AXIS
COMMUNICATIONS

AXIS M4317-PLR Panoramic Camera
6 MP fisheye camera for buses

Optimized for surveillance onboard buses, this discreet, panoramic camera is designed to withstand shock and vibrations. It delivers a complete 180° or 360° overview for total situational awareness. Thanks to built-in IR illumination with individually controllable LEDs, it ensures clear, reflection-free footage and excellent image quality even in low light or complete darkness. Delivered factory-focused, it includes digital roll functionality to remotely adjust the rotation of the camera overview. Furthermore, this high-performance camera includes built-in cybersecurity features to help prevent unauthorized access and safeguard your system. Plus, it supports advanced analytics based on deep learning on the edge.

> **Complies with industry bus regulations**

> **Sharpdome technology**

> **Complete 180° and 360° overview**

> **Built-in IR with individual IR LEDs**

> **Built-in cybersecurity features**

Onvif® | **GMST**

AXIS M4317-PLR Panoramic Camera

Camera

Image sensor	1/1.8" progressive scan RGB CMOS
Lens	Focal length: 1.1 mm, F2.2 Horizontal field of view: 182° Vertical field of view: 182° Fixed iris, IR corrected, fixed focus
Day and night	Automatic IR-cut filter
Minimum illumination	**Color:** 0.16 lux at 50 IRE, F2.2 **B/W:** 0.03 lux at 50 IRE, F2.2 0 lux with IR illumination on
Shutter speed	1/33500 s to 0.2 s
Camera angle 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: 2160x2160 to 160x160 Panorama: 2560x1440 to 192x72 Double Panorama: 2560x1920 to 384x288 Quad view: 2560x1920 to 384x288 View area 1-4: 1920x1440 to 256x144 Corner right and left: 2368x1184 to 192x72 Double corner: 2016x2016 to 384x288 Corridor: 2560x1920 to 256x144
Frame rate	Up to 25/30 fps (60/50 Hz) in all resolutions 360° overview up to 2160x2160 without WDR: 50/60 fps @(50/60 Hz) 360° overview and 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, polygon privacy mask
Image processing	Axis Zipstream, Forensic WDR, Lightfinder, OptimizedIR
Pan/Tilt/Zoom	Digital PTZ of view areas, digital PT of panorama, corner, corridor and quad views, preset positions, guard tours

Audio

Audio features	Network speaker pairing
Audio input/output	Audio features through portcast technology: two-way audio connectivity, voice enhancer

Network

Network protocols	IPv4, IPv6 USGv6, ICMPv4/ICMPv6, HTTP, HTTPS[a], HTTP/2, TLS[a], QoS Layer 3 DiffServ, FTP, SFTP, CIFS/SMB, SMTP, mDNS (Bonjour), UPnP®, SNMP v1/v2c/v3 (MIB-II), DNS/DNSv6, DDNS, NTP, NTS, RTSP, RTP, SRTP/RTSPS, 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*. ACAP includes Native SDK and Computer Vision SDK.

	One-click cloud connection ONVIF® Profile G, ONVIF® Profile M, ONVIF® Profile S, and ONVIF® Profile T, specification 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 Companion, AXIS Camera Station, video management software from Axis' Application Development Partners available at *axis.com/vms*
Onscreen controls	Privacy masks IR illumination Media clip
Event conditions	Device status: above operating temperature, above or below operating temperature, below operating temperature, casing open, IP address removed, live stream active, network lost, new IP address, system ready, within operating temperature Edge storage: recording ongoing, storage disruption, storage health issues detected I/O: digital input is active, digital output is active, manual trigger, virtual input is active MQTT: stateless Scheduled and recurring: schedule Video: average bitrate degradation, day-night mode, tampering
Event actions	Day-night mode: use while the rule is active I/O: toggle once, toggle while the rule is active Illumination: use lights, use lights while the rule is active Images: FTP, HTTP, HTTPS, SFTP, email and network share MQTT: publish Notification: HTTP, HTTPS, TCP and email Overlay text: use, use while the rule is active Recordings: record video, record video while the rule is active SNMP trap messages: send, send while the rule is active Status LED: flash, flash while the rule is active Video clips: FTP, HTTP, HTTPS, SFTP, email and network share WDR mode: set, set while the rule is active
Built-in installation aids	Pixel counter, level grid, digital roll

Analytics

AXIS Object Analytics	**Object classes:** humans, vehicles (types: cars, buses, trucks, bikes) **Trigger conditions:** line crossing, object in area Up to 10 scenarios Metadata visualized with trajectories and color-coded bounding boxes Polygon include/exclude areas ONVIF Motion Alarm event
Metadata	**Object data:** Classes: humans, faces, vehicles (types: cars, buses, trucks, bikes) **Attributes:** Vehicle color, confidence, position **Event data:** Producer reference, scenarios, trigger conditions
Applications	**Included** AXIS Object Analytics, AXIS Video Motion Detection, active tampering alarm **Supported** AXIS People Counter Support for AXIS Camera Application Platform enabling installation of third-party applications, see *axis.com/acap*

Approvals

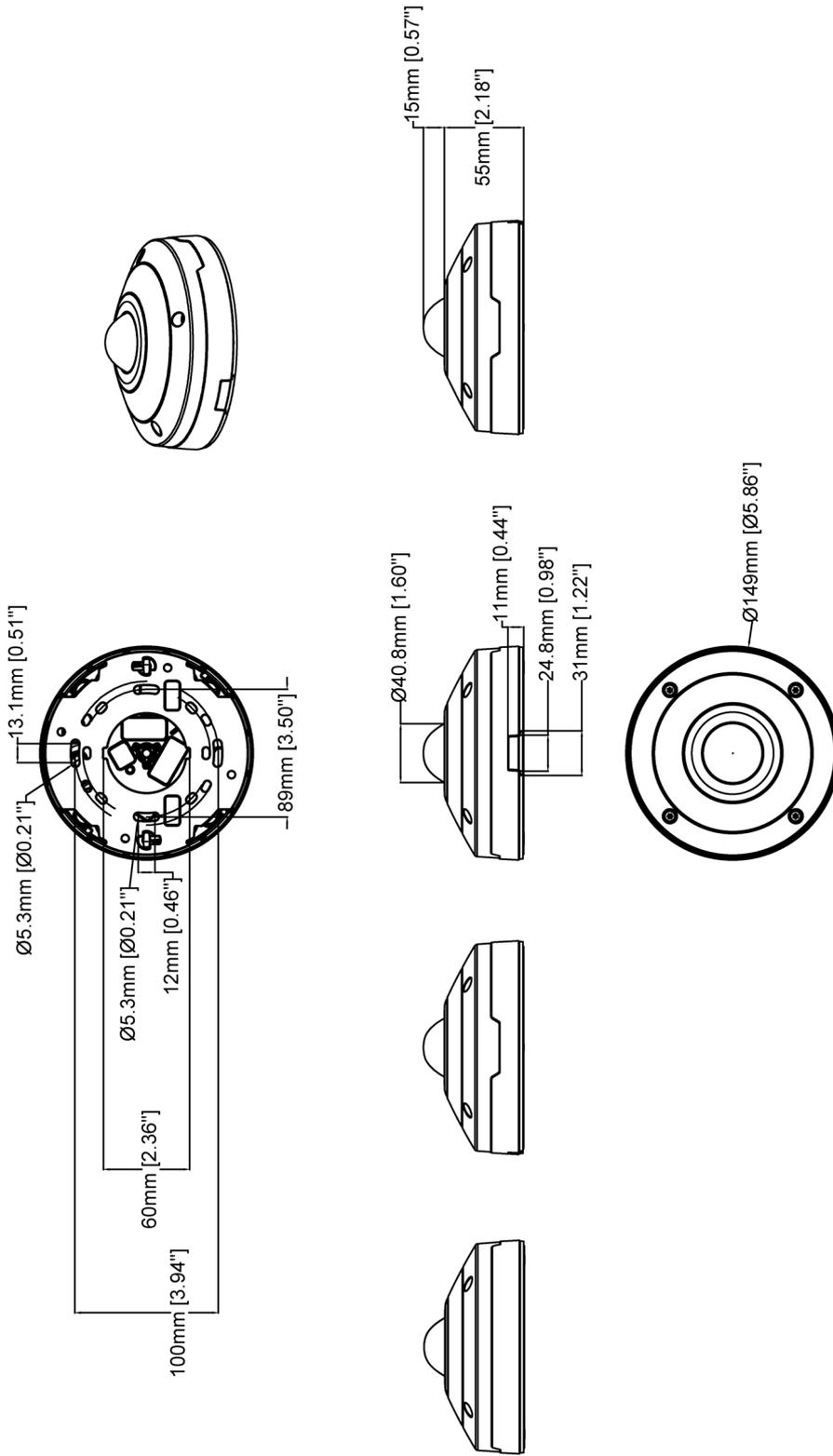|	
Product markings	CSA, UL/cUL, BIS, UKCA, CE, KC
Supply chain	TAA compliant
EMC	ECE R10 rev.06, EN 55035, EN 55032 Class A, EN 50121-4, EN 61000-6-1, EN 61000-6-2, EN 61547 **Australia/New Zealand:** RCM AS/NZS CISPR 32 Class A **Canada:** ICES-3(A)/NMB-3(A) **Japan:** VCCI Class A **Korea:** KS C 9835, KS C 9832 Class A **USA:** FCC Part 15 Subpart B Class A **Railway:** IEC 62236-4
Safety	IEC/EN/UL 62368-1 ed. 3, CAN/CSA C22.2 No. 62368-1 ed. 3, IEC/EN 62471 risk group exempt, UN ECE R118, 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, IEC TR 60721-4-5 Class 5M3

	(Vibration, Shock), IEC/EN 62262 IK10, IEC/EN 60529 IP66, ISO 4892-2, NEMA 250 Type 4X, NEMA TS 2 (2.2.7-2.2.9), EN 50155, IEC/EN 61373 Category 1 Class B, ISO 21207 (Method B)
Network	NIST SP500-267

Cybersecurity

Edge security	**Software:** Signed firmware, brute force delay protection, digest authentication and OAuth 2.0 RFC6749 OpenID Authorization Code Flow for centralized ADFS account management, password protection, 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)[a], IEEE 802.1AR, HTTPS/HSTS[a], TLS v1.2/v1.3[a], Network Time Security (NTS), X.509 Certificate PKI, IP address filtering
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* To read more about Axis cybersecurity support, go to *axis.com/cybersecurity*

General

Casing	IP66-, NEMA 4X- and IK10-rated Polycarbonate hard-coated dome Aluminum Color: white NCS S 1002-B Repaintable skin cover accessory
Mounting	Mounting bracket with junction box holes (double-gang, single-gang, and 4" octagon) ¼"-20 UNC tripod screw thread
Power	Power over Ethernet (PoE) IEEE 802.3af/802.3at Type 1 Class 3 Typical 5.7 W, max 12.95 W
Connectors	Network: Shielded RJ45 10BASE-T/100BASE-TX PoE I/O: Terminal block for 1 supervised alarm input and 1 output (12 VDC output, max. load 25 mA) Audio: Audio and I/O connectivity via portcast technology
IR illumination	OptimizedIR with power-efficient, long-life 850 nm IR LEDs Range of reach 20 m (65.6 ft) depending on the scene
Storage	Support for microSD/microSDHC/microSDXC card Recording to network-attached storage (NAS) For SD card and NAS recommendations see *axis.com*

Operating conditions	-40 °C to 50 °C (-40 °F to 122 °F) Start-up temperature: -30 °C Humidity 10-100% RH (condensing)
Storage conditions	-40 °C to 65 °C (-40 °F to 149 °F) Humidity 5-95% RH (non-condensing)
Dimensions	Height: 70 mm (2.7 in) ø 149 mm (5.9 in) Effective Projected Area (EPA): 0.0076 m^2 (0.025 ft^2)
Weight	860 g (1.9 lb)
Box content	Camera, installation guide, terminal block connector, connector guard, cable gaskets, cable hole lid, owner authentication key
Optional accessories	AXIS T8415 Wireless Installation Tool, AXIS T94T02D Pendant kit, AXIS TM3814 Skin Cover Black, AXIS TM3204 Recessed Mount, AXIS TM3206 Recessed Mount, AXIS Mounts and Cabinets, AXIS Surveillance Cards For more accessories, go to *axis.com/products/axis-m4317-plr#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
Warranty	5-year warranty, see *axis.com/warranty*
Part numbers	Available at *axis.com/products/axis-m4317-plr#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: 29.6% (bio-based) 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*

a. *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).*

Dimension drawing

AXIS M4317-PLR Panoramic Camera

15mm [0.57"]
55mm [2.18"]

13.1mm [0.51"]
Ø5.3mm [Ø0.21"]
Ø5.3mm [Ø0.21"]
12mm [0.46"]
89mm [3.50"]
60mm [2.36"]
100mm [3.94"]

Ø40.8mm [1.60"]
11mm [0.44"]
24.8mm [0.98"]
31mm [1.22"]
Ø149mm [Ø5.86"]

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Key features and technologies

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 offers features to protect the device's identity, safeguard its integrity from factory and protect sensitive information from unauthorized access.

Establishing the root of trust starts at the device's boot process. In Axis devices, the hardware-based mechanism **secure boot** verifies the operating system (AXIS OS) that the device is booting from. AXIS OS, in turn, is cryptographically signed (**signed firmware**) during the build process. Secure boot and signed firmware tie into each other and ensure that the firmware has not been tampered with during the lifecycle of the device and that the device only boots from authorized firmware. This creates an unbroken chain of cryptographically validated software for the chain of trust that all secure operations depend on.

From a security aspect, 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 is provided through a Common Criteria and/or FIPS 140 certified hardware-based cryptographic computing module. Depending on security requirements, an Axis device can have either one or multiple such modules, like a TPM 2.0 (Trusted Platform Module) or a secure element, and/or a system-on-chip (SoC) embedded Trusted Execution Environment (TEE).

Signed video ensures that video evidence can be verified as untampered without proving the chain of custody of the video file. Each camera uses its unique video signing key, which is securely stored in the secure keystore, to add a signature into the video stream. This allows video to be traced back to the Axis camera from where it originated, so it's possible to verify that the footage has not been tampered with after it left the camera.

To read more about Axis Edge Vault, go to *axis.com/solutions/edge-vault*.

Lightfinder

The Axis Lightfinder technology delivers high-resolution, full-color video with a minimum of motion blur even in near darkness. Because it strips away noise, Lightfinder makes dark areas in a scene visible and captures details in very low light. Cameras with Lightfinder discern color in low light better than the human eye. In surveillance, color may be the critical factor to identify a person, an object, or a vehicle.

OptimizedIR

Axis OptimizedIR provides a unique and powerful combination of camera intelligence and sophisticated LED technology, resulting in our most advanced camera-integrated IR solutions for complete darkness. In our pan-tilt-zoom (PTZ) cameras with OptimizedIR, the IR beam automatically adapts and becomes wider or narrower as the camera zooms in and out to make sure that the entire field of view is always evenly illuminated.

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*