**DAHUA** TECHNOLOGY

# 4MP ePoE Starlight+ Network Bullet 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 Lens
- Enhanced Power and Data Transmission Distances (ePoE)
- Starlight+ Technology for Low-light Applications
- Analytics+ Functions — Face Detection, Facial Attribute Extraction, People Counting, Perimeter Protection, and Smart Motion Detection
- ArcticPro Series Camera — Operational down to −40° C (−40° F)
- IP67 Ingress Protection and IK10 Vandal Resistance
- True Wide Dynamic Range (140 dB) and Day/Night IR Cut Filter
- Maximum IR LED Distance 50 m (164.04 ft)
- Intelligent Video System
- Five-year Warranty*

**WizMind**

**ArcticPro**

| 4Mp | Face Capture | Perimeter | People Counting | Metadata | Starlight+ |

WizMind Series devices offer the full complement of Dahua Analytics+ functions for comprehensive, human-oriented analytic solutions. WizMind Series products deliver perimeter protection, vehicle and crowd density statistics, video metadata, and advanced people counting with heat map functionality. WizMind is ideal for complex applications with demanding requirements that need advanced analytic capabilities.

## 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+, Ultra 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

### 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.

### Smart Motion Detection
Smart Motion Detection, a component of Dahua's Analytics+ technology, improves alarm accuracy and decreases the number of false alarms. The advanced SMD algorithm analyzes a scene for human or vehicle motion, while filtering out other motion due to trees, leaves, animals, weather, and triggers an alarm when detected. SMD also saves time when searching recorded video by filtering false alarms and allowing quick retrieval of an alarm due to a person or vehicle.

### 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.

### ArcticPro
The Dahua ArcticPro Series of extreme-environment cameras combine temperature-tolerant components, a waterproof enclosure, and an integrated heater to ensure flawless operation in temperatures as low as −40° C (−40° F). For applications that demand high-resolution video with advanced features in extremely cold environments, the Dahua ArcticPro Series offers a camera to satisfy the most demanding requirements.

### 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 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)<br>Color: 0.029 lux at F1.8 (1/30 s, 30 IRE)<br>0 lux at F1.8 (with IR on) |
| S/N Ratio | Greater than 56 dB |
| IR Distance | Distance up to 50.0 m (164.04 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°<br>Vertical: 62° to 26° |
| Optical Zoom | 4.4x |
| Aperture Control | Auto |
| Close Focus Distance | 1.20 m (3.94 ft) |

| DORI Distance[1] | 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 360˚; Tilt: 0˚ to 90˚; Rotation: 0˚ to 360˚ |

### 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),2560 x 1440, 2304 x 1296,<br>1080p (1920 x 1080), 1.3 MP (1280 x 960),<br>720p (1280 x 720), D1 (704 x 480), VGA (640 x 480),<br>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<br>H.265: 19 Kbps to 8192 Kbps |
| Day/Night | Auto (ICR), Color, B/W |
| BLC Mode | BLC, HLC, Ultra WDR (140 dB), SSA |

| | |
|---|---|
| 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, 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 |
| Auto Register | Support |
| Streaming Method | Unicast / Multicast |
| Maximum User Access | 20 Users |
| Edge Storage | Network Attached Storage (NAS)<br>FTP<br>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 |
| 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<br>CAN/CSA C22.2 No.60950-1-07<br>EN60950-1 |
| Electromagnetic Compatibility (EMC) | FCC CFR 47 Part 15 Subpart B<br>Electromagnetic Compatibility Directive 2014/30/EU |

### Interface

| | |
|---|---|
| Audio | Input: One (1) Channel<br>Output: One (1) Channel |
| Alarm | Input: Two (2) Channels (5 mA, 5 VDC)<br>Output: One (1) Channel (300 mA, 12 VDC) |

### Electrical

| | | |
|---|---|---|
| Power Supply | | 12 VDC or PoE+ (IEEE 802.3at, Class 4) |
| Power Consumption | 12 VDC | Standard: 3 W<br>with IR ON: 12.1 W<br>with heater ON: 10.3 W |
| | PoE+ | Standard: 3.7 W<br>with IR ON: 15.2 W<br>with heater ON: 12.5 W |

## Environmental

| | |
|---|---|
| Operating Conditions | −40° C to +60° C (−40° F to +140° F), 10% to 95% RH |
| Storage Conditions | −40° C to +60° C (−40° F to +140° 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 | 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 lb) |
| Gross Weight | 1.51 kg (3.33 lb) |

## Analytics+ Functions[2]

| | |
|---|---|
| Perimeter Protection | • Detects human or vehicle violations using the following methods:<br>  **Tripwire**: a target crosses a defined line.<br>  **Intrusion:** a target enters or exits a defined perimeter.<br>• Monitors a combination of detection methods.<br>• Search and retrieve video based on target type. |
| People Counting | • Delivers accurate flow statistics from the following methods:<br>  **Line Crossing:** counts a person as they cross a threshold in a defined direction.<br>  **Region:** counts the number of people in a defined area.<br>• Counts people simultaneously from four (4) threshold lines and four (4) defined regions[3]. |
| Smart Motion Detection[2] | • Differentiates between and classifies human and vehicle objects.<br>• Filters false alarms due to leaves, lights, animals, and other inconsequential objects.<br>• Extracts human or vehicle objects from recorded video for quick target search and retrieval. |
| Face Detection with Facial Attribute Extraction | Captures faces from video image and extracts the following facial features:<br>  Age<br>  Gender<br>  Expression (Happy, Calm, Surprise, Sad, Rage)<br>  Wearing Glasses<br>  Wearing a Mask<br>  Facial Hair |

## Intelligent Video System Functions

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

| | |
|---|---|
| Standard Features | • Tampering with the camera.<br>• Error writing to an onboard Micro SD card.<br>• Error sending or receiving data over the network.<br>• Unauthorized access to the camera.<br>• IP Address Conflict |
| **Premium Features** | |
| Missing Object | An object is missing from a designated area. |
| Abandoned Object | An object is placed in a designated area where no object should be. |
| Scene Change | A person or object moves the camera to change the scene or covers the camera to obscure the scene. |
| Fast Moving | Target exceeds a set speed when exiting a defined area |
| Parking Detection | Vehicle remains in a defined area without motion for a set period of time. |
| Crowd Gathering | Specified number of people remain inside a defined area for a set time. |
| Loitering Detection | Target is in motion inside a defined area longer than a specified amount of time. |

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. 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.

## 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

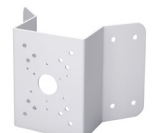| Type | Part Number | Description |
|---|---|---|
| Analytics+ Camera | N45DB7Z | 4 MP ePoE Starlight+ Vari-focal Bullet Camera |
| Mounting Accessories, optional | PFA121 | Junction Box |
| | PFA151 | Corner Mount (for use with PFA121 Junction Box) |
| | PFA152-E | Pole Mount (for use with PFA121 Junction Box) |
| | DH-PFM321D-US | 12 VDC, 1 A Power Adapter |
| ePoE Accessories, optional | LR1002 | EoC Passive Converter |
| | LR1002-1EC | Single-port EoC Receiver |

## Accessories

Optional:



PFA121
Junction Box



PFA152-E
Pole Mount



PFA151
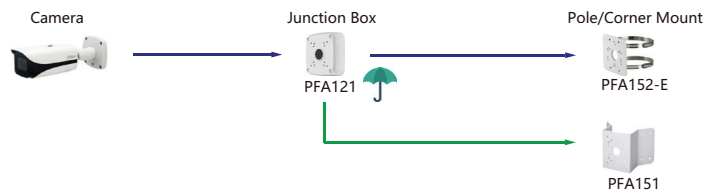Corner Mount



DH-PFM321D-US
Power Adapter



LR1002
EoC Passive Converter



LR1002-1EC
Single-port EoC Receiver

## Mounting Diagram



Camera → Junction Box PFA121 → Pole/Corner Mount PFA152-E / PFA151

## Dimensions



273.2 [10.76"]
174.7 [6.88"]
100.0 [3.94"]
95.0 [3.74"]
88.9 [3.5"]
79.7 [3.14"]
95.0 [3.74"]



95.0 [3.74"]
95.0 [3.74"]
70.0 [2.76"]
70.0 [2.76"]
4-⌀4.5 [⌀0.18"]