# DHI-TPC-BF1241-T

## WizSense Thermal Network Bullet Camera

· Uncooled VOx thermal sensor technology

· Athermalized lens (thermal camera), focus-free

· 1/2.7'' 4Megapixel progressive scan CMOS

· Support ROI, motion detection, color palettes

· Smoking and call behaviour detection

· Support fire detection and alarm

· Built-in 1/1 alarm in/out

· Micro SD memory, IP67, PoE

· Smart linkage with strobe light and audio

· Temperature measurement

· Dual image fusion (visible and thermal images)

Launched by Dahua Technology, WizSense is a series of AI products and solutions that adopts 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.

## System Overview

Featuring a dual lens, fixed camera, this series provides an all-in-one solution for capturing video surveillance for indoor and outdoor applications. Together with Thermal and Visible Technology, the camera is the perfect solution for dark, small area monitoring applications. The series combines one thermal camera for monitoring in total darkness and one visible camera with Smart IR for confirming details.

## Functions

### Uncooled VOx Technology

Dahua thermal cameras use uncooled VOx sensor technology. The detector is small-sized, and highly sensitive allowing the camera to reveal images in greater detail, giving you more visual information on a monitored site. It also improves the accuracy of temperature measurements, ensuring that even minute temperature changes are detected.

### High Sensitivity

High thermal sensitivity (< 50 mK) makes these cameras capture images in fine detail, and detect subtle and large temperature changes.

### Fire Detection & Alarm

With its extended detection range, the camera can detect fires that are in locations distant to it. It is also highly sensitive to temperature changes, allowing the accuracy of its fire detection to be higher than cameras that work in the visible light range.

### Temperature Measurement

Dahua thermal cameras (-T models) provide remote temperature monitoring function with the ability to set temperature threshold alarms. Object temperatures can be monitored in daytime or at night, making them ideal for usage in power plant or oil extraction applications where overheating can be dangerous. When the temperature exceeds the defined threshold, an alarm is triggered. The temperature range is between −20 °C to 550 °C (−4 °F to +1022 °F).

### Intelligent Video System (IVS)

With its built-in intelligent video analytics, the camera detects and analyzes moving objects for improved video surveillance. The camera has a wide range of intelligent detection capabilities, allowing the detection of multiple types of objects and object behaviors, such as vehicle detection. IVS also supports tripwire analytics, allowing the camera to detect when a pre-determined line has been crossed.

### Smoking Detection

Empowered by deep learning AI technology, the camera can automatically detect and trigger alarms for people smoking, providing intelligent sound and light warnings to dissuade smokers, and avoid potential risks and loss. It multi-tasks in extracting elements from the visible light and thermal image at the same time to detect smoke and the person that is actively smoking.

### Environmental

Developed to operate in extreme conditions, the camera can function in temperatures ranging from −30 °C to +50 °C (−22 °F to +122 °F). It was subjected to rigorous dust and water immersion tests, gaining its IP66 certification, making it suitable for demanding outdoor applications. For environments with rain, sleet, snow and fog, an integrated wiper (optional) provides users with clear visibility at all times.

### Protection

The camera supports ± 20% voltage input, making it suitable for even the most unstable conditions. It has 6 kV lightning certification, providing strong protection for both the camera and its structure against lightning, making it ideal for outdoor applications.

## Technical Specification

### Thermal

| | |
|---|---|
| Detector Type | Vanadium Oxide Uncooled FPA |
| Max. Resolution | 256 × 192 |
| Pixel Pitch | 12 μm |
| Spectral Range | 8 μm–14 μm |
| Thermal Sensitivity (NETD) | < 50 mK (@f/1.0, 25 Hz, 300 K) |

| | | | |
|---|---|---|---|
| Focal Length | 3.5 mm | 7 mm | 10 mm |
| Field of View | H: 50.6°, V: 37.8° | H: 24°, V: 18° | H: 17.3°, V: 13.1° |
| Close Focus Distance | 0.5 m (1.64 ft) | 1.0 m (3.28 ft) | 2.0 m (6.56 ft) |
| Effective Distance① Human (1.8 m × 0.5 m) | D②: 146 m (479 ft) R③: 38 m (125 ft) I④: 19 m (622 ft) | D: 292 m (958 ft) R: 75 m (246 ft) I: 38 m (125 ft) | D: 417 m (1,368 ft) R: 107 m (351 ft) I: 54 m (177 ft) |
| Effective Distance Vehicle (4.0 m × 1.4 m) | D: 389 m (1,276 ft) R: 97 m (318 ft) I: 49 m (161 ft) | D: 778 m (2,552 ft) R: 194 m (636 ft) I: 97 m (318 ft) | D: 1,111 m (3,645 ft) R: 278 m (912 ft) I: 139 m (456 ft) |

Note:
①Effective Distance: The optimal values calculated according to Johnson's Criteria. They are for reference only. The actual performance depends on environmental conditions.
②D (Detection Distance): Detects objects, but cannot recognize their characteristics. Detected objects only cover a small amount of pixels (objects must cover more than 3.6 pixels of the image).
③R (Recognition Distance): Classifies objects into general categories, such as human, vehicle, and building (the object must cover more than 14 pixels of the image).
④I (Identification Distance): Classifies objects into specific categories based on their characteristics, such as soldier, pickup truck, and gas station (the object must cover more than 28 pixels of the image).

| | |
|---|---|
| Aperture | F1.0 |
| Digital Detail Enhancement (DDE) | Yes |
| Digital Zoom | 16× |
| AGC | Auto; Manual |
| Noise Reduction | 2D NR; 3D NR |
| Image Flip | 90°; 180°; 270° |
| Color Palettes | 18 (Whitehot; Blackhot; Ironrow; Icefire; Fusion; Rainbow; Globow; Iconbow1; Iconbow2; etc.) |
| Fusion Mode | 3 (Warm color; Cool color; Ironred) |

### Visible

| | |
|---|---|
| Image Sensor | 1/2.7'' CMOS |
| Max. Resolution | 2336 × 1752 |
| Pixel | 4 MP |
| Electronic Shutter Speed | 1/30,000 s–1 s |
| Min. Illumination | Color: 0.05 lux Black & white: 0.005 lux 0 lux (IR on) |
| IR Illumination Distance | ≥ 30 m (98.43 ft) |

| | | | |
|---|---|---|---|
| IR Illuminator On/Off Control | Auto; Manual | | |
| Focal Length | 4 mm | 8 mm | 12 mm |
| Aperture | F1.6 | F2.0 | F2.0 |
| Field of View | H: 71.2° V: 52° D: 92.6° | H: 33.4° V: 25° D: 41.9° | H: 22° V: 16.6° D: 26.9° |
| Focus Control | Fixed | | |
| Close Focus Distance | 1.0 m (3.28 ft) | 2.5 m (8.2 ft) | 2.5 m (8.2 ft) |

| | |
|---|---|
| Day/Night | Auto (ICR); Color; B/W |
| BLC | Yes |
| WDR | DWDR |
| HLC | Yes |
| White Balance | Auto; Manual; Indoor; Outdoor; Tracking; Street lamp; Natural |
| AGC | Auto; Manual |
| Noise Reduction | 2D NR; 3D NR |
| S/N Ratio | ≥ 55 dB |
| Region of Interest (RoI) | Yes |
| Image Flip | 90°; 180°; 270° |
| Exposure Compensation | Yes |

### Intelligence

| | |
|---|---|
| General Intelligence | Tripwire; Intrusion |
| Advanced Intelligence | Fire Detection & Alarm Cold & Hot Spot Trace Human & Vehicle Classification Smoking Detection Call Detection |

### Temperature Measurement

| | |
|---|---|
| Temperature Range | Low Temperature Mode: −20 °C to +150 °C (−4 °F to +302 °F) High Temperature Mode: 0 °C to +550 °C (+32 °F to +1022 °F) |
| Temperature Accuracy | Max (± 2 °C, ± 2%) Operating Temperature: −20 °C to +50 °C (−4 °F to +122 °F) |
| Temperature Mode | Spot: 12 Line: 12 Area: 12 Support 12 rules simultaneously |

### Video and Audio

| | |
|---|---|
| Video Compression | H.265; H.264M; H.264H; H.264B; MJEPG |
| Resolution | Thermal: Main Stream: 1280 × 960 (1.3M); XVGA (1024 × 768); VGA (640 × 480); 256 × 192; 1280 × 960 (by default) Sub Stream: VGA (640 × 480); 256 × 192; 256 × 192 (by default) Visual: Main Stream: 2336 × 1752; 1080p (1920 × 1080); 720p (1280 × 720); D1 (704 × 576); 2336 × 1752 (by default) Sub Stream: 720p (1280 × 720); D1 (704 × 576); CIF (352 × 288); 352 × 288 (by default) |

| | |
|---|---|
| Frame Rate | Thermal<br>50 Hz: (main stream) 1 fps–25 fps adjustable, 25 fps by default; (sub stream) 1 fps–25 fps adjustable, 15 fps by default<br>60 Hz: (main stream) 1 fps–30 fps adjustable, 30 fps by default; (sub stream) 1 fps–30 fps adjustable, 15 fps by default<br><br>Visual<br>50 Hz: (main stream) 1 fps–25 fps adjustable, 25 fps by default; (sub stream) 1 fps–25 fps adjustable, 15 fps by default<br>60 Hz: (main stream) 1 fps–30 fps adjustable, 30 fps by default; (sub stream) 1 fps–30 fps adjustable, 15 fps by default |
| Audio Compression | G.711a; G.711mu; PCM |

## Network

| | |
|---|---|
| Protocol | HTTPS; HTTP; TCP; ARP; RTSP; RTP; UDP; RTCP; SMTP; FTP; DHCP; DNS; DDNS; PPPOE; IPv4/v6; SNMP; QoS; UPnP; NTP |
| Edge Storage | Micro SD card (256 G) |
| Interoperability | ONVIF; CGI |
| Browser | IE: IE 8 and later<br>Google: 42 and earlier<br>Firefox: 42 and earlier |
| User/Host | 10 |
| Security | Authorized username and password; attached MAC address; encrypted HTTPS; IEEE 802.1x; controlled network access |

## Port

| | |
|---|---|
| Network | One 10/100 M Ethernet port (RJ-45) |
| Audio Input | 1 |
| Audio Output | 1 |
| Alarm Input | 1 |
| Alarm Output | 1 |
| RS-485 | 1 pair |

## Power

| | |
|---|---|
| Power Supply | 12 VDC (± 20%)<br>PoE |
| Power Consumption | Basic: < 8 W (LED off)<br>Max: < 14 W (LED on, heater on) |

## Environment

| | |
|---|---|
| Operating Temperature | −30 °C to +50 °C (−22 °F to +122 °F) |
| Storage Temperature | −30 °C to +70 °C (−22 °F to +158 °F) |
| Operating Humidity | ≤ 95% |
| Protection | IP67; anti-surge 6 kV; anti-elctrostatic 6 kV (touched by objects); anti-elctrostatic 8 kV (air) |

## Structure

| | |
|---|---|
| Product Dimensions | 205.5 mm × 90.4 mm × 90.1 mm (8.09'' × 3.56'' × 3.55'') |
| Packaging Dimensions | 279 mm × 187 mm × 138 mm (10.98'' × 7.36'' × 5.43'') |
| Net Weight | ≤ 0.9 kg (1.98 lb) |
| Gross Weight | ≤ 1.3 kg (2.87 lb) |

## Ordering Information

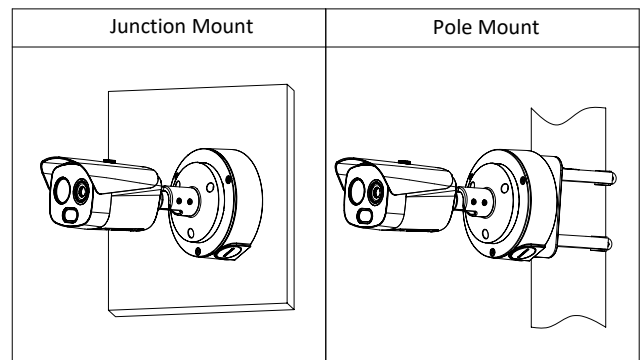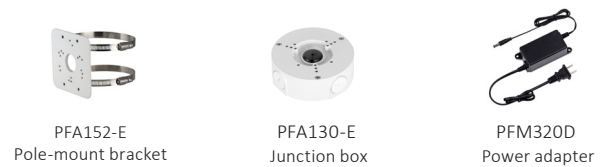| Type | Part Number | Description |
|---|---|---|
| Thermal Camera | DHI-TPC-BF1241-TB3F4-DW-S2 | Thermal: 256 × 192 3.5 mm lens<br>Visible: 4 MP 4 mm lens |
| | DHI-TPC-BF1241-TB7F8-DW-S2 | Thermal: 256 × 192 7 mm lens<br>Visible: 4 MP 8 mm lens |
| | DHI-TPC-BF1241-TB10F12-DW-S2 | Thermal: 256 × 192 10 mm lens<br>Visible: 4 MP 12 mm lens |
| Accessories | PFA152-E | Pole-mount bracket |
| | PFA130-E | Junction box |
| | PFM320D | Power adapter |

## Temperature Measurement Range

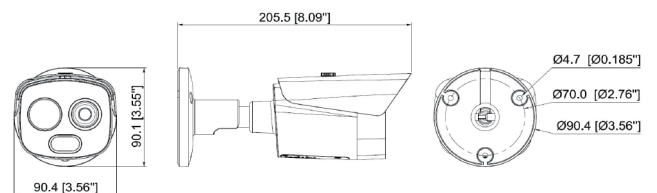| Focal Length | 3.5 mm | 7 mm | 10 mm |
|---|---|---|---|
| Min Distance | 1 m | 3 m | 4 m |
| Max Distance | 5 m | 8 m | 12 m |

Note:
The table displays the measured distances obtained from using the target size 0.1 m x 0.1 m for testing in an environment where the temperature is 23 °C 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, and more.

## Accessories



| PFA152-E<br>Pole-mount bracket | PFA130-E<br>Junction box | PFM320D<br>Power adapter |
|---|---|---|

| Junction Mount | Pole Mount |
|---|---|



## Dimensions (mm [inch])



205.5 [8.09'']
90.1 [3.55'']
90.4 [3.56'']
Ø4.7 [Ø0.185'']
Ø70.0 [Ø2.76'']
Ø90.4 [Ø3.56'']

Rev 001.001