

# AXIS P1488-LE Bullet Camera

## 8 MP fully featured AI-powered surveillance

This robust, impact-resistant camera delivers excellent image quality in 8 MP under any light conditions. It comes with a 5.9-13.8 mm wide-angle lens. Zipstream with support for AV1, H.264, and H.265 significantly lowers bandwidth and storage costs. Built on ARTPEC-9, it offers accelerated performance to run impressive analytics applications on the edge and comes with AXIS Object Analytics and AXIS Image Health Analytics preinstalled. This outdoor-ready camera can handle extreme temperatures. It's easy to install, maintain, and operate. What's more, Axis Edge Vault, our hardware-based cybersecurity platform, safeguards the device and offers FIPS 140-3 Level 3 certified secure key storage and operation.

- > **Excellent 8MP video in any light**
- > **Reduced storage cost with AV1 video encoding**
- > **Next-generation AI-powered analytics**
- > **Robust and impact-resistant**
- > **Built-in cybersecurity with Axis Edge Vault**



FIPS-3 Inside 4679



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## Camera

### Image sensor

1/1.2" progressive scan RGB CMOS  
Pixel size 2.9  $\mu$ m

### Lens

Varifocal, 5.9–13.8 mm, F1.5–2.8  
Horizontal field of view 114°–46°  
Vertical field of view 62°–26°  
Minimum focus distance: 0.6m (2 ft)  
P-iris lens, IR corrected

### Day and night

Automatic IR-cut filter  
Hybrid IR filter

### Minimum illumination

0 lux with IR illumination on  
Color: 0.06 lux, at 50 IRE F1.6  
B/W: 0.01 lux, at 50 IRE F1.6

### Shutter speed

1/66500 s to 2 s  
Traffic overview mode: 1/33500 s to 2 s

## System on chip (SoC)

### Model

ARTPEC-9

### Memory

2 GB RAM, 8 GB Flash

### Compute capabilities

Deep learning processing unit (DLPU)

## Video

### Video compression

H.264 (MPEG-4 Part 10/AVC) Baseline, Main and High Profiles  
H.265 (MPEG-H Part 2/HEVC) Main Profile  
AV1  
Motion JPEG

### Resolution

16:9: 3840x2160 to 640x360  
16:10: 2560x1600 to 320x200  
4:3: 2880x2160 to 160x120

### Frame rate

With Forensic WDR: Up to 25/30 fps (50/60 Hz) in all resolutions  
No WDR: Up to 50/60 fps (50/60 Hz) in all resolutions

### Video streaming

Axis Zipstream technology in H.264, H.265, and AV1  
Controllable frame rate and bandwidth  
VBR/ABR/MBR H.264/H.265/AV1  
Low latency mode  
Video streaming indicator

### Signal-to-noise ratio

>55 dB

### WDR

Forensic WDR: Up to 120 dB depending on scene

### Multi-view streaming

Up to 7 individually cropped out view areas

### Noise reduction

Spatial filter (2D noise reduction)  
Temporal filter (3D noise reduction)

### Image settings

Saturation, contrast, brightness, sharpness, white balance, day/night threshold, exposure mode, exposure zones, defogging, compression, orientation: auto, 0°, 90°, 180°, 270° including corridor format, mirroring of images, dynamic text and image overlay, polygon privacy masks, barrel distortion correction  
Scene profiles: forensic, vivid, traffic overview  
Electronic image stabilization

### Image processing

Axis Zipstream, Forensic WDR, Lightfinder 2.0, OptimizedIR

### Pan/Tilt/Zoom

Digital PTZ, digital zoom

## Audio

### Features

Automatic gain control (AGC)  
Speaker pairing, microphone pairing

## Streaming

Configurable duplex:

One-way (simplex, half duplex)

Two-way (half duplex, full duplex)

## Input

10-band graphic equalizer

Input for external unbalanced microphone, optional 5 V microphone power

Digital input, optional 12 V ring power

Unbalanced line input

## Output

Output through network speaker pairing

## Encoding

24bit LPCM, AAC-LC 8/16/32/44.1/48 kHz, G.711 PCM

8 kHz, G.726 ADPCM 8 kHz, Opus 8/16/48 kHz

Configurable bit rate

## Network

### Network protocols

IPv4, IPv6 USGv6, ICMPv4/ICMPv6, HTTP, HTTPS<sup>1</sup>, HTTP/2, TLS<sup>1</sup>, QoS Layer 3 DiffServ, FTP, SFTP, CIFS/SMB, SMTP, mDNS (Bonjour), UPnP®, SNMP v1/v2c/v3 (MIB-II), DNS/DNSv6, DDNS, NTP, PTP, NTS, RTSP, RTP, SRTP/RTSPS, TCP, UDP, IGMPv1/v2/v3, RTCP, ICMP, DHCPv4/v6, ARP, SSH, LLDP, CDP, MQTT v3.1.1, Secure syslog (RFC 3164/5424, UDP/TCP/TLS), Link-Local address (ZeroConf)

## System integration

### Application Programming Interface

Open API for software integration, including VAPIX®, metadata and AXIS Camera Application Platform (ACAP); specifications at [axis.com/developer-community](http://axis.com/developer-community).

One-click cloud connection

ONVIF® Profile G, ONVIF® Profile M, ONVIF® Profile S and ONVIF® Profile T, specification at [onvif.org](http://onvif.org)

Support for Voice over IP (VoIP) through the Session Initiation Protocol (SIP), using peer-to-peer (P2P) or Private Branch Exchange (PBX).

### Video management systems

Compatible with AXIS Camera Station Edge, AXIS Camera Station Pro, AXIS Camera Station 5, and video management software from Axis' partners available at [axis.com/vms](http://axis.com/vms).

## Onscreen controls

Autofocus

Day/night shift

Defogging

Video streaming indicator

Wide dynamic range

IR illumination

Privacy masks

Media clip

Electronic image stabilization

## Edge-to-edge

Microphone pairing

Speaker pairing

Siren and light pairing

## Event conditions

Application

Device status: above operating temperature, above or below operating temperature, below operating temperature, within operating temperature, IP address removed, new IP address, network lost, system ready, ring power overcurrent protection, live stream active, Digital audio input status

Edge storage: recording ongoing, storage disruption, storage health issues detected

I/O: digital input, manual trigger, virtual input

MQTT: subscribe

Scheduled and recurring: schedule

Video: average bitrate degradation, day-night mode, tampering

## Event actions

Audio clips: play, stop

Day-night mode

I/O: toggle I/O once, toggle I/O while the rule is active

Illumination: use lights, use lights while the rule is active

MQTT: publish

Notification: HTTP, HTTPS, TCP and email

Overlay text

Recordings: SD card and network share

SNMP traps: send, send while the rule is active

Upload of images or video clips: FTP, SFTP, HTTP, HTTPS, network share and email

WDR mode

## Built-in installation aids

Pixel counter, remote zoom and focus, straighten image, auto rotation

1. This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. ([openssl.org](http://openssl.org)), and cryptographic software written by Eric Young ([eay@cryptsoft.com](mailto:eay@cryptsoft.com)).

## Analytics

### Applications

#### Included

AXIS Object Analytics, AXIS Scene Metadata, AXIS Image Health Analytics, AXIS Live Privacy Shield, AXIS Video Motion Detection

#### Supported

AXIS Perimeter Defender, AXIS License Plate Verifier, AXIS Speed Monitor<sup>2</sup>  
Support for AXIS Camera Application Platform enabling installation of third-party applications, see [axis.com/acap](http://axis.com/acap)

### AXIS Object Analytics

**Object classes:** humans, vehicles (types: cars, buses, trucks, bikes, other)

**Scenarios:** line crossing, object in area, time in area, crossline counting, occupancy in area, tailgating detection, PPE monitoring<sup>BETA</sup>, motion in area, motion line crossing

Up to 10 scenarios

**Other features:** triggered objects visualized with trajectories, color-coded bounding boxes and tables

Polygon include/exclude areas

Perspective configuration

ONVIF Motion Alarm event

### AXIS Image Health Analytics

#### Detection settings:

Tampering: blocked image, redirected image

Image degradation: blurred image, underexposed image

Other features: sensitivity, validation period

### AXIS Scene Metadata

**Object classes:** humans, faces, vehicles (types: cars, buses, trucks, bikes), license plates

**Object attributes:** Vehicle color, upper/lower clothing color, confidence, position

### AXIS Live Privacy Shield

**Object classes:** Humans, (entire body or face only), license plates, backgrounds

**Masking type:** Pixelated with adjustable block size, color (solid), masking inclusion and exclusion areas

**Other features:** Dynamic masking up to 10 fps.

Supports multiple dynamically masked streams, and one unmasked stream with full frame rate, simultaneously.

## Approvals

### Product markings

CSA, UL/cUL, CE, KC, VCCI, RCM

### Supply chain

TAA compliant

### EMC

CISPR 35, CISPR 32 Class A, EN 55035, EN 55032 Class A, EN 50121-4, EN 61000-3-2, EN 61000-3-3, EN 61000-6-1, EN 61000-6-2

**Australia/New Zealand:** RCM AS/NZS CISPR 32 Class A

**Canada:** ICES-3(A)/NMB-3(A)

**Japan:** VCCI Class A

**Korea:** KS C 9835, KS C 9832 Class A

**USA:** FCC Part 15 Subpart B Class A

**Railway:** IEC 62236-4

### Safety

CAN/CSA C22.2 No. 62368-1 ed. 3, IEC/EN/UL 62368-1 ed. 3, IEC/EN 62471 risk group exempt, IS 13252

### Environment

IEC 60068-2-6, IEC 60068-2-14, IEC 60068-2-27, IEC/EN 60529 IP66/IP67, IEC/EN 62262, IEC 60950-22, ISTA 3A, IK10, NEMA TS 2 (2.2.7-2.2.9)

### Network

IPv6 USGv6, NIST SP500-267

### Cybersecurity

ETSI EN 303 645, BSI IT Security Label, FIPS-140

## Cybersecurity

### Edge security

**Software:** Signed OS, brute force delay protection, digest authentication and OAuth 2.0 RFC6749 OpenID Authorization Code Flow for centralized ADFS account management, password protection, Axis Cryptographic Module (FIPS 140-2 level 1)

**Hardware:** Axis Edge Vault cybersecurity platform Secure element (CC EAL 6+), system-on-chip security (TEE), Axis device ID, secure keystore, signed video, secure boot, encrypted filesystem (AES-XTS-Plain64 256bit)

2. It also requires AXIS D2110-VE Security Radar with AXIS OS 10.12 or later.

## Network security

IEEE 802.1X (EAP-TLS, PEAP-MSCHAPv2)<sup>3</sup>,  
IEEE 802.1AE (MACsec PSK/EAP-TLS), IEEE 802.1AR,  
HTTPS/HSTS<sup>3</sup>, TLS v1.2/v1.3<sup>3</sup>, Network Time Security  
(NTS), X.509 Certificate PKI, host-based firewall

## Documentation

*AXIS OS Hardening Guide*

*Axis Vulnerability Management Policy*

*Axis Security Development Model*

AXIS OS Software Bill of Material (SBOM)

To download documents, go to [axis.com/support/cybersecurity/resources](http://axis.com/support/cybersecurity/resources)

To read more about Axis cybersecurity support, go to [axis.com/cybersecurity](http://axis.com/cybersecurity)

## General

### Casing

IP66/IP67-, NEMA 4X-, and IK10-rated casing

Polycarbonate blend and aluminium

Color: white NCS S 1002-B

For repainting instructions, go to the product's support page. For information about the impact on warranty, go to [axis.com/warranty-implication-when-repainting](http://axis.com/warranty-implication-when-repainting).

### Power

Power over Ethernet IEEE 802.3af/802.3at Type 1

Class 3, max 12.95 W

10–28 V DC, max 12.95 W

### Connectors

Network: Shielded RJ45 10BASE-T/100BASE-TX/1000BASE-T

Audio: 3.5 mm mic/line in

I/O: Terminal block for 1 supervised alarm input and 1 output (12 V DC output, max. load 25 mA)

Power: DC input

### IR illumination

OptimizedIR with power-efficient, long-life 850 nm IR LEDs

Range of reach 50 m (164 ft) or more depending on the scene

### Storage

Support for microSD/microSDHC/microSDXC card

Support for SD card encryption (AES-XTS-Plain64 256bit)

Recording to network-attached storage (NAS)

For SD card and NAS recommendations see [axis.com](http://axis.com)

## Operating conditions

Temperature: -40 °C to 60 °C (-40 °F to 140 °F)

Maximum temperature according to NEMA TS2 (2.2.7): 74 °C (165 °F)

Start-up temperature: -40 °C

Humidity 10–100% RH (condensing)

Wind load (sustained): 60 m/s (134 mph)

## Storage conditions

-40 °C to 65 °C (-40 °F to 149 °F)

Humidity 5–95% RH (non-condensing)

## Dimensions

For the overall product dimensions, see the dimension drawing in this datasheet.

Effective Projected Area (EPA): 0.024 m<sup>2</sup> (0.26 ft<sup>2</sup>)

## Weight

With weather shield: 1.4 kg (3.1 lb)

## Box content

Camera, weathershield, installation guide, terminal block connector, connector guard, cable gaskets, owner authentication key

## System tools

AXIS Site Designer, AXIS Device Manager, product selector, accessory selector, lens calculator

Available at [axis.com](http://axis.com)

## Languages

English, German, French, Spanish, Italian, Russian, Simplified Chinese, Japanese, Korean, Portuguese, Polish, Traditional Chinese, Dutch, Czech, Swedish, Finnish, Turkish, Thai, Vietnamese

## Warranty

5-year warranty, see [axis.com/warranty](http://axis.com/warranty)

## Part numbers

Available at [axis.com/products/axis-p1488-le#part-numbers](http://axis.com/products/axis-p1488-le#part-numbers)

## Optional accessories

### Installation

AXIS T8415 Wireless Installation Tool

### Mounting

AXIS T91B47 Pole Mount, AXIS T94F01P Conduit Back Box, AXIS TM4101 Pendant Kit

3. This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. ([openssl.org](http://openssl.org)), and cryptographic software written by Eric Young ([eay@cryptsoft.com](mailto:eay@cryptsoft.com)).

## Storage

AXIS Surveillance Cards

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For more accessories, go to [axis.com/products/axis-p1488-le#accessories](http://axis.com/products/axis-p1488-le#accessories)

## Sustainability

### Substance control

PVC free, BFR/CFR free in accordance with JEDEC/ECA

Standard JS709

RoHS in accordance with EU RoHS Directive 2011/65/EU/ and EN 63000:2018

REACH in accordance with (EC) No 1907/2006. For SCIP UUID, see [axis.com/partner](http://axis.com/partner).

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### Materials

Screened for conflict minerals in accordance with OECD guidelines

To read more about sustainability at Axis, go to [axis.com/about-axis/sustainability](http://axis.com/about-axis/sustainability)

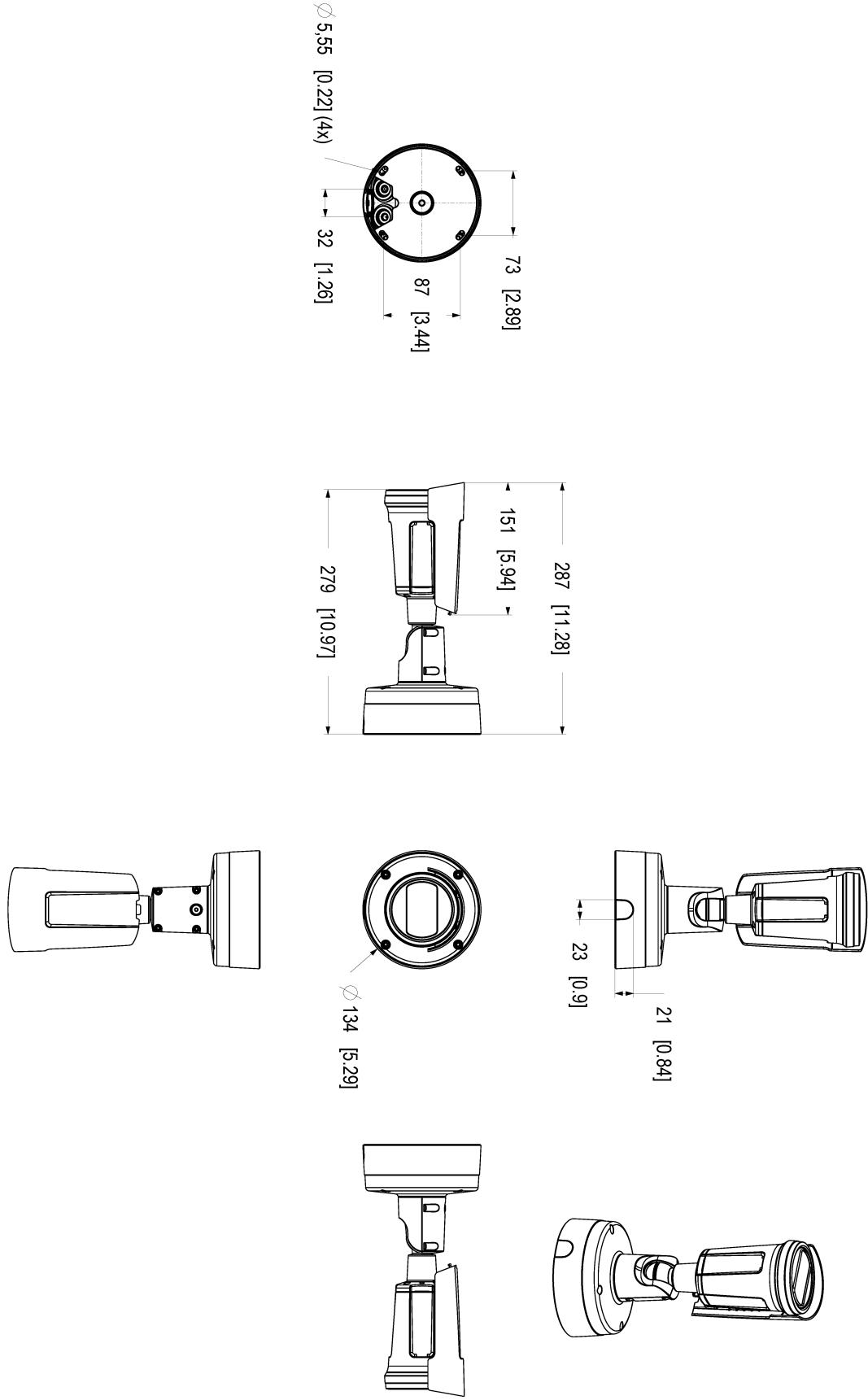
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### Environmental responsibility

[axis.com/environmental-responsibility](http://axis.com/environmental-responsibility)

Axis Communications is a signatory of the UN Global Compact, read more at [unglobalcompact.org](http://unglobalcompact.org)

## AXIS P1488-LE Bullet Camera

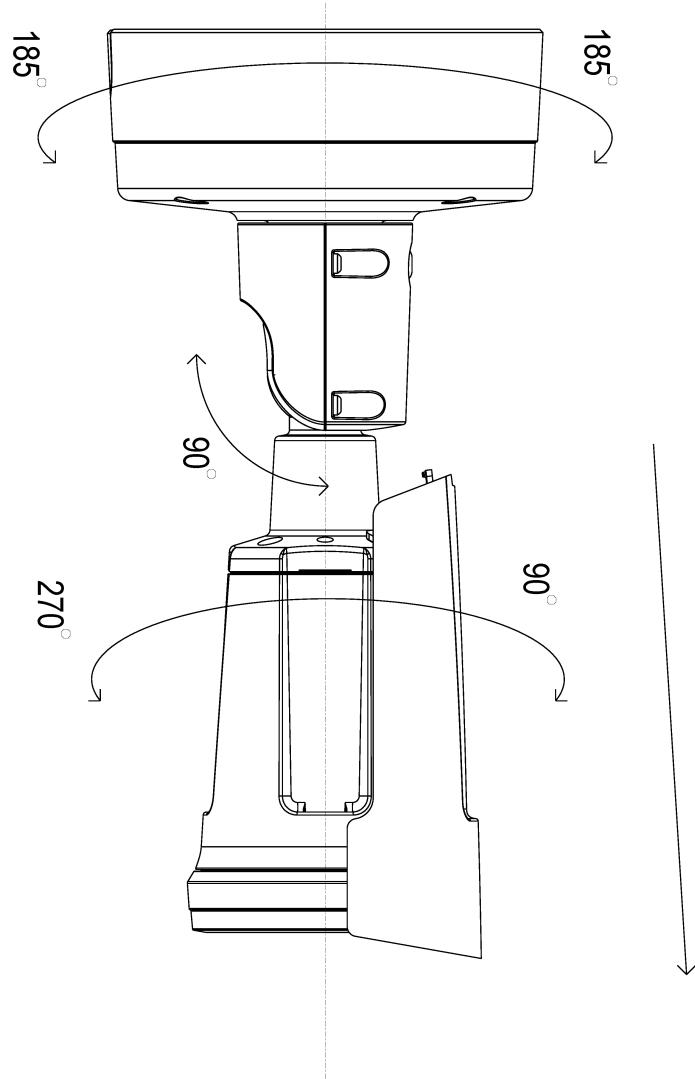


Dimensions in mm [inch]			
Front	Side	Top	Bottom
279	287	151	134
[10.97]	[11.28]	[5.94]	[5.29]
32	23	21	21
[1.26]	[0.9]	[0.84]	[0.84]
73	23	21	21
[2.89]	[0.9]	[0.84]	[0.84]
87			
[3.44]			
$\varnothing 5,55$			
[0.22] (4x)			

Front Side Top Bottom  
279 287 151 134  
[10.97] [11.28] [5.94] [5.29]  
32 23 21 21  
[1.26] [0.9] [0.84] [0.84]  
73 23 21 21  
[2.89] [0.9] [0.84] [0.84]  
87  
[3.44]  
 $\varnothing 5,55$  [0.22] (4x)

Front Side Top Bottom  
279 287 151 134  
[10.97] [11.28] [5.94] [5.29]  
32 23 21 21  
[1.26] [0.9] [0.84] [0.84]  
73 23 21 21  
[2.89] [0.9] [0.84] [0.84]  
87  
[3.44]  
 $\varnothing 5,55$  [0.22] (4x)

## Weather Shield sliding direction: 15.5mm [6.10]



## AV1

AV1 is a modern video encoding standard optimized for video transmission over the internet by Alliance for Open Media (AoM). It was designed to provide better compression efficiency than older codecs including H.264 (also known as AVC) and H.265 (HEVC), while being royalty-free and open-source.

## Axis Edge Vault

Axis Edge Vault is the hardware-based cybersecurity platform that safeguards the Axis device. It forms the foundation that all secure operations depend on and offer features to protect the device's identity, safeguard its integrity and protect sensitive information from unauthorized access. For instance, secure boot ensures that a device can boot only with signed OS, which prevents physical supply chain tampering. With signed OS, the device is also able to validate new device software before accepting to install it. And the secure keystore is the critical building-block for protecting cryptographic information used for secure communication (IEEE 802.1X, HTTPS, Axis device ID, access control keys etc.) against malicious extraction in the event of a security breach. The secure keystore and secure connections are provided through a Common Criteria or FIPS 140 certified hardware-based cryptographic computing module.

Furthermore, signed video ensures that video evidence can be verified as untampered. Each camera uses its unique video signing key, which is securely stored in the secure keystore, to add a signature into the video stream allowing video to be traced back to the Axis camera from where it originated.

To read more about Axis Edge Vault, go to [axis.com/solutions/edge-vault](http://axis.com/solutions/edge-vault).

## AXIS Object Analytics

AXIS Object Analytics is a preinstalled, multifeatured video analytics that detects and classifies humans, vehicles, and types of vehicles. Thanks to AI-based algorithms and behavioral conditions, it analyzes the scene and their spatial behavior within – all tailored to your specific needs. Scalable and edge-based, it requires minimum effort to set up and supports various scenarios running simultaneously.

## AXIS Live Privacy Shield

Remotely monitor activities both indoors and outdoors while safeguarding privacy in real-time.

With AI-based dynamic masking you can choose what to mask or blur while addressing rules and regulations protecting privacy and personal data. The application enables masking of moving and still objects such as humans, license plates, or backgrounds. The application

works in real-time and on both live and recorded video streams.

## Electronic image stabilization

Electronic image stabilization (EIS) provides smooth video in situations where a camera is subject to vibrations. Built-in gyroscopic sensors continuously detect the camera's movements and vibrations, and they automatically adjust the frame to ensure you always capture the details you need. Electronic image stabilization relies on different algorithms for modeling camera motion, which are used to correct the images.