

Hybrid Thermal Network Eyeball Camera

256 x 192 Thermal Sensor and a 4 MP CMOS Sensor



Wiz Sense

WizSense Series devices combine Dahua's powerful Analytics+ with an intuitive and easy to use interface. WizSense devices offer analytic functions that focus on human and vehicular images and offer specialized thermal analytics to detect rapid temperature changes and smoking. WizSense Series devices provide powerful general security for small to medium size businesses at a sensible price.

System Overview

The Entry-level Visible-Thermal Crossover (EVX) camera combines an uncooled VOx 256 x 192 thermal imager with a 4 MP visible-light sensor for cost-effective, long-range security in a rugged all-in-one package. The thermal imager coupled with an athermalized, focus-free lens produces crisp images in total darkness and sees through rain, fog, and snow. The visible imager with an IR illuminator delivers superior video in any lighting condition. The built-in Excessive Temperature Detection and Smoking Detection issues an audible and visual alert. Hybrid thermal cameras let you see the visible and the invisible.

Functions

Uncooled Vanadium Oxide (VOx) Technology

Dahua thermal cameras use an uncooled Vanadium Oxide (VOx) sensor that delivers higher thermal sensitivity in a more compact and cost-effective package. Vanadium Oxide cameras are also more reliable, as compared to other thermal imaging technologies, due to less moving parts.

Athermalized Lens

The athermalized lens used in Dahua thermal cameras maintains the focus position passively and without power over a wide temperature range.

High Thermal Sensitivity

The VOx detector offers high thermal sensitivity (≤ 50 mK) that allows Dahua thermal cameras to distinguish objects in a scene with minimal temperature differences. The camera captures detailed images where thermal contrast between object and background is minimal.

Thermal Camera

- 256 x 192 VOx Uncooled Thermal Sensor Technology
- Athermalized Lens, Focus-free
- 2 mm or 7 mm Fixed Thermal Lens Options
- ≤ 50 mK Thermal Sensitivity

Visible-light Camera

- 1/2.7-in. 4 MP Progressive-scan CMOS Sensor
- 2 mm or 8 mm Fixed Lens Options
- Maximum IR Distance 30 m (98.43 ft)

System Features

- Intelligent Video System with Excessive Temperature Detection
- Smart Alarm with Voice Prompt and White Light for Active Alarm
- IP67 Ingress Protection
- Five-year Warranty*

Excessive Temperature Detection and Alarm

With built-in temperature functionality, the camera can detect a rapid rise in temperature over a short time and issue an alarm even at long distances. Because thermal cameras are sensitive to temperature, they provide higher detection accuracy than standard cameras, making them particularly fit for applications such as forests, warehouse complexes, and industrial areas.

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.

Smart Alarm

The camera is equipped with a white-light illuminator and an external speaker that can be triggered when the camera detects an abnormal event either via the thermal or the visible-light sensor. The camera also takes a snapshot of the scene and can record the snapshot.

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

With a temperature range of -30 °C to $+60$ °C (-22 °F to $+140$ °F), the camera is designed for extreme temperature environments. The camera complies with the IP67 rating makes it suitable for demanding outdoor applications.

Protection

The camera allows for $\pm 20\%$ input voltage tolerance, suitable for the most unstable conditions for outdoor applications. Its 6 KV lightning rating provides effective protection for both the camera and its structure against lightning.

Technical Specification

Thermal Camera

| | |
|----------------------------|--|
| Image Sensor | Uncooled VOx Focal Plane Detector |
| Effective Pixels | 256 (H) x 192 (V) |
| Pixel Size | 12 μm |
| Thermal Sensitivity (NETD) | < 50 mK (f/1.0, 25 Hz, 300 K) |
| Spectral Range | 8 μm to 14 μm |
| Image Setting | Brightness, Sharpness, ROI, AGC, FFC, 3D DNR |
| Color Palettes | 18, including: White Hot, Black Hot, Ice Heat, Fusion, Rainbow, Globow, Ironbow1, and Sepia |

Thermal Lens

| | | |
|----------------------|--------------------------|----------------------|
| Lens Type | Fixed, DDE | |
| Aperture | F1.0 | |
| Focus Control | Athermalized, Focus-free | |
| Focal Length | 2 mm | 7 mm |
| Angle of View | H: 87.8° V: 63.8° | H: 24.0° V: 18.0° |
| Close Focus Distance | 0.30 m (0.98 ft) | 1.0 m (3.28 ft) |

DORI Distance¹

| | | 2 mm | 7 mm |
|---|----------------|----------------|-----------------|
| Effective Distance, human (1.80 m x 0.50 m) ¹ | Detection | 83 m (272 ft) | 292 m (958 ft) |
| | Recognition | 21 m (69 ft) | 75 m (246 ft) |
| | Identification | 11 m (36 ft) | 38 m (125 ft) |
| Effective Distance, vehicle (4.0 m x 1.40 m) ¹ | Detection | 222 m (728 ft) | 778 m (2552 ft) |
| | Recognition | 55 m (180 ft) | 194 m (636 ft) |
| | Identification | 27 m (89 ft) | 97 m (318 ft) |

Visible-light Camera

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|--------------------------|---|
| Image Sensor | 1/2.7-in. CMOS |
| Effective Pixels | 2336 (H) x 1752 (V), 4 MP |
| Electronic Shutter Speed | 1/1 s to 1/30,000 s |
| Minimum Illumination | Color: 0.05 lux at F2.0 B/W: 0.005 lux at F2.0 0 lux with IR On |
| S/N Ratio | > 55 dB |
| IR Distance | 30.0 m (98.43 ft) |
| IR On/Off Control | Auto, Manual |
| IR LEDs | One (1) |

Visible-light Lens

| | | |
|----------------------|--|---|
| Focal Length | 2 mm | 8 mm |
| Maximum Aperture | F2.2 | F2.0 |
| Angle of View | Horizontal: 94.0° Vertical: 72.0° Diagonal: 116.0° | Horizontal: 33.4° Vertical: 25.0° Diagonal: 41.9° |
| Close Focus Distance | 0.30 m (0.98 ft) | 2.50 m (8.20 ft) |
| Focus Control | Fixed | |

Video

| | | |
|--------------------|--|---|
| Compression | H.265, H.264, H.264H, MJPEG | |
| Frame Rate | Main Stream | |
| | Thermal | 1280 x 960, 1024 x 768, 640 x 480, or 256 x 192 at 30 fps |
| | Visible | 2336 x 1752, 1080p, 720p, or D1 at 30 fps |
| | Sub Stream | |
| | Thermal | 640 x 480, 256 x 192 at 30 fps |
| | Visible | 720p, D1, or CIF at 30 fps |
| Bit Rate Control | | |
| Bit Rate | H.265 | Thermal: 14 Kbps to 3840 Kbps Visible: 14 Kbps to 8192 Kbps |
| | H.264 | Thermal: 24 Kbps to 6144 Kbps Visible: 24 Kbps to 8192 Kbps |
| Day/Night | Auto (ICR), Color, B/W | |
| BLC Mode | BLC, HLC, Digital WDR | |
| White Balance | Auto, Indoor, Outdoor, Manual, ATW, Natural, Street Lamp | |
| Gain Control | Auto, Gain Priority, Shutter Priority, Manual | |
| Noise Reduction | 2D, 3D | |
| Motion Detection | 4 | |
| Region of Interest | Off, On (4 Zones) | |
| Flip | 0°, 90°, 180°, 270° | |
| Digital Zoom | 16x | |
| Privacy Masking | 4 Region | |

Network

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|-------------------------|--|
| Ethernet | RJ-45 (10/100 Base-T) |
| Protocol | HTTPS, HTTP, TCP, ARP, RTSP, RTP, UDP, RTCP, SMTP, FTP, DHCP, DNS, DDNS, PPPOE, IPv4/v6, SNMP, QoS, UPnP, NTP |
| Interoperability | ONVIF, CGI |
| Streaming Method | Unicast / Multicast |
| Maximum User Access | 10 Users |
| Edge Storage | Micro SD Card Slot, maximum 32 GB |
| Web Viewer | IE8 or later |
| Management Software | DSS Pro, DSS Express, DMSS |
| 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 |

Audio

| | |
|-------------|----------------------|
| Compression | G.711a, G.711Mu, PCM |
|-------------|----------------------|

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. The Detection, Recognition, and Identification values shown are nominal values and should be used as estimates only. Exact value calculations depend on a wide variety of conditions.

2. The table displays the measured distances obtained from using the target size 0.2 m x 0.2 m for testing in an environment where the temperature is 23 °C (73.4 °F) and the relative humidity is below 60%. The table is for reference only. The distances within it are subject to actual conditions including atmospheric conditions, target size, the installation site, among others.

Certifications

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|-------------------------------------|---|
| Safety | UL 62368-1 CAN/CSA C22.2 No. 62368-1-14 |
| Electromagnetic Compatibility (EMC) | CFR 47 FCC Part 15 subpart B ANSI C63.4-2014 |

Interface

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|-------|---|
| Audio | Input: One (1) Channel, RCA Jack Output: One (1) Channel, RCA Jack |
| RS485 | One (1) Port |
| Alarm | Input: One (1) Channel Output: One (1) Channel |

Electrical

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|-------------------|--|
| Power Supply | 12 VDC ± 20%, 1.2 A or PoE (IEEE802.3af, Class 0) |
| Power Consumption | Basic: < 6.5 W (IR off) Maximum: < 13 W (IR on) |

Environmental

| | |
|---------------------|--|
| Operating Condition | -30° C to +50° C (-22° F to +122° F) Less than 95% RH |
| Storage Conditions | -30° C to +70° C (-22° F to +158° F) |
| Ingress Protection | IP67 |

Construction

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|--------------|--|
| Casing | Metal |
| Dimensions | ∅122.18 mm x 112.0 mm (∅4.80 in. x 4.41 in.) |
| Net Weight | 0.85 kg (1.98 lb) |
| Gross Weight | 1.0 kg (2.20 lb) |

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. Camera loses or changes focus drastically. Error writing to an onboard Micro SD card. Error sending or receiving data over the network. Unauthorized access to the camera. |
|-------------------|---|

Premium Features

| | |
|-----------|---|
| Tripwire | A target crosses a user-defined line. |
| Intrusion | A target enters or exits a defined perimeter. |

Thermal Analytics+

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|---------------------------------|---|
| Excessive Temperature Detection | Detects a rise in temperature over a short time and issues an alarm. |
| Cold/Hot Spot Trace | Indicates the coldest and the hottest spot of the scene. |
| Smoking Detection | Detects a person smoking in the thermal image and triggers a pre-determined action (voice prompt, white light) to alert the person of the smoking policy. |
| Human/Vehicle Classification | Detects human or vehicle violations using Tripwire or Intrusion detection methods. |

Effective IVS Distances – Thermal Lens

| | 2 mm | 7 mm |
|--------------------------|--------------------|----------------------|
| Human (1.80 m x 0.50 m) | 15.0 m (49.21 ft) | 52.50 m (172.24 ft) |
| Vehicle (4.0 m x 1.40 m) | 42.0 m (137.80 ft) | 146.50 m (480.64 ft) |

Rapid Temperature Rise Detection Distance²

| | 2 mm | 7 mm |
|--|-------------------|--------------------|
| Target Size: 0.2 m x 0.2 m, Recommended Distance | 8.30 m (27.23 ft) | 29.2 m (95.80 ft) |
| Target Size: 0.2 m x 0.2 m, Maximum Distance | 12.0 m (39.73 ft) | 40.0 m (131.23 ft) |

Ordering Information

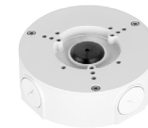
| Type | Part Number | Description |
|--------------------------------|------------------------|---|
| Hybrid Network Camera | DHI-TPC-DF1241-B2F2-S2 | Hybrid Network Eyeball Camera, Thermal: 256 x 192, 2 mm lens, Visible-light: 4MP, 2 mm lens |
| | DHI-TPC-DF1241-B7F8-S2 | Hybrid Network Eyeball Camera, Thermal: 256 x 192, 7 mm lens, Visible-light: 4MP, 8 mm lens |
| Mounting Accessories, optional | PFA106 | Mount Adapter |
| | PFA130-E | Junction Box |
| | PFA152-E | Pole Mount (use with PFB203W wall mount) |
| | PFB203W | Wall Mount |
| | PFB220C | Ceiling Mount (use with PFA106 mount adapter) |
| | DH-PFM320D-US | 12 VDC, 2 A Power Adapter |

Accessories

Optional:



PFA106
Mount Adapter



PFA130-E
Junction Box



PFA152-E
Pole Mount



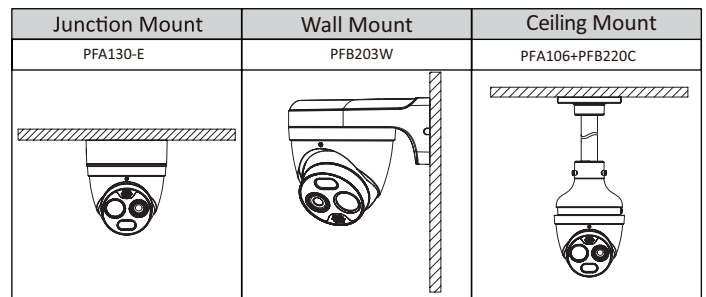
PFB203W
Wall Mount



PFB220C
Ceiling Mount



DH-PFM320D-US
12 VDC, 2 A
Power Adapter



Dimensions (mm/in.)

