DHI-TPC-BF5441

Thermal Network Hybrid Bullet Camera

- Vanadium oxide uncooled focal plane detector.
- 1/1.8" 4Megapixel progressive scan CMOS.
- Heat detection and alarm, tripwire, intrusion, and target filtering.
- Junction box optional.
- Illumination distance is up to 80 m.
- IP67 rated.
- Wide input voltage 12 VDC ± 20%, and PoE power supply.
- Smart linkage of white light and audio.

Featuring thermal and visible channels, Thermal Network Hybrid Bullet Camera offers various AI functions such as heat detection, tripwire, intrusion, and human/vehicle classification, and supports sound and light alarm. The camera is widely applied in outdoor scenes of the medium-distance perimeter protection and heat detection.

Technical Specification

Thermal

Detector Type	Vanadium oxide uncooled focal plane detector
Effective Pixels	400 (H) × 300 (V)
Pixel Pitch	17 μm
Spectral Range	8 μm–14 μm
Sensitivity (NETD)	≤35 mK (@f/1.0)
Field of View	7.5 mm: H:53.5°; V: 39.5° 13 mm: H:30.4°; V: 22.5° 19 mm: H:20.3°; V: 15.3° 25 mm: H:15.5°; V: 11.6° 35 mm: H:11.1°; V: 8.3°
Thermal Focus Control	Fixed-focal
Close Focus Distance	7.5 mm: 1.2 m (3.93 ft) 13 mm: 2.9 m (9.51 ft) 19 mm: 5.5 m (18.04 ft) 25 mm: 9 m (29.53 ft) 35 mm: 36 m (118.10 ft)
Detection Distance①	7.5 mm: Vehicle: 633 m (2,078.36 ft); Human: 206 m (675.47 ft) 13 mm: Vehicle: 1,176 m (3,859.81 ft); Human: 382 m (1,253.26ft) 19 mm: Vehicle: 1,719 m (5,641.26 ft); Human: 559 m (1,833.41 ft) 25 mm: Vehicle: 2,262 m (7,422.71 ft); Human: 735 m (2,411.38 ft) 35 mm: Vehicle: 3,167 m (10,391.80 ft); Human: 1,029 m (3,375.94 ft)
Recognition Distance②	7.5 mm: Vehicle: 155 m (509.79 ft); Human: 53 m (173.69 ft) 13 mm: Vehicle: 289 m (946.75 ft); Human: 98 m (321.51 ft) 19 mm: Vehicle: 422 m (1,383.71 ft); Human: 144 m (471.45 ft) 25 mm: Vehicle: 555 m (1,820.67 ft); Human: 189 m (620.07 ft) 35 mm: Vehicle: 777 m (2,548.93 ft); Human: 256 m (868.46 ft)
Identification Distance③	7.5 mm: Vehicle: 78 m (257.32 ft); Human: 26 m (86.85 ft) 13 mm: Vehicle: 146 m (477.88 ft); Human: 49 m (160.76ft) 19 mm: Vehicle: 213 m (698.44 ft); Human: 72 m (235.72 ft) 25 mm: Vehicle: 280 m (919.00 ft); Human: 95 m (310.16 ft) 35 mm: Vehicle: 392 m (1,286.60 ft); Human: 132 m (433.06 ft)

Note:
① Detection Distance: Detects objects, but cannot recognize their characteristics (objects must cover more than 3.6 pixels of the image).
② Recognition Distance: Classifies objects into general categories, such as human, vehicle (the object must cover more than 14 pixels of the image).
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).

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)

Visible

Image Sensor	1/1.8" 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
Field of View	4 mm: H: 87.0°; V: 47.3° 6 mm: H: 55.3°; V: 30.0° 12 mm: H:37.3°; V: 21.4° 10–30 mm: H: 42°–15°;V: 23°–8.4°
Close Focus Distance	4 mm: 1.2 m (3.93 ft) 6 mm: 2.5 m (8.20 ft) 12 mm: 7.4 m (24.27 ft) 10–30 mm: 9 m (29.53 ft)
Aperture	4 mm: F1.6 6 mm: F1.6 12 mm: F1.7 10–30 mm: F1.7
Illuminator On/Off Control	Auto; manual
Illumination Distance	80 m (262.47 ft)

Audio and Video

Video Compression	H.265; H.264M; H.264H; H.264B
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)
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
Target Tracking	Yes
Smoke Detection	Yes

Port

Analog Output	1 × CVBS output; BNC port (not supported by the device with a junction box)

Network Port	1 × RJ-45 (10/100 Base-T)
Alarm Input	2
Alarm Output	2
Audio Input	1
Audio Output	1
RS-485	1

Power

Power Supply	12 VDC ± 20%, PoE (802.3af), ePoE
Power Consumption	Basic: 5 W (12 VDC); 8.9 W (PoE) Max: 15 W (12 VDC); 18 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 (–40 °F to +158 °F)

Physical Characteristics

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

Structure

Product Dimensions	300.9 mm × 181.8 mm × 181.8 mm (11.85" × 7.16" × 7.16") (L × W × H)
Packaging Dimensions	423 mm × 180 mm × 178 mm (16.65" × 7.09" × 7.01") (L × W × H)
Net Weight	≤2.35 kg (5.18 lb)
Gross Weight	≤2.7 kg (5.95 lb)
Lens	Included

Certification

Certifications	CE/FCC

Heat Detection Distance

Certifications	Max. Distance
7.5 mm	45 m (147.64 ft)
13 mm	78 m (255.91 ft)
19 mm	114 m (374.02 ft)
25 mm	150 m (492.13 ft)
35 mm	210 m (688.98 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

Certifications	Distance (Human)	Distance (Vehicle)
7.5 mm	60 m (196.85 ft)	180 m (590.55 ft)
13 mm	104 m (341.21 ft)	312 m (1,023.62 ft)
19 mm	152 m (498.69 ft)	456 m (1,496.06 ft)
25 mm	200 m (656.17 ft)	600 m (1,968.50 ft)
35 mm	280 m (918.64 ft)	840 m (2,755.91 ft)

Note:
The table displays the measured distances obtained from using the target sizes 1.8 m × 0.5 m (human) and 1.4 m × 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-BF5441-B7F4 DHI-TPC-BF5441-B7F4-J	Thermal: 7.5 mm; Visible: 4 mm
	DHI-TPC-BF5441-B13F6 DHI-TPC-BF5441-B13F6-J	Thermal: 13 mm; Visible: 6 mm
	DHI-TPC-BF5441-B19F12 DHI-TPC-BF5441-B19F12-J	Thermal: 19 mm; Visible: 12 mm
	DHI-TPC-BF5441-B25F12 DHI-TPC-BF5441-B25F12-J	Thermal: 25 mm; Visible: 12 mm
	DHI-TPC-BF5441-B35Z3 DHI-TPC-BF5441-B35Z3-J	Thermal: 35 mm; Visible: 10mm-30 mm
Accessories (Optional)	PFA151 + PFA121	Corner Mount Bracket
	PFA121	Junction Mount
	PFA150+PFA121	Vertical Pole Mount Bracket
Accessories (Optional for -J model)	—	Junction Mount
	PFA154	Vertical Pole Mount Bracket

Accessories

Optional:

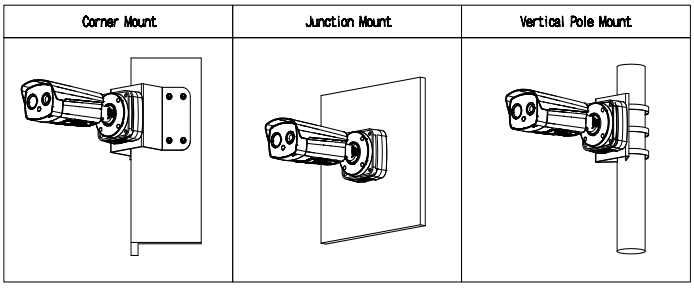
PFA151 + PFA121
Corner Mount Bracket

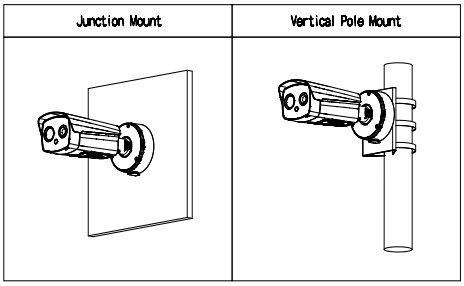
PFA121
Junction Mount

PFA150 + PFA121
Vertical Pole Mount Bracket

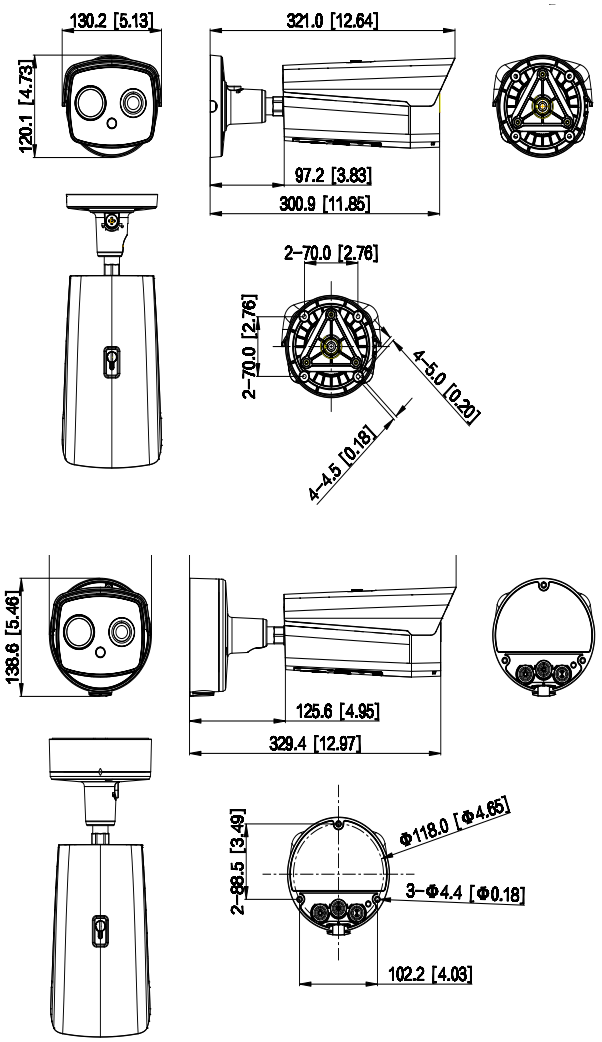
For Junction box model (-J):

PFA154
Vertical Pole Mount Bracket





Dimensions (mm[inch])



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