

AXIS P37–PLE Network Cameras

AXIS P3717–PLE Network Camera

User Manual

AXIS P37-PLE Network Cameras

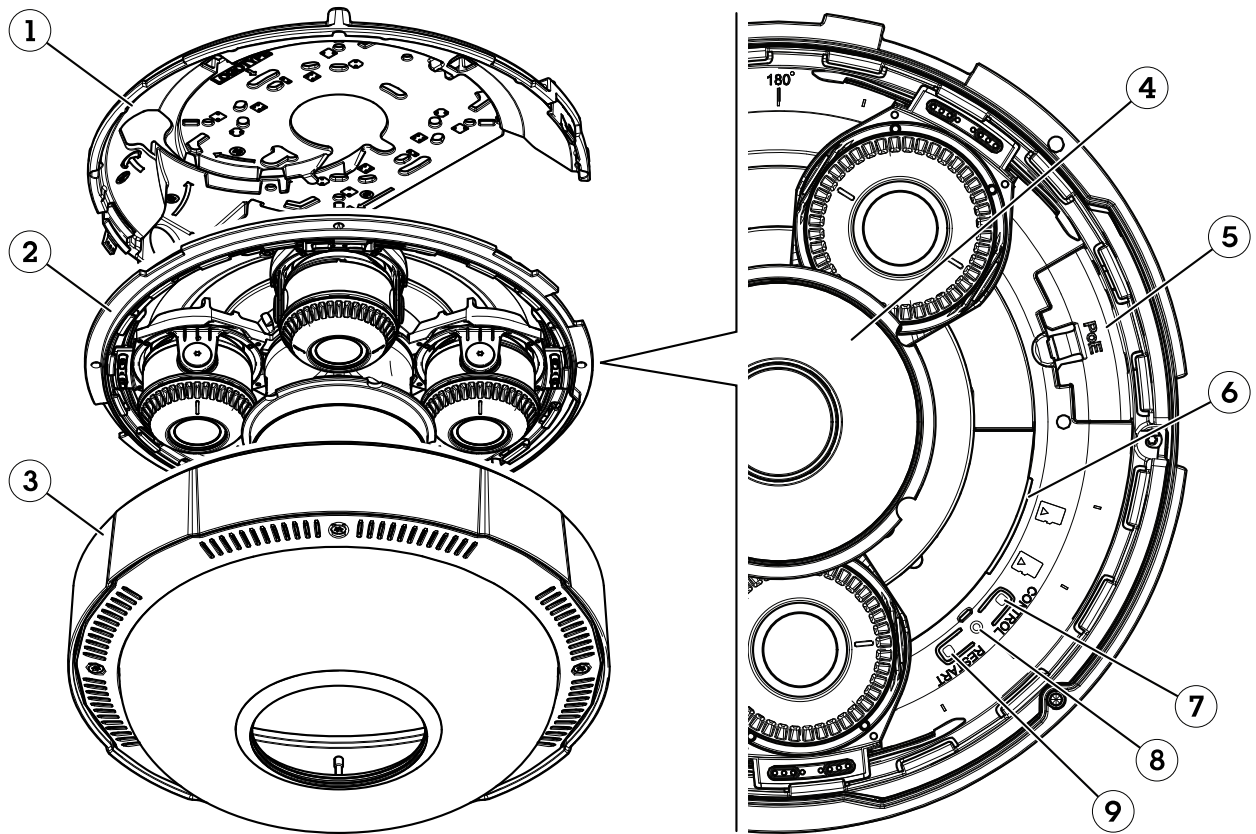
Table of Contents

| | |
|--|----|
| Product overview | 3 |
| Find the device on the network | 4 |
| Access the device | 4 |
| About secure passwords | 4 |
| Setup | 5 |
| Product webpage overview | 5 |
| Image quality | 7 |
| Privacy masks | 9 |
| Overlays | 10 |
| Streaming and storage | 11 |
| Events | 12 |
| Applications | 13 |
| Troubleshooting | 14 |
| How to reset to factory default settings | 14 |
| How to check the current firmware | 14 |
| How to upgrade the firmware | 14 |
| Technical issues, clues and solutions | 15 |
| Performance considerations | 16 |
| Specifications | 17 |
| LED indicators | 17 |
| SD card slot | 17 |
| Buttons | 17 |
| Connectors | 18 |

AXIS P37-PLE Network Cameras

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

AXIS P37-PLC Network Cameras

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 on 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.

About 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:

- Change the default password that comes with each device.
- 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 *About secure passwords on page 4*.
2. Retype the password to confirm the spelling.
3. Click **Create login**. The password has now been configured.

AXIS P37-PLE Network Cameras

Setup

Setup

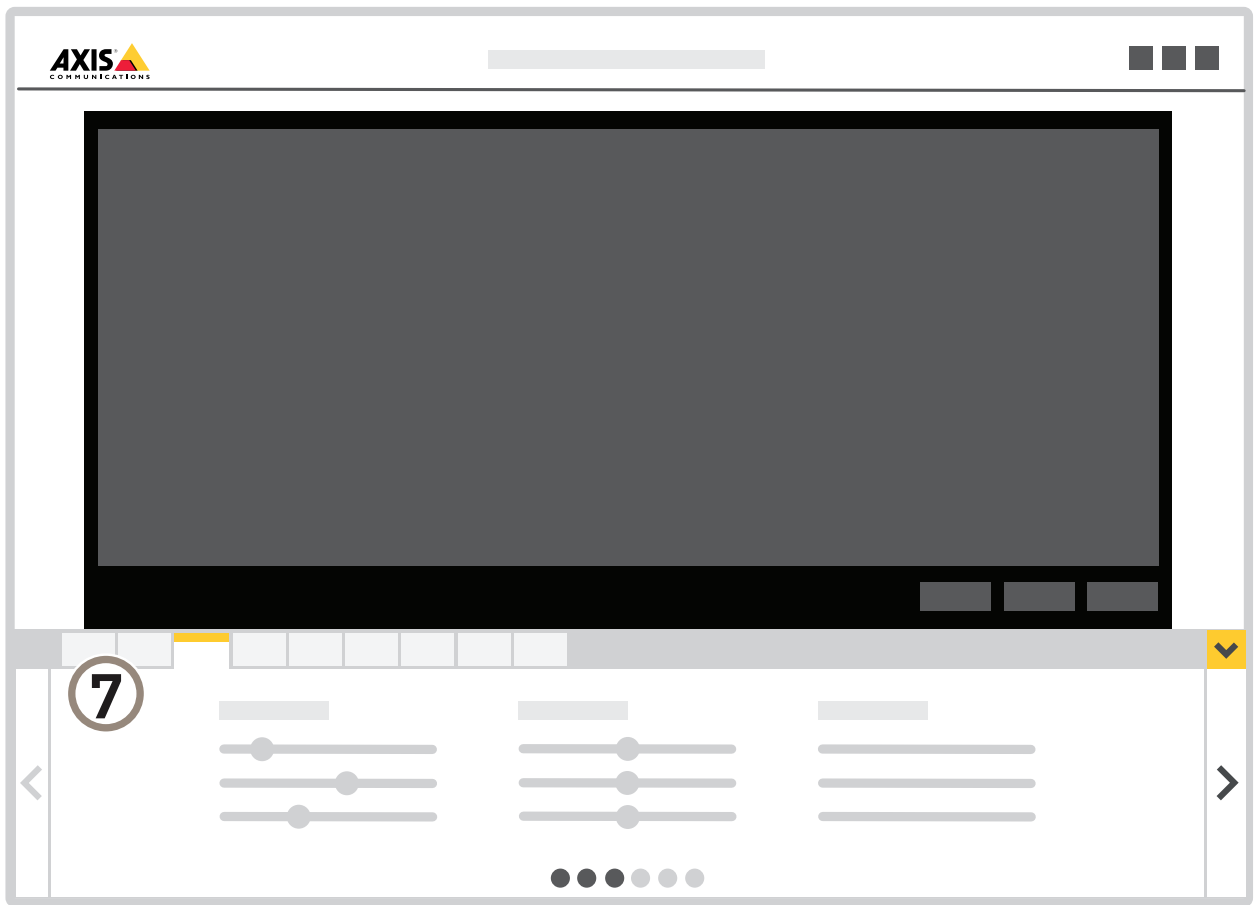
Product webpage overview



- 1 *Live view control bar*
- 2 *Live view*
- 3 *Product name*
- 4 *Controls*
- 5 *Video control bar*
- 6 *Settings toggle*

AXIS P37-PLE Network Cameras

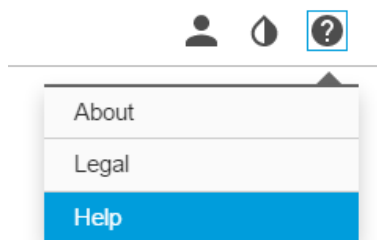
Setup



7 Settings tabs

About the product's built-in help

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



AXIS P37-PLE Network Cameras

Setup

Image quality

About 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.

How to optimize IR illumination

In most cases, the exposure of the image is automatically adjusted to obtain optimal image quality. Sometimes if the camera is placed close to a wall or a corner, it might result in saturating 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, e.g. external light sources in the scene, it is sometimes possible to achieve better IR-illumination by manually setting 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 on **IR illumination** and turn on **IR light** and **Manual intensity**.

AXIS P37-PLE Network Cameras

Setup

5. Adjust LED intensity.

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

Your camera uses visible light to deliver color images during the day. As light diminishes, you can set the camera to automatically shift to night mode. In night mode 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**.

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 **Allow IR illumination** and **Synchronize IR illumination** to use the camera's built-in IR light when the night mode is activated.

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 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**.
2. Use the **Local contrast** slider to adjust the amount of WDR.



Image without WDR.

AXIS P37-PLE Network Cameras

Setup



Image with WDR.

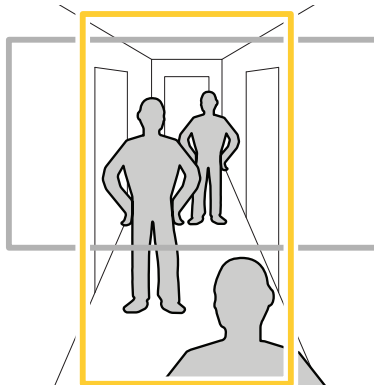
Note

WDR may cause artifacts in the image.

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

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.



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

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

Privacy masks

How to hide parts of the image with privacy masks

What is a privacy mask?

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.

AXIS P37-PLC Network Cameras

Setup

Important

Using multiple privacy masks may affect the product's performance.

Note

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

How to create a privacy mask

To create a privacy mask, go to **Settings > Privacy mask**.

Overlays

About 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.

How to show an image overlay

1. Go to **Settings > Overlay**.
2. Select **Create overlay** and select **Image overlay**.
3. Choose **Import**.
4. Upload own overlay image.
5. Choose the image from the list of images.
6. To position the image overlay, choose **Custom** or one of the presets.

How to show a text overlay when the camera detects motion

This example explains how to display the text "Motion detected" when the camera 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.

Create an action rule:

AXIS P37-PLC Network Cameras

Setup

9. Go to **System > Events > Action rules**.
10. Create an action rule with **AXIS Video Motion Detection** as trigger.
11. From the list of actions, select **Overlay text**.
12. Type "Motion detected".
13. Set the duration.

Note

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

Streaming and storage

How to choose video compression format

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. 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.

How to 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.

AXIS P37-PLE Network Cameras

Setup

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**.
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**.

How to record and watch video

To record video you must first set up network storage, see *How to set up network storage on page 12*, or have an SD card installed.

1. Go to the camera's live view.
2. Click on **Record** once to start recording and one more time to stop recording.

To watch your recording:

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

Events

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 camera 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.

How to 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.

AXIS P37-PLE Network Cameras

Setup

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

Create an action rule:

4. Go to **Settings > System > Events** and add an action rule.
5. Type a name for the action rule.
6. From the list of triggers, select **Applications** and then select **AXIS Video Motion Detection (VMD)**.
7. From the list of actions, select **Record video**.
8. Select an existing stream profile or create a new one.
9. Enable and set the pre-trigger time to 5 seconds.
10. Enable **While the rule is active**.
11. Enable and set the post-trigger time to 60 seconds.
12. Select **SD card** from the list of storage options.
13. Click **Ok**.

How to automatically send an email 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 an action rule:

4. Go to **Events > Action rules** and add an action rule.
5. Enter a name for the action rule.
6. From the list of triggers, select **Detectors** and then select **Tampering**.
7. From the list of actions, select **Send Notification** and then select a recipient from the list or click **New Recipient** to create a new recipient.
8. Enter name and address for the email.
9. Click **Ok**.

Applications

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

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

Note

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

AXIS P37-PLE Network Cameras

Troubleshooting

Troubleshooting

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

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. 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**.

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.

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

AXIS P37-PLC Network Cameras

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 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. |
| 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 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. |
| 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">• 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 product.• 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. |
| 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. |

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. If the password for the user <code>root</code> is lost, the product must be reset to the factory default settings. See <i>How to reset to factory default settings on page 14</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 product on the network. Identify the product 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 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®. |
| Firewall protection | Check the Internet firewall with your network administrator. |

AXIS P37-PLC Network Cameras

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 product 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 product 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 on page 16</i>.• 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 lens manually will result in better performance compared to rotating the image from the GUI.
- 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 Cameras

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 *How to reset to factory default settings on page 14*.
- 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.

AXIS P37-PLE Network Cameras

Specifications

Restart button

Press the restart button to restart the product.

Connectors

Network connector

RJ45 with High Power over Ethernet (High PoE).

