

AXIS P1455–LE–3 License Plate Verifier Kit

User Manual

AXIS P1455-LE-3 License Plate Verifier Kit

About the product

About the product

AXIS P1455-LE-3 License Plate Verifier Kit consists of an AXIS P1455-LE Network Camera and pre-installed AXIS License Plate Verifier application, making it a kit for license plate recognition for slow-speed traffic, as well as automated vehicle entry and exit management. AXIS P1455-LE-3 uses a whitelist and a blacklist to verify access to controlled areas such as parking lots.

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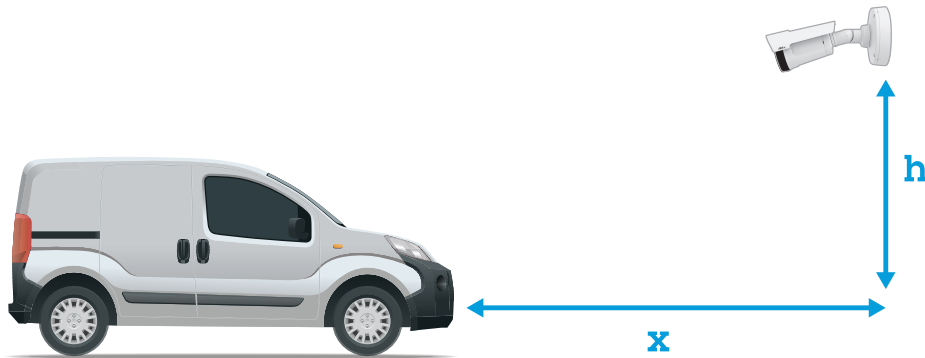
Get started

These setup instructions are valid for all scenarios:

1. *Camera mounting recommendations on page 3*
2. *Step-by-step guide on page 5*
3. *Adjust the area of interest on page 8*
4. *Select region on page 9*
5. *Set up event storage on page 9*

Camera mounting recommendations

- When you select the mounting location, remember that direct sunlight can distort the image, for example, during sunrise and sunset.
- The mounting height for a camera in a **Access control** scenario should be half of the distance of that between the vehicle and the camera.
- The mounting height for camera in a **Free flow** (slow traffic license plate recognition) scenario should be less than half of the distance of that between the vehicle and the camera.



Access control capture distance: 2–7 m (6.6–23 ft). This example is based on the AXIS P3245–LVE-3 License Plate Verifier kit.

Capture distance: (x)	Mounting height (y)
2.0 m (6.6 ft)	1.0 m (3.3 ft)
3.0 m (9.8 ft)	1.5 m (4.9 ft)
4.0 m (13 ft)	2.0 m (6.6 ft)
5.0 m (16 ft)	2.5 m (8.2 ft)
7.0 m (23 ft)	3.5 m (11 ft)

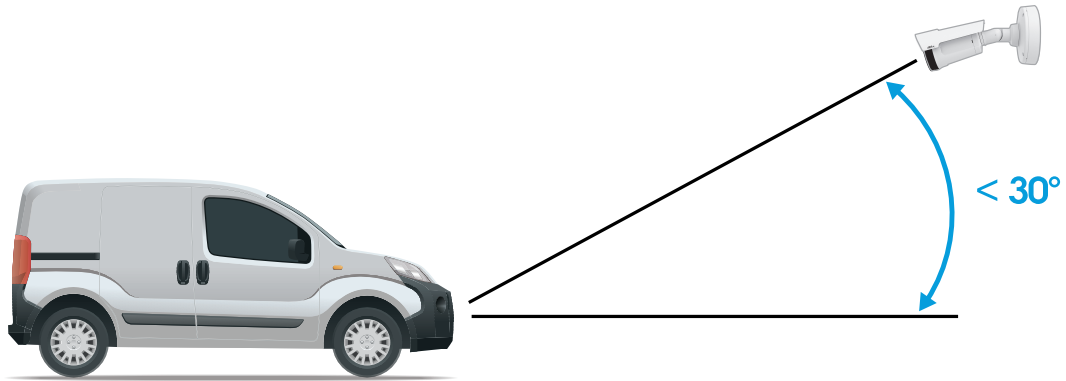
Free flow capture distance: 7–20m (23–65 ft). This example is based on the AXIS P1455–LE-3 License Plate Verifier kit.

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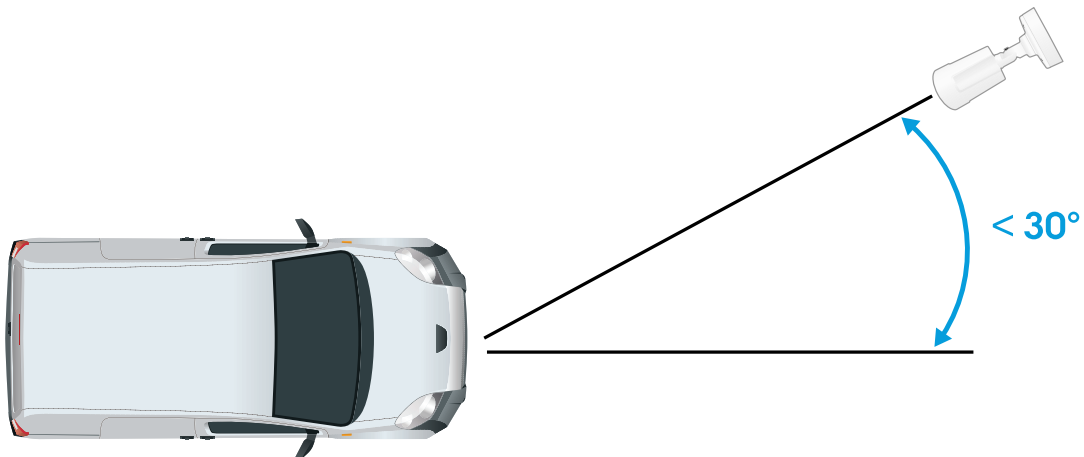
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Capture distance (x)	Mounting height (y)
7.0 m (23 ft)	3.0 m (9.8 ft)
10.0 m (33 ft)	4.0 m (13 ft)
15.0 m (49 ft)	6.0 m (19.5 ft)
20.0 m (65 ft)	10.0 m (33 ft)

- The camera's mounting angle should not be larger than 30° in any direction.



Mounting angle from the side.

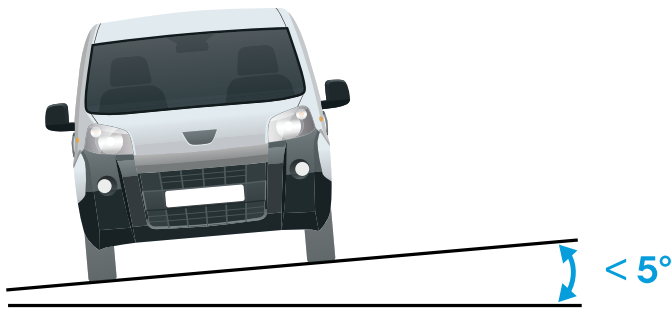


Mounting angle from above.

- The image of the license plate should not tilt more than 5° horizontally. If the image is tilted more than 5°, we recommended that you adjust the camera so that the license plate is displayed horizontally in the live stream.

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Horizontal tilt.

Step-by-step guide

When you first run the application, set up **Free flow** or **Access control** using the step-by-step guide. If you want to make changes later on, it can be found in the **Settings** tab under **Configuration wizard**.

Free flow

In **Free flow**, the application can detect and read license plates in slow speed traffic on larger access roads, city centers and enclosed areas like campuses, ports or airports. This allows for LPR-forensic search and LPR triggered events in a VMS.

1. Select **Free flow** and click **Next**.
2. Select the image rotation that corresponds to how your camera is mounted.
3. Select the number of areas of interest. Note that one area can detect plates in both directions
4. Select the region where the camera is located.
5. Select capture type.
 - **License plate crop** saves only the license plate.
 - **Vehicle crop** saves the entire captured vehicle.
 - **Frame downsized 480x270** saves the entire image and reduces the resolution to 480x270.
 - **Full frame** saves the entire image at full resolution.
6. Drag the anchor points to adjust the area of interest. See *Adjust the area of interest on page 8*.
7. Adjust the direction of the area of interest. Click the arrow and rotate to set the direction. The direction determines how the application registers vehicles entering or exiting the area.
8. Click **Next**
9. In the **Protocol** drop-down list, select one of the following protocols:
 - TCP
 - HTTP POST

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10. In the **Server URL** field, type the server address and port in the following format: 127.0.0.1:8080
11. In the **Device ID** field, type the name of the device or leave as is.
12. Under **Event types**, select one or more of the following options:
 - **New** means the first detection of a license plate.
 - **Update** is either a correction of a character on a previously detected license plate, or when a a direction is detected as the plate moves and is tracked across the image.
 - **Lost** is the last tracked event of the license plate before it exits the image. It also contains the direction of the license plate.
13. To turn on the feature, select **Send event data to server**.
14. To reduce bandwidth when using HTTP POST, you can select **Do not to send images through HTTP POST**.
15. Click **Next**
16. If you already have a list of registered plates, choose to import as either a **blocklist** or **allowlist**.
17. Click **Finish**.

Access control

Use the setup wizard for quick and easy configuration. You can choose to **Skip** to leave the guide at any time.

1. Select **Access control** and click **Next**.
2. Select the type of access control to use:
 - **Internal I/O** if you want keep list management in the camera. See *Open a barrier for known vehicles using the camera's I/O on page 14*
 - **Controller** if you want to connect a Door controller. See *Connect to a door controller on page 16*
 - **Relay** if you want to connect to a relay module. See *Open a barrier for known vehicles using a relay module on page 13*
3. In the **Barrier mode** drop-down list, under **Open from lists**, select **Allowlist**.
4. In the **Vehicle direction** drop-down list, select **out**.
5. In the **ROI** drop-down-list, select the area of interest you would like to use, or if you would like to use all.
6. Click **Next**

Image settings

1. Select the number of areas of interest.
2. Select the region where the camera is located.
3. Select capture type. See *Adjust the image capture settings on page 9*.
4. Drag the anchor points to adjust the area of interest. See *Adjust the area of interest on page 8*.
5. Adjust the direction of the area of interest. The direction determines how the application registers vehicles entering or exiting the area.
6. Click **Next**

Event data See *Push event information to third-party software on page 19*

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1. In the **Protocol** drop-down list, select one of the following protocols:
 - TCP
 - HTTP POST
2. In the **Server URL** field, type the server address and port in the following format: 127.0.0.1:8080
3. In the **Device ID** field, type the name of the device or leave as is.
4. Under **Event types**, select one or more of the following options:
 - **New** means the first detection of a license plate.
 - **Update** is either a correction of a character on a previously detected license plate, or when a a direction is detected as the plate moves and is tracked across the image.
 - **Lost** is the last tracked event of the license plate before it exits the image. It also contains the direction of the license plate.
5. To turn on the feature, select **Send event data to server**.
6. To reduce bandwidth when using HTTP POST, you can select **Do not to send images through HTTP POST**.
7. Click **Next**

Import list from a .csv file.

1. If you already have a list of registered plates, choose to import as either a **blocklist** or **allowlist**.
2. Click **Finish**.

How to access the product's webpage

If you do not know the IP address of your product, use **AXIS IP Utility** or **AXIS Device Manager** to locate the product on the network. Both applications are free and can be downloaded from axis.com/support

We recommend the following browsers:

- Chrome™
 - Firefox®
1. Start the web browser.
 2. Enter the IP address or host name of the Axis product in the browser's address field.
 3. Enter the username and password. If this is the first time you access the product, you must first configure the root password.
 4. If this is the first time you access the product, you are prompted to do some initial settings. When you're done, the product's live view page opens in your browser..

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

Set a new 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. See *Reset to factory default settings on page 21*

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

www.axis.com/products/online-manual/70394#t10098905

Support tip: Password security confirmation check

1. Type a password. Follow the instructions about secure passwords. See *Secure passwords on page 8*.
2. Retype the password to confirm the spelling.
3. Click **Create login**. The password has now been configured.

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.

Access the application settings

1. In the camera's webpage, go to **Apps**, start the application and click **Open**.

Adjust the area of interest

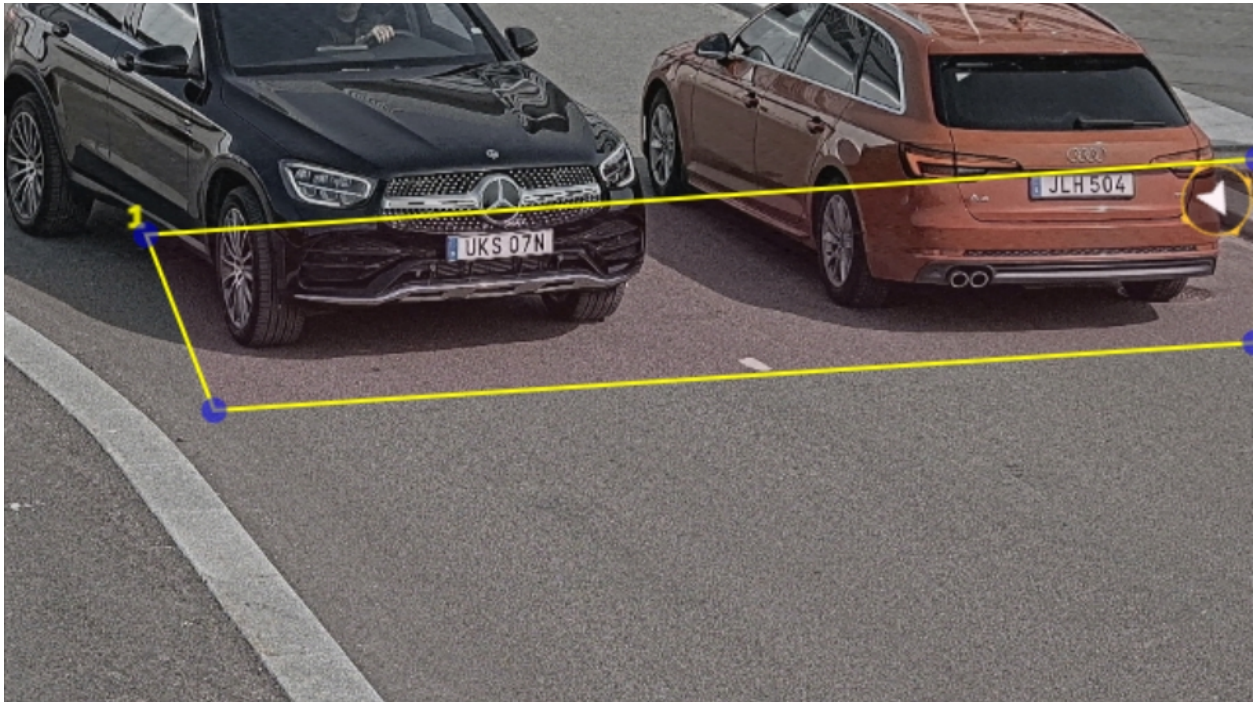
Note

If you move the area of interest more than 60° or if you place it outside the live view, it will automatically jump back to default position. Make sure the region of interest stays in position after you have saved the settings.

1. Go to **Settings**.
 2. Click **Edit area of interest**.
 3. To adjust the area of interest, click anywhere in the area and drag the anchor points highlighted in blue.
 4. To get the correct direction feedback in the **Event log**, turn the arrow to the driving direction. Click outside the area of interest, and then click the arrow and rotate to set the direction. The direction feedback shows up in the **Direction** column. Note that one area can detect plates in both directions
- To add a second of interest, select **2** in the **Area of interest** drop-down menu.

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Example with one area of interest.

Note

For performance reasons, keep the area of interest as small as possible.

Select region

1. Go to **Settings > Image**.
2. In the **Region** drop-down list, select your region.

Adjust the image capture settings

1. Go to **Settings > Image**.
2. To change the resolution of captured images, go to **Resolution**
3. To change the rotation of the captured image, go to **Image rotation**
4. To change how you save your captured images, go to **Save full frame**:
 - **License plate crop** saves only the license plate.
 - **Vehicle crop** saves the entire captured vehicle.
 - **Frame downsized 480x270** saves the entire image and reduces the resolution to 480x270.
 - **Full frame** saves the entire image at full resolution.

Set up event storage

This example use case explains how to store events of allowlisted license plate numbers for 30 days.

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Requirements:

- Camera physically installed and connected to the network.
 - AXIS License Plate Verifier up and running on the camera.
1. Go to **Settings > Events**.
 2. Under **Save events**, select **Allowlisted**.
 3. Under **Delete events after**, select **30 days**.

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Additional settings

Additional settings

Add detected license plate to list

A license plate can be added directly to a list after being detected by the application.

1. Click the Event log tab
2. Go to Latest Event
3. Click **Add to list** next to the license plate that you'd like to add.
4. Select the list you would like to add the license plate in the list drop down menu.
5. Click **Append**

Import allowlisted license plate numbers

You can import allowlisted license plate numbers from a .csv file on the computer. In addition to the license plate number, you can also add comments for each license plate number in the .csv file.

The structure of the .csv file must look like this: `license plate number, comment`

Example

```
AXIS123, Reception1
```

```
AXIS345, Reception2
```

```
AXIS456, Reception3
```

1. Go to **List management**
2. Go to the context menu next to **Allowlist** and select **Import from file**.
3. Browse to select a .csv file on the computer.
4. Click **OK**.
5. Check that the imported license plate numbers appear in the **Allowlist**.

Share license plate lists with other cameras

You can share the license plate lists with other cameras on the network. The synchronization will override all current license plate lists in the other cameras.

1. Go to **List management**.
2. Under **Camera synchronization**, type the IP address, username and password.
3. Click **+**.
4. Click **Camera synchronization**.
5. Check that the date and time under **Last sync** updates accordingly.

Configure text overlay

A text overlay shows the following event information in the live view: `weekday, month, time, year, license plate number`.

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Additional settings

1. Go to **Settings > Image**.
2. Activate **Text overlay**.
3. Set **Overlay duration** to a value between 1 and 9 seconds.
4. Select either date, time and license plate (**Datetime + LP**), or just the license plate (**LP**).
5. Check that the overlay appears in the live view.

Detect license plates in low-light conditions

Each detection gets a score by the algorithm, this is called the sensitivity level (confidence parameter). Detections that have a lower score than the selected level will not show up in the list of events.

For scenes with low lighting you can lower the sensitivity level.

1. Go to **Settings > Detection parameters**.
2. Adjust the slider under **Sensitivity level**. To avoid false detections, we recommend that you lower the threshold value with 0.05 at a time.
3. Check that the algorithm detects the license plates as expected.

Allow fewer characters on license plates

The application has a default minimum number of characters for a license plate to be detected. The default minimum number of characters is five. You can configure the application to detect license plates with fewer characters.

1. Go to **Settings > Detection parameters**.
2. In the **Minimum number of characters** field, type the minimum number of characters you want to allow.
3. Check that the application detects license plates as expected.

Allow more than one character deviation when matching license plates

The matching algorithm automatically allows a deviation of one character when matching the detected license plate against the allowlist or blocklist. However, you can allow more than one character deviation.

1. Go to **Settings > Detection parameters**.
2. Under **Allowed character deviation**, select the number of characters that are allowed to be different.
3. Check that the application matches the license plates as expected.

Set up secure connection

To protect communication and data between devices, for example between the camera and the door controller, set up a secure connection with HTTPS using certificates.

1. Go to **Settings > Security**.
2. Under **HTTPS**, **Enable HTTPS**.
3. Select either **Self-signed** or **CA-signed**.

Note

Find out more about HTTPS and how to use it at .

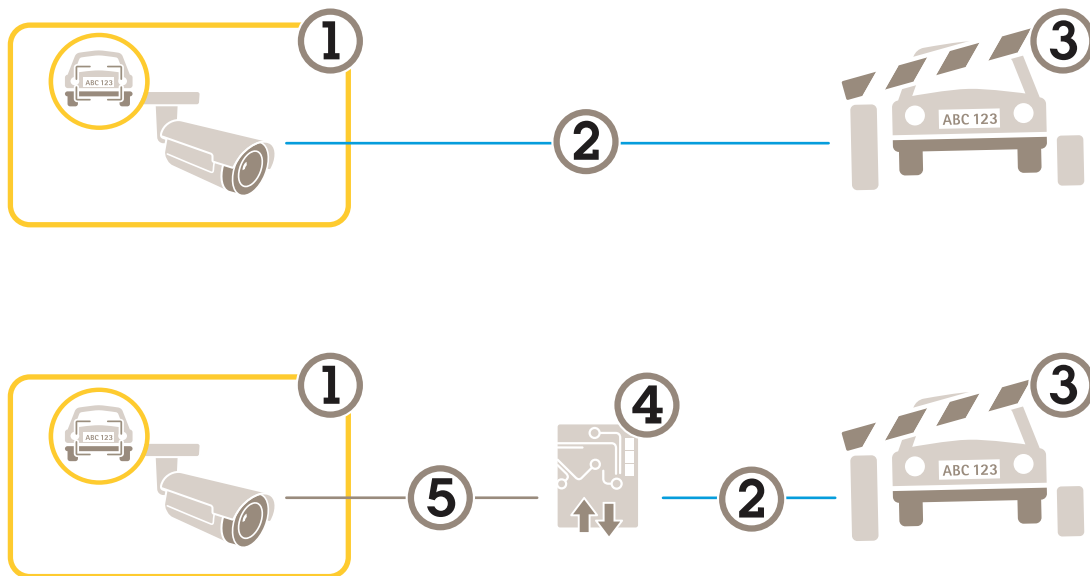
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Vehicle entry and exit scenario

Vehicle entry and exit scenario

In the scenario for vehicle entry and exit, the application reads the vehicle license plate captured by the camera and verifies the license plate against a list of authorized or unauthorized license plate numbers stored in the camera.

This scenario requires the application embedded in a camera with I/O support or a connected I/O relay module to open and close the barrier.



Two possible setups for the vehicle entry and exit scenario.

- 1 Axis camera with AXIS License Plate Verifier
- 2 I/O communication
- 3 Barrier
- 4 Axis I/O relay module
- 5 IP communication

Open a barrier for known vehicles using a relay module

This example use case explains how to set up AXIS License Plate Verifier together with a relay module to open a barrier for a known vehicle driving through a specific region of interest (ROI) into, let's say a parking area.

Requirements:

- Camera physically installed and connected to the network.
 - AXIS License Plate Verifier up and running on the camera.
 - Cables connected between the barrier and the relay module.
 - Basic setup done. See .
1. Go to the camera's webpage, select **Settings** and open **AXIS License Plate Verifier**.
 2. Go to the relay module's webpage and make sure the relay port is connected to the camera's I/O port.
 3. Copy the relay module's IP address.
 4. Go back to **AXIS License Plate Verifier**.

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Vehicle entry and exit scenario

5. Go to the **Settings > Access control**
6. Go to **Type** and select **Relay** in the drop-down list.
7. In the **I/O output** drop-down list, select the I/O port that is connected to the barrier.
8. In the **Barrier mode** drop-down list, select **open to allowlisted**.
9. In the **Vehicle direction** drop-down list, select **in**.
10. In the **ROI** drop-down list, select the region of interest that covers the traffic lane.
11. Enter the following information:
 - the IP address for the relay module in format 192.168.0.0
 - the username for the relay module
 - the password for the relay module
12. To make sure the connection works, click **Connect**.
13. To activate the connection, click **Turn on integration**.
14. Go to the **List management** tab
15. Enter the license plate number in the **Allowlist** field.

Note

The physical input ports 1 to 8 on the relay module correspond to ports 1 to 8 in the drop-down list. However, the relay ports 1 to 8 on the relay module correspond to ports 9 to 16 in the drop-down list. This is valid even if the relay module only has 8 ports.

16. Check that the application identifies the license plate number in the allowlist as a known vehicle and that the barrier opens as expected.

Open a barrier for known vehicles using the camera's I/O

This example explains how to set up AXIS License Plate Verifier together with the camera's I/O port to open a barrier for a known vehicle entering, for example, a parking area.

Requirements:

- Camera physically installed and connected to the network.
- AXIS License Plate Verifier up and running on the camera.
- Cables connected between the barrier and the camera's I/O port.
- Basic setup done. See .



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

www.axis.com/products/online-manual/70394#t10124267

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Vehicle entry and exit scenario

1. Go to the application's webpage and select the **Event log** tab and add detected license plates to a list. See *Add detected license plate to list on page 11*
2. To edit the lists directly, go to the **List management** tab.
3. Enter the authorized license plate numbers in the **Allowlist** field.
4. Go to the **Settings** tab.
5. Under **Access control** , select the **Type** drop-down list, select **Internal I/O**.
6. Select the **I/O output #**.
7. In the **Barrier mode** drop-down list, select **Open to allowlisted**
8. In the **Vehicle direction** drop-down list, select **in**.
9. In the **ROI** drop-down-list, select the area of interest you would like to use, or if you would like to use all.
10. Check that the application identifies the license plate number in the allowlist as a known vehicle and that the barrier opens as expected.

Get notified about an unauthorized vehicle

This example explains how to set up the application so that an event that triggers a notification can be created in the camera.

Requirements:

- Basic setup done. See .
1. Go to **List management**.
 2. Enter the license plate number in the **Blocklist** field.
 3. Go to the camera's webpage.
 4. Go to **Settings > Events** and set up an action rule with the application as a condition and with a notification as an action.
 5. Check that the application identifies the added license plate number as an unauthorized vehicle and that the action rule runs as expected.

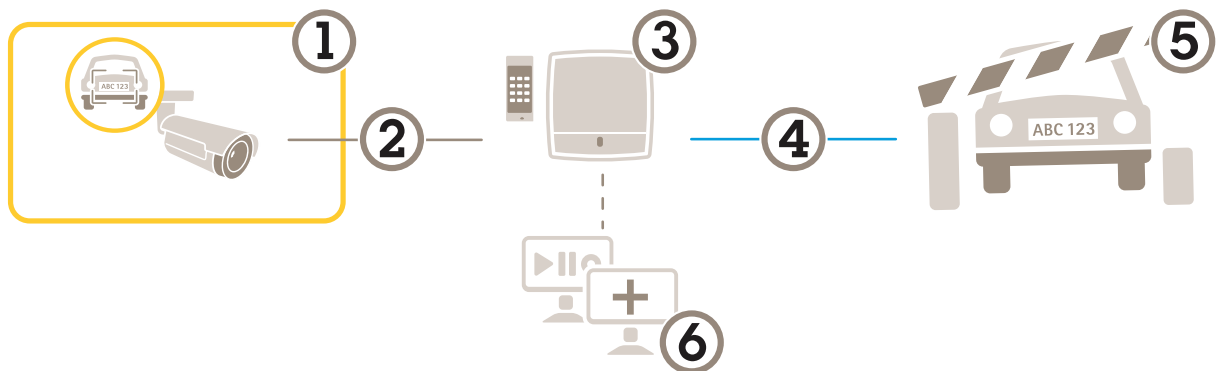
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Vehicle access control scenario

Vehicle access control scenario

In the scenario for vehicle access control, the application can be connected to an Axis network door controller to configure access rules, create schedules for access times, and handle vehicle access not only for employees, but also, for example, visitors and suppliers.

For backup, use an access system involving a door controller and card reader. To set up the door controller and the card reader, see the user documentation at axis.com



- 1 Axis camera with AXIS License Plate Verifier
- 2 IP communication
- 3 Axis network door controller with card reader
- 4 I/O communication
- 5 Barrier
- 6 Optional third-party software

Connect to a door controller

In this example we connect the camera to a network door controller which means the camera works as a sensor. The camera forwards the information to the controller which in turn analyzes the information and triggers the events.

Note

When switching between the AXIS License Plate Verifier and AXIS Entry Manager, make sure to refresh the webpages to get access to all parameters.

Requirements:

- Camera and door controller physically installed and connected to the network.
- AXIS License Plate Verifier up and running on the camera.
- Basic setup done. See .

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Vehicle access control scenario



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

www.axis.com/products/online-manual/70394#t10124729

This video shows how to get the application up and running with AXIS A1001 Door Controller.

Hardware configuration in AXIS Entry Manager

1. Go to AXIS Entry Manager and start a new hardware configuration under **Setup**.
2. In the hardware configuration, rename the network door controller to "Gate controller".
3. Click **Next**.
4. In **Configure locks connected to this controller**, clear the **Door monitor** option.
5. Click **Next**.
6. In **Configure readers connected to this controller**, clear the **Exit reader** option.
7. Click **Finish**.

Configuration in AXIS License Plate Verifier

1. Go the AXIS License Plate Verifier webpage.
2. Go to the **Settings > Access control**
3. Go to **Type** and select **Controller** in the drop-down list.
4. Enter the following information:
 - the IP address for the controller in format 192.168.0.0
 - the username for the controller
 - the password for the controller
5. Click **Connect**.
6. If the connection is successful, "Gatecontroller" shows up in the **Network Door Controller** name drop-down list. Select "Gatecontroller".
7. In the **Reader name** drop-down list, select the reader connected to the door "Gatecontroller", for example "Reader entrance". These names can be changed in AXIS Entry Manager.
8. To activate the connection, select **Turn on integration**.
9. Enter one of the user's license plate number in the test field and click **Test integration**. Check that the test was successful.

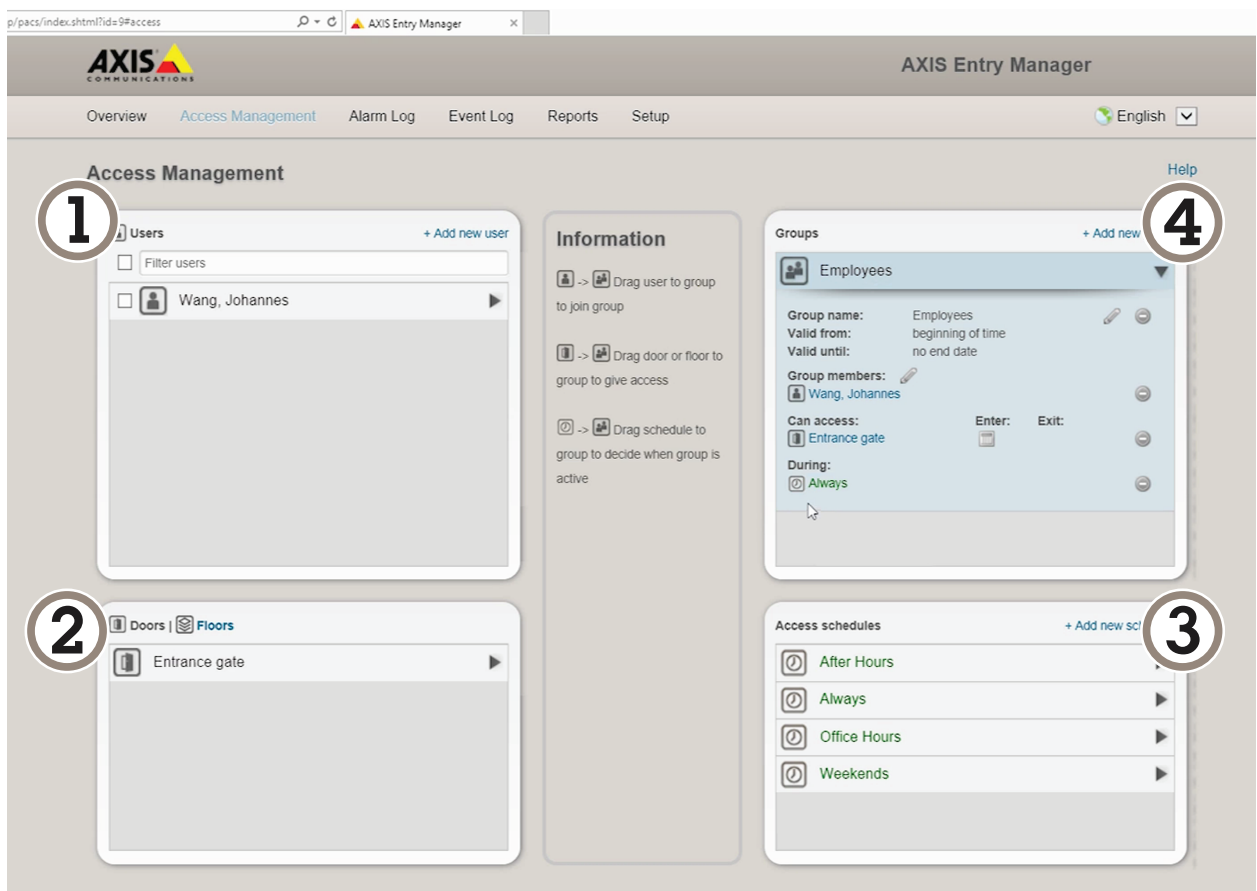
Configure users, groups, doors, and schedules in AXIS Entry Manager

1. Go to AXIS Entry Manager.
2. Go to **Access Management**.
3. Go to **Doors > Add identification type**.
4. In the **Credentials needed** drop-down list, select **License plate only**.

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Vehicle access control scenario

5. To set limits for when the identification type can be used, drag and drop a Schedule to the door.
6. Add users and, for each user, add the credential License plate.
7. Click Add credential again and enter the license plate information.
8. Click Add new group and enter the information.
9. To add users to a group, drag and drop Users to the user group.
10. To give users access, drag and drop the Door to the user group.
11. To limit the access time, drag and drop a Schedule to the user group.



Overview of AXIS Entry Manager user interface.

- 1 Users
- 2 Doors
- 3 Schedules
- 4 User groups

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Push event information to third-party software

Push event information to third-party software

Note

The application sends the event information in JSON format. For more information, *log in using your MyAxis account*, go to the *AXIS VAPIX Library* and select *AXIS License Plate Verifier*

With this feature you can integrate third-party software by pushing the event data through TCP or HTTP POST.

Before you start:

- The camera must be physically installed and connected to the network.
 - AXIS License Plate Verifier must be up and running on the camera.
1. Go to **Integration > Push events**.
 2. In the **Protocol** drop-down list, select one of the following protocols:
 - TCP
 - HTTP POST
 3. In the **Server URL** field, type the server address and port in the following format: `127.0.0.1:8080`
 4. In the **Device ID** field, type the name of the device or leave as is.
 5. Under **Event types**, select one or more of the following options:
 - **New** means the first detection of a license plate.
 - **Update** is either a correction of a character on a previously detected license plate, or when a direction is detected as the plate moves and is tracked across the image.
 - **Lost** is the last tracked event of the license plate before it exits the image. It also contains the direction of the license plate.
 6. To turn on the feature, select **Send event data to server**.
 7. To reduce bandwidth when using HTTP POST, you can select **Do not to send images through HTTP POST**.
 8. Click **Save**.

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Troubleshooting

Troubleshooting

Unknown vehicles are marked as accepted

If the application lets in vehicles with license plates that are not in the allowlist, one probable reason is that the comparison allows a deviation of one character.

For example, if AXI S1234 is in the allowlist the application accepts AXI SI234.
Similarly, if AXIS 1234 is in the allowlist the application accepts AXI 1234.

The connection between the application and controller or relay module doesn't work

Make sure the controller, or relay module, allows data traffic through HTTP. To find out how to change this setting, go to the user manual for the corresponding device.

Technical issues, clues and solutions

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

Problems upgrading the firmware

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

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

Problems setting the IP address

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

The IP address is being used by another device Disconnect the Axis device from the network. Run the ping command (in a Command/DOS window, type `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 `http` or `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 21*.

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Troubleshooting

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/vms.

Problems with streaming

Multicast H.264 only accessible by local clients	Check if your router supports multicasting, or if the router settings between the client and the device need to be configured. The TTL (Time To Live) value may need to be increased.
No multicast H.264 displayed in the client	Check with your network administrator that the multicast addresses used by the Axis device are valid for your network. Check with your network administrator to see if there is a firewall preventing viewing.
Poor rendering of H.264 images	Ensure that your graphics card is using the latest driver. The latest drivers can usually be downloaded from the manufacturer's website.
Color saturation is different in H.264 and Motion JPEG	Modify the settings for your graphics adapter. Go to the adapter's documentation for more information.
Lower frame rate than expected	<ul style="list-style-type: none">• See <i>Performance considerations</i> on page 22.• 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.
Can't select H.265 encoding in live view	Web browsers do not support H.265 decoding. Use a video management system or application supporting H.265 decoding.

Reset to factory default settings

▲WARNING

 IR emitted from this product. Do not look at operating lamp.

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.

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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**.

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.

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



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

www.axis.com/products/online-manual/70394#t10095327

How to upgrade the firmware

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.

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:

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Troubleshooting

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

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

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

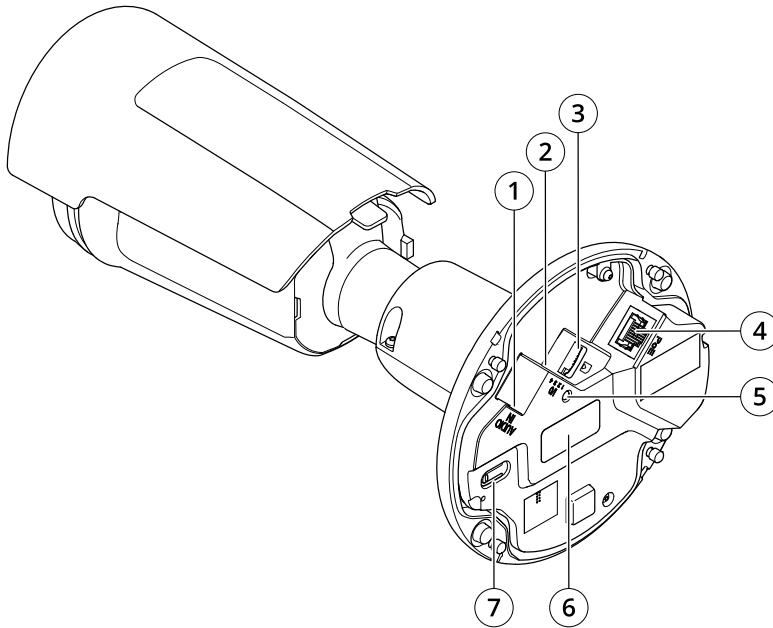
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Specifications

Specifications

Product overview

AXIS P1455-LE 9 mm



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

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.
Red	Firmware upgrade failure.

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Specifications

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 21*.
- 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).

Audio connector

- Audio in – 3.5 mm input for a mono microphone, or a line-in mono signal (left channel is used from a stereo signal).
- 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	Electret power if selected	Ground
Digital signal	Ring power if selected	Ground

For audio in, the left channel is used from a stereo signal.

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Specifications

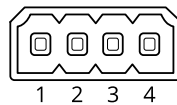
I/O connector

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:

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.

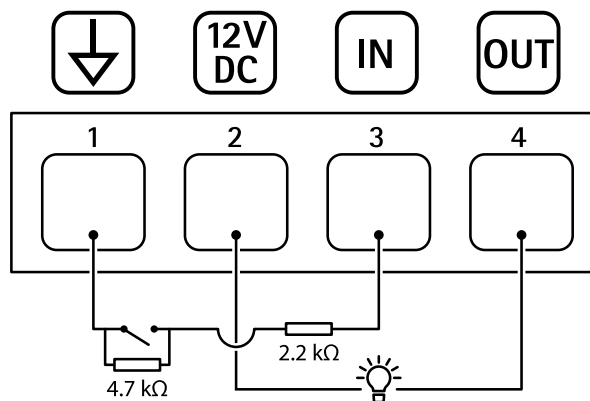
Digital output – For connecting external devices such as relays and LEDs. Connected devices can be activated by the VAPIX® Application Programming Interface, through an event or from the product's webpage.

4-pin terminal block



Function	Pin	Notes	Specifications
DC ground	1		0 V DC
DC output	2	Can be used to power auxiliary equipment. Note: This pin can only be used as power out.	12 V DC Max load = 25 mA
Digital Input or Supervised Input	3	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 V DC
Digital Output	4	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 V DC, open drain, 100 mA

Example



- 1 DC ground
- 2 DC output 12 V, max 25 mA
- 3 Supervised input
- 4 Digital output

