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Chapter 1. Safety Instructions

Before using the product

This product complies with all safety rules. However, improper use of any electric device can be a cause of fire and bring to property damage. Please read this User Manual carefully before you start using this door station.

ATTENTION!

Use accessories recommended by the manufacturer only. Using the improper accessories may cause device breakdown.

Follow the operating instructions

Do not use and store this door station in severe environment:

- avoid extremely low or high ambient temperatures (the door station operating temperature is -40°C to +50°C)
- avoid exposure to direct sunlight and do not locate the door station near any heat sources
- do not locate the door station near any electrical appliances which can be electromagnetic transmitters
- avoid exposure to high vibration

ATTENTION!

In case of malfunction of the product contact our Service Center.

In case of:

- detection of a strange smell or smoke
- penetration of any liquid or foreign objects into the door station
- the door station has been dropped or damaged

Do the following:

- unplug the power cord and disconnect all other cords from the door station
- contact our Service Center.

Transportation

Ttransport the door station carefully, using the original box and protective packing.

Ventilation

To prevent overheating of the device, keep free air circulation in the area where the door station is located.

Cleaning

Use a soft, dry cloth for cleaning door station external surfaces. It is acceptable to use some detergent for removing persistent dirt, but not the volatile cleaners such as the alcohol-containing solvents, benzene and so on, because of the risk to damage the door station housing.

Chapter 2. Description

2.1. General Information on DS06A(P)

IP Video Door Station ZN9-DP06AP is used for building IP intercom system based on the local area network without using additional equipment, such as a separate interior monitor. All you need to start using the door station is to install on your PC the software from the package contents and do a simple setting. Low costs, easy installation and remote access to the device are the advantages of such solution.

Pic. 2.1

ZN9-DP06AP has a vandal resistant housing. Built-in speaker, microphone and IP camera provide establishing video and audio connection between the Guest and the Client, watching the nearby territory and also control other devices that can be connected to the door station, such as electronic locks, garage door openers, light switches, alarm systems, etc. To provide operation at low light level the door station has a built-in infrared LED with work distance up to 10 m and mechanical infrared filter.

The ZN9-DP06AP model is connected to the network using the 10/100BASE-TX Ethernet interface and power is supplied from a DC 12V power source. The ZN9-DP06AP model supports PoE.

Supporting the MicroSD memory cards improves camera capabilities and makes its operation safer. In case of disconnection all important data are saved to the card.

2.1.1. Key Features

- Image sensor: 1.3 MP, CMOS 1/3'' SONY Exmor Day/Night

- Simultaneous encoding: H.264/H264, H.264/MJPEG, MJPEG /MJPEG

- Frame rate: up to 25 fps for all resolutions

- IR illumination distance up to 10 m and mechanical IR filter

- 4 GB MicroSDHC memory card installed (up to 32 GB supported)

- Multi-streaming: up to 10 nonidentical streams (only one user can be in the two-way audio mode at one time)

- Built-in web server for viewing and setting

- A built-in player for watching records

- Built-in microphone and speaker

- Power: DC 12V, 0.5A / PoE 802.3af Class 0

- Operating temperature: -40°C to +50°C

- Protocols supported: TCP/IP, IPv4/IPv6, UDP, VPN, HTTP, HTTPS, NTP, RTP, RTSP, DHCP, DDNS, SMTP, FTP, SIP, Modbus

- ONVIF support

2.1.2. Package Contents

- ZN9-DP06AP

- Bracket with mounting kit

- Hexagonal socket screw with L-key

- RJ45-S01 connector (2 pcs)

- Terminal block

- CD with product documentation and software

ATTENTION!
Package contents and door station specification are subject to change without notice.

2.1.3. Default Settings

- IP-address: **192.168.0.99**

- Subnet mask: **255.255.255.0**

- Gateway: **192.168.0.1**

- User name: **admin**

- User password: **admin**

- HTTP-port: **80**

- Data port: **5000**

2.2. What Is This User Manual for

IP Video Door Station ZN9-DP06AP can be also used as a video surveillance device which has a built-in web server and a web interface. You can watch real-time video displayed by the door station using a standard web browser or by means of free software included in the package contents (you can also download the necessary applications from the "Play Market" and "App Store"). The current User Manual contains full information on how to use the door station through the web interface. It explains how to set up the door station web interface for operation in a local network or Internet. To learn more about operation of door station software, please, see software user manuals.

2.3. Minimum System Requirements

It is recommended that your PC system meets these minimum requirements for correct door station operation:

Item	Requirement
CPU	2.8 GHz Intel Core or AMD Athlon X2
Video card	256 MB RAM or equivalent on-board card
RAM	1 GB (2 GB and more is recommended)
OS	Microsoft ® Windows Vista, Windows 7, Windows 8
Web browser	Internet Explorer 11.0 or higher

ATTENTION!

This manual describes operation with the door station web interface in Windows 7 Professional and Internet Explorer 11.0 (though some screenshots can be made in other OS or browser versions). Titles of system menus and options may differ from the ones in other operating systems and web browsers.

Chapter 3. Start Using

3.1. Accessing Door Station Web Interface and ActiveX Installation

At first, connect the door station in accordance with the Installation User Manual.

Launch Internet Explorer to access the door station web user interface (WUI).

Enter the following path in the address field: **http://<IP>:<port>/**, where **<IP>** is the IP address of the door station, **<port>** is the number of the port that is used for HTTP connection to the door station (*Pic. 3.1*).

ATTENTION!

On default, the IP address of the door station is 192.168.0.99 and the http-port is 80.

NOTE:

You do not need enter a port number if you connect via the default HTTP port 80.
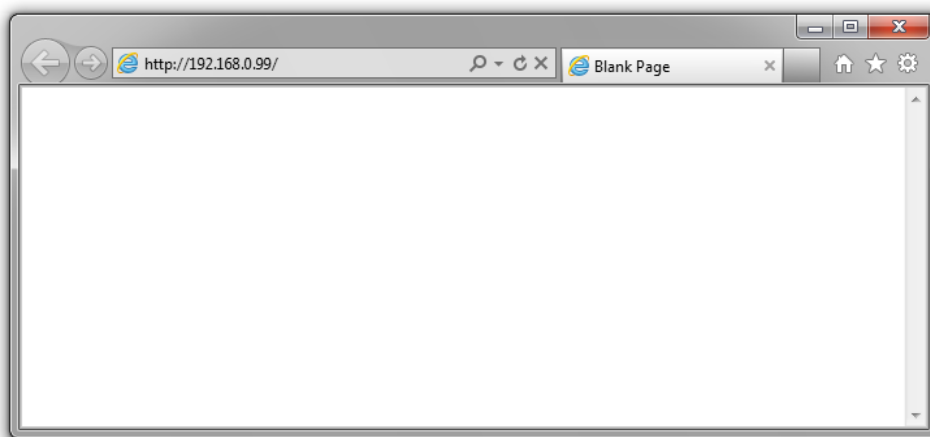
Pic. 3.1

If the path is correct you will see the authorization window (*Pic. 3.2*).

To work with the door station web interface you need to install the ActiveX add-on. You will see the system notification at the bottom of the window: **"This webpage wants to run the following add-on: "AxMediaControl ActiveX Control Module"** (*Pic. 3.2*).
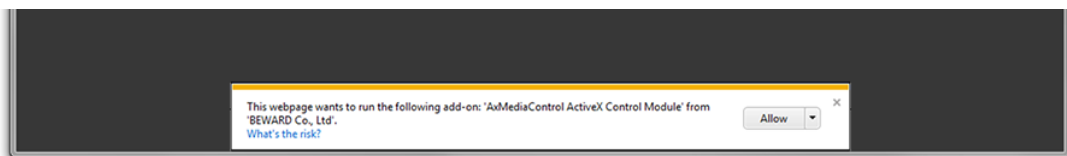
Pic. 3.2

Click **[Allow]** to start installation.

ATTENTION!

Installation of ActiveX components is only possible for 32-bit Internet Explorer.

On default, the Internet Explorer security system blocks ActiveX installation. Click **[Install]** to continue (*Pic. 3.3*).
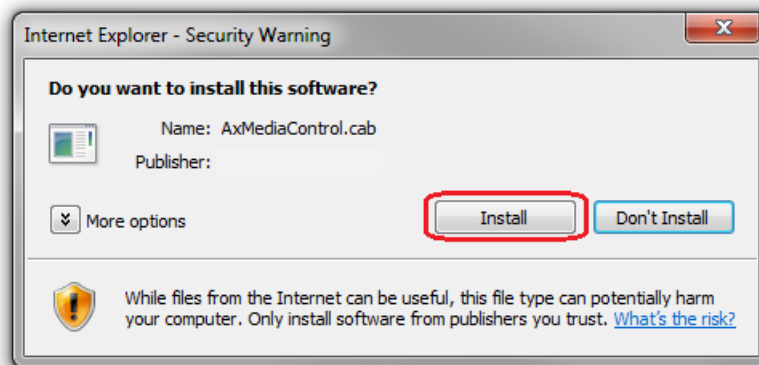
Pic. 3.3

Then you will see the following window (*Pic. 3.4*):
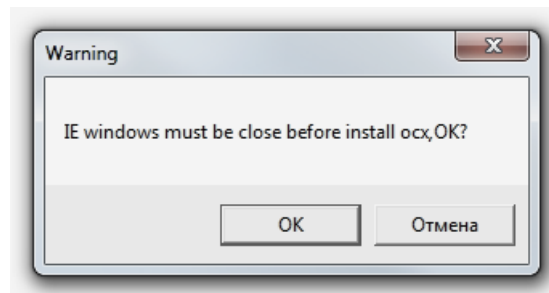
Pic. 3.4

Close Internet Explorer and click **[OK]**. You need close the browser before installation anyway, whether the window on the *Picture 3.4* will appear or not.

After that the installation window will appear. Click **[Install]** (*Pic. 3.5*).
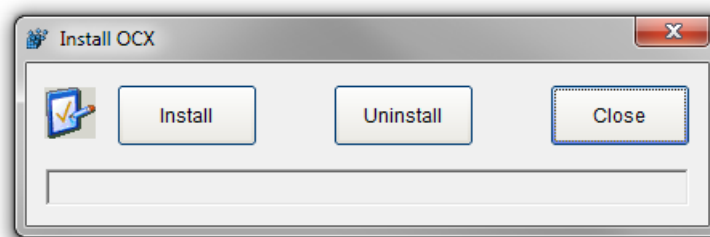
Pic. 3.5

After installation completing you will see the following notification: **«Register OCX success(C:\NetVideoX)»** (*Pic. 3.6*). Click **[Close]** to finish ActiveX installation.
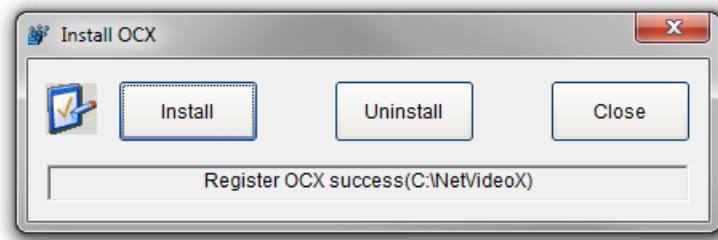
Pic. 3.6

NOTE:

Titles of system menus and options in Windows 7 and Internet Explorer 11.0 may differ from other operating systems and web browsers.

NOTE:

There is one more ActiveX installation blocking in Windows 7 with enabled user account control. In this case you will see an additional system notification. Give a positive answer in the notification window to permit installation.

Open Internet Explorer, enter door station IP address and press **[Enter]**. Enter username and password and then click **[Login]** (*Pic. 3.7*).

ATTENTION!

You can change login and password in the menu *Config – System – Access Policy* after authorization. If you lost your login or password, you can restore the default settings of the door station. To set the device by default press the reset button 3 times during 10 seconds with 1 second or more between the pushes.
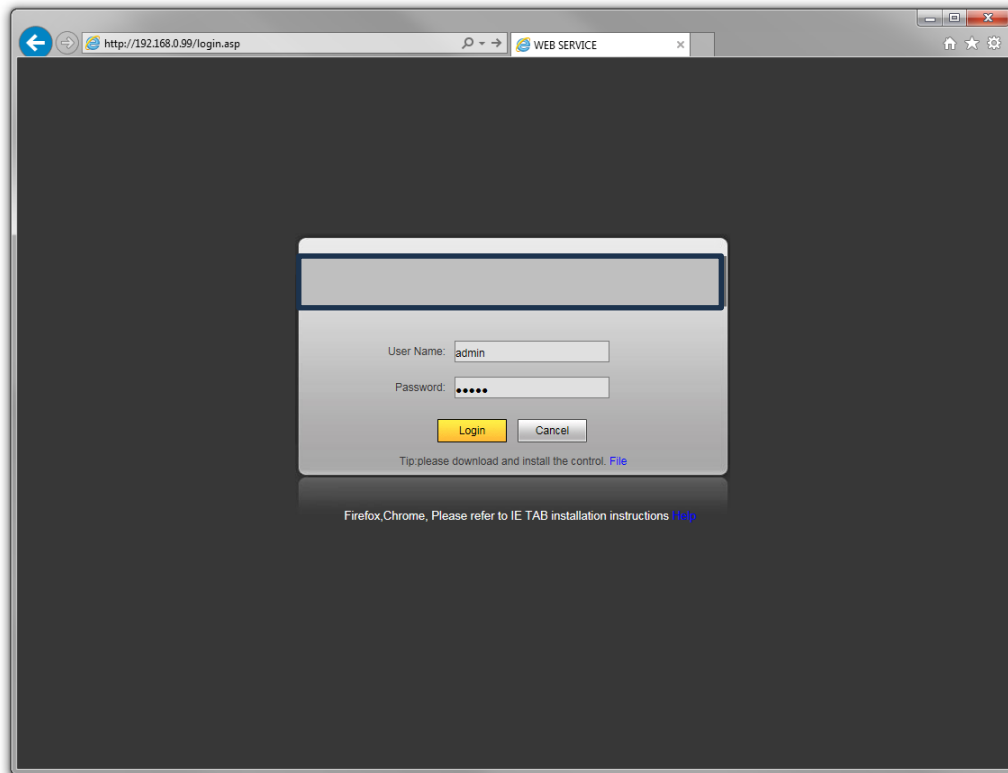
Pic. 3.7

If everything was done correctly, you will start receiving a video stream from door station camera (*Pic. 3.8*).
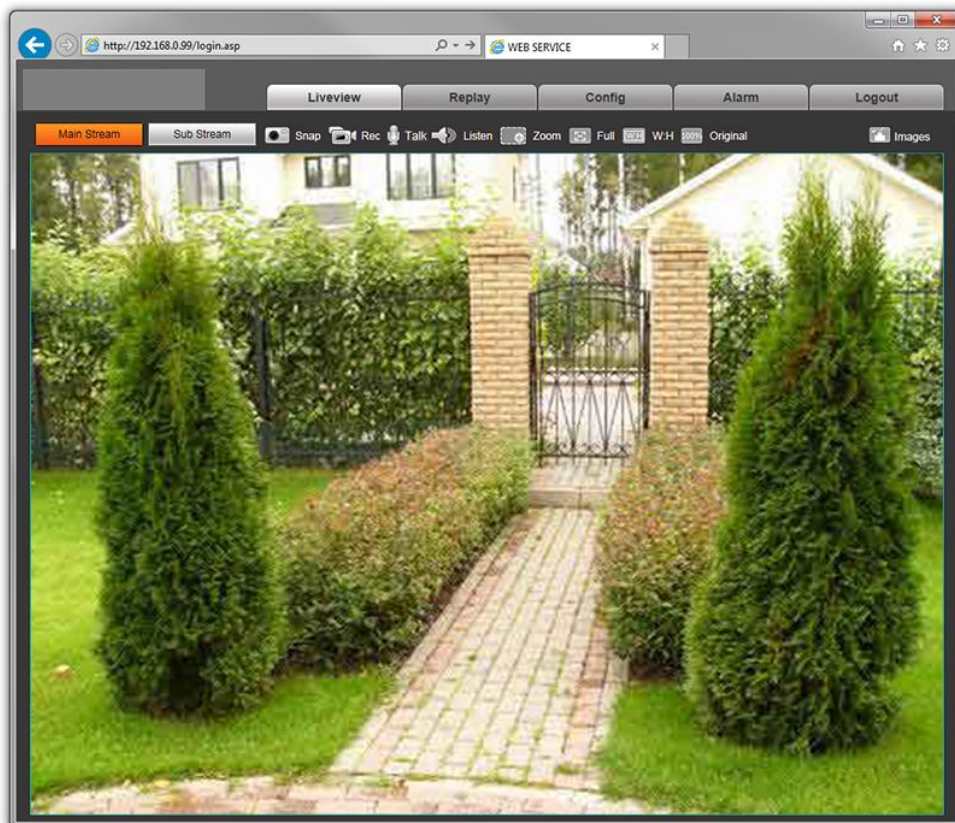
Pic. 3.8

If you failed to install ActiveX correctly you can do it again by clicking the link in the authorization window (*Pic. 3.9*) and following the instructions above.
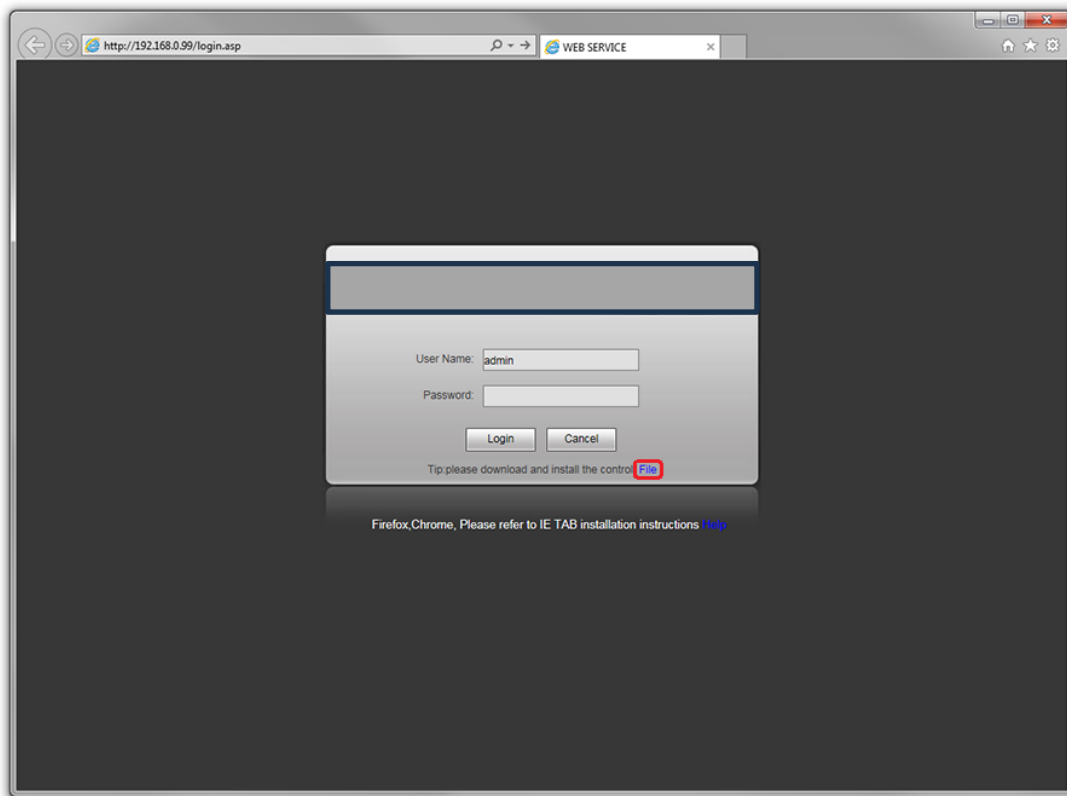
Pic. 3.9

3.2. Main Window (Live View)

The following functions are available in the **"Live View"** window: choosing a main or a sub video stream, making a video image snapshot, recording a video file, enabling "Talk" and "Listen" modes, zooming the image, maximizing the image to full screen, enabling a width to height relation mode, streaming at the original resolution and changing image settings.
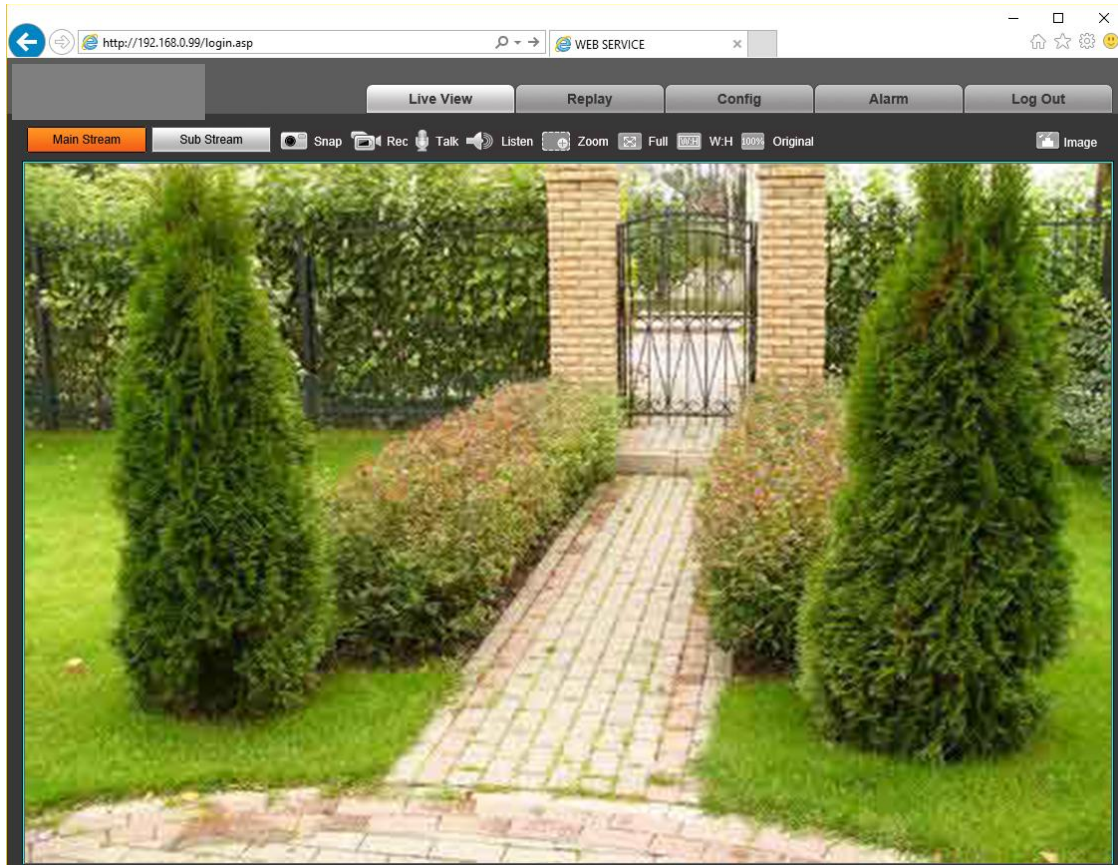
Pic. 3.10

Main Stream / Sub Stream: displaying a main or a sub video stream in the "Live View" window. The main stream can be displayed at a higher resolution in comparison with the sub stream. You can set the stream parameters in the menu *Config – Video Settings – Video Coding* (see paragraph 7.2).

Snap: press this button to make a JPEG snapshot of the video image. The snapshots are saved in the local folder (see Chapter 5) specified by a user.

Rec: press this button to record some part of the live stream as a H.264 video file. The files are saved in the local folder (see Chapter 5) specified by a user.

Talk: press this button to activate a two-way audio mode. In this case, sound transmits from the door station microphone to the PC speakers and from the PC microphone to the door station speaker.

Listen: press this button to listen sound from the door station microphone via the PC speakers.

Zoom: press this button to enlarge some area of the video image. Press **[Zoom]**, then press and hold the left mouse framing the area. The enlarged area of the video image will appear in a new window. Close the "Zoom In" window and press again **[Zoom]** to disable the function.

Full: press this button to maximize the video image to full screen. Press the **[ESC]** button on your keyboard or the right mouse to disable the full screen mode.

W:H: press this button to apply a correct width to height relation to the video image.

Original: press this button to display the video image at the original resolution. Use the scrollbars if the image is too big to be placed in the browser window.

Image: using this toolbar you can adjust the video image parameters, such as brightness, contrast, hue and saturation. Press **[Default]** to restore the parameters to the factory defaults (*Pic. 3.11*).
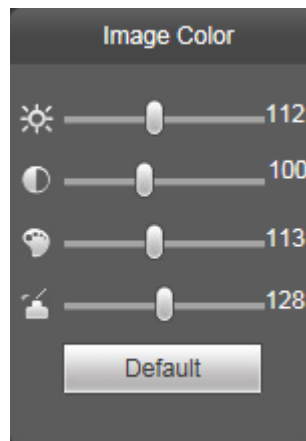
Pic. 3.11

Chapter 4. Replay

Press **"Replay"** to open the window of the web interface player, where you can open videos and images that you saved on the memory card or on your PC (*Pic. 4.1*).
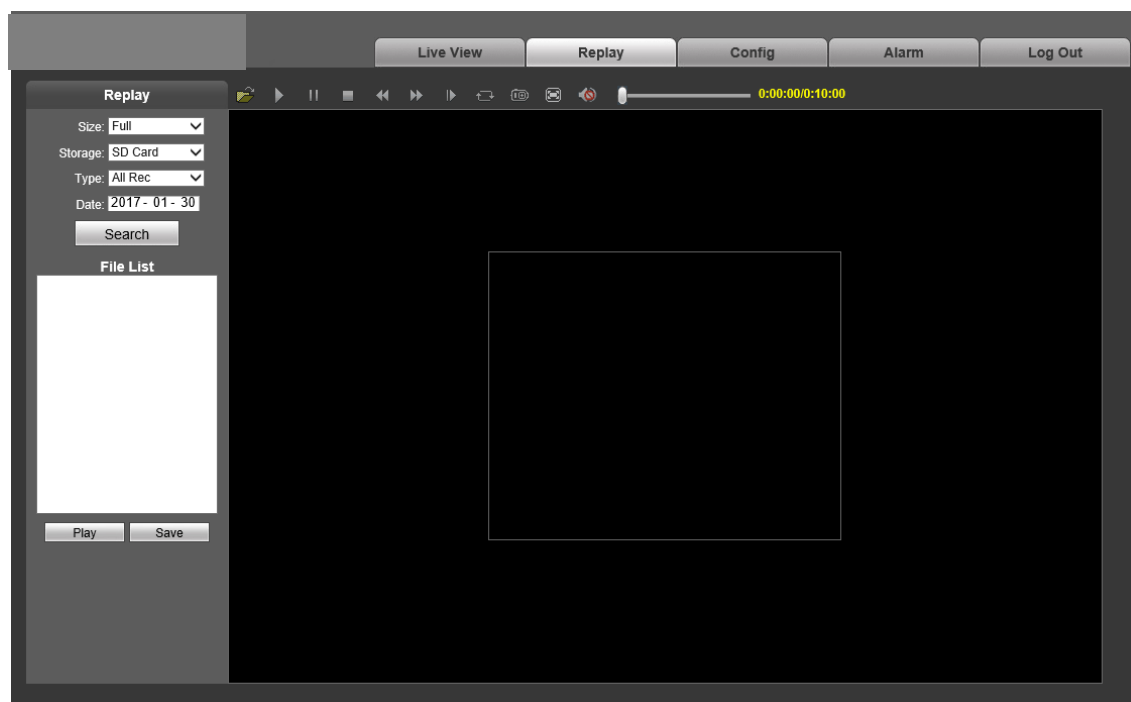
Pic. 4.1

Size: change a width to height relation to display the files correctly. The following relations are available: Full (screen), 4:3, 16:9, 11:9.

Storage: choose the location of the files you saved, a SD card or a PC. By default, the catalog on the PC is "**C:\MyIPCam**".

Type: choose the type of the files you want to find and open – "All Rec", "Alarm Rec", "Schedule Rec", "Images".

Date: choose the date for searching the files.

[Search]: press this button to start searching the files.

File List: the search results are listed in this field in chronological order.

[Play]: choose the necessary file in the File List and click this button to play/display it. You can also double-click it to do that.

You can use the following toolbar (*Pic. 4.2*):
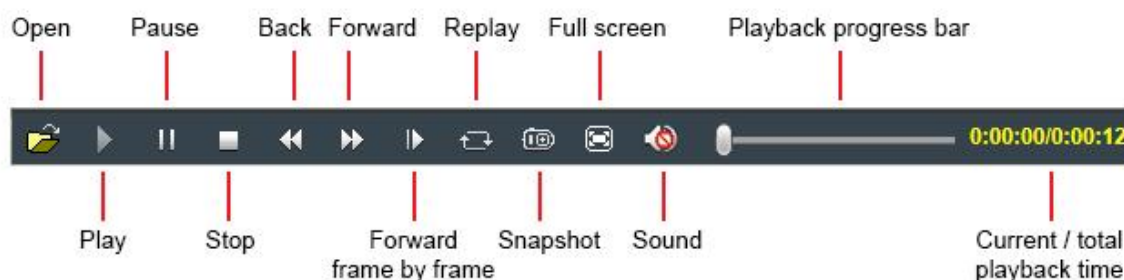
Pic. 4.2

[Save]: use this button if you want to save the files from the SD card on your PC. Choose the necessary file in the File List and click this button. The following window will be opened:
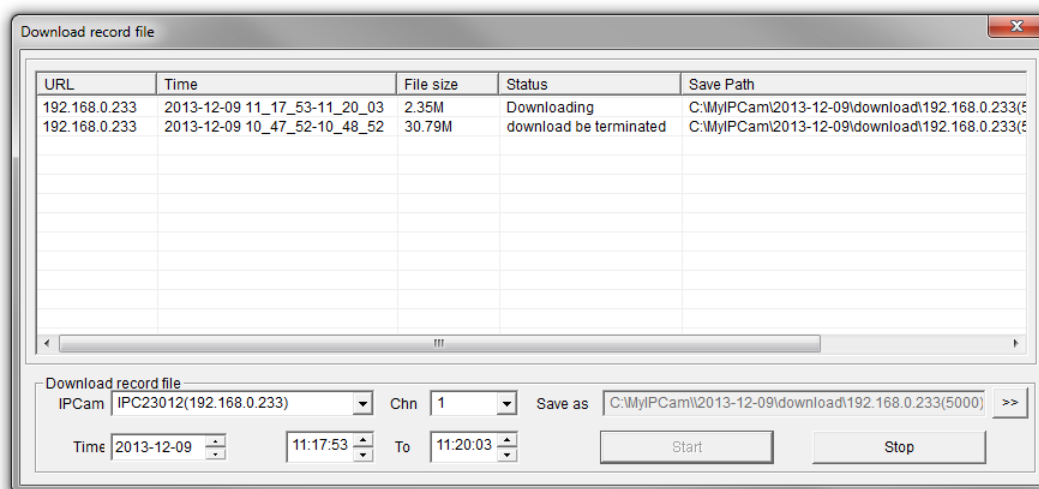
Pic. 4.3

IPCam: the field contains a door station ID and its IP address.

Chn: a channel number, choose "1" for a door station.

Time: enter the date and the time interval the records you need to save belong to.

NOTE!

All records from the time interval you specified will be saved as one file.

Ensure that you have the rights to create new objects in the catalog you choose for saving files. In Windows 7 you may need to **run Internet Explorer as administrator** to provide saving files on the local disc.

[>>]: click this button to choose the path to save files.

[Start]: click this button to start saving the file.

[Stop]: click this button to stop saving the file.

NOTE!

In Windows 7 (and later OS versions) you may need to **run Internet Explorer as administrator** to provide correct operation of the web interface player.

Chapter 5. Config: Local Config

Go to the **"Config"** tab. Here you can work with the door station settings menu.

The **"Local Config"** menu is shown on the *Picture 5.1*.
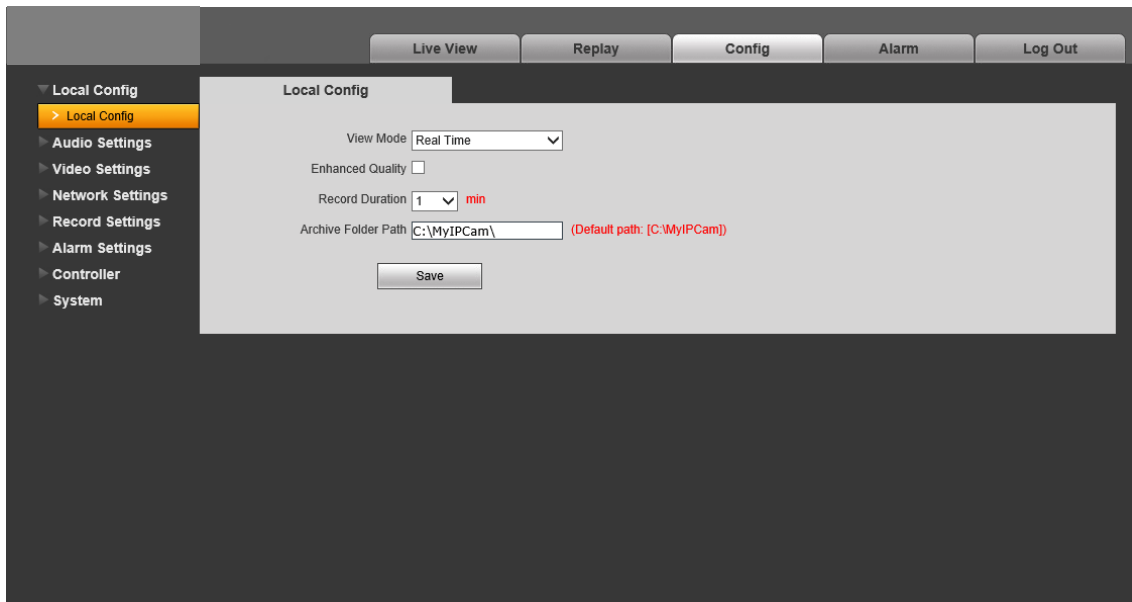
Pic. 5.1

View Mode: the **"Real Time"** and **"Fluency"** modes are available.

The buffering procedure is not used in the **"Real Time"** mode, and a video stream is displayed without a delay in the **"Live View"** window. But some viewing defects may occur because of the high load of your LAN.

The buffering procedure is used in the **"Fluency"** mode, and a video stream is displayed with some delay (less than 1 second). Use this mode when some viewing defects occur.

Enhanced Quality: enabling this option, you can improve video image quality, but it raises the load of your CPU.

Record Duration: specify the duration (in minutes) of recorded files.

Archive Folder Path: specify the local folder for saving video and image files. By default: C:\MyIPCam\.

NOTE!

Make sure that you have the right to create new objects in the local folder, choosing it for saving video and image files. Otherwise, the files will not be saved.

In Windows 7 you need to **run Internet Explorer as administrator** to save the files on the local disc.

Press the **[Save]** button to apply new settings.

Chapter 6. Config: Audio Settings

The **"Audio Parameters"** menu is shown on the *Picture 6.1*.
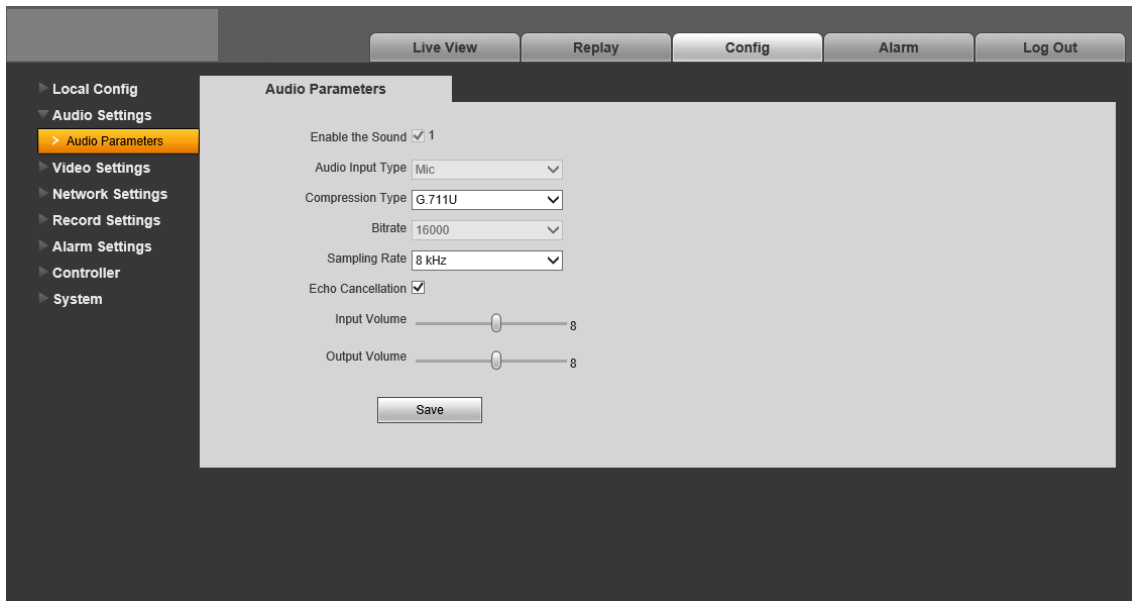
Pic. 6.1

Enable the Sound: turn on / off sound transmission option. By default it is turn on.

Audio Input Type: by default the "Mic" (microphone) type is activated. Not available to change.

Compression Type: by default – G.711U. The following are also available: G.711A and G.726.

Bitrate: by default – 16000 bit/s. Not available to change.

Sampling Rate: by default – 8 kHz. Not available to change.

Echo Cancellation: put a tick to enable the function of an additional program echo cancellation. Enable it if using a hardware echo cancellation is not enough.

Input Volume: set the volume level of the input audio signal from 0 to 15.

Output Volume: set the volume level of the output audio signal from 0 to 15.

Press the **[Save]** button to apply new settings.

ATTENTION!

Adjusting the "Input Volume" and "Output Volume" parameter will change a device operation mode and may cause defects such as interrupted speech, echo, etc. Adjust these parameters only in case when it is strongly needed.

Chapter 7. Config: Video Settings

7.1. On-Screen Text

The **"On-Screen Text"** menu is shown on the *Picture 7.1*. Here you set on-screen text.
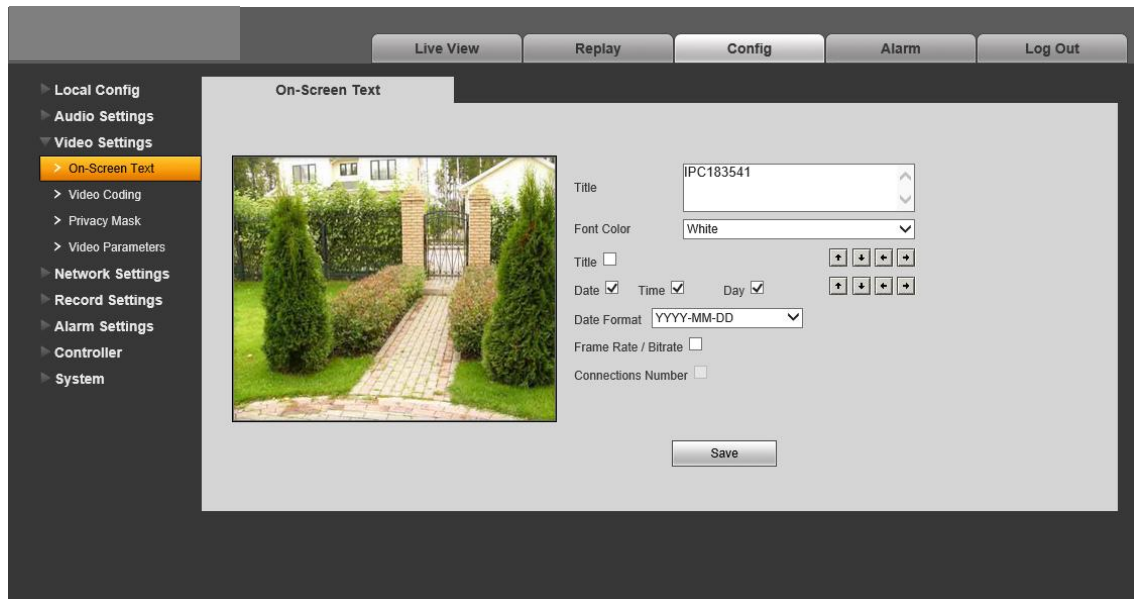
Pic. 7.1

Title: enter the text which will be displayed in the left lower corner of the image window, for example, door station name.

Font Color: choose the color of the text. The following colors are available: **white**, **black**, **yellow**, **red**, **blue**.

Title: turn on / off title displaying.

Date / Time / Day: turn on displaying of date, time and day of a week, using the check marks.

Date Format: choose the format of date displaying.

Frame Rate / Bitrate: turn on / off displaying of current frame rate and bitrate on the screen.

Connections Number.: turn on / off displaying of the number of current connections to the door station web interface with video stream viewing. The number displays in the brackets after the title.

Moreover, you can change the position of the displaying elements. For this purpose you can use the arrow-buttons ↑↓←→. The upper group is used for changing the title position, and the lower group allows you to change the position of other information.

Press the **[Save]** button to apply new settings.

7.2. Video Coding

The **"Video Coding"** menu is shown on the *Picture 7.2*.

This menu contains the settings of main and sub streams. A main stream provides resolution and video quality higher than a sub stream. So you can record video files with a high quality, using the main stream, and at the same time watch a real-time video, using the sub stream, even in case of low network bandwidth capacity.
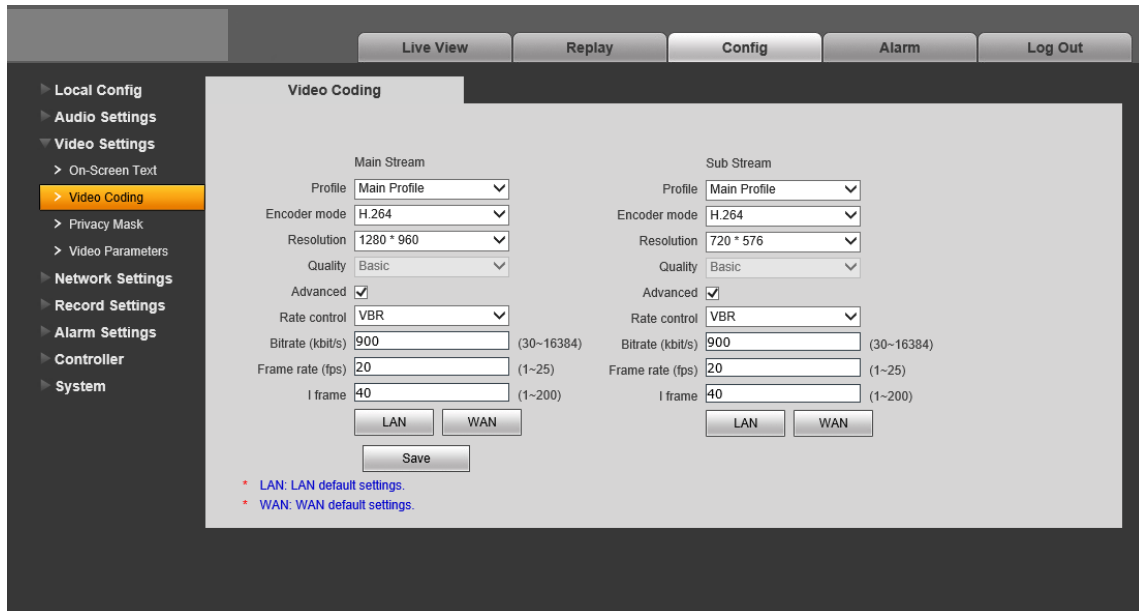
Pic. 7.2

Profile: Baseline and Main profiles are available.

Encoder mode: H.264 and MJPEG formats are available.

Resolution: set the stream resolution. The following resolutions are available:

- Main stream: 1280x960, 1280x720;
- Sub stream: 720x576, 640x480, 320x240.

Quality: the "Basic", "Normal" and "Fine" variants are available.

NOTE!

You can use this setting only if the **"Advanced"** option is disabled.

Advanced: enable this option for more flexible setting. The following parameters can be changed after that:

Rate control: choose the type of bitrate control:

- **VBR** – the level of quality is in priority and the bitrate value may vary, depending on different conditions in the surveillance area. In this case the average bitrate value approaches the value you specify in the "Bitrate" field but the current value may vary significantly.

Bitrate: set the data transmission speed (the available range is from 30 to 16384 kbit/s). The higher a bitrate value, the higher image quality, though it requires more network resources.

Frame rate: it is not recommended to set a high frame rate at the low network bitrate. Otherwise, the objects on the image may move with stops.

I frame: set the interval of I-frames (the available range is from 1 to 200). The less this parameter, the higher bitrate and image quality. It is recommended to set the same value as for the frame rate.

[LAN], [WAN]: these patterns of coding settings allow you to set the recommended values by one click for LAN and WAN connections.

[LAN]:

- main stream: "I frame" – 50, "Frame rate" – 25 fps, "Rate control" – VBR, "Bitrate" – 4096 kbit/s;

- sub stream: "I frame" – 50, "Frame rate" – 25 fps, "Rate control" – VBR, "Bitrate" – 512 kbit/s.

[WAN]: "I frame" – 25, "Frame rate" – 5 fps, "Rate control" – VBR, "Bitrate" – 384 kbit/s.

Press the **[Save]** button to apply new settings.

7.3. Privacy Mask

The **"Privacy Mask"** menu is shown on the *Picture 7.3*.
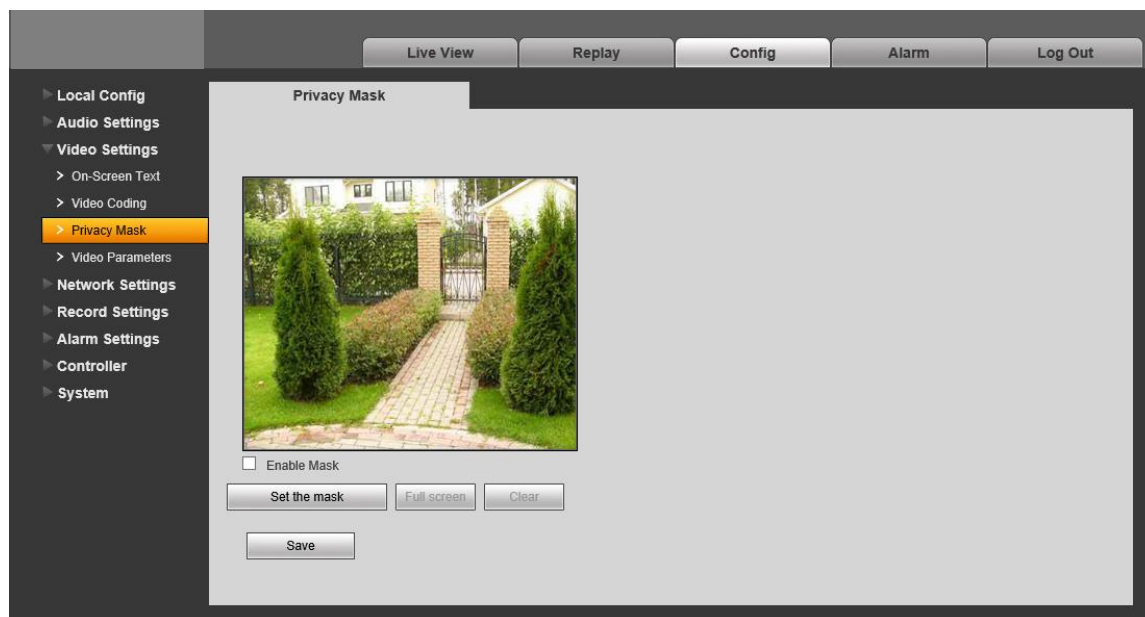
Pic. 7.3

Enable Mask: put a tick to enable the option.

[Set the mask]: click this button, then press and hold the left mouse framing the area of the necessary size. You can set up to the 4 mask areas.

[Full screen]: click this button to place the mask at full screen.

[Clear]: click this button to remove the all mask areas.

Press the **[Save]** button to apply new settings.

7.4. Video Parameters

The **"Video Parameters"** menu is shown on the *Picture 7.4*.
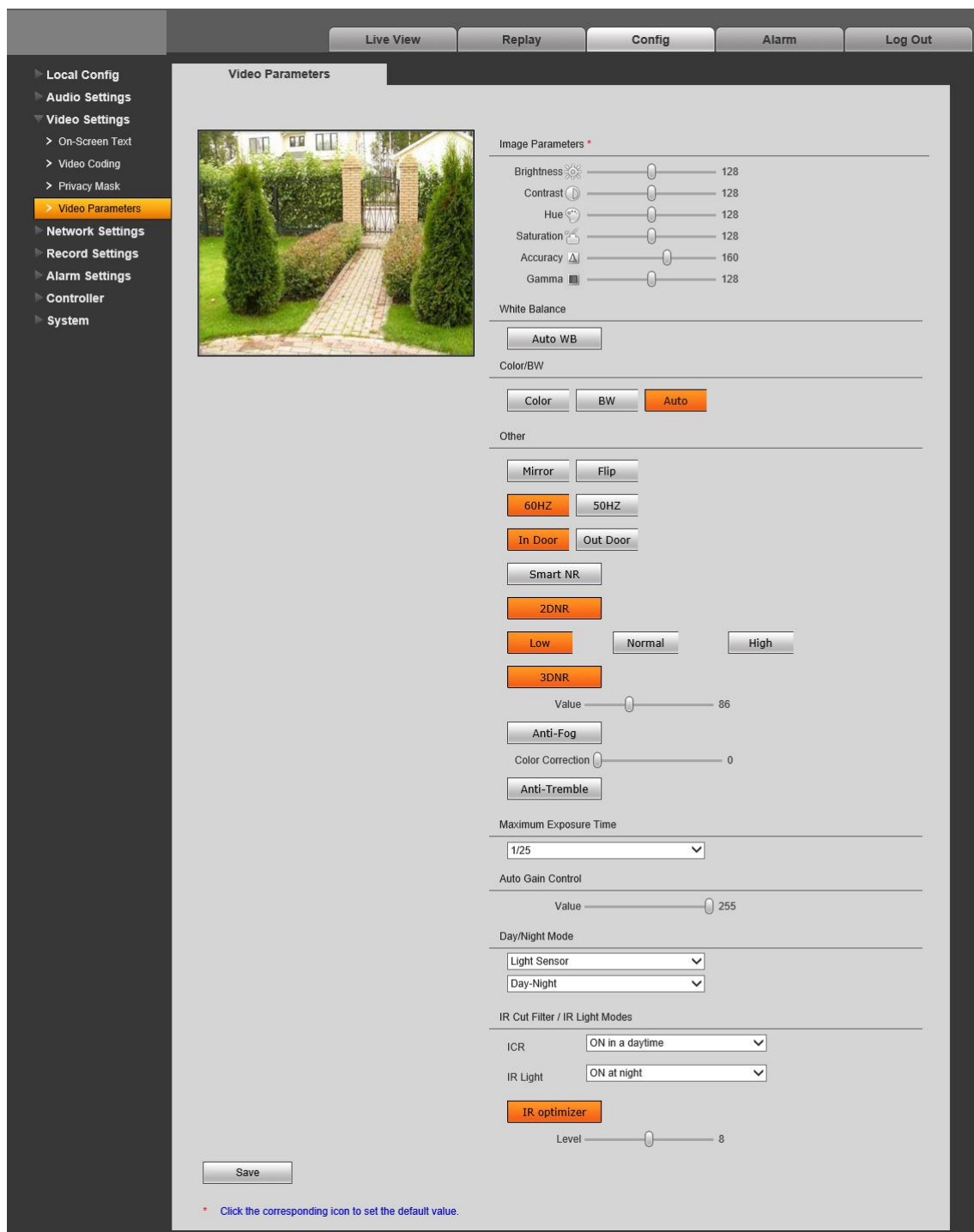
Pic. 7.4

Image Parameters: set image parameters such as brightness, contrast, hue and saturation within the range from 0 to 255. You can see the image changes immediately, moving the slider. Click an icon to the right of a name to set any parameter by default (*Pic. 7.4*).

White Balance: by default, the white balance is set automatically, but you can also set it manually, using three parameters, red, green, blue, and moving the sliders.

Color/BW: you can set a color mode or a black and white one for the door station camera. By default, the modes switch automatically.

Mirror: reflect the image from the door station camera.

Flip: turn over the image from the door station camera.

60Hz: use this mode if light source equipment in the surveillance area connect to the 60 Hz electrical grid. In this case the exposure time is automatically set to the value divisible by 30.

50Hz: use this mode if light source equipment in the surveillance area connect to the 50 Hz electrical grid. In this case the exposure time is automatically set to the value divisible by 25. This mode is used in Russia.

Indoor / Outdoor: enable one of these modes to reduce or remove flickering of indoor or outdoor light sources by means of the pulse-width modulation.

Smart NR: this option is used with 3DNR, increases its efficiency in low light conditions and reduces the blurry effect of objects in motion.

2DNR: a noise reduction function which is used in low light conditions. Choose one of the three available degrees of processing the image, low, normal or high. The image may become less detailed depending on the degree you choose.

3DNR: a noise reduction function which is used in low light conditions. The function doesn't influence image details, but there may be traces of objects on the move depending on the value you set with a slider.

> **NOTE!**
> The 3DNR function only applies to the Night Mode.

Anti-Fog: the function allows displaying objects better in case of the fog.

Color Correction: the function allows setting colors of the image using correction of their hues.

Anti-Tremble: the function allows reducing an effect of vibrations if the door station is installed on the surface that is exposed to them.

Maximum Exposure Time: choose the maximal value of the exposure time. The values from 1/25 to 1/8000 s are available.

Auto Gain Control: the function increases brightness of the image in low light conditions. But the bigger AGC value, the higher a noise level.

Day/Night Mode: set the parameters of day and night operation of the door station camera:

- **Schedule:** day and night modes switch on the schedule you specify in the fields below.
- **Light Sensor:** day and night modes switch on the signal of a built-in light sensor. You can choose an operation mode of the sensor in the drop-down list below. "Day-Night" means that the camera operates in the day mode at a high level of external light and in the night mode at the low level. The "Night-Day" mode operates in the opposite way.

IR Cut Filter / IR Light Modes: there are two operation modes for the filter and IR LED, "ON in a daytime" and "ON at night".

- **ICR** (Infrared Cut filter Removable)**:**
  - o **"ON in a daytime":** the filter blocks the IR spectrum of the light during day operation and makes it available for the sensor during night operation.
  - o **"ON at night":** the filter makes the IR spectrum available for the sensor during day operation and blocks it during night operation.
- **IR Light:** using the built-in IR LED in conditions of a low level of external light.
  - o **"ON in a daytime":** the LED is disabled during day mode operation and enabled during night mode operation.
  - o **"ON at night":** the LED is enabled during day mode operation and disabled during night mode operation.
  - o **"Disabled":** the LED is always disabled.
- **IR optimizer:** it optimizes a video image at night in a way that there is no area overlighted by the IR LED in the center, so a face of a guest can be easily identified.

Press the **[Save]** button to apply new settings.

Chapter 8. Config: Network Settings

8.1. Basic

The **"Basic Settings"** menu is shown on the *Picture 8.1*.
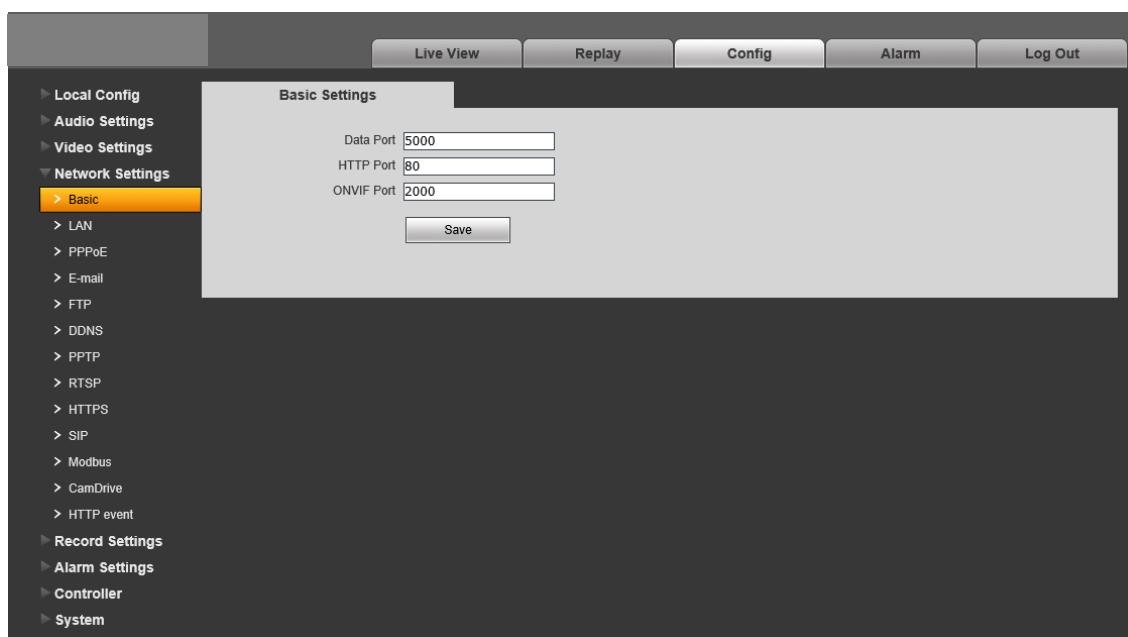
Pic. 8.1

Data Port: the number of the port used for video data transmission. The default value is 5000. The recommended values are from 1124 to 7999 (it is not recommended to change this parameter without necessity).

HTTP Port: the number of the port used for work with a web browser. The default value is 80. The recommended values are 80 and from 1124 to 7999 (it is not recommended to change this parameter without necessity).

ONVIF Port: the number of the port used for work with the ONVIF protocol. The default value is 2000. The recommended values are from 1124 to 7999 (it is not recommended to change this parameter without necessity).

Press the **[Save]** button to apply new settings.

8.2. LAN

The **"LAN Settings"** menu is shown on the *Picture 8.2*.
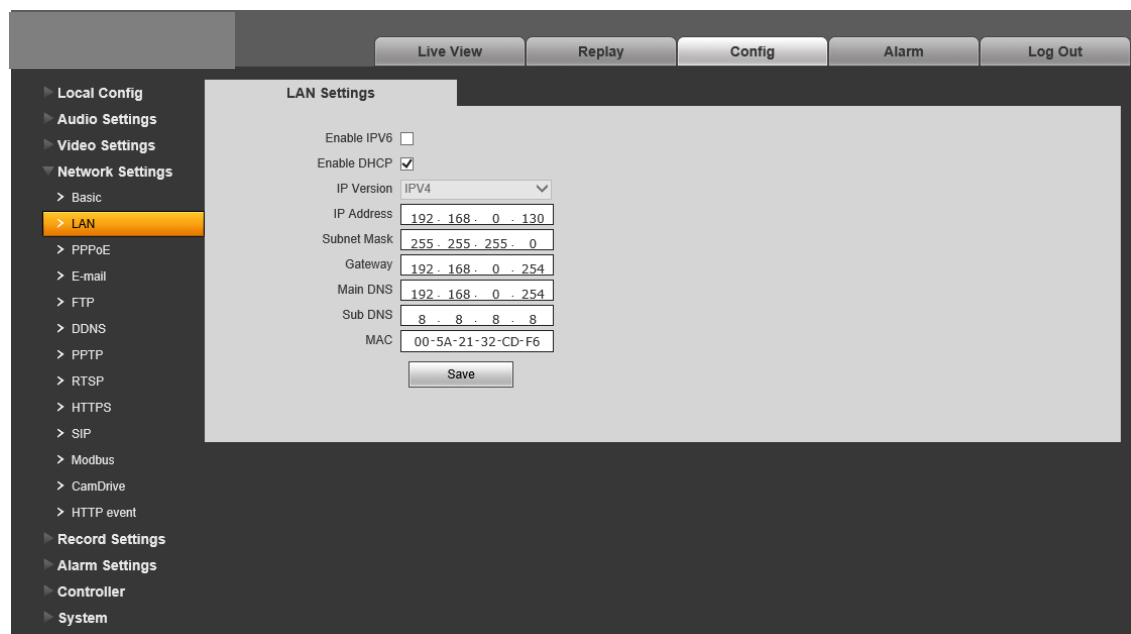
Pic. 8.2

Enable IPV6: this option allows you to use the 128-bit IP addresses for door station connection.

Enable DHCP: enable this option to receive main network parameters from a DHCP server automatically (the DHCP server must be set up in your local network).

IP Version (available if the IPV6 option is enabled)**:** choose "IPV6" to use the 128-bit IP addresses.

IP Address: if the DHCP option is disabled, enter an IP address in this field manually.

Subnet Mask: the default value is 255.255.255.0 (it is not recommended to change this parameter without necessity).

Gateway: set the gateway address.

Main DNS: set the preferable DNS address.

Sub DNS: set the alternative DNS address.

MAC: door station MAC address (not available for changing).

NOTE!

When assigning an IP address to the door station, you need remember that IP addresses must not be repeated in the network. Applying new settings in the "LAN Setting" menu require a reboot procedure.

ATTENTION!

The door station is rebooted automatically as LAN settings are changed.

Press the **[Save]** button to apply new settings.

8.3. PPPoE

The **"PPPoE Settings"** menu is shown on the *Picture 8.3*.
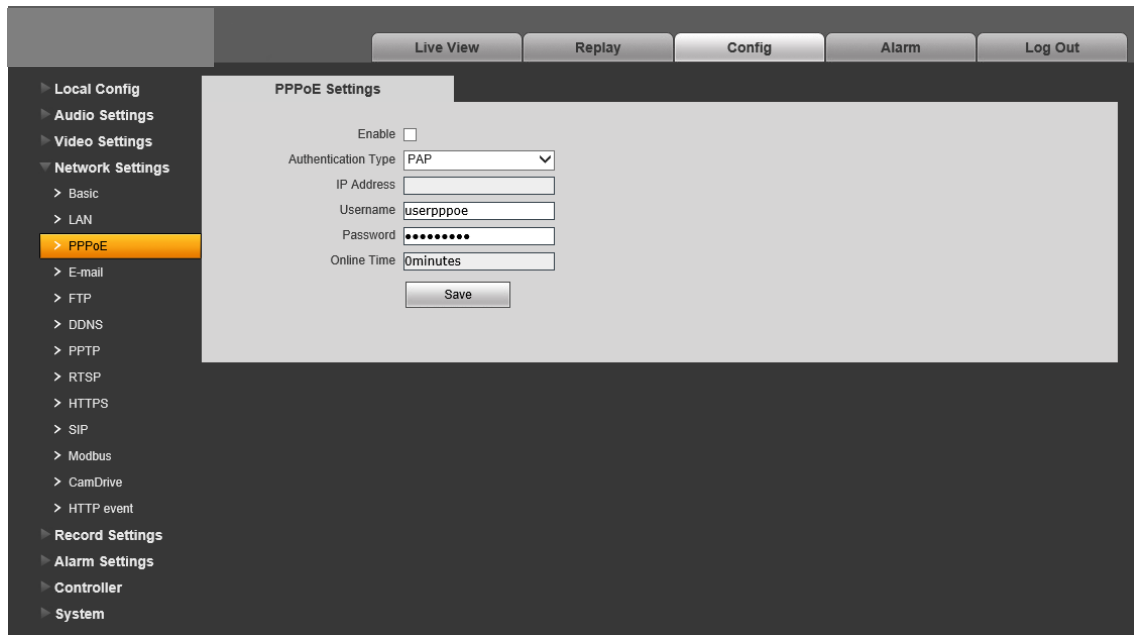
Pic. 8.3

Enable: put a tick to enable PPPoE function.

Authentication Type: choose an authentication protocol.

IP Address: the field contains an IP address or a domain name of a PPPoE server (given by the server).

Username: enter a user name for a PPPoE connection.

Password: enter a user password for a PPPoE connection.

Online Time: the time of connection is displayed in this field.

Press the **[Save]** button to apply new settings.

8.4. E-mail

The **"E-mail Settings"** menu is shown on the *Picture 8.4*.

Pic. 8.4

This menu allows you to set parameters of the e-mail client for using the option of image snapshots sending by e-mail.

SMTP server: enter an IP address or a name of the SMTP server you use.

From: enter an e-mail address of the sender.

To: enter an e-mail address of the recipient. The letters will be sent to this address.

SMTP Username: enter a user name for getting access to the SMTP server.

SMTP Password: enter a password for getting access to the SMTP server.

SMTP Port: enter a port number of the SMTP server (by default – 25).

SSL: tick off this option if it is required by your Internet service provider.

Press the **[Save]** button to apply new settings.

8.5. FTP

The **"FTP Settings"** menu is shown on the *Picture 8.5*.

Pic. 8.5

This menu allows you to set parameters of the FTP client for using the option of sending of video records and image snapshots to the FTP server. In case of the main server is not available, the sub server is used instead.

Server URL: enter the IP address of the FTP server.

Server Port: enter the port of the server. By default – 21.

FTP Catalog: specify the folder for recorded files on the FTP server. If the folder is not specified or the specified folder does not exist, it will be created in the root server folder automatically.

Username / Password: enter user name and password to get access to the server.

Port from / **To:** specify the range of the ports for getting access to the server.

> **NOTE!**
> Before setting, make sure that you have enough rights to record files to the FTP server you are going to use.

Press the **[Save]** button to apply new settings.

8.6. DDNS

The **"DDNS Settings"** menu is shown on the *Picture 8.6*.
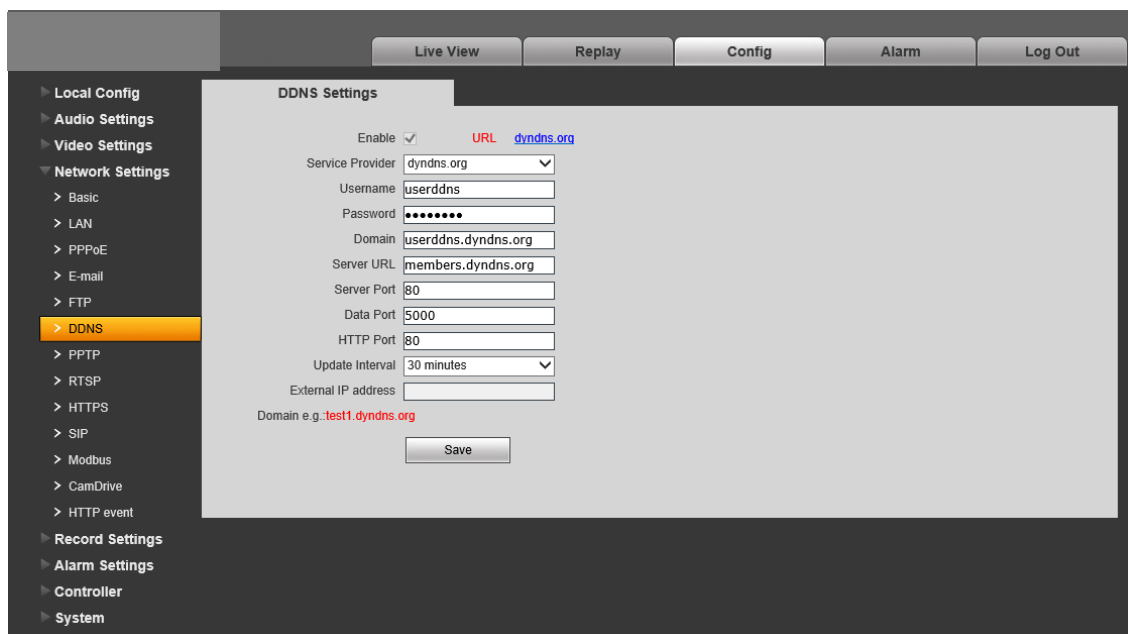
Pic. 8.6

This menu is used for setting door station connection using a DDNS service. This service allows you to provide access to the door station from Internet even if you have only a dynamic IP address.

Every time as your current IP address is changed, it is automatically compared with the specific domain name which can be used for access to the door station from Internet in any time.

Enable: turn on / off the DDNS option.

Service Provider: choose the DDNS provider from the list.

Username: enter the user name which you receive on DDNS provider's site after registration.

Password: enter the password which you receive on DDNS provider's site after registration.

Domain: enter the domain name which you receive on DDNS provider's site after registration.

Server URL: enter the web address of the DDNS provider.

Server Port: enter the port used for the DDNS option. By default – 30000 (it is not recommended to change this parameter).

Data Port.: enter the data port used for port mapping.

HTTP Port.: enter the HTTP port used for port mapping.

Update Interval: choose the time interval which will be used by the device to initiate IP address update on the DDNS server after IP address change.

External IP address: this field displays a global IP address of the door station defined by your DDNS provider.

Press the **[Save]** button to apply new settings.

8.7. PPTP

The **"PPTP Settings"** menu is shown on the *Picture 8.7*.
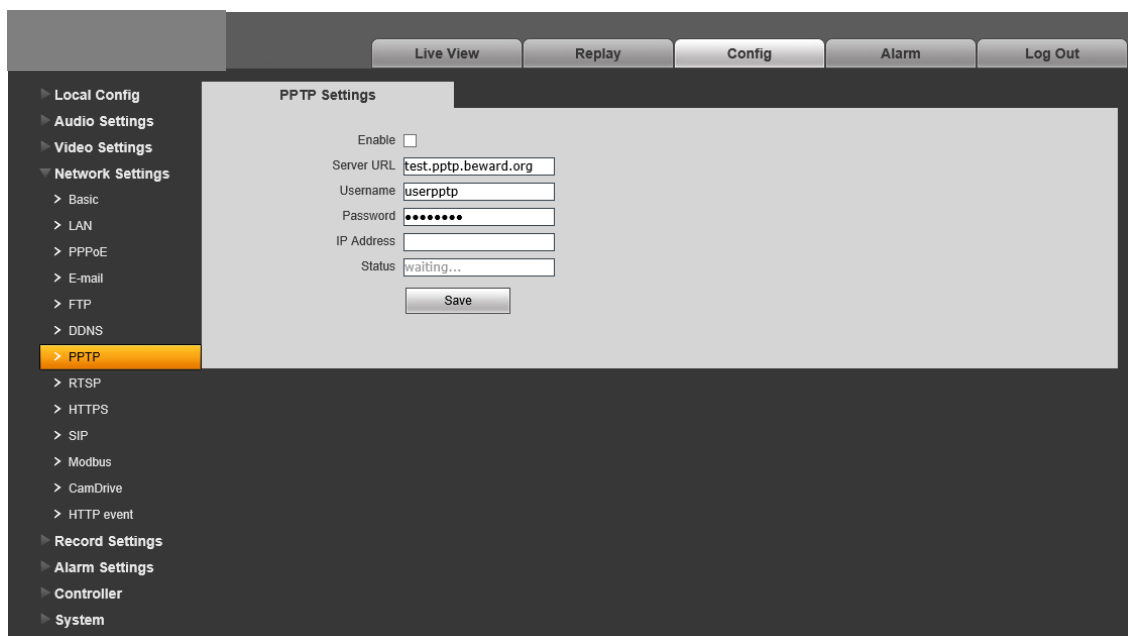
Pic. 8.7

Enable: put a tick to enable the PPTP function.

Server URL: enter an IP address or a domain name of the PPTP server.

Username: enter a user name to get access to the PPTP server.

Password: enter a user password to get access to the PPTP server.

IP Address: the field displays an IP address received after the PPTP connection is established.

Status: the field displays the status of the PPTP connection.

Press the **[Save]** button to apply new settings.

8.8. RTSP

Enabling the RTSP function, you can receive a real-time video stream from the door station using different players which supports a standard RTSP protocol (RTSP clients), for example, VLC, Quick Time, Real Player, etc.

The following request is used for getting access to the video stream via RTSP clients: **rtsp://<IP>:<PORT>/av<X>_<Y>**, where:

- **<IP>** – door station IP address;
- **<PORT>** – door station RTSP port (by default – 554.);
- **<X>** – a command of the video stream channel. The channels are counted from "0". The door station has only one channel so you need enter "0".
- **<Y>** – a command of the video stream profile: 0 – main stream, 1 – sub stream.

Here is request for example: **rtsp://192.168.0.99:554/av0_0**.

The coding type for the video stream is specified in the coding settings.

> **NOTE!**
>
> Bitrate depends on the access channel given by the ISP when you connect to the door station from Internet.

The **"RTSP Settings"** menu is shown on the *Picture 8.8*.
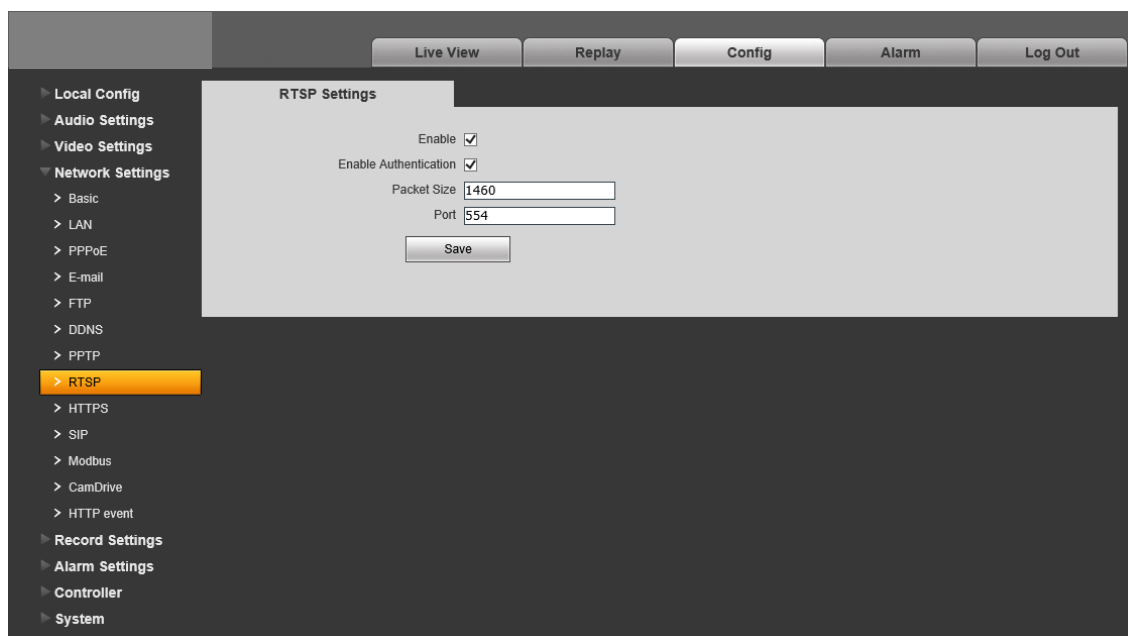
Pic. 8.8

Enable: enable the RTSP function.

Enable Authentication: tick off this option if it needs to use an authorization procedure to receive the RTSP stream. The following request must be used in this case: **rtsp://<IP>:<PORT>/av<X>_<Y>&user=<USER>&password=<PASS>**, where **<USER>** – user name, **<PASS>** – password.

Here is request for example:

rtsp://192.168.0.99:554/av0_0&user=<admin>&password=<admin>.

Packet Size: set the necessary size of a data packet. By default: 1460.

Port: RTSP port. By default: 554.

Press the **[Save]** button to apply new settings.

8.9. HTTPS

The **"HTTPS Settings"** menu is shown on the *Picture 8.9*.
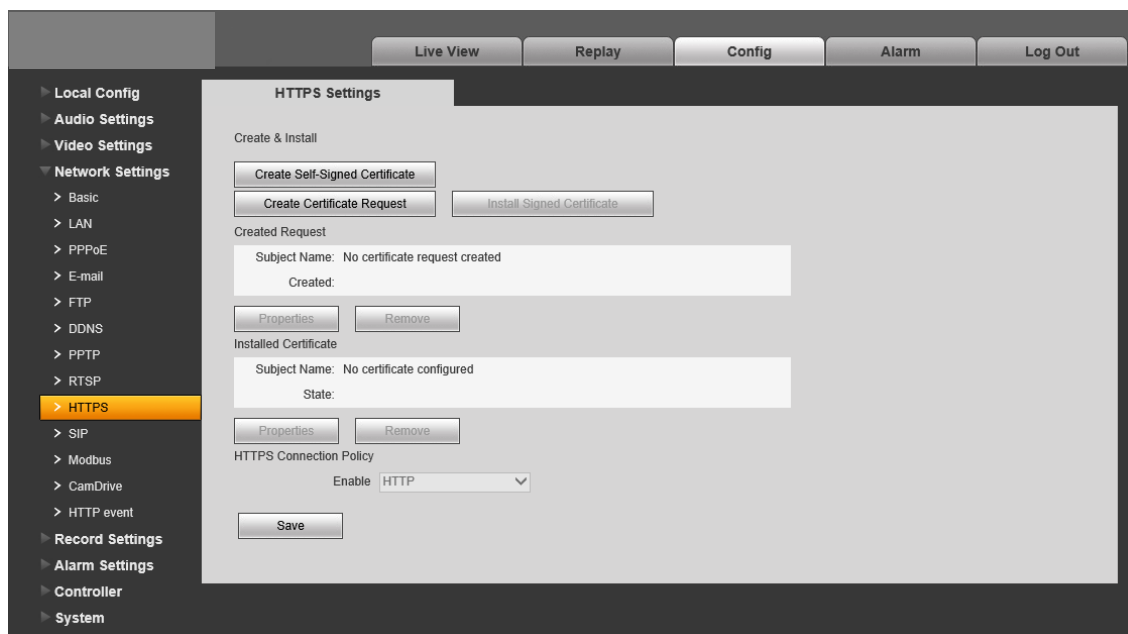
Pic. 8.9

A HTTPS protocol allows transferring data being encrypted. The TCP-port 443 is used for the HTTPS protocol.

Before using HTTPS connection you need to set parameters in the door station web-interface.

You can create a self-signed certificate or make a request for creating the certificate to the Certification authority.

[Create Self-Signed Certificate]: click to create a self-signed certificate. Fill in the fields in the pop-up window with necessary information and click **[Submit]**. The created certificate will be displayed in the "Installed Certificate" field.

[Create Certificate Request]: click to make a request to the Certification authority. Fill in the fields in the pop-up window with necessary information and click **[Submit]**. The created request will be displayed in the "Created Request" field.

Created Request: the request to the Certification authority is displayed in this field.

[Properties]: click to look through information on the certificate request which needs to be sent to the Certification authority.

[Remove]: click to remove the certificate request.

[Install Signed Certificate]: click to install the certificate received from the Certification authority in response to the request you made earlier. This button only becomes available after making the request. A web-page where you can upload a certificate file opens after clicking the button. Choose the file with the *".pem"* extension and click **[Upload]**. The certificate you install should correspond with the request, because the data are compared during the certificate installation.

> **NOTE!**
> It is necessary to change Internet Explorer security settings to permit uploading files from the local folder. For this purpose, go to the menu *Tools – Internet options – Security* and press the **[Custom level]** button. Find the item **"Include local directory path when uploading files to a server"** in the opened window and select **"Enable"** (*Pic. 12.5*).

Installed Certificate: the installed certificate either self-signed or from the Certification authority is displayed in this field.

[Properties]: click to look through information on the current certificate.

[Remove]: click to remove the certificate.

HTTPS Connection Policy: choose the necessary protocol. The following values are available: HTTP, HTTPS, HTTP & HTTPS.

The TCP-port 443 is used for the HTTPS protocol. Note this fact if you use a *port forwarding* on your router.

Press the **[Save]** button to apply new settings.

8.10. SIP

A web page with SIP settings is shown on the *Picture 8.10*.

Pic. 8.10

It is necessary to adjust these parameters before starting a SIP session.

Enable SIP #1 (#2): choose the account. Both accounts can be used at one time. By default, these items are disabled.

Name: the name of a door station; it is displayed during the call. By default, the field is empty.

Number: the number of a door station that is used for calling by other subscribers. By default the field is empty.

Username / Password: these data are used for registration (authorization) of a door station on the SIP server. By default, the field is empty.

SIP port: the number of the port which is used for interaction with a SIP user agent (UA). By default, the number is 5060.

Allow registration: the option allows the door station to be registered on a SIP server. Not enabled by default.

Get the address of a registration server via DHCP: put a tick to enable this option. Supporting by a SIP server is obligatory.

Registration server / Port: the network address and port of a registration server. Addresses of the registration server and the SIP server can match. By default, the fields are empty.

Get the address of a proxy server via DHCP: put a tick to enable this option. Supporting by a SIP server is obligatory.

Proxy server / Port: the network address of a proxy server and its port.

SIP server / Port: the network address of a SIP server (of a telephone exchange) and the number of the port for data exchange. By default the fields are empty.

NAT: choose to allow the door station to operate via a STUN server. The STUN server is one of the methods of getting access to devices in the network, which are situated "behind" NAT, without decreasing a level of network security. By default the item is disabled.

STUN IP / STUN port: the network address and port of the STUN server.

ATTENTION!

STUN doesn't work correctly with symmetric NAT. In case of using symmetric NAT the IP address of the STUN server differs from its endpoint address and therefore the NAT address, which is seen by the STUN server, also differs from the endpoint address, which is used for sending data to the user agent.

DTMF mode: choose the mode of transmitting DTMF signals. The following modes are available:

- RFC2833 – sends DTMF tones within RTP packets.
- SIP INFO – sends DTMF tones within INFO-messages.
- In-band – DTMF signals are included in the media stream; it is only used for G.711 alaw/ulaw.

Stream type: choose the type of the stream transmitting during the SIP session between the Guest and the Client. By default, a **main stream** is chosen for SIP 1, a **sub stream** for SIP 2. "Audio only" is also available.

Call subscriber when pressing "Call" button: it allows calling a call recipient by pressing the "Call" button on the door station panel. The function is disabled if no call recipients are chosen.

Call account: it needs for calling the recipient(s) by pressing the "Call" button on the door station panel. «SIP 1» is set by default. If the «SIP 1» account is not used, then the value changes to «SIP 2» (and vice versa).

Call recipient #1-5: specify the number of the recipient who needs to be called by pressing the "Call" button on the door station panel. By default, the fields are empty.

Relay out 1-3 (DTMF): specify the value of the DTMF signal; the relay outputs will be closed as the signal will be received. For example, the door will be opened when pressing the phone button specified in one of these fields. Up to 3 DTMF symbols are available (0-9, #, *). By default, the fields are empty.

End SIP session after door opening: choose to end the SIP session in case of receiving the "open the door" command (in case of receiving the DTMF signal of closing the relay outputs by the door station). The function can be set for each relay out separately. By default, the function is disabled.

Receive incoming calls: choose to receive the incoming calls using the SIP account(s) automatically without any user actions. The door station cancels the call (sends a message that the call is canceled) if the receiving account is not available.

Use call melody: put a tick to use a standard call melody instead of the sound of phone rings when calling a recipient by SIP.

Number of repeats: in this field you can set, how many times the call melody should be repeated. The "0" value means, that the melody is repeated again and again cyclically.

Answer without sound: enabling this option means that a call recipient can see and hear a guest when he gets the call, but the guest can't hear the recipient and doesn't know that connection is established.

Enable sound with command (DTMF): in this field you can set the value of a DTMF command (symbols: 0-9, #, *), which will be used for enabling sound transmission from the recipient to the guest for talking.

End SIP session by pressing "Call" button: it allows the subscriber on the door station side (Guest) to stop the call by pressing the "Call" button. The disconnection can be made **during the call** (the response is not received yet) or **during the talk**. By default, both items are enabled.

To save new settings click **[Save]**.

8.11. Modbus

A web page with Modbus protocol settings is shown on the *Picture 8.11*.

Pic. 8.11

You can connect to compatible equipment using the Modbus protocol.

Enable: put a tick to use the function.

TCP port: specify the number of the port for the Modbus protocol. The number by default is 502.

To save new settings click **[Save]**.

8.12. CamDrive

Connecting a door station to the CamDrive video surveillance service allows you to record video data and watch the archive online from any location, where Internet is provided, without using a static IP address.

NOTE!

An Internet connection is required for operation with the service. The output bitrate must be not less than 512 kbps.

A web page with the CamDrive connection settings is shown on the *Picture 8.12*.

Pic. 8.12

Enable: put a tick and click **[Save]** to connect a door station to the CamDrive service. After that the device will be restarted, and all the fields on the page will be filled in (*Pic. 8.13*).
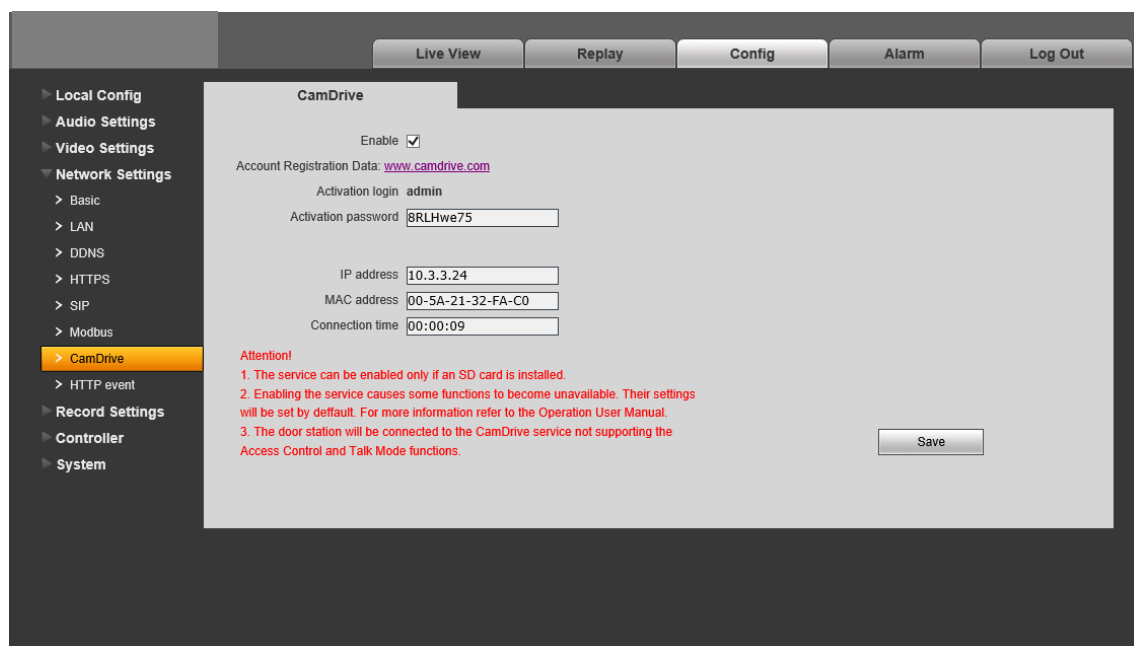
Pic. 8.13

Account Registration Data: www.camdrive.com: click the link and enter login and password to create a new CamDrive account or to add the door station to the one already existed.

Activation login: admin: the login for entering the account.

Activation password: the password for entering the account.

IP address: a door station IP address assigned by the CamDrive service.

MAC address: a door station MAC address assigned by the CamDrive service.

Connection time: the time that a door station stays connected to the service.

ATTENTION!

1. A door station can work with the CamDrive service only if a memory card is installed in. And for that purpose the card will be formatted, all the saved data will be removed.

2. While operating with the service some door station functions, such as PPPoE, E-mail, FTP, PPTP, RTSP, memory card (reading/recording, because it is used by the service), are not available and their parameters are set by default.

3. A door station connected to the CamDrive service can't perform access control and talk mode functions.

Remove the tick and click **[Save]** to disconnect the door station from the CamDrive service. The device will be restarted, and all its functions will become available again.
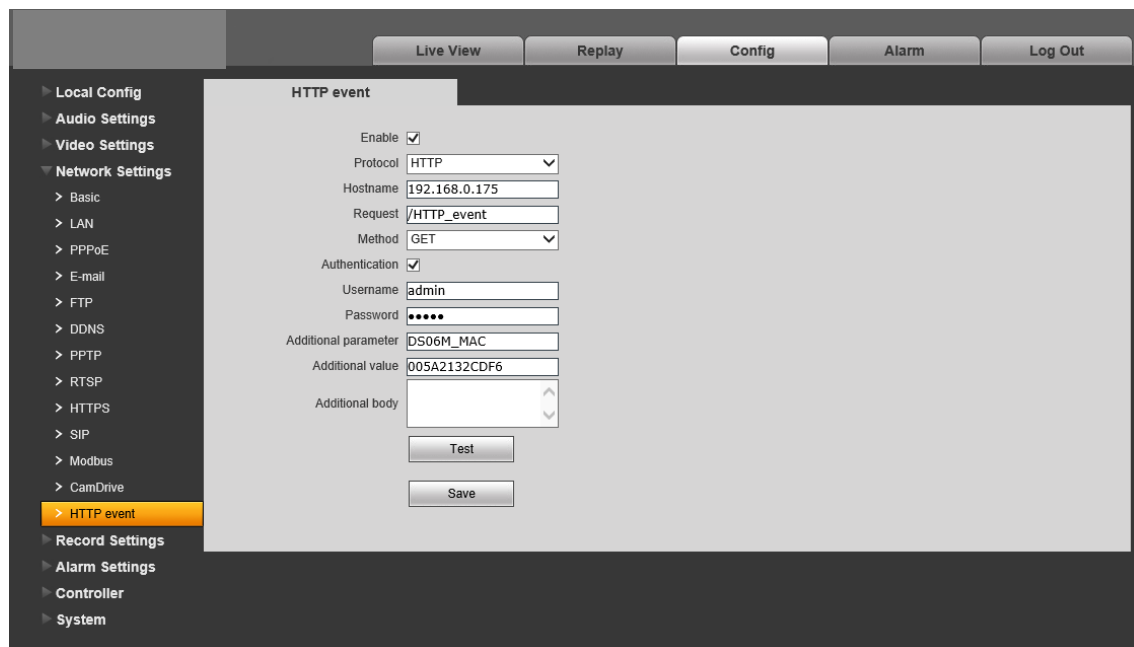
ATTENTION!

When disconnecting from the service the records, which were saved on a memory card in the CamDrive mode, are removed.

8.13. HTTP event

The "HTTP event" is a function of sending commands from a door station to other network devices on motion detection activation or on pressing the call button.

A web page with HTTP event settings is shown on the *Picture 8.14*.

Pic. 8.14

Enable: put a tick to enable the function.

Protocol: choose the protocol (HTTP/HTTPS) you want to use for sending notifications (commands).

Hostname: enter an address and a command for your HTTP event server. Symbols "&" and "=" are not supported.

For example, in the "Hostname" field it is necessary to enter "www.eventserver.org" for the URL http://www.eventserver.org.

In addition, in the "Hostname" field you can enter a port number, which differs from the default one ("www.eventserver.org:81" if the port number is "81").

Default port numbers ("80" for HTTP and "443" for HTTPS) are set automatically when choosing the protocol and therefore can be omitted.

Request: enter a request for your HTTP event server. For example, "/alarm" should be entered for the URL "http://www.eventserver.org/alarm".

Method: choose a method of sending notifications: GET or POST.

Authentication: put a tick to enable an authentication procedure for sending notifications.

Username: enter a username for authentication. 20 symbols is a maximal length. Lower and upper case letters are supported as well as the following symbols: «!», «@», «#», «$», «*», «_», «-», «,», «.».

Password: enter a password for authentication. 20 symbols is a maximal length. Lower and upper case letters are supported as well as the following symbols: «~», «!», «@», «#», «$», «%», «^», «*», «(», «)», «_», «+», «{», «}», «:», «"», «|», «<», «>», «?», «-», «;», «'», «\», «,», «.», «/».

Additional parameter: enter a name of the parameter, which is sent additionally. It is commonly required for the server when using a POST request.

Additional value: enter a value of the additional parameter if it is necessary.

Additional body: enter additional information added to the body of the notification. For example, it can be used for adding program code to make sending messages to an online chat, a blog, and so on.

[Test]: click this button to check if data you entered are correct. The HTTP request will be sent to the specified address.

To save new settings click **[Save]**.
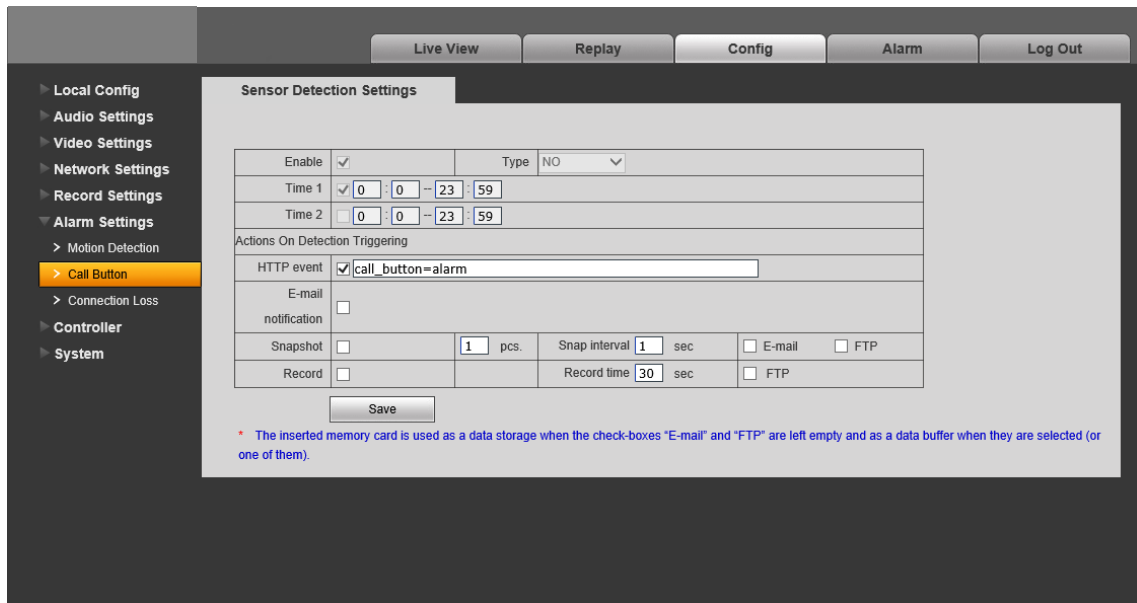
HTTP event examples

1) On motion detection activation (refer to 10.1):

Pic. 8.15

2) On pressing the call button (refer to 10.2):

Puc. 8.16

In both cases it is necessary to put a tick near the "HTTP event" field and enter the parameter you need. 127 symbols is a maximal length. Symbols "&" and "=" are supported.

That parameter will be sent to the HTTP event server specified in the menu on the *Picture 8.14*, according to the method GET/POST.

Notifications will not be sent if you don't set or enable the HTTP event server.

A HTTP request with additional parameters is made as follows:

http://<"Hostname" field value>?<"Additional parameter" field value>=<"Additional value" field value>&<"HTTP event" field value>HTTP/1.0

A HTTP request without additional parameters is made as follows:

http://<"Hostname" field value>?<"HTTP event" field value>HTTP/1.0

Chapter 9. Config: Record Settings

9.1. Memory card

A web page with memory card settings is shown on the *Picture 9.1*.
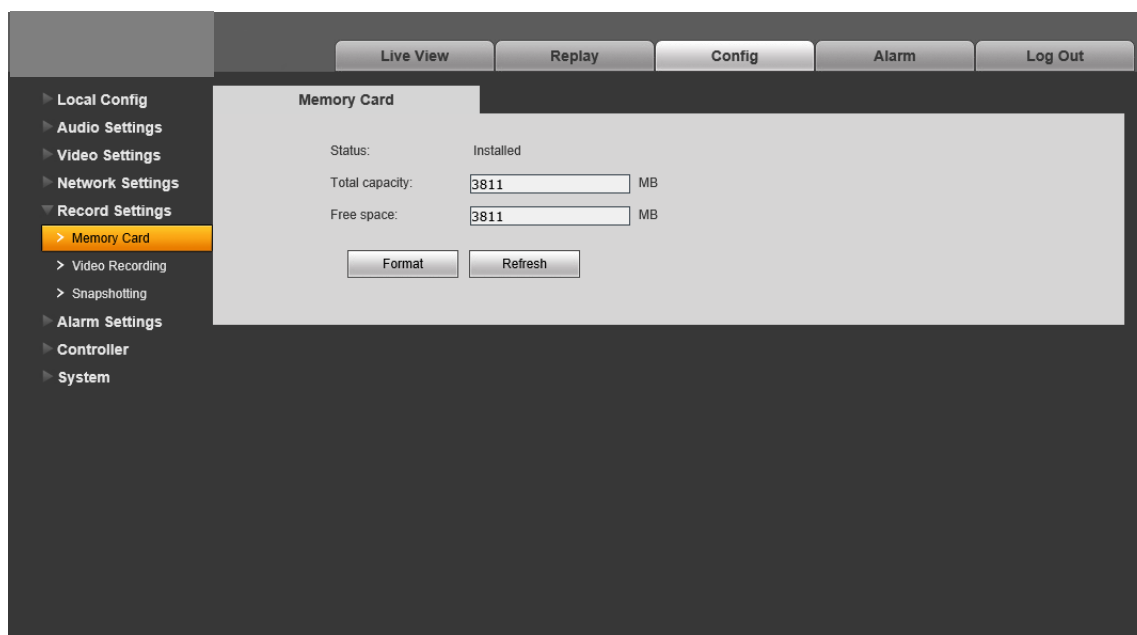
Pic. 9.1

The page contains information on the status of the memory card (installed / not installed), its total capacity and free space.

[Format]: click this button to start formatting the card.

[Refresh]: click this button to renew information on current parameters of the card.

> **ATTENTION!**
>
> The hot swap of a memory card is not supported by the door station and may damage the equipment or cause a data loss!
>
> Do not switch off the door station when formatting the memory card.
>
> The memory cards which contain several partitions after the formatting are not supported.

> **ATTENTION!**
>
> An overwriting function is enabled by default for this door station model. It means that old files are automatically removed to let new ones be recorded when the card is full.

9.2. Video Recording

The **"Video Recording"** menu is shown on the *Picture 9.2*.
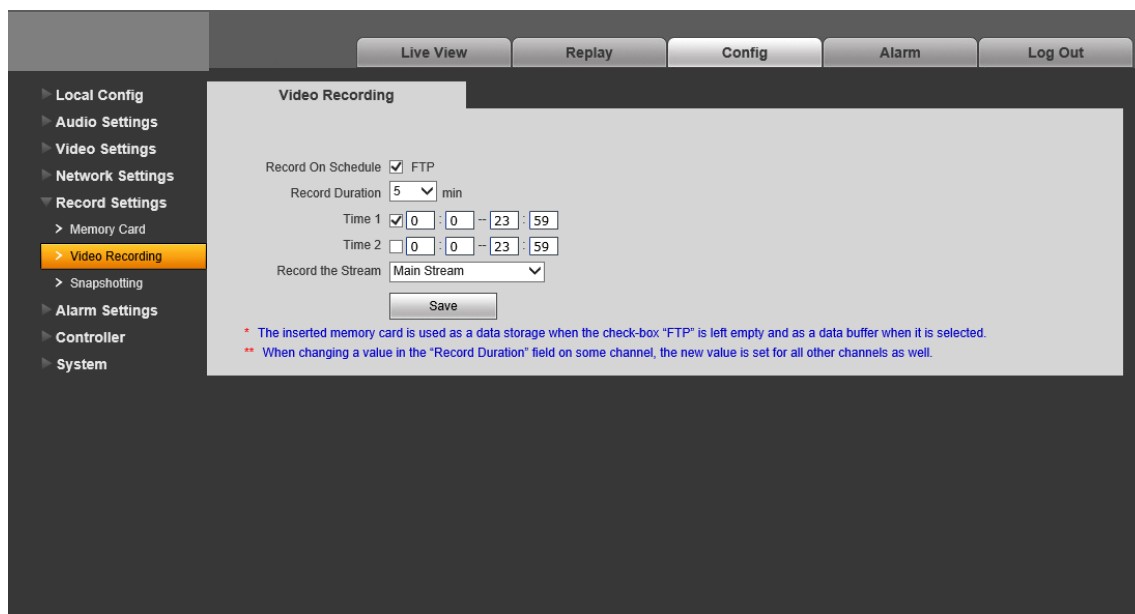
Pic. 9.2

Record On Schedule: put a tick to enable video recording on a schedule to the FTP server. Parameters of the FTP server can be set in the "FTP" menu (see paragraph 8.5).

NOTE!

If the "FTP" check box is not ticked off video files may be saved on the memory card.

Record Duration: choose the duration of the video files being recorded to the FTP server.

ATTENTION!

The memory card installed by default is also used for caching files when recording them to the FTP server. In that case file duration doesn't depend on the size of an inner buffer of the door station.

The inner buffer of the door station, which size is about 1 MB, is used for caching video files when recording them to the FTP server if the memory card is not installed. In that case video file duration varies from 1 to several seconds, depending on bitrate value.

Time 1 / 2: set the schedule for video recording. Two schedules are available.

Record the Stream: choose what video stream needs to be recorded, the main or the sub.

NOTE!

The "Record the Stream" setting is also influenced video recording on alarm.

Press the **[Save]** button to apply new settings.

9.3. Snapshotting

The **"Snapshotting"** menu is shown on the *Picture 9.3*.
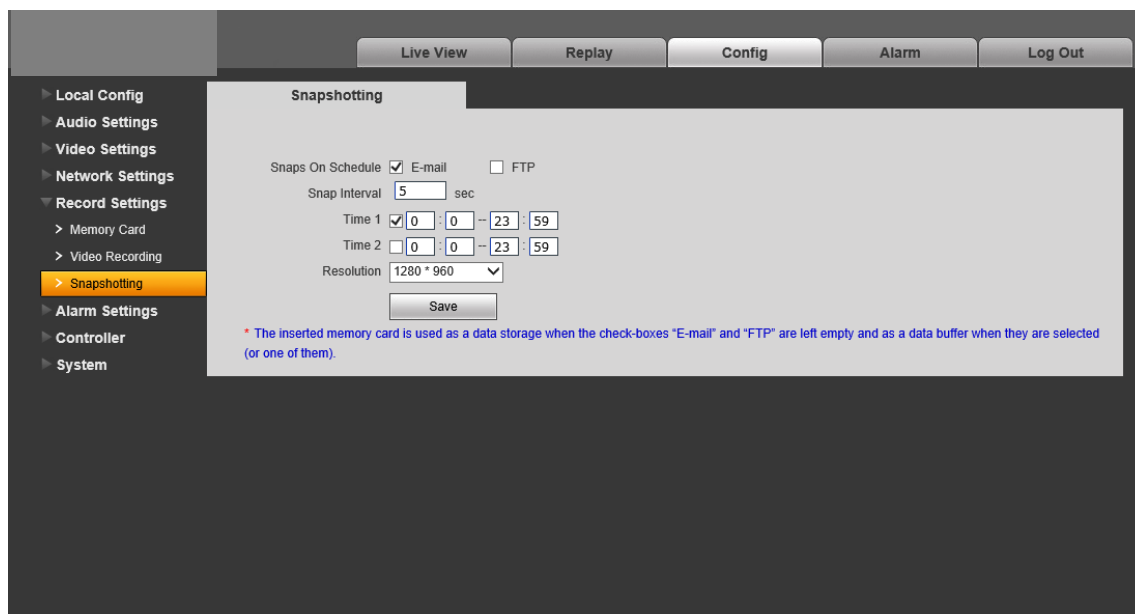
Pic. 9.3

Here you can set the schedule for the snapshotting function and choose where the snapshots will be saved, to the FTP server or to the mail server.

Snaps On Schedule: put a tick / ticks to enable snapshotting on a schedule and sending the snapshots to the FTP server or/and by E-mail. Parameters of the E-mail can be set in the "E-mail" menu (see paragraph 8.4). Parameters of the FTP server can be set in the "FTP" menu (see paragraph 8.5).

> **NOTE!**
> If the "FTP" check box or(and) "E-mail" check box is(are) not ticked off snapshots may be saved on the memory card.

Snap Interval: set the snapshotting time interval, 1 s is minimum, 3600 s is maximum.

> **ATTENTION!**
> The memory card installed by default is also used for caching files when recording them to the FTP server or by E-mail, so you can find these files on the memory card.

Time 1/2: set the schedule for snapshotting. Two schedules are available.

Resolution: choose a necessary resolution of the snapshots.

> **NOTE!**
> The "Resolution" setting is also influenced snapshotting on alarm.

Press the **[Save]** button to apply new settings.

Chapter 10. Config: Alarm Settings

10.1. Motion Detection Setting

The **"Motion Detection Setting"** menu is shown on the *Picture 10.1*.
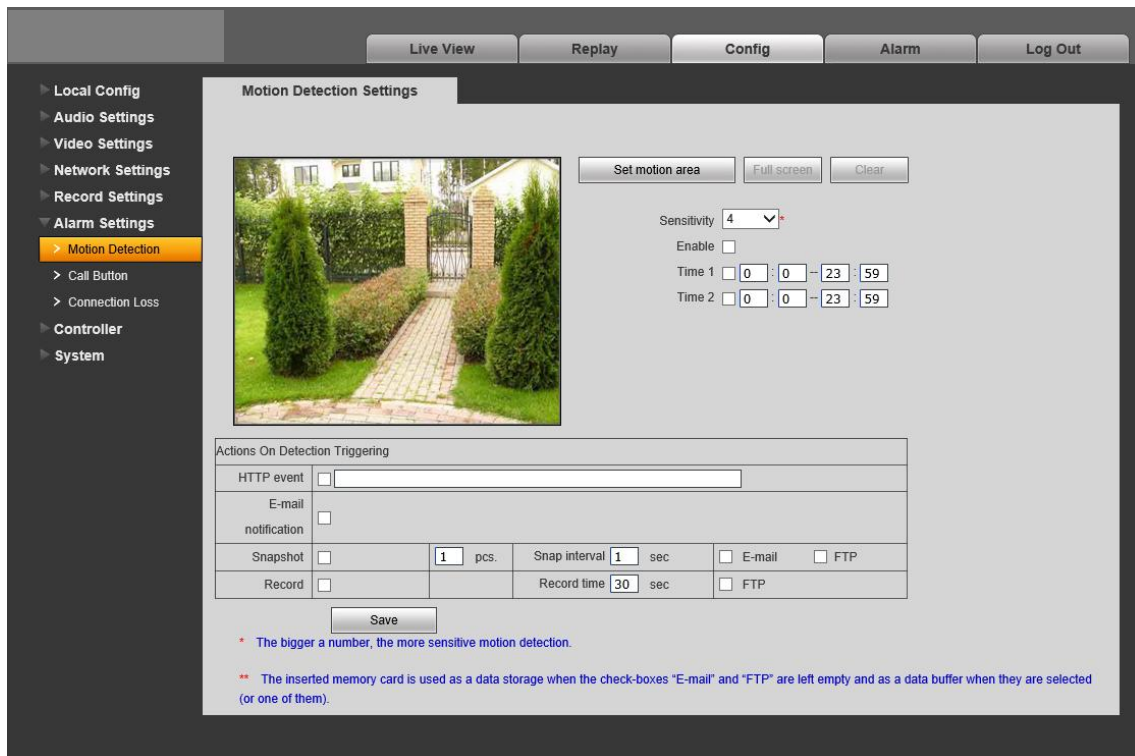
Pic. 10.1

This menu allows you to set motion detection parameters and conditions of sending files and notifications on motion detection triggering.

[Set motion area]: press this button to set the motion detection area. Press and hold the left mouse framing the area of the necessary size. You can set up to the 4 areas.

[Full screen]: set the motion detection area at full image size.

[Clear]: remove all the areas.

Sensitivity: set motion detection sensitivity. 5 levels are available: the bigger the number, the more sensitive the detection.

Enable: enable / disable the motion detection function.

Time 1/2: set motion detection operation by schedule. You can set 2 operating time periods.

HTTP event: put a tick near the "HTTP event" field and enter the parameter you need. That parameter will be sent to the HTTP event server, which you specified in the menu *Config – Network settings – HTTP event*, on motion detection activation.

127 symbols is a maximal length. Symbols "&" and "=" are supported.

Notifications will not be sent if you don't set or enable the HTTP/HTTPS event server (for details refer to the paragraph 8.13).

E-mail notification: tick off this option to activate sending e-mail notifications on motion detection triggering.

Snapshot: tick off this option to activate snapshotting on motion detection triggering. You can specify an amount of the snaps need be made in the field to the right.

Snap interval: set the snapshotting time interval.

E-mail / FTP: you can set E-mail and/or FTP server as a destination for sending the snapshots. The snapshots will not be recorded if nothing is set.

> **ATTENTION!**
>
> The memory card installed by default is also used for caching files when recording them to the FTP server or by E-mail, so you can find these files on the memory card.

Record: tick off this option to activate recording video files on motion detection triggering.

Record time: set a necessary duration of the video file.

FTP: you can set an FTP server as a destination for sending the video files. The files will not be recorded if nothing is set.

Press the **[Save]** button to apply new settings.

> **ATTENTION!**
>
> The memory card installed by default is also used for caching files when recording them to the FTP server. In that case file duration doesn't depend on the size of an inner buffer of the door station.
>
> The inner buffer of the door station, which size is about 1 MB, is used for caching video files when recording them to the FTP server if the memory card is not installed. In that case video file duration varies from 1 to several seconds, depending on bitrate value.

10.2. Call Button

The **"Call Button"** menu is shown on the *Picture 10.2*. This menu allows you to set different actions which can be done on pressing the call button of the door station.
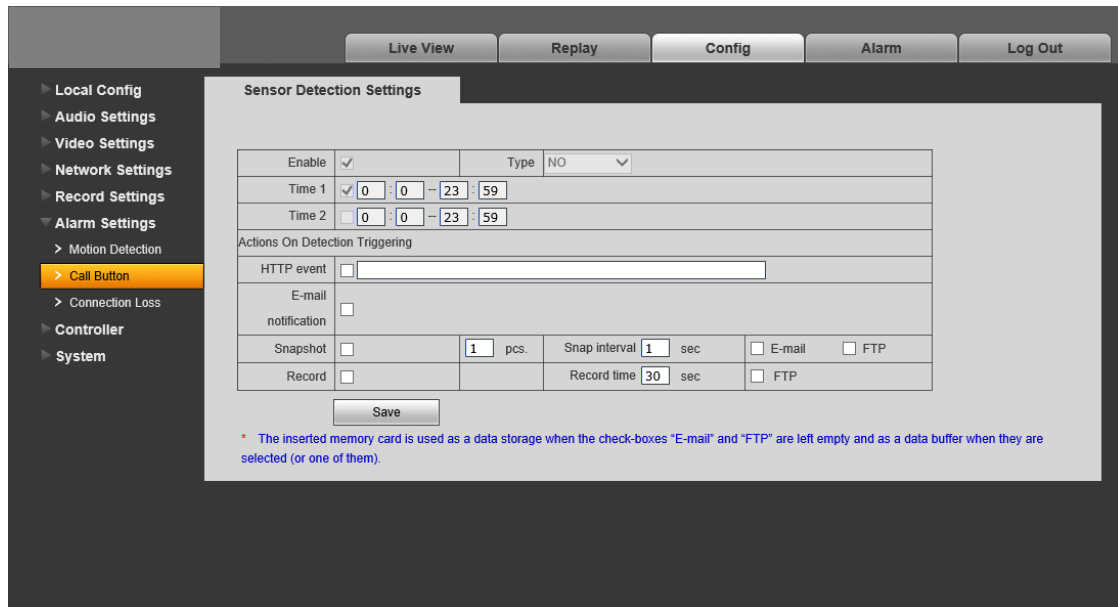
Pic. 10.2

This option is always enabled by default, that's why the checkboxes **"Enable"** and **"Time 1/2"** are not available.

HTTP event: put a tick near the "HTTP event" field and enter the parameter you need. That parameter will be sent to the HTTP event server, which you specified in the menu *Config – Network settings – HTTP event*, on pressing the call button of the door station. For details refer to the paragraph 8.13.

E-mail notification: put a tick to send a notification by E-mail on pressing the call button of the door station.

Snapshot: put a tick for making snapshots on pressing the call button of the door station. The number of the snapshots you can specify in the field to the right.

Snap interval: set the snapshotting time interval.

E-mail / FTP: you can set E-mail and/or an FTP server as a destination or storage for the snapshots. The snapshots will not be recorded if nothing is set.

> **ATTENTION!**
> The memory card installed by default is also used for caching files when recording them to the FTP server or by E-mail, so you can find these files on the memory card.

Record: tick off this option to activate recording video files on pressing the call button of the door station.

Record time: set a necessary duration of the video files.

FTP: you can set an FTP server as storage for the video files. The files will not be recorded if nothing is set.

> **ATTENTION!**
> The memory card installed by default is also used for caching files when recording them to the FTP server. In that case file duration doesn't depend on the size of an inner buffer of the door station.
> The inner buffer of the door station, which size is about 1 MB, is used for caching video files when recording them to the FTP server if the memory card is not installed. In that case video file duration varies from 1 to several seconds, depending on bitrate value.

Press the **[Save]** button to apply new settings.

10.3. Connection Loss

The **"Connection Loss"** menu is shown on the *Picture 10.3*.
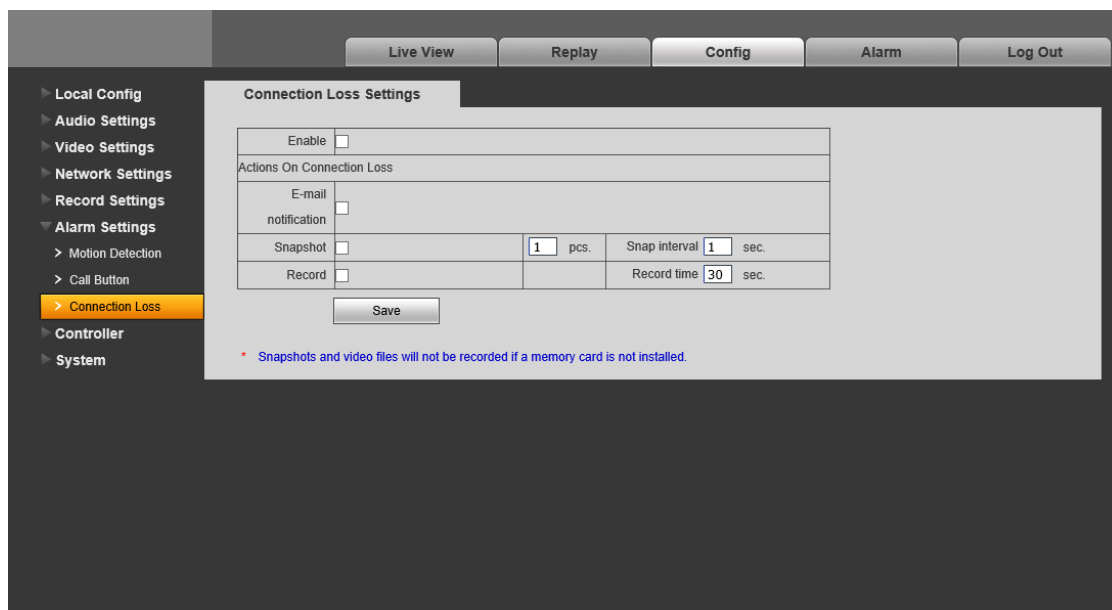
Pic. 10.3

This menu allows you to set different actions which can be done in case of disconnection.

Enable: put a tick to enable recording snapshots and videos in case of disconnection.

E-mail notification: put a tick to enable sending notifications by E-mail on connection loss. The notification is sent right after problems with connection are solved.

Snapshot: put a tick for making snapshots in case of the connection loss. The number of the snapshots you can specify in the field to the right.

Snapshot interval: set the snapshotting time interval.

Record: tick off this option to activate recording video files in case of the connection loss.

Record time: set a necessary duration of the video files.

Press the **[Save]** button to apply new settings.

> **NOTE!**
>
> In case of the connection loss snapshots and video files will not be recorded if a memory card is not installed.

Chapter 11. Config: Controller

The **"Controller Settings"** menu is shown on the *Picture 11.1*.
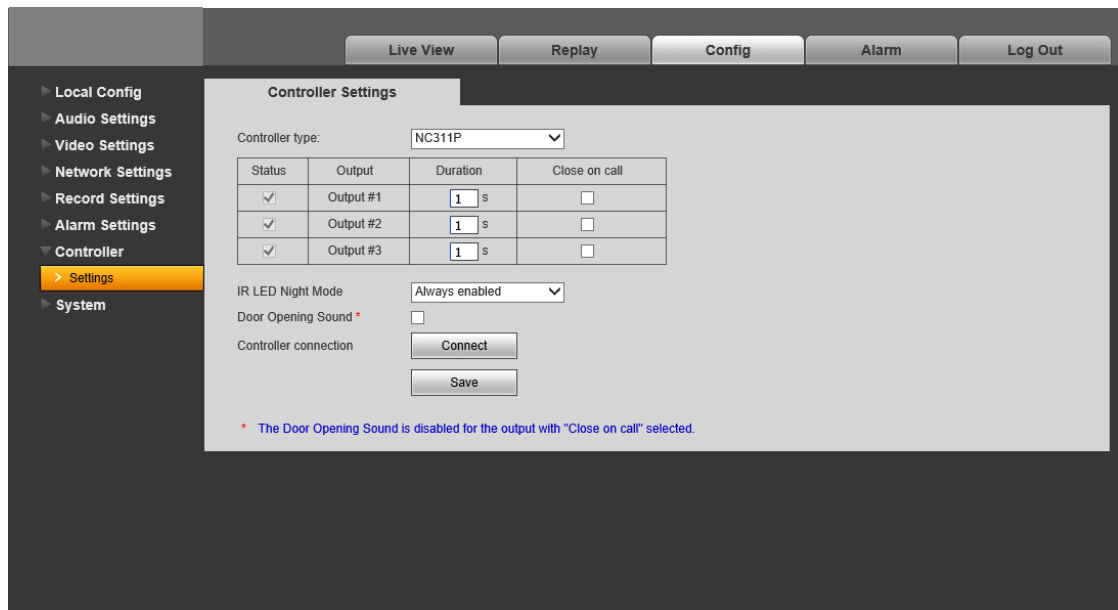
Pic. 11.1

The package contents may include a 1-channel (NC103 / NC103P) or a 3-channel controller (NC311P), depending on a purchased model of the door station.

You can connect to the door station devices of different types. In addition to the doors (door locks) it can be garage door openers, light switches, alarm systems and so on. You can connect one device to the 1-channel controller and three devices to the 3-channel controller.

Using a 3-channel controller, you are able to operate three different locks via one door station, that can be useful, for example, if you need open a gate, a garage door and a front door.

Controller type: choose the type of a controller: "1 channel" or "NC311P". The additional option, "Controller connection", appears on the page when choosing "NC311P" (see below).

Duration: set how long controller outputs must be closed / opened (depending on the type of a lock and its controller).

For the NC311P controller type, the "0" value of duration corresponds to the state, when controller outputs stay opened until receiving a command from the user to become closed. The values from 1 to 10 mean that the outputs are opened on the command and automatically closed in the time specified.

Close on call: if necessary, you can set closing relay output contacts on pressing the call button of the door station (for example, when connecting a door bell).

IR LED Night Mode: IR illumination of the door station has two operation modes: "On request" and "Always enabled".

The "On request" mode allows the IR LED to operate only on pressing the call button of the door station or in case of request of the program client to receive a video stream (for example, watching video image using PC applications or a web browser).

In the "Always enabled" mode the door station automatically switches between "Day" and "Night" modes on sensor without any additional influences from outside.

The "On request" mode is set by default.

The "On request" mode is preferable, because it increases LED operating time as well as allows the door station to be invisible from the outsiders at night.

Door Opening Sound: put a tick to play a sound signal through the door station speaker when clicking the "open the door" button in the BEWARD Intercom and BEWARD IP Visor applications.

NOTE!

The "Door Opening Sound" function doesn't work together with the "Close on call" option for the selected relay output.

The "Door Opening Sound" function doesn't work when opening the door via the SIP connection because the sound can't be played while the SIP channel is open.

ATTENTION!

Simultaneous use of the "On request" mode and the motion detection function at night time is not acceptable! In this case the motion detection operates incorrectly.

Controller connection: (available when the NC311P controller type is chosen) the **[Connect]** button is used for setting interaction between the controller and the door station.

ATTENTION!

For operation with the NC311P controller (in the DS06MP-3L package contents) it is obligatory to set interaction between the controller and the door station. This step must be done when using the NC311P first time and also when changing it to another one. Otherwise, you could not operate the controller.

For the interaction press the **"LINK"** button on the controller housing (refer to the Installation User Manual for details) and then click **[Connect]** in the current menu.

The interaction procedure takes about 1 minute from the moment of pressing the **"LINK"** button. Do not switch off or restart the door station during the procedure.

Press the **[Save]** button to apply new settings.

Chapter 12. Config: System

12.1. System Info

The **"System Information"** menu is shown on the *Picture 12.1*.
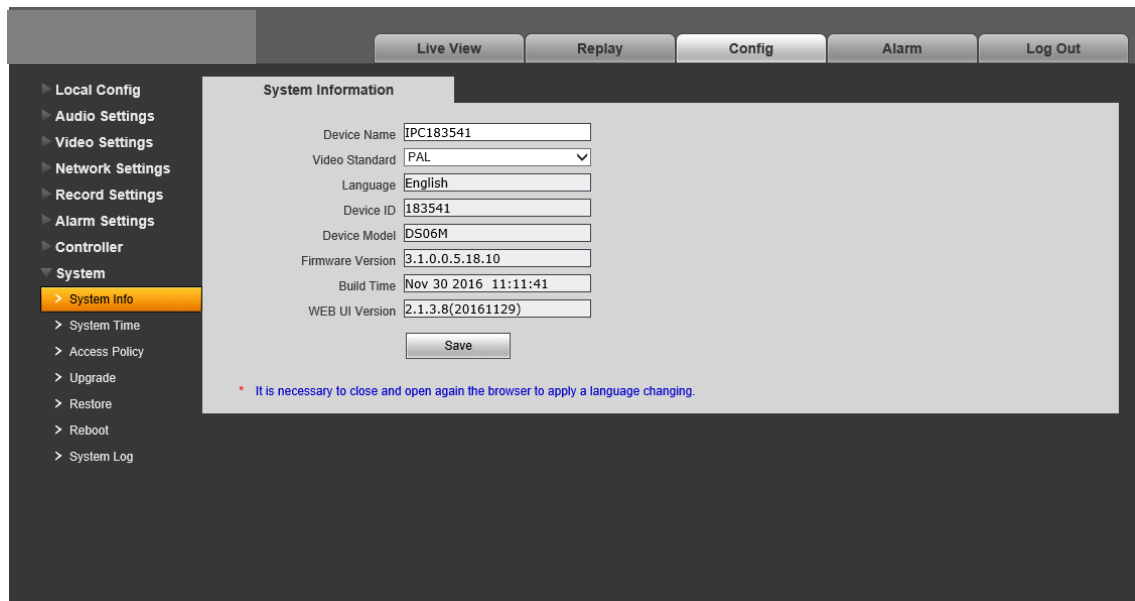
Pic. 12.1

This menu contains information on the device ID, model and current versions of the firmware (as well as the date and time when it was built) and the web interface. Moreover, you can change here the following settings:

Device Name: change the device name for its easy identification.

Video Standard: choose the standard of video broadcasting (PAL/NTSC).

Language: it is possible to upload different localization files in the **"Upgrade"** menu (refer to the paragraph 12.4) to use web interface in a suitable language.

Press the **[Save]** button to apply new settings.

12.2. System Time

The **"System Time"** menu is shown on the *Picture 12.2*.
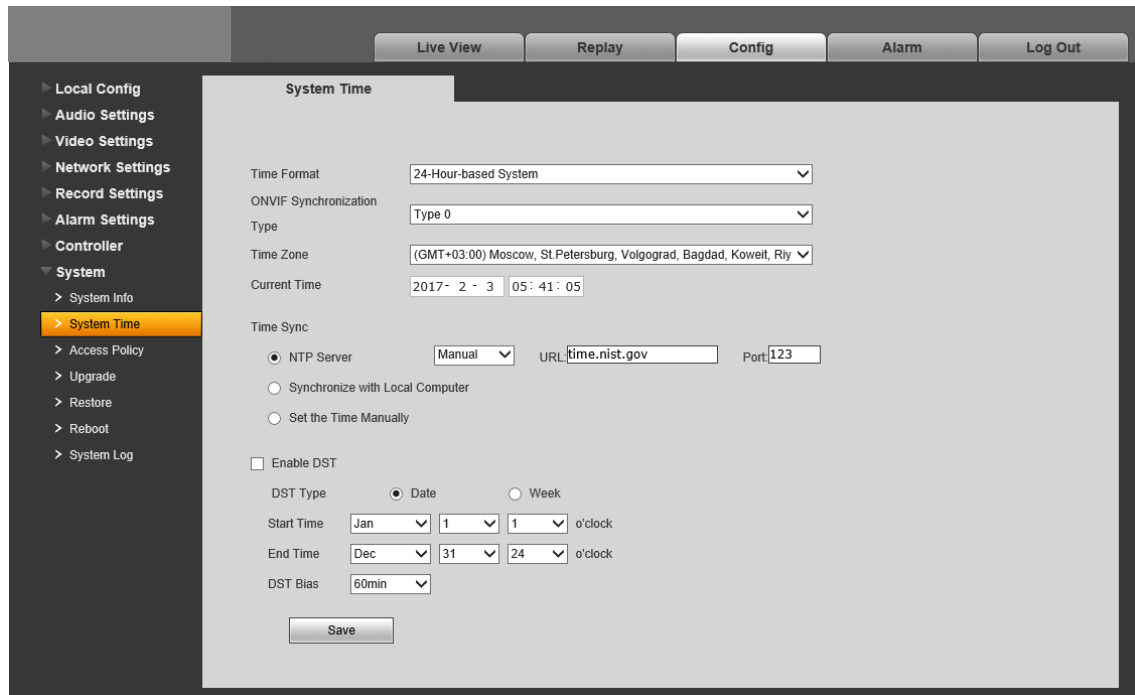
Pic. 12.2

Time Format: choose the time displaying format – 12- or 24-hour.

ONVIF Synchronization Type: choose the type of door station synchronization in accordance with an appropriate time standard (CST/GMT/UTC).

Time Zone: choose the time zone in accordance with location of the door station.

Current Time: these fields contain current date and time entered manually or synchronized with an NTP server.

NTP Server: tick off this option to conform time and date with a standard time server (by default – *time.nist.gov*) in Internet, using the NTP (Network Time Protocol). You can enter web address and port of an NTP server in the fields to the right.

- **Manual/Auto:** the two ways an NTP server can be chosen.

Set "Manual" to enter address and port of the NTP server in the fields to the right.

Set "Auto" to let the door station try to use NTP servers from the list by default till the moment of successful synchronization. The fields to the right will not be available. The list of NTP servers by default is given in the Appendix A.

Synchronize with Local Computer: press this button to set date and time according to time settings of the PC which is used for work with the web interface of the door station.

Set the Time Manually: choose it to set date and time manually in the "Current Time" field.

Enable DST: tick off this item to set a daylight saving time option.

DST Type: you can choose the specific date of time advancing ("Date" type) or a day of the week ("Week" type).

Start / End Time: set the time of advancing and backward adjusting.

DST Bias: set a size of the time shift.

Press the **[Save]** button to apply new settings.

12.3. Access Policy

The **"Access Policy"** menu is shown on the *Picture 12.3*.
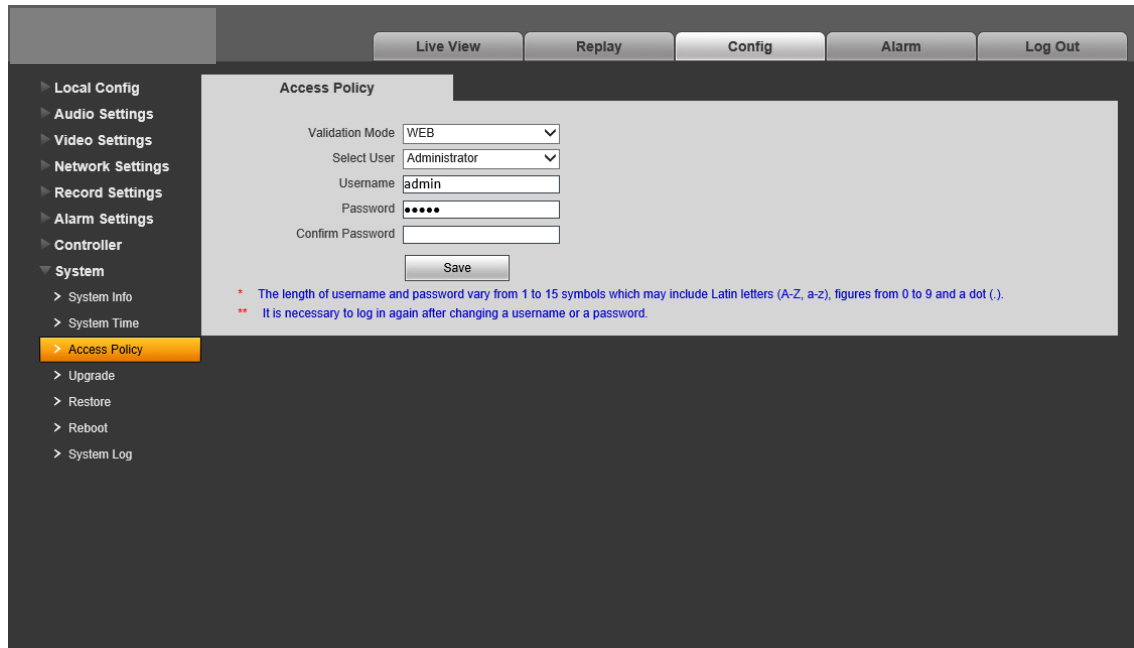
Pic. 12.3

Validation Mode – WEB: this mode determines that username and password for door station access are entered in the authorization window.

By default the door station has 3 user accounts:

- **"Administrator"** has username and password as "**admin** / **admin**". This is the main user account so it has no limits of access rights.

- **"User1"** has username and password as "**user1** / **user1**".

- **"User2"** has username and password as "**user2** / **user2**".

The following parts of the web interface are only available for the users authorized as **"User1"** and **"User2"**: **"Live View"**, **"Replay"** and **"Local Config"**.

Press the **[Save]** button to apply new settings.

NOTE!

Entering username and password, pay attention to the size of symbols. Both uppercase and lowercase letters are available. The length of username and password vary from 1 to 15 symbols which may include Latin letters (A-Z, a-z), figures from 0 to 9 and a dot (.).

12.4. Upgrade

The **"File Uploading"** menu is shown on the *Picture 12.4*.
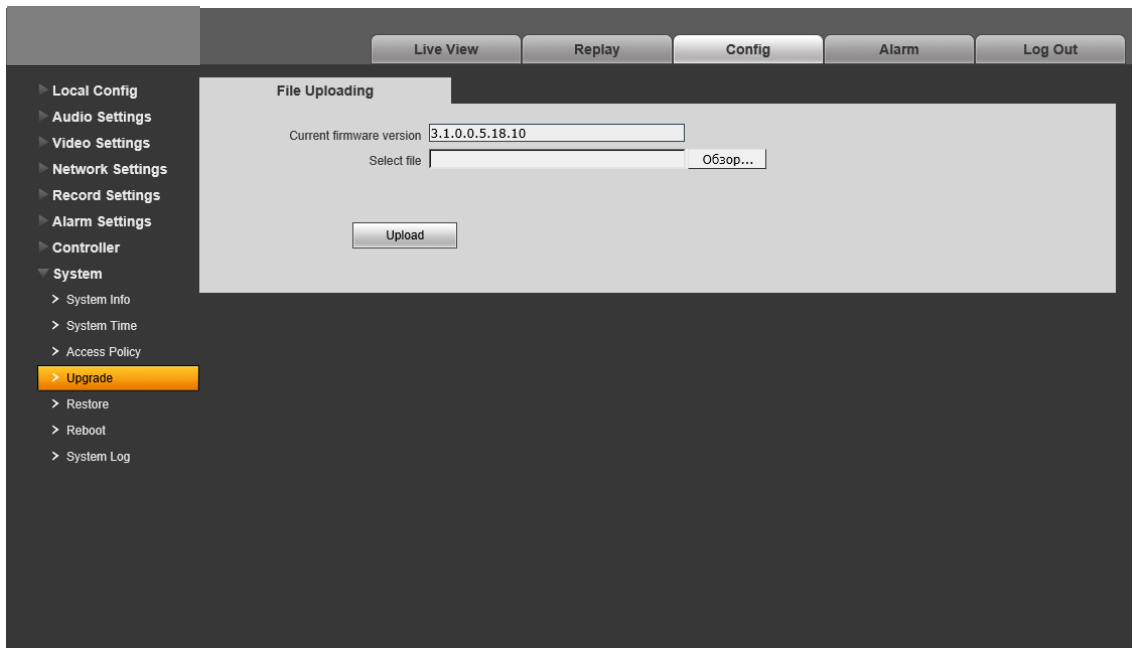
Pic. 12.4

To upgrade the device firmware or upload a localization file do as follows:

1. Press the **[Browse]** button. Choose the appropriate file in the opened File Explorer window and press the **[Open]** button.

2. Press the **[Upload]** button to start upgrading. The door station is automatically rebooted after upgrading procedure completing.

NOTE!

It is necessary to change Internet Explorer security settings to permit uploading files from the local folder. For this purpose, go to the menu *Tools – Internet options – Security* and press the **[Custom level]** button. Find the item **"Include local directory path when uploading files to a server"** in the opened window and select **"Enable"**. (*Pic. 12.5*).
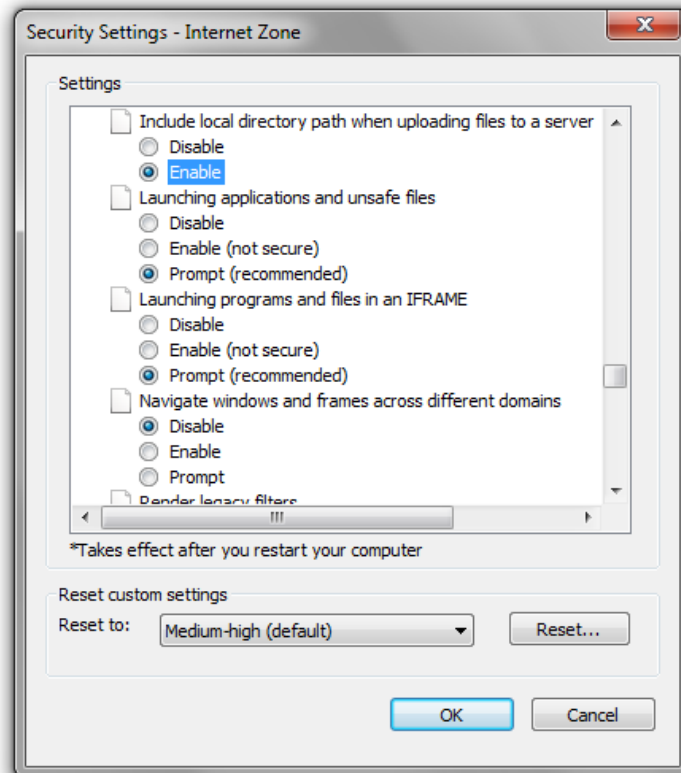
Pic. 12.5

3. Set door station parameters by default (see paragraph [12.5](#)).

ATTENTION!

Use only appropriate firmware files which conform to the device model! The device may operate incorrectly and be damaged in case of using an unsuitable firmware file.

Do not disconnect the device from the network while the firmware is upgraded. The door station will have the IP address 192.168.0.99 after restoring to default settings.

The device breakdown caused by incorrect firmware upgrading is not covered by the warranty.

12.5. Restore

The **"Restore Settigs"** menu is shown on the *Picture 12.6*.
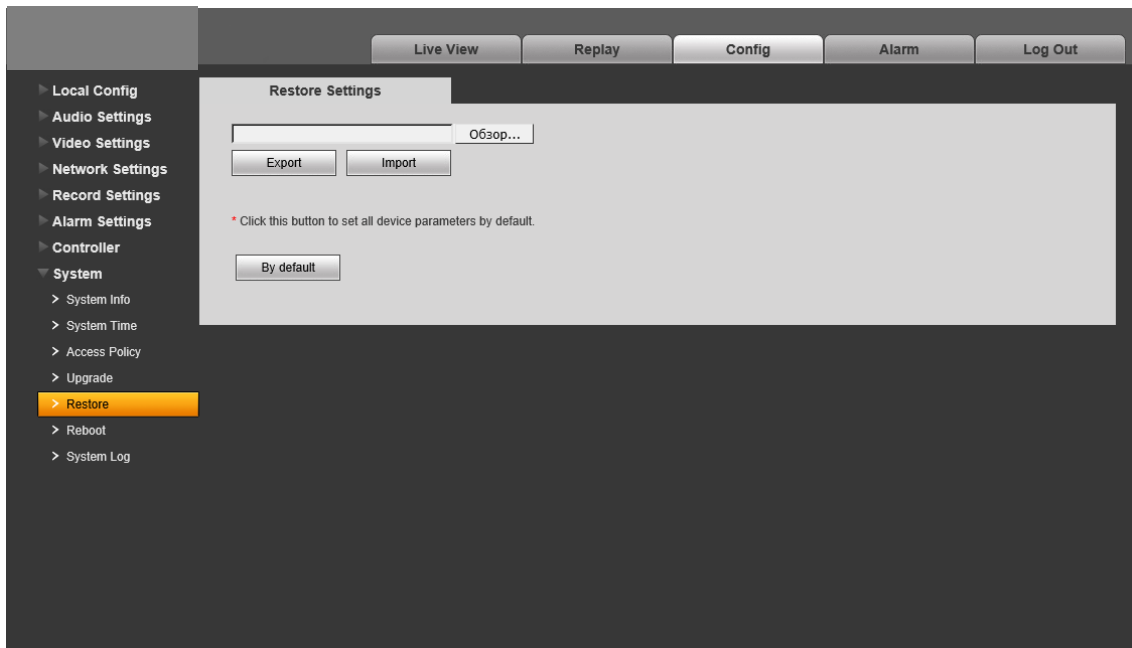
Pic. 12.6

Here you can set the door station by default in case of some problems or after firmware upgrade. Moreover, you can save the main door station settings as a file to reset them later.

[Export]: click to save door station settings as a file with the **".bak"** extension. The file name contains the date and the time of saving (according to the door station clock).

[Import]: click to reset the settings from the **".bak"** file. Click **[Browse]**, choose the file and click **[Import]**. After restoring the settings the device will be rebooted.

[Restore]: press this button to set door station parameters by default. Enter the administrator password and press the **[OK]** button to confirm restoring in the opened window. Press **[X]** to cancel restoring. Here you can also put a tick **"Save network settings"** to keep LAN settings of your door station (*Network Settings – LAN*) without changing.

The door station will be automatically rebooted after restoring the default settings. All the parameters, including an IP address and a current date, are set by default.

12.6. Reboot

The **"Reboot"** menu is shown on the *Picture 12.7*.
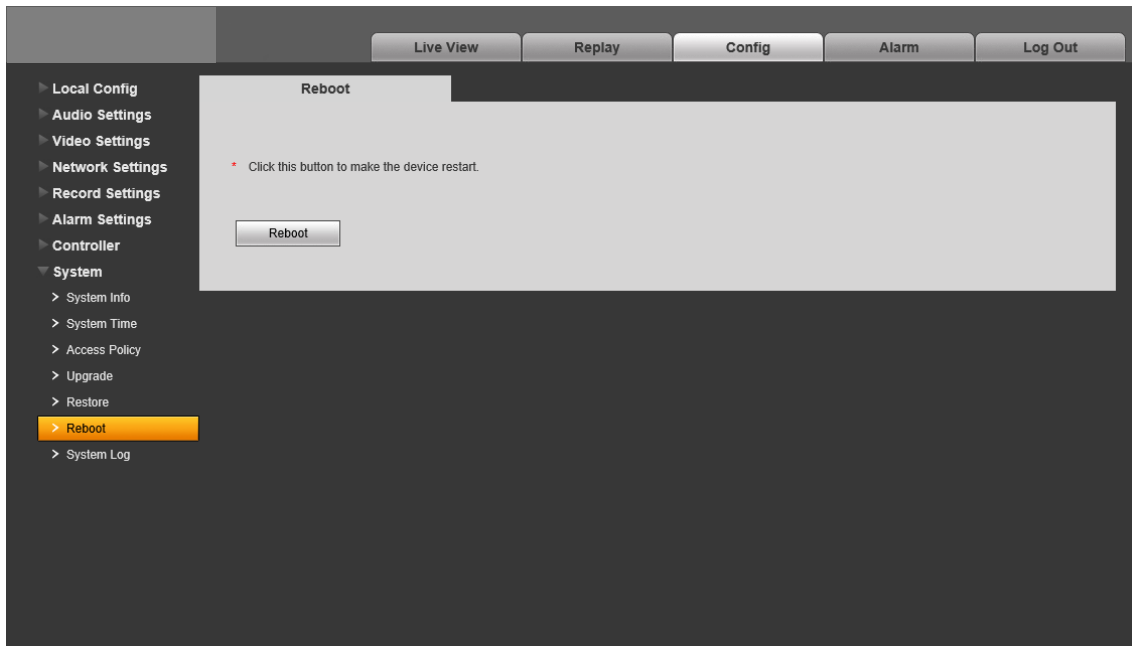
Pic. 12.7

[Reboot]: press this button to reboot the door station. This procedure may last 1-2 minutes. Enter the administrator password and press the **[OK]** button to confirm rebooting in the opened window. Press **[X]** to cancel rebooting.

12.7. System Log

The **"System Log"** menu is shown on the *Picture 12.8*.
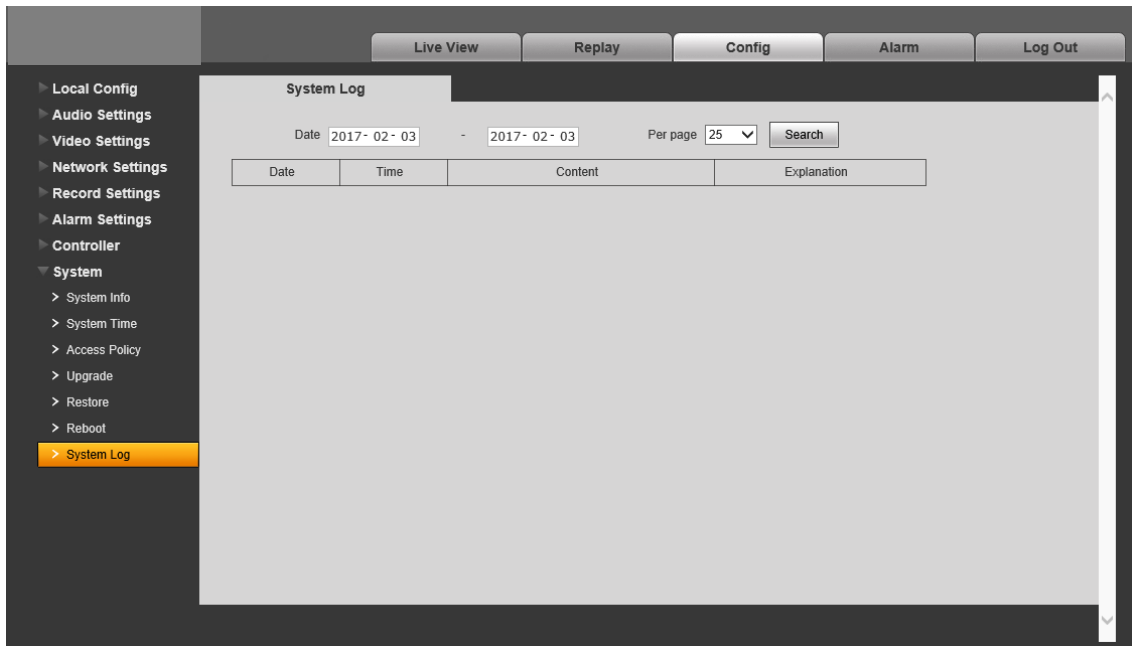
Pic. 12.8

The system log contains information about changes of the door station settings and the system events that happened. The log starts recording information automatically after the device is switched on.

The following settings are available in that menu:

Date: specify the necessary search period.

Per page: specify the number of lines per a log page.

Press the **[Search]** button to start searching the events.

Chapter 13. Alarm

The **"Alarm Log"** menu is shown on the *Picture 13.1*.
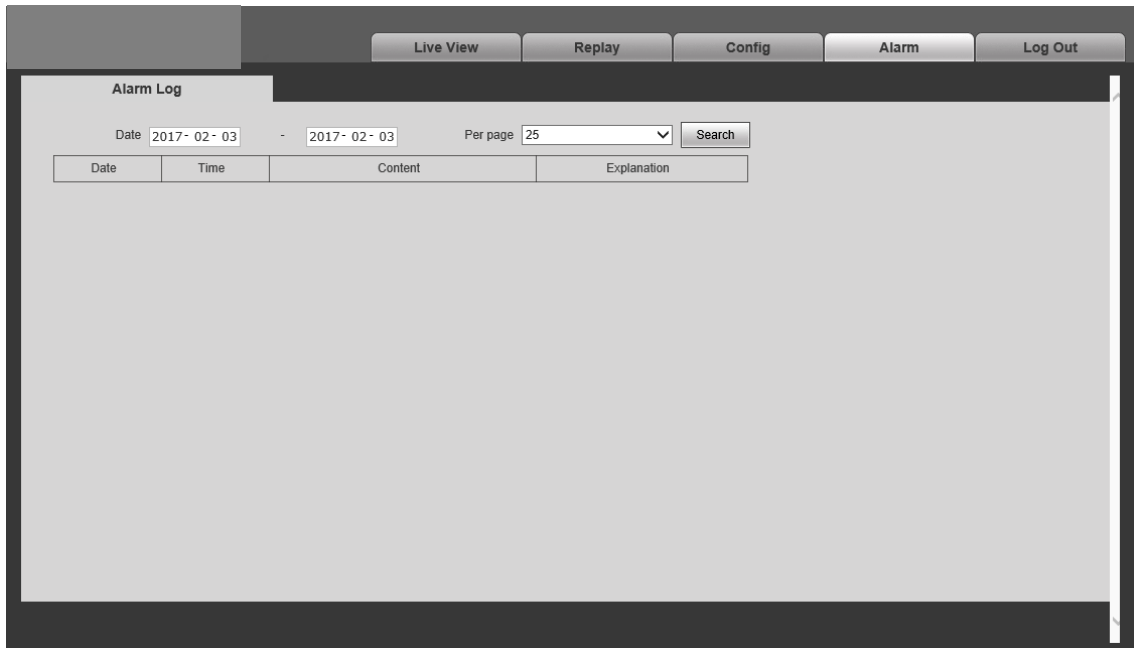
Pic. 13.1

This menu has a similar look and functionality as the previous one (see paragraph), excepting one difference that it is used for searching alarm events only.

Chapter 14. Recommendations on Setting and Operation of DS06A(P)

IP intercom systems unite different types and configurations of equipment (PCs, laptops, microphones, speakers, etc.). Consequently, correct operation of the whole system depends on proper setting of each used device taking into account the peculiarities of their joint operation.

14.1. Acoustic Echo Cancellation

Using the door station the Client or the Guest may hear an echo feedback from their PC speakers or the door station speaker accordingly.

The echo feedback on the Guest side (door station speaker) depends on settings of audio output equipment of Client's PC as well as on audio settings in the operating system on Client's PC.

The echo feedback on the Client side (PC speakers) depends on the door station settings.

The echo feedback may occur when one or more of the following conditions are taken place:

- Microphone Boost level is too high;
- The speakers are too close to the microphone;
- The speaker volume is turned up so as the microphone hears the speakers;
- The microphone is very sensitive.

The most efficient method to remove the echo feedback effect on the Client side is use of headphones or a hands-free unit by the Client for a conversation with the Guest. If this is impossible according to some reasons, follow the recommendations below.

There are two main ways of reducing the echo feedback effect: **change of audio settings in the operating system** and **change of audio settings of the door station**.

1. To reduce the echo feedback effect on the Guest side (door station speaker) by changing settings of the operating system do as follows:

- go to *Control Panel – Sound – Recording*, double-click the recording device set by default (microphone) and ensure that the **"Listen to this device"** option is disabled on the *Listen* tab.
- go to *Control Panel – Sound – Playback*, double-click the playback device set by default and ensure that the **"Microphone"** option is disabled on the *Levels* tab (button ![button]).

It is also possible to reduce the echo feedback effect by selecting the *Enhancements* tab on the microphone properties page and enabling one of the following options:

- Enable Noise Suppression
- Enable Acoustic Echo Cancellation

> **NOTE!**
> These settings are audio hardware and software specific and may not be available for all microphones.

> **NOTE!**
> The names of options in the OS menus may differ from the ones mentioned above.

2. Some features of functionality of the door station can be effectively used to reduce the echo feedback effect on the Client side (PC speakers). In the Web User Interface menu go to *Config – Audio Settings – Audio Parameters* and put a tick near **"Echo Cancellation"**.

14.2. Sound Gain and Volume Adjusting

1. If the Client can't hear the Guest well or his voice is interrupted, or if the Guest hears his echo, then change your operating system settings as follows:

- go to *Control Panel – Sound – Recording*, double-click the recording device set by default (microphone) and reduce microphone boost level and volume level (if necessary) on the *Levels* tab. It is recommended to set microphone boost level to 0 dB, volume level to 100. It is also necessary to ensure that the **"Listen to this device"** option is disabled on the *Listen* tab.
- reduce volume level of the PC speakers to the minimal appropriate level. If it is too high, then the microphone may receive the audio waves from the speakers and, therefore, the Guest may hear his echo as well as the Client may hear the Guest with interrupts.
- place the PC microphone farther from the speakers and closer to Client's face.

Moreover, you can adjust the gain of sound transmitted from the door station microphone to the PC speakers in the Web User Interface. Go to *Config – Audio Settings – Audio Parameters* and change the **"Input Volume"** parameter to the appropriate value. The lower "Input Volume" value, the quieter Guest's voice and his echo, and vice versa.

2. If the Guest can't hear the Client well or his voice is interrupted, then change your operating system settings as follows:

- go to *Control Panel – Sound – Recording*, double-click the recording device set by default (microphone) and increase microphone boost level on the *Levels* tab. Then, set appropriate volume level. It is recommended to set microphone boost level to 0 dB, volume level to 100. Values of the parameters may vary depending on the PC microphone type.
- ensure that the **"Listen to this device"** option is disabled on the *Listen* tab.
- reduce volume level of the PC speakers to the minimal appropriate level.

Moreover, you can adjust the gain of sound transmitted from the PC microphone to the door station speaker in the Web User Interface. Go to *Config – Audio Settings – Audio Parameters* and change the **"Output Volume"** parameter to the appropriate value. The lower "Output Volume" value, the quieter Client's voice and his echo, and vice versa.

Appendices

Appendix A. Factory Defaults

Parameter	Value
IP address	192.168.0.99
Subnet mask	255.255.255.0
Gateway	192.168.0.1
Username (administrator)	admin
Password (administrator)	admin
HTTP port	80
Data port	5000
RTSP port	554
ONVIF port	2000
NTP-server	time.nist.gov time.windows.com time-nw.nist.gov time-a.nist.gov time-b.nist.gov

Appendix B. Example of SIP Setting

B1. Direct Connection

Setting the SIP direct connection using the MicroSIP application is given for example. In case of using other applications the setting is done in a similar way.

ATTENTION!

It is necessary to provide a connection channel between the devices (door station and PC with the application) for the direct connection. Pay attention that the Port 5060 is only used for establishing connection, but data are transferred via RTP (the range of port numbers by default is 1024-65535). The devices need be accessible via these ports for correct SIP operation.

Install and run MicroSIP. The application window is given below:

Pic. B1

Go to the door station web interface menu for setting SIP connection.

You only need specify the following parameters for the SIP direct connection:

Enable SIP #1: put a tick to enable a SIP option.

Name: enter a device name for its easy identification.

Number: enter the door station IP address.

Call recipient #1: enter the IP address of the device which will receive the call (for example, PC).

To apply new settings click **[Save]** (*Pic. B2*).
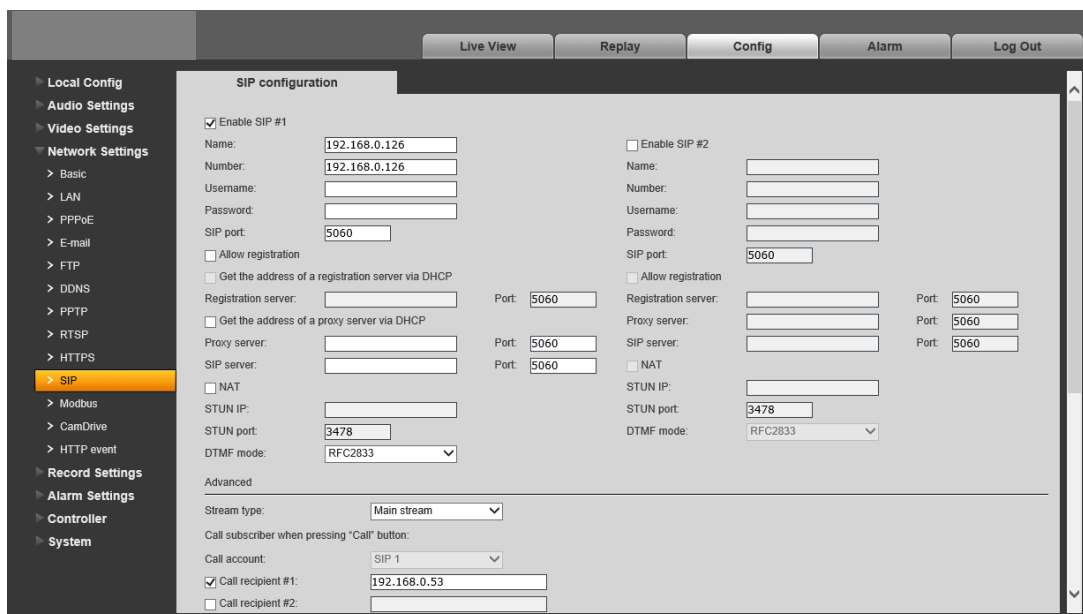
Pic. B2

If the settings are correct then you will see the following window after pressing the call button of a door station:
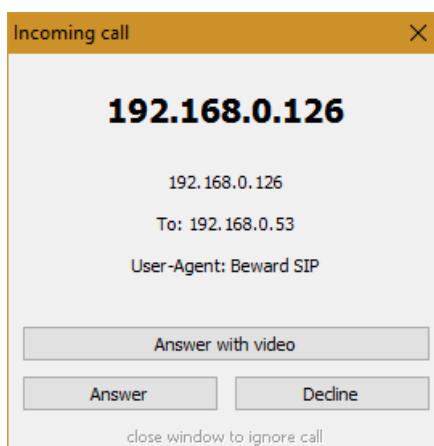
Pic. B3

You can answer or cancel the call.

Setting the SIP direct connection is finished.

B2. SIP Server

Setting connection via a SIP server using the MicroSIP application is given for example. In case of using other applications the setting is done in a similar way.

ATTENTION!

It is necessary to provide a connection channel between the devices (door station and PC with the application) in case of using a SIP server. Pay attention that the Port 5060 is only used for establishing connection, but data are transferred via RTP (the range of port numbers by default is 1024-65535). The devices need be accessible via these ports for correct SIP operation.

Install and run MicroSIP. The application window is given on the *Picture B1*. Click **Menu – Add account**:

Pic. B4

Enter the following main data:

SIP server: your SIP server address.

User: your account username.

Domain: your account domain.

Login: username for authentication.

Password: your account password.

If necessary you can also enter additional parameters. To apply new settings click **[Save]**.

NOTE!

Contact your system administrator for local SIP server settings. If you have no a local SIP server then you can use any Internet SIP server you prefer.

Go to the door station web interface menu for setting SIP connection.

You commonly need specify the following parameters:

Enable SIP #1: put a tick to enable a SIP option.

Name: enter the name to identify a door station.

Number: enter the SIP number for your account.

Username: enter the username for authentication.

Password: enter the password for authentication.

SIP port: enter the SIP port (by default – 5060).

Allow registration: put a tick to use a SIP server.

Registration server: enter the domain address for your SIP account.

SIP server: enter the address of your SIP server.

Call recipient #1: enter the SIP number of the device which will receive the call (for example, SIP number of a PC).

To apply new settings click **[Save]** (*Pic. B5*).
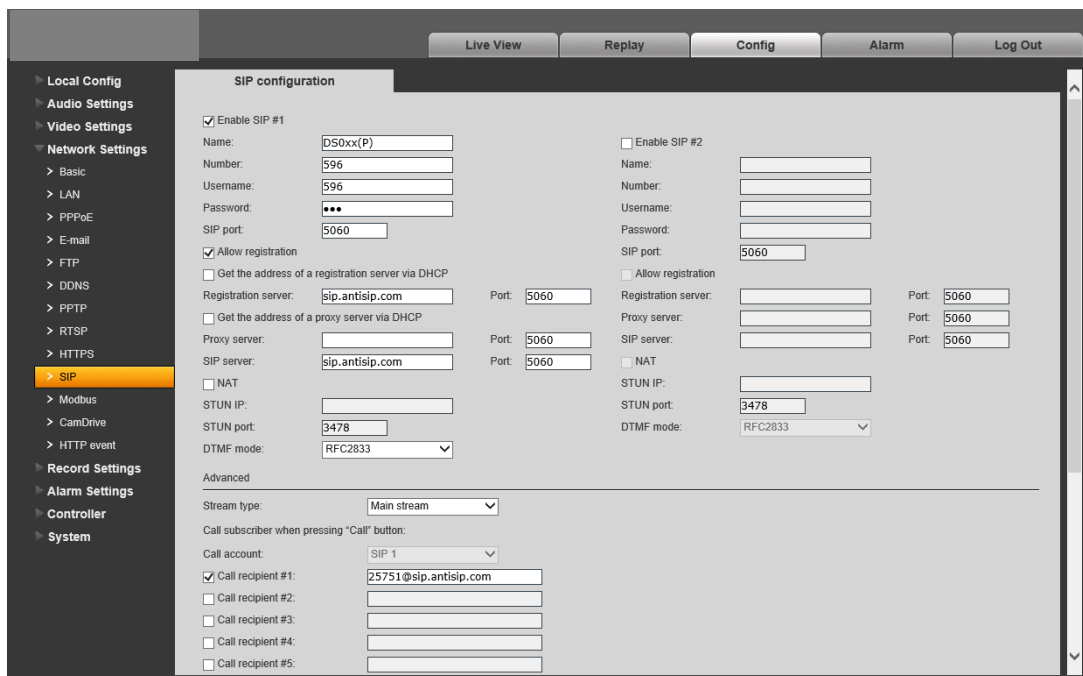
Pic. B5

If the settings are correct then you will see the following window after pressing the call button of a door station:
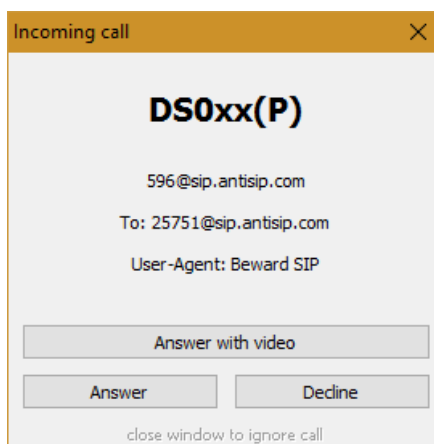
Pic. B6

You can answer or cancel the call.

The setting is finished.

Appendix C. SIP Hardware and Software (for transmitting video and sound via SIP) Compatibility Lists

C1. PBX Compatibility

- 3CX
- Asterisk 11
- Asterisk 12

C2. Software Compatibility

- Jitsy 2.8.5426 (Windows Desktop, Mac OS X, Linux)
- MicroSIP 3.12.1 (Windows Desktop)
- Linphone 3.9.1 (Windows Desktop, Android)
- Grandstream Wave (Android, iOS)

C3. Hardware Compatibility

- Видеотелефон Grandstream GXV3240, GXV3275
- Yealink SIP VP-T49G

Appendix D. Glossary

Client is person who controls a door station using computer.

Door Station Controller is used for powering the door station, network connection, processing the signal of door opening and signals of other devices that can be connected to the door station.

Guest is a person who presses the call button on a door station installed outside.

IP Video Door Station is a device which is used for controlling the access to some territory or building and provides video surveillance functions due to a built-in IP video camera. The call from the Guest (as he presses the call button) is sent from the door station to the Client's PC or laptop with the installed application. The Client can see the Guest on the monitor of his PC and talk with him using a microphone and speakers / headphones. The Client can control the electronic door lock and some other devices connected to the door station controller.

PoE Injector is a device that stands between a regular Ethernet switch and the powered device (for example, door station PoE supported controller), injecting power and transferring the data via the same cable.

3GP (3GPP file format) is a multimedia container format defined by the Third Generation Partnership Project (3GPP) for 3G UMTS multimedia services. It is used on 3G mobile phones but can also be played on some 2G and 4G phones.

ActiveX is a standard that enables software components to interact with one another in a networked environment, regardless of the language(s) used to create them. Web browsers may come into contact with ActiveX controls, ActiveX documents, and ActiveX scripts. ActiveX controls are often downloaded and installed automatically as required.

Asymmetric Digital Subscriber Line (ADSL) is an obsolete type of Digital Subscriber Line technology, a data communications technology that enables faster data transmission over copper telephone lines than a conventional voiceband modem can provide.

Angle is the field of view, relative to a standard lens in a 35mm still camera, expressed in degrees, e.g. 30°. For practical purposes, this is the area that a lens can cover, where the angle of view is determined by the focal length of the lens. A wide-angle lens has a short focal length and covers a wider angle of view than standard or telephoto lenses, which have longer focal lengths.

ARP (Address Resolution Protocol) is used to associate an IP address to a hardware MAC address. A request is broadcast on the local network to discover the MAC address for an IP address.

Aspect ratio is a ratio of width to height in images. A common aspect ratio used for television screens and computer monitors is 4:3. High-definition television (HDTV) uses an aspect ratio of 16:9.

Authentication is the process of identifying an individual, usually based on a user name and password. In security systems, authentication is distinct from authorization, which is the process of giving individuals access to system objects based on their identity. Authentication merely ensures that the individual is who he or she claims to be, but says nothing about the access rights of the individual.

Autoiris (or DC-Iris).This special type of iris is electrically controlled by the camera, to automatically regulate the amount of light allowed to enter.

Bit rate: (in kbit/s or Mbit/s) is often referred to as speed, but actually defines the number of bits/time unit and not distance/time unit.

Backlight Compensation compensates for strong backlighting, so that subjects appear clearly instead of as silhouettes.

Bonjour, also known as zero-configuration networking, Bonjour enables automatic discovery of computers, devices, and services on IP networks. Bonjour allows devices to automatically discover each other without the need to enter IP addresses or configure DNS servers. Bonjour is developed by Apple Computer Inc.

CCD (Charged Coupled Device). This light-sensitive image device used in many digital cameras is a large integrated circuit that contains hundreds of thousands of photo-sites (pixels) that convert light energy into electronic signals. Its size is measured diagonally and can be 1/4", 1/3", 1/2" or 2/3".

CGI (Common Gateway Interface) is a specification for communication between a web server and other (CGI) programs. For example, a HTML page that contains a form might use a CGI program to process the form data once it is submitted.

Classless Inter Domain Routing (CIDR) is a method for assigning IP addresses without using the standard IP address classes like Class A, Class B or Class C. In CIDR notation, an IP address is represented as A.B.C.D /n, where "/n" is called the IP prefix or network prefix. The IP prefix identifies the number of significant bits used to identify a network. For example, 192.9.205.22 /18 means, the first 18 bits are used to represent the network and the remaining 14 bits are used to identify hosts. Common prefixes are 8, 16, 24, and 32.

Complementary metal–oxide–semiconductor (CMOS) is a technology for constructing integrated circuits. CMOS technology is used in microprocessors, microcontrollers, static RAM, and other digital logic circuits. CMOS technology is also used for several analog circuits such as image sensors (CMOS sensor), data converters, and highly integrated transceivers for many types of communication.

Dynamic DNS is a method/protocol/network service that provides the capability for a networked device, such as a router or computer system using the Internet Protocol Suite, to notify a

Domain Name System (DNS) name server to change, in real time, the active DNS configuration of its configured hostnames, addresses or other information.

DHCP (Dynamic Host Configuration Protocol) is a protocol that lets network administrators automate and centrally manage the assignment of Internet Protocol (IP) addresses to network devices in a network. DHCP uses the concept of a "lease" or amount of time that a given IP address will be valid for a computer. The lease time can vary, depending on how long a user is likely to require the network connection at a particular location. DHCP also supports static addresses for e.g. computers running web servers, which need a permanent IP address.

Digital zoom is a method of decreasing (narrowing) the apparent angle of view of a digital photographic or video image. Digital zoom is accomplished by cropping an image down to a centered area with the same aspect ratio as the original, and usually also interpolating the result back up to the pixel dimensions of the original. It is accomplished electronically, with no adjustment of the camera optics, and no optical resolution is gained in the process.

Domain server can also be used by organizations that wish to centralize the management of their (Windows) computers. Each user within a domain has an account that usually allows them to log in to and use any computer in the domain, although restrictions may also apply. The domain server is the server that authenticates the users on the network.

Ethernet is the most widely installed local area network technology. An Ethernet LAN typically uses special grades of twisted pair wires. The most commonly installed Ethernet systems are 10BASE-T and 100BASE-T10, which provide transmission speeds up to 10 Mbps and 100 Mbps respectively.

Factory default settings are the settings that originally applied for a device when it was first delivered from the factory. If it should become necessary to reset a device to its factory default settings, this will, for many devices, completely reset any settings that were changed by the user.

Firewall works as a barrier between networks, e.g. between a Local Area Network and the Internet. The firewall ensures that only authorized users are allowed to access the one network from the other. A firewall can be software running on a computer, or it can be a standalone hardware device.

Focal length is measured in millimeters; the focal length of a camera lens determines the width of the horizontal field of view, which in turn is measured in degrees.

FPS (frames per second) a measure of how much information is used to store and display motion video. The term applies equally to film video and digital video. Each frame is a still image; displaying frames in quick succession creates the illusion of motion. The more frames per second (fps), the smoother the motion appears.

Frame is a complete video image. In the 2:1 interlaced scanning format of the RS-170 and CCIR formats, a frame is made up of two separate fields of 262.5 or 312.5 lines interlaced at 60 or 50 Hz to form a complete frame, which appears at 30 or 25 Hz. In video cameras

with a progressive scan, each frame is scanned line-by-line and not interlaced; most are also displayed at 30 and 25 Hz.

FTP (File Transfer Protocol) is an application protocol that uses the TCP/IP protocols, used to exchange files between computers/devices on networks.

Full-duplex means transmission of data in two directions simultaneously. In an audio system this would describe e.g. a telephone system. Half-duplex also provides bi-directional communication, but only in one direction at a time, as in a walkie-talkie system.

G.711 is the default pulse code modulation (PCM) standard for Internet Protocol (IP) private branch exchange (PBX) vendors, as well as for the public switched telephone network (PSTN). G.711 digitizes analog voice signals producing output at 64 kilobits per second (Kbps).

Gain is the amplification factor and the extent to which an analog amplifier boosts the strength of a signal. Amplification factors are usually expressed in terms of power. The decibel (dB) is the most common way of quantifying the gain of an amplifier.

Gateway is a point in a network that acts as an entry point to another network. In a corporate network for example, a computer server acting as a gateway often also acts as a proxy server and a firewall server. A gateway is often associated with both a router, which knows where to direct a given packet of data that arrives at the gateway, and a switch, which furnishes the actual path in and out of the gateway for a given packet.

HTTP (Hypertext Transfer Protocol) is the set of rules for exchanging files (text, graphic images, sound, video, and other multimedia files) on the web. The HTTP protocol runs on top of the TCP/IP suite of protocols.

HTTPS (Hypertext Transfer Protocol over SSL) is a web protocol used by browsers and web servers to encrypt and decrypt user page requests and the pages returned by the server. The encrypted exchange of information is governed by the use of an HTTPS certificate (issued by a Certificate Authority), which guarantees the authenticity of the server.

Hub is used to connect multiple devices to the network. The hub transmits all data to all devices connected to it, whereas a switch will only transmit the data to the device it is specifically intended for.

ICMP is a network protocol useful in Internet Protocol (IP) network management and administration. ICMP is a required element of IP implementations. ICMP is a control protocol, meaning that it does not carry application data, but rather information about the status of the network itself.

IEEE 802.11 is a family of standards for wireless LANs. The 802.11 standard supports 1 or 2 Mbit/s transmission on the 2.4 GHz band. IEEE 802.11b supports data rates up to11 Mbit/s on the 2.4 GHz band, while 802.11g allows up to 54 Mbit/s on the 5 GHz band.

Interlacing. Interlaced video is video captured at 50 pictures (known as fields) per second, of which every 2 consecutive fields (at half height) are then combined into 1 frame. Interlacing was

developed many years ago for the analog TV world and is still used widely today. It provides good results when viewing motion in standard TV pictures, although there is always some degree of distortion in the image.

Internet Explorer (formerly Microsoft Internet Explorer, commonly abbreviated IE or MSIE) is a series of graphical web browsers developed by Microsoft and included as part of the Microsoft Windows line of operating systems, starting in 1995.

IP66 is a two digit number developed by the international electrical Commission, and is used to provide Ingress Protection (IP) rating to a piece of electronic equipment or to an enclosure for electronic equipment. The Ingress protection code indicates the level and amount of protection. The first digit means no ingress of dust; complete protection against contact. The second digit means water projected in powerful jets (12.5mm nozzle) against the enclosure from any direction shall have no harmful effects.

IP camera. The terms IP camera, network camera and Internet camera all refer to the same thing - a camera and computer combined in one unit. It operates as stand-alone unit and only requires a connection to the network.

JPEG (Joint Photographic Experts Group).Together with the GIF file format, JPEG is an image file type commonly used on the web. A JPEG image is a bitmap, and usually has the file extension '.jpg' or ".jpeg." When creating a JPEG image, it is possible to configure the level of compression to use. As the lowest compression (i.e. the highest quality) results in the largest file, there is a trade-off between image quality and file size.

kbit/s (kilobits per second) is a measure of the bit rate, i.e. the rate at which bits are passing a given point. See also Bit rate.

LAN (Local Area Network) is a group of computers and associated devices that typically share common resources within a limited geographical area.

Lux is a standard unit of illumination measurement.

MAC address (Media Access Control address) is a unique identifier associated with a piece of networking equipment, or more specifically, its interface with the network. For example, the network card in a computer has its own MAC address.

Mbit/s (Megabits per second) is a measure of the bit rate, i.e. the rate at which bits are passing a given point. Commonly used to give the "speed" of a network. A LAN might run at 10 or 100 Mbit/s.

Motion JPEG is a simple compression/decompression technique for network video. Latency is low and image quality is guaranteed, regardless of movement or complexity of the image. Image quality is controlled by adjusting the compression level, which in turn provides control over the file size, and thereby the bit rate.

MPEG-4 is a group of audio and video coding standards and related technology. The primary uses for the MPEG-4 standard are web (streaming media) and CD distribution, conversational

(videophone), and broadcast television. Most of the features included in MPEG-4 are left to individual developers to decide whether to implement them or not. This means that there are probably no complete implementations of the entire MPEG-4 set of standards. To deal with this, the standard includes the concept of "profiles" and "levels", allowing a specific set of capabilities to be defined in a manner appropriate for a subset of applications.

Multicast is a bandwidth-conserving technology that reduces bandwidth usage by simultaneously delivering a single stream of information to multiple network recipients.

Network Time Protocol (NTP) is a protocol for synchronizing the clocks of computer systems over packet-switched, variable-latency data networks. It is designed particularly to resist the effects of variable latency by using a jitter buffer.

NTSC (National Television System Committee) is an analog color encoding system used in television systems in Japan, the United States and other parts of the Americas. NTSC defines the video signal using 525 TV lines per frame, at a refresh rate equal to 30 frames per second. See also PAL.

ONVIF (Open Network Video Interface Forum) is a global and open industry forum with the goal to facilitate the development and use of a global open standard for the interface of physical IP-based security products. Or in other words, to create a standard for how IP products within video surveillance and other physical security areas can communicate with each other. ONVIF is an organization started in 2008 by Axis Communications, Bosch Security Systems and Sony.

PAL (Phase Alternating Line) is an analog color encoding system used in television systems in Europe and in many other parts of the world. PAL defines the video signal using 625 TV lines per frame, at a refresh rate equal to 25 frames per second.

Power over Ethernet or PoE provides power to a network device via the same cable as used for the network connection. This is very useful for IP-Surveillance and remote monitoring applications in places where it may be too impractical or expensive to power the device from a power outlet.

PPP (Point-to-Point Protocol) is a protocol that uses a serial interface for communication between two network devices. For example, a PC connected by a phone line to a server.

Point-to-Point Protocol over Ethernet (PPPoE) is a network protocol for encapsulating Point-to-Point Protocol (PPP) frames inside Ethernet frames. It is used mainly with DSL services where individual users connect to the DSL modem over Ethernet and in plain Metro Ethernet networks.

Progressive scan, as opposed to interlaced video, scans the entire picture, line by line every sixteenth of a second. In other words, captured images are not split into separate fields as in interlaced scanning.

Jack-45 is an eight-wire connector used to connect computers onto a local-area networks (LAN), especially Ethernets. RJ-45 connectors look similar to the RJ-11 connectors used for connecting telephone equipment, but they are a bit wider.

Router is a device that determines the next network point to which a packet should be forwarded on its way to its final destination. A router creates and/or maintains a special routing table that stores information on how best to reach certain destinations. A router is sometimes included as part of a network switch.

RTP is an Internet protocol for the transport of real-time data, e.g. audio and video. It can be used for media-on-demand as well as interactive services such as Internet telephony.

RTSP (Real Time Streaming Protocol) is a control protocol, and a starting point for negotiating transports such as RTP, multicast and Unicast, and for negotiating codecs.

RTSP can be considered a "remote control" for controlling the media stream delivered by a media server. RTSP servers typically use RTP as the protocol for the actual transport of audio/video data.

Shutter is the device on the camera that opens and closes to control how long the focal plane is exposed to light.

SMTP is used for sending and receiving e-mail. However, as it is "simple," it is limited in its ability to queue messages at the receiving end, and is usually used with one of two other protocols, POP3 or IMAP. These other protocols allow the user to save messages in a server mailbox and download them periodically from the server.

SMTP authentication is an extension of SMTP, whereby the client is required to log into the mail server before or during the sending of email. It can be used to allow legitimate users to send email while denying the service to unauthorized users, such as spammers.

SSL/TLS (Secure Socket Layer/Transport Layer Security). These two protocols (SSL is succeeded by TLS) are cryptographic protocols that provide secure communication on a network. SSL is commonly used over HTTP to form HTTPS, as used e.g. on the Internet for electronic financial transactions. SSL uses public key certificates to verify the identity of the server.

Subnet & subnet mask is an identifiably separate part of an organization network. Typically, a subnet may represent all the machines at one geographic location, in one building, or on the same local area network (LAN). Having an organization network divided into subnets allows it to be connected to the Internet with a single shared network address. The subnet mask is the part of the IP address that tells a network router how to find the subnet that the data packet should be delivered to. Using a subnet mask saves the router having to handle the entire 32-bit IP address; it simply looks at the bits selected by the mask.

Switch is a network device that connects network segments together, and which selects a path for sending a unit of data to its next destination. In general, a switch is a simpler and faster

mechanism than a router, which requires knowledge about the network and how to determine the route. Some switches include the router function.

TCP is used along with the Internet Protocol (IP) to transmit data as packets between computers over the network. While IP takes care of the actual packet delivery, TCP keeps track of the individual packets that the communication (e.g. requested a web page file) is divided into, and, when all packets have arrived at their destination, it reassembles them to re-form the complete file.

TCP is a connection-oriented protocol, which means that a connection is established between the two end-points and is maintained until the data has been successfully exchanged between the communicating applications.

Time to live (TTL) is mechanism that limits the lifespan of data in a computer or network. TTL may be implemented as a counter or timestamp attached to or embedded in the data. Once the prescribed event count or timespan has elapsed, data is discarded. In computer networking, TTL prevents a data packet from circulating indefinitely. In computing applications, TTL is used to improve performance of caching or improve privacy.

UDP is a communications protocol that offers limited service for exchanging data in a network that uses the Internet Protocol (IP). UDP is an alternative to the Transmission Control Protocol (TCP). The advantage of UDP is that it is not required to deliver all data and may drop network packets when there is e.g. network congestion. This is suitable for live video, as there is no point in re-transmitting old information that will not be displayed anyway.

Universal Plug and Play (UPnP) is a set of networking protocols for primarily residential networks without enterprise class devices that permits networked devices, such as personal computers, printers, Internet gateways, Wi-Fi access points and mobile devices to seamlessly discover each other's presence on the network and establish functional network services for data sharing, communications, and entertainment.

Uniform Resource Locator or Unified Resource Locator (URL) is a character string that specifies where a known resource is available on the Internet and the mechanism for retrieving it.

Wireless Application Protocol (WAP) is a technical standard for accessing information over a mobile wireless network. A WAP browser is a web browser for mobile devices such as mobile phones (called "cellular phones" in some countries) that uses the protocol.

Web server is a program, which allows Web browsers to retrieve files from computers connected to the Internet. The Web server listens for requests from Web browsers and upon receiving a request for a file sends it back to the browser.

The primary function of a Web server is to serve pages to other remote computers; consequently, it needs to be installed on a computer that is permanently connected to the Internet. It also controls access to the server whilst monitoring and logging server access statistics.

Wireless LAN is a wireless local area network that uses radio waves as its carrier: where the network connections for end-users are wireless. The main network structure usually uses cables.