

4K IR Vari-focal ePoE Eyeball

WDR IR Eyeball Network Camera



System Overview

The 4K eyeball camera features an advanced 1/2.5-in. STARVIS™ imager with a 2.7 mm to 12 mm 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.

Functions

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.

Enhanced PoE encompasses pure IP systems where a single CAT 5 cable can carry signals up to 800 m (2624 ft), and IP/Analog hybrid systems where the technology leverages existing analog infrastructure to transmit power and data up to 1000 m (3281 ft) over RG59 coaxial cable. Enhanced PoE is compatible with three connection modes operating over the same network simultaneously: traditional IP networks, long-distance ePoE networks and coaxial networks. ePoE technology seamlessly integrates the latest high-definition IP cameras with a coaxial infrastructure using the Ethernet over Coaxial (EoC) protocol to convert between analog and IP power and data transmissions.

- 1/2.5-in. 8 MP Progressive-scan STARVIS™ CMOS Sensor
- Dual Stream Encoding
- Smart H. 265+ and Smart H.264+ Dual Codec
- 8 MP (3840 x 2160) at 15 fps or 3 MP (2304 x 1296) at 30 fps
- 2.7 mm to 12 mm Motorized Optical Zoom Lens
- Enhanced Power and Data Transmission Distances (ePoE)
- Built-in Microphone
- True Wide Dynamic Range (120 dB) and True Day/Night (ICR)
- Maximum IR LED Distance 50 m (164 ft)
- IP67 Ingress Protection
- Intelligent Video System
- Five-year Warranty*



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.

Intelligent Video System (IVS)

IVS is a built-in video analytic algorithm that delivers intelligent functions to monitor a scene for Tripwire violations, intrusion detection, and abandoned or missing objects. A camera with IVS quickly and accurately responds to monitoring events in a specific area. In addition to scene analytics, the camera supports face detection to quickly capture a face and upload the image to a server. The camera also offers tamper detection by recognizing a dramatic scene change and generating a warning message to inspect the camera.

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 -30° C to +60° C (-22° F to +140° F) with 95% humidity. 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 | 1/2.5-in. 8 MP Progressive-scan CMOS |
| Effective Pixels | 3840(H) x 2160(V) |
| RAM/ROM | 512 MB/32 MB |
| Scanning System | Progressive |
| Electronic Shutter Speed | Auto, Manual, 1/3 s to 1/100,000 s |
| Minimum Illumination | Color: 0.05 lux at F1.4 (1/3 s, 30 IRE) Color: 0.2 lux at F1.4 (1/30 s, 30 IRE) 0 lux at F1.4 (IR on) |
| S/N Ratio | More than 50 dB |
| IR Distance | Distance up to 50 m (164.04 ft) |
| IR On/Off Control | Auto, Manual |
| IR LEDs | Two (2) |

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| Lens | | | | | |
| Lens Type | | Motorized, Auto Iris (DC) | | | |
| Mount Type | | Board-in | | | |
| Focal Length | | 2.7 mm to 12 mm | | | |
| Maximum Aperture | | F1.4 | | | |
| Angle of View | | Horizontal: 110° to 40° Vertical: 58° to 23° | | | |
| Optical Zoom | | 4x | | | |
| Focus Control | | Motorized | | | |
| Close Focus Distance | | 0.30 m (0.98 ft) | | | |
| DORI ¹ Distance | Lens | Detect | Observe | Recognize | Identify |
| | Wide | 85 m (280 ft) | 34 m (112 ft) | 17 m (56 ft) | 8.5 m (28 ft) |
| | Tele | 228 m (748 ft) | 91 m (299 ft) | 46 m (151 ft) | 23 m (75 ft) |

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| Installation Angle | |
| Range | Pan: 0° to 360° Tilt: 0° to 78° Rotation: 0° to 360° |

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| Video | |
| Compression | Smart H.265+, H.265, Smart H.264+, H.264 |
| Streaming Capability | Three (3) Streams |
| Resolution | 8 MP (3840 x 2160), 6 MP (3072 x 2048), 5 MP (3072 x 1728), 5 MP (2592 x 1944), 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: 8 MP at 15 fps or 3 MP at 30 fps |
| | Sub Stream 1: D1 at 30 fps |
| | Sub Stream 2: 720p at 30 fps |
| Bit Rate Control | CBR/VBR |
| Bit Rate | H.264: 1024 Kbps to 6144 Kbps H.265: 256 Kbps to 4096 Kbps |
| Day/Night | Auto (ICR), Color, B/W |
| BLC Mode | BLC, HLC, True WDR (120 dB) |

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.

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| White Balance | Auto, Natural, Street Lamp, Outdoor, Manual |
| Gain Control | Auto, Manual |
| Noise Reduction | 3D DNR |
| Motion Detection | Off, On (4 Zones, Rectangular) |
| Region of Interest | Off, On (4 Zones) |
| Smart IR | Support |
| Digital Zoom | 16x |
| Flip | 0°, 90°, 180°, 270° |
| Mirror | Off, On |
| Privacy Masking | Off, On (4 Areas, Rectangular) |

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| Audio | |
| Compression | G.711a, G.711Mu, AAC, G.726 |

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| 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, Bonjour, 802.1x, Multicast, ICMP, IGMP, SNMP |
| Interoperability | ONVIF, PSIA, CGI |
| Streaming Method | Unicast / Multicast |
| Maximum User Access | 10 Users / 20 Users |
| Edge Storage | Network Attached Storage (NAS) Local PC for Instant Recording Micro SD Slot, maximum 128 GB |
| Web Viewer | IE, Chrome, Firefox, Safari |
| Management Software | SmartPSS, DSS |
| Smart Phone | IOS, Android |

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| Certifications | |
| Safety | UL60950-1 |
| Electromagnetic Compatibility (EMC) | FCC CFR 47 Part 15 Subpart B |

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| Interface | |
| Audio | Input: Built-in Microphone |

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| Electrical | |
| Power Supply | 12 VDC, 1 A or PoE (IEEE802.3af, Class 0) |
| Power Consumption | < 8.5 W |

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| 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 |

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| Construction | |
| Casing | Metal |
| Dimensions | ø122.0 mm x 104.0 mm (ø4.80 in. x 4.09 in.) |
| Net Weight | 0.60 kg (1.32 lb) |
| Gross Weight | 0.76 kg (1.67 lb) |

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| Intelligence | |
| 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. |
| Premium Features | |
| Motion | An object moves through any part of the scene. |
| Tripwire | A target crosses a user-defined line. |
| Intrusion | A target enters or exits a defined perimeter. |
| 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. |

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| 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 |

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|------------------------------------|-----------------|----------------------|-------------------------|--------------|
| 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 |

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|-----------------------------------|-----------------|----------------------|-------------------------|--------------|
| 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 |

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|-----------------------------------|-----------------|----------------------|-------------------------|--------------|
| 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 |
|--------------------------------|---------------|--|
| 4K Network Camera | N85CM5Z | 8 MP IR ePoE, Vari-focal Eyeball Network Camera, True WDR, IVS |
| Mounting Accessories, optional | PFA137 | Junction Box |
| | PFA152-E | Pole Mount |
| | PFB203W | Wall Mount |
| | DH-PFM321D-US | 12 VDC, 1 A Power Adapter |
| ePoE Accessories, optional | LR1002 | EoC Passive Converter |
| | LR1002-1EC | Single-port EoC Receiver |

Accessories

Optional:



PFA137
Junction Box



PFA152-E
Pole Mount



PFB203W
Wall Mount



DH-PFM321D-US
Power Adapter



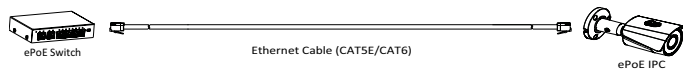
LR1002
EoC Passive
Converter



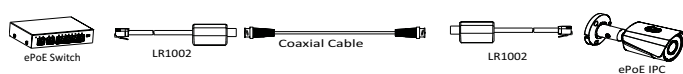
LR1002-1EC
Single-port EoC
Receiver

ePoE Applications

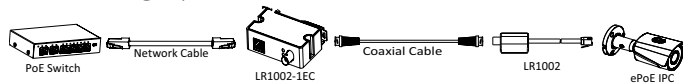
Pure Ethernet



Passive EoC

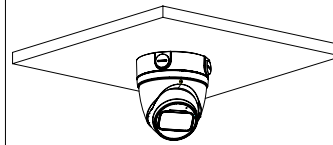


EoC with Single-port EoC Receiver



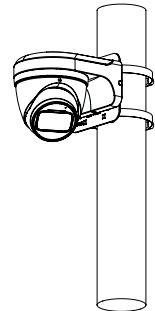
Junction Mount

PFA137



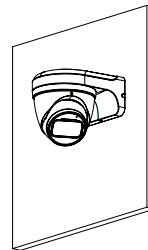
Pole Mount

PFB203W + PFA152-E



Wall Mount

PFB203W



Dimensions (mm/in.)

