

AXIS 3D People Counter

User Manual

AXIS 3D People Counter

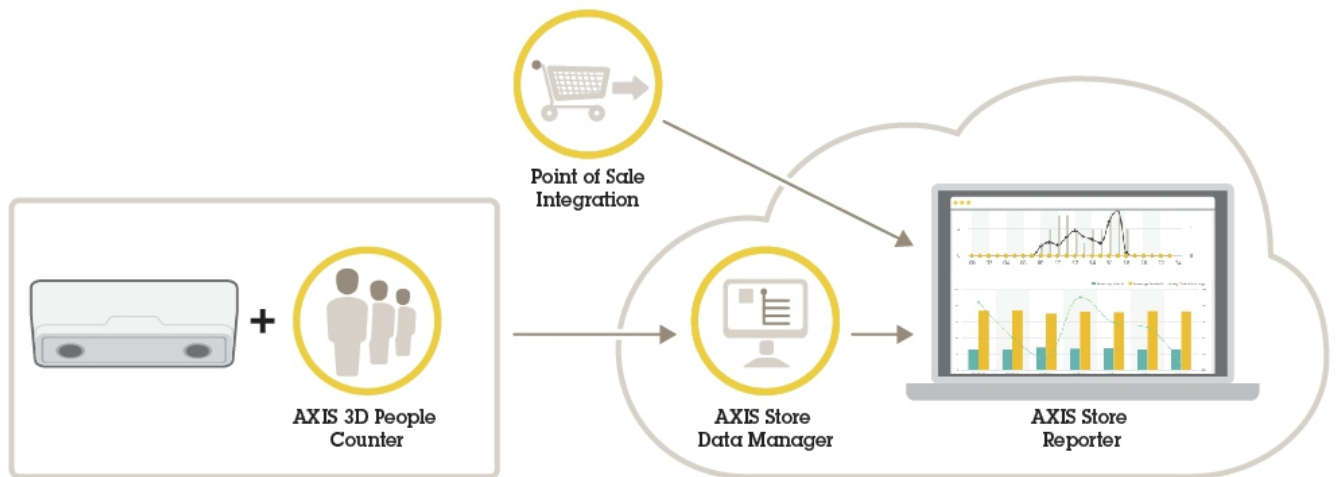
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AXIS 3D People Counter

Solution overview

Solution overview



An overview of the different devices, applications, and tools needed for a complete system.

AXIS P8815-2 3D People Counter

AXIS P8815-2 3D People Counter provides software and dedicated hardware in one device. The 3D people counting application is embedded in the device. This means that you don't need a dedicated computer to run the application. AXIS P8815-2 3D People Counter is intended for indoor use in, for example, retail environments like stores or shopping malls, or other locations where you want to count people or keep track of how many people are inside the premises.

An example of a store with AXIS P8815-2 3D People Counter at each entrance.

What's the difference between AXIS People Counter and AXIS P8815-2 3D People Counter?

The applications have two different algorithms for counting people which makes them suitable for different environments:

- AXIS People Counter recognizes objects that move in the field of view and identifies them as people based on their overall size and movement. AXIS People Counter is suitable for most scenarios, covering single as well as double door entrances.
- AXIS P8815-2 3D People Counter calculates the depth within the counting area in order to measure the height and the size of the object. AXIS P8815-2 3D People Counter is suitable for crowded scenarios and scenes with challenging light conditions like strong sunlight, glares and shadows.

AXIS 3D People Counter

Mount the camera

Mount the camera

For instructions on how to install the device, see the installation guide and the installation video.

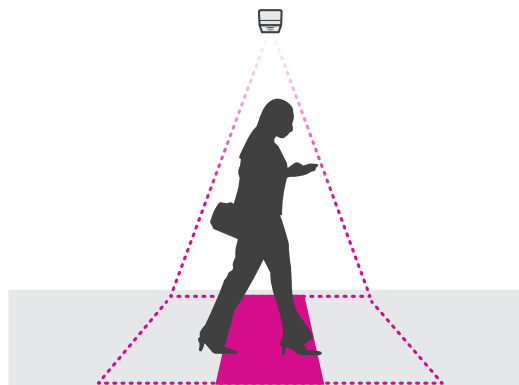
Installation guide



Installation video

In addition to the instructions in the installation guide, there are some important steps to follow for the application to behave in the expected way:

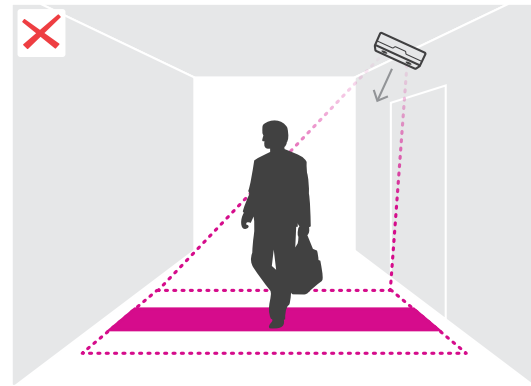
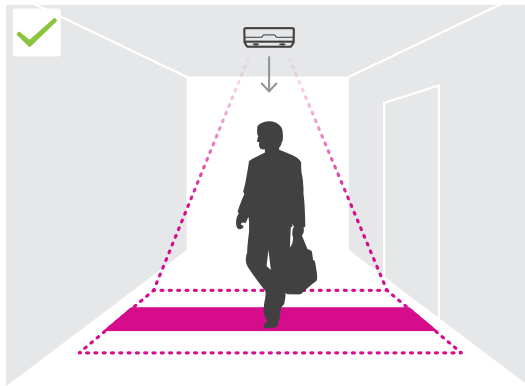
- The device must be mounted straight above the point where people pass.



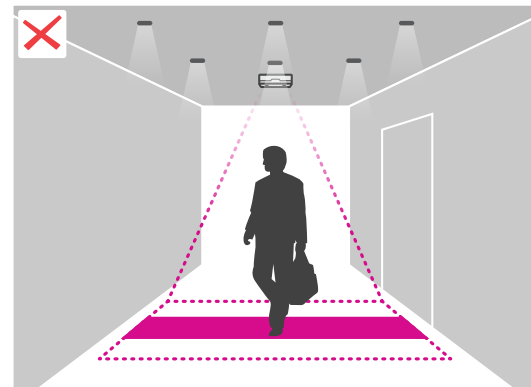
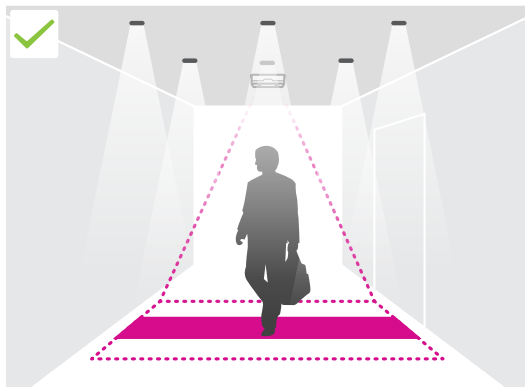
- Make sure the device is facing straight down, in line with the ceiling. It's important that both the ceiling and the floor are level.

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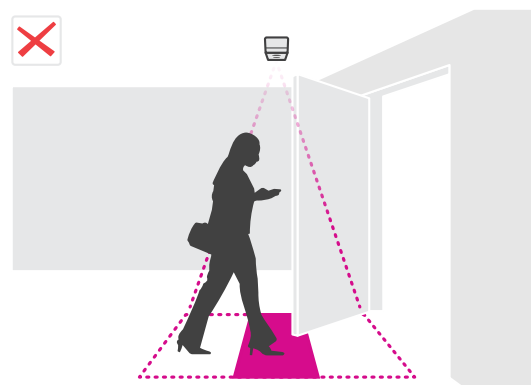
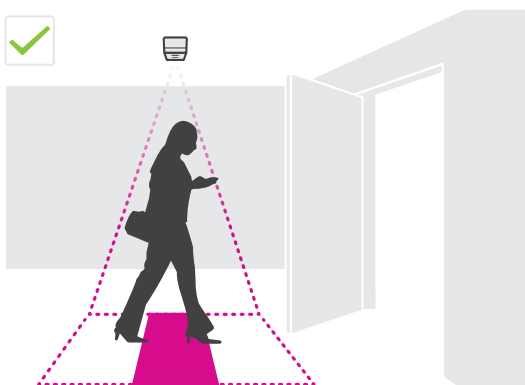
Mount the camera



- Make sure there is sufficient white light on site.



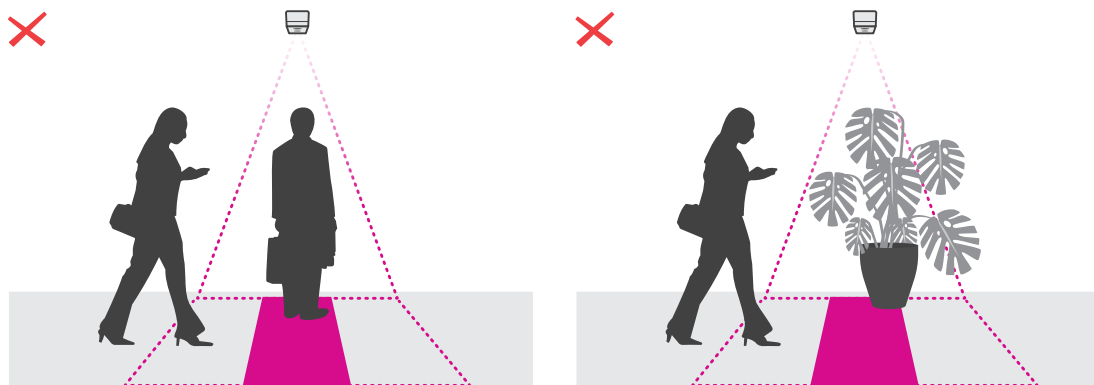
- Make sure there are no objects interfering in the device's view. For example, do not install the device too close to a door or a large sign hanging from the ceiling.



- Loitering people or large objects that sway slightly could interfere with the counting.

AXIS 3D People Counter

Mount the camera



AXIS 3D People Counter

Find the device on the network

Find the device on the network

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

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

Access the device

1. Open a browser and enter the IP address or host name of the Axis device.
If you do not know the IP address, use AXIS IP Utility or AXIS Device Manager to find the device on the network.
2. Enter the username and password. If you access the device for the first time, you must set the root password. See *Set a new password for the root account on page 7*.
3. The live view page opens in your browser.

Secure passwords

Important

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

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

To protect your data we strongly recommend that you:

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

Set a 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



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

help.axis.com/?&tpid=37897&tsection=set-a-new-password-for-the-root-account

Support tip: Password security confirmation check

1. Type a password. Follow the instructions about secure passwords. See *Secure passwords on page 7*.

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Find the device on the network

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

Install the application on the camera

Note

- The license is only valid for one camera. You can't activate the license on another camera without a new registration key.
- To install applications on the camera you need administrator rights.

1. Install the camera on your network..
2. Go to the camera's webpage in your browser, see the User Manual for the camera.
3. Go to **Setup > Applications** .
4. If there are other applications installed on the camera, remove them.
5. Upload the application file (.eap) to the camera.
6. Click the link under **Applications > AXIS 3D People Counter > Settings**.
7. Activate the license. If you're online, enter the license code. The application automatically activates the license.
8. Calibrate the counter. See *How to calibrate the counter on page 10*

How to activate the license when you're offline

To activate the license when you're offline, you need a license key. If you don't have a license key on the computer, do the following:

1. Go to www.axis.com/applications
2. Go to **License key registration**. You need the license code and the Axis device serial number.
3. Save the license key file on the computer and select the file when the application asks for it.

How to access the application settings

To access the application's webpage:

- In the camera's webpage, go to **Setup > Application > AXIS 3D People Counter** and click the **AXIS 3D People Counter settings** link.
- In a browser, type `[deviceIP]/stereo`.

AXIS 3D People Counter

Additional settings

Additional settings

Set the date and time

The date and time settings are important for your camera to keep the correct time for a longer period of time, and for the statistics to be attributed to the correct time. You set the date and time in the camera's webpage.

Create a user account

You can create user accounts with different privileges, so that unauthorized staff can view statistics but not change any settings of the counter.

To create a user account:

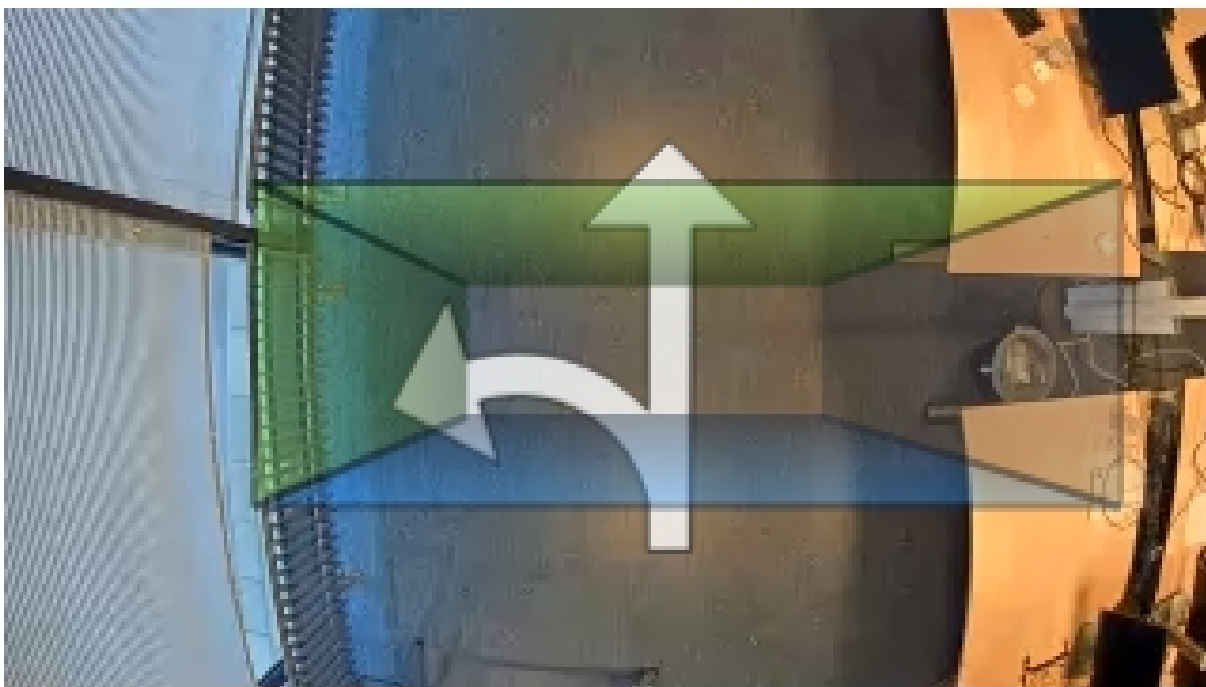
1. Go to **Device settings > Users**.
2. Click **+**.

Users with the **Viewer** role can only access the **Statistics** tab. For more information about different user roles, see the built-in help.

About the counting zone

The counting zone is the area where the counter detects people.

The counting zone is indicated by a transparent rectangle in the middle of the image. It should be aligned with the door threshold. A perspective box is created on top of the counting zone with the approximate height of a person. For each of the four sides of the perspective box, you set the counting direction.



Blue to green – When a person moves from blue to green, it gets counted as someone going in. Arrows indicate the direction.

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Additional settings

Green to blue – When a person moves from green to blue, it gets counted as someone going out.

For a person to be counted, they must move from blue to green or from green to blue. The feet must pass through the transparent rectangle in the middle.

To ensure the accuracy of the counter, you must calibrate and set up AXIS 3D People Counter before use. The setup is done in two steps:

- First, you need to calibrate the counter to be able to analyze the incoming data. You perform the initial calibration when you first connect to the application. See *How to calibrate the counter on page 10*.
- Second, you must adjust the counting zone to fit the scene. You do this in the settings page. See *Set up the counter on page 12*.

How to calibrate the counter



During calibration, you must use the four paper markers included with the camera. Each marker is unique.

The markers are available *here*. If you print them yourself, use paper size A3/11x17 in (ledger/tabloid). Make sure the marker doesn't fill the page, as there must be a wide white margin on all sides for the calibration to work.

If there are any applications running on the camera, they are paused during the calibration.

1. Place one marker in each corner of the area visible through the camera. It doesn't matter which marker you place where.

Important

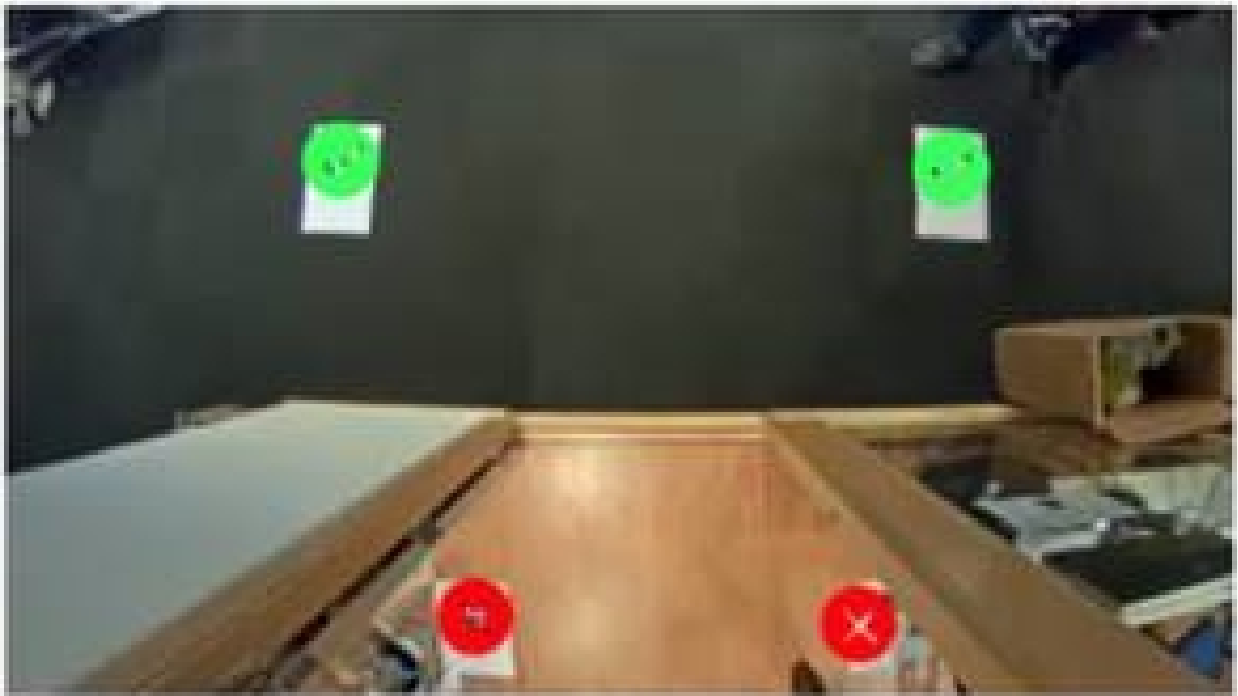
- Each marker is unique. Make sure to use different markers in each corner.
 - The markers must be visible to the camera throughout the calibration process.
 - If you need to fasten the markers to the floor, use transparent adhesive. If you use colored adhesive it can interfere with the calibration process.
2. In the application, you get to the initial calibration after the registration page. If you want to recalibrate the counter, go to **Maintenance > Calibration**.
 3. Click **Calibrate**. The following happens:
 - The application gathers data.
 - The application processes the data. This usually takes 1 to 5 minutes.
 - If the calibration is successful,  is shown on top of each marker in the image. If  is shown on top of a marker, it means the calibration failed because the markers are placed too close together. You need to move the markers and calibrate again.
 4. When the calibration is done, click **Go to live view**.

Reasons for a failed calibration:

- the markers are placed too close together
- one or more markers are obscured
- there are duplicate markers

AXIS 3D People Counter

Additional settings



Example of a challenging calibration, where the two lower markers are placed too close together.



A solution to the challenging calibration is to place one marker in the center.

AXIS 3D People Counter

Additional settings

Set up the counter

1. Measure the camera's mounting height. This is the distance from the floor to the bottom of the camera's lens.
See [Mount the camera](#) on page 4.
2. In the application's webpage, go to **Settings > General**.
3. In the **Name** field, type the name of the camera or location.
This can be for example "Axis_Main_entrance_T_building". All cameras need to have unique names.
4. Enter the camera's mounting height in the **Mounting height (cm)** field.
5. Click **Submit**.
6. Go to **Settings > Counting area**.
7. Set **Top direction**, **Bottom direction**, **Right direction**, and **Left direction** to **In**, **Out**, or **None**, depending on the direction of the people passing by in live view. When you select **Out**, that side turns blue, and when you select **In**, that side turns green and is also indicated with an arrow.

Note

The camera's mounting height affects both the width adjustment and the alignment of the counting area.

8. Align the counting area with the door threshold with the **Counting area offset** slider.
9. To adjust the width of the counting area, use the **Counting area width** slider.

About schedules

There are two types of schedules: automatic and manual. The automatic schedule turns off the application when there is insufficient lighting. This schedule is used by default. With a manual schedule, you can decide yourself at what times to turn the application on and off for each day of the week.

You can update the schedule settings under **Settings > Advanced > Schedule**.

Anonymize people

Note

This setting is only available if you have logged in as an administrator.

If you want to prevent people from being identified in the live view or recordings, you can turn on privacy mode. Privacy mode blocks all video streams and images and turns the live view into a black image.

To turn on privacy mode:

1. Go to **Setup > Counter > Privacy**.
2. Turn on **Privacy mode**.

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Validate the system

Validate the system

Note

Before you validate the system, make sure you have mounted the camera according to the recommendations. See *Mount the camera on page 4*.

When you have installed and set up all cameras in the building, we recommend that you validate the accuracy and fine-tune the system. This is likely to increase the accuracy or identify any problems with the counters.

To get an overview, go to **Statistics** and look at the counting data for a couple of days back. If the difference between number of persons going in and out is <5% it's a good first indication that the system is configured correctly.

Important

- The validation only works if
 - there is only a single point of entry to the building, or
 - all points of entry to the building are covered by a counter and the statistics are aggregated, manually or with the help of AXIS Store Reporter, across all counters.

AXIS 3D People Counter

Statistics

Statistics

There are several ways to use the statistics from the counter:

- In the application's webpage, view real-time counting data in the built-in graphs.
- View built-in graphs in day, week, and month views in the statistics page. The data is updated in real time.
Data is available on the device for up to 90 days and updated every minute. The data is stored in one-minute bins representing the in and out counts for that minute.
- Download data through an open API. See *API documentation*
- Send data automatically to a remote HTTPS destination through the data push functionality. See .
- Use AXIS Store Data Manager, a software package that acts as a central point to store and manage data collected from all devices. See *Connect the device to a folder in AXIS Store Data Manager on page 14*.
- Use AXIS Store Reporter, a statistical web-based solution, for managing and monitoring historical data.
- Download statistics to your computer, see *Download statistics on page 14*.

Connect the device to a folder in AXIS Store Data Manager

1. In AXIS Store Data Manager, go to **Sources** and get the **Folder connection identifier** and the **Folder connection password** for the folder you want to connect to.
2. In the application's webpage, go to **Setup > Counter**.
3. Under **Device**, enter a name for the device, so you know which device the report comes from.
4. Go to **Setup > Reporting**.
5. To allow sending reports to AXIS Store Data Manager, turn on **Report to ASDM**.
6. In the **URL** field, enter the address to the server.
7. Enter the folder connection identifier and password for AXIS Store Data Manager in the **Folder identifier** fields.
8. Click **Test connection**.
If the connection is successful, it's indicated by a white check mark.
9. Click **Save**.

Download statistics

1. Go to **Statistics**.
2. Click **Export data**.
A comma-delimited (.csv) file with all statistics data from the device is saved locally.

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Troubleshooting

Troubleshooting

Issue	Action
The software doesn't count.	Make sure the instructions for how to install the device has been followed, see .
I still can't get the software to count.	If you have followed the advice above and still can't get the software to work, contact your Axis reseller.
The software counts shadows on the walls.	<ol style="list-style-type: none">1. Make sure the counting area only doesn't include parts of the walls.2. Go to Advanced > Troubleshooting and turn on Eliminate shadows.
I have a wide area covered by multiple devices, and the software doesn't send reports.	Make sure the date and time of the devices are synchronized.
The software warns me that the FPS is low.	<ol style="list-style-type: none">1. Make sure no other applications run on the device at the same time.2. Make sure there is only one video stream from the device running at a time.

Restart the application

If the counting is inaccurate or the web interface unusually slow, you can try restarting the running services or restart the device.

To restart the device, go to **Device Settings > Device view > System > Maintenance** and click **Restart**.

Generate a log report

If you have any trouble with your device you can generate a log report.

1. Go to **Device settings > Device view > System > Maintenance > Logs**
2. Click **View** the system log.
3. The log report opens in a new tab in the browser.

Manage your license

Go to **Maintenance > Registration**.

- To register a license, click on the **Registration** page.

AXIS 3D People Counter

P8815-2 3D people counter API

P8815-2 3D people counter API

Common examples

Example

Open all statistics that are stored in the camera with a one minute resolution, using a browser.

Request (CSV)

```
http://<servername>/stereo/people-counter/export.csv?export-method=open&date=YYYYMMDD&resolution=60&method=open
```

See *List download statistics on page 16* for more information.

Example

Download statistics that occurred on the 10th of January of 2017.

Request (JSON)

```
http://<servername>/stereo/people-counter/export.json?resolution=day&date=20170110&method=download
```

See *List download statistics on page 16* for more information.

API specification

Request real-time data

Returns JSON file with real time counting data.

Request

```
http://<servername>/stereo/people-counter/counts.json
```

Return

```
{
  "in": 0,
  "name": "Untitled AXIS 3D People Counter",
  "out": 0,
  "serial": "ACCC8E235294",
  "timestamp": "20180115121710"
}
```

Return value descriptions

Value	Description
in	Number of people passing in until now today.
name	The name of the application, chosen by the client.
out	Number of people passing out until now.
serial	The Mac address for the camera.
timestamp	Time in the camera in the format YYYYMMDDhhmmss.

List download statistics

Returns statistics stored in the camera in JSON or plain text comma separated format (CSV)

AXIS 3D People Counter

P8815-2 3D people counter API

Request (CSV)

`http://<servername>/stereo/people-counter/export.csv?resolution=<resolution>&date=<date>&method=<method>`

Request (JSON)

`http://<servername>/stereo/people-counter/export.json?resolution=<resolution>&date=<date>&method=<method>`

Request parameter descriptions

Parameter	Description
<date>	a date of the form YYYYMMDD
	a date interval of the form YYYYMMDD-YYYYMMDD
	comma separated dates of the form YYYYMMDD, [. .], YYYYMMDD
	all (default) for all available data
<resolution>	minute for data in 1 minute bins
	hour for data in 1 hour bins
	day for data in 1 day bins
	60 for data in 1 minute bins
	3600 for data in 1 hour bins
	86400 for data in 1 day bins
<method>	select open to list the statistics in a web browser
	select download to download the JSON or CSV file

Return

Returns statistics stored in the camera in JSON or plain text comma separated format (CSV). The first line of the CSV file contains a description of each element, and the following lines contain the corresponding data for the chosen time interval and resolution:
Interval Start, Interval Start (Unixtime), In, Out

List frame rate

Returns the current internal frame rate

Request

`http://<servername>/stereo/fps.json`

Return

```
{
  "fps": real time fps,
  "fps_100": average FPS for the last 100 frames,
  "fps_1000": average FPS for the last 1000 frames,
  "fps_5": average FPS for the last 5 frames,
  "fps_50": average FPS for the last 50 frames,
  "frames": frame counter.
}
```

I/O interface

Get the latest I/O signals as false or true.

Request

`http://<servername>/stereo/io.json`

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P8815-2 3D people counter API

Return

"True" or "False"

List parameters

Get all parameters currently set.

Request

`http://<servername>/stereo/params.json`

Return

A JSON object of all the parameters currently set.

