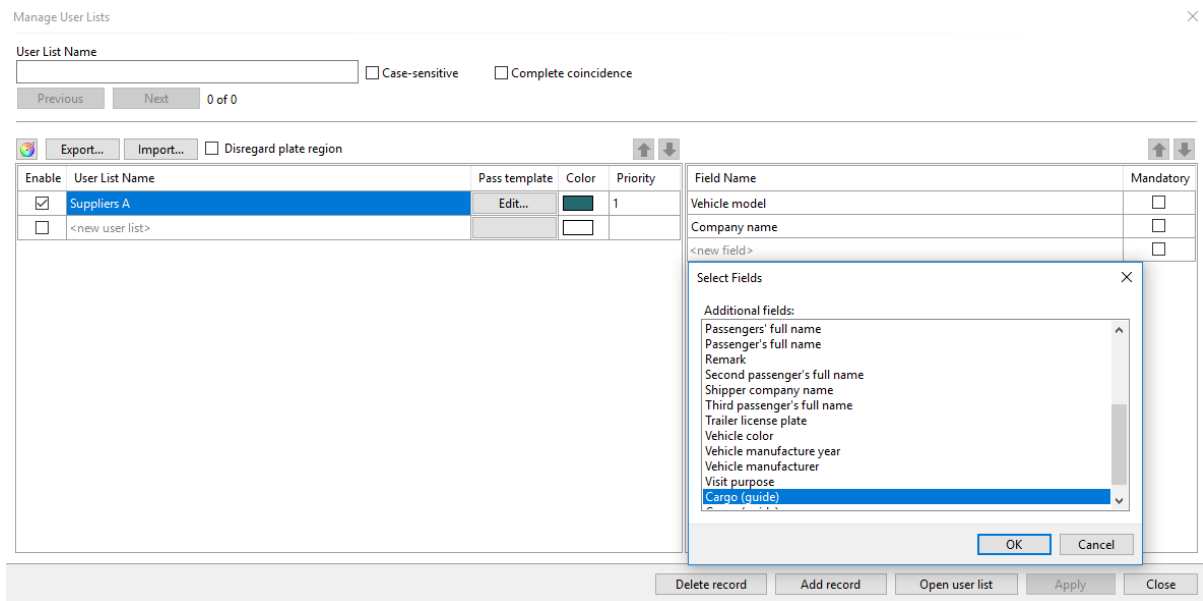


Figure 6.3.2.18

List field linked to directory will be displayed in user lists (Figure 6.3.2.19) and in the “Manual Recognition” window (Figure 6.3.2.20).

User Lists

User list:

Vehicles list

Pass:

<input type="checkbox"/>	Plate	Vehicle type	Created by	Creation Date	Cargo (guide)	Pass
<input type="checkbox"/>	92LXKS	Truck	Admin	5/16/2019 5:32:52 PM	<not selected>	Edit...
<input type="checkbox"/>	85SXV1	Truck	Admin	5/16/2019 5:32:52 PM	<not selected>	Edit...
<input type="checkbox"/>	62GRX2	Truck	Admin	5/16/2019 5:32:52 PM	Rubble	Edit...
<input type="checkbox"/>	ZBXJ08	Truck	Admin	5/16/2019 5:32:52 PM	Sand	Edit...
<input type="checkbox"/>	K013AX35	Truck	Admin	5/16/2019 5:32:52 PM	Sawdust	Edit...
<input type="checkbox"/>	K013AX35	Truck	Admin	5/16/2019 5:32:52 PM	<not selected>	Edit...
<input type="checkbox"/>	8KJX23	Truck	Admin	5/15/2019 10:09:31 AM	<not selected>	Edit...

Figure 6.3.2.19

A button for quick access to “Edit Data Directory” is located in the “Manual Recognition” window next to the field linked to directory (Figure 6.3.2.20).

Plate:

Direction:

Channel:

Information

User List (Company):

Pass:

Driver:

Rear Plate:

Cargo (guide):

- <not selected>
- Rubble
- Sand
- Sawdust
- mandatory items

Figure 6.3.2.20

6.3.3. Additional Fields

Additional fields are meant to store information associated with the recognized number.

In the top menu go to "Database" → "Manage Additional Fields " (Figure 6.3.3.1).

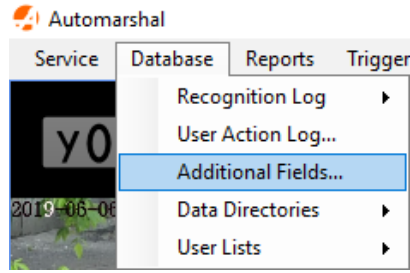


Figure 6.3.3.1

The following fields are displayed in "Manage additional fields" window:

- created by the user;
- added to the user lists from among the built-in Automarshall field templates (for instance, "Purpose of Visit", "Comment", "Passenger Name", etc.);
- added by any of the modules (for instance, the inclusion of the "Tariffing" module adds the "For payment", "Tariff", "Currency" fields). For such additional fields the following functions are not available: adding to user lists, editing, links with directories setting, including autofill and a required field.

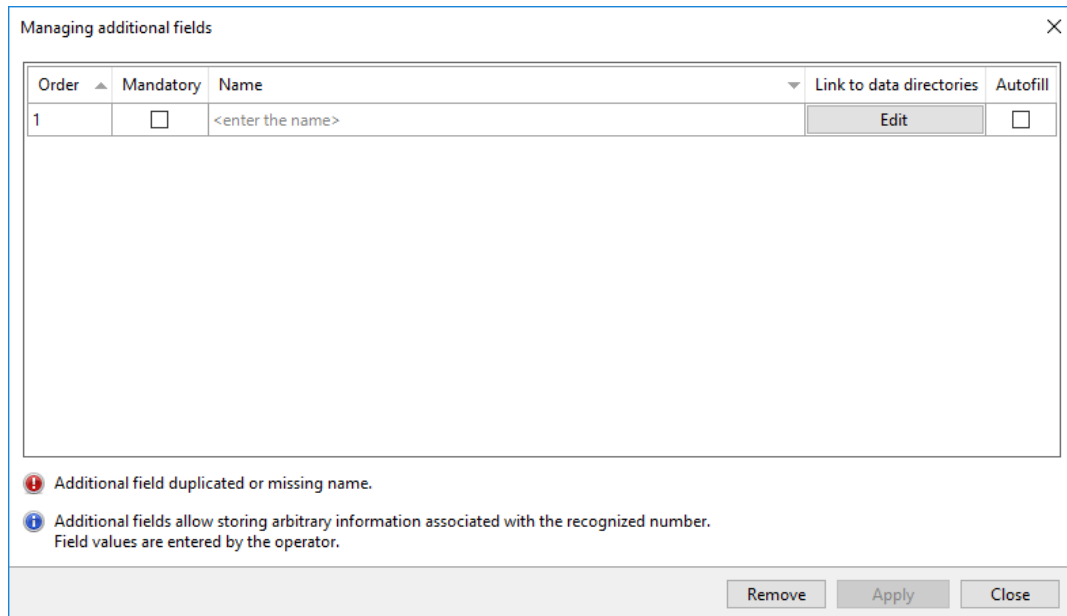


Figure 6.3.3.2

Order - the order of additional fields displaying in the windows of manual vehicle checking and manual vehicle registration.

Required Field – in case of manual recognition, the field for which the flag is set, will be mandatory.

Name – list of all additional fields. To add a new field, enter the name in the line “enter the name of the add. Fields”. To edit the name of an additional field, double-click the desired line.

Link to data directories – creating a link between directories fields and additional fields. For more information on directories, see section **6.3.2 Data Directories**.

Autofill – select the fields that are involved in autofill in the “Manual Recognition” window. Autofill conditions are in the “Settings” menu in the “Manual Vehicle Registration” section, autofill is disabled by default. For details, see section **7.4.1 Manual Vehicle Registration Condition Settings**.

Warnings:

It is not allowed to create multiple additional fields with the same name. The name of the additional field is case sensitive.

Buttons:

Remove — deletion of additional fields will result in the loss of all information indicated in these fields. You cannot remove additional fields that are used by modules.

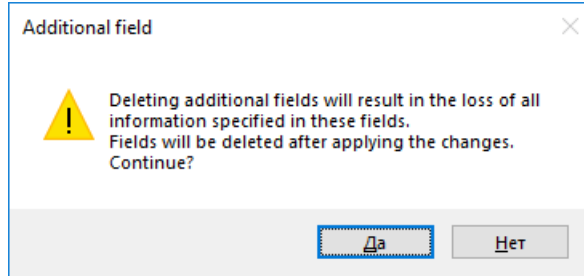


Figure 6.3.3.3

Apply — save changes to the database.

Close — it closes the control window for additional fields.

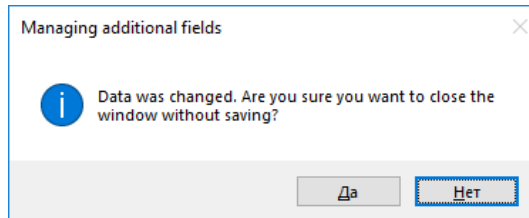


Figure 6.3.3.4

6.3.4. Reports Configurator

Report Configurator is required if you need to configure the report form that differs from the templates integrated in Automarshal.

There are two standard templates integrated in Automarshal. To view them and to generate a quick report, select Reports tab in the upper menu and go to one of the templates.

In figure 6.3.4.1, Standard template is selected. Select the time, for which the report must be generated.

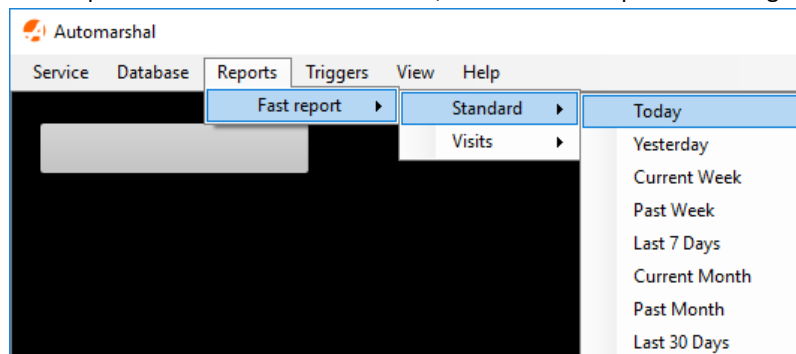


Figure 6.3.4.1

As soon as the period is selected, a document file will open, which contains log data (figure 6.3.4.2).

Nº s/p	Plate	Date/Time	Direction	Video channel	User list
1	8KJX23	26.04.18 16:50:59	Bottom to top	Camera 2	Workers
2	92LXKS	26.04.18 16:50:37	Top to bottom	Camera 2	Workers
3	06NNPZ	26.04.18 16:50:33	Top to bottom	Camera 2	Workers
4	06NNPZ	26.04.18 16:50:27	Bottom to top	Camera 2	Workers
5	35HRF9	26.04.18 16:50:23	Top to bottom	Camera 2	Workers
6	5HRF99	26.04.18 16:50:20	Undefined	Camera 2	
7	68ZVJ4	26.04.18 16:50:15	Top to bottom	Camera 2	Workers

Operator _____

signature, date, full name

Figure 6.3.4.2

In the quick report, select Visits template (figure 6.3.4.3).

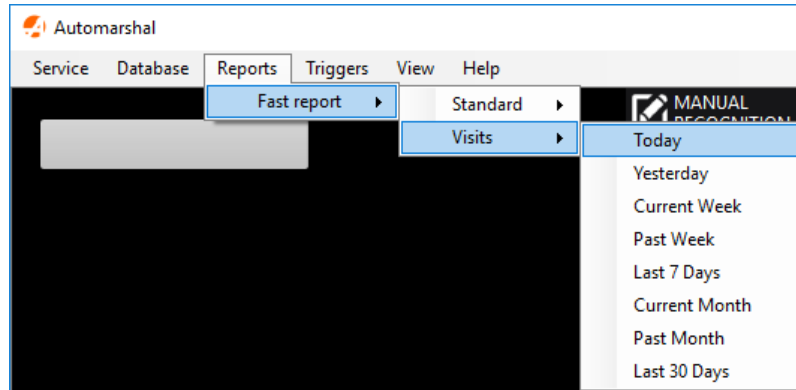


Figure 6.3.4.3

Visits template report looks as follows (figure 6.3.4.4):

VISITS REPORT

The report was prepared for the period from 4/26/2018 12:00:00 AM to 4/27/2018 12:00:00 AM

Nº s/p	Plate	Entry date/time	Exit date/time	Duration of day	Passage	User list
1	8KJX23		26.04.18 16:50:59		Exit without entry	Workers
2	92LXKS	26.04.18 16:50:37			Entry without Exit	Workers
3	06NNPZ	26.04.18 16:50:33			Entry without Exit	Workers
4	06NNPZ		26.04.18 16:50:27		Exit without entry	Workers
5	35HRF9	26.04.18 16:50:23			Entry without Exit	Workers
6	5HRF99	26.04.18 16:50:20				
7	68ZVJ4	26.04.18 16:50:15			Entry without Exit	Workers

Entries without exit: 4
 Exits with entry: 0
 Exits without entry: 2
 Undefined: 1
 Drivers on territory: 2
 Passengers on territory: 0
 Total people on territory: 2

Figure 6.3.4.4

To generate your own report template, open Settings menu and go to Reports Configurator (figure 6.3.4.5).

In Report Configurator tab there is an option for selecting the encoding (Latin or Cyrillic) of the vehicle plate. The option is relevant only for plates of the Russian Federation. This setting is global and affects 1) quick reports, 2) Mail Delivery module, 3) and report from the search form.

To add a new template, click Add button.

Templates can be imported, this is convenient when transferring data from one device to another. Supports only *.frx format. export of created templates is also done in this format.

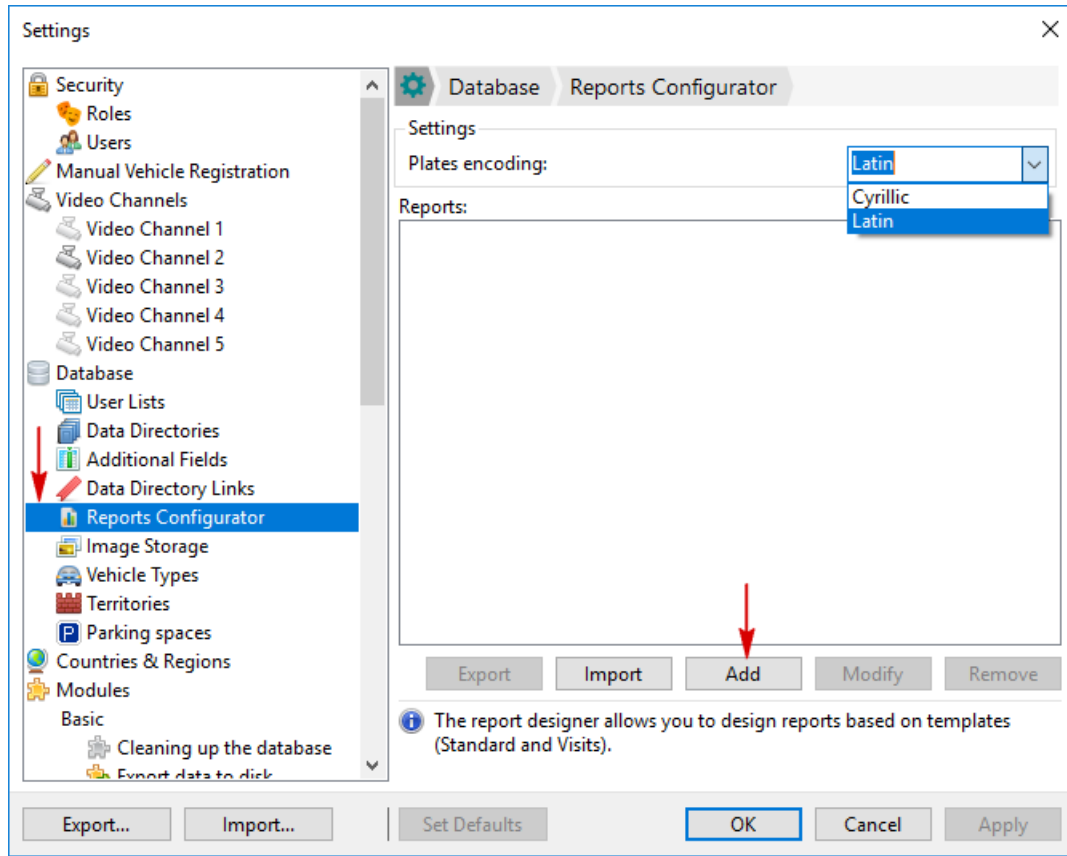


Figure 6.3.4.5

After clicking Add, a reports configuration mode selection window will open (figure 6.3.4.6).

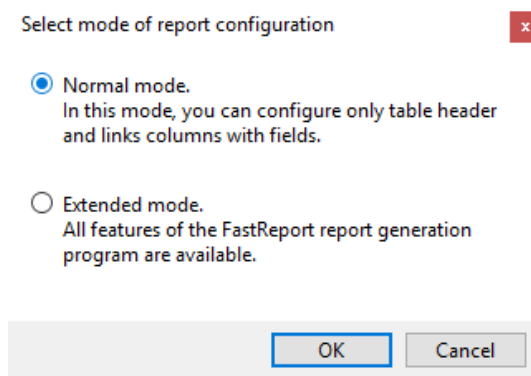


Figure 6.3.4.6

Normal Mode – FastReport limited functionality mode.

Extended Mode – grants access to all functions of Automarshel-integrated software for FastReport report generation. Prior to use of this tool for editing and creating the report form, it is recommended to read documentation and user manual on the developer’s website:

<https://www.fastreport.ru>, <https://www.fastreport.ru/ru/product/fast-report-net/documentation/>.

After any mode is selected, a window will open, where you will need to enter the name of report and select a template, on which the user template will be based (figure 6.3.4.7). The name must consist of at least one character, otherwise Next button will be inactive to continue. All reports must have different names.

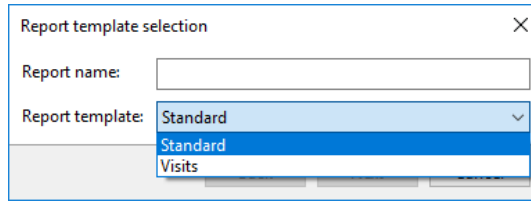


Figure 6.3.4.7

Report Editing window for the standard template looks as follows (figure 6.3.4.8):

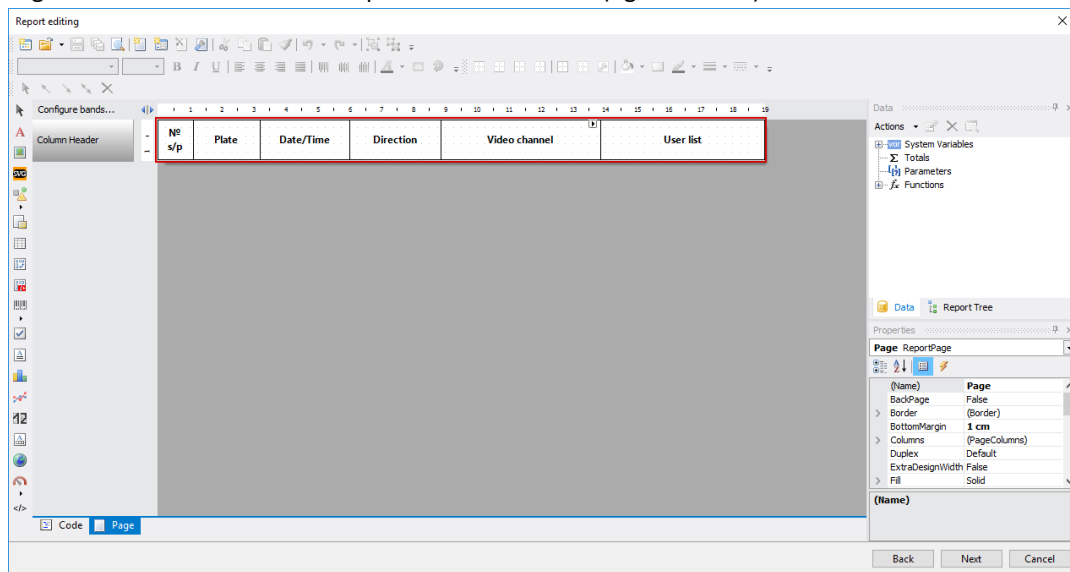


Figure 6.3.4.8

In limited mode, the title of the table in the report can be edited.

To start working with the columns, go to Report Tree tab and expand the list in red box, find Table section. In an example (figure 6.3.4.9), a Video Channel column is selected (`_colVideoChannel` in the report tree). When clicking the selected line in the report tree, the corresponding column will be highlighted in blue.

The following actions are available for the columns:

- insert: to the left or to the right of selected column;
- auto size: when the report is opened, column width will be selected automatically.
- cut: cuts the existing column that can later be pasted in another position.

For example, cut “№ S/P” column. To paste it, right-click any column in the report tree and click Paste. The cut column will be inserted before the selected one, there is no “left” or “right” option for Paste, unlike for inserting a new column.

- delete: removes the selected column.

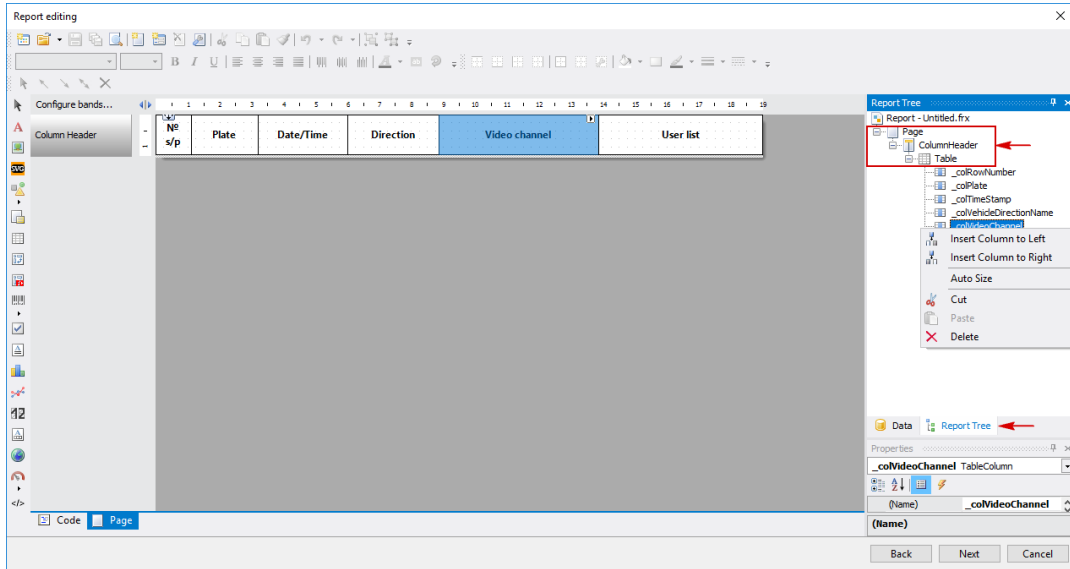


Figure 6.3.4.9

In an example (figure 6.3.4.10), a new column is inserted. To complete it, double-left-click the column. An Edit Text window will open, where you can enter the text header of the column.

In the upper section of the window are the tools for editing and generating text and table view.

These functions are similar to, for instance, equivalents in Microsoft Word.

In figure 6.3.4.10, 1 and 2 mark the tools that you will absolutely need. When inserting a column, all following columns move to the right and go beyond the sheet.

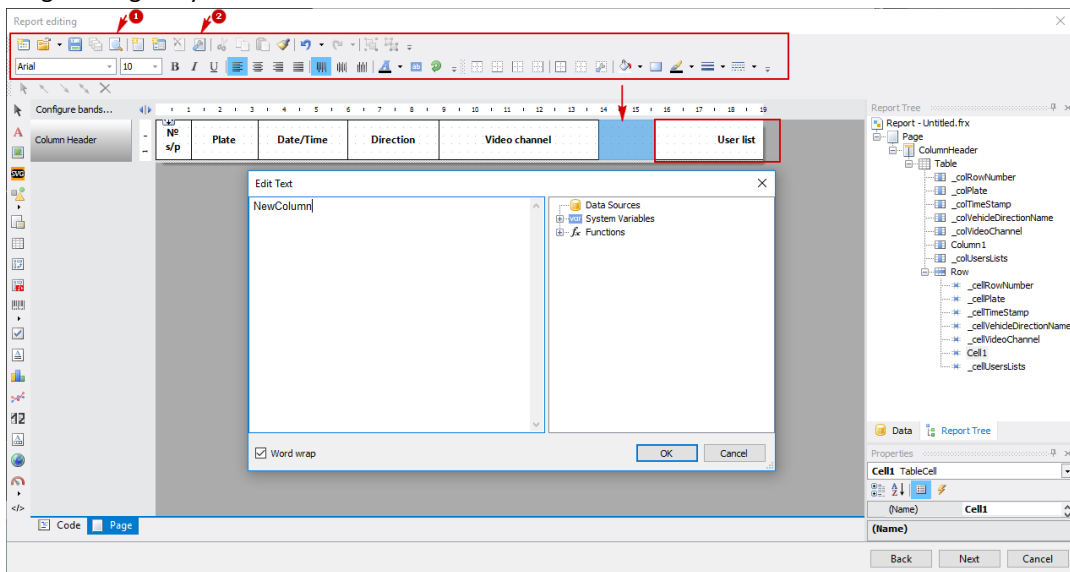


Figure 6.3.4.10

In a figure 6.3.4.10, 1 marks the report preview tool. If no operations are performed with the title after adding new column, the result will be as follows (figure 6.3.4.11):

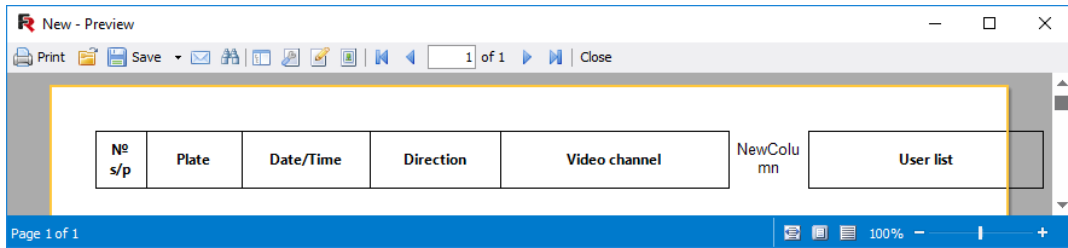


Figure 6.3.4.11

The size of columns can be adjusted by setting them larger or smaller. Or you may change the parameters of the page itself (figure 6.3.4.10, a tool marked 2): page orientation (landscape or portrait), format (standard is A4), set the required width and height of the page if a non-standard size is required (figure 6.3.4.12).

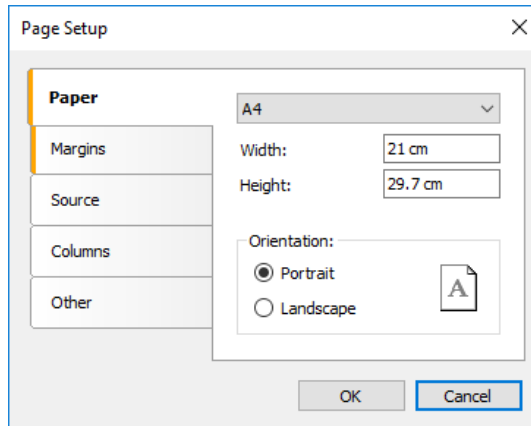


Figure 6.3.4.12

After everything is done for a new report, click Next in Report Editing window. A Customizing Report Fields window will open (figure 6.3.4.15). The red box marks the inserted column. By default, it is always “№ S/P” field that is selected; in the drop-down list you may select any other field from the lists and log from among standard templates integrated in Automarshall or added by the user.

To complete creation of new report template click Finish.

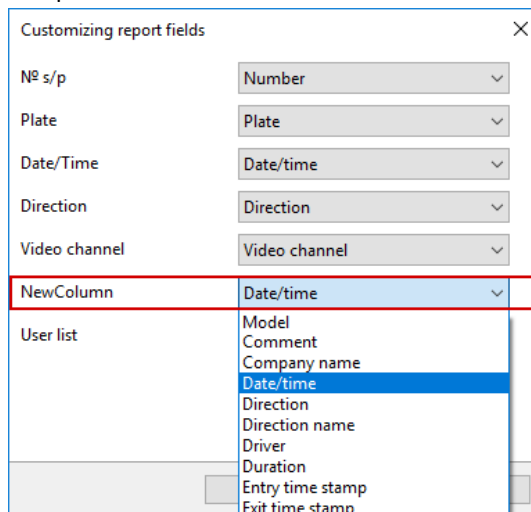


Figure 6.3.4.13

Once finished, you will return to Settings menu, Reports Configurator section. New report will be displayed in Reports field. Report template may be edited at any time.

Attention! All operations will be saved in the database only after clicking Apply or OK. Clicking Cancel does not change the state of the database.

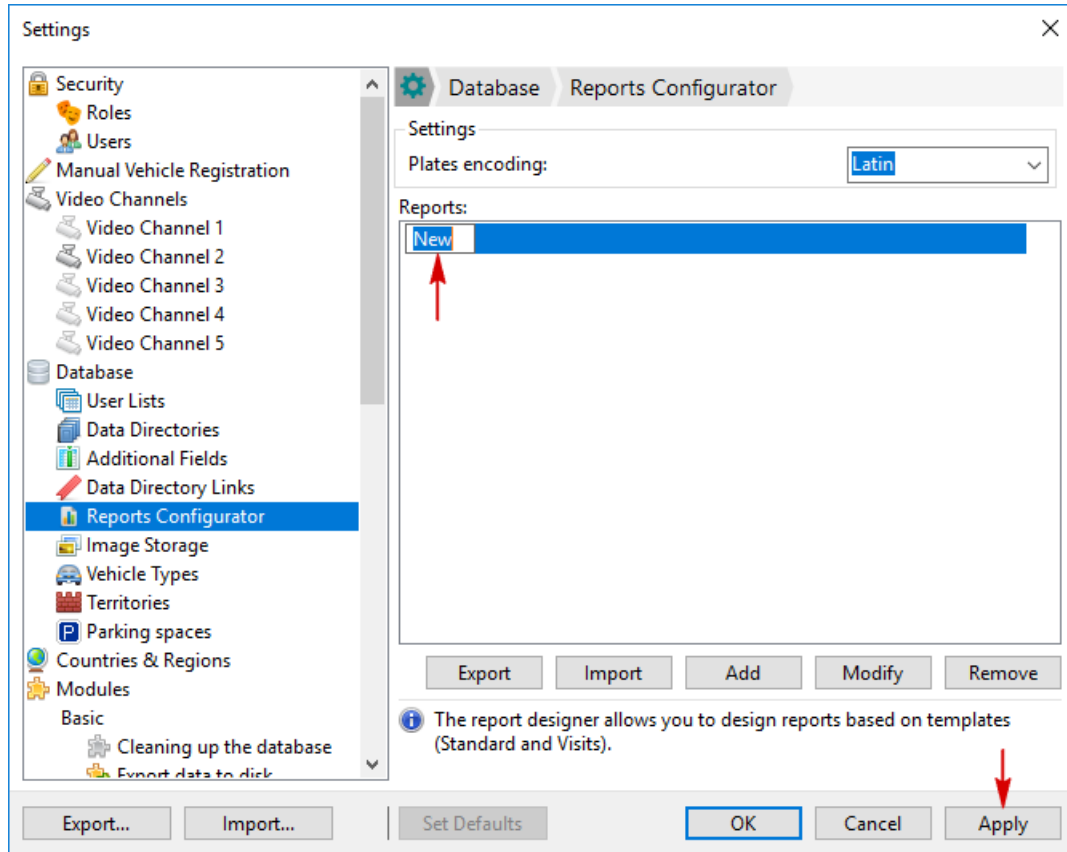


Figure 6.3.4.14

Normal mode does not enable the band functions, therefore, when attempting to create a new report based on Visits template (figure 6.3.4.15), only the table title will be available for editing. All statistics shown under the table in the report (figure 6.3.4.4) will not be transferred to the new report.

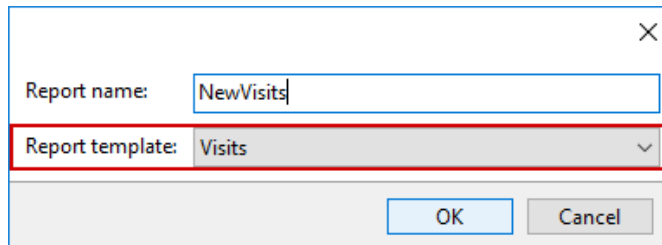


Figure 6.3.4.15

To use the bands, including creating reports based on Visits templates, select the extended mode in the reports configurator (figure 6.3.4.16).

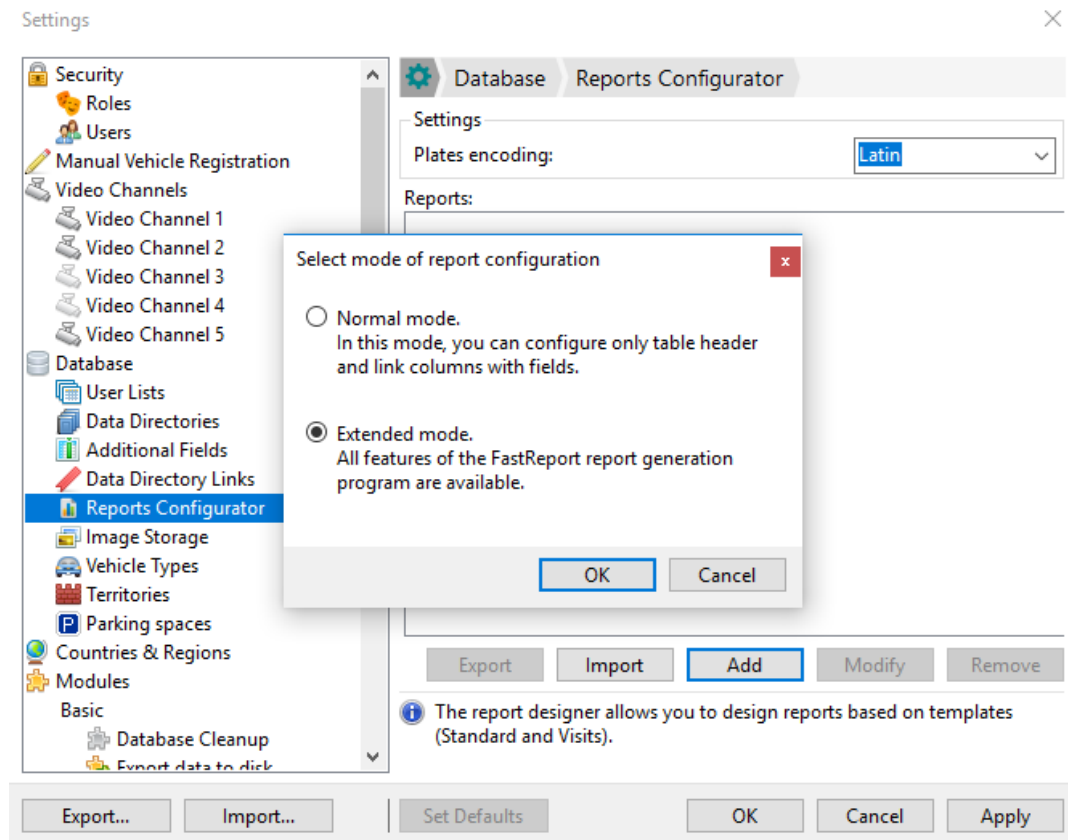


Figure 6.3.4.16

All information on using the report editor is available in FastReport documentation. Everything you need to know to generate report for Automarshall.

In an example (figure 6.3.4.17), a visit report is used, for which the band objects are configured.

Band is an object on the report page which acts as a container for other objects (e.g. image, table, functions, etc.). Figure 6.3.4.17 shows several bands.

For instance, Column Header contains text information. It is recommended to input only text in this band.

Collection Band contains fields of log and user lists. Collection Band must be completed mandatorily, otherwise no data from the log and user lists will be added to the report. Collection Band can be added to the columns in several ways:

Figure 6.3.4.17 show the first method: for each column, upon hovering the cursor, a button will be displayed in the upper right corner of a cell, which, when clicked, will expand the list of Collection Bands available for adding.

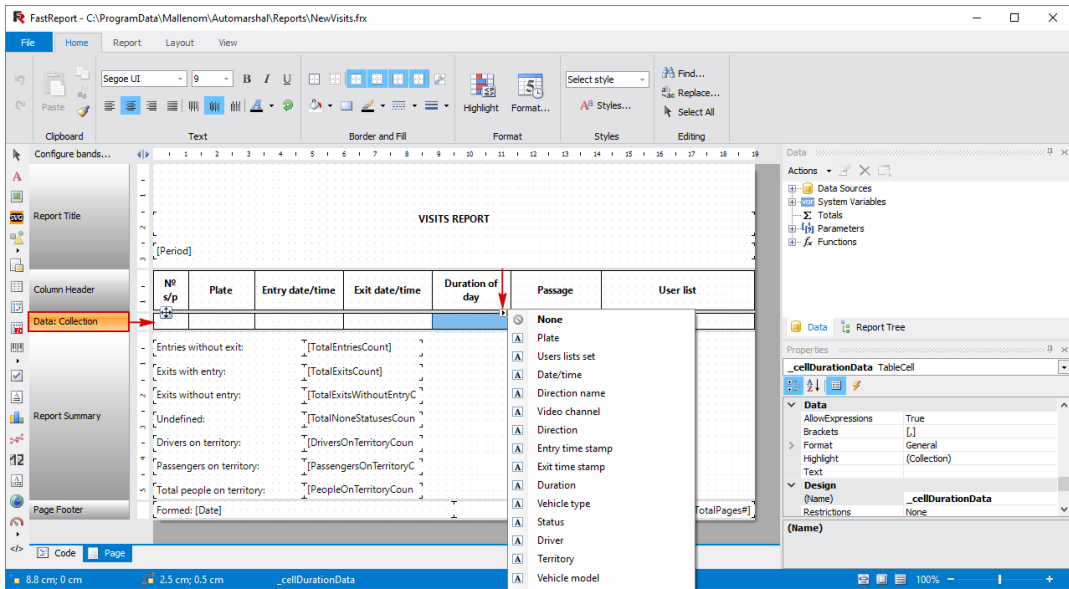


Figure 6.3.4.17

Collection Band, just as any other objects, may be moved from the data list to the columns manually. To do so go to Data → Data Sources → Collection, and from the list select the required Collection Band and move it to the column. In an example (figure 6.3.4.18), a [Collection.List] was moved to the column.

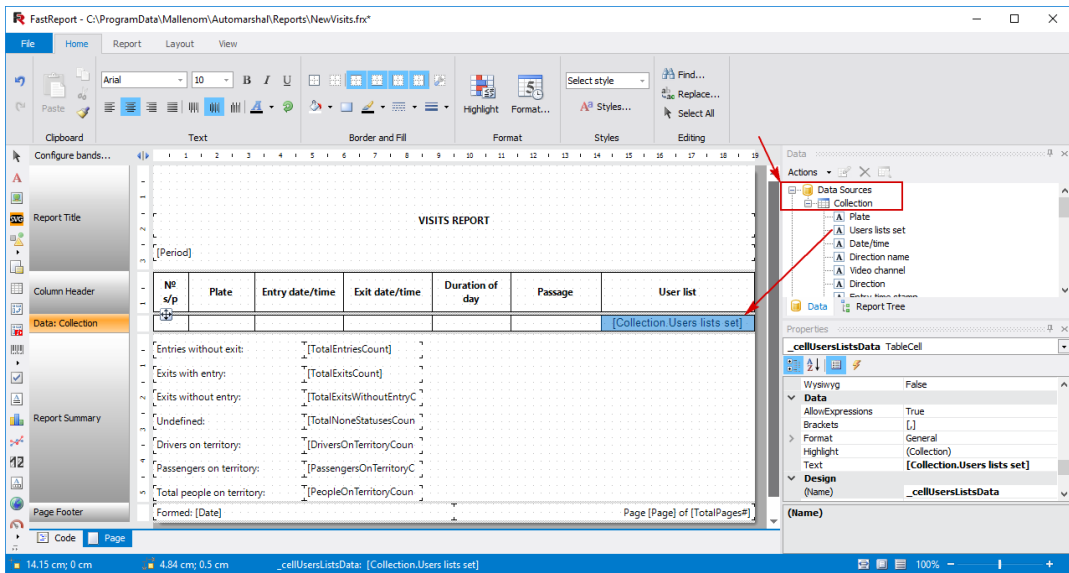


Figure 6.3.4.18

You can add it in the text editor (figure 6.3.4.19). To open it, double-left-click the column. In the next window expand Collection in data sources. You can add by double-clicking the required Collection, or by dragging and dropping to the right pane.

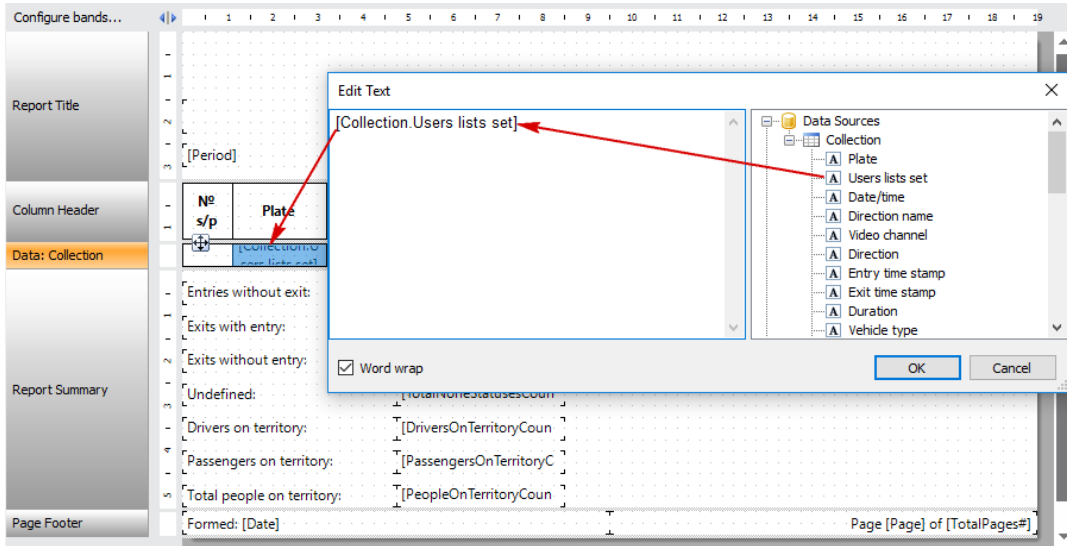


Figure 6.3.4.19

Values of “No S/P” column do not relate to Collection data. This is a system variable, its addition is shown in figure 6.3.4.20: go to Data → System Variables → Row# and move to the column as shown in figure 6.3.4.20.

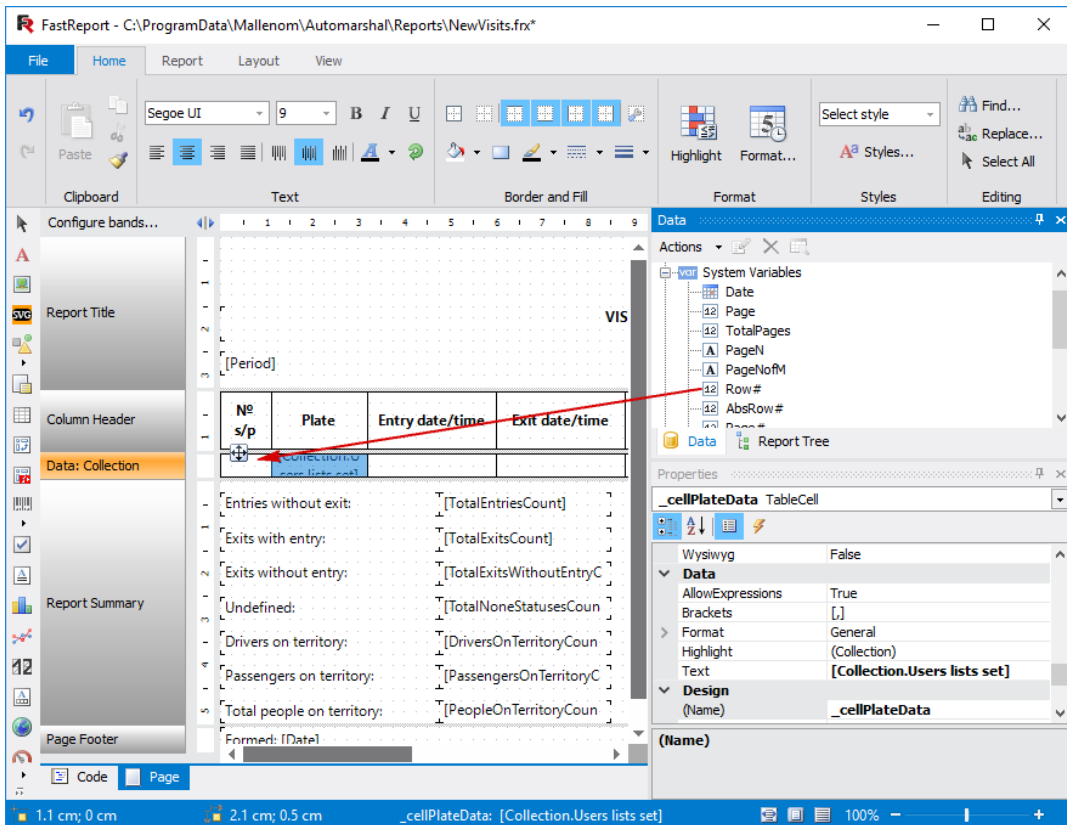


Figure 6.3.4.20

To add new column in the title, follow the same rules as in the normal version of report editor:

Report Tree → ColumnHeader → Table. Now select the header, relative to which you wish to add a new one (in an example shown in figure 6.3.4.21, Passage column is selected), right-click it and select one of the options “Insert column to left/right”.

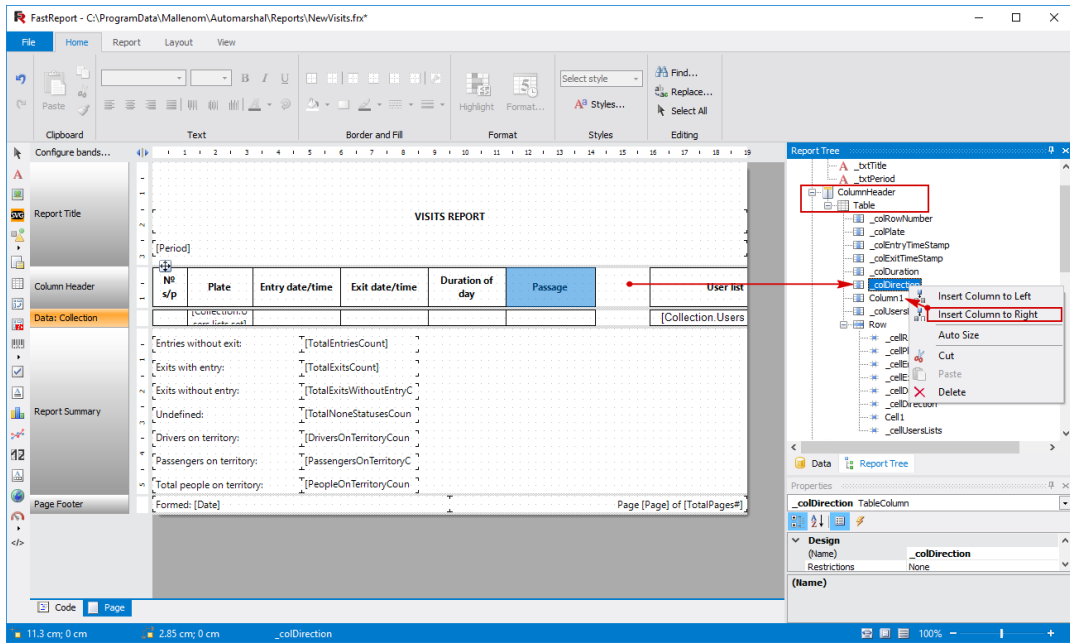


Figure 6.3.4.21

Adding column in Collection band: Report Tree → Data → Table. Now select the header, relative to which you wish to add a new one (in an example shown in figure 6.3.4.22, Passage column is selected), right-click it and select one of the options “Insert column to left/right”.

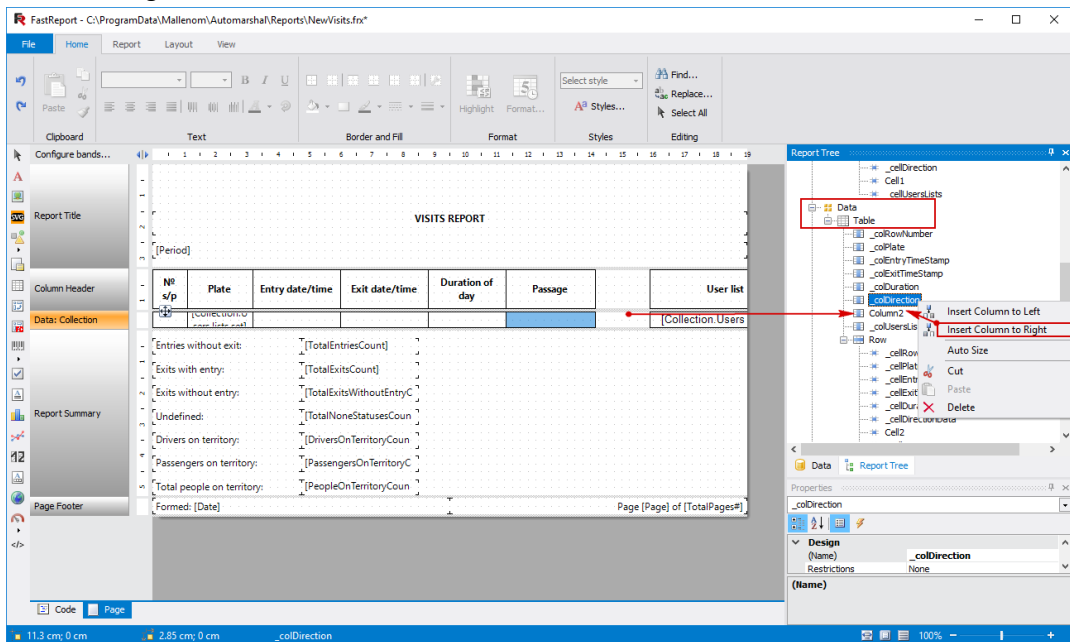


Figure 6.3.4.22

New columns are created empty, with no text or table borders. All tools for text editing and formatting are in the upper section of FastReport editor.

Once the report template is configured, you must save it (figure 6.3.4.23). In an extended mode, there is no Next button as in normal mode. Open File menu and select Save as...

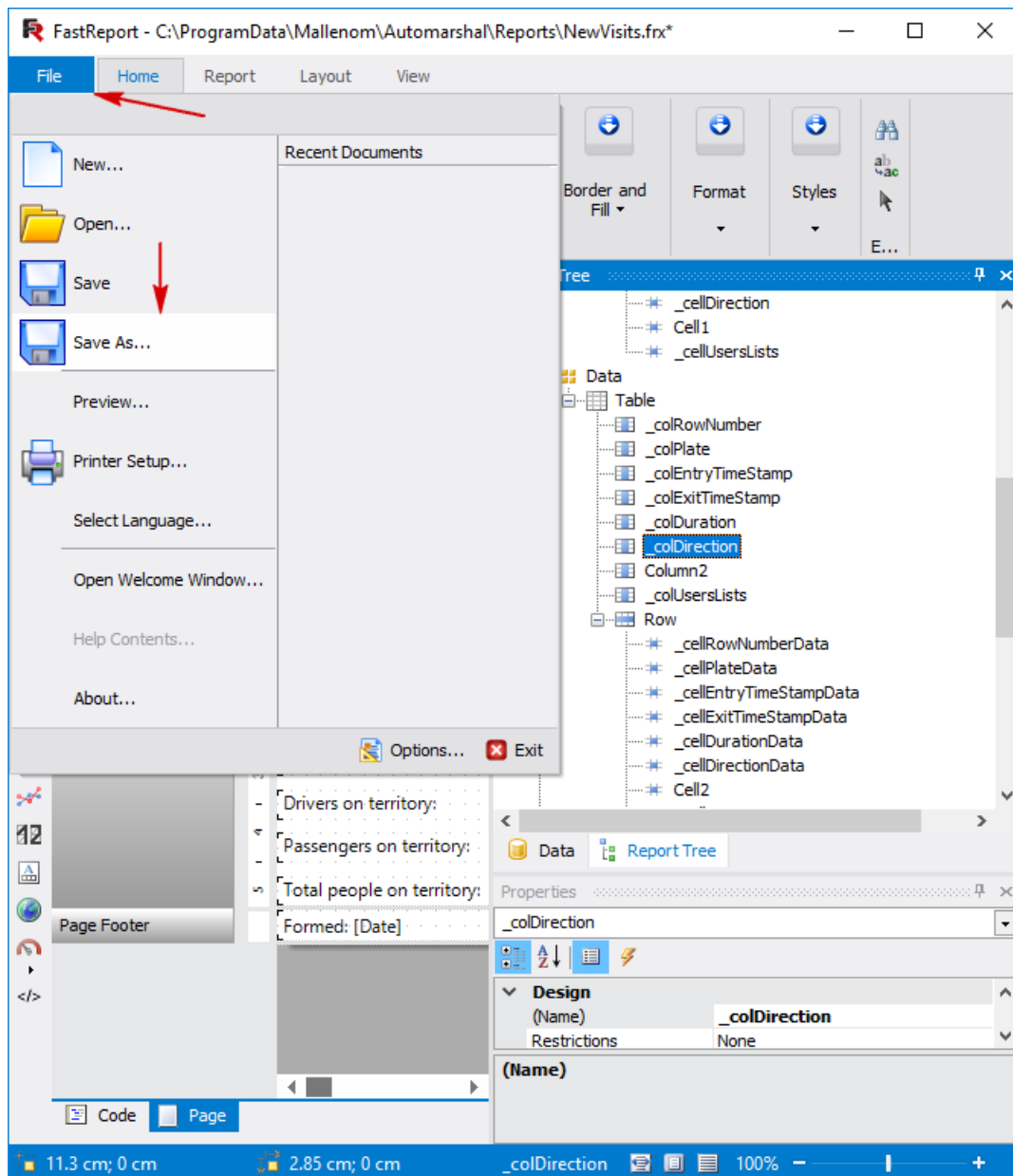


Figure 6.3.4.23

Saving window will open, all files are saved in Reports folder by default (figure 6.3.4.24).

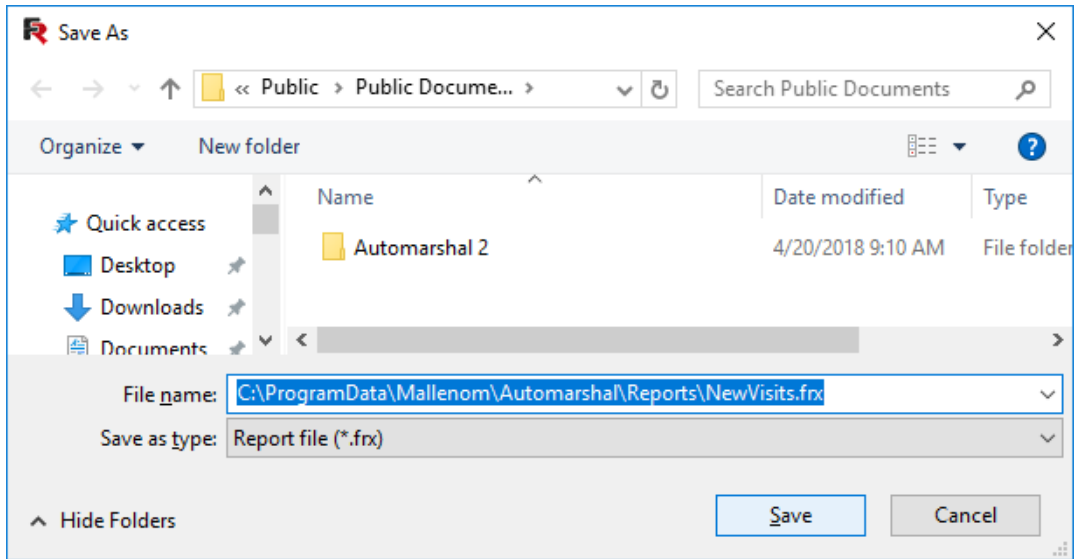


Figure 6.3.4.24

Once Save button is clicked, a confirmation dialog warning that the file already exists will appear (figure 6.3.4.25). Click Yes. The system is built in such a manner that when creating the report in an extended mode, a report file in Reports folder is created immediately, and when the operations are completed, the changes made to this file must be saved. After saving just close the report editor.

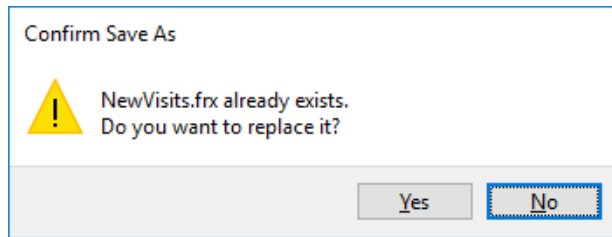


Figure 6.3.4.25

A created report may be found in Fast Report section (figure 6.3.4.26):

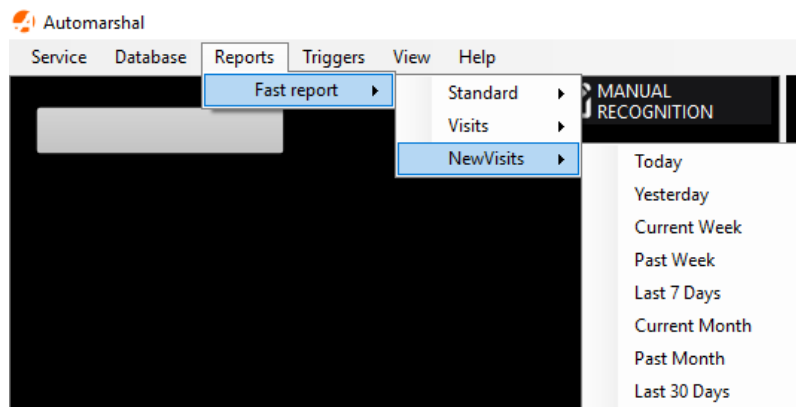


Figure 6.3.4.26

In preview window opened through Fast Report, the file can be saved in any format available for selection (figure 6.3.4.27).

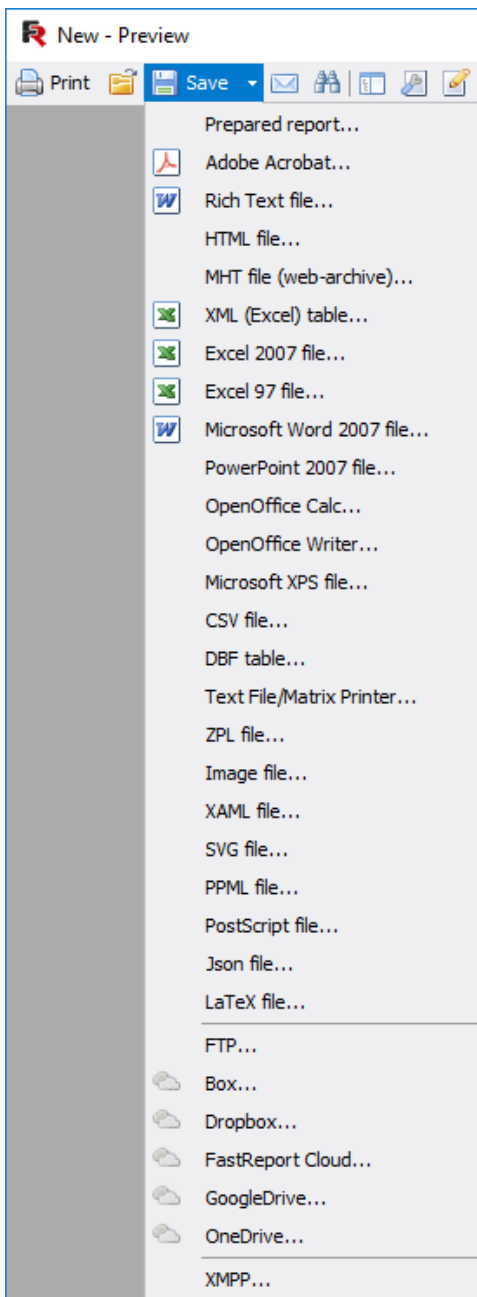


Figure 6.3.4.27

User-created reports are available for selection in mailing section (figure 6.3.4.28):

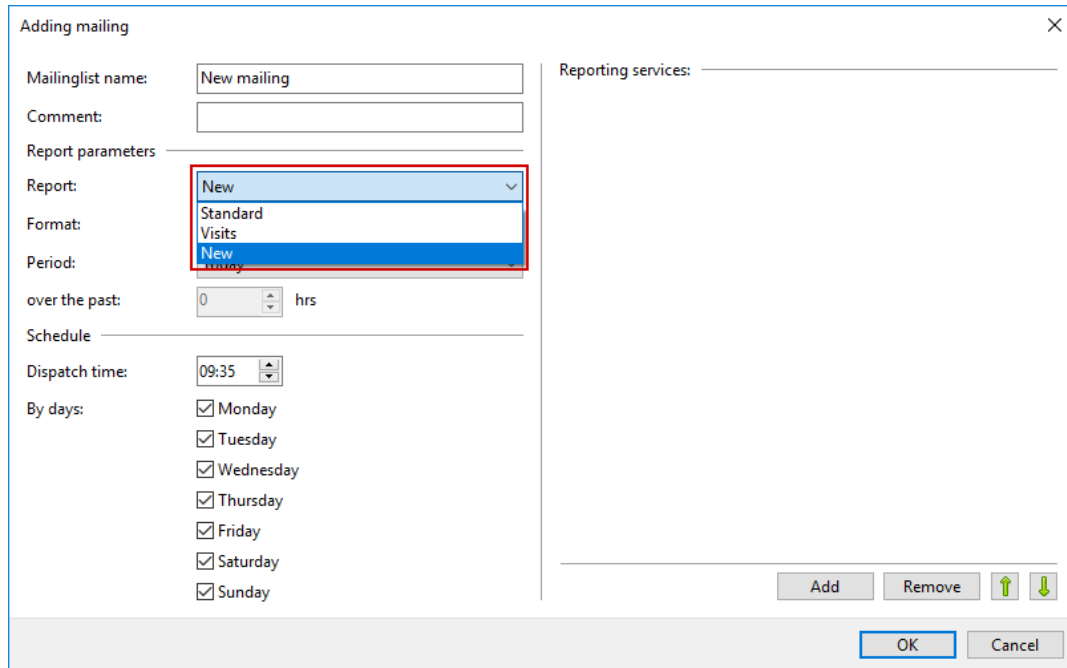


Figure 6.3.4.28

6.3.5. Image Buffer

Image Buffer sets the image format and its compression quality for further storage in the database.

Perform the following actions to setup parameters:

1. Open program settings and go to **Database-Image Buffer**.

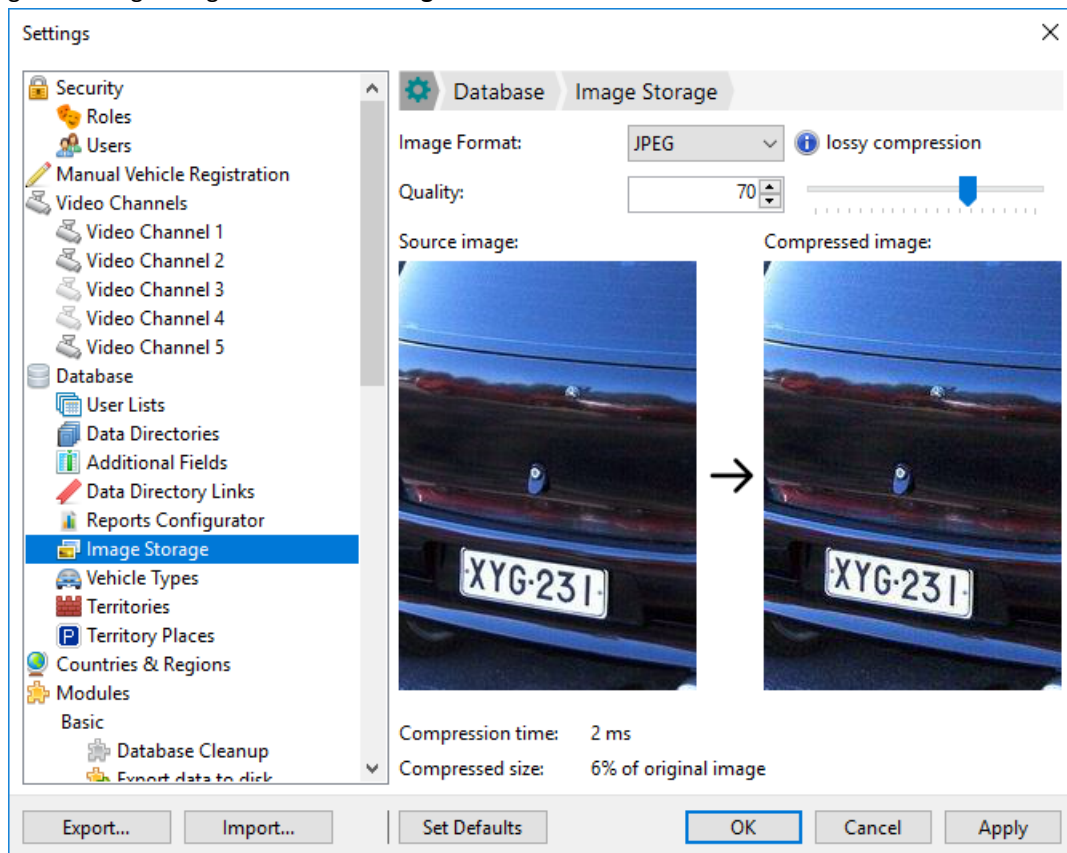


Figure 6.3.5.1

2. Setup parameters would be displayed on the right side:

2.1 Image format

Select one variant from the drop-down list (JPEG, PNG or BMP).

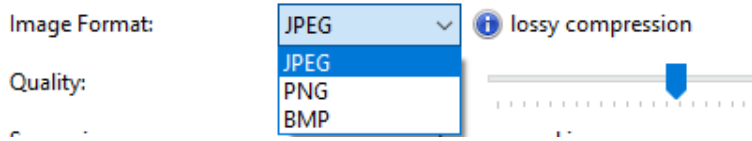


Figure 6.3.5.2


2.2 Depending of the selected image format, the following parameters are set:

- **JPEG format**

Quality – image compression level. Setup range is within 1 to 100, default value is 70.

- **PNG format**

Compression level – image compression level. Setup range is within 1 to 9, default value is 7.

Value is set with the use of scroll box  or manually.

Below is an example of initial image and with application of entered settings.

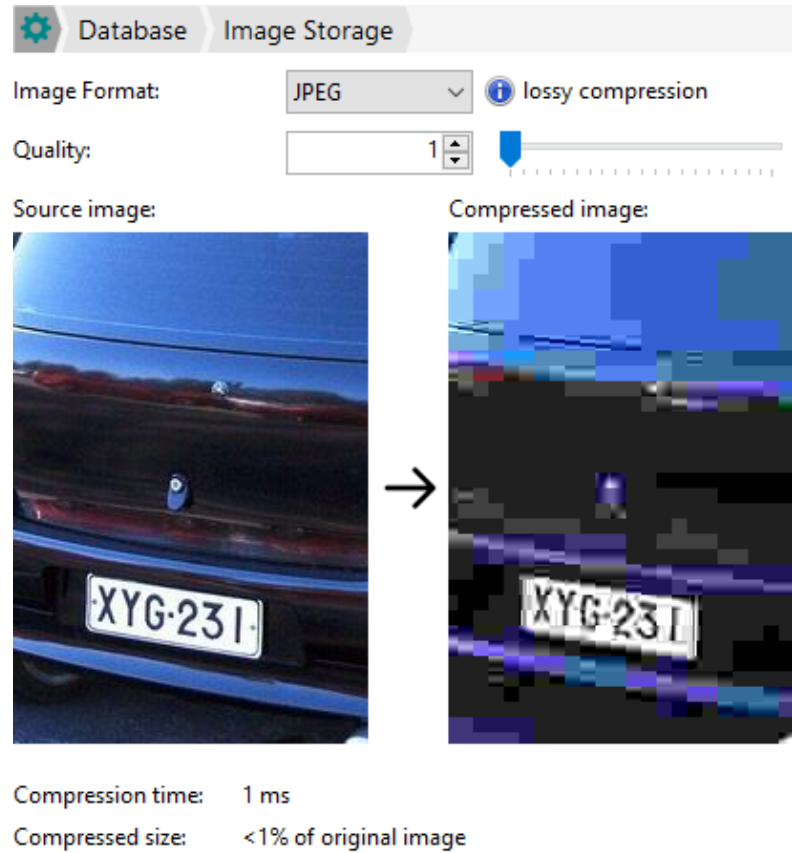


Figure 6.3.5.3

Information regarding the compression time and final image dimensions depending of the selected settings is displayed under the examples.

The higher quality of image, the lesser is the compression level and the larger is the file size.

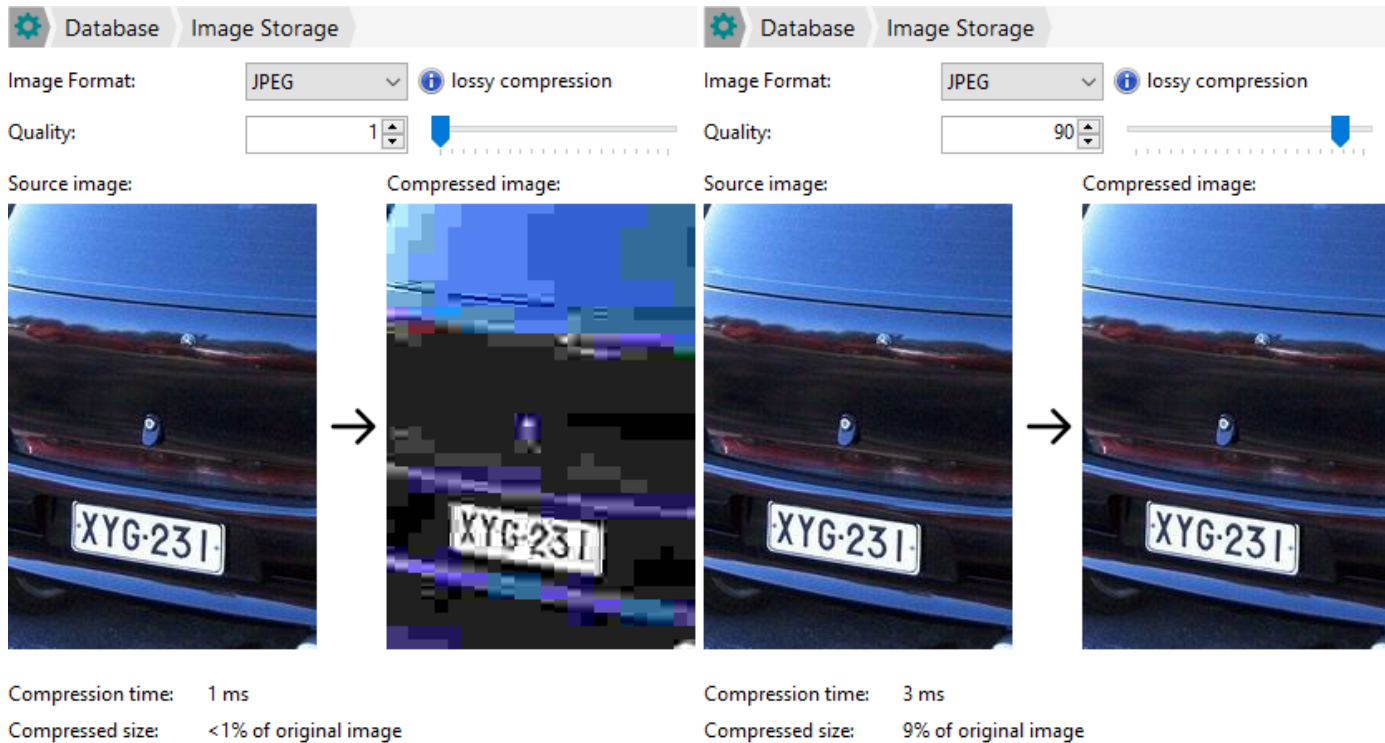


Figure 6.3.5.4

- **BMP format**

Images are stored without compression.



Image compression is application of the compression algorithms of data to images stored in the digital form. Compression results in the decreased size of image, thus resulting in the decreased time of image transfer via network and more space for storage.

Image compression is divided into compression with loss of quality and compression without loss of data.

6.3.6. Vehicle Type

In this section you can set the default vehicle type for all vehicles, as well as add vehicle types that can be selected for manual recognition, manual verification, adding entries to the list, and manual editing of journal entries.

By default, "Unknown vehicle type" is created in the system with space ration equal to 1 (Figure 6.3.6.1).

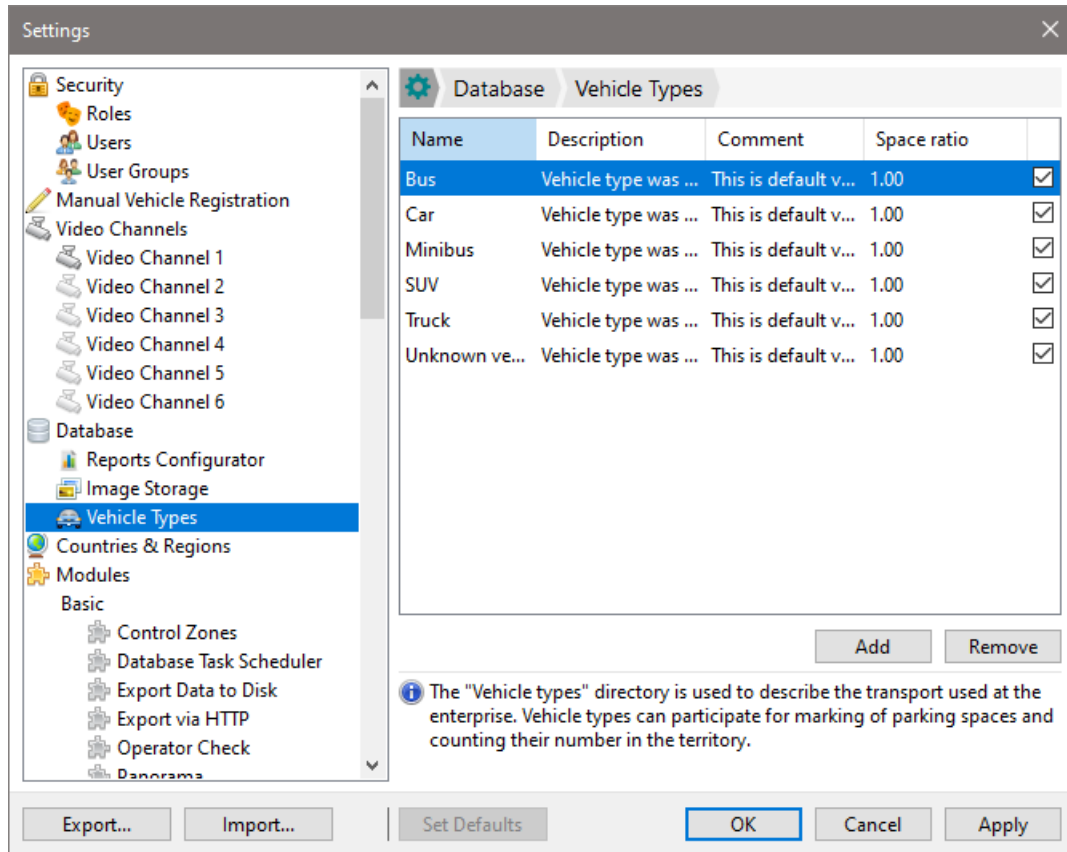


Figure 6.3.6.1

Space ratio - a conventional unit, which determines the size of parking space for this type of vehicle. Space ration is required when setting up parking spaces in HurasysParkingSystem.

The flag in vehicle type line is responsible for selecting the default vehicle type.

The section "Vehicle type" can't be empty. If you delete all lines with vehicle types, the system recreates the last vehicle type installed by default.

The system must always have at least one vehicle type by default. When you try to remove all the flag marks from vehicle types and save the settings, a warning will be displayed (Figure 6.3.6.2).

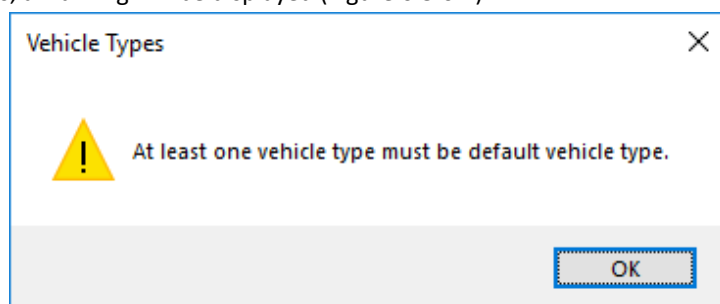


Figure 6.3.6.2

To add a vehicle type to the list, follow instructions below:

- Click **Add**.
- Enter Full Vehicle Name, description and comment. The "Description" and "Comment" fields are not required for filling, the information from these fields is not displayed anywhere except for the "Vehicle types" section.

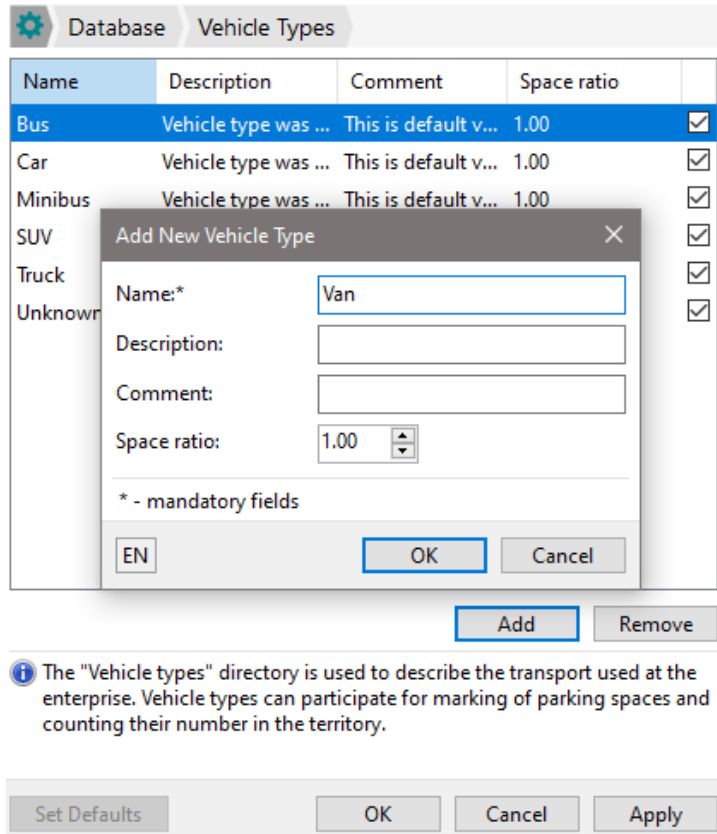


Figure 6.3.6.3

After these actions have been done, a new type of vehicle appears in the list (Figure 6.3.6.4). You can edit vehicle types at any time by double-clicking on the line in the desired column.

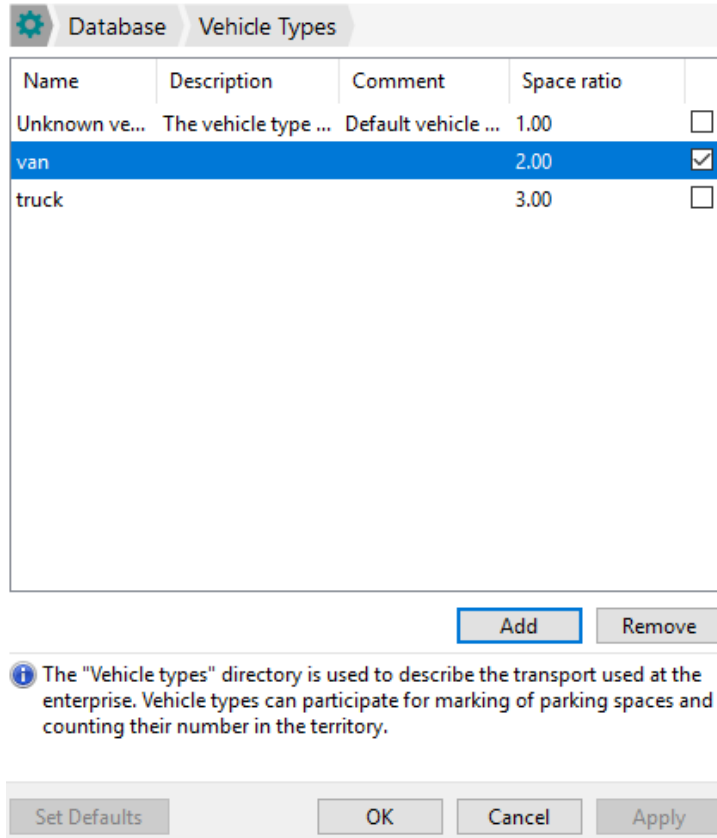


Figure 6.3.6.4

The names of vehicle types can't be duplicated. When you try to create a vehicle type with an existing name, the system displays a warning * (Figure 6.3.6.5).

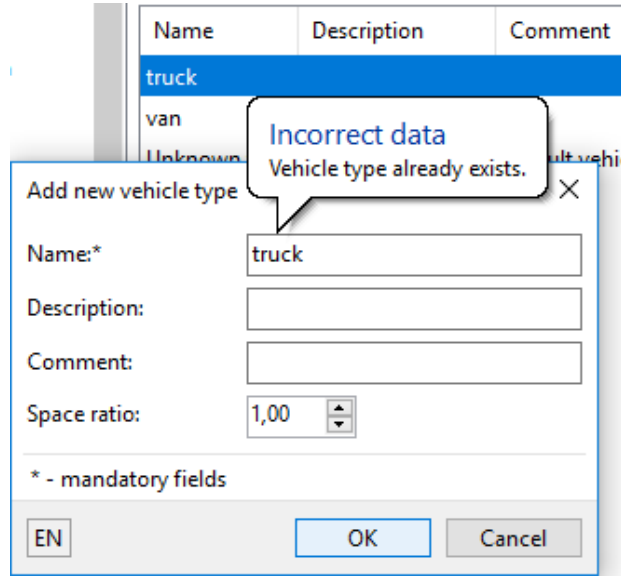


Figure 6.3.6.5

Now when adding an entry to the user list, you will have the opportunity to select vehicle type for each record separately (Figure 6.3.6.6) and for the entire list (Figure 6.3.6.7).

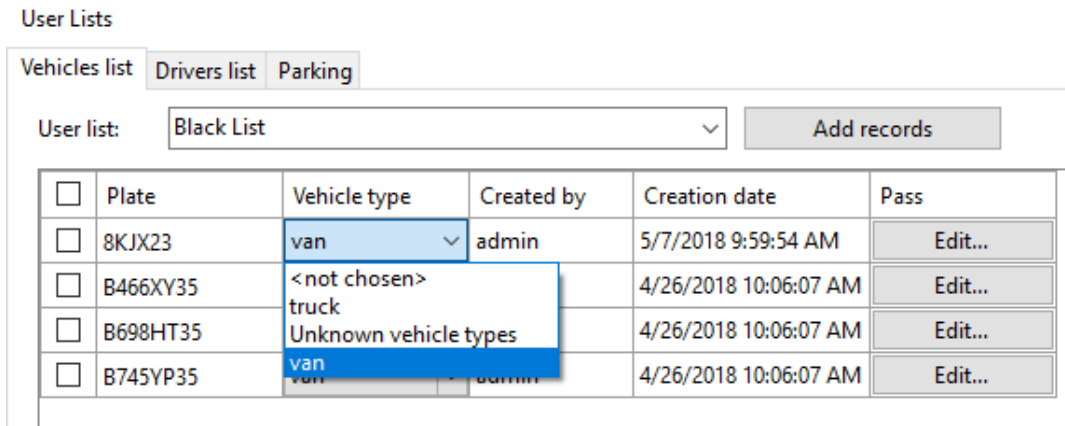


Figure 6.3.6.6

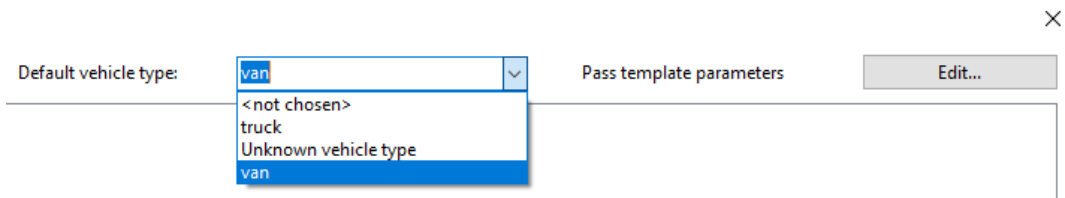


Figure 6.3.6.7

To delete the vehicle type, select the desired vehicle type, click the **Remove** button, and then click **Apply**.

You can't delete the vehicle type that the log or user list refers to (Figure 6.3.6.8), the system will restore the deleted line when trying to save the settings. First change the type of the vehicle in the lists and in the log to another vehicle type.

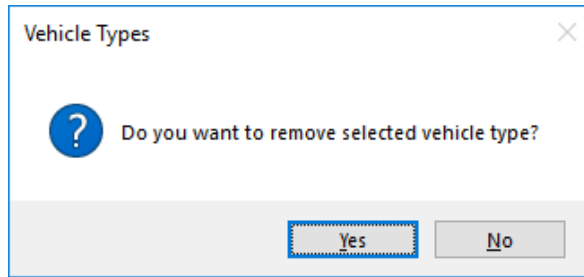


Figure 6.3.6.8

6.3.6.1. Vehicle types classifier



This functionality is experimental and available only for a 64-bit operating system.

To enable the vehicle types classifier, do the following:

1. Open the Settings menu.
2. In the Video channels section, select the required Video channel.
3. The video channel settings are located in the right part of the window. Open the Recognition section.
4. Click Set up and go to the "Vehicle types classifier (beta)".

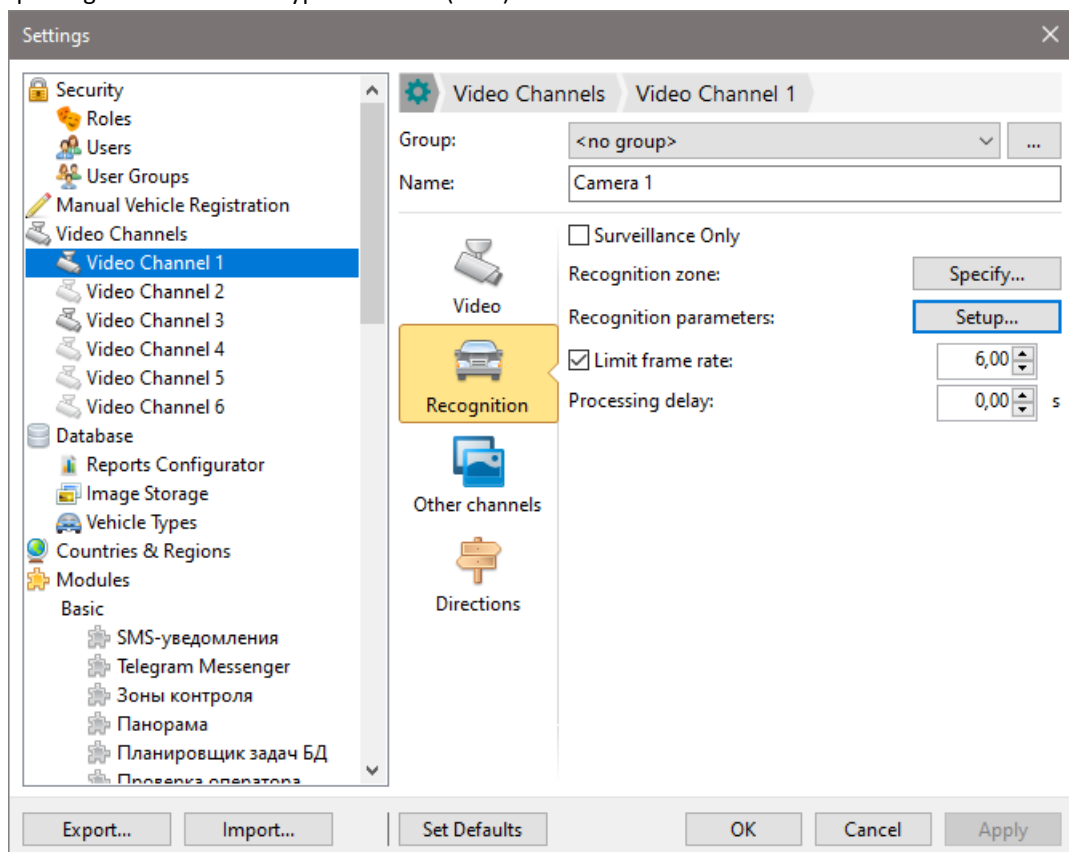


Figure 6.3.6.9

5. To enable the classifier, check the Enable box and save the settings.



Figure 6.3.6.10

With the module enabled, upon recognition of each vehicle one of the standard vehicle types will be assigned:

- Bus;
- SUV;
- Truck;
- Car;
- Minibus;
- Unknown vehicle type.

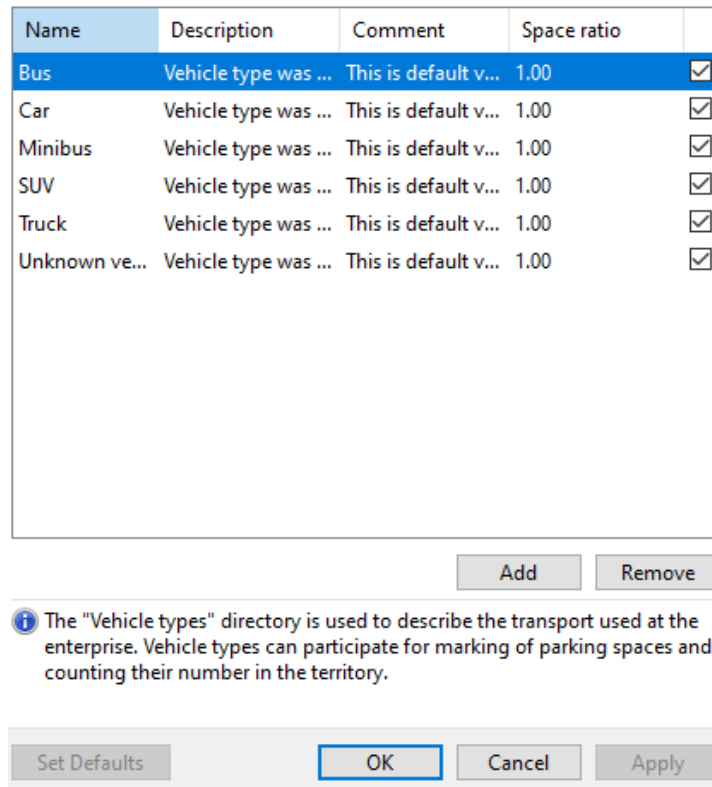


Figure 6.3.6.11

6.3.7. Territories and Configuring Parking Spaces

“Manage Territories” allows to set up free spaces accounting for different vehicle types (cars, trucks, etc.) in the parking lot.

In the top menu, go to “Database” → “Territories” (Figure 6.3.7.1).

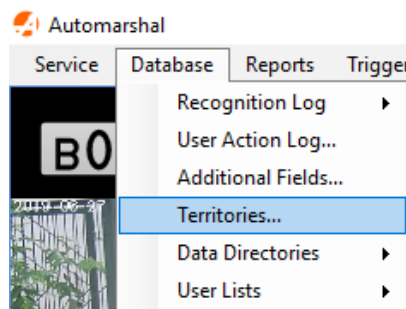


Figure 6.3.7.1

Territories

To configure the territory and allocate parking spaces, proceed as follows:

1. **Add territories:** click “Add”.

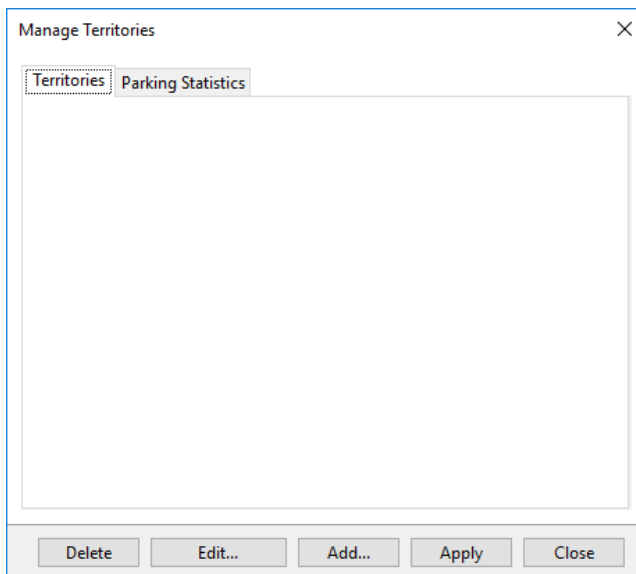


Figure 6.3.7.2

2. Set up territory settings:

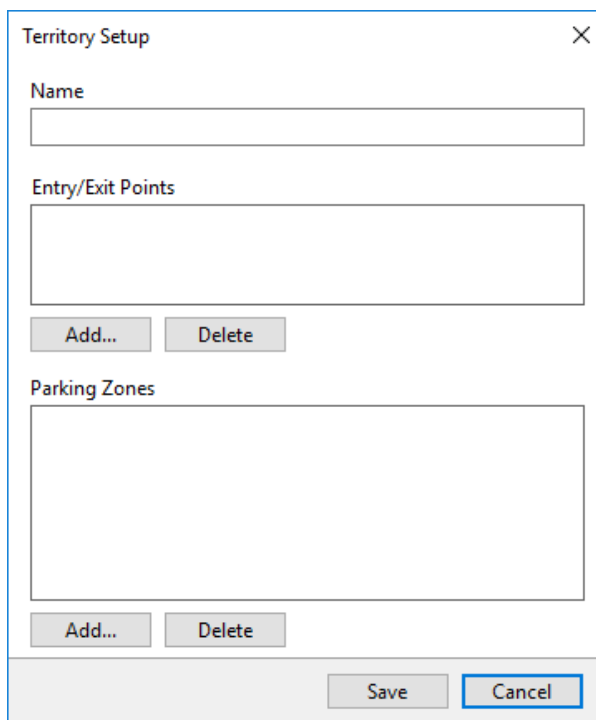


Figure 6.3.7.3

- **Name:** enter territory name.

Name field cannot be empty.

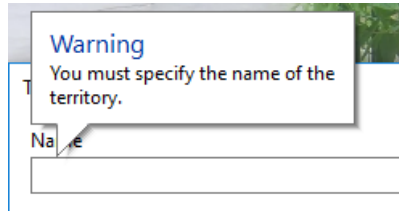


Figure 6.3.7.4

• **Entry/Exit points.**

Add an entry/exit point for the territory (video channel), that will recognize vehicle number plates. “Set up Point of Entry/Exit” window will open. Select video channel and click “Save”.

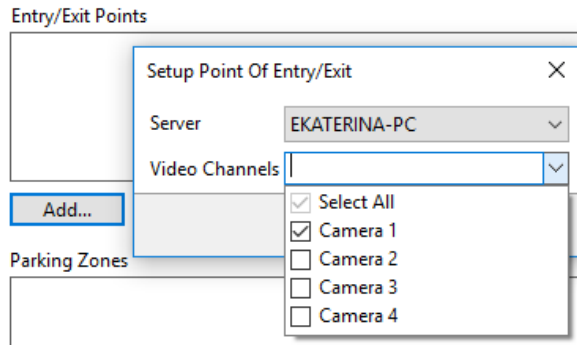


Figure 6.3.7.5

There may be more than one channels for a territory (for instance, one records entry into the territory, and the second records exit).

When adding an entry/exit point, a warning may appear (Figure 6.3.7.6), indicating that there are no channels available: it means that all video channels are activated, or no recognition has yet been made on free video channels, in this case, perform it manually. For information on video channels settings and manual recognition, refer to paragraphs 6.2 *Video Channels* and 7.4.2 *Manual Recognition* of this manual.

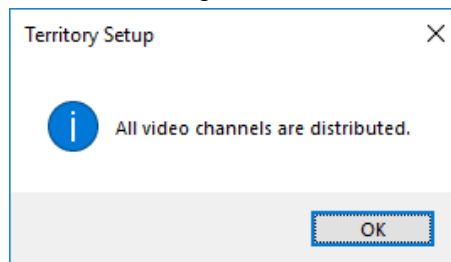


Figure 6.3.7.6

Entry/Exit point field cannot be empty.

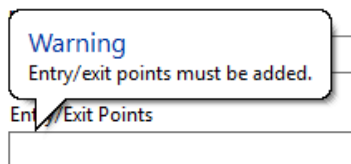


Figure 6.3.7.7

• **Parking Zones:**

Before setting up parking spaces, the “Vehicle Type” directory shall be filled in first. Go to the “Vehicle Type” section (Figure 6.3.7.8): “Service” → “Settings (F8)” → “Vehicle Types”.

To create user vehicle type, click “Add” and in the “Add New Vehicle Type” window that opens, fill in the fields required and save the settings. Move the flag to another string, if the system is necessary to determine all vehicles by default according to this setting.

Space ratio – conditional unit, which determines the size of parking space for this vehicle type.

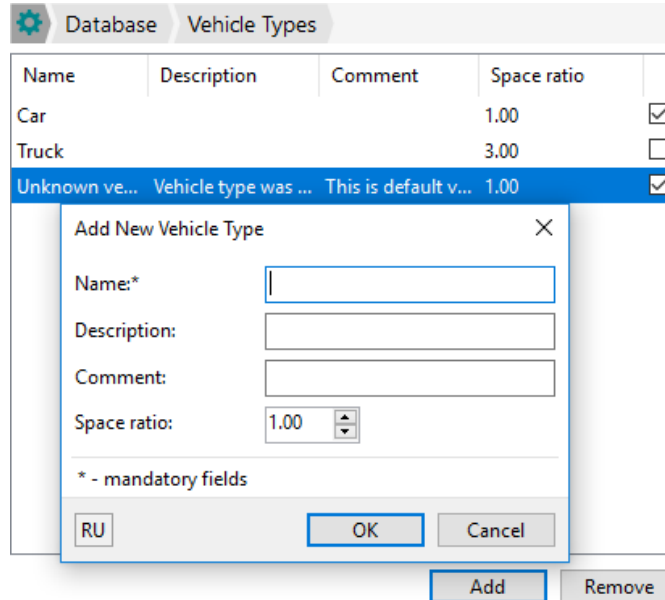


Figure 6.3.7.8

When the vehicle types are set up, they will be displayed in the “Vehicle Type” drop-down menu in the “Set up Parking Zone” window.

To set up parking zone in the territory, specify the number of spaces for the vehicle type selected and click “Save”. After saving, the parking zone set-up will be displayed in the general list, vehicle type and number of allocated spaces are displayed for each zone.

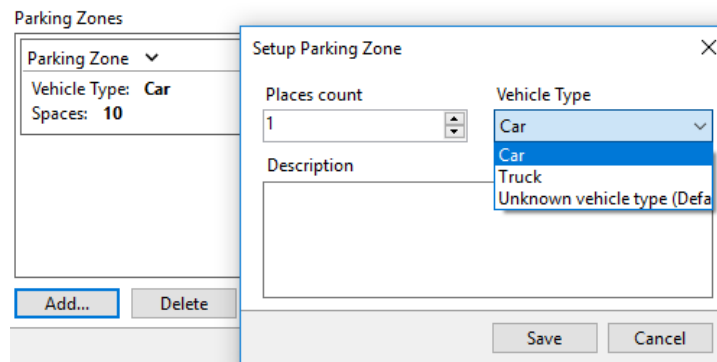


Figure 6.3.7.9

To save territory settings, click “Save”.

“Parking Zones” field cannot be empty.

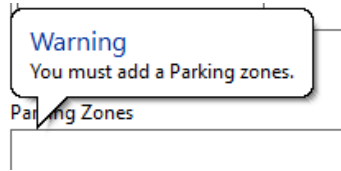


Figure 6.3.7.10

The territories set up are displayed in blocks in the “Manage Territories” window. Each block contains territory name and number of spaces allocated. Distribution of number of spaces between vehicle types is provided in the details.

To delete or edit territory settings, select the block required and click “Delete” or “Edit”.

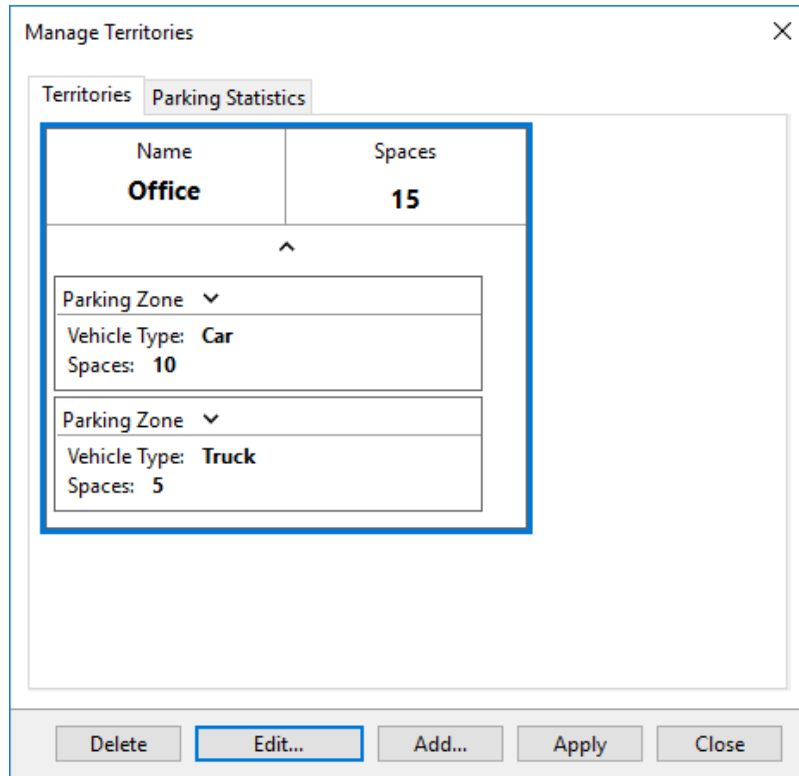


Figure 6.3.7.11

Parking spaces settings for the lists are made from the menu of the “User Lists” window.

Go to the lists editing: “Database” → “User Lists” → “Manage User Lists (F4)” or “Edit User Lists (F5)”, if they have already been created.

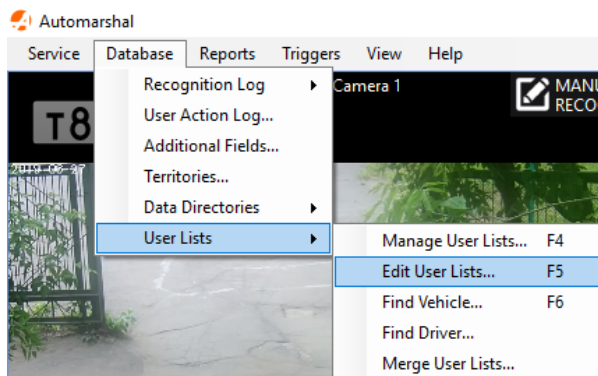


Figure 6.3.7.12

Switch to the “Parking” tab in the “User Lists” window.

To set up parking spaces, select the list and click “Add Records”. In the window that opens, select the territory, vehicle type and specify number of spaces allocated for the list.

When added, the record with parking spaces is not accessible for editing. To change data, either delete the parking space record and add the record again, or use the “Add Record” button, if it is required to increase the number of spaces.

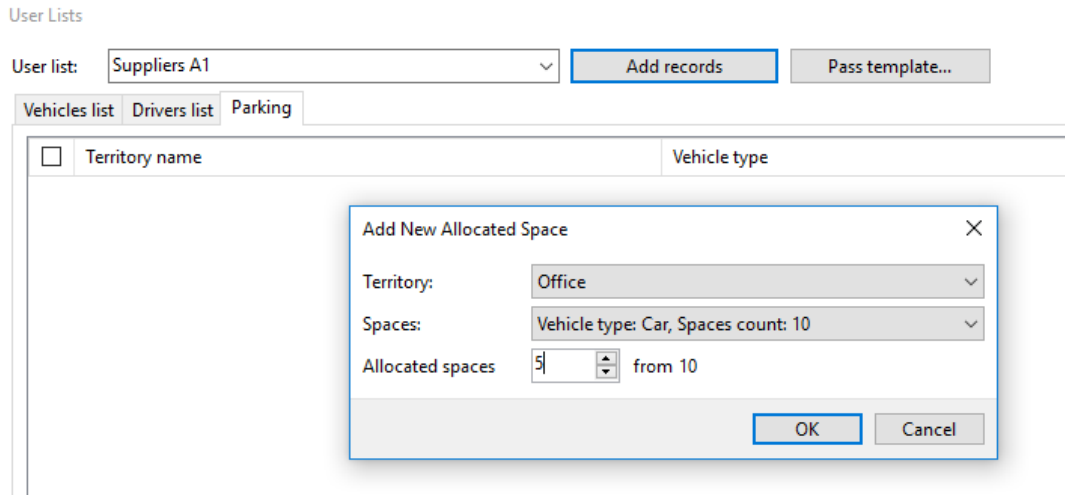


Figure 6.3.7.13

Parking Statistics

This tab contains parking statistics. Data in the table are displayed for each vehicle type in each territory.

The screenshot shows the 'Manage Territories' window with the 'Parking Statistics' tab selected. The table below displays the parking statistics for each territory and vehicle type.

Territory	Vehicle Type	User List	Allocated space	Used Space	Free Space
Office	Car	Collapse	10	0	10
		Suppliers A1	5	0	5
		<out of the user list>	5	0	5
Office	Truck	No data	5	0	5

Buttons at the bottom: Delete, Edit..., Reload, Apply, Close.

Figure 6.3.7.14

Vehicle type, information on the access to the territory, information on the number of free spaces in the territory and for the list are displayed in the “Parking” tab of the Manual Recognition window (Figure 6.3.7.15).

Plate: -

Direction: downwards (Entry)

Channel: Camera 3

Information Parking Date and Time

Vehicle type: Car

Access:

Territory: Office

Places reserved for user list:
allocated: 5, used: 0, free: 5

Places outside of lists:
allocated: 5, used: 0, free: 5

Figure 6.3.7.15

In case there are no settings of parking spaces, a dash in the “Territory” column and the “not marked” note for parking spaces will appear in the “Parking” tab of the Manual Recognition window.

Plate: -

Direction: downwards (Entry)

Channel: Camera 3

Information Parking Date and Time

Vehicle type: Car

Access:

Territory: -/-

Places reserved for user list:
not marked

Places outside of lists:
not marked

Figure 6.3.7.16

Data on parking spaces are displayed only if the “Entry” direction is selected. When selecting “Exit” or “Direction is not defined” directions, a dash will appear in the columns with information on the spaces (Figure 6.3.7.17).

Plate: -

Direction: upwards (Exit)

Channel: Camera 3

Information Parking Date and Time

Vehicle type: Car

Access:

Territory: -/-

Places reserved for user list:
 -/-

Places outside of lists:
 -/-

Figure 6.3.7.17

Example (Figure 6.3.7.18) shows the situation, when the vehicles from the list have taken more spaces than the number of spaces allocated for the list. If there are no additional settings for access to the territory, the system skips the vehicle during automatic check, as there are parking spaces available on the whole.

Negative values indicate the number of vehicles, that have driven into the territory in excess of the allocated spaces.

Plate:

Direction:

Channel:

Information **Parking** Date and Time

Vehicle type:

Access:

Territory: Office

Places reserved for user list:
allocated: 5, used: 10, free: -5

Places outside of lists:
allocated: 5, used: -10, free: 15

Figure 6.3.7.18

If there are no parking spaces for the vehicle from the list, then when trying to skip such vehicle to the territory, a window will open that requires the action confirmation (Figure 6.3.7.19): “Yes” – skip the vehicle; “No” – the system will not let the vehicle enter the territory; “Cancel” – returns to editing the items of manual recognition.

Information **Parking** Date and Time

Vehicle type:

Access:

Territory: Office

Places reserved for user list:
allocated: 5, used: 5, free: 0

Places outside of lists:
allocated: 5, used: 1, free: 4

Manual Recognition

No parking spaces allocated for selected user list available.
 Allow to pass?

Figure 6.3.7.19

Trigger conditions: Parking Spaces Check

For details on trigger setup, go to the “Triggers” section of the Manual.

Triggers for the “Parking” module are not required to be set up, but they give an opportunity to select conditions for access to the territory.

In “Trigger Event” settings select “Vehicle Detected”, in “Trigger Conditions” select “Parking Spaces Check”. The “Actions Performed” field is not mandatory for filling in.

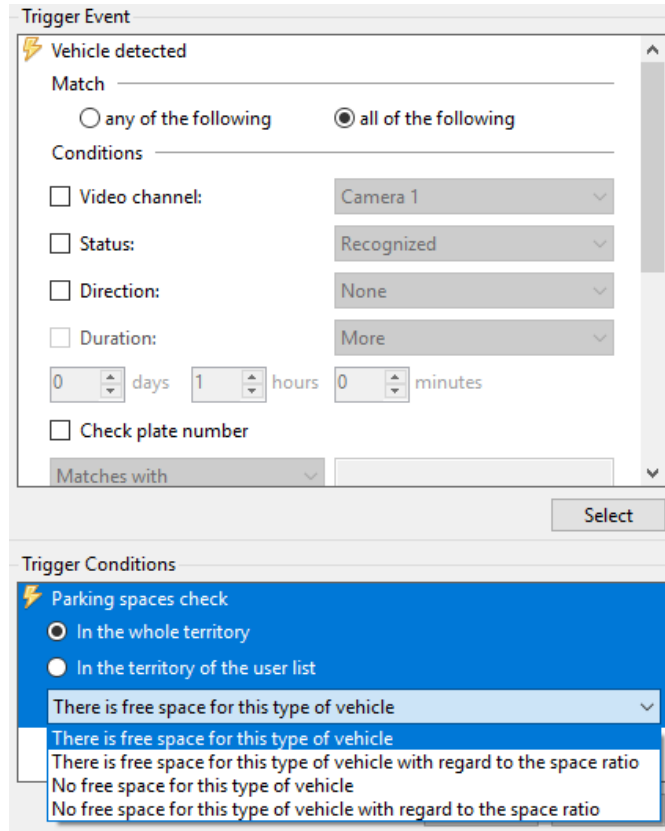


Figure 6.3.7.20

Parking spaces check may run either in the whole territory, or in the territory for the list that includes the vehicle recognized.

Options for parking spaces check in the territory of the user list:

For vehicle type:

- There is free space for this type of vehicle;
- No free space for this type of vehicle;

The check is made strictly by the number of parking spaces allocated for specific types of vehicles. It means that if two parking spaces are allocated for a truck (cargo transport vehicle), then only two trucks are permitted to enter the parking lot, even when some trucks more can be parked there.

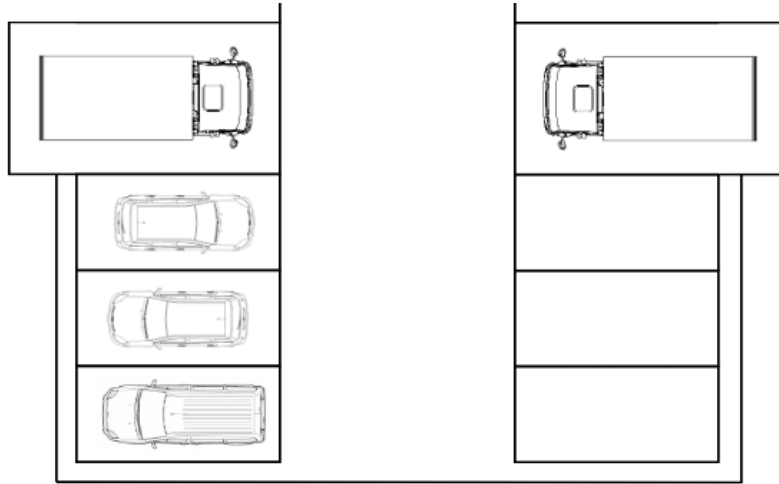


Figure 6.3.7.21

For vehicle type with regard to the space ratio:

- There is free space for this type of vehicle with regard to the space ratio;
- No free space for this type of vehicle with regard to the space ratio.

Check is made by the number of parking spaces with regard to the space ratio. For instance, two types of vehicle are set up: trucks with space ration equal to two, and cars with space ratio equal to one. Four parking spaces are allocated for trucks. In terms of space ration, four trucks or four cars are permitted to be parked there. One space with larger ration is not allowed to be taken by several vehicles with smaller ratio, as well as a vehicle with larger ratio is not allowed to take several spaces with smaller ratio.

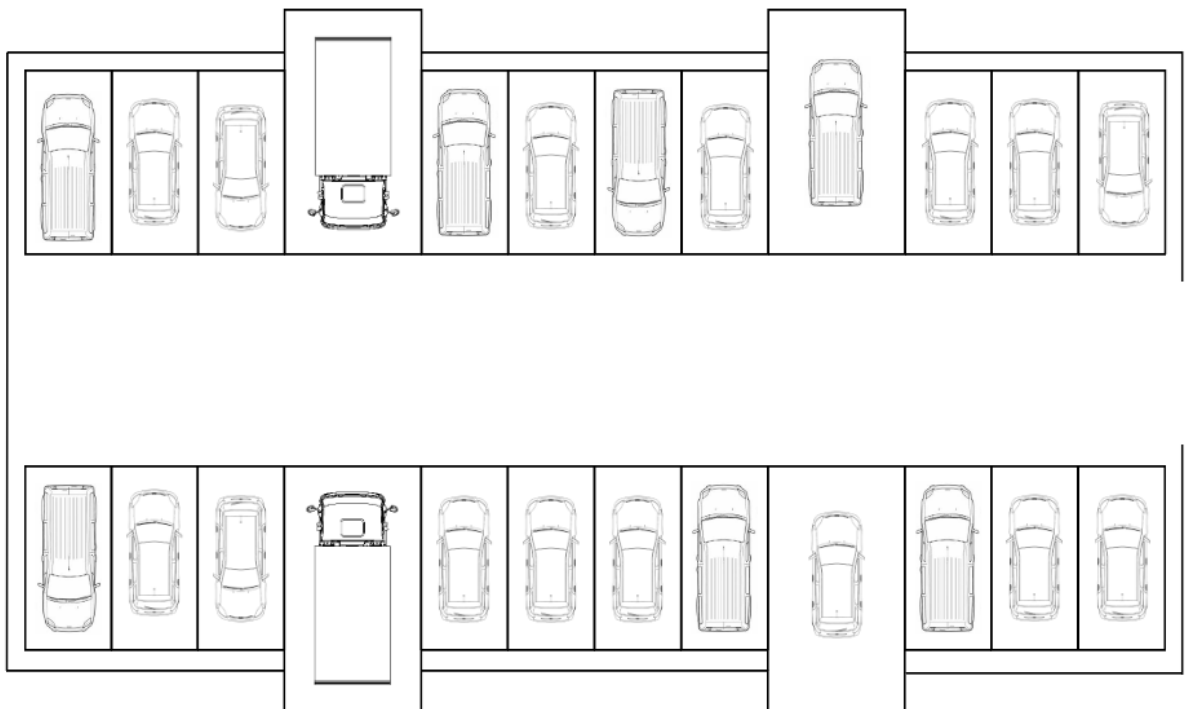


Figure 6.3.7.22

If there are no free spaces in the territory for this vehicle type, a warning window will open in the manual recognition after clicking "OK" (Figure 6.3.7.23), informing that there are no free spaces. When clicking "Yes", the system will display

“Direction is not determined” in the log, the vehicle has not been passed to the territory. In automatic recognition mode, “Direction is not determined” will be immediately displayed in the log.

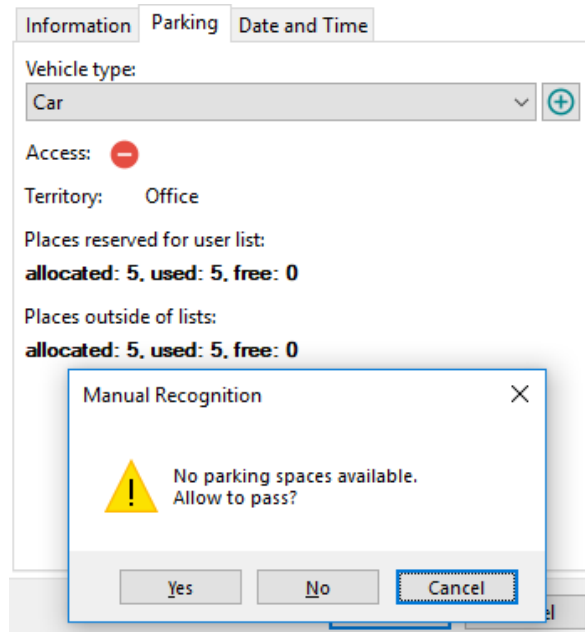


Figure 6.3.7.23

6.4. Countries and Regions



- Number plates acceptable for recognition purposes are determined by the license.

To include the template, go to section **Settings → Countries and Regions and Templates**, tick opposite the required country, and press **Apply** button.

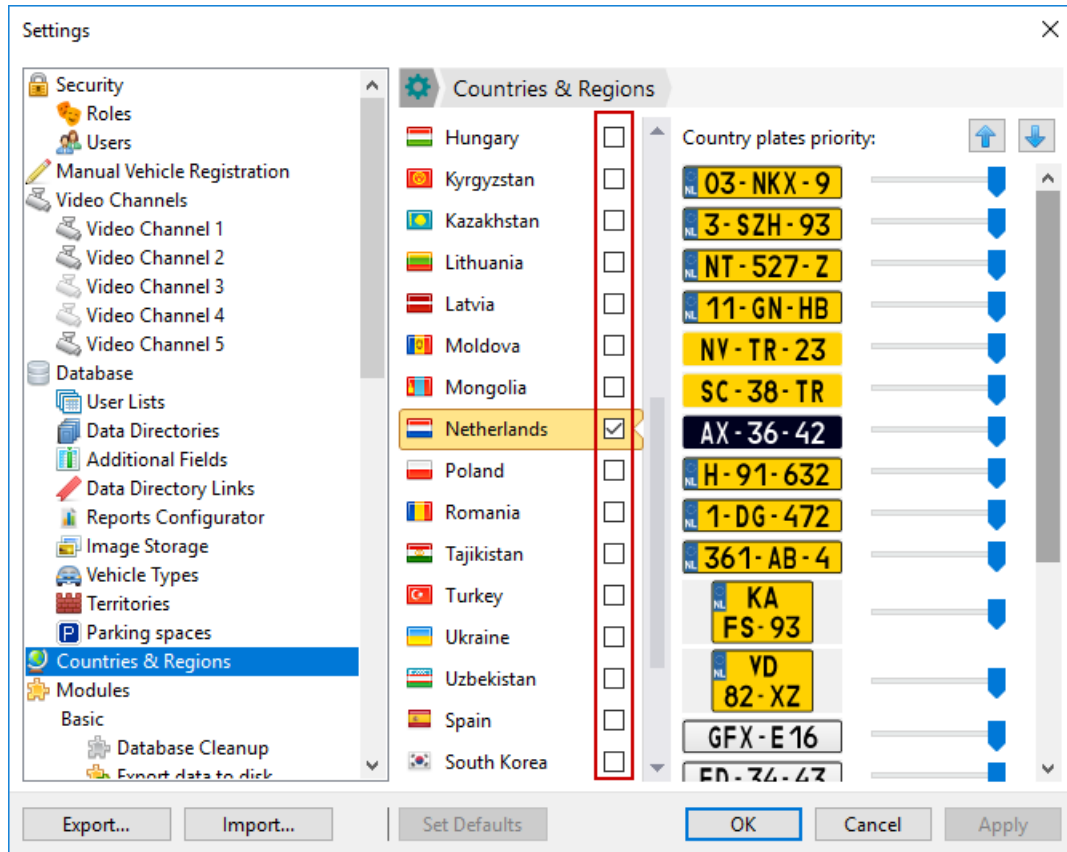




Figure 6.4.1


Country Priority

The higher the country priority (top position in the list), the faster is the recognition of number plate of such country.

Countries by priority may be moved by scrolling up/down buttons  .

To do that, click on a country, priority of which shall be changed, and change its priority position by arrows buttons. The often number plates of given country are met, the higher is its priority position of such country in the list.

Setting priority of Vehicle Number Plate Template

Setting of Priority for processing of the number plates by countries of recognition is made by scroll boxes .

The higher the priority, the faster number plates of such country are processed, i.e. recognition speed of given number plate would be higher.

If given number plate is found rarely, set the minimum value.

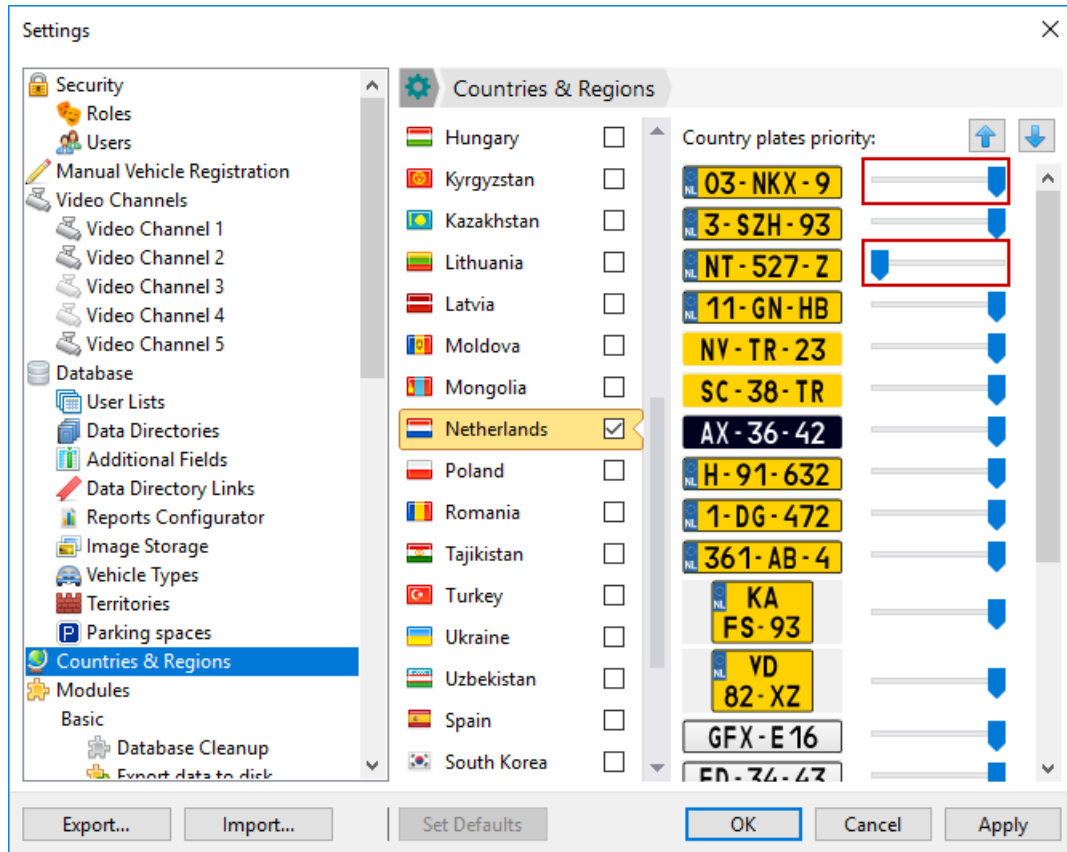


Figure 6.4.2

6.5. Modules

Modules are divided into **Basic**, **Additional** and **Integration**.

Basic Modules are free. They include: **SMS-notifications**, **Text File**, **Export HTTP**, **Export Data to Disks**.

Additional Modules- paid. They include **Device Management** module.

Integration – free modules for integration with external SW. Integration modules include: **Autogard**, **Car Wash** and **ACS Gate**.

By pressing **Modules** section, information on available modules specified in the license would appear in the right part of window (name, version and status).

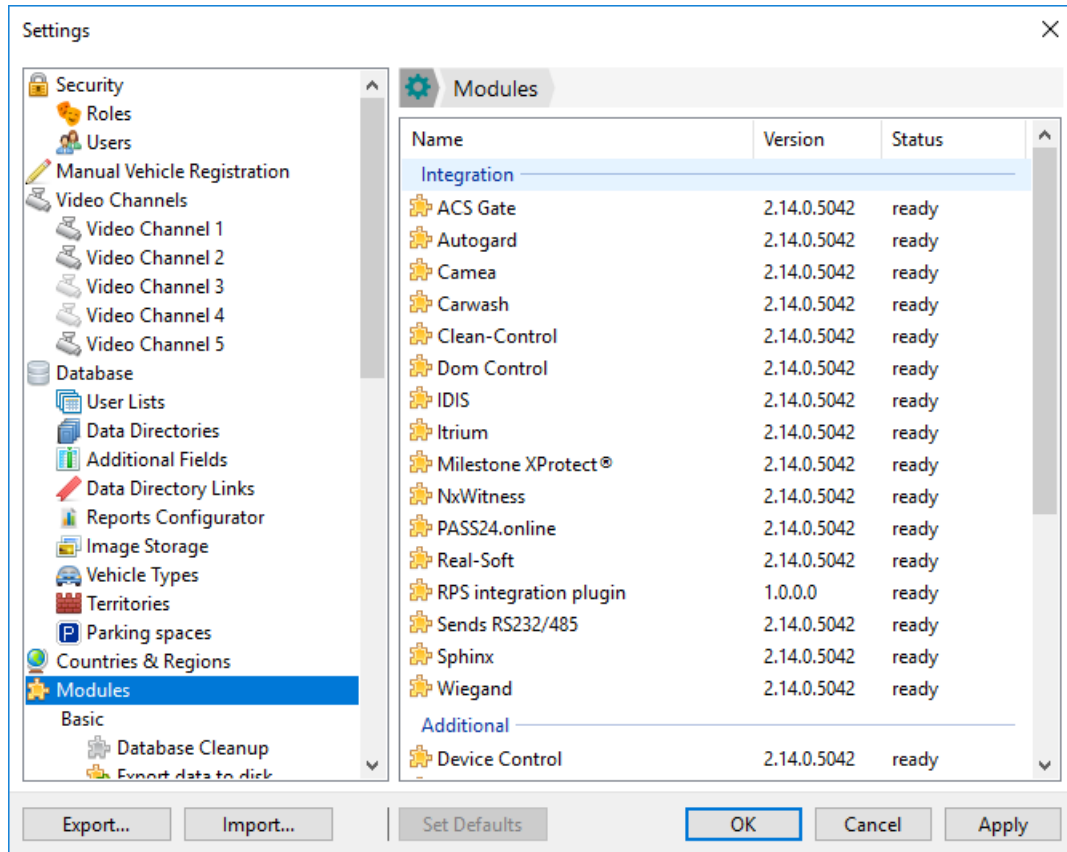


Figure 6.5.1

Name: module name.

Version: version SW Automarshat 2.

Status: module status (ready or not ready for use).

To easily move to module setting, double click by the left mouse button on the name of required module with “ready” status.

6.5.1. SMS-Notifications

Module purpose: Sending SMS to one or several phone numbers.

Module is currently supported in Russia only.

Enabling module

To enable the module, follow instructions below:

1. Select Service and then Settings in drop-down menu;
2. In a window opened, select Modules → SMS Notifications;
3. In the right pane check Enable and click Apply.

An icon next to the module name in the left pane will turn yellow.

Disabled modules are not highlighted.

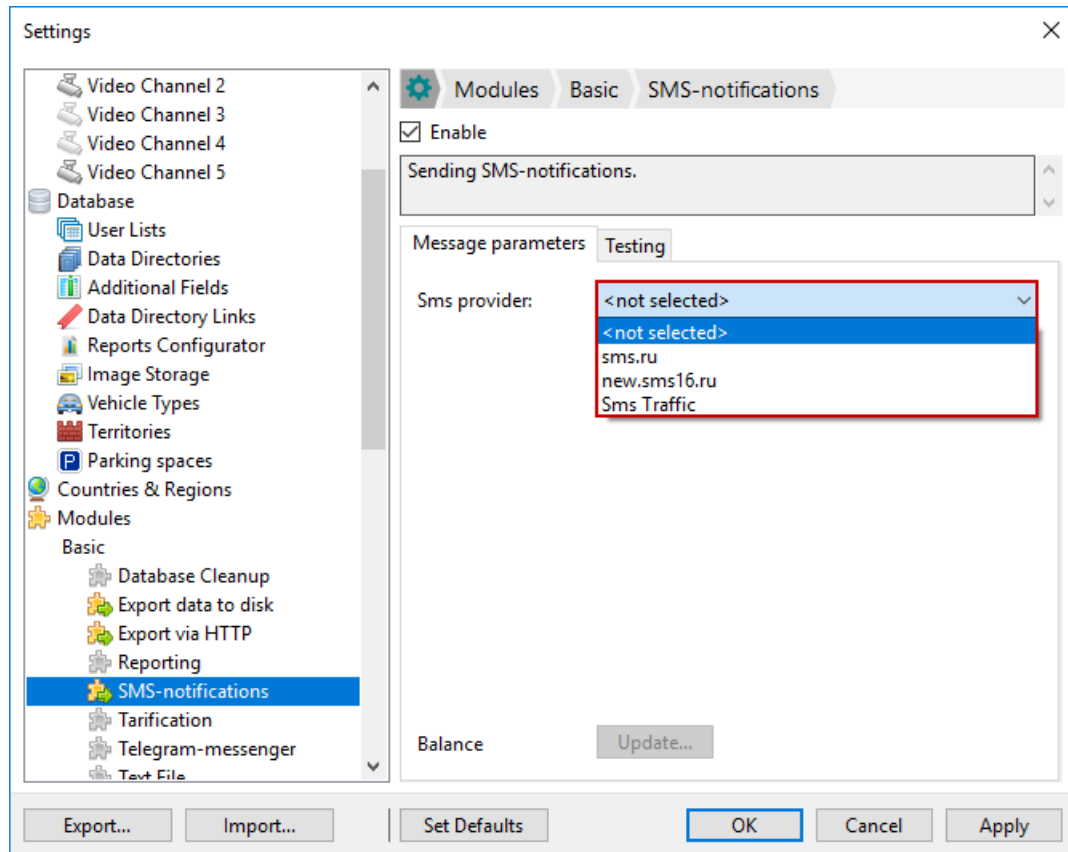


Figure 6.5.1.1



In order to make this module send messages, you need to specify the conditions for sending notifications. This can be done with triggers (see clause 6.7).

Configuring SMS notification module

Message parameters

First of all, in order to configure SMS plug-in, you need to select the bulk SMS service in the Message Parameters tab.

Bulk SMS service is a service/server that will process the queries for sending SMS notification.

Then you need to enter the authorization data on the selected server. Currently, there are 3 services available: sms.ru; new.sms16.ru; sms traffic

Configuring sms.ru service

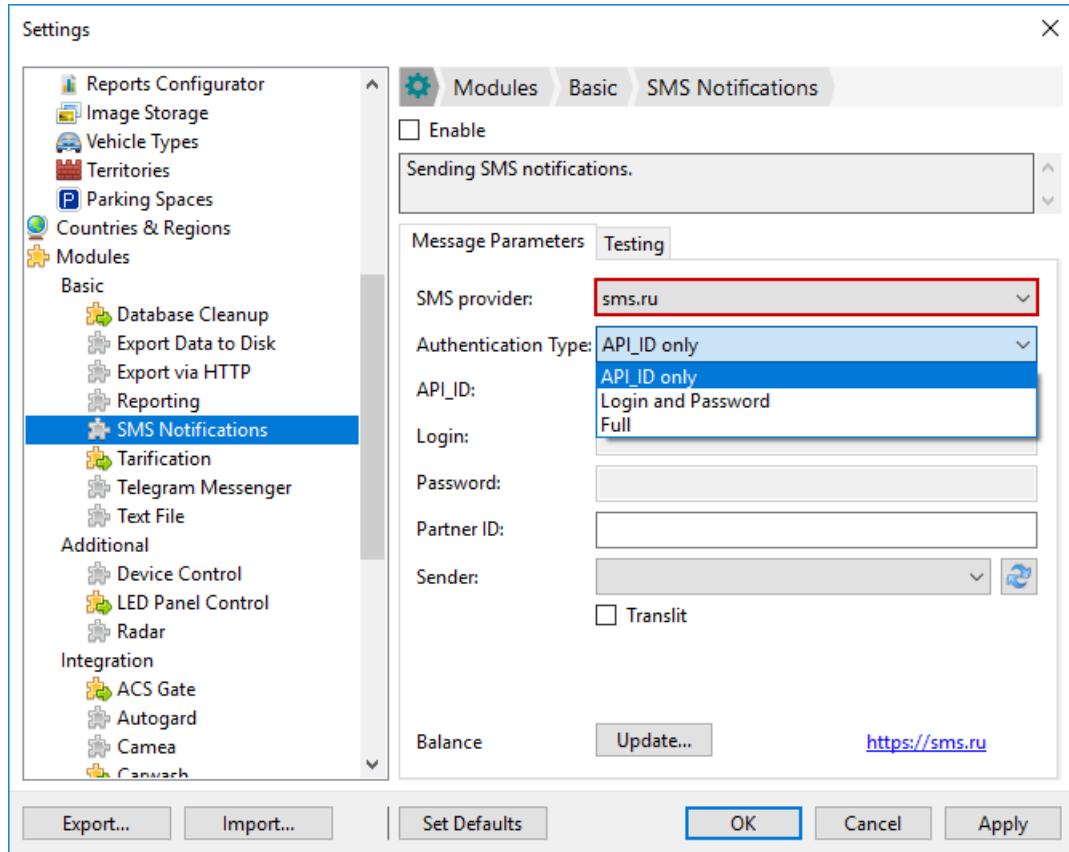


Figure 6.5.1.2

- **Authentication Type:** Simply, Enhanced, API Enhanced.
API_ID only: requires to complete API field.
Login and Password: requires to enter Login and Password.
Full: requires to complete API, Login and Password fields.
- **API_ID**
 You need to enter data (api_id) provided upon registration on sms.ru website.
- **Login and Password**
 Login and Password you entered on registration on sms.ru website.
- **Partner ID**
 Partner ID is provided when making a contract with sms.ru website.
- **Translit**
 If this option is enabled, the message text will be transliterated from Cyrillic into Latin alphabet.
- **Use SSL**
 Enabling this option ensures securer messaging.
- **Test mode**

Sending free messages (this option is for programmers).

- **Balance**

This option is to check you phone balance.

Configuring new.sms16.ru service

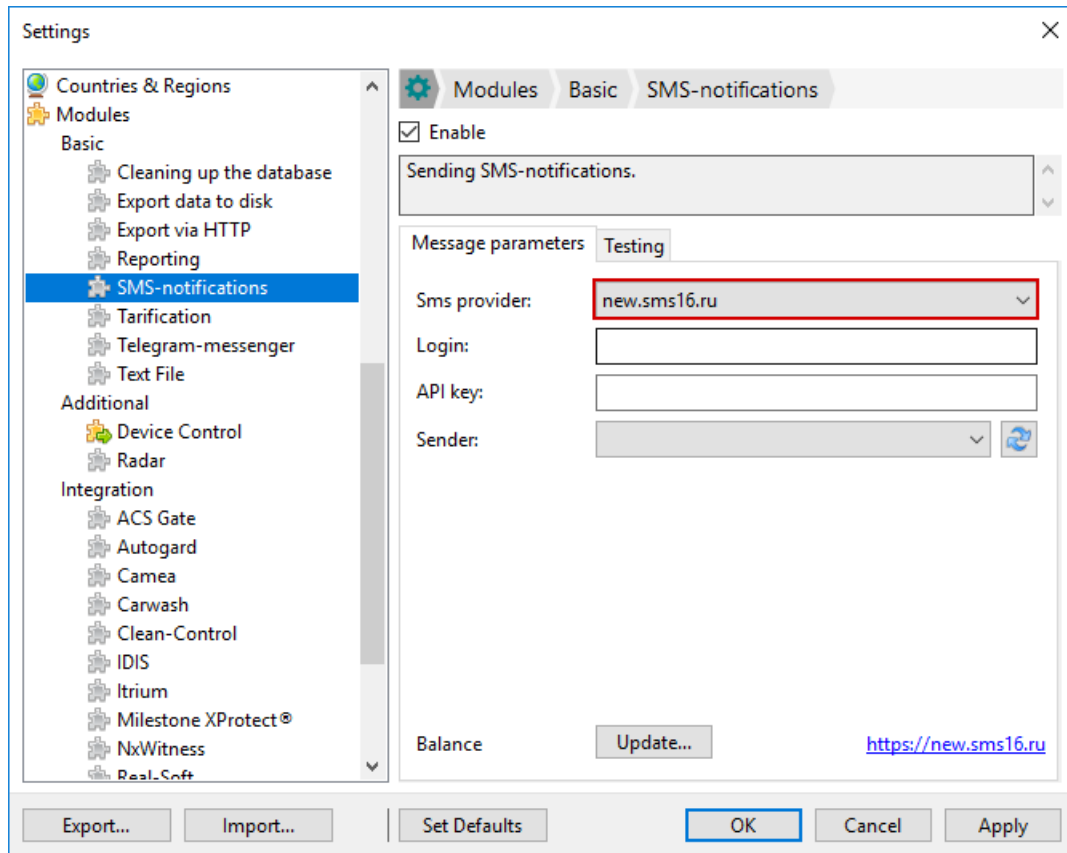


Figure 6.5.1.3

- **Login.**

Login you entered on registration on new.sms16.ru website

- **API key.**

Here you need to enter data (api_id) provided upon registration on new.sms16.ru website.

- **Sender.**

This field will display the phone number given on registration on new.sms16.ru website

If a phone number is not displayed, click the refresh button next to the field.

If a phone number is not displayed after refreshing, then registration data is incorrect.

Configuring Sms Traffic service

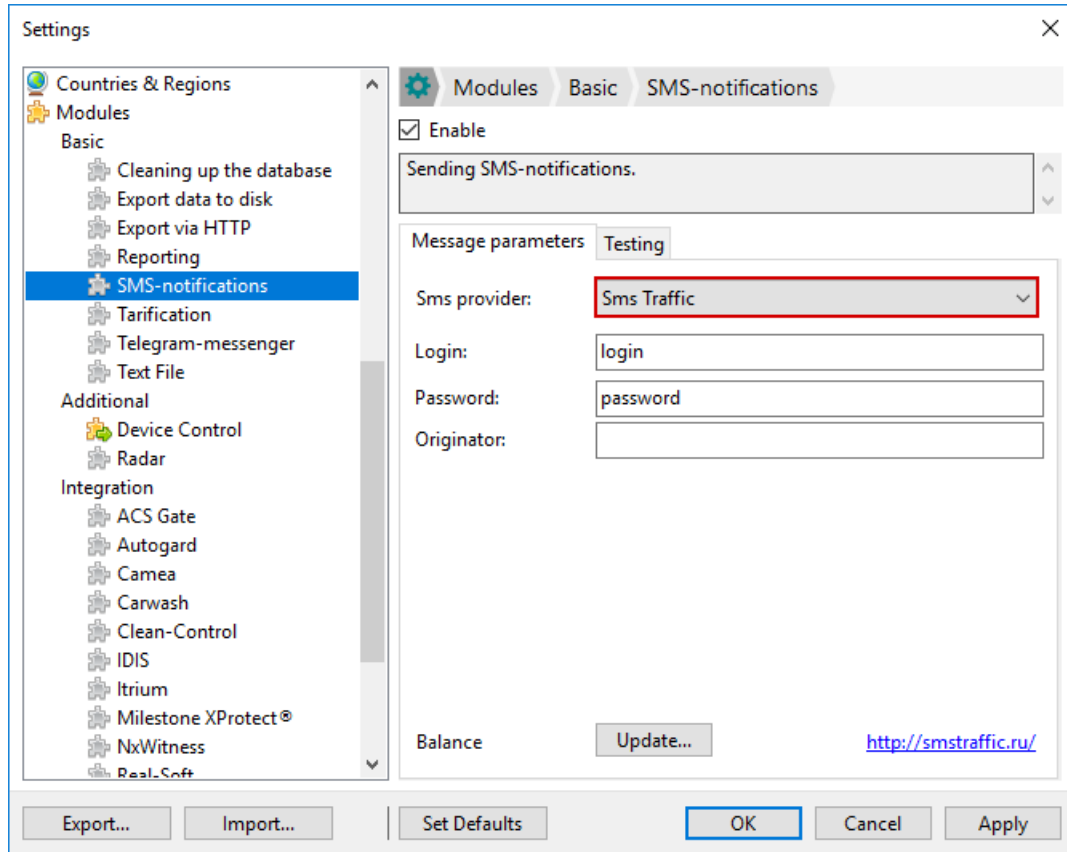


Figure 6.5.1.4

- **Login**

Login you entered on registration on Sms Traffic website

- **Password**

Password you entered on registration on Sms Traffic website

- **Sender**

Phone number of SMS notification sender.

Testing

Sample message – an SMS text that will be sent. Cannot be changed. Click Test to check module settings.

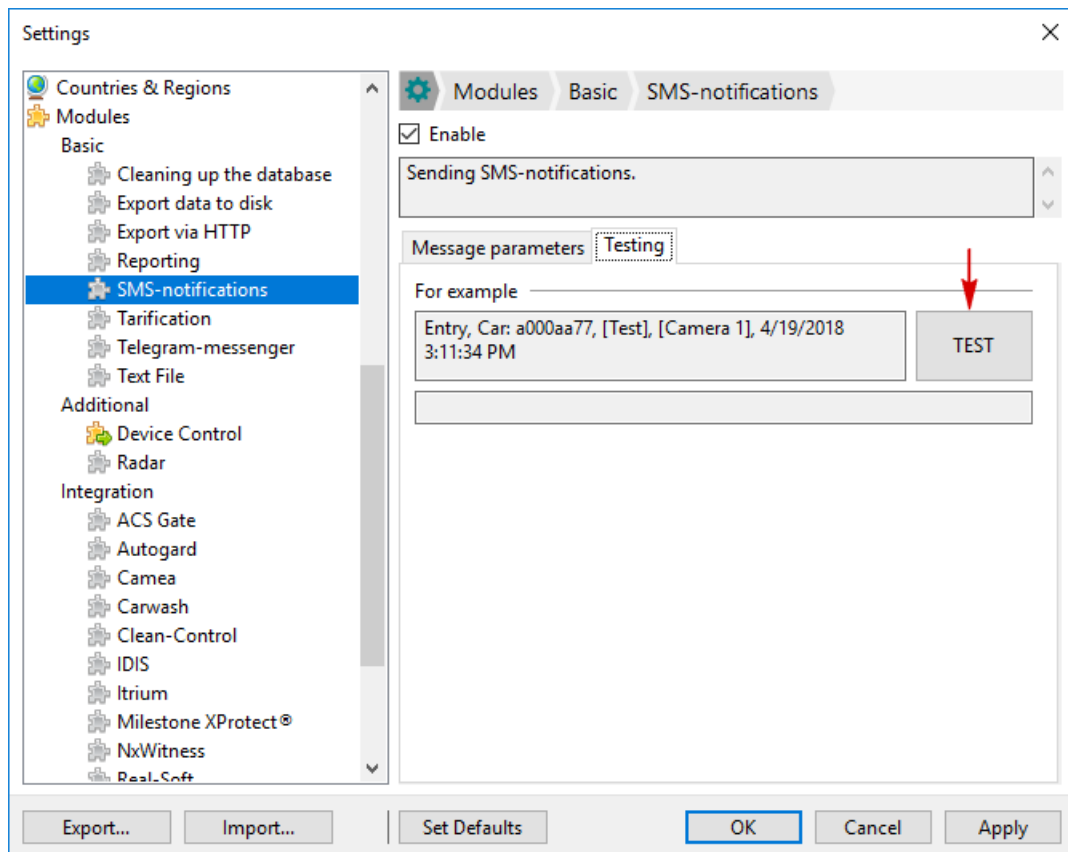


Figure 6.5.1.5

6.5.2. Telegram notifications

Module purpose: sending Telegram messages to one or several devices through telegram bot.

Enabling module

To enable the module, follow instructions below:

1. Select Settins in Service drop-down menu;
2. In a window opened, select Telegram Messenger module;
3. In the right pane check Enable and click Apply.

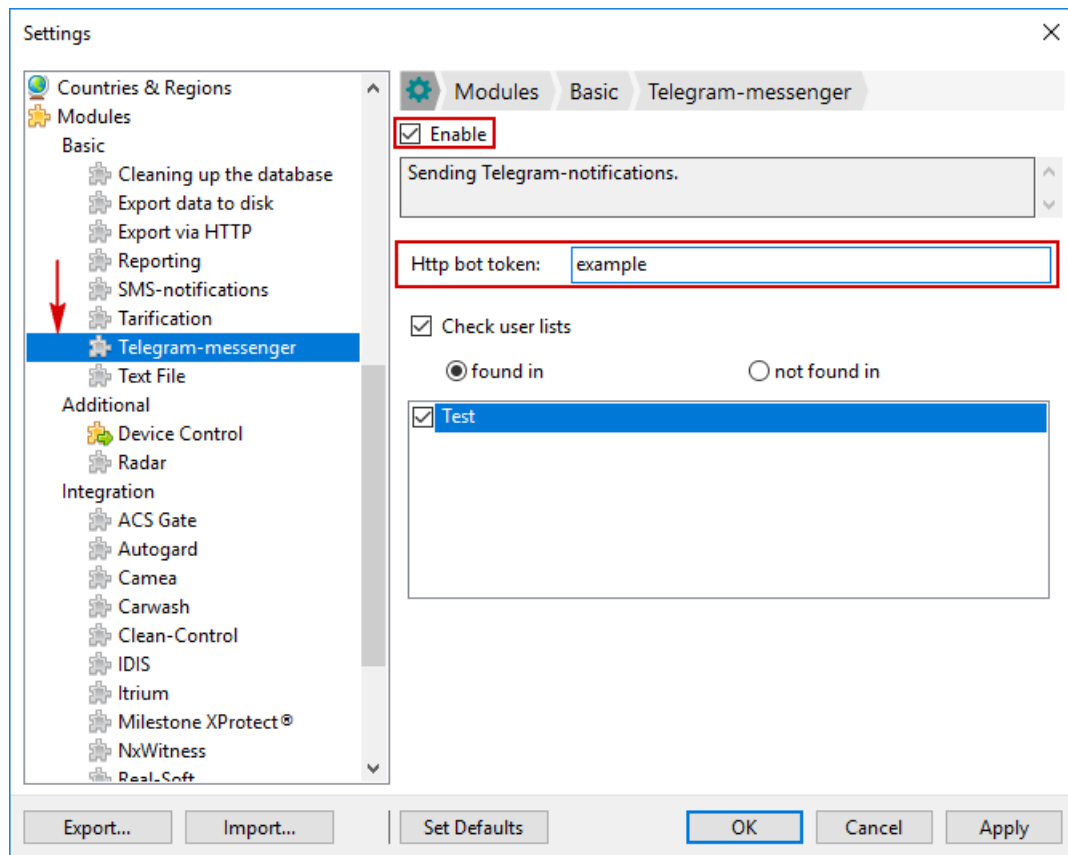


Figure 6.5.2.1

An icon next to the module name in the left pane will turn yellow.

Disabled modules are not highlighted.

Configuring module

Create Telegram bot:

- You need to install Telegram application on a phone or PC.
- Add a bot named BotFather to your contact list
- Launch the bot “communication” procedure by pressing Start. Now you will see the list of commands as shown on a screenshot.
- To create a new bot, run the /newbot command and follow the instructions.

Note that bot username must always contain bot. in the end. For example, DjangoBot or Django_bot.

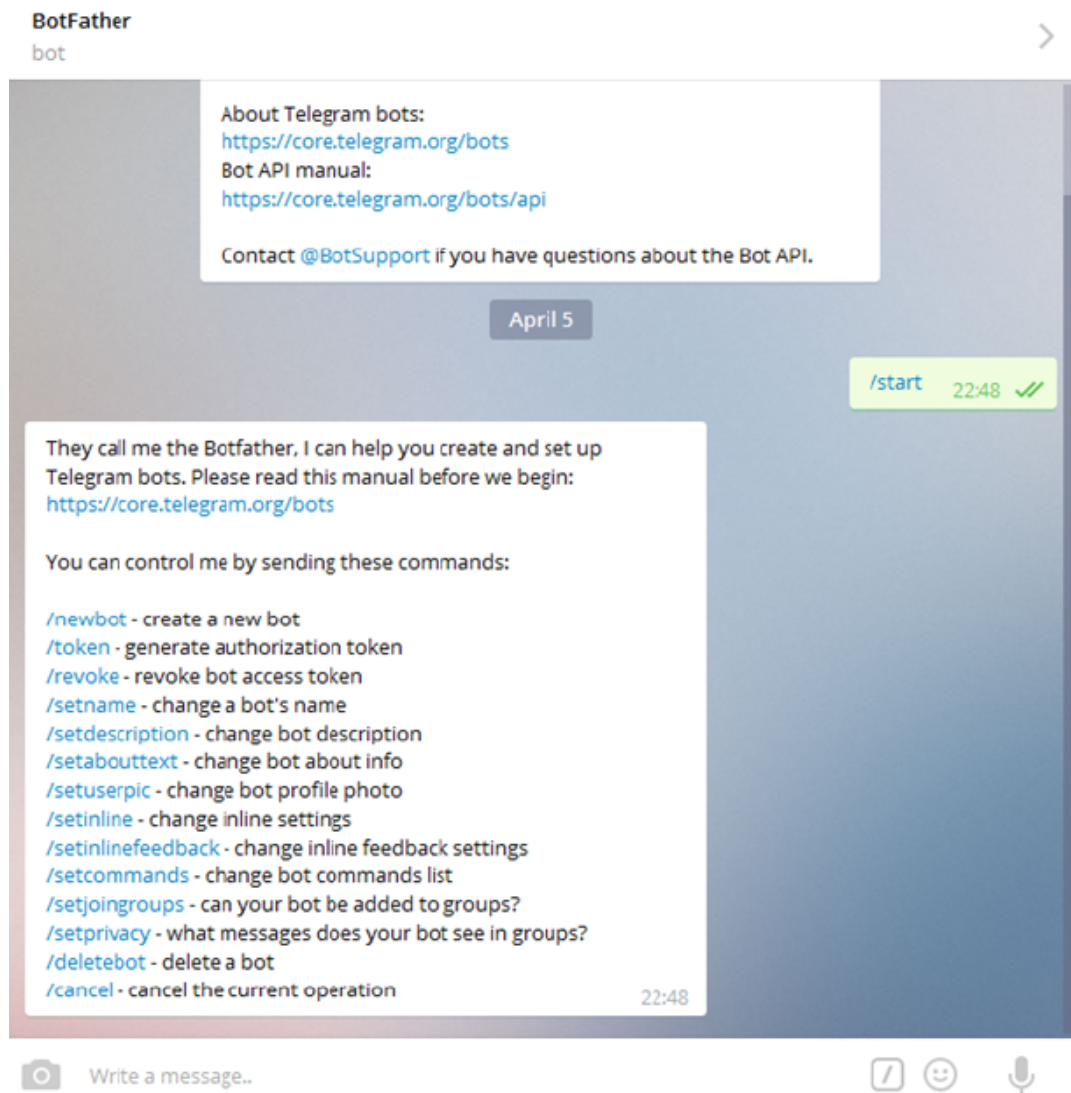


Figure 6.5.2.2

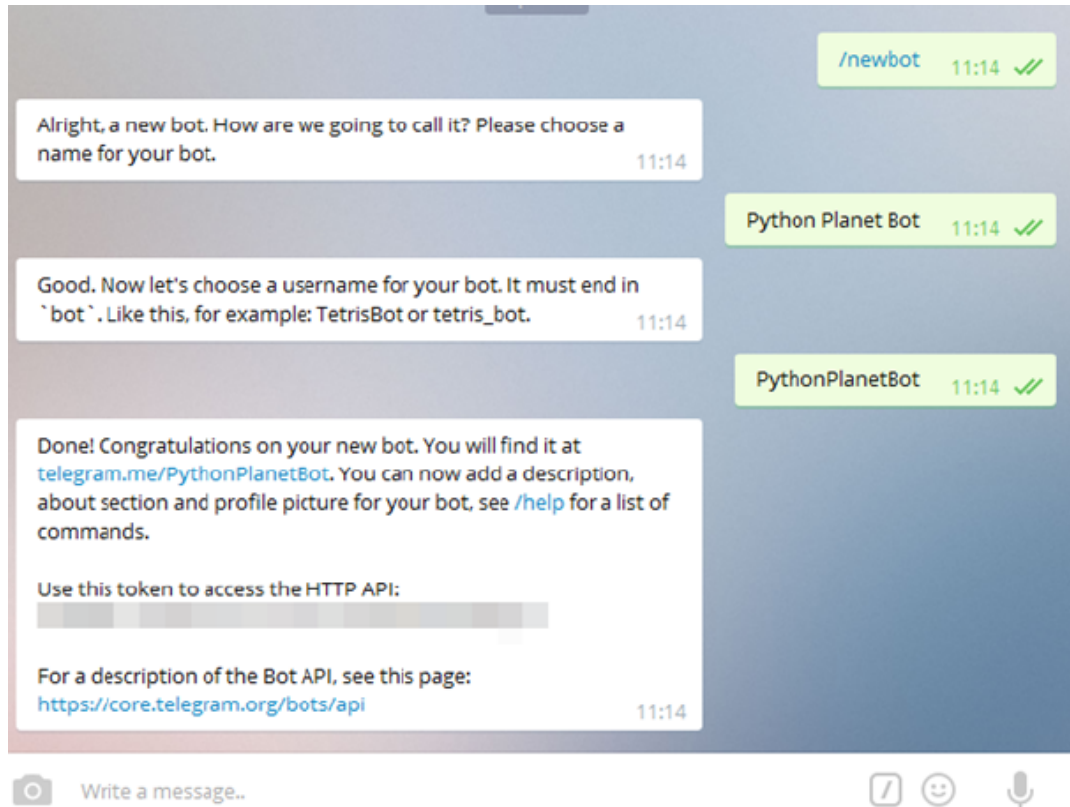


Figure 6.5.2.3

Once the bot is created, look at the following text:

Use this token to access the HTTP API:

Which is followed by so-called token that must be copied to a field.

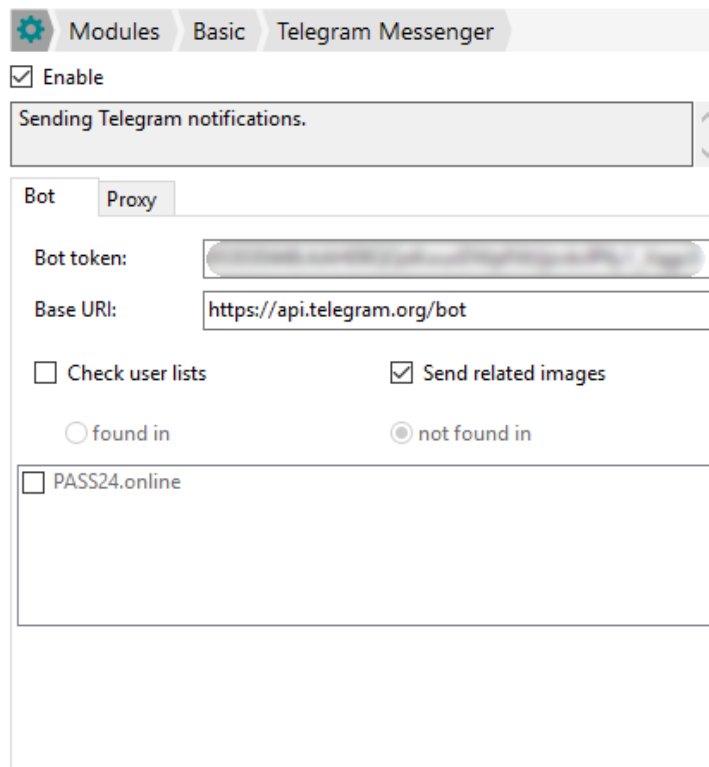


Figure 6.5.2.4

Configure your bot:

- In Telegram, start dialog with BotFather and enter /mybots
- Select a name for your bot (the name starts with @)
- Bot Settings - Allow Groups? – Turn groups on – back to settings
- Group Privacy – Turn on
- Back to Bot – Back to Bots list
- Go to your bot dialogue and run the bot. Send the / help command to view available commands. To receive messages, subscribe to the bot.

List of standard available commands:

/ subscribe - subscribe to the bot;

/ unsubscribe - unsubscribe from the bot.

Now, when a license plate is recognized, Automarshal will send you a message.

Automarshal sends the following information in a message: information on the vehicle movement direction, vehicle number plate, information on the list, name of the camera, which the recognition was made from, date, time and photo from recognition (Figure 6.5.2.5).

Use the “Check user lists” option, if the messages about definite vehicles shall be sent.

For example, notification about all vehicles, that are not in the lists, shall be made. To do this, select "not found in ..." and check the boxes for all lists, so telegram notifications will only be sent concerning those vehicles, that are not in any of the lists marked.

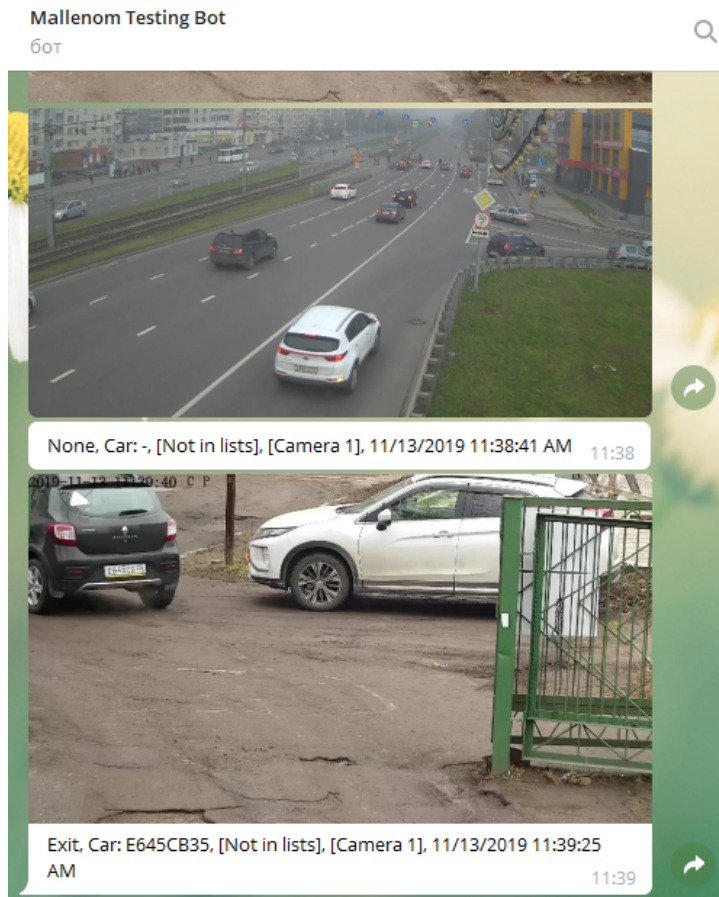


Figure 6.5.2.5

The “Send related images” option will allow to send images from the cameras of the same group in one message (Figure 6.5.2.6).

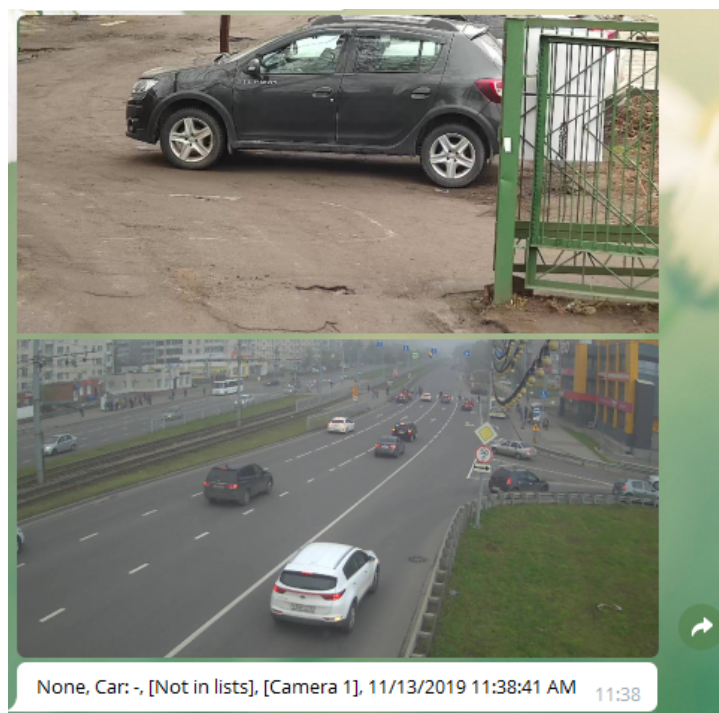


Figure 6.5.2.6

The proxy settings in the telegram module are available in the “Proxies” tab (Figure 6.5.2.7).

Only the SOCKS5 proxy type is available. Select “Use proxies” checkbox and fill in the fields: address, port and login / password pair, if they are required for connection.

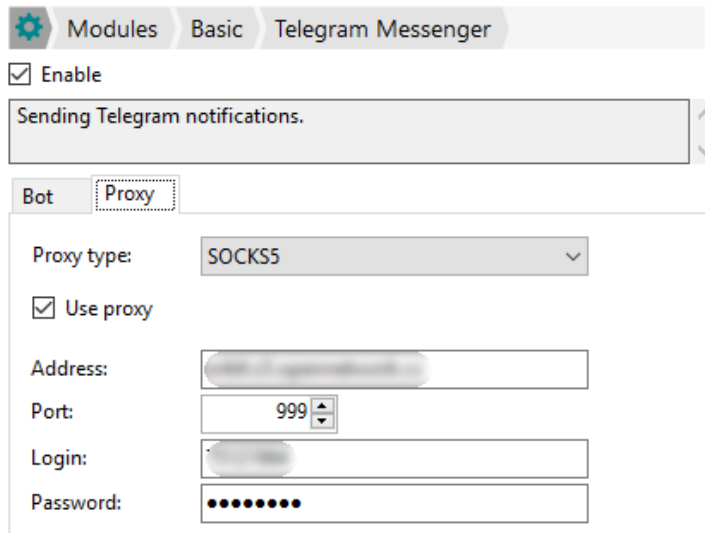


Figure 6.5.2.7

6.5.3. Reporting

Go to Settings menu, Reporting section. By default, this section is empty and mailing is disabled. To enable mailing check Enable. To configure, click Add.

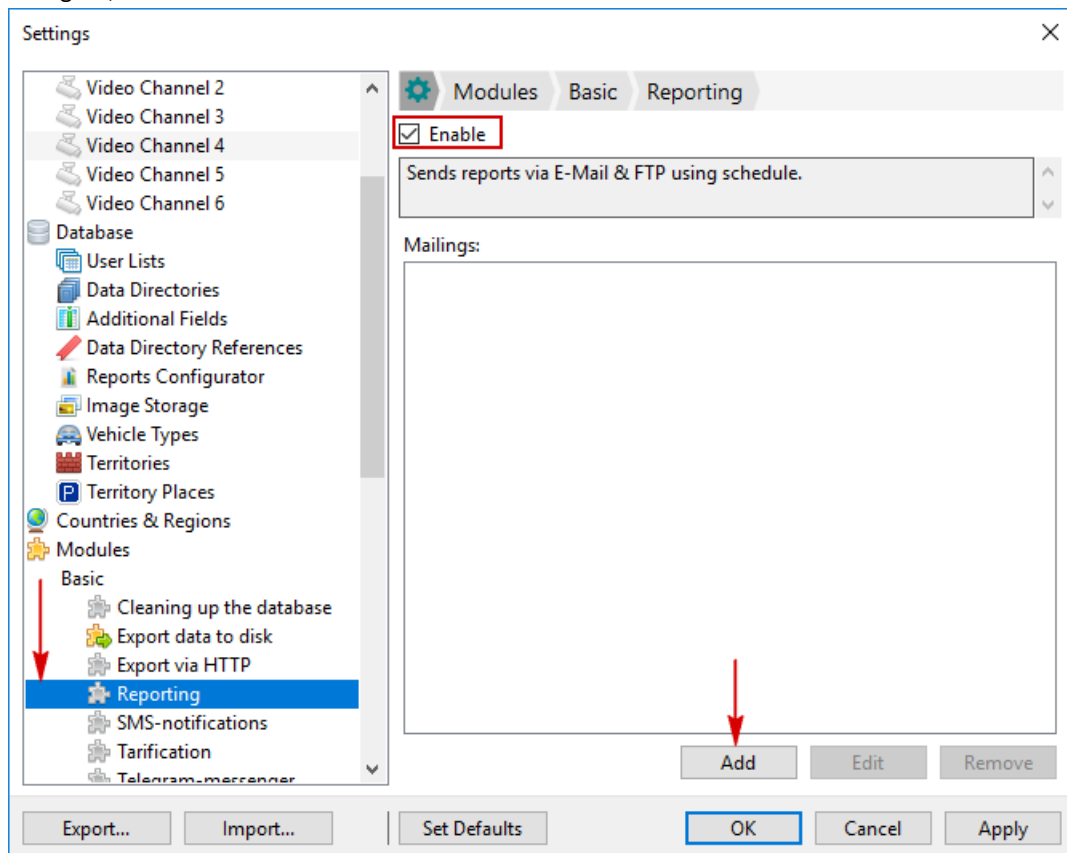


Figure 6.5.3.1

A Change Mailing window will open (figure 6.5.3.2). By default, the name of each new mailing is set as New Mailing. Enter the name you need, and leave a comment to the configured mailing for convenience.

To send reports, specify the required report parameters and schedule. In Schedule section (figure 6.5.3.2) set the days, on which the report will be generated and sent by checking and unchecking certain days of week and time of sending of report.

Use Up and Down arrow buttons to move the selected methods of reporting.

You may set several options for sending and saving reports at the same time.

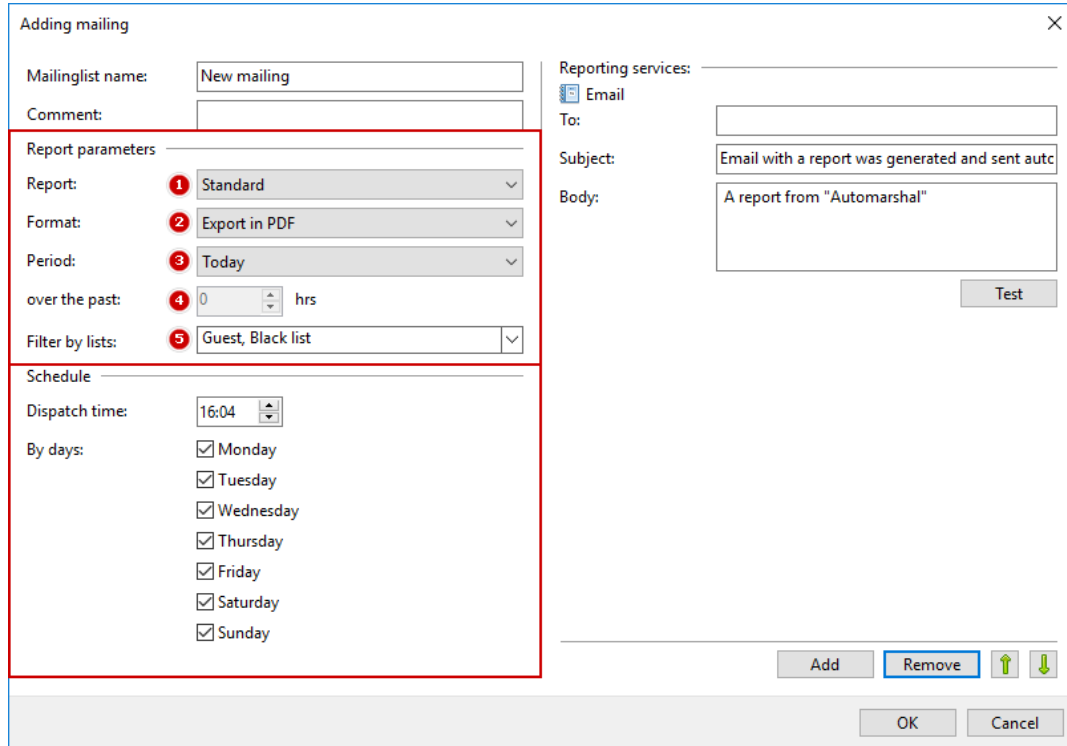


Figure 6.5.3.2

Report Parameters field have report settings numbered:

1. Report – a standard version of report is set by default, user-defined versions are set in Settings menu in Report Configurator section. The standard report sample is given in figure 6.5.3.3.

Nº s/p	Plate	Date/Time	Direction	Video channel	User list
1	96KV87	25.04.18 16:26:25	Undefined	Camera 2	
2	3KHJ18	25.04.18 16:26:15	Bottom to top	Camera 2	Black List
3	50ZFT7	25.04.18 16:03:03	Top to bottom	Camera 2	Workers

Operator

signature, date, full name

Figure 6.5.3.3

2. Format – export of report in one of available file formats (figure 6.5.3.4).

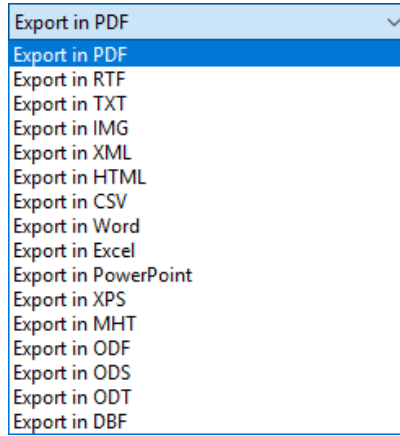


Figure 6.5.3.4

3. Period – for what time must the report be generated, options are shown in figure 6.5.3.5.

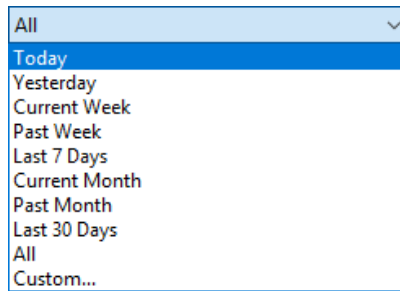


Figure 6.5.3.5

4. Over the past n hours – this field becomes active when a Custom period is selected, whereafter a number of hours, for which a report must be generated, must be entered in this field.

5. Filter by lists – allows you to generate a report on selected lists

In “Schedule” section the function is available to deliver reports “on schedule” and «at time interval» (Figure 6.5.3.6).

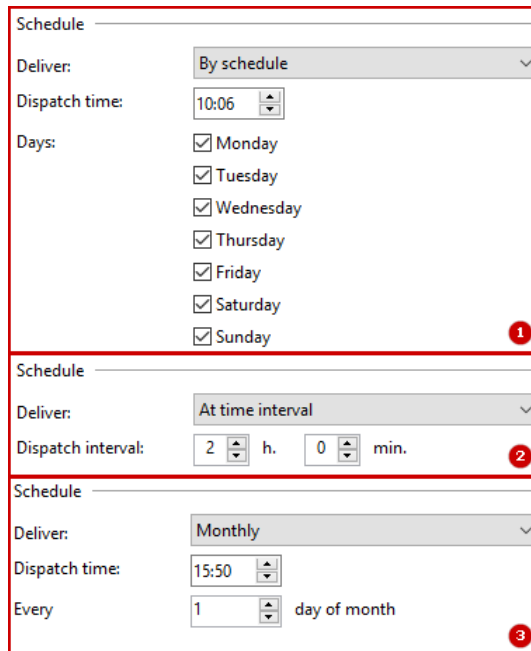


Figure 6.5.3.6

1. To deliver on schedule:

Specified time and days for reports mailing shall be set.

2. To deliver at time interval:

Specified time interval for reports mailing shall be set. For instance, every 2 hours.

3. Deliver: Monthly:

Time and date of report delivery is set up. For example, the seventh day of every month.

If there is no such day in the month (for example, the 31st), the report will be sent on the last day of a month. For example, in June the report will be sent on the 30th day.

Specify the method of report mailing. To do this, click “Add” in “Mailing Methods” field. The report file can be sent to disk, Email, FTP, Yandex Disk and Google Drive.

Click Add in Reporting Services field. A report file may be sent to disk, e-mail, FTP, Y.drive and Google Drive. Figure 6.5.3.7 shows an example of all three options.

Drive

To send reports to disk, you need to select a folder where the files will be saved. By default, this is a standard Documents folder, where Reports folder is created to store reports.

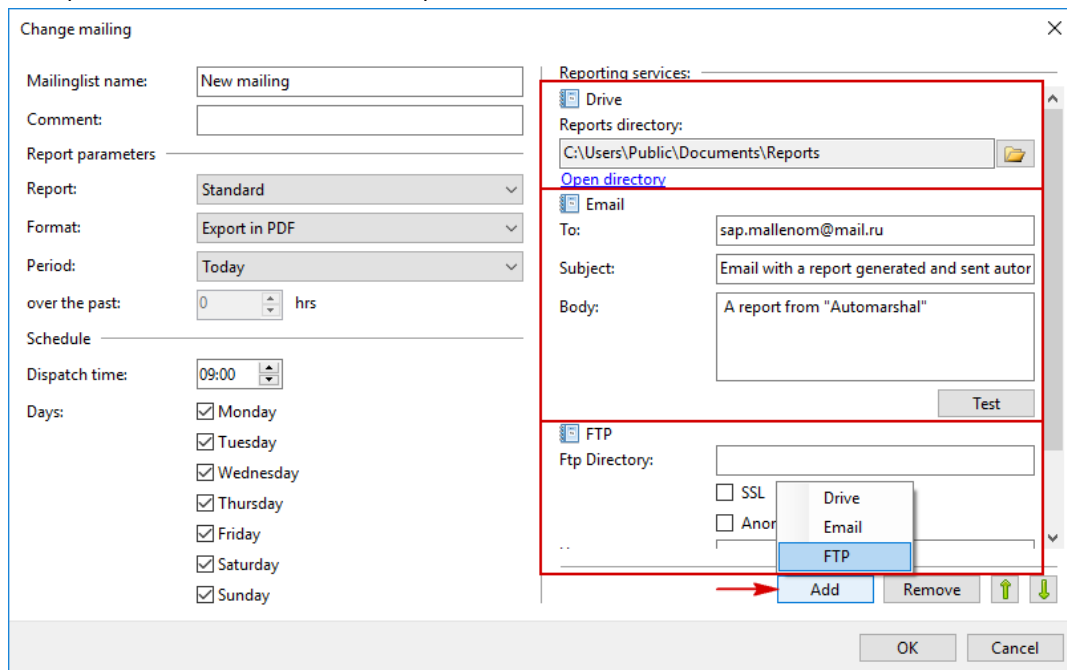


Figure 6.5.3.7

E-mail

To e-mail reports, in To: field enter an e-mail address where the messages will be sent.

Specify a convenient topic, the default is “Email with a report generated and sent automatically by the Program Automarshall, response is not required”.

Click Test to send a test message to e-mail to make sure the Send Mail module is configured correctly.

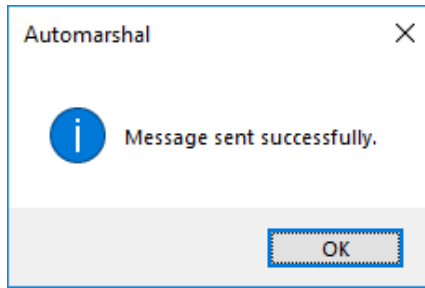


Figure 6.5.3.8

If an error has been made in Send Mail module, a warning will pop-up (figure 6.5.3.9). Check if the data is entered correctly.

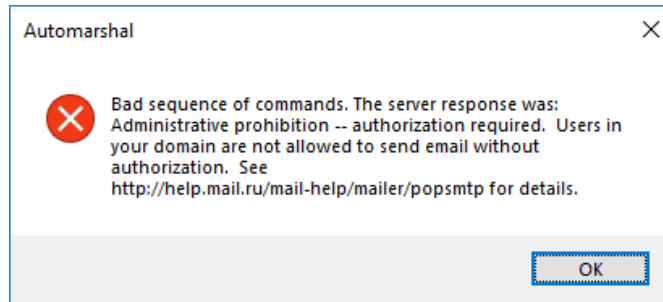


Figure 6.5.3.9

Figure 6.5.3.10 shows an example of test message.

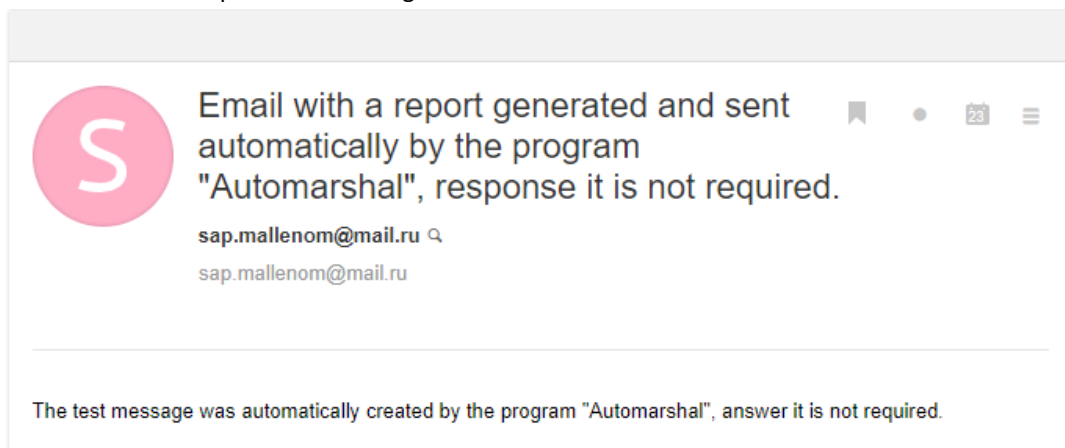


Figure 6.5.3.10

FTP

To send reports to FTP, enter the path to folder on your FTP, where the reports will be saved (figure 6.5.3.11).

Only check SSL and Anonymous Login if your FTP requires SSL protocol and supports anonymous login, otherwise you do not need to check them as an application may fail to pass authorization and upload reports.

In the User Name and Password fields, enter data for authorization on FTP server.

If the reports are not saved, check if the data is entered correctly.

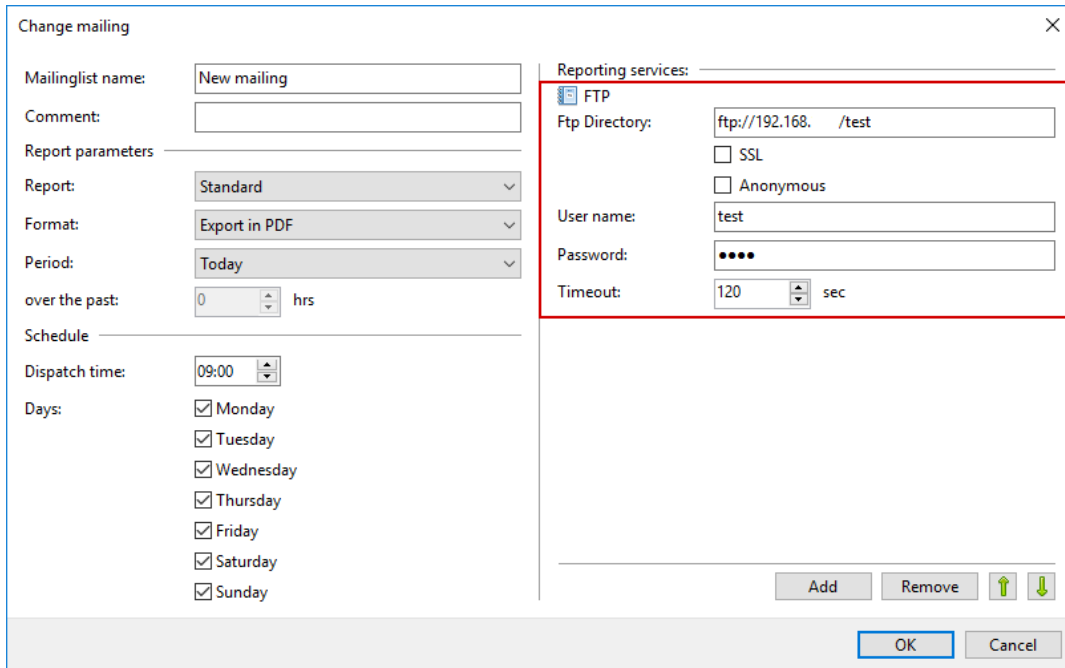


Figure 6.5.3.11

Yandex drive

To send reports to Yandex drive, enter the authorization information: full email address and password. Indicate the path to the desired folder in which the reports shall be saved, without specifying the path, all reports will be saved to the root of Yandex drive.

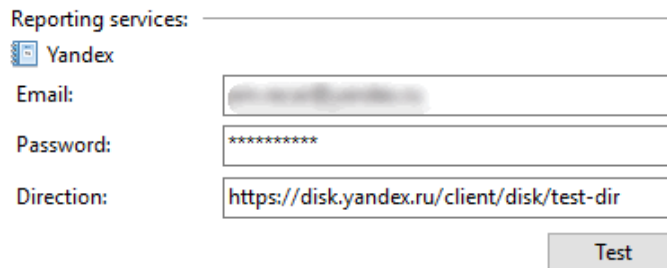


Figure 6.5.3.12



After clicking “Test”, a test empty file will be sent to Yandex disk.



Figure 6.5.3.13

Google drive

To send reports to Google drive will require an access file. If you have an access file, then specify the path to it. If there is no access file, then you need to create and configure it. To go to the configuration of the access file, click “File credention not found. Option.” or click the link <https://console.developers.google.com/apis/credentials>. After clicking this link, Google Cloud Platform will ask for consent to the terms of use of the platform and related services - confirm your agreement and continue setup.

Reporting services: _____
 Google
 Path to file credention: 
 Direction:

[File credention not found. Option.](#)

Figure 6.5.3.14

Create new project.








API	APIs & Services	Credentials
	Dashboard	<div style="border: 1px solid #ccc; padding: 10px; background-color: #f9f9f9;"> <p>i To view this page, select a project SELECT PROJECT CREATE PROJECT</p> </div>
	Library	
	Credentials	
	OAuth consent screen	
	Domain verification	
	Page usage agreements	

Figure 6.5.3.15

New Project

⚠ You have 11 projects remaining in your quota. Request an increase or delete projects. [Learn more](#)

[MANAGE QUOTAS](#)

Project name *
 

Project ID: dotted-nature-271410. It cannot be changed later. [EDIT](#)

Location *
 [BROWSE](#)

Parent organization or folder

Figure 6.5.3.16

Set up the Consent Screen, select user type – external.

OAuth consent screen

Choose how you want to configure and register your app, including your target users. You can only associate one app with your project.

User Type

Internal ?

Only available to users within your organization. You will not need to submit your app for verification.

External ?

Available to any user with a Google Account.



Figure 6.5.3.17

Just enter the app name and save the settings.

OAuth consent screen

Before your users authenticate, this consent screen will allow them to choose whether they want to grant access to their private data, as well as give them a link to your terms of service and privacy policy. This page configures the consent screen for all applications in this project.

Verification status

Not published

Application name ?

The name of the app asking for consent

Application logo ?

An image on the consent screen that will help users recognize your app



About the consent screen

The consent screen tells your users who is requesting access to their data and what kind of data you're asking to access.

OAuth verification

To protect you and your users, your consent screen and application may need to be verified by Google. Verification is required if your app is marked as **Public** and at least one of the following is true:

- Your app uses a sensitive and/or restricted scope
- Your app displays an icon on its OAuth consent screen
- Your app has a large number of authorized domains
- You have made changes to a previously-verified OAuth consent screen

Figure 6.5.3.18

In the side menu, go to the “Library” section, enter the query “Google Drive API” in the search box and enable it.

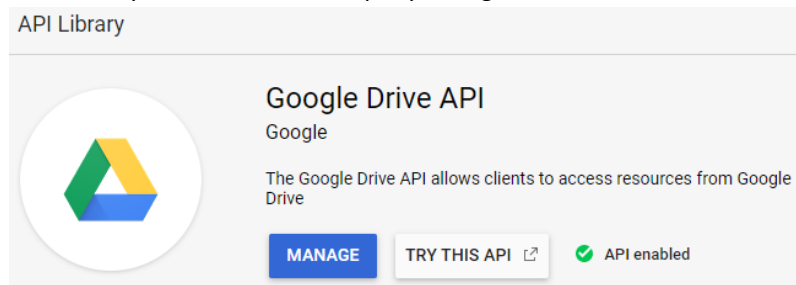


Figure 6.5.3.19

After enabling Google Drive API, the Credentials section will appear, where it is required to create the credentials.

Type API - Google Drive API.

Where to call API from - another with a user interface.

What data will be accessed - user data.

Finish adding the credentials, click "Select credential type", then create client identifier - enter the name and click "Create OAuth Client Identifier".

Credentials

Add credentials to your project

1 Find out what kind of credentials you need

We'll help you set up the correct credentials

If you wish you can skip this step and create an [API key](#), [client ID](#), or [service account](#)

Which API are you using?

Different APIs use different auth platforms and some credentials can be restricted to only call certain APIs.

Google Drive API

Where will you be calling the API from?

Credentials can be restricted using details of the context from which they're called. Some credentials are unsafe to use in certain contexts.

Other UI (e.g. Windows, CLI tool)

What data will you be accessing?

Different credentials are required to authorize access depending on the type of data that you request.

User data

Access data belonging to a Google user, with their permission

Application data

Access data belonging to your own application

What credentials do I need?

2 Get your credentials

Cancel

Figure 6.5.3.20

Finish adding the credentials and download credential file.

Credentials

Add credentials to your project

✓ Find out what kind of credentials you need
Calling Google Drive API from a UI-based platform

✓ Create an OAuth 2.0 client ID
Created OAuth client 'Other client 1'

3 Download credentials

Client ID [redacted]

Download this credential information in JSON format. This is always available for you on the credentials page.

Download I'll do this later

Done Cancel

Figure 6.5.3.21

In the mailing settings, select the method of report sending to google disk and specify the path to the resulting access file.

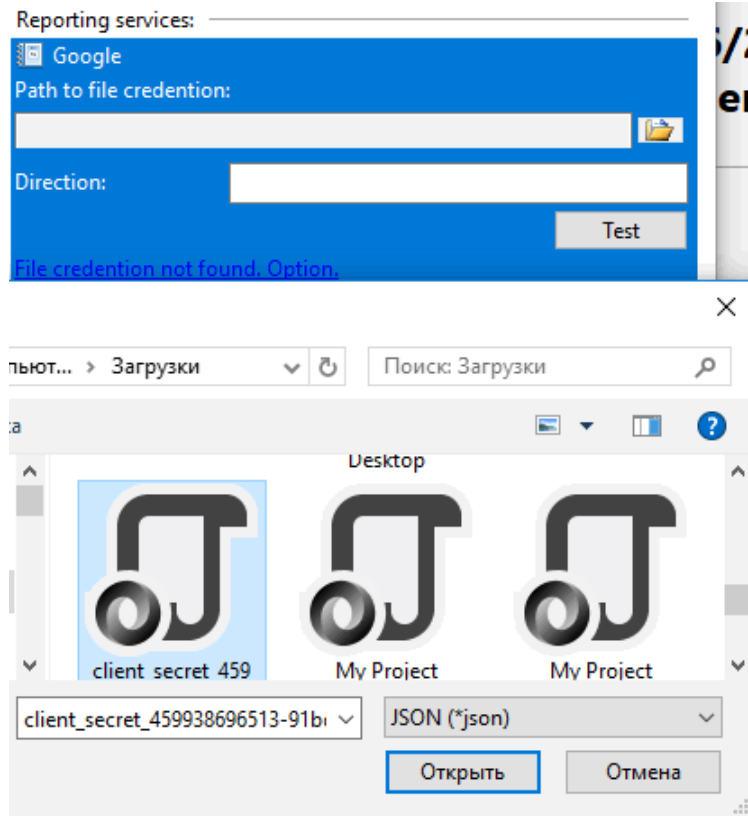


Figure 6.5.3.22

Click "Test" to test the operation and complete setup. On the warning page that opens, click the link "Go to the page "Project Name" (unsafe)". Allow access to the application.

Setup is completed. An empty test file will appear in the root of Google drive.

My Drive ▾

Quick Access

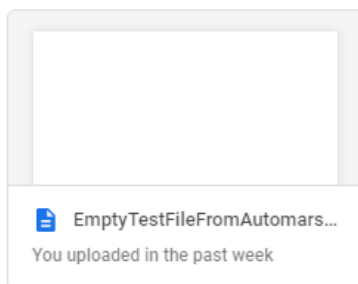


Figure 6.5.3.22

At the first automatic mailing of the google report, the drive may again require access confirmation for the application.

6.5.4. Text file

Module Purpose: present Module is designated for recording in the text file of the information regarding the detected motor vehicle.

Module Activation

To activate the module, perform the following actions:

1. Select **Settings** option in the drop-down list of **Service** menu;
2. In the opened window choose section **Text File** Modules;
3. Place tick on the right side of window opposite **Activate** and press **Apply** button.

Icon opposite module name in the left part of settings window would turn yellow. Inactive modules remain colorless.

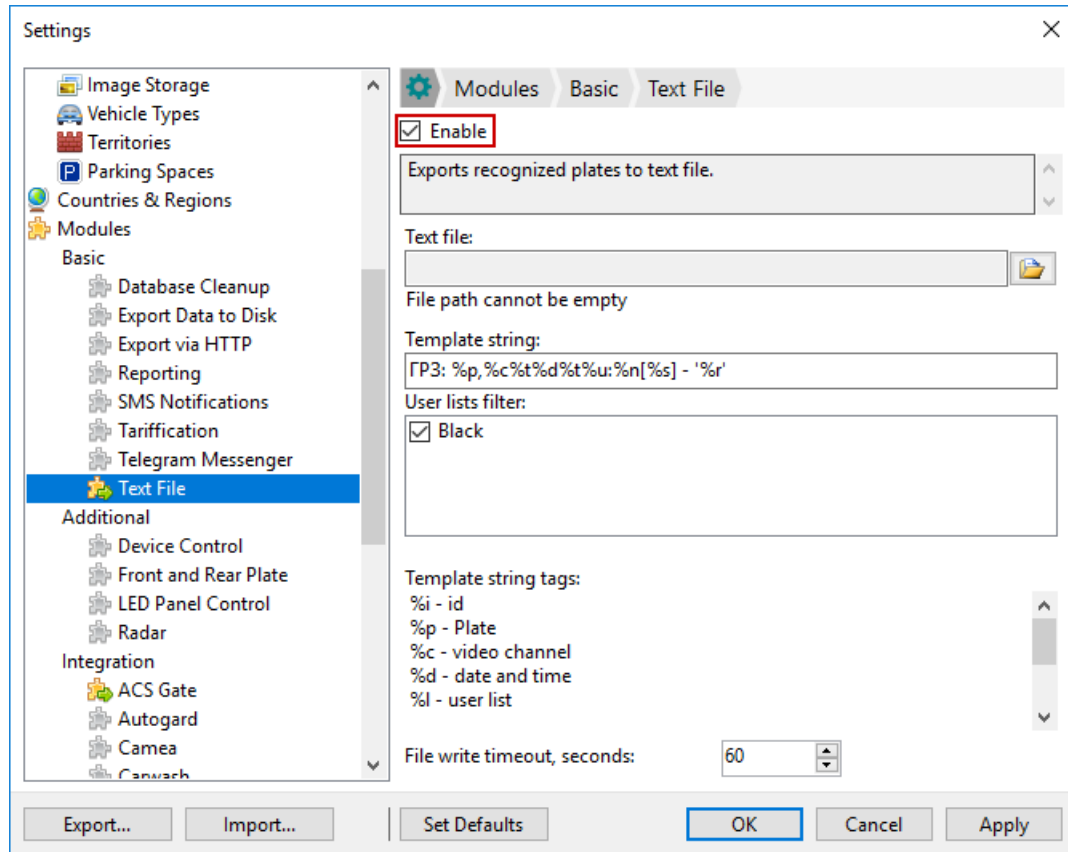



Figure 6.5.4.1

Settings of Text File Module

Module Setting parameters include:

- **Event Storage File** – indicate the file, in which records shall be stored. One may choose the existing file by clicking folder pictogram , or by setting path and manually naming the file. If file is not found, it would be automatically created.

File format for the record does not matter.

- **Event Format** – a line which would be recorded in the file. All symbols, except for the business-purpose symbols (symbols of event format), would be transferred into file without any changes.
- **Save events with status** – the entry would be made only if the detected motor vehicle would be included in the ticked list.
- **Event Format Symbols** – business-purpose symbols, which would be replaced by the software for relevant symbols (extracted from the DB):

%i - id

%p - Plate

%c - video channel

%d - date and time

%l - user list

%m - direction of motion

%s - recognition status

%t - tabulation

%% - %

- **Entry Timeout (sec)** – if file is full for record, attempt of record would be made within the indicated time interval. At expiration of such time, Vehicle Number Plate would be removed (not recorded to file).

If entry timeout value is 0, record attempt would be repeated until the record is made.

Default value is 60 seconds.

6.5.5. HTTP Export

Module Purpose: transfer of recognized number plates via HTTP.

Module Activation

To activate the module, perform the following actions:

1. Select **Setting** option in the drop-down list of **Service** menu;
2. In the opened window, select section modules **Export HTTP**;
3. In the right part of window tick opposite **Activate** option and press **Apply**.

Icon opposite module name on the left side of settings window would turn yellow. Inactive modules remain colorless.

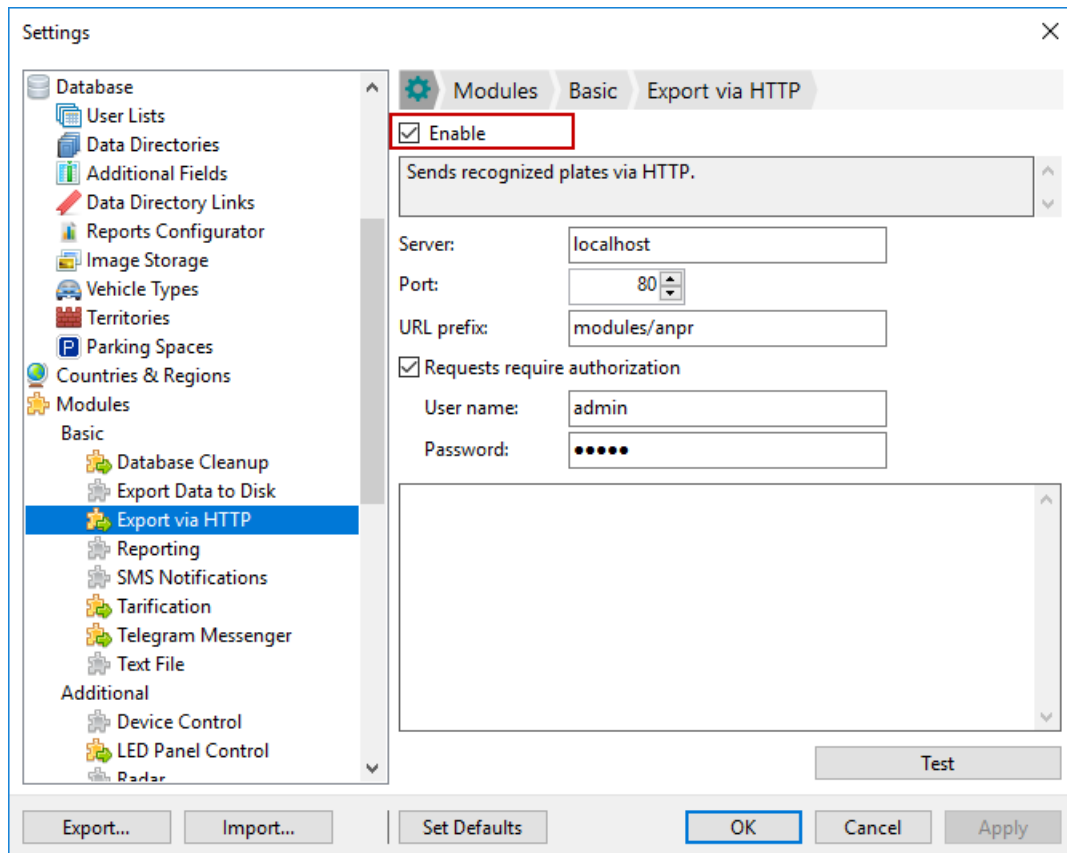


Figure 6.5.5.1

Settings of Module Export HTTP



Revisor VMS server would be indicated as video source.

Module setup parameters include:

- **Server address.**
- **Server port.**
- **Prefix.**
- **Authentication:**User and Password.
- **Text message** – forced sending of the number example to server for testing purposes.

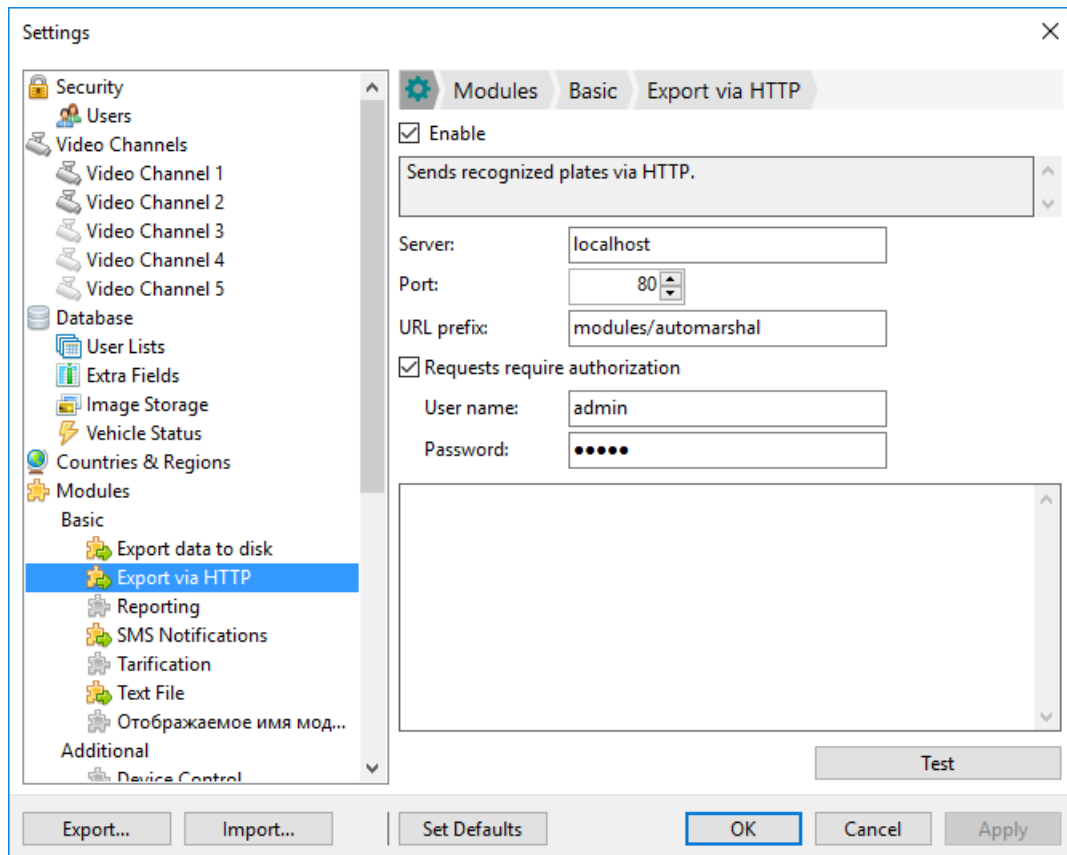


Figure 6.5.5.2

Upon recognition of the number, module sends data by HTTP in form of POST –enquiries in the following format:

```
POST/rsapi/modules/automarshall?user=admin&password=19a2854144b63a8f7617a6f225019b12
HTTP/1.1
Content-Type: application/x-www-form-urlencoded
Host: localhost:11012
Content-Length: 262
Expect: 100-continue
Connection: Keep-Alive
TimeStamp=2013-01-24T12:00:01
Plate=A100AA97
PlateStencil=xxxxxxx
Status=Recognized
```

```
Direction=Undefined
Passage=None
VideoChannel=b370347a-47ff-40e2-8e50-9a3c501bc322
VideoChannelName=Camera N1
```

Authentication is performed by sending of the name and password to be added to the connection line in form of user and password parameters, provided that password is set in form of MD5 hash. Note that Unicode, but ASCII, is used upon hashing.

Video Channel parameter now contains *random* GUID and in future, possibly, would be deactivated.

It is recommended to activate the module and set the address and port of the server, to which enquiries shall be sent. Indicate user name and password.

Test Message button allows sending number example to server for testing purposes.

6.5.6. Export of Data to Disk

Module purpose: sending recognized license plates to disk in the form of text file formats csv/xml and/or images.

Enabling module

To enable the module, follow instructions below:

1. Select Setup in Service drop-down menu;
2. In a window opened, select Export Data to Disk modules section;
3. In the right pane check Enable, then click Apply.

An icon next to the module name in the left pane will turn yellow.

Disabled modules are not highlighted.

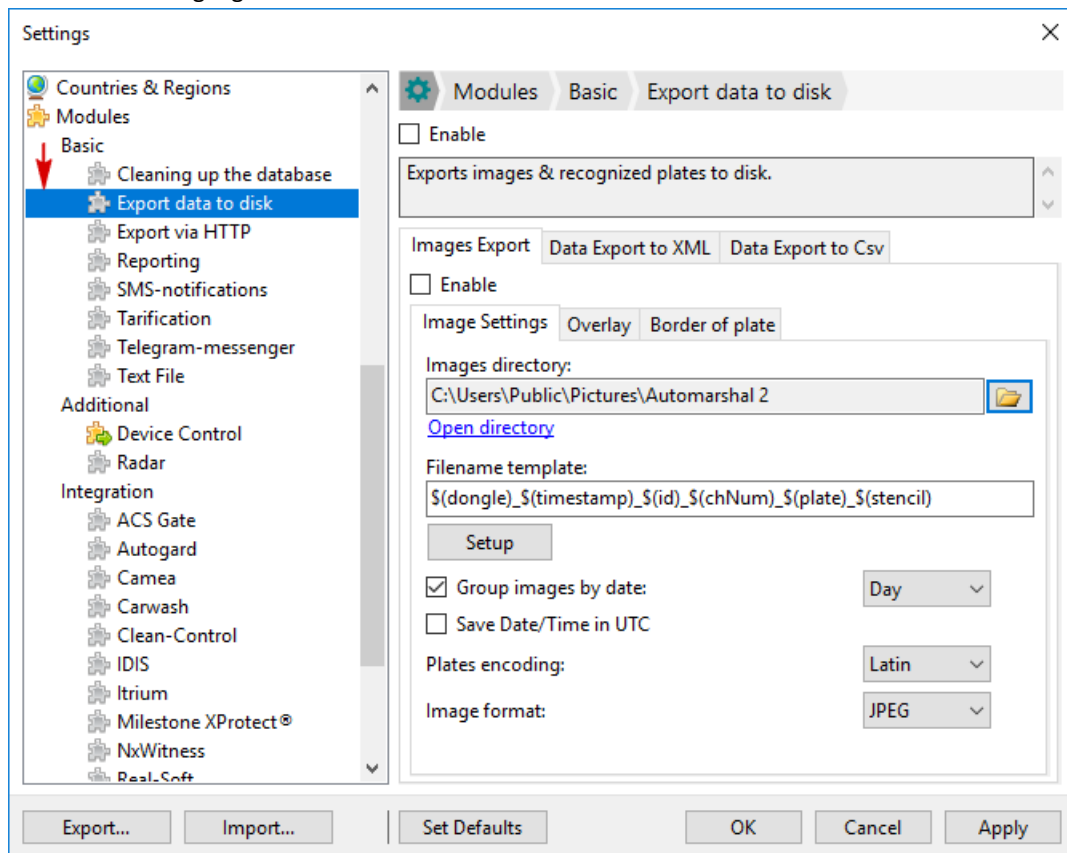


Figure 6.5.6.1

Configuring Export Data to Disk module

1. Sending images

Configuring file

To send data to disk as images, check Enable in Images Export tab.

By default, a data storage file is located in:

C:\Users\Public\Pictures\Automarshal 2

For quick access to file storage, click Open Folder link.

Sort Images by Date - check to sort vehicle.

Plate Encoding: Latin or Cyrillic alphabet. When uploading a file to a disk, the data in the file will be written in selected encoding.

Image Format: JPEG, PNG, BMP.

Filename template allows to dynamically change filename by using template modifiers, e.g. a keyword \$(plate) will be replaced with the recognized vehicle plate.

You can just enter regular text, and all images will be saved under that name.

To change a template click Setup and select required modifiers. Or you may manually and randomly enter modifiers in the filename template.

When Group Images by Date is checked, exported images will be sorted by dates, and for each date a separate folder will be created.

When Save Date/Time in UTC is enabled, date and time of an image will be saved in the Universal Time Coordinated format.

From the Image Format drop-down list, select the preferred format.

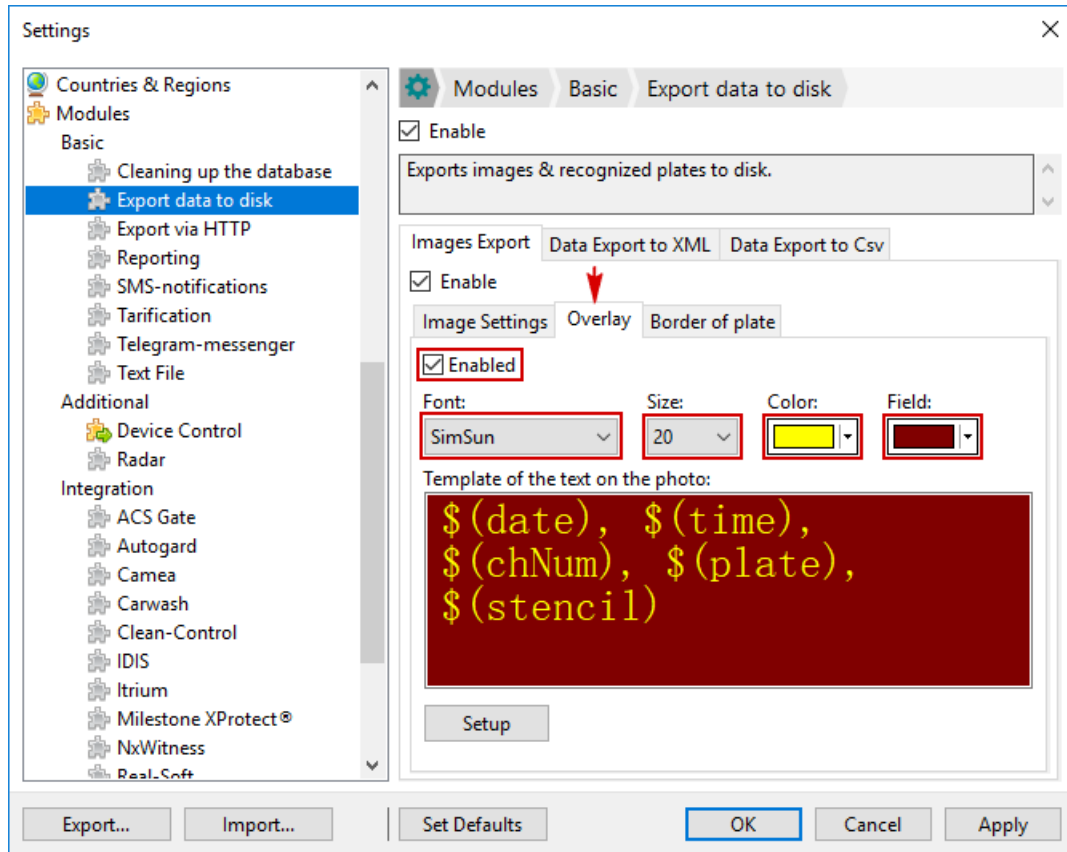


Figure 6.5.6.2

Border of Plate

To place a box around the recognized plate in the image, check Enable in Border of Plate tab.

Weight means the thickness of box borders (in pixels).

Margin means an indent from border of the recognized plate area.

Color changes the box color.

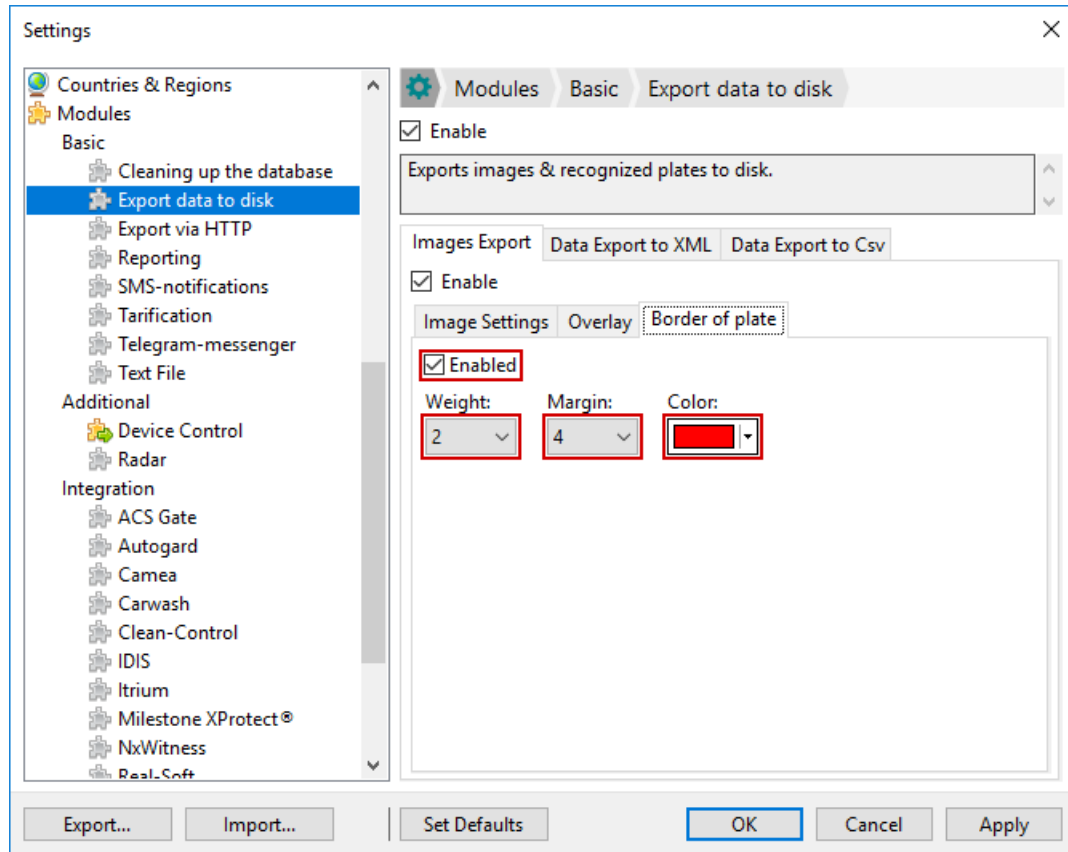


Figure 6.5.6.3

You can see an example of exported image below.

2. Export to XML

To send data to disk as XML file, check Enable in Export to XML tab.

File Settings

Select file saving mode:

- Save data in one file
- Save data in individual files

Group by Date option allows to group files in different folders depending on the date.

Filename Template field settings are similar to Template field settings in Images Export tab.

By default, the data file is located in:

C:\Users\Public\Documents\Automarshal\VehicleRegistrationLog.xml

For quick access to file storage, click Open Folder link.

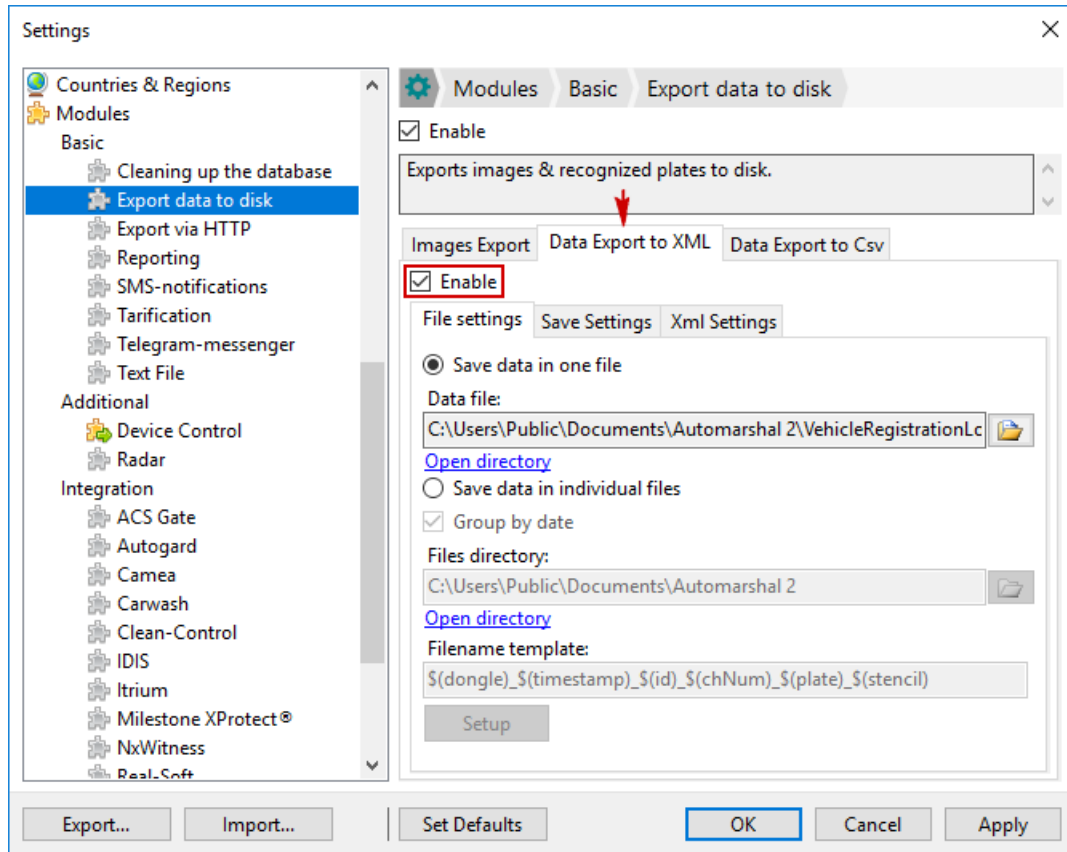


Figure 6.5.6.4

Save Settings

Passage Filter allows to save only the records meeting the set condition.

Available conditions:

- Entries and exits
- Entries only
- Exits only

Plate Encoding option allows to change text encoding.

Available parameters:

- Latin
- Cyrillic

Save Date/Time in UTC allows to save date and time in the Universal Time Coordinated format.

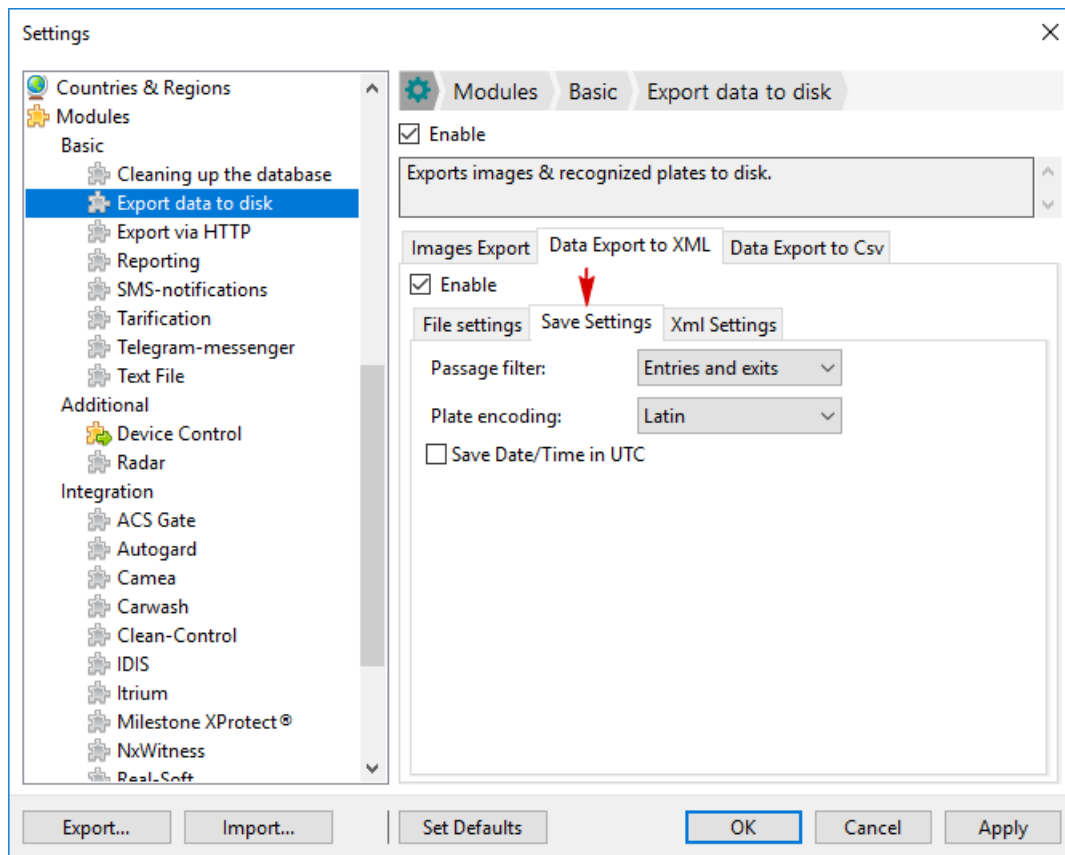


Figure 6.5.6.5

XML settings

Here you can choose what data will be written to XML file.

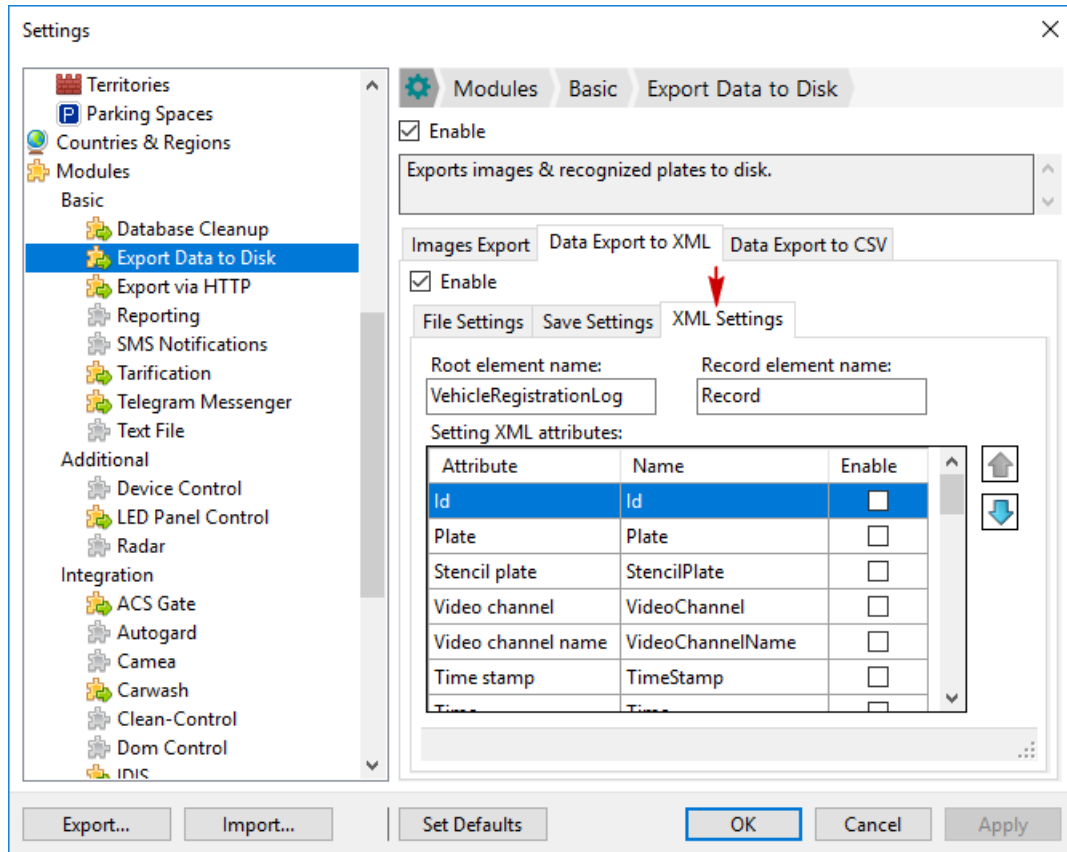


Figure 6.5.6.6

To add data to record, check Enabled next to the required field.

User fields are at the bottom of the list.

Attribute column displays the original name of the field used in Automarshall software. This parameter cannot be changed.

Name column displays exported name of the field. This is the line that will be written instead of Attribute.

To change the Name, double-click the field, enter new name and click Apply.

3. Data Export to CSV

To send data to disk as text file, check Enable in Data Export tab.

By default, the data file is located in:

C:\Users\Public\Documents\Automarshall\VehicleRegistrationLog.csv

For quick access to file storage, click Open Folder link.

The type of file written must be *.csv.

Plate Encoding: Latin or Cyrillic alphabet. When uploading a file to a disk, the data in the file will be written in selected encoding.

To save changes, click Apply.

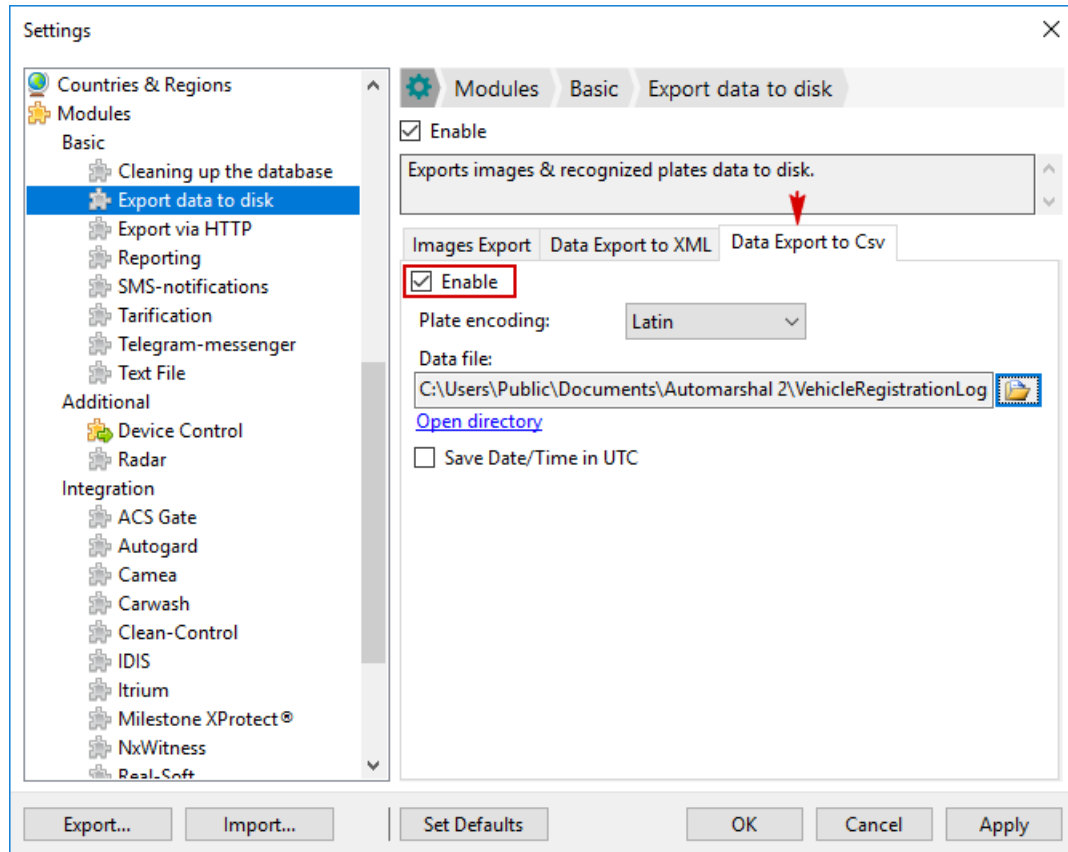


Figure 6.5.6.7

6.5.7. Tarification

Module purpose

Calculation of fee for staying in the territory.

Enabling module

To enable the module, follow the steps below:

1. Select the "Settings" item in the "Service" drop-down menu;
2. In the opened window, select: Modules → Basic → Tarification;
3. In the right part of the window, check the box at the Enable item and click the Apply button.

The icon opposite the module name on the left side of the settings window has to turn yellow. The disabled modules are of dim color.

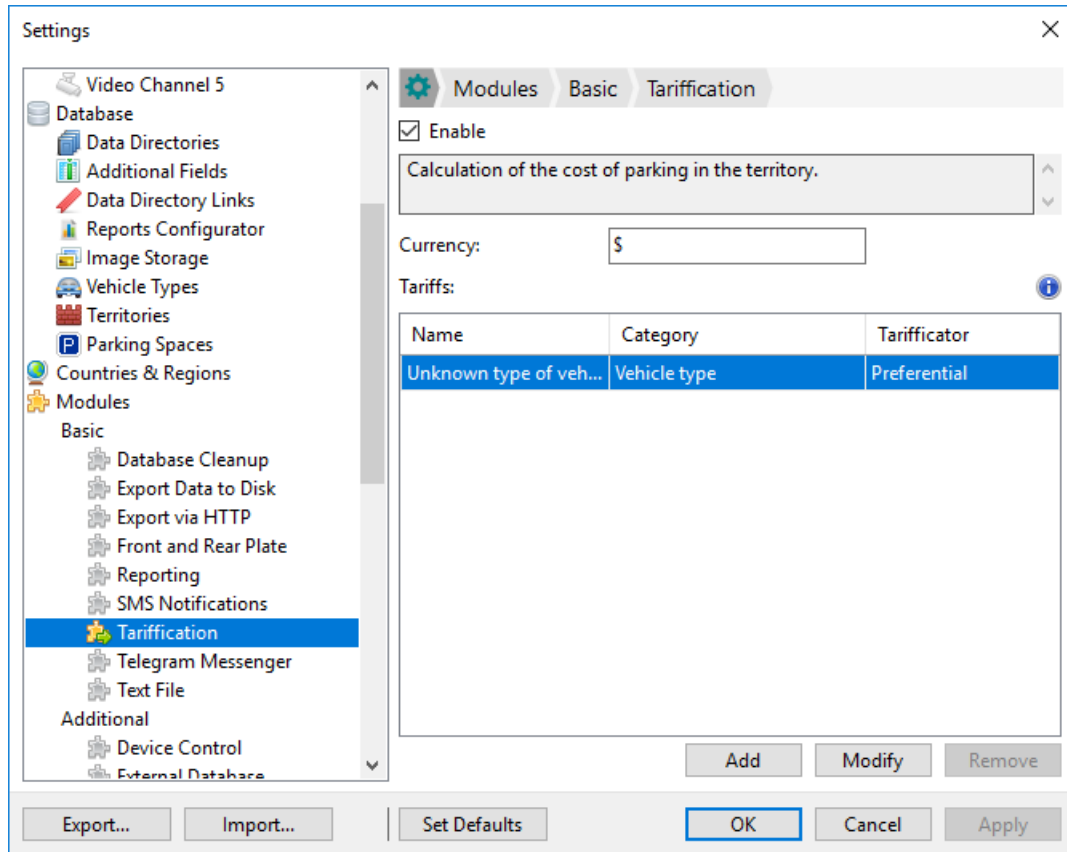


Figure 6.5.7.1

Tariffication module settings

Before setting the tariffs, specify the currency of payment. All Unicode characters are accepted.

Beginning from the Automarshall 2.15 version of software, it became possible to set up tariffs for vehicle types:

- By default, the “Unknown type of vehicle” is created in the system and automatically added to the list of tariffs.
- When adding new vehicle types, they will be automatically added to the tariffication settings.
- By default, the “Preferential” tarifficator is set for vehicle types
- The tariffs for vehicle types cannot be removed. In the settings of the tariff for vehicle type, this type of vehicle cannot be changed to another one or replaced with lists (Figure 6.5.7.2).

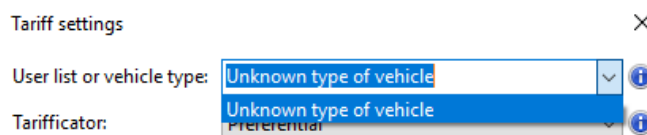


Figure 6.5.7.2

- The existing tariffs for user lists take precedence over the tariffs for vehicle types.

Tariff setting:

To open the tariff settings, click the “Add” button or select a tariff from the list and click the “Modify” button (Figure 6.5.7.3).

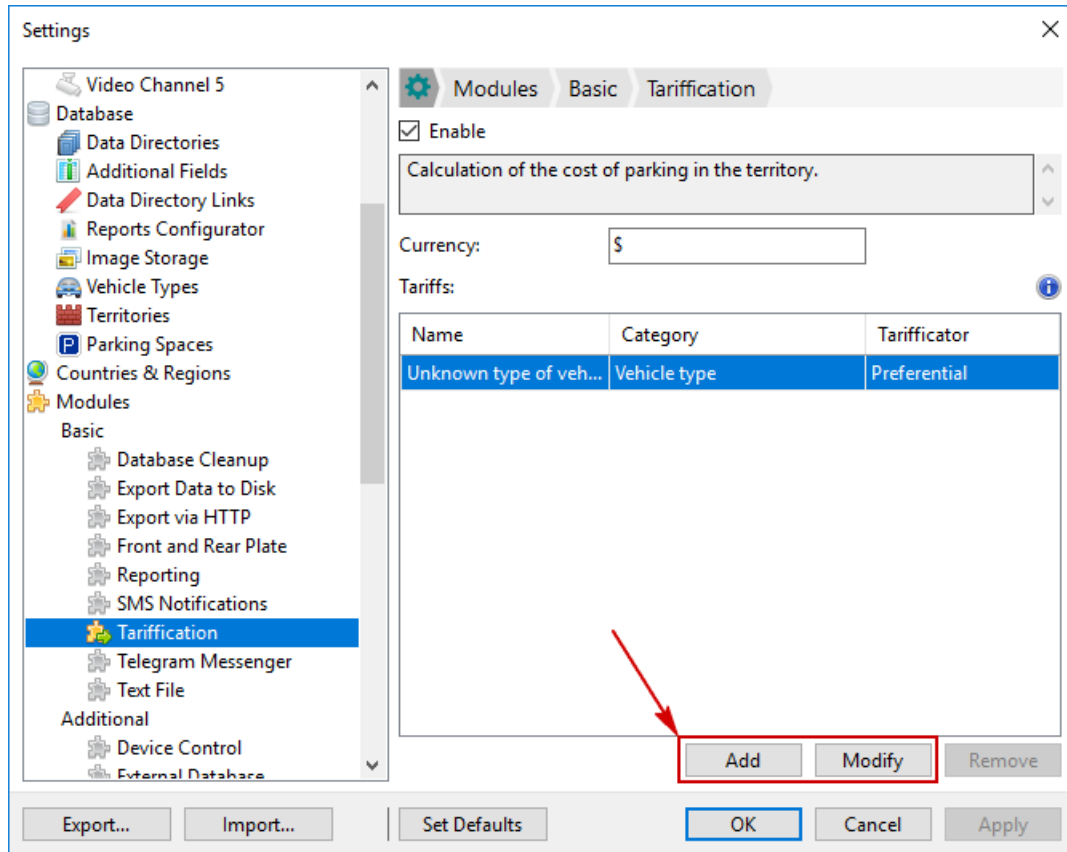


Figure 6.5.7.3

In the opened “Tariff setting” window (Figure 6.5.7.4), select the user list for which the tariff will be in effect or select the “Not in any list” option.

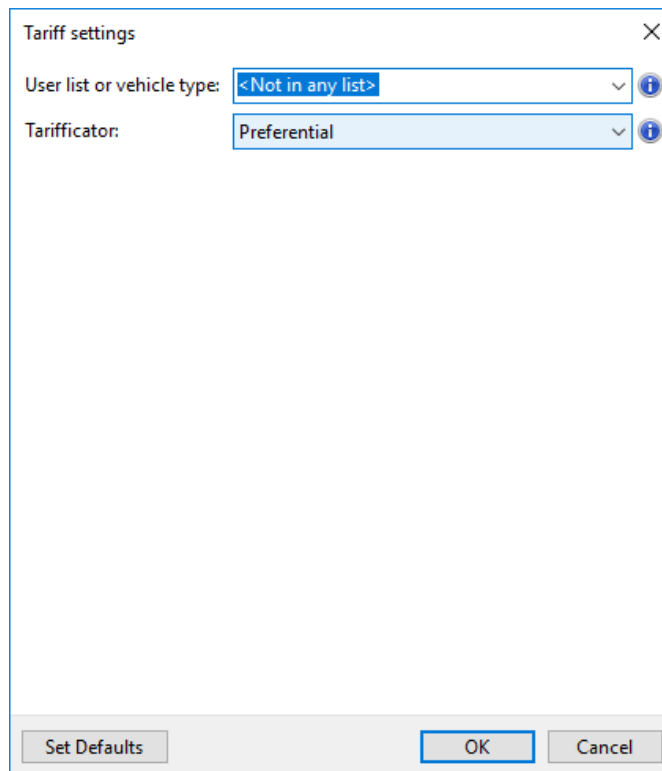


Figure 6.5.7.4

Select the tariff under which the parking cost shall be calculated. Four tariffs are available: preferential, hourly, flexible, daily flexible.

- **Hourly**

Specify the hourly rate and the number of free hours.

The screenshot shows a 'Tariff settings' dialog box with the following fields and controls:

- User list or vehicle type:** A dropdown menu showing '<Not in any list>'.
- Tarifficator:** A dropdown menu showing 'Hourly'.
- Hourly rate:** A numeric input field with a spinner, showing '0,00'.
- Free hours:** A numeric input field with a spinner, showing '0,0'.
- Parking cost verification:** A section with three spinner controls for '0 days', '0 hours', and '0 minutes', followed by a 'Recalculate' button.
- Payment:** A label showing 'Payment: 0'.
- Buttons:** 'Set Defaults', 'OK', and 'Cancel' are located at the bottom of the dialog.

Figure 6.5.7.5

- **Flexible**

Click the “Add” button in the “Add condition” window and specify the time limits and rate for this period. Click OK.

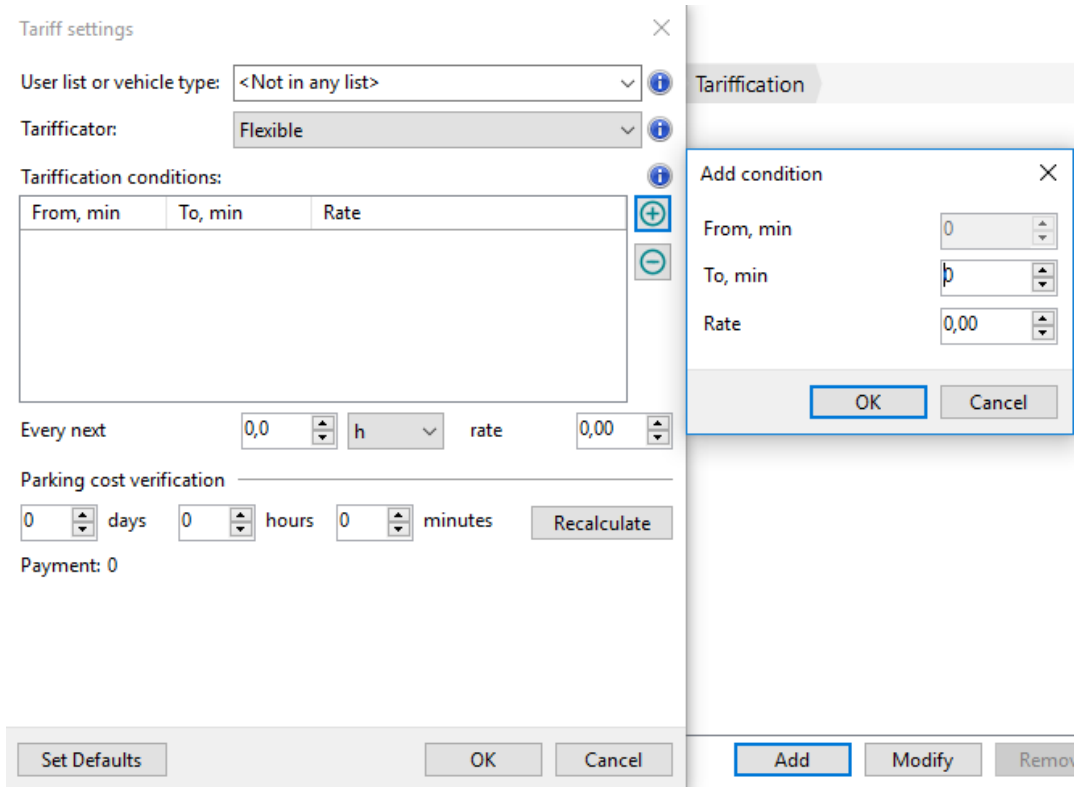


Figure 6.5.7.6

To delete a condition, click the “Remove last” button.

In the “Every next” row, select the time measurement unit and specify the rate in case if a vehicle stays in the territory longer than the time stated in the table.

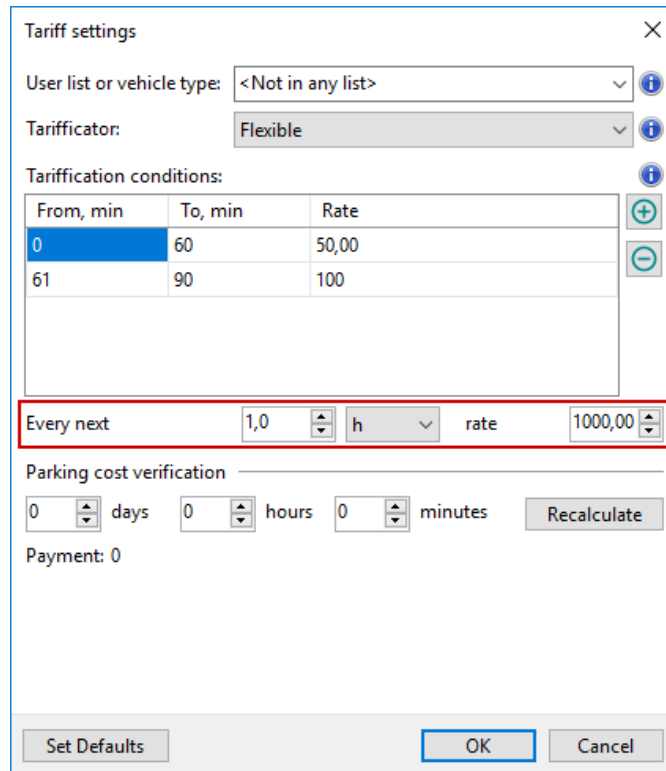


Figure 6.5.7.7

The prompt is provided to help set the tariffication conditions (Figure 6.5.7.8).

Allows you to specify conditions for charging fees for parking.
 You can specify multiple time intervals with different payment.
 Example: Parking for 30 minutes is free.
 Parking longer than 30 minutes but less than or equal to an hour, will cost 100.
 Parking longer than 60 minutes but less than or equal to 90 minutes, will cost 200.
 Every subsequent 30 minutes of Parking are 150. Then the settings will look as follows:
 · from 0 min to 30 min rate 0
 · from 30 min to 60 min rate 100
 · from 60 min to 90 min rate 200
 · Every next 30 minutes rate 150
 The results of a calculation of the cost under these conditions:
 Duration: 30; payment: 0.
 Duration: 50; payment: 100.
 Duration: 75; payment: 200.
 Duration: 120; payment: 350.

Figure 6.5.7.8

- **Preferential**

This type allows the vehicles from the selected list to stay in the territory for free.

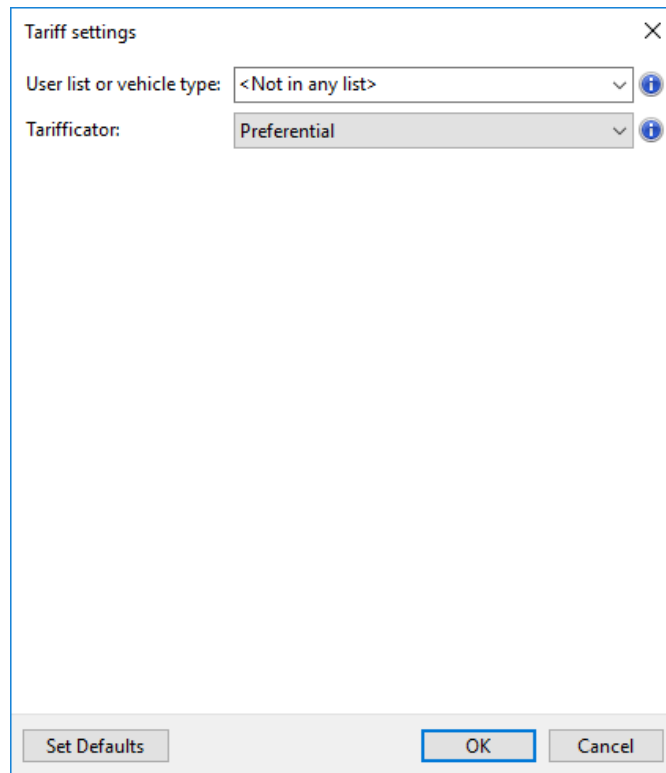


Figure 6.5.7.9

- **Daily flexible**

This type allows specifying several time intervals with different cost per day.

Click the “Add” button in the “Add condition” window and specify the period of time and the price for this period. Click OK.

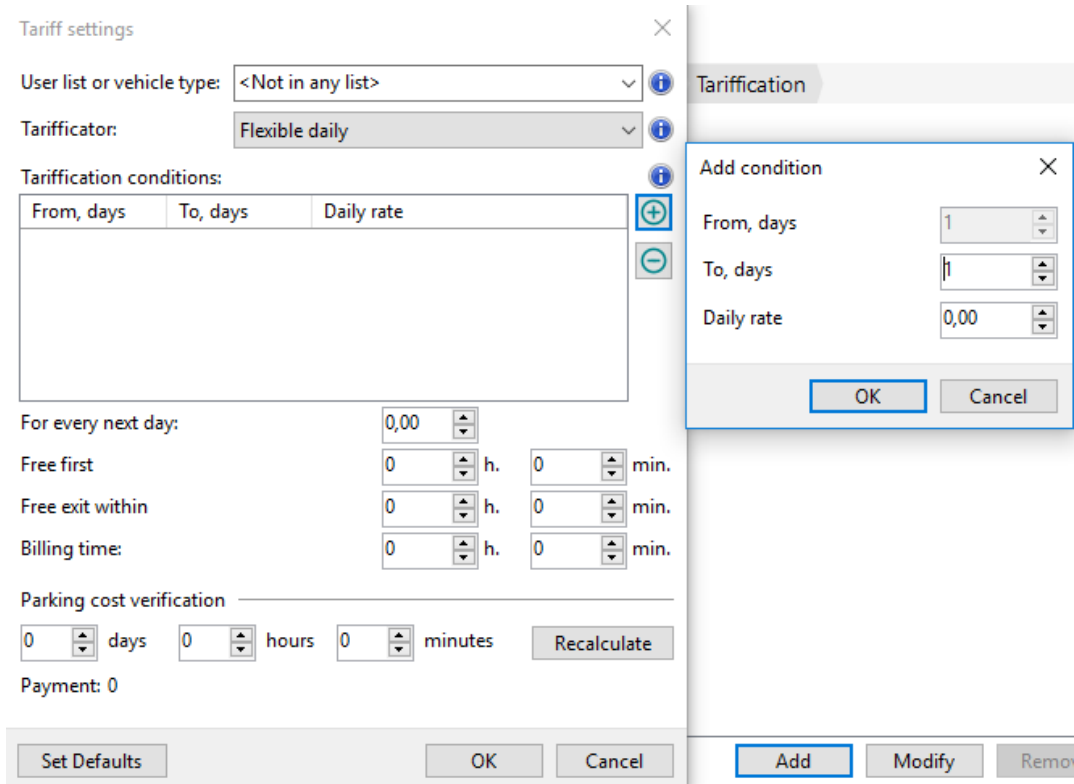


Figure 6.5.7.10

To delete a condition, click on the “Delete last” button.

In the **For every next day**: line, specify the cost in case if a vehicle stays in territory longer than the time specified in the table.

Figure 6.5.7.11 shows the example of settings:

Free first ... is the period of time for which the charge will not be accrued. For example, the first two hours of parking is free.

Free exit within ... is the time after the billing period intended for the exit from the parking lot. It is needed in order that if the departure has been delayed for several minutes, the charge will not be accounted for a full day.

Billing time ... – the moment of the beginning/end of the day of parking. For example, the billing time is set at 11 p.m. o’clock, so the payable day of parking shall begin at 11:00 p.m. and shall end at 11:00 p.m. of the next day.

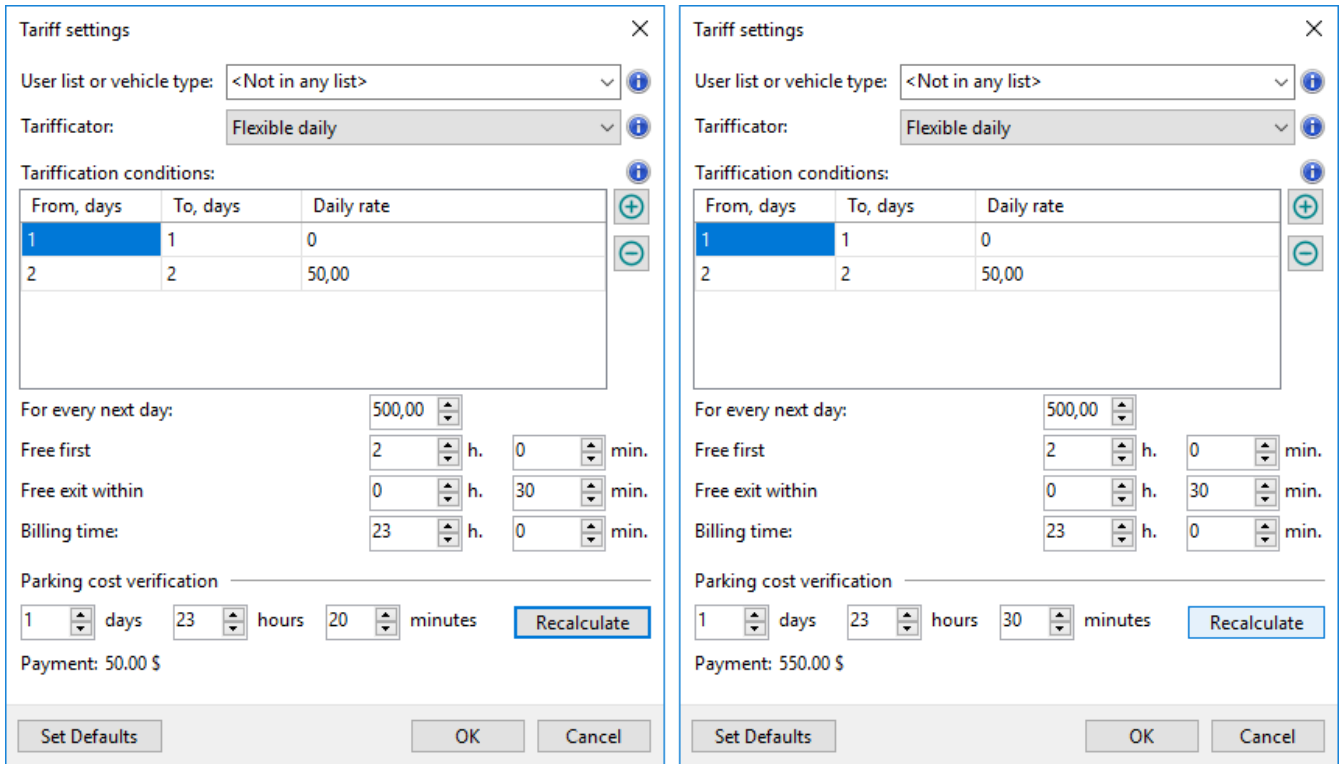


Figure 6.5.7.11

You can check the operation of the selected tariff if you specify in the “Parking cost verification” section the number of days/hours/minutes of staying in the territory and then click the “Recalculate” button.

It is not allowed to set several tariffication conditions for the same list. If you try to set new tariffication conditions when all user lists have already been added, the system will display the information window with the relevant notice.

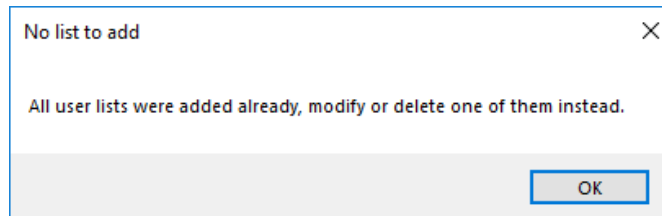


Figure 6.5.7.12

6.5.8. Autogard / Autogard Parking

6.5.8.1. Autogard

Module Purpose: present module is designated for transfer of the recognized number plates to Autogard module.

Module Activation

To activate the module, perform the following actions:

1. Select **Settings** option in the drop-down list of **Service** menu;
2. In the opened window select **Autogard** Module section;
3. In the right part of window place tick opposite **Enable** option and press the **Apply** button.

Icon opposite module name on the left side of setup window would turn yellow. Inactivated modules remain colorless.

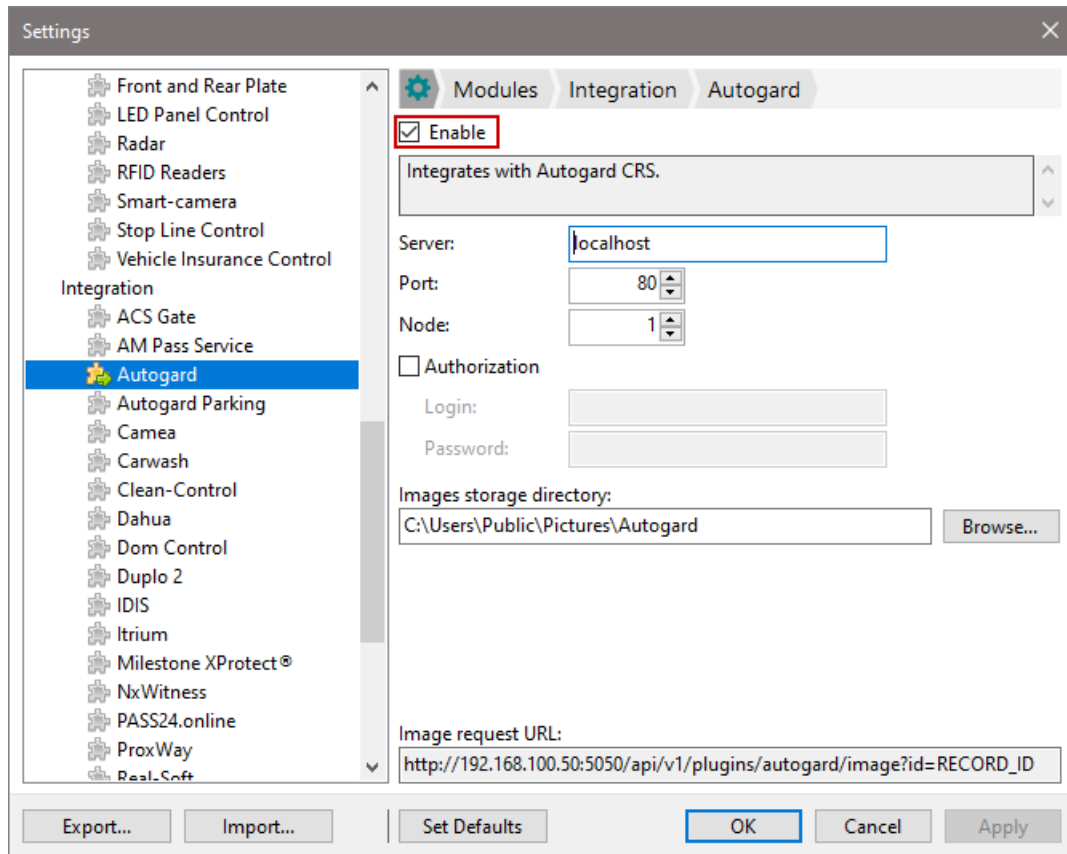


Figure 6.5.8.1

Autogard Module Settings



For operation of Autogard module, HTTP-server should be activated.

Module setup parameters shall involve:

- **Server**
- **Port**
- **Node**
- **Enquiry authorization is required:** Login and Password.

URL for image inquiry *http://IP-adress:port/api/v1/plugins/autogard/image?id=RECORD_ID*

6.5.8.2. Autogard Parking

Module purpose: integration with the EcoPark system by AUTOGARD.

The Autogard Parking module transfers to the EcoPark system at certain time intervals the recognized number plates of vehicles that have been in the parking lot longer than the time specified by the settings.

Enabling the module

To enable the module, follow these steps:

1. Select the Settings item in the Service drop-down menu;
2. In the window that opens, select Modules → Autogard Parking;
3. In the right part of the window, check the box next to the Enable item and click Apply or OK.

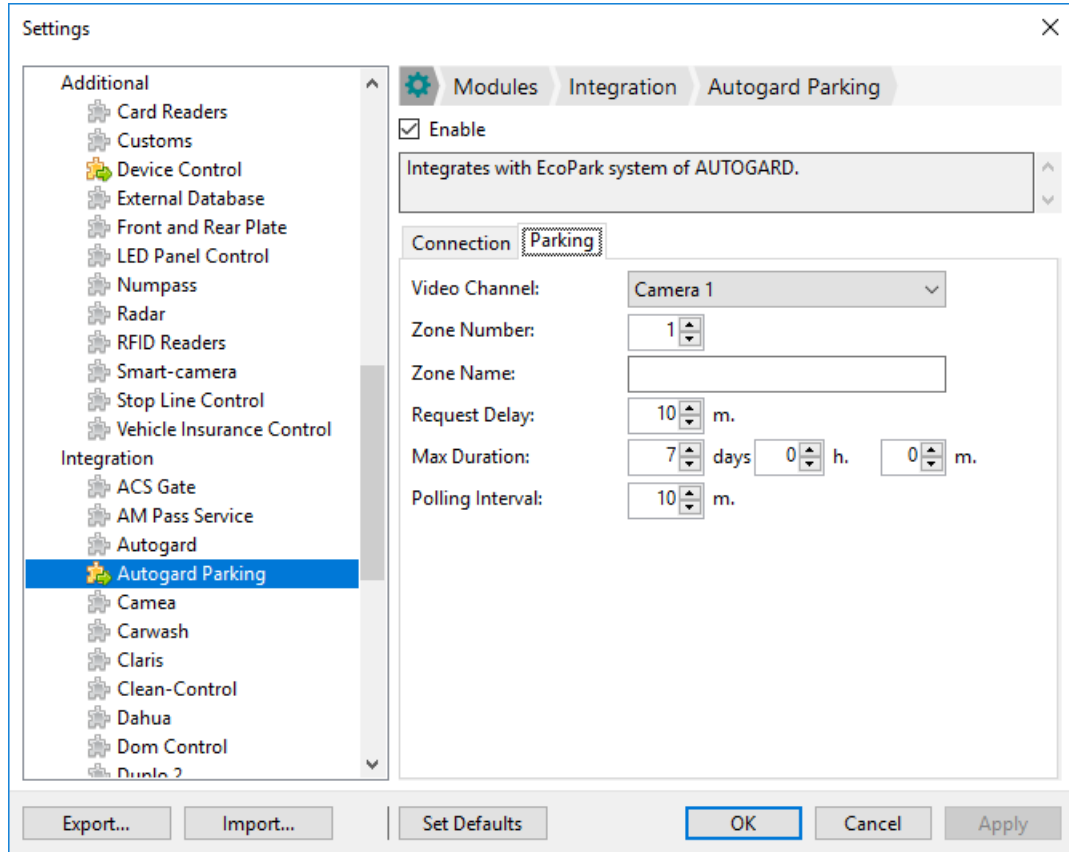


Figure 6.5.8.2

Module configuration

The module settings include:

Server - specify the server IP address and **Port**;

Video channel - for each video channel it is possible to set zone parameters:

- Zone number - the parameter responsible for the parking tariff in the selected zone;
- Zone name - parameter required for reports on the EcoPark server.

Request delay (in minutes) - every N minutes (polling interval), requests are made to the recognition log to obtain records about the entry of vehicles that have been in the territory longer than the specified request delay.

The module remembers the time of the vehicle's entry in the last record sent to the EcoPark system. The next time the recognition log is accessed, the record for the period starting from the current time and up to the time T is downloaded (calculated using the formula: current time minus "**Request delay**").

If the entry time of the last sent record is not in memory, then the time is calculated using the formula: current time minus **Maximum duration**.

If the entry time of the last posted record is older than the maximum duration value, then the time is calculated using the formula: current time minus maximum duration.

The maximum duration is set in days, hours and minutes.

Polling interval (in minutes) - the interval of the recognition log polling to get records of vehicle entry.

Request authorization - a username and a password need to be entered to authorize requests on the server.

6.5.9. IDIS

Module Purpose:

This module is designed to transmit information about the detected vehicle to IP-DVR or IP camera IDIS Solution Suite.

Interaction is possible when jointly using the Automarshal software, IP-DVRa and Solution Suite software.

6.5.10. Carwash

Module Purpose: this module is designated for the file recording of main data on vehicle detected after its number plate recognition.

Module is meant for interaction with the software to automate carwashes (Helix, Real-Soft older versions and Clean-Control).

Module Activation

To activate the module, perform the following actions:

1. Select **Settings** option in the drop-down list of **Service** menu;
2. In the window opened select **Carwash** module section;
3. In the right side of the window put a tick opposite **Activate** option and click **Apply** button.

Icon opposite the module name in the left side of setup window will turn yellow. Inactivated modules remain colorless.

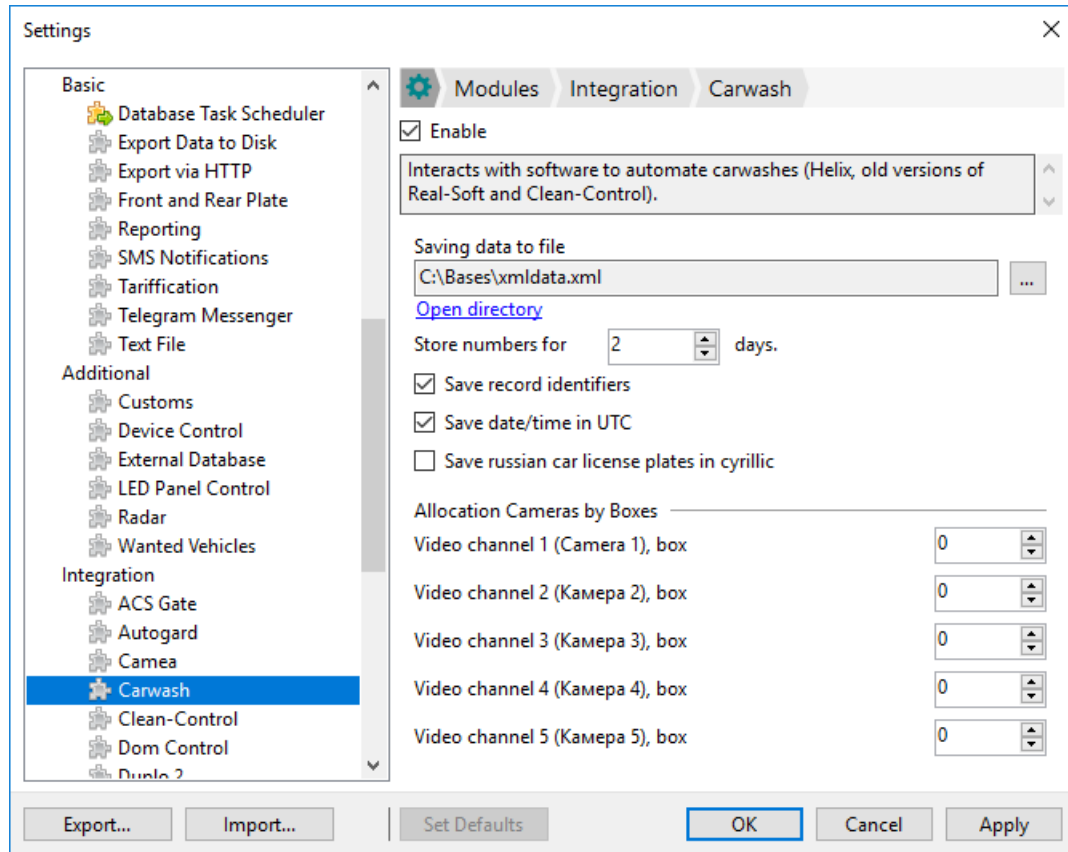


Figure 6.5.10.1

Carwash Module Settings

Module setup parameters include:

- **Data saving to a file** - complete path to a file, which record shall be made to. If given file is not found, it will be created, otherwise the old file will be rerecorded. File encoding is utf-8.
- **Store numbers for N days** - number plates, recognized earlier than the days indicated, will be automatically deleted from the file.

By default: *store number for 2 days.*

- **Save record identifiers** - each entry has its unique identifier.
- **Save date/ UTC time.** UTC - Coordinated Universal Time. Clear the check box for this graph, when needed to save records by local time (UTC + n).

Figure 6.5.10.2 is an example of records saving in UTC and UTC + 3:00.

```

<?xml version="1.0" encoding="UTF-8"?>
- <main name="AMRecogData">
  <rec boks="0" time="20.08.2018 08:05:51" nomer="O609XB199" id="277"/>
  <rec boks="0" time="20.08.2018 08:05:53" nomer="M113MC197" id="278"/>
  <rec boks="1" time="20.08.2018 11:07:49" nomer="O609XB199" id="279"/>
  <rec boks="1" time="20.08.2018 11:07:51" nomer="M113MC197" id="280"/>
  <rec boks="1" time="20.08.2018 11:07:54" nomer="T934CT197" id="281"/>
  <rec boks="1" time="20.08.2018 11:07:57" nomer="K170XO199" id="282"/>
  <rec boks="2" time="20.08.2018 08:10:21" nomer="O609XB199" id="283"/>
  <rec boks="2" time="20.08.2018 08:10:23" nomer="M113MC197" id="284"/>
  <rec boks="2" time="20.08.2018 08:10:26" nomer="T934CT197" id="285"/>
  <rec boks="2" time="20.08.2018 08:10:29" nomer="K170XO199" id="286"/>
</main>

```

UTC + 3:00

Figure 6.5.10.2

- Save Russian number plates in Cyrillic.
- Camps distribution across boxes — records saving to the file with the indication of box for video channels.

```

<?xml version="1.0" encoding="UTF-8"?>
- <main name="AMRecogData">
  <rec boks="0" time="20.08.2018 08:05:51" nomer="O609XB199" id="277"/>
  <rec boks="0" time="20.08.2018 08:05:53" nomer="M113MC197" id="278"/>
  <rec boks="1" time="20.08.2018 11:07:49" nomer="O609XB199" id="279"/>
  <rec boks="1" time="20.08.2018 11:07:51" nomer="M113MC197" id="280"/>
  <rec boks="1" time="20.08.2018 11:07:54" nomer="T934CT197" id="281"/>
  <rec boks="1" time="20.08.2018 11:07:57" nomer="K170XO199" id="282"/>
  <rec boks="2" time="20.08.2018 08:10:21" nomer="O609XB199" id="283"/>
  <rec boks="2" time="20.08.2018 08:10:23" nomer="M113MC197" id="284"/>
  <rec boks="2" time="20.08.2018 08:10:26" nomer="T934CT197" id="285"/>
  <rec boks="2" time="20.08.2018 08:10:29" nomer="K170XO199" id="286"/>
</main>

```

Figure 6.5.10.3

Information is saved after successful recognition.

The xml file has the structure as follows:

```

<?xml version="1.0" encoding="utf-8"?>
<main name="AMRecogData">
<rec boks="0" time="08.08.2018 12:00:00" nomer="O609XB199" id="277"/>
<rec boks="1" time="08.08.2018 12:20:04" nomer="M133MC197" id="278"/>
</main>

```

Where:

- id – entry identifier;
- nomer – vehicle number plate;
- time – time of recognition;
- rec boks – box number.

If file size reaches or exceeds 3 GB, the file is renamed into "name_old" (for instance, file "1.xml" is renamed in "1.xml_old"). Afterwards, a new file with indicated name is created. If file "name_old" already exists, it shall be deleted.

6.5.11. ACS Gate

Module Purpose: present module is designated for transfer of the recognized plate numbers to ACS Gate.

Upon appearance of MV in the control zone, SW recognizes its number plate, by transforming it into format acceptable by ACS Gate and transfers it to the controlling unit. If not all symbols are recognized in the number plate, they are ignored upon transfer, for instance, plate number a 123o #77 would be transferred as A123O77.

The number plate is re-recognized and transferred until MV is in camera visibility area. Such approach allows increasing the possibility for correct recording of the number plate, if the system fails to recognize it for the first time, i.e. there is a chance that it would be correctly recognized again.

Module Activation

To activate the module, perform the following actions:

1. Select **Settings** option in the drop-down list of **Service** menu;
2. In the opened window, select **ACS Gate** module section;
3. In the right part of window place tick opposite **Enable** option and press the **Apply** button.

Icon opposite module name on the left side of setup window would turn yellow. Inactivated modules shall remain colorless.

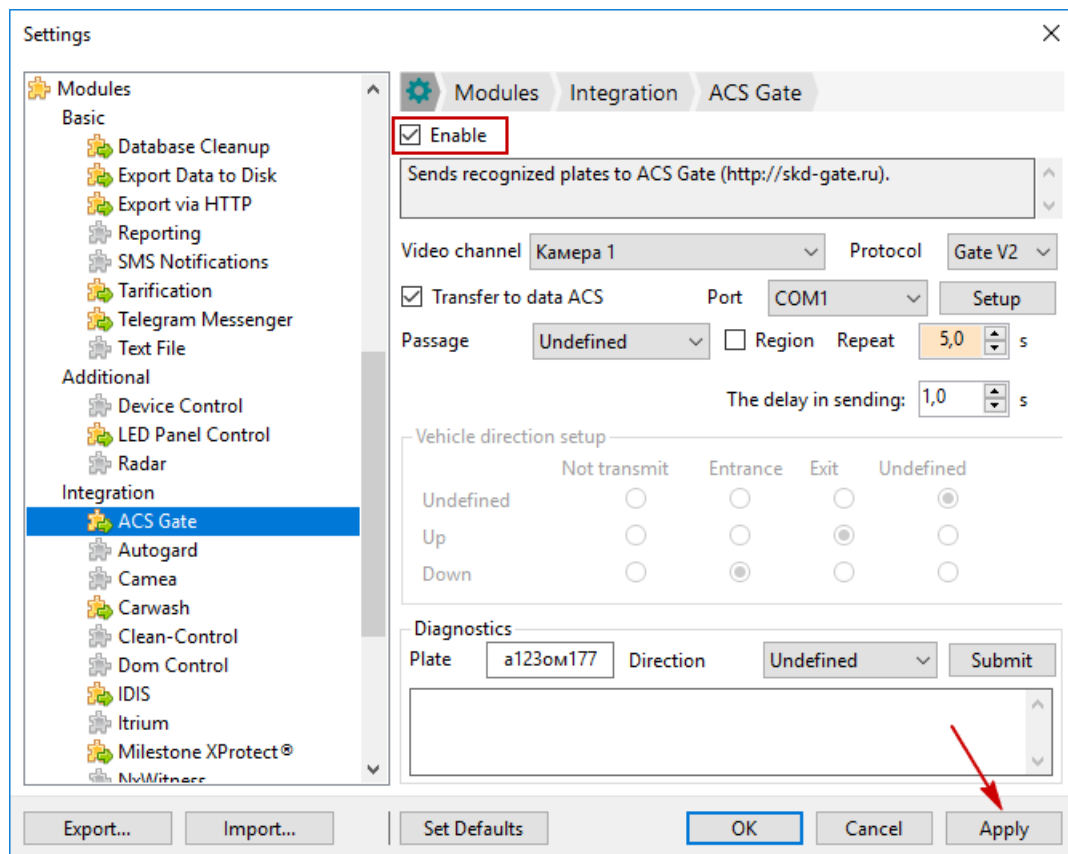


Figure 6.5.10.1

ACS Gate Module Settings

Configuration of each video channel is performed separately. Configured channel is selected from the **Video channel** list.

To transfer data to ACS, plate tick on selected channel to **Transfer Data to ACS**.

Delay in sending is the break before the transfer of recognition results from the Automarshall software to the Gate controller. It is needed to avoid the data loss while simultaneous recognizing and transferring more than one vehicle plate. The capacity of the buffer, where the not yet transferred vehicle plates are stored, is fixed and can contain only 100 numbers.

By default, the set period of delay in sending is 1 second.

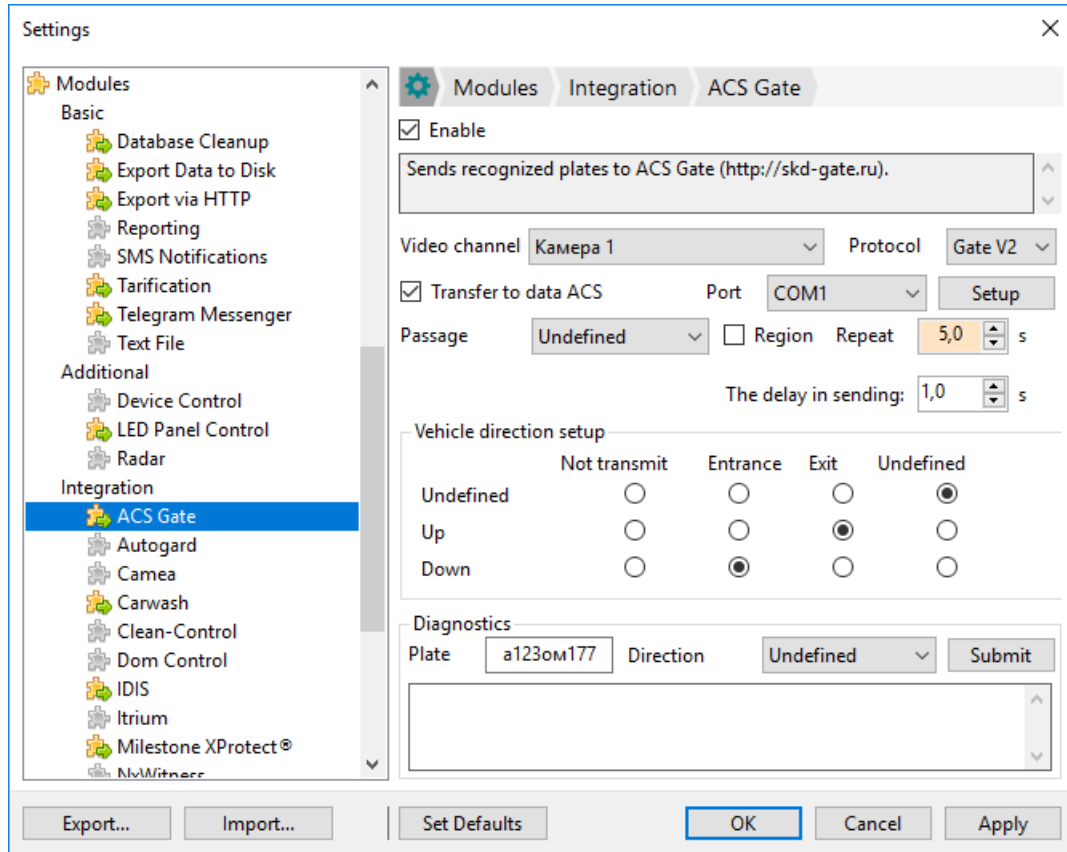


Figure 6.5.10.2

Data is transferred to consequential (COM) port, number of which shall be indicated. Additional port settings are activated upon pressing **Customize** button and allow setting the boud rate (**Baud rate**), parity (**Parity**), data bits (**Data Bits**), and stop bits (**Stop Bits**).

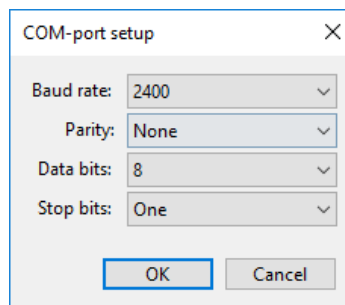


Figure 6.5.10.3

One and the same consecutive data transfer port in various video channels.

Pass-through type allows setting pass-through parameter to be transferred to ACS:

- **Entry** – ACS would interpret any recognized MV as *entering*;

- **Exit** – ACS would interpret any recognized MV as *exiting*;
- **Undefined** – pass-through type would be transferred to ACS as *undefined*;
- **Custom** – allows setting the type of pass-through depending of MV movement direction in a shot;

Region tick indicates whether symbols of the number region shall be transferred to ACS. If most of numbers of the controlled MV has one and the same region, it is recommended to deactivate region transfer.

Interval in seconds between the repeated recognitions of the number plate may be indicated in parameter **Repeat _sec**.

To check data transfer to ACS, use **Diagnostics** tab. It allows for manual indication of the plate number and MV movement direction in a shot, and transfer data to ACS, by pressing the **Transfer** button.

6.5.12. Device Control

Module purpose: this module is designed to control peripherals by sending binary signals to controlling mechanisms or scanning their statuses using digital, network or connectable controllers (input/output devices).

Glossary

Digital device – (input/output device) – a controlling device used in industry and other sectors for automation of processes.

Enabling module

To enable the module, follow instructions below:

1. Select Settings in Service drop-down menu;
2. In a window opened, select Device Control modules section;
3. In the right pane check Enable and click Apply.

An icon next to the module name in the left pane will turn yellow.

Disabled modules are not highlighted.

Configuring Device Manager module

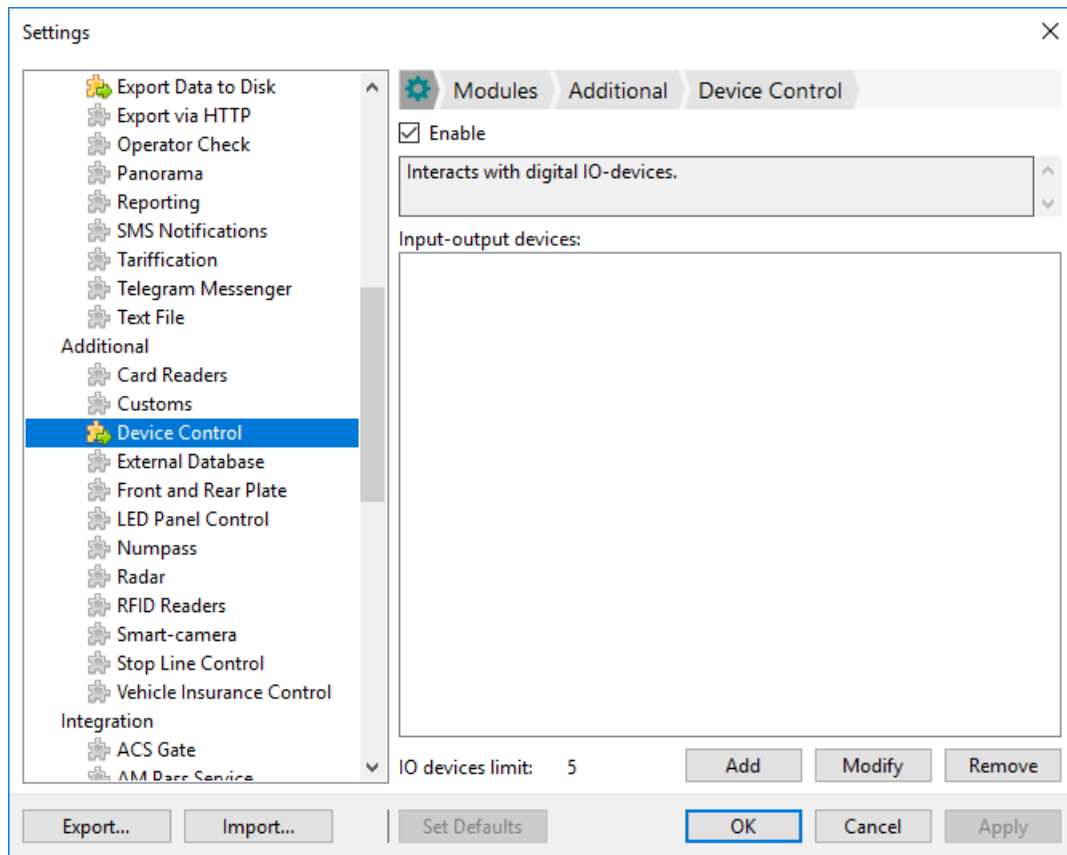


Figure 6.5.12.1

In the lower left corner of the screen you can see your limit of connected devices.

Limit of connected devices depends on your license.

To add a device to the device list, follow a number of simple steps:

1. In the lower right corner click Add.
2. Select the required device from the drop-down list.

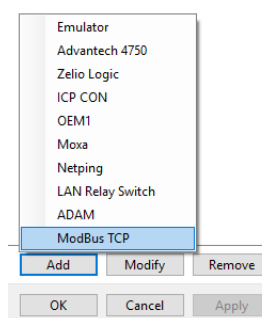


Figure 6.5.12.2

Device Parameters window will open.

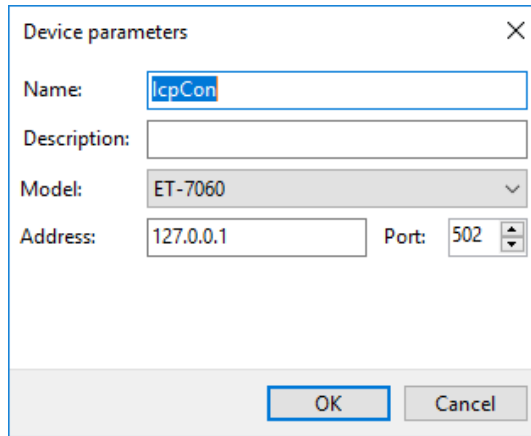


Figure 6.5.12.3

3. In Device Parameters window, enter the required data:

- Device name.
- Description.
- Model
- Device IP address
- Port

Maximum number of inputs and outputs in Triggers depends on the device model.

4. Click OK

If all steps were performed correctly, your device will appear in the device list under the name you entered.

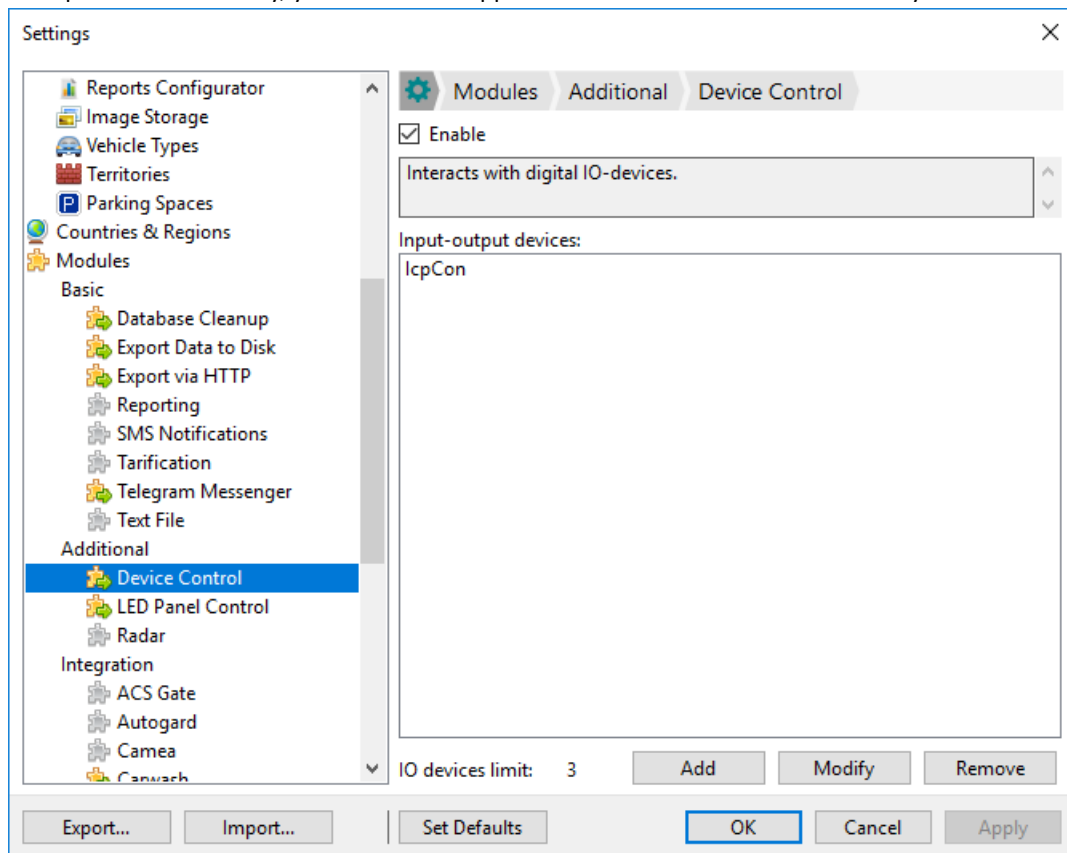


Figure 6.5.12.4

6.5.13. Itrium

Module Purpose: integration with Itrium System.

Module Activation

To activate the module, perform the following actions:

1. Select **Settings** option in the drop-down list of **Service** menu;
2. In the opened window select section **Itrium** Module;
3. In the right part of window place tick opposite **Activate** option and press the **Apply** button.

Icon opposite the module name on the left side of setup window would turn yellow. Inactive modules would remain colorless.

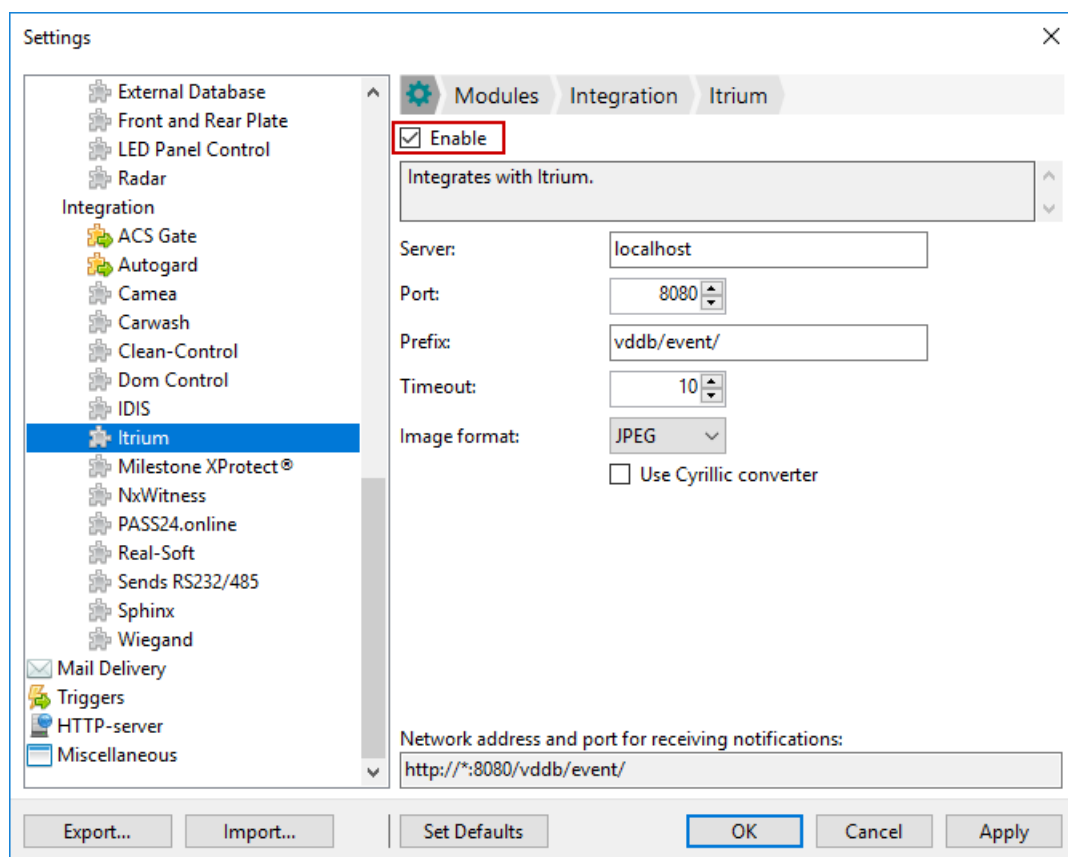


Figure 6.5.12.1

Itrium Module Settings

Module setup parameters include as follows:

- **Server** – network address of PC, on which Itrium system is installed.
- **Port** – port, on which HTTP-server of Vehicle Identification Service in SW Itrium operates.
- **Prefix** – address of processor of HTTP enquiries from Automarshall system.
- **Timeout** – maximum response waiting time from Vehicle Identification Service to POST enquiry from SW Automarshall.

- **Image format:** JPEG, PNG or BMP formats.
- **Use Cyrillic converter.** If parameter is activated, symbols in Vehicle Number Plate would be transferred in Cyrillic, or in Latin – if the parameter is inactive.

Configuration of Vehicle Identification Service in Itrium System Administrator Software

For successful dispatch of the set with details of the recognized MV number plate, perform the following actions:

1. Select (highlight) section **MV Identification System Service** in SW Itrium System Administrator;
2. In the right side of window, **Properties** tab, fill up the field **Network Address and Notification Port**.

In given field indicate the address and port specified in settings of SW Automarshal 2.

See the example below:

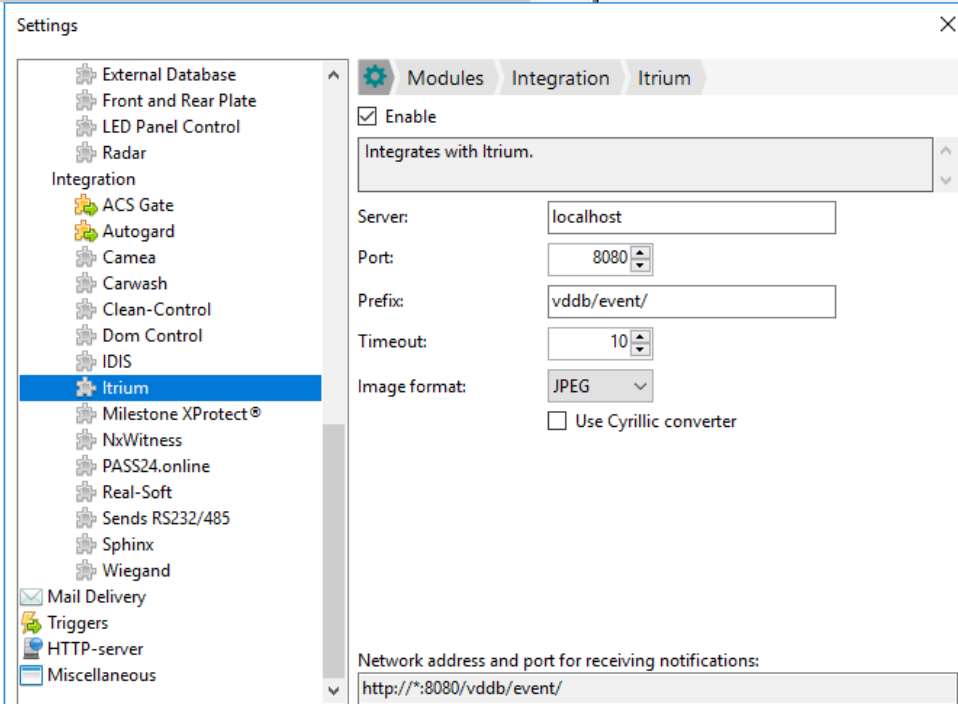
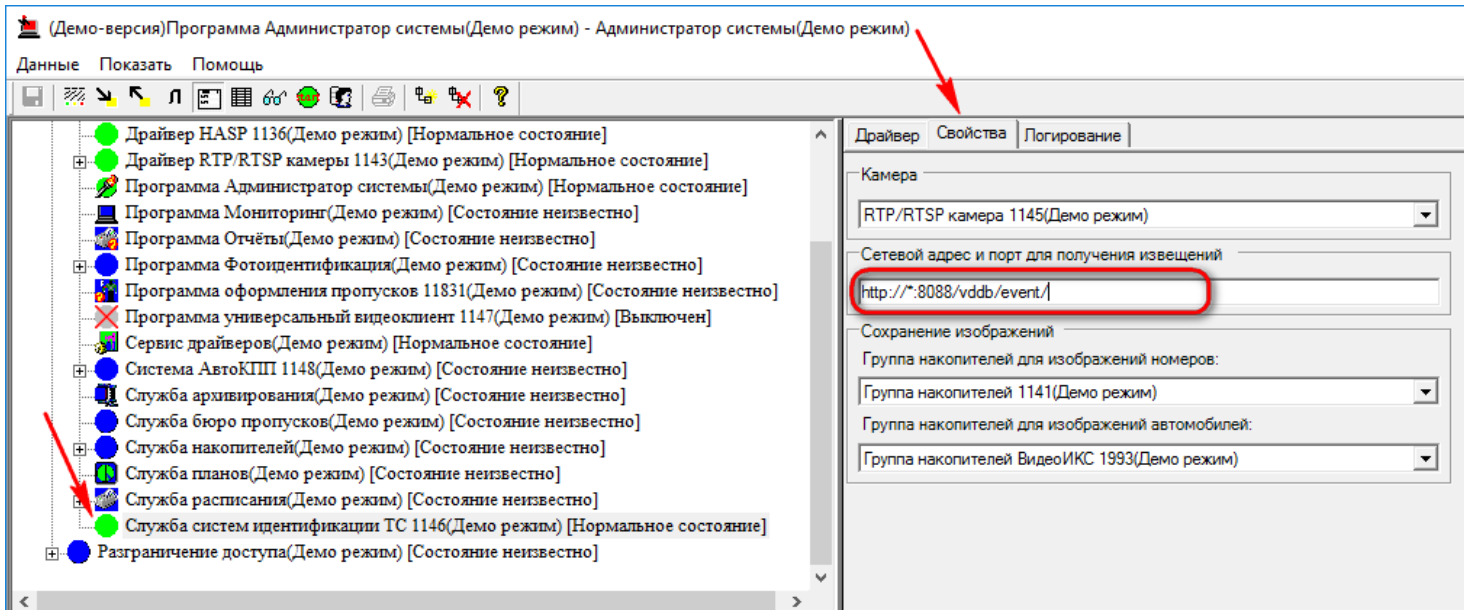


Figure 6.5.12.2

6.5.14. Dom.Control

Dom.Control module is currently supported in Russia only.

6.5.15. PASS24.online

PASS24.online module is currently supported in Russia only.

6.5.16. Operator Check

Purpose of the module: the module is designed to verify the operator presence at the workplace.

To enable the module, open the “Settings” menu: “Tools” → “Settings” → “Operator Check” or use F8 hotkey to open the Settings menu and go to the “Operator Check” section. In the settings section of the “Operator Check” module, check the box in the “Enable” column.

Attention! All actions will be saved after clicking “Apply” or “OK” only.

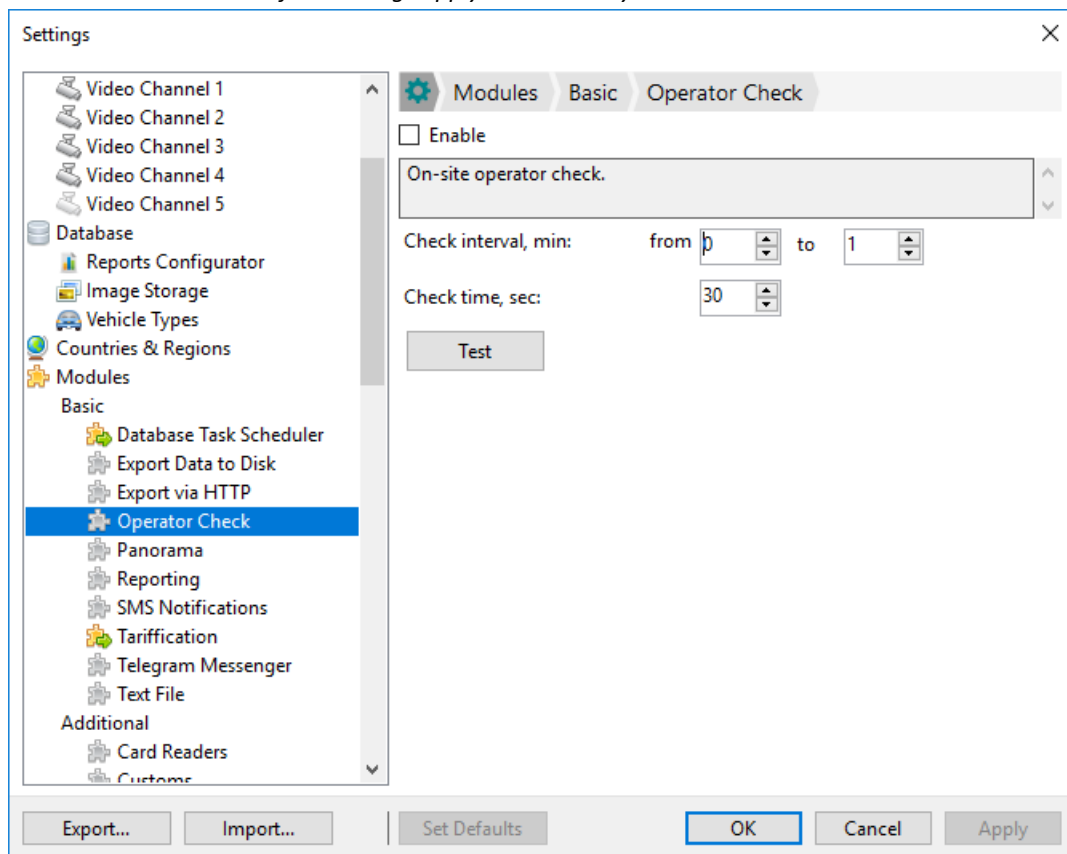


Figure 6.5.16.1

To set up the module, it is necessary to set the time interval, in which the check window and its display time will appear.

Press “Test” to check the operation of the module.

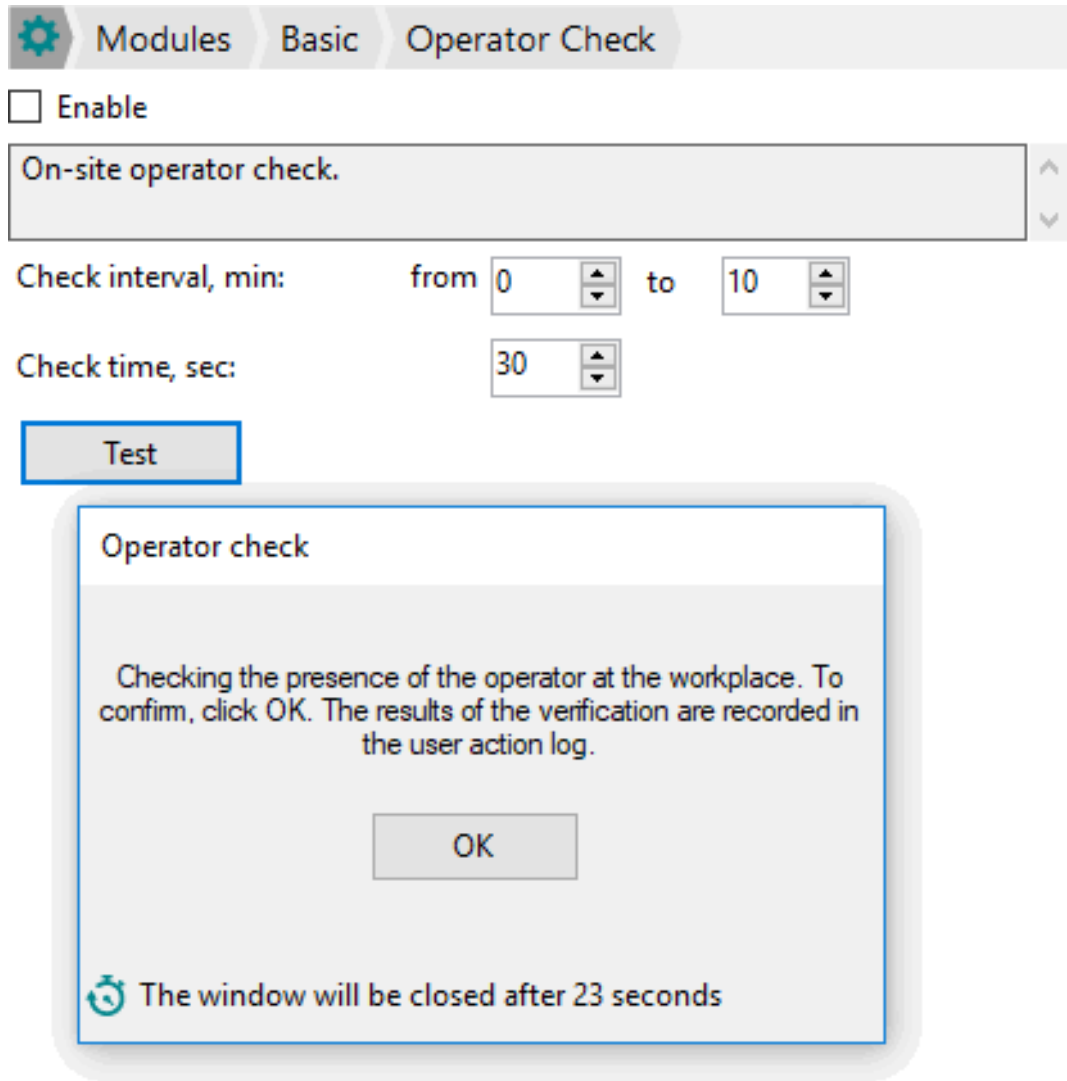


Figure 6.5.16.2

The results of the check are entered in the user action log, if the operator has not confirmed its presence at the workplace (Figure 6.5.16.3).

User Action Log

DATE/TIME

USER

FILTER Since: 14.02.2020 00:00

Until: 22.02.2020 23:59

<All Users>

Exclude System

Date/Time	Message
2/18/2020 10:03:07 AM	No operator in place.

Figure 6.5.16.3

6.5.17. LED panel

LED panel module is designed to interact with the LED panel on the controller manufactured by Listen Vision company and output of information about vehicle passage on it.

Prior to operating LED panel, it is necessary to install Led Player 6.0 which will allow you to find and change the controller IP address.

To turn on the LED panel, go to Configuration: Service → Setup → LED Panel Control or use F8 hotkey. Check Enable (figure 6.5.17.1).

In the Address you need to specify the IP address of the LED panel controller.

The Width and Height values (the number of LEDs) must be entered depending on the size of the LED panel used.

In the Screen Color field, the values from 1 to 4 must be specified: 1 - monochrome; 2 - two-color (with two LEDs); 3 - color (with two LEDs, when it turns yellow when two LEDs are turned on); 4 - full color (RGB LEDs).

Attention! All operations will be saved only after clicking Apply or OK.

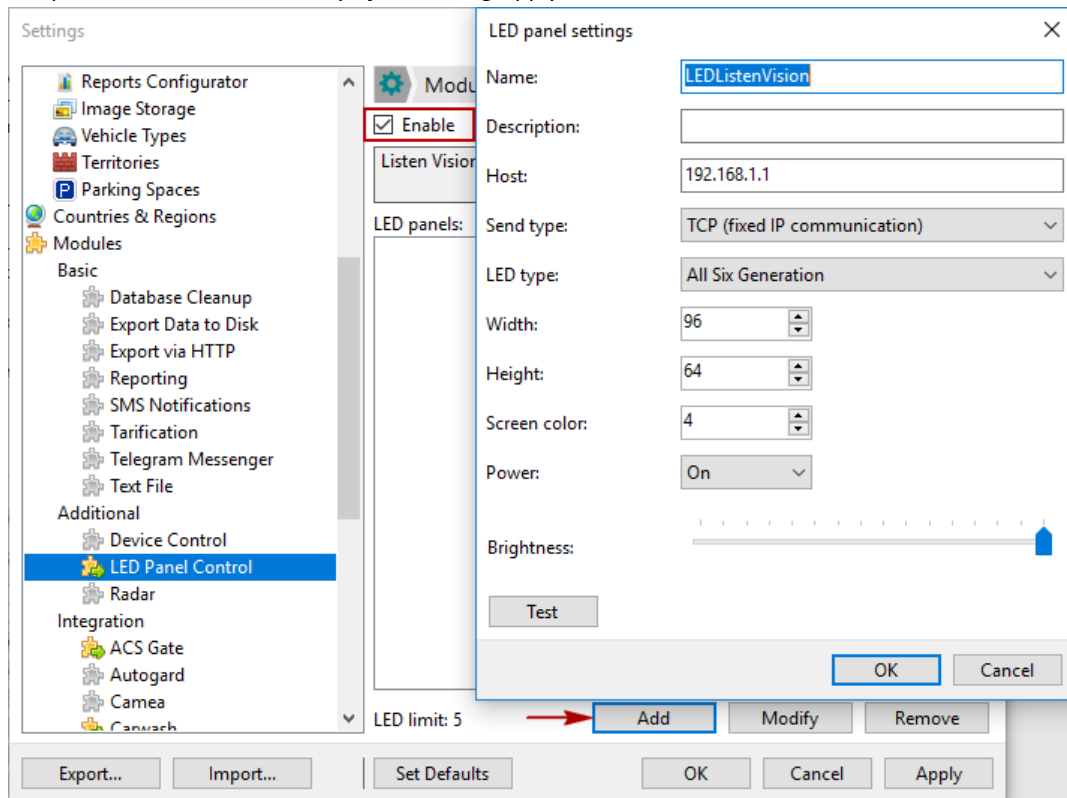


Figure 6.5.17.1

Once the LED control module is enabled, go to the Triggers section and add a new trigger.

You can display messages and images on the LED panel. To do so, click Add in the Actions Taken field; there are three settings for LED panel in the list opener.

Figure 6.5.17.2 shows an example when for a passing vehicle from the Access is Allowed list an image is displayed on the panel (figure 6.5.17.3). After 10 seconds (10 000 milliseconds), the panel turns off.

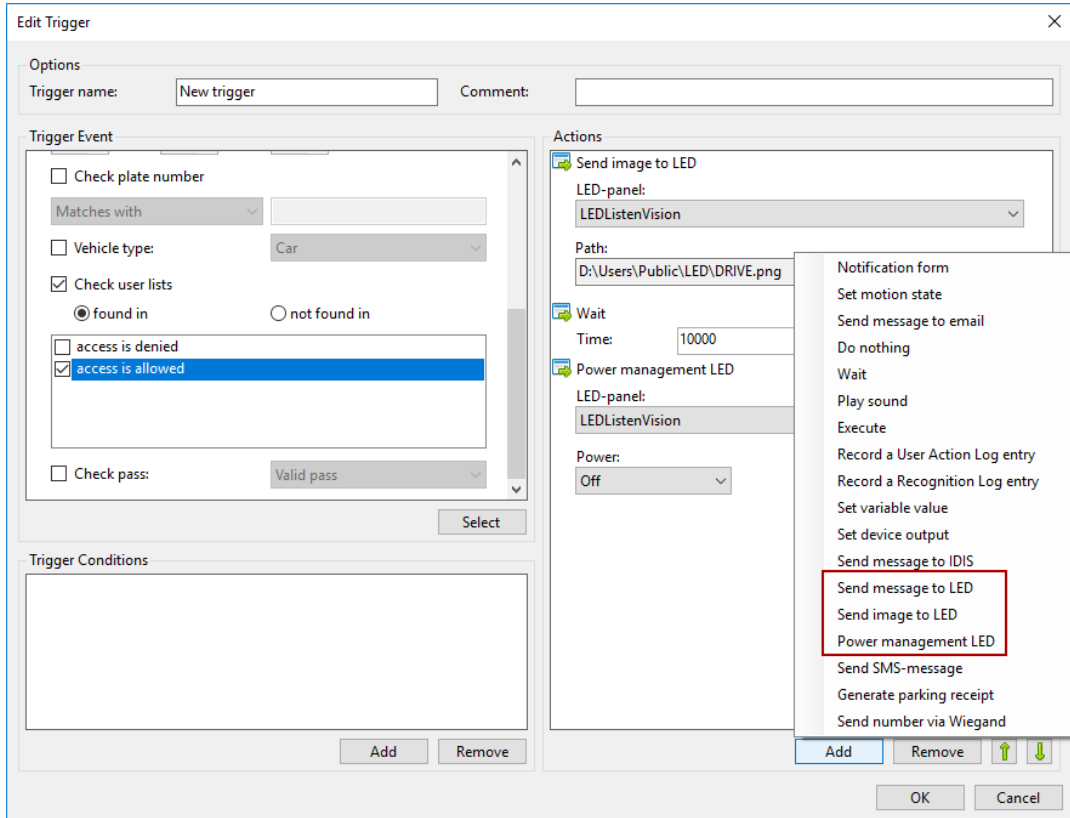


Figure 6.5.17.2

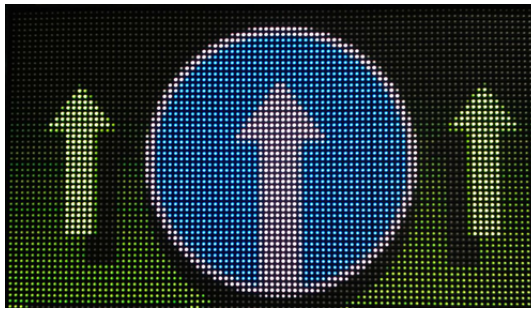


Figure 6.5.17.3

Figure 6.5.17.4 shows an example when for a moving vehicle from the Access is Denied list an image is displayed on the panel (figure 6.5.17.5).

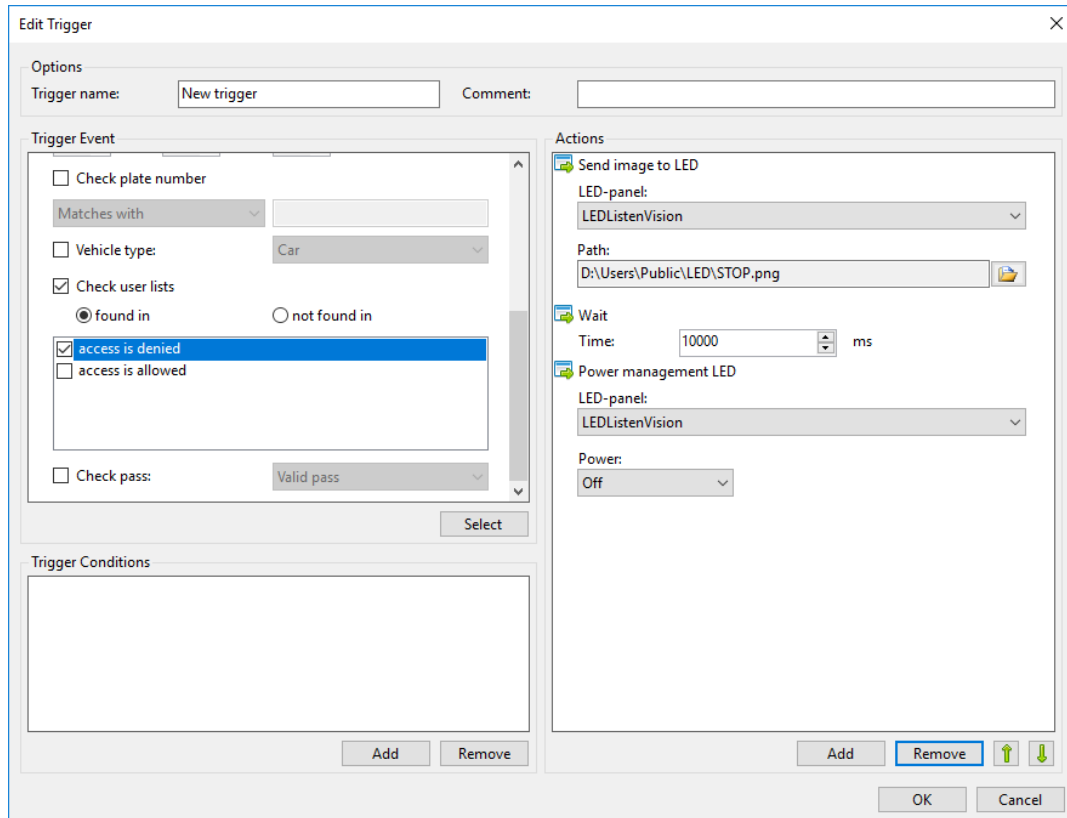


Figure 6.5.17.4

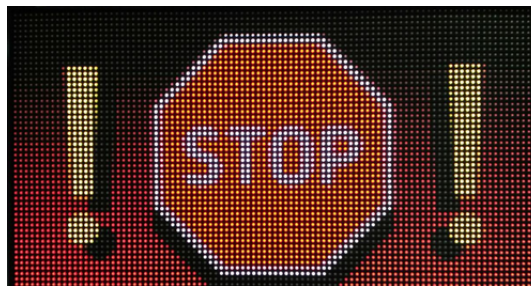


Figure 6.5.17.5

To configure the text output on the LED panel, select the Action Send Image to LED. Font, type of message (static or dynamic), display time for static and speed for the dynamic image type, font, font size, color and position on the screen can be customized for the image. In order to customize the text displayed on the screen, click Setup button (figure 6.5.17.6) and in the String Template Settings window check the required boxes.

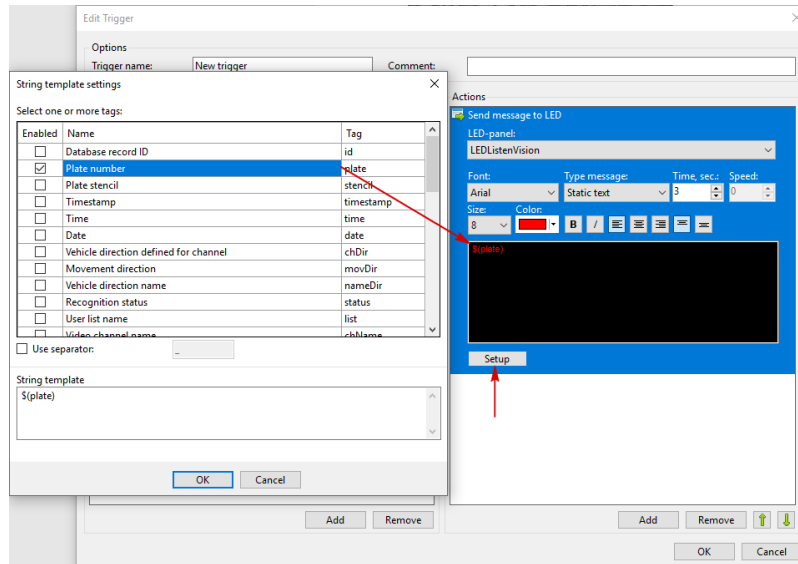


Figure 6.5.17.6

Figure 6.5.17.7 demonstrates the example of settings that enables output to the LED panel of vehicle plate number, time and date of passage and the list the vehicle is in (figure 6.5.17.8).

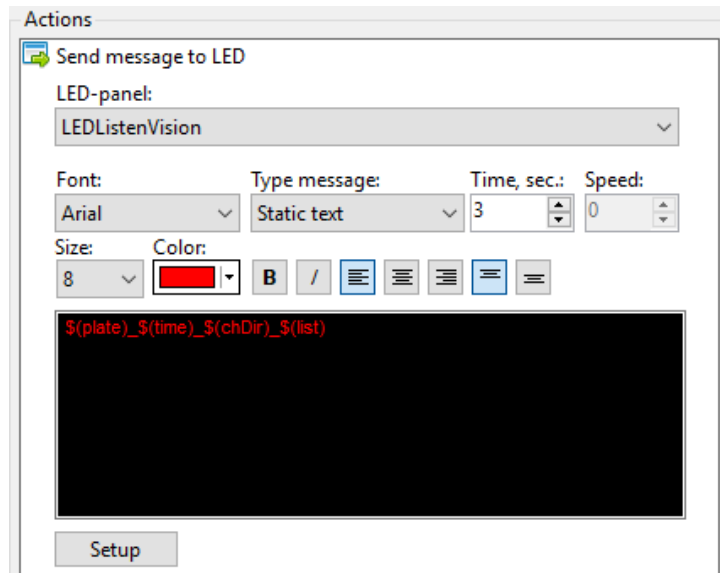


Figure 6.5.17.7



Figure 6.5.17.8

After each action taken in respect of the LED panel, it is necessary to set the LED Power Management action for the LED panel, and tick Disable as shown in figures 6.5.17.4 and 6.5.17.2, otherwise the image or text on the LED panel will continue to be displayed until next trigger activation.

6.5.18. Wiegand

Wiegand is a wire communication interface between the identifier reader (card) and controller widely used in access control systems (ACS). It is designed for transmitting identification result from ACS reader to the controller.

Automarshall supports transmission via Z-2 Base adapter that only supports Wiegand-26 protocol.

To send the license plate number via Wiegand it is necessary to:

1. Connect Z-2 Base adapter to the PC.
2. Enable Wiegand plug-in in Automarshall settings (figure 6.5.18.1).

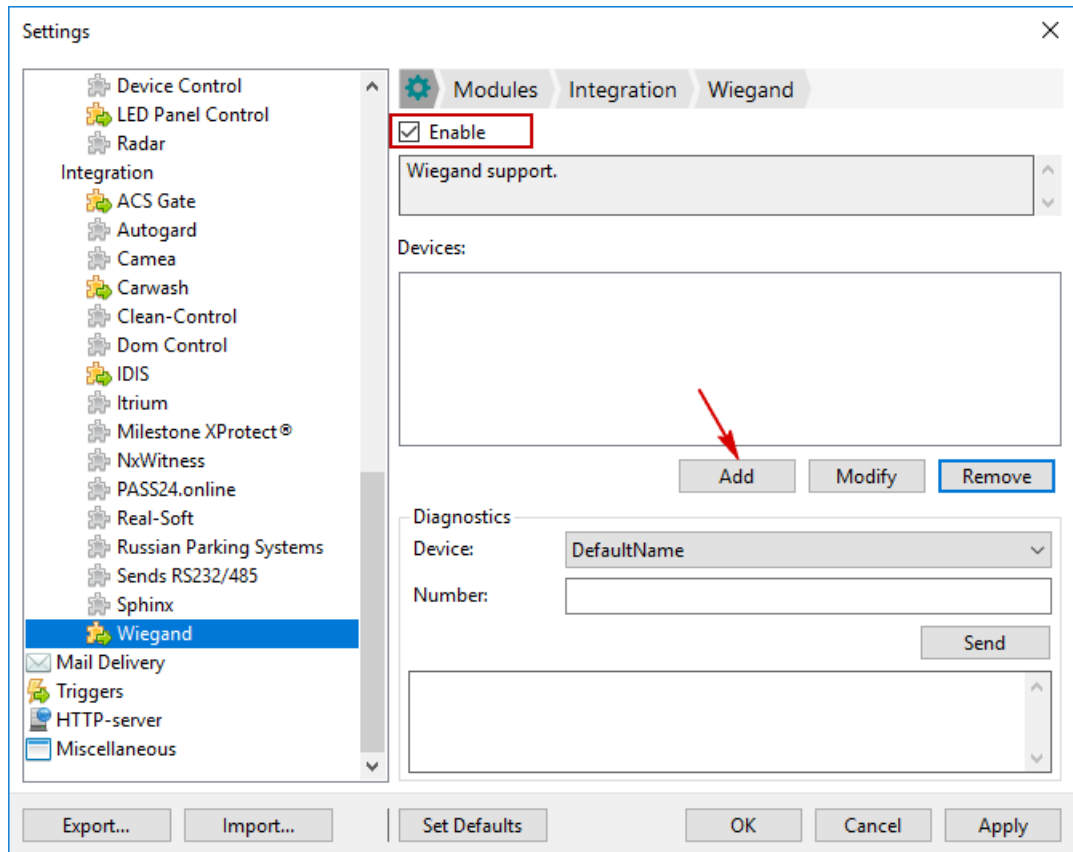


Figure 6.5.18.1

3. Add new device by selecting the required parameters in the settings (figure 6.5.18.2).

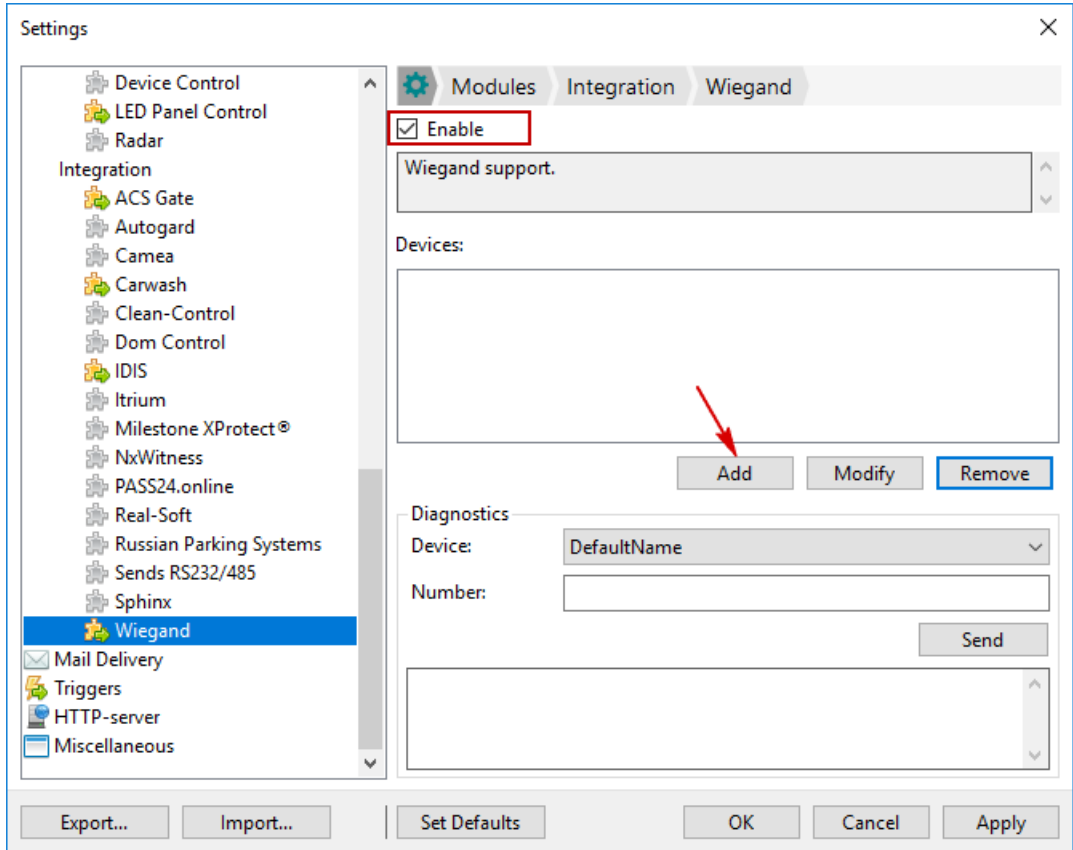


Figure 6.5.18.1

4. A Send Number via Wiegand action will be available in triggers.

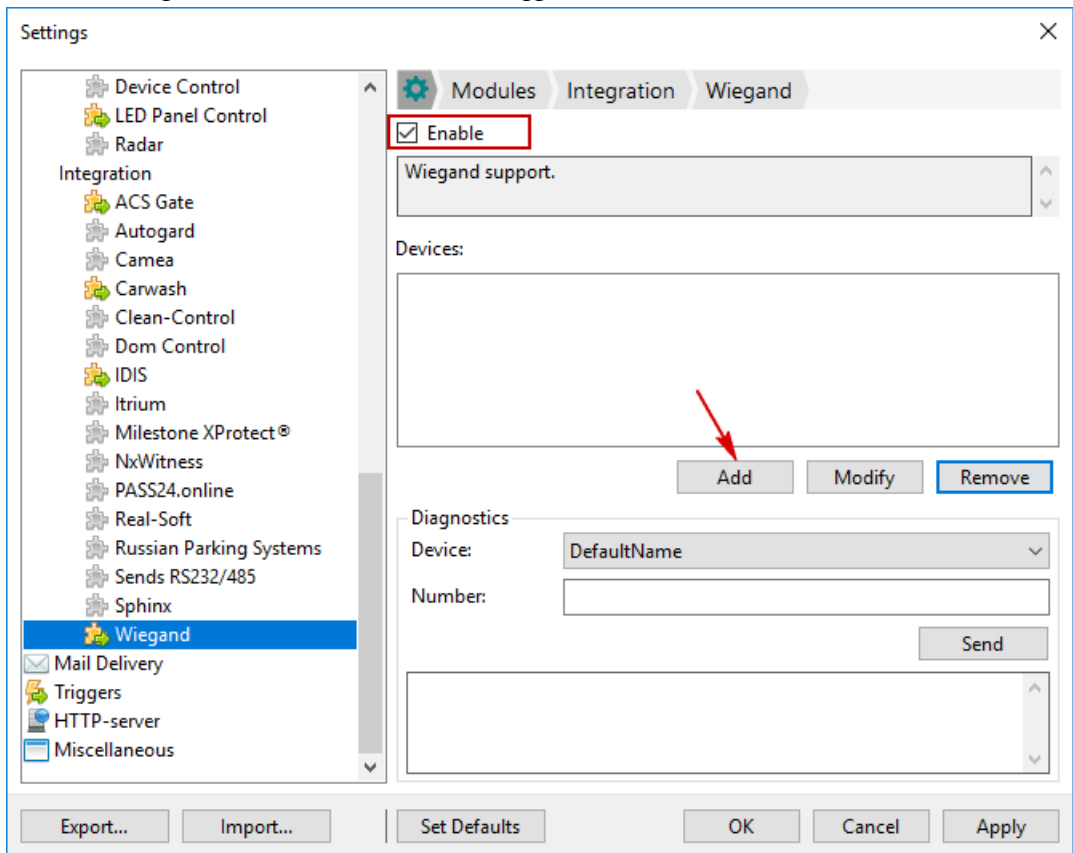


Figure 6.5.18.1

5. After adding Send Number via Wiegand, select a device where the plate number will be sent, and an additional field to store the plate number sent. When the activation event occurs, the selected additional field will be sent to the selected device.

6.5.19. Database Task Scheduler

«Database task scheduler» module is designated to create database cleanup tasks.

To activate the module, select “Settings” in the list of “Service” menu: «Service» → «Settings» or use the hot key F8. Go to “Database task scheduler” section (Figure 6.5.19.1), enable plugin.

Attention! All actions will be saved only after clicking either “Apply” or “Ok” button.

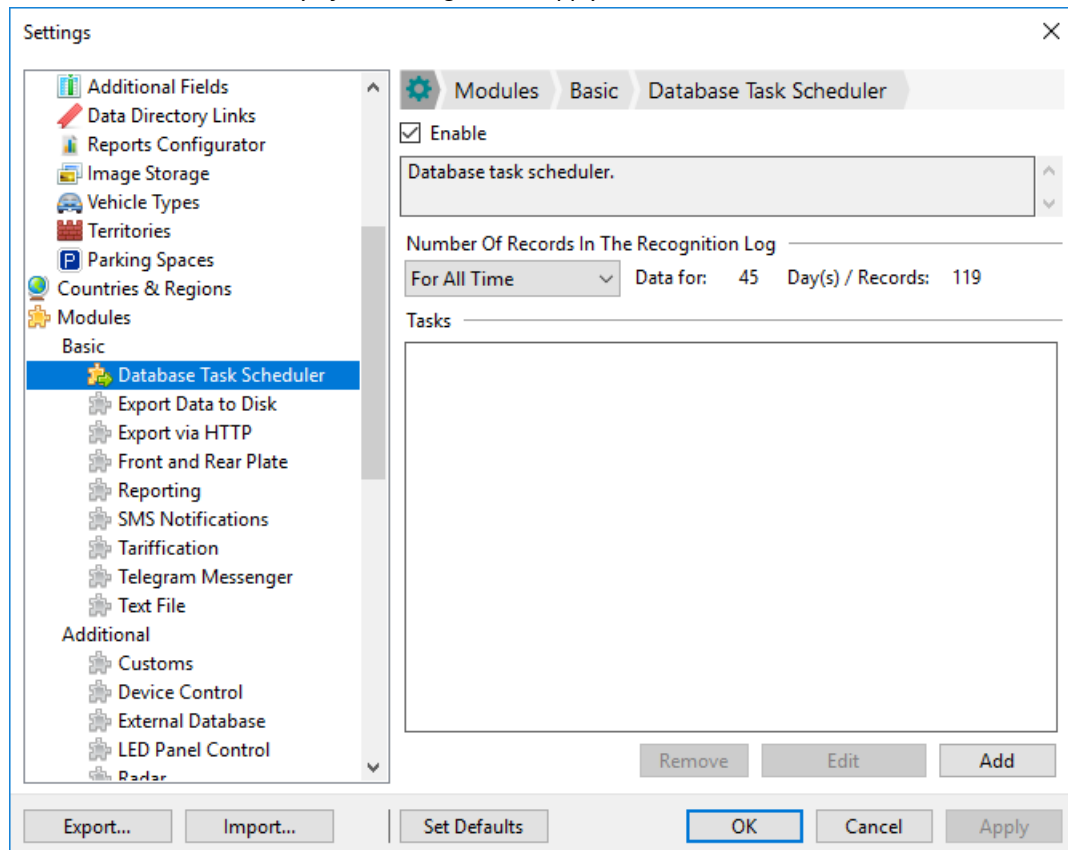


Figure 6.5.19.1

Module renders the data per number of records in the recognition log (Figure 6.5.19.2) in the format: data for N days / number of records over a certain period. The following periods are available at option:

- For all time
- For today
- For a week
- For a month
- For a year

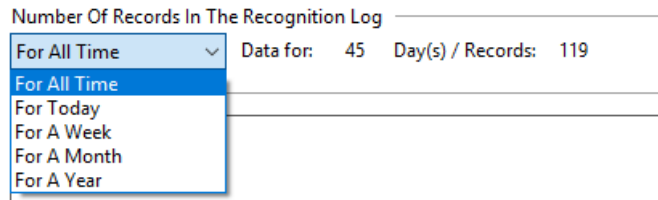


Figure 6.5.19.2

Database Task Scheduler Module Settings

Module settings are made in “Task” window. To go to the window, click “Add” (Figure 6.5.19.3). The flag in the “Enable” field is set for new tasks by default. “Name” field is mandatory.

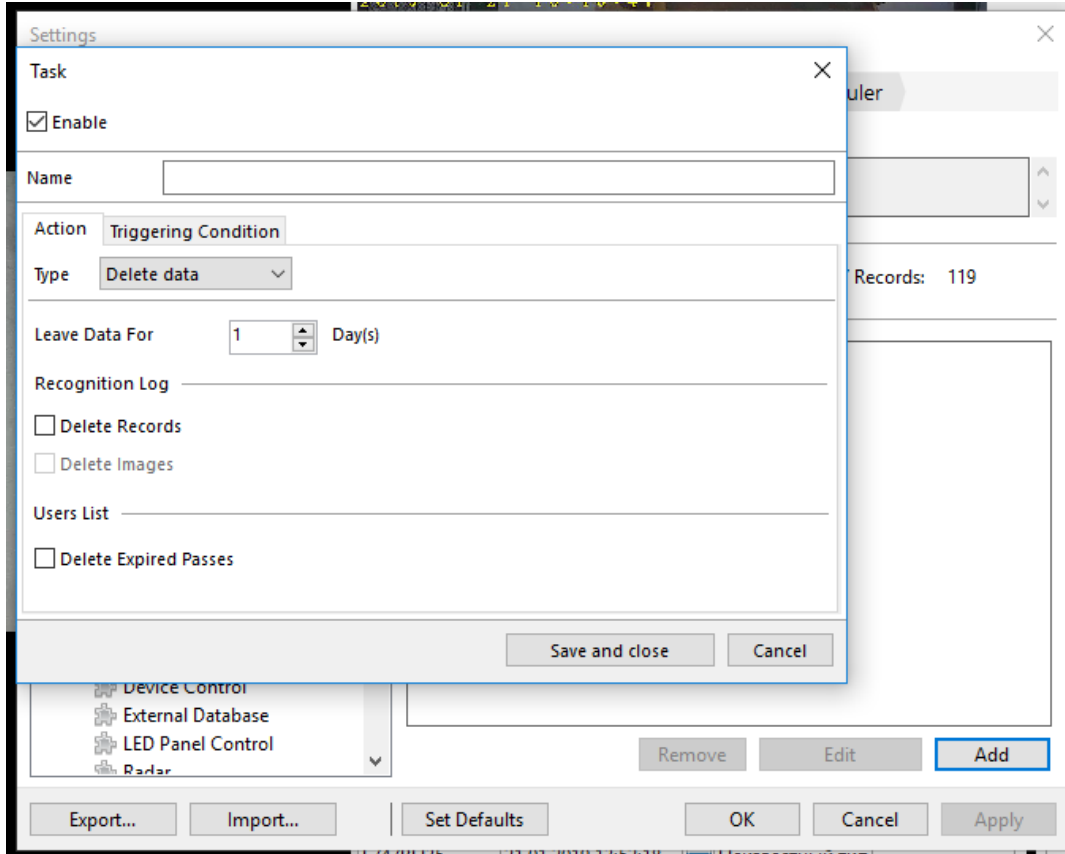


Figure 6.5.19.3

Action

This tab is to set the actions performed by the task.

«Delete Records» task type — it performs the recognition log cleanup (records and/or images delete) and users list cleanup (expired passes delete).

Leave data for N days — it deletes the data that are older than the indicated period. For instance, value set up is 1 day, task start is appointed at 00:00: records older than 24 hours at the moment of task start will be deleted during the cleanup.

The following functions are available for recognition log at option:

Delete Records — records will be deleted from recognition log.

Delete Images — saved recognized images will be deleted. All files with the images are saved to the database folder. Images are saved in two forms: frame at the moment of recognition and vehicle number plate clipped. This action becomes active just when “Delete records” is enabled.

Database folder is located by default: C:\ProgramData\Mallenom\Automarshal\Database\data_base_name_filestream\

The following actions are available for users lists at option:

Delete Expired Passes — template settings are cleared for expired passes.

Triggering Condition

This tab is to set the task triggering type.

Manually — the task is executed manually; no miscellaneous settings are required (Figure 6.5.19.4).

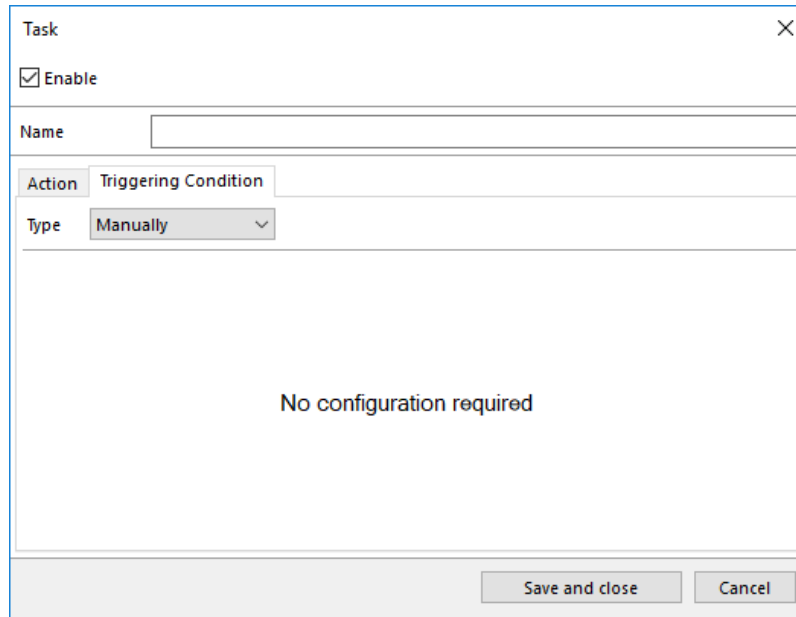


Figure 6.5.19.4

On schedule — the task is executed conditionally (Figure 6.5.19.5).

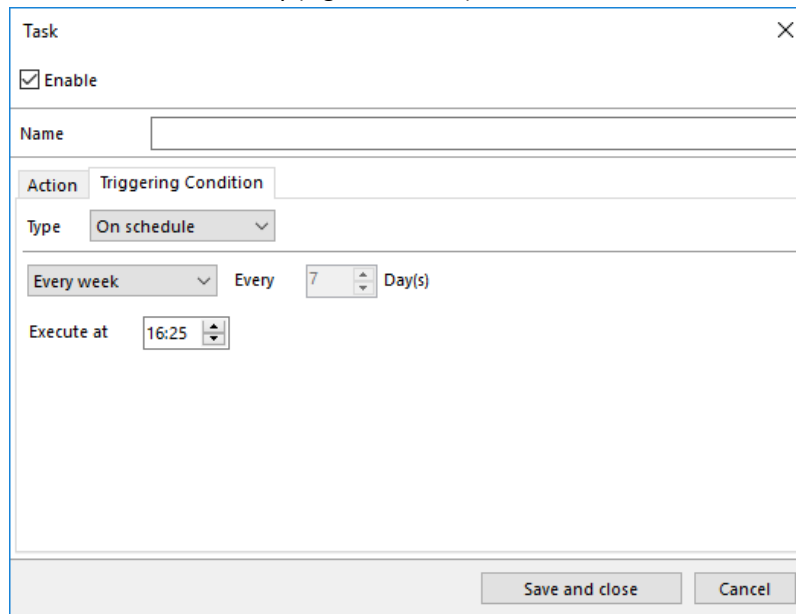


Figure 6.5.19.5

Execute:

- *Every day* — data older than one day are deleted.
- *Every week* — data older than seven days are deleted.
- *Every month* — data older than thirty days are deleted.
- *User-defined* — quantity of days is set manually by the user.

Execute at ... — set the time, which the task shall be executed at.

Important! Once under the task setting with “on schedule: every day” condition for execution, the task will be initiated the next day (every day after settings).

After the task conditions have been set, click “Save and Close” to save the task, or “Cancel” to leave discarding the changes.

After the save procedure has been made, the tasks are displayed in the module, in the “Tasks” field. In the task head-line there is an enable task field and task name. Task body displays the task type and task condition: manually or on schedule.

For “manually” trigger condition, an “Execute” command as well as time and date of the last run are displayed (Figure 6.5.19.6).

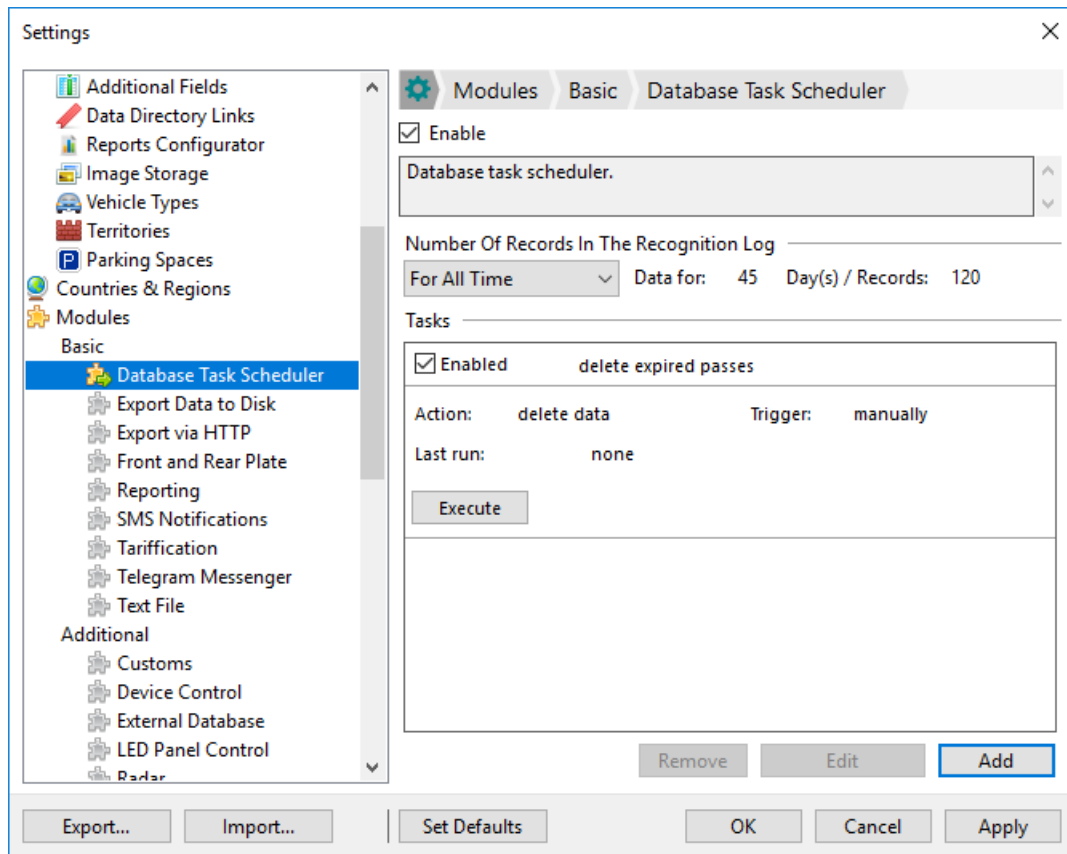


Figure 6.5.19.6

For “on schedule” trigger condition the dates of the last and next run are displayed (Figure 6.5.19.8). For the task, that has just been created, the “none” message will be displayed in the “Last run” field.

Tasks	
<input checked="" type="checkbox"/> Enabled	delete expired passes
Action:	delete data
Trigger:	on schedule
Last run:	none
Next run:	22.01.2019 16:27:50

Figure 6.5.19.7

6.5.20. Integration with Server Milestone XProtect®



Integration can be performed with *Milestone XProtect*® Express edition or higher.

Video stream configuration

Go to video channel settings tab at **Service** → **Settings** → **Video Channels** → **Video Channel N** → **Select...** and set the video source as Milestone XProtect®.

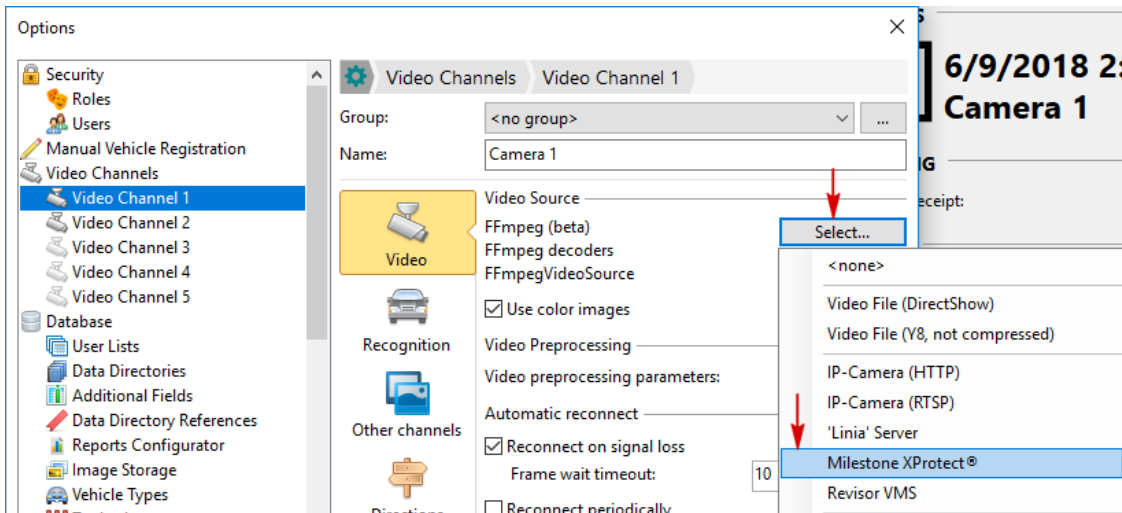


Figure 6.5.20.1

Go to video source setup menu by clicking **Setup...** Configure the Milestone server connection.

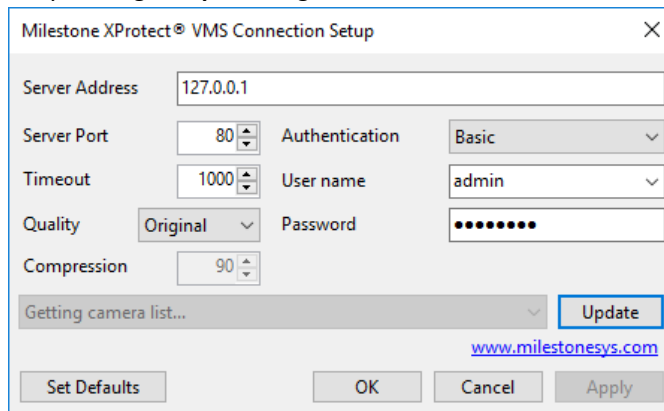


Figure 6.5.20.2

Event transmission setup

Open the Milestone XProtect® module settings tab at: Service → Settings → Modules → Integration → Milestone XProtect®. Enable the module by checking the Enable box.

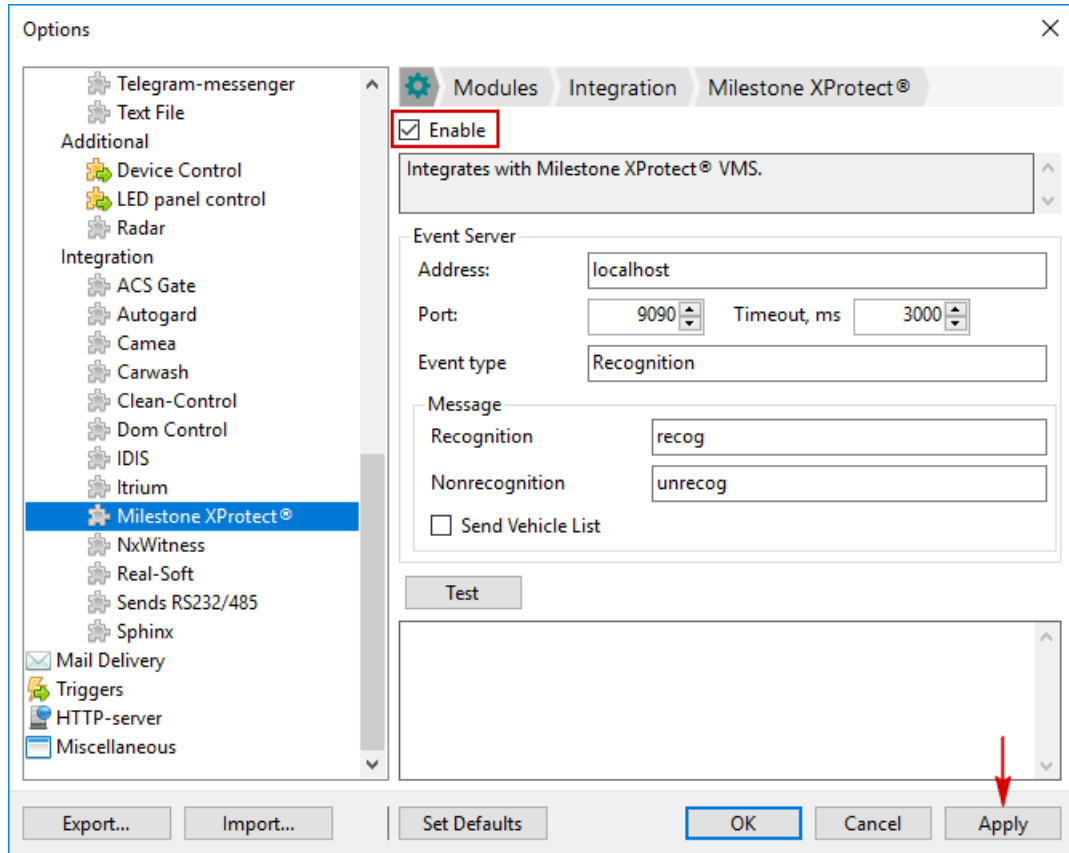


Figure 6.5.20.3

This window is used to configure the port where the events will be transmitted, along with the names of events sent to the Milestone server upon recognition/nonrecognition of the license plate. Events in the context of the Milestone server are called *Analyze events*. If you check the **List as a Name box**, then, when the plate is recognized and is present in the User List is available, the name of the event will be transmitted as the name of the list.

The **Test** button allows you to check the transmission of an event to the Milestone server at the current settings. If the Test button is not active, click **Apply**.

Milestone Server configuratoin

Analyze events receipt must be enabled on the Milestone server as shown in the figure (Options → Analytics Events). The port must match the port configured in Automarshal 2 software.

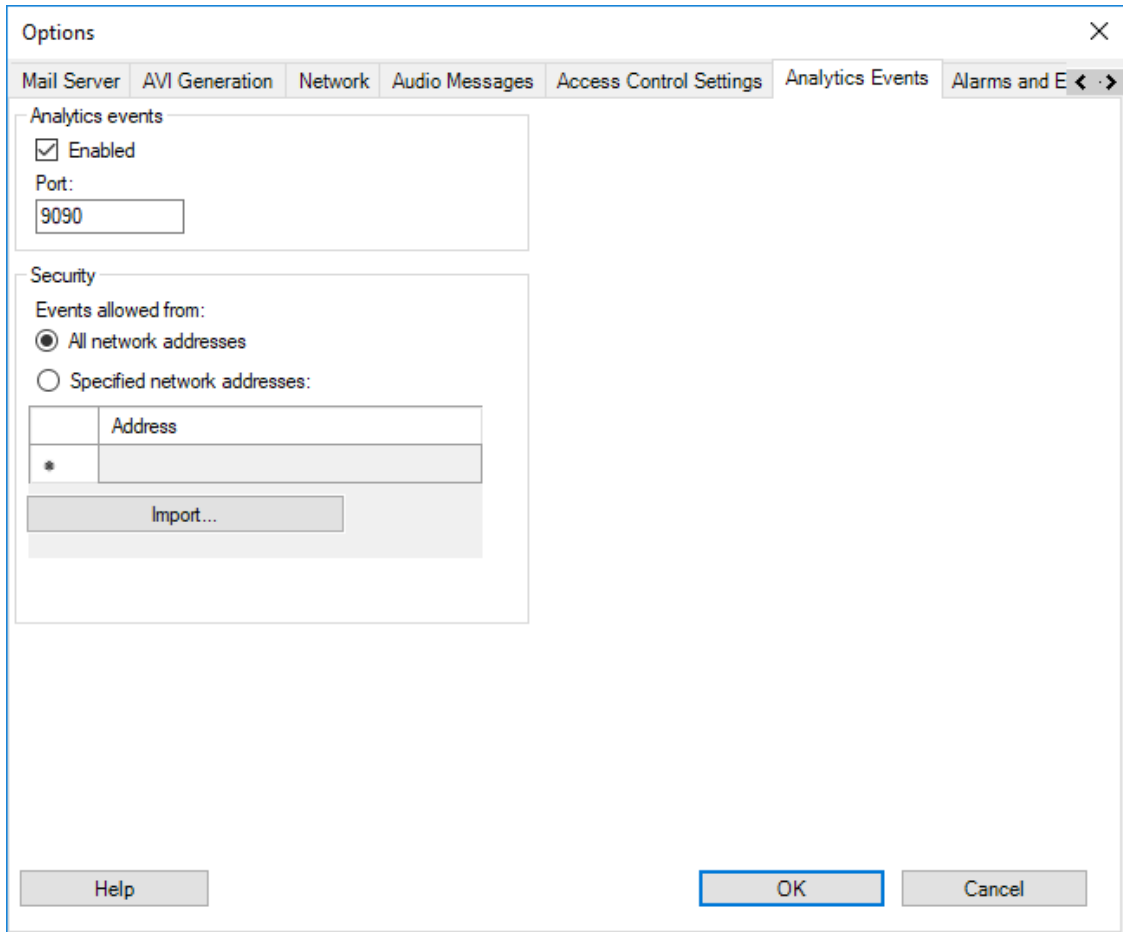



Figure 6.5.20.4

It is necessary to create events the names of which match the same in Automarshall 2 software. If necessary, Alerts may be assigned to the events.

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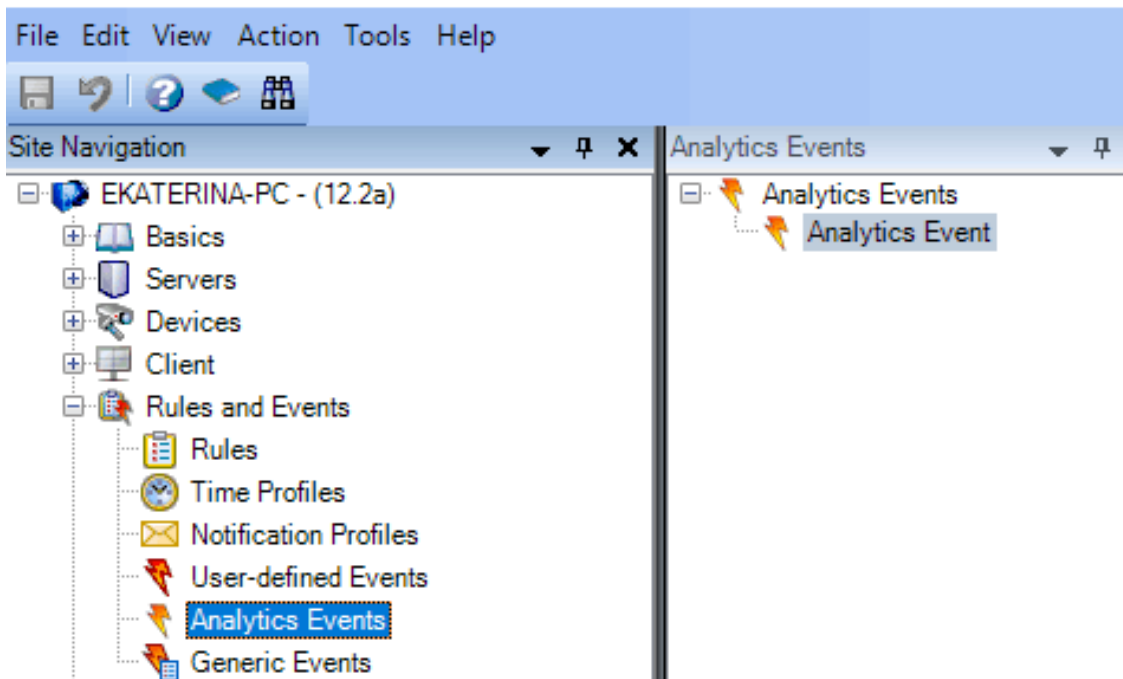


Figure 6.5.20.5

6.5.21. Real-Soft

Module Purpose: this module is designated for the file recording of main data on vehicle detected after its number plate recognition.

Module is meant for interaction with the Real-Soft software to automate carwashes. Real-Soft is a software system for carwashes.

Module Activation

To activate the module, perform the following actions:

1. Select **Settings** option in the drop-down list of **Service** menu;
2. In the window opened select **Real-Soft** module;
3. In the right filed of the window put a tick opposite **Activate** option and click **Apply** button.

Icon opposite the module name in the left side of setup window will turn yellow. Inactivated modules remain colorless.

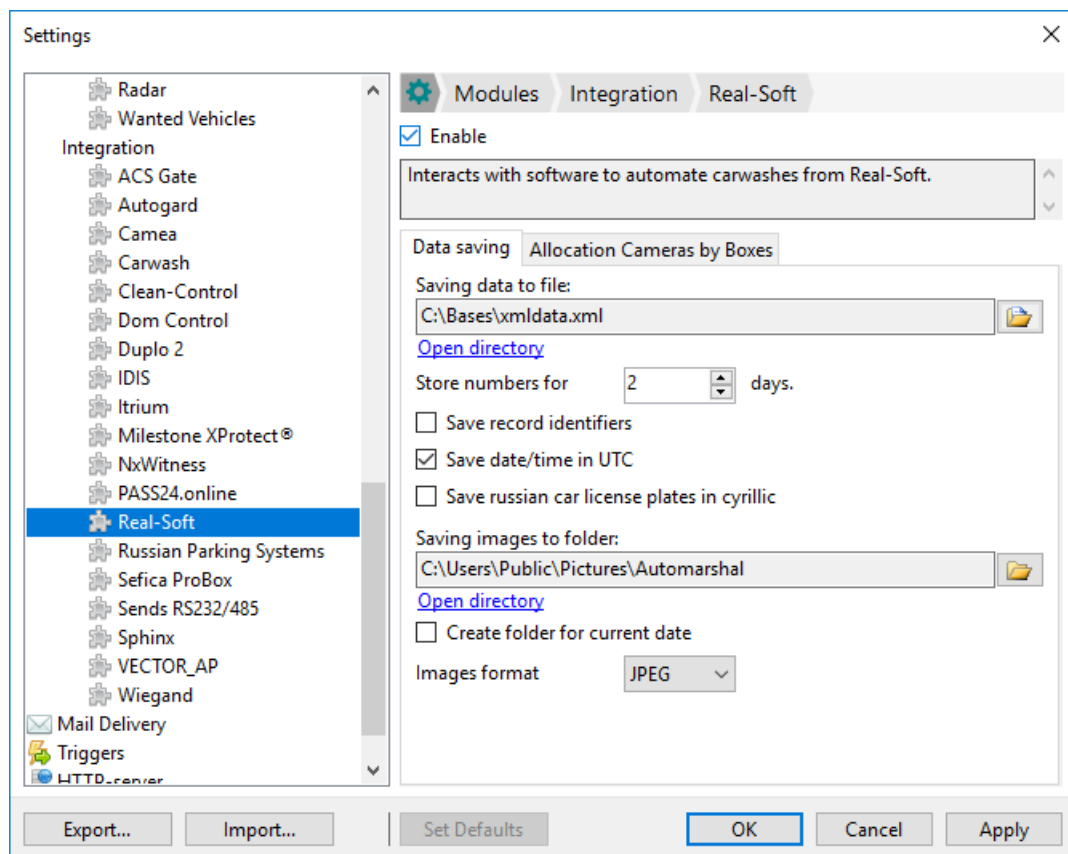


Figure 6.5.21.1

Real-Soft Module Settings

Module setup parameters include:

- **Data saving to a file** - complete path to a file, which record shall be made to. If given file is not found, it will be created, otherwise the old file will be rerecorded. File encoding is UTF-8.
- **Store numbers for N days** - number plates, recognized earlier than the days indicated, will be automatically deleted from the file.

By default: *Store number for 2 days.*

- **Save record identifiers** - each entry has its unique identifier.
- **Save date/ UTC time.** UTC - Coordinated Universal Time. Clear the check box for this graph, when needed to save records by local time (UTC + n).

Figure 6.5.21.2 is an example of records saving in UTC and UTC + 3:00.

```

<?xml version="1.0" encoding="UTF-8"?>
- <main name="AMRecogData">
  <rec boks="0" time="20.08.2018 08:05:51" nomer="O609XB199" id="277"/>
  <rec boks="0" time="20.08.2018 08:05:53" nomer="M113MC197" id="278"/>
  <rec boks="1" time="20.08.2018 11:07:49" nomer="O609XB199" id="279"/>
  <rec boks="1" time="20.08.2018 11:07:51" nomer="M113MC197" id="280"/>
  <rec boks="1" time="20.08.2018 11:07:54" nomer="T934CT197" id="281"/>
  <rec boks="1" time="20.08.2018 11:07:57" nomer="K170XO199" id="282"/>
  <rec boks="2" time="20.08.2018 08:10:21" nomer="O609XB199" id="283"/>
  <rec boks="2" time="20.08.2018 08:10:23" nomer="M113MC197" id="284"/>
  <rec boks="2" time="20.08.2018 08:10:26" nomer="T934CT197" id="285"/>
  <rec boks="2" time="20.08.2018 08:10:29" nomer="K170XO199" id="286"/>
</main>
    
```

UTC + 3:00

Figure 6.5.21.2

- **Save Russian number plates in Cyrillic.**
- **Folder for image storage** – complete path to a folder, where files will be stored.
- **Create folder for each date** – files will be recorded to separate folders for each new date.
- **Image format** – format select, which the images will be saved in.

The following formats are available: *.jpeg, *.png, *.bmp.

- **Camps distribution across boxes** — records saving to the file with the indication of box for video channels.

```

<?xml version="1.0" encoding="UTF-8"?>
- <main name="AMRecogData">
  <rec boks="0" time="20.08.2018 08:05:51" nomer="O609XB199" id="277"/>
  <rec boks="0" time="20.08.2018 08:05:53" nomer="M113MC197" id="278"/>
  <rec boks="1" time="20.08.2018 11:07:49" nomer="O609XB199" id="279"/>
  <rec boks="1" time="20.08.2018 11:07:51" nomer="M113MC197" id="280"/>
  <rec boks="1" time="20.08.2018 11:07:54" nomer="T934CT197" id="281"/>
  <rec boks="1" time="20.08.2018 11:07:57" nomer="K170XO199" id="282"/>
  <rec boks="2" time="20.08.2018 08:10:21" nomer="O609XB199" id="283"/>
  <rec boks="2" time="20.08.2018 08:10:23" nomer="M113MC197" id="284"/>
  <rec boks="2" time="20.08.2018 08:10:26" nomer="T934CT197" id="285"/>
  <rec boks="2" time="20.08.2018 08:10:29" nomer="K170XO199" id="286"/>
</main>
    
```

Figure 6.5.21.3

Information is saved after successful recognition.

The xml file has the structure as follows:

```
<?xml version="1.0" encoding="utf-8"?>
<main name="AMRecogData">
<rec boks="0" time="08.08.2018 12:00:00" nomer="O609XB199" id="277"/>
<rec boks="1" time="08.08.2018 12:20:04" nomer="M133MC197" id="278"/>
</main>
```

Where:

- id - entry identifier;
- nomer - vehicle number plate;
- time - time of recognition;
- rec boks - box number.

If file size reaches or exceeds 3 GB, the file is renamed into "name_old" (for instance, file "1.xml" is renamed in "1.xml_old"). Afterwards, a new file with indicated name is created. If file "name_old" already exists, it shall be deleted.

6.5.22. Radar

The **"Radar" module** is designed for integration with a radio-locating vehicle speed meter (radar). The measuring of vehicle speed is made at the time of recognition of the license plate.

The plugin functions:

- getting the value of vehicle speed from the metering device and synchronizing it with the recognized license plate in the Automarshall software;
- recording the received data in the database log;
- alerting the operator (alarm window, beep, color indication) when the allowed speed limit has been exceeded;
- output of the report of recognized vehicles with stating the measured speed.

To enable the module, please open the "Settings" menu, then "Service" → "Settings" → "Radar" or use the F8 hot key and go to the needed section. Check the box at the "Enable" item (Figure 6.5.22.1) and click the "Apply" button.

The icon opposite the plugin name on the left side of the settings window will turn yellow. The disabled plugins are of dim color.

The module has an emulator which allows to test the module's operation, for example, on a test video.

When setting up, please specify the video channel on which the vehicle movement is being registered and select "Emulator" in the "Radar" field (Figure 6.5.22.1). By default, the fixation speed is set in the range from 0 to 100 km/h, these data can be edited.

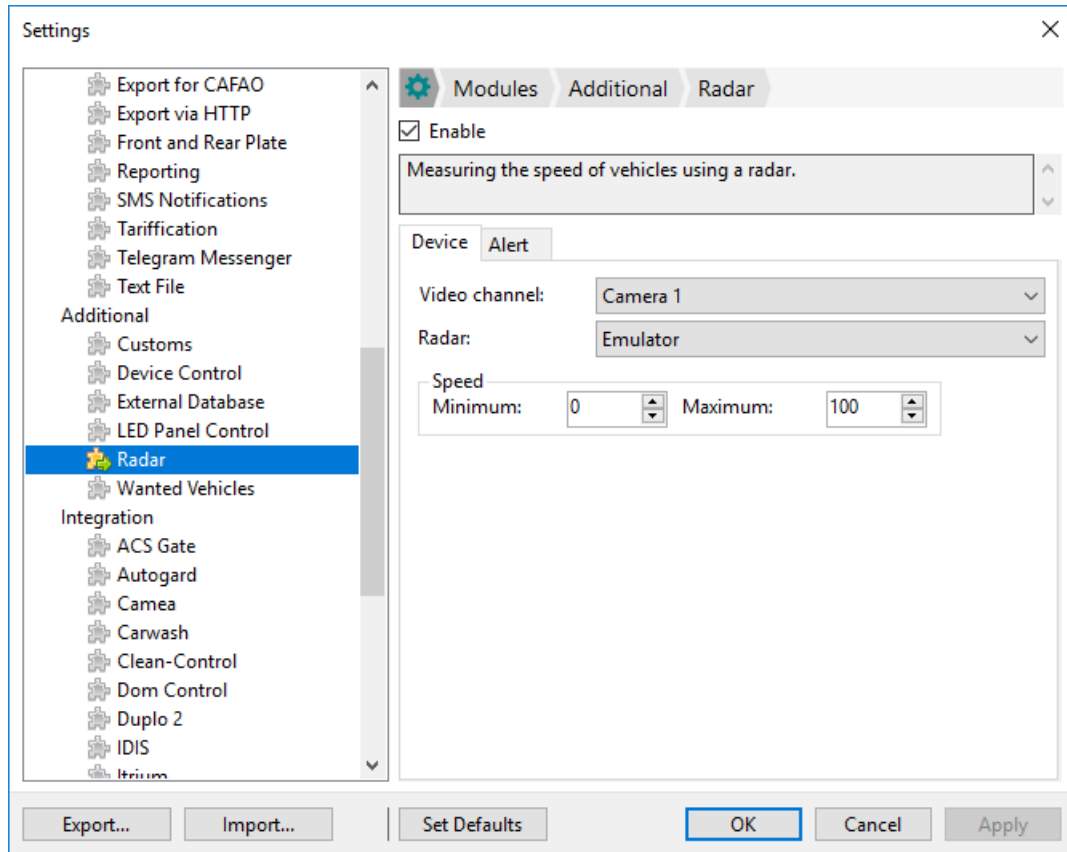


Figure 6.5.22.1

The module has the option to enable the alerting of the operator with the alarm window in case of exceed of the allowed speed limit is (Figure 6.5.22.2).

The default speed is 100 km/h.

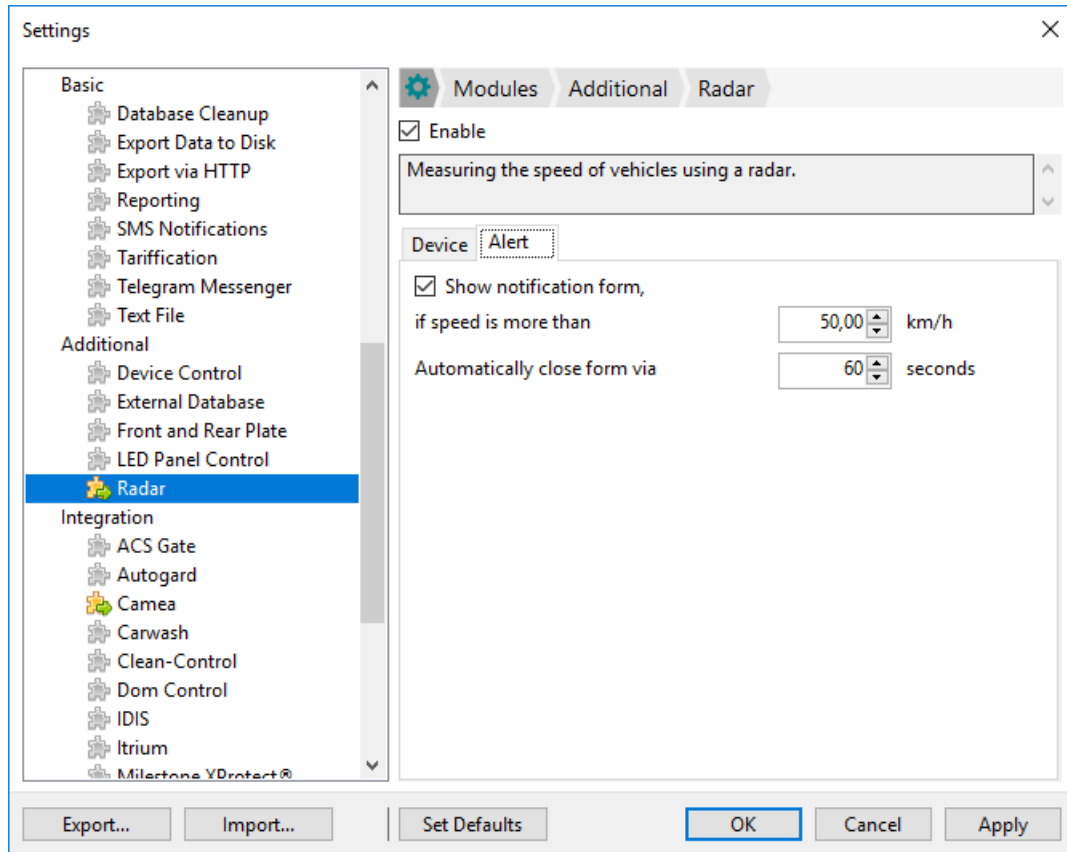


Figure 6.5.22.2

The time after which the alert window will be automatically closed can be specified in the settings (Figure 6.5.22.2). The default time is 60 seconds. The window closure can be cancelled by clicking the “Do not close” button.

The data from the alert window can be copied by clicking on the “Copy” button in the lower right corner of the window. The copied data are as follows:

The vehicle with the state registration number 8KJX23 has been detected at the speed of 53 km/h.

Database: no.

Direction: Bottom up

After the module has been enabled, the additional “Speed” field will be displayed in the log. The “Speed” field will contain the speed value detected by the “Radar” (Figure 6.5.22.3).

RECOGNITION LOG					AUTOUPDATE
Plate	Date/Time	Direction	Vehicle type	Speed	
E747BH35	03.06.2019 14:18:57	↑ Down up	↔ Car	✓ 48	
B466XY35	03.06.2019 12:59:13	↓ Top down	↔ Car	✓ 48	
B797TE35	03.06.2019 14:08:35	↓ Top down	↔ Car	✓ 48	

Figure 6.5.22.3

To date, Automarshall supports only the Iskra DA/40 radar.

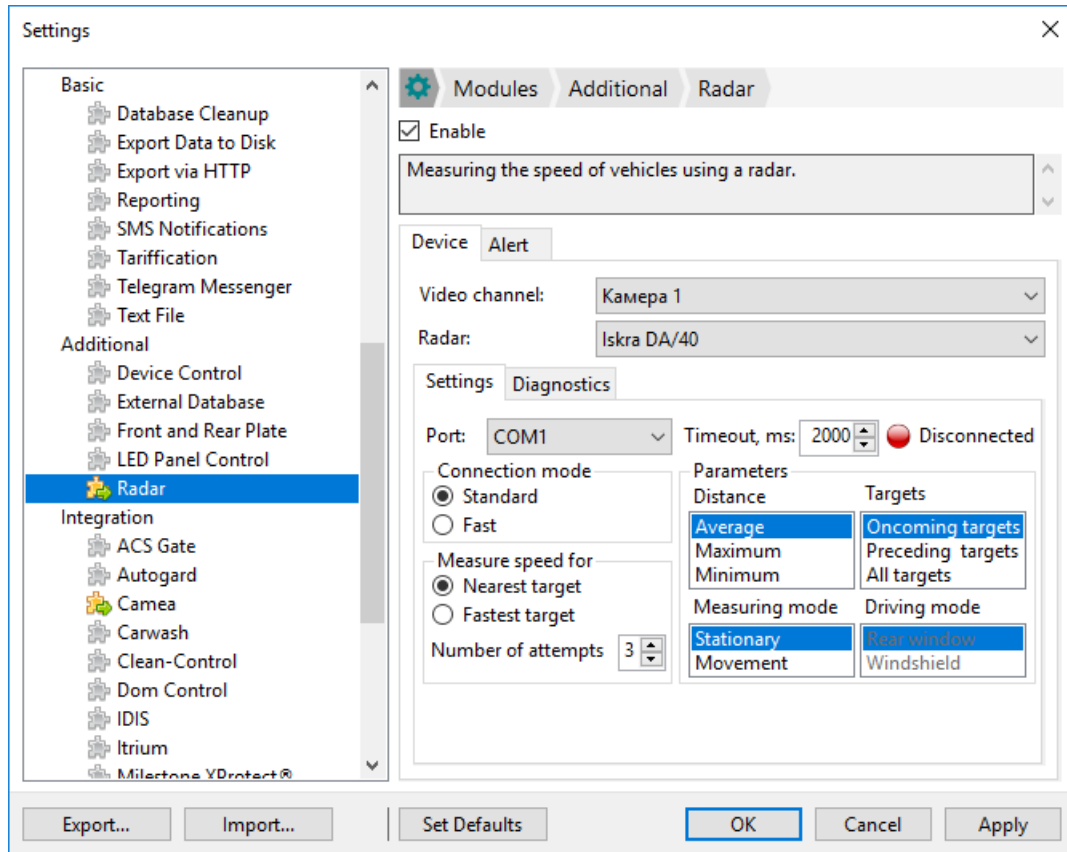


Figure 6.5.22.4

Setting Iskra DA/40

1. Select the connection port in the drop-down list, and click the “Apply” button.

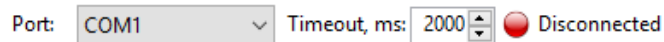


Figure 6.5.22.5

The indicator of radar connection will turn green. On the radar itself, the LED will also change color to green.

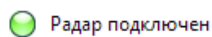


Figure 6.5.22.6

2. If the indicator has not changed its color, please check the physical connection of the radar and the port number.
3. When measuring a speed the measured value does not return every time. The “Number of attempts” parameter shows the number of repeated queries for measuring speed to the radar.

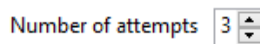


Figure 6.5.22.7

4. By clicking the “Measure speed” button, a query for measuring speed is sent to the radar forcibly. The radar returns three values (for details, see the Manual for the Iskra DA/40 page 5.1. Operating principle).

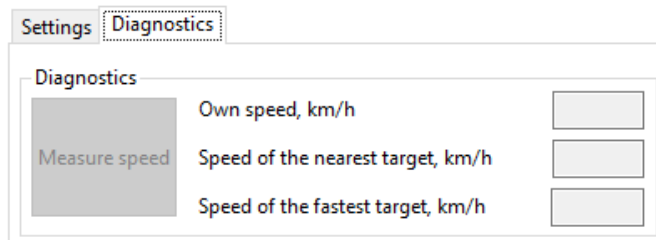


Figure 6.5.22.8

5. The algorithm of setting the radar parameters: Connection mode, Measure speed, Distance, Targets, Measurement mode, Motion mode are described in the documentation to the radar.

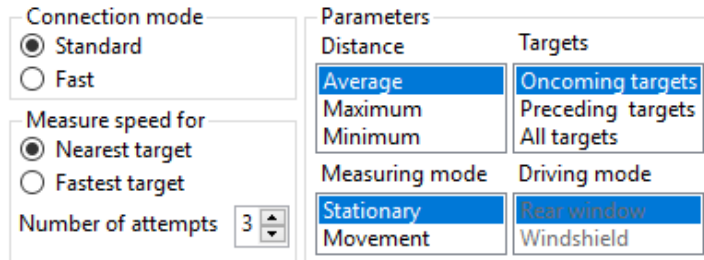


Figure 6.5.22.9

The protocol of radar operation is saved to the file: *C:\ProgramData\Mallenom\Automarshal\Logs\radar.log*

6.5.23. VECTOR_AP

Purpose of the module

The VECTOR_AP module is designed for integration with the VECTOR_AP automatic parking system. It can also be used for integration with other systems which transmit in real-time mode the results of recognition of a vehicle plate and a freeze frame of a vehicle passage.

The module receives the “start recognition” and “finish recognition” commands (HTTP GET query) from the VECTOR_AP system.

Enabling the module

To enable the module, it is required to enable the VECTOR_AP module in the “Modules” section and to enable the HTTP server.

Icon opposite module name on the left side of settings window would turn yellow. Inactive modules remain colorless.

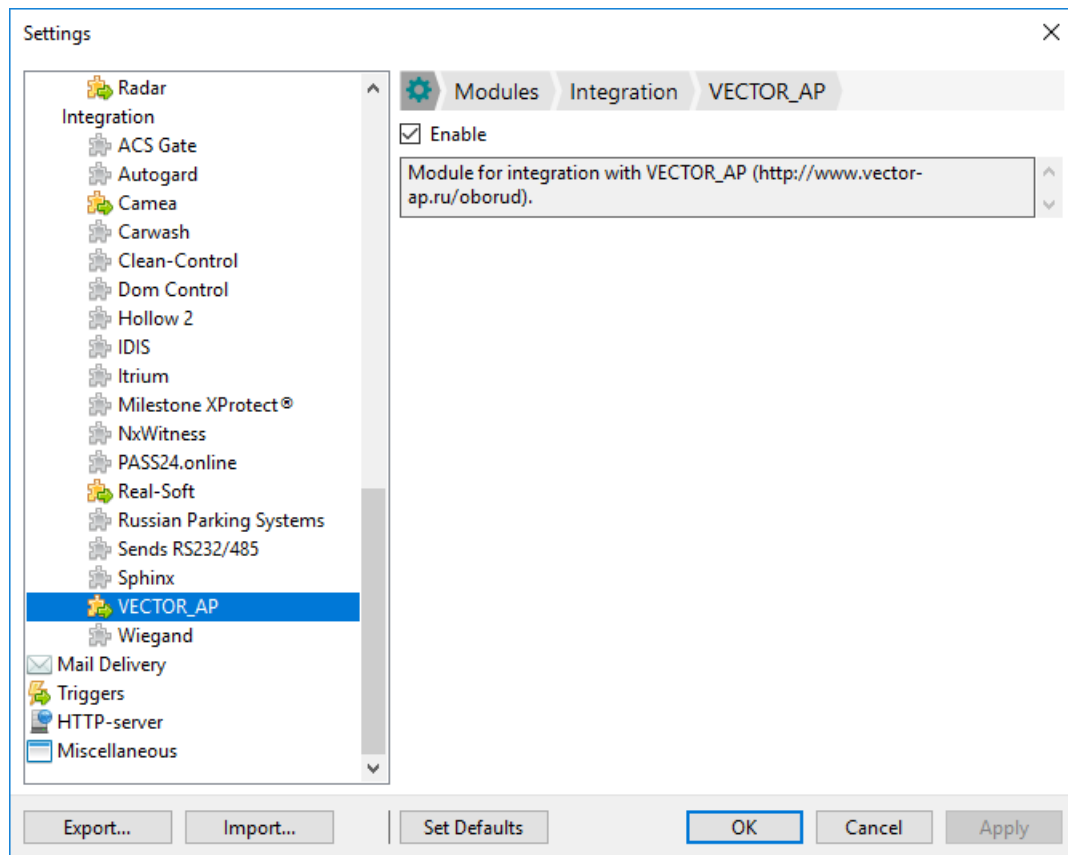


Figure 6.5.23.1

After that, the HTTP-server shall be enabled. To do this, go to the appropriate section in the “Settings” menu, select the checkbox in the “Enable” column (Figure 6.5.23.2) and click “Apply”.

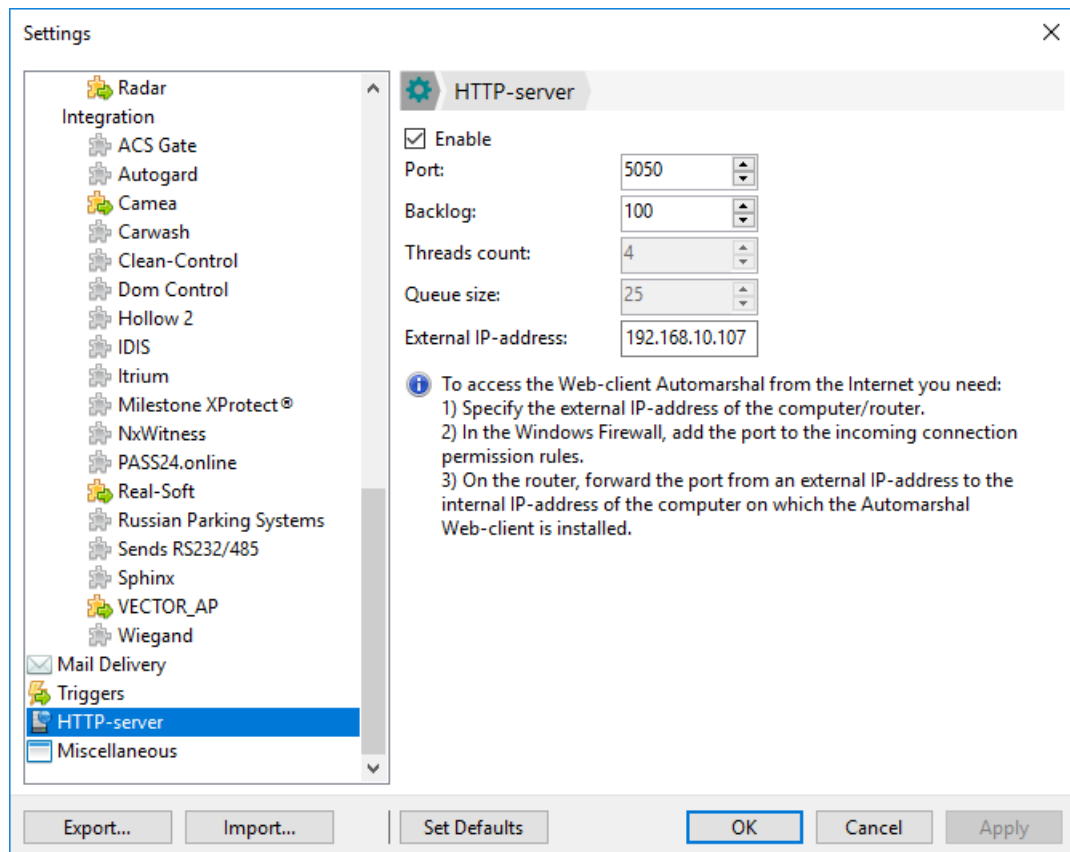


Figure 6.5.23.2

Upon the recognition of a vehicle plate by the Automarshall software, the POST query will be sent to the IP address specified in the “Start recognition” query. The body of a POST query contains the image of the recognized vehicle. The information about the recognized vehicle is in the following parameters of the query:

- **plate** – plate of the recognized vehicle;
- **channelId** – identifier of the channel on which the vehicle has been recognized;
- **dateTime** – date and time of recognition.
- **Confidence** – it is the transfer of recognition accuracy, available range of values from 0 to 100.

Module operation

Getting a list of video channels

A list of video channels can be received using the following query:

```
HTTP GET http://{automarshall_IP}:{automarshall_port}/api/v1/videochannels
```

where

- {automarshall_IP} – is the IP address of the computer where Automarshall is running;
- {automarshall_port} – is the port specified in the settings of the HTTP server (Figure 6.5.23.2).

In the response, JSON (or XML – it depends on the recipient’s requirements set in the query’s header) in the following format has to arrive:

- **count** – number of video channels;

- **videoChannels** – list of video channels.

The element of a list of video channels constitutes the following structure:

- **Id** – identifier of a video channel ;
- **name** – displayed name of a video channel;
- **videoSource** – type of video source;
- **imageUrl** – relative address for receiving the current frame of a video channel.

Example of a query: <http://192.168.10.126:5050/api/v1/videochannels>

Example of a response:



Figure 6.5.23.3

Getting a current frame

A current frame can be received using the following query:

HTTP GET http://{{automarshal_IP}}:{{automarshal_port}}/api/v1/image

Mandatory parameters:

- **videochannel** – identifier of a video channel .

Non-mandatory parameters:

- **format** – format of the image, possible values: JPG (default value), BMP, PNG.

In the reply, the current frame of the specified video channel in JPG format has to arrive.

Examples of query:

<http://192.168.10.126:5050/api/v1/image?videochannel=0> – it causes the return of a freeze frame in JPG format

<http://192.168.10.126:5050/api/v1/image?videochannel=0&format=BMP> – it causes the return of a freeze frame in BMP format

<http://192.168.10.126:5050/api/v1/image?videochannel=0&format=PNG> – it causes the return of a freeze frame in PNG format

Пример ответа:

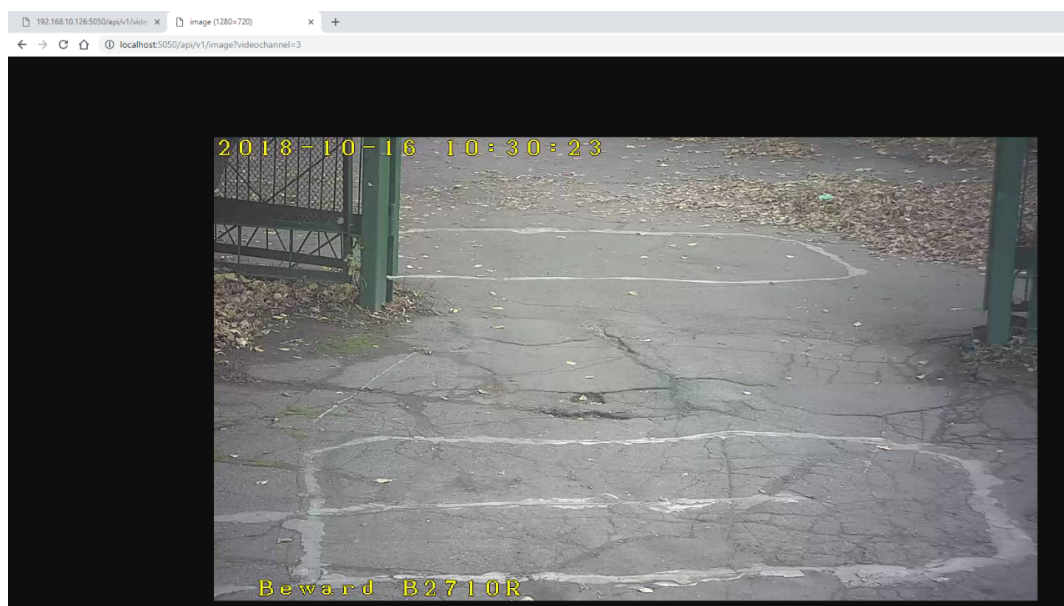


Figure 6.5.23.4

Enabling and disabling the recognition

Enabling and disabling the recognition is done with the following query:

HTTP GET http://192.168.10.126:5050/api/plugins/vector_ap/v1/recognition

Mandatory parameters:

- **run** – recognition status: true – enabled (“start recognition”); false – disabled (“finish recognition”);
- **channelId** – identifier of a video channel;
- **subscriberIp** – the IP address to which Automarshall shall send the response in case of recognition of a vehicle plate on a channel.

Upon the re-query for enabling the recognition, the interrelation of channelId and subscriberIp will be rewritten. Thus, given that at first, on channel 0, the recognition with the return address 192.168.14.11:8080 was enabled and then the query for enabling the recognition on channel 0 with the return address 192.168.15.121:8080 was received, then upon the recognition of a vehicle by Automarshall, the HTTP POST query with the recognition result will be sent to address 192.168.15.121:8080.

Upon the re-query for disabling the recognition, Automarshall will return the code of a HTTP response: 200 and will ignore the query.

Пример запроса:

http://192.168.14.34:5050/api/plugins/vector_ap/v1/recognition?run=true&channelId=0&subscriberIp=192.168.14.11:8080

После получения этого запроса будет включено распознавание на канале 0. После того, как «Автомаршал» распознает ТС на канале 0, он отправит HTTP POST запрос с результатом распознавания на адрес 192.168.14.11:8080.

Example of a query:

http://192.168.14.11:8080/?
plate=H566MM175&channelId=0&dateTime=15.10.2018%2010:36:50&format=JPEG&confidence=51

The freeze frame with the image of a recognized vehicle is transmitted in JPG format in the query's body.

Possible codes of a HTTP response:

- 200 (ok) - the query is fulfilled;
- 500 (Can't parse query string) - failure to parse the query string;
- 404 (Channel by id {channelId} not found) - failure to find the channelId channel.

6.5.24. External Database

Purpose of the module: real-time export of data from the Recognition Log to the external database located on a remote PC.

To transfer data to an external database, an Internet connection is required. The module has the offline mode of operation (for example, if the Internet connection is lost), upon exiting from which the previously unsent local data are delivered to the remote database.

Enabling the module

To enable the module, go to the "Settings" menu, then "Service" → "Settings" → "External Database" or use the F8 hot key to bring up the "Settings" menu and go to the "External Database" section (Figure 6.5.24.1). In the section of External Database settings, check the box at the "Enable" item and click the "Apply" button.

Attention! All changes will be saved only after clicking the "Apply" or "OK" button.

The icon opposite the module name on the left side of the settings window will turn yellow. The disabled modules are of dim color.

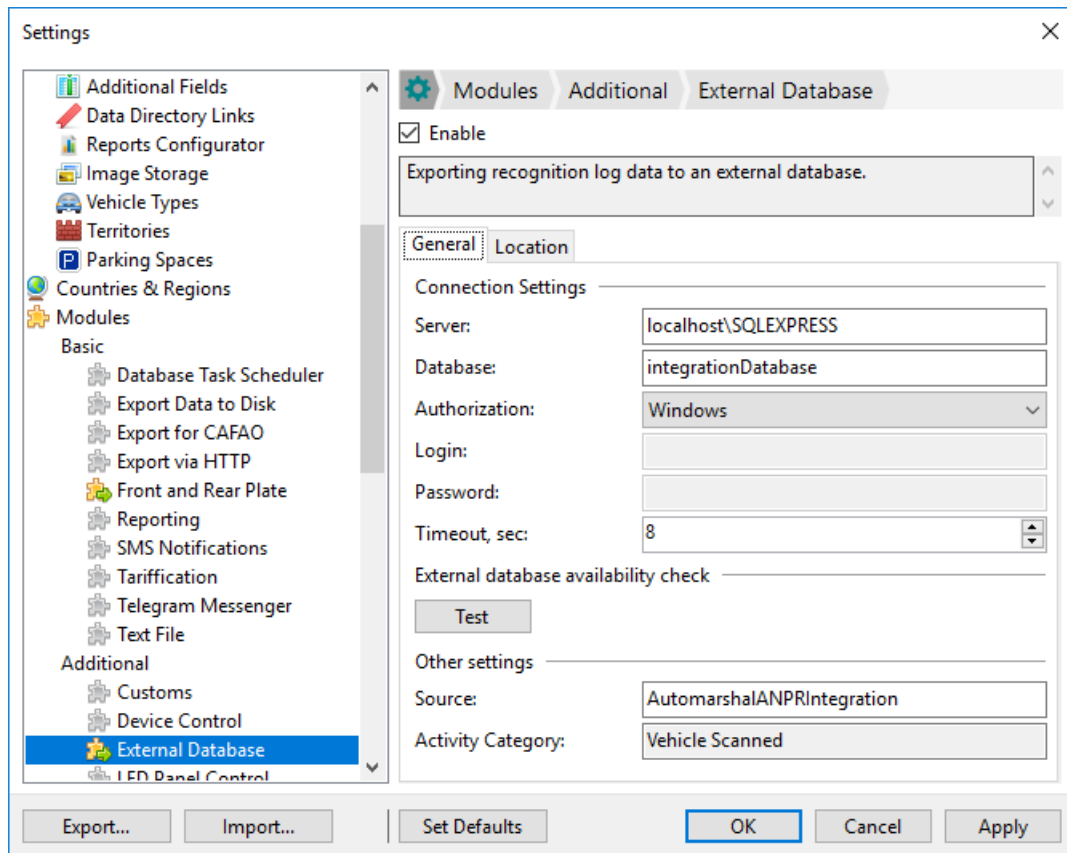


Figure 6.5.24.1

Setting

Two tabs are provided to set up plug-in: for database connection setting, and for video-channels description.

Database

To set up remote database connection it is necessary to specify the following:

Server: specify server path.

Database: specify the name of the database. You can specify the name of already existing database or enter a new one – in this case upon clicking “OK”, “Apply” or “Test” buttons a new database will be created.

Authorization: Windows or MSSQL Server.

Login and password: optionally, depending on the type of authorization.

Connection Timeout: the time before reconnecting if the connection has been lost. The default time is 8 seconds.

After saving the settings, it is necessary to check the availability of the external database. Click the “Test” button and wait for the system’s response.

If all the data have been entered correctly, the window with the notice “The connection was successful” will open (Figure 6.5.24.2).

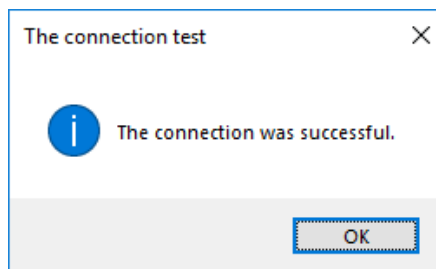


Figure 6.5.24.2

If the data have been entered wrong, the window with the notice “The connection failed” will open (Figure 6.5.24.3). Please check the correctness of the entered data and Internet connection.

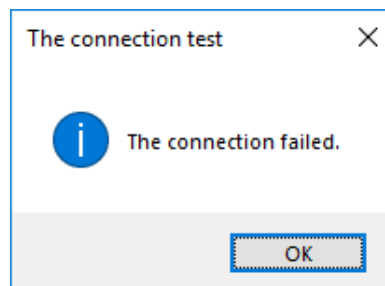


Figure 6.5.24.3

In “Other Settings” section:

Data source — name of the data source, from which the number plate entries come to External database. The “AutomarshALANPRIIntegration” name is set by default, and is editable for user.

Entry category — Vehicle Scanned. It cannot be edited.

The “Server” and “Database” fields shall be filled without fail.

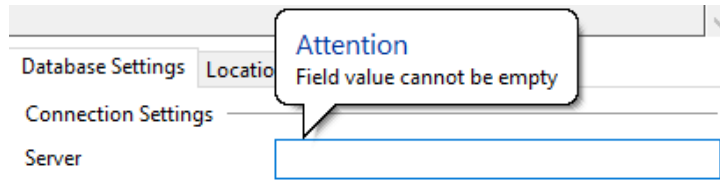


Figure 6.5.24.4

Location

To configure and describe the video channels, go to the “Location” tab (Figure 6.5.24.5).

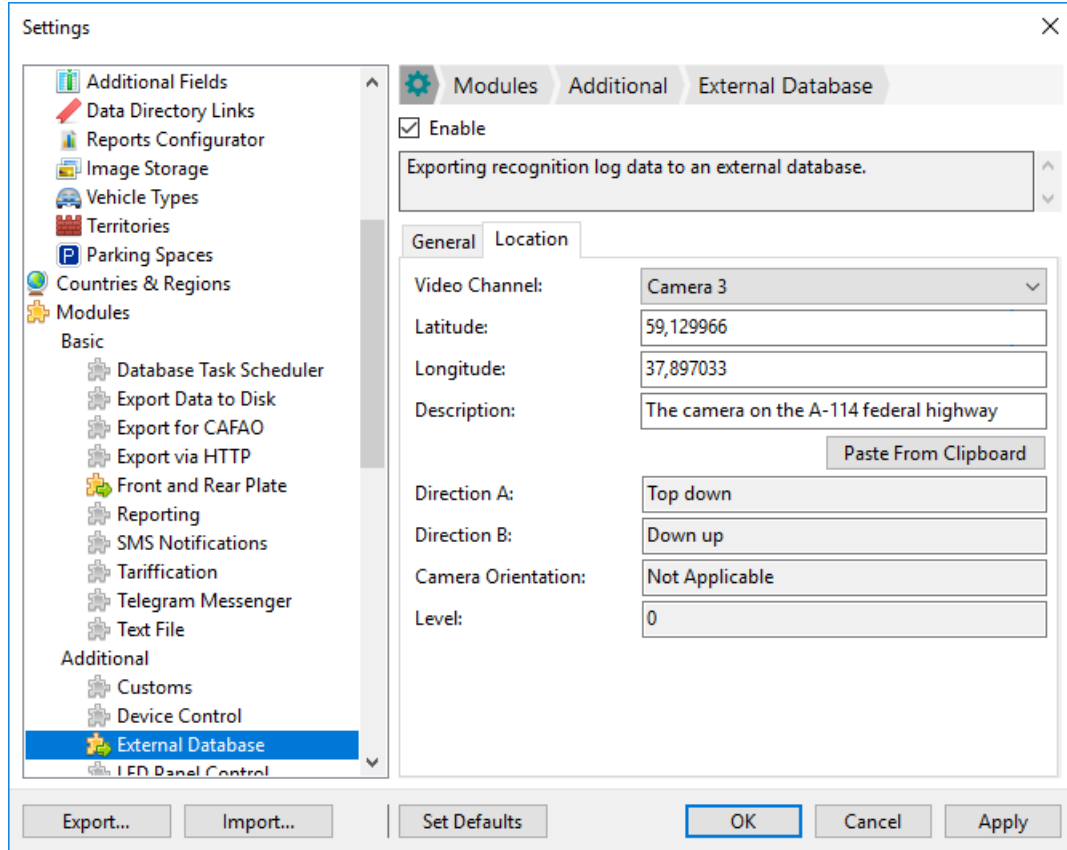


Figure 6.5.24.5

You can set the geographical coordinates of latitude and longitude (for example: 59.129966, 37.897033) and description in text form (for example: The camera on the A-114 federal highway) for each video channel (Figure 6.5.24.6).

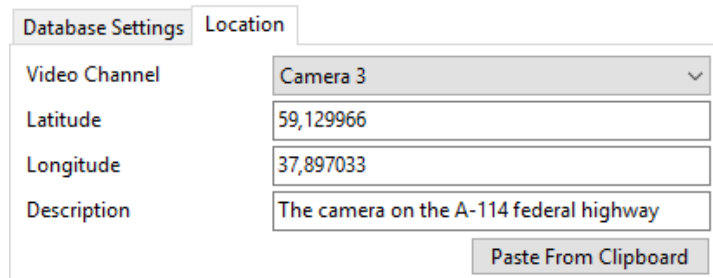


Figure 6.5.24.6

Clicking the “Paste From Clipboard” button copies the values of latitude and longitude to the relevant fields if the buffer contains the suitable text. For example, in Google and Yandex maps you can copy the coordinates in the following form: 59.129966, 37.897033.

If the exchange buffer contains the text of an inappropriate format, the window with the “Wrong input format” notice will open:

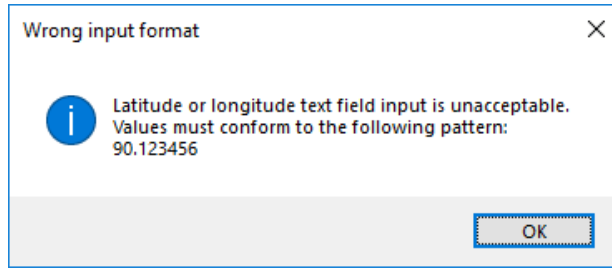


Figure 6.5.24.7

Direction A (top down) / Direction B (down up) – information on basic settings for selected video channel.

“Camera Orientation” and “Level” fields contain default values for External database. These values cannot be edited.

6.5.25. Front and Rear Number Plate

Module function: allows to generate one passage entry in the log containing information on front and rear number plate recognition.

To enable the module, go to “Settings” menu: “Service” → “Settings” → “Front and Rear Plate” or use F8 hotkey to invoke “Settings” menu and go to “Front and Rear Plate” Section (Figure 6.5.25.1).

Attention! All actions will be saved only after the buttons “Apply” or “Ok” are pressed.

Icon against module name in the left part of the “Settings” window will turn yellow.

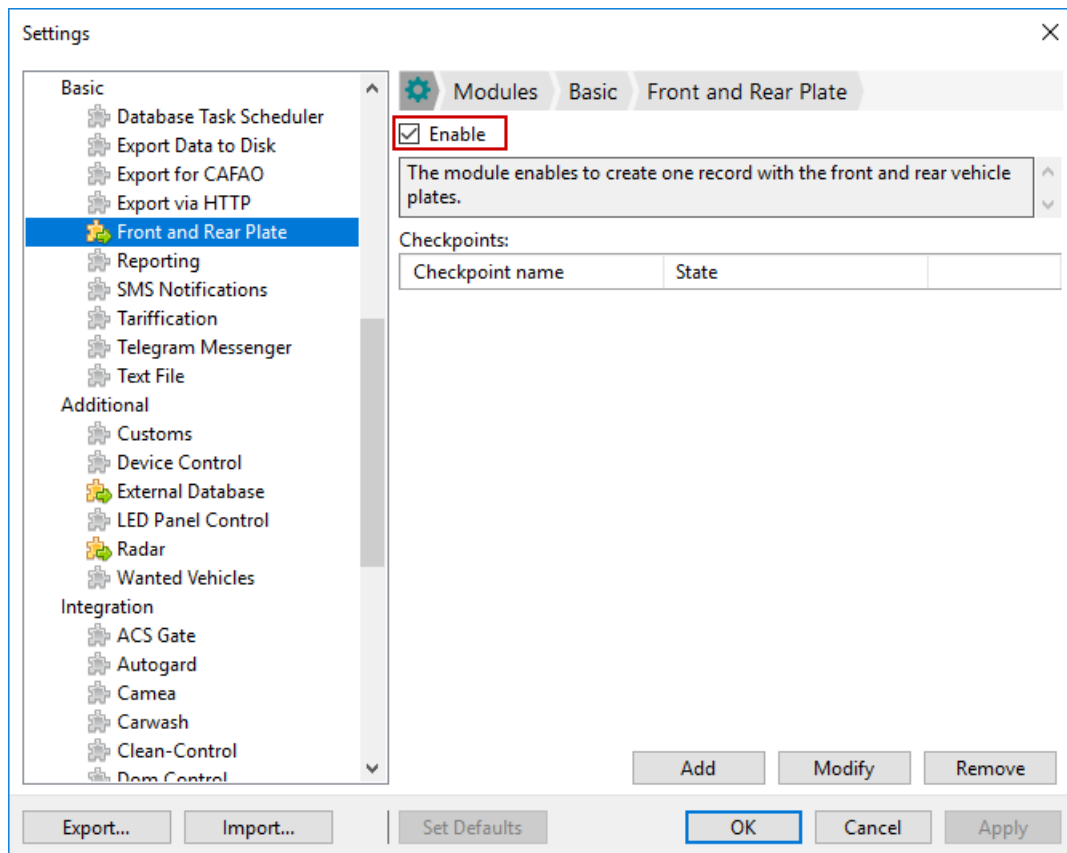


Figure 6.5.25.1

For module running the checkpoint shall be added. For this purpose, click “Add” (Figure 6.5.25.2) and select one of the options suggested:

- Checkpoint with two sensors: two induction sensors of magnetic loop are installed.
- Checkpoint with one sensor: one induction sensor of magnetic loop is installed.

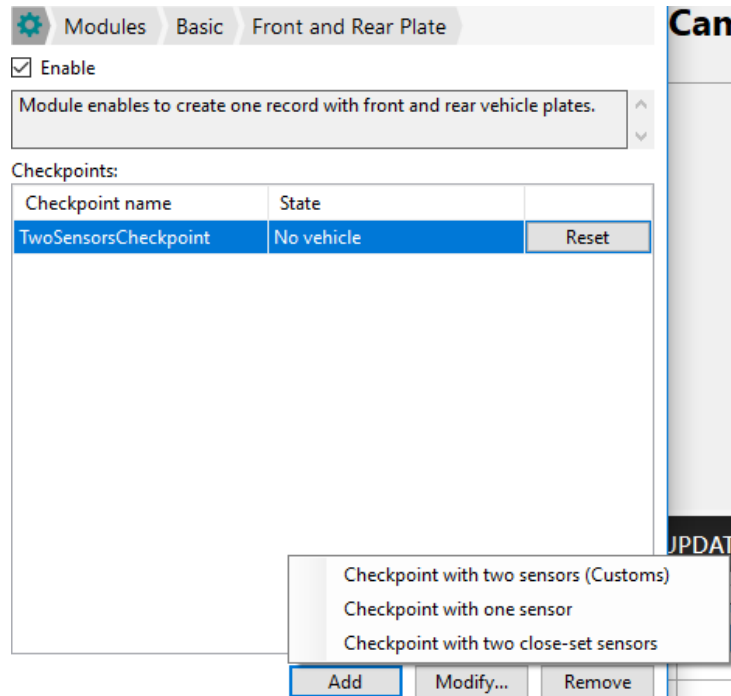


Figure 6.5.25.2

In the Checkpoint Settings (Figure 6.5.25.3) the following is necessary to be indicated:

- Name – a “Checkpoint” name is set by default in case of two sensors, or “OneSensorCheckpoint” is set in case of one sensor. This name will be indicated in the “Checkpoint name” field of the log (Figure 6.5.25.17). For ease of use it is recommended to indicate the checkpoint name in pursuant to its location (street name, checkpoint name etc.).
- Description – is displayed in the “Checkpoint Settings” window only. It is a field for comments / additional information on the checkpoint.
- Front plate channel / Rear plate channel – video channels are indicated, which are used for front and rear number plates recognition.
- Device 1 / Device 2 – magnetic loop sensors are indicated.
- Sensor input 1 / Sensor input 2 – sensors input numbers are indicated.
- Two-way traffic – is installed in case vehicles move in both directions along specified road section. The module can operate both for entry and for exit. When enabling this option, the module will not operate in the backward direction.

This setting is not supported for the checkpoint with one sensor.

- Decision time – time for decision generation to insert data into recognition log entry. If number plate is not recognized after vehicle exit from magnetic loop and decision time has passed, then a null recognition result is generated in the log, but with the shot storage, made by video cameras within this time interval.

Checkpoint with two close-set sensors is setup similarly to Checkpoint with two sensors. It supports two-way traffic without any additional settings.

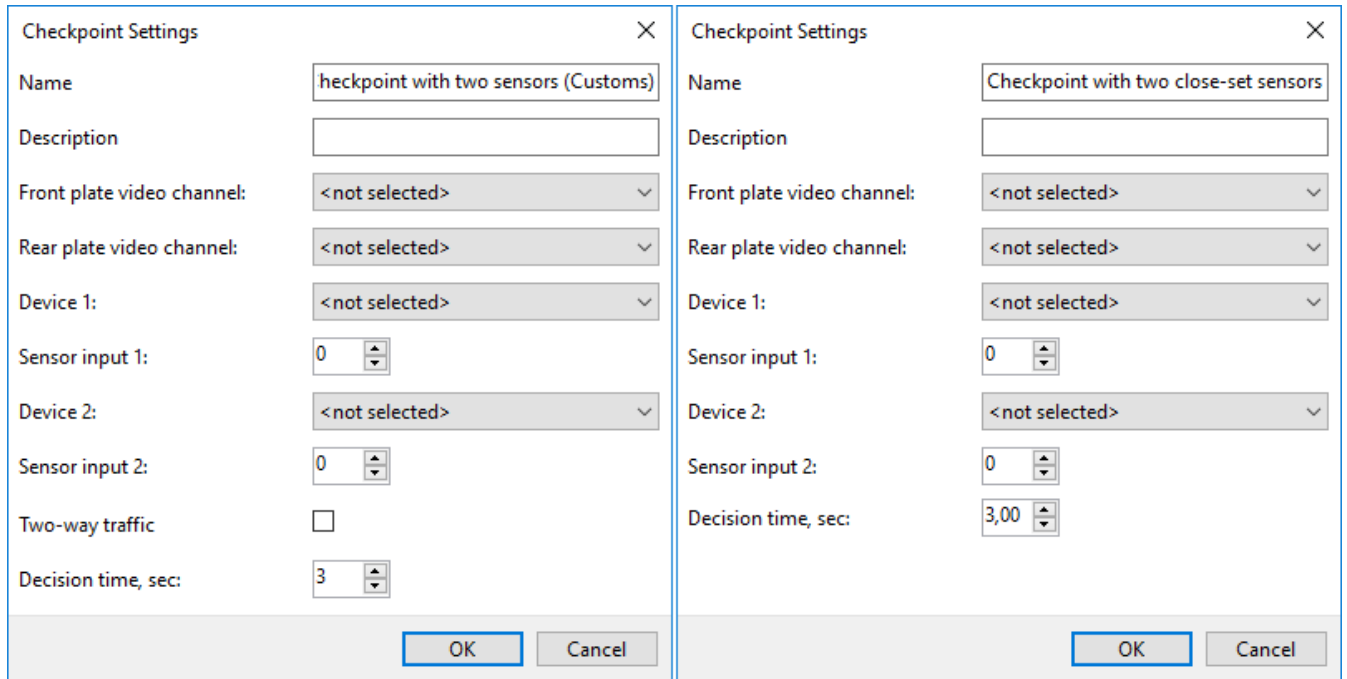


Figure 6.5.25.3

Setting of the checkpoint with one sensor is made in a similar way, but with the indication of data for only one device.

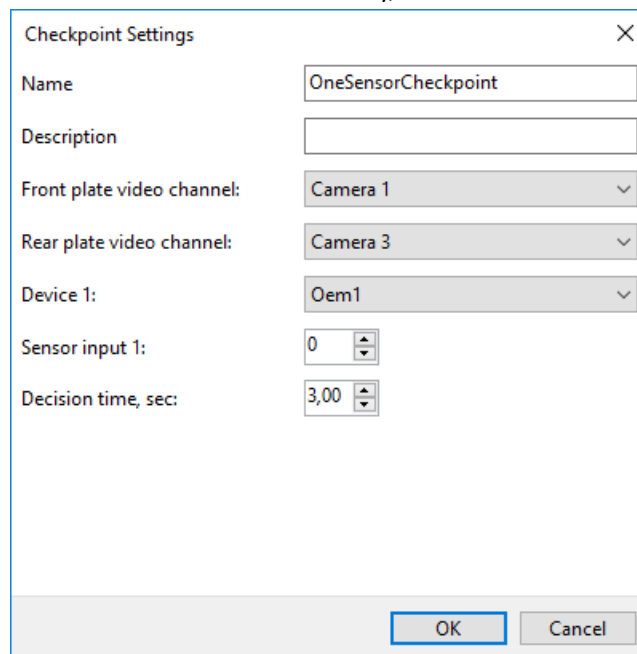


Figure 6.5.25.4

When the setting is made, click “Ok”. After the data are saved, a checkpoint line will be displayed in the module menu, containing checkpoint name and state, and “Reset” button. Generated entry can be modified or deleted. To do this, select the required entry in the module menu and click “Modify” or “Delete”.

Plug-in allows to set up several checkpoints (Figure 6.5.25.5).

“Reset” button resets the checkpoint state to “No vehicle”. It is necessary in contingency when the checkpoint state “sticks”.

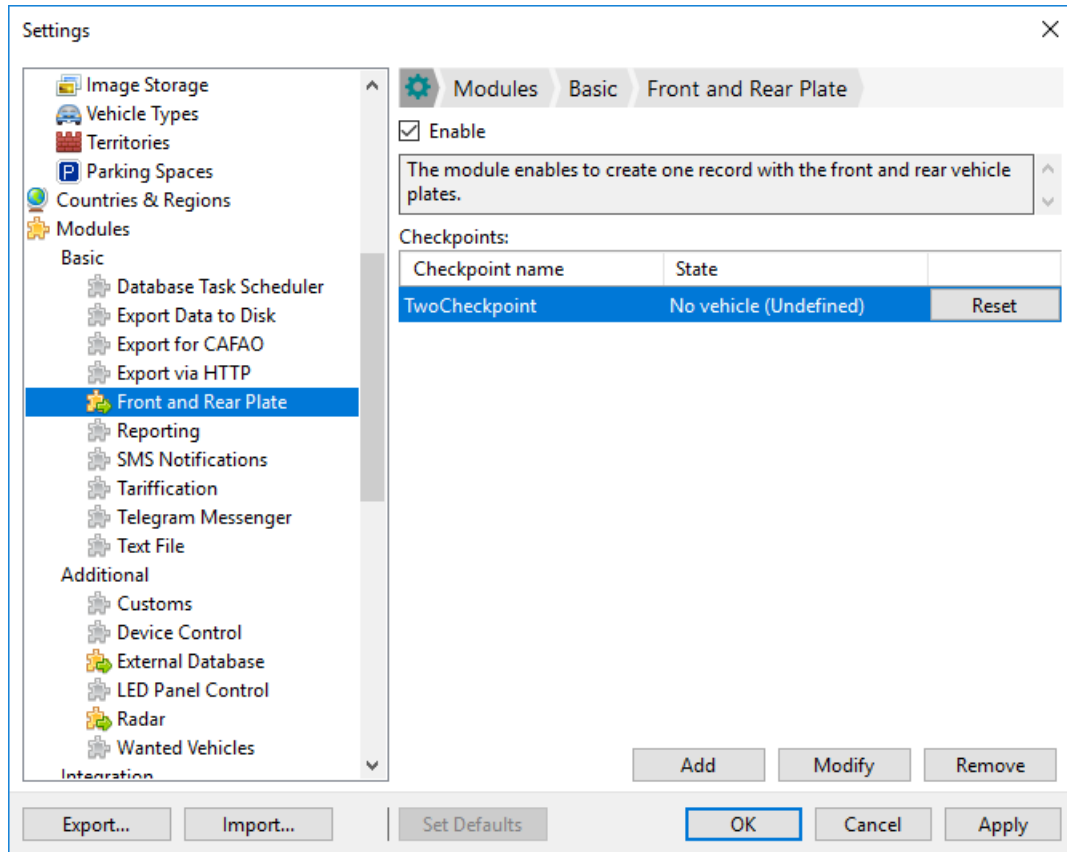


Figure 6.5.25.5

Video channels selected in modules are automatically set up into "Trigger" in the "Method" field of the "Process parameters" settings.

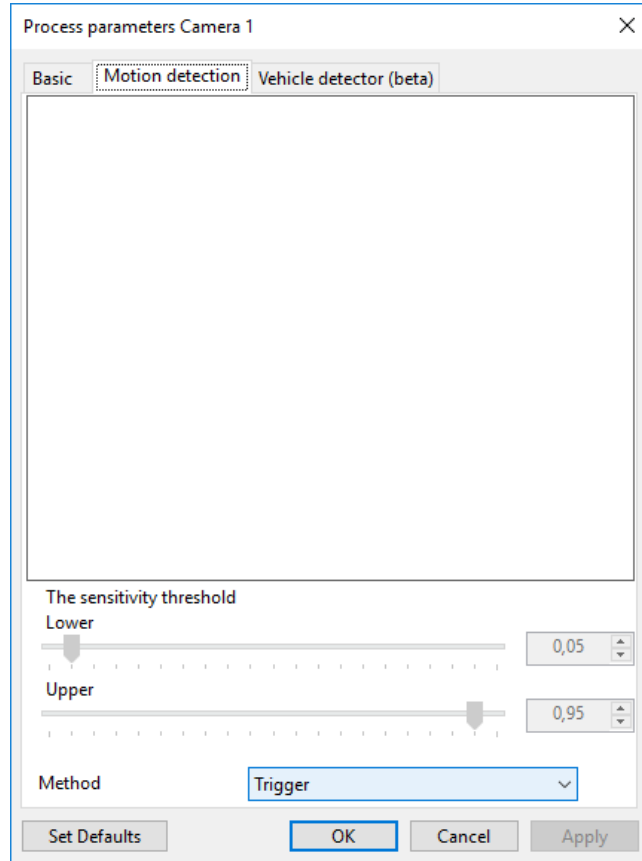


Figure 6.5.25.6

If filled in incorrectly, the following warnings can be displayed:

- Both video channels shall be indicated.

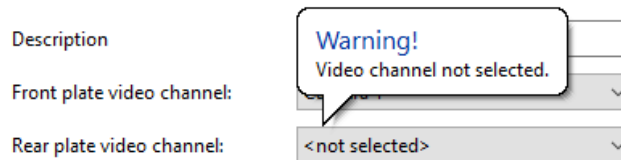


Figure 6.5.25.7

- This video channel is already in use. Different video channels shall be used for front and rear plates.

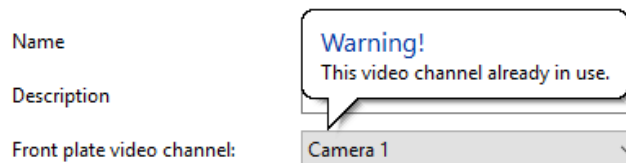


Figure 6.5.25.8

- Device is not selected. Specify the device, in case it is not provided in the drop-down list, check the settings of "Device control" module.



Figure 6.5.25.9

Algorithm of vehicle passage through the checkpoint with two sensors

For the algorithm to work with two-way vehicle movement, the corresponding option shall be enabled in the module settings.

Figure 6.5.25.10 shows the movement direction, where:

- L1 - Induction Sensor 1 of magnetic loop;
- L2 - Induction Sensor 2 of magnetic loop;
- Camera 1 to recognize front number plate;
- Camera 2 to recognize rear number plate;
- Gate Arm;
- Vehicle.

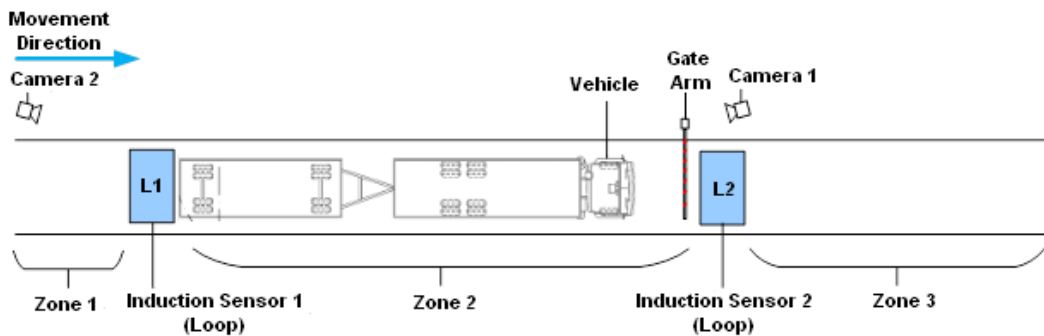


Figure 6.5.25.10

Step 1. Primarily, no vehicle appears in Zones 1, 2, 3, Sensors L1 and L2 are open. A vehicle enters Zone 1 (Figure 6.5.25.11).

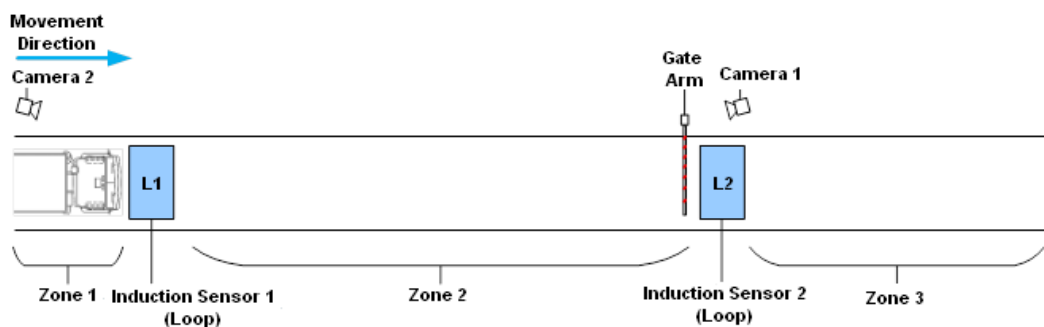


Figure 6.5.25.11

Step 2. A vehicle reaches Sensor L1 (vehicle is on Sensor L1), Sensor L1 closes, recognition process from Camera 1 runs (Figure 6.5.25.12).

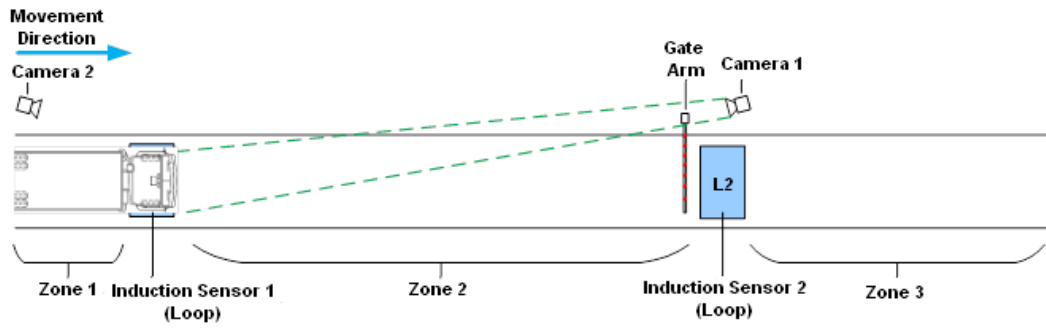


Figure 6.5.25.12

Step 3. A vehicle moves out of Sensor L1 and then moves to Zone 2, Sensor opens, recognition process of rear number plate from Camera 2 runs (Figure 6.5.25.13).

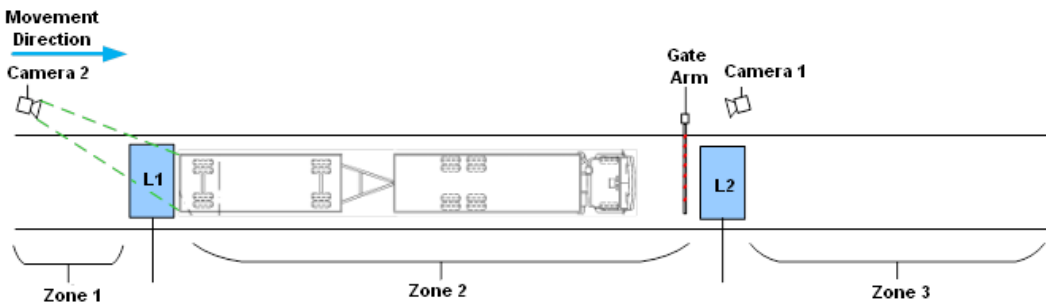


Figure 6.5.25.13

Step 4. Gate arm opens, a vehicle moves to Zone 3 and reaches Sensor L2 (Figure 6.5.25.14).

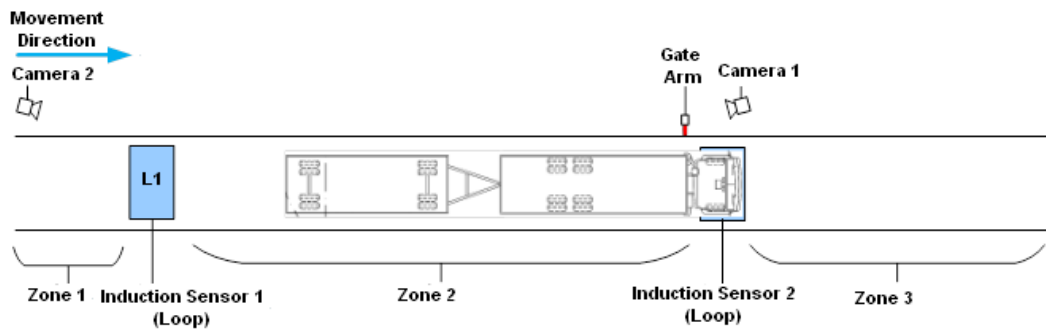


Figure 6.5.25.14

Step 5. A vehicle moves out of Sensor L2 and passes Zone 3 (Figure 6.5.25.15).

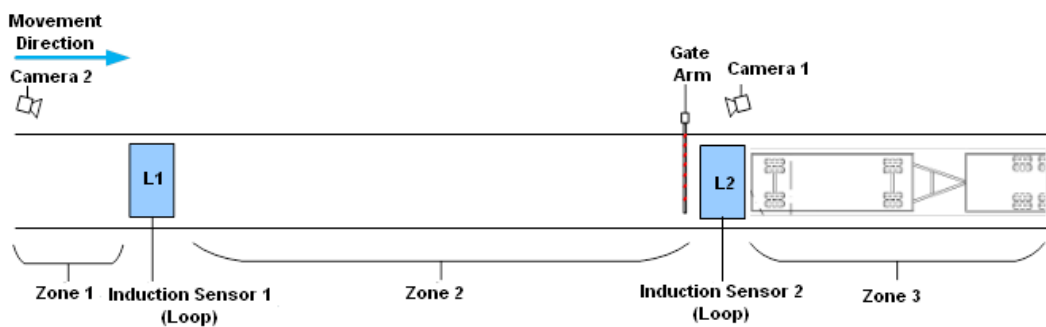


Figure 6.5.25.15

Algorithm description of vehicle passage through the checkpoint:

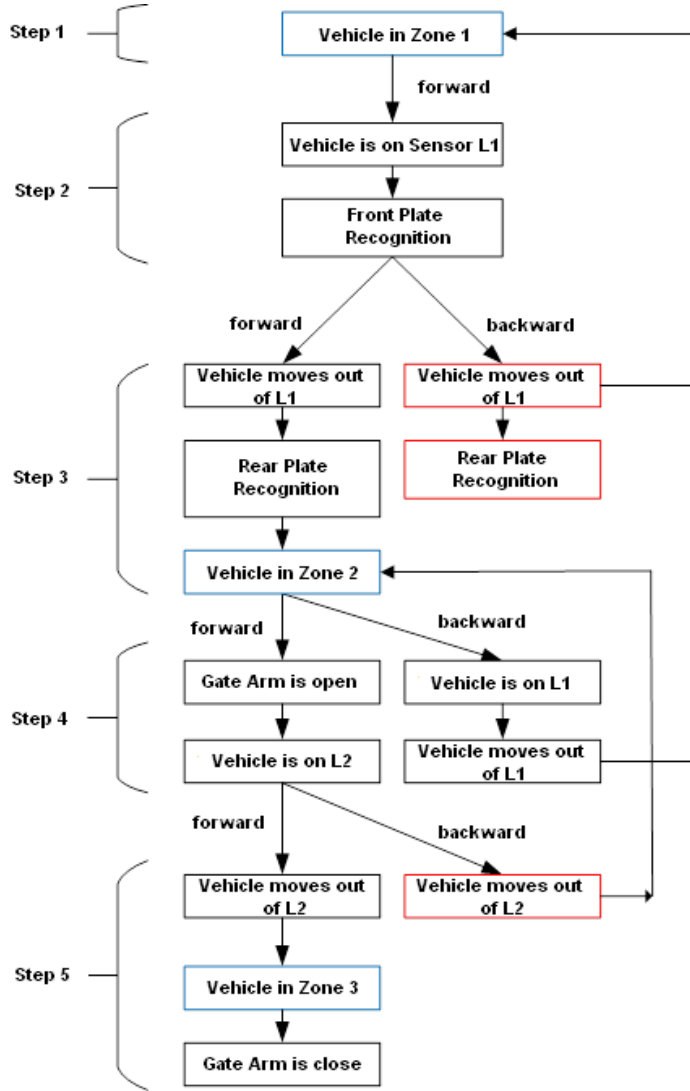


Figure 6.5.25.16

Algorithm of vehicle passage through the checkpoint with one sensor

Данный алгоритм работает только с односторонним движением.

Vehicle passes through the checkpoint with one sensor by a simplified algorithm..

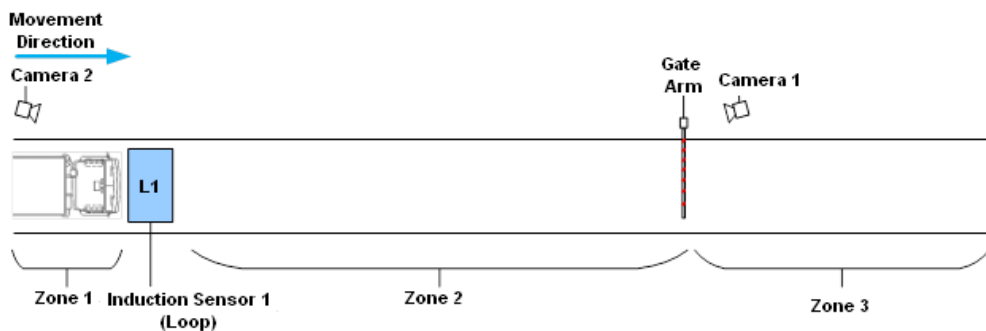


Figure 6.5.25.17

- Step 1.** Primarily, no vehicle appears in Zone 1, 2, 3, Sensor L1 is open. A vehicle entries Zone 1 (Figure 6.5.25.17).
- Step 2.** A vehicle reaches Sensor L1 (vehicle is on Sensor L1), Sensor ПЛ closes, recognition process from Camera 1 runs.
- Step 3.** A vehicle moves to Zone 2, moves out of Sensor L1, recognition process of rear number plate from Camera 2 runs.
- Step 4.** Gate arm opens, a vehicle moves to Zone 3.

Entry to recognition log

When the modules is enabled, four fields are added into recognition log: Rear plate, Checkpoint state, Checkpoint name, Date/Time of entry.

These fields are not available for use in the lists. When the modules is disabled, additional fields will also be disabled. When the modules is enabled, additional fields will be displayed with earlier logged data.

Data entry is saved in recognition log (Figure 6.5.25.18). To show entry details, open “View” in the top menu and enable “Show Front/Rear Plate”.

RECOGNITION LOG						
Plate	Date/Time		Checkpoint Name	Rear Plate	Checkpoint Status	Date/Time of entry
E747BH35	26.09.2018 09:49:06	→ ✓	Mallenom1	E747BH35	Vehicle has passed (Entry)	26.09.2018 9:49:07

Figure 6.5.25.18

Shot view from two cameras used for recognition is available for this entry.

Text in “Checkpoint status” field is dynamically changed (Figure 6.5.25.19). After finishing recognition, recognition end data will be displayed in “Date/Time of entry” field.

RECOGNITION LOG							AUTOUPDATE			
Plate	Rear Plate	Date/Time		Checkpoint Status	Video channel	Checkpoint Name				
X255YH16		24.05.2019 13:03:46	→ ✓	Vehicle on sensor 1 (Entry)	Camera 1	Checkpoint				
X255YH16	X255YH16	24.05.2019 13:02:21	← ✓	Vehicle passed (Exit)	Camera 2	Checkpoint				

Рисунок 6.5.25.19

Checkpoint status:

```
# Waiting for a vehicle
# Vehicle is on Sensor 1
# Vehicle has moved out of Sensor 1
# Vehicle is on Sensor 1 and 2
# Vehicle is on Sensor 2
# Vehicle has moved out of Sensor 2
# Vehicle has passed

* Vehicle is moving backwards
* Vehicle hasn't passed
```

Potential problems due to vehicle movement algorithm

There might be some recognition problems, if a vehicle, having passed the sensor, moves backwards or if due to heavy traffic some vehicles reach the sensor before the running recognition is completed. Such problems are solved by proper arrangements, i.e. prevent following vehicles reaching sensor, until the foregoing vehicle has not passed leaving the sensor; prevent vehicles moving backwards during the recognition process, bring drivers to entirely pass the sensors.

Vehicle moves backwards from Sensor L1.

It can happen that after step 2 a vehicle moves backwards (Figure 6.5.25.20). In this case the system does not consider backward motion. After Sensor L1 is open, the rear plate recognition begins. The problem is solved by proper arrangement, i.e. such vehicle shall entirely pass Zone 2.

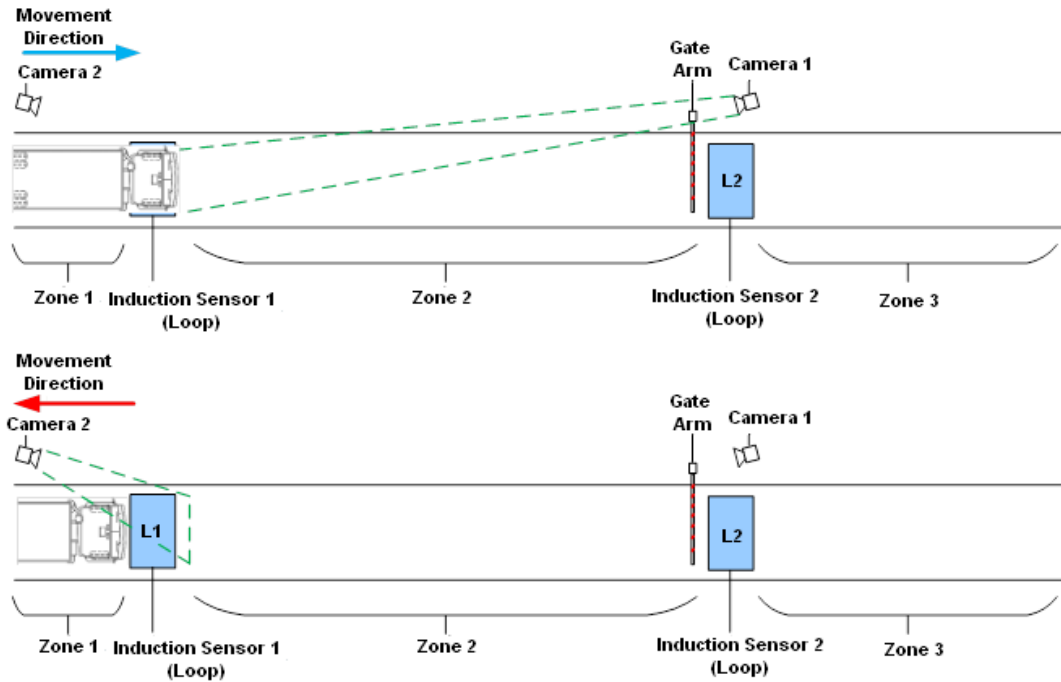


Figure 6.5.25.20

Vehicle moves backwards from Zone 2.

It can happen that after step 2 a vehicle moves backwards (Figure 6.5.25.21). In this case the system is able to identify backward motion.

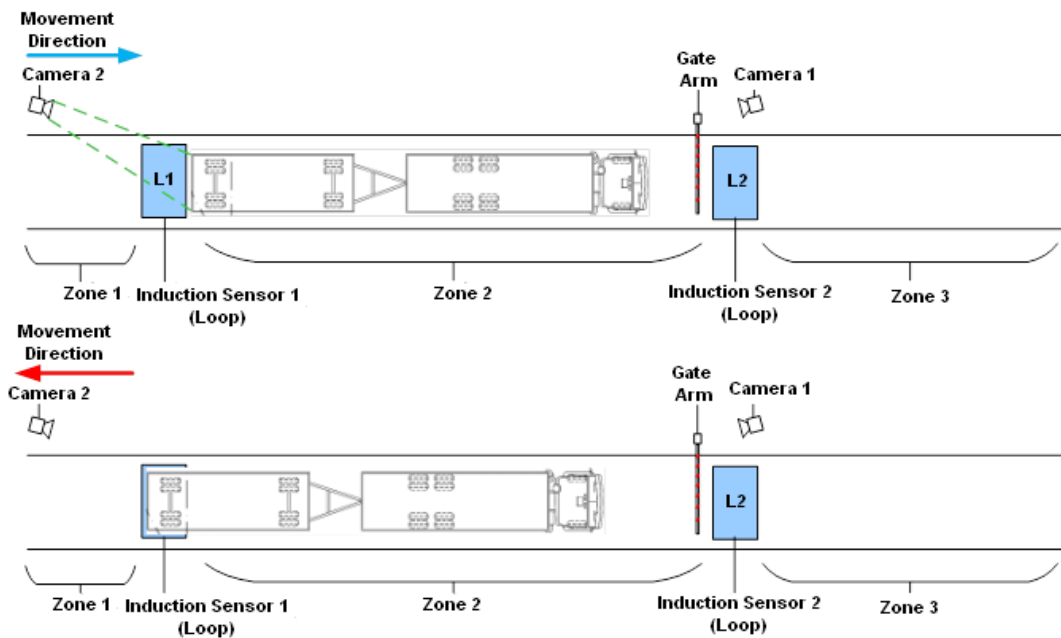


Figure 6.5.25.21

Next vehicle is on Sensor L1.

It can happen that after step 3 when the first vehicle is in Zone 2, the next vehicle has already driven up (Figure 6.5.25.22). The problem is solved by proper arrangement, i.e. prevent the following vehicle reaching Sensor L1, until the foregoing vehicle has not passed leaving Sensor L2.

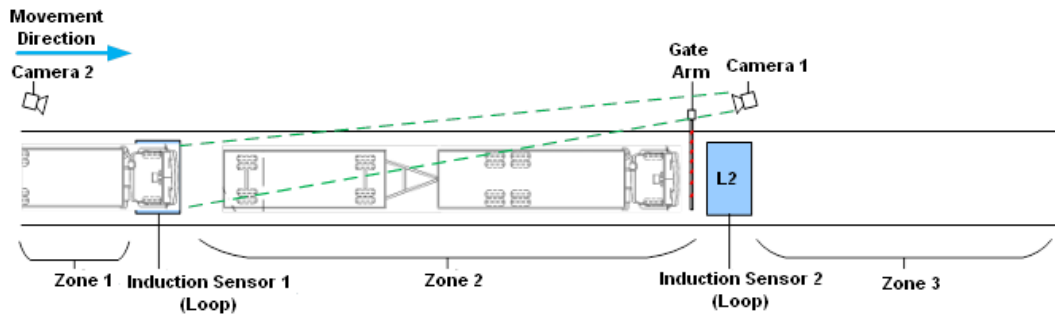


Figure 6.5.25.22

Vehicle moves backwards from Zone 3.

It can happen that after step 4, when a vehicle has already reached Sensor L2 (vehicle is on Sensor L2), it starts moving backwards. In this case the system is not able to determine the zone, where the vehicle is in. The problem is solved by proper arrangement, i.e. bring drivers to entirely pass Sensor L2.

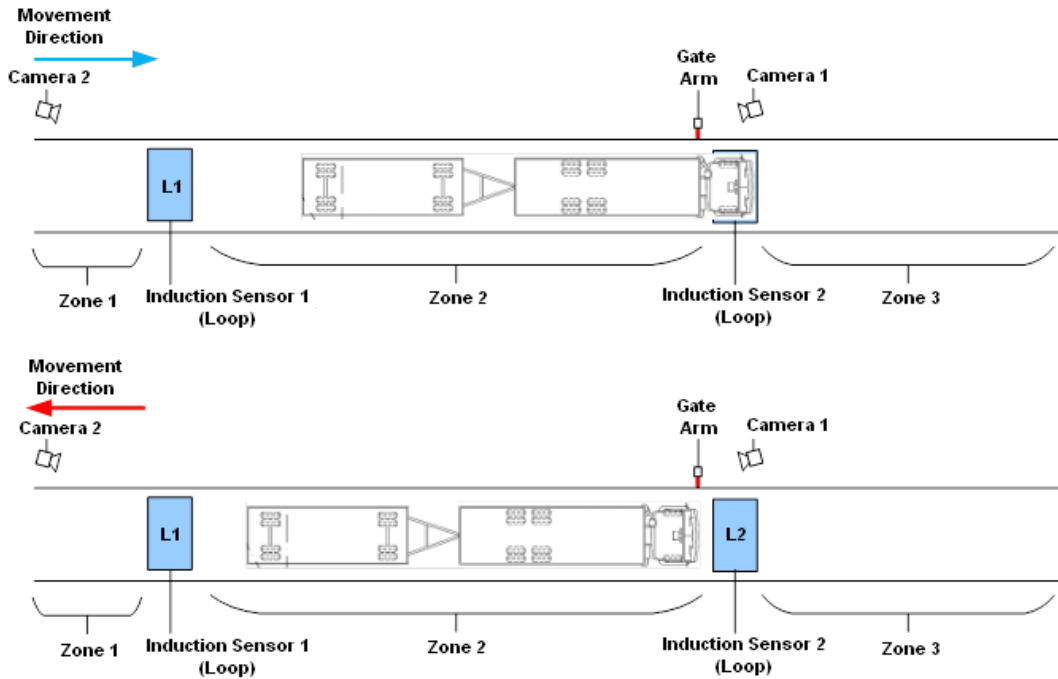


Figure 6.5.25.23

Trigger event “Front and rear plates recognized”

Create new trigger and select activation event “Front and rear plates recognized” (Figure 6.5.25.24).

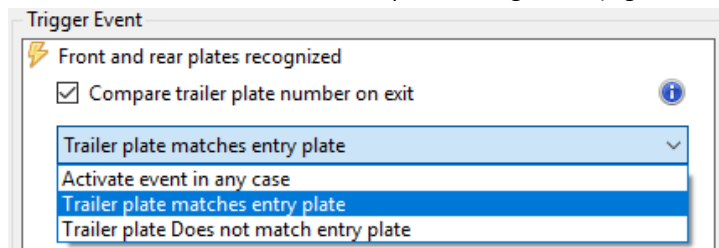


Figure 6.5.25.24

Mark “Compare trailer plate number on exit” checkbox, if it is necessary to verify trailer plate number on exit with the same on entry. If the option is enabled, such event trigger will be active on vehicle exit only.

Trigger setup example:

Activation event: Front and rear plates recognized, Compare trailer plate number on exit → Trailer plate number does not match entry plate.

Actions performed: Notification window, Display time N sec.

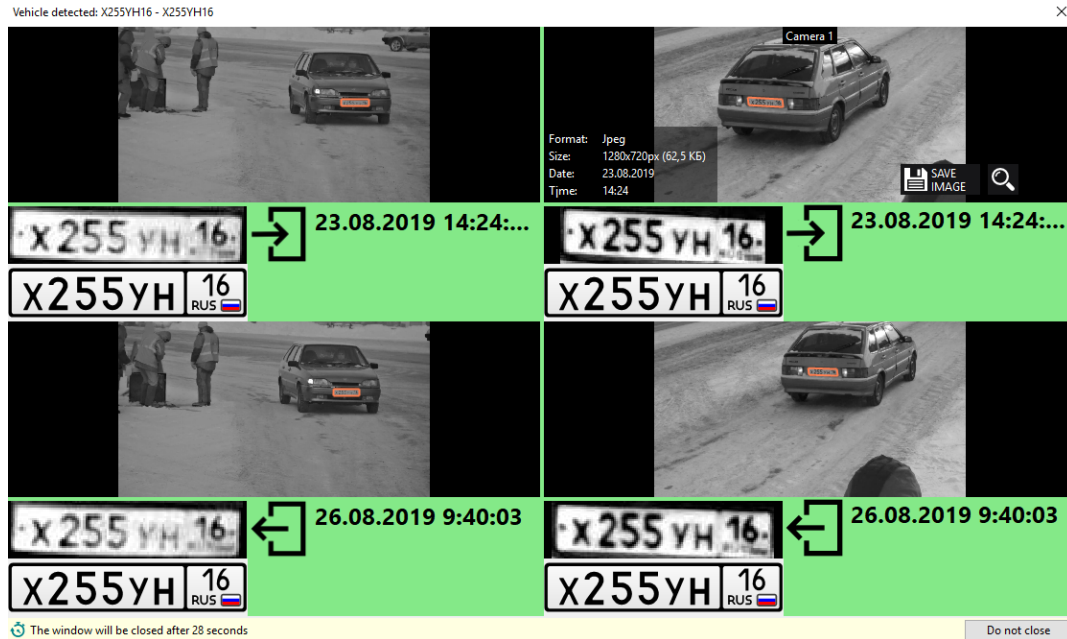


Figure 6.5.25.25

6.5.26. Card Readers

Module function: it allows to work with card readers.

To enable the module, go to the “Settings” menu: “Service” → “Settings” → “Card Readers” or use F8 hotkey to bring up the “Settings” menu and go to the “Card Readers” section (Figure 6.5.25.1).

Attention! All actions will be saved only after clicking the “Apply” or “OK” buttons.

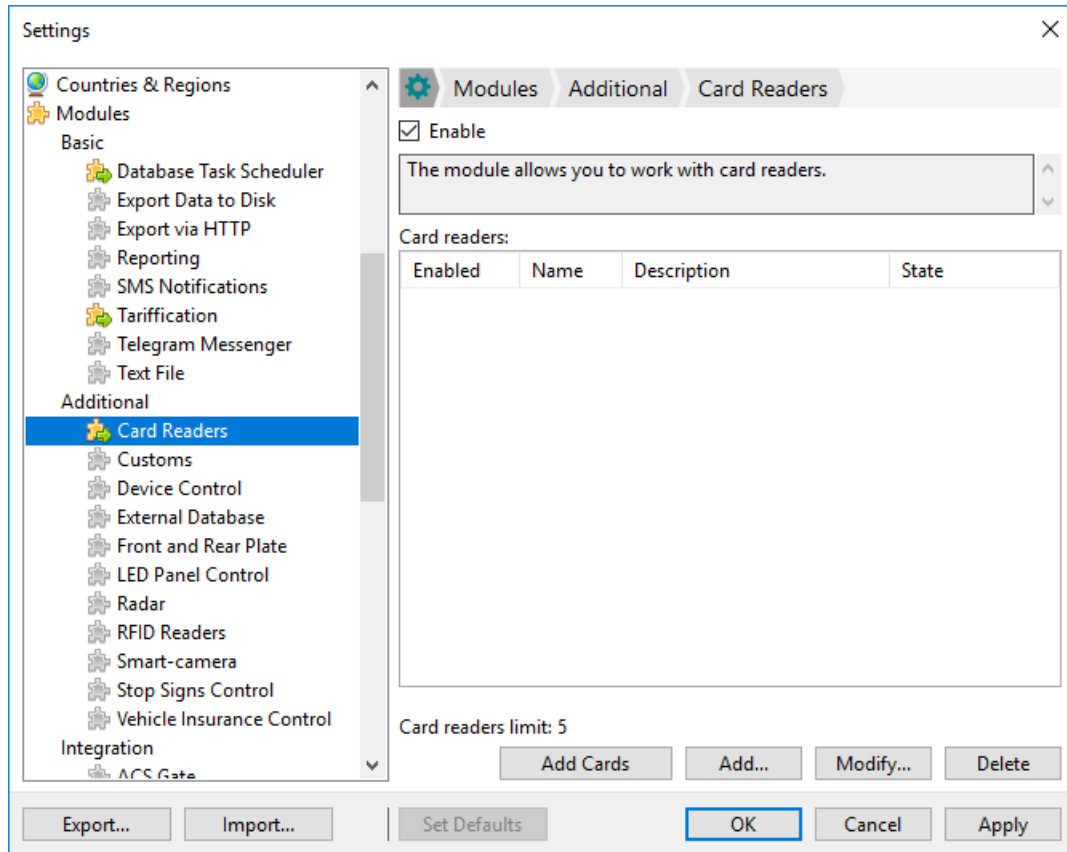


Figure 6.5.26.1

The limit of card readers is determined by the license.

To go to the reader settings, click "Add" (Figure 6.5.26.2).

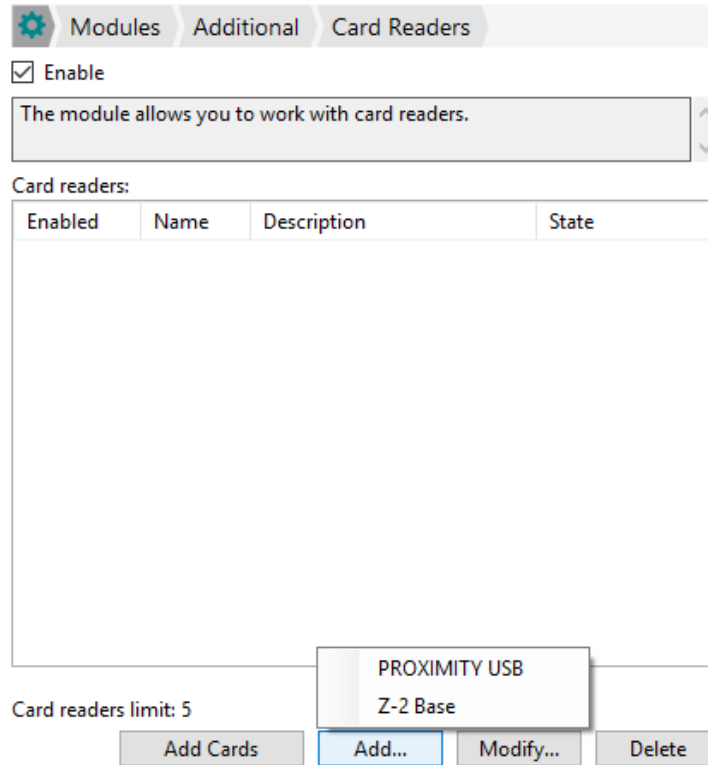


Figure 6.5.26.2

PROXIMITY USB Reader Connection Settings

Specific values of serial port parameters depend on the type of device and its settings. See documentation for the appropriate device, which the port is set up for.

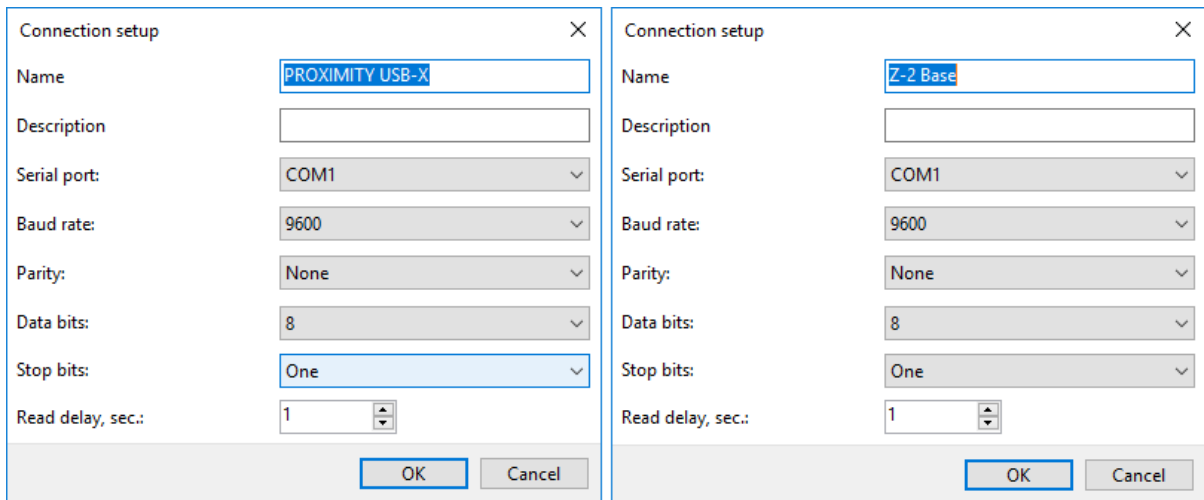


Figure 6.5.26.3

Name is the reader name. The default name is PROXIMITY USB-X or Z-2 Base, depending on the reader selected.

Description – the space for comment / additional information.

Serial port – select the serial port.

Baud rate – the port clock frequency, measured in bits per second.

The following range of standard speeds is available: 2400; 4800; 9600; 19200; 38400; 57600; 115200.

Parity – it determines the parity bit presence and type, the last bit in the sending acts as a batch total. It is used to check the received batch.

- *None* – no parity bit;
- *Odd* – with odd bit;
- *Even* – with parity bit;
- *Mark* – fixed parity is 1, it is necessary when the receiver demands a 10-bit batch with a difference in the 9 bit;
- *Space* – fixed parity is 0, it is necessary when the receiver demands a 10-bit batch with a difference in the 10 bit.

Data bits – the number of bits sent in one sending. It is important to remember that when this parameter is incorrectly configured, a data “pruning” may occur.

Possible values are: 4, 5, 6, 7, 8.

Stop bits – stop-bit duration may be: None, One, Two, OnePointFive;

Reading delay – the time between repeated readings of cards. It is required to avoid trigger re-activation.

Click “OK” to save changes.

When the changes are saved, a string with the configured device will be displayed in the “Readers” section. The following parameters are available in the string for each configured reader:

- Enable /disable the reader;
- The name of the reader;
- Added description of the reader;
- State. The following statuses are available: Off, Wait, Loss of Signal, Error, OK.

Modules Additional Card Readers

Enable

The module allows you to work with card readers.

Card readers:

Enabled	Name	Description	State
<input checked="" type="checkbox"/>	PROXIMI...		OK

Card readers limit: 5

Add Cards Add... Modify... Delete

Set Defaults OK Cancel Apply

Figure 6.5.26.4

To go to the map settings, click “Add Cards” (Figure 6.5.26.5).

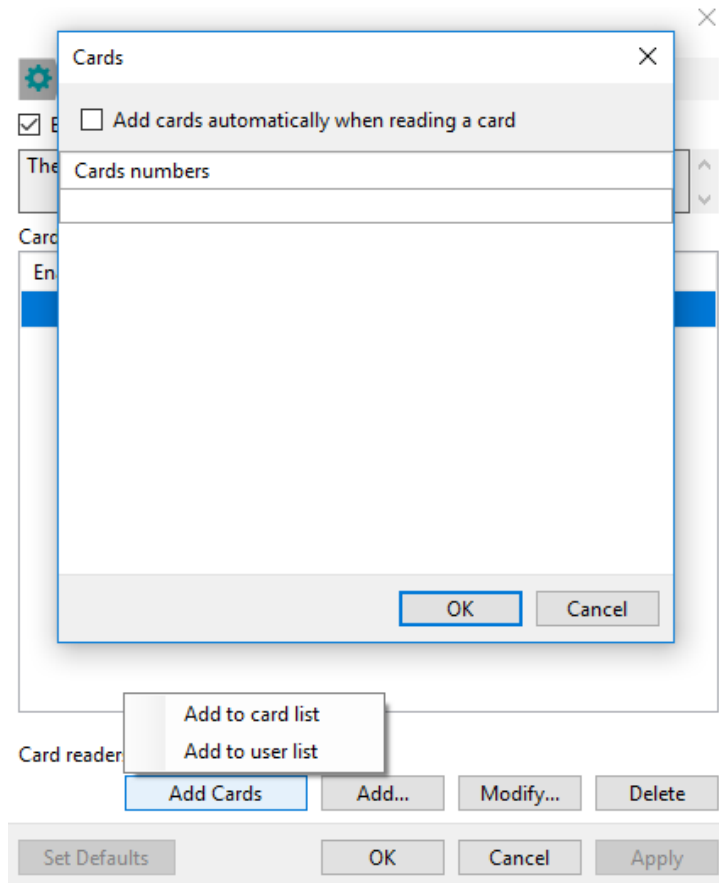


Figure 6.5.26.5

Add Card to card list

To add a card number, double-click an empty string and enter the number.

The range of numbers accessible for input is: from -2147483648 to +2147483647.

All inaccessible values (numeric, not included in the specified range, alphabetic and characters) will be replaced by 0.

Add cards automatically when reading — it adds the card number to the list at the time of its reading.

To remove a card from the list, right-click the desired string and select “Delete” in the drop-down menu.

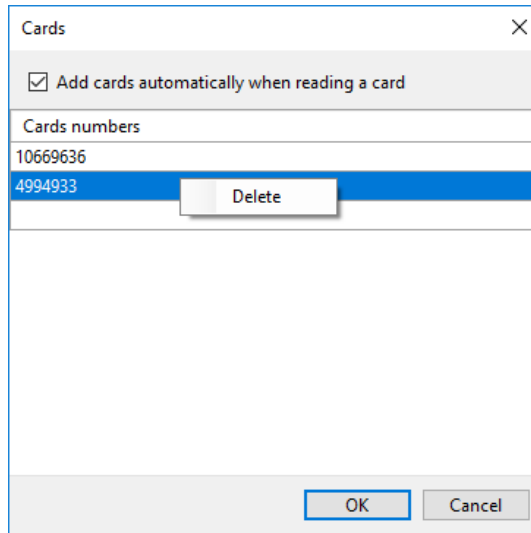


Figure 6.5.26.6

Add Card to User List

This option to save card numbers allows to bind a card number to a vehicle number plate.

To add cards, select the reader, user list, vehicle type and enter the vehicle number plate. The access card field can be filled in manually or automatically when reading the card.

To add a card to the list, click "Add" after all the fields required are completed.

Add cards automatically when reading - adds the card number in the "Access card" field at the time of its reading.

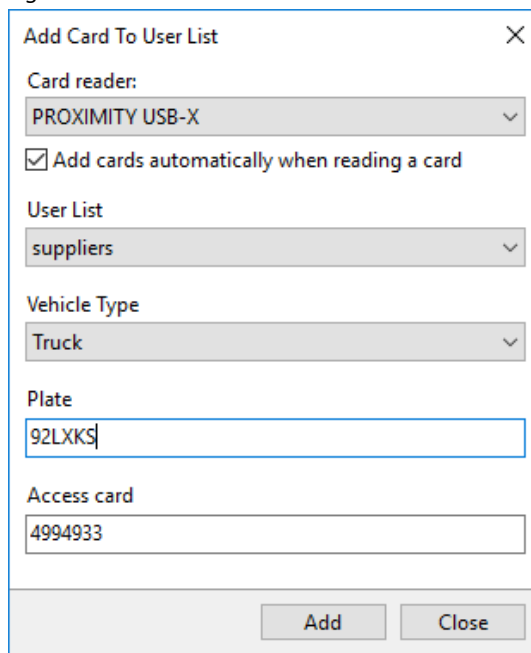


Figure 6.5.26.7

An additional field "Access card" containing card numbers will be added to the list, which the card numbers were entered in.

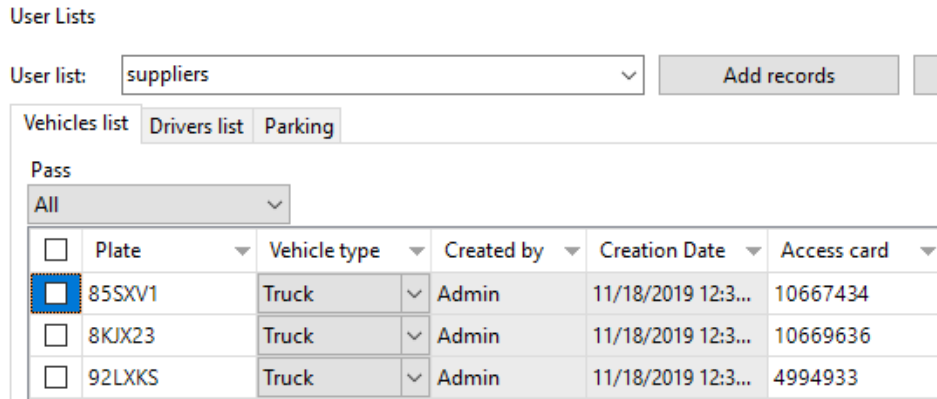


Figure 6.5.26.7

When the trigger for reading a card is set up, the entries will be made to the recognition log, see an example in Figure 6.5.26.9.

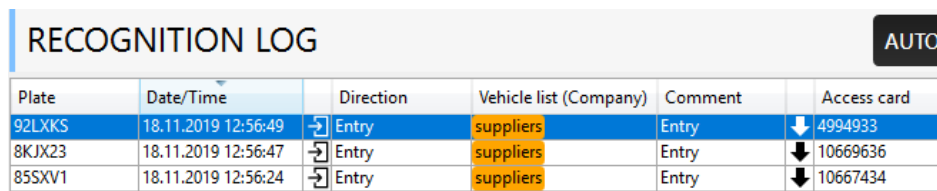


Figure 6.5.26.9

Triggers are necessary to be set up in order to display the card reading information in recognition log. Figures 6.5.26.7 и 6.5.26.8 show an example of trigger setting and the result of its execution.

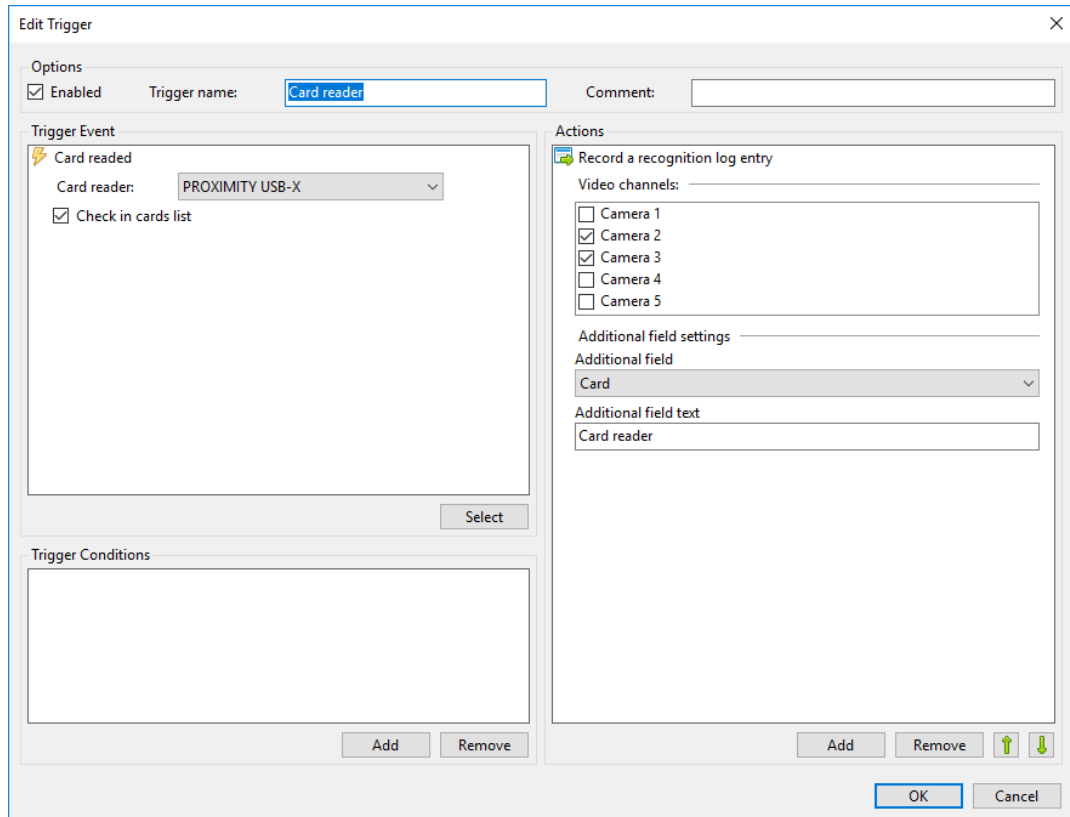


Figure 6.5.26.10

RECOGNITION LOG						AUTOUPDATE
Plate	Date/Time	Video channel	Direction		Card	
-	03.06.2019 15:31:40	Camera 3	? Undefined	? <input checked="" type="checkbox"/>	Card reader	
-	03.06.2019 15:31:31	Camera 3	? Undefined	? <input checked="" type="checkbox"/>	Card reader	

Figure 6.5.26.11

6.5.27. NxWitness / Sefica ProBox

Module purpose: this module is designed to integrate with NxWitness (Sefica ProBox).

To enable this module, open the “Settings” menu: “Tools” → “Settings” → “NxWitness” or use F8 hot key to invoke the “Settings” menu and go to “NxWitness” section. In the “Settings” section of NxWitness module select the checkbox in the “Enable” column.

Attention! All actions will be saved only after clicking “Apply” or “OK”.

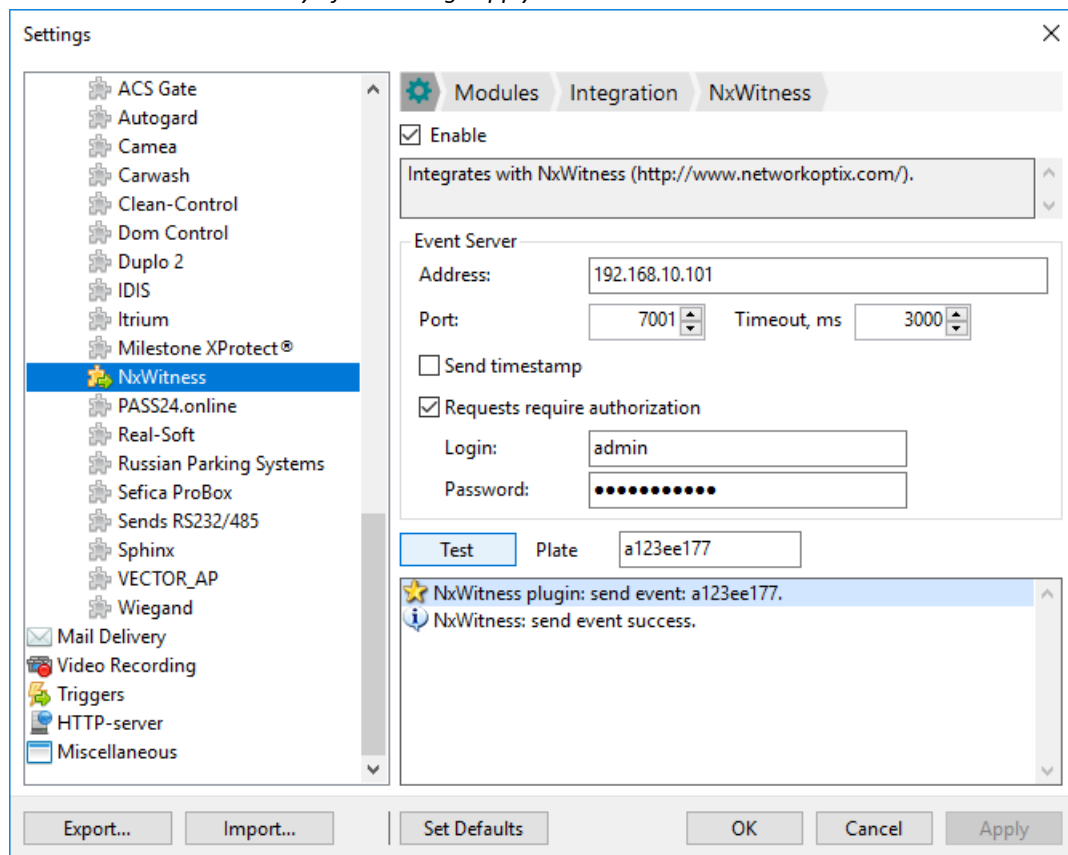


Figure 6.5.27.1

Setting

To set up the link, specify the following:

Address: path to NxWitness server.

Port: your NxWitness server port and reconnection timeout.

Login and password: enter username and password used to connect to the server.

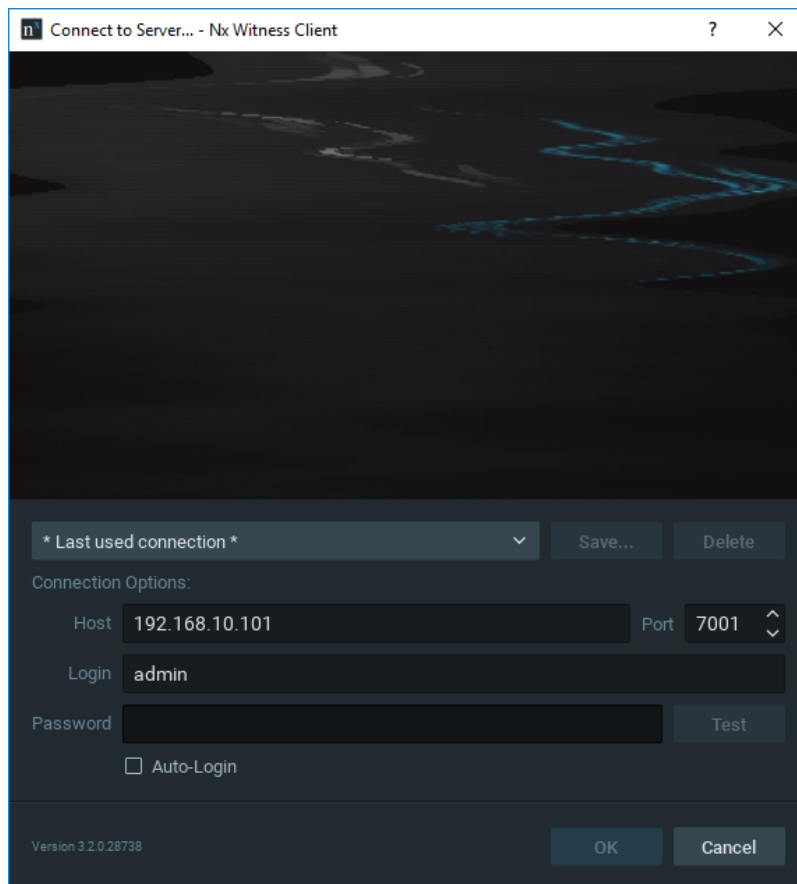


Figure 6.5.27.2

Click “Apply” to save settings.

To verify the correctness of the settings entered, click “Test” – a test number will be sent to NxWitness Client.

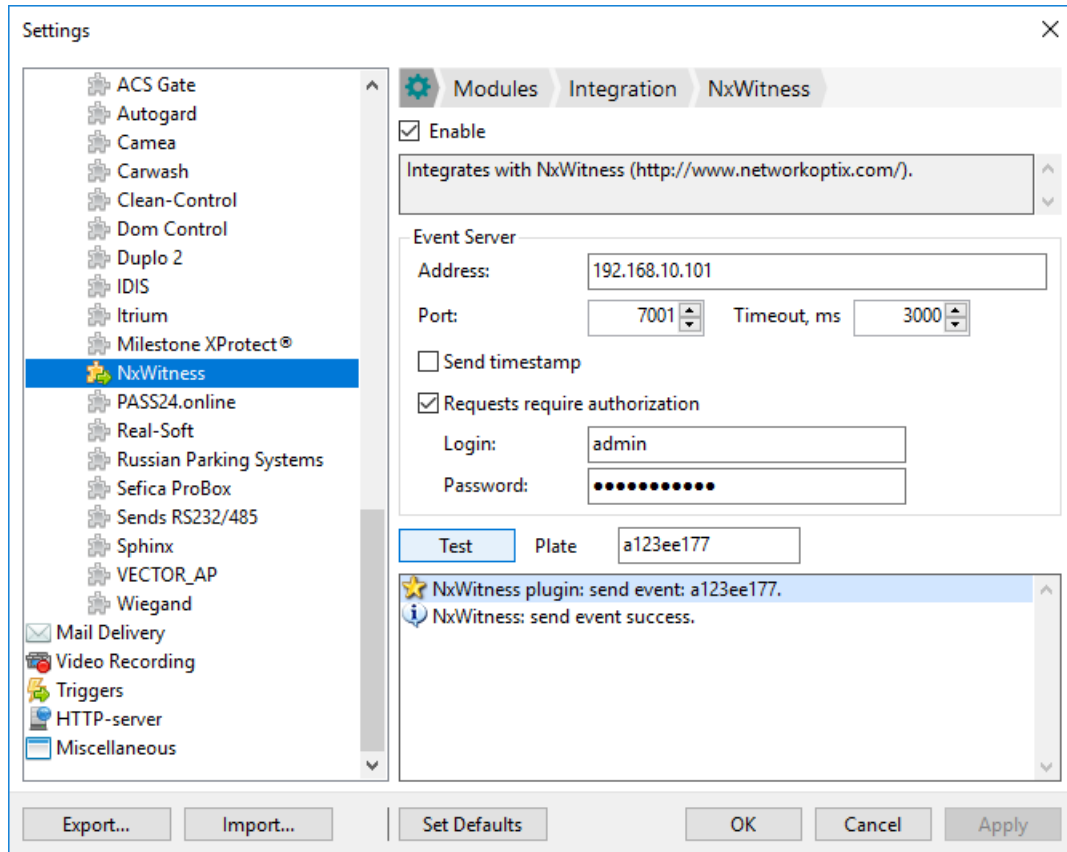


Figure 6.5.27.3

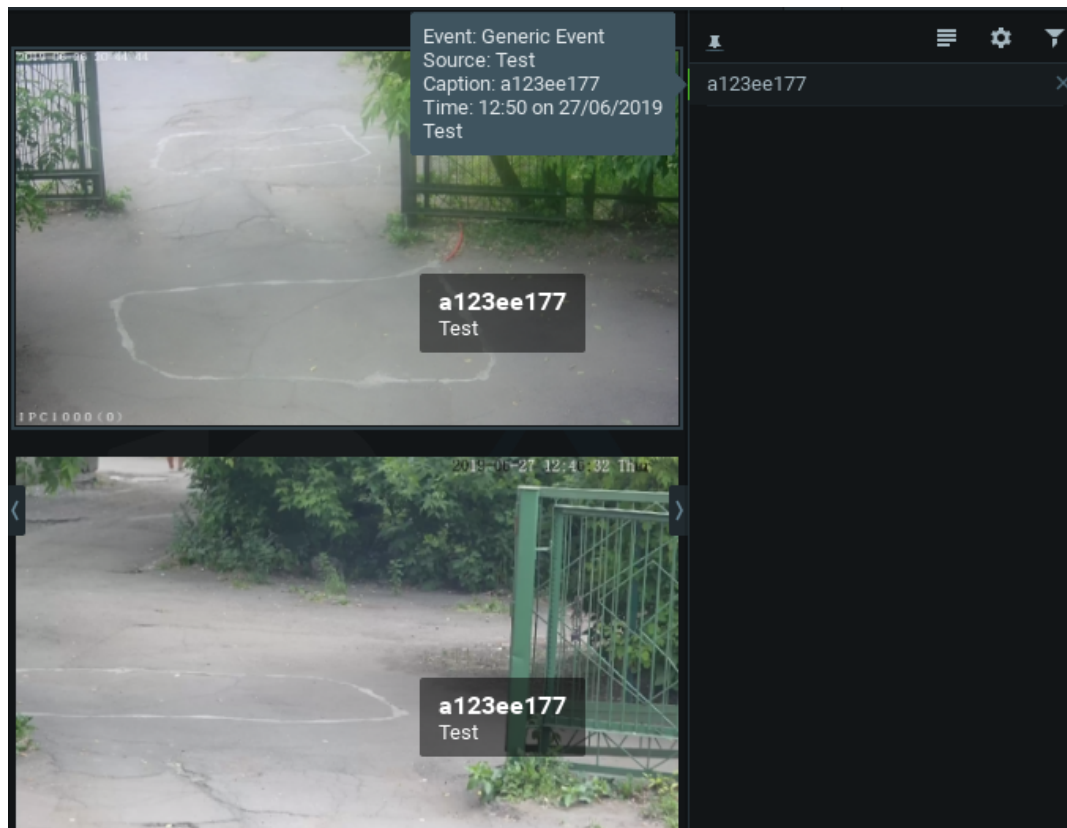


Figure 6.5.27.4

In the Event Log, Test is displayed as follows:

Date/Time	Event	Source	Action	Target	Description
27/06/2019 12:50	Generic Event	Test	Show notification	All users	Test
27/06/2019 12:50	Generic Event	Test	Bookmark	urn_uuid_0cb2dba0-1e61-11e9-8640-001c27fc8cd1	Test
27/06/2019 12:50	Generic Event	Test	Show text overlay	urn_uuid_0cb2dba0-1e61-11e9-8640-001c27fc8cd1	Test
27/06/2019 12:50	Generic Event	Test	Show text overlay	HW0100302hd	Test

Figure 6.5.27.5

Recognition results sent to NxWitness are displayed as an arbitrary event in the Event Log. By default it includes notifications display and record about it in the Event Log.

Date/Time	Event	Source	Action	Target	Description
20/06/2019 13:02	Generic Event	Camera 2	Write to log		
20/06/2019 13:02	Generic Event	Camera 2	Show text overlay	HW0100302hd	
20/06/2019 13:02	Generic Event	Camera 2	Show text overlay	urn_uuid_0cb2dba0-1e61-11e9-8640-001c27fc8cd1	
20/06/2019 13:02	Generic Event	Camera 2	Bookmark	urn_uuid_0cb2dba0-1e61-11e9-8640-001c27fc8cd1	
20/06/2019 13:02	Generic Event	Camera 2	Show notification	All users	
20/06/2019 13:02	Generic Event	Camera 1	Write to log		

Figure 6.5.27.6

The following event rules may be required for additional information on recognition results:

Show text overlay

Click “Add”:

Event: “Generic Event” occurred.

Action: “Show text overlay” on selected cameras.

Specify the time that the notification will be displayed over video. The default time is set to 5 seconds.

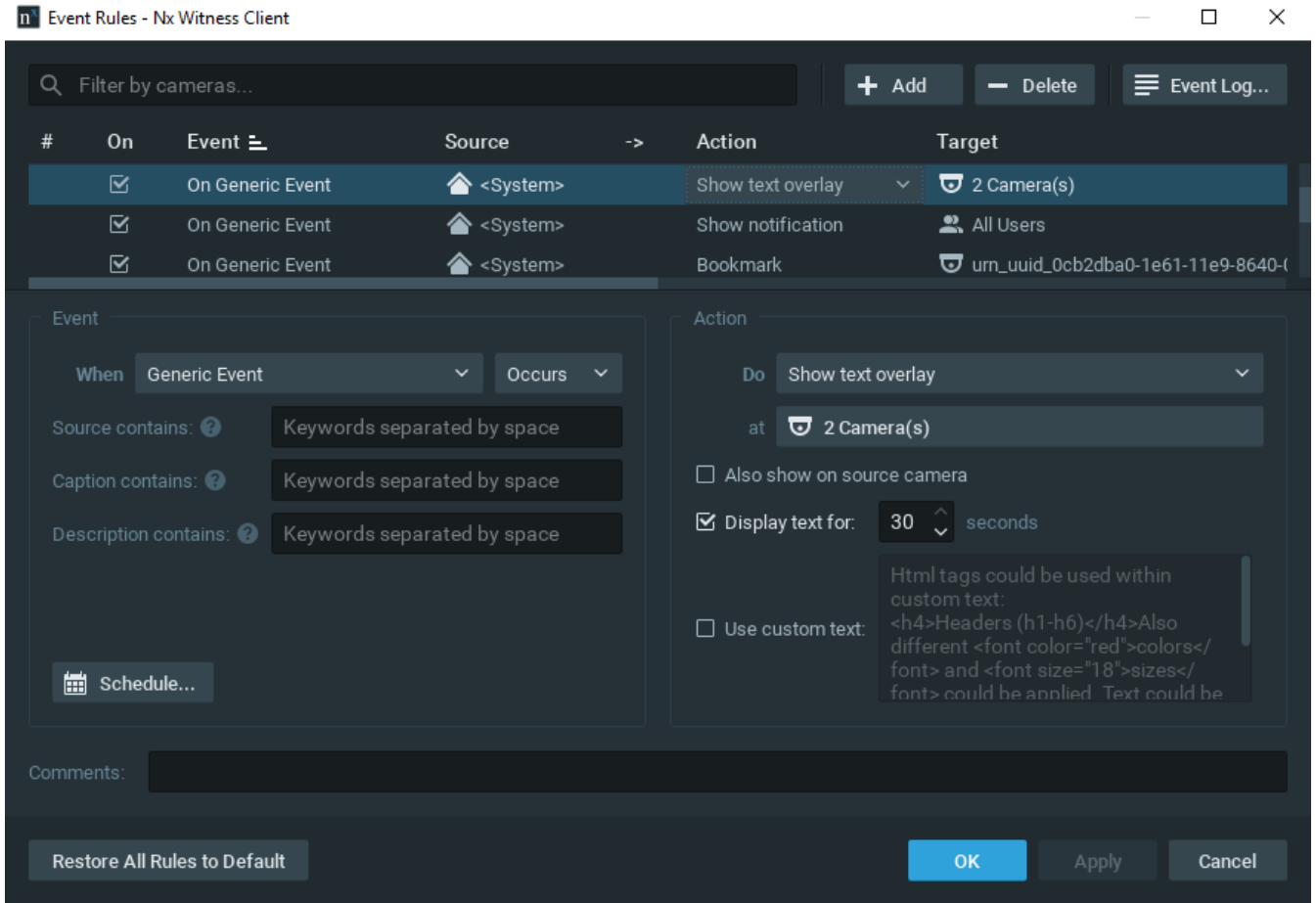


Figure 6.5.27.7

Show text overlay: number plate without list.

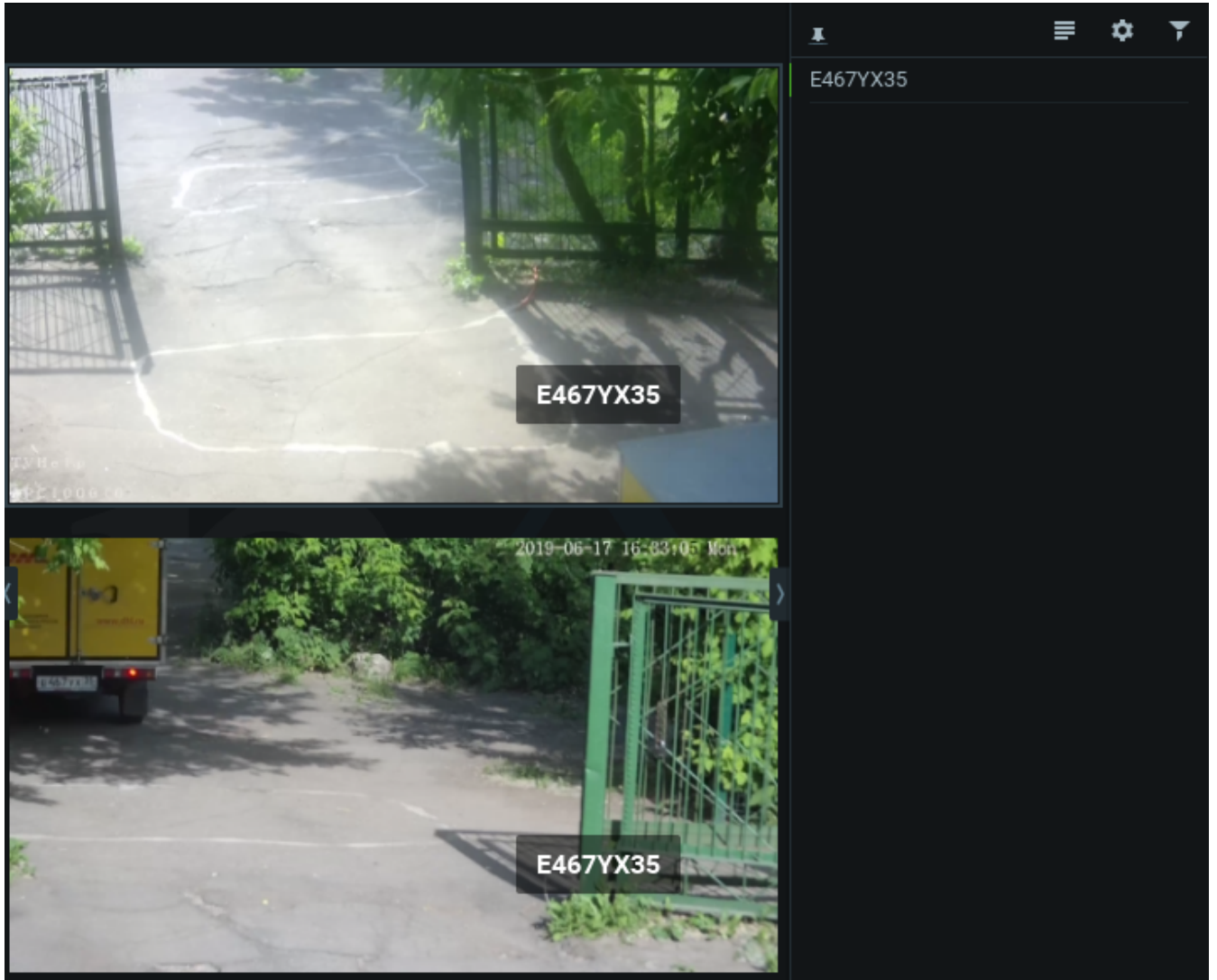


Figure 6.5.27.8

Show text overlay: number plate and the list which it is listed in (in Automarshal database).

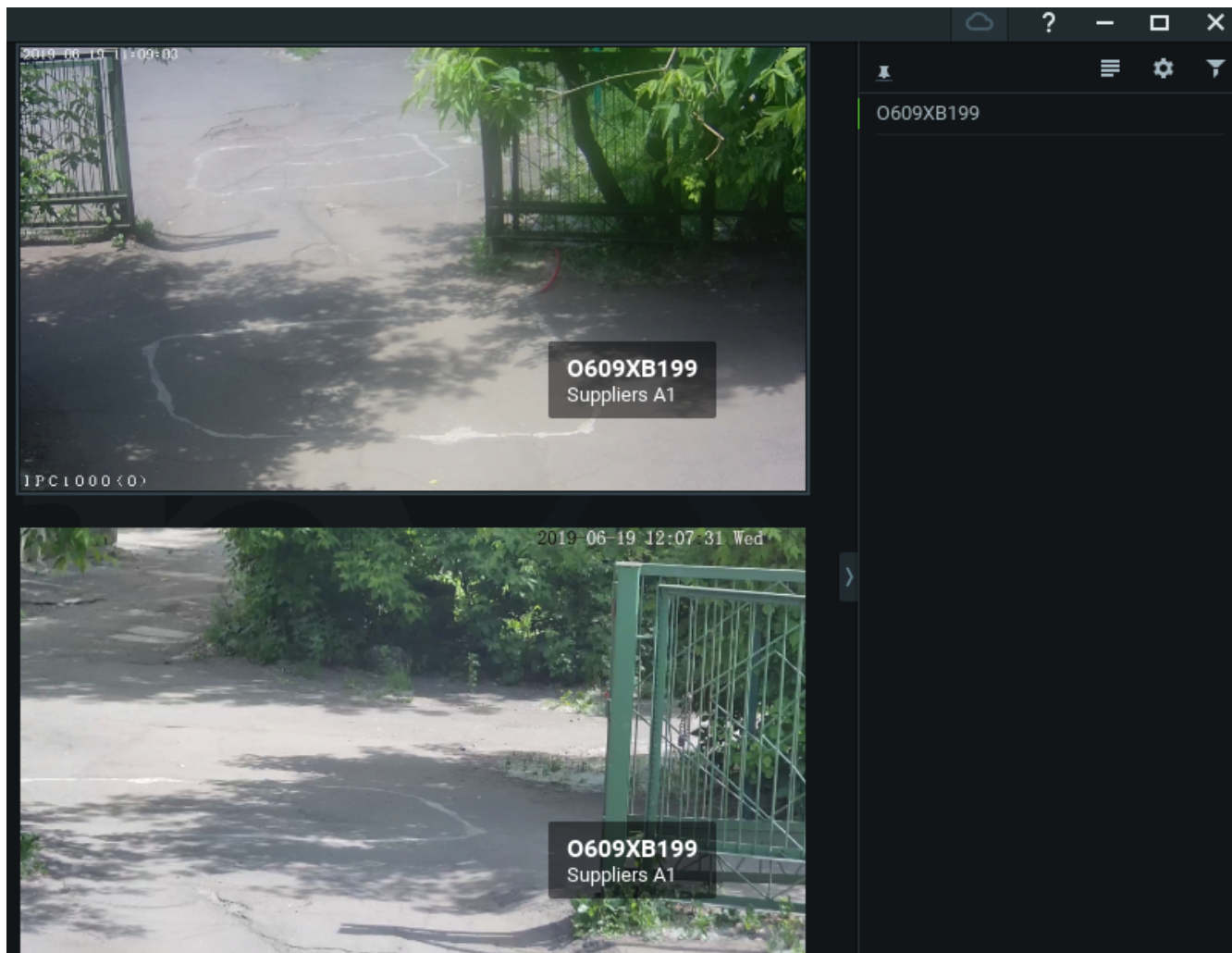


Figure 6.5.27.9

Send email

Click “Add”:

Event: “Generic Event” occurred.

Action: Send email” to the users selected.

Email Settings – set up and check previously entered settings of the outgoing email.

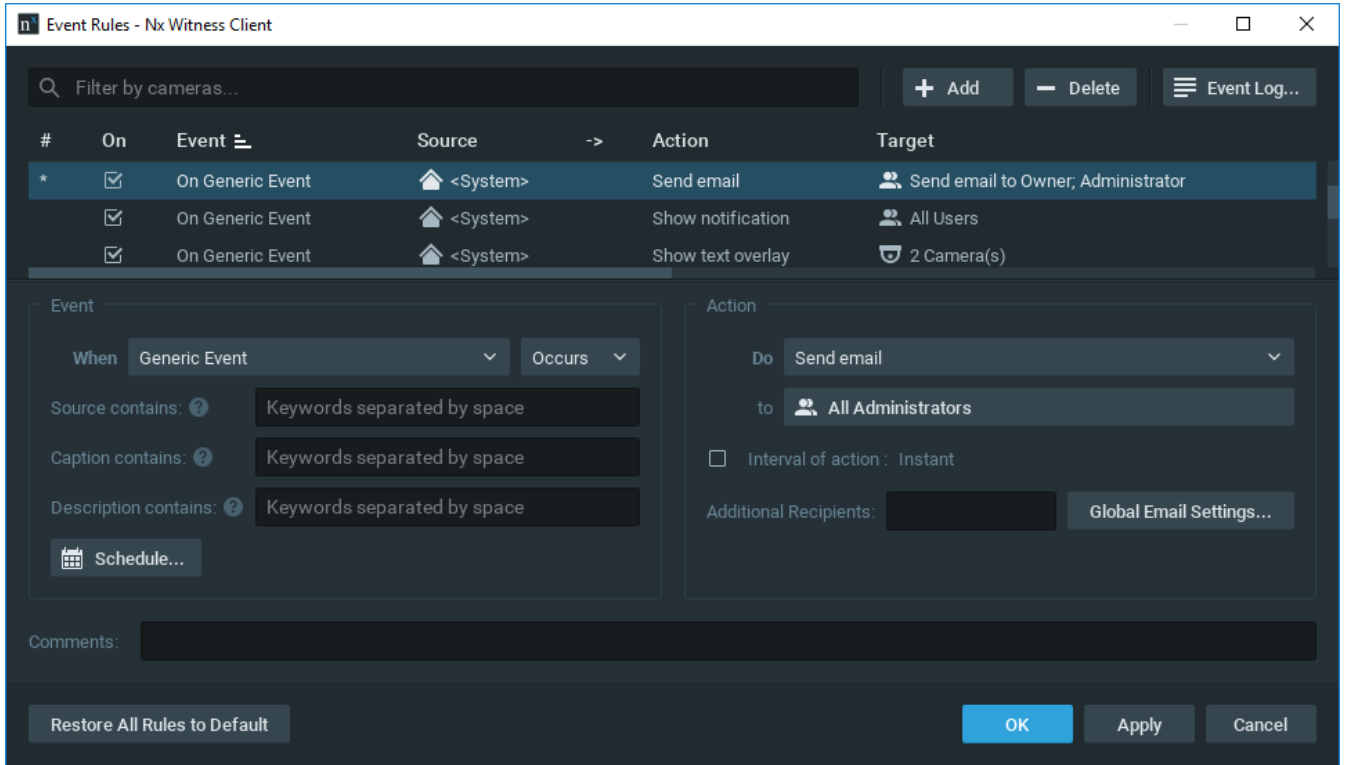


Figure 6.5.27.10

If all settings have been correctly entered, then upon receipt of recognition results in Nx Witness, the following emails will be sent:

Vehicle number plate recognized is indicated in the subject line. Message body contains the server in Nx Witness, information on the system (it is filled in Email Settings in Nx Witness Client), video channel, which the recognition event occurred on, vehicle number plate, date and time of recognition.

X155AT98

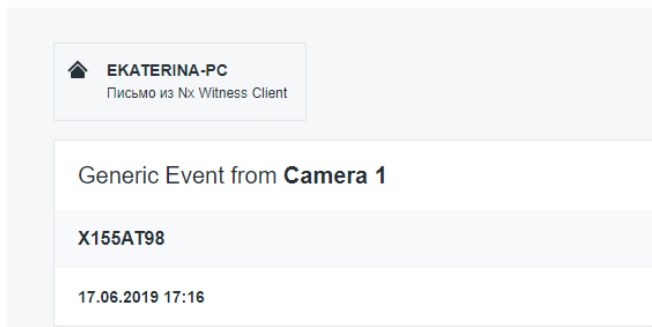


Figure 6.5.27.11

Add to bookmarks

Click “Add”:

Event: “Generic Event” occurred.

Action: Bookmark on selected video channels.

Duration: specify recording time in seconds.

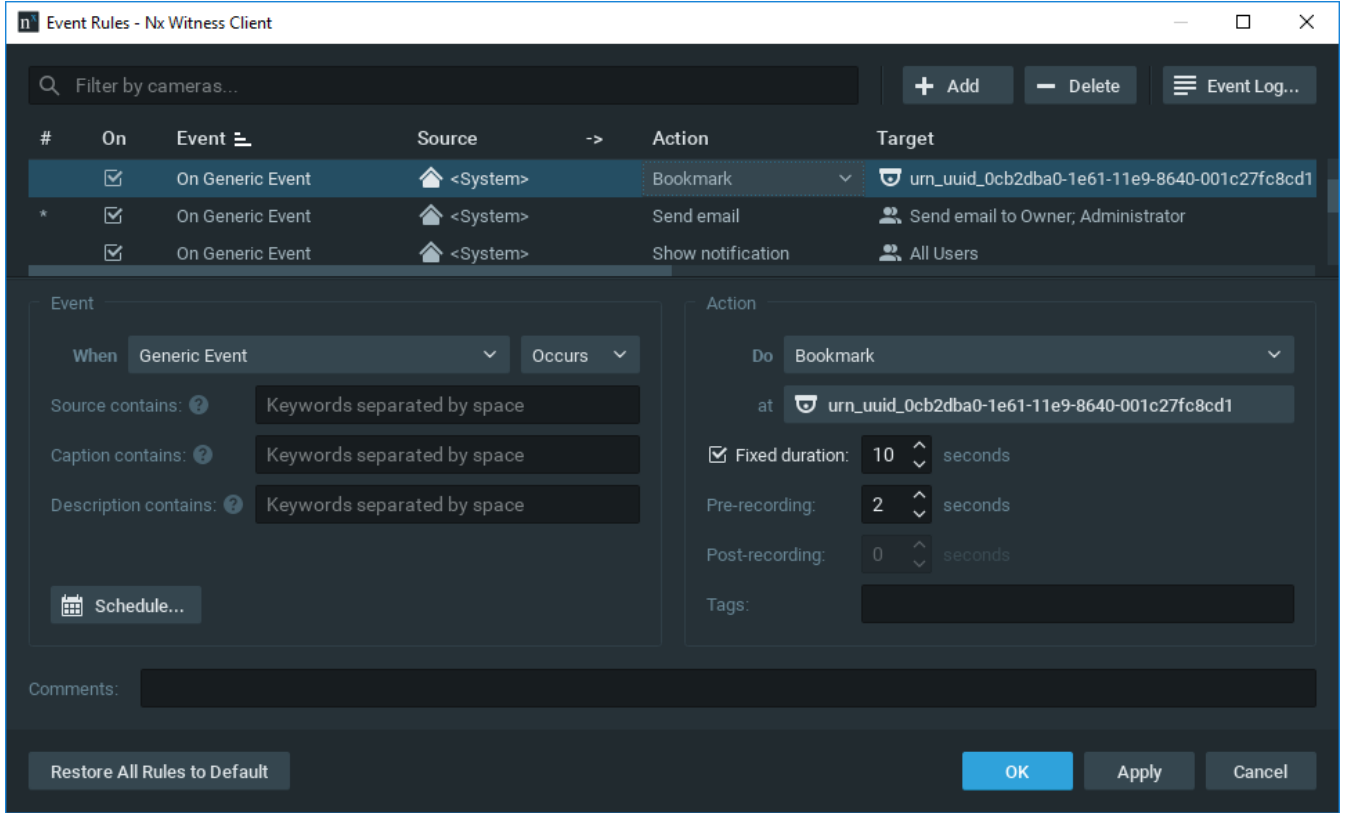


Figure 6.5.27.12

Use Ctrl + B hot key combination to go to the bookmark log.

Bookmark Log displays vehicle number plate, camera, which the recording was made from, time and duration of video bookmark.

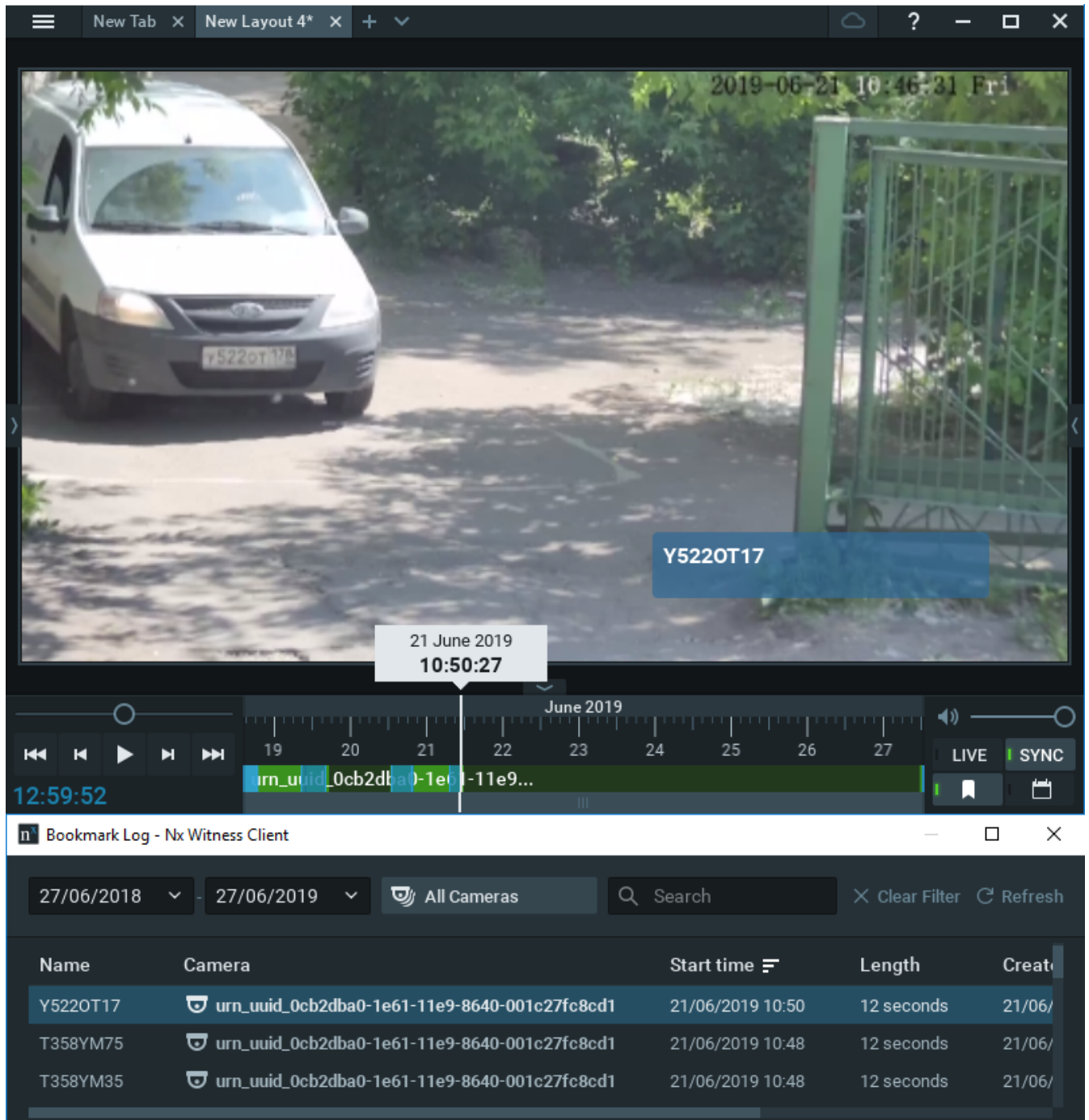


Figure 6.5.27.13

6.5.28. RFID Readers

The module is meant for interaction with RFID Readers.

Install ISO Start 2018 before working with “RFID Readers” module. This program is necessary to set up data transfer about the tags read to the port specified.

To enable the module, open “Settings” menu: “Service” → “Settings (F8)” → “RFID Readers”. In “RFID Readers” section, select “Enable” box.

Note! All actions will be saved after clicking “Apply” or “OK” only.

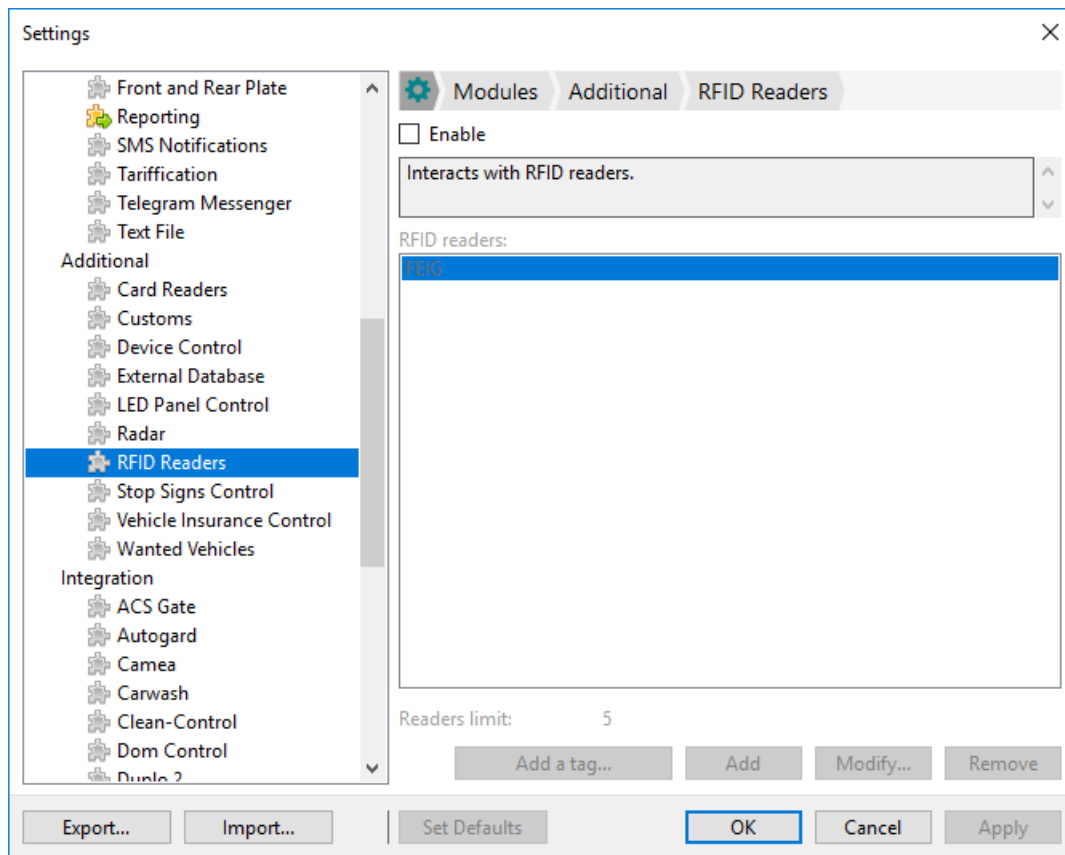


Figure 6.5.28.1

Readers limit is determined by the license.

FEIG device is supported.

To go to the reader setup, click “Add” (Figure 6.5.28.2).

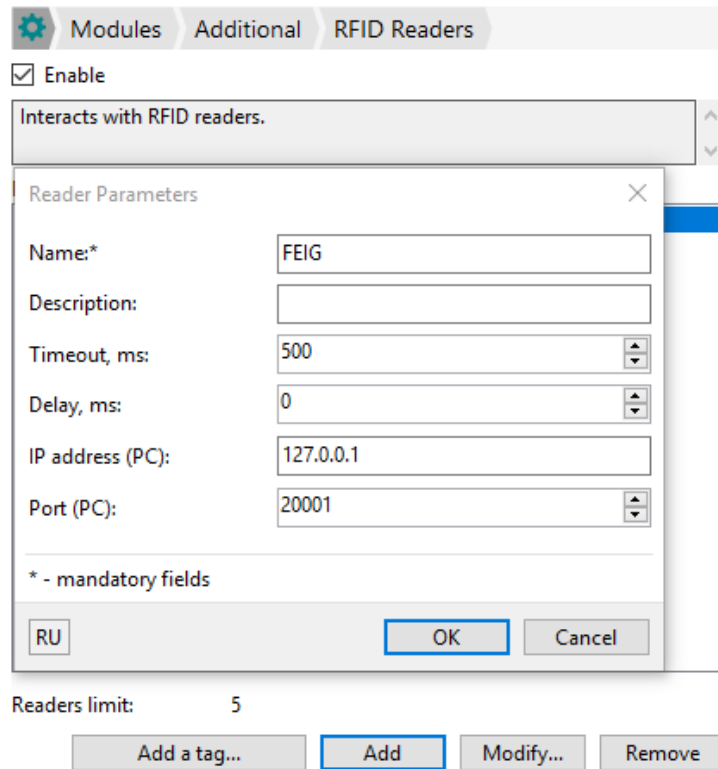


Figure 6.5.28.2

FEIG Reader Connection Setup

- **Name** – reader name. FEIG is set up by default.
- **Description** – comment blank / additional information.
- **Timeout** – time between tag rereading, is measured in milliseconds.
- **Delay** – time to trigger execution, is measured in milliseconds. It is required when recognition of vehicle number plates and RFID tag is going simultaneously, but number plate shall be recognized first.
- **IP address (PC)** – IP-address of device (PC), which receives recognition results. It is set up in ISO Start 2018 software settings.
- **Port (PC)** – port of device (PC), which receives recognition results. It is set up in ISO Start 2018 software settings.

Click “OK” to save changes.

After saving the changes, a string with the device set up will appear in “RFID Readers” section.

To modify reader settings, select the reader required from the list and click “Modify”.

To remove reader, select the reader required from the list and click “Remove”.

To add RFID tags, click “Add a Tag” (Figure 6.5.28.3).

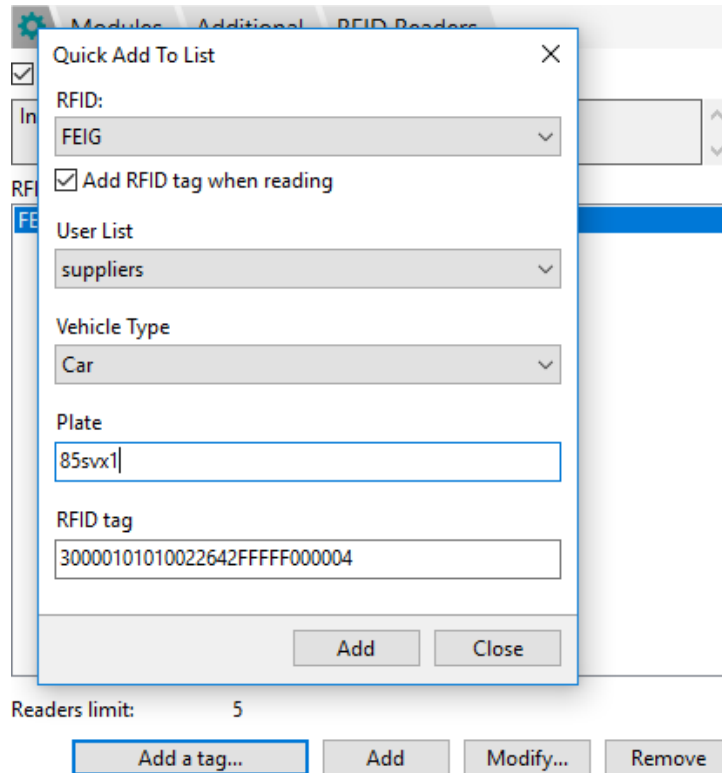


Figure 6.5.28.3

- **RFID** – select the RFID tag reader.
- **Add RFID tag when reading** – it adds card number to the list when reading it.
- **User List** – select user list, which the vehicle number plates and RFID tags will be entered into.
- **Vehicle Type** – indicate vehicle type for the vehicle number plates added.
- **Plate** – enter vehicle number.

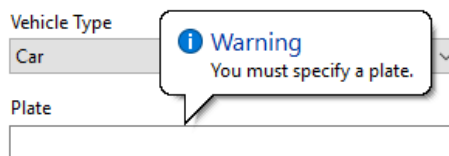


Figure 6.5.28.4

- **RFID tag** – a field, where the RFID tag number appears in. When “Add RFID tag when reading” box is not selected, it is required to manually enter the tag number.

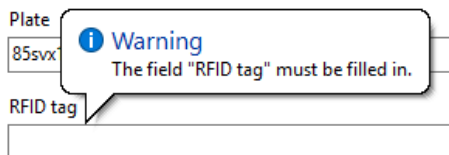


Figure 6.5.28.5

Numbers are added to the list by clicking “Add”.

Trigger Setup

Trigger is necessary to be set up in order to display records about the RFID tag detected in recognition log. Example of trigger setup and its execution result is shown in Figures 6.5.28.5 and 6.5.28.6.

Look for plate number in user lists – when the checkbox is marked, it will look for the tag in user lists. If the number plate is in the list, an action “Record to recognition log” will create a record with the vehicle number plate from the list.

When the checkbox is not marked, a blank record with the images saved from selected cameras will be created in recognition log.

No repeat – it works along with “Look for plate number in user lists”. If the same vehicle number plate has been recognized in the last N seconds, then the trigger will not be executed.

Figure 6.5.28.6



Figure 6.5.28.7

Tags display in the user list.

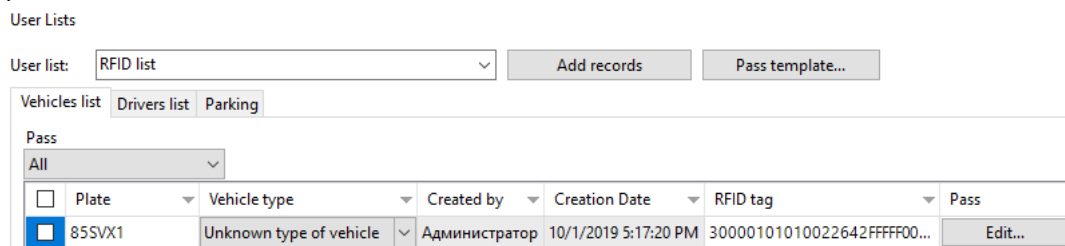


Figure 6.5.28.8

6.5.29. Smart Camera

The module is meant for integration with Sunell Smart Camera, that supports cgi alarm service.

To enable the module, go to “Settings” menu: “Service” → “Settings” → “Smart Camera” or use F8 hotkey to open “Settings” menu and go to “Smart Camera” section (Figure 6.5.29.1).

Attention! All actions will be saved after clicking “Apply” or “OK” only.

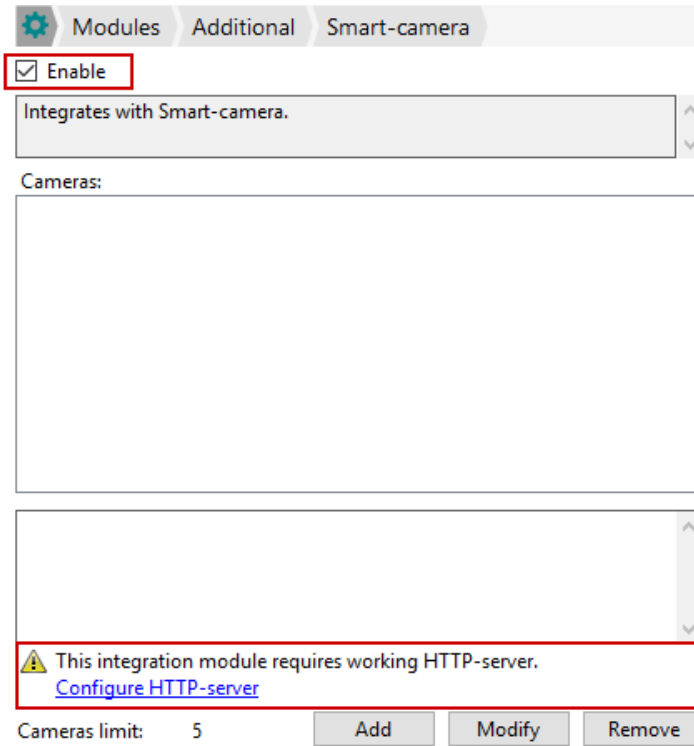


Figure 6.5.29.1

Then go to “HTTP Server” section and check the box in “Enable” column. To save the actions performed, click “Apply” (Figure 6.5.29.2).

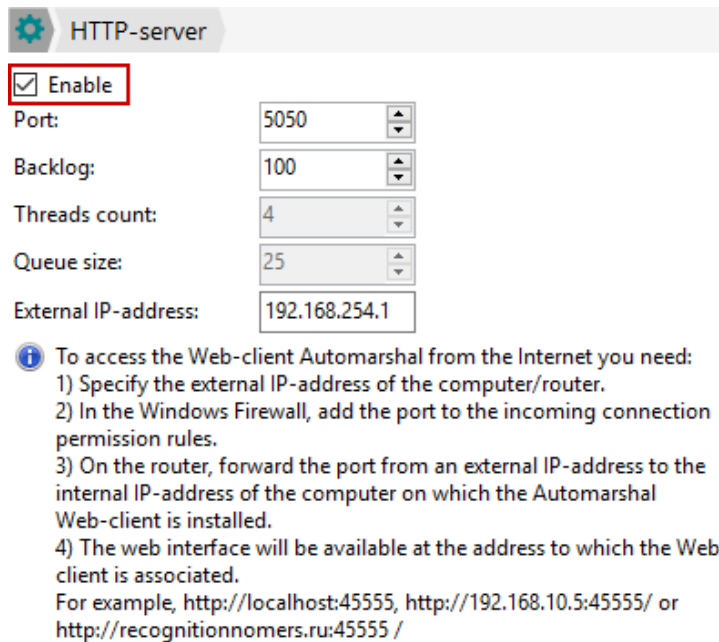


Figure 6.5.29.2

To go to the camera settings, click “Add” (Figure 6.5.29.3).

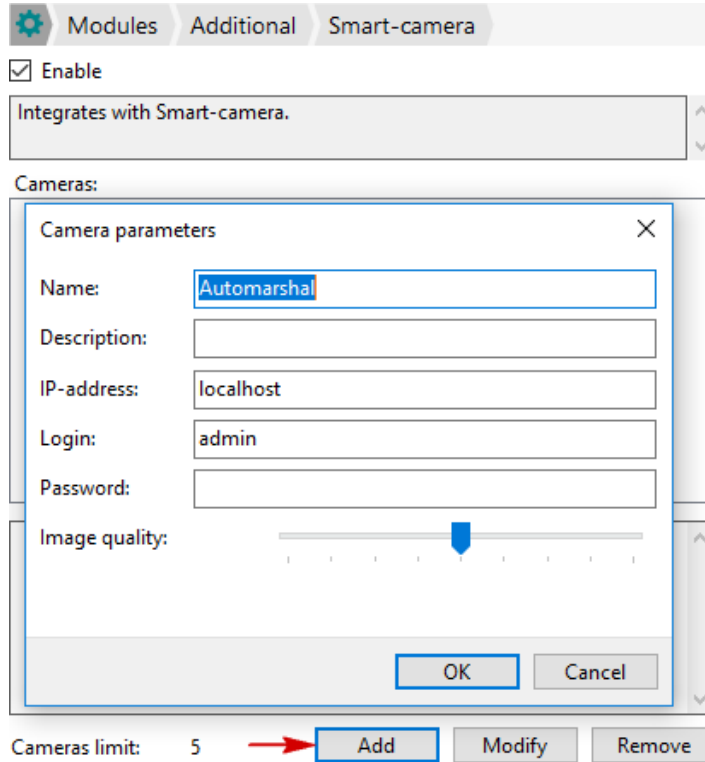


Figure 6.5.29.3

Number of Smart Cameras depends on number of video sources in Automarshal. Smart Camera is automatically bound to Automarshal video source via IP-address. If the camera is not connected to Automarshal, the first video channel will be selected by default. Thus, recognition results from Smart Camera will be displayed in the log under corresponding video channel.

Figure 6.5.29.4 shows an example of recognition results received from Smart Camera.

Smart Camera does not transmit plate number coordinates, so the plate number is not highlighted in screenshots, and the plate number cut from the frame is not attached to recognition results. These movement directions are not transmitted as well.

Upon recognition, Smart Camera module takes a screenshot using HTTP, so the frame transmitted depends on speed and quality of the connection to the camera.

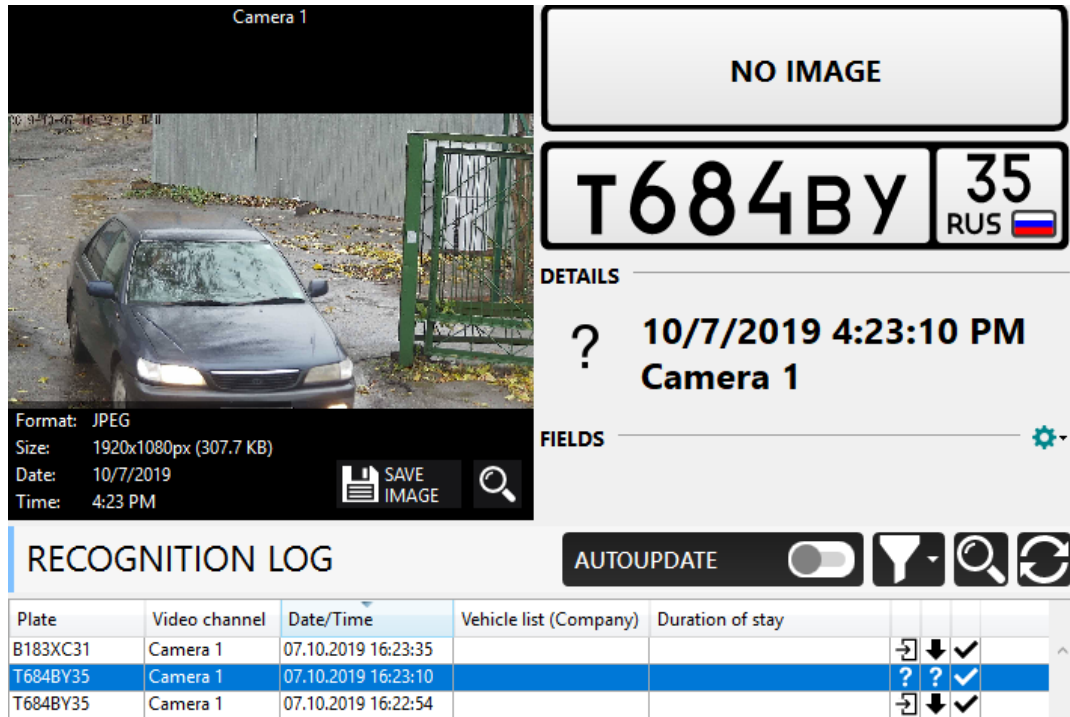


Figure 6.5.29.4

Setup of Smart Camera connection in Automarshall

- **Name** – Camera name. It is set by default by Automarshall.
- **Description** – space for comments / additional information.
- **IP-address** – IP-address of the device, that will transmit recognition results to Automarshall.
- **Login and Password** – authorization data when connecting to the camera.
- **Image quality** – set the quality of image transmitted by the camera.

Click “OK” to save changes.

After saving the changes, a string with the device configured will be displayed in “Camera” field.

Modify – it is meant to change settings of the device selected.

Remove – it is meant to delete the device selected.

Figure 6.5.29.5 shows an example of camera setup.

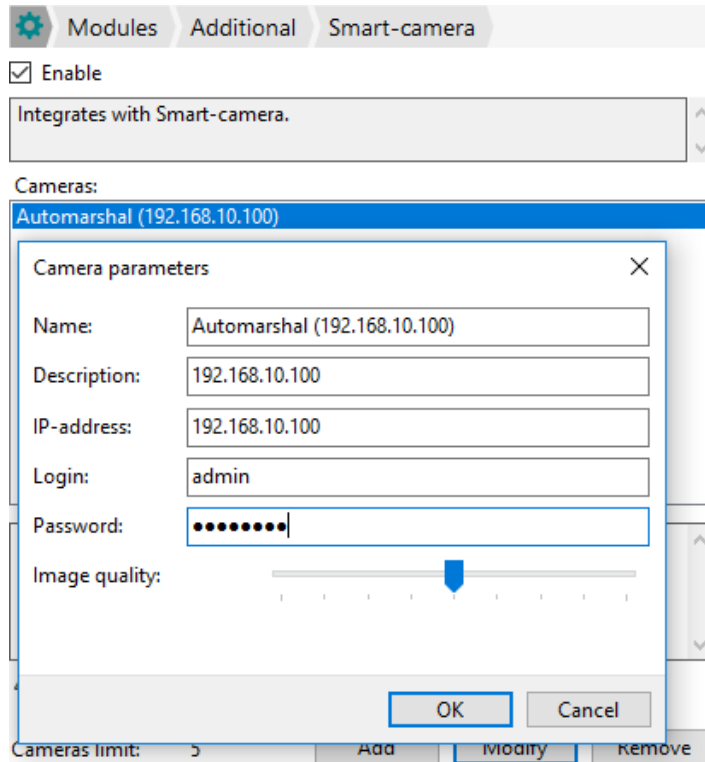


Figure 6.5.29.5

Setup of CGI Alarm Service (Sunell)

CGIAlarm:

- CGIAlarm – set the switch to “ON”.
- Name – enter the camera name.
- Type → HTTP.
- URL Start:
http://AM_server_IP_address (lower_limit of_range):AM_server_port / api / plugins / smartcamera / v1 / sunell.
- URL End:
http://AM_server_IP_address (upper_limit of_range):AM_server_port / api / plugins / smartcamera / v1 / sunell.
- User name – user name for authorization on the camera (login).
Password – user password for authorization on the camera.

Proxy:

- Proxy setup – set the switch to “ON”.
- Address – IP-address of AM server (see URL Start or URL End).
- Port – port of AM server (see URL Start or URL End).
- User name – user name for authorization on the camera (login).

Password –user password for authorization on the camera.

Setup example:

 CGI Alarm Service Center

CGIAlarm ON

Name

Type

URL Start

URL End

User Name

Password

Proxy Setting OFF

Figure 6.5.29.6

Recommendations for setup:

- Disable proxy in the camera settings;
- Disable recognition in AM video channels;
- Set the minimum image quality (1-3);
- In camera settings, specify the IP-address of the PC that will receive recognition results as upper and lower ranges;
- If recognition results have not been delivered to Automarshal, check brandmauer (firewall) settings or disable it.

6.5.30. Panorama

The module is designed to set up panorama generation.

To enable the module, go to the “Settings” menu: “Tools” → “Settings” → “Panorama” or use F8 hotkey to open the “Settings” menu and go to the “Panorama” section (Figure 6.5.30.1).

Attention! All actions will be saved after clicking “Apply” or “OK” only.

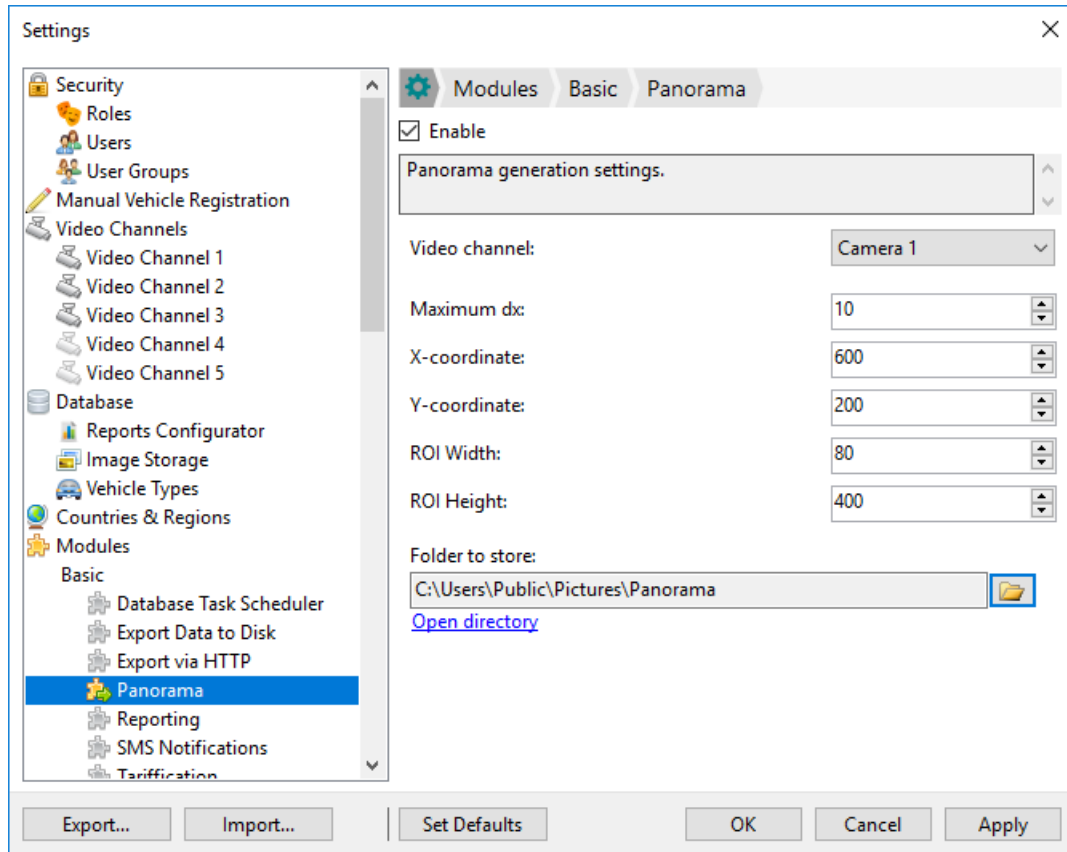


Figure 6.5.30.1

Setting

To set up panorama generation, specify the following:

- Video channel: select the video channel required to be set up. Each video channel has its own settings.
- Maximum dx - the maximum possible shift of the vehicle between adjacent frames along the X axis. The faster the vehicle goes, the greater the value of the parameter should be. Panorama quality decreases with increasing dx value.

Change of the value is available in the range 10 to 50.

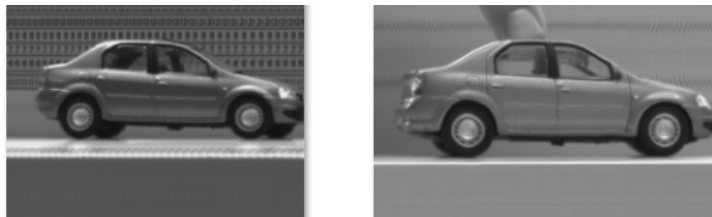


Figure 6.5.30.2

- X, Y coordinates, width and height of the area - the position and size of the area, by which the adjacent frames are evaluated. Values shall be within the borders of the image.
- Directory to save - specify the path to the folder, where the results will be saved.

After completing the settings, create triggers to capture the panorama.

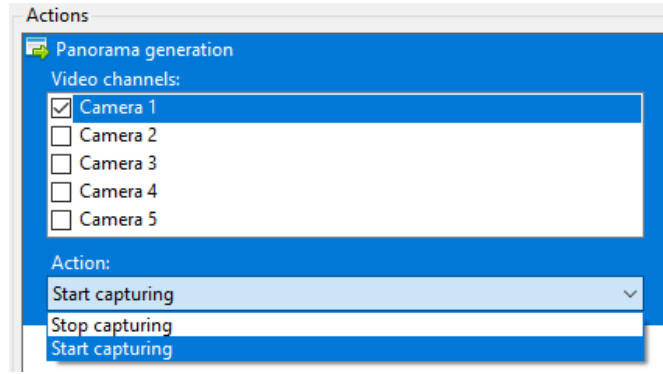


Figure 6.5.30.3

6.5.31. Recognition service

The module is intended for integration with the Automarshall license plate recognition service.

To enable the module, go to the “Settings” menu: “Service” → “Settings” → “Recognition service” or use the F8 hotkey to call up the “Settings” menu and go to the “Recognition service” section (Figure 6.5.31.1).

Attention! All actions will be saved only after clicking the “Apply” or “OK” button.

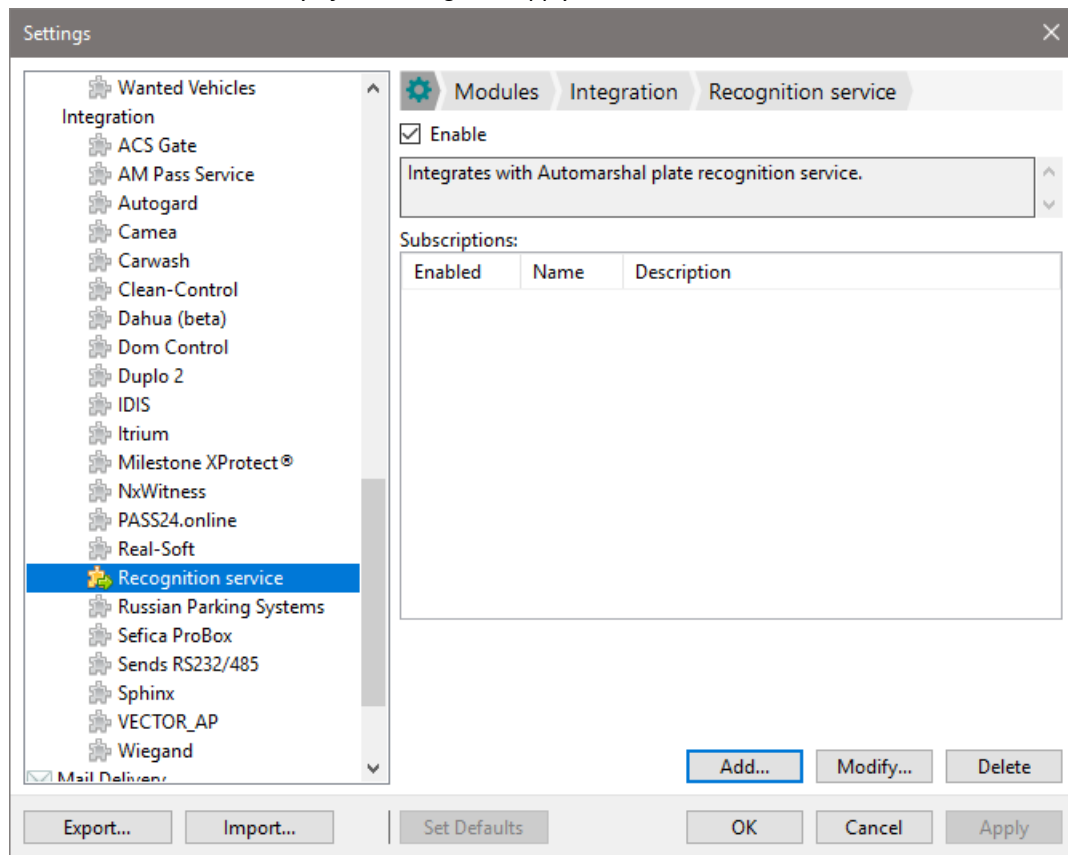


Figure 6.5.31.1

Service subscription setup

To proceed to setting up a service subscription, click the “Add” button (Figure 6.5.31.2).

- Name - the name of the subscription.

- Description - space for comments / additional information.
- Server - IP-address of the device from which recognition results will be sent.
- Port - server port.
- Notification settings:
 - Queue length - The maximum number of messages that can be stored in the queue.
 - Lifetime - the maximum allowed lifetime of a message in the queue. After the lifetime has expired, the message expires and is automatically removed from the queue.
 - Resend timeout - time between resending notifications.
- Permanent subscription – if checked, the subscription is marked in the recognition service as permanent, it is saved in the configuration, and the service remembers it when it restarts.

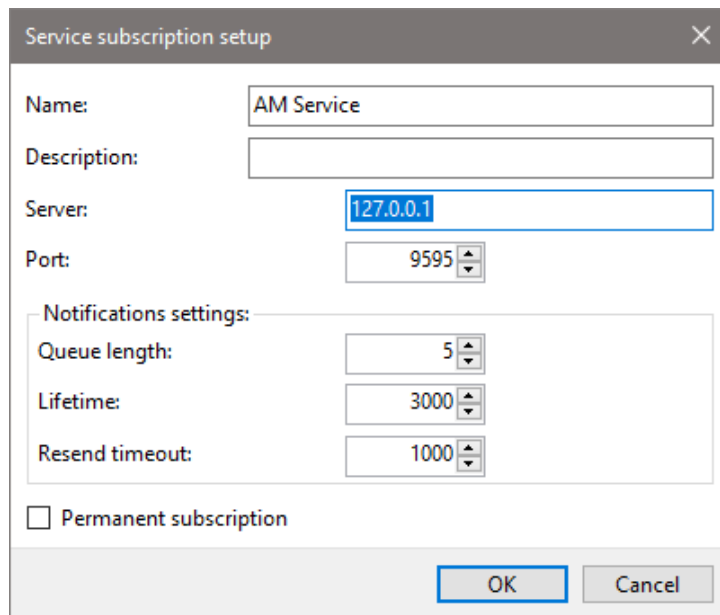


Figure 6.5.31.2

After completing the configuration of the service subscription, run the file recar2.kernel.service.exe.

```

recar2.kernel.service
20.01.2020 16:53:12[DBG] Камера 1: P155PY98 (RU_N01_a000aa00), 92 x 19 (1032 x 598), estimate: 0.9960 [0.0000, 0.0000],
zoneId: -1.
20.01.2020 16:53:12[DBG] Камера 1: P155PY#8 (RU_N02_a000aa100), 101 x 22 (1032 x 598), estimate: 0.9387 [0.0000, 0.0000
], zoneId: -1.
20.01.2020 16:53:13[DBG] Камера 1: motion lost: 16:53:13.1047, frames: 9.
20.01.2020 16:53:13[DBG] Камера 1: trying to make decision: variant wait timeout (1599 ms > 1500 ms) count: 3, timestamp
: 16:53:11.60.
20.01.2020 16:53:13[DBG] Камера 1: stencil rejected: RU_N01_a000aa00 (C571MA98) because 2 frames < 3.
20.01.2020 16:53:13[DBG] Камера 1: stencil rejected: RU_N02_a000aa100 (C571MA#8#) because 2 frames < 3.
20.01.2020 16:53:13[DBG] Камера 1: stencil rejected: RU_N06_aa00000 (C071#9#) because 2 frames < 3.
20.01.2020 16:53:13[DBG] Камера 1: plate rejected: confidence less than threshold (0.60).
20.01.2020 16:53:13[DBG] Камера 1: plate rejected: vehicle not detected.
20.01.2020 16:53:13[DBG] Камера 1: motion detected: 16:53:13.3048.
20.01.2020 16:53:13[DBG] Камера 1: motion lost: 16:53:13.6051, frames: 3.
20.01.2020 16:53:13[DBG] Камера 1: trying to make decision: variant wait timeout (1600 ms > 1500 ms) count: 3, timestamp
: 16:53:12.20.
20.01.2020 16:53:13[DBG] Камера 1: stencil rejected: RU_N01_a000aa00 (H160MM98) because 2 frames < 3.
20.01.2020 16:53:13[DBG] Камера 1: stencil rejected: RU_N02_a000aa100 (M160MM#8#) because 2 frames < 3.
20.01.2020 16:53:13[DBG] Камера 1: stencil rejected: RU_N06_aa00000 (#H60#98) because 1 frames < 3.
20.01.2020 16:53:13[DBG] Камера 1: plate rejected: confidence less than threshold (0.60).
20.01.2020 16:53:13[DBG] Камера 1: plate rejected: vehicle not detected.
20.01.2020 16:53:13[DBG] Камера 1: C540OX#8# (RU_N03_a000aa700) not matching stencil.
20.01.2020 16:53:13[DBG] Камера 1: C540OX98 (RU_N01_a000aa00), 86 x 19 (1032 x 598), estimate: 0.7853 [0.0000, 0.0000],
zoneId: -1.
20.01.2020 16:53:13[DBG] Камера 1: C540OX#8# (RU_N02_a000aa100), 94 x 19 (1032 x 598), estimate: 0.8280 [0.0000, 0.0000]
, zoneId: -1.
20.01.2020 16:53:13[DBG] Камера 1: C000#8# (RU_N06_aa00000), 93 x 17 (1032 x 598), estimate: 0.9330 [0.0000, 0.0000], zo
neId: -1.
20.01.2020 16:53:13[DBG] Камера 1: motion detected: 16:53:13.9033.
    
```


Figure 6.5.31.3

6.5.32. Control zones module

Purpose: the module is designed to configure control zones and is required for operation of video channels for parking monitoring.

Enabling the module

To enable the module, follow these steps:

1. Select the Settings item from the Service drop-down menu;
2. In the window that opens, select the section Modules → Control zones;
3. In the right part of the window, check the box next to the Enable item and click Apply or OK.

Attention! All actions will be saved only after clicking the "Apply" or "OK" button.

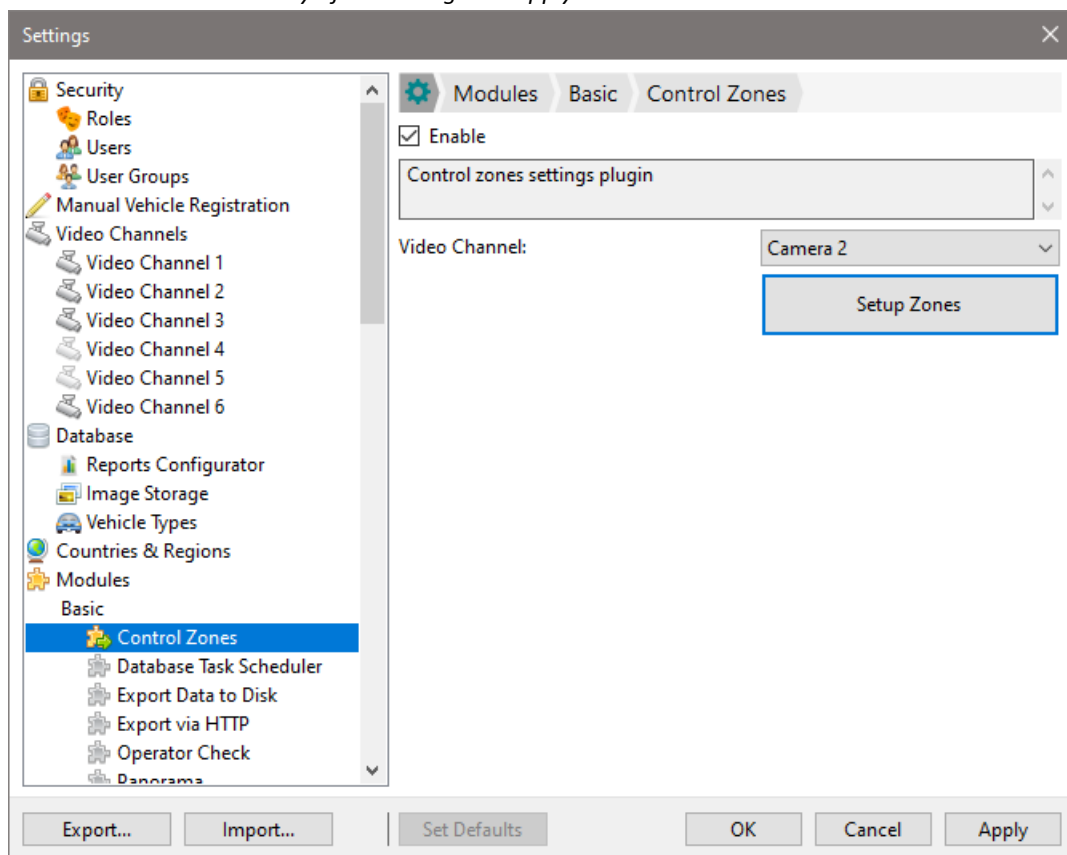



Figure 6.5.32.1

Module configuration:

To configure the module, select a video channel and click the "Configure zones" button.

In the "Configure control zones" window, click Add, then specify the zone number, enter its description and save the settings. The added zone is displayed on top of the video channel. It can be moved and stretched to the required size. To delete a control zone, move the cursor to the upper right corner of the selected area and click the "Close" button .

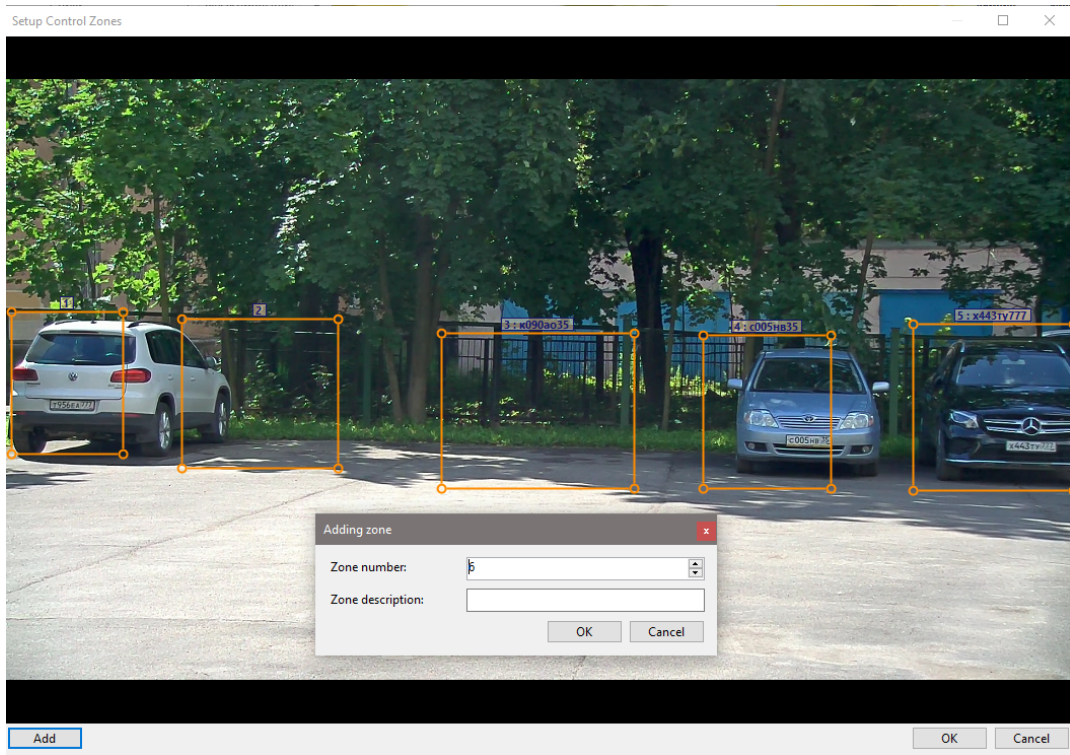


Figure 6.5.32.2

Information about the zone number and its description is entered into additional fields in the Recognition log.



Figure 6.5.32.3

6.5.33. Numpass

Purpose: the module is intended for integration with the Numpass system.

After saving information about the recognized vehicle in the database, the module sends a request to the Numpass system to open or close (vehicle entry/exit) of the parking session. As a result of sent requests, the following responses may be received:

- OK - successful execution of the request, parking was paid;

- Plate not found - plate is missing in the Numpass database;
- Not authorized - login and password have to be checked;
- Not paid.

Upon receiving the “Not paid” answer, Automarshal starts re-recognition every N seconds until the “OK” status is received, which allows the vehicle driver to replenish the balance and make payment without leaving his position in front of the camera.

The N value is set by the Numpass system.

The payment status is checked only when the vehicle intends to leave the parking area.

Enabling the module

Follow these steps to enable the module:

1. Select the Settings item from the Service drop-down menu;
2. In the window that opens, select Modules → Numpass;
3. In the right part of the window, check the box next to the Enable item and click Apply or OK.

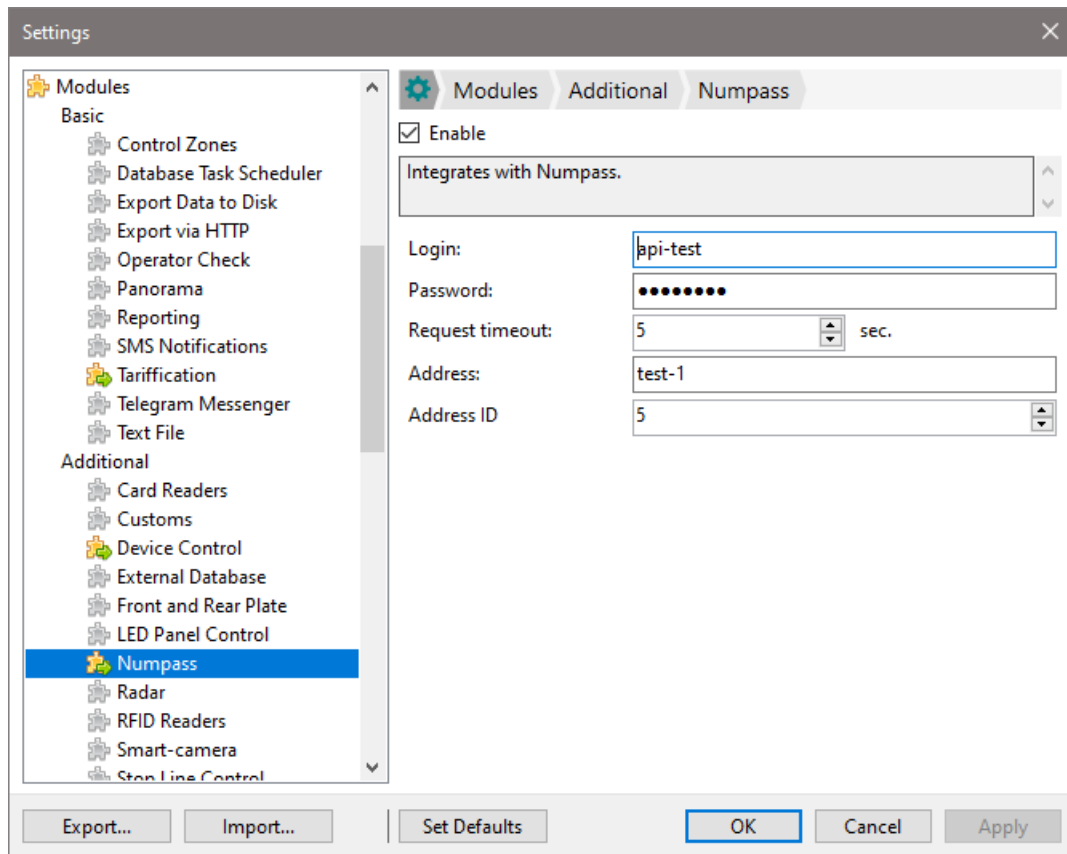


Figure 6.5.33.1

Configuration:

Login and Password — data for authorization in the Numpass system;

Request timeout — time between repeated sending of requests;

Address and Address ID — data for Automarshal identification in the Numpass system;

Latitude and longitude — the parking location in the Numpass system is set by the latitude and longitude configured in Automarshal. The settings are located in the "Miscellaneous" section.

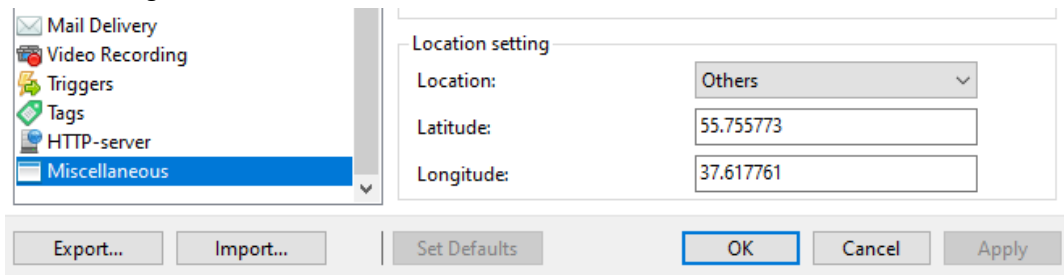


Figure 6.5.33.2

Tariffs are configured using the "Tariffication" module in the Automarshal. To configure the tariff, select the Numpass list, install and configure the tariff. See section **6.5.7. Tariffication for details**.

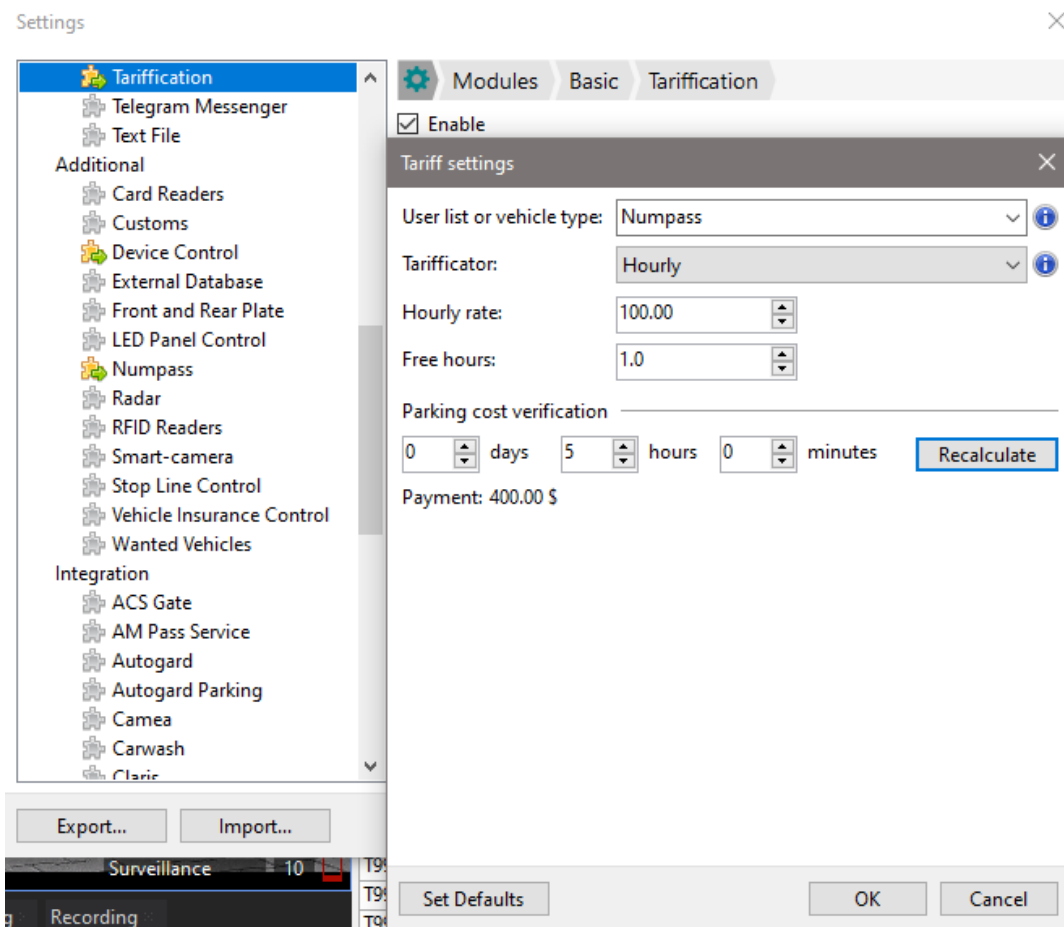


Figure 6.5.33.3

Setting up triggers for the "Numpass" module is optional, but will open up additional possibilities. In the trigger settings, select the activation event "Response from Numpass received ", check the box next to the "Plate exists in the Numpass database", select the video channel and account status.

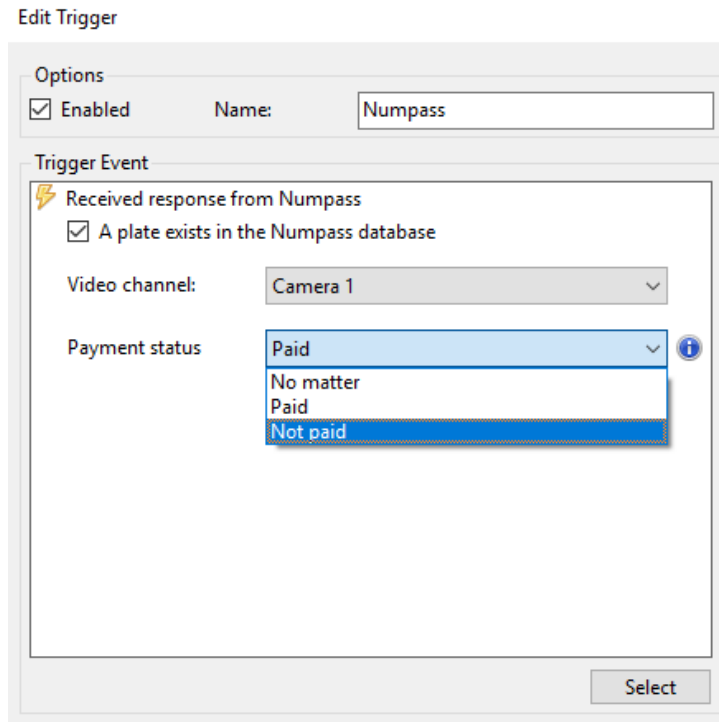


Figure 6.5.33.4

The module creates additional fields for the recognition log - the ID of the parking space, which Automarshal receives from the Numpass system.

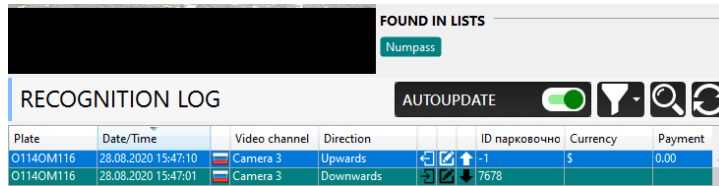


Figure 6.5.33.5

6.6. Mail Delivery

Mail Delivery module is required to send reports. Go to Mail Delivery section in Settings menu (figure 6.6.1). Start configuration with specifying SMTP server address.

SMTP server is a network protocol used to send electronic mail. SMTP stands for Simple Mail Transfer Protocol. SMTP is used to send outgoing mail using TCP 25 port.

The default is always smtp.mail.ru, similarly to other free mail services: smtp.yandex.ru, smtp.gmail.com... This information is publicly available for every mail service supporting SMTP. The default port is always 25, and it works for all free mail services. If you have personal mail service, the port may differ; please contact your system administrator for more information.

Now enter User name – full name of electronic mailbox, including login, @ and domain, and a password you use to access your inbox.

Attention! All operations will be saved in the database only after clicking Apply or OK. Clicking Cancel does not change the state of the database.

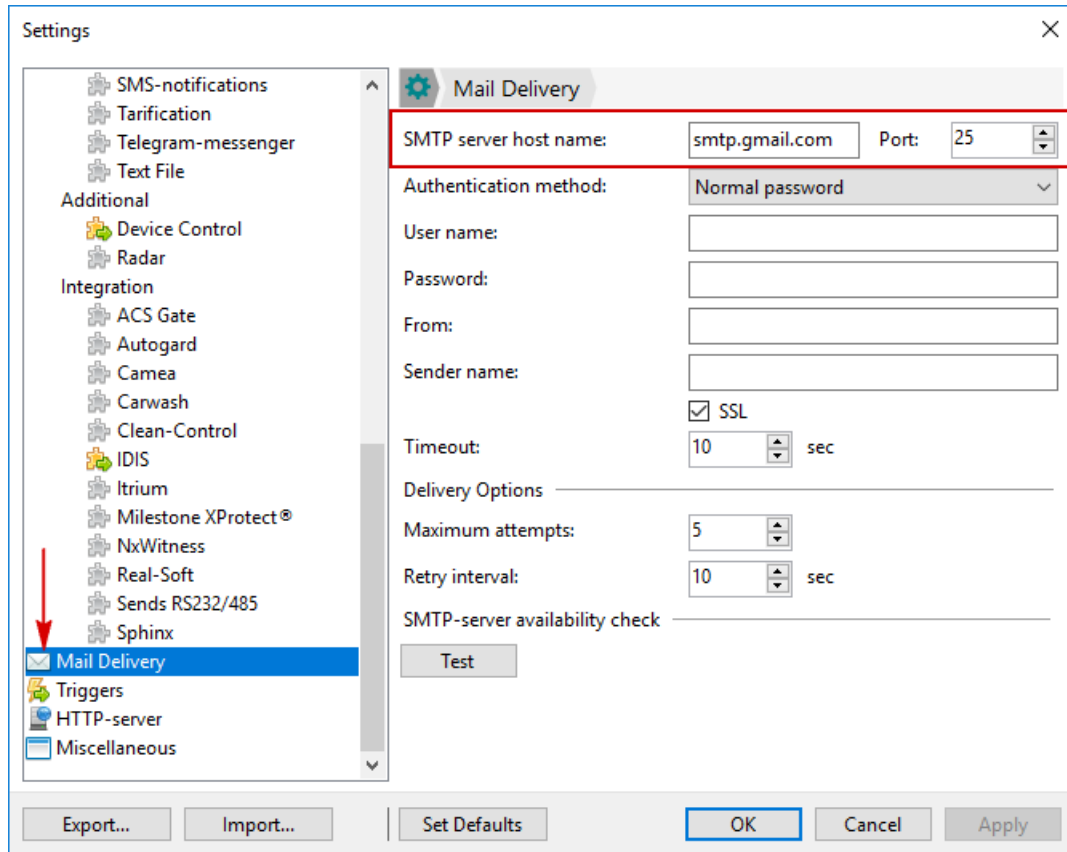


Figure 6.6.1

For your mailbox you can set SMTP parameters, including method of authentication: Normal Password or No Authentication (figure 6.6.2), when entering login and password to mailbox is not required.

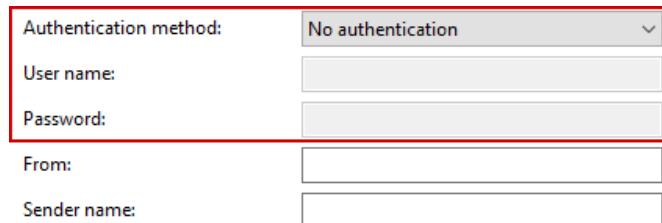


Figure 6.6.2

Figure 6.6.3 demonstrates an example of entering data for sending mail. In From:, specify the electronic mail address, from which the messages will be sent, i.e. if the authentication method is set to Normal Password, this field must be completed similarly to User Name field. Sender Name may be any, e.g., company name.

SSL must be mandatorily checked as the most of mail services require SSL/TLS encryption protocol.

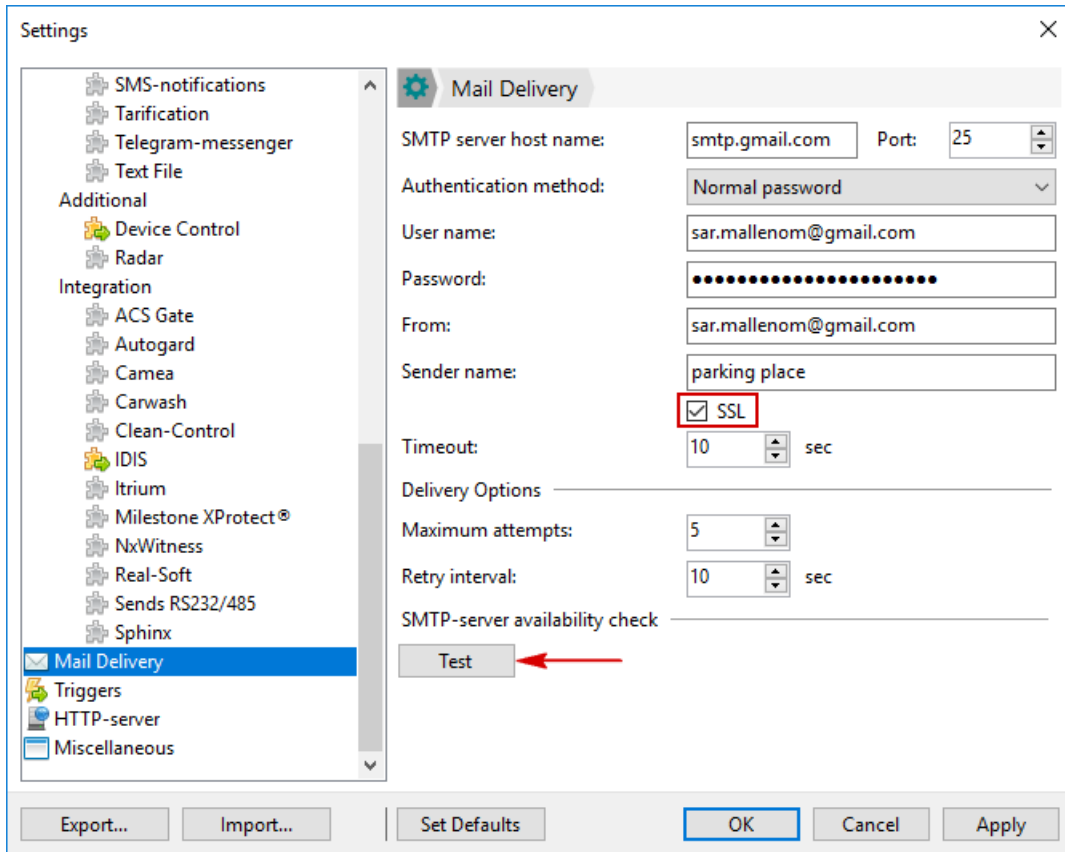


Figure 6.6.3

Timeout – allowed time for receiving response from server, and, if timed out, the message will not be sent, which may require adjustment of Resend Settings.

Maximum attempts – number of application’s attempts to send a message, shall not be under 1.

Retry Interval – time between attempts to send message.

Once everything is configured, test the availability of SMTP server by clicking Test (figure 6.6.3).

If all data is entered correctly and the server is operational, a notification of server availability will pop-up (figure 6.6.4).

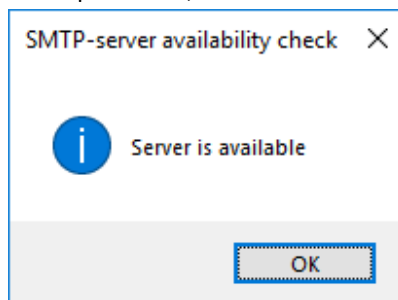


Figure 6.6.4

If any field is completed incorrectly, one of the following errors may occur:

E-mail login and password are entered incorrectly (figure 6.6.5):

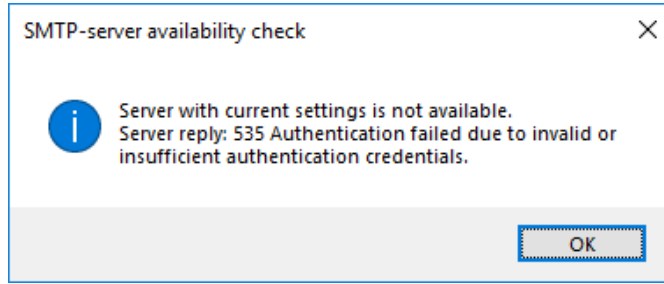


Figure 6.6.5

Login and password are not entered or entered incorrectly:

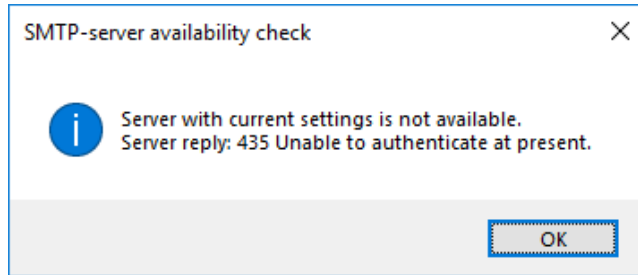


Figure 6.6.6

Server Response Timeout – verify the SMTP server specified or try again later (figure 6.6.7 and 6.6.8).

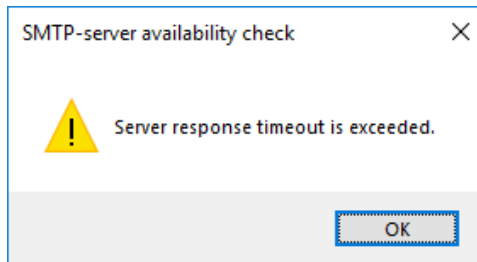


Figure 6.6.7

An error in figure 6.6.8 may occur due to incorrectly entered data or due to server unavailability.

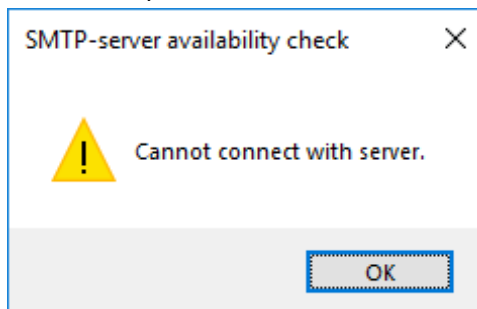


Figure 6.6.8

Server might not support SSL connection (figure 6.6.9), check if SMTP server is specified correctly, if SMTP configuration information provided by mail service is correct and if SSL is flagged.

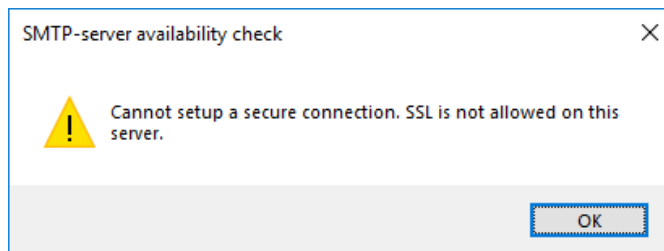


Figure 6.6.9

6.7. Triggers

Glossary

Trigger — conditions, which, when met, cause a prescribed action (in a broader sense – a cause of event).

Trigger Condition — condition for acceptance or rejection of trigger activation decision. All conditions must be met.

Trigger Event — an event generated by an application or peripheral device that activates a trigger.

Actions — a sequence of actions performed by the trigger when all trigger conditions are met and trigger event is achieved. The actions are taken consecutively, the processing priority (top-down) is defined by their order in this dialog.

Trigger Setup

Open the “Setting” menu and go to the “Trigger” section.

To add a trigger, follow instructions below:

1. Select Settings in Service drop-down menu;
2. In a window opened, select Triggers section;
3. In the bottom right-hand part of the window, click “Add”. Select “New Trigger” item in the drop-down menu, or use one of the ready templates to create new trigger, then “Edit Trigger” window will open.

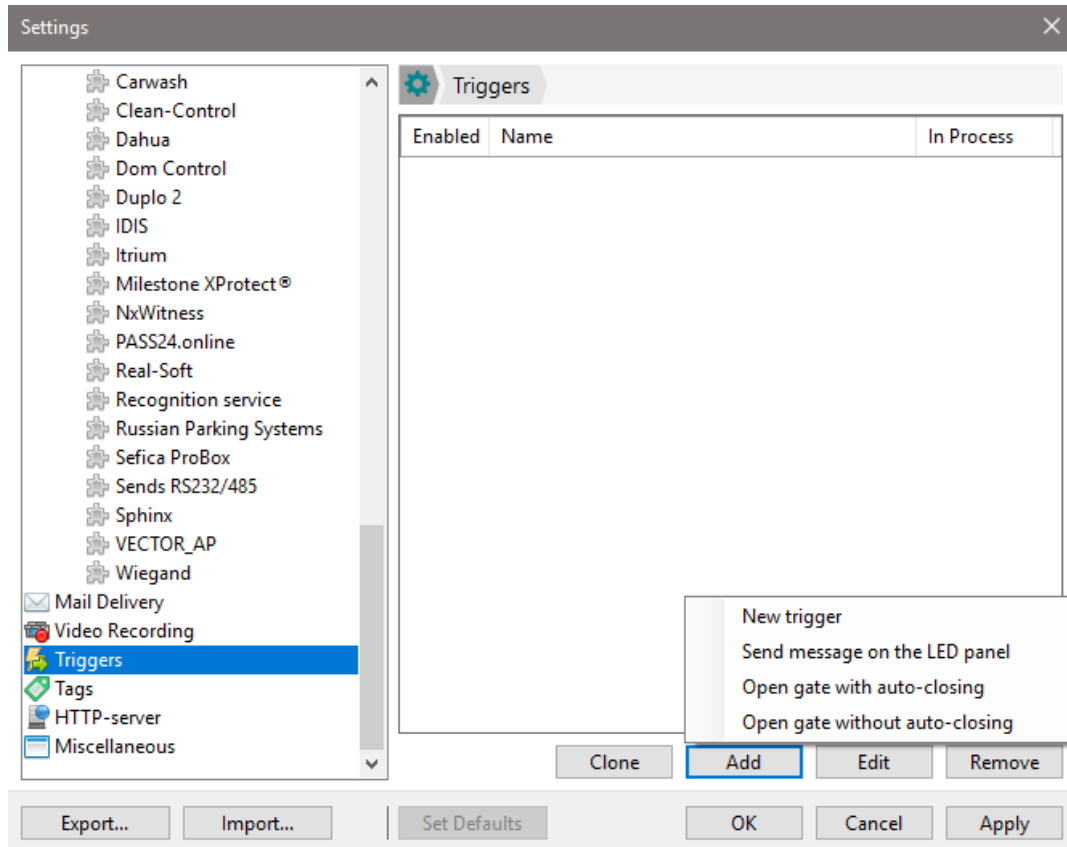


Figure 6.7.1

At the top of the window in “Options” Section it is possible to indicate **Trigger status as “on/off”**, **Trigger name** and **Comment** to the trigger. Comment is only displayed while trigger editing.

After setup, the triggers can be manually executed using the “Execute” button (Figure 6.7.1).

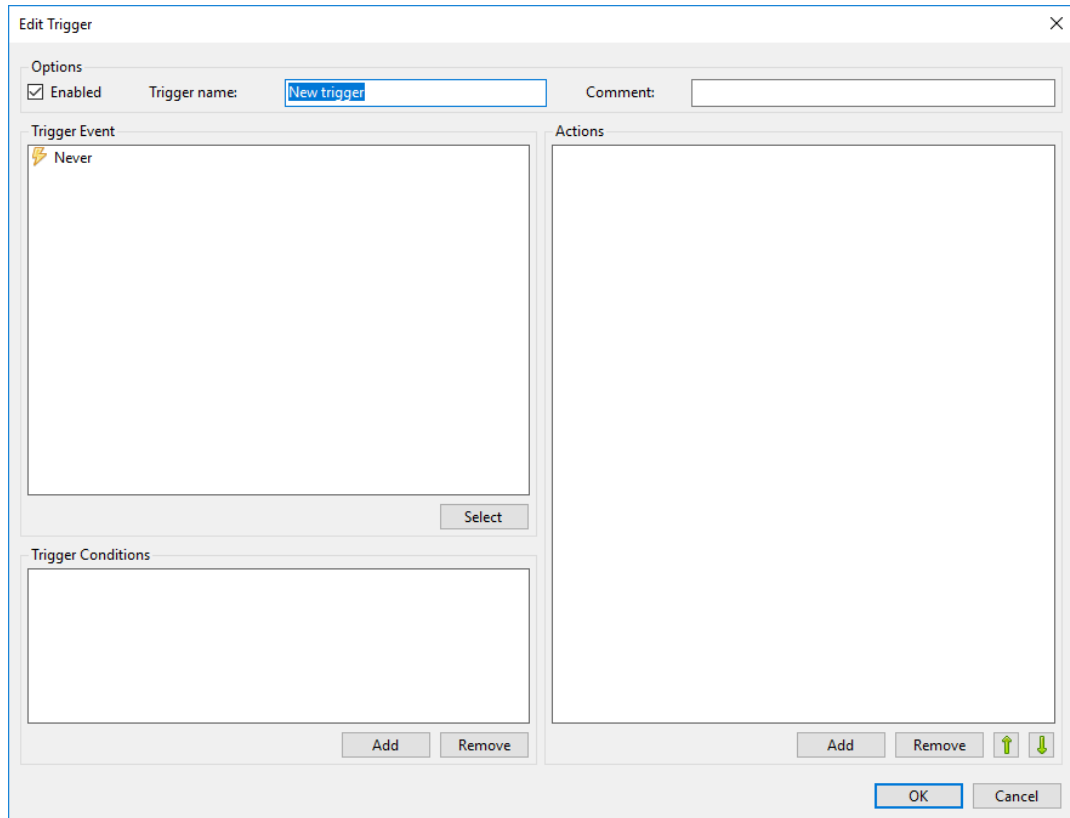


Figure 6.7.2

6.7.1. Adding trigger event

You can only select one trigger event.

To add trigger event, follow instructions below:

1. Click Add
2. Select category from the list:
 - Vehicle detected
 - Camera connection lost
 - Camera connection restored
 - Camera connection is not restored
 - Any event
 - Never
 - On schedule
 - Variable value changed
 - Device input state changed
 - Device output state changed
 - Card readed

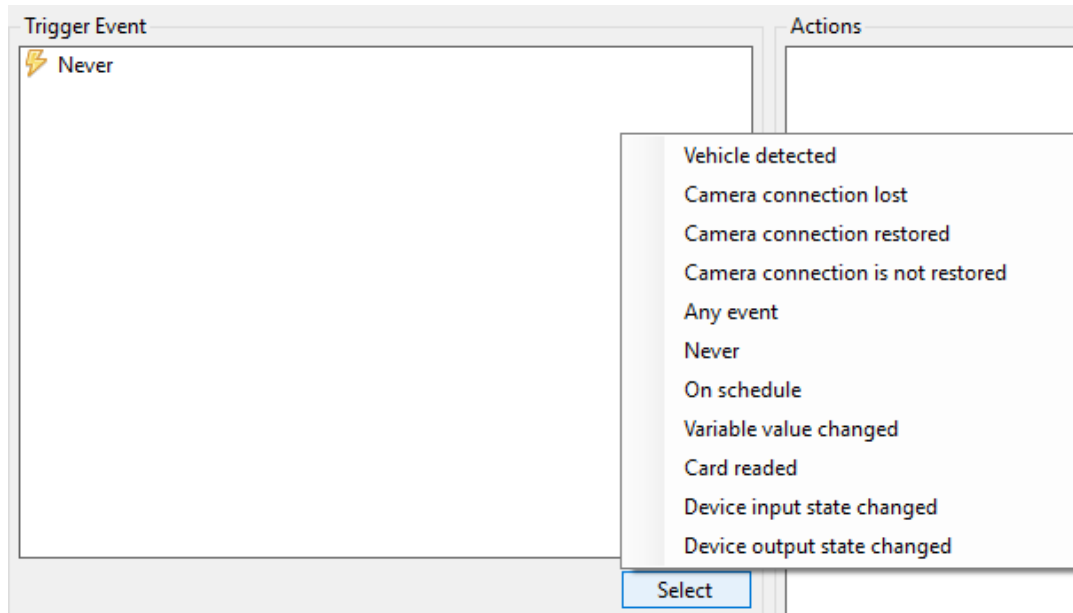


Figure 6.7.1.1

3. Setup trigger event.

Trigger event configuration

1. Vehicle detected.

This event includes trigger conditions related to vehicle detection.

Available list of conditions: First of all, chose the condition match option: any of conditions, all conditions.

- *Video Channel* – vehicle detected on this video channel. You cannot select a video channel that is not activated. Video Channel – vehicle detected on this video channel. You cannot select a video channel that is not activated.
- *Status* – status in the recognition log: recognized, not recognized, entered manually.
- *Direction* – direction, in which vehicle was moving: entry, exit, not defined.
- *Duration* – duration of vehicle stay in the area. This condition becomes available only when choosing the direction "exit". When this option is enabled, you must select a rule and set the length of stay in days, hours and minutes.
- *Check plate number* - when this condition is activated, it becomes possible to set the validation rules: "Matches with ..." or "contains" and enter the required values in the field opposite the column with the rule.
- *Vehicle type* - checking for a specific type of vehicle. The vehicle types are set up in Vehicle Types section.
- *Check user lists* – vehicle is or is not in user list.
- *Check pass* – verifies whether a pass is valid. You can choose from the following options: valid pass, invalid pass, no pass, invalid pass or no pass. Passes may be specified in user list editor.
- *Check decisions generated by trigger* – it activates a trigger by an entry from recognition log, that was created by the trigger.

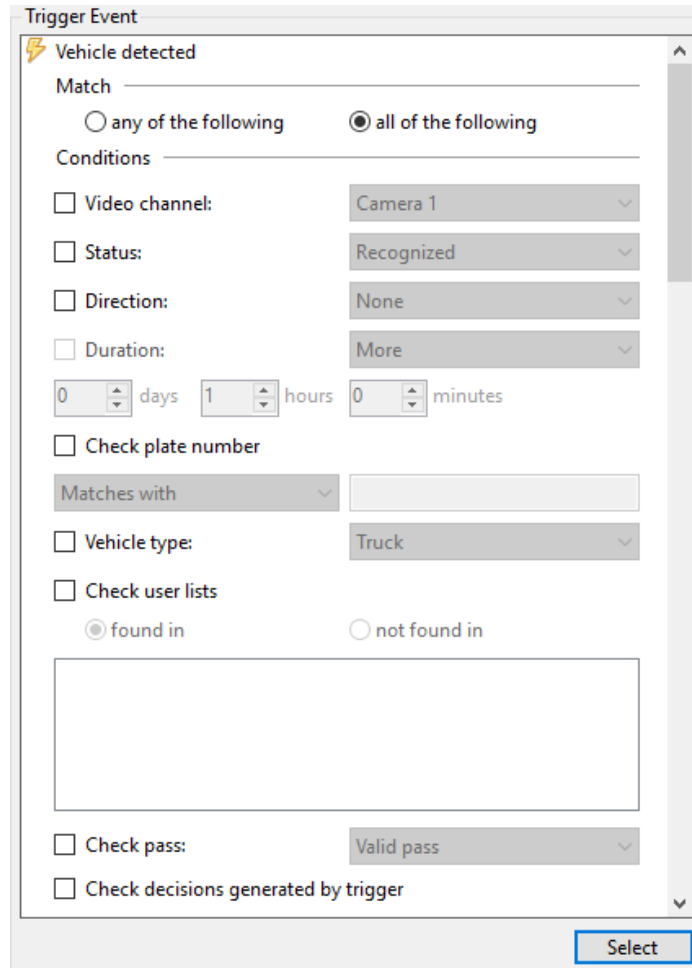


Figure 6.7.1.2

2. Any event.

When this event is selected, trigger will activate provided that Automarshall software performs any task.

It is utterly not recommended to use this event due to its unpredictability.

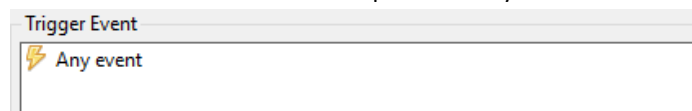


Figure 6.7.1.3

3. Never.

When this event is selected, the trigger will only be activated manually. You can run the trigger with the event manually in the main window, select "Triggers" → "Registered Triggers" → select the desired trigger.



Figure 6.7.1.4

4. Variable Value Changed.

When this event is selected, trigger will activate if a specified variable has changed to specified value.

In the Variable field specify the number of the variable to be monitored. In the Value field, specify the value which will run the trigger.

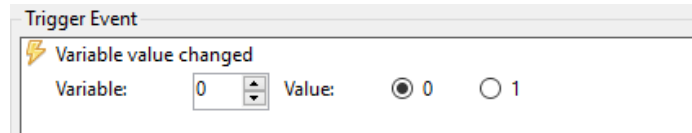


Figure 6.7.1.5

5. Device Input State Changed.

When this event is selected, trigger will activate if the value on the selected device has changed to specified value.

Select the required device from the drop-down list.

Enter in Input field the device input number. In Value field, specify the value, at which the trigger activates.

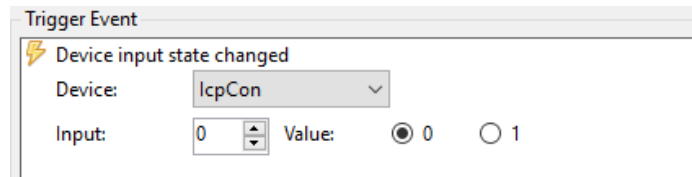


Figure 6.7.1.6

6. Device Output State Changed

When this event is selected, trigger will activate if the value on the selected device has changed to specified value.

Select the required device from the drop-down list.

Enter in Output field the device input number. In Value field, specify the value, at which the trigger activates.

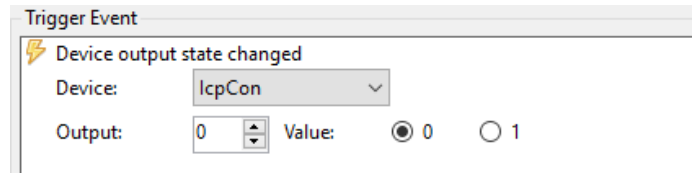


Figure 6.7.1.7

7. On schedule

This trigger event allows to configure trigger activation on schedule.

For example: controlling devices connected into Automarshal (automatic opening / closing of the gate on specified days at a given time, barrier gate control, switching off the LED panel, traffic lights, etc.); sending messages, etc.

There are lots of options for using this activation event, it's suitable for solving various tasks.

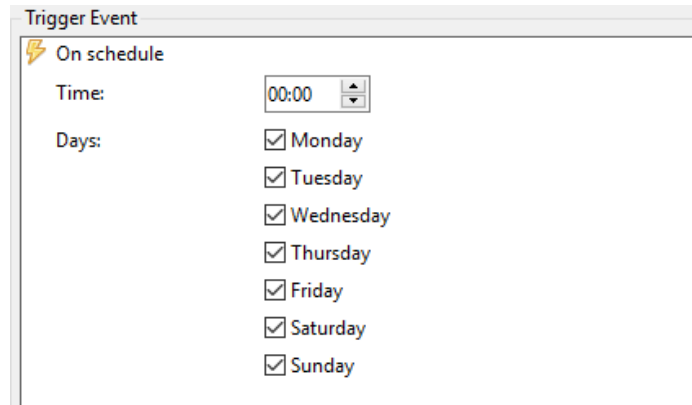


Figure 6.7.1.8

8. Camera connection.

One of the applications of the activation event that monitors connection to camera is sending SMS or email messages.

Configuring the trigger with this activation event is especially relevant for remote implementation sites and unattended sites (with no operator).

— *Camera connection lost*

When this event is selected, the trigger will be activated in case the connection to the camera is lost.

Select the desired video channel from the drop-down list. If you need to track several video channels, then for each one you need to configure a separate trigger.

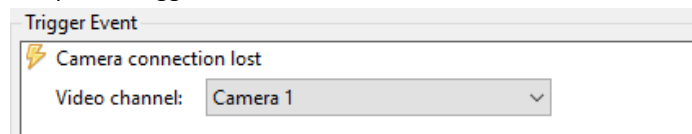


Figure 6.7.1.9

— *Camera connection restored*

When this event is selected, the trigger will be activated in case the connection to the camera is restored.

Select the desired video channel from the drop-down list. If you need to track several video channels, then for each one you need to configure a separate trigger.

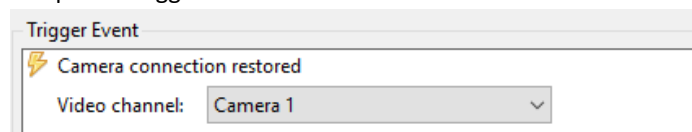


Figure 6.7.1.10

— *Camera connection is not restored*

When this event is selected, the trigger will be activated in case the connection to the camera has not been restored within the specified time period.

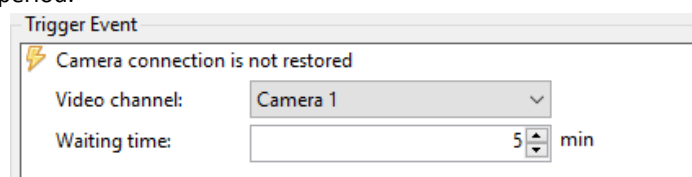


Figure 6.7.1.11

9. Card read

This event allows to generate an entry to recognition log when reading the card.

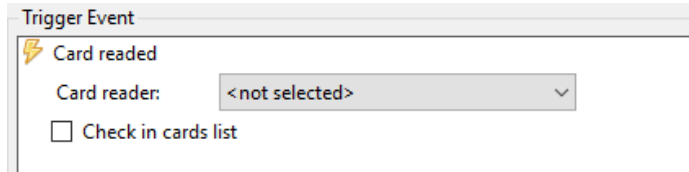


Figure 6.7.1.12

10. Front and rear plates recognized

When selecting this event, the trigger will be active at front and rear number plates recognition.

Compare trailer plate on exit – if the check box is selected, the trigger will be activated on vehicle exit.

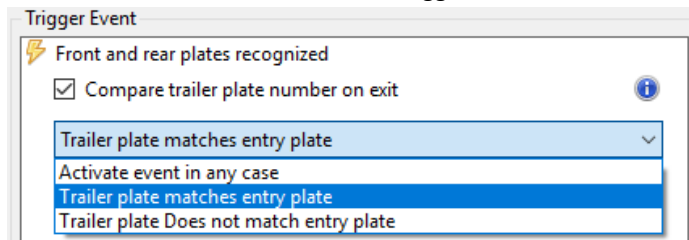


Figure 6.7.1.13

Figure 6.7.1.14 shows the example of notification display when trigger event “Front and rear plates recognized” is selected.

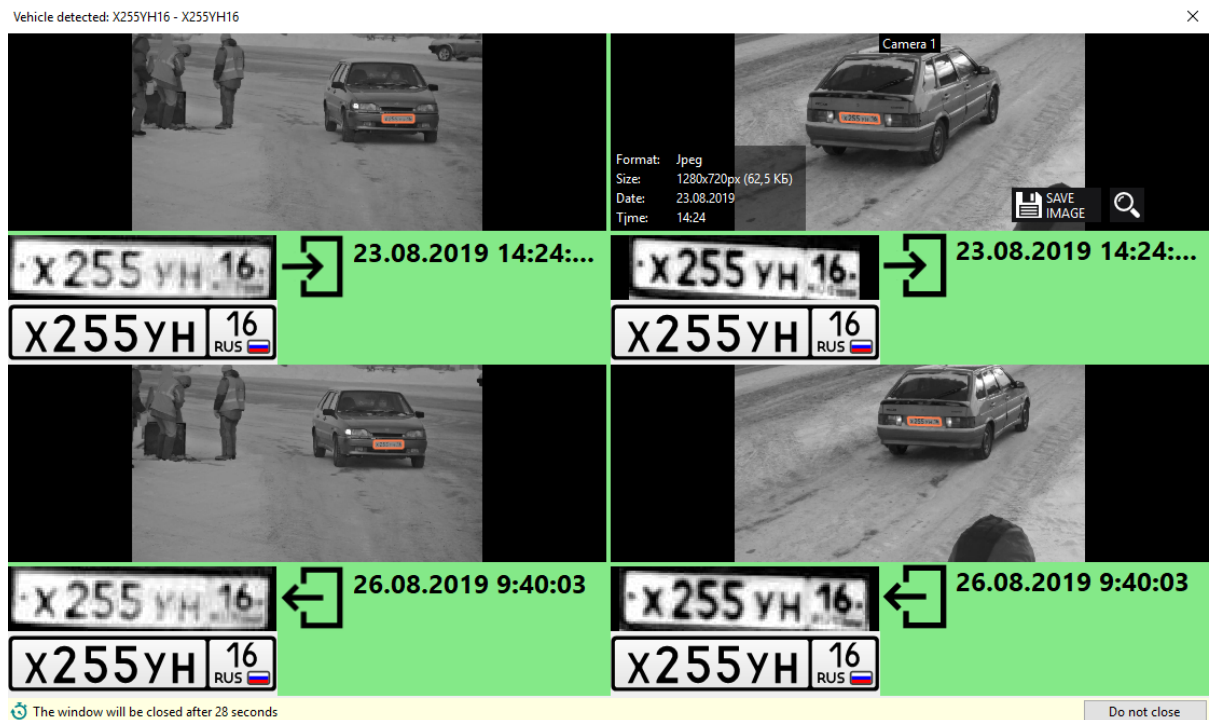


Figure 6.7.1.14

11. RFID tag detected

This trigger event is required to be set up for displaying the records on RFID tags detected in recognition log.

Look for plate number in user lists – when the check box is selected, the system will search for the tag in user lists. If the vehicle number plate is in the list, the action “Record to recognition log” will create a record with such vehicle number from the list.

When the check box is cleared, a blank record with saved images from the cameras selected will be created in recognition log.

No repeat – it works along with “Look for plate number in user lists”. If the same vehicle number plate has been recognized in the last N seconds, then the trigger will not be executed.

The screenshot shows a 'Trigger Event' window with the following settings:

- Event type: RFID tag detected
- RFID reader: FEIG
- Antennas: Antenna 1 (checked), Antenna 2 (unchecked), Antenna 3 (unchecked), Antenna 4 (unchecked)
- Look for plate number in user lists: (unchecked)
- No repeat, sec.: 10

Figure 6.7.1.15

12.Activation events: sunrise and sunset

When selecting such activation conditions (Figure 6.7.1.16), the trigger will work with the calculation of the selected location in the "Miscellaneous" settings section (Figure 6.7.1.17) and the specified offset.

The first screenshot shows a 'Trigger Event' window for 'Sunrise' with an offset of 0 minutes and a calculated sunrise time of 2/12/2020 8:02:03 AM.

The second screenshot shows a 'Trigger Event' window for 'Sunset' with an offset of 0 minutes and a calculated sunset time of 2/12/2020 5:26:42 PM.

Figure 6.7.1.16

Location can be selected from the given large cities, or the coordinates can be set independently.

The screenshot shows a 'Location setting' window with the following values:

- Location: Others
- Latitude: 55,755773
- Longitude: 37,617761

Figure 6.7.1.17

6.7.2. Adding trigger conditions

Trigger conditions are an additional check step before triggering.

To add trigger conditions, click Add in the left pane of the trigger configuration window.

You may add any number of trigger conditions.

Available list of conditions:

- Day of the week.
- Date.
- Time.
- Passages count check.
- Parking spaces check.
- Variable value received.
- Device input status check.
- Device output status check.

Configuring trigger conditions

1. Current day of the week check.

This condition allows to set days of week, on which a trigger event must occur.

Available list of conditions: *Mon, Tue, Wed, Thu, Fri, Sat, Sun.*

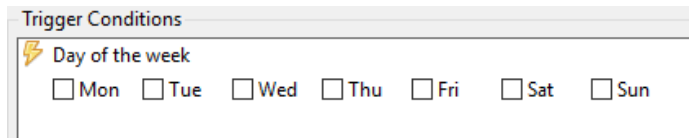


Figure 6.7.2.1

2. Current date check.

This condition allows to set calendar time period, during which a trigger event must occur.

In the drop-down list select the first and last day of the period.

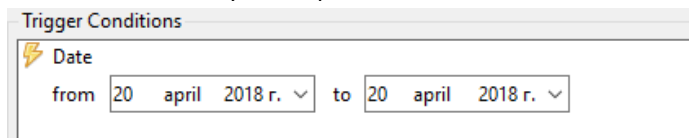


Figure 6.7.2.2

3. Current time check.

This condition allows to set hourly time period, during which a trigger event must occur.

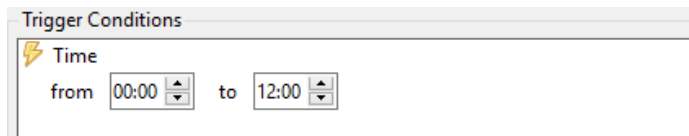


Figure 6.7.2.3

4. Passages count check.

You can set a number of permitted passages of vehicle in a time interval.

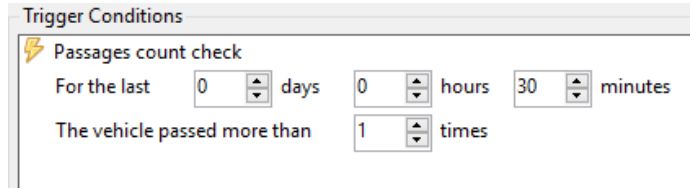


Figure 6.7.2.4

5. Parking spaces check

The parking spaces check can be carried out on the entire territory, or on the territory for the list, which contains the recognized vehicle.

The following check options are available:

For the vehicle type

- There is free space for this type of vehicle;
- No free space for this type of vehicle.

The check is executed strictly by to the number of parking spaces allocated for specific types of vehicles. This means that if three parking spaces for the cargo type of vehicles are allocated in the parking lot, only three cargo vehicles will be allowed to park, even if several more cargo vehicles can stand in the parking lot.

For the vehicle type with regard to the space ratio

- There is free space for this type of vehicle;
- No free space for this type of vehicle.

The check is executed by the number of places in the parking lot with regard to their space ratio. For example, in vehicle types it is configured that a cargo vehicle has space ratio equal to two, and the passenger vehicle has space ratio equal to one. There are four spaces for cargo vehicle in the parking lot. A parking space with larger space ratio cannot be taken by several vehicles with smaller space ratios, as well as a vehicle with larger space ratio cannot occupy several places with smaller space ratios.

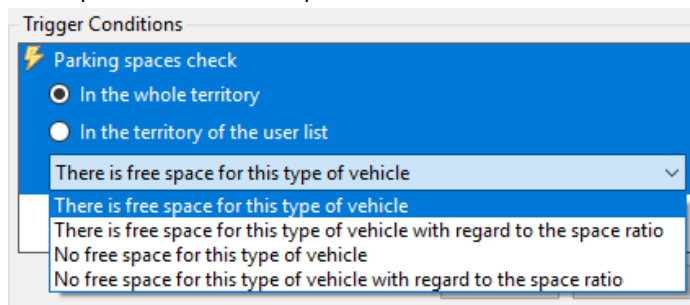


Figure 6.7.2.5

For more details on parking settings, see section 6.3.7. Territories and Configuring Parking Spaces.

6. Variable value received.

Configuration of this condition is similar to that given in trigger event.

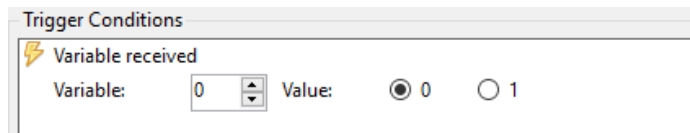


Figure 6.7.2.6

7. Device status check.

Device status check allows to run the trigger under certain conditions. As a result, the trigger works more accurately due to narrower trigger conditions.

For example, this may be required if two vehicles approach the installed barrier from both sides. The second vehicle can also be recognized, and the command to open the barrier will be sent again. Verification of input signals from external equipment (induction loop, barrier photocells) can be an additional condition. If the signal from this equipment is lost, a command to open the barrier for the second car will be issued.

— *Device Input Status Check.*

If this condition is selected, the device input state will be checked and the trigger will run when the input state changes.

Select the desired device from the drop-down list. In the Input field, specify the device input number. In the value field, specify the value at which the trigger will be activated.

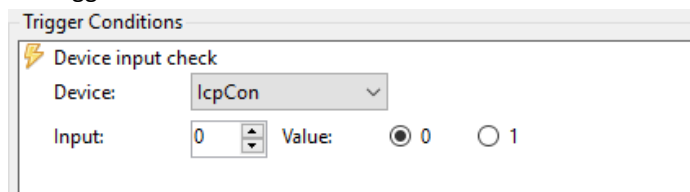


Figure 6.7.2.7

— *Device Output Status Check.*

If this condition is selected, the device output state will be checked and the trigger will run when the output state changes.

Select the desired device from the drop-down list. In the Output field, specify the device output number. In the value field, specify the value at which the trigger will be activated.

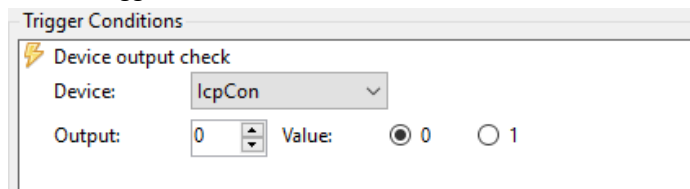


Figure 6.7.2.8

8. Free spaces available on the territory

Indicate the territory on which the check should be carried out, and the number of places upon reaching which a trigger event should occur. For example, a trigger condition will be fulfilled every time there are less than 5 available parking spaces.

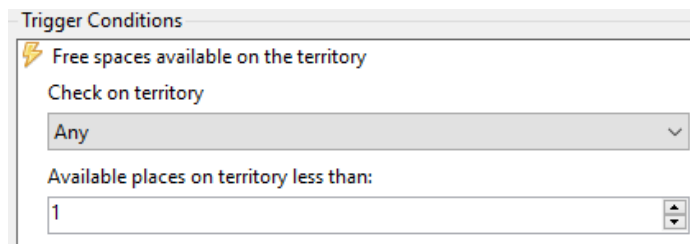


Figure 6.7.2.9

6.7.3. Actions

In this window pane, you can specify the actions and their sequence, which will be taken on trigger event.

In the right pane of the trigger configuration window click Add, and select the required action from the drop-down list.

You may add any number of actions.

Available list of actions:

- Notification form.
- Set motion state.
- Send a message to e-mail.
- Do nothing.
- Wait.
- Play sound.
- Execute.
- Record a user action log entry.
- Record a recognition log entry
- Set variable value.
- Set device output.
- Send a message to IDIS.
- Send a message to LED.
- Send image to LED.
- LED power management
- Send an SMS message.
- Generate parking receipt.
- Send number via Wiegand.

Configuring Actions

1. Notification window.

When vehicle is detected, a notification window containing recognized license plate will pop-up. Notification only works with Detected Vehicle trigger event.



Figure 6.7.3.1

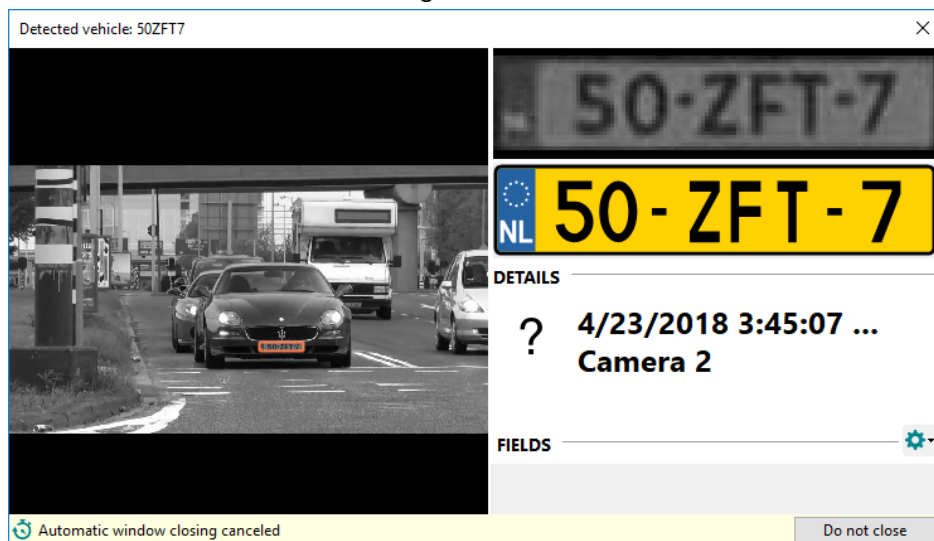


Figure 6.7.3.2

2. Report motion state.

Sends motion state to the specified video channel.

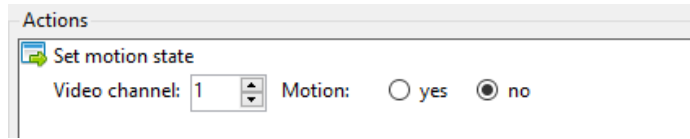


Figure 6.7.3.3

3. Send E-mail.

Sends a user e-mail to the specified address.

Operation of this action requires configuring Mail Delivery plug-in and Vehicle Detected event.

In To: field, enter the address where the message will be sent.

In Subject field, enter message topic.

In Text field, enter message text.



Starting with AM version 2.6, you can enter wildcard expressions in the Text field, which, when sending, will be replaced with similar data. For instance, \$(plate) will be replaced with the recognized vehicle plate (e.g. B989BH35). Full list is available in Appendix B.

Set the settings for the attached images: do not attach images, attach an image with the number plate, attach all images.

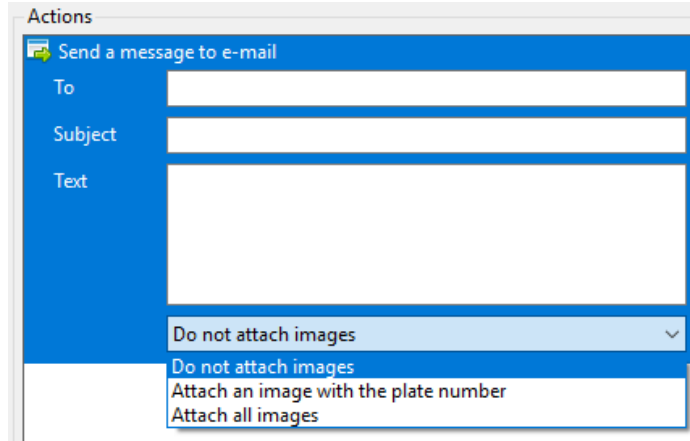


Figure 6.7.3.4

4. Do nothing.

Action does nothing.

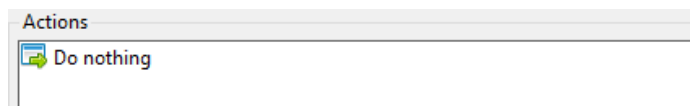


Figure 6.7.3.5

5. Wait.

Pauses for the specified period in milliseconds.



Figure 6.7.3.6

6. Play sound.

Plays specified audio file.

To select an audio file, click folder icon.



Figure 6.7.3.7

7. Execute.

It runs the program selected. To select a program, click folder-button.

Trigger allows to run an executable file with the parameters specified. To set up the parameters transferred from Automarshall software, click "Setup" and fill the check box for the tags required.



Figure 6.7.3.8

8. Record a User Action Log Entry.

- editing the recognition log entries;
- manual recognition;
- manual triggering;
- video stop and start only if recognition is enabled on the video channel;
- prohibition of recognition on the video channel;

In the "Message" field, you can enter a comment to the entry in User Action Log (Figure 6.7.3.9).

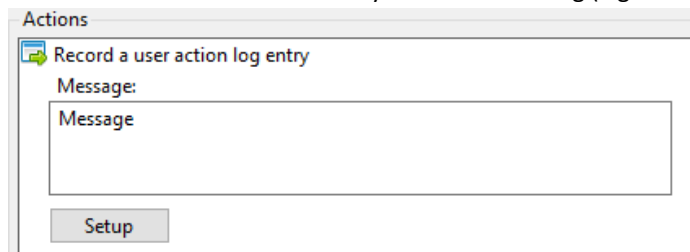


Figure 6.7.3.9

Or customize the message template from the ready-made tags (Figure 6.7.31).

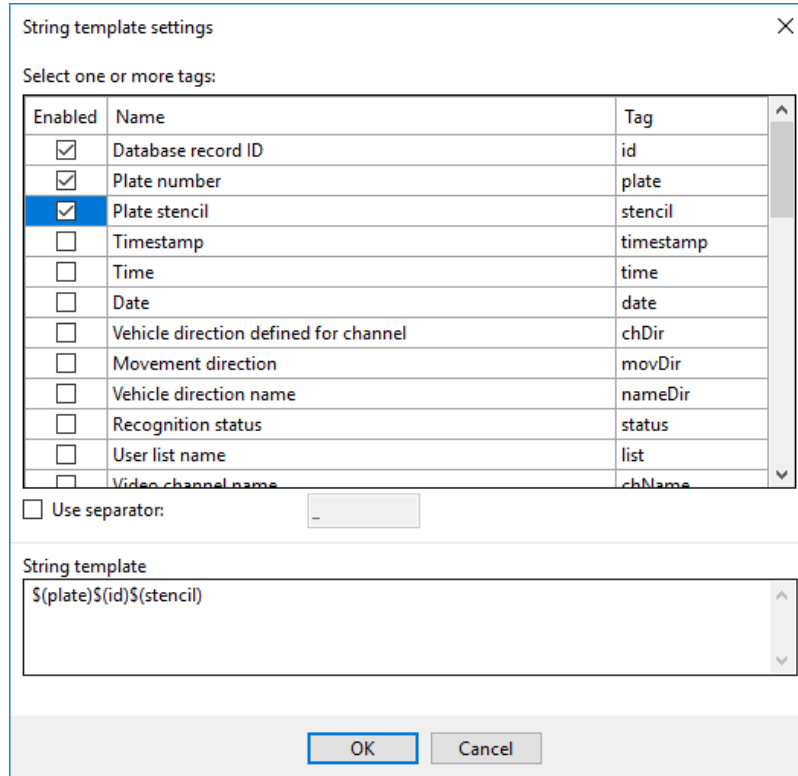


Figure 6.7.3.10

Entries can be found in User Actions Log (Database → User Actions Log). In the "Search" field, you can enter a message from the trigger, or a part of it, to sort the entries.

The Details field contains a link to the Recognition log entries. When you click on the button "More ..." a window with a record from the recognition log will open.

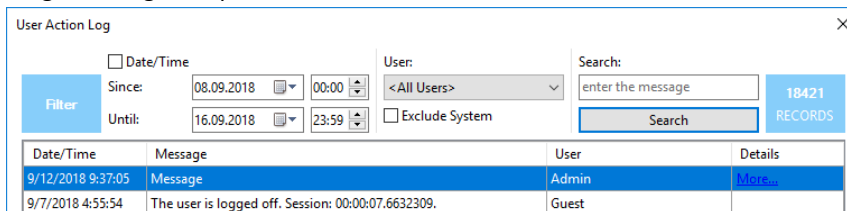


Figure 6.7.3.11

9. Record a Recognition Log Entry.

When the trigger is activated, an empty record (Figure 6.7.3.12) with the shots made from the selected video channels (cameras) and the comment in the additional field are recorded in the Recognition Log. You can select several video channels, and all shots from them will be recorded in a single log entry.

Use options: at the car wash for getting vehicle images before and after the services were provided; for saving shots from cameras when the barrier is manually opened.

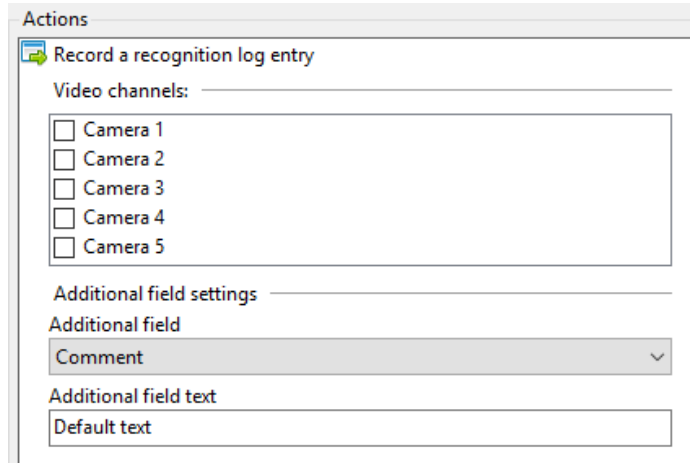


Figure 6.7.3.12

RECOGNITION LOG					AUTOUPDATE
Plate	Date/Time	Video channel	Comment	Movement	
-	17.09.2018 15:13:18	Camera 2	activated trigger	Bottom to top	

Figure 6.7.3.13

10.Set variable value.

Sets the value of the specified variable. Configuration of this action is similar to that given in trigger event.

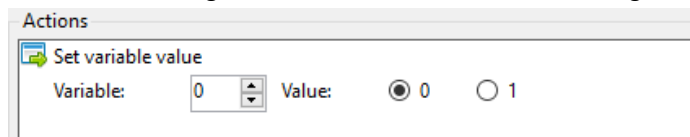


Figure 6.7.3.14

11.Set device output.

Configuration of this action is similar to that given in trigger event.

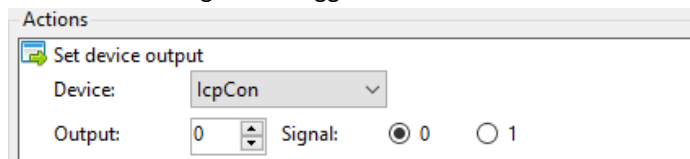


Figure 6.7.3.15

12.Send Message to IDIS.

Trigger event: select Vehicle Detected and define settings for sending messages. Actions: add Send Message to IDIS action. In Server field, enter IP address of the camcorder, port value; do not change text in Message field.

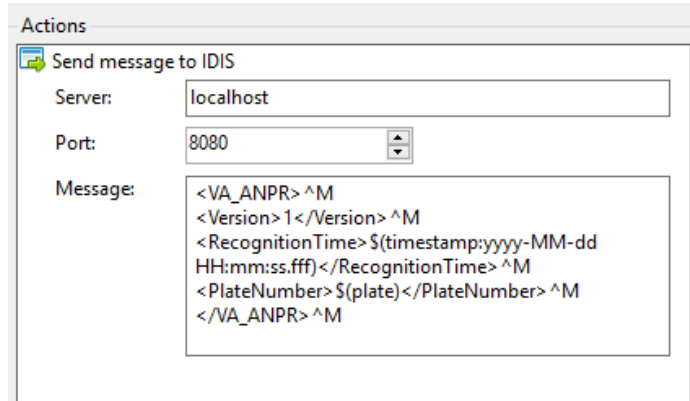


Figure 6.7.3.16

13.LED panel.

With this trigger, you can configure the output of text messages and images on the LED panel.

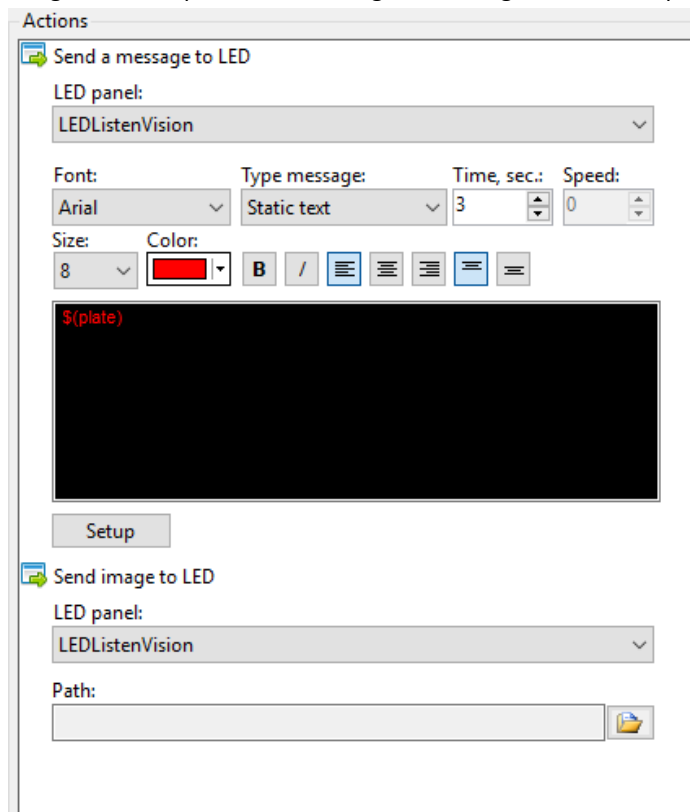


Figure 6.7.3.17

In the trigger, you can also set the power management: turn on and off the LED panel.

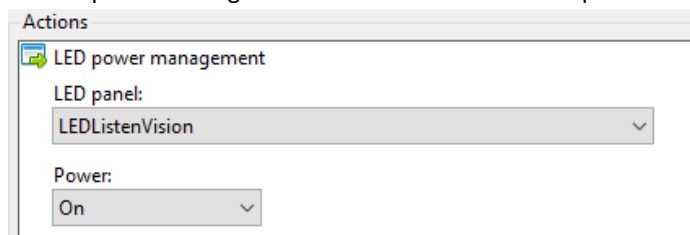


Figure 6.7.3.18

For examples and settings, see section 6.5.17 LED panel of this manual.

14. Send SMS message.

Operation of this action requires configuring SMS Notifications plug-in and Vehicle Detected event.

Sends user SMS to selected phone number.

In Phone field, enter the phone number where the SMS will be sent.

In Text field, enter message text.

Starting with AM version 2.6, you can enter wildcard expressions in the Text field, which, when sending, will be replaced with similar data. For instance, \$(plate) will be replaced with the recognized vehicle plate (e.g. B989BH35). Full list is available in Appendix B.

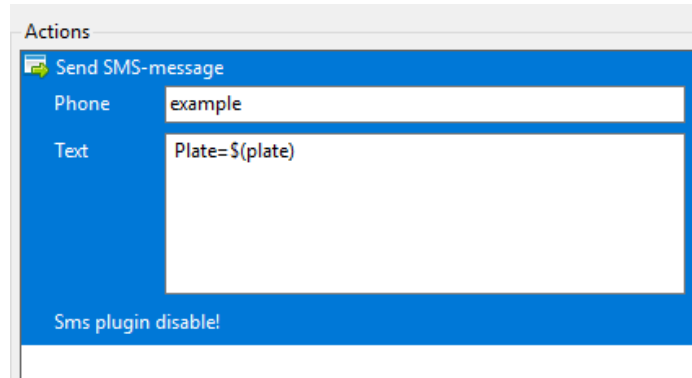


Figure 6.7.3.19

15. Generate parking receipt.

For the operation of this event, you need to configure the Tariffication module (see section 6.5.7 Tariffication).

This action allows you to configure automatic generation of the parking receipt.

When setting up the action, it is available to select the type of receipt (printing on A4 sheet or on paper up to 6 cm wide), to save the receipt to disk or not, to select the path and name template for the saved receipt, to open the saved pdf file or not.

It is also possible to set up automatic print of a receipt, when the trigger action is performed.

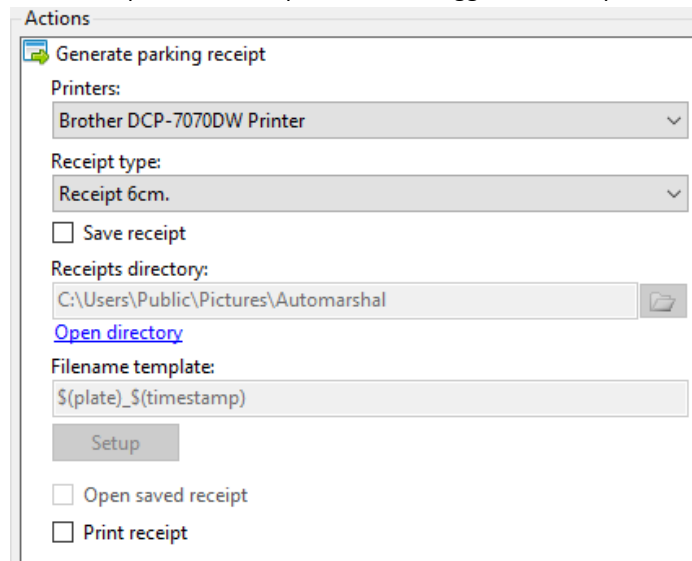


Figure 6.7.3.20

16. Send number via Wiegand.

For the operation of this event, you need to configure the Wiegand module.

After adding the action "Send number via Wiegand", the device should be selected, to which the number and user list's additional field where the number is stored, will be sent.

Select a device from the drop-down list and an additional field that contains the card number.

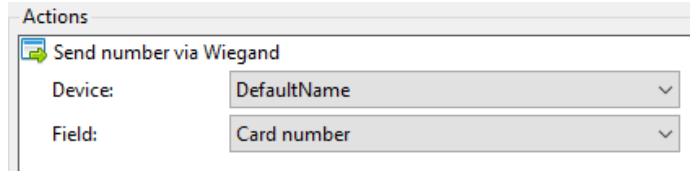


Figure 6.7.3.21

17. Actions with User Lists

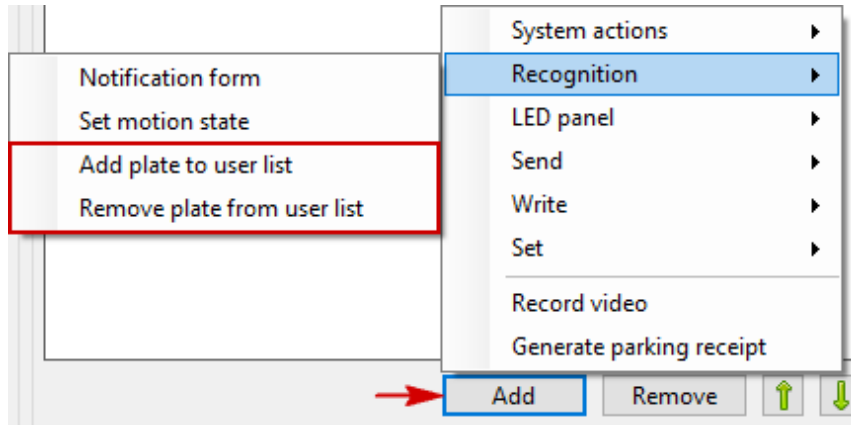


Figure 6.7.3.22

Add Plate to User List

When triggered, the trigger enters the number plate of recognized vehicle in the list. If recognized vehicle number plate is already in one of the lists, it will be transferred to a new list, the additional fields data will not be saved during such transfer.

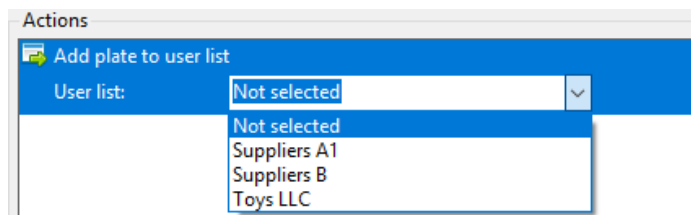


Figure 6.7.3.23

Remove Plate from User List

When the trigger is executed, the vehicle number plate will be deleted from the list selected in trigger settings.

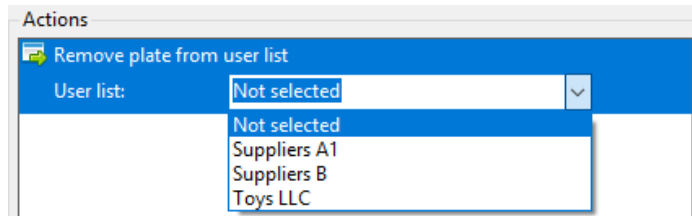


Figure 6.7.3.24

18.Video recording

Trigger execution activates video recording from video channels. To make the trigger work correctly, it is necessary to set the recording turn on and off in a specified period of time.

Use cases: video recording while recognizing the vehicle (for instance, the vehicle is inspected, and the guard’s actions are required to be recorded); when “input/output state changing of the device” activation event is set, it is possible to make a recording with passages in order not to miss a single vehicle.

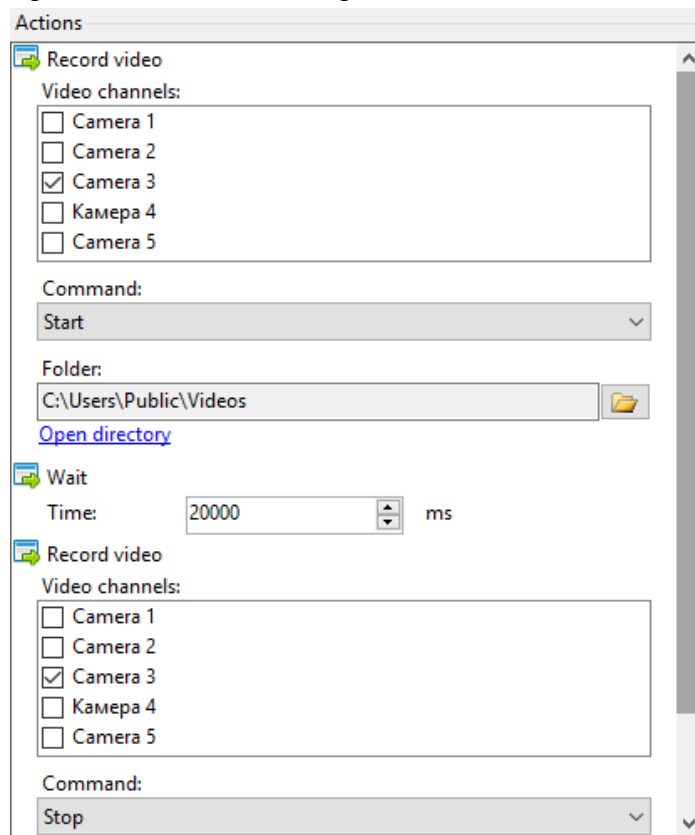


Figure 6.7.3.25

19.Panorama Generation

Starts panorama generation from selected video channels.

Actions:

- Start capturing – launches frame capture for panorama generation.
- Stop capturing – stops frame capture and makes panorama.

Panorama settings are performed in the “Panorama” module.

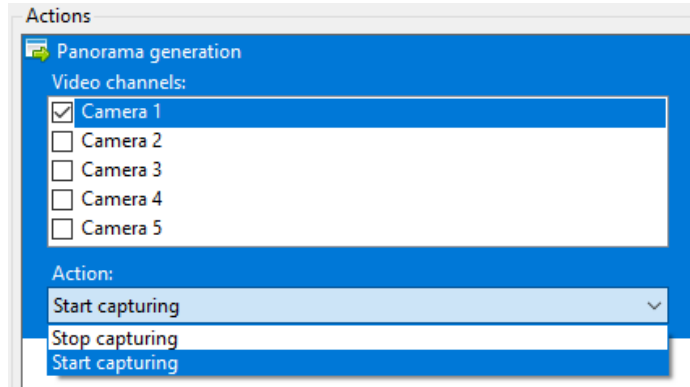


Figure 6.7.3.26

20. Record video with prebuffer

Trigger execution activates video recording from selected video channels. The duration of recorded video is a combination of the prebuffer values specified and the recording duration.

Prebuffer is a duration of the preliminary buffering, sec.

Duration is a recording duration from the event beginning, sec.



Attention! Prebuffering on an ongoing basis additionally uses the PC resources, increases the load on the processor and RAM. It is necessary to use a server with technical specifications higher than recommended for the selected number of recognition channels.

The load on the system depends on the prebuffer size.

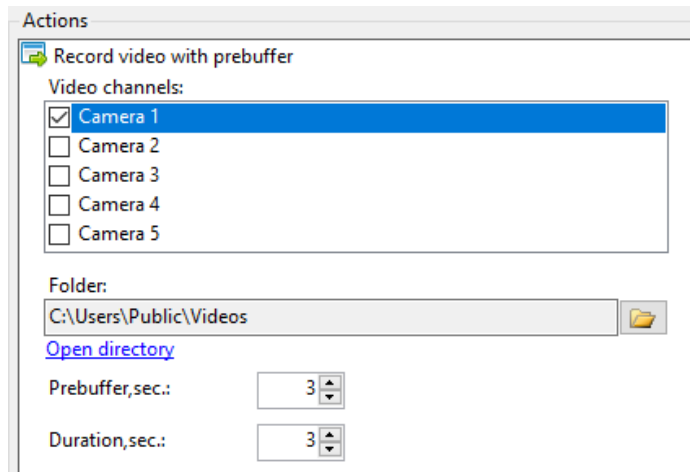


Figure 6.7.3.27

To complete configuration click OK.

For sample trigger settings, see Appendix A.

6.8. Video Recording

This section contains settings for video recording.

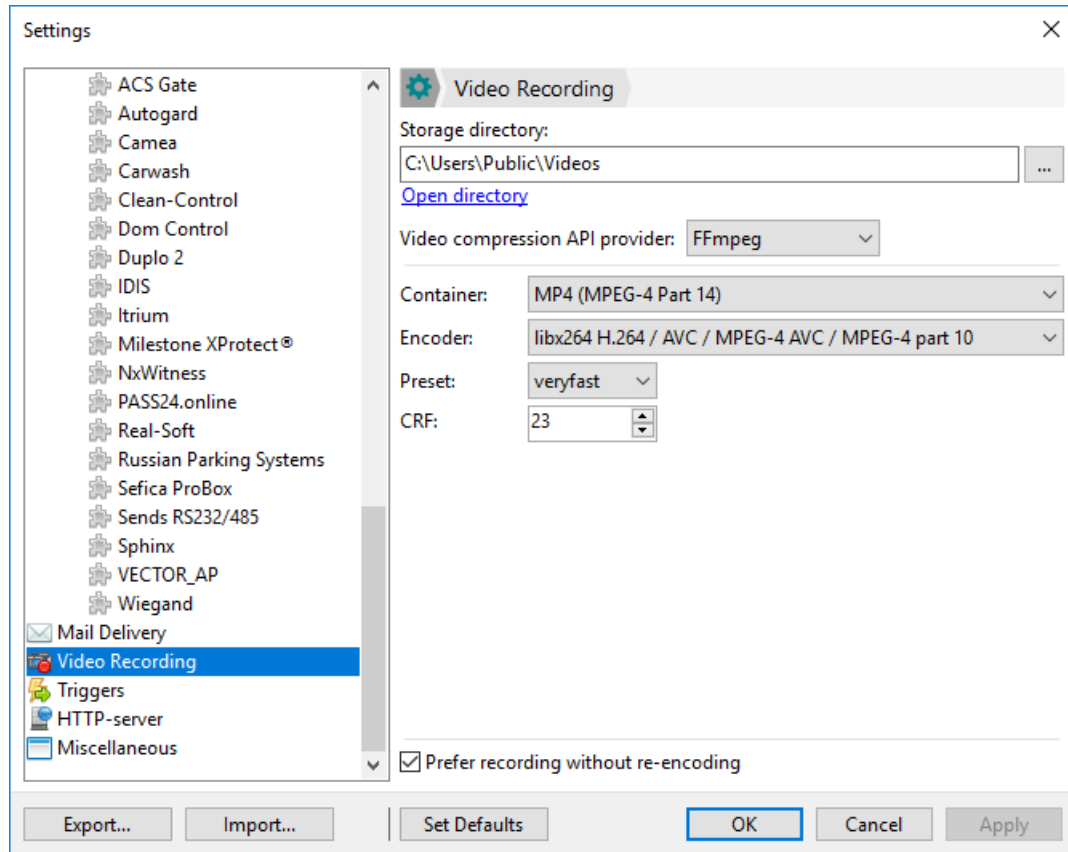


Figure 6.8.1

Parameters:

Storage directory is the directory where video files are saved by default into.

The default path is C:\Users\Public\Videos.

Video compression API provider is a set of video compression codec libraries.

currently only FFmpeg is available.

Further settings depend on the API provider.

For FFmpeg:

Container

Types of video file container (including the file extension):

- MP4 (MPEG-4 Part 14), *.mp4;
- QuickTime / MOV, *.mov;
- AVI (Audio Video Interleaved), *.avi;
- Matroska, *.mkv.

Encoder is a coder to compress video stream.

2 variants of H264-encoder are available:

- libx264 H.264 / AVC / MPEG-4 / AVC / MPEG-4 part 10;
- libx264 H.264 / AVC / MPEG-4 / AVC / MPEG-4 part 10 RGB.

The last-mentioned encoder works better with RGB-sources (for instance, Basler USB-cameras), in other cases the first-mentioned encoder is preferable.

Preset

The set of encoder settings defines “file size / computing resources consumption” ratio. The “faster” the preset is, the smaller CPU it uses, and the larger the resulting file is.

It is not recommended to use presets listed below “fast” for real-time video streams recording.

CRF

Constant Rate Factor is a generalized quality indicator for compressed video, it sets “quality / file size” ratio.

The lower is the index value, the higher is the quality (0 = lossless compression). Recommended range is from 17 to 28.

When compressed with CRF of 17-18, it is very hard to visually distinguish compressed video from non-compressed.

Increasing the CRF by 6 reduces the file size by about 2 times; decreasing by 6 increases the file size by 2 times.

Prefer recording without re-encoding

Some video sources may offer their own recording mechanisms. Enabling this option allows to ignore all previous settings, and transfers control over the recording to a video source. Currently only the FFmpeg source supports such mode. IP-cameras give already compressed video stream, therefore it is possible to record it without loss of quality and resources for re-encoding.

Advantages of the approach:

- minimum CPU costs;
- no quality loss due to video stream compression;
- video stream is identical to the one that was at the input of recognition module – hence, resulting files are ideal for testing.

Disadvantages of the approach:

- in case video processing is enabled, then it does not affect the recorded file in any way (turnings and distortions removing require stream compression);
- recording does not start instantly, but from the next keyframe (depends on the camera settings, usually within 1 second);
- available when using the FFmpeg video source only.

6.9. HTTP-Server

Purpose of HTTP-Server

HTTP-Server is designated for processing of HTTP-enquiries delivered to port indicated in the settings. If the enquiry was registered in SW Automarshall and if all parameters are indicated correctly, Automarshall would provide relevant HTTP-response.

Activation of HTTP-Server

For activation of the HTTP-Server, perform the following actions:

1. Select **Setting** option in the drop-down list of **Service** menu;

2. In the opened window select section **HTTP-Server**;
3. In the right side of window, place tick opposite **Activate** option, and press the **Apply** button.

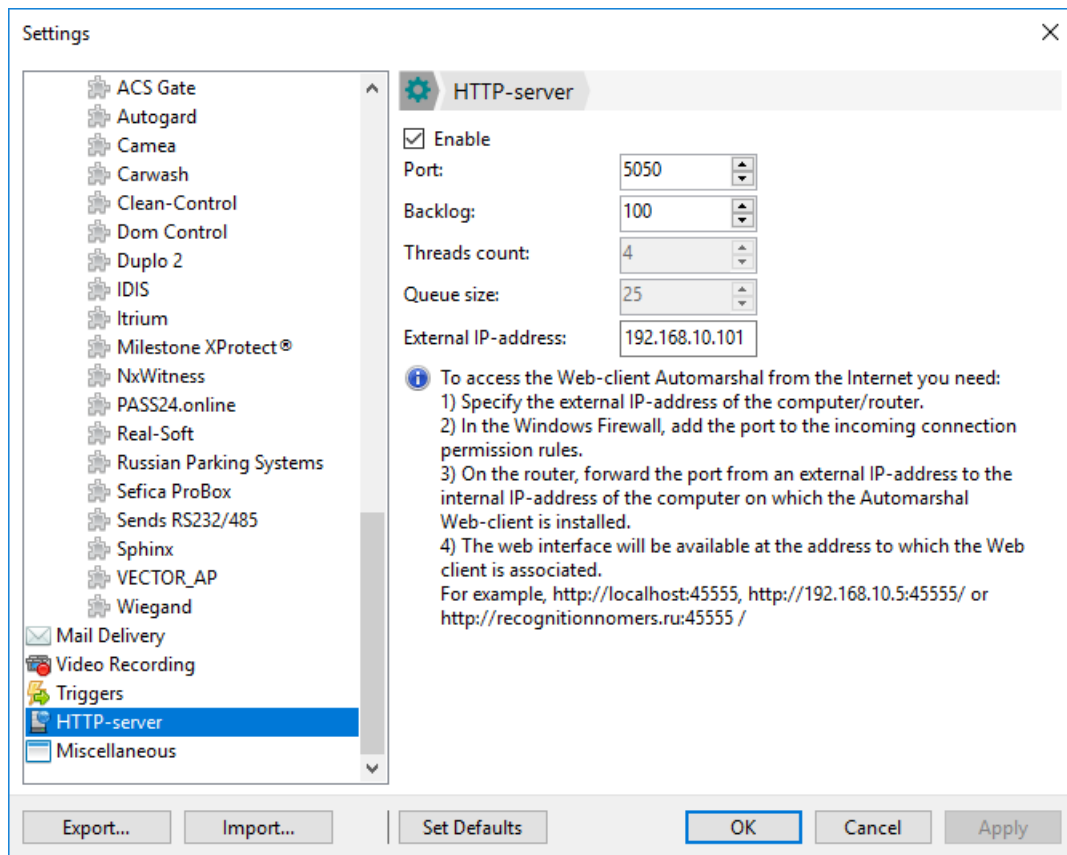


Figure 6.9.1

Settings of HTTP-Server

Port – number of TCP port, which would be opened on your PC for processing of incoming enquiries.

Connection Turn– maximum acceptable turn of connections for given TCP port. By default: connection turn is 100.

Number of streams – indicates how much parallel streams for processing of incoming enquiries would be created in SW Automarshal 2.

By default: number of streams is 4, and this value is fixed.

Enquiry Turn – maximum acceptable turn of HTTP-enquiries per one processing stream. By default: turn of enquiries is 25, and given value is fixed.

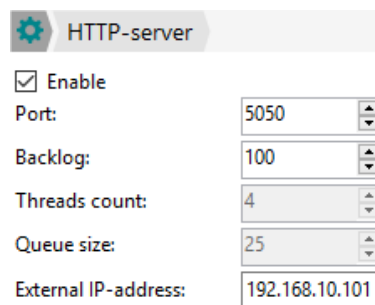


Figure 6.9.2

Streams and Enquiries - protection against DDoS attacks.

Enquiries for the list of video channels in xml and Json formats, as well as reception of images in certain format from the certain video channel are allowed.

Line for reception of video channel list:

localhost:port/api/v1/videochannels

Example:

```

<VideoChannelsSchema>
  <Count>5</Count>
  <VideoChannels>
    <VideoChannelInfo>
      <Id>0</Id>
      <ImageUrl>/api/v1/image?videochannel=0</ImageUrl>
      <Name>Camera 1</Name>
    </VideoChannelInfo>
    <VideoChannelInfo>
      <Id>1</Id>
      <ImageUrl>/api/v1/image?videochannel=1</ImageUrl>
      <Name>Camera 2</Name>
    </VideoChannelInfo>
    <VideoChannelInfo>
      <Id>2</Id>
      <ImageUrl>/api/v1/image?videochannel=2</ImageUrl>
      <Name>Camera 3</Name>
    </VideoChannelInfo>
    <VideoChannelInfo>
      <Id>4</Id>
      <ImageUrl>/api/v1/image?videochannel=4</ImageUrl>
      <Name>Camera 4</Name>
    </VideoChannelInfo>
  </VideoChannels>
</VideoChannelsSchema>

```

Figure 6.9.3

Line for reception of image based on example of the first video channel:

http://localhost:port/api/v1/image?videochannel=0

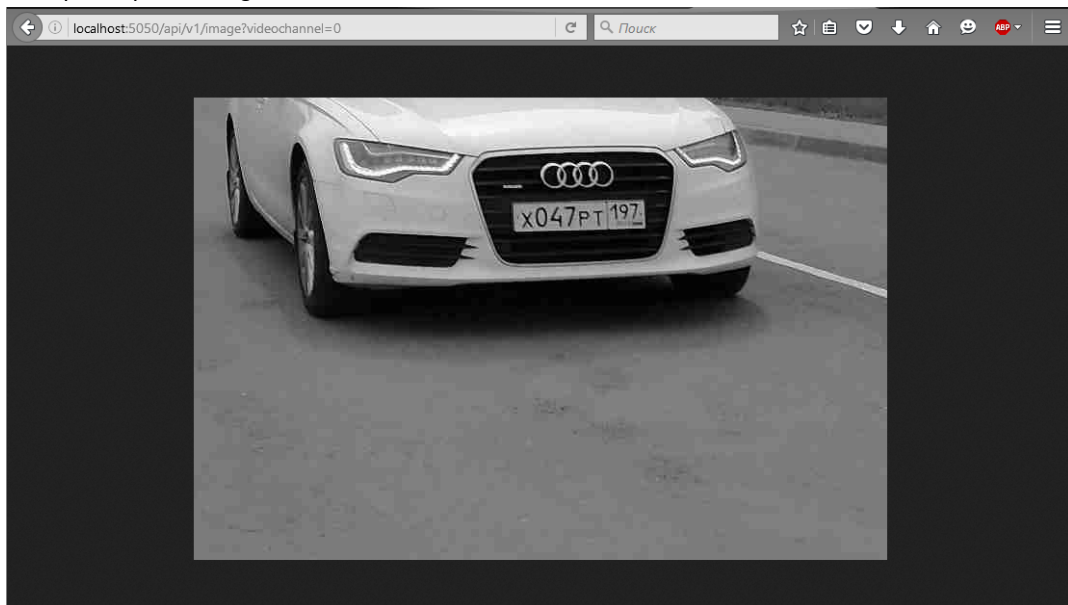


Figure 6.9.4

6.10. Exporting and Importing of Program Settings

To save/upload the program settings, there are two buttons: **Export** and **Import** are available in the **Settings** Window.

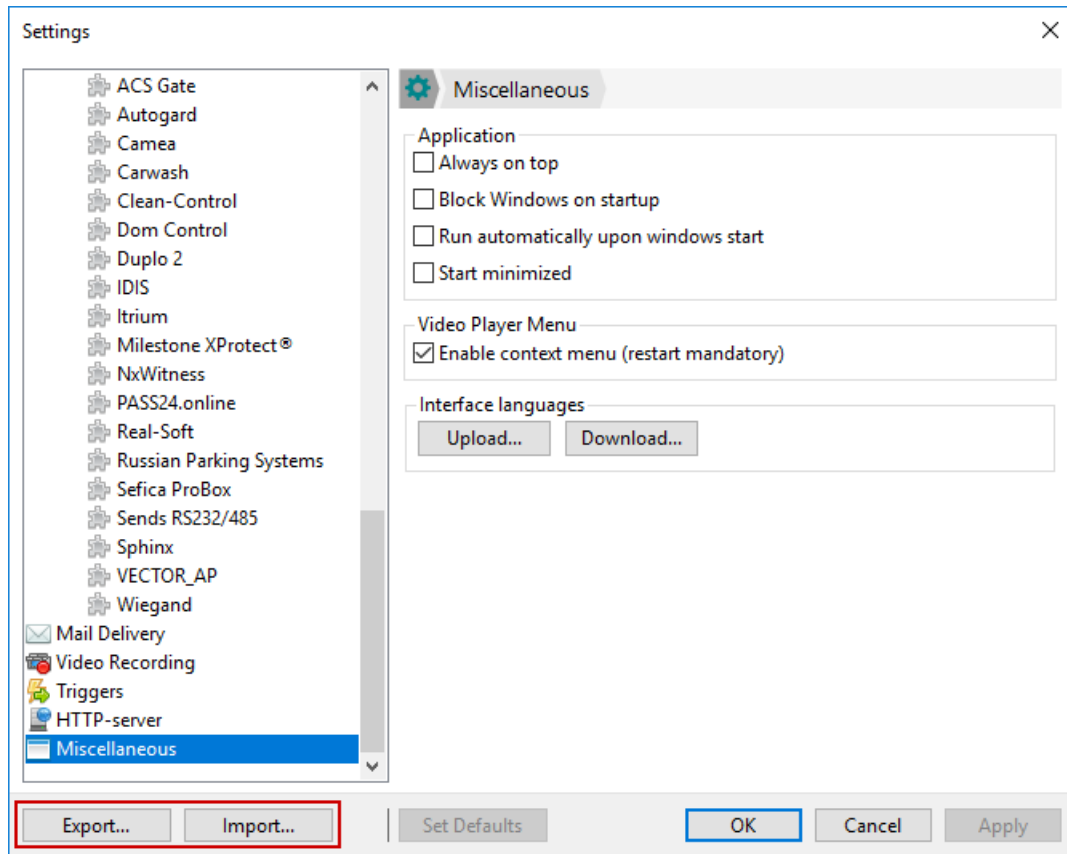


Figure 6.10.1

By pressing the **Export** button, **Export Settings** would be displayed:

1. Select folder, in which you would like to save SW settings.
2. Indicate name of the file.

By default, date and time, of settings export, shall be indicated in file name, file type *.amsettings.

To Import earlier saved settings, perform the following actions:

1. Press **Upload** button at the bottom line of **Settings** Window.
2. Select settings file and press **Open** button.

File resolution shall be *.amsettings.

3. • If settings are successfully applied, window with relevant message would be displayed: Program settings were successfully imported.
- If file with settings was damaged, the following message would appear: Importing of program settings was failed.

OR

- Program settings were imported partially. Importing of some settings was failed.

6.11. Miscellaneous

Miscellaneous tab is designated for setting of parameters, not included in other tabs.

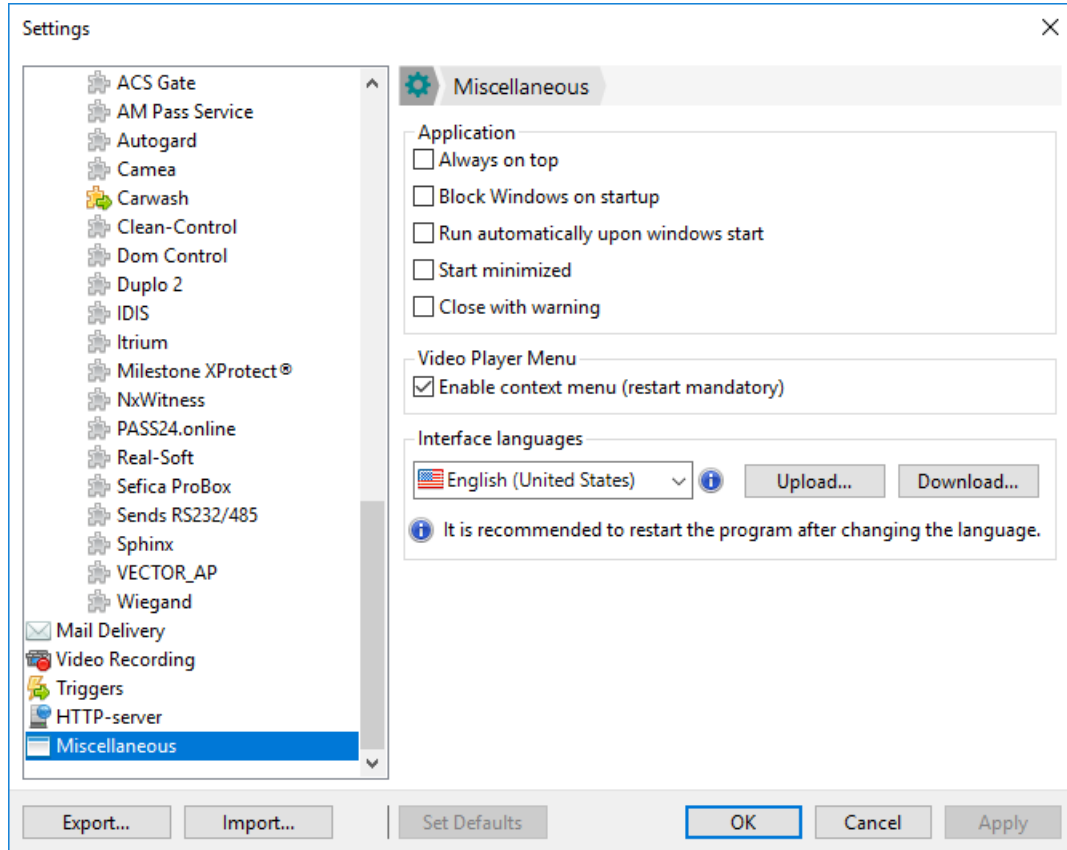


Figure 6.11.1

1. **Appendix** Section involves three options:

- **Always on top**

Upon activation of this option, windows of SW Automarshall would be located above all activated programs reflected at the task panel.

- **Block Windows on startup**

By activation of given option, upon running of SW Automarshall 2 all windows would be blocked and the user would be unable to make any changes.

- **Run automatically upon windows atart**

Given option is designated for automatic run of SW Automarshall 2 upon turning on/restarting of the computer.

- **Start minimized**

This option is meant for Automarshall software start as minimized in the task bar.

- **Close with warning**

When trying to close Automarshall 2 software, a window opens that requires to confirm the action.

2. Option **Allow Context Menu** is located in section **Video Player Menu**.

Given option is designated for activation/deactivation of the context menu in the main window of SW Automarshal 2. Context Menu is activated by pressing of the right mouse button on video player in the main window of the program.

To enforce changes, restart SW.

3. **Interface Languages.**

In Automarshal 2.18 Version it is now possible to change interface language.

To get files with interface languages available, click “Upload” and in the “Select Folder” window specify the place to save files.

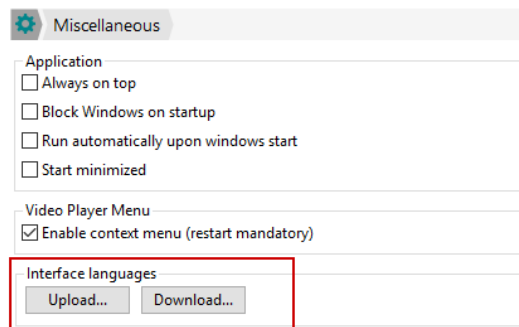


Figure 6.11.2

Wait for notification that the process of interface languages upload is completed.

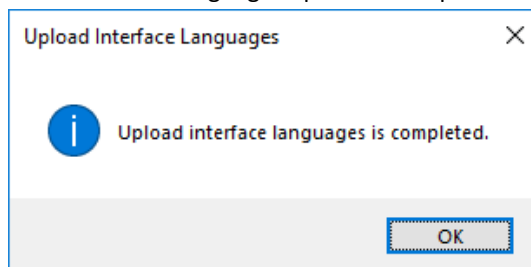


Figure 6.11.3

When the upload is completed, the *.xml files will appear in the folder. At the moment, there are three interface languages available in Automarshal: Russian, English, Ukrainian.

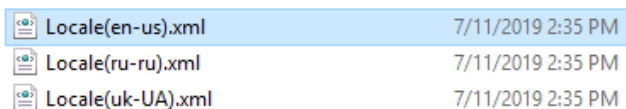


Figure 6.11.4

The content of files with interface languages is provided in the Figure 6.11.5.

```
<?xml version="1.0" encoding="UTF-8"?>
- <Localization>
  - <Scope Id="Automarshal.Tablet">
    <String Id="RecognizeButtonText">Recognize</String>
    <String Id="VideoButton">Video</String>
    <String Id="LogButton">Log</String>
    <String Id="SetupButton">Service</String>
    <String Id="AboutButton">About</String>
    <String Id="MinimizeButton">Minimize</String>
    <String Id="CloseButton">Close</String>
  </Scope>
  - <Scope Id="CarControl.Reports">
    - <Scope Id="ReportColumnsConfigurationControl">
      <String Id="ShowExtraFields">Show extra fields</String>
      <String Id="ShowUsersLists">Show users lists</String>
      <String Id="ShowUserListFields">Show user lists fields</String>
    </Scope>
    - <Scope Id="ReportConfigurationForm">
      <String Id="ReportColumnsConfiguration">Customizing Report Fields</String>
      <String Id="ReportDesign">Report Editing</String>
      <String Id="ReportTemplateSelection">Report Template Selection</String>
    </Scope>
    - <Scope Id="ReportExtendedConfigurationForm">
      <String Id="Cancel">Cancel</String>
      <String Id="ReportExtendedTemplateSelection">Report Template Selection</String>
    </Scope>
    - <Scope Id="ReportTemplateSelectionControl">
      <String Id="ReportName">Report name:</String>
      <String Id="ReportTemplate">Report template:</String>
      <String Id="ImpossibleCreate">Cannot create a report with this name</String>
      <String Id="InvalidCharacters">Invalid character {0}</String>
      <String Id="ReportAlreadyExist">A report with this name already exists.</String>
      <String Id="ReportIsEmpty">Name can't be empty.</String>
    </Scope>
  - <Scope Id="TerminalPanelControl">
```

Figure 6.11.5

To change Automarshal interface, open the file with editor available (for instance, notepad) and edit the text.

```
<?xml version="1.0" encoding="UTF-8"?>
- <Localization>
  - <Scope Id="Automarshal.Tablet">
    <String Id="RecognizeButtonText">Распознать</String>
    <String Id="VideoButton">Видео</String>
    <String Id="LogButton">Журнал</String>
    <String Id="SetupButton">Сервис</String>
    <String Id="AboutButton">О программе</String>
    <String Id="MinimizeButton">Свернуть</String>
    <String Id="CloseButton">Заккрыть</String>
  </Scope>
  - <Scope Id="CarControl.Reports">
    - <Scope Id="ReportColumnsConfigurationControl">
      <String Id="ShowExtraFields">Отображать дополнительные поля</String>
      <String Id="ShowUsersLists">Отображать пользовательские списки</String>
      <String Id="ShowUserListFields">Отображать поля пользовательских списков</String>
    </Scope>
    - <Scope Id="ReportConfigurationForm">
      <String Id="ReportColumnsConfiguration">Настройка полей отчёта</String>
      <String Id="ReportDesign">Редактирование отчёта</String>
      <String Id="ReportTemplateSelection">Выбор шаблона отчёта</String>
    </Scope>
    - <Scope Id="ReportExtendedConfigurationForm">
      <String Id="Cancel">Отмена</String>
      <String Id="ReportExtendedTemplateSelection">Выбор шаблона отчёта</String>
    </Scope>
    - <Scope Id="ReportTemplateSelectionControl">
      <String Id="ReportName">Название отчёта:</String>
      <String Id="ReportTemplate">Шаблон отчёта:</String>
      <String Id="ImpossibleCreate">Невозможно создать отчет с таким именем</String>
      <String Id="InvalidCharacters">Недопустимые символы {0}</String>
      <String Id="ReportAlreadyExist">Отчет с таким именем уже существует.</String>
      <String Id="ReportIsEmpty">Имя не может быть пустым.</String>
    </Scope>
  - <Scope Id="TerminalPanelControl">
```

Figure 6.11.6

To download user interface language into Automarshal, click “Download” and select the file. The file downloaded shall be in *.xml format.

After selecting file in the program, a window will open, suggesting to select a language. The name of the file, that is placed in the "Locales" folder, depends on the language selected (Figure 6.11.7).

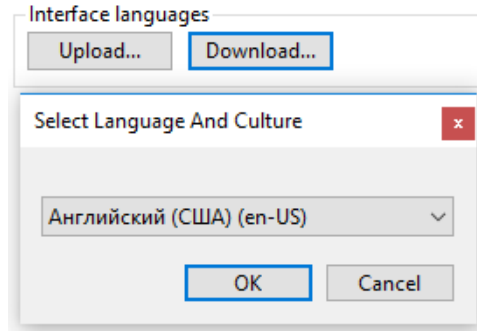


Figure 6.11.7

Wait until download of interface language in Automarshall is completed and restart the program.

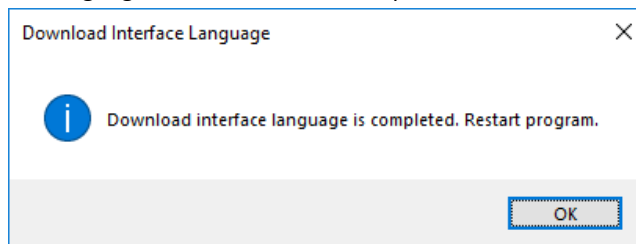


Figure 6.11.8

Files with new interface language are in the folder C:\ProgramData\Mallenom\Automarshall\Locales (Figure 6.11.9).

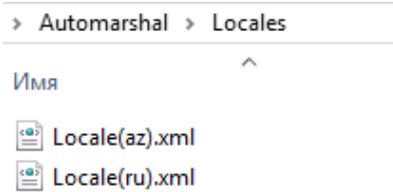


Figure 6.11.9

Example for introduction of changes to Automarshall.

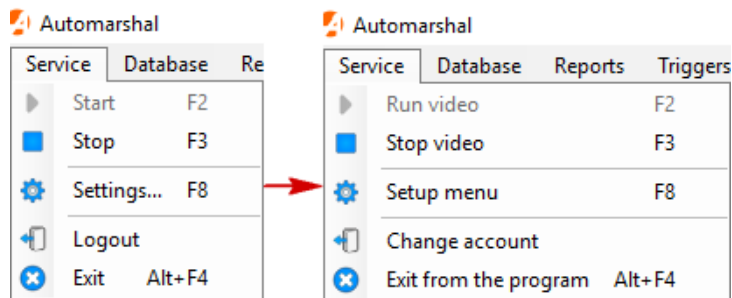


Рисунок 6.11.10

6.12. Appendix A – Examples

6.12.1. Example 1. Simple barrier opening

Create a new trigger named Open a Barrier with following parameters:

- Trigger name: Open a Barrier;
- Trigger event:
 - Vehicle Detected, with parameters:
 - Video Chanel – unflagged;
 - List – Any list;
 - Direction – All directions.
- Leave the Trigger Conditions list empty;
- Add to the Actions list:
 - Set device output, with parameters:
 - Output – 0;
 - Signal – 1;
 - Wait, with parameters:
 - Time – 30 ms.
 - Set device output, with parameters:
 - Output – 0;
 - Signal – 0.

See example on a screenshot below:

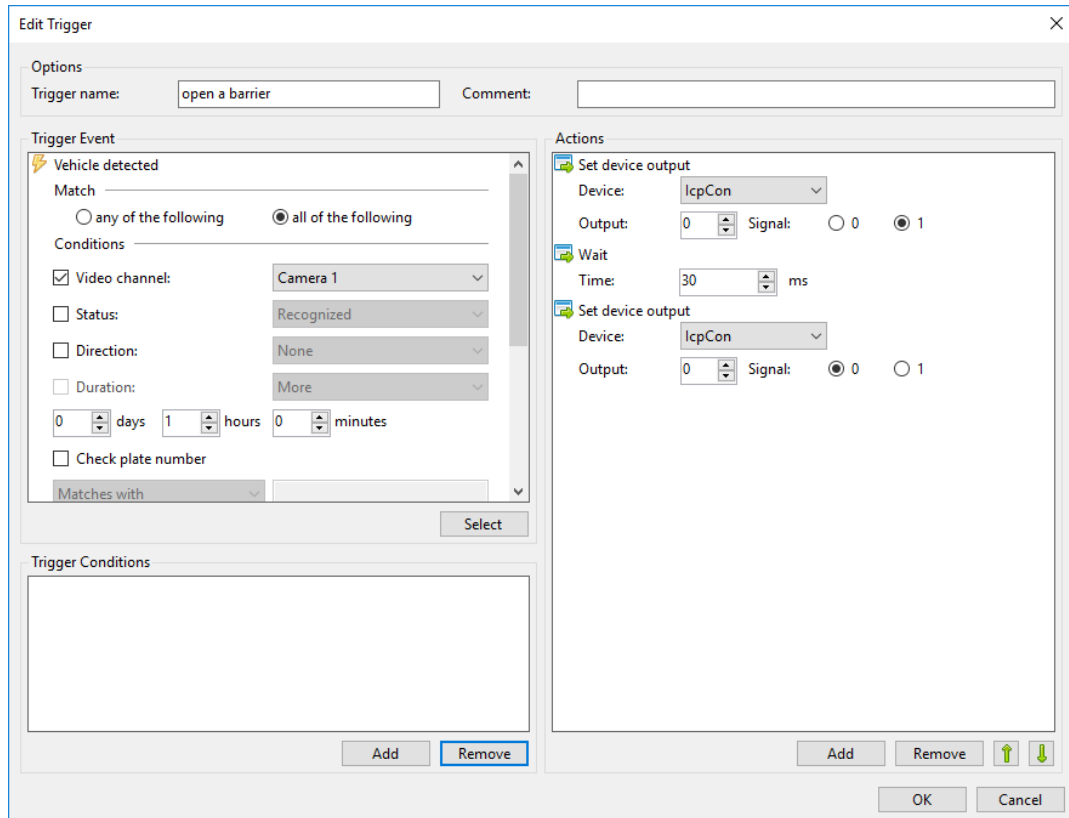


Figure 6.12.1

6.12.2. Example 2. Simple motion generation by sensor signal

Create trigger named Vehicle Detected.

Complete the form:

- Trigger name: Vehicle Detected;
- Trigger event:
 - Set Device Input State, with parameters:
 - Input – 0;
 - Value – 1.
- Leave the Trigger Conditions list empty;
- Add to the Actions list:
 - Set Motion State, with parameters:
 - Video Channel – 1;
 - Motion – yes.

The result should be as shown below:

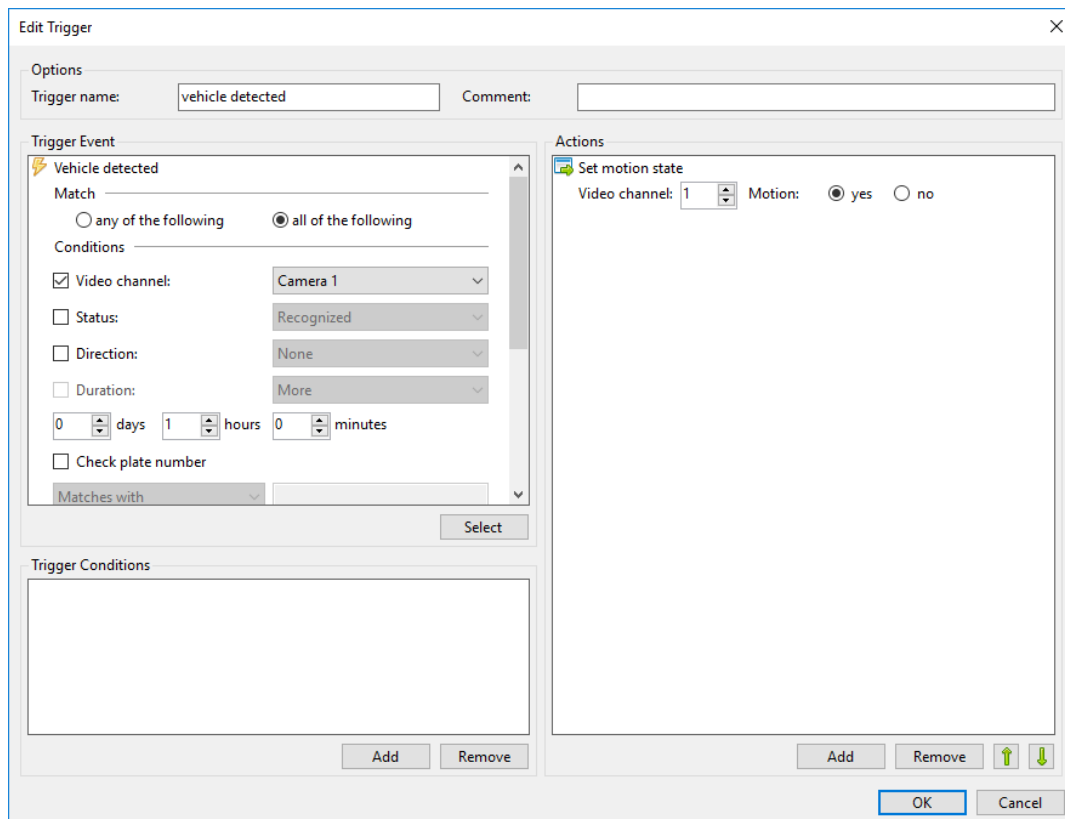


Figure 6.12.2

6.12.3. Example 3. Cancel motion by sensor signal

Create trigger named Vehicle Lost.

Complete the form:

- Trigger name: Vehicle Lost;
- Trigger event:
 - Device Input State Changed, with parameters:
 - Input – 0;
 - Value – 0.
- Leave the Trigger Conditions list empty;
- Add to the Actions list:
 - Set Motion State, with parameters:
 - Video Channel – 1;
 - Motion – no.

The result should be as shown below:

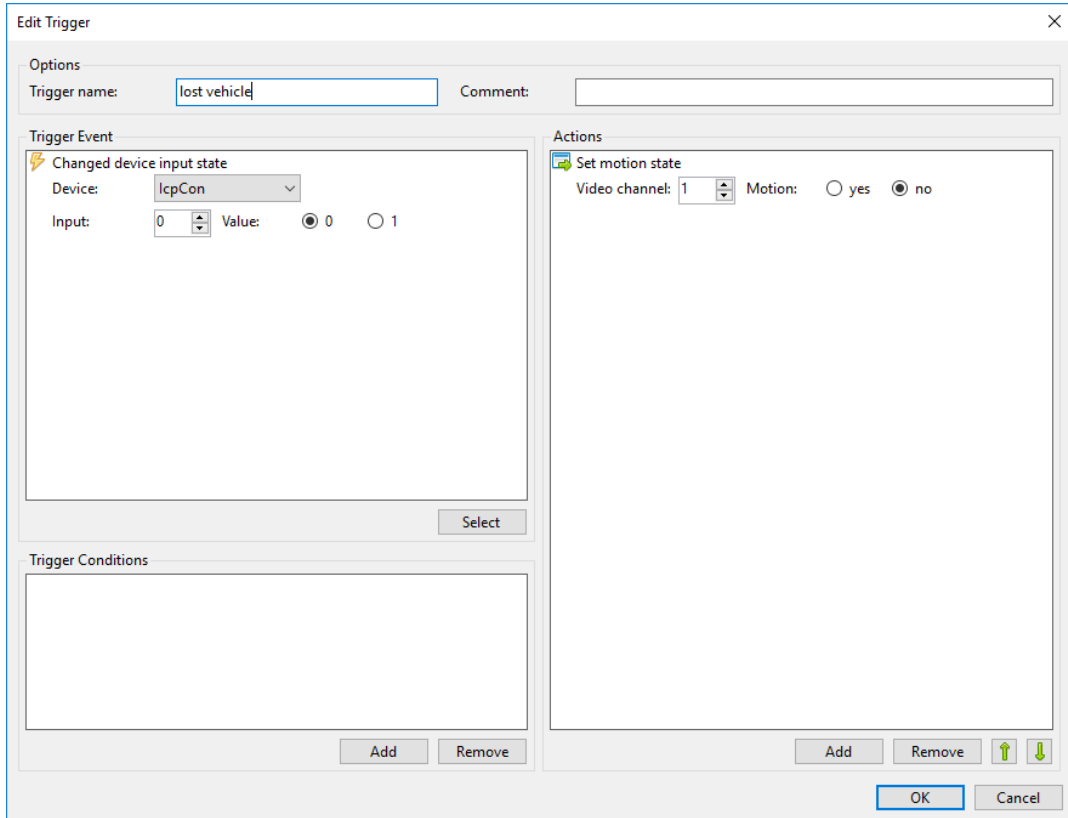


Figure 6.12.3

6.12.4. Example 4. Report with a vehicle picture and interval mailing of reports

User report generation through report configurator. Setting of report dispatch every two hours along with the vehicle entries, when duration of such vehicle stay in the territory is over 10 minutes.

Add a child band (Figure 6.12.4.1). To do this, right-click on “Data: Collection” field and select “Add Child Band” in the drop-down menu.

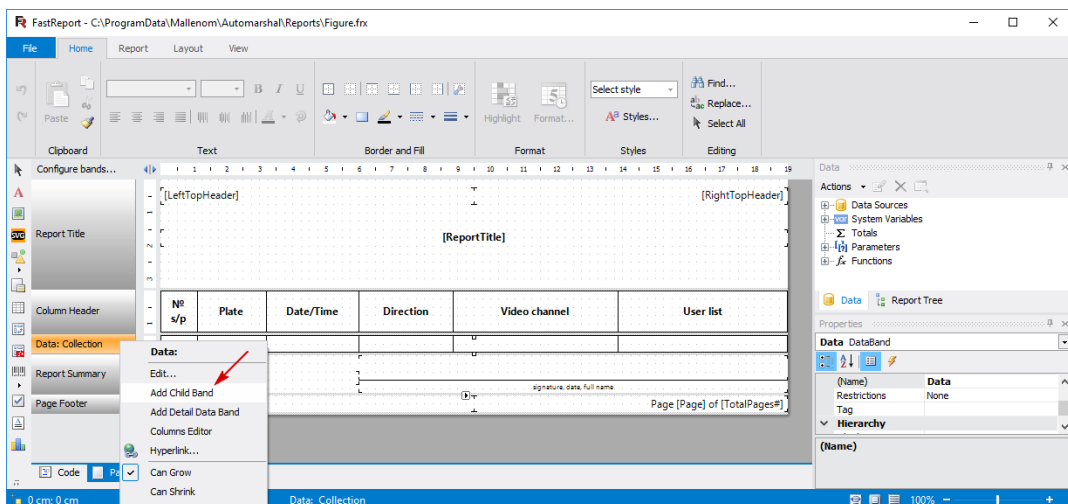


Figure 6.12.4.1

Place “Image” in the band added (Figure 6.12.4.2). Set the size required by dragging the selected image frame area, and image position.

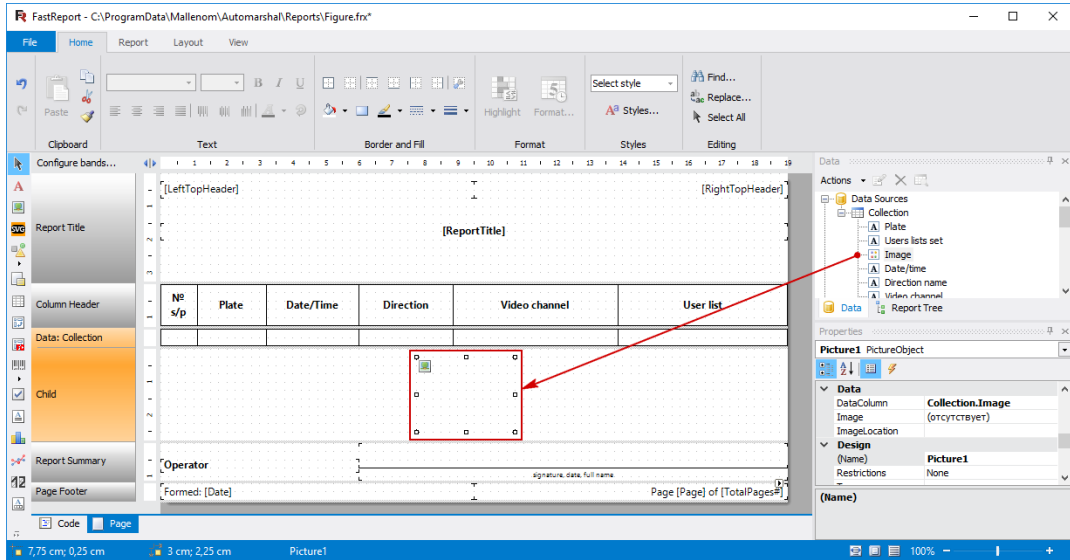


Figure 6.12.4.2

To set up the filter, right-click on “Data: Collection” field and select “Edit...” in the drop-down menu (Figure 6.12.4.3).

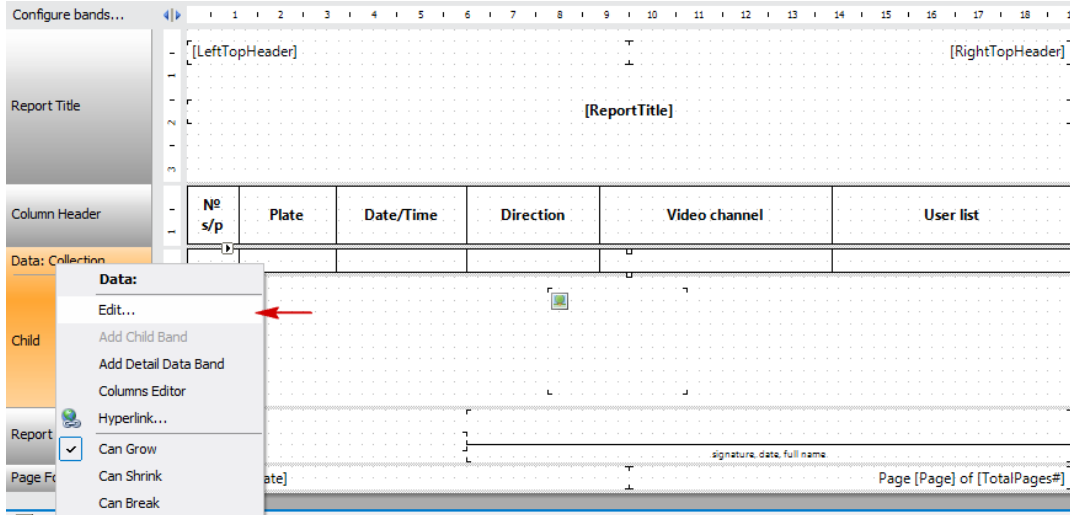


Figure 6.12.4.3

Transit to Edit Expression in “Filter” tab of “Edit Data Band” window (Figure 6.12.4.4).

Set “Duration in minutes’> 10” condition in Edit Expression. Save the report.

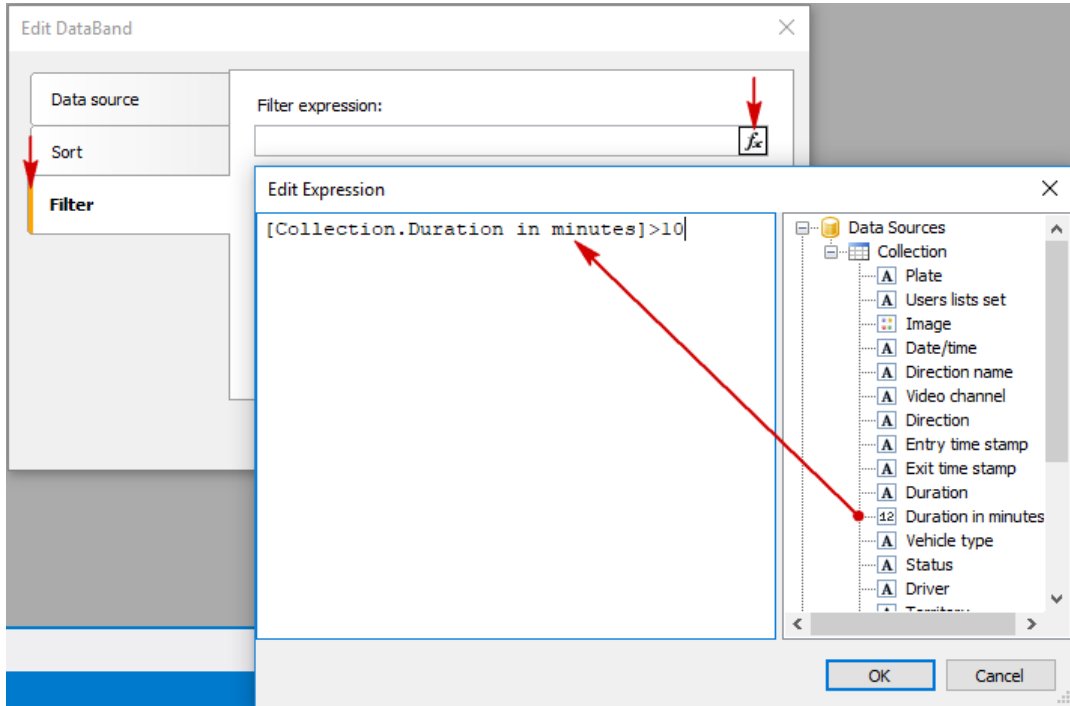


Figure 6.12.4.4

Using “Report mailing” module, set up a report mailing (Figure 6.12.4.5).

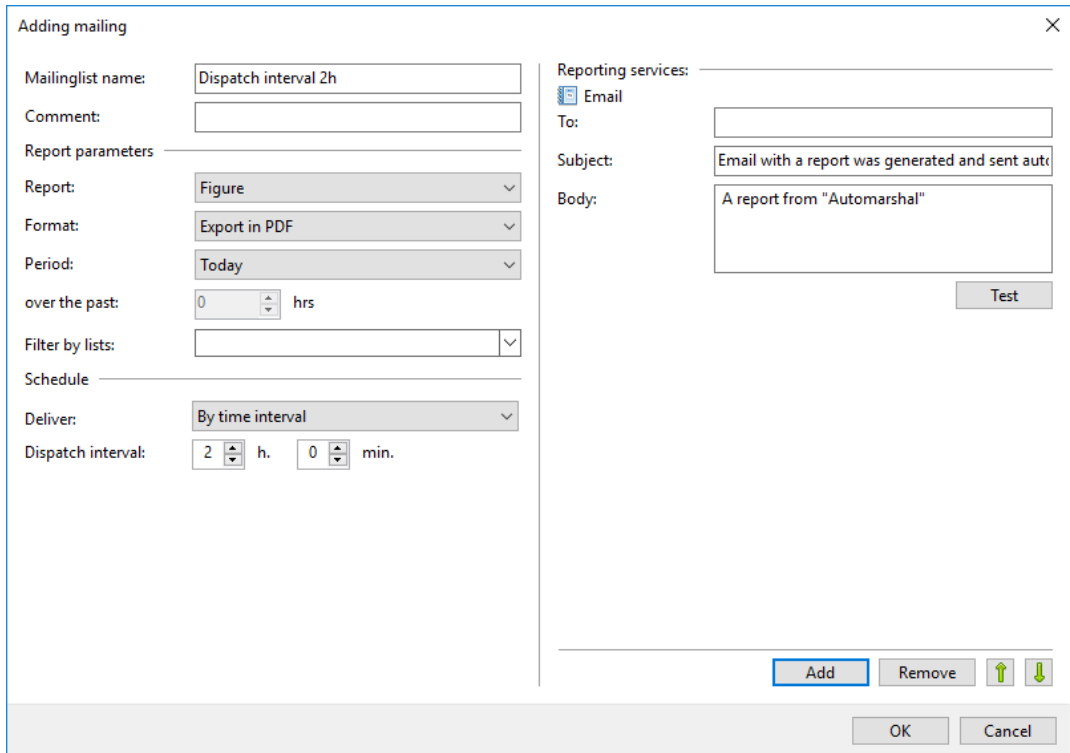


Figure 6.12.4.5

Select the type of dispatch (Deliver) “At time interval” and set up the required time interval for report dispatch, in Figure 6.12.4.5 this interval is equal to 2 hours.

Figure 6.12.4.6. shows the example of report.

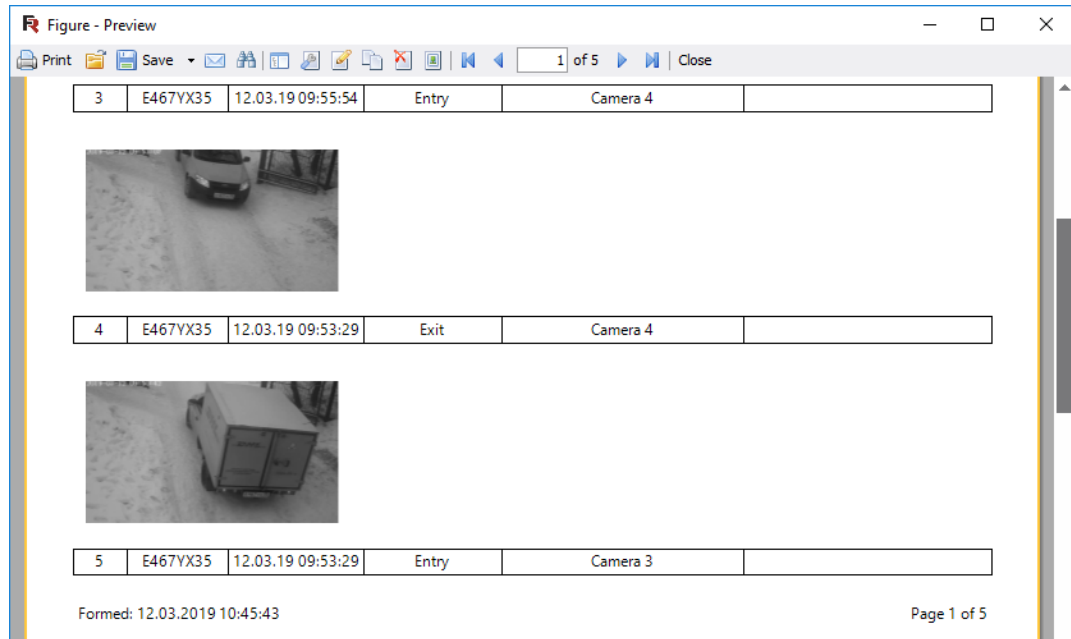


Figure 6.12.4.6

6.13. Appendix B – Wildcard expressions

List of available wildcard expressions:

- \$(id) – returns ID of the last record.
- \$(plate) – returns vehicle license plate.
- \$(stencil) – returns recognized license plate country template.
- \$(time) – returns time of vehicle passage.
- \$(chDir) – returns vehicle movement direction.
- \$(movDir) – returns vehicle motion direction in frame.
- \$(status) – returns recognition status.
- \$(list) – returns user list containing the vehicle.
- \$(chName) – returns the name of the video channel that recognized the vehicle.
- \$(chNum) – returns the number of the video channel that recognized the vehicle.

6.12.1. Message examples

1. Message text:

Plate = \$(plate)

Received message:

Plate = B127MC35

2. Message text:

Plate = \$(plate)_Time = \$(time)

Received message:

Plate = B127MC35_Time = 31.08.2017-14:23:2

3. Message text:

\$(status)_\$(movDir)

Received message:

Recognized_top_to_bottom

• Last step of export is selection of folder to save document. In the dialog opened, select a folder where you would like to save a report, enter file name or leave unchanged (default file: Report.file_type).

Click Save to export report.

6.14. Appendix C – PostgreSQL

PostgreSQL is a free object-relational database management system (DBMS).

Benefits of PostgreSQL:

- There are no database size restrictions.
- Compared to SQL Server, it is more productive.
- Available on Windows and Linux.

Weak points of PostgreSQL:

- Lack of SQL Server data migration to and from PostgreSQL.
- It does not allow to create database from Automarshal, if PostgreSQL is installed on Linux.
- It works via TCP/IP, can load a channel and lose connection when it is (connection) is poor.
- It does not allow to create database with Russian characters in the name.

Tools:

“PGAdmin” utility is installed with PostgreSQL, it allows to administer the database. It is opened in the browser.

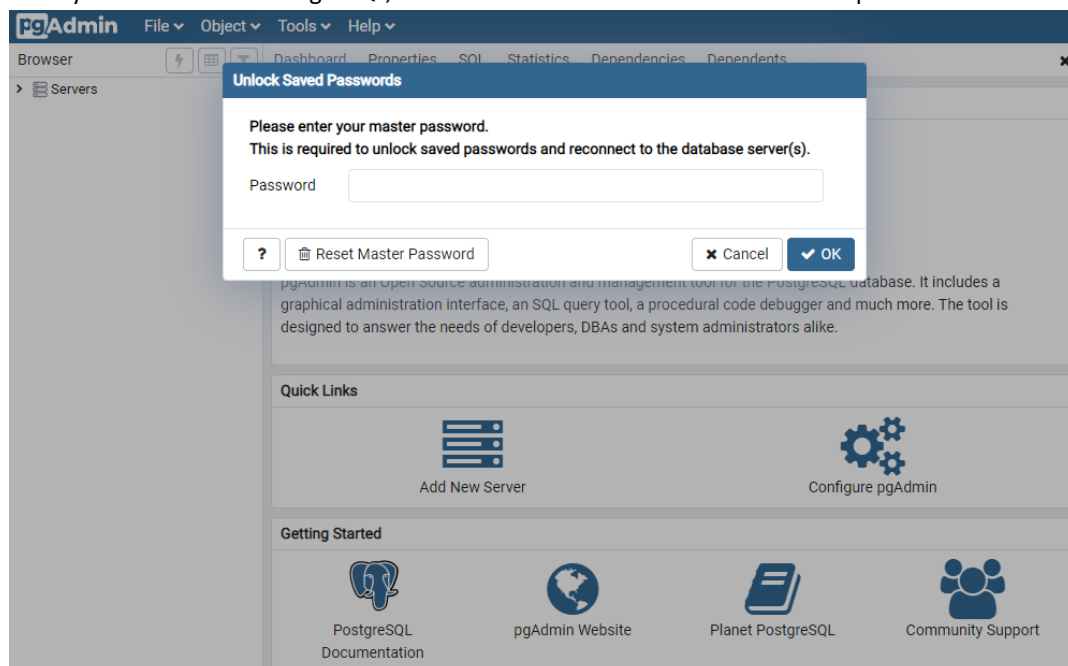


Figure 6.14.1

“Pg_dump” and “pg_restore” utilities allow to save and restore the database. Location: Program Files\PostgreSQL\10 (or another version)\bin.

Work with PostgreSQL

PostgreSQL is a DBMS that is based on interaction via TCP/IP data transfer protocol, which allows to store the database on another machine.

Connection parameters:

- Host is the IPv4 address for PostgreSQL installed.
- Port is 5432 port by default; changing is not recommended.
- Database name is the name of the database, which the connection is made to.

Postgres is the database by default.

- Authorization type – the Postgres authorization type is only supported.
- Data for connection to the database by default:

Login – postgres.

Password – admin.

Figure 6.14.2

PostgreSQL database can be backed up, restored and updated.

When restoring data to the existing database, the current database will be deleted and recreated with the data from the restored database.

PostgreSQL settings

PostgreSQL configuration file location: Program Files\PostgreSQL\10\data.

Main file – postgresql.conf, it contains data on the following settings:

- File location;
- Connection and authentication;
- Use of PC recourses;
- Logging;
- Replication;
- Query/Request optimization;
- Statistics collection;
- Autovacuum settings;
- Default settings for customer connection;
- Lock management.

More information: <https://postgrespro.com/docs/postgresql/10/runtime-config>

The “pg_hba.conf” remote connection configuration file contains information on the following settings:

	IPv4	IPv6
Type	host	host
Database	all	all
User	all	all
Address	127.0.0.1/32	1/128
Method	md5	md5

Advanced parameters:

Type:

Local – it manages connections through Unix sockets. Connections through Unix sockets are impossible without such entry.

Host – it manages connections through TCP/IP. Host entries correspond to the connections with and without SSL.

Hostssl – it manages connections through TCP/IP. With SSL (using SSL).

Hostnssl – it manages connections through TCP/IP. Without SSL.

Database:

All – it is a connection to all databases.

Sameuser – the database name shall match the user name.

Samerole – the database name shall match the user role name.

Users:

all – all users, it is possible to specify the names of the user or user role.

Addresses:

Addresses are set in IPv4/IPv6 format, «/» mark shall be put after the address and the CIDR mask length shall be specified. Mask length for one PC: 32 for IPv4 and 128 for IPv6. To allow all connections, the following addresses shall be specified «0.0.0.0/0» for IPv4 and «::0/0» for IPv6.

Authentication method:

Trust – it allows all connections.

Reject – it rejects all connections.

Scram-sha 256 – it performs scram-sha 256 authentication.

Md5 – it performs scram-sha 256 or md5 authentication.

More information: <https://postgrespro.com/docs/postgresql/10/auth-pg-hba-conf>

7. Program Operation



During run and operation of the program, hardware protection key shall be connected to the computer. If during program operation, hardware protection key is disconnected from the computer, recognition algorithms are automatically deactivated. Herewith, normal operation of the program would be restored only upon restart thereof.

7.1. User Authorization

Upon the initial run of SW Automarshal 2, running of software is performed on behalf of the administrator, and the **Administrator** is established as user for automatic entry in the system (for more details about automatic entry, see "6.1.2.5 Automatic system entry").

If you establish entry by user name and password (see Clause 6.1.1. Users), upon running of the software, window with requirement to enter *User Name and Password* would be displayed on the screen.

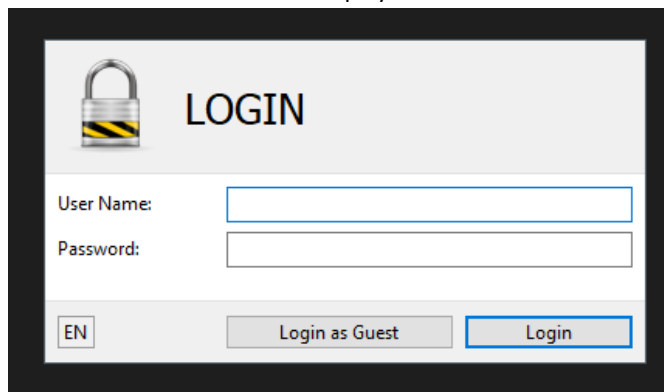


Figure 7.1.1

Upon pressing **Login as Guest**, system entry would be done under **Guest** status; it is used only to review the recognition log.

In the **Login** window, plate number recognition will not be stopped, but recorded in the database as **System User**.

7.1.1. User Change

To change user in SW Automarshal 2, perform the following actions :

1. Select menu option **Service** → **Logout**.

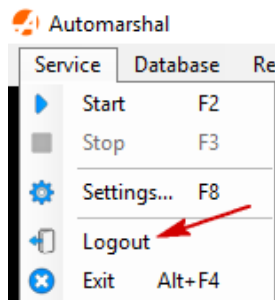


Figure 7.1.2

OR

Or Press Change **User Button** in the Status Bar.



Figure 7.1.3

2. Afterwards, window with request to enter *User Name* and *Password* would be displayed on the screen.

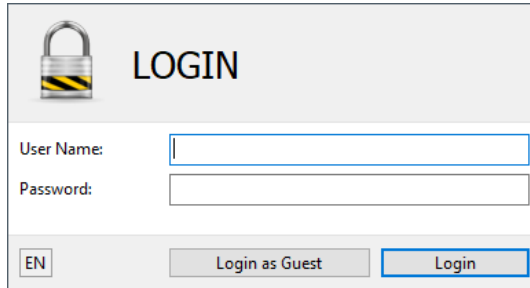


Figure 7.1.4

3. Indicate User Name and Password, under which you would like to enter the system, and press **Enter** button.

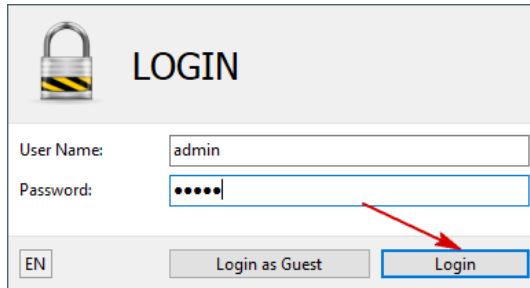


Figure 7.1.5

7.1.2. Possible Errors upon Program Entry

1. **Unknown username.**

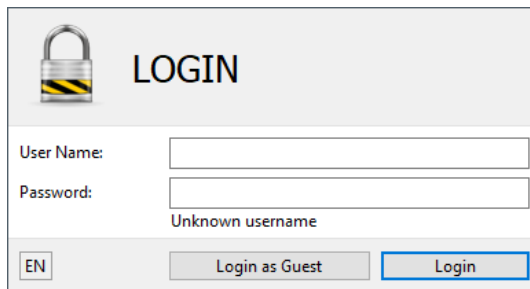


Figure 7.1.6

2. **Invalid user name or password.**

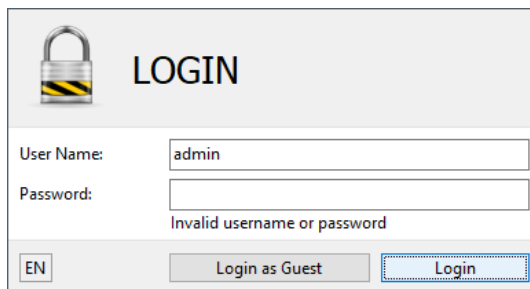


Figure 7.1.7

7.2. Recognition Log

Recognition Log reflects details of the recognized number plate:

- *Plate* — number of passed motor vehicle.
- *Date/Time* — fixation date and time of the recognized plate.
- *Movement / Direction* — direction of motor vehicle (up, down, undefined).
- *Recognition Status* — shows whether number plate is recognized automatically or entered manually.
- *Video channel* — name of camera, which shall record the motor vehicle.
- *User* — name, under which the user enters the system.
- *Server* — name of PC, on which DB is installed.
- *Additional Fields* — correspond to fields filled up upon creation of the User Lists.

For more details on creation of the user lists see Clause 6.3.1. **User Lists** of given User Manual.

Plate		Date/Time	Video channel	Comment	Movement	Count
50ZFT7	✓	20.09.2018 10:28:45	Camera 2		Bottom to top	NL
88XHZ3	✓	20.09.2018 10:28:41	Camera 2		Bottom to top	NL
RLPT30	✓	20.09.2018 10:28:40	Camera 2		Top to bottom	NL

Figure 7.2.1

7.2.1. Log Settings

Column Display

By default, the following columns are displayed in the **Recognition Log**: *Plate, Date/Time, Movement / Direction, and Recognition Status, Video channel, User and additional fields.*

Displaying of the “unnecessary” fields may be inactivated leaving only necessary fields. Displaying of *Vehicle Number Plate and Date/Time* could not be deactivated.

To do that:

1. Click the right mouse button on the name of either column in the recognition log, the following menu would be displayed:

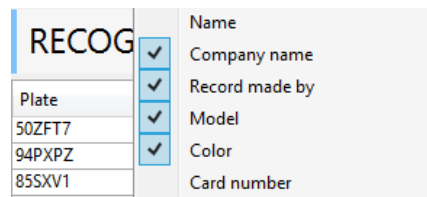


Figure 7.2.1.1

2. Untick the fields, which shall be hid in the recognition log.

To show hidden fields, tick opposite the required fields.

Example of displaying of the recognition log with fields: *Comment*, *Company name* is shown on the screenshot below.

Plate	Date/Time	Video channel	Movement	Country coc	Comment	Company name
50ZFT7	<input checked="" type="checkbox"/> 20.09.2018 10:28:45	Camera 2	Bottom to top	<input checked="" type="checkbox"/> NL		
88XHZ3	<input checked="" type="checkbox"/> 20.09.2018 10:28:41	Camera 2	Bottom to top	<input checked="" type="checkbox"/> NL		

Figure 7.2.1.2

Sorting Log Entries

Arrow indicator on the column name shows by which parameter log data is sorted in the log. Data may be sorted in the descending (arrow down) and ascending order (arrow up).

Plate	Date/Time	Video channel	Comment	Movement	Count
50ZFT7	<input checked="" type="checkbox"/> 20.09.2018 10:28:45	Camera 2		Bottom to top	<input checked="" type="checkbox"/> NL
88XHZ3	<input checked="" type="checkbox"/> 20.09.2018 10:28:41	Camera 2		Bottom to top	<input checked="" type="checkbox"/> NL
RLPT30	<input checked="" type="checkbox"/> 20.09.2018 10:28:40	Camera 2		Top to bottom	<input checked="" type="checkbox"/> NL

Figure 7.2.1.3

By default, log entries are sorted in the descending order by column *Date/Time*. New entries are displayed in the upper line of the log.

7.2.2. Viewing of Log Entries

Captured shot with the last recognized number plate is indicated above the recognition log and information on such vehicle is displayed on the right side.

To view information on other vehicle, select the required line in the recognition log.

Captured shot of selected vehicle and details would be displayed above the recognition log.

If during viewing of the information on vehicles, new number plate (or several number plates) is/are recognized, **New**

Records Indicator , would be displayed above the recognition log with indication of the number of new entries in the log.

To view new entries, click the left mouse button on the **New Records** Indicator or **Refresh Recognition Log** Button. The Recognition Log would be renewed and new entries would be recorded.

For automatic renewal of the recognition log, press button **Autoupdate**.

7.2.3. Editing Plate in the Log

To edit vehicle number plate, double click the mouse button on the selected line of the **Recognition Log**.

Vehicle Image and edited **Plate** field would be displayed in the opened window **Edit Record**.

Edit **Plate** and press **OK** button to save changes.

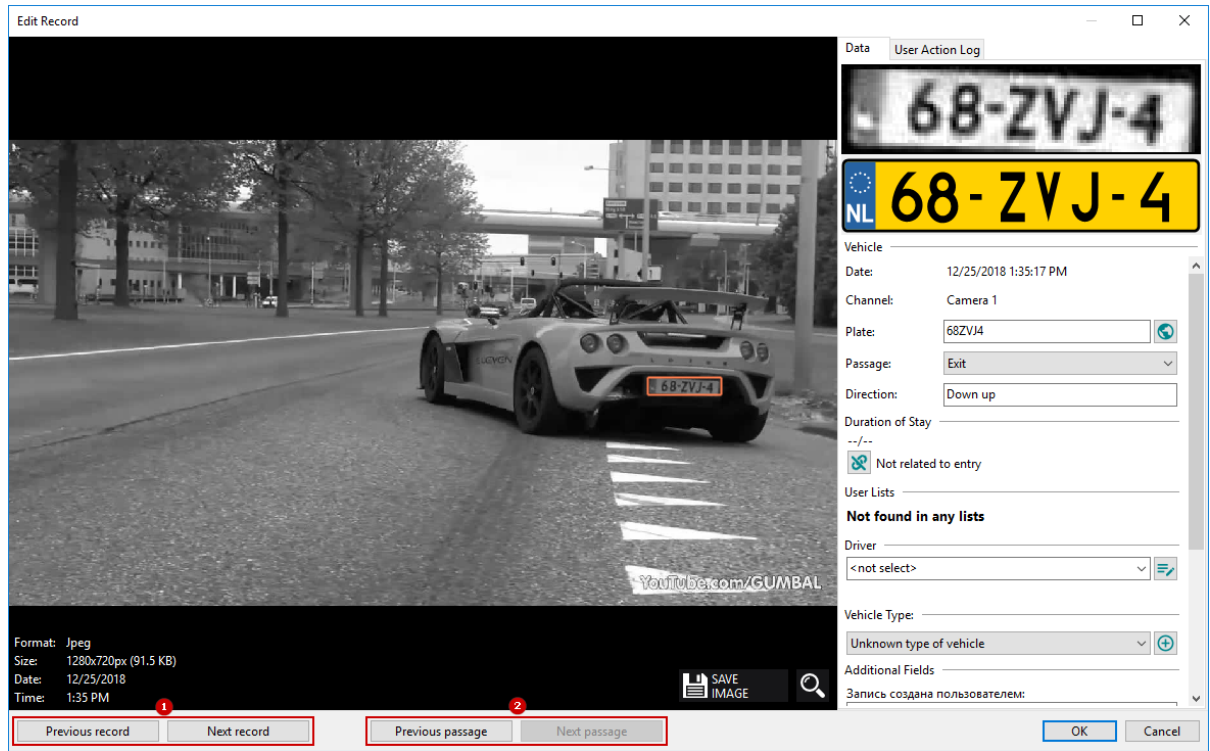



Figure 7.2.3.1

In Figure 7.2.3.1, the buttons for switching between the log records are marked with figures:

- 1 – buttons for switching between all records in the log;
- 2 – buttons for switching between the records with the passages of the selected vehicle.

Vehicle Photo may be saved on the disk in given window. To do so, press **Save** button  in the lower left corner of window, and select format, in which image shall be saved *.jpg, *.bmp, *.png).




If SW Line is jointly used with SW Automarshal 2, by double clicking the mouse button on image with the recognized vehicle, archive of SW Line will be opened on the screen to view video with passing vehicle.

In recognition log, the edited records have a corresponding mark (Figure 7.2.3.2).

RECOGNITION LOG							AUTOUPDATE	
Plate	Date/Time		Video channel	Direction	Access card	Comment		
88VFP5	10.03.2020 12:30:04		Camera 1					
88VFP5	10.03.2020 12:29:53		Camera 1					
70VFP4	10.03.2020 12:27:07		Camera 1		10667434	Card is read on entry		
-	10.03.2020 12:26:56		Camera 1			Card is read on entry		

Figure 7.2.3.2

7.2.4. Log Search

To search, press button  **Search in the recognition log** in the main form of the program, select **Recognition Log** option in the main menu, and select **Search** option in the drop-down list of the menu or press **F7** button.

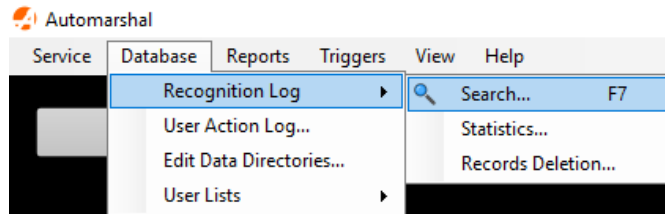


Figure 7.2.4.1

In the opened **Search** window, you may create various search enquiries and filter log entries by date, direction or user.

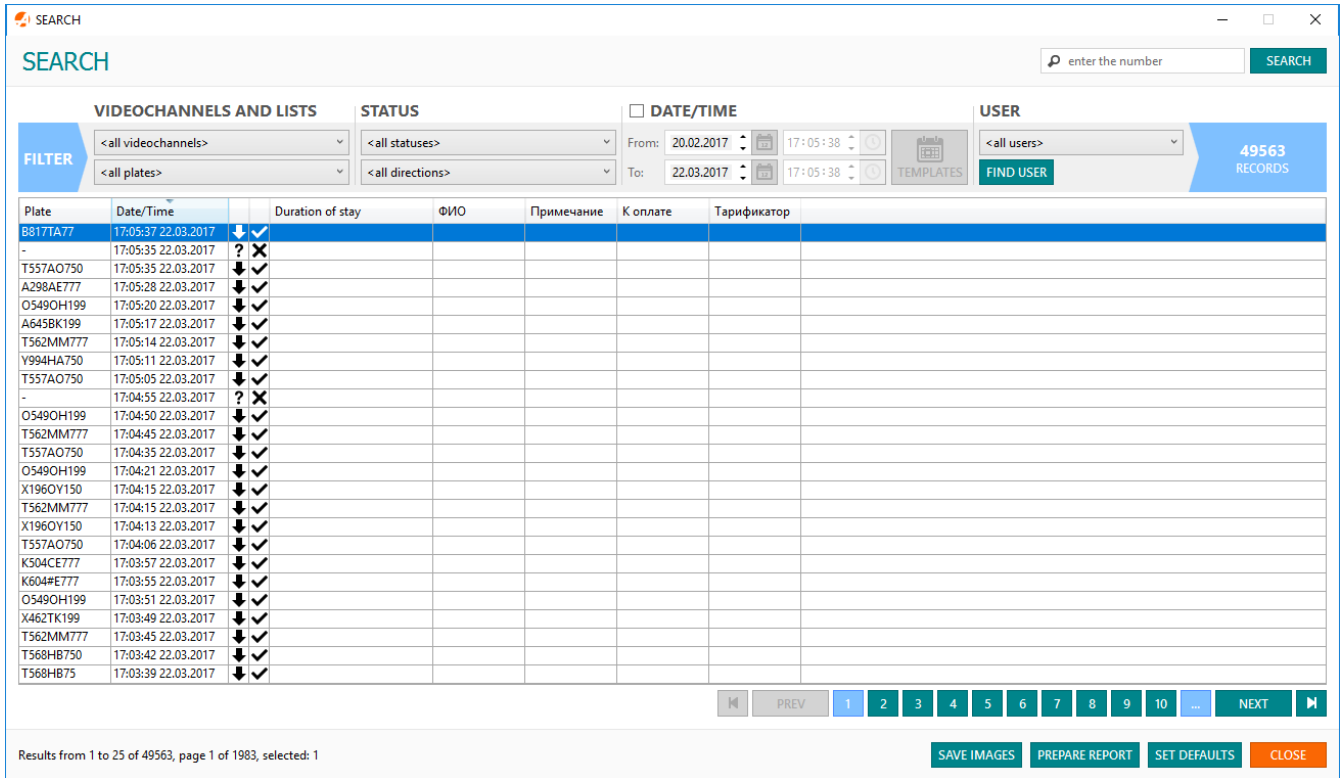


Figure 7.2.4.2

7.2.4.1. Filtering entries in the Search form



You can use several filters at the same time.

1. Filter by Lists

- Filtering by lists

To filter the entries by list, in the “Lists” section, select the filter you need (all plates, not found, one of the created user lists) in the “all plates” drop-down menu.

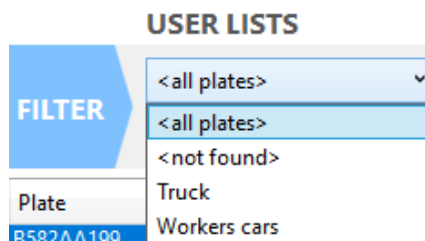


Figure 7.2.4.3

- **Filtering by vehicle type**

To filter the entries by vehicle type, in the “Lists” section, select the filter you need in the “all vehicle types” drop-down menu. By default, the “Unknown vehicle type” is set in the system; all other vehicle types shall be set by the user. For details, see Section 6.3.6 **Vehicle Type of this Manual**.

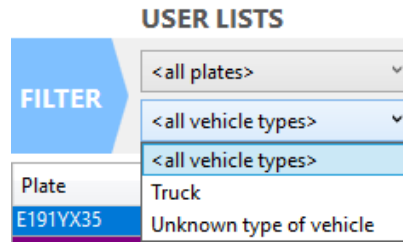


Figure 7.2.4.4

2. Statuses

- Filtration by Status

For filtration of Vehicle Number Plate entries by **status**, select **Status** option.

Select the appropriate status from the drop-down list with: *All statuses, Recognized, Not recognized or Manua.*

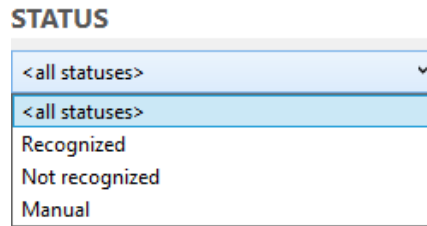


Figure 7.2.4.5

- **Filtration by Direction**

For filtration of Plates entries by **direction**, select **Status** option.

Select the appropriate movement direction from the drop-down list: *All directions, undefined, up or down.*

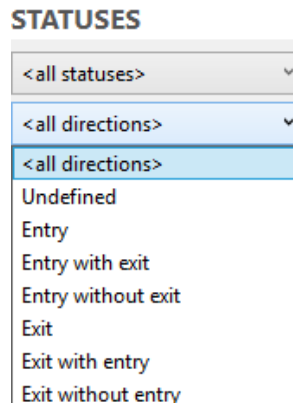


Figure 7.2.4.6

3. Filter Date/Time

To set the date and time manually, place tick opposite the **Date/Time** option.

• **Setting date and time manually**

Set date and time by up/down arrows or calendar and clock table.

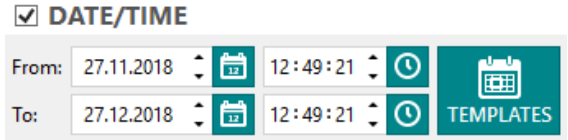


Figure 7.2.4.7

• **Setting date and time with the use of templates**

Templates are required to avoid manual introduction of the date and time.

To choose one of templates, click the left mouse button on **Templates** button and select the required Templates from the drop-down list.

Template options: *Today, Yesterday, Current Week, Previous Week, Current Month, Previous Month, last 30 days.*

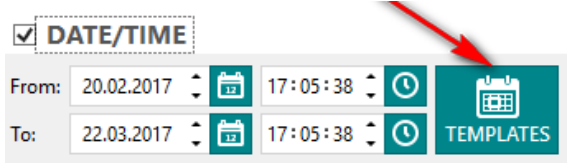


Figure 7.2.4.8

4. **Filter User**

To filter Vehicle Number Plate entries by certain user, select **Operator** option, Select the required user from the drop-down list in *all Users* field.

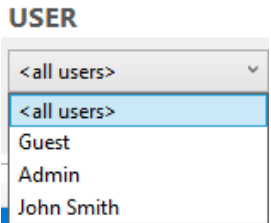


Figure 7.2.4.9

5. **Search**

Enter enquiry in search line and press **Search** button.

Example of the search by composition of “z” letters within the period 1.04.2016 - 11.04.2016 in Vehicle Number Plate is shown below.

Plate	Date/Time	Video channel	Movement	Country coc	Comment	Company name	Record made b	Model	Color
50ZF17	✓ 20.09.2018 10:28:45	Camera 2	Bottom to top	NL					
88XHZ3	✓ 20.09.2018 10:28:41	Camera 2	Bottom to top	NL					
94PXPZ	✓ 17.09.2018 15:12:45	Camera 2	Bottom to top	NL					
50ZF17	✓ 17.09.2018 15:12:42	Camera 2	Bottom to top	NL					

Figure 7.2.4.10



To reset all filters and search results press **FILTER RESET** or **SET DEFAULTS** in the lower part of the search window.

7.2.4.2. Generation and Printing out of Reports

To export data on the recognized vehicle number plates to the report, perform the following actions:

- If required, perform search and/or apply filters. For more details, see Clause 7.3.2. Filtration of entries in the Search Form.
- Press **GENERATE REPORT** **Generate Report** at the bottom line of window.
- In the opened window **Reports**, select (highlight) **Standard Report** in **Reports** Section.
- Enter data in the following fields of **Report Parameters** Section:
 - Left for running title;
 - Right for running title;
 - Report title;
 - Report Heading.

Fields are optional.

For instance:

Figure 7.2.4.11

- To preview the report, **View** button.
- To print out the report, press **Print** button.
- To export file, press the drop-down list next to **Export** button:
 - select type of file to which data shall be exported, and press **Export** button:

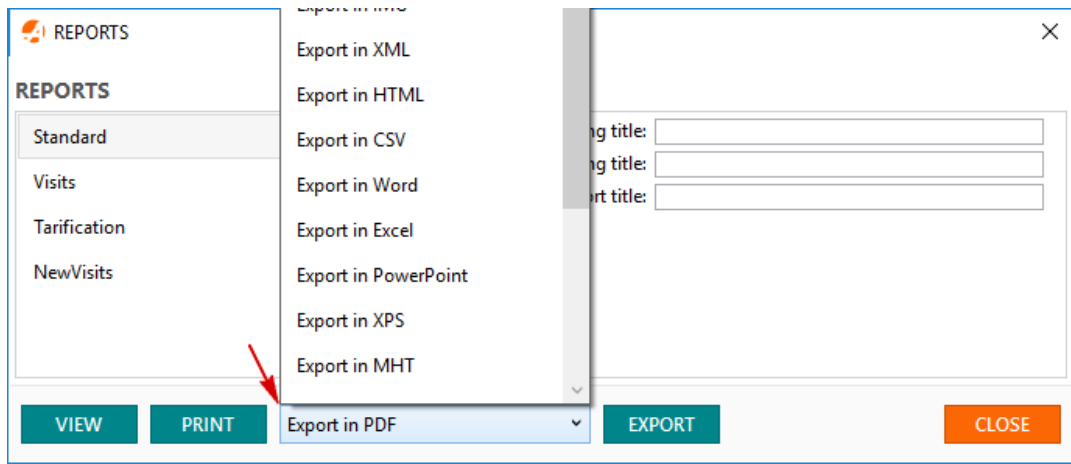


Figure 7.2.4.12

In the opened window set export parameters and press **OK** to continue or **Cancel**.

- Last stage of export operation– select file to save document. In the opened window, select file where you would like to save the report, indicate file name or leave without changes (by default, Report. file type).

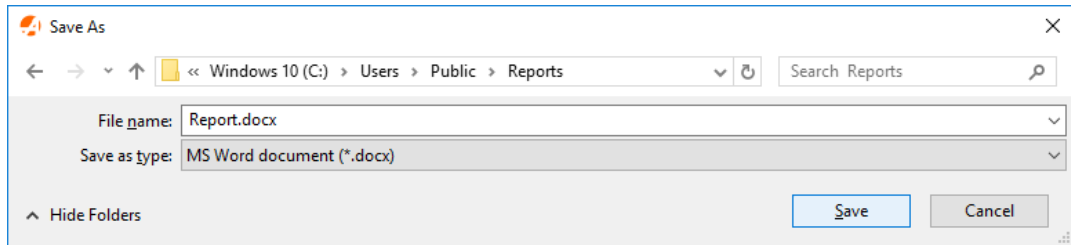


Figure 7.2.4.13

Press **Save** to export the report.

For more information of Reports, see **6.3.4 Report Configurator**.

7.2.5. Filtration of Entries in the Recognition Log

Given button  is required for filtration of entries in the recognition log.

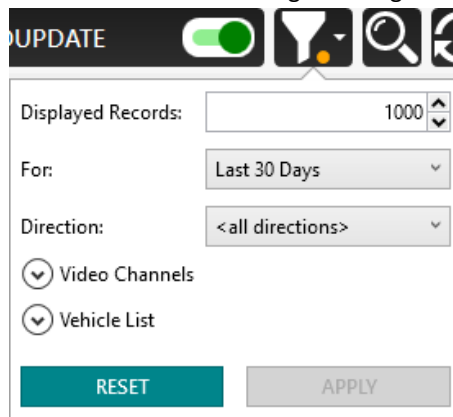


Figure 7.2.5.1

7.2.6. Deleting records from the Recognition Log

The records in the Recognition Log can be deleted in two ways: one at a time – directly from the Recognition Log in the Automarshall main window; the deletion of several records – in the “Records Deletion” window.

In the top menu, click the “Database” and then follow the steps: “Recognition Log” → “Records Deletion” (Figure 7.2.6.1).

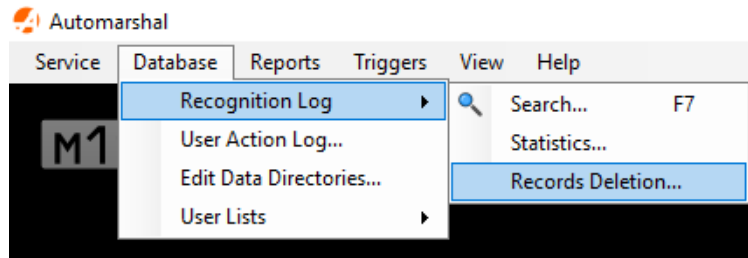


Figure 7.2.6.1

The opened window displays the log records divided into pages. Each page shows twenty records.

For each record, the Vehicle Plate, the record’s Creation Date, Video Channel and Server, from which the recognition has been made, are stated.

When switching between the records, the freeze-frame with the vehicle plate is displayed in the right part of the window. In this window, the records editing is disabled, you can only delete the records.

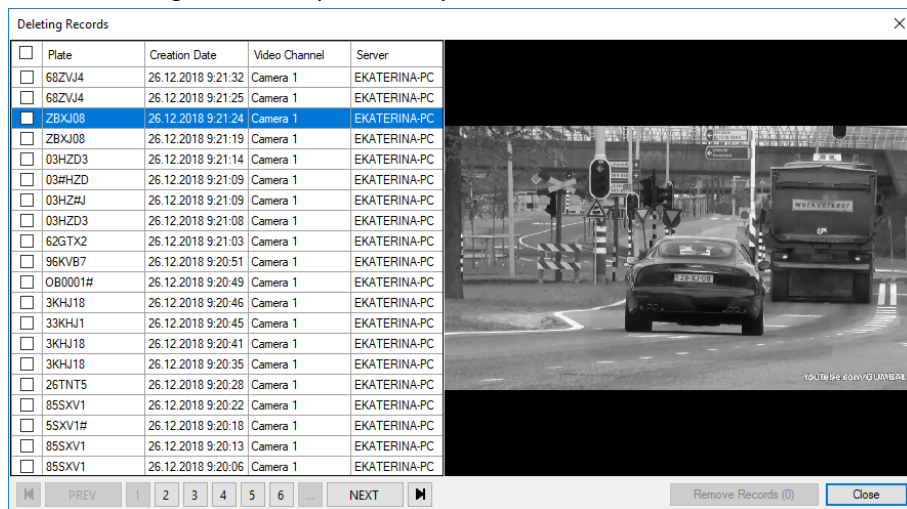


Figure 7.2.6.2

To delete a record, set a flag at the front of the line and click the “Remove Records” button (Figure 7.2.6.3), on which the number of selected records has to be stated.

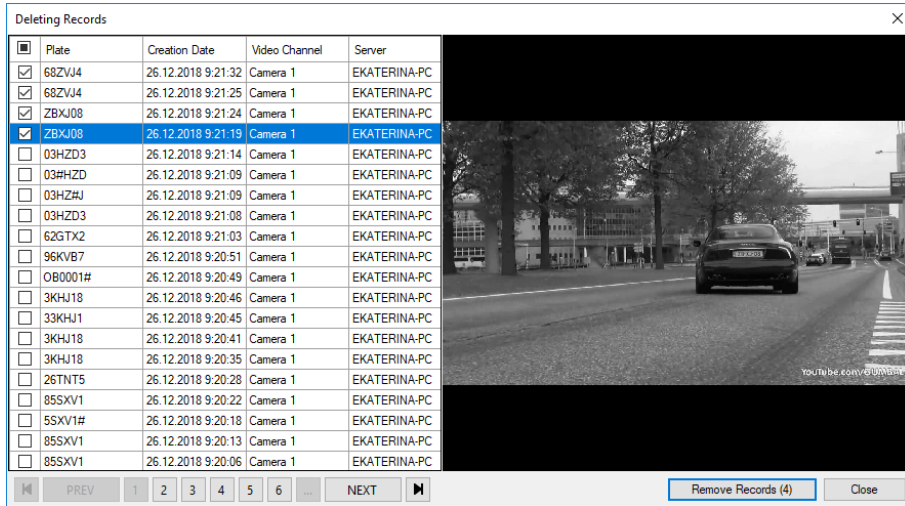


Figure 7.2.6.3

After the click, the window for confirmation of the action has to open (Figure 7.2.6.4).

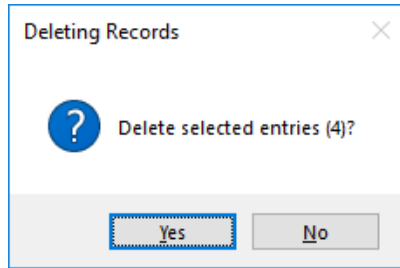


Figure 7.2.6.4

To delete all records on the page, set the flag in the table header (Figure 7.2.6.5) and click the “Remove Records” button.

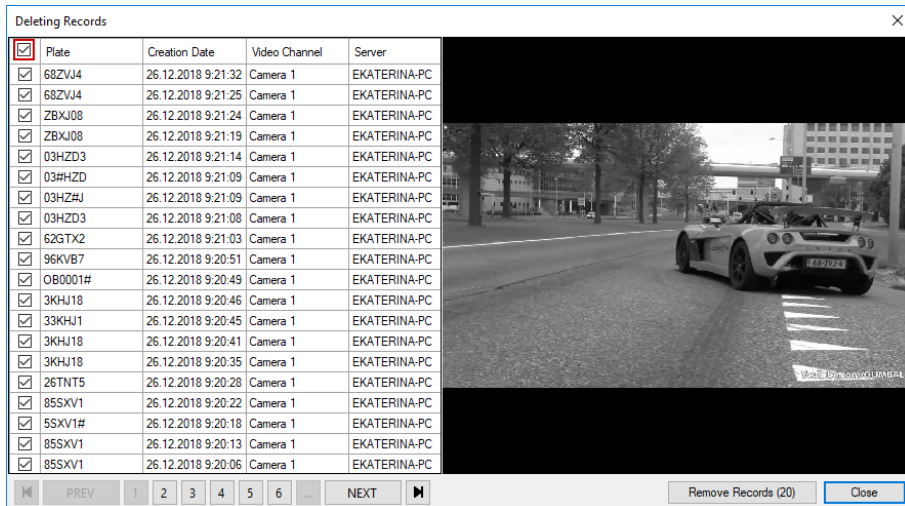


Figure 7.2.6.5

7.3. Statistics

«Statistics» Section is designed to monitor the efficiency of recognition and statistics display for the license plates.

To upload to statistics, select “Database” in the top tier of menu → Recognition Log → Statistics.

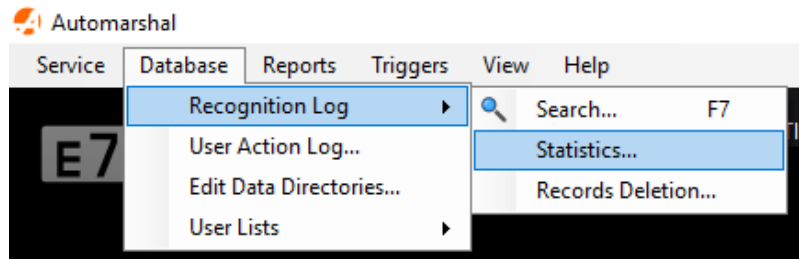


Figure 7.3.1

License Plates Statistics for a Period

It allows to monitor vehicle and recognition quantity over a certain period.

Install filter at the top of the window: select server, channel, beginning and end of the period, then click “Statistics for the period”.

Recognition statistics will be displayed in a chart (Figure 7.3.2).

Unique license plates — number of recognized vehicles per day.

Recognized license plates — number of all recognitions (vehicle passages) per day.

For instance, Figure 7.3.2 shows twenty-five unique license plates at date of 21.01.2019 – that is a number of vehicles, passed during the day, but the number of recognitions is forty – that means that recognized vehicles passed forty times.



Figure 7.3.2

License Plates Statistics for a Day

It allows to monitor vehicle entry and exit statistics.

Install filter at the top of the window: select server, channel, day and chart type, then click «Statistics for the day».

Type 1

Chart shows the time of vehicle entry and exit. When a tick is put in the field «Show plates», all vehicle license plates, recognized during that day, will be displayed in the chart.

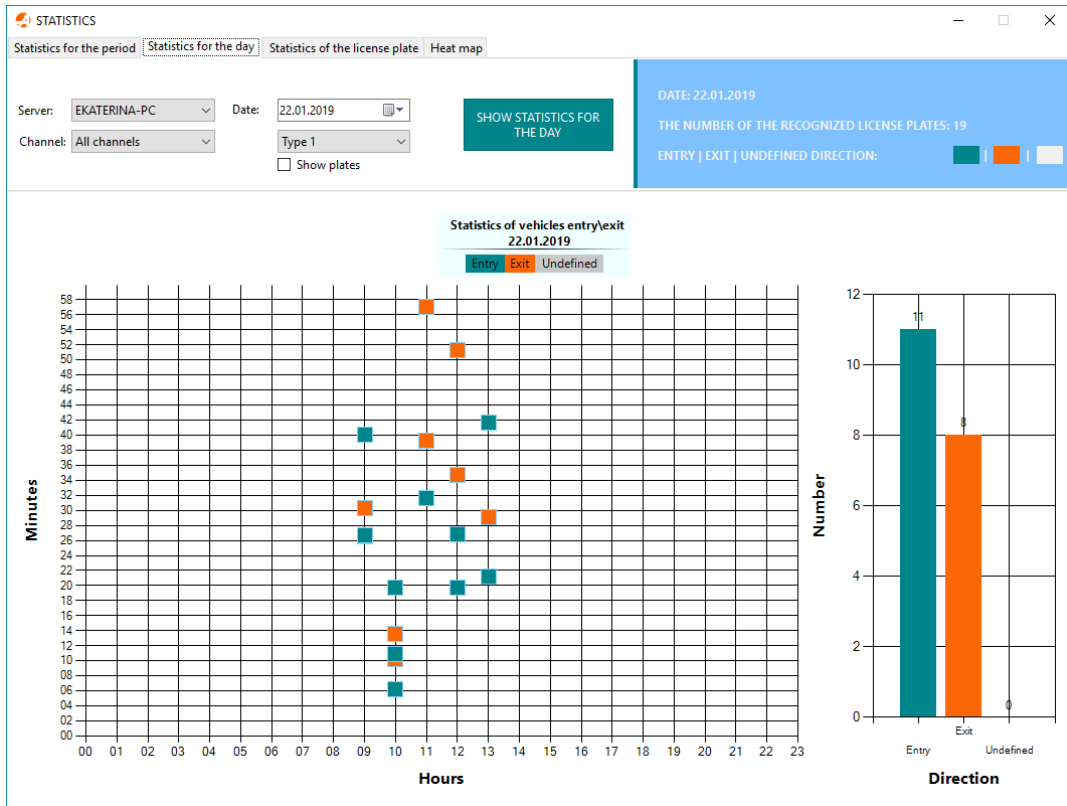


Figure 7.3.3

Type 2

Chart shows the quantity of license plates recognized per definite hour.



Figure 7.3.4

Statistics for a license plate

Chart shows entry and exit statistics for a vehicle with definite license plate over a certain/selected period.

Install filter at the top of the window: select server, channel, beginning and end of the period, enter the license plate in the field "License plate", then click «Show statistics of the license plate».

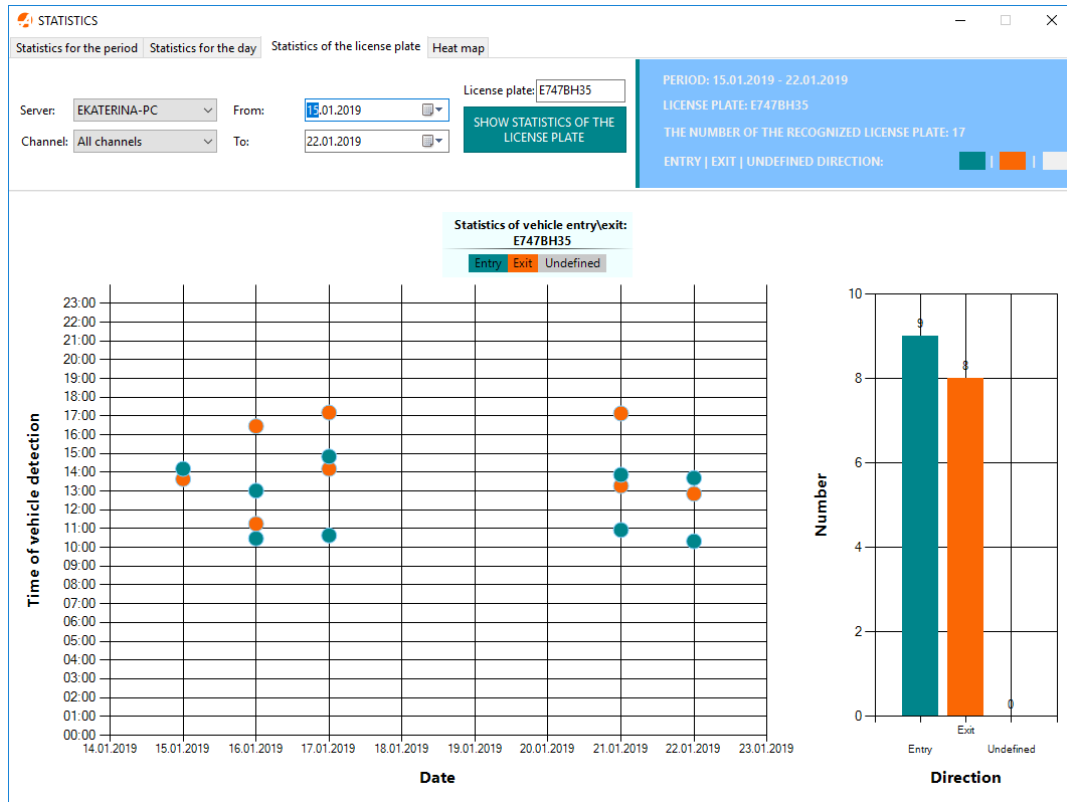


Figure 7.3.5

Heat Map

Chart shows value distribution characteristics by number plates and symbols.

The following chart types are available: heat map, width bar chart, height bar chart.

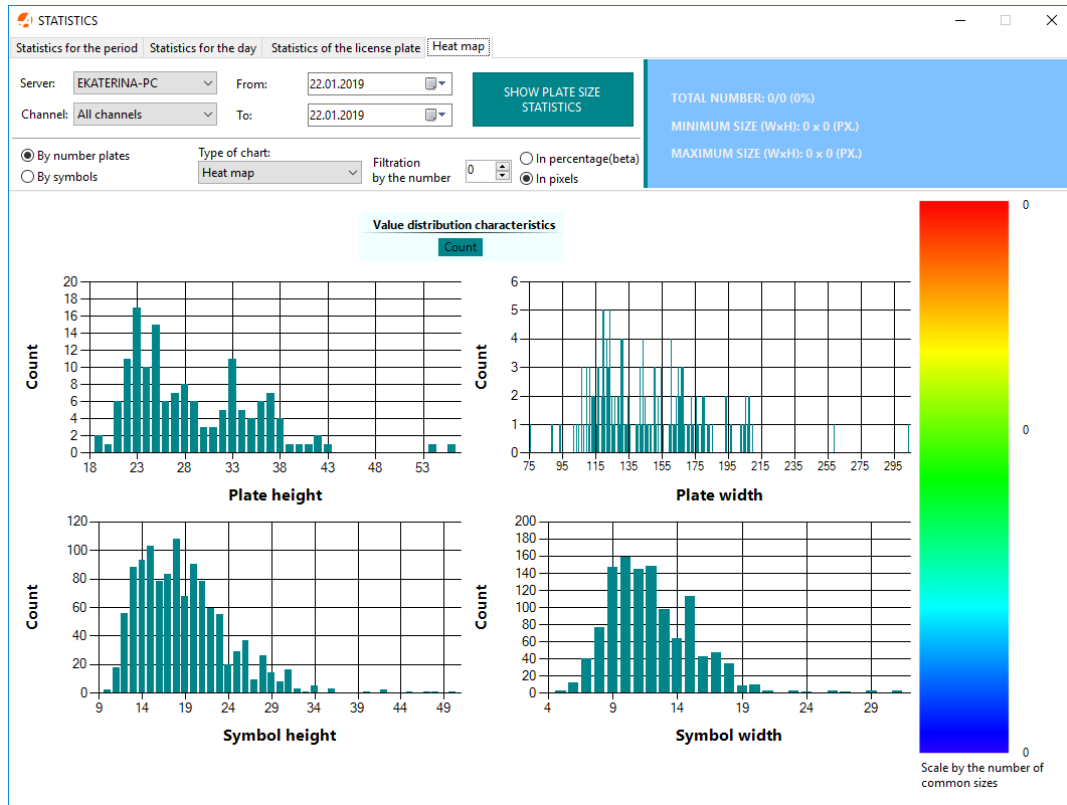


Figure 7.3.6

7.4. Manual Vehicle Registration and Manual Plate Recognition

7.4.1. Manual Vehicle Registration Condition Settings.

In order to verify and setup manual vehicle registration go to Settings menu; to do so use F8 hotkey to access menu, or go to Service → Settings in top navigation menu bar (figure 7.4.1.1).

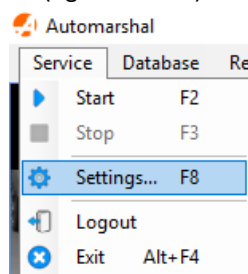


Figure 7.4.1.1

In the settings menu, go to Manual Vehicle Registration section (figure 7.4.1.2).

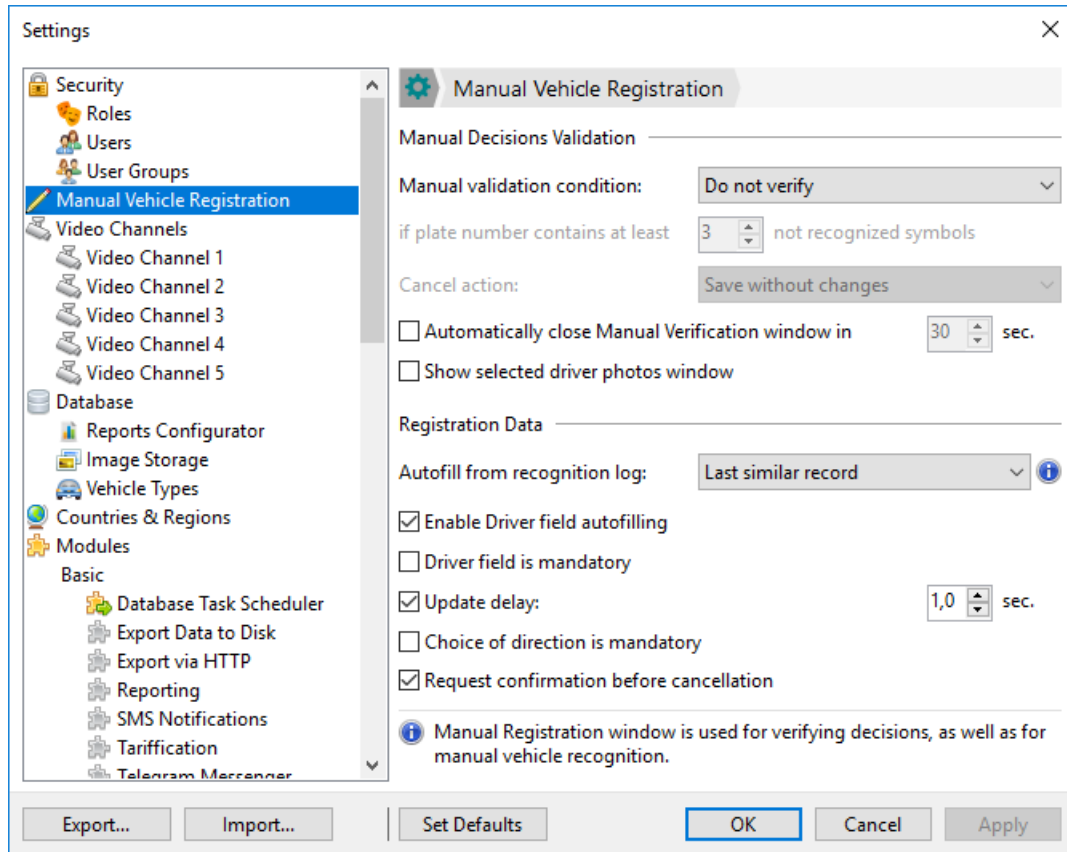


Figure 7.4.1.2

Manual Decisions Validation

Manual Validation Condition:

Do not verify — recognition will run automatically.

In this validation mode, the associated options are unavailable.

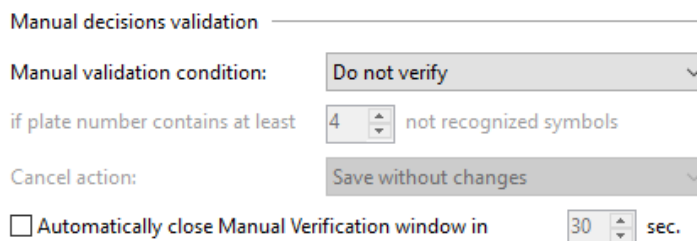


Figure 7.4.1.3

Always verify — for every recognition of every vehicle, a manual vehicle verification window will open.

In this validation mode, the Cancel Action option is available in manual validation window:

Save without changes — an entry will be made in the log containing only vehicle plate, movement direction, video channel and vehicle type. No additional field data will be saved.

Not save — no entry will be made in the log.

Manual decisions validation

Manual validation condition: Always verify

if plate number contains at least 4 not recognized symbols

Cancel action: Save without changes

Automatically close Manual Verification window in 30 sec.

Figure 7.4.1.4

Verify on condition — if n or more characters are not recognized on the vehicle plate. N is a number of characters; the system default value is four, it can be changed to a larger or smaller number.

Manual decisions validation

Manual validation condition: Verify on condition...

if plate number contains at least 4 not recognized symbols

Cancel action: Save without changes

Automatically close Manual Verification window in 30 sec.

Figure 7.4.1.5

Verify if not found in any list — the manual recognition window will open upon founding the vehicles which have not been entered in any list or which plates have been recognized incorrectly.

Registration data

Autofill from vehicle log: Disabled

Enable Driver field autofilling

Driver field is mandatory

Update delay: 1,0 sec.

Figure 7.4.1.6

Show selected driver photos window — the box with the selected driver photo will be displayed upon Manual Vehicle Registration and Manual Verification windows (Figure 7.4.1.7). Those photos are displayed, that were added to the driver lists.

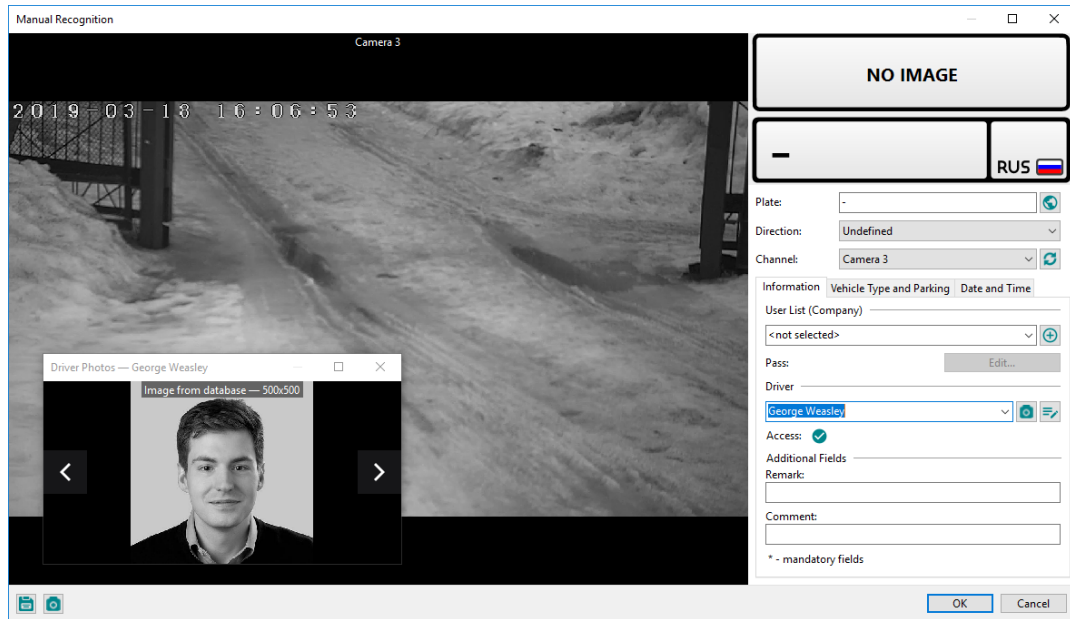


Figure 7.4.1.7

Registration data

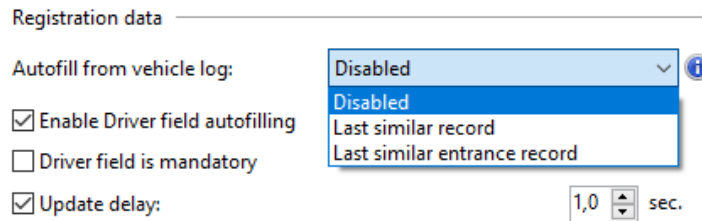


Figure 7.4.1.8

Vehicle log based data fields and drop-down lists autofill mode.

- Disabled — autofill is disabled;
- Last similar record — take values from last vehicle log record with same plate number;
- Last similar entrance record — take values from last vehicle log record with same plate number that has passage direction "entry" and has no related exit record.

Figure 7.4.1.9

Autofill mode: Disabled, Last similar record, Last similar entrance record.

Additional field and drop-down list autofill mode:

Disabled – Autofill disabled;

Last similar record – inserts the values from the last log entry with the same vehicle plate number. For example, the last vehicle record was made on the exit from the territory, therefore during the next entrance the fields for this vehicle will be filled based on the last entry, without reference to the movement direction.

Last similar entrance record – inserts the values from the last log entry with the same vehicle plate number, movement towards “entrance” direction and lack of exit record. For example, on the entry to the territory, fields were filled in the manual validation window for the vehicle, therefore on exit of such vehicle, the fields will be based on this entry. On the next entrance to the territory, the fields for this vehicle will need to be re-filled.

Enable Driver field autofilling - filled in accordance with the autofill mode set.

Driver Field is Mandatory - in the manual vehicle registration window, this field must be mandatorily, otherwise the system will not save the record.

Update delay - allows to specify the time until updating data in the manual vehicle recognition window. The default for this option is update every second.

This option will be useful:

- When the operator requires time to fill in the main and additional fields in the manual recognition window;
- When the PC does not meet the minimum technical specifications or the PC is heavily loaded.

Choice of direction is mandatory – Vehicle motion direction shall be mandatory selected in “Manual Vehicle Registration” window (Figure 7.4.1.9).

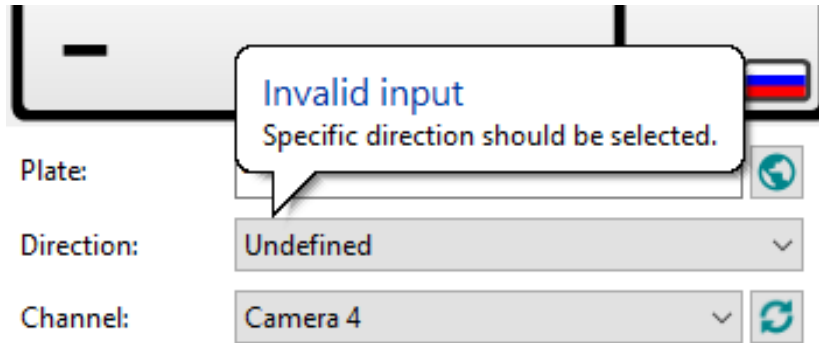


Figure 7.4.1.10

Vehicle motion direction (“vehicle direction” in the screenshot) may be modified for video channel. For instance, if “Entry” direction is specified instead of “Undefined” (Figure 7.4.1.10), this direction will be selected by default when recognizing.

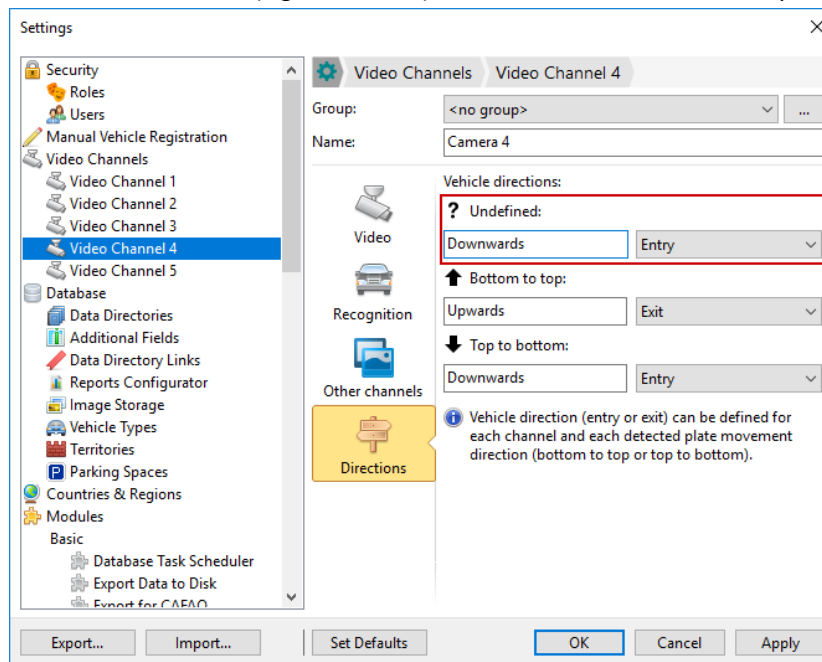


Figure 7.4.1.11

Request for confirmation before cancellation - if the check box is selected, the program will require the confirmation of action to close manual recognition window or manually verify decisions (Figure 7.4.1.12).

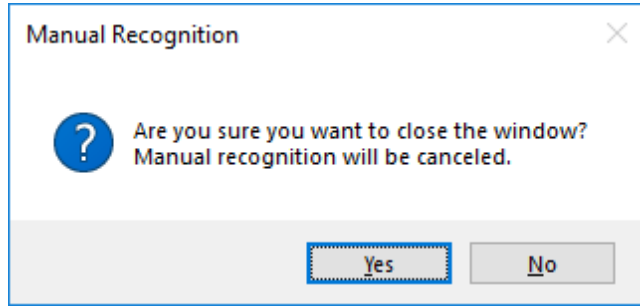


Figure 7.4.1.12

7.4.2. Manual plate recognition

Manual recognition is required when, for example, a plate was not recognized automatically or was recognized with an error.

To recognize the vehicle manually, follow these steps:

1. Right-click the video player and select Manual Recognition from the drop-down menu.

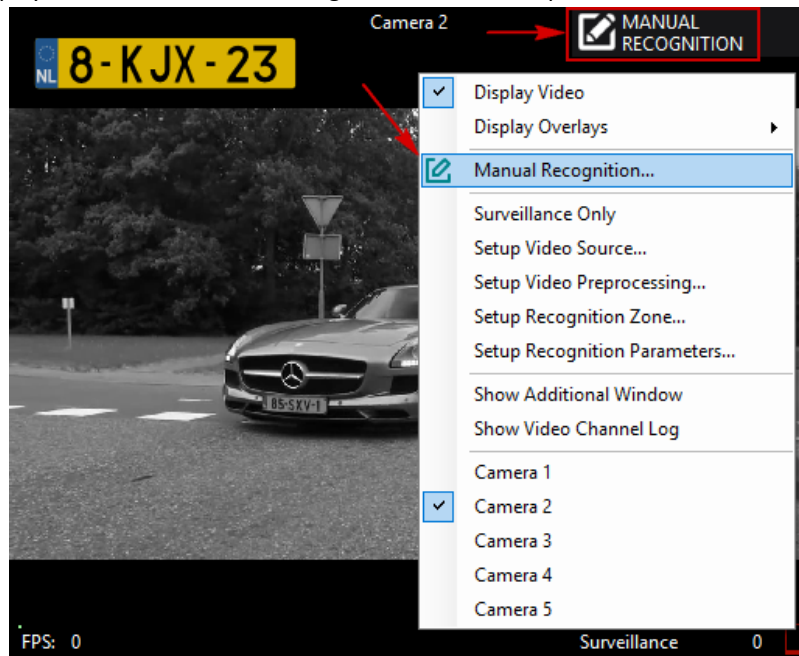



Figure 7.4.2.1



Context menu can be disabled, for details see clause 6.10 Miscellaneous.

2. In the next window:

- select the video channel from the drop-down list to which the number will be referred;
- click the Update Image from Selected Video Channel  – a snapshot from the selected camera will be displayed on the left.

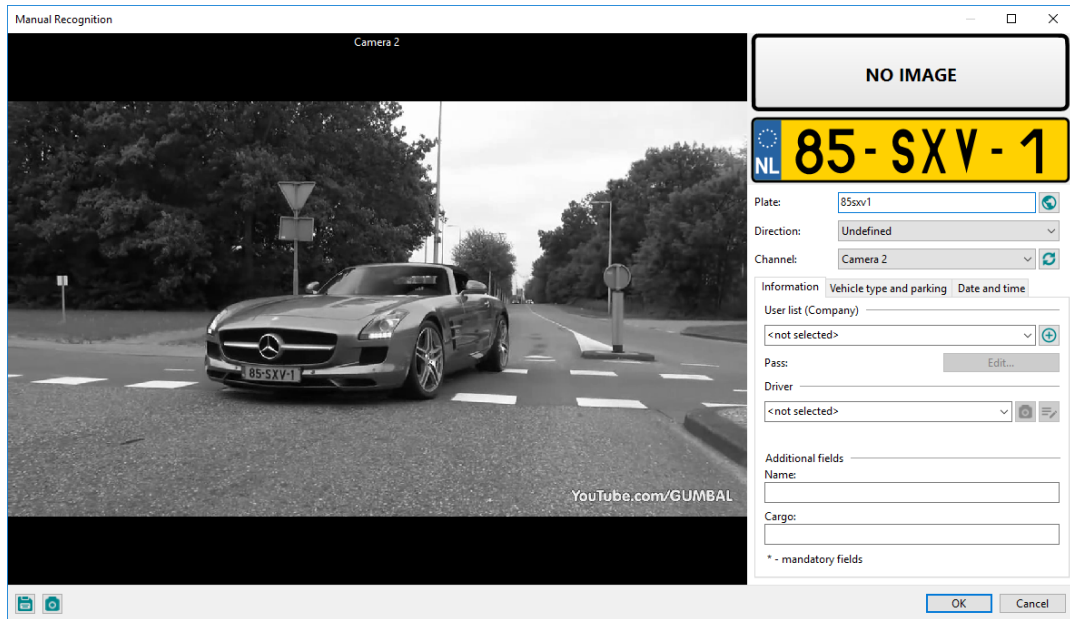






Figure 7.4.2.2

3. Enter vehicle plate number in Plate field.
4. To select a country and license plate template click the Configure Country and Plate Template . The template affects plate display.
5. You can enter the recognized plate in the user list. Select the required list from the List (Company) drop-down menu.
6. To create a new list, click Add New User List .
7. You can set a pass for the vehicle if it is added to an existing user list, otherwise the Skip: Edit button will be inactive.
8. You can specify the vehicle driver; to do so, select the driver from the Driver drop-down list. The drop-down list will display the driver's name and identification document number.

If the driver is not listed, they can be added to the required list or their entry can be edited in the manual recognition window. To add the driver to the list, click Add New Driver or Edit Selected .

You can add drivers photograph to the driver's entry in the manual recognition window. Click Add Driver Photo . It will open the Add Driver Photo window (figure 7.4.2.3), which allows you to capture an image from the picture from the surveillance camera. The captured image will be attached to the driver entry in the user list (for more details, see clause 6.3.1 User Lists of this user manual).

The availability and number of surveillance cameras is determined by the license.



Figure 7.4.2.3

These functions are unavailable for the license not including surveillance camera (figure 7.4.2.4).

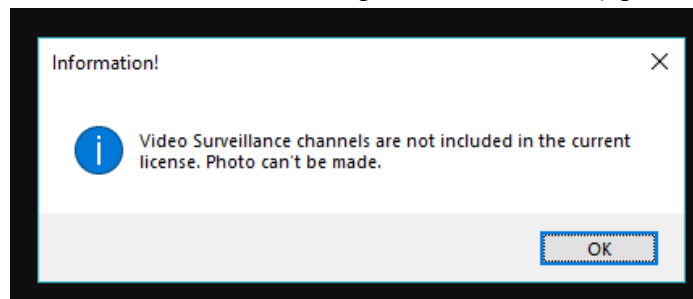




Figure 7.4.2.4

For each driver a mark regarding to the territory can be made and in the manual recognition window an entry “Access is Allowed” Access:  or “Access is Denied” Access:  will be displayed under the selected driver.

9. You can fill out additional fields. This window displays all additional fields, regardless of which fields refer to the selected list.

The data entered in the additional fields from the manual recognition window will be displayed in the log.

These data will not be added to the user lists.

If the user list contains additional fields and they are filled out, then in the manual recognition window these additional fields will be filled with data from the list, but their editing will not affect the list itself in any manner.

More detailed information about using additional fields and user lists can be found in sections 6.3.1 User Lists and 6.3.3 Additional Fields of this user manual.

10. You can select the vehicle type from the drop-down list in the Vehicle Type and Parking tab (figure 7.4.2.3).

Figure 7.4.2.5

If vehicle types were not preset, you can quickly add new type from the manual recognition window. To do so, click Add New Vehicle Type and complete the fields in the window opened (figure 7.4.2.5).

Figure 7.4.2.6

Vehicle type changes will also be displayed in the user list. For example, if the vehicle is listed in the “Passenger” vehicle type list, and the vehicle type has been changed to “Truck” in the manual recognition window, the type in the list the vehicle was in will also change to “Truck”. Information on vehicle types and configuration can be found in section 6.3.6 Vehicle Type of this user manual.

11. You can set the date and time of log entry in the manual recognition window. Only the past dates can be selected.


This option may be useful when you need to import the records, for example, from paper copy to the Automarshall log.

Figure 7.4.2.7

Functions of Date and Time tab are only available in Manual Recognition window accessible as shown in figure 7.4.2.1. In the Manual Validation window, Date and Time tab functions are unavailable (figure 7.4.2.6). Settings and conditions of Manual Validation window accessibility are described in section 7.4.1 Manual Decisions Validation.



Figure 7.4.2.8

12. You can save a camera snapshot as a separate file. To do so, click Save Image  in the lower left corner. Filename will include the name of the channel the image was saved from, country code and selected vehicle plate template (figure 7.4.2.4).

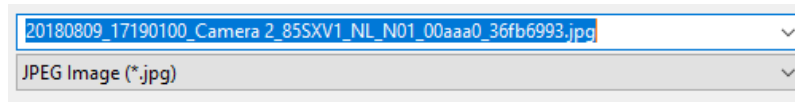



Figure 7.4.2.9

13. You can add an additional frame to the record when registering a vehicle. To do so, click Add Additional Image  in the lower right corner of the window. The window and the function of adding image a similar to the Add Driver Photo window (figure 7.4.2.3). This function is unavailable for the license not including surveillance camera.

14. To save the record click OK, or click Cancel to undo changes.

7.5. User Action Log

User action log displays data on the actions, performed by the user.

Figure 7.5.1 highlights the essential interface elements in “User Action Log” window:

The screenshot shows the 'User Action Log' window. At the top, there are filter controls: a 'DATE/TIME' section with 'Since' (28.02.2019 00:00) and 'Until' (08.03.2019 23:59) fields, a 'USER' dropdown menu showing a list of users (System, Guest, Administrator, User2, Operator Leon (Deleted)), and a 'SEARCH' field with a 'SEARCH' button and a '84 RECORDS' indicator. The main area is a table with columns for 'Date/Time', 'Message', 'User', and 'Details'. The table contains 16 rows of log entries. At the bottom, there is a status bar showing 'Results from 1 to 15 of 84, page 1 of 6, selected: 1', a 'Generate report' button, and a 'Close' button. Navigation buttons (PREV, 1-6, NEXT) are also present.

Date/Time	Message	User	Details
3/4/2019 1:48:05 PM	Name of user list 'Suppliers' has been	Administrator	
3/4/2019 1:47:37 PM	Driver 'George Weasley' has been transferred from list 'Suppliers' to list 'Black list'.	Operator Leon	
3/4/2019 1:47:28 PM	Drivers (count: 1) have been added into 'Suppliers' user list.	Administrator	
3/4/2019 1:47:28 PM	Driver 'George Weasley' has been added into 'Suppliers' user list.	Administrator	
3/4/2019 1:46:35 PM	License plate numbers (count: 1) have been added 'Suppliers' user list.	Administrator	Login: admin
3/4/2019 1:46:35 PM	License plate number 'K013AX35' has been added into 'Suppliers' user list.	Administrator	
3/4/2019 1:46:28 PM	Trigger: any event	Administrator	More...
3/4/2019 1:46:26 PM	Trigger: any event	Administrator	More...
3/4/2019 1:46:26 PM	Trigger: any event	Administrator	
3/4/2019 1:46:18 PM	Trigger: any event	Administrator	
3/4/2019 1:46:14 PM	User list 'Suppliers' has been added.	Administrator	
3/4/2019 1:45:23 PM	User list 'Black list' has been added.	Administrator	
3/4/2019 1:45:00 PM	Trigger Any event has been added by user.	Administrator	
3/4/2019 1:44:24 PM	Trigger Camera connection lost has been modified by user.	Administrator	
3/4/2019 1:40:47 PM	Trigger Camera connection lost has been modified by user.	Administrator	

Figure 7.5.1

1. User Action Log entries. One log page displays sixteen entries.
Each log entry is recorded in the following format: date/time, message, user, details.
2. For entries concerning vehicle recognition, the “More” button is provided in “Details” field. Clicking the “More” button, the “Edit Record” window appears from Recognition Log (See Section 7.2.3. Editing Plate in the Log).
3. User (Information): it opens a context menu indicating user login by user name rightclick.
4. **Filter.** Date and Time:
set a flag in «Date/Time» field and select time segment required.
5. **Filter.** User:
Select user from the drop-down list, the log will be automatically filtered. Set a tick in the “Exclude System” field to let user actions entries only to be left in the log. Information on users deleted is also available for viewing, such users are marked by “(Deleted)” note against their names.
6. **Filter.** Search:
enter the word or phrase either in part or in whole, and click “Search”.
7. **Filter.** Quantity of entries displayed after filter setting.
8. User Deleted – it is an icon, that is displayed near deleted user profile.
9. Navigation button for switching between log pages.
10. Information display on user action log records.
11. Prepare report. Entries of User action log can be uploaded and saved apart. To do this, click “Prepare report” at the bottom. Filter settings are applied to report as well. For instance, it is possible to prepare report for “System” user actions only (Figure 7.5.2).

No s/p	Message	User
1	er added: 'system'	
2	er added: 'guest'	
3	er added: 'admin'	
4	e user is logged in.	System
5	e user is logged off. Session: 00:00:00.0428828.	System
6	e user is logged in.	Administrator
7	p initialized	Administrator
8	p deinitialized	Administrator
9	e user is logged off. Session: 00:00:36.1608669.	Administrator
10	25.02.2019 17:26:11 The user is logged in.	System
11	25.02.2019 17:27:17 The user is logged in.	System
12	25.02.2019 17:27:17 The user is logged in.	Administrator
13	25.02.2019 17:27:17 The user is logged off. Session: 00:00:00.0408906.	System
14	25.02.2019 17:27:18 App initialized	Administrator
15	26.02.2019 09:47:47 App deinitialized	Administrator
16	26.02.2019 09:47:47 The user is logged off. Session: 16:20:29.9950604.	Administrator

Figure 7.5.2

Messages to Entries in User Action Log

System Messages:

- System login: User is logged in;
- Application startup: Application is launched;
- System logout: User is logged out. Session: 1.01:41:41.6498752;
- Program switch-off: Application is closed.

Actions with recognition log entries:

- Entry has been deleted: 16.10.2018 8:35:38, license plate number: 8KJX23;
- License plate number has been edited: 'E747BH35' => 'E747BH34'.
- Connection has been modified: '27.11.2018 13:28:23' => '26.11.2018 13:28:35'.
- 'Company name' field has been edited: '200' => 'Tsement LLC'.
- Driver has been modified: 'No drive' => 'Kiselev M. I.'.
- Vehicle type has been modified: 'Unknown vehicle' => 'Truck'.
- Direction has been modified 'Upwards' => 'Downwards'.
- Direction has been modified: 'Exit' => 'Entrance'.
- Direction towards screen has been modified: 'Upward' => 'Downwards'.
- Number plate template has been modified: 'RU_N02_a000aa100' => 'RU_N02_a000aa100'.

Manual generation of decision:

- Manual generation launch (manual recognition): Manual generation of decision is launched;

- Manual generation of decision: Manual generation of decision. Vehicle number plate: B466XC35, video channel: 2;
- Cancellation of manual validation (See Section **7.4.1 Manual Vehicle Registration Condition Settings**): Manual validation is cancelled.

Actions with users:

- Name change: «admin user is edited: full name: 'Administrator' => 'Admin'»;
- Password change: «Operator user is edited: password: new password»;
Password set for the user is not recorded in the user action log.
- New user adding: «user is added: 'Operator'».

Actions with user lists:

• **Actions with the list:**

- User list name 'Supplier' has been added.
- User list name 'Personnel1' has been changed for 'Personnel'.
- Additional field 'Comments' has been added to 'Personnel' user list.
- Additional field 'Comment' has been deleted from 'Personnel' user list.
- In the user list 'Supplier', the pass was changed at the registration number 'Y474BH197'.
- In the 'Supplier' user list, the passes for {N} registration numbers were edited.
- In the 'Supplier' user list was all passes edited.
- In the 'Supplier' user list was changed the pass template.

• **Actions with the list entries:**

- License plate number 'M158CE35' has been added to 'Personnel' user list.
- License plate number 'Y474BH35' has been modified in 'Personnel' user list. New value is '474BH197'.
- License plate numbers (count: 1) have been added to 'Personnel' user list.
- License plate number 'E429XT35' has been deleted from 'Personnel' user list.
- License plate numbers (count: 1) have been deleted from 'Personnel' user list..
- License plate number 'Y474BH197' has been transferred from 'Personnel' user list to 'Suppliers' user list.
- License plate number 'A261YM35' has been added to 'Suppliers' user list through quick adding window.
- License plate number 'A261YM35' has been deleted from 'Suppliers' user list through quick adding window.

• **Actions with the drivers list:**

- Driver 'Kiselev M.E.' has been added to 'Suppliers' user list.
- Drivers (count: 1) have been added to 'Suppliers' user list.
- Access of driver 'Kiselev M.K.' (document: '123/255') in 'Personnel' user list had the status: 'accept'. New value is 'reject'.
- Driver 'Kiselev M.E.' has been transferred form 'Suppliers' user list to 'Personnel' user list.

- Full name of driver 'Kiselev M.E.' (document: '123/255') has been modified in 'Suppliers' user list. New value is 'Kiselev M.K.'.
- Phone number '35-12-85' of driver 'Kiselev M.E.' has been modified in 'Suppliers' user list. New value is '35-12-86'.
- Document '123/254' of driver 'Kiselev M.E.' has been modified in 'Suppliers' user list. New value is "123/255".
- Driver 'Kiselev R.E.' has been deleted from 'Personnel' user list.
- Drivers (count: 1) have been deleted from 'Personnel' user list.

Trigger actions:

- Trigger execution: 'Access barrier' trigger is executed manually;
- Trigger adding: New trigger is added by the user;
- Trigger delete: New trigger is deleted by the user;
- Trigger change: Trigger has never been changed by the user;
- Trigger entry to user action log (See Section 6.7.2.3 Actions performed → 8. Record a User Action Log Entry): user message.

Miscellaneous:

- Generate parking receipt: «Parking receipt is generated. Vehicle number: T934CT197».

The vehicle of type 'car' passed to the territory 'office', which has no proper parking spaces. Parking spaces count: free -3, used 8, total 5, free for user list -3, used for user list 8, allocated for user list 5.

8. DB Managment

8.1. General Information

8.1.1. Full name, designation

Maintenance of Automarshal 2 DB, hereinafter referred to as the **Utility. Database**, further referred to as the **DB**.

8.1.2. Functions

The **Utility** is designated for:

- Creation, updating, and deletion of the database.
- Backing-up and restoration of the database.
- Migration of DB Fireberd to DB Microsoft SQL Server.

8.1.3. Hard Core of Technical Tools

1. Processor: Core i3 (Desktop 4th generation and up).
2. Operation Memory: 4 GB and up.
3. Operation System:
 - Microsoft Windows 7/8/10 (32-bit (x86) or 64-bit (x64);
 - Windows Server 2008, 2012.

4. Monitor resolution: 1280x720 or higher.

* Equipment may be replaced by equipment with similar or better properties.

8.1.4. Hard Core of Software Tools

- Microsoft .NET Framework 4.5 [<https://www.microsoft.com/ru-ru/download/details.aspx?id=30653>].
- DBMS to be used for SW Automarshal 2, for instance, **SQL Server Compact** [<https://www.microsoft.com/ru-ru/download/details.aspx?id=17876>].

Components may be downloaded for free from the official Microsoft **Microsoft** website.

8.2. Setup and Run of the Utility

Simultaneously with setup of **SW Automarshal 2**, **Database Management Utility** is setup.

To run the **Utility**, perform the following actions:



Before running the Utility, close all programs connected to the database. Otherwise, warning with recommended actions would be displayed on the screen.

1. Press Menu Start ↑↑ **All applications (all programs)**.

2. Find **Automarshal 2**.
3. Select **DB Management** option.

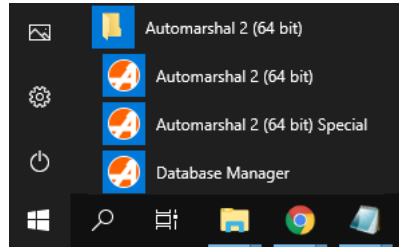


Figure 8.2.1

4. Main window of the utility is opened:

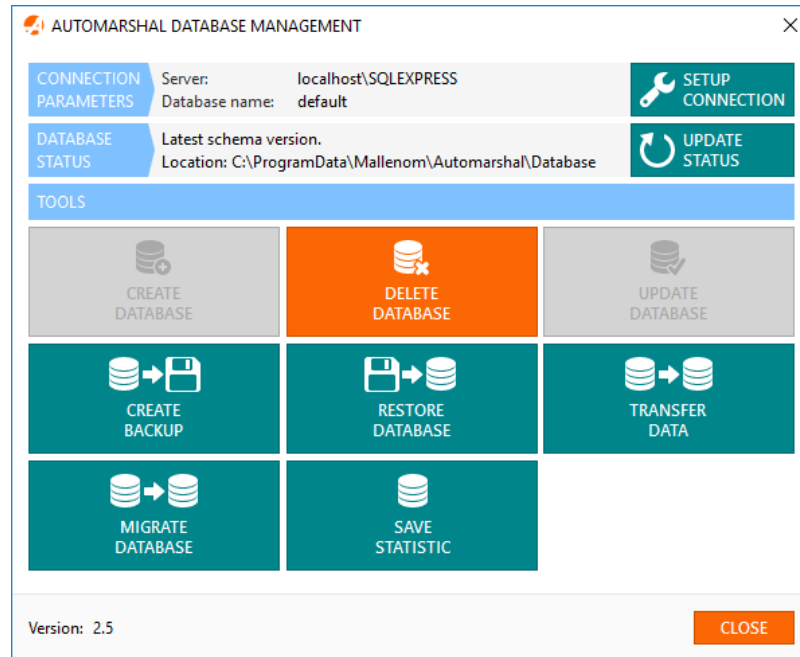


Figure 8.2.2

5. To close the **Utility**, press **Close** button.

8.3. Utility Operation

8.3.1. Server Connection



Prior to operation of the DB, it is recommended to close all applications using DB on all PCs.

In the upper part of the main window of **Utility** find **Connection Parameters** — path to server synchronized with the **DB** parameters.

To change setup parameters:

1. Press **Setup Connection** button;

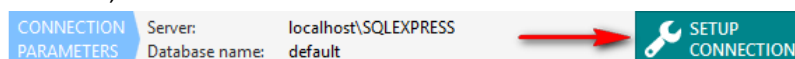


Figure 8.3.1.1

2. In the opened window indicate as follows:



By default, DBMS Microsoft SQL Server Compact is setup.

1. *Provider* — Microsoft SQL Server Compact.

- *Database* — select database manually by pressing ; or leave default database.

By default, database is located in folder: %ProgramData%\Mallenom\Automarshal\Database

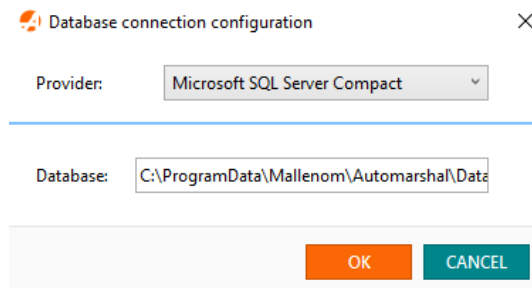


Figure 8.3.1.2

2. *Provider* — Microsoft SQL Server.

- *Server* — localhost\SQLEXPRESS.
- *Database* — enter manually or select from the drop-down list.

Default name of **BD** is: automarshal.

- *Authorization* — Windows.

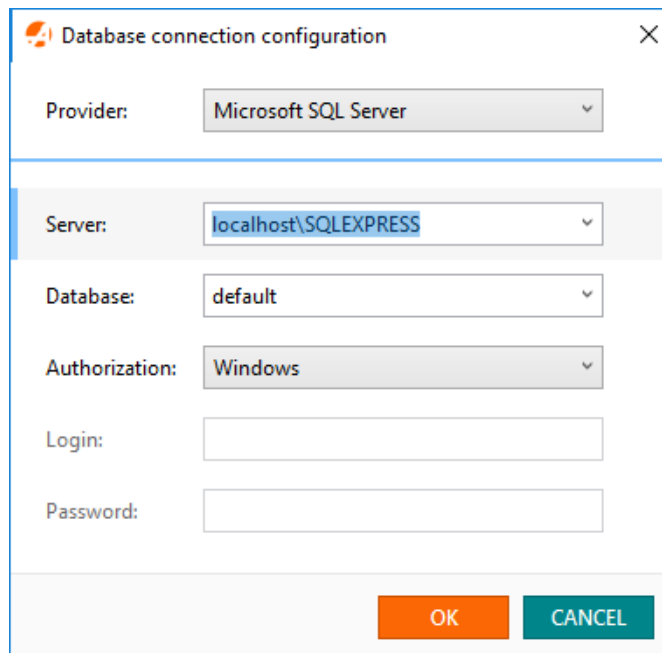


Figure 8.3.1.3

3. *Provider* — PostgreSQL.

- *Server* — 127.0.0.1 by default.
- *Port* — 5432 by default; changing is not recommended.
- *Database* — enter the name manually or select from the drop-down list.
- *Authorization* — PostgreSQL.

Login — “postgres” by default.

Password — “admin” by default.

Timeout — time to connect to the database.

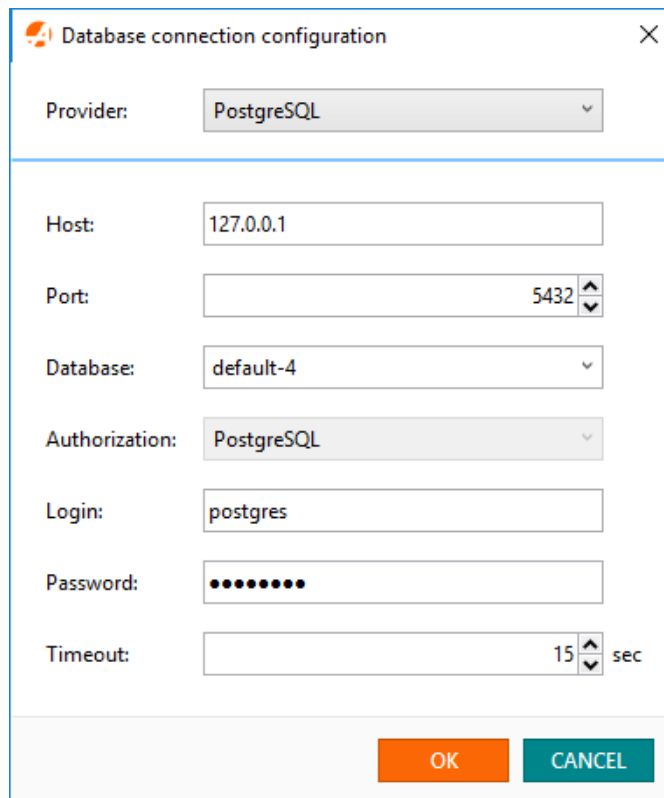


Figure 8.3.1.4

3. Check settings and, if required, change **DB** connection settings.
4. Selected parameters are displayed in the Status Bar in main menu of **Utility**.

Database status is displayed in the line below with recommendations for correction, if required.

8.3.2. Database Creation

To create new database, follow the steps below:

1. Press **Create view Database** button.
2. By pressing the **Browse** button, in the opened window select folder for storage of **DB** files.

Default path:

For Microsoft SQL Server - %ProgramData%\Mallenom\Automarshal\Database\default.sdf

For PostgreSQL – \Automarshal\Database\PG_version_BD. Database files are located in folders, which are named in accordance with the database identifier in the PostgreSQL system.

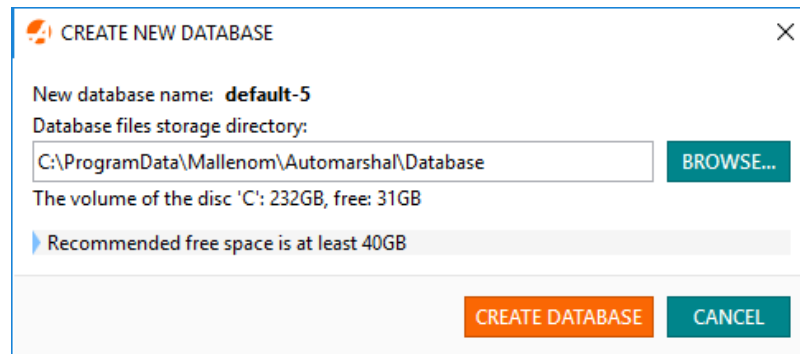


Figure 8.3.2.1

Recommended free space on a disk with database is at least 40 GB. Volume and free space of selected disk is displayed in the Status Bar.

3. Press **Create Database** button and database creation progress status would be displayed on the screen.
4. At the end of the process, window with process results would be displayed on the screen.

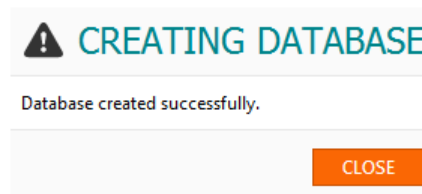


Figure 8.3.2.2

File **DB Automarshal 2** has resolution *.sdf.

To return to main window of **Utility**, press **Close** button.

Latest schema version and **DB** directory are displayed in the Status Bar.

In the main window of **Utility**, additional **DB** management tools are activated:

- *Delete database;;*
- *Create backup;;*
- *Restore database..*

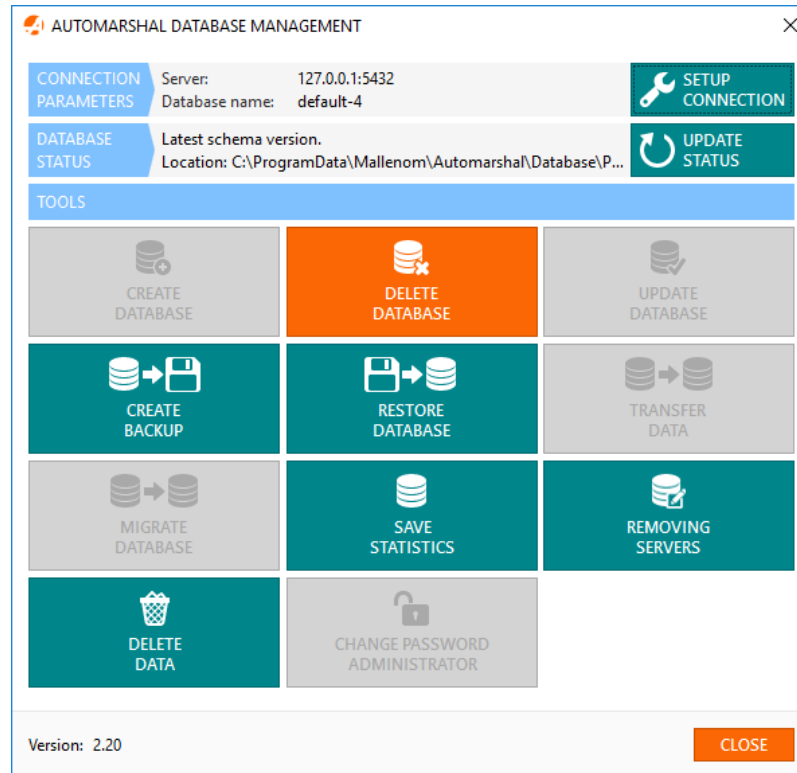


Figure 8.3.2.3

8.3.3. Backup Copy of Database

Creation of backup copy is reserve copying procedure with possibility for further restoration of the database. To create back-up copy of DB, follow the steps below:

1. Press **Create backup** in the main window of the Utility.
2. By pressing the **Browse** button, in the opened window select folder for storage of DB backup copy.

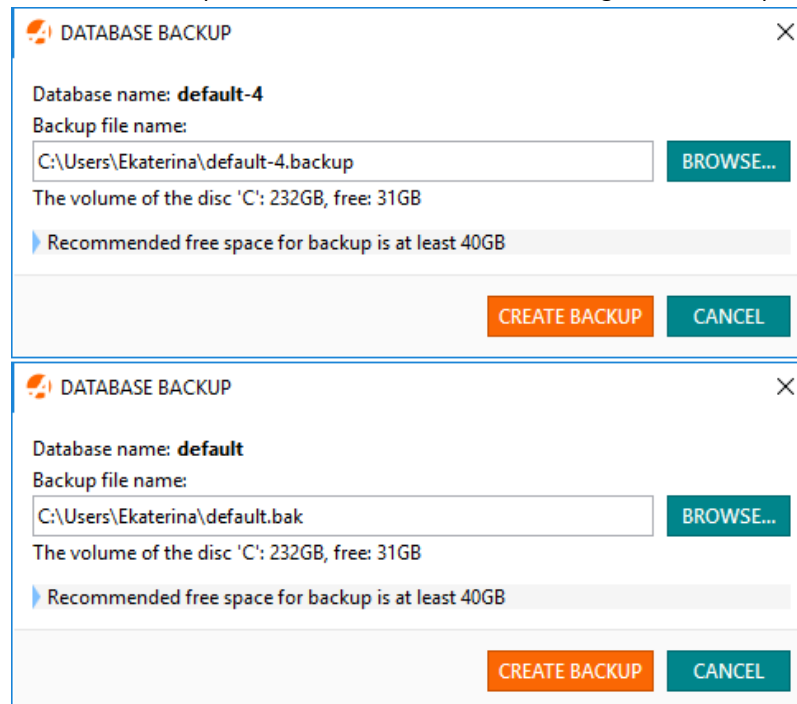


Figure 8.3.3.1

Recommended free space on a disk with database is at least 40 GB. Volume and free space of selected disk is displayed in the Status Bar.

3. Press **Create Backup**, and window with progress will be displayed on the screen.

Or press **Cancel** button to exit **DB** backup copy window.

At the end of the process, window with process results would be displayed on the screen.

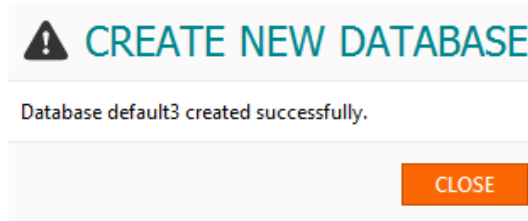


Figure 8.3.3.2

MicrosoftSQL database backup file has the extension *.bak.

PostgreSQL database backup file has the extension *.backup.

To return to main window of the **Utility**, press **Close** button.

8.3.4. Restoration of Database from the Backup Copy

To restore **DB** from the backup copy, perform the following actions:

1. Press **Restore Database** button.

2. Complete relevant fields:

- *Database backup file name* - specify the database backup file (for MicrosoftSQL file with * .bak extension, for PostgreSQL file with * .backup extension), the folder is selected using the Browse button.
- Folder for storage of files from the restored database: by pressing the Browse button, select folder in which the restored DB would be stored.

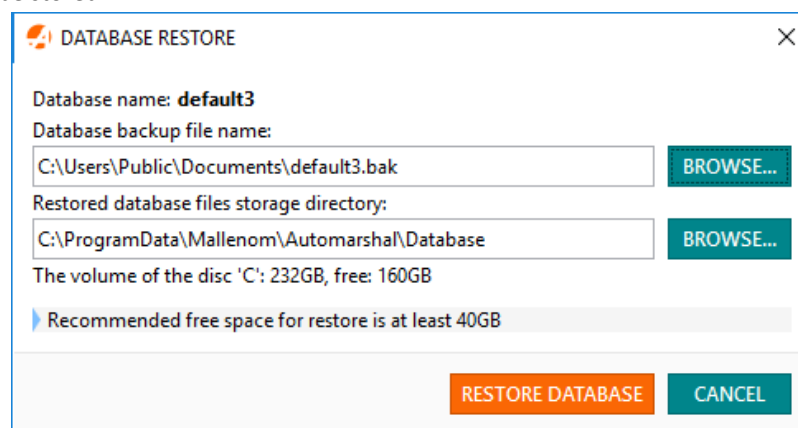


Figure 8.3.4.1

Press **Restore Database** and execution progress would be displayed in the appeared window. At the end of operation, window with process result would be displayed on the screen.

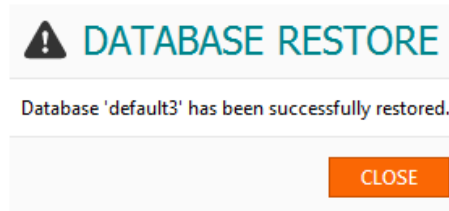


Figure 8.3.4.2

To return to main window of the **Utility**, press **Close** button. **DB** location would be renewed in the Status Bar.

8.3.5. Database Deletion

To delete the earlier created database, perform the following actions:

1. Press **Delete Database** button in the main window of the **Utility**.
2. In the opened window enter the following in the text box: delete database.
3. To confirm given operation, press the activated button **Delete Database**.



Given operation is irreversible without backup copy of the database!

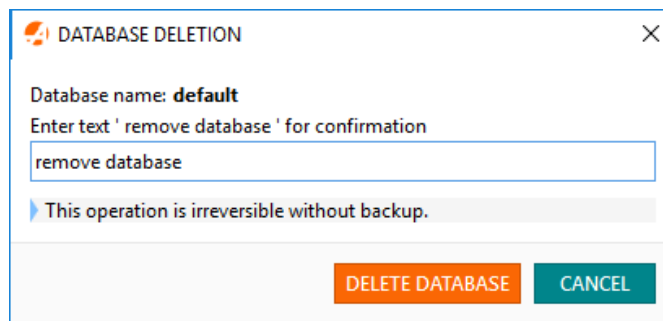


Figure 8.3.5.1

Afterwards, window displaying the execution progress would appear on the screen.

At the end of all operations, window with process results will appear on the screen.

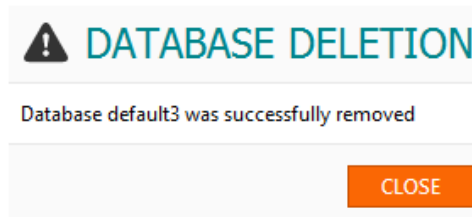


Figure 8.3.5.2

To return to main window of the **Utility**, press **Close** button.

8.3.6. Database Updating

Update Database button is designated to update **DB** scheme in **SW Automarshal 2**.

To update the database:

1. Press **Update Database** button.
2. In the opened window, introduce manually the following in the text box: *update database*.
3. To confirm operation, press the activated button **Update Database**.

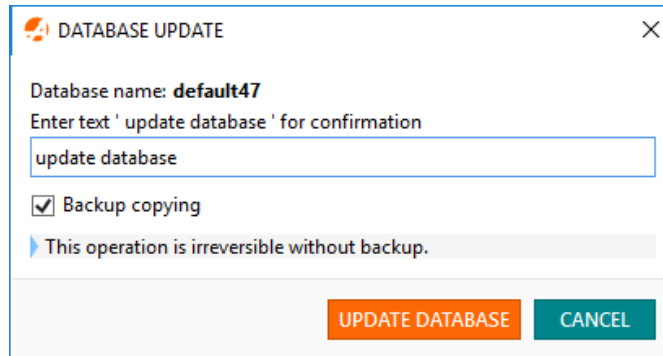


Figure 8.3.6.1

Afterwards, window displaying the execution progress would appear on the screen. At the end of all operations, window with process results will appear on the screen.

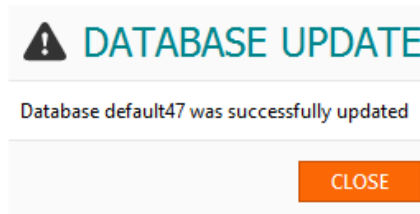


Figure 8.3.6.2

To return to main window of the **Utility**, press **Close** button.

8.3.7. Database Migration

To migrate information from the **DB Firebird** to **DB SQL Server Express**, perform the following actions:

DB may be migrated from the DB Firebird to DB SQL Server Express only. It is an irrevocable process.

1. In the opened window press **Migrate Database** button.

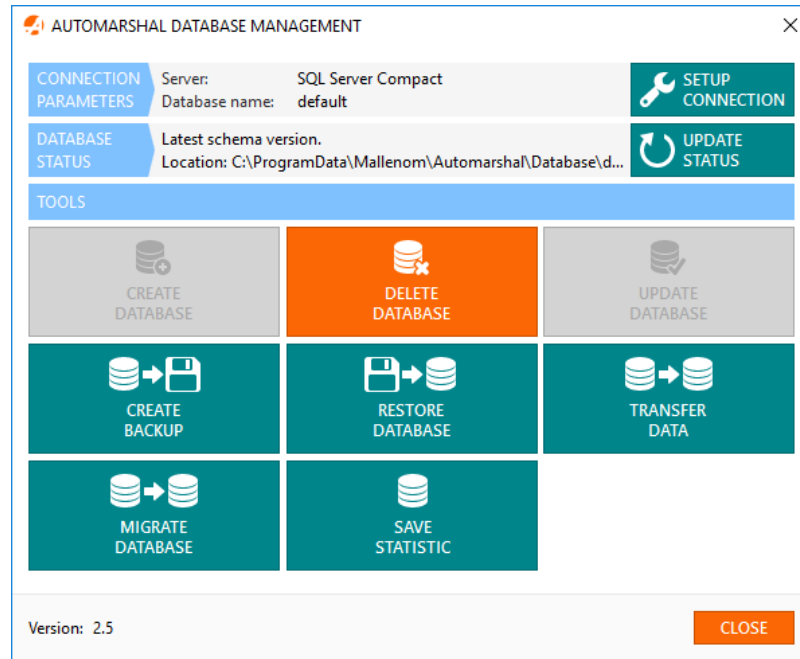


Figure 8.3.7.1

2. In the opened window of **DB Migration**, complete the following fields:

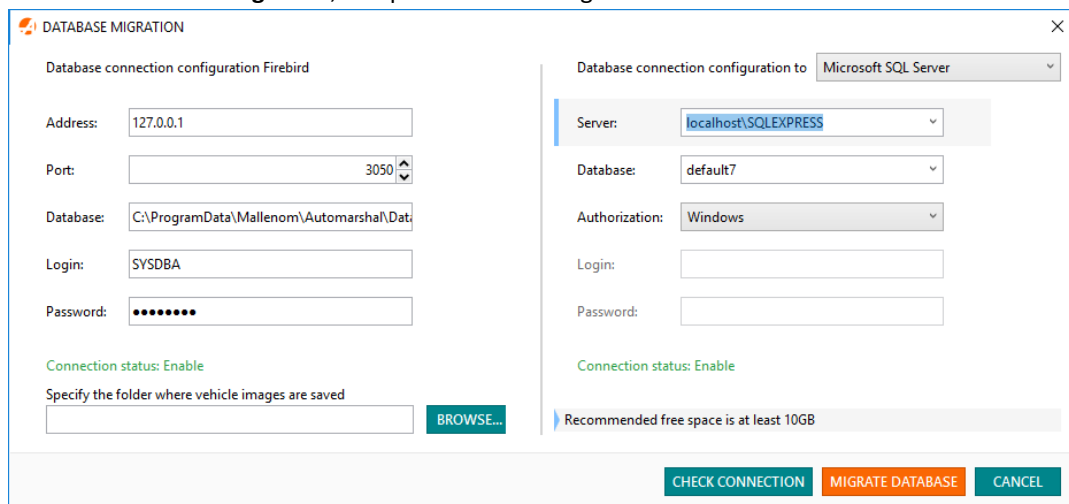


Figure 8.3.7.2

Connection settings for **DB Firebird (DB v1)**:

- *Address;*
- *Port;*
- *Database;*
- *Login;*
- *Password.*

Connection settings for **DB SQL Server Express (DB v2)**:

- *Server;*

- *Database;*
- *Authorization;*
- *Login;*
- *Password.*

Folder with images on disk

If option **Save images of detected MV to catalogue** is activated in Automarshal 2, version **1.x**, and you would like to save such images also in Automarshal 2, v. **2.0** as well, press **Review** button and select folder with saved images.

To check connection to databases, press **Check Connection** button.

If message *Connection Status: Disable* appears, check connection and if required change DB connection settings.

3. Press **Migrate Database** button.

DB Migration process may take significant time, if database volume exceeds 50000 entries.

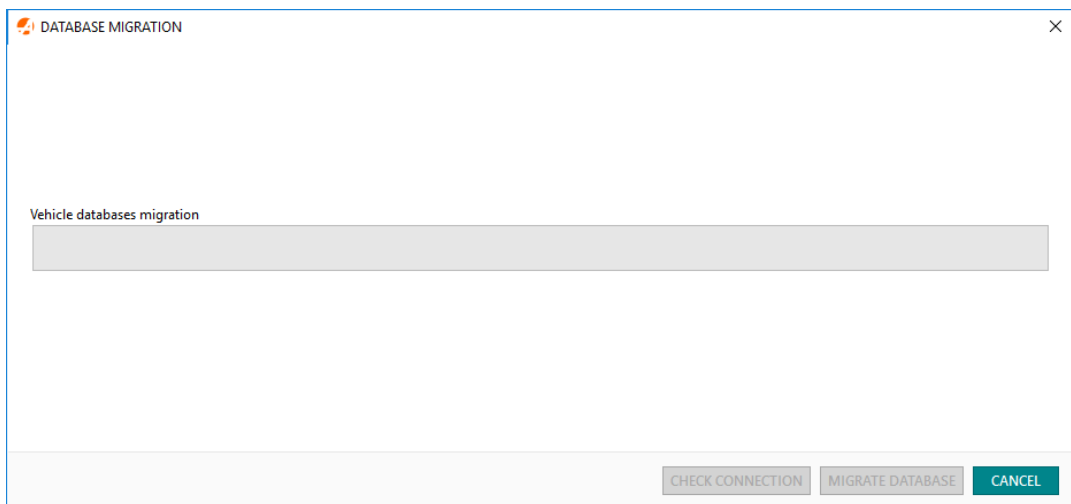


Figure 8.3.7.3

At the end of all operations, window with the process results will appear on the screen.

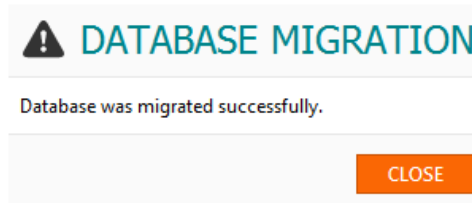


Figure 8.3.7.4

8.4. Possible Errors in the Utility

- **Connection not configured**

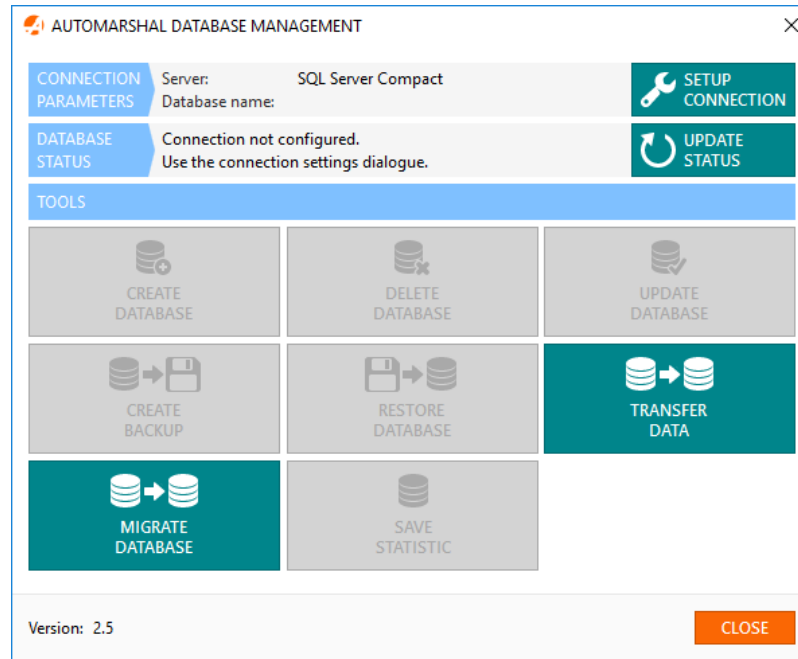


Figure 8.4.1

Reason: Server connection error has occurred. Herewith, all DB management tools are not active.

Solution: Check and if required change server connection settings.

- **Unable to connect**

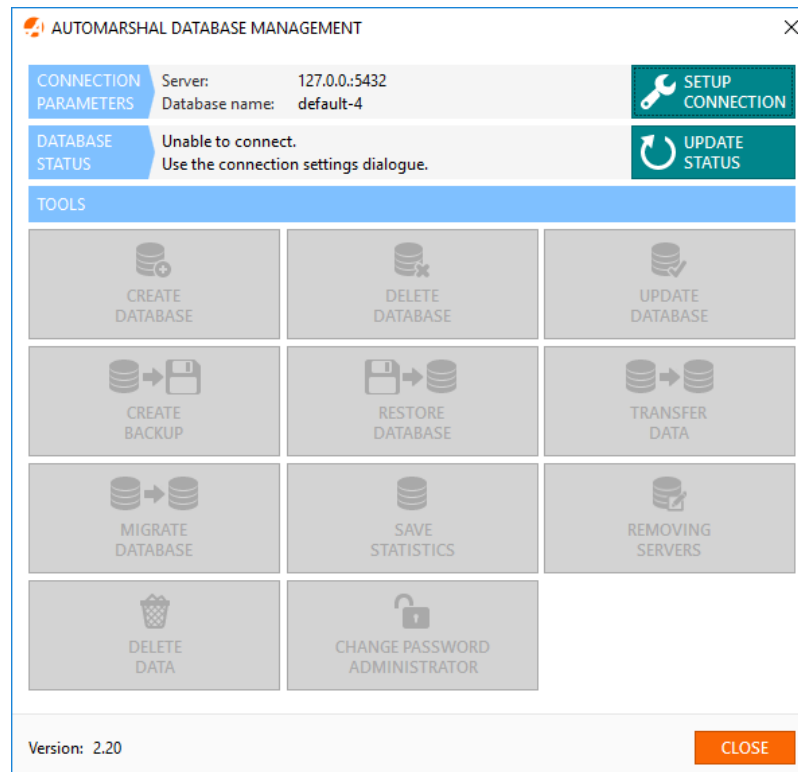


Figure 8.4.2

Reason: Server connection settings error. Herewith, all DB management tools are inactive.

Solution: Check and if required change server connection settings.

- **Database does not exist**

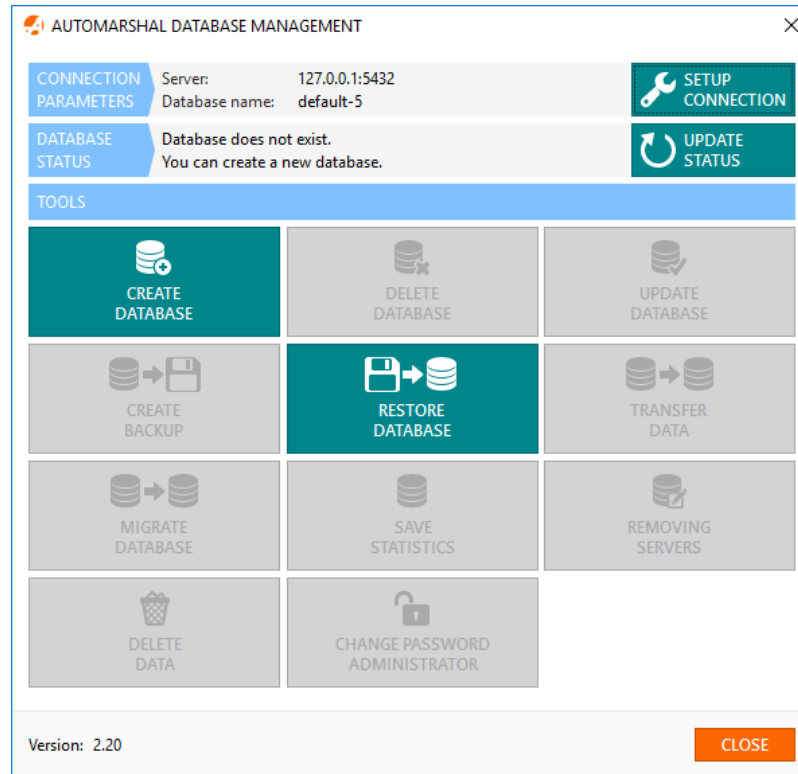


Figure 8.4.3

Reason_1: DB does not exist.

Solution_1: In such a case, DB management tools become active: **Create database, Restore database and Migrate database** (for details see Clauses 3.2. and 3.5).

Reason_2: DB name error.

Solution_2: Check and if required change server connection settings.

- **DB migration error**

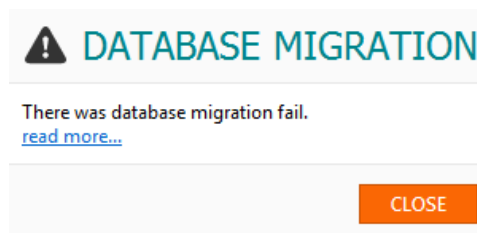


Figure 8.4.4

Press **Read more...** button.

1. **Connection to one of DB has failed**

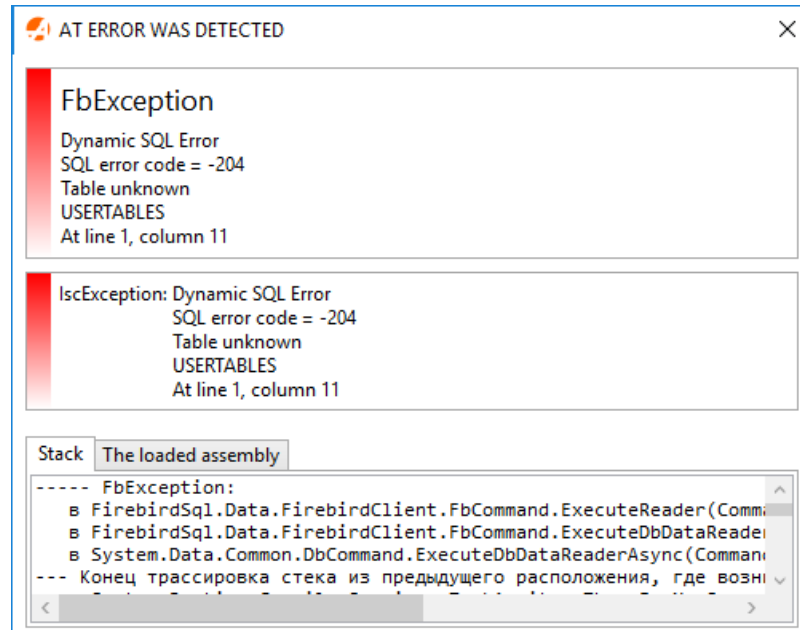


Figure 8.4.5

Reason: DB connection error.

Solution: Check and if required change server connection settings.

9. Technical Support

Automarshal performs technical support of Mallenom Systems LLC:

Specialists of the Technical Support Service (consultants, technical experts) are ready to answer your questions.

For faster settlement of any issue, describe the problem in short, but as completely as possible, and in a short time you will receive the exhausting answer avoiding the excessive loss of time by answering any additional questions.

Do not double question if you have not yet received the answer on the last one. All messages are processed by way of priority. Possibly, it takes some time before you receive answer on your question.

Question requiring explanation shall be accurate and complete with description of the problems to be settled. For more efficient settlement of questions, it is recommended to include the following information as full as possible:

- Message theme (shall reflect the nature of question);
- Question (it is recommended to pose question by using terms used in the program);
- In case of any error in the program, attach the error text or screenshot, log files and configurations to the message;
- In case of any problems with MVP recognition, attach to your message the following:
 - Videofile or photo of motor vehicle with unrecognized plate number;
 - Log and configs files;
 - Camera settings screenshot.

Required information may be filled in the check list (see below) and attached to your message.

Full name of the company	
Contact details (full name of the officer, phone number with city code, e-mail)	
Software version, module name (if any)	
Code of e-key Guardant	
Description of problem (time, ddate and frequency of occurrence, consequenc of actions preceding the problem)	
Parameters (model, location, etc.) of cameras	
Parameters of peripheral equipment: cameras, controllers, sensors, etc (if any)	
Vesrion and capacity of operation system Windows	
Processor, RAM	
Type of Internet access (modem, dedicated line, local network); availability of proxy server or use of third party VPN	
Details for connection to TeamViewer, Ammy Admin or through remote assistant Windows (provided execution of the service contract for given service)	

Contact details:

- E-mail: <support@mallenom.ru>.
- Phone number: 8-800-700-35-17 code. 4

10. Recommendations for selection of peripheral equipment

Given modules may be purchased both from the official dealers of this equipment and from Mallenom Systems.

10.1. Recommended models of hardware modules for interoperation with external devices

Millenom Systems, the developer of SW Automarshal 2, recommends you the following types of input/output discrete modules for joint use with recognition system of SW Automarshal 2:

- **ICP DAS USB-2060**

Input-output module, 6 channels of discrete input, 6 channels of discrete output, and USB Interface. Recommended distance between the module and computer is no more than 3 meters, distance between the module and the device (gate, etc.) is no more than 100 meters. Output – electromechanical relay with normally opened contacts, commutation current 5A at AC 250 V, and 5A at DC 30 V.

- **ICP DAS ET-7060**

Input-output module, 6 channels of discrete input, 6 channels of discrete output, Ethernet interface. Recommended distance between the module and computer is no more than 100 meters, distance between the module and the device (gate, etc.) is no more than 100 meters. Output – electromechanical relay with normally opened contacts, commutation current 5A at AC 250 V, and 5A at DC 30 V.

10.2. List of Alternative Supportable Input-Output Modules

- **Advantech USB-4750-AE**

Input-output module, 16 channels of discrete input, 16 channels of discrete output, and USB Interface. Recommended distance between the module and computer is no more than 5 meters, distance between the module and the device (gate, etc.) is no more than 100 meters. Output – opened collector.

- **Advantech USB-4761**

Input-output module, 8 channels of discrete input, 8 channels of discrete output, and USB Interface. Recommended distance between the module and computer is no more than 5 meters, distance between the module and the device (gate, etc.) is no more than 100 meters. Output – dry contact, commutation current is maximum 0.2A at voltage of 220 V for AC and 2A for 30V of DC.

- **ICP DAS USB-2055**

Input-output module, 8 channels of discrete input, 8 channels of discrete output, and USB Interface. Recommended distance between the module and computer is no more than 5 meters, distance between the module and the device (gate, etc.) is no more than 100 meters. Output – opened collector.

- **ICP DAS ET-7044**

Input-output module, 8 channels of discrete input, 8 channels of discrete output, and Ethernet Interface. Recommended distance between the module and computer is no more than 100 meters, distance between the module and the device (gate, etc.) is no more than 100 meters. Output – opened collector.

- Moxa ioLogik E2212

Input-output module, 8 channels of discrete input, 8 channels of discrete output, 4 adjusted inputs/outputs, Ethernet Interface. Recommended distance between the module and computer is no more than 100 meters, distance between the module and the device (gate, etc.) is no more than 100 meters. Output – opened collector. Operating temperature range is -40..+70 Celsius degrees.

- Schneider Electric ZelioLogic

ZelioLogic type line with Ethernet-module of commutation SR3NET01BD. It requires customized programming.

10.3. Gate and Traffic Light Connection Layout to ET-7060 Input-Output Module, with the option of manual control of the entrance gate

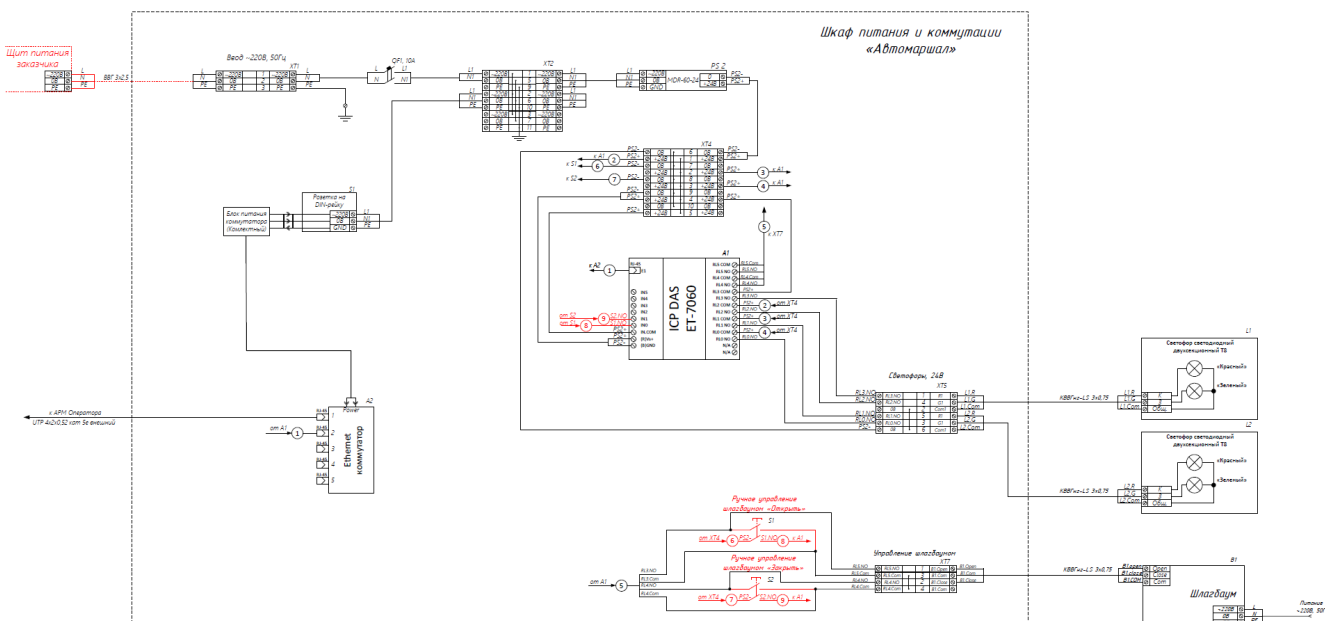


Figure 10.3.1

Optional layout for activation of entrance access gate manual control buttons with possibility for recording of the manual opening/closing of the gate in SW Automarshal 2 is highlighted in red. It is due to use of buttons with two groups of normally opened contacts. One of such groups is used for management of the gate; the second one is connected to the discrete inlets of input-output module, thus allowing SW Automarshal 2 to record all button pressing. Manual control of the entrance gate is possible even when SW Automarshal 2 is turned off and the computer is turned off. Herewith, pressing of buttons would not be recorded in SW Automarshal 2.

11. Automarshal Web Client



Automarshal Web-Client is available starting from Automarshal Software version 2.5.5.

Web Client features:

- Remote surveillance.
- Real-time remote recognition log view.
- Recognition log search.
- Remote management of user lists.
- Remote management of guest lists.

11.1. Web Client installation

11.1.1. Web Client installation requirements



- Prior to installing software it is recommended to close all active application; it will allow installation without restarting computer.
 - Install all available Windows OS updates. If any updates requiring Windows restart are found on the OS, it is recommended to restart OS before installing Web Client.
 - You will require Administrator permissions to install and use software on MS Windows 7 SP1.
-

In order to install Web Client you will need:

1. **Automarshal.Http.exe** installation file
2. **USB-key** signed as Guardant Code.
3. (Optional) **license file** with **.lic** extension.

11.1.2. Installation



You shall install to the PC already containing Automarshal software.

To install software:

1. Run the executable installation file **Automarshal.Http.exe**.
2. It will open Web Client Setup Wizard window (figure 11.1.2.1).

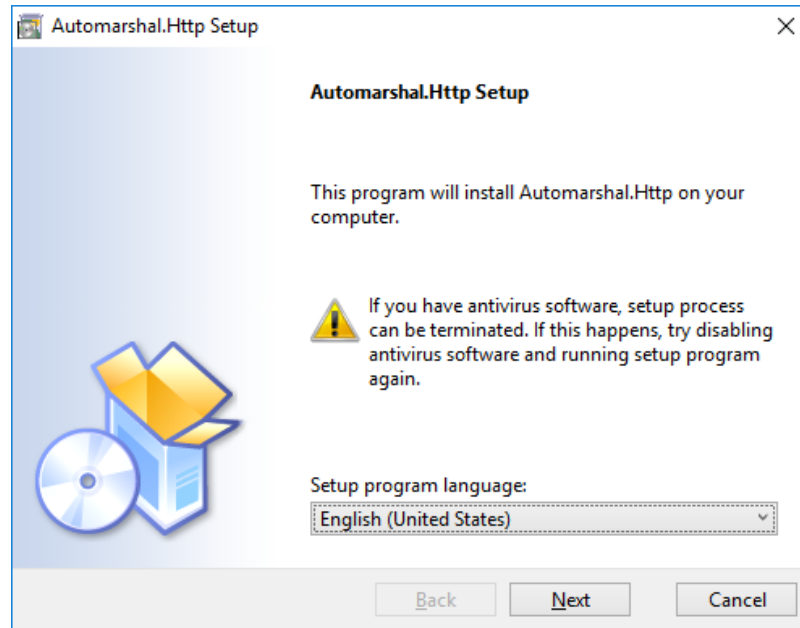


Figure 11.1.2.1

Select the preferred setup language and click **Next**.

3. In the next window, the setup wizard will prompt to select one of the following license file actions (figure 11.1.2.2).

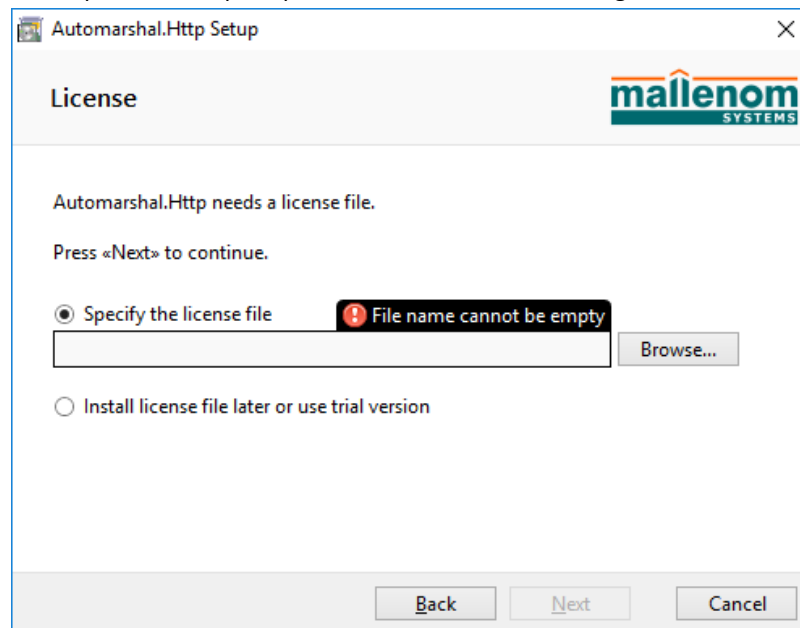


Figure 11.1.2.2

Specify the license file: click Browse and specify the path to license file. License file for box version of Automarshal software is available on the USB drive along with distribution package. For Automarshal software version with security dongle the license is sent by electronic mail.

Install license file later or use trial version: license file can be later manually copied to Automarshal software folder; without license file, Automarshal software will only run as trial version.

4. In the next window you will be prompted to configure database connection.

In the Server field, specify the IP address of computer containing SQL EXPRESS database.



SQL Compact databases are not supported by the setup wizard.



If the database is installed on the same PC, you can enter localhost\SQLEXPRESS in the field. Information about the database Automarshal uses can be viewed in Database Manager utility.

In the **Database** field, select the database that the Automarshal software uses.

In the **Authorization field**, specify the authorization method for your database.



If the database is installed on your current PC, you may specify the Authorization method as Windows. Authorization method may be changes in MS SQL Management Studio.

In the **Login** field, specify the database login.

In the **Password** field, provide your database password.

Login and Password fields will be inactive if Windows authorization method is selected. If SQL Server authorization is selected, you will need to enter login and password of the user having permissions to access database.

Web Client Setup Wizard will automatically verify the settings. If they are correct, you will see **“Connected”** message in the lower right corner, and **Next** button will become active.

The screenshot shows a dialog box titled "Automarshal.Http Setup" with a close button (X) in the top right corner. The main title is "Data base connection configuration" and the Mallenom Systems logo is in the top right. The configuration fields are:

- Server: localhost\SQLEXPRESS (dropdown menu)
- Database: default (dropdown menu)
- Authorization: Windows (dropdown menu)
- Login: (empty text field)
- Password: (empty text field)

At the bottom right, the word "Connected" is displayed. At the bottom, there are three buttons: "Back", "Next", and "Cancel".

Figure 11.1.2.3

5. In the next window you will be prompted to select the installation folder.

Clicking Browse button will open a dialog that will help you select the installation folder.

Then click **Next**

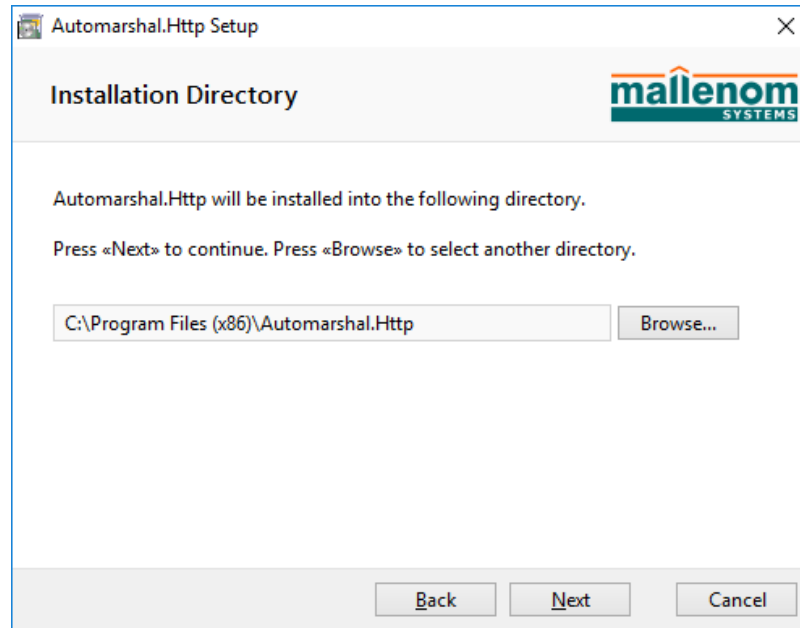


Figure 11.1.2.4

6. You will now see the message that Web Client is ready.

Click **Start**.

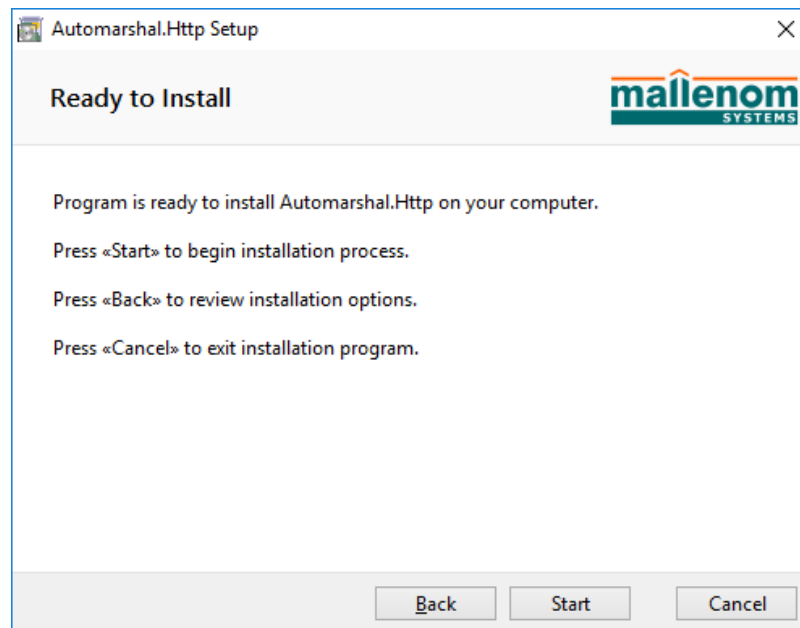


Figure 11.1.2.5

7. It will run the installation process.

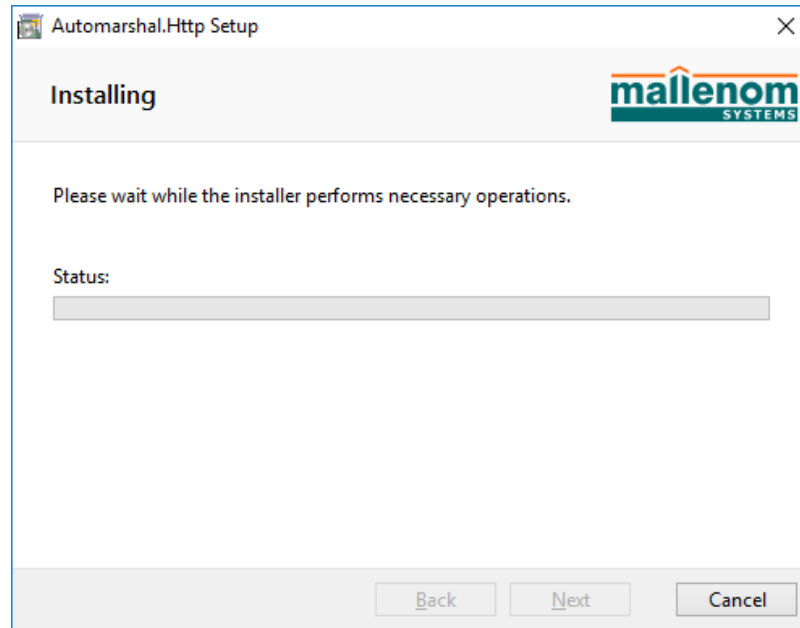


Figure 11.1.2.6

8. Once the installation is complete, you will see the following window.

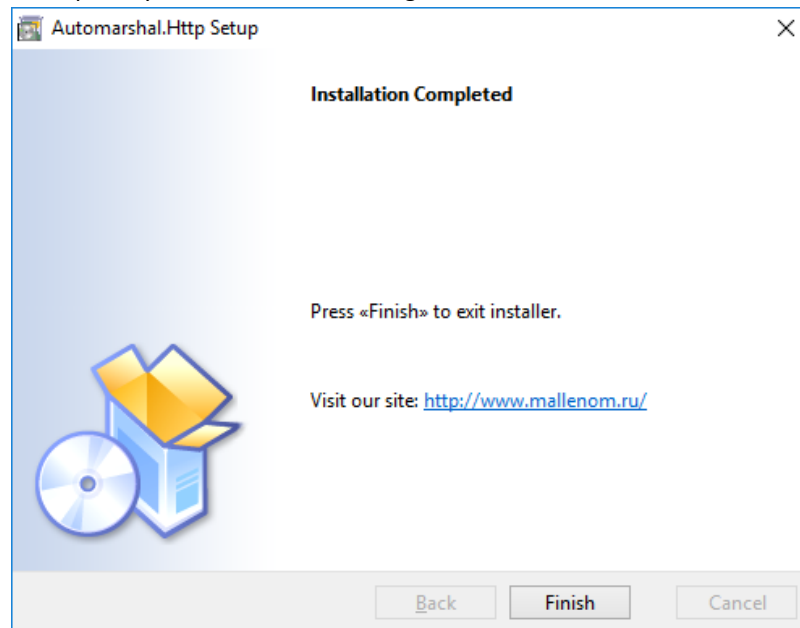


Figure 11.1.2.7

Click **Finish**.

Web Client is now setup and running.

11.2. Web Client configuration

Web Client does not have a separate configuration interface, therefore it shall be configured in Automarshal software interface.

Initial configuration

To configure Web Client, perform the following actions:

1. Run Automarshal software.
2. Select **Settings** in the **Service** drop-down menu;
3. In the next window, select the “HTTP-server” section;
4. In the right pane, check the **Enable** box and click the **Apply**.

The icon next to the module name in the left settings pane will turn yellow. The disabled modules will not be highlighted.

5. Specify the desired settings.

List of available settings:

- Port – this is where you specify the port of **your** copy of Automarshal software.
- Backlog – shows the number of connections that may be queued without resetting. In case of slow internet connection, modifying this parameter will result in better responsiveness of Web Client.
- Threads count – non-modifiable value.
- Queue size – non-modifiable value.
- External IP-address – specifies the external static IP-address defined by ISP.

6. To save the settings, click **Apply**.

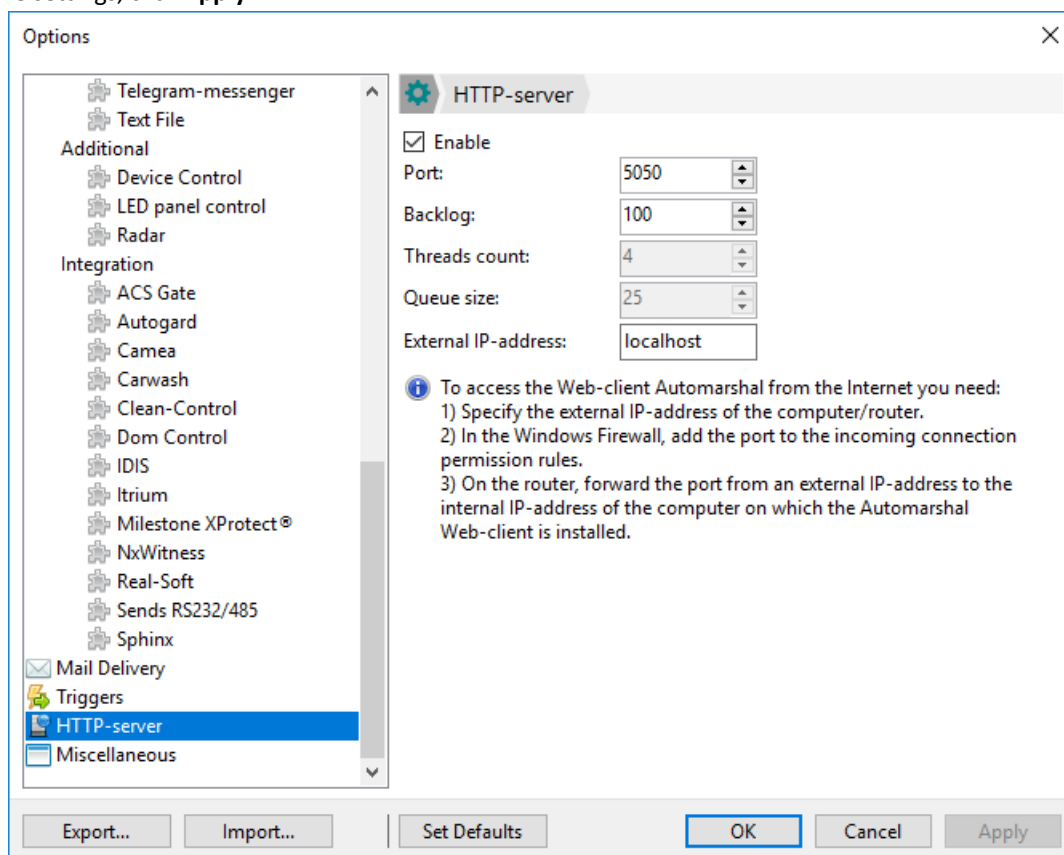


Figure 11.2.1

7. During setup of Web Client, specify the path to license file by clicking Browse, or copy the license file to the folder Web Client was installed to. By default the Web Client is installed to C:\Program Files(x86)\Automarshal.Http.

License file for box version of AM is provided on flash drive and is located in “license” folder, or mailed mail together with security dongle.



Web Client license file must be the same as license file of your version of Automarshal software installed.

Logo change



Logo setting in Web-Client is available as of Automarshal Version 2.17

Rebranding settings are made in Automarshal http configuration file – Automarshal.cfg. Configuration files are located by default in “%ProgramData%\Mallenom\Automarshal.Http\Configuration” folder.



10 (C:) > ProgramData > Mallenom > Automarshal.Http > Configuration	
Name	Date modified
 Automarshal.cfg	2/4/2019 10:00 AM
 Automarshal.cfg.bak	2/1/2019 3:13 PM

Figure 11.2.2

To change logo, perform the following steps in configuration file:

Find “GuiConfiguration” section in “Configuration” section.

If there is no “GuiConfiguration” section, add this section and its content (see. Section example):

– add “PagesElements” section to “GuiConfiguration”.

– add “Rebranding” section to “PagesElements”.

– add the following to “Rebranding”:

```
<CustomLoginLogoFileName Value="" /> – logo on the login page;
<CustomSideMenuFileName Value="" /> – logo in the side menu.
```

In «Value» write file name from «Rebranding» folder. For instance,

```
<CustomSideMenuFileName Value="logo1.png" />
```



```

<?xml version="1.0" encoding="utf-8" standalone="yes"?>
<Configuration>
  <DataStorage> [19 lines]
  <VehicleRegistrationLog> [288 lines]
  <CoreModules> [273 lines]
  <GuiConfiguration>
    <PagesElements>
      <Rebranding>
        <CustomLoginLogoFileName Value="logo3.png" />
        <CustomSideMenuFileName Value="logo1.png" />
      </Rebranding>
    </PagesElements>
  </GuiConfiguration>
  <Views> [66 lines]
  <VehicleRegistrationDetails> [4 lines]
  <Application> [4 lines]
  <Recognition> [4 lines]
</Configuration>

```

Figure 11.2.3

Example of "GuiConfiguration" section:

```

<GuiConfiguration>
  <PagesElements>
    <Rebranding>
      <CustomLoginLogoFileName Value="logo3.png" />
      <CustomSideMenuFileName Value="logo1.png" />
    </Rebranding>
  </PagesElements>
</GuiConfiguration>

```

Logo on the login page will be changed for logo3.png, and logo in the side menu will be changed for logo1.png

Logo file shall be placed in "Rebranding" folder. At the first start of the service (just right after set up) Rebranding folder will be created in the folder with executable file. If the folder was deleted, it will be created again at the service start.

10 (C:) > Program Files (x86) > Automarshall.Http > Rebranding

Name	Date modified
logo2.jpg	2/7/2019 6:13 PM
logo3.png	2/7/2019 6:22 PM

Figure 11.2.4

Restart server (Figure 11.2.5).

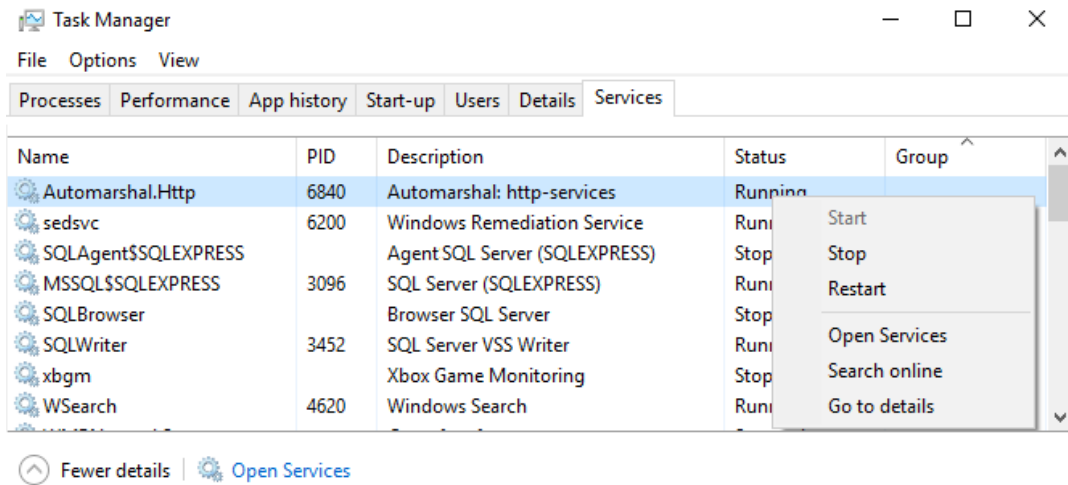


Figure 11.2.5

When restarted the service, the logos will be changed for those, that are specified in configuration (Figure 11.2.6).

If the logos are not displayed, check for files availability in "Rebranding" folder, the name conformance and file extension.

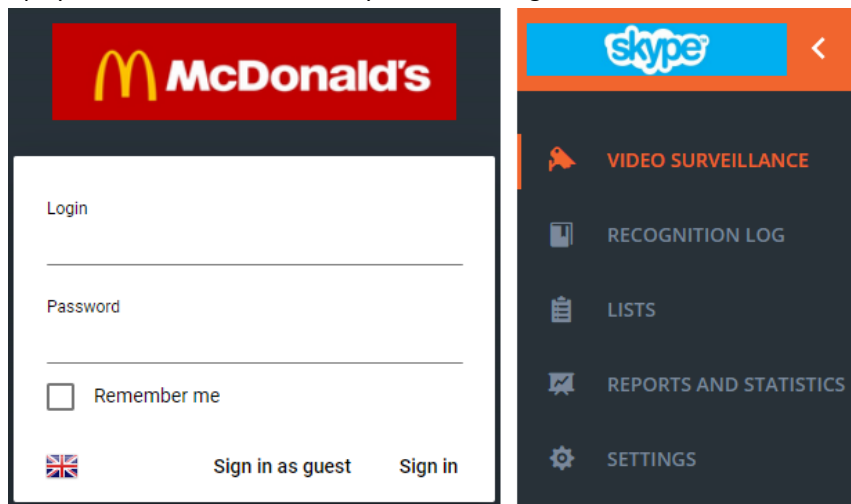


Figure 11.2.6

Logo images zooming is applied on the pages without content pruning or distortion. It is recommended to use the following sizes:

Login page:

– Single-line 500 x 70

– Two-line 500 x 100

Side menu: 250 x 60

11.3. Overview of Web Client features

11.3.1. Getting started

Open your browser to access Web Client.



Supported browsers: Chrome 60, Chromium 8 powered browsers and newer, Edge, Mozilla Firefox.

In the address line, enter IP-address of the PC Web Client is installed on, and add port number :**45555** after the address.



If Web Client is installed on current PC, you may enter “localhost:45555” in the address line.

The following dialog must appear.

Figure 11.3.1.1 shows the Automarshal login dialog. The dialog features a dark blue header with the Automarshal logo and the text "AUTOMARSHAL". Below the header is a white login form with the following elements: a "Login" label above a text input field; a "Password" label above a text input field; a checkbox labeled "Remember me"; a small UK flag icon; and two buttons labeled "Sign in as guest" and "Sign in".

Figure 11.3.1.1

Enter your Automarshal software login and password and click Sign In. It will open the video surveillance window.

11.3.2. Video surveillance page

This page displays all active video channels connected to the database.

In figure 11.3.2.1, the digits identify the key interface elements.

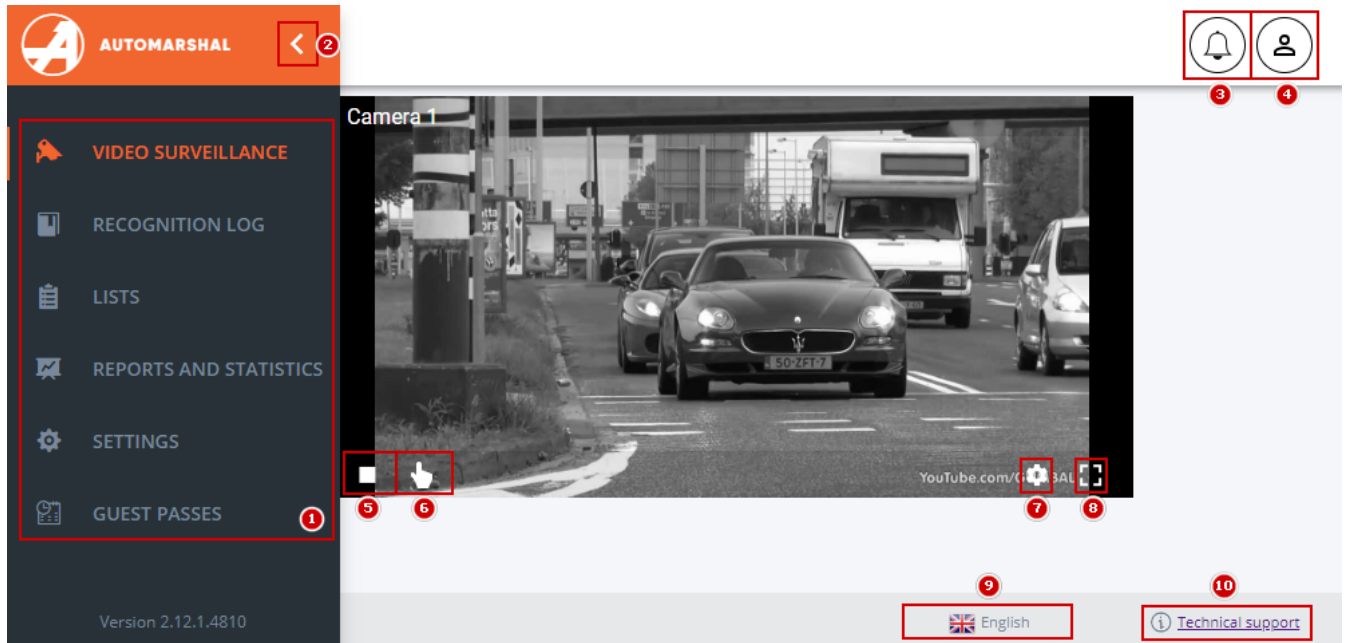


Figure 11.3.2.1

1. Menu panel containing the buttons to browse Web Client pages.
2. A button to minimize the menu panel.
3. Display of notifications. Upon the click, the drop-down window with the list of notifications has to appear (Figure 11.3.2.2).

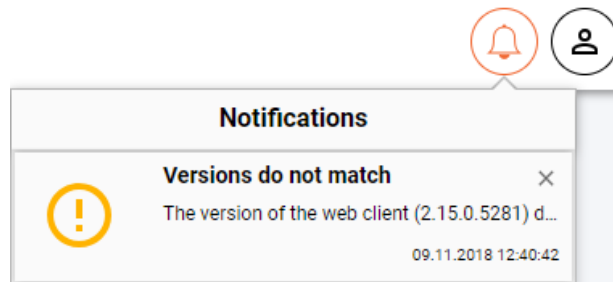


Figure 11.3.2.2

The full text of a notification has to open upon the click on it. The list of available notifications is shown in Figure 11.3.2.3.

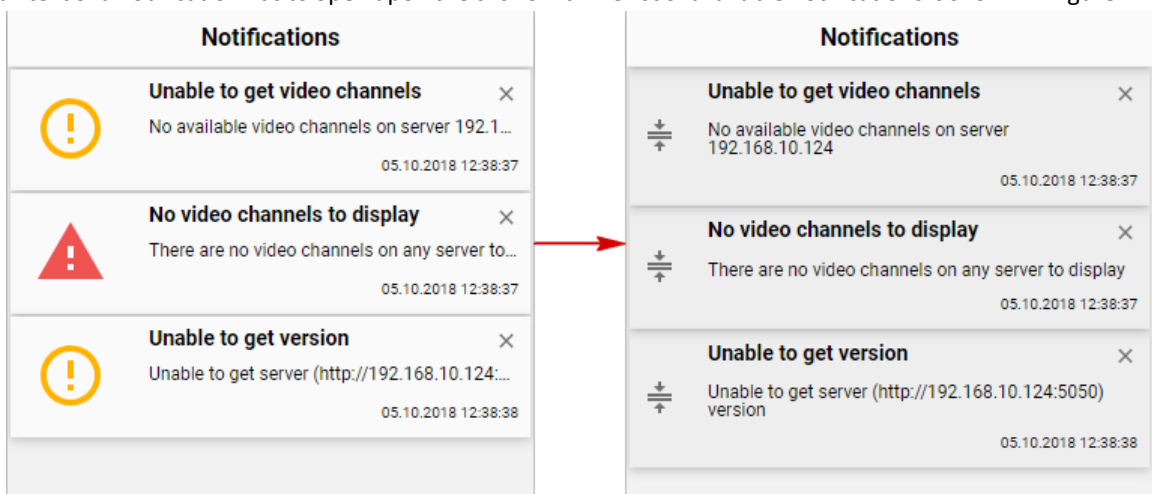


Figure 11.3.2.3

4. Display of an active user. Upon the click, the drop-down menu with the information about the user role, client version and the logout button has to appear.

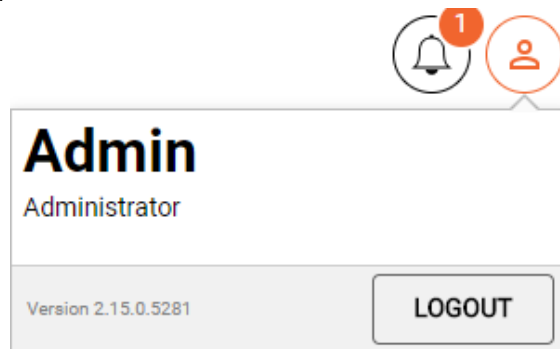


Figure 11.3.2.4

5. Active user identification. When clicked, a drop-down box containing the Sign Out button appears.
6. Video stream re-enable and stop button.
7. Manual recognition button.

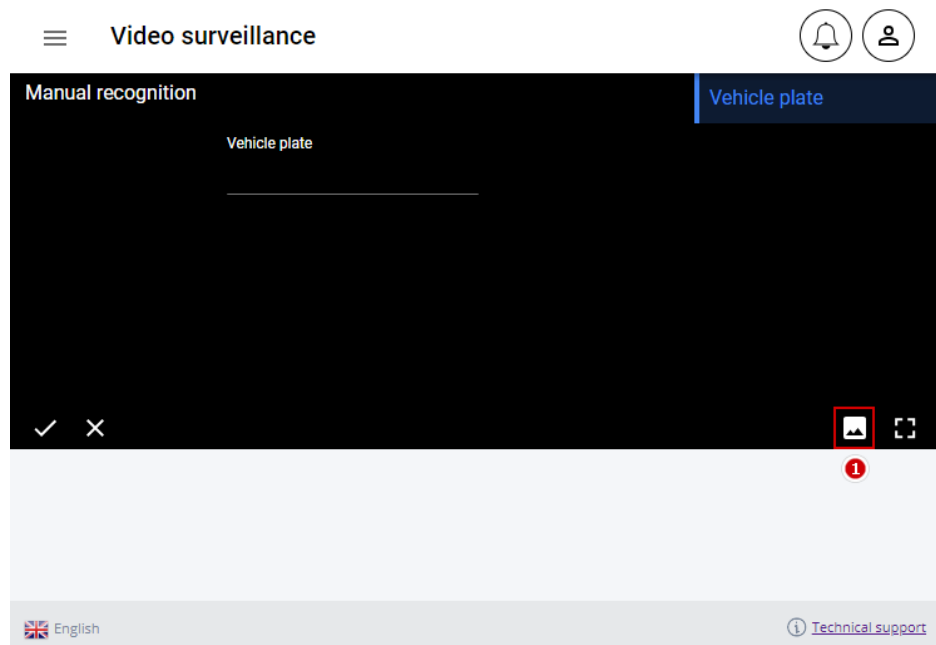


Figure 11.3.2.5

- 1 — switch to manual recognition window button. When clicked, switches to the frame displaying a vehicle.

Click **Confirm** to add the manually recognized vehicle plate to the database.

8. Settings menu button:

– manage triggers of the current video channel;

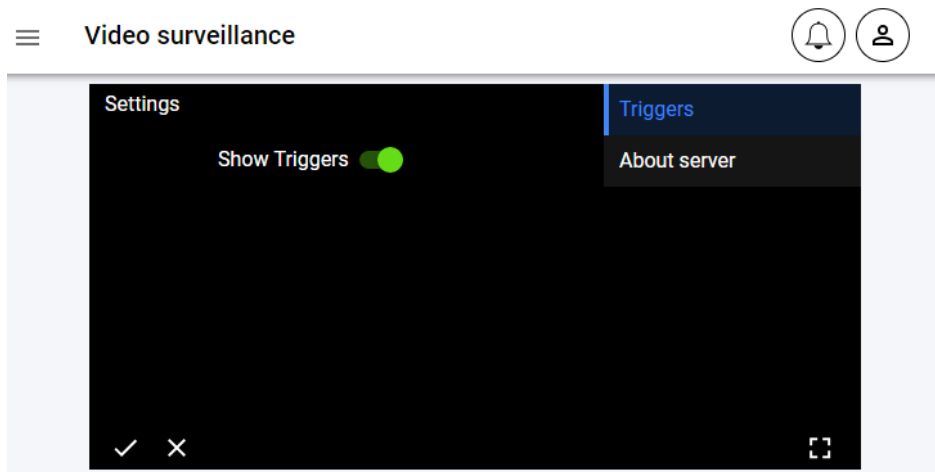


Figure 11.3.2.6

– display server and configured trigger information.

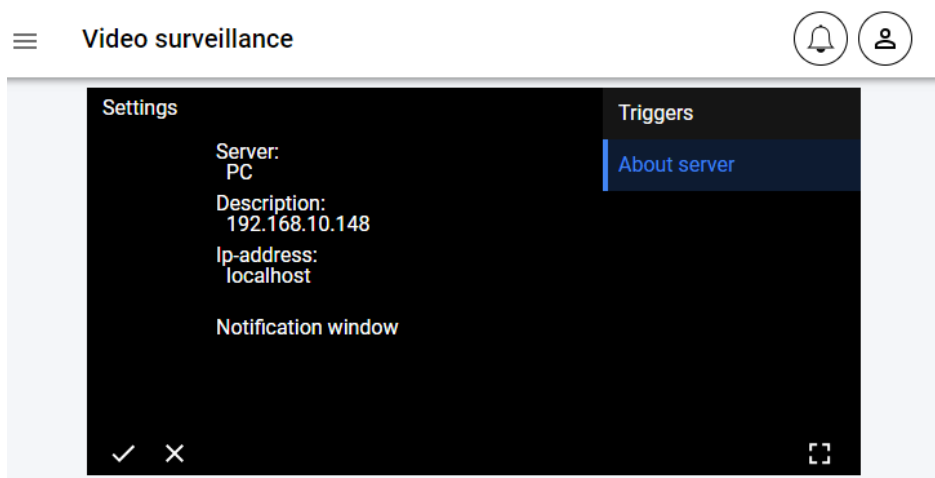


Figure 11.3.2.7

9. Enable full-screen video.

10. Web Client language change button. Supports Russian and English.

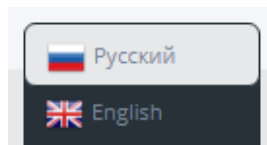


Figure 11.3.2.8

11. A link to technical support website.

11.3.3. Log

Recognition log is displayed in real time on this page.

In figure 11.3.3.1, the digits identify the key interface elements.

1 🔍 Search

4 Auto update 5 ⚙️

3 Plate	Direction	Status	Passage	Date and time
8KJX23	↓	✓	📄	06.09.2018 10:49:52
85SXV1	↓	✓	📄	06.09.2018 10:49:37
94XPZ	↑	✓	📄	06.09.2018 10:49:17
RLPT30	↓	✓	📄	06.09.2018 10:49:09
8KJX23	↓	✓	📄	06.09.2018 10:49:02
85SXV1	↓	✓	📄	06.09.2018 10:48:15
94XPZ	↑	✓	📄	06.09.2018 10:48:05
RLPT30	↓	✓	📄	06.09.2018 10:47:57
8KJX23	↑	✓	📄	06.09.2018 10:47:41
68ZVJ4	↑	✓	📄	06.09.2018 10:43:00

K < 1 2 > >| 6



Figure 11.3.3.1

1. Search log.
2. Log view configuration. Switches between brief view that displays only log entries, and full view displaying additional information about log entry.
3. Automatic update switch: when active, updates log in real time; when disabled, log must be updated manually.
4. Recognition log. Additional information is available for each entry, which will be displayed as elements numbered 7 and 8.
5. Setting up the log field display. When clicking, an additional menu opens (Figure 11.3.3.2), where the display of log columns and records sorting is set up.

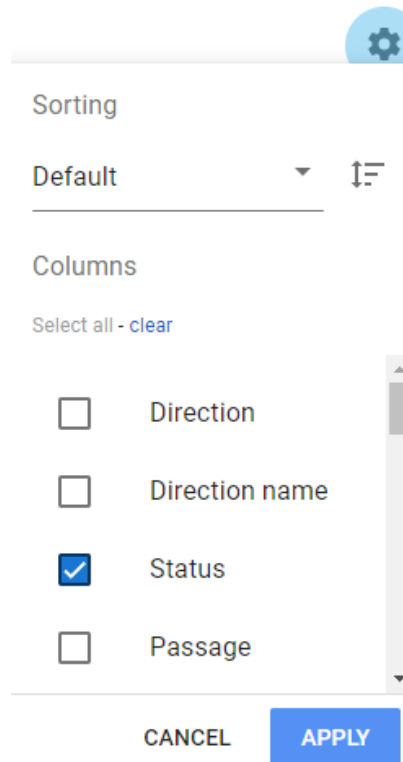



Figure 11.3.3.2

6. Switching between log pages.

7. A picture of captured vehicle. There is a  button in the upper right corner of the frame to generate parking ticket; once clicked, it will generate the ticket and save it as PDF.

In the top left corner of the shot there is a button with the pass status. Clicking the button, the legend is opened in the bottom left corner.

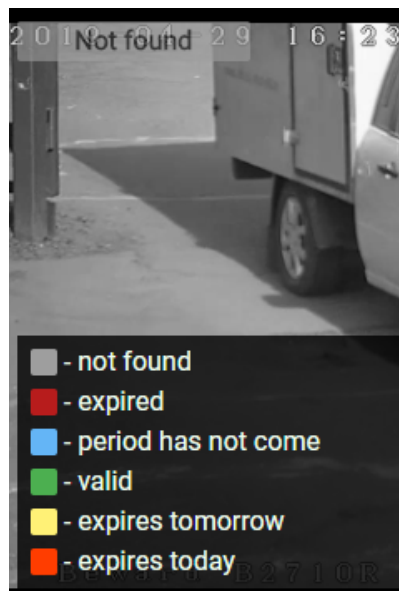


Figure 11.3.3.3

8. Display further information: a part of a frame displaying vehicle license plate, a thumbnail of recognized plate on Automarshal template, motion direction information, date and time, video channel used to recognize the plate.

The right part of the element has a button to access further information: header of the list and additional fields, information about vehicle duration on the territory (figure 11.3.3.4).

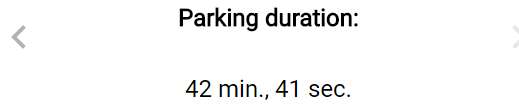


Figure 11.3.3.4

Search log

You can search the recognition log.

In figure 11.3.3.5, the digits identify the key interface elements.

The screenshot shows a search interface with the following elements:

- 1:** Search input field with a magnifying glass icon and the text "Search".
- 2:** "Status" dropdown menu with "All statuses" selected.
- 3:** "Direction" dropdown menu with "All directions" selected.
- 4:** Date range selection fields labeled "From" and "To", both with the placeholder "mm/dd/yyyy --:-- --".
- 5:** "List" dropdown menu with "All lists" selected.
- 6:** "Server" dropdown menu with "All servers" selected.
- 7:** "Video channel" dropdown menu with "All video channels" selected.

At the bottom right, there are two buttons: "CANCEL" and "SEARCH".

Figure 11.3.3.5

1. A field to enter the license plate to search. The search may be performed by entire plate number or by letters and digits. Search is not case sensitive. You do not need to enter a license plate number or part of it to search but use other features of search menu.
2. Search entries by status: recognized, not recognized, recognized manually. Search by status will display all entries matching the selected status.
3. Search by direction in frame: upward, downward, not defined.
4. Search by date: enables selection of the required range of dates.
5. Search by list.
6. Search by server.

7. Search by the list.

After the lists are deleted, the system continues to store information related to them; using these data it is possible to search entries in the recognition log. Special mark is set for deleted lists (figure 11.3.3.6).

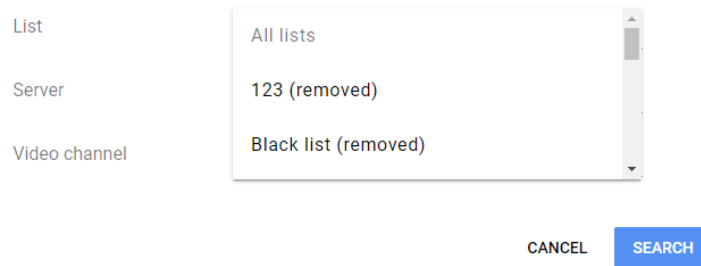


Figure 11.3.3.6

11.3.4. Lists

You can manage user lists, delete and add data.

In figure 11.3.4.1, the digits identify the key interface elements..

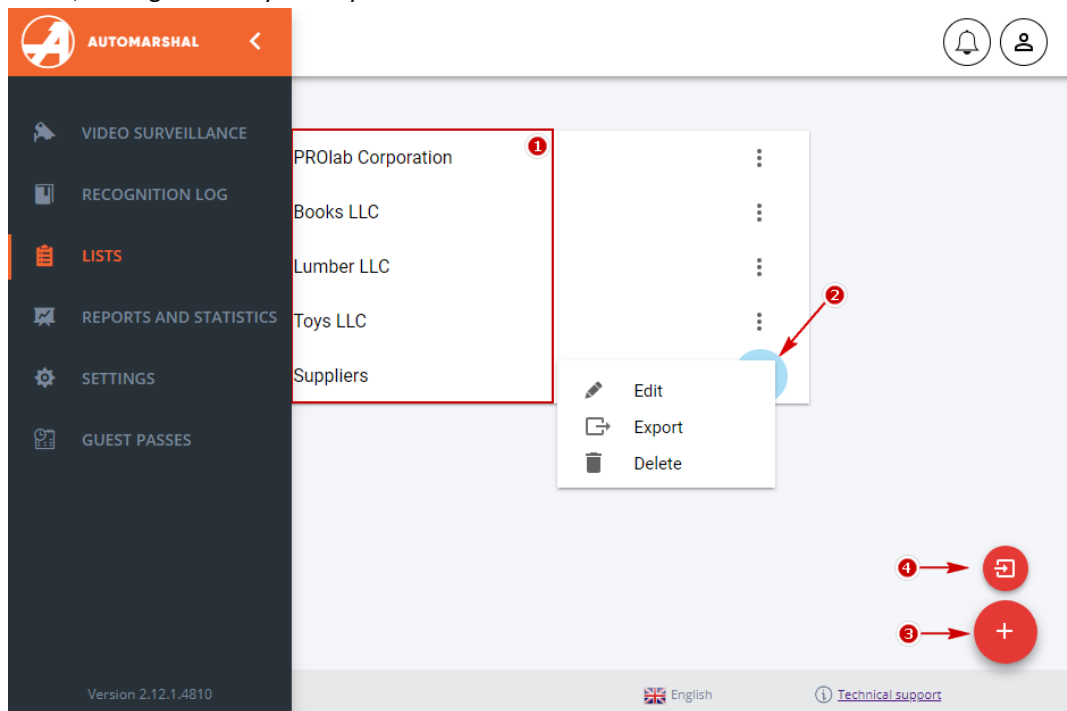


Figure 11.3.4.1

1. Lists.
2. List management menu: list editing, export, deletion.
3. Button switching to list creation menu.
4. Import. The Button is displayed when hovering the mouse over the list creation menu.

Adding list

To add a list, click + (figure 11.3.4.2). In the next window enter the list name and click Apply, whereafter the name of the new list will be displayed on the list page.

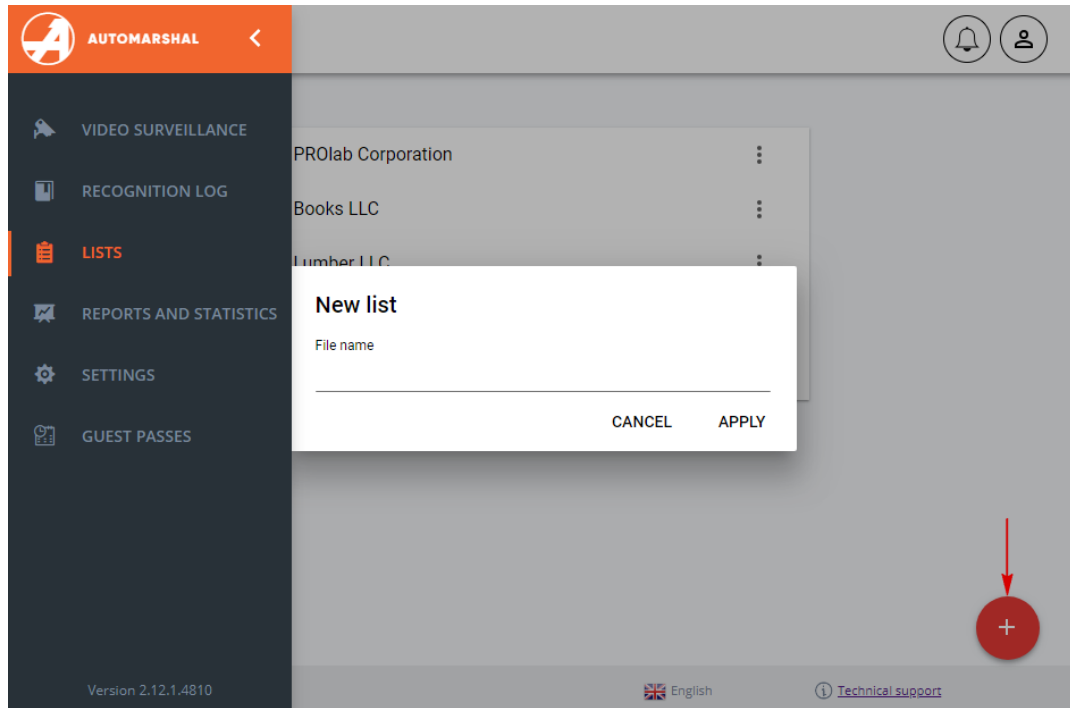


Figure 11.3.4.2

Import

To import the list, hover the mouse over list add button and click the displayed import button (figure 11.3.4.3). In the next dialog select the file for import; here you can also change the name of the list to be imported. The following extensions are supported: *.xml, *.xlsx, *.csv.

Once the file is selected and the list is named, click Next.

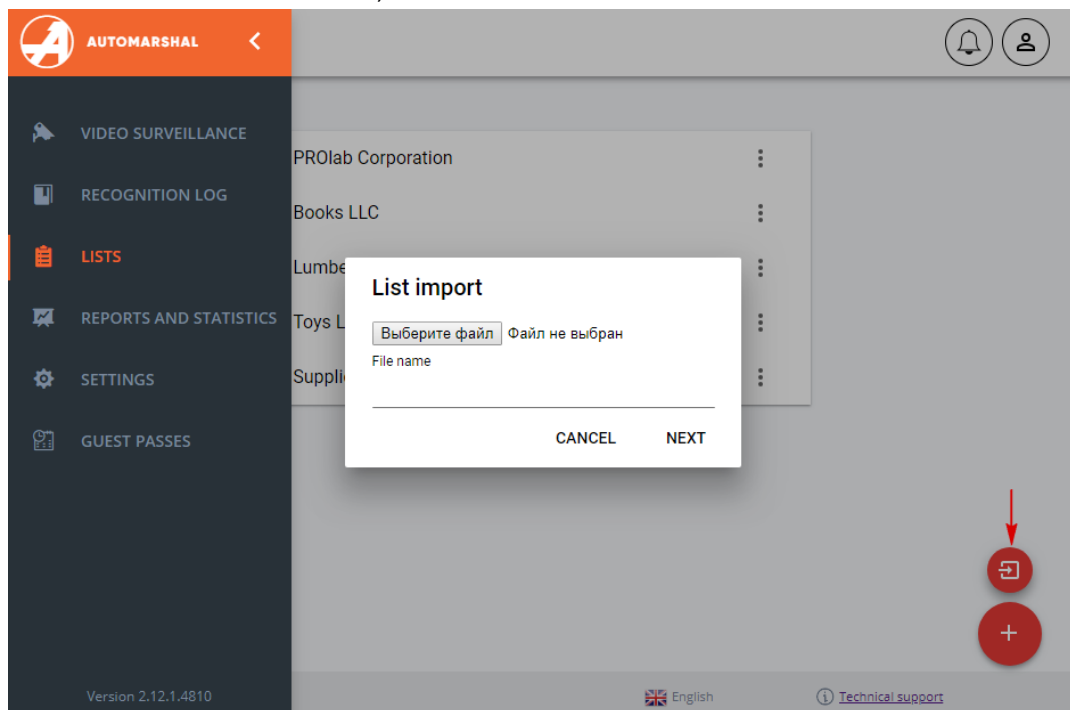


Figure 11.3.4.3

In the next window (figure 11.3.4.4) select vehicle type for this list (e.g. it can include only passenger cars), select the field containing vehicle license plate (a column in the file containing vehicle plates), and the system will by default select the appropriately named field, but if the system's selection is incorrect it can be changed. This is where the list color and pass for this list are configured.

Click Next.

List import

Vehicle type
<not chosen>

Plate field
Plate

List Color

PASS CANCEL NEXT

Figure 11.3.4.4

In the next window (figure 11.3.4.5) select one of the options offered:

Overwrite duplicate plates: if the plates in the lists are duplicated, they will be rewritten to the imported list.

Skip duplicate plates: if the plates in the lists are duplicated, they will be ignored and left in the existing lists.

List import

Overwrite duplicate plates

Skip duplicate plates

CANCEL NEXT

Figure 11.3.4.5

Click Next; once the import is completed, the name of the new list will be displayed on the page.

Export

To export the list, click the menu call button in the end of the line containing the list and select Export (figure 11.3.4.6). In the window opened you can rename the list file and select the extension of the file to be imported. The following extensions are supported: *.xml, *.xlsx, *.csv.

Click Apply and wait for the export to complete.

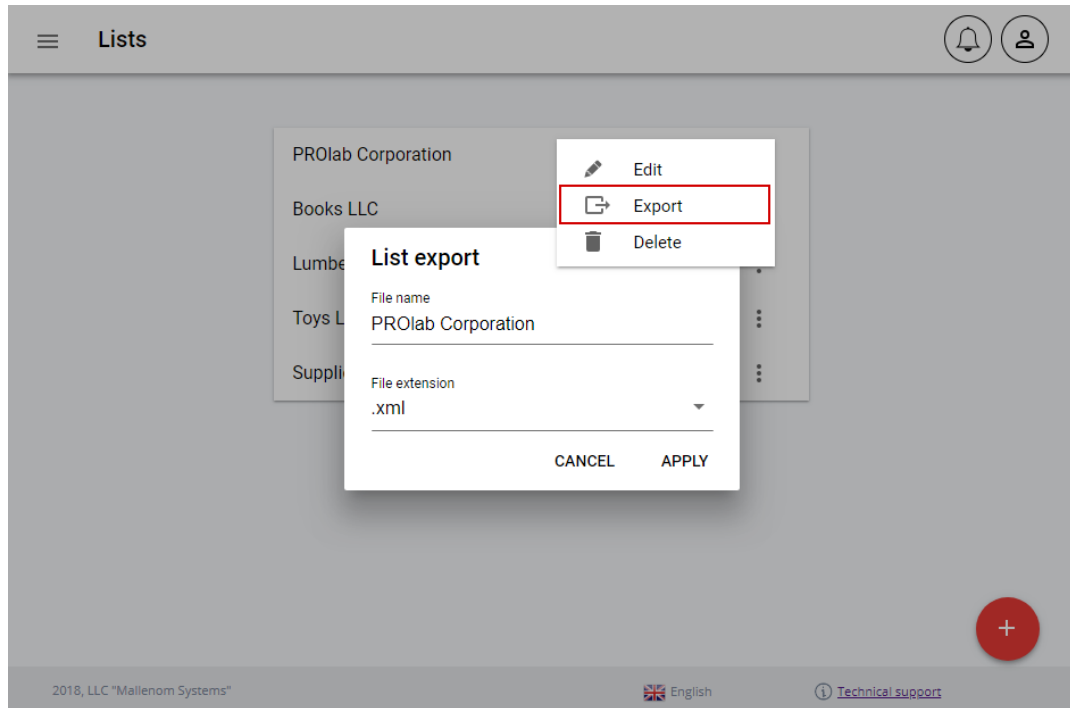


Figure 11.3.4.6

List editor

A page to edit and add user lists.

In Figure 11.3.4.7, the numbers denote important interface elements.

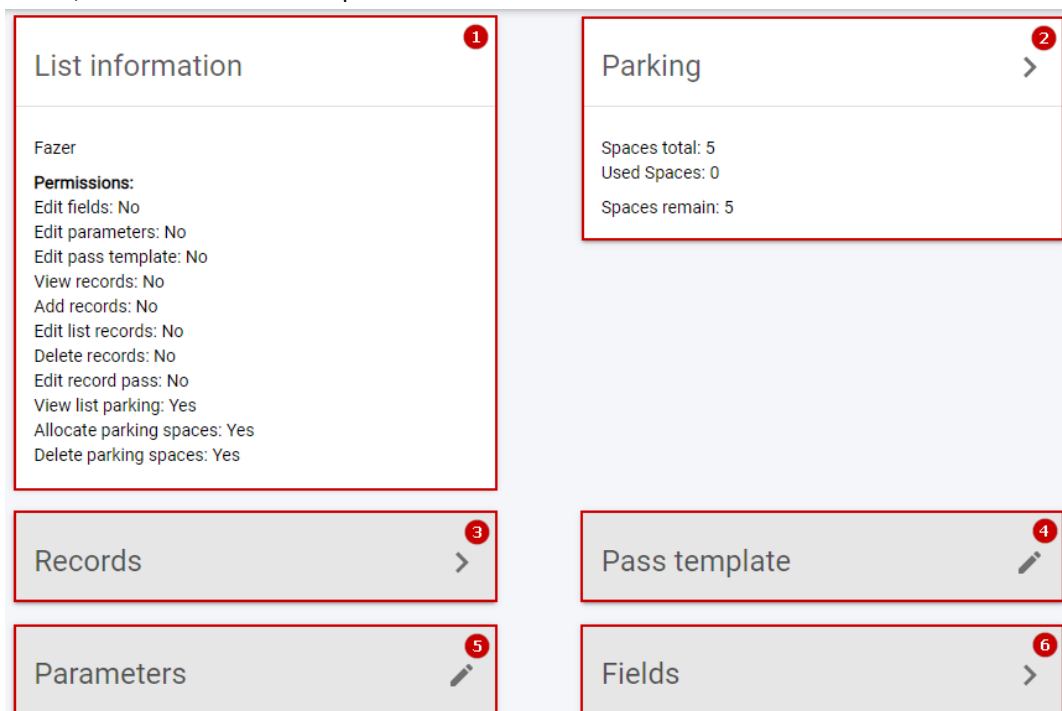


Figure 11.3.4.7

1. List information contains:

The name of the list is available for editing by “Parameters” button (4).

User rights to access the list, settings are made through Automarshal.

2. Parking displays information about the number and condition of parking spaces for the list. By clicking, it redirects to the page for editing and adding parking spaces for the list (Figure 11.3.4.8).

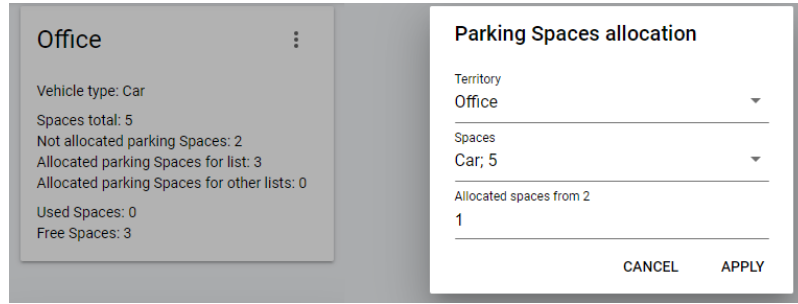


Figure 11.3.4.8

3. Entries, by clicking it redirects to the edit page and add entries to the list.

4. Pass template

Click the “Pass Template” button (Figure 11.3.4.9) to go to the pass setting. Switch between settings using the “Next” and “Cancel” buttons.

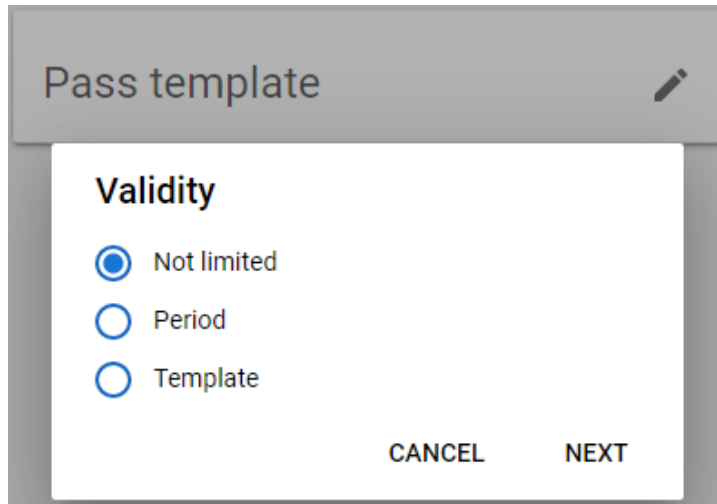


Figure 11.3.4.9

5. Setting of the list parameters (Figure 11.3.4.10): List name, Vehicle Type for the list by default, List Color.

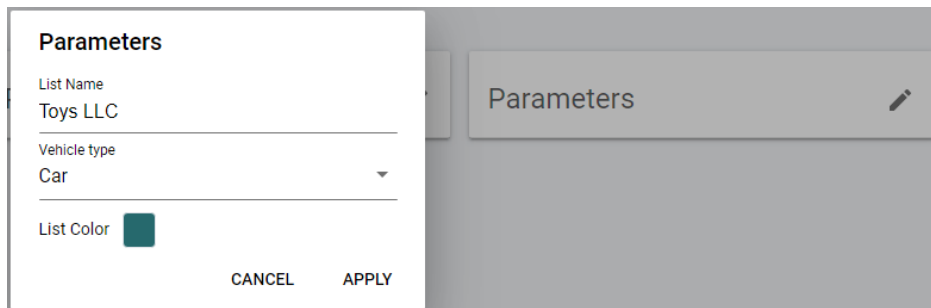


Figure 11.3.4.10

6. Fields, when clicked, it redirects to the edit page and adds additional fields for the list (Figure 11.3.4.11).

To add a field, click the “Add Field” button (Figure 11.3.4.11). In the window opened, select existing fields, or add a field manually. To do this, click the “Add Field” button, in the window opened, enter the name of the field and click “Accept”. The added fields are editable, click the button at the end of the line with the name of the desired field and in the new window change the name of the field.

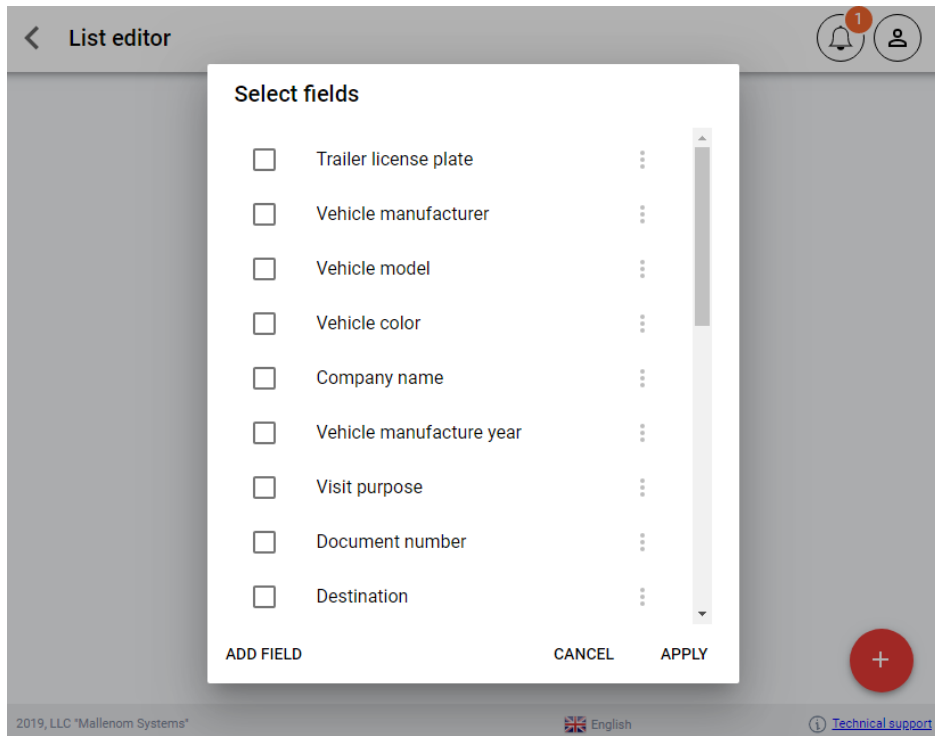


Figure 11.3.4.11

Newly added fields can be deleted (figure 11.3.4.12).

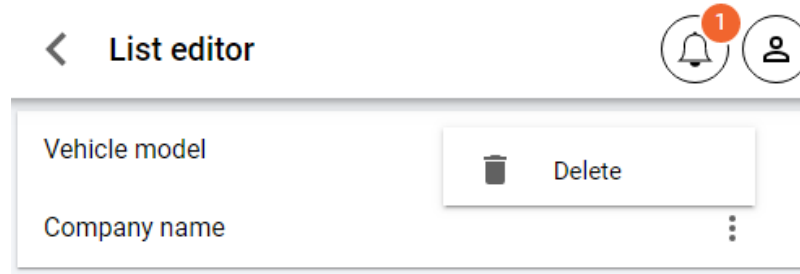


Figure 11.3.4.12

List filling

To complete the list, switch to Records tab.

In figure 11.3.4.13, the digits identify interface elements.



Figure 11.3.4.13

1. Search by the list. Enter part of the number or the whole number, the search results are displayed automatically. Search is not case-sensitive.
2. List fields, including additional ones.
3. Plate selection flag.
Control panel contains the following buttons:
4. Add – add a license plate to the list.
5. Edit – select license plate and click Edit to edit the existing list entry.
6. Delete – select license plate or several license plates in the list and click Delete to remove them from the list.
7. Buttons to navigate pages in large list.

To add or edit an entry, a dialog is used (figure 11.3.4.14). For the license plate to be added, a pass can be created and active additional fields can be completed.

Plate

Vehicle type
Car

Vehicle model

Company name

PASS CANCEL APPLY

Figure 11.3.4.14

Entries with customized gaps in the list are indicated by a definite color, which depends on the pass validity period.



Figure 11.3.4.15

11.3.5. Guest pass

Guest pass page functions (figure 11.3.5.1) allow to add license plates to special user list named Guest Passes.



Guest passes are only available to applicant and administrator type users. User type can be specified in Automarshal software menu. For details of how to add users and change their type see chapter 6.

Guest passes provide access to the specified vehicle to enter the territory an unlimited number of times during the user-specified time interval. For instance, from June 29, 2018 through June 30, 2018.

Upon expiration, the license plate remains in the list, and later its entry can be edited and a new pass validity period can be defined.

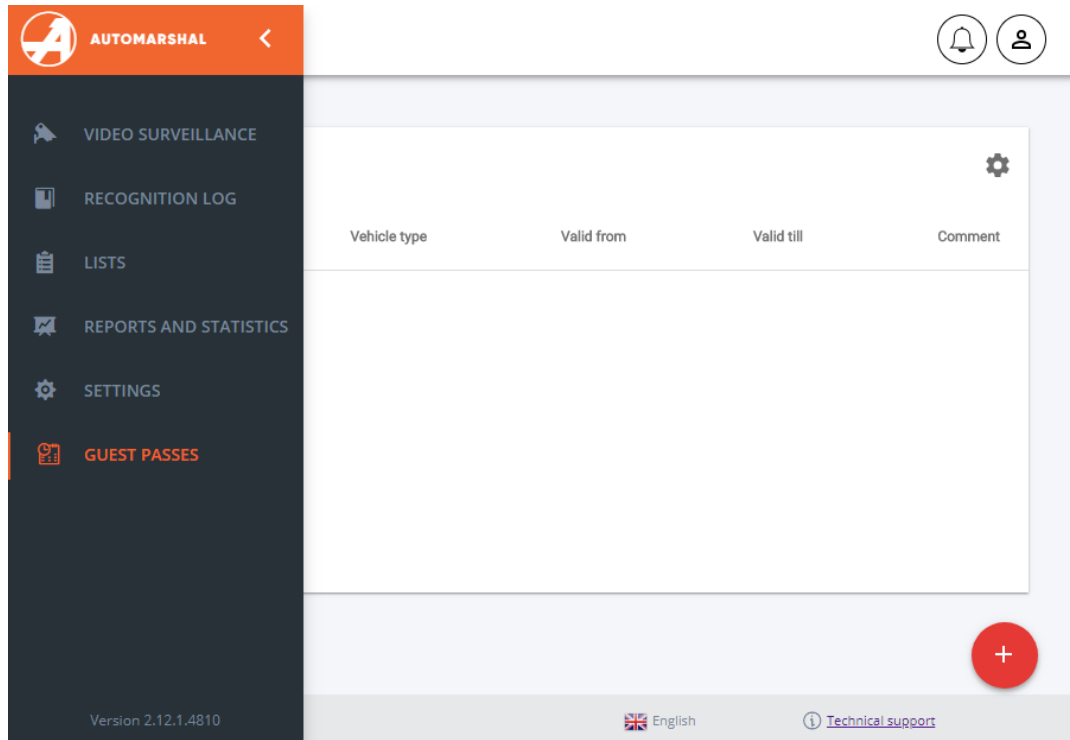


Figure 11.3.5.1

In figure 11.3.5.2, the digits identify the key interface elements.

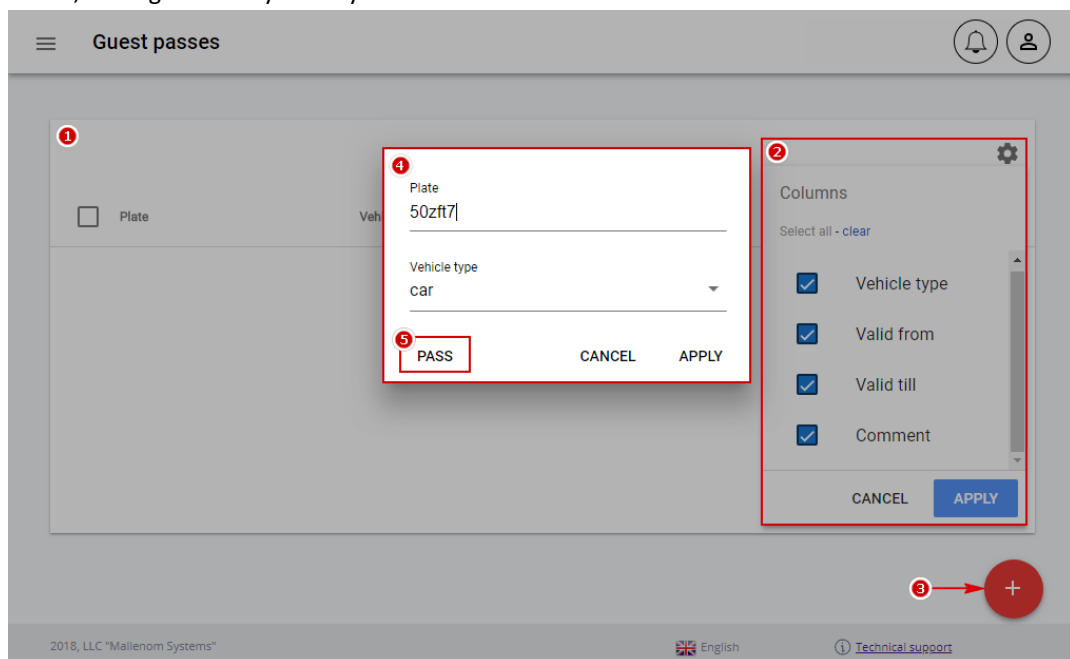


Figure 11.3.5.2

1. List of added license plates and relevant information.

The list is currently empty.

2. Configuring display of additional list fields. Additional fields must be added in the Lists section.

3. Add entry to list button. Once clicked, a new dialog (4) will open that contains two fields by default: Plate and Vehicle Type.

4. Configuring pass for new entry. A pass for guest list differs from the pass for regular lists (figure 11.3.5.3).

Pass

Valid from
29.06.2018 10:22:25

Valid till
30.06.2018 10:22:25

Comment

CANCEL APPLY

Figure 11.3.5.3

When adding to the list a vehicle plate that already exists in another list, a warning will be displayed (figure 11.3.5.4).

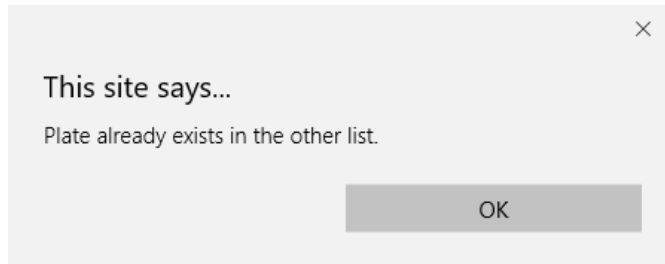


Figure 11.3.5.4


When adding to the guest list of the vehicle plate that has been previously entered in it, a dialog will be displayed (figure 11.3.5.5) prompting to update the information about previously entered plate.

The entered plate already exists in database. Update information about plate?

Record type	Plate	Vehicle type	Valid from	Valid till	Comment
Current information	8KJX23		06.09.2018 06:00:00	06.09.2018 10:00:00	
Entered information	8KJX23		06.09.2018 14:39:24	07.09.2018 14:39:24	

Cancel Apply

Figure 11.3.5.5

An entry made in the guest pass may be edited or removed. To make this function accessible, check the appropriate entry and click  configuration button in the upper right corner of the window, and select the required option from the drop-down menu (figure 11.3.5.6).

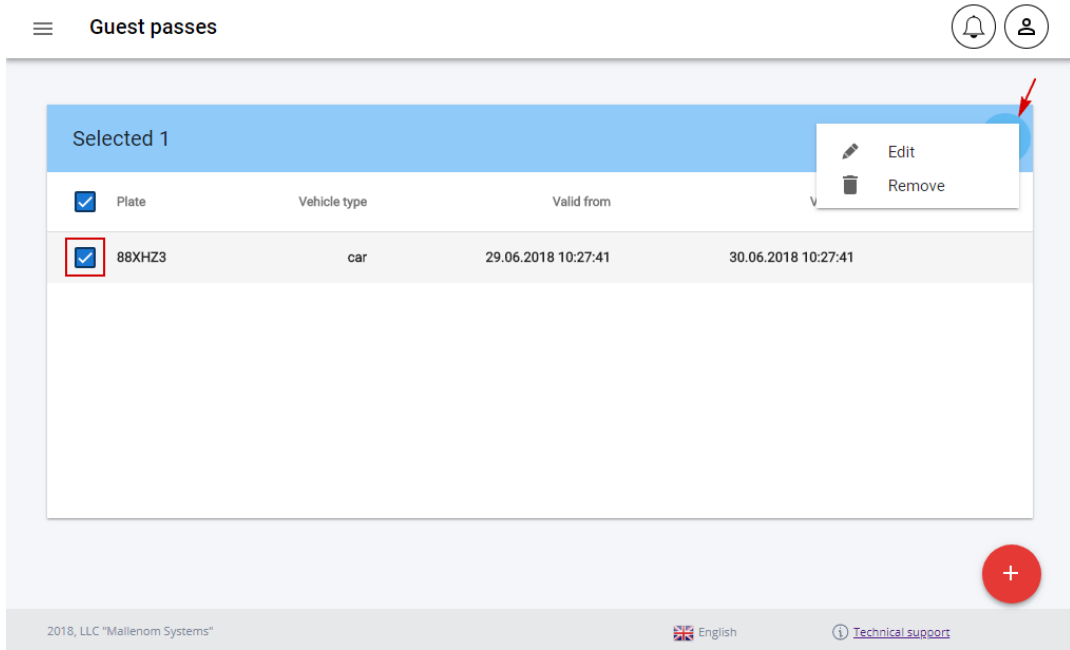


Figure 11.3.5.6

All guest lists and name of the user who created them can be viewed in Automarshall software menu.

To do so, go to Automarshall software → Database → List editor, and select Guest Passes in the next User Lists window (figure 11.3.5.7).

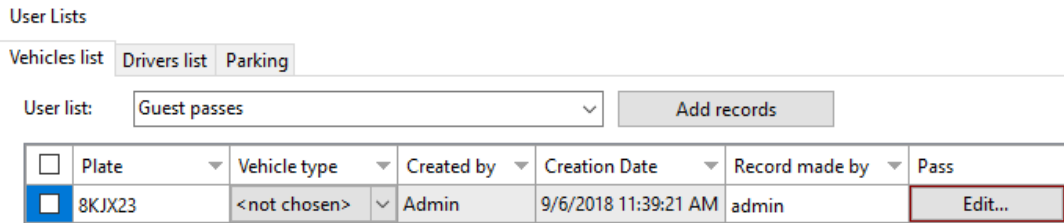


Figure 11.3.5.7

11.3.6. Reports and statistics

You can configure and download reports on the Reports and Statistics Web Client page (figure 11.3.6.1). To start generating a report, click any line in the Reports window.

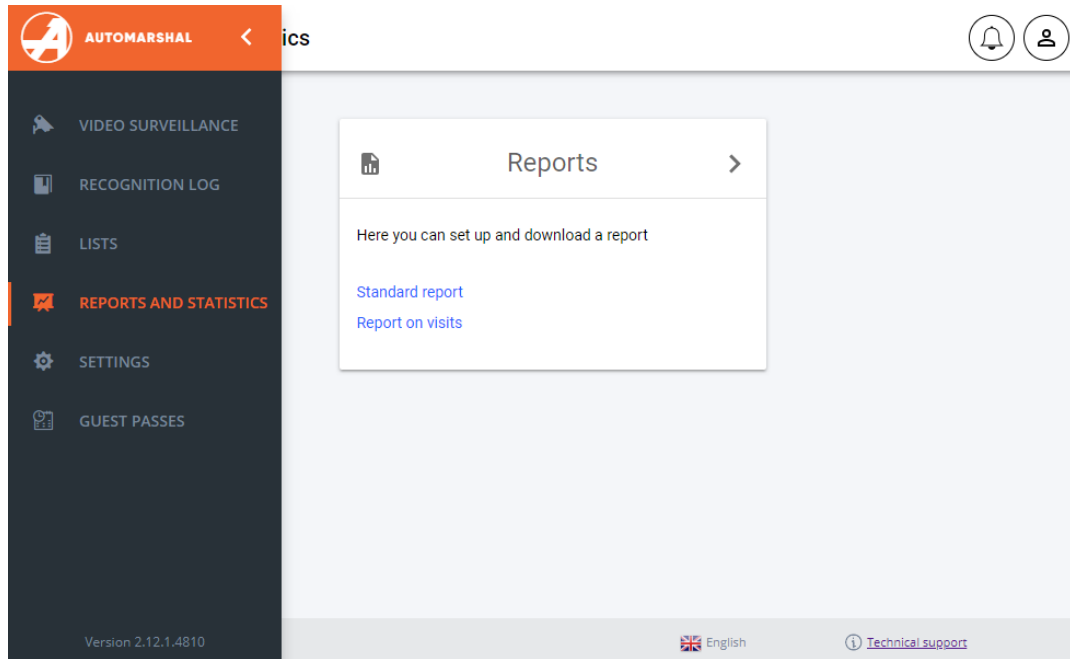


Figure 11.3.6.1

The Reports page (figure 11.3.6.2) displays windows with two available report types:

Standard report is a complete copy of the log by the selected filter;

Report by visits contains the entries about the vehicle from the recognition log together with the duration of their stay on the territory.

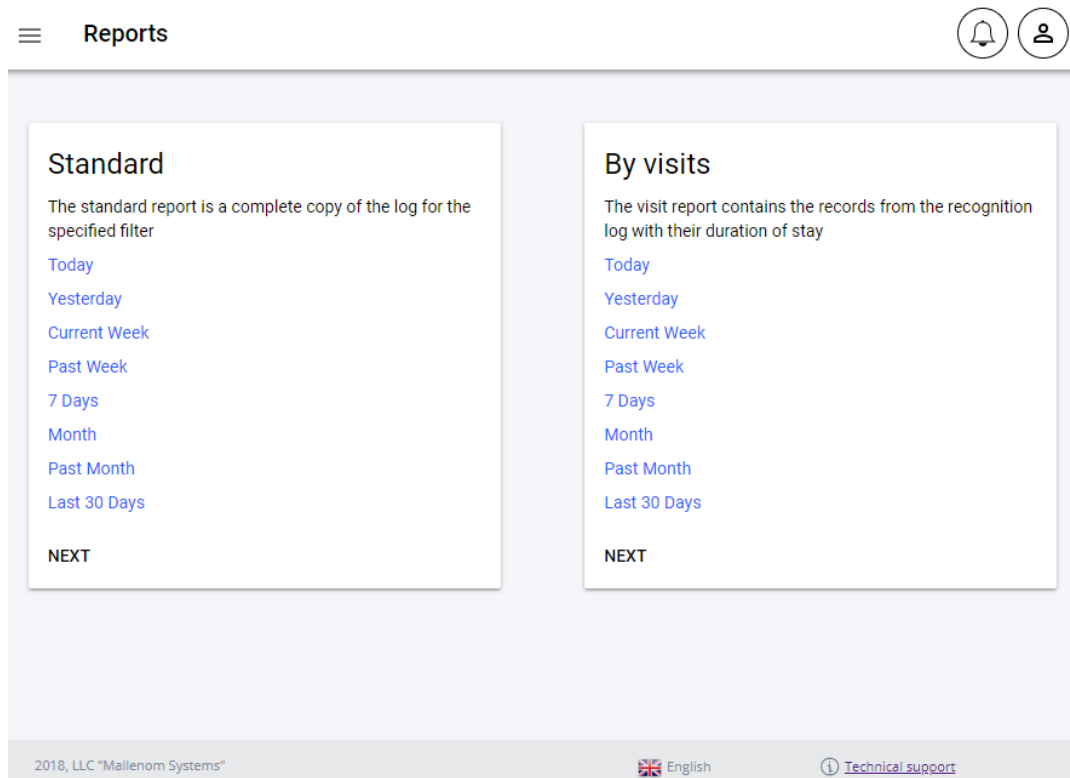


Figure 11.3.6.2

- *Today*

- Yesterday
- Current week
- Past week
- 7 days
- Month
- Past month
- Last 30 days

For both types of reports, the same window is used to select a preset filter (figure 11.3.6.3). The default extension is *.pdf; the following extensions are also available: *.txt, *.html, *.docx, *.pptx, *.xlsx, *.rtf, *.xps, *.xml, *.svg.

File name is set in Report name line. The default name contains the “Report”, and time and date of its generation.

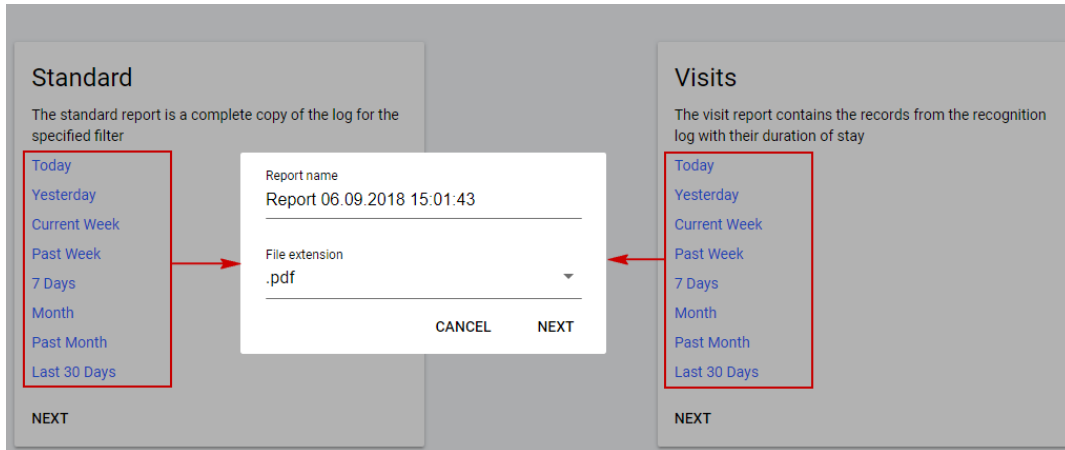


Figure 11.3.6.3

Or you can use the function of report generation by available filters.

Standard report

Click Next in the standard report window (figure 11.3.6.4). In the next window, three fields are available for completing: report title, left header, right header. They are not mandatory, you can either complete them or ignore them. Click Next.

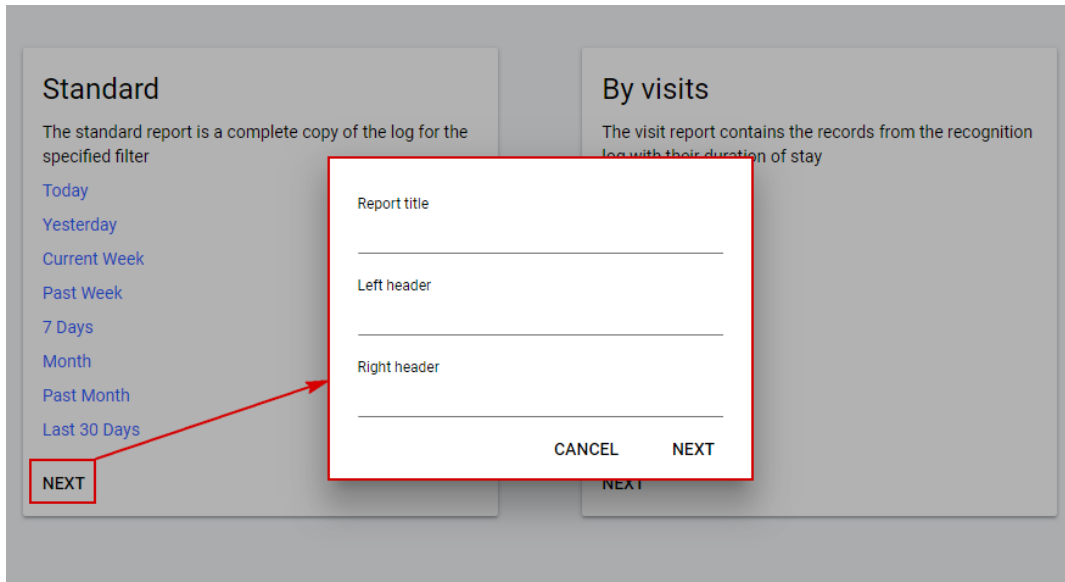


Figure 11.3.6.4

In the next window (figure 11.3.6.5), the parameters that enable you to filter the data for the report are specified. Fields are not mandatory, and if you leave them empty and generate a report, it will include all log data for the entire period.

Plate: upon entering the vehicle plate number, the system will generate a report for this vehicle number. The filter will also work if you enter part of the plate number, the system in this case will pick all suitable options for the report.

Status: all directions, recognized, not recognized, recognized manually.

Directions: all directions, upward, downward, not defined.

Server: Available servers. The option is relevant if the information is written to the same database from different servers.

Video channel: all video channels – retrieves information from the log about all channels, including from several servers; also allows filtering by a single channel for report generation.

Dates: allows to set the filter for generation of report for the selected period in calendar days.

Once the required parameters are set, click Next.

Figure 11.3.6.5

In the next window (figure 11.3.6.6) you will be prompted to enter the report name and select file extension.

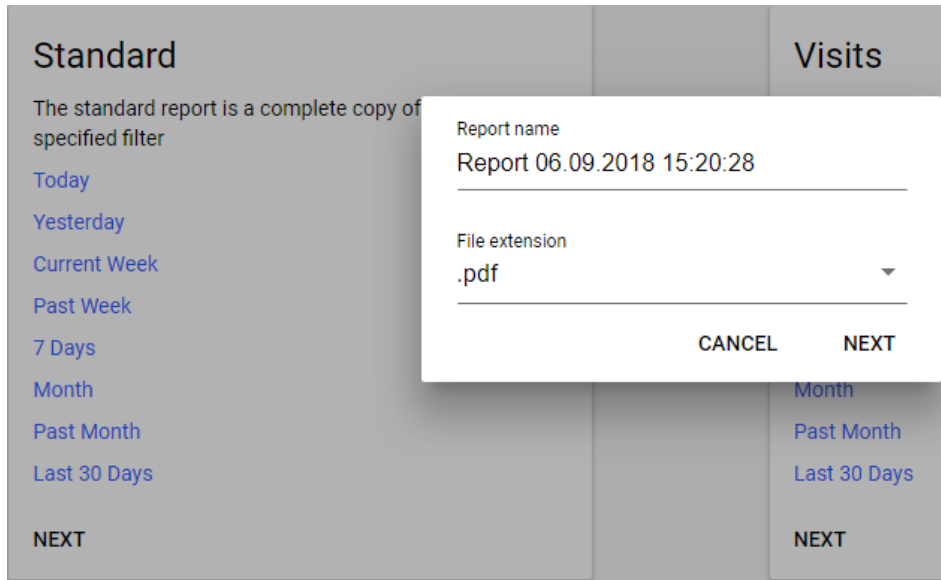


Figure 11.3.6.6

Generated report will be downloaded as a separate file (figure 11.3.6.7).

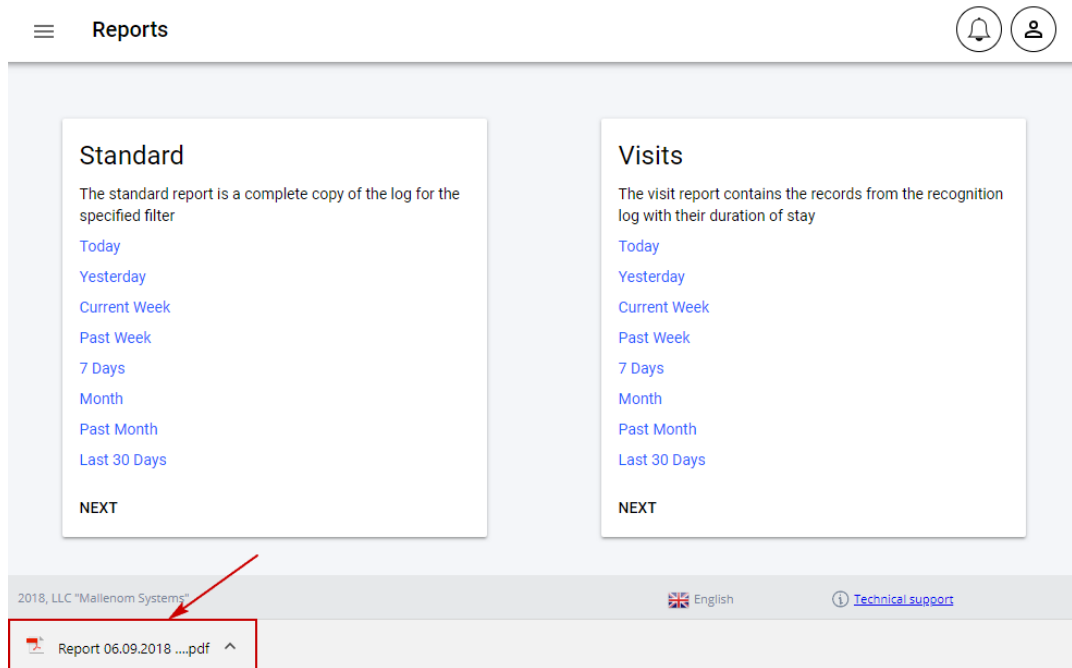


Figure 11.3.6.7

If the fields with a title and headers are left empty, information about these fields will not be written to the final report file. The screenshot displays the set headers and the "Standard report" title. The bottom of the page contains the information about the date and time of report generation and the number of pages in the report.

An example of a standard report is given below (Figure 11.3.6.8).

Nº s/p	Plate	Date/Time	Direction	Video channel	User list
1	8KJX23	06.09.18 14:59:07	Bottom to top	Camera 2	Guest passes
2	85SXV1	06.09.18 10:49:37	Top to bottom	Camera 2	Norway
3	94XPZ	06.09.18 10:49:17	Bottom to top	Camera 2	
4	RLPT30	06.09.18 10:49:09	Top to bottom	Camera 2	
5	85SXV1	06.09.18 10:48:15	Top to bottom	Camera 2	Norway
6	68ZVJ4	06.09.18 10:43:00	Bottom to top	Camera 2	
7	ZBXJ08	06.09.18 10:42:54	Bottom to top	Camera 2	Norway
8	03HZD3	06.09.18 10:42:49	Top to bottom	Camera 2	Toys LLC

Operator

signature, date, full name

Figure 11.3.6.8

Visits report

Click Next in the visits report window (figure 11.3.6.9). Generation of visits report starts with setting the parameters allowing to filter data for the report. Fields are not mandatory, and if you leave them empty and generate a report, it will include all log data for the entire period.

Plate: upon entering the vehicle plate number, the system will generate a report for this vehicle number. The filter will also work if you enter part of the plate number, the system in this case will pick all suitable options for the report.

Status: all directions, recognized, not recognized, recognized manually.

Directions: all directions, upward, downward, not defined.

Server: Available servers. The option is relevant if the information is written to the same database from different servers.

Video channel: all video channels – retrieves information from the log about all channels, including from several servers; also allows filtering by a single channel for report generation.

Dates: allows to set the filter for generation of report for the selected period in calendar days.

Once the required parameters are set, click Next.

Figure 11.3.6.9

In the next window (figure 11.3.6.10) you will be prompted to enter the report name and select file extension.

Figure 11.3.6.10

Generated report will be downloaded as a separate file (figure 11.3.6.11).

Figure 11.3.6.11

An example of visits report is given below (figure 11.3.6.12). There are no configurable header and title fields for the visits report. The visits report displays the period for which it was generated. The bottom of the page contains the information about the date and time of report generation and the number of pages in the report.

VISITS REPORT

The report was prepared for the entire period

Nº s/p	Plate	Entry date/time	Exit date/time	Duration of day	Passage	User list
1	8KJX23		06.09.18 14:59:07		Exit without entry	Guest passes
2	85SXV1	06.09.18 10:49:37			Entry without Exit	Norway
3	94XPXZ		06.09.18 10:49:17		Exit without entry	
4	RLPT30	06.09.18 10:49:09			Entry without Exit	
5	85SXV1	06.09.18 10:48:15			Entry without Exit	Norway
6	68ZVJ4	10.08.18 10:33:08	06.09.18 10:43:00	27d 00h 09min	Exit	
7	ZBXJ08	10.08.18 10:32:57	06.09.18 10:42:54	27d 00h 09min	Exit	Norway
8	03HZD3	06.09.18 10:42:49			Entry without Exit	Toys LLC

Entries without exit: 4

Exits with entry: 2

Exits without entry: 2

Undefined: 0

Drivers on territory: 2

Passengers on territory: 0

Total people on territory: 2

Figure 11.3.6.12

Tarification report and user reports

Starting with the AM version 2.14, you can find user reports and the Tarification report in Web Client, using them is similar to using standard reports: filters are selected and a PDF file is generated as a result.

Tarification report can be found in the list of reports only when the Tarification module is enabled.

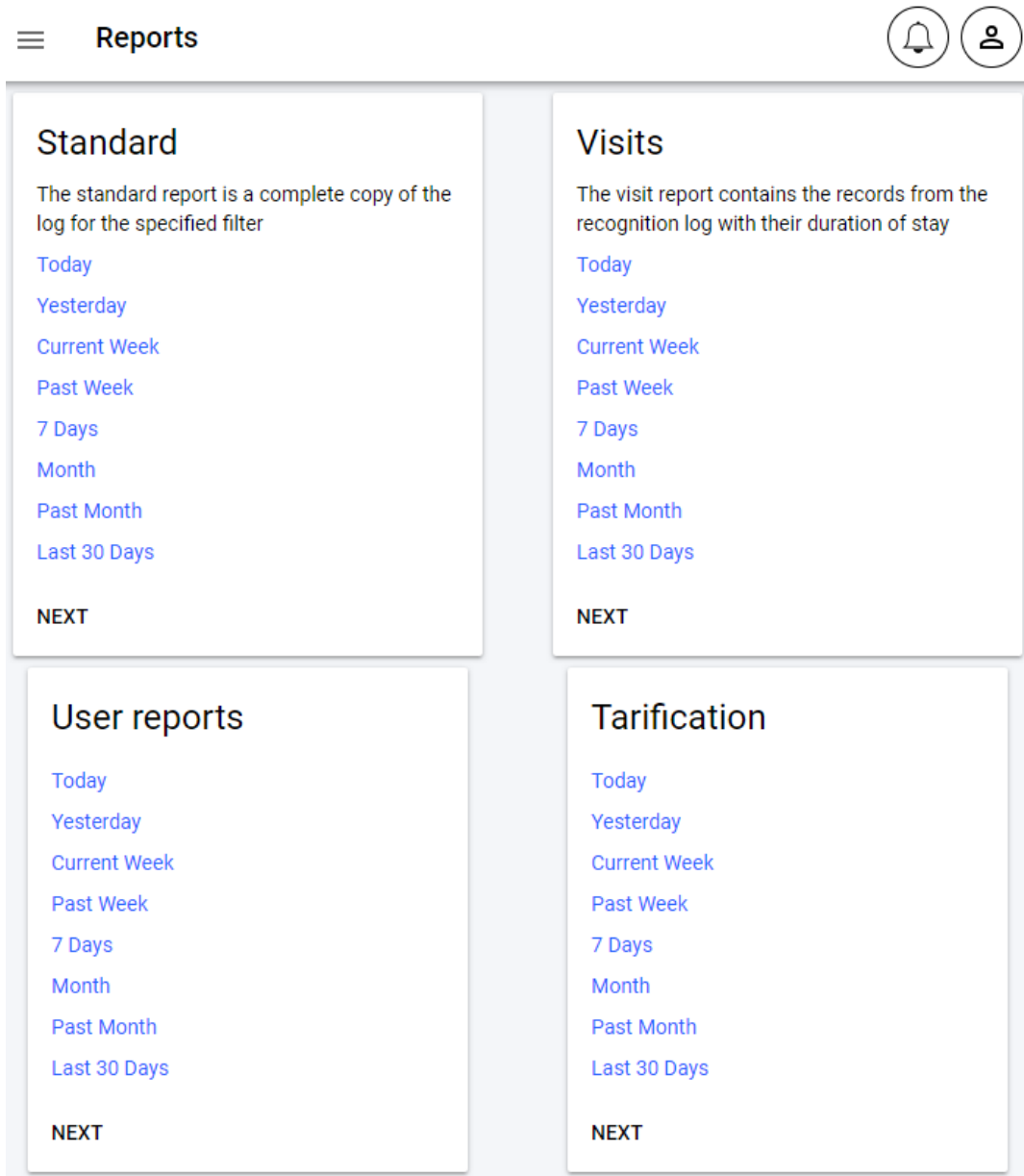


Figure 11.3.6.13

11.3.7. Settings

The settings (figure 11.3.7.1) allow to configure:

Users – users' access to video channels;

Video channels – displaying and controlling video channel triggers.

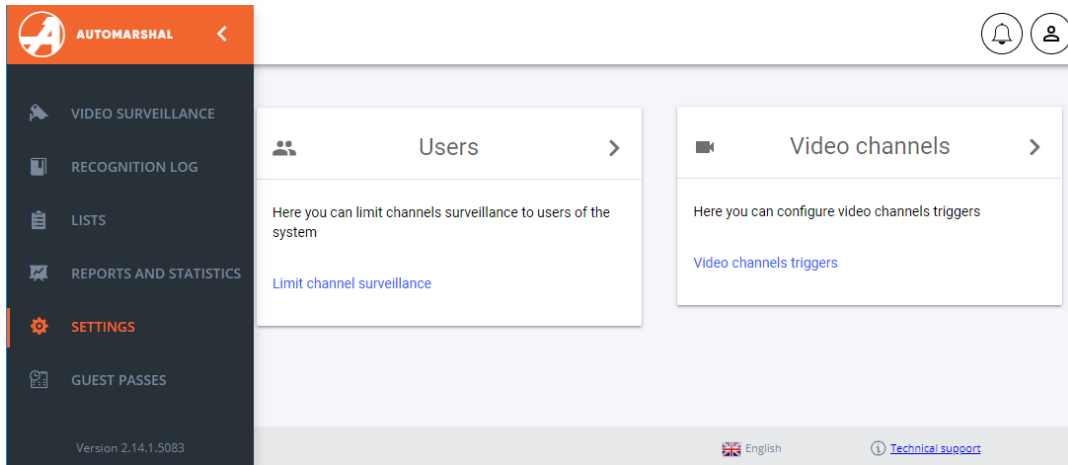


Figure 11.3.7.1

User settings

To switch to channel surveillance limits, click any button in Users tab (figure 11.3.7.1).

In figure 11.3.7.2, the digits identify the key interface elements.

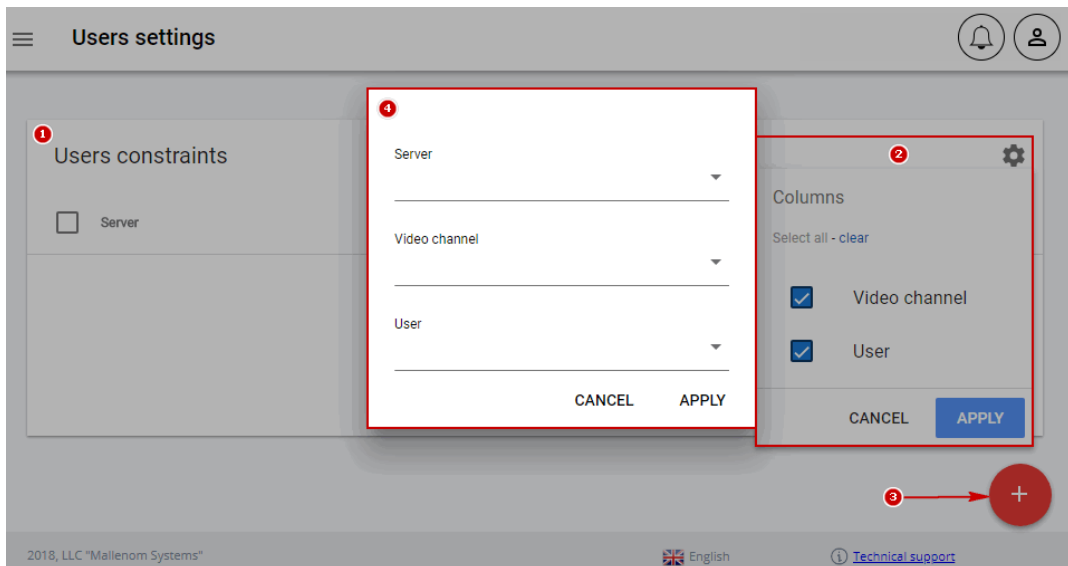


Figure 11.3.7.2


1. List of limits and relevant information.

The list is currently empty.

2. Configure fields display. There are two of them: a video channel limited for viewing, and user for which a limit is set.

3. Add entry to list.

4. New limit configuration window. It is used to configure the server, for which the limited channel will be selected, and to select account of a user who will be prevented from viewing this channel.

Once added, limits can be removed or edited. To make this function accessible, check the appropriate entry and click  configuration button in the upper right corner of the window, and select the required option from the drop-down menu (figure 11.3.7.3).

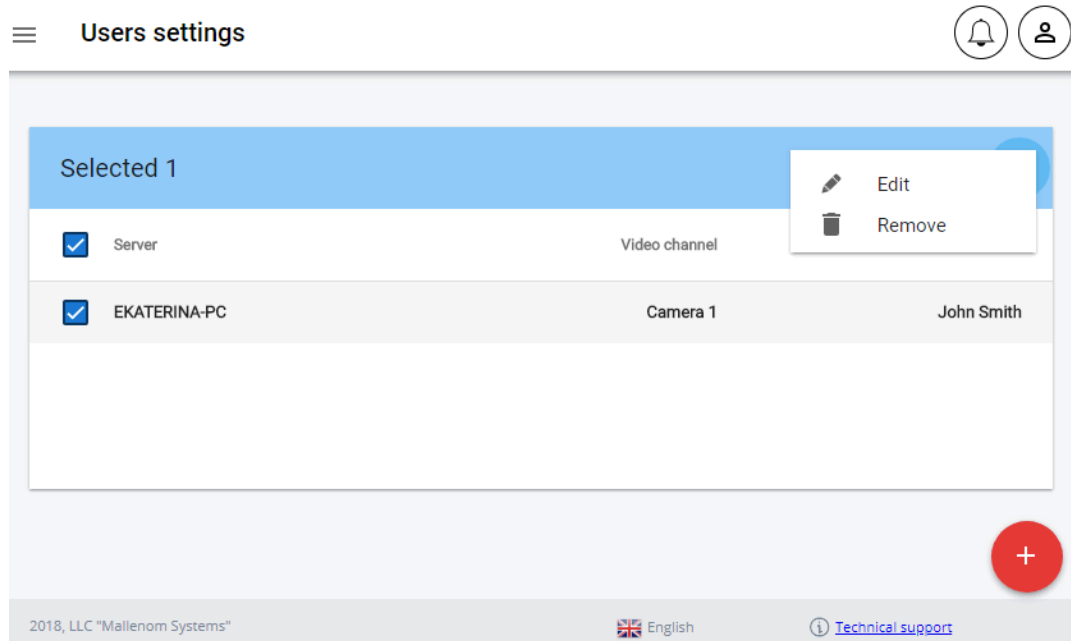


Figure 11.3.7.3

Configuring video channels

This section is used to manage triggers from Surveillance page in Web Client.

To switch to configuration of video channels, click any button in Video channels tab (figure 11.3.7.1).

In figure 11.3.7.4, the digits identify the key interface elements.

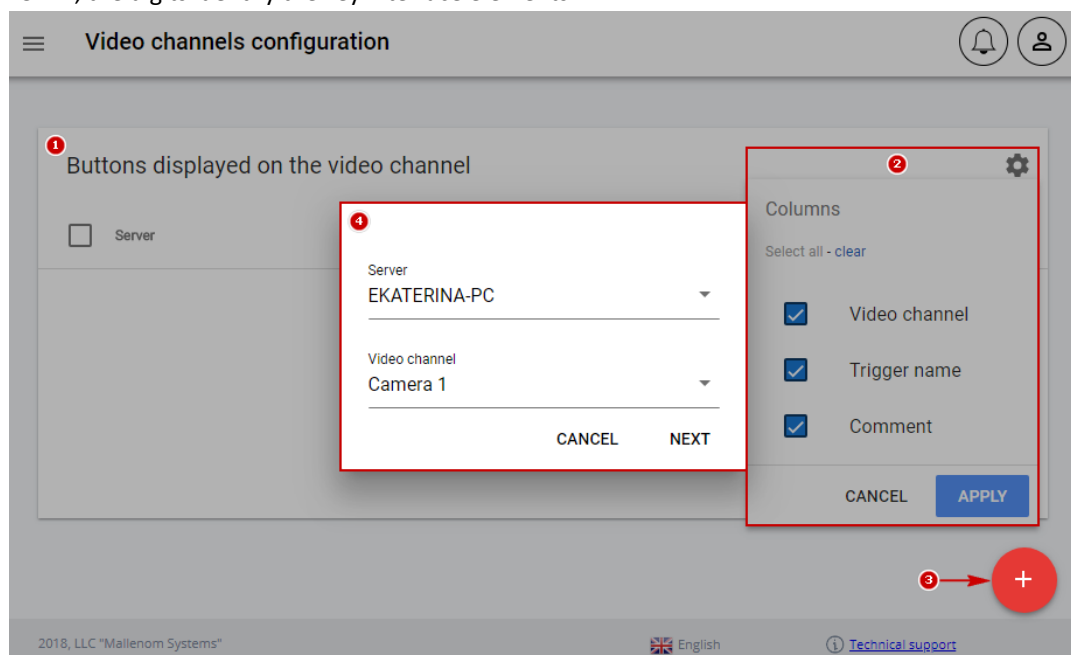


Figure 11.3.7.4

1. List of settings and relevant information.

The list is currently empty.

2. Configure field display. There are three of them on this page: video channel, trigger name and the comment.

3. Add an entry to the list button.
4. New limit configuration window. The first step is to specify the server and the video channel, i.e. trigger display is not configured for a specific user, they will be visible to all users who have permissions to view the Surveillance page.

The second step (figure 11.3.7.5) is to select a trigger. The comment field is not editable, it is completed when creating and configuring an AM trigger.

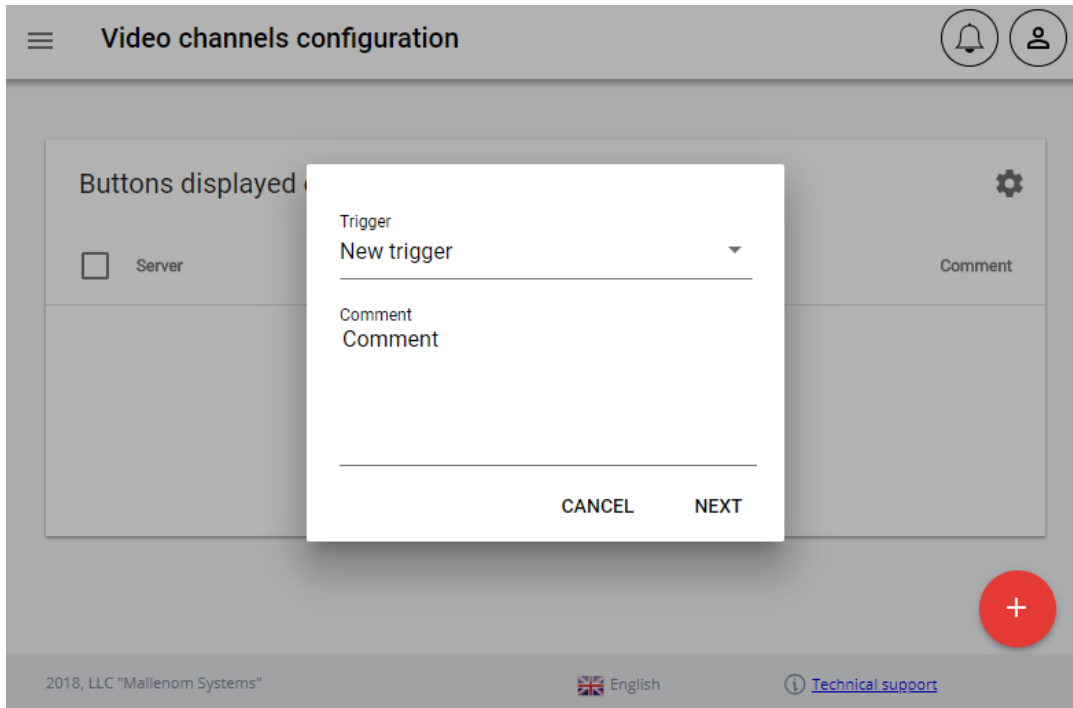


Figure 11.3.7.5

Triggers set for the video channels can be removed after creation. To activate this function, check the appropriate entry, click the setup button in the upper corner of the window and select Remove from the drop-down menu (figure 11.3.7.6).

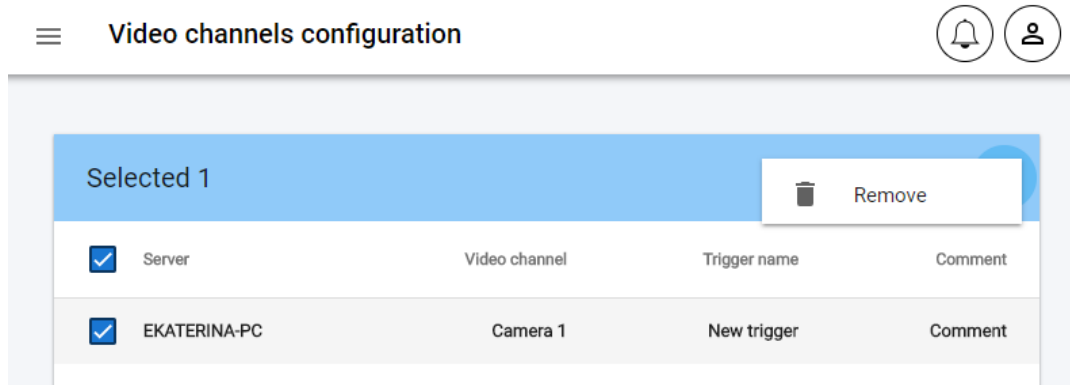


Figure 11.3.7.6

Screenshot below shows the example of trigger set for the video channel. The buttons displayed allow to control trigger activation manually (e.g. raise the barrier or switch the traffic lights, if the trigger is set to control them).



Figure 11.3.7.7

Video channel settings (figure 11.3.7.8) allow to enable / disable the display of triggers in the video channel. Disabling the display of triggers in the video channel by a user disables the display of triggers for all users since the trigger display setting is for the video channel but not for the specific user.

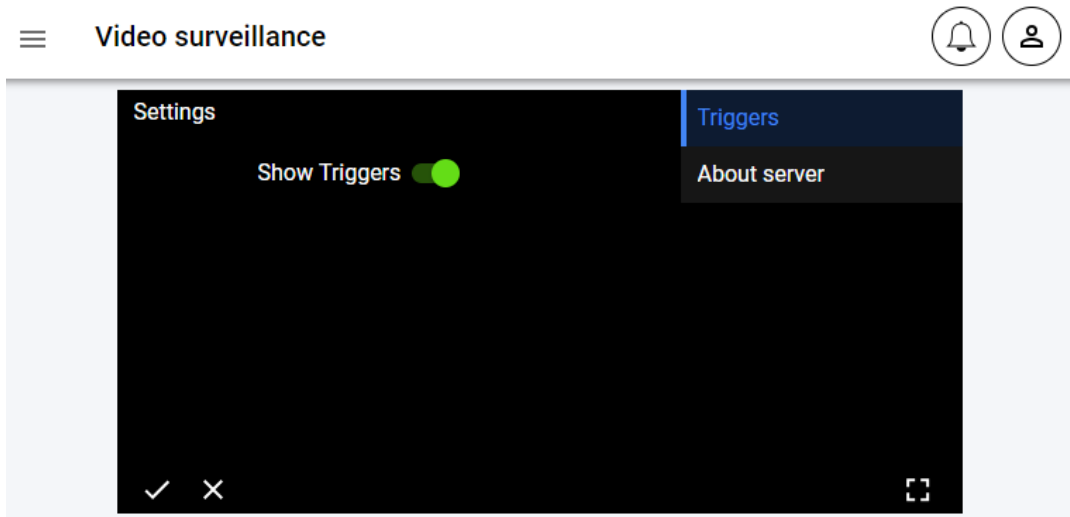


Figure 11.3.7.8

Not all users can control the display of triggers in the video channel. When display is attempted to be changed by a user who does not have enough permission to perform this operation, a corresponding notification window will be displayed (figure 11.3.7.9):

Access denied: there are not enough rights to perform this operation.

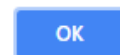


Figure 11.3.7.9

11.4. Users

There are five types of users in Web Client who are subdivided into three groups by limits.

1. Full access to all features of Web Client.

- Administrators
- Operator

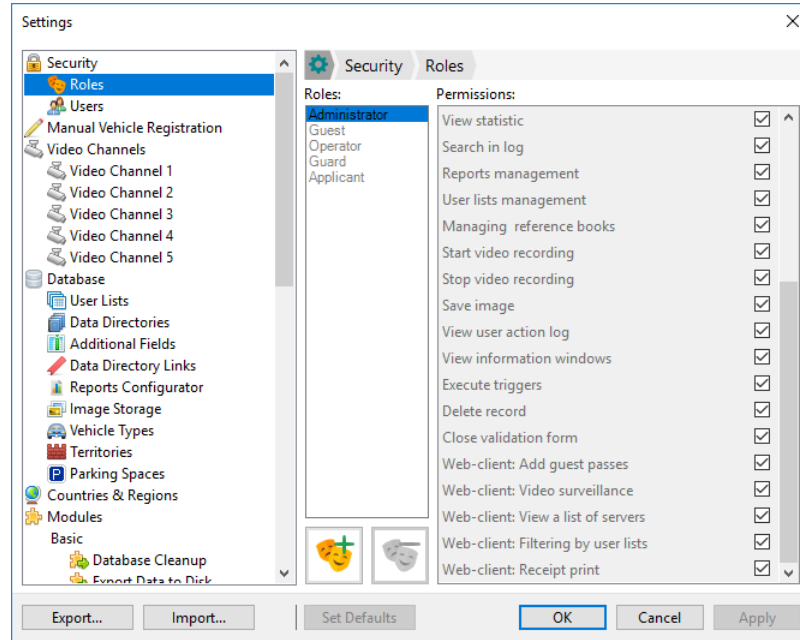


Figure 11.4.1

2. Partial access. Grants access to video surveillance, viewing log, creating guest passes, viewing list of servers.

- Guard
- Applicants

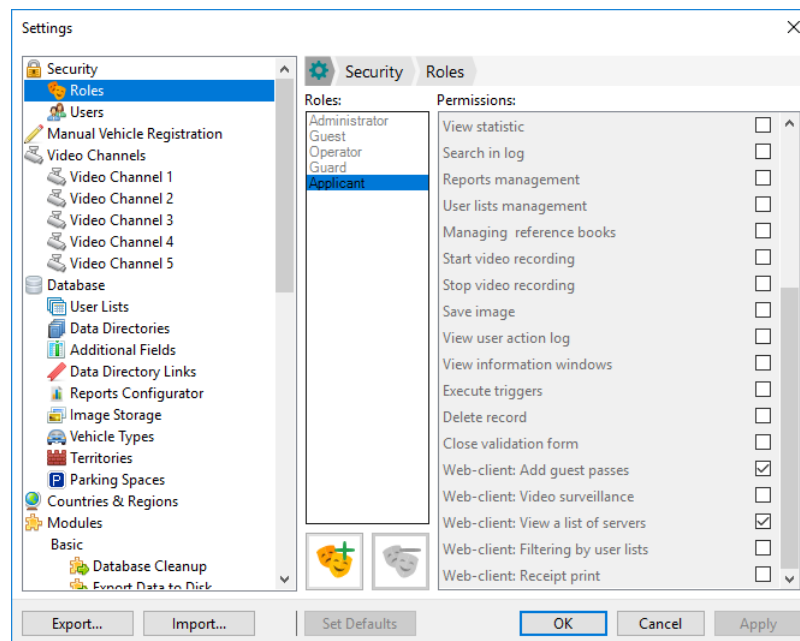


Figure 11.4.2

3. Access only to video, list of servers, filters by user lists.

- Guest

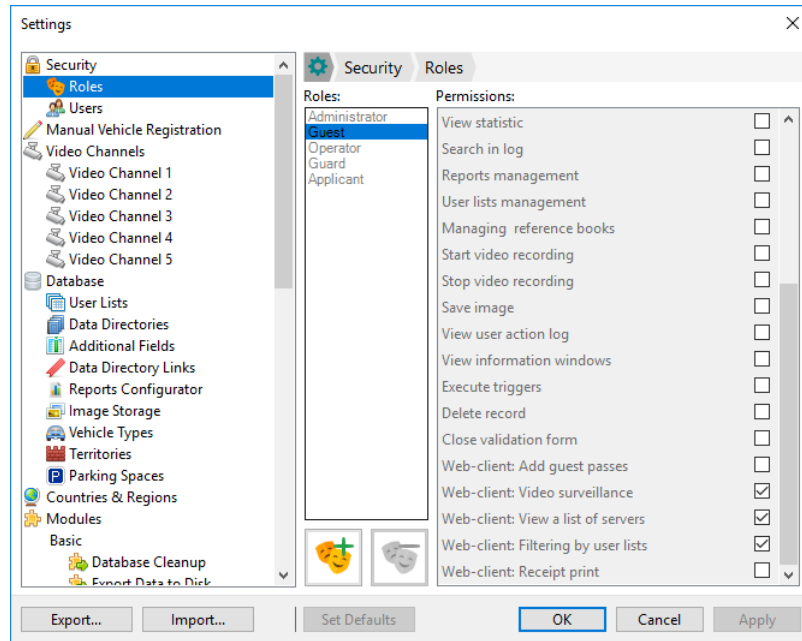


Figure 11.4.3

All users and permissions are configured in Automarshall software.

Permissions affecting user's access to Web Client features:

- Viewing log;
- Manual recognition;
- Report management;
- User list management;
- Trigger activation;
- Web Client: Adding guest passes;
- Web Client: Viewing video;
- Web Client: Viewing server list
- Web Client: Filtering by user lists;
- Web Client: Printing ticket.

Side menu in Web Client is displayed depending on the access rights of the user.

Administrator:

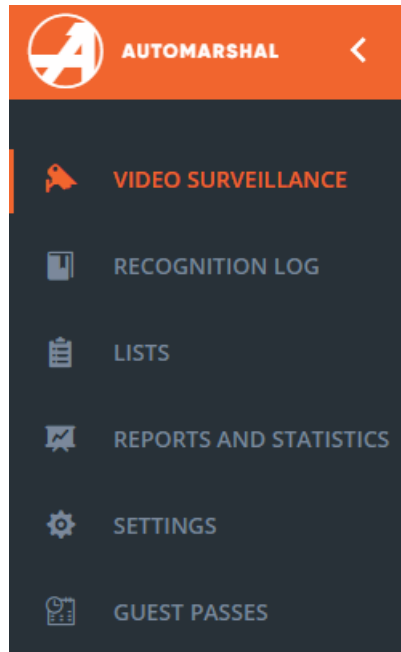


Figure 11.4.4

Guard:

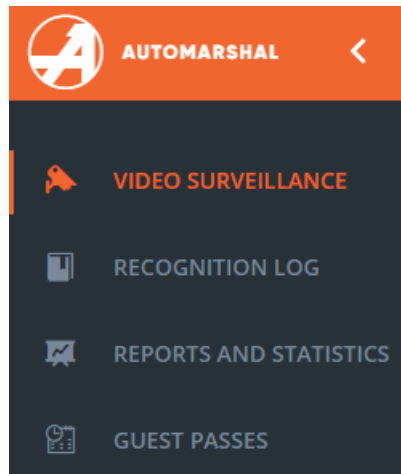


Figure 11.4.5

Applicant:

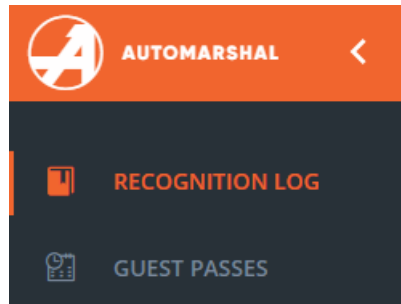


Figure 11.4.6

Guest:

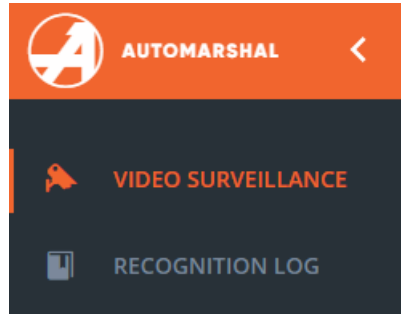


Figure 11.4.7

11.5. Possible errors

- **Error 401:** Authorization error

The user is not authorized or has insufficient permissions for this operation.

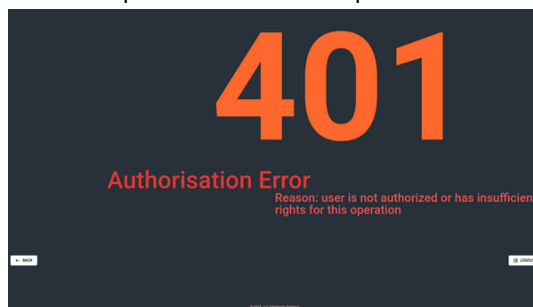


Figure 11.5.1

- **Error 403:** access forbidden

You do not have access to view this page, request permissions from your administrator or change user account type in the Automarshal software interface.

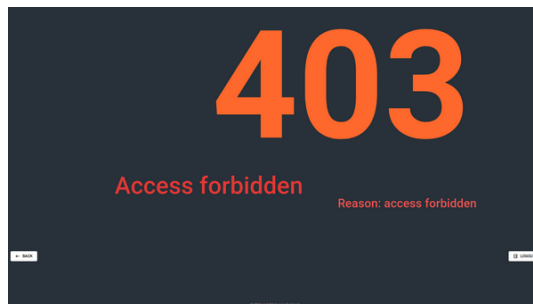


Figure 11.5.2

Security dongle not found.

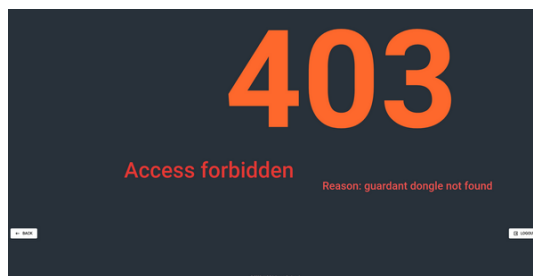


Figure 11.5.3

- **Error 404:** page not found

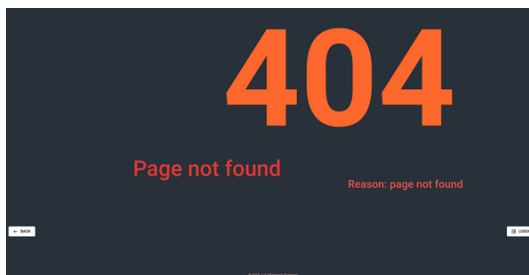


Figure 11.5.4

- **No image on video surveillance page**

Try the following steps:

1. Press Ctrl + F5 key combination on the video surveillance page.
2. Try to restart Http Server module in Automarshal software.
3. In Http-сервер module settings change the value in Port field and click Apply, then re-enter the previous value and click Apply again.
4. Try to reinstall Web Client.

- **Duplicate video channels**

Change the IpAddress field in ServersMetadata table (Only accessible through database editing).

- **No image beyond local area network**

Http server is likely to be configured incorrectly. Configure Web Client in accordance with section 11.2 of Web Client Configuration Manual.

11.6. HTTP queries

11.6.1. Working with lists through the API Web Client

To work with the user lists queries described below, it is required that the Web Client version be at least 2.14.

HTTP queries allow using the capabilities of the Automarshal Web Client in third-party applications. Using HTTP queries, it is possible to carry out the receipt of data from the Automarshal Web Client and transmission of the queries for adding, modifying and deleting records in user lists.

Authorization

Before starting the work, it is necessary to pass the authorization by sending the following query:

```
POST /login
```

A POST query for authorization shall send to the server an object serialized in JSON with the following fields:

- username - string;

user's login.

- password - string;

user's password.

- isRememberMe - boolean;

the necessity to resume the session after restarting the browser

The example of a serialized JSON object sent to the server for authorization as a guest account:

```
{
  username: "guest",
  password: "",
  isRememberMe: false,
}
```

The example of response in JSON format:

```
{
  "redirectUrl": "/",
  "isAuthorized": true
}
```

The example of response in XML format:

```
<LoginResult xmlns="http://schemas.datacontract.org/2004/07/
Automarshal.Http.Framework.Entities.Login" xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <IsAuthorized>true</IsAuthorized>
  <RedirectUrl></RedirectUrl>
</LoginResult>
```

Besides the data (JSON/XML), the server will return the cookie variables.



For further work, it is necessary to transmit the cookie variables to the server with each query. Otherwise, the server will consider that the query came from a non-authorized user.

Queries

1. Getting an array of lists

Get all lists in order to determine the identifier of the needed list

HTTP GET: <http://localhost:45555/api/v1/vehiclelists?offset=0&count=20>

Parameters:

offset - an offset;

count - the required number (maximum 35).

In response, the following object consisting of two fields entries and _metadata will be received:

1. entries - an array of received lists.

The entity of a list consists of the following fields:

id - long; it returns and sets the list identifier;

displayName - string; it returns the displayed name of a list;

name - string; it returns the list name;

color - string; it returns and sets the list color;

order - int; it returns and sets the priority order of a list;

status - int; it returns and sets the list status;

fields - VehicleListFieldEntry; array [of the list's fields],

- *id* – int; it returns and sets the identifier of the list's field;
- *displayName* – string; it returns the name of a list's field.

passTemplateId – long; it returns and sets the identifier of a pass template;

passTemplate – PassTemplateEntry; the entity of a pass template,

- *id* – long; it returns and sets the unique identifier of a record;
- *totalCount* – int; it returns and sets the maximum possible number of passages;
- *displayName* – string; the object containing the displayed name of a pass;
- *allowedPeriod* – int; the allowed period during a day (10-15);
- *schedules* – ScheduleEntry; array of the passes' schedules,

The entity of a passes' schedule (only one entity in an array is allowed):

- *id* – long; it returns and sets the unique identifier of a record;
- *beginTime* – string; it returns and sets the date of beginning of the period of work (UTC);;
- *endTime* – string; it returns and sets the date of end of the period of work (UTC);
- *beginTimeOfDay* – int; it returns and sets the beginning of the period of work (in ms from the beginning of a day);;
- *endTimeOfDay* – int; it returns and sets the end of the period of work (in ms from the beginning of a day);
- • Return and set the value indicating whether the period of work has been selected for a specified day:

mon – boolean;

tue – boolean;

wed – boolean;

thu – boolean;

fri – boolean;

sat – boolean;

sun – boolean.

- **workDay** – boolean; it returns and sets the value indicating whether a weekday of the work calendar has been selected;
- **dayOff** – boolean; it returns and sets the value indicating whether a day off of the work calendar has been selected.

defaultVehicleTypeId – long; it returns the identifier of a vehicle type by default;

defaultVehicleType – VehicleType; it returns a vehicle type by default,

The entity of a vehicle type by default:

- **comment** – string; the comment to a vehicle type, for example: “Default vehicle type”;
- **description** – string; the description of a vehicle type, for example: “The vehicle type has been created by the system automatically”;
- **id** – long; identifier of a vehicle type;
- **isDefault** – boolean; it returns and sets the default vehicle type;
- **name** – string; name of a vehicle type;
- **spaceRatio** – double; it returns and sets the value of the space occupied by a vehicle type.

constraints – ListsConstraints; it returns the constraints of a list.

2. **_metadata**

offset – int; the current offset;

limit – int; the number of received lists;

totalCount – int; the total number of lists in the database.

The example of a response is given below:

```
{
  "entries": [
    {
      "id": 2,
      "displayName": "Guest passes",
      "name": "guestPassesList",
      "color": "#33CC33",
      "order": 0,
      "status": 0,
      "fields": [
        {
          "id": 5,
          "displayName": "Record made by"
        }
      ]
    },
    "passTemplateId": 0,
    "passTemplate": {
      "id": 2,
```



```

    "totalCount": 2147483647,
    "displayName": "",
    "allowedPeriod": null,
    "schedules": [
      {
        "id": 5,
        "beginTime": null,
        "endTime": null,
        "beginTimeOfDay": null,
        "endTimeOfDay": null,
        "mon": true,
        "tue": true,
        "wed": true,
        "thu": true,
        "fri": true,
        "sat": true,
        "sun": true,
        "workDay": true,
        "dayOff": true
      }
    ]
  },
  "defaultVehicleTypeId": 1,
  "defaultVehicleType":
  {
    "comment": "Default vehicle type"
    "description": "The vehicle type has been created by the system automatically"
    "id": 1
    "isDefault": true
    "name": "Unknown vehicle type"
    "spaceRatio": 1
  },
  "constraints": null
}
],
"_metadata": {
  "offset": 0,
  "limit": 20,
  "totalCount": 27
}
}

```

2. Getting vehicle types

To get the possibility to select a vehicle type of the added record:

HTTP GET: <http://localhost:45555/api/v1/vehicletypes>

In response, the following array of objects will be received :

```

[
  {
    "id": 5,
    "name": "Minibuses",
    "description": "",
    "comment": "",
    "spaceRatio": 1.5,
    "isDefault": false
  },
  {
    "id": 1,
    "name": "Unknown vehicle type",
    "description": "The vehicle type has been created by the system automatically",
    "comment": "Default vehicle type",

```

```

"spaceRatio": 1.0,
"isDefault": true
}
]

```

3. Getting list records

HTTP GET: <http://localhost:45555/api/v1/vehiclelist/records?id=95&offset=0&count=20&searchquery=>

Query parameters:

id - list identifier;

offset - the offset;

count - the number of the records to be received (maximum 35);

searchquery - the query for filtering records (for example: Ivanov).

1. entries – the array of recieved entries

id – long; it returns and sets the identifier of an entry;

plate – string; it returns and sets a vehicle plate;

fieldValues – VehicleListRecordFieldValue; it returns the fields' values,

- *id* – long; it returns the identifier;
- *fieldId* – long; it returns the identifier of the field to which the value belongs;
- *value* – string; it returns a field's value.

passes – PassEntry; it returns and sets a list of passes,

- *id* – long; it returns and sets the unique identifier of an entry;
- *totalCount* – int; it returns and sets the maximum possible number of passages;
- *currentCount* – int; it returns and sets the number of passages;
- *flags* – int; it returns and sets the current status of a pass;
- *createdOn* – DateTime; it returns and sets the date/time of a pass creation (UTC);
- *comment* – string; it returns and sets a comment;
- *recordId* – long; it returns and sets the unique identifier of a bind entry in the user table;
- *createdById* – long; it returns and sets the identifier of the user during whose work the entry was created;
- *schedules* – ScheduleEntry; it returns and sets the time intervals of work ([see the schedules](#)).

vehicleTypeId – long; it returns and sets the identifier of a vehicle type;

vehicleType – VehicleType; it returns and sets a vehicle type.

2. _metadata

([see. metadata](#))

In response, the following object will be received:

```
{
  "entries": [
    {
      "id": 170,
      "plate": "A222AA22",
      "fieldValues": [
        {
          "id": 152,
          "fieldId": 39,
          "value": "User2"
        }
      ],
      "passes": [
        {
          "id": 165,
          "totalCount": 2147483647,
          "currentCount": 0,
          "flags": 0,
          "createdOn": "0001-01-01T00:00:00",
          "comment": "",
          "recordId": 0,
          "createdById": 0,
          "schedules": [
            {
              "id": 10190,
              "beginTime": "2018-10-31T12:19:55.0000000",
              "endTime": "2018-11-01T12:19:55.0000000",
              "beginTimeOfDay": 28800000,
              "endTimeOfDay": 36000000,
              "mon": true,
              "tue": true,
              "wed": true,
              "thu": true,
              "fri": true,
              "sat": true,
              "sun": true,
              "workDay": true,
              "dayOff": true
            }
          ]
        }
      ],
      "vehicleTypeId": null,
      "vehicleType": null
    },
  ],
  "_metadata": {
    "offset": 0,
    "limit": 13,
    "totalCount": 4
  }
}
```

The example of a vehicle type object::

```
{
  "comment": ""
  "description": ""
  "id": 3
  "isDefault": false
}
```

```
"name": "Truck"
"spaceRatio": 1.2
}
```

4. Deletion

If you have the identifier of certain entry of the list, you may delete such entry:

HTTP DELETE: <http://localhost:45555/api/v1/vehiclelist/record?id=260>

5. Adding an entry

HTTP POST: <http://localhost:45555/api/v1/vehiclelist/record?id=100>

Query parameters:

id - the identifier of the list to which the entry is added.

It is necessary to send the following object in the query's body:

```
{
  "Id": 0,
  "Plate": "Test1",
  "VehicleTypeId": 4,
  "VehicleType": {
    "Id": 4,
    "Name": "Buses",
    "Description": "",
    "Comment": "",
    "SpaceRatio": 1.4,
    "IsDefault": false
  },
  "FieldValues": [
    {
      "FieldId": 39,
      "Value": "igor"
    }
  ],
  "Passes": [
    {
      "Id": 22,
      "TotalCount": 2147483647,
      "Schedules": [
        {
          "Id": 187,
          "BeginTime": "31.10.2018 12:19:55",
          "EndTime": "01.11.2018 12:19:55",
          "BeginTimeOfDay": 28800000,
          "EndTimeOfDay": 36000000,
          "WorkDay": true,
          "DayOff": true,
          "Mon": true,
          "Tue": true,
          "Wed": true,
          "Thu": true,
          "Fri": true,
          "Sat": true,
          "Sun": true
        }
      ]
    }
  ],
  "AllowedPeriod": null
}
```

The following entry has been created:

Number - Test1

Vehicle type id - 4

Vehicle type – Buses

The list's field (39) contains the entry "igor"

The pass is not limited by the number of passages

The pass is valid from 31.10.2018 12:19:55 to 01.11.2018 12:19:55

The pass is valid from 8-10 am

The pass is valid on any day of the week.

6. Modifying an entry

If you have the identifier of certain entry of the list, you can modify such entry:

HTTP PUT: <http://localhost:45555/api/v1/guestslist/record>

It is necessary to send the modified entry in the query's body.



IMPORTANT NOTE:

The identifiers of an entry before and after the modification must be the same (except for a vehicle type – it can be changed). This applies to such identifiers as: entry id, pass id, schedule id, identifiers of a list's fields and fields in a modified entry (the array of FieldValues objects).
