AXIS XFQ1656 Explosion-Protected Camera

Class/Division- and Zone-certified camera with deep learning

AXIS XFQ1656 is certified worldwide for use in hazardous locations (Class I/II/III Div 1, Zone 1,21, IIC, IIIC, and Ex I Mb certified). Ideal for health and safety applications, preinstalled smoke-alert analytics monitor for signs of smoke or fire in combustible environments. Plus, AXIS Object Analytics can detect people in restricted areas and supports safety compliance with hardhat detection. In addition, AXIS XFQ1656 can easily be integrated with production monitoring and industrial control systems to provide valuable image-based data, analyzed by deep learning algorithms. This can help improve scene understanding and offers valuable information about processes.

- > Worldwide hazardous area certifications
- > Excellent light sensitivity
- > Advanced analytics preinstalled
- > Suitable for installation worldwide
- > Axis Edge Vault safeguards device

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Camera

Image sensor	1/1.8" progressive scan RGB CMOS
Lens	Varifocal, 3.9–10 mm, F1.5 Horizontal field of view: 81°–47° Vertical field of view: 45°–27° Autofocus, IR corrected, remote zoom and focus, i-CS lens, P-Iris control Minimum focus distance: 0.5 m (1.6 ft)
Day and night	Automatic IR-cut filter Hybrid IR filter
Minimum illumination	**4 MP 25/30 fps with Forensic WDR and Lightfinder 2.0** **Color:** 0.05 lux at 50 IRE, F1.5 **B/W:** 0.01 lux at 50 IRE, F1.5 **4 MP 50/60 fps with Lightfinder 2.0** **Color:** 0.1 lux at 50 IRE, F1.5 **B/W:** 0.02 lux at 50 IRE, F1.5 **4 MP 25/30 fps with Forensic WDR and Lightfinder 2.0** With optional F0.9 lens **Color:** 0.02 lux at 50 IRE, F0.9 **B/W:** 0.004 lux at 50 IRE, F0.9
Shutter speed	1/47500 s to 1 s

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	**16:9** 2688x1512 Quad HD to 160x90 **4:3** 2016x1512 to 160x120
Frame rate	**No WDR:** Up to 50/60 fps (50/60 Hz) in all resolutions **WDR:** Up to 25/30 fps (50/60 Hz) in all resolutions
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 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 8 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, local contrast, tone mapping, exposure mode, exposure zones, defogging, barrel distortion correction, electronic image stabilization, compression, rotation: 0°, 90°, 180°, 270° including Corridor Format, mirroring, dynamic text and image overlay, polygon and mosaic privacy mask Scene profiles: Forensic, Vivid, Traffic overview
Image processing	Forensic WDR, Lightfinder 2.0
Pan/Tilt/Zoom	Digital PTZ, optical zoom, preset positions Preset position tour

Audio

Audio features	AGC automatic gain control Network speaker pairing
Audio streaming	Configurable duplex: One-way (simplex, half duplex) Two-way (half duplex, full duplex)
Audio input	10-band graphic equalizer Input for external microphone, optional 5 V microphone power Digital input, optional 12 V ring power Line input Internal microphone
Audio output	Output via network speaker pairing or portcast technology
Audio 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[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, ICMP, DHCPv4/v6, ARP, SSH, LLDP, CDP, MQTT v3.1.1, Secure syslog (RFC 3164/5424, UDP/TCP/TLS), 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, specifications at *onvif.org*
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	Autofocus Electronic image stabilization Day/night shift Defogging Wide dynamic range Video streaming indicator Privacy masks Media clip Timed wiper
Event conditions	Application Audio: audio clip playing Device status: above/below/within operating temperature, IP address removed, live stream active, network lost, new IP address, ring power overcurrent protection, system ready Digital audio input status Edge storage: recording ongoing, storage disruption, storage health issues detected I/O: digital input, manual trigger, virtual input MQTT Scheduled and recurring: schedule Video: average bitrate degradation, day-night mode, tampering
Event actions	Audio clips: play, play while the rule is active, stop Day-night mode Defog: set defog mode, set defog mode while the rule is active I/O: toggle I/O once, toggle I/O while the rule is active MQTT: publish Notification: HTTP, HTTPS, TCP and email Overlay text Pre- and post-alarm video or image buffering for recording or upload Recordings: record, record while the rule is active 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 Wiper
Built-in installation aids	Remote zoom and focus, remote back focus, leveling assistant, pixel counter

Analytics

Applications	**Included** AXIS Object Analytics, Scene metadata, AXIS Video Motion Detection, smoke alert **Supported** AXIS Perimeter Defender, AXIS License Plate Verifier 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, other) **Trigger conditions**: line crossing, object in area, time in area, PPE monitoring 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
Scene metadata	**Object classes:** humans, faces, vehicles (types: cars, buses, trucks, bikes), license plates **Object attributes:** vehicle color, upper/lower clothing color, confidence, position

Approvals

Supply chain	TAA compliant
EMC	EN 55035, EN 55032 Class A, 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) **USA:** FCC Part 15 Subpart B Class A
Safety	CAN/CSA C22.2 No. 62368-1 ed. 3, IEC/EN/UL 62368-1 ed. 3IS 13252
Environment	IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-6, IEC 60068-2-14, IEC 60068-2-27, IEC 60068-2-64, IEC 60068-2-78, UL 50E
Network	IPv6 USGv6, NIST SP500-267
Cybersecurity	ETSI EN 303 645, FIPS 140
Explosion	IEC/EN 60079-0, IEC/EN 60079-1, IEC/EN 60079-31, UL 1203, UL 60079-1, UL 60079-31, CSA C22.2 No. 30, CSA C22.2 No. 25, CSA C22.2 No. 60079-0, CSA C22.2 No. 60079-1, CSA C22.2 No. 60079-31, UL121201
Certifications	Type F31111 **ATEX:** I M2 Ex db I Mb II 2 G Ex db IIC T5 Gb II 2 D Ex tb IIIC T100°C Db **Certificate:** ExVeritas 20ATEX0651X **IECEx:** Ex db I Mb Ex db IIC T5 Gb Ex tb IIIC T100°C Db **Certificate:** EXV 20.0017X **cMETus:** Class I Div 1 Groups B,C,D T5 Class II Div 1 Groups E,F,G T5 Class I Zone 1 AEx db IIC Gb Zone 21 AEx tb IIIC **Certificate:** MET E115198

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 **Hardware:** Axis Edge Vault cybersecurity platform TPM 2.0 (CC EAL4+, FIPS 140-2 Level 2), 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 802.1AE (MACsec PSK/EAP-TLS), IEEE 802.1AR, HTTPS/HSTS[a], TLS v1.2/v1.3[a], 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* To read more about Axis cybersecurity support, go to *axis.com/cybersecurity*

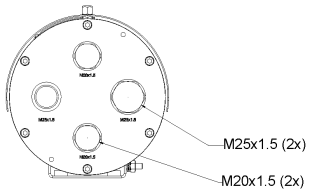
General

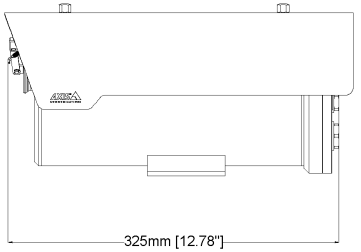
Casing	IP66-, IP67- and IP68-rated, electropolished SUS316L (EN 1.4404) stainless steel casing for maximum corrosion protection Wiper included
Power	Power over Ethernet (PoE) IEEE 802.3bt Type 3 Class 6 Typical 11.5 W, max 51W 100–240 V AC, typical 13.3 V A, max 56 V A
Connectors	Network: RJ45 10BASE-T/100BASE-TX/1000BASE-T PoE Network: SFP connector I/O: Terminal block for two supervised and two unsupervised configurable inputs / digital outputs (12 V DC output, max load 50 mA) Serial communication: RS485, 2 pos, terminal block Power: AC input, terminal block Audio: 3.5 mm mic/line in, 3.5 mm line out Auxiliary output: 48 V DC 14.4 W, 0.3 A Two M25x1.5 cable entries Two M20x1.5 cable entries
Storage	256 GB microSD/microSDHC/microSDXC card included Support for SD card encryption (AES-XTS-Plain64 256bit) Recording to network-attached storage (NAS) For SD card and NAS recommendations see *axis.com*
Operating conditions	**With PoE:** -40 °C to 60 °C (-40 °F to 140 °F) **With AC/SFP:** -40 °C to 55°C (-40 °F to 131 °F) Humidity 10–100% RH (condensing)
Storage conditions	-40 °C to 60 °C (-40 °F to 140 °F) Humidity 5-95% RH (non-condensing)
Dimensions	342 x 160 x 170 mm (13.46 x 6.3 x 6.7 in)
Weight	9 kg (19.8 lb)
Box content	Camera, installation guide, installation manual IM001, AXIS TQ1903-E Swivel Joint, AXIS TQ1924–E Washer Nozzle, AXIS TQ1917 Adapter M25x1.5-3/4 NPT, connector kit, H4 bit, owner authentication key, Declaration of Conformity
Optional accessories	AXIS TQ1001-E Wall Mount, AXIS TQ1301-E Pole Mount 50-150 mm[b], TQ1303-E Corner Mount[c] For more accessories, see *axis.com*
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-xfq1656#part-numbers*

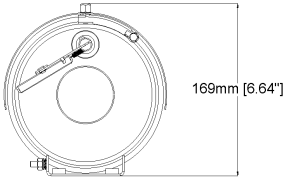
Sustainability

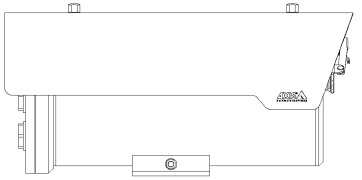
Substance control	RoHS in accordance with EU RoHS Directive 2011/65/EU/ and EN 63000:2018 REACH in accordance with (EC) No 1907/2006. For SCIP UUID, see *echa.europa.eu*
Materials	Screened for conflict minerals in accordance with OECD guidelines To read more about sustainability at Axis, go to *axis.com/about-axis/sustainability*
Environmental responsibility	*axis.com/environmental-responsibility* Axis Communications is a signatory of the UN Global Compact, read more at *unglobalcompact.org*

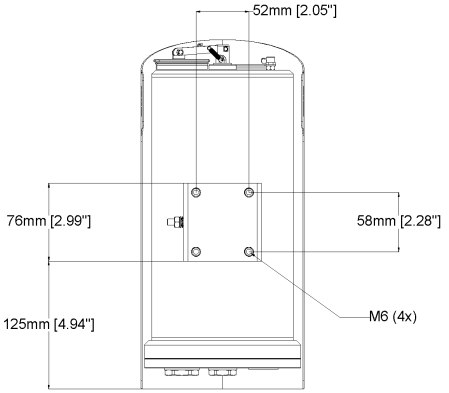
a. *This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. (openssl.org), and cryptographic software written by Eric Young (eay@cryptsoft.com).*
b. *AXIS TQ1301-E Pole Mount must be installed on AXIS TQ1001-E Wall Mount*
c. *AXIS TQ1303-E Corner Mount must be installed on AXIS TQ1001-E Wall Mount*

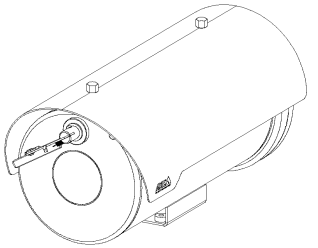


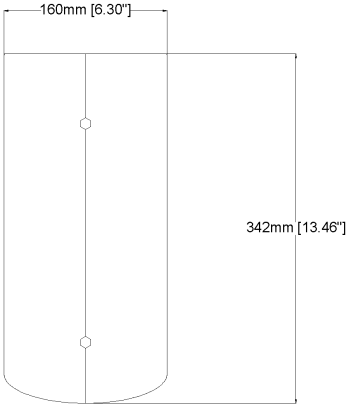












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Revision	v.01	Revision date	2023-05-03
Paper size	A4	Release date	2023-05-03
Created by	MS	Scale	1:6

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 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*.

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.

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.

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.

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