

# AXIS Q1800-LE License Plate Camera

For accuracy at high speeds

This purpose-tuned camera is preconfigured for accurate license plate reading 24/7 at speeds up to 250 km/h (155 mph) and distances up to 100 m (328 ft) - with minimal setup required. It's fully compatible with LPR software from leading third-party vendors. Built on the Axis open platform, it integrates seamlessly with most video management systems (VMS) and supports a wide range of third-party applications and analytics. Its robust design ensures reliable performance in extreme weather. With a built-in weathershield, it withstands wind forces up to 60 m/s (134 mph), ensuring durability in the toughest conditions.

- > [LPR camera for 3rd party software](#)
- > [Purpose-tuned for license plate recognition](#)
- > [Capture license plates up to 250 km/h \(155 mph\)](#)
- > [Capture range of up to 100 m \(328 ft\)](#)
- > [Robust design withstands tough weather](#)



# AXIS Q1800-LE License Plate Camera

Camera	
<b>Image sensor</b>	1/2.8" progressive scan RGB CMOS Pixel size 2.9 µm
<b>Lens</b>	Vari-focal, 7–137 mm, F1.5–4.0 Horizontal field of view: 38°–2.3° Vertical field of view: 22°–1.3° Minimum focus distance: 1.2 m (3.9 ft) Remote zoom and focus, P-Iris control Thread for 62 mm filters, max filter thickness: 5 mm
<b>Day and night</b>	Automatic IR-cut filter in day mode IR-pass filter 720 nm in night mode
<b>Minimum illumination</b>	Color: 0.06 lux at 50 IRE, F1.5 B/W: 0.01 lux at 50 IRE, F1.5 0 lux with IR illumination on
<b>Shutter speed</b>	1080p @ 25/30 fps (WDR): 1/37000 s to 2 s 1080p @ 50/60 fps: 1/71500 s to 2 s 1080p @ 90 fps: 1/111000 s to 2 s
<b>Camera angle adjustment</b>	Pan ±180°, tilt 0 to -90°, roll -90 to 270°
License Plate Capture	
<b>Detection range</b>	Day: 20–100 m (66–328 ft) Night: 20–50 m (66–164 ft) Night detection range up to 100 m (328 ft) with optional accessory AXIS T90D20 IR-LED Illuminator
<b>IR illumination</b>	OptimizedIR with power-efficient, long-life 850 nm IR LED's with adjustable angle of illumination and intensity. Range of reach 40 m (131 ft) in wide field of view and 50 m (164 ft) in full tele view, or more depending on the scene
<b>Vehicle speed</b>	Up to 200 km/h (124 mph) with optional edge analytics Up to 250 km/h (155 mph) with server based analytics
<b>Coverage</b>	Single lane with optional edge analytics Two lanes with server based analytics
<b>Installation</b>	Mounting height: Up to 10 m (33 ft) Distance from road: Up to 10 m (33 ft) Camera detects tilt and roll angle automatically Built-in licence plate capture assistant optimizes video settings based on mounting height, distance to vehicle, and expected vehicle speed
System on chip (SoC)	
<b>Model</b>	ARTPEC-8
<b>Memory</b>	2048 MB RAM, 8192 MB Flash
<b>Compute capabilities</b>	Deep learning processing unit (DLPU)
Video	
<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>	4:3: 1400x1050 to 160x120 16:9 1920x1080 to 320x180
<b>Frame rate</b>	With WDR: Up to 25/30 fps (50/60 Hz) in all resolutions No WDR: Up to 90 fps (50/60 Hz) in all resolutions
<b>Video streaming</b>	Up to 20 unique and configurable video streams <sup>a</sup> 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
<b>Signal-to-noise ratio</b>	>55 dB
<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, white balance, day/night threshold, local contrast, tone mapping, exposure mode, exposure zones, defog, barrel distortion correction, compression, rotation: 0°, 90°, 180°, 270° including corridor

format, mirroring, text and image overlay, dynamic text and image overlay, polygon privacy mask, target aperture  
Scene profiles: license plate

<b>Image processing</b>	Axis Zipstream, Forensic WDR, Lightfinder 2.0, OptimizedIR
Audio	
<b>Audio features</b>	Automatic gain control 10-band graphic equalizer for audio input Speaker pairing Spectrum visualizer <sup>b</sup>
<b>Audio streaming</b>	Two-way (half duplex)
<b>Audio input</b>	Input through microphone pairing Input for external unbalanced microphone, optional 5 V microphone power Digital input, optional 12 V ring power Unbalanced line input
<b>Audio output</b>	Output through speaker pairing
<b>Audio encoding</b>	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	
<b>Network protocols</b>	IPv4, IPv6 USGv6, ICMPv4/ICMPv6, HTTP, HTTPS <sup>c</sup> , HTTP/2, TLS <sup>c</sup> , QoS Layer 3 DiffServ, FTP, SFTP, CIFS/SMB, SMTP, mDNS (Bonjour), UPnP <sup>®</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, Secure syslog (RFC 3164/5424, UDP/TCP/TLS), Link-Local address (ZeroConf)
System integration	
<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="https://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, specifications at <a href="https://onvif.org">onvif.org</a>
<b>Video management systems</b>	Compatible with AXIS Companion, AXIS Camera Station, video management software from Axis' Application Development Partners available at <a href="https://axis.com/vms">axis.com/vms</a>
<b>Onscreen controls</b>	Video streaming indicator Day/night shift Image stabilization Defog Autofocus Privacy masks Wide dynamic range IR illumination Media clip
<b>Edge-to-edge</b>	Microphone pairing Radar pairing Speaker pairing
<b>Event conditions</b>	Device status: above/below/within operating temperature, IP address blocked, IP address removed, live stream active, network lost, new IP address, ring power overcurrent protection, system ready, within operating temperature Digital audio: digital signal contains Axis metadata, digital signal has invalid sample rate, digital signal missing, digital signal okay Edge storage: recording ongoing, storage disruption, storage health issues detected I/O: digital input is active, manual trigger, virtual input MQTT: stateless Scheduled and recurring: schedule Video: average bitrate degradation, day-night mode, tampering
<b>Event actions</b>	Day-night mode Defog I/O: toggle I/O once, toggle I/O while the rule is active Illumination: use lights, use lights while the rule is active Images: send images through FTP, HTTP, SFTP 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 Video clips: send video clips through FTP, HTTP, SFTP

	WDR mode
<b>Built-in installation aids</b>	Pixel counter, remote zoom and focus, level grid, leveling assistant, traffic camera installation assistance
<b>Analytics</b>	
<b>Applications</b>	<p><b>Included</b>            AXIS Object Analytics, AXIS Scene Metadata, AXIS Live Privacy Shield<sup>d</sup>, AXIS Video Motion Detection, active tampering alarm, audio detection</p> <p><b>Supported</b>            AXIS License Plate Verifier, AXIS Speed Monitor            Support for AXIS Camera Application Platform enabling installation of third-party applications, see <a href="http://axis.com/acap">axis.com/acap</a></p>
<b>AXIS Object Analytics</b>	<p><b>Object classes:</b> humans, vehicles (types: cars, buses, trucks, bikes, other)  <b>Scenarios:</b> line crossing, object in area, time in area, crossline counting, occupancy in area, motion in area, motion line crossing            Up to 10 scenarios  <b>Other features:</b> triggered objects visualized with trajectories, color-coded bounding boxes and tables            Polygon include/exclude areas            Perspective configuration            ONVIF Motion Alarm event</p>
<b>AXIS Scene Metadata</b>	<p><b>Object classes:</b> humans, faces, vehicles (types: cars, buses, trucks, bikes), license plates  <b>Object attributes:</b> vehicle color, upper/lower clothing color, confidence, position</p>
<b>Approvals</b>	
<b>Product markings</b>	UL/cUL, BIS, UKCA, CE, KC, VCCI, RCM
<b>Supply chain</b>	TAA compliant
<b>EMC</b>	<p>CISPR 35, CISPR 32 Class A, EN 55035, EN 55032 Class A, EN 50121-4, 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(A)/NMB(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</p>
<b>Safety</b>	CAN/CSA C22.2 No. 62368-1 ed. 3, IEC/EN/UL 62368-1 ed. 3, IEC/EN 62471 risk group exempt, 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/EN 60529 IP66, IEC/EN 62262 IK10 body, IK08 glass, NEMA 250 Type 4X, NEMA TS 2 (2.2.7-2.2.9)
<b>Network</b>	NIST SP500-267
<b>Cybersecurity</b>	ETSI EN 303 645, FIPS 140
<b>Cybersecurity</b>	
<b>Edge security</b>	<p><b>Software:</b> Signed OS, brute force delay protection, digest authentication and OAuth 2.0 RFC6749 OpenID Authorization Code Flow for centralized ADFS account management, password protection  <b>Hardware:</b> 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)</p>
<b>Network security</b>	IEEE 802.1X (EAP-TLS, PEAP-MSCHAPv2) <sup>c</sup> , IEEE 802.1AE (MACsec PSK/EAP-TLS), IEEE 802.1AR, HTTPS/HSTS <sup>c</sup> , TLS v1.2/v1.3 <sup>c</sup> , Network Time Security (NTS), X.509 Certificate PKI, host-based firewall
<b>Documentation</b>	<p><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="http://axis.com/support/cybersecurity/resources">axis.com/support/cybersecurity/resources</a>            To read more about Axis cybersecurity support, go to <a href="http://axis.com/cybersecurity">axis.com/cybersecurity</a></p>
<b>General</b>	
<b>Casing</b>	IP66 and NEMA 4X-rated IK10 impact-resistant aluminum enclosure with integrated dehumidifying membrane, IK08 impact-resistant glass front window

	Color: grey NCS S 5502-B, black NCS S 9000-N For repainting instructions, go to the product's support page. For information about the impact on warranty, go to <a href="http://axis.com/warranty-implication-when-repainting">axis.com/warranty-implication-when-repainting</a> .
<b>Mounting</b>	Mounting bracket with junction box holes (double-gang, single-gang, 4" square, and 4" octagon) ¾" (M25) conduit side entries
<b>Power</b>	<p>Power over Ethernet (PoE) IEEE 802.3af/802.3at Type 1 Class 3, typical 12.6 W, max 12.95 W (no IR, no heaters)            Power over Ethernet (PoE) IEEE 802.3at Type 2 Class 4, typical 12.6 W, max 25.5 W            Power over Ethernet (PoE) IEEE 802.3bt Type 3 Class 6, typical 12.6 W, max 51 W            Midspan 60 W, IEEE 802.3bt Type 3 Class 6 required for PoE out            IEEE 802.3at Type 2 Class 4 (30 W) to a second device            10–28 V DC, typical 11 W, max 29 W            20–24 V AC, typical 11 VA, max 28 VA            Features: power profiles, power meter</p>
<b>Connectors</b>	<p>Network: Shielded RJ45 10BASE-T/100BASE-TX/1000BASE-T PoE, RJ45 1000BASE-T PoE output to power an external PoE device            I/O: 4-pin 2.5 mm terminal block for two configurable supervised inputs / digital outputs (12 V DC output, max. load 50 mA)            Audio: 3.5 mm mic/line in            Power: DC input</p>
<b>Storage</b>	<p>Support for microSD/microSDHC/microSDXC card            Support for SD card encryption (AES-XTS-Plain64 256bit)            Recording to network-attached storage (NAS)            For SD card and NAS recommendations see <a href="http://axis.com">axis.com</a></p>
<b>Operating conditions</b>	<p>Temperature: -40 °C to 60 °C (-40 °F to 140 °F)            Maximum temperature according to NEMA TS 2 (2.2.7): 74 °C (165 °F)            Humidity: 10–85% RH (condensing)</p>
<b>Storage conditions</b>	<p>Temperature: -40 °C to 65 °C (-40 °F to 149 °F)            Humidity: 5–95% RH (non-condensing)</p>
<b>Dimensions</b>	For the overall product dimensions, see the dimension drawing in this datasheet. Effective Projected Area (EPA): 0.054 m <sup>2</sup> (0.58 ft <sup>2</sup> )
<b>Weight</b>	3200 g (7.05 lb)
<b>Box content</b>	Camera, installation guide, terminal block connector, RJ45 cable, connector guard, cable gaskets, owner authentication key
<b>Optional accessories</b>	<p>AXIS T8415 Wireless Installation Tool            AXIS Surveillance Cards            For more accessories, go to <a href="http://axis.com/products/axis-q1800-le#accessories">axis.com/products/axis-q1800-le#accessories</a></p>
<b>System tools</b>	<p>AXIS Site Designer, AXIS Device Manager, product selector, accessory selector, lens calculator            Available at <a href="http://axis.com">axis.com</a></p>
<b>Languages</b>	English, German, French, Spanish, Italian, Russian, Simplified Chinese, Japanese, Korean, Portuguese, Polish, Traditional Chinese, Dutch, Czech, Swedish, Finnish, Turkish, Thai, Vietnamese
<b>Warranty</b>	5-year warranty, see <a href="http://axis.com/warranty">axis.com/warranty</a>
<b>Part numbers</b>	Available at <a href="http://axis.com/products/axis-q1800-le#part-numbers">axis.com/products/axis-q1800-le#part-numbers</a>
<b>Sustainability</b>	
<b>Substance control</b>	<p>PVC free, BFR/CFR free in accordance with JEDEC/ECA Standard JS709            RoHS in accordance with EU RoHS Directive 2011/65/EU/ and 2015/863, and standard EN IEC 63000:2018            REACH in accordance with (EC) No 1907/2006. For SCIP UUID, see <a href="http://echa.europa.eu">echa.europa.eu</a></p>
<b>Materials</b>	<p>Renewable carbon-based plastic content: 60% (recycled: 1%, bio-based: 59%)            Screened for conflict minerals in accordance with OECD guidelines            To read more about sustainability at Axis, go to <a href="http://axis.com/about-axis/sustainability">axis.com/about-axis/sustainability</a></p>
<b>Environmental responsibility</b>	<p><a href="http://axis.com/environmental-responsibility">axis.com/environmental-responsibility</a>            Axis Communications is a signatory of the UN Global Compact, read more at <a href="http://unglobalcompact.org">unglobalcompact.org</a></p>

- a. We recommend a maximum of 3 unique video streams per camera or channel, for optimized user experience, network bandwidth, and storage utilization. A unique video stream can be served to many video clients in the network using multicast or unicast transport method via built-in stream reuse functionality.

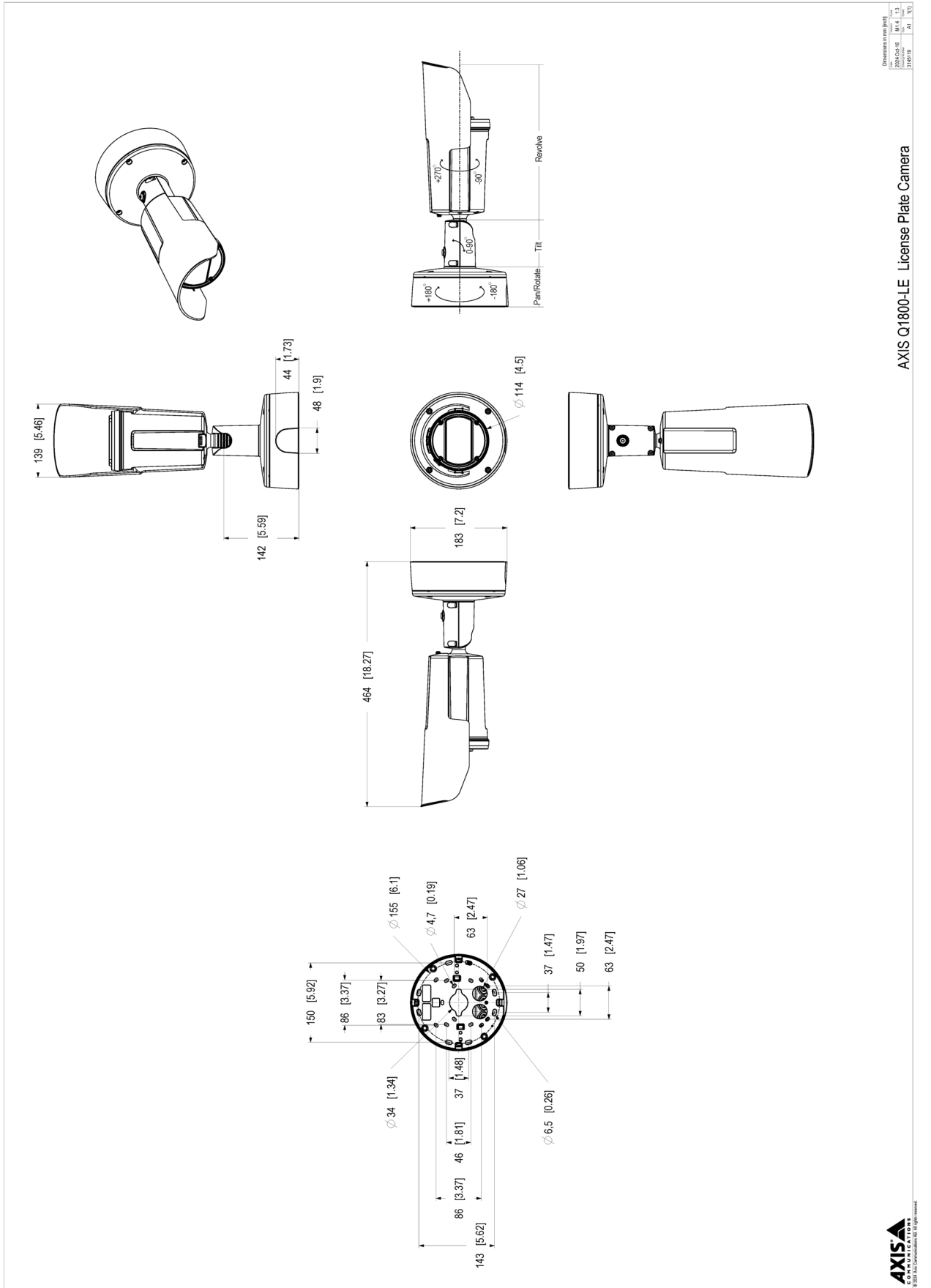
- b. *Feature available with ACAP*
- c. *This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. (openssl.org), and cryptographic software written by Eric Young (eay@cryptsoft.com).*
- d. *Available for download*

## Detect, Observe, Recognize, Identify (DORI)

	DORI definition	Distance (wide)	Distance (tele)
Detect	25 px/m (8 px/ft)	96.7 m (317.18 ft)	1884.2 m (6180.18 ft)
Observe	63 px/m (19 px/ft)	38.4 m (125.95 ft)	747.7 m (2452.46 ft)
Recognize	125 px/m (38 px/ft)	19.3 m (63.30 ft)	376.8 m (1235.90 ft)
Identify	250 px/m (76 px/ft)	9.7 m (31.82 ft)	188.4 m (617.95 ft)

The DORI values are calculated using pixel densities for different use cases as recommended by the EN-62676-4 standard. The calculations use the center of the image as the reference point and consider lens distortion. The possibility to recognize or identify a person or object depends on factors such as object motion, video compression, lighting conditions, and camera focus. Use margins when planning. The pixel density varies across the image, and the calculated values can differ from the distances in the real world.

# Dimension drawing



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## Highlighted capabilities

### 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 gyrosopic 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 de-

tails 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.

### 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)