

AXIS P1405-LE Mk II Network Camera

AXIS P1425-LE Mk II Network Camera

AXIS P1435-LE Network Camera

AXIS P1435-E Network Camera

Table of Contents

	3
Solution overview	4
Product overview	5
Find the device on the network	7
Access the device	7
About secure passwords	7
Setup	8
	8
Image quality	8
Overlays	3
Streaming and storage 1	4
Events 1	5
Applications 1	6
Troubleshooting 1	8
Reset to factory default settings	8
Check the current firmware	8
Upgrade the firmware	8
Technical issues, clues and solutions	9
Performance considerations	0
Specifications 2	1
LED Indicators 2	1
SD card slot 2	1
Buttons 2	
Connectors 2	1
Connection Diagrams 2	2

About this manual

About this manual

This User Manual provides information on the product regarding:

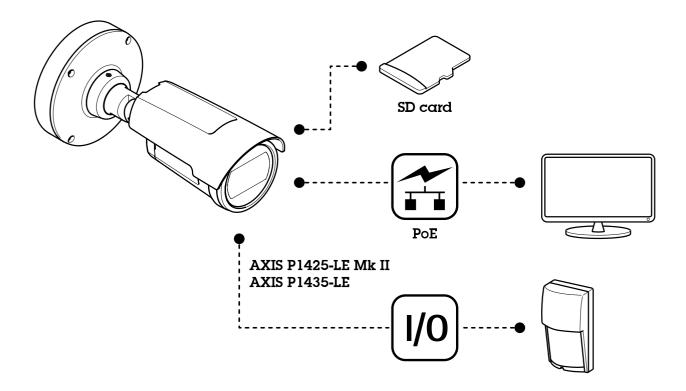
- Access
- Main use cases
- Troubleshooting
- Specifications

Note

The User Manual may include more than one product. Part of the content, e.g. some use cases or specifications, may only apply to some of them. For more information on the exact feature set and specifications, see the product's web page and datasheet at www.axis.com

Solution overview

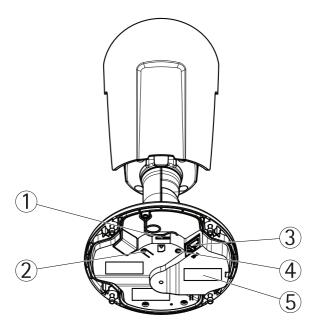
Solution overview



Product overview

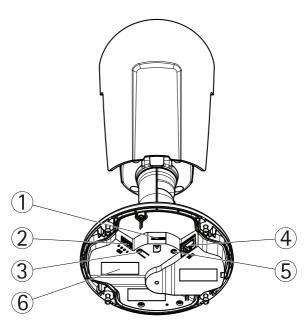
Product overview

AXIS P1405-LE Mk II Network Camera



- 1 microSD card slot
- 2 Control button
- 3 Network connector
- 4 Status LED indicator
- 5 Part number (P/N) & Serial number (S/N)

AXIS P1425-LE Mk II and AXIS P1435-LE Network Cameras



1 microSD card slot

Product overview

- I/O connector
- Control button
- Network connector
- 5 Status LED indicator6 Part number (P/N) & Serial number (S/N)

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 7.
- 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:

- 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 7*.
- 2. Retype the password to confirm the spelling.
- 3. Click Create login. The password has now been configured.

Setup

Setup

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.

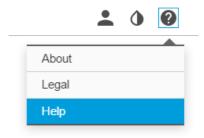


Image quality

Capture modes

Capture mode defines the maximum resolution and maximum frame rate available in the Axis product. If using a capture mode with a smaller resolution than the maximum resolution, the angle of view is reduced. The capture mode also affects light sensitivity. A capture mode with a high maximum frame rate has reduced light sensitivity and vice versa.

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.

Select capture mode

Which 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

Select exposure mode

There are different exposure mode options in the camera that adjusts aperture, shutter speed, and gain to improve image quality for specific surveillance scenes. Go to **Settings > Image > Exposure** and select between the following exposure modes:

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

Setup

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

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.

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

Hide parts of the image with privacy masks

What is a privacy mask?

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.

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

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

Create a privacy mask

To create a privacy mask, go to $\mathbf{Settings} > \mathbf{Privacy} \ \mathbf{mask}$.

Adjust the focus

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.

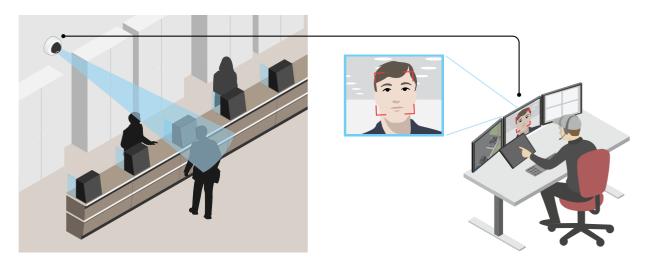
Setup



Left: no zoom. Right: remote zoom applied.

Improve facial recognition

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



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

Note

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

Improve license plate recognition

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

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

1. Go to Settings > System > Orientation and click



Setup

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

Note

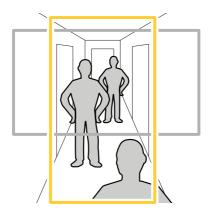
You can use an object of a known size in the view as a reference to decide how much resolution is needed for recognition.

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

- Shutter speed
- Gain
- Zoom

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

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.

Setup

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. If required, turn on WDR under Wide dynamic range.



Image without WDR.



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

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.

Setup

Maximize details in an image

Important

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

- Make sure to select the capture mode that has the highest resolution.
- Set the compression as low as possible.
- Select MJPEG streaming.
- Turn off Zipstream functionality.

Overlays

About overlays

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.

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. Enter #D in the text field.
- 6. Choose text size and appearance.

Create a rule:

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

Setup

Streaming and storage

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.

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.

Setup

Events

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

Record video when a PIR detector senses motion

This example explains how to connect an Axis PIR detector to the camera, and set up the camera to start recording when the detector senses motion.

Required hardware

• 3-wire cable (ground, power, I/O)

Setup

Axis PIR detector

NOTICE

Disconnect the camera from power before connecting the wires. Reconnect to power after all connections are done.

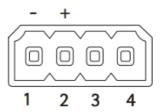
Connect the wires to the camera's I/O connector

Note

For information on the I/O connector, see Connectors on page 21

- 1. Connect the ground wire to pin 1 (GND/-).
- 2. Connect the power wire to pin 2 (12V DC output).
- 3. Connect the I/O wire to pin 3 (I/O input).

Connect the wires to the PIR detector's I/O connector



- 1. Connect the other end of the ground wire to pin 1 (GND/-).
- 2. Connect the other end of the power wire to pin 2 (DC input/+).
- 3. Connect the other end of the I/O wire to pin 3 (I/O output).

Configure the I/O port in the camera's webpage

- 1. Go to Settings > System > I/O ports.
- 2. Give the input module a descriptive name.
- 3. To make the PIR detector send a signal to the camera when it senses motion, select Closed circuit in the drop-down list.

To trigger the camera to start recording when it receives a signal from the PIR detector, you need to create a rule in the camera's webpage.

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

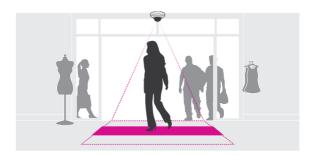
Several applications can run at the same time but some applications might not be compatible with each other. Certain
combinations of applications might require too much processing power or memory resources when run in parallel. Verify
that the applications work together before deployment.

Setup

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.



Troubleshooting

Troubleshooting

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

Reset to factory default settings

Important

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

To reset the product to the factory default settings:

- 1. Disconnect power from the product.
- 2. Press and hold the control button while reconnecting power. See *Product overview on page 5*.
- 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

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

Troubleshooting

- 1. Download the firmware file to your computer, available free of charge at axis.com/support/firmware
- 2. Log in to the product as an administrator.
- 3. Go to Settings > System > Maintenance. Follow the instructions on the page. When the upgrade has finished, the product restarts automatically.

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

Technical issues, clues and solutions

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

Problems upgrading the firmware

		c '1
Firmware	ungrade	tailure

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 setting the IP address

The device is located	on	
different subnet		

If the IP address intended for the device and the IP address of the computer used to access the device are located on different subnets, you cannot set the IP address. Contact your network administrator to obtain an IP address.

The IP address is being used by another device

Disconnect the Axis device from the network. Run the ping command (in a Command/DOS window, type ping and the IP address of the device):

- If you receive: Reply from <IP address>: bytes=32; time=10... this means that the IP address may already be in use by another device on the network. Obtain a new IP address from the network administrator and reinstall the device.
- If you receive: Request timed out, this means that the IP address is available for use with the Axis device. Check all cabling and reinstall the device.

Possible IP address conflict with another device on the same subnet

The static IP address in the Axis device is used before the DHCP server sets a dynamic address. This means that if the same default static IP address is also used by another device, there may be problems accessing the device.

The device cannot be 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 \mathtt{http} or \mathtt{https} in the browser's address field.
	If the password for the user root is lost, the device must be reset to the factory default settings. See Reset to factory default settings on page 18.
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
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 Settings > System > Date and time

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

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	 See Performance considerations on page 20. 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 webpage and set a capture mode that prioritizes frame rate. Changing the capture mode to prioritize frame rate 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.

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.

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	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.

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 18.
- 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).

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 V DC reference point and power (DC output), the I/O connector provides the interface to:

Specifications

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.

Digital output - For connecting external devices such as relays and LEDs. Connected devices can be activated by the VAPIX® Application Programming Interface or from the product's webpage.

4-pin terminal block

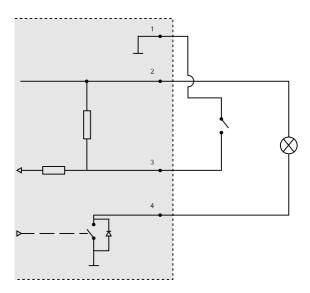


Connection Diagrams

I/O Connector

Note

Valid for AXIS P1435-LE Network Camera



- 0 V DC (-) DC output 12 V, max 25 mA
- Digital input
- Digital output

User Manual AXIS P14 Network Camera Series © Axis Communications AB, 2017 - 2019 Ver. M3.3

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