

AXIS M3057-PLR Mk II Dome Camera

Table of Contents

Installation 4
 Preview mode 4
 Get started..... 5
 Find the device on the network..... 5
 Browser support 5
 Open the device's web interface..... 5
 Create an administrator account..... 5
 Secure passwords..... 6
 Make sure that no one has tampered with the device software 6
 Web interface overview 6
 Configure your device..... 7
 Basic settings 7
 Adjust the image..... 7
 Rotate the image with digital roll..... 7
 Configure the quad view 7
 Level the camera 7
 Reduce image processing time with low latency mode..... 8
 Select exposure mode 8
 Benefit from IR light in low-light conditions by using night mode 8
 Optimize IR illumination..... 9
 Reduce noise in low-light conditions 9
 Reduce motion blur in low-light conditions..... 9
 Maximize the details in an image 10
 Handle scenes with strong backlight..... 10
 Verify the pixel resolution..... 11
 Hide parts of the image with privacy masks..... 11
 Show an image overlay 11
 Show a text overlay 12
 Adjust the camera view (PTZ)..... 12
 Limit the pan, tilt, and zoom movementsLimit the zoom movements..... 12
 Create a guard tour with preset positions..... 12
 View and record video 13
 Reduce bandwidth and storage 13
 Set up network storage 13
 Record and watch video 13
 Set up rules for events 14
 Trigger an action 14
 Record video when the camera detects an object..... 14
 Show a text overlay in the video stream when the device detects an object 15
 Trigger a notification when the camera lens is tampered 15
 Audio..... 16
 Add audio to your recording 16
 Add audio capability to your product using portcast..... 16
 The web interface 17
 Learn more..... 18
 View area 18
 Capture modes..... 18
 Privacy masks 19
 Overlays 19
 Pan, tilt, and zoom (PTZ) 19
 Guard tours..... 19
 Streaming and storage..... 20
 Video compression formats..... 20

- How do Image, Stream, and Stream profile settings relate to each other?.....21
- Bitrate control.....21
- Analytics and apps22
- Specifications.....23
 - Product overview23
 - LED indicators.....23
 - SD card slot.....24
 - Buttons.....25
 - Control button25
 - Connectors.....25
 - Network connector25
 - I/O connector.....26
- Clean your device.....29
- Troubleshooting.....30
 - Reset to factory default settings30
 - AXIS OS options.....31
 - Check the current AXIS OS version32
 - Upgrade AXIS OS.....32
 - Technical problems and possible solutions32
 - Performance considerations35
 - Contact support.....36
- Cybersecurity37
 - Vulnerability management37
 - Security notifications.....37
 - Secure product lifecycle.....37

Installation

Preview mode

Preview mode is ideal for installers when fine tuning the camera view during the installation. No login is required to access the camera view in preview mode. It is available only in factory defaulted state for a limited time from powering up the device.



To watch this video, go to the web version of this document.

This video demonstrates how to use preview mode.

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, go to *How to assign an IP address and access your device*.

Browser support

You can use the device with the following browsers:

	Chrome™	Edge™	Firefox®	Safari®
Windows®	✓	✓	*	*
macOS®	✓	✓	*	*
Linux®	✓	✓	*	*
Other operating systems	*	*	*	*

✓: Recommended

*: Supported with limitations

Open the device's web interface

1. Open a browser and type the IP address or host name of the Axis device. If you don't know the IP address, use AXIS IP Utility or AXIS Device Manager to find the device on the network.
2. Type the username and password. If you access the device for the first time, you must create an administrator account. See *Create an administrator account, on page 5*.

For descriptions of all features and settings in the web interface of devices with AXIS OS, see *AXIS OS web interface help*.

Create an administrator account

The first time you log in to your device, you must create an administrator account.

1. Enter a username.
2. Enter a password. See *Secure passwords, on page 6*.
3. Re-enter the password.
4. Accept the license agreement.
5. Click **Add account**.

Important

The device has no default account. If you lose the password for your administrator account, you must reset the device. See *Reset to factory default settings, on page 30*.

Secure passwords

Important

Use HTTPS (which is enabled by default) to set your password or other sensitive configurations over the network. HTTPS enables secure and encrypted network connections, thereby protecting sensitive data, such as passwords.

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.

Make sure that no one has tampered with the device software

To make sure that the device has its original AXIS OS, 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 30*.
After the reset, secure boot guarantees the state of the device.
2. Configure and install the device.

Web interface overview

This video gives you an overview of the device's web interface.



Axis device web interface

Configure your device

Basic settings

Set the capture mode

1. Go to **Video > Installation > Capture mode**.
2. Click **Change**.
3. Select a capture mode and click **Save and restart**.
See also *Capture modes, on page 18*.

Set the mounting position

1. Go to **Video > Installation > Mounting position**.
2. Click **Change**.
3. Select a mounting position and click **Save and restart**.

Set the power line frequency

1. Go to **Video > Installation > Power line frequency**.
2. Select a power line frequency and click **Save and restart**.

Adjust the image

This section includes instructions about configuring your device. If you want to learn more about how certain features work, go to *Learn more, on page 18*.

Rotate the image with digital roll

Note

If you rotate the image, all views are affected.

To rotate the 360° view, go to **Video > Installation** and use the **Roll** slider.



You can also enter a value for the roll angle in the text field.

Configure the quad view

Note



Quad view is available in these mounting positions:

- Desk
- Ceiling

1. Click  and select **Legacy device interface**.
2. Select **Quad view** among the live feed sources.
3. Go to **Settings > System > Orientation** and click .
4. To change the view order, drag and drop the yellow boxes.

Level the camera

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

1. Go to **Video > Image >** and click .
2. Click  to show the level grid.

3. Adjust the camera mechanically until the position of the reference area or the object is aligned with the level grid.

Reduce image processing time with low latency mode

You can optimize the image processing time of your live stream by turning on low latency mode. The latency in your live stream is reduced to a minimum. When you use low latency mode, the image quality is lower than usual.

1. Go to **System > Plain config**.
2. Select **ImageSource** from the drop-down list.
3. Go to **ImageSource/IO/Sensor > Low latency mode** and select **On**.
4. Click **Save**.

Select exposure mode

To improve image quality for specific surveillance scenes, use exposure modes. Exposure modes lets you control aperture, shutter speed, and gain. Go to **Video > Image > Exposure** and select between the following exposure modes:

- For most use cases, select **Automatic** exposure.
- For fast moving objects that require a fast or fixed shutter, select **Automatic aperture**.
- To maintain a longer depth of field or focus range, select **Automatic shutter**.
- 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.
- If you need full control of all parameters, select **Manual**. This is mostly useful for scenes with little change in lighting.
- To lock the current exposure settings, select **Hold current**.

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

Your camera uses visible light to deliver color images during the day. But as the visible light diminishes, color images become less bright and clear. If you switch to night mode when this happens, the camera uses both visible and near-infrared light to deliver bright and detailed black-and-white images instead. You can set the camera to switch to night mode automatically.


1. Go to **Video > Image > Day-night mode**, and make sure that the **IR-cut filter** is set to **Auto**.
2. To set at what light level you want the camera to switch to night mode, move the **Threshold** slider toward **Bright** or **Dark**.
3. To use the built-in IR light when the camera is in night mode, turn on **Allow illumination** and **Synchronize illumination**.
4. If you use an accessory IR illuminator, turn on **Allow illumination** and **Synchronize illumination** to use IR light when the camera is in night mode.

Note

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

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 image quality if you manually adjust the intensity of the LEDs. If you have problems with reflections from the LEDs, you can try to reduce the intensity.

1. Go to **Video > Image > Day-night mode**.
2. Turn on **Allow illumination**.
3. Click  in the live view and select **Manual**.
4. Adjust the intensity.

You can also reduce the reflections by changing the illumination angle.

1. Go to **Video > Image > Day-night mode**.
2. Turn off **Automatic illumination angle**.
3. Adjust the illumination angle slider.

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 **Video > 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.

Note

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

- Set the max gain to a lower value.
- If there is an **Aperture** slider, move it towards **Open**.
- Reduce sharpness in the image, under **Video > Image > Appearance**.

If the above settings do not improve the image sufficiently, change to a lens with a lower f-value.

Reduce motion blur in low-light conditions

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

- Set **Exposure mode** to **Automatic** and turn on **Motion-adaptive exposure**.

Note

When you increase the gain, image noise also increases.

- Set **Max shutter** to a shorter time, and **Max gain** to a higher value.

Note

When you open the aperture, the depth of field gets shallower.

- Move the **Aperture** slider toward **Open**.

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.

Note


If you use a lens with a larger aperture, the depth of field gets shallower.

- Change to a lens with a larger aperture.

Maximize the details in an image

Important

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

- Make sure to select the capture mode that has the highest resolution.
- Go to **Video > Stream > General** and set the compression as low as possible.
- Below the live view image, click  and in **Video format**, select MJPEG.
- Go to **Video > Stream > Zipstream** and select **Off**.

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.

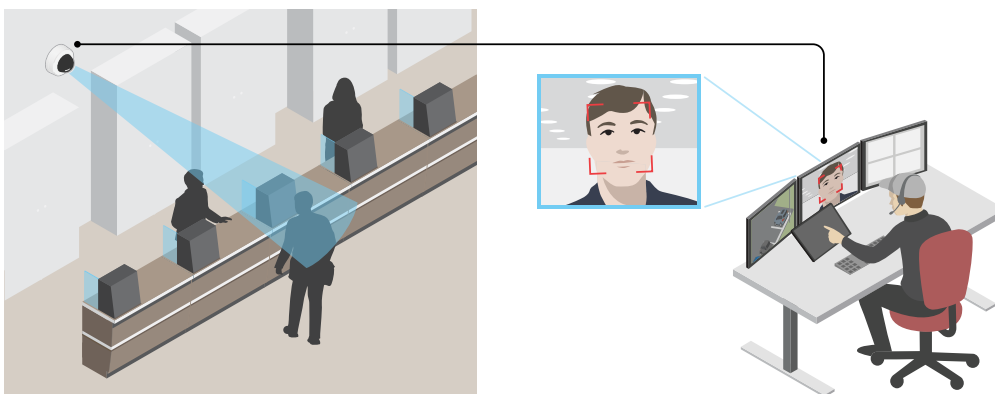
Note



- WDR can cause artifacts in the image.
 - WDR may not be available for all capture modes.
1. Go to **Video > Image > Wide dynamic range**.
 2. Turn on WDR.
 3. Use the **Local contrast** slider to adjust the amount of WDR.
 4. Use the **Tone mapping** slider to adjust the amount of WDR.
 5. To set the amount of WDR, select **Low**, **Medium** or **High** from the **WDR level** list.
 6. 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.

Verify the pixel resolution


To verify that a defined part of the image contains enough pixels to, for example, recognize the face of a person, you can use the pixel counter.



1. Go to **Video > Image** and click .
2. Click  for **Pixel counter**.
3. In the camera's live view, adjust the size and position of the rectangle around the area of interest, for example where you expect faces to appear. You can see the number of pixels for each of the rectangle's sides, and decide if the values are enough for your needs.

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 **Video > Privacy masks**.
2. Click .
3. Click the new mask and type a name.
4. Adjust the size and placement of the privacy mask according to your needs.
5. To change the color for all privacy masks, click **Privacy masks** and select a color.

See also *Privacy masks, on page 19*


Show an image overlay

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

1. Go to **Video > Overlays**.
2. Click **Manage images**.
3. Upload or drag and drop an image.
4. Click **Upload**.
5. Select **Image** from the drop-down list and click .
6. Select the image and a position. You can also drag the overlay image in the live view to change the position.

Show a text overlay

You can add a text field as an overlay in the video stream. This is useful for example when you want to display the date, time or a company name in the video stream.

1. Go to **Video > Overlays**.
2. Select **Text** and click  .
3. Type the text you want to display, or select modifiers to show for example the current date.
4. Select a position. You can also click-and-drag the overlay in the live view to change the position.

Adjust the camera view (PTZ)

Limit the pan, tilt, and zoom movementsLimit the zoom movements

If there are parts of the scene that you don't want the camera to reach, you can limit the pan, tilt, and zoom movements. For example, you want to protect the privacy of residents in an apartment building, which is located close to a parking lot that you intend to monitor.

To limit the movements:


If there are parts of the scene that you don't want the camera to be able to zoom in on, you can limit the maximum zoom level. For example, you want to protect the privacy of residents in an apartment building, which is located close to a parking lot that you intend to monitor.

To limit the maximum zoom level:

1. Go to **PTZ > Limits**.
2. Set the limits as needed.

Create a guard tour with preset positions

A guard tour displays the video stream from different preset positions either in a predetermined or random order, and for configurable periods of time.

1. Go to **PTZ > Guard tours**.
2. Click  **Guard tour**.
3. Select **Preset position** and click **Create**.
4. Under **General settings**:
 - Enter a name for the guard tour and specify the pause length between each tour.
 - If you want the guard tour to go to the preset positions in a random order, turn on **Play guard tour in random order**.
5. Under **Step settings**:
 - Set the duration for the preset.
 - Set the move speed, which controls how fast to move to the next preset.
6. Go to **Preset positions**.
 - 6.1. Select the preset positions that you want in your guard tour.
 - 6.2. Drag them to the **View order** area, and click **Done**.
7. To schedule the guard tour, go to **System > Events**.


View and record video

This section includes instructions about configuring your device. To learn more about how streaming and storage works, go to *Streaming and storage, on page 20*.

Reduce bandwidth and storage

Important

Reducing the bandwidth can lead to loss of detail in the image.

1. Go to **Video > Stream**.
2. Click  in the live view.
3. Select **Video format AV1** if your device supports it. Otherwise select **H.264**.
4. Go to **Video > Stream > General** and increase **Compression**.
5. Go to **Video > Stream > Zipstream** and do one or more of the following:

Note

The **Zipstream** settings are used for all video encodings except MJPEG.


- Select the **Zipstream Strength** that you want to use.
- Turn on **Optimize for storage**. This can only be used if the video management software supports B-frames.
- Turn on **Dynamic FPS**.
- Turn on **Dynamic GOP** and set a high **Upper limit GOP length** value.

Note

Most web browsers don't support H.265 decoding and because of this the device doesn't support it in its web interface. Instead you can use a video management system or application that supports H.265 decoding.


Set up network storage

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

1. Go to **System > Storage**.
2. Click  **Add network storage** under **Network storage**.
3. Type the IP address of the host server.
4. Type the name of the shared location on the host server under **Network share**.
5. Type the username and password.
6. Select the SMB version or leave it on **Auto**.
7. Select **Add share without testing** if you experience temporary connection issues, or if the share is not yet configured.
8. Click **Add**.

Record and watch video


Record video directly from the camera

1. Go to **Video > Stream**.
2. To start a recording, click  .

If you haven't set up any storage, click  and  . For instructions on how to set up network storage, see *Set up network storage, on page 13*

- To stop recording, click  again.

Watch video

- Go to **Recordings**.
- Click  for your recording in the list.

Set up rules for events

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.

To learn more, see *Get started with rules for events*.

Trigger an action

- Go to **System > Events** and add a rule. The rule defines when the device will perform certain actions. You can set up rules as scheduled, recurring, or manually triggered.
- Enter a **Name**.
- 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.
- Select which **Action** to perform when the conditions are met.

Note

- If you change the definition of a stream profile that is used in a rule, you need to restart all the rules that use that stream profile.

Record video when the camera detects an object

This example explains how to set up the camera to start recording to the SD card when the camera detects an object. The recording will include five seconds before detection and one minute after detection ends.

Before you start:

- Make sure you have an SD card installed.

Make sure that **AXIS Object Analytics** is running:

Make sure that **AXIS Video Motion Detection** is running:

- Go to **Apps > AXIS Object Analytics**.
- Go to **Apps > AXIS Video Motion Detection**.
- Start the application if it is not already running.
- Make sure you have set up the application according to your needs.

Create a rule:

- Go to **System > Events** and add a rule.
- Type a name for the rule.
- In the list of conditions, under **Application**, select **Object Analytics**.
- In the list of conditions, under **Application**, select **VMD4**.
- In the list of actions, under **Recordings**, select **Record video while the rule is active**.
- In the list of storage options, select **SD_DISK**.
- Select a camera and a stream profile.
- Set the prebuffer time to 5 seconds.
- Set the postbuffer time to 1 minute.

10. Click Save.

Show a text overlay in the video stream when the device detects an object



This example explains how to display the text "Motion detected" when the device detects an object.

Make sure that AXIS Object Analytics is running:

Make sure that AXIS Video Motion Detection is running:

1. Go to **Apps > AXIS Object Analytics**.
2. Go to **Apps > AXIS Video Motion Detection**.
3. Start the application if it is not already running.
4. Make sure you have set up the application according to your needs.

Add the overlay text:

1. Go to **Video > Overlays**.
2. Under **Overlays**, select **Text** and click .
3. Enter #D in the text field.
4. Choose text size and appearance.
5. To position the text overlay, click  and select an option.

Create a rule:

1. Go to **System > Events** and add a rule.
2. Type a name for the rule.
3. In the list of conditions, under **Application**, select **Object Analytics**.
4. In the list of conditions, under **Application**, select **VMD4**.
5. In the list of actions, under **Overlay text**, select **Use overlay text**.
6. Select a video channel.
7. In **Text**, type "Motion detected".
8. Set the duration.
9. Click Save.

Note

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

Trigger a notification when the camera lens is tampered

This example explains how to set up an email notification when the camera lens gets either spray painted, covered, or blurred.

Activate the tampering detection:

1. Go to **System > Detectors > Camera tampering**.
2. Set a value for **Trigger delay**. The value indicates the time that must pass before an email is sent.
3. Turn on **Trigger on dark images** to detect if the lens is sprayed, covered, or rendered severely out of focus.

Add an email recipient:

4. Go to **System > Events > Recipients** and add a recipient.
5. Type a name for the recipient.
6. Select **Email** as the notification type.
7. Type the recipient's email address.

8. Type the email address that you want the camera to send notifications from.
9. Provide the login details for the sending email account, along with the SMTP hostname and port number.
10. To test your email setup, click **Test**.
11. Click **Save**.

Create a rule:

12. Go to **System > Events > Rules** and add a rule.
13. Type a name for the rule.
14. In the list of conditions, under **Video**, select **Tampering**.
15. In the list of actions, under **Notifications**, select **Send notification to email** and then select the recipient from the list.
16. Type a subject line and message for the email.
17. Click **Save**.

Audio

Add audio to your recording

Note

To connect the audio device, this product requires a multicable.

Turn on audio:

1. Go to **Video > Stream > Audio** and include audio.
2. If the device has more than one input source, select the correct one in **Source**.
3. Go to **Audio > Device settings** and turn on the correct input source.

Edit the stream profile that is used for the recording:

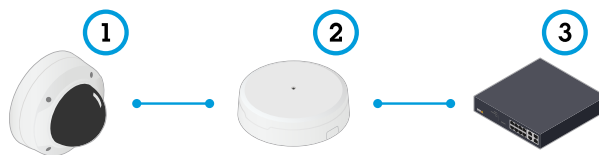
4. Go to **System > Stream profiles** and select the stream profile.
5. Select **Include audio** and turn it on.
6. Click **Save**.

Add audio capability to your product using portcast

With portcast technology, you can add audio capability to your product. It allows audio and I/O communication digitally over the network cable between the camera and the interface.

To add audio capability to your Axis network video device, connect the portcast compatible Axis audio device 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 portcast device (2) with a PoE cable.
2. Connect the Axis portcast device (2) and the PoE switch (3) with a PoE cable.



- 1 Axis network video device
- 2 Axis portcast device
- 3 Switch

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 your Axis portcast device's user manual for more information.

The web interface

To read about all the features and settings available in the web interface of devices with AXIS OS, go to *AXIS OS web interface help*.

Learn more

View area

A view area is a cropped part of the full view. You can stream and store view areas instead of the full view to minimize bandwidth and storage needs. If you enable PTZ for a view area, you can pan, tilt and zoom within it. By using view areas you can remove parts of the full view, for example, the sky.

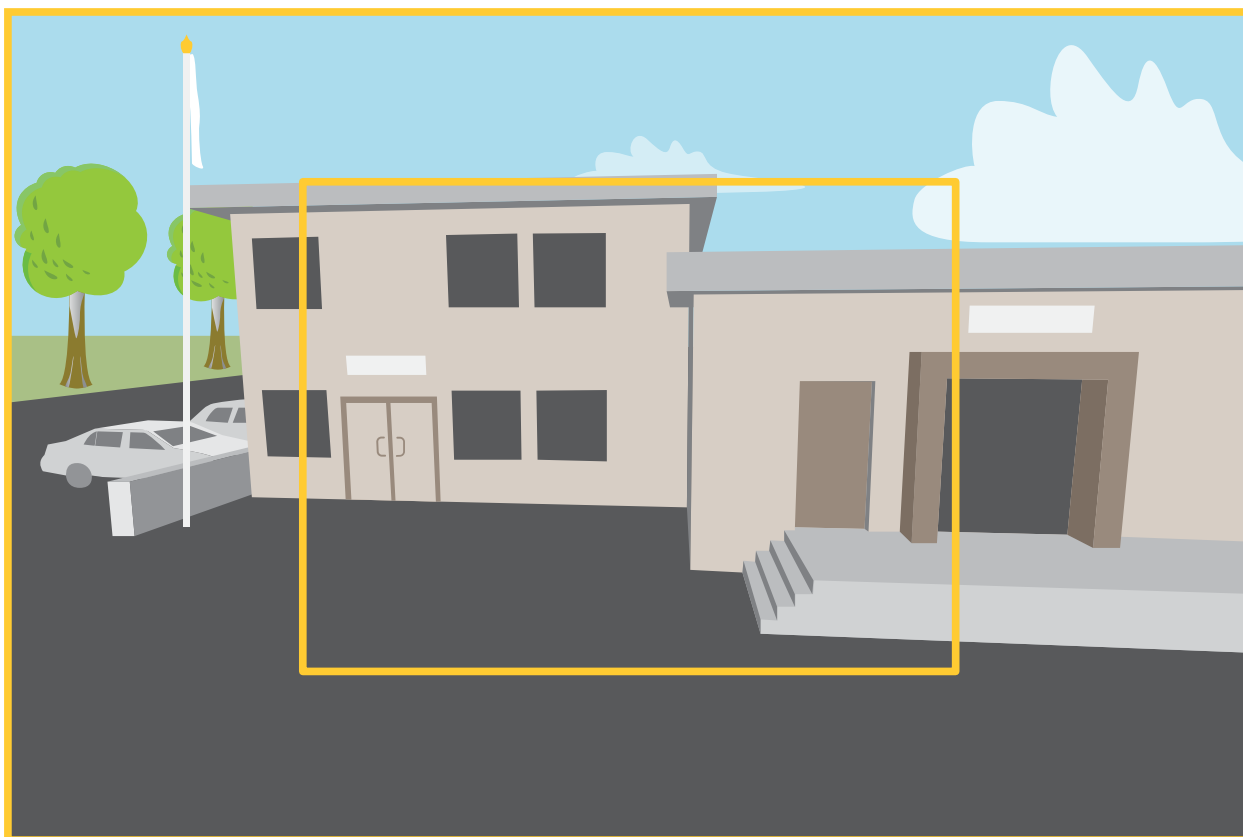
Capture modes

A capture mode is a preset configuration that defines how the camera captures images.

- The capture mode setting can affect the maximum resolution and maximum frame rate available in the device.
- The capture mode with a lower resolution than the maximum can reduce the field of view.
- The capture mode also affects the shutter speed, which in turn affects the light sensitivity. This is because a capture mode with a high maximum frame rate has a reduced light sensitivity, and the other way around.
- With some capture modes you can't use WDR.

A capture mode is a preset configuration that defines how the camera captures images. The capture mode setting can affect the camera's field of view and aspect ratio. The shutter speed can also be affected, which in turn affects the light sensitivity.

The lower resolution capture mode might be sampled from the original resolution, or it might be cropped out from the original, in which case the field of view could also be affected.



The image shows how the field of view and aspect ratio can change between two different capture modes.

What capture mode to choose depends on the requirements for the frame rate and resolution of the specific surveillance setup. For specifications about available capture modes, see the product's datasheet at axis.com.

Privacy masks

A privacy mask is a user-defined area that prevents users from viewing a part of the monitored area. In the video stream, privacy masks appear as blocks of solid color.

A privacy mask is a user-defined area that prevents users from viewing a part of the monitored area. In the video stream, privacy masks appear as blocks of solid color or blurred image elements.

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.

A privacy mask is a user-defined area that covers part of the monitored area. In the video stream, privacy masks can appear as blocks of solid color, mosaic patterns, or in chameleon mode, which dynamically adapts to the scene to enhance privacy protection.

The privacy mask is relative to the pan, tilt, and zoom coordinates, so regardless of where you point the camera, the privacy mask covers the same place or object.

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

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

Important

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

You can create several privacy masks. Each mask can have 3 to 10 anchor points.

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.

Note

Privacy masks may appear warped in some view modes.

Overlays

Note

Overlays are not included in the video stream when using SIP calls.

Note

Image and text overlay will not be displayed on video stream over HDMI  .

Note

Image and text overlay will not be displayed on video stream over SDI.

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.

The video streaming indicator is another type of overlay. It shows you that the live view video stream is live.

Note

Overlays are included in all video streams except SIP calls when the connection is over PoE class 3.

Pan, tilt, and zoom (PTZ)

Guard tours

A guard tour displays the video stream from different preset positions either in a predetermined or random order, and for configurable periods of time. Once started, a guard tour continues to run until stopped, even when there are no clients (web browsers) viewing the images.

The guard tour function includes tour recording. This allows recording a custom tour using an input device, such as a joystick, a mouse, or a keyboard, or through using the VAPIX® Application Programming Interface (API). A recorded tour is a replay of a recorded sequence of pan/tilt/zoom movements, including their variable speeds and lengths.

Note

The pause between successive guard tours is at least 10 minutes, and the fixed minimum viewing time is 10 seconds.

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

Note

To ensure support for the Opus audio codec, the Motion JPEG stream is always sent over RTP.

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 older MPEG formats. 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.

H.265 or MPEG-H Part 2/HEVC

H.265 can, without compromising image quality, reduce the size of a digital video file by more than 25% compared to H.264.

Note

- H.265 is licensed technology. The Axis product includes one H.265 viewing client license. Installing additional unlicensed copies of the client is prohibited. To purchase additional licenses, contact your Axis reseller.
- Most web browsers don't support H.265 decoding and because of this the camera doesn't support it in its web interface. Instead you can use a video management system or application supporting H.265 decoding.

AV1

AV1 (AOMedia Video 1) is a license -free video coding format optimized for streaming media. AV1 enables high-quality video streaming even in bandwidth-constrained environments. By reducing a video's bitrate, AV1 preserves video quality while minimizing data usage.

AV1 supports all major browsers, computer operating systems and mobile platforms.

Note

AV1 requires more processing power for encoding and decoding compared to some other codecs.

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.

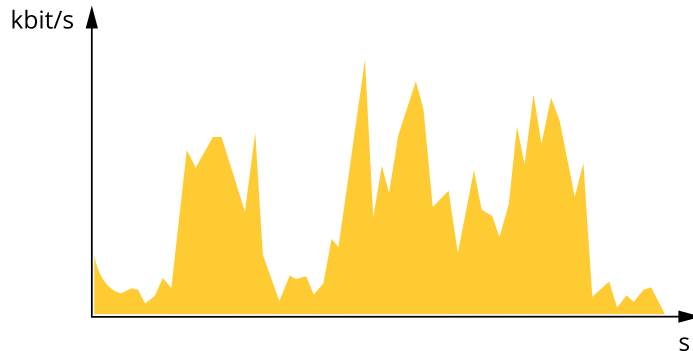
The **Stream profiles** settings override the settings from the **Stream** tab. If you request a stream with a specific stream profile, the stream contains the settings of that profile. If you request a stream without specifying a stream profile, or request a stream profile that doesn't exist in the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

Bitrate control

Bitrate control helps you to manage the bandwidth consumption of your video stream.

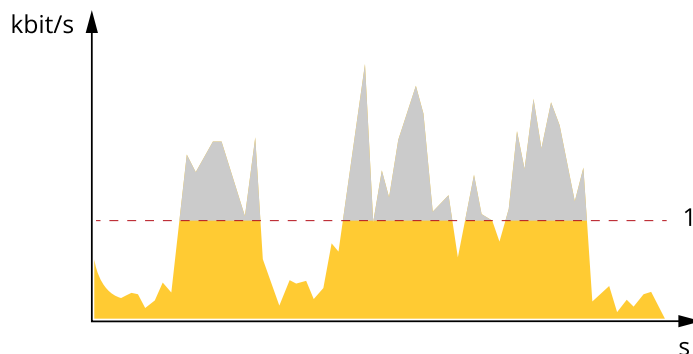
Variable bitrate (VBR)

Variable bitrate allows the bandwidth consumption to vary depending on the level of activity in the scene. The more activity, the more bandwidth you need. With variable bitrate you are guaranteed constant image quality, but you need to make sure you have storage margins.



Maximum bitrate (MBR)

Maximum bitrate lets you set a target bitrate to handle bitrate limitations in your system. You might see a decline in image quality or frame rate as the instantaneous bitrate is kept below the specified target bitrate. You can choose to prioritize either 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 in case there is a high level of activity in the scene.

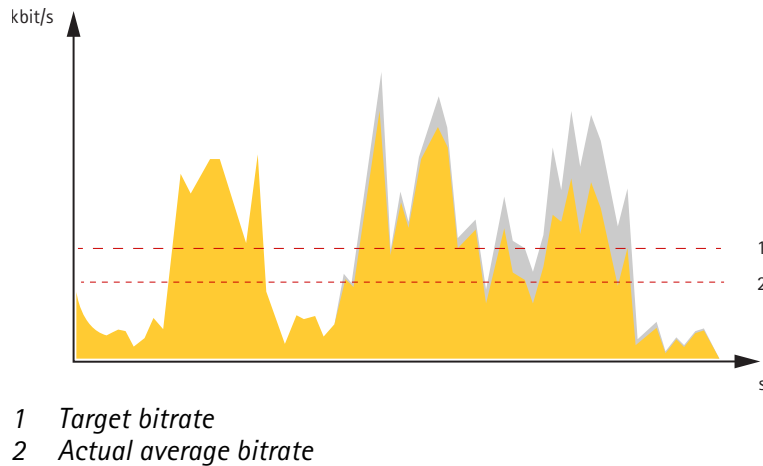


1 Target bitrate

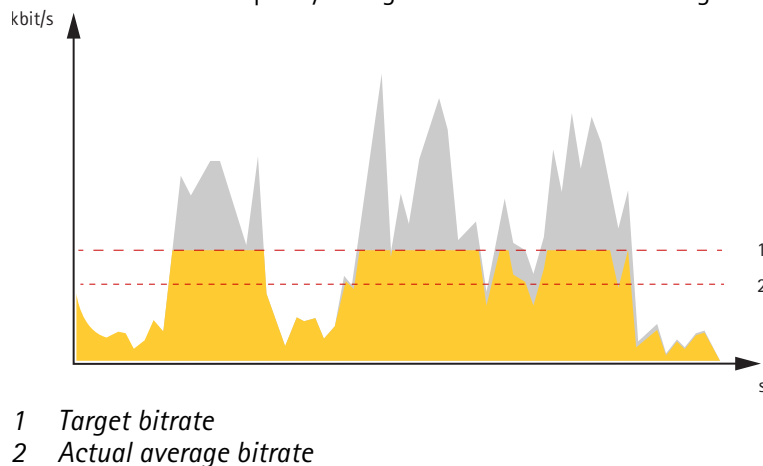
Average bitrate (ABR)

With average bitrate, the bitrate is automatically adjusted over a longer period of time. 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 in scenes with a lot of activity if you use 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.



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



Analytics and apps

With analytics and apps you can get more out of your Axis device. AXIS Camera Application Platform (ACAP) is an open platform that makes it possible for third parties to develop analytics and other apps for Axis devices. Apps can be preinstalled on the device, available for download for free, or for a license fee.

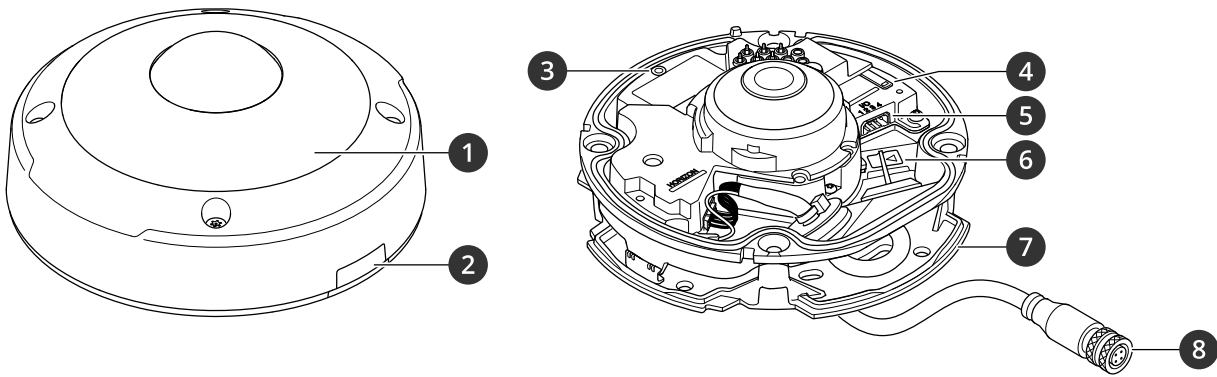
To find the user manuals for Axis analytics and apps, go to help.axis.com.

Note

- We recommend running one app at a time.
- Several apps can run at the same time but some apps might not be compatible with each other. Certain combinations of apps might require too much processing power or memory resources when run in parallel. Verify that the apps work together before deployment.
- Avoid running apps when the built-in motion detection is active.
- Apps are supported on channel 1.

Specifications

Product overview



- 1 IR illumination
- 2 Lid
- 3 Status LED indicator
- 4 Control button
- 5 I/O connector
- 6 SD card slot
- 7 Mounting bracket
- 8 D-coded M12 connector, female

LED indicators

Note

- The Status LED can be configured to flash while an event is active.
- The LEDs turn off when you close the casing.

Status LED	Indication
Unlit	Connection and normal operation.
Green	Shows steady green for 10 seconds for normal operation after startup completed. Flashes green during wireless network pairing. Steady green for normal operation. Flashes before startup if the temperature is below -20 °C and heating is required. The product starts when it reaches operating temperature.
Amber	Steady during startup. Flashes during device software upgrade or reset to factory default. Steady during startup. Flashes when restoring settings.
Amber/Red	Flashes amber/red if network connection is unavailable or lost.
Red	Device software upgrade failure.

Network LED	Indication
Green	Steady for connection to a 100 Mbit/s network. Flashes for network activity. Steady for connection to a 1 Gbit/s network. Flashes for network activity.

Amber	Steady for connection to a 10 Mbit/s network. Flashes for network activity. Steady for connection to a 10/100 Mbit/s network. Flashes for network activity.
Unlit	No network connection.

Power LED	Indication
Green	Normal operation.
Amber	Flashes green/amber during device software upgrade.

Microphone power LED	Indication
Unlit	Phantom power off.
Blue	Phantom power on. Steady when the phantom power is on and the microphone is connected. Flashes when the phantom power is on and the microphone is disconnected.

Wireless LED	Indication
Unlit	Wired mode.
Green	Steady for connection to a wireless network. Flashes for network activity.
Red	Steady for no wireless network connection. Flashes while scanning for wireless networks.
Amber	Steady or flashing during wireless network pairing.


Note

- The tally LED (indication LED) only indicates network transmission. If video or audio is only transmitted through HDMI or SDI the tally LED will be unlit.


Tally LED	Indication
Unlit	Camera idle.
Red	Active network transmission or recording.

SD card slot

⚠ CAUTION

 Moving parts. Risk of injury. Keep your body parts away from the product when it's in operation. Disconnect from power supply before installing or performing maintenance on the product.

⚠ CAUTION

 Hot surface. Risk of injury. Don't touch the product when it's in operation. Disconnect from power supply and allow the surfaces to cool before performing maintenance on the product.


NOTICE


- Risk of damage to SD card. Don't 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. Unmount the SD card from the device's web interface before removing it. Don't remove the SD card while the product is running.

This device supports SD/SDHC/SDXC cards.

This device supports microSD/microSDHC/microSDXC cards.

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

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

 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:

- Enabling the Focus Assistant. Press and very quickly release the Control button.
- Resetting the product to factory default settings. See *Reset to factory default settings, on page 30*.
- Ensuring the camera is level. Press the button for not more than two seconds to start the leveling assistant and press again to stop. The status LED and buzzer signal (see) assist leveling of the camera. The camera is level when the buzzer beeps continuously.
- Ensuring the camera is level. Press the button for not more than two seconds to start the leveling assistant and press again to stop. The buzzer signal (see) assist leveling of the camera. The camera is level when the buzzer beeps continuously.
- Connecting to an AXIS Video Hosting System service. To connect, press and hold the button for about 3 seconds until the status LED flashes green.
- Connecting to a one-click cloud connection (O3C) service over the internet. To connect, press and release the button, then wait for the status LED to flash green three times.

Connectors

Network connector

The Axis product is available with:

RJ45 Ethernet connector.

RJ45 Ethernet connector with Power over Ethernet (PoE).

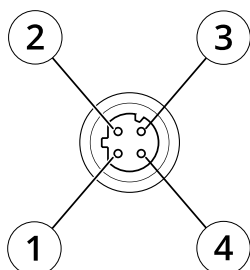
RJ45 Ethernet connector with Power over Ethernet Plus (PoE+).

RJ45 with High Power over Ethernet (High PoE).

RJ45 Push-pull Connector (IP66) with High Power over Ethernet (High PoE).

RJ45 Ethernet service port.

D-coded M12 connector with Power over Ethernet (PoE).



4-pin female connector

Pin	Function
1	TX+
2	RX+
3	TX-
4	RX-

SFP connector.

NOTICE

Use the supplied midspan.

NOTICE

To comply with the IP66-rated design of the camera and maintain the IP66 protection, the supplied RJ45 Push-pull Connector (IP66) shall be used. Alternatively, use the RJ45 IP66-rated cable with premounted connector which is available from your Axis reseller. Do not remove the plastic network connector shield from the camera.

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 VDC reference point and power (12 V 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.

Supervised input – Enables possibility to detect tampering on a digital input.

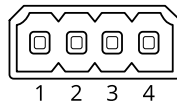
Digital output – For connecting external devices such as relays and LEDs. Connected devices can be activated by the VAPIX® Application Programming Interface, through an event or from the device’s web interface.

A digital light sensor – For receiving a value of the ambient light intensity from an external light sensor. This is used to control the device’s day and night functionality.

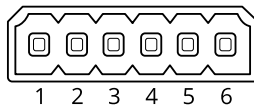
Note


The I/O connector is connected to the housing (fan/heater) on delivery. In case of a fan or heater error, an input signal will be triggered in the camera. Set up an action rule in the camera to configure which action the signal shall trigger.

4-pin terminal block





6-pin terminal block



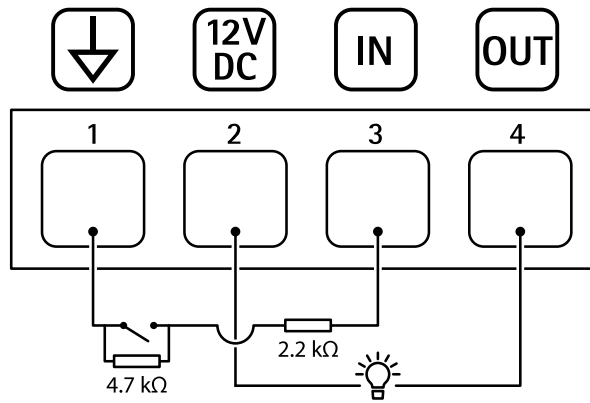
Function	Pin	Notes	Specifications
DC ground	1		0 VDC
DC output	2	 <p>Can be used to power auxiliary equipment. Note: This pin can only be used as power out.</p>	<p>12 VDC Max load = 25 mA</p>

Digital Input or Supervised Input	3	Connect to pin 1 to activate, or leave floating (unconnected) to deactivate. To use supervised input, install end-of-line resistors. See connection diagram for information about how to connect the resistors.	0 to max 30 VDC
Digital Output	4	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 VDC, open drain, 100 mA

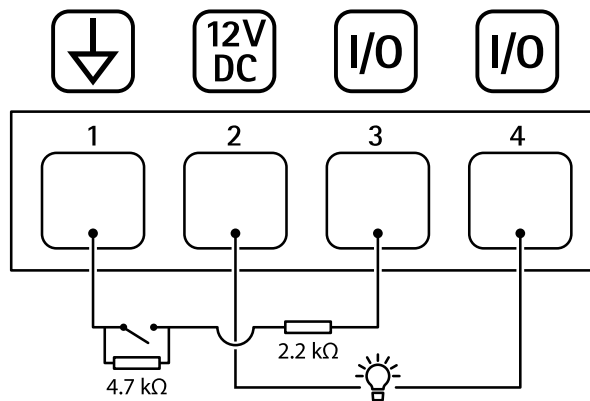
Function	Pin	Notes	Specifications
DC ground	1		0 VDC
DC output	2	 Can be used to power auxiliary equipment. Note: This pin can only be used as power out.	12 VDC Max load = 50 mA
Configurable (Input or Output)	3-4	Digital input or Supervised input – Connect to pin 1 to activate, or leave floating (unconnected) to deactivate. To use supervised input, install end-of-line resistors. See connection diagram for information about how to connect the resistors.	0 to max 30 VDC
		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 VDC, open drain, 100 mA

Function	Pin	Notes	Specifications
DC ground	1		0 VDC
DC output	2	 Can be used to power auxiliary equipment. Note: This pin can only be used as power out.	12 VDC Max load = 50 mA
Configurable (Input or Output)	3-6	Digital input or Supervised input – Connect to pin 1 to activate, or leave floating (unconnected) to deactivate. To use supervised input, install end-of-line resistors. See connection diagram for information about how to connect the resistors.	0 to max 30 VDC
		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 VDC, open drain, 100 mA

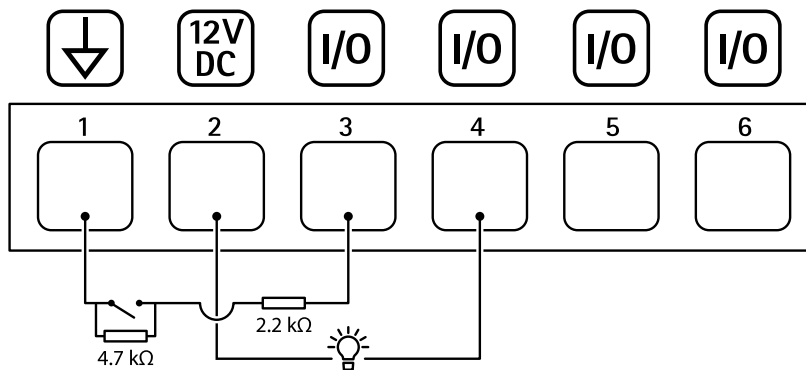
Example:



- 1 DC ground
- 2 DC output 12 V, max 25 mA
- 3 Supervised input
- 4 Digital output



- 1 DC ground
- 2 DC output 12 V, max 50 mA
- 3 I/O configured as supervised input
- 4 I/O configured as output



- 1 DC ground
- 2 DC output 12 V, max 50 mA
- 3 I/O configured as supervised input
- 4 I/O configured as output
- 5 Configurable I/O
- 6 Configurable I/O

Clean your device

You can clean your device with lukewarm water.

You can clean your device with lukewarm water and mild, nonabrasive soap.

You can clean your device with lukewarm water and cleaning agents that contain any of the following chemicals:

- isopropanol 70% (IPA)
- hydrogen peroxide 3% (H₂O₂)
- sodium hypochlorite <5% (NaClO)
- acetic acid 10% (CH₃COOH)
- peracetic acid 0.12% (CH₃CO₃H)

You can clean your device with high-pressure water.

⚠ CAUTION

Before you use a cleaning agent, read and adhere to the safety data sheet (SDS) provided by the cleaning agent manufacturer.

NOTICE

- High-pressure water can damage the device. Keep a distance of at least 1 m (3.3 ft) between the nozzle and the device.
 - Hot water can damage the device. Don't use water that is hotter than 80° C (176° F).
 - Harsh chemicals can damage the device. Don't use chemicals such as window cleaner or acetone to clean your device.
 - Harsh chemicals can damage the device. Don't use chemicals such as acetone or gasoline to clean your device.
 - Don't spray cleaning agents directly on the device. Instead, apply the cleaning agent to a nonabrasive cloth and use it to clean the device.
 - Cleaning agents can cause permanent stains if they dry on the device. Use water and a soft cloth to wipe off any residue immediately.
 - Avoid cleaning in direct sunlight or elevated temperatures, since this can cause stains.
1. Use a can of compressed air to remove dust and loose dirt from the device.
 2. Use a water hose or high-pressure water to rinse the device.
 3. If necessary, clean the device with a soft microfiber cloth dampened with lukewarm water.
 4. If necessary, clean the device with a soft microfiber cloth dampened with lukewarm water and mild, nonabrasive soap.
 5. If necessary, clean the device with a soft microfiber cloth dampened with lukewarm water and a cleaning agent.
 6. To remove any residual cleaning agents, wipe the device with a soft microfiber cloth dampened with lukewarm water.
 7. To avoid stains, dry the device with a clean, nonabrasive cloth.

For more information about cleaning of Axis devices, see the white paper *Chemical resistance to common cleaning agents*.

Troubleshooting

Reset to factory default settings

▲ WARNING

⚠ Possibly hazardous optical radiation is emitted from this product. It can be harmful to the eyes. Don't stare at the operating lamp.

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.

Note

For products with multiple IP addresses and AXIS OS 11.11 or earlier, channel 1 will have the address 192.168.0.90, channel 2 will have the address 192.168.0.91 and so on. Products with AXIS OS 12.0 and later will obtain a distinct IP address obtained from the link-local address subnet for each channel (169.254.x.x).

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 23*.
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. If no DHCP server is available on the network, the device IP address will default to one of the following:
 - **Devices with AXIS OS 12.0 and later:** Obtained from the link-local address subnet (169.254.0.0/16)
 - **Devices with AXIS OS 11.11 and earlier:** 192.168.0.90/24
5. Use the installation and management software tools to assign an IP address, set the password, and access the device.
The installation and management software tools are available from the support pages on axis.com/support.
6. Refocus the product.
 1. Press and hold the control button and the restart button at the same time.
 2. Release the restart button but continue to hold down the control button for 15–30 seconds until the status LED indicator flashes amber.
 3. Release the control button. The process is complete when the status LED indicator turns green. If no DHCP server is available on the network, the device IP address will default to one of the following:
 - **Devices with AXIS OS 12.0 and later:** Obtained from the link-local address subnet (169.254.0.0/16)
 - **Devices with AXIS OS 11.11 and earlier:** 192.168.0.90/24
 4. Use the installation and management software tools to assign an IP address, set the password and access the video stream.
 5. Release the restart button and hold the control button.
 6. Keep the control button pressed until the power LED indicator turns green and the 4 status LED indicators turn amber (this may take up to 15 seconds).
 7. Keep the control button pressed until the power LED indicator turns green and the 6 status LED indicators turn amber (this may take up to 15 seconds).
 8. Release the control button. When the status LED indicators display green (which can take up to 1 minute) the process is complete and the unit has been reset.
 9. The process is now complete. If no DHCP server is available on the network, the device IP addresses will default to either of the following:
 - **Devices with AXIS OS 12.0 and later:** Obtained from the link-local address subnet (169.254.x.x)

- Devices with AXIS OS 11.11 and earlier: 192.168.0.90 to 192.168.0.93
10. The process is now complete. If no DHCP server is available on the network, the device IP addresses will default to either of the following:
 - Devices with AXIS OS 12.0 and later: Obtained from the link-local address subnet (169.254.x.x)
 - Devices with AXIS OS 11.11 and earlier: 192.168.0.90 to 192.168.0.95
 11. Use the installation and management software tools to assign the IP addresses, set the password and access the video stream.

Note

To reset a single channel to the original factory default settings, log in to the device's web interface and use the provided button.

1. Press and hold the control button and the power button for 15–30 seconds until the status LED indicator flashes amber. See *Product overview, on page 23*.
2. Release the control button but continue to hold down the power button until the status LED indicator turns green.
3. Release the power button and assemble the product.
4. The process is now complete. The product has been reset to the factory default settings. If no DHCP server is available on the network, the device IP address will default to one of the following:
 - Devices with AXIS OS 12.0 and later: Obtained from the link-local address subnet (169.254.0.0/16)
 - Devices with AXIS OS 11.11 and earlier: 192.168.0.90/24
5. Using the installation and management software tools to assign an IP address, set the password and access the video stream.
 1. Press and hold the control button and the power button. See *Product overview, on page 23*.
 2. Release the power button but continue to hold down the control button for 15–30 seconds until the status LED indicator flashes amber.
 3. Release the control button.
 4. The process is now complete. The product has been reset to the factory default settings. If no DHCP server is available on the network, the device IP address will default to one of the following:
 - Devices with AXIS OS 12.0 and later: Obtained from the link-local address subnet (169.254.0.0/16)
 - Devices with AXIS OS 11.11 and earlier: 192.168.0.90/24
 5. Using the installation and management software tools, assign an IP address, set the password and access the video stream.

You can also reset parameters to factory default through the device's web interface. Go to **Maintenance > Factory default** and click **Default**.

AXIS OS options

Axis offers device software 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 AXIS OS 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 device software strategy, go to axis.com/support/device-software.

Check the current AXIS OS version

AXIS OS determines the functionality of our devices. When you troubleshoot a problem, we recommend that you to start by checking the current AXIS OS version. The latest version might contain a correction that fixes your particular problem.

To check the current AXIS OS version:

1. Go to the device's web interface > **Status**.
2. Under **Device info**, see the AXIS OS version.

Upgrade AXIS OS

Important

- When you upgrade the device software, your preconfigured and customized settings are saved. Axis Communications AB can't guarantee that the settings are saved, even if the features are available in the new AXIS OS version.
- Starting from AXIS OS 12.6, you must install every LTS version between your device's current version and the target version. For example, if the currently installed device software version is AXIS OS 11.2, you have to install the LTS version AXIS OS 11.11 before you can upgrade the device to AXIS OS 12.6. For more information, see *AXIS OS Lifecycle guide: Upgrade path*.
- Make sure the device remains connected to the power source throughout the upgrade process.
- Make sure the cover is attached during upgrade to avoid installation failure.

Note

- When you upgrade the device with the latest AXIS OS version 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 you upgrade. To find the latest AXIS OS version and the release notes, go to axis.com/support/device-software.
1. Download the AXIS OS file to your computer, available free of charge at axis.com/support/device-software.
 2. Log in to the device as an administrator.
 3. Go to **Maintenance > AXIS OS upgrade** and click **Upgrade**.

When the upgrade has finished, the product restarts automatically.

You can use AXIS Device Manager to upgrade multiple devices at the same time. Find out more at axis.com/products/axis-device-manager.

Technical problems and possible solutions

Problems upgrading AXIS OS

AXIS OS upgrade failed

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

Problems after AXIS OS upgrade

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

Problems setting the IP address

Can't set the IP address

- 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 can't set the IP address. Contact your network administrator to obtain an IP address.
- The IP address could be in use by another device. To check:
 1. Disconnect the Axis device from the network.
 2. In a Command/DOS window, type `ping` and the IP address of the device.
 3. If you receive: `Reply from <IP address>: bytes=32; time=10...` this means that the IP address might already be in use by another device on the network. Obtain a new IP address from the network administrator and reinstall the device.
 4. 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.
- There could be a 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 could be problems accessing the device.

Problems accessing the device

Can't log in when accessing the device from a browser

When HTTPS is enabled, make sure that you use the correct protocol (HTTP or HTTPS) when you try to log in. You might need to manually type `http` or `https` in the browser's address field.

If you've lost the password for the root account, you must reset the device to the factory default settings. For instructions, see *Reset to factory default settings, on page 30*.

The IP address has been changed by DHCP

IP addresses obtained from a DHCP server are dynamic and could 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, you can assign a static IP address manually. For instructions, go to axis.com/support.

Certificate error when using IEEE 802.1X

For authentication to work properly, the date and time settings in the Axis device must be synchronized with an NTP server. Go to **System > Date and time**.

The browser isn't supported

For a list of recommended browsers, see *Browser support, on page 5*.

Can't access the device externally

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

- AXIS Camera Station Edge: free of charge, ideal for small systems with basic surveillance needs.
- AXIS Camera Station Pro: 90-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 you need to configure the router settings between the client and the device. You might need to increase the TTL (Time To Live) value.

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 that prevents viewing.

Poor rendering of H.264 images

Ensure that your graphics card uses the latest driver. You can usually download the latest drivers from the manufacturer's website.

Color saturation is different in H.264 and Motion JPEG

Modify the settings for your graphics adapter. Check the adapter's documentation for more information.

Lower frame rate than expected

- See *Performance considerations, on page 35*.
- 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.
- Log in to the device's web interface and set a capture mode that prioritizes frame rate. If you change the capture mode to prioritize frame rate it might lower the maximum resolution, depending on the device used and capture modes available.
- The maximum frames per second is dependent on the utility frequency (60/50 Hz) of the Axis device.

Can't select H.265 encoding in live view

Web browsers don't support H.265 decoding. Use a video management system or application that supports H.265 decoding.

Problems retrieving additional video streams

I get an error message:

- in AXIS Camera Station Edge: 'Video Error', or
- in Chrome/Firefox: 'Stream: Error. Something went wrong. Maybe there are too many viewers.', or
- in Quick Time: '503 service unavailable', or
- AXIS Camera Station 5 or Pro: 'Camera not available', or
- in browser when using the Java applet: 'Error reading video stream'

The reason is that the camera is designed to deliver up to four different streams. If a fifth unique stream is requested, the camera can't provide it, and you get an error message. The error message depends on the way the stream is requested. The streams are used on a first come, first served basis. Examples of instances that use a stream are:

- live viewing in a web browser or other application
- while recording - continuous or motion triggered recording
- an event that uses images on the camera, for example an event that sends an e-mail with an image every hour
- an installed and running application, such as AXIS Object Analytics, always consumes a video stream whether it's used or not. A stopped application doesn't consume a video stream.

The camera can deliver more than four simultaneous streams provided the configuration of any additional stream is identical to any of the first four streams. Identical configuration implies exactly the same resolution, frame rate, compression, video format, rotation etc.

Problems with MQTT

Can't connect over port 8883 with MQTT over SSL

The firewall blocks traffic that uses port 8883 since it's regarded insecure.

In some cases the server/broker might not provide a specific port for MQTT communication. It might still be possible to use MQTT over a port normally used for HTTP/HTTPS traffic.

- If the server/broker supports WebSocket/WebSocket Secure (WS/WSS), typically on port 443, use this protocol instead. Check with the server/broker provider to see if WS/WSS is supported and which port and basepath to use.
- If the server/broker supports ALPN, the use of MQTT can be negotiated over an open port, such as 443. Check with your server/broker provider to see if ALPN is supported and which ALPN protocol and port to use.

Problems with operating the device

Front heater and wiper aren't working

If the front heater or wiper are not turning on, confirm that the top cover is properly fastened to the bottom of the housing unit.

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

Performance considerations

When you set up your system, it's important to consider how different settings and situations affect performance. Some factors affect bandwidth (bitrate), others affect frame rate, and some affect both.

The most important factors 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 can increase the product's CPU load.
- Removing or attaching the cover will restart the camera.
- Access by large numbers of Motion JPEG clients or unicast H.264/H.265/AV1 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 video streams with different codecs simultaneously affects both frame rate and bandwidth. For optimal performance, use streams with the same codec.
- 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.
- Using palettes affects the product's CPU load which in turn affects the frame rate.

Contact support

If you need more help, go to axis.com/support.

Cybersecurity

Cybersecurity supports a successful product lifecycle with minimized risks. You can find in-depth information and documentation about our cybersecurity approach at axis.com/about-axis/cybersecurity. Follow the cybersecurity guidelines below to receive product security notifications from Axis and to configure your product for a secure lifecycle and decommissioning.

At *Axis Trust Center*, you can find information about how Axis implements security compliance, transparency, data protection, and privacy.

Vulnerability management

Axis is a *Common Vulnerability and Exposures (CVE) Numbering Authority (CNA)*. To minimize your risk of exposure, we follow industry standards when identifying and resolving vulnerabilities in our devices, software, and services. Refer to axis.com/vulnerability-management for information about our vulnerability management policy or to report a vulnerability.

Security notifications

Subscribe to Axis security notification emails at axis.com/security-notification-service. We will send you information about vulnerabilities, corresponding security advisories, and other security-related matters for your Axis product.

Secure product lifecycle

Axis minimizes risks throughout the lifetime of our products through secure lifecycle management. Use our hardening guides at help.axis.com to more securely configure and operate your Axis products and to find information about:

Secure first-use – Axis products are pre-configured with high default protection to allow for secure initialization and encrypted communication from the very start.

Intended use and common configuration mistakes – Our guides provide information about the intended usage of Axis products, including common security-relevant misuse and configuration mistakes that should be avoided.

Managing vulnerabilities and supply chain transparency – A Software Bill of Material (SBOM) is published with every software release on axis.com to disclose vulnerabilities and improve supply chain transparency.

Decommissioning and the secure erasure of data – To securely decommission a product when it reaches the end of its lifecycle, reset it to factory default settings. This erases your configurations, stored data, and sensitive information.

T10180944

2026-07 (M19.2)

© 2022 – 2026 Axis Communications AB