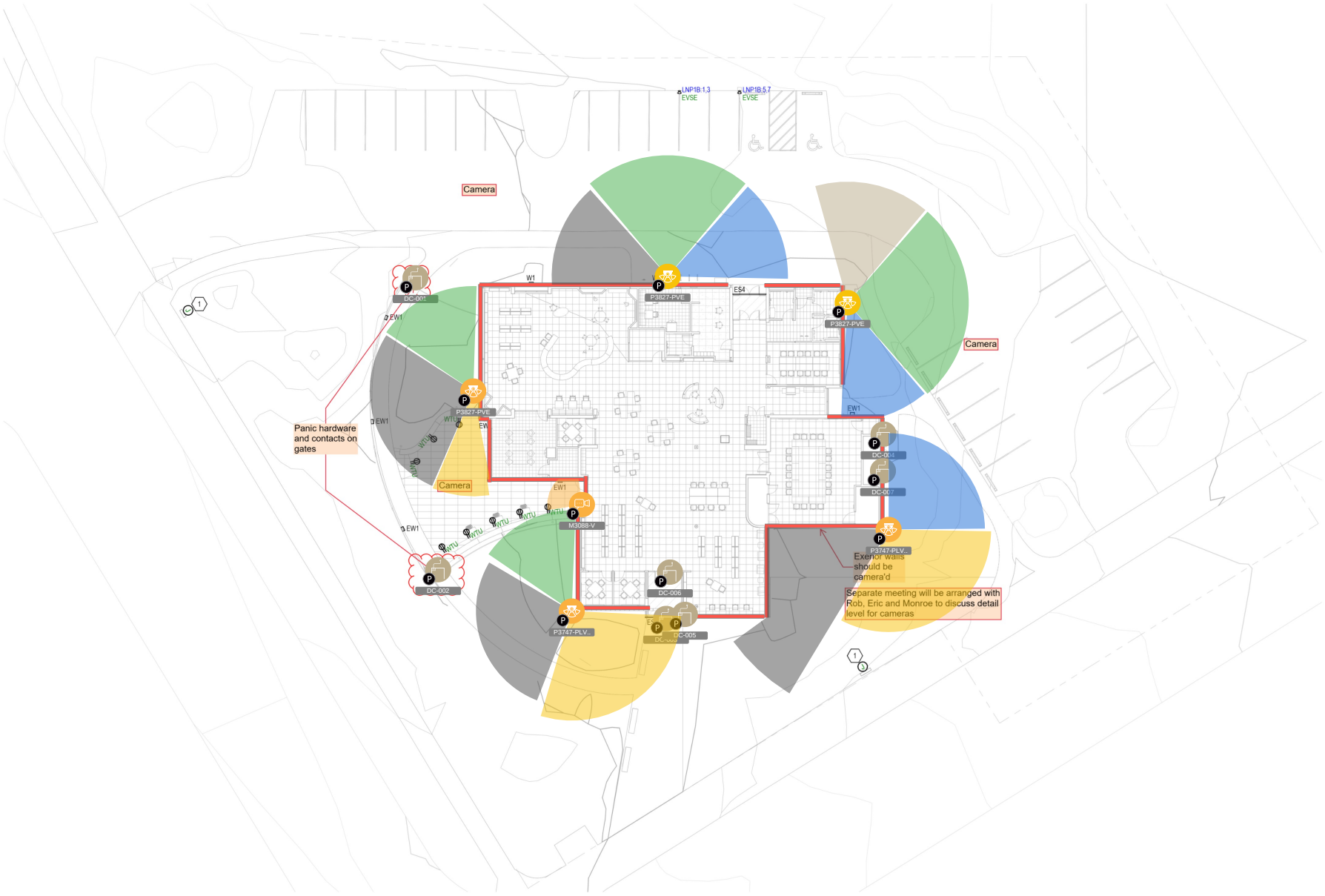


1 Site Electrical
1/16" = 1'-0"

SURVEY	SITE	COMPANY	REPORT BY	DATE	PAGE
CPL - Fleet - 2025 2026 Renovation - Exterior - Proposed Changes (Budgetary Adjustme…	CPL - Fleet - 2025 2026 R…	IP Systems Team	Kelly Fox	5/14/2026	

IP SYSTEMS

Sheet Notes - T101	
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1	Provide data drop for copy machine. Coordinate location with architectural.
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4	Provide data biscuit jack in accessible location above ceiling for people counter. Homerun to PoE port to power people counter.
5	Provide data faceplate for book locker in weatherproof enclosure. Coordinate location with architectural.
6	Provide antennae from this access point on the exterior of the building to provide coverage for Reading Garden.
7	Provide remote unlock for Restrooms 112, 113 and 115 and exterior doorway of Vestibules 101 and 116 from this location.
8	Provide panic button at this location.
9	The teledata rack shall serve as the MDF. All Category cabling shall homerun to this location.
10	Coordinate with utility to relocate the telecomm service entrance to this location.
11	Locate the access control head, video surveillance head-end, master clock system, and public address headend at this location.



1 First Floor Technology
3/16" = 1'-0"

Project:
FLEET BRANCH RENOVATION AND EXPANSION
7224 Broadway Ave Cleveland, OH 44105

Civil Engineer:
Halle's Engineering & Design
320 S. Main Street, Suite 2531
Akron, OH 44311
t: 33.631.5634

MEP AV/IT Engineer:
Algebra AEC
11410 Uptown Ave
Cleveland, OH 44106
t: 216.714.2542

Structural Engineer:
Barber & Hoffman
2217 E. 9th Street, Suite 350
Cleveland, OH 44115
t: 216.875.0100

Seal:

PROGRESS SET

BIALOSKY
6555 Carnegie Avenue, Suite 200
Cleveland, Ohio, 44103
t. 216.752.8750
f. 216.752.9437
www.bialosky.com

Project No: 25-25
Drawn / Checked: Author / Checker

Issue: Design Development 11.21.2025

FIRST FLOOR TECHNOLOGY NEW PLAN

T101

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SURVEY	SITE	COMPANY	REPORT BY	DATE	PAGE
CPL - Fleet - 2025 2026 Renovation - First Floor	**CPL - Fleet - 2025 2026 R...**	**IP Systems Team**	**Kelly Fox**	**5/14/2026**	



1 Site Electrical
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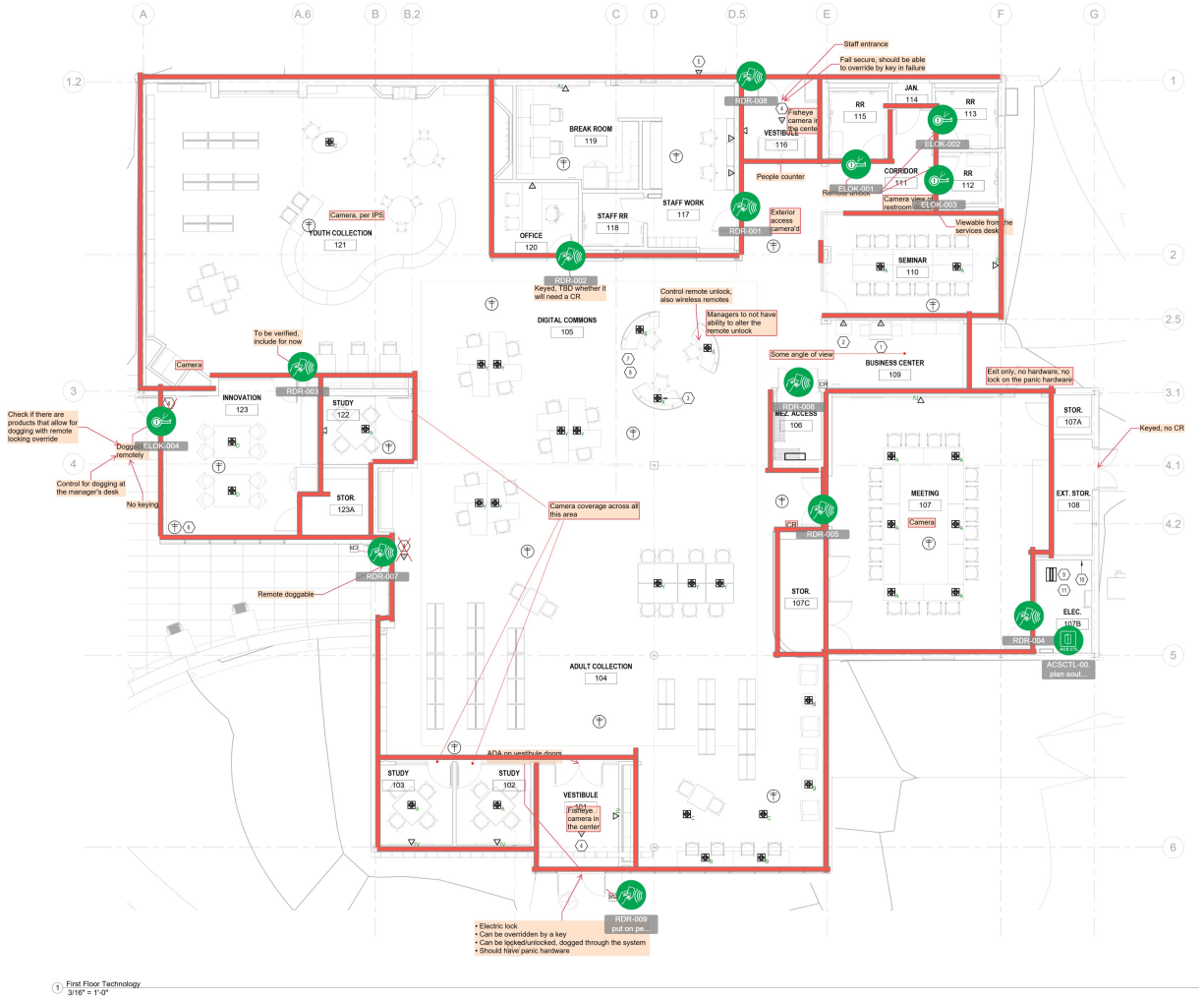
Survey : CPL - Fleet - 2025 2026 Renovation - Exterior - Proposed Changes

Site : CPL - Fleet - 2025 2026 Renovation

Company : IP Systems Team

Report By : Kelly Fox

Date : 3/12/2026



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FLEET BRANCH RENOVATION AND EXPANSION
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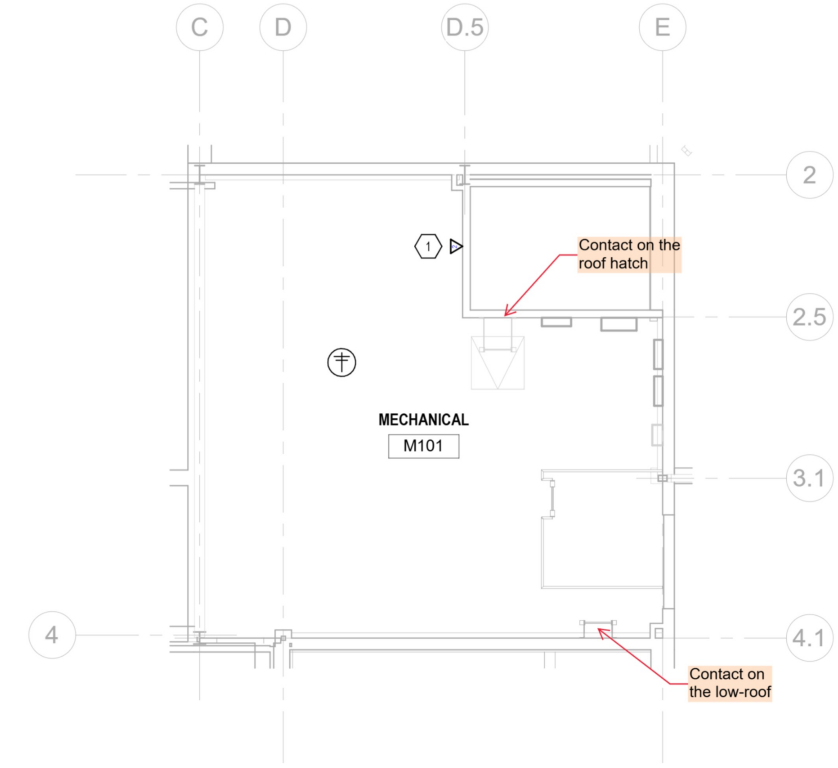
FIRST FLOOR TECHNOLOGY NEW PLAN

T101

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Survey : CPL - Fleet - 2025 2026 Renovation - First Floor
Site : CPL - Fleet - 2025 2026 Renovation

Company : IP Systems Team
Report By : Kelly Fox
Date : 3/12/2026



1 Penthouse Technology
3/16" = 1'-0"

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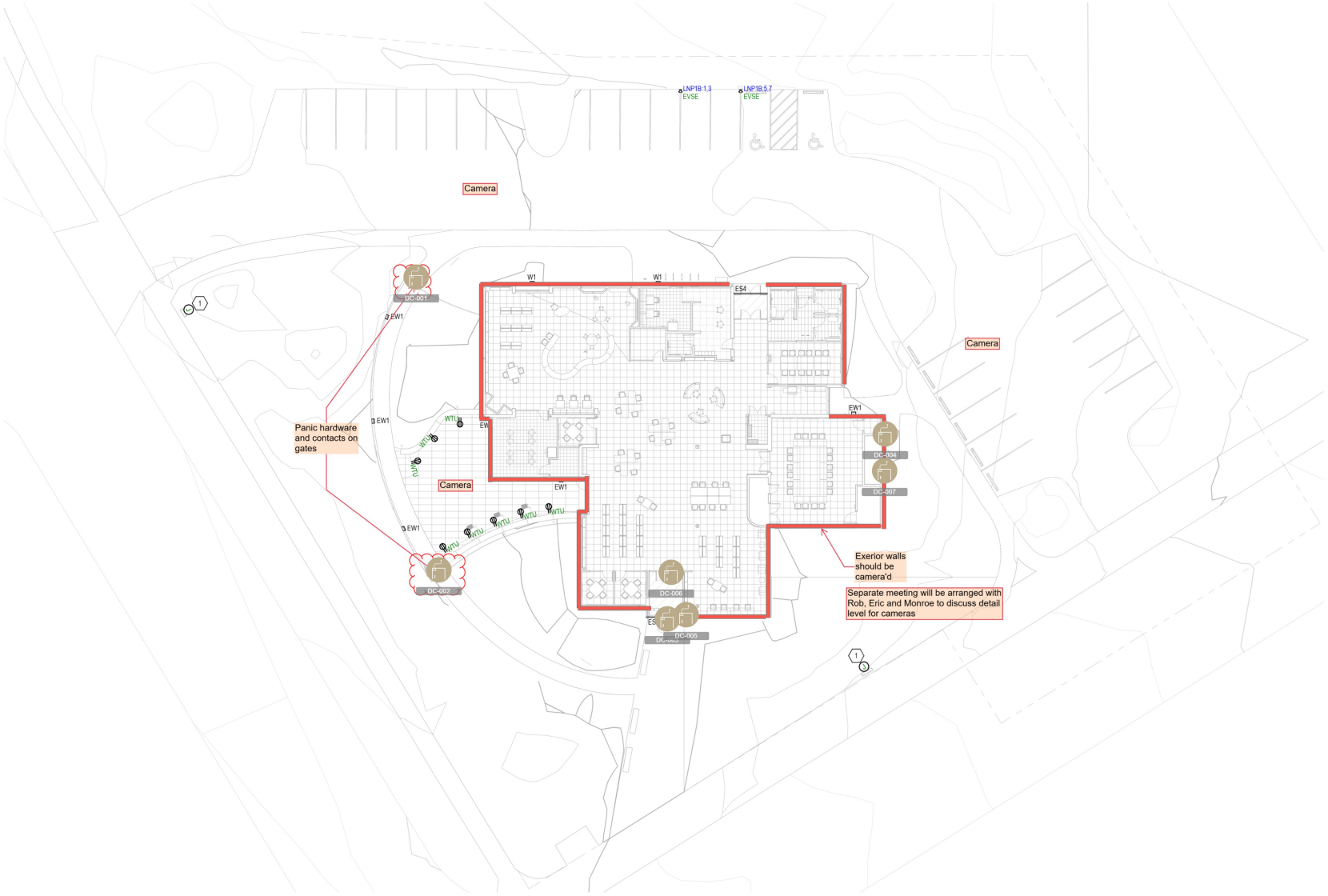
PENTHOUSE TECHNOLOGY NEW PLAN

T102

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Survey : CPL - Fleet - 2025 2026 Renovation - Penthouse
Site : CPL - Fleet - 2025 2026 Renovation

Company : IP Systems Team
Report By : Kelly Fox
Date : 3/12/2026



1 Site Electrical
1/16" = 1'-0"

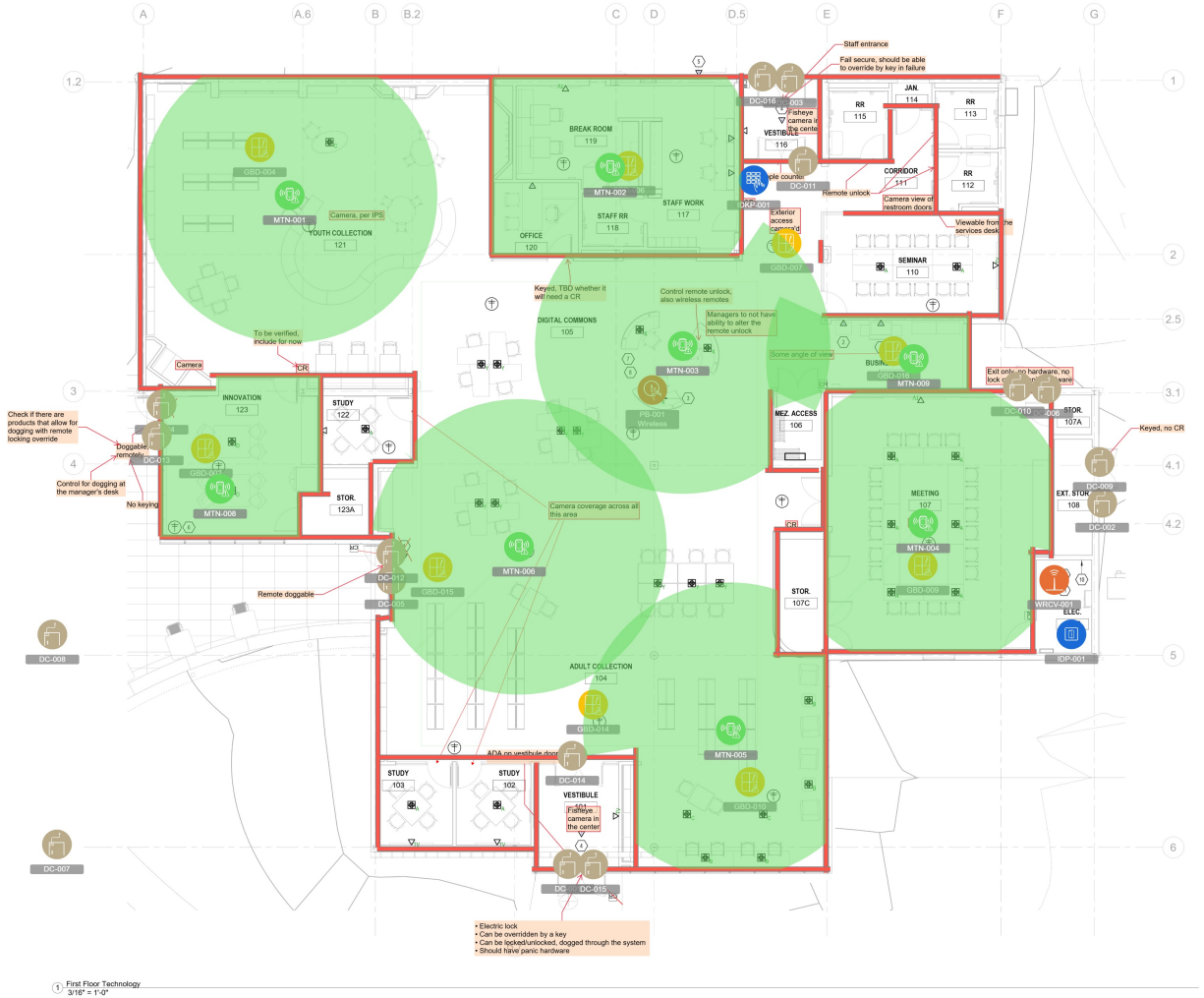
Survey : CPL - Fleet - 2025 2026 Renovation - Exterior - Proposed Changes

Site : CPL - Fleet - 2025 2026 Renovation

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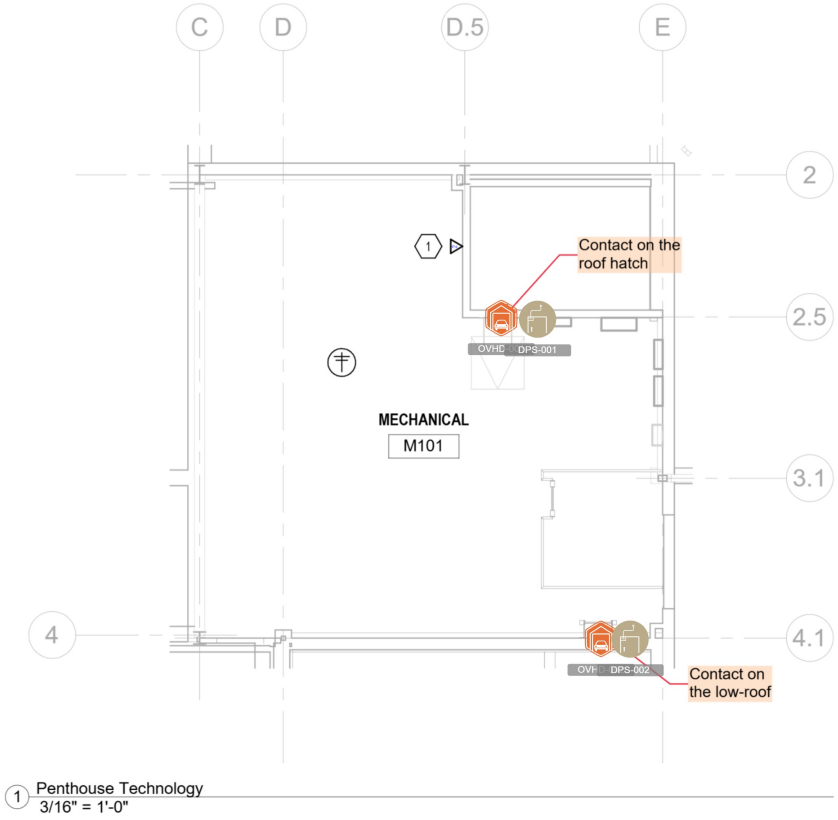
FIRST FLOOR TECHNOLOGY NEW PLAN

T101

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PENTHOUSE TECHNOLOGY NEW PLAN

T102

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Survey : CPL - Fleet - 2025 2026 Renovation - Penthouse
Site : CPL - Fleet - 2025 2026 Renovation

Company : IP Systems Team
Report By : Kelly Fox
Date : 3/12/2026

Feature	Technical Specifications	
Processor	One Intel® Xeon® 6300 series or one Intel® Xeon® E-2400 series processor with up to 8 cores or One Intel® Pentium® G7400/G7400T processor with 2 cores	
Memory	• 4 DDR5 DIMM slots, supports UDIMM 128 GB max, speeds up to 4400 MT/s • Supports unregistered ECC DDR5 DIMMs only	
Storage controllers	• Internal Controllers: HBA355i Adpt, PERC H355 Adpt, PERC H755 Adpt • Internal Boot: Internal USB 3.0, or Boot Optimized Storage Subsystem (BOSS-N1) HWRAID 2 x M.2 SSDs • External HBAs (non-RAID): HBA355e Adpt • Software Controller: S160	
Drive Bays	Front bays: • Up to 2 x 3.5-inch cable SAS/SATA HDD, max 32 TB • Up to 6 x 2.5-inch hot-plug SAS/SATA HDD/SSD, max 46.08TB	
Power Supplies	• 450 W Platinum 100 — 240 VAC, non redundant • 700 W Titanium 200 — 240 VAC or 240 VDC, non redundant	
Cooling Options	Air cooling	
Fans	• Up to six cabled fans	
Dimensions	• Height – 42.8 mm (1.68 inches) • Width – 482.0 mm (18.97 inches) • Depth – 461.14 mm (18.15 inches) without bezel • Depth – 496.8 mm (19.55 inches) with bezel • Depth – 426.6 mm (16.80 inches) with cable PSU and without bezel	
Form Factor	1U rack server	
Embedded Management	• iDRAC9 • iDRAC Direct • iDRAC RESTful API with Redfish • iDRAC Service Manual	
Bezel	Security bezel or optional Filter bezel	
OpenManage Software	• OpenManage Enterprise • OpenManage Power Manager plugin • OpenManage Service plugin • OpenManage Update Manager plugin • CloudIQ for PowerEdge plug in • OpenManage Enterprise Integration for VMware vCenter • OpenManage Integration for Microsoft System Center • OpenManage Integration with Windows Admin Center	
Mobility	OpenManage Mobile	
OpenManage Integrations	• BMC Truesight • Microsoft System Center • OpenManage Integration with ServiceNow • Red Hat Ansible Modules • Terraform Providers • VMware vCenter and vRealize Operations Manager	
Security	• Cryptographically signed firmware • Data at Rest Encryption (SEDs with local or external key mgmt) • Secure Boot • Secured Component Verification (Hardware integrity check) • Secure Erase • Secured-core server • Silicon Root of Trust • System Lockdown (requires iDRAC9 Enterprise or Datacenter) • TPM 2.0 FIPS, CC-TCG certified, TPM 2.0 China NationZ	
Embedded NIC	2 x 1 GbE LOM	
GPU Options	N/A	
Ports	Front Ports • 1 x iDRAC Direct (Micro-AB USB) port • 1 x USB 2.0	Rear Ports • 1 x Dedicated iDRAC Ethernet port • 1 x USB 2.0 • 1 x USB 3.2 Gen1 • 1 x VGA • 1 x Serial
	Internal Ports • 1 x USB 3.2 Gen1	
PCIe	Up to two PCIe Gen4 slots on the Gen4 Riser • Slot 1: 1 x8 with x8 bandwidth, Half Length, Low Profile • Slot 2: 1 x16 with x8 bandwidth, Half Length, Low Profile	

Feature	Technical Specifications
Operating System and Hypervisors	• Canonical Ubuntu Server LTS • Microsoft Windows Server with Hyper-V • Red Hat Enterprise Linux • SUSE Linux Enterprise Server • VMware ESXi For specifications and interoperability details, see Dell.com/OSsupport.
OEM-ready version available	From bezel to BIOS to packaging, your servers can look and feel as if they were designed and built by you. For more information, visit Dell.com/OEM.

APEX on Demand

APEX Flex on Demand Acquire the technology you need to support your changing business with payments that scale to match actual usage. For more information, visit www.delltechnologies.com/en-us/payment-solutions/flexible-consumption/flex-on-demand.htm.

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March 2025

AXIS M4317-PLVE Panoramic Camera

6 MP dome with 360° view and deep learning

With a 6 MP sensor, this discreet mini dome offers excellent image quality and a complete 180° or 360° overview. Featuring a stereographic lens and Sharpdome 360, it delivers greater sharpness at the edges of the image. Built-in IR illumination with individually controllable LEDs ensures clear, reflection-free footage and excellent image quality even in low light or complete darkness. A deep learning processing unit enables unique opportunities for analytics based on deep learning. Plus, AXIS Object Analytics can detect and classify humans, vehicles, and types of vehicles. Furthermore, Axis Edge Vault protects your Axis device ID and simplifies authorization of Axis devices on your network.

- > Complete 180° and 360° overview
- > Built-in IR with individual IR LEDs
- > Support for deep learning analytics
- > Built-in cybersecurity features
- > Digital roll for ease of installation



AXIS M4317-PLVE Panoramic Camera

Camera

Image sensor
1/1.8" progressive scan RGB CMOS

Lens
Focal length: 1.1 mm, F2.2
Horizontal field of view: 182°
Vertical field of view: 182°
Fixed iris, IR corrected, fixed focus

Day and night
Automatic IR-cut filter

Minimum illumination
Color: 0.16 lux at 50 IRE, F2.2
B/W: 0.03 lux at 50 IRE, F2.2
0 lux with IR illumination on

Shutter speed
1/33500 s to 0.2 s

Camera adjustment
Digital roll: ± 180°

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
Overview: 2160x2160 to 160x160
Panorama: 2560x1440 to 192x72
Double Panorama: 2560x1920 to 384x288
Quad view: 2560x1920 to 384x288
View area 1-4: 1920x1440 to 256x144
Corner right and left: 2368x1184 to 192x72
Double corner: 2016x2016 to 384x288
Corridor: 2560x1920 to 256x144

Frame rate
360° overview only up to max resolution without WDR: 50/60 fps @ 50/60 Hz
360° overview and 4 dewarped views up to max resolution with WDR: up to 25/30 fps @ 50/60 Hz

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

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, local contrast, tone mapping, white balance, day/night threshold, exposure mode, exposure zones, compression, mirroring, dynamic text and image overlay, polygon privacy mask

Image processing
Axis Zipstream, Forensic WDR, Lightfinder, OptimizedIR

Pan/Tilt/Zoom
Digital PTZ of view areas, digital PT of panorama, corner, corridor and quad views, preset positions, guard tours

Audio

Audio features
Network speaker pairing

Audio input/output
Audio features through portcast technology: two-way audio connectivity, voice enhancer

Network

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, RTP, SRTP/RTSPS, TCP, UDP, IGMPv1/v2/v3, RTCP, DHCPv4/v6, SSH, LLDP, CDP, MQTT v3.1.1, Syslog, 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*.
One-click cloud connection
ONVIF® Profile G, ONVIF® Profile M, ONVIF® Profile S, and ONVIF® Profile T, specification at *onvif.org*
Support for Session Initiation Protocol (SIP) for integration with Voice over IP (VoIP) systems, peer to peer or integrated with SIP/PBX.

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
Privacy masks
IR illumination
Media clip

Event conditions
Device status: above operating temperature, above or below operating temperature, below operating temperature, casing open, IP address removed, live stream active, network lost, new IP address, system ready, within operating temperature
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: stateless
Scheduled and recurring: schedule
Video: average bitrate degradation, day-night mode, tampering

Event actions
Day-night mode: use while the rule is active
I/O: toggle once, toggle while the rule is active
Illumination: use lights, use lights while the rule is active
Images: FTP, HTTP, HTTPS, SFTP, email and network share
MQTT: publish
Notification: HTTP, HTTPS, TCP and email
Overlay text: use, use while the rule is active
Recordings: record video, record video while the rule is active
SNMP trap messages: send, send while the rule is active
Status LED: flash, flash while the rule is active
Video clips: FTP, HTTP, HTTPS, SFTP, email and network share
WDR mode: set, set while the rule is active

Built-in installation aids
Pixel counter, level grid, digital roll

Analytics

Applications
Included
AXIS Object Analytics, AXIS Image Health Analytics, AXIS Scene Metadata, AXIS Video Motion Detection, active tampering alarm
Supported
AXIS People Counter
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)
Scenarios: line crossing, object in area, crossline counting, occupancy in area[BETA]
Up to 10 scenarios
Other features: triggered objects visualized with trajectories, color-coded bounding boxes and tables
Polygon include/exclude areas
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)
Object attributes: vehicle color, confidence, position

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).*

Approvals

Product markings
CSA, UL/cUL, BIS, UKCA, CE, KC

Supply chain
TAA compliant

EMC
EN 55035, EN 55032 Class A, EN 50121-4, EN 61000-6-1, EN 61000-6-2, EN 61547
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 ed. 3, CAN/CSA C22.2 No. 62368-1 ed. 3, IEC/EN 62471 risk group exempt, UN ECE R118, 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 62262 IK10, IEC/EN 60529 IP66, ISO 4892-2, NEMA 250 Type 4X, NEMA TS 2 (2.2.7-2.2.9), ISO 21207 (Method B)

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, Axis Cryptographic Module (FIPS 140-2 level 1), AES-XTS-Plain64 256bit SD card encryption
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, PEAP-MSCHAPv2)[2], IEEE 802.1AE (MACsec PSK/EAP-TLS), IEEE 802.1AR, 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
Polycarbonate hard-coated dome
Aluminum
Color: white NCS S 1002-B
Repaintable skin cover accessory

Mounting
Mounting bracket with junction box holes (double-gang, single-gang, and 4" octagon)
¼"-20 UNC tripod screw thread

Power
Power over Ethernet (PoE) IEEE 802.3af/802.3at Type 1 Class 3
Typical 5.7 W, max 12.95 W

Connectors
Network: Shielded RJ45 10BASE-T/100BASE-TX PoE
I/O: Terminal block for 1 supervised alarm input and 1 output (12 VDC output, max. load 25 mA)
Audio: Audio and I/O connectivity via portcast technology

IR illumination
OptimizedIR with power-efficient, long-life 850 nm IR LEDs
Range of reach 20 m (65.6 ft) depending on the scene

Storage
Support for microSD/microSDHC/microSDXC card
Recording to network-attached storage (NAS)
For SD card and NAS recommendations see *axis.com*

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).*

Operating conditions
-40 °C to 50 °C (-40 °F to 122 °F)
Start-up temperature: -30 °C
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: 70 mm (2.7 in)
ø 149 mm (5.9 in)
Effective Projected Area (EPA): 0.0076 m^2 (0.025 ft^2)

Weight
860 g (1.9 lb)

Box content
Camera, installation guide, terminal block connector, connector guard, cable gaskets, cable hole lid, owner authentication key

Optional accessories
AXIS T8415 Wireless Installation Tool, AXIS T94T02D Pendant kit, AXIS TM3814 Skin Cover Black, AXIS TM3204 Recessed Mount, AXIS TM3206 Recessed Mount, AXIS Mounts and Cabinets, AXIS Surveillance Cards
For more accessories, go to *axis.com/products/axis-m4317-plve#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*

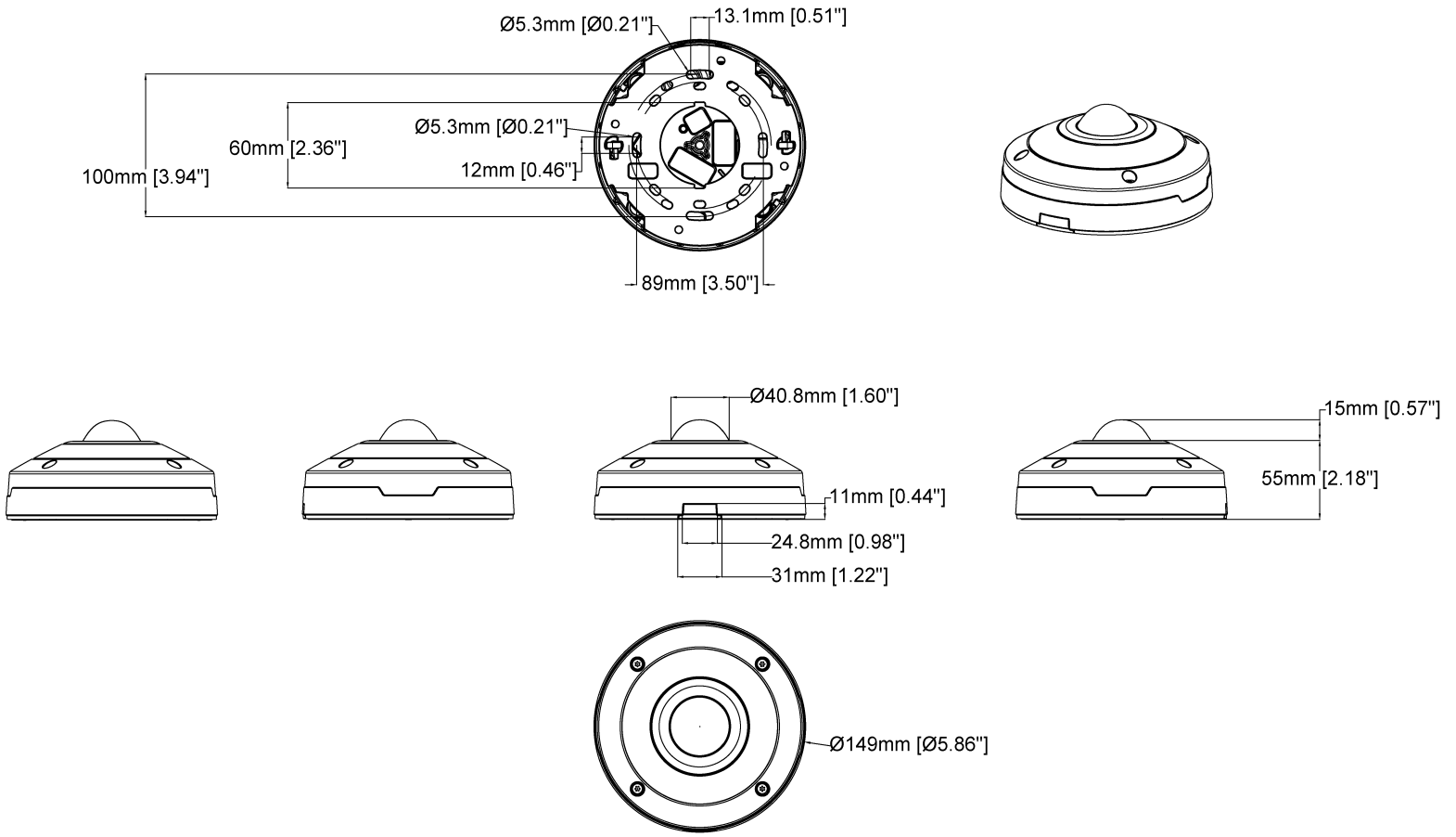
Part numbers
Available at *axis.com/products/axis-m4317-plve#part-numbers*

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 EN 63000:2018
REACH in accordance with (EC) No 1907/2006. For SCIP UUID, see *axis.com/partner.*

Materials
Renewable carbon-based plastic content: 29.6% (bio-based)
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*



AXIS M4317-PLVE Panoramic Camera

Revision	v.01	Revision date	2022-08-30
Paper size	A4	Release date	2022-08-30
Created by	MF	Scale	1:4

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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*.

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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AXIS P3747-PLVE Panoramic Camera

4x5 MP multidirectional with AI analytics

AXIS P3747-PLVE offers four channels with 5 MP per channel at 20 fps. It includes 360° IR illumination with individually controllable LEDs and a removable IR cut filter. All four sensors are fully motorized and PTRZ functionality ensures ease of installation and configuration. Plus, presets make it easy to configure multiple devices. This discreet camera can be mounted on ceilings for complete 360° coverage. Or corner mounted for 270° coverage. It supports advanced analytics on the edge. Furthermore, Axis Edge Vault, a hardware-based cybersecurity platform, safeguards the device and offers FIPS 140-2 Level 2 certified secure key storage and operations.

- > 4x5 MP at 20 fps per channel
- > Remote pan, tilt, roll, zoom (PTRZ)
- > Support for powerful analytics
- > 360° IR illumination with individually controlled LEDs
- > Built-in cybersecurity with Axis Edge Vault





AXIS P3747-PLVE Panoramic Camera

Camera

Image sensor
4x 1/2.78" progressive scan RGB CMOS
Pixel size 2.0 µm

Lens
Varifocal, 3.18–7.42 mm, F1.6–2.7
Horizontal field of view: 360° (90°–40° per sensor)
Vertical field of view: 71.5°–30°
Minimum focus distance: 1.5 m (4.9 ft)
Fixed iris, IR corrected, remote zoom and focus

Day and night
Automatic IR-cut filter

Minimum illumination
Color: 0.15 lux at 50 IRE, F1.6
B/W: 0 lux at 50 IRE, F1.6 (with IR on)

Shutter speed
5 MP
WDR on: 1/19500 s to 1 s
WDR off: 1/16000 s to 1 s
Quad HD
WDR on: 1/18000 s to 1 s
WDR off: 1/15000 s to 1 s

Camera adjustment
Pan ±180°, tilt -23° to -150°, roll +5° to -95°

System on chip (SoC)

Model
ARTPEC-8

Memory
4096 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 4x 2592x1944 (4x 5 MP) to 4x 640x480
16:9 4x 2560x1440 (4x Quad HD) to 4x 640x360

Frame rate
5 MP: Up to 20/20 fps (50/60 Hz) in all resolutions
Quad HD: Up to 25/30 fps (50/60 Hz) in all resolutions

Video streaming
Multiple, individually configurable streams in H.264, H.265 and Motion JPG
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, barrel distortion correction, compression, rotation: 0°, 90°, 180°, 270° including corridor format, mirroring, text and image overlay, dynamic text and image overlay, privacy masks, polygon privacy mask

Image processing
Axis Zipstream, Forensic WDR, Lightfinder, OptimizedIR

Audio

Input and output through portcast technology accessories or edge-to-edge pairing. For more information, see *Optional accessories* and *Edge-to-edge*.

Audio streaming
Two-way (half duplex, full duplex) via network speaker pairing technology

Network

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, 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*. 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 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
Autofocus
Video streaming indicator
IR illumination
Privacy masks
Media clip

Edge-to-edge
Speaker pairing

Event conditions
Device status: above/below/within operating temperature, IP address removed, new IP address, network lost, system ready, live stream active, casing open, shock detected
Edge storage: recording ongoing, storage disruption, storage health issues detected
I/O: manual trigger, virtual input
MQTT: stateless
Scheduled and recurring: schedule
Video: average bitrate degradation, day-night mode, tampering

Event actions
Day-night mode
Illumination: use lights, use lights while the rule is active
LEDs: flash status LED, flash status LED while the rule is active
MQTT: publish
Notification: HTTP, HTTPS, TCP and email
Overlay text
Recordings: record, record while the rule is active
Security: erase configuration
SNMP traps: send, send while the rule is active
Upload of images or video clips: FTP, SFTP, HTTP, HTTPS, network share and email
WDR mode

Built-in installation aids
Pixel counter, remote zoom and focus, level grid, barrel distortion correction, preset positions, pan-tilt-roll: designed to withstand at least 200 full movement cycles

Analytics

Applications
Included
AXIS Object Analytics, AXIS Scene Metadata, AXIS Video Motion Detection, active tampering alarm
Supported
Support for AXIS Camera Application Platform enabling installation of third-party applications, see *axis.com/acap*

Multisensor analytics
4 channels analytics support, AXIS Object Analytics

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 Scene Metadata
Object classes: humans, faces, vehicles (types: cars, buses, trucks, bikes), license plates
Object attributes: vehicle color, upper/lower clothing color, confidence, position

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).*

Approvals

Product markings
UL/cUL, CE, FCC, ICES, KC, VCCI, RCM, BSMI

Supply chain
TAA compliant

EMC
CISPR 35, CISPR 32 Class A, EN 55035,
EN 55032 Class A, EN 50121-4, 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 9835, KS C 9832 Class A
USA: FCC Part 15 Subpart B Class A
Taiwan: CNS 15936
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, RCM AS/NZS 62368.1:2022, 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,
MIL-STD-810H (Method 501.7, 502.7, 505.7 506.6, 507.6 509.7), 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: TPM 2.0 (CC EAL4+, FIPS 140-2 Level 2), 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), IEEE 802.1AR,
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
Polycarbonate hard-coated dome
Aluminum and plastic 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.*

Mounting
Mounting bracket with junction box holes (double-gang, single-gang, 4" square, and 4" octagon)
½" (M20) conduit side entry

Power
Power over Ethernet (PoE) IEEE 802.3af/802.3at Type 2 Class 4
Typical 10.8 W, max 23.7 W

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).*

Connectors
Network: Shielded RJ45 10BASE-T/100BASE-TX/1000BASE-T PoE
Audio: Audio and I/O connectivity via portcast technology

IR illumination
OptimizedIR with power-efficient, long-life 850 nm IR LEDs
Range of reach 20 m (65.6 ft) at 0 lux, 30 m (98.4 ft) at 0.1 lux

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
-40 °C to 50 °C (-40 °F to 122 °F)
Minimum temperature for PTR functionality: -30 °C (-22 °F)
Maximum temperature according to NEMA TS 2 (2.2.7): 74 °C (165 °F)
Start-up temperature: -30 °C
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.
Effective Projected Area (EPA): 0.030862 m^2 (0.33 ft^2)

Weight
3 kg (6.6 lb)

Box content
Camera, installation guide, connector guard, cable gasket, mounting plate, dome casing

Optional accessories
AXIS TP3107 Pendant Kit, AXIS TP3108-E Pendant Kit, AXIS TP3840-E Dome Casing Black, AXIS TP3841-E Dome Smoked, AXIS T90D Illuminators, AXIS T8415 Wireless Installation Tool, AXIS T6112 Mk II Audio and I/O Interface, AXIS Surveillance Cards
For more accessories, go to *axis.com/products/axis-p3747-plve#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-p3747-plve#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: 40% (recycled: 13%, bio-based: 25%, carbon capture based: 2%)
Screened for conflict minerals in accordance with OECD guidelines
To read more about sustainability at Axis, go to *axis.com/about-axis/sustainability*

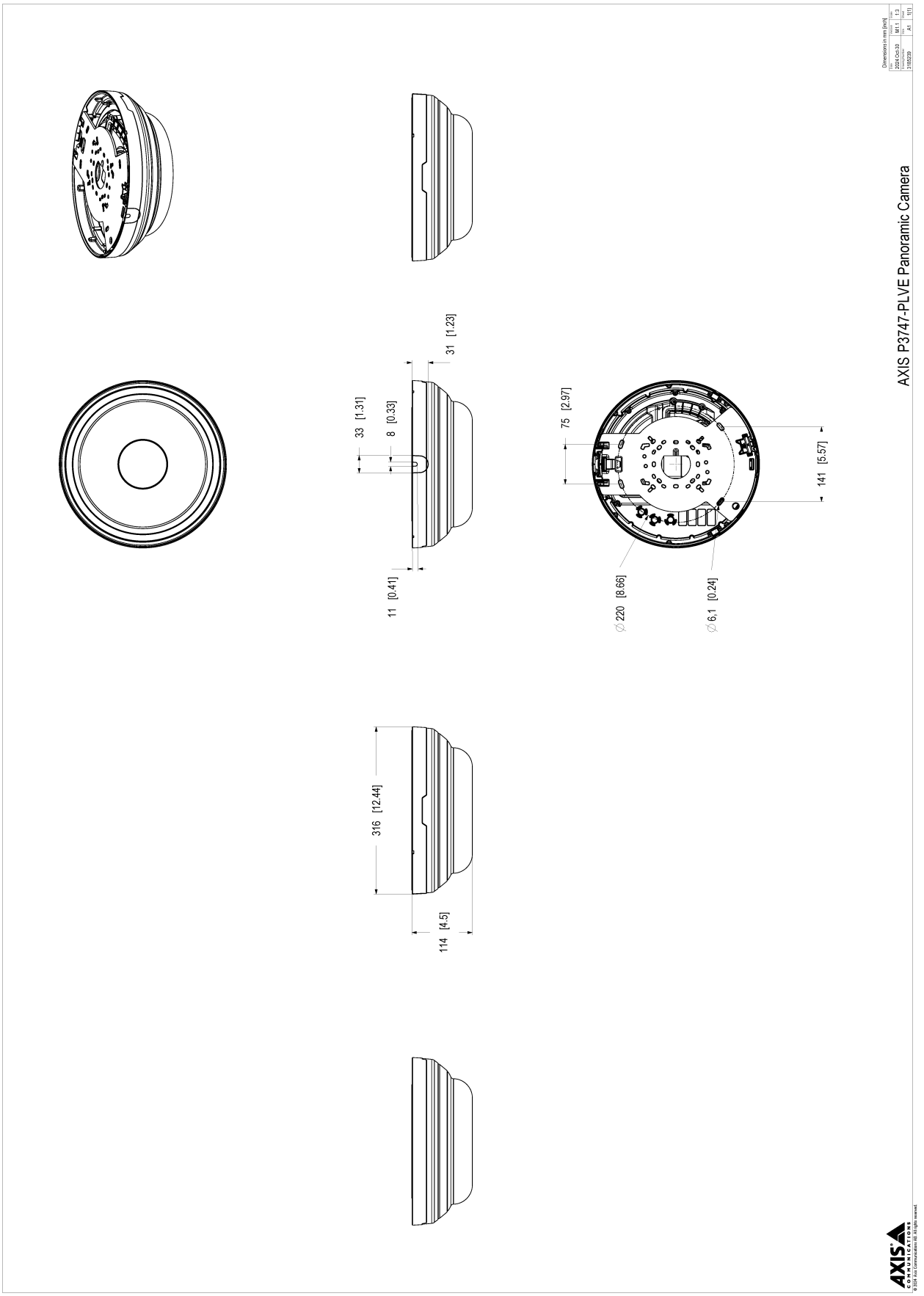
Environmental responsibility
axis.com/environmental-responsibility
Axis Communications is a signatory of the UN Global Compact, read more at *unglobalcompact.org*

Detect, Observe, Recognize, Identify (DORI)

	DORI definition	Distance (wide)	Distance (tele)
Detect	25 px/m (8 px/ft)	60.5 m (198.4 ft)	147.9 m (485.1 ft)
Observe	63 px/m (19 px/ft)	24 m (78.7 ft)	58.7 m (192.5 ft)
Recognize	125 px/m (38 px/ft)	12.1 m (39.7 ft)	29.6 m (97.1 ft)
Identify	250 px/m (76 px/ft)	6.1 m (20.0 ft)	14.8 m (48.5 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



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*.

Pan-tilt-roll-zoom (PTRZ)

PTRZ functionality includes the ability of a camera to rotate around its vertical, lateral, and longitudinal axes. The camera's focal length is adjustable to achieve a narrower or wider field of view. Thanks to the remote functionality, you can quickly adjust and readjust the camera view remotely over the network, saving time and effort. PTRZ functionality also gives you the flexibility to make future adjustments easily, ensuring less disruption, less downtime, and that no dispatched technician is needed.

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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AXIS M3088-V Dome Camera

Fixed 8 MP mini dome with deep learning

This cost-efficient mini dome features Wide Dynamic Range (WDR) to ensure clarity even when there's both dark and light areas in the scene. A deep learning processing unit enables intelligent analytics based on deep learning on the edge. Plus, AXIS Object Analytics including time in area feature lets you track whenever an object stays in a defined area longer than a user-defined time, for example, to detect loitering. This compact, easy-to-install, vandal-resistant camera comes factory focused so there's no manual focusing required. Furthermore, Axis Edge Vault protects your Axis device ID and simplifies authorization of Axis devices on your network.

- > Great image quality in 8 MP
- > Compact, discreet design
- > WDR for challenging light
- > Support for analytics with deep learning
- > Built-in cybersecurity features





AXIS M3088-V Dome Camera

Camera

Image sensor
1/2.8" progressive scan RGB CMOS

Lens
2.9 mm, F2.0
Horizontal field of view: 109°
Vertical field of view: 56°
Fixed iris, IR corrected

Day and night
Automatic IR-cut filter

Minimum illumination
Color: 0.25 lux at 50 IRE F2.0
B/W: 0.05 lux at 50 IRE F2.0

Shutter speed
1/71500 s to 1/5 s

Camera adjustment
Pan ±175°, tilt ±80°, rotation ±175°
Can be directed in any direction and see the wall/ceiling

System on chip (SoC)

Model
CV25

Memory
2048 MB RAM, 512 MB Flash

Compute capabilities
Deep learning processing unit (DLPU)

Video

Video compression
H.264 (MPEG-4 Part 10/AVC) Main and High Profiles
H.265 (MPEG-H Part 2/HEVC) Main Profile
Motion JPEG

Resolution
16:9: 3840x2160 (8 MP) to 640x360
4:3: 2592x1944 to 320x240

Frame rate
12/15 fps with power line frequency 50/60 Hz in H.264 and H.265[1]

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

WDR
WDR: Up to 120 dB depending on scene

Multi-view streaming
Up to 2 individually cropped out view areas in full frame rate

Image settings
Saturation, contrast, brightness, sharpness, white balance, day/night threshold, exposure mode, exposure zones, compression, rotation: 0°, 90°, 180°, 270° including corridor format, mirroring, dynamic text and image overlay, privacy masks

Image processing
Axis Zipstream, WDR

Pan/Tilt/Zoom
Digital PTZ

Audio

Features
Automatic gain control
10-band graphic equalizer for audio input
Voice enhancer through portcast technology
Speaker pairing

Streaming
Two-way (full duplex)

Input
Input through portcast technology

Output
Output through speaker pairing or portcast technology

1. *Reduced frame rate in Motion JPEG*

Encoding
AAC-LC 8/16/32/44.1/48 kHz, G.711 PCM 8 kHz, G.726 ADPCM 8 kHz, Opus 8/16/48 kHz, LPCM 48 kHz
Configurable bitrate

Network

Network protocols
IPv4, IPv6 USGv6, ICMPv4/ICMPv6, HTTP, HTTPS[2], HTTP/2, TLS[2], QoS Layer 3 DiffServ, FTP, SFTP, CIFS/SMB, SMTP, mDNS (Bonjour), UPnP®, SNMP v1/v2c/v3 (MIB-II), DNS/DNSv6, DDNS, NTP, PTP, NTS, RTSP, RTCP, RTP, SRTP/RTSPS, TCP, UDP, IGMPv1/v2/v3, DHCPv4/v6, SSH, 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*.
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
Privacy masks
Media clip

Edge-to-edge
Speaker pairing

Event conditions
Application
Audio: audio detection
Device status: above/below/within operating temperature, IP address blocked, IP address removed, new IP address, network lost, system ready, live stream active
Edge storage: recording ongoing, storage disruption, storage health issues detected
I/O: manual trigger, virtual input, digital input via accessories using portcast technology
MQTT: subscribe
Scheduled and recurring: schedule
Video: average bitrate degradation, tampering

Event actions
Day-night mode
LEDs: flash status LED, flash status LED while the rule is active
MQTT: publish
Notification: HTTP, HTTPS, TCP and email
Overlay text
Recordings
SNMP traps
Upload of images or video clips: FTP, SFTP, HTTP, HTTPS, network share and email
WDR mode
External output activation via accessories using portcast technology

Built-in installation aids
Pixel counter, level grid

Analytics

Applications
Included
AXIS Object Analytics, AXIS Scene Metadata, AXIS Live Privacy Shield[3], AXIS Video Motion Detection, active tampering alarm, audio detection
Supported
AXIS People Counter
Support for AXIS Camera Application Platform enabling installation of third-party applications, see *axis.com/acap*

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. *Available for download*

AXIS Object Analytics
Object classes: humans, vehicles (types: cars, buses, trucks, bikes)
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 color-coded bounding boxes, polygon include/exclude areas, perspective configuration, ONVIF motion alarm event

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
Audio data: audio level

Approvals

Product markings
CE, FCC, ICES, RCM, VCCI, BIS

Supply chain
TAA compliant

EMC
EN 55032 Class A, EN 55035, 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 9835, KS C 9832 Class A
USA: FCC Part 15 Subpart B Class A

Safety
IEC/EN/UL 62368-1, 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 IP42, IEC/EN 62262 IK08

Network
NIST SP500-267

Cybersecurity
ETSI EN 303 645, BSI IT Security Label

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)[4], IEEE 802.1AR, HTTPS/HSTS[4], TLS v1.2/v1.3[4], Network Time Security (NTS), X.509 Certificate PKI, IP address filtering

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
IP42 water- and dust-resistant (to comply with IP42, follow Installation Guide), IK08 impact-resistant, polycarbonate/ABS casing
Encapsulated electronics
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 2
Typical 3.6 W, max 4.2 W

Connectors
Network: Shielded RJ45 10BASE-T/100BASE-TX PoE
Audio: Audio and I/O connectivity via portcast technology

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).*

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: 0 °C to 40 °C (32 °F to 104 °F)
Humidity: 10–85% RH (non-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.

Weight
150 g (0.33 lb)

Box content
Camera, installation guide

Optional accessories
AXIS TM3812 Tamper Cover
AXIS T61 Audio and I/O Interface Series
Black casing
Smoked dome
AXIS Surveillance microSDXC™ Card
For more accessories, go to *axis.com/products/axis-m3088-v#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-m3088-v#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 EN 63000:2018
REACH in accordance with (EC) No 1907/2006. For SCIP UUID, see *echa.europa.eu*

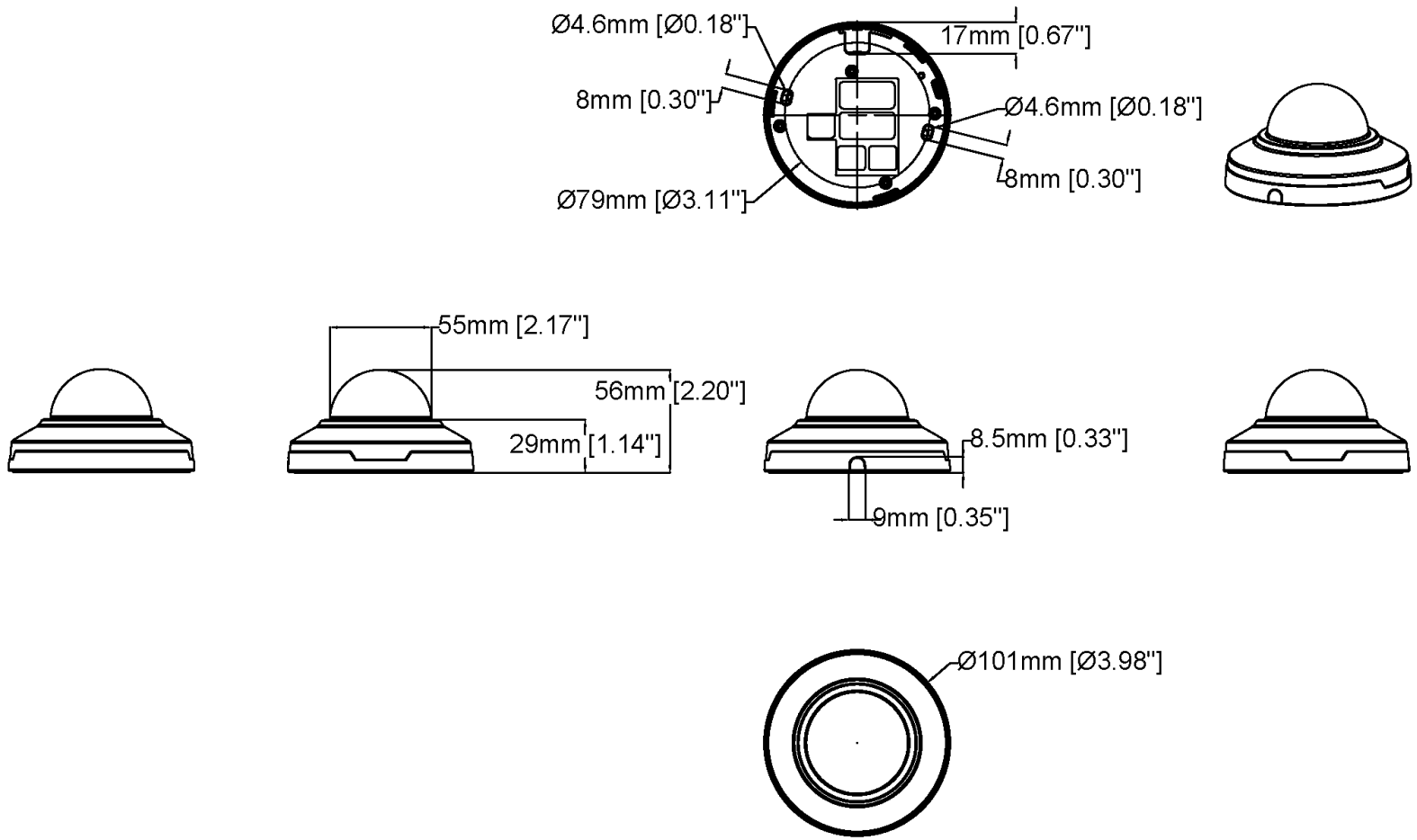
Materials
Renewable carbon-based plastic content: 57% (recycled)
Screened for conflict minerals in accordance with OECD guidelines
To read more about sustainability at Axis, go to *axis.com/about-axis/sustainability*

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
Detect	25 px/m (8 px/ft)	82.9 m (271.9 ft)
Observe	63 px/m (19 px/ft)	32.9 m (107.9 ft)
Recognize	125 px/m (38 px/ft)	16.6 m (54.4 ft)
Identify	250 px/m (76 px/ft)	8.3 m (27.2 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.



AXIS M3088-V Dome Camera

Revision	v.01	Revision date	2021-12-17
Paper size	A4	Release date	2021-12-17
Created by	MF	Scale	1:3

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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*.

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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AXIS P3827-PVE Panoramic Camera

True to life, 180° coverage, no blind spots

With 7 MP resolution and seamless stitching of all four images, this multisensor camera offers complete coverage and excellent image quality with incredible details up to 30 fps. It delivers 180° horizontal and 90° vertical coverage with no blind spots. Plus, it's possible to mount two cameras back-to-back for a complete 360° overview. Including horizon straightening, this product will give an excellent viewing experience, enabling to set the horizon in the image. Built on ARTPEC-8, this cost-effective camera supports advanced analytics based on deep learning on the edge. Additionally, built-in cybersecurity features prevent unauthorized access and safeguard your system.

- > 7 MP multisensor camera with one IP address
- > 180° horizontal, 90° vertical coverage
- > Seamlessly stitched realistic images
- > Support for advanced analytics
- > Horizon straightening



AXIS P3827-PVE Panoramic Camera

Camera

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

Lens
Fixed 3.3 mm, F2.0
Horizontal field of view: 180°
Vertical field of view: 90°

Day and night
Automatic IR-cut filter
Hybrid IR filter

Minimum illumination
Color: 0.15 lux at 50 IRE, F2.0
B/W: 0.05 lux at 50 IRE, F2.0

Shutter speed
1/31500 s to 1.5 s

Camera adjustment
Pan ±180°
Tilt 0° to 50°
Roll ±5°

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
3712x1856 to 640x320

Frame rate
Up to 25/30 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

Multi-view streaming
Up to 8 individually cropped out view areas

Noise reduction
Spatial filter (2D noise reduction)
Temporal filter (3D noise reduction)

Image settings
Horizon straightening, saturation, contrast, brightness, sharpness, white balance, day/night threshold, local contrast, tone mapping, exposure mode, compression, dynamic text and image overlay, polygon privacy masks

Image processing
Axis Zipstream, Forensic WDR, Lightfinder

Pan/Tilt/Zoom
Digital PTZ

Audio

Audio features
AGC automatic gain control
Network speaker pairing

1. *We recommend a maximum of 3 unique video streams 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.*

Audio streaming
Configurable duplex:
One-way (simplex, half duplex)
Two-way (half duplex, full duplex)

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

Audio output
Output via network speaker pairing

Audio encoding
24bit LPCM, AAC-LC 8/16/32/48 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[2], HTTP/2, TLS[2], 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, 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*.
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
Privacy masks
Media clip

Event conditions
Device status: above operating temperature, above or below operating temperature, below operating temperature, within operating temperature, IP address removed, new IP address, network lost, system ready, ring power overcurrent protection, live stream active, casing open
Digital audio input status
Edge storage: recording ongoing, storage disruption, storage health issues detected
I/O: digital input, manual trigger, virtual input
MQTT: subscribe
Scheduled and recurring: schedule
Video: average bitrate degradation, day-night mode, live stream, tampering

Event actions
Audio clips: play, stop
Day-night mode
I/O: toggle I/O once, toggle I/O while the rule is active
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
Upload of images or video clips: FTP, SFTP, HTTP, HTTPS, network share and email

Built-in installation aids
Pixel counter, level grid

Analytics

Applications
Included
AXIS Object Analytics, AXIS Scene Metadata, AXIS Video Motion Detection, active tampering alarm, audio detection
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
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

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).*

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
CSA, UL/cUL, BIS,UKCA, CE, KC, EAC, VCCI, RCM

Supply chain
TAA compliant

EMC
CISPR 35, CISPR 32 Class A, EN 55035,
EN 55032 Class A, EN 50121-4, EN 61000-6-1,
EN 61000-6-2, IEC 62236-4
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

Safety
CAN/CSA C22.2 No. 62368-1 ed. 3,
IEC/EN/UL 62368-1 ed. 3, 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/IP67, IEC/EN 62262 IK10,
NEMA 250 Type 4X, NEMA TS 2 (2.2.7-2.2.9),
MIL-STD-810H (Method 501.7, 502.7, 505.7, 506.6,
507.6, 509.7, 512.6)

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), AES-XTS-Plain64 256bit SD card encryption
Hardware: Secure boot, Axis Edge Vault with Axis device ID, signed video, secure keystore (CC EAL4+, FIPS 140-2 level 2 certified hardware protection of cryptographic operations and keys)

Network security
IEEE 802.1X (EAP-TLS, PEAP-MSCHAPv2)[3],
IEEE 802.1AE (MACsec PSK/EAP-TLS), IEEE 802.1AR,
HTTPS/HSTS[3], TLS v1.2/v1.3[3], 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/IP67-, NEMA 4X- and IK10-rated aluminum casing
Polycarbonate hard-coated 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*.

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

Power
Power over Ethernet (PoE) IEEE 802.3at Type 2 Class 4
Typical 12 W, max 18 W

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).*

Connectors
Network: Shielded RJ45 10BASE-T/100BASE-TX/1000BASE-T PoE
I/O: Terminal block for two configurable supervised inputs / digital outputs (12 V DC output, max load 50 mA)
Audio: 3.5 mm analog/digital mic/line in

Storage
Support for microSD/microSDHC/microSDXC card
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)
Start-up temperature: -40 °C
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: 169 mm(6.7 in)
ø 195 mm (7.7 in)
Effective Projected Area (EPA): 0.025 m^2 (0.27 ft^2)

Weight
2300 g (5.1 lb)

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

Optional accessories
AXIS T8415 Wireless Installation Tool
AXIS Surveillance Cards
AXIS TQ3102 Pendant Kit
AXIS TQ3101-E Pendant Kit
AXIS TQ3201-E Recessed Mount
AXIS T94V01C Dual Camera Mount
For more accessories, go to *axis.com/products/axis-p3827-pve#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

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

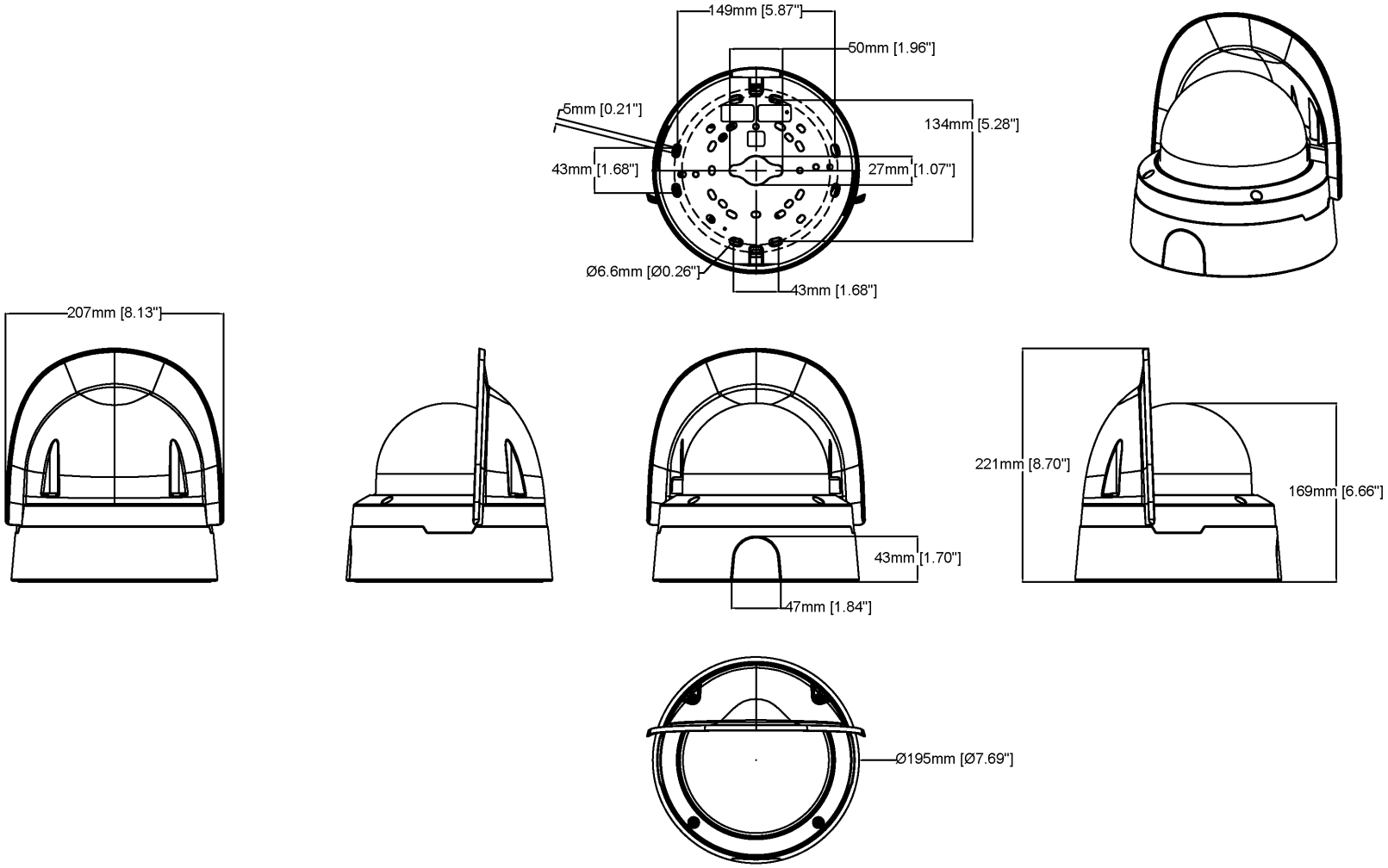
Part numbers
Available at *axis.com/products/axis-p3827-pve#part-numbers*

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 EN 63000:2018
REACH in accordance with (EC) No 1907/2006. For SCIP UUID, see *axis.com/partner.*

Materials
Renewable carbon-based plastic content: 19% (biobased)
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*



AXIS P3827-PVE Panoramic Camera

Revision	v.01	Revision date	2023-02-13
Paper size	A4	Release date	2022-04-01
Created by	MF	Scale	1:5

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Highlighted capabilities

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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.

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.

Horizon straightening

Horizon straightening is a feature in panoramic multisensor cameras that compensates for any physical tilt of the camera, thereby removing distortion and enabling the horizon to be straight even though it is not in the middle of the image. All objects and lines that are vertical in real life stay vertical also in the image.

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*.

For more information, see *axis.com/glossary*

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