AXIS M4328-P Panoramic Camera

12 MP indoor fisheye with deep learning

AXIS M4328-P can deliver 360° or 180° panoramic views at up to 30 fps with no blind spots. The camera can stream up to four individual view areas simultaneously, with support for digital PTZ. Built on ARTPEC-8, it offers powerful artificial intelligence and deep learning analytics on the edge. Plus, thanks to AXIS Object Analytics, it can accurately detect and classify moving objects for more effective monitoring. The camera is delivered factory-focused and features digital roll functionality for easy installation. Furthermore, it's compact, discreet, and repaintable to blend in with any surroundings.

- > 180°/360° view up to 30 fps
- > 12 MP with stereographic lens
- > Support for digital PTZ views
- > Digital roll for easy installation
- > Support for advanced analytics



AXIS M4328-P Panoramic Camera

Camera

Image sensor
1/2.3" progressive scan RGB CMOS

Lens
1.2 mm, F2.2
Horizontal field of view: 182°
Vertical field of view: 182°
Fixed iris, fixed focus, IR corrected

Day and night
Automatic IR-cut filter

Minimum illumination
Color: 0.19 lux at 50 IRE, F2.2
B/W: 0.04 lux at 50 IRE, F2.2

Shutter speed
1/8100 s to 1/2 s

Camera adjustment
Digital roll: ±180°

System on chip (SoC)

Model
ARTPEC-8

Memory
2048 MB RAM, 8192 MB 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
Motion JPEG

Resolution
Overview: 2992x2992 to 160x160 (1:1)
Panorama: 3840x2160 to 192x72 (8:3, 16:9 or 32:9)
Double panorama: 3584x2688 to 384x288 (4:3 or 16:9)
Quad view: 3584x2688 to 384x288 (4:3 or 16:9)
View area 1-4: 2048x1536 to 256x144 (4:3 or 16:9)
Corner left/right: 3200x1600 to 192x72 (2:1 or 8:3)
Double corner: 2880x2880 to 384x288 (1:1 or 4:3)
Corridor: 2560x1920 to 256x144 (4:3 or 16:9)

Frame rate
360° overview only up to max resolution without WDR: 25/30 fps @ 50/60 Hz
360° overview and 4 dewarped views up to max resolution with WDR: up to 25/20 fps @ 50/60 Hz

Video streaming
Multiple, individually configurable streams in H.264, H.265, and Motion JPEG
Axis Zipstream technology in H.264 and H.265
Controllable frame rate and bandwidth
VBR/ABR/MBR H.264/H.265
Video streaming indicator

WDR
Forensic WDR: Up to 120 dB depending on scene

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

Image settings
Saturation, contrast, brightness, sharpness, local contrast, tone mapping, white balance, day/night threshold, exposure mode, exposure zones, compression, mirroring, dynamic text and image overlay, and polygon privacy mask

Image processing
Axis Zipstream, Forensic WDR

Pan/Tilt/Zoom
Digital PTZ, preset positions

Audio

Features
Network speaker pairing

Input/output
Audio features through portcast technology: two-way audio connectivity, voice enhancer

Network

Network protocols
IPv4, IPv6 USGv6, ICMPv4/ICMPv6, HTTP, HTTPS[1], HTTP/2, TLS[1], 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, TCP, UDP, IGMPv1/v2/v3, RTCP, DHCPv4/v6, SSH, LLDP, CDP, MQTT v3.1.1, Syslog, Link-Local address (ZeroConf), IEEE 802.1X (EAP-TLS), IEEE 802.1AR

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*.
One-click cloud connection
ONVIF® Profile G, ONVIF® Profile M, ONVIF® Profile S, and ONVIF® Profile T, specifications at *onvif.org*
Support for Session Initiation Protocol (SIP) for integration with Voice over IP (VoIP) systems, peer to peer or integrated with SIP/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*.

Onscreen controls
Privacy masks
Media clip

Edge-to-edge
Siren and light pairing

Event conditions
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, live stream active
Edge storage: recording ongoing, storage disruption, storage health issues detected
I/O: manual trigger, virtual input
MQTT: subscribe
Scheduled and recurring: schedule
Video: average bitrate degradation, day-night mode, tampering

Event actions
Day-night mode
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
Status LED
Upload of images or video clips: FTP, SFTP, HTTP, HTTPS, network share and email
WDR mode

Built-in installation aids
Pixel counter, digital roll, level grid

Analytics

Applications
Included
AXIS Object Analytics, AXIS Image Health Analytics, AXIS Scene Metadata, AXIS Video Motion Detection, active tampering alarm
Supported
Support for AXIS Camera Application Platform enabling installation of third-party applications, see *axis.com/acap*

AXIS Object Analytics
Object classes: humans, vehicles (types: cars, buses, trucks, bikes)
Scenarios: line crossing, object in area, crossline counting, occupancy in area[BETA]
Up to 10 scenarios
Other features: triggered objects visualized with trajectories, color-coded bounding boxes and tables
Polygon include/exclude areas
ONVIF Motion Alarm event

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

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, confidence, position

Approvals

Product markings
CSA, UL/cUL, BIS, UKCA, CE, KC

Supply chain
TAA compliant

EMC
EN 55032 Class A, EN 55035, 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

Safety
IEC/EN/UL 62368-1 ed. 3,
CAN/CSA C22.2 No. 62368-1 ed. 3, IS 13252

Environment
IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-6, IEC 60068-2-14, IEC 60068-2-27, IEC 60068-2-78

Network
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 Client Credential Flow/OpenID Authorization Code Flow for centralized ADFS account management, password protection, Axis Cryptographic Module (FIPS 140-2 level 1), AES-XTS-Plain64 256bit SD card encryption
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)

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

Documentation
AXIS OS Hardening Guide
Axis Vulnerability Management Policy
Axis Security Development Model
To download documents, go to *axis.com/support/cybersecurity/resources*
To read more about Axis cybersecurity support, go to *axis.com/cybersecurity*

General

Casing
Plastic casing, encapsulated electronics
Color: white NCS S 1002-B
For repainting instructions of the casing and information about the impact on warranty, contact your Axis partner.

Mounting
Mounting bracket with junction box holes (double-gang, single-gang, and 4" octagon)

Power
Power over Ethernet (PoE) IEEE 802.3af/802.3at Type 1 Class 3
Typical 3.5 W, max 5.1 W

Connectors
Network: Shielded RJ45 10BASE-T/100BASE-TX PoE
Audio: Audio and I/O connectivity via portcast technology

2. *This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. (openssl.org), and cryptographic software written by Eric Young (eay@cryptsoft.com).*

Storage
Support for microSD/microSDHC/microSDXC card
Recording to network-attached storage (NAS)
For SD card and NAS recommendations, see *axis.com*

Operating conditions
0 °C to 40 °C (32 °F to 104 °F)
Humidity 10–85% RH (non-condensing)

Storage conditions
-40 °C to 65 °C (-40 °F to 149 °F)
Humidity 5–95% RH (non-condensing)

Dimensions
Height: 51 mm (2.0 in)
ø 101 mm (4.0 in)

Weight
300 g (0.66 lb)

Box content
Camera, installation guide, owner authentication key

Optional accessories
AXIS TM3820 Vandal Casing (IK08, IP42 with cover hatch, IP41 without cover hatch)
AXIS TM3210 Recessed Mount
AXIS TM3211 Recessed Mount
AXIS T94 mounting accessories
AXIS T91 mounting accessories
AXIS Surveillance Cards
For more accessories, go to *axis.com/products/axis-m4328-p#accessories*

System tools
AXIS Site Designer, AXIS Device Manager, product selector, accessory selector, lens calculator
Available at *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*

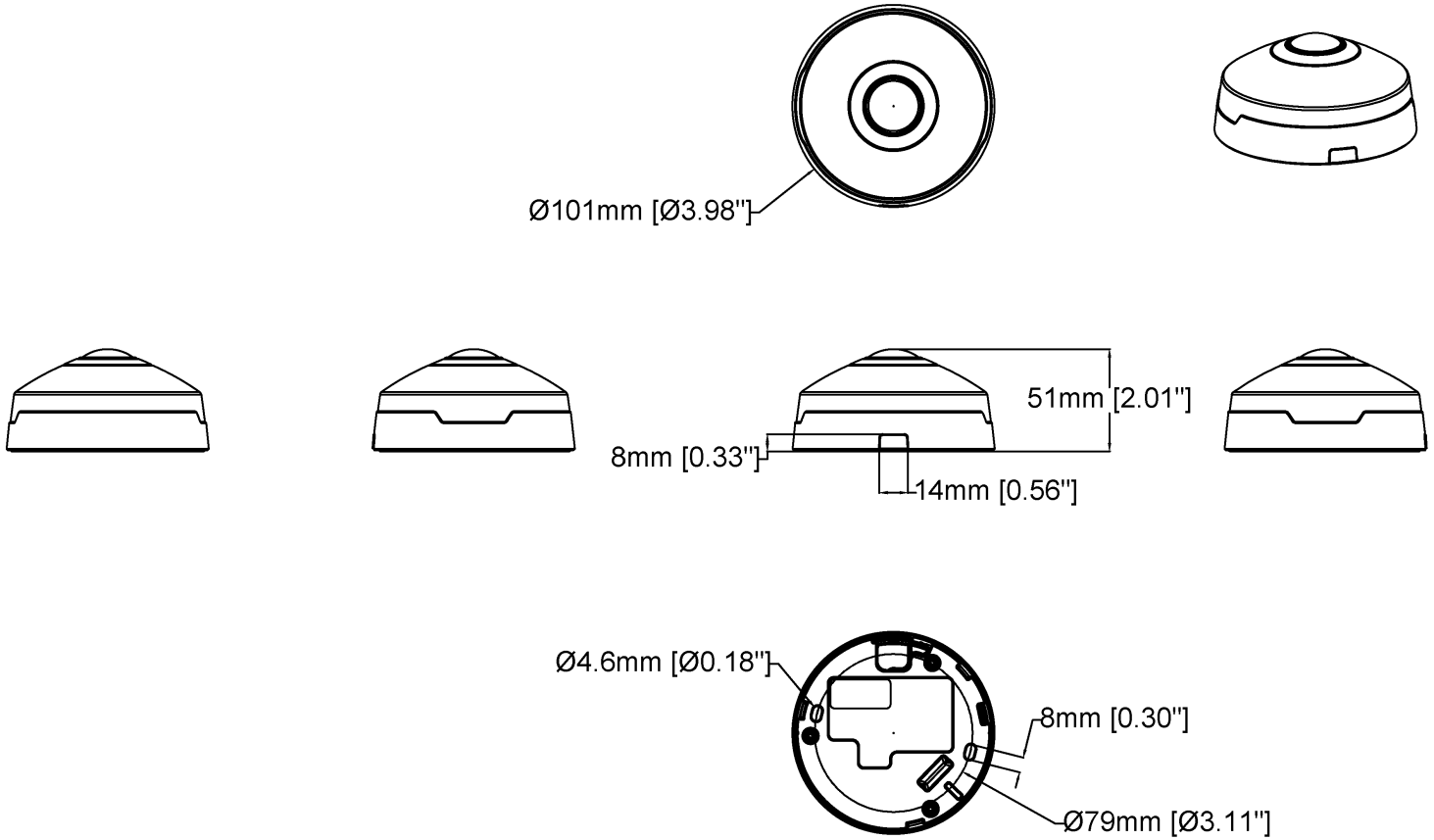
Part numbers
Available at *axis.com/products/axis-m4328-p#part-numbers*

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.*

Materials
Renewable carbon-based plastic content: 73% (recycled)
Screened for conflict minerals in accordance with OECD guidelines
To read more about sustainability at Axis, go to *axis.com/about-axis/sustainability*

Environmental responsibility
axis.com/environmental-responsibility
Axis Communications is a signatory of the UN Global Compact, read more at *unglobalcompact.org*



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Revision	v.01	Revision date	2023-02-17
Paper size	A4	Release date	2023-02-17
Created by	MS	Scale	1:3

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Highlighted capabilities

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 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*.

Forensic WDR

Axis cameras with wide dynamic range (WDR) technology make the difference between seeing important forensic details clearly and seeing nothing but a blur in challenging light conditions. The difference between the darkest and the brightest spots can spell trouble for image usability and clarity. Forensic WDR effectively reduces visible noise and artifacts to deliver video tuned for maximal forensic usability.

Zipstream

The Axis Zipstream technology preserves all the important forensic in the video stream while lowering bandwidth and storage requirements by an average of 50%. Zipstream also includes three intelligent algorithms, which ensure that relevant forensic information is identified, recorded, and sent in full resolution and frame rate.

For more information, see *axis.com/glossary*

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