AXIS Perimeter Defender Requirements

User Manual

AXIS Perimeter Defender Requirements

This document explains the prerequisites and guidelines for implementation of the AXIS Perimeter Defender automated intrusion detection system.

Scenario requirements

AXIS Perimeter Defender is suitable for detecting humans or vehicles intruding a sterile zone. A sterile zone is an area where humans or vehicles are not expected. AXIS Perimeter Defender is intended for the following scenarios:

- Perimeter protection of industrial sites or critical infrastructures
- Zone protection of sensitive facilities, storage sites, recycling sites, or any outdoor private areas
- Peripheral protection of stores, warehouses, company buildings or private houses

Prerequisites for effective implementation

For AXIS Perimeter Defender to perform most effectively, the following prerequisites are needed:

- Humans or vehicles to be detected are fully visible (from feet to head) in the image during at least 2 seconds and are not obscured by other fixed or moving objects.
- Humans or vehicles to be detected are moving on a horizontal plane or a slight slope.
- The camera has a fixed field of view.
- The level of illumination and camera settings should be sufficient to provide enough contrast between humans or vehicles and the background. We recommend at least 50 lux in the whole detection area when using an Axis day-and-night camera with artificial lighting.
    - When using external IR spots, the recommended **Maximum Detection Distance** is 80 m (260 ft). The IR spot should have a maximum distance greater than twice the **Maximum Detection Distance**.
    - When using built-in IR light, the **Maximum Detection Distance** is limited to maximum 20 m (66 ft) depending on the camera and the environment.
- To avoid interference from insects, we do not recommend using the camera's built-in IR light (especially cameras with sunshield).
- Small camera vibrations are tolerated but maximum performances are reached for cameras which are not subject to vibrations.
- The minimum frame rate is 8 fps (note that simultaneous views of the camera video stream through the Axis web server can reduce the frame rate to below 8 fps).
- For physical installation requirements, we recommend using the AXIS Perimeter Defender Camera Placement Tool. The tool takes into account both Axis cameras and AXIS Perimeter Defender requirements.

Supported devices

- For a list of compatible Axis devices, go to *www.axis.com/products/axis-perimeter-defender/download*
- To download Design tool for AXIS Perimeter Defender, which includes technical features of supported devices, go to *www.axis.com/products/axis-perimeter-defender/download*

Supported VMS and 3rd party systems

- AXIS Perimeter Defender is compatible with all VMS and 3rd party systems that support native AXIS output interfaces
- AXIS Perimeter Defender is fully integrated with Genetec, Milestone and Eboo

- AXIS Perimeter Defender generates an XML data stream providing alarms and metadata (for example a 2D bounding box surrounding the detected objects). A fully documented protocol allows 3rd party systems to seamlessly integrate with this XML data stream.

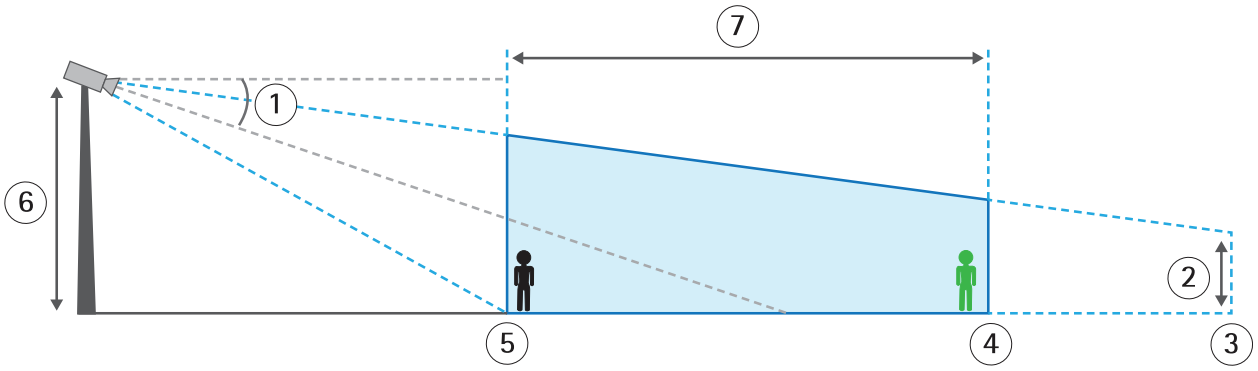
Do you want more information? Go to *www.axis.com/products/axis-perimeter-defender/download*

Network and system requirements

- Cameras running AXIS Perimeter Defender must be reachable from the computer running the AXIS Perimeter Defender Setup Interface through HTTP.
- Bandwidth of the connection to the camera must be sufficient. A good 3G connection should be sufficient.
- AXIS Perimeter Defender Setup Interface (only required during the setup phase) requires:
  - Windows® 7 or Windows® 8
  - Intel® Core™ 2 Duo processor or better
  - at least 2 GB RAM of memory
  - at least 1024x768 screen resolution

How to mount the camera

Camera setup overview



1 Tilt
2 Field of view
3 Distance
4 Maximum detection distance
5 Minimum detection distance
6 Camera height
7 Detection zone

Minimum pixel size

The **Maximum Detection Distance** is the maximum distance from where the application can detect a human or a vehicle. It corresponds to the maximum distance from which the pixel size in the image of a standing person (1.7 m height) is less than a certain pixel size value, called **Minimum Pixel Size**. The **Minimum Pixel Size** is a percentage of the image height and depends on the camera type and the AXIS Perimeter Defender functions.

Visible light cameras – The **Minimum Pixel Size** is 10% of the image height (*). For example, if the height of the visualized image is 576 pixels, a human or a vehicle will be correctly detected up to a distance from which the height of a standing person becomes less than 57 pixels.

Thermal cameras – The **Minimum Pixel Size** is 7% of the image height (*). When the **Long Range** function is enabled, the **Minimum Pixel Size** is 4% of the image height.

NOTICE

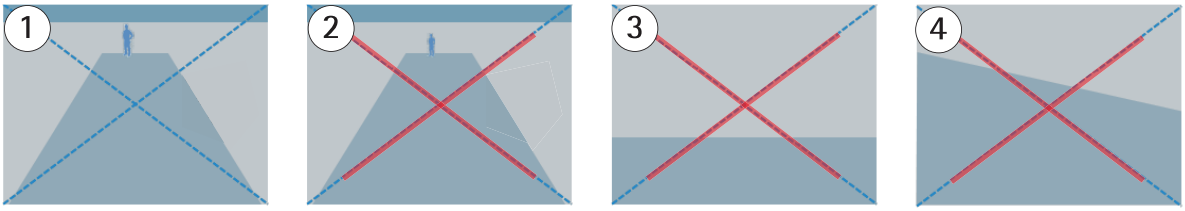
When using corridor format, the indicated percentages are related to the width of the image rather than the height.

Maximum pixel size

- The height of a human must be at maximum 60% of the image height.
- The pixel surface of a vehicle must be at maximum 35% of the image surface.

Tilt and roll angle

- The camera must be sufficiently oriented towards the ground so that the center of the image is under the horizon line. The side view of a person to be detected must be sufficient: **Minimum Detection Distance** > camera height / 2. For thermal images, the camera must be significantly tilted towards the ground to minimize the amount of sky appearing in the image.
- The roll angle of the camera must be nearly equal to zero.



1 Object height, tilt angle, and roll angle are suitable.
2 The human height is less than 10% of the image height (7% for thermal cameras).
3 The center of the image is above the horizon line.
4 The camera's roll angle is too big.

Mounting height

To reach certain detection distances, besides the requirement of a minimum pixel size, the camera must be placed at a minimum height. There is no maximum camera height as long as other requirements, especially the tilt angle, are met.

Camera Height	Maximum Detection Distance
2 m (6.6 ft)[1]	10 m (33 ft)
2.5 m (8 ft)[2]	20 m (66 ft)
3 m (10 ft)	100 m (330 ft)
4 m (13 ft)	200 m (650 ft)
5 m (16 ft)	300 m (1000 ft)
6 m (20 ft)	500 m (1600 ft)

1. Minimum mounting height for indoor cameras.
2. Minimum mounting height for outdoor cameras.

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