



IP VIDEO SURVEILLANCE SOFTWARE

USER GUIDE

Version 1.8

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1. MACROSCOP Products and Features

MACROSCOP — is a software package for intellectual analysis, archiving, and displaying video data for the IP video surveillance distribution systems.

Installation Package Description

An installation package contains the main software product of the package and the additional components required for setup.

Software products and components	Package			
	Server	Client	Standalone	Monitoring
MACROSCOP Server	✓	—	—	—
MACROSCOP Client	—	✓	—	—
MACROSCOP Standalone	—	—	✓	—
MACROSCOP Monitoring	—	—	—	✓
MACROSCOP Configurator	✓	✓	✓	—
MACROSCOP Status Info	✓	—	—	—
MACROSCOP Player	✓	✓	✓	—
Local view and archive backing up	✓	✓	✓	—

Log packing	✓	✓	✓	✓
Debugging mode "on / off" commands	✓	✓	✓	✓

MACROSCOP Server is a server application for receiving, archiving and providing intellectual analysis of the video data from IP-videocameras. It is installed on a separate server computer, which processes data and stores the archive. This computer must be highly reliable and be able to function in a non-stop mode. A license file is provided with a distribution package for server functioning.

MACROSCOP Client — is a network client application of the video surveillance distribution system, which provides the real-time channels monitoring, archive processing and other functions of the video surveillance system. It is installed on the computers of operators, security department supervisor, other video surveillance system users. A license file is not required for MACROSCOP Client functioning.

MACROSCOP Standalone is an application that combines the functions of video surveillance system server and video surveillance system client. It is installed on a separate server computer which both processes the data, stores the archive and displays the videostreams in real time. This computer must be highly reliable and be able to function in a non-stop mode. Standalone functioning requires a license file that is provided with a distribution package.

MACROSCOP Monitoring is an application used for monitoring the status of video surveillance system components.

MACROSCOP Configurator is an application for configuring MACROSCOP video surveillance system.

MACROSCOP Status Info is an application for notifying the user about the current server status.

MACROSCOP Player is an application for a quick viewing of video files exported in MACROSCOP internal format (*.MCM).

Local view and archive backup is an application for viewing and copying archive files.

Log stowage packaging is an application for extracting system logs and recording them in a single archive file.

Debugging mode on /off commands turn on/off the debugging mode, which allows the user to record more detailed information in the system log files.

2. MACROSCOP Installation

2.1. Guidelines for Hardware Platform Selection and Setting Up

Server requirements can be calculated at the website <http://macroscop.com/en> at the "Calculator" tab.

Prior to installing the operating system and in order to obtain maximum productivity, please turn off processor's energy-saving technologies: Cool'n'Quiet from AMD company and SpeedStep or EIST from Intel (settings are made at BIOS motherboard, usually at the sections Advanced/CPU). In order to use SATA-disks, don't forget to set the AHCI value for SATA mode (settings are made at BIOS motherboard, usually at the sections Advanced/SATA).

2.2. Guidelines for Operating System (Windows) Setting Up

- The computer must be running one of the following operating systems: Microsoft Windows Server 2003 / Server 2008 / XP / Vista / 7 / 8;

Guidelines for setting up operating system:

- Control panel → Power supply: High performance.
- Control panel → User account → User account control parameters: Never notify.
- Control panel → Network → Internet → Network connections → Adapter properties: disable IPv6.
- Install all Windows updates, afterwards disable Autoupdate.
- Set the time zone corresponding to the server location and set the exact time corresponding to this time zone.

- The computer must have an open network port 8080 and port 80 for connection with camera (in case of input from RTSP video stream cameras it is also necessary to open port 554).
- It is recommended to disable the firewall.
- Antivirus installed on the computer should not scan http- and rtsp-traffic, including the incoming streams from IP cameras, because it can significantly decrease system performance. Also, add MACROSCOP files to the list of trusted applications of anti-virus and firewall (MacroscopServer.exe, MacroscopClient.exe, MacroscopArhivePlayer.exe), as video stream checking consumes a significant amount of computing resources.

2.3. Software Installation (Windows)

Close all Windows applications. Insert a **MACROSCOP** CD into the CD/DVD-ROM. If the distribution package is downloaded from the Internet, run the "MacroscopInstaller.exe" file. You will see a setup menu (Fig. 1). Follow the instructions on the screen.



Fig. 1

3. MACROSCOP Video Surveillance System Setting Up (MACROSCOP Configurator)

MACROSCOP system setting up is performed with **MACROSCOP Configurator**.

3.1. Start Working with MACROSCOP

After installing **MACROSCOP Server** (or **MACROSCOP Standalone**) please follow the following procedure in order to explore full range of options of working with the system:

1. If the **MACROSCOP Server** is installed on the **Linux** operating system, MACROSCOP Client, which contains a MACROSCOP Configurator application, must be installed on a separate computer with Windows operating system.
2. Run **MACROSCOP Configurator**, indicating server IP address and network port (8080 by default), user name and password (**root** with an empty password by default).
3. Configure server settings with **MACROSCOP Configurator**.
3. Set up cameras (connection to cameras, archiving settings, intellectual functions, etc.) by using **MACROSCOP Configurator**.
4. Configure user accounts of the system by using **MACROSCOP Configurator**.
5. Apply configuration and close **MACROSCOP Configurator**.
6. Install and run **MACROSCOP Client**, configure set up viewing parameters at the client's workstation.

3.2. Video Surveillance System Setting Up with MACROSCOP Configurator Application.

MACROSCOP Configurator allows the user to create and edit the settings of **MACROSCOP** system:

- camera (channel) settings;
- server settings;
- user rights settings;

- object plan settings;
- view (screen profile) settings.

MACROSCOP Configurator allows the user to:

- save the current configuration in a file;
- upload a previously saved configuration from a file;
- install licenses.

3.2.1. MACROSCOP Configurator Start

This application can be run in several ways:

Option 1. Start from the "Start" menu.

Start —>Programs —>MACROSCOP Server (or Client) —>MACROSCOP Configurator".

You will see the "Start" screen (fig.2), where you can select one of the actions related to system set-up.

The following actions are available:

- Connect to Selected Server from List;
- Connect to Other Server;
- Edit Server Settings;
- Install License;
- Create Empty Configuration;
- Load Configuration from File.

When you select any action, a login window will appear (Fig.3). To continue, please enter a user name with an authorization to configure such server (configurations) and a password.

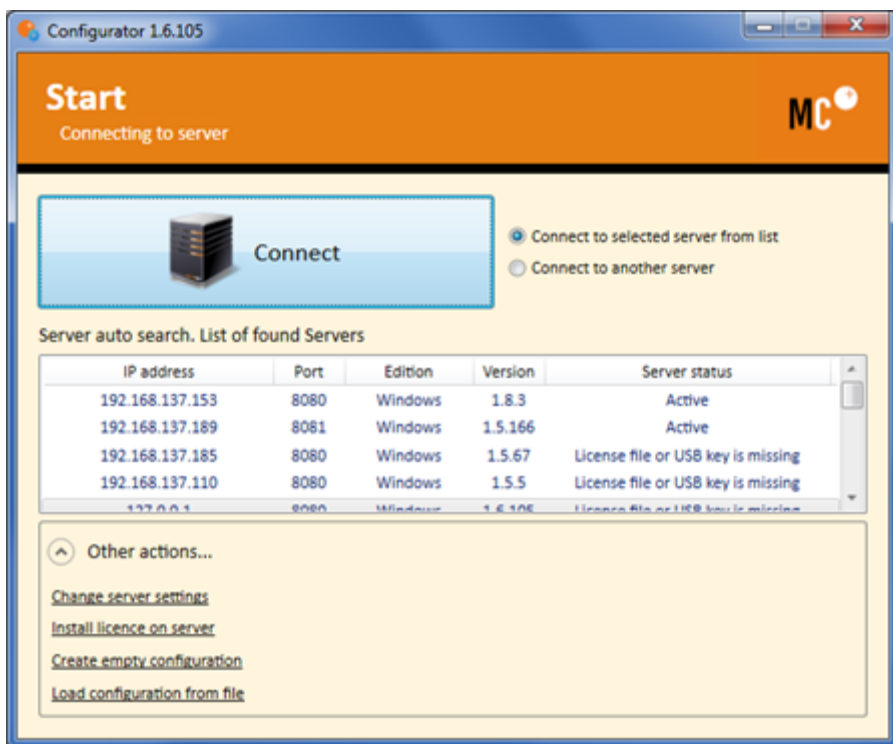
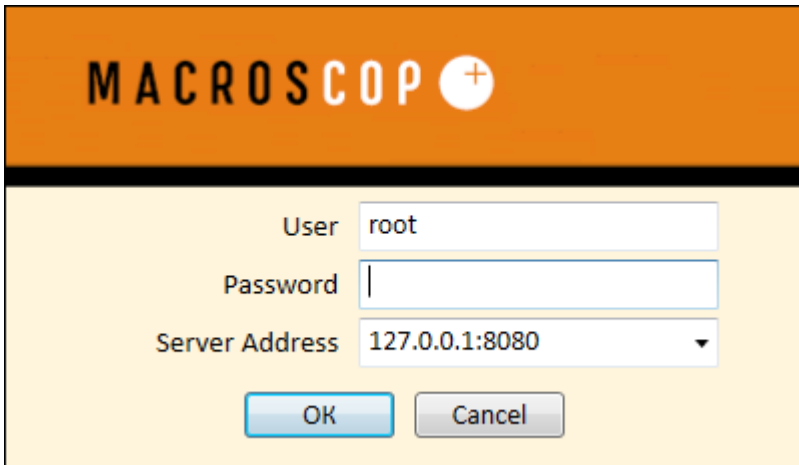


Fig.2



The image shows a login dialog box for the MACROSCOP software. It has an orange header bar with the 'MACROSCOP' logo, which consists of the word 'MACROSCOP' in a bold, sans-serif font followed by a white circle containing a plus sign. Below the header, the dialog box has a light yellow background. It contains three input fields: 'User' with the text 'root', 'Password' which is empty, and 'Server Address' with the text '127.0.0.1:8080' and a small downward arrow on the right. At the bottom, there are two buttons: 'OK' and 'Cancel'.

Fig.3

Configuration editor will appear after you have logged into the system (Fig.4).

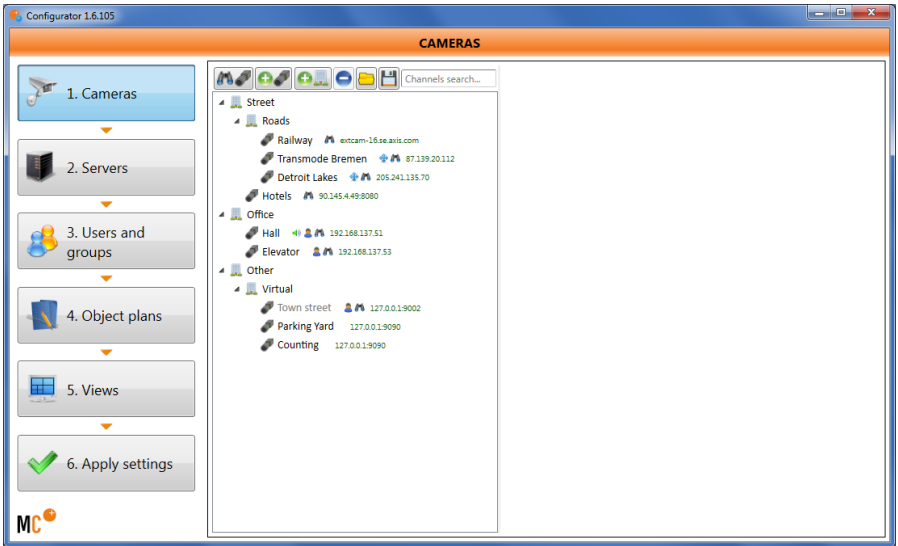


Fig.4

Option 2. Start from MACROSCOP Client application.


Go to control panel, (Fig.4) press "Settings",  settings menu will appear, select "System Settings".



Fig.5 MACROSCOP Client control panel

Option 3. Start from the main screen of MACROSCOP Standalone. If you use **MACROSCOP Standalone**, use the "Configurator" button on the Main Screen (Fig.6).



Fig.6

3.2.2. License Installation

Perform the following actions:

1. Run **MACROSCOP Configurator**.
2. Select **"Install license on server"**

3. Press the "**Browse**" button in the appeared window (Fig.7) and select a file with the license.
4. Press the "**Install**" button.

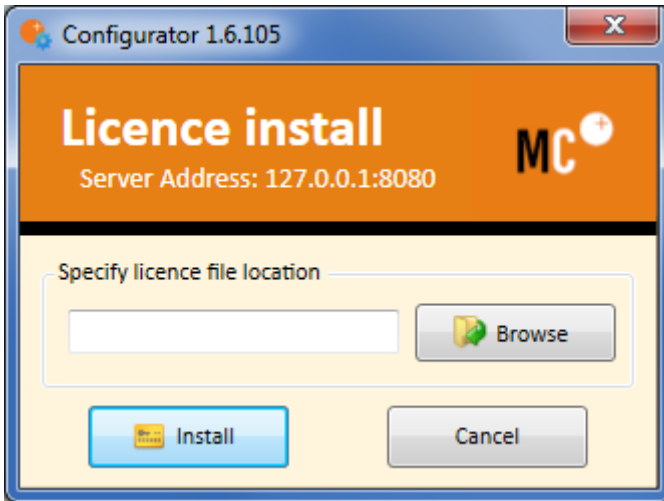


Fig.7

3.2.3. Configuration Application and Storage. Configuration Control

You have to apply the settings after making any configuration changes.

A warning window will appear if you try exiting **MACROSCOP Configurator** application without applying the settings (Fig.8).

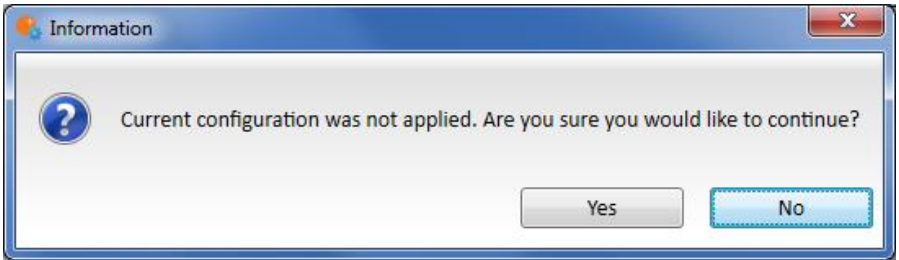


Fig.8

In order to apply the settings, use the "**Apply Settings**" page of the configuration editor. Control elements located on this page allow the user to save configuration settings in a separate file, check current server status and obtain a list of settings from all channels.

3.2.3.1. Configuration Application

1. Press "**6. Apply settings**".
2. Press the "**Apply**" button at the appeared page (Fig.9).

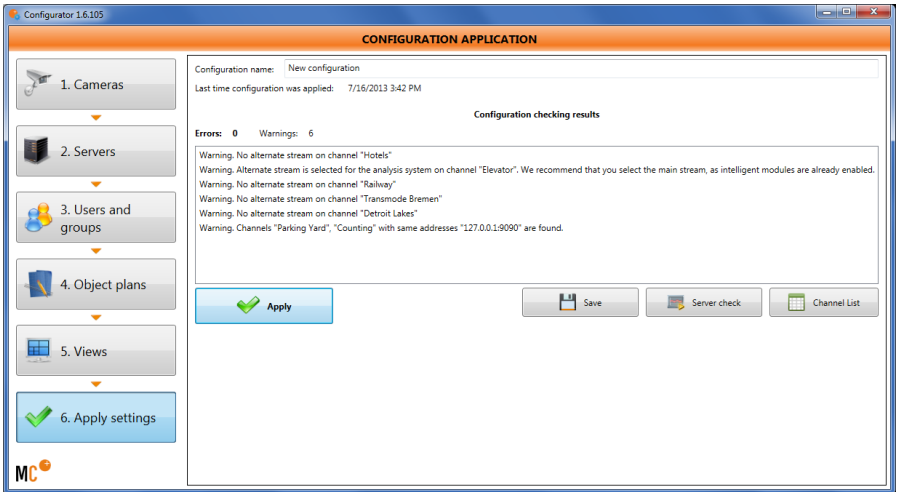


Fig.9

3.2.3.2. Save Configuration on a Disk

MACROSCOP Configurator allows to save the system configuration in a separate file. This option allows for the following:

- Restore the configuration after unsuccessful changes.
- In case of equipment change, install the configuration taken from the old out-of-service server onto the new server.
- In case of replication, install a general configuration on the servers.

In order to save the current configuration in a file:

1. Press **"6. Apply settings"**.
2. Press **"Save"** at the appeared page.

3. In the appeared window (Fig.10) enter the file name for the file you are saving in the "**File name**" field and press the "**Save**" button.

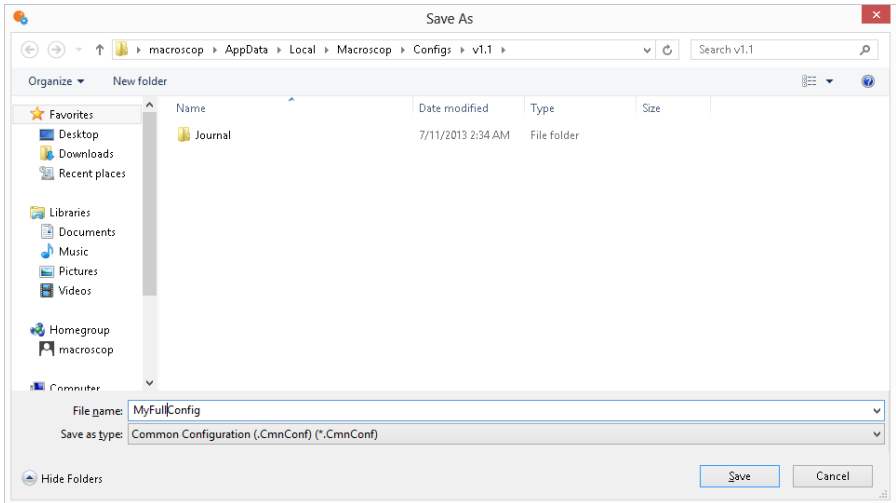


Fig.10

3.2.3.3. Server Check

In order to check the current state of system's servers:

1. Press "**6. Apply settings**".
2. Press "**Server Check**" at the appeared page.
3. A new window will appear, showing the current state of each server of the system (Fig.11).

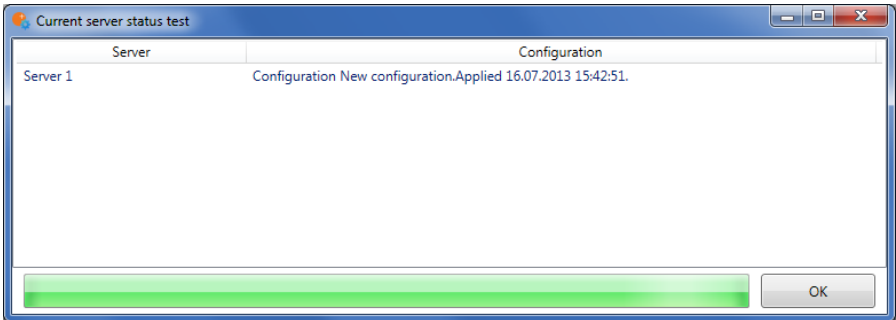


Fig.11

3.2.3.4. Channel List

In order to obtain a list of settings of all system channels:

1. Press **"6. Apply settings"**.
2. Press the **"Channel List"** button at the appeared page.
3. A new window will appear, showing the current settings of each server of the system (Fig.12).

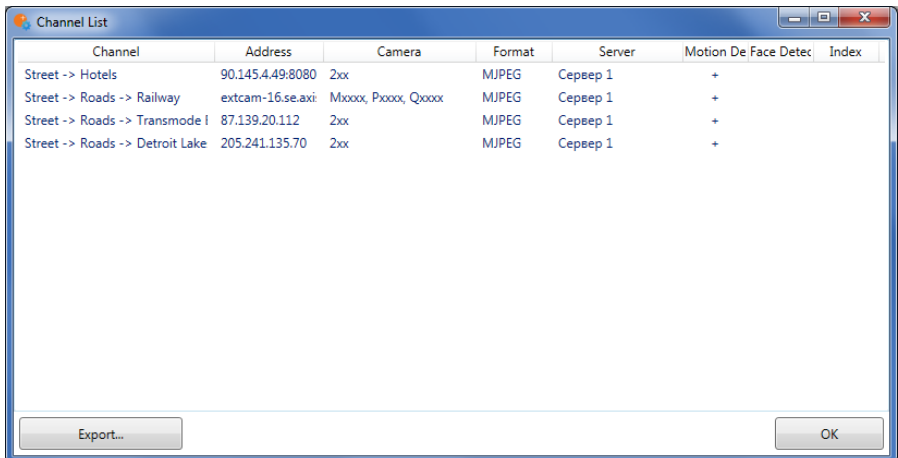


Fig.12

In order to download the channel list in CSV or XPS file, press the **"Export..."** button.

3.2.4. Server Settings

Server settings determine which servers are connected to the system, network settings for these servers, as well as the parameters for storing the archive on the server's hard drives.

In order to open the server configuration page, press **"2.Servers"** (Fig.13).

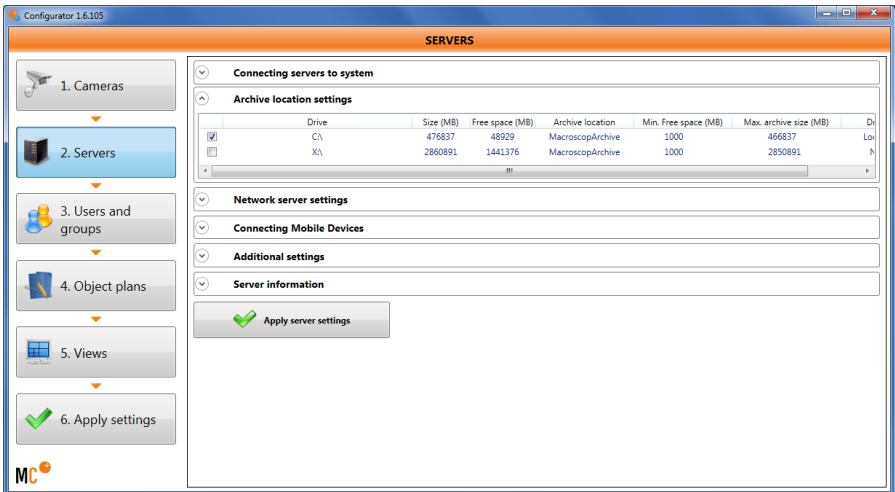


Fig. 2

In order for the server configuration changes to become effective, press **"Apply Server Settings"** button. The server will reload.

A description of each section of the server configuration page is given below.

3.2.4.1. Connecting Servers to System

This section (Fig.Fig. 14) allows the user to connect new servers to the system, disconnect the servers connected earlier and change the addresses of connected servers.

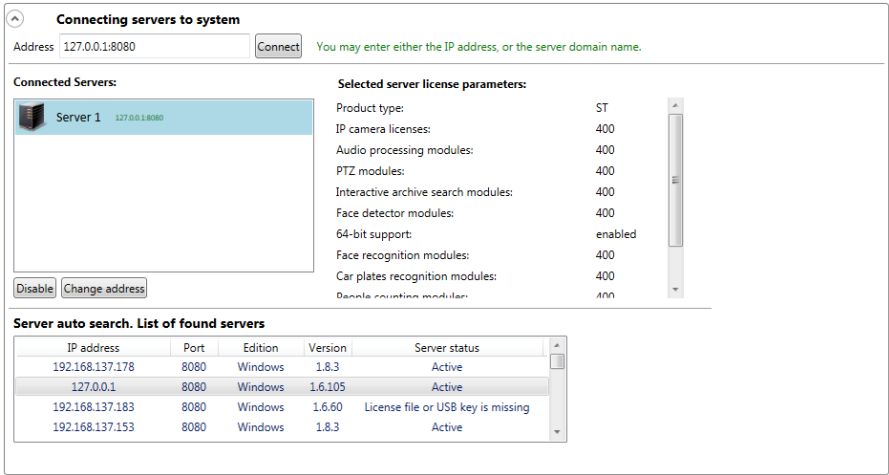


Fig.14

In order to **connect a new server** to the existing configuration you can use one of the following two options:

Option 1.

Select from the "**Server auto search. List of found servers**" a server with a "**Not configured**" status. "**Connect to the system**" button will appear below the list. Press this button and the selected server will be automatically connected to the current configuration.

Option 2. In the "**Address**" field, enter the name of the connected server and press the "**Connect**" button. If the selected server has not been assigned to any configuration, it will be connected to the current configuration. If the selected server has already been assigned to a different configuration, a warning window will appear (Fig.15) and the server will not be connected to the current configuration.

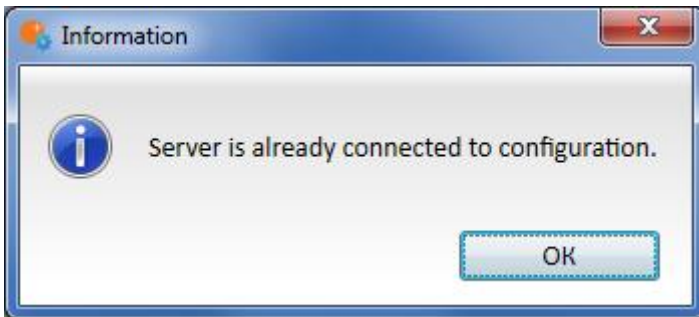


Fig.15

In order to **disconnect the server** from the current configuration, select the server from the "**Connected servers**" list and press the "**Disable**" button. The following warning window will appear.

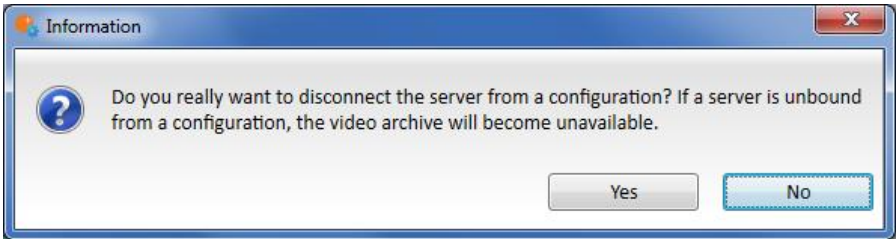


Fig.16

In order to **change the IP address** select the server from the "**Connected servers**" list and press the "**Change address**" button.

Indicate server IP address and port in the appeared window; press "OK" to save the settings.

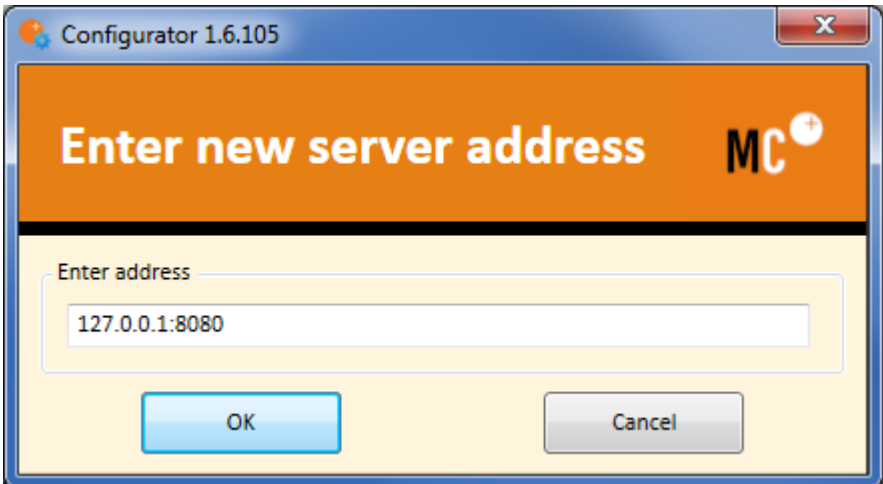


Fig.17

This operation will not change the IP address of the network adapter for the selected server, but it allows to indicate one of the IP addresses already assigned to the server in the configuration settings.

In order to **view the information about the connected server**, select it from the "**Connected servers**" list. You will see the information about license parameters of the selected server:

- Product type — ML, LS or ST;
- Licenses for IP cameras — a number of IP channels that can be connected to this server;
- Processing modules for audio channels - a number of channels that can process sound;
- PTZ modules — a number of channels that can manage rotating cameras;
- Interactive archive search modules — a number of modules the corresponding archives of which are engaged in search;
- Person detection modules — a number of channels that can be used for detection of individuals;
- 64 bit support — a note of whether this server can be installed at the 64-bit operating system;
- Person recognition modules — a number of channels that can be used for recognition of individuals;
- License plate recognition modules — a number of channels that can be used for recognition of license plates;
- Visitor recognition modules — a number of channels that can be used for calculation of visitors;

- Moving objects tracking modules — a number of channels that can be used for tracking moving objects.
- Video registration channels - this option is reserved and it is not used in this version.

3.2.4.2. Multi-server Configuration: Creation

In order to use several servers within one system, such servers need to be combined in one configuration, i.e. a multi-server configuration needs to be created.

1. Connect with Configurator to one of the servers (*in the example, "Server 1"*). If the 127.0.0.1 IP address is assigned to the server — change the IP address to a real one (assigned at the server adapter (*in the example, 192.168.137.167:8080*)).
2. Indicate the IP address of the second server in the "Address" field (*in the example, 192.168.137.170:8080*).

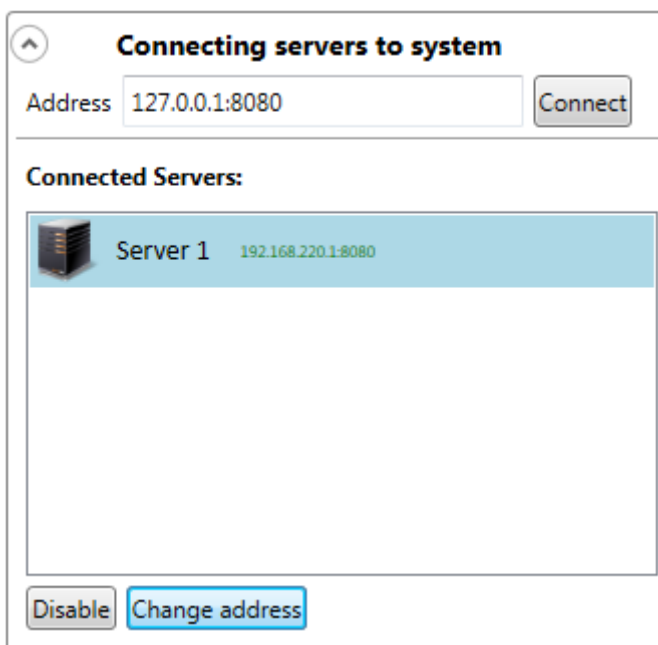


Fig.18

Press "Connect" - the selected server will appear in the list of connected servers.

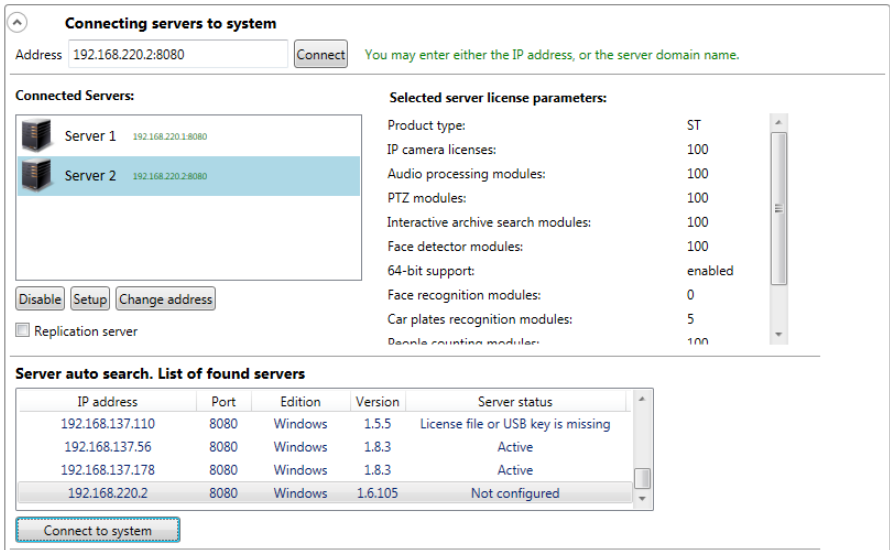


Fig. 19

3. Apply settings. Close the Configurator.

3.2.4.3. Multi-server Configuration: Connection of a New Server

1. Connect with the Configurator to one of the multi-server configuration servers.
2. Indicate the IP address of a new server in the "Address" field and press "Connect" - the selected server will appear in the list of connected servers.
3. Apply settings. Close the Configurator.

3.2.4.4. Multi-server Configuration: Connection of an Operated Server

In order to connect to the multi-server configuration a server with connected cameras that has already been placed into operation, first you should save a configuration of security objects of this server. After connecting, the saved configuration should be loaded to the total channel configuration.

1. Connect to the operated server with the Configurator. Enter camera settings "1. Cameras". Create a security object in the root of the channel list; transfer into this security object all other security objects and/or cameras; save a security object configuration to the disk.
2. Select the operated server from the list of connected servers and press the "Disconnect" button that appears below the list. A warning window will appear. Press "Yes" and the server will be disconnected from the current configuration. Close the Configurator.
3. Connect with the Configurator to one of the multi-server configuration servers.
4. Indicate the IP address of a new server in the "Address" field and press "Connect" - the selected server will appear in the list of connected servers.
5. Enter camera settings "1. Cameras" Select the root security object, bring up the context menu by right-clicking, select "Load", load the security object that was saved before from the connected server.

6. Apply settings. Close the Configurator.

3.2.4.5. Multi-server Configuration: Distribution of Channels over Servers

Configuration of the distribution of channels over servers is performed in the same way as the configuration of server connections to the system.

Connecting servers to system

Address
You may enter either the IP address, or the server domain name.

Connected Servers:

Server 1
192.168.220.1:8080

Server 2
192.168.220.2:8080

☐ Replication server

Selected server license parameters:

Product type:	ST
IP camera licenses:	100
Audio processing modules:	100
PTZ modules:	100
Interactive archive search modules:	100
Face detector modules:	100
64-bit support:	enabled
Face recognition modules:	0
Car plates recognition modules:	5
People counting module:	100

Server auto search. List of found servers

IP address	Port	Edition	Version	Server status
192.168.137.110	8080	Windows	1.5.5	License file or USB key is missing
192.168.137.56	8080	Windows	1.8.3	Active
192.168.137.178	8080	Windows	1.8.3	Active
192.168.220.2	8080	Windows	1.6.105	Not configured

Servers channels distribution settings

Тип настройки:
☒ Assert main Servers to channels
☐ Assert reserved Servers to channels

Binding channels to selected server:
Server channels (main): 1

Hall

All system channels: ([Main server] [Reserved server] [Replication server])

Channels search...

Street

Roads

Railway [Server 1]
Transmode Bremen [Server 1]
Detroit Lakes [Server 1]
Hotels [Server 1]

Office

Hall [Server 2]
Elevator []

Other


Virtual

Town street [Server 1]
Parking Yard [Server 1]
Counting [Server 1]


Fig.20

Each channel can be assigned to two servers. In this case, one of the servers will be the main server and the other one - a reserve server. In case of failure of the main server the channel data will be recorded to the reserve server. Thus, reliability of video surveillance system will be increased.

In order to **connect the channel** to the main (reserve) server:

1. Select "**Assert main Servers to channels**" configuration type or « **Assert reserve Servers to channels** »;
2. Select the server;
3. Select the channel;
4. Press the button .

In order to **disconnect a channel** from the server:

1. Select the server;
2. Select the channel;
3. Press the button .

For automatic **even distribution of channels** per main (reserve) servers, press "**Auto distribution**" button.

In order to **unlink all channels** from the main (reserve) servers, please the "Cancel" button.

3.2.4.6. Multi-server Configuration: Special Features

When several servers are used within one system, editing of settings for each server takes place not in the system configuration editor window, but in a separate server settings editor window.

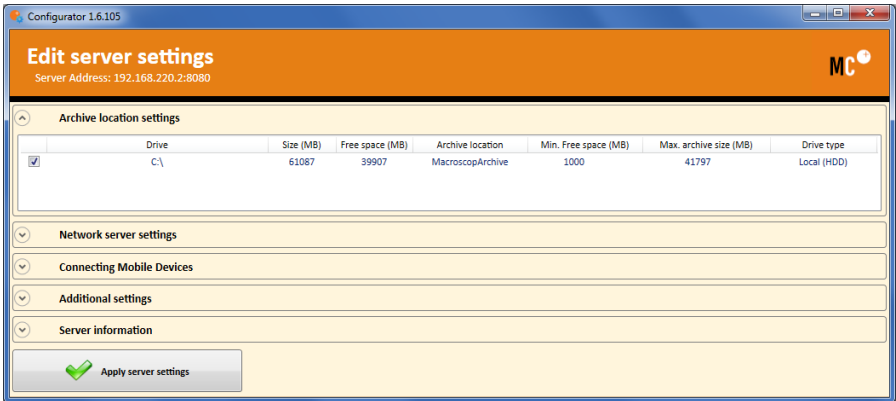


Fig.21

In order to **go to server settings**, select the server from the list of connected servers, press the "Setup" button located below the list. Edit Server Settings window will appear (Fig.21). In order to **save changes in server configuration** press the "Apply Server Settings" button. If you want to **exit without saving server settings**, just close the window



In case of a multi-server configuration, server addresses (in the list of connected servers) must be assigned in such a way as to make each server available to other servers per indicated port. For example, when using local IP addresses and server connection through the Internet without the use of tunneling, the public IP addresses assigned to the external router ports must be indicated in the configurator (at the same time, the corresponding ports from the external router ports must be displayed by using NAT on the local IP addresses of MACROSCOP servers).

3.2.4.7. Replication Server Settings

One or several servers in the system can be assigned replication server functions. Replication server is a server that stores reserve copies of archives of other servers in the system.

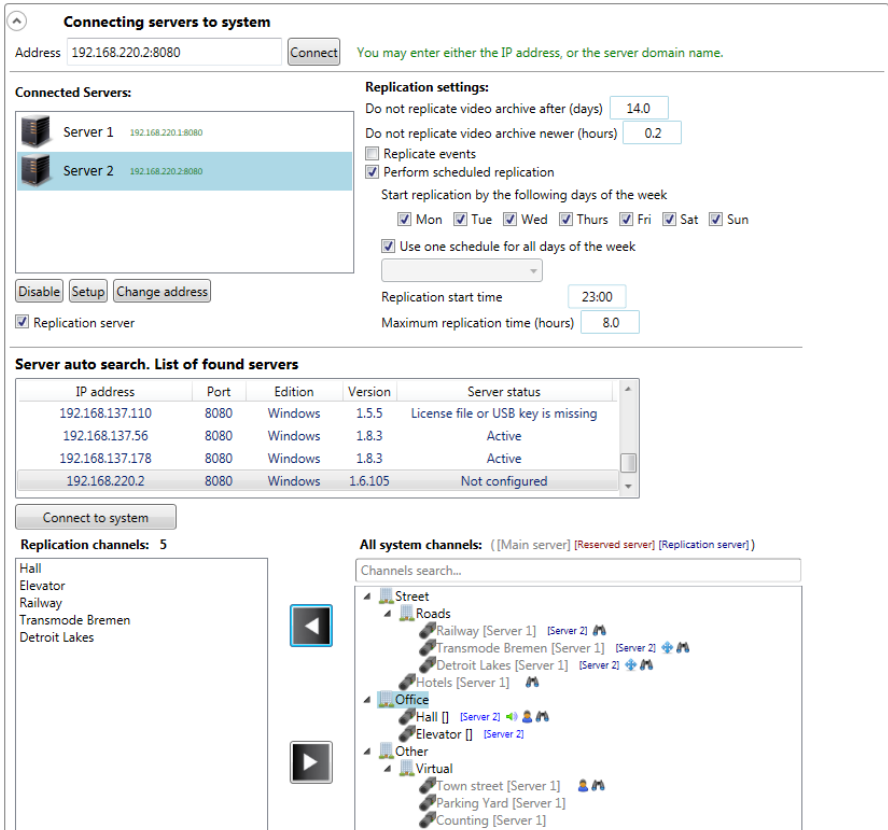



Fig.22.

1. Select the server;
2. Put a checkmark against "Replication server" option;
3. Set replication parameters and schedule at the "Replication settings" area.

4. By using button  move the channels subject to replication from the "All system channels" list to the "Replication channels" list.

You can force the start or interruption of a replication (Fig.23) in the replication server settings window.

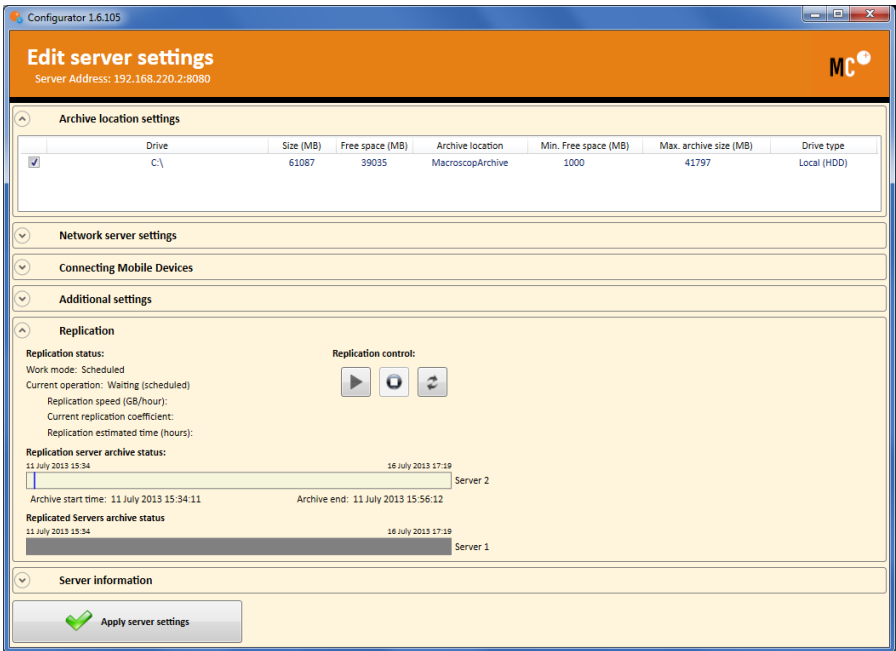
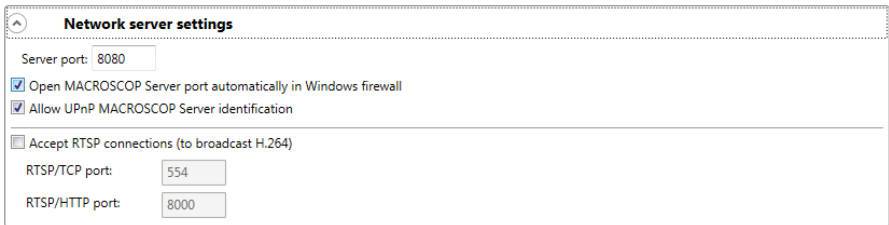


Fig. 23.

3.2.4.8. Server Network Settings



Network server settings

Server port:

☒ Open MACROSCOP Server port automatically in Windows firewall

☒ Allow UPnP MACROSCOP Server identification

☐ Accept RTSP connections (to broadcast H.264)

RTSP/TCP port:

RTSP/HTTP port:

Fig.24

The following settings are available at the "Network server settings"

Open MACROSCOP Server port automatically in Windows firewall — for external incoming connections.

Allow UPnP MACROSCOP Server identification.

Server port — allows the user to select the port for client connections to the selected server.

Accept RTSP connections (to broadcast H.264)— adding this option permits reception of a video stream and service information by sending direct requests to the server. RTSP broadcasting ports must be indicated through TCP and/or over HTTP.

3.2.4.9. Mobile Devices



Connecting Mobile Devices

☒ Connecting Mobile Devices

Mobile Device server network port:

☒ Connecting Mobile Devices to server in proxy mode 

[Advanced Settings...](#)

Fig.25

Mobile Devices tab allows the user to configure a video stream broadcasting for mobile devices and web clients that is built-in the MACROSCOP Server.

Connecting Mobile Devices — includes a video stream broadcasting for mobile devices service at the server.

Mobile Device server Network port — permits to configure a service connection port.

Connecting Mobile Devices to server in the proxy mode — includes broadcasting in the proxy mode. When the proxy mode is turned on at the multi-server configurations, broadcasting of video streams from all servers onto mobile devices connected to this server will be performed through this server. When the proxy mode is turned off at the multi-server configurations, a mobile device will be automatically connected to the servers assigned to requested cameras.

3.2.4.10. Additional Server Settings

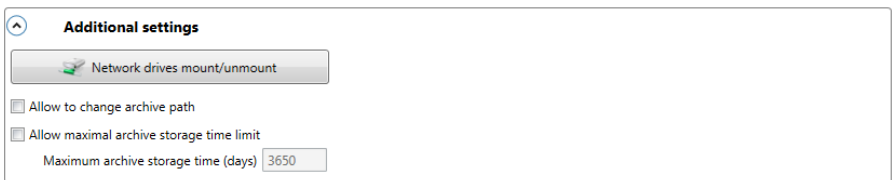


Fig.26

Allow to change archive path — permits to make archive recording into a non-standard folder (for example, to "C:\MacroscopArchive2" instead of «C:\MacroscopArchive»).

Allow maximum archive storage time limit — allows the user to establish the maximum storage time for archive records.

3.2.4.11. Network Drive Configuration

In order to **connect a network drive**:

1. Press the "**Network drives mount/unmount**" button (Fig.26).
2. A network disk settings window will appear, (Fig.Fig.) **select a letter** determining a network drive.

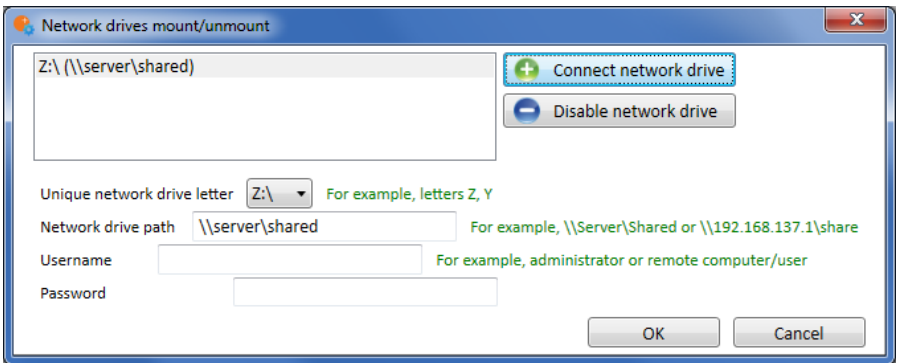


Fig.27

3. Indicate a **path to the network drive, user name and password** in the corresponding fields.
4. Press the "**Connect network drive**" button.
5. Press the "**OK**" button.

Once the "OK" button is pressed, the server will reload. A network disk will be added to the disk list given at the server settings tab. It can be configured in the same manner as the local disks.

3.2.4.12. View Server Information

Server information is provided at the lower part of server configuration page (or server configuration window for multi-server configurations).

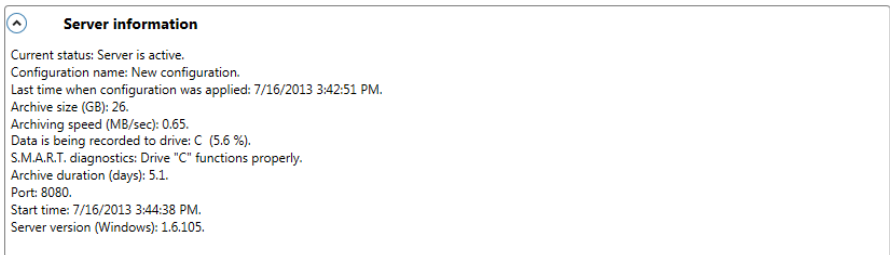


Fig. 3

3.2.5. Camera Settings

Press **"1. Cameras"**. Channel configuration editor (Fig.29) will open on the right with the channel list in its left part.

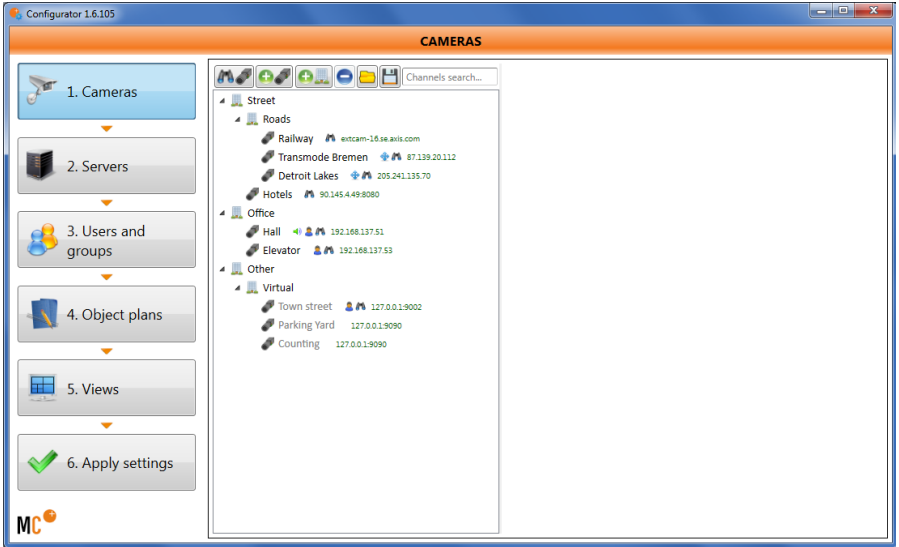


Fig.29

Create new security object



In order to **create a security object assigned to another security object**, select an object to which you would like to

link a new security object and press



Create new channel



In order to **create a channel within a specific channel object**, first select this object in the list.

In order to **change the name of the channel or the security object**, double-click on it with a left mouse button or press "F2".

Delete security object or channel .

Save channels configuration as a file to drive .


Open saved channels configuration file .

All the aforementioned **actions** can be carried out **from the context menu** of channels and security objects: to do so, select a security object or channel and click with a right mouse button. Besides that, context menu commands feature **additional options**: configuration of a specific security object or channel can be saved on the disk and uploaded from a disk.

In order to **save a configuration of a selected security object or channel on a disk**, select the security object to which you would like to add the previously saved object or channel, click the right mouse button and chose the "Save" command in the appeared window.

In order to **upload a configuration of a selected security object or channel from a disk**, select the security object or channel, click the right mouse button and chose the "Upload" command in the appeared window.

Auto search cameras in the local network and **add them** to the configuration:

1. Press .
2. In the appeared window (Fig.Fig.) select with check marks the cameras which you would like to add.

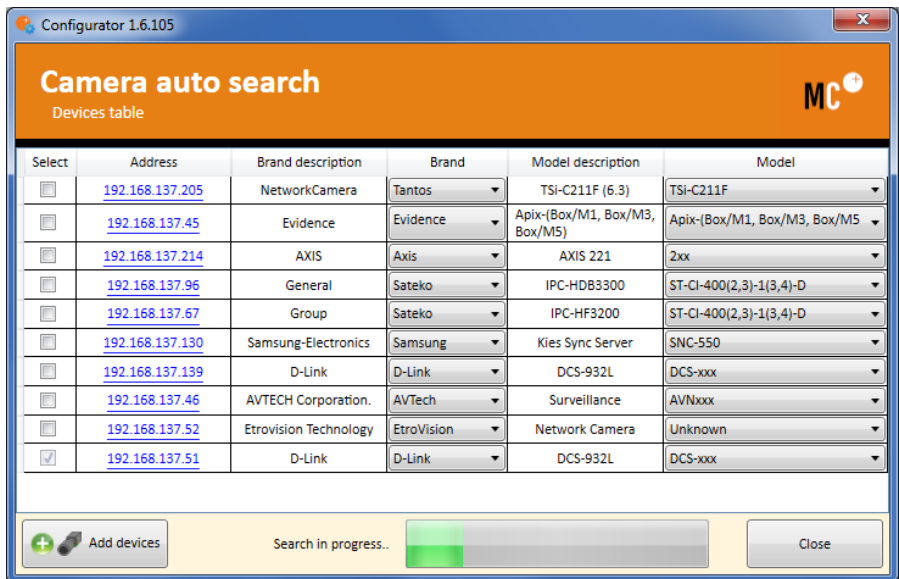


Fig.30

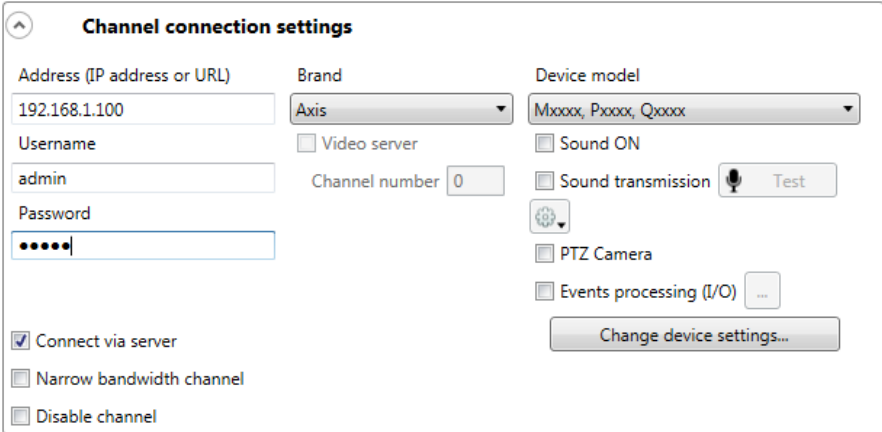
3. Press the "Add devices" button.

In order to **configure a specific channel**, select it from the list. Upon that the configuration editor for this channel will appear at the right part of the window, allowing to configure the following parameters:

- Channel connection settings;

- Archive record settings for this channel;
- Intellectual video analysis settings;
- Additional parameters;
- Schedule tasks;
- Scenarios.

3.2.5.1. Channel Connection Settings



Channel connection settings

Address (IP address or URL): 192.168.1.100

Brand: Axis

Device model: Mxxxx, Pxxxx, Qxxxx

Username: admin

Password: •••••

☐ Video server

Channel number: 0

☐ Sound ON

☐ Sound transmission

☐ PTZ Camera

☐ Events processing (I/O)

☒ Connect via server

☐ Narrow bandwidth channel

☐ Disable channel

Fig.31

Indicate in the corresponding field the **IP address** or **URL of the device** that will be used to capture video data ("http://" prefix type does not need to be indicated in this field). In some cases, you might have to indicate the control port/device data (for example, "192.168.1.55:8000").

Indicate **brand** and **model**.

If this device requires a **username** and a **password**, fill the required fields.

In order to turn on **sound from camera**, check "Sound ON". *[*not available for all device models]*

In order to turn on **sound transmission to camera**, check "Sound transmission". *[*not available for all device models]*

In order to turn on **PTZ camera control**, check "PTZ camera". *[*not available for all device models]*

In order to turn on **registration of signals from camera input and sending signals from camera output**, check "Event Processing (I/O)". *[*not available for all device models]*

In order to **change resolution, frame rate or compression level** on a camera, press the "Change device settings..." - a configuration editor window will appear (Fig.32). *[*Available only for a selected number of device models]*

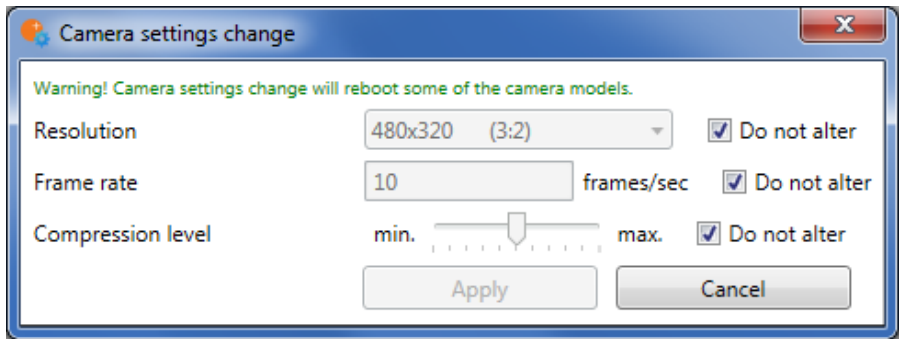


Fig.32

Mark a **"Video Server"** field if the video data is received not from a camera, but from a video server or a video recorder. Enter a **channel number** in the corresponding field. Channel numeration starts from 0 or 1 depending on the model.

In some models, a **"Video Recorder"** field is displayed instead of the "Video server" field (Fig.33). In this case, you can view the archive stored on the video recorder - to do so, mark **"Use Video Recorder archive"**. If you mark **"Only Video Recorder archive"** than recording to MACROSCOP archive and video analysis will not be performed.

Channel connection settings

Address (IP address or URL): 192.168.1.100

Username: admin

Password: •••••

Brand: LTV

Device model: DVR-xx60-HV

☒ Video Recorder

☐ Sound ON

☐ Sound transmission Test

☒ Use Video Recorder archive

☐ Only Video Recorder archive

☐ PTZ Camera

☐ Events processing (I/O)

☒ Connect via server

☐ Narrow bandwidth channel

☐ Disable channel

Fig. 33

Mark the **"Disable channel"** field if you need to temporary turn off the channel.

Select the **"Connect via server"** field if there is no option for direct network access to cameras from client work stations. In this case, video data will be transmitted from the video surveillance system server.

Mark the "**Narrow bandwidth channel**" field if you are using a low capacity network. This setting allows to increase the waiting time for the signal from a camera.

In order to **view a video from the configured channel in the browser**:

1. Right click with a mouse on the channel from the channel list;
2. Select "Open in browser" in the appeared window.

3.2.5.2. Data Streams Settings

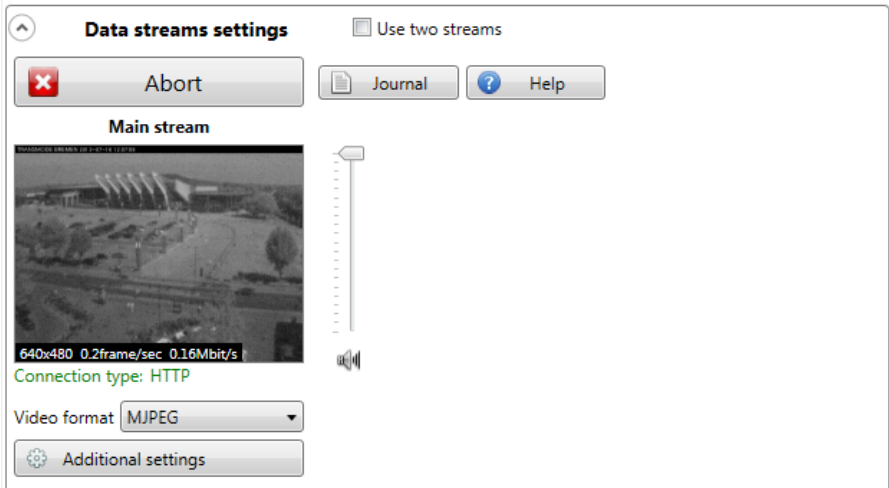


Fig.34

In order to configure the **data stream format** select the needed value from the "Video format".

In order to **check the connection settings correctness**,

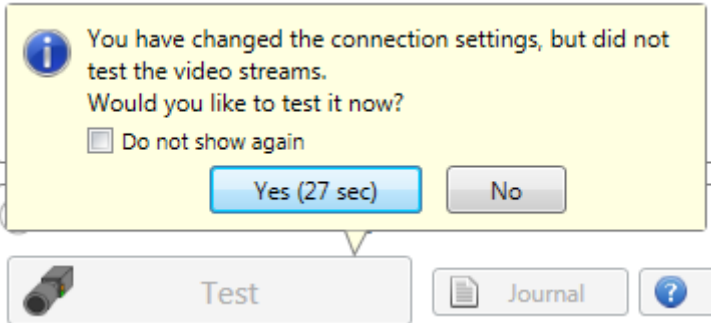
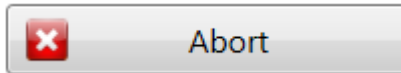
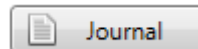


Fig.35

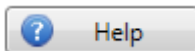
Abort test connection



View event logs with camera connection



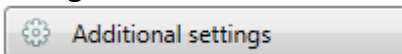
Get prompts as to solving problems with camera connection



Change sound volume level



Configure additional data stream settings



, a new window will appear (Fig.36).

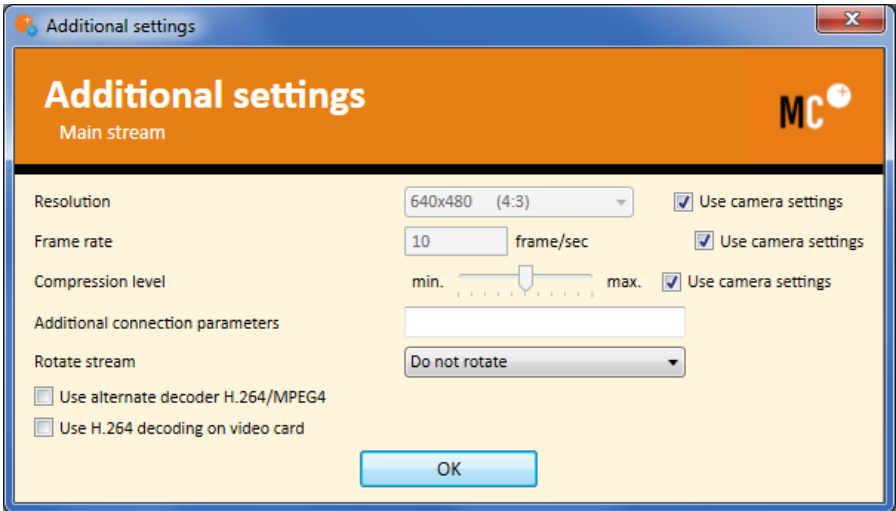


Fig.4

In order to set **resolution, frame rate and compression level**, select the desired values in the corresponding fields. In order to use the set values for for these settings, mark "Use camera settings".

In order to **rotate the image** received from the camera, select the desired rotation type in the "Rotate stream" field.

In order to set **special connection settings**, enter them in the "Additional connection parameters" field. This option is used very rarely, for the selected number of devices.

H.264 decoding on the video card is used only for displaying video on the screen in the MACROSCOP Client application. If this option is selected for the channel, then MACROSCOP Client will perform a H.264 decoding on the video card for this channel; otherwise MACROSCOP Client will use the resources of the central processor for decoding the channel.

3.2.5.3. Use of Two Streams

Use of two streams from a camera allows to perform a high-quality recording of frames to the archive, and a lower-quality output at the Client, which allows for a significant reduction of equipment load. When two streams are used, MACROSCOP always records the main stream to the archive.

In order to **use two streams** obtained from a camera, mark "Use two streams" (Fig.37).

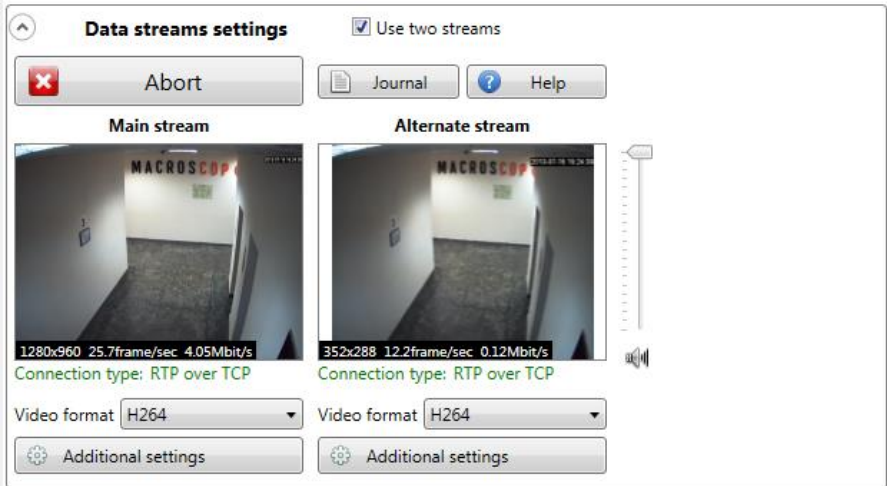


Fig.37

In order to use two streams, select a video format and if necessary, perform additional settings for each stream.

3.2.5.4. Archive Recording Parameters Setting

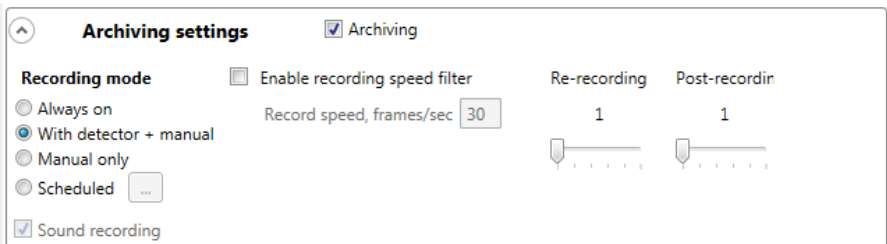


Fig.38

In order to **include a video recording to the archive**, mark "Archiving".

In order to **include a sound recording to the archive**, mark "Sound recording".

In order to **select an archive recording mode**, select a required field:


- **Always on-** archive recording is made on the ongoing basis.
- **With detector + manual**—archive recording is made only upon detection of movement on the screen. Also, the operator has an option to enable / disable permanent recording to the archive.
- **Manual only** — archive recording is enabled and disabled only by an operator.
- **Scheduled** — permits a flexible setting of archive recording modes.

In order to **configure archive recording pace restrictions**, mark "Enable recording speed filter" and indicate the desired value in the "Record speed" field.

"**Re-recording**" option sets a period of time during which the data must be recorded to the archive prior to movement detection.

"**Post-recording**" option sets a period of time during which the data must be recorded to the archive after movement termination.

In order to **configure archive recording settings**:

1. Select the "By schedule" field and press . A window will open up (Fig.39)

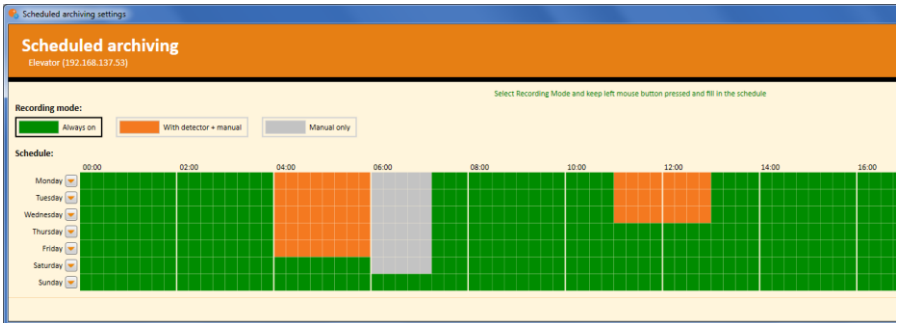



Fig.39

2. Select one of the modes by clicking on the corresponding rectangle in the upper part of the window.
3. Select the periods of time during which the selected mode will be applied by holding the left mouse button.
4. In order to select a uniform recording mode for the entire day or to copy a schedule from another day, press , and then select a corresponding option in the opened menu (Fig.40).

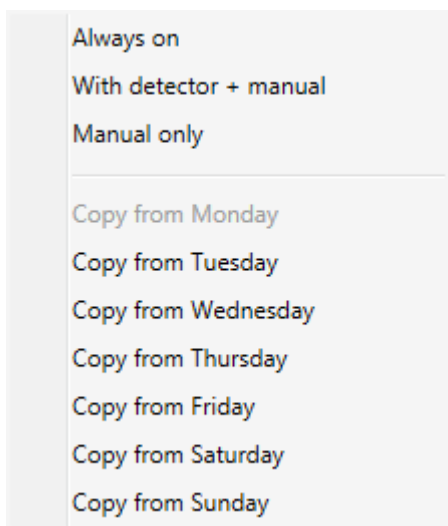


Fig.40

5. Press the "OK" button to save the changes.

3.2.5.5. Intellectual Analysis System Settings

⬆
Intelligence analysis system settings

Stream selection for analysis
Alternate

☒ **Motion detector**
Checking...

☐ Use camera built-in motion detector

Motion detector settings mode:
☒ Simple
☐ Expert mode (with detection zones)

Object size limits:
Object min. width
Object min. height

Set in interactive mode...
5% of frame width
9% of frame height

☐ **Face Detection**

Quality:
☒ Average
☐ High

☐ **Interactive Archive Search**
(Objects position in frame, sizes and features search)

☐ Indexing of moving objects by features

☐ **Use external intelligence modules**

Fig.41

In order to turn on the **motion detector**, mark a corresponding field.

In order to use a camera **built-in motion detector**, mark a corresponding field, otherwise **MACROSCOP movement detector** will be used.

If two streams are used for the selected channel, then the option "**Stream selection for analysis**" becomes available - the main one or the alternate one. The "Alternate" is selected by default.

Guidelines for selecting a stream for analysis: given that the main one has a higher resolution than the alternate one (for example, the main one — 1920x1080, the alternate — 640x480)

Alternate	If no other modules are used for the intellectual analysis except for the MACROSCOP program detector.
Main	If at least one additional intellectual analysis module is used besides MACROSCOP program detector, including external modules.

Two **MACROSCOP movement detector** modes: simple and expert.

The simple mode allows to set the minimum size of the object that will be detected.

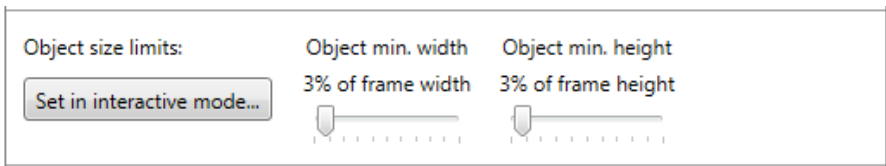


Fig. 5

In order to set the object size in the interactive mode:

1. Press the "Set in interactive mode" - a new window will appear (Fig. 43)

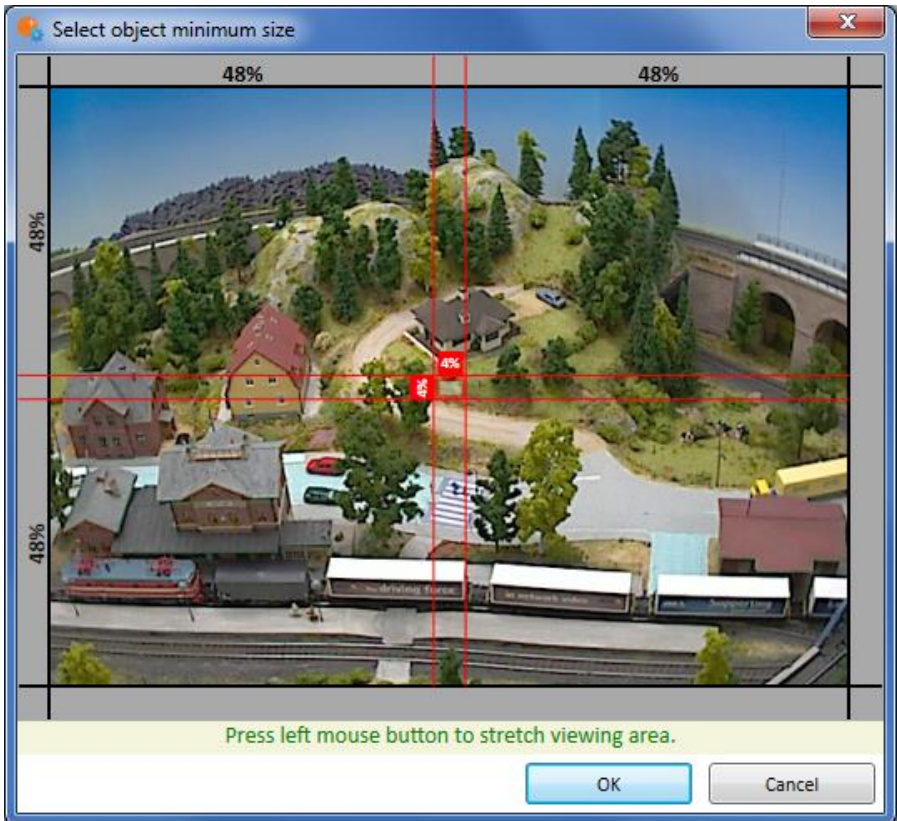


Fig. 43.

2. By clicking a left mouse button, select the area which size equals to the minimum object size;

The **expert mode** allows to set detection areas and configure the motion detector performance speed (Fig.44).

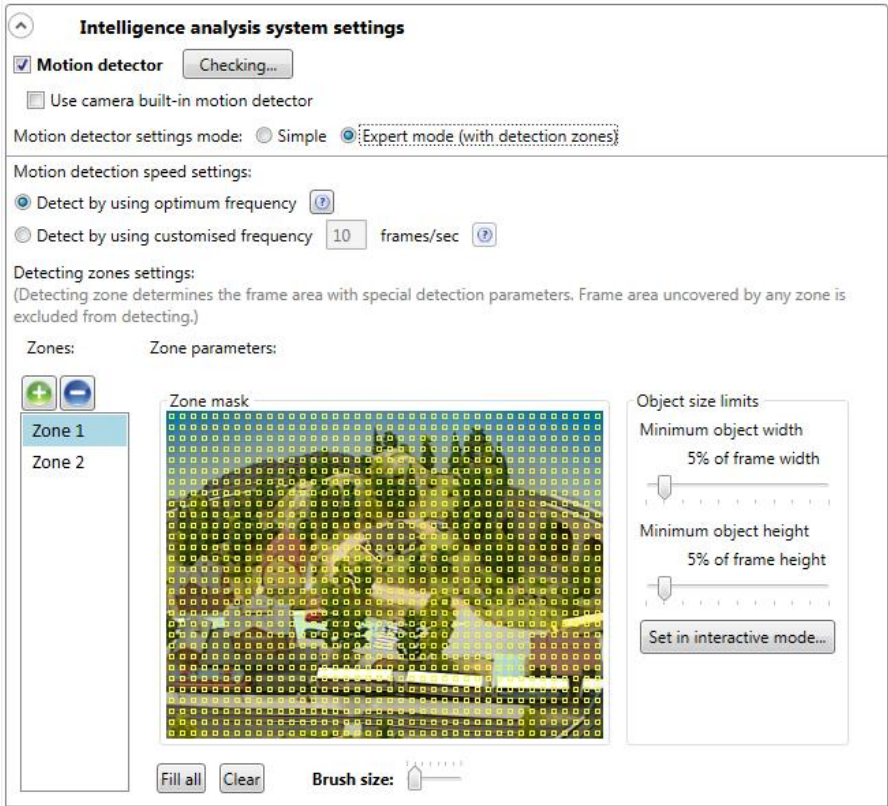


Fig. 44.

In order to **configure the motion detector speed**, select one of the two options:

- "Detect by using optimum frequency"
- "Detect by using customised speed"

Detection Zone is a screen area for which special detection parameters are set.

In order to **add a new detection area**, press the button



, in order to **delete it** – the button



In the "**Zone mask**" area - detection area is the area filled with yellow squares. In order to **change the detection area**, use the mouse:

- Left button is used for selection;
- Right button is used for removing the selection.

In order to **check motion detector work**, press the "Check..." button.

In order to enable **face detection, interactive archive search and indexing of moving objects by features**, mark the corresponding fields.

When a face detection feature is enabled, you can **configure the quality of face detection module** (Fig. 45): Middle or High. The quality level of face detection module affects the consumption of computer system resources - processor load and RAM use.



Fig. 45.

When an moving object indexing feature is enabled, you will see an **indexing parameter setting block**. Set minimum and maximum sizes of the indexed objects by using sliders or interactively.

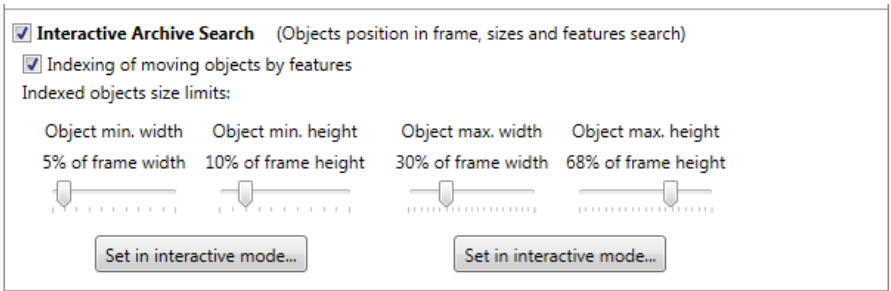


Fig. 46.

In order to use **external intelligence modules**, mark a corresponding field. After that, a list of available intelligence modules will appear below.

3.2.5.6. PTZ Patrolling

If a camera permits creating presets, then MACROSCOP will allow the user to create PTZ Patrolling (Fig.47).

PTZ Patrolling

New PTZ patrolling 1
New PTZ patrolling 2

▶ Preset number 0
◀ Preset number 1
Staying time 5 seconds
▶ Preset number 2
▶ Preset number 3

Default time to move to next Preset 5 seconds
☒ Continue PTZ patrolling after user input
Continue PTZ patrolling mode From last preset ▼
After specified time 30 seconds



Fig.47

add a new PTZ Patrolling - 

delete - 

add a new preset to the PTZ Patrolling -  above the Preset list

delete – press the button  to the right of the Preset.

move the preset up or down in the list -   to the right of the Preset.

You can establish a PTZ Patrolling scenario - a delay time between the transfers, behavior after the Preset is interrupted by the user.

3.2.5.7. Scheduled Tasks

Each channel provides an option of performing the following scheduled actions:

- Enable record to the archive.
- Disable record to the archive.
- Set camera position (preset)
- Send an SMS notification.
- Send an email notification (including the attached frame).
- Send a signal for the camera exit;
- Run an external application on the server.
- Save a frame to a disk.
- Make a pause in the action sequence.
- Send a notification about the boom barrier raising and lowering (if the license plate recognition mode is used).

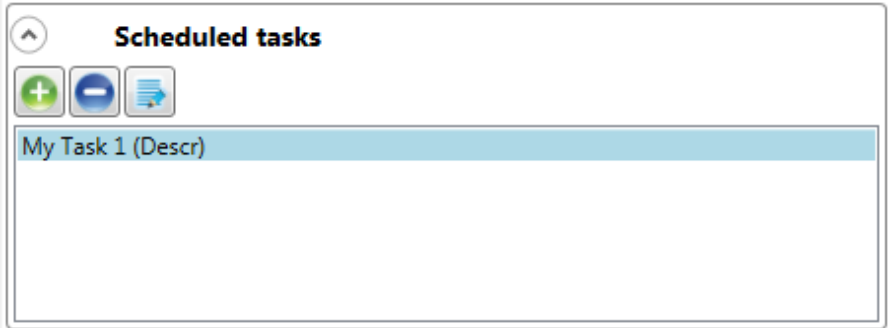



Fig.48

In order to create a new task:

1. Press . Schedule Action Wizard will appear (Fig.49).

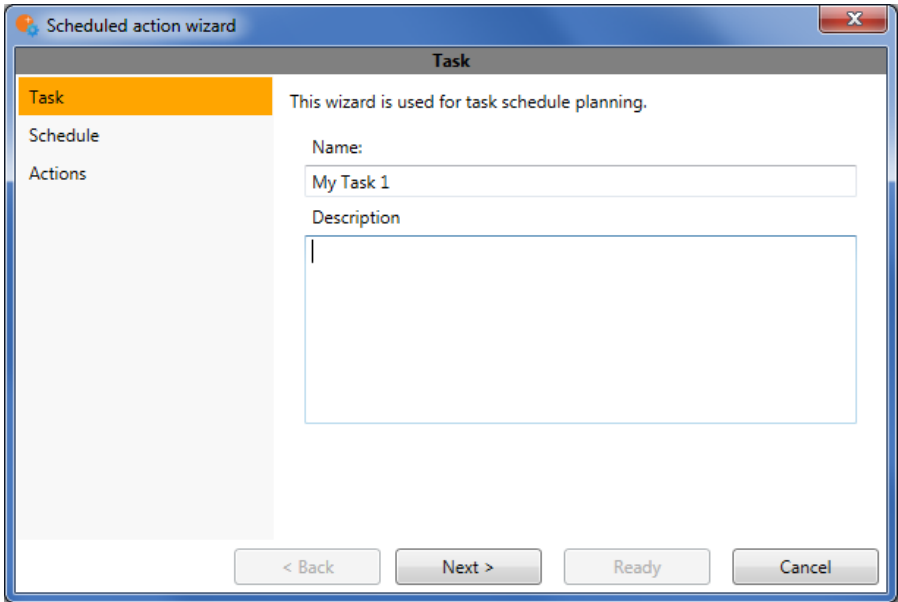


Fig.49

2. Enter the task name into the "Name" field. Enter the task description into the "Description" field.
3. Press the "Next" button. A window will open up (Fig.50).

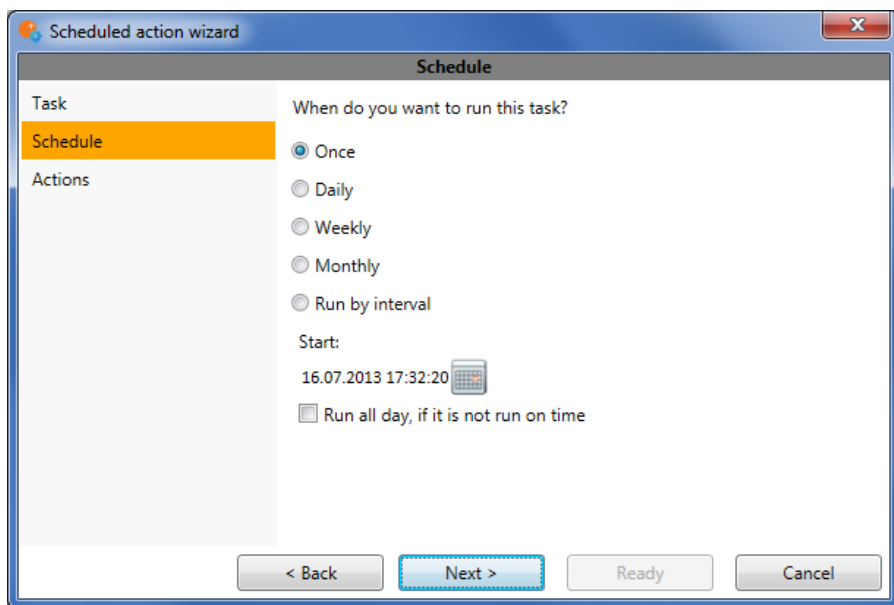


Fig.50

4. Select a time for running the task (Fig.51).

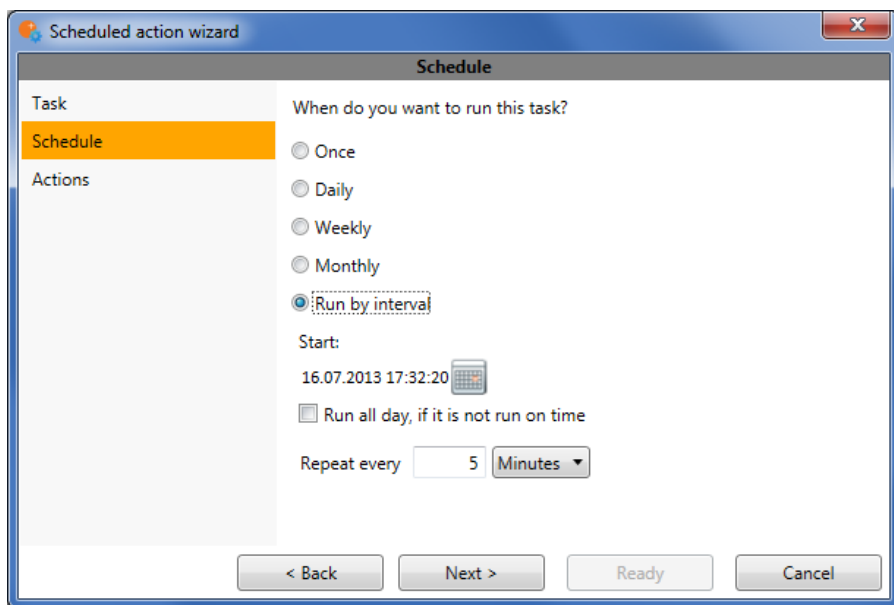


Fig.51

5. Press the "Next" button. A wizard window will open up (Fig.52)

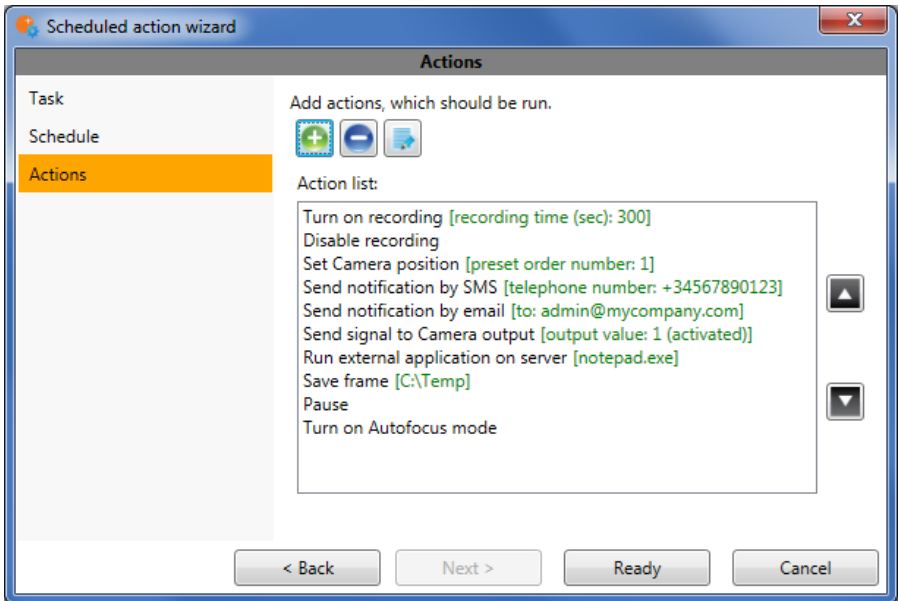







Fig.52

6. Add the actions that need to be performed:

- **Add the action** 
- **delete the action** 
- **edit the action** 
- **change task performance sequence**  

7. Press "Ready". The created task will appear in the scheduled tasks list.

Most actions will allow to set special parameters that are typical for such action (for example, configurations for email notification delivery).

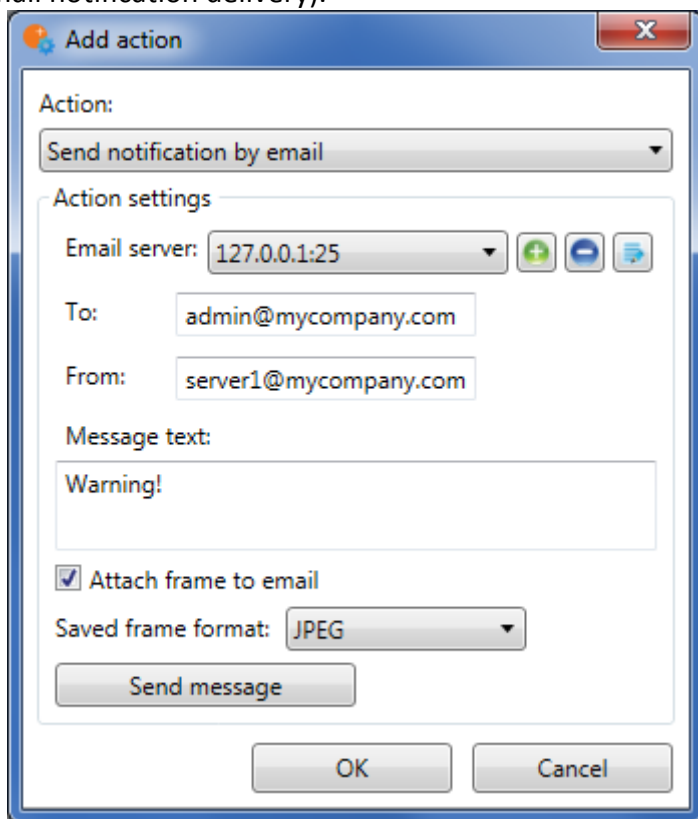


Fig.53

3.2.5.8. Scenarios (Reaction to System Events)

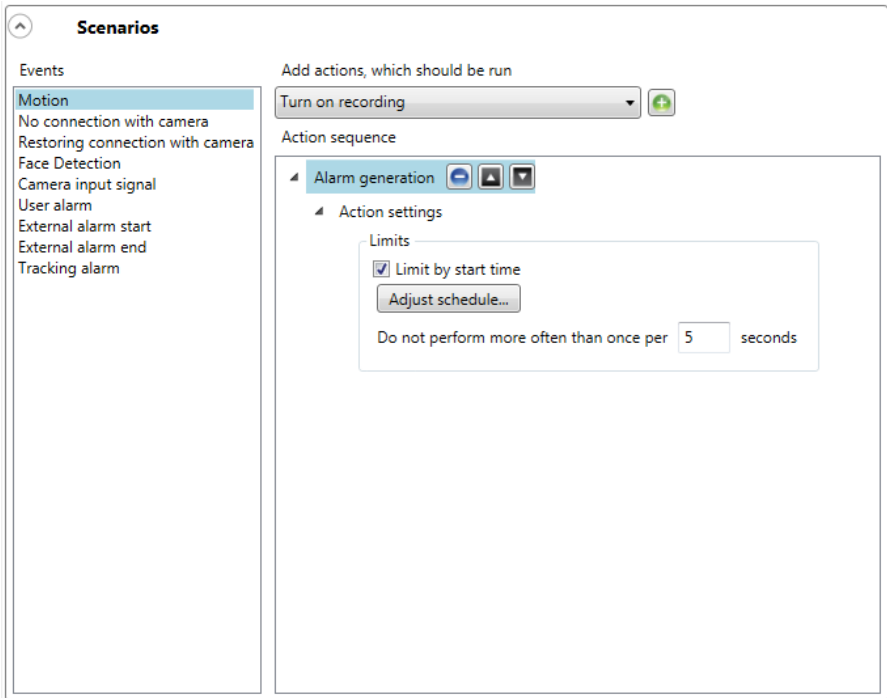



Fig.54

This setting allows the user to set the actions that will be run in response to the events occurring in the video surveillance system.

In order to **set an action** for a certain event:

1. Select the event in the "Events" list;
2. Select an action to be run from a drop-down list;
3. Press .

4. Maximize the drop-down list for the selected action and perform action configuration;


delete the action 

change the action performance sequence  

3.2.5.9. Connected Module Indication

In the channel tree you will see the icons corresponding to connected modules, next to the name of each channel.

 - Face detection module;

 - PTZ module;

 - Audio module;

 - Archive interactive search module.

If none of these icons appears it means that the aforementioned modules are not included for this channel.

3.2.6. User Rights Settings

Press "3. Users and groups". Group, user and rights allocation tab will open (Fig.55).

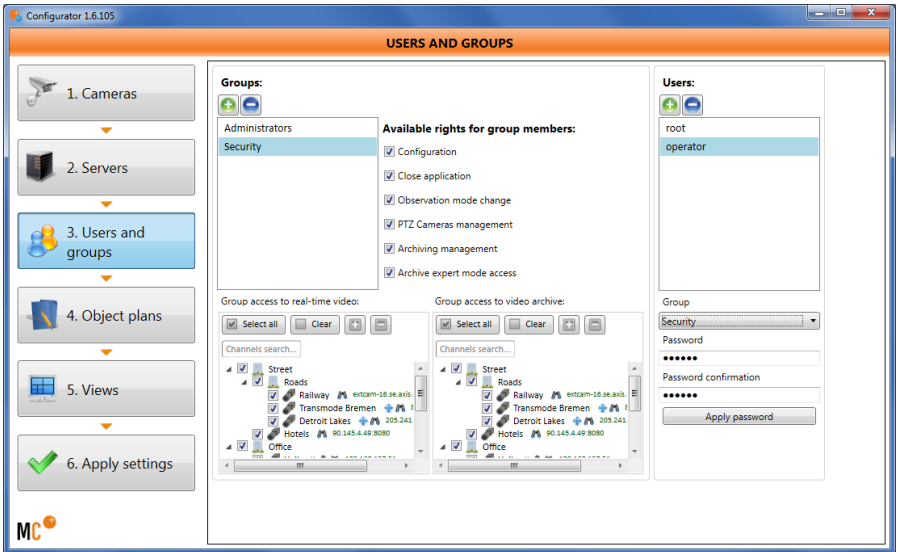


Fig.55

add a new user group



delete



In order to select the **available rights** for the selected group, please mark the corresponding fields:

- Configuration;
- Close application;
- Observation mode change;
- PTZ cameras management;
- Archiving management;
- Archive expert mode access.

add a new user





change group or user name - double click on it with a left mouse button or press the "F2" key, or bring up the context menu with a right click and select the "Rename" option; then enter a new name and press the "Enter" key on the keyboard.

add a user to the group and set a user password:

1. Select a user;
2. Select a group in the "Group" drop-down menu located in the right part of the section above the "Password" field;
3. Fill in the "Password" field;
4. Repeat the password in the "Confirm password" field.
5. Press the "Apply password" button.

3.2.7. Object Plans

In order to configure visualization of camera placement at object plans, press "4. Object plans" (Fig.56).

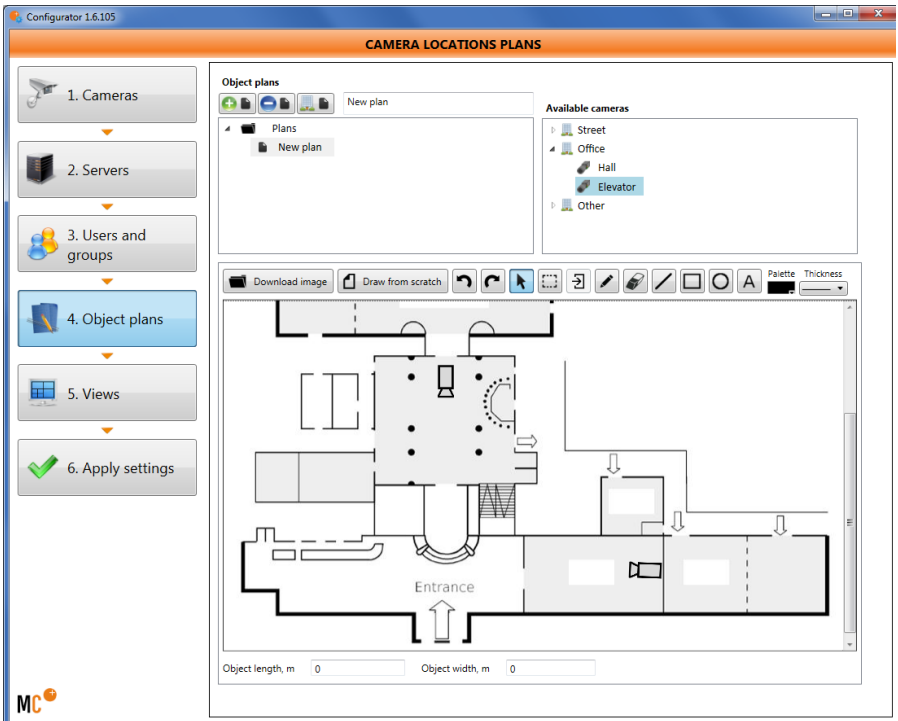


Fig.56

This page allows the user to create location plans. Plans can be uploaded from JPEG, PNG, BMP files or created independently. Then the list of available cameras must be dragged onto camera planning.

3.2.8. Screen Profile Settings

To configure screen settings, press "5. Views" (Fig.57)

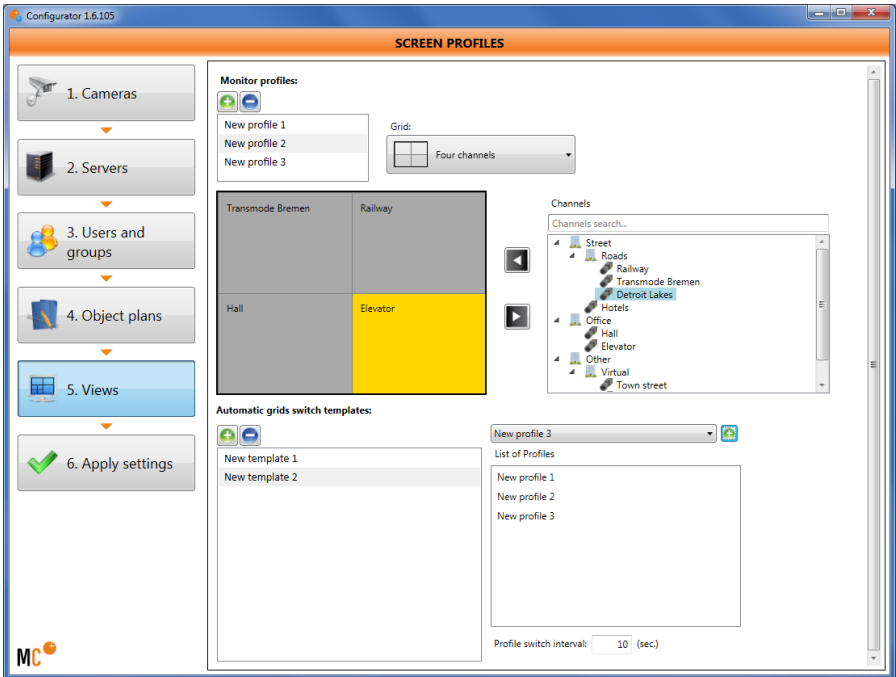


Fig.57


create a screen profile 

change screen profile name- double click on it with a left mouse button or press the "F2" key, or bring up the context menu with a right click and select the "Rename" option; then enter a new name and press the "Enter" key on the keyboard.


delete a screen profile 

In order to **configure the location of grid boxes** for displaying of channels on the monitor, select one of the available location types at the "**Grid**" field.

In order to **place a channel into the grid box**, drag the channel into the corresponding grid box, or:

1. Select a grid box with with a left click of a mouse;
2. Select a channel with with a left click of a mouse;
3. Press .

delete a channel from a grid box:

1. Select a grid box with with a left click of a mouse;
2. Press .

Besides profiles, MACROSCOP allows to configure the **automatic grids switch templates**.

create template .

In order to **change the name of template** - double click on it with a left mouse button or press the "F2" key, or bring up the context menu with a right click and select the "Rename" option; then enter a new name and press the "Enter" key on the keyboard.

delete template .

add a profile to template .

delete a profile from the template .

change the profile sequence order in the template

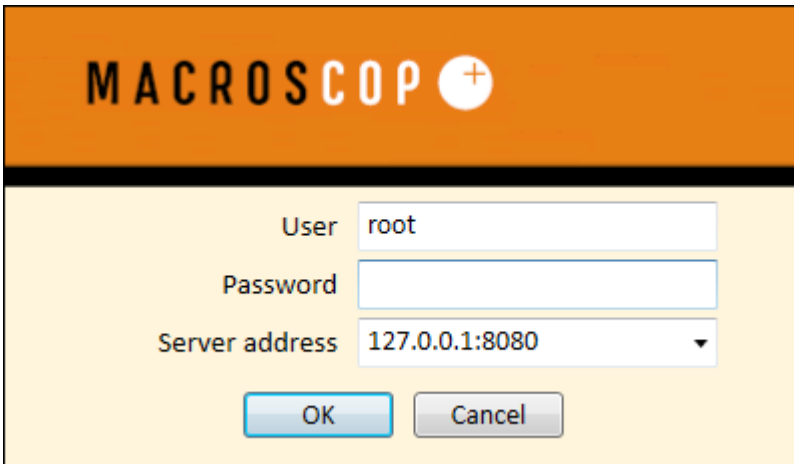


Working with MACROSCOP Video Surveillance System (MACROSCOP Client)

3.3. Start and System Login



3.3.1. Start

If the operator system login window (Fig.58) appears when the computer is turned on, it means that the **MACROSCOP Client** application was started automatically.

The login window has an orange header bar with the 'MACROSCOP' logo in white. Below the header is a light yellow area containing three input fields: 'User' with 'root', 'Password' (empty), and 'Server address' with '127.0.0.1:8080'. At the bottom are 'OK' and 'Cancel' buttons.

MACROSCOP	
User	root
Password	
Server address	127.0.0.1:8080
<div>OK Cancel</div>	

Fig. 58

If the operator system login window does not appear on the screen, run the application manually by double clicking with a left mouse button on the  **MACROSCOP** icon on the desktop or from the menu "Start → Programs → MACROSCOP →  MACROSCOP.

If you are using **MACROSCOP Standalone**:


1. Click with a left mouse button on the icon  in the lower right corner of the screen. The main screen of MACROSCOP Standalone (Fig.59) will appear.



Fig.59

2. Click on the **"View"** button with a left mouse button.

3.3.2. Login

Fill out the fields on the screen (Fig.58):

In case of successful login, the main application screen will appear (Fig.60).

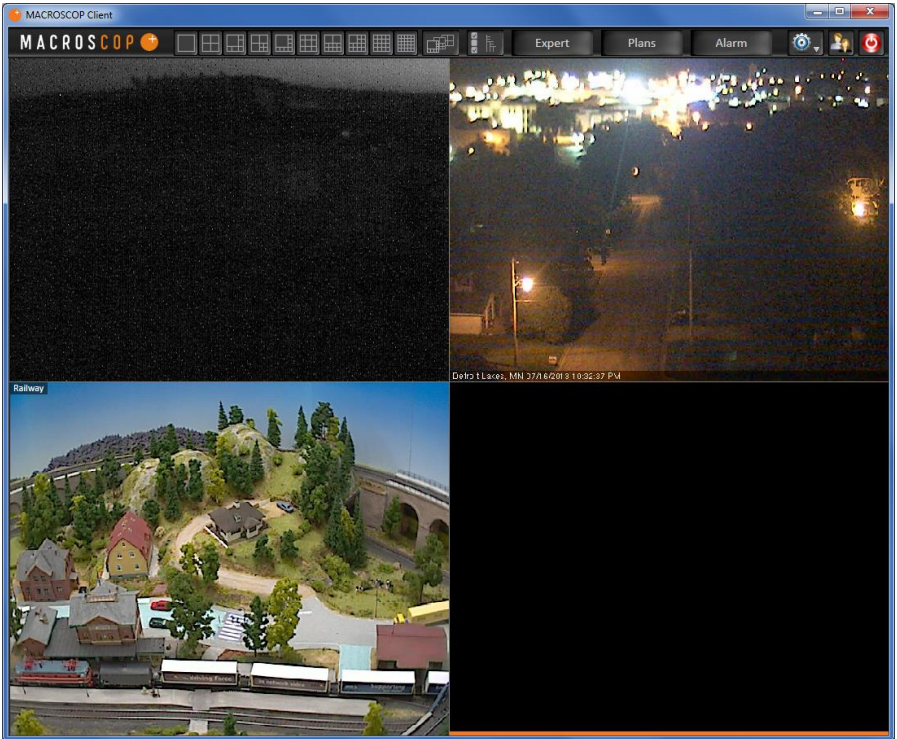


Fig.60

If you weren't able to log in, verify that your user name, password and server addresses are correct and then try again.

3.4. MACROSCOP Client Application Main Screen

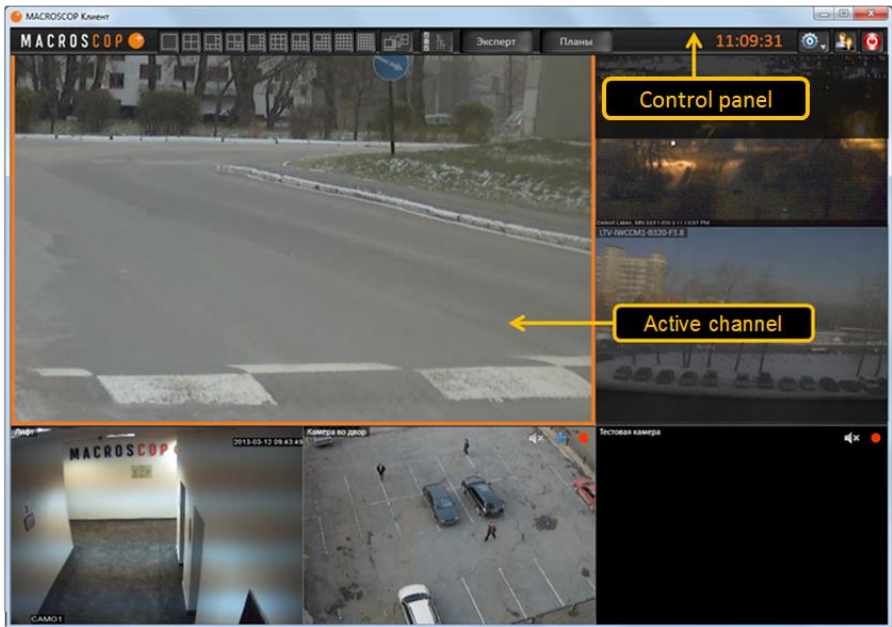


Fig. 61

The main screen of the MACROSCOP Client (Fig.61) consists of a channel grid and a control panel. The active channel is marked with an orange frame on the channel grid. Control panel (Fig.62) is hidden by default: in order to open it, move the mouse cursor to the upper edge of the screen or press the "F8" button on the keyboard.

3.4.1. Control Panel Elements

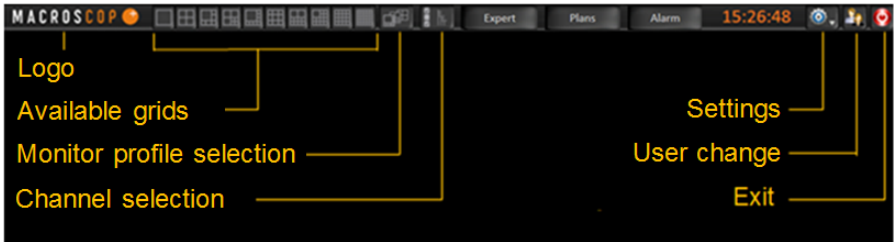


Fig.62

MACROSCOP logo is placed in the left part of the control panel. MACROSCOP Client application information window appears after a double click of the mouse on the logo.



Fig. 63

Next you will find a list of buttons located on the control panel:

3.4.1.1. Available Grids

This option allows the user to choose one of the channel grids available at this work station. Channel grids available for selection can be re-defined in the current work station settings, in the "Available grids" section.

3.4.1.2. Screen Profile Selection

This option allows the user to select one of the preset screen profiles and to turn on the automatic screen profile change mode (configuration in tab "5. Views").

select a preset screen profile

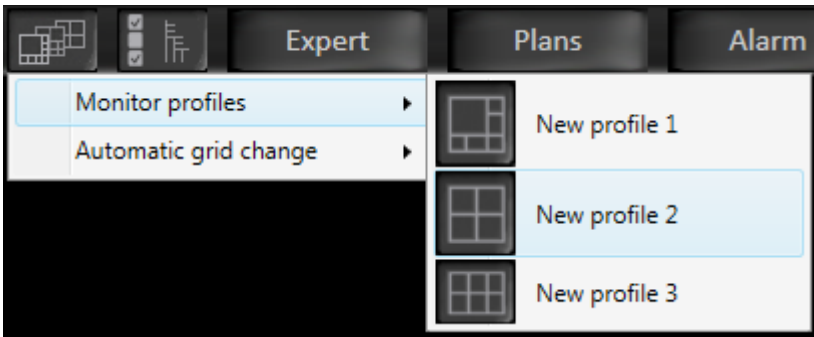


Fig.64

select an automatic screen profile change mode

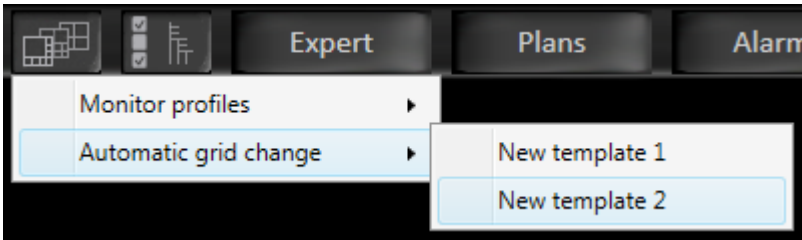


Fig.65

3.4.1.3. Channel Selection

Allows to select the channels that will be displayed on the screen. Select the channels for viewing in the window (Fig.66)

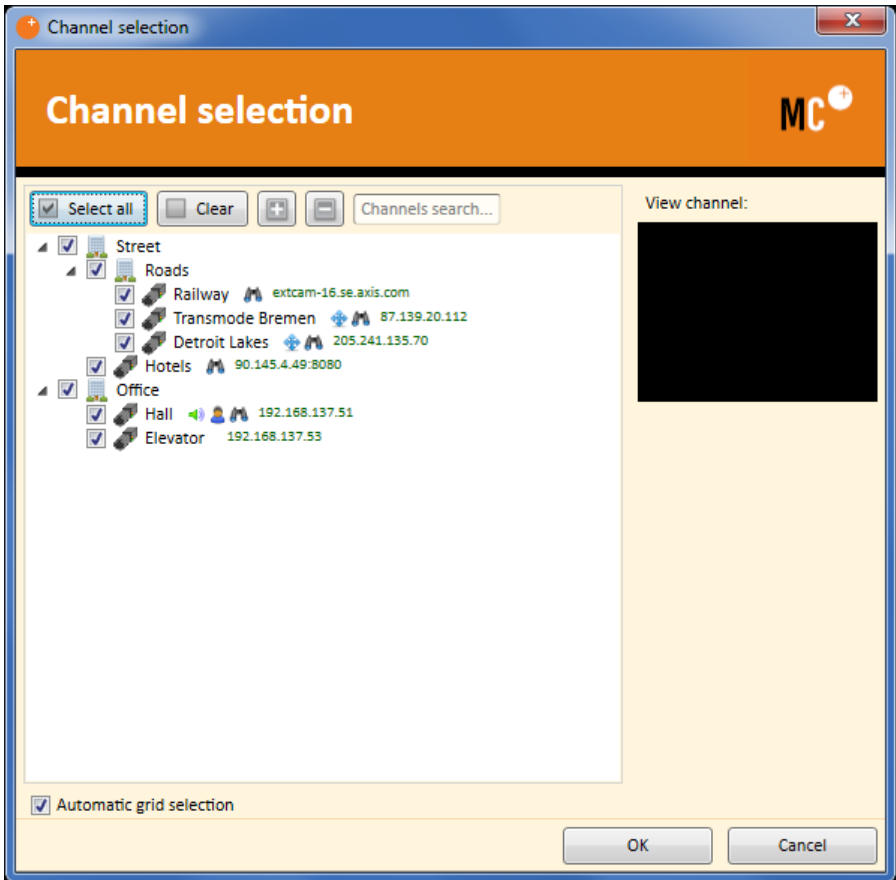


Fig.66

3.4.1.4. Expert

Turns on / turns off the expert mode of work with archive.

3.4.1.5. Plans

Allows the system to show a camera on the location plan.
A window with the location plan (Fig.67) opens up, where the active camera is highlighted in orange.

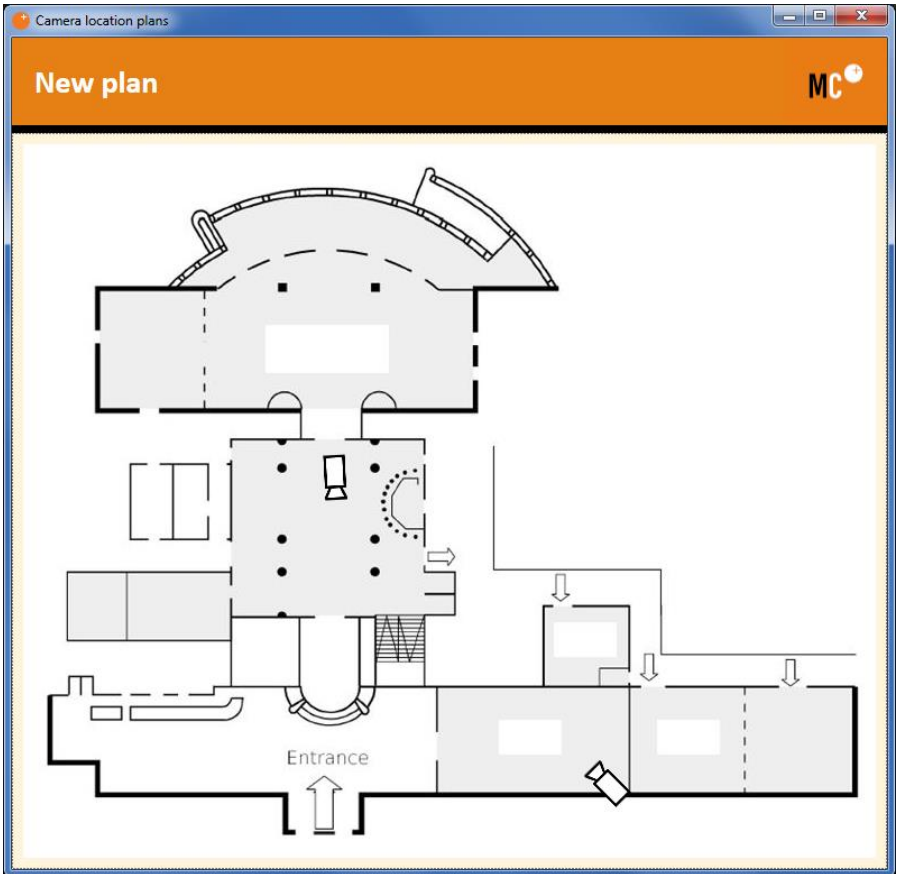


Fig. 67

3.4.1.6. Alarm

Turns on / off user alarm.

Channels with user alarm and the "Alarm" button image can be configured in the current work station settings.

Action run upon activation of user alarm is set by the administrator in the Configurator, in the "Scenario" channel configuration section. By default, in case of user alarm activation, an ongoing recording to the archive is turned on.

3.4.1.7. Configuration

Opens the MACROSCOP Client configuration menu (Fig.68). A list of menu options can vary depending on the used MACROSCOP modules.

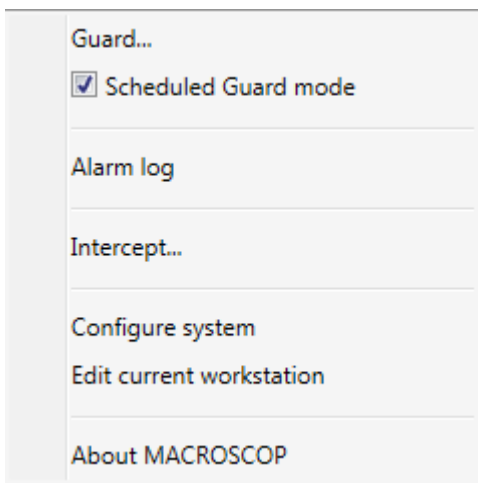


Fig. 68

3.4.1.8. User Change

MACROSCOP Client user can be changed by using this option. When this button is pressed, the main screen of MACROSCOP Client is closed and the operator login window appears.

3.4.1.9. System Exit

Closes the MACROSCOP Client application.

3.4.2. Grid Box Elements

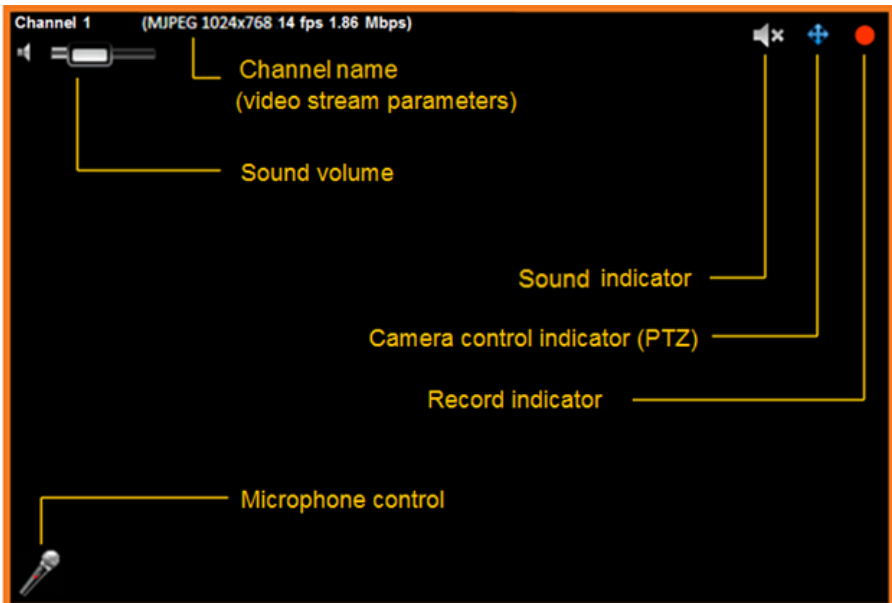


Fig. 69

Channel name — name of the channel assigned in the Configurator.

Video stream parameters — compression format, resolution, **frame rate**, bitrate.

Sound volume regulator is shown the "Receive Sound" option is activated in the Configurator channel settings, and if the "Reproduce sound" command is selected in the context channel menu of the Client.

Microphone control is shown if the "Sound Transmission" option is enabled in the Configurator.

Sound absence indicator is shown when a camera does not provide the audio stream even if the "Receive Sound" option is enabled in the Configurator.

Camera control indicator (PTZ) is shown if the "PTZ" option is enabled in channel settings of the Configurator.

Record indicator is shown when the video is recorded to the archive.

3.4.3. Grid Box Context Menu

It is opened by clicking with a right mouse button on the corresponding grid box.

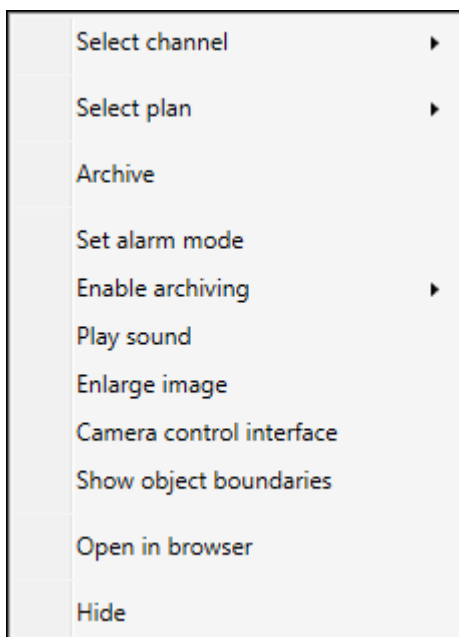


Fig. 70

3.4.3.1. Select Channel

Allows the user to select one of the available channels and place it in the grid box (Fig.71).



Fig.71

3.4.3.2. Select Plan

Allows the user to select one of the available location plans and place it in the grid box (Fig.72).

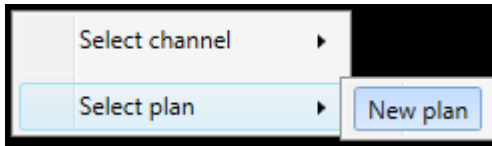


Fig.72

3.4.3.3. Archive / Surveillance

It allows the user to switch between the "Archive viewing Browsing" and "Real-time Surveillance" modes corresponding to a specific channel.

3.4.3.4. Enable /Disable Security Mode

Allows the user to enable /disable the security mode for a specific channel.

3.4.3.5. Enable Archiving

Allows the operator to force recording to the archive for a specific channel. Recording is turned on for a specific period of time which can be selected in the drop-down sub-menu (Fig.73).

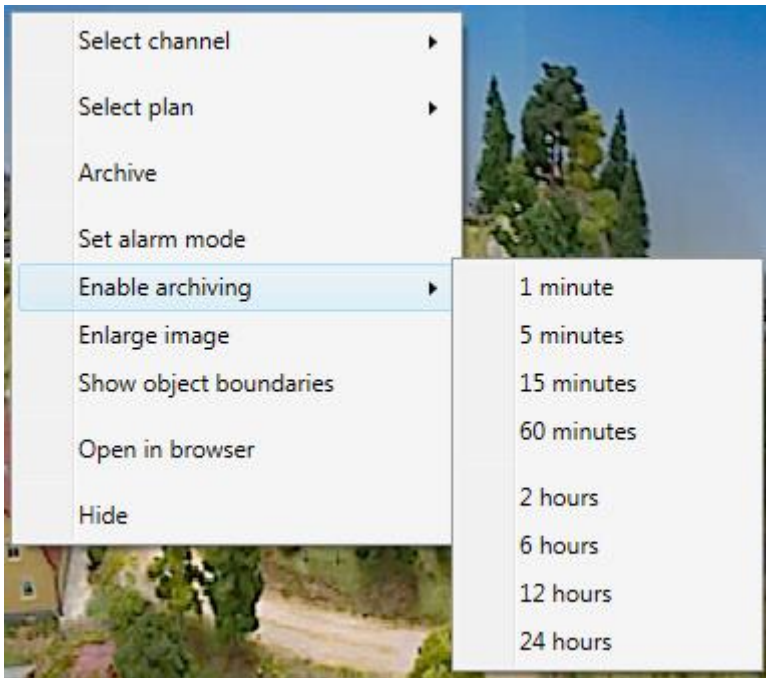


Fig.73

After the recording is turned on, the menu will show the remaining time until the end of recording (Fig.74).

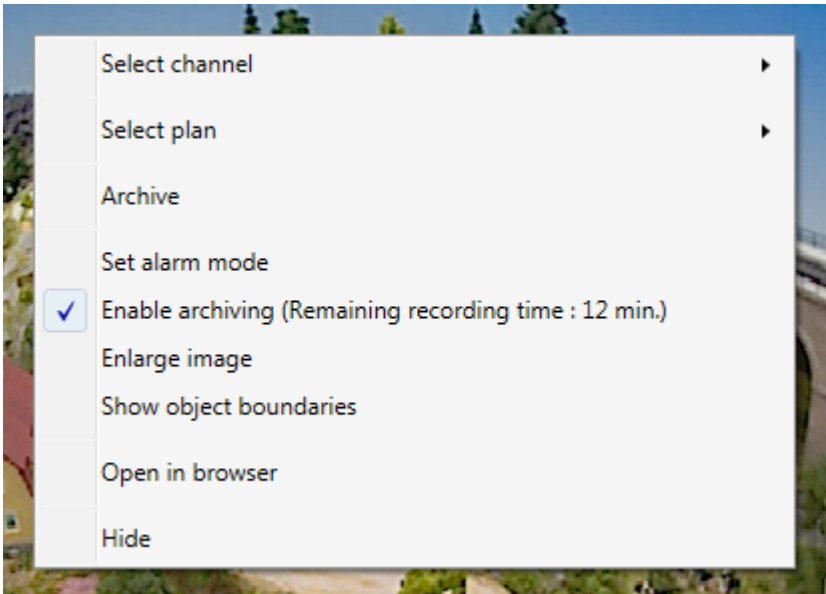


Fig.74

After manual recording is enabled — recording to the archive will be carried out continuously during a specified period of time, regardless of the recording settings customized by the system administrator (in the Configurator).

After manual recording is terminated / disabled — recording to the archive will be carried out in the mode established by the system administrator (in the Configurator).

3.4.3.6. Play Sound

Turns on/off audio playback for the channel.

3.4.3.7. Enlarge Image

In order to *go to the image zoom mode*, select "Enlarge image" option in the context menu or click with a central mouse button (wheel) on the grid box.

Mouse wheel can be used *for image zoom in and zoom out*. Also, in order to enlarge a screen fragment, a square in the grid box can be selected by holding the left button of the mouse.

3.4.3.8. Camera Control Interface

Turns on/off the interface of rotating camera and lens control.

3.4.3.9. Show Object Boundaries

Turns on / off the displaying of the rectangular color frames for the moving objects (by using MACROSCOP software-controlled detector) and for detected faces (by using face detection module).

3.4.3.10. Video Proportions

Allows the user to select proportions (Fig. 75).

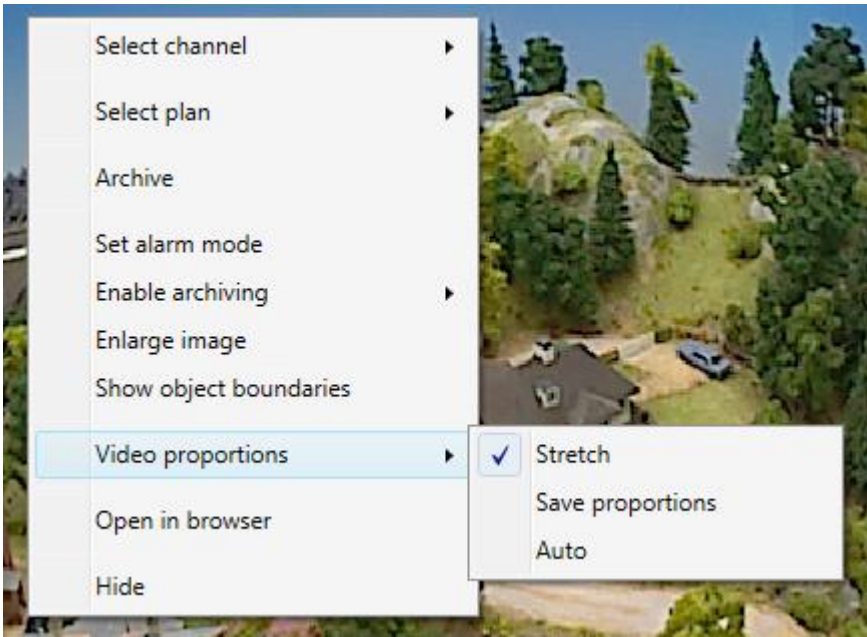


Fig. 75

3.4.3.11. Open in a Browser

Opens the camera web interface in a browser.

3.4.3.12. Hide

Hiding the channel (vacating the box).

3.4.4. Channel Dragging

In order to move a file form one grid box to another, you can drag it with a mouse.

3.4.5. Switch to a Full-Screen Mode and Back

In order to turn on a full-screen mode, double click on the box for this channel with a left mouse button. In order to restore the default settings, double click with a left mouse button again.

3.5. PTZ Camera Control

PTZ camera can be controlled in several ways:

1. Controlling camera movements in different directions and zoom in / zoom out.
2. Camera installation in preset positions;

3.5.1.1. Controlling Camera Movements in Different Directions and Zoom

Perform the following actions:

1. Click on the channel image corresponding to the rotating camera with a right mouse button.
2. Select "Camera control interface" in the appeared window.
3. In order to control the camera, use the control interface buttons which appear below the channel image (Fig. 76).

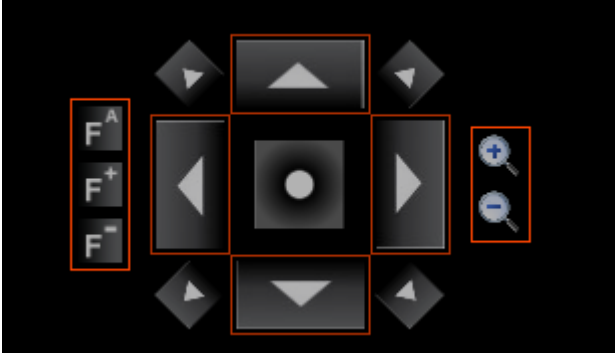


Fig.76

3.5.1.2. Camera Installation in Preset Positions

Perform the following actions:

1. Click on the channel image corresponding to the rotating camera with a right mouse button.
2. Select the "Camera position" in the appeared window.
3. Select one of the preset camera positions from the appeared list (Fig. 77).

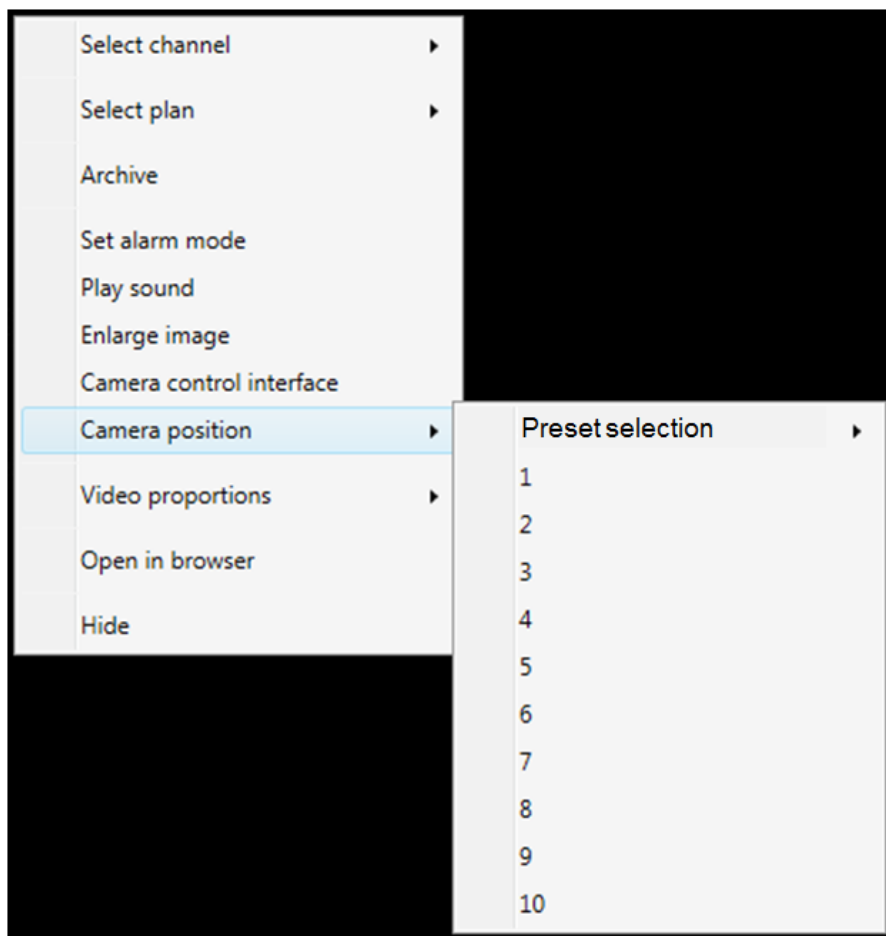



Fig.77


3.6. Channel Guard Mode Enabling / Disabling

"Guard mode" — is mode of channel work where the channel goes into alarm mode in case of detection of movement in the screen or loss of contact with the camera.

If a channel goes into the alarm mode, the alarm will sound and the following sign will be blinking 

There are two options of **putting the channel under guard**:

Option 1:

Press , select "Guard..." and mark the channels that have to be put under security in the appeared window (Fig. 78).

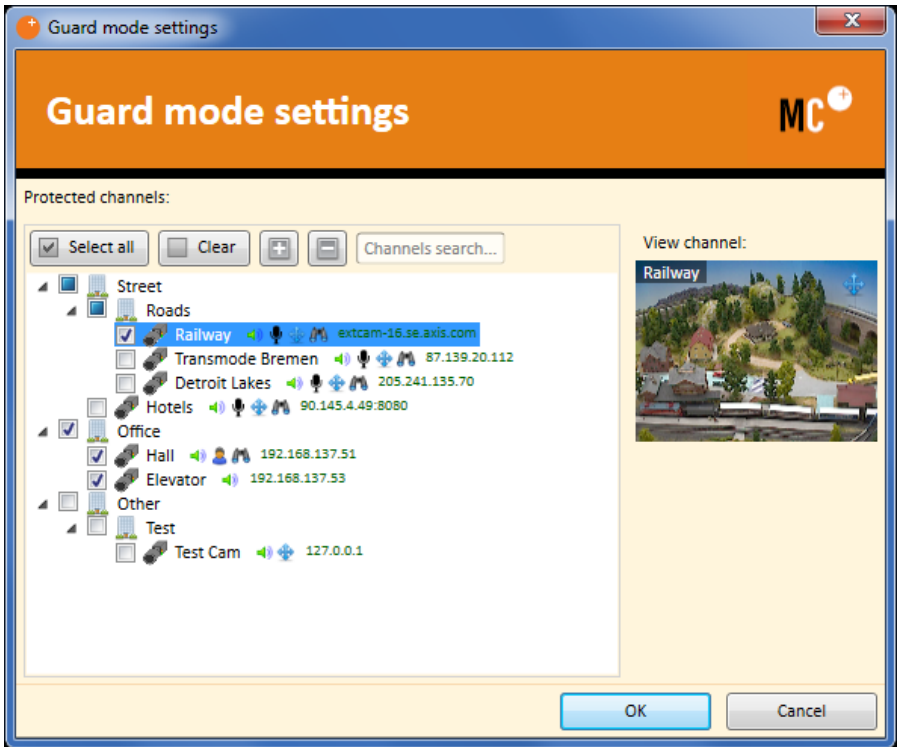


Fig.78


Option 2:

Select "Enable guard mode" in the context menu of the channel box.

3.7. Interception of Objects Similar to the Defined Samples

The "**Intercept**" function allows the user to find the objects that are similar to a sample image.

In order to turn on the "**Intercept**" function:

1. Press , select "Intercept..." and a window will open (Fig. 79)

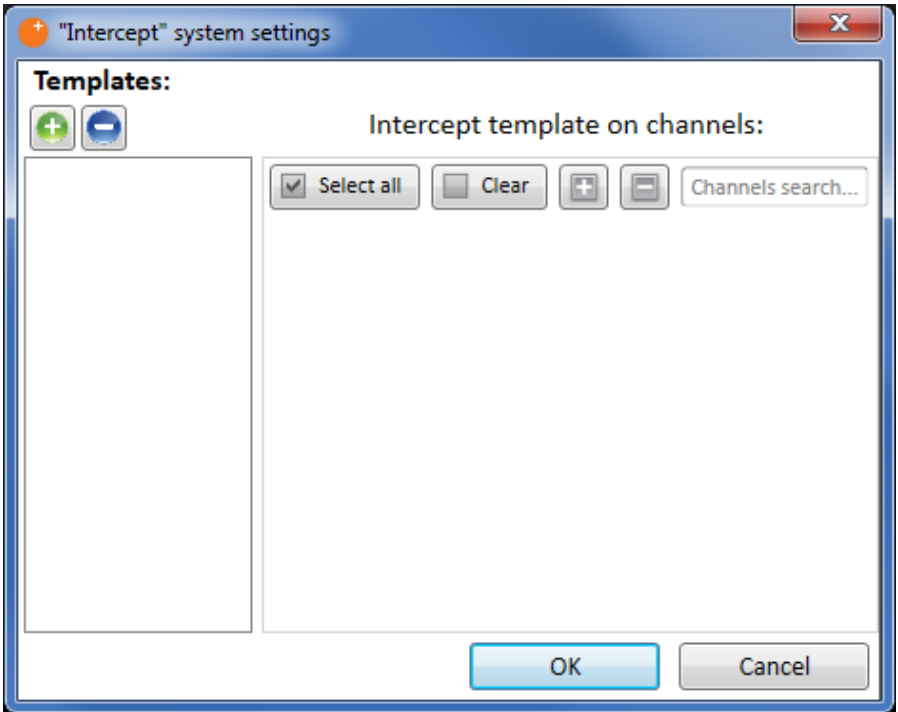



Fig.79

2. Press  — a sample selection window will appear (Fig. 80).

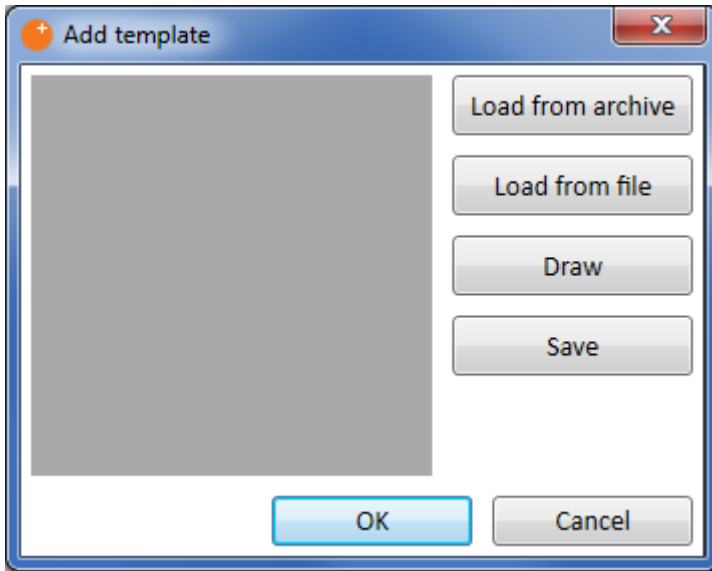


Fig.80

- In order to select an image from the archive video record as a sample, press the "**Load from archive**" button.
- In order to select an image saved in a file as a sample, press the "**Load from file**" button.
- In order to indicate combinations and mutual location of colors, press the "**Draw**" button (Fig. 81).

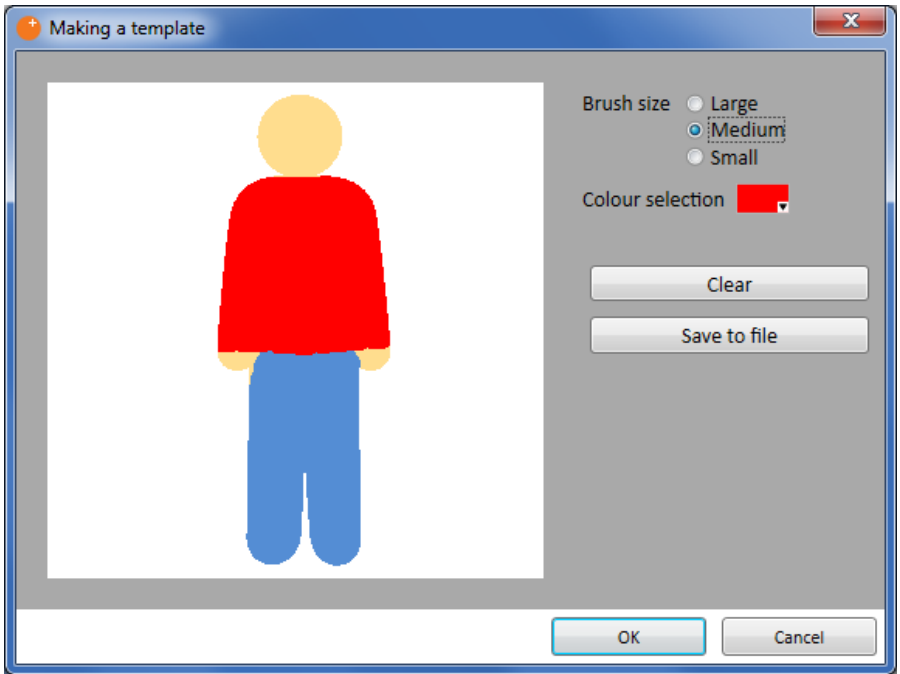


Fig.81

3. Select the channels which will participate in the interception of objects similar to the object (Fig. 82).

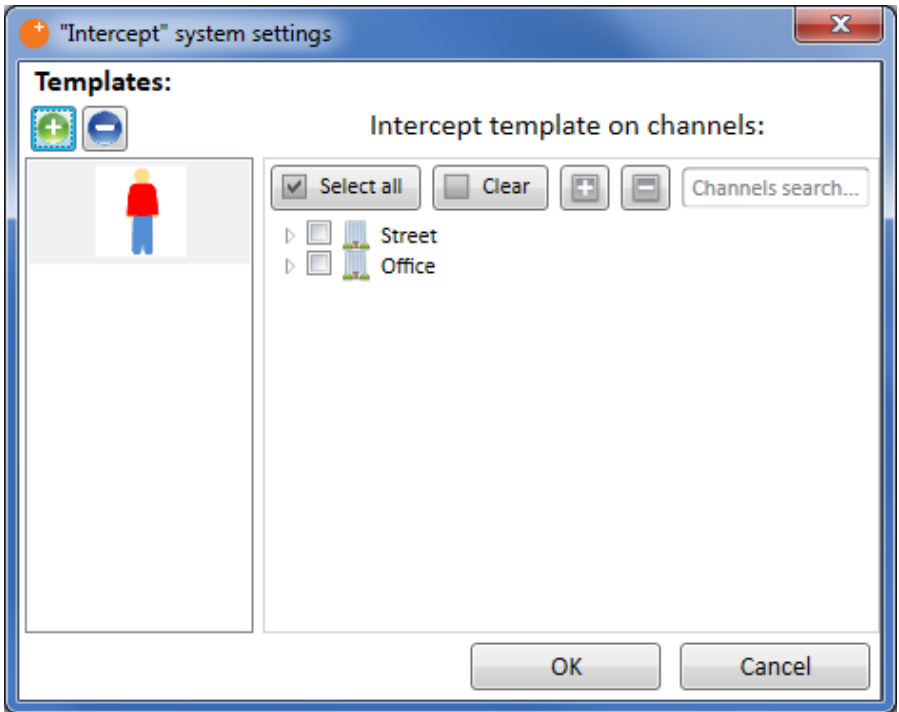


Fig.82

If a camera detects an **object** that is similar to one of the sample, at the lower part of the channel screen corresponding to the camera the orange "Intercept" panel will appear with the following buttons (Fig. 83):




-  – detected similar objects.
-  – movement up and down the list.
-  – exit the intercept panel.



Fig.83

Note: When the "Intercept" function is on, if a moving object similar to the sample is detected, the channel will switch to "Alarm" mode.

3.8. Working with Alarm Events

3.8.1. User Alarm Activation

In order to **activate user alarm** for several channels at once, press the "**Alarm**" button on the control panel.

3.8.2. "Accept Alarm"

In order to inform that you have seen the alarm signal and that you have the situation under control, click with a left mouse button on the channel area.

3.8.3. Working with Alarm Monitor

Alarm monitor (Fig. 84) is a monitor that displays video streams from the channels in the "Alarm" mode.

"**Alarm**" mode is acquired by the channel in one of the following three events:

- Detection of movement within the reach of camera, if the channel is put under guard;
- Detection of objects similar to the sample, if the "Intercept" function is enabled;
- User alarm activation.

If the channel appears on the alarm monitor, you have to accept the alarm by clicking on the channel image with a left mouse button.

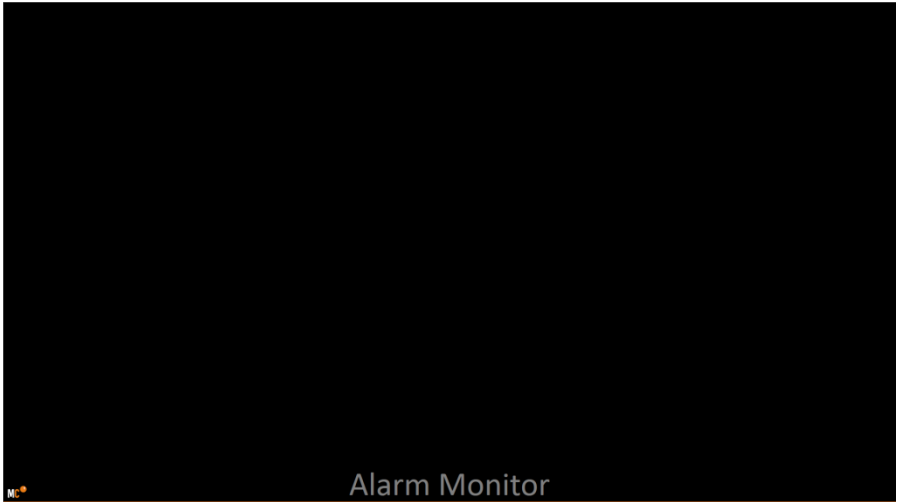



Fig. 84

3.8.4. Working with a Missed Alarm Log

Missed alarm log is a function that can capture missed alarms and then view their corresponding video records.

When a new entry appears in the missed alarm log, the following sign starts blinking .

Click on it with a left mouse button in order to open a window for viewing the missed alarm log (Fig. 85).

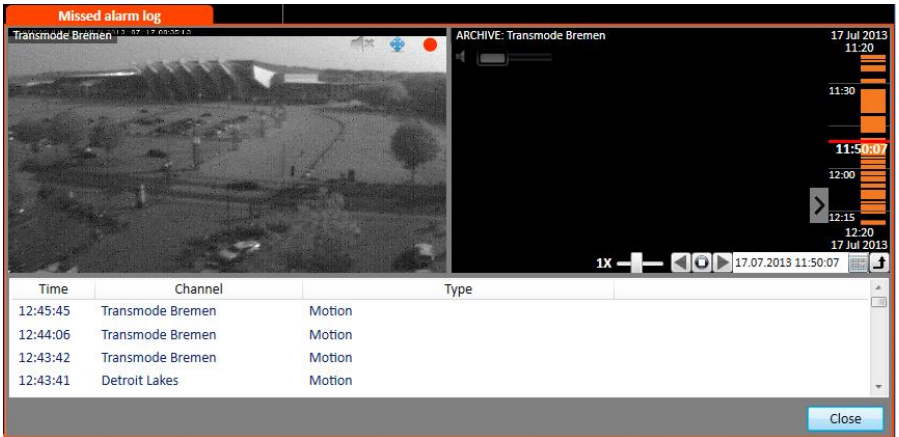


Fig.85

A list of missed alarms is located in the lower part of the screen. Each element on the list includes the following fields:


- alarm trigger time;
- channel name;
- description;

In order to select the alarm, click on it with a left mouse button.

The upper left part of the screen shows a real-time video stream from the channel corresponding to the selected alarm.

The upper right part of the screen shows this channel in the archive work mode. Displayed screen corresponds to the alarm triggering moment.

In order to view a **video record** corresponding to the alarm, use the archive fragment panel (located in the right part of channel image) and the archive view panel (located in the lower part of channel image).

In order to open the "Missed alarm log" at any time, select the "Alarm log" option 

3.9. Working with Archive for the Selected Channel

3.9.1. Transfer of Channel into the Archive Work Mode and Back

In order to turn on **channel archive video viewing**, click with a right mouse button on the grid box and select the "Archive" in the appeared context menu. The box will switch to the archive view mode for the selected channel (Fig. 86).



Fig.86

In order to go back to the **surveillance mode**, click with a right mouse button on the grid box and select the "Surveillance" in the appeared context menu (Fig. 87).

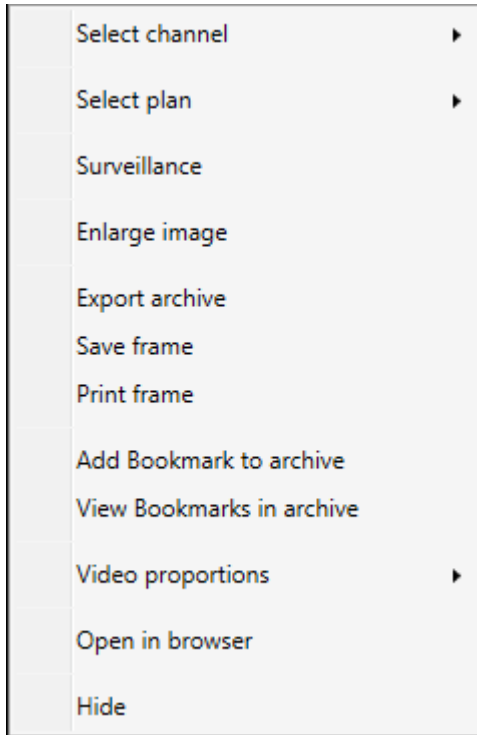





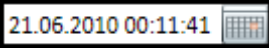

Fig. 87

3.9.2. Archive Records Playback

Archive fragment panel is located in the right part of the channel image and record fragments are highlighted in orange.

In order to **playback records from the archive**, use the **archive playback panel**.

-  – forward playback;

-  – backward playback;
-  – stop playback;
-  – go to frame by time
;
-  –speed.

3.9.3. Archive Export

In order to **export an archive**, click with a right mouse button on the grid box and select the "Export archive" in the appeared context menu. Archive export menu will open (Fig. 88).

MACROSCOP allows the user to export the video archive into files of two formats:

MCM (MACROSCOP Media) — internal MACROSCOP format; file viewing by using "MACROSCOP Player", export speed into MCM format exceeds the export speed into AVI by several times.

AVI — files of this format can be viewed in the vast majority of video players.

3.9.3.1. Export to MCM

In the window (Fig. 88) select the "**Export Type**" — MCM.

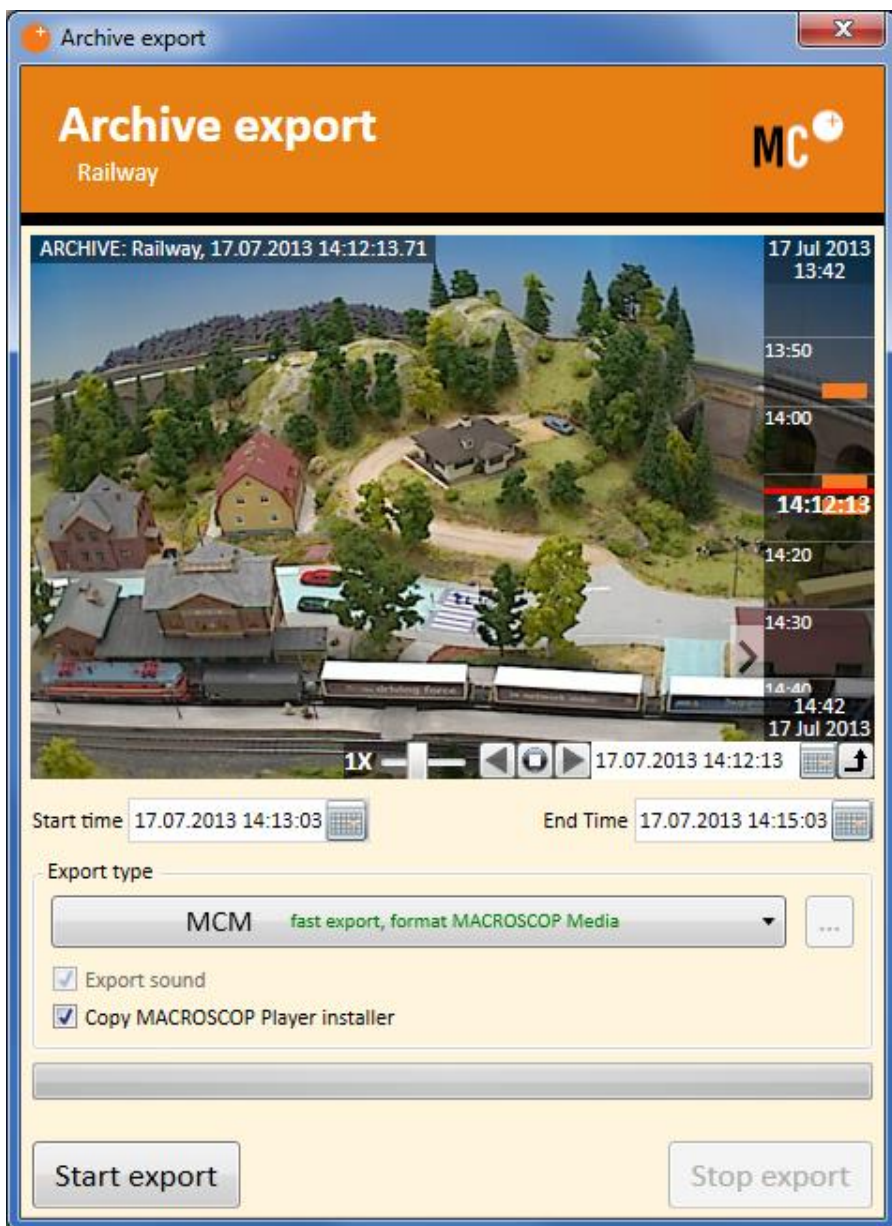


Fig. 88

Indicate the start and end time of the archive fragment exporting in the "**Start time**" and the "**End time**" fields.

Press "**Start export**", select a location in the appeared window (Fig. 89) and press "Save".

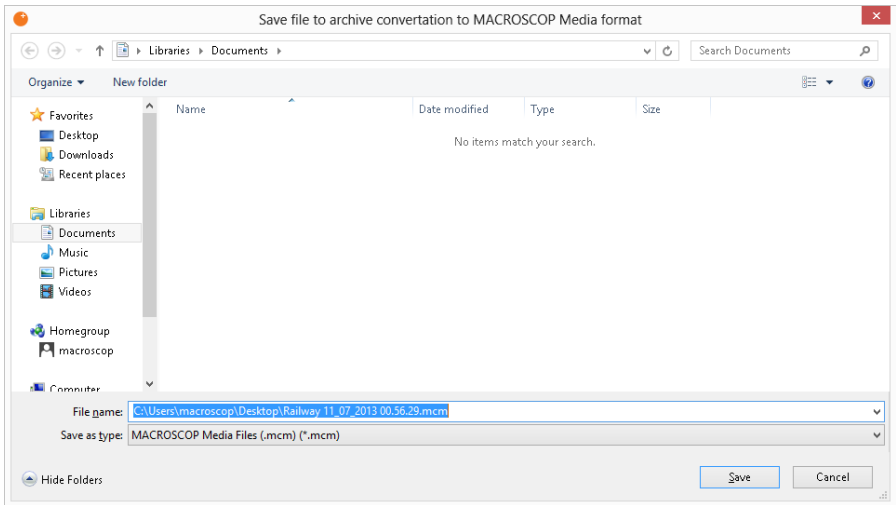


Fig.89

After finishing the export, press "Yes" in the appeared window (Fig. 90) if you want to open the MACROSCOP Player and view this recently exported file. Press "No" if you want to return to the main screen of MACROSCOP Client.

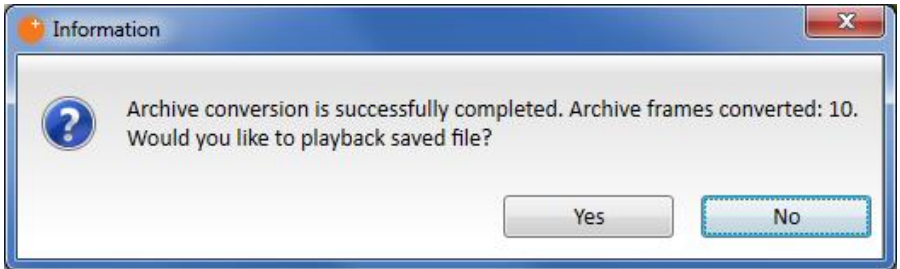


Fig. 90

3.9.3.2. Export to AVI

In order to export into the AVI format, select "**Export type**"

- AVI in the archive export window (Fig. 91).

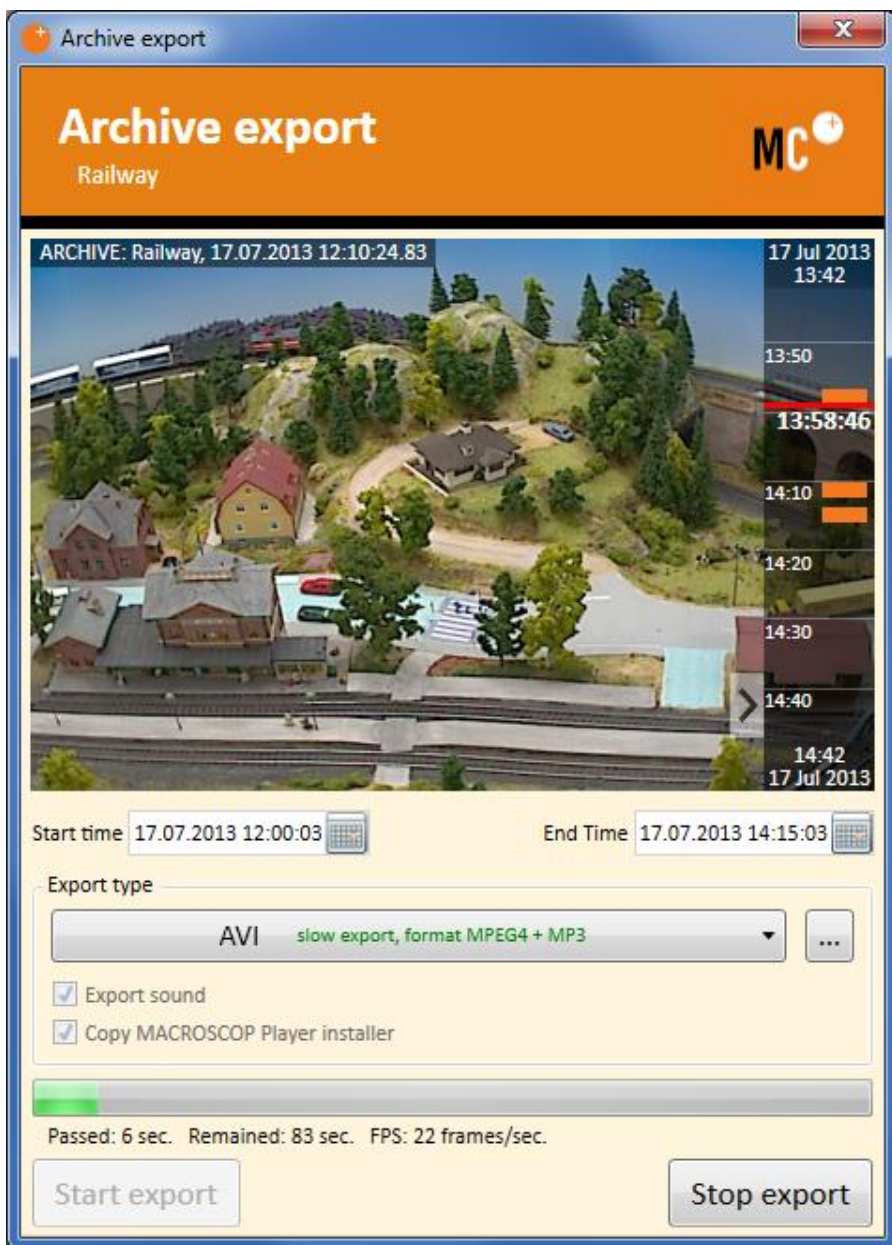


Fig.91

In order to **configure code parameters in AVI**, press the "... " button to the right of the "Export type" field - a new window will open (Fig. 92).

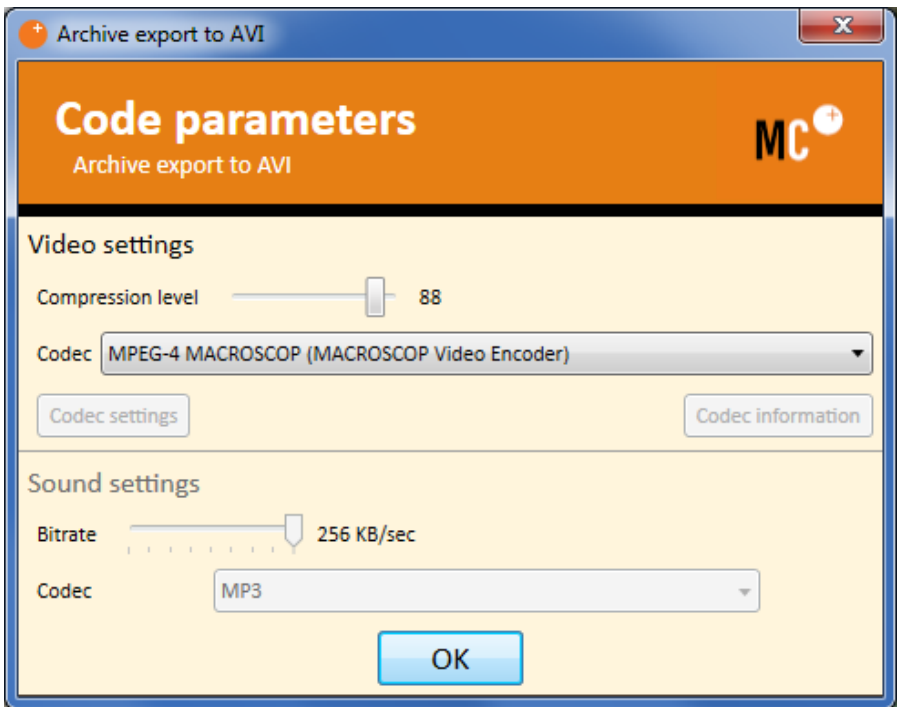


Fig.92

Press "**Start export**" (Fig. 91), press "Save"(Fig. 93).

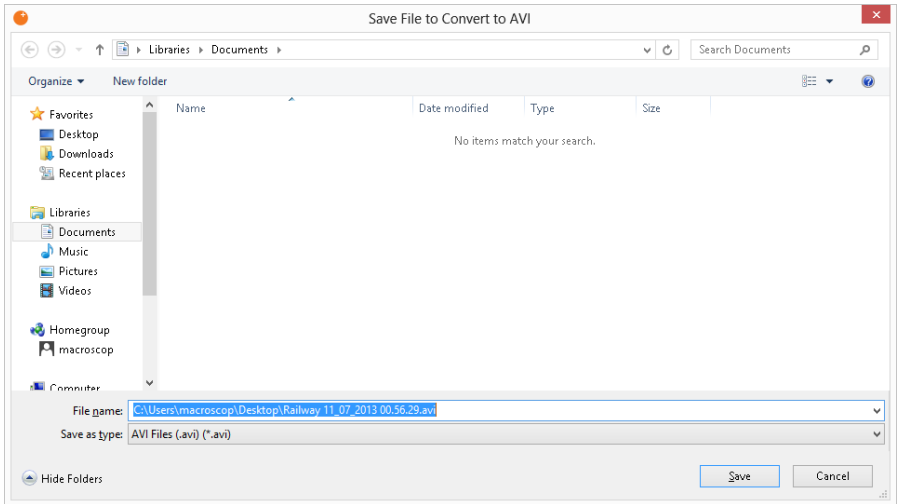


Fig.92

3.9.4. Save Frame

In order to **save a frame to a disk**, click with a right mouse button on the grid box and select the "Save frame" in the appeared context menu.

In order to **save a zoomed in screen frame**, zoom in the screen before saving.

3.9.5. Print Frame

In order to print the frame on a printer, click with a right mouse button on the channel box, select "Print frame" in the appeared context menu, select a printer in the appeared window and press "Print".

In order to **print a zoomed in screen frame**, zoom in the screen before saving.

3.10. Working with an Archive in the Expert Mode

Expert mode is a mode of working with files which features the following functions:

- Synchronous playback on several channels;
- Moving objects and faces archive search
- Application of archive search filters;
- Convenient panel for working with record fragments;
- Printing and saving screens from the file.

In order to **enable the expert mode (Fig. 93)**, press the "Expert" button on the control channel. As a result, all available channels on the screen will switch to the archive view mode and a fragment strip and playback control panel will appear at the lower part of the screen.

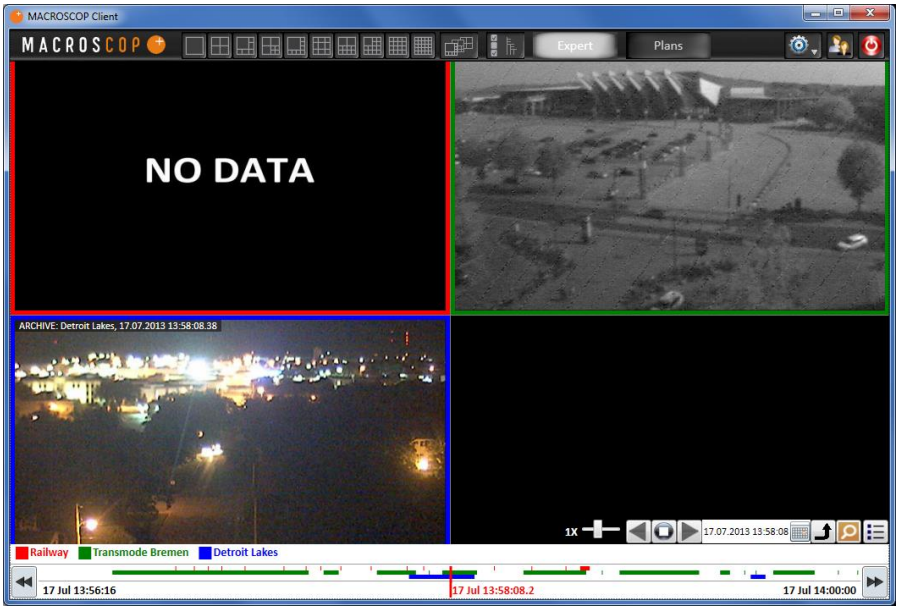


Fig.93

3.10.1. Synchronous Playback

Synchronous playback function allows to view video records from the archive on several channels at the same time. A video on each channel corresponds to the same moment in time. A single control panel at the lower part of the screen is used for playback control.

Required channels are selected in the grid boxes.

3.10.2. Moving Objects and Faces Archive Search

In order to start archive search, click with a right mouse button on the grid box and select the "Archive Search" menu option. "Moving objects and faces archive search" window will appear (Fig. 94).

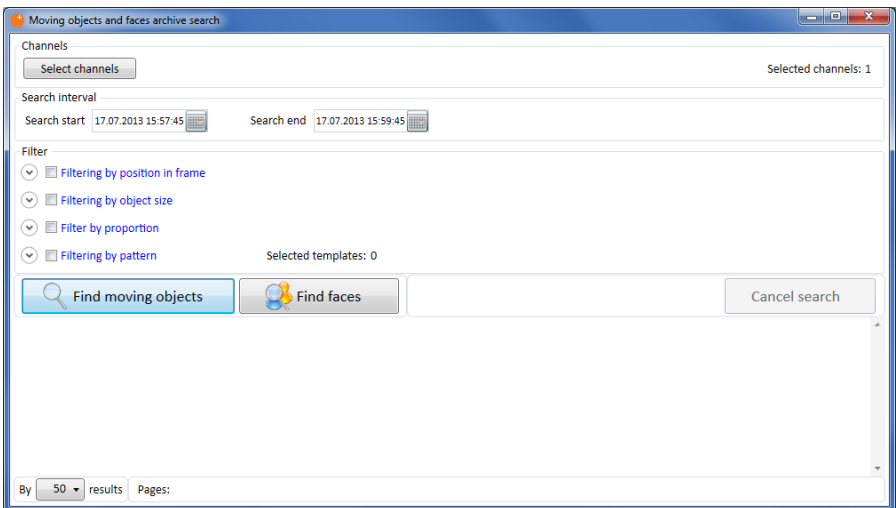


Fig.94

Set the search parameters:

- in order to **select search parameters**, press the "Select channels" button (this will allow the user to perform search on several channels);
- in order to **set the search interval**, indicate the corresponding values in the "Search start" and "Search end";

- in order to set up **filtering by size**, mark a corresponding field and then set the object size with the sliders;
- In order to set up **filtering by position**, mark a corresponding field. Use the mouse in order to set the search area;
- In order to set up **filtering by template**, mark a corresponding field.

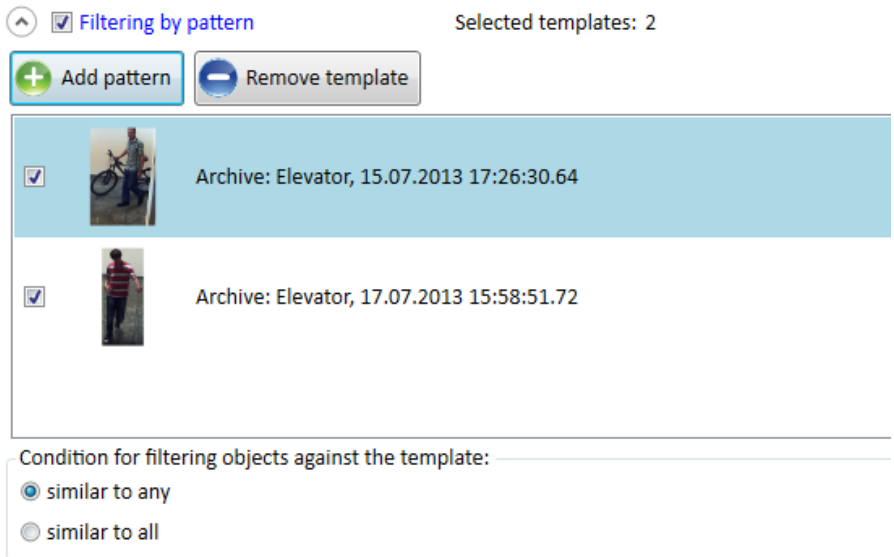

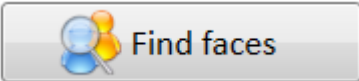


Fig. 95

- add template ;
- delete template ;

- in order to configure the number of results displayed on the page, select the required value in the field in the lower left corner;

By results Pages: 1 [Next](#)

Press  , if you need to find moving objects or  , of you need to find faces.

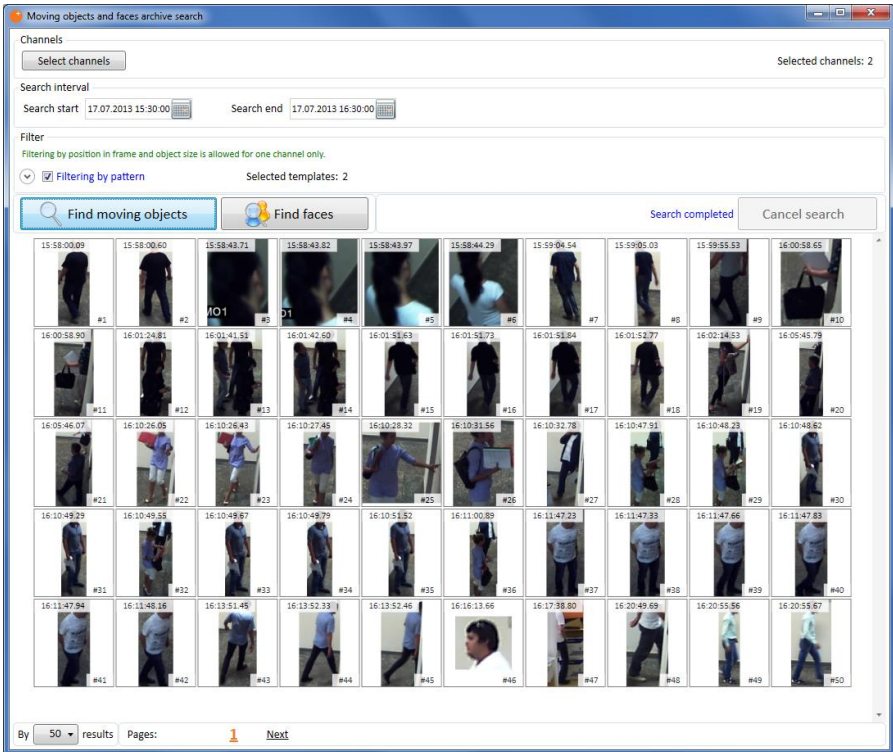

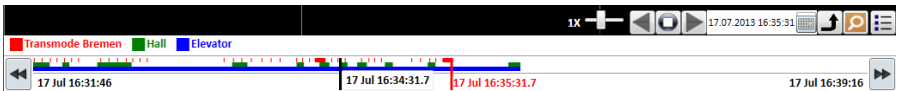


Fig. 96

In order to **show the recorded moment** of when the object was discovered, click on the object with a right mouse button. In order to **return to the search window** press the button .

3.10.3. Working with video record fragment panel

The lower part of the screen has a panel for working with video record fragments. A panel represents a time scale with images of video record fragments corresponding to the channels, which are viewed in the expert mode. Each channel is assigned a specific color. Channel images are placed in a frame with a specific color.



In order to **go back or forward in time** at the panel - move the mouse cursor to the right or left part of this panel; click the left mouse button.

There are two ways to **go to the specific time** in the archive record:

Option 1. Click with a left mouse button on a corresponding place on the panel.

Option 2. Click with a right mouse button on a corresponding place on the fragment work panel and select "Go to" (Fig. 97).



Fig.97

3.10.4. Search in the Events Archive.

1. Click with a right mouse button on the channel box and select "Show events" from the menu. An "Events view" window will appear.

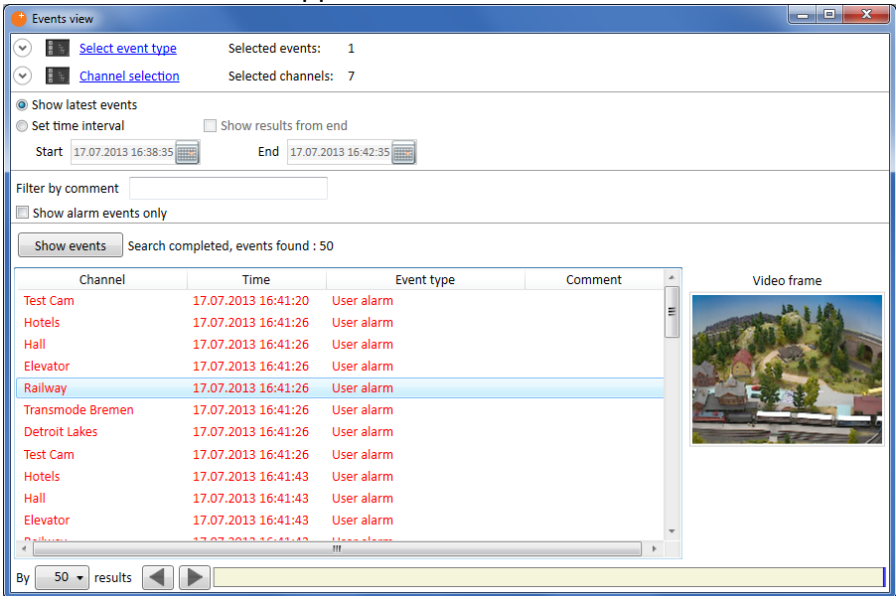


Fig. 98

2. Select event types that need to be found in the "Select event type" list.
3. Select the channels for which such events need to be found;
4. Select "Show latest events" or set a time interval;
5. Select "Show alarm events only" in order to view only the alarm events in the list of detected events.
6. Enter a comment used to filter such events in the field "Filter by comment";

7. Press the "Show events" button.

3.10.5. Working with Archive Bookmarks

In order to set a bookmark for the archive, click with a right mouse button on the channel box and select "Add Bookmark to archive".

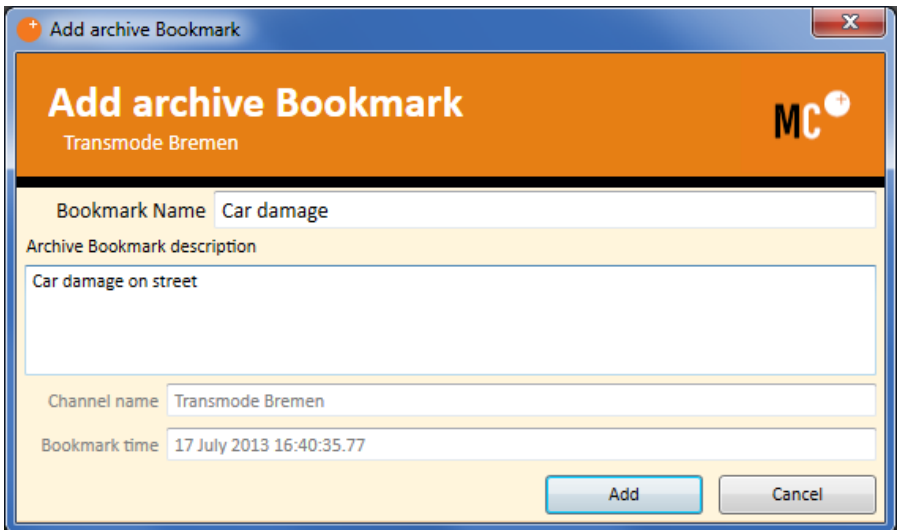
The image shows a software dialog box titled "Add archive Bookmark". The title bar is blue with a close button (X) on the right. The main area has an orange header with the text "Add archive Bookmark" and "Transmode Bremen" below it, and a logo "MC" with a plus sign on the right. The dialog contains several input fields: "Bookmark Name" with the value "Car damage", "Archive Bookmark description" with the value "Car damage on street", "Channel name" with the value "Transmode Bremen", and "Bookmark time" with the value "17 July 2013 16:40:35.77". At the bottom right, there are two buttons: "Add" and "Cancel".

Fig.99

In order to **go to the archive bookmark that was created earlier**, click with a right mouse button on the grid box and select the "View Bookmarks in archive" menu option. Find a bookmark in the corresponding archive bookmark window (Fig.100) – you will go to a corresponding archive fragment after a double click with a mouse on the bookmark.

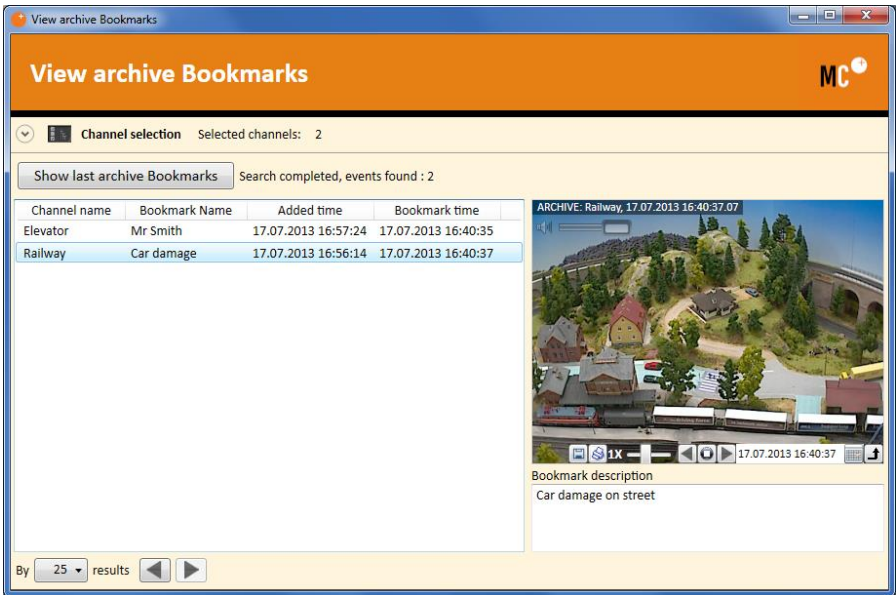



Fig.100

3.11. Edit Current Workstation Settings

Workstation settings allow the user to configure set MACROSCOP Client parameters on the computer where such settings have taken place.

Press , then "Edit current workstation" and a new window will appear (Fig. 101).

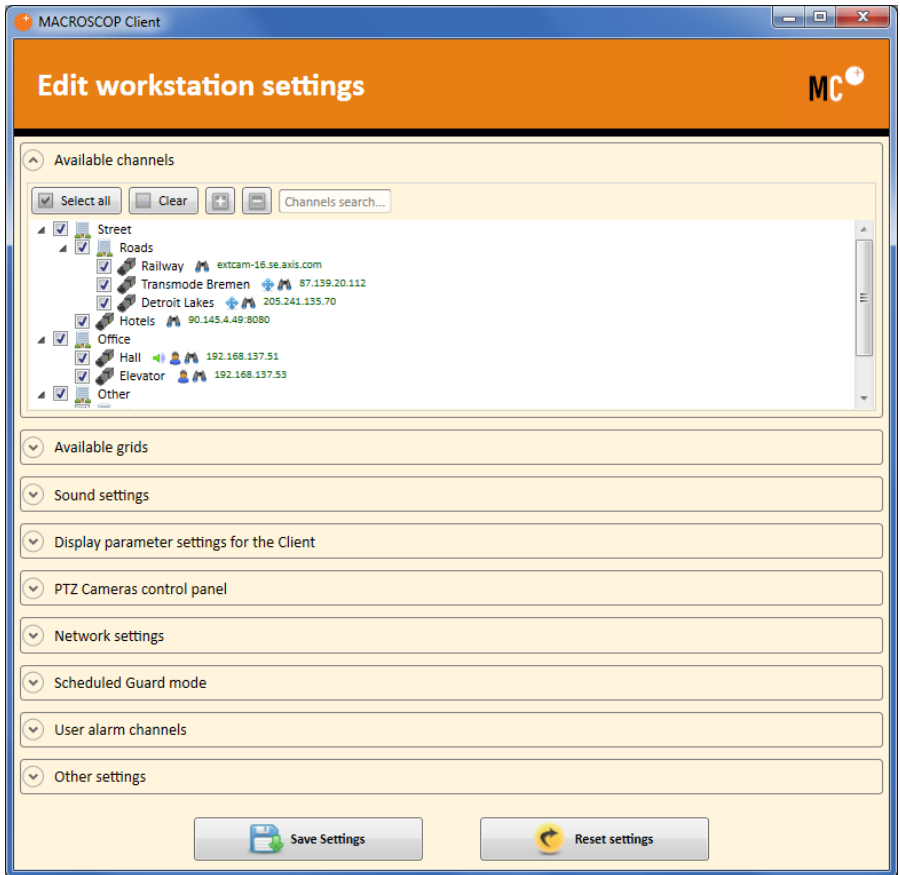


Fig.101

3.11.1. Available Channels

In order to set the **channels available for displaying**, put a check mark next to them (Fig. 101)

3.11.2. Available Grids

In order to set the **grids available for displaying**, put a check mark next to them (Fig.102)

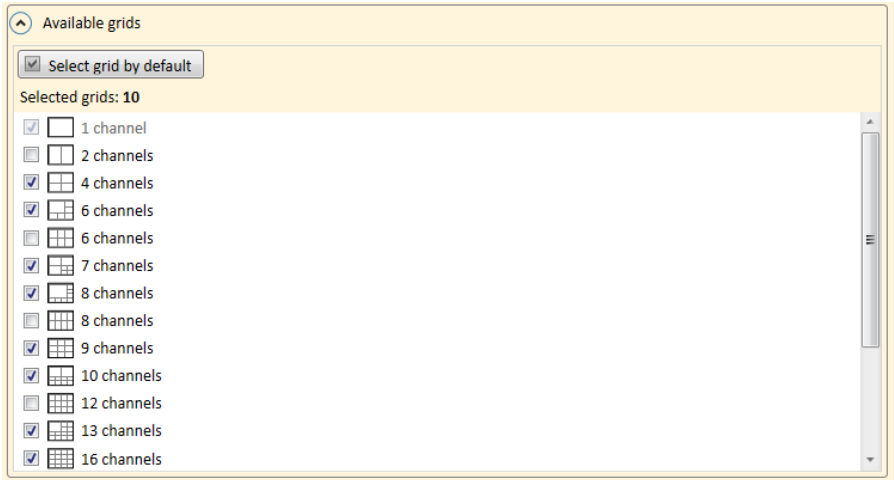


Fig.102

3.11.3. Sound Settings



Fig. 103

"Play only for the active channel" - the sound will be played only for the available channel. If such option is turned off, the sound will be transmitted at all channels displayed on the screen.

"Sound transmission" settings group allows the user to select a microphone and the screen button mode for the channels which supports the sound transmission to the camera.

3.11.4. Display Parameter Settings for the Client

Configuration of video proportions, display rate, window mode, etc. (Fig. 104).

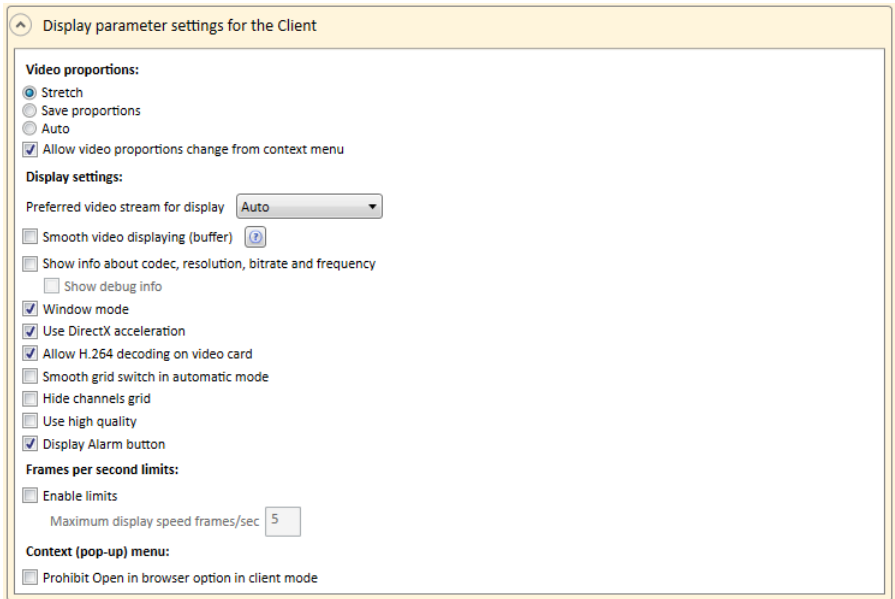


Fig.104

3.11.5. PTZ Cameras Control

Remote control or joystick configuring.

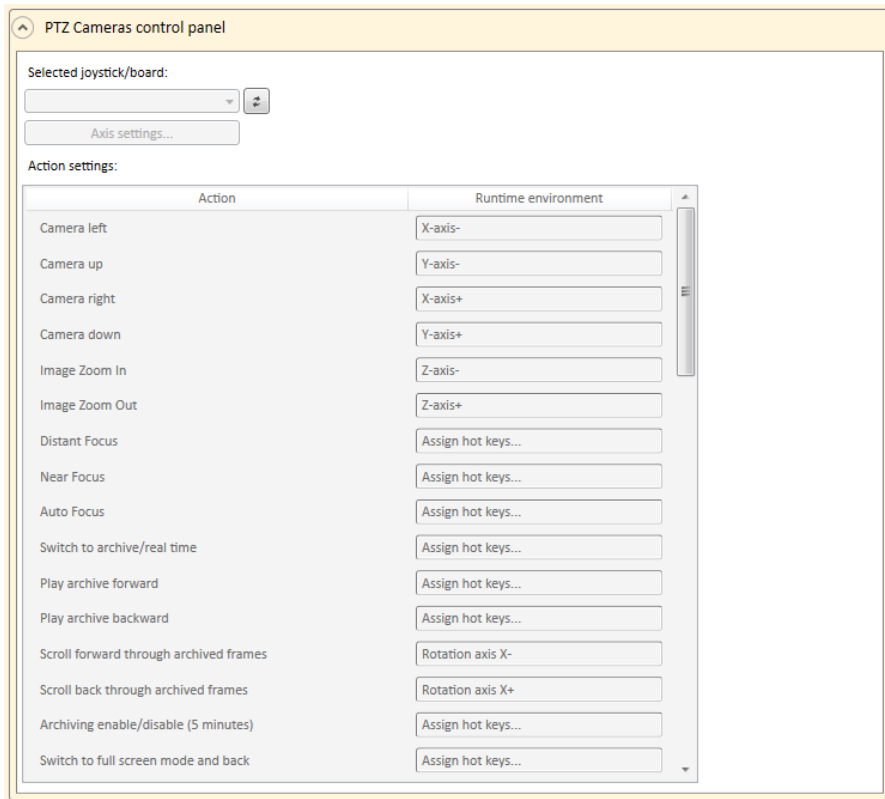


Fig. 105

3.11.6. Network Settings

"**Network Settings**" section allows the user to configure a connection in the proxy mode: in this case, MACROSCOP Client application can receive all video streams and data from the video archive by making only one connection to the MACROSCOP server (this server, in its turn, will obtain data from the other servers and forward them to the MACROSCOP Client).



Fig. 106

3.11.7. Scheduled Guard Mode

In order to enable **Scheduled Guard mode**, put a corresponding check mark. In order to set up channels for which the schedule security mode will be activated, mark them in the "Enable Scheduled Guard mode" list. In order to set a specific time period for the Scheduled Guard mode operation for a separate camera, mark the corresponding intervals on the time scale (Fig. 107).

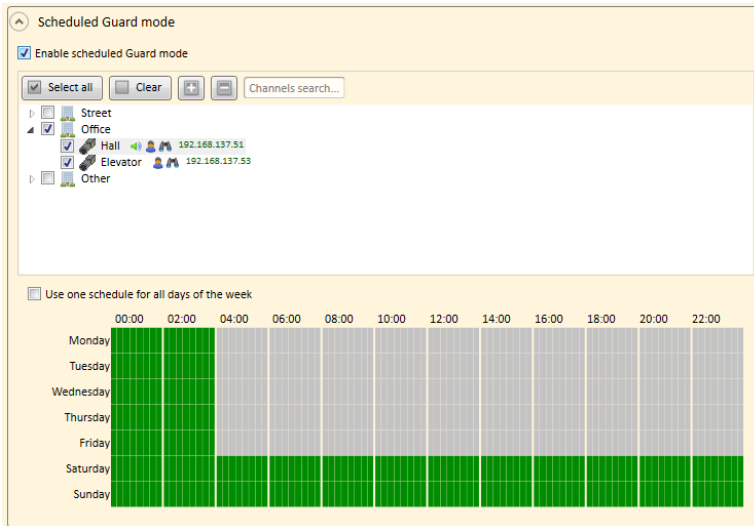


Fig.107

3.11.8. User Alarm Channels

Mark the **channels subjects to user alarm activation** (Fig.108).

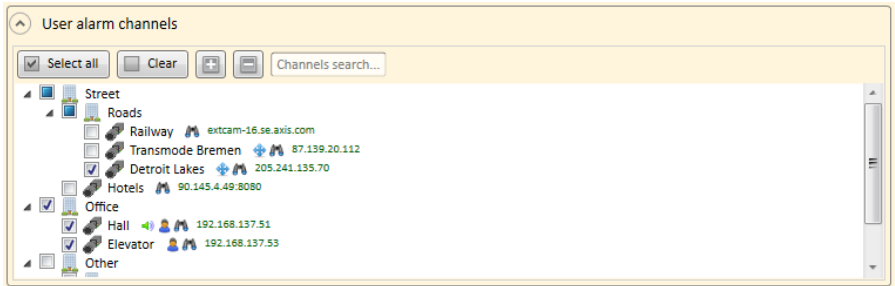


Fig.108

3.11.9. Other Settings

Settings for sound notification and working with several monitors.

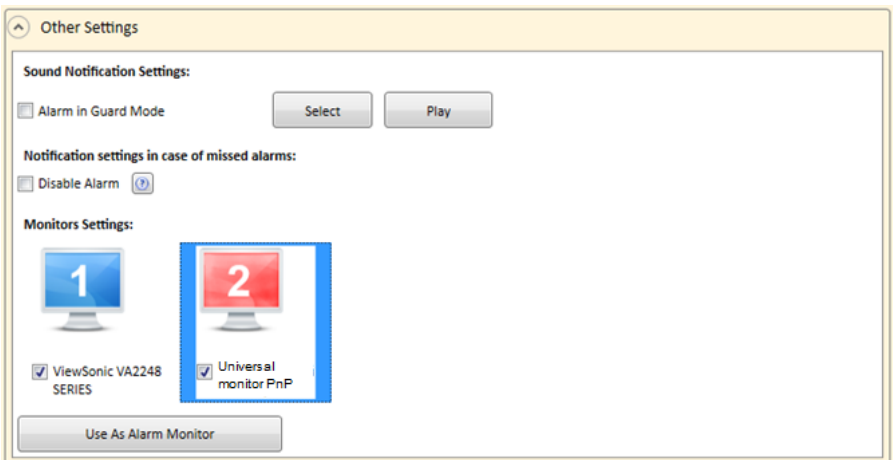


Fig. 109

MACROSCOP Web-Client

3.12. Description

MACROSCOP web client allows the user to watch real-time videos and video surveillance system archives by using any web browser that supports a Silverlight technology.

Next you will find a list of supported Silverlight versions in different operating systems and browsers:

Operating System	Browser						
	Internet Explorer			Mozilla Firefox 3 and earlier	Safari	Opera	Google Chrome
	6 SP1 and later	7	8 and earlier				
Windows 7	—	—	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2	unofficial	2, 3, 4, 5
Windows Server 2008 R2	—	—	1, 2, 3, 4, 5	5	1, 2	unofficial	2, 3, 4, 5
Windows Vista	—	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2	unofficial	2, 3, 4, 5
Windows Server 2008	—	1, 2, 3, 4, 5	1, 2, 3, 4	1, 2, 3, 4, 5	1, 2	unofficial	2, 3, 4, 5
Windows XP	1, 2, 3, 4	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2	unofficial	2, 3, 4, 5
Windows Server 2003							
Windows Home Server							
Windows 2000	2, 3, 4	—	—	unofficial	2	scheduled	—

Operating System	Browser						
	Internet Explorer			Mozilla Firefox 3 and earlier	Safari	Opera	Google Chrome
	6 SP1 and later	7	8 and earlier				
Mac OS 10.4/10.5 Intel	—	—	—	1, 2, 3, 4, 5	1, 2, 3, 4, 5	scheduled	—

3.13. Settings

3.13.1. Server Settings

Video stream broadcasting service for mobile devices and web clients must be activated at the server.

3.13.2. Browser Settings

Silverlight browser platform installation may be required during the first launch of the web client.

3.14. Use

In order to **run a web client**, enter the line of the following type in the browser `http://<IP-address_or_server_URL>:<server_port>`, for example:

`http://192.168.1.100:8080` or
`http://server.company.com:9090`

The main server web page will open (Fig.110), follow the link "**MACROSCOP Web Client**".

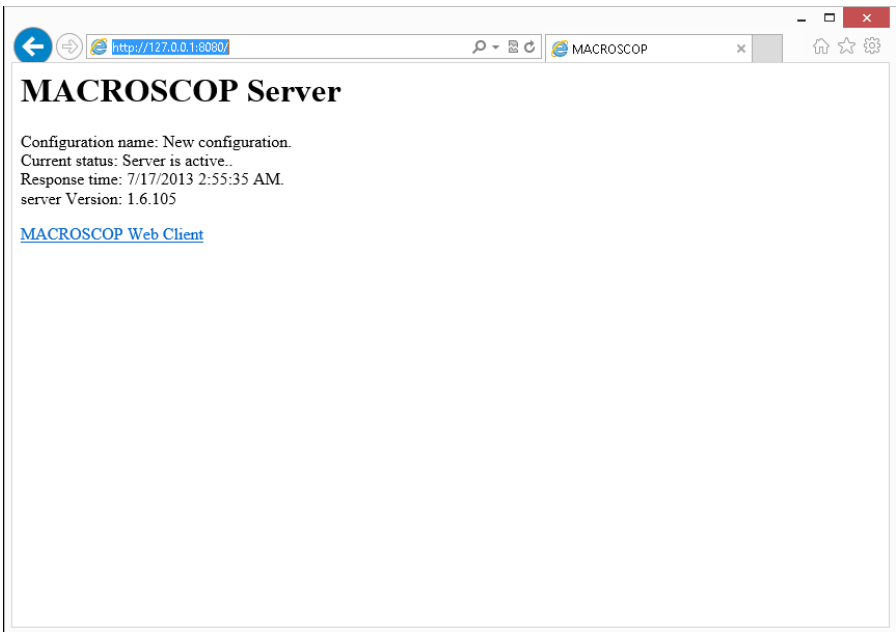


Fig.110

Web client login window will appear:



Fig. 111

After logging in you will see a window without any images from the cameras:

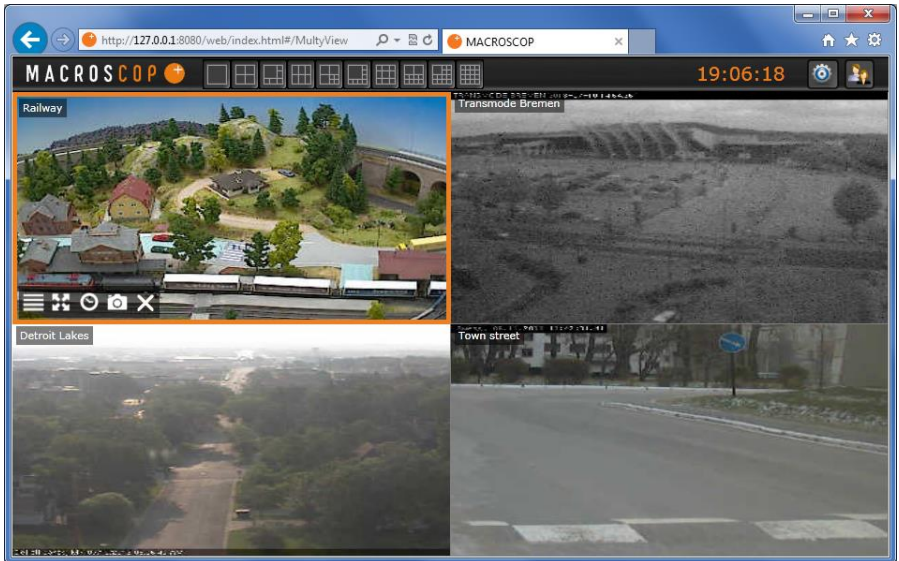


Fig. 112

Select a camera by going to the "Camera selection" option.

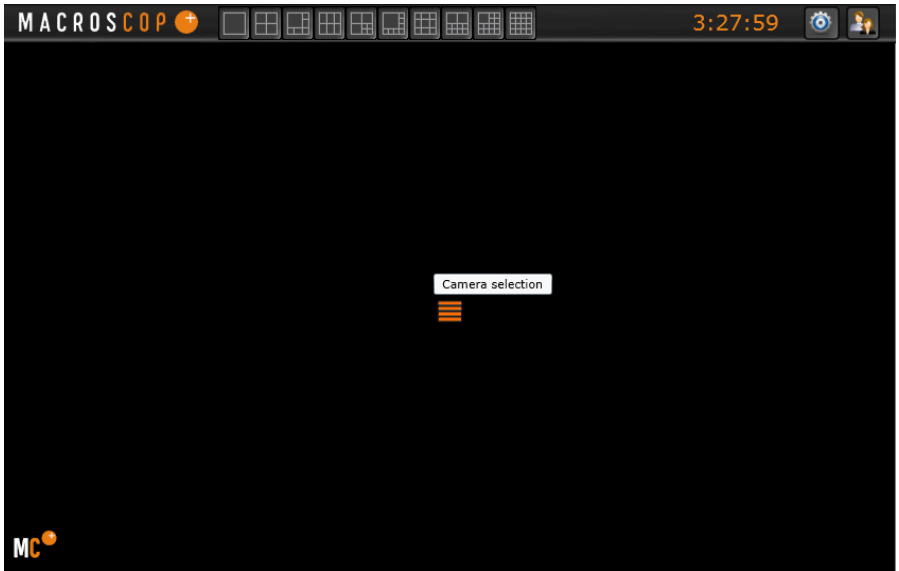


Fig. 113

Select one of the cameras from a pop-up panel with a list of cameras.

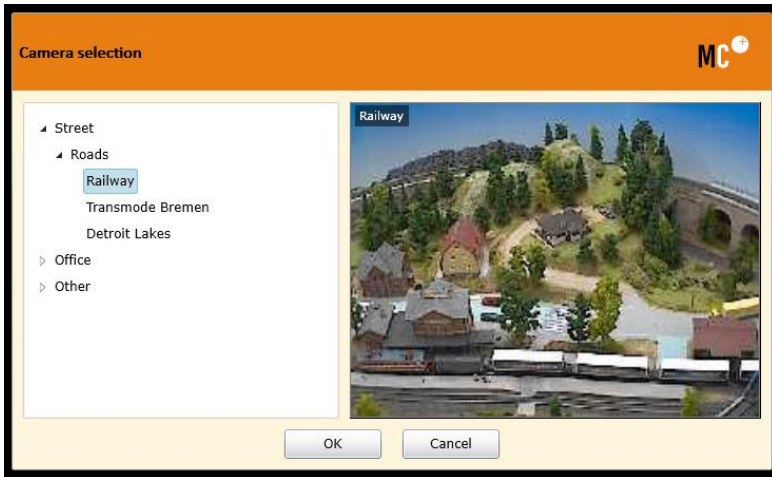


Fig. 114

Web client control panel elements are similar to control elements of the MACROSCOP Client application. Web client window samples are given below:

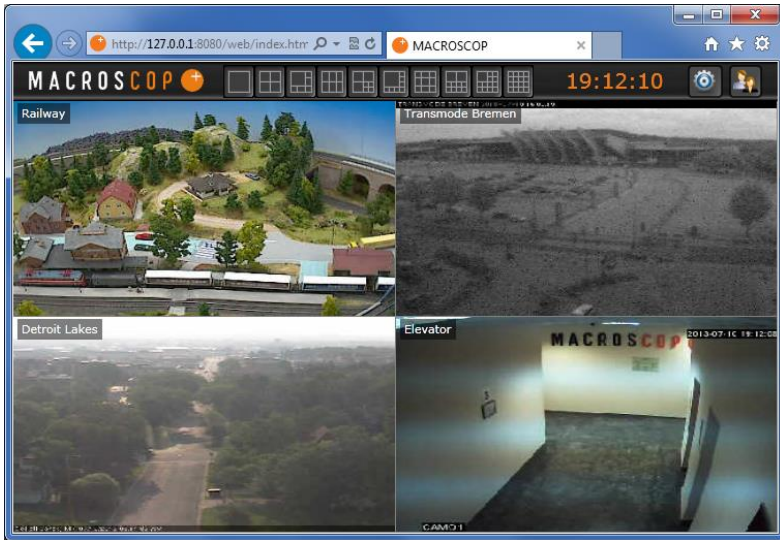


Fig. 115

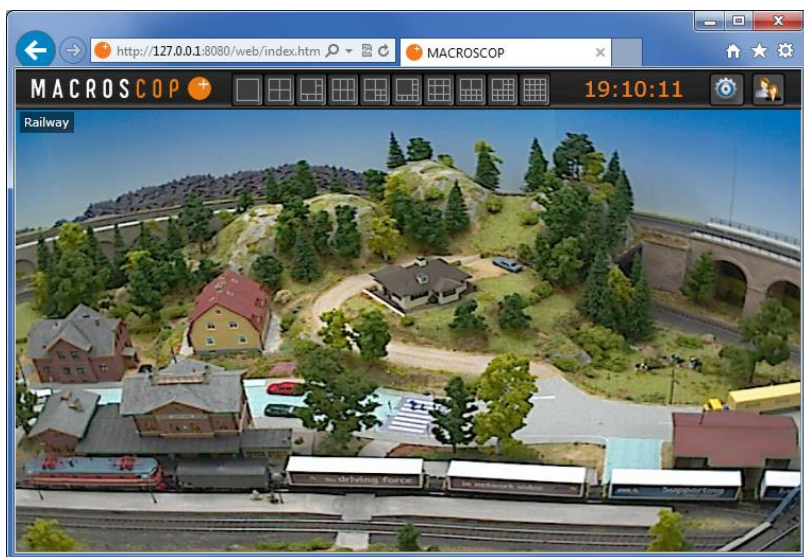


Fig. 116

If a grid is used by several cameras, there is an option for selecting one of the cameras and viewing only this camera - double click:

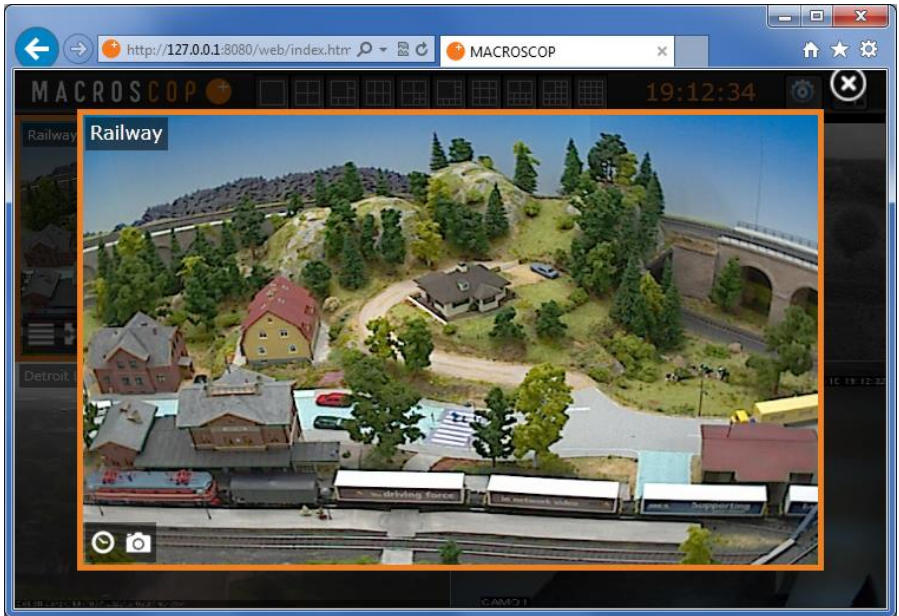


Fig. 117

Only one function - "Screenshot" - is available during such viewing.

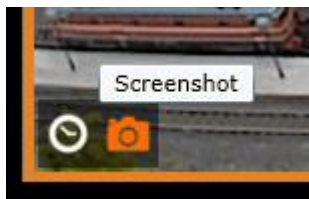


Fig. 118

Open the configuration editing window by selecting the "Settings" option in the control panel.



Fig. 119

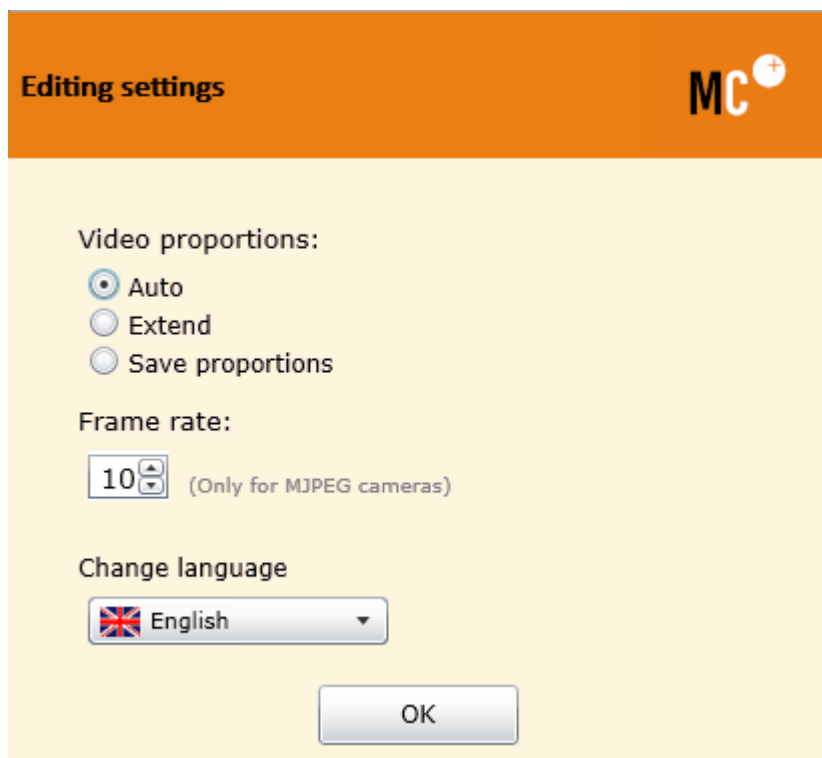


Fig. 120

In order for the changes to become effective after the change of frame rate, you have to close the browser or (without closing the browser) select "Switch user" option and log in again:

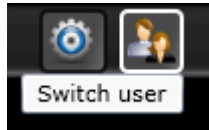


Fig. 121

A description of a context menu is provided below:

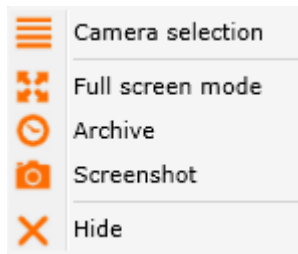


Fig. 122



Fig. 123

Control elements in the archive view mode for the web client are similar to the control elements in the MACROSCOP Client application.

Moving Objects Tracking Module

3.15. Description

Moving Objects Tracking Module

- Tracking moving objects within the camera range.
- Alarm triggering (alarm events) in case of the following scenarios:
 - crossing a line
 - entering the area

- extended stay of the object in the area.
- Search in the alarm events archive.
- Interactive search in the archive by crossing an arbitrary line set by the operator.

3.16. Configuration

In order for the module to work correctly it is necessary to correctly place the camera, set up MACROSCOP movement detector and the module itself.

3.16.1. Camera Location

The camera should be located so that the objects in its range would cover each other to the least possible degree. For that, the camera must be placed as high as possible and turned to the ground at the sharpest angle possible.

3.16.2. Configuration of MACROSCOP Motion Detector

The minimum object size must be selected in such a way as to exclude false instances of motion detector activation.

Simple Motion Detector Configuration

1. Turn on the motion detector at the camera settings..

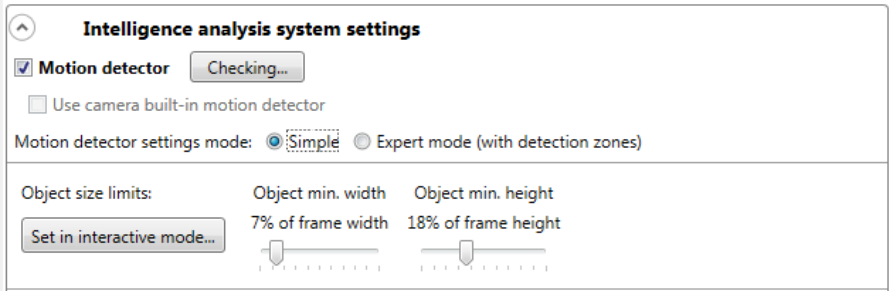


Fig. 124

2. Press the "Set in interactive mode" button in order to open a window of interactive setup of the minimum size of the detected object for the current zone.

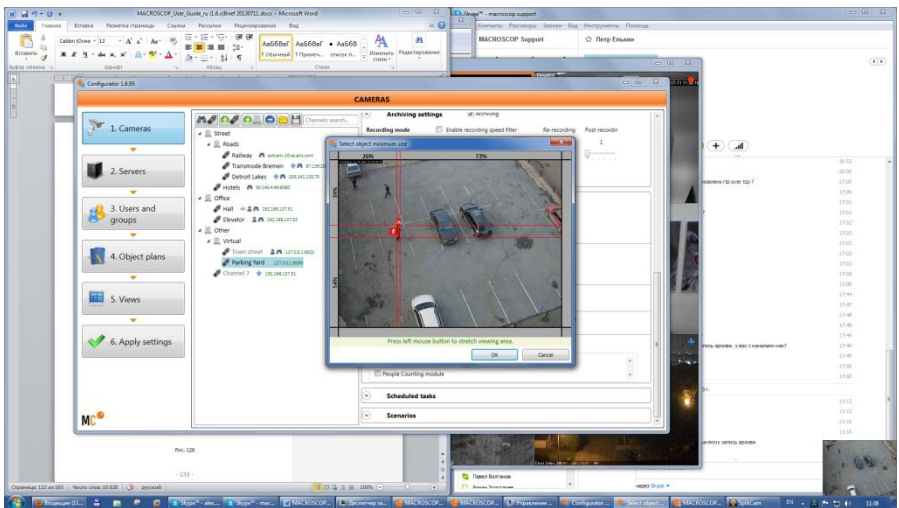


Fig. 125

3. By holding the left mouse button, select the area which size corresponds to the minimum object size (somewhat less than a size of objects that will be detected). Press the "OK" button to save the settings.

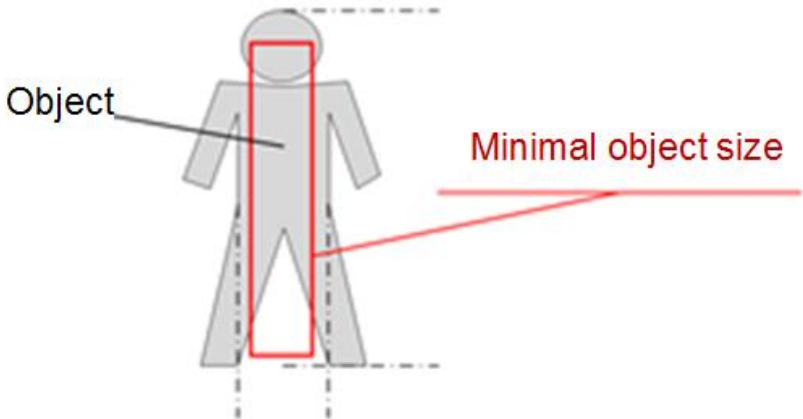


Fig. 126

If you cannot get rid of false alarms with a simple configuration of motion detector, as well as if the triggering of alarm events does not occur in all cases, you should then use the expert motion detector configuration.

Expert Motion Detector Configuration

1. Turn on the motion detector in camera settings and select the "Expert" mode in the motion detector work modes.

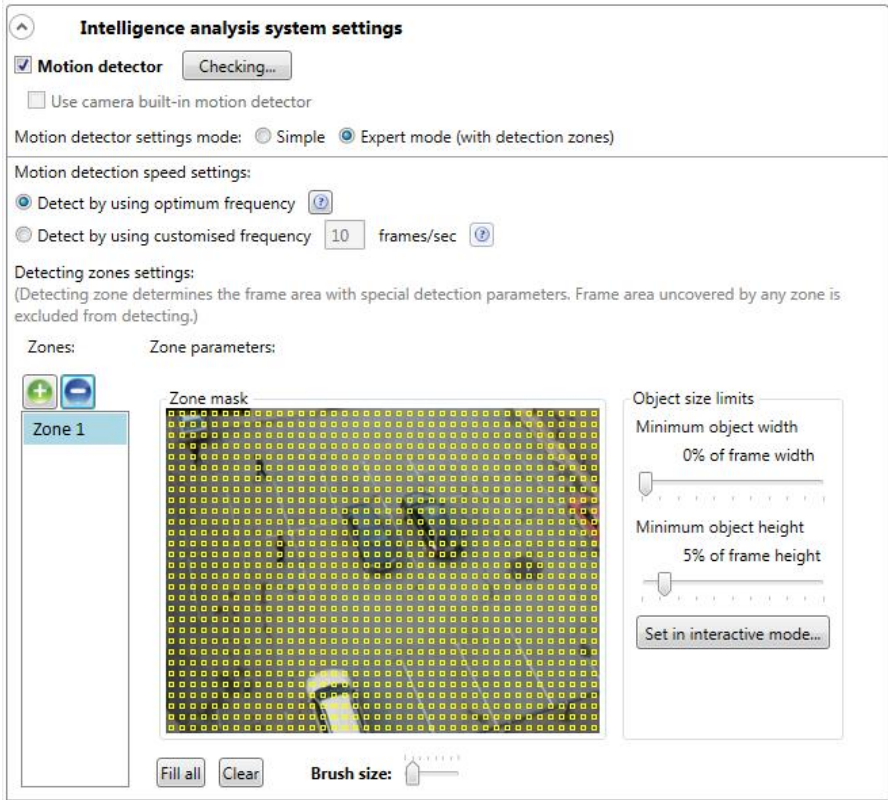


Fig. 127

2. Press the "Set in interactive mode" button in order to open a window of interactive setup of the minimum size of the detected object for the current zone.

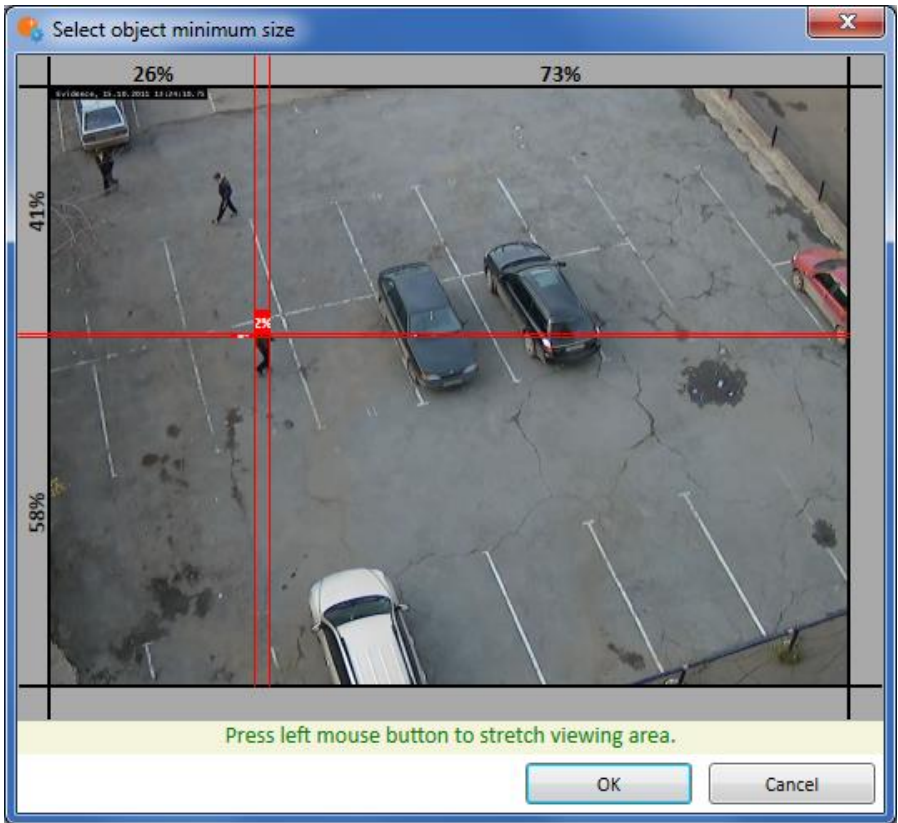



Fig. 128

3. By holding the left mouse button, set up a minimum **height** (several pixels) and **width** for the minimum object size, which should be **somewhat smaller than the detected objects**. Press the "OK" button to save the settings.
4. Add the second detection zone by using the button 

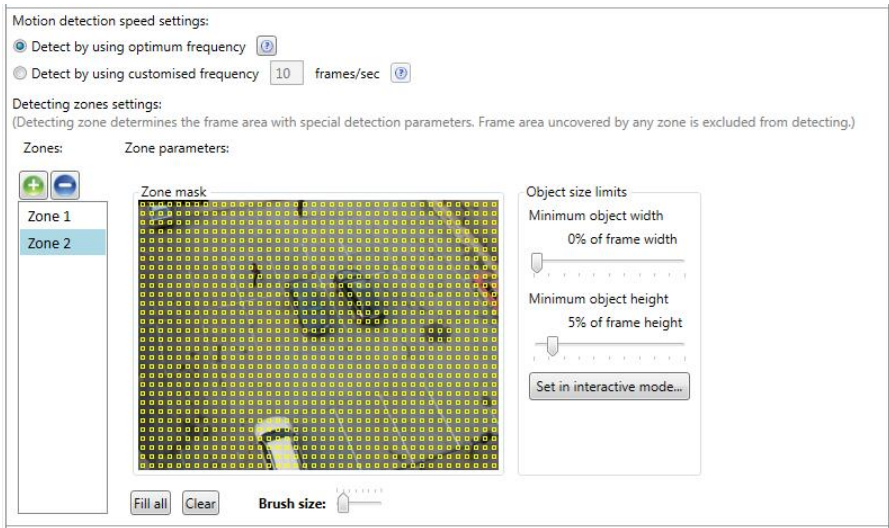


Fig. 129

5. Select the second zone and press the "Set in interactive mode" button in order to open a window of interactive setup of the minimum size of the detected object for the current zone.

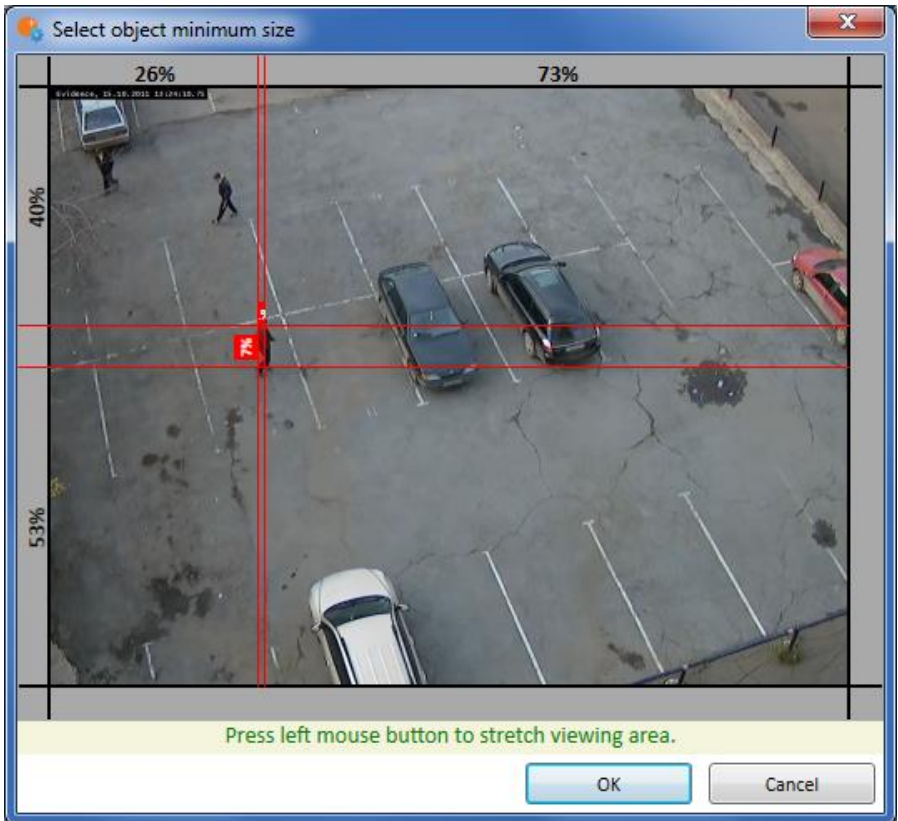


Fig. 130

6. By holding the left mouse button, set up a minimum **width** (several pixels) and **hight** for the minimum object size, which should be **somewhat smaller than the detected objects**. Press the "OK" button to save the settings.

After such configuration, the object will be considered true if it is larger than one of these dimensions - the width for the first zone and the height for the second zone.

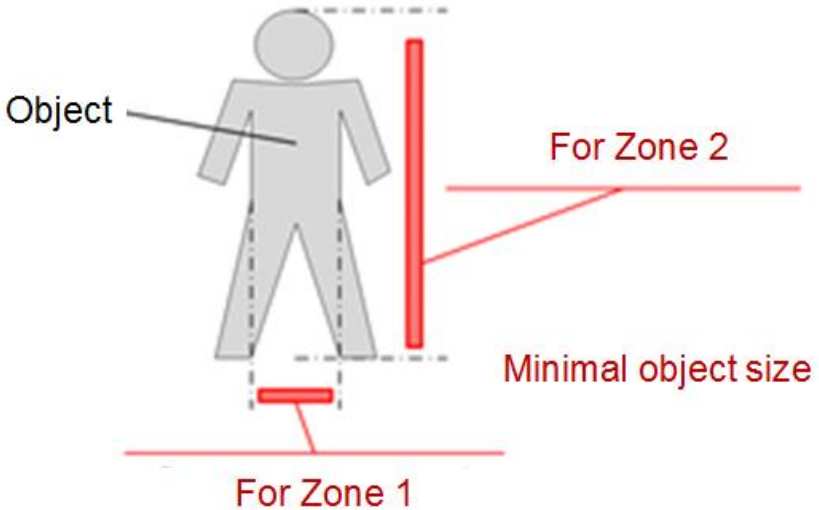


Fig. 131


3.16.3. Moving Object Tracking Module Configuration

In order to set up the module:

1. Mark the option "Use external intelligent modules" in the Configurator channel settings, in "Intellectual analysis system configuration" section. Afterwards, the "Moving objects tracking module" will be available for turning on.



Fig. 132

2. Mark the "Moving objects tracking module"
3. Press "Configuration" 
4. Two areas are available for configuration - "Detector settings" (Fig. 133) and "Alarm settings" (Fig. 134).

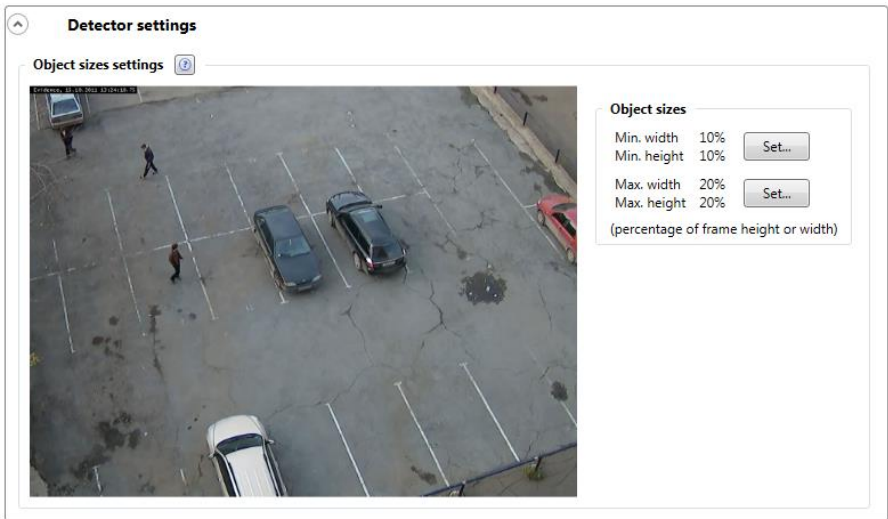


Fig.133

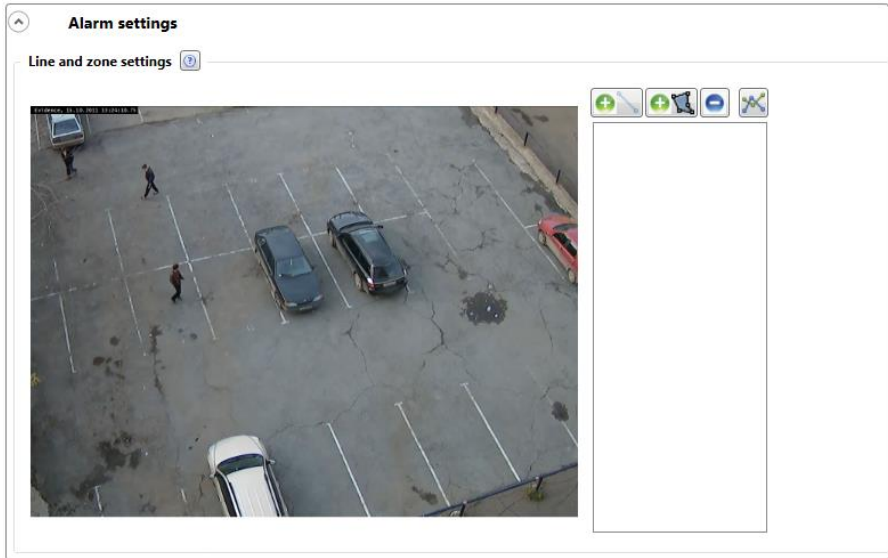


Fig.134

3.16.3.1. Detector Settings

Minimum and maximum object sizes must be set.

The minimum object size determines which movement areas will be joined into the objects. If the objects are detected well and one object does not brake up into several, then such parameter can be reduced. If a object brakes up into several ones, then such parameter must be incremented. Also note that too strong reduction of this parameter may result in the situation when that object trajectory will be broken down (i.e. in one frame the object will cover too long distance in comparison with the set minimum distance).

The maximum object size defines internal characteristics of algorithms. It should be set so that it would be approximately equal to the maximum size of an object that can appear on the screen.

Minimum or maximum object size configuration:

1. Press — will open (Fig. 135)

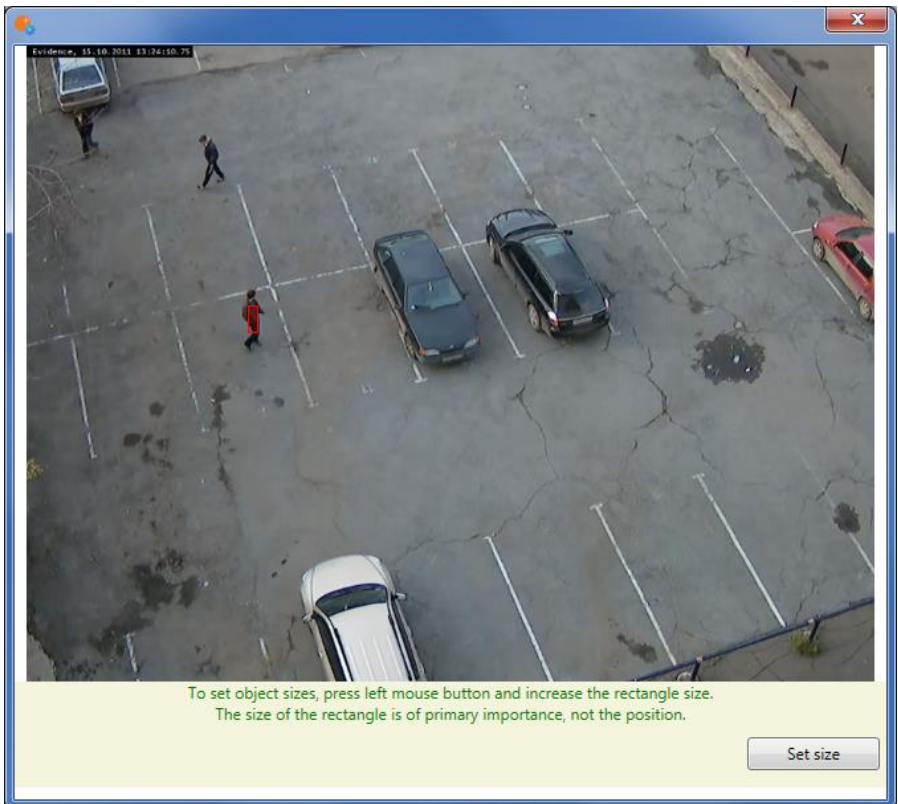


Fig. 135


2. By holding a left mouse button, select the area which size equals to the minimum (maximum) object size;
3. Press the "Set size" button to save the settings.

3.16.3.2. Alarm Settings

Lines or zones must be added for the alarm configuration. The archive will record events according to the following alarms: *(as well as the notification to the operator)*

- crossing a line (in one or two directions)
- movement in the area
- extended stay in the area.

If necessary, set up lines and zones in the "Line and zone settings" option.

When "Add Line" is pressed , the screen will show a line, which location can be changed (click with a left mouse button on a square at the end of the line and drag it in the desired direction). Select the objects moving direction for line crossing.

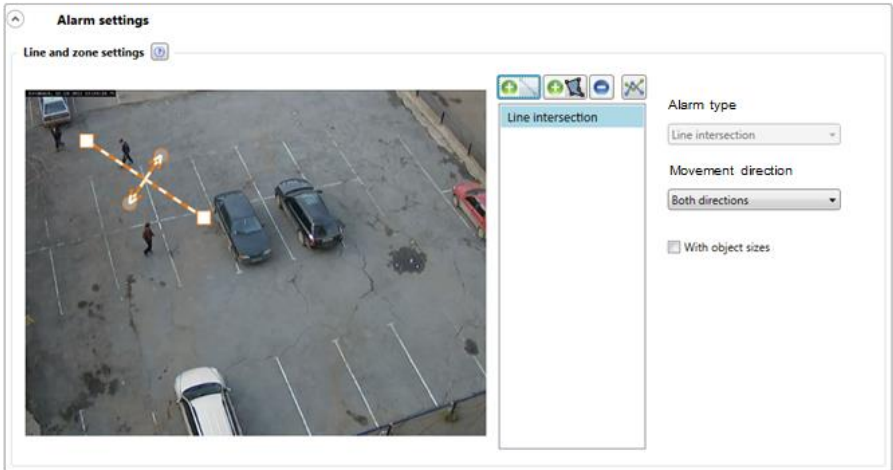



Fig. 136

When "Add Zone" button is pressed , a zone will appear on the screen. Zone location can be changed by dragging the principle support points for the zone lines. In order to add/remove support points, click on the zone line / support point with a right mouse button.

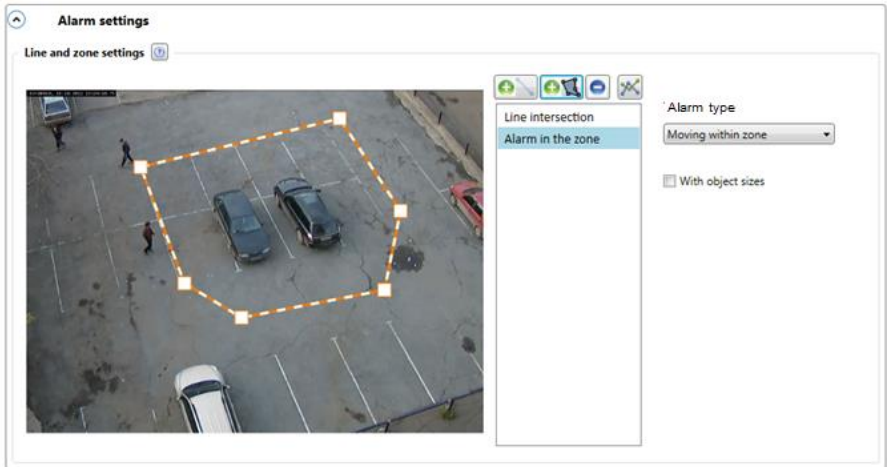




Fig. 137

To delete lines / zones, press  .

To view added lines / zones, press  . You can view the location and if necessary, edit the lines/zones selected from the list.

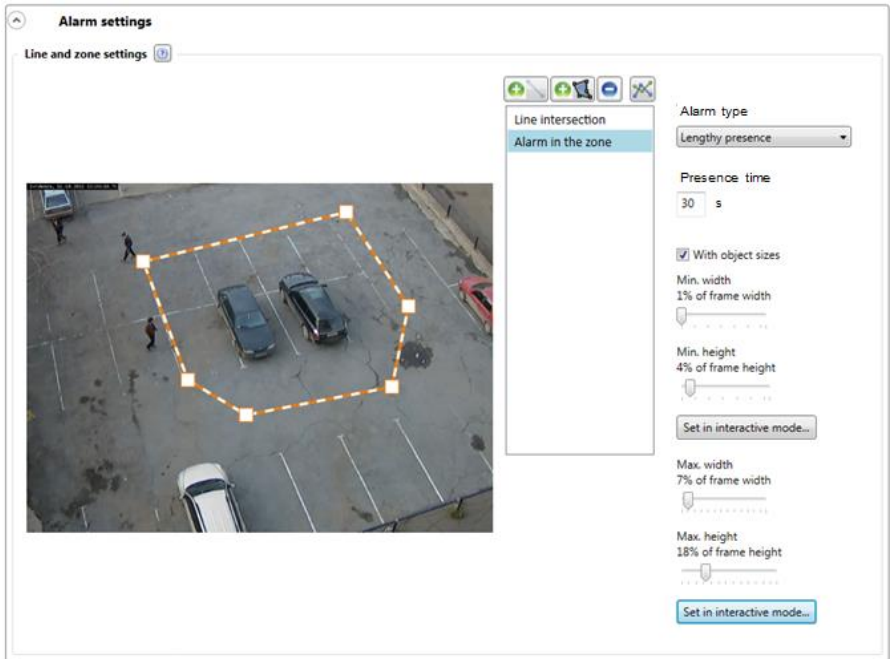


Fig.138

Save and exit

To save, press

Exit without saving

To close without saving, press

3.17. Operating Moving Object Monitoring Module

3.17.1. Real-Time Mode Viewing

In order to view in the real-time mode, run the MACROSCOP Client and select a channel.

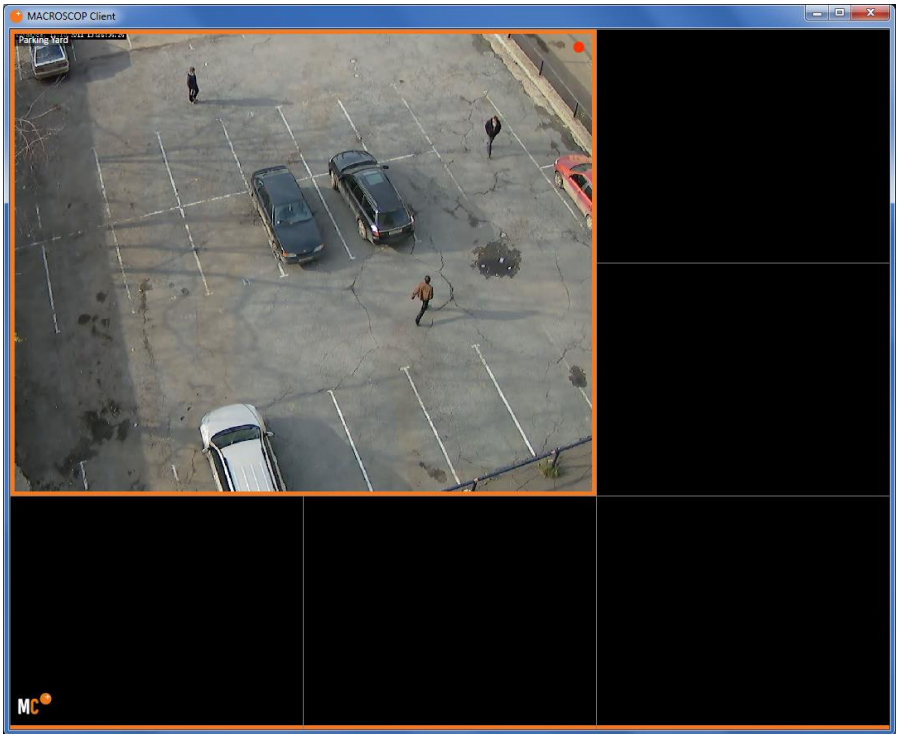


Fig. 139

When viewing in a real-time mode, the following can be done for the convenience of monitoring:

- Show alert zones and lines;
- Show object trajectories;
- Show coloured boundaries of objects.

To do so, bring up the context menu for this channel by right-clicking on the mouse and select the corresponding options from the "Tracking" menu. (Fig. 140).

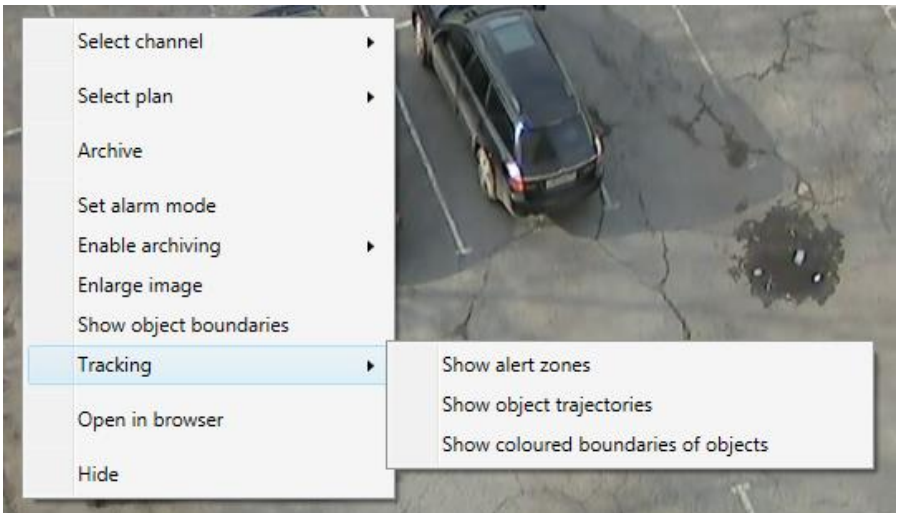


Fig.140

Alarm lines and zones will appear on the screen upon "Show alert zones" selection. In case of an alarm the lines/zones will change their color, indicating an intersection point. (Fig. 141)

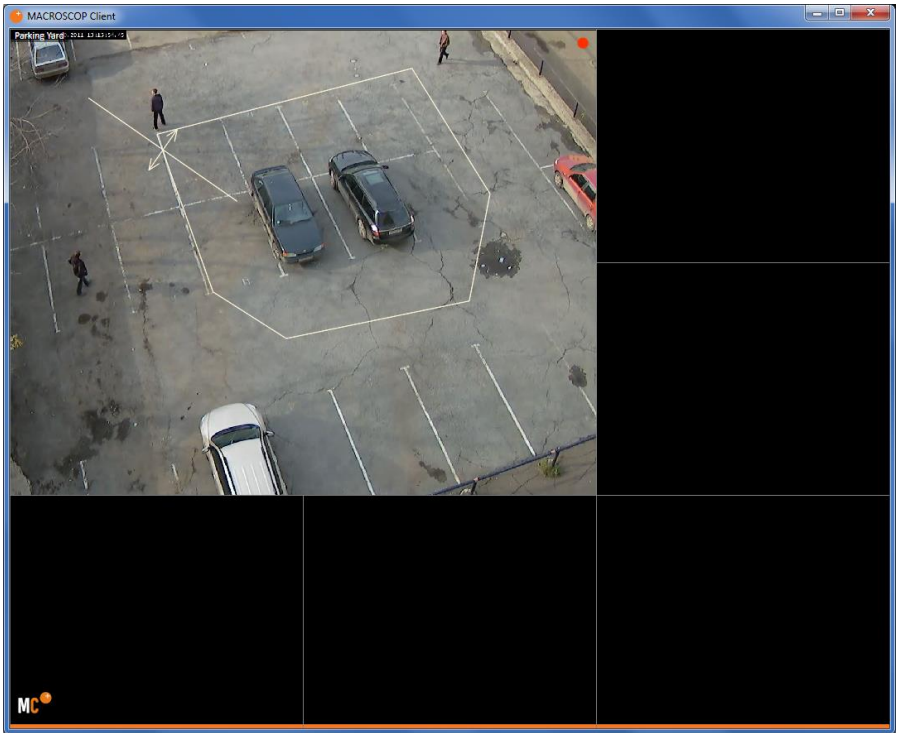


Fig.141

Upon selection of "Show object trajectories", a movement trajectory of each object is displayed on the screen, allowing the user to see where did the object come from in the alert zone (Fig. 142)

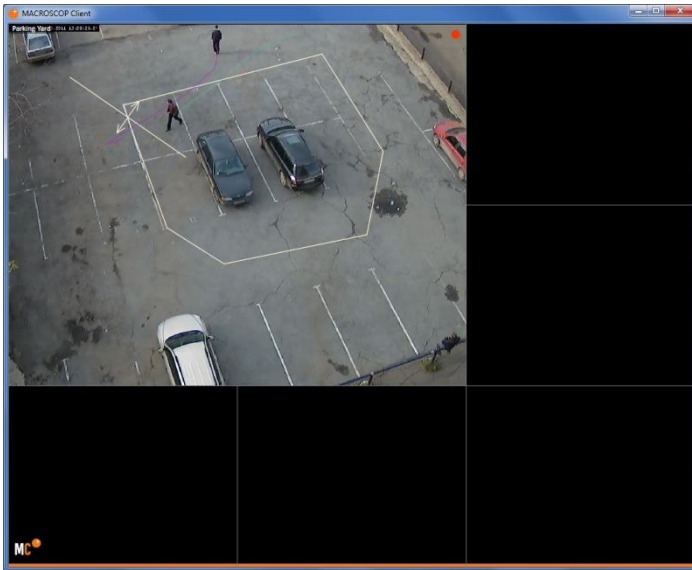


Fig.142

Alarm line/zone, intersection point, object trajectory are displayed in case of alarm (Fig. 143)

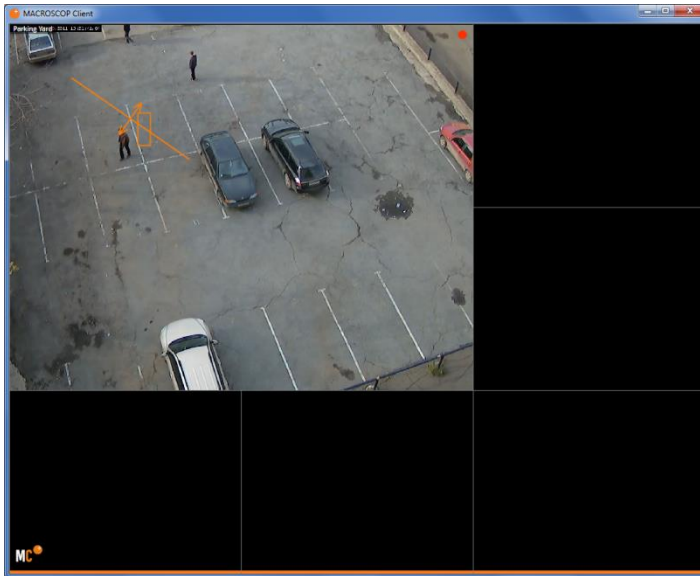


Fig.143

Upon selection of "Show colored boundaries of objects", each object on the screen is shown with its own color. (Fig. 144)

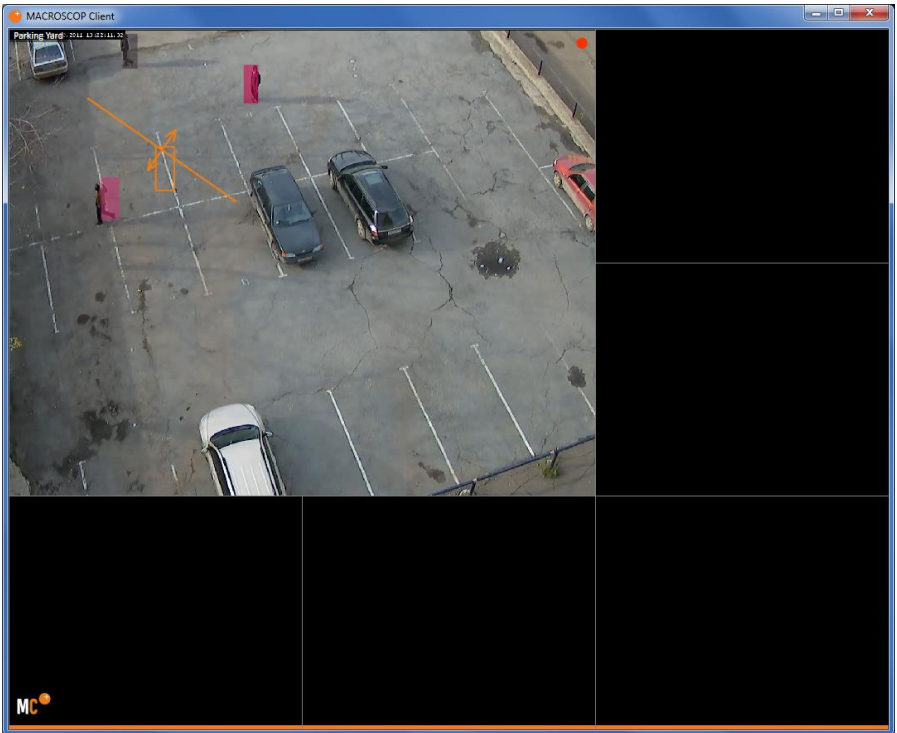


Fig.144

In order to make monitoring more convenient, a user can combine the display options. All positions are indicated in the example (Fig. 145).

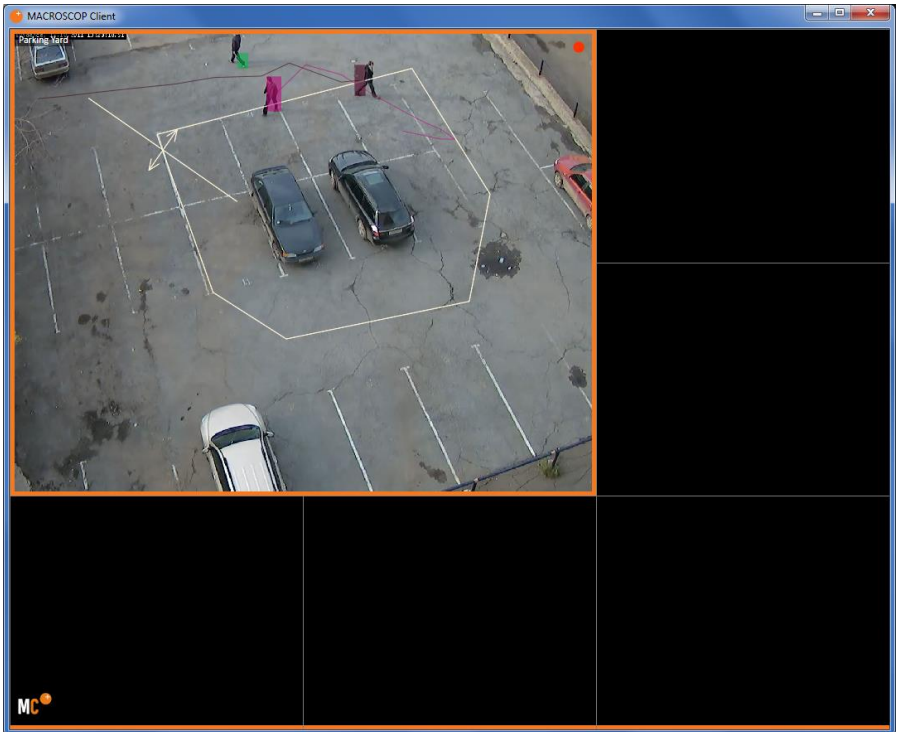


Fig.145

3.17.2. Events Archive View

In order to view an events archive:

1. Run MACROSCOP Client.
2. Switch to the "Expert" mode.



Events archive search is available in the "Expert mode".
(Fig. 146)

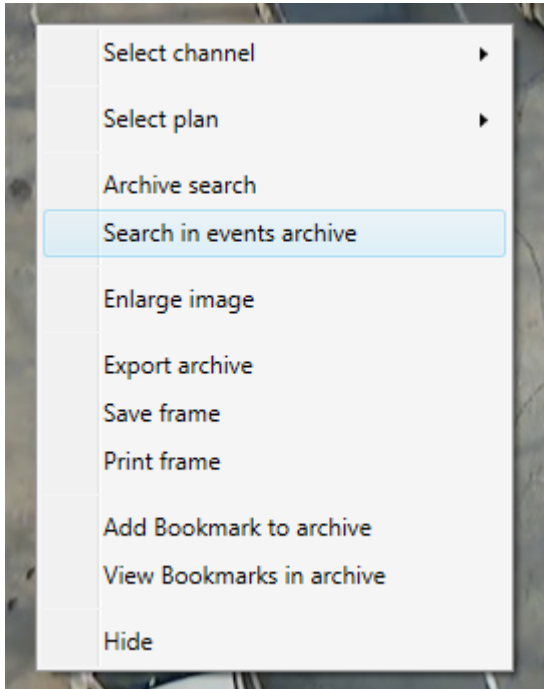


Fig.146

"Events view" window opens up by pressing on the "Search in events archive" (Fig. 147)

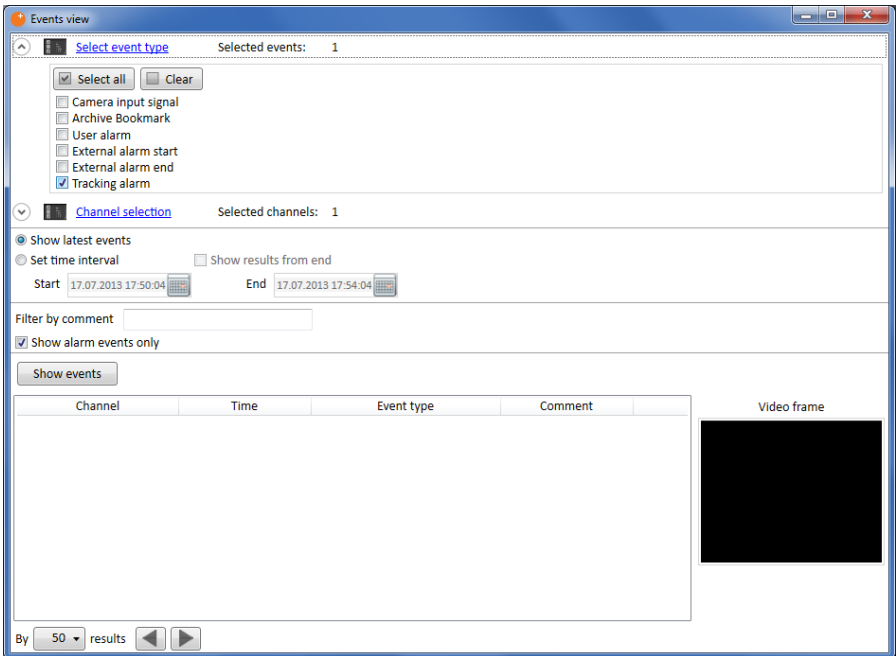


Fig.147

Select the event type in the "Events view" window (in this case, we will mark "Tracking alarm") and select the channels. After setting a time interval (or the "latest events"), event information will be displayed in the results field. By selecting an event in the list, the operator can view a Video frame of this event. In order to go to video view on the selected event, double click on it with a left mouse button. (Fig. 148)

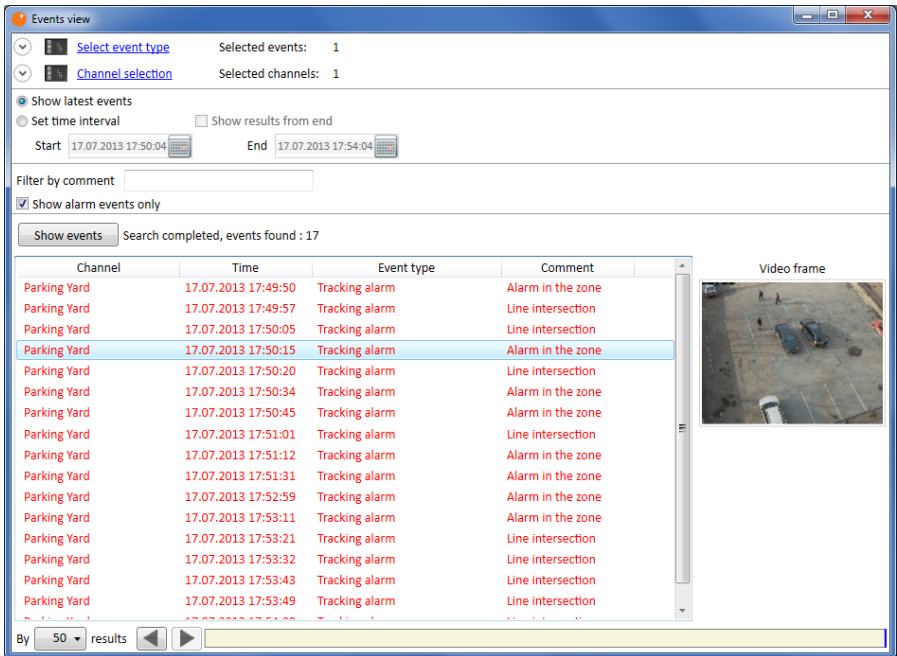


Fig.148

People Counting Module

3.18. Description

People Counting Module:

- Counting the number of entering and exiting visitors in real time - either through one or through several entrances.
- Building reports on number of visitors that entered, exited and left inside – for various time periods (from

1 hour to 1 year), using data from one or more cameras, monitoring the same room from different entrances;

- Exporting reports in CSV format (can be opened in Microsoft Excel).

3.19. Setting

For proper module operation install camera in a proper position, then setup the MACROSCOP motion detector and the module itself.

3.19.1. Positioning the Camera

For a more accurate module operation is recommended to install the camera so that it focuses at the visitors heads. For example, locate the camera on the ceiling pointing its lens vertically downwards.

For proper visitors calculation each visitor should be detected, at least in 8 frames.

To reduce the possibility of response due to changes in background and lighting, the lighting should not change dramatically and there should be no foreign objects in camera's field of view.

3.19.2. MACROSCOP Motion Detector Configuration for a Proper Module Operation

Set up the MACROSCOP motion detector:

If the camera oversees a fairly large area, where the objects are observed for more than 5 seconds, you should adjust the sensitivity area of the MACROSCOP motion detector. The sensitivity area should be such that the motion detector detected motion only near the set intersection line.

To eliminate false motion detection the minimum size of the object must be set. If simple setup of MACROSCOP motion detection doesn't allow you to avoid false detection of motion, perform the expert setting.

3.19.3. People Counting Module configuration

To set up the module:

1. Tick the option «Use external intelligent modules», in the Configurator channel settings, in "Intellectual analysis system configuration" section. After that the «People Counting module» will be available for turning on.

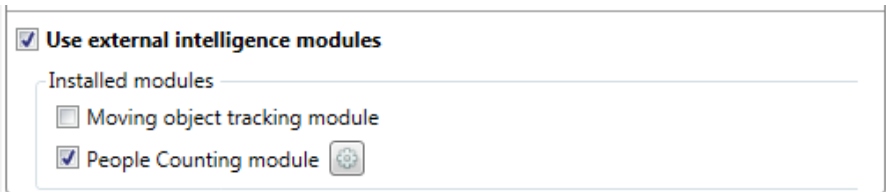



Fig. 149

2. Tick «People Counting module»
3. Press «Setting» 

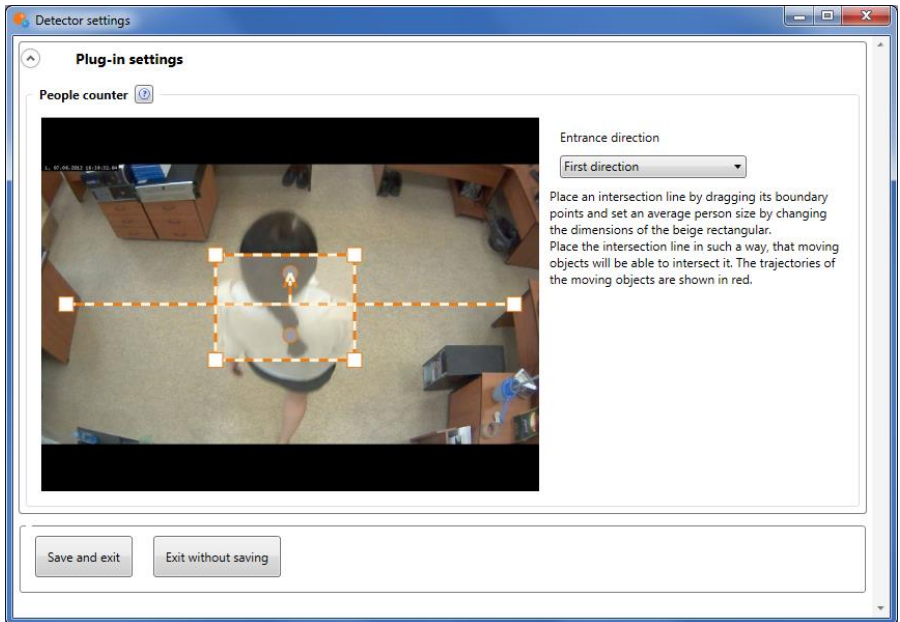


Fig. 150

4. Set the intersection line by dragging its boundary points. It is essential that all incoming / outgoing objects crossed the line. It's also important to ensure that before and after crossing the line the object could be captured in 8 shots - for successful detection.
5. Adjust the entrance direction by selecting "first direction" or "second direction" from a drop-down list in the upper right part of the settings window. After selecting the entrance direction, the arrow perpendicular to the intersection line shall coincide with the direction of incoming objects.

6. Adjust the average size of the object by dragging the corners of the square. The size of the square should be approximately the same as the average size of objects moving within the frame.

3.20. Operating People Counting Module

3.20.1. Real-Time View

When viewing in real time, in order for for the convenience of tracking you can:

- Display intersection line;
- Show trajectories of the objects;
- Set people counting start time.

To do this, right-click for the context menu of the channel and tick the relevant options in the submenu "People Counter".

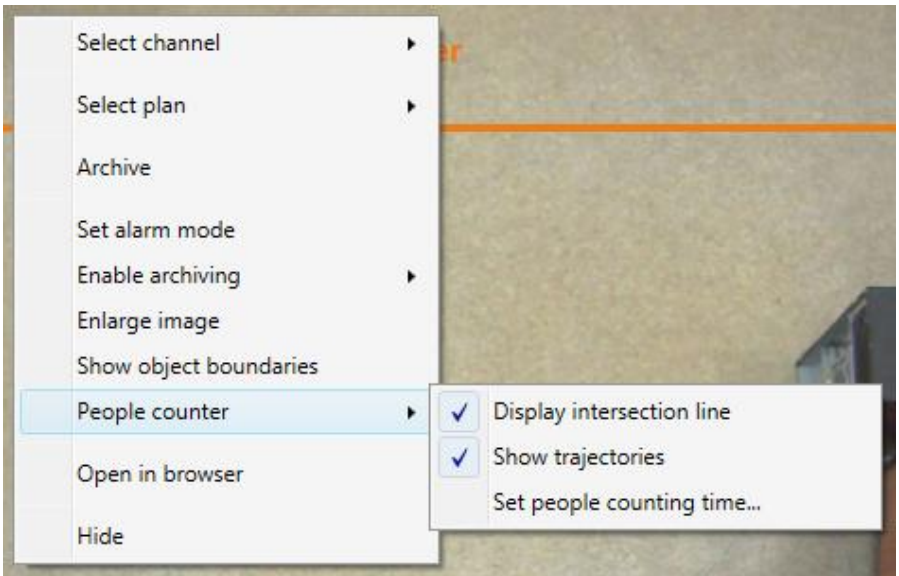


Fig. 151

When choosing «Display intersection line» the intersection line will be displayed on the screen (the entrance direction is indicated by an arrow).

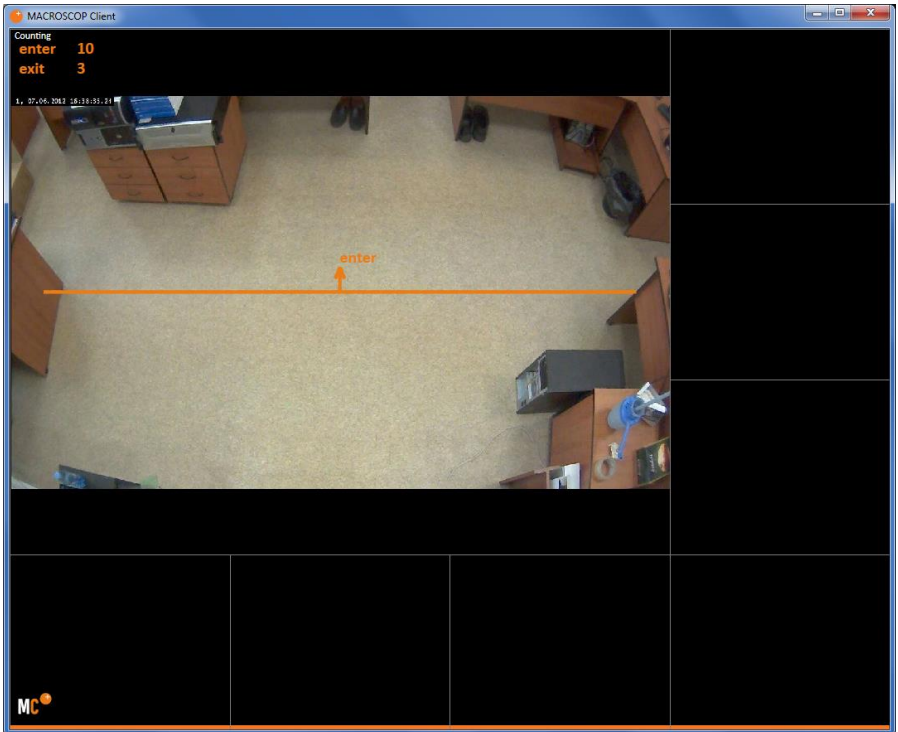


Fig. 152

When choosing «Show trajectories of the objects», every object's trajectory will be displayed on the screen.



Fig. 153

To set/change the time/date of counting start, select "Set people counting start...", from the context menu; then enter the desired time/date in the appeared window and click "OK".

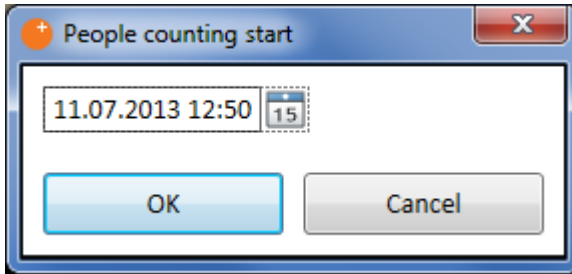



Fig. 154

3.20.2. Report Building

To build a report:

1. If you do not see the control panel, open it by moving the mouse cursor to the top edge of the screen (or press the «F8» key on your keyboard);
2. Click  and choose «**People counting...**» (Fig. 155), the Report building window will appear (Fig. 156).

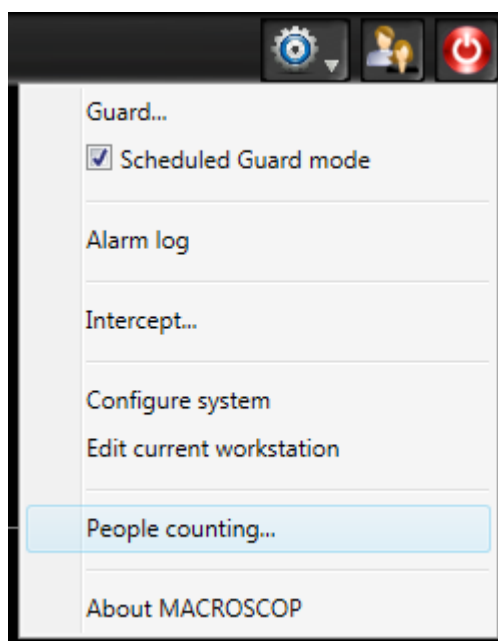


Fig.155

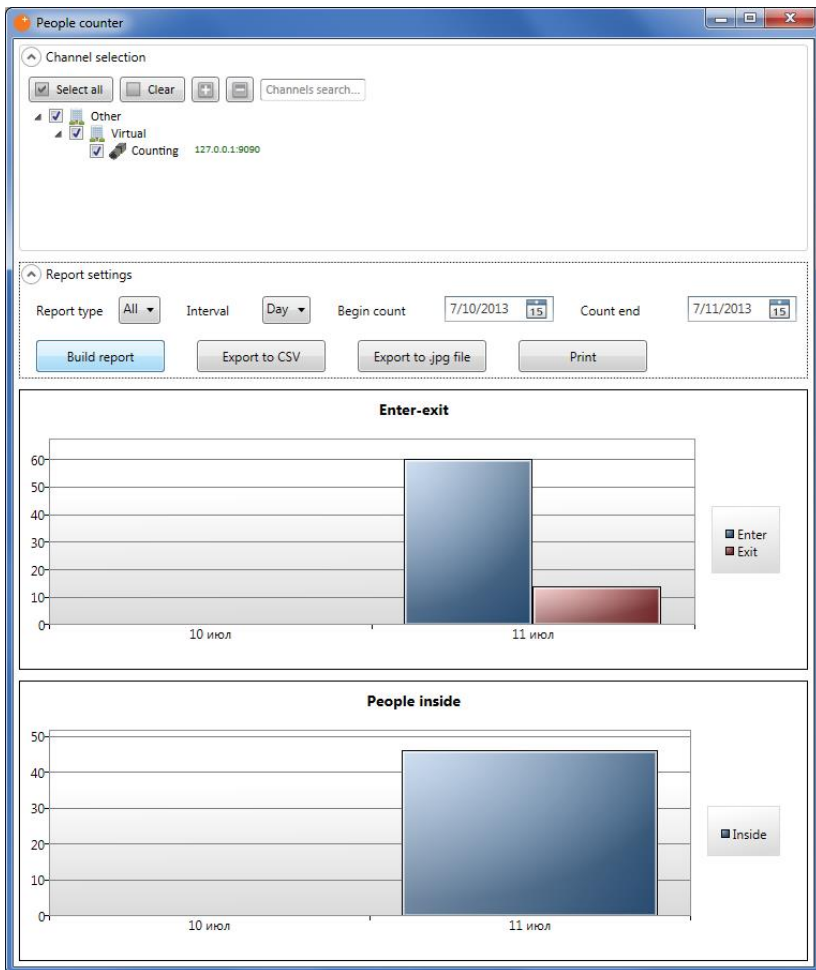


Fig.156

In «**Channel Selection**» section tick the basic channels for your report.

In «**Report Settings**» section you can choose the report type (Enter/Exit, Inside, All), set the time csale interval and to indicate start time and end time of the time interval on which the report will be based.

To build a report press «**Build Report**».

Once the report is finished, it can be downloaded to any disc to CSV file (table view; it can be opened in Excel) or to JPG file.

MACROSCOP Monitoring

To track the status of MACROSCOP video surveillance system use **MACROSCOP Monitoring**.

3.21. Description

MACROSCOP Monitoring allows:

- To monitor the following MACROSCOP server parameters in real-time mode:
 - availability;
 - state;
 - CPU load;
 - RAM load;
 - Analysis System load;
 - Archive Recording System Load;
 - Client-Server System Load;
 - Network load;
 - Hard disks status;
 - Connected Cameras Status.

- To monitor the parameters of multiple servers at the same time.
- To generate alarms if the following events occur:
 - server is unavailable;
 - processor overload;
 - memory overload;
 - network overload;
 - Cameras' digital inputs in alarm mode;
 - Cameras malfunction.
- In case of alarm, send messages by e-mail, SMS or SNMP trap.

3.22. Starting the MACROSCOP Monitoring

1. Enter the menu "Start -> All Programs." Select the menu item «MACROSCOP Monitoring -> MACROSCOP Monitoring." A window will appear (Fig. 166) where you can select from several steps to configure the system.

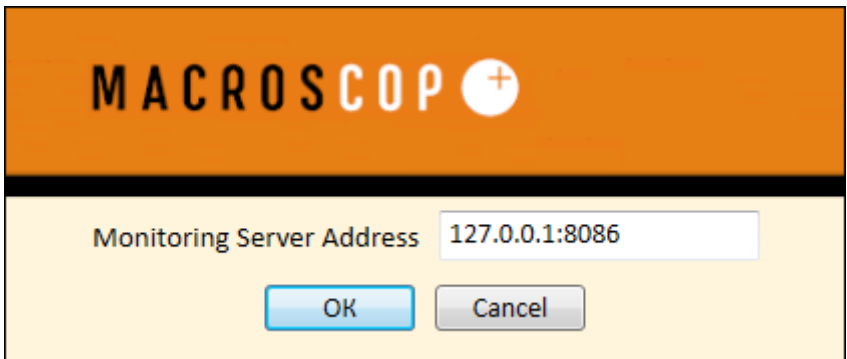


Fig. 166

2. Enter the IP-address and server monitoring port and click "OK". The following window will open (Fig. 167).

In the Observation window of the MACROSCOP Monitoring application the various parameters of the MACROSCOP servers and connected cameras are displayed online.

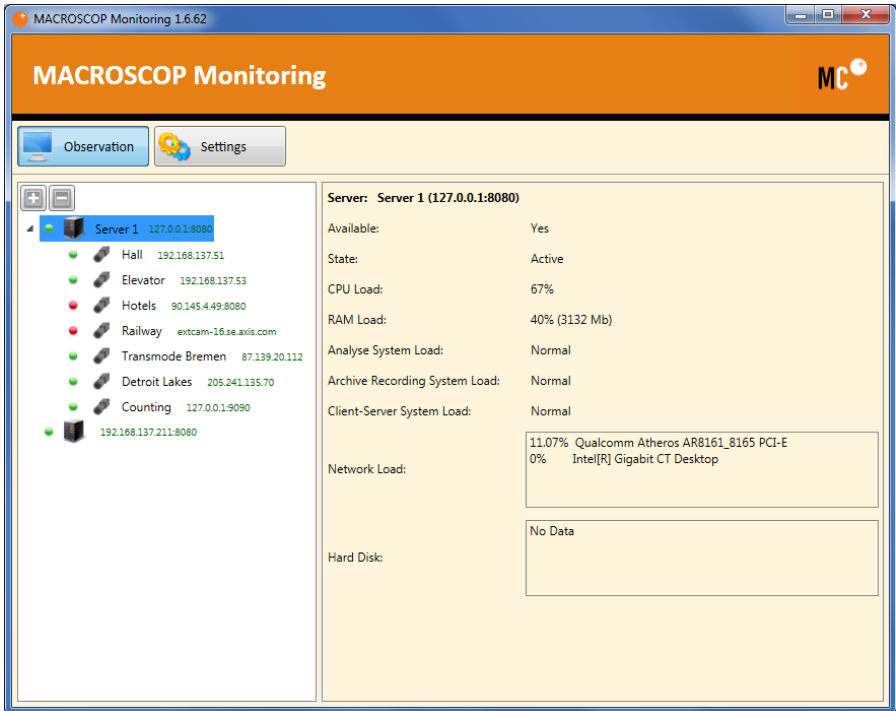


Fig.167

3.23. Monitoring Settings

To **open the Monitoring settings window**, choose in the MACROSCOP Monitoring main window (Fig. 167), press «Settings», Monitoring Settings window will open (Fig. 168).

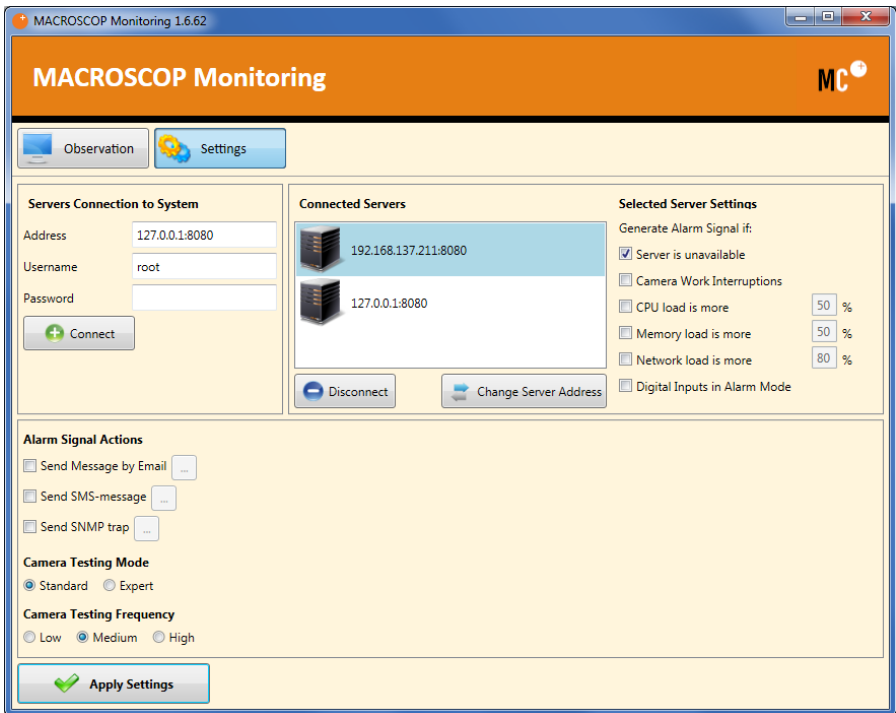


Fig.168

To connect the server to the monitoring system, enter the server address (specifying the port), the name and password of the user having access to configuration procedures, and then click "Connect."

To disconnect the server from the monitoring system - highlight the server using your mouse, and then click "Disable".

To configure the alarm signals parameters, select the appropriate options in the "Selected Server Settings" section and, if necessary, enter the parameter values.

To configure the alarm signal actions, select the appropriate options in the "Alarm Signal Actions" section.

To adjust the camera testing mode and frequency, select the values of corresponding parameters at the bottom of the window.

To apply the settings click "Apply Settings"

Troubleshooting

3.24. Technical Support Service

If you experience any problems with **MACROSCOP**, please contact our Technical Support Service:

- E-mail: support@macroscop.com
- ICQ: 604028140
- Skype: macroscop.support

3.25. Using System Log Files

To speed up the solution of any arisen problem, please send the system log files to our Technical Support Service using **MACROSCOP Log Pack** application.

1. Run the application by selecting "Start -> Programs -> MACROSCOP Server -> System Tools -> Log Pack"; The following window will open:

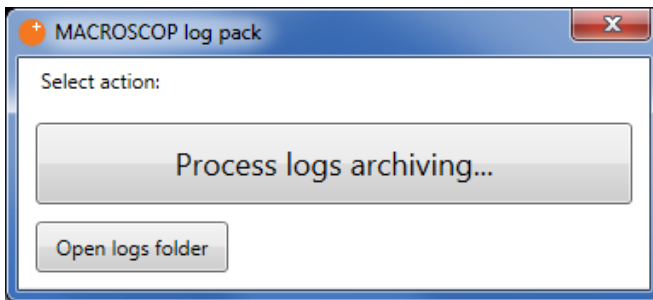


Fig. 169

Send the saved file via e-mail to Technical Support Service.

3.26. Archive View in the Event of Faults

If you have problems with archive view with the help of the **MACROSCOP Client** application, use **Local archive view** and **archive backing up** application:

1. Run the application by selecting "Start -> Programs -> MACROSCOP Server -> System Tools -> Local archive view". The following window will open:

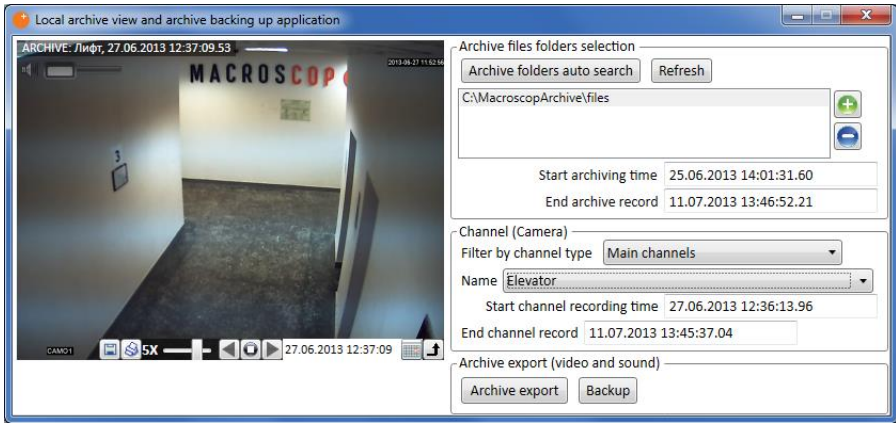



Fig. 170

2. Press , to chose the folder, containing the files you want to view;
3. To automatically find all the folders which contain the archive, click «Archive folders auto search»;
4. Chose channel type in the field «Filter by channel type»;
5. Choose from the drop-down list in the field "Name", the channel containing the video you want to view;
6. Press «Export to AVI...», to export the archive records in AVI format;
7. Press «Backup», to create a backup copy of the selected archive files;
8. To view archived recordings use the panel situated at the bottom of the preview window:

