

AXIS P37–PLE Network Camera Series
AXIS P3717–PLE Network Camera
AXIS P3719–PLE Network Camera

AXIS P37–PLE Network Camera Series

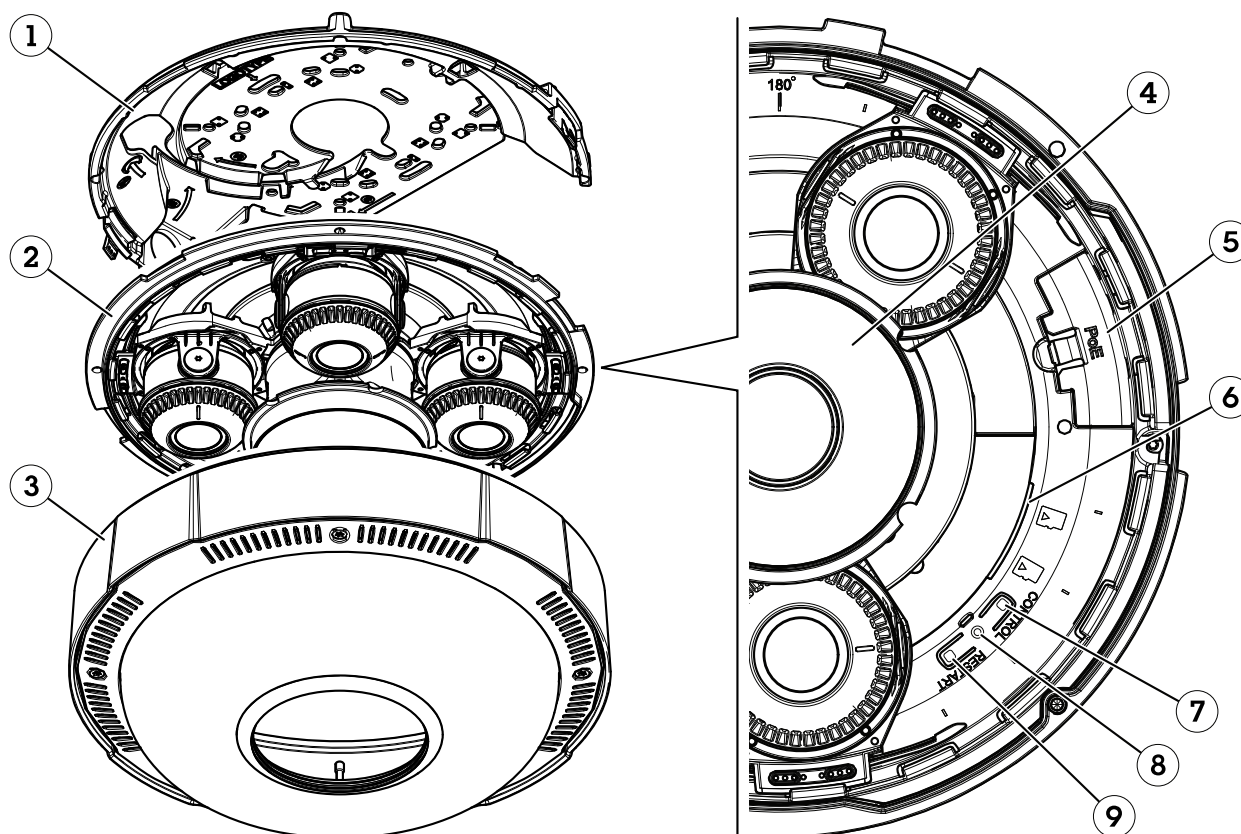
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Product overview

Product overview



- 1 Mounting bracket
- 2 Camera unit
- 3 Dome cover
- 4 IR illumination
- 5 Network connector (PoE)
- 6 SD card slots
- 7 Control button
- 8 Status LED indicator
- 9 Restart button

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Find the device on the network

Find the device on the network

To find Axis devices on the network and assign them IP addresses in Windows®, use AXIS IP Utility or AXIS Device Manager. Both applications are free and can be downloaded from axis.com/support.

For more information about how to find and assign IP addresses, see the document *How to assign an IP address and access your device* on the device page at axis.com.

Access the device

1. Open a browser and enter the IP address or host name of the Axis device.

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

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

Secure passwords

Important

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

The device password is the primary protection for your data and services. Axis devices do not impose a password policy as they may be used in various types of installations.

To protect your data we strongly recommend that you:

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

Set a secure password for the root account

Important

The default administrator username is **root**. If the password for root is lost, reset the device to factory default settings.

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

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Setup

Setup

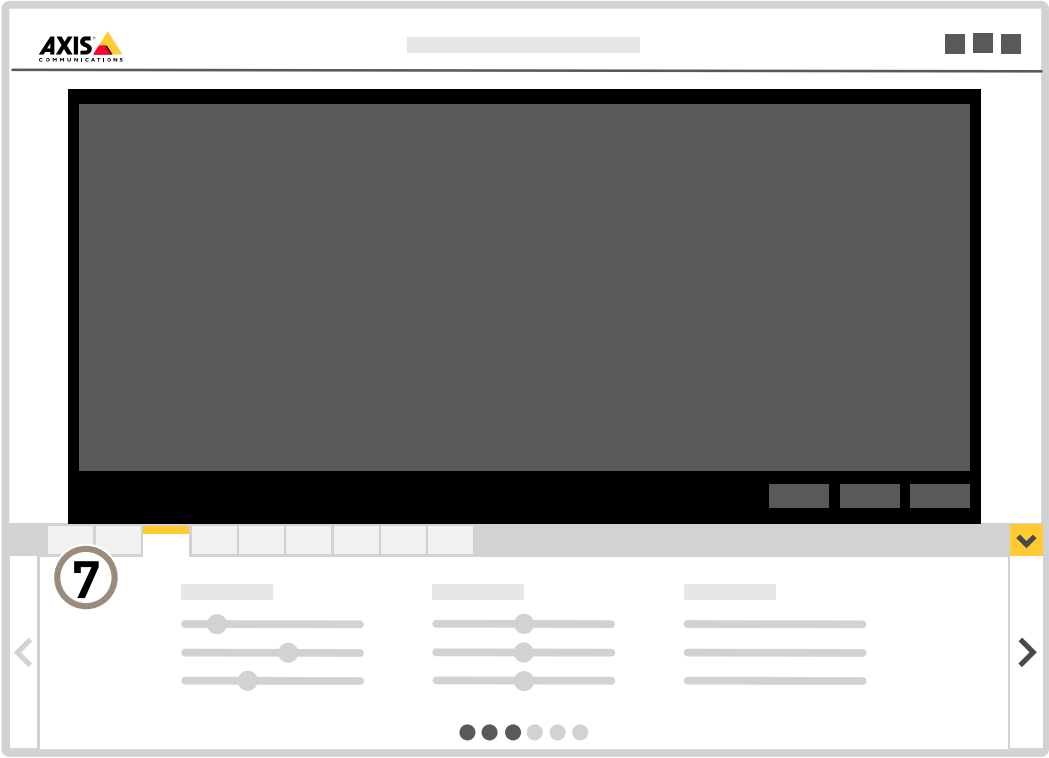
Webpage overview



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

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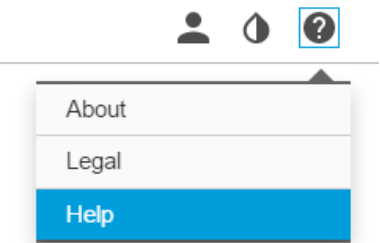
Setup



7 Settings tabs

Need more help?

You can access the built-in help from the device's webpage. The help provides more detailed information on the device's features and their settings.



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Image quality

Remote focus and zoom

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



Left: no focus. Right: remote focus applied.



Left: no zoom. Right: remote zoom applied.

Optimize IR illumination

In most cases, the exposure of the image is automatically adjusted to obtain optimal image quality. If the camera is placed close to a wall or a corner, it can sometimes result in saturation of parts of the image. When this happens, the LED's closest to the wall or corner are automatically dimmed to avoid saturating the image.

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

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

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5. Adjust the intensity.

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

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

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

Note

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

Reduce noise in low-light conditions

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

- Set the exposure mode to automatic.

Note

A high max shutter value can result in motion blur.

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

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.

1. Go to **Settings > Image > Wide dynamic range**.
2. If required, turn on WDR.
3. Use the **Local contrast** slider to adjust the amount of WDR.



Image without WDR.

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Image with WDR.

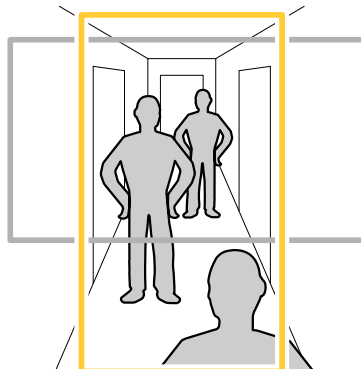
Note


WDR may cause artifacts in the image.

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

Monitor long and narrow areas

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



1. Depending on your device, turn the camera or the 3-axis lens in the camera 90° or 270°.
2. If the device doesn't rotate the view automatically, log in to the webpage and go to **Settings > System > Orientation**.
3. Click .
4. Rotate the view 90° or 270°.

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

Privacy masks

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

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

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

Important

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

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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.

Hide parts of the image with privacy masks

Create a privacy mask to hide a part of the image:

1. Go to **Settings > Privacy mask**.
2. Click **New**.

Overlays

Note

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

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.

Show an image overlay

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

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

Show a text overlay in the video stream when the device detects motion

This example explains how to display the text "Motion detected" when the device detects motion:

Make sure the AXIS Video Motion Detection application is running:

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

Add the overlay text:

4. Go to **Settings > Overlay**.
5. Select **Create overlay** and select **Text overlay**.
6. Enter #D in the text field.
7. Choose text size and appearance.
8. To position the text overlay, choose **Custom** or one of the presets.

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Create a rule:

9. Go to **System > Events > Rules** and add a rule.
10. Type a name for the rule.
11. In the list of conditions, select **AXIS Video Motion Detection**.
12. In the list of actions, select **Use overlay text**.
13. Select a view area.
14. Type "Motion detected".
15. Set the duration.
16. Click **Save**.

Note

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

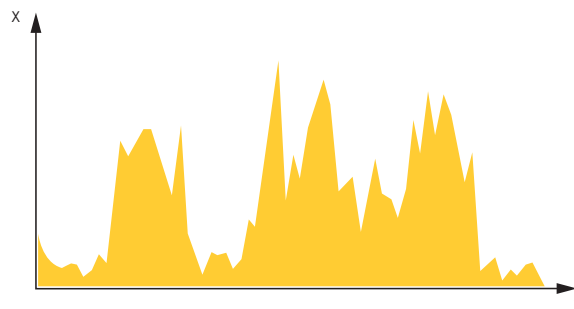
Streaming and storage

Bitrate control

By setting the bitrate control you can manage the bandwidth consumption for your video stream.

Variable bitrate (VBR)

With variable bitrate the bandwidth varies based on the level of activity in the scene. The more activity in the scene, the more bandwidth is required. This option guarantees that image quality is constant but requires storage margins.



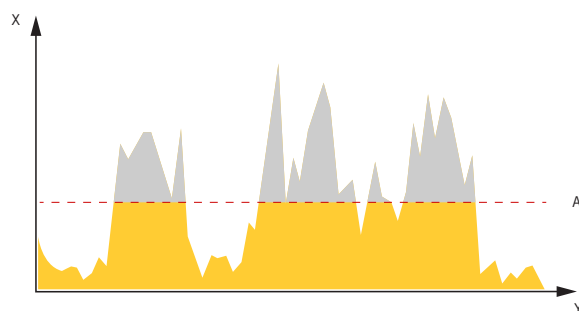
X Bitrate
Y Time

Maximum bitrate (MBR)

The maximum bitrate option allows you to set a target bitrate value to be able to handle system bitrate limitations. To keep the instantaneous bitrate below the specified target bitrate, there may be a decrease in image quality or the frame rate may decrease. You have the option to prioritize either image quality or frame rate. It is recommended to configure the target bitrate higher than the expected bitrate to have margins for additional complexity that needs to be captured.

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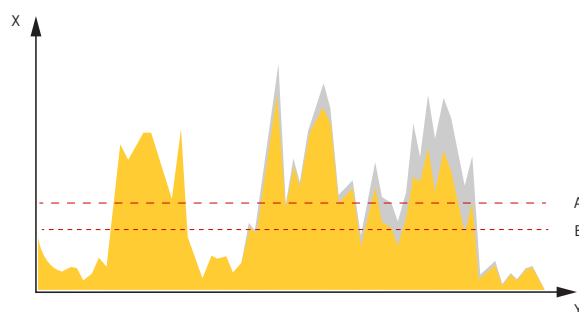


X Bitrate
Y Time
A Target bitrate

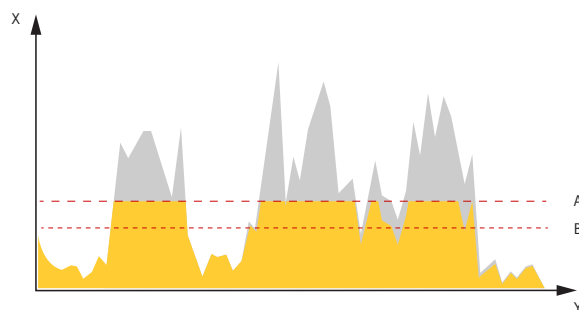
Average bitrate (ABR)

With average bitrate, the bitrate is automatically adjusted over a longer timescale to meet the specified target and provide the best quality on the video stream based on available storage. Bitrate is higher in scenes with activities, compared to static scenes. The probability of getting better image quality when desired is higher when using the average bitrate option. The average bitrate option allows you to 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:

- Set the target bitrate and the retention time to calculate the estimated storage need.
- Use the target bitrate calculator to calculate the average bitrate, based on available storage and desired retention time.



You have also the option to turn on maximum bitrate to specify a bitrate limit.



X Bitrate
Y Time
A Target bitrate
B Actual average bitrate

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Video compression formats

Decide which compression method to use based on your viewing requirements, and on the properties of your network. The available options are:

Motion JPEG

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

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

H.264 or MPEG-4 Part 10/AVC

Note

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

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

Reduce bandwidth and storage

Important

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

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

Set up network storage

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

1. Go to **Settings > System > Storage**.
2. Click **Setup** under **Network storage**.
3. Enter the IP address of the host server.
4. Enter the name of the shared location on the host server.
5. Move the switch if the share requires a login, and enter username and password.
6. Click **Connect**.

Record and watch video

To record video you must first set up network storage, see *Set up network storage on page 13*, or have an SD card installed.

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Record video

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

Watch video

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

Events

Set up rules and alerts

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

Trigger an action

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

Note

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

Record video when the camera detects motion

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

Make sure the AXIS Video Motion Detection application is running:

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

Create a rule:

1. Go to **Settings > System > Events** and add a rule.
2. Type a name for the rule.
3. In the list of conditions, under **Application**, select **AXIS Video Motion Detection (VMD)**.
4. In the list of actions, under **Recordings**, select **Record video while the rule is active**.
5. Select an existing stream profile or create a new one.
6. Set the prebuffer time to 5 seconds.
7. Set the postbuffer time to 60 seconds.

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8. In the list of storage options, select **SD card**.
9. Click **Save**.

Send an email automatically if someone spray paints the lens

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

Create a rule:

1. Go to **Events > Rules** and add a rule.
2. Type a name for the rule.
3. In the list of conditions, select **Tampering**.
4. In the list of actions, select **Send notification to email** and then select a recipient from the list. Go to **Recipients** to create a new recipient.
5. Type a subject and a message for the email.
6. Click **Save**.

Applications

Applications

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

To find the user manuals for Axis applications, go to axis.com.

Note

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

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Troubleshooting

Troubleshooting

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

Reset to factory default settings

Important

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

To reset the product to the factory default settings:


1. 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. 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.
4. Use the installation and management software tools to assign an IP address, set the password and access the video stream.

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

Check the current firmware

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

To check the current firmware:

1. Go to the product's webpage.
2. Click on the help menu. 
3. Click **About**.

Upgrade the firmware

Important

Preconfigured and customized settings are saved when the firmware is upgraded (provided that the features are available in the new firmware) although this is not guaranteed by Axis Communications AB.

Important

Make sure the product remains connected to the power source throughout the upgrade process.

Note

When you upgrade the product with the latest firmware in the active track, the product receives the latest functionality available. Always read the upgrade instructions and release notes available with each new release before upgrading the firmware. To find the latest firmware and the release notes, go to axis.com/support/firmware.

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

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Troubleshooting

2. Log in to the product as an administrator.
3. Go to **Settings > System > Maintenance**. Follow the instructions on the page. When the upgrade has finished, the product restarts automatically.

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

Technical issues, clues and solutions

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

Problems upgrading the firmware

Firmware upgrade failure	If the firmware upgrade fails, the device reloads the previous firmware. The most common reason is that the wrong firmware file has been uploaded. Check that the name of the firmware file corresponds to your device and try again.
Problems after firmware upgrade	If you experience problems after a firmware upgrade, roll back to the previously installed version from the Maintenance page.

Problems setting the IP address

The device is located on a different subnet	If the IP address intended for the device and the IP address of the computer used to access the device are located on different subnets, you cannot set the IP address. Contact your network administrator to obtain an IP address.
The IP address is being used by another device	Disconnect the Axis device from the network. Run the ping command (in a Command/DOS window, type <code>ping</code> and the IP address of the device): <ul style="list-style-type: none">• If you receive: <code>Reply from <IP address>: 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 device.• If you receive: <code>Request timed out</code>, this means that the IP address is available for use with the Axis device. Check all cabling and reinstall the device.
Possible IP address conflict with another device on the same subnet	The static IP address in the Axis device is used before the DHCP server sets a dynamic address. This means that if the same default static IP address is also used by another device, there may be problems accessing the device.

The device cannot be accessed from a browser

Cannot log in	When HTTPS is enabled, ensure that the correct protocol (HTTP or HTTPS) is used when attempting to log in. You may need to manually type <code>http</code> or <code>https</code> in the browser's address field. If the password for the user <code>root</code> is lost, the device must be reset to the factory default settings. See <i>Reset to factory default settings on page 16</i> .
The IP address has been changed by DHCP	IP addresses obtained from a DHCP server are dynamic and may change. If the IP address has been changed, use AXIS IP Utility or AXIS Device Manager to locate the device on the network. Identify the device using its model or serial number, or by the DNS name (if the name has been configured). If required, a static IP address can be assigned manually. For instructions, go to axis.com/support .

The device is accessible locally but not externally

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

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

For instructions and download, go to axis.com/products/axis-companion.

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Troubleshooting

Problems with streaming

Multicast H.264 only accessible by local clients	Check if your router supports multicasting, or if the router settings between the client and the device need to be configured. The TTL (Time To Live) value may need to be increased.
No multicast H.264 displayed in the client	Check with your network administrator that the multicast addresses used by the Axis device are valid for your network. Check with your network administrator to see if there is a firewall preventing viewing.
Poor rendering of H.264 images	Ensure that your graphics card is using the latest driver. The latest drivers can usually be downloaded from the manufacturer's website.
Color saturation is different in H.264 and Motion JPEG	Modify the settings for your graphics adapter. Go to the adapter's documentation for more information.
Lower frame rate than expected	<ul style="list-style-type: none">• See <i>Performance considerations</i> on page 18.• Reduce the number of applications running on the client computer.• Limit the number of simultaneous viewers.• Check with the network administrator that there is enough bandwidth available.• Lower the image resolution.

Performance considerations

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

The following factors are the most important to consider:

- High image resolution or lower compression levels result in images containing more data which in turn affects the bandwidth.
- Rotating the image in the GUI will increase the product's CPU load.
- Access by large numbers of Motion JPEG or unicast H.264 clients affects the bandwidth.
- Simultaneous viewing of different streams (resolution, compression) by different clients affects both frame rate and bandwidth.

Use identical streams wherever possible to maintain a high frame rate. Stream profiles can be used to ensure that streams are identical.

- Accessing Motion JPEG and H.264 video streams simultaneously affects both frame rate and bandwidth.
- Heavy usage of event settings affects the product's CPU load which in turn affects the frame rate.
- Using HTTPS may reduce frame rate, in particular if streaming Motion JPEG.
- Heavy network utilization due to poor infrastructure affects the bandwidth.
- Viewing on poorly performing client computers lowers perceived performance and affects frame rate.
- Running multiple AXIS Camera Application Platform (ACAP) applications simultaneously may affect the frame rate and the general performance.

AXIS P37–PLE Network Camera Series

Specifications

Specifications

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

LED indicators

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

Status LED behavior for focus assistant

The status LED flashes when the Focus Assistant is active.

Color	Indication
Red	The image is out of focus. Adjust the lens.
Amber	The image is close to focus. The lens needs fine tuning.
Green	The image is in focus.

SD card slot

NOTICE

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

This product supports SD/SDHC/SDXC cards.

For SD card recommendations, see axis.com.



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Buttons

Control button

The control button is used for:

- Resetting the product to factory default settings. See *Reset to factory default settings* on page 16.
- 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.

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Specifications

Restart button

Press the restart button to restart the product.

Connectors

Network connector

RJ45 with High Power over Ethernet (High PoE).

