



Installing and configuring security system components guide

Axxon PSIM 2.0 (english)

Last update 02/02/2026

Table of Contents

1	Installing and configuring security system components guide.	
	INTRODUCTION	8
1.1	Purpose and structure of the guide	8
1.2	Purpose of Axxon PSIM	8
2	Installing security system components	9
2.1	Assembly and installation of video surveillance subsystem hardware	9
2.1.1	Installing video capture cards into computer case	9
2.1.2	Installing drivers for video capture cards	11
2.1.3	Testing installation of drivers for video capture cards	16
2.1.4	Checking the correctness of driver installation for video capture cards using the Codereader.exe utility	18
2.1.5	Special features of Driver Pack updating for YUAN cards	20
2.2	Connecting the hardware performance testing	20
2.2.1	Connecting the Watchdog hardware performance tester	20
2.2.2	Connecting the USB Watchdog hardware performance tester	23
2.3	Connecting Sensor-Relay cards	26
2.3.1	Connecting 4/4 and 16/4 Sensor-Relay cards	26
2.3.2	Connecting 4/4 Sensor-Relay (low profile) cards	31
2.3.3	Connecting SL USBIO cards (4x4, 16x8 and 24x4)	38
2.3.4	Connecting MO USBIO 4x4 cards.....	41
2.3.5	Connecting AGRG-IO-16/8-WD-DS Sensor-Relay cards.....	43
2.4	Connecting MO USBIO 4x4 external module	46
2.5	Assembling and installing hardware components of audio subsystem	47
2.5.1	Supported audio cards and other audio input devices	47
2.5.2	Options for increasing the number of audio input channels when standard audio cards are in use.....	47
2.5.3	Installing audio input devices	48
2.5.4	Installing microphones and loud speakers	48
2.6	Connecting PTZ devices and control panels	48
2.7	Connecting and configuring network devices.....	49
2.8	Installing the expansion card for analog video out.....	49
3	Configuring security system components in Axxon PSIM™ software	52
3.1	Configuring video capture cards in Axxon PSIM™ software	52

3.1.1	Video subsystem configuration.....	52
	Creating and configuring the Video capture device object.....	52
	Creating and configuring the Camera object	55
	Configuring the analog video output.....	57
	Configuring HikVision video capture card	59
	Configuring YUAN PD652 video capture card	59
3.1.2	Audio subsystem configuration	60
	Creating and configuring the Audio card object	60
	Creating and configuring the Microphone object	63
3.1.3	Initial configuration wizard	64
3.1.4	Configuring the Watchdog hardware performance tester.....	66
3.2	Configuring IP devices	68
3.2.1	General information on IP devices	68
3.2.2	Configuring video acquisition from IP devices	69
3.2.3	Configuring audio acquisition from IP devices.....	70
3.2.4	Configuring the access to the archive in edge storage	72
	General information about storing the video archive in the edge storage	72
	Creating the Edge storage object.....	72
	Setting the list of cameras to access the Edge storage	73
	Importing from edge storages.....	74
3.2.5	Camera discovery tool	75
3.2.6	Connecting devices over standard protocols.....	78
	Configuring multimedia stream receipt using RTSP protocol.....	78
	Connecting cameras via the GB/T28181 protocol.....	81
	Connecting devices using the FFMPEG driver	95
	Connecting devices via the ONVIF protocol	107
	Using universal General Device and generic drivers	109
3.2.7	Features of IP device configuration	111
	Features of Beward IP cameras configuration	111
	Features of Panasonic IP devices (i-Pro series) configuration.....	111
	Features of TrendNet IP device configuration.....	111
	Features of Pelco Spectra IV IP device configuration.....	111
	Features of AEBELL IP device configuration	112
	Features of Dynacolor IP device configuration	112
	Features of Stream Labs IP device configuration.....	112

Features of Cisco IP device configuration.....	114
Features of Mobotix IP device configuration	114
Characteristics of joint operation of Jassun and Bosch cameras	115
Features of configuring ONVIF or Hikvision IP devices behind NAT	115
Configuring and adding the Alpha OTM device in Axxon PSIM	116
3.2.8 Changing the transport protocol used by IP-device	118
3.2.9 Digest authentication when accessing IP device	119
3.2.10 Configuring getting video from web cameras via HTTP protocol	120
3.3 Configuring Sensor-Relay devices in Axxon PSIM software	122
3.3.1 Creating and configuring the Relay system object.....	122
3.3.2 Creating and configuring the Sensor system object	123
3.3.3 Creating and configuring connection with the Analog sensor (input)	125
3.3.4 Configuring Sensor-Relay expansion cards.....	126
Configuring sensor connection using 16/4 sensor-relay card	126
Configuring sensor connection via the 4/4 sensor-relay card	130
Configuring the relay connection.....	132
3.3.5 Configuring Sensor-Relay expansion cards (low profile)	135
Connecting relays of the 4/4 sensor-relay (low profile) card	135
Connecting sensors of the 4/4 sensor-relay (low profile) card	137
3.3.6 Configuring SL USBIO cards	138
Features of running the SL USBIO 16x8 card drivers.....	138
Connecting relays	139
Connecting sensors.....	139
3.3.7 Configuring MO USBIO 4x4 devices.....	139
Connecting MO USBIO 4x4 relay.....	139
Connecting MO USBIO 4x4 sensors	141
3.3.8 Configuring sensors and relays connected via IP devices	142
3.3.9 Configuring AGRG-IO-16/8-WD-DS sensor-relay cards.....	143
3.4 PTZ configuration	146
3.4.1 PTZ configuration procedure	146
Pre-configuration.....	147
Devices configuration procedure	147
Interface object configuration procedure	148
Additional settings	148
3.4.2 Configuring PTZ devices (Telemetry Controllers)	149

PTZ device setting procedure.....	149
Configuring Server ports and remote workstation to connect PTZ devices.....	149
Configuring PTZ device in Axxon PSIM.....	151
3.4.3 Configuring the PTZ device control panel	152
Features of BOSCH KBD-Digital or BOSCH KBD-Universal control panel configuration and operation	154
Features of Axis T8310 control panel configuration and operation	159
Features of Lilin PIH-800III control panel configuration and operation	165
Features of Panasonic WV-CU950 control panel configuration and operation	168
Features of Samsung SSC-2000 control panel configuration and operation	172
Features of EverFocus EKB200 control panel configuration	173
Features of Samsung SPC-7000 control panel configuration.....	174
Features of using VIDEOTEC DCZ keyboard.....	176
3.4.4 Configuring PTZ IP cameras	177
Configuring control of PTZ IP camera using the control panel	178
Features of Vivotek Panoramic PTZ configuration.....	179
3.4.5 Configuring the joystick for telemetry control	180
Configuring joystick using Windows OS tools	180
Configuring the Control device object	186
3.4.6 Configuring the mouse buttons to control PTZ devices	196
3.4.7 Configuring the telemetry control panel	198
3.4.8 Creating and configuring the Operator query panel for telemetry control	199
3.4.9 Configuring the Monitor for telemetry control	201
3.4.10 Priorities of PTZ control.....	201
3.4.11 Configuring functions for tracking moving objects.....	203
Tag&Track configuration	203
Using absolute telemetry	207
3.4.12 Patrolling configuration.....	217
Creating a route for patrolling.....	217
Running and stopping the patrolling	219
4 Installing and configuring security system components guide. Appendices	222
4.1 Appendix 1. Features of video capture card configuration.....	222
4.1.1 Drivers for video capture cards, sensor/relay cards, Guardant and USB Watchdog integrated into Axxon PSIM	222
4.1.2 Features of video subsystem configuration	223
4.1.3 Features of audio subsystem configuration	226

4.2	Appendix 2. IP device configuration in the Windows OS	230
4.2.1	Configuration of IP devices by the example of Axis camera	230
	Searching for IP devices.....	231
	Assigning network addresses to IP devices	232
	How to call the Web Server home page of IP device	236
	Configuring network parameters of IP-devices using the Web Server	239
4.2.2	Features of configuring Axis IP devices.....	242
4.2.3	Features of configuring IP devices using the Web interface	242
	Features of configuring Panasonic IP devices (i-Pro series) using the Web interface	243
	Features of configuring Samsung IP devices using the Web interface.....	243
	Features of configuring Mobotix IP devices using the Web interface.....	244
	Features of configuring Sony IP devices using the Web interface	244
4.3	Appendix 3. Technical specifications of video capture cards.....	245
4.3.1	Technical specifications of FS-5, FS-6, FS-16 and FS-8 video capture cards	246
4.3.2	Technical specifications of WS-6, WS-7, SC390N16 (WS16) and WS-17 video capture cards.....	248
4.3.3	Technical specifications of SC300D16 (FX8), SC200Q4 (FS15), SC300Q16 (FX4), SC310N16 (FX16), SC330Q16 and SC330D16 video capture cards.....	250
4.3.4	Technical specifications of SC200Q4 Low profile (FS115), FX2, SL16-200 (FX116), FX416 and SC230N4 video capture cards.....	253
4.3.5	Technical specifications of SC3B0N16 (WS216), SC510N4 (FX HD4) and MS416 video capture cards.....	256
4.3.6	Technical specifications of DS-4016HCI(R) and SC590N4 video capture card.....	258
4.4	Appendix 4. Video capture cards pins	261
4.4.1	FS-5 video capture card pins	261
4.4.2	FS-6 video capture card pins	262
4.4.3	FS-16(Exp) video capture card pins.....	263
4.4.4	FS-8 video capture card pins	264
4.4.5	WS-7 video capture card pins.....	265
4.4.6	SC390N16 (WS-16) video capture card pins.....	266
4.4.7	WS-17 video capture card pins	267
4.4.8	SC3B0N16 (WS216) video capture card pins.....	268
4.4.9	SC200Q4 (FS15) video capture card pins	270
4.4.10	SC300D16 (FX8) video capture card pins	271
4.4.11	SC300Q16 (FX4) video capture card pins	271
4.4.12	SC310N16 (FX16) video capture card pins	272
4.4.13	SC200Q4 Low profile (FS115) video capture card pins	273

4.4.14 SL16-200 (FX116) video capture card pins	274
4.4.15 FX416 video capture card pins	274
4.4.16 VRC6004 video capture card pins	275
4.4.17 VRC6008 video capture card pins	275
4.4.18 VRC6416 video capture card pins	276
4.4.19 VRC7008L video capture card pins	277
4.4.20 VRC6404 HD video capture card pins	277
4.4.21 SC510N4 (FX HD4) video capture card pins	277
4.4.22 MS416 video capture card pins	278
4.4.23 SC230N4 video capture card pins	279
4.4.24 SC590N4 video capture card pins	279
4.4.25 SC330Q16 video capture card pins	280
4.4.26 SC330D16 video capture card pins	280
4.4.27 SC3C0N8-L video capture card pins	281
4.5 Appendix 5. Electrical and technical specifications of Sensor-Relay cards	281
4.5.1 Electrical and technical specifications of Sensor-Relay cards	281
4.5.2 Electrical and technical specifications of 4/4 Sensor-Relay (low profile) cards	282
4.5.3 Electrical and technical specifications of MO USBIO 4x4 devices	283
4.5.4 Electrical and technical specifications of SL USBIO (4x4, 16x8 and 24x4) card	283
4.5.5 Electrical and technical specifications of AGRG-IO-16/8-WD-DS devices	287
4.6 Appendix 6. Maximum number of presets for IP devices	288
5 Installing and configuring security system components guide.	
CONCLUSION.....	291

1 Installing and configuring security system components guide.

INTRODUCTION

On the page:

- [Purpose and structure of the guide](#)
- [Purpose of Axxon PSIM](#)

1.1 Purpose and structure of the guide

[Installing and configuring security system components guide](#) is a reference and information guide that is designed for system administrators, installation and configuration engineers, users with the rights to administrate *Axxon PSIM*-based digital video surveillance and audio surveillance systems.

This guide contains the following information on:

1. How to install security system components.
2. How to configure security system components in the *Axxon PSIM* software.
3. Appendixes that contain supplemental information on security system components and features of their configuration.

1.2 Purpose of Axxon PSIM

Axxon PSIM is used for the deployment of industrial scalable, flexible (adjustable) integrated security systems, based on the digital video surveillance and audio monitoring systems.

Axxon PSIM has the following basic features:

1. Integration of digital video surveillance and audio monitoring systems with the existing data systems, various security equipment, auxiliary software of other developers, using integrated open interfaces of the data exchange.
2. Compatibility with diverse security devices and data systems, in particular, with the fire and security alarm and access control systems, video cameras, data analysis systems and systems for recognition of objects (events) and identification by their images ([Hardware integrated into Axxon PSIM](#)).
3. Single-source registration and processing of events, generation of notifications and controlling response in accordance with the flexibly modified logics.

Ultimately unlimited capabilities for scaling, solution—specific adjustments, re-distribution of resources with changes in the number or quality of tasks in monitoring protected facilities and operating various equipment.

2 Installing security system components

An *Axxon PSIM™*-based security system consists of hardware kit that fit the functionality of the basic software kit. This section outlines the procedures for configuring basic hardware components of the security system.

2.1 Assembly and installation of video surveillance subsystem hardware

The video surveillance subsystem of the *Axxon PSIM™* software can include the following hardware components:

1. FS/WS/FX/VRC video capture cards and analogue video cameras connected to them. Information on how to install video capture cards is given in the following chapter.
2. Network video cameras and network video servers connected to the Server via the TCP/IP telecommunication protocols. Installation and configuration procedures for this hardware are outlined in the documentation supplied with the network device.
3. Expansion cards for analogue video signal output that are installed in the video capture cards in order to transmit a video signal to analogue monitors.

2.1.1 Installing video capture cards into computer case

One or more video capture card is included into the kit of *Axxon PSIM™*-based digital video surveillance system.

FS-5B, FS-6B, FS-6C, FS-8, WS-7, SC200Q4 (FS15), SC200Q4 Low profile (FS115), SC230N4 and DS4016HCI video capture cards are connected to the PCI interface version 2.1 and higher; FS-16, SC390N16 (WS16), SC3B0N16 (WS216), WS-17, SC300D16 (FX8), SC300Q16 (FX4), SL16-200 (FX116), VRC6004, VRC6008, VRC7008L, SC590N4, SC330D16 (analogue of SC300D16), SC330Q16 (analogue of SC300Q16) and SC3C0N8-L video capture cards are connected to the PCI-express (PCI-E X1) interface; FX416, MS416, SC310N16 (FX16), SC510N4 (FX HD4), VRC6416 and VRC6404HD video capture cards are connected to the PCI-express (PCI-E X4) interface. Installation procedure of video capture cards resembles the installation procedure of standard PCI or PCI-express (sound, network, etc.) cards.

Note

Standard precautions should be observed while installing the video capture cards into a computer case.

Install video capture cards as follows:

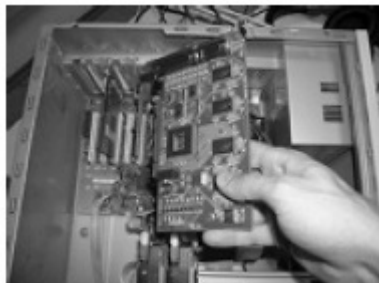
1. Turn the computer off and *disconnect* the *plug* from the mains.
2. Remove the computer case cover.



3. Install the video capture card in a free PCI-E X1 slot of the motherboard. Secure the video capture card with a screw.

Note

Before encasing video capture cards, make sure that your hands are free from static electricity, which can damage computer cards and video capture cards. To prevent damage to the cards, various special antistatic tools may be used (for instance, an antistatic wristband).



Example of FS-6C video capture card installation into a PCI slot.



Example of FS-16 video capture card installation into a PCI-E X1 slot.

4. Set the computer case cover.



5. Connect the interface cable with the numbered BNC-pins to the video capture card.



6. Connect video cameras to the interface cable.



7. Connect the power cord of the computer case to the mains and turn the computer on.
8. While the operating system is loading, new hardware (video capture card) is found and the monitor displays the **Found New Hardware Wizard** dialog box.

If *Axxon PSIM™* is to be installed on the given computer, then click the **Cancel** button in the **Found New Hardware Wizard** dialog box. In this case, the driver of the video capture card is installed automatically during the *Axxon PSIM™* software installation.

If *Axxon PSIM™* has already been installed and a new video capture card needs to be installed, then install the driver of the video capture card(s) using the **Found New Hardware Wizard** application (see [Installing drivers for video capture cards](#) section).

Installation of video capture cards is completed.

2.1.2 Installing drivers for video capture cards

When the video capture card is installed in the computer, the monitor displays the **Found New Hardware** message while the operating system is loading.



As a result the monitor automatically displays the **Found New Hardware Wizard** dialog box.



Note

If *Axxon PSIM™* is to be installed on the given computer, then click the **Cancel** button in the **Found New Hardware Wizard** dialog box. In this case, the driver of the video capture card is installed automatically during the *Axxon PSIM™* software installation.

If *Axxon PSIM™* has already been installed and a new video capture card needs to be installed or a driver needs to be reinstalled, do the following:

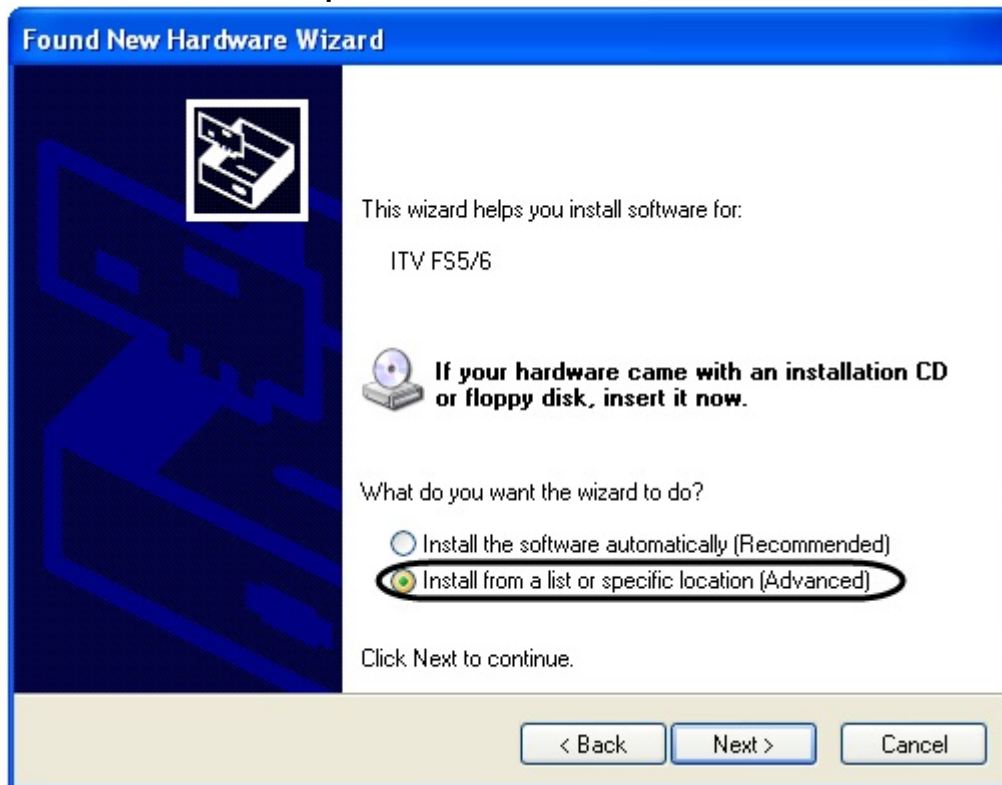
Attention!

It is recommended to shutdown antivirus software while installing the driver

1. Select **No, not this time** and click **Next** in the **Found New Hardware Wizard** dialog box.
2. Select one of the following actions:
 - a. Install the software automatically (recommended) – driver search and follow-up installation.
 - b. Install from a list or specific location – enables selecting the necessary driver or a folder for manual driver search.

If the **Install the software automatically (recommended)** item is selected, then the description of installation continues with item 6.

3. Select **Install from a list or specific location** and click **Next**.

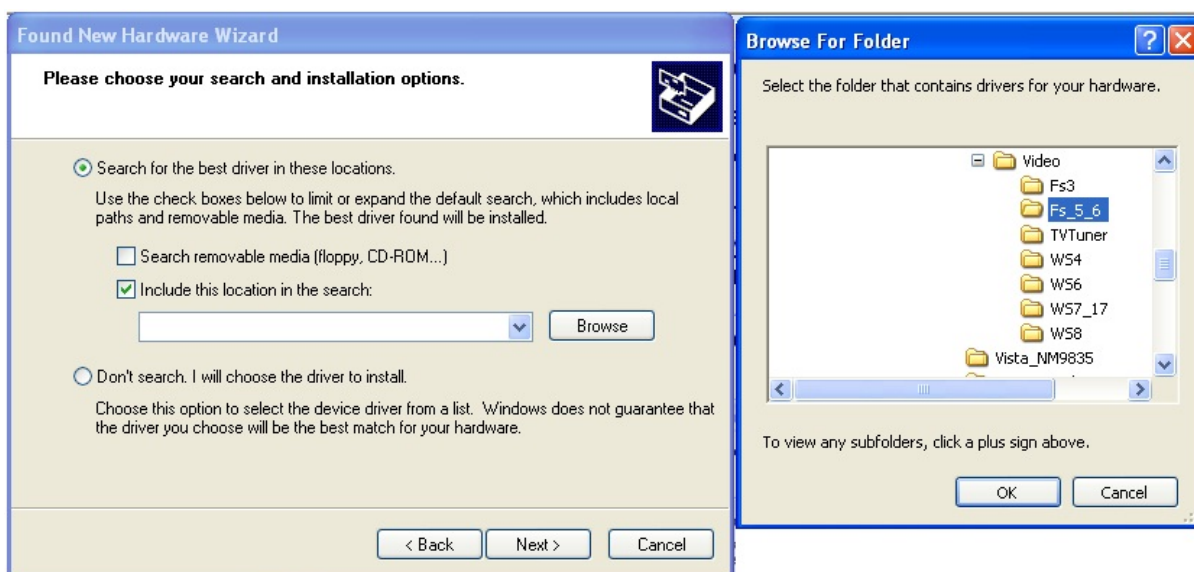


4. Set the **Include this location in the search** checkbox in the search options dialog box and click the **Browse** button. In the **Browse For Folders** box specify the path to the folder that contains drivers for a video capture card and click **OK**.

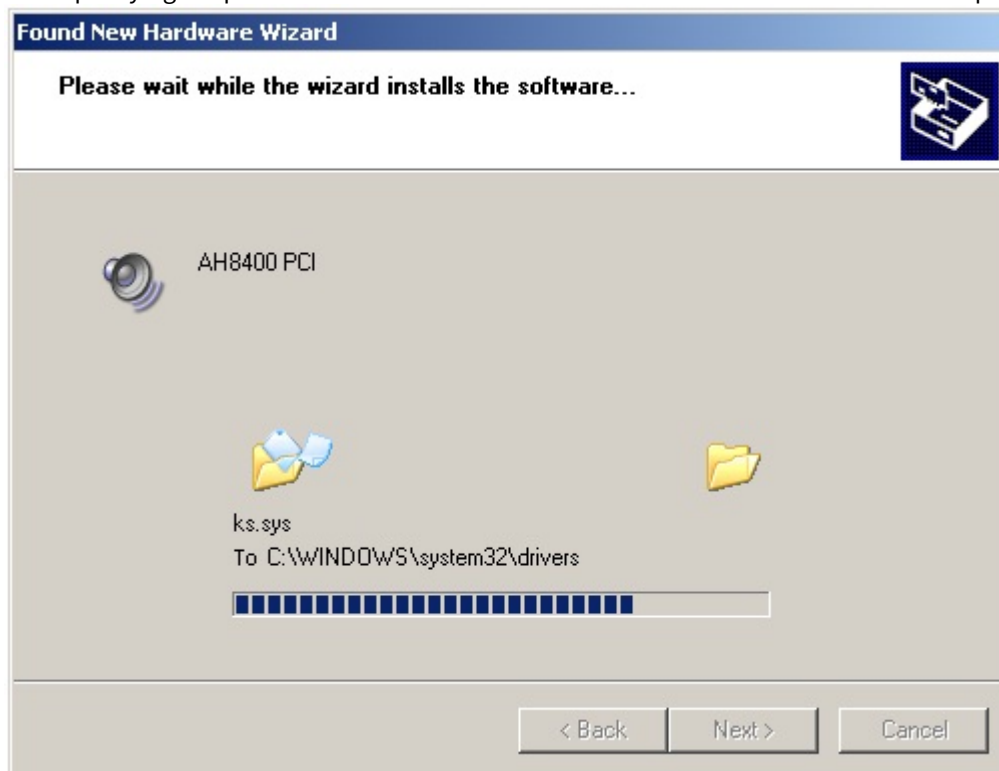
Note

Drivers for SC3C0N8-L video capture card should be downloaded from the manufacturer's web site: <https://www.yuan.com.tw/support/download.htm> (or follow the [link](#)).

Drivers for all the rest of the video capture cards are stored in the **Drivers** folder in the installation kit or in the *Axxon PSIM™* software installation directory. To install drivers for video capture cards select the folder, where the drivers for video capture cards are stored (see [Drivers for video capture cards integrated into the Axxon PSIM™ software](#) section).



5. After specifying the path to the folder click the **Next** button in order to start installation process.



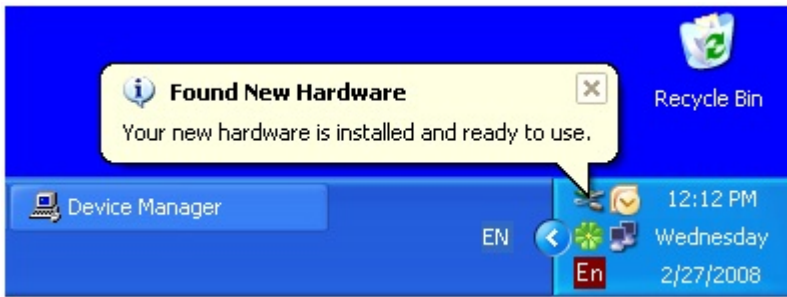
6. Ignore Microsoft notification by clicking the **Continue Anyway** button.



7. To complete installation click the Finish button.



As a result, the message **Your new hardware is installed and ready to use** is displayed in the Windows taskbar.



Installation of a driver for video capture card is completed.

Driver installation procedure for one video capture card is repeated in turn required number of times depending on the number of ADCs on the video capture card (e.g., 1 time for FS-5 video capture card, 4 times for FS-6, FS-16, WS-7 video capture cards, 8 times for FS-8 video capture card).

2.1.3 Testing installation of drivers for video capture cards

When installation of the drivers for video capture cards is finished, driver availability in the Windows operating system should be tested with the help of the **Device Manager**. For this, do the following:

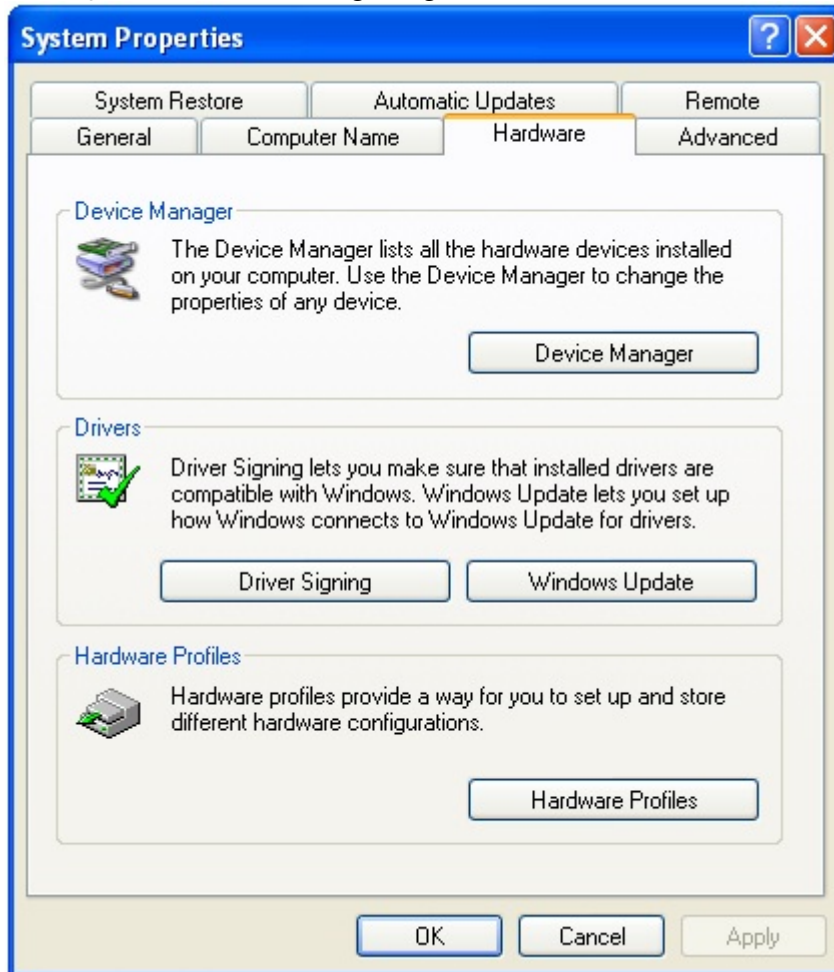
1. Open the **System Properties** window by right-clicking the **My Computer** icon on the desktop and select **Properties** in the contextual menu.

Note

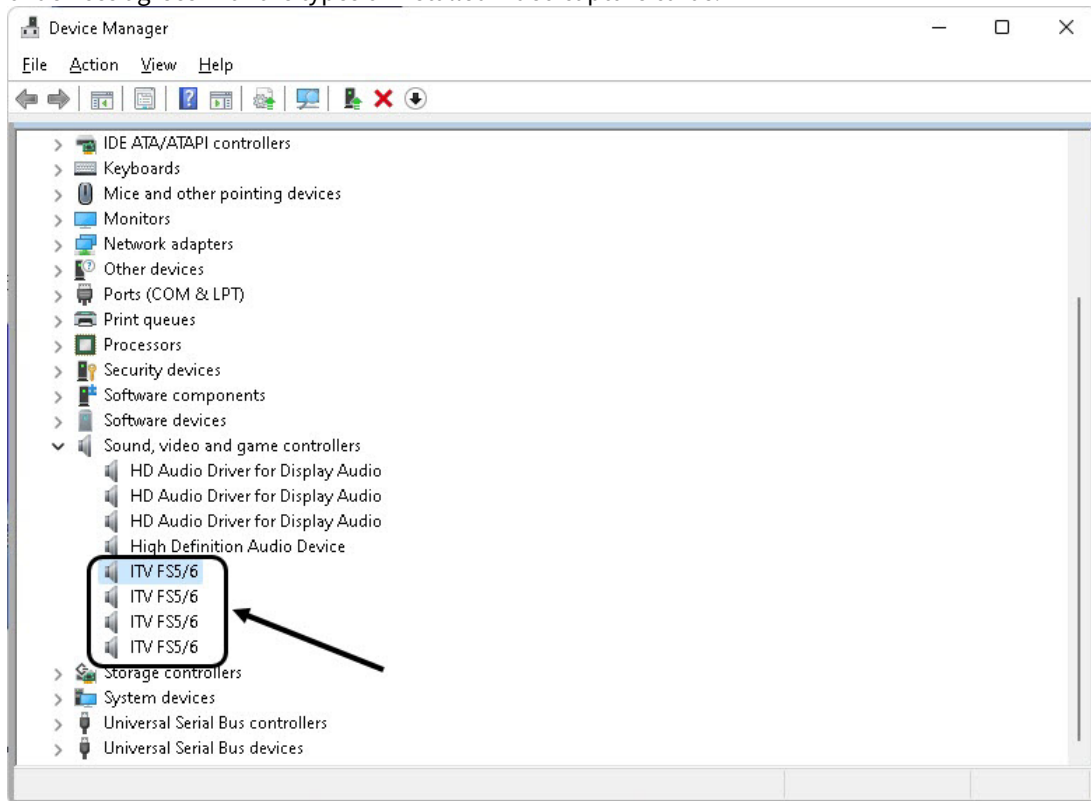
The **System Properties** window can be opened by clicking **Start=> Control Panel=> System**.



2. In the **System properties** dialog box, go to the **Hardware** tab and click the **Device Manager** button.



- Go to **Sound, video and game controllers** item in the Windows hardware tree and check if the displayed list of devices agrees with the types of installed video capture cards.



Important!

If Secure Boot is enabled in BIOS, then the video capture cards' drivers with no Microsoft digital signature won't start on Windows 10 since build 1607 and later, and the corresponding devices will be with the exclamation mark on the yellow background in the list. In this case restart the computer and disable Secure Boot in BIOS. If Secure Boot is still necessary, install older Windows 10 version (build before 1607), then install video capture card drivers, then update to a newer Windows 10.

2.1.4 Checking the correctness of driver installation for video capture cards using the Codereader.exe utility

To check the correctness of driver installation for video capture cards, use the *Codereader.exe* utility designed to read the codes of video capture cards. It is bundled with the *Axxon PSIM* software.

Note

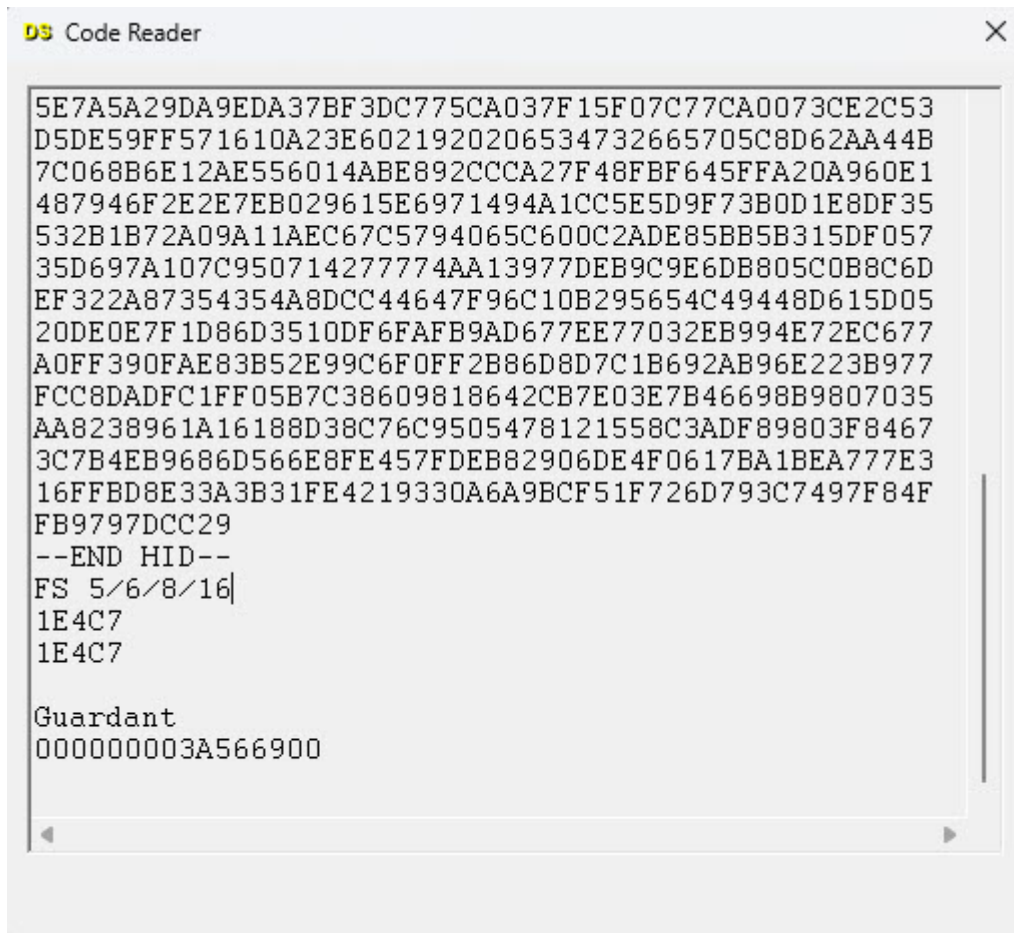
Some video capture cards (for example, SL16-200 (FX116), FX416 and MS416) aren't equipped with a cryptochip. You cannot check the correctness of driver installation of such video capture cards using the *Codereader.exe* utility.

You can run this utility from the **Tools64** folder of the *Axxon PSIM* installation directory. For example, C:\Program Files\Axxon PSIM\Tools64\codereader.exe.

You can also run the *Codereader.exe* utility by selecting **Start** → **All Programs** → **Axxon PSIM** → **Code Reader**.

After you start the utility, the monitor displays a window with the codes of video capture cards.

If you install drivers for video capture cards correctly, the utility window displays the codes of video capture cards. If there are several embedded ADCs on the video capture card, then the codes are repeated as many times as there are ADCs on the video capture card.



The code absence in the *Codereader.exe* utility window or its display as 0000 can be caused by the following reasons:

1. The video capture card isn't installed in the computer.
2. The video capture card is invalid.
3. A driver for the video capture card isn't installed.
4. The installed driver doesn't correspond to the used video capture card.
5. The Installed driver for the video capture card works improperly.
6. The video capture card has no cryptochip (SL16-200 (FX116)/FX416/MS416).

You must check if the video capture card is installed in the computer and reinstall drivers for all ADCs of the video capture card. In case the ADC codes aren't read by the *Codereader.exe* utility after the driver reinstallation, contact your distributor to check the video capture card.

2.1.5 Special features of Driver Pack updating for YUAN cards

The following video capture devices are qualified as YUAN cards: SC390N16 (WS16), SC3B0N16 (WS216), SC200Q4 (FS15), SC300Q16 (FX4), SC300D16 (FX8), SC310N16 (FX16), SC200Q4 Low profile (FS115), SC510N4 (FX HD4), SC330Q16 (analogue of SC300Q16), SC330D16 (analogue of SC300D16) and SC3C0N8-L.

For these cards updating from DriversPack 3.2.21 and lower to version 3.2.22 and above is performed as follows:

1. Remove installed DriversPack and install a new version or update the installed Driverspack.
2. Repair the Axxon PSIM software package (see the [Repairing Axxon PSIM™ software](#) section in [Administrator's Guide](#)).



Attention!

The repairing utility is to be run using the login of computer Administrator.

3. Check whether the drivers for video capture card are installed (see the [Testing installation of drivers for video capture cards](#) section).
4. Install the driver if it was not installed (see the [Installing drivers for video capture cards](#) section).



Note.

The YUAN card will not be found by the *Camera discovery tool* after performing actions which are described above. In this case, configure video subsystem manually (see the [Video subsystem configuration](#) section).

The card will be found by the *Camera discovery tool* if you install DriversPack and then install the *Axxon PSIM* software package.

2.2 Connecting the hardware performance testing

Hardware performance tester is designed to automatically restart the computer whenever any failure in the Windows OS or basic modules of *Axxon PSIM™* software occurs.

Hardware performance testing is done in one of two ways:

1. With the help of Watchdog used on servers with installed video capture cards that support the Watchdog hardware testing (see [Appendix 3. Technical specifications of video capture cards](#)).
2. With the help of USB-Watchdog used on servers and clients without installed video capture cards.

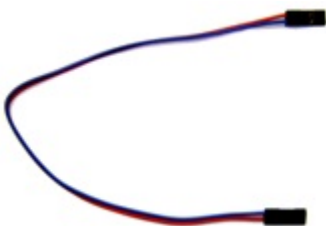
2.2.1 Connecting the Watchdog hardware performance tester

In case of the Watchdog hardware performance testing the **Reset** button is connected to the computer motherboard via the video capture card with the help of special Watchdog cable.



Note

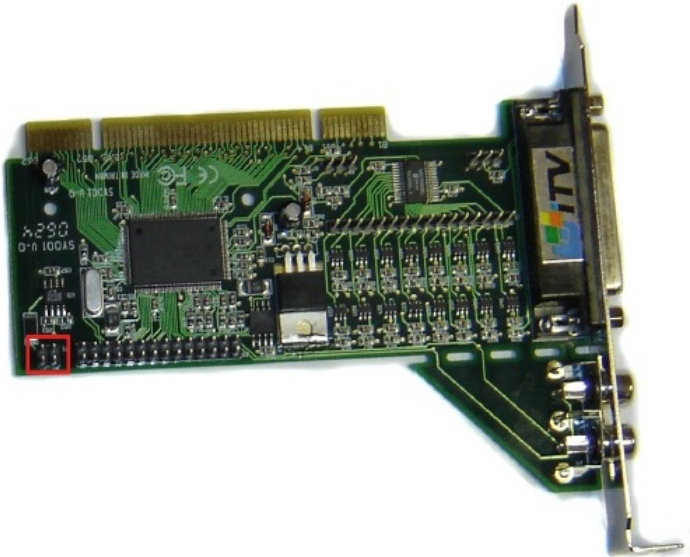
The Watchdog cable is optionally bundled with video capture card.



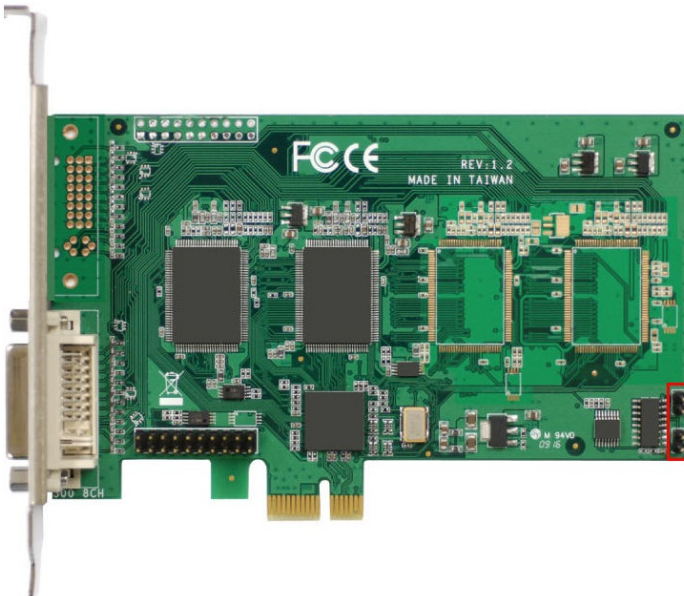
If several video capture cards are installed on the Server, then Watchdog is connected to one card only.

A special four-pin connector or two two-pin connectors are installed on the video capture card to connect the Watchdog cable.

A four-pin connector for connecting the hardware tester of Watchdog pending (by the example of FS-5 video capture card):



Two two-pin connectors for connecting the hardware tester of Watchdog pending (by the example of SC300Q16 (FX-4) video capture card):



Connect the Watchdog hardware performance tester as follows:

1. Make sure that power of motherboard and video capture card is off.
2. Connect the cable of the **Reset** button to the two-pin or four-pin connector of video capture card with the help of a pair of 1/0 or 2/0 connections. Connection of the Reset button cable to FS-5 video capture card is displayed in the second figure.

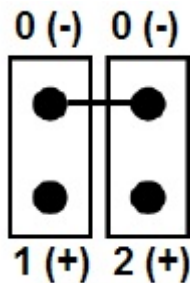
⚠ Attention!

Cables are to be connected to the video capture card taking into account the positioning of the main wire of four-pin connector. You can connect the Watchdog cable to two-pin connector of FX video capture cards any way without taking into account the positioning of the main wire.

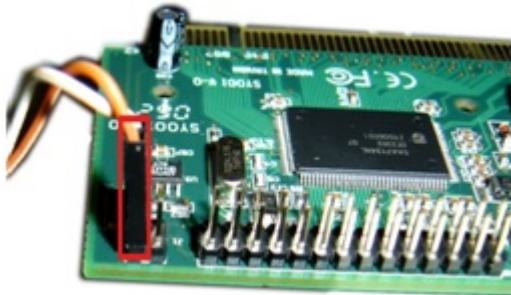
ℹ Note

To specify the positioning of the main wire (earth conditioned «-/-») the multimeter may be used in the resistance test mode. In this case the main wire is determined by 0 resistance value between contacts.

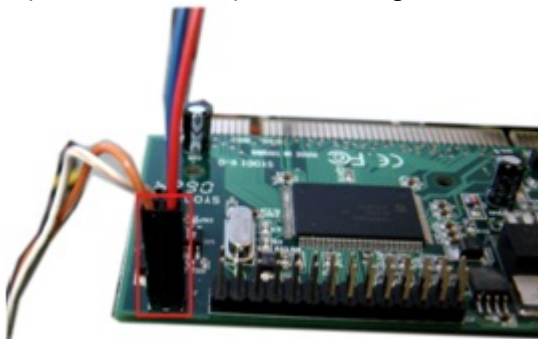
Appearance and pinout of four-pin connector of video capture card: 0/0-main wire (earth conditioned «-/-»), 1/0 and 2/0- pairs of contacts for cables connections («+/-», «+/-»):



The **Reset** button cable connection to the four-pin connector of FS-5 video capture card:



3. Connect the Watchdog cable to the vacant two-pin or four-pin connector of video capture card with the help of vacant pair of contacts (1/0 or 2/0) – see the figure above. The Watchdog cable connection to FS-5 video capture card is exemplified in the figure below:



4. Connect the vacant end of the Watchdog cable to the connector on the motherboard for the **Reset** button cable.

Connecting the Watchdog hardware performance tester is completed.

Note

Connecting the Watchdog hardware performance tester is not correct if there is no reboot after pressing the **Reset** button.

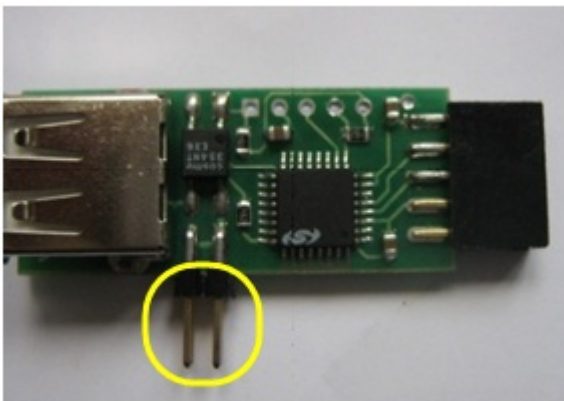
If all the steps of connecting are correct, then the Watchdog inoperativeness can be caused by inobservance of polarity while connecting the Watchdog cable to the motherboard. Interchange the cables and reconnect the Watchdog cable to the motherboard.

Note

Program setting of the Watchdog function is necessary to activate the hardware performance tester (see [Configuring the Watchdog hardware performance tester](#) section).

2.2.2 Connecting the USB Watchdog hardware performance tester

In case of the USB Watchdog hardware performance testing the **Reset** button is connected to the computer motherboard via the USB Watchdog device with the help of special Watchdog cable. The appearance of the USB Watchdog device is displayed in the figure:

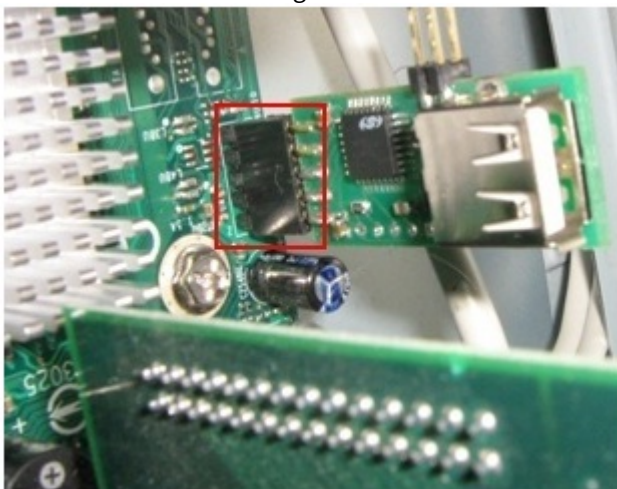


Special four-pin connector is installed on the USB Watchdog device to connect the Watchdog cable.

Connect the USB Watchdog hardware performance tester as follows:

1. Make sure that power of motherboard and video capture card is off.

2. Connect the USB Watchdog device to USB connector on the motherboard.



3. Connect the **Reset** button cable to the four-pin connector of the USB Watchdog device with the help of a pair of contacts (1/0 or 2/0). Connecting the **Reset** button cable to the USB Watchdog device is exemplified in the figure.

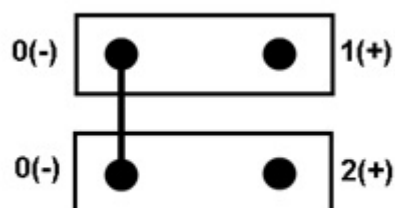
⚠ Attention!

Cables are to be connected to the video capture card taking into account the positioning of the main wire of four-pin connector.

i Note

To specify the positioning of the main wire (earth conditioned «-/-») the multimeter may be used in the resistance test mode. In this case the main wire is determined by 0 resistance value between contacts

Appearance and pinout of four-pin connector of the USB Watchdog: 0/0-main wire (earth conditioned «-/-»), 1/0 and 2/0- pairs of contacts for cables connections («+/-», «+/-»):



Connection of the cables to four-pin connector of the USB Watchdog device.



4. Connect the Watchdog cable to four-pin connector of the USB Watchdog device with the help of a vacant pair of contacts (1/0, or 2/0) – see the figure above.
5. Connect the vacant end of the Watchdog cable to the connector on the motherboard for the **Reset** button cable.

Connecting the USB Watchdog hardware performance tester is completed.

Attention!

The USB Watchdog hardware performance tester is activated with the help of the System restart service (see [Activating the hardware control of workability](#) section in [Administrator's Guide](#)).

Note

Connecting the USB Watchdog hardware performance tester is not correct if there is no reboot after pressing the **Reset** button.
If all the steps of connecting are correct, then the USB Watchdog inoperativeness can be caused by in observance of polarity while connecting the Watchdog cable to the motherboard. Interchange the cables and reconnect the Watchdog cable to the mother board.

Note

USB connector on the USB Watchdog may be used for connecting any external USB devices to the computer. Connected USB devices do not influence the USB Watchdog hardware performance tester.

2.3 Connecting Sensor-Relay cards

DI/DO card is connected to the video capture card and is used for connecting guard loops (sensors), relays and in some cases analog sensors to the control system - the server with installed *Axxon PSIM™* software. General information about sensors and relays is given in the table:

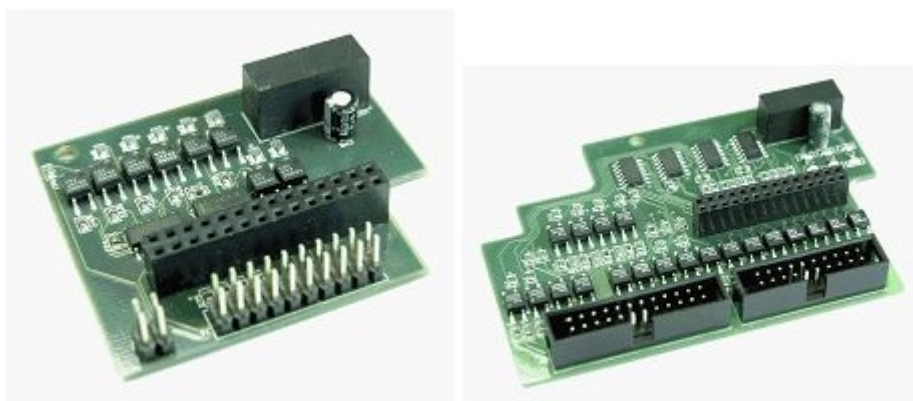
Type of device	Description	Functions	Operation conditions	Changes in operation condition	Examples of devices
Sensor	Interface line of external sensor and control system	Informs the control system about changes in sensor status	Closed – logical one Open – logical zero	Opening/closing – when sensor detects the alarm	Annunciators (smoke, heat, window, etc), button
Relay	Interface line of control system and executive device	Changes operation condition of executive device on command from the control system	Closed – logical one Open – logical zero	Opening/closing – on command from the control system.	Annunciators (light, sound, etc.), mechanized gates
Analog sensor	Interface line of external sensor and control system	Informs the control system about changes in sensor status	-	In analog (continuous) mode.	Temperature, humidity, pressure, etc. sensors

Electrical and technical specifications of some Sensor-Relay cards are given in [Appendix 5. Electrical and technical specifications of Sensor-Relay cards](#) section. For the most up-to-date information on the characteristics and connection of the Sensor-Relay cards, please see the manufacturer's documentation.

Some of the Sensor-Relay cards are integrated with Axxon PSIM via Drivers Pack. See [Documentation Drivers Pack](#) for the full list of such cards.

2.3.1 Connecting 4/4 and 16/4 Sensor-Relay cards

Multichannel digital-to-analogue conversion 4/4 and 16/4 Sensor-Relay cards can be installed on the Server depending on the security system requirements:



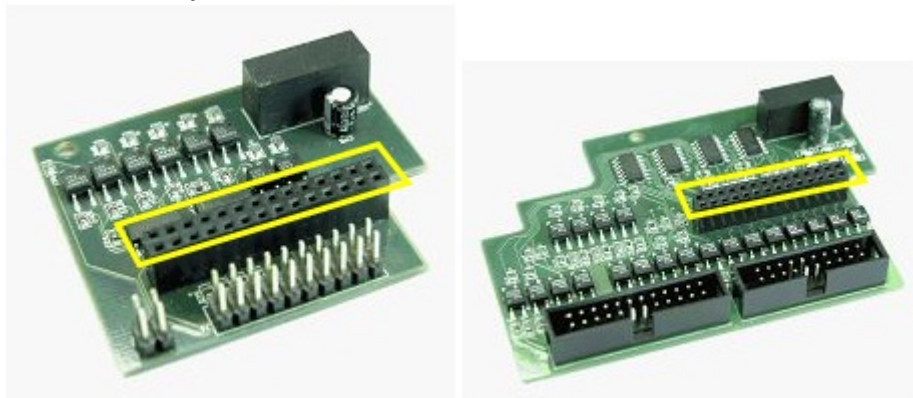
The 4/4 Sensor-Relay cards enable to process the signals from 4 sensors and the 16/4 cards - from 16 sensors. Simultaneously with processing the sensors signals these cards perform digital-analogue conversion and transmit up to 4 control signals to executive devices (relays).

The 4/4 and 16/4 Sensor-Relay cards have power (24V) and grounding terminals. The 4/4 and 16/4 Sensor-Relay cards are installed in the J9 connector on FS-5, FS-6, FS-16 and FS-8 video capture cards (see [Appendix 4. Video capture cards pins](#)).

Connect Sensor-Relay cards as follows:

1. Make sure that power supply of the video capture card is off.
2. Install the Sensor-Relay card on the video capture card in the J9 connector.

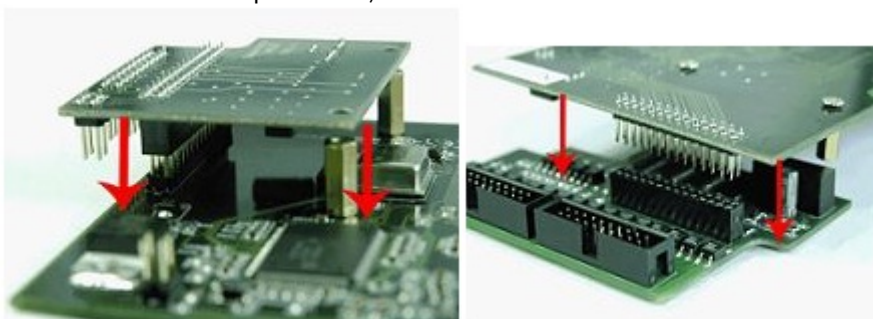
Connector on the Sensor-Relay card for connecting to the video capture card (by the example of 4/4 and 16/4 Sensor-Relay cards):



Connector J9 on the video capture card for connecting the Sensor-Relay card (by the example of FS6 video capture card):



Installation of the Sensor-Relay card on the video capture card (by the example of 4/4 and 16/4 Sensor-Relay cards and FS6 video capture card):



3. Fix the Sensor-Relay card on the video capture card with the help of screws bundled with the distribution kit of the Sensor-Relay card.
4. Connect the interface cable (bundled with the distribution kit of the Sensor-Relay card) to the Sensor-Relay card with the help of special connector:



Note

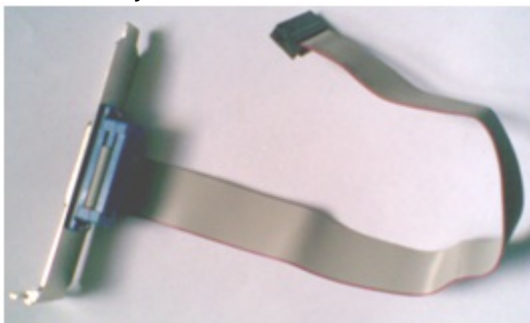
For interface cable connection the 4/4 Sensor-Relay card has J6 connector, 16/4 Sensor-Relay card has J6 and J7 connectors.



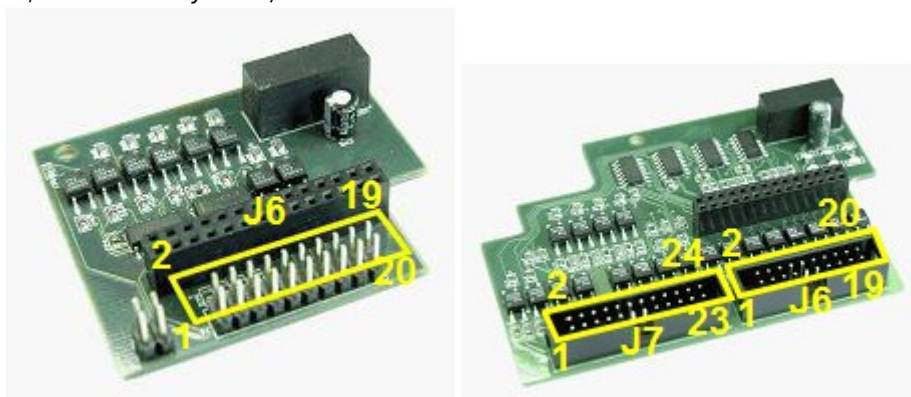
Attention!

The first wire of the interface cable (marked red) is to match the first pin of corresponding connector of the Sensor-Relay card.

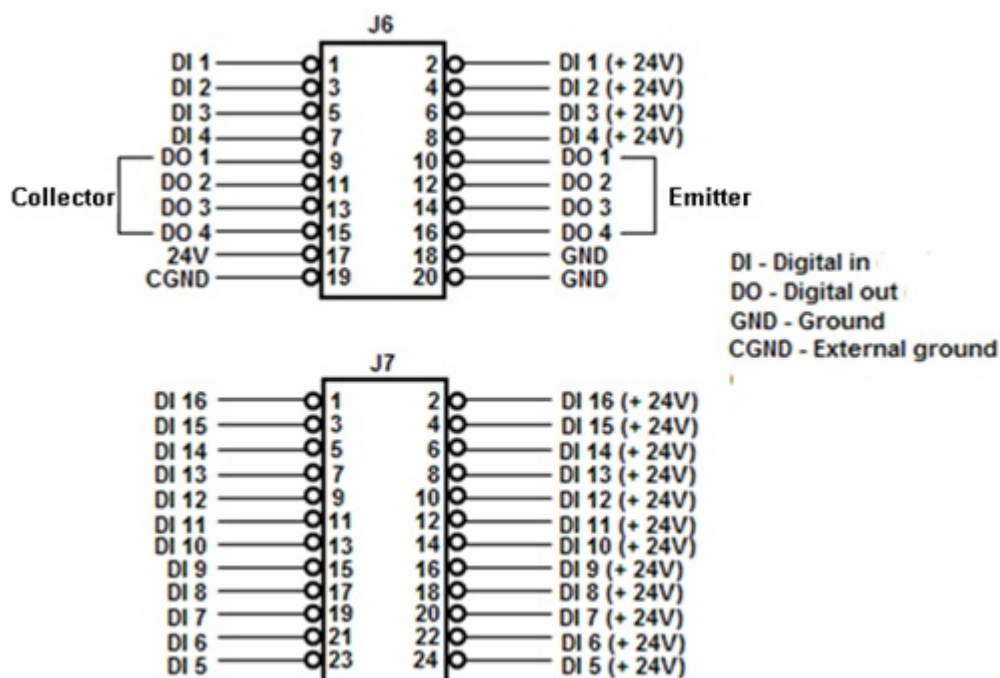
Sensor-Relay interface cable:



Connectors on the Sensor-Relay card for the interface cable connection (by the example of 4/4 and 16/4 Sensor-Relay cards):



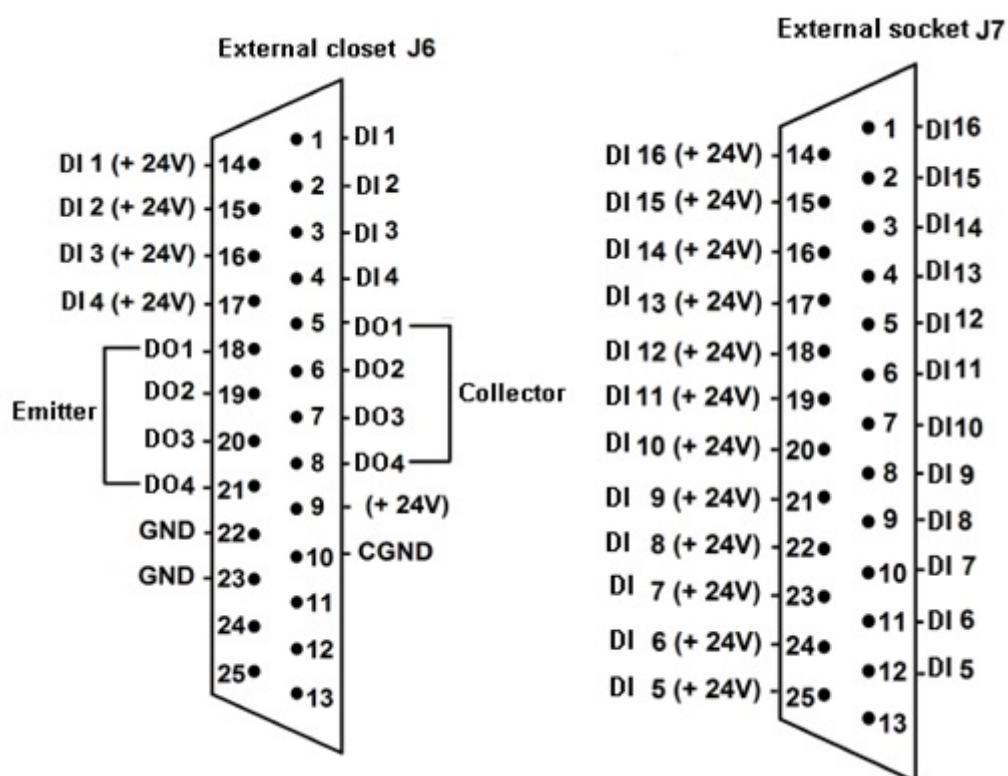
J6 and J7 connector pinout:



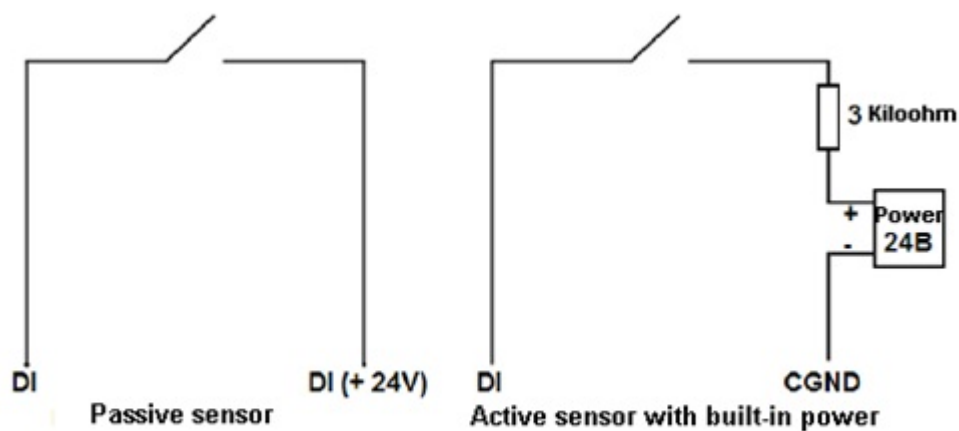
Example of the interface cable connection to the 4/4 Sensor-Relay card:



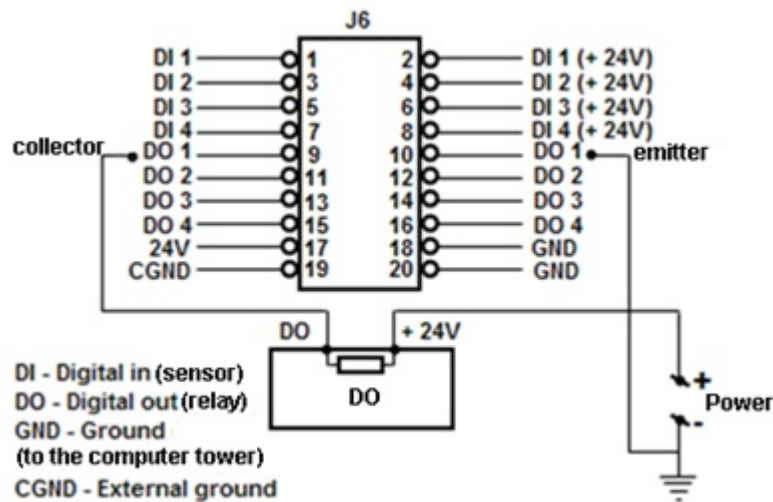
- To connect Sensor-Relay, unsolder the connector bundled with the distribution kit of the Sensor-Relay card. Unsoldering is made in accordance with the external connector pinout of the Sensor-Relay interface cable, taking into account power circuit of connected devices.
External connector pinout of the Sensor-Relay interface cable:



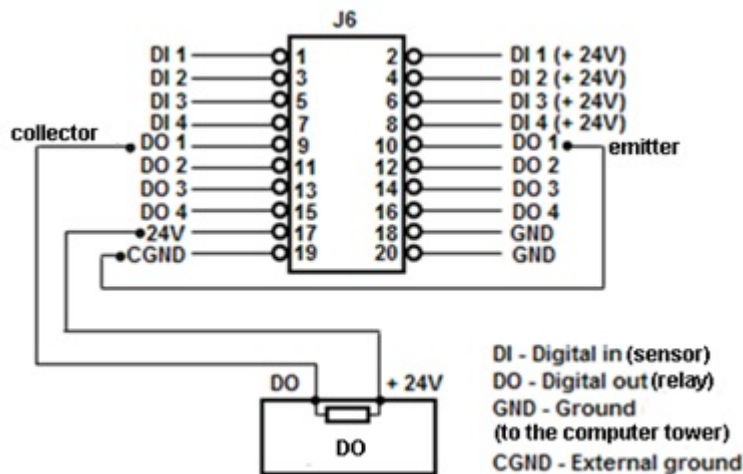
Sensor types and features of their connection:



Example of power relay connection (with external power supply):



Example of low-power relay (power supply on the card):



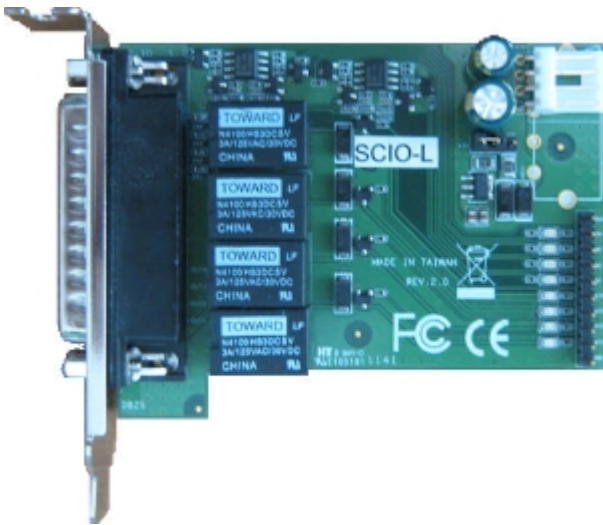
6. Fix the unsoldered connector in the casing bundled with the distribution kit of the Sensor-Relay card.
7. Connect ready-for-use connector to external connector of the Sensor-Relay interface cable in order to connect Sensor-Relay to the Server.

The Sensor-Relay cards are now connected.

2.3.2 Connecting 4/4 Sensor-Relay (low profile) cards

Building security video subsystem with the use of SC200Q4 Low profile (FS115) / SC300Q16 (FX4) / SC300D16 (FX8) / SC310N16 (FX16) / SC230N4 / SC3B0N16 (WS216) / SC590N4 video capture cards one can install 4/4 Sensor-Relay cards (low profile) in order to connect external sensors (DI) and executive devices (DO) to the Server.

4/4 Sensor-Relay (low profile) card appearance is shown in the figure:



Connect the 4/4 Sensor-Relay (low profile) card as follows:

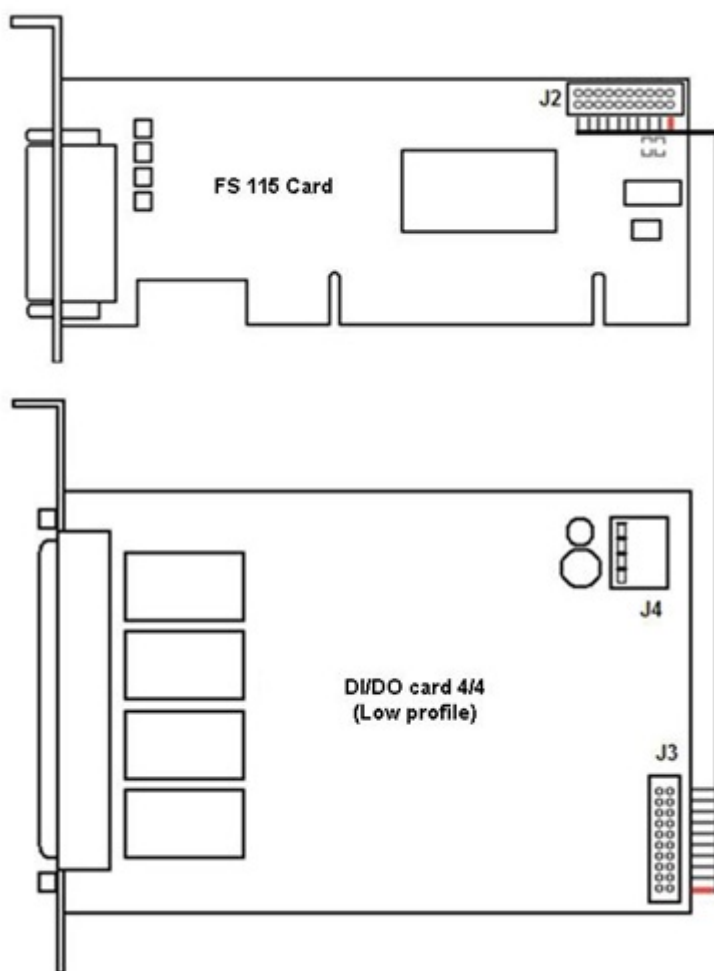
1. Make sure that the power of computer is off.
2. Connect the 4/4 Sensor-Relay (low profile) card to the video capture card with the help of loop bundled with the distribution kit. The loop is connected to J2 and J3 connectors (see the figures below and [Appendix 5. Video capture cards pins section](#)).

Note

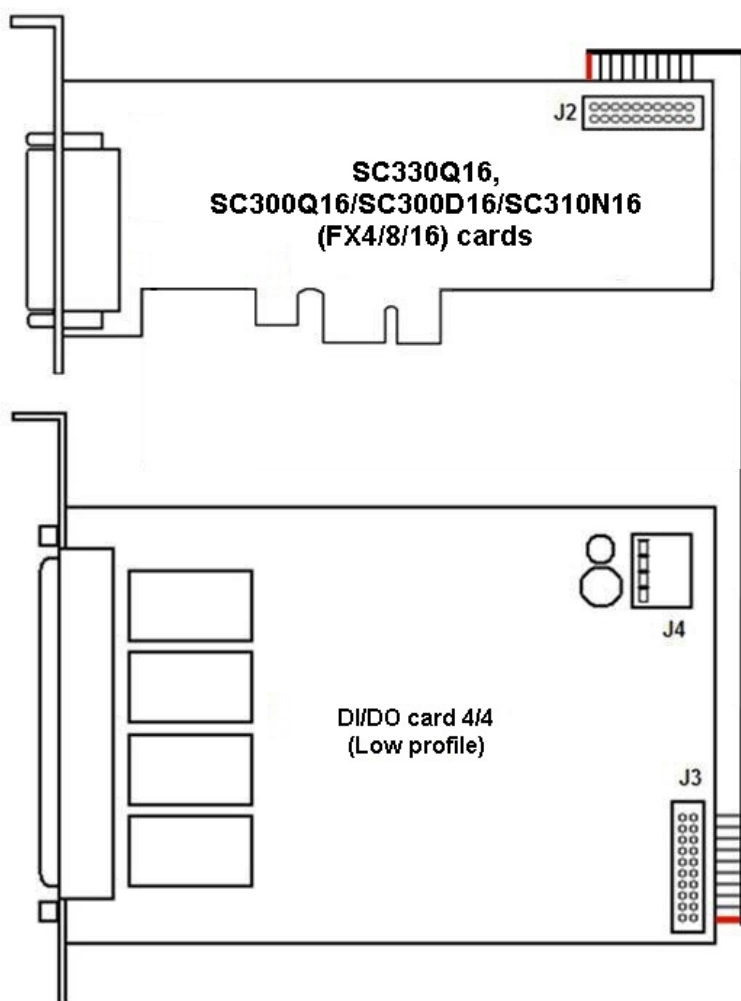
The loop is to be connected to the first row of J2 connectors. One of the outers is marked red in the figures.

The 4/4 Sensor-Relay card (low profile) can be connected to SC590N4 video capture card both to the first and the second row of J2 connectors.

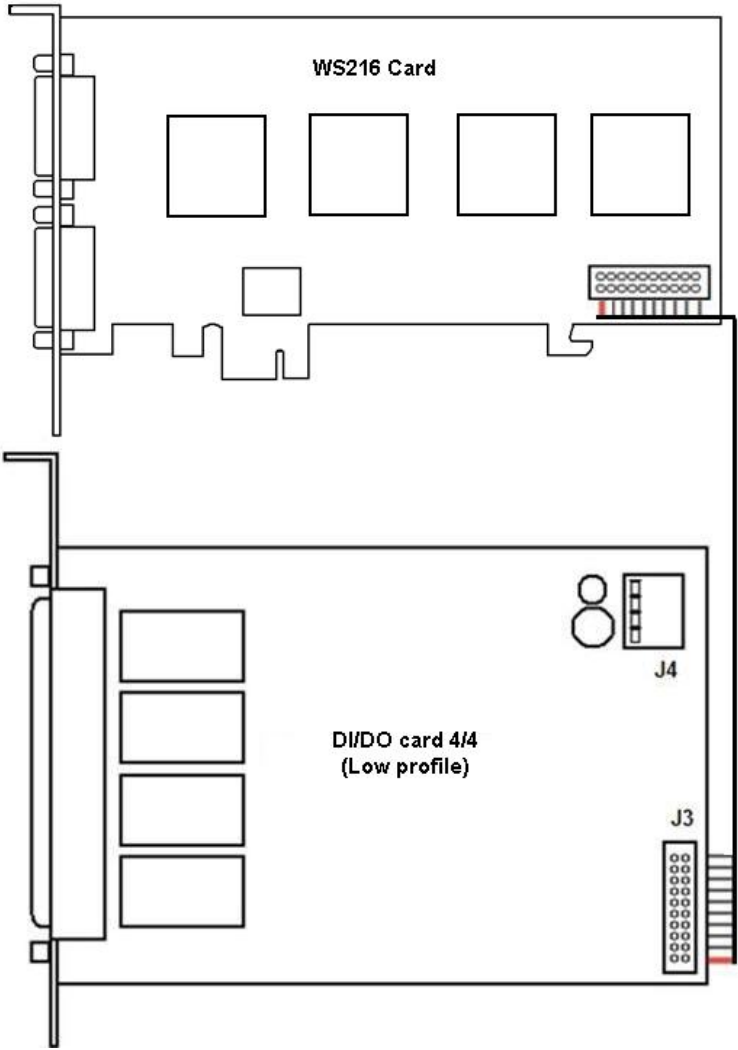
The figure showing the 4/4 Sensor-Relay (low profile) card connection to SC200Q4 Low profile (FS115) card:



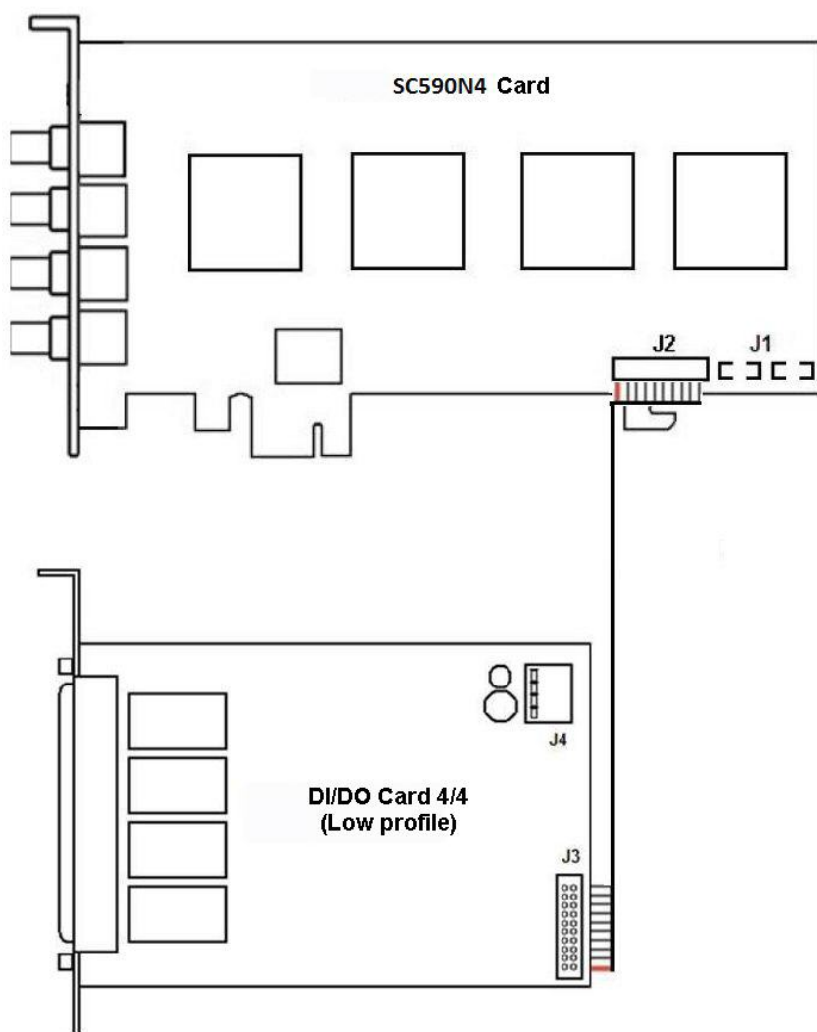
The figure showing the 4/4 Sensor-Relay (low profile) card connection to SC330Q16, SC300Q16/SC300D16/ SC310N16 (FX4/8/16) cards:



The figure showing the 4/4 Sensor-Relay (low profile) card connection to SC3B0N16 (WS216) card:



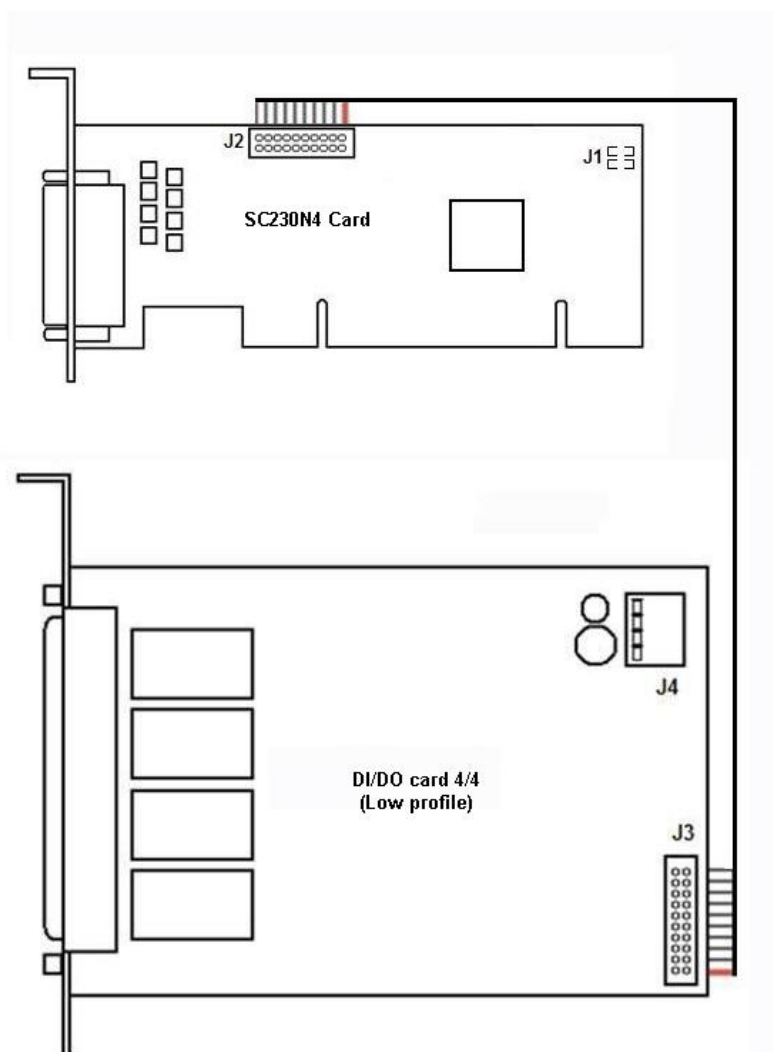
The figure showing the 4/4 Sensor-Relay (low profile) card connection to SC590N4 card:



Note.

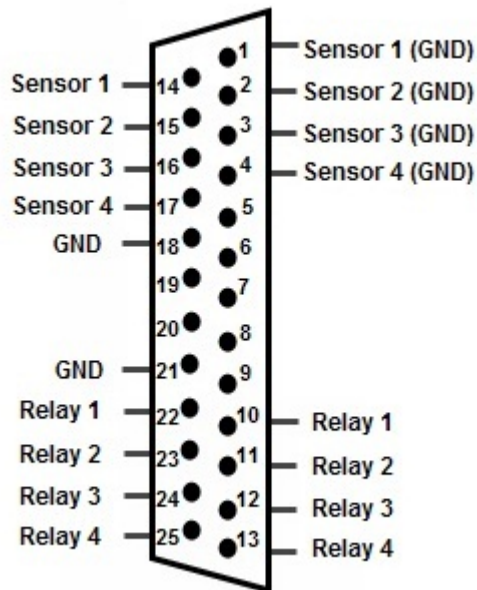
SC590N4 card supports up to 8 sensors and 8 relays as two 4/4 Sensor-Relay (low profile) cards can be connected to the J2 connector simultaneously.

The figure showing the 4/4 Sensor-Relay (low profile) card connection to SC230N4 card:



3. Connect the cable of computer PSU (disk drive power supply) to J4 connector of the 4/4 Sensor-Relay (low profile) card.
4. Install the card into vacant computer slot and fix it in the casing with the help of screw.

5. To connect Sensor-Relay, unsolder the connector. Unsoldering is made in accordance with the external connector pinout of the 4/4 Sensor-Relay (low profile) card.



6. Connect the ready-for-use connector to external connector of the 4/4 Sensor-Relay (low profile) card in order to connect sensors and relays to the Server.

Attention!

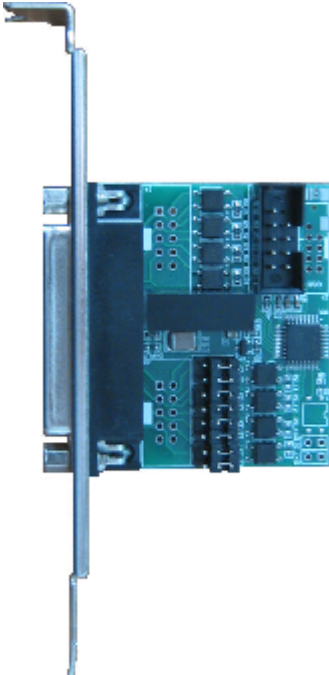
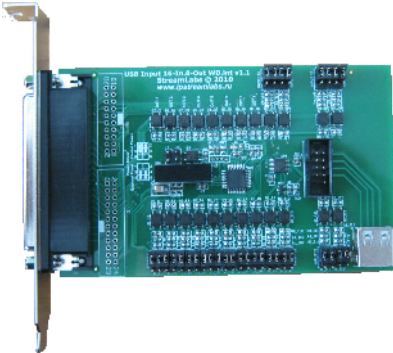
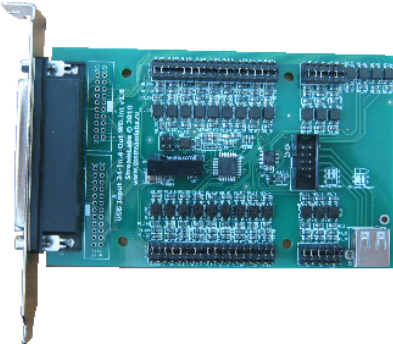
For 4/4 Sensor-Relay (low profile) card proper operation it is essentially required to supply video signal on at least one channel of the video capture card connected to the 4/4 Sensor-Relay (low profile) card.

The 4/4 Sensor-Relay (low profile) card is now connected.

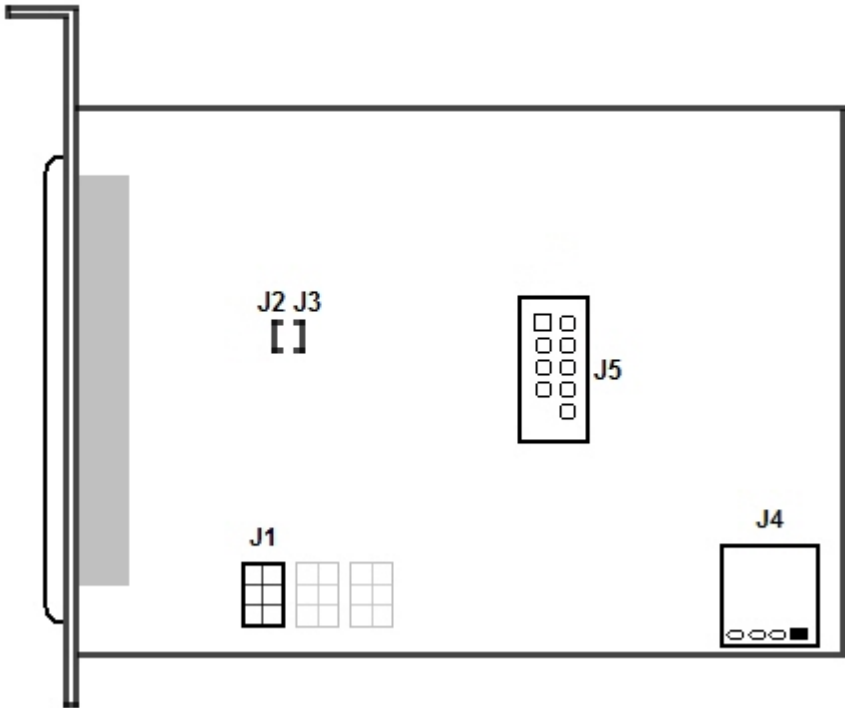
2.3.3 Connecting SL USBIO cards (4x4, 16x8 and 24x4)

The SL USBIO card is an interface of external sensors and external executive devices (relays) as a part of video surveillance and fire and security alarm systems.

The figures show the appearance of SL USBIO cards:

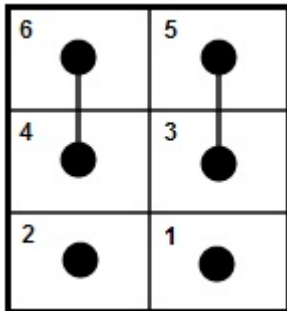
		
SL USBIO 4x4	SL USBIO 16x8	SL USBIO 24x4

The layout of SL USBIO connectors:

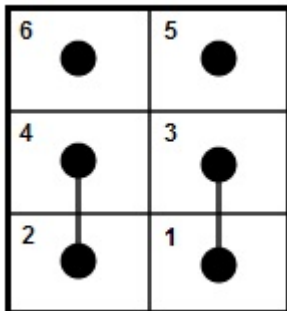


Connect the SL USBIO card to the Server as follows:

1. For each sensor configure the power supply by shifting the jumper in the corresponding **J1** contact set.



Sensor functions using the power supply in the device

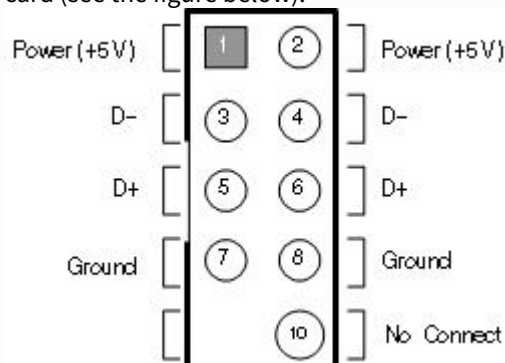


Sensor functions using the external power supply
(polarity of external voltage is not important)

2. Switch the computer power supply off. Remove the system cover.
3. Install the SL USBIO card into a vacant motherboard slot and fix it in the casing.
4. Connect the loop (bundled with the distribution kit) to the **J5** connector and to a vacant USB connector on the motherboard of computer.

Note

There is a special adapter in the delivery package if the SL USBIO 4x4 card is in use and the motherboard has an outsized USB connector or there is no connector for a loop contact. If you do not have the adapter, it is required to acquire one or route the loop leads by yourself taking into account the connector layout on the motherboard and USB connector layout on the SL USBIO 4x4 card (see the figure below):



5. To activate the hardware pending check, connect wires to the **J2 J3** connector (see [Connecting the hardware performance testing](#) section).

Note

There is no **J2 J3** connector on the SL USBIO 4x4 card.

Use **J4** port if the connection is to be performed via the external USB port (USB cable of A-A type) or the USB device is to be connected.

Note

There is no **J4** port on the SL USBIO 4x4 card.

6. To connect sensors and relays, unsolder the connector and fix it in the casing bundled with the distribution kit. Unsoldering is made in accordance with the external connector layout (see [Appendix 5. Electrical and technical specifications of Sensor-Relay cards](#)).
7. Connect the ready-for-use connector to external connector of the SL USBIO card.

Note

When connecting a SL USBIO card, the operating system can automatically install drivers for it. If the drivers were not installed immediately after the card connection, they will be installed along with the *Axxon PSIM* installation. The drivers can also be installed manually from the Windows Device Manager – see [Drivers for video capture cards, sensor/relay cards, Guardant and USB Watchdog integrated into Axxon PSIM](#).

After the cards are installed, they have the following names in the device manager:

SL USB IO 4x4	SL USB IO 16x8	SL USB IO 24x4
Stream Labs 4IO	Stream Labs 16I8OWDint	Stream Labs 24I4OWDint

The SL USBIO card is now connected.

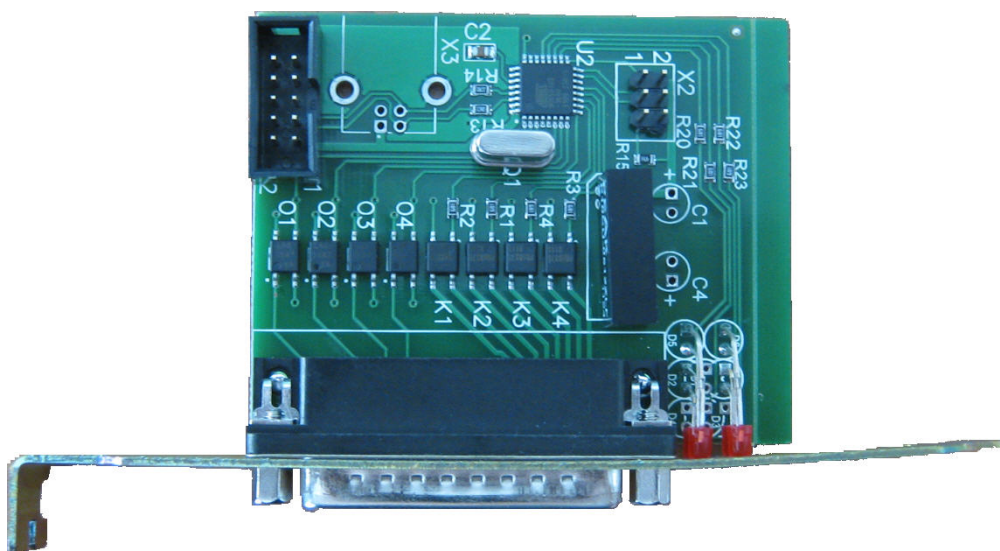
2.3.4 Connecting MO USBIO 4x4 cards

The MO USBIO 4x4 card is an interface of external sensors and external executive devices (relays) as a part of video surveillance and fire and security alarm systems.

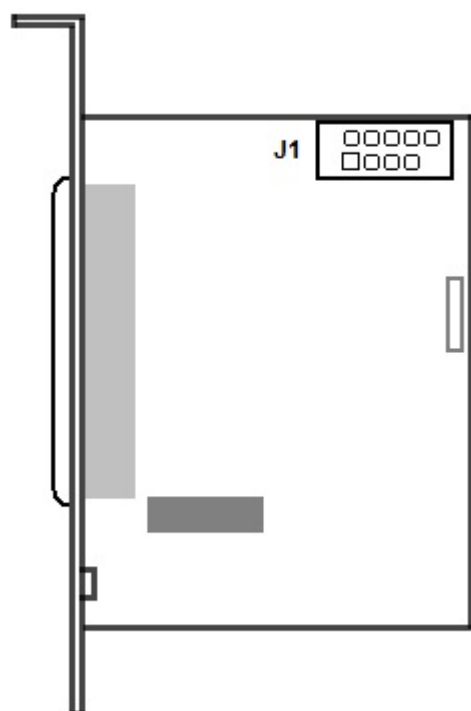
The figure shows the appearance of MO USBIO card.

Note

This card can be bundled as an external module – see the [Connecting MO USBIO 4x4 external module](#) section



The layout of card connectors:

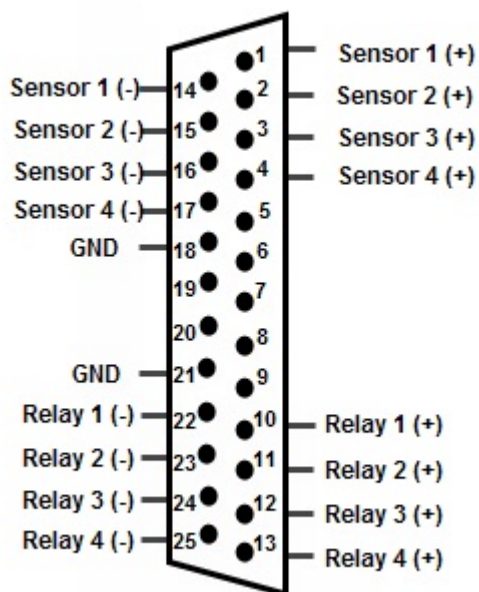


The device is controlled via the USB interface. Electrical and technical specifications of the card are given in the [Electrical and technical specifications of MO USBIO 4x4](#) section.

Connect the MO USBIO 4x4 card to the Server as follows:

1. Switch the computer power supply off. Remove the system cover.
2. Install the MO USBIO 4x4 card into a vacant motherboard slot and fix it in the casing.
3. Connect the loop (bundled with the distribution kit) to the **J1** connector and to a vacant USB connector on the motherboard of computer .

4. To connect sensors and relays unsolder the connector bundled with the distribution kit. Unsoldering is made in accordance with the external connector pinout of the MO USBIO 4x4 card.



5. Fix the unsoldered connector in the casing bundled with the distribution kit.
6. Connect ready-for-use connector to external connector of the card in order to connect sensors and relays to the Server.

The MO USBIO 4x4 card is now connected.

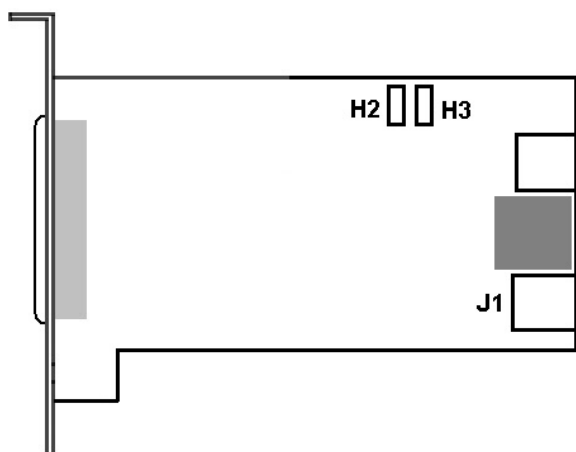
2.3.5 Connecting AGRG-IO-16/8-WD-DS Sensor-Relay cards

The *AGRG-IO-16/8-WD-DS Sensor-Relay* card is an interface of external sensors and external executive devices (relays) as a part of video surveillance and fire and security alarm systems.

The figure shows the appearance of *AGRG-IO-16/8-WD-DS* card.



The layout of card connectors:



The device is controlled via the USB interface. Electrical and technical specifications of the card are given in the [Electrical and technical specifications of AGRG-IO-16/8-WD-DS devices](#) section.

Connect the *AGRG-IO-16/8-WD-DS* card to the Server as follows:

1. Switch the computer power supply off. Remove the system cover.
2. Install the *AGRG-IO-16/8-WD-DS* card into a vacant motherboard slot and fix it in the casing.
3. Connect the loop (bundled with the distribution kit) to the **J1** connector and to a vacant USB connector on the motherboard of the computer.
4. To activate the hardware control of the hang, connect the wires to the **H2 H3** connector (see Connecting the hardware control of the system to work).
5. To connect sensors and relays unsolder the connector bundled with the distribution kit.
 - a. The connecting wires from the executive devices are soldered to the contacts marked as "Relay" (see the table below).

Connector	Application	Connector	Application
1	Relay 1 (+)	26	Sensor 5
2	Relay 1	27	Sensor 5
3	Relay 2	28	Sensor 6
4	Relay 2	29	Sensor 6
5	Relay 3	30	Sensor 7
6	Relay 3	31	Sensor 7
7	Relay 4	32	Sensor 8
8	Relay 4	33	Sensor 8

Connector	Application	Connector	Application
9	Relay 5	34	Sensor 9
10	Relay 5	35	Sensor 9
11	Relay 6	36	Sensor 10
12	Relay 6	37	Sensor 10
13	Relay 7	38	Sensor 11
14	Relay 7	39	Sensor 11
15	Relay 8	40	Sensor 12
16	Relay 8	41	Sensor 12

- b. The connecting wires from the sensors are soldered to the contacts marked as "Sensor" (see the table below).

Connector	Application	Connector	Application
17	Sensor 1	42	Sensor 13
18	Sensor 1	43	Sensor 13
19	Sensor 2	44	Sensor 14
20	Sensor 2	45	Sensor 14
21	Sensor 3	46	Sensor 15
22	Sensor 3	47	Sensor 15
23	Sensor 4	48	Sensor 16
24	Sensor 4	49	Sensor 16
25	+ 12V (Output)	50	GND (Ground)

6. Fix the unsoldered connector in the casing bundled with the distribution kit.

7. Connect ready-for-use connector to external connector of the card in order to connect sensors and relays to the Server.

The AGRG-IO-16/8-WD-DS card is now connected.

2.4 Connecting MO USBIO 4x4 external module

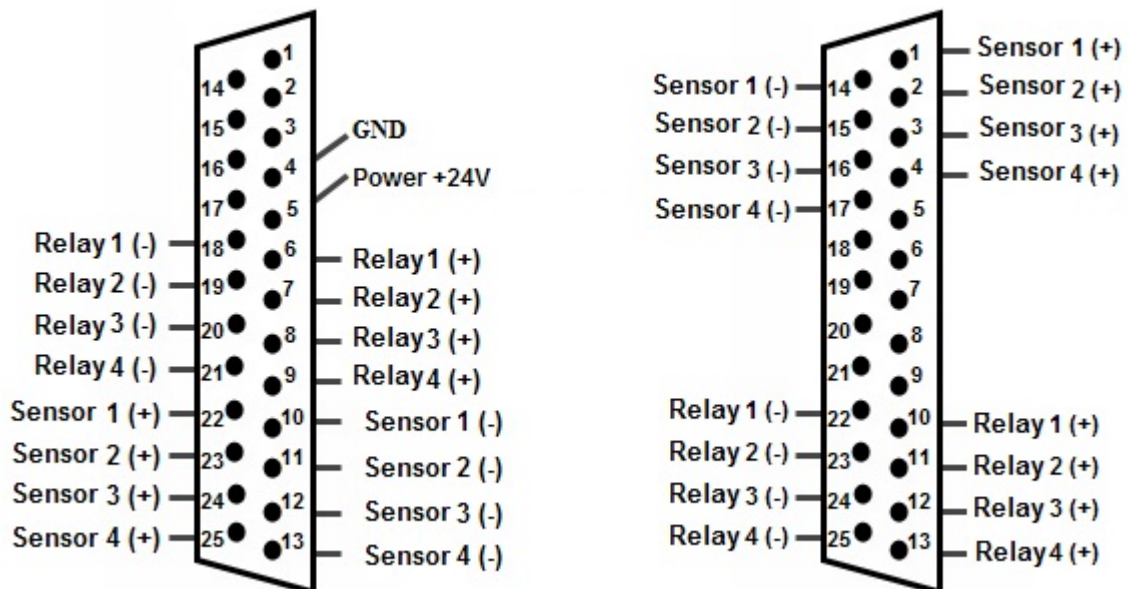
The MO USBIO 4x4 module is an interface for external sensors (sensors) and external executive devices (relays) as a part of video surveillance and fire and security alarm systems.



External module is controlled via the USB interface. Electrical and technical specifications of the module are given in [Electrical and technical specifications of MO USBIO 4x4](#) section.

Configure the MO USBIO 4x4 external module as follows:

1. Connect the MO USBIO 4x4 module to the server via the USB cable included in the distribution kit.
2. To connect sensors and relays, unsolder the connector that is in the distribution kit. Unsoldering is made in accordance with the external connector pinout of the MO USBIO 4x4 module. Depending on the module modification one of the jack pinout shown in figure can be in use.



3. Fix the unsoldered connector in the casing in the distribution kit.
4. Connect ready-for-use connector to external connector of the card in order to connect sensors and relays to the Server.

The MO USBIO 4x4 external module configuration is completed.

2.5 Assembling and installing hardware components of audio subsystem

On the page:

- Supported audio cards and other audio input devices
- Options for increasing the number of audio input channels when standard audio cards are in use
- Installing audio input devices
- Installing microphones and loud speakers

Axxon PSIM™ software supports synchro video and audio recording and remote audio monitoring.

To enable operation of the audio subsystem, the Operator Workstation is to be equipped with optional equipment, such as audio cards, microphones, loud speakers and earphones.

2.5.1 Supported audio cards and other audio input devices

The following audio input devices can be used in the audio subsystem:

1. Standard audio cards installed in a computer or integrated into motherboards of computers.
2. Multi-channel audio cards such as Comart Hera, MidiMan Delta and Olkha 9P.
3. Ekholot USB-32, an external module for multi-channel audio signal input (32 channels).
4. Audio input channels of the network devices.
5. Audio input channels of FS/WS cards. As these cards do not have audio output channels for playing back the audio signal, an audio card is to be installed.

2.5.2 Options for increasing the number of audio input channels when standard audio cards are in use

Axxon PSIM™-based Server can process as many analog audio signals as specified in the license key.

As a rule a standard audio card has only one stereo audio input channel. To increase the number of audio input channels, the following options are offered:

1. Use a stereo audio input channel of a standard sound card as two independent mono-channels.
2. Use audio input channels of video capture cards.

3. Install several standard audio cards on the Server.

Note

Several audio cards of the same type installed within the system may cause conflicts in Windows OS.

4. Use multi-channel audio input cards (special audio cards support up to 16 independent audio input channels).
5. Use Ekholot USB-32, an external module for multi-channel audio signal input (32 channels).

2.5.3 Installing audio input devices

Information on how to install third-party audio cards and the drivers for them, as well as any other devices is given in the documentation bundled with specified equipment.

Sound channels of the network devices do not require any additional installation. The only requirement is that the device supports communication with the Server via the TCP/IP protocol.

2.5.4 Installing microphones and loud speakers

Microphones are to be installed in inaccessible places, ensuring unobstructed receipt of audio signals. Each microphone is connected to an audio card installed in a computer or to an audio connector on a video capture card.

Loud speakers or earphones designed for audio signal receipt are installed in the Operator Workstation. Loud speakers or earphones are connected to the audio output connector of the audio card.

The layouts of connectors for connecting microphones and earphones or loud speakers are given in the documentation bundled with audio cards.

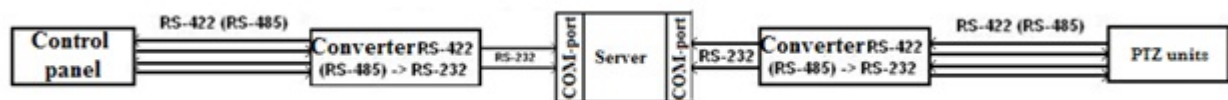
Connectors bundled with a video capture card are used to connect microphones to these video capture cards.

2.6 Connecting PTZ devices and control panels

Attention!

Attention! Before one starts using a control panel or a PTZ device it is necessary to read the list of integrated devices and protocols at [AxxonSoft's official website](#). If the connected device is not in the list, then its operation is not guaranteed

PTZ device and control panel are connected to the Server via a vacant serial port (COM) (RS-232 interface).



As a rule, PTZ devices use RS-422 or RS-485 interfaces. A PTZ device is connected to a COM port of the Server with RS-232 interface via RS-422 converter (RS-485) -> RS-232.

A PTZ device uses RS-422/RS-485 based on a 4-wires circuit (2 wires for receiving and 2 wires for transmission). To control PTZ devices in Axxon PSIM™, only 2 wires are used (transmitting data from the Server to the PTZ device). The **T+** and **T-** contacts of the converter are connected to the **R+** and **R-** contacts of the PTZ device.

The control panel is connected via converter RS-422 (RS-485) -> RS-232. Only two wires, connected to the Server, are used to control PTZ devices via control panel in Axxon PSIM™.

A PTZ device and control panel controlling this PTZ device are to be connected to one Server.

Detailed information on how to connect PTZ devices and control panels is given in the documentation accompanying the corresponding devices and converters. An example of controlling PTZ devices using the control panel is given in the [PTZ configuration](#) section.

2.7 Connecting and configuring network devices

Network devices allow remote video surveillance and audio monitoring using the TCP/IP telecommunication environment.

Network devices can be defined as a self-contained hardware and software modules integrated in the digital video surveillance system using the TCP/IP telecommunication environment. To use network devices, the system requires connection to the telecommunication network using the TCP/IP protocol to interact with other components of the digital video surveillance system.

Network devices for video surveillance and audio monitoring are:

1. network cameras (IP-cameras);
2. various types of network videosevers.

Network cameras are designed for video surveillance and transmission of the digital video signal to the users via the TCP/IP telecommunication environment.

Note

If a network camera is equipped with an analog camera instead of a digital one, then a video signal is at first digitized by an AD converter embedded in the camera and then transmitted to the users via the TCP/IP telecommunication environment.

Network videosevers are connected directly to the analog cameras; they digitize analog video signal and transmit it to users via the TCP/IP telecommunication environment. The users who use analog cameras connected to the network servers can use the same functionality range for the video stream playback and transmission, as the functionality of network cameras.

Network devices are connected to Server network card using the standard RJ-45 connector.

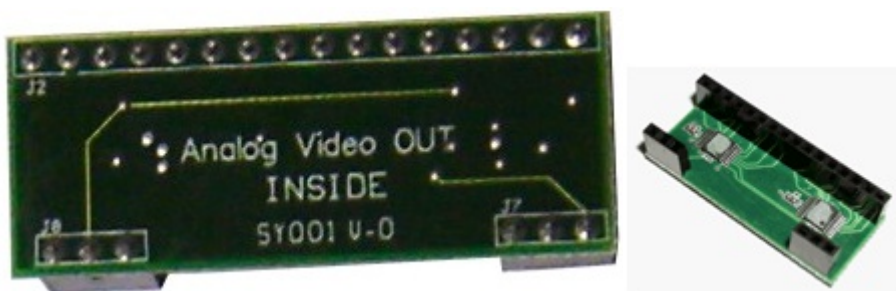
Detailed information on how to connect network devices to Server is given in the documentation for corresponding network devices.

2.8 Installing the expansion card for analog video out

There is a special option for viewing video sequences from surveillance cameras with the analog monitors – analog video out. To activate this option with FS-5, FS-6 and FS-16 video capture cards, the additional card is used – analog video out card.

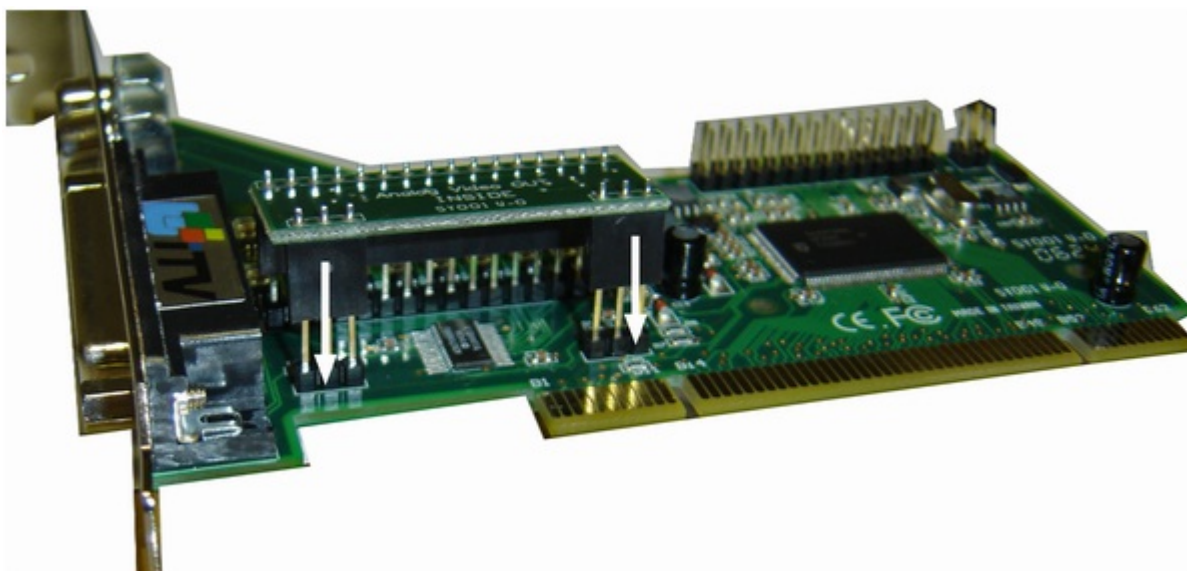
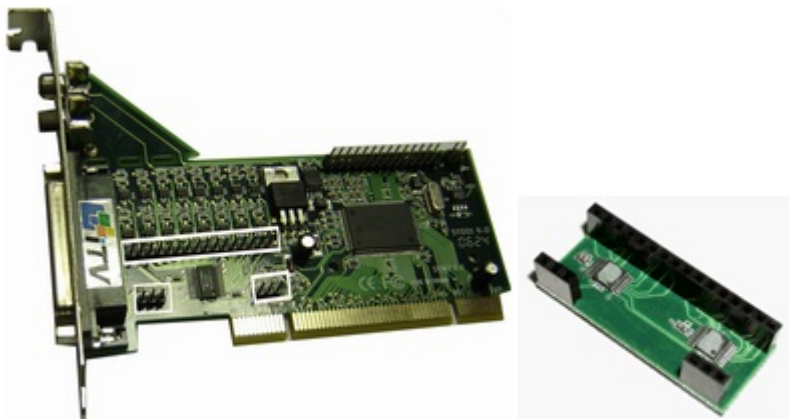
The analog video out card is used for direct video signal output from one of the cameras connected to the Server to the analog monitor (with no digitization).

The analog video out card has three connectors compatible with FS-5, FS-6 and FS-16 video capture cards.

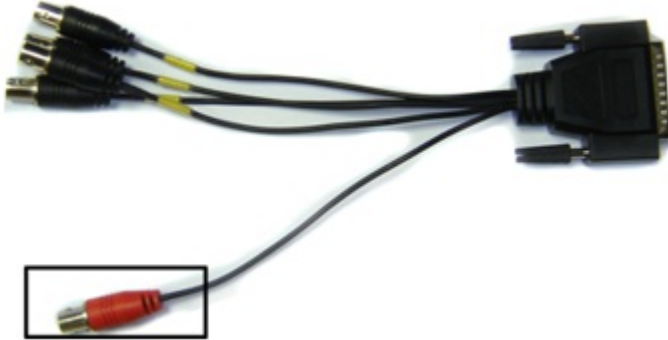


Install the analog video out card as follows:

1. Make sure that the video capture card power supply is off (either the computer with installed video capture card is off or the video capture card is not installed).
2. Install the analog video out card on the video capture card using special connectors on the video capture card.



3. Connect the interface cable of the analog monitor to the red BNC connector of the video-in cable connected to the video capture card.



3 Configuring security system components in Axxon PSIM™ software

3.1 Configuring video capture cards in Axxon PSIM™ software

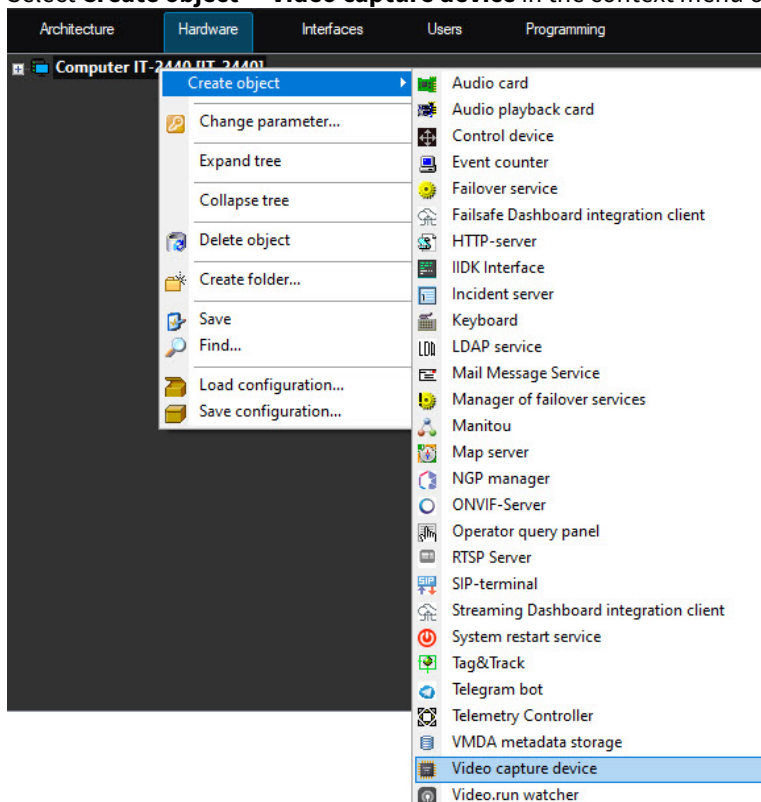
3.1.1 Video subsystem configuration

To configure a video subsystem in the *Axxon PSIM™* software create the **Video Capture Device** objects under which the **Camera** objects are created.

Creating and configuring the Video capture device object

To create the **Video capture device** object, do the following:

1. Go to the **Hardware** tab in the **System settings** dialog window.
2. Select **Create object -> Video capture device** in the context menu of the **Computer** object.



As a result, the main object settings panel is displayed.

Note

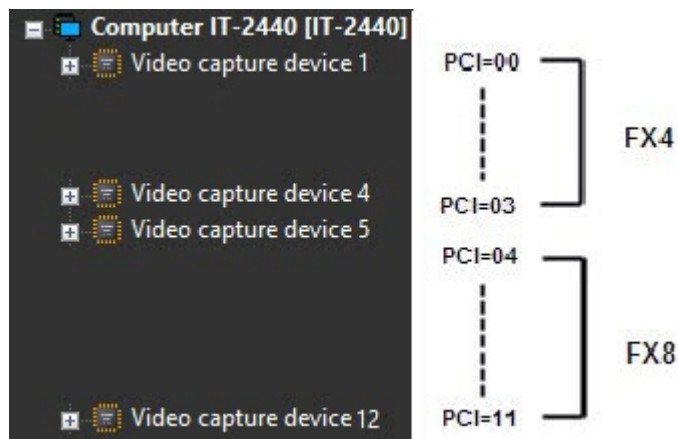
Main settings are set automatically. If necessary, you can change an ID, the object name, and the parent object.

3. To create the object, click the **Apply** button.
4. Select the created object in the object tree (1).

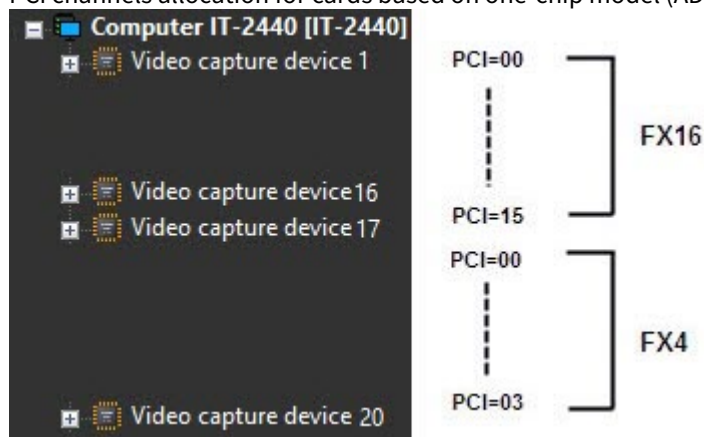
5. Configure the created object.
 - a. From the **Type** drop-down list (2), select the type of the video capture card installed on the server.
 - b. Specify the PCI channel by selecting the value from the **PCI** drop-down list (3). For cards based on one chip model (ADC) and one driver (see the [Drivers for video capture cards integrated into the Axxon PSIM™ software](#) section), the allocation of PCI channels between the **Video capture device** objects must be performed in the end-to-end order, starting from 00. Examples of the PCI channel allocation between the **Video capture device** objects:

Note

When you configure the SC300Q16 (FX4), SC300D16 (FX8), SC330Q16 (analogue of SC300Q16), SC330D16 (analogue of SC300D16) video capture cards, take into account the correlation between the color of the BNC video input of the interface cable and the PCI channel specified in *Axxon PSIM* (see the [Features of video subsystem configuration](#) section).



PCI channels allocation for cards based on one-chip model (ADC)



PCI channels allocation for cards based on different chip models (ADC)

- c. From the **Signal** drop-down list (4), select the type of the video input, PAL or NTSC.

Note

When you use the Stretch VRC 6004, VRC 6008, VRC 6416 and VRC 7008L cards, the video input (PAL or NTSC) is selected automatically depending on the camera connected to the card. The change of this parameter doesn't affect the card operation.

Note

When you use the SL16-200 (FX116)/FX416 cards, you must restart *Axxon PSIM* after changing the video input format. Otherwise, the previous settings are active.

- d. From the **Resolution** drop-down list (5), select the resolution: **Standard**, **High**, or **Full** with which the video signal is captured. You must perform this action when configuring WaveHub, LinuxHub, and LinuxServer; otherwise, you can skip this step.
- e. Specify the allowable frame rate for the card by setting the **Rate** slider (6) into the corresponding position.
- Values of the **Rate** parameter:

Value	Description
Max	The maximum allowable sum of video frame rate
Average	Half of the maximum allowable sum of video frame rate
Min	One-third of the maximum allowable sum of video frame rate

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

Configuring the **Video capture device** object is complete.

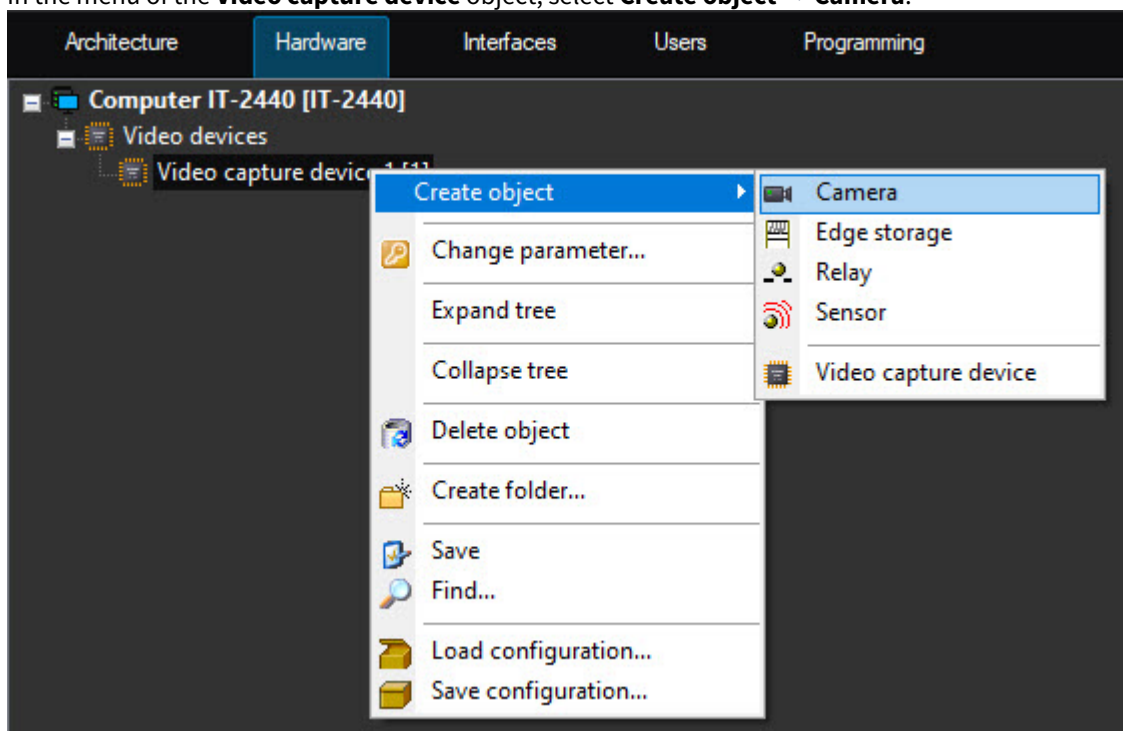
Attention!

To configure one physical video capture card, you may have to create several **Video capture device** objects (see [Features of video subsystem configuration](#) section).

Creating and configuring the Camera object

To create and configure the **Camera** object, do the following:

1. In the menu of the **Video capture device** object, select **Create object** → **Camera**.

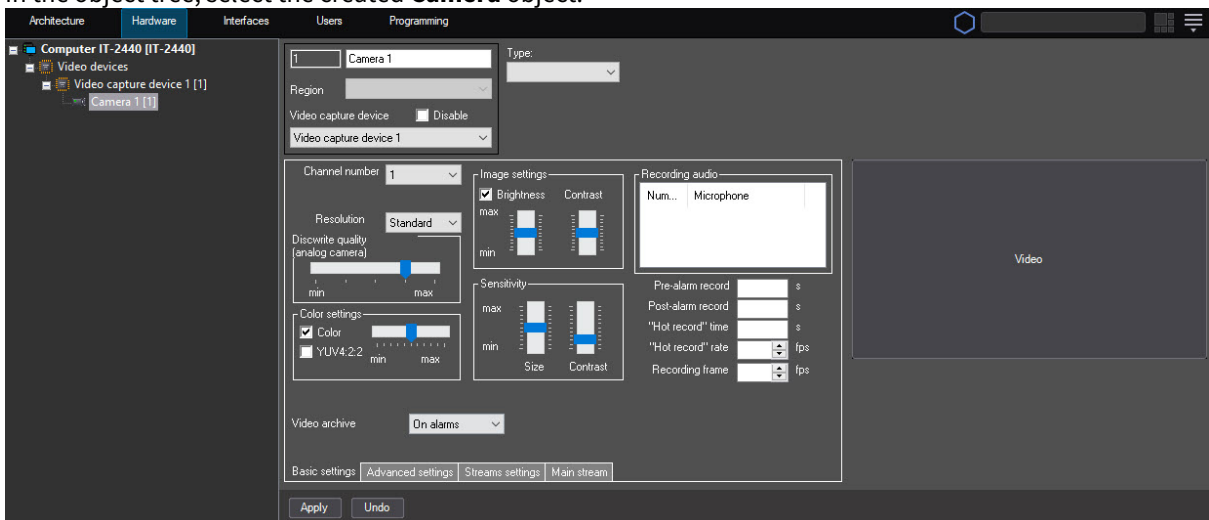


2. As a result, the basic settings panel of the object is displayed.

Note

Basic settings are set automatically. If necessary, you can change the ID, object name, and parent object.

3. Click **Apply** to create an object.
4. In the object tree, select the created **Camera** object.



5. To configure the created object, do the following:
- From the **Channel number** list, select the physical video card input to which the camera is connected (see [Features of video subsystem configuration](#)).

Note

Channel numbers within one **Video capture device** object must not be repeated.

- In the **Resolution** list, select the resolution with which the video signal is captured: **Standard**—minimum allowable value for the card, **High**—average value, and **Full**—maximum allowable value.

Note

Resolutions supported by video capture cards are given in [Appendix 4. Technical specifications of video capture cards](#).

When you configure the camera, which is connected via the SC590N4 video capture card, in *Axxon PSIM*, you must set the frame resolution equal to the resolution set on the camera. Otherwise, artifacts can appear on the video image.

If you use the Stretch VRC-6404 HD video capture card, you must restart *Axxon PSIM* when you change the resolution.

Changing the **Resolution** doesn't guarantee that the resolution of the received video signal changes, as it depends, among other things, on the internal settings of the camera itself. If you need to specify certain streams strictly, it is better to [configure multistreaming video](#).

- c. Click the **Apply** button to save the settings.

Configuring the **Camera** object is complete.

Repeat the steps described in this section for all cameras connected to the card.

Note

The number of the **Camera** objects that you can create on the basis of one **Video capture device** object is specified in [Features of video subsystem configuration](#).
Detailed description of all settings of the **Camera** object is given in [Administrator's Guide](#).

Configuring the analog video output

Expansion cards are used optionally and they bring out this functionality and installed directly on video capture cards. Axxon PSIM software brings out functionality of analog (decompressed and unprocessed) video output to external devices via corresponding BNC connector on video capture card (TV-out) (see [Installing the expansion card for analog video out](#) section).

Video outputting to analog monitor is made directly (without digitization) from one of the video cameras connected to Server.

Note

When configuring Axxon PSIM, take into account that outputting of analog video to analog monitor is possible from one camera only.

For video outputting to analog monitor a video capture card is to have an analog video output. An analog video output is integrated into FS-8 video capture cards. An extra analog video output card is to be installed for FS-5, FS-6 and FS-16 cards.

A video signal from any camera on the Server can be output to an analog monitor. By default, a video signal from the camera connected to the same video capture card as a monitor can be output to an analog monitor. To output video signals from any camera connected to any video capture card on the Server, solder analog outputs (interface cables) on all video capture cards on the Server.

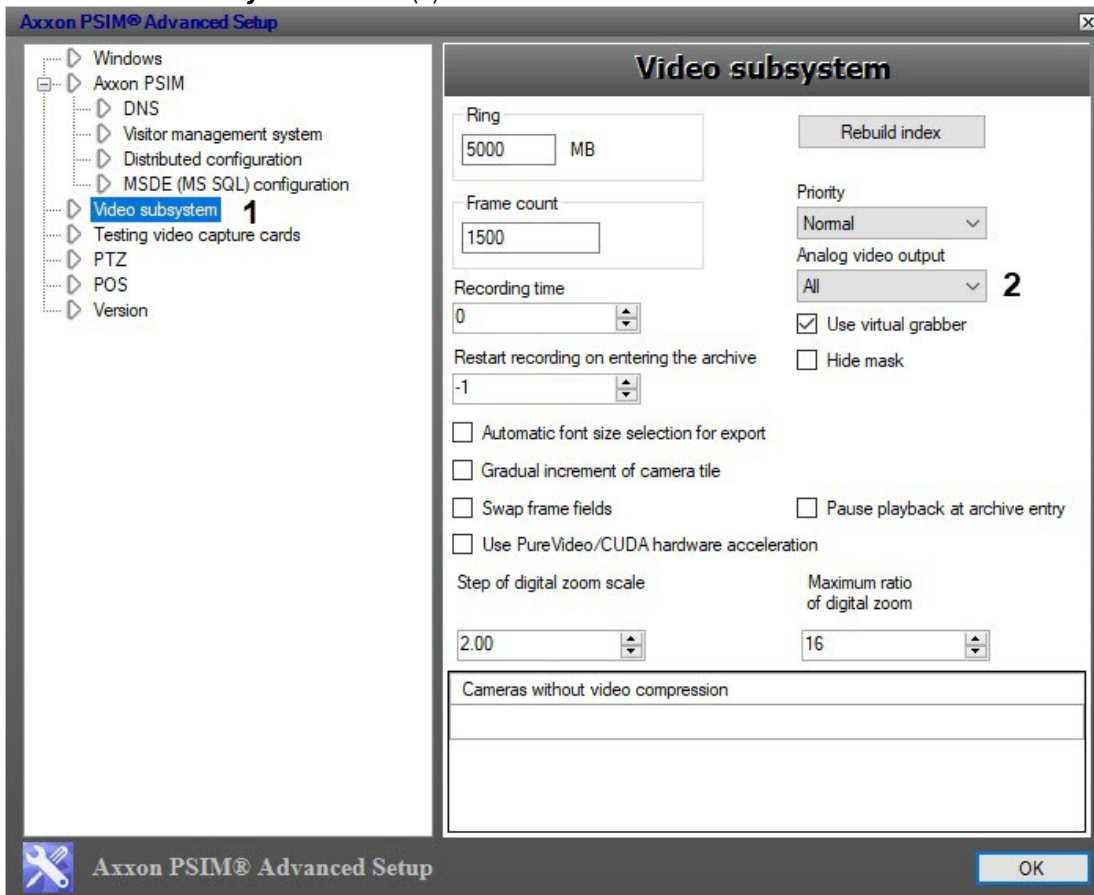
Note

When an analog video out card is connected to a video capture card and analog monitor connector to the corresponding BNC-connector on the video capture card, analog video outputting to analog monitor is activated automatically.

Output the video from all cameras installed on the Server and connected to different video capture cards, to one analog monitor (perhaps when analog video outputs of cards installed on the Server are soldered) in `tweaki.exe` utility (Extended Axxon PSIM configuration) as follows:

1. Start **tweaki.exe** utility in the **Tools** folder of Axxon PSIM installation directory.

2. Select the **Video subsystem** section (1).



3. In the **Analog video output** list, select the **One** item to activate outputting video from cameras connected to different video capture cards to one analog monitor (2).
Video commutation (switching) while outputting them to analog monitor is performed only within cameras connected to one video capture. Changing the **Analog video output** parameter enables an extra program video commutator (switch) from all Server cameras connected to different video capture cards.
4. To save changes, click the **OK** button.

If several analog cards are used, then the switch between cameras video from which is output to one analog monitor is made via macros and scripts (programs). For example, for switching between two cameras, one can create macros given in the table.

Macro	Operations			
	Type	Number	Name	Operation
Macro 1	Video capture card			Switch analog video out off 1
	Camera	1	Camera 1	Switch camera to output
Macro 2	Video capture card			Switch analog video out off 1

Macro	Operations			
	Type	Number	Name	Operation
	Camera	2	Camera 2	Switch camera to output

Note

Details on how to make macros is given in [Administrator's Guide](#).

Configuring HikVision video capture card

Configure HikVision video capture card as follows:

1. Go to the **Hardware** tab in the **System settings** dialog box.
2. Create the **Video Capture Device** object under the **Computer** object.
3. Select **HikVision(<compressor>)** in the **Type** list on the settings panel of the object.

Note

Camera discovery tool can be used to configure HikVision video capture cards in *Axxon PSIM™* software (see [Camera discovery tool](#) section).

Configuring YUAN PD652 video capture card

Note

The list of OSs supported by the YUAN PD652 video capture card is given on the [official website](#).

To configure the YUAN PD652 video capture card, do the following:

1. Install the card [drivers](#), but first disable the checkup of the driver's digital signature in the system.
2. Remove *Axxon PSIM* and IP DriverPack add-ons.

Note

For the information on how to remove *Axxon PSIM*, see the [Removing Axxon PSIM™ software](#) section of [Administrator's Guide](#).

The IP DriverPack is removed from the OS Windows control panel.

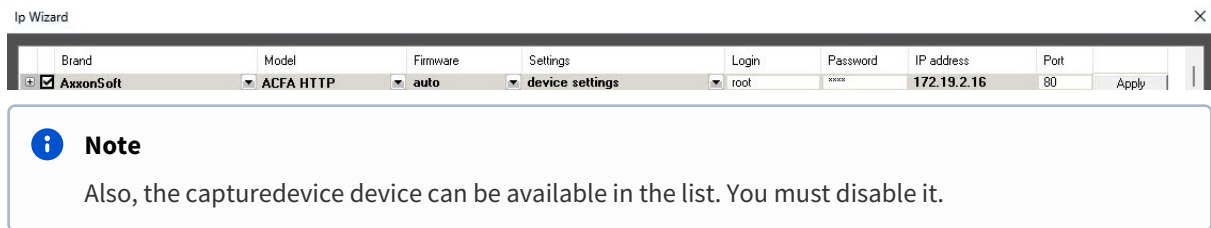
3. Install the IP DriverPack. The installation file of the driver add-on is in the `ipint.driverpack` folder of the *Axxon PSIM* distributive package.
4. Install *Axxon PSIM*.

Attention!

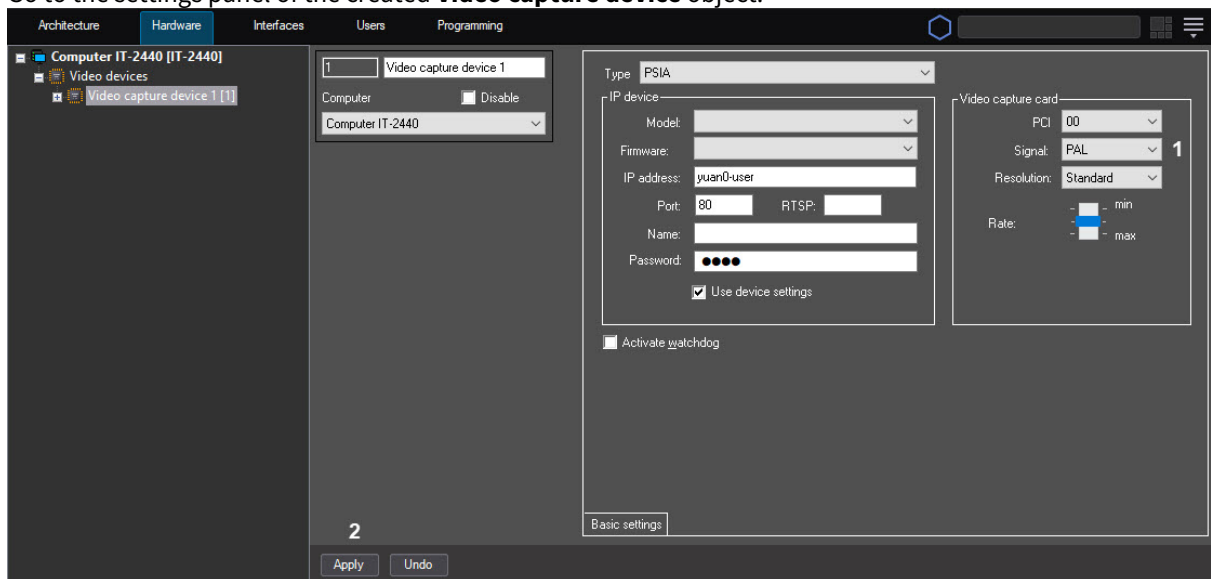
First of all, install the IP DriverPack add-on and then install *Axxon PSIM*.

5. Connect cameras to YUAN PD652 and connect YUAN PD652 to the computer.
6. Start *Axxon PSIM*.
7. Start the [Camera discovery tool](#).

8. Select AxxonSoft in the list of available devices.



9. Click the **Apply** button.
10. Corresponding devices are added to the *Axxon PSIM* object tree.
11. Go to the settings panel of the created **Video capture device** object.



12. In the **Signal** drop-down list, select the type of signal supported by the device: **PAL** or **NTSC** (1).
13. Click the **Apply** button (2).

Configuring the YUAN PD652 video capture card is complete.

3.1.2 Audio subsystem configuration

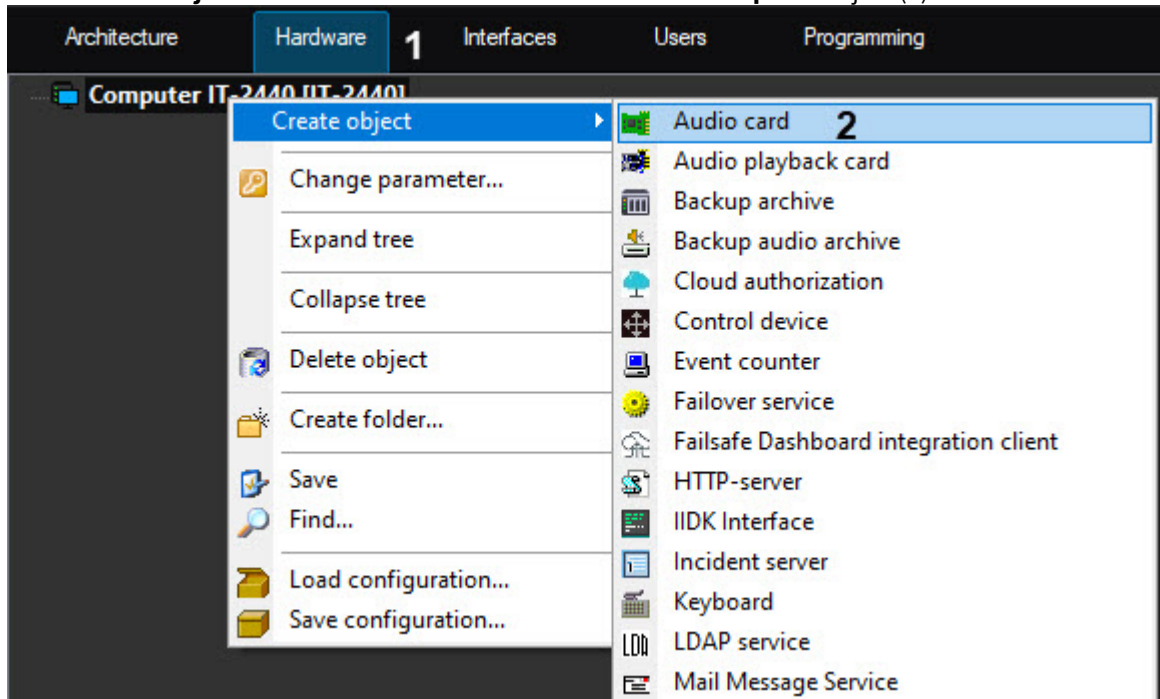
In *Axxon PSIM™* software the audio subsystem is configured with the help of the **Audio card** objects under which the **Microphone** objects (corresponding to connected audio devices) are created.

Creating and configuring the Audio card object

To add and configure the **Audio card** object in *Axxon PSIM*, do the following:

1. Go to the **Hardware** tab in the **System settings** dialog window (1).

2. Select **Create object** -> **Audio card** in the context menu of the **Computer** object (2).



3. As a result, the main object settings panel opens.

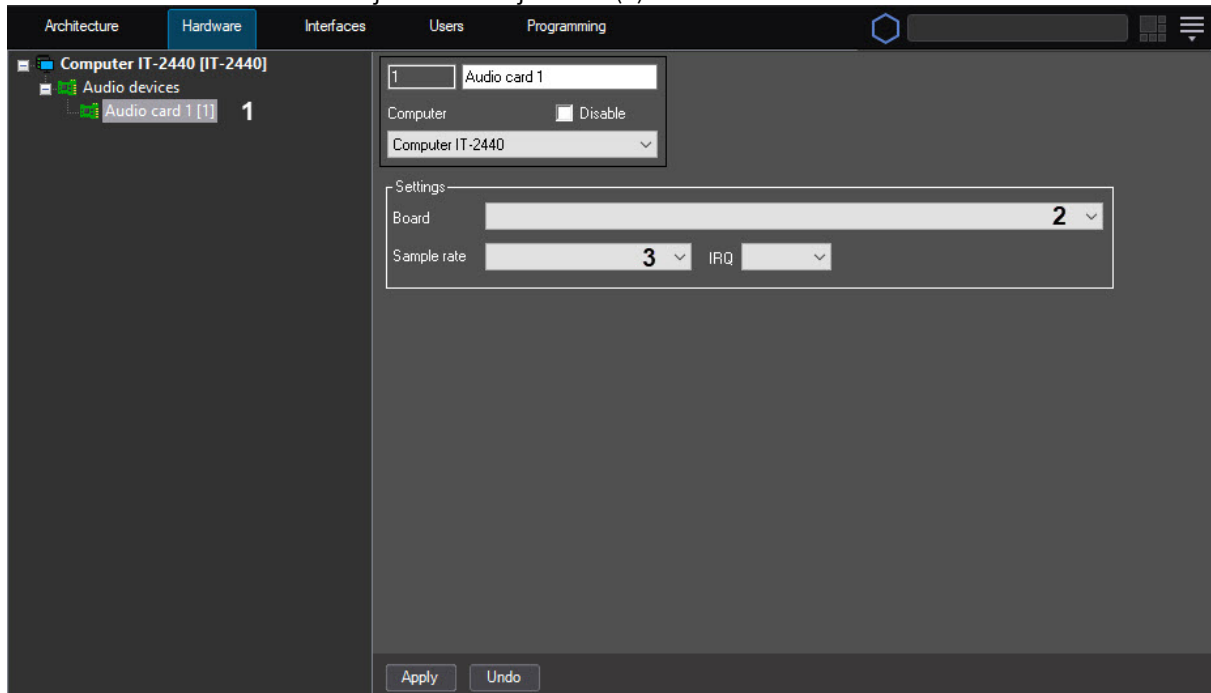
Note

Main settings are set automatically. If necessary, you can change an ID, the object name, and the parent object.

The screenshot shows the main object settings panel for the 'Audio card' object. The 'Number' field is set to 1, the 'Name' field is set to 'Audio card 1', and the 'Parent' dropdown is set to 'Computer IT-2440'. The 'Apply' button is highlighted.

4. To create the object, click the **Apply** button.

5. Select the created **Audio card** object in the object tree (1).



6. Configure the created object.
- In the **Board** list (2), specify the type and the PCI channel of the card. Between the **Audio card** objects, the PCI channels are allocated in the end-to-end order starting from 0.
 - From the **Sample rate** list, select the audio sample rate (3).

Attention!

If the audio signal is received from the IP device, then the value selected from the **Digitization** drop-down list is ignored. In this case, the digitization rate is set on the settings panel of the **Microphone** object in the driver parameters (see [Configuring audio acquisition from IP devices](#)).

Note

The sample rate for the SC510N4 (FX HD4—SA 7160PCI) card specified in the **Sample rate** list must be the same as the sample rate with which the audio signal is digitized by a camera. If the rate values aren't the same, then slow or fast playback of the audio signal is possible.

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

Configuring the **Audio card** object is complete.

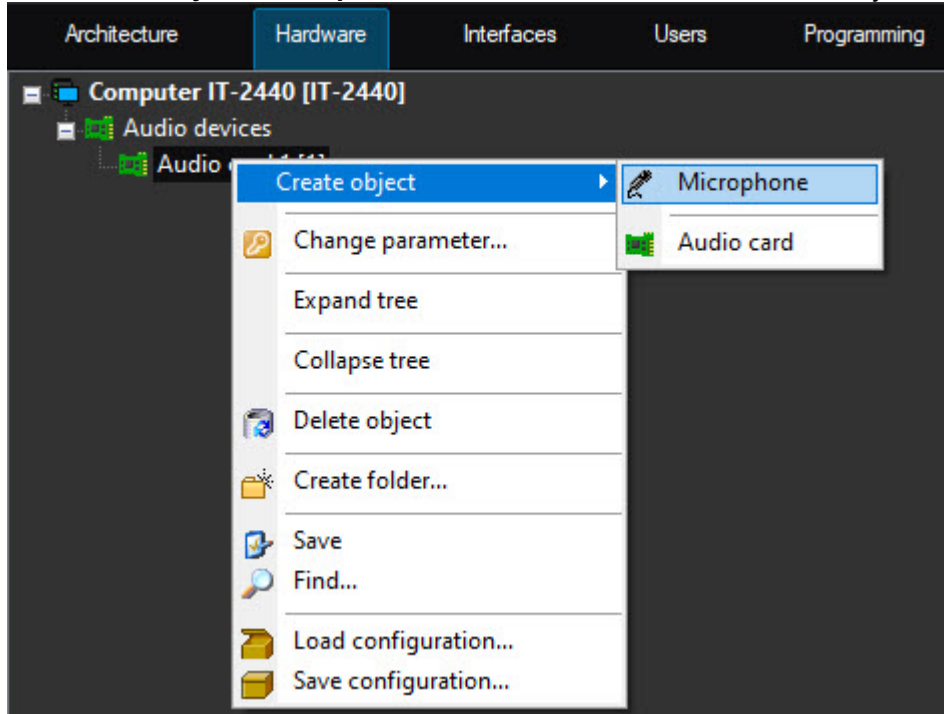
Attention!

To configure one physical video capture card, you may have to create several **Audio card** objects (see [Features of audio subsystem configuration](#) section).

Creating and configuring the Microphone object

To create and configure the **Microphone** object, do the following:

1. Select **Create object** -> **Microphone** in the context menu of the **Audio card** object.



2. As a result, the main object settings panel opens.

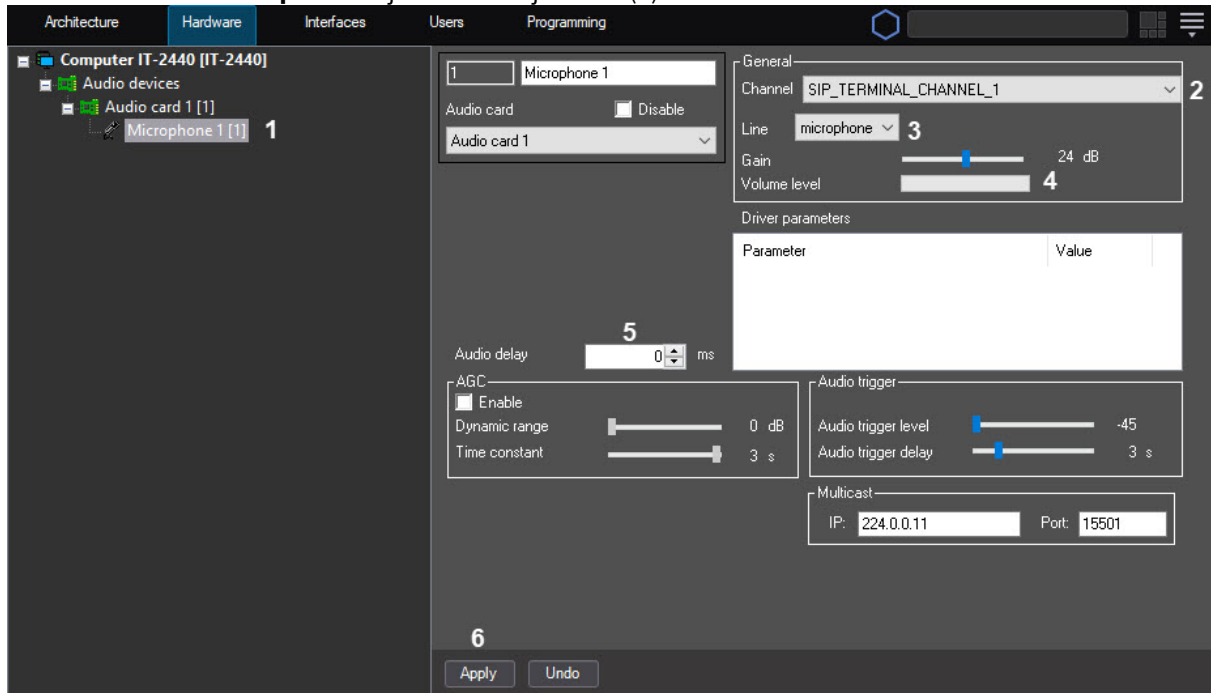
Note

Main settings are set automatically. If necessary, you can change an ID, the object name, and the parent object.

The screenshot shows the 'Main object settings' panel for the 'Microphone' object. It contains three input fields: 'Number' with the value '1', 'Name' with the value 'Microphone 1', and a dropdown menu for the parent object set to 'Audio card 1'. At the bottom of the panel are two buttons: 'Apply' and 'Undo'.

3. To create the object, click the **Apply** button.

4. Select the created **Microphone** object in the object tree (1).



5. Configure the created object.
- From the **Channel** list (2), select the channel to which the audio device is connected (see the [Features of audio subsystem configuration](#) section).
 - From the **Line** list (3), select the device type (**microphone**, by default).
 - Configure the level of volume using the **Gain** slider. In the **Volume level** graphic scale (4), you can determine the sound availability on the specific microphone and the set gain value.
 - In the **Audio delay** (5) field, set the delay in milliseconds between the moment of receiving an audio signal from the audio input device and the moment of its output to the speaker or the archive recording synchronously with the video signal. This parameter is used if the video image comes delayed or advanced, and the sound goes ahead of or behind it. You can set the value range from -10000 to 10000.
 - Click the **Apply** (6) button to save the settings.

Configuring the **Microphone** object is complete.

Note

The number of the **Microphone** objects that can be created under one **Audio card** object is specified in the [Features of audio subsystem configuration](#) section.

Note

Detailed description of all settings of the **Microphone** object is given in [Administrator's Guide](#).

3.1.3 Initial configuration wizard

One can configure video subsystem automatically in Axxon PSIM™ software using the initial configuration wizard.

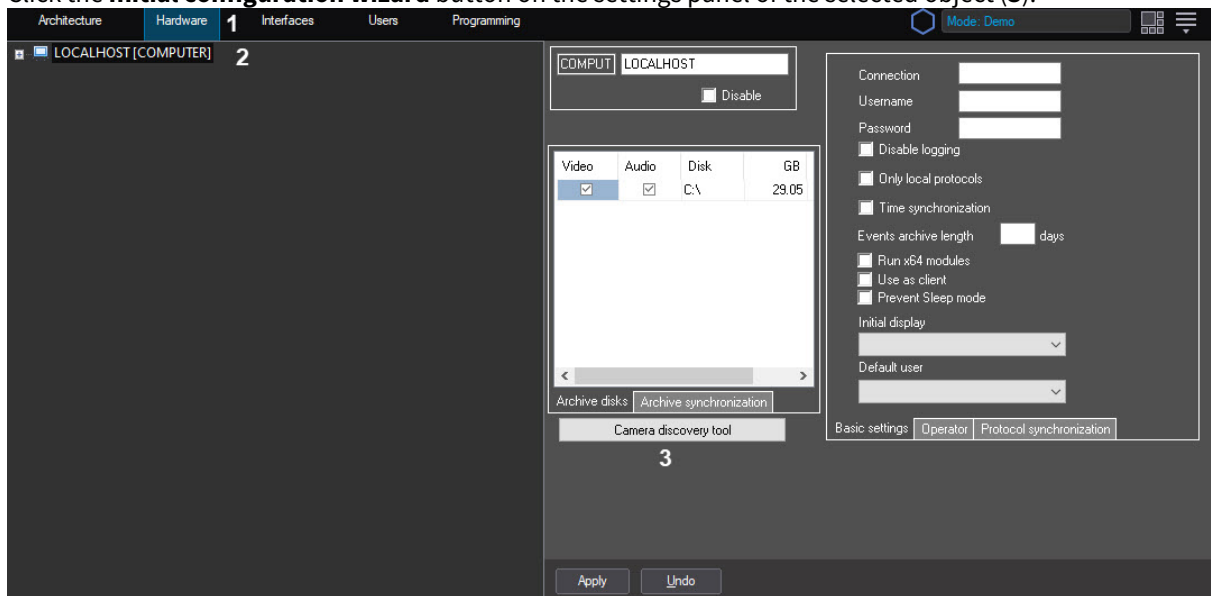
⚠ Attention!

The initial configuration wizard is not available if at least one of the following conditions is met:

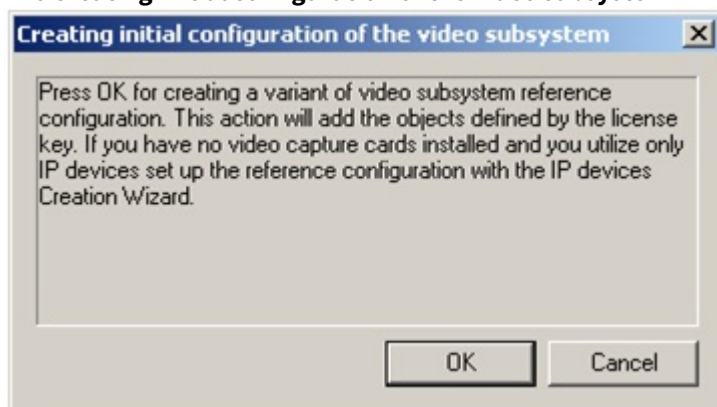
1. *Axxon PSIM* software runs in Demo mode.
2. **Video capture card** or **Audio card** object(s) has already been created in *Axxon PSIM* software.
3. *Axxon PSIM* Server is configured from other Server in the distributed architecture.

Configure the video subsystem automatically as follows:

1. Go to the **Hardware** tab in the **System settings** dialog box (1).
2. Select the **Computer** object related to the required Server in the object tree in the **Hardware** tab (2).
3. Click the **Initial configuration wizard** button on the settings panel of the selected object (3).

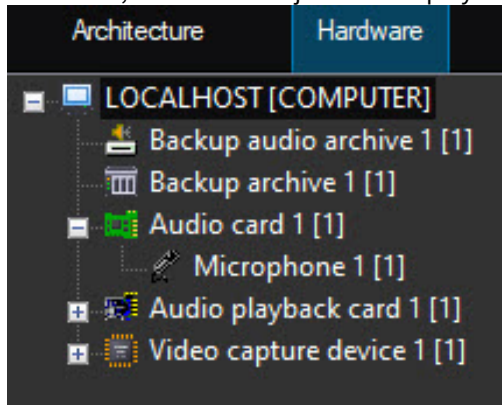


4. The **Creating initial configuration of the video subsystem** window is displayed.



5. To create initial configuration of the video subsystem, click the **OK** button. This action will add objects based on Axxon PSIM software key.

6. As a result, the created objects are displayed in the object tree.



Note

The following objects are created as a result of initial configuration wizard working:

- The **Video Capture Device** objects (specified in the key) that correspond to the physical video capture cards (for example, 4 **Video Capture Device** objects are created for one FS6/16 video capture card);
- The **Camera** objects - one for each **Video Capture Device** object;
- The **Audio card** object configured to work with a local audio card;
- The **Microphone** objects under the **Audio card** object (the number of the **Microphone** objects is equal to the number of audio channels in the key).

Initial configuration wizard does not create other objects that are given in the key.

The automatic configuration of video subsystem is completed.

3.1.4 Configuring the Watchdog hardware performance tester

Hardware performance tester is used for computer autoreboot in case of the Windows OS or main *Axxon PSIM* software modules failure.

Axxon PSIM™ software allows configuring the Watchdog hardware performance tester when using video capture cards that support this functionality (see [Appendix 3. Technical specifications of video capture cards](#)).

The Watchdog hardware performance tester on the Server with installed video capture cards is configured in 3 stages:

1. Make sure that the Watchdog hardware performance tester is connected correctly (see [Connecting the Watchdog hardware performance tester](#) section).
2. Activate the function of the Watchdog hardware performance tester on the settings panel of the **Video Capture Device** object.
3. Verify the Watchdog hardware performance tester.

Activate and verify the Watchdog hardware performance tester as follows:

1. Go to the **Hardware** tab in the **System settings** dialog box.

- Set the **Activate watchdog** checkbox on the settings panel of the **Video Capture Device** object corresponding to one ADC on the card to which the Watchdog is connected (1).

Note

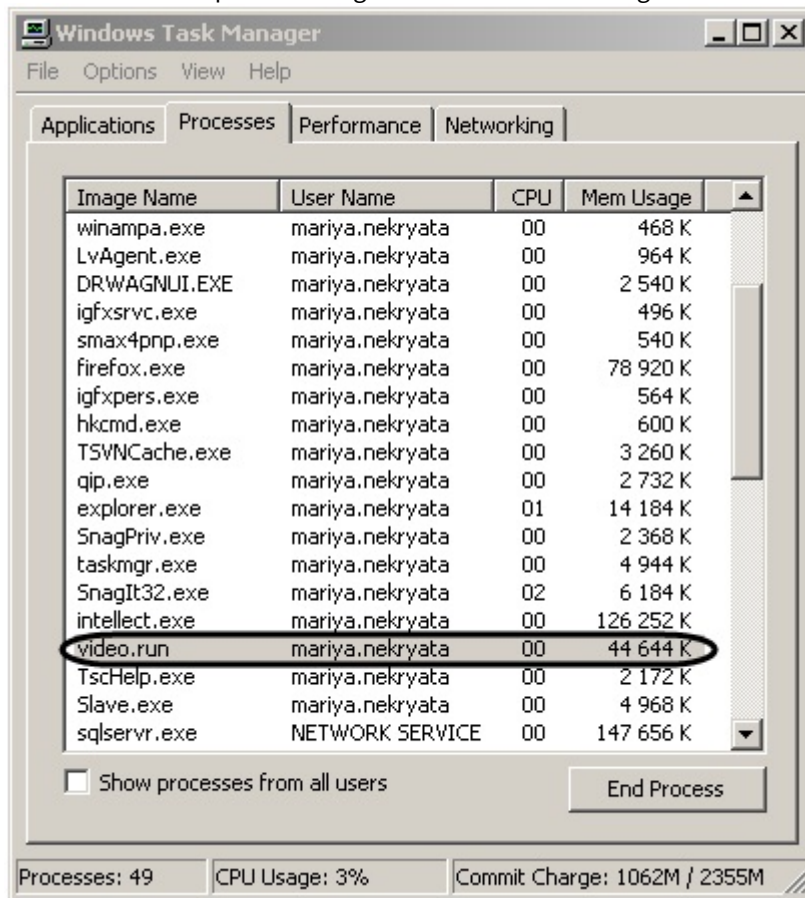
When SC300Q16 (FX4), SC300D16 (FX8) or SC310N16 (FX16) as well as SC330Q16 (analogue of SC300Q16) or SC330D16 (analogue of SC300D16) video capture cards are in use, set the **Activate watchdog** checkbox checked in the settings of every **Video Capture Device** object created for the card to which the Watchdog is connected.

Note

The **07** PCI channel is to be selected for one of the **Video Capture Device** objects corresponding to the ADC of FS8 card for correct operation of the Watchdog hardware performance tester on FS8 video capture card. At the same time the Watchdog hardware performance tester can be activated on the settings panel of any **Video Capture Device** object of FS8 card.

- To save the changes, click the **Apply** button (2).

4. End the **video.run** process using the Windows task manager.



5. If the Watchdog hardware performance tester is connected and configured, then there is Windows reboot.

Note

On SC200Q4 (FS15) and FX video capture cards Windows reboots in several minutes after ending the **video.run** process.

Activation and verification of the Watchdog hardware performance tester is completed.

3.2 Configuring IP devices

3.2.1 General information on IP devices

Axxon PSIM™ software allows receiving, digitizing, processing and playing back the audio and video with the help of IP devices. IP cameras and IP servers can be used as IP devices for receiving, digitizing and processing the video.

IP device is configured with the help of Web server or another software bundled with this device and Axxon PSIM configuration.

Process parameters (size, frame rate, frame resolution, brightness, contrast, color saturation and color format) and parameters of video compression are set with the help of Web server or another software bundled with this device.

Axxon PSIM™ software receives and processes video with the help of detectors as well as records and transmits video from IP devices to remote workstations.

Axxon PSIM supports IP devices with dynamic IP address using DynDNS or other services. In these cases specify the address (hostname) given by DynDNS service instead of IP address when configuring IP devices.

Before using IP devices in Axxon PSIM™ make sure that process and digitization parameters (codecs) of IP devices installed with the help of Web server are supported by Axxon PSIM™. The list of IP devices compatible with Axxon PSIM™ and relevant information about the compatibility is shown on AxxonSoft's website in the 'Integration' section: http://www.axxonsoft.com/integrated_security_solutions/supported_ip.php.

3.2.2 Configuring video acquisition from IP devices

As a rule, IP devices allow processing one or more video signals depending on the type of device used.

Note

Axxon PSIM doesn't support the operation with IP devices over the https protocol. For more details about using transport protocols, see [Changing the transport protocol used by IP-device](#).

Each IP device used for the video input is registered in Axxon PSIM by creating and configuring the **Video capture device** object. The **Video capture device** objects are created on the **Hardware** tab on the basis of the **Computer** object.

The screenshot displays the 'Video capture device 2' configuration window. On the left, a list of devices includes 'Computer IT-2440'. The main configuration area is divided into two sections:

- IP device section:**
 - Type:** Virtual bench (1)
 - Model:** Virtual (2)
 - Firmware:** 1.0.0 (3)
 - IP address:** (4)
 - Port:** 80 (5)
 - Name:** (6)
 - Password:** (masked with dots)
 - Use device settings:** (7)
- Video capture card section:**
 - PCI:** (dropdown)
 - Signal:** PAL (dropdown)
 - Resolution:** Standard (dropdown)
 - Rate:** (slider between min and max)

At the bottom, there is an 'Activate watchdog' checkbox and a 'Basic settings' tab. The 'Apply' and 'Undo' buttons are at the bottom left.

When you create the **Video capture device**, you must set the following parameters for each IP device:

1. From the **Type** drop-down list (1), select the IP device vendor.
2. If you want to detect the model and firmware of the connected IP device automatically, go to step 3. The **Model** and **Firmware** fields are filled in automatically after you apply the connection settings. To set the model and firmware manually, do the following:
 - a. From the **Model** drop-down list (2), select the IP device model.

Note

If the required model isn't in the list, it isn't integrated. Consider [connecting IP device via one of the standard protocols](#).

- b. From the **Firmware** drop-down list (3), select the firmware number on the device.
3. In the **IP address** field (4), enter the network address assigned to the IP device. For information on how to assign IP addresses, refer to [Assigning network addresses to IP devices](#).
4. In the **Port** field (5), specify the (TCP/IP) port number used for video transmission.

Note

In some cases you might also specify the RTSP port—see [Features of configuring ONVIF or Hikvision IP devices behind NAT](#).

5. To log in to the Web server of the IP device, enter the corresponding data in the **Name** and **Password** fields (6).
6. If you want to use the settings specified using the Web server or another software of the IP device, set the **Use device settings** checkbox (7). In this case, the crossing settings applied on the settings panel of the **Camera** object in *Axxon PSIM* are ignored.

Note

If the camera settings specified using the IP device software aren't applied in *Axxon PSIM* or are applied partially, we recommend clearing the **Use device settings** checkbox and configuring a camera on the settings panel of the **Camera** object.

7. Click the **Apply** button.

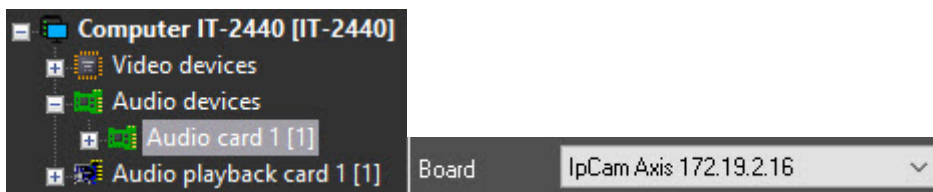
After you log into *Axxon PSIM*, you must assign the values to the **Channel number** parameters of the **Camera** object corresponding to the numbers of the camera connection channels to the IP device.

Note

When you configure the IP camera, set the **1** value for the **Channel number** parameter. Otherwise, the IP camera doesn't operate.

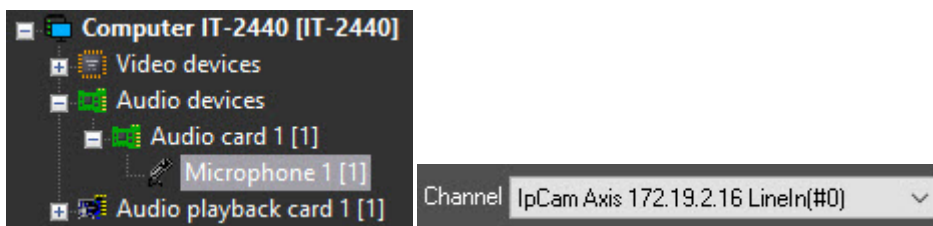
3.2.3 Configuring audio acquisition from IP devices

Every IP device used for the audio input is registered in *Axxon PSIM* by creating and configuring the **Audio card** object. The **Audio card** objects are created on the **Hardware** tab on the basis of the **Computer** object. When you create the **Audio card** objects, you must select the value from the **Board** drop-down list corresponding to the designation of the IP audio input device, followed by its IP address for each IP device. This value is available in the drop-down list only if you create and configure the **Video capture device** object corresponding to the IP device (see the [Configuring video acquisition from IP devices](#) section). Besides, the **Audio card** and **Video capture device** objects corresponding to the one physical IP device must be created on the basis of the same **Computer** object. The example of configuring the **Board** parameter of the **Audio card** object for the **Axis** camera is shown in the figure:



After you configure the **Audio card** objects, you must restart *Axxon PSIM*. Otherwise, you cannot proceed with configuring the audio subsystem (particularly, microphones).

The microphones embedded into or connected to IP devices are registered in *Axxon PSIM* by creating the **Microphone** objects on the basis of the **Audio card** object. On the basis of one **Audio card** object, you can place the **Microphone** objects in the number corresponding to the amount of audio input channels of the configured IP device and restrictions applied by the license activation key. The corresponding segment of the hardware tree with the registered IP device and one microphone is shown in the figure:



After you register the **Microphone** object, you must select the connection channel number of a microphone to the audio input device from the **Channel** drop-down list.

Besides, you can set the driver parameters to receive audio from the IP device. The list of available parameters depends on the device used, and is shown in the **Driver parameters** table on the settings panel of the **Microphone** object.

Driver parameters	
Parameter	Value
Codec	G.711
Baud rate	64000
Encrypting	u-law
Gain	0

In particular, you can set the audio digitization rate (**Sample rate**) in this way. The value of the **Digitization** parameter set on the settings panel of the **Audio card** parent object is ignored. For more information on how to select the codec and the digitization rate in *Axxon PSIM*, see the [Configuring the digitization devices for audio signals](#) section in [Administrator's Guide](#).

If a video comes delayed or advanced, and the sound goes "ahead" or "behind" of it, you must select the value of the **Audio delay** parameter correspondingly. You can set the value from -10000 to 10000.



3.2.4 Configuring the access to the archive in edge storage

General information about storing the video archive in the edge storage

In *Axxon PSIM*, you can view video archive from the embedded storage of IP devices (NVR video recorders). Video from a camera isn't recorded to the edge storage via the **Edge storage** object in *Axxon PSIM*.

Access to the video archive of the edge storage is configured using the **Edge storage** object. You can view the video from the edge archive using the **Video surveillance monitor**. The details of its operation are given in [Operator's Guide](#).

Important: for *Axxon PSIM* to work with the embedded storage of IP devices, it is necessary to synchronize the time between the *Axxon PSIM* Server and the device in its web interface.

Note

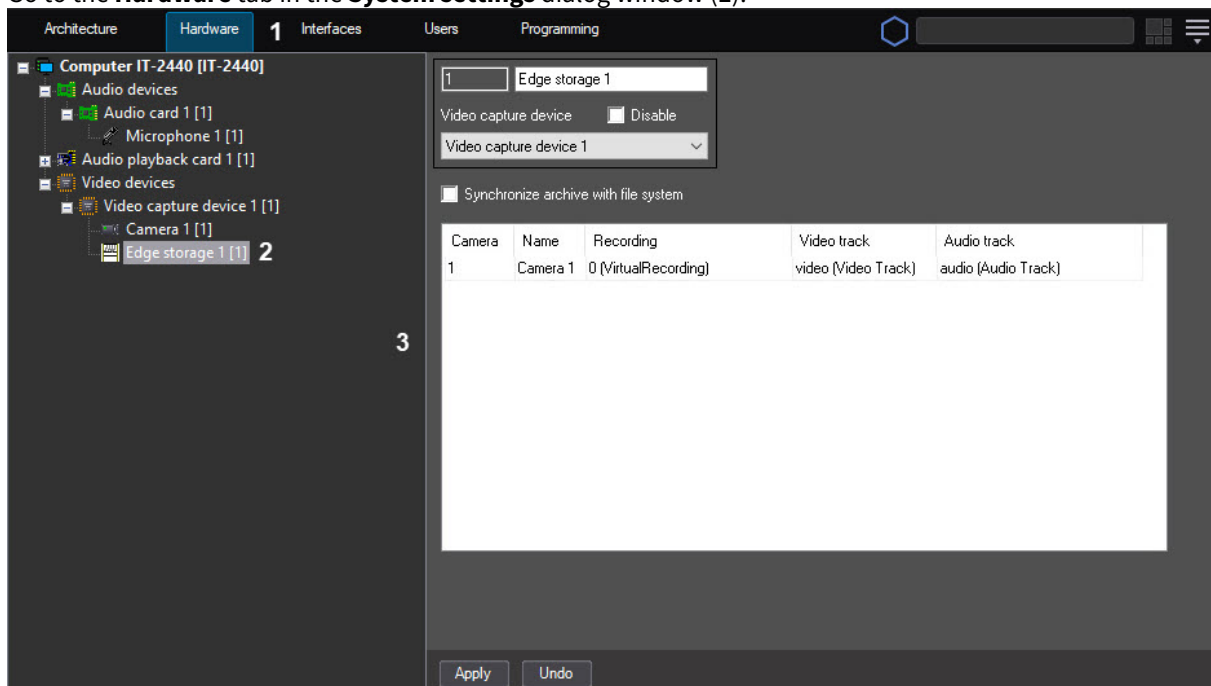
The virtual Video Capture Device, like **Virtual bench**, can emulate the Edge storage (see [Creating and configuring a virtual Video capture device](#)).

Playback of edge storage archive

Creating the Edge storage object

To create the **Edge storage** object, do the following:

1. Go to the **Hardware** tab in the **System settings** dialog window (1).



2. Create the **Edge storage** object based on the **Video capture device** object in the objects tree on the **Hardware** tab (2). The setting panel of the selected object is displayed in the right part of the **Hardware** tab (3).

You can set the connection parameters to the edge storage on the **Video capture device** object settings panel—see [Configuring video acquisition from IP devices](#). If you set them correctly, then after performing the steps above, you can set the list of cameras used for viewing the edge storage of the video archive (see the [Setting the list of cameras to access the Edge storage](#) section).

Attention!

You can create only one child **Edge storage** object on the basis of each **Video capture device** object.

Creating the **Edge storage** object is complete.

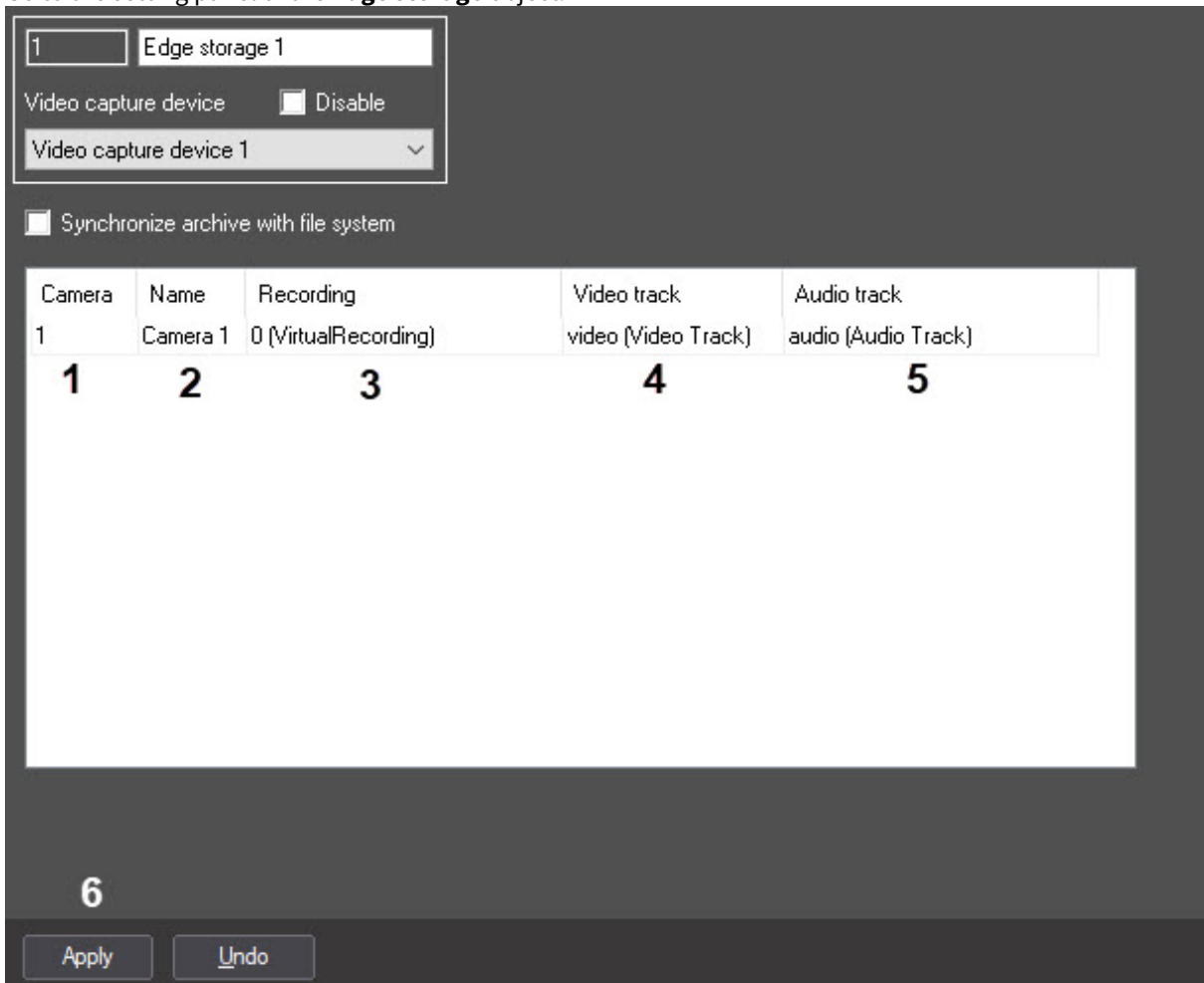
Setting the list of cameras to access the Edge storage

You can configure several cameras to view video from the edge storage. Each camera is configured for one channel of the device with edge storage.

If you select one camera for viewing video from several edge storages, then you can view the archive only from the archive that is matched with the camera when the **Monitor** object is configured (see [Selecting and configuring video cameras](#)).

To set the list of cameras to access the edge storage, do the following:

1. Go to the setting panel of the **Edge storage** object.



Camera	Name	Recording	Video track	Audio track
1	Camera 1	0 (VirtualRecording)	video (Video Track)	audio (Audio Track)

2. In the **Camera** column (1), specify the number of the camera used for video archive viewing.

3. Double left click in the **Name** field (2). This field is automatically filled with the name of the selected camera.
4. In the **Recording** column (3), specify the channel of the device with edge storage that will be used by camera.

**Note**

Recording names are received from the device with edge storage and aren't changed in *Axxon PSIM*.

5. After recording selection, video channel within selected recording is automatically selected in the **Video track** column (4). If necessary, you can select another channel.

**Note**

Names of video tracks are received from the device with edge storage and aren't changed in *Axxon PSIM*.

6. In the **Audio track** column (5), specify the audio channel within selected recording.
7. Repeat steps 2–6 for all cameras that you want to use for viewing the archive from the edge storage. To add new cameras to the table, use the down arrow ↓ button on the keyboard. To delete a row, use the Ctrl+Del key combination.
8. Click the **Apply** button to save the changes (6).

Setting the list of cameras to access the edge storage is completed.

Importing from edge storages

When *Axxon PSIM* is connected to the camera with edge storage, then video server performs recording the video archive from the camera. If the connection is lost, then recording is performed to the edge storage only. It is possible to import the video archive (for the time period when connection was lost) from edge storages to *Axxon PSIM* file system when the connection is restored. The archive is imported as follows:

1. Import to the Main video server archive. Video server always records the main archive. When connecting a camera the main video server archive requires the edge storage for the archive over the period when the camera was disconnected from the server.
2. Import to the Backup archive. The archive can be recorded onto several disks/partitions. When connecting a camera and activating the Backup archive, it requires the edge storage for the archive over the period when the camera was disconnected from the server.

To configure import to the Backup archive, select and configure cameras for copying to the Backup archive – see the [Selecting and configuring the cameras for the Backup archive](#) section, as well as set the schedule for archive copying when the connection is lost - see [Configuring the schedule of the video archive copying](#).

**Important!**

Create a specific **Backup archive** object to import from edge storage and backup copying of video server archive. Thus, the video archive is always divided into two parts: the archive over connection lost periods is in the specific Backup archive and the archive over periods when there is connection is in the Main and/or Backup archive of the video server.

**Important!**

In both cases, only videos recorded when the Server was disconnected are imported in order to avoid video duplication.

Use a script to force import if it was not performed automatically (see [IPSTORAGE Edge storage](#)).

The time from which the synchronization should start is set by the SyncedTime parameter in the Settings.xml file – see [XML-file parameters reference guide](#). Also, the maximum possible synchronization period is set by the IpStorageSyncDepthHours key (see [Registry keys reference guide](#)). The time in the SyncedTime parameter can be changed when a new fragment appears in the archive provided that the synchronization is successful and forced by the UPDATE_TIME command (see [IPSTORAGE Edge storage](#)).

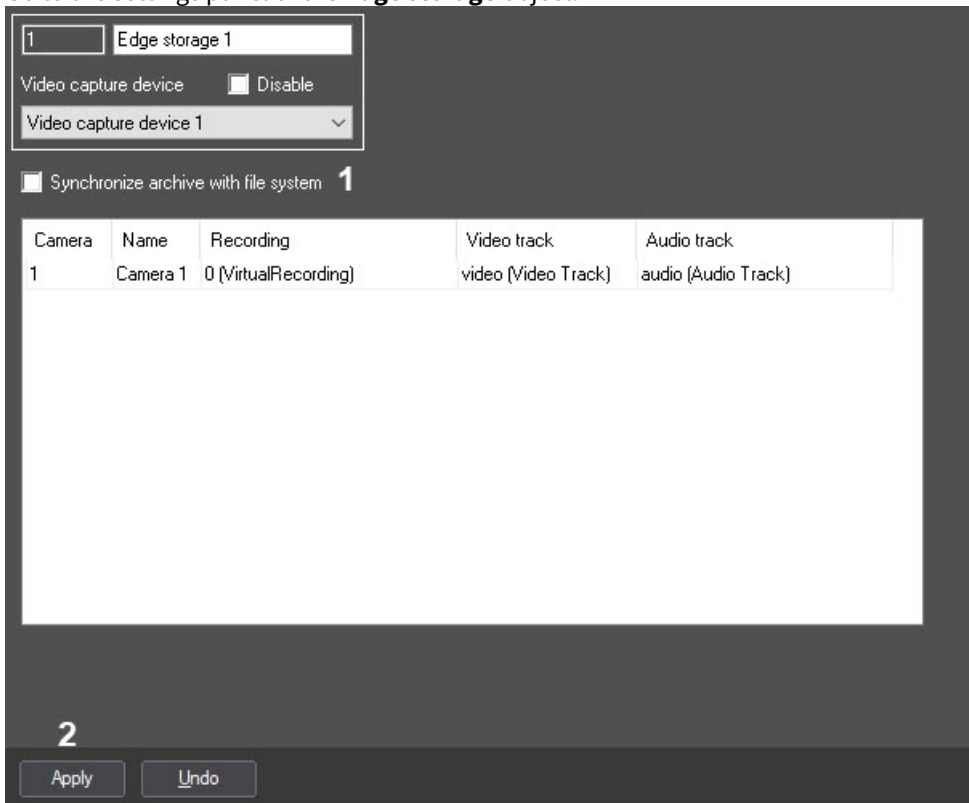
Important!

We don't recommend viewing the archive in the edge storage until the synchronization is complete to avoid video import.

You can enable the additional logging of the edge storage synchronization using the LogFullIpStorageSyncInfo parameter of the HKEY_LOCAL_MACHINE\SOFTWARE\AxxonSoft\Axxon PSIM\Video registry key (see [Registry keys reference guide](#), for information on how to work with the registry; see [Working with Windows OS registry](#)).

Import from edge storages is enabled as follows:

1. Go to the settings panel of the **Edge storage** object.



Camera	Name	Recording	Video track	Audio track
1	Camera 1	0 (VirtualRecording)	video (Video Track)	audio (Audio Track)

2. Set the **Synchronize archive with file system** checkbox checked (1).
3. Click the **Apply** button to save changes (2).

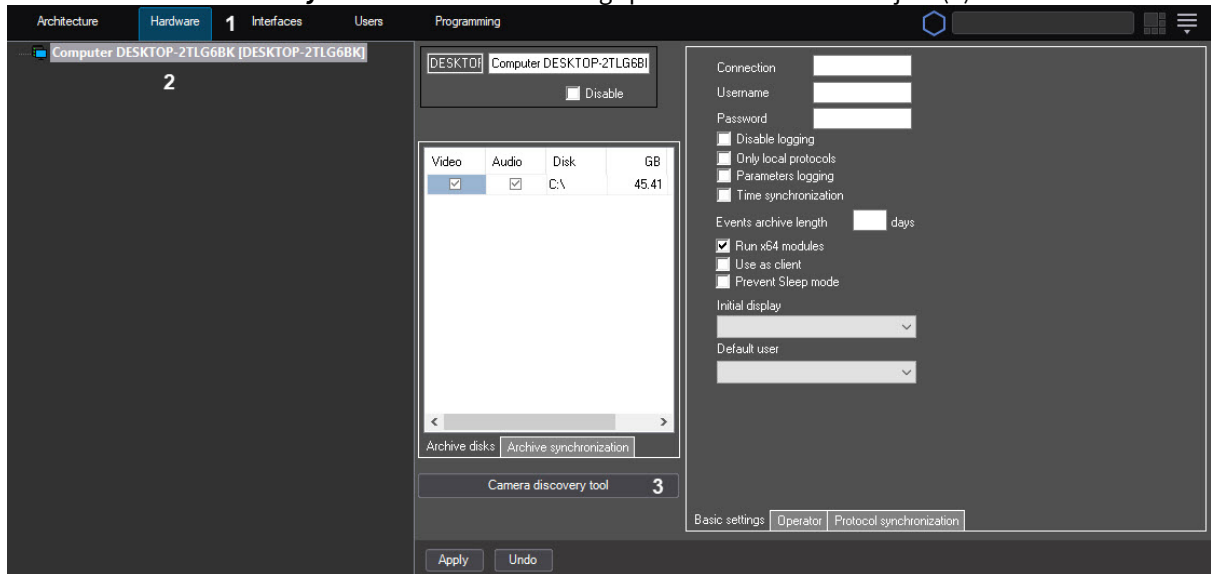
Import from edge storages is now enabled.

3.2.5 Camera discovery tool

To create IP devices in *Axxon PSIM*, do the following:

1. Go to the **Hardware** tab of the **System settings** window (1).
2. In the object tree, select the **Computer** object corresponding to the configured server (2).

3. Click the **Camera discovery tool** button on the settings panel of the selected object (3).

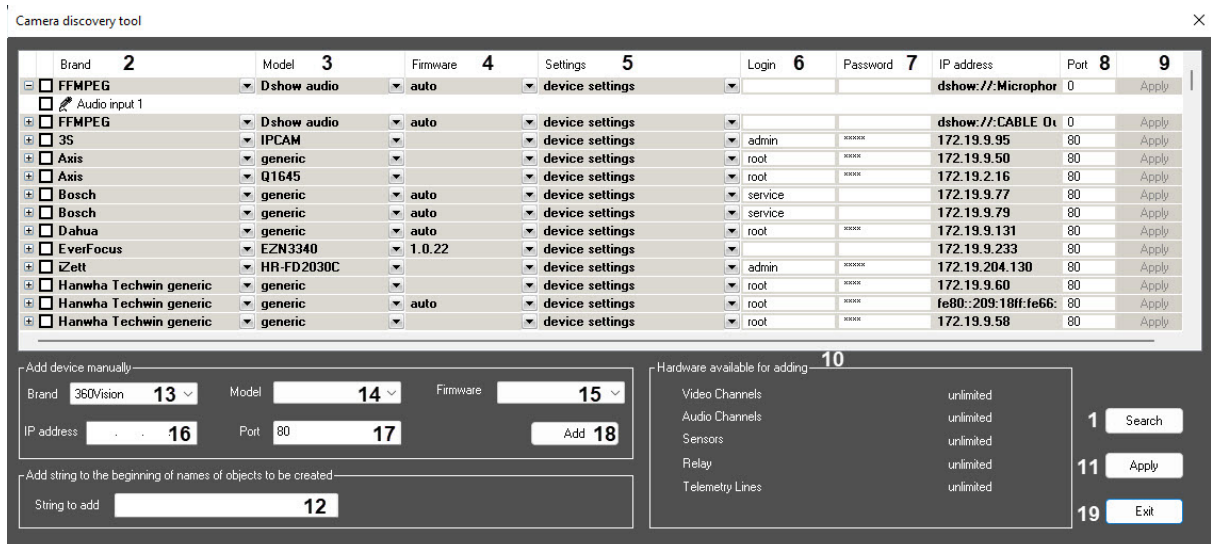


As a result, the **Camera discovery tool** window opens and displays the found IP devices at the top.



Attention!

Video capture cards can also be displayed in the list. However, we highly don't recommend adding them to the configuration using the **Camera discovery tool** window. You can configure video capture cards manually, see [Configuring video capture cards in Axxon PSIM™ software](#). By default, the list also displays the found archive devices that are no longer supported in the installed Drivers Pack version. If you don't want to display such devices, create the UseObsoleteAttribute registry key with the 1 value (see [Registry keys reference guide](#)).



To sort devices in the **Camera discovery tool** window, click the name of the corresponding column. The data is sorted alphabetically, including IP addresses. For example, when you sort IP addresses in ascending order, 10.0.12.98 is lower than 10.0.12.252 in the list.

4. If the required device isn't displayed in the list, click the **Search** button (1). Wait for the list to update, as the device search can take several seconds. If you click the **Search** button again during the search, the current search is stopped and the new one is started.

Note

If necessary, you can increase the wait time for a response from the device by setting the additional time in milliseconds in the parameter of the AdditionalSearchTime registry key (see [Registry keys reference guide](#), for more information on working with the registry, see [Working with Windows OS registry](#)).

5. Check the correctness of the brand (2), model (3), and firmware (4) determination for the found IP device. If necessary, make changes by expanding the list and selecting the required value.
6. From the drop-down list (5), select which settings must be installed on the IP device when you add it to the hardware tree: leave the installed device settings or apply the video server settings.
7. Check the correctness of the TCP/IP port (8). If necessary, specify the required value in the field.
8. Specify the login (6) and password (7) to connect the IP device. Login and password are specified in the documentation for the connected network device.
9. If necessary, add additional information to the beginning of the names of created objects (for example, the address where the object is located). Enter the value in the **String to add** field (12). Limitations: Latin and Cyrillic letters, service characters except for the > and < characters; the number of characters is up to 60 including the length of the object name, which is set by default. The setting is applied to the selected objects in the next step.
10. Select the objects that you want to create on the basis of the IP device.

Note

The number of objects that you can create on the basis of the IP device is automatically displayed in the **Hardware available for adding** table (10).

- a. Expand the list of objects supported by the IP device by clicking the + button:



Correspondence of object names in the **Camera discovery tool** window to the branches of the object tree is given in the table.

Name of object in the Camera discovery tool window	Branch of object tree in Axxon PSIM
Video channel	The Video Capture Device object → The Camera object
Audio input	The Audio card object → The Microphone object
Contact	The Video Capture Device object → The Sensor object
Executive device	The Video Capture Device object → The Relay object

Name of object in the Camera discovery tool window	Branch of object tree in Axxon PSIM
Telemetry line	The Telemetry controller object → The PTZ device object
Audio output	The Playback card object → The Speaker object

- b. Set the checkboxes next to the objects that you want to create.

Note

To create/delete all objects, set/clear the checkboxes next to the brand of the IP device.

11. Click the **Apply** button for each selected device (9) or for all selected devices (11). The selected objects are created automatically in the object tree on the **Hardware** tab.
12. Repeat steps 4-8 for each IP device that you want to create in the system.

Note

To delete the IP device from the **Camera discovery tool** window, right-click the corresponding line in the table and select the **Delete camera <IP address> from the list** item. To delete the IP device or objects created on the basis of it from the hardware tree by means of the *Camera discovery tool*, you must clear the set checkboxes next to the corresponding objects and click the **Apply** button.

13. If the IP device isn't found, you can add it manually.
 - a. From the **Brand**, **Model**, and **Firmware** lists, select the brand, model, and firmware installed on the IP device (13-15).
 - b. In the **IP address** and **Port** fields (16, 17), specify the IP address of the device and the number of the TCP/IP port.
 - c. Click the **Add** button (18).
As a result, the IP device with the specified parameters is displayed at the top of the window.
14. To complete the IP device creation, repeat steps 6-8.
15. Click the **Exit** button to close the **Camera discovery tool** window (19).

Creating the IP device is complete.

3.2.6 Connecting devices over standard protocols

Configuring multimedia stream receipt using RTSP protocol

To receive the video stream from a camera via the RTSP protocol, the camera must support this protocol. For the information indicating the support of the RTSP protocol by the camera, refer to the official reference documentation of this camera.

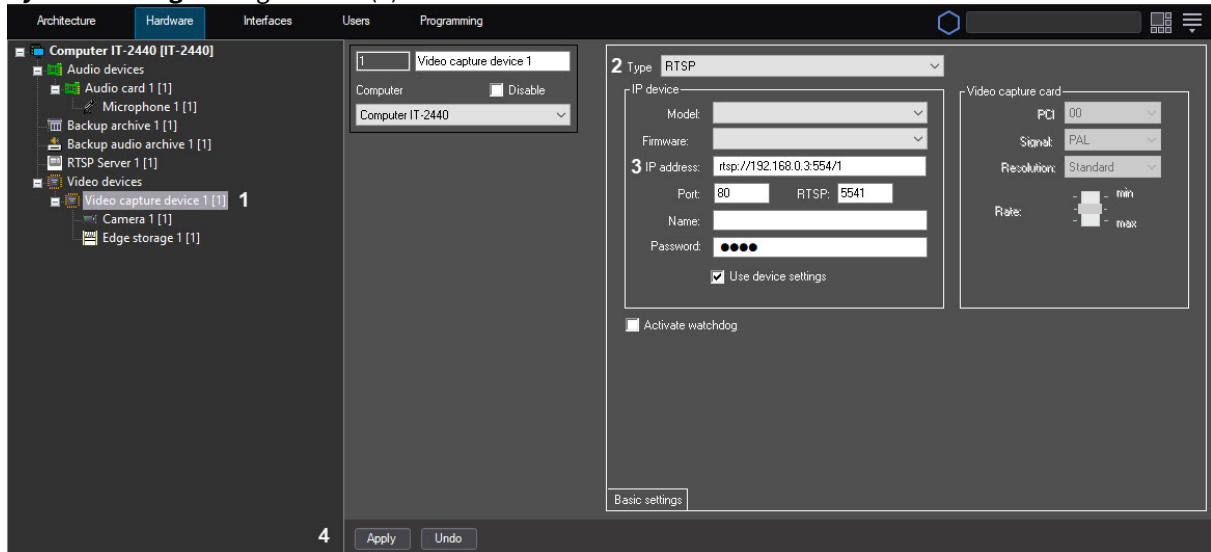
For proper operation of the RTSP grabber, make sure that there are no network settings of the used hardware that prevent data transmission via the RTSP protocol.

Note

If you want to receive the RTSP stream that comes from the RTSP server of *Axxon PSIM* (see [Configuring the RTSP Server module](#)), then you must set the **multicast** value to the **RTSP** parameter in the HKEY_LOCAL_MACHINE\SOFTWARE\AxxonSoft\PSIM\Video\TransportProtocols for a 32-bit system (HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\AxxonSoft\PSIM\Video\TransportProtocols for a 64-bit system) registry section on the computer where the **Camera** object is created. For more information about this parameter, see [Changing the transport protocol used by IP-device](#) section.

To receive a video via the RTSP protocol, do the following:

1. Create the **Video capture device** object on the basis of the **Computer** object on the **Hardware** tab of the **System settings** dialog window (1).



2. Go to the settings panel of the created object.
3. From the **Type** dropdown list (2), select the **RTSP** value.
4. In the **IP address** field (3), enter the address of the RTSP stream. The length of the address must not exceed 100 characters.

The format of the address depends on the camera model and its firmware. It is specified in the technical documentation of the vendor. Generally, the address looks like this:

rtsp://[<username>:<password>@]<IP address of video source>:<port>/<path_to_stream>.

For the Axis 210A camera, the address of the RTSP stream looks like this:

rtsp://root:password@10.0.11.121:554/mpeg4/media.amp

Note

The address to access the RTSP stream delivered by the RTSP server of *Axxon PSIM*, looks like rtsp://192.168.0.3:554/1. When the RTSP server operates in the **Multicast** mode, you cannot access it via the RTSP grabber.

Besides, starting with the Drivers Pack v. 3.2.28.1518 version, the system supports receiving multiple streams via the RTSP protocol (multistreaming). In this case, the maximum possible number of streams is three. RTSP stream addresses are separated in the **IP address** field by the semicolon ";".

Example

To get video from two streams, enter `rtsp://admin:admin@10.0.26.16/live/h264;rtsp://admin:admin@10.0.26.16/live/mjpeg` in the **IP address** field.

To get video from three streams:

`rtsp://admin:admin@10.0.26.16/live/h264;rtsp://admin:admin@10.0.26.16/live/mjpeg;rtsp://admin:admin@10.0.26.16/live/mpeg4`

Starting with the Drivers Pack 3.62.2953 version, the system supports receiving the RTSP stream over HTTPS. To do this, you must set the HTTPS transport protocol using the RTSP registry key beforehand (for more information about this parameter, see [Changing the transport protocol used by IP-device](#)). Example of the link for receiving the RTSP stream over HTTPS:

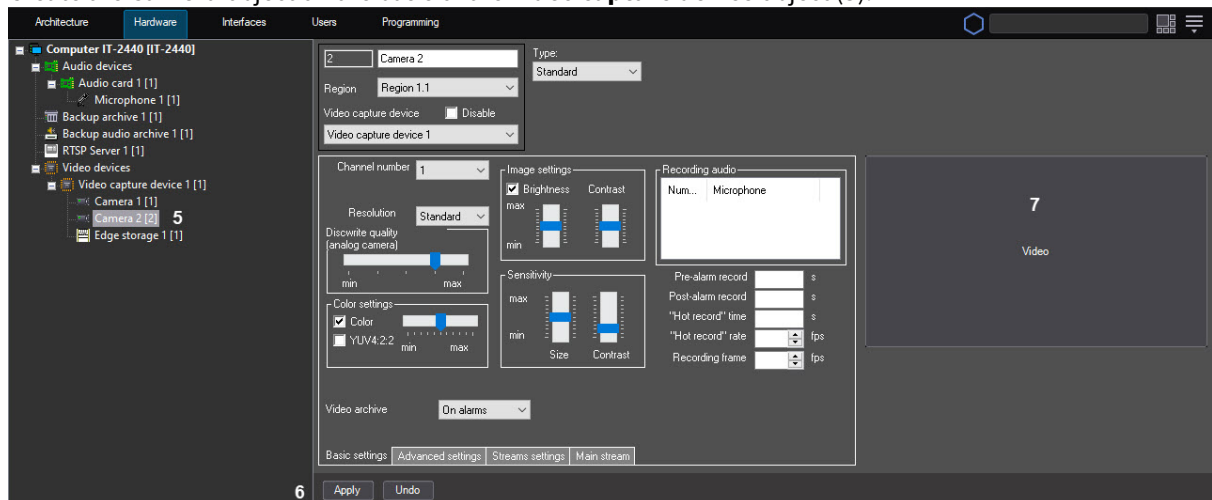
`https://192.168.0.3:443/profile1/media.smp;`

`https://admin:admin@192.168.0.3:443/profile2/media.smp.`

⚠ Attention!

When you transmit the username or password that contains invalid characters, including "@" ,via URL, they must be screened using ASCII codes (hexadecimal format). The "@" character is screened as %40. For example, when you connect the device over RTSP the link can look like "rtsp://admin:New%40edge@192.168.0.75:554/RVi/1/1". However, if this data is in the login and password fields of the **Video capture device** object in *Axxon PSIM*, they stay the same. In this case, "admin" and "New@edge" correspondingly.

5. Click the **Apply** button to save the settings of the **Video capture device** object (4).
6. Create the **Camera** object on the basis of the **Video capture device** object (5).

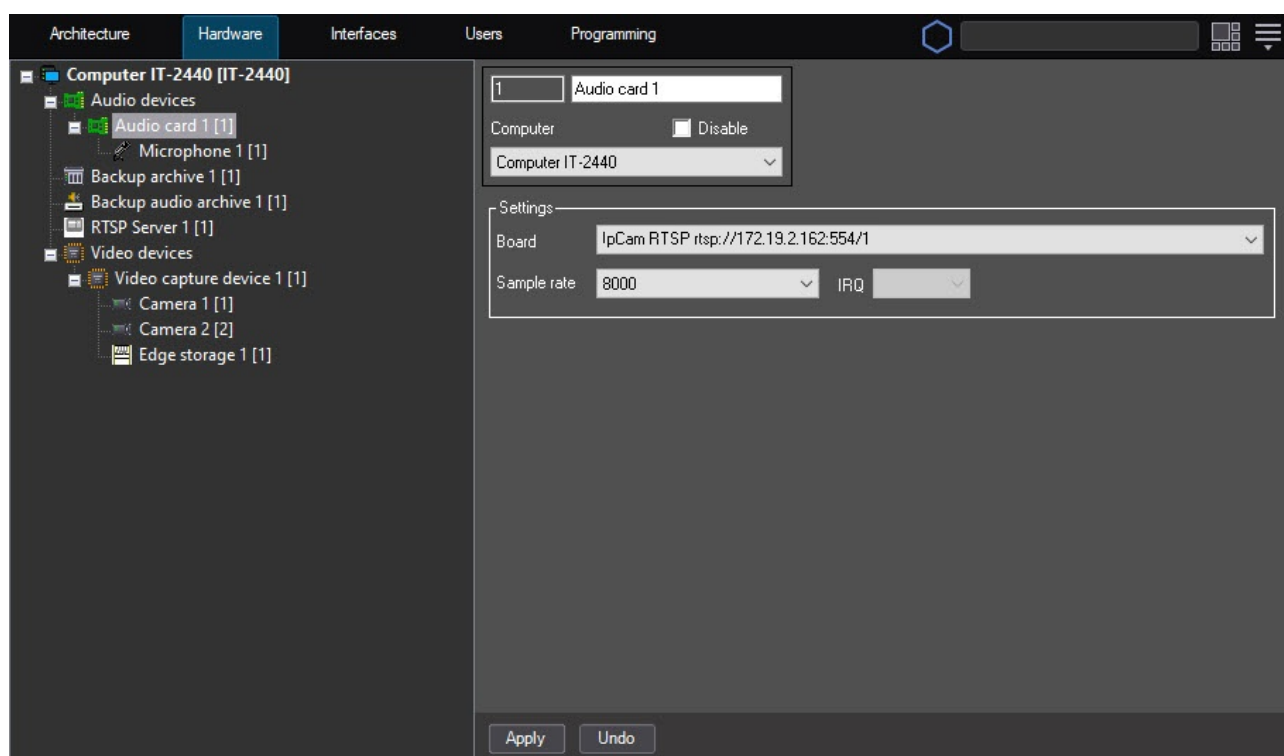


7. Configure the created **Camera** object.
8. Click the **Apply** button (6).
9. Click the **Video** field to check if the video is available (7).

In case the configuration is correct, the video received via the RTSP protocol is displayed in the viewing area. Further actions with the received video stream are performed using the created **Camera** object.

Configuring video receipt via the RTSP protocol is complete.

To receive an audio stream from a camera, you must create and configure the **Audio card** and **Microphone** objects for the audio stream from a camera that is received via the RTSP protocol. For this, select the **RTSP** type of the audio card (see [Registration of audio cards and microphones in Axxon PSIM™ software](#)).



Further actions with the audio stream are performed using the created **Microphone** object.

Connecting cameras via the GB/T28181 protocol

On the page:

- [General information on GB/T28181 standard and supported functions](#)
- [Configuring an IP-device to operate via the GB/T28181 standard](#)
- [Configuring IP-device connection via the GB/T28181 standard](#)

General information on GB/T28181 standard and supported functions

Axxon PSIM allows connecting devices via the chinese standard GB/T28181. This protocol is based on the SIP over UDP protocol (and over TCP starting with the GB/T28181-2016 version). The GB/T28181 protocol uses the following protocols over SIP:

- SDP (Session Description Protocol)
- MANSCDP (Monitoring and Alarming Network System Control Description Protocol)
- MANSRTSP (Monitoring and Alarming Network System Real Time Streaming Protocol)

This allows receiving the status of sensors, events from detectors, PTZ and relays control, access to the embedded archive of the IP device (you must set the correct device time zone in *Axxon PSIM* beforehand), within the SIP session, and so on. The operation with single-channel and multi-channel devices in single-stream mode and with the UDP and TCP transport protocols is also supported.

At the same level of the OSI model, the RTP/RTCP protocol also works in parallel with the SIP protocol, which makes it possible to use the following functions:

- video transmission (including archive one) in H264, H265, or MJPEG formats.
- audio transmission in G.711a, G.711u, or G.726 formats in the PS (Program Stream) stream only. Audio from the archive isn't supported.

For the most up-to-date information on this standard and the features supported in *Axxon PSIM*, see the [Documentation Drivers Pack](#).

Configuring an IP-device to operate via the GB/T28181 standard

To configure IP devices connected via the GB/T28181 protocol, use the web interface of these IP devices. The settings aren't sent from *Axxon PSIM* to the device.

Before you connect the IP device via this protocol to *Axxon PSIM*, you must set the SIP settings on the IP device in the following way:

1. Set the Server IP parameter equal to the server's IP address.
2. Set the Server port parameter (5060 by default).
3. Set the Device ID parameter. This parameter must be set on all cameras connected via the GB/T28181 protocol and must be unique. The format of the connection code (device ID and server ID) is a 20-digit number:
 - the first 10 digits specify the address (according to the GB/T-2260-2007 standard);
 - the next 10 digits specify the device information.

If the IP device is located behind NAT, you must forward and explicitly specify the external address of the server, the port/port range for receiving video, and the SIP port of the *Axxon PSIM* server.
Example: 34020000001110000001/50557-51557@10.3.3.11/85.172.174.36
4. If you want the device to detect the server more quickly, reduce the default value of the RefreshRegTime parameter. The name of this setting can differ on different IP devices.

Note

For the telemetry to work correctly on the IP device, set the value of the RefreshRegTime parameter to more than 600.

See also [Examples of IP device settings for connection via GB/T28181 standard](#).

Configuring IP-device connection via the GB/T28181 standard

Attention!

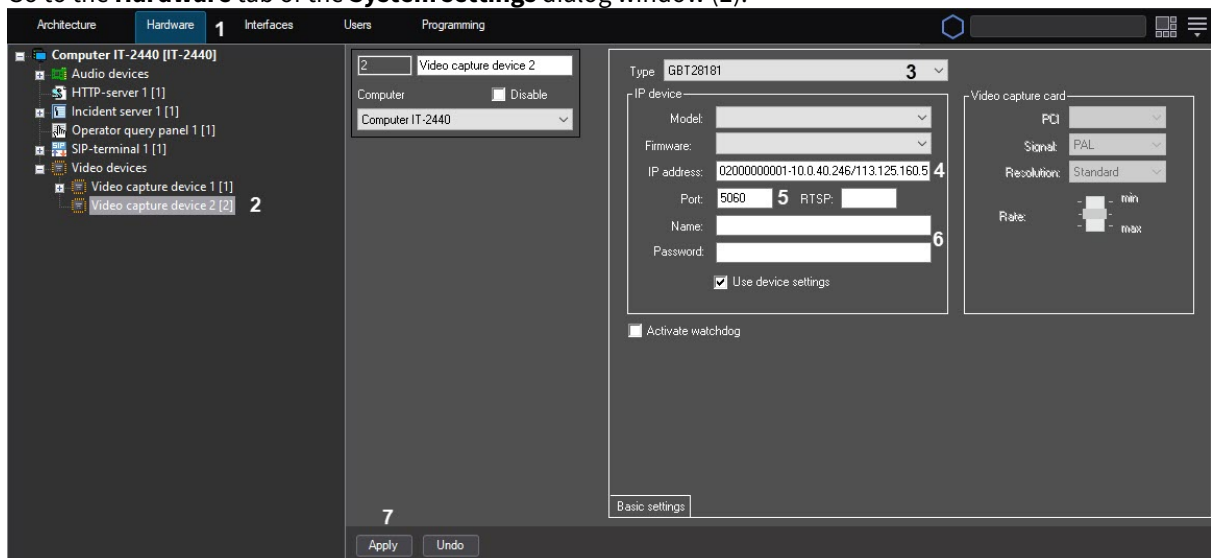
The system supports the operation of IP devices via the GB/T28181 protocol with no more than one SIP server. This means that you can create several **Video capture device** objects with the GB/T28181 type in the *Axxon PSIM* hardware tree, however, the part of the address after @ must match for all of them. The server ID, local address, external address, and port must be the same for all devices. If at least one parameter is different (for example, the local IP address isn't set for some device when it is set for other devices), then such a device doesn't start.

Note

Axxon PSIM doesn't support the automatic search of devices connected via the GB/T28181 protocol, and when you add them using the Camera discovery tool.

After you configure the device as described above, add it to *Axxon PSIM* as follows:

1. Go to the **Hardware** tab of the **System settings** dialog window (1).



2. Create the **Video capture device** object on the basis of the **Computer** object (2). The settings panel of this object appears on the right part of the **System settings** window.
3. From the **Type** dropdown list (3), select the **GBT28181** value.
4. In the **IP** field (4), specify the value in the following format:
`[gbt://]deviceID[/videoPort]@serverID[-serverLocalIP[/serverExternalIP]]`
or
`[gbt://]deviceID[/videoPortFirst-videoPortLast]@serverID[-serverLocalIP[/serverExternalIP]]`
where:
deviceID is the Device ID parameter specified during the IP device setup;
serverID is the identifier of the *Axxon PSIM* server created according to the same rules as the IP device ID (see above);
videoPort is the port for receiving video;
videoPortFirst-videoPortLast is range of ports for receiving video;
serverLocalIP is the local IP address of the *Axxon PSIM* server, which sets the network interface on which the server will be available;
serverExternalIP is the global IP address of the *Axxon PSIM* server; this parameter is used when the *Axxon PSIM* server is behind the gateway. In this case, this IP address is specified as the SIP server address in the IP device settings.

Examples

```

340200000013200000008@34020000002000000001
340200000013200000008@34020000002000000001-10.0.40.246/113.125.160.58
340200000013200000008@34020000002000000001-10.0.40.246
340200000013200000008@34020000002000000001-/113.125.160.58
340200000013200000008/50200@34020000002000000001
340200000013200000008/50200-50210@34020000002000000001-10.0.40.246

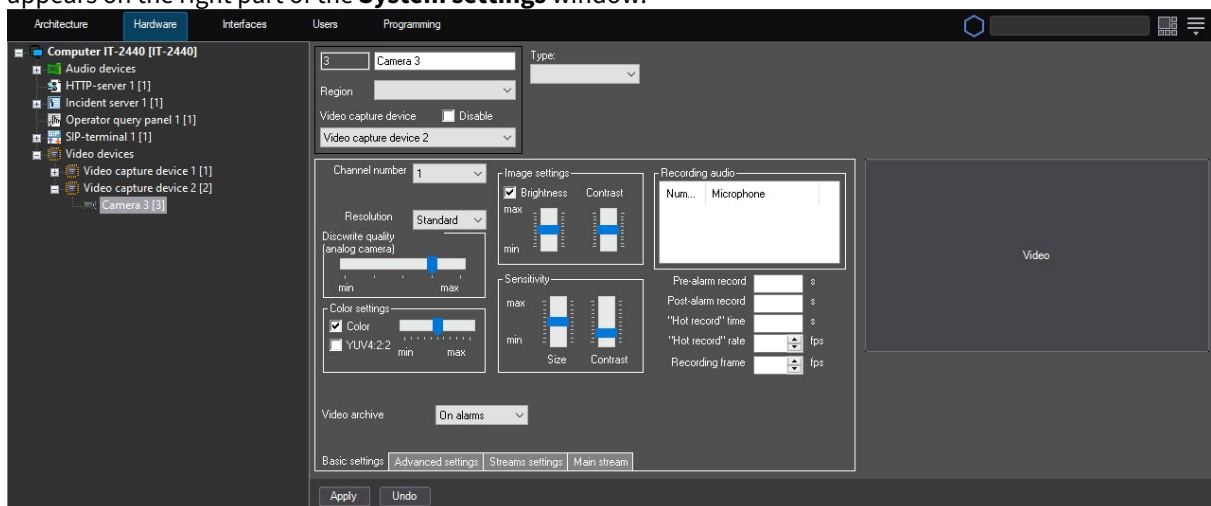
```

- In the **Port** field (5), enter the local port number that the *Axxon PSIM* server will "listen" to receive messages from the IP device.
Usually this is the default SIP port—5060.

Note

The SIP port of the IP device is detected automatically.

- The **Name** and **Password** fields aren't used (6).
- Click the **Apply** button (7).
- Create the **Camera** object on the basis of the **Video capture device** object. The settings panel of this object appears on the right part of the **System settings** window.



- Click the **Apply** button.

Further work with the device (for example, displaying video on the monitor, archive recording) is performed using the created **Camera** object—see the [Configuring video subsystem](#) section in the [Administrator's Guide](#) document. The PTZ and relay management functions, access to the embedded storage, and so on are configured in the same way as for ordinary IP devices and described in the corresponding sections of this document [Installing and configuring security system components guide](#).

Adding the device that operates via the GB/T28181 protocol is complete.

Examples of IP device settings for connection via GB/T28181 standard

On the page:

- Jovision
- Bosch
- Huawei
- Hikvision
 - GB/T28181-2011
 - GB/T28181-2016
 - Settings in Axxon PSIM
- Dahua

Examples of IP device settings and connection settings in *Axxon PSIM* for GB/T28181 standard are given below. The protocol is usually supported by cameras for China market not having any English interface. This is why some of the screenshots below are given in Chinese.

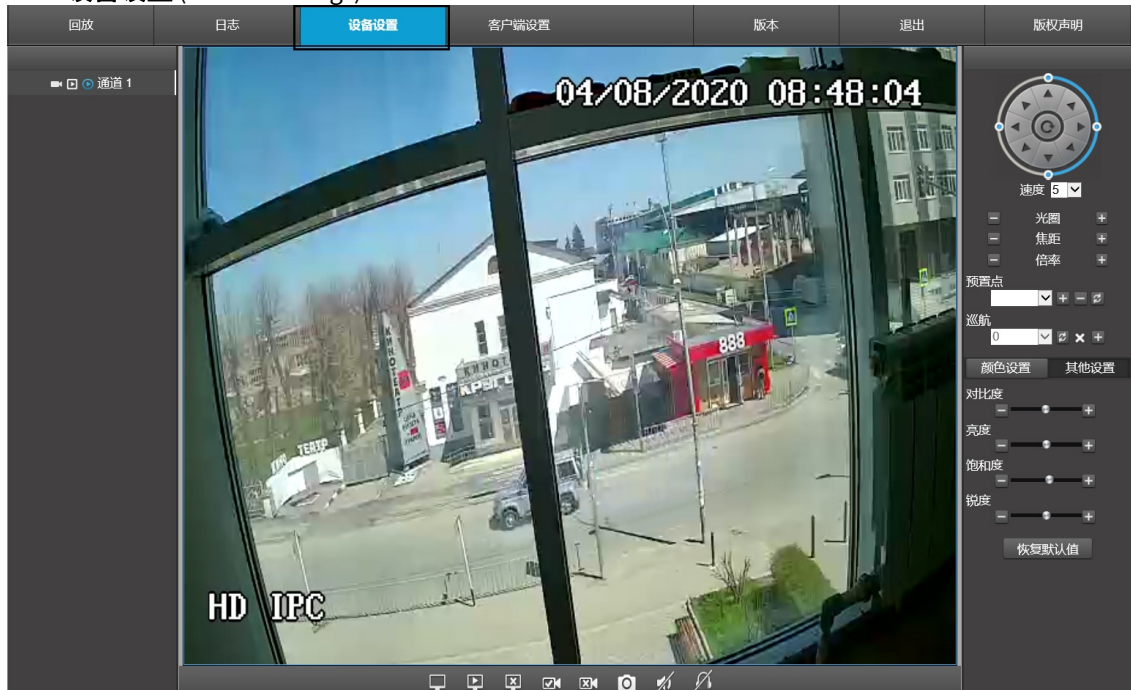
Jovision

Configure a Jovision camera for operation via GB/T28181 standard as follows:

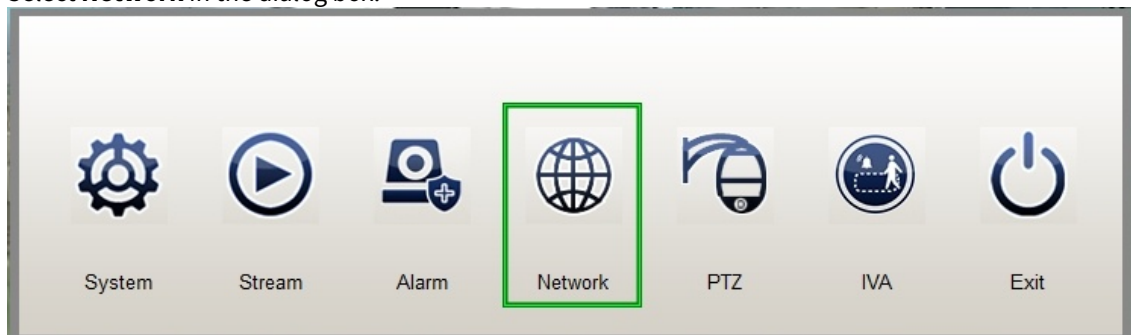
1. Perform the following settings of the IP-device:
 - a. Go to the IP device web interface (see [How to call the Web Server home page of IP device](#)).
 - b. Enter your login and password.

- c. Click **确定** (Confirm) in the dialog box opened.

- d. Click **设备设置** (Device settings).



- e. Select **Network** in the dialog box.



- f. In the **Network Management** window, click **GB28181**.

Network Management

Network Type: ☒ Ethernet ☐ PPPOE ☐ WIFI

☐ Self Adaption IP Addr

☐ DHCP

Network Info

IP: 172 . 17 . 12 . 109 CloudSEE ID: W30860765

Netmask: 255 . 255 . 0 . 0 Status: Online

Gateway: 172 . 17 . 0 . 1

DNS: 10 . 0 . 12 . 1

MAC: E0:62:90:8A:BB:BE

Start AP

GB28181 Refresh Ok Exit

- g. The **GB28181** window opens.

GB28181

☐ Gb28181 Enable 1

Device ID 34020000001300000001 2

Password

Server Ip 172 . 17 . 12 . 2 3

Server Port 5070 4

Local Port 5060 5

Refresh Interval 3600 6

Alarm ID

Keep Alive 30 7

8

Ok Exit

- h. Set the **Gb28181 Enable** checkbox checked (1).
- i. In the **Device ID** field, enter the device identification number as described in [Connecting cameras via the GB/T28181 protocol](#) (2). Example on the picture shows Device ID 34020000001300000001.
- j. In the **Server Ip** field, enter the *Axxon PSIM* server IP-address (3). The example shows IP 179.17.12.2
- k. In the **Server Port** field, enter *Axxon PSIM* server port number assigned for receiving messages from the IP device (4) The example shows port 5070.
- l. In the **Local Port** field, enter the IP device SIP port number (5).

- m. In the **Refresh Interval** field, enter the device discovery period in seconds (6). The value shall not be less than 600.
 - n. In the **Keep Alive** field, enter the period in seconds for sending messages confirming the device activity (7).
 - o. Click the **Ok** button (8).
2. Use the following settings for the **Video capture device** object in *Axxon PSIM*:
 - a. Select **GBT28181** from the **Type** drop-down list.
 - b. Example value for the **IP address** field:
`34020000001300000001@34020000001300000002-10.0.40.246/179.17.12.2`
 The Server ID 34020000001300000002 is not set on the Jovision device, so any Server ID can be chosen as per the conditions set in [Connecting cameras via the GB/T28181 protocol](#).
 - c. Set **Port** to **5070**.

Bosch

Configure a Bosch camera for operation via GB/T28181 standard as follows:

1. Perform the following settings of the IP-device:
 - a. Go to the IP device web interface (see [How to call the Web Server home page of IP device](#)).
 - b. Go to **Configuration - General - GB/T 28181**.

The screenshot shows the web interface of a Bosch FLEXIDOME IP panoramic 7000 MP camera. The 'Configuration' menu is open, and the 'GB/T 28181' section is selected. The settings are as follows:

Field	Value	Label
Enable	☒	1
H.264 elementary stream	☐	
Registration timeout	3600	2
Heartbeat timeout	15	3
Server ID	34020000002000000001	4
Server IP address	172.17.12.2	5
Server port	5070	6
Device ID	34020000001350000001	7
Device port	5065	8
Password		
Alarm device ID	34020000001350000001	9

A 'Set' button is located at the bottom right of the configuration area. A 'Preview' window on the right shows a live video feed from the camera.

- c. Set the **Enable** checkbox checked (1).
 - d. In the **Registration timeout** field, enter the device discovery period in seconds (2). The value shall not be less than 600.
 - e. In the **Heartbeat timeout** field, enter the period in seconds for sending messages confirming the device activity (3).
 - f. In the **Server ID** field, enter the *Axxon PSIM* server identification number (4). The example shows `34020000002000000001`.
 - g. In the **Server IP address** field, enter the *Axxon PSIM* server IP-address (5). The example shows `172.17.12.2`.
 - h. In the **Server port** field, enter *Axxon PSIM* server port number assigned for receiving messages from the IP device (6). The example shows port **5070**.
 - i. In the **Device ID** field, enter the device identification number as described in [Connecting cameras via the GB/T28181 protocol](#) (7). Example on the picture shows Device ID `34020000001350000001`.
 - j. In the **Device port** field, enter the IP device SIP port number (8).
 - k. In the **Alarm device ID** field, enter the channel identification number (9). The same value as **Device ID** may be used.
 - l. Click the **Set** button (10).
2. Use the following settings for the **Video capture device** object in *Axxon PSIM*:
 - a. Select **GBT28181** from the **Type** drop-down list.
 - b. Example value for the **IP address** field:
`34020000001350000001@34020000002000000001-10.0.40.246/172.17.12.2`

- c. Set **Port** to **5070**.

Huawei

Configure a Huawei camera for operation via GB/T28181 standard as follows:

1. Perform the following settings of the IP-device:
 - a. Go to the IP device web interface (see [How to call the Web Server home page of IP device](#)).
 - b. Go to **Settings - Platform connections - Second Protocol Parameters - T28181**.

The screenshot shows the 'HUAWEI IPC' web interface. The 'Settings' tab is selected, and the 'Second Protocol Parameters' section is expanded. The 'GB/T 28181' checkbox is checked. The 'Platform IP' field is set to '10.2.2.107', 'Port number' is '5070', 'Device ID' is '3402000001110000001', 'Server code' is '3402000002000000001', 'Login name' is '3402000001110000001', and 'Password' is '3402000000'. The 'Registration validity (s)' is '3600', 'Heartbeat cycle (s)' is '60', 'Max number of timeouts' is '3', 'Stream index' is 'Secondary 1', and 'Channel ID' is '3402000001320000000'. The 'Save' button is at the bottom.

- c. Set the **GB/T 28181** checkbox checked (1).
- d. In the **Platform Ip** field, enter the *Axxon PSIM* server IP-address (2). The example shows **10.2.2.107**.
- e. In the **Port number** field, enter *Axxon PSIM* server port number assigned for receiving messages from the IP device (3). The example shows port **5070**.
- f. In the **Device ID** field, enter the device identification number as described in [Connecting cameras via the GB/T28181 protocol](#) (4). Example on the picture shows Device ID **3402000001110000001**.
- g. In the **Server code** field, enter the *Axxon PSIM* server identification number (5). The example shows Server ID **3402000002000000001**.
- h. In the **@** field, enter the first 10 digits of the address according to GB/T-2260-2007 (6).
- i. In the **Registration validity (s)** field, enter the device discovery period in seconds (7). The value shall not be less than 600.
- j. In the **Heartbeat cycle (s)** field, enter the period in seconds for sending messages confirming the device activity (8).
- k. In the **Max number of timeouts** field, enter the maximum number of Heartbeat message omissions after which the device connection is considered lost (9).
- l. Select the video stream from the **Stream index** drop-down list (10).
- m. In the **Channel ID** field, enter the channel identification number in the same format as Device ID and Server ID (11).
- n. Click the **Save** button (12).
2. Use the following settings for the **Video capture device** object in *Axxon PSIM*:
 - a. Select **GBT28181** from the **Type** drop-down list.
 - b. Example value for the **IP address** field: **3402000001110000001@3402000002000000001-10.2.2.107**
 - c. Set **Port** to **5070**.

Hikvision

The Hikvision cameras may support several GB/T28181 standard versions: GB/T28181-2011 and/or GB/T28181-2016. Examples of configuration for these versions are given below.

Setup video streams as follows before you configure the GB/T28181 standard on the IP device:

1. Go to **配置 - 视音频 - 视频** (Settings - Video and Audio - Video).

2. Configure the main stream:

- a. From the **码流类型** (Stream type) drop-down list, select **主码流 (定时)** (Main stream) (1).

- b. From the **分辨率** (Resolution) drop-down list, select the main stream resolution (2).

- c. From the **视频编码** (Codec) drop-down list, select the main stream codec (3).

3. Configure the second stream:

- a. From the **码流类型** (Stream type) drop-down list, select **子码流** (Second stream) (1).

- b. From the **分辨率** (Resolution) drop-down list, select the second stream resolution (2).

- c. From the **视频编码** (Codec) drop-down list, select the second stream codec (3).

4. Click **保存** (Save).

GB/T28181-2011

- Go to **配置 - 高级设置 - 平台接入** (Settings - Advanced settings - Platform access).

The screenshot displays the Hikvision configuration web interface. On the left is a sidebar with navigation options: 本地 (Local), 系统 (System), 网络 (Network), 基本配置 (Basic Configuration), 高级配置 (Advanced Configuration), 视音频 (Video/Audio), 图像 (Image), 事件 (Events), and 存储 (Storage). The '高级配置' (Advanced Configuration) section is selected, and the '平台接入' (Platform Access) tab is active. The configuration fields are as follows:

Field	Value	Status/Note
平台接入方式 (Platform Access Method)	28181	
本地SIP端口 (Local SIP Port)	5060	✓
传输协议 (Transport Protocol)	UDP	
白名单 (Whitelist)	编辑 (Edit)	
平台1 (Platform 1)		
启用 (Enable)	☒ 1	
协议版本 (Protocol Version)	GB/T28181-2011	2
SIP服务器ID (SIP Server ID)	34020000002000000001	✓ 3
SIP服务器域 (SIP Server Domain)	3402000000	✓ 4
SIP服务器地址 (SIP Server Address)	109.248.191.112	✓ 5
SIP服务器端口 (SIP Server Port)	5070	✓ 6
SIP用户名 (SIP Username)	34020000001320000001	✓ 7
SIP用户认证ID (SIP User Authentication ID)	172171289	✓
密码 (Password)	•••••	
密码确认 (Password Confirmation)	•••••	
注册有效期 (Registration Period)	3600	✓ 秒 8
注册状态 (Registration Status)	在线 (Online)	
心跳周期 (Heartbeat Period)	60	✓ 秒 9
28181码流索引 (28181 Stream Index)	主码流 (定时) (Main Stream (Timed))	10
最大心跳超时次数 (Maximum Heartbeat Timeout Count)	3	✓ 11

- Set the **启用** (Enable) checkbox (1).
- From the **协议版本** (Protocol version) drop-down list, select **GB/T28181-2011** (2).
- In the **SIP服务器ID** (SIP Server ID) field, enter the *Axxon PSIM* Server ID (3). The example shows Server ID **34020000002000000001**.
- In the **SIP服务器域** (SIP Server domain) field, enter first 10 digits of the address according to GB/T-2260-2007 (4).
- In the **SIP服务器地址** (SIP Server address) field, enter the *Axxon PSIM* server IP-address (5). The example shows IP **109.248.191.112**.
- In the **SIP服务器端口** (SIP Server Port) field, enter the *Axxon PSIM* server port number assigned for receiving messages from the IP device (6). The example shows port **5070**.
- In the **SIP用户名** (SIP user name) field, enter the device identification number as described in [Connecting cameras via the GB/T28181 protocol](#) (7). Example on the picture shows Device ID 34020000001320000001.
- In the **注册有效期** (Registration period) field, enter the device discovery period in seconds (8). The value shall not be less than 600.
- In the **心跳周期** (Heartbeat period) field, enter the period in seconds for sending messages confirming the device activity (9).
- From the **28181码流索引** (Video stream) drop-down list, select one of the streams configured earlier (**主码流 (定时)** for Main stream or **子码流** for Second stream) (10).
- In the **最大心跳超时次数** (number of timeouts for Heartbeat messages) field, enter the maximum number of Heartbeat message omissions after which the device connection is considered lost (11).

13. Go to the **视频通道编码ID** (Video channel ID) tab at the bottom of the setings page (1).

编码ID

报警输入编码ID

视频通道编码ID

语音输出通道编码ID

通道号

1

视频通道编码ID

1

34020000001320000002

2

保存

3

14. Enter the identifiers of all channels of the IP device in the same format as the device identifiers (2). The example shows ID **34020000001320000002**.
15. Click the **保存** (Save) button (3).

GB/T28181-2016

1. Go to **配置 - 高级设置 - 平台接入** (Settings - Advanced settings - Platform access).

The screenshot shows the Hikvision configuration interface for Platform Access (平台接入). The left sidebar contains navigation options: 本地 (Local), 系统 (System), 网络 (Network), 基本配置 (Basic Configuration), 高级配置 (Advanced Configuration), 视音频 (Video/Audio), 图像 (Image), 事件 (Events), and 存储 (Storage). The main configuration area is divided into tabs: SNMP, FTP, Email, 平台接入 (Platform Access), HTTPS, QoS, 802.1x, 集成协议 (Integrated Protocol), and 网络服务 (Network Service). The 平台接入 tab is selected, showing the following settings:

- 平台接入方式 (Platform Access Method): 28181
- 本地SIP端口 (Local SIP Port): 5060
- 传输协议 (Transport Protocol): TCP
- 白名单 (Whitelist): 编辑 (Edit)
- 平台1 (Platform 1):
 - ☒ 启用 (Enable)
 - 协议版本 (Protocol Version): GB/T28181-2016
 - SIP服务器ID (SIP Server ID): 34020000002000000001
 - SIP服务器域 (SIP Server Domain): 3402000000
 - SIP服务器地址 (SIP Server Address): 109.248.191.112
 - SIP服务器端口 (SIP Server Port): 5070
 - SIP用户名 (SIP User Name): 34020000001320000001
 - SIP用户认证ID (SIP User Authentication ID): 172171289
 - 密码 (Password):
 - 密码确认 (Password Confirmation):
 - 注册有效期 (Registration Validity Period): 3600
 - 注册状态 (Registration Status): 在线 (Online)
 - 心跳周期 (Heartbeat Period): 60
 - 28181码流索引 (28181 Stream Index): 主码流 (定时) (Main Stream (Timed))
 - 注册间隔 (Registration Interval): 60
 - 最大心跳超时次数 (Maximum Heartbeat Timeout Count): 3
 - 编码ID (Encoding ID): 视频通道编码ID (Video Channel Encoding ID)

2. From the **传输协议** (Transport protocol) drop-down list, select the transport level protocol to be in use: UDP or TCP (1).
3. Set the **启用** (Enable) checkbox (2).
4. From the **协议版本** (Protocol version) drop-down list, select **GB/T28181-2016** (3).
5. In the **SIP服务器ID** (SIP Server ID) field, enter the *Axxon PSIM* Server ID (4). The example shows Server ID **34020000002000000001**.
6. In the **SIP服务器域** (SIP Server domain) field, enter first 10 digits of the address according to GB/T-2260-2007 (5).
7. In the **SIP服务器地址** (SIP Server address) field, enter the *Axxon PSIM* server IP-address (6). The example shows IP **109.248.191.112**.
8. In the **SIP服务器端口** (SIP Server Port) field, enter the *Axxon PSIM* server port number assigned for receiving messages from the IP device (7). The example shows port **5070**.
9. In the **SIP用户名** (SIP user name) field, enter the device identification number as described in [Connecting cameras via the GB/T28181 protocol](#) (8). Example on the picture shows Device ID **34020000001320000001**.
10. In the **注册有效期** (Registration period) field, enter the device discovery period in seconds (9). The value shall not be less than 600.
11. In the **心跳周期** (Heartbeat period) field, enter the period in seconds for sending messages confirming the device activity (10).

12. From the **28181码流索引** (Video stream) drop-down list, select one of the streams configured earlier (**主码流 (定时)** for Main stream or **子码流** for Second stream) (11).
13. In the **注册间隔** (Registration interval) field, enter the device discovery interval in seconds (12).
14. In the **最大心跳超时次数** (number of timeouts for Heartbeat messages) field, enter the maximum number of Heartbeat message omissions after which the device connection is considered lost (13).
15. Go to the **视频通道编码ID** (Video channel ID) tab at the bottom of the settings page (1).

编码ID

报警输入编码ID	视频通道编码ID	语音输出通道编码ID
	1	
1	34020000001320000002	
	2	

保存 3

16. Enter the identifiers of all channels of the IP device in the same format as the device identifiers (2). The example shows ID **34020000001320000002**.
17. Click the **保存** (Save) button (3).

Settings in Axxon PSIM

Use the following settings for the **Video capture device** object in *Axxon PSIM*:

1. Select **GBT28181** from the **Type** drop-down list.
2. Example value for the **IP address** field: **34020000001320000001@3402000000200000001-109.248.191.112**
3. Set **Port** to **5070**.

Dahua

Configure a Dahua camera for operation via GB/T28181 standard as follows:

1. Perform the following settings of the IP-device:
 - a. Go to the IP device web interface (see [How to call the Web Server home page of IP device](#)).
 - b. Go to **网络设置 - 平台接入 - 国标28181** (Network settings - Platform access - GBT28181).

- c. Set the **接入使能** (Enable connection) checkbox (1).
- d. In the **SIP服务器编号** (SIP server number) enter the Axxon PSIM Server ID (2). The example shows Server ID **34020000002000000001**.
- e. In the **SIP服务器IP** (SIP server IP address) enter the Axxon PSIM server IP address (3). The example shows IP **192.168.88.33**

- f. In the **设备编号** (Device number) field, enter the device identification number as described in [Connecting cameras via the GB/T28181 protocol](#) (4). Example on the picture shows Device ID 34020000001300000001.
 - g. In the **本地SIP服务器端口** (Local SIP port) field, enter the IP device SIP port number (5).
 - h. In the **心跳周期** (Heartbeat period) field, enter the period in seconds for sending messages confirming the device activity (6).
 - i. In the **SIP服务器端口** (SIP server port) field, enter the Axxon PSIM server port assigned for receiving messages from the IP device (7). The example shows port 5060.
 - j. In the **注册有效期** (Registration period) field, enter the device discovery period in seconds (8). The value shall not be less than 600.
 - k. In the **最大心跳超时次数** (number of timeouts for Heartbeat messages) field, enter the maximum number of Heartbeat message omissions after which the device connection is considered lost (9).
 - l. Click **刷新** (Update).
2. Use the following settings for the **Video capture device** object in *Axxon PSIM*:
 - a. Select **GBT28181** from the **Type** drop-down list.
 - b. Example value for the **IP address** field: 34020000001300000001@34020000002000000001-192.168.88.33
 - c. Set **Port** to 5060.

Connecting devices using the FFMPEG driver

The FFMPEG universal driver supports the following functions:

- it receives video and audio via RTSP and RTMP protocols;
- it plays back video and audio in any format supported by ffmpeg (FFmpeg);
- it plays back video and audio from connected cameras and microphones in a specified format (compressed/uncompressed stream, resolution and codec, bitrate, and so on)

The following device types (models) are supported:

- **1 channel device** for receiving video and audio via RTSP and RTMP protocols.
- **Dshow device (USB camera)** for receiving video and audio from USB webcams.
- **Dshow video (USB camera)** for receiving video from USB webcams.
- **Desktop capturer** for capturing video images from all displays/monitors of the server in MJPEG format (default). Decompressed capture in YUV format is also supported.
- **Windows capturer** for capturing video images from the application window.

You can add a device that is connected via the FFMPEG protocol by using the [Camera discovery tool](#).

See sections below for details on configuring these types of devices.

Receiving video and audio over RTSP or RTMP protocols via FFMPEG driver

On the page:

- [Creating the Video capture device object](#)
- [Additional features of the FFMPEG device](#)

- [Working with multistreaming devices](#)

You can add the **Video capture device** object for receiving video and audio over the RTSP or RTMP protocols via the FFMPEG driver by [creating and configuring the Video capture device object](#) or using the [Camera discovery tool](#). The latter way is preferable.

Note

You can receive video and audio over the RTSP or RTMP protocols via the FFMPEG driver with the following restrictions:

- Only one stream per channel is supported. For more information on how to configure multistreaming devices, see the "Working with multistreaming devices" section below.
- Video is received with the H.264/H.265 codecs only.
- Audio is received with the AAC codec only.

Creating the Video capture device object

To add the **Video capture device** object for receiving video and audio over the RTSP or RTMP protocols via the FFMPEG driver, do the following:

1. Open the [Camera discovery tool](#).

	Brand	Model	Firmware	Settings	Login	Password	IP address	Port	
+	ONVIF generic	generic	auto	device settings	root	xxxx	172.19.204.132	80	Apply
+	ONVIF generic	generic	auto	device settings	root	xxxx	fe80::bec3:42ff:fe2a:1c5e	80	Apply
+	ONVIF generic	generic	auto	device settings	root	xxxx	172.19.9.140	80	Apply
+	ONVIF generic	generic	auto	device settings	root	xxxx	172.19.9.206	80	Apply
+	ONVIF generic	generic	auto	device settings	root	xxxx	172.19.9.133	80	Apply
+	ONVIF generic	generic	auto	device settings	root	xxxx	172.19.9.71	80	Apply
+	ONVIF generic	generic	auto	device settings	root	xxxx	10.10.10.43	80	Apply
+	Sony	SNC-ER580	1.87.00	device settings			10.0.11.207	80	Apply
+	FFMPEG	1 channel device	auto	device settings			10.0.12.34	80	Apply

☒ Video Channel 1
☒ Audio input 1
☒ Audio output 1

Add device manually: Brand **FFMPEG** Model **1 channel device** Firmware **auto**
 IP address **0 . 0 . 0 . 0** Port **80** **Add**

Add string to beginning of created object name: Added string

Hardware available for adding:

Video Channels	unlimited
Audio Channels	unlimited
Sensors	unlimited
Relay	unlimited
Telemetry Lines	unlimited

Search 1 **Apply** 11 **Exit** 12

2. The found FFMPEG devices are displayed in the list. If the required device isn't displayed, click the **Search** (1) button and wait until the research is complete. Check that FFMPEG is displayed in the **Brand** (2) list, **1 channel device** in the **Model** list (3), and **auto** is selected in the **Firmware** list (4). If necessary, make changes by expanding the corresponding list and selecting the required value. From the **Settings** drop-down list (5), select **videosever settings** if you want to transfer the settings specified in *Axxon PSIM* to the camera when you add it, or select **device settings** if you want to use the device settings.
3. Specify the login (6) and password (7) to connect the FFMPEG device. The login and password are specified in the documentation for the connected network device.

Note

You can set the login and password directly in the **IP address** field on the **Video capture device** object settings panel. If you set the login and password simultaneously in the address line and in the fields, the data in the address line are of greater priority.

4. Check if the TCP/IP port is correct (8). Enter the required value in the field if necessary.



Note

You can set the port directly in the **IP address** field on the **Video capture device** object settings panel.

5. Select the objects that you want to create on the basis of the FFMPEG device by setting the corresponding checkboxes (9, see [Camera discovery tool](#)).
6. Click the **Apply** button (10) for one device or (11) if you select several devices.
The selected objects are automatically created in the object tree of the **Hardware** tab.
7. Click the **Exit** button (12) to close the **Camera discovery tool** window.

If the FFMPEG device isn't found, add it manually by [creating and configuring the Video capture device object](#). The device address format is given in the "Additional features of the FFMPEG device" section below.

Additional features of the FFMPEG device

You can manually set the address line consisting of the ffmpeg utility options in the **IP address** field on the **Video capture device** object settings panel. In this case, the address looks in the following way:

protocol://[login:password@]address[:port][/path]:[-additional_options]

The list of possible options and their values depends on the format and a specific device of the used protocol. You can find the full list of options, for example, for the rtsp protocol [on this page](#).

Example:

rtsp://admin:1111@59.124.126.102:84/-video_size 1280x960

Working with multistreaming devices

If you want to add a certain stream of the multistreaming device, then specify the stream number in the link in the **IP address** field using the bitmask:

Number of channel	Number in the link
1	1
2	2
3	4
4	8
5	16
6	32

Number of channel	Number in the link
7	64
8	128

For example, if the video is transmitted by the link: `rtsp://admin:1111@59.124.126.102:84/cgi-bin/net_jpeg.cgi?push=1&ch=X`

then X is two to the power of the channel number, starting from the zero channel (1, 2, 4, 8, 16, ..., 32768)

Receiving video and audio from USB webcams via the FFMPEG driver

On the page:

- [Creating the Video capture device object](#)
- [Advanced settings for the FFMPEG device](#)
- [Connecting multistream devices](#)

To receive video and audio from USB webcams via the **FFMPEG** driver, you can add the **Video capture device** object either by [Creating and configuring the Video capture device object](#) or using the [Camera discovery tool](#). The latter method is preferable.

Using the FFMPEG driver for connecting USB webcams has the following features:

- Video and audio streams are not combined for the discovered devices. For example, if there is a USB camera with a microphone, two devices are discovered—one video-only device and one audio-only device.
- In order to make a single device with both audio and video streams, manually edit the **IP address** field on the settings panel of the **Video capture device** object. To specify the audio device, enter its name with a colon after the name of the video device. See also [Advanced settings for the FFMPEG device](#) below.
- Both video and audio devices can be unavailable. For example, if you specify the device address as `dshow://:Internal Microphone (Conexant ISST Audio)`, a device without video but with audio is available.

Creating the Video capture device object

To add the **Video capture device** object to receive video and audio via RTSP and RTMP protocols using the **Dshow device (USB camera)** model, do the following:

1. Start the **Camera discovery tool**.

Brand	Model	Firmware	Settings	Login	Password	IP address	Port	
FFMPEG	Dshow device[USB camera]	auto	device settings			dshow://ZET USB WEBCA	0	Apply
3S	N9071		device settings	root	XXXXXX	172.19.204.131	80	Apply
Axis	Q1645		device settings	root	XXXXXX	172.19.2.16	80	Apply
Dahua	DH-IPC-HFW7442H-Z4FR	auto	device settings	admin	XXXXXX	172.19.9.129	80	Apply
Dahua	DH-IPC-HFW5241T-ASE	auto	device settings	admin	XXXXXX	172.19.9.131	80	Apply
EverFocus	EZN3340	1.0.22	device settings			172.19.9.233	80	Apply
iZett	HR-FD2030C		device settings	admin	XXXXXX	172.19.204.130	80	Apply
Hanwha Techwin	XNP-8300RW		device settings	root	XXXXXX	172.19.9.60	80	Apply
Bosch	FLEXIDOME IP panoramic 7000	auto	device settings	service		172.19.9.77	80	Apply
Bosch	DINION IP starlight 8000 MP	auto	device settings	service		172.19.9.79	80	Apply
HiWatch	NVR-432M-K		device settings	admin	XXXXXX	172.19.9.164	80	Apply

Hardware available for adding:

Video Channels	unlimited
Audio Channels	unlimited
Sensors	unlimited
Relay	unlimited
Telemetry Lines	unlimited

Buttons: Search (1), Apply (11), Exit (12)

2. In the **Model** list (3), select **Dshow device (USB camera)**.3. In the **Firmware** list (4), select **auto**.

As a result, the discovered devices are displayed in the **FFMPEG** list (2). If the required device isn't discovered, proceed to the next step. If the device is discovered, proceed to step 5.

4. Click the **Search** button (1) and wait for the repeat discovery to complete.

If necessary, you can add the device manually by [Creating and configuring the Video capture device object](#).

For the device address format, see [Advanced settings for the FFMPEG device](#) below.

5. In the **Settings** list (5), select:

- Video server settings**, if you want to send the settings specified in *Axxon PSIM* to the camera when you add it.
- Device settings**, if you want to use the device settings.

6. Enter login (6) and password (7) to connect the FFMPEG device. The login and password are specified in the documentation of the network device that you connect. Usually these fields must be left blank.

7. Check if the TCP/IP port (8) is correct. If necessary, enter the required value in the field.

8. Select the objects that you want to create on the basis of the FFMPEG device by setting the corresponding checkboxes (9).

**Note**

For more information, see [Camera discovery tool](#).

9. Click the **Apply** button (10) for one device or the **Apply** button (11) if several devices are selected.

The selected objects are automatically created in the object tree on the **Hardware** tab.

10. Click the **Exit** button (12) to close the **Camera discovery tool** window.

Advanced settings for the FFMPEG device

- You can specify the address manually by including the parameters of the ffmpeg utility after the colon in the **IP address** field on the settings panel of the **Video capture device** object. In this case the address looks like this:
`dshow[index]://[video_device_name]:[audio_device_name]:[-additional_options]`
- By default, the index is set to **0** unless you specify another option. A non-zero index is used when several devices with the same name are connected to the system at the same time, for example, `dshow1://USB 2.0 HD Camera` if there is already `dshow://USB 2.0 HD Camera`.

- You can specify the required resolution and codec that the USB camera outputs different from the default settings:
`-pixel_format yuv420p -video_size 1280x960`
- The list of settings and the list of parameters of these settings depend on the format and a specific device. You can find out the set of allowed parameters for dshow devices using the following command:
`ffmpeg -list_options true -f dshow -i video="<device name>"`

Connecting multistream devices

A camera that is created on the basis of the **Video capture device** object with the **Dshow device (USB camera)** model has two streams. You can select a codec for each stream:

- YUV422—codec for the detector stream.
- MJPEG—codec for transmission over the network and saving to an archive.



Note

For more information, see [Configuring the multistream video](#).

Receiving video from USB webcams via the FFMPEG driver

On the page:

- [Creating the Video capture device object](#)
- [Advanced settings for the FFMPEG device](#)
- [Connecting multistream devices](#)
- [Dshow video \(USB camera\) formats](#)

Creating the Video capture device object

To receive video from USB webcams via the **FFMPEG** driver, you can add the **Video capture device** object either by [Creating and configuring the Video capture device object](#) or using the [Camera discovery tool](#). The latter method is preferable.

Video and audio devices aren't combined when you search, unless they are previously integrated via the **FFMPEG** driver. So when there is a USB camera with a microphone, two devices are discovered—one video-only device and one audio-only device. The **Dshow video (USB camera)** model detects only video devices. If a device with video and audio is required, select the **Dshow device model (USB camera)** and manually edit the address string to create a device with video and audio, or integrate the device so that it is immediately displayed when you search.



For more information about the **Dshow device (USB camera)** model, see [Receiving video and audio from USB webcams via the FFMPEG driver](#).

To add the **Video capture device** object to receive video via RTSP and RTMP protocols using the **Dshow video (USB camera)** model, do the following:

1. Start the **Camera discovery tool**.

2. In the **Model** list (3), select **Dshow video (USB camera)**.3. In the **Firmware** list (4), select **auto**.

As a result, the discovered devices are displayed in the **FFMPEG** list (2). If the required device isn't discovered, proceed to the next step. If the device is discovered, proceed to step 5.

4. Click the **Search** button (1) and wait for the repeat discovery to complete.

If necessary, you can add the device manually by [Creating and configuring the Video capture device object](#).

For the device address format, see [Advanced settings for the FFMPEG device](#) below.

5. In the **Settings** list (5), select:

- Video server settings**, if you want to send the settings specified in *Axxon PSIM* to the camera when you add it.
- Device settings**, if you want to use the device settings.

6. Enter login (6) and password (7) to connect the FFMPEG device. The login and password are specified in the documentation of the network device that you connect. Usually these fields must be left blank.

7. Check if the TCP/IP port (8) is correct. If necessary, enter the required value in the field.

8. Select the objects that you want to create on the basis of the FFMPEG device by setting the corresponding checkboxes (9).

Note

For more information, see [Camera discovery tool](#).

9. Click the **Apply** button (10) for one device or the **Apply** button (11) if several devices are selected.

The selected objects are automatically created in the object tree on the **Hardware** tab.

10. Click the **Exit** button (12) to close the **Camera discovery tool** window.

Advanced settings for the FFMPEG device

- Specify the address string manually in the **IP address** field on the settings panel of the **Video capture device** object. If necessary, you can include a list of parameters in the address string after two colons: `dshow(<index>)://<video_device_name>(:additional_parameters)`
- It doesn't matter which port you select if there are several identical device types in the configuration.
- By default, the index is set to **0** unless you specify another option. You can use a non-zero index when connecting several devices with the same name to the system at the same time, for example, `dshow1://USB 2.0 HD Camera`, if there is already `dshow://USB 2.0 HD Camera`.

- The **additional options** property allows you to specify a string that consists of ffmpeg utility parameters directly from the software. Example of a string to receive a video with settings different from the default ones:
`pixel_format yuv420p -video_size 1280x960`
- You must specify the value of the **additional options** property at the end of the address string. Example of a string for a device without audio (two colons are required):
`dshow0://A4 TECH USB2.0 PC Camera J::-pixel_format yuyv422 -video_size 640x480`
- The list of settings and the list of parameters of these settings depend on the format and the specific device. You can find out the set of allowed parameters for dshow devices using the following command:
`ffmpeg -list_options true -f dshow -i video="<device name>"`

**Note**

The string with additional parameters must contain only additional parameters; that is, it isn't necessary to specify `ffplay`, `-f` or `-i` parameters.

Connecting multistream devices

A camera that is created on the basis of the **Video capture device** object with the **Dshow video (USB camera)** model has two streams. You can select a codec for each stream:

- YUV422—codec for the detector stream.
- MJPEG—codec for transmission over the network and saving to an archive.

**Note**

For more information, see [Configuring the multistream video](#).

Dshow video (USB camera) formats

Dshow video (USB camera) supported formats:

- RAWVIDEO/RGB24BGR24 (bgr24) ,
- YUV422 (yuyv422),
- YUV420P (yuv420p),
- MJPEG (mjpeg),
- H.264 (h264),
- H.265 (h265, hevc).

Capturing video from all Server displays/monitors via FFMPEG driver

On the page:

- [Preconfiguring the system for capturing system sounds](#)

- Additional features of the FFMPEG device

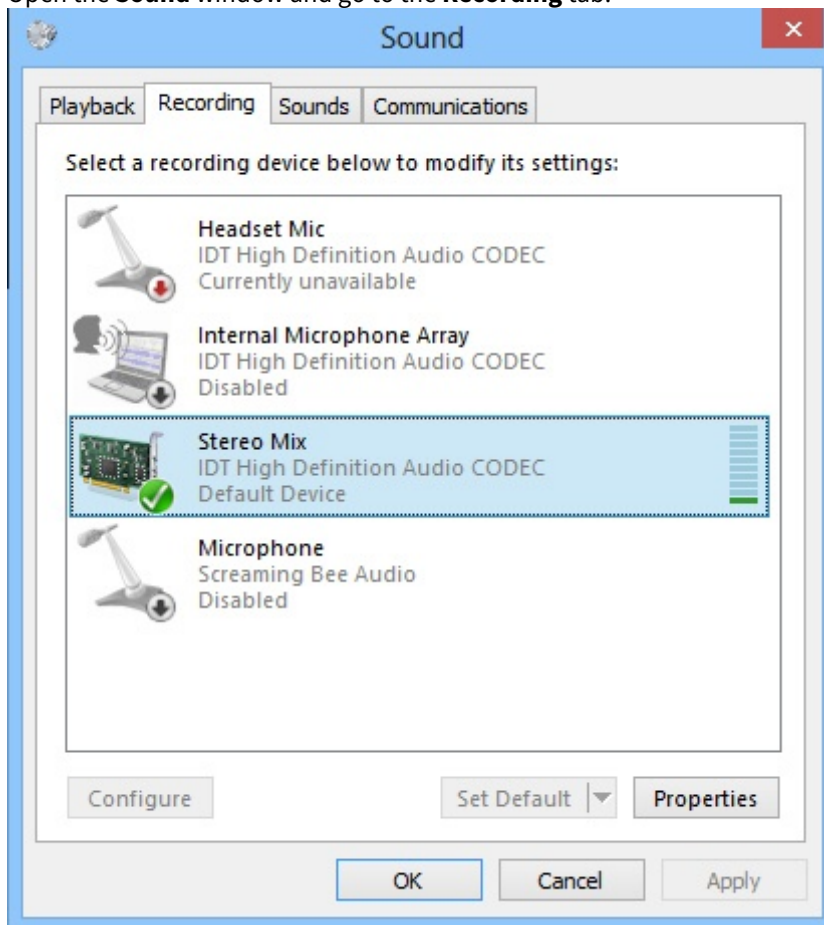
You can add the **Video capture device** object for receiving video from all server displays/monitors via the FFMPEG driver by [creating and configuring the Video capture device object](#) or using the [Camera discovery tool](#). The latter way is preferable.

Besides, the driver supports capturing system sounds and sounds from the computer microphone. The audio input and output format is PCM. For this, except for the **Video capture device** object, you must create and configure the **Audio card** and **Microphone** objects. You can also do it by using the camera discovery tool. To capture system sounds, you must preconfigure the system (see below).

Preconfiguring the system for capturing system sounds

To capture system sounds, you must enable the Stereo Mix device in the system in the following way:

1. Open the **Sound** window and go to the **Recording** tab.



Note

In Windows 7, you can open this window by selecting the **Recording Devices** item in the menu that opens when you right-click the speaker icon.

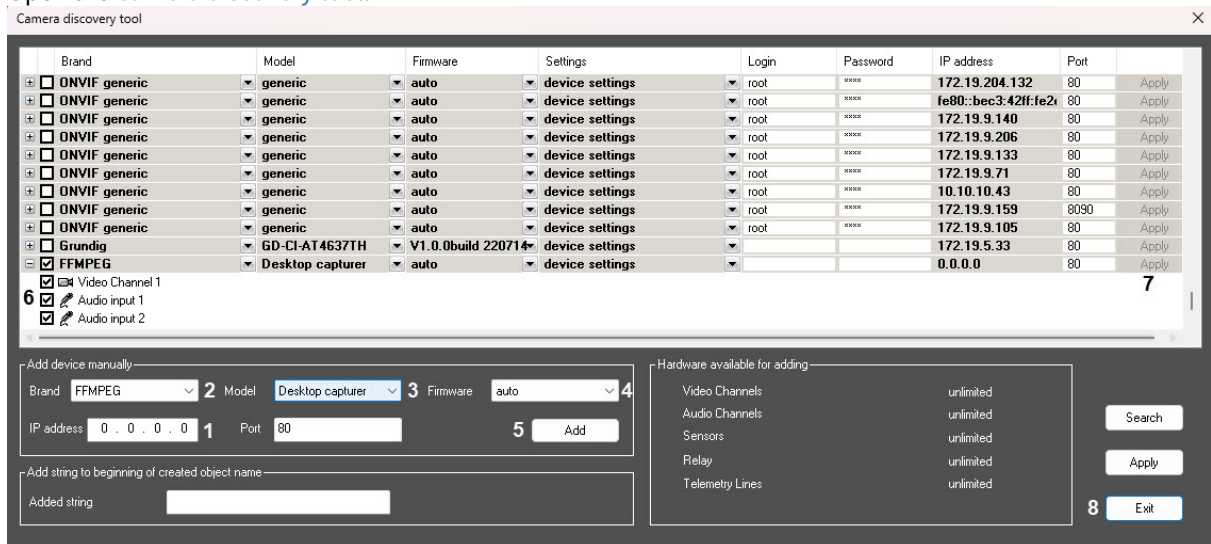
2. If there is no **Stereo Mix** device on the **Recording** tab, right-click any empty space in the list and select **Show Disabled Devices**.
3. If the **Stereo Mix** device is disabled, right-click it and select **Enable**.

- Click the **Apply** button in the **Sound** window.

Creating the Video capture device and Audio card objects

To add the **Video capture device** object for receiving video from all server displays/monitors and the **Audio card** and **Microphone** objects for capturing sound via the FFMPEG driver, do the following:

- Open the **Camera discovery tool**.



- In the **IP address** field (1), enter any IP address. The driver automatically sets the required address for this model.

Note

When you add a device of this type by creating the **Video capture device** object, you must specify the `gdirab://desktop` address in the **IP address** field.

- From the **Brand** drop-down list (2), select the FFMPEG value.
- From the **Model** drop-down list (3), select the **Desktop capturer** model.
- From the **Firmware** drop-down list (4), select the **auto** firmware.
- Click the **Add** button (5). The device is added to the list.
- Set the checkbox next to the added device and the required child objects (6):
 - Select the **Video channel 1** object if you want to capture video.
 - Select the **Audio input 1** object if you want to capture audio from the speaker selected as the default output device in the system.
 - Select the **Audio input 2** object if you want to capture audio from the microphone selected as the default device (not communication) in the system.

Attention!

You can detect the default microphone/speaker when you add the **Video capture device** object. If you switch the default microphone/speaker (for example, by connecting the USB camera or the microphone/speaker connector or simply changing the system settings) after that without unloading *Axxon PSIM*, then switching to the new device ISN'T performed automatically. To update the linked input/output device, you must restart *Axxon PSIM* or delete the **Video capture device** and **Audio card** objects and re-add them.

- Click the **Apply** button (7).
- Click the **Exit** button (8).

Additional features of the FFMPEG device

You can manually set the address line by including the ffmpeg utility options to it in the **IP address** field on the settings panel of the **Video capture device** object. In this case, the address looks in the following way:

gdirab://desktop: [-additionalOptions]

For example, you can set a specific area and several other options.

The list of options supported by the ffmpeg library for the gdirab mode:

- -draw_mouse <int> draw the mouse cursor (from 0 to 1) (1 by default);
- -show_region <int> draw borders across the capture line (from 0 to 1) (0 by default);
- -framerate <video_rate> set the frame rate ("ntsc" by default);
- -video_size <image_size> set the frame size;
- -offset_x <int> indent along the x axis of the capture area (from INT_MIN to INT_MAX) (0 by default);
- -offset_y <int> indent along the y axis of the capture area (from INT_MIN to INT_MAX) (0 by default);

Example of the value for the "additionalOptions" property:

-draw_mouse 1 -show_region 1 -framerate 25 -video_size 640x480 -offset_x 10 -offset_y 10

Capturing video from application window via FFMPEG driver

On the page:

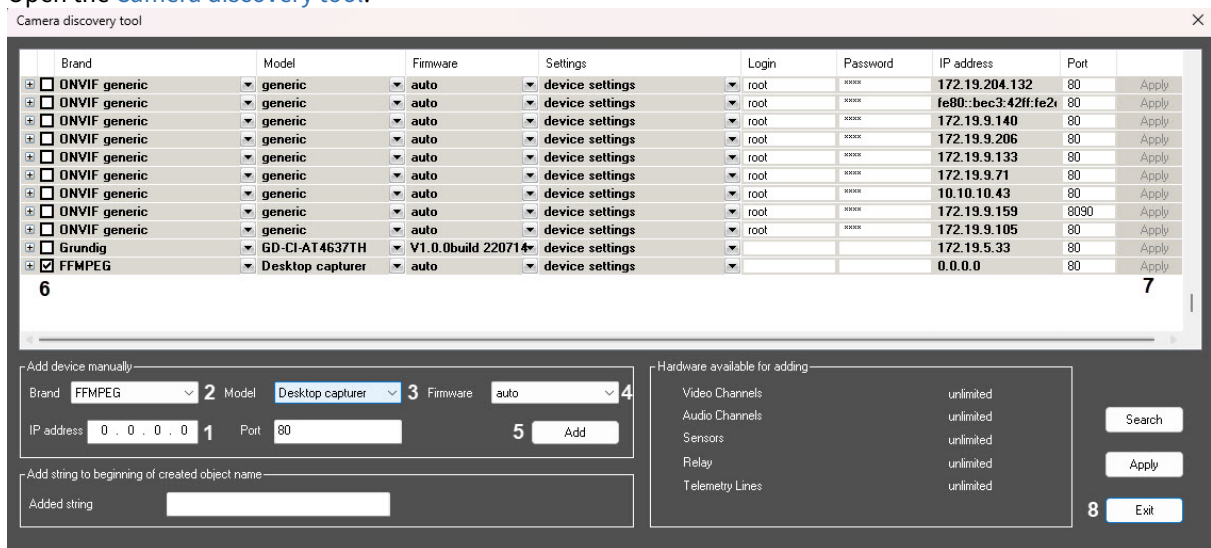
- [Creating the Video capture device objects](#)
- [Additional settings of the FFMPEG device](#)

You can add the **Video capture device** object for capturing video from the application window via the FFMPEG driver by [creating and configuring the Video capture device object](#) or using the [Camera discovery tool](#). The latter way is preferable.

Using the [additional settings](#), you can set a specific application window as well as the window area and decompression. Currently, the driver supports the following codecs: video capture in the MJPEG (default) format and RGBA/BGRA formats, decompression to MJPEG, MPEG2, YUV422 formats.

Creating the Video capture device objects

To add the **Video capture device** object for capturing video from the application window via the FFMPEG driver, do the following:

1. Open the **Camera discovery tool**.

2. In the **IP address** field (1), enter any IP address. The driver automatically sets the required address for this model.

**Note**

When you add a device of this type by creating the **Video capture device** object, you must specify the address in the **IP address** field in the format described below (see [Additional settings of the FFMPEG device](#)).

- From the **Brand** drop-down list (2), select the FFMPEG value.
- From the **Model** drop-down list (3), select the **Windows capturer** model.
- From the **Firmware** drop-down list (4), select the **auto** firmware.
- Click the **Add** button (5). The device is added to the list.
- Set the checkbox next to the added device (6).
- Click the **Apply** button (7).
- Click the **Exit** button (8).

Additional settings of the FFMPEG device

You can manually set the address line by including the ffmpeg utility options to it in the **IP address** field on the settings panel of the **Video capture device** object. In this case, the address looks in the following way:

```
gdigrab:// "App_name"[:additionalOptions]
```

App_name is the name of the application that is displayed in the window title. The name can contain only the Latin characters and digits. If there are any other characters used in the window title, change it using the third-party utilities.

With additionalOptions, you can set a specific area and several other options.

The list of options supported by the ffmpeg library for the gdigrab mode:

- draw_mouse <int> draw the mouse cursor (from 0 to 1) (1 by default);
- show_region <int> draw borders across the capture line (from 0 to 1) (0 by default);
- framerate <video_rate> set the frame rate ("ntsc" by default);
- video_size <image_size> set the frame size;
- offset_x <int> indent along the x axis of the capture area (from INT_MIN to INT_MAX) (0 by default);
- offset_y <int> indent along the y axis of the capture area (from INT_MIN to INT_MAX) (0 by default).

Example of the **IP address** field value with the "additionalOptions" property:

```
gdigrab://"Calculator":-draw_mouse 1 -show_region 1 -framerate 25 -video_size 640x480 -offset_x 10 -offset_y 10
```

Connecting devices via the ONVIF protocol

On the page:

- [Creating devices using the ONVIF protocol](#)
- [Advanced settings for ONVIF device](#)
- [Working with ONVIF devices](#)

Axxon PSIM allows you to connect devices via the **ONVIF** protocol and fully supports S, G, T profiles. An ONVIF profile is a certified set of device functions.



You can check IP devices for compatibility with **ONVIF** on the [Conformant products](#) page on the official [ONVIF](#) website.
For more information about ONVIF profiles, see [Main ONVIF profiles](#).

There are two drivers available in the product:

- **ONVIF** (single-stream) that works with the axxon0 profile,
- **ONVIF 2.X** (double-stream) with models according to the number of device channels that works with axxon0F (first stream) and axxon0S (second stream) profiles.

Creating devices using the ONVIF protocol

To add an ONVIF device to *Axxon PSIM*, do the following:

1. Start [Camera discovery tool](#).

2. In the **Brand** list (2), select **ONVIF** or **ONVIF 2.X**.
 3. In the **Model** list (3), select the number of device channels.
 4. In the **Firmware** list (4), select **auto**.
As a result, the discovered devices are displayed in the **Brand** list (2). If the required device isn't displayed, proceed to the next step. If the device is displayed, proceed to step 6.
 5. Add the device manually:
 - a. In the **IP address** field (12), enter the IP address of the device.
 - b. In the **Port** field (13), enter the TCP/IP port number.
 - c. In the **Brand** list (14), select **ONVIF** or **ONVIF 2.X**.
- Note**

To use multistreaming via the **ONVIF** protocol, select the **ONVIF 2.X** brand and the **1-channel-multistream** model. You can configure the streams of the connected ONVIF device in the standard way (see [Configuring the multistream video](#)).
- d. In the **Model** list (15), select the number of device channels.
 - e. In the **Firmware** list (16), select **auto**.
 - f. Click the **Add** button (17).
As a result, the ONVIF device with the specified parameters is displayed at the top of the **Camera discovery tool** window.
 6. In the **Settings** list (5), select:
 - a. **Video server settings**, if you want to send the settings specified in *Axxon PSIM* to the device when you add it.
 - b. **Device settings**, if you want to use the device settings.
 7. Enter login (6) and password (7) to connect the ONVIF device. The login and password are specified in the documentation for the network device that you connect.
 8. Check if the TCP/IP port (8) is correct. If necessary, enter the required value in the field.
 9. Select the objects that you want to create on the basis of the ONVIF device by setting the corresponding checkboxes (9).

Note

For more information, see [Camera discovery tool](#).

10. Click the **Apply** button (10) for one device or the **Apply** button (11) if several devices are selected. The selected objects are automatically created in the object tree on the **Hardware** tab.
11. Click the **Exit** button (18) to close the **Camera discovery tool** window.

Creation of the ONVIF device is complete.

Advanced settings for ONVIF device

- The **IP address rewriting** and **RTSP port rewriting** parameters enable/disable the ability to connect to cameras behind NAT (Network Address Translation) via **ONVIF**.
- To configure the RTSP port, the **0** value is set by default. In this case, the RTSP port number is read in the request from the camera that is sent during device initialization via the HTTP port that is specified in the **Port** field.

Working with ONVIF devices

- When you work with the archive on multi-channel devices, you can work with only one channel in the archive mode at a time.
- The signal loss timeout allows you to set the time interval after which the software displays the signal loss notification.
- In some cases (for example, if there is no video from the device), when you connect cameras via the **ONVIF** protocol, it is necessary to synchronize the time and time zone between the server and the device in the web interface of the latter.
- ONVIF devices operate:
 - with preset camera profiles, if you enable the compatibility mode (in *Axxon PSIM*, you can set it using the registry key; see below),
 - with profiles that are created when you connect to the camera and used when you work in the software.

Note

If the IP device doesn't fully support the **ONVIF** protocol, we recommend setting the **1** value to the **OnvifCompatibilityMode** registry key of the HKEY_LOCAL_MACHINE\SOFTWARE\AxxonSoft\AxxonPSIM\Video registry—see [Registry keys reference guide](#). For more information on working with the registry, see [Working with Windows OS registry](#).

Using universal General Device and generic drivers

Universal drivers allow the AxxonSoft software to operate practically with all devices of the corresponding vendor.

There are two types of universal drivers:

1. **General device.** The majority of device settings connected via the General Device driver are performed via the device web interface. For the detailed list of supported functions, refer to the [Documentation Drivers Pack](#) page
2. **generic.** When you connect to the device operating via the generic driver, the configuration of the device is read and transferred to *Axxon PSIM*. Further, you can configure this device from *Axxon PSIM*.

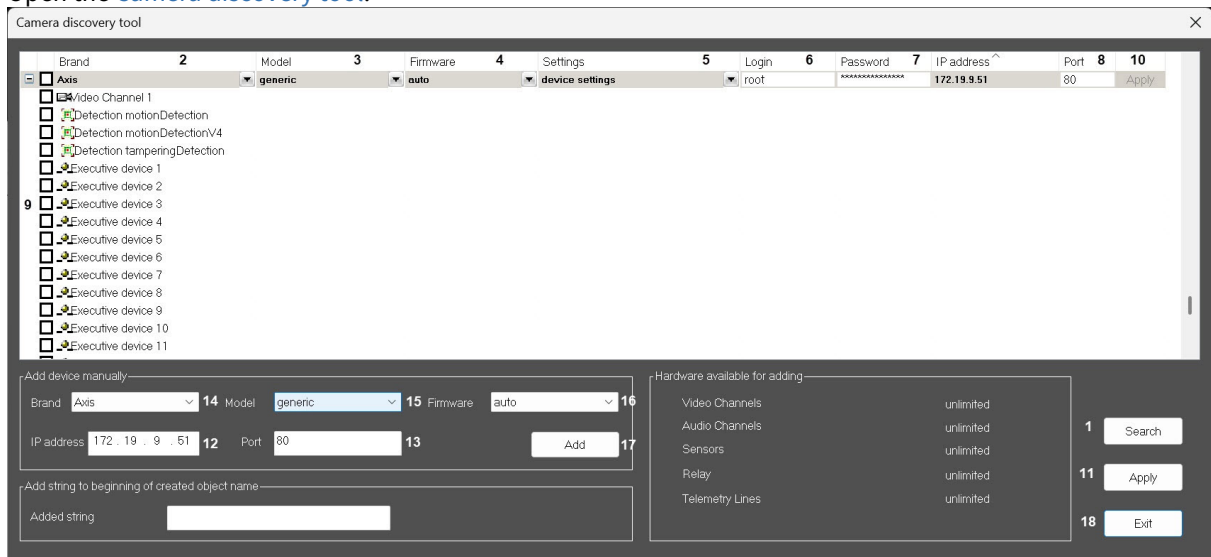
Connection via the universal drivers is available for the following devices:

	Axis	Bosch	Panasonic	Samsung	Sony	ONVIF
General Device	+	+	+	+	+	-

generic	+	+	-	-	-	+
---------	---	---	---	---	---	---

To add the General Device and generic devices in *Axxon PSIM*, do the following:

1. Open the [Camera discovery tool](#).



2. The found devices are displayed in the list. If the required device isn't displayed in the list, click the **Search** (1) button and wait until the research is complete. Check the correctness of brand detection (2) and make sure that **General Device** or **generic** is specified in the **Model** list (3) and **auto** in the **Firmware** list (4). Check the correctness of the channel number detection for the Axis and Bosch devices.



Note

Axis devices have the following restriction: if the login and password for device access aren't default, you cannot detect the number of channels for the device. Therefore, all non-integrated devices whose login and password aren't default are detected during the search as one-channel General Device.

3. From the **Settings** drop-down list (5), select **videosever settings** if you want to transfer the settings specified in *Axxon PSIM* to the camera when you add it, or select **device settings** if you want to use the device settings.
Note that the majority of settings are performed via the device web interface.
4. Enter the login (6) and password (7) to connect the IP device. The login and password are specified in the documentation for the connected network device.
5. Check if the TCP/IP port is correct (8). Enter the required value in the field if necessary.
6. Select the objects that must be created on the basis of the IP device by setting the corresponding checkboxes (9, see the [Camera discovery tool](#)).
7. Click the **Apply** button (10) for one device or (11) if you select several devices.
The selected objects are automatically created in the object tree of the **Hardware** tab.
8. If the IP device isn't found, add it manually.
 - a. In the **IP address** field (12), enter the device IP address.
 - b. In the **Port** field (13), enter the TCP/IP port number.
 - c. From the **Brand** list (14), select the required brand.
 - d. From the **Model** field (15), select **General Device** or **generic**. For the Axis and Bosch devices, select the number of device channels.

- e. From the **Firmware** drop-down list (16), select **auto**.
- f. Click the **Add** button (17).

As a result, the IP device with the specified parameters is displayed at the top of the window.

9. To complete the creation of IP devices, do steps 2-6 as described above.
10. Click the **Exit** button (18) to close the **Camera discovery tool** window.

Creating the General Device is complete.

3.2.7 Features of IP device configuration

Features of Beward IP cameras configuration

By default, port 80 is set for connecting to IP devices on the settings panel of the **Video Capture Device** object. Enter the **5000** value in the **Port** field to connect to IP device of Beward B-9xx series and B-10xx series (B-975W, B-970, B-915, B2.920, B-1070, B-1014 models and others).

Features of Panasonic IP devices (i-Pro series) configuration

When Panasonic IP-device (i-Pro series) is configured to compress in MPEG4 format, the **Speed** slider controls videodata bitrate on the settings panel of the **Video Capture Device** object. When this parameter is changed, both the speed of video stream and image quality are changed.

Note

WV-NP1000\1004, WV-F284, WV-NP240\244, WV-NS202 models and others are IP-devices (i-Pro series).

Video from Panasonic IP device (i-Pro series) is displayed in the **Monitor** interface window with delay from 15 sec to 1 min, depending on the model of the camera.

Features of TrendNet IP device configuration

TrendNet IP device is restarted when one of the following settings is changed on the settings panel of the **Video Capture Device** object and/or **Camera** object:

1. **Speed** parameter(**Video Capture Device**);
2. **Quality** parameter (**Camera**);
3. **Resolution** parameter (**Camera**).

When the changes are saved, video disappears for about 1 min (time depends on the model of the camera) and then it is restored with new parameters.

Note

TrendNet TV-IP312W, TV-IP212W, TV-IP110 and TV-IP410 IP devices are restarted.

Features of Pelco Spectra IV IP device configuration

If Pelco Spectra IV IP device is configured to compress in MPEG4 format, then the **Resolution** dropdown list on the settings panel of the **Camera** object is used for simultaneous configuration of three video signal parameters:

1. **Resolution**;
2. **Speed**;

3. Compression quality.

At the same time, the **Speed** (**Video Capture Device** object) and **Quality** (**Camera** object) parameters do not interfere with the corresponding parameters of a video signal.

To set maximum quality, resolution and speed, select the **Full** or **High** value in the **Resolution** dropdown list on the settings panel of the **Camera** object. The **Standard** value is to be selected to set the lowered compression quality of resolution and speed of video signal.

Features of AEBELL IP device configuration

By default, port 80 is set for connecting to IP devices on the settings panel of the **Video Capture Device** object. Specify the **36688** value in the **Port** field to connect to AEBELL BL-E704F IP server.

Features of Dynacolor IP device configuration

Dynacolor DynaHawk ZH-801+ IP device is restarted when one of the following settings is changed on the settings panel of the **Video Capture Device** object and/or **Camera** object:

1. The **Type** parameter (**Video capture device**) – selection of Dynacolor (mjpeg) or Dynacolor (mpeg-4) video stream compression format;
2. The **Speed** parameter (**Video capture device**);
3. The **Quality** parameter (**Camera**);
4. The **Resolution** parameter (**Camera**);

When the changes are saved, video disappears for about 1 min and then it is restored with new parameters.

There can also be no video for about one minute when Axxon PSIM is started.

Features of Stream Labs IP device configuration

On the page:

- [Features of Wave Cam M5 camera](#)
- [Features of Wave Server Enterprise hardware internetwork](#)
- [Features of Wave Server WH1501 video server](#)



Note

Detailed description of the given devices can be found at <https://www.stream-labs.com/products/>

Features of Wave Cam M5 camera

1. Automatic brightness control. In this mode Axxon PSIM automatically uses internal algorithm of image's brightness control. This mode is enabled when the **Brightness** slider is set to a minimum position. When there are no special requirements to the image, then this mode of brightness control is recommended.

 Note

Brightness can be controlled manually, moving the **Brightness** slider.

2. Video stream frame rate. Wave Cam M5 camera supports two channels of video displaying. When only one video channel is engaged in Axxon PSIM, the video stream frame rate is 25 fps. When both channels are engaged, frame rate of video stream for each channel is 12fps.
3. Telemetry. Wave Cam M5 camera is not a PTZ device. One can control some area of an image with the help of video surveillance monitor. While configuring the Telemetry on a Wave Cam M5 camera, do the following:
 - a. Select the protocol of data exchange with a camera - IP-Camera (on the settings panel of the **Telemetry control** object).
 - b. Apply PTZ device to the first video input channel (is set in the **Channel number** list on the settings panel of the **Camera** object).
 - c. Apply telemetry control panel to the first video input channel (is set in the **Channel number** list on the settings panel of the **Camera** object).

 Note

The image will move through the second video input channel.

Features of Wave Server Enterprise hardware internetwork

1. Video stream frame rate. When only one camera is connected to Wave Server Enterprise hardware internetwork, the video stream frame rate is 25 fps. When two or more cameras are connected, total frame rate of processed video is 16 fps.

 Note

If two video input channels are used, then frame rate of processed video is $16/2=8$ fps. If there are four video input channels, then $16/4=4$ fps

2. Telemetry. Telemetry is performed on an individual card with its own network interface. To configure it, do the following:
 - a. Select the protocol of data exchange with camera with the help of which an analog camera connected to the video server is controlled on the settings panel of the **Telemetry control** object (for example, Pelco-D, Pelco-P, Panasonic-850).
 - b. Create two **Video Capture Device** objects.

 Note

For every analog camera connected to Wave Server Enterprise, two **Camera** objects are to be created under different **Video Capture Device** objects for video viewing and telemetry configuration correspondingly.

Features of Wave Server WH1501 video server

Telemetry. When telemetry for Wave Server WH1501 video server is configured, it is necessary to select protocol with the help of which the analog camera connected to the video server is controlled, on the settings panel of the **Telemetry control** object (for example, Pelco-D, Pelco-P, Panasonic-850).

Features of Cisco IP device configuration

Cisco 4500 IP-device supports the following formats of video signal compression:

1. H.264;
2. MJPEG.

While setting the resolution the H.264 format has a higher priority than MJPEG: a possibility to set the resolution for MJPEG exceeding the given for H.264, is not provided.

Priority difference leads to the following effects:

1. After changing the video capture card of the **Cisco(h264)** type for **Cisco(mjpeg)** with standard video resolution, MJPEG video resolution can not be increased;
2. When the video capture card of the **Cisco(mjpeg)** type is changed for **Cisco(h264)** with full video resolution, the resolution will be changed from 704*576 to 1280*720. Resolution 720*576 will be set after return to the **Cisco(mjpeg)** type.

Note

The type of a video capture card is selected in the **Type** dropdown list on the settings panel of the **Video Capture Device** object. Video resolution is set with the use of the same parameter on the settings panel of the **Camera** child object.

Features of Mobotix IP device configuration

Features of audio subsystem configuration

Mobotix IP camera supports the following formats of video compression in Axxon PSIM:

1. MJPEG;
2. MxPEG.

Audio subsystem of Mobotix IP devices may be used when video is encoded in MxPEG. To choose this format, select the **MxPEG** codec in video stream settings on the settings panel of the **Camera** object (see [Configuring the multistream video](#)).

By default, video is received in MJPEG format and audio subsystem functionality of IP device is not performed.

Mobotix IP cameras that support sound are Q24M, D12, M22 and others. Detailed description of the supported models and features of their configuration can be found in [Documentation Drivers Pack](#).

Note.

If MxPEG codec and MxPEG decompressor are in use, then video can be not displayed in *Axxon PSIM*. In this case the value of the MxpegResetCounter registry key should be lowered MxpegResetCounter, specified by default – see [Registry keys reference guide](#).

Features of IO configuration

Due to the peculiarities of the Mobotix M16A / M16B / S16D / S16B camera software, when using the Mobotix MX-232-IO-BOX module, *Axxon PSIM* can track the state of only one of the two sensors. For example, if you first close the first sensor, and then close the second sensor, *Axxon PSIM* will display the state of only the first sensor, and the second one will be ignored.

Up to 5 Mobotix MX-232-IO-BOX modules can be connected to Mobotix M16A / M16B / S16D / S16B IP cameras. When several modules are connected, the numbering of sensors and relays in the *Axxon PSIM* is continuous: sensor/relay

number 1 and 2 should be set for the first module, 3 and 4 for the second etc. The sensor numbers must match the relay numbers.

In case of problems with receiving/sending an event from sensor/relay of the Mobotix MX-232-IO-BOX module, it is recommended to restore the default settings in the web interface of the IP camera.

Characteristics of joint operation of Jassun and Bosch cameras

Some errors can appear while the Bosch camera working if the ActiveX add-on is installed for the Jassun camera.

Note.

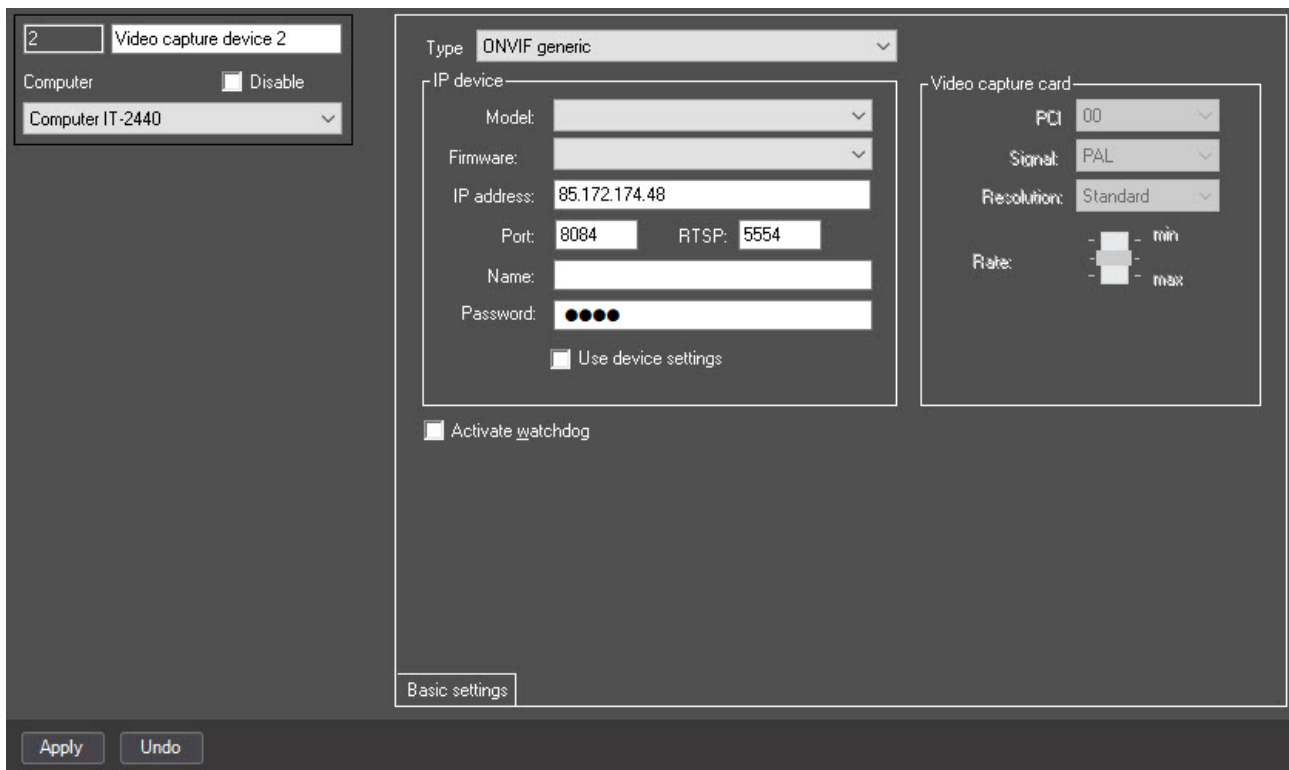
This add-on is provided to the installation while entering the camera web-interface.

Features of configuring ONVIF or Hikvision IP devices behind NAT

Some devices, including those that are connected via the ONVIF protocol and the Hikvision IP device, connect to *Axxon PSIM* via the HTTP protocol and use this protocol to transmit settings, PTZ control, and so on, but at the same time they transmit video, sound, and metadata via the RTSP protocol. In this case, by default, the RTSP port from which the device transmits certain data is reported by the IP device itself in response to the HTTP request from *Axxon PSIM*. For information about the necessity of using the RTSP port, refer to the documentation of the IP device vendor.

However, if the IP device is behind NAT, the RTSP port returned by the device may not be correct.

In this case, after you create and configure the **Video capture device** object (see [Configuring video acquisition from IP devices](#) or [Connecting devices via the ONVIF protocol](#)), you must specify the RTSP port from which *Axxon PSIM* must request data in the **RTSP** field on the settings panel of the created object:



The screenshot shows the configuration window for a video capture device. On the left, a sidebar lists the device as 'Video capture device 2' with a 'Computer' dropdown set to 'Computer IT-2440' and a 'Disable' checkbox. The main panel is titled 'Basic settings' and contains the following sections:

- Type:** A dropdown menu set to 'ONVIF generic'.
- IP device:** A section with fields for 'Model', 'Firmware', 'IP address' (85.172.174.48), 'Port' (8084), 'RTSP' (5554), 'Name', and 'Password' (masked with dots). There is a 'Use device settings' checkbox below these fields.
- Video capture card:** A section with fields for 'PCI' (00), 'Signal' (PAL), 'Resolution' (Standard), and 'Rate' (a slider between min and max).
- Activate watchdog:** A checkbox that is currently unchecked.

At the bottom of the window are 'Apply' and 'Undo' buttons.

Example

For example, the ONVIF device is on the local network and has the 192.168.1.53 IP address, the 80 HTTP port, and the 554 RTSP port.

At the same time, the device is brought to the global network through NAT, and *Axxon PSIM* connects to the device using the 85.172.174.48 IP address, 8084 HTTP port, and 5554 RTSP port.

Configuring and adding the Alpha OTM device in Axxon PSIM

If Alpha OTM is behind NAT, that is, in the external network after *Axxon PSIM* installation, then to add a device, you must enter the IP address for receiving events from the embedded detector.

You can enter the address for receiving events in the driver repository:

1. Open the C:\Program Files (x86)\Common Files\AxxonSoft\Ipint.DriverPack\3.0.0\Ipint.AlphaOTM.rep file using the Notepad utility.
2. Find the "<property id='staticAcceptorAddress' xsi:type='PropertyStringType' value='___' />" line and enter the IP address of the XXX.XXX.XXX.XXX format in the **value** parameter. For example, 10.11.12.13.

```

*Ipint.AlphaOTM - Notepad
File Edit Format View Help
<?xml version="1.0" encoding="utf-8"?>
<repository xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:at="http://www.axxonsoft.com/3.0.0/types"
xmlns="http://www.axxonsoft.com/3.0.0/types" xsi:schemaLocation="http://www.axxonsoft.com/3.0.0/types ..\..\DeviceInfo\DeviceInfo.xsd"
type="at:ipint30" version="3" minor="0">
  <driver name="AlphaOTM" version="3.0.0">
    <!-- Video codec section. -->
    <videoCodec id="H264_empty" name="H264"/>
    <!-- Video source section. -->
    <videoSource id="video_source_default"/>
    <!-- Video streaming section. -->
    <videoStreaming id="video_streaming_Alpha_OTM">
      <videoCodecRef id="H264_empty" default="true"/>
      <fps default="true">25</fps>
      <resolution name="auto" width="1920" height="1200" default="true">auto</resolution>
    </videoStreaming>
    <detector id="counter_detection" name="Video Analytics">
      <property id="detectorsGroup" xsi:type="PropertyStringType" value="Counter"/>
      <property id="staticAcceptorAddress" xsi:type="PropertyStringType" value="10.11.12.13"/>
      <property id="acceptorAddress" xsi:type="PropertyEditableStringType"/>
      <event id="lotsObjects" name="Object Counting" xsi:type="DetectorOnePhaseEventType"/>
    </detector>
  </driver>
</repository>
Ln 16, Col 92 100% Windows (CRLF) UTF-8

```

You can find out the external IP address for receiving events by checking, for example, on 2ip.io.

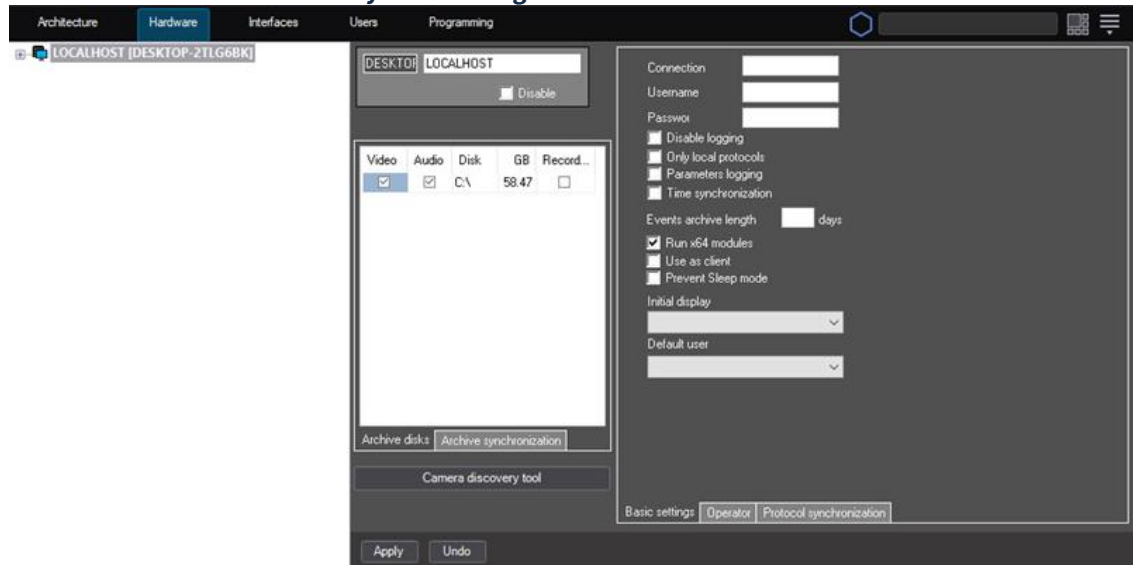
The hardware automatically assigns the IP address for receiving events to the cameras located within one subnetwork when adding to the system. In this case, manual configuration of the IP address isn't required.

Adding the Alpha OTM device in Axxon PSIM

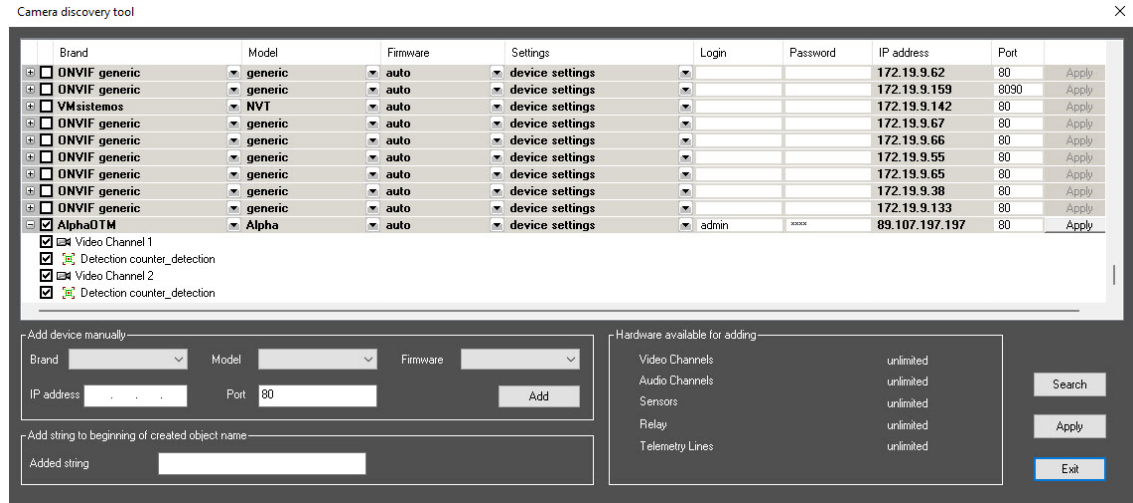
To add the Alpha OTM device in *Axxon PSIM*, do the following:

1. Open the camera discovery tool:

- a. Go to the **Hardware** tab of the **System settings** window.



- b. Select the **Computer** object in the objects tree corresponding to the configured server.
 - c. Click the **Camera discovery tool** button on the settings panel of the selected object.
- As a result, the **Camera discovery tool** window is displayed on the screen.
2. To add a device automatically using the camera discovery tool, do the following:
 - a. Select the **AlphaOTM** device in the **Camera discovery tool** window by setting the checkbox next to the name of the device.
 - b. Enter login and password in the corresponding fields.
 - c. Click the **Apply** button for the selected device and for all selected devices.



3. To add a device manually using the camera discovery tool, do the following:

- a. From the **Brand** drop-down list, select **AlphaOTM** in the **Camera discovery tool** window.

Camera discovery tool

	Brand	Model	Firmware	Settings	Login	Password	IP address	Port	
☐	ONVIF generic	generic	auto	device settings			172.19.9.62	80	Apply
☐	ONVIF generic	generic	auto	device settings			172.19.9.159	8090	Apply
☐	VMsistemas	NVT	auto	device settings			172.19.9.142	80	Apply
☐	ONVIF generic	generic	auto	device settings			172.19.9.67	80	Apply
☐	ONVIF generic	generic	auto	device settings			172.19.9.66	80	Apply
☐	ONVIF generic	generic	auto	device settings			172.19.9.55	80	Apply
☐	ONVIF generic	generic	auto	device settings			172.19.9.65	80	Apply
☐	ONVIF generic	generic	auto	device settings			172.19.9.38	80	Apply
☐	ONVIF generic	generic	auto	device settings			172.19.9.133	80	Apply
☒	AlphaOTM	Alpha	auto	device settings	admin	XXXX	89.107.197.197	80	Apply

☒ Video Channel 1
☒ Detection counter_detection
☒ Video Channel 2
☒ Detection counter_detection

Add device manually:
 Brand: AlphaOTM Model: Alpha Firmware: auto
 IP address: 89.107.197.197 Port: 80 **Add**

Add string to beginning of created object name:
 Added string:

Hardware available for adding:
 Video Channels: unlimited
 Audio Channels: unlimited
 Sensors: unlimited
 Relay: unlimited
 Telemetry Lines: unlimited

Search
Apply
Exit

- From the **Model** drop-down list, select **Alpha**.
 - From the **Firmware** drop-down list, select **auto**.
 - Enter the IP address.
 - Enter the port number.
The default port number is **80**.
 - Click the **Add** button.
As a result, the name of the device is displayed at the end of the list.
 - Set the checkbox next to the name of the device.
 - Enter login and password in the corresponding fields.
 - Click the **Apply** button for the selected device and for all selected devices.
4. Click the **Exit** button to close the window.

Adding the Alpha OTM device in Axxon PSIM is complete.

3.2.8 Changing the transport protocol used by IP-device

Axxon PSIM provides an opportunity to change the transport protocol used by the IP-device. The following types of protocols can be used:

1. TCP-based protocols.

This protocol is reliable; safety and reliability of data delivery is provided when used at the network layer of the operating system. On the other hand, this is its fault: the packet loss will cause re-sending the data. This requires substantial additional resources and time in order to determine the loss and send the data again.

Recommended for use:

- In busy networks where serious packet loss are possible (caused by the equipment, communication media, etc.).
- When the integrity of the picture is more important than speed of response (for example, when recording to the archive).

Not recommended for use:

- In the high-bit-rate stream (high fps and resolution, low compression).
- For situations where a delay between the true and the observed picture is more important than the loss of a picture (for example, live video).

Some cameras (for example, ArecontVision) have serious FPS limitations when TCP protocol is in use.

2. UDP-based protocols.

These protocols are unreliable, i.e. transport layer does not provide data delivery for them. On the other hand, this protocol provides a fast data transmission and low delay. Also, in case of low losses and high fps

the picture is smoother.

Moreover, some UDP protocols, particularly RTP, have packet losses processed at the application layer (i.e., means of application, rather than the OS). This allows using algorithms of adjustment stream width and packet loss processing that are fitted for multimedia transmission. So sometimes these protocols better solve the problem of bad data transmission in networks.

Recommended for use:

- a. In networks with low packet loss (in-door, office network).
- b. For situations where a delay between the true and the observed picture is more important than the loss of a picture (for example, live video).
- c. In the high-bit-rate stream (high fps and resolution, low compression).

Not recommended for use:

- a. In busy networks where serious packet loss are possible (because of the equipment, communication media, etc.).
- b. When the integrity of the picture is more important than speed of response (for example, when recording to the archive).

In order to change the transport protocols for IP device, add the following key to the registry:

1. Path: HKEY_LOCAL_MACHINE \SOFTWARE\AxxonSoft\PSIM\Video\TransportProtocols (for 64-bit system the path is HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\AxxonSoft\PSIM\Video\TransportProtocols). If the path does not exist, then create the corresponding section.
2. Key name: <Driver name>. The driver name, not the name of the IP-device vendor, is used as name of the key. Name of the driver is included in the name of the corresponding ipd-file which is located in the installation directory of Drivers Pack (for example, the file C:\Program Files\Common Files\AxxonSoft\Ipint.DriverPack\3.0.0\Ipint.Axis.ipd for Axis devices). In most cases, the driver name matches the name of the IP-device vendor. To clarify the driver name for the desired vendor contact AxxonSoft technical support.

Note

If IP-device is connected via RTSP, use the name of the key "RTSP" without quotes, the value is case-sensitive.

3. Value: <protocol>. For example, "http" (TCP-based) or "tftp" (UDP-based) for ArecontVision, "tcp" or "udp" for Axis. The key value is case-sensitive.

Note

For some Axis devices, it is possible to enable multicast in the device. The IP-device will be the source of broadcasting. Set the multicast value to the Axis parameter to enable broadcasting. On the moment of document writing this feature is supported by the following models of Axis cameras: 243SA, 243Q, 241Q, 232D+, 225FD, 221, 216FD and 211A.

4. Key type: string value.

3.2.9 Digest authentication when accessing IP device

Axxon PSIM supports safe digest authentication (Digest HTTP authentication) when accessing IP device. To perform this type of authentication, it is to be supported by the IP device.

Note.

Information whether the IP device supports digest authentication can be found at the vendor's website.

For Axxon PSIM to use the IP device via digest authentication only, one is to add “.” as the last character when adding the IP device manually (by creating the **Camera** object) or using the IP Wizard.

For instance, if the camera access password is *root* and the camera supports digest authentication, then root:password is to be specified.

3.2.10 Configuring getting video from web cameras via HTTP protocol

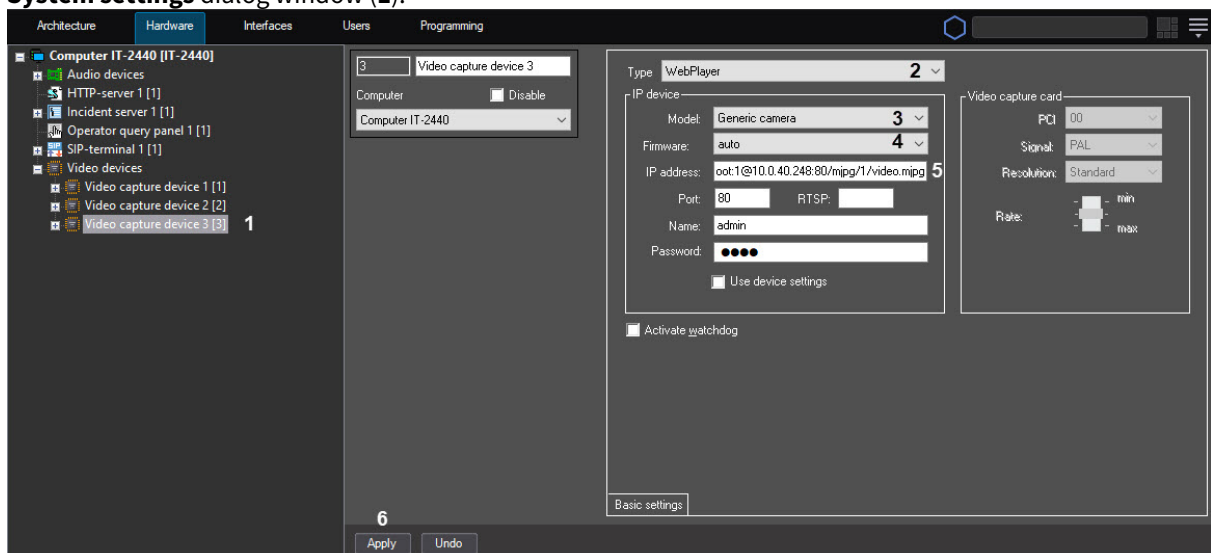
In *Axxon PSIM*, you can get a video via HTTP protocol from specific web cameras, allowing you to view a video in a web browser through the known HTTP address. You can get a video from both a single-thread and multi-thread camera (up to four threads)—both methods are described below. MJPEG and MPEG2 codecs are supported.

Note

To check the ability of getting a video from these cameras in *Axxon PSIM*, you can use VLC Media Player. If you can get a video in VLC, it is also available in *Axxon PSIM*.

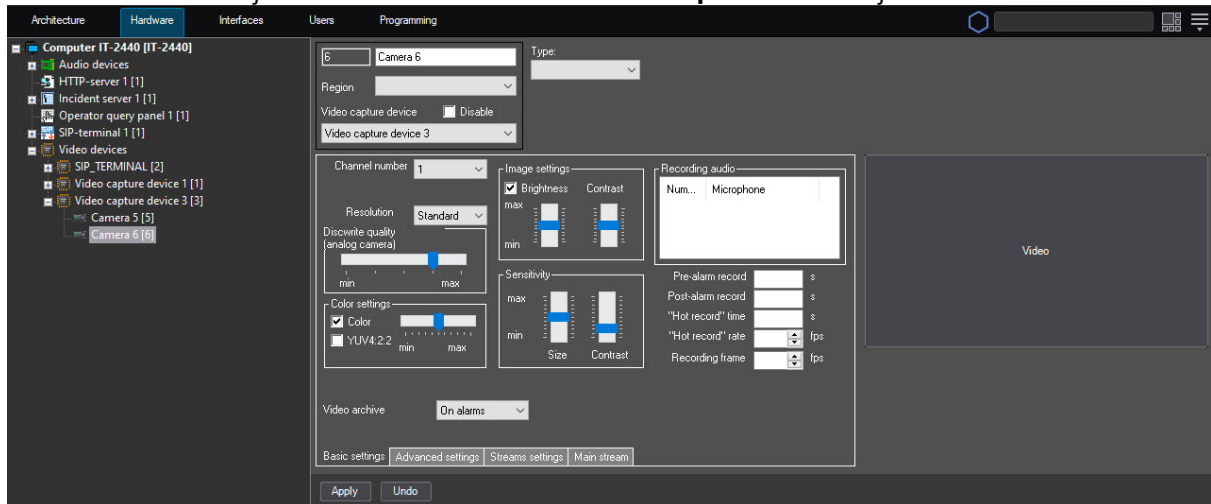
To add the device that transmits a video via the HTTP protocol, do the following:

1. Create the **Video capture device** object on the basis of the **Computer** object on the **Hardware** tab of the **System settings** dialog window (1).



2. From the **Type** drop-down list (2), select **WebPlayer**.
3. From the **Model** drop-down list (3), select **Generic camera**.
4. From the **Firmware** drop-down list (4), select **auto**.
5. In the **IP address** field (5), specify the address to get a video from a web camera. Any format of IP address is possible. Don't use the URL through which video viewing in the browser is available as the address; use the address of the video stream that is displayed on such page. Sometimes you can find it in the source code of the page.
Examples of addresses:
http://81.25.231.7:28080/stream/live
http://root:1@10.0.40.248:80/mjpg/1/video.mjpg—the address to get a video from the Axis camera that supports video transmitting in the corresponding format.
6. Click the **Apply** button (6).

7. Create the **Camera** object on the basis of the created **Video capture device** object.

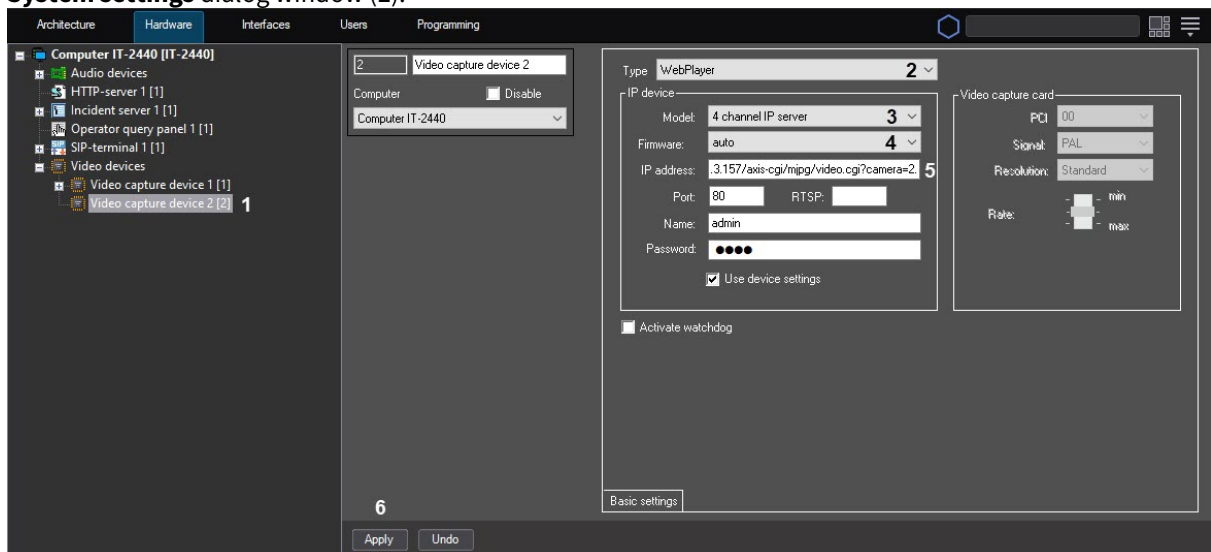


8. Click the **Apply** button.

Adding the device that transmits a video via the HTTP protocol is complete.

To add a device with multiple channels, do the following:

1. Create the **Video capture device** object on the basis of the **Computer** object on the **Hardware** tab of the **System settings** dialog window (1).



2. From the **Type** drop-down list (2), select **WebPlayer**.
3. From the **Model** drop-down list (3), select **4 channel IP server**.
4. From the **Firmware** drop-down list (4), select **auto**.
5. In the **IP address** field (5), specify the address to get a video from a multichannel camera. Note the following:
 - a. You must list addresses using the “|” character for different channels;
 - b. There can be four channels maximum;
 - c. You can list addresses of different threads for one channel using a semicolon;
 - d. Don't use the URL through which video viewing in the browser is available as the address; use the address of video streams that are displayed on such page.

Note

Example of an IP address for the Axis 2400 camera with two channels:

`http://192.168.3.157/axis-cgi/mjpg/video.cgi?camera=1|http://192.168.3.157/axis-cgi/mjpg/video.cgi?camera=2`

Here, the URL format is used—`http://<ip>/axis-cgi/mjpg/video.cgi?camera=<channel>`, where `<channel>` is the number of a channel starting from 1.

6. Click the **Apply** button (6).
7. Create the **Camera** object on the basis of the created **Video capture device** object.
8. Click the **Apply** button.

Adding the multichannel device using the WebPlayer driver is complete.

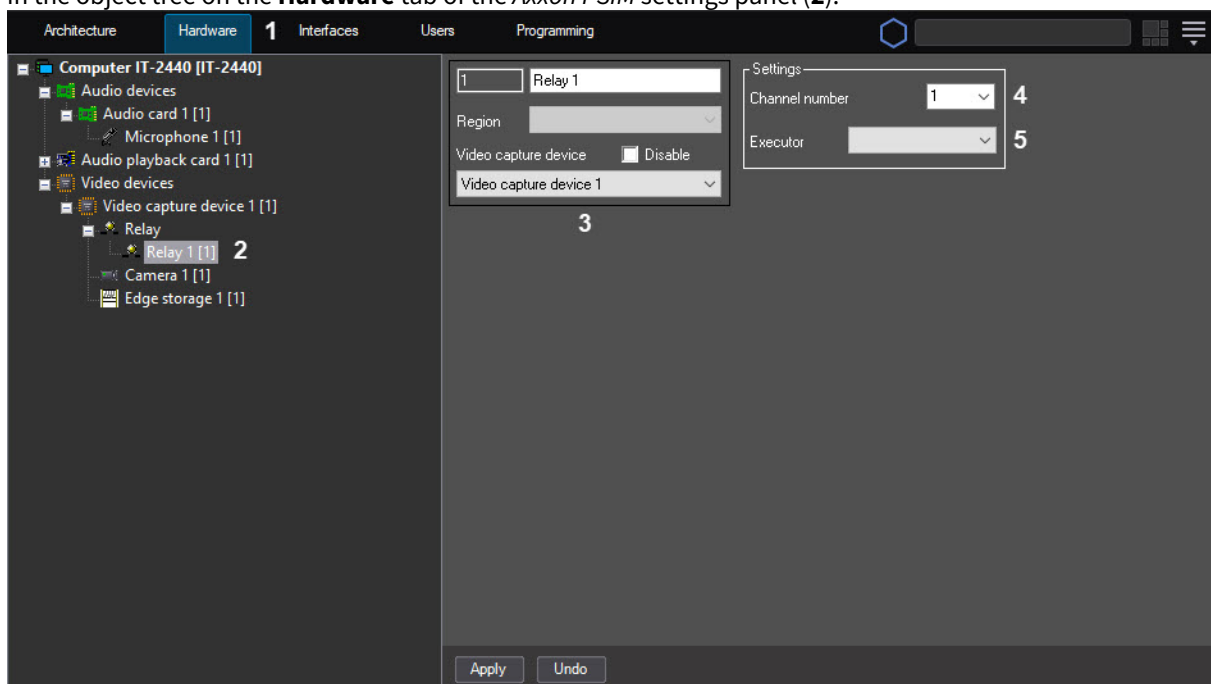
3.3 Configuring Sensor-Relay devices in Axxon PSIM software

3.3.1 Creating and configuring the Relay system object

You can create the **Relay** system object on the basis of the **Video capture device** object.

To create and configure the main parameters of the **Relay** object, do the following:

1. Go to the **Hardware** tab of the *Axxon PSIM* settings panel (1).
2. Create the **Relay** object on the basis of the **Video capture device** object or select the corresponding object in the object tree on the **Hardware** tab of the *Axxon PSIM* settings panel (2).



3. When you create the **Relay** object (3), you must specify the ID, the name of the object and select the **Video capture device** object based on which the **Relay** object is created.

Note

If you use the sensor-relay card, then in the **Relay** object settings, you must specify the video capture card on the ADC of which the sensor-relay card is installed.

4. Select the channel number in accordance with the number of the output connector to which the relay is connected physically (4).
5. In the **Executor** drop-down list, select the type of the executive device used as the relay on the protected facility (5).

The **Executor** parameter is used for selecting the icon that is displayed on the interactive map. This parameter is required for the better perception of information by the operator that is displayed on the map as object icons, as well as for the rapid operator reaction if such is required.

The types of executive devices available for the **Relay** system object are given in the table.

Executive device	Description
Light	The icon of the interactive map for the device responding to changes in the illumination on the protected facility
Signal	The icon of the interactive map for the device responding to the background sound changes on the protected facility
Lock	The icon of the interactive map for the device that responds to locking/unlocking a window, door, and so on

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

Creating and configuring the **Relay** object is complete.

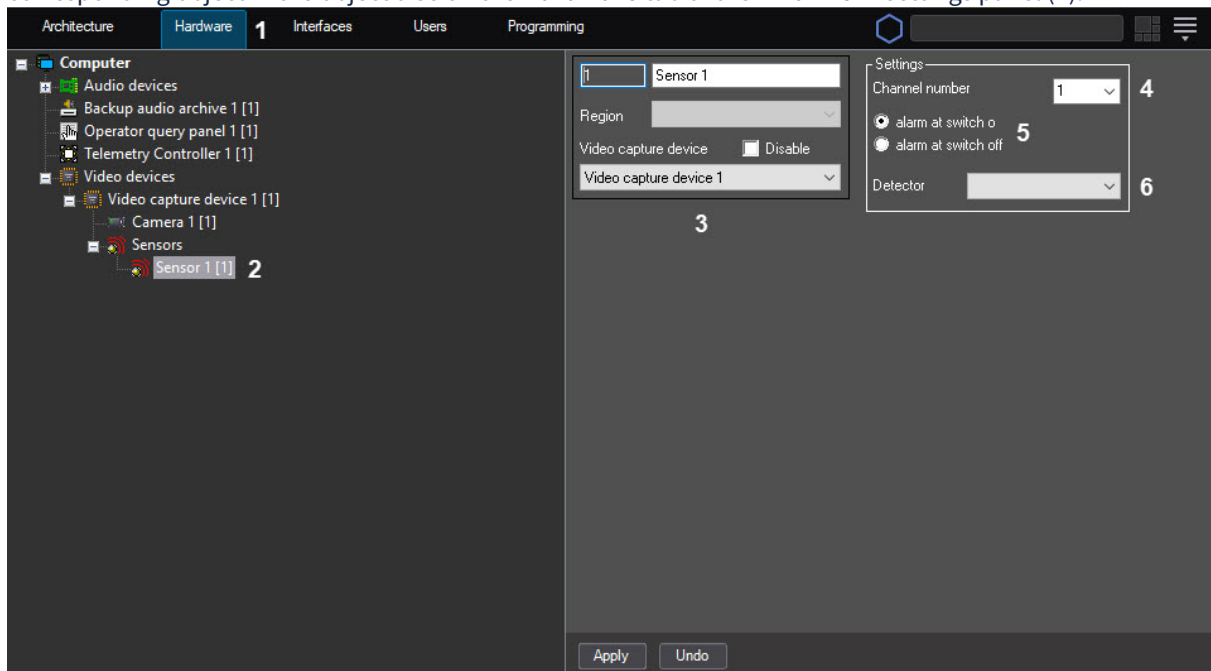
3.3.2 Creating and configuring the Sensor system object

You can create the **Sensor** system object on the basis of the **Video capture device** object.

To create and configure the main parameters of the **Sensor** object, do the following:

1. Go to the **Hardware** tab of the *Axxon PSIM* settings panel (1).

2. Create the **Sensor** system object on the basis of the **Video capture device** object or select the corresponding object in the object tree on the **Hardware** tab of the *Axxon PSIM* settings panel (2).



3. When you create the **Sensor** object (3), you must specify the ID, the name of the object and select the **Video capture device** object based on which the **Sensor** object is created.

Note

If you use the sensor-relay card, then in the **Sensor** object settings, you must specify the video capture card on the ADC of which the sensor-relay card is installed.

4. Select the channel number in accordance with the number of the output connector to which the sensor is connected physically (4).
5. In the group of switches, select the mode at which the sensor generates an event: at switch on or at switch off. By default, the **alarm at switch on** mode is selected (5).
The executive device corresponding to the **Sensor** system object operates in one of two modes: **alarm at switch on** or **alarm at switch off**.

Note

Sensors connected to Panasonic IP-devices of the i-Pro series generate an event only at the switch off event.

For example, when you select the **alarm at switch off** mode for the executive device of the **Sensor** type, the normal state of the sensor is switch on. When you switch it off, the sensor generates an event, and the actions set in *Axxon PSIM* are eventually performed.

6. In the **Detector** drop-down list, select the type of executive device that is used as a sensor on the protected facility (6).
The **Detector** parameter is used for selecting the icon that is displayed on the interactive map. This parameter is required for the better perception of information by the operator that is displayed on the **Map** as object icons, as well as for the rapid operator reaction if such is required.
7. Types of detectors available for the **Sensor** system object are given in the table.

Hardware	Description
Infrared	The icon of the interactive map for the motion detector
PIR	The icon of the interactive map for the device installed on the ceiling of the protected facility
Glass	The icon of the interactive map for the device installed on the window of the protected facility and responding when the window is broken
Fire	The icon of the interactive map for the device responding to the heat condition changes at the protected facility
Window	The icon of the interactive map for the device installed at a distance from a window and responding when the window is broken
Smoke	The icon of the interactive map for the device responding to the smoke appearance at the protected facility
Reed switch	The icon of the interactive map for the device that responds to locking/unlocking a window, door, and so on

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

After you create the sensor in the objects tree, it is in the "Armed" state. To change the sensor state, use a macro (see the [Creating and using macros](#) section) or control the sensor from the map (see the [Configuring the interactive map for object state indication and controlling the objects](#) and [Operations with sensors](#) sections). If you arm the sensor, the "Alarm" event appears when you switch on/switch off the sensor depending on the alarm mode setting—see step 5 above. If you disarm the sensor, the "Switch off"/"Switch on" events appear correspondingly.

Note

Axxon PSIM requests the sensor state three times per second. Short-term event generations that last for less than 1/3 of a second can be skipped.

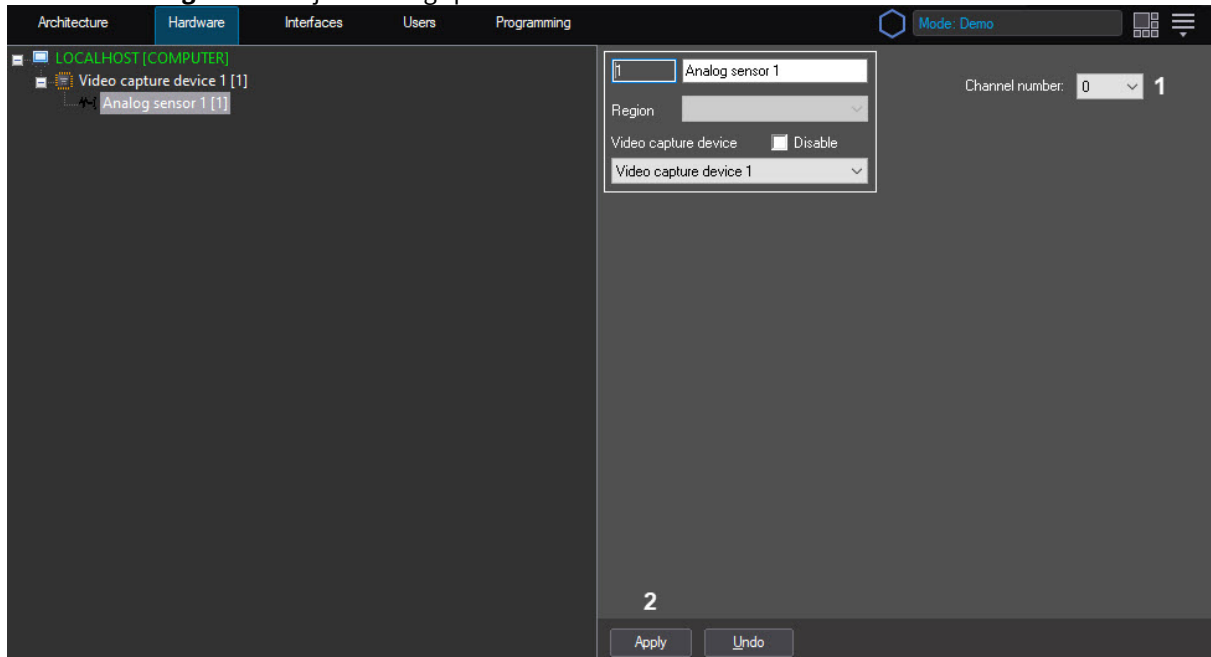
Creating and configuring the connection channel of the **Sensor** object is complete.

3.3.3 Creating and configuring connection with the Analog sensor (input)

An analog sensor is represented in Axxon PSIM as **Analog sensor** object created under the **Video Capture Device** object. On the settings panel of the **Video Capture Device** object, set the Type, Model and Firmware of the IP-device or Sensor/Relay card to which the analog sensor is connected and set the connection parameters. Use the [Camera discovery tool](#) to create the corresponding objects without any additional configuration if the analog input is connected to a device integrated via Drivers Pack (see [Documentation Drivers Pack](#)).

The analog sensor is configured as follows:

1. Go to the **Analog sensor** object settings panel.



2. In the **Channel number** drop-down list, select the channel number matching the number of output connector to which the sensor is connected (1).
3. Click **Apply** (2).

The analog sensor configuration is completed.

3.3.4 Configuring Sensor-Relay expansion cards

Configuring sensor connection using 16/4 sensor-relay card

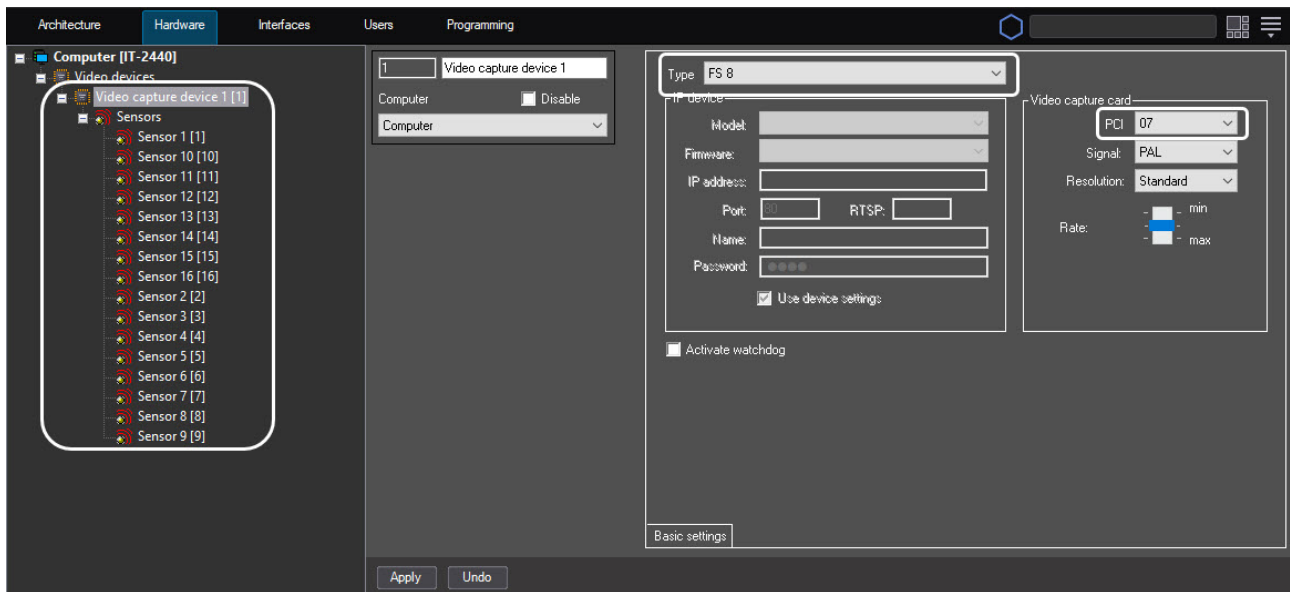
In *Axxon PSIM*, you can create up to 16 **Sensor** objects on the basis of the **Video capture device** object when the 16/4 sensor/relay card is installed.

All the **Sensor** objects corresponding to sensors connected to one 16/4 *sensor-relay* card (interface lines with the executive device) must be created in the **Hardware** object tree on the basis of the **Video capture device** object on the ADC cards of which the *sensor-relay* card is installed.

For the sensor to operate, you must create at least one **Camera** object based on the same **Video capture device** object.

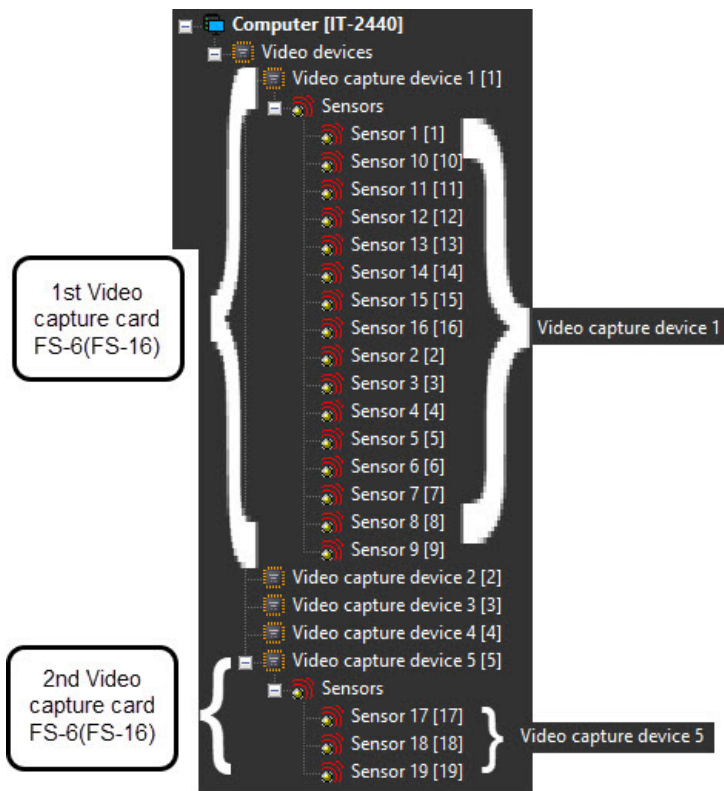
If you install the *sensor-relay* card on the FS-5, FS-6 or FS-16 video capture card, then you can create the **Sensor** objects based on any **Video capture device** object within the hardware card.

If you install the *sensor-relay* card on the FS-8 video capture card, then you must create the **Sensor** objects based on the **Video capture device** object with the 07 number of the PCI channel.



You can change the **Sensor** object's position in the *Axxon PSIM* object tree. To change the parent **Video capture device** objects for the **Sensor** objects, change the value of the **Video capture device** parameter on the settings panel of the **Sensor** object. The value of this parameter must correspond to the number of the **Video capture device** object in the object tree based on which you must place the **Sensor** object. If you change the **Video capture device** parameter on the settings panel of the **Sensor** object, the object is moved to the branch of child objects of the **Video capture device** object different from the initial one.

The figure shows an example of placing the **Sensor** objects in the object tree when two FS-6 (or FS-16) video capture cards are used with 16 relays connected to the 16/4 *sensor-relay* card installed on the first video capture card and two sensors connected to the second one.

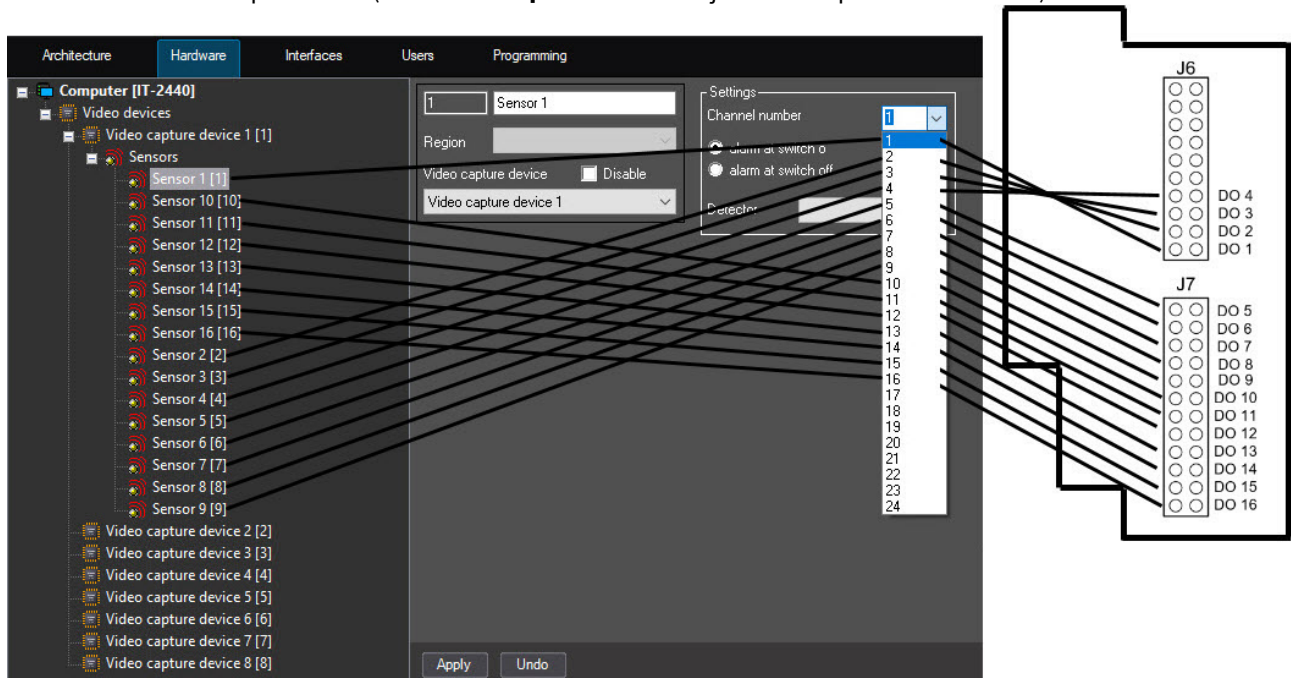


When you configure the **Sensor** objects in *Axxon PSIM*, you must assign the channel numbers of sensor connections (interface lines with the executive device) to the *sensor-relay* card in accordance with the numeration of inputs of the DI sensor/relay connection connector on the card.

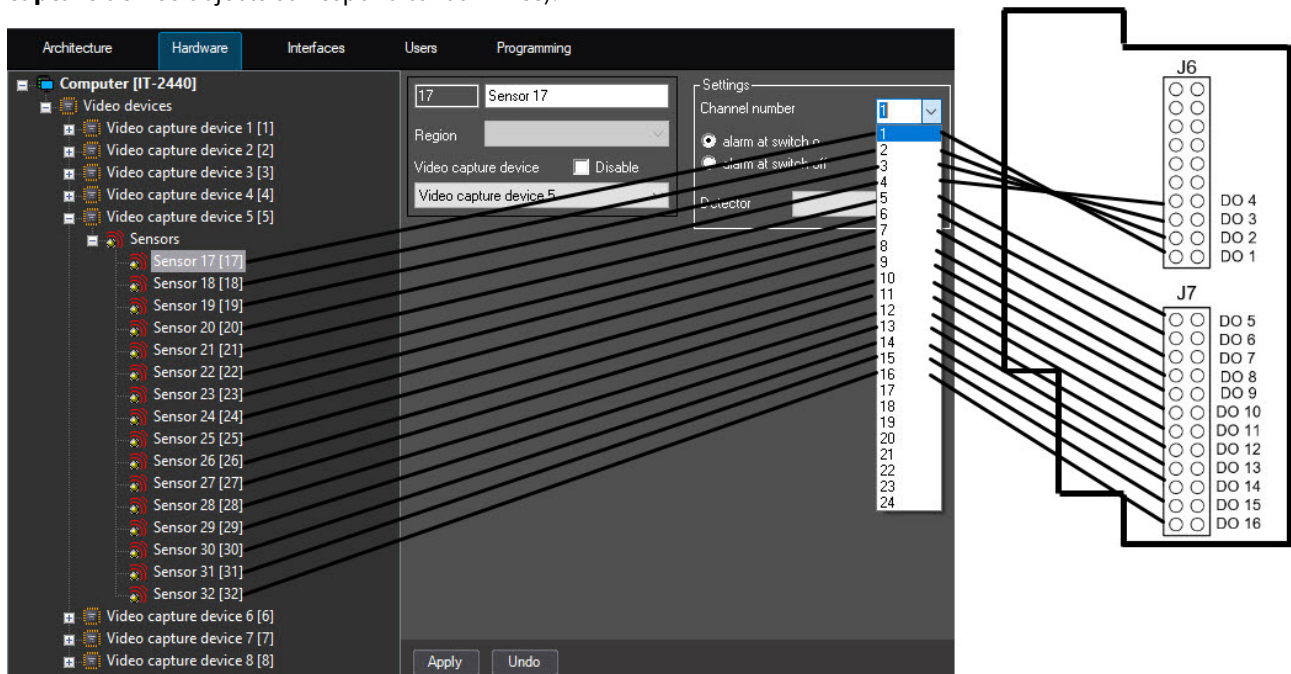
To change the channel numeration, use the **Channel number** list on the settings panel of the **Sensor** object.

When you use the 16/4 *sensor-relay* cards, up to 16 relay connection channels are available according to the configuration of the license key file.

The figure shows an example of allocating the channel numeration on the 16/4 *sensor-relay* card installed on the FS-6 or FS-16 video capture card (four **Video capture device** objects correspond to four ADCs)



Channels of the second (the next one) 16/4 *sensor-relay* hardware card are numbered from 1 to 16 according to the DI input connectors of the sensor/relay connection on the card. Example of allocating the channel numeration on the second (the next one) 16/4 *sensor-relay* card installed on the FS-6 or FS-16 video capture card (four **Video capture device** objects correspond to four ADCs):



Configuring sensor connection via the 4/4 sensor-relay card

You can create up to four **Sensor** objects on the basis of the **Video capture device** object in *Axxon PSIM* with the 4/4 *sensor-relay* card installed.

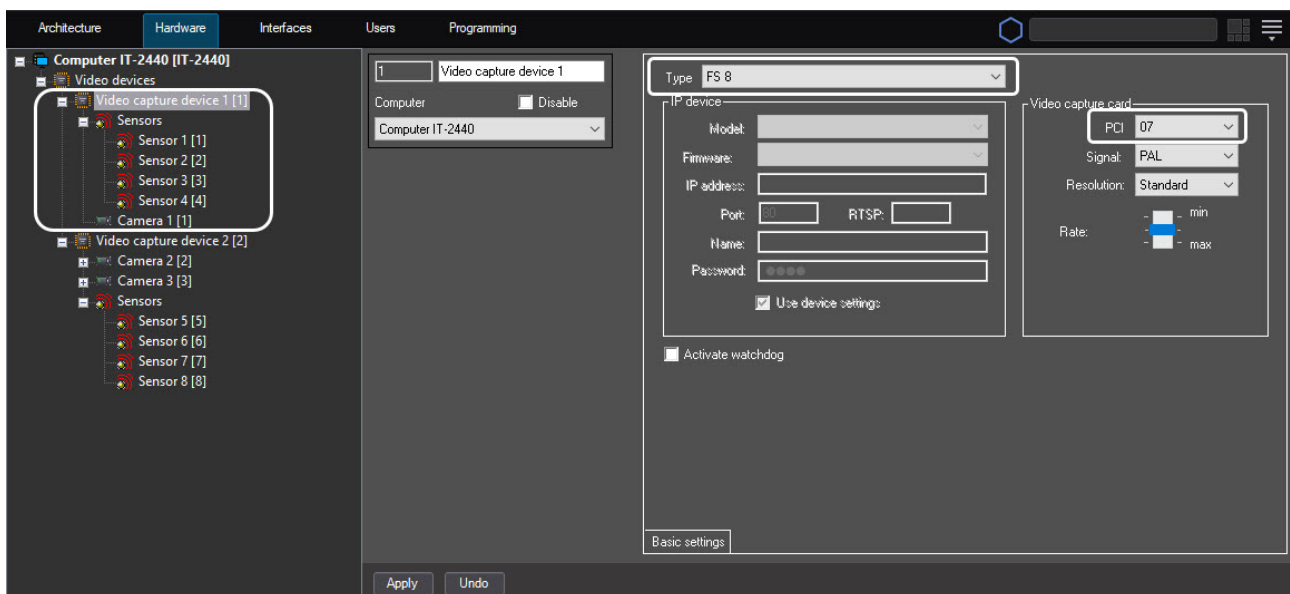
All **Sensor** objects corresponding to the sensors connected to one 4/4 *sensor-relay* card (interface lines with executive devices) must be created in the hardware tree on the basis of those **Video capture device** objects, the ADC cards of which have the *sensor-relay* card installed.

You must create at least one **Camera** object on the basis of the same **Video capture device** object for the sensor's operation.

If the *sensor-relay* card is installed on the FS-5, FS-6, FS-16 video capture card, you can create the **Sensor** objects on the basis of any **Video capture device** object within the hardware card.

If the *sensor-relay* card is installed on the SC3B0N16 (WS216) video capture card, you must create the **Sensor** objects on the basis of the **Video capture device** object with the 00 number of the PCI channel.

If the *sensor-relay* card is installed on the FS-8 video capture card, you must create the **Sensor** objects on the basis of the **Video capture device** object with the 07 number of the PCI channel.

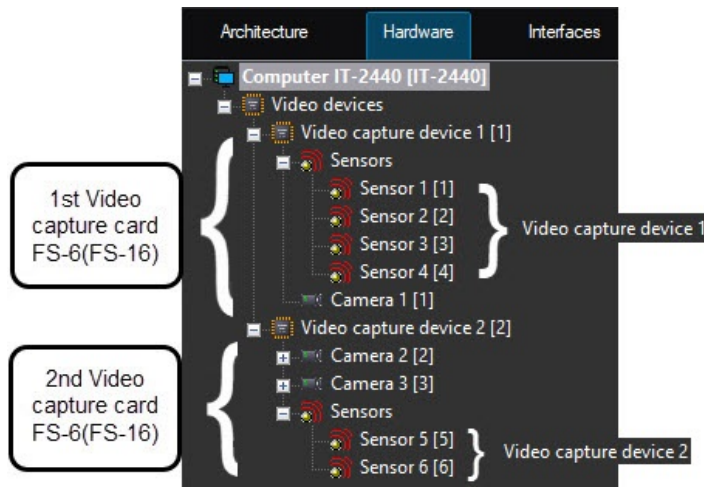


You can change the position of **Sensor** objects in the *Axxon PSIM* object tree. To change the parent **Video capture device** objects for the **Sensor** objects, you must change the value of the **Video capture device** object on the settings panel of the **Sensor** object. The value of this parameter must correspond to the number of the **Video capture device** object in the object tree, on the basis of which you must place the **Sensor** object. When you change the **Video capture device** parameter on the settings panel of the **Sensor** object, the object is placed in the branch of child objects of the **Video capture device** object different from the original one.

Note

When you change the position of the **Sensor** objects in the objects tree, note that for the proper operation of *Axxon PSIM*, all **Sensor** objects corresponding to one *sensor-relay* card must be placed on the basis of one **Video capture device** object. You cannot place the **Sensor** objects in child branches of different **Video capture device** objects even if these objects correspond to one video capture card with the adjustable *sensor-relay* card connected to it.

The figure shows the example of placing the **Sensor** objects in the object tree when two FS-6 (or FS-16) video capture cards are used with four sensors connected to the 4/4 *sensor-relay* card installed on the first video capture card and two relays connected to the second one.

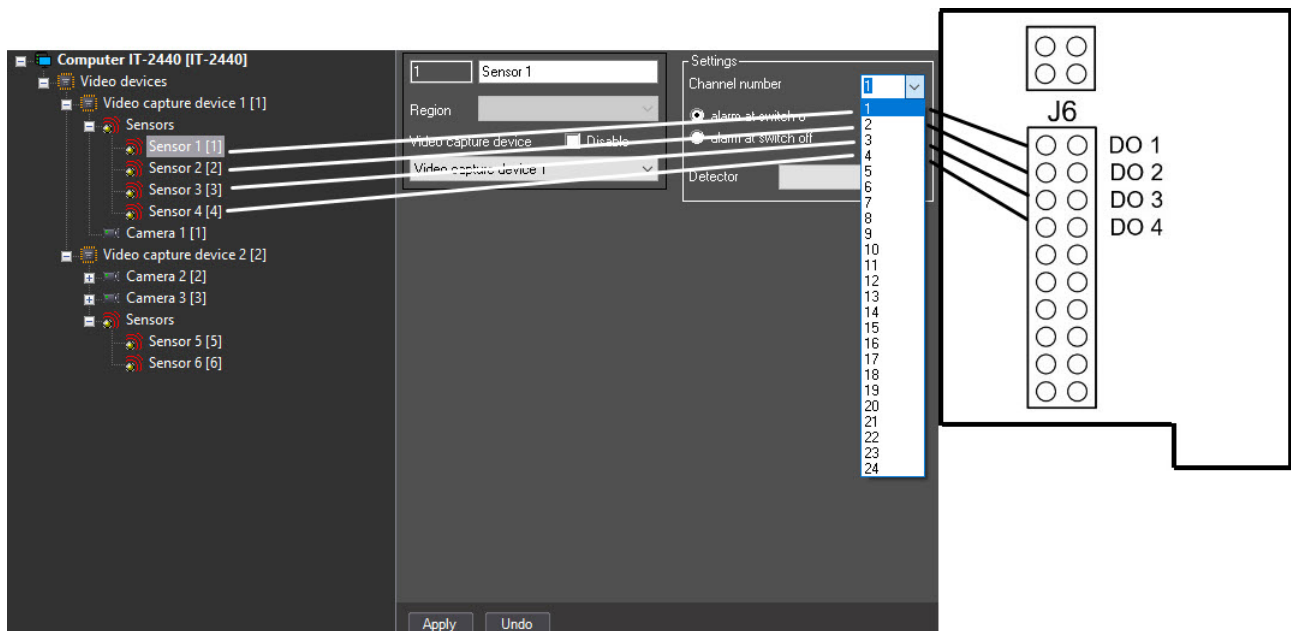


When you configure the **Sensor** objects in *Axxon PSIM*, you must assign the number of channels of the sensor connection (interface lines with executive devices) to the sensor-relay card in accordance with the numeration of inputs of the DI slot(s) of the sensors/relays connected to the card.

To change the channel numeration, use the **Channel number** list on the settings panel of the **Sensor** object.

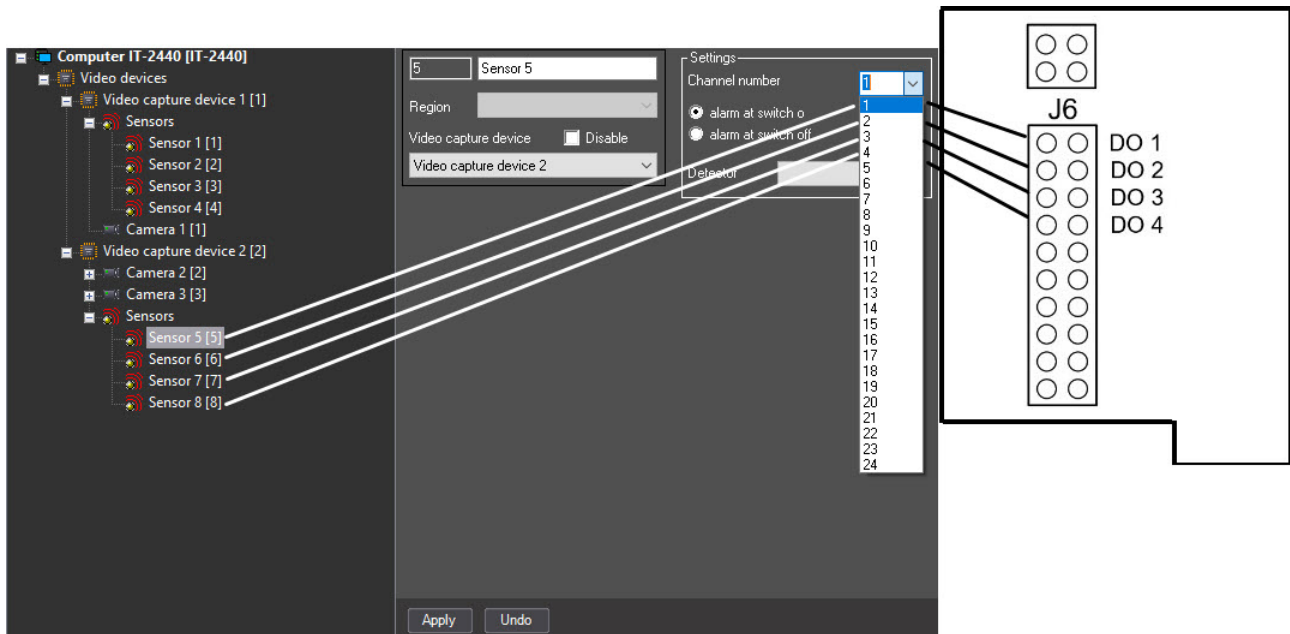
When you use 4/4 *sensor-relay* cards, up to four channels are available for connecting sensors in accordance with the configuration of the license key.

The figure shows the example of the sensors' connection channel number distribution on the 4/4 *sensor-relay* card installed on the FS-6 or FS-16 video capture card (four ADCs with four corresponding **Video capture device** objects):



Channels of the second (next) 4/4 *sensor-relay* hardware card also have the numeration from the first to the fourth in accordance with the inputs of the DI slot(s) of the sensors/relays connected to the card. The example of the

sensors' connection channel number distribution on the second (next) 4/4 *sensor-relay* card installed on the FS-6 or FS-16 video capture card (four ADCs with four corresponding **Video capture device** objects):



Configuring the relay connection

If you connect relays to the *sensor-relay* card, you can create up to four **Relay** objects on the basis of the **Video capture device** parent object.

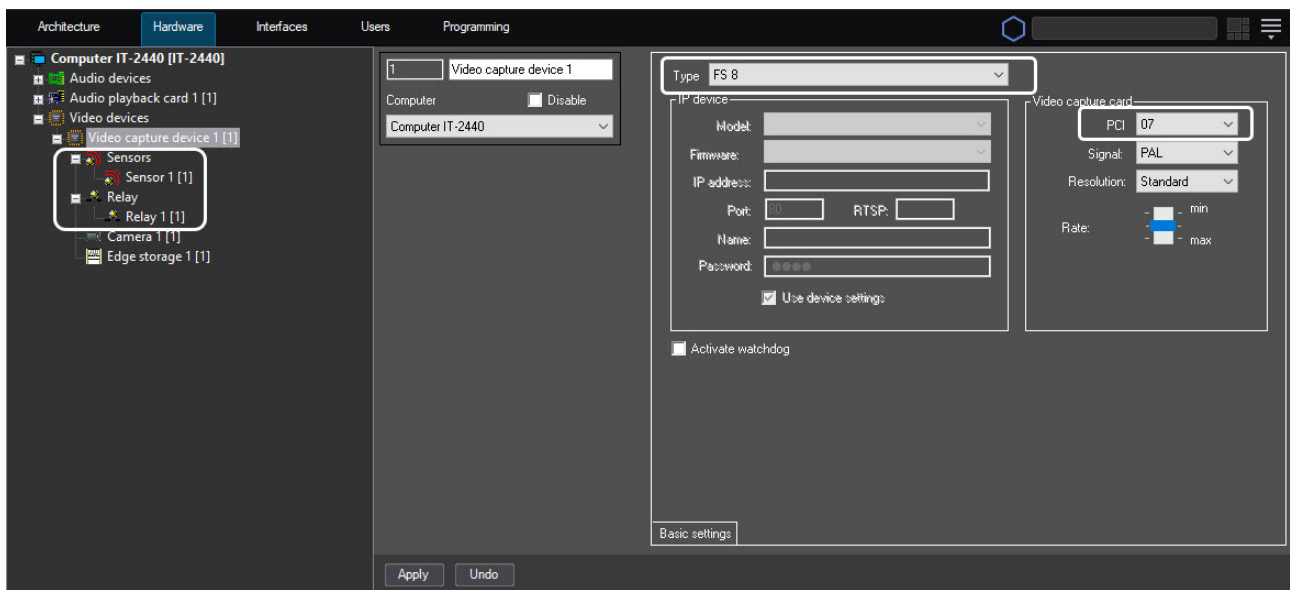
All **Relay** objects corresponding to relays connected to one *sensor-relay* card must be created in the **Hardware** object tree on the basis of the **Video capture device** object corresponding to the physical video capture card where the *sensor-relay* card is installed.

For the relay to operate, you must create at least one **Camera** object based on the same **Video capture device** object.

If you install the *sensor-relay* card on the FS-5, FS-6 or FS-16 video capture card, then you can create the **Relay** objects based on any **Video capture device** object within the hardware card.

If you install the *sensor-relay* card on the SC3B0N16 (WS216) video capture card, then you must create the **Relay** objects based on the **Video capture device** object with the 04 number of the PCI channel.

If you install the *sensor-relay* card on the FS-8 video capture card, then you must create the **Relay** objects based on the **Video capture device** object with the 07 number of the PCI channel.

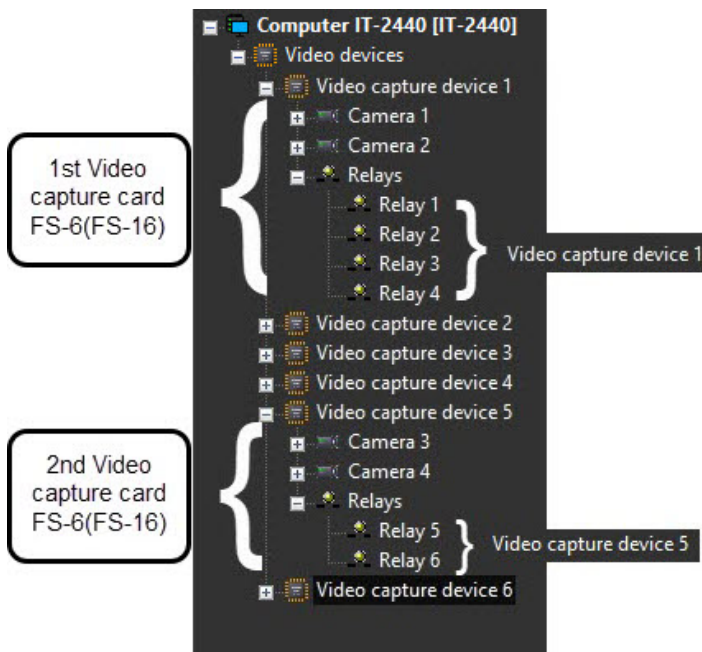


You can change the **Relay** object's position in the *Axxon PSIM* object tree. To change the parent **Video capture device** objects for the **Relay** objects, change the value of the **Video capture device** parameter on the settings panel of the **Relay** object. The value of this parameter must correspond to the number of the **Video capture device** object in the object tree based on which you must place the **Relay** object. If you change the **Video capture device** parameter on the settings panel of the **Relay** object, the object is moved to the branch of child objects of the corresponding **Video capture device** object.

Note

When you change the position of the **Relay** objects in the object tree, note that for the proper operation of *Axxon PSIM*, you must place all **Relay** objects corresponding to one *sensor-relay* card based on one **Video capture device** object. You cannot place the **Relay** objects in child branches of different **Video capture device** objects even if these objects correspond to one video capture card with the adjustable *sensor-relay* card that is connected to it.

The figure shows an example of placing the **Relay** objects in the object tree when two FS-6 (or FS-16) video capture cards are used with four relays connected to the 4/4 (or 16/4) *sensor-relay* card installed on the first video capture card and two relays connected to the second one.

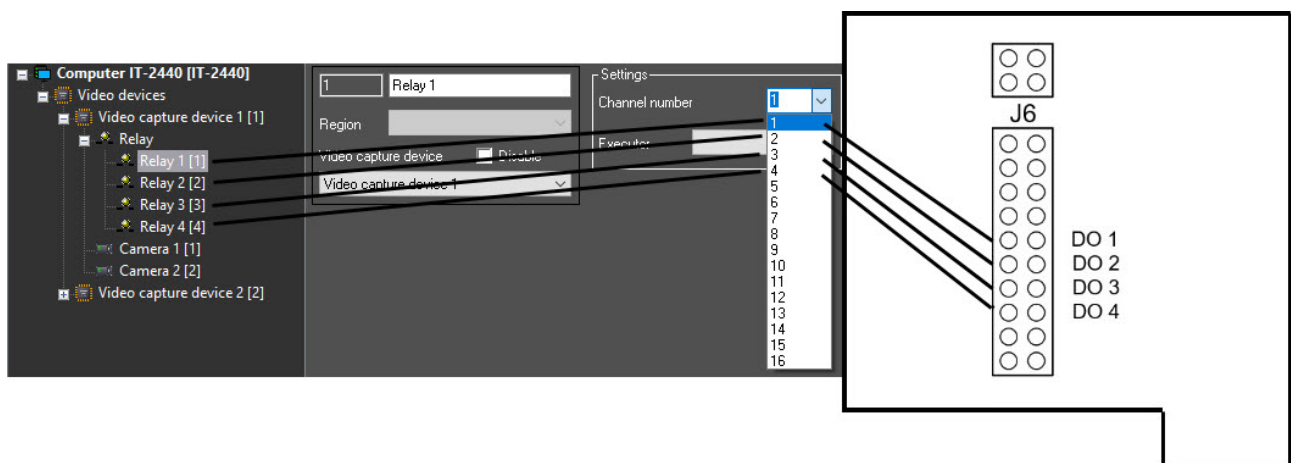


When you configure the **Relay** objects in *Axxon PSIM*, you must assign the channel numbers of sensor connections (interface lines with the executive device) to the *sensor-relay* card in accordance with the numeration of inputs of the DO sensor/relay connection connector on the card.

To change the channel numeration, use the **Channel number** list on the settings panel of the **Relay** object.

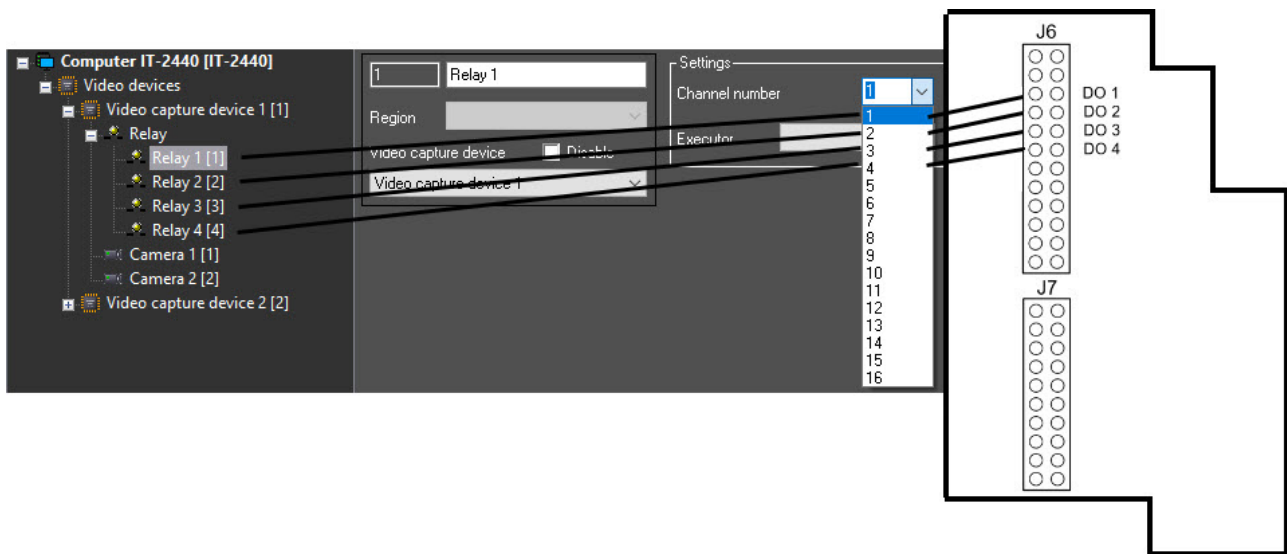
When you use the 4/4 and 16/4 *sensor-relay* cards, up to four relay connection channels are available according to the configuration of the license key file.

The figure shows an example of allocating the channel numeration when four relays are connected to one 4/4 *sensor-relay* card installed on the FS-6 or FS-16 video capture card (four **Video capture device** objects correspond to four ADCs).



Channels of the second (the next one) 16/4 *sensor-relay* hardware card are numbered from 1 to 4 according to the DI input connectors of the sensor/relay connection on the card.

Example of allocating the channel numeration of relays connected to the second (the next one) 16/4 *sensor-relay* card installed on the FS-6 or FS-16 video capture card (four **Video capture device** objects correspond to four ADCs):



3.3.5 Configuring Sensor-Relay expansion cards (low profile)

Connecting relays of the 4/4 sensor-relay (low profile) card

Depending on what video capture card is used, the **Relay** objects corresponding to relays connected to the 4/4 *sensor-relay* card (low profile) are created in the hardware tree based on the **Video capture device** object of one of the following types: **SC200Q4 Low profile (FS 115)**, **SC300Q16 (FX 4)**, **SC300D16 (FX 8)**, **SC310N16 (FX 16)**, **SC3B0N16 (WS 216)**, **SC230N4** and **SC590N4**.

For the relay to operate, you must create at least one **Camera** object based on the same **Video capture device** object.

You must create the **Relay** objects based on the **Video capture device** object to which the first PCI channel of the used physical video capture card is set.

For example, when you build the security video subsystem on the basis of two SC300Q16 (FX4) and two *sensor-relay* (low profile) cards, you must create the **Relay** objects based on the **Video capture device** objects with the **00** (for the first SC300Q16 (FX4) card) and **04** (for the second SC300Q16 (FX4) card) PCI channel numbers.

If you connect the 4/4 *sensor-relay* (low profile) card to the SC3B0N16 (WS216) video capture card, then you must create the **Relay** objects based on the **Video capture device** object with the **04** number of the PCI channel.

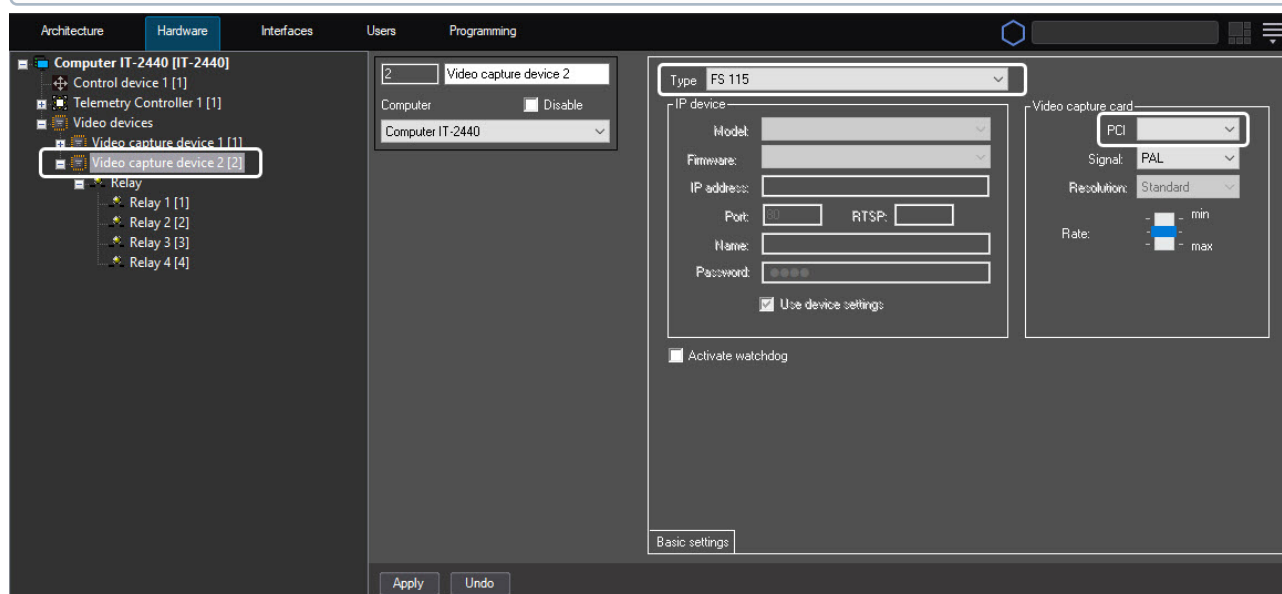
For the SC310N16 (FX16) video capture card, you can create the **Relay** objects based on the **Video capture device** object with the 00 or 08 number of the PCI channel. The working channel is discovered experimentally.

When you connect the relay to the SC230N4 video capture card, you must create the **Relay** objects based on the **Video capture device** object with the 03 number of the PCI channel.

For the SC590N4 video capture card, you can create the **Relay** objects based on the **Video capture device** object with the **01** number of the PCI channel (see the [Connecting 4/4 Sensor-Relay \(low profile\) cards](#) section for the *sensor-relay* card connected to low contacts of the J2 connector of the SC590N4 card) and the **03** (for the *sensor-relay* card connected to top contacts of the J2 connector of the SC590N4 card). If you use the SC590N4 card, we recommend creating no more than four **Relay** objects for one **Video capture device** object.

Note

The number of PCI channels (the number of the **Video capture device** objects) for all types of cards is given in the [Features of video subsystem configuration](#) section.

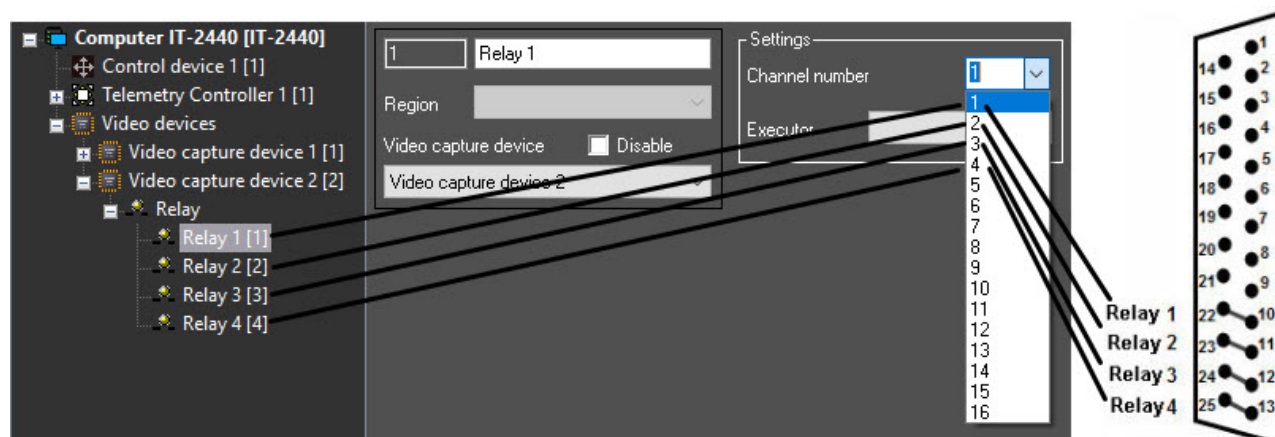


You can create up to four **Relay** objects based on the **Video capture device** parent object. When you configure the **Relay** objects in *Axxon PSIM*, you must specify the channel numbers of the relay connection (executive devices) to the 4/4 *sensor-relay* (low profile) card. The channel numbers are allocated in accordance with the external pinout of the card.

To change the channel numeration, use the **Channel number** list on the settings panel of the **Relay** object.

When you use the 4/4 *sensor-relay* (low profile) card, up to four relay connection channels are available according to the configuration of the license key file.

The figure shows an example of allocating the channel numeration of four relays connected to one 4/4 *sensor-relay* (low profile) card.



For the second and the next 4/4 *sensor-relay* (low profile) card, the allocation of channel numbers is also performed in the range 1—4.

Connecting sensors of the 4/4 sensor-relay (low profile) card

Depending on what video capture card is used, the **Sensor** objects corresponding to sensors connected to the 4/4 *sensor-relay* card (low profile) are created in the hardware tree based on the **Video capture device** object of one of the following types: **SC200Q4 Low profile (FS 115)**, **SC300Q16 (FX 4)**, **SC300D16 (FX 8)**, **SC310N16 (FX 16)**, **SC3B0N16 (WS 216)**, **SC230N4** and **SC590N4**.

For the sensor to operate, you must create at least one **Camera** object based on the same **Video capture device** object.

You must create the **Sensor** objects based on the **Video capture device** object to which the first PCI channel of the used physical video capture card is set. For example, when you build the security video subsystem on the basis of two SC300Q16 (FX4) and two *sensor-relay* (low profile) cards, you must create the **Sensor** objects based on the **Video capture device** objects with the **00** (for the first SC300Q16 (FX4) card) and **04** (for the second SC300Q16 (FX4) card) PCI channel numbers.

If you connect the 4/4 *sensor-relay* (low profile) card to the SC3B0N16 (WS216) video capture card, then you must create the **Sensor** objects based on the **Video capture device** object with the **00** number of the PCI channel.

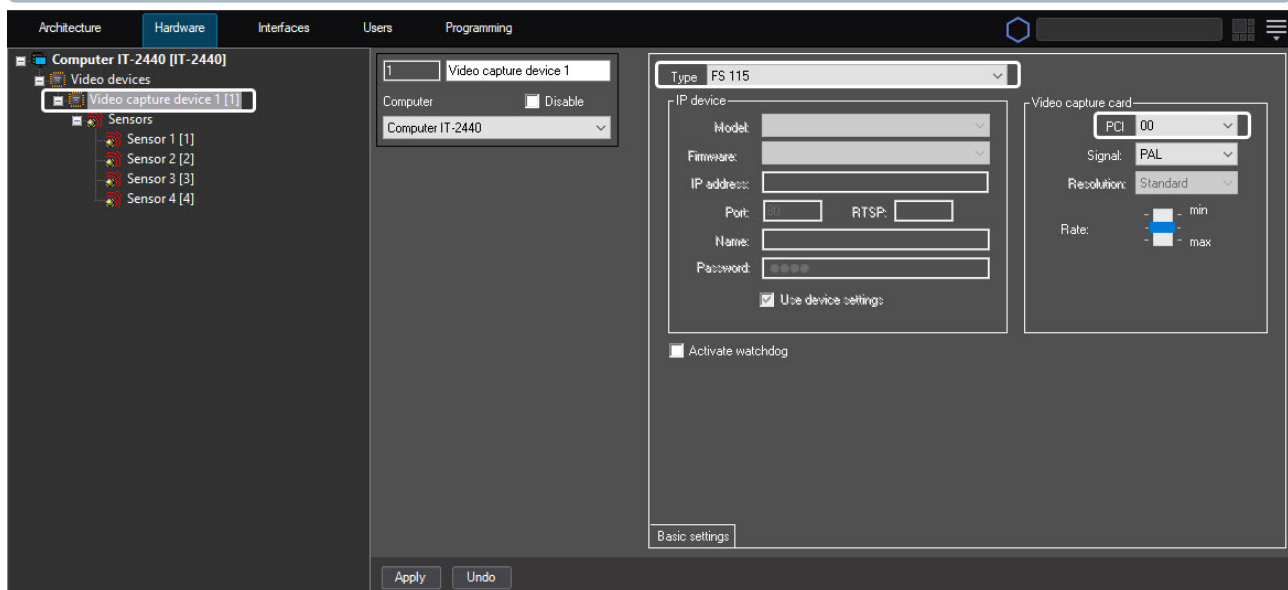
For the SC310N16 (FX16) video capture card, you can create the **Sensor** objects based on the **Video capture device** object with the 00 or 08 number of the PCI channel. The working channel is discovered experimentally.

When you connect the sensor to the SC230N4 video capture card, you must create the **Sensor** objects based on the **Video capture device** object with the 03 number of the PCI channel.

For the SC590N4 video capture card, you can create the **Sensor** objects based on the **Video capture device** object with the **00** number of the PCI channel (see the [Connecting 4/4 Sensor-Relay \(low profile\) cards](#) section for the *sensor-relay* card connected to low contacts of the J2 connector of the SC590N4 card) and the **02** (for the *sensor-relay* card connected to top contacts of the J2 connector of the SC590N4 card). If you use the SC590N4 card, we recommend creating no more than four **Sensor** objects for one **Video capture device** object.

Note

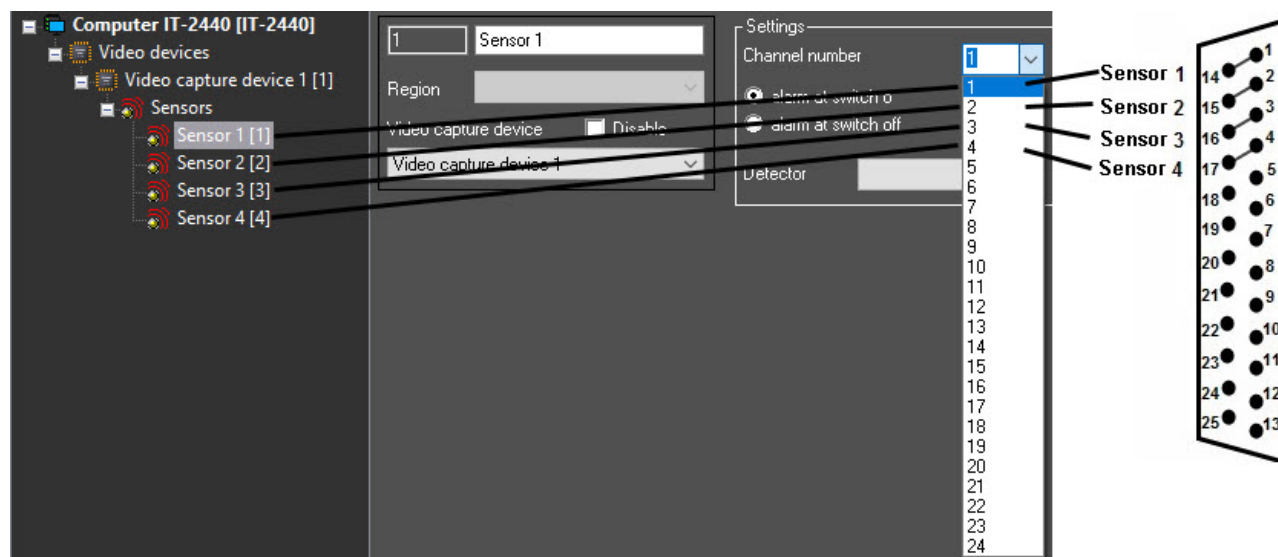
The number of PCI channels (the number of the **Video capture device** objects) for all types of cards is given in the [Features of video subsystem configuration](#) section.



You can create up to four **Sensor** objects based on the **Video capture device** parent object. To configure the **Sensor** objects in *Axxon PSIM*, you must specify the channel numbers of the sensor connection to the 4/4 *sensor-relay* (low profile) card. When you use the 4/4 *sensor-relay* (low profile) card, up to four sensor connection channels are available according to the configuration of the license key file.

To change the channel numeration, use the **Channel number** list on the settings panel of the **Sensor** object.

The channel numbers are allocated in accordance with the external pinout of the card. The figure shows an example of allocating the channel numeration of four sensors connected to one 4/4 *sensor-relay* (low profile) card.



For the second and the next 4/4 *sensor-relay* (low profile) card, the allocation of channel numbers is also performed in the range 1—4.

3.3.6 Configuring SL USBIO cards

On the page:

- [Features of running the SL USBIO 16x8 card drivers](#)
- [Connecting relays](#)
- [Connecting sensors](#)

Features of running the SL USBIO 16x8 card drivers

The startup of the SL USBIO 16x8 device drivers in Windows OS can take up to 10 minutes. To reduce this time to two minutes, use the utility to configure the USB device sensor/relay "SL USBIO 16x8" which you can download at the [AxxonSoft website](#).

In this utility, you must set the lower value of the **TimeOut PowerUp** parameter for each device (the recommended value is 10—20 seconds). The utility doesn't provide the ability to select the specific device, so you must connect one SL USBIO 16x8 device to the computer in turn, disconnecting others.

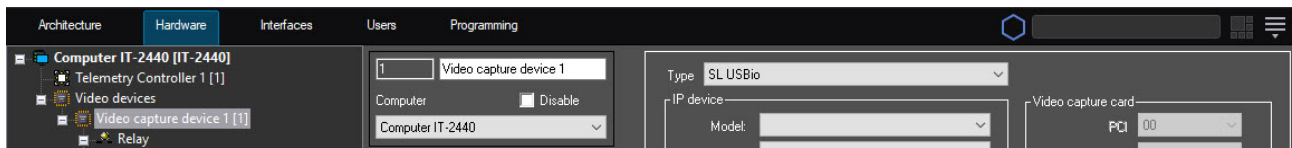
You must run *Axxon PSIM* after completing the driver startup of SL USBIO 16x8 devices (you can control the driver status via the Windows Device Manager).

If you set the auto start of *Axxon PSIM* using the Auto Startup feature in Windows OS, then you must configure the delayed start of *Axxon PSIM* to be at least two minutes after the operating system restarts.

If *Axxon PSIM* starts as the Windows OS wrapper, we don't guarantee the stable operation of the SLIO USBIO 16x8 card in *Axxon PSIM*. In this case, we recommend selecting another way to start *Axxon PSIM* (see the [Configuration of Axxon PSIM™ software startup](#) section in [Administrator's Guide](#)).

Connecting relays

The **Relay** objects corresponding to relays connected to the SL USBIO (4x4, 16x8, and 24x4) card (executive devices) are created in the hardware tree based on the **Video capture device** object with the **SL USBio** type.

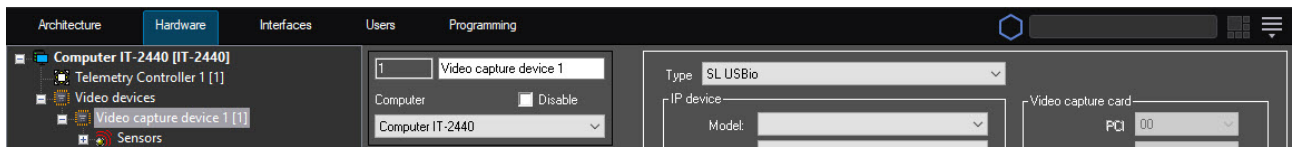


When you configure the **Relay** objects in *Axxon PSIM*, you must specify the channel numbers of the relay connection (executive devices) to the card. The channel numbers are allocated in accordance with the external pinout of the card (see [Appendix 5. Electrical and technical specifications of Sensor-Relay cards](#)).

To change the channel numeration, use the **Channel number** list on the settings panel of the **Relay** object.

Connecting sensors

The **Sensor** objects corresponding to sensors connected to the SL USBIO (4x4, 16x8, and 24x4) card are created in the hardware tree based on the **Video capture device** object with the **SL USBio** type.



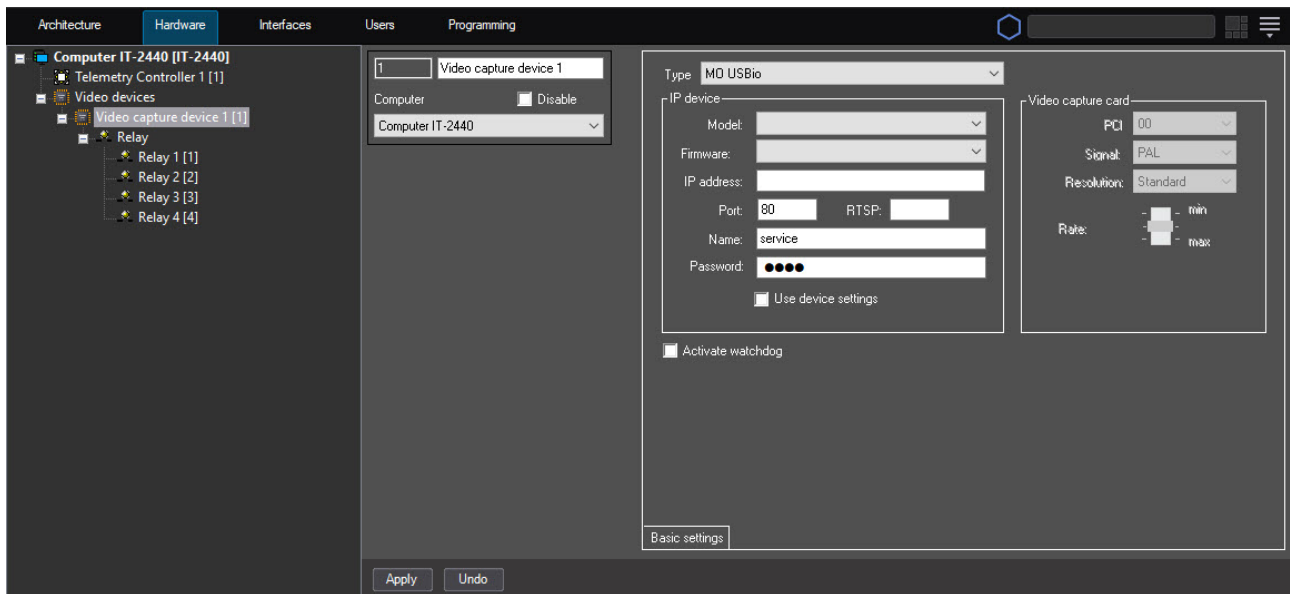
To configure the **Sensor** objects in *Axxon PSIM*, you must specify the channel numbers of the sensor connection to the card. The channel numbers are allocated in accordance with the external pinout of the card (see [Appendix 5. Electrical and technical specifications of Sensor-Relay cards](#)).

To change the channel numeration, use the **Channel number** list on the settings panel of the **Sensor** object.

3.3.7 Configuring MO USBIO 4x4 devices

Connecting MO USBIO 4x4 relay

The **Relay** objects corresponding to relays connected to the *MO USBIO* 4x4 device are created in the hardware tree based on the **Video capture device** object with the **MO USBio** type. You can create up to four **Relay** objects based on the **Video capture device** parent object.



Note

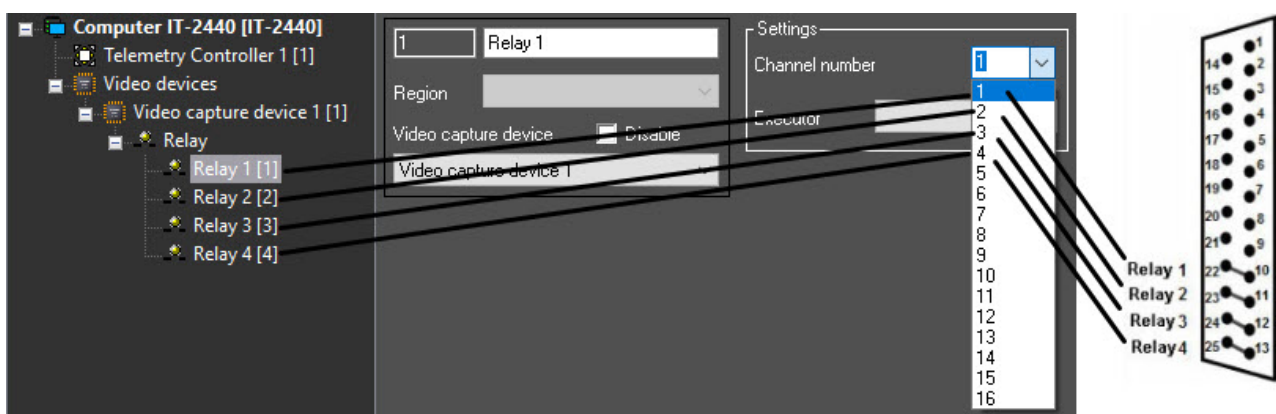
In the settings of the **Video capture device** object, you must specify the number of the PCI channel that isn't used by another object.

When you configure the **Relay** objects in *Axxon PSIM*, you must specify the channel numbers of the relay connection to the **MO USBIO 4x4** device. The channel numbers are allocated in accordance with the external pinout of the device (see the [Connecting MO USBIO 4x4 external module](#) or the [Connecting MO USBIO 4x4 cards](#) sections).

To change the channel numeration, use the **Channel number** list on the settings panel of the **Relay** object.

When you use the **MO USBIO 4x4** device, up to four relay connection channels are available according to the configuration of the license key file.

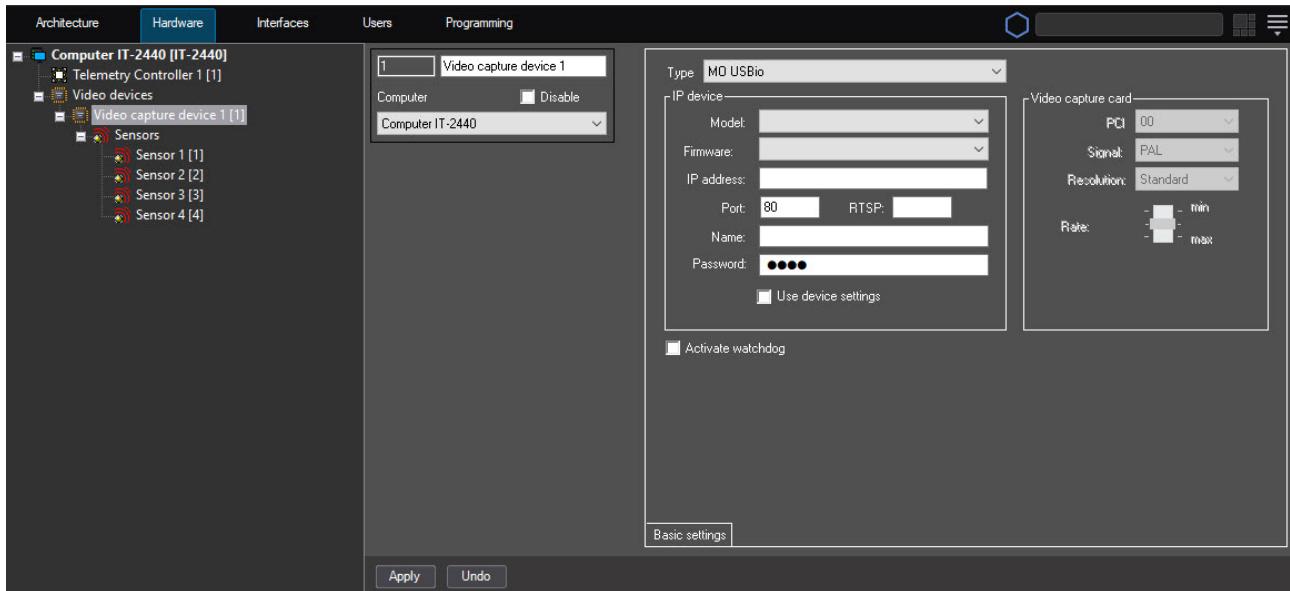
The figure shows an example of allocating the channel numeration of four relays connected to one **MO USBIO 4x4** device.



For the second and the next device, the allocation of channel numbers is also performed in the range 1—4.

Connecting MO USBIO 4x4 sensors

The **Sensor** objects corresponding to sensors connected to the *MO USBIO 4x4* device are created in the hardware tree based on the **Video capture device** object with the **MO USBio** type. You can create up to four **Sensor** objects based on the **Video capture device** parent object.



Note

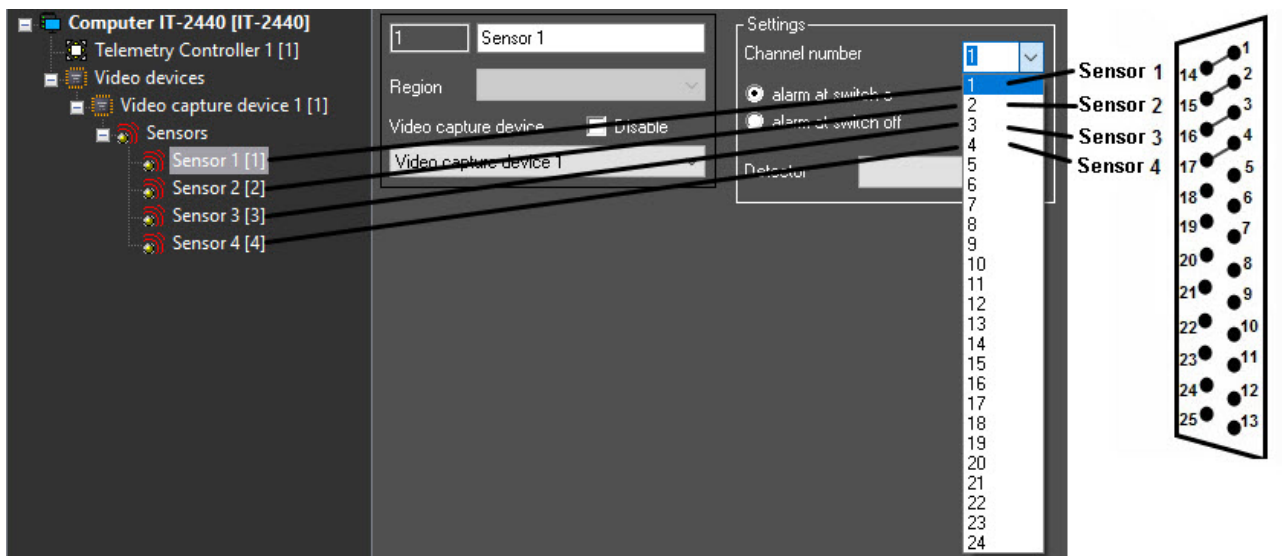
In the settings of the **Video capture device** object, you must specify the number of the PCI channel that isn't used by another object.

When you configure the **Sensor** objects in *Axxon PSIM*, you must specify the channel numbers of the sensor connection to the *MO USBIO 4x4* device. The channel numbers are allocated in accordance with the external pinout of the device (see the [Connecting MO USBIO 4x4 external module](#) or the [Connecting MO USBIO 4x4 cards](#) sections).

To change the channel numeration, use the **Channel number** list on the settings panel of the **Sensor** object.

When you use the *MO USBIO 4x4* device, up to four sensor connection channels are available according to the configuration of the license key file.

The figure shows an example of allocating the channel numeration of four sensors connected to one *MO USBIO 4x4* device.



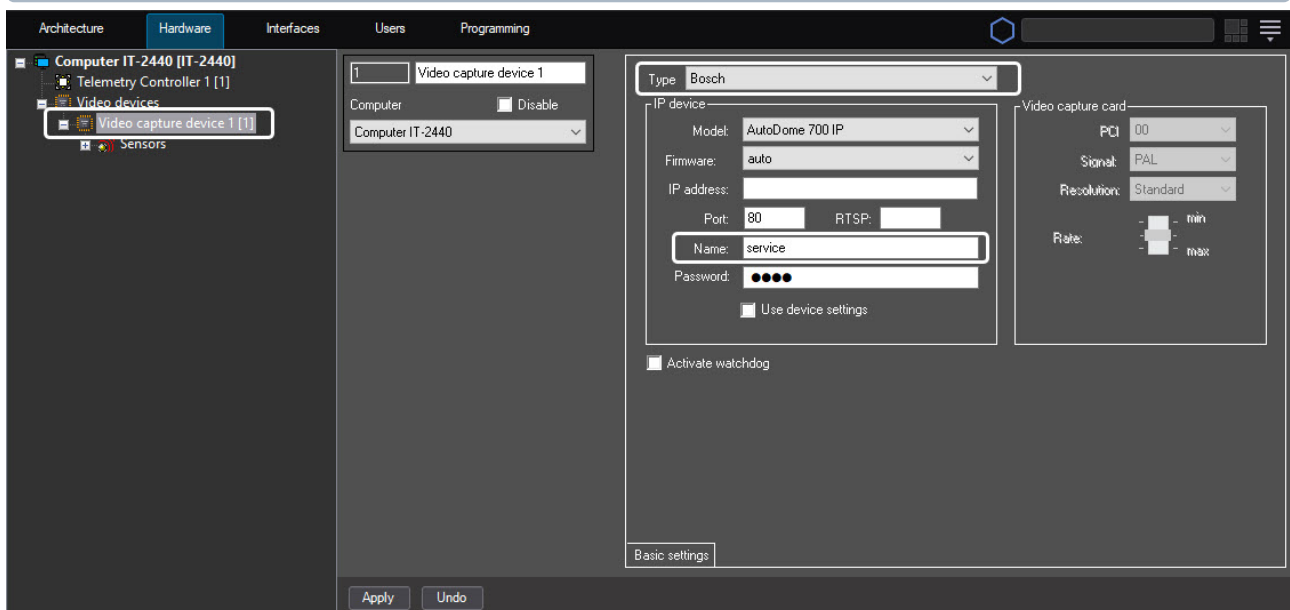
For the second and the next device, the allocation of channel numbers is also performed in the range 1—4.

3.3.8 Configuring sensors and relays connected via IP devices

If you connect relays to the *Axxon PSIM* server via the IP device, select the corresponding type of the IP device on the settings panel of the **Video capture device** parent object, then set the IP address, port, name, and password to connect to the camera (see the [Configuring IP devices](#) section).

Note

If you connect the relay to the *Axxon PSIM* server via the Bosch IP device, then specify the **service** value in the **Name** field. At another value, the functionality of the given relay on the server isn't performed.



If you use the Smartec STS-IPT-880 IP server, you must connect sensors to those video channels for which the **Camera** objects are created. The video channel with the N number corresponds to two sensor connection channels with the 2N-1 and 2N numbers.

Note

The Smartec STS-IPT-880 IP server supports up to eight video channels and 16 sensors (two sensors for each channel).

To connect each pair of sensors, you must create the **Camera** object with the N channel number, then create two **Sensor** objects with the 2N-1 and 2N channel numbers. The **Camera** and **Sensor** objects are created on the basis of the common **Video capture device** object of the **Smartec** type. If you connect sensors via the inactive video channel (the **Camera** object is absent), then the sensor functionality on the *Axxon PSIM* server isn't performed.

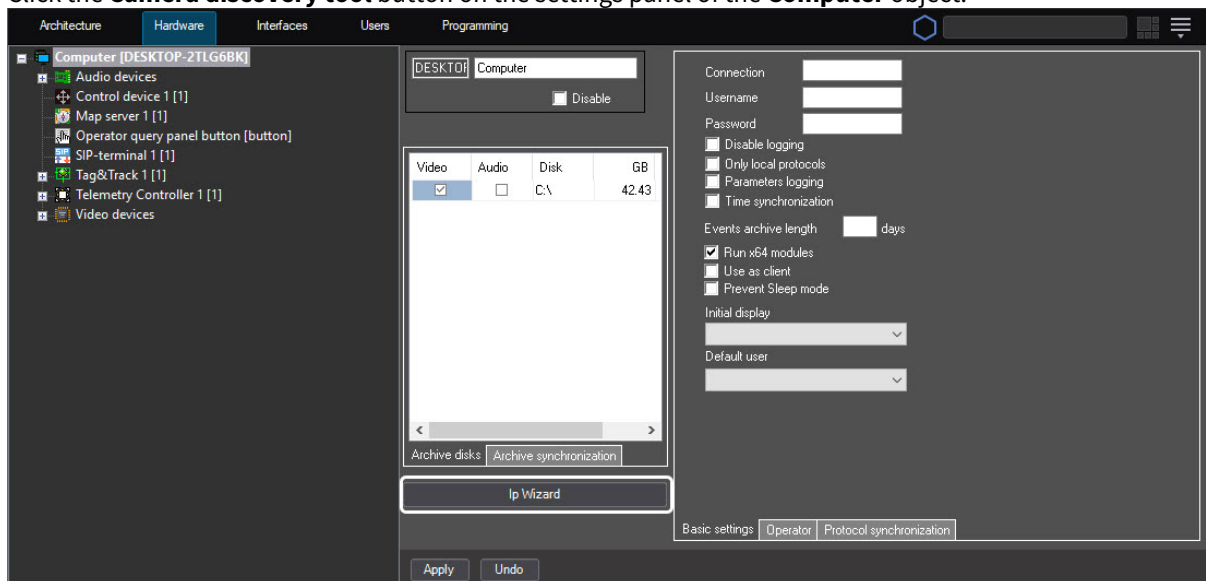
To implement the sensor functionality on the *Axxon PSIM* server connected via the AEBELL BL-E704F IP server, disable the Auto Work Plan IP server mode. You can enable/disable this mode either via the Web interface of the IP server or in the dialog window of the Network DVR Monitor System utility (see the reference documentation on the IP server).

3.3.9 Configuring AGRG-IO-16/8-WD-DS sensor-relay cards

Sensor-relay cards are integrated via the *Drivers Pack*, so you can add them to the *Axxon PSIM* hardware tree using the [Camera discovery tool](#).

To configure the AGRG-IO-16/8-WD-DS sensor-relay cards, do the following:

1. Click the **Camera discovery tool** button on the settings panel of the **Computer** object.



As a result, the **Camera discovery tool** window opens.

2. In the **Camera discovery tool** window, set the checkbox next to the **AGRG** card (1).

Camera discovery tool

	Brand	Model	Firmware	Settings	Login	Password	IP address	Port	
☐	FFMPEG	Dshow audio	auto	device settings			dshow://Microphor	0	Apply
☐	FFMPEG	Dshow audio	auto	device settings			dshow://Line 1 (Vi	0	Apply
☐	3S	N6037		device settings	root	XXXX	172.19.2.33	80	Apply
☒	AGRG	IDUSB-16/8-WD-DS	1.1.1	device settings		XXXX	6704474152546672	80	Apply
☐	Axis	216FD		device settings	root	XXXX	172.19.9.202	80	Apply
☐	Axis	Q1615(DigitalAutotrack		device settings	root	XXXX	172.19.9.50	80	Apply
☐	Axis	Q1615		device settings	root	XXXX	fe80::aecc:8eff:fe0	80	Apply
☐	Axis	M2025-LE		device settings	root	XXXX	172.19.9.51	80	Apply
☐	Axis	225FD		device settings	root	XXXX	172.19.9.204	80	Apply
☐	Axis	225FD		device settings	root	XXXX	fe80::240:8cff:fe84	80	Apply
☐	Axis	Stub Driver(1 channel)		device settings	root	XXXX	172.19.9.126	80	Apply
☐	Bosch	FLEXIDOME IP panor	auto	device settings	service		172.19.9.77	80	Apply
☐	Bosch	DINION IP starlight 80	auto	device settings	service		172.19.9.79	80	Apply
☐	Bosch	DINION IP ultra 8000	auto	device settings	service		172.19.9.78	80	Apply

Add device manually: Brand Model Firmware
 IP address Port

Add string to beginning of created object name: Added string

Hardware available for adding:

Video Channels	unlimited
Audio Channels	unlimited
Sensors	unlimited
Relay	unlimited
Telemetry Lines	unlimited

3. Make sure that the correct model of the connected device is selected in the **Model** drop-down list (2).



Note

Leave the default values of the settings in all fields.

4. By default, all sensors and relays available on the device are enabled in the Camera discovery tool. If you want to disable any of them, click the **+** button and clear the checkboxes next to the corresponding relays (the **Executive device** object) and sensors (the **Contact** object).

Camera discovery tool

Brand	Model	Firmware	Settings	Login	Password	IP address	Port	
☒ AGRG	IOUSB-16/8-WD-DS	1.1.1	device settings		xxxx	6704474152546672	0	Apply
☒ Contact 1								
☒ Contact 2								
☒ Contact 3								
☒ Contact 4								
☒ Contact 5								
☒ Contact 6								
☒ Contact 7								
☒ Contact 8								
☒ Contact 9								
☒ Contact 10								
☒ Contact 11								
☒ Contact 12								
☒ Contact 13								

Add device manually: Brand Model Firmware
 IP address Port

Add string to beginning of created object name: Added string

Hardware available for adding:

Video Channels	unlimited
Audio Channels	unlimited
Sensors	unlimited
Relay	unlimited
Telemetry Lines	unlimited

Camera discovery tool

Brand	Model	Firmware	Settings	Login	Password	IP address	Port	
☒ Contact 15								
☒ Contact 16								
☒ Contact 17								
☒ Contact 18								
☒ Contact 19								
☒ Contact 20								
☒ Executive device 1								
☒ Executive device 2								
☒ Executive device 3								
☒ Executive device 4								
☒ Executive device 5								
☒ Executive device 6								
☒ Executive device 7								
☒ Executive device 8								

Add device manually: Brand Model Firmware
 IP address Port

Add string to beginning of created object name: Added string

Hardware available for adding:

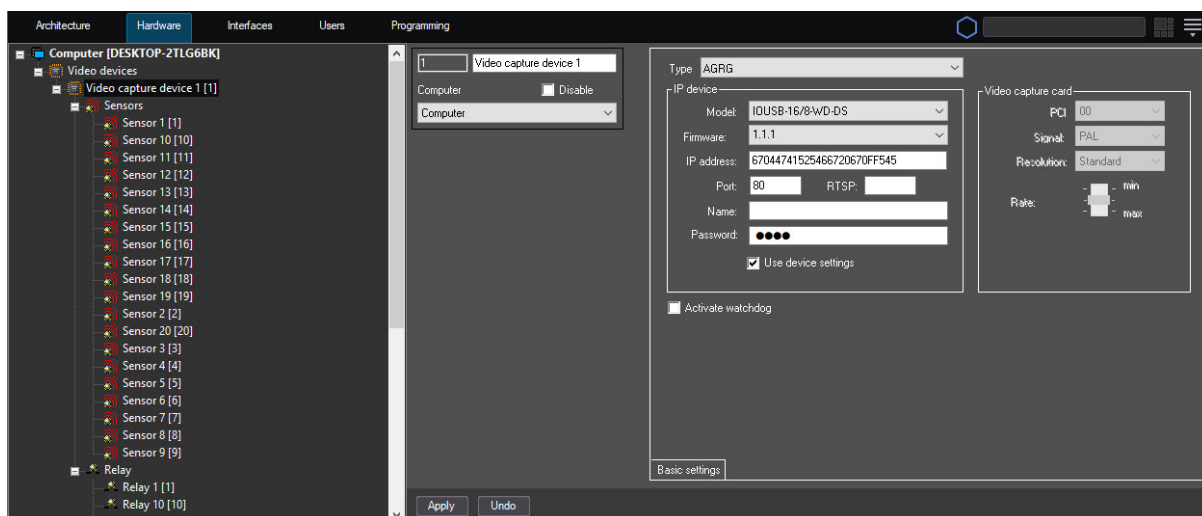
Video Channels	unlimited
Audio Channels	unlimited
Sensors	unlimited
Relay	unlimited
Telemetry Lines	unlimited

- Click the **Apply** button (3).
- Click the **Exit** button (4).
- As a result, the required **Video capture device**, **Sensor** and **Relay** objects are created in the *Axxon PSIM* hardware tree. The corresponding type, model, and firmware of the AGRG-IO-16/8-WD-DS card are displayed on the settings panel of the Video capture device object.



Note

Specify the accurate serial number in the **IP address** field. If you want to enter this number manually, you must have the utility to read it. This utility is available on the vendor website by the [link](#).



8. If necessary, configure the **Relay** objects—see [Creating and configuring the Relay system object](#).
9. If necessary, configure the **Sensor** objects—see [Creating and configuring the Sensor system object](#).

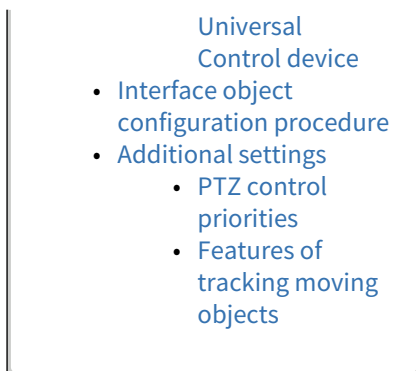
Configuring the AGRG-IO-16/8-WD-DS sensor-relay cards in Axxon PSIM is complete.

3.4 PTZ configuration

3.4.1 PTZ configuration procedure

On this page:

- [Pre-configuration](#)
- [Devices configuration procedure](#)
 - [General PTZ configuration procedure in Axxon PSIM](#)
 - [Configuration option if the IP camera with the embedded PTZ is used](#)
 - [Configuration option if the IP camera controlled by the Control panel is used](#)
 - [Configuration option using the](#)



PTZ devices are used to expand the video surveillance area by mechanically rotating a camera.

In *Axxon PSIM*, you can control PTZ devices by configuring system objects on the **Hardware** tab, as well as setting up a suitable interface solution.

On the **Hardware** tab, the selection of objects depends on the connected physical devices:

- **Telemetry Controller** and its child devices, like the **PTZ device** and the **Control panel**, if the connected PTZ device is designed for a particular camera.
- **Control device**, if a device is integrated into *Axxon PSIM* using *Drivers Pack* and is a universal control device (see [Drivers Pack documentation](#)).

The **Telemetry control panel** is an interface object used for controlling PTZ devices. You can also control a PTZ camera using the **Video surveillance monitor** or create the custom **Operator query panel** object.

To physically control PTZ devices, you can use a keyboard with a mouse and specialized devices—control panels and joysticks.

Pre-configuration

First, you need to:

1. Physically connect PTZ devices and control panels to the server (see [Connecting PTZ devices and control panels](#)).
2. Connect and configure cameras for which telemetry will be used (see [Configuring video subsystem](#)).

Devices configuration procedure

General PTZ configuration procedure in *Axxon PSIM*

1. Create and configure the **Telemetry Controller** on the **Hardware** tab. Each type of PTZ device used for connection (for example, each COM port with a device) corresponds to a separate **Telemetry Controller**.
2. Create and configure the **PTZ device** object, which is the child object for the controller. Each physical PTZ device corresponds to the system object. Each PTZ device is interconnected with a camera for controlling. The number of PTZ devices connected to the server is stated in the license.
3. Create and configure the **Control panel** object, which is the child object for the controller. It is designed for quick control of PTZ devices. It is connected to the separate COM or USB port.

See [Configuring PTZ devices \(Telemetry Controllers\)](#), [Configuring the PTZ device control panel](#).

Configuration option if the IP camera with the embedded PTZ is used

1. Create and configure the **Telemetry Controller** with the IP camera exchange protocol.
2. Create and configure the **PTZ device** object, which is the child object for the controller.

See [Configuring PTZ IP cameras](#).

Configuration option if the IP camera controlled by the Control panel is used

1. Create and configure two **Telemetry Controller** objects.
2. Create and configure the **PTZ device** within one controller.
3. Create and configure the **Control panel** within the second controller.

See [Configuring control of PTZ IP camera using the control panel](#).

Configuration option using the Universal Control device

The **Control device** object is designed for configuring joysticks and universal devices integrated via the *Drivers Pack*. Using this device, you can control any PTZ cameras connected to the server. If you use the **Control device**, you don't need to configure the **Telemetry Controller**; it is enough to create and configure the **Control device** on the **Hardware** tab.

See [Configuring the Control device object](#).



Note

You can also configure joysticks connected to *Axxon PSIM* using Windows OS tools—see [Configuring joystick using Windows OS tools](#).

Interface object configuration procedure

To control PTZ, you can use:

1. **Video surveillance monitor panel**, which displays a video from the PTZ camera. In this case, you don't need to configure additional objects; configure PTZ control in the video surveillance monitor.
2. **Telemetry control panel** is the object designed specifically for PTZ control. You must create and configure it on the **Interfaces** tab.
3. The **Operator query panel** custom object is a unique control panel that is displayed in a separate window. It is developed by the PTZ device vendor and provided along with the software for the PTZ device. The files of unique control panels of PTZ devices are stored in the Program folder of the *Axxon PSIM* root installation directory. If you want to use a unique panel from the vendor, create and configure the **Operator query panel** object on the **Hardware** tab.

See [Configuring the Monitor for telemetry control](#), [Creating and configuring the Operator query panel for telemetry control](#), [Configuring the telemetry control panel](#).

Additional settings

PTZ control priorities

After you complete configuration, assign PTZ control priorities for the following objects:

1. **Video surveillance monitor**;
2. **Telemetry control panel**;
3. **Control panel**.

This is necessary to organize the simultaneous use of PTZ devices by different users.

See [Priorities of PTZ control](#).

Features of tracking moving objects

If necessary, you can set up the camera tracking function for the object that moves in a certain way on the video image. You can do it using the following guides:

1. [Configuring functions for tracking moving objects.](#)
2. [Patrolling configuration.](#)

3.4.2 Configuring PTZ devices (Telemetry Controllers)

PTZ device setting procedure

PTZ device configuration in the *Axxon PSIM™* software consists of creation and configuration of system objects corresponding to the PTZ module, and user interface for PTZ device operation.

The user interface for PTZ device operation is represented by the following interface objects:

1. **Telemetry control panel;**
2. **Operator query panel;**
3. **Video Monitor.**

Here is PTZ device setting procedure:

1. Configure Server ports to connect PTZ devices (see [Configuring Server ports and remote workstation to connect PTZ devices](#)).
2. Configure PTZ devices (see [Configuring PTZ devices in Axxon PSIM™](#)).
3. Configure **Control panel** (see [Configuring Control panel](#)).
4. Configure **Telemetry control panel** (see [Configuring the telemetry control panel](#)).
5. Configure **Operator query panel** for telemetry control (PTZ devices of certain type) (see [Creating and configuring the Operator query panel for telemetry control](#)).
6. Configure **Video Monitor** to control PTZ device with the help of mouse or joystick (see [Configuring the Monitor for telemetry control](#)).
7. Configure the joystick for PTZ control (see [Configuring the joystick for telemetry control](#)).
8. Configure the mouse buttons to control PTZ device (see [Configuring the mouse buttons to control PTZ devices](#)).

Configuring Server ports and remote workstation to connect PTZ devices

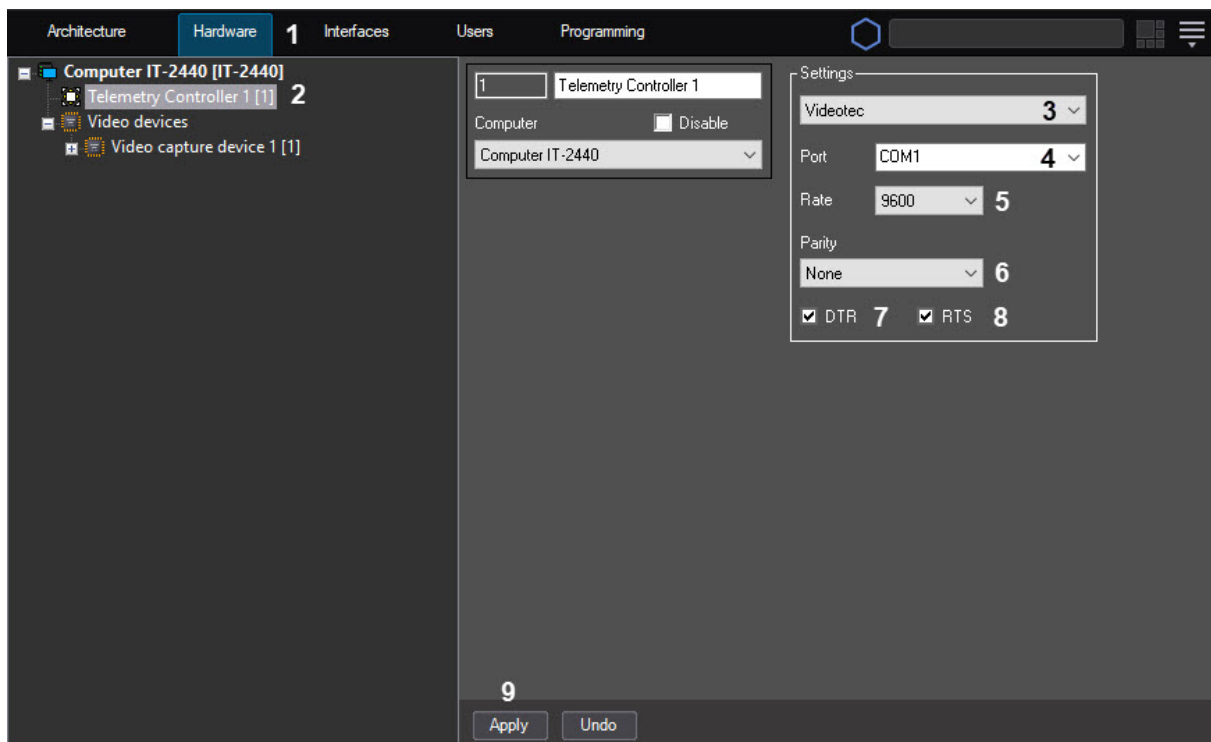
PTZ devices are connected to the server serial (COM) ports. In *Axxon PSIM*, you can connect the required number of PTZ devices depending on users' demands.

The data exchange with the PTZ device is performed via the serial (COM) port in accordance with the specialized protocol. Each type of PTZ device uses the individual exchange protocol. To exchange data via the serial (COM) port, you can select only one exchange protocol. Thus, you can connect only one type of PTZ device to one serial (COM) port.

Configure several serial (COM) ports one after another. Each type of serial (COM) port used to connect the PTZ device in *Axxon PSIM* has the corresponding **Telemetry Controller** object created and configured on the **Hardware** tab of the *Axxon PSIM* **System settings** dialog window.

To configure the serial (COM) port used for connecting PTZ devices of the same type, do the following:

1. Go to the **Hardware** tab of the **System settings** dialog window (1).
2. Create the **Telemetry Controller** system object based on the **Computer** object, or select the corresponding object in the object tree on the **Hardware** tab of the **System settings** dialog window (2).



3. When you create the **Telemetry Controller** object, specify the ID, the name of the object, and select the server to the COM port of which the PTZ device is connected.
4. Select the protocol of data exchange with the PTZ device in the list. The names of data exchange protocols in this list correspond to the names of PTZ types (3).
5. From the **Port** list (4), select the serial (COM) port number to connect the PTZ device. If you connect the device via the converter over the Ethernet network, then enter the IP address and port in this field to which you want to send the telemetry commands by the selected protocol.

Attention!

You must select the port only if the PTZ device is physically connected to the computer COM port. Otherwise, if you want to control PTZ on the IP device, select the **Remote COM port** value. The PTZ control commands are sent via the device driver, and the address configuration in the RS-485 or RS-232 network is performed on the settings panel of the **PTZ device** object (see [Configuring PTZ device in Axxon PSIM](#)).

Note

If you use the "OKO" telemetry system, select the NM port number from the **Port** drop-down list (4).

6. If necessary, change the data exchange rate between the server and the PTZ device (5).

Note

Take into account that the data exchange rate via the COM port is specified by the vendor of the PTZ device. The data exchange rate with the PTZ device via the COM port must be the same as the rate specified by the vendor.

Note

If you want to change the serial COM port settings, you must simultaneously make the corresponding changes in the COM port settings in the Windows OS (for information on how to configure the serial COM port in the Windows OS, see [Appendix 4. Technical specifications of video capture cards](#)).

7. If necessary, change the parameters of the bit parity control at the data exchange (6).
8. If PTZ devices are passive (that is, the power isn't supplied independently), you must activate the power supply of PTZ devices via the outputs of the DTR or RTS serial COM ports by setting the **DTR** or **RTS** checkboxes (7, 8).
9. To save the changes, click the **Apply** button (9).

Configuring PTZ device in Axxon PSIM

The number of PTZ devices connected to the server is specified in the license key bundled along with the *Axxon PSIM* distribution kit.

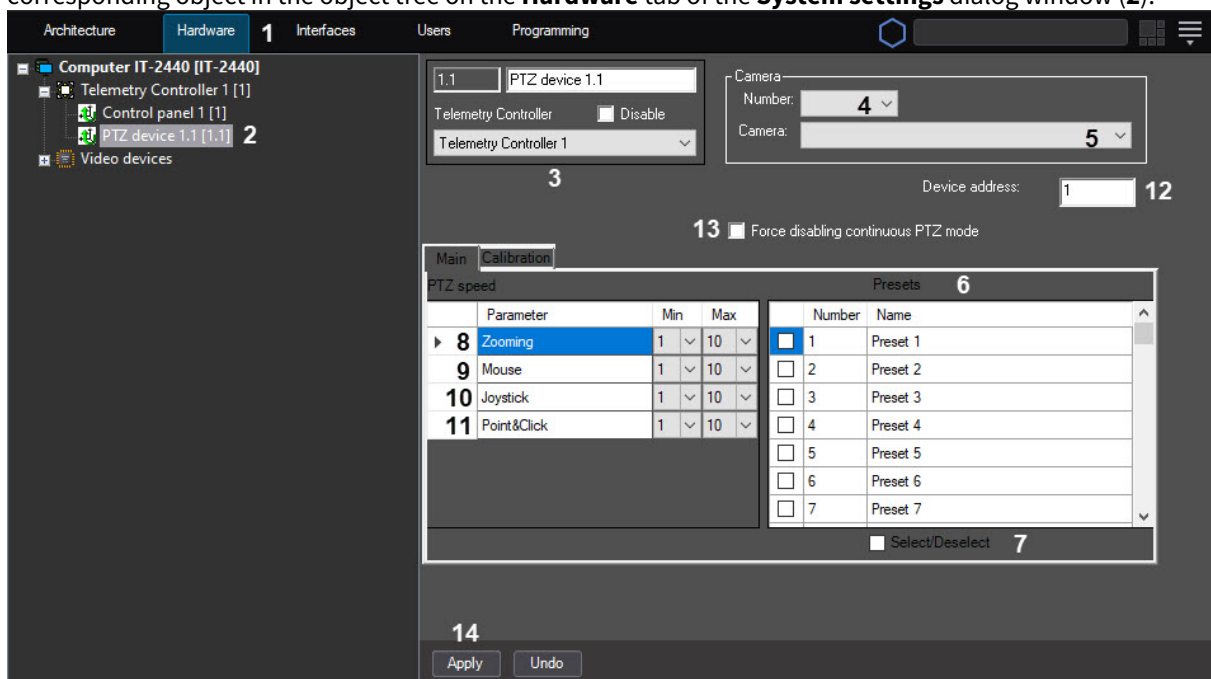
Each PTZ device in *Axxon PSIM* has the corresponding **PTZ device** system object. The **PTZ device** object is a child object to the **Telemetry Controller** object.

The PTZ device configuration includes the stages of selecting the camera equipped by the PTZ device and setting PTZ hardware addresses. When you use the absolute telemetry, the calibration setup is required, see [Configuring points calibration in the camera FOV](#).

Configure several PTZ devices one after another.

To configure the PTZ device, do the following:

1. Go to the **Hardware** tab of the **System settings** dialog window (1).
2. Create the **PTZ device** object on the basis of the **Telemetry Controller** system object, or select the corresponding object in the object tree on the **Hardware** tab of the **System settings** dialog window (2).



3. When you create the **PTZ device** object, you must specify the ID, the object name and select the **Telemetry Controller** object to which the PTZ device is connected (3).
4. Select the ID of the camera equipped by the PTZ device (4).

5. Select the name of the camera equipped by the PTZ device (5).

Note

You must specify either the camera ID or its name.

6. In the **Presets** table, set the checkboxes next to the presets that you want to display in the **Telemetry control panel** (see the [Configuring the telemetry control panel](#) section). Change the preset's name if necessary (6).

Note

To select all presets or cancel this operation, use the **Select/Deselect** checkbox (7).
The number of presets depends on the device, see [Appendix 6. Maximum number of presets for IP devices](#).

7. In the **Zooming** group (8), set the minimum and maximum speed of the optical zoom in conventional units for the PTZ device.
8. In the **Mouse** group (9), set the minimum and maximum rotation speed in conventional units for the PTZ device when controlling from the surveillance monitor with the mouse.
9. In the **Joystick** group (10), set the minimum and maximum rotation speed in conventional units for the PTZ device when controlling with a joystick.
10. In the **Point&Click** group (11), set the minimum and maximum rotation speed of the PTZ device in the direction of the mouse pointer click (Point&Click) in conventional units for the PTZ device.
11. In the **Device address** field (12), you must specify the hardware address of the PTZ device. The PTZ hardware address corresponds to the address set on the device using jumpers or configured when you program the PTZ device with the bundled software.
12. If you want to disable the continuous PTZ control mode, set the **Force disabling continuous PTZ mode** checkbox (13).

Note

If you clear the checkbox, then the continuous PTZ control mode is automatically enabled for PTZ devices that support it.

13. To save the changes, click the **Apply** button (14).

3.4.3 Configuring the PTZ device control panel

The telemetry control panel is used to control PTZ devices. To register the *Telemetry control panel* as the hardware device in *Axxon PSIM*, use the **Control panel** system object.

Note

Some of the PTZ control panels, for example, UNIVIEW KB-1100 are registered by using the **Control device** object, see [Configuring the Control device object](#).

After you connect, register, and configure the telemetry control panel, the **Key pressed** events start coming from the corresponding **Control panel** object when you press keys, as well as other events depending on the control panel model—see subsections.

When you connect the telemetry control panel integrated into the Drivers Pack, you can use the [Camera discovery tool](#) to automatically register the **Control panel** object in *Axxon PSIM* similar to IP devices. The Axis T8310 and Videotec DCZ control panels are integrated in this way at the time of writing this documentation. You can configure

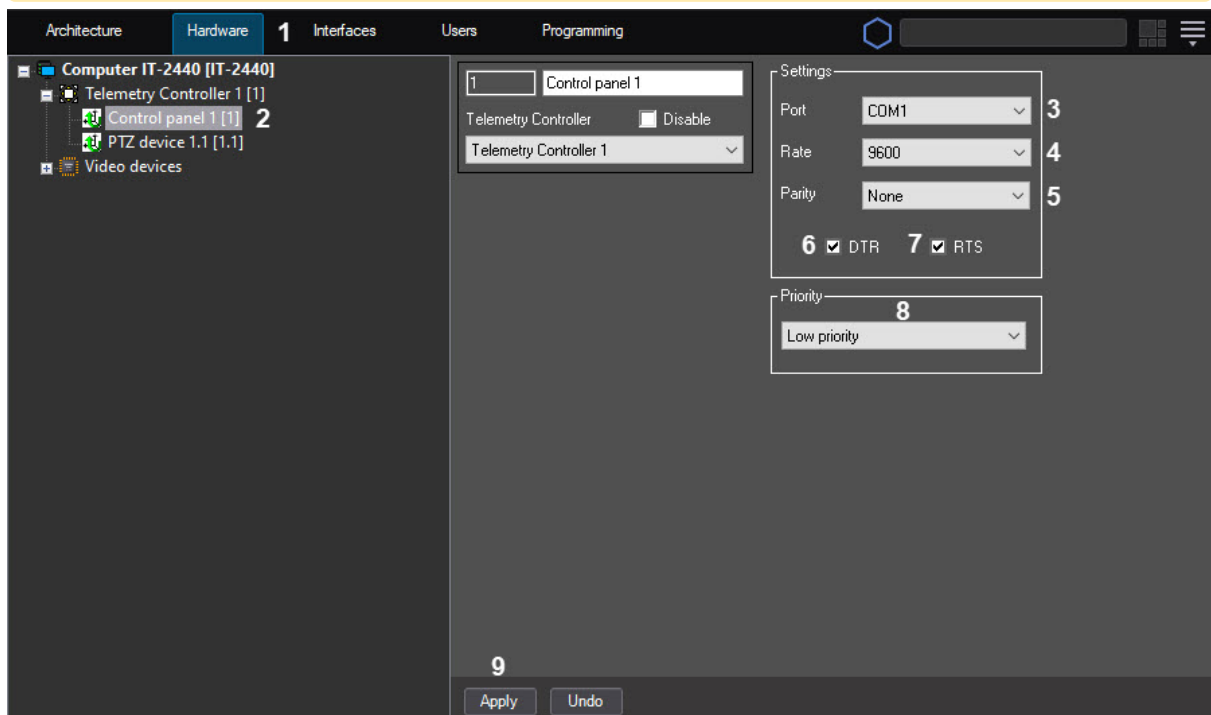
their connection manually as described below. For the list of control panels that can use the Camera discovery tool, see the [Documentation Drivers Pack](#).

To register and configure the **Control panel** object manually, do the following:

1. Go to the **Hardware** tab of the *Axxon PSIM System settings* dialog window (1).
2. Create the **Control panel** system object on the basis of the **Telemetry Controller** object, or select the corresponding object on the **Hardware** tab of the **System settings** dialog window (2).

Attention!

If you connect the control panel using the USB interface, then all settings related to the COM port are ignored by the system. In this case, go to step 8.



3. When you create the **PTZ device** object, you must specify the ID, the object name and select the **Telemetry controller** object to which the PTZ device is connected.
4. From the **Port** list (3), select the serial COM port number to connect the **Control panel** device.

Note

The control panel connects to the COM port different from the one used by PTZ devices. Due to this, you must specify another COM port number on the settings panel of the parent (for the **Control panel** object) **Telemetry Controller** object.

5. If necessary, specify the parameters of the data exchange rate between the computer and the **Telemetry control panel** device (4).
6. If necessary, change the parameters of the bit parity control at the data exchange (5).
7. If the **Telemetry control panel** device is passive (that is, the power isn't supplied independently), you must activate the power supply of PTZ devices via the outputs of the DTR or RTS serial COM ports by setting the **DTR** or **RTS** checkboxes (6, 7).

Note

The COM port rate and parity settings set for the parent Telemetry controller object don't relate to the similar settings of the **Control panel** system object, as they refer to another COM port.

Note

The values of the **Rate** and **Parity** settings must be the same as the COM port settings in the Windows OS.

8. If necessary, change the PTZ device control priority by using the **Telemetry control panel** device. For this, select the required item from the **Priority** list (8).
9. To save the changes, click the **Apply** button (9).

Features of BOSCH KBD-Digital or BOSCH KBD-Universal control panel configuration and operation

On the page:

- [Configuring BOSCH KBD-Digital or BOSCH KBD-Universal control panel in Axxon PSIM™](#)
- [Features of BOSCH KBD-Digital or BOSCH KBD-Universal control panel operation in Axxon PSIM™](#)
- [Example of JScript script](#)

Configuring BOSCH KBD-Digital or BOSCH KBD-Universal control panel in Axxon PSIM™

Configure BOSCH KBD-Digital or BOSCH KBD-Universal control panel in *Axxon PSIM™* as follows:

1. Create the **Telemetry Controller** object.

2. Configure the **Telemetry Controller** object as follows:

- Set the **Bosch-IntuiKey** interface protocol.
 - Select the COM port in the **Port** list.
 - Set **19200** value to the **Rate** parameter.
 - Set the **None** value for the **Parity** parameter.
 - Set the **DTR** and **RTS** checkboxes checked.
- Create the **Control panel** system object under the **Telemetry Controller** object.
 - Configure the **Control panel** object as described in [Configuring the PTZ device control panel](#) section.

BOSCH KBD-Digital or BOSCH KBD-Universal control panel is now configured in Axxon PSIM™.

Features of BOSCH KBD-Digital or BOSCH KBD-Universal control panel operation in Axxon PSIM™

 Attention!

Before you start using BOSCH KBD-Digital or BOSCH KBD-Universal control panel in Axxon PSIM™, switch it to the **Terminal mode**. For this, press the **Prod** key and select **Terminal** on the monitor.

 Note

Detailed information on BOSCH KBD-Digital or BOSCH KBD-Universal control panel is given in official reference documentation on this device.

When the key is pressed on BOSCH KBD-Digital or BOSCH KBD-Universal control panel there is **Key is pressed** or **Key is released** message in Axxon PSIM™.

Event	Message	Parameter	Description
KEY_PRESSED	Key pressed	param0	Code of pressed key
KEY_RELEASED	Key released	param0	Code of released key

In the comments to these events the code (param0) of pressed and released key is specified.

 Note

With long key pressing (more then 500 milliseconds) the **Key is pressed** event is repeated with 100 milliseconds interval. Releasing the key one **Key is released** message is received.

Key codes of BOSCH KBD-Digital or BOSCH KBD-Universal control panel:

Key	Key code	Key	Key code
SOFTKEY 1L	0x01	4	0x34
SOFTKEY 2L	0x02	5	0x35
SOFTKEY 3L	0x03	6	0x36
SOFTKEY 4L	0x04	7	0x37
SOFTKEY 5L	0x05	8	0x38
SOFTKEY 6L	0x06	9	0x39
SOFTKEY 7L	0x07	MONITOR	0x20
SOFTKEY 1R	0x08	PRODUCT	0x21
SOFTKEY 2R	0x09	CLEAR	0x22
SOFTKEY 3R	0x0A	IRISA	0x23
SOFTKEY 4R	0x0B	IRISB	0x24
SOFTKEY 5R	0x0C	ACK	0x25
SOFTKEY 6R	0x0D	ENTER	0x26

SOFTKEY 7R	0x0E	SHOT	0x27
0	0x30	FOCUSA	0x28
1	0x31	FOCUSB	0x29
2	0x32	0 + 1	0x81
3	0x33	MONITOR + CLEAR	0x82

The following special features are available for *BOSCH KBD-Digital* or *BOSCH KBD-Universal* control panel:

1. **Paint figure** (set by **Figure**, **Type of painting**, **Paint figure**, **original Y-coordinate**, **end Y-coordinate**, **original X-coordinate**, **end X-coordinate** and **Screen**).
2. **Clear screen** (set by **Screen** parameter).
3. **Type text** (set by **X-coordinate**, **Y-coordinate**, **Coding**, **Style**, **Screen** and **Text** parameters).



Note

Bold text is displayed only on the status display.

Example of JScript script

[bosch.txt](#) and [bosch_menu.txt](#) files are available when clicking the links.

[bosch_menu.txt](#) file consists of Jscript script that, when initiated by macro, displays the menu on the *BOSCH KBD-Digital* or *BOSCH KBD-Universal* telemetry control panel. This menu shows the correspondence of *keys of BOSCH KBD-Digital* or *BOSCH KBD-Universal* control panels to the actions they perform. This script is to be run just once.

[bosch.txt](#) file consists of Jscript script that assigns actions to *keys of BOSCH KBD-Digital* or *BOSCH KBD-Universal* control panels as follows:

Key	Code (denary)	Code (hexadecimal)	Action
SOFTKEY 1L	1	0x01	Display 1 video surveillance window on the monitor
SOFTKEY 2L	2	0x02	Display 4 video surveillance windows on the monitor
SOFTKEY 3L	3	0x03	Display 9 video surveillance windows on the monitor
SOFTKEY 4L	4	0x04	Display all video surveillance windows
SOFTKEY 5L	5	0x05	Rewind

SOFTKEY 6L	6	0x06	Playback
SOFTKEY 7L	7	0x07	Go to the archive playback mode
SOFTKEY 1R	8	0x08	Export frame
SOFTKEY 2R	9	0x09	Print frame
SOFTKEY 3R	10	0x0A	Run macro 2
SOFTKEY 4R	11	0x0B	Run macro 3
SOFTKEY 5R	12	0x0C	Forward wind
SOFTKEY 6R	13	0x0D	Stop playback
SOFTKEY 7R	14	0x0E	Go to the video surveillance mode
MONITOR	32	0x20	Specify monitor ID
ACK	37	0x25	Display menu (run macro 1)
ENTER	38	0x26	Specify camera ID
SHOT	39	0x27	Go to preset

Example of how to use script.

Task: to display camera 2 on the monitor 1 and go to preset 3.



Note.

Preset 3 is to be saved, for example using the [Control of PTZ device using the telemetry control panel](#).

1. Click the 1 button, then click the MONITOR button. The information about current monitor number is displayed on the display of the control panel.
2. Click the 2 button on the control panel, then click the ENTER button. As a result, camera 2 is displayed on the monitor 1, and information about current camera number is displayed on the display of the control panel.
3. Click the 3 button on the control panel, then click the STOP button. As a result, camera 2 switches to preset 3, and information about current preset number is displayed on the display of the control panel.

Features of Axis T8310 control panel configuration and operation

On the page:

- [General information](#)
- [Features of Axis T8310 control panel operation in Axxon PSIM](#)
- [Example of script in JScript](#)

General information

Two versions of Axis T8310 control panel are integrated with *Axxon PSIM*: Rev01 and Rev02. The setup and operation procedure for these versions in *Axxon PSIM* is similar.

It is not recommended to connect control panels of both versions to *Axxon PSIM* at the same time to avoid incorrect operation of the system.

The control panel can be added to *Axxon PSIM* as a control device – see [Configuring the Control device object](#). In this case, events on pressing keys, changing the position of the joystick, etc. in the Event Viewer are received from the **Control Device** object.

Configuring Axis T8310 control panel in Axxon PSIM

Configure Axis T8310 control panel in Axxon PSIM as follows:

1. Create the **Telemetry controller** object.

2. Configure the **Telemetry controller** object as follows:

- a. Set the **Axis** interface protocol.
- b. Other settings of this object are ignored by system because the control panel of *Axis T8310* telemetry is connected to the Server using USB interface.
3. Create the **Control panel** system object under the **Telemetry controller** object.
4. Configure the **Control panel** object as described in [Configuring the PTZ device control panel](#) section.
5. If Rev01 panel is in use, restart Axxon PSIM

Axis T8310 control panel is now configured in Axxon PSIM.

Features of Axis T8310 control panel operation in Axxon PSIM

Note.

Detailed information on Axis T8310 control panel is given in official reference documentation on this device

Pressing the key on Axis T8310 control panel there is **Key is pressed** or **Key is released** message in *Axxon PSIM*.

AXIS T8310 control panel is a modular system that consists of three devices:

1. AXIS T8311 joystick. This device has functionality of an ordinary joystick and it is configured in the standard way (see [Configuring the joystick for telemetry control](#) section). The device also has 6 hot keys.

Note.

By default, the image zooms out if z axis is rotated right (in clockwise order) and zooms in if z axis is rotated left (counterclockwise) while the telemetry is controlled in the Monitor using Axis 8311 joystick.

2. AXIS T8312 keyboard has 10 hot keys and 12 programmed keys.
3. AXIS T8313 Jog Dial has 6 hot keys and a navigation wheel.

The panel model varies depending on the connected [devices](#).

T8310	All devices
T8311	Joystick only
T8311/T8312	Joystick and keypad
T8311/T8313	Joystick and jog dial
T8312	Keypad only
T8312/T8313	Keypad and jog dial
T8313	Jog dial only

If complete AXIS T8310 control panel is used, then modules are connected to each other via AXIS T8312 keyboard (USB hub).

Functions of control panel related to pressing keys can be performed with the help of following:

1. scripts in JScript (see details on how to create scripts in [The Script object. Programming using the JScript language](#));
2. programs in internal language in Axxon PSIM;
3. macros (see [Creating and using macros](#)).

Pressing the key on the keyboard of AXIS T8310 control panel in Axxon PSIM there is **Key is pressed** or **Key is released** message.

Description of 'Key is pressed' and 'Key is released' messages:

Event	Message	Parameter	Description	Value range
KEY_PRESSED	Key pressed	param0	Code of pressed key	0..21
		device	Device with pressed key.	0 - AXIS T8312 main keyboard, 1 - AXIS T8313 keyboard
KEY_RELEASED	Key pressed	param0	Code of released key	0..21

Event	Message	Parameter	Description	Value range
		device	Device with released key	0 - AXIS T8312 main keyboard, 1 – AXIS T8313 Jog Dial

The **Control panel** object (TELEMETRY_EXT) is the issuer of these events. In the comment to these events the code of pressed and released key is specified.

Key codes of AXIS T8312 control panel:

Key	Key code	Key	Key code
0	0	Alt	11
1	1		12
2	2		13
3	3		14
4	4		15
5	5		16
6	6	F1	17
7	7	F2	18
8	8	F3	19
9	9	F4	20
	10	F5	21

**Note.**

Control panel key codes and the event issuer depend on the panel firmware.

When the position of AXIS T8313 joystick is changed, the *Axxon PSIM* receives the **Position is changed** message.

Description of **Position is changed** message:

Event	Message	Parameter	Description	Value range
MOVED	Position changed	param0	Offset value	JogDial -1.. 1; shuttle -8..7
		device	'AXIS T8313' type of control-gear	0 – JogDial, 1 – shuttle

The following special features are available for AXIS T8310 control panel:

1. Switch on relay (set by **Relay identifier** parameter). This command allows switching on the light on the key with light (12-16).
2. Switch off relay (set by **Relay identifier** parameter). This command allows switching off the light on the key with light (12-16).

Example of script in JScript

The [link](#) provides the file containing the script on JScript, which allows assigning actions to the keys of the AXIS T8310 telemetry control panel as follows:

Axis T8312

Key	Action
F1	1-CAM layout
F2	4-CAM layout
F3	9-CAM layout
F4	16-CAM layout
F5	25-CAM layout
	Monitor ID
	Camera ID
	Go to preset
	not used
	Save preset
	Switch between live-view & archive
Alt	not used

Axis T8313

Key	Action
	standart controls
[L]	export frame
[R]	export arch
	Outer control = increase/decrease camera surveillance window size Inner control = next/previous

Usage example:

1. To activate Camera 3 on Monitor 12 do the following:

- a. Press 12 then  .
- b. Press 3 then  .
2. To go to preset #2 do the following:
 - a. Press 2 then  .

Features of Lilin PIH-800III control panel configuration and operation

On the page:

- [Configuring Lilin PIH-800III telemetry control panel](#)
- [Using Lilin PIH-800III telemetry control panel](#)

Configuring Lilin PIH-800III telemetry control panel

Configure the *Lilin PIH-800III* telemetry control panel in the *Axxon PSIM* as follows:

1. Create the **Telemetry controller** object.

1. Configure the **Telemetry controller** object as follows:

2. Specify the **Lilin PIH-7000/7600** communication protocol.

Note.

In order to transmit directly data to Lilin cameras connected via a serial port, select the **Lilin PIH-7000/7600 Direct** communication protocol. However, the full functionality of these cameras can be used, even what is not supported by *Axxon PSIM*.

3. In the **Port** list, specify the number of the serial (COM) port for connecting to the telemetry controller.
4. Specify **9600** value for the **Rate** parameter.
5. Specify **None** value for the **Parity** parameter.
6. Set the **DTR** and **RTS** checkboxes checked.

- Create the **Control panel** object under the **Telemetry controller** object.
- Configure the **Control panel** object as described in [Configuring the telemetry control panel](#) section.

Lilin PIH-800III telemetry control panel is now configured in *Axxon PSIM*.

Using *Lilin PIH-800III* telemetry control panel

Some of *Lilin PIH-800III* telemetry control panel's keys correspond to standard functions in *Axxon PSIM*.

Note.

The functionality of these keys is also described in the reference documentation on *Lilin PIH-800III* control panel.

Key	Function
-----	----------

ZOOM IN / ZOOM OUT	Increases/decreases the size of the image
FOCUS FAR / FOCUS NEAR	Increases/decreases the focal distance of the lens
IRIS O / IRIS C	Opens/closes the aperture
AUTOFOCUS	Sets the focal distance of the lens automatically
AUTOIRIS	Automatically selects the position of the aperture
AUTOPAN	Switches the pan head to auto-pan mode; or switches a dome camera to auto-patrol mode
PRESET	Switches to a preset; saves a preset
PRESET 1/2/3/4	Switches to preset 1/2/3/4

Some of *Lilin PIH-800III* control panel's keys can be used through the KEY_PRESSED event. *Axxon PSIM* receives the **KEY_PRESSED** event when these keys are pressed on Lilin PIH-800III telemetry control panel's keyboard.

Event	Message	Parameter	Description
KEY_PRESSED	A key was pressed	param0	Code the key that was pressed

The source of this event is the **Control panel** object (TELEMETRY_EXT). The event's documentation indicates the code of the key that was pressed (param0). The key code for entering a number (1, 2, or 4 digits) is equal to the number entered. A four-byte hexadecimal code is used for function keys.

Key	Code	Hexadecimal code
ESC	1769472	0x001B0000
LIGHT	655360	0x000A0000
CTRL1	851969	0x001A0000
CTRL2	851970	0x00090000
CLR	3604480	0x00370000
ENT	3538944	0x00360000
WIPER	786432	0x000C0000

SPRAY	720896	0x000B0000
-------	--------	------------

No messages are sent to *Axxon PSIM* when the F1-F4, MON and CAM keys are pressed.

Control panel functions associated with the execution of actions in *Axxon PSIM* when events arrive from the control panel can be implemented using the following resources:

1. Scripts written in the JScript programming language (see [The Script object. Programming using the JScript language](#) for more information on how to create scripts);
2. Programs written in internal programming language in *Axxon PSIM*;
3. Macros (see [Creating and using macros in Administrator's Guide](#) for more information).

Features of Panasonic WV-CU950 control panel configuration and operation

On the page:

- [Configuring Panasonic WV-CU950 control panel in Axxon PSIM™](#)
- [Features of Panasonic WV-CU950 control panel operation in Axxon PSIM™](#)
- [Example of JScript script](#)

Configuring Panasonic WV-CU950 control panel in Axxon PSIM™

Panasonic WV-CU950 control panel is connected using 4-wired version of RS-485 interface. Before connecting *Panasonic WV-CU950* control panel, make sure that the MODE switches are set to the position corresponding to connection via RS-485 protocol: switches number 1 and number 5 are to be set to ON, the rest to OFF. See details on how to set switches in the reference documentation.

Configure *Panasonic WV-CU950* control panel in *Axxon PSIM™* as follows:

1. Create the **Telemetry controller** object.

2. Configure the **Telemetry controller** object as follows:

- Set the **Panasonic PS-Data** interface protocol.
 - Select the COM port in the **Port** list.
 - Set **9600** value for the **Rate** parameter.
 - Set the **None** value for the **Parity** parameter.
 - Set the **DTR** and **RTS** checkboxes checked.
- Create the **Control panel** system object under the **Telemetry controller** object.
 - Configure the **Control panel** object as described in [Configuring the PTZ device control panel](#) section.

Panasonic WV-CU950 control panel is now configured in Axxon PSIM™.

Features of Panasonic WV-CU950 control panel operation in Axxon PSIM™

Pressing the key on Panasonic WV-CU950 control panel there is **Key pressed** or **Key released** message in Axxon PSIM™.

Description of 'Key pressed' and 'Key released' messages:

Event	Message	Parameter	Description
KEY_PRESSED	Key pressed	param0	Code of pressed key
KEY_RELEASED	Key released	param0	Code of released key

The **Cotrol panel** object (TELEMETRY_EXT) is the source of these events. In the comment to these events the code of pressed and released key is specified.

Key codes of Panasonic WV-CU950 control panel:

Key	Key code	Key	Key code
1	'1'	30	'T'
2	'2'	31	'U'
3	'3'	32	'V'
4	'4'	33	'W'
5	'5'	34	'X'
6	'6'	35	'Y'
7	'7'	36	'Z'
8	'8'	37	'a'
9	'9'	38	'b'
10	'0'	39	'c'
11	'A'	40	'd'
12	'B'	41	'e'
13	'C'	42	'f'
14	'D'	43	'g'
15	'E'	44	'h'
16	'F'	45	'i'
17	'G'	46	'j'
18	'H'	47	'k'
19	'I'	48	'l'

Key	Key code	Key	Key code
20	'J'	49	'm'
21	'K'	50	'n'
22	'L'	51	'o'
23	'M'	52	'p'
24	'N'	53	'q'
25	'O'	54	'r'
26	'P'	55	's'
27	'Q'	56	't'
28	'R'	57	'u'
29	'S'		

When the position of Panasonic WV-CU950 joystick is changed, then there is the **Position changed** message.

Description of Position changed message:

Event	Message	Parameter	Description	Value range
MOVED	Position changed	param0	Offset value	JogDial -1.. 1; shuttle -6..6
		device	Type of control-gear	0 – JogDial, 1 – shuttle

Functions of control panel related to pressing keys can be performed with the help of following:

1. scripts in JScript (see details on how to create scripts in [The Script object. Programming using the JScript language](#));
2. programs in internal language in Axxon PSIM;
3. macros (see details in [Administrator's Guide, Creating and using macros](#) section).

The following special features are available for Panasonic WV-CU950 control panel using macros:

1. **Clear screen** – allows clearing the device screen.
2. **Type text** (set by Y coordinate, Text and Indication parameters) – displaying text with certain position and indication on the device screen.
3. **Set alarm** (set by Audio alarm parameter). Set alarm signal type.
4. **Switch on relay** (set by Relay identifier parameter). This command allows switching on the indicator.

5. **Switch off relay** (set by Relay identifier parameter). This command allows switching off the indicator.
6. **Reboot** (set by Reboot type parameter). Allows rebooting the device immediately or after a time period.

Example of JScript script

The file with JScript can be found [here](#). It allows assigning actions to Panasonic WV-CU950 control panel keys:

Key	Function
K	Continuous playback/pause
J	Stop playback
I	Switch to the archive playback mode/view live video mode
N	Clear control panel display
n	Enter key emulation
A	Set the Video surveillance monitor ID
B	Set the camera ID
D	Go to the preset
F	Record preset
i	Layout with 1 camera
j	Layout with 4 cameras
k	Layout with 9 cameras
l	Layout with 16 cameras
Shifting wheel of rotary control	Rewind/fast forward playback
Shifting frame-by-frame wheel	Maximize/minimize the Surveillance window

Features of Samsung SSC-2000 control panel configuration and operation

Configure Samsung SSC-2000 telemetry control panel in *Axxon PSIM* as follows:

1. Create the **Telemetry controller** object.

1. Configure the **Telemetry controller** object as follows:

The screenshot shows the configuration window for a Telemetry Controller. On the left, there's a tab labeled '1' and the title 'Telemetry Controller 1'. Below the title, there's a 'Computer' section with a 'Disable' checkbox and a dropdown menu currently showing 'LOCALHOST'. To the right, a 'Settings' section contains several configuration options: a 'Protocol' dropdown menu set to 'Samsung', a 'Port' dropdown menu set to 'COM1', a 'Rate' dropdown menu set to '9600', a 'Parity' dropdown menu set to 'None', and two checked checkboxes labeled 'DTR' and 'RTS'. At the bottom of the window are two buttons: 'Apply' and 'Undo'.

2. Specify the **Samsung** communication protocol (1).
3. In the **Port** list, select the number of the serial (COM) port for connecting to the telemetry controller (2).
4. Specify **9600** value for the **Rate** parameter (3).
5. Specify **None** value for the **Parity** parameter (4).
6. Set the **DTR** and **RTS** checkboxes checked (5,6).

- Create the **Control panel** object under the **Telemetry controller** object.
- Configure the **Control panel** object as described in [Configuring the telemetry control panel](#) section.

Samsung SSC-2000 telemetry control panel is now configured in Axxon PSIM.

Features of EverFocus EKB200 control panel configuration

Configure *EverFocus EKB200 telemetry control panel* in *Axxon PSIM* as follows:

1. Create the **Telemetry Controller** object.



Note.

You can leave default settings of the **Telemetry Controller** object.

2. Create the **Control panel** object.
3. Select **EverFocus EKB200** in the **Port** field (1).

**Note.**

As the control panel is connected to the computer via USB, then you can leave default **Rate**, **Parity**, **DTR** and **RTS** settings.

4. To apply settings, click the **Apply** button (2).

Even if there are no PTZ cameras in the system, there will be events (when buttons are pressed and the joystick position is changed) from the **Control panel** object corresponding to EverFocus EKB200 telemetry control panel. These events will be displayed in the event log and they can be used in scripts and macros (see also [TELEMETRY_EXT Keyboard](#) in [Guide for creating scripts \(programming\)](#)).

EverFocus EKB200 telemetry control panel is now configured.

Features of Samsung SPC-7000 control panel configuration

On the page:

- [Configuring Samsung SPC-7000 control panel](#)
- [Example of script in JScript](#)

Configuring Samsung SPC-7000 control panel

Configure *Samsung SPC-7000* telemetry control panel in *Axxon PSIM* as follows:

1. Create the **Telemetry control panel** object.

Note.

You can leave default settings of the **Telemetry control panel** object.

2. Create the **Control panel** object.

3. Select **Samsung SPC-7000** in the **Port** field (1).

Note.

As the control panel is connected to the computer via USB, then you can leave default **Speed**, **Parity**, **DTR** and **RTS** settings.

4. To apply the changes, click the **Apply** button (2).

Samsung SPC-7000 panel is now configured.

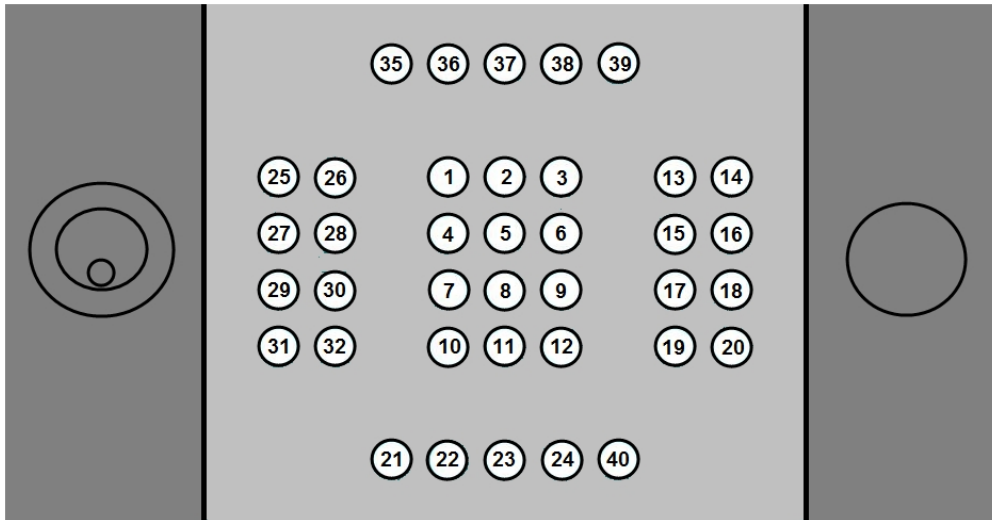
Example of script in JScript

The [link](#) provides the file containing the script on JScript, which allows assigning actions to the keys of the *Samsung SPC-7000* telemetry control panel as in the manufacturer's manual.

Features of using VIDEOTEC DCZ keyboard

This keyboard is connected to *Axxon PSIM* as a standard joystick – see [Configuring the joystick for telemetry control](#). When connecting the keyboard to the computer, it is necessary to press SET + 5 keys on it, in this case it will be defined by the system as a USB gaming device. There is no need to create a Control panel object under the Telemetry controller object.

The figure below shows the correspondence of the key codes to the buttons on the keyboard.



Important!

External left joystick is not supported in *Axxon PSIM*.

The right joystick allows controlling the rotation of the camera lens along the X, Y, Z axes.

When pressing keyboard buttons, *Axxon PSIM* receives events of the following form:

TELEMETRY|1.1||joystick<1>,button <29>,tel_prior <1>,monitor <1>,speed <0>,cam <1>,operator <>,vy <0>,vx <0>

Important!

By default, the keyboard automatically sends ZOOM_IN and ZOOM_OUT commands to the *Axxon PSIM* when 1 or 2 keys are pressed. For proper operation of the keyboard, it is necessary to reset the command values for the keyboard buttons. For this, create **empty** string values **1, 2, 3, 4, 5, 6, 7** and **8** in the HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\AxxonSoft\PSIM\Telemetry branch for the 64-bit system (HKEY_LOCAL_MACHINE\SOFTWARE\AxxonSoft\PSIM\Telemetry for 32-bit) on the computer to which the keyboard is connected.

Actions are assigned to pressed buttons using a script or program (find more information on creating scripts in [The Script object. Programming using the JScript language](#)). The example of this script can be downloaded [here](#). This example assigns the following actions to the buttons of the keyboard:

Key code	Action
10	Activate previous camera

12	Activate next camera
13	Focus in
14	Focus out
15	Enable auto focus
16	Set preset number
18	Delete preset number
21	Activate layout wit 1 camera
22	Activate layout wit 4 cameras
23	Activate layout wit 9 cameras
24	Activate layout wit 16 cameras
40	Activate layout wit all cameras
25	Go to the live video mode
26	Go to archive mode
32	Start patrolling

3.4.4 Configuring PTZ IP cameras

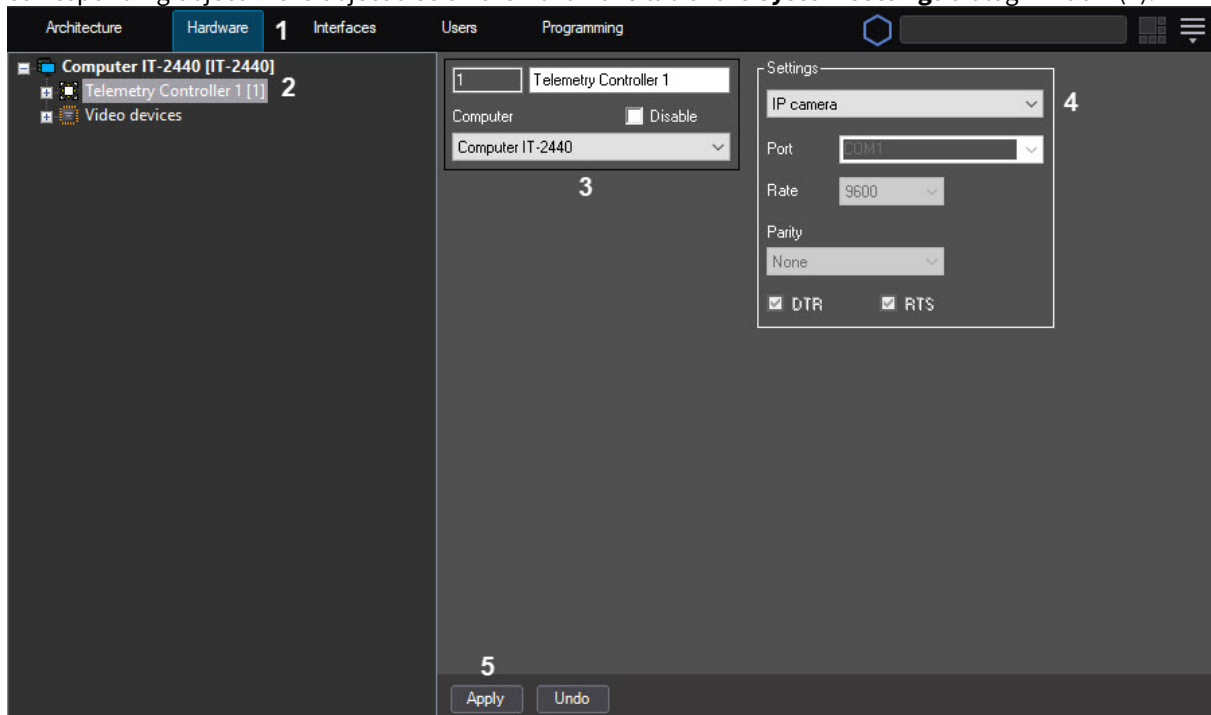
The order of configuring the PTZ IP cameras differs from the one for configuring other PTZ device types.

The connection with the PTZ IP cameras is performed through the local network via the TCP/IP transport protocol. Also, the common protocol of information interaction is used for all PTZ IP cameras.

To configure the **Telemetry Controller** object when you connect the PTZ IP camera, do the following:

1. Go to the **Hardware** tab of the **System settings** dialog window (1).

2. Create the **Telemetry Controller** system object on the basis of the **Computer** object, or select the corresponding object in the object tree on the **Hardware** tab of the **System settings** dialog window (2).



3. When you create the **Telemetry Controller** object (3), you must specify the ID, the object name and select the server to which the PTZ device is connected.
4. Select the data exchange protocol with the PTZ device from the list. You must select the **IP camera** item as the protocol (4) to exchange the data with the PTZ IP camera via the TCP/IP protocol.

Note

When you select the **IP camera** item on the settings panel of the **Telemetry Controller** object, all other parameters become unchanged.

Note

When you use the *Bosch VG5 AutoDome 700 Series* IP cameras, select the **Bosch-Autodome 1.0** data exchange protocol; for the *Bosch VG4 AutoDome*, *Bosch VG5 AutoDome 800 Series* cameras, select **Bosch-Autodome 4.0**.

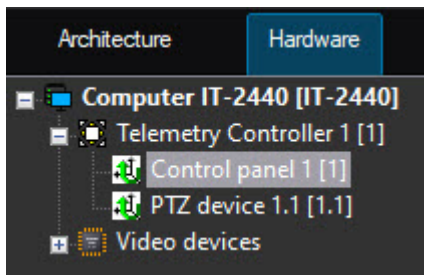
5. To save all the changes, click the **Apply** button (5).

Note

The order of configuring the **PTZ device** object to control the PTZ IP cameras corresponds to the order of configuring the **PTZ device** object to control PTZ devices connected via the server's COM port.

Configuring control of PTZ IP camera using the control panel

To control the PTZ IP camera using the control panel connected via the COM-port, you must create two **Telemetry controller** objects:



1. With the **Control panel** child object. You must configure the **Telemetry controller** object in accordance with the connected control panel as described in the corresponding section, see [Configuring the PTZ device control panel](#).
2. With the **PTZ device** child object. You must configure the **Telemetry controller** object in accordance with the description in the [Configuring PTZ IP cameras](#) section and the **PTZ device** child object in accordance with the [Configuring PTZ device in Axxon PSIM](#) section.

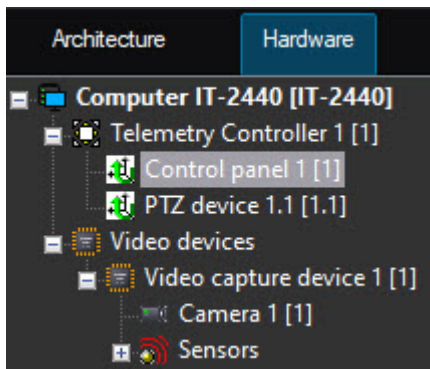
Features of Vivotek Panoramic PTZ configuration

The Vivotek Panoramic PTZ functionality supports the Vivotek SF8172 and Vivotek SF 8172V fisheye cameras, as well as the Vivotek SD8362E PTZ camera.

For information on how to install these cameras and configure connection between them for proper use of the Vivotek Panoramic PTZ, refer to the official documentation that is available on the Vivotek website: <http://www.vivotek.com/panoramic%20ptz/>

For this functionality to operate in *Axxon PSIM*, you must create and configure the following objects in the hardware tree in accordance with the connected cameras:

1. Two **Video capture device** objects (the setting is described in the [Configuring video acquisition from IP devices](#) section).
2. Two **Camera** objects based on the **Video capture device** objects corresponding to the connected cameras.
3. Two **Telemetry controller** objects (the setting is described in the [Configuring PTZ IP cameras](#) section).
4. Two **PTZ device** objects based on the **Telemetry controller** objects, corresponding to the created cameras (the setting is described in the [Configuring PTZ device in Axxon PSIM](#) section).



You also must configure the **Monitor** and **Telemetry control panel** interface objects to control PTZ devices (see the [Configuring the Monitor for telemetry control](#) and the [Configuring the telemetry control panel](#) sections).

After you configure all enumerated objects, the telemetry control on the fisheye camera using the AreaZoom and Point&Click functions becomes available (for detailed information on how to use these functions, see the [Control of PTZ devices using a mouse](#) section of the [Operator's Guide](#) document).

3.4.5 Configuring the joystick for telemetry control

Configuring the joystick to control PTZ devices may be performed in one of the following ways:

1. Using the **Control device object** (by default).
2. Using **Windows OS tools** (if the registry key DisableInternalJoystick = 0, see [Registry keys reference guide](#)).

Configuring joystick using Windows OS tools

Joystick setting procedure

Important!

Before configuring the joystick using the Windows OS tools, set the registry key DisableInternalJoystick = 0, see [Registry keys reference guide](#).

If the joystick is connected to the Server and configured in Windows OS, then *Axxon PSIM* automatically activates the joystick telemetry control option. The option is valid for all PTZ devices connected to the Server and configured in *Axxon PSIM*.

Generally, the joystick configuration contains the following stages:

1. Testing joystick handle functioning in *Axxon PSIM*. This procedure is described in the [Testing joystick functioning](#) section.
Configuration of issuing the command to PTZ devices using the joystick keys. For configuration instructions, see the [Assigning commands to joystick buttons for telemetry control](#) section.
Testing joystick keys functioning in *Axxon PSIM*. The procedure is similar to testing joystick handle functioning. For a detailed description, see the [Testing joystick functioning](#) section.

The following functions are available by default and do not require additional configuration:

1. Rotation of cameras equipped with PTZ devices is performed by inclining the joystick handle;

Note

Joystick threshold corresponds to the **Joystick Threshold** string parameter and is set in the HKLM\SOFTWARE\AxxonSoft\PSIM\Telemetry register of the Windows OS. By default, Joystick Threshold=1, this parameter can possess values from 0 and more. The bigger the value, the less sensitive the joystick is, the best value is selected empirically.

2. Zooming option is performed by turning a joystick handle around its vertical axis.

The zooming option is available only for joysticks with Z axis, for example Axis 295. This axis is formed by joystick handle's angles of rotation.

Z axis is enabled by default and corresponds to the value of **Zenable=1** string parameter in the HKLM\SOFTWARE\AxxonSoft\PSIM\Telemetry register of the Windows OS.

Attention!

The coordinate of joystick Z axis is to be automatically zeroized after every zooming for proper telemetry control. Otherwise, Z axis is to be disabled by setting the Zenable=0 parameter in the HKLM\SOFTWARE\AxxonSoft\PSIM\Telemetry section.

Note

Z axis is to be disabled when the Logitech USB joystick is used.

Assigning commands to joystick buttons for telemetry control

Certain commands can be assigned to the joystick buttons in order to issue default commands to PTZ devices.

This feature is available for USB joysticks only and not related to telemetry control panels.

To assign the commands to joystick buttons, do one of the following:

1. Edit the Windows OS registry (see [Assigning commands to joystick buttons using Registry Editor](#)).
2. Set up the Monitor (see [Assigning commands to joystick buttons using the Monitor](#)).

Note.

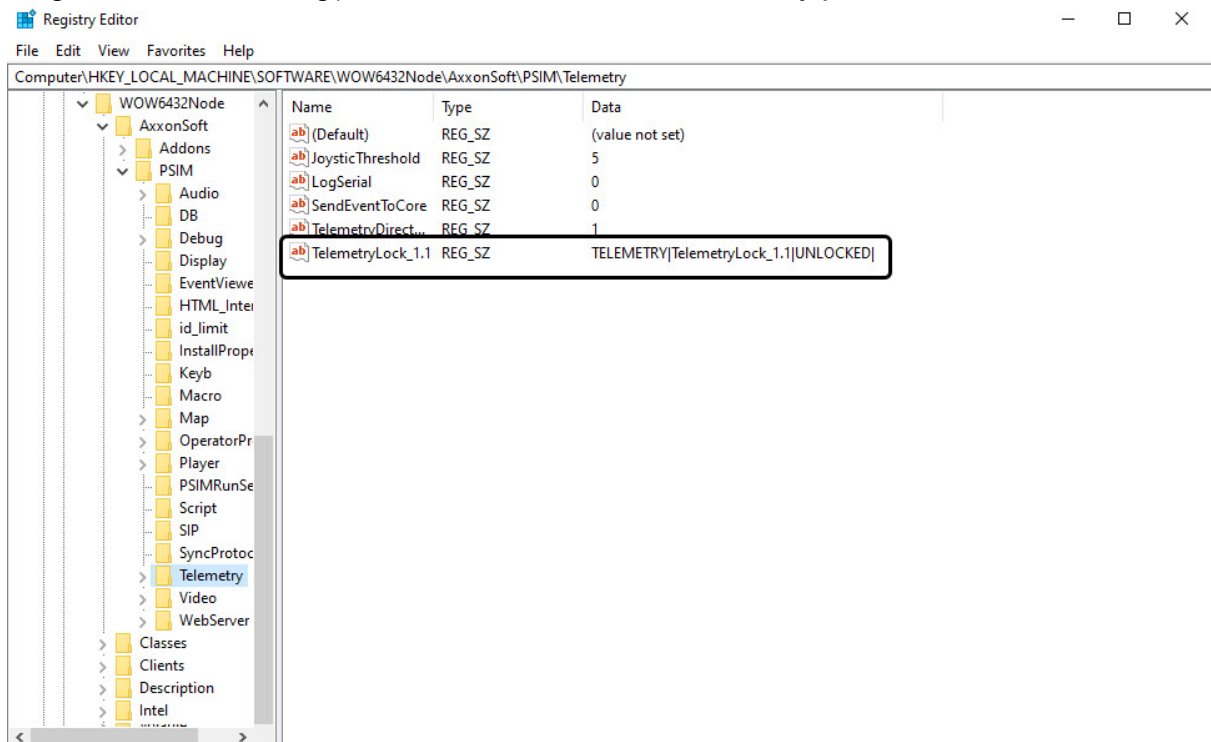
Some PTZ devices do not react to commands issued by the joystick buttons used for video camera rotation. In this case, you can rotate a video camera using a joystick handle.

Assigning commands to joystick buttons using Registry Editor

Here is a short list of actions that are to be performed in order to configure the joystick buttons. Detailed information on how to use the Windows OS registry can be found in the [Appendix 2. Relevant information on using Windows operating system](#) section of [Administrator's Guide](#).

Assign commands to the joystick buttons in the Windows OS registry as follows:

1. Open the **TELEMETRY** folder of the HKEY_LOCAL_MACHINE\SOFTWARE\AxxonSoft\PSIM registry branch (HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\AxxonSoft\PSIM for 64-bit system).
2. Add a string parameter to the **TELEMETRY** folder.
3. Assign the name to the string parameter, identical to the number of the joystick button in the Windows OS.



**Note.**

To define the numbers of the joystick buttons in the Windows OS, use the **Game devices** application.

4. Assign the value to the string parameter, identical to the name of the command executed by the PTZ device in *Axxon PSIM* (the value is to be entered in uppercase). Available commands in *Axxon PSIM* are listed in the table below:

Symbol	Command
AUTOFOCUS_ON	Activate the autofocusing option
AUTOPAN_END_P	Set the autopan endpoint
AUTOPAN_START	Start the autopan
AUTOPAN_START_P	Set the autopan start point
AUTOPAN_STOP	Stop the autopan
CLEAR_PRESET	Clear the selected preset
D2OFF	Disable additional dynamic settings for Panasonic PTZ cameras for improving an analog video signal
D2ON	Enable additional dynamic settings for Panasonic PTZ cameras for improving an analog video signal
DOWN	Rotate the camera lens down
FOCUS_IN	Focusing the image in
FOCUS_OUT	Focusing the image out
FOCUS_STOP	Stop focusing the image in/out
GO_PRESET.N	Rotate the video camera to the position set in N preset
HOME	Rotate the video camera to the initial (home) position
IRIS_CLOSE	Close the iris diaphragm

Symbol	Command
IRIS_OPEN	Open the iris diaphragm
IRIS_STOP	Stop the iris diaphragm
LEFT	Rotate the camera lens left
LEFT_DOWN	Rotate the camera lens left and down
LEFT_UP	Rotate the camera lens left and up
PATROL_LEARN	Start the programming procedure of patrolling by learning the video camera behavior
PATROL_PLAY	Start patrolling
PATROL_STOP	Stop patrolling
RIGHT	Rotate the camera lens right
RIGHT_DOWN	Rotate the camera lens right and down
RIGHT_UP	Rotate the camera lens right and up
SET_PRESET	Save the current position of the video camera in the selected preset
STOP	Stop the camera lens rotation
UP	Rotate the camera lens up

Repeat steps 2-4 for each joystick button to which the command is to be assigned.

Joystick buttons are now configured.

Assigning commands to joystick buttons using the Monitor

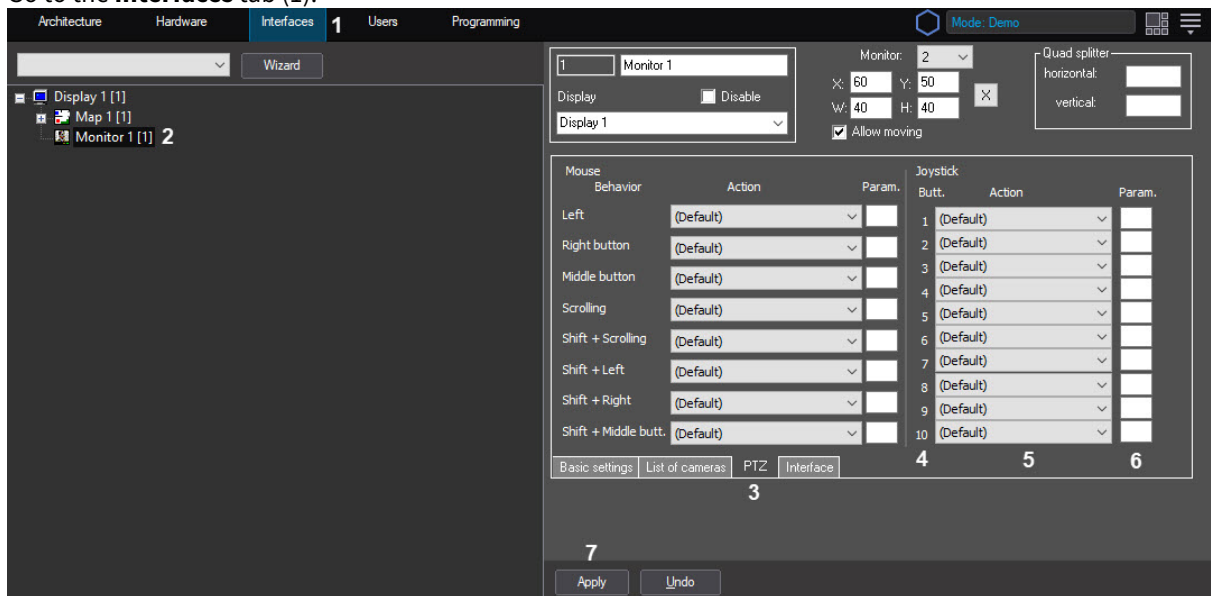
The default commands assigned to joystick buttons are presented in the table below:

Button	Default command
1	Optical zoom in
2	Optical zoom out

3	Focus +
4	Focus -
5	Enable auto focus
6	Not specified
7	Open diaphragm
8	Close diaphragm
9	Not specified
10	Not specified

Assign commands to joystick buttons using the Monitor as follows:

1. Go to the **Interfaces** tab (1).



2. Go to settings panel of the **Monitor** object which is in use to display video from the camera to which the PTZ device is assigned (2).
3. Go to the **PTZ** tab (3).
4. Joystick buttons are listed in the **Joystick buttons** column (4). Buttons numeration depends on the joystick model and is described in the reference documentation.
5. In the **Action** dropdown list, select a reaction of the **PTZ device** object next to the required button. This reaction will be performed when clicking the button (5).
6. In case of the selected reaction requires specifying the parameter, e.g. preset number or speed, specify the value of this parameter in the **Parameter** field (6).
7. To save changes, click the **Apply** button (7).

Note.

Settings of the Monitor from which controlling is performed are in use if different actions are assigned to one button in several Monitors.

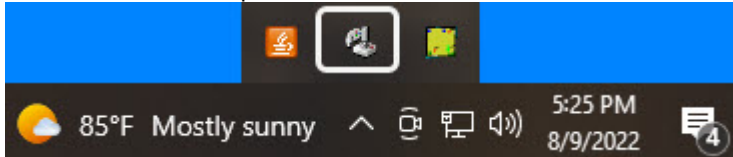
Joystick buttons are now configured.

Testing joystick functioning

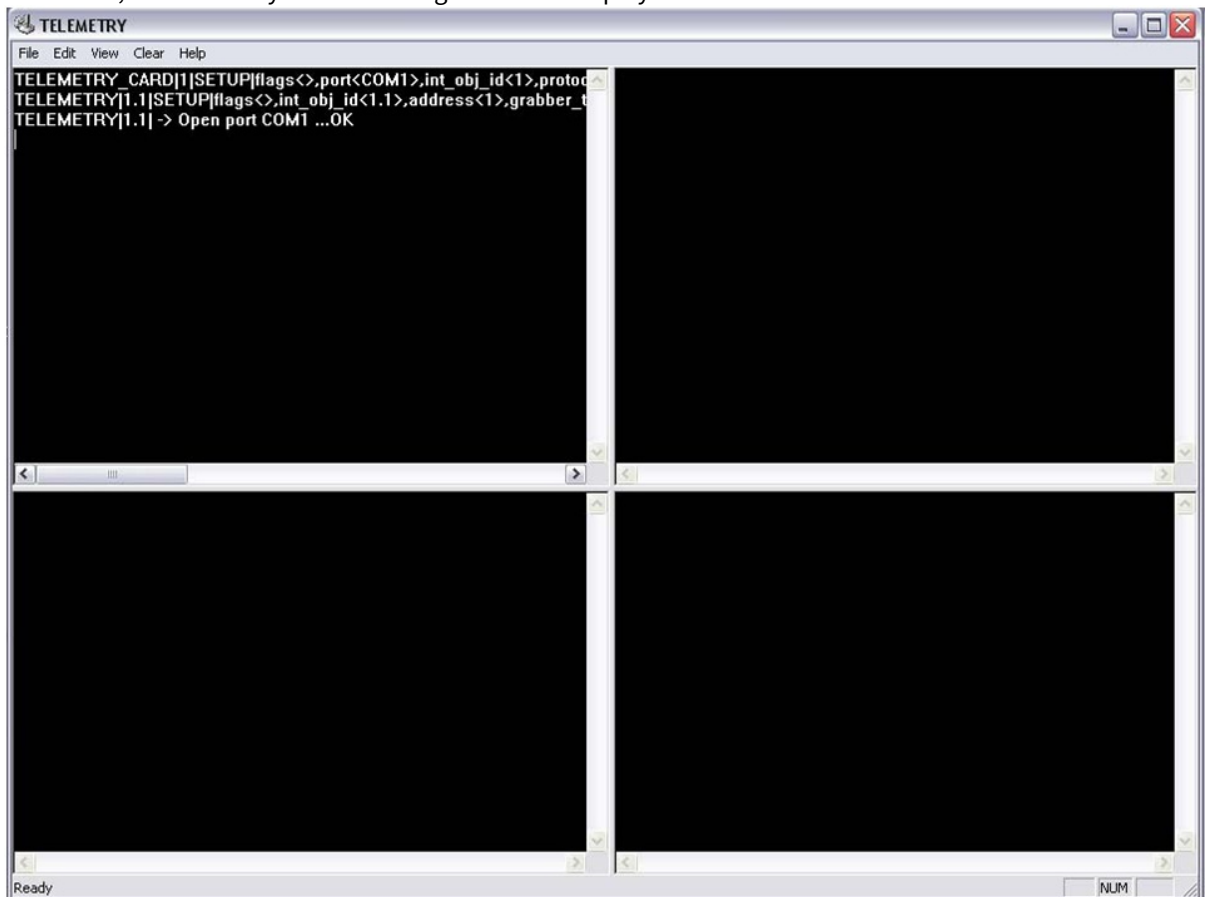
Before configuring and using a joystick to control PTZ devices, test its functioning in *Axxon PSIM™*.

To test the joystick functioning in *Axxon PSIM™*, do the following:

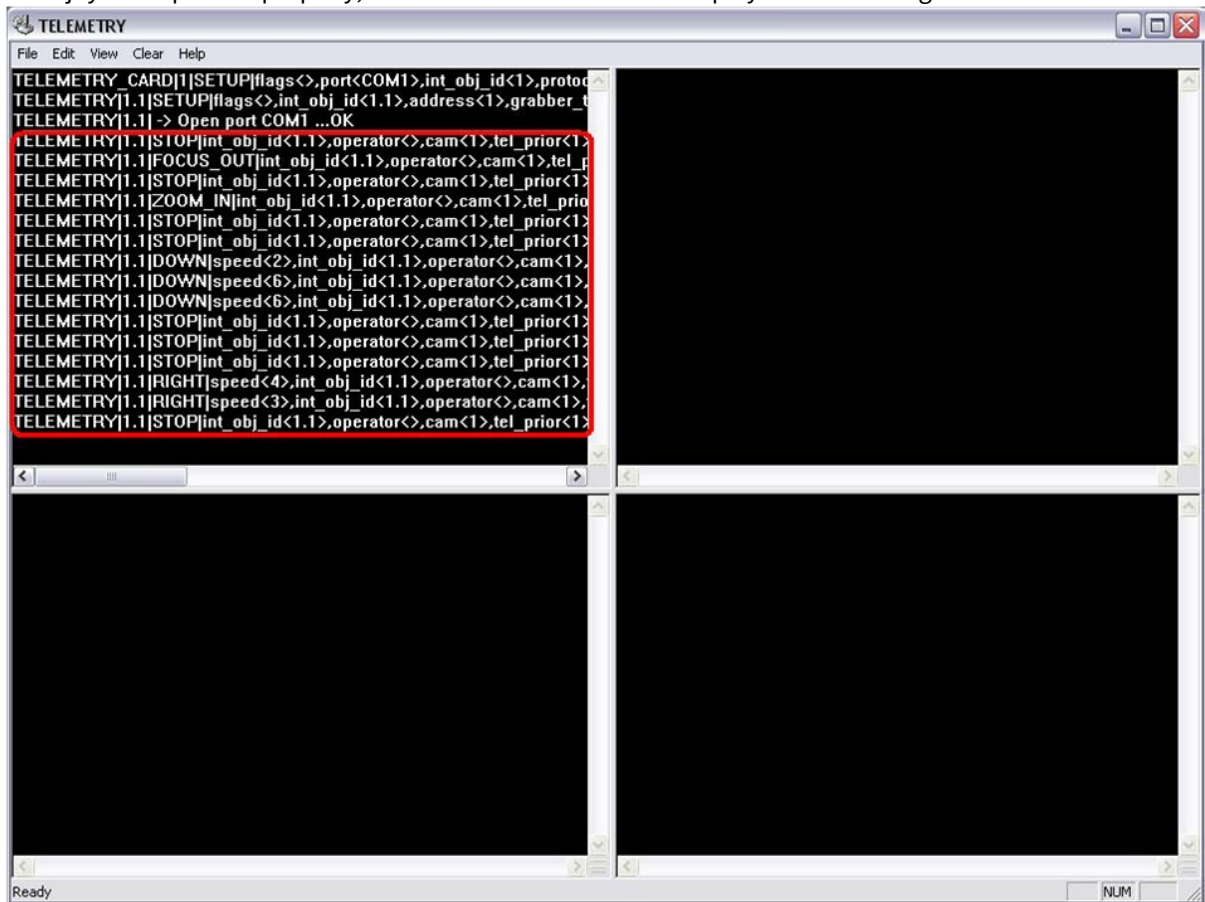
1. Make sure that PTZ devices are connected, configured and operate properly in *Axxon PSIM™*.
2. Display the video surveillance monitor on the screen.
3. Check if cameras equipped with PTZ devices are displayed on the video surveillance monitor. If not, change the layout of viewing tiles.
4. Activate the selected viewing tile by left clicking it.
5. Display the telemetry module debug window. To display the telemetry module debug window, double click with the left button upon the window icon in the notification zone of the Windows OS menu.



6. As a result, the telemetry module debug window is displayed.



7. To test the joystick handle functioning, rotate it in different directions.
8. To test the joystick buttons functioning, push them in turn.
9. If the joystick operates properly, the relevant commands are displayed in the debug window.



10. If there are no commands in the debug windows, then the joystick does not operate in Axxon PSIM™. Check its connection to the computer and its data exchange driver settings in the Windows OS.

The joystick functioning is now tested.

Configuring the Control device object

The **Control device** object is used to configure the joysticks integrated through the Drivers Pack (see [Documentation Drivers Pack](#)).

⚠ Attention!

To use a joystick to control PTZ devices on video surveillance monitors of different computers, you must create and configure the **Control device** object on the basis of each corresponding **Computer** object. For example, if you want to control the PTZ camera, both on the Server and the Remote Client using the same joystick, you must create the **Control device** object both under the Server and the Remote Client.

To configure the **Control device** object, do the following:

1. Create the **Control device** object on the basis of the **Computer** object on the **Hardware** tab of the **System settings** dialog window (1).

2. From the **Vendor** drop-down list, select the device vendor (2).
3. From the **Model** drop-down list, select the device model (3).
4. From the **Firmware** drop-down list, select the firmware number (4).
5. In the **Address** field, enter the device IP-address (5).
6. In the **Port** field, enter the device connection port (6).
7. In the **User** field, enter the user name to connect to the device (7).
8. In the **Password** field, enter the password to connect to the device (8).
9. In the **Sensitivity threshold (0 - 100)** field, specify the joystick sensitivity threshold (9). The threshold is measured in the logical elementary shift units in the range from 0 to 100 and means the maximum shift along any of the axes at which the joystick movement messages aren't received by *Axxon PSIM*.
10. In the **Min. speed (0 - 10)** field, set the minimum joystick speed in the logical elementary shift units (10).
11. In the **Max. speed (0 - 10)** field, set the maximum joystick speed in logical elementary shift units (11).
12. Click the **Apply** button (12).

Configuring the **Control device** object is complete.

Attention!

To assign certain actions for the **Control device** keys, use scripts in the JScript language (see [The Script object. Programming using the JScript language](#)). Examples of scripts are given on the pages with specific device settings.

Features of Dahua DH-NKB1000 PTZ control device configuration

On the page:

- Control device modes of operation
- Features of setting in the OS
- Configuring the Dahua DH-NKB1000 control device in Axxon PSIM

Control device modes of operation

For correct operation in *Axxon PSIM*, the control device must be defined in Windows as a KEYBOARD 1000 game device. This can be checked in the **Devices and Printers** panel accessible from the **Start** menu.

If the device is identified as a HID keyboard, you need to switch the mode by long pressing the Shift key on the control device itself.

Features of setting in the OS

For correct operation, the console must be defined in Device Manager as an HID-compliant game controller. If the console is defined as BETTER_USB_HS in Windows Device Manager, roll back the device driver (this can be done in the driver **Properties** window).

Configuring the Dahua DH-NKB1000 control device in Axxon PSIM

The Dahua DH-NKB1000 control device can be added via [Camera discovery tool](#).

If necessary, the connection of the Dahua DH-NKB1000 control device to the *Axxon PSIM* software package can be configured manually as follows:

1. Create the **Control device** object under the **Computer** object on the **Hardware** tab of the **System settings** dialog window.

The screenshot shows the 'System settings' dialog window. On the left, under the 'Computer' tab, there is a 'Control device 1' entry with a 'Disable' checkbox and a 'LOCALHOST' dropdown. The main area is titled 'Connection settings' and contains the following fields:

- Vendor:** A dropdown menu with 'Dahua-joystick' selected. A red circle with the number '1' is next to it.
- Model:** A dropdown menu with 'DH-NKB1000' selected. A red circle with the number '2' is next to it.
- Firmware:** A dropdown menu with 'auto' selected. A red circle with the number '3' is next to it.
- Address:** An empty text field.
- Port:** An empty text field.
- User:** An empty text field.
- Password:** A text field with four black dots representing a masked password.
- Sensitivity threshold (0 - 100):** A slider set to 5.
- Min. speed (0 - 10):** A slider set to 0.
- Min. speed (0 - 10):** A slider set to 10.

At the bottom left, there is a 'Basic settings' tab. At the bottom right, there is a large red circle with the number '4' next to the 'Apply' button.

2. Select **Dahua-joystick** from the **Vendor** dropdown list (1).
3. Select **DH-NKB1000** from the **Model** drop-down list (2).
4. Select **auto** from the **Firmware** drop-down list (3).
5. Click the **Apply** button (4).

Configuring the connection of the Dahua DH-NKB1000 control panel to the *Axxon PSIM* software package is now complete.

Features of Hikvision DS-1200KI PTZ control device configuration

On the page:

- [Configuring the Hikvision DS-1200KI control device before adding to Axxon PSIM](#)
- [Configuring the Hikvision DS-1200KI](#)

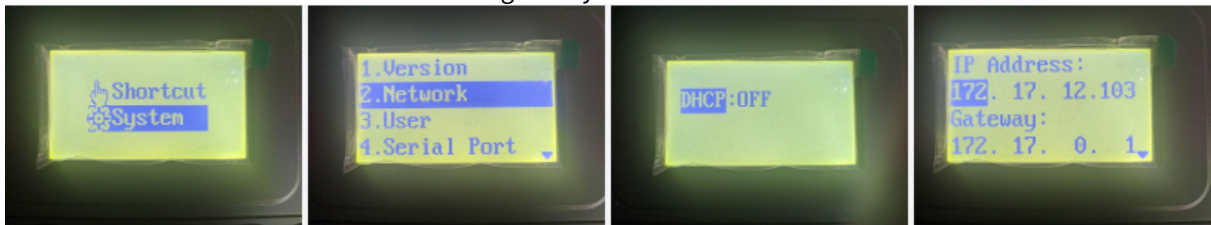
control device in Axxon PSIM

- Features of the Hikvision DS-1200KI control device
- operation in Axxon PSIM
- JScript script example

Configuring the Hikvision DS-1200KI control device before adding to Axxon PSIM

You must configure the Hikvision DS-1200KI PTZ control device in the following way before creating the corresponding object in *Axxon PSIM*:

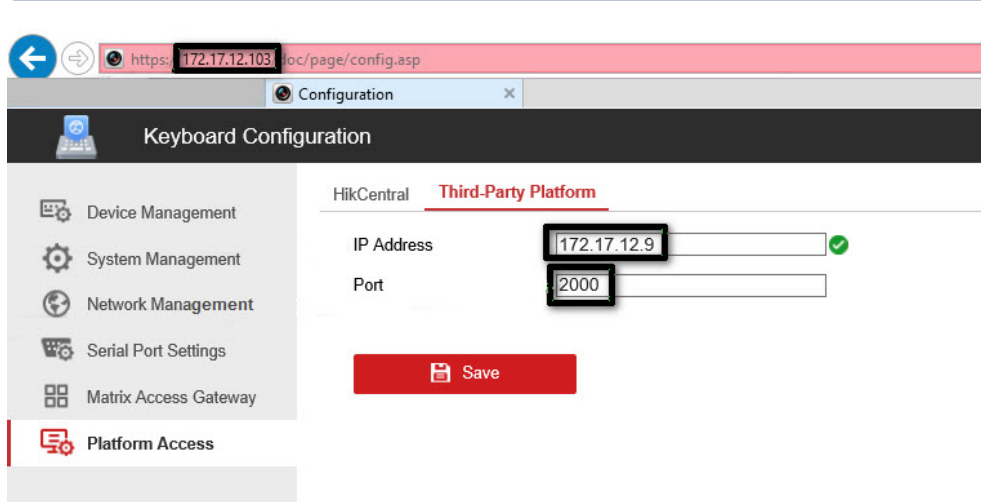
1. Set the control device address. To do this, select **System** → **Network** in the device internal interface, then disable DHCP and set the IP address and the gateway.



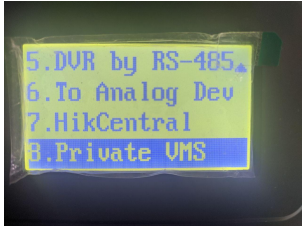
2. Set the *Axxon PSIM* IP address and server port on the device. To do this, you must open the device web interface by the address set in the previous step and select **Platform Access** → **Third-Party Platform**.

Note

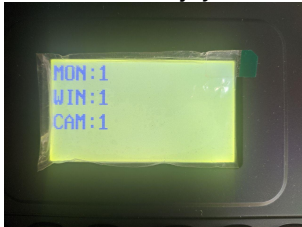
By default, the web interface is only available on https, so enter the https prefix before the IP address.



3. Select the **8. Private VMS** mode in the device internal interface.



4. To switch the PTZ control device into the operating mode, do one of the following actions:
 - a. Select any monitor MON (monitor) [an integer in the range 1—9999], any camera CAM (camera) [an integer in the range 0—999999]; in this mode all keys work, including the WIN (subwindow of video wall) and the MULT (layout size) keys for the monitor and camera.
 - b. Select any camera CAM (camera) [an integer in the range 1—999999 (number 0 is available only when you set the monitor)]; the WIN, MULT and CAM-G keys don't work in this mode.
 - c. Select any monitor MON (monitor) [an integer in the range 1—9999] and any group of cameras CAM-G (camera group) [an integer in the range 1—999999]; in this mode, only the MULT, OK keys and the rotations of the joystick axes work.



Note

To select these parameters, enter a number from the device keypad, and then press the corresponding key (MON/WIN/CAM/CAM-G).
If the server IP address and/or port aren't available from the PTZ control device, then after you press the MON/WIN/CAM/CAM-G keys, the "Connect failed" message is displayed on the control device screen.

Preconfiguring the Hikvision DS-1200KI PTZ control device is complete.

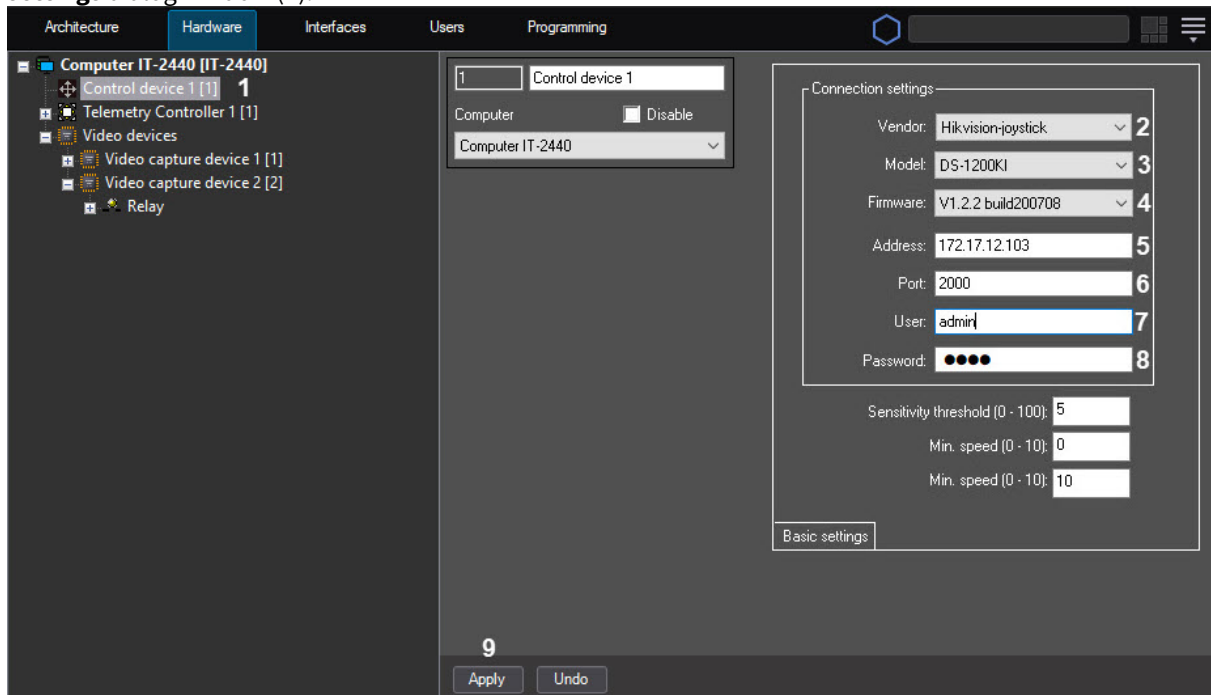
Configuring the Hikvision DS-1200KI control device in Axxon PSIM

Note

Before you start configuring the control device in *Axxon PSIM*, make sure that the 1 value is assigned to the DisableInternalJoystick registry key (that is, the default value, see [Registry keys reference guide](#)).

To configure the connection of the Hikvision DS-1200KI control device in *Axxon PSIM*, do the following:

1. Create the **Control device** object on the basis of the **Computer** object on the **Hardware** tab of the **System settings** dialog window (1).



2. From the **Vendor** drop-down list, select **Hikvision-joystick** (2).
3. From the **Model** drop-down list, select **DS-1200KI** (3).
4. From the **Firmware** drop-down list, select **V1.2.2 build200708** (4).
5. In the **Address** field, enter the IP address of the control device (5).
6. In the **Port** field, enter the port number of the control device (6).
7. In the **User** field, enter the username to access the device (7).
8. In the **Password** field, enter the password to access the device (8).
9. Click the **Apply** button (9).

Configuring the connection of the Hikvision DS-1200KI control device in *Axxon PSIM* is complete.

Features of the Hikvision DS-1200KI control device operation in *Axxon PSIM*

When you press the MULT, PRESET, PATROL, or PATTERN keys on the control device, the following actions are performed:

- when you enter a number in the range 1—99 and press MULT for each number, *Axxon PSIM* receives a message about pressing the corresponding separate key with a number in the range 23—121 (B22—B120);
- when you press PresetRec for the first time, *Axxon PSIM* receives a message about pressing the 13 (B12) key, and the **Record started** title appears on the device display;
- when you press PresetRec for the second time, *Axxon PSIM* receives a message about pressing the 12 (B11) key, and the **Record ended** title appears on the device display;
- when you enter a number in the range 1—65535 and press PresetRec, *Axxon PSIM* receives a message about pressing the 22 (B21) key, and the **PRESET:** title appears on the device display;
- when you enter a number in the range 1—65535 and press Patrol, *Axxon PSIM* receives a message about pressing the 17 (B16) key, and the **PATROL:** title appears on the device display;
- when you enter a number in the range 1—65535 and press PatternPlay, *Axxon PSIM* receives a message about pressing the 18 (B17) key, and the **PATTERN:** title appears on the device display;
- when you enter a number in the range 65536—999999 and press any of the PresetRec/Patrol/PatternPlay buttons, nothing happens: such numbers aren't processed.

JScript script example

The link contains a [file with a script](#) in the JScript language, which allows you to assign actions to the keys of the *Hikvision DS-1200KI* telemetry control panel in the following way:

Key	Code	Action
CAM	21	Select a camera
MON		Select a monitor
WIN		Used along with the digital buttons to select the surveillance window
PRESET	22	Used along with the digital buttons to open a preset
IRIS+	7	Increase the iris value
IRIS-	8	Decrease the iris value
PATROL	17	
PATTERN	18	
PREV	15	Switch to the previous camera
NEXT	16	Switch to the next camera
CAM-G	20	Used along with the digital buttons to select a group of cameras
ZOOM+	1	Zoom in
ZOOM-	2	Zoom out
WIPER	6	Enable the wiper
LIGHT	5	Enable the backlight
FOCUS+	3	Increase the focal length
FOCUS-	4	Decrease the focal length

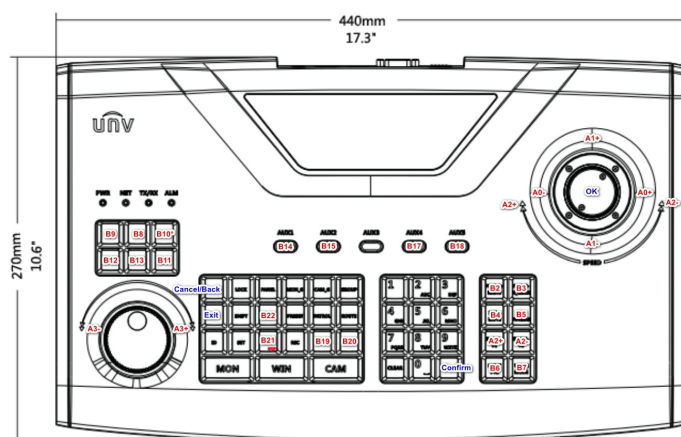
Features of UNIVIEW KB-1100 PTZ control device configuration

On the page:

- General description of the UNIVIEW KB-1100 control device
- Configuring the control device before adding it to Axxon PSIM
- Configuring the UNIVIEW KB-1100 control device in Axxon PSIM

General description of the UNIVIEW KB-1100 control device

The schematic representation of the UNIVIEW KB-1100 PTZ control device is shown in the figure below.



The following physical controls are available on the device:

Joystick is a rotary control element that can move along three axes:

- Pan axis (panning: left or right deviation).
- Tilt axis (tilt: up or down deviation).
- Zoom axis (scaling: clockwise or counterclockwise deviation).

Acceleration along each of the three axes depends on the degree of deviation from the center. The movement is performed until release. When released, the control returns to its original position.

Jog-Wheel (not integrated into *Axxon PSIM*!) is a rotary control element that can rotate only around its axis. When released, the control returns to its original position. On the illustration it is located at the bottom left (outer rotatory ring).

Shuttle is a rotary element that can rotate only around its axis. It is responsible for the discrete movement in one of two directions. It has no initial position but, when released, remains in place. On the illustration it is located at the bottom left (inner rotatory ring).

Button is the push control element that can represent two states. It is responsible for the discrete call of one of two functions (the function for pressing and the function for releasing). When released, it returns to its original position ("not pressed" state).

Of all button elements of the control device, the following blocks are integrated:

- the block of playback control keys (six keys on the left: the record button is activated after pressing a button on the joystick);
- the block of keys for controlling the focus, zoom, iris and PTZ presets (eight keys);

Also, the following keys, which used to work with the control device interface and aren't related to *Axxon PSIM*, are available:

- Pressing the button on the joystick control (OK) (equivalent to pressing the ENTER key).
- Cancel the action/return one step back to the control device menu (equivalent to pressing the ESC key).
- Numbers/letters are entered from the numeric keyboard, the input mode (upper/lower register, digits) is switched by the SHIFT key.
- Moving through the menu items and within the fields is performed by deviating the device control vertically/horizontally.

Configuring the control device before adding it to *Axxon PSIM*

Before you create the corresponding object in *Axxon PSIM*, you must configure the UNIVIEW KB-1100 PTZ control device in the following way:

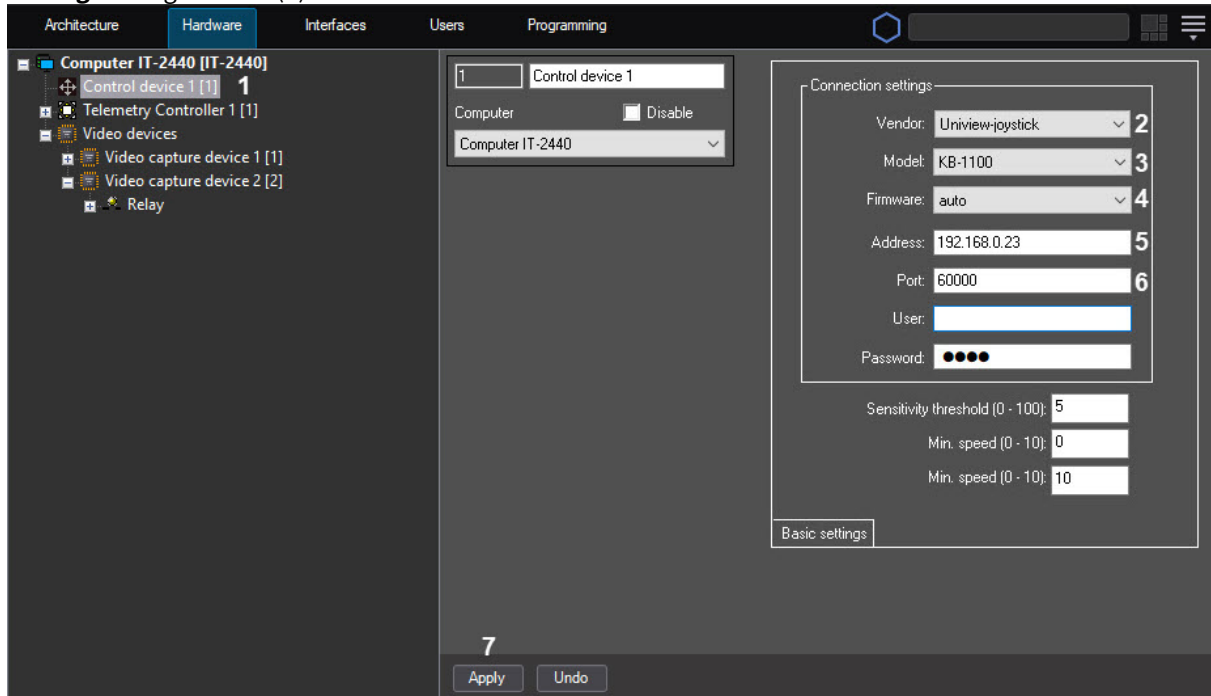
1. Enable the control device.
2. Enter the login and password in the device display. The default credentials are as follows:
 - a. login: admin
 - b. password: 123456
3. Configure the device control network configuration. To do this, set the following parameters in the Local Cfg -> Net Cfg menu:
 - a. IP address
 - b. Mask
 - c. Gateway
4. Add the *Axxon PSIM* Server/Remote Administration Workstation/Remote Client to the internal device configuration. To do this, set the following parameters in the Dev Manage -> Manual Cfg -> Add Dev menu:
 - a. ID—enter any number (range: 1—240, the number must not coincide with the ID of the control device or other already added device).
 - b. name—enter a string (1—8 characters).
 - c. DType—select VM (VideoManagementSystem, that is, *Axxon PSIM*).
 - d. LType—select NetWork (the control device is integrated for connecting to *Axxon PSIM* via the network).
 - e. After you select LType, press the button on the joystick and enter the IP address of the *Axxon PSIM* Server/Remote Administration Workstation/Remote Client and the port used (the 60000 port is used by default).
5. Connect to *Axxon PSIM* added in the previous step. To do this, enter the above ID in the FindDev -> Dev ID menu or select the found profile in the Dev Manage -> Search Dev menu.
6. If the device is found, the information about it is displayed on the device display.
7. Press on the ID field. As a result, you can work with the control device in *Axxon PSIM*.

Configuring the UNIVIEW KB-1100 control device is complete.

Configuring the UNIVIEW KB-1100 control device in Axxon PSIM

To configure the connection of the UNIVIEW KB-1100 PTZ control device in *Axxon PSIM*, do the following:

1. Create the **Control device** object based on the **Computer** object on the **Hardware** tab of the **System settings** dialog window (1).



2. From the **Vendor** dropdown list (2), select **Uniview-joystick**.
3. From the **Model** drop-down list (3), select **KB-1100**.
4. From the **Firmware** drop-down list (4), select **auto**.
5. In the **Address** field, enter the IP address of the control device (5).
6. In the **Port** field, enter the port number specified in step 4e of the control device configuration (6).
7. Click the **Apply** button (7).

Configuring the connection of the UNIVIEW KB-1100 PTZ control device in *Axxon PSIM* is complete.

✓ Control of PTZ devices using a keyboard controller

3.4.6 Configuring the mouse buttons to control PTZ devices

It is possible to change commands of telemetry control for mouse buttons in *Axxon PSIM*.

Default actions assigned to mouse buttons and to buttons combinations are presented in the table below.

Note.

New control features are used by default and their description is given in the **New default action** column. If the previous PTZ control features are to be used, then set 0 value for the TelemetryMouseAlternative registry key – see [Registry keys reference guide](#).

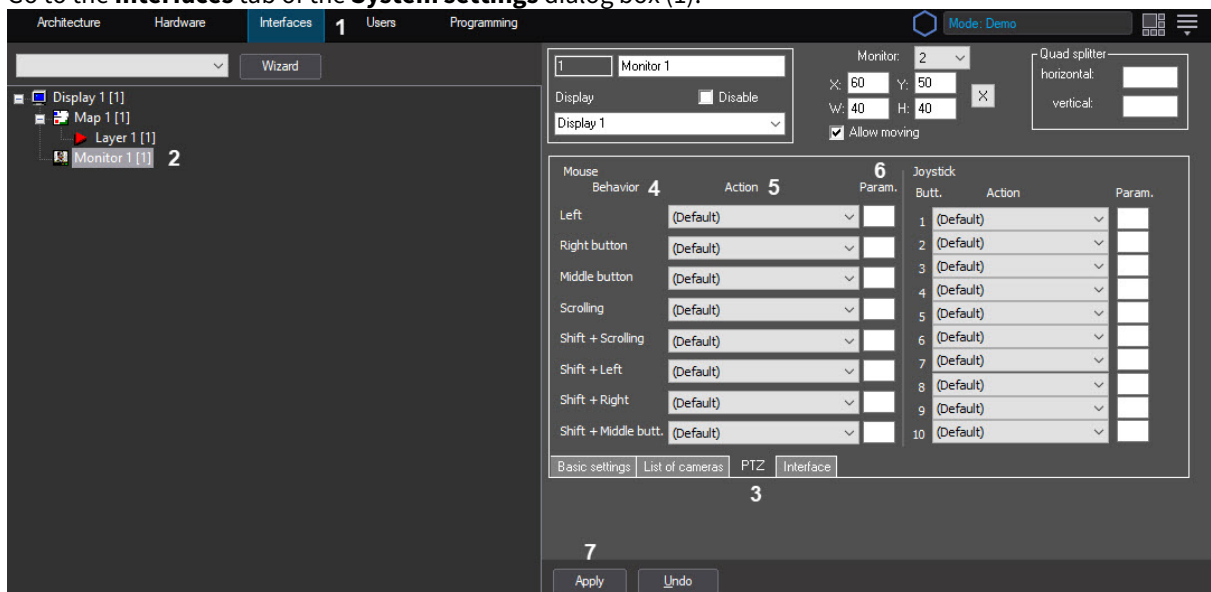
Button/button combination	Old default action	New default action
Left button	Optical zoom in	-
Right button	Optical zoom out	-
Middle button	Auto changing of video camera objective orientation to the area on which the mouse button click was performed (Point&Click)	
Scrolling	Digital zoom	Optical zoom
Shift+Scrolling	Digital zoom	
Shift+Left button	Focus In	
Shift+Right button	Focus Out	
Shift+Middle button	Auto changing of video camera objective orientation to the area on which the mouse button click was performed (Point&Click)	


Note.

See more info in [Control of PTZ devices using a mouse](#) section.

Assign actions to mouse buttons as follows:

1. Go to the **Interfaces** tab of the **System settings** dialog box (1).



2. Go to settings panel of the **Monitor** object which is used to display video from the camera with which the PTZ device is connected (2).

3. Go to the **PTZ** tab (3).
4. Buttons and button combinations to which it is possible to assign telemetry commands are listed in the **Mouse behavior** column (4).
5. In the **Action** dropdown list, select the reaction of **PTZ device** object next to the required button. The reaction will be performed while clicking this button (5).
6. If the selected reaction requires specifying the parameter, e.g. preset number or speed, specify the value of this parameter in the **Parameter** field (6).
7. To save changes, click the **Apply** button (7).

**Note.**

Settings of the Monitor from which controlling is performed are in use if different actions are assigned to one button in several Monitors.

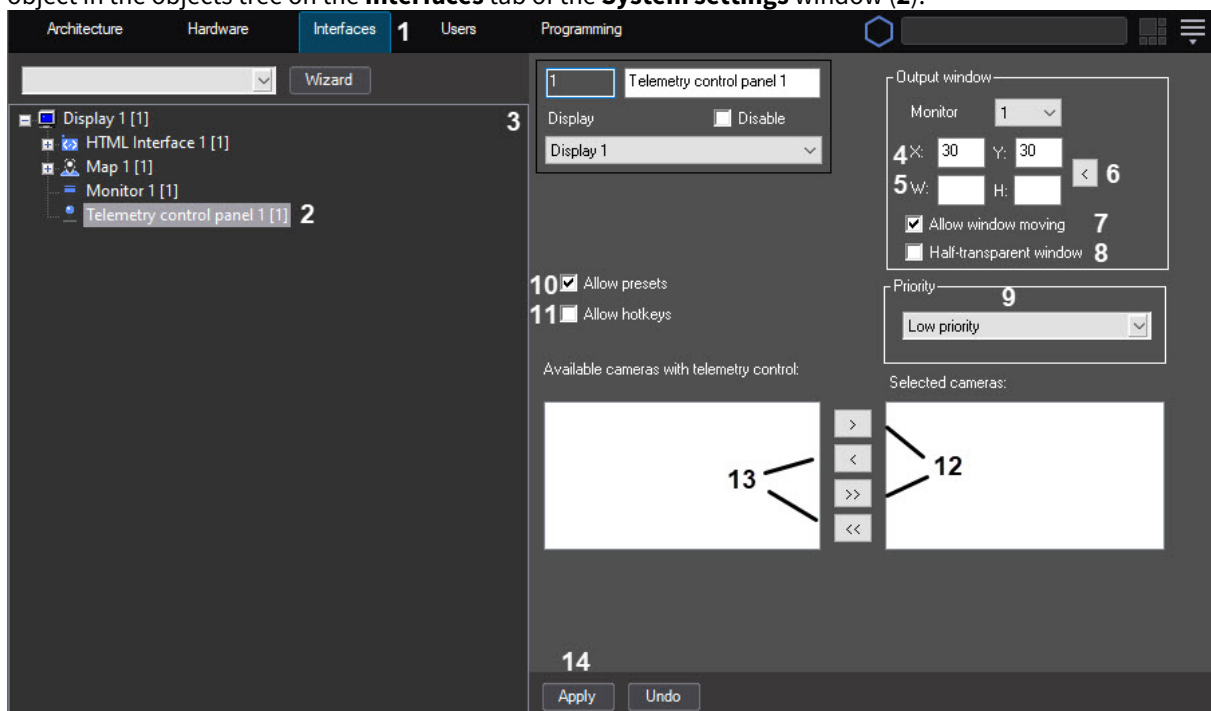
Mouse buttons are now configured.

3.4.7 Configuring the telemetry control panel

Telemetry control panel is an interface object used for PTZ device control. The interface of the telemetry control panel is the same for all used PTZ device types.

To create and configure the telemetry control panel, do the following:

1. Go to the **Interfaces** tab in the **System settings** window (1).
2. Create the **Telemetry control panel** object on the basis of the **Display** object or select the corresponding object in the objects tree on the **Interfaces** tab of the **System settings** window (2).



3. When you create the **Telemetry control panel** object (3), specify the ID, the name of the object, and select the **Display** object based on which the **Telemetry control panel** object is created.
4. Specify the coordinates of the telemetry control panel position on the screen. To do this, change the values in the **X** and **Y** fields (4). The **X** and **Y** values correspond to the coordinates of the upper left corner of the telemetry control panel on the screen and are expressed as percentages relative to the screen size horizontally and vertically.

- Specify the dimensions of the **Telemetry control panel** object: the **W** (window width) and **H** (window height) fields (5). Dimensions are expressed as percentages relative to the screen size horizontally and vertically.

Note

The  button (6) is used for automatic input of the current object coordinates specified by the user when using the telemetry control panel.

- By default, you can drag the telemetry control panel over the screen. In this case, if you want to fix the telemetry control panel position, clear the **Allow window moving** checkbox (7).
- By default, the telemetry control panel is opaque. To display interface objects located in the same screen area as the telemetry control panel, set the **Half-transparent window** checkbox (8).
- If you want to change the PTZ control priority using the telemetry control panel, select the required item from the **Priority** list (9).
- By default, the operator is allowed to save the presets of the PTZ device, that is, the presets of the camera position. When you use the telemetry control panel, you can save presets using the digital buttons of the **Presets** panel. To forbid the operator from saving the presets of the PTZ device, clear the **Allow presets** checkbox (10).
- Set the **Allow hotkeys** checkbox (11) if you want to control the PTZ device using the keyboard.
- Move the names of cameras equipped with PTZ devices to the **Selected cameras** list to control them by this **Telemetry control panel** object. To do this, you must move the selected cameras one by one in the **Selected cameras** list by clicking the one-arrow button or move all cameras equipped with the PTZ device by clicking the two-arrow button (12).
- If necessary, move the camera names from the **Selected cameras** list to the **Available cameras with telemetry control** list to forbid the control over the specified cameras using this **Telemetry control panel** object. To do this, you must move the selected cameras one by one in the **Available cameras with telemetry control** list by clicking the one-arrow button or move all cameras to this list by clicking the two-arrow button (13).
- To save the changes, click the **Apply** button (14).

 Control of PTZ device using the telemetry control panel

Configuring the telemetry control panel is complete.

3.4.8 Creating and configuring the Operator query panel for telemetry control

In *Axxon PSIM*, you can control the PTZ device using the operator query panel. The operator query panel is an individual user panel that contains the relevant elements to control a certain type of PTZ device.

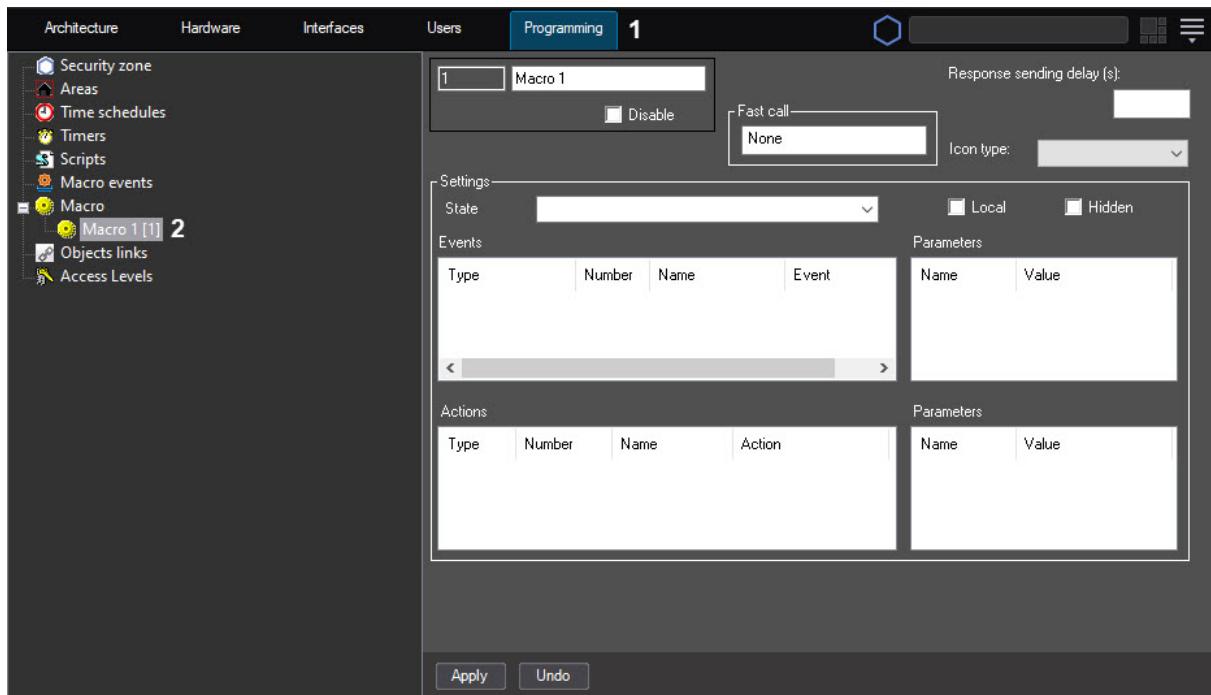
The operator query panel displays the unique control panel that is designed by the PTZ device vendor. Its files are stored in the Program folder of the *Axxon PSIM* root installation directory and provided along with the PTZ software.

To create and configure the operator query panel in *Axxon PSIM*, do the following:

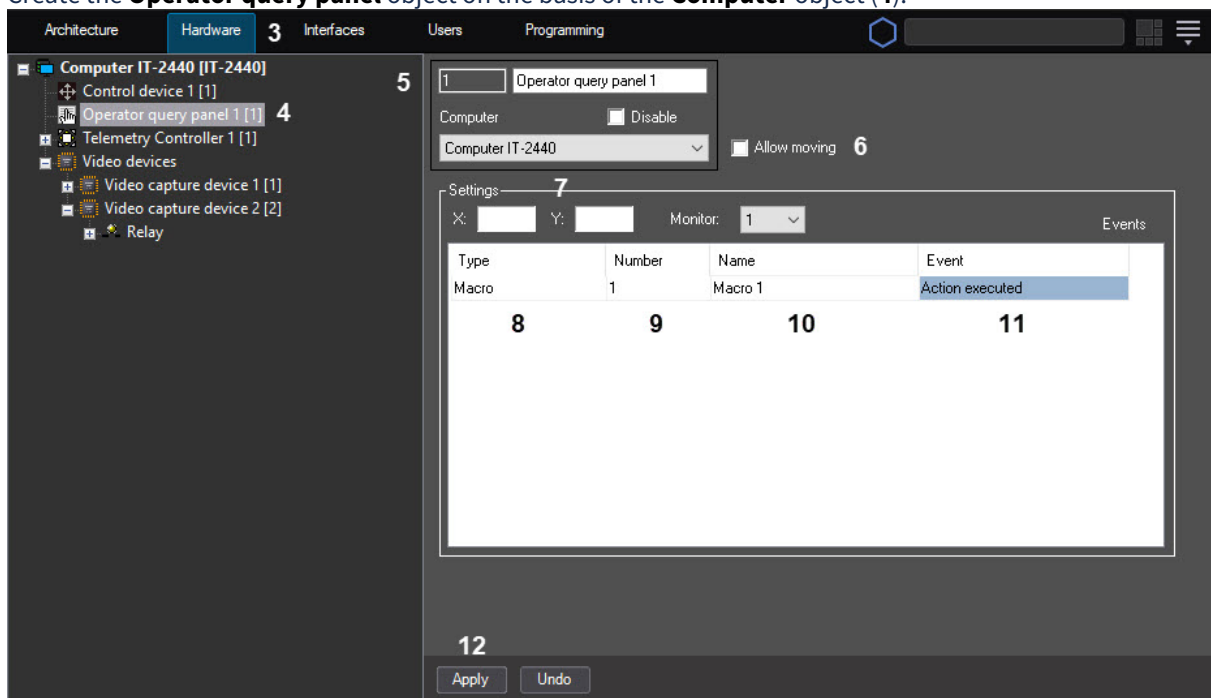
- Open the **Programming** tab.
- Create the **Macro** object on the basis of the **Macro** object by specifying the object's ID and name.

Note

The **Macro** object is required to refer to the *Axxon PSIM* program core and display the **Operator query panel** on the screen.



3. Open the **Hardware** tab of the **System settings** window (3).
4. Create the **Operator query panel** object on the basis of the **Computer** object (4).



5. When you create the **Operator query panel** object, specify the name of the file (without extension) of the dialog window, used for PTZ device control, in the ID number field (5).

Note

First, create this file using the ArpEdit utility and place it in the Program folder of the *Axxon PSIM* installation directory (see [Creating the dialog window form](#)). You can also obtain examples of dialog window files by contacting AxxonSoft technical support.

By default, the **Program** object isn't displayed on the **Programming** tab. To display it, create the OldScript=1 parameter of the HKEY_LOCAL_MACHINE\SOFTWARE\AxxonSoft\PSIM\ registry key (see [Registry keys reference guide](#)) or use the *tweaki.exe* utility (see point 19 on the page [The settings panel of the PSIM section](#)). Then, on the basis of this object, create the **Program** object where you must specify the name of the computer and select the **Always** value in the time schedule. As a result, the Program folder is created automatically. All files with the .dlg extension created with the ArpEdit utility are added to this folder.

6. To move the operator query panel across the screen by using a mouse, set the **Allow moving** checkbox (6).
7. In the **X** and **Y** fields, specify the coordinates of the operator query panel position on the screen (7).

 Note

The values of the **X** and **Y** fields match with the coordinates of the upper left corner of the operator query window on the screen and are expressed as a percentage of the horizontal and vertical dimensions of the screen, respectively.

8. Select the **Macro** value from the drop-down list in the **Type** column (8).
9. Select the ID of the **Macro** object created to call up the operator query panel from the drop-down list in the **Number** column (9).
As a result, the name of the selected **Macro** object is automatically displayed in the **Name** column (10).
10. Select **Action executed** from the drop-down list in the **Event** column (11).
11. Click the **Apply** button (12).

Creating and configuring the operator query panel is complete.

3.4.9 Configuring the Monitor for telemetry control

Axxon PSIM™ provides the PTZ control option using the Monitor windows that correspond to the cameras equipped with PTZ devices. In this case the PTZ device is controlled by the mouse using the viewing tiles of PTZ cameras.

PTZ control function via the viewing tiles corresponding to the cameras equipped with PTZ devices, is always enabled and can't be disabled. To access PTZ control via the viewing tile, do the following:

1. On conditions that the equipment is functional, configure the **PTZ device** object related to the selected PTZ device.
2. Select the PTZ control priority for the viewing tile in the settings of the **Monitor** object (see [Configuring video display on Video Surveillance Monitor](#)).

Additional configuration of telemetry control option is not required.

3.4.10 Priorities of PTZ control

The **PTZ control** or **Priority** parameter (depending on the type of the configured object), determines the privileges to control the PTZ device when you use several interface objects to control one PTZ device or, if necessary, to control the same PTZ device by multiple users at a time.

When you configure interface objects used for the PTZ control, you must select the value of the PTZ control priority parameter from the list of suggested values.

The **PTZ control** parameter is set for the following objects:

1. **Surveillance monitor;**
2. **Telemetry control panel;**
3. **Telemetry remote control.**

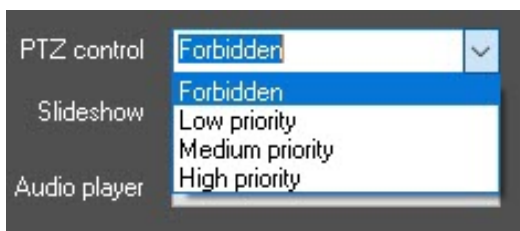
Note

The priority of the PTZ control with the joystick equals the priority of the PTZ control with the surveillance monitor and mouse.

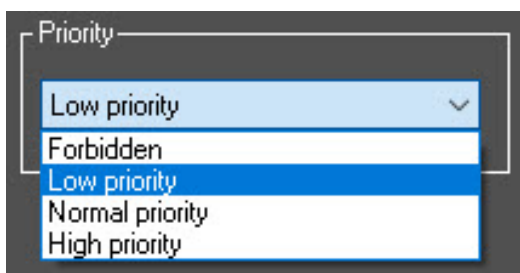
The parameter of the PTZ priority control can take the following values:

1. Control is forbidden (**Forbidden**). When you select this item, the control of the PTZ device via the configured object is forbidden.
2. Low (**Low priority**). When you select this item, the control of the PTZ device is performed in the last turn after it is controlled by devices with the normal and high priority. This parameter has the lowest queue of the PTZ control.
3. Normal (**Normal priority**). When you select this item, the control of the PTZ device is performed after it is controlled by the device with high priority. This parameter is higher in the queue of the PTZ control rather than the device with low priority.
4. High (**High priority**). When you select this item, the control of the PTZ device is performed first in the queue of the PTZ control. This parameter has the highest queue of the PTZ control.

The context menu for selecting the PTZ control priority for the **Monitor** interface object is called **PTZ control** and contains the **Forbidden**, **Low priority**, **Medium priority**, **High priority** items:



The panel for selecting the PTZ control priority for the **Telemetry control panel** interface object and the **Telemetry remote control** system object is called **Priority** and contains the following items: **Forbidden**, **Low priority**, **Normal priority**, **High priority**.

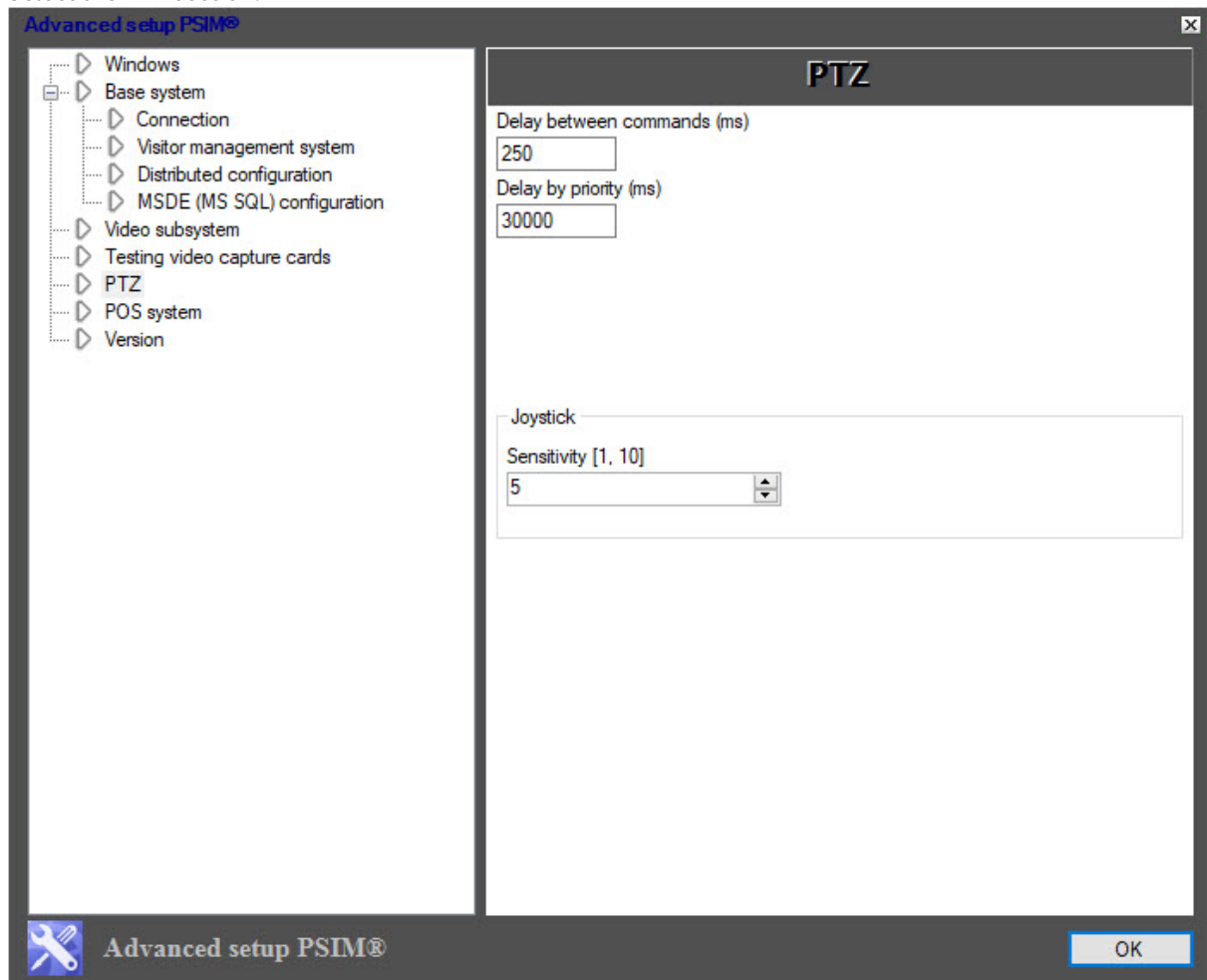


In case when one PTZ device is controlled from several workstations via interface objects of the same type with the same priority for controlling this PTZ device, the PTZ device is controlled in the following way:

1. Each user can control the PTZ device when it isn't controlled by another user via the interface of the same control priority.
2. In cases when the user who controls the PTZ device via the interface object with a higher priority delegates control to the user who controls the same PTZ device via the interface object with a lower priority, then the procedure of delegating control is delayed. You can set the priority delay time using the *tweaki.exe* utility (Axxon PSIM Advanced Setup).

To change the delay time of the PTZ control priority with the *tweaki.exe* utility, do the following:

1. Run the *tweaki.exe* utility located in the **Tools64** folder of the *Axxon PSIM* installation directory.
2. Select the **PTZ** section.



3. In the **Delay by priority (ms)** field, specify the value of the PTZ control priority delay. The delay parameter is specified in milliseconds. The default value is **30000**.
4. Click the **OK** button to save the changes.

Note

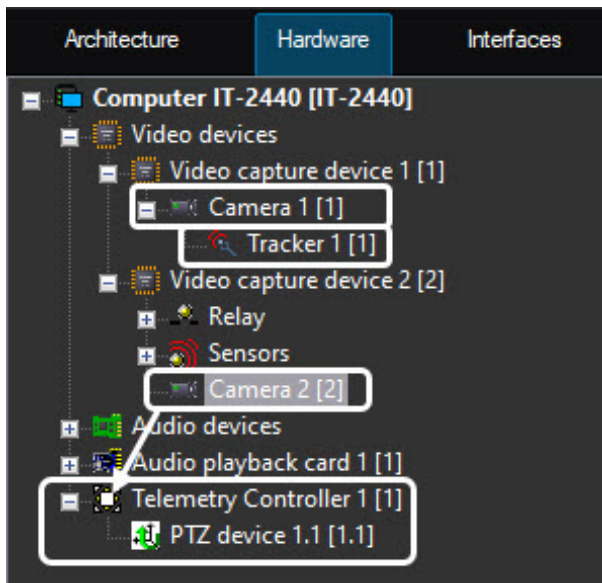
When you configure objects, on the settings panels of which you must specify the queue parameters of the PTZ control, you must, if possible, specify different PTZ priority controls for each object (object type). If you specify the same PTZ priority controls for different objects, then problems can occur with the PTZ device control during the operation with *Axxon PSIM*.

3.4.11 Configuring functions for tracking moving objects

Tag&Track configuration

The Tag&Track function allows the PTZ camera to follow an object based on the trajectories obtained by the usual camera using the **Tracker** object. Thus, to use this function, you must first create and configure the following objects in *Axxon PSIM*:

1. The PTZ camera (see [Configuring PTZ IP cameras](#)).
2. The usual (stationary) camera with a tracker (see [Configuring IP devices](#) and [Creating and configuring the Tracker object](#)).



To configure the Tag&Track function, do the following:

1. Create the **Tag&Track** object on the basis of the **Camera** object (not the PTZ camera!).

Note

If a camera is linked with the PTZ device, you cannot create the **Tag&Track** object. If you first create this object and then link a camera with the PTZ device, the settings for changing the **Tag&Track** object are unavailable.

2. From the **PTZ** drop-down list, select the **PTZ device** object linked with the corresponding PTZ camera that is used for object tracking (**1**).

1 Tag&Track 1

Camera ☐ Disable

Camera 1

PTZ: PTZ device 1.1 1

Auto switch (s): 2

pan	tilt	zoom	x	y
12	-43	2	73	63
-8	-41	2	39	65
-25	-23	2	17	83
26	-47	2	95	64
5	-36	2	57	72
0	0	0	0	0

3

Edit 4

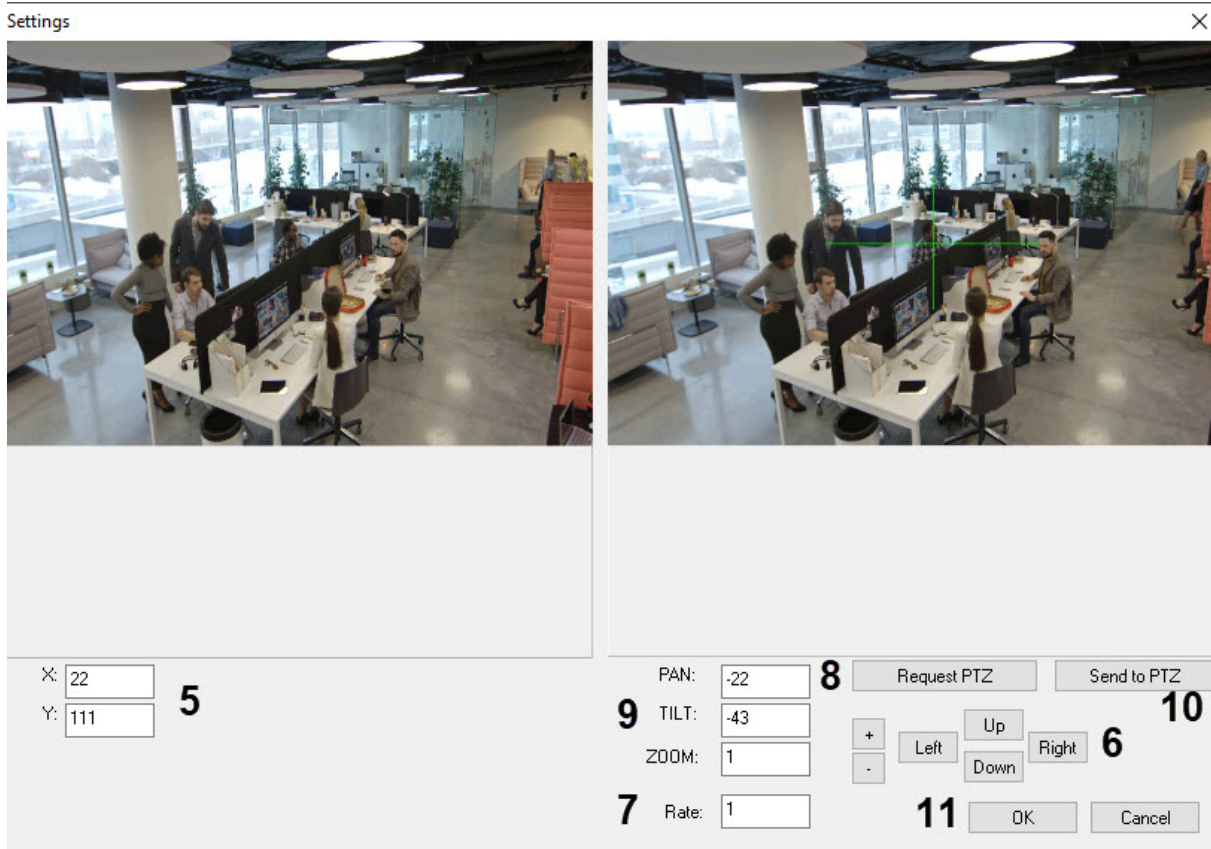
Apply Undo

- In the **Auto switch (s):** field (2), enter the time period in seconds after which you want to automatically switch to the next object in the automatic Tag&Track mode.
- Select a line in the table (3). To do that, left-click any cell in the line.

**Note**

You can sort lines by one of the specified parameters. To do this, click the name of the corresponding column.

- Click the **Edit** button (4). The **Settings** window opens.
If you skip step 3 and don't select a line in the table, the **Settings** window doesn't open and the message "String not selected" is displayed.



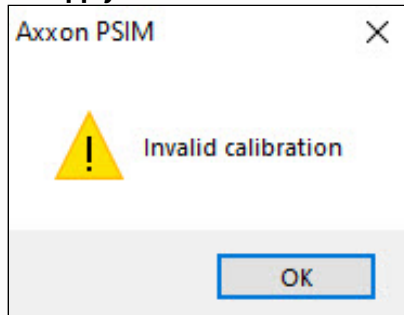
Note

- For calibration, you can use the video with a low resolution, so the display quality in the **Settings** window can differ from the original video from a camera.
- In this window, you can display a video in the separate window and increase the size of this window to the required one. To do this, right-click the video while holding down the Shift key on the keyboard. You can perform the same operations with video in the separate window as in the **Settings** window.

- Click the required point on the image from the stationary camera (on the left). As a result, the coordinates of this point are specified in the **X** and **Y** fields (5). The point on the image is highlighted with a red square.
- Rotate the PTZ camera (on the right) so that the cross that is in the center points at the same point as selected on the stationary camera. Use the **Up**, **Down**, **Left**, **Right** buttons to control a camera, and the **+** and **-** buttons to zoom in and out (6).
- In the **Rate** field (7), set the moving speed of the PTZ camera lens. Possible values are from 1 to 10, the default value is 1.
- Click the **Request PTZ** button (8).
- The **PAN**, **TILT**, **ZOOM** fields are filled in with the corresponding PTZ camera coordinates (9).
- If the check is required, click the **Send to PTZ** button (10). As a result, a camera is positioned to the obtained coordinates.
- Click the **OK** button (11). The specified coordinates are displayed in the table on the **Tag&Track** object settings panel.
- Repeat steps 4-11 at least five times for different points on the video. We recommend setting as many points as possible.
- Click the **Apply** button.

Note

When you set too few points, or in some other cases when points aren't set properly and the algorithm cannot process them, the "Invalid calibration" message is displayed when you click the **Apply** button.



In this case, click the **OK** button and add or edit the points.

Attention!

The following recommendations will help to configure the function better:

1. Place the panoramic and the PTZ cameras close to each other. If they are far from each other, they can interpret the scene differently, due to which the algorithm sometimes can not operate correctly.
2. The points set in the calibration setting must not be on the same line for both the panoramic and the PTZ camera. We recommend setting the points for both cameras so that they evenly cover the entire frame.
3. The recommended number of points that must be set is 4-10. If you add more points, the algorithm is adjusted more precisely. However, it can increase the chance of entering the wrongly configured point into the calibration algorithm, which leads to the common deterioration of the operation quality.

Configuring the Tag&Track function is complete.

 Using Tag&Track

Using absolute telemetry

General information about absolute telemetry in Axxon PSIM

It is possible to use PTZ cameras that support positioning by absolute coordinates to track objects on the map in *Axxon PSIM*. This feature can be in use if it is possible to get coordinates of the object on the map, for instance, when using *Strelec-Integral. Web extension* integration module that is the part of the subsystem *ACFA PSIM* subsystem (only available in Russian at the moment). This module enables getting coordinates of beacons and bracelets, and if these coordinates change, PTZ camera rotates. Coordinates can be assigned to any object on the map including using scripts (see [Examples of script commands for controlling absolute telemetry](#)).

Configure absolute telemetry as follows:

1. [Select the object tracking monitor.](#)
2. [Configure map binding to coordinate grid.](#)

3. [Set the camera FoV on the map.](#)
4. [Configure the calibration of points in the camera FoV.](#)

Selecting object tracking monitor

Object tracking monitor is a Video surveillance monitor that displays video from PTZ cameras used to track objects in absolute coordinates. You should create and configure the **Monitor** object corresponding to the object tracking monitor and add all required cameras to it (see [Configuring video display on Video Surveillance Monitor](#)).

When coordinates of the tracked object are changed, the camera, in the FoV of which it appeared, rotates to the point where it appeared, and the video from this camera is displayed on the object tracking monitor. When all the objects leave the PTZ camera FoV, it stops being displayed on the object tracking monitor. See [Setting camera field of view on map](#).

Select the object tracking monitor as follows:

1. Go to the settings panel of the **Map** object.

2. Select the corresponding **Monitor** object in the **Object tracking monitor** dropdown list (1).
3. Click the **Apply** button (2).

The object tracking monitor is now selected.

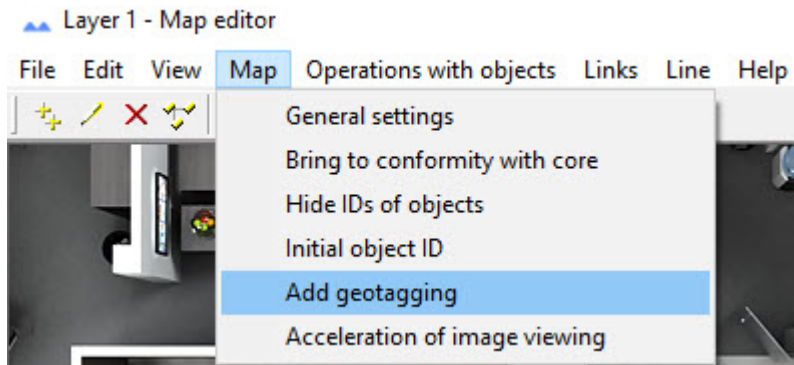
Configuring map binding to coordinate grid

Note

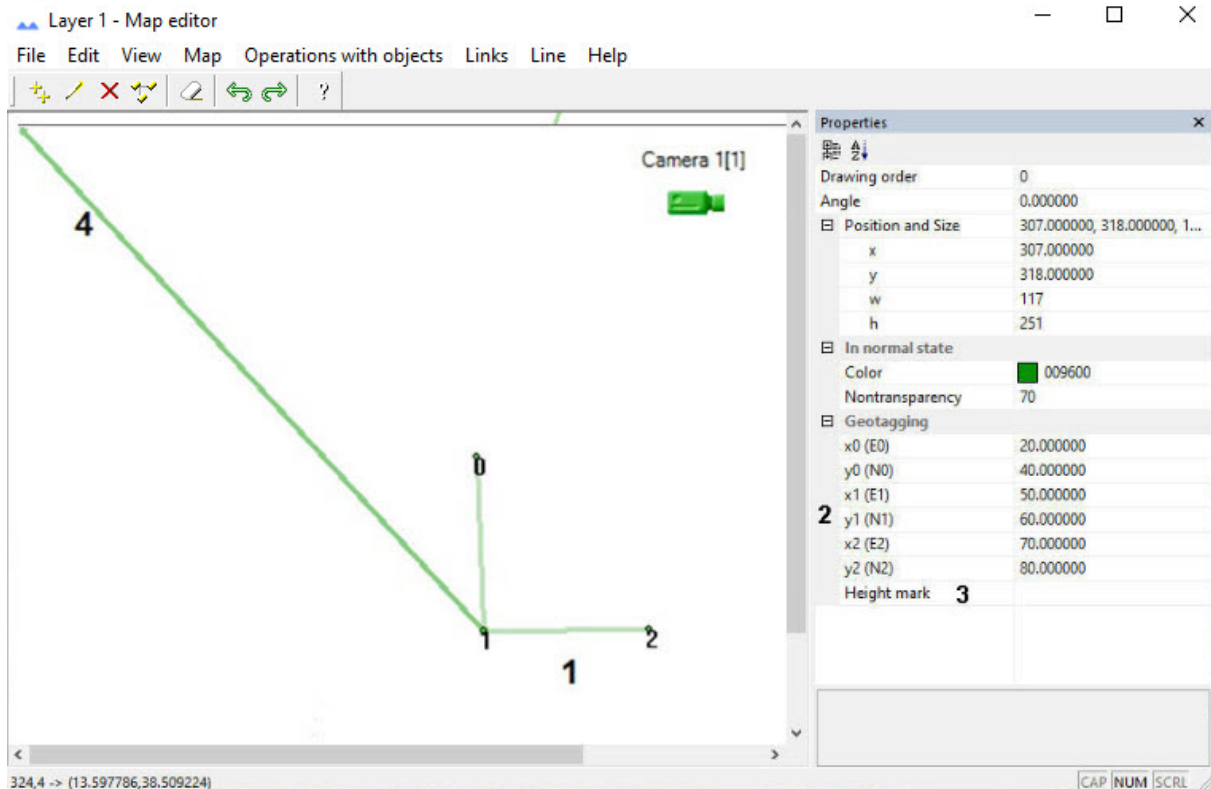
When you use external maps, the binding to geographical coordinates is performed automatically—see [Configuring the external Map server](#).

To configure the binding to the coordinate grid, do the following:

1. Start the *Map editor* utility for the required map layer (for more details about this utility, see [Configuring the interactive map for object state indication and controlling the objects](#) section in *Administrator's Guide*).
2. Display the **Properties** panel to edit object properties on the map (see [Editing object properties using the Properties panel](#)).
3. Select **Add geotagging** in the **Map** menu.

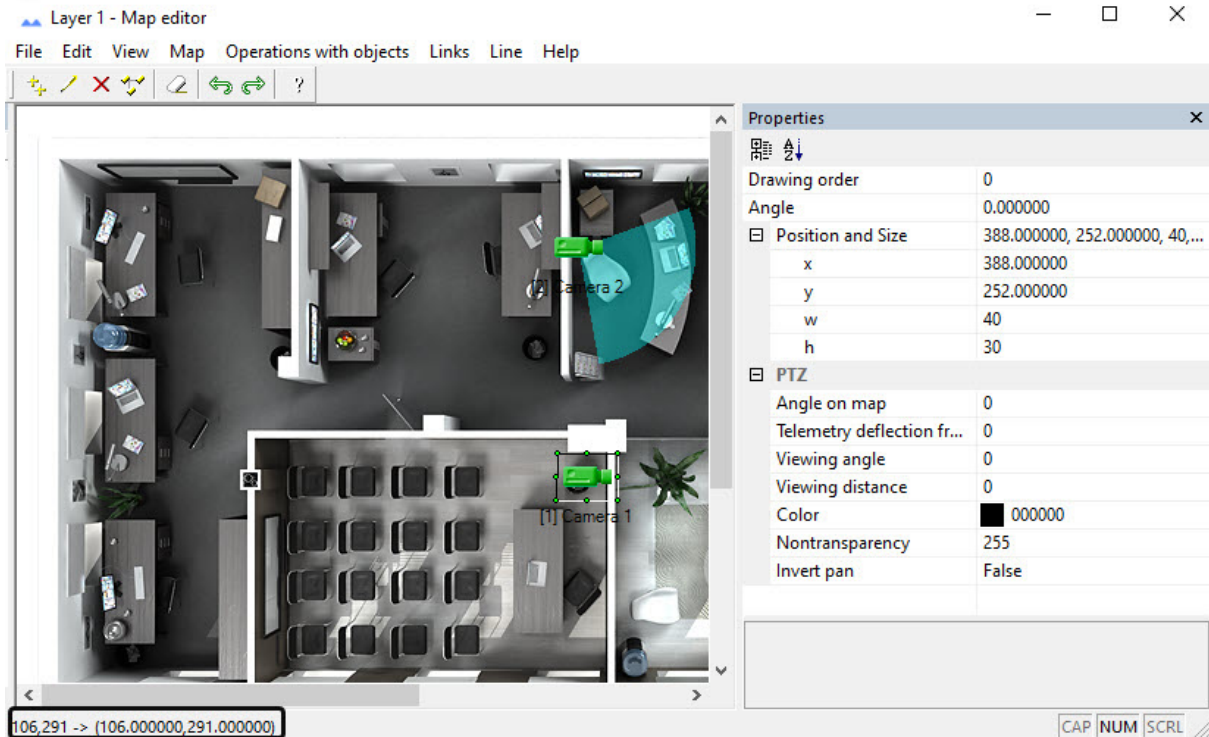


4. The coordinate axes are arranged on the map (1).

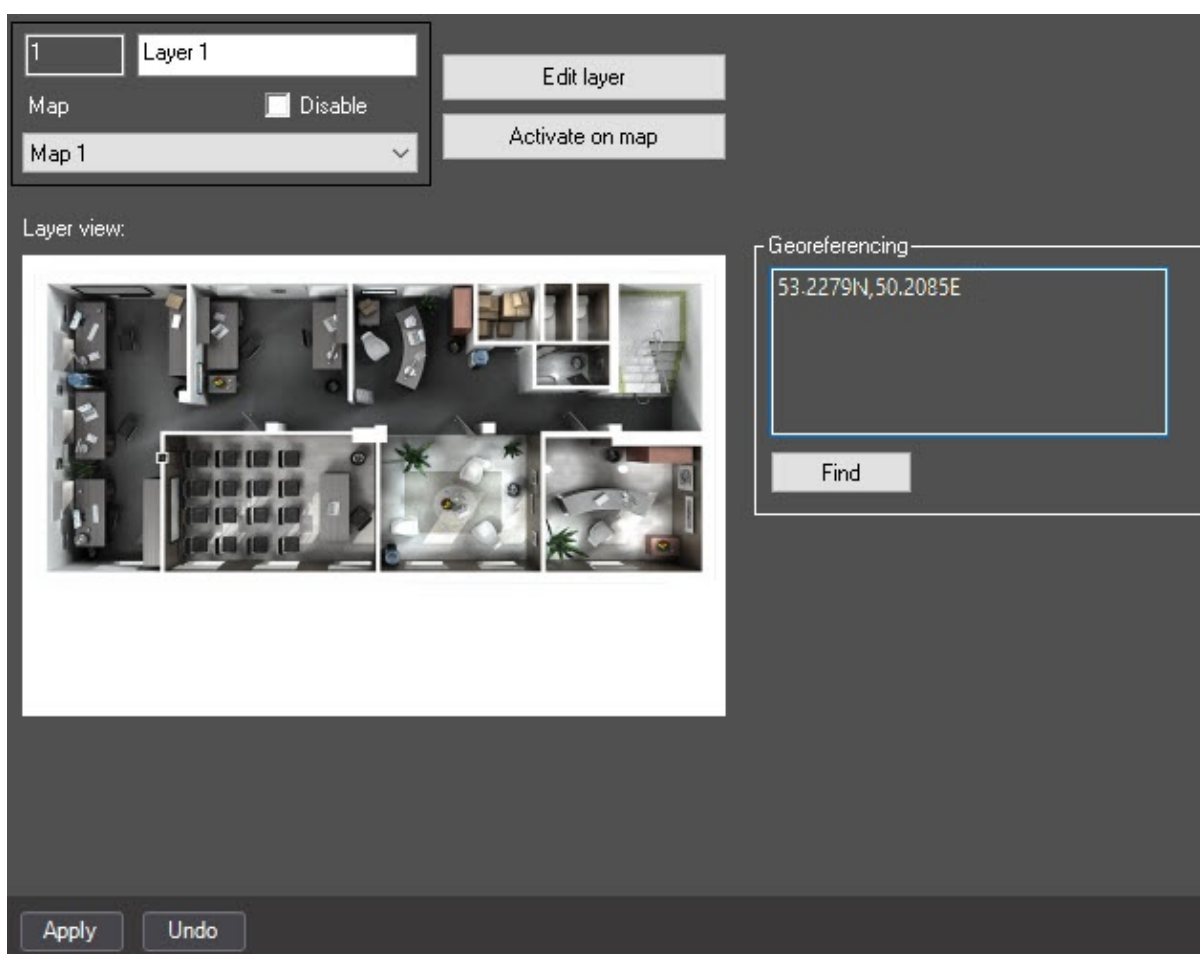


5. Place points 1, 2, and 3 in positions corresponding to points with known coordinates (geographical or relative).
6. In the **x0, y0, x1, y1, x2, y2** fields, specify the coordinates of 0, 1, and 2 points, respectively (2). The x coordinates correspond to longitude, and the y coordinates correspond to latitude.

7. If you configure the cooperation with the *sintegral_web.run* integration module, enter the number of the building floor that you want to bind in the **Height mark** field (3).
8. If geographical coordinates of 0, 1, and 2 points are specified correctly, the axis (4) points to the north. The coordinates of the point to which the mouse cursor is pointed are displayed in the status bar in the lower left corner of the **Map Editor** window.



9. Close the *Map editor* utility and click the **Apply** button on the settings panel of the corresponding **Layer** object.
10. As a result, the calculated coordinates of the point in the upper right corner of the map are displayed in the **Georeferencing** field.

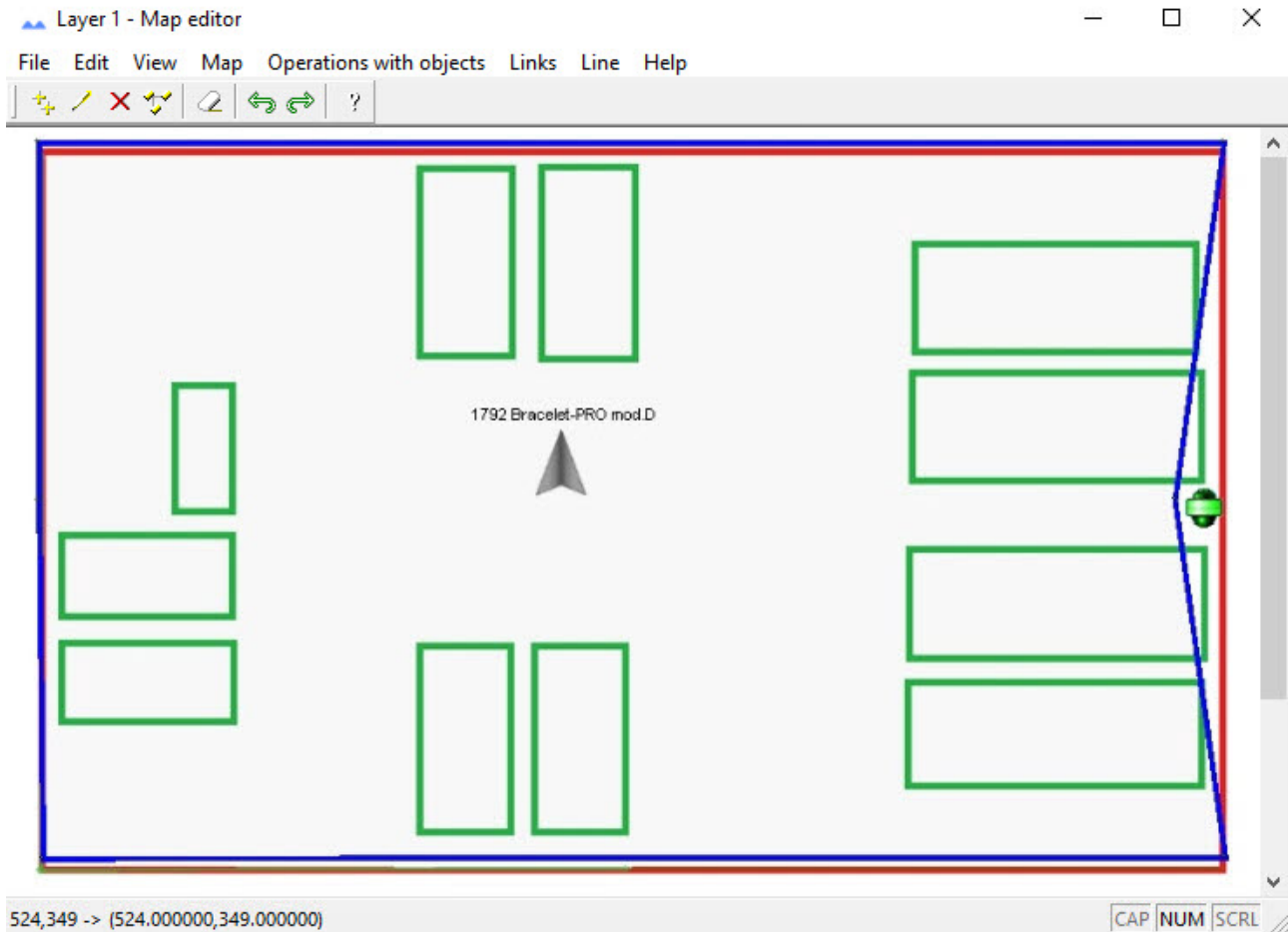


11. Click the **Find** button to check the correctness of the settings. As a result, the Google map by the specified coordinates is opened in the default browser.

Binding the map to the coordinate grid is complete.

Setting camera field of view on map

To set the camera FOV on the map, you must add it to the map as a polygon limiting the area that is controlled by the camera and in which there can be a beacon or a bracelet. (see [Administrator's Guide](#), the [Attaching objects to the layer of interactive map](#) section). If a beacon or a bracelet is located within this area, the camera can track it and display the video on the surveillance monitor (see [Operator's Guide](#), the [Enabling object tracking on interactive map](#) section). If a beacon or a bracelet moves to the area of another camera, the first camera is no longer displayed on the surveillance monitor, and the other camera performs the tracking function.

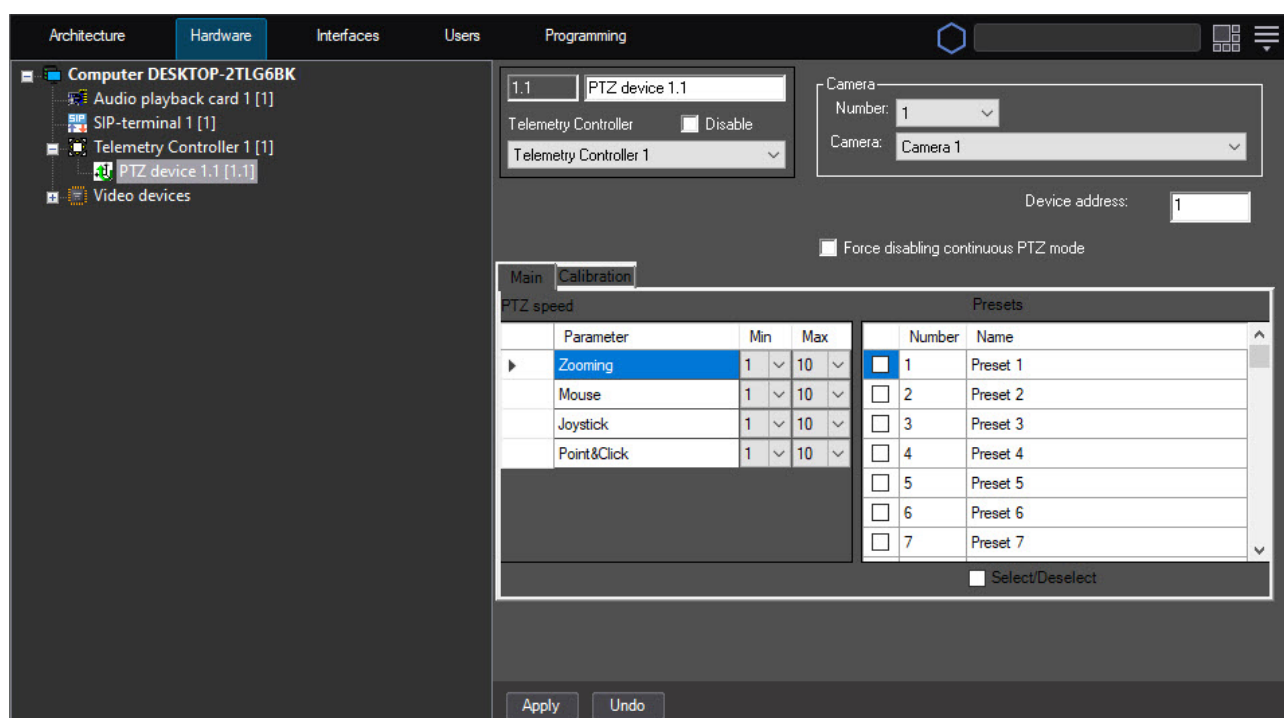


Note

You can configure the display of the camera viewing angle on the map, see [Configuring the display of the camera viewing angle on the map](#).

Configuring points calibration in the camera FOV

Before you configure the points calibration in the camera FOV, you must configure the PTZ camera: create and configure the **Camera** object (see [Configuring PTZ IP cameras](#)), and create the corresponding **Telemetry controller** and **PTZ device** objects (see [Configuring PTZ devices \(Telemetry Controllers\)](#)). You can configure the points calibration in the camera FOV on the settings panel of the **PTZ device** object corresponding to the PTZ camera used to track objects.



Calibration of points in the camera FOV allows you to set the correspondence between the camera absolute coordinates and the coordinate grid of the map (geographical or relative). To calibrate, you must use at least six points.

To configure the calibration of points in the camera FOV, do the following:

1. Go to the settings panel of the **PTZ device** object corresponding to the PTZ camera used to track objects.

2. Go to the **Calibration** tab (1).

1.1 PTZ device 1.1

Telemetry Controller ☐ Disable

Telemetry Controller 1

Camera Number: 1

Camera: Camera 1

Device address: 1

1 ☐ Force disabling continuous PTZ mode

Main Calibration

	update 2	pan 3	tilt 4	zoom 5	x 6	y 7
	...	14	-60	0		
	...	14	-60	0		
	...	14	-60	0		
	...	14	-60	0		
	...	14	-60	0		
	...	16	-70	0		
	...	21	-82	0		
	...	27	-95	0		
	...	27	-95	0		

8

Apply Undo

3. Select a point on the interactive map.
4. Rotate the camera lens so that the selected point is located approximately in the center of the video image received from the camera.
5. Click the ... button in the **Update** column (2). As a result, the **pan** (3), **tilt** (4), and **zoom** (5) fields are filled with the current absolute coordinates of the camera in the corresponding line.
6. In the **x** (6) and **y** (7) fields, enter the coordinates of points on the map corresponding to the selected position of the camera.
7. Repeat steps 3-6 for all points of calibration.
8. Click the **Apply** button (8).

Configuring the points calibration in the camera FOV is complete.

Examples of script commands for controlling absolute telemetry

Example JScript command for positioning the camera by absolute coordinates.

This command can be used to check if the camera supports this function.

```
DoReactStr("TELEMETRY","1.1","MOVE_ABSOLUTE","tel_prior<1>,x<0.5>,y<1>,zoom<0>");
```

Request absolute telemetry coordinates using JScript command:

```
DoReactStr("TELEMETRY","1.1","GET_ABSOLUTE","");
```

Set absolute telemetry coordinates using JScript command:

```
DoReactStr("TELEMETRY","1.1","MOVE_ABSOLUTE","pan<0>,tilt<0>,zoom<0>,tel_prior<1>");
```

Example script for setting object position on the map by coordinates. If there is geo tagging coordinates are considered geographical.

```
{
    var d = new Date();
    var command = CreateMsg();
    command.Action = "SET_OBJECT_GEOMETRY";
    command.SourceType = "MAP";
    command.SourceId = "1";

    command.SetParam("objtype","CAM");
    command.SetParam("objid",1);

    command.SetParam("a",d.getSeconds()*6);
    command.SetParam("x",d.getSeconds());
    command.SetParam("y",d.getSeconds());
    command.SetParam("w",20+10*Math.sin(Math.PI/d.getSeconds()));
    command.SetParam("h",20+10*Math.sin(Math.PI/d.getSeconds()));

    DoReactGlobal(command);
}
```

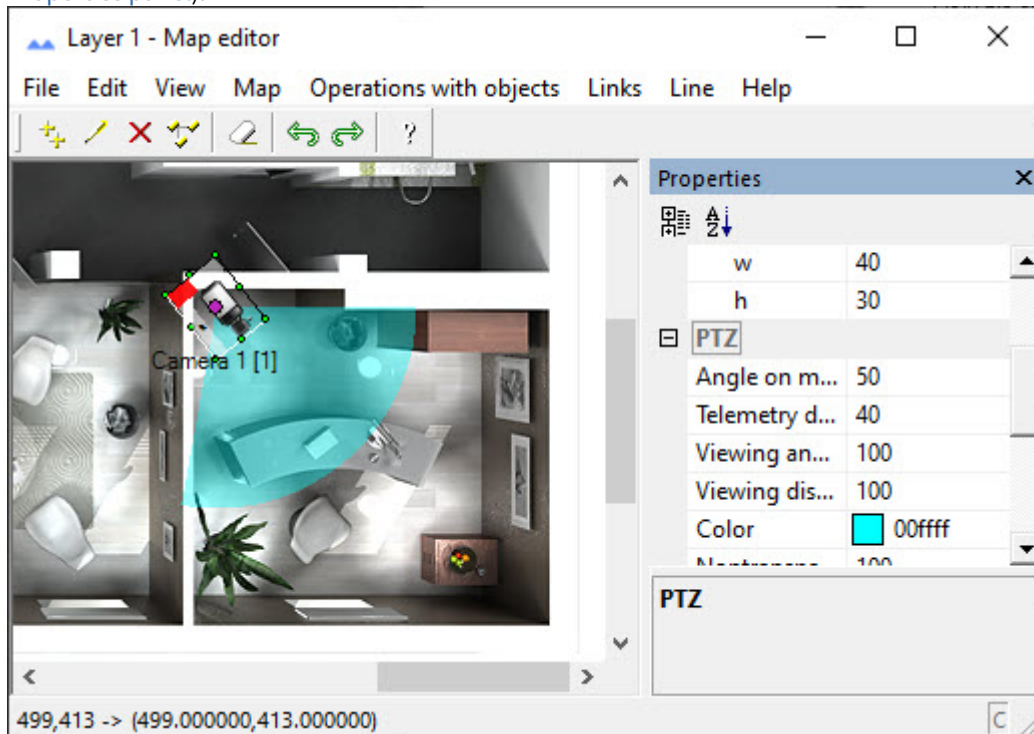
Configuring the display of the camera viewing angle on the map

This setting is optional. The function of displaying the camera viewing angle on the map allows you to mark the area on the map that the camera displays on the surveillance monitor in real time.

Besides, when you select a camera with the configured viewing angle on the map, the numerical value of the absolute coordinates (the rotation angle) is displayed on top of the displayed sector (see [Enabling object tracking on interactive map](#)).

To configure the display of the camera viewing angle on the map, do the following:

1. Open the *Map Editor* utility for the required layer (see [Creating the layers of the interactive map](#)).
2. Add the **Camera** object icon on the layer (see [Attaching objects to the layer of interactive map](#)) or select the already attached **Camera** object.
3. Open the **Properties** panel if it isn't displayed automatically (see [Editing object properties using the Properties panel](#)).



4. On the **Properties** panel in the **PTZ** group, set the parameters for the viewing angle:
 - a. **Angle on map**—the direction of the initial vector on the map in degrees.
 - b. **Telemetry deflection from zero**—the real camera deflection from the zero position at the moment of parameter setup.
 - c. **Viewing angle**—the value of the camera viewing sector in degrees.
 - d. **Viewing distance**—the radius of the camera viewing sector.
 - e. **Color**—the color of the displayed camera viewing sector.
 - f. **Nontransparency**—the opacity of the displayed camera viewing sector.
 - g. **Invert pan**—invert the panning direction of the camera viewing angle in case the camera sends the inverted pan direction data (for example, by clockwise turning, the camera informs about the counter-clockwise pan).
5. Close the *Map Editor* utility.
6. Click the **Apply** button on the settings panel of the **Layer** object.

Configuring the display of the camera viewing angle on the map is complete.

You can change the color of the sector limiting the viewing angle by using the script. The example of the color change command for the JScript is presented below:

```
var msg = CreateMsg();
```

```

msg.SourceType = "MAP";
msg.Action = "OBJECT_ATTRIBUTE";

msg.SetParam("obj_type", "CAM");
msg.SetParam("obj_id", "1"); // Camera object identifier.
msg.SetParam("obj_action", "update_sector");
msg.SetParam("c_clr", "#AAFF0000"); // ARGB format. RGB without transparency can also
be used.

DoReact(msg);

```

3.4.12 Patrolling configuration

Patrolling is the automatic transition of the PTZ camera to the specified presets in the specified order and then returning to the starting position. *Axxon PSIM* supports patrolling for Huawei and ONVIF devices.

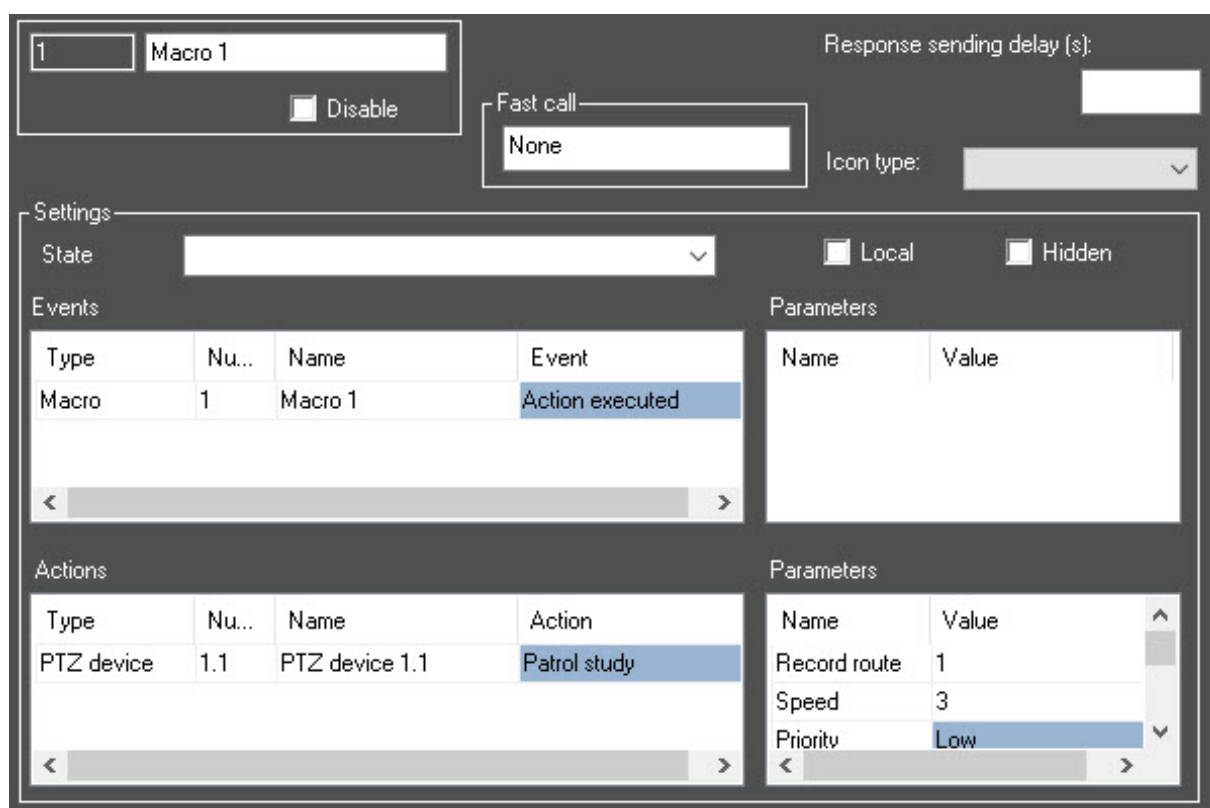
Create the necessary presets before configuring patrolling in *Axxon PSIM*. This can be done through the IP device web interface or in *Axxon PSIM* itself, for example, using the **Telemetry control panel** (see [Control of PTZ device using the telemetry control panel](#)).

The procedure for configuring patrolling is as follows:

1. Using the **Patrol study** action macro for the **PTZ device**, create a route for patrolling—macros for switching between the presets of the PTZ camera. Each point created in the macro will correspond to each preset. The last macro of the route must be a macro with the **Yes** value for the **Record route** parameter. This is the signal that the route is complete and it can be saved.
2. For the created route for patrolling, create the macros to start and stop the route—the actions **Patrol** and **Patrol stop** for the **PTZ device**, respectively. Specify the number of the created route for patrolling in the parameters of these macros.
3. To study the route for patrolling, it is necessary to run the **Patrol study** macro sequentially in the same order as the patrolling will happen.
4. Later to start and stop the patrolling, it is necessary to use the **Patrol** and **Patrol stop** macros.

Creating a route for patrolling

To create a route for patrolling, add points to the route using the **Patrol study** action macro. ☐ Create a separate macro for each point:



1 Macro 1 ☐ Disable

Fast call: None

Response sending delay (s):

Icon type:

Settings

State: Local Hidden

Events

Type	Nu...	Name	Event
Macro	1	Macro 1	Action executed

Parameters

Name	Value
Record route	1
Speed	3
Priority	Low

Actions

Type	Nu...	Name	Action
PTZ device	1.1	PTZ device 1.1	Patrol study

Parameters

Name	Value
Record route	1
Speed	3
Priority	Low

Parameters description:

Parameter name	Description	Value range
Record route	Shows if the point is the last in the route	Yes—this is the last point in the route, save the route. No—another point is expected in the route.
Speed	The speed of the camera movement to the specified point	0 – 10
Priority	The priority of the command to rotate to the specified preset. See Priorities of PTZ control	Low Medium High

Parameter name	Description	Value range
Point	The cruise point identifier. <i>Note. If you specify a point number that is more than 1 more than the last one, then the next sequential number will be assigned to the point. For example, point No. 10 cannot be created after point No. 3, the number will automatically be set to 4</i>	1–31
Preset	The ID number of the preset corresponding to the cruise point	1–255
Delay	Time period during which the device should stay in the preset	3–3600
Route	Patrolling route identification number. The first route must be No. 0. The identifiers can be set in no particular order, for example, the route No. 8 can be created before route No. 3	0–7

Running and stopping the patrolling

Run the following macro to start patrolling:

1

Macro 1

☐ Disable

Fast call

None

Response sending delay (s):

Icon type:

Settings

State

Local

Hidden

Events

Type	Nu...	Name	Event
Macro	1	Macro 1	Action executed

Parameters

Name	Value
------	-------

Actions

Type	Nu...	Name	Action
PTZ device	1.1	PTZ device 1.1	Patrol

Parameters

Name	Value
Priority	Low
Route	2

Run the following macro to stop patrolling:

1

Macro 1

☐ Disable

Fast call

None

Response sending delay (s):

Icon type:

Settings

State

Local

Hidden

Events

Type	Nu...	Name	Event
Macro	1	Macro 1	Action executed

Parameters

Name	Value
------	-------

Actions

Type	Nu...	Name	Action
PTZ device	1.1	PTZ device 1.1	Patrol stop

Parameters

Name	Value
Priority	Low
Route	2

Consider the following aspects when using these macros:

1. The **Patrol stop** macro acts only after the **Patrol** macro, i.e. if you run the **Patrol** macro, restart *Axxon PSIM* and then try to run the **Patrol stop** macro, the latter one will not be run.
2. If the route number different from the previously started route is specified in the **Patrol stop** command, the patrolling of the current route will be stopped.

4 Installing and configuring security system components guide. Appendices

4.1 Appendix 1. Features of video capture card configuration

4.1.1 Drivers for video capture cards, sensor/relay cards, Guardant and USB Watchdog integrated into Axxon PSIM

Drivers for video capture cards integrated into *Axxon PSIM™* are stored in the **Drivers** folder of the *Axxon PSIM™* installation directory (e.g., C:\Program Files\Axxon PSIM\Drivers). Structure of the **Drivers** folder is given in the table.



Note

The Fs_1_4, SLKEY, TvTuner and SLIO folders in the AxxonSoft directory contain the old version drivers which are needed to ensure the compatibility with the previous versions of *Axxon PSIM*.

Directory	Drivers for video capture cards	Platform supported
AxxonSoft\Fs5_6_8_16	Video capture cards FS5, FS6, FS8, FS16, FX2	x32, x64
AxxonSoft\FX116_416	Video capture cards SL16-200 (FX116), FX416, MS416	x32, x64
AxxonSoft\Ws7	Video capture cards WS7, WS17	x32
AxxonSoft\SL_WD	Sensor/relay cards Stream Labs SL USB IO 4x4, SL USB IO 24x4, SL USB IO 24x4	x32, x64
TUAN\TW6802	Video capture cards SC200Q4 (FS15), SC200Q4 Low profile (FS115), SC300Q16 (FX4), SC300D16 (FX8), SC230N4, SC330Q16 (analogue of SC300Q16)*, SC330D16 (analogue of SC300D16)*	x32, x64
TUAN\CX2581	Video capture card SC310N16 (FX16)	x32, x64
TUAN\AH8400	Video capture card SC390N16 (WS16)	x32, x64
TUAN\TW5864	Video capture card SC3B0N16 (WS216)	x32, x64
TUAN\SA7160	Video capture card SC510N4 (FX HD4)	x32, x64

TUAN\TW2809	Video capture card SC590N4	x32, x64
Guardant	Guardant hardware security key drivers	x32, x64
USBWatchDog	USB Watchdog hardware operational check drivers	x32, x64

* The SC330Q16 and SC330D16 cards have the TW6816 microchip, however it is shown as TW6802 in the device manager.



Note

Drivers for SC3C0N8-L video capture card should be downloaded from the manufacturer's web site: <https://www.yuan.com.tw/support/download.htm> (or follow the [link](#)).



Important!

If there is no 64-bit version for the video capture card driver, then this card will not operate in a 64-bit OS.



Note.

WS6 card is not supported.

4.1.2 Features of video subsystem configuration

Features of video subsystem configuration are given in the table below:

Video capture device	Number of the Video capture device objects for one physical card	Maximum number of the Camera objects for one Video capture device object	Allocation of channel numbers between the Camera objects	Number of the Camera objects (in live mode) for the Video capture device object
FS5	1	16	1-16 (for each physical card)	1
FS6*	4	4	1-16 (for each physical card)	1
FS16	4	4	1-16 (for each physical card)	1
FS8	8	2	1-16 (for each physical card)	1

Video capture device	Number of the Video capture device objects for one physical card	Maximum number of the Camera objects for one Video capture device object	Allocation of channel numbers between the Camera objects	Number of the Camera objects (in live mode) for the Video capture device object
FX2	2	4	1-8 (for each physical card)	1
SC200Q4 (FS15)	1	4	1-4 (for each physical card)	1
SC200Q4 Low profile (FS115)	1	4	1-4 (for each physical card)	1
SC230N4	4	1	randomly	1
SC300Q16 (FX4)***	4	4	1-4 (for each Video capture card object)	1
SC300D16 (FX8)***	8	2	1-2 (for each Video capture card object)	1
SC310N16 (FX16)	16	1	randomly	1
WS7	4	1	randomly	1
SC390N16 (WS16)	16	1	randomly	1
WS17	4	1	randomly	1
SC3B0N16 (WS216)	16	1	randomly	1
SL16-200 (FX116)****	1	16	1-16 (for each physical card)	8
FX416	1	16	1-16 (for each physical card)	16
MS416	1	16	1-16 (for each physical card)	16

Video capture device	Number of the Video capture device objects for one physical card	Maximum number of the Camera objects for one Video capture device object	Allocation of channel numbers between the Camera objects	Number of the Camera objects (in live mode) for the Video capture device object
DS4016HCI(R)	1	16	1-16 (for each physical card)	16
SC510N4 (FX HD4)**	4	1	randomly	1
SC590N4	4	1	randomly	4
SC330Q16	4	4	1-4 (for each Video capture card object)	1
SC330D16	8	2	1-2 (for each Video capture card object)	1
SC3C0N8-L	8	1	1	1

* If the FastBoot mode is ON on Windows 10, reboot the OS from Start-Restart menu after first run of Server after video capture card installation. To avoid this, disable FastBoot by changing the following registry keys:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session Manager\Power\ **HiberbootEnabled** set to **0**
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\luaufv\ **Start** set to **0**

The FastBoot can also be disabled from Control Panel. Go to **Control Panel - All Control Panel Items - Power Option**, then click **Choose what the power buttons do - Change settings that are currently unavailable** and uncheck **Enable Quick Launch**.

PCI channels are to be allocated between the **Video capture device objects created for SC510N4 (FX HD4) video capture card, taking into account the numbers of external HDMI connectors indicated on the card.

*** When a video subsystem is built using SC300Q16 (FX4) or SC300D16 (FX8) or SC330Q16 (analogue of SC300Q16) or SC330D16 (analogue of SC300D16) video capture card, take into account that each color of BNC video input of interface cable conforms with a certain PCI channel specified in the settings of the Video capture device object.

Value of PCI channel	Colour of BNC video input
00	Blue
01	Green

Value of PCI channel	Colour of BNC video input
02	Yellow
03	Black
2nd interface cable	
04	Blue
05	Green
06	Yellow
07	Black

For example, if one SC300Q16 (FX4) video capture card is used and video cameras are connected to blue BNC video inputs, then the **Camera** objects under the **Video capture device** object correspond to these video cameras (with 00 value for PCI channel) in *Axxon PSIM™*.



Attention!

Specify the **min** value to the **Speed** parameter in the settings panel of the **Video Capture Device** object if more than 8 cameras are connected to SL16-200 (FX116) card (see the [The settings panel of the Video capture device object](#) section of the [Administrator's Guide](#) document). This value corresponds to 8 fps in the PAL format. Otherwise, noise (distortions) on video can occur.



Note.

WS6 card is not supported.

4.1.3 Features of audio subsystem configuration

Features of audio subsystem configuration are given in the table below:

Video capture device	Number of the Audio card objects for one physical card	Maximum number of the Microphone objects for one Audio card object	Allocation of channel numbers between the Microphone objects under one Audio card object
FS5 (FS 6)	1	2	#0 - #1
FS6 (FS 6)	4	2	#0 - #1

Video capture device	Number of the Audio card objects for one physical card	Maximum number of the Microphone objects for one Audio card object	Allocation of channel numbers between the Microphone objects under one Audio card object
FS16 (FS 6)	4	2	#0 - #1
FS8 (FS 8)	8	2	#0 - #1
FX2 (FS 6)	2	2	#0 - #1
SC200Q4 (FS15, TW6802 PCI, Analog WaveIn)	1	1	only #0
SC200Q4 Low profile (FS115)	1	1	only #0
SC230N4	4	1	only #0
SC300Q16 (FX4, TW6802 PCI, Analog WaveIn)	4	1	only #0
SC300D16 (FX8, TW6802 PCI, Analog WaveIn)***	8	1	only #0
SC310N16 (FX16, CX2581 PCI, Analog WaveIn)	16	1	only #0
WS7 (WS 7)	4	2	#0 - #1
SC390N16 (WS16, AH8400 PCI, Analog WaveIn)	16	1	only #0
WS17 (WS 7)	4	2	#0 - #1
SC3B0N16 (WS216, TW5864 PCI, Analog WaveIn)	16	1	only #0

Video capture device	Number of the Audio card objects for one physical card	Maximum number of the Microphone objects for one Audio card object	Allocation of channel numbers between the Microphone objects under one Audio card object
SL16-200 (FX116, SLFXR)	1	16	#0 - #15
FX416 (SLFXR)	1	16	#0 - #15
MS416(SLMSR)	1	32	#0 - #31
SC510N4 (FX HD4, SA7160 PCI, Analog WaveIn)*	4	1	only #0
SC590N4**	4	1	#0 - #1
SC330Q16	4	1	only #0
SC330D16	8	1	only #0
SC3C0N8-L	8	1	only #1

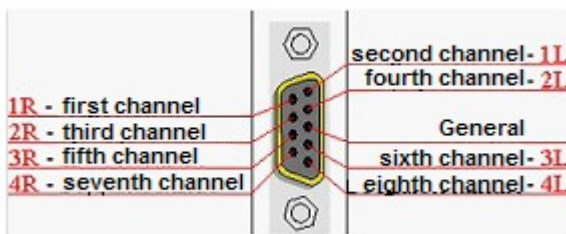
* PCI channels are to be allocated between the **Audio card** objects created for SC510N4 (FX HD4) video capture card, taking into account the numbers of external HDMI connectors indicated on the card.

** Audio input is performed via both SDI connectors and analog inputs. **Either** SDI or analog input can be used at the same time for each card. #0 channel corresponds to the SDI, and #1 – to the analog input. Therefore, it is possible to simultaneously connect audio to the card via either 4 SDIs, or 3 SDIs and one analog input, or 2 SDIs and 2 analog inputs.

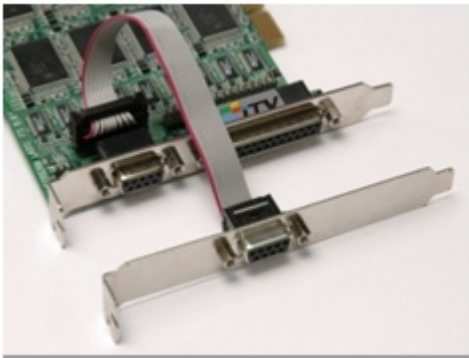
Restart the *Axxon PSIM* to apply settings.

*** FS8 video capture card allows capturing 16 audio channels with digitization quality up to 32 kHz. Eight right (#1) channels are used to connect to external DB9-M connector.

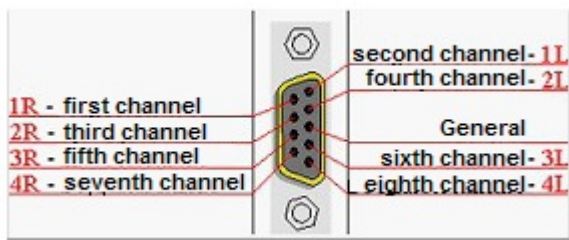
Pinout of an audio port of FS8 card:



Eight left (#0) channels are used to connect to internal 6-pin connector using 8-channel audio cable. FS8 card with an audio cable:



Pinout of an audio port of an audio cable:



Optionally there is an adapter for DB9-M connector (audio input port on FS8 card) with 8 RCA-F connectors that make audio source connection easier.

⚠ Attention!

Signs on audio cable connectors do not conform with numbers of card channels. Right channels are performed in DB9 connector, left channels are performed in DB9 cable.

Channels in DB9 connector:

Sign on audio cable connector	Number of a card channel
1R	1R
2R	3R
3R	5R
4R	7R
1L	2R
2L	4R
3L	6R

Sign on audio cable connector	Number of a card channel
4L	8R

Channels in DB9 cable:

Sign on audio cable connector	Number of a card channel
1R	1L
2R	3L
3R	5L
4R	7L
1L	2L
2L	4L
3L	6L
4L	8L



Note.

WS6 card is not supported.

4.2 Appendix 2. IP device configuration in the Windows OS

4.2.1 Configuration of IP devices by the example of Axis camera

IP-devices in Windows OS are configured with the software bundled with the network module.

To configure the IP device in Windows OS, the following software bundled with the device is in use:

1. Software bundled with the network device package. This software allows:
 - a. Searching for the network devices connected to the local network computers.
 - b. Assigning initial IP addresses (without routing).



Note

An initial IP-address is required to enable access to the home pages of the devices installed on the embedded Web Servers.

2. The Web Server module of the network device. This module contains home pages of all connected network devices. The Web Server module allows:
 - a. Configuring network devices taking into account routing.
 - b. Configuring operation modes of the network devices with video and audio signals.
 - c. Playing back video from the network devices in the standard Web-browser mode.

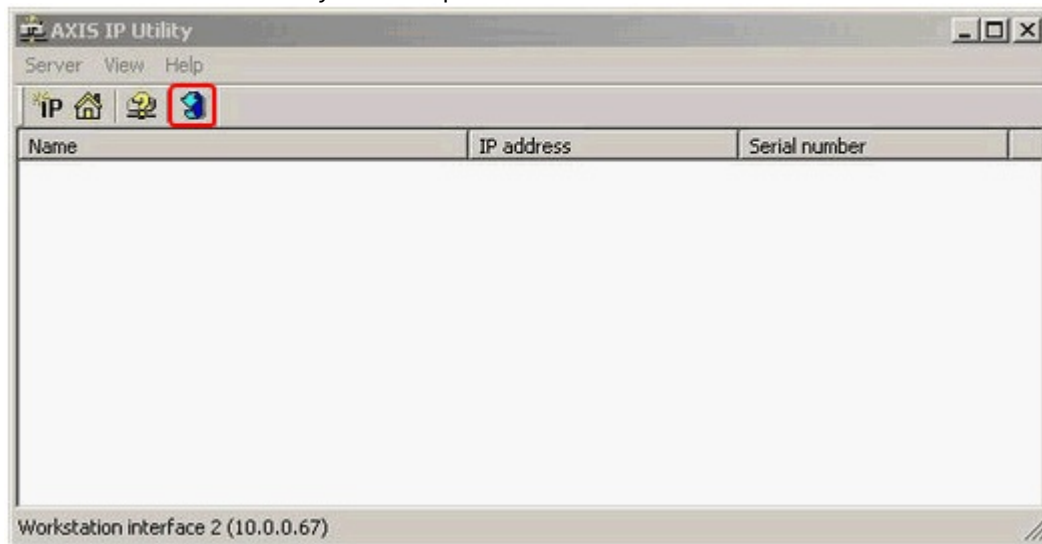
Searching for IP devices

The software package consists of various software including different utilities designed to search for the network devices of the same type connected to the local network computers.

IPUtility.exe utility is used to search for connected network cameras when Axis cameras are in use. IPUtility.exe utility is bundled with Axis cameras and is stored in the Axis installation software directory.

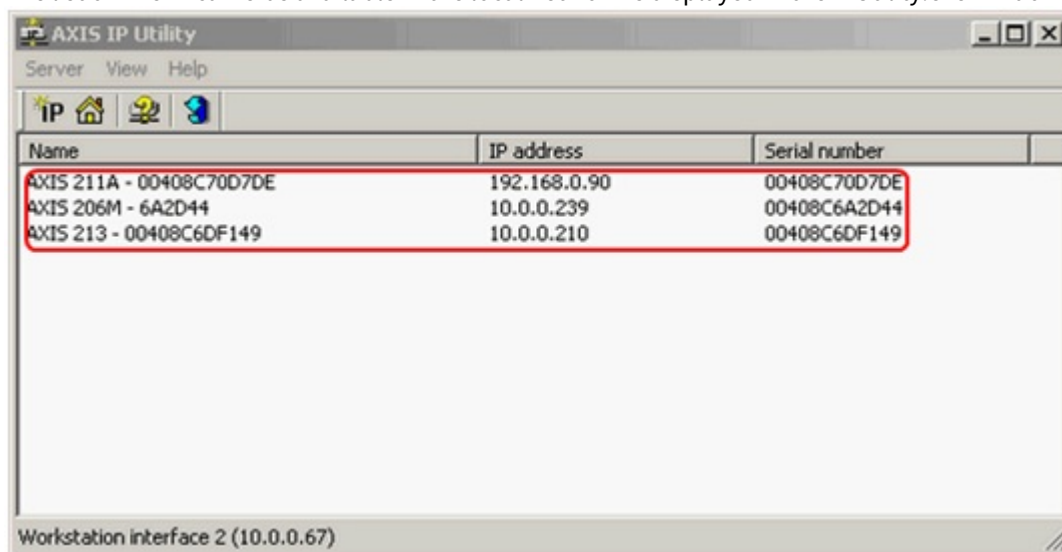
To search for Axis IP cameras connected to the local network computers, using the IPUtility.exe utility, do the following:

1. Select **Search** on the IPUtility.exe tools panel.



The search for Axis IP cameras starts as soon as the **Search** button is clicked.

2. The list of Axis IP cameras available in the local network is displayed in the IPUtility.exe window.



Assigning network addresses to IP devices

To ensure correct operation of the network devices within the local video surveillance system, their IP addresses are to be configured correctly. IP addresses are configured using the utilities bundled with the software kit.

Before assigning an IP address to the Axis network camera, do the following:

1. Make sure that the Axis network camera is connected to the mains and correctly connected to the telecommunication network.
2. Get a unique IP address from the network Administrator.
3. Make sure that the device displays its own MAC address correctly. The MAC address of Axis cameras is the same as the serial number of the camera.

Note

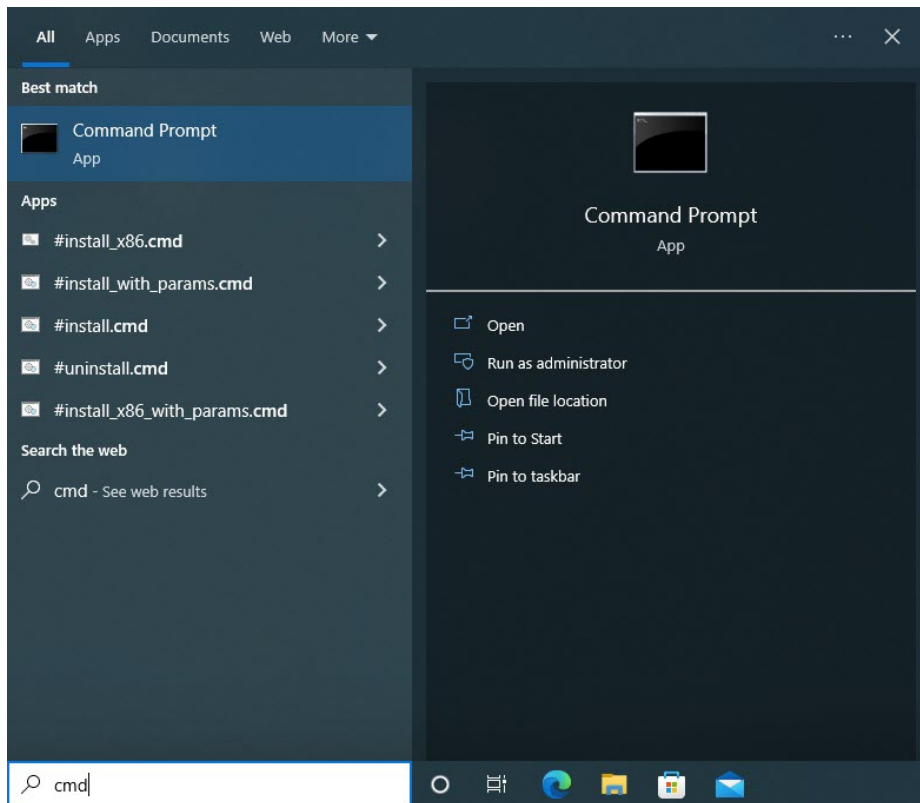
The examples below use a computer with 192.168.0.1 IP address, whereas an Axis camera is installed to 192.168.0.90 IP address. The MAC address for an Axis camera is 00408C70D7DE. The addresses given as an example are not to be used; always consult your network Administrator before assigning an IP address.

Note

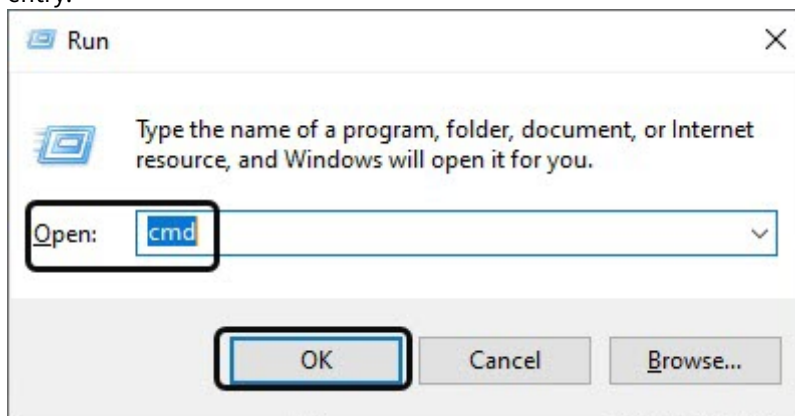
Selecting an IP address to be assigned to an IP camera, keep in mind that the initial IP address of the camera connected for the first time is to correspond to the same subnetwork as the IP address of computer. Later on, if required, the IP address can be modified using the Web Server of the device.

To assign an IP address to the Axis network camera, do the following:

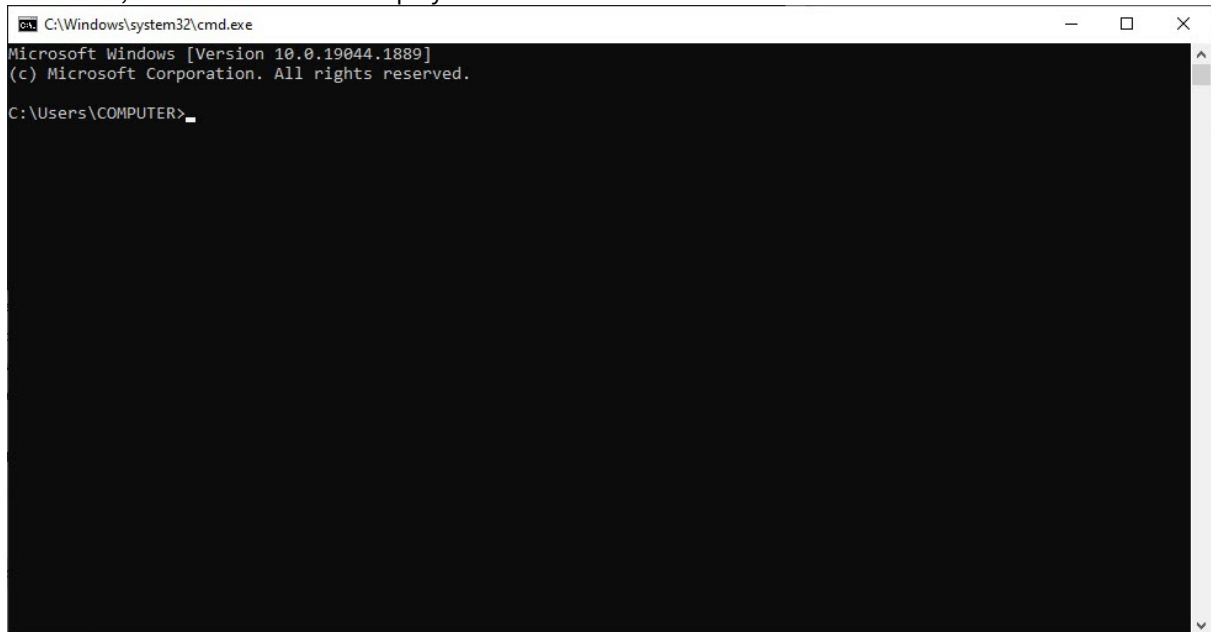
1. Check that the IP address to be assigned to the Axis network camera is not used by any other devices. The IP address in Windows OS is checked using the command line. To display the command line on the monitor, select the **Command Prompt** in the **Start** menu.



Now type the **cmd** command in the **Open** field of the **Run** dialog box and click the **OK** button to approve the entry.



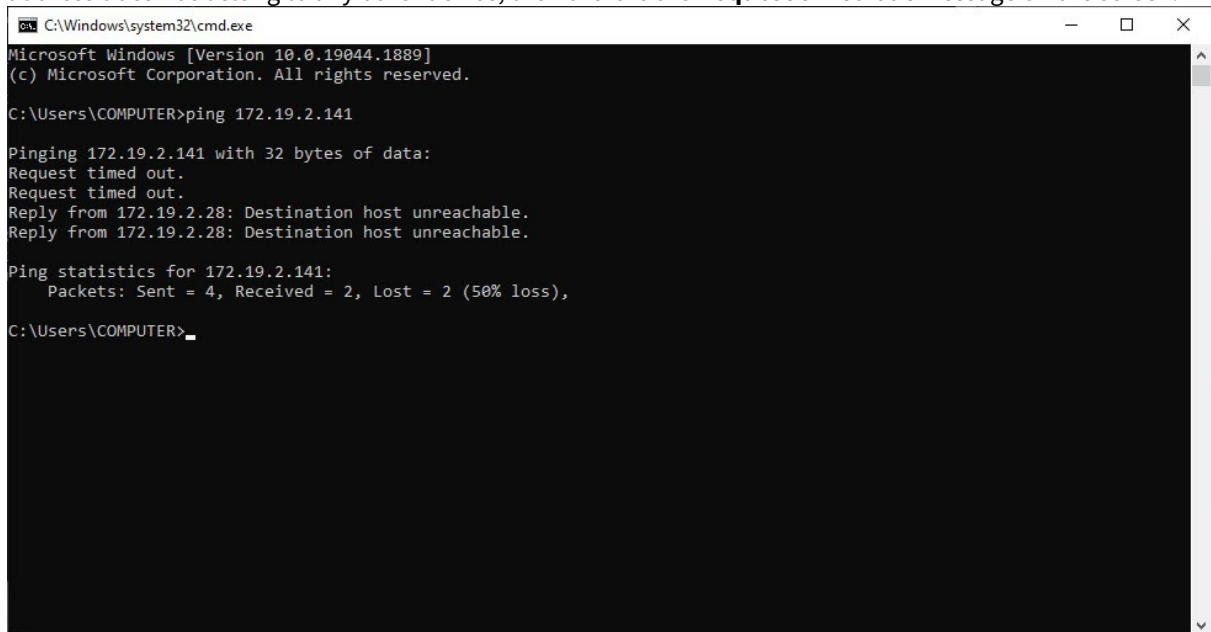
As a result, the command line is displayed on the screen.



```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.19044.1889]
(c) Microsoft Corporation. All rights reserved.

C:\Users\COMPUTER>
```

To check the selected IP address, type the **ping 192.168.0.90** command in the command line. If the given IP address does not belong to any other device, then there is the **Request timed out** message on the screen.



```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.19044.1889]
(c) Microsoft Corporation. All rights reserved.

C:\Users\COMPUTER>ping 172.19.2.141

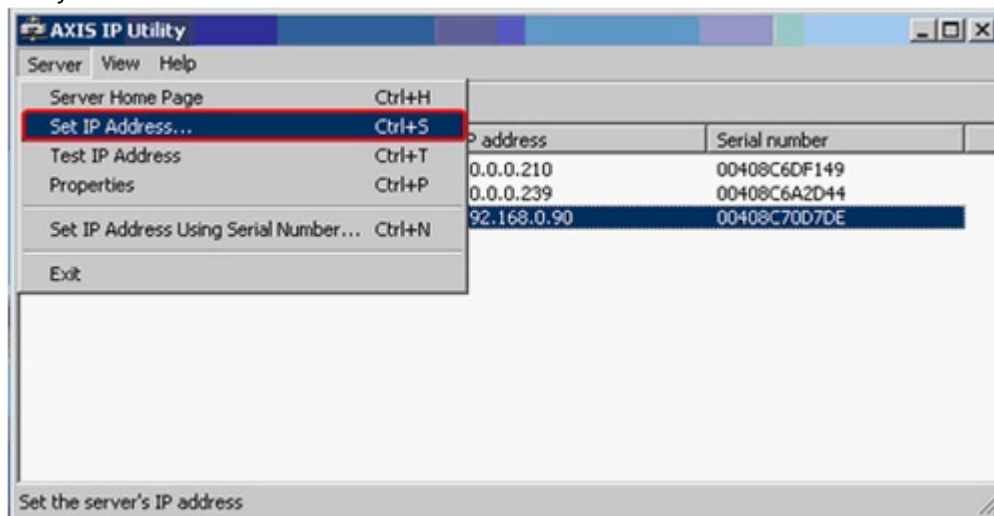
Pinging 172.19.2.141 with 32 bytes of data:
Request timed out.
Request timed out.
Reply from 172.19.2.28: Destination host unreachable.
Reply from 172.19.2.28: Destination host unreachable.

Ping statistics for 172.19.2.141:
    Packets: Sent = 4, Received = 2, Lost = 2 (50% loss),

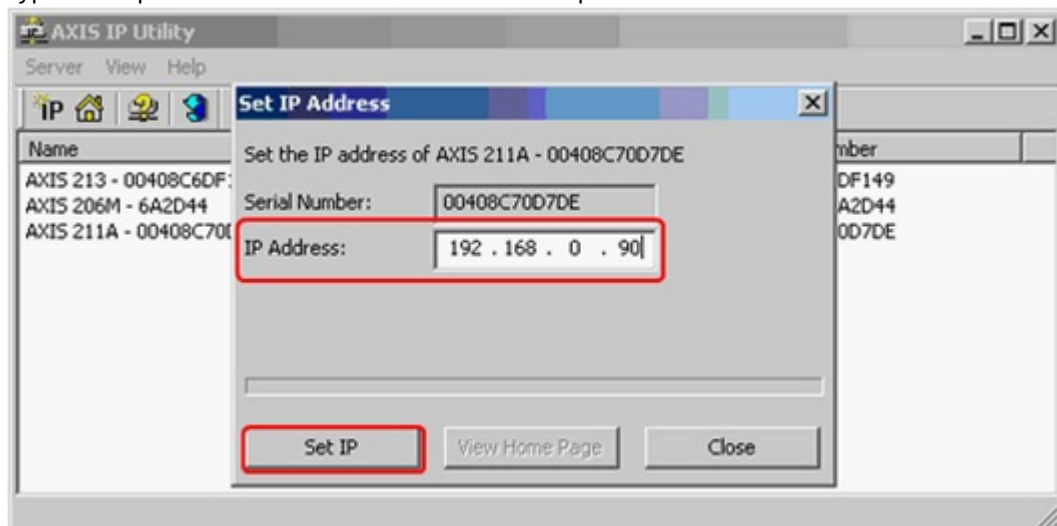
C:\Users\COMPUTER>
```

2. Assign the required IP address to the Axis camera. Assign the selected IP address as follows:
 - a. Start the **IPUtility.exe** utility.
 - b. Start searching for all Axis IP cameras (see [Searching for IP devices](#) section).
 - c. Highlight the line containing the required IP camera in the list of Axis IP cameras connected to the local network.

- d. Select the **Set IP Address** item in the **Server** dropdown list in the main menu of the **IPUtility.exe** utility.



- e. Type the required IP address on the **Set IP Address** panel.



- f. Confirm the IP address assigned to the Axis network camera by clicking the **Set IP** button.

As soon as the above operations are done, IP address settings of the network device are enabled.

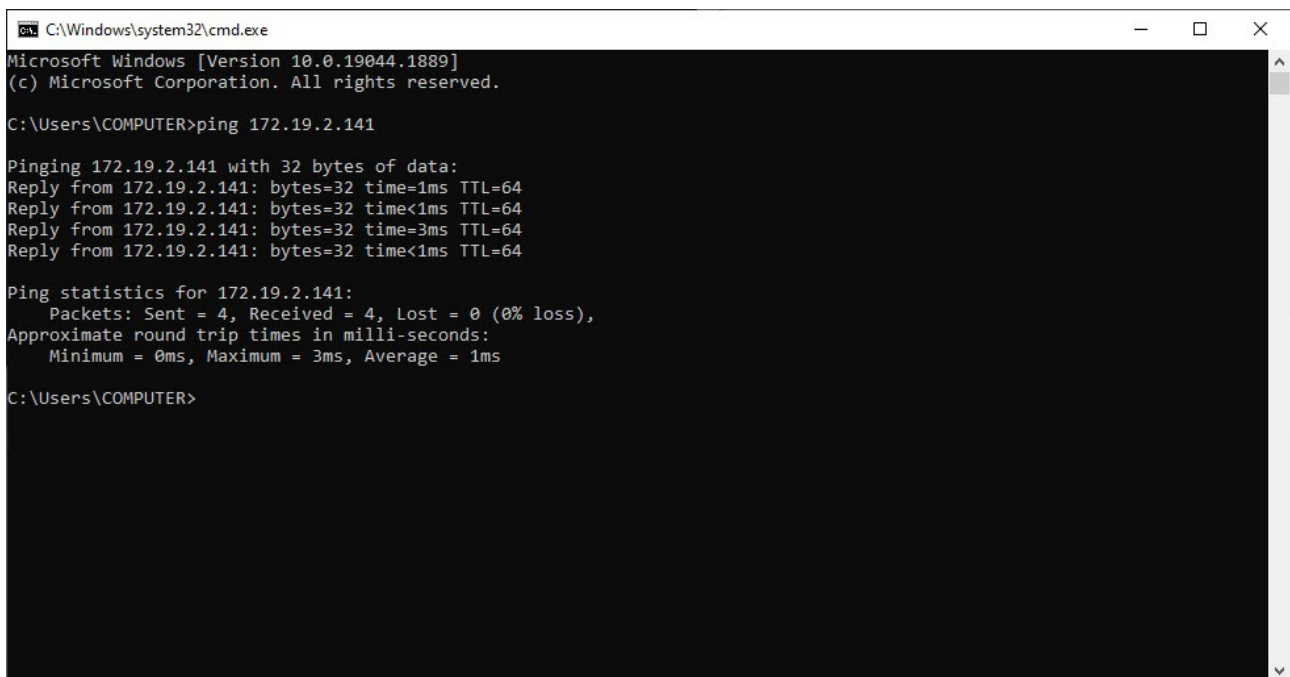
Note

To prevent possible failures of the camera, check the assigned IP address again.

3. Check the IP address assigned to the Axis network camera.

Note

The IP address is checked with the use of the command line (see the 1st item of this instruction). If the IP address is set correctly, then following message is displayed in the command line window in reply to the **ping 192.168.0.90** command:



```

C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.19044.1889]
(c) Microsoft Corporation. All rights reserved.

C:\Users\COMPUTER>ping 172.19.2.141

Pinging 172.19.2.141 with 32 bytes of data:
Reply from 172.19.2.141: bytes=32 time=1ms TTL=64
Reply from 172.19.2.141: bytes=32 time<1ms TTL=64
Reply from 172.19.2.141: bytes=32 time=3ms TTL=64
Reply from 172.19.2.141: bytes=32 time<1ms TTL=64

Ping statistics for 172.19.2.141:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 3ms, Average = 1ms

C:\Users\COMPUTER>

```

The IP address is now assigned to the Axis camera. If assignment of the IP-address to the Axis camera is successful, then proceed to the network configuration of the device using the embedded Web Server.

How to call the Web Server home page of IP device

The home page of a network device is automatically created on the Web Server of the network device as soon as the IP address is assigned to the device using the IPUtility.exe utility (see [Assigning network addresses to IP devices](#) section).

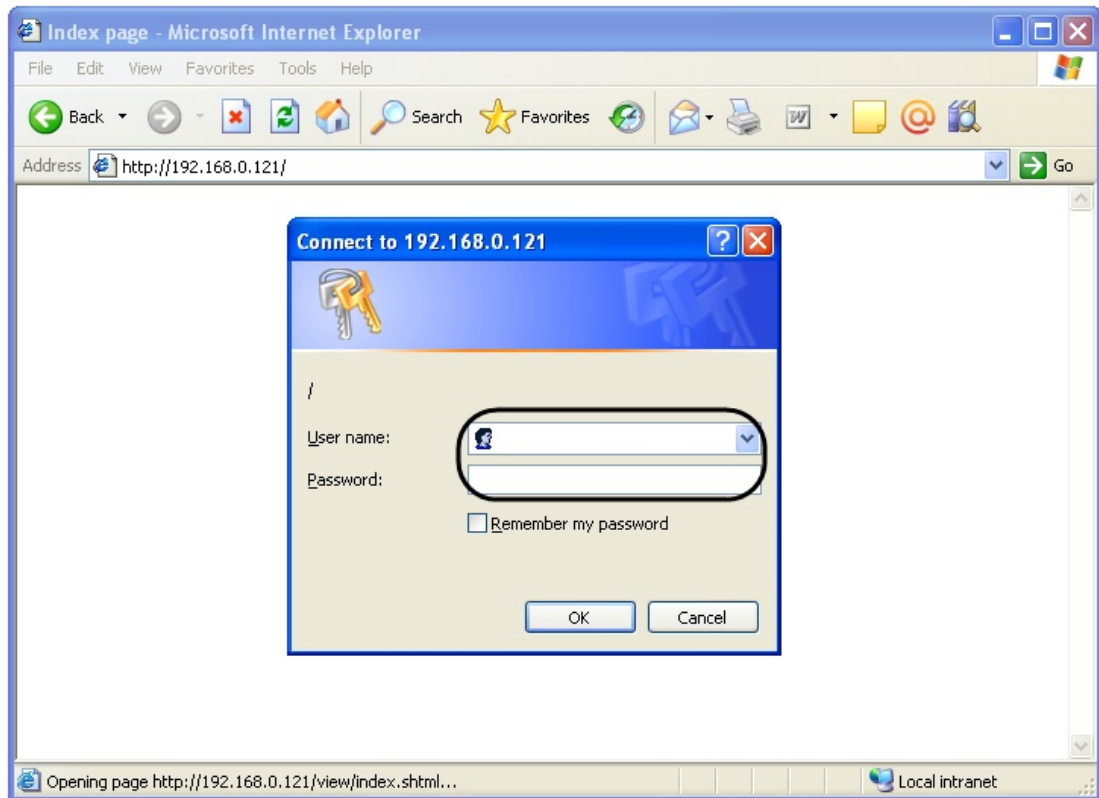
Webpage of IP device can be downloaded in two ways:

1. Specify address manually. For this:
 - a. Start Internet Explorer.
 - b. Type the address in the **Address** line: `http://assigned IP-address` (for instance, `http://192.168.0.90`) and click the **Enter** key.



- c. Type a user name and password to access the home page of the network device. The data specified in the **User name** and **Password** fields can be found in the documentation to the add-on network

device.



- d. Click **the OK** button after specifying the user name and password.
2. On the settings panel of the **Camera** object corresponding to the IP device. Holding Shift click the **Video** button on the settings panel of the object.

1 Camera 1 Type:
 Region
 Video capture device ☐ Disable
 Video capture device 1
 Video
 Channel number 1
 Resolution Standard
 Recording quality
 min max
☒ Color
☐ YUV4:2:2
 min max
☒ Brightness
 max min
 Contrast
 max min
 Sensitivity
 max min
 Size Contrast
 min max
☒ Record alarms
 Recording audio
 Num... Microphone
 Pre-alarm record s
 Post-alarm record s
 "Hot record" time s
 "Hot record" rate fps
 Recording frame rate fps
 Basic settings Advanced settings Streams settings Main stream
 Apply Undo

A webpage of *Web server* of IP device appears in the default browser.

If Drivers Pack cannot provide connection string to *Web server* of IP device, then Web server is attempted to be accessed at <http://login:password@camera-ip/>.

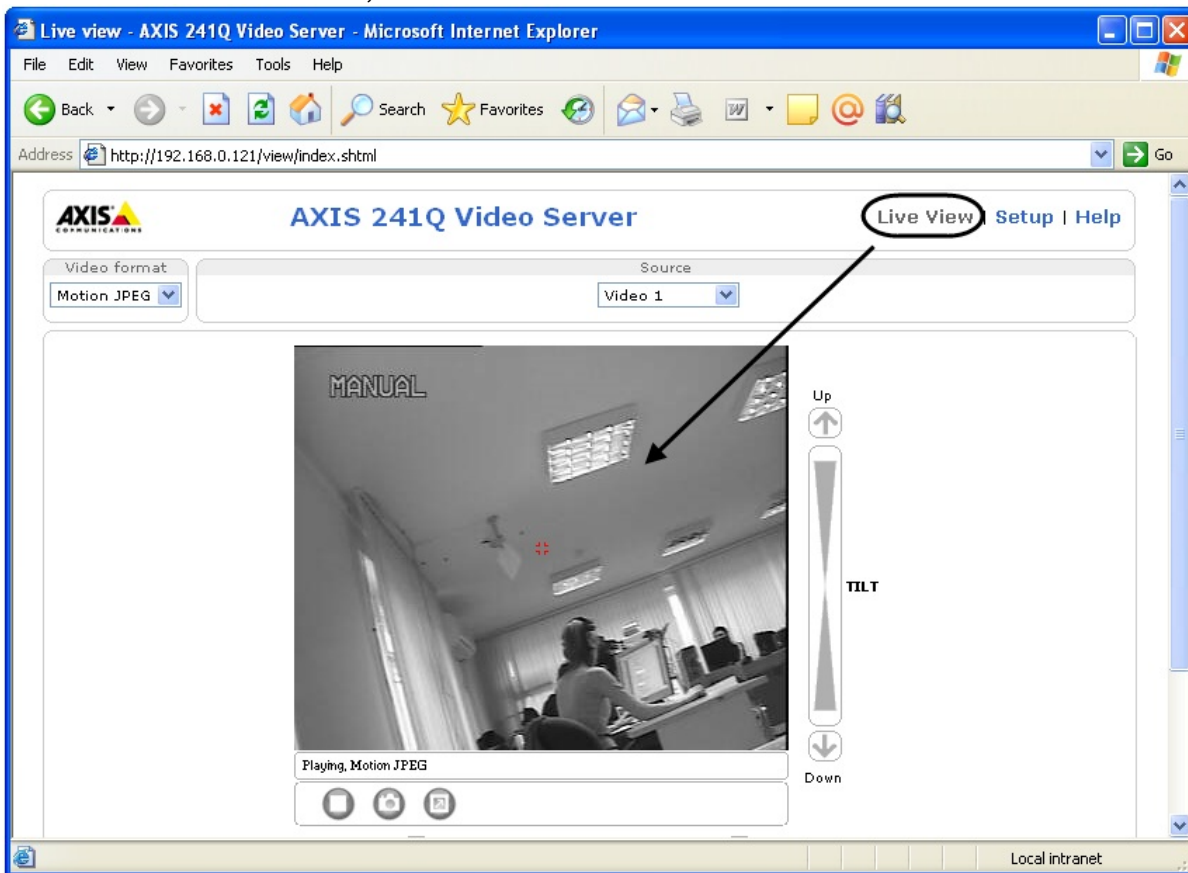
Note.

This feature is not available if Internet Explorer is the default browser.

The feature is supported by Axis and Bosch cameras.

If the `hardcoded_hyperlink` registry key is set, the address of the network device Web server home page may differ from the address specified in the device documentation (see the [Registry keys reference guide](#)).

The screen displays the viewing tile of the IP camera if a network camera is in use or one of the analog cameras connected to the network Server, if the network Server is in use.



Note

If an IP camera gives no image, then check if the IP address is assigned correctly (see [Assigning network addresses to IP devices](#) section).

Configuring network parameters of IP-devices using the Web Server

Network parameters of the IP devices are configured using the interface of the embedded Web Server of the network device.

Note

Configuration of the network parameters of IP devices using the Web Server is a compulsory procedure.

To configure IP devices when working in the local network that is either equipped or non-equipped with the routers, do the following:

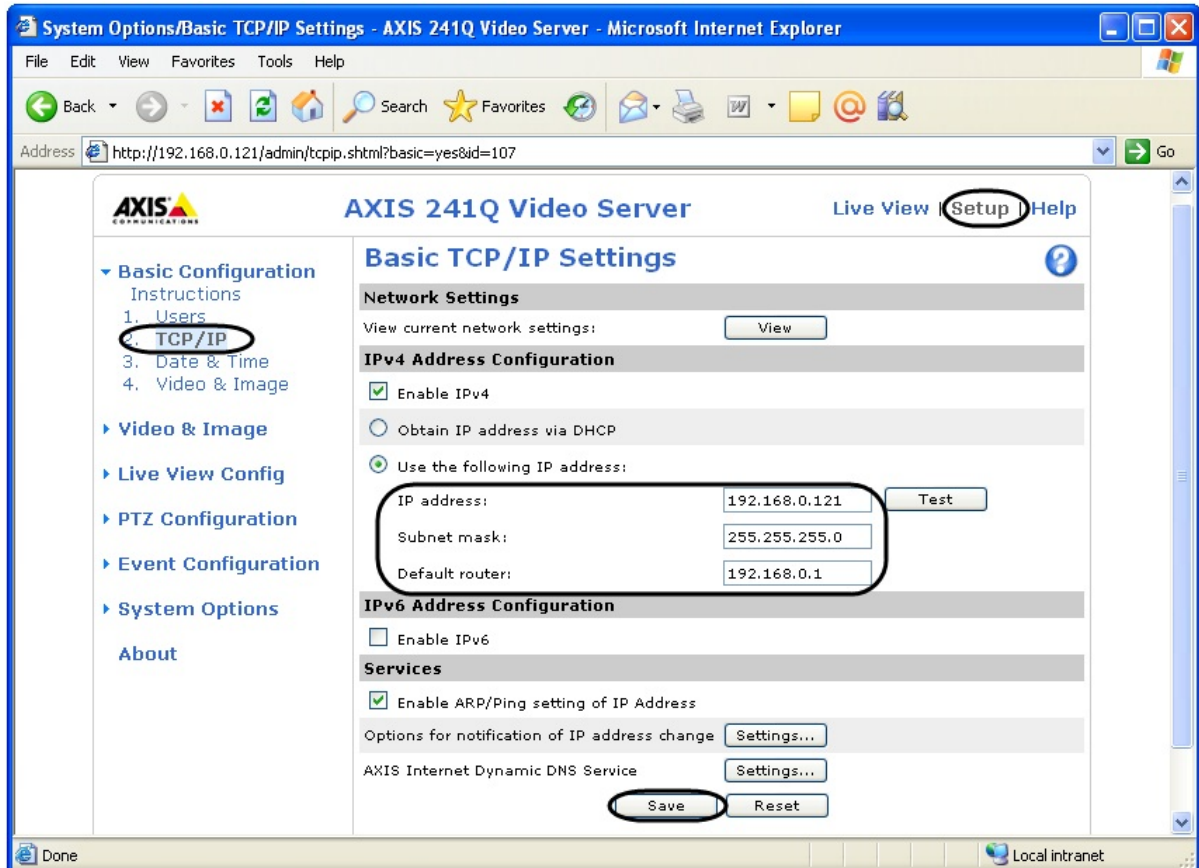
1. Start Internet Explorer.
2. Open the home page of the network device (see [How to call the Web Server home page of IP device](#) section).

3. Open the **Setup** section in the Web Server feature menu of the Web browser home page.



4. Select the **TCP/IP** tab in the **Setup** section.

Specify the **IP address**, **Subnet mask** and **Default router** in the given tab. To confirm the settings, click the **Save** button.

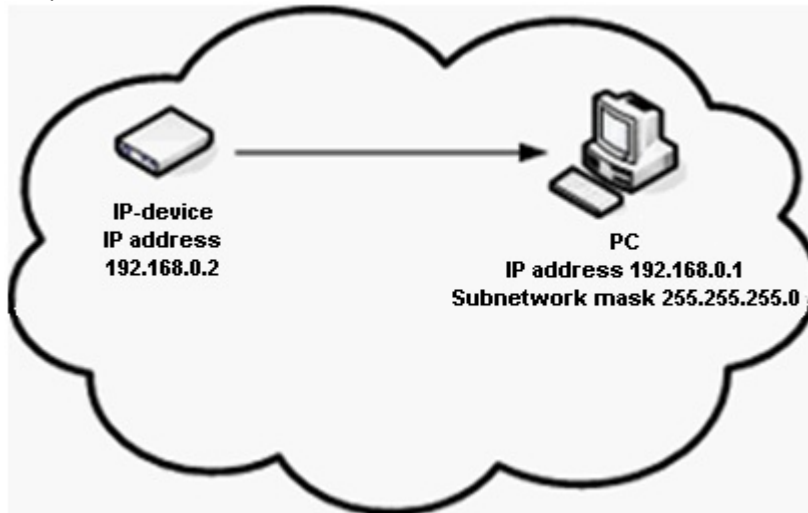


Specify the assigned IP-address of the network device in the **IP address** field (see [Assigning network addresses to IP devices](#) section).

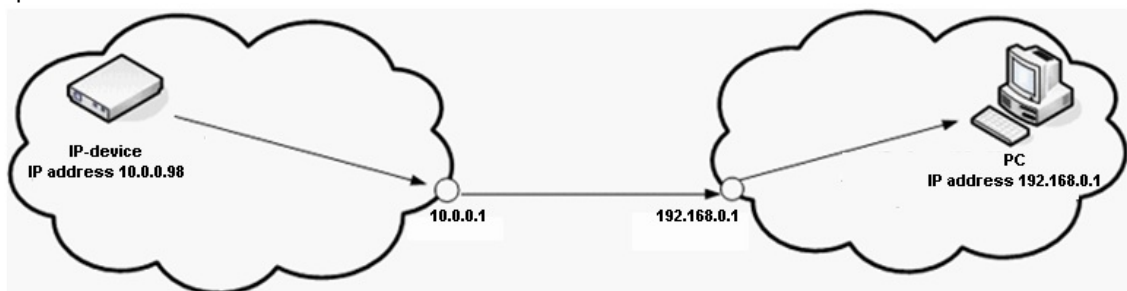
In the **Subnet mask** field Specify the mask of the subnet to which the network device is connected.

When entering data in the **Default router** field, the following should be taken into consideration:

- a. If the Server and IP camera are in the same subnetwork, then the **Default router** parameter is not to be specified.



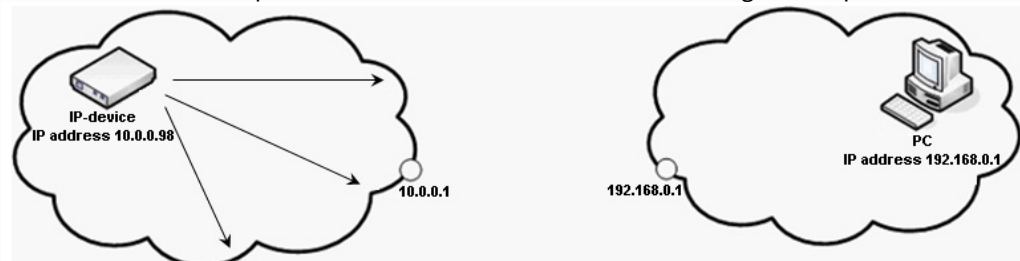
- b. If the Server and IP camera are in different subnetworks, then the **Default router** parameter is to be specified.



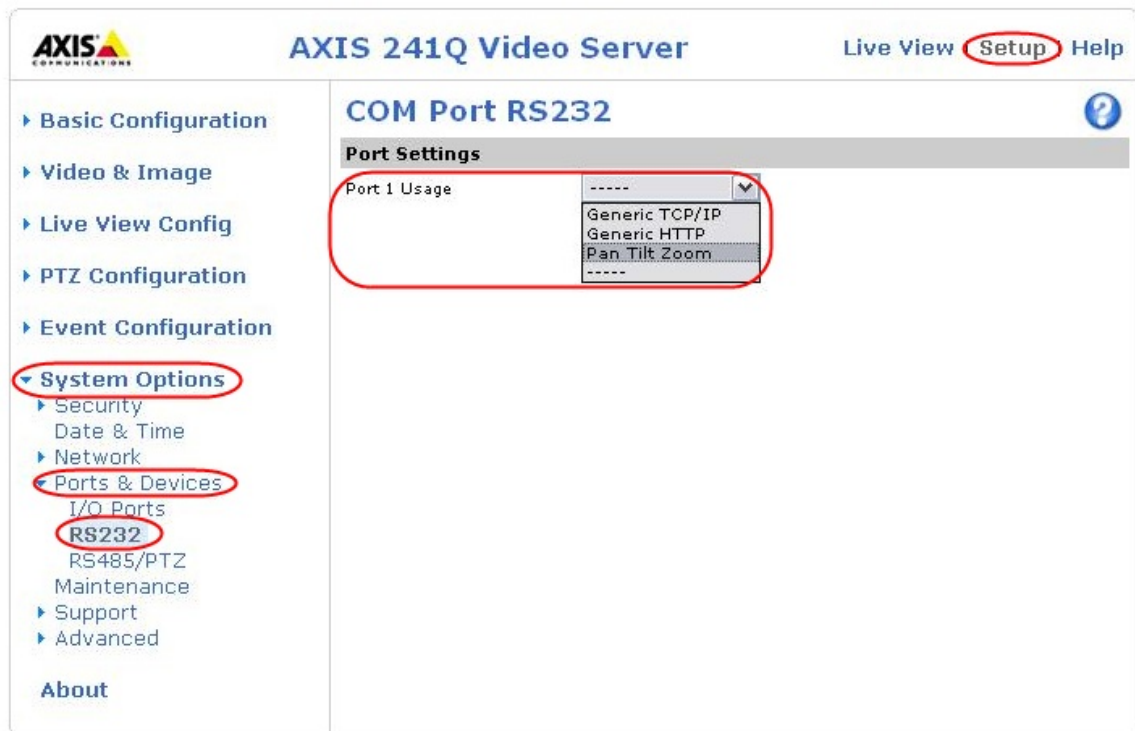
- c. The IP address of the **Default router** is to match the subnetwork that the IP address of the camera belongs to.

Note

The camera does not operate if the IP address of the router is wrong or not specified at all.



5. Select **System Options / Ports & Devices / RS232** tab in the **Setup** section. Select **Pan Tilt Zoom** in the **Port 1 Usage** field to show that the given interface is used for telemetry. To confirm the settings, click the **Save** button.



Network parameters of the IP devices are now configured.

Now proceed to the configuration of IP devices in *Axxon PSIM™*.

4.2.2 Features of configuring Axis IP devices

It is strongly recommended to keep the default value of the **Friendly name** parameter unchanged for Axis IP device with enabled and supported *Bonjour* option. If there is an arbitrary value of the **Friendly name** parameter for Axis IP device, then search for a connected device in *Axxon PSIM™* will give incorrect results concerning this IP device.

Note

The **Friendly name** parameter is configured via the Web interface of IP device: **Setup -> System options -> Network -> Bonjour**

Note

The **Friendly name** parameter has the following default value: AXIS <model name> - <mac address>, where <model name> is model of Axis IP-device and <mac address> is its MAC address (for example, AXIS 214 - 00408C7D2610).

4.2.3 Features of configuring IP devices using the Web interface

On the page:

- Features of configuring Panasonic IP devices (i-Pro series) using the Web interface
- Features of configuring Samsung IP devices using the Web interface
- Features of configuring Mobotix IP devices using the Web interface
- Features of configuring Sony IP devices using the Web interface



Note

Details on how to configure IP devices using the Web interface are given in reference manuals to corresponding devices.

Features of configuring Panasonic IP devices (i-Pro series) using the Web interface

If a Panasonic IP device (i-Pro series) is configured to simultaneous transmission of video streams in MJPEG and MPEG-4 formats, then video stream rate in MJPEG format is limited by 5(10) fps.



Note

WV-NP1000\1004, WV-F284, WV-NP240\244, WV-NS202 and other models belong to IP devices of i-Pro series.

Features of configuring Samsung IP devices using the Web interface

An audio input gain for Samsung SNC-B2315 IP device is configured using **Setup** → **Video & Audio Configuration** → **Input Gain**. By default the **Input Gain** parameter equals 0 and audio signals are not played back by IP device. To play back audio signals select the value of the **Input Gain** parameter from 1 to 10 depending on the required audio input gain.

Samsung SNC-M300P IP device supports dual stream mode of video compression in MJPEG and MPEG-4 formats. If the value 25 fps is selected for the frame rate of MJPEG video stream (the **Frame Rate** parameter), then the range of

values of analog parameter for MPEG-4 format is restricted by 3fps. To extend the given rate the value less than 25fps for the **Frame Rate** parameter of MJPEG-video stream is to be selected.

Features of configuring Mobotix IP devices using the Web interface

Resolution of Mobotix MX-Q22M-Sec-D11 panoramic camera is determined by selected mode of video displaying (**Display Mode**) in the **Setup Menu** tab.

Display Mode	Resolution
Full Image	2048*1536
Normal	1456*1088
Surround	1456*1088
Panorama	2048*768
Double Panorama	1456*1088
Focus Panorama	1456*1088

Note

In the **Double Panorama** mode the screen is divided by horizontal line into equal areas, each of which displays panoramic video.

As a Mobotix MX-Q22M-Sec-D11 camera is a panoramic one, proportions are distorted in Axxon PSIM™. The **Normal** mode is recommended to be set for proper video displaying.

Features of configuring Sony IP devices using the Web interface

The **Light Funnel** function is used for sensitivity enhancement of Sony SNC-CM120 IP device. The settings are accessed in **Setting -> Camera -> Sense up** tab.

Enabling the **Light Funnel** option leads to changing the range of values of the following settings in Axxon PSIM™:

1. Videostream rate;
2. Video resolution (in MJPEG format).

Configuring Axxon PSIM using the **Light Funnel** option:

Setting in Axxon PSIM™	Implementation of a setting in Axxon PSIM™	Range of values	
		The Light Funnel is disabled	The Light Funnel is enabled

Videostream rate	The Speed slider on the settings panel of the Video capture device object	Not more than 10fps	Up to 30 fps
Video resolution (in MJPEG format)	The Resolution dropdown list on the settings panel of the Camera object	Full (1280*960) High (960*720) Standard (640*480)	Standard (640*480)

**Example**

If Full resolution is set with enabled **Light Funnel** option, then video is displayed in standard resolution.

4.3 Appendix 3. Technical specifications of video capture cards

On the page:

- [Technical specifications of FS-5, FS-6, FS-16 and FS-8 video capture cards](#)
- [Technical specifications of WS-6, WS-7, SC390N16 \(WS16\) and WS-17 video capture cards](#)
- [Technical specifications of SC300D16 \(FX8\), SC200Q4 \(FS15\), SC300Q16 \(FX4\), SC310N16 \(FX16\), SC330Q16 and SC330D16 video capture cards](#)
- [Technical specifications of SC200Q4 Low profile \(FS115\), FX2, SL16-200](#)

- (FX116), FX416 and SC230N4 video capture cards
- Technical specifications of SC3B0N16 (WS216), SC510N4 (FX HD4) and MS416 video capture cards
 - Technical specifications of DS-4016HCI(R) and SC590N4 video capture card

4.3.1 Technical specifications of FS-5, FS-6, FS-16 and FS-8 video capture cards

Parameters	FS-5	FS-6	FS-16	FS-8
PCI bus, bit / MHz	32 / 33, using PCI-66/X	32 / 33, using PCI-66/X	PCI E 1x	32 / 33, using PCI-66/X
Supply voltage, V	3.3 and 5	3.3 and 5	3.3	3.3 and 5
Power consumption, W	2	5	5	9
Video inputs, V / Ohm	1 / 75	1 / 75	1 / 75	1 / 75
Video output, V / Ohm	1 / 75	1 / 75	1 / 75	1 / 75
Number of video inputs	16	16	16	16
Hardware compression	no	no	no	no
Analog video out	1 (optional)	1 (optional)	1 (optional)	1 (built-in)
Signal type	CCIR PAL, NTSC	CCIR PAL, NTSC	CCIR PAL, NTSC	CCIR PAL, NTSC

Parameters	FS-5		FS-6		FS-16		FS-8	
Resolution, pixels	PAL	NTSC	PAL	NTSC	PAL	NTSC	PAL	NTSC
	352*288 704*288 704*576	320*240 640*240 640*480	352*288 704*288 704*576	320*240 640*240 640*480	352*288 704*288 704*576	320*240 640*240 640*480	352*288 704*288 704*576	320*240 640*240 640*480
Resolution, TV lines (b/w, color)	480		480		480		480	
Color palette	16 mln colors, 256 shades of gray		16 mln colors, 256 shades of gray		16 mln colors, 256 shades of gray		16 mln colors, 256 shades of gray	
Number of multiplexed video inputs	16		16		16		16	
Number of non-multiplexed (live) video inputs	1		4		4		8	
Video input rate for each non-multiplexed channel, fps, PAL (NTSC)	25 (30)		25 (30)		25 (30)		25 (30)	
Total video input rate for all multiplexed channels, fps, PAL	16 (704x288, 352x288) 12 (704x576)		64 (704x288, 352x288) 48 (704x576)		64 (704x288, 352x288) 48 (704x576)		128 (704x288, 352x288) 96 (704x576)	
Total video input rate for all multiplexed channels, fps, NTSC	20 (640x240, 320x240) 15 (640x480)		80 (640x240, 320x240) 60 (640x480)		80 (640x240, 320x240) 60 (640x480)		160 (640x240, 320x240) 120 (640x480)	
Total video input rate for all non-multiplexed channels, fps, PAL (NTSC)	25 (30)		100 (120)		100 (120)		200 (240)	

Parameters	FS-5	FS-6	FS-16	FS-8
Galvanic isolation of sensor lines	4(16), 2000 V	4 (16), 2000 V	4 (16), 2000 V	4 (16), 2000 V
Galvanic isolation of control outputs	4, 24 V, 30 mA	4, 24 V, 30 mA	4, 24 V, 30 mA	4, 24 V, 30 mA
Number of audio input/output channels	2 x RCA/ -	8 x RCA/ -	8 x RCA/ -	16 x RCA/ -
Audio digitizing frequency, kHz	8, 16, 32	8, 16, 32	8, 16, 32	8, 16, 32
Watchdog, hardware control of OS hanging-up	yes	yes	yes	yes
Digital-analog conversion, bit	9	9	9	9

4.3.2 Technical specifications of WS-6, WS-7, SC390N16 (WS16) and WS-17 video capture cards

Parameters	WS-6	WS-7	SC390N16 (WS16)*	WS-17
PCI bus, bit / MHz	32 / 33, using PCI-66/X	32 / 66(33)	1x	1x
Supply voltage, V	3,3 and 5	3,3	-	3,3
Power consumption, W	4	8	3,3	8
Video inputs, V / Ohm	1 / 75	1 / 75	1 / 75	1 / 75
Video output, V / Ohm	no	no	no	no

Parameters	WS-6		WS-7		SC390N16 (WS16)*		WS-17	
Number of video inputs	4		4		16		4	
Hardware compression	yes		yes		yes		yes	
Analog video out	no		no		no		no	
Signal type	PAL, NTSC		PAL, NTSC		PAL, NTSC		PAL, NTSC	
Resolution, pixels	PAL	NTSC	PAL	NTSC	PAL	NTSC	PAL	NTSC
	704*544	640*480	704*288 704*544	640*240 640*480	352*288 704*288 704*576	352*240 704*240 704*480	352*288 704*288 704*544	320*240 640*240 640*480
Resolution, TV lines (b/w, color)	500 (500)		500 (500)		625 (PAL)/ 525(NTSC)		500 (500)	
Color palette	16 mln colors, 256 shades of gray		16 mln colors, 256 shades of gray		16 mln colors, 256 shades of gray		16 mln colors, 256 shades of gray	
Number of multiplexed video inputs	-		-		-		-	
Number of non-multiplexed (live) video inputs	4		4		16		4	
Video input rate for each non-multiplexed channel, fps, PAL (NTSC)	25 (30)		25 (30)		25 (30)		25 (30)	
Total video input rate for all multiplexed channels, fps, PAL	-		-		-		-	

Parameters	WS-6	WS-7	SC390N16 (WS16)*	WS-17
Total video input rate for all multiplexed channels, fps, NTSC	-	-	-	-
Total video input rate for all non-multiplexed channels, fps, PAL (NTSC)	100 (120)	100 (120)	400(480)	100 (120)
Galvanic isolation of sensor lines	no	no	no	no
Galvanic isolation of control outputs	no	no	no	no
Number of audio input/output channels	8 x RCA/ -	8 x RCA/ -	16 x RCA/ -	8 x RCA/ -
Audio digitizing frequency, kHz	16	8, 16	8	8,16
Watchdog, hardware control of OS hanging-up	no	no	no	no
Digital-analog conversion, bit	9	9	10	9

**Note**

Resolutions supported by WS16 video capture card are given in the table for archive recording and for displaying video on the Client. On the Server video is displayed only with 352x288 (PAL) / 352x240 (NTSC) resolution

4.3.3 Technical specifications of SC300D16 (FX8), SC200Q4 (FS15), SC300Q16 (FX4), SC310N16 (FX16), SC330Q16 and SC330D16 video capture cards

Parameters	SC300D16 (FX8)	SC200Q4 (FS15)	SC300Q16 (FX4)	SC310N16 (FX16)	SC330Q16	SC330D16
------------	----------------	----------------	----------------	-----------------	----------	----------

Size (mm x mm)	132,22 x 80		120.55 × 85		132,22 x 80		179.97 × 106.65		132,22 x 80		132,22 x 80	
Minimal requirements to the input/output bus, standard	PCI-E x 1		PCI (33MHZ)		PCI-E x 1		PCI-E×4 (33MHZ)		PCI-E x 1		PCI-E x 1	
ADC (bit)	10		10		10		10		10		10	
Number of video inputs	16 x BNC		4 × BNC		16 x BNC		16 x BNC		16 x BNC		16 x BNC	
Hardware compression	no		no		no		no		no		no	
Analog video out	no		no		no		no		no		no	
Power consumption, W	4		0,5		4		5,5		4		4	
Video inputs, V / Ohm	1/75		1/75		1/75		1/75		1/75		1/75	
Video output, V / Ohm	1/75		1/75		1/75		1/75		1/75		1/75	
Audio input, V/ kOhm	1/40		1/40		1/40		3,5/10		1/40		1/40	
Signal type	PAL, NTSC		PAL, NTSC		PAL, NTSC		PAL, NTSC		PAL, NTSC		PAL, NTSC	
Resolution, pixels	PAL	NTS C	PAL	NTS C	PAL	NTS C	PAL	NTS C	PAL	NTS C	PAL	NTS C
	352* 288	320* 240	352* 288	320* 240	352* 288	320* 240	352* 288	320* 240	352* 288	320* 240	352* 288	320* 240
	704* 288	640* 240	704* 288	640* 240	704* 288	640* 240	704* 288	640* 240	704* 288	640* 240	704* 288	640* 240
	704* 576	640* 480	704* 576	640* 480	704* 576	640* 480	704* 576	640* 480	704* 576	640* 480	704* 576	640* 480

Maximum resolution, TV lines (b/w, color)	576 (PAL) / 480 (NTSC)	576 (PAL) / 480 (NTSC)	470	625 (PAL) / 525 (NTSC)	600	600
Color palette	16 mln colors, 256 shades of gray	16 mln colors, 256 shades of gray	16 mln colors, 256 shades of gray	16 mln colors, 256 shades of gray	16 mln colors, 256 shades of gray	16 mln colors, 256 shades of gray
Number of multiplexed video inputs	16	4	16	-	16	16
Number of non-multiplexed (live) video inputs	8	1	4	16	4	8
Video input rate for each non-multiplexed channel, fps, PAL (NTSC)	25 (30)	25 (30)	25 (30)	25 (30)	25 (30)	25 (30)
Total video input rate for all multiplexed channels, fps, PAL	128 (704x288, 352x288) 128 (704x576)	16 (704x288, 352x288) 16 (704x576)	64 (704x288, 352x288) 64 (704x576)	-	64 (704x288, 352x288) 64 (704x576)	128 (704x288, 352x288) 128 (704x576)
Total video input rate for all multiplexed channels, fps, NTSC	160(640x240, 320x240) 160(640x480)	20(640x240, 320x240) 20(640x480)	80(640x240,320x240) 80(640x480)	-	80(640x240,320x240) 80(640x480)	160(640x240, 320x240) 160(640x480)
Total video input rate for all non-multiplexed channels, fps, PAL (NTSC)	200 (240)	25 (30)	100 (120)	400(480)	100 (120)	200 (240)

Number of audio input/output channels	8 x RCA/ -	1 x TRS/ -	4 x RCA/ -	16 x RCA/ -	4 x RCA/ -	8 x RCA/ -
Audio digitizing frequency, kHz	8, 16, 24, 32, 40, 48	8, 16, 24, 32, 40, 48	8, 16, 24, 32, 40, 48	8, 16, 24, 40, 48	8, 16, 24, 32, 40, 48	8, 16, 24, 32, 40, 48
Galvanic isolation of sensor lines	4	not integrated	4	4	4	4
Control outputs, open collector	4	not integrated	4	4	4	4
Watchdog, hardware control of OS hanging-up	yes	yes	yes	yes	yes	yes
Peak temperature of card	50 ⁰ C	40 ⁰ C	40 ⁰ C	65 ⁰ C	40 ⁰ C	50 ⁰ C
Supported OS	All OS supported by the Axxon PSIM™ system	All OS supported by the Axxon PSIM™ system	All OS supported by the Axxon PSIM™ system	All OS supported by the Axxon PSIM™ system	All OS supported by the Axxon PSIM™ system	All OS supported by the Axxon PSIM™ system

4.3.4 Technical specifications of SC200Q4 Low profile (FS115), FX2, SL16-200 (FX116), FX416 and **SC230N4** video capture cards

Parameters	SC200Q4 Low profile (FS115)	FX2	SL16-200 (FX116)	FX416	SC230N4
Minimal requirements to the input/output bus, standard	PCI	PCI-E x 1	PCI-E x 1	PCI-Ex4	PCI
ADC (bit)	10	9	10	10	10

Parameters	SC200Q4 Low profile (FS115)		FX2		SL16-200 (FX116)		FX416		SC230N4	
Number of video inputs	4 × BNC		8 x BNC		16 x BNC		16 x BNC		4 x BNC	
Hardware compression	no		no		no		no		no	
Analog video out	no		1 (optionally)		no		no		no	
Power consumption, W	0,5		3		1,5		1,8		4	
Video inputs, V / Ohm	1/75		1/75		1/75		1/75		1/75	
Video outputs, V / Ohm	1/75		1/75		1/75		1/75		1/75	
Audio input, V/ kOhm	1/40		1,4 / 5		1/10		1/10		1/40	
Signal type	PAL, NTSC		PAL, NTSC		PAL, NTSC		PAL, NTSC		PAL, NTSC	
Resolution, pixels	PAL	NTSC	PAL	NTSC	PAL	NTSC	PAL	NTSC	PAL	NTSC
	352*288	320*240	352*288	320*240	352*288	320*240	352*288	352*240	352*288	320*240
	704*288	640*240	704*288	640*240	704*288	640*240	704*288	704*240	704*288	640*240
	704*576	640*480	704*576	640*480	704*576	640*480	704*576	704*480	704*576	640*480
Maximum resolution, TV lines (b/w, color)	576 (PAL) / 480 (NTSC)		480		420		625 (PAL) / 525 (NTSC)		576 (PAL) / 480 (NTSC)	
Color palette	16 mln colors, 256 shades of gray		16 mln colors, 256 shades of gray		16 mln colors, 256 shades of gray		16 mln colors, 256 shades of gray		16 mln colors, 256 shades of gray	

Parameters	SC200Q4 Low profile (FS115)	FX2	SL16-200 (FX116)	FX416	SC230N4
Number of multiplexed video inputs	4	8	16	-	-
Number of non-multiplexed (live) video inputs	1	2	8	16	4
Video input rate for each non-multiplexed channel, fps, PAL (NTSC)	25 (30)	25 (30)	25 (30)	25 (30)	25(30)
Total video input rate for all multiplexed channels, fps, PAL	16 (704x288, 352x288) 16 (704x576)	32 (704x288, 352x288) 24 (704x576)	128 (704x576)	-	-
Total video input rate for all multiplexed channels, fps, NTSC	20(640x240, 320x240) 20(640x480)	40(640x240, 320x240) 30(640x480)	160(640x480)	-	-
Total video input rate for all non-multiplexed channels, fps, PAL (NTSC)	25 (30)	50 (60)	200 (240)	400 (480)	100 (120)
Number of audio inputs/outputs channels	1 x RCA/ -	4 x RCA/ -	16 x RCA/ -	16 x RCA/ -	4 x RCA / -
Audio digitizing frequency, kHz	8, 16, 24, 32, 40, 48	8, 16, 32	8, 16	8, 16	8, 16, 24, 32, 40, 48
Galvanic isolation of sensor lines	4	4 (16), 2000 V	not integrated	not integrated	4

Parameters	SC200Q4 Low profile (FS115)	FX2	SL16-200 (FX116)	FX416	SC230N4
Control outputs, open collector	4	4, 24 V, 30 mA	not integrated	not integrated	4
Watchdog, hardware control of OS hanging-up	yes	yes	yes	yes	yes
Supported OS	All OS supported by the Axxon PSIM™ system	All OS supported by the Axxon PSIM™ system	All OS supported by the Axxon PSIM™ system	All OS supported by the Axxon PSIM™ system	All OS supported by the Axxon PSIM™ system

4.3.5 Technical specifications of SC3B0N16 (WS216), SC510N4 (FX HD4) and MS416 video capture cards

Parameters	SC3B0N16 (WS216)*	SC510N4 (FX HD4)	MS416
Minimal requirements to the input/output bus, standard	PCI-E x 1	PCI-E×4	PCI-Ex4
ADC (bit)	10	-	10
Number of video inputs	16	4	16 x BNC
Hardware compression	yes	no	no
Analog video out	no	no	no
Power consumption, W	3,3	3,3	1,8
Video inputs, V / Ohm	1/75	-	1/75
Video outputs, V / Ohm	-	-	1/75
Signal type	PAL, NTSC	-	PAL, NTSC

Parameters	SC3B0N16 (WS216)*		SC510N4 (FX HD4)	MS416	
Resolution, pixels	PAL	NTSC	1920*1080, 1280*720 - noninterlaced scan 1280*720 - interlaced scan	PAL	NTSC
	352*288	352*240		352*288	320*240
	704*288	704*240		704*288	640*240
	704*576	704*480		704*288	640*480
Maximum resolution, TV lines (b/w, color)	576 (PAL) / 480 (NTSC)		-	625 (PAL) / 525 (NTSC)	
Color palette	16 mln colors, 256 shades of gray		16 mln colors, 256 shades of gray	16 mln colors, 256 shades of gray	
Number of multiplexed video inputs	-		-	-	
Number of non-multiplexed (live) video inputs	16		4	16	
Total video input rate for all non-multiplexed channels, fps, PAL (NTSC)	25 (30)		25 (1920x1080 resolution) 50 (1280x720 resolution)	25 (30)	
Total video input rate for all multiplexed channels, fps, PAL (NTSC)	-		200 (1280x720 resolution) 100 (1920x1080 resolution)	-	
Total video input rate for all non-multiplexed channels, fps, PAL (NTSC)	400 (480)		200 (1280x720 resolution) 100 (1920x1080 resolution)	400 (480)	
Number of audio inputs/ outputs channels	16 x RCA/ -		4 x HDMI/ 4 x HD SDI	32 x RCA/ -	
Audio digitizing frequency, kHz	8		32 - 48	48	

Parameters	SC3B0N16 (WS216)*	SC510N4 (FX HD4)	MS416
Galvanic isolation of sensor lines	4	not integrated	not integrated
Control outputs, open collector	4	not integrated	not integrated
Watchdog, hardware control of OS hanging-up	yes	yes	yes
Supported OS	All OS supported by the Axxon PSIM™ system	All OS supported by the Axxon PSIM™ system	All OS supported by the Axxon PSIM™ system

Note

Resolutions supported by WS26 video capture card are given in the table for archive recording and displaying video on the Client. On the Server video is displayed only with 352x288 (PAL) / 352x240 (NTSC) resolution

Note.

In order to use SC3B0N16 video capture card in Windows Server 2012 R2 enable the *Desktop Experience*. Find information on how to work with this component at [https://technet.microsoft.com/en-us/library/cc754314\(v=ws.11\).aspx](https://technet.microsoft.com/en-us/library/cc754314(v=ws.11).aspx)

4.3.6 Technical specifications of DS-4016HCI(R) and SC590N4 video capture card

Parameters	SC590N4
Minimal requirements to the input/output bus, standard	PCI Express 1x
Size (mm x mm)	189 x 90
Number of video channels	4
Video input interface	HD SDI
Maximum fps for a channel	50 fps (PAL) / 60 fps (NTSC)

Resolution at recording, pixels	1920x1080 @ 30/25/24fps 1920x1080 @ 50/60fps 1280x720 @ 30/25/24fps 1280x720 @ 50/60fps
Resolution under compression, pixels	-
Number of non-multiplexed (live) video inputs	4
Total video input rate for all non-multiplexed channels	120fps @ 1920x1080i
Color palette	16 mln colors, 256 shades of gray
Video compression format	H.264 Main Profile

Number of audio channels	4 x SDI + 2 x 3.5mm jack, while maximum number of channels is defined in the configuration).
Audio compression format	Stereo / 16-bit / 48000Hz
Audio input interface	SDI, 3.5mm jack
Video/audio output	yes
Resolution of preview, pixels	960x540 @ 30/25/24fps 960x540 @ 50/60fps 640x360 @ 30/25/24fps 640x360 @ 50/60fps
Dual stream	yes
DI / DO (rays and relays)	16 (8 rays and 8 relays)
Watchdog, hardware control of OS hanging-up	yes

Supported OS	All OS supported by the Axxon PSIM™ system
--------------	--

Note.

Using the SC590N4 Video capture card with h.264 compression format the record to archive is performed in color mode. Black and white mode of record is not supported. Also, the card sends separate streams with different resolution for displaying and recording to the archive.

Note.

While configuring the video camera which is connected through the SC590N4 video capture card, in the *Axxon PSIM* software the frame resolution is to be set as the resolution set on the video camera. Otherwise, artefacts can appear on the video image.

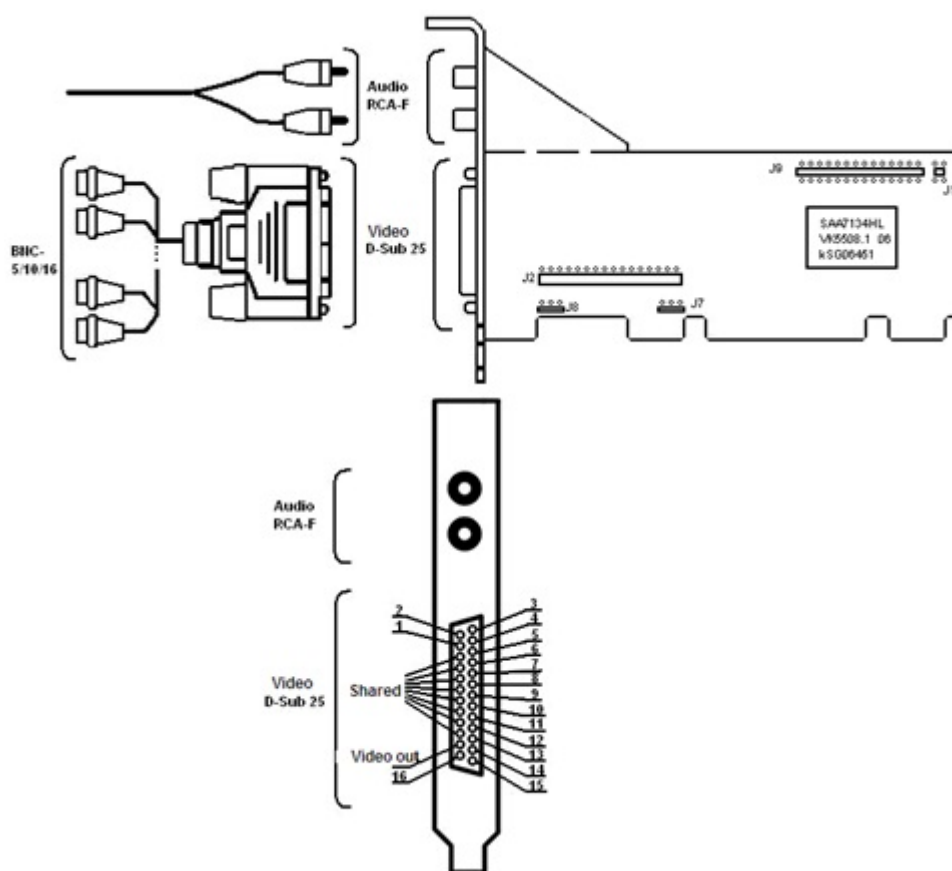
Note.

In order to use SC590N4 video capture card in Windows Server 2012 R2 enable the *Desktop Experience*. Find information on how to work with this component at [https://technet.microsoft.com/en-us/library/cc754314\(v=ws.11\).aspx](https://technet.microsoft.com/en-us/library/cc754314(v=ws.11).aspx)

4.4 Appendix 4. Video capture cards pins

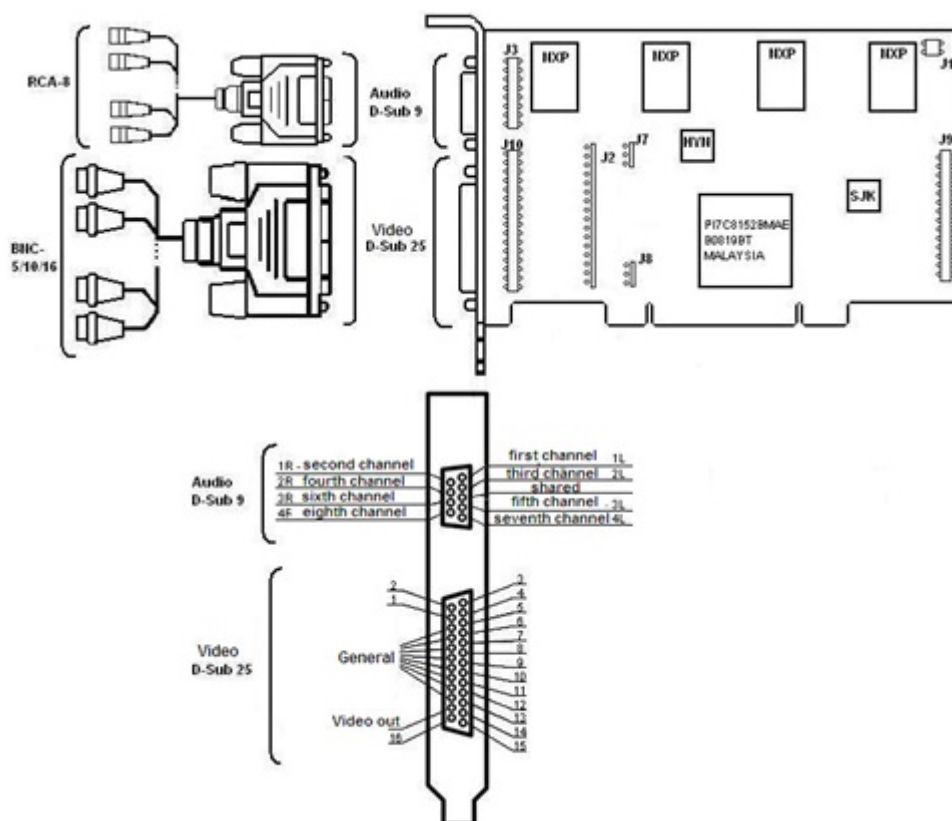
4.4.1 FS-5 video capture card pins

FS-5 video capture card has 3 external pins– two RCA pins and a D-SUB-25 pin. Video connection is performed to the D-SUB-25 pin with the help of D-SUB-25/BNC stub. Simultaneous connection of up to 16 cameras is possible. Sound connection is performed with the help of RCA pins (two sound sources are maximum possible). Analog output card is connected to J2, J7, J8 pins. The *Watchdog* cable is connected to the J1 pin. The J9 pin is designed for connecting the 4/4 or 16/4 Sensor-Relay card (see [Connecting 4/4 and 16/4 Sensor-Relay cards](#)).



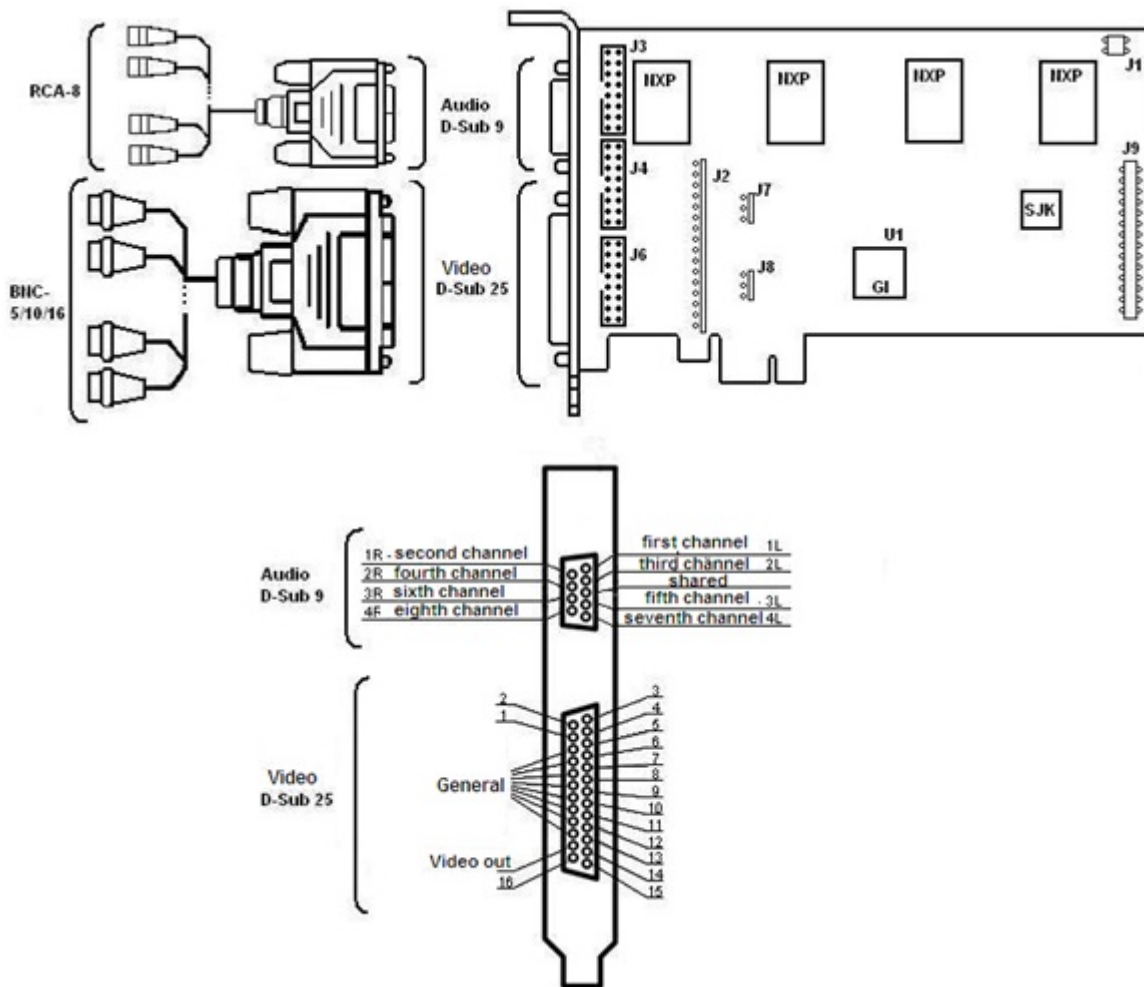
4.4.2 FS-6 video capture card pins

FS-6 video capture card has 2 external pins - D-SUB-9 and D-SUB-25. Video connection is performed with the help of D-SUB-25/BNC stub. Simultaneous connection of up to 16 cameras is possible. D-SUB-9/RCA-8 interface cable is used for connecting the audio channels (up to 8 sound sources simultaneously) to the external D-SUB-9 pin of FS-6 video capture card. Analog output card is connected to J2, J7, J8 pins. The *Watchdog* cable is connected to the J1 pin. The J9 pin is designed for connecting the 4/4 or 16/4 Sensor-Relay card (see [Connecting 4/4 and 16/4 Sensor-Relay cards](#)).



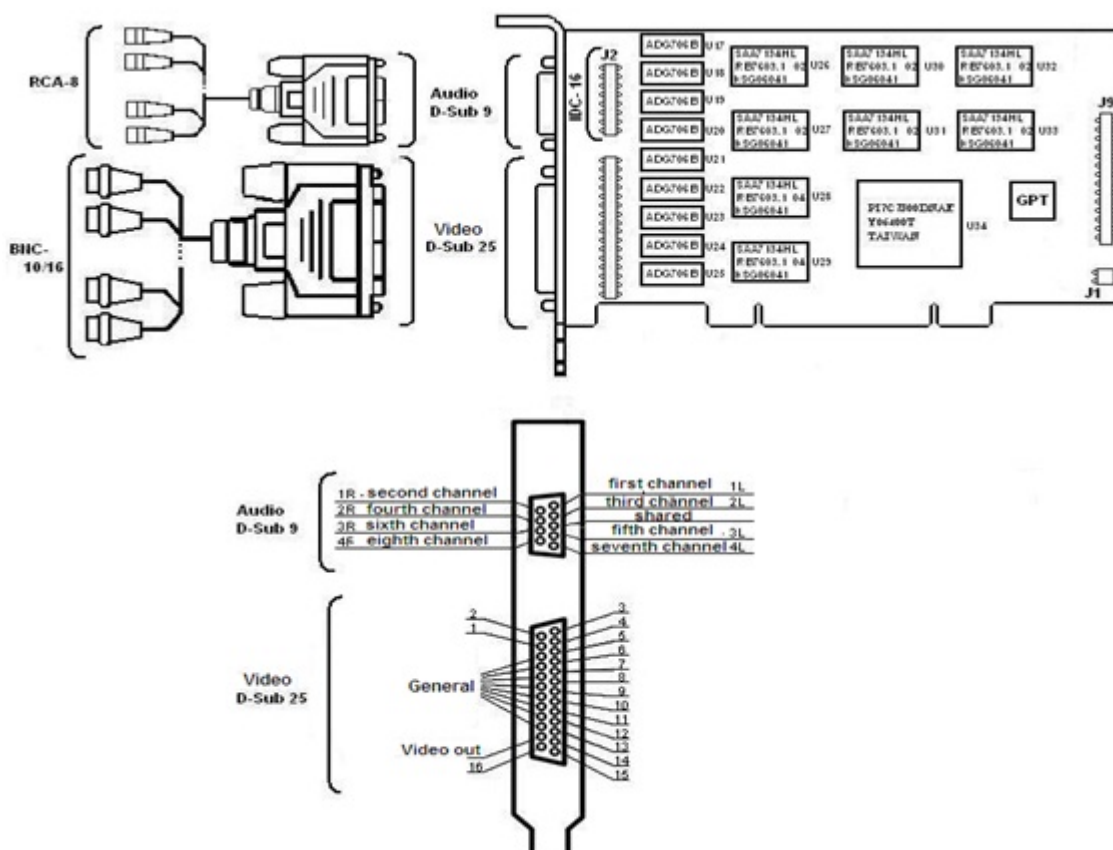
4.4.3 FS-16(Exp) video capture card pins

FS16 (Exp) video capture card has 2 external pins - D-SUB-9 and D-SUB-25. Video connection is performed with the help of D-SUB-25/BNC stub. Simultaneous reception of up to 16 video images is possible. D-SUB-9/RCA-8 interface cable is used for connecting the audio channels to the external D-SUB-9 pin of FS16 (Exp) video capture card (up to 8 sound sources simultaneously). Analog output card is connected to J2, J7, J8 pins. The *Watchdog* cable is connected to the J1 pin. The J9 pin is designed for connecting the 4/4 or 16/4 Sensor-Relay card (see [Connecting 4/4 and 16/4 Sensor-Relay cards](#)).



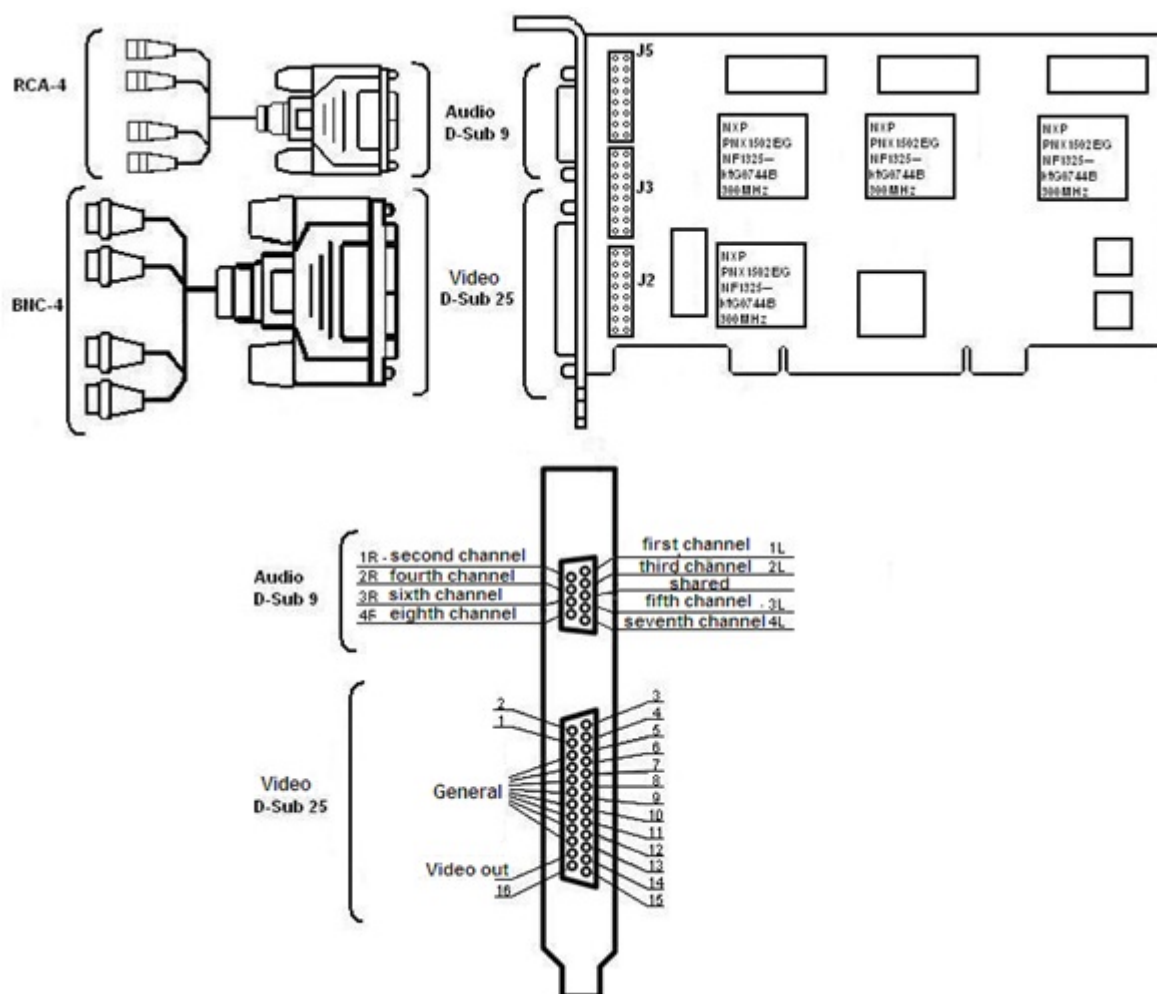
4.4.4 FS-8 video capture card pins

FS-8 video capture card has two external pins - D-SUB-9 and D-SUB-25 and one internal pin - IDC-16. Video connection is performed with the help of D-SUB-25/BNC stub via D-SUB-25 pin. Simultaneous reception of up to 16 video images is possible. D-SUB-9/RCA-8 interface cable is used for connecting the audio channels to the external D-SUB-9 pin of FS-8 video capture card (up to 8 sound sources simultaneously). IDC-16/D-SUB-9 bracket of sound extension is used (up to 8 sound sources simultaneously) to connect additional audio channels. It is connected to the internal IDC-16 pin of FS-8 video capture card. The *Watchdog* cable is connected to the J1 pin. The J9 pin is designed for connecting the 4/4 or 16/4 Sensor-Relay card (see [Connecting 4/4 and 16/4 Sensor-Relay cards](#)).



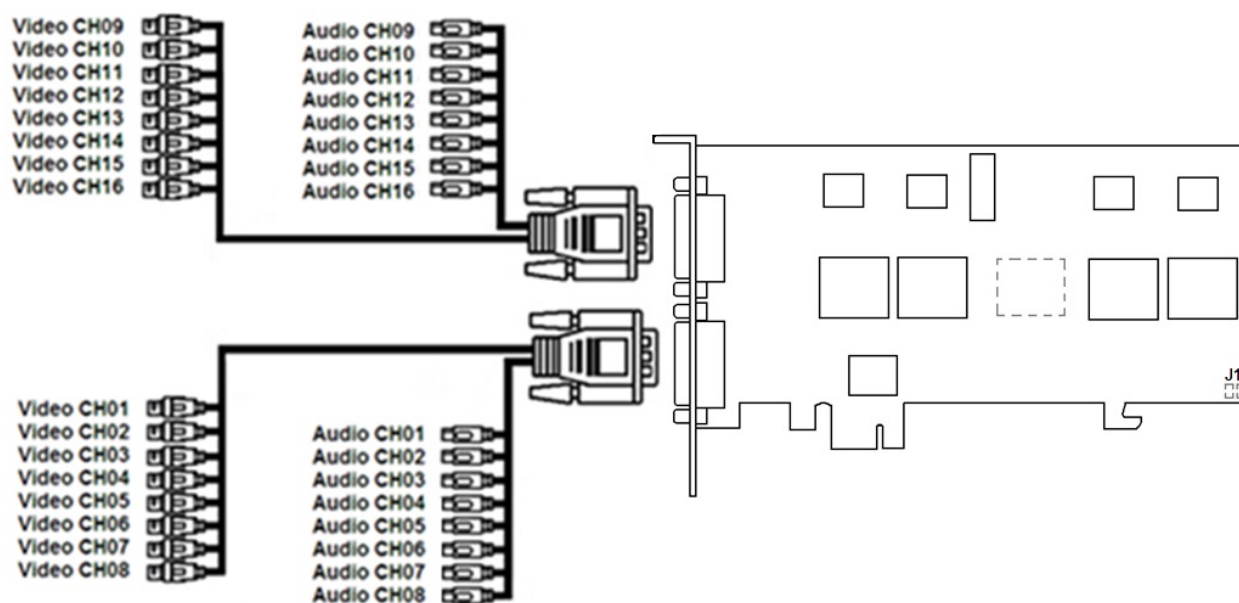
4.4.5 WS-7 video capture card pins

WS-7 video capture card has two external pins - D-SUB-9 and D-SUB-25. D-SUB-25/BNC interface cable is used for simultaneous connection of 4 cameras to the external D-SUB-25 pin of WS-7 video capture card. D-SUB-9/RCA interface cable is used for simultaneous connection of 4 audio channels to the external D-SUB-9 pin of WS-7 video capture card.



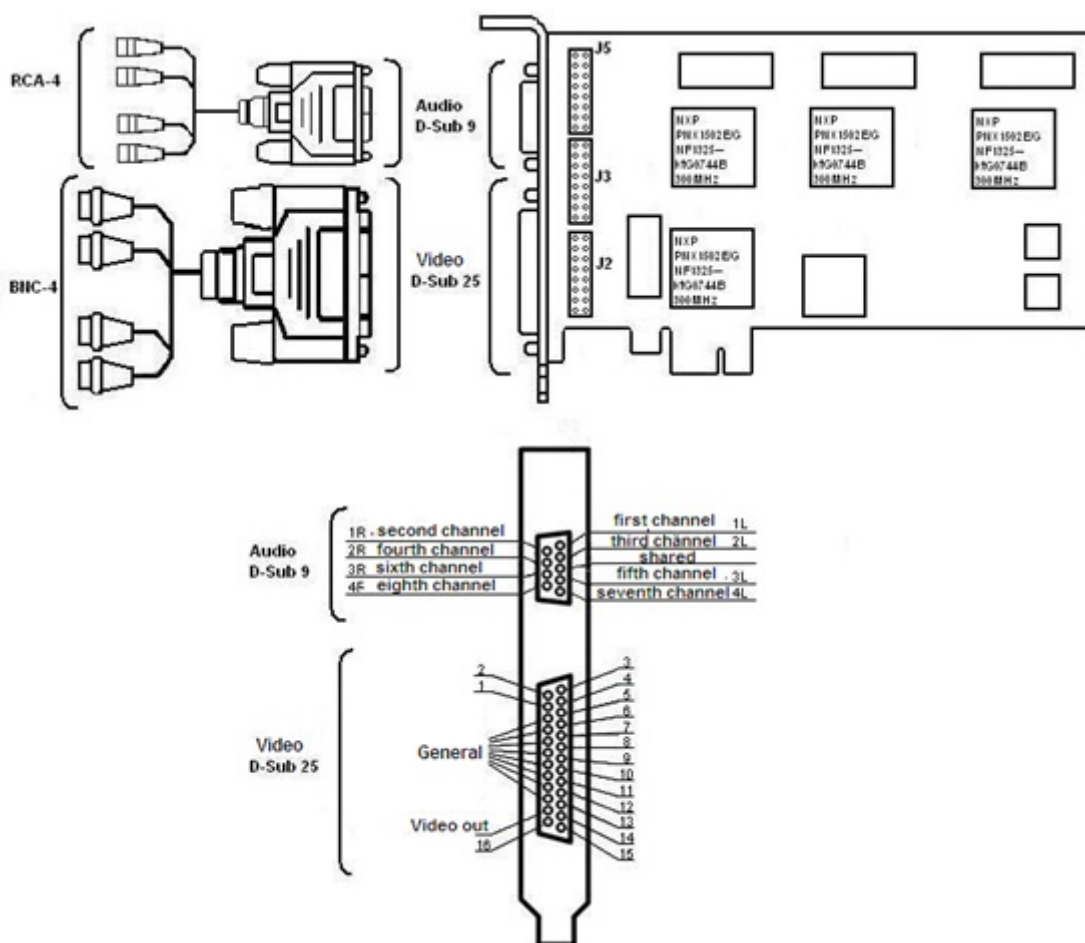
4.4.6 SC390N16 (WS-16) video capture card pins

SC390N16 (WS-16) video capture card has two external DVI-I pins. Video and audio connection is performed with the help of DVI-I/BNC and DVI-I/RCA stubs correspondingly. Simultaneous connection of up to 8 cameras and up to 8 sound sources to one external pin of SC390N16 (WS-16) video capture card is possible. The Watchdog cable is connected to the J1 pin.



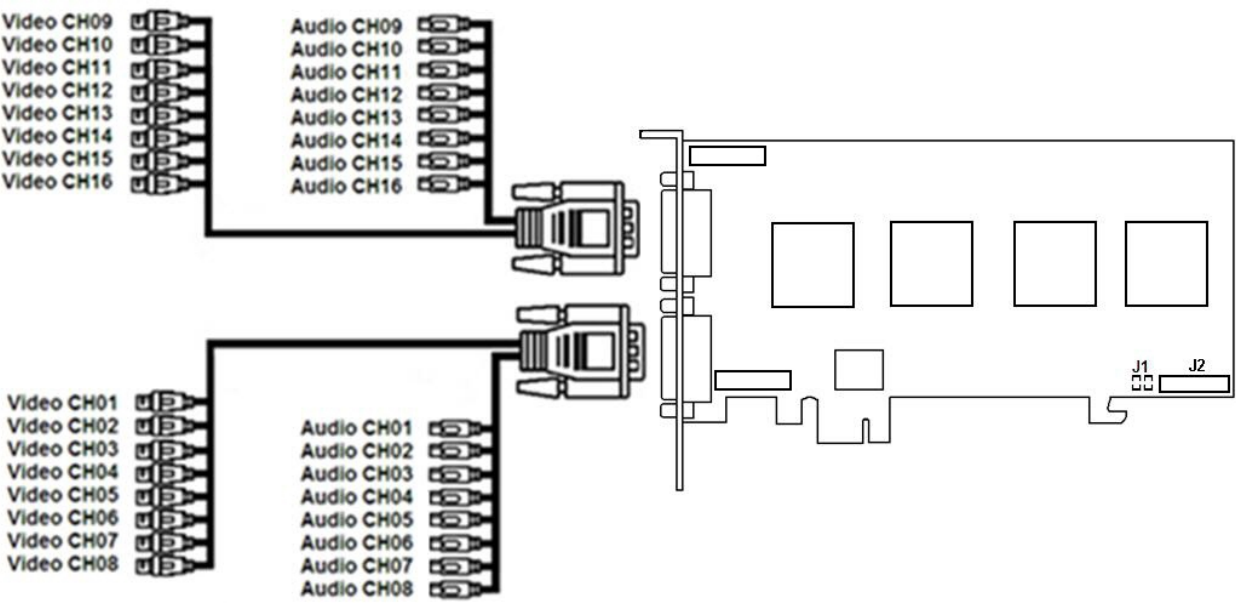
4.4.7 WS-17 video capture card pins

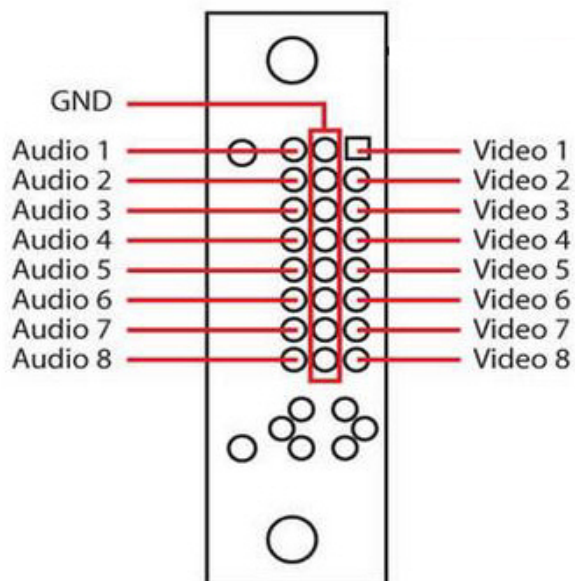
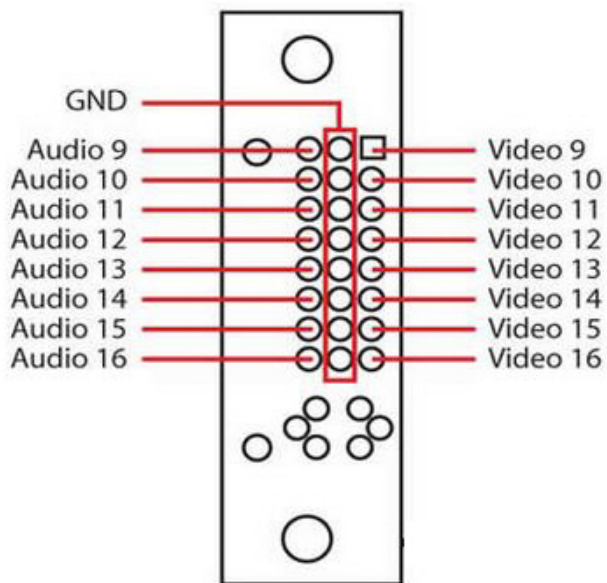
WS-17 video capture card has two external pins - D-SUB-9 and D-SUB-25. D-SUB-25/BNC interface cable is used for simultaneous connection up to 4 cameras to the external D-SUB-25 pin of WS-17 video capture card. D-SUB-9/RCA interface cable is used for simultaneous connection up to 4 audio channels to the external D-SUB-9 pin of WS-17 video capture card.



4.4.8 SC3B0N16 (WS216) video capture card pins

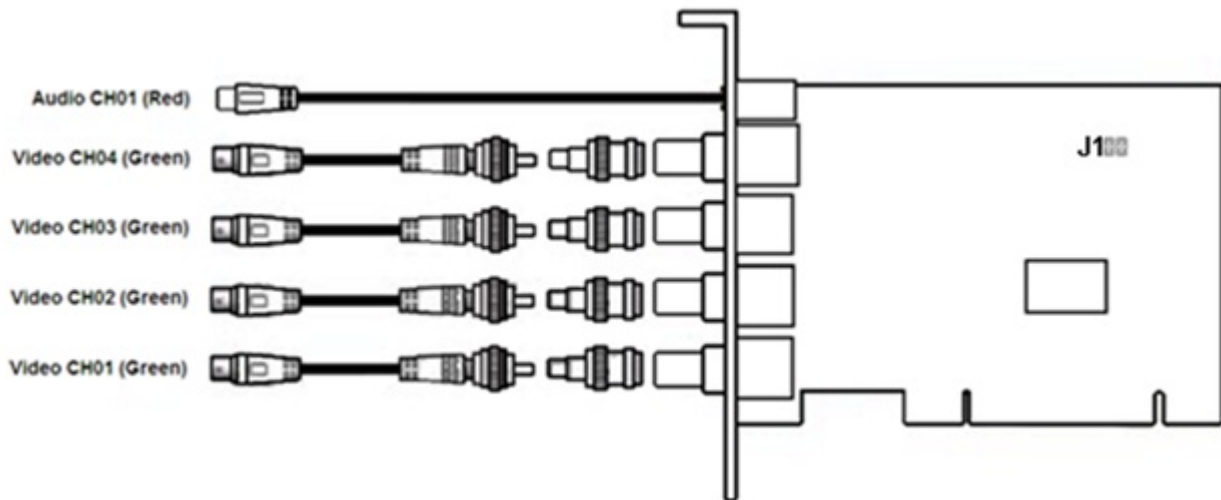
SC3B0N16 (WS216) video capture card has two external DVI-I pins. Video and audio connection is performed with the help of DVI-I/BNC and DVI-I/RCA stubs correspondingly. Simultaneous connection of up to 8 cameras and up to 8 sound sources to one external pin of SC3B0N16 (WS216) video capture card is possible. The Watchdog cable is connected to the J1 pin. DI/DO card is connected to the J2 pin.





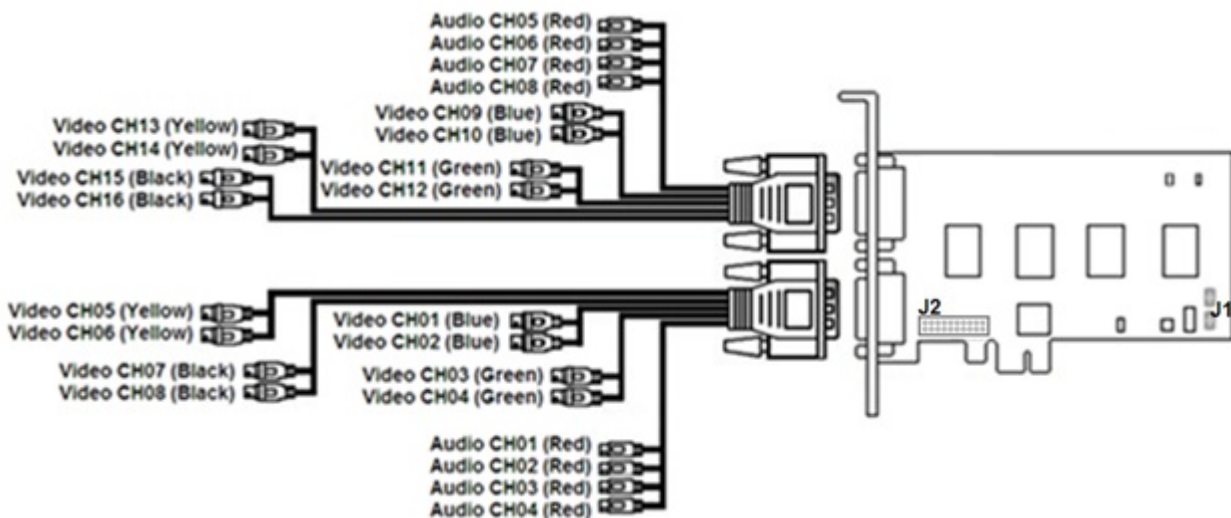
4.4.9 SC200Q4 (FS15) video capture card pins

SC200Q4 (FS15) video capture card has five external pins– one TRS (3,5 mm, *mini-jack*) pin and four BNC pins. Cameras are connected via BNC pin. Simultaneous connection of up to 4 cameras is possible. Sound is connected via TRS pin. The Watchdog cable is connected to the J1 pin.



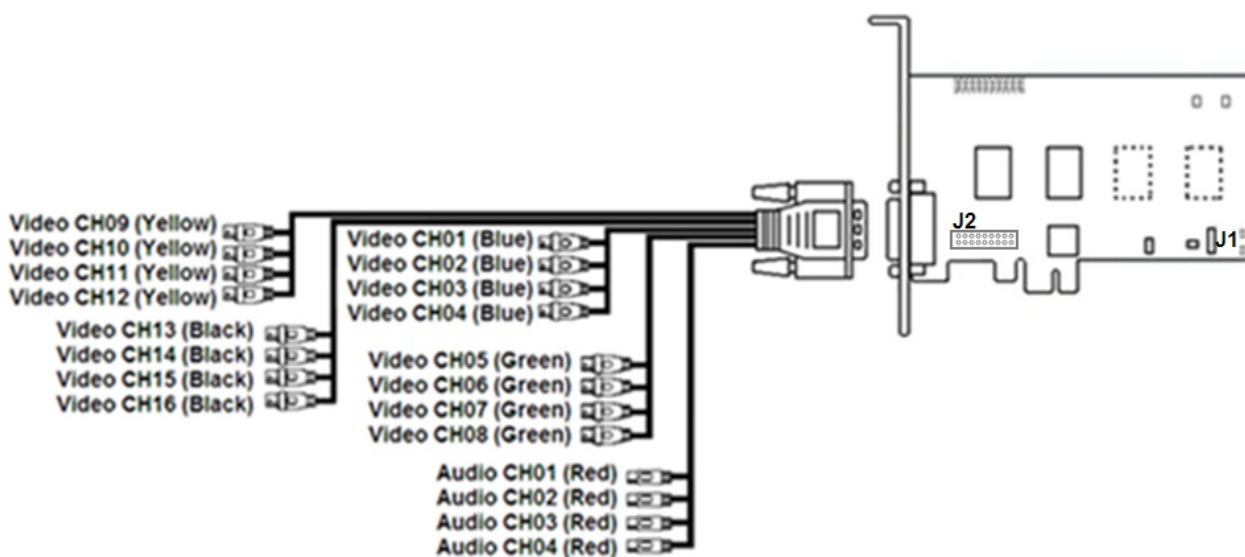
4.4.10 SC300D16 (FX8) video capture card pins

SC300D16 (FX8) video capture card has two external DVI-I (24+5) pins. Video and audio connection is performed with the help of DVI-I/BNC and DVI-I/RCA stubs correspondingly. Simultaneous connection of up to 8 cameras and up to 4 sound sources to one external pin of SC300D16 (FX8) video capture card is possible. The Watchdog cable is connected to the J1 pin. DI/DO card (low profile) is connected to the J2 pin.



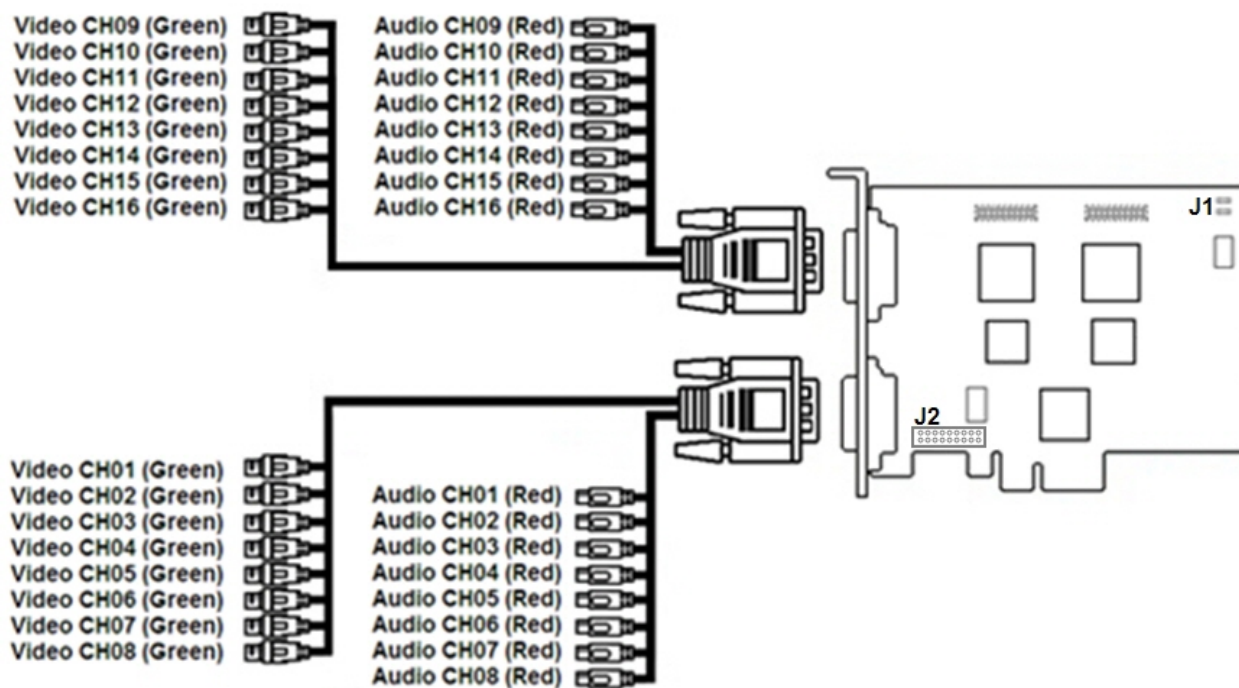
4.4.11 SC300Q16 (FX4) video capture card pins

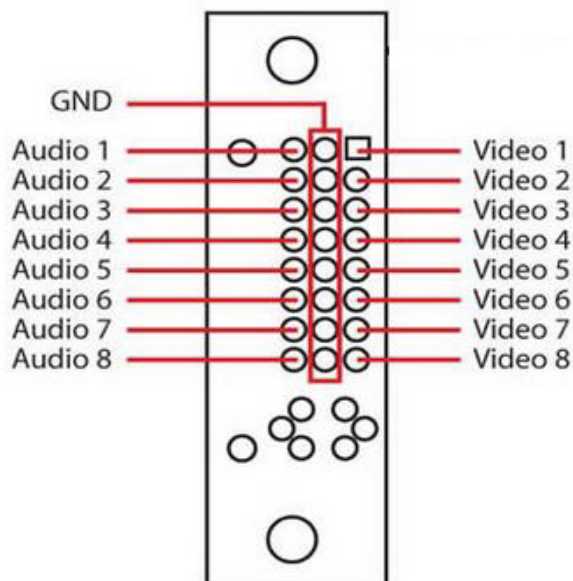
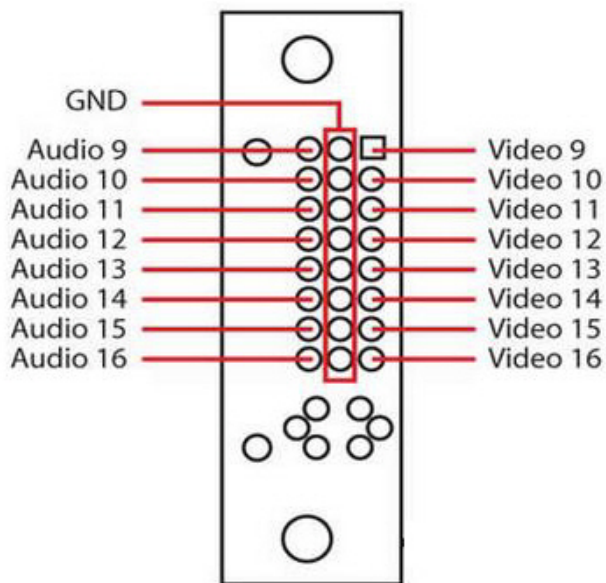
SC300Q16 (FX4) video capture card has one external DVI-I (24+5) pin. Video and audio connection is performed with the help of DVI-I/BNC and DVI-I/RCA stubs correspondingly. Simultaneous connection of up to 16 cameras and up to 4 sound sources to one external pin of SC300Q16 (FX4) video capture card is possible. The Watchdog cable is connected to the J1 pin. DI/DO card (low profile) is connected to the J2 pin.



4.4.12 SC310N16 (FX16) video capture card pins

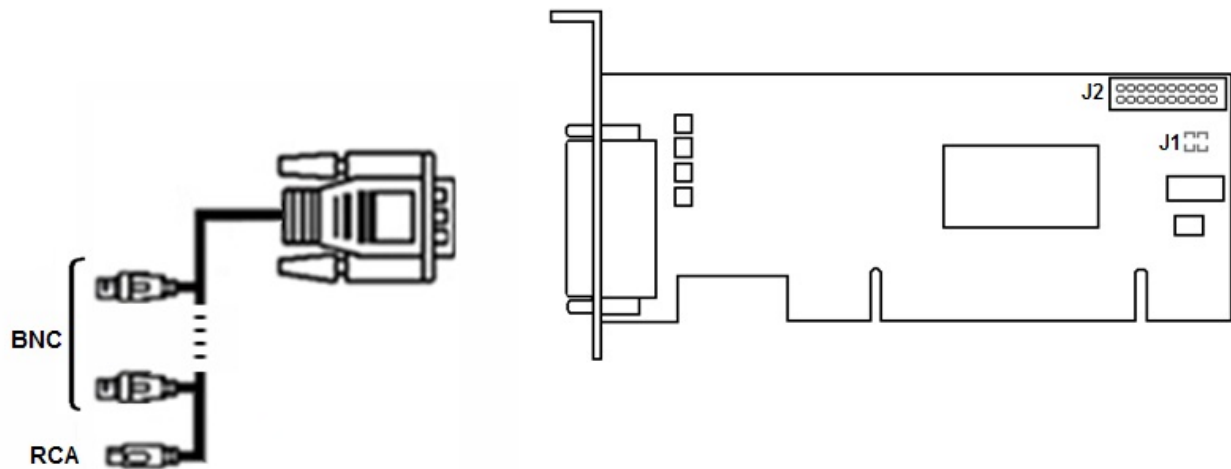
SC310N16 (FX16) video capture card has two external DVI-I (24 + 5) pins. Video and audio connection is performed with the help of DVI-I/BNC and DVI-I/RCA stubs correspondingly. Simultaneous connection of up to 8 cameras and up to 8 sound sources to one external pin of SC310N16 (FX16) video capture card is possible. The Watchdog cable is connected to the J1 pin. DI/DO card (low profile) is connected to the J2 pin.





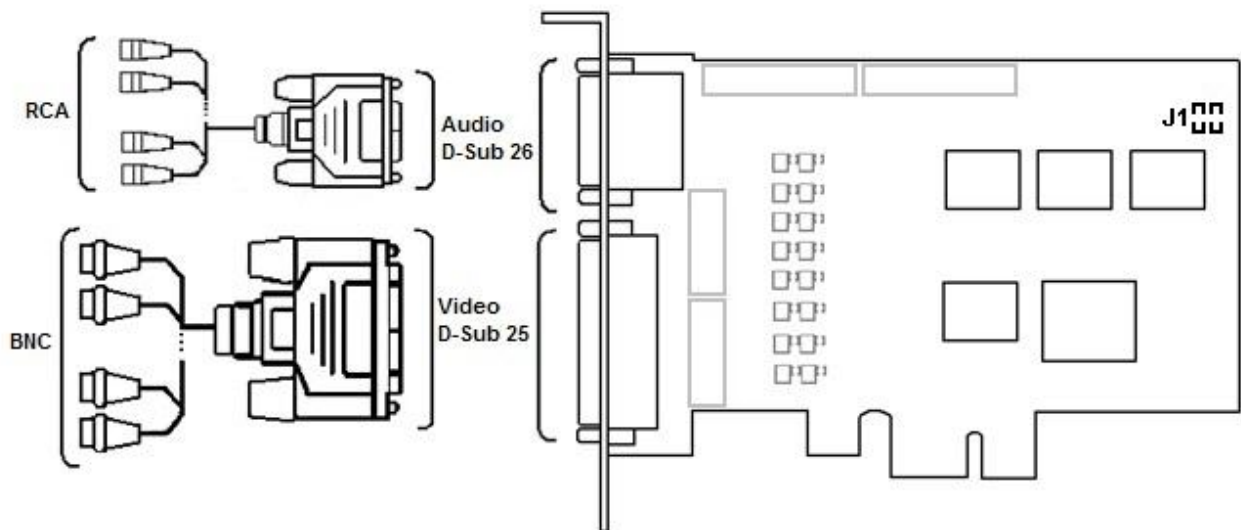
4.4.13 SC200Q4 Low profile (FS115) video capture card pins

SC200Q4 Low profile (FS115) video capture card has one external DVI-I pin. Video and audio connection is performed with the help of DVI-I/BNC and DVI-I/RCA stubs correspondingly. Simultaneous connection of up to 4 cameras and 1 sound source to one external pin of SC200Q4 Low profile (FS115) video capture card is possible. The Watchdog cable is connected to the J1 pin. DI/DO card (low profile) is connected to the J2 pin.



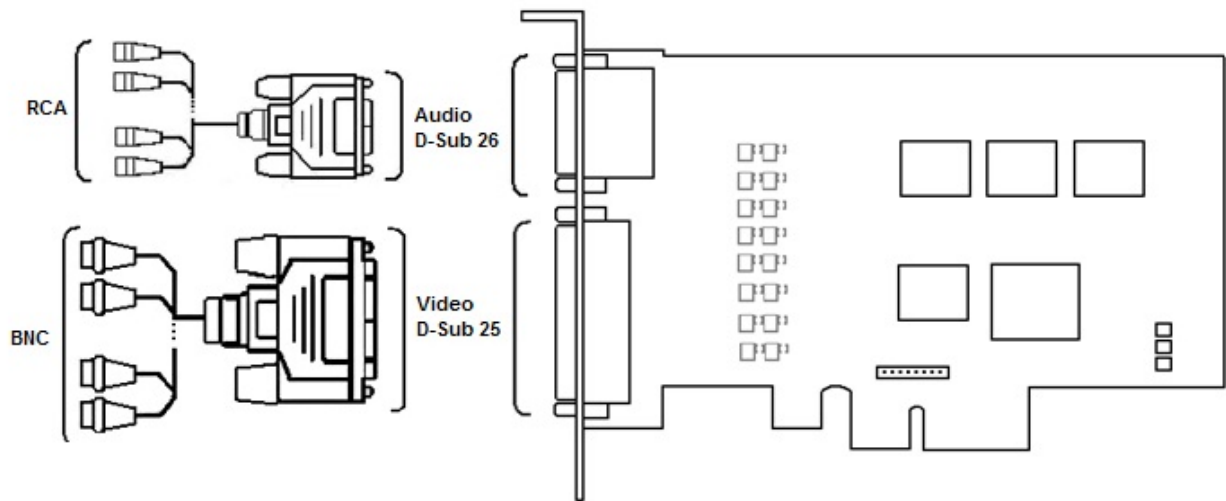
4.4.14 SL16-200 (FX116) video capture card pins

SL16-200 (FX116) video capture card has two external pins - D-SUB 25 and D-SUB 26. Simultaneous connection of up to 8 cameras and 16 sound sources to external pins of FX116 video capture card is possible. Video connection is performed with the help of D-SUB-25/BNC stub and audio connection is performed with the help of D-SUB-26/RCA stub. Watchdog cable is connected to the J1 pin.



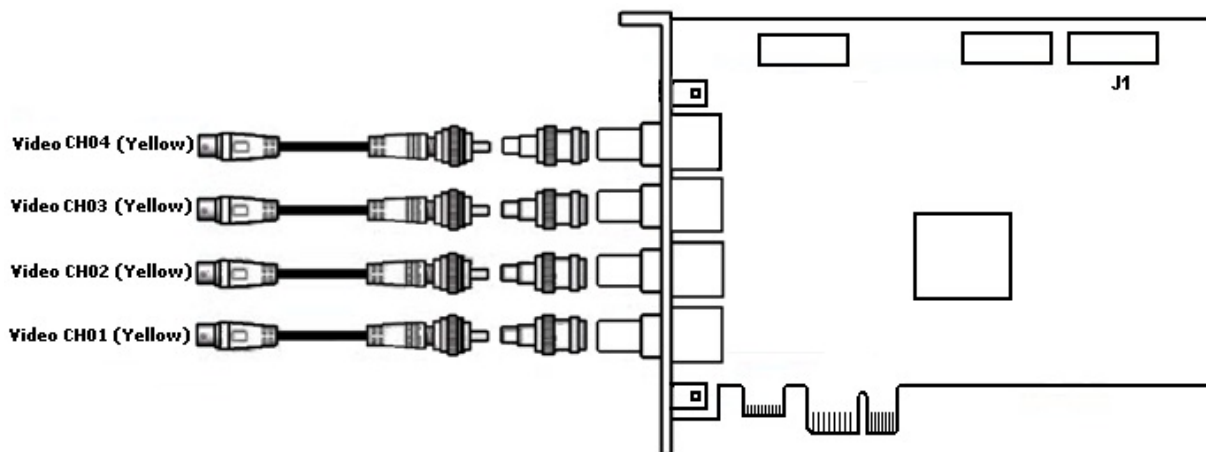
4.4.15 FX416 video capture card pins

FX416 video capture card has two external pins - D-SUB 25 and D-SUB 26. Simultaneous connection of up to 16 cameras and 16 sound sources to external pins of FX416 video capture card is possible. Video connection is performed with the help of D-SUB 25/BNC stub and audio connection is performed with the help of D-SUB 26/RCA stub.



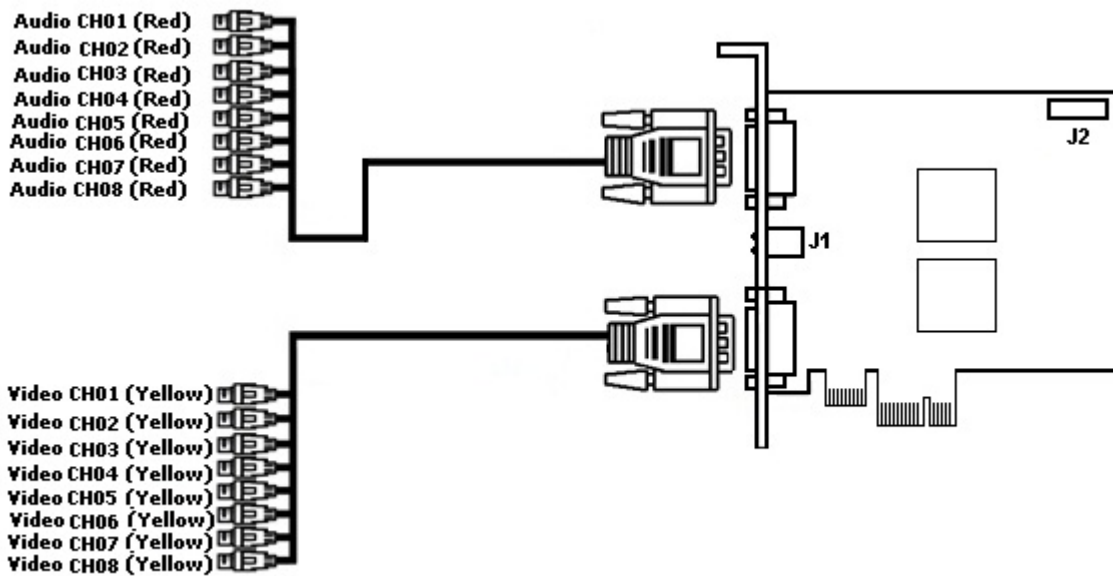
4.4.16 VRC6004 video capture card pins

VRC6004 video capture card has four external BNC pins. Cameras are connected with the help of BNC pin. Simultaneous connection of up to 4 cameras is possible. DI/DO card is connected to the J1 pin.



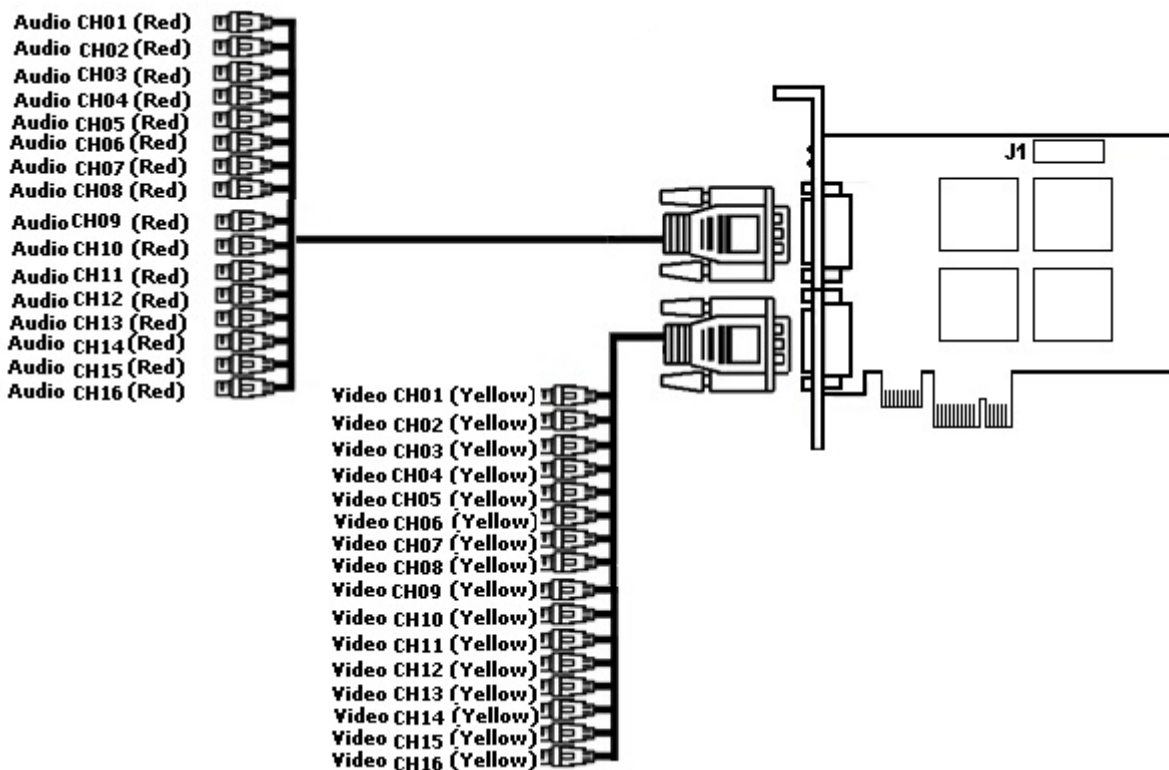
4.4.17 VRC6008 video capture card pins

VRC6008 video capture card has two external D-SUB-15 pins. D-SUB-15/BNC interface cable is used for simultaneous connection of up to 8 cameras and 8 audio channels to the external D-SUB-15 pin of VRC6008 video capture card. DI/DO card is connected to the J2 pin. Pin J1 corresponds to analog video out.



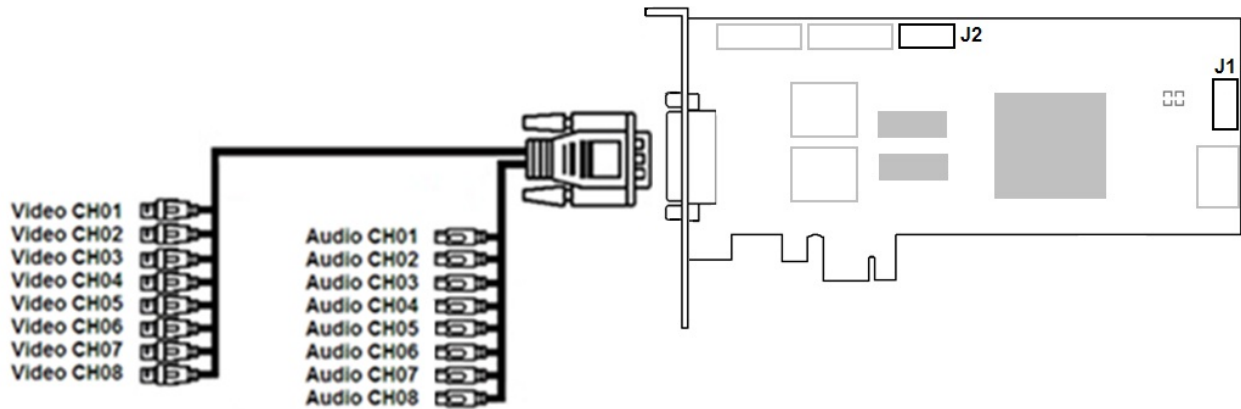
4.4.18 VRC6416 video capture card pins

VRC6416 video capture card has two external DVI pins. DVI /BNC interface cable is used for simultaneous connection of up to 16 cameras and 16 sound sources to external DVI pins of VRC6416 video capture card. DI/DO card is connected to the J1 pin.



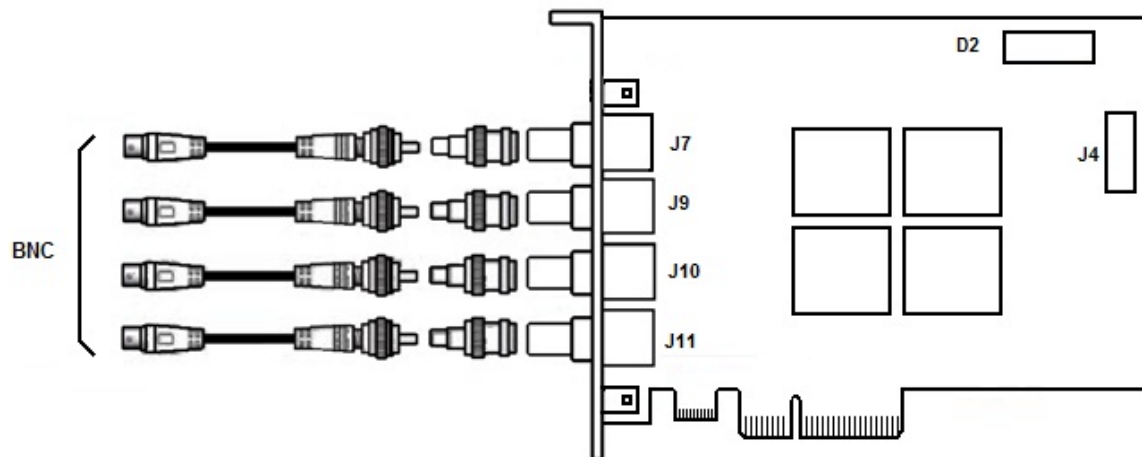
4.4.19 VRC7008L video capture card pins

VRC7008L video capture card has a DVI pin. DVI /BNC interface cable is used for simultaneous connection of up to 8 cameras and 8 sound sources to external DVI pin of VRC7008L video capture card. DI/DO card is connected to the J1 pin. J2 pin corresponds to analog video out.



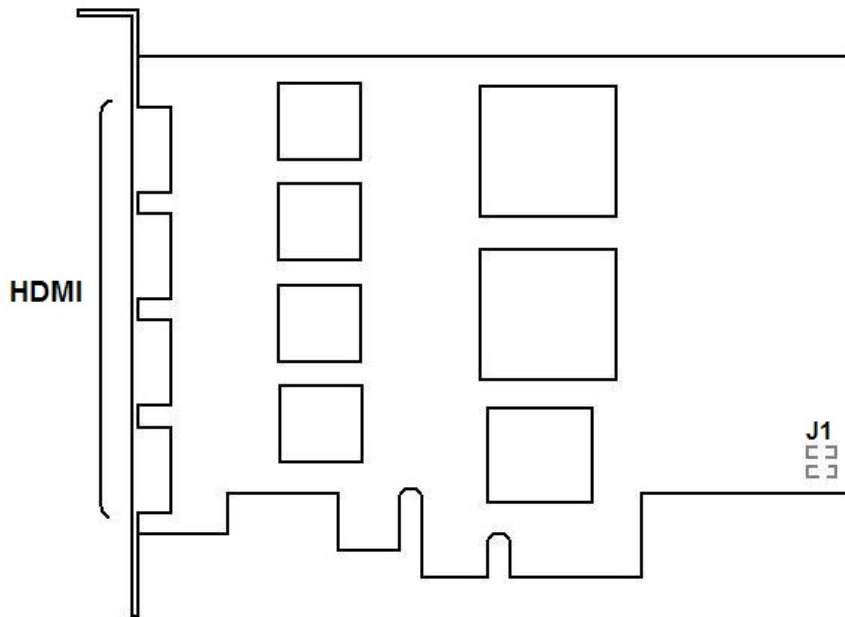
4.4.20 VRC6404 HD video capture card pins

VRC6404 HD video capture card has BNC pins through which cameras are connected. Up to 4 cameras can be connected. There is the 15-pin SATA (J4) power socket. D2 pin is used to connect DI/DO card.



4.4.21 SC510N4 (FX HD4) video capture card pins

SC510N4 (FX HD4) video capture card has 4 external HDMI pins to connect video and audio devices. The Watchdog cable is connected to the J1 pin.



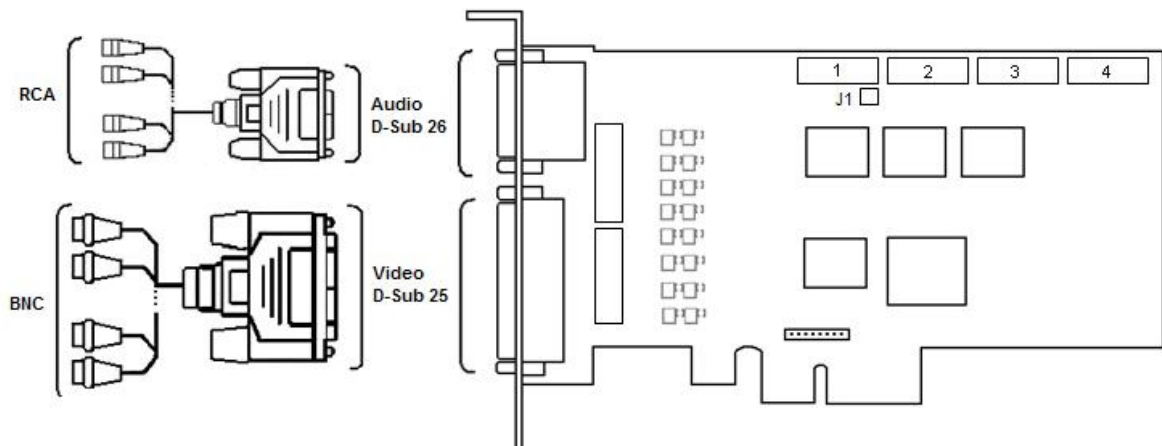
4.4.22 MS416 video capture card pins

The MS416 video capture card has two external pins: D-SUB-25 and D-SUB-26. Up to 16 video cameras and 16 audio sources can be simultaneously connected to the card's external sockets. Video connections are made using the D-SUB-25/BNC input. Audio connections use the D-SUB-26/RCA input. A J1 pin is used to connect the WatchDog hardware monitoring cable.

Slots 1-4 are used to connect additional sound cards. This card requires a separate slot in the case for installation, and it allows an additional 16 audio sources to be connected.

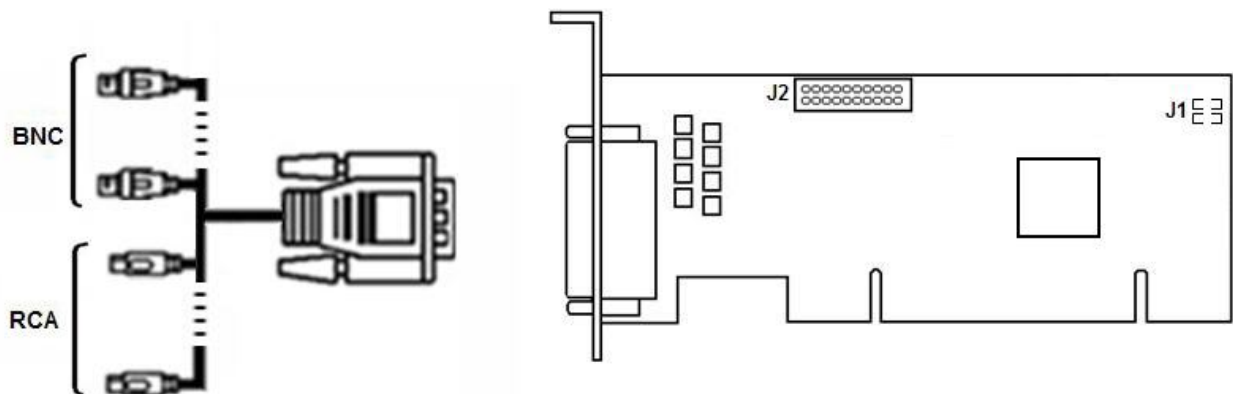
The following mapping exists between slot numbers and channel numbers:

- slot 1 - channels 1-8;
- slot 2 - channels 9-16;
- slot 3 - channels 17-24;
- slot 4 - channels 25-32.



4.4.23 SC230N4 video capture card pins

The SC230N4 video capture card has one external DVI-I pin. Video and audio connection are made using DVI-I/BNC and DVI-I/RCA stubs correspondingly. Simultaneous connection of up to 4 cameras and 4 sound sources to one external pin of SC230N4 video capture card is possible. The Watchdog cable is connected to the J1 pin. DI/DO card (low profile) is connected to the J2 pin.

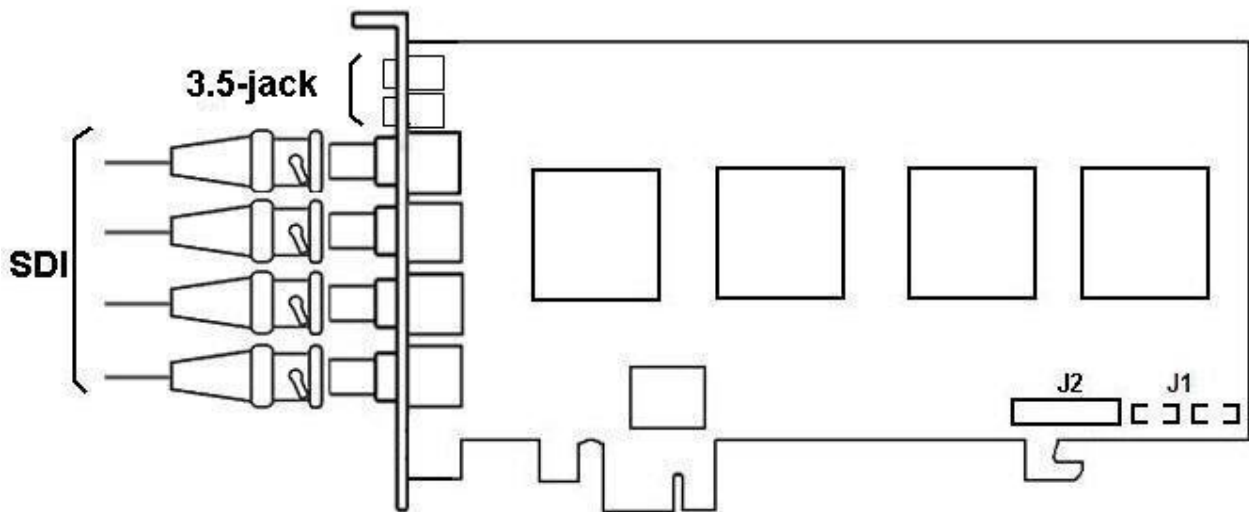


4.4.24 SC590N4 video capture card pins

The SC230N4 video capture card has four external SDI sockets, used to connect video cameras and audio input devices. Simultaneous connection of up to 4 cameras is possible. There also are two 3.5-jack sockets. DI/DO card is connected to the J2 pin. The Watchdog cable is connected to the J1 pin.

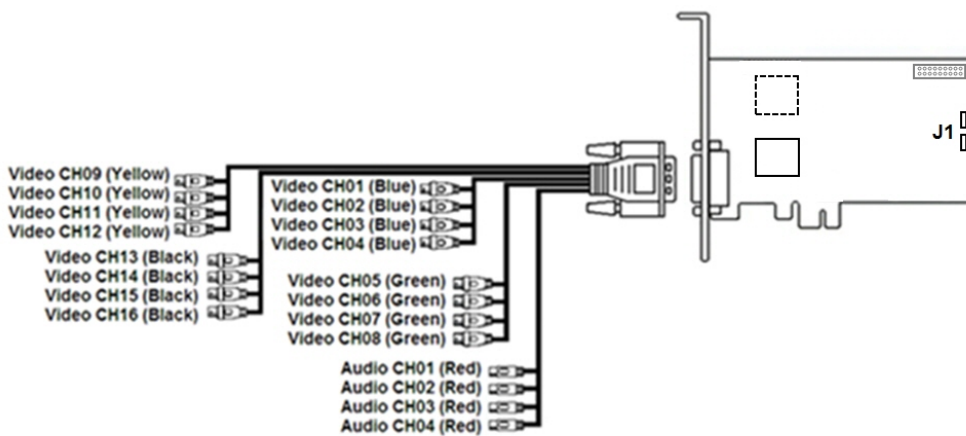
Note.

Both SDI sockets and analog inputs can be used for audio signal input.



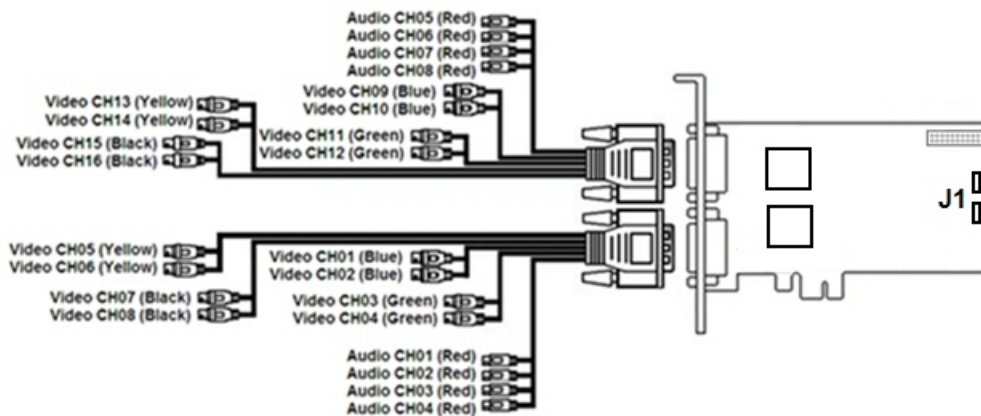
4.4.25 SC330Q16 video capture card pins

SC330Q16 video capture card has one external DVI-I (24+5) pin. Video and audio connection is performed with the help of DVI-I/BNC and DVI-I/RCA stubs correspondingly. Simultaneous connection of up to 16 cameras and up to 4 sound sources to one external pin of SC330Q16 video capture card is possible. The Watchdog cable is connected to the J1 pin.



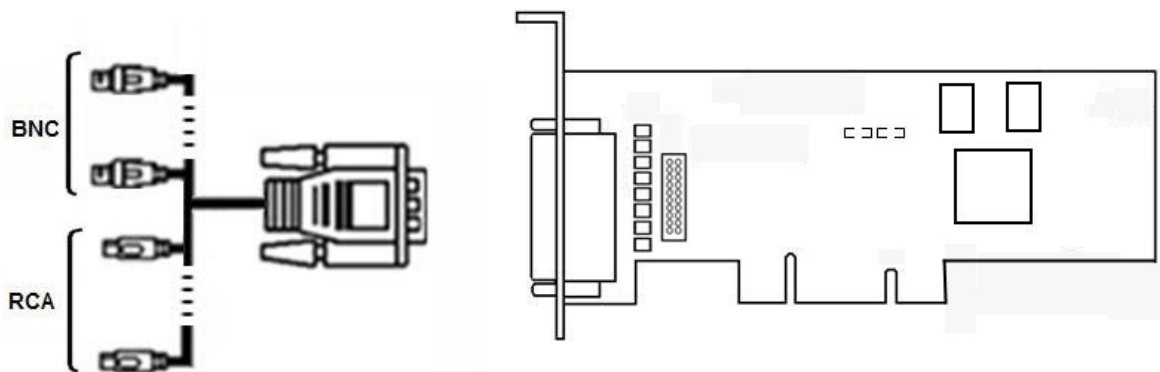
4.4.26 SC330D16 video capture card pins

SC330D16 video capture card has two external DVI-I (24+5) pins. Video and audio connection is performed with the help of DVI-I/BNC and DVI-I/RCA stubs correspondingly. Simultaneous connection of up to 8 cameras and up to 4 sound sources to one external pin of SC330D16 video capture card is possible. The Watchdog cable is connected to the J1 pin.



4.4.27 SC3C0N8-L video capture card pins

SC3C0N8-L video capture card has one external DVI-I pin. Video and audio connection is performed with the help of DVI-I/BNC and DVI-I/RCA stubs correspondingly. Simultaneous connection of up to 8 cameras and up to 8 sound sources to one external pin of SC3C0N8-L video capture card is possible.



4.5 Appendix 5. Electrical and technical specifications of Sensor-Relay cards

4.5.1 Electrical and technical specifications of Sensor-Relay cards

Sensor-Relay cards are multichannel digital-analogue converters and transmitters of up to 4 control signals to executive devices (relays) designed to be used in video surveillance systems built using FS-5, FS-6, FS-16 and FS-8 video capture cards.

While working with Sensor-Relay cards it is necessary to take into account the following electrical specifications:

1. Current state of a sensor.
Depending on the value of resistance between input contacts on the line, the current state of a sensor can be:
 - a. close (below 3 kilohms);

- b. open (over 10 kilohms);
- c. undefined (from 3 to 10 kilohms).

Note

Undefined state may be determined by the system as close or open.

2. State of a relay at the output.

State of a relay at the output is to be **Open** for Sensor-Relay card. The following conditions are to be met:

- a. maximum current through the open collector– 150 milliamperes;
- b. resistance – 24 volts;
- c. minimal resistance of connected relay– 160 ohms.

Technical specifications of Sensor-Relay cards are to be taken into account while connecting the sensors.

Parameter	4/4 Sensor-Relay cards	16/4 Sensor-Relay cards
Guard loops (sensors)	4	16
Breakdown voltage	1000 V up to 1 minute	1000 V up to 1 minute
Control output (relays)	4	4
Open collector (interface)	24, 30 ma	24, 30 ma

4.5.2 Electrical and technical specifications of 4/4 Sensor-Relay (low profile) cards

4/4 Sensor-Relay (low profile) card is to be used in video surveillance systems installed with SC200Q4 Low profile (FS115) / SC300Q16 (FX4) / SC300D16 (FX8) / SC310N16 (FX16) / SC230N4 / SC3B0N16 (WS216) / SC590N4 video capture cards.

Electrical and technical specifications of 4/4 Sensor-Relay (low profile) cards are given in the table:

Parameter	Sensor		Relay
Number of guard loops	4		4
Triggering time	0.1 ms		OFF -> ON: 3.0 ms ON -> OFF: 2.5 ms
Maximum value of current strength and voltage			direct current: 2 A/24 V alternating current: 1 A/120 V
Triggering level	Up to 5 V	Up to 12 V	

Parameter	Sensor		Relay
	2.5 V – OFF	4.5 V –OFF	
	2.1 V – ON	2.1 V – ON	

4.5.3 Electrical and technical specifications of MO USBIO 4x4 devices

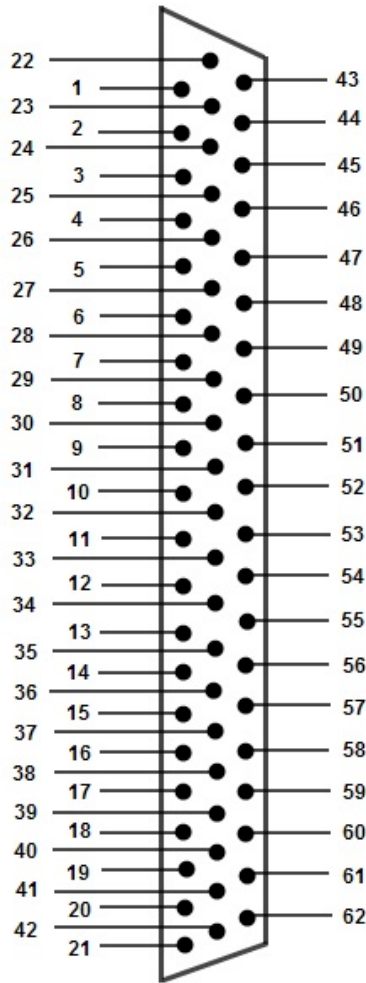
Power is supplied to MO USBIO 4x4 device via the USB. Maximum permissible current consumed by the device is not more than 500 ma.

The MO USBIO 4x4 device has a galvanic isolation of DI/DO circuits (sensors and relays) against the USB (breakdown voltage is 1000 V up to 1 minute). Electrical and technical specifications of MO USBIO 4x4 device are given in the table.

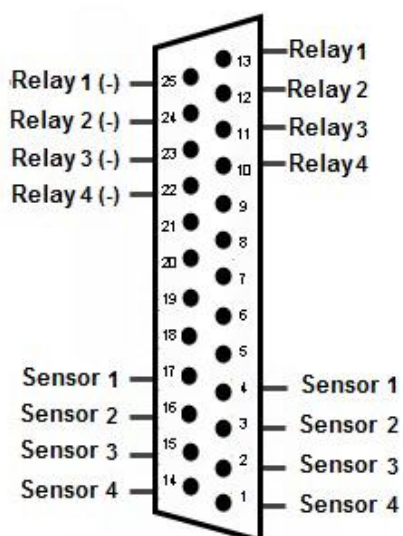
Parameter	Relay (output circuit)	Sensor (input circuit)
Number of loops	4	4
Maximum permissible current	400 ma (in any direction)	50 ma (in any direction)
Ampere rating	-	8 ma (in any direction)
Voltage rating	-	24 V (in any direction)
Maximum permissible voltage	60 V (in any direction)	-
Embedded power supply	-	24 V

4.5.4 Electrical and technical specifications of SL USBIO (4x4, 16x8 and 24x4) card

Pinout of an external pin of the SL USBIO card is given in the figure.



Pinout of an external pin of SL USBIO 16x8 and USBIO 24x4 cards.



Description of channels of SL USBIO 16x8 and SL USBIO 24x4 cards is given in the table.

USBIO 16x8				USBIO 24x4			
Contact	Application	Contact	Application	Contact	Application	Contact	Application
1	Sensor 1	32	Sensor 14	1	Sensor 1	32	Sensor 14
2	Sensor 1	33	Sensor 14	2	Sensor 1	33	Sensor 14
3	Sensor 2	34	Sensor 15	3	Sensor 2	34	Sensor 15
4	Sensor 2	35	Sensor 15	4	Sensor 2	35	Sensor 15
5	Sensor 3	36	Sensor 16	5	Sensor 3	36	Sensor 16
6	Sensor 3	37	Sensor 16	6	Sensor 3	37	Sensor 16
7	Sensor 4	38	Not used	7	Sensor 4	38	Not used
8	Sensor 4	39	Not used	8	Sensor 4	39	Not used
9	Sensor 5	40	Not used	9	Sensor 5	40	Not used
10	Sensor 5	41	Relay 3 (+)	10	Sensor 5	41	Relay 3 (+)
11	Sensor 6	42	Relay 3 (-)	11	Sensor 6	42	Relay 3 (-)

USBIO 16x8				USBIO 24x4			
Contact	Application	Contact	Application	Contact	Application	Contact	Application
12	Sensor 6	43	Not used	12	Sensor 6	43	Sensor 17
13	Sensor 7	44	Not used	13	Sensor 7	44	Sensor 17
14	Sensor 7	45	Not used	14	Sensor 7	45	Sensor 18
15	Sensor 8	46	Not used	15	Sensor 8	46	Sensor 18
16	Sensor 8	47	Not used	16	Sensor 8	47	Sensor 19
17	Not used	48	Not used	17	Not used	48	Sensor 19
18	Relay 1 (+)	49	Not used	18	Relay 1 (+)	49	Sensor 20
19	Relay 1 (-)	50	Not used	19	Relay 1 (-)	50	Sensor 20
20	Relay 2 (+)	51	Relay 5 (+)	20	Relay 2 (+)	51	Sensor 21
21	Relay 2 (-)	52	Relay 5 (-)	21	Relay 2 (-)	52	Sensor 21
22	Sensor 9	53	Relay 6 (+)	22	Sensor 9	53	Sensor 22
23	Sensor 9	54	Relay 6 (-)	23	Sensor 9	54	Sensor 22
24	Sensor 10	55	Relay 7 (+)	24	Sensor 10	55	Sensor 23
25	Sensor 10	56	Relay 7 (-)	25	Sensor 10	56	Sensor 23
26	Sensor 11	57	Relay 8 (+)	26	Sensor 11	57	Sensor 24
27	Sensor 11	58	Relay 8 (-)	27	Sensor 11	58	Sensor 24
28	Sensor 12	59	Not used	28	Sensor 12	59	Not used
29	Sensor 12	60	Not used	29	Sensor 12	60	Not used

USBIO 16x8				USBIO 24x4			
Contact	Application	Contact	Application	Contact	Application	Contact	Application
30	Sensor 13	61	Relay 4 (+)	30	Sensor 13	61	Relay 4 (+)
31	Sensor 13	62	Relay 4 (-)	31	Sensor 13	62	Relay 4 (-)

Electrical and technical specifications of SL USBIO card are given in the table.

Parameter	Characteristic
Polling interval for all alarm inputs	250 ms for all contacts. Not configured.
Galvanic isolation of input/output	1000 V
Interface connection to PC	USB 2.0 up to 5 m
Alarm contacts	• Maximum current – 0.5 A • Voltage – 100 V • Power – 10 W
Relay contacts	• Permissible voltage - up to 80 V • Minimum triggering voltage - 1.0 V • Minimum triggering current - 5 ma
Real-time clock for event logging	Yes
ROM	For 1000 alarm events
Power supply	Using USB port or PSU, voltage - 9-50 V, consumption - 500 ma

4.5.5 Electrical and technical specifications of AGRG-IO-16/8-WD-DS devices

When connecting the AGRG-IO-16/8-WD-DS sensor-relay cards, the electrical and technical specifications shown in the table below should be considered.

Parameter	Specification
Galvanic isolation on inputs/outputs	3750 V

Parameter	Specification
Inputs	Quantity - 16 Type - current loop Galvanic isolation - Yes Maximum voltage - 60 V Rated voltage - 12 V Maximum current - 60 mA
Outputs	Quantity - 8 Type - open collector Galvanic isolation - Yes Maximum voltage - 300 V Maximum current - 150 mA Minimum pick-up voltage - 1.0 V Minimum pick-up current - 5 mA
Reset Timer (Watchdog)	Customizable
Ping interval of all alarm inputs	100 ms for all contacts. Customizable
PC connection interface	USB 2.0, up to 5 meters
Power supply	500 mA consumption from USB port

4.6 Appendix 6. Maximum number of presets for IP devices

Device	Maximum number of presets
Axis 2130 PTZ	40
Axis 212 PTZ	20
Axis 213 PTZ	20
Axis 214PTZ	20
Axis 215 PTZ	10

Axis 232D+	50
Axis 233D	100
Axis 241Q	20
Axis 241QA	20
Axis 241S	20
Axis 2400	20
Axis 2400+	20
Axis 243SA	20
Bosch VG4-313-PTE2W	99
Dynacolor Dynahawk 811 IP SpeedDome	255
Dynacolor DynaHawk ZH-801+	255
Panasonic BB HCM311	8
Panasonic BL-C131	8
Panasonic BL-C111	8
Panasonic BB HCM331	8
Panasonic BB HCM381	8
Panasonic BL-C10	8
Panasonic WV-NS202	64
Sony SNC-RZ30P	16
D-Link DCS-5220	20

D-Link DCS-6620G	20
D-Link DCS-6620	20
Lilin PIH-7625PFIP	128
Sony SNC-RZ50P	16
Sony SNC-RZ25P	16
Sony SNC-P5	8
JVC VN-C625U	100
Pelco Spectra IV	128
Smartec STC-IP3975A/2	256
Smartec STC-IP3985A/2	256
TrendNET TV-IP400	24
TrendNET TV-IP410	8
TrendNET TV-IP422	8

5 Installing and configuring security system components guide. CONCLUSION

More detailed information on the Axxon PSIM software package is presented in the documents titled:

1. [Operator's Guide.](#)
2. [The Script object. Programming using the JScript language.](#)
3. [Administrator's Guide.](#)

If while operating the given software product you have faced difficulties and problems, you are welcome to contact us. However before addressing us, we kindly ask you to answer the following questions:

1. What is the problem?
2. When did the problem occur and what had happened before it occurred?
3. Which conditions gave rise to the problem?

Remember, that the more detailed and precise information you give us, the faster our experts will resolve your problem.

We are striving to improve the quality of our products, and hence welcome any proposals and suggestions how to improve our software and documentation.