# DH-IPC-HFW7451Z1-Z30-X

## 4MP 30x Optical Zoom IR Bullet WizMind Network Camera



Xinghan ePoE WizMind

## Series Overview

Dahua WizMind 7 Series camera adopts the deep learning algorithm and integrates over 10 intelligent functions, such as video metadata, ANPR, PPE, AcuPick, parking space management, face detection, face recognition and perimeter protection. Intelligent functions can be enabled simultaneously, making it suitable for a variety of scenes. Supports privacy protection for faces, human bodies, and vehicles. Adopts Xinghan Large-Scale AI model technology, the series achieves significant improvements in target detection, recognition, and scene adaptability. The AI ISP technology delivers superior night vision performance for images. The camera is dust-proof, waterproof, and vandal-proof, certified as IP67 and IK10.

## Functions

### Xinghan Large-Scale AI Models-Vision

Xinghan Large-Scale AI Models-Vision seamlessly expands the storage and operational capacity of algorithmic models through the powerful integration of edge AI model algorithms and NPU computing power. Engineered with a lightweight transformer architecture and enhanced by model distillation and quantization techniques, it optimizes the computing power consumption of ViT operators. This enables the system to collaborate on multiple tasks simultaneously through joint inference between small and large models optimized for edge devices.

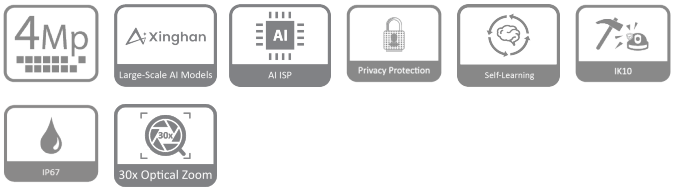
### AI-ISP

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

### Privacy Protection

Dahua Privacy Protection technology can mask the detected face and human body to protect the privacy of some special targets.

- 4-MP 1/2.7" CMOS image sensor, low luminance, and high definition image.
- Outputs max 4 MP (2688 × 1520)@50/60 fps and 2 MP (1920 × 1080)@100/120 fps.
- Built-in IR LED, the max IR distance is 200 m.
- With deep learning algorithm, it supports: Video metadata, PPE, face recognition, face detection, perimeter, people counting, parking space management, ANPR, AcuPick, and so on.
- Privacy protection (mosaics/frosted glasses) for faces, human bodies, and vehicle bodies. Advanced image processing technologies: Xinghan face exposure and Xinghan precise focusing.
- The built-in dual Mic utilizes Dahua's noise reduction algorithms for adaptive noise cancellation. Indoor sound pickup reaches 30 m.
- Built-in Hi-Fi large-diameter speaker covers an auditory range of 30 meters when used indoors.
- Alarm: 3 in, 2 out; audio: 1 in, 1 out; RS-485, BNC; supports max 1 TB Micro SD card.
- 12 VDC/PoE/ePoE power supply, 12 VDC power output, max current 165 mA, and peak current 700 mA, easy for installation.
- Encrypted with TPM2.0 (FIPS 140-2 level 2).
- Displays the working status with indicators for simplified installation and commissioning.
- Power detection outputs daily/weekly report.
- G-sensor supports image stabilization and tampering detection.
- Supports window heating.
- IP67 and IK10 protection.




### Self-Learning

Empowered by deep learning technology, the device recognizes different types of targets and their statuses through learning and analyzing target features to detect targets and filter out false alarms.

### Xinghan Precise Focusing

Powered by large scale scene models, the system generates depth maps and predicts optimal focus settings, automatically applying them to deliver sharp images with a single click.

### Smart PDS-Heated Window

Integrates smart PDS heating with the printed silver conductive elements to automatically defog the window.

### 30× Optical Zoom

30× Optical Zoom

## Technical Specification

### Camera

| | |
|---|---|
| Image Sensor | 1/2.7" CMOS |
| Max. Resolution | 2688 (H) × 1520 (V) |
| Scanning System | Progressive |
| Electronic Shutter Speed | Auto/Manual 1/3 s–1/100,000 s |
| Min. Illumination | 0.0005 lux@F1.2 (Color, 30 IRE)<br>0.0001 lux@F1.2 (B/W, 30 IRE)<br>0 lux (Illuminator on) |
| S/N Ratio | >56 dB |
| Illumination Distance | Up to 200 m (656.17ft) (IR) |
| Illuminator On/Off Control | Auto;Manual |
| Illuminator Number | 4 (IR LED) |
| Angle Adjustment | Pan: 0° to 360°<br>Tilt: 0° to 90°<br>Rotation: 0° to 360° |

### Lens

| | |
|---|---|
| Lens Type | Motorized vari-focal |
| Lens Mount | Module |
| Focal Length | 5 mm–150 mm |
| Max. Aperture | F1.2 |
| Field of View | H: 56.6°–2.07°; V: 32.95°–1.17°; D: 63.89°–2.4° |
| Iris Control | Auto |
| Iris Control Type | P-Iris |
| Close Focus Distance | 1 m (3.28 ft) |

| | Lens | Detect | Observe | Recognize | Identify |
|---|---|---|---|---|---|
| DORI Distance | W | 100 m ( 328.08 ft) | 40 m ( 131.23 ft) | 20 m ( 65.62 ft) | 10 m ( 32.81 ft) |
| | T | 3000 m ( 9842.52 ft) | 1200 m ( 3937.01 ft) | 600 m ( 1968.50 ft) | 300 m ( 984.25 ft) |
| | *DORI (Detect, Observe, Recognize, Identify) is a standard system (EN-62676-4) for defining the ability of a person viewing the video to distinguish persons or objects within a covered area. The numbers in this table do not reflect intelligent function distances. For intelligent function distances, refer to installation and commissioning manual/project design tool. | | | | |

### Smart Event

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|---|---|
| IVS | Abandoned object; missing object |

### Intelligence

| | |
|---|---|
| Intelligence Notes | Dual intelligent functions can be enabled simultaneously: Face detection + people counting; face recognition + people counting; PPE detection + Perimeter Protection; PPE detection + face detection; PPE detection + face recognition |
| IVS (Perimeter Protection) | Intrusion, tripwire, fast moving (the three functions support the classification and accurate detection of vehicle, animal and human), loitering detection, people gathering, parking detection, stay detection, abandoned object, and missing object. Offers Perimeter Protection Large-Scale AI Models to extend the target detection range and reduce the rate of false alarm. Supports self-learning, it filters out false alarms. Supports privacy protection. |
| AcuPick | Uses deep learning algorithms and works with back-end devices to accurately match targets, such as people, animals, and motor vehicles, and search through live and recorded videos to quickly locate targets. |
| Face Detection | Face detection; track; snapshot; snapshot optimization; optimal face snapshot upload; face enhancement; face exposure; face attributes extraction including 6 attributes and 8 expressions; face snapshot set as face, one-inch photo or custom; snapshot strategies (real-time snapshot, quality priority and optimization snapshot); face angle filter; optimization time setting; supports privacy protection for faces |
| Face Recognition | There are two modes: General mode and counting mode.<br>General mode:<br>Face detection; snapshot; snapshot optimization; optimal face snapshot upload; face enhancement; face exposure; face attributes extraction including 6 attributes and 8 expressions; face snapshot set as face or one inch photo; snapshot strategies (recogniton priority and optmization snapshot); face angle filter; optmization time setting. support privacy protection for faces.<br>Supports adding 5 group face databases; registering person one by one or in batches; setting face similarity; and supports face comparison with the face database containing up to 200,000 face pictures.<br>Counting mode: Offers advanced customer counter, filters out specified faces from the face database, and exports reports both before and after removing duplicate faces. |
| PPE Detection | Triggers alarms when the detected object matches or does not match all of the configured attributes (helmets, hats, uniforms, masks, gloves, shoe covers, shoes, safety vests, seatbelts, goggles, and aprons).<br>Supports self-learning, it detects the different colors and styles of workwear.<br>Supports privacy protection for faces/human bodies. |
| People Counting | Tripwire people counting and people counting in area; generating and exporting report (day/month/year); queue management and exporting report (day/month); 4 rules can be set for tripwire people counting, people counting in area, and queue management; supports privacy protection |
| Heat Map | Yes |
| ANPR | ANPR, track, priority, snapshot<br>Vehicle attributes: License plate, vehicle type, vehicle color, vehicle brand<br>Other attributes: Seat belt, smoking, calling<br>Supports up to 10,000 blocklist records and 10,000 allowlist records<br>The camera can recognize plate numbers of vehicles<br>Supports privacy protection for vehicle bodies |

| | |
|---|---|
| Parking Space Management | Parking Space Management: Manage outdoor and planned parking lots; manage parking spaces in multiple areas; display the total number of parking spaces and parking spaces that are available; trigger alarms based on a predefined number of vehicles |
| Video Metadata | Motor vehicle, non-motor vehicle, face, human detection; track; snapshot; snapshot optimization; optimal face snapshot upload<br>Generates flow statistics for people, motor vehicles, and non-motor vehicles based on the direction, and exports reports<br>Motor vehicle attributes: License plate, vehicle type, vehicle color, vehicle logo, seatbelt, smoking, and calling<br>Non-motor vehicle attributes: Type, color, number of people, top type and color, and hat<br>Human body attributes: Top and bottom type and color, bag, hat, gender, and umbrella<br>Supports privacy protection for faces, human bodies, and vehicle bodies |
| Privacy Protection | Mosaics and frosted glasses can be automatically placed over faces, human bodies and vehicles protect their privacy |
| Smart Search | Yes |

## Video

| | |
|---|---|
| Video Compression | H.265; H.264; H.264H; H.264B; MJPEG (Only supported by sub stream) |
| AI Coding | AI H.265; AI H.264<br>*Includes smart codec technology, Smart H.265+ and Smart H.264+ |
| Video Frame Rate | Main stream: 2688 × 1520@(1–25/30 fps)<br>Sub stream: 1920 × 1080@(1–25/30 fps)<br>Third stream: 1920 × 1080@(1–25/30 fps)<br>Fourth stream: 1920 × 1080@(1–25/30 fps)<br>Fifth stream: 704 × 576@(1–25 fps)/704 × 480@(1–30 fps)<br>High Frame Rate:<br>Main stream: 2688 × 1520@(1–50/60 fps)/1920 × 1080@(1–100/120 fps)<br>Sub stream: 1920 × 1080@(1–25/30 fps)<br>Third stream: 1920 × 1080@(1–25/30 fps)<br>Fourth stream: 1920 × 1080@(1–25/30 fps)<br>Fifth stream: 704 × 576@(1–25 fps)/704 × 480@(1–30 fps)<br>*The values above are the max. frame rates of each stream; for multiple streams, the values will be subjected to the total encoding capacity. |
| Streaming Capability | 5 streams |
| Resolution | 4M (2688 × 1520); 3M (2048 × 1536/2304 × 1296); 1080p (1920 × 1080); 1.3M (1280 × 960); 720p (1280 × 720); D1 (704 × 576/704 × 480); CIF (352 × 288/352 × 240) |
| Bit Rate Control | VBR;CBR;ABR |
| Video Bit Rate | H.264: 32 kbps–10,240 kbps;<br>H.265: 12 kbps–10,240 kbps |
| Day/Night | Auto(ICR)/Color/B/W |
| BLC | Yes |
| HLC | Yes |
| WDR | 150 dB |
| Scene Self-adaptation (SSA) | Yes |
| White Balance | Auto; Natural; Street Lamp; Outdoor; Manual; Regional Custom |
| Gain Control | Auto |
| Noise Reduction | 3D NR |
| Motion Detection | OFF/ON (4 areas, rectangular) |
| Region of Interest (RoI) | Yes (4 areas) |
| Image Stabilization | Gyroscope Image Stabilization (GIS) |
| Defog | Yes |
| Image Rotation | 0°/90°/180°/270° (Support 90°/270° with 2688 × 1520 resolution and lower) |
| Mirror | Yes |
| Privacy Masking | 4 mosaics + 8 color blocks (The color of every pure color block can be set as one, including red, orange, yellow, green, cyan, blue, purple and black.) |

## Audio

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|---|---|
| Built-in MIC | Yes, built-in dual Mic |
| Built-in Speaker | Yes, built-in speaker;Max power consumption: 2 W; max sound level at 10 cm: 110 dB<br>* Test results from laboratory |
| Audio Compression | G.711a; G.711Mu; PCM; G.726; G.723 |

## Alarm

| | |
|---|---|
| Alarm Event | No SD card; SD card full; SD card error; SD card durability warning; network disconnection; IP conflict; illegal access; motion detection; video tampering; tripwire; intrusion; fast moving; abandoned object; missing object; loitering detection; people gathering; parking detection; scene changing; audio detection; defocus detection; external alarm; face detection; face recognition; video metadata; ANPR; people counting in area; stay alarm; people counting; people number error detection; people stay detection; security error; parking space management; PPE detection; tampering detection |

## Network

| | |
|---|---|
| Network Port | RJ-45 (10/100/1000 Base-T) |
| SDK and API | Yes |
| Network Protocol | IPv4; IPv6; HTTP; TCP; UDP; ARP; RTP ; RTSP; RTCP; RTMP; SMTP; FTP; SFTP; DHCP; DNS; DDNS; QoS; UPnP; NTP; Multicast; ICMP; IGMP; NFS; SAMBA; PPPoE; SNMP; DoLynk Cloud; Auto Registration |
| Interoperability | ONVIF (Profile S & Profile G & Profile T & Profile M); CGI |
| User/Host | 20 (Total bandwidth: 340 M) |
| Storage | FTP; SFTP; Micro SD card (support max. 1 TB); NAS |
| Browser | IE: IE11 and later<br>Chrome: Chrome 100 and later<br>Firefox: Firefox 47.0.2 and later |
| Management Software | Smart PSS Lite; DSS; DMSS |
| Mobile Client | iOS;Android |

| | |
|---|---|
| Security | Digest;WSSE;Account lockout;Security logs;IP/MAC filtering;Generation and importing of X.509 certification;syslog;HTTPS;802.1x;Trusted boot;Trusted execution;Trusted upgrade;Session security;Security warning;AES 256;TPM 2.0 (FIPS 140-2 level 2);SSL/TLS1.3 |

## Function

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|---|---|
| Sound Warning | Yes |
| Heater (Window Heating) | Quickly removes water,ice,snow,and mist from the glass to keep images clear |

## Certification

| | |
|---|---|
| Certifications | CE-LVD: EN62368-1;<br>CE-EMC: Electromagnetic Compatibility Directive 2014/30/EU |

## Port

| | |
|---|---|
| RS-485 | 1 (baud rate range: 1200 bps–115200 bps) |
| Audio Input | 1 channel (RCA port) |
| Audio Output | 1 channel (RCA port) |
| Alarm Input | 3 channels in: supports wet contact connection (max load 5 mA 3–5 VDC); supports dry contact connection |
| Alarm Output | 2 channels out: dry contact, max load 1,000 mA 30 VDC/500 mA 50 VAC |
| Analog Output | 1 channel (CVBS output: BNC) |
| Power Output | 12 VDC power output, max. current 165 mA, peak current 700 mA |

## Power

| | |
|---|---|
| Power Supply | 12 VDC (±30%); PoE+ (802.3at); ePoE |
| Dual Power Backup | When the power adapter and PoE provide power at the same time, disconnect one of them. The device will continue to work, but will not restart. |
| Power Consumption | Basic: 8.2 W (12 VDC); 11.4 W (PoE)<br>Max (ICR switch + IR intensity): 19.5 W (12 VDC); 21.8 W (PoE)<br>Heating: 2.64 W (12 VDC); 3.04 W (PoE) |
| ePoE | Yes |

## Environment

| | |
|---|---|
| Operating Temperature | –40 °C to +65 °C (–40 °F to +149 °F) |
| Operating Humidity | ≤ 95% (RH), non-condensing |
| Storage Temperature | –40 °C to +65 °C (–40 °F to +149 °F) |
| Storage Humidity | 10–95% (RH), non-condensing |
| Protection | IP67; IK10 |
| Anti-corrosion Level | Basic Protection<br>*The products are designed for general use and are applicable even in areas with no specific requirements for anti-corrosion protection. |

## Structure

| | |
|---|---|
| Casing Material | Casing: Metal; Sun cover: Plastic |
| Product Dimensions | 345 mm × 137 mm × 134 mm (13.58" × 5.39" × 5.28") (L × W × H) |
| Net Weight | 2 kg (4.41 lb) |
| Gross Weight | 3 kg (6.61 lb) |

## Ordering Information

| Type | Model | Description |
|---|---|---|
| IP CAMERA | DH-IPC-HFW7451Z1-Z30-X | 4MP 30x Optical Zoom IR Bullet WizMind Network Camera |
| Accessories (Optional) | DH-PFA154 | Pole Mount Bracket |
| | DH-PFM320-020EN | DC12V 2A Power Adapter |
| | DH-PFM320D-EN | DC12V 2A Power Adapter |
| | PFM900-E | Integrated Mount Tester |
| | DHI-TF-P100/1TB | MicroSD Card |

## Accessories

Optional:



DH-PFA154
Pole Mount Bracket



DH-PFM320-020EN
DC12V 2A Power Adapter



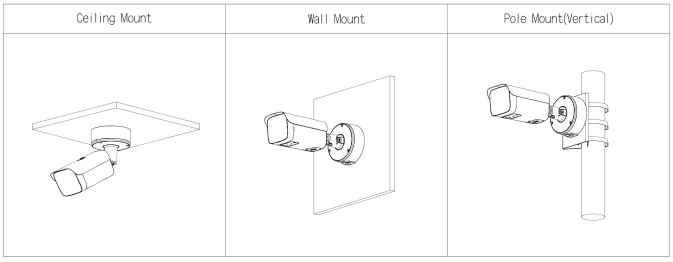
DH-PFM320D-EN
DC12V 2A Power Adapter



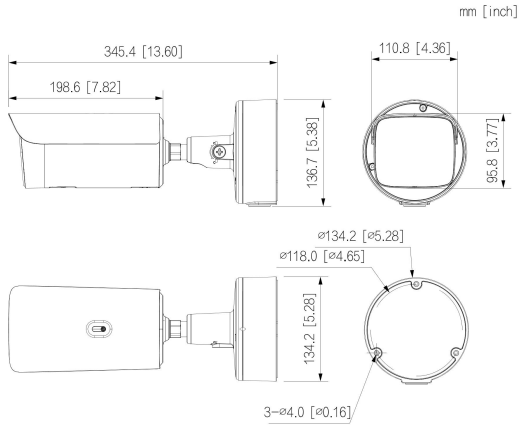
PFM900-E
Integrated Mount Tester



DHI-TF-P100/1TB
MicroSD Card



## Dimensions (mm[inch])





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