AXIS Q6411-LE Bispectral PTZ Camera

AI-powered, all-in-one thermal and visual camera

This all-in-one bispectral PTZ camera includes a thermal camera for reliable detection and verification 24/7 in all weather and light conditions, and a visual camera with an extremely light-sensitive ½" sensor. A deep learning processing unit (DLPU) runs advanced features and powerful analytics on the edge. For instance, AXIS Object Analytics is preinstalled to detect, classify, track, and count humans, vehicles, and types of vehicles. It's also compatible with AXIS Perimeter Defender for enhanced area detection using thermal technology. Furthermore, Axis Edge Vault, a hardware-based cybersecurity platform, safeguards the device and offers FIPS 140-3 Level 3 certified secure key storage and operations.

- > 7mm QVGA for reliable thermal detection
- > Outstanding visual identification
- > Excellent image quality in all light conditions
- > Next-generation AI-powered analytics
- > Built-in cybersecurity with Axis Edge Vault

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Camera

Variants
AXIS Q6411-LE 8.3 fps
AXIS Q6411-LE 30 fps

Image sensor
Visual:
1/2" progressive scan CMOS
Thermal:
Uncooled microbolometer
384x288 pixels, pixels size: 17 µm
Spectral range: 8-14 µm

Lens
Visual:
Optical zoom: 31x
Focal length: 6.91 – 214.64 mm
Horizontal field of view: 59.6 – 1.0°
Vertical field of view: 36.3°– 0.5°
Autofocus, P-iris
Thermal:
Athermalized
7 mm, F1.18
Horizontal field of view: 55°
Vertical field of view: 41°
Near focus distance: 1.2 m (3.9 ft)

Sensitivity
Thermal:
NETD <20 mK @25 °C, F1.0

Day and night
Visual:
Automatically removable infrared-cut filter

Minimum illumination
Visual:
Color: 0.06 lux at 30 IRE, F1.36
B/W: 0.001 lux at 30 IRE, F1.36, 0 lux with IR illumination on
Color: 0.09 lux at 50 IRE, F1.36
B/W: 0.000 lux at 50 IRE, F1.36, 0 lux with IR illumination on

Shutter speed
Visual:
1/111000 s to 1/2 s

Pan/Tilt/Zoom
Pan: 360° endless, 0.05°– 150°/s
Tilt: +20 to -90°, 0.05°– 150°/s
Nadir flip, 300 preset positions, tour recording (max 10, max duration 16 minutes each), guard tour (max 100), control queue, on-screen directional indicator, set new pan 0°
Visual:
Zoom: 31x optical, 12x digital, Total 372x zoom
Adjustable zoom speed

System on chip (SoC)

Model
ARTPEC-9

Memory
4096 MB RAM, 8192 MB Flash

Compute capabilities
Deep learning processing unit (DLPU)

Video

Video compression
AV1
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:
1920x1080 (HDTV 1080p) to 640x360
Thermal:
Sensor is 384x288. Image can be scaled up to 768x576.

Frame rate
Visual:
Up to 50/60 fps (50/60 Hz) in all resolutions
Thermal:
Up to 8.3 fps or 30 fps depending on model

Video streaming
Multiple, individually configurable streams in AV1, H.264, H.265 and Motion JPEG
Axis Zipstream technology in AV1, H.264 and H.265
Controllable frame rate and bandwidth
VBR/ABR/MBR AV1/H.264/H.265
Low latency mode
Video streaming indicator

Signal-to-noise ratio
Visual:
>55 dB

Image settings
Visual:
Compression, color, brightness, sharpness, white balance, exposure control, exposure zones, image freeze on PTZ, scene profiles, rotation, electronic image stabilization (EIS), defogging, barrel distortion correction
Contrast, local contrast, autofocus, Forensic WDR: Up to 120 dB depending on scene, 100 individual polygon privacy masks including mosaic and chameleon privacy masks
Thermal:
Barrel distortion correction, gain, electronic image stabilization, contrast, sharpness, brightness, exposure zones, compression, dynamic text and image overlay, polygon privacy mask, thermal palettes

Audio

Audio input
Input through portcast technology

Audio output
Output through portcast technology

Network

Security
Multi-level user, IP address filtering, HTTPS[1] encryption, IEEE 802.1x (EAP-TLS)[1], network access control, user access log, centralized certificate management, secure keystore (CC EAL4 certified), TPM-equivalent secure element (CC EAL 6+, FIPS 140-3 Level 3)

Network protocols
IPv4, IPv6 USGv6, ICMPv4/ICMPv6, HTTP, HTTPS[1], HTTP/2, TLS[1], QoS Layer 3 DiffServ, FTP, SFTP, CIFS/SMB, SMTP, mDNS (Bonjour), UPnP®, SNMP v1/v2c/v3 (MIB-II), DNS/DNSv6, DDNS, NTP, NTS, RTSP, RTCP, RTP, SRTP/RTSPS, TCP, UDP, IGMPv1/v2/v3, DHCPv4/v6, ARP, SSH, NTCIP, 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® and AXIS Camera Application Platform; specifications at *axis.com*
One-Click Cloud Connection
ONVIF® Profile G, ONVIF® Profile M, ONVIF® Profile S, and ONVIF® Profile T, specification at *onvif.org*

Onscreen controls
IR illumination

Edge-to-edge
Microphone pairing
Speaker pairing
Radar pairing

Event conditions
Audio: audio clip playing
Device status: above operating temperature, above or below operating temperature, below operating temperature, fan failure, IP address removed, IP address blocked, live stream active, network lost, new IP address, PTZ power failure, shock detected, system ready, within operating temperature
Edge storage: recording ongoing, storage disruption, storage health issues detected
I/O: digital input is active, manual trigger, virtual input is active
MQTT: MQTT client connected
PTZ: PTZ control queue, PTZ malfunctioning, PTZ movement, PTZ preset position reached, PTZ ready
Scheduled and recurring: schedule
Video: average bitrate degradation, day-night mode

1. *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 actions
Audio clips: play, stop
Day-night mode
Defog: set defog mode, set defog mode while the rule is active
Guard tour, guard tour (recorded)
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: FTP, SFTP, HTTP, HTTPS, network share and email
MQTT: MQTT publish message
Notification: HTTP, HTTPS, TCP and email
Overlay text
Preset positions
Recordings: record video, record video while the rule is active
Security: erase configuration
SNMP: trap messages, trap messages while the rule is active
Tracking: start temporary detection, toggle autotracking, toggle autotracking profile, toggle autotracking profile while the rule is active, toggle autotracking while the rule is active
Video clips: FTP, HTTP, HTTPS, SFTP, email, network share

Analytics

Applications
Included
Visual: AXIS Object Analytics, AXIS Scene Metadata, AXIS Video Motion Detection, AXIS OSDI Zone, Orientation Aid PTZ, advanced gatekeeper, autotracking 2
Supported
Support for AXIS Camera Application Platform enabling installation of third-party applications, see *axis.com/acap*

AXIS Object Analytics
Visual:
Object classes: humans, vehicles (types: cars, buses, trucks, bikes, other)
Scenarios: line crossing, object in area, time in area, crossline counting, 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 Scene Metadata
Visual:
Object classes: humans, faces, vehicles (types: cars, buses, trucks, bikes), license plates
Object attributes: confidence, position

Approvals

EMC
EN 55032 Class A, EN 55035, EN 61000-6-1, EN 61000-6-2, CISPR 35, EAC, EN 50121-4
Australia/New Zealand: RCM AS/NZS CISPR 32 Class A
Canada: ICES-3(A)/NMB-3(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
IEC/EN/UL 62368-1, CAN/CSA C22.2 No. 62368-1, IEC/EN 62471 risk group 1

Environment
IEC/EN 62262 IK10, IEC/EN 60529 IP66, NEMA 250, Type 4X, NEMA TS 2 (2.2.7–2.2.9), IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-6, IEC 60068-2-14, IEC 60068-2-27, IEC 60068-2-78, ISO 21207 (Method B), ISO 12944-6 C5, MIL-STD-810H (Method 501.7, 502.7, 505.7, 506.6, 507.6, 509.7, 510.7, 521.4)

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 OpenID Authorization Code Flow for centralized ADFS account management, password protection, AES-XTS-Plain64 256bit SD card encryption
Hardware: Axis Edge Vault cybersecurity platform
Secure keystore: secure element (CC EAL6+, 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)[2],
IEEE 802.1AE (MACsec PSK/EAP-TLS), HTTPS/HSTS[2], TLS v1.2/v1.3[2], 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-, NEMA 4X- and IK10-rated[3]
Color: white NCS S 1002-B
Repaintable metal casing (aluminum), hard coated Polycarbonate (PC), germanium window

Power
IEEE802.3bt Type 3 Class 6
Possibility to optimize power consumption of camera:
Full power: typical 10.7 W (no IR), max 51 W
Low power: typical 10.7 W (no IR), max 30 W. With IR: 40 W
Features: power profiles, power meter

Connectors
RJ45 10BASE-T/100BASE-TX/1000BASE-T
RJ45 Push-pull Connector (IP66)
Audio: Audio and I/O connectivity via portcast technology

IR illumination
OptimizedIR with power-efficient, long-life 850 nm IR LEDs
Range of reach 150 m (492 ft) or more depending on the scene

Storage
Support for SD/SDHC/SDXC card
Support for SD card encryption (AES-XTS-Plain64 256bit)
Support for recording to network-attached storage (NAS)
For SD card and NAS recommendations see *axis.com*

Operating conditions
-40 °C to 55 °C (-40 °F to 131 °F)
Maximum temperature according to NEMA TS 2 (2.2.7): 74 °C (165 °F)
Arctic Temperature Control: Start-up as low as -40 °C (-40 °F)
Humidity 10–100% RH (condensing)

Storage conditions
-40 °C to 65 °C (-40 °F to 149 °F)
Humidity 5-95% RH (non-condensing)

Dimensions
Height: 304 mm (12.0 in)
With: ø 239 mm (9.4 in)

Weight
6 200 g (13.7 lb)

Included accessories
Installation guide, Windows® decoder 1-user license, IP66-rated network connector, repaint template, paint paper

Optional accessories
AXIS TU8003 90 W Connectivity Midspan
AXIS T91/T94 Mounting Accessories
AXIS Surveillance Cards
For more accessories, see *axis.com*

Video management software
AXIS Companion, AXIS Camera Station, video management software from Axis Application Development Partners available at *axis.com/vms*

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*

Export control
This product is subject to export control regulations, and you should always comply with all applicable national and international export or re-export control regulations.

Part numbers
Available at *axis.com/products/axis-q6411-le#part-numbers*

2. *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).*
3. *Excluding front windows*

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: 13% (recycled: 10%, bio-based: 3%, carbon capture based: 0%)
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

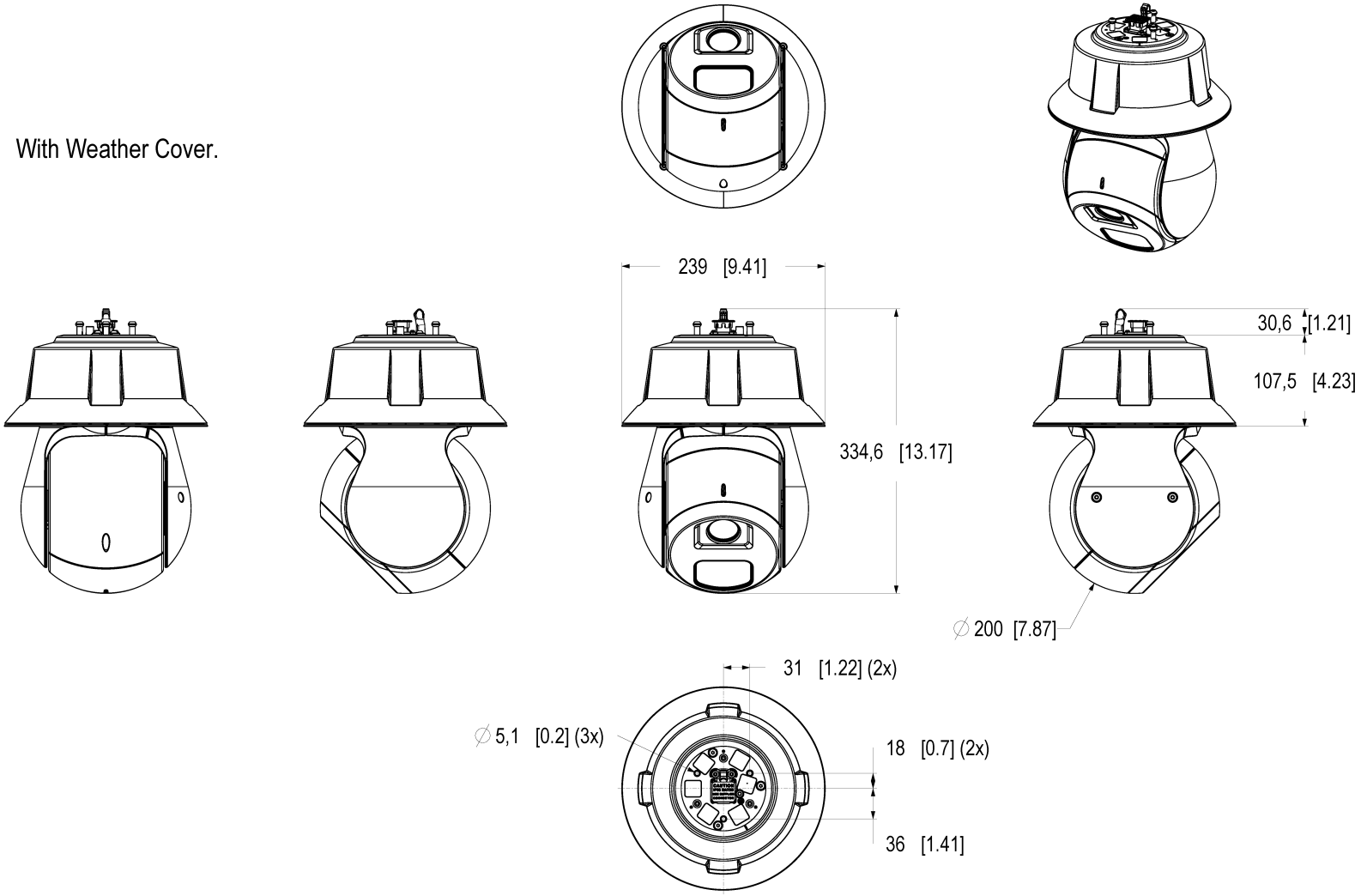
axis.com/environmental-responsibility
Axis Communications is a signatory of the UN Global Compact, read more at *unglobalcompact.org*

Detect, Observe, Recognize, Identify (DORI)

	DORI definition	Distance (wide)	Distance (tele)
Detect	25 px/m (8 px/ft)	65.8 m (216 ft)	1749.3 m (5737.7 ft)
Observe	63 px/m (19 px/ft)	26.1 m (85.6 ft)	693.7 m (2275 ft)
Recognize	125 px/m (38 px/ft)	13.2 m (43.3 ft)	349.2 m (1145 ft)
Identify	250 px/m (76 px/ft)	6.6 m (21.6 ft)	174.2 m (571.4 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.

With Weather Cover.



AXIS COMMUNICATIONS

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Dimensions in mm [inch]

Date	Version	Scale
2025 Jun-23	M1.3	1:3
Drawing Number	Size	Sheet
3370573	A2	1(2)