AXIS P5654-E Mk II PTZ Camera

77° wide angle PTZ with HDTV 1080p

This cost-effective PTZ camera offers great image quality in HDTV 1080p with 21x optical zoom and wide area coverage with 77° field of view. Thanks to Lightfinder 2.0 and Forensic WDR, it provides true colors and great detail in challenging light or near darkness. Including Axis Object Analytics, it can detect and classify people and vehicles- all tailored to specific needs. With IP66, NEMA 4X, and IK10 ratings, this robust and resistant camera can handle temperatures ranging from -30 °C to 50 °C (-22 °F to 122 °F). Furthermore, Axis Edge Vault safeguards your device and protects sensitive information from unauthorized access.

- > HDTV 1080p with 21x optical zoom
- > Wide 77° field of view
- > Lightfinder 2.0 and Forensic WDR
- > Support for advanced analytics
- > Axis Edge Vault safeguards the device

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Camera

Variants	AXIS P5654-E Mk II 50 Hz AXIS P5654-E Mk II 60 Hz
Image sensor	1/2.8" progressive scan RGB CMOS
Lens	Varifocal, 4.0–84.6 mm, F1.6–4.5 Horizontal field of view: 77.0°–3.6° Vertical field of view: 43.1°–2.0° Autofocus and auto-iris
Day and night	Automatic IR-cut filter
Minimum illumination	**Color:** 0.11 lux at 50 IRE F1.6 **Color:** 0.1 lux at 30 IRE F1.6 **B/W:** 0.03 lux at 50 IRE F1.6 **B/W:** 0.01 lux at 30 IRE F1.6
Shutter speed	1/66500 s to 2 s
Pan/Tilt/Zoom	Pan: 360° endless, 0.1°–350°/s Tilt: 180°, 0.1°–350°/s Zoom: 21x optical, 12x digital, Total 252x zoom 256 preset positions, e-flip, limited guard tour, control queue, on-screen directional indicator, set new pan 0°, focus window, focus recall

System on chip (SoC)

Model	ARTPEC-7
Memory	1024 MB RAM, 512 MB Flash
Compute capabilities	Machine learning processing unit (MLPU)

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	1920x1080 HDTV 1080P to 320x180
Frame rate	Up to 60/50 fps (60/50 Hz) in all resolutions
Video streaming	Multiple, individually configurable streams in H.264, H.265 and Motion JPEG Controllable frame rate and bandwidth Axis Zipstream technology in H.264 and H.265 VBR/ABR/MBR H.264/H.265 Low latency mode
WDR	Forensic WDR: Up to 120 dB depending on scene
Image settings	Compression, saturation, brightness, sharpness, contrast, local contrast, white balance, exposure control, exposure zones, defogging, day/night shift level, tone mapping, fine tuning of low-light behavior, rotation: 0°, 180°, text and image overlay, image freeze on PTZ, electronic image stabilization, scene profiles, 20 individual polygon privacy masks
Image processing	Axis Zipstream, Forensic WDR, Lightfinder 2.0

Network

Network protocols	IPv4, IPv6 USGv6, ICMPv4/ICMPv6, HTTP, HTTPS[a], HTTP/2, TLS[a], 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, NTCIP, 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*. ACAP includes Native SDK. 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 Companion, AXIS Camera Station, video management software from Axis' Application Development Partners available at *axis.com/vms*
Onscreen controls	Focus recall area Video streaming indicator Autotracking Privacy masks Day/night shift
Event conditions	Device status: above/below/within operating temperature, fan failure, IP address blocked, IP address removed, new IP address, network lost, system ready, live stream active, PTZ power failure, shock detected Edge storage: recording ongoing, storage disruption, storage health issues detected I/O: digital input, manual trigger, virtual input MQTT: subscribe PTZ: PTZ control queue, PTZ malfunctioning, PTZ movement, PTZ preset reached, PTZ ready Scheduled and recurring: schedule Video: average bitrate degradation, day-night mode
Event actions	Day-night mode Guard tour MQTT: publish Notification: HTTP, HTTPS, TCP and email Overlay text Preset position Recordings SNMP traps: send, send while the rule is active Tracking: start temporary detection, autotracking, autotracking profile Upload of images or video clips: FTP, SFTP, HTTP, HTTPS, network share and email WDR mode
Built-in installation aids	Pixel counter

Analytics

Applications	**Included** AXIS Object Analytics, AXIS Scene Metadata, AXIS Image Health Analytics, AXIS Video Motion Detection, AXIS Motion Guard, AXIS Fence Guard, AXIS Loitering Guard, advanced gatekeeper, autotracker 2 **Supported** Support for AXIS Camera Application Platform enabling installation of third-party applications, see *axis.com/acap*
AXIS Object Analytics	**Object classes:** humans, vehicles **Features**: line crossing, object in area, time in area Up to 10 scenarios Metadata 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
Metadata	**Object data**: Classes: humans, faces, vehicles, license plates Confidence, position

Approvals

Product markings	UL/cUL, UKCA, CE, KC, EAC, RCM
Supply chain	TAA compliant
EMC	CISPR 35, CISPR 32 Class A, EN 50121-4, 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 **Korea:** KS C 9832 Class A, KS C 9835 **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
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, NEMA 250 Type 4X
Network	NIST SP500-267
Cybersecurity	ETSI EN 303 645

Cybersecurity

Edge security	**Software:** Signed OS, brute force delay protection, digest authentication, password protection

	Hardware: Axis Edge Vault cybersecurity platform 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)[a], IEEE 802.1AR, HTTPS/HSTS[a], TLS v1.2/v1.3[a], 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 Aluminum casing, polycarbonate (PC) dome 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	**Axis PoE+ midspan 1-port:** 100–240 V AC, max 37 W IEEE 802.3at, Type 2 Class 4 Camera consumption: typical 8 W, max 16 W (PoE+ midspan not included)
Connectors	Network: RJ45 10BASE-T/100BASE-TX PoE
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	-30 °C to 50 °C (-22 °F to 122 °F) Maximum temperature (intermittent): 55 °C (131 °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	For the overall product dimensions, see the dimension drawing in this datasheet.
Weight	2.5 kg (5.5 lb)
Box content	Camera, installation guide, smoked dome, RJ45 push-pull connector (IP66), hard ceiling mount, spring clip adapter, U-profile adapter pipe
Optional accessories	AXIS T91B mounts, AXIS T94A02L recessed mount, outdoor RJ45 cable with premounted connector, AXIS T8133 Midspan 30 W 1-port, repaintable skin covers AXIS Surveillance Cards For more accessories, go to *axis.com/products/axis-p5654-e-mk-ii#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-p5654-e-mk-ii#part-numbers*

Sustainability

Substance control	PVC free 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*
Materials	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*

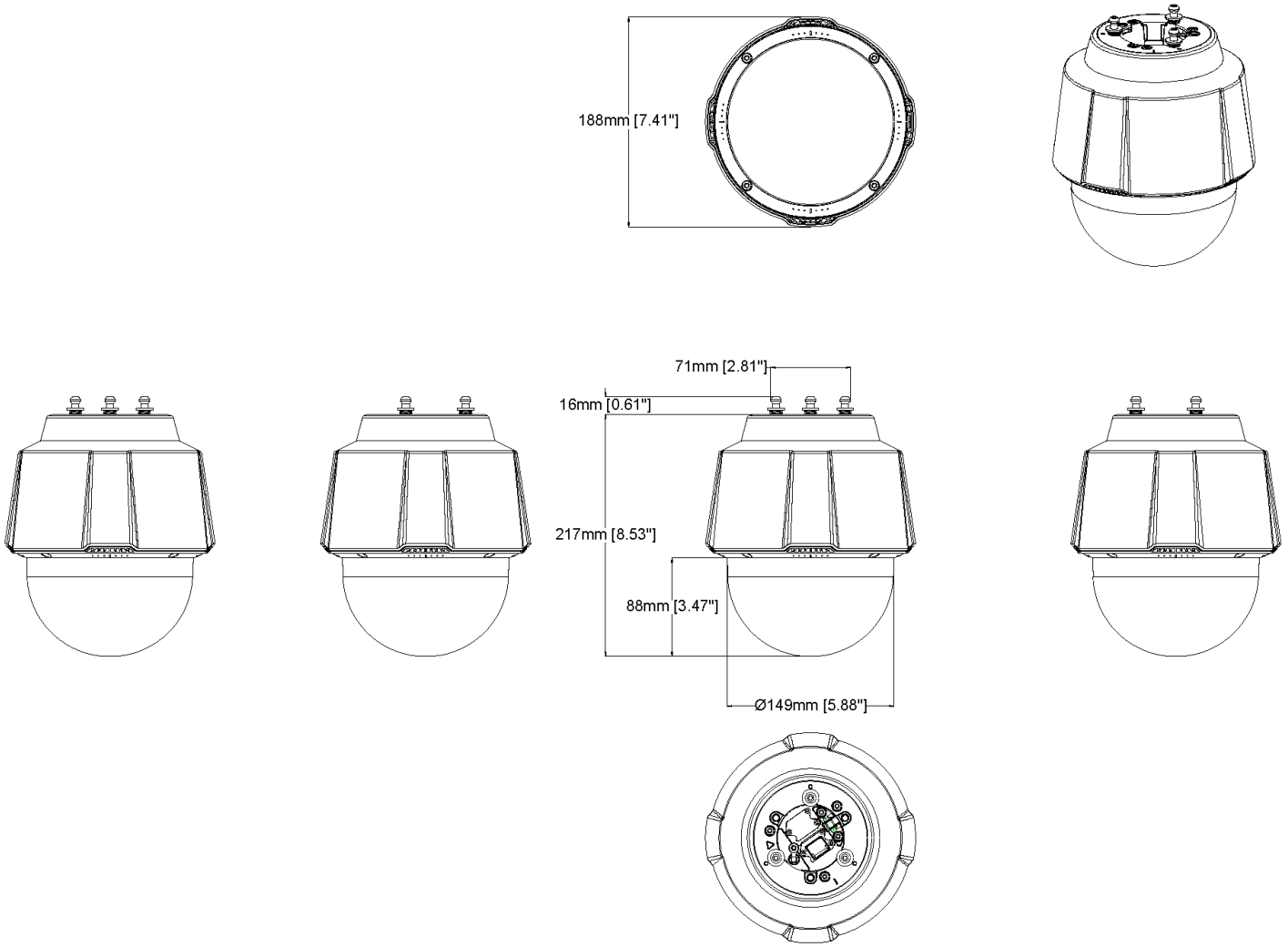
a. *This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. (openssl.org), and cryptographic software written by Eric Young (eay@cryptsoft.com).*

Detect, Observe, Recognize, Identify (DORI)

	DORI definition	Distance (wide)	Distance (tele)
Detect	25 px/m (8 px/ft)	57 m (187 ft)	1120 m (3674 ft)
Observe	63 px/m (19 px/ft)	23 m (75 ft)	450 m (1476 ft)
Recognize	125 px/m (38 px/ft)	11 m (36 ft)	225 m (738 ft)
Identify	250 px/m (76 px/ft)	6 m (20 ft)	110 m (361 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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Revision	v.01	Revision date	2023-05-19
Paper size	A4	Release date	2023-05-19
Created by	MS	Scale	1:5

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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*.

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.

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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