

User Manual

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Get started

Get started

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, see the document *How to assign an IP address and access your device* on the device page at *axis.com*.

Browser support

You can use the device with the following browsers:

	Chrome™	Firefox [®]	Edge [®]	Safari®
Windows®	recommended	х	х	
OS X [®]	recommended			x
Other operating systems	x	х		

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 have a Mac computer (OS X), go to Safari, click Bonjour and select the device from the drop-down list. To add Bonjour as a browser bookmark, go to Safari > Preferences.

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 3.
- 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 21*.

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.

- 1. Type a password. Follow the instructions about secure passwords. See Secure passwords on page 4.
- 2. Retype the password to confirm the spelling.
- 3. Click **Create login**. The password has now been configured.

Get started

Secure passwords

Important

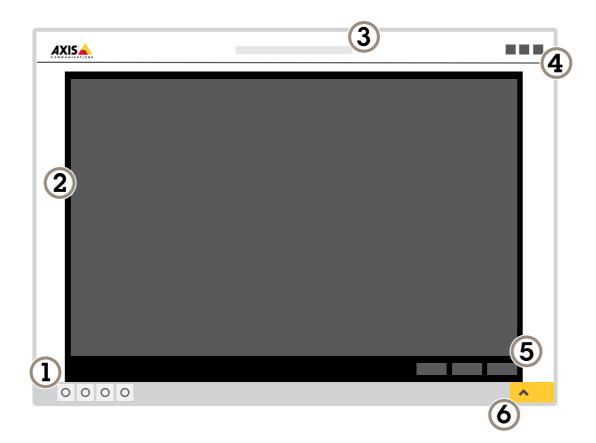
Axis devices send the initially set password in clear text over the network. To protect your device after the first login, set up a secure and encrypted HTTPS connection and then change the password.

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

Get started



7 Settings tabs

Additional settings

Additional settings

Adjust the image

If you want to know more about different image settings, see Learn more on page 16.

Level the camera

To adjust the view in relation to a reference area or 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 object, is aligned with the leveling guide.

Adjust the zoom and focus

To adjust the zoom:

1. Go to Settings > Image > Zoom and use the slider to adjust the zoom.

To adjust the focus:

- 1. Go to Settings > Image > Focus and click Show AF area.
- 2. Adjust the autofocus area to cover the part of the image that you want to be in focus.

If you don't select an autofocus area, the camera focuses on the entire scene. We recommend that you focus on a static object.

- 3. Click Autofocus.
- 4. To fine tune the focus, use the focus slider.

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.

Optimize IR illumination

Depending on the installation environment and the conditions around the camera, for example external light sources in the scene, you can sometimes improve the IR illumination if you manually adjust the intensity of the LED's.

- 1. Go to Settings > Image > Day and night, and turn on Allow illumination.
- 2. Turn on Live view control.
- 3. Minimize Settings.
- 4. In the live view control bar, click the Illumination button, turn on IR light and select Manual.
- 5. Adjust the intensity.

Additional settings

Benefit from IR light in low-light conditions using night mode

Your camera uses visible light to deliver color images during the day. As the available light diminishes, you can set the camera to automatically shift to night mode, in which the camera uses both visible light and near-infrared light to deliver black-and-white images. Since the camera uses more of the available light it can deliver brighter, more detailed, images.

- 1. Go to Settings > Image > Day and night, and make sure that the IR cut filter is set to Auto.
- 2. To determine at what light level you want the camera to shift to night mode, move the Threshold slider toward Bright or Dark.
- 3. Enable Allow IR illumination and Synchronize IR illumination to use the camera's IR light when night mode is activated.

Note

If you set the shift to night mode to occur when it's brighter, the image remains sharper as there will be less low-light noise. If you set the shift to occur when it's darker, the image colors are maintained for longer, but there will be more image blur due to low-light noise.

Reduce noise in low-light conditions

To reduce noise in low-light conditions, you can adjust one or more of the following settings:

- Adjust the trade-off between noise and motion blur. Go to Settings > Image > Exposure and move the Blur-noise trade-off slider toward Low noise.
- Set the exposure mode to automatic.

Note

A high max shutter value can result in motion blur.

- To slow down the shutter speed, set max shutter to the highest possible value.
- Reduce sharpness in the image.

Note

When you reduce the max gain, the image can become darker.

- Set the max gain to a lower value.
- Open the aperture.

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.

Additional settings

Maximize details in an image

Important

If you maximize details in an image, the bitrate will probably increase and you might get a reduced frame rate.

- Set the compression as low as possible.
- Select MJPEG streaming.
- Turn off Zipstream functionality.

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 might cause artifacts in the image.

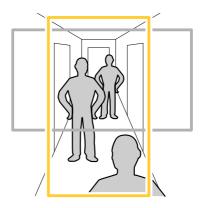
- 1. Go to Settings > Image > Wide dynamic range.
- 2. Turn on WDR.
- 3. Use the Local contrast slider to adjust the amount of WDR.
- 4. If you still have problems, go to Exposure and adjust the Exposure zone to cover the area of interest.

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

Additional settings

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°.

Note

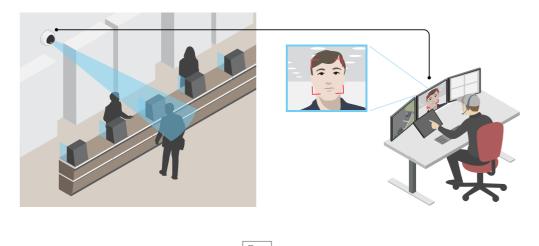
Make sure to aim IR LEDs away from walls or weathershields.

- 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.

Improve facial recognition

To better recognize the face of a person passing by the camera, you can set the optimal pixel resolution with the camera's pixel counter.



1. Go to Settings > System > Orientation and click

Additional settings

2. In the camera's live view, adjust the size and placement of the rectangle around the area of interest, for example, where the faces of passing persons are expected to appear. You can then see the number of pixels represented by the sides of the rectangle.

Note

You can use an object of a known size in the view as a reference to decide how much resolution is needed for recognition.

Improve license plate recognition

To better recognize the license plate of a car passing by the camera, you can apply and adjust a number of things.

One option is to use the pixel counter in your camera to set the optimal pixel resolution:

- 1. Go to Settings > System > Orientation and click
- 2. Adjust the size and placement of the rectangle in the camera's live view around the area of interest, for example where the license plates of passing cars are expected to appear. You can then see the number of pixels represented by the sides of the rectangle.

Note

You can use an object of a known size in the view as a reference to decide how much resolution is needed for recognition.

In addition, you can try to adjust the following to optimize license plate recognition:

- Shutter speed
- Gain
- Zoom

Hide parts of the image with privacy masks

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

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

Show an image overlay

To add an image as an overlay in the video stream:

- 1. Go to Settings > Overlay.
- 2. Click Create overlay.
- 3. Select Image and click Ok.
- 4. Select **Import** and upload an image.
- 5. Select the image from the drop-down list.
- 6. To position the image overlay, choose **Custom** or one of the presets.

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:

Make sure that AXIS Video Motion Detection is running:

Additional settings

- 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.

View and record video

To learn more about settings for viewing and recording video, see Streaming and storage on page 17.

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 the Zipstream functionality and select the desired level.
 - Turn on dynamic GOP and set a high GOP length value.
 - Increase the compression.
 - Turn on dynamic FPS.

Additional settings

Set up network storage

To store recordings on the network, you need to set up 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 12, or have an SD card installed.

Record video

- 1. Go to the camera's 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 when it records.

Trigger an action

- 1. Go to Settings > System > Events to set up a rule. The rule defines when the camera 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 camera should perform when the conditions are met.

Note

If you make changes to an active rule, then the rule needs to be restarted 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.

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.

Additional settings

3. Make sure you have set up the application according to your needs.

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.

Send an email automatically if someone spray paints the lens

- 1. Go to Settings > System > Detectors.
- 2. Turn on Trigger on dark images. This will trigger an alarm if the lens is sprayed, covered, or rendered severely out of focus.
- 3. Set a duration for Trigger after. The value indicates the time that must pass before an email is sent.

Create a rule:

- 1. Go to Settings > System > Events > Rules and add a rule.
- 2. Type a name for the rule.
- 3. In the list of conditions, select Tampering.
- 4. In the list of actions, select Send notification to email.
- 5. Select a recipient from the list or go to **Recipients** to create a new recipient.

To create a new recipient, click **+** . To copy an existing recipient, click

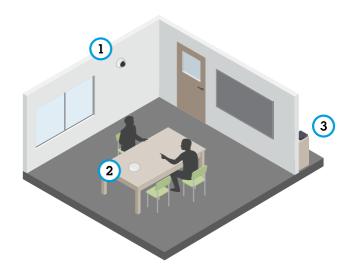
- 6. Type a subject and a message for the email.
- 7. Click Save.

Add audio

Add audio capability to your product

With the AXIS T61 Audio and I/O Interface products, you can add audio capability to your product. Use the setup in, for example, interview rooms. You can place the Axis network video product on the wall or ceiling to give good visual coverage, and the AXIS T61 Audio and I/O Interface on or above the interview table.

Additional settings



Interview room with AXIS T61 Series setup.

- 1 Axis network video device
- 2 AXIS T61 Audio and I/O Interface
- 3 PoE switch

To add audio capability to your Axis network video device, connect the AXIS T61 Audio and I/O Interface between your device and the PoE switch which provides power.

- 1. Connect the Axis network video device (1) and the AXIS T61 Audio and I/O Interface (2) with a PoE cable.
- 2. Connect the AXIS T61 Audio and I/O Interface (2) and the PoE switch (3) with a PoE cable.



Once the devices are connected, an audio tab becomes visible in the settings for your Axis network video device. Go to the audio tab and turn on Allow audio.

See T61 user manual for further instructions.

Cleaning recommendations

Cleaning recommendations

NOTICE

Never use harsh detergent, for example gasoline, benzene, or acetone.

- 1. Use a can of compressed air to remove any dust or loose dirt from the device.
- 2. If necessary, clean the lens with a soft cloth dampened with lukewarm water.

Note

Avoid cleaning in direct sunlight or at elevated temperatures, as this may cause stains when the water droplets dry.

Learn more

Learn more

Long-distance connections

This product supports fiber-optic cable installations through a media converter. Fiber-optic cable installations offer a number of benefits such as:

- Long-distance connection
- High speed
- Long lifetime
- Large capacity of data transmission
- Electromagnetic interference immunity

Find out more about fiber-optic cable installations on axis.com/technologies/fiber-optics.

For information about how to install the media converter see the Installation Guide for this product.

View area

When you set up a view area, we recommend you to set the video stream resolution to the same size as or smaller than the view area size. If you set the video stream resolution larger than the view area size it implies digitally scaled up video after sensor capture, which requires more bandwidth without adding image information.

Remote focus and zoom

The remote focus and zoom functionality allows you to make focus and zoom adjustments to your camera from a computer. It is a convenient way to ensure that the scene's focus, viewing angle and resolution are optimized without having to visit the camera's installation location.

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.

Important

Set the zoom and focus before you create a privacy mask.

Note

You can't add privacy masks to the quad stream, but it will show all privacy masks configured on the individual channels.

Overlays

Note

The overlay feature is not supported for the quad stream, only for the individual video streams.

Learn more

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:

Motion JPEG

Motion JPEG, or MJPEG, is a digital video sequence that is made up of a series of individual JPEG images. These images are then displayed and updated at a rate sufficient to create a stream that shows constantly updated motion. For the viewer to perceive motion video the rate must be at least 16 image frames per second. Full motion video is perceived at 30 (NTSC) or 25 (PAL) frames per second.

The Motion JPEG stream uses considerable amounts of bandwidth, but provides excellent image quality and access to every image contained in the stream.

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.

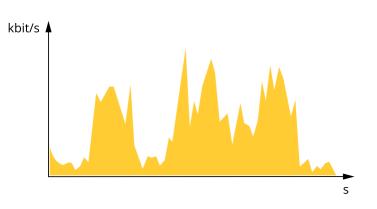
Bitrate control

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

Variable bitrate (VBR)

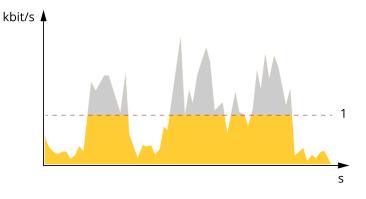
With variable bitrate, the bandwidth consumption varies based on the level of activity in the scene. The more activity in the scene, the more bandwidth you need. You are guaranteed constant image quality but it requires storage margins.

Learn more



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.



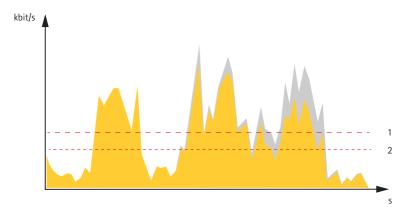
1 Target bitrate

Average bitrate (ABR)

With average bitrate, the bitrate is automatically adjusted over a longer timescale. This is so you can meet the specified target and provide the best video quality based on your available storage. Bitrate is higher in scenes with a lot of activity, compared to static scenes. You are more likely to get better image quality when needed when using the average bitrate option. You can define the total storage required to store the video stream for a specified amount of time (retention time) when image quality is adjusted to meet the specified target bitrate. Specify the average bitrate settings in one of the following ways:

- To calculate the estimated storage need, set the target bitrate and the retention time.
- To calculate the average bitrate, based on available storage and required retention time, use the target bitrate calculator.

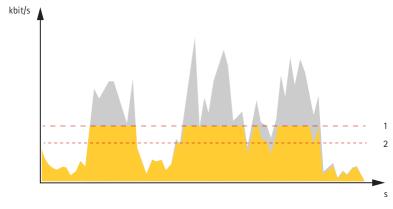
Learn more



1 Target bitrate

2 Actual average bitrate

You can also turn on maximum bitrate and specify a target bitrate within the average bitrate option.



- 1 Target bitrate
- 2 Actual average 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.

Note

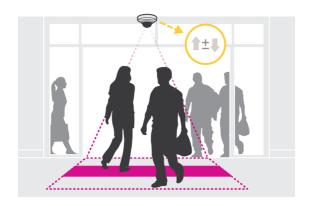
• Several applications can run at the same time but some applications might not be compatible with each other. Certain combinations of applications might require too much processing power or memory resources when run in parallel. Verify that the applications work together before deployment.

AXIS People Counter

AXIS People Counter is an analytic application that can be installed on a network camera.

The counter is embedded in the camera which means you do not need a dedicated computer to run the application. AXIS People Counter is intended for retail environments, like stores or shopping malls, or other environments where you want to count people.

Learn more



Security

TPM module

The TPM (Trusted Platform Module) is a component that provides cryptographic features to protect information from unauthorized access. It is always activated and there are no settings you can change.

To learn more about TPM, go to axis.com/press-center/media-resources/white-papers.

Troubleshooting

Troubleshooting

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

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:

- 1. Disconnect power from the product.
- 2. Press and hold the control button while reconnecting power. See Product overview on page 25.
- 3. Keep the control button pressed for 15–30 seconds until the status LED indicator flashes amber.
- 4. Release the control button. The process is complete when the status LED indicator turns green. The product has been reset to the factory default settings. If no DHCP server is available on the network, the default IP address is 192.168.0.90.
- 5. Use the installation and management software tools to assign an IP address, set the password, and access the video stream.

The installation and management software tools are available from the support pages on axis.com/support.

6. Refocus the product.

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

Remove reflections in image

Depending on the camera surroundings, high intensity on one or several IR LEDs can cause reflections in the image. To mitigate this, reduce the IR intensity of the LEDs.

- 1. Go to Settings > Image.
- 2. Turn on Allow illumination
- 3. Turn on Live view control.
- 4. Minimize the settings menu and click \blacksquare in the live view control bar.
- 5. Turn on IR light. Adjust the intensity of one IR LED at a time.

Note

If the IR LEDs continue to disturb the image, or if surrounding light affects the image, attach the weathershield even if the camera is installed indoors.

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

Troubleshooting

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*.

- 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.

AXIS Device Manager can be used for multiple upgrades. Find out more at axis.com/products/axis-device-manager.

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
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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 after firmware upgrade	If you experience problems after a firmware upgrade, roll back to the previously installed version from the Maintenance page.

Troubleshooting

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.</ip> 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 access	sed 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 21.	
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

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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 24. 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.

Troubleshooting

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.

Need more help?

Useful links

• How to assign an IP address and access your device

Contact support

Contact support at axis.com/support.

Specifications

Specifications

To find the latest version of the product's datasheet, go to the product page at axis.com and locate Support & Documentation.

Product overview

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 SD/SDHC/SDXC cards.

For SD card recommendations, see axis.com.

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Buttons

Control button

The control button is used for:

• Resetting the product to factory default settings. See Reset to factory default settings on page 21.

Intrusion alarm switch

Use the intrusion alarm switch to get a notification when someone opens the device's housing. Set up an action rule, for example recording or notification, to perform an action when the switch is activated. See .

Connectors

Network connector

RJ45 Ethernet connector with Power over Ethernet (PoE).

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