

Operation Manual.

Spherical video camera for recording, broadcasting and publishing video images in 4K format with a 360-degree view.

VARSH.201219.006RE

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This manual is intended to familiarize you with the device and operation principles of the spherical video camera for recording, broadcasting and publishing video images in 4K format with a 360 ° view (hereinafter - Camera 360), designed to transmit a black and white or color image of a surveillance subject to an external monitor or recorder, together with its design features and operating conditions.

Camera 360 is used in security television systems to protect people and property in protected facilities from criminal encroachments.

It is not recommended to turn on the Camera without studying the instruction manual.

1. Intended use

Camera 360 is designed for professional video surveillance, it is a complete solution for building a reliable, scalable video surveillance system.

Camera 360 allows you to solve a complex of tasks related to the organization of round-the-clock surveillance in rooms with various types of lighting.

2. Operating conditions

The operating conditions of the video camera must comply with the values given in the table (Table 2.1).

Table 2.1

Parameter	Value
Ambient temperature, °C	-10...+40
Relative humidity (non-condensing) at 25 °C, no more, %	85

3. Installation requirements

3.1. General requirements

The network video camera is installed according to the drawings (Typical Installation Options).

The climatic conditions at the place of installation must comply with the conditions given in the table (Table 2.1).

It is not recommended to stack the space around the network video camera during operation.

The 12V power voltage is supplied to the network video camera from a standard power source.

The network video camera provides the ability to supply power according to the PoE standard class at least fourth.

The supply lines must be connected to the network video camera, if possible, avoiding the cases of laying them along the lines of the electrical network or high frequency. Intersections with such lines must be performed at right angles. All standard connections must be maintained in good condition.

It is periodically necessary to clean the network camera from dust.

3.2. Requirements for a personal computer:

Below are the minimum requirements for a personal computer for connecting a network video camera.

Hardware:

- Intel (R), Core™ i3 or older;
- RAM 4 GB or more;
- Network connection with a speed of at least 30 Mbit / s;
- Screen resolution: 3840x2160 if 4K display is required.
- Connection to the Internet with a speed of at least 30 Mbit / s for downloading and uploading, if online broadcasting is required;
- Sound reproduction device;

Software:

- Web browser - Mozilla Firefox, either Chrome
- Free software Onvif Device Manager, or Onvif Device Tool Lingodigits (R);

4. Technical description

4.1. Technical specification

The technical specification of the network video camera correspond to the values given in the table (Table 4.1).

Table 4.1

Parameter	Value
1. Matrix	2X1/2.3" OV13850 CMOS – Progressive Scan Sensor
2. Resolution	4224x3156 main stream 15 fps
3. Operating illumination range, lx	Color: 0.7 (F2.0, AGC On, 1/30 sec, 10 fps), B / W: 0.3 (F2.0, AGC On, 1/30 sec, 10 fps)
4. Focal length, mm	1.65
5. Signal-to-noise ratio, dB, min	27
6. Observation angle, degrees - on the horizon - in elevation	360 360
7. Video compression algorithm	H.264 Profile H.264 Main Profile / High Profile
8. Transmission rate, Mb/s	100/1000
9. Video stream	RTSP, ONVIF supported (Profile S)
10. Supported network protocols	TCP/IP, UDP, HTTP, FTP, DHCP, DNS, DDNS, RTSP, PPPoE, UPnP, SMTP, SNMP, RTMP, VOIP, IPv6
11. Audio stream	Vorbis
12. Dimensions, mm	215,7x161,4x106,3
13. Weight, kg	1.1
14. Body material	Metal, plastic

4.2. Components

The delivery set of video cameras should include:

- video camera;
- set of operational documentation;
- packaging.

Note. By agreement with the consumer, the delivery set may also include additional accessories.

4.3. Design and configuration of the video camera

The network video camera is manufactured in a plastic case that allows you to install the video camera using mounting elements.

A photograph of the Camera 360 is shown in the figure (Figure 4.1).



Figure 4.1 Camera 360, Front View

The layout of the elements on the back and front panels of the video camera is shown in the figures (Figure 4.2, Figure 4.23).

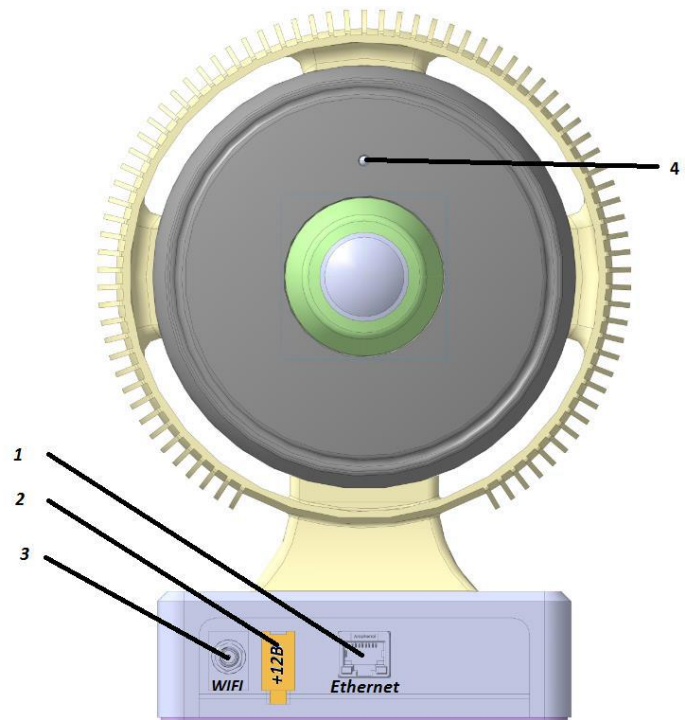


Figure 4.2 Back panel view of network video camera

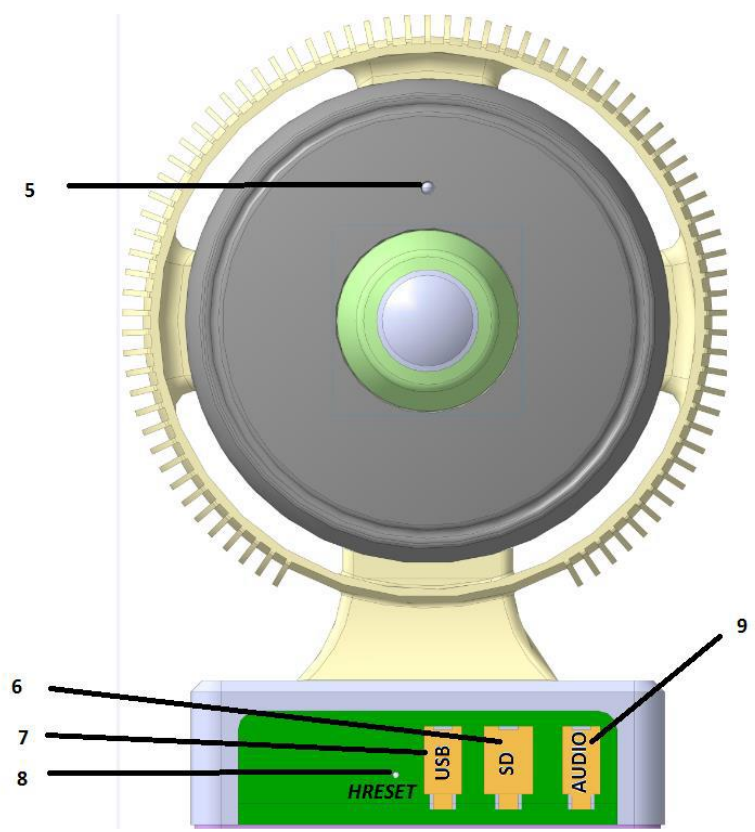


Figure 4.3 Front panel view of network video camera

Description of the video camera elements located on the front and back panels is given in the table (Table 4.2).

Table 4.2

№	Element	Functions
1	ETHERNET	Connecting the camera to the network
2	DC12V	Connecting power supply 12 V, 2 A
3	WiFi	Connecting an RF cable from a WIFI antenna.
4,5	USB/RS485	Camera mode indicators
6	SD	MicroSD card slot
7	USB	Standard micro USB OTG port
8	HRESET	Resetting the network settings of the camera to factory defaults
9	AUDIO	Audio and microphone line-out connector

4.4. Marking and sealing

Marking and sealing is carried out in accordance with the assembly drawing.

4.5. Packaging

A video camera checked for compliance with the requirements of technical conditions, with a set of operational documentation, a passport, spare parts and accessories (if any), is packed in a transportation packing in accordance with the packaging drawing.

5. Product operation

5.1. Prestarting procedures

Check the completeness of the Camera 360 according to the passport. By external inspection, make sure that there are no defects due to a violation of the packaging associated with poor-quality transportation. If the camera was at a temperature below 0°C or at high humidity (over 85%) before the first turning on, then it is necessary to withstand it under normal conditions for at least 2 hours.

Install the camera in its proper location. Fulfill the requirements of section 3 of this manual.

When supplying power via PoE, make sure that the PoE injector is of class 4 or higher; if not, use power from a + 12V source.

5.2. Network Neighborhood Settings

There are several ways to set up your camera's network neighborhood. This section covers the following options:

- A connection using DHCP (Dynamic IP Address Assignment Protocol);
- A connection using a static IP address.

There are two methods for configuration of network connection:

- The personal computer is connected directly to the network video camera (Figure 5.1);
- A personal computer is connected to a network camera via router (Figure 5.2),

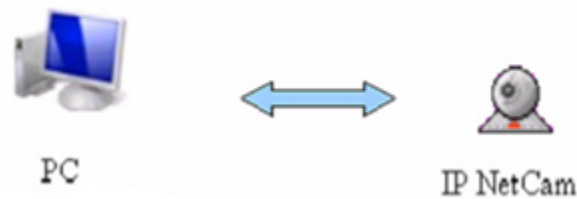


Figure 5.1 - Personal computer connected to a network video camera

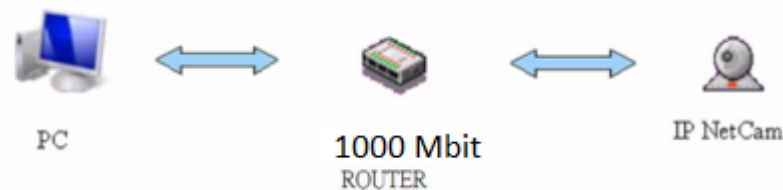


Figure 5.2 - Personal computer connected to a network video camera via router

5.2.1 Connection using a static IP address.

1. Configure the network according to the diagram shown in Figure 5.1. Set a static IP address from the 192.168.0.0/24 subnet, for example 192.168.0.5, on the computer. Connect external power to turn on the network video camera. Wait for the green LED on the camera to turn on. This process takes about 1 minute.

2. Enter the IP address of the camera into the browser address line (Chrome or Firefox), adding at the end ": 8080" - "192.168.0.10:8080") and press the Enter key.

After that, you will be redirected to the authorization page, and fields for entering a login and password will appear, as shown in Figure 5.3.

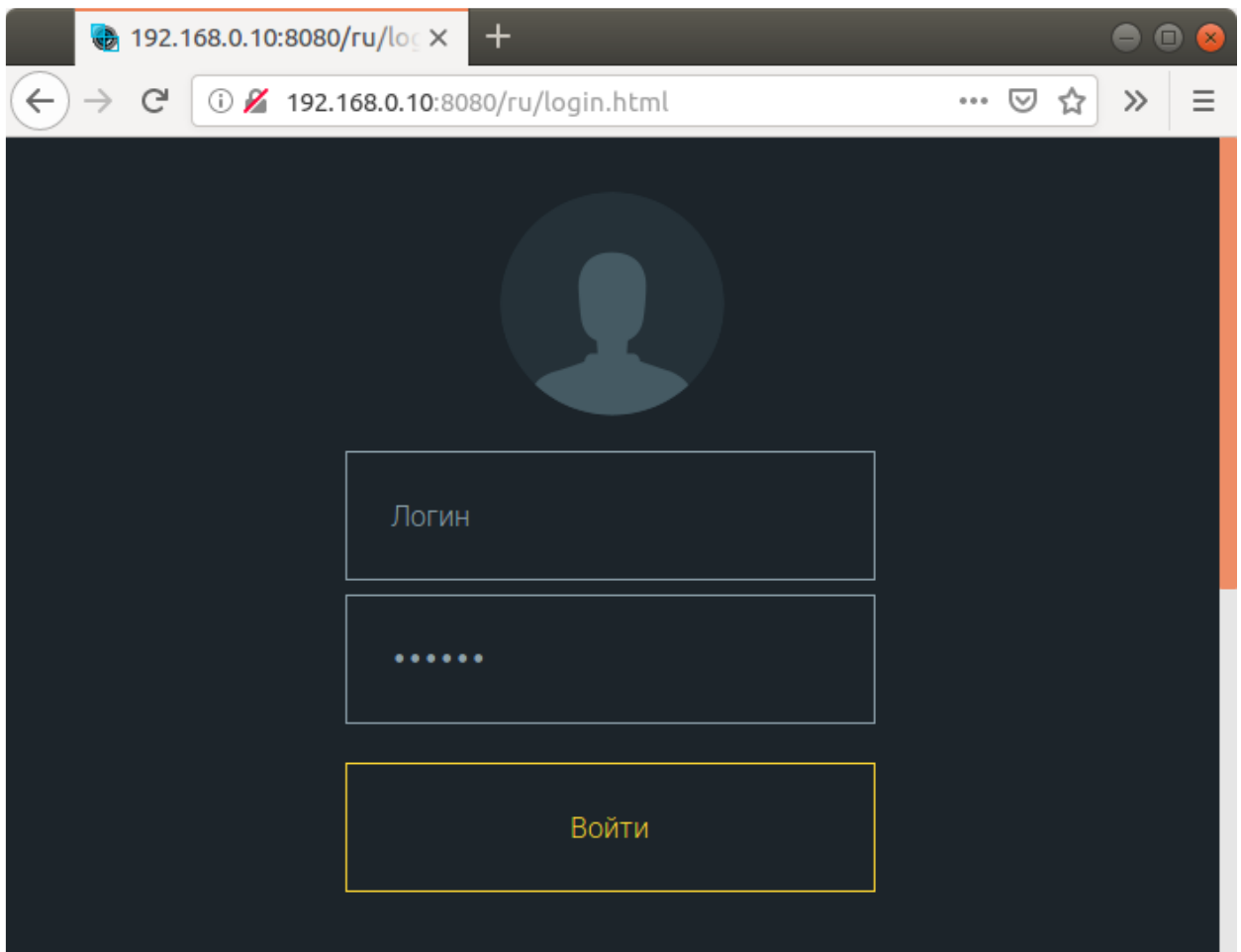


Figure 5.3 - Entering the IP-address of the network camera into the browser line

3. Enter “admin” in the Login field and “admin” in the Password field. Press the Enter key. The main page of the web interface will open, as shown in Figure 5.4. (The video image on the main page may not be available, it depends on the selected broadcast format, for more details see p. 5.3.1 Setting the broadcast format).

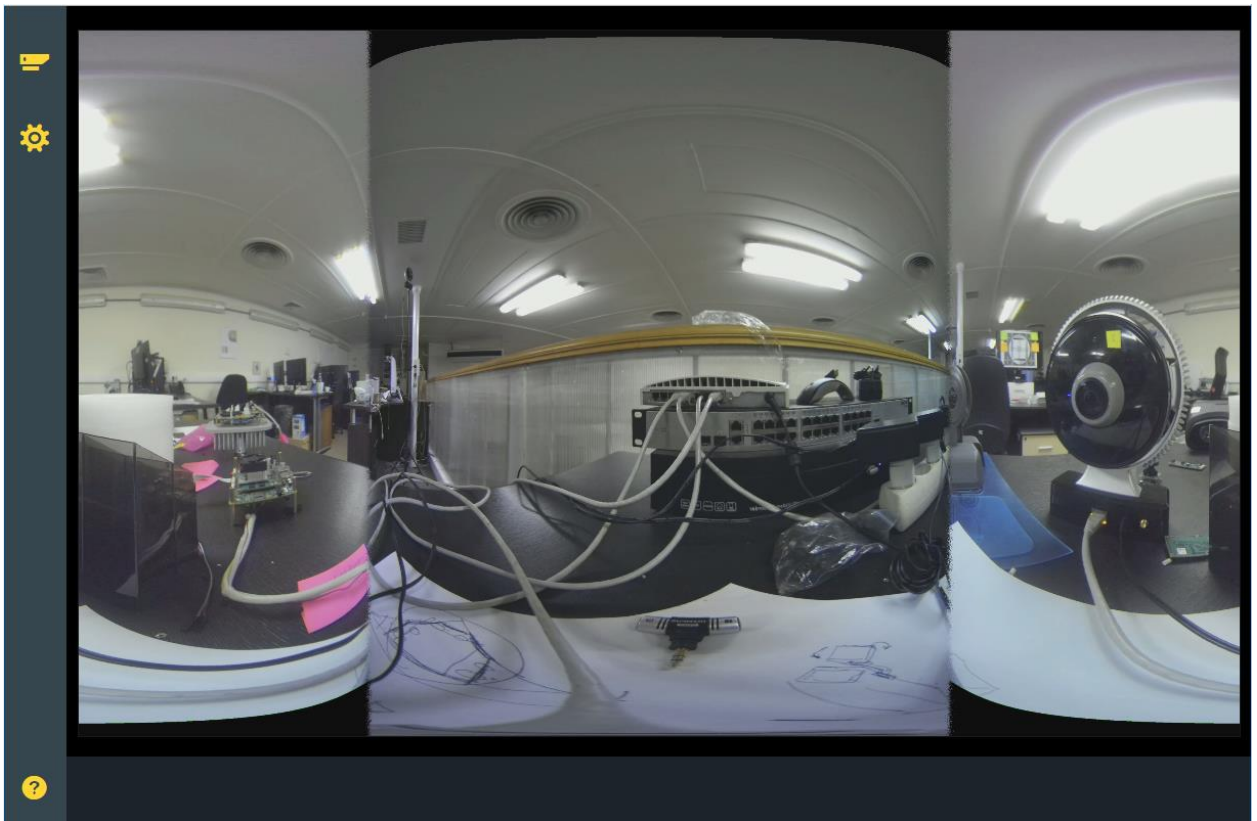


Figure 5.4 - The main page of the web interface.

5.2.2 Connection using DHCP.

It is possible to configure such network parameters as the IP address and network name of the VisorJet 720, as well as switch the operating mode between static and dynamic (DHCP) ip. To change the settings, follow these steps:

1. Log into the web interface of VisorJet 720 (see 5.2.1 Connection using a static IP address).
2. Go to the settings section by clicking on the icon in the upper left corner. The camera settings panel will open in the browser (Figure 5.5).

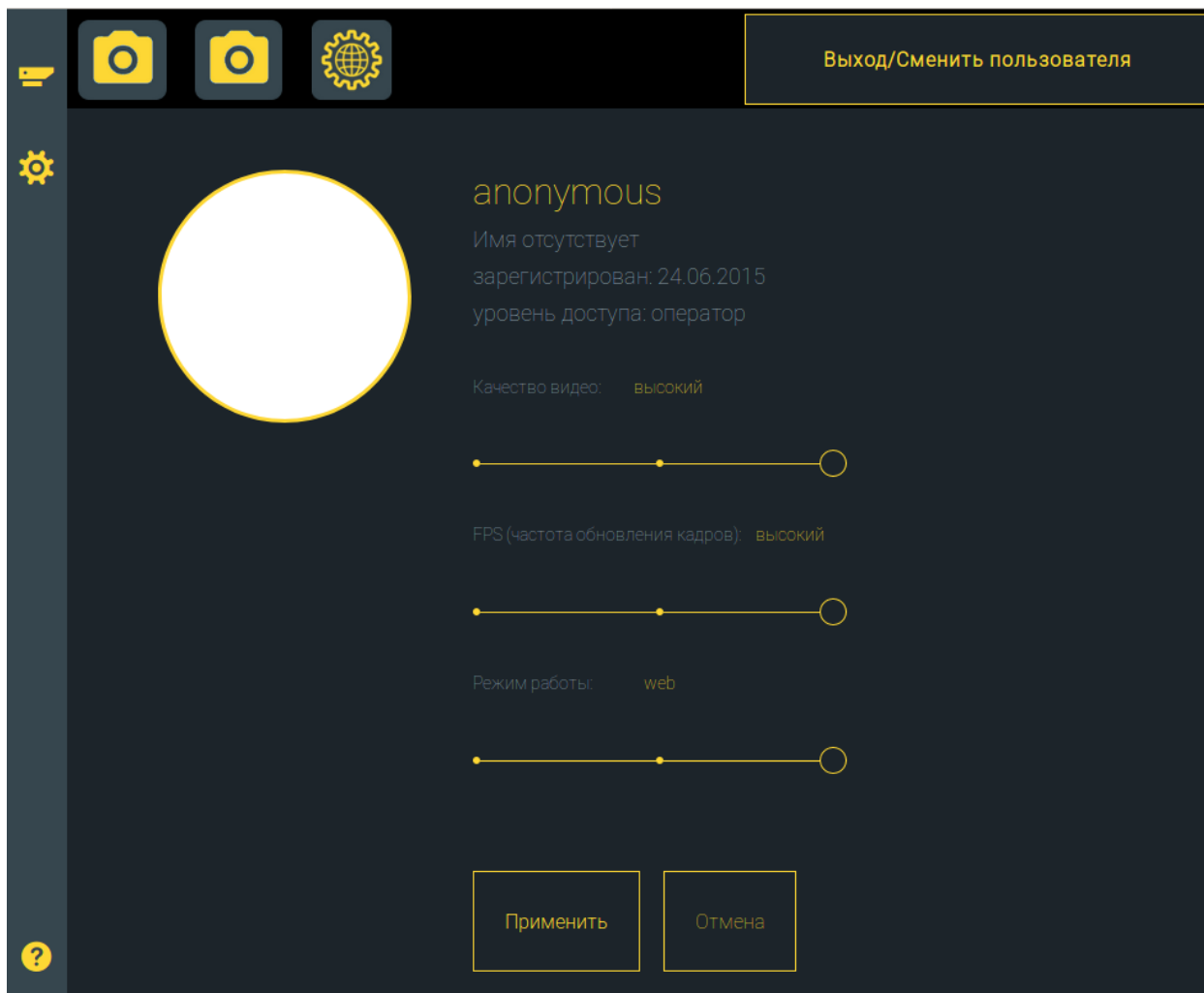


Figure 5.5 Camera settings panel.

3. Go to the network settings section by clicking on the icon in the upper left corner (Figure 5.6).
4. The "mode" element allows you to switch the operating mode of VisorJet 720 camera between dynamic and static IP addresses.
5. The "hostname" input field allows you to change the network name of the VisorJet 720.
6. After changing the parameters, you must click on the "Apply" button for the changes confirmation.

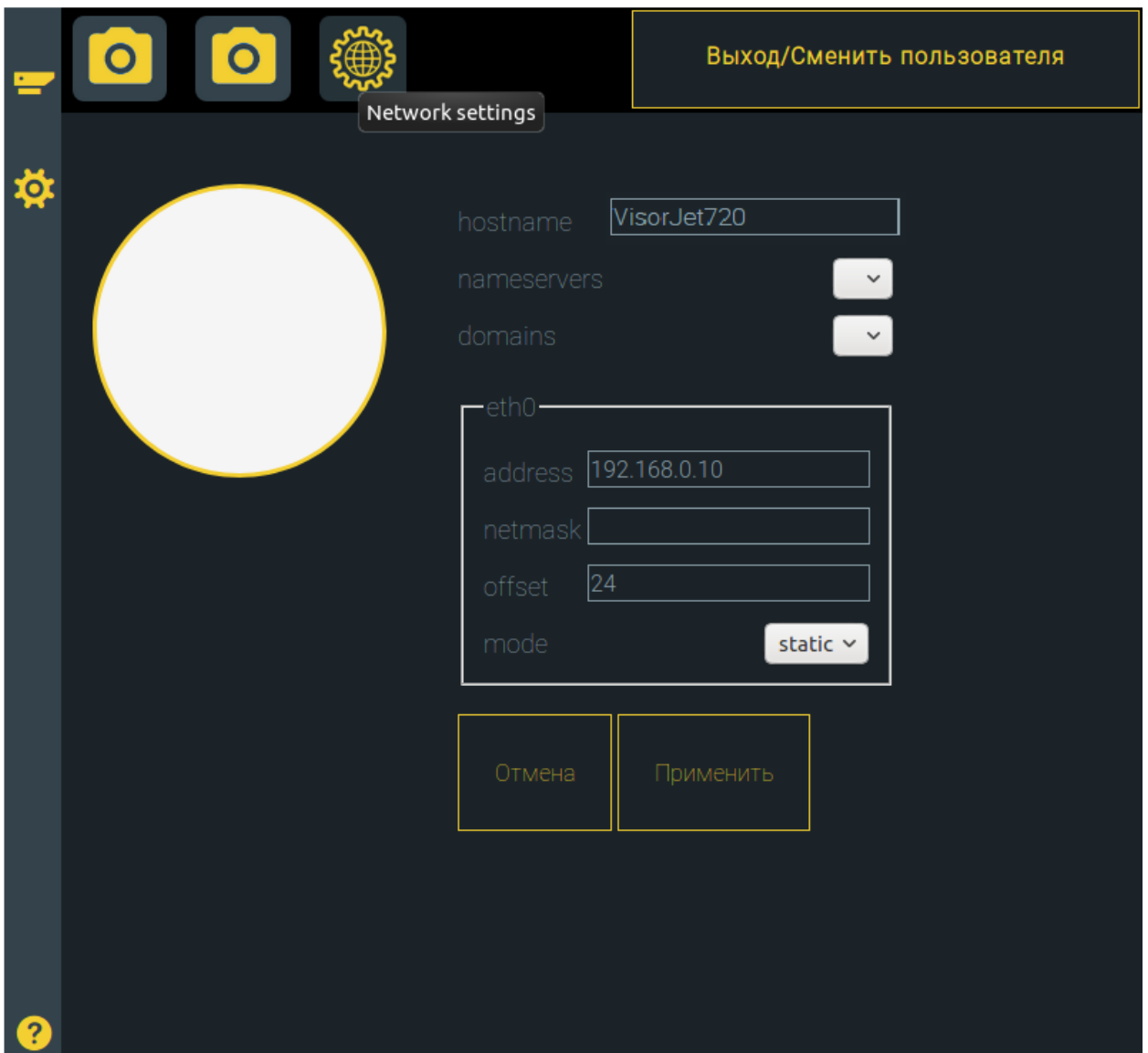


Figure 5.6 Network settings screen for VisorJet 720

After switching the mode from static to dynamic ip, connect the camera using a router, according to the diagram shown in Figure 5.2, or configure a DHCP server on the PC. For further use of the web-interface, you will need to find out the camera's ip address assigned by the DHCP server.

To determine the IP address of the camera, you can use the Onvif Device Manager program (see Figure 5.7). A device named VisorJet720 appears in the Device List section. In the same field there is a line Address - this is the camera's ip-address, issued by the DHCP server. This address should be used to connect to the web interface.

Note: To restore access to the VisorJet 720, it is possible to reset the camera settings using button 8 shown in Figure 4.3.

5.3. Advanced settings

5.3.1 Setting the broadcast format

It is possible to switch the broadcast format.

RTSP

To switch broadcasting to rtsp-broadcast format, follow these steps:

1. Log in to the web interface of the camera (see paragraphs 5.2)
2. Go to the settings section by clicking on the icon in the upper left corner. The camera settings panel will open in the browser (see figure 5.5).
3. Move the "operation mode" slider to the "rtsp" position and click the "apply" button.
4. Open Onvif Device Manager, in the list of devices select "VisorJet720", in the appeared window select "Live video" (see Figure 5.7). The video stream from the camera will appear in the program window.



Figure 5.7 Viewing rtsp broadcast

5. If you need to open a video stream in another program (vlc, OBS, VisorJetViewer, etc.), you should use the rtsp-link presented in the address bar under the video (see Figure 5.7).

YOUTUBE

To start a live broadcast of a video stream from a camera to youtube.com, follow these steps:

1. Create a live video broadcast with panoramic mode on youtube.com.

A detailed description of this process you can find in the Youtube Help at <https://support.google.com/youtube/> in the Video Creation and Channel Management section, in the Live Streaming subsection.

In the process of creating a live broadcast on youtube.com, the site will generate a stream key (Four 4-digit words, separated by hyphens), which will be needed for step 4.

2. Repeat steps 1 - 2 from the RTSP section;
3. Move the "operating mode" slider to the "youtube" position - an input line will appear under the slider.
4. Enter the stream key in the line that appears (see point 1) and click the Apply button.

WEB

To switch the stream to the web interface, repeat steps 1 - 3 from the RTSP section, but in step 3 "operation mode" should be set to "web" mode.

After that, a live video will appear on the main page of the web interface (see Figure 5.4).

5.3.2 Image Parameters

It is possible to adjust such parameters of the image obtained from the sensors of the VisorJet 720, as brightness, white balance, etc. To do this, follow these steps.

1. Log in to the web interface of the VisorJet 720 (see paragraphs 5.2).
2. Go to the settings section by clicking on the icon in the upper left corner. The camera settings panel will open in the browser (Figure 5.5).
3. Go to the section for setting image parameters by clicking on one of the icons in the upper left corner (Figure 5.8). Since the VisorJet 720 has two digital camera sensors, there are also two windows for setting image parameters.
4. After changing the parameters, you must click on the "Apply" button for the changes confirmation. The changes will then be reflected in the image coming from the VisorJet 720 camera.

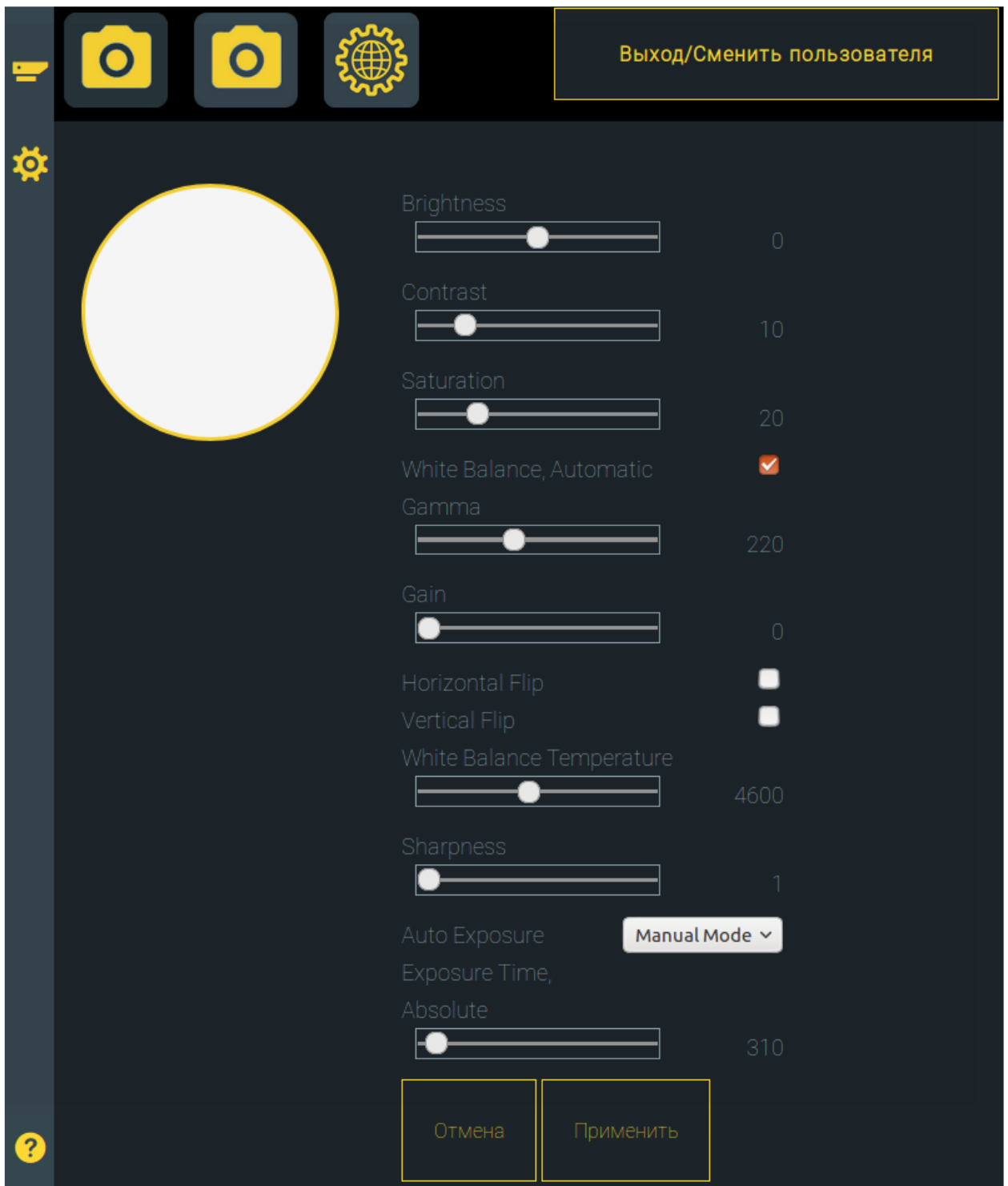


Figure 5.8 Image parameters settings screen of VisorJet 720

6. Possible malfunctions and troubleshooting

6.1. General instructions

Before troubleshooting your camera, check:

- Serviceability of the power supply 12 V, 2 A;

- Serviceability of the PoE switch (when powered via Ethernet).
- Serviceability of the equipment connected to the video camera;
- Correct and reliable connection of the video camera with additional equipment.
- Integrity of connecting cables.

6.2. Problem checklist

The problem checklist eliminated within the warranty period by the operating party:

- Replacement of the power supply (12 V, 2 A).
- Damage (failure) of connecting cables.
- Ethernet cable fault.

All other malfunctions of the video camera are eliminated by the manufacturer or another organization (including the operating one) that is currently performing warranty or post-warranty service. The operating party, by agreement with the manufacturer, can independently make other minor repairs within the warranty period.

7. Maintenance

7.1. Security measures

7.1.1 Operation of the product should be carried out by engineering and technical personnel with special training in the field of computer technology, installation and use of the product.

7.1.2 When equipping a workplace, preparing for work and operating the product, it is necessary to comply with safety requirements when working on installations with voltages up to 1000 V.

7.1.3 When using the product, the following rules should be observed:

- check the serviceability and functionality of the product before starting work;
- turn on and off the product as specified in this OM;
- disconnect the power cable first, then the Ethernet cable.

7.2. Maintenance procedure

7.2.1 Periodic Maintenance.

Periodic maintenance includes:

- periodic preventive maintenance;
- periodic measurements of the main parameters.

Periodic preventive maintenance is carried out by the operator as needed, depending on the condition of the room and other factors.

7.2.2 Warranty service.

The warranty service of the video camera is carried out by the manufacturer, based on the entry in the passport of the video camera, or in the service contract.

In case of claims to the parameters of the video camera, in order to carry out warranty repairs, the operating party must provide the measuring equipment necessary to measure these parameters. All devices must be fully equipped and not overdue. In the absence of this equipment, the warranty service of the video camera is carried out on the territory of the manufacturer's plant. By decision of the manufacturer, instead of repairing failed modules, warranty service can be carried out by replacing them with new ones. If the replacement is not associated with a complex adjustment, it is carried out by the operator independently. The replacement is accompanied by a corresponding entry in the passport. Defective parts of the video camera, replaced with new ones during the warranty period, must be returned to the manufacturer.

7.3. Functional check

The video camera is checked by the operating organization using control and measuring equipment and methods recommended by technical conditions of VARSH.201219.006TU. The scope and frequency of inspections is determined by control or other services.

8. Storage

Video cameras that have arrived at the consumer and are not subject to putting into operation can be stored in a heated room with an air temperature of 5 ... 45 ° C and a relative humidity of no more than 80% at a temperature of 25 ° C. The storage should be free of dust, acid vapors, alkalis, gases that cause corrosion. The storage should have a normal ventilation system that excludes the formation of an environment with an increased concentration of moisture, dust, gases, aerosols. After removing the camera from the storage room, before turning it on, keep the camera and its components for at least 2 hours under normal conditions.

9. Transportation

Transportation of the video camera is carried out by all types of transport with the exclusion of increased vibrations and transit drop, as well as direct exposure to precipitation, solar radiation, sea fog. Transportation by sea is allowed if the video camera or its main parts are preserved in sealed polyethylene packages. When repacking for further transportation, caused by operating conditions, you can use a primary container or similar made by the consumer. Foam rubber, polystyrene foam,

corrugated cardboard, wood shavings, sponge rubber can be used as damping materials for gaskets. During transportation, it is not recommended to overcool the video camera below minus 30 ° C. The packaging (container) must reliably protect the video camera and its elements from mechanical damage.