

# Video Digital Recording System



## User Manual

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## **1. Introduction**

We present to you next version of VDRS AV system with many new functions and modules. Many of these changes is the effect of our cooperation with You and our Partners. Part of them are our ideas which extend capabilities of digital video recording. Please pay your attention to the possibilities of simultaneous image recording from network cameras and, widely used so far, analog cameras, developed archives and wider capabilities of controlling the whole system.

### **1.1 System description**

VDRS AV is a digital video recorder designed for cooperation with CCTV cameras. It uses PC class computers which work under control of Microsoft Windows 2000/XP operating system. New VDRS AV system version can record image from up to 64 cameras, **servicing** 16 output switches and 16 alarm inputs. Moreover the system can be hybrid, that is one system can service both analog an IP cameras – thanks to this it is possible to upgrade an existing installation and add IP or analog cameras. Managing the video server through the network is possible. Program allows wide possibilities of motion detection settings, searching the motion in archives, servicing alarm events. Differential image-compression method guarantees image recording longer than in other systems of that type without changing the image quality and storage space.

Software for managing VDRS AV system consists of two independent applications:

1. VDR-S (*Video Digital Recording - Server*)
2. VDR-C (*Video Digital Recording – Client*)

The first application is a server: processes image from the cameras, manages user accounts, tasks, controls the cameras. The second one is used as a client. We can connect to the server by a local network and do remote monitoring. Client application is available on mobile devices (mobile phones, Pocket PC) which allows access to camera images from any place in the world.

## **1.2 Video capture cards**

Video capture cards are mainboard extension placed inside the computer chassis. They use commonly accessible PCI interface on mainboards. Current technology allows image processing from 25 up to 400 frames per second for one card in PAL system. Whole specification of available devices can be found on our website [www.alnetsystems.com](http://www.alnetsystems.com) .

## **1.3 System and hardware requirements**

System requirements for VDRS AV:

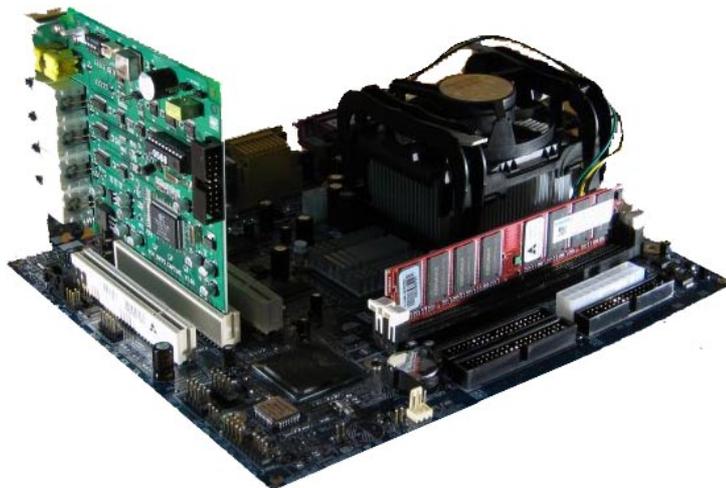
- **Intel** processor (*Pentium 4 3.0 Ghz (HT) or higher / Pentium D 2.8 Ghz or higher*)
- Mainboard based on **Intel** chipset (*models from i845 and higher*)
- Min. 512MB of RAM
- 85MB of free hard disk space for software
- Free hard disk space for storing video archives (*min. 40GB*)
- Microsoft WindowsXP Professional SP2 OS

## **2. Installation of the system**

The way of installing video capture cards and VDRS AV system software on PC class computer is presented below.

### **2.1 Video capture cards installation**

Depending on the system You get from one up to four cards<sup>1</sup>. Begin installation by mounting all of the cards on the mainboard. Cards are placed in PCI slots:



*Figure 1: Installing the video card*

If You decide to use watchdog function<sup>2</sup> in this stage it is necessary to connect video card with the mainboard with enclosed cable. On the video capture board find two-pin *watchdog* socket and connect it with *reset* socket placed on the mainboard.

### **2.2 Installing USB dongle**

The system needs USB dongle installed for proper work. Plug it to USB port in Your computer. Remember to have it plugged permanently, if else the system will shut down. During the work of the system the dongle glows blue, which indicates it's proper functioning.

---

<sup>1</sup> In VDRS NET system no video capture cards are needed for image recording

<sup>2</sup> When the card won't receive a signal from the processor restart of the computer will occur. It is a protection against uncontrolled system failure

## 2.3 Connecting cameras

To connect cameras plug camera cables with BNC connectors to video capture cards.

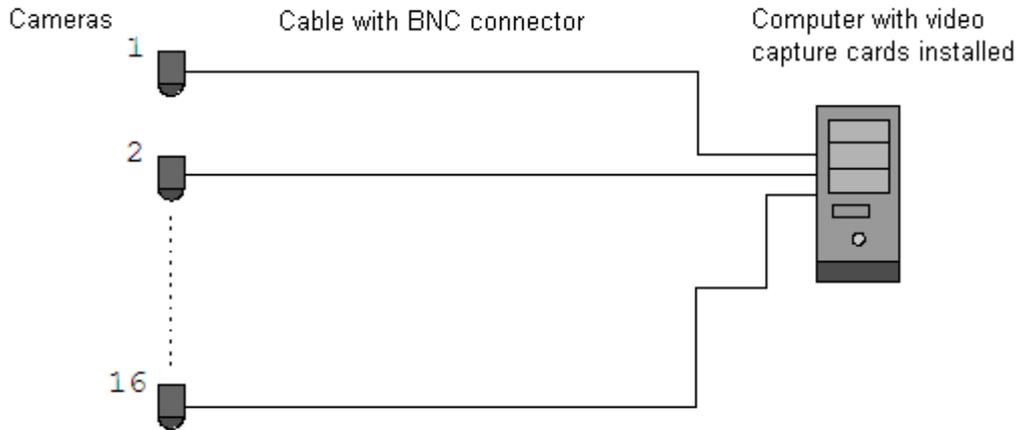


Figure 2: Connecting the cameras

If Your video capture card has 15 pin connector, it is necessary to plug "transition cable" to the card and then connect cameras to it. Lower input on the card connects cameras from numbers 1 to 8, the upper one cameras from 9 to 16.

## 2.4 Software installation

When all the devices are connected correctly You can begin to install software. Turn on the computer and when Your OS detects new devices **do not install it until VDRS AV software is installed**. Leave the system window without clicking. Next run application **VDRS\_PROFESSIONAL\_INSTALL.exe** from the delivered cd with software.

 **ATTENTION:** during installation of VDRS application, drivers for capture boards are installed at the same time, which can cause "Windows warning" displayed regarding lack of Microsoft digital signature in the installed drivers. In this case press "Continue anyway" in order to install the drivers properly.

After the software is installed You will be asked to restart the computer. At this stage select **"No, I will restart later"**. Begin video capture cards' drivers installation. If the Operating System still shows the system window regarding new devices, follow the steps of

the installation panel. If else, You have to install devices manually. Click right mouse button on *My computer* icon, select *Properties*, *Hardware* bookmark, *Device manager* button. Next choose *Scan for hardware changes*. System will initiate a creator for installing new devices. Follow the steps. To check if video capture card is installed properly go to *Device manager* and "unroll" *Sound, video and game controllers menu* (or **DVR boards** when DSP boards are used). After successful installation of all of the devices *restart Your computer*.

### 3. Use and configuration of the system

During the installation process VDRS AV application is added to *Autostart* group, which means it will be automatically activated when Your Operating System starts. It is also possible to run video server manually from the *Start Menu* or from the shortcut on desktop. Important action after every change in the system is saving the configuration. You can do it by choosing from the menu:

**Configuration** ➡ **Save configuration**

#### 3.1 Running the program for the first time

When running the program for the first time it is necessary to define some parameters, which are essential for proper work. Explanation of this matter is presented below.

##### 3.1.1 Configuration Wizard

When running the program for the first time it is necessary to define some parameters, which are essential for proper work.

##### 3.1.1.1 Choosing the language

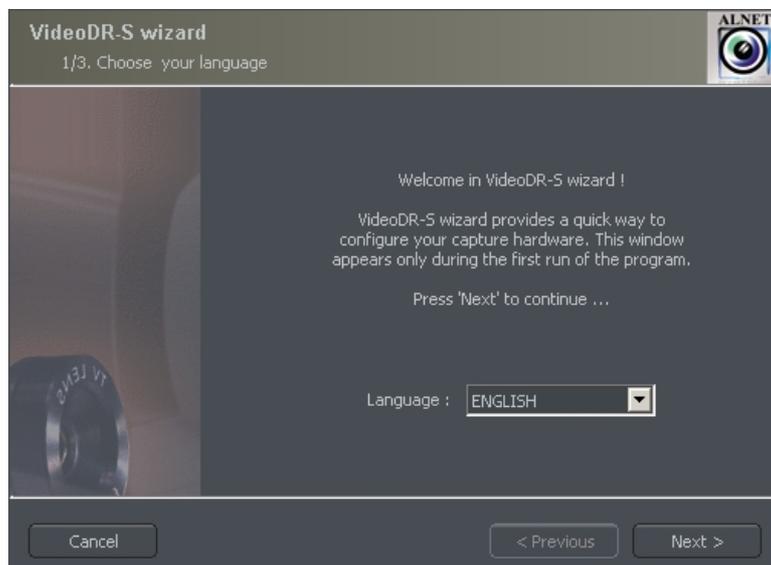


Figure 3: Configuration wizard – choosing the language

Pick the language from the list. After this click **next** button.

### 3.1.1.2 Regional settings

In the next window set the time format: **24 hour** (24 hour) or **AM/PM** (12 hour). Below there are three data display formats.

*Symbols explanation:*

**dd** – day, **mm** – month, **yyyy** – year

Go to the next step by clicking **next**.

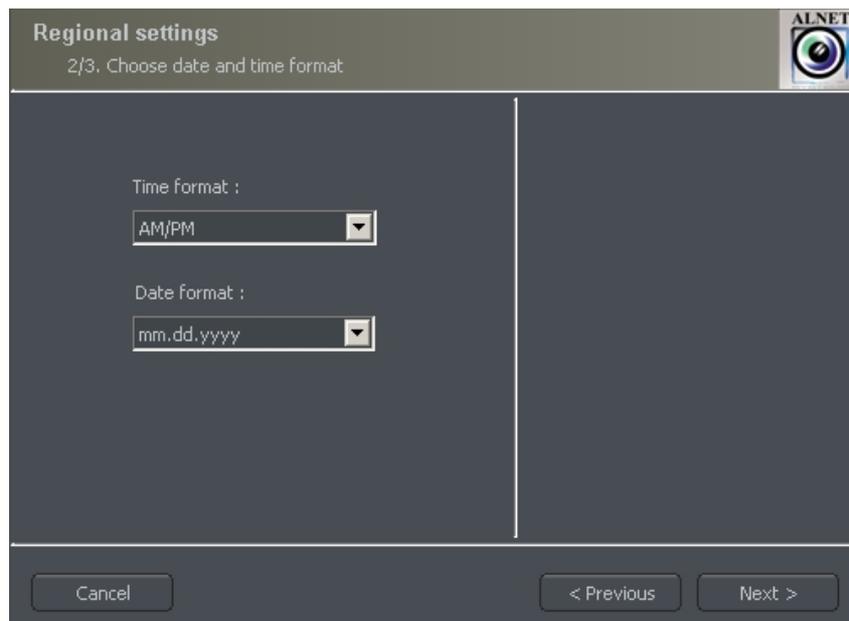


Figure 4: Configuration wizard – regional settings

### 3.1.1.3 Video capture cards<sup>3</sup>

In this part point if the **ConExt** extensions are installed in the system. If yes, choose the proper type from the list.

**⚠ ATTENTION:** It is very important to check to which video capture card the extension board is connected. For instance first position corresponds with the first video capture card installed on the mainboard.

Next step is to choose between **PAL** and **NTSC** video recording standard. Countries and areas which use above-mentioned standards can be found in the *"Image transmission standards"* supplement.

<sup>3</sup> When not using video capture cards skip this step

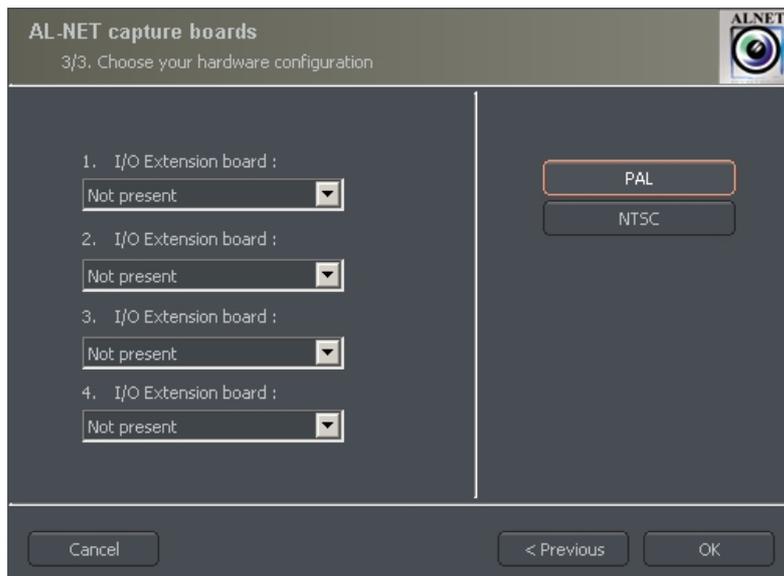


Figure 5: Configuration wizard – video capture cards

#### **3.1.1.4 Network cameras<sup>4</sup>**

Next panel allows to add network cameras (*IP cameras*) to the system. In the main window there are positions defined by You. When starting VDR-S for the first time they are blank. To add network camera click **Add** button. System will display additional window. After finishing click **OK**. This will end the first stage ( camera configuration ) and the system will proceed to creating video archives. It is important to remember that the wizard can be accessed later from Windows Start Menu – VDRS PROFESSIONAL WIZARD.

Buttons **Edit** and **Delete** are responsible for editing and deleting the marked position.

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4 Does not apply to systems based only on video capture cards

### 3.1.1.4.1 Adding a network camera

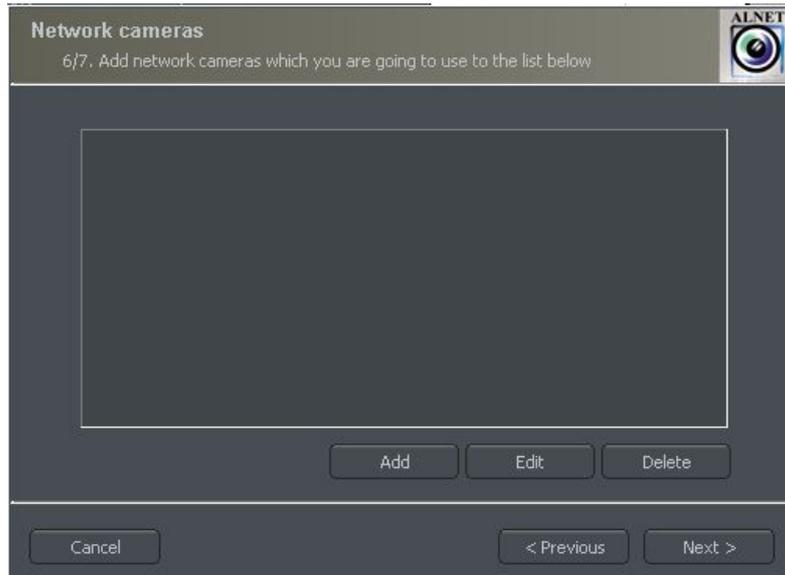


Figure 6: The list of installed IP cameras. To add camera click Add button

An example below shows step by step how to add Arecont Vision IP camera.

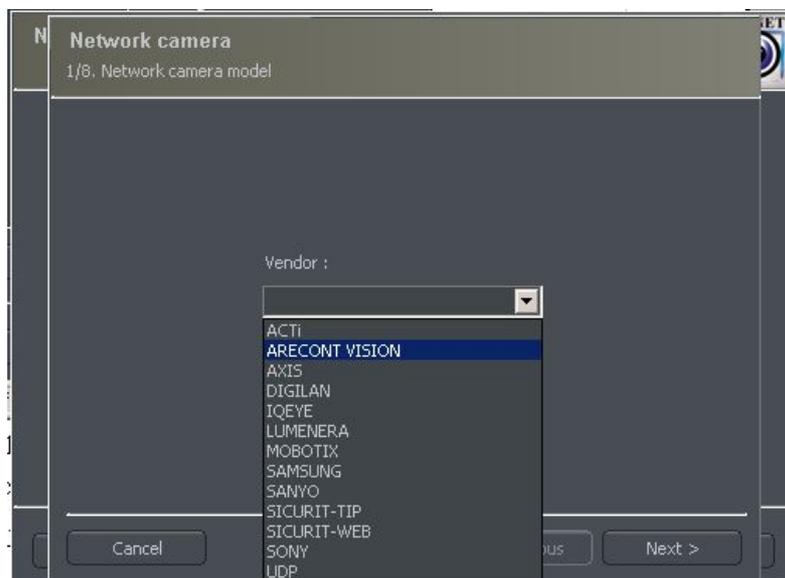


Figure 7: Choice of camera manufacturer

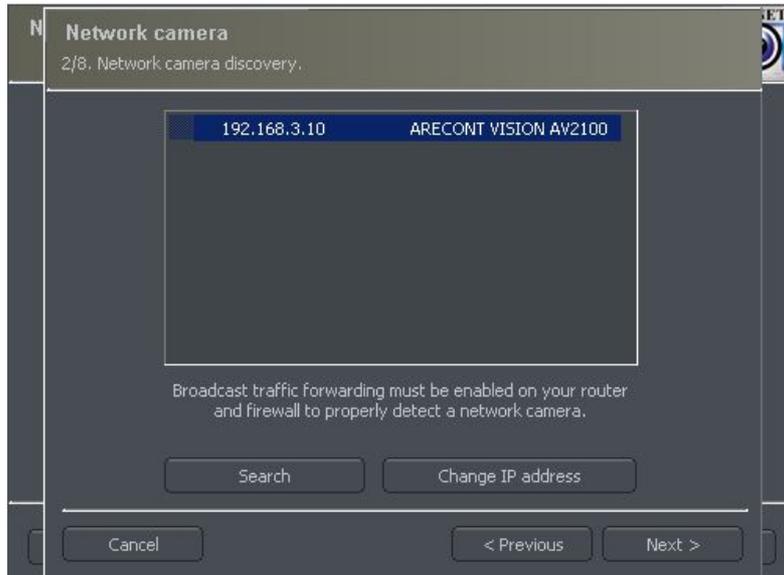


Figure 8: **Search** function automatically detects available network cameras. User can manually change camera IP address – **Change IP address** button.

- ⚠ Attention: A window presented above and **Search** function is not available for all IP cameras. In this case it is necessary to enter camera data manually (IP address, port, user name, password etc).

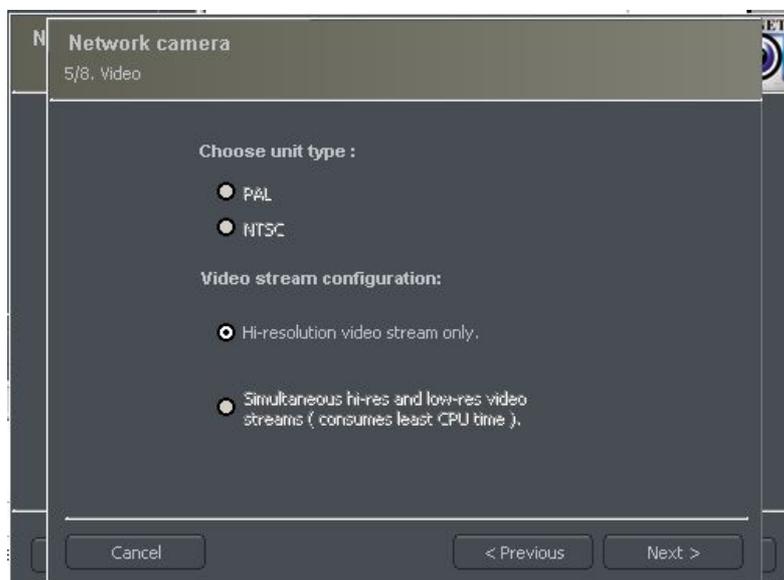


Figure9: Additional options for the camera – available options differ depending on the manufacturer.

<b>Bookmark</b>	<b>Field</b>	<b>Description</b>
<b>Network</b>	<b>Model</b>	<i>Camera model, which we are currently using</i>
	<b>Address</b>	<i>Address (IP number or domain name)</i>
	<b>User</b>	<i>Name of the user which has full image streaming rights</i>
	<b>Password</b>	<i>Password of the user</i>
	<b>HTTP port</b>	<i>Number of the port on which camera transmits its image</i>
<b>Video</b>	<b>Camera type</b>	<i>Choose PAL or NTSC format for image transmission for the camera</i>
	<b>Video stream configuration</b>	<i>Video stream quality choice. When using many of cameras it is recommended to choose second or third option. Selecting the second option will cause the image to be displayed with less fps (only the key frame will be displayed). Recording will remain at full fps though. The third option creates two separate connections: one for recording, one for displaying the image. The recorded and displayed image can be diverted. Low display quality saves the computational power of the processor</i>
<b>Audio</b>	<b>Sound configuration</b>	<i>Enable the sound transmission through the camera Enable the microphone – If network camera is equipped with a speaker it is possible to transmit sound to the camera from the VDRS server level</i>
<b>Advanced</b>	<b>Dome operation</b>	<i>Enable dome control</i>
	<b>Device options</b>	<i>Hardware motion detection (camera transmits motion detection signal), displaying the status of the output switches installed in the camera</i>

Table 1: Configuration wizard -network cameras

### **3.1.1.5 Disk archive**

For the proper work of the system it is necessary to configure the disk archive, that is to point the disk space which will be used for storing the camera image and sound. The more space will be used, the more archive recordings will be stored.

Disk archive is created in the second stage of configuration wizard – after the camera configuration is completed.



Figure 10: Creating disk archive

First window of archive creator offers 3 choose options:

**Create a new media archive** – create new disk archive

**Use existing media archive** – configuration of the existing disk

**No, don't create media archive now, exit wizard** – closing wizard, without creating disk archive

 **ATTENTION:** In case of using the above option, recording function will not be available. Later configuration and editing the archive will be available by "Archive Storage" function in the "Configuration" menu of VDRS application.

In next step, must be defined, what type of archive will be created. By marking "Create archive which will use preallocate disk space" will cause creating disk archive, with size defined by user. Otherwise, archives will be build increasingly, which means that it will increase it's size during data recording, until it fills whole disk space of selected partition.

 **ATTENTION:** After filling assigned disk space, VDRS system continues recording, successively overwriting the "oldest" archives.

Next, location of the archive files have to be defined:

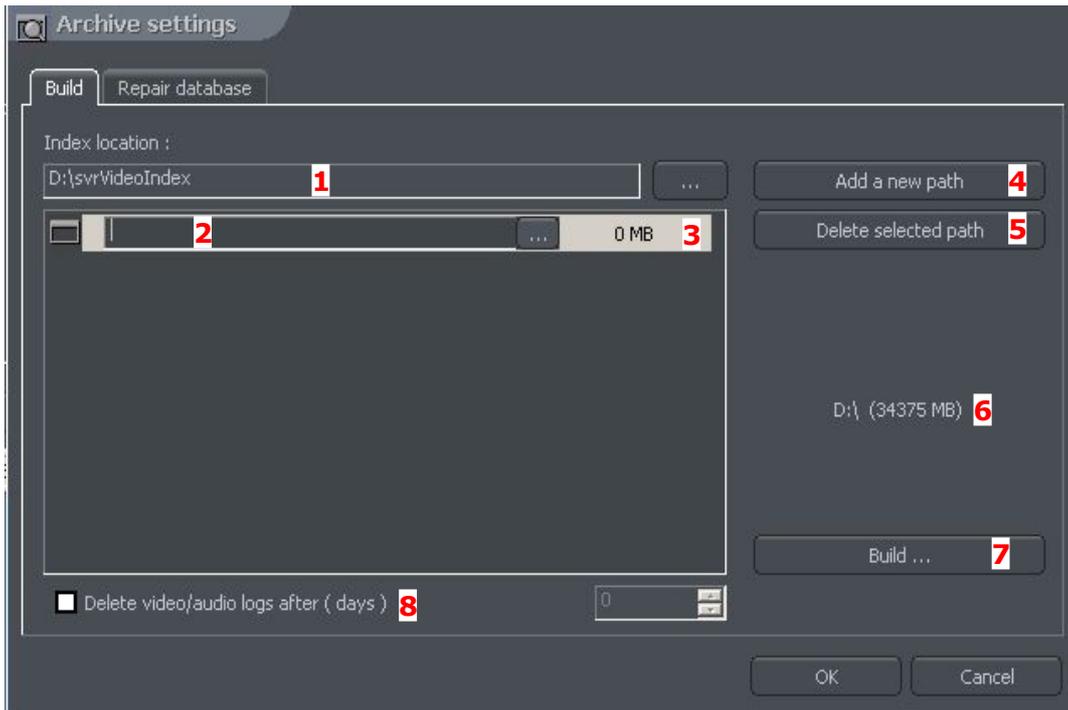


Figure 11: Creating disk archive – path configuration

1. **Index folder path** - this folder contains information about stored archives - it must be defined in the first place.
2. **Archive folder path** - in defined folder archives will be stored. At the same time, configuration of multiple archive path's is possible.
3. **Size of disk archives** - defined size of archive folder - changing is possible after double-click on numerical value.



**ATTENTION:**

1. Option presented above is available only when the disk archive is created with preallocated disk space (see figure 10). If the increasing archive is created the option will not be available.

2. Minimum disk space **cannot be lower than:**

***[number of connected cameras] x 32 MB,***

- lower disk space can cause recording malfunctions.

4. **Adding path to archive** – allows to add another paths to disk archive
5. **Deleting archive path** – erases the selected disk archive path
6. **Declaring the available archive size** on selected disk partition

7. **Creating archive** – after defining index paths and archive use this option to create archive for the recordings
8. **Erasing recordings** older than defined number of days

Clicking **OK** button after defining the paths to index folder and disk archives folder will make system to proceed to the next stage of archive configuration:

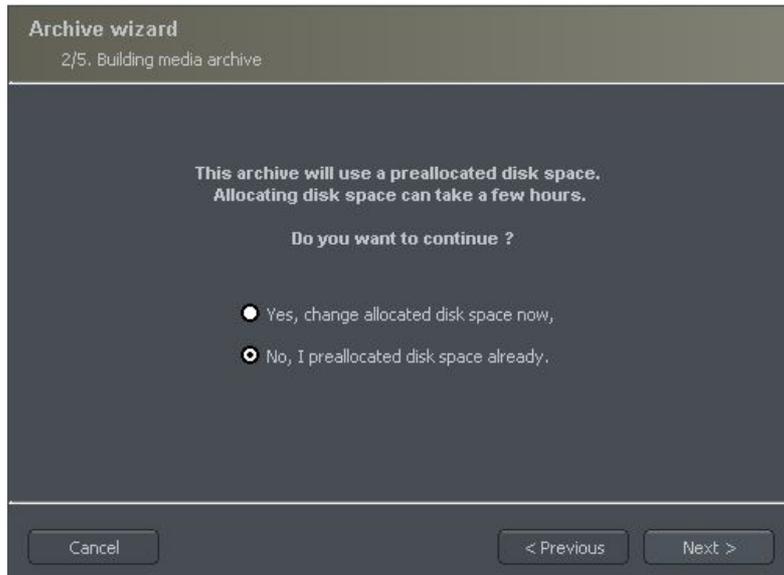


Figure 12: Creating disk archive

1. **Yes, change allocated disk space now** – this option should be checked when creating new archive or adding new path for data storage. After choosing this option system shows the next stage of configuration (see figure 13)
2. **No, I preallocated disk space already** – this option must be selected when path of the existing archive is added, or recording path is deleted.

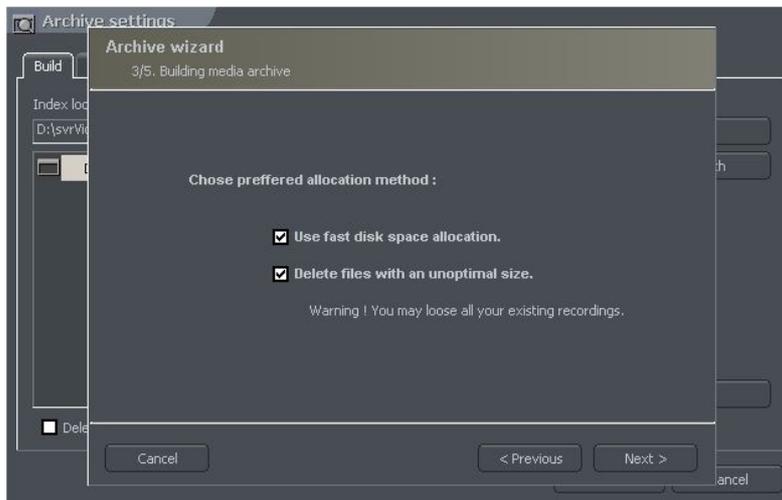


Figure 13: Creating disk archive

**Use fast disk space allocation** – fast allocation of disk space - It lasts considerably faster than standard. However, it can cause archive files fragmentation.

**Delete files with an unoptimal size** – archive files which have unoptimal size will be deleted ( for example when adding existing archive, which was created increasingly )

On this stage, the configuration of disk archives is finished.

### ***3.1.2 System administrator***

When running the system for the first time it will ask to define system administrator's login and password. Administrator is a person who possesses all the rights to change system parameters and control system's work. It's very important to remember administrator's login and password because once given they can not be changed. Also administrator shouldn't pass these parameters to anyone and keep it confidential.

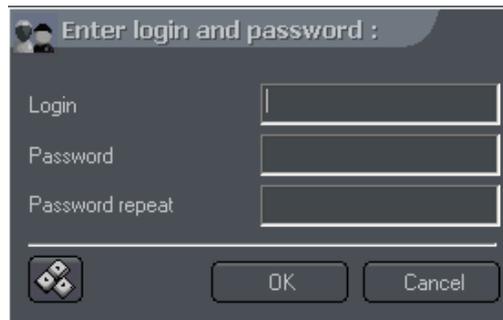


Figure 14: System administrator

Next step is to put the product license number. You can find the number printed on the attached Dongle Key. If this step is skipped some program functions will be unavailable. Every one hour system will automatically display notification and ask about license number.

After these actions VDRS system is ready for use.

### **3.2 Main Program Window**

Main program window is designed to give immediate access to the most important program functions. It is possible to simultaneously watch the image from the cameras, monitor alarm inputs status, switch between displayed cameras and make snapshots.

Main menu is placed at the top of the screen. It's structure looks as follows:

- **Program**
  - **Minimize** – minimizes the application window
  - **Log out** – logs out the user
  - **Shutdown system** – shuts down the OS
  - **Restart system** – restarts the OS
  - **Exit** – closes the application
- **Tools**
  - **Browse archives** – opens the recordings archives
  - **Browse photos** – opens the snapshots browser

- **Register domain** – domain registration
- **Layout manager** – edits layout manager
- **Analog video output** – analog video output configuration
- **Export watermark** – exports watermark to the file
- **Program console** – opens text console
- **Program update** – checks if any program updates are available
- **Sound control** – opens system sound mixer
- **On-screen keyboard** – launches the on-screen keyboard
- **Dome panel** – opens dome control panel
- **E-Map** – displays graphic camera layout at particular area
- **Configuration**
  - **Scheduler** – task scheduler tool
  - **Cameras** – camera settings
  - **Sound** – sound channels settings
  - **Alarm inputs** – alarm inputs settings
  - **Output switches** – output switches settings
  - **Network services** – remote access settings
  - **Archive storage** – disk space for archive storage settings
  - **User accounts** – VDRS user accounts settings
  - **Dome control** – dome control settings
  - **E-map editor** – allows creating graphic layout of the devices at particular area
  - **Program settings** – global program settings
  - **External tools** – Windows tools access
    - ◆ Time and day settings

- Mouse properties
- Modem options
- Network settings

→ **Save configuration** – confirms all the program changes and saves them

- **Bookmark** - adds a bookmark in the archives
- **About** – information about VDRS server

At the left side of the screen You can find icons, which are shortcuts to the most important tools.

	<i>Enable/disable recording</i>
	<i>Recordings archive</i>
	<i>Dome control panel</i>
	<i>E-map</i>
	<i>Snapshot browser</i>



At the top right corner You will find a panel which informs about how much storage space is used, that is from how many days and hours we acquired the video. Below there is a name of the currently logged local user and number of currently logged remote users (in brackets).

Icons on the bar at the bottom of the screen represent the status of available cameras and audio channels. Each icon consists of number of camera/channel and it's name. Red rectangle, which appears beside the number symbolizes motion detection on the camera or sound detection if it appears beside audio channel number. If the icon is all red it means channel failure – the signal is not transmitted.



Clicking with left mouse button on the icon will maximize the camera view on full screen.

On the left side of the screen available layouts are placed. Layouts are different ways of placing camera views on the screen. Dependent on the system version different layouts are available.

	1 camera on the screen
	4 cameras on the screen
	7 cameras on the screen

Last icon  launches the dynamic camera layouts, that is previously defined layout sequences, which change in time.



If VDRS system has integrated ConExt type extensions icons with available inputs/outputs are displayed on the right side of the screen. A table below describes the meaning of each icon.

	<i>Inactive output switch</i>
	<i>Active output switch</i>
	<i>Inactive alarm input</i>
	<i>Active alarm input</i>
	<i>Unconfirmed alarm</i>

Table 2: Main window – digital inputs/outputs

### 3.2.1 Camera view

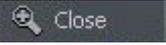
In the center of the screen the most important elements of the system are placed. These elements are camera views. On each screen system can display information such as: camera name, current time, number of captured frames per second. Double clicking by left mouse button on the camera view will bring this view full screen. Another double click will bring back previous state of the view. When You put the cursor in the top right corner of the camera view an additional menu will appear.

	<i>Starts recording regardless of the scheduler settings, motion detection or complete disabling of the recording</i>
	<i>Makes a snapshot</i>

	<i>Starts recording regardless of the scheduler settings, motion detection or complete disabling of the recording</i>
	<i>Selecting this option allows to enlarge the camera view. The example is presented below</i>
	<i>When a camera works as a dome the icon starts the "mouse control" mode. To change the position just click with left mouse button on the desired place in the camera view</i>
	<i>Remote microphone. Enabling this option allows to transmit the voice from the sound card to the IP camera (if enable microphone option was selected in the network cameras wizard)</i>

## Zooming the image



While holding the left mouse button pressed select the area to be zoomed. **This action does not affect the image size stored in the archives.** After releasing left mouse button the image will be digitally zoomed. This operation won't affect the size of the image recorded in the archives. This function may be useful when cameras with optical zoom are used. To go back to normal state select the button .

If You click with right mouse button on the camera view area during the system work menu will appear. All available commands are described on the next page.

<b>Active camera</b>	<i>Displays the list of available cameras. Marked position means that the camera is assigned to the particular area. To assign other camera choose it from the list</i>
<b>Sound channels</b>	<i>List of sound channels assigned to the particular camera</i>
	<i><b>Auto</b> – assigns the channels as in camera configuration</i>
	<i><b>Edit channels</b> – opens panel with sound channels</i>
<b>Displaying mode</b>	<i><b>Normal</b> - displays whole application window with tool bars</i>
	<i><b>Fullscreen</b> – displays only camera image on fullscreen</i>
	<i><b>Preview</b> – displays application window at the size controlled by user. Changing the size is done by resizing window (catching it's corner with left mouse button)</i>
	<i><b>Stay on top</b> – in a preview mode application window will stay on top (that is it won't be covered by other active programs)</i>
	<i><b>Show menu</b> – shows/hides menu bar at the top</i>
	<i><b>Hide buttons</b> – hides the bottom bar with camera symbols</i>
	<i><b>Small buttons</b> – small camera icons at the bottom bar</i>
	<i><b>Large buttons</b> – large camera icons at the bottom bar</i>
<i><b>Show tool buttons</b> – shows/hides toolbar at the bottom</i>	
<b>Layout</b>	<i>Switches to selected camera layout. Enables dynamic mode. <b>Dynamic</b> – if <b>Camera pop-up</b> after alarm option was selected in camera configuration, it is possible to temporarily disable/enable this option by marking it</i>
<b>Add bookmark</b>	<i>Adds a bookmark to archive recording</i>
<b>Snapshot</b>	<i>Makes screenshot (photo)</i>

Most of the options mentioned above refer to single camera. It is very important to choose the proper camera (by clicking with left mouse button on it's display area) before selecting any option. Selected camera has a red border.

### **3.3 Scheduler**

VDRS system allows to configure schedule for: cameras, sound recording, alarm inputs and system alerts. It allows to diverse the work of the system, it's reactions to alarms on working days of the week, weekends or in night hours. It is a very strong and versatile tool, which can help You to adjust the system to all of Your needs. Activation of the scheduler events can be achieved either by defining the time range or activation of the alarm input.

During the work with scheduler it is necessary to pay attention to the order of the scheduled tasks. The higher the task is on the list the lower is its priority. For example if the first task on the list activates continuous image recording for all cameras and the second task disables the recording at the same time – then the system will disable recording as the second task has higher priority. In case on task conflict (overlapping) proper marks will be shown on the time axis. Suppose two positions were defined, which "time borders" overlap each other. Time axis will be displayed as follows:

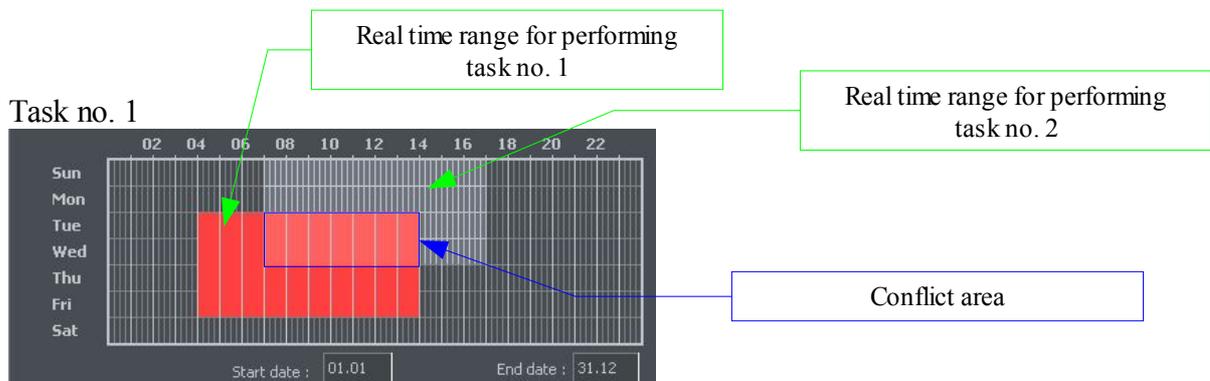


Figure 15: Scheduler - conflict



Figure 16: Scheduler - conflict

 To use e-mail notification in the scheduler access to SMTP server has to be configured in the system (see **Program settings**)

The scheduler can be opened from the upper menu:

**Configuration** → **Scheduler...**

Buttons (the same for all bookmarks) are described below.

-  - adds new position
-  - deletes selected position
-  - moves selected position one level up
-  - moves selected position one level down

### 3.3.1 Cameras schedule

To add a new task select **Add new**. A new position will appear on the list – select it. Beside the positions list **Activation condition** panel is placed. It characterizes the task to be controlled by the time or alarm input activation.

-  - launching the task in due time
-  - launching the task by alarm input activation

When task is time-controlled, it is necessary to mark the days of the week and time of a day in which the task should be enabled. The vertical axis represents the days of the week (from Saturday to Sunday) and the horizontal axis is a time range. Single rectangle represents 15 minutes time. To mark a rectangle click it with left mouse button. To select larger time range – hold left mouse button and drag the mouse pointer.

The image below is an example of an event, that will be executed in the weekend, that is from 18.00 on Friday to 0:00 on Sunday. In the fields below the time axis You can define the date to begin (start date) and finish (end date) the task.

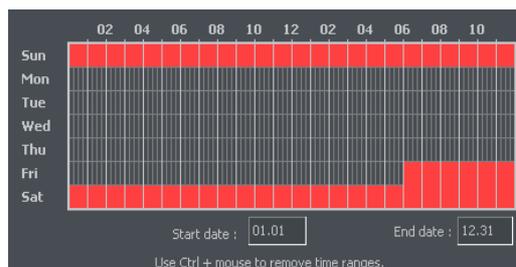


Figure 17: Camera schedule – time axis

When task is activated by alarm input, choose the proper alarm input and mark the time range on the time axis, in which the alarm input activated events will be executed.



Figure 18: Camera schedule – alarm inputs

### Description of other options:

<i>Name</i>	<i>Description</i>
Task name	Name of the task, which will appear on the task list
Cameras	To which cameras the task will apply
Recording	Image recording options
Options	Recording time after motion detection – if motion option was selected it determines how much time (in seconds) after the motion detection the recording will last; motion time before motion alarm – determines how long (in seconds) must the motion last, to activate the alarm event.
After motion alarm	The way that systems informs about alarm event. There are three possibilities: <ul style="list-style-type: none"> <li>• Send email - sends email notification on previously given address</li> <li>• Set outputs - activates selected output switches</li> <li>• Connect to client – activates the connection with selected remote client, used for example in monitoring headquarters</li> </ul>

### 3.3.2 Sounds schedule

"Schedule sounds" bookmark allows to "plan" system reactions to sound events. Activation conditions are the same as in camera schedule. The difference is that You choose sound channels. Additional reaction to alarm event is starting the image recording from selected cameras. Recording time is set in **Options** field.

Night can represent an example situation. Cameras have limited possibilities to detect motion but sensitive microphone can detect noise, start the alarm and enable output switch, which will turn on the light and this will make image recording possible.

### ***3.3.3 Alarm inputs schedule***

This module is used for programming the behavior of the alarm inputs and their reactions on alarm. Programming the event looks the same as in camera and sound schedule. Additionally, after the alarm detection system can add bookmark to archives and enable the output switch (for example with connected siren). In the **Options** panel **Activation time before alarm** can be set (a time needed for the system to recognize the input activation as an alarm).

### ***3.3.4 System alerts***

System alerts are responsible for notifications about changes in system work. You can set notifications for example about application shutdown, remote user login or camera signal lost. The list of available alerts is presented below:

- Program start up**
- Program shut down**
- Recording on**
- Recording off**
- Camera connected**
- Camera disconnected**
- Remote user login**
- Remote user login failed**
- Remote user logout**
- Video signal restored**
- Video signal lost**
- User is sleeping (no user reaction for system popups)**

Defining new task process is the same as in previous modules.

### ***3.3.5 Scheduler – Address book***

Address book manages the contacts to which the alarm notifications are sent or to connect with remote clients.

### 3.3.5.1 E-mail address

Address book panel consists of two bookmarks: **Choose address** and **Address book**. First bookmark displays the list of available contacts, the second one allows to add, remove and edit contacts. To add new contact choose "Add new" button in the **Address book** bookmark. After filling all of the empty fields click "Ok" button or "Add new" button if You want to add new address.

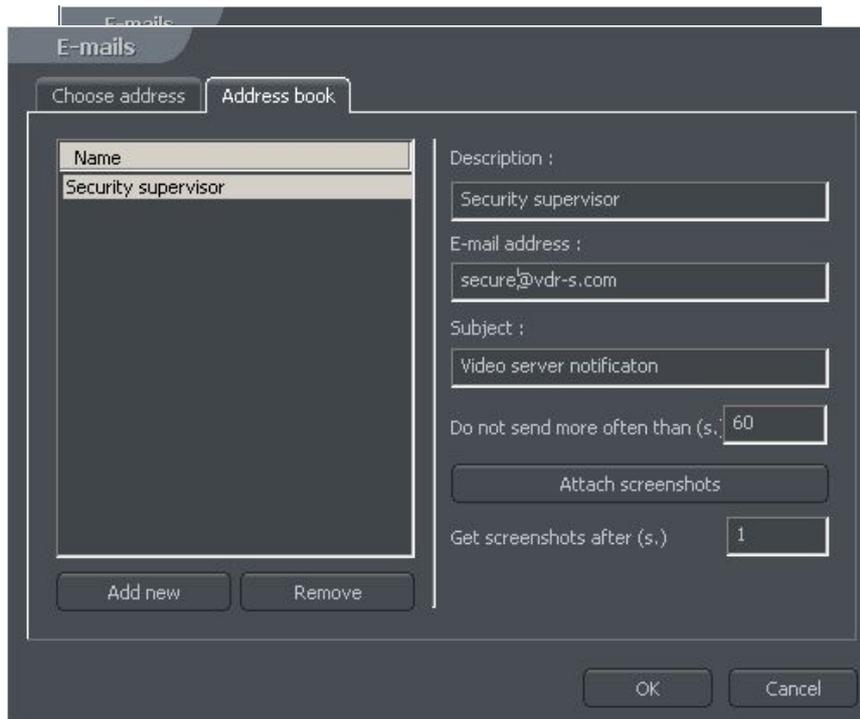


Figure 20: Address book – e-mail addresses

<b>Field</b>	<b>Description</b>
Description	Name which will appear in the contact list
E-mail address	E-mail address to which notification will be sent
Subject	Subject of an e-mail notification message
Do not send more often than (s.)	The minimum time gap between two messages
Attach screenshots	Allows to attach screenshots from selected cameras to e-mail notification message
Get screenshots after (s.)	Time gap between alarm activation and camera image snapshot

After filling all the fields select **Ok** to finish or **Add new** (to add new contact).

### 3.3.5.2 Client addresses

In this place You can add addresses of the remote client applications to which server application will send notifications. The way server sends notifications to client applications is presented on a diagram below.

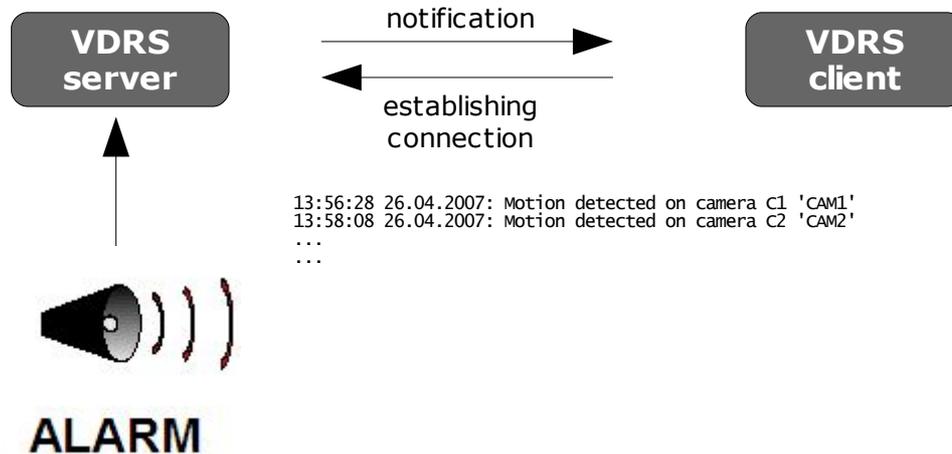


Figure 21: Schema for sending notifications to the client

To add new contact it is necessary to fill all the blank fields:

<i>Field</i>	<i>Description</i>
Description	Name which will appear in the contact list
Client address and port	Address and port of the remote client
Client password	Password selected for sending notifications
Server user	Server user login
Server password	Server user password
Dial-up connection	If dial-up connection is configured it is possible to "call" client application

After filling all the fields select **Ok** to finish or **Add new** (to add new contact).

### **3.3 Camera configuration**

VDRS system allows to configure many camera parameters. Quality of displayed image, compression settings, drawing a mask of areas, in which motion detection will be omitted. Configuration panel can be reached from the top menu bar:

**Configuration → Cameras**

or by **Ctrl+C** shortcut combination.

At the top of the window there are placed icons, which represent cameras. By clicking on them You can switch between configuration panels for each camera. Icons with white border refer to cameras, which are not serviced by the system<sup>5</sup>. In VDRS PRO 4 AV first four cameras will be available, the rest will be inactive. Camera settings are divided into several sections. To switch between sections click on the bookmarks.

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<sup>5</sup> It depends on the version of the system

### 3.3.1 Camera

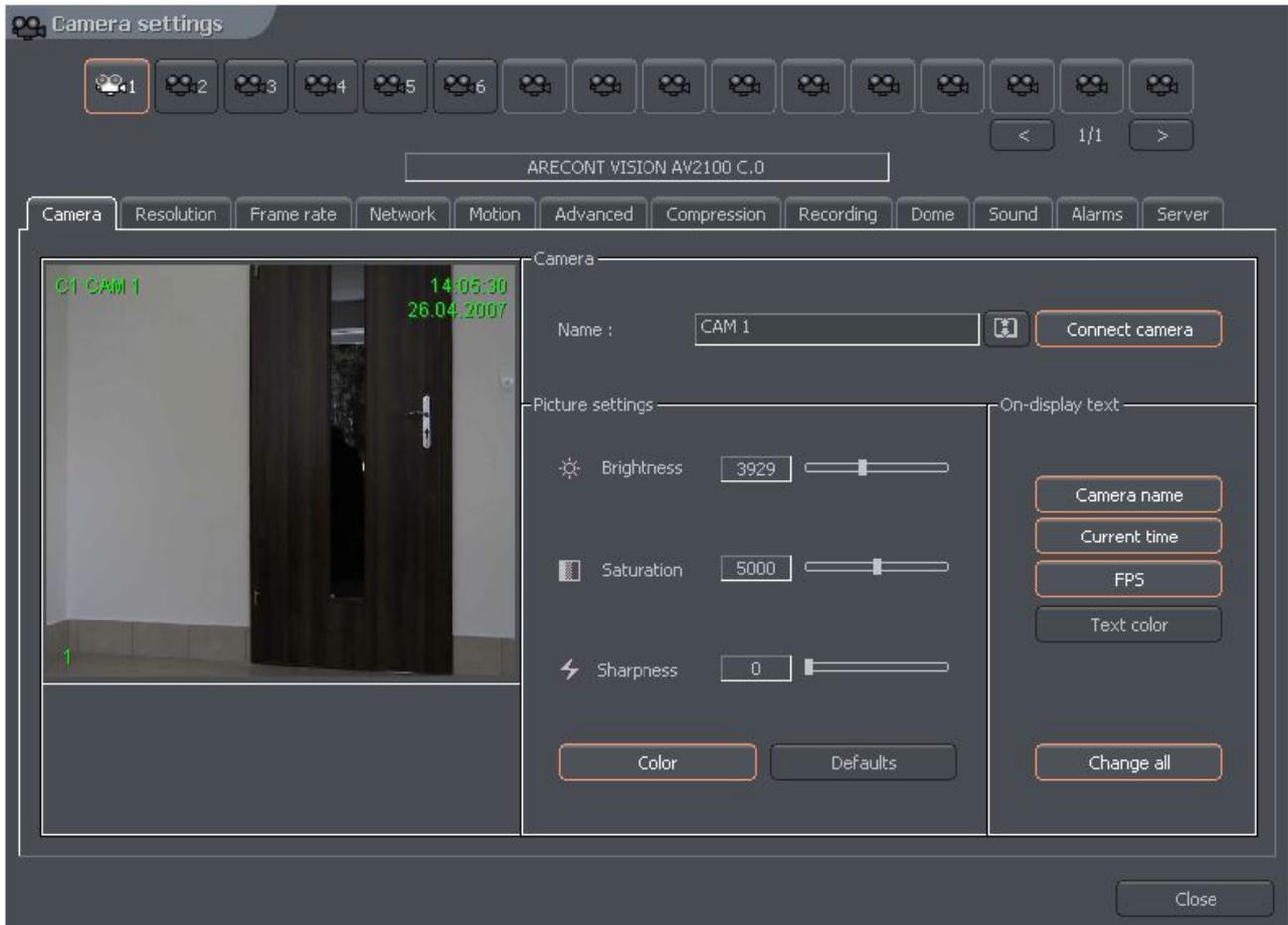


Figure 22: Camera configuration – Camera bookmark

Panel	Field	Description
Camera	Name	Name describing camera
	Connect camera	Enables the video stream capture
		Image stabilization button
Picture settings	Brightness, Contrast, Saturation, Hue, Sharpness	Parameters characterizing the image. To change parameter move the slider
	Color	Enables the color mode (if color camera)
	Default	Restores the default settings
On-display text	Camera name	Display camera name on the screen
	Current time	Display current time on the screen
	Fps	Display the number of captured fps on the screen
	Text color	Changes the text color
	Change all	Changes the settings for all connected cameras

### 3.3.2 Resolution

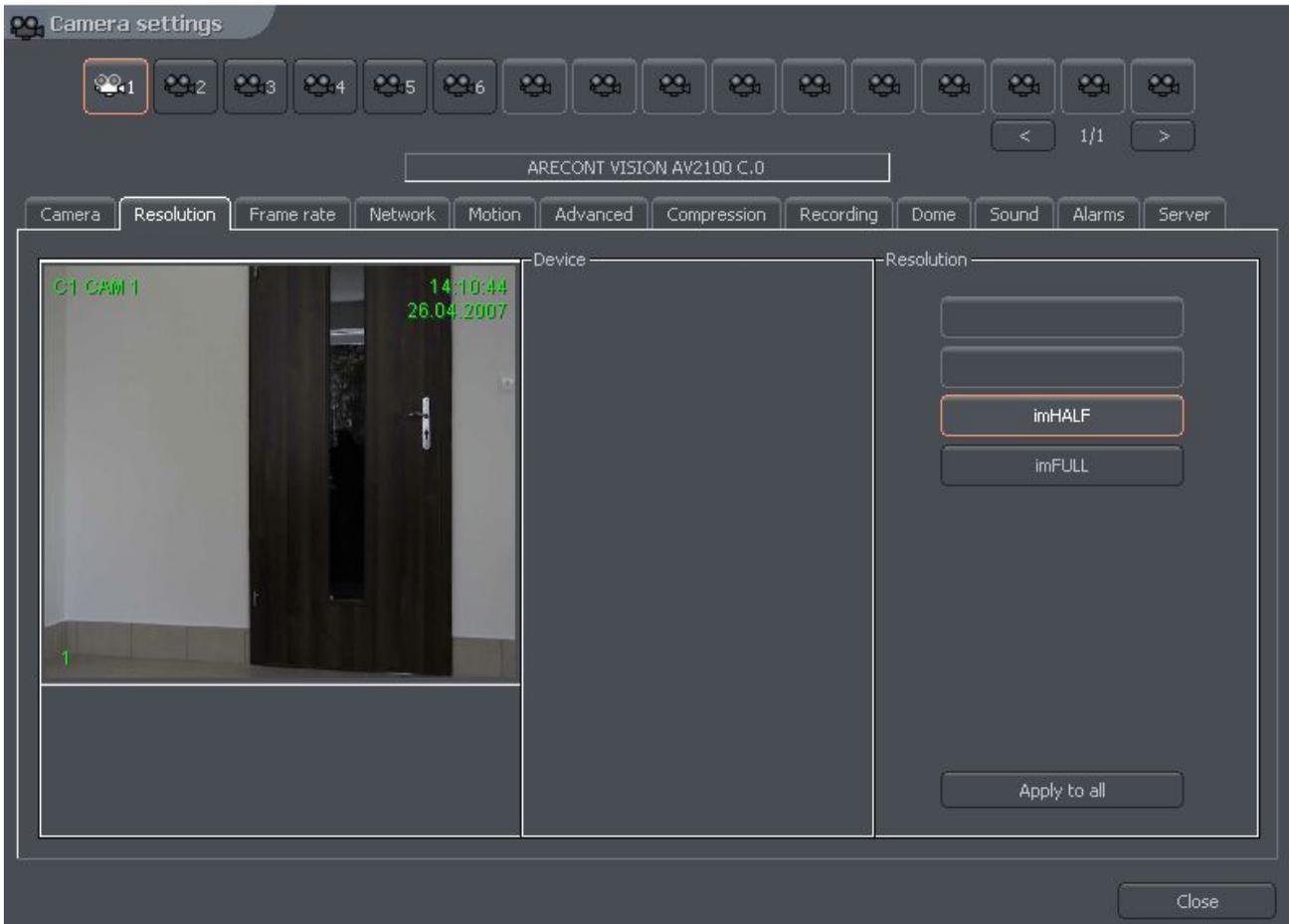


Figure 23: Camera configuration – Resolution bookmark

<b>Panel</b>	<b>Field</b>	<b>Description</b>
Device	Deinterlace	During the analog – digital signal conversion, semi-images are not created in the same time but gathered one after another. After they are put together there is a visible effect of shift between even and odd lines. It is especially visible in fast-changing scenes. Selecting this option will remove the effect.
Resolution	Resolution of captured image. The higher resolution the better image quality and more space is required for archive recordings storage. Some cameras, instead of specific resolution can provide only ImHalf and ImFull – it means that the image is in half and full available resolution for particular camera	
	Apply to all	Applies the changes to all connected cameras

### 3.3.3 Frames per second

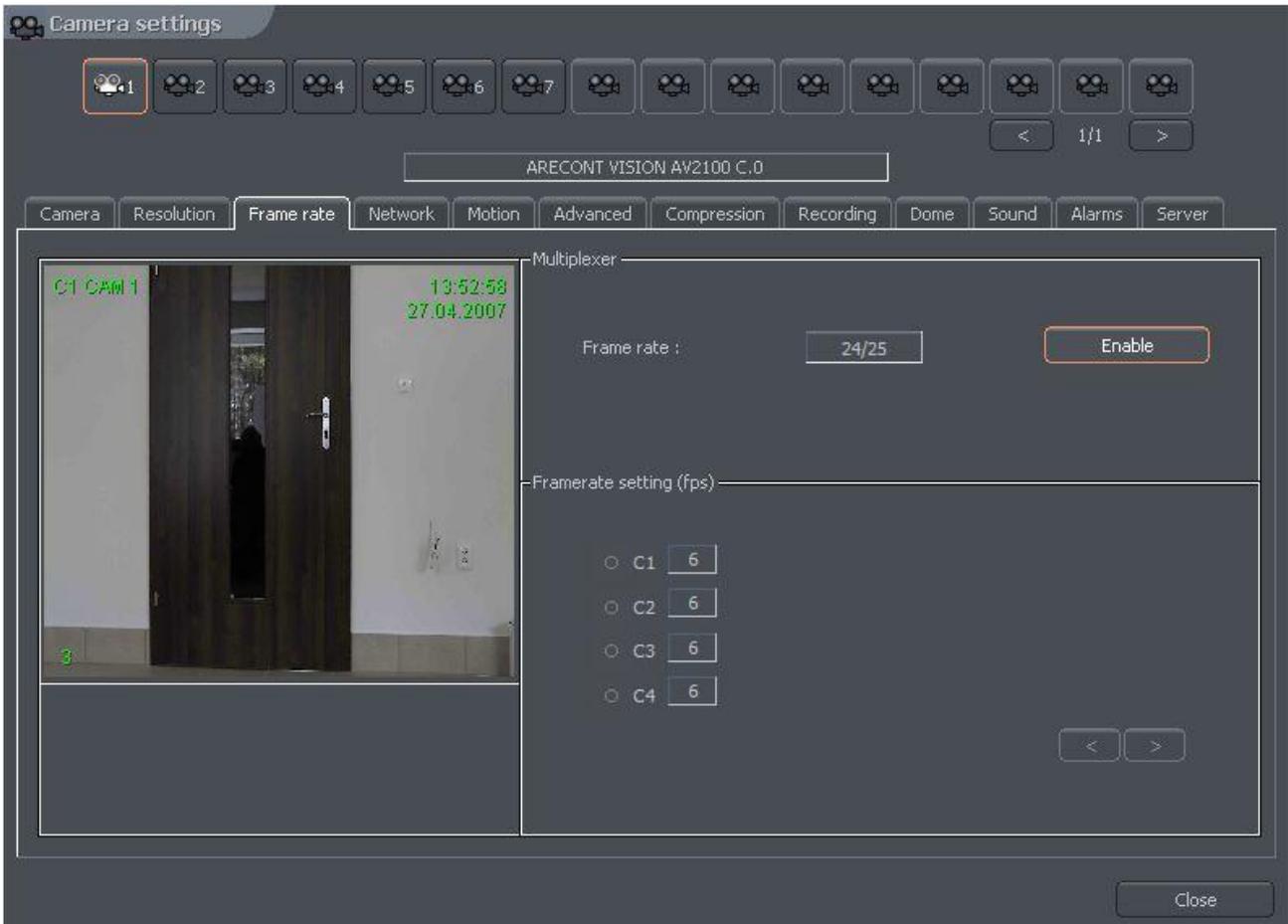


Figure 24: Camera configuration – Frame rate bookmark

Panel	Description
Multiplexer	Enables the mode for dynamic frame assigning for each camera. In the window You can see frames used / frames available. In the configuration presented above there are 24 frames used (6 frames x 4 cameras).
Frames per second settings	<p>Panel shows a list of available cameras in the system and number of frames per second assigned to them. It is possible to enable the dynamic frames assigning by clicking the icon with a camera number</p> <p><input checked="" type="radio"/> C1 - means that the dynamic mode is enabled</p> <p><input type="radio"/> C1 - means that frame assigning is constant</p> <p>Dynamic mode assigns all available frames per second to the camera, which detected motion and entered the recording mode. Suppose we have PRO4 system (25 fps). We set the constant number of frames</p>

per second for each camera on 4. 9 frames per second stay unused ( 25 fps - [4 cam. X 4 fps = 16 fps] = 9 fps). These 9 unused frames can be assigned to any camera by enabling it's dynamic mode. If the dynamic mode is enabled for two or more cameras, the system assigns unused frames between the cameras evenly.

### 3.3.4 Card

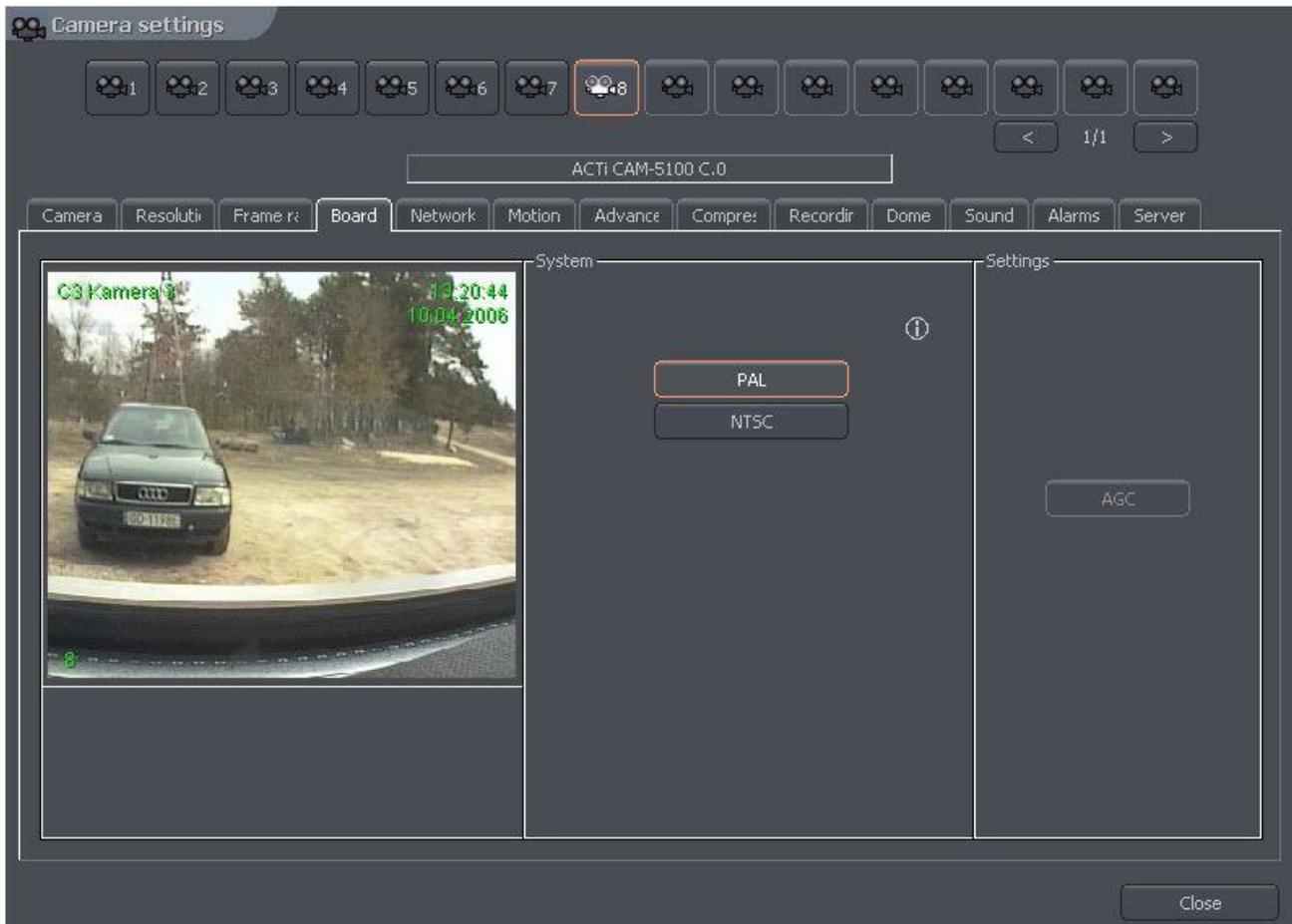


Figure 25: Camera configuration – Board bookmark

Panel	Description
System	Camera image transmission standard PAL/NTSC
Skip frames	Option allows to set the number of frames to skip. Increasing the parameter lowers the number of displayed and recorded frames. It lowers both the CPU usage and storage place needed on the hard disk
Settings	AGC – Automatic Gain Control. Auto regulation of source amplifier

### 3.3.5 Network<sup>6</sup>

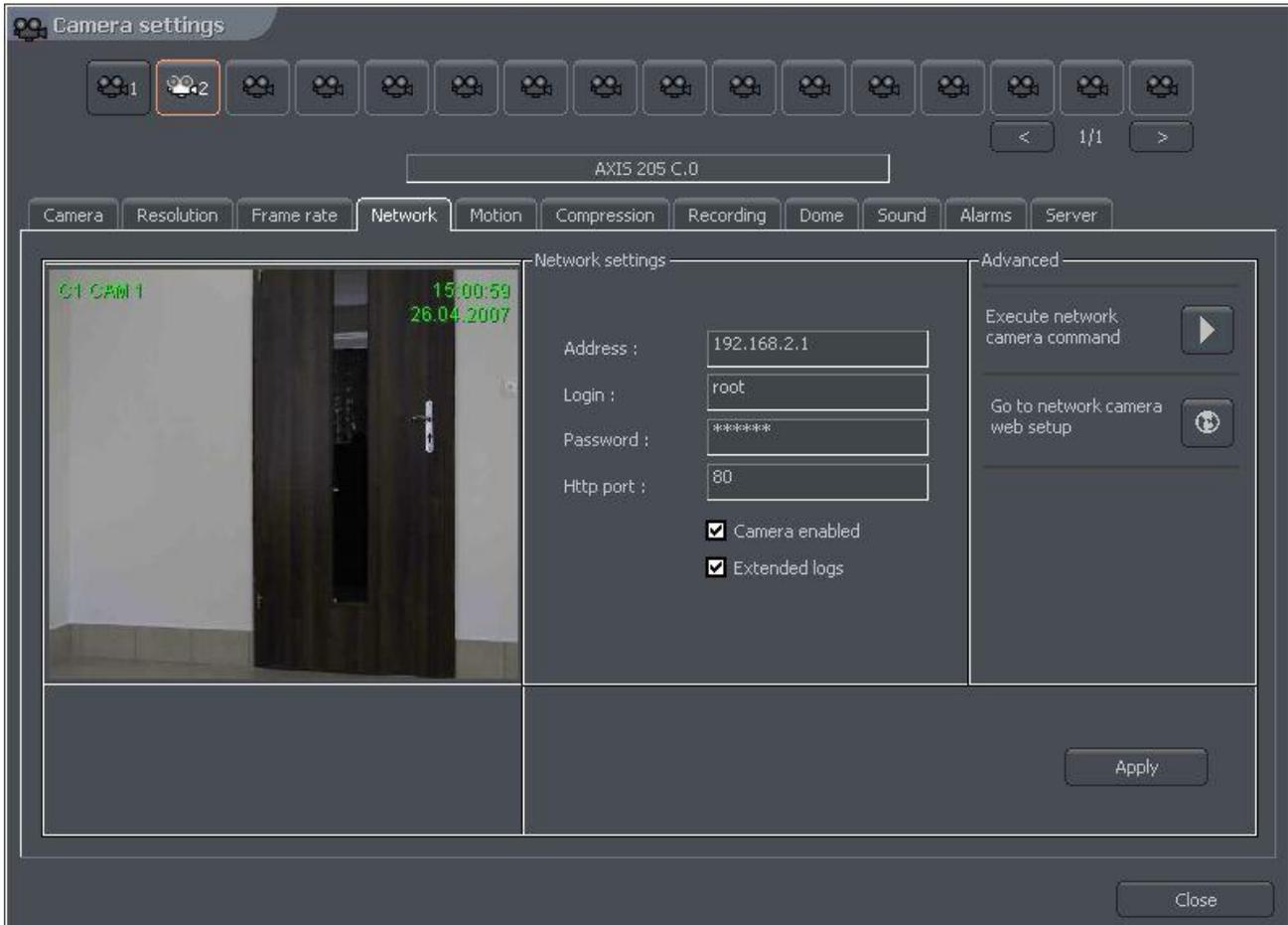


Figure 26: Camera configuration – Network bookmark

<i>Panel</i>	<i>Field</i>	<i>Description</i>
Network Configuration	Address	Camera address (IP number or domain name) which was put in configuration wizard. This field can be modified
	User	Name of the user which has rights to connect with the camera
	Password	User password
	Http port	Port through which the camera sends an image
	Camera enabled	Deselecting this field causes the system not to service the camera (including digital inputs/outputs, sound)
	Extended log	System administrator help in solving problems with network cameras. After marking this option every command sent to camera and every camera reply is saved to logs

<sup>6</sup> Refers to network cameras

Advanced

Go to configuration on Opens internet browser on the camera the website configuration web page

Load configuration from the IP camera Loads the camera configuration (brightness, contrast, resolution etc.) from the camera to VDRS. If the camera configuration is changed from the www browser level it is possible to download these new settings to VDRS

### 3.3.6 Motion

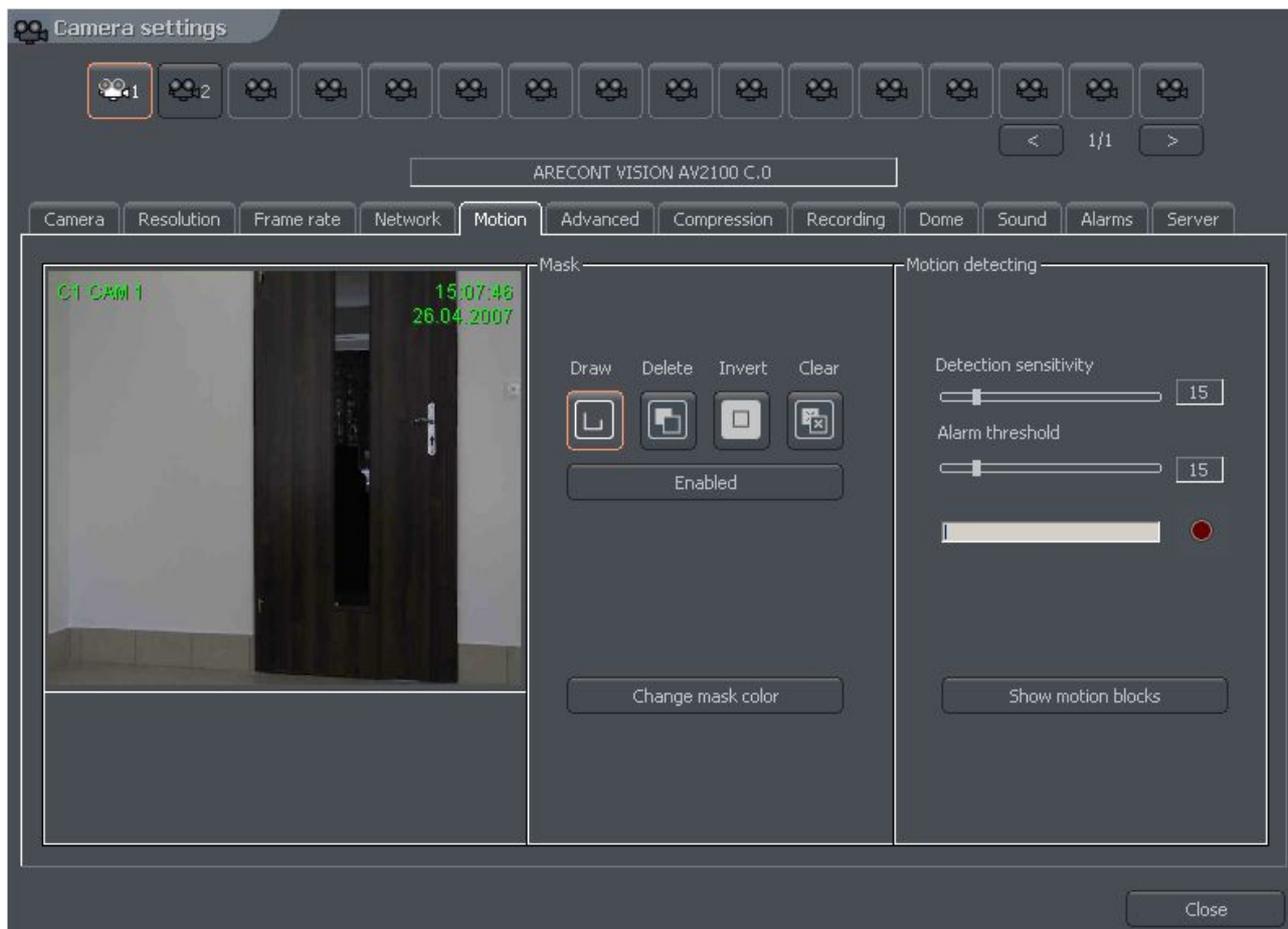


Figure 27: Camera configuration – Motion bookmark

<i>Panel</i>	<i>Field</i>	<i>Description</i>
Mask		Allows to mark areas on which any motion will be skipped
	Draw	Enables the mask drawing mode. Drawing is realized by drag-and-drop method
	Delete	Mask delete mode. Cutting the areas from previously masked areas
	Invert	Invert the marked mask. Masked areas become unmasked and vice versa
	Clear	Clears the mask
	Enabled	Sets the mask active
	Change mask color	Changes the mask color
Motion detection	Detection sensitivity	The system detects motion as changes in the image. Application analyses the data and classifies them as a motion detection or not. The slider allows to set the sensitivity level for these changes
	Alarm threshold	Level, from which the system reacts to changes in the image. It is recommended to set the threshold when the image is in stillness. It will help to eliminate recording of the insignificant motion, such as leaves motion on the wind and camera noise. Below the slider there is a field which shows current alarm level
	Show motion blocks	Enables plotting the motion blocks on the image, in which the system detects motion. This option is useful while modifying the motion detection settings

### 3.3.7 Compression

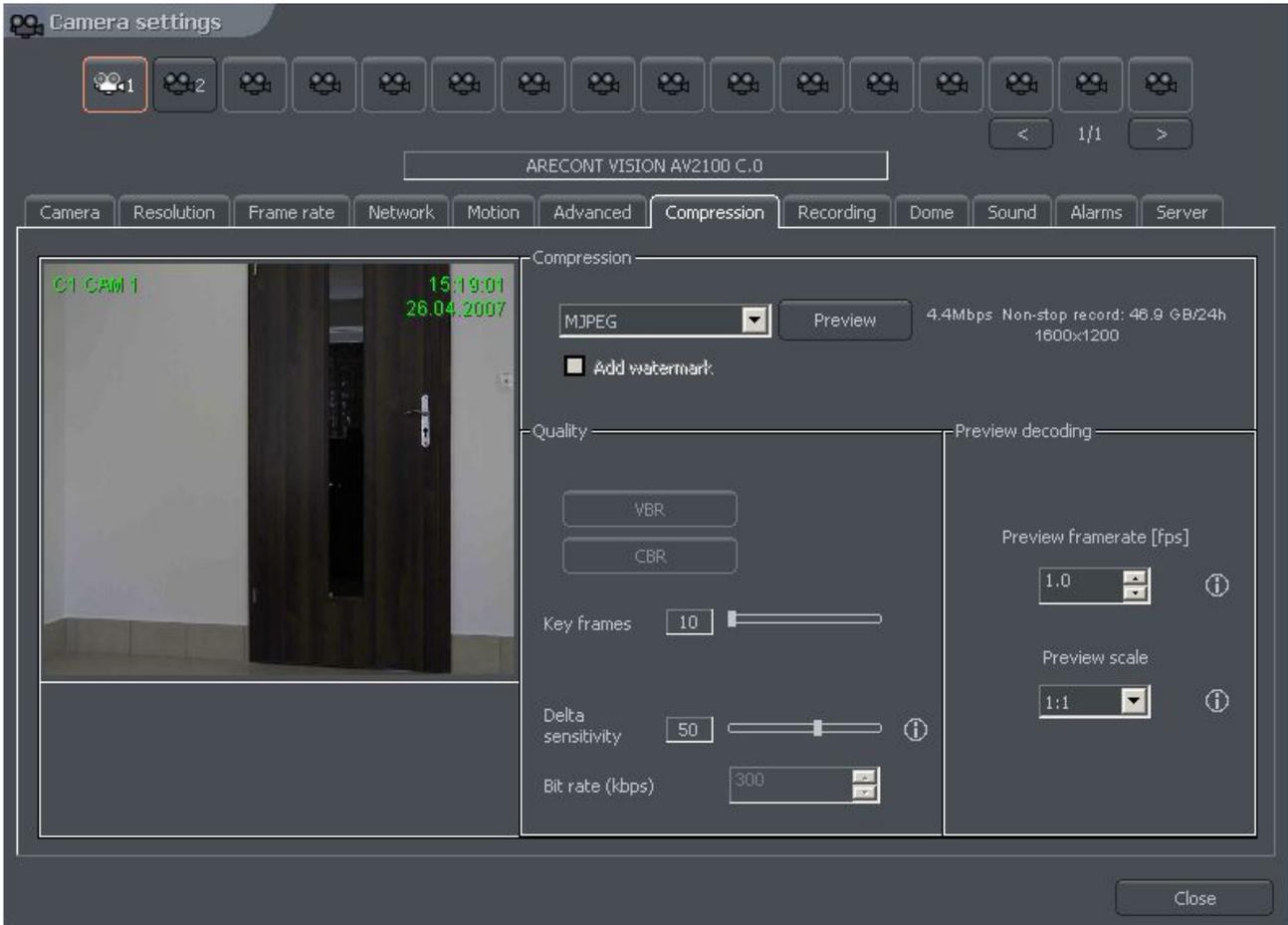


Figure 28: Camera configuration – Compression bookmark

Panel	Field	Description
Compression	<b>Analog cameras</b>	
	MJPEG	Records the individual frames as JPEG images – each frame is coded individually (every frame is a key frame). It requires plenty of hard disk space but gives good image quality. It uses average CPU power. Amount of generated data doesn't depend on amount of motion on the screen
	MPEG-4	Encoding and decoding uses a lot of CPU power. Uses key and delta frames. Delta is an ordinary full frame calculated from a difference between previous frame and current frame. That's why big amount of data is generated when there are no changes in the image (but less when changes are big). It guarantees high image quality
	DJPEG	Codec developed by Alnetsystems Company. Codes only image areas which are changed – uses key and delta frames. When image doesn't change system is not generating any data. CPU usage is low and hard disk

space for archive storage strongly depends on how much motion is on the screen.

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### Digital cameras

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MPEG4@rtp-unicast

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MPEG4@rtp-multicast

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MPEG4@rtp-tcp

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MPEG4@rtp-http

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MJPEG@http

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Frames	Quality of key frames, which are background to delta frames. The higher value the higher quality (and more hard disk space needed for the archives)
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Delta	Quality of Delta frames (the part of the image which changes)
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Delta Sensitivity	Parameter which allows to set how system reacts on changing image. When set too low delta frames won't be replaced (for instance person in motion wearing clothes which color match the background color)
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Quality	VBR	Variable Bit Rate – codec generates a stream of compressed data with variable intensity (which depends on amount of motion on the screen). The image quality is at the same level
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	CBR	Constant Bit Rate – codec changes the image quality so the data stream will have approximately constant bit-rate. This option is useful for network cameras, which use UDP protocol
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	Target bit rate (kbps)	Bit-rate value for CBR
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Mode	Watermark	Certain value (pattern) "entangled" with recorded video image. Prevents archives from modification. Watermark is not visible on the screen, but it is possible to check (by VDR-A application) if it exists in the archives or not. Watermark is unique for each VDR-S system. Every modification of the recorded video destroys the watermark and during the watermark check the system will pop up error. To make checking watermark function possible it is necessary to export it first: <b>Tools -&gt; Export watermark</b>
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Preview decoding	Preview framerate	Only for IP cameras – frames per second for the stream sent to: - display - motion detection - remote clients with free bandwidth
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	Preview scale	Applies only for IP cameras with MJPEG codec
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Preview	Allows to calculate approximate size of recorded data and video stream for	
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### 3.3.8 Advanced

Bookmark and the options in it depends on type of connected camera. With that bookmark, it is possible to control the advance parameters of the camera. ( see Fig. 29 )

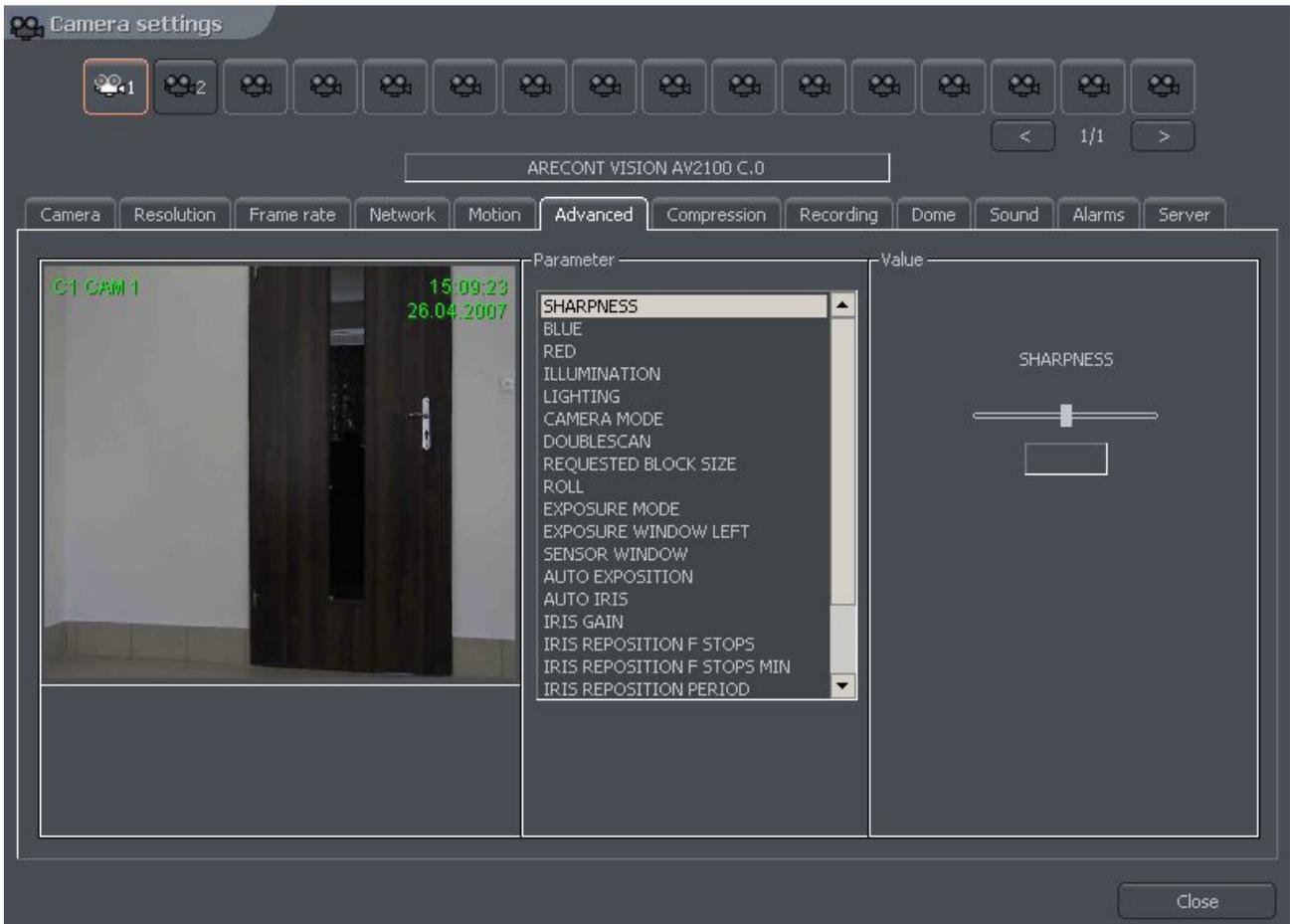


Figure 29: Camera configuration – Advanced bookmark

### 3.3.9 Recording

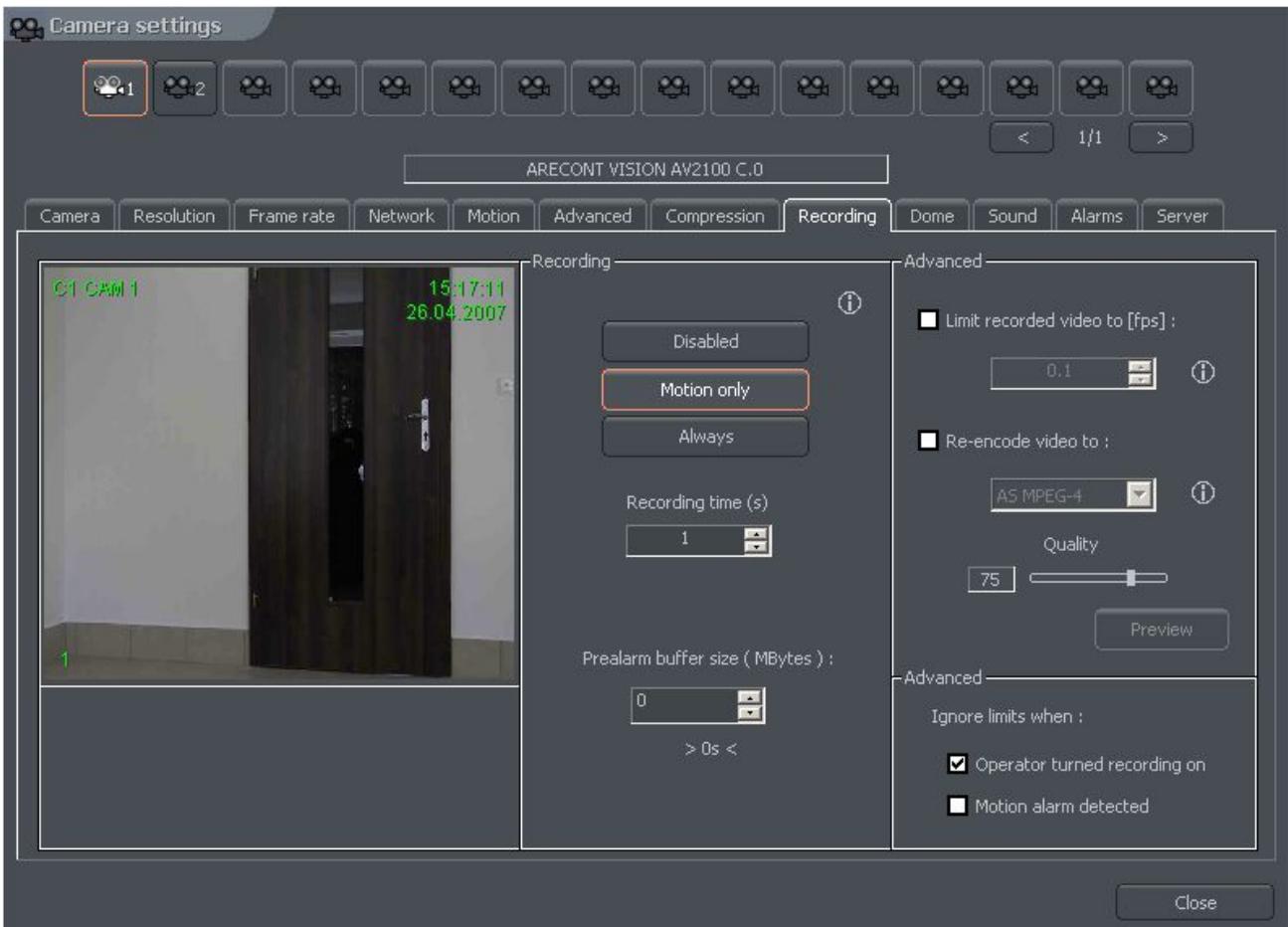


Figure 30: Camera configuration – Recording bookmark

Panel	Field	Description
Recording		The options are set only when no scheduled task is active. <b>Scheduler tasks have higher priority!</b>
	Disabled	Recording is disabled
	Motion only	Recording will start on motion detection
	Always	Continuous recording
	Recording time (s)	Recording time after motion detection

## Prealarm

Prealarm is function of early reaction for alarm. It enables to recreate recordings from moments before activating alarm. When the function is enabled, the application is buffering image, and when movement is detected (and recording is set on) the frames recorded before alarm remain to user's disposal. The length of buffered image in case of network cameras depends on memory size reserved for prealarm. For analog cameras two parameters are being set up:

- **Prealarm buffer size (frame)** – quantity of buffered frames
- **Buffer every n-th frame** – ratio of buffered frames to non-buffered

Example:

Camera in the system records 5 fr/sec. If define 5 buffered frames and quantity of buffered frames for one the result will be 1 second of buffered recording. The formula for calculating length of the buffer is presented below.

$$\text{Buffer} = \frac{\text{Prealarm buffer size(frame)} * \text{Buffer every n-th frame}}{\text{Number of recorded frames}}$$

For the example above:

$$(5 * 1) / 5 = 1 \text{ sec}$$

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Advanced	Limit recorded video to [fps]	Function limits fps in the recorded video – this function can be used to save space on a hard drive
	Re-encode video to:	Function allows to re-compress video stream to other format independently on the input video stream which is sent by camera or video capture card
	Quality	Setting for quality of re-compressed video
	Ignore limits when:	Option ignores limits mentioned above in two defined cases: - <b>Recording is triggered manually by the operator</b> - <b>Motion detection alarm has occurred</b>

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### 3.3.10 Alarms

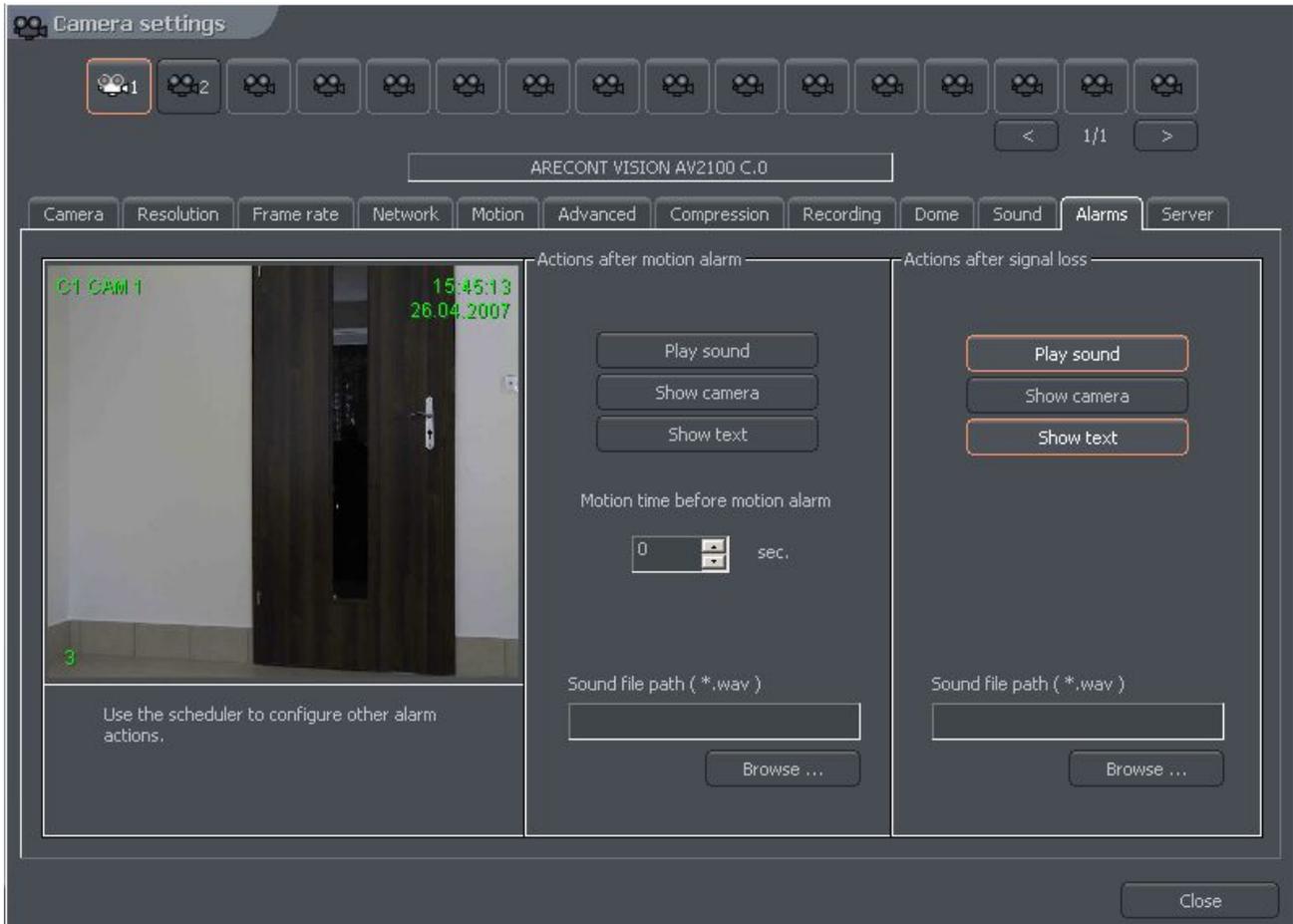


Figure 31: Camera configuration - Alarms bookmark

<b>Panel</b>	<b>Field</b>	<b>Description</b>
Actions after motion alarm	Play sound	Activates sound alarm. System will play sound defined in settings panel
	Show camera	Marking this option will cause the camera image to be shown in full screen. When application is minimized after the motion detection the program window will be maximized and will show the camera, on which the motion was detected. The the program window will minimize. During the normal work the system will show the camera on full screen and will back to the previous layout
	Show text	Shows pop up message from the VDRS system tray icon
	Motion time before motion alarm	Determines the time which should last before the motion is detected as an alarm
Sound file path	A sound file which will be used when motion alarm is detected	

### 3.3.11 Dome



Figure 32: Camera configuration – Dome bookmark

Panel	Field	Description
Dome settings	Address	Address, which was set on hardware, for example by jumpers on the dome. It is necessary to pay attention which address is assigned to particular setting (dome manual). Sometimes position '1' means address number '0', and not '1' as one may suppose (for instance Pelco D protocol)
	Port	COM port, to which the dome control is plugged. If the protocol is set in <b>Dome control</b> panel it's name will be visible
	Protocol	Protocol for dome control
	Dome enabled	Enables the dome control in the system
Auto-pan	Automatic dome control. Switching between previously set positions. This option works only with domes, which support saving and recalling presets. It is possible to set up to 128 positions. For proper work the dome protocol has to have two command included: 'Save preset' and 'Recall preset'.	

Activate after [sec]      The time gap between last manual command (for example from the keyboard) and AutoPan activation

Preset dwell time [sec.]      The time the dome stops on a preset for

Activate on program start      Activates AutoPan on VDR-S system start

**Auto pan presets**      On the left side there is a list, from which the set of presets can be chosen. One set is 16 positions. To save the dome position under desired preset click on its number. To add preset to AutoPan sequence mark it's checkbox. **ATTENTION!** To activate AutoPan it is necessary to mark  option in the dome control panel. You can call dome control panel  using the Ctrl+D keyboard shortcut or  from the current bookmark

### 3.3.12 Sound

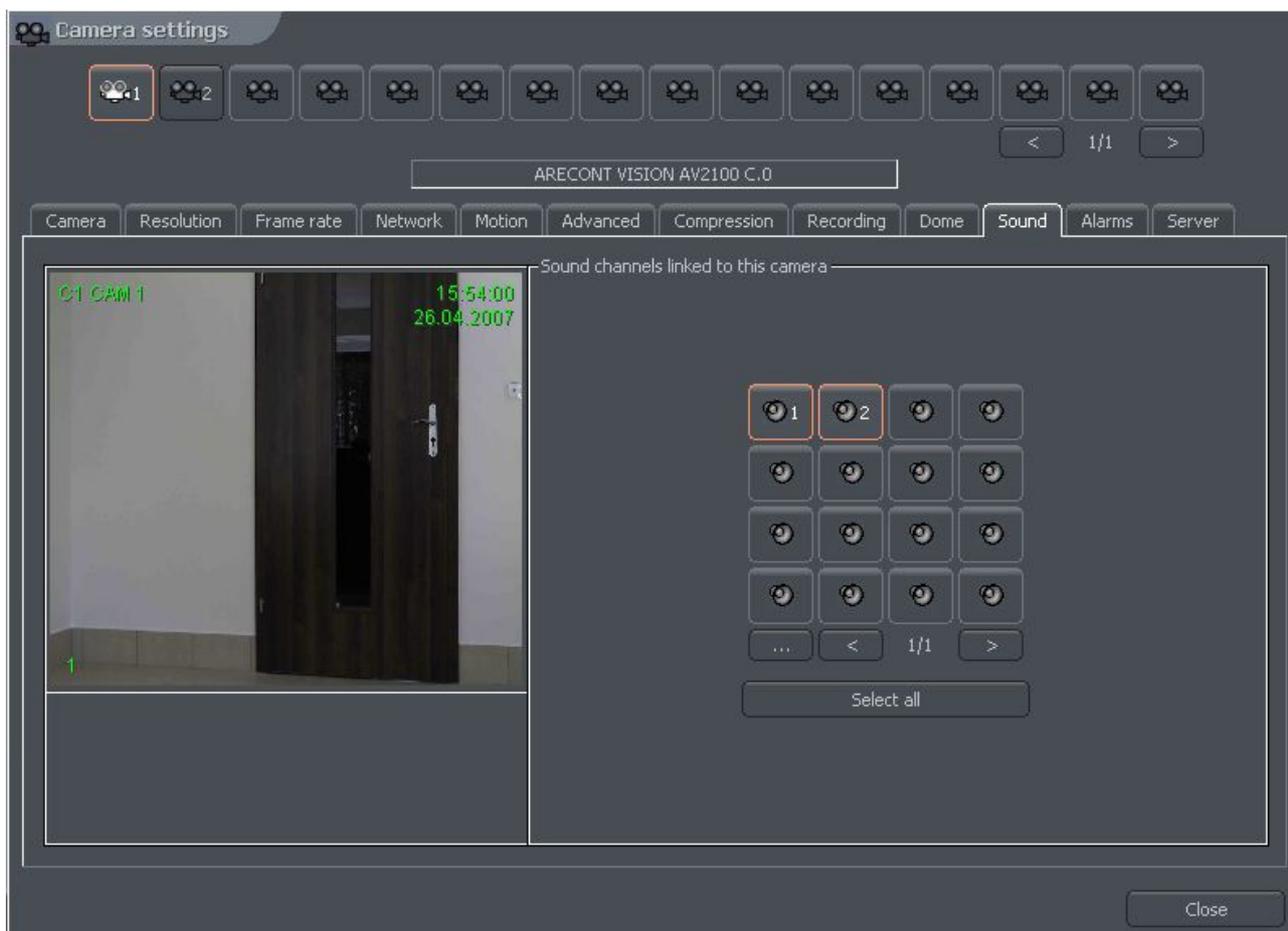


Figure 33: Camera configuration - Sound bookmark

The panel is responsible for connecting particular camera with sound channels. It is

made by choosing numbered buttons or from the list. Selection mode is made by clicking

 button. Connecting camera with a sound channel means that during live monitoring when camera is marked the system will play sound from the previously chosen channels.

### 3.3.13 Server

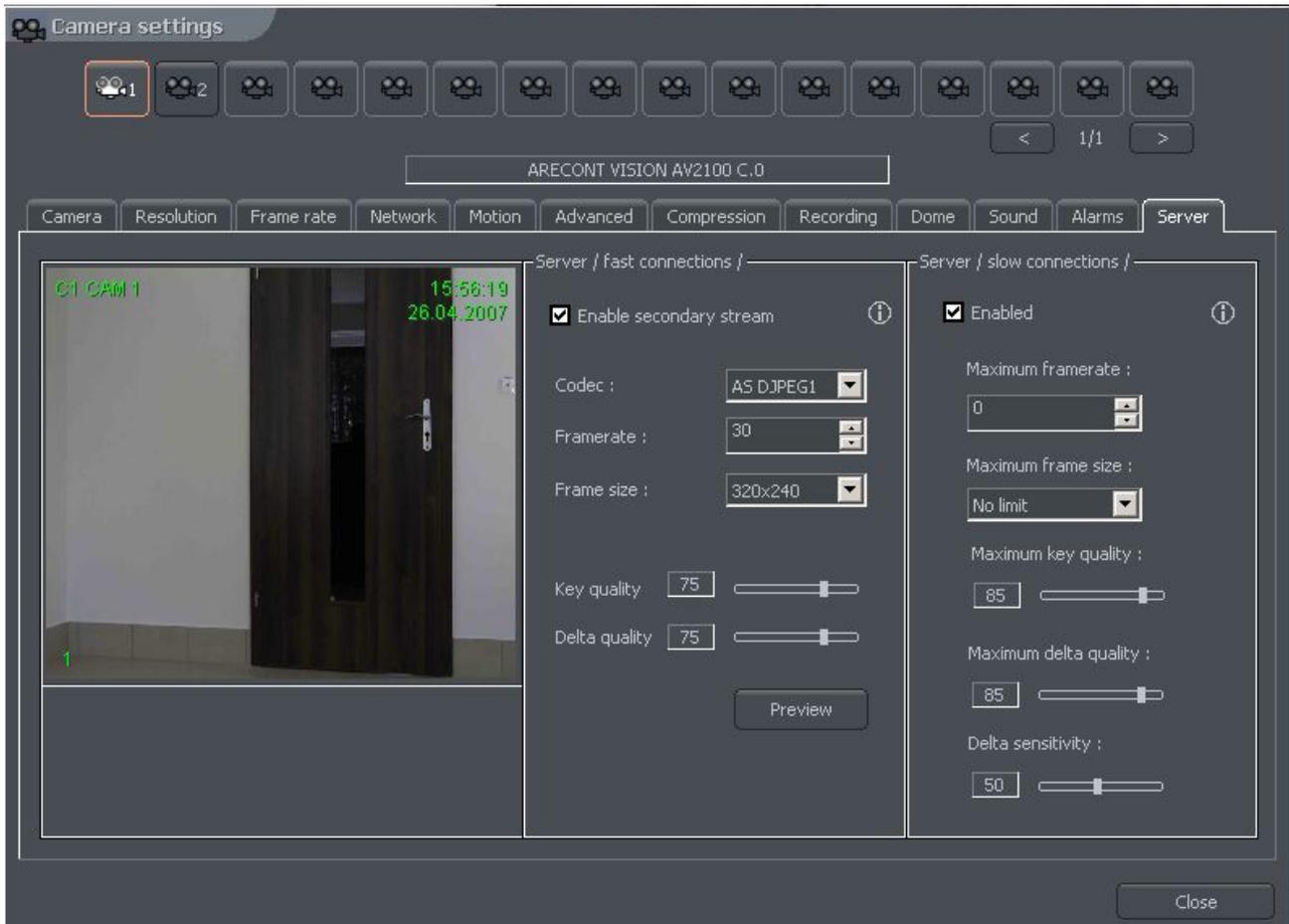


Figure 34: Camera configuration - Server bookmark

Server bookmark allows activation and configuration of additional video streams for remote clients for fast and slow connections.

<b>Panel</b>	<b>Field</b>	<b>Description</b>
Server /fast connections/	Codec	Choice of codec for video stream transmission
	Framerate	Amount of frames per second in transferred image
	Frame size	Frame size of the image

	Key quality	See paragraph 3.3.7 Compression
	Delta quality	See paragraph 3.3.7 Compression
Server /slow connections/	Maximum framerate	Maximum frames per second for video stream transmission
	Maximum frame size	Maximum frame size
	Maximum key quality	See paragraph 3.3.7 Compression
	Maximum delta quality	See paragraph 3.3.7 Compression
	Delta sensitivity	See paragraph 3.3.7 Compression
Preview	See paragraph 3.3.7 Compression	

### 3.4 Sound configuration

VDRS System allows sound capture by extension cards or sound card. It is possible to capture up to 16 channels. You can set system to enable alarm inputs on sound, control the dome. For each channel the panel below allows to configure recording quality, volume and way the system reacts on sound detection.

#### 3.4.1 Format

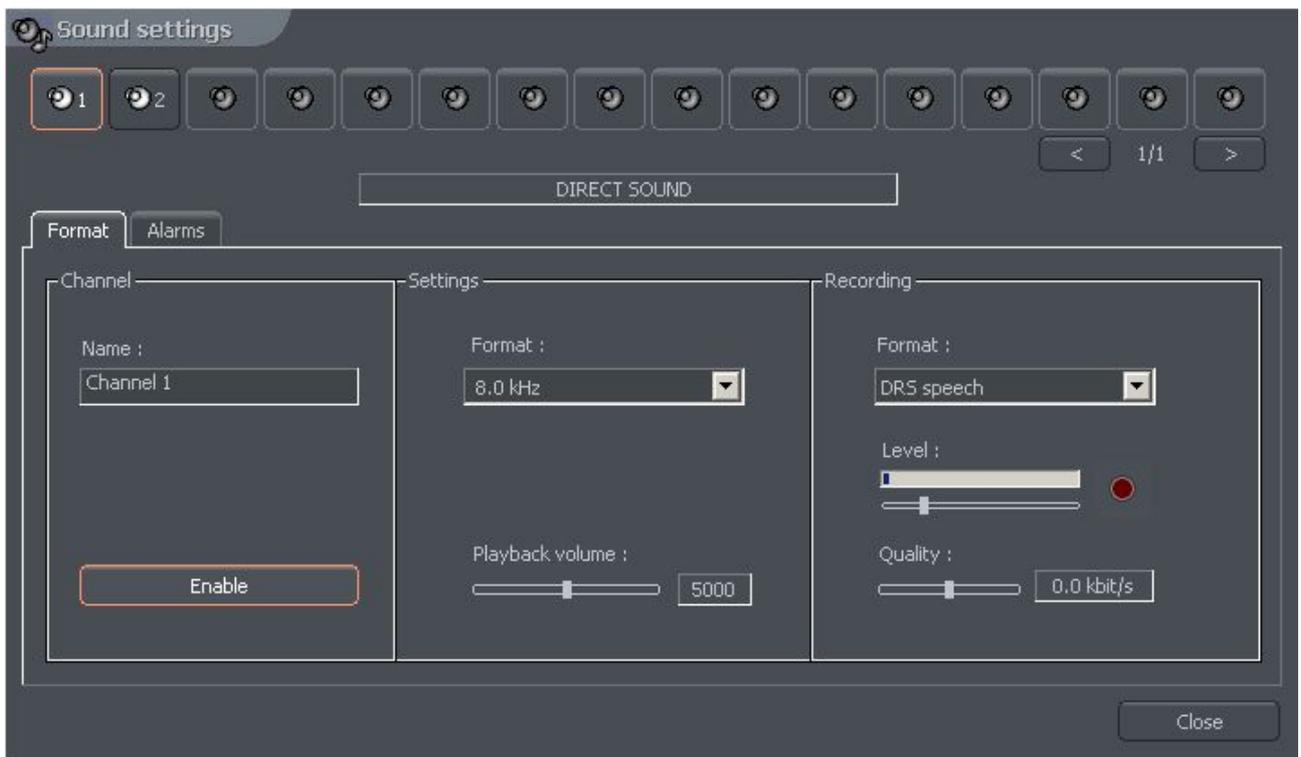


Figure 35: Sound configuration – Format bookmark

<i>Panel</i>	<i>Field</i>	<i>Description</i>
Channel	Name	Channel name which will be visible in the system, for example hall, office. The device, from which the sound will be captured, is listed under the window.  ALNET – channel from AudExt extension boards DIRECT SOUND – sound card channel  When sound is captured from IP camera, it's IP will be visible
	Enable	Marking this option activates the channel in the system
Settings	Format	Sound sample frequency. The higher it is, the better quality. This parameter is limited by the device, from which the sound is captured
	Volume	Playback volume
Recordings	Format	Recorded sound compression format
		No recording    Recording off
		DRS speech    Codec designed for VDRS system adapted mainly for human voice recording. Good sound quality is achieved by multiple compression (comparing to RAW audio)
	RAW audio    Format without any compression. Occupies much more disk space but has lower CPU usage. Useful for high quality recordings	
	Level	Threshold for the system to qualify sound as alarm
Quality	Settings for quality of recorded sound. Window beside shows current bits per second size	

### 3.4.2 Alarms

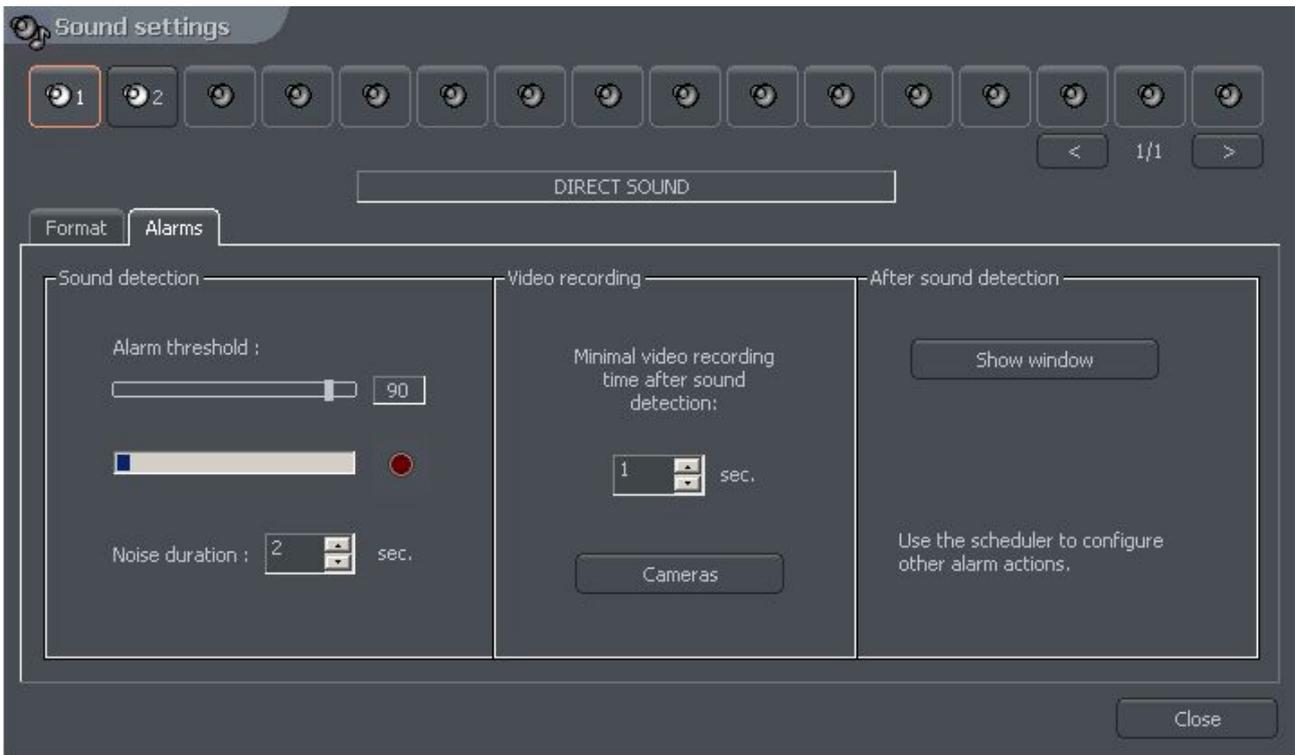


Figure 36: Sound configuration - Alarms

<b>Panel</b>	<b>Field</b>	<b>Description</b>
<b>Sound detection</b>	Alarm threshold	Sound level to be classified as an alarm
	Noise duration	The number of seconds the sound has to last (sound above the threshold) to be classified as an alarm
<b>Video recording</b>	Minimal video recording time after sound detection	Recording time after sound detection
	Cameras	Cameras, which will record image after the alarm
<b>After sound detection</b>	Show window	When program works minimized it will be maximized

### 3.5 Alarm inputs

VDRS system allows cooperation with digital in/out extension cards. These cards allow to gather signals from the PCB sensors, reed relays etc. Alarm inputs configuration menu is available from from the top menu:

#### Configuration -> Alarm inputs

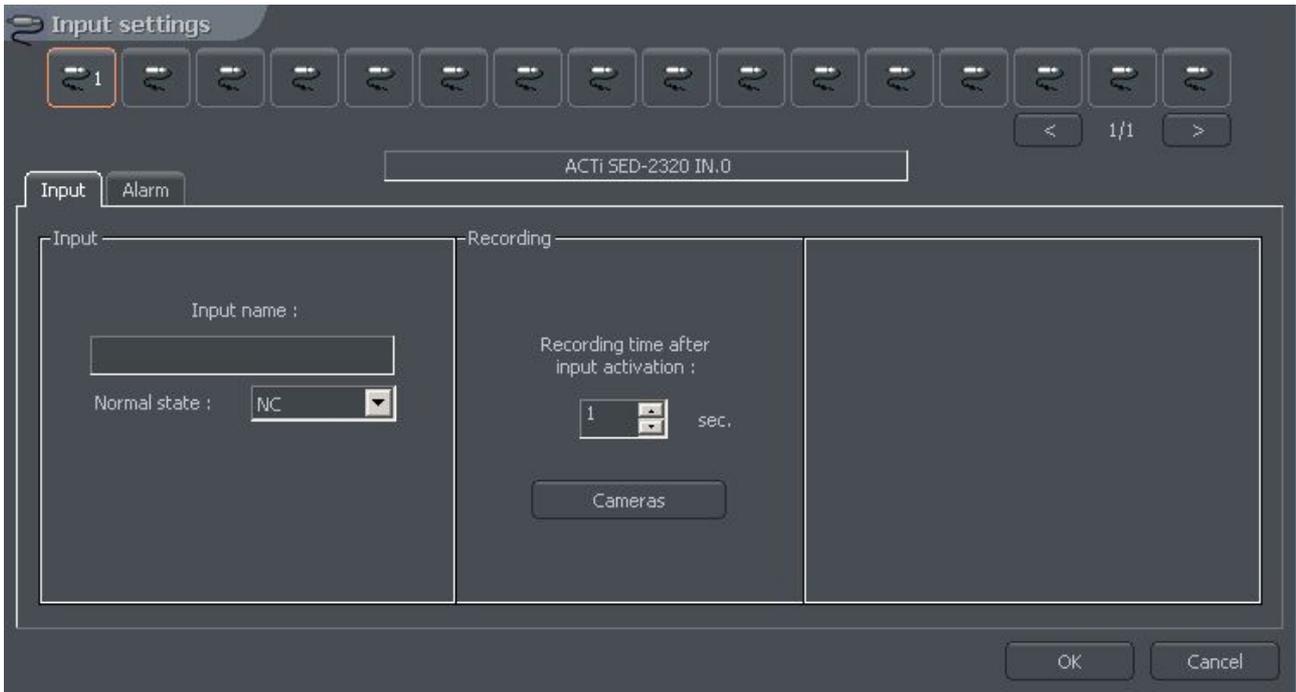


Figure 37: Alarm inputs – Input

Panel	Field	Description
Input	Input name	Input name
	Normal state	State, which doesn't enable the alarm NC – normally closed NO – normally open
Recording	Recording time after input activation	
	Cameras	Button allows to select cameras, which image will be recorded after input activation

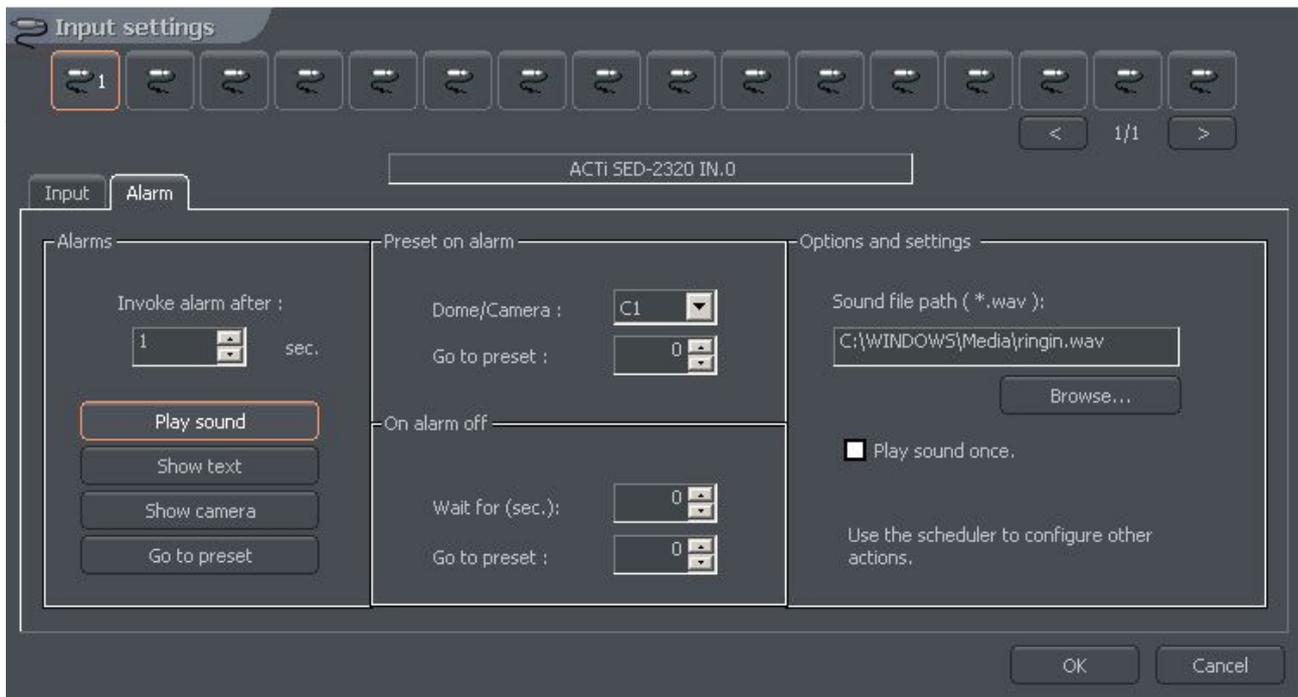


Figure 38: Alarm inputs - Alarms

<b>Panel</b>	<b>Field</b>	<b>Description</b>
Alarms	Play sound	Plays sound from the "settings" panel in current window
	Show text	Shows notifications which pop up over the VDRS icon in tray
	Show window	When program is minimized it will maximize after the alarm
	Go to preset	Sets the dome on the preset chosen in panel beside
	Invoke alarm after :	Time before input activation and raising the alarm
Preset on alarm	Dome	List of available cameras. It is necessary to choose the dome camera
	Go to preset	Dome position, to which camera should go after the alarm Defining presets was described in paragraph 3.3.9
	Wait for (sec)	Time, after which the dome moves to the preset defined below
	Go to preset	The position the dome goes after the finished alarm
Settings	Path to the sound file, which will be played during the alarm	
	Play sound once	

### 3.6 Output switches

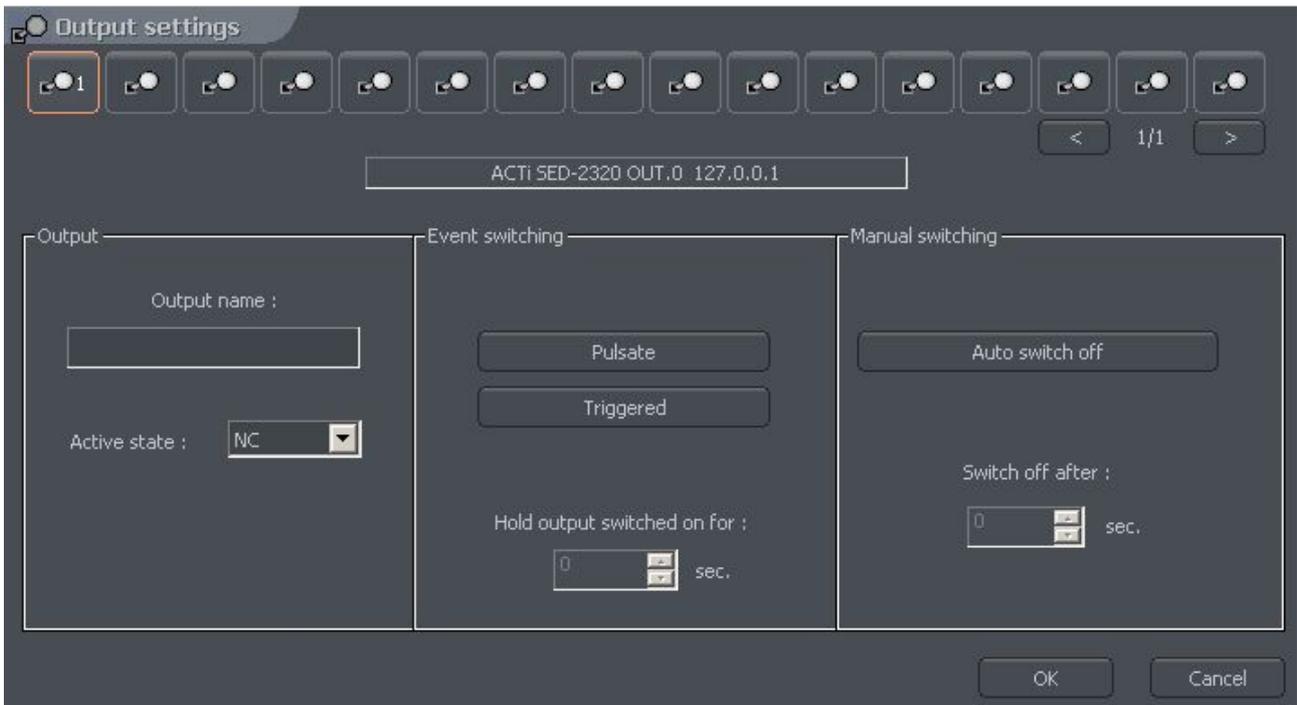


Figure 39: Output switches

Output switches allows to manipulate with devices, for example with light, gates, sirens etc. The cooperation between output switches and alarm inputs can be defined in the scheduler.

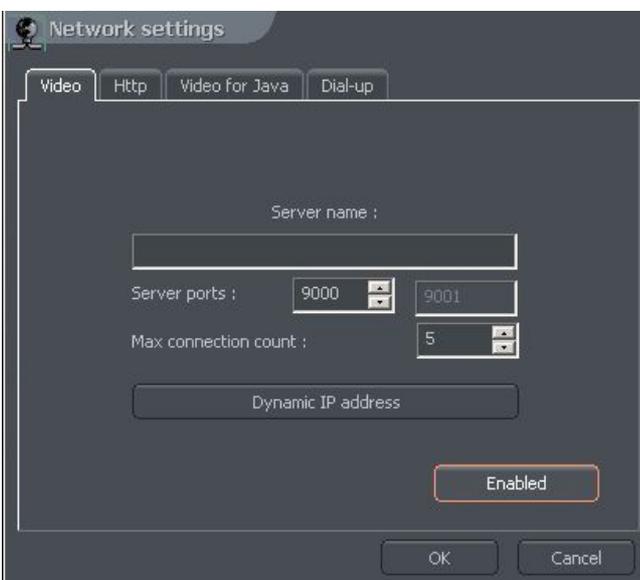
<b>Panel</b>	<b>Field</b>	<b>Description</b>
Output	Output name	Name of the output, for example "Gate"
	Active state	State, which doesn't enable the switch NC – normally closed NO – normally open
Event switching	Activation by the events defined in the scheduler	
	Pulsate	The switch will pulsate (will change it's state every 1 second)
	Triggered	Enables the possibility to define the time of switch activation
	Hold output switched on for :	Time of switch activation
Manual switching	Auto switch off	If user manually activates the switch the system can automatically disable the switch
	Switch off after :	Time to elapse before the auto switch off

### 3.7 Network services

Network services are designed to allow access to the server from outside, for example from the Internet. The access may be realized by four ways:

1. by VDRC client application
2. by using mobile devices (Pocket PC, cell phones)
3. by using Internet browser (java applets)
4. by dial-up connection

#### 3.7.1 Video server



The bookmark concerns server access settings for VDRC client application

Figure 40: Network settings - video server

<b>Field</b>	<b>Description</b>
Server name	Name of the video server
Server ports	VDRS uses two (following) ports. Here You can define port for connection between server and client. By default it's port 9000 (and the following – 9001)
Max. Connection count	Number represents the maximum amount of simultaneous connections. When the bandwidth is low it is possible to limit the number of connections
Dynamic IP address	This option allows to use ALNET DNS server. When using the connection with dynamic IP address it's very difficult and sometimes impossible to connect to the server because dynamic IP address can change even several times a day. The solution is to register a domain. By the first configuration of the Network Services, if the option is marked, the form will appear. To register domain it is necessary to fill this form. These subject will be described in the further part of

the manual.

---

Enabled/Disabled Enables/Disables the access to the server from outside network

---

### 3.7.2 Http

Server configuration for WWW services. It is possible to connect to the server by using Internet browser.

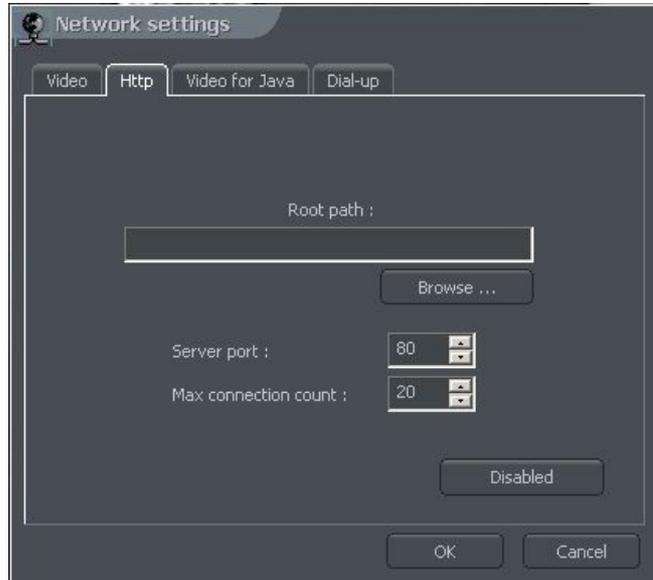


Figure 41: Network settings – www server

<i>Field</i>	<i>Description</i>
Root path	Path to the folder, where HTML files are located. If the field stays blank, the application will set root path as "http" subfolder in the VDRS installation folder. If other than default folder is defined as the "root path" it is necessary to copy all the files from "http" subfolder where VDRS application is installed to the place where "root path" leads
Server port	Port number for the connection by Internet browser
Max. Connection count	Maximum number of simultaneous connections
Enabled/Disabled	Enables/Disables the WWW server service

To test the http connection You can type local host number in Your Internet browser <http://127.0.0.1/>

By default java applet connects to the AL-NET demo server. Applet consists of the following windows:

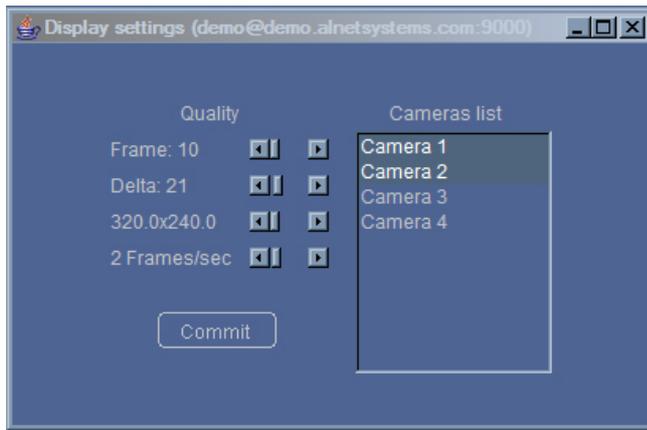


Figure 42: Java applet – camera settings

Window with image parameters. Changes refer to all of the cameras

- Frame – quality of the frame
- Delta – quality of the Delta frame
- Resolution
- Number of frames per second

The list of cameras is on the right side of the window. Clicking on the camera name will open/close the window with camera view.

Main applet window. It contains a list of active connections, alarm inputs and output switches control module.



Figure 43: Applet Java - main



Opens a window with connections list. Choosing the connection from the active connections list and clicking the icon will disconnect from this particular server.



Opens a window with image parameters

To add or modify network connection parameters it is necessary to edit and modify **index.htm** file, which is placed in the folder defined in http settings. In the file there are some connections created by default. One block refers to one connections. It consists of five parameters:

Connection name

```
<param name="Server1Name" value="localhost">
```

Server address

```
<param name="Server1Address" value="127.0.0.1">
```

Pot number

```
<param name="Server1Port" value="9000">
```

User name

```
<param name="Server1Login" value="admin">
```

User password

```
<param name="Server1Password" value="1">
```



**Attention: Single connection is defined in two places in the file! In <param> section and <embed> section. The reason is that different Internet browsers interpret it variously.**

It is possible to implement the applet on Your own website. The example of single frame, which can be displayed, is included in single.html file. The code responsible for displaying the window with camera is presented below.

```
<OBJECT
  classid="clsid:CAFEEFAC-0014-0000-0000-ABCDEFEDCBA"
  WIDTH = "322" HEIGHT = "264" NAME = "TestApplet" ALIGN = "middle" VSPACE = "0"
  HSPACE = "0"
  codebase="http://java.sun.com/products/plugin/autodl/jinstall-1_4_0-
    win.cab#Version=1,4,0,0">
  <PARAM NAME = CODE VALUE = "pl.npc.kamery.Main.class" >
  <PARAM NAME = CODEBASE VALUE = "." >
  <PARAM NAME = ARCHIVE VALUE = "kamerys.jar" >
  <PARAM NAME = NAME VALUE = "TestApplet" >

  <PARAM NAME="type" VALUE="application/x-java-applet;jpi-version=1.4">
  <PARAM NAME="scriptable" VALUE="false">
  <PARAM NAME = "progressbar" VALUE = "true">
  <!--Here we put text, which will be displayed during loading -->
  <PARAM NAME = "boxmessage" VALUE = "Loading applett, please wait">
  <!--Name of the first server on the list -->
  <param name="Server0Name" value="AL-NET demo server">
  <!--Address of the first server on the list -->
  <param name="Server0Address" value="demo.alnetsystems.com">
  <!--Port number of the first server on the list -->
  <param name="Server0Port" value="9000">
  <!--Login for the first server on the list -->
  <param name="Server0Login" value="demo">
  <!--Password for the first server on the list -->
  <param name="Server0Password" value="demo">

  <!--Similarly for the next servers -->
  <param name="Server1Name" value="tescik">
  <param name="Server1Address" value="address">
  <param name="Server1Port" value="1111">
  <param name="Server1Login" value="login">
```

```

    <param name="Server1Password" value="password">
    <param name="DefaultCamera" value="0">
    <!--Language of the messages -->
    <param name="Language" value="ENGLISH">
    <!--Autoconnect after start -->
    <param name="AutoConnect" value="yes">

    <!--It is necessary to repeat all of the parameters for Netscape -->
    <COMMENT>
        <EMBED
            type="application/x-java-applet"
            CODE = "pl.npc.kamery.Main.class"
            CODEBASE = "."
            ARCHIVE = "kamerys.jar"
            NAME = "TestApplet"
            WIDTH = "322"
            HEIGHT = "264"
            ALIGN = "middle"
            VSPACE = "0"
            HSPACE = "0"
            progressbar = "true"
            boxmessage = "Loading applett, please wait"
            scriptable=false
            pluginspage="http://java.sun.com/products/plugin/index.html#download"

            Server0Name="AL-NET demo server"
            Server0Address="127.0.0.1"
            Server0Port="9000"
            Server0Login="login"
            Server0Password="hasło"

            DefaultCamera="0"

            Language="ENGLISH"
            AutoConnect="yes">
        </EMBED>
    </COMMENT>
</OBJECT>

```

### 3.7.3 Video for Java

This panel controls all the image transfer parameters for the cell-phone client applications made for JAVA environment.

<i>Field</i>	<i>Description</i>
Server port	Port number for the connection
Max. Connection count	Max number of simultaneous connections
Picture quality	Quality of transmitted image
Enabled/Disabled	Enables/Disables the video server for JAVA

### 3.7.4 Dial up

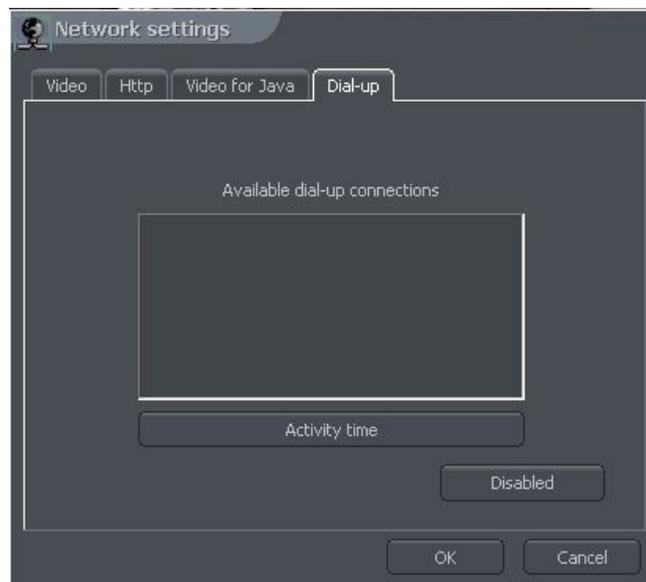


Figure 44: Network settings – dial-up server

Dial up connection can be used when there is no Internet connection or the Internet connection failure occurs. VDRS allows both making and receiving calls. The bookmark shows available modem connections. If there is no connection on the list, it has to be configured in Windows OS. **Activity time** option allows to define the time range for the modem connections.

### 3.8 Archive storage

Very important matter is to define a storage space for archives in the system. Many different parameters (such as codec type, image resolution, Delta and Key frames quality, motion frequency) have influence on the archives size. User can access the configuration of archive storage from menu:

#### Configuration -> Archive Storage

There will be information displayed, regarding application shutdown. In case of serious changes, when recording is turned on, it is necessary to close the application. Archive configuration was described in chapter 3.1.15

### 3.9 User accounts

VDRS user account management module. Allows to create a complex hierarchy of rights (for example different rights for security manager and different for security workers), time restrictions for individual accounts. Also allows to assign selected cameras, inputs, outputs and sound channels to particular users.

On the first launch of the system the only account available is the administrator account. New user can be added by clicking **Add user** button.

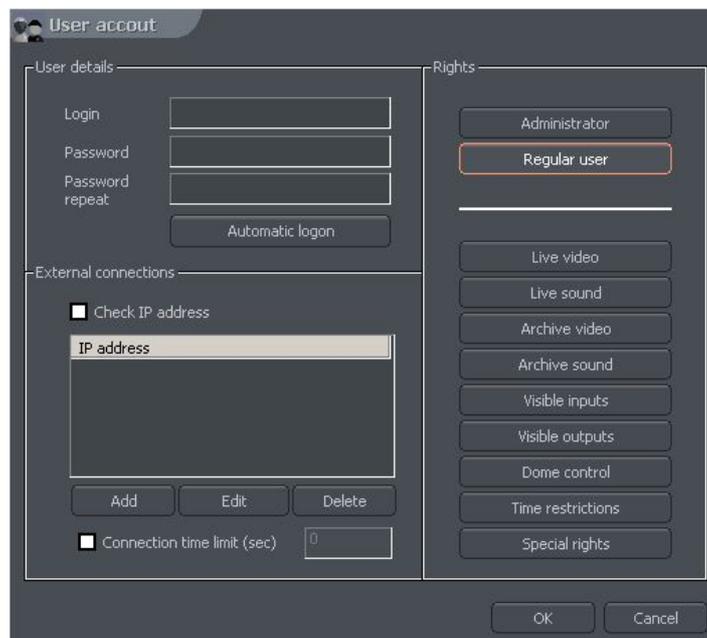


Figure 45: User account configuration

<i>Panel</i>	<i>Field</i>	<i>Description</i>
User details	Login	User name
	Password	User password
	Password repeat	Password repeat in order to check if it is correct
	Automatic logon	Marking this option will autologon this user on system start
External connections	Check IP address	This option allows to check user IP. It is helpful when access to the server has to be blocked from certain hosts
	IP address	IP address, from which particular user can access the server
User rights	Administrator	Marking this option will grant user all highest rights. He will be available to access all functions of the system
	Regular user	Marking this option will assign the lowest rights to the user (only possibility to logon). All the rights have to be assigned manually from the beginning
	Live video	Allows user to watch live camera image
	Live sound	Allows user to hear live sound from available channels
	Archive video	Allows user to watch archive camera image
	Archive sound	Allows user to hear archive sound from available channels
	Visible inputs	Alarm inputs available to the user
	Visible outputs	Relay outputs available to the user
	Dome control	Speed Domes available to the user
	Time restrictions	Determines the time, when user is allowed to connect.
	Special rights	Additional rights

In case of editing of existing user (button **Edit**) image of window varies from presented above although given options remain in the same shape. One difference is appearance of the new option **Checking presence**.

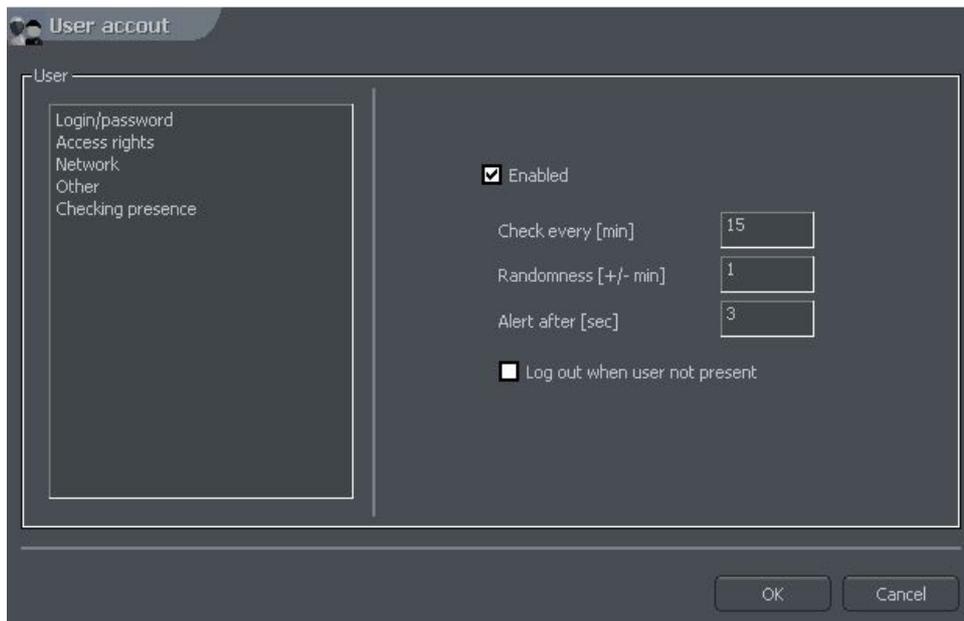
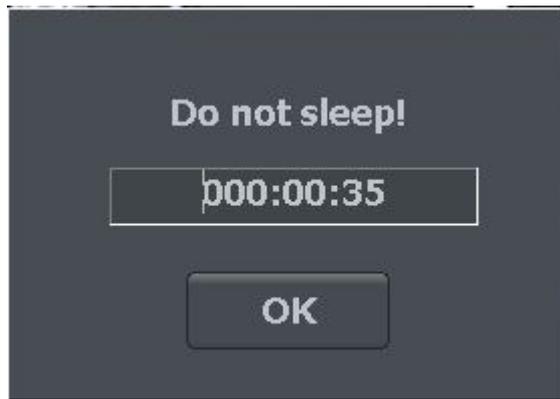


Figure 46: User account – **Checking presence** function

Setting on this option is aimed at checking user's activity periodically.

<b>Check every [min]</b>	This parameter determines the time periods between following presence checking
<b>Randomness [+/-min]</b>	Random time shift for presence checking
<b>Alert after [sec]</b>	Time period after which ' <b>User is sleeping</b> ' message will be saved in the system logs and system alert will be activated

User should in this case in defined period of time (he is informed by white task bar) press the accurate button to confirm his presence. Sequence of buttons is random which makes impossible to use macro which automatically confirms presence. In case of lack of user's reaction alarm "**User is sleeping**" is being activated. This event is being written to the application log. Window with timer which measures user's reaction time appears.



*Figure 47: User account –Checking presence function*

### 3.10 Dome control

VDRS System allows to control analog dome cameras (with ConExt extension boards) and digital cameras (control by TCP/IP protocol). The unique function is possibility to add new protocols and edit protocols already implemented. The devices used to control domes are for example: keyboard, mouse, dome control panel from the application level, joystick, industrial panels connected by USB or MIDI/Gameport (which was used in older sound cards).

#### 3.10.1 Setting the parameters and protocols of the domes

##### 3.10.1.1 Settings

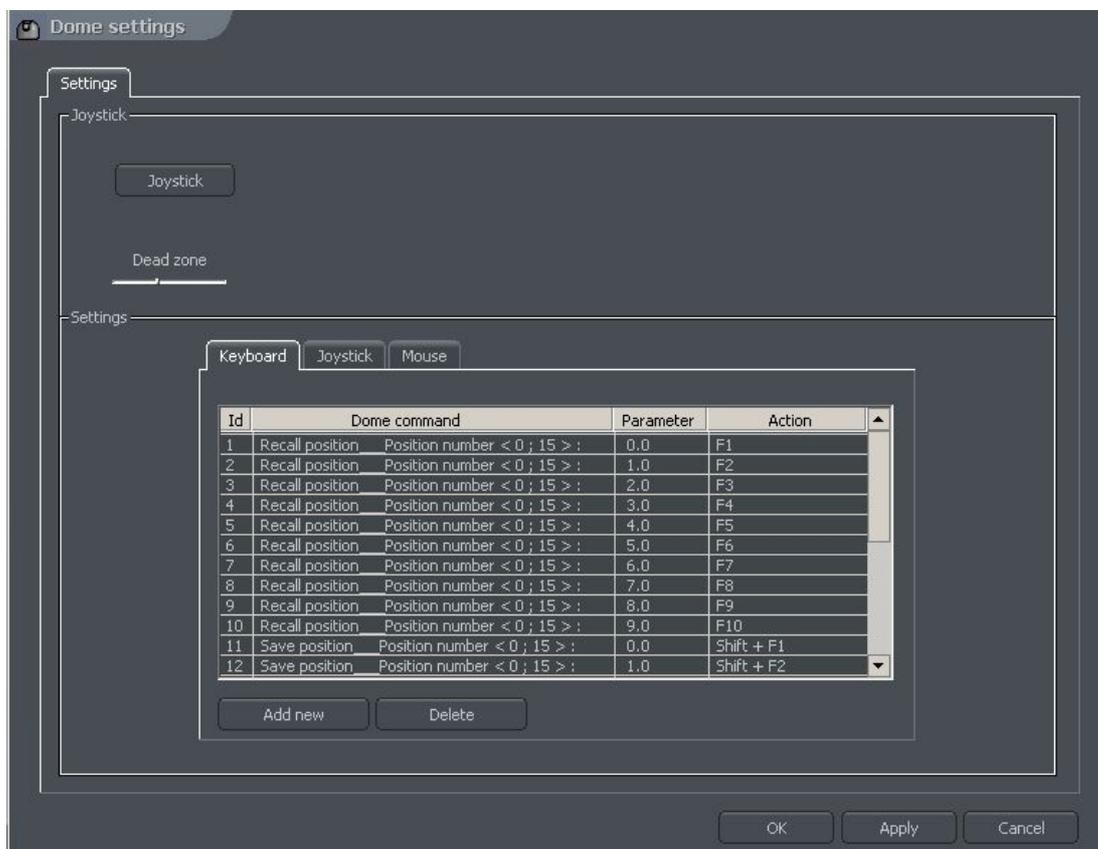


Figure 48: Dome settings

<i>Panel</i>	<i>Field</i>	<i>Description</i>
Control	Enable	Enables the dome control function in VDRS
Joystick	Joystick	Activates joystick. If any error occurs the message will appear
	Dead zone	Joystick "motion range" on which system will not react
Protocol	This panel assigns dome control protocol to selected COM port. In order to add a protocol select COM port, click " <b>Set protocol</b> " button and choose the protocol from the list	
Settings	Settings which concern control commands. This panel is divided into three sections: Keyboard, Joystick and Mouse. It is possible to add new command and edit existing ones. To edit command double-click on command name. To add command select " <b>Add new</b> " button	
	Dome command	Command name (describes it's action)
	Parameter	Parameter value, which is transmitted to the dome during the command execution
	Action	Keyboard shortcut to selected command (for mouse and joystick these options are permanently assigned to their functions)

### **3.10.1.2 Protocols**

Subaplicaton Protocol, activated by VDRS\_DOMEPROTOCOL.EXE file from application install folder, is responsible for configuration of protocols implemented into the system. The protocol can be tested and addresses of commands can be changed. Protocols located in the VDRS system are recommended by manufacturers. If there is no need to change their parameters. Before adding protocol to application the technical specification should be obtained (for e.g. from dome manufacturer) to fill in required gaps.

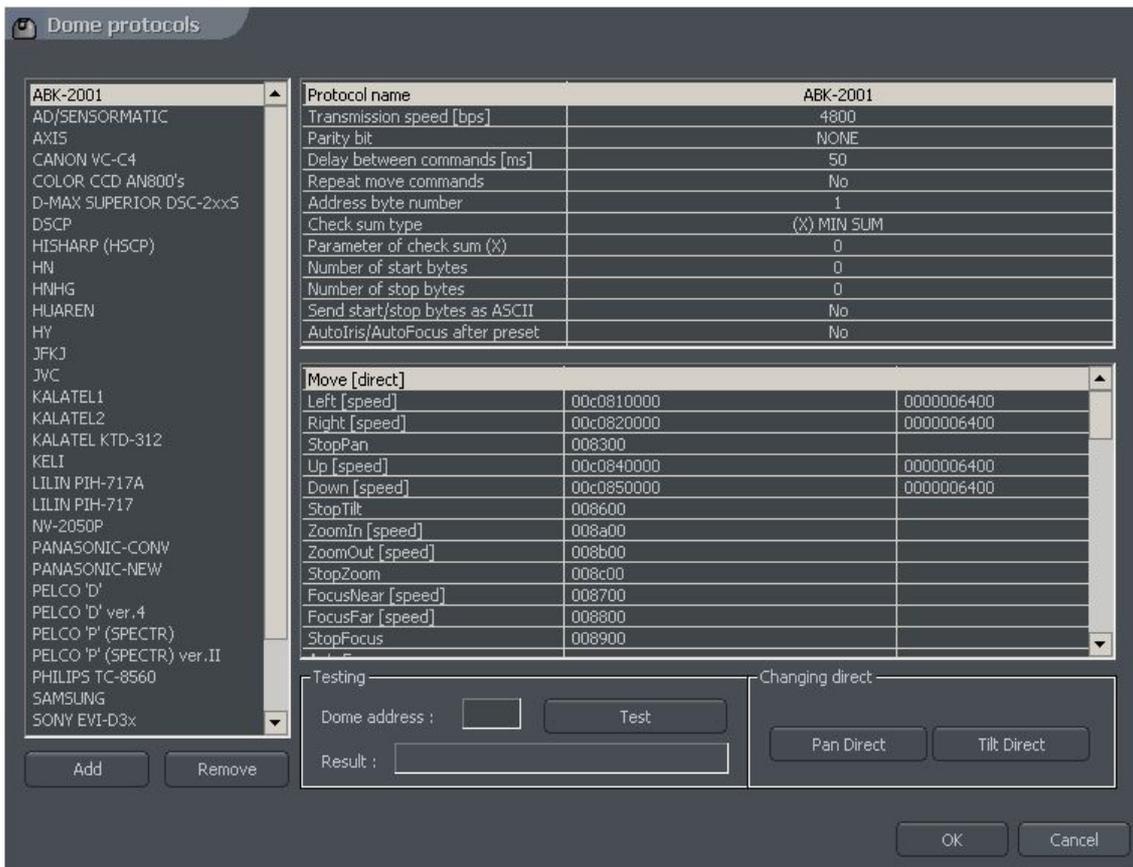


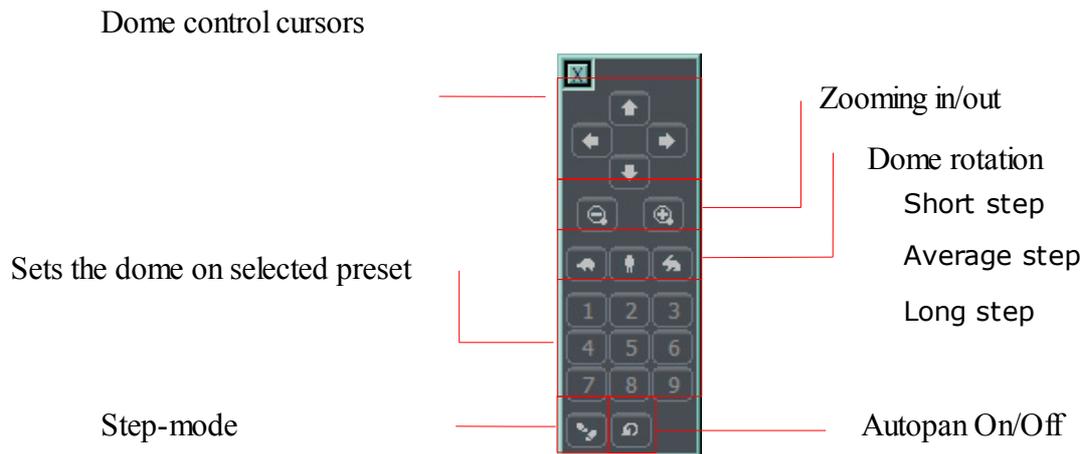
Figure 49: Domes – dome protocols

Panel	Field	Description
Protocol Parameters	Protocol name	Protocol name
	Transmission speed	
	Parity bit	
	Delay between commands	
	Repeat move commands	
	Address byte number	
	Check sum type	
	Parameter of checksum	
	Number of start bytes	
	Number of stop bytes	
	Send start/stop bytes as	

	ASCII		
	Autoiris/Autofocus after preset		
Testing	This panel allows to test the protocol. To test protocols it is necessary to temporarily disable protocols assigned to COM ports (Settings bookmark) and fill fields described below.		
	Address	Hardware address set in a dome	
	Port	COM port number which is responsible for dome control	
	Send	Attempts to send a command to the dome	
	Result	Empty field	Check if dome control is enabled in the system
		No access to the resource	Check if any protocol is assigned to COM port
		No resource	Wrong port number was set
If a dome not responds (even when sequence of bytes was displayed) it is necessary to check: - if the right address was selected - if the dome control cables are polarized properly			
Changing direct	Pan direct	Changes the direction of dome movement (steering left - the dome goes right and vice versa)	
	Tilt direct	Changes the directions of dome movement (steering up – the dome goes down and vice versa)	

### 3.10.2 Dome control panel

Panel allows to steer the domes. It is a substitute for control devices such as joystick or industrial keyboard.



### 3.11 E-map editor

E-map is a tool which allows to design a graphic plan of cameras, switches and alarm inputs placement. Additionally it is possible to activate switches, monitor the activity of alarm inputs, cameras and sound channels. Graphic files (.jpg .gif .png) can be used as E-map background. E-map editor can be accessed from menu panel:

#### **Configuration -> E-map editor**

E-map can have a tree structure. An example is presented on the next page:

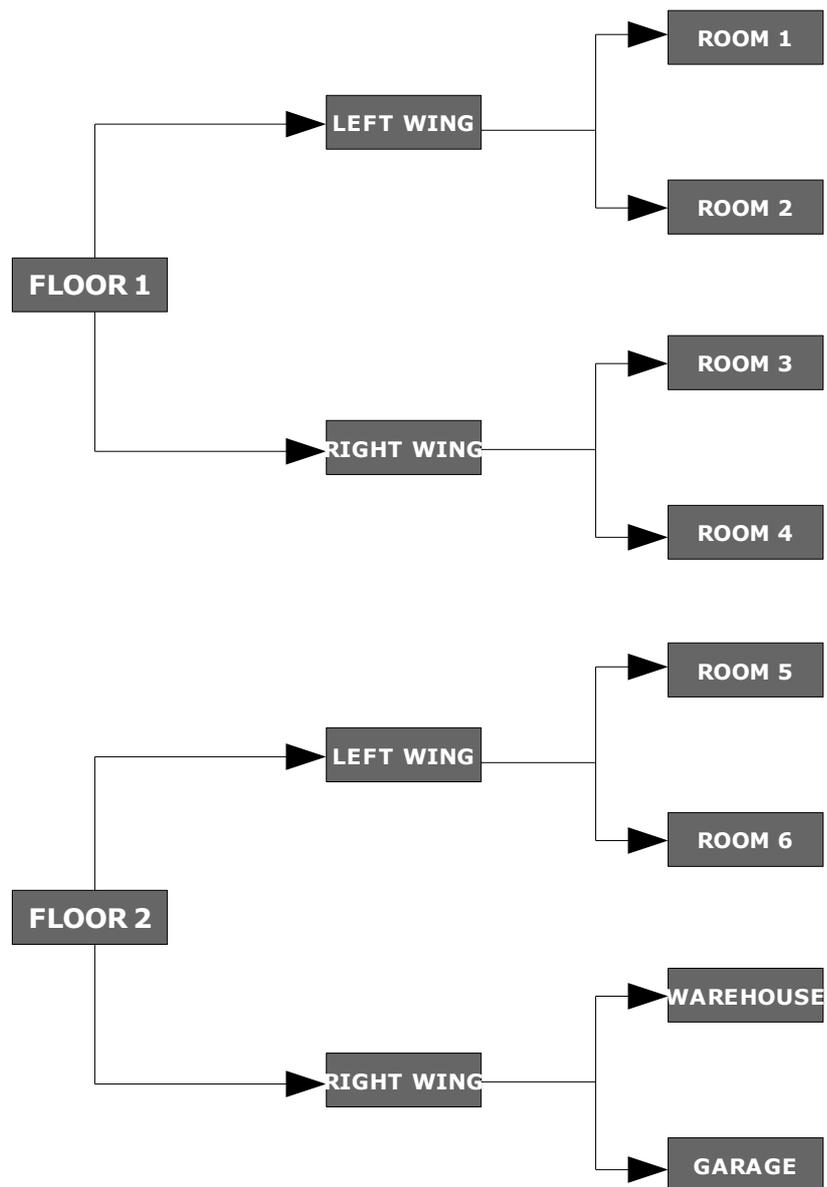
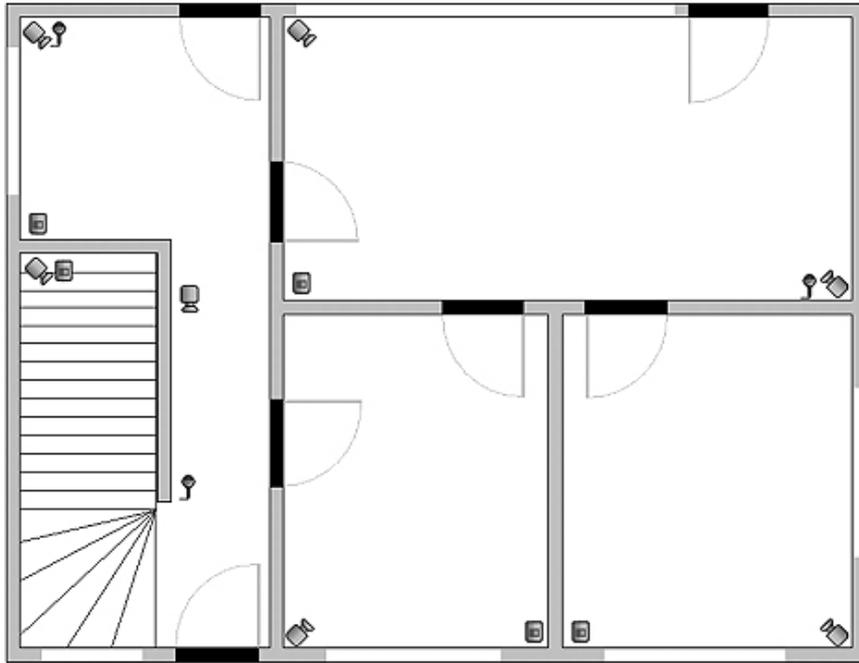


Figure 50: Example of E-map structure

Figure on the next page shows an example of e-map editor with already placed indicators.

In the main part there is a rooms schema with visible cameras, digital inputs and outputs and sound channels. By clicking on the map area with right mouse button we can change the name and background of current level and add new level (**properties** menu). When adding new level it is necessary to check which object is selected on the list. As an example – if we

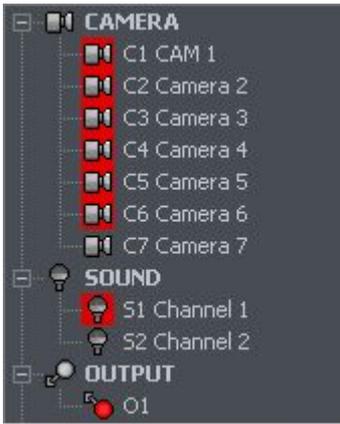


try to add floor, it is necessary to select **Building** object, if we try to add rooms on the 1<sup>st</sup> floor, object **1<sup>st</sup> floor** should be selected.

In the top left corner the panel with a tree of objects is placed. In the example above, **Building** object is divided into 2 floors. Different elements are

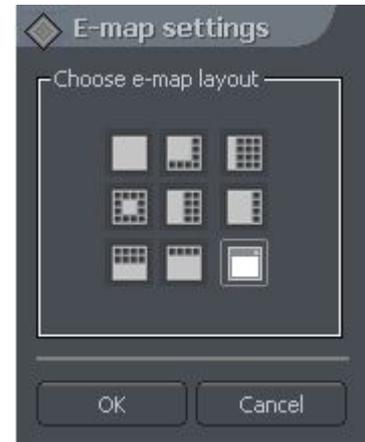
assigned to the floors. Selecting one of the objects will result in displaying its schema. By clicking with right mouse button a context menu will appear:

<i>Option</i>	<i>Description</i>
Raise item	Moves selected item one position up. When the whole "branch" is selected it will be moved with all its elements
Lower item	Th same as the action described above but one position down
Delete item	Deletes selected element
Properties	Properties of selected item. When the "branch" is selected it will be possible to change its name and graphic plan. When the camera, input etc. is selected it is possible to change the type of displayed icon



Below the panel with "tree" schema the list of available devices (cameras, microphones etc.) is placed. These devices can be easily placed on the e-map plan by drag&drop method. Red background means that the indicator is already placed on the map.

In the top right corner of the window **E-map layout** button is placed. It displays all available e-map layouts along with cameras. One of nine possible layouts can be chosen. The light area indicates that the e-map will be displayed in this particular place. The last icon allows to display e-map on the separate monitor<sup>7</sup>.



When the e-map project is ready it can be saved and then loaded after the reinstallation. To do this use two buttons placed in the lower right corner: **Import e-maps** and **Export e-maps**.

<sup>7</sup> If multidisplay graphic card is in use

## 3.12 Program settings

### 3.12.1 Mail

Parameters of e-mail server, which will be used for sending messages from the VDRS server to the users.

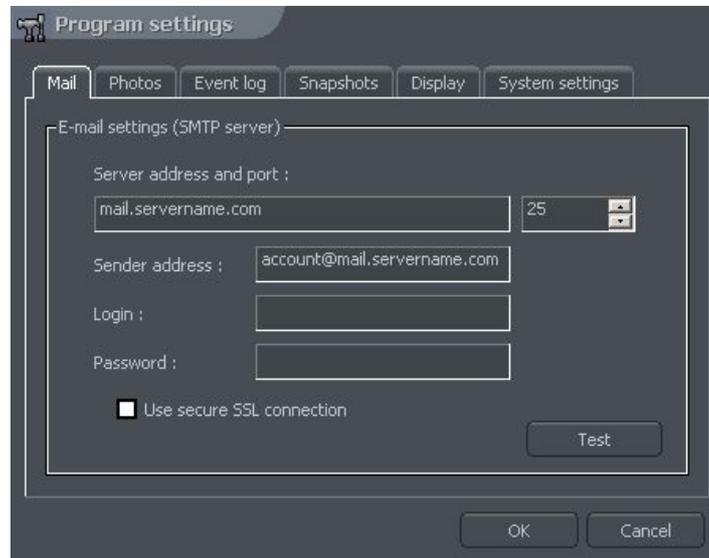


Figure 51: Program settings -Mail

<b>Field</b>	<b>Description</b>
Server address	Mail server IP address or domain name
Server port	Mail server SMTP port
Sender address	Address visible in <i>Sender</i> field
User	User name
Password	Password necessary for authentication
Test	Click this button to send test message to the address given in Sender field

### 3.12.2 Photos

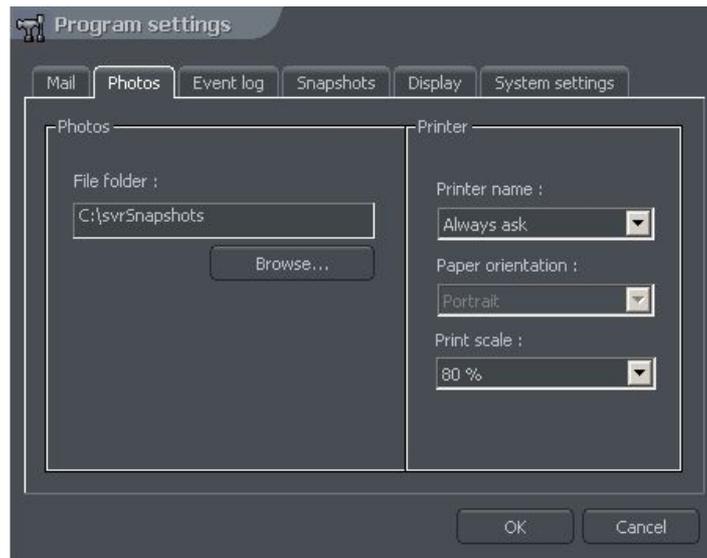


Figure 52: Program settings -photos

<i>Panel</i>	<i>Field</i>	<i>Description</i>
Photos	File Folder	Place on the disk where photos will be saved
Printer	Printer name	The choice of default printer. If <b>Always ask</b> is selected every time before printing the system will ask to choose the printer
	Paper orientation	Paper orientation in the printer
	Print scale	Percent scale for image printing

### 3.12.3 Event log

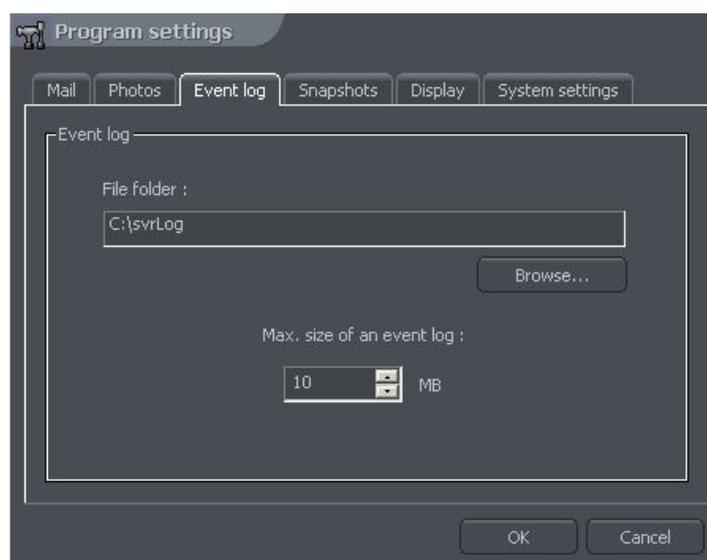


Figure 53: Program settings – event log

<b><i>Field</i></b>	<b><i>Description</i></b>
File Folder	Place on the disk where logs will be stored
Max. size of an event log	The size of a single file with a log

### **3.12.4 Snapshots**

Here You can enable the Auto image screenshots.

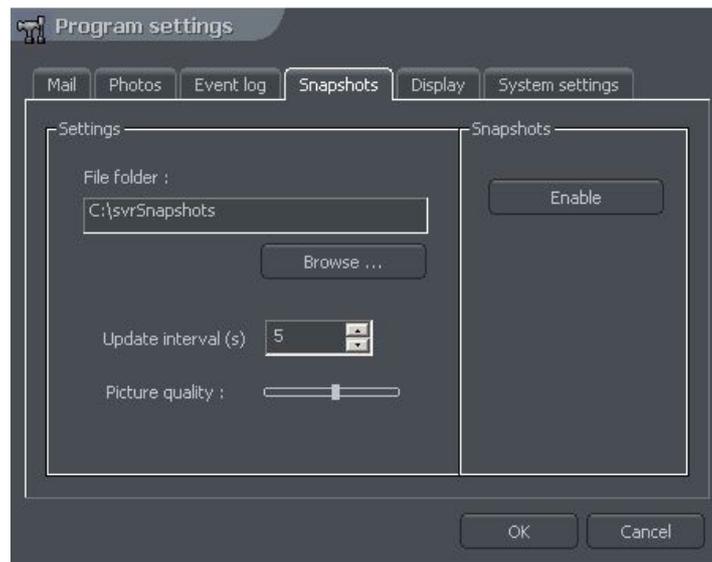


Figure 54: Program settings - Snapshots

<b><i>Field</i></b>	<b><i>Description</i></b>
File folder	Place on the disk where auto screenshots will be stored
Update interval (s)	Time gap between two following snapshots
Picture quality	Picture quality. Moving the slider to the right will raise the quality of the image
Enable	Activates Auto snapshots service

### 3.12.5 Display

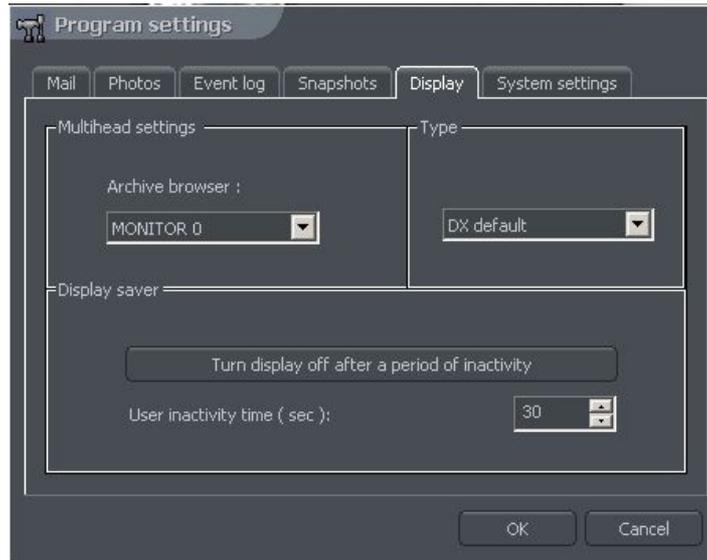


Figure 55: Program settings - Display

<b>Panel</b>	<b>Field</b>	<b>Description</b>
Multihead settings	Archive browser	Selection of system monitor on which archive browser module will be displayed
Type	Method of image display. It differs depending on which graphic card is used and which display modes are supported.	
	DX default	System will automatically try to choose between one of the options presented below.
	DX Overlay	
	DX YUV12	
	DX YUY2	
	DX RGB565	
	GDI	
Display server	Turn display off ...	Saves the CPU resources by disabling display (after a period of inactivity)
	User inactivity time (sec)	Time of inactivity, after which camera image display will be disabled

To restore image display it is necessary to double click anywhere on the image display area.

### 3.12.6 System settings

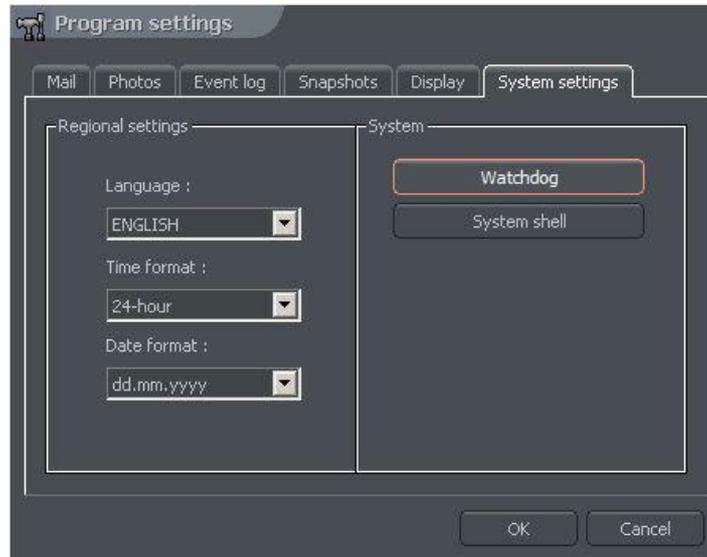


Figure 56: Program settings – System settings

<b>Panel</b>	<b>Field</b>	<b>Description</b>
System	Language	Application language
	Time format	Displayed time format: 12 or 24 h
	Date format	Displayed date format: dd – day mm – month yyyy – year
	Watchdog (this function is available only with video capture board based systems which watchdog jumper)	Hardware monitor that watches over the computer system. If the computer system doesn't react it resets and restarts it. To activate this function it is necessary to connect video capture card with <i>reset</i> pins on the motherboard with the black "watchdog" cable.
	System shell	Enables VDRS to work as a system shell. It means that it replaces standard Windows interface and disables all the other applications (for example Games, Accessories, Internet Explorer). The Device Manager is also disabled (so the VDRS cannot be shut down and other applications cannot be started). Shutting down VDRS in System shell mode will cause shutting down Windows. VDRS minimize option is also disabled.

### **3.13 External Tools**

Access to basic tools of OS system:

- Time and day settings
- Mouse properties
- Modem options
- Network settings

### **3.14 Save configuration**

Saves all the changes made in the system. Every change in system configuration has to be saved!

### **3.15 USB dongle update**

In order to upgrade the system, for example from NET8 to NET16, it is possible to update the security dongle license. From **About** menu choose **Dongle update** option. System automatically will try to connect via Internet to update the dongle. If there is no Internet connection it is necessary to choose **Normal** bookmark and question number will be shown. User can call to AL-NET call center and type this sequence of signs after choosing , the dongle update menu. Our system will generate the answer code, which should be entered into VDRS dongle update form. If neither of these options is available, it is possible to send question number to AL-NET technical support. The answer code will be generated and sent back. However this operation can take up to few days.

## 4. System Tools

VDRS system tools will be described in this paragraph. Archives are one of them. The multitude of included functions allows to quickly find particular events, prepare backup copies and export recording to popular .avi format.

The efficiency of archives depends mainly on hardware specification of the computer (Processor, HDD interface, RAM memory).

### 4.1 Browse archives

Archives can be accessed by Ctrl+A keyboard shortcut, from the menu bar (Tools) at the top or by clicking icon  .



Green bar represents the recording from the camera. Red bar represents the time when the signal from cameras is lost. Vertical yellow line points the time the VDRS system was started or shut down. If the mouse indicator is moved over the camera recording bar the camera name, date and time of the recording will be displayed. If the mouse indicator is kept for a while longer an additional window with camera image will appear. In this mode it is possible to move the mouse along the recording bar and watch video recordings. By clicking with right mouse button it is possible to add or remove a bookmark sign. You can mark special events by bookmark like unusual situations or alarms.

On the left side of the screen the function panels are placed. The first is the panel which controls the replay.



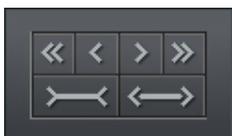
<i>Icon</i>	<i>Description</i>
	Play backwards
	Pause
	Play forwards
	Play speed x2
	Play with maximum possible speed
	One frame step forward
	Shows the bar with audio recordings
	One frame step backward

Below is the panel with archive tools:



<i>Icon</i>	<i>Description</i>
	Allows to mark an area on the camera image
	Enlarges, by marking the area, displayed camera image
	Seeks for motion in the selected area
	Launches the screenshot browser
	Go to previous bookmark
	Go to next bookmark
	Make snapshot of the selected camera image
	Export to .avi file
	Image parameters from the selected camera

The following panel controls the range of displayed time.



<i>Icon</i>	<i>Description</i>
	Goes 1/2 of the selected time period back
	Goes 1/8 of the selected time period back
	Goes 1/8 of the selected time period forward
	Goes 1/2 of the selected time period forward
	Tightens the selected time period
	Widens the selected time period

For example if 1 day archives are displayed, the time period will move adequately for 12 hours and 3 hours.

Function buttons are described below:

- Show a whole day – shows a whole day recordings
- Calendar – launches calendar
- Backup – launches the backup copy tool

#### ***4.1.1 Searching for motion in the archive recordings***

VDRS system allows to search for motion in the recorded video. It is possible to select particular area on the camera image. To search for motion click  icon and select the area or whole image. To start the search procedure click  icon.

System will start to play the video. If the motion is detected it will stop playing the video, which will indicate motion. Additionally the system will play sound. User can also control the motion sensitivity during the search by clicking  and moving the first bar (**motion search level**) in the panel. To search further click  again.

#### ***4.1.2 Export to .avi***

This function allows to export the selected recording from a single camera to .avi file. During this process system uses codecs installed in the operating system. Uncompressed image can be also exported.

Select the camera, from which You want to export image, and choose the time range on the time axis. Then click  .

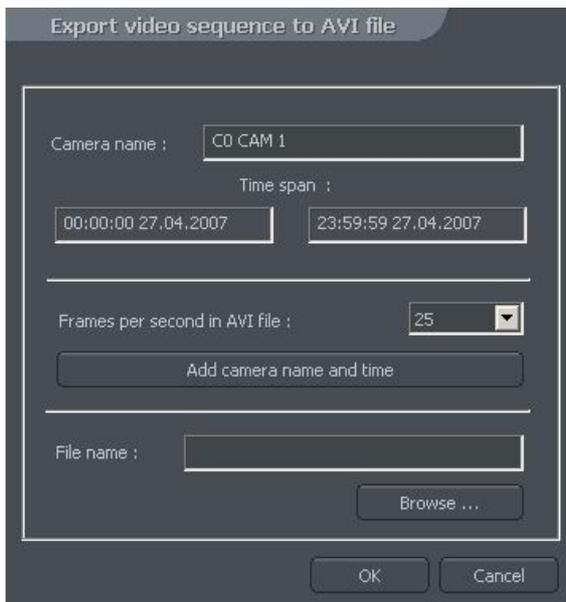


Figure 57: Archive – export to .avi

In this window user can set number of frames per second or if camera name and time will be put in the .avi video. The next step is to name the file. After these actions click **OK**. The following step is to choose codec for image compression. You can choose one of the codecs installed in Windows OS. You can resign from image compression by selecting **Full frames (uncompressed)**. The export process can take some time. It depends on video length, compression level and CPU computational

power.

### 4.1.3 Backup copy

This tool allows to backup video recordings from any cameras without changing the file format. Copy which was made in this way can only be seen by using VDRC client application with full archive functionality.

Backup tool can be opened in the archives, by selecting the "backup" button. Next it's necessary to type login and password of user with rights to perform the "backup", and chose one of the options:

**Backup media files** – performs archive backup copy

**Delete media files** – deleting archive files

**Change backup settings** – change of settings of backup function

In order to make the archive backup copy, first path to the designated folder must be entered, to which the archive files will be copied, then select the cameras and sound source, from which the recording will be archived.

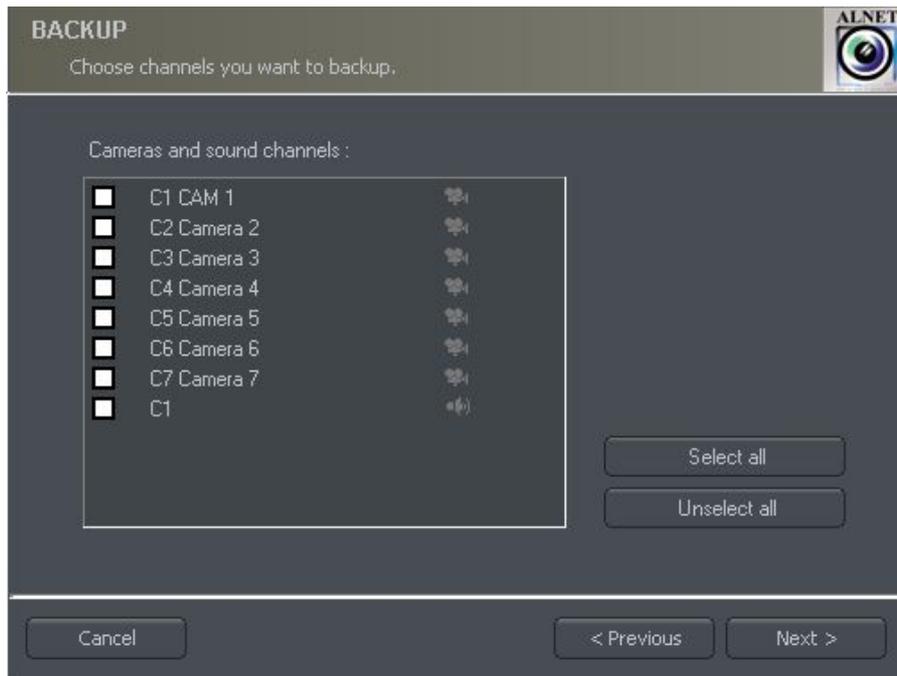


Figure 58: Archive – Backup – Camera selection

Next stage is selecting the time range of the recordings. After that, the program will show required and free space in the specified location of the disk and will start the backup process.

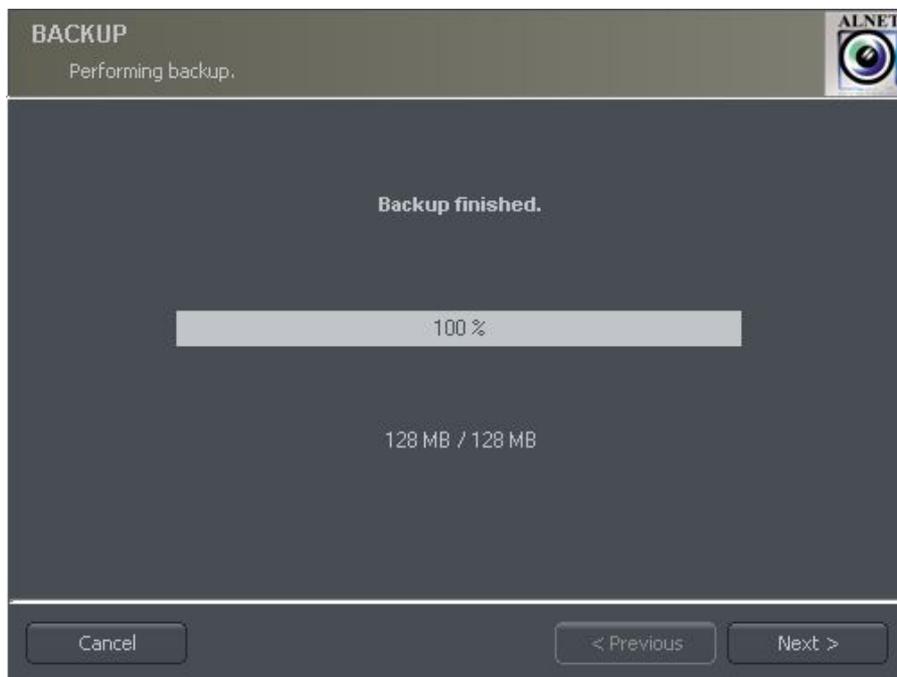


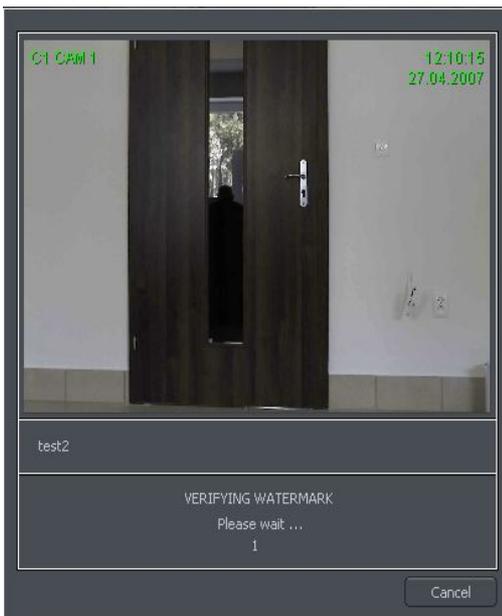
Figure 59: Archive - Backup

After creating the backup copy, backup application will show the summary of made operations, and end action.

Creating backup copy can be very long-lasting and CPU power demanding process. It is recommended to create backup copy when the system is not heavy loaded, for example in evening hours where there is less motion.

#### **4.1.4 Watermark check**

This function allows to check the authenticity of the recordings. It is available for the cameras which have **Watermark** option checked in the camera configuration menu (compression bookmark). Additional condition is that the watermark is exported to file.



Watermark is checked for particular time period of the recordings. It is necessary to choose the time period on the time axis. Then click with right mouse button on the camera image will show option **Check watermark**. After choosing it system will begin to track the changes frame by frame. When violation of authentication of the recordings is detected the error will be submitted. In other case the system will successfully finish the watermark check.

## 4.2 Photo browser

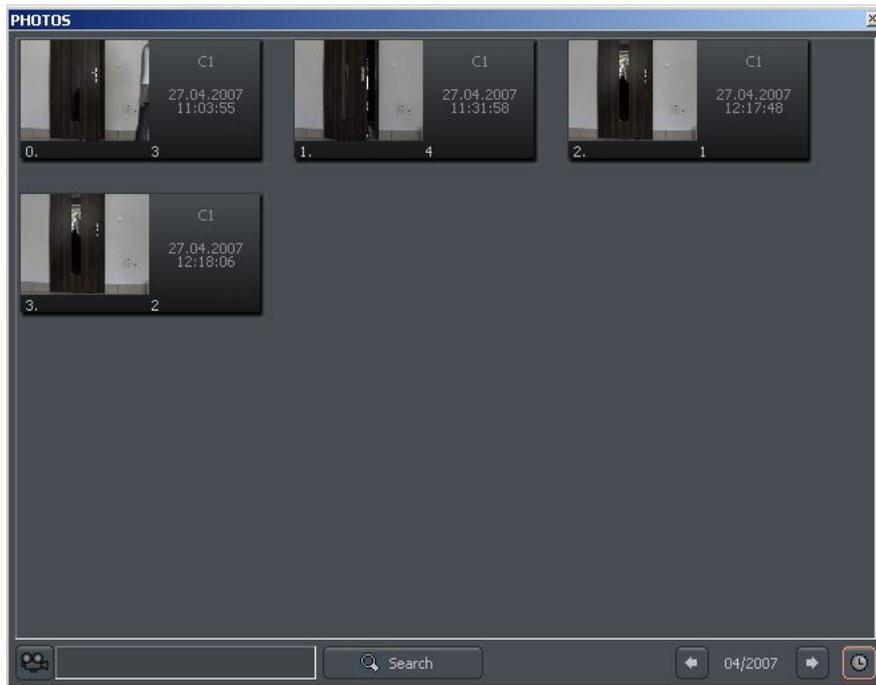
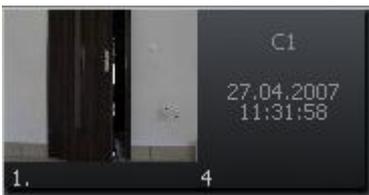


Figure 60: Photo browser

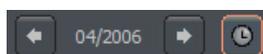
Photo browser displays all the photos taken during the work with the system. It is possible to sort photos by particular cameras and months and search for photos.



Single photo is described by camera number, date and hour and also name under which it was saved. Double click on the area enlarges the picture.

In order to display photos only from particular cameras choose the camera icon and then cameras from the palette.

Choosing  icon will show the photos from particular month. Beside the icon there is symbol, which describes currently browsed month. User can jump to another months using arrows.

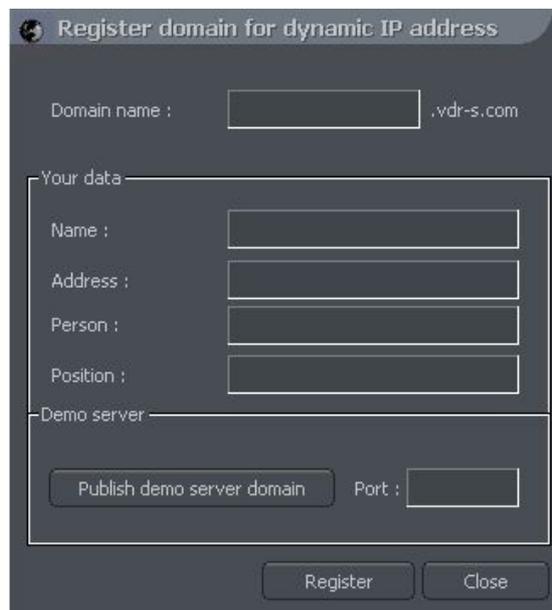


After filling the text field and clicking **Search** system will display pictures which name includes the submitted sequence of signs. Additionally it is possible to delete photos from the browser level. To this select picture and press Delete key on keyboard.

### **4.3 Registering domain**

AL-NET Company offers DDNS (Dynamic Domain Name Server) for VDRS system. It is possible to register domain in our database for Video server. It is very useful in systems which have dynamic IP address. To register domain it is necessary to fill all the fields in the form, which is accessible from the menu:

**Tools -> Register Domain**



*Figure 61: Domain register*

<b><i>Field</i></b>	<b><i>Description</i></b>
Domain name	Domain name, for instance <i>server</i> will be shown as <i>server.vdr-s.com</i>
Name	Name of Your company
Address	Address of Your company
Name and surname	Name and surname of the person, who registers the domain
Position	Position in the company
Demo server	Marking this option You inform us that the server will have also demo function. To make demo server create user <i>demo</i> and pass <i>demo</i> and assigned proper cameras.
Port	Port for VDRS data transfer



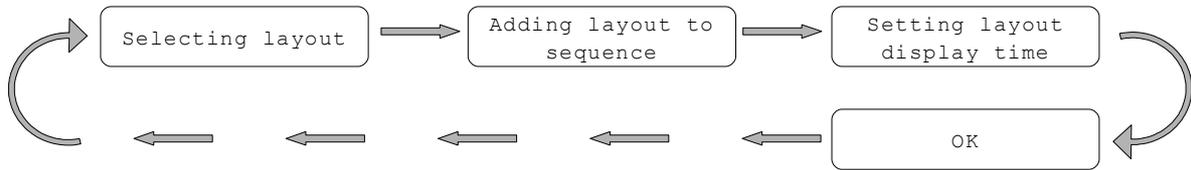
ATTENTION: In order to register the domain it is necessary to enter proper product license number! In other case system will deny to register domain. User can enter license number in About menu.

Right from the moment of registration it is possible to connect to server (it is necessary to remember the domain name and port).

## 4.4 Dynamic layout

The function allows to set the sequence of camera picture layouts. For example in the 16 camera system it is possible to create a program, which will display each camera on fullscreen for 5 seconds, and then at the the end of the sequence all cameras all together.

Setting of dynamic camera layout mode is made in the following steps:



Selecting layout

Choosing of one of the available layouts (paragraph [3.2](#))

Adding layout to sequence

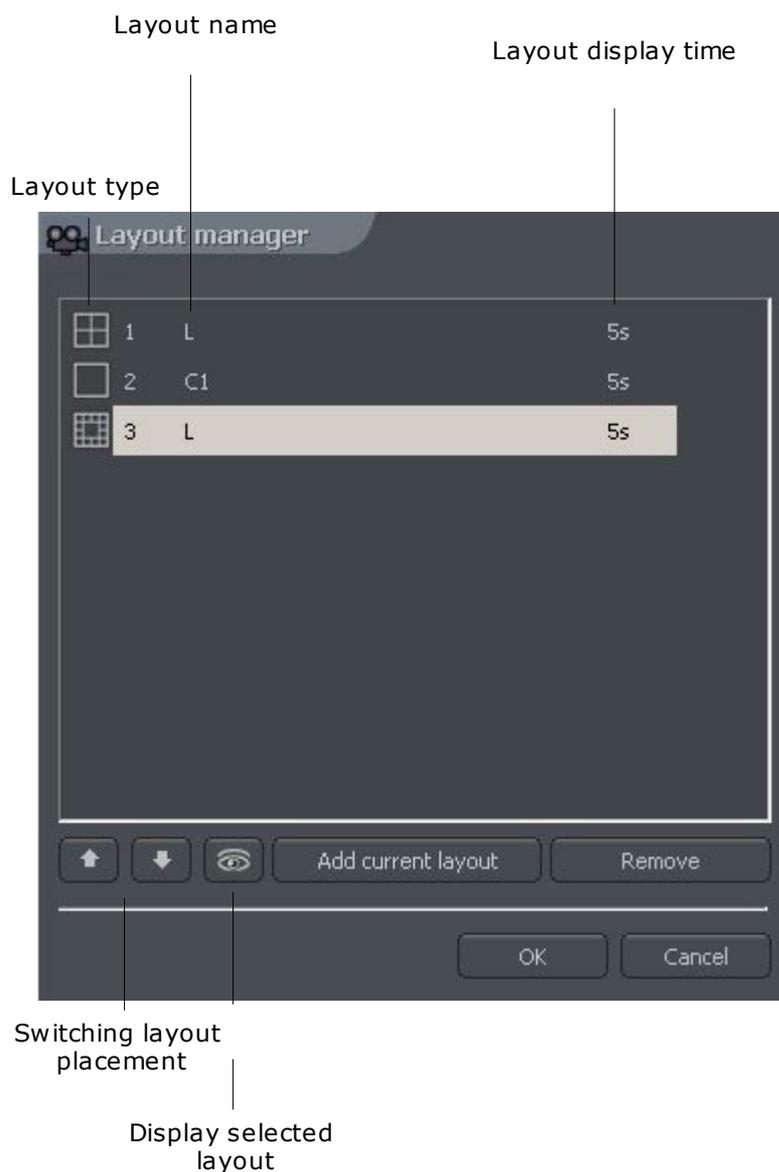
Menu: Tools -> Dynamic layout -> Add current layout

Setting layout display time

When in the dynamic layout menu double click on particular layout time field to set it's display time

OK

Confirm changes



#### 4.5 Watermark export

This tool allows to export watermark to file. This action is necessary for checking the authenticity of the recordings (paragraph [4.1.4](#)).

##### Tools -> Export watermark

<i>Field</i>	<i>Description</i>
Watermark description	Name which describes the watermark
Destination path	Place on the hard disk where the watermark will be stored

## 4.6 Program console

The tool for server administrators. It shows current report of all video server actions. It gives useful information and allows to optimize system work and solve problems. Additionally it allows to search system log for events by category, for example action taken by particular user and so.

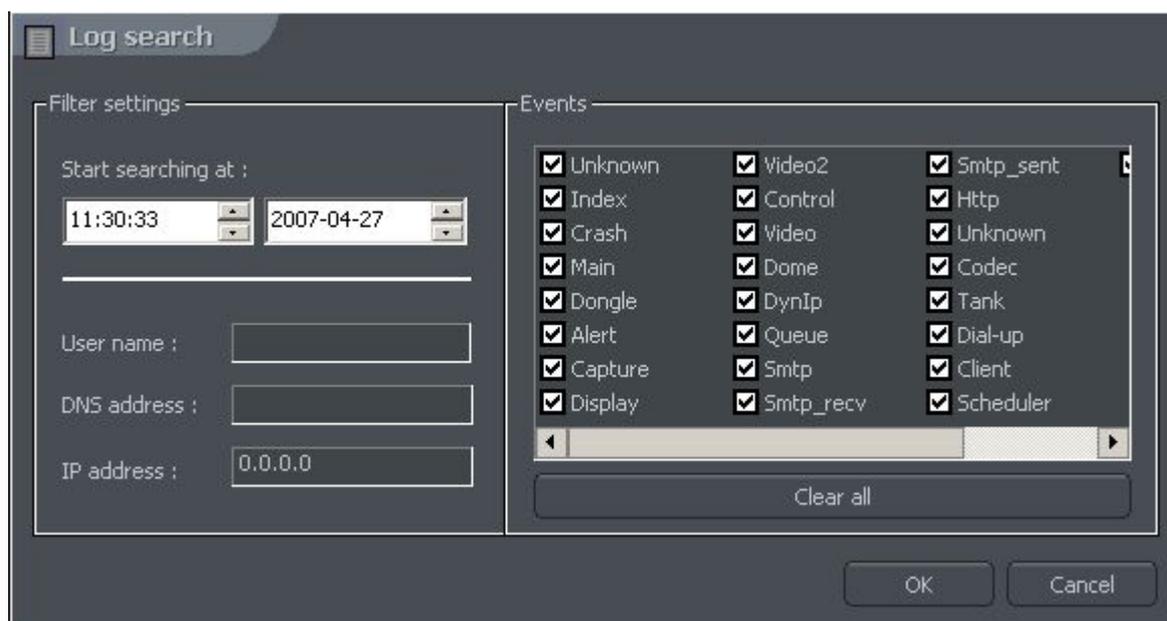
Format of shown data goes as follows:

```
[time][date]:[category]:[user]:[cam/client network address]:[message]
```

<i>Field</i>	<i>Description</i>
[time][date]	Time and date of the event
[category]	Announcement type
	Index
	Crash
	Main
	Dongle
	Alert
	Capture
	Display
	Video2
	Control
	Video
	Dome
	DynIP
	Queue
	Sntp
	Sntp_recv
	Sntp_sent
	Http
	Codec
	Tank
	Dial-up
	Client
	Scheduler

[user]	Name of the user who causes the event. "*" symbol represents global announcement which applies to whole system
[cam/client network address]	Address of remote camera or client
[message]	Announcement content

**Server log** bookmark allows to search to browse and search saved logs. To start search click **Search** button and choose criterion.



<i>Panel</i>	<i>Field</i>	<i>Description</i>
Filter settings	Start searching from	Time from which system will search for information
	User	Name of the user, who caused the event
	DNS address	Domain type address, for instance: camera.web.com
	IP address	IP type address
Events	Type of the event to search for	

## 4.7 Import/Export of program configuration

„**VDRS CONFIG EXPORT**“ tool allows to export and import VDRS server configuration to (and from) text file. It creates a copy of all the settings in order to restore the configuration later. It is possible to use the copy of settings in the other VDRS PRO server.

User can access this tool either from Windows start menu or from software installation folder. To run this application it is necessary to enter administrator login and password.

-  **ATTENTION:** Settings for e-map are not saved during the export. Saving and restoring e-map is described in paragraph [3.9](#)

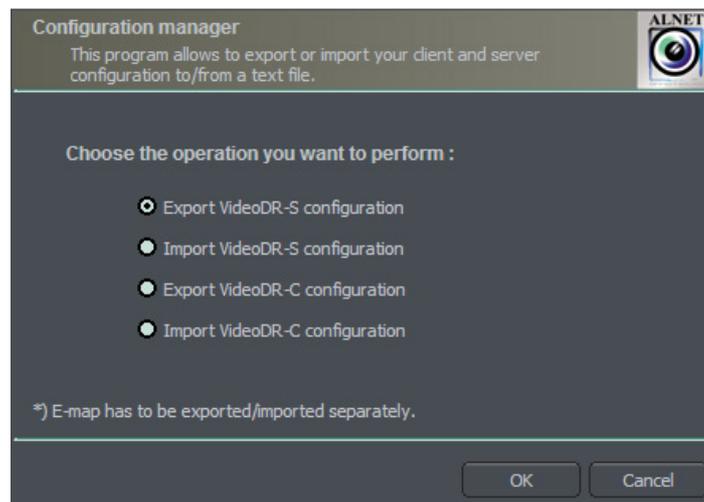


Figure 62: Program configuration Import/Export

### 4.7.1 Configuration export

Choose the first option from the list - **Export VideoDR-S configuration** and click **OK** button. Then select folder for data store.

### 4.7.2 Configuration Import

Choose the second option from the list - **Import VideoDR-S configuration** and click **OK** button. Select source file from which the configuration will be read.

## 4.8 Log browser

The tool, that is very similar to described in Chapter **4.6 Program console**. It supports advanced searching, filtering and browsing of VDRS system and alarm events.

