

4MP ePoE Starlight+ Network Dome Camera

True Wide Dynamic Range Vari-focal Network Camera with Analytics+



- 1/1.8-in. 4 MP Progressive-scan CMOS Sensor
- Triple-stream Encoding
- Smart H.265+ and Smart H.264+ Dual Codec
- 4 MP (2688 x 1520) at 30 fps, 2.7 mm to 12 mm Motorized Vari-focal Lens
- Enhanced Power and Data Transmission Distances (ePoE)
- Starlight+ Technology for Low-light Applications
- Analytics+ Functions — Face Capture, Facial Attribute Extraction, People Counting, and Perimeter Protection
- True Wide Dynamic Range (120 dB) and Day/Night IR Cut Filter
- Maximum IR LED Distance 45 m (147.64 ft)
- IP67 Ingress Protection and IK10 Vandal Resistance
- Intelligent Video System
- Five-year Warranty*



System Overview

The Dahua 4 MP Starlight+ ePoE camera offers Analytics+ functions at the edge — performing complex real-time face capture, people counting, and perimeter protection surveillance. The Dahua Analytics+ algorithms significantly improve accuracy and reliability as compared to standard intelligent features. The camera is ideal for a host of diverse applications — Starlight+, True Wide Dynamic Range, and Smart IR technologies allow the camera to operate in any lighting condition and the IP67 and IK10 rating make the camera suitable for the harshest environments.

Functions

Face Capture

Dahua Analytics+ with Face Capture technology automatically captures faces from a digital image or from a video frame. The camera employs advanced algorithms to locate faces quickly and accurately from the source video and then captures the facial image.

Facial Attributes

Once the camera captures a facial image, it analyzes the face and extracts six attributes — age, gender, expression, and whether the target face wears glasses, wears a mask, or sports facial hair.

People Counting

The camera uses complex real-time people counting algorithms to deliver accurate flow statistics from two distinct people counting functions, Line Crossing and Regional. The line crossing function counts the number of people crossing a defined line, and the regional function counts the number of people in a distinct, user-defined area. People counting is ideal for measuring the number of customers entering or exiting a location and to monitor groups of people in a distinct location.

Perimeter Protection

Dahua Analytics+ includes Tripwire and Intrusion functions that offer custom tripwires based on object type for automation in limited access areas. Perimeter Protection requires less pixels to detect an object to deliver improved accuracy and decreased false alarms due to lights, weather, trees, or animals.

Enhanced Power over Ethernet (ePoE) Technology

Dahua's innovative ePoE technology offers a plug-and-play solution to transmit power and data over long distances via Ethernet or coaxial cables, reducing installation time and saving money. ePoE technology is a viable, cost-effective solution for extending transmission distances and for converting existing, coax-based analog systems into IP systems. For video security and surveillance installers, ePoE technology saves time and money by reducing overall cabling requirements, allowing for existing coax cable to be used, and minimizing the number of peripheral devices needed. For new installations, ePoE offers the ability to design long-distance applications without the need for additional repeaters.

Starlight Technology

For challenging low-light applications, Dahua's Starlight Ultra-low Light Technology offers best-in-class light sensitivity, capturing color details in low light conditions. The camera uses a set of optical features to balance light throughout the scene, resulting in clear images in dark environments.

Smart H.265+

Smart H.265+ is the optimized implementation of the H.265 codec that uses a scene-adaptive encoding strategy, dynamic GOP, dynamic ROI, flexible multi-frame reference structure and intelligent noise reduction to deliver high-quality video without straining the network. Smart H.265+ technology reduces bit rate and storage requirements by up to 70% when compared to standard H.265 video compression.

Environmental

Dahua cameras operate in extreme temperature environments, rated for use in temperatures from -40°C to $+60^{\circ}\text{C}$ (-40°F to $+140^{\circ}\text{F}$). The camera complies with an IK10 impact rating making it capable of withstanding the equivalent of 5 kg (11.02 lbs) of force dropped from a height of 40 cm (15.75 in.). Subjected to rigorous dust and water immersion tests and certified to the IP67 Ingress Protection rating makes it suitable for demanding outdoor applications.



Technical Specification						
Camera						
Image Sensor		1/1.8-in. 4 MP CMOS				
Effective Pixels		2688(H) x 1520(V)				
RAM/ROM		1 GB / 128 MB				
Scanning System		Progressive				
Electronic Shutter Speed		Auto, Manual, 1/3 s to 1/100,000 s				
Minimum Illumination		Color: 0.0024 lux at F1.8 (1/3 s, 30 IRE) Color: 0.029 lux at F1.8 (1/30 s, 30 IRE) 0 lux at F1.8 (with IR on)				
S/N Ratio		Greater than 56 dB				
IR Distance		Distance up to 45.0 m (147.64 ft)				
IR On/Off Control		Auto, Manual				
IR LEDs		Three (3)				
Lens						
Lens Type		Motorized				
Mount Type		Board-in				
Focal Length		2.7 mm to 12 mm				
Max. Aperture		F1.8				
Angle of View		Horizontal: 114° to 47° Vertical: 62° to 26°				
Optical Zoom		4.4x				
Aperture Control		Auto				
Close Focus Distance		1.20 m (3.94 ft)				
DORI Distance¹	Lens	Detect (8 ppf)	Observe (19 ppf)	Recognize (38 ppf)	Identify (76 ppf)	
	Wide	58 m (190 ft)	23 m (75 ft)	12 m (39 ft)	6 m (20 ft)	
	Telephoto	131 m (430 ft)	52 m (171 ft)	26 m (85 ft)	13 m (43 ft)	
Installation Angle						
Range		Pan: 0° to 355°; Tilt: 0° to 65°; Rotation: 0° to 355°				
Video						
Compression		Smart H.265+, H.265, Smart H.264+, H.264, H.264B, H.264H, MJPEG (sub stream only)				
Streaming Capability		Three (3) Streams				
Resolution		4 MP (2688 x 1520), 3 MP (2304 x 1296), 1080p (1920 x 1080), 1.3 MP (1280 x 960), 720p (1280 x 720), D1 (704 x 480), VGA (640 x 480), CIF (352 x 240)				
Frame Rate		Main Stream:4 MP (2688 x 1520) at 30 fps				
		Sub Stream 1: D1 at 30 fps				
		Sub Stream 2: 1080p at 11 fps				
Bit Rate Control		CBR/VBR				
Bit Rate		H.264: 32 Kbps to 8192 Kbps H.265: 19 Kbps to 8192 Kbps				
Day/Night		Auto (ICR), Color, B/W				
BLC Mode		BLC, HLC, True WDR (120 dB), SSA				

1. The DORI distance is a measure of the general proximity for a specific classification to help pinpoint the right camera for your needs. The DORI distance is calculated based on sensor specifications and lab test results according to EN 62676-4 , the standard that defines the criteria for the Detect, Observe, Recognize and Identify classifications.

White Balance		Auto, Natural, Street Lamp, Outdoor, Manual, Regional Custom
Gain Control		Auto, Manual, Gain Priority, Shutter Priority
Noise Reduction		3D DNR
Motion Detection		Off, On (4 Zones, Rectangular)
Region of Interest		Off, On (4 Zones)
Advanced Features		Electronic Image Stabilization (EIS), Smart IR, Defog
Flip		0°, 90°, 180°, 270°
Mirror		Off, On
Privacy Masking		Off, On (4 Areas, Rectangular)
Audio		
Compression		G.711a, G.711Mu, AAC, G.726, G.723
Network		
Ethernet		RJ-45 (10/100 Base-T)
Protocol		HTTP, HTTPS, TCP, ARP, RTSP, RTP, UDP, SMTP, FTP, DHCP, DNS, DDNS, PPPOE, IPv4/v6, QoS, UPnP, NTP, ICMP, IGMP, 802.1x
Interoperability		ONVIF Profile S and G, CGI, Milestone, Genetec, P2P
Streaming Method		Unicast / Multicast
Maximum User Access		20 Users
Edge Storage		Network Attached Storage (NAS) FTP Micro SD Slot, maximum 256 GB
Web Viewer		IE (Version 8 and higher), Chrome, Firefox, Safari (Version 12 and higher)
Management Software		SmartPSS, DSS, P2P
Mobile Operating System		IOS, Android
Certifications		
Safety		UL60950-1 CAN/CSA C22.2 No.60950-1-07 EN60950-1
Electromagnetic Compatibility (EMC)		FCC CFR 47 Part 15 Subpart B Electromagnetic Compatibility Directive 2014/30/EU
Interface		
Video		One (1) Port, for adjustment only
Audio		Input: One (1) Channel Output: One (1) Channel
Alarm		Input: One (1) Channel (5 mA, 5 VDC) Output: One (1) Channel (300 mA, 12 VDC)
Electrical		
Power Supply		12 VDC, 24 VAC, or PoE+ (IEEE 802.3at, Class 4)
Power Consumption	12 VDC	Standard: 4.9 W with IR ON: 18.7 W with heater ON: 15.5 W
	24 VAC	Standard: 5.1 W with IR ON: 17.6 W with heater ON: 14.7 W
	PoE+	Standard: 5.2 W with IR ON: 16.8 W with heater ON: 13.5 W

Environmental

Operating Conditions	−40° C to +60° C (−40° F to +140° F), 10% to 95% RH
Storage Conditions	+5° C to +40° C (41° F to +104° F), 10% to 95% RH (daily temperature difference within 15° C/59° F)
Ingress Protection	IP67
Vandal Resistance	IK10

Construction

Casing	Metal and Plastic
Dimensions	ø159.10 mm x 117.90 mm (6.26 in. x 4.64 in.)
Net Weight	0.95 kg (2.09 lb)
Gross Weight	1.20 kg (2.65 lb)

Analytics+ Functions²

Face Capture with Facial Attribute Extraction	<ul style="list-style-type: none">• Captures faces from video image and extracts the following facial features: Age Gender Expression (Happy, Calm, Surprise, Sad, Rage) Wearing Glasses Wearing a Mask Facial Hair
People Counting	<ul style="list-style-type: none">• Delivers accurate flow statistics from the following methods: Line Crossing: counts a person as they cross a threshold in a defined direction. Region: counts the number of people in a defined area.• Counts people simultaneously from one (1) threshold line and one (1) defined region.
Perimeter Protection	<ul style="list-style-type: none">• Detects human or vehicle violations using the following methods: Tripwire: a target crosses a defined line. Intrusion: a target enters or exits a defined perimeter.• Monitors a combination of ten (10) detection methods.• Search and retrieve video based on target type.

Intelligent Video System Functions²

IVS triggers an alarm and takes a defined action for the following events:	
Standard Features	<ul style="list-style-type: none">• Tampering with the camera.• Error writing to an onboard Micro SD card.• Error sending or receiving data over the network.• Unauthorized access to the camera.• IP Address Conflict
Premium Features	
Motion	An object moves through any part of the scene.
Scene Change	A person or object moves the camera to change the scene or covers the camera to obscure the scene.
Abandoned/Missing Object	A target leaves an object in designated area, or a target removes an object from the same designated area.
Advanced Features	
Facial Detection	Detects and captures a snapshot of a human face in a defined area within a scene.

2. The Face Capture, Perimeter Protection, and IVS functions cannot be used at the same time, only one Analytics+ or IVS function can be used at a time. In addition, the Smart H.265+ and the Smart H.264+ cannot be used simultaneously with either an Analytics+ or an IVS feature.

ePoE Transmission Distances

Via CAT5E/CAT6 Ethernet Cable

ePoE supply voltage 48 V
Maximum DC resistance < 10 Ω/100 m

Cable Length, m (ft)	Bandwidth, Mbps	PoE Load Capacity, W	Hi-PoE Load Capacity, W	Working Mode
100 (328)	100	25.5	53	IEEE/E100
200 (656)	100	25.5	33	E100
300 (984)	100	19	19	E100
400 (1312)	10	17	17	E10
500 (1640)	10	13	13	E10
800 (2625)	10	7	7	E10

Via CAT5E/CAT6 Ethernet Cable

ePoE supply voltage 53 V
Maximum DC resistance < 10 Ω/100 m

Cable Length, m (ft)	Bandwidth, Mbps	PoE Load Capacity, W	Hi-PoE Load Capacity, W	Working Mode
100 (328)	100	25.5	53	IEEE/E100
200 (656)	100	25.5	47	E100
300 (984)	100	25.5	32	E100
400 (1312)	10	23	26	E10
500 (1640)	10	20	20	E10
800 (2625)	10	13	13	E10

Via RG-59 Coaxial Cable

ePoE supply voltage 48 V
Maximum DC resistance < 5 Ω/100 m

Cable Length, m (ft)	Bandwidth, Mbps	PoE Load Capacity, W	Hi-PoE Load Capacity, W	Working Mode
100 (328)	100	25.5	50	IEEE/E100
200 (656)	100	25.5	30	E100
300 (984)	100	18	18	E100
400 (1312)	100	15	15	E100
500 (1640)	10	12	12	E10
800 (2625)	10	6	6	E10
1000 (3281)	10	5	5	E10

Via RG-59 Coaxial Cable

ePoE supply voltage 53 V
Maximum DC resistance < 5 Ω/100 m

Cable Length, m (ft)	Bandwidth, Mbps	PoE Load Capacity, W	Hi-PoE Load Capacity, W	Working Mode
100 (328)	100	25.5	52	IEEE/E100
200 (656)	100	25.5	48	E100
300 (984)	100	25.5	30	E100
400 (1312)	100	20	23	E100
500 (1640)	10	16	16	E10
800 (2625)	10	10	10	E10
1000 (3281)	10	8	8	E10

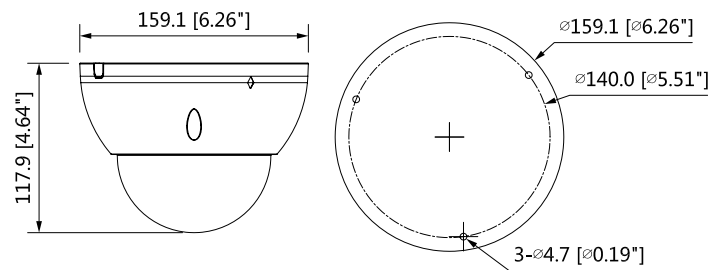


Ordering Information

Type	Part Number	Description
Analytics+ Camera	N45DL7Z	4 MP ePoE Starlight+ Vari-focal Dome Camera
Mounting Accessories, optional	PFA101	Mount Adapter
	PFA138	Junction Box
	PFA151	Corner Mount (for use with PFA138 junction box)
	PFA152-E	Pole Mount (for use with PFB210W wall mount)
	DH-PFB201C	In-ceiling Mount
	PFB210W	Wall Mount
	PFB300C	Ceiling Mount (for use with PFA101 mount adapter)
	PFB302S	Wall Mount (for use with PFA101 mount adapter)
ePoE Accessories, optional	DH-PFM321D-US	12 VDC, 1 A Power Adapter
	LR1002	EoC Passive Converter
	LR1002-1EC	Single-port EoC Receiver

In-ceiling Mount PFB201C	Junction Mount PFA138	Pole Mount PFB210W + PFA152-E
Ceiling Mount PFA101 + PFB300C	Wall Mount PFB210W	

Dimensions



Accessories

Optional:

PFA101
Mount AdapterPFA138
Junction BoxPFA151
Corner MountPFA152-E
Pole MountDH-PFB201C
In-ceiling MountPFB210W
Wall MountPFB300C
Ceiling MountPFB302S
Wall MountDH-PFM321D-US
Power AdapterLR1002
EoC Passive
ConverterLR1002-1EC
Single-port EoC
Receiver