

# 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**



# AXIS XFQ1656 Explosion-Protected Camera

## 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<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, 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](https://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](https://onvif.org)

### 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](https://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

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

## 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, AXIS Scene Metadata, AXIS Image Health Analytics, 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](https://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

### 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

## 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)  
**Japan:** VCCI Class 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, BSI IT Security Label, 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

### INMETRO:

Ex db I Mb

Ex db IIC T5 Gb

Ex tb IIIC T100°C Db

**Certificate:** CPEx 22.0478 X

### IA:

Ex db I Mb

Ex db IIC T5 Gb

Ex tb IIIC T100°C Db

**Certificate:** MASC MS/22-8127X

### OSHA Taiwan:

Ex db I Mb

Ex db IIC T5 Gb

Ex tb IIIC T100°C Db

**Certificate:** TD100043

### PESO:

Ex db IIC T5 Gb

**Certificate:** P596101/4

### KCs:

Ex db IIC T5 Gb

Ex tb IIIC T100°C Db

**Certificate:** 24-KA4BO-0297X and 24-KA4BO-0298X

### JPEX:

Ex db IIC T5 Gb

Ex tb IIIC T100°C Db

**Certificate:** DEK23.0019X

## 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)

**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)<sup>2</sup>, IEEE 802.1AE (MACsec PSK/EAP-TLS), IEEE 802.1AR, HTTPS/HSTS<sup>2</sup>, TLS v1.2/v1.3<sup>2</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](https://axis.com/support/cybersecurity/resources)

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

## General

### Casing

IP66-, IP67- and IP68-rated, electropolished SUS316L (EN 1.4404) stainless steel casing for maximum corrosion protection  
IK08-rated front glass, IK10-rated housing  
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

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

## 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

512 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](https://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

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

## Weight

9 kg (19.8 lb)

## Box content

Camera, installation guide, installation manual IM001, AXIS TQ1903-E Swivel Joint, AXIS TQ1924-E Washer Nozzle, connector kit, H4 bit, owner authentication key, Declaration of Conformity  
AXIS TQ1917 Adapter M25x1.5-3/4 NPT (02462-001 only)  
AXIS TQ1943-E Cable Gland Ex d Armored M25 (02462-005 only)

## Optional accessories

AXIS TQ1001-E Wall Mount,  
AXIS TQ1301-E Pole Mount 50–150 mm<sup>3</sup>,  
TQ1303-E Corner Mount<sup>4</sup>  
For more accessories, see [axis.com](https://axis.com)

## System tools

AXIS Site Designer, AXIS Device Manager, product selector, accessory selector, lens calculator  
Available at [axis.com](https://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](https://axis.com/warranty)

## Part numbers

Available at [axis.com/products/axis-xfq1656#part-numbers](https://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](https://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](https://axis.com/about-axis/sustainability)

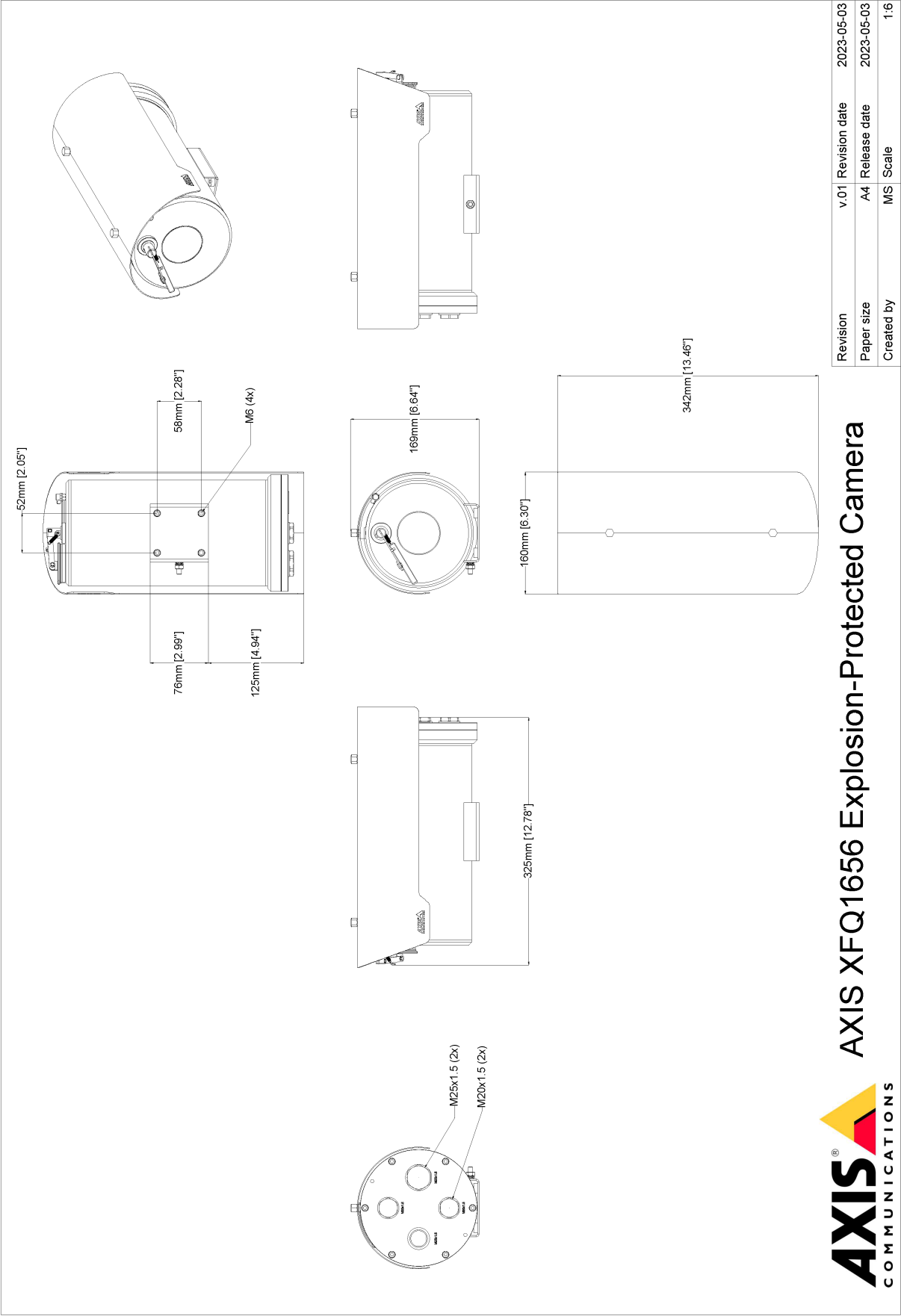
### Environmental responsibility

[axis.com/environmental-responsibility](https://axis.com/environmental-responsibility)  
Axis Communications is a signatory of the UN Global Compact, read more at [unglobalcompact.org](https://unglobalcompact.org)

3. AXIS TQ1301-E Pole Mount must be installed on AXIS TQ1001-E Wall Mount

4. AXIS TQ1303-E Corner Mount must be installed on AXIS TQ1001-E Wall Mount

Dimension drawing





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