AXIS 3D People Counter

User Manual

AXIS 3D People Counter
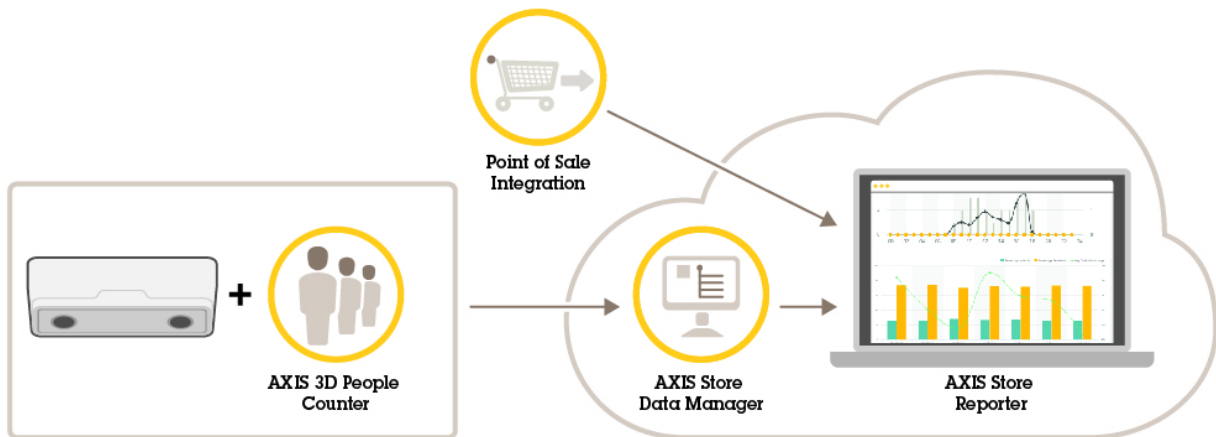
Table of Contents

Solution overview

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

AXIS 3D People Counter

AXIS 3D People Counter is an analytic application that can be installed on a network camera.

The counter is embedded in the camera which means you do not need a dedicated computer to run the application. AXIS 3D People Counter is intended for retail environments, like stores or shopping malls, or other environments where you want to count people.
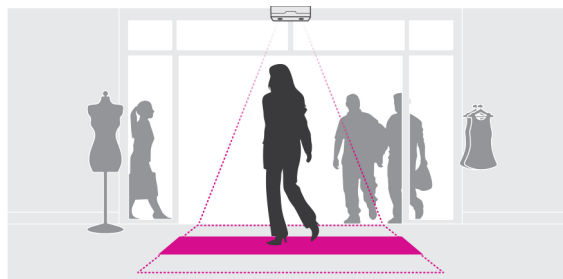
What's the difference between AXIS People Counter and AXIS 3D People Counter?

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

- AXIS People Counter recognizes objects moving in the field of view and identifies them as people due to their overall size and movement. AXIS People Counter is suitable for most scenarios, covering single as well as double door entrances.

AXIS 3D People Counter

Solution overview
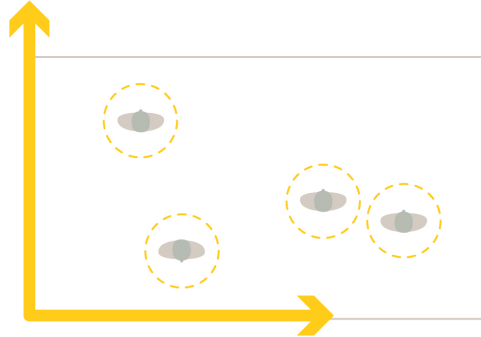
- AXIS 3D People Counter calculates the depth within the field of view in order to measure the height and the size of the object. AXIS 3D People Counter is suitable for crowded scenarios and scenes with challenging light conditions like strong sunlight, glares and shadows.
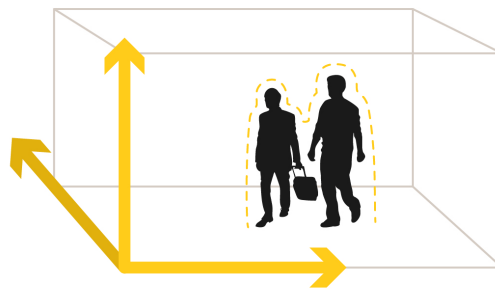
AXIS 3D People Counter

How to mount the camera

In addition to the instructions in the camera's Installation Guide, there are some important steps to follow for the application to behave in the expected way:

- The camera must be mounted straight above the point where people pass.
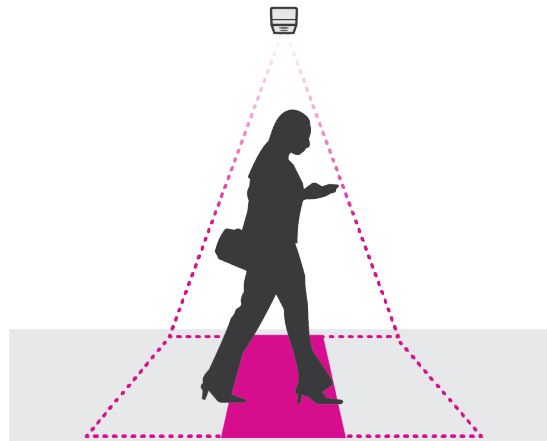
- Make sure the camera is facing straight down, in line with the ceiling.
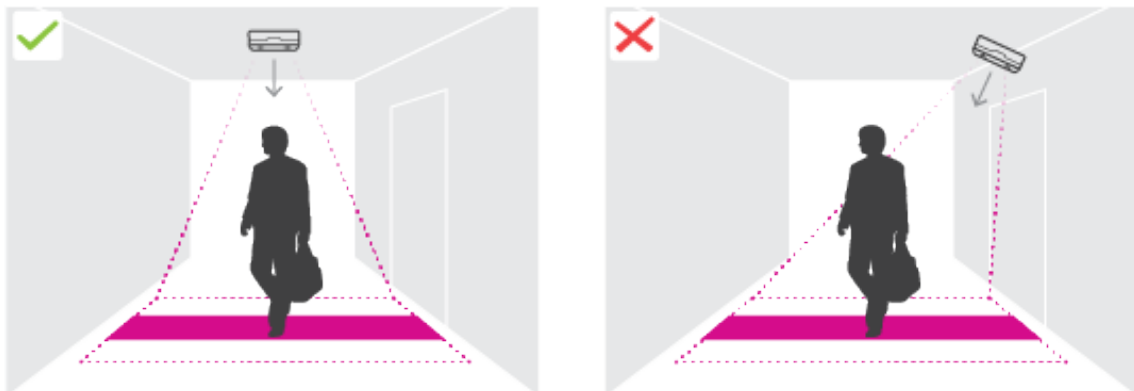
- Make sure there is sufficient white light or IR illumination on site.

AXIS 3D People Counter

How to mount the camera
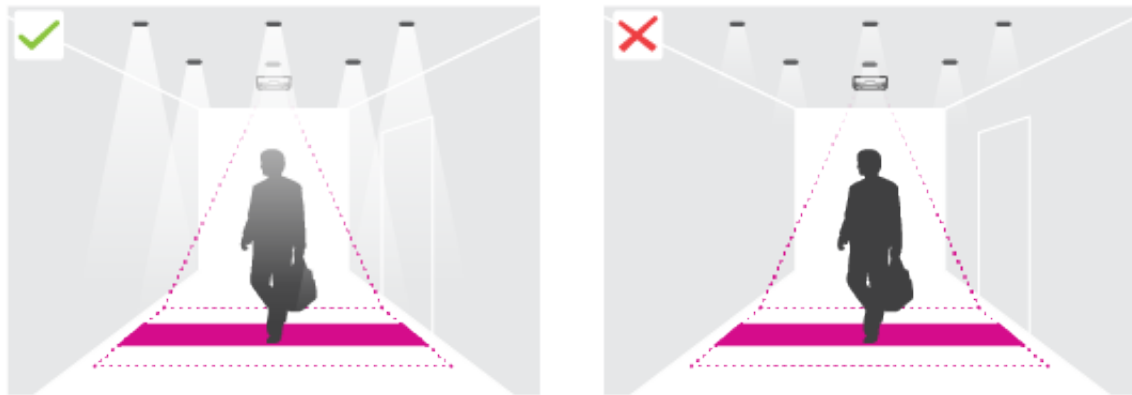
Mounting height and coverage

The tables and graphs show the width that can be covered by a camera at a given mounting height.

Ceiling height (cm)	Counting area width (cm)
240	172
260	203
280	234
300	266
320	297
340	328
360	360
380	385
400	363

Ceiling height (in)	Counting area width (in)
95	68
102	80
110	92
118	105
126	117
134	129
142	142
147	152
158	143

How to access the product

AXIS IP Utility and AXIS Device Manager are recommended methods for finding Axis products on the network and assigning them IP addresses in Windows®. Both applications are free and can be downloaded from *axis.com/support*

The product can be used with the following browsers:

- Windows®: Chrome^{TM} (recommended), Firefox®, Edge®, or Opera®

- OS X®: Chrome^{TM} (recommended) or Safari®

- Other operating systems: Chrome^{TM} or Firefox®.

How to access the product from a browser

1. Start a web browser.

2. Enter the IP address or host name of the Axis product in the browser's address field.

3. Enter your username and password. If this is the first time the product is accessed, the root password must first be configured.

About secure passwords

Important

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

The device password is the primary protection for the 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 recommend that you:

- Change the default password that comes with the devices.

- Use a password with at least 8 characters, preferably created by a password generator.

- Don't expose the password.

- Change password at a recurring interval, at least once a year.

Set a secure password for the root account

Important

> The default administrator user name **root** cannot be deleted. If the password for root is lost, the device must be reset to the factory default settings.

1. Make sure to follow the instructions about secure passwords. See *About secure passwords on page 7* .

2. Type a password and then retype it to confirm the spelling.

3. Click **Create login**. The password has now been configured.

How to install the application on the camera

Note

- The license is only valid for one camera. You cannot activate the license on another camera without a new registration key.
- To install applications on the product 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. For products with firmware 7.10 or later, go to **Settings > Apps**.

   For products with firmware 6.50 or previous, go to **Setup > Applications** .

4. Upload the application file (.eap) to the camera.

5. Activate the license. If you're online, enter the license code. The application automatically activates the license.

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 product 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

1. To access the settings for a specific application, do one of the following:

   - For products with firmware 7.10 or later, go to **Settings > Apps**, select the application and click **Open** to open the application settings.

   - For products with firmware 6.50 or previous, click on the **Live view** button or go to **Setup > Applications > [Application name]** and click on the setup link to open the application settings.

2. To continue with the basic settings, go to *Setup on page 9* .

Setup

How to set date and time

The date and time settings are important for your camera to keep the correct time for a longer period of time.

1. To set the date and time you need to go to the camera's webpage.

   - For products with firmware 7.10 or later, go to **Settings > System > Date and time**.

   - For products with firmware 6.50 or previous, go to **Setup > System Options > Date & Time**.

2. For detailed instructions about the user account, go to the product's built-in help.

How to set up a user account

In the camera you can set up different account privileges so that unauthorized personnel can view statistics but not change any settings of the counter.

1. To set up a user account, go to the camera's webpage.

    - For products with firmware 7.10 or later, go to **Settings > System > Users**.

    - For products with firmware 6.50 or previous, go to **Setup > System Options > Security > Users**.

2. For detailed instructions about the user account, go to the product's built-in help.

About the counting area

The counting area is the area where the counter detects people. A person needs to be visible within the entire area to be counted.

AXIS 3D People Counter

Setup

The counting area is indicated by a red shaded area in the image. To visually guide the setup, a perspective box is created on top of the counting area with the approximate height of a person. That means a correctly defined counting area has the body part of a person within the clear area, or within the red area, and the person's feet only within the red area.
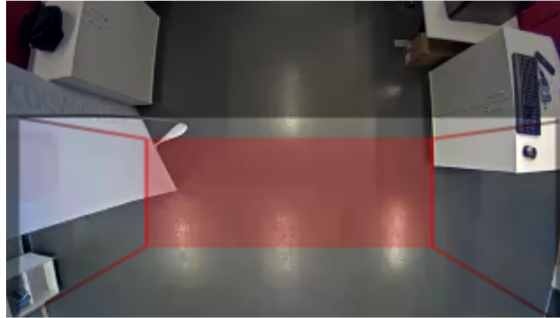
To ensure the accuracy of the counter, AXIS 3D People Counter must be calibrated and set up before use. The setup is done in two steps:

- First, the counter needs to be calibrated to be able to analyze the incoming data. The initial calibration is done when first connecting to the application. See *How to calibrate the counter on page 11*.

- Second, the counting area must be adjusted to fit the scene. This is done in the settings page. See *How to set up the counter on page 11*.

How to calibrate the counter

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

1. The initial calibration is done when first connecting to the application. If you want to recalibrate the counter, go to **Maintenance > Calibration**.

2. Before you start, make sure there are people passing by underneath the camera.

   Make sure the people cross the counting area from several directions rather than just in a straight line. The more random the walking pattern, the better calibration of the counter.

3. Click **Start calibration**. The following happens:

   - The application gathers data.

   - The application processes the data. This usually takes 5 to 15 minutes.

4. When the calibration is done, exit the calibration by clicking **Go to live view**.

How to set up the counter

1. Measure the camera's mounting height. More specifically, this is the distance from the floor to the bottom of the camera's lens.

   See *How to mount the camera on page 5*.

2. In the application's webpage, go to **Settings > Device**.

3. Enter the camera's mounting height in the **Height (cm)** field.

4. 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.

5. Go to **Settings > General**.

6. Set **Direction in** to **Up** or **Down**, depending on the direction of the people passing by in live view.

Note

> The camera's mounting height limits how much you can move the counting area.

7. To move the entire counting area up or down, use the **Counting area offset** slider.

8. To adjust the width of the counting area, use the **Counting area width** slider.

How to set up a schedule

To avoid unwanted detection during the night we recommend that you set up a schedule.

1. Go to **Settings > Schedule**.

2. Select start and stop times by moving the slider. You can set individual schedules for each day of the week by selecting **Per day schedule** and then move the corresponding slider.

3. Select **Advanced** if you want to:

    -   Decide if the functionality should be on or off during the specified time interval.

    -   Enter the hours and minutes rather than moving the slider.

How to disable the application on a specific day of the week

Deselect the checkbox next to the slider.

How to 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 live view or recordings, you can turn on the anonymize feature. The anonymize feature blocks all video streams and images from the camera and turns live view into a black image.

How to turn on anonymize

1. Go to **Advanced > Anonymize**.

2. Click **Anonymize**.

How to turn off anonymize

1. To go back to normal mode, go to **Advanced > Anonymize**.

2. Click **Reset anonymization**.

How to validate the system

Note

> Before you validate the application, make sure you have mounted the camera according to the recommendations. See *How to mount the camera on page 5* .

When the cameras are up and running 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.

About the 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 and week view from the statistics page. The data is updated in real time.

  Data is available on the camera 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.

- View graphs of historical data directly on the camera.

- Download data through an open API.

- Use AXIS Store Data Manager, a software package that acts as a central point to store and manage data collected from all cameras. See *How to connect a camera to a folder on page 14*.

- Use AXIS Store Reporter, a statistical web-based solution, for managing and monitoring historical data.

- Download statistics to your computer, see *How to download statistics on page 14*.

How to connect a camera to a folder

To perform this task, the application must be installed on the camera.

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 product's webpage, go to **Settings> Apps** and open the application's webpage.

3. In the application's webpage, go to **Settings > Reporting**.

4. To enable pushing data to a server, select **Enabled**.

5. Enter the web address for AXIS Store Data Manager, for example `http://[systemintegrator1].asdm.axis.com/datamanager` where `[systemintegrator1]` is replaced by a unique name.

6. Enter the **Folder connection identifier** and **Folder connection password**.

7. Click **Submit**.

How to download statistics

1. Go to **Statistics > Download statistics**.

2. Select the **File format**.

3. Select **Time interval**.

4. Select **Time period**.

5. Select start date and end date in the calendars.

6. Select **Retrieval method**.

7. Click **Export**. The browser saves the file in the default download folder.

If you want to download all available data, click **Download all** next to the file format.

Troubleshooting

Issue	Action
The software does not upload to AXIS Store Data Manager.	The most common reason is network communication problems. Run the connection test under **Settings > Reporting** to get information about the root cause for the problem.
The software does not count.	Make sure the instructions for how to mount the camera has been followed, see *How to mount the camera on page 5* .
The software does not count correctly.	Make sure people are passing the entire counting zone crossing both blue lines. They should not pass out to the left or to the right.
I still cannot get the software to count.	If you have followed the advice above and still cannot get the software to work, contact your Axis reseller.

How to restart the application

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

Go to **Maintenance > Restart**.

How to reset the application

Go to **Maintenance > Reset** and do one of the following:

- To clear all counting data from the camera, click **Clear data**.
- To restore all settings of the application to default, click **Restore settings**.

How to backup the settings

1. To backup the application settings, go to **Maintenance > Parameter backups**.
2. Click **Backup**. The computer saves the file in your browser's default folder for downloads.

How to generate a log report

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

1. Go to **Maintenance > Logs**.
2. Click **Generate logs**.
3. The browser saves the file on the default download browser on the computer.
4. Attach the log report when submitting an issue to support.

How to manage your license

Go to **Maintenance > Registration**.

- To register a license, click on the **Registration page**.
- If you want to remove you license from this product, click **Clear registration**.

- If you have an updated license, click **Renew license**.

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?resolution=60&date=all&method=open
```

See *List or download statistics on page 17* 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=downloa
```

See *List or download statistics on page 17* 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":<in>,
  "out":<out>
}
```

Return value descriptions

Value	Description
<in>	number of people passing in until now today
<out>	number of people passing out until now

List or download statistics

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

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

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

Request parameter descriptions

3D People Counter API

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
<res>	15minute for data in 15 minute bins
	3600seconds or 1hour for data in 1 hour bins
	24hour or 1day 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

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.