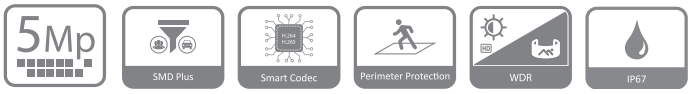
# DH-IPC-HFW2541T-Z(A)S

5MP IR Vari-focal Bullet WizSense Network Camera

*The parameters and datasheets below can only be applied to 2541-S2 series.

- 5-MP 1/2.7" CMOS image sensor, low luminance, and high definition image.
- Outputs max. 5 MP (2960 × 1668) @20 fps, and supports 2688 × 1520 (2688 × 1520) @25/30 fps.
- H.265 codec, high compression rate, ultra-low bit rate.
- Built-in IR LED, and the max. illumination distance is 60 m.
- ROI, SMART H.264+/H.265+, flexible coding, applicable to various bandwidth and storage environments.
- Rotation mode, WDR, 3D NR, HLC, BLC, digital watermarking, applicable to various monitoring scenes.
- Intelligent monitoring: Intrusion, tripwire (the two functions support the classification and accurate detection of vehicle and human).
- Abnormality detection: Motion detection, video tampering, audio detection, no SD card, SD card full, SD card error, network disconnection, IP conflict, illegal access, and voltage detection.
- Alarm: 1 in, 1 out (Only - ZAS supports); audio: 1 in, 1 out (Only - ZAS supports); supports max. 256 G Micro SD card; built in MIC.
- 12 VDC/PoE power supply, easy for installation.
- IP67, IK10 (optional) protection.
- SMD Plus.




Launched by Dahua Technology, WizSense is a series of AI products and solutions that adopt independent AI chip and deep learning algorithm. It focuses on human and vehicle with high accuracy, enabling users to fast act on defined targets. Based on Dahua's advanced technologies, WizSense provides intelligent, simple and inclusive products and solutions.

## Series Overview

With advanced deep learning algorithm, Dahua WizSense 2 Series network camera supports intelligent functions, such as perimeter protection and smart motion detection. With starlight technology, this series camera provides a better image effect in the condition of low illuminance.

## Functions

### SMD Plus

With intelligent algorithm, Dahua Smart Motion Detection technology can categorize the targets that trigger motion detection and filter the motion detection alarm triggered by non-concerned targets to realize effective and accurate alarm.

### Smart H.265+ & Smart H.264+

With advanced scene-adaptive rate control algorithm, Dahua smart encoding technology realizes the higher encoding efficiency than H.265 and H.264, provides high-quality video, and reduces the cost of storage and transmission.

### Perimeter Protection

With deep learning algorithm, Dahua Perimeter Protection technology can recognize human and vehicle accurately. In restricted area (such as pedestrian area and vehicle area), the false alarms of intelligent detection based on target type (such as tripwire, intrusion) are largely reduced.

### WDR

With advanced Wide Dynamic Range (WDR) technology, Dahua network camera provides clear details in the environment of strong brightness contrast. The bright and dark area can get clear video even in high brightness environment or with backlight shadow.

### Cyber Security

Dahua network cameras employ a series of security technologies, including security authentication and authorization, access control protocols, trusted protection, encrypted transmission and encrypted storage. These technologies improve the camera's defense against external cyber threats and prevent malicious programs from compromising the device.

### Protection (IP67, Wide Voltage)

IP67: The camera passes a series of strict test on dust and soak. It has dust-proof function, and the enclosure can work normally after soaking in 1 m deep water for 30 minutes.
Wide voltage: The camera allows ±30% (for some power supplies) input voltage tolerance (wide voltage range), and it is widely applied to outdoor environment with instable voltage.

## Technical Specification

### Camera

| | |
|---|---|
| Image Sensor | 1/2.7" CMOS |
| Max. Resolution | 2960 (H) × 1668 (V) |
| ROM | 128 MB |
| RAM | 256 MB |
| Scanning System | Progressive |
| Electronic Shutter Speed | Auto/Manual 1/3 s–1/100,000 s |
| Min. Illumination | 0.007 lux@F1.5 (Color, 30 IRE)<br>0.0007 lux@F1.5 (B/W, 30 IRE)<br>0 lux (Illuminator on) |
| S/N Ratio | >56 dB |
| Illumination Distance | 60 m (196.85 ft) (IR) |
| Illuminator On/Off Control | Auto; Manual |
| Illuminator Number | 4 (IR LED) |
| Pan/Tilt/Rotation Range | Pan: 0°–360°<br>Tilt: 0°–90°<br>Rotation: 0°–360° |

### Lens

| | |
|---|---|
| Lens Type | Motorized vari-focal |
| Lens Mount | ϕ14 |
| Focal Length | 2.7 mm–13.5 mm |
| Max. Aperture | F1.5 |
| Field of View | H: 113°–31°; V: 58°–18°; D: 138°–36° |
| Iris Control | Fixed |
| Close Focus Distance | 0.8 m (2.62 ft) |

| | Lens | Detect | Observe | Recognize | Identify |
|---|---|---|---|---|---|
| DORI Distance | W | 64.0 m (210.00 ft) | 25.6 m (84.00 ft) | 12.8 m (42.00 ft) | 6.4 m (21.00 ft) |
| | T | 210.0 m (689.00 ft) | 84.0 m (275.60 ft) | 42.0 m (137.80 ft) | 21.0 m (68.90 ft) |

### Intelligence

| | |
|---|---|
| IVS (Perimeter Protection) | Intrusion, tripwire (the two functions support the classification and accurate detection of vehicle and human) |
| Smart Search | Work together with Smart NVR to perform refine intelligent search, event extraction and merging to event videos |

### Video

| | |
|---|---|
| Video Compression | H.265; H.264; H.264H; H.264B; MJPEG (Only supported by the sub stream) |
| Smart Codec | Smart H.265+; Smart H.264+ |
| Video Frame Rate | Main stream: 2960 × 1668 @(1–20 fps )/2688 × 1520@(1–25/30 fps)<br>sub 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. |
| Stream Capability | 2 streams |
| Resolution | 2960 × 1668 (2960 × 1668); 2880 × 1620 (2880 × 1620); 2688 × 1520 (2688 × 1520); 3M (2048 × 1536); 2304 × 1296 (2304 × 1296); 1080p (1920 × 1080); 1.3M (1280 × 960); 720p (1280 × 720); D1 (704 × 576/704 × 480); VGA (640 × 480); CIF (352 × 288/352 × 240) |
| Bit Rate Control | CBR/VBR |
| Video Bit Rate | H.264: 32 kbps–8192 kbps<br>H.265: 12 kbps–8192 kbps |
| Day/Night | Auto(ICR)/Color/B/W |
| BLC | Yes |
| HLC | Yes |
| WDR | 120 dB |
| White Balance | Auto; natural; street lamp; outdoor; manual; regional custom |
| Gain Control | Auto; Manual |
| Noise Reduction | 3D NR |
| Motion Detection | OFF/ON (4 areas, rectangular) |
| Region of Interest (RoI) | Yes (4 areas) |
| Smart Illumination | Yes |
| Image Rotation | 0°/90°/180°/270° (Support 90°/270° with 2688 × 1520 resolution and lower) |
| Mirror | Yes |
| Privacy Masking | 4 areas |

### Audio

| | |
|---|---|
| Built-in MIC | Yes |
| Audio Compression | G.711a; G.711Mu; PCM; G.726 |

### Alarm

| | |
|---|---|
| Alarm Event | No SD card; SD card full; SD card error; network disconnection; IP conflict; illegal access; motion detection; video tampering; tripwire; intrusion; audio detection; voltage detection; defocus detection; external alarm (Only- ZAS supports); SMD; security exception |

### Network

| | |
|---|---|
| Network Port | RJ-45 (10/100 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; PPPoE; Boujour |
| Interoperability | ONVIF (Profile S/Profile G/Profile T); CGI; P2P; Milestone |
| User/Host | 20 (Total bandwidth: 48 M) |
| Storage | FTP; SFTP; Micro SD card (support max. 256 GB); NAS |
| Browser | IE; Chrome; Firefox |
| Management Software | Smart PSS; DSS; DMSS |
| Mobile Client | iOS; Android |

| | |
|---|---|
| Cyber Security | Configuration encryption; trusted execution; Digest; security logs; WSSE; account lockout; syslog; video encryption; 802.1x; IP/MAC filtering; HTTPS; trusted upgrade; trusted boot; firmware encryption; generation and importing of X.509 certification |

## Certification

| | |
|---|---|
| Certifications | CE-LVD: EN62368-1;<br>CE-EMC: Electromagnetic Compatibility Directive 2014/30/EU;<br>FCC: 47 CFR FCC Part 15, Subpart B;<br>UL/CUL: UL62368-1 & CAN/CSA C22.2 No. 62368-1-14 |

## Port

| | |
|---|---|
| Audio Input | 1 channel (RCA port) (Only- ZAS supports) |
| Audio Output | 1 channel (RCA port) (Only- ZAS supports) |
| Alarm Input | 1 channel in: 5mA 3V–5V DC (Only- ZAS supports) |
| Alarm Output | 1 channel out: 300mA 12V DC (Only- ZAS supports) |

## Power

| | |
|---|---|
| Power Supply | 12 VDC/PoE (802.3af) |
| Power Consumption | -ZS:<br>Basic: 2.4 W (12 VDC); 3.1 W (PoE);<br>Max. (H.265+ max. resolution + max. stream+ WDR + IR intensity + IVS): 7 W (12 VDC); 8.4 W (PoE)<br>-ZAS:<br>Basic: 2.4 W (12 VDC); 3.1 W (PoE);<br>Max. (H.265+ max. resolution + max. stream+ WDR + IR intensity + IVS): 7.1 W (12 VDC); 8.5 W (PoE) |

## Environment

| | |
|---|---|
| Operating Temperature | –30 °C to +60 °C (–22 °F to +140 °F) |
| Operating Humidity | ≤95% |
| Storage Temperature | –40 °C to +60 °C (–40 °F to +140 °F) |
| Storage Humidity | ≤95% |
| Protection | IP67; IK10 (optional) |

## Structure

| | |
|---|---|
| Casing Material | Metal |
| Product Dimensions | 238.5 mm × 90.7 mm × 90.7 mm (9.39" × 3.57" × 3.57") (L × W × H) |
| Net Weight | -ZS: 0.74 kg (1.63 lb)<br>-ZAS: 0.77 kg (1.70 lb) |
| Gross Weight | -ZS: 0.98 kg (2.16 lb)<br>-ZAS: 1.01 kg (2.23 lb) |

## Ordering Information

| Type | Model | Description |
|---|---|---|
| 5MP Camera | DH-IPC-HFW2541T-ZAS | 5MP IR Vari-focal Bullet WizSense Network Camera |
| | DH-IPC-HFW2541T-ZS | 5MP IR Vari-focal Bullet WizSense Network Camera |
| Accessories (Optional) | PFA130-E | Water-proof Junction Box |
| | PFA152-E | Pole Mount Bracket |
| | PFM321D | 12 VDC 1A Power Adapter |
| | PFM900-E | Integrated Mount Tester |
| | TF-P100 | MicroSD Memory Card |

## Accessories

Optional:

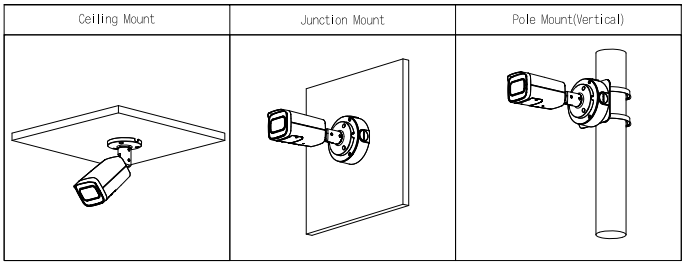
PFA130-E
Water-proof Junction Box

PFA152-E
Pole Mount Bracket

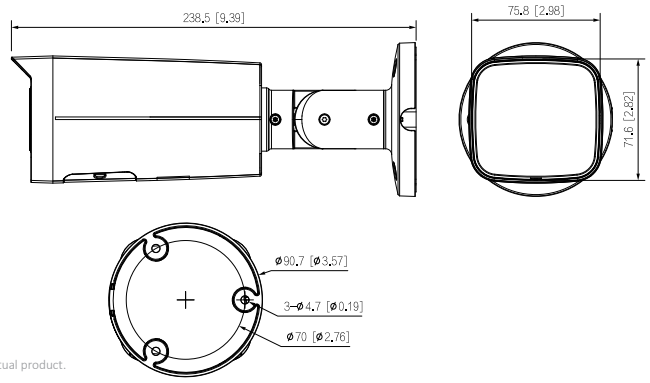
PFM321D
12 VDC 1A Power Adapter

PFM900-E
Integrated Mount Tester

TF-P100
MicroSD Memory Card




## Dimensions (mm[inch])

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