4MP AcuPick Starlight+ Network Eyeball Camera (Vari-focal)

ePoE, True Wide Dynamic Range, and Analytics+

- 1/1.8-in. 4MP Progressive-scan CMOS Sensor
- Quadruple-stream Encoding
- AI Coding, Smart H.265+, and Smart H.264+ Video Compression
- AI Smart Scene Adaptive (SSA) Technology
- 4MP (2680 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 — AcuPick, Face Detection, People Counting, Perimeter Protection, and Smart Motion Detection+
- Ultra Wide Dynamic Range (140 dB) and True Day/Night IR Cut Filter
- Maximum IR LED Distance 40 m (131.23 ft)
- Built-in Microphone
- IP67 Ingress Protection
- Five-year Warranty*

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.

System Overview

The Dahua AcuPick Starlight+ 4MP Network Eyeball Camera offers Analytics+ functions at the edge–performing complex real-time AcuPick, Face Detection, People Counting, and Perimeter Protection. Dahua's Analytics+ algorithms significantly improve accuracy and reliability compared to standard intelligent features. The camera is ideal for a host of diverse applications with Starlight+, Ultra Wide Dynamic Range, and Smart IR technologies and an IP67 to operate in the most difficult lighting conditions and environments.

Functions

AcuPick

Dahua effectively utilizes both front-end and back-end intelligence to realize AcuPick. AcuPick technology is a true video search engine that can quickly locate the information you need. Use it to find a lost individual, locate a specific vehicle, or pinpoint evidence of a suspect who's damaged another's property.

AI-powered Image

With AI ISP technology, the camera is able to easily adapt to scenes, producing high quality images that reveal the fine details of targets.

AI Smart Scene Adaptive (SSA) Technology

Smart Scene Adaptive (SSA) is an intelligent image technology, developed by Dahua that automatically evaluates and compensates for changes in the luminance of a scene. SSA automatically regulates the exposure parameters to improve image quality in a backlit scene, especially in scenes with traffic lights or headlights.

Face Detection

Face Detection technology captures a human face in a digital image and then selects the best image and outputs a snapshot of the face.

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.

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.

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 encompasses pure IP systems where a single CAT5E cable can carry signals up to 800 m (2624 ft), and IP/Analog hybrid systems where the technology leverages existing analog infrastructure to transmit signals up to 1000 m (3281 ft) over RG59 coaxial cable. This seamless technology offers an effective solution for transmitting over long distances and for upgrading legacy analog system to the latest HD technology.

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.

Enivronmental

Subjected to rigorous dust and water immersion tests and certified to the IP67 Ingress Protection rating makes it suitable for demanding outdoor applications.

*Warranty applies to products sold through an authorized Dahua Dealer.

Technical Specification

Camera

Image Sensor		1/1.8-in. 4MP CMOS
Effective Pixels		2680 (H) x 1520 (V)
RAM/ROM		1 GB/4 GB
Scanning System		Progressive
Electronic Shutter Speed		1/3 s to 1/100,000 s
Minimum Illumination	Color	0.0007 lux at F1.8 (30 IRE)
	B/W	0.0004 lux at F1.8 (30 IRE)
	IR On	0 lux at F1.8
S/N Ratio		> 56 dB
IR Distance		Up to 40 m (131.23 ft)
IR On/Off Control		Auto, Manual
IR LEDs		Two (2)

Lens

Lens Type		Motorized
Mount Type		M14
Focal Length		2.7 mm to 12 mm
Maximum Aperature		F1.8
Angle of View	Horizontal	115° to 47°
	Vertical	62° to 27°
	Diagonal	137° to 54°
Focus Control		Auto
Close Focus Distance		1.50 m (4.92 ft)

DORI[1] Distance	Lens	Detect (8 ppf)	Observe (19 ppf)	Recognize (38 ppf)	Identify (76 ppf)
	Wide	58 m (189 ft)	23 m (75 ft)	12 m (38 ft)	6 m (19 ft)
	Telephoto	131 m (429 ft)	52 m (172 ft)	26 m (86 ft)	13 m (43 ft)

Installation Angle

Range	Pan	0˚ to 360˚
	Tilt	0˚ to 78˚
	Rotation	0˚ to 360˚

Video

Compression		AI Coding, Smart H.265+, H.265, Smart H.264+, H.264, H.264B, H.264H, MJPEG (Sub Stream only)
Streaming Capability		Four (4) Streams
Resolution		4MP (2688 x 1520), 3MP (2048 x 1536), 2304 x 1296, 1080p (1920 x 1080),1.3MP (1280 x 960), 720p (1280 x 720), D1 (704 x 480), VGA (640 x 480), CIF (352 x 240)
Frame Rate[2]	Main Stream	4MP (2688 x 1520) at 30 fps
	Sub Stream 1	D1 at 30 fps
	Sub Stream 2	1080p at 30 fps
	Sub Stream 3	720p at 10 fps
Bit Rate Control		CBR/VBR
Bit Rate	H.264	32 Kbps to 16384 Kbps
	H.265	32 Kbps to 11008 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, Gain Priority, Shutter Priority, Manual
Noise Reduction		3D DNR
Motion Detection		Off, On (4 Zones, Rectangular)
Region of Interest		Off, On (4 Zones)
Advanced Features		Smart IR, Defog
Image Rotation		0°, 90°, 180°, 270°
Mirror		Off, On
Privacy Masking		Off, On (8 Areas, Rectangular)

Audio

Compression	PCM, G.711A, G.711Mu, G.726, G.723, AAC

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, G, T), CGI, P2P
Auto Register	Support
Streaming Method	Unicast, Multicast
Maximum User Access	20 Users
Edge Storage	Network Attached Storage (NAS), FTP, SFTP, MicroSD Slot (Maximum 512 GB)
Web Viewer	Edge (Version 9 or Higher), Chrome (Version 102 or Higher), Firefox (Version 88 or Higher)
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	UL62368-1 CAN/CSA C22.2 No.62368-1-14
Electromagnetic Capability (EMC)	FCC CFR 47 Part 15 Subpart B Electromagnetic Compatibility Directive 2014/30/EU

Interface

Audio	Built-in Mic

Electrical

Power Supply		12 VDC, PoE (802.3af), ePoE
Power Consumption	12 VDC	Standard: 3.5 W Maximum: 6.7 W (H.265 + WDR+ Intelligence + IR)
	PoE	Standard: 4.5 W Max: 8.2 W (H.265 + WDR+ Intelligence + IR)

Environmental

Operating Conditions	–30 °C to +60 °C (–22 °F to +140 °F), 10% to 95% RH
Storage Conditions	–40 °C to +60 °C (–40 °F to +140 °F)
Ingress Protection	IP67

Construction

Casing	Metal
Dimensions	122.0 mm x 108.30 mm (4.80 in. x 4.26 in.)
Net Weight	0.70 kg (1.54 lb)
Gross Weight	0.96 kg (2.12 lb)

Analytics+ Functions

Smart Plan Schedule	Enable Analytics+ functions depending on a user-defined schedule. Allows the camera to switch analytic functions based on time.
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.
Face Detection	• Detects and captures a snapshot of a human face within a scene.
AI SSA	• Automatically evaluates and compensates for changes in the luminance of a scene. • Regulates the exposure parameters to improve image quality in a backlit scene, especially in scenes with traffic lights or headlights.
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

AcuPick		• **Directly locate the target**: Directly locate the video clips of the target without pre-configuration. • **Smart search by intrusion**: AcuPick allows searching for humans/vehicles that have entered the rule area while performing a historical video search of the target. • **One Pick**: Users can search in preview or playback with just one pick. 1 Click to freeze the video and frame the target. • **Smart secondary search**: AcuPick can perform a second accurate search based on the search results. • IPC/NVR extracts and models the target's appearance details through an algorithm, mainly focusing on the appearance characteristics of the human body, such as clothing color, clothing style, gender, body shape, and other relevant information.
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].
Smart Motion Detection+[3]		• 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	Up to 10.0 m (32.81 ft)
	Vehicle	Up to 15.0 m (49.21 ft)

Intelligent Video System Functions

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. • 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.
Advanced Features	
Heat Map	Generates a visual representation of data.

ePoE Transmission Distances

Via CAT5E/CAT6 Ethernet Cable

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

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

Via CAT5E/CAT6 Ethernet Cable

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

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

Via RG-59 Coaxial Cable

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

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

Via RG-59 Coaxial Cable

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

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

Ordering Information

Type	Part Number	Description
Camera	N45FJ6Z	4MP AcuPick ePoE Starlight+ Vari-focal Eyeball Camera
Accessories (Optional)	DH-PFA109	Mount Adapter (For use with PFB220C and PFB305W)
	PFA130-E	Junction Box (For use with PFA152-E)
	PFA137	Junction Box (For use with PFA152-E)
	PFA150	Pole Mount (For use PFB305W)
	PFA151	Corner Mount (For use with PFB305W)
	PFA152-E	Pole Mount (For use with PFB203W)
	PFB203W	Wall Mount (For use with PFA150 or PFA152-E)
	PFB220C	Ceiling Mount (For use with DH-PFA109)
	PFB305W	Wall Mount (For use with DH-PFA109)
	DH-PFM321D-US	12 VDC, 1 A Power Adapter
Accessories (ePoE, optional)	LR1002	EoC Passive Converter
	LR1002-1EC	Single-port EoC Receiver

Accessories

Optional:

DH-PFA109
Mount Adapter

PFA130-E
Junction Box

PFA137
Junction Box

PFA150
Pole Mount

PFA151
Corner Mount

PFA152-E
Pole Mount

PFB203W
Wall Mount

PFB220C
Ceiling Mount

PFB305W
Wall Mount

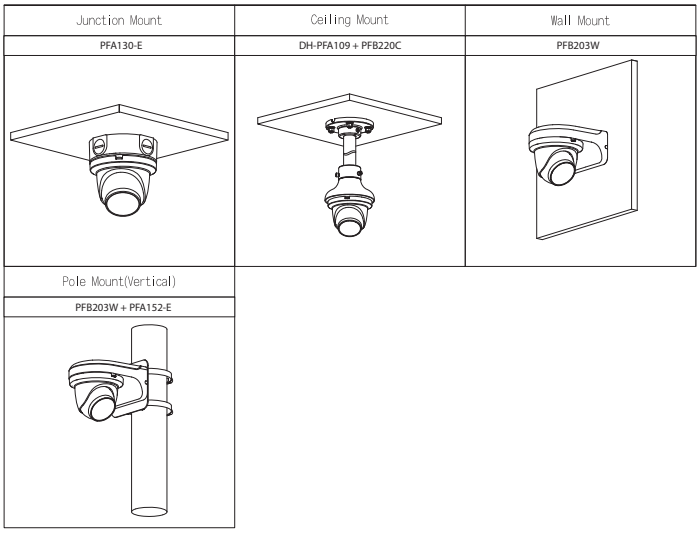
DH-PFM321D-US
12 VDC, 1 A Power Adapter

LR1002
EoC Passive Converter

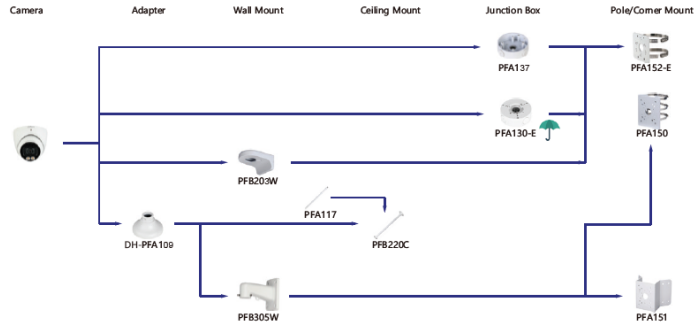
LR1002-1EC
Single-port EoC Receive

For all possible accessory combinations for this camera, please scan or click the QR code below to go to our accessory selector.

Installation



Mounting Diagram



Dimensions

mm [in.]