

AXIS D4200-VE Network Strobe Speaker

Table of Contents

Solution overview 4
 4
 Installation 5
 Get started..... 6
 6
 Find the device on the network..... 6
 Browser support..... 6
 Open the device's web interface..... 6
 Create an administrator account..... 6
 Secure passwords..... 7
 Make sure that no one has tampered with the device software 7
 Configure your device..... 8
 Configure a profile 8
 Configure a profile with custom siren audio file..... 8
 Import or export a profile..... 8
 Set up direct SIP (P2P) 8
 Set up SIP through a server (PBX)..... 9
 Calibrate and run a remote speaker test..... 10
 Set up rules for events 10
 Trigger an action 10
 Start a profile when an alarm is triggered 10
 Start a profile through SIP..... 11
 Control more than one profile through SIP extensions 11
 Run two profiles with different priorities..... 12
 Activate a strobe speaker through HTTP post when a camera detects motion 12
 Activate a strobe speaker through virtual input when a camera detects motion 13
 Activate strobe speaker over MQTT when camera detects motion..... 15
 Send an email if a speaker test fails..... 16
 Play custom clip when an alarm is triggered..... 17
 Stop audio with DTMF..... 17
 Set up audio for incoming SIP calls..... 18
 The web interface 20
 Learn more..... 21
 Session Initiation Protocol (SIP) 21
 Peer-to-peer SIP (P2PSIP)..... 21
 Private Branch Exchange (PBX) 21
 NAT traversal..... 22
 Analytics and apps 22
 AXIS Audio Analytics..... 22
 InformaCast®..... 23
 Specifications..... 24
 Product overview 24
 LED indicators..... 25
 SD card slot..... 26
 Buttons..... 26
 Control button 26
 Microphone switch 26
 Connectors..... 26
 Network connector 26
 Audio connector..... 26
 I/O connector..... 27
 Light pattern names 28
 Sound pattern names..... 28

Clean your device.....	30
Troubleshooting.....	31
Reset to factory default settings.....	31
AXIS OS options.....	31
Check the current AXIS OS version.....	31
Upgrade AXIS OS.....	31
Technical problems and possible solutions.....	32
Performance considerations.....	34
Contact support.....	34
Cybersecurity.....	35
Vulnerability management.....	35
Security notifications.....	35
Secure product lifecycle.....	35

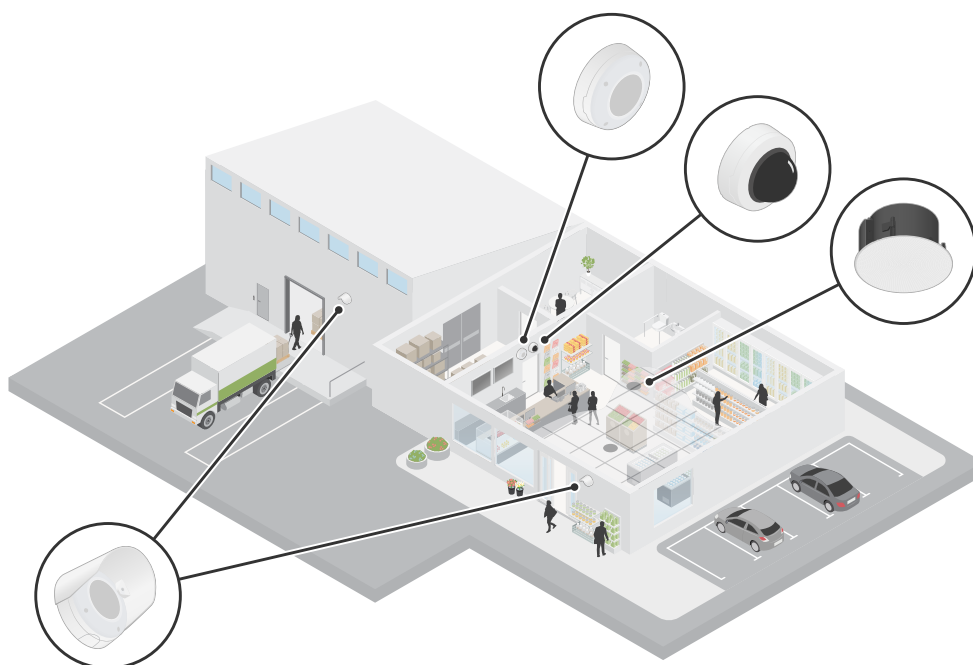
Solution overview

This manual describes how you make the device accessible to your audio system, and how to configure the device directly from its interface.

If you are using an audio or video management software, you can use that software for configuring the device. The following management software are available for controlling your audio system:

- **AXIS Audio Manager Edge** – Audio management software for small systems. Comes pre-installed on all audio devices with a firmware equal to or higher than 10.0.
 - *AXIS Audio Manager Edge user manual*
- **AXIS Audio Manager Pro** – Advanced audio management software for large systems.
 - *AXIS Audio Manager Pro user manual*
- **AXIS Camera Station Pro** – Advanced video management software for large systems.
 - *AXIS Camera Station Pro user manual*

For more information, see *Audio management software*.



Installation

Important

Don't install the strobe speaker and connected devices within 3 m of the center of the railway track.

This video is an example of how to install the AXIS D4200-VE Network Strobe Speaker.



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

Get started

⚠ WARNING

Flashing or flickering lights can trigger seizures in persons with photosensitive epilepsy.

Find the device on the network

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

For more information about how to find and assign IP addresses, go to *How to assign an IP address and access your device*.

Browser support

You can use the device with the following browsers:

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

✓: Recommended

*: Supported with limitations

Open the device's web interface

1. Open a browser and type the IP address or host name of the Axis device. If you don't know the IP address, use AXIS IP Utility or AXIS Device Manager to find the device on the network.
2. Type the username and password. If you access the device for the first time, you must create an administrator account. See *Create an administrator account, on page 6*.

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

Create an administrator account

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

1. Enter a username.
2. Enter a password. See *Secure passwords, on page 7*.
3. Re-enter the password.
4. Accept the license agreement.
5. Click **Add account**.

Important

The device has no default account. If you lose the password for your administrator account, you must reset the device. See *Reset to factory default settings, on page 31*.

Secure passwords

Important

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

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

To protect your data we strongly recommend that you:

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

Make sure that no one has tampered with the device software

To make sure that the device has its original AXIS OS, or to take full control of the device after a security attack:


1. Reset to factory default settings. See *Reset to factory default settings, on page 31*.
After the reset, secure boot guarantees the state of the device.
2. Configure and install the device.

Configure your device

Configure a profile

A profile is a collection of set configurations. You can have up to 30 profiles with different priorities and patterns.

To set a new profile:


1. Go to **Profiles** and click  **Create**.
2. Enter a **Name** and **Description**.
3. Select the **Light** and **Siren** settings that you want for your profile.
4. Set the light and siren **Priority** and click **Save**.

To edit a profile, click  and select **Edit**.

Configure a profile with custom siren audio file

You can configure a profile with a custom audio file. You can save audio files up to 100 Mb in size on the device. For larger audio files, use an SD card, if the device is equipped with an SD card slot.

Upload an audio file:


1. Go to **Media** and click  **Add**.
2. Browse to select the file from your computer.
3. Select **Storage location**.
4. Click **Save**.

To use the audio file in a profile:

1. Go to **Profiles** and create a profile. For more information, see *Configure a profile, on page 8*.
2. When configuring **Siren**, select the uploaded audio file as **Pattern**.

Import or export a profile

If you want to use a profile with predefined configurations, you can import it:

1. Go to **Profiles** and click  **Import**.
2. Browse to locate the file or drag and drop the file that you want to import.
3. Click **Save**.

To copy one or more profiles and save to other devices, you can export them:

1. Select the profiles.
2. Click **Export**.
3. Browse to locate the .json files.

Set up direct SIP (P2P)

Use peer-to-peer when the communication is between a few user agents within the same IP network and there is no need for extra features that a PBX-server could provide.

For more information about setting options, see *SIP*.

1. Go to **System > SIP > SIP settings** and select **Enable SIP**.
2. To allow the device to receive incoming calls, select **Allow incoming calls**.
3. Under **Call handling**, set the timeout and duration for the call.
4. Under **Ports**, enter the port numbers.
 - **SIP port** – The network port used for SIP communication. The signaling traffic through this port is non-encrypted. The default port number is 5060. Enter a different port number if required.
 - **TLS port** – The network port used for encrypted SIP communication. The signaling traffic through this port is encrypted with Transport Layer Security (TLS). The default port number is 5061. Enter a different port number if required.
 - **RTP start port** – Enter the port used for the first RTP media stream in a SIP call. The default start port for media transport is 4000. Some firewalls might block RTP traffic on certain port numbers. A port number must be between 1024 and 65535.
5. Under **NAT traversal**, select the protocols you want to enable for NAT traversal.

Note

Use NAT traversal when the device is connected to the network from behind a NAT router or a firewall. For more information see *NAT traversal*.

6. Under **Audio**, select at least one audio codec with the desired audio quality for SIP calls. Drag-and-drop to change the priority.
7. Under **Additional**, select additional options.
 - **UDP-to-TCP switching** – Select to allow calls to switch transport protocols from UDP (User Datagram Protocol) to TCP (Transmission Control Protocol) temporarily. The reason for switching is to avoid fragmentation, and the switch can take place if a request is within 200 bytes of the maximum transmission unit (MTU) or larger than 1300 bytes.
 - **Allow via rewrite** – Select to send the local IP address instead of the router's public IP address.
 - **Allow contact rewrite** – Select to send the local IP address instead of the router's public IP address.
 - **Register with server every** – Set how often you want the device to register with the SIP server for the existing SIP accounts.
 - **DTMF payload type** – Changes the default payload type for DTMF.
8. Click **Save**.

Set up SIP through a server (PBX)

Use a PBX-server when user agents will communicate within and outside the IP network. Additional features could be added to the setup depending on the PBX-provider.

For more information about setting options, see *SIP*.

1. Request the following information from your PBX provider:
 - User ID
 - Domain
 - Password
 - Authentication ID
 - Caller ID
 - Registrar
 - RTP start port
2. To add a new account, go to **System > SIP > SIP accounts** and click **+ Account**.
3. Enter the details you received from your PBX provider.

4. Select **Registered**.
5. Select a transport mode.
6. Click **Save**.
7. Set up the SIP settings the same way as for peer-to-peer. See *Set up direct SIP (P2P)*, on page 8 for more information.

Calibrate and run a remote speaker test

You can run a speaker test to verify from a remote location that a speaker is working as intended. The speaker performs the test by playing a series of test tones that are registered by the built-in microphone. Every time you run the test, the registered values are compared with the values that were registered during the calibration.

Note

The test must be calibrated from its mounted position at the installation site. If the speaker is moved or if its local surroundings change, for instance if a wall is built or removed, the speaker should be re-calibrated.

During calibration, it is recommended that someone is physically present at the installation site to listen to the test tones and ensure that the test tones are not muffled or blocked by any unintended obstructions in the speaker's acoustic path.

1. Go to the device interface > **Audio > Speaker test**.
2. To calibrate the audio device, click **Calibrate**.

Note

Once the Axis product is calibrated, the speaker test can be run at any time.

3. To run the speaker test, click **Run the test**.

Note

It is also possible to run the calibration by pressing the control button on the physical device. See *Product overview*, on page 24 to identify the control button.

Set up rules for events

You can create rules to make your device perform actions 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 play an audio clip according to a schedule or when it receives a call, or send an email if the device changes IP address.

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

Trigger an action

1. Go to **System > Events** and add a rule. The rule defines when the device will perform certain actions. You can set up rules as scheduled, recurring, or manually triggered.
2. Enter a **Name**.
3. 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.
4. Select which **Action** to perform when the conditions are met.

Start a profile when an alarm is triggered

This example explains how to trigger an alarm when the digital input signal is changed.

Set direction input for the port:

1. Go to **System > Accessories > I/O ports**.
2. Go to **Port 1 > Normal state** and click **Circuit closed**.

Create a rule:

1. Go to **System > Events** and add a rule.
2. Type a name for the rule.
3. In the list of conditions, select **I/O > Digital input is active**.
4. Select **Port 1**.
5. In the list of actions, select **Run light and siren profile while the rule is active**.
6. Select the profile you want to start.
7. Click **Save**.

Start a profile through SIP

This example explains how to trigger an alarm through SIP.

Activate SIP:

1. Go to **System > SIP > SIP settings**.
2. Select **Enable SIP** and **Allow incoming calls**.
3. Click **Save**.

Create a rule:

1. Go to **System > Events** and add a rule.
2. Type a name for the rule.
3. In the list of conditions, select **Call > State**.
4. In the list of state, select **Active**.
5. In the list of actions, select **Run light and siren profile while the rule is active**.
6. Select the profile you want to start.
7. Click **Save**.

Control more than one profile through SIP extensions

Activate SIP:

1. Go to **System > SIP > SIP settings**.
2. Select **Enable SIP** and **Allow incoming calls**.
3. Click **Save**.

Create a rule to start a profile:

1. Go to **System > Events** and add a rule.
2. Type a name for the rule.
3. In the list of conditions, select **Call > State change**.
4. In the list of reasons, select **Accepted by device**.
5. In **Call direction**, select **Incoming**.
6. In **Local SIP URI**, type `<sip:[Ext]@[IP address]>` where [Ext] is the extension used for the profile and [IP address] is the device address. For example `sip:1001@192.168.0.90`.
7. In the list of actions, select **Light and Siren > Run light and siren profile**.
8. Select the profile you want to start.
9. Select the action **Start**.
10. Click **Save**.

Create a rule to stop a profile:

1. Go to **System > Events** and add a rule.
2. Type a name for the rule.
3. In the list of conditions, select **Call > State change**.
4. In the list of reasons, select **Terminated**.
5. In **Call direction**, select **Incoming**.
6. In **Local SIP URI**, type **sip:[Ext]@[IP address]** where [Ext] is the extension used for the profile and [IP address] is the device address. For example **sip:1001@192.168.0.90**.
7. In the list of actions, select **Light and Siren > Run light and siren profile**.
8. Select the profile you want to stop.
9. Select the action **Stop**.
10. Click **Save**.

Repeat the steps to create start and stop rules for each profile you want to control through SIP.

Run two profiles with different priorities

If you run two profiles with different priorities, the profile with a higher priority number will interrupt the profile with a lower priority number.

Note

If you run two profiles with the same priority, the most recent profile will cancel the previous one.

This example explains how to set the device to show one profile with priority 4 over another profile with priority 3 when triggered by the digital I/O port.

Create profiles:

1. Create a profile with priority 3.
2. Create another profile with priority 4.

Create a rule:

1. Go to **System > Events** and add a rule.
2. Type a name for the rule.
3. In the list of conditions, select **I/O > Digital input is active**.
4. Select a port.
5. In the list of actions, select **Run light and siren profile while the rule is active**.
6. Select the profile that has the highest priority number.
7. Click **Save**.
8. Go to **Profiles** and start the profile with the lowest priority number.

Activate a strobe speaker through HTTP post when a camera detects motion

This example explains how to connect a camera to the strobe speaker, and activate a profile in the strobe speaker whenever the application AXIS Motion Guard, installed in the camera, detects motion.

Before you start:

- Create a new user with the role Operator or Administrator in the strobe speaker.
- Create a profile in the strobe speaker called: "Strobe speaker profile".
- Set up AXIS Motion Guard in the camera and create a profile called: "Camera profile".
- Make sure to use AXIS Device Assistant with firmware version 10.8.0 or later.

Create a recipient in the camera:

1. In the camera's device interface, go to **System > Events > Recipients** and add a recipient.
2. Enter the following information:
 - **Name:** Strobe speaker
 - **Type:** HTTP
 - **URL:** http://<IPAddress>/axis-cgi/siren_and_light.cgi
Replace <IPAddress> with the address of the strobe speaker.
 - The username and password of the newly created strobe speaker user.
3. Click **Test** to make sure all data is valid.
4. Click **Save**.

Create two rules in the camera:

1. Go to **Rules** and add a rule.
2. Enter the following information:
 - **Name:** Activate strobe speaker with motion
 - **Condition:** **Applications > Motion Guard: Camera profile**
 - **Action:** **Notifications > Send notification through HTTP**
 - **Recipient:** **Strobe speaker.**
The information must be the same as you previously entered under **Events > Recipients > Name**.
 - **Method:** **Post**
 - **Body:**

```
{ "apiVersion": "1.0", "method": "start", "params": {
  "profile": "Strobe speaker profile" } }
```

Make sure to enter the same information under **"profile" : <>** as you did when you created the profile in the strobe speaker, in this case: "Strobe speaker profile".

3. Click **Save**.
4. Add another rule with the following information:
 - **Name:** Deactivate strobe speaker with motion
 - **Condition:** **Applications > Motion Guard: Camera profile**
 - Select **Invert this condition**.
 - **Action:** **Notifications > Send notification through HTTP**
 - **Recipient:** **Strobe speaker**
The information must be the same as you previously entered under **Events > Recipients > Name**.
 - **Method:** **Post**
 - **Body:**

```
{ "apiVersion": "1.0", "method": "stop", "params": { "profile": "Strobe speaker
profile" } }
```

Make sure to enter the same information under **"profile" : <>** as you did when you created the profile in the strobe speaker, in this case: "Strobe speaker profile".

5. Click **Save**.

Activate a strobe speaker through virtual input when a camera detects motion

This example explains how to connect a camera to the strobe speaker, and activate a profile in the strobe speaker whenever the application AXIS Motion Guard, installed in the camera, detects motion.

Before you start:

- Create a new account with Operator or Administrator privileges in the strobe speaker.
- Create a profile in the strobe speaker.

- Set up AXIS Motion Guard in the camera and create a profile called "Camera profile".

Create two recipients in the camera:

1. In the camera's device interface, go to **System > Events > Recipients** and add a recipient.
2. Enter the following information:
 - **Name:** Activate virtual port
 - **Type:** HTTP
 - **URL:** `http://<IPaddress>/axis-cgi/virtualinput/activate.cgi`
Replace <IPaddress> with the address of the strobe speaker.
 - The account and password of the newly created strobe speaker account.
3. Click **Test** to make sure all data is valid.
4. Click **Save**.
5. Add a second recipient with the following information:
 - **Name:** Deactivate virtual port
 - **Type:** HTTP
 - **URL:** `http://<IPaddress>/axis-cgi/virtualinput/deactivate.cgi`
Replace <IPaddress> with the address of the strobe speaker.
 - The account and password of the newly created strobe speaker account.
6. Click **Test** to make sure all data is valid.
7. Click **Save**.

Create two rules in the camera:

1. Go to **Rules** and add a rule.
2. Enter the following information:
 - **Name:** Activate virtual IO1
 - **Condition:** **Applications > Motion Guard: Camera profile**
 - **Action:** **Notifications > Send notification through HTTP**
 - **Recipient:** **Activate virtual port**
 - **Query string suffix:** `schemaversion=1&port=1`
3. Click **Save**.
4. Add another rule with the following information:
 - **Name:** Deactivate virtual IO1
 - **Condition:** **Applications > Motion Guard: Camera profile**
 - Select **Invert this condition**.
 - **Action:** **Notifications > Send notification through HTTP**
 - **Recipient:** **Deactivate virtual port**
 - **Query string suffix:** `schemaversion=1&port=1`
5. Click **Save**.

Create a rule in the strobe speaker:

1. In the strobe speaker web interface, go to **System > Events** and add a rule.
2. Enter the following information:
 - **Name:** Trigger on virtual input 1
 - **Condition:** **I/O > Virtual input**
 - **Port:** **1**
 - **Action:** **Light and siren > Run light and siren profile while the rule is active**

- **Profile:** select the newly created profile
3. Click **Save**.

Activate strobe speaker over MQTT when camera detects motion

This example explains how connect a camera to the strobe speaker over MQTT, and activate a profile in the strobe speaker whenever the camera detects motion.

Before you start:

- Create a profile in the strobe speaker.
- Set up an MQTT broker and get the broker's IP address, username and password.
- Make sure the motion detection application is configured and running in the camera.

Set up the MQTT client in the camera:

1. In the camera's web interface, go to **System > MQTT > MQTT client > Broker** and enter the following information:
 - **Host:** Broker IP address
 - **Client ID:** For example Camera 1
 - **Protocol:** The protocol the broker is set to
 - **Port:** The port number used by the broker
 - The broker **Username** and **Password**
2. Click **Save** and **Connect**.

Create two rules in the camera for MQTT publishing:

1. Go to **System > Events > Rules** and add a rule.
2. Enter the following information:
 - **Name:** Motion detected
 - **Condition:** **Applications > Motion alarm**
 - **Action:** **MQTT > Send MQTT publish message**
 - **Topic:** Motion
 - **Payload:** On
 - **QoS:** 0, 1 or 2
3. Click **Save**.
4. Add another rule with the following information:
 - **Name:** No motion
 - **Condition:** **Applications > Motion alarm**
 - Select **Invert this condition**.
 - **Action:** **MQTT > Send MQTT publish message**
 - **Topic:** Motion
 - **Payload:** Off
 - **QoS:** 0, 1 or 2
5. Click **Save**.

Set up the MQTT client in the strobe speaker:

1. In the strobe speaker web interface, go to **System > MQTT > MQTT client > Broker** and enter the following information:
 - **Host:** Broker IP address
 - **Client ID:** Siren 1
 - **Protocol:** The protocol the broker is set to

- **Port:** The port number used by the broker
 - **Username and Password**
2. Click **Save and Connect**.
 3. Go to **MQTT subscriptions** and add a subscription.
Enter the following information:
 - **Subscription filter:** Motion
 - **Subscription type:** Stateful
 - **QoS:** 0, 1 or 2
 4. Click **Save**.

Create a rule in the strobe speaker for MQTT subscriptions:

1. Go to **System > Events > Rules** and add a rule.
2. Enter the following information:
 - **Name:** Motion detected
 - **Condition:** MQTT > Stateful
 - **Subscription filter:** Motion
 - **Payload:** On
 - **Action:** Light and siren > Run light and siren profile while the rule is active
 - **Profile:** Select the profile you want to be active.
3. Click **Save**.

Send an email if a speaker test fails

In this example the audio device is configured to send an email to a defined recipient when a speaker test fails. The speaker test is configured to be performed 18:00 every day.

1. Set up a schedule for the speaker test:
 - 1.1. Go to the device interface > **System > Events > Schedules**.
 - 1.2. Create a schedule that starts at 18:00 and ends at 18:01 every day. Name it "Daily at 6pm".
2. Create an email recipient:
 - 2.1. Go to the device interface > **System > Events > Recipients**.
 - 2.2. Click **Add recipient**.
 - 2.3. Name the recipient "Speaker test recipients"
 - 2.4. Under **Type**, select **Email**.
 - 2.5. Under **Send email to**, enter the email addresses of the recipients. Use commas to separate multiple addresses.
 - 2.6. Enter the details for the email account of the sender.
 - 2.7. Click **Test** to send a test email.

Note

Some email providers have security filters that prevent users from receiving or viewing large attachments, from receiving scheduled emails and similar. Check the email provider's security policy to avoid delivery problems and locked email accounts.


- 2.8. Click **Save**.
3. Set up the automated speaker test:
 - 3.1. Go to the device interface > **System > Events > Rules**.
 - 3.2. Click **Add a rule**.
 - 3.3. Enter a name for the rule.

- 3.4. Under **Condition**, select **Schedule** and select from the trigger list
- 3.5. Under **Schedule**, select your schedule ("Daily at 6pm").
- 3.6. Under **Action**, select **Run automatic speaker test**.
- 3.7. Click **Save**.
4. Set up the condition for sending an email when the speaker test fails:
 - 4.1. Go to the device interface > **System** > **Events** > **Rules**.
 - 4.2. Click **Add a rule**.
 - 4.3. Enter a name for the rule.
 - 4.4. Under **Condition**, select **Speaker test result**.
 - 4.5. Under **Speaker test status**, select **Didn't pass the test**.
 - 4.6. Under **Action**, select **Send notification to email**.
 - 4.7. Under **Recipient**, select your recipient ("Speaker test recipients")
 - 4.8. Enter a subject and a message, and click **Save**.


Play custom clip when an alarm is triggered

This example explains how to trigger a custom audio file when the digital input signal changes.

Upload an audio file:

1. Go to **Media** and click  **Add**.
2. Click to browse and select the audio file from your computer.
3. Select **Storage location**.
4. Click **Save**.

Create a profile with the audio file:

1. Go to **Profiles** and click  **Create**.
2. Enter **Name** and select light pattern for the profile.
3. In the siren section, select the uploaded audio file.
4. Select **Intensity** and **Duration**.
5. Click **Save**.

Set direction input for the port:


1. Go to **System** > **Accessories** > **I/O ports**.
2. Go to **Port 1** > **Normal state** and click **Circuit closed**.

Create a rule:

1. Go to **System** > **Events** and add a rule.
2. Enter a name for the rule.
3. In the list of conditions, select **I/O** > **Digital input is active**.
4. Select **Port 1**.
5. In the list of actions, select **Run light and siren profile while the rule is active**.
6. Select the profile with the uploaded audio file.
7. Click **Save**.

Stop audio with DTMF

This example explains how to:


- Configure DTMF on a device.
 - Set up an event to stop the audio when a DTMF command is sent to the device.
1. Go to **System > SIP > SIP settings**.
 2. Make sure **Enable SIP** is turned on.
If you need to turn it on, remember to click **Save** afterwards.
 3. Go to **SIP accounts**.
 4. Next to the SIP account, click  > **Edit**.
 5. Under **DTMF**, click **+ DTMF sequence**.
 6. Under **Sequence**, enter "1".
 7. Under **Description**, enter "stop audio".
 8. Click **Save**.
 9. Go to **System > Events > Rules** and click **+ Add a rule**.
 10. Under **Name**, enter "DTMF stop audio".
 11. Under **Condition**, select **DTMF**.
 12. Under **DTMF Event ID**, select **stop audio**.
 13. Under **Action**, select **Stop playing audio clip**.
 14. Click **Save**.

Set up audio for incoming SIP calls

You can set up a rule that plays an audio clip when you receive a SIP call.

You can also set up an additional rule that answers the SIP call automatically after the audio clip has ended. This can be useful in cases where an alarm operator wants to call the attention of someone near an audio device and establish a line of communication. This is done by making a SIP call to the audio device, which will play an audio clip to alert the persons near the audio device. When the audio clip has stopped playing, the SIP call is automatically answered by the audio device and communication between the alarm operator and the persons near the audio device can take place.

Enable SIP settings:

1. Go to the device interface of the speaker, by entering its IP address in a web browser.
2. Go to **System > SIP > SIP settings** and select **Enable SIP**.
3. To allow the device to receive incoming calls, select **Allow incoming calls**.
4. Click **Save**.
5. Go to **SIP accounts**.
6. Next to the SIP account, click  > **Edit**.
7. Uncheck **Answer automatically**.

Play audio when a SIP call is received:

1. Go to **Settings > System > Events > Rules** and add a rule.
2. Type a name for the rule.
3. In the list of conditions, select **State**.
4. In the list of states, select **Ringling**.
5. In the list of actions, select **Play audio clip**.
6. In the list of clips, select the audio clip you want to play.
7. Select how many times to repeat the audio clip. 0 means "play once".

8. Click **Save**.

Answer the SIP call automatically after the audio clip has ended:

1. Go to **Settings > System > Events > Rules** and add a rule.
2. Type a name for the rule.
3. In the list of conditions, select **Audio clip playing**.
4. Check **Use this condition as a trigger**.
5. Check **Invert this condition**.
6. Click **+ Add a condition** to add a second condition to the event.
7. In the list of conditions, select **State**.
8. In the list of states, select **Ringling**.
9. In the list of actions, select **Answer call**.
10. Click **Save**.

The web interface

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

Learn more

Session Initiation Protocol (SIP)

The Session Initiation Protocol (SIP) is used to set up, maintain and terminate VoIP calls. You can make calls between two or more parties, called SIP user agents. To make a SIP call you can use, for example, SIP phones, softphones or SIP-enabled Axis devices.

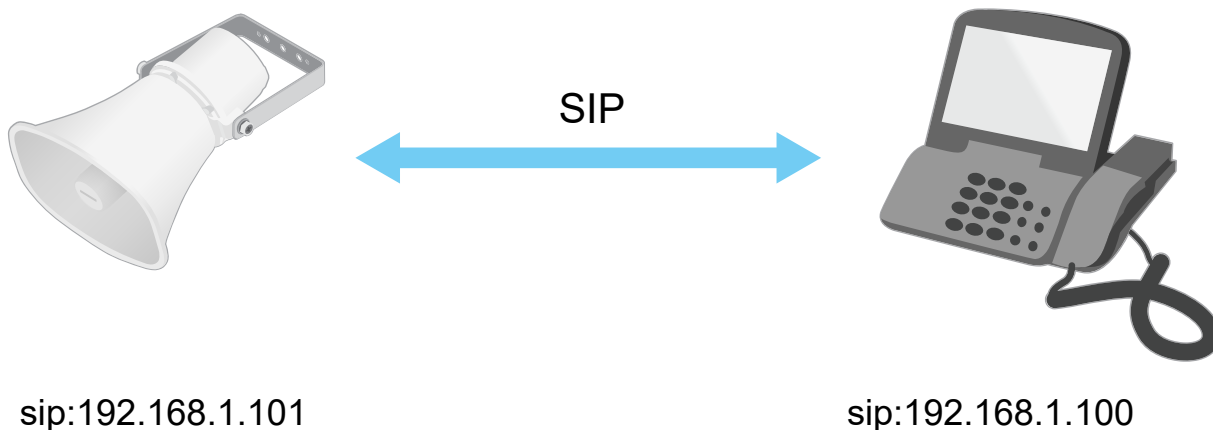
The actual audio or video is exchanged between the SIP user agents with a transport protocol, for example RTP (Real-Time Transport Protocol).

You can make calls on local networks using a peer-to-peer setup, or across networks using a PBX.

Peer-to-peer SIP (P2PSIP)

The most basic type of SIP communication takes place directly between two or more SIP user agents. This is called peer-to-peer SIP (P2PSIP). If it takes place on a local network, all that's needed are the SIP addresses of the user agents. A typical SIP address in this case would be `sip:<local-ip>`.

Example:



You can set up a SIP-enabled phone to call an audio device on the same network using a peer-to-peer SIP setup.

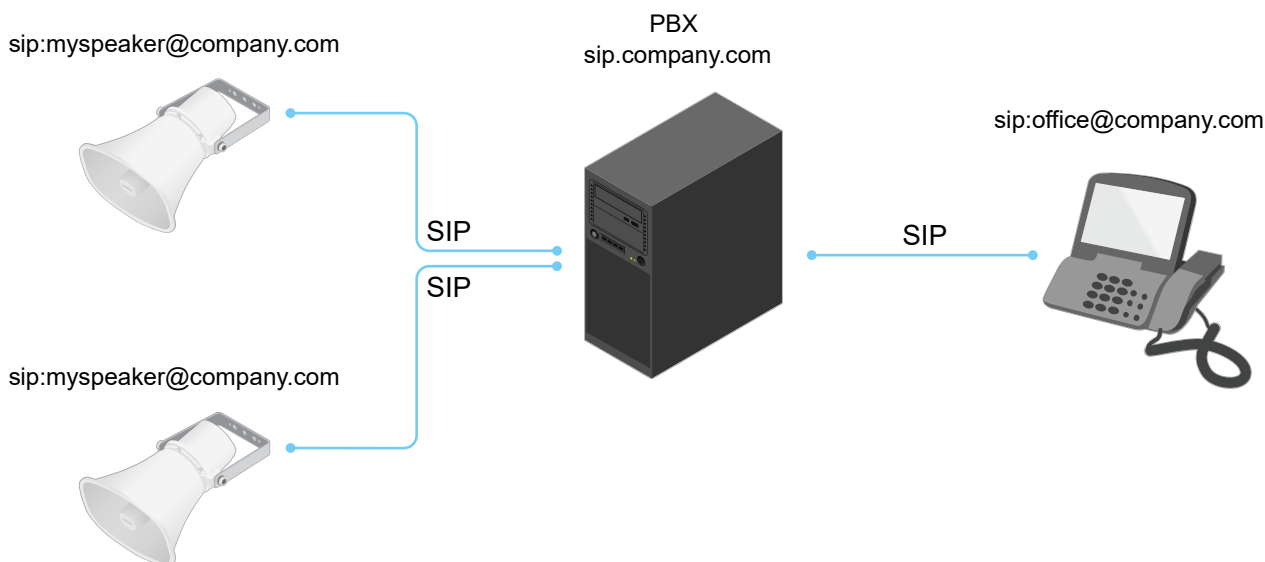
Private Branch Exchange (PBX)

When you make SIP calls outside your local IP network, a Private Branch Exchange (PBX) can act as a central hub. The main component of a PBX is a SIP server, which is also referred to as a SIP proxy or a registrar. A PBX works like a traditional switchboard, showing the client's current status and allowing for example call transfers, voicemail, and redirections.

The PBX SIP server can be set up as a local entity or offsite. It can be hosted on an intranet or by a third party provider. When you make SIP calls between networks, calls are routed through a set of PBXs, that query the location of the SIP address to be reached.

Each SIP user agent registers with the PBX, and can then reach the others by dialing the correct extension. A typical SIP address in this case would be `sip:<user>@<domain>` or `sip:<user>@<registrar-ip>`. The SIP address is independent of its IP address and the PBX makes the device accessible as long as it is registered to the PBX.

Example:



NAT traversal

Use NAT (Network Address Translation) traversal when the Axis device is located on an private network (LAN) and you want to access it from outside of that network.

Note

The router must support NAT traversal and UPnP®.

Each NAT traversal protocol can be used separately or in different combinations depending on the network environment.

- **ICE** (The ICE Interactive Connectivity Establishment) protocol increases the chances of finding the most efficient path to successful communication between peer devices. If you also enable STUN and TURN, you improve the ICE protocol's chances.
- **STUN** - STUN (Session Traversal Utilities for NAT) is a client-server network protocol that lets the Axis device determine if it is located behind a NAT or firewall, and if so obtain the mapped public IP address and port number allocated for connections to remote hosts. Enter the STUN server address, for example, an IP address.
- **TURN** - TURN (Traversal Using Relays around NAT) is a protocol that lets a device behind a NAT router or firewall receive incoming data from other hosts over TCP or UDP. Enter TURN server address and the login information.

Analytics and apps

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

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

AXIS Audio Analytics

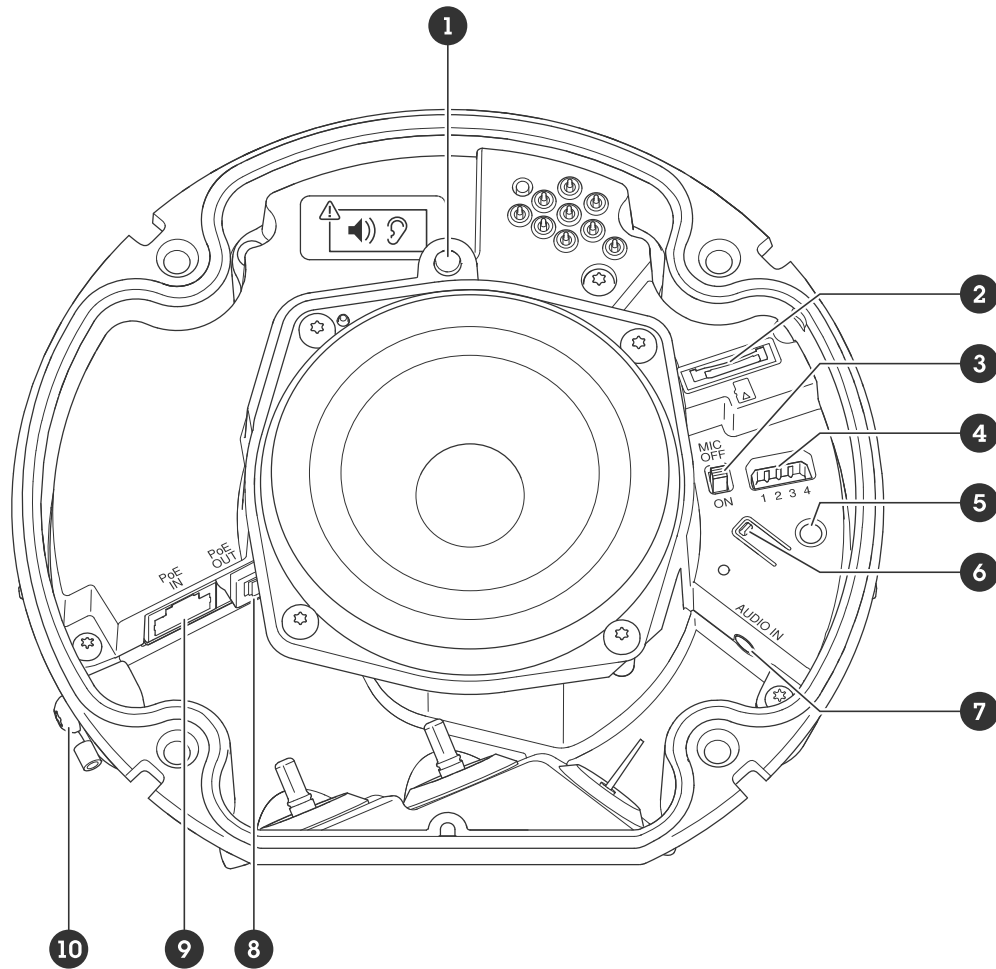
AXIS Audio Analytics detects sudden increases in sound volume and specific types of sounds such as screams or shouts within range of the device it's installed on. These detections can be configured to trigger a response, such as recording video, playing an audio message, or alerting security staff. To find out more about how the application works, see *AXIS Audio Analytics user manual*.

InformaCast®

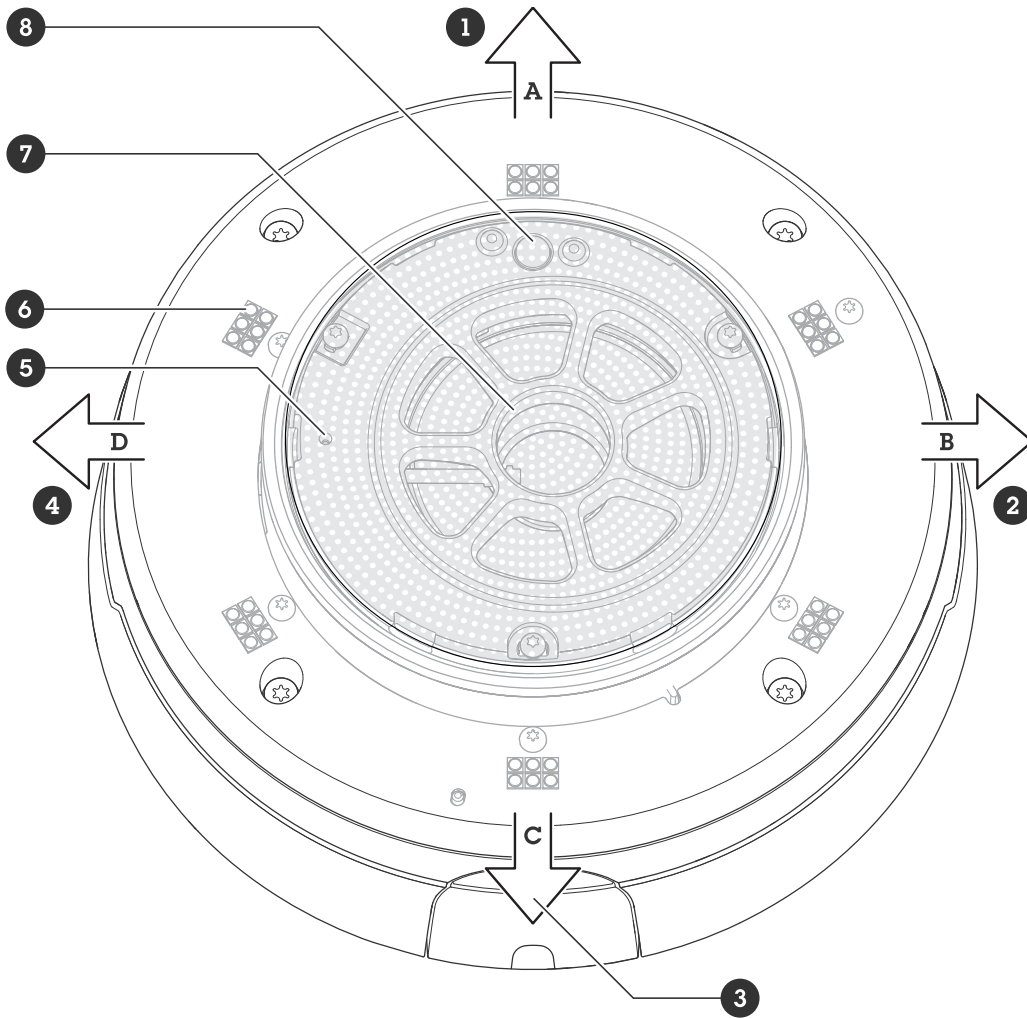
InformaCast is a platform that allows you to send emergency messages and communicate through the communication channels your organization already has in place, including Axis network speakers. InformaCast mass notification system delivers intrusive audio alerts throughout your facility. To find out more about the application, see *AXIS Speaker Functionality for Singlewire InformaCast*.

Specifications

Product overview



- 1 Audio LED
- 2 microSD card slot
- 3 Microphone switch
- 4 I/O connector
- 5 Status LED indicator
- 6 Control button
- 7 Audio connector
- 8 Network connector (PoE OUT)
- 9 Network connector (PoE IN)
- 10 Grounding screw



- 1 Light direction A
- 2 Light direction B
- 3 Light direction C
- 4 Light direction D
- 5 Internal microphone
- 6 Signaling LEDs
- 7 Speaker
- 8 Audio LED

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, during reset to factory default or when restoring settings.

SD card slot

NOTICE

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

For SD card recommendations, see axis.com.



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Buttons

Control button

The control button is used for:

- Calibrating the speaker test. Press and release the control button and a test tone is played.
- Resetting the product to factory default settings. See *Reset to factory default settings, on page 31*.
- Connecting to a one-click cloud connection (O3C) service over the internet. To connect, press and release the button, then wait for the status LED to flash green three times.

Microphone switch

For location of the microphone switch, see *Product overview, on page 24*.

The microphone switch is used to mechanically turn the microphone **ON** or **OFF**. The factory default setting for this switch is **ON**.

Connectors

Network connector

RJ45 Ethernet connector with Power over Ethernet (PoE).

NOTICE

The device shall be connected using a shielded network cable (STP). All cables connecting the device to the network shall be intended for their specific use. Make sure that the network devices are installed in accordance with the manufacturer's instructions. For information about regulatory requirements, see the Installation Guide at www.axis.com.

Audio connector

- **Audio in** – 3.5 mm input for a digital microphone, an analog mono microphone, or a line-in mono signal (left channel is used from a stereo signal).



Audio input

1 Tip	2 Ring	3 Sleeve
Unbalanced microphone (with or without electret power) or line-in	Electret power if selected	Ground
Digital signal	Ring power if selected	Ground

Note

The maximum length of connected cable is 30 m (98.4 ft).

I/O connector

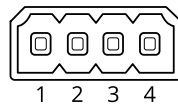
Use the I/O connector with external devices in combination with, for example, motion detection, event triggering, and alarm notifications. In addition to the 0 VDC reference point and power (12 V DC output), the I/O connector provides the interface to:


Digital input – For connecting devices that can toggle between an open and closed circuit, for example PIR sensors, door/window contacts, and glass break detectors.

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

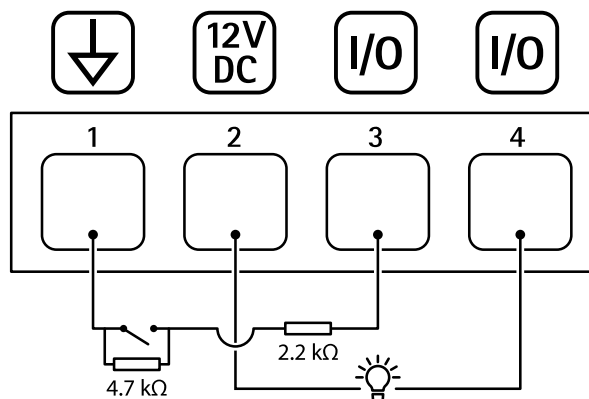
Digital output – For connecting external devices such as relays and LEDs. Connected devices can be activated by the VAPIX® Application Programming Interface, through an event or from the device's web interface.

4-pin terminal block



Function	Pin	Notes	Specifications
DC ground	1		0 VDC
DC output	2	 Can be used to power auxiliary equipment. Note: This pin can only be used as power out.	12 VDC Max load = 50 mA
Configurable (Input or Output)	3-4	Digital input or Supervised input – Connect to pin 1 to activate, or leave floating (unconnected) to deactivate. To use supervised input, install end-of-line resistors. See connection diagram for information about how to connect the resistors.	0 to max 30 VDC
		Digital output – Internally connected to pin 1 (DC ground) when active, and floating (unconnected) when inactive. If used with an inductive load, e.g., a relay, connect a diode in parallel with the load, to protect against voltage transients.	0 to max 30 VDC, open drain, 100 mA

Example:



- 1 DC ground
- 2 DC output 12 V, max 50 mA

- 3 I/O configured as supervised input
- 4 I/O configured as output

Note

The maximum length of connected cable is 30 m (98.4 ft).

Light pattern names

Off
Steady
Alternate
Pulse
Escalate 3 steps
Blink
Blink 3x
Blink 4x
Blink 3x fade
Blink 4x fade
Flash 1x
Flash 3x
Direction A
Direction B
Direction C
Direction D
Rotate
Random
Spin

Sound pattern names

Alarm: Alarm high pitch
Alarm: Alarm low pitch
Alarm: Bird
Alarm: Boat horn
Alarm: Car alarm
Alarm: Car alarm fast
Alarm: Classic clock
Alarm: First attender
Alarm: Horror
Alarm: Industrial
Alarm: Single beep

Alarm: Soft quad beep
Alarm: Soft triple beep
Alarm: Triple high pitch
Notification: Accepted
Notification: Calling
Notification: Denied
Notification: Done
Notification: Entry
Notification: Failed
Notification: Hurry
Notification: Message
Notification: Next
Notification: Open
Siren: Alternate
Siren: Bouncy
Siren: Evac
Siren: Falling pitch
Siren: Home soft

Clean your device

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

NOTICE

- Harsh chemicals can damage the device. Don't use chemicals such as window cleaner or acetone to clean your device.
 - Avoid cleaning in direct sunlight or elevated temperatures, since this can cause stains.
1. Use a can of compressed air to remove dust and loose dirt from the device.
 2. If necessary, clean the device with a soft microfiber cloth dampened with lukewarm water and mild, nonabrasive soap.
 3. To remove any residual cleaning agents, wipe the device with a soft microfiber cloth dampened with lukewarm water.
 4. To avoid stains, dry the device with a clean, nonabrasive cloth.

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

Troubleshooting

Reset to factory default settings

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 24*.
3. Keep the control button pressed for 10 seconds until the status LED indicator turns amber for the second time.
4. Release the control button. The process is complete when the status LED indicator turns green. If no DHCP server is available on the network, the device IP address will default to one of the following:
 - Devices with AXIS OS 12.0 and later: Obtained from the link-local address subnet (169.254.0.0/16)
 - Devices with AXIS OS 11.11 and earlier: 192.168.0.90/24
5. Use the installation and management software tools, assign an IP address, set the password, and access the product.

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

AXIS OS options

Axis offers device software management according to either the active track or the long-term support (LTS) tracks. Being on the active track means continuously getting access to all the latest product features, while the LTS tracks provide a fixed platform with periodic releases focused mainly on bug fixes and security updates.

Using AXIS OS from the active track is recommended if you want to access the newest features, or if you use Axis end-to-end system offerings. The LTS tracks are recommended if you use third-party integrations, which are not continuously validated against the latest active track. With LTS, the products can maintain cybersecurity without introducing any significant functional changes or affecting any existing integrations. For more detailed information about Axis device software strategy, go to axis.com/support/device-software.

Check the current AXIS OS version

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

To check the current AXIS OS version:

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

Upgrade AXIS OS

Important

- When you upgrade the device software, your preconfigured and customized settings are saved. Axis Communications AB can't guarantee that the settings are saved, even if the features are available in the new AXIS OS version.
- Starting from AXIS OS 12.6, you must install every LTS version between your device's current version and the target version. For example, if the currently installed device software version is AXIS OS 11.2, you

have to install the LTS version AXIS OS 11.11 before you can upgrade the device to AXIS OS 12.6. For more information, see *AXIS OS Lifecycle guide: Upgrade path*.

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

Note

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

When the upgrade has finished, the product restarts automatically.

Technical problems and possible solutions

Problems upgrading AXIS OS

AXIS OS upgrade failed

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

Problems after AXIS OS upgrade

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

Problems setting the IP address

Can't set the IP address

- If the IP address intended for the device and the IP address of the computer used to access the device are located on different subnets, you can't set the IP address. Contact your network administrator to obtain an IP address.
- The IP address could be in use by another device. To check:
 1. Disconnect the Axis device from the network.
 2. In a Command/DOS window, type `ping` and the IP address of the device.
 3. If you receive: `Reply from <IP address>: bytes=32; time=10...` this means that the IP address might already be in use by another device on the network. Obtain a new IP address from the network administrator and reinstall the device.
 4. If you receive: `Request timed out`, this means that the IP address is available for use with the Axis device. Check all cabling and reinstall the device.
- There could be a possible IP address conflict with another device on the same subnet. The static IP address in the Axis device is used before the DHCP server sets a dynamic address. This means that if the same default static IP address is also used by another device, there could be problems accessing the device.

Problems accessing the device

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

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

If you've lost the password for the root account, you must reset the device to the factory default settings. For instructions, see *Reset to factory default settings, on page 31*.

The IP address has been changed by DHCP

IP addresses obtained from a DHCP server are dynamic and could change. If the IP address has been changed, use AXIS IP Utility or AXIS Device Manager to locate the device on the network. Identify the device using its model or serial number, or by the DNS name (if the name has been configured).

If required, you can assign a static IP address manually. For instructions, go to axis.com/support.

Certificate error when using IEEE 802.1X

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

The browser isn't supported

For a list of recommended browsers, see *Browser support, on page 6*.

Can't access the device externally

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

- AXIS Camera Station Edge: free of charge, ideal for small systems with basic surveillance needs.
- AXIS Camera Station Pro: 90-day trial version free of charge, ideal for small to mid-size systems.

For instructions and download, go to axis.com/vms.

Problems with audio files

Can't upload media clip

The following audio clip formats are supported:

- au file format, encoded in μ -law and sampled with 8 or 16 kHz.
- wav file format, encoded in PCM audio. It supports encoding as 8 or 16-bit mono or stereo and sample rate of 8 to 48 kHz.
- mp3 file format, in mono or stereo with bitrate of 64 kbps to 320 kbps and sample rate of 8 to 48 kHz.

Media clips are played with different volumes

A sound file is recorded with a certain gain. If your audio clips have been created with different gains, they will be played with a different loudness. Make sure that you use clips with the same gain.

Problems with MQTT

Can't connect over port 8883 with MQTT over SSL

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

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

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

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

Problems with the sound

The device is not as loud as expected	Check that the device is closed correctly and that there are no obstructions in the horn or on the speaker element.
---------------------------------------	---

Problems with the light

The device is not as bright as expected	Check that a PoE class 4 power supply is used.
	Check the device's ambient temperature. If the device is installed in a high temperature environment, the lights will dim automatically.

Performance considerations

When you set up your system, it's important to consider how different settings and situations affect the required bandwidth (bitrate).

The most important factors to consider:

- Heavy network utilization due to poor infrastructure affects the bandwidth.
- Running multiple AXIS Camera Application Platform (ACAP) applications simultaneously may affect the general performance.

Contact support

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

Cybersecurity

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

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

Vulnerability management

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

Security notifications

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

Secure product lifecycle

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

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

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

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

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

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