

AXIS Q2802-E Bispectral Camera

High-resolution thermal detection and 4K visual verification

This all-in-one camera combines a high-resolution thermal sensor and a 4K visual sensor. It uses thermal imaging technology to deliver outstanding thermal detection and verification. Axis Edge Vault, a hardware-based cybersecurity platform, safeguards the device and offers FIPS 140-3 Level 3 certified secure key storage and operations. AI-powered, it can run advanced features and powerful analytics on the edge. AXIS Object Analytics on the visual video stream can detect, classify, track, and count objects. Or AXIS Perimeter Defender on the thermal video stream offers reliable long-range detection and classification of humans and vehicles intruding on your property.

- > **VGA thermal and 4K visual in one camera**
- > **Thermal visual image fusion**
- > **Flexible mounting options**
- > **Reliable perimeter protection**
- > **Built-in cybersecurity with Axis Edge Vault**



AXIS Q2802-E Bispectral Camera

Camera

Variants

AXIS Q2802-E 17 HFoV 30 fps
AXIS Q2802-E 17 HFoV 8.3 fps
AXIS Q2802-E 24 HFoV 30 fps
AXIS Q2802-E 24 HFoV 8.3 fps
AXIS Q2802-E 31 HFoV 30 fps
AXIS Q2802-E 31 HFoV 8.3 fps
AXIS Q2802-E 63 HFoV 30 fps
AXIS Q2802-E 63 HFoV 8.3 fps

Image sensor

Visual: 1/1.2" progressive scan RGB CMOS, pixel size 2.9 µm
Thermal: Uncooled microbolometer 640x480 pixels, pixel size 17 µm. Spectral range: 8-14 µm

Lens

Visual:

IR corrected, remote focus, P-iris control
Thermal 17° HFoV, 24° HFoV, 31° HFoV uses:
Fixed, 13.8 mm, F2.9
Horizontal field of view: 46°
Vertical field of view: 26°
Thermal 63° HFoV uses:
Fixed, 5.85 mm, F1.5
Horizontal field of view: 114°
Vertical field of view: 62°
Minimum focus distance: 1 m (3.3 ft)

Thermal:

17° HFoV:

Athermalized 35 mm, F1.2
Horizontal field of view: 17°
Vertical field of view: 13°
Minimum focus distance: 32 m (105 ft)

24° HFoV:

Athermalized 25 mm, F1.0
Horizontal field of view: 24°
Vertical field of view: 18.5°
Minimum focus distance: 18.5 m (61 ft)

31° HFoV:

Athermalized 19 mm, F1.0
Horizontal field of view: 31°
Vertical field of view: 24°
Minimum focus distance: 8.5 m (28 ft)

63° HFoV:

Athermalized 10 mm, F1.2
Horizontal field of view: 63°
Vertical field of view: 46°
Minimum focus distance: 2.8 m (9.2 ft)

Sensitivity

NETD <20 mK @25 °C, F1.0

Day and night

Visual: Automatic IR-cut filter

Minimum illumination

Visual:

Color: 0.05 lux at 50 IRE, F1.5

B/W: 0.01 lux at 50 IRE, F1.5

Shutter speed

Visual:

1/66500 s to 2 s

System on chip (SoC)

Model

ARTPEC-8

Memory

4 GB RAM, 8 GB 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

Visual:

16:9: 3840x2160 to 480x270

16:10: 2560x1600 to 640x400

4:3: 2592x1944 to 320x240

Thermal:

Sensor is 640x480. Image can be scaled up to 768x578

Frame rate

Visual:

Up to 25/30 fps (50/60 Hz) in all resolutions

Thermal:

Up to 8.3 fps or 25/30 fps (50/60 Hz) depending on model

Video streaming

Up to 12 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, compression, rotation: 0°, 90°, 180°, 270° including corridor format, mirroring, dynamic text and image overlay, polygon privacy mask
Scene profiles: forensic, vivid, traffic overview

Image processing

Axis Zipstream, Forensic WDR, Lightfinder 2.0

Pan/Tilt/Zoom

Preset positions
Control queue

Audio

Features

Automatic gain control
Speaker pairing
Spectrum visualizer⁽²⁾

Input

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

Output

Output through speaker pairing or portcast technology

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 bitrate

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, PTP, 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)

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, and video management software from Axis' partners available at axis.com/vms.

Onscreen controls

Privacy masks
Video streaming indicator
Defog
Image stabilization
Heater
Wide dynamic range
Autofocus
Orientation aid
Thermal visual fusion mode

Edge-to-edge

Speaker pairing

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).

Event conditions

Device status: above/below/within operating temperature, audit log, casing open, IP address blocked/removed, live stream active, network lost, new IP address, PTZ power failure, ring power overcurrent protection, system ready
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, digital output is active, manual trigger, virtual input is active
MQTT: MQTT client connected, stateless
PTZ: PTZ malfunctioning, PTZ ready
Scheduled and recurring: schedule
Video: average bitrate degradation, day-night mode

Event actions

Day-night mode: use day-night mode
Defog: set defog mode
I/O: toggle I/O
Images: send images through FTP, SFTP, HTTP, HTTPS, network share and email
MQTT: publish
Notification: send notifications through HTTP, HTTPS, TCP and email
Overlay text: use overlay text
Recordings: record video
Security: erase configuration
SNMP traps: send SNMP traps message
Video clips: send video clips through FTP, SFTP, HTTP, HTTPS, network share and email
WDR mode: set WDR mode

Built-in installation aids

Pixel counter, remote focus, level grid

Analytics

Applications

Included⁽⁴⁾

AXIS Object Analytics, AXIS Image Health Analytics, AXIS Scene Metadata, AXIS Video Motion Detection, audio detection

Supported

AXIS Perimeter Defender
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, tailgating detection, PPE monitoring^{BETA}, 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, bag, confidence, position

Approvals

Product markings

UL/cUL, 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

4. It is not recommended to run all included analytics simultaneously in high-load environments.

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/IP67, IEC/EN 62262 IK10⁽⁵⁾,
ISO 21207 (Method B),
MIL-STD-810H (Method 501.7, 502.7, 505.7, 506.6,
507.6, 509.7, 512.6, 521.4), 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
Secure keystore: secure element (CC EAL 6+, FIPS 140-3 Level 3), system-on-chip security (TEE)
Axis device ID, signed video, secure boot, encrypted filesystem (AES-XTS-Plain64 256bit)

Network security

IEEE 802.1X (EAP-TLS, PEAP-MSCHAPv2)⁽⁶⁾,
IEEE 802.1AE (MACsec PSK/EAP-TLS), IEEE 802.1AR,
HTTPS/HSTS⁽⁶⁾, TLS v1.2/v1.3⁽⁶⁾, 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

IP66/67-, NEMA 4X- and IK10-rated⁽⁵⁾

Aluminum and plastic casing

Color: white NCS S 1002-B

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.

Power

Power over Ethernet (PoE) IEEE 802.3af/802.3at Type 1

Class 4, max 25.5 W, typical (heater off, IR off) 9.4 W

10-28 VDC, max 25.5 W, typical (heater off, IR off)

9.6 W

Features: dynamic power mode, low power mode, power meter

I/O functionality

2 configurable (digital input, supervised input, digital output) I/Os, 12 VDC output, max load 25 mA

I/O connectivity through portcast technology accessories. For more information, see *Optional accessories*.

Connectors

Audio: 3.5 mm mic/line in

I/O: 4-pin 2.5 mm terminal block

Network: Shielded RJ45 10BASE-T/100BASE-TX/
1000BASE-T PoE

Power: DC input, terminal block

Serial communication: RS485/RS422, 2 pcs, 2 pos, full duplex, terminal block

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 with full power: -40 °C to 60 °C (-40°F to 140 °F)

Temperature with low power: 0 °C to 60 °C (32°F to 140 °F)

Humidity: 10-100% RH (condensing)

Wind speed (sustained): 60 m/s (134 mph)⁽⁷⁾

5. Excluding front window

6. This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. (openssl.org), and cryptographic software written by Eric Young (ey@cryptsoft.com).

7. The values shown are based on results from actual wind tunnel testing. The maximum wind speed when the unit is stationary is not known due to wind speed limit of 60 m/s (135 mph) at the test lab. For drag force calculations, use Effective Projected Area (EPA).

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): 0.092 m² (0.99 ft²)

Weight

2950 g (6.5 lb)

Box content

Camera, weathershield, installation guide, terminal block connectors, connector guard, cable gasket, owner authentication key

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

Software support

New feature development until 2030 (AXIS OS 12, 13 and 14)

Support until 2035-12-31 (AXIS OS LTS 2030–2035)

Read more about the AXIS OS lifecycle at help.axis.com/axis-os

Part numbers

Available at axis.com/products/axis-q2802-e#part-numbers

Optional accessories

Portcast

AXIS T61 MkII Audio and I/O Interface Series

Storage

AXIS Surveillance Cards

For more accessories, go to axis.com/products/axis-q2802-e#compatible-products

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: 71% (recycled: 18%, bio-based: 53%)

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, Recognize, Identify (DRI)

Thermal lens

AXIS Q2802-E (17° HFoV)		
	Definition	Distance
Detect	1.5 pixels	Human: 1079 m (3539 ft) Vehicle: 3307 m (10847 ft)
Recognize	6 pixels	Human: 270 m (886 ft) Vehicle: 827 m (2713 ft)
Identify	12 pixels	Human: 135 m (443 ft) Vehicle: 413 m (1355 ft)

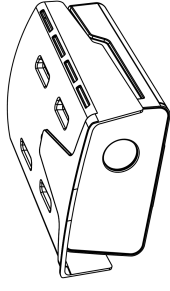
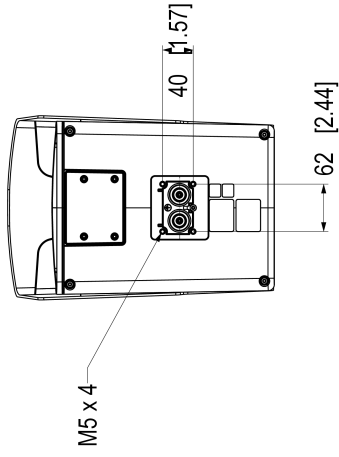
AXIS Q2802-E (24° HFoV)		
	Definition	Distance
Detect	1.5 pixels	Human: 735 m (2411 ft) Vehicle: 2100 m (6888 ft)
Recognize	6 pixels	Human: 184 m (604 ft) Vehicle: 566 m (1856 ft)
Identify	12 pixels	Human: 91 m (298 ft) Vehicle: 283 m (928 ft)

AXIS Q2802-E (31° HFoV)		
	Definition	Distance
Detect	1.5 pixels	Human: 559 m (1834 ft) Vehicle: 1596 m (5235 ft)
Recognize	6 pixels	Human: 140 m (459 ft) Vehicle: 430 m (1410 ft)
Identify	12 pixels	Human: 70 m (230 ft) Vehicle: 215 m (705 ft)

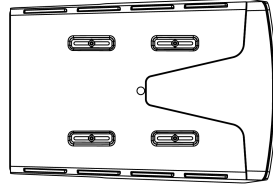
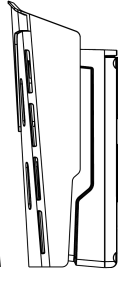
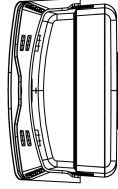
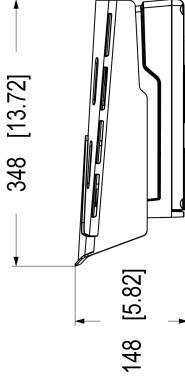
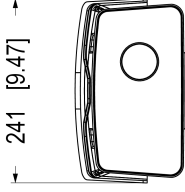
AXIS Q2802-E (63° HFoV)		
	Definition	Distance
Detect	1.5 pixels	Human: 291 m (954 ft) Vehicle: 890 m (2919 ft)
Recognize	6 pixels	Human: 73 m (239 ft) Vehicle: 223 m (731 ft)
Identify	12 pixels	Human: 36 m (118 ft) Vehicle: 112 m (367 ft)

We used Johnson's criteria to calculate the theoretical values shown in the table. Human and vehicle sizes were assumed to be 1.8 x 0.5 m and 4.0 x 1.5 m, respectively.

Thoroughly evaluate your scene using, for example, AXIS Site Designer. Consider factors like weather conditions when determining actual detection distances.



Weather cover sliding position 30mm,
see screw position.



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.

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.

Thermal visual image fusion

Thermal visual fusion is an advanced technology that integrates the camera's thermal stream with the camera's visual stream, creating a fused visual output. This process involves precise alignment of the two streams, ensuring that objects detected in the infrared spectrum correspond accurately with those in the visible light spectrum. The fusion of these streams results in a single visual view, which can be customized to highlight specific elements or data points.

By combining thermal and visual data, this technology offers a powerful tool for monitoring, surveillance, and analysis in various applications.