

# AXIS M4318-PLR Panoramic Camera

12 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.

- > **Sharpdome technology**
- > **Complete 180° and 360° overview**
- > **Built-in IR with individual IR LEDs**
- > **Support for advanced analytics**
- > **Built-in cybersecurity features**



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<b>Camera</b>	
<b>Image sensor</b>	1/2.3" progressive scan RGB CMOS
<b>Lens</b>	Focal length: 1.2 mm, F2.2 Horizontal field of view: 182° Vertical field of view: 182° Fixed iris, IR corrected, fixed focus
<b>Day and night</b>	Automatic IR-cut filter
<b>Minimum illumination</b>	Color: 0.19 lux at 50 IRE, F2.2 B/W: 0.04 lux at 50 IRE, F2.2 0 lux with IR illumination on
<b>Shutter speed</b>	1/8100 s to 0.5 s
<b>Camera angle adjustment</b>	Digital roll: ± 180°
<b>System on chip (SoC)</b>	
<b>Model</b>	ARTPEC-8
<b>Memory</b>	2048 MB RAM, 8192 MB Flash
<b>Compute capabilities</b>	Deep learning processing unit (DLPU)
<b>Video</b>	
<b>Video compression</b>	H.264 (MPEG-4 Part 10/AVC) Baseline, Main and High Profiles H.265 (MPEG-H Part 2/HEVC) Main Profile Motion JPEG
<b>Resolution</b>	Overview: 2992x2992 to 160x160 Panorama: 3840x2160 to 192x72 Double Panorama: 3584x2688 to 512x288 Quad view: 3584x2688 to 384x288 View area 1-4: 2048x1536 to 256x144 Corner right and left: 3200x1200 to 192x72 Double corner: 2880x2880 to 384x288 Corridor: 2560x1920 to 256x144
<b>Frame rate</b>	360° overview 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 25/30 fps @50/60 Hz
<b>Video streaming</b>	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
<b>WDR</b>	Forensic WDR: Up to 120 dB depending on scene
<b>Noise reduction</b>	Spatial filter (2D noise reduction) Temporal filter (3D noise reduction)
<b>Image settings</b>	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
<b>Image processing</b>	Axis Zipstream, Forensic WDR, Lightfinder, OptimizedIR
<b>Pan/Tilt/Zoom</b>	Digital PTZ of view areas, digital PT of panorama, corner, corridor and quad views, preset positions, guard tours
<b>Audio</b>	
<b>Audio features</b>	Network speaker pairing
<b>Audio input/output</b>	Audio features through portcast technology: two-way audio connectivity, voice enhancer
<b>Network</b>	
<b>Network protocols</b>	IPv4, IPv6 USGv6, ICMPv4/ICMPv6, HTTP, HTTPS <sup>a</sup> , HTTP/2, TLS <sup>a</sup> , QoS Layer 3 DiffServ, FTP, SFTP, CIFS/SMB, SMTP, mDNS (Bonjour), UPnP <sup>b</sup> , 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
<b>System integration</b>	
<b>Application Programming Interface</b>	Open API for software integration, including VAPIX <sup>®</sup> , metadata and AXIS Camera Application Platform (ACAP); specifications at <a href="http://axis.com/developer-community">axis.com/developer-community</a> . ACAP includes Native SDK and Computer Vision SDK. One-click cloud connection

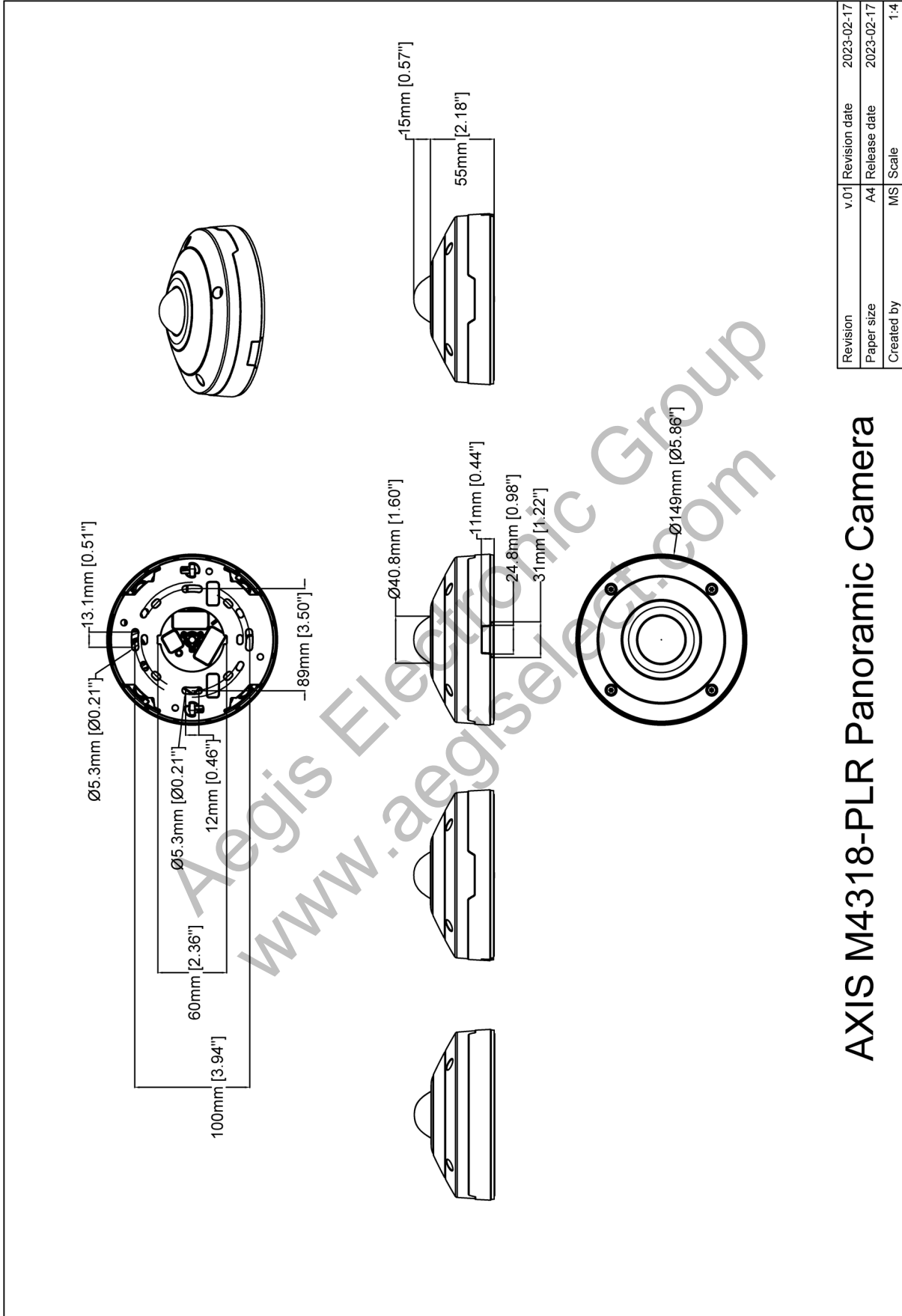
	ONVIF <sup>®</sup> Profile G, ONVIF <sup>®</sup> Profile M, ONVIF <sup>®</sup> Profile S, and ONVIF <sup>®</sup> Profile T, specification at <a href="http://onvif.org">onvif.org</a> Support for Session Initiation Protocol (SIP) for integration with Voice over IP (VoIP) systems, peer to peer or integrated with SIP/PBX.
<b>Video management systems</b>	Compatible with AXIS Companion, AXIS Camera Station, video management software from Axis' Application Development Partners available at <a href="http://axis.com/vms">axis.com/vms</a>
<b>Onscreen controls</b>	Privacy masks IR illumination Media clip
<b>Event conditions</b>	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
<b>Event actions</b>	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
<b>Built-in installation aids</b>	Pixel counter, level grid, digital roll
<b>Analytics</b>	
<b>AXIS Object Analytics</b>	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
<b>Metadata</b>	Object data: Classes: humans, faces, vehicles (types: cars, buses, trucks, bikes) Attributes: Vehicle color, confidence, position Event data: Producer reference, scenarios, trigger conditions
<b>Applications</b>	<b>Included</b> AXIS Object Analytics, AXIS Video Motion Detection, active tampering alarm <b>Supported</b> Support for AXIS Camera Application Platform enabling installation of third-party applications, see <a href="http://axis.com/acap">axis.com/acap</a>
<b>Approvals</b>	
<b>Product markings</b>	CSA, UL/cUL, BIS, UKCA, CE, KC
<b>Supply chain</b>	TAA compliant
<b>EMC</b>	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
<b>Safety</b>	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
<b>Environment</b>	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)

<b>Network</b>	NIST SP500-267
<b>Cybersecurity</b>	ETSI EN 303 645
<b>Cybersecurity</b>	
<b>Edge security</b>	<b>Software:</b> 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 <b>Hardware:</b> 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)
<b>Network security</b>	IEEE 802.1X (EAP-TLS, PEAP-MSCHAPv2) <sup>a</sup> , IEEE 802.1AE (MACsec PSK/EAP-TLS), IEEE 802.1AR, HTTPS/HSTS <sup>a</sup> , TLS v1.2/v1.3 <sup>a</sup> , Network Time Security (NTS), X.509 Certificate PKI, host-based firewall
<b>Documentation</b>	<i>AXIS OS Hardening Guide</i> <i>Axis Vulnerability Management Policy</i> <i>Axis Security Development Model</i> AXIS OS Software Bill of Material (SBOM) To download documents, go to <a href="https://axis.com/support/cybersecurity/resources">axis.com/support/cybersecurity/resources</a> To read more about Axis cybersecurity support, go to <a href="https://axis.com/cybersecurity">axis.com/cybersecurity</a>
<b>General</b>	
<b>Casing</b>	IP66-, NEMA 4X- and IK10-rated Polycarbonate hard-coated dome Aluminum Color: white NCS S 1002-B Repaintable skin cover accessory
<b>Mounting</b>	Mounting bracket with junction box holes (double-gang, single-gang, and 4" octagon) ¼"-20 UNC tripod screw thread
<b>Power</b>	Power over Ethernet (PoE) IEEE 802.3af/802.3at Type 1 Class 3 Typical 6.4 W, max 12.95 W
<b>Connectors</b>	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
<b>IR illumination</b>	Optimized IR with power-efficient, long-life 850 nm IR LEDs Range of reach 15 m (49.2 ft) depending on the scene
<b>Storage</b>	Support for microSD/microSDHC/microSDXC card Recording to network-attached storage (NAS) For SD card and NAS recommendations see <a href="https://axis.com">axis.com</a>

<b>Operating conditions</b>	-40 °C to 50 °C (-40 °F to 122 °F) Start-up temperature: -30 °C Humidity 10-100% RH (condensing)
<b>Storage conditions</b>	-40 °C to 65 °C (-40 °F to 149 °F) Humidity 5-95% RH (non-condensing)
<b>Dimensions</b>	Height: 70 mm (2.7 in) ø 149 mm (5.9 in) Effective Projected Area (EPA): 0.0076 m <sup>2</sup> (0.025 ft <sup>2</sup> )
<b>Weight</b>	860 g (1.9 lb)
<b>Box content</b>	Camera, installation guide, terminal block connector, connector guard, cable gaskets, cable hole lid, owner authentication key
<b>Optional accessories</b>	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 <a href="https://axis.com/products/axis-m4318-plr#accessories">axis.com/products/axis-m4318-plr#accessories</a>
<b>System tools</b>	AXIS Site Designer, AXIS Device Manager, product selector, accessory selector, lens calculator Available at <a href="https://axis.com">axis.com</a>
<b>Languages</b>	English, German, French, Spanish, Italian, Russian, Simplified Chinese, Japanese, Korean, Portuguese, Polish, Traditional Chinese
<b>Warranty</b>	5-year warranty, see <a href="https://axis.com/warranty">axis.com/warranty</a>
<b>Part numbers</b>	Available at <a href="https://axis.com/products/axis-m4318-plr#part-numbers">axis.com/products/axis-m4318-plr#part-numbers</a>
<b>Sustainability</b>	
<b>Substance control</b>	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 <a href="https://axis.com/partner">axis.com/partner</a> .
<b>Materials</b>	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 <a href="https://axis.com/about-axis/sustainability">axis.com/about-axis/sustainability</a>
<b>Environmental responsibility</b>	<a href="https://axis.com/environmental-responsibility">axis.com/environmental-responsibility</a> Axis Communications is a signatory of the UN Global Compact, read more at <a href="https://unglobalcompact.org">unglobalcompact.org</a>
<b>a.</b>	<i>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).</i>

# Dimension drawing



Revision	v.01	Revision date	2023-02-17
Paper size	A4	Release date	2023-02-17
Created by	MS	Scale	1:4

## AXIS M4318-PLR Panoramic Camera

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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](https://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](https://axis.com/glossary)