Manuals+ — User Manuals Simplified.

AXIS COMMUNICATIONS FA51-B Connect Sensor Unit User Manual

AXIS FA51-B Main Unit
User Manual

Contents

Get started

Connect sensor units
When you connect a sensor unit to a main unit, we recommend that you make the connection before you power up the main unit. If you disconnect a sensor unit and connect a different one, you must restart the main unit.

Shorten the sensor unit cable
Note

- The sensor unit cable cannot be extended or split.

- When routing the sensor unit cable, the minimum bending radius is 40 mm.

The sensor unit is delivered with a cable. To shorten the cable follow these steps:

1. Cut the cable to the desired length. Measure from the sensor unit.
2. Strip the plastic outer coating from the end of the cable.
3. Peel back the shield.
4. Flatten the colored wires in the order described below.

1	B rroowwn
2	W hhiittee//bbrroowwn
3	N oot u sseed
4	N oot u sseed
5	W hhiittee//bblluue
6	B lluue

5. Insert the wires all the way into a shielded 6P6C RJ12 connector.

   NOTICE

   Make sure that the wires stay in the correct order and that the cable shield makes good contact with the connector shield.

6. Use a crimping tool to fasten the connector to the cable.
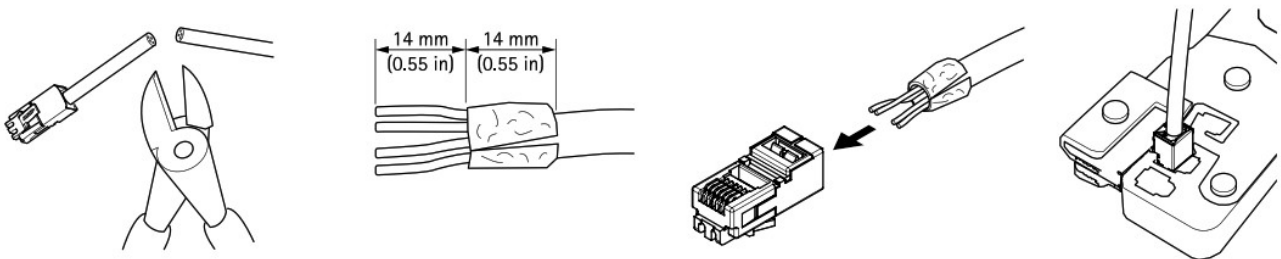
Find the device on the network

To find Axis devices on the network and assign them IP addresses in Windows®, use AXIS IP Utility or AXIS Device Manager. Both applications are free and can be downloaded from **axis.com/support**.
For more information about how to find and assign IP addresses, go to How to assign an IP address and access your device.

Browser support
You can use the device with the following browsers:

	ChromeTM	Firefox®	Edge®	Safari®
Windows®	recommended	x	x	
macOS®	recommended			x
Other operating systems	x	x		

If you need more information about recommended browsers, go to **axis.com/browser-support**.

Access the device

1. Open a browser and enter the IP address or host name of the Axis device. If you do not know the IP address, use AXIS IP Utility or AXIS Device Manager to find the device on the network.
2. Enter the username and password. If you access the device for the first time, you must set the root password. See Set a new password for the root account on page 4 .
3. The live view page opens in your browser.

Verify that no one has tampered with the firmware
To make sure that the device has its original Axis firmware, or to take full control of the device after a security attack:

1. Reset to factory default settings. See Reset to factory default settings on page 17. After the reset, secure boot guarantees the state of the device.
2. Configure and install the device.

Set a new password for the root account
Important
The default administrator username is root. If the password for root is lost, reset the device to factory default settings.

To watch this video, go to the web version of this document.
www.axis.com/products/online-manual/71903#t10098905
Support tip: Password security confirmation check

1. Type a password. Follow the instructions about secure passwords. See Secure passwords on page 5 .
2. Retype the password to confirm the spelling.
3. Click Create login. The password has now been configured.

Secure passwords
Important
Axis devices send the initially set password in clear text over the network. To protect your device after the first login, set up a secure and encrypted HTTPS connection and then change the password.

The device password is the primary protection for your data and services. Axis devices do not impose a password policy as they may be used in various types of installations. To protect your data we strongly recommend that you:

- Use a password with at least 8 characters, preferably created by a password generator.
- Don't expose the password.
- Change the password at a recurring interval, at least once a year.

Webpage overview
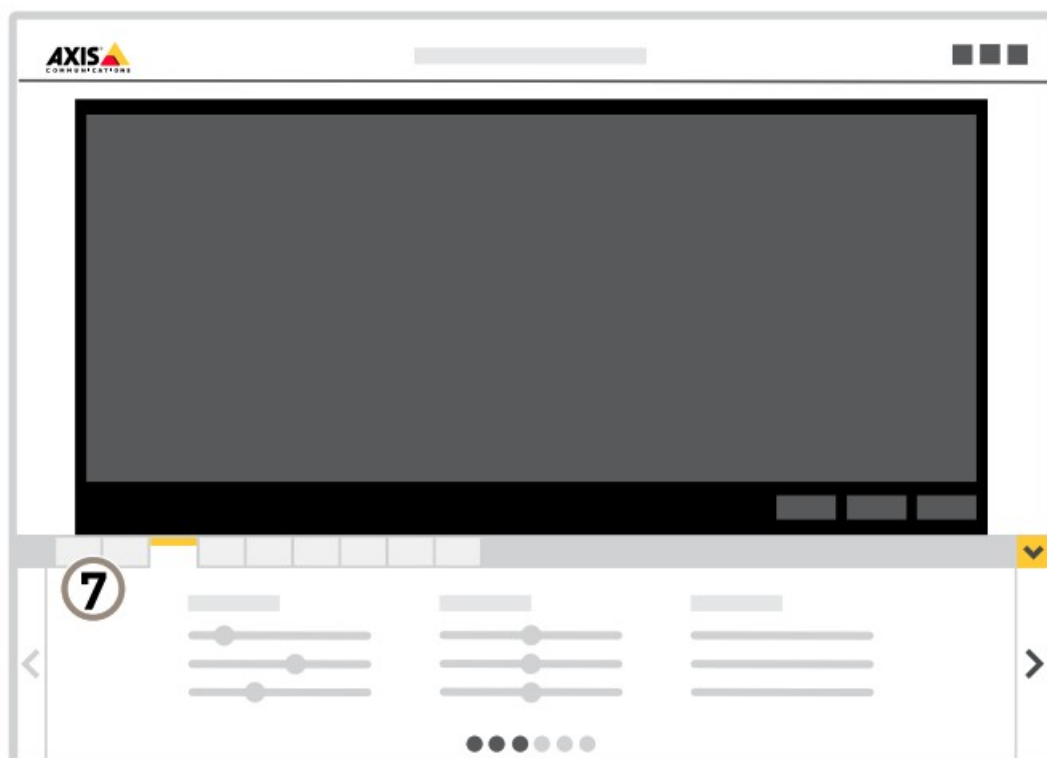
1 Live view control bar 2 Live view 3 Product name 4 User information, color themes, and help	5 Video control bar 6 Settings toggle 7 Settings tabs

Additional settings

Adjust the image

This section includes instructions about how to configure your device. If you want to learn more about how certain features function, go to Learn more on page 14.

Level the camera

To adjust the view in relation to a reference area or an object, use the leveling guide in combination with a mechanical adjustment of the camera.

1. Go to Settings > System > Orientation and click

2. Adjust the camera mechanically until the position of the reference area or the object is aligned with the leveling guide.

Select exposure mode

There are different exposure mode options in the camera that adjusts aperture, shutter speed, and gain to improve image quality for specific surveillance scenes. Go to Settings > Image > Exposure and select between the following exposure modes:

- For most use cases, select Automatic exposure.
- For environments with certain artificial lighting, for example fluorescent lighting, select Flicker-free.
  Select the same frequency as the power line frequency.
- For environments with certain artificial light and bright light, for example outdoors with fluorescent lighting at night and sun during daytime, select Flicker-reduced.
  Select the same frequency as the power line frequency.
- To lock the current exposure settings, select Hold current.

Reduce motion blur in low-light conditions

To reduce motion blur in low-light conditions, adjust one or more of the following settings in Settings > Image > Exposure:

- Move the Blur-noise trade-off slider toward Low motion blur.
  Note When you increase the gain, image noise also increases.
- Set Max shutter to a shorter time, and Max gain to a higher value.

If you still have problems with motion blur:

- Increase the light level in the scene.
- Mount the camera so that objects move toward it or away from it rather than sideways.

Handle scenes with strong backlight

Dynamic range is the difference in light levels in an image. In some cases the difference between the darkest and

the brightest areas can be significant. The result is often an image where either the dark or the bright areas are visible. Wide dynamic range (WDR) makes both dark and bright areas of the image visible.


Image without WDR.

Image with WDR.

Note

- WDR can cause artifacts in the image.
- WDR may not be available for all capture modes.

1. Go to Settings > Image > Wide dynamic range.
2. Turn on WDR.
3. Use the Local contrast slider to adjust the amount of WDR.
4. If you still have problems, go to Exposure and adjust the Exposure zone to cover the area of interest.

Find out more about WDR and how to use it at axis.com/web-articles/wdr.

Monitor long and narrow areas
Use corridor format to better utilize the full field of view in a long and narrow area, for example a staircase, hallway, road, or tunnel.
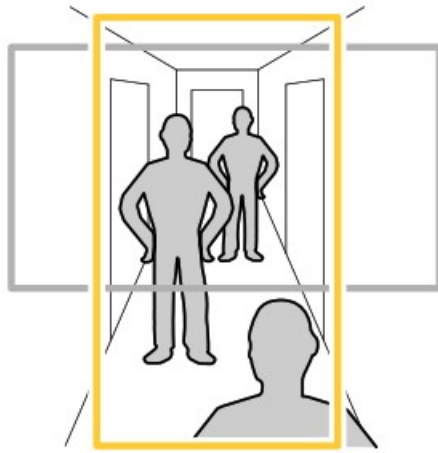
1. Depending on your device, turn the camera or the 3-axis lens in the camera 90° or 270°.
2. If the device doesn't have automatic rotation of the view, log in to the webpage and go to Settings > System > Orientation.
3. Click .
4. Rotate the view 90° or 270°.

Find out more at **axis.com/axis-corridor-format**.

Hide parts of the image with privacy masks
You can create one or several privacy masks to hide parts of the image.

To watch this video, go to the web version of this document.
www.axis.com/products/online-manual/71903#t10106902
How to create a privacy mask

1. Go to Settings > Privacy mask.
2. Click New.
3. Adjust the size, color, and name of the privacy mask according to your needs.

To watch this video, go to the web version of this document.
www.axis.com/products/online-manual/71903#t10106902
How to change the appearance of the mask

Show an image overlay

You can add an image as an overlay in the video stream.

1. Go to Settings > Overlay.

2. Click Image list.

3. Upload an image and click Done.

4. Click Create overlay.

5. Select Image and click Create.

6. Select the image from the drop-down list.

7. To position the image overlay, choose Custom or one of the presets.

8. Click Create.

View and record video
This section includes instructions about how to configure your device. To learn more about how streaming and storage works, go to Streaming and storage on page 14.

Reduce bandwidth and storage
Important
If you reduce the bandwidth it can result in loss of details in the picture.

1. Go to live view and select H.264.

2. Go to Settings > Stream.

3. Do one or more of the following:
   – Turn on dynamic GOP and set a high GOP length value.
   – Increase the compression.
   – Turn on dynamic FPS.

View a live video stream on a monitor
Your camera can transmit a live video stream to an HDMI monitor even without a network connection. The monitor can be used for surveillance purposes or for public viewing, e.g. in a store.

1. Connect an external monitor using the HDMI connector.

2. Change the HDMI settings under Settings > System > HDMI.

Set up network storage

To store recordings on the network, you need to set up your network storage.

1. Go to Settings > System > Storage.

2. Click Setup under Network storage.

3. Enter the IP address of the host server.

4. Enter the name of the shared location on the host server.

5. Move the switch if the share requires a login, and enter username and password.

6. Click Connect.

Record and watch video
To record video you must first set up network storage, see Set up network storage on page 11 , or have an SD card installed.

Record video

1. Go to the live view.
2. To start a recording, click Record. Click again to stop the recording.

Watch video

1. Click Storage > Go to recordings.
2. Select your recording in the list and it will play automatically.

Set up rules and alerts
You can create rules to make your device perform an action when certain events occur. A rule consists of conditions and actions. The conditions can be used to trigger the actions. For example, the device can start a recording or send an email when it detects motion, or show an overlay text while the device is recording.

Trigger an action

1. Go to Settings > System > Events to set up a rule. The rule defines when the device will perform certain actions. Rules can be setup as scheduled, recurring, or for example, triggered by motion detection.
2. Select the Condition that must be met to trigger the action. If you specify more than one condition for the rule, all of the conditions must be met to trigger the action.
3. Select which Action the device should perform when the conditions are met.

Note If you make changes to an active rule, you have to restart the rule for the changes to take effect.

Record video when the camera detects motion
This example explains how to set up the camera to start recording to the SD card five seconds before it detects motion and to stop one minute after.

To watch this video, go to the web version of this document.
www.axis.com/products/online-manual/71903#t10106619
How to record a video stream when the camera detects motion

Make sure that AXIS Video Motion Detection is running:

1. Go to Settings > Apps > AXIS Video Motion Detection.
2. Start the application if it is not already running.
3. Make sure you have set up the application according to your needs. If you need help, see the user manual for AXIS Video Motion Detection 4.

Create a rule:

1. Go to Settings > System > Events and add a rule.

2. Type a name for the rule.

3. In the list of conditions, under Application, select AXIS Video Motion Detection (VMD).

4. In the list of actions, under Recordings, select Record video while the rule is active.

5. Select an existing stream profile or create a new one.

6. Set the prebuffer time to 5 seconds.

7. Set the postbuffer time to 60 seconds.

8. In the list of storage options, select SD card.

9. Click Save.

Show a text overlay in the video stream when the device detects motion
This example explains how to display the text "Motion detected" when the device detects motion.

To watch this video, go to the web version of this document.
www.axis.com/products/online-manual/71903#t10103832
How to show text overlay when the camera detects motion

Make sure that AXIS Video Motion Detection is running:

1. Go to Settings > Apps > AXIS Video Motion Detection.

2. Start the application if it is not already running.

3. Make sure you have set up the application according to your needs. Add the overlay text:

4. Go to Settings > Overlay.

5. Select Create overlay and select Text overlay.

6. Enter #D in the text field.

7. Choose text size and appearance.

8. To position the text overlay, choose Custom or one of the presets.

   Create a rule:

9. Go to System > Events > Rules and add a rule.

10. Type a name for the rule.

11. In the list of conditions, select AXIS Video Motion Detection.

12. In the list of actions, select Use overlay text.

13. Select a view area.

14. Type "Motion detected".

15. Set the duration.

16. Click Save.

Note
If you update the overlay text it will be automatically updated on all video streams dynamically.

Learn more

Privacy masks

A privacy mask is a user-defined area that covers a part of the monitored area. In the video stream, privacy masks appear either as blocks of solid color or with a mosaic pattern.

You'll see the privacy mask on all snapshots, recorded video, and live streams.

You can use the VAPIX® application programming interface (API) to turn off the privacy masks.

Important

If you use multiple privacy masks it may affect the product's performance.

Overlays

Overlays are superimposed over the video stream. They are used to provide extra information during recordings, such as a timestamp, or during product installation and configuration. You can add either text or an image.

Streaming and storage

Video compression formats

Decide which compression method to use based on your viewing requirements, and on the properties of your network. The available options are: H.264 or MPEG-4 Part 10/AVC

Note

H.264 is a licensed technology. The Axis product includes one H.264 viewing client license. To install additional unlicensed copies of the client is prohibited. To purchase additional licenses, contact your Axis reseller.

H.264 can, without compromising image quality, reduce the size of a digital video file by more than 80% compared to the Motion JPEG format and by as much as 50% compared to the MPEG-4 standard. This means that less network bandwidth and storage space are required for a video file. Or seen another way, higher video quality can be achieved for a given bitrate.

How do Image, Stream, and Stream profile settings relate to each other?

The Image tab contains camera settings that affect all video streams from the product. If you change something in this tab, it immediately affects all video streams and recordings.

The Stream tab contains settings for video streams. You get these settings if you request a video stream from the product and don't specify for example resolution, or frame rate. When you change the settings in the Stream tab, it doesn't affect ongoing streams, but it will take effect when you start a new stream.

The Stream profiles settings override the settings from the Stream tab. If you request a stream with a specific stream profile, the stream contains the settings of that profile. If you request a stream without specifying a stream profile, or request a stream profile that doesn't exist in the product, the stream contains the settings from the Stream tab.

Bitrate control

With bitrate control, you can manage the bandwidth consumption of your video stream.

Variable bitrate (VBR) With variable bitrate, the bandwidth consumption varies based on the level of activity in the scene. The more activity in the scene, the more bandwidth you need. You are guaranteed constant image quality but it requires storage margins.
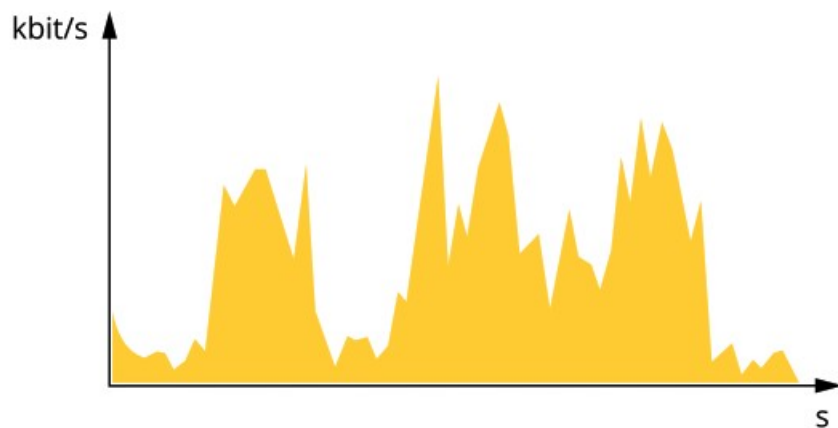
Maximum bitrate (MBR)

With maximum bitrate, you can set a target bitrate to handle bitrate limitations in your system. You may see a decline in image quality or frame rate when the instantaneous bitrate is kept below the specified target bitrate. You can choose to either prioritize image quality or frame rate. We recommend that you configure the target bitrate to a higher value than the expected bitrate. This gives you a margin for additional complexity that needs to be captured.
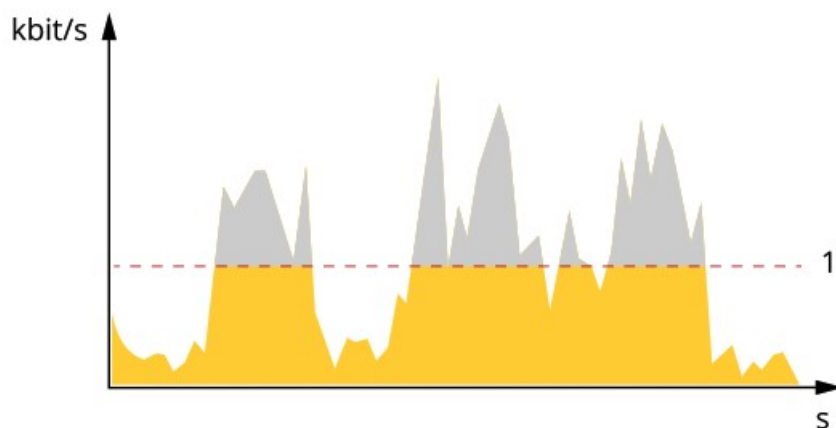
1 Target bitrate

Applications

AXIS Camera Application Platform (ACAP) is an open platform that enables third parties to develop analytics and other applications for Axis products. To find out more about available applications, downloads, trials and licenses, go to axis.com/applications. To find the user manuals for Axis applications, go to **axis.com**.

To watch this video, go to the web version of this document.
www.axis.com/products/online-manual/71903#t10001688
How to download and install an application

To watch this video, go to the web version of this document.
www.axis.com/products/online-manual/71903#t10001688
How to activate an application licence code on a device

AXIS Face Detector

AXIS Face Detector is an application that detects faces in a predefined area of the live video. The detected faces are marked within boxes.

To find out more about the application, see **axis.com/products/axis-face-detector**

Troubleshooting

Reset to factory default settings

Important

Reset to factory default should be used with caution. A reset to factory default resets all settings, including the IP address, to the factory default values.

To reset the product to the factory default settings:

It is also possible to reset parameters to factory default through the web interface. Go to Settings > System > Maintenance and click Default.

Firmware options

Axis offers product firmware management according to either the active track or the long-term support (LTS) tracks. Being on the active track means continuously getting access to all the latest product features, while the LTS tracks provide a fixed platform with periodic releases focused mainly on bug fixes and security updates.

Using firmware from the active track is recommended if you want to access the newest features, or if you use Axis end-to-end system offerings. The LTS tracks are recommended if you use third-party integrations, which are not continuously validated against the latest active track. With LTS, the products can maintain cybersecurity without introducing any significant functional changes or affecting any existing integrations. For more detailed information about Axis product firmware strategy, go to **axis.com/support/firmware.**

Check the current firmware

Firmware is the software that determines the functionality of network devices. One of your first actions when troubleshooting a problem should be to check the current firmware version. The latest version may contain a correction that fixes your particular problem.

To check the current firmware:

1. Go to the product's webpage.

2. Click on the help menu ⍰

3. Click About.

Upgrade the firmware
Important
Preconfigured and customized settings are saved when the firmware is upgraded (provided that the features are available in the new firmware) although this is not guaranteed by Axis Communications AB.
Important
Make sure the product remains connected to the power source throughout the upgrade process.
Note
When you upgrade the product with the latest firmware in the active track, the product receives the latest functionality available. Always read the upgrade instructions and release notes available with each new release before upgrading the firmware. To find the latest firmware and the release notes, go to **axis.com/support/firmware.**
AXIS Device Manager can be used for multiple upgrades. Find out more at **axis.com/products/axis-device-manager.**

To watch this video, go to the web version of this document.
www.axis.com/products/online-manual/71903#t10095327
How to upgrade the firmware

1. Download the firmware file to your computer, available free of charge at axis.com/support/firmware.

2. Log in to the product as an administrator.

3. Go to Settings > System > Maintenance. Follow the instructions on the page. When the upgrade has finished, the product restarts automatically.

Technical issues, clues and solutions
If you can't find what you're looking for here, try the troubleshooting section at axis.com/support.

Problems upgrading the firmware

Firmware upgrade failure	If the firmware upgrade fails, the device reloads the previous firmware. The most common reason is that the wrong firmware file has been uploaded. Check that the name of the firmware file corresponds to your device and try again.

Problems setting the IP address

The device is located on a different subnet	If the IP address intended for the device and the IP address of the computer used to access the device are located on different subnets, you cannot set the IP address. Contact your network administrator to obtain an IP address.
The IP address is being used by another device	Disconnect the Axis device from the network. Run the ping command (in a Command/DOS window, type ping and the IP address of the device): • If you receive: Reply from <IP address>: bytes=32; time=10… this means that the IP address may already be in use by another device on the network. Obtain a new IP address from the network administrator and reinstall the device. • If you receive: Request timed out, this means that the IP address is available for use with the Axis device. Check all cabling and reinstall the device.
Possible IP address conflict with another device on the same subnet	The static IP address in the Axis device is used before the DHCP server sets a dynamic address. This means that if the same default static IP address is also used by another device, there may be problems accessing the device.

The device cannot be accessed from a browser

Cannot log in	When HTTPS is enabled, ensure that the correct protocol (HTTP or HTTPS) is used when attempting to log in. You may need to manually type http or https in the browser's address field. If the password for the user root is lost, the device must be reset to the factory default settings. See Reset to factory default settings on page 17.
The IP address has been changed by DHCP	IP addresses obtained from a DHCP server are dynamic and may change. If the IP address has been changed, use AXIS IP Utility or AXIS Device Manager to locate the device on the network. Identify the device using its model or serial number, or by the DNS name (if the name has been configured). If required, a static IP address can be assigned manually. For instructions, go to **axis.com/support.**

The device is accessible locally but not externally

To access the device externally, we recommend using one of the following applications for Windows®:

- AXIS Companion: free of charge, ideal for small systems with basic surveillance needs.
- AXIS Camera Station: 30-day trial version free of charge, ideal for small to mid-size systems.

  For instructions and download, go to **axis.com/vms**.

Problems with streaming

Multicast H.264 only accessible by local clients	Check if your router supports multicasting, or if the router settings between the client and the device need to be configured. The TTL (Time To Live) value may need to be increased.
No multicast H.264 displayed in the client	Check with your network administrator that the multicast addresses used by the Axis device are valid for your network. Check with your network administrator to see if there is a firewall preventing viewing.
Poor rendering of H.264 images	Ensure that your graphics card is using the latest driver. The latest drivers can usually be downloaded from the manufacturer's website.
Color saturation is different in H.264 and Motion JPEG	Modify the settings for your graphics adapter. Go to the adapter's documentation for more information.
Lower frame rate than expected	• See Performance considerations on page 19. • Reduce the number of applications running on the client computer. • Limit the number of simultaneous viewers. • Check with the network administrator that there is enough bandwidth available. • Lower the image resolution.

Performance considerations

When setting up your system, it is important to consider how various settings and situations affect the performance. Some factors affect the amount of bandwidth (the bitrate) required, others can affect the frame rate, and some affect both. If the load on the CPU reaches its maximum, this also affects the frame rate.
The following factors are the most important to consider:

- High image resolution or lower compression levels result in images containing more data which in turn affects the bandwidth.
- Rotating the image in the GUI will increase the product's CPU load.
- Access by large numbers of Motion JPEG or unicast H.264 clients affects the bandwidth.
- Simultaneous viewing of different streams (resolution, compression) by different clients affects both frame rate and bandwidth.
  Use identical streams wherever possible to maintain a high frame rate. Stream profiles can be used to ensure that streams are identical.
- Accessing Motion JPEG and H.264 video streams simultaneously affects both frame rate and bandwidth.
- Heavy usage of event settings affects the product's CPU load which in turn affects the frame rate.
- Using HTTPS may reduce frame rate, in particular if streaming Motion JPEG.
- Heavy network utilization due to poor infrastructure affects the bandwidth.
- Viewing on poorly performing client computers lowers perceived performance and affects frame rate.
- Running multiple AXIS Camera Application Platform (ACAP) applications simultaneously may affect the frame rate and the general performance.

Contact support

Contact support at **axis.com/support.**

Specifications

Product Overview
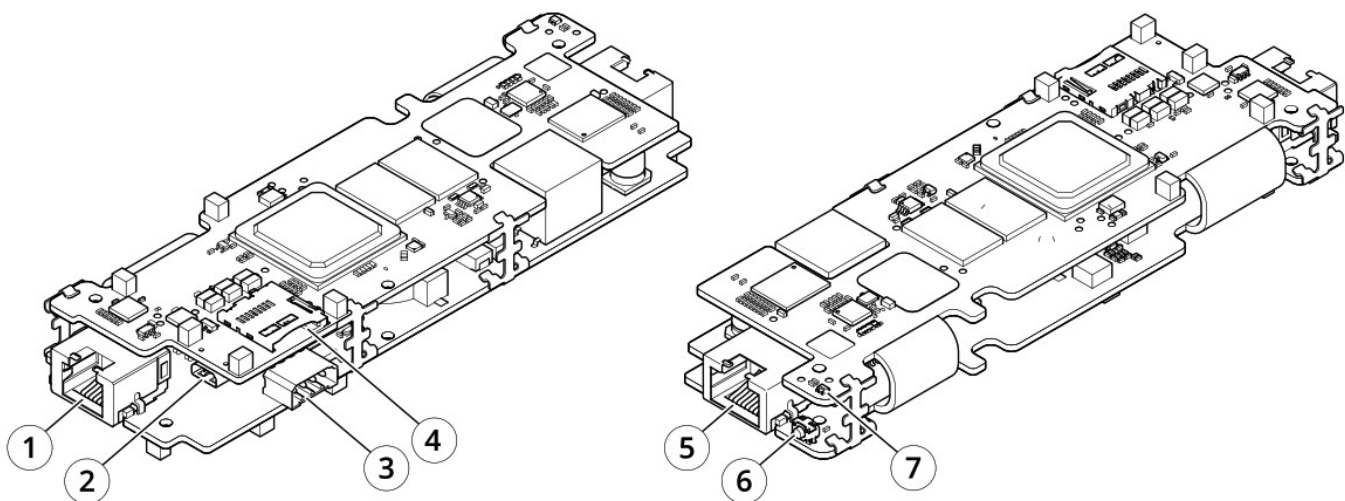
1 RJ12 connector 2 HDMI type D 3 I/O connector 4 MicroSD card slot	5 Network connector (PoE) 6 Control button 7 Status LED indicator

LED indicators

Status LED	Indication
Unlit	Connection and normal operation.
Green	Shows steady green for 10 seconds for normal operation after startup completed.
Amber	Steady during startup. Flashes during firmware upgrade or reset to factory default.
Amber/Red	Flashes amber/red if network connection is unavailable or lost.

SD card slot
NOTICE

- Risk of damage to SD card. Do not use sharp tools, metal objects, or excessive force when inserting or removing the SD card. Use your fingers to insert and remove the card.
- Risk of data loss and corrupted recordings. Do not remove the SD card while the product is running. Unmount the SD card from the product's webpage before removal.

    This product supports microSD/microSDHC/microSDXC cards.

    For SD card recommendations, see **axis.com.**

 microSD, microSDHC, and microSDXC Logos are trademarks of SD-3C LLC. microSD, microSDHC, microSDXC are trademarks or registered trademarks of SD-3C, LLC in the United States, other countries or both.

Buttons
Control button
The control button is used for:

- Resetting the product to factory default settings. See Reset to factory default settings on page 17.

Connectors
HDMI connector
Use the microHDMI™ connector to connect a display or public view monitor.

Network connector
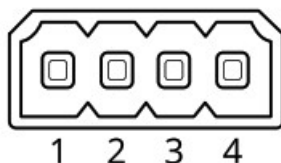RJ45 Ethernet connector with Power over Ethernet (PoE).

I/O connector
Use the I/O connector with external devices in combination with, for example, motion detection, event triggering, and alarm notifications. In addition to the 0 V DC reference point and power (DC output), the I/O connector provides the interface to:
Digital input – For connecting devices that can toggle between an open and closed circuit, for example PIR sensors, door/window contacts, and glass break detectors.
Digital output – For connecting external devices such as relays and LEDs. Connected devices can be activated by the VAPIX® Application Programming Interface, trough an event or from the product's webpage.
4-pin terminal block

Function	Pin	Notes	Specifications
DC ground	1		0 V DC
DC output	2	Can be used to power auxiliary equipment. Note: This pin can only be used as power out.	12 V DC Max load = 50 mA
Configurable (Input or Output)	3-4	Digital input – Connect to pin 1 to activate, or leave floating (unconnected) to deactivate.	0 to max 30 V DC
		Digital output – Internally connected to pin 1 (DC ground) when active, and floating (unconnected) when inactive. If used with an inductive load, e.g., a relay, connect a diode in parallel with the load, to protect against voltage transients.	0 to max 30 V DC, open drain, 100 mA
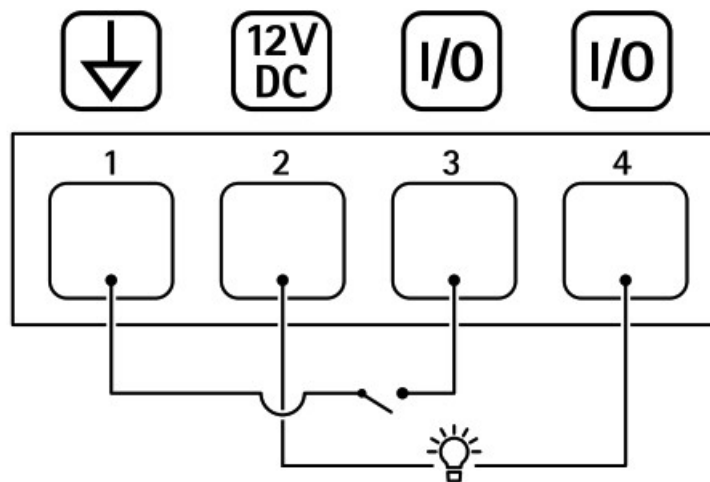
| 1 DC ground
2 DC output 12 V, max 50mA | 3 I/O configured as input
4 I/O configured as output |

RJ12 connector

The RJ12 connector is used for connecting the sensor unit to the main unit.

For information on how to shorten the sensor unit cable see Shorten the sensor unit cable on page 3 .

Documents / Resources

AXIS FA51-B Main Unit User Manual	**AXIS COMMUNICATIONS FA51-B Connect Sensor Unit** [pdf] User Manual FA51-B, Connect Sensor Unit, Sensor Unit, Unit, FA51-B, Main Unit

References

- ⚠ **Axis Communications - Leader in network cameras and other IP networking solutions | Axis Communications**
- ⚠ **AXIS GENERAL SOFTWARE LICENSE TERMS | Axis Communications**
- ⚠ **Solutions by technology | Axis Communications**
- ⚠ **AXIS OS Hardening Guide User manual**
- ⚠ **AXIS Device Manager | Axis Communications**
- ⚠ **AXIS Face Detector | Axis Communications**
- ⚠ **Welcome to Axis support | Axis Communications**
- ⚠ **Firmware | Axis Communications**

- **Video management software | Axis Communications**
- **Wide dynamic range | Axis Communications**
- **AXIS FA51-B Main Unit User manual**
- **AXIS FA51-B Main Unit User manual**
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