

# DHI-TPC-BF5641

## 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	640 (H) × 512 (V)
Pixel Pitch	12 μm
Spectral Range	8 μm–14 μm
Sensitivity (NETD)	≤35 mK (@f/1.0)
Field of View	5 mm: H: 90.0°; V: 70.7° 9 mm: H: 50.0°; V: 39.6° 13 mm: H: 32.0°; V: 25.7° 19 mm: H: 22.9°; V: 18.4° 25 mm: H: 17.6°; V: 14.1° 35 mm: H: 12.5°; V: 10°
Thermal Focus Control	Fixed-focal
Close Focus Distance	5 mm: 0.8 m (6.56 ft) 9 mm: 2.2 m (13.120ft) 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: 13 m (42.65 ft)
Detection Distance <sup>①</sup>	5 mm: Vehicle: 641 m (2,103.10 ft); Human: 208 m (682.24 ft) 9 mm: Vehicle: 1,154 m (3,785.58 ft); Human: 375 m (1,230.00 ft) 13 mm: Vehicle: 1,667 m (5,468.07 ft); Human: 542 m (1,777.12 ft) 19 mm: Vehicle: 2,436 m (7,991.79 ft); Human: 792 m (2,597.33 ft) 25 mm: Vehicle: 3,205 m (10,515.51 ft); Human: 1,042 m (3,417.54 ft) 35 mm: Vehicle: 4,487 m (14,721.72 ft); Human: 1,458 m (4,784.56 ft)

Recognition Distance <sup>②</sup>	5 mm: Vehicle: 157 m (515.86 ft); Human: 54 m (175.76 ft) 9 mm: Vehicle: 283 m (928.54 ft); Human: 96 m (314.88 ft) 13 mm: Vehicle: 409 m (1,341.22 ft); Human: 139 m (456.97 ft) 19 mm: Vehicle: 597 m (1,960.25 ft); Human: 204 m (667.89 ft) 25 mm: Vehicle: 786 m (2,579.28 ft); Human: 268 m (878.8 ft) 35 mm: Vehicle: 1,101 m (3,610.99 ft); Human: 375 m (1,230.31 ft)
Identification Distance <sup>③</sup>	5 mm: Vehicle: 79 m (260.38 ft); Human: 27 m (87.88 ft) 9 mm: Vehicle: 143 m (468.69 ft); Human: 48 m (157.44 ft) 13 mm: Vehicle: 206 m (677.00 ft); Human: 70 m (228.49 ft) 19 mm: Vehicle: 302 m (989.46 ft); Human: 102 m (333.94 ft) 25 mm: Vehicle: 397 m (1,301.92 ft); Human: 134 m (439.40 ft) 35 mm: Vehicle: 556 m (1,822.69 ft); Human: 188 m (615.16 ft)
Note:	<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	24 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 × 720; 640 × 512; 1280 × 1024 (default) Sub stream: 640 × 512; 320 × 256; 640 × 512 (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
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**Heat Detection Distance**

Focal Length	Max. Distance
5 mm	30 m (89.43 ft)
9 mm	56 m (183.73 ft)
13 mm	78 m (255.90 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**

Focal Length	Distance (Human)	Distance (Vehicle)
5 mm	40 m (131.23 ft)	120 m (393.70 ft)
9 mm	72 m (236.22 ft)	216 m (708.66 ft)
13 mm	104 m (341.21 ft)	312 m (1023.62 ft)

19 mm	152 m (498.69 ft)	456 m (1496.06 ft)
25 mm	200 m (656.17 ft)	600 m (1968.50 ft)
35 mm	280 m (918.64 ft)	840 m (2755.91 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-BF5641-B5F4 DHI-TPC-BF5641-B5F4-J	Thermal: 5 mm; Visible: 4 mm
	DHI-TPC-BF5641-B9F4 DHI-TPC-BF5641-B9F4-J	Thermal: 9 mm; Visible: 4 mm
	DHI-TPC-BF5641-B13F6 DHI-TPC-BF5641-B13F6-J	Thermal: 13 mm; Visible: 6 mm
	DHI-TPC-BF5641-B19F12 DHI-TPC-BF5641-B19F12-J	Thermal: 19 mm; Visible: 12 mm
	DHI-TPC-BF5641-B25F12 DHI-TPC-BF5641-B25F12-J	Thermal: 25 mm; Visible: 12 mm
	DHI-TPC-BF5641-B35Z3 DHI-TPC-BF5641-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

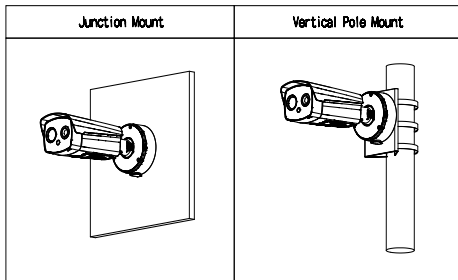
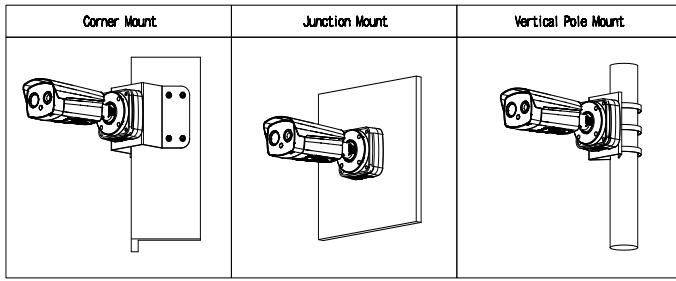
PFA121  
Junction Mount

PFA150 + PFA121  
Vertical Pole Mount Bracket

For Junction box model (-J):



PFA154  
Vertical Pole Mount Bracket



**Dimensions (mm[inch])**

