

**AXIS M31 Series**

**AXIS M3104-L**

**AXIS M3104-LVE**

**AXIS M3105-L**

**AXIS M3105-LVE**

# AXIS M31 Series

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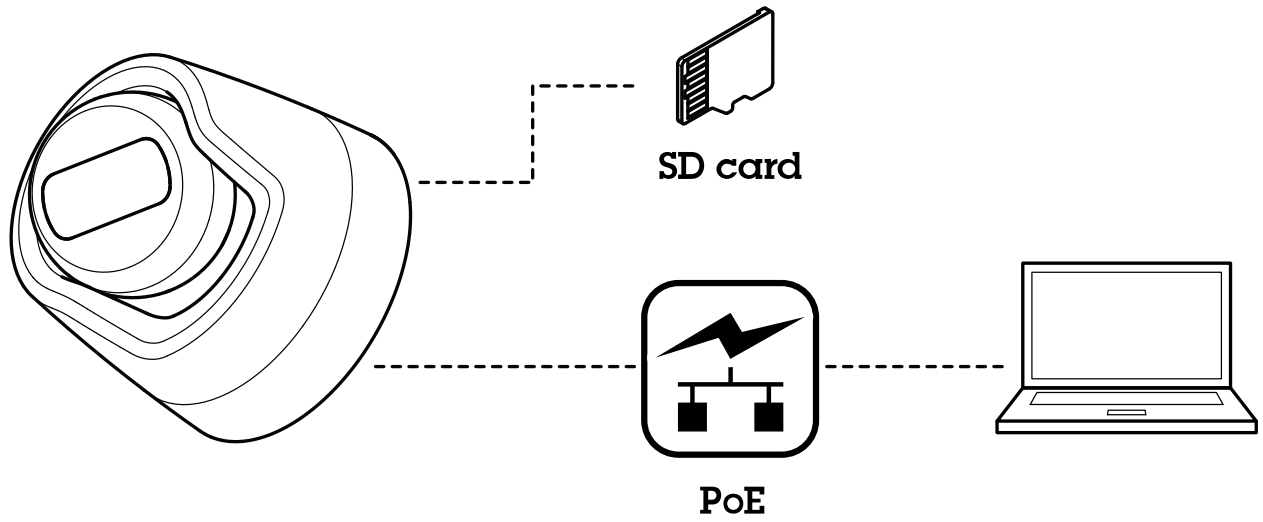
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# AXIS M31 Series

## System overview

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### System overview

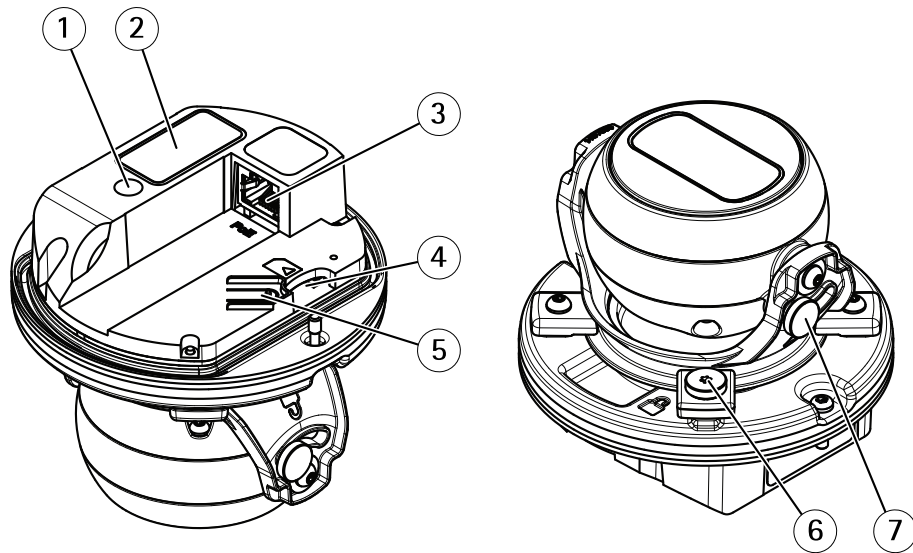


# AXIS M31 Series

## Product overview

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### Product overview



- 1 *Status LED indicator*
- 2 *Part number (P/N) Et Serial number (S/N)*
- 3 *Network connector (PoE)*
- 4 *SD card slot*
- 5 *Control button*
- 6 *Pan lock screw*
- 7 *Tilt lock screw*

# AXIS M31 Series

## How to access the product

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### How to access the product

AXIS IP Utility and AXIS Camera Management are recommended methods for finding Axis products on the network and assigning them IP addresses in Windows®. Both applications are free and can be downloaded from [axis.com/support](https://axis.com/support)

The product can be used with the following browsers:

- Chrome™ (recommended), Firefox®, Edge®, or Opera® with Windows®
- Chrome™ (recommended) or Safari® with OS X®
- Chrome™ or Firefox® with other operating systems.

### How to access the product from a browser

1. Start a web browser.
2. Enter the IP address or host name of the Axis product in the browser's address field.

To access the product from a Mac computer (OS X), go to Safari, click on Bonjour and select the product from the drop-down list.

If you do not know the IP address, use AXIS IP Utility to locate the product on the network. For information about how to discover and assign an IP address, see the document *Assign an IP Address and Access the Video Stream* on Axis Support web at [axis.com/support](https://axis.com/support)

#### Note

To show Bonjour as a browser bookmark, go to **Safari > Preferences**.

3. Enter your username and password. If this is the first time the product is accessed, the root password must first be configured.
4. The product's live view page opens in your browser.

### About secure passwords

#### Important

When setting the initial password, the password is sent in clear text over the network. If there is a risk of network sniffing, first set up a secure and encrypted HTTPS connection before resetting the passwords.

The device password is the primary protection for the data and services. Axis' products do not impose a password policy as products may be used in various types of installations, but to protect your data do the following:

- Don't use the default password that comes with the products.
- Use a password with at least 8 characters, preferably using a password generator.
- Don't expose the password.
- Change password at a recurring interval, at least once a year.

### Set a password for the root account

#### Important

The default administrator user name **root** cannot be deleted. If the password for root is lost, the product must be reset to the factory default settings.

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## How to access the product

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The default root account has full privileges and should be reserved for administrative tasks. Always create a user account with limited privileges for daily use. This reduces the exposure of the administrative account.

1. Make sure to follow the instructions about secure passwords, see *About secure passwords on page 5*.
2. Type a password and then retype it to confirm the spelling.
3. Click **Create login**. The password has now been configured.

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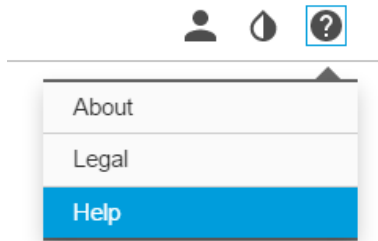
## Setup

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### Setup

#### About the product's built-in help

You can access the built-in help through your product's web page. The help provides more detailed information on the product's features and their settings.

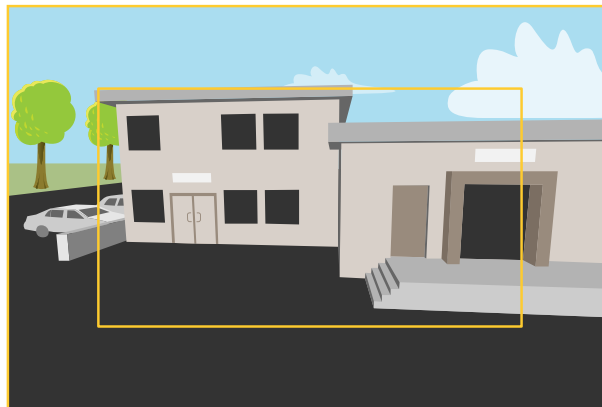


#### Image quality

##### About capture modes

A capture mode consists of a resolution and the corresponding frame rate available in the product. The capture mode setting affects the camera's field of view and aspect ratio.

The lower resolution capture mode is cropped out from the highest resolution.



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

##### How to select capture mode

What capture mode to choose depends on the requirements of frame rate and resolution for the specific surveillance setup. For specifications about available capture modes, see the product's datasheet. To find the latest version of the datasheet, go to [axis.com](http://axis.com)

##### How to select exposure mode

There are several exposure mode options in the camera that adjusts aperture, shutter speed, and gain to improve image quality for specific surveillance scenes. In the **Image** tab, select between the following options:

- For most use cases, select **Automatic** exposure.

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

### How to reduce noise in low-light conditions

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

- Make sure that the exposure mode is automatic.

#### Note

Increasing the max shutter value can result in motion blur.

- The shutter speed should be as slow as possible, which means you should set max shutter to the highest possible value.
- Reduce sharpness in the image.
- Try lowering the max gain value.

### How to benefit from IR light in low-light conditions using night mode

Your camera delivers color images during the day. As light diminishes, you can set the camera to automatically shift to night mode. This enables delivering black-and-white images with the help of IR light.

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**.

#### Note

If you set the shift 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 longer but there will be more image blur due to low-light noise.

3. Enable IR illumination to use the camera's built-in IR light when the night mode is activated.

### How to monitor long and narrow areas

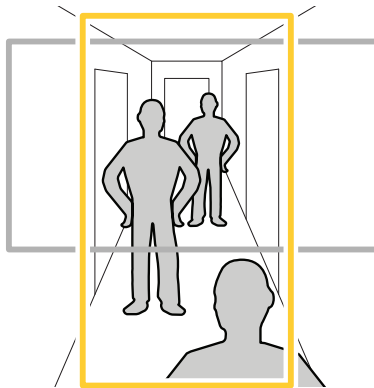
Use corridor format to better utilize the full field of view in a long and narrow area, for example a staircase, hallway, road, or tunnel.



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1. Depending on your product, turn the camera or the 3-axis lens in the camera 90° or 270°.
2. Go to **Settings > Stream > Orientation** on the product's webpage and rotate the view 90° or 270°.

Find out more at [axis.com/axis-corridor-format](https://axis.com/axis-corridor-format)

### How to handle scenes with strong backlight

Use WDR to make both dark and bright areas of the image visible.

1. Go to **Settings > Image**.
2. Turn on WDR under **Wide dynamic range**.



*Image without WDR.*



*Image with WDR.*

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## Setup

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### Note

If you use WDR, you may experience some WDR artifacts in the image.

Find out more about WDR and how to use it at [axis.com/web-articles/wdr](https://axis.com/web-articles/wdr)

## Streaming and storage

### How to choose video compression format

Deciding which compression method to choose depends 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. Installing 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.

Find out more at [axis.com/compression-formats](https://axis.com/compression-formats)

### How to reduce bandwidth and storage

### Important

If you reduce the bandwidth it can result in less details in the picture.

1. Go to live view and select H.264.
2. Go to the **Stream** tab.
3. Do one or more of the following:
  - Turn on the Zipstream functionality and select the desired level.
  - Turn on the GOP and set a high GOP length value.
  - Increase the compression.
  - Turn on the dynamic FPS.

### How to 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**.

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## Setup

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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**.

### About events

The event pages allow you to configure your product to perform actions when different events occur. For example, the product can start a recording or send an email notification when motion is detected. The set of conditions that defines how and when the action is triggered is called an action rule.

### How to trigger an action

1. Go to **Settings > System > Events** to set up an action rule. The action rule defines when the product will perform certain actions. Action rules can be setup as scheduled, recurring, or for example, triggered by motion detection.
2. Select what **Trigger** must be met to trigger the action. If you specify more than one trigger for the action rule, all of them 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 action rule, the action rule needs to be restarted for the changes to take effect.

### About 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](https://axis.com/applications)

To find the user manuals for Axis applications, go to [axis.com](https://axis.com)

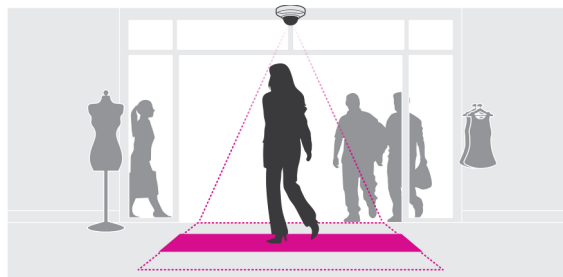
#### Note

- 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.



# AXIS M31 Series

## Troubleshooting

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### Troubleshooting

#### How to 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*.
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](https://axis.com/support)

#### How to 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.

#### How to 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.

##### Note

When you upgrade the product with the latest firmware, 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](https://axis.com/support/firmware)

1. Download the latest firmware file to your computer, available free of charge at [axis.com/support/firmware](https://axis.com/support/firmware)
2. Log in to the product as an administrator.
3. Go to **Settings > System > Maintenance** in the product's webpage and follow the instructions.
4. The upgrade takes a while, don't break the power to the product. When the upgrade is finished, the product restarts automatically.

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AXIS Camera Management can be used for multiple upgrades. Find out more at [axis.com/products/axis-camera-management](https://axis.com/products/axis-camera-management)

### Technical issues, clues and solutions

If you can't find what you're looking for here, try the troubleshooting section at [axis.com/support](https://axis.com/support)

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#### Problems upgrading the firmware

Firmware upgrade failure	If the firmware upgrade fails, the product 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 product and try again.
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#### Problems setting the IP address

The product is located on a different subnet	If the IP address intended for the product and the IP address of the computer used to access the product are located on different subnets, you cannot set the IP address. Contact your network administrator to obtain an IP address.
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The IP address is being used by another device	Disconnect the Axis product from the network. Run the ping command (in a Command/DOS window, type <code>ping</code> and the IP address of the product): <ul style="list-style-type: none"><li>• If you receive: <code>Reply from &lt;IP address&gt;: bytes=32; time=10...</code> 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 product.</li><li>• If you receive: <code>Request timed out</code>, this means that the IP address is available for use with the Axis product. Check all cabling and reinstall the product.</li></ul>
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Possible IP address conflict with another device on the same subnet	The static IP address in the Axis product 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 product.
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#### The product cannot be accessed from a browser

Cannot log in	When HTTPS is enabled, ensure that the correct protocol (HTTP or HTTPS) is used when attempting to log in. You may need to manually type <code>http</code> or <code>https</code> in the browser's address field.
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If the password for the user `root` is lost, the product must be reset to the factory default settings. See *How to reset to factory default settings*.

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 Camera Management to locate the product on the network. Identify the product using its model or serial number, or by the DNS name (if the name has been configured).
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If required, a static IP address can be assigned manually. For instructions, go to [axis.com/support](https://axis.com/support).

Certificate error when using IEEE 802.1X	For authentication to work properly, the date and time settings in the Axis product must be synchronized with an NTP server. Go to <b>Settings &gt; System &gt; Date and time</b>
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#### The product is accessible locally but not externally

Router configuration	Check that your router allows incoming data traffic to the Axis product. The router must support UPnP®.
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Firewall protection	Check the Internet firewall with your network administrator.
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#### Problems with streaming

Multicast H.264 only accessible by local clients	Check if your router supports multicasting, or if the router settings between the client and the product need to be configured. The TTL (Time To Live) value may need to be increased.
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## Troubleshooting

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No multicast H.264 displayed in the client	<p>Check with your network administrator that the multicast addresses used by the Axis product are valid for your network.</p> <p>Check with your network administrator to see if there is a firewall preventing viewing.</p>
Poor rendering of H.264 images	<p>Ensure that your graphics card is using the latest driver. The latest drivers can usually be downloaded from the manufacturer's website.</p>
Color saturation is different in H.264 and Motion JPEG	<p>Modify the settings for your graphics adapter. Go to the adapter's documentation for more information.</p>
Lower frame rate than expected	<ul style="list-style-type: none"><li>• See <i>Performance considerations on page 14</i>.</li><li>• Reduce the number of applications running on the client computer.</li><li>• Limit the number of simultaneous viewers.</li><li>• Check with the network administrator that there is enough bandwidth available.</li><li>• Lower the image resolution.</li><li>• In the product's webpage, set a capture mode that prioritizes frame rate. Changing the capture mode to prioritize frame rate might lower the maximum resolution depending on the product used and capture modes available.</li><li>• The maximum frames per second is dependent on the utility frequency (60/50 Hz) of the Axis product.</li></ul>

### 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.
- 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.

# AXIS M31 Series

## Specifications

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### Specifications

To find the latest version of the product's datasheet, go to [axis.com](http://axis.com) > [product] > Support & Documentation.

### LED indicators

**Note**

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.
Red	Firmware upgrade failure.

### SD card slot

**NOTICE**

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

This product supports microSD/microSDHC/microSDXC cards (not included).

For SD card recommendations, see [axis.com](http://axis.com)

### Buttons

#### Control button

The control button is used for:

- Resetting the product to factory default settings. See *How to reset to factory default settings on page 12*.
- 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.

### Connectors

#### Network connector

RJ45 Ethernet connector with Power over Ethernet (PoE).

