

# DHI-TPC-BF4441-V1

## Thermal Network Hybrid Bullet Camera



- Vanadium oxide uncooled focal plane detector.
- 1/2.7" 4Megapixel progressive scan CMOS.
- AI functions: heat detection, tripwire, intrusion, and human/vehicle classification.
- Wide input voltage 12 VDC ± 20%, and PoE&PoE.
- IP67 rated.
- Supports up to 18 color palettes.

Featuring thermal and visible channels, BF4X41 series thermal network hybrid bullet camera offers various AI functions such as tripwire, intrusion, and heat detection. It can be used in medium-distance monitoring scenes such as perimeter protection and heat monitoring, and can link various alarm actions such as sound and light alarm, email and external alarm.

### Technical Specification

#### Thermal

Detector Type	Vanadium oxide uncooled focal plane detector
Effective Pixels	400 (H) × 300 (V)
Pixel Pitch	12 μm
Spectral Range	8 μm–14 μm
Sensitivity (NETD)	≤30 mK (@f/1.0)
Focal Length	9 mm; 13 mm; 19 mm; 25 mm; 35 mm
Field of View	9 mm: H: 30.2°; V: 22.6° 13 mm: H: 20.92°; V: 15.77° 19 mm: H: 14.4°; V: 10.82° 25 mm: H: 10.97°; V: 8.24° 35 mm: H: 7.85°; V: 5.89°
Thermal Focus Control	Fixed-focal
Close Focus Distance	9 mm: 1.8 m (5.91 ft) 13 mm: 4 m (13.12 ft) 19 mm: 8 m (26.25 ft) 25 mm: 15 m (49.21 ft) 35 mm: 28 m (91.86 ft)
Detection Distance <sup>①</sup>	9 mm: Vehicle: 1,153.8 m (3,785.43 ft); Human: 375 m (1,230.31 ft) 13 mm: Vehicle: 1,666.7 m (5,468.18 ft); Human: 541 m (1,774.93 ft) 19 mm: Vehicle: 2,435.9 m (7,991.80 ft); Human: 791.7 m (2,597.44 ft) 25 mm: Vehicle: 3,205.1 m (10,515.42 ft); Human: 1,041.7 m (3,417.65 ft) 35 mm: Vehicle: 4,487.2 m (1,4721.78 ft); Human: 1,458.3 m (4,784.45 ft)

Recognition Distance <sup>②</sup>	9 mm: Vehicle: 283 m (928.48 ft); Human: 96.4 m (316.27 ft) 13 mm: Vehicle: 408 m (1,338.58 ft); Human: 139 m (456.04 ft) 19 mm: Vehicle: 597.5 m (1,960.30 ft); Human: 203.6 m (667.98 ft) 25 mm: Vehicle: 786.2 m (2,579.40 ft); Human: 267.9 m (878.94 ft) 35 mm: Vehicle: 1,100.6 m (3,610.89 ft); Human: 375.0 m (1,230.31 ft)
Identification Distance <sup>③</sup>	9 mm: Vehicle: 142 m (465.88 ft); Human: 48 m (157.48 ft) 13 mm: Vehicle: 206 m (675.85 ft); Human: 69 m (226.38 ft) 19 mm: Vehicle: 301.6 m (989.50 ft); Human: 101.8 m (333.99 ft) 25 mm: Vehicle: 396.8 m (1,301.84 ft); Human: 133.9 m (439.3 ft) 35 mm: Vehicle: 555.6 m (1,822.83 ft); Human: 187.5 m (615.16 ft)
<p>Note:</p> <p>① Detection Distance: Detects objects, but cannot recognize their characteristics (objects must cover more than 3.6 pixels of the image).</p> <p>② Recognition Distance: Classifies objects into general categories, such as human, vehicle (the object must cover more than 14 pixels of the image).</p> <p>③ Identification Distance: Classifies objects into specific categories based on their characteristics, such as engineering truck, car (the object must cover more than 28 pixels of the image).</p>	
Digital Detail Enhancement (DDE)	Yes
Digital Zoom	19 levels
Thermal AGC	Auto/Manual
Thermal Noise Reduction	2D NR/3D NR
Image Flip	180°; Mirror

Color Palettes	18 (white hot/black hot/fusion/rainbow/golden autumn/midday/iron red/amber/jade/sunset/icefire/painting/pomegranate/emerald /spring/summer/autumn/winter)
<b>Visible</b>	
Image Sensor	1/2.7" CMOS
Max. Resolution	2688 (H) × 1520 (V)
Pixel	4 MP
Horizontal Definition	≥1100 TVL
Min. Illumination	Color: 0.01 lux Black & white: 0.001 lux 0 lux (white light on)
Visible AGC	Auto/Manual
Visible Noise Reduction	2D NR/3D NR
S/N Ratio	>55 dB
White Balance	Auto; manual; indoor; outdoor; tracking; sodium lamp; street lamp; natural
Defog	Electronic defog
Electronic Shutter Speed	1 s–1/30,000 s (auto/manual)
BLC	Yes
WDR	Yes
HLC	Yes
Day/Night	Auto (ICR); Color; B/W
Iris Control	Fixed
Image Flip	180°; Mirror
Exposure Compensation	Yes
Visible Focus Control	Fixed-focal
Focal Length	4 mm; 6 mm; 8 mm; 12 mm
Field of View	4 mm: H: 91.1°; V: 48.2° 6 mm: H: 56.1°; V: 30.1° 8 mm: H: 41.3°; V: 23.1° 12 mm: H: 37.3°; V: 21.4°
Close Focus Distance	4 mm: 2 m (6.56 ft) 6 mm: 4.5 m (14.76 ft) 8 mm: 8 m (26.25 ft) 12 mm: 7.4 m (24.28 ft)
Aperture	F1.6
Illuminator On/Off Control	Auto; manual
Illumination Distance	30 m (98.43 ft)

**Audio and Video**

Video Compression	H.265; H.264H; H.264
Resolution	Thermal: Main stream: 1280 × 1024; 1280 × 960; 1280 × 720; 400 × 300; 1280 × 960 (default) Sub stream: 640 × 512; 640 × 480; 400 × 300; 400 × 300 (default) Visible: Main stream: 2688 × 1520; 2560 × 1440; 1920 × 1080; 1280 × 720; 704 × 576; 2560 × 1440 (default) Sub stream: 704 × 576; 352 × 288; 704 × 576 (default)

Video Frame Rate	Thermal (50 Hz): Main stream: 1 fps–25 fps, 25 fps by default Sub stream: 1 fps–25 fps, 15 fps by default Visible (50 Hz): Main stream: 1 fps–25 fps, 25 fps by default Sub stream: 1 fps–25 fps, 15 fps by default Thermal (60 Hz): Main stream: 1 fps–30 fps, 30 fps by default Sub stream: 1 fps–30 fps, 15 fps by default Visible (60 Hz): Main stream: 1 fps–30 fps, 30 fps by default Sub stream: 1 fps–30 fps, 15 fps by default
Audio Compression	G.711a; G.711 mu
Image Encoding Format	JPEG

**Function**

Two-way Audio	Yes
Sound and Light Alarm	Local audio and white light alarm prompts
Network Protocol	IPv4/IPv6; HTTP; HTTPS; 802.1x; QoS; FTP; SMTP; UPnP; SNMP; DNS; DDNS; NTP; RTSP; RTP; TCP; UDP; IGMP; ICMP; DHCP; PPPoE
Region of Interest (RoI)	Yes (customizable)
Storage	FTP; Micro SD card (512 GB, hot swapping)
Micro SD Card (Max.)	512 GB
Interoperability	ONVIF; CGI; DaHua SDK
Browser	IE; Firefox; Chrome; Safari
User/Host	Up to 20 (total bandwidth: 64 MB)
Security	Authorized username and password; attached MAC address; encrypted HTTPS; IEEE 802.1x; controlled network access
User Management	Up to 20 users; supports multi-level user permissions (2 levels): management group and user group
Malfunction Detection	Network disconnection detection; IP conflict detection; memory card state detection; memory space detection
Fusion Mode	Yes. Off by default
PIP	Yes

**Intelligence**

Heat Detection	Yes
Cold/Hot Spot Trace	Yes
Perimeter Protection	Yes. Supports tripwire and intrusion.
Target Distinction	Human/Vehicle Classification
Smoke Detection	Yes

**Port**

Analog Output	1 × CVBS output; BNC port
Network Port	1 × RJ-45 (10/100 Base-T)
Alarm Input	2
Alarm Output	2
Audio Input	1
Audio Output	1

RS-485	1
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**Power**

Power Supply	12 VDC ± 20%, PoE (802.3af), ePoE
Power Consumption	Basic: 4.68 W (12 VDC); 5.4 W (PoE) Max.: 11.88 W (12 VDC); 12.8 W (PoE)
ePoE	Yes

**Environment**

Operating Temperature	-30 °C to +70 °C (-22 °F to +158 °F)
Operating Humidity	≤95%
Storage Temperature	-40 °C to +70 °C

**Physical Characteristics**

Protection	IP67
Reliability	Surge protection: 6 kV Air discharge: 15 kV Contact discharge: 8 kV

**Structure**

Product Dimensions	300.9 mm × 130.2 mm × 120.1 mm (11.85" × 5.13" × 4.73") (L × W × H)
Packaging Dimensions	Package: 365 mm × 175 mm × 176 mm (14.37" × 6.89 × 6.93") (L × W × H) Protection box: 902 mm × 380 mm × 380 mm (35.51" × 14.96" × 14.96") (L × W × H)
Net Weight	≤1.4 kg (3.09 lb)
Gross Weight	≤1.9 kg (4.19 lb)
Lens	Included
Bracket	Wall mount: PFA121 (optional) Corner mount: PFA151, PFA121 (optional) Pole mount: PFA152-E, PFA121 (optional)

**Certification**

Certifications	CE/FCC
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**Heat Detection Distance**

Focal Length	Max. Distance
9 mm	86 m (282.15 ft)
13 mm	141 m (462.60 ft)
19 mm	220 m (721.78 ft)
25 mm	280 m (918.64 ft)
35 mm	420 m (1,377.95 ft)

Note:  
The table displays the measured distances obtained from using the target size 0.2 m × 0.2 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.

**Perimeter Protection Distance**

Focal Length	Distance (Human)	Distance (Vehicle)
9 mm	63 m (206.69 ft)	189 m (620.08 ft)

13 mm	91 m (298.56 ft)	273 m (895.67 ft)
19 mm	133 m (436.35 ft)	399 m (1,309.06 ft)
25 mm	175 m (574.15 ft)	525 m (1,722.44 ft)
35 mm	245 m (80.381 ft)	735 m (2,411.42 ft)

Note:  
The table displays the optimal distance obtained from using the target sizes 1.8 m × 0.5 m (human) and 4 m × 1.4 m (vehicle) 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.

**Ordering Information**

Type	Model	Description
Security	DHI-TPC-BF4441-B9F4-V1	Thermal Network Hybrid Bullet Camera
	DHI-TPC-BF4441-B13F6-V1	Thermal Network Hybrid Bullet Camera
	DHI-TPC-BF4441-B19F8-V1	Thermal Network Hybrid Bullet Camera
	DHI-TPC-BF4441-B25F12-V1	Thermal Network Hybrid Bullet Camera
	DHI-TPC-BF4441-B35F12-V1	Thermal Network Hybrid Bullet Camera
Accessories (Optional)	PFA121 + PFA151	Corner Mount
	PFA121	Junction Mount
	PFA152-E + PFA121	Vertical Pole Mount
	PFM320D	Power Adapter

**Accessories**

Optional:



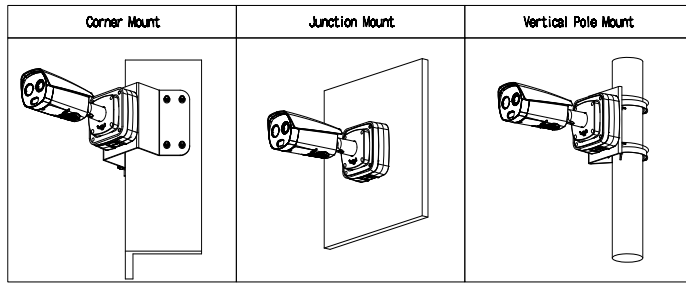
PFA121 + PFA151  
Corner Mount

PFA121  
Junction Mount

PFA152-E + PFA121  
Vertical Pole Mount



PFM320D  
Power Adapter



**Dimensions (mm[inch])**

