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**

ONVIF® | GMST

AXIS Q1800-LE License Plate Camera

Camera

Image sensor
1/2.8" progressive scan RGB CMOS
Pixel size 2.9 µm

Lens
Varifocal, 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

Day and night
Automatic IR-cut filter in day mode
IR-pass filter 720 nm in night mode

Minimum illumination
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

Shutter speed
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

Camera adjustment
Pan ±180°, tilt 0 to -90°, roll -90 to 270°

License Plate Capture

Detection range
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

IR illumination
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

Vehicle speed
Up to 200 km/h (124 mph) with optional edge analytics
Up to 250 km/h (155 mph) with server based analytics

Coverage
Single lane with optional edge analytics
Two lanes with server based analytics

Installation
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)

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
4:3: 1400x1050 to 160x120
16:9 1920x1080 to 320x180

Frame rate
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

Video streaming

Up to 20 unique and configurable video streams[1]
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

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, 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

Image processing

Axis Zipstream, Forensic WDR, Lightfinder 2.0,
OptimizedIR

Audio

Audio features

Automatic gain control
10-band graphic equalizer for audio input
Speaker pairing
Spectrum visualizer[2]

Audio streaming

Two-way (half duplex)

Audio input

Input through microphone pairing
Input for external unbalanced microphone, optional 5 V
microphone power
Digital input, optional 12 V ring power
Unbalanced line input

Audio output

Output through speaker pairing

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[3], HTTP/
2, TLS[3], 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, Secure syslog (RFC 3164/5424,
UDP/TCP/TLS), Link-Local address (ZeroConf)

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*.
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 Camera Station Edge,
AXIS Camera Station Pro, AXIS Camera Station 5, and
video management software from Axis' partners
available at *axis.com/vms*.

Onscreen controls

Video streaming indicator
Day/night shift
Image stabilization
Defog
Autofocus
Privacy masks
Wide dynamic range
IR illumination
Media clip

1. *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.*
2. *Feature available with ACAP*
3. *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).*

Edge-to-edge
Microphone pairing
Radar pairing
Speaker pairing

Event conditions
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

Event actions
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, HTTP, SFTP
WDR mode

Built-in installation aids
Pixel counter, remote zoom and focus, level grid, leveling assistant, traffic camera installation assistance

Analytics

Applications
Included
AXIS Object Analytics, AXIS Image Health Analytics, AXIS Scene Metadata, AXIS Speed Monitor, AXIS Video Motion Detection, active tampering alarm, audio detection
Supported
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)
Scenarios: line crossing, object in area, time in area, crossline counting, occupancy in area, motion in area, motion line crossing
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

Product markings
UL/cUL, BIS, UKCA, CE, KC, VCCI, RCM

Supply chain
TAA compliant

EMC
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

Safety
CAN/CSA C22.2 No. 62368-1 ed. 3, IEC/EN/UL 62368-1 ed. 3, IEC/EN 62471 risk group exempt, 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/EN 60529 IP66, IEC/EN 62262 IK10 body, IK08 glass, NEMA 250 Type 4X, NEMA TS 2 (2.2.7-2.2.9)

Network

NIST SP500-267

Cybersecurity

ETSI EN 303 645, BSI IT Security Label, FIPS 140

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)[4], IEEE 802.1AE (MACsec PSK/EAP-TLS), IEEE 802.1AR, HTTPS/HSTS[4], TLS v1.2/v1.3[4], 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 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 *axis.com/warranty-implication-when-repainting*.

Mounting

Mounting bracket with junction box holes (double-gang, single-gang, 4" square, and 4" octagon)
¾" (M25) conduit side entries

Power

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
10–28 V DC, typical 11 W, max 29 W
20–24 V AC, typical 11 VA, max 28 VA
For PoE output: Power over Ethernet (PoE) IEEE 802.3bt Type 3 Class 6
Power over Ethernet (PoE) IEEE 802.3at Type 2 Class 4 (30 W) to a second device
Features: power profiles, power meter

Connectors

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

Storage

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 *axis.com*

Operating conditions

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: 10–100% RH (condensing)

Storage conditions

Temperature: -40 °C to 65 °C (-40 °F to 149 °F)
Humidity: 5–95% RH (non-condensing)

Dimensions

For the overall product dimensions, see the dimension drawing in this datasheet.
Effective Projected Area (EPA): 0.054 m^2 (0.58 ft^2)

Weight

3200 g (7.05 lb)

Box content

Camera, installation guide, terminal block connector, RJ45 cable, connector guard, cable gaskets, owner authentication key

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4. *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).*

Optional accessories

AXIS T8415 Wireless Installation Tool
AXIS Surveillance Cards
For more accessories, go to *axis.com/products/axis-q1800-le#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, Dutch, Czech, Swedish, Finnish, Turkish, Thai, Vietnamese

Warranty

5-year warranty, see *axis.com/warranty*

Part numbers

Available at *axis.com/products/axis-q1800-le#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 2015/863, and standard EN IEC 63000:2018
REACH in accordance with (EC) No 1907/2006. For SCIP UUID, see *echa.europa.eu*

Materials

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 *axis.com/about-axis/sustainability*

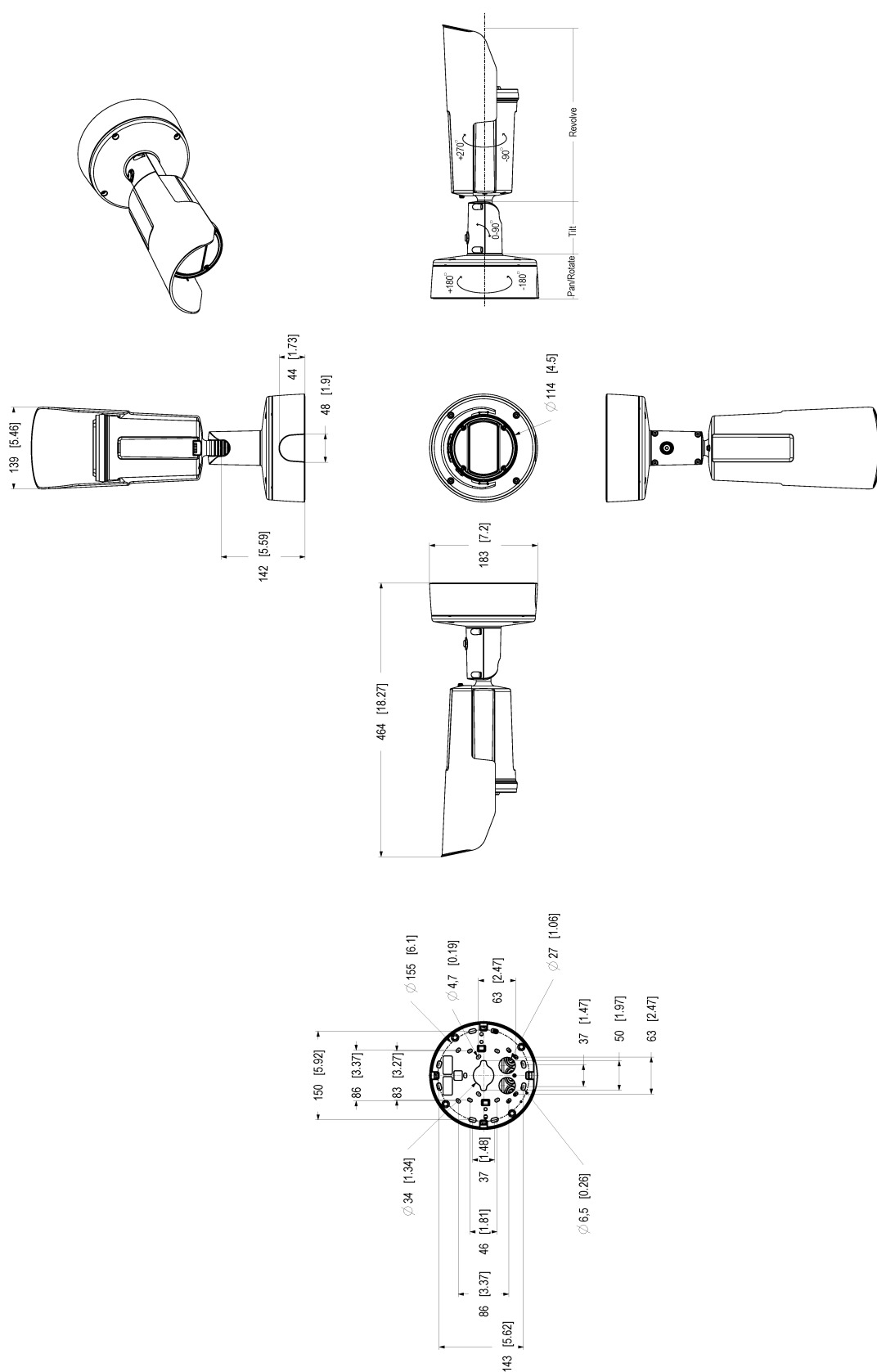## Environmental responsibility

axis.com/environmental-responsibility
Axis Communications is a signatory of the UN Global Compact, read more at *unglobalcompact.org*

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

AXIS Q1800-LE License Plate Camera

Dimension in mm [inch]

+270°
-90°
Revolve
0-90°
Tilt
+180°   -180°
Pan/Rotate

44 [1.73]
48 [1.9]
139 [5.46]
142 [5.59]
⌀ 114 [4.5]
183 [7.2]
464 [18.27]

⌀ 155 [6.1]
⌀ 4,7 [0.19]
⌀ 27 [1.06]
63 [2.47]
37 [1.47]
50 [1.97]
63 [2.47]
150 [5.92]
86 [3.37]
83 [3.27]
⌀ 34 [1.34]
37 [1.48]
46 [1.81]
86 [3.37]
143 [5.62]
⌀ 6,5 [0.26]

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.*

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.

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*

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