alhua TECHNOLOGY

4K IR Vari-focal ePoE Network Bullet

Starlight+ True Wide Dynamic Range with WizMind Analytics

- 1/1.8-in. 8MP Progressive-scan CMOS Sensor
- Triple-stream Encoding
- AI Coding, Smart H.265+, and Smart H.264+ Video Compression
- 8MP (3840 x 2160) at 30 fps
- 8 mm to 32 mm Motorized Optical Zoom Lens
- Analytics+ Functions — Perimeter Protection, People Counting, Face Detection, Smart Motion Detection+
- Enhanced Power and Data Transmission Distances (ePoE)
- Starlight+ Technology for Low-light Applications
- IP67 Ingress Protection and IK10 Vandal Resistance
- True Wide Dynamic Range (120 dB) and True Day/Night (ICR)
- Maximum IR LED Distance 120 m (393.70 ft)
- Five-year Warranty*

WizMind

ePoE

WizMind Series devices offer Dahua Analytics+ functions for comprehensive, human-oriented analytic solutions. WizMind Series products are ideal for complex applications with demanding requirements that need advanced analytic capabilities.

| 8Mp | Face Detection | Face Attributes | Perimeter Protection | People Counting | Starlight+ |

AI Coding
The AI Coding function puts recording emphasis on human or vehicular objects in the video scene. This technology, based on constant bit rate (CBR), dynamically allocates increased bit rate to the target object while reducing the bit rate allocated to background objects. AI Coding reduces bit rate and storage requirements by up to 50% when compared to the H.265 video compression standard.

System Overview

The 4K bullet camera features an advanced 1/1.8-in. progressive-scan imager with an 8 mm to 32 mm long-range vari-focal lens. The camera offers True Wide Dynamic Range, a True Day/Night IR Cut filter, IP67 Ingress Protection and operation in extreme temperatures to deliver superior images in most environmental conditions. The camera is a component of Dahua's innovative Enhanced Power over Ethernet (ePoE) system that transmits power and data over long distances without the need for repeaters or multiple switches.

True Wide Dynamic Range (WDR)
The camera achieves vivid images, even in the most intense contrast lighting conditions, using industry-leading wide dynamic range (WDR) technology. For applications with both bright and low lighting conditions that change quickly, True WDR (120 dB) optimizes both the bright and dark areas of a scene at the same time to provide usable video.

Functions

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.

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

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 security 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.

Cybersecurity
Dahua network cameras are equipped with a series of key cybersecurity technologies including: security authentication and authorization, access control, trusted protection, encrypted transmission, and encrypted storage. These technologies improve the camera's ability to prevent malicious access and to protect data.

Environmental
The camera complies with the 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 and certified to rigorous dust and water immersion tests, the IP67 rating makes it suitable for demanding outdoor applications.

Technical Specification

Camera

Image Sensor	1/1.8-in. 8MP Progressive-scan CMOS
Effective Pixels	3840(H) x 2160(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: 0.004 lux at F1.4 (30 IRE) B/W: 0.0004 lux at F1.4 (30 IRE) 0 lux at F1.4 (IR on)
S/N Ratio	Less Than 56 dB
IR Distance	Distance up to 120.0 m (393.70 ft)
IR On/Off Control	Auto, Manual, Zoom Priority
IR LEDs	Four (4)

Lens

Lens Type	Motorized, Vari-focal
Mount Type	Module
Focal Length	8 mm to 32 mm
Aperture	F1.4
Angle of View	Horizontal: 42.0° to 14.90° Vertical: 23.30° to 8.60° Diagonal: 48.50° to 16.90°
Iris Control	Automatic
Close Focus Distance	Wide: 3.0 m (9.84 ft) Tele: 5.50 m (18.04 ft)

DORI[1] Distance	Lens	Detect	Observe	Recognize	Identify
	Wide	213.6 m (700.8 ft)	85.4 m (280.2 ft)	42.7 m (140.1 ft)	21.4 m (70.2 ft)
	Tele	572.8 m (1879.3 ft)	229.1 m (751.6 ft)	114.6 m (376.0 ft)	70.2 m (188.0 ft)

Installation Angle

Range	Pan: 0° to 360° Tilt: 0° to 90° Rotation: 0° to 360°

Video

Compression	AI Coding, Smart H.265+, H.265, Smart H.264+, H.264, H.264H, H.264B, MJPEG (sub stream only)
Streaming Capability	Three (3) Streams
Resolution	8MP (3840 x 2160), 6MP (3072 x 2048), 5MP (3072 x 1728), 5MP (2592 x 1944), 4MP (2688 x 1520), 2048 x 1536, 3MP (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[2]	Main Stream: 8MP at 30 fps
	Sub Stream 1: 720p at 30 fps
	Sub Stream 2: 1080p at 30 fps
Bit Rate Control	CBR/VBR
Bit Rate	H.264: 3 kbps to 20480 kbps H.265: 3 kbps to 20480 kbps

Day/Night	Auto (ICR), Color, B/W
BLC Mode	BLC, HLC, WDR (120 dB), SSA
White Balance	Auto, Natural, Street Lamp, Outdoor, Manual, Regional
Gain Control	Auto, Manual, Gain Priority, Shutter Priority, Aperture Priority
Noise Reduction	3D NR
Motion Detection	Off, On (4 Zones, Rectangular)
Region of Interest	Off, On (4 Zones)
Advanced Functions	Smart IR, Defog, Electronic Image Stabilization (EIS)
Optical Zoom	4x
Flip	0°, 90°, 180°, 270° (Supports 90°, 270° at 4 MP resolution or lower)
Mirror	Off, On
Privacy Masking	Off, On (8 Areas, Rectangular)

Audio

Compression	PCM; G.711a; G.711Mu; G.726; G.723

Network

Ethernet	RJ-45 (10/100 Base-T)
Protocol	IPv4; IPv6; HTTP; HTTPS; TCP; UDP; ARP; RTP; RTSP; RTCP; RTMP; SMTP; FTP; SFTP; DHCP; DNS; DDNS; QoS; UPnP; NTP; Multicast; ICMP; IGMP; NFS; SAMBA; PPPoE; 802.1x; SNMP
Interoperability	ONVIF (Profile S, Profile G, Profile T); CGI; P2P
Streaming Method	Unicast / Multicast
Maximum User Access	20 Users (Total Bandwidth 80 Mbps)
Edge Storage	Network Attached Storage (NAS), FTP, SFTP Micro SD Slot, maximum 256 GB
Web Viewer	IE, Chrome, Firefox
Management Software	DSS, DMSS
Mobile Operating System	IOS, Android
Cybersecurity	Video Encryption, Firmware Encryption, Configuration Encryption, Digest, WSSE, Account Lockout, Security Logs, IP/MAC Filtering, Generating and Importing X.509 Certification, Syslog, HTTPS, 802.1x, Trusted Boot, Trusted Execution, Trusted Upgrade

Certifications

Safety	UL60950-1, CAN/CSA C22.2 No.60950-1-07, EN62368-1
Electromagnetic Compatibility (EMC)	47 CFR FCC Part 15 Subpart B Electromagnetic Compatibility Directive 2014/30/EU

Interface

Audio	Input: One (1) Channel, RCA Output: One (1) Channel, RCA
Alarm	Input: Two (2) Channels (5 mA, 3 VDC to 5 VDC) Output: One (1) Channel (300 mA, 12 VDC) Output: Two (2) Channels (1000 mA, 30 VDC; 500 mA, 50 VDC)

Electrical

Power Supply	12 VDC (±30%), PoE (IEEE802.3af Class 0), ePoE	
Power Consumption	Basic	12 VDC: 6.4 W / PoE: 6.9 W
	Maximum	12 VDC: 7.7 W / PoE: 7.9 W

Environmental

Operating Temperature	−30° C to +60° C (−22° F to +140° F) Less than 95% RH
Storage Temperature	−30° C to +60° C (−22° F to +140° F) Less than 95% RH
Ingress Protection	IP67
Vandal Resistance	IK10

Construction

Casing	Metal, Plastic
Dimensions	273.20 mm x 95.0 mm x 95.0 mm (10.76 in. x 3.74 in. x 3.74 in.)
Net Weight	1.11 kg (2.44 lbs)
Gross Weight	1.51 kg (3.33 lbs)

Analytics+ Functions[3]

Perimeter Protection	• 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 detection methods. • Search and retrieve video based on target type.
People Counting	• 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 four (4) threshold lines and four (4) defined regions[3].
Queue Management	• Monitors four (4) user-defined regions where people wait in line (or queue). Issues an alarm for the following triggers: **People in Line:** the number of people in line exceeds a minimum threshold. **Wait Time:** time a person waits in line is greater than the minimum queue time.
Face Detection	• Detects and captures a snapshot of a human face within a scene.
Smart Object Detection	• Monitors for an **abandoned object** offering two functions: **Object-only**: issues an alarm when an object remains stationary for a set time. **People/Object**: issues an alarm when an object is separated from a person. • Monitors for a **missing object**. Issues an alarm if an object is moved from its original position.
Smart Schedule	• Configure up to six (6) different Smart Plans for use at different time periods.
Smart Motion Detection+	• Differentiates between and classifies human and vehicle objects. • Filters false alarms due to leaves, lights, animals, and other inconsequential objects. • Extracts human or vehicle objects from recorded video for quick target search and retrieval.

Recommended Detection Distance		Human	Vehicle
	Wide	Up to 41.0 m (134.51 ft)	Up to 84.0 m (275.60 ft)
	Telephoto	Up to 10.0 m (32.81 ft)	Up to 12.0 m (39.37 ft)

Intelligence

IVS triggers an alarm and takes a defined action for the following events:

Standard Features	• 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.

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

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.
2. The video frame rates listed are the maximum rates for each stream. The actual video rates are subjected to the total encoding capacity.
3. Pair a Smart Motion Detection camera with a Dahua recording device that also offers SMD functionality to take advantage of SMD alarm filtering and object classification when searching and playing back recorded video.

Ordering Information

Type	Part Number	Description
4K Network Camera	DH-IPC-HFW5842EN-Z4E-S2	8MP IR ePoE, Vari-focal Bullet Network Camera, WizMind
Mounting Accessories, optional	PFA121	Junction Box
	PFA140	Waterproof Power Box
	DH-PFA143	Outdoor Junction Box
	PFA151	Corner Mount
	PFA152-E	Pole Mount
	DH-PFM321D-US	12 VDC, 1 A Power Adapter
	DH-PFA153	Heavy-duty Pole Mount
ePoE Accessories, optional	LR1002	EoC Passive Converter
	LR1002-1EC	Single-port EoC Receiver

Accessories

Optional:

PFA121 Junction Box

PFA140 Waterproof Power Box

DH-PFA143 Outdoor Junction Box

PFA152-E Pole Mount

PFA151 Corner Mount

DH-PFM321D-US Power Adapter

LR1002 EoC Passive Converter

LR1002-1EC Single-port EoC Receiver

DH-PFA153 Heavy-duty Pole Mount
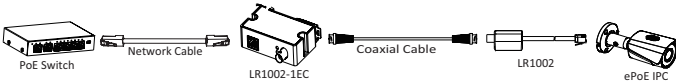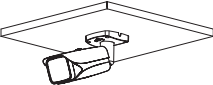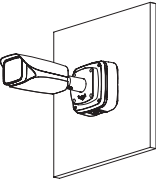
ePoE Applications

Pure Ethernet

ePoE Switch — Ethernet Cable (CAT5E/CAT6) — ePoE IPC

Passive EoC
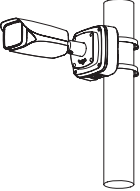
ePoE Switch — LR1002 — Coaxial Cable — LR1002 — ePoE IPC

EoC with Single-port EoC Receiver

PoE Switch — Network Cable — LR1002-1EC — Coaxial Cable — LR1002 — ePoE IPC

Junction Mount PFA121

Pole Mount PFA121 + PFA152-E

Dimensions (mm/in.)

273.20 mm (10.76 in.)

174.70 mm (6.88 in.)

100.0 mm (3.94 in.)

95.0 mm (3.74 in.)

95.0 mm (3.74 in.)