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.

System Overview

The Thermal Network Hybrid Bullet Camera provides an all-in-one solution for video monitoring whether day or night. It has 18 different kinds of thermal pseudo-color modes. It also offers tripwire, intrusion, and multiple types of intelligence analysis functions such as calling, smoking and fire.

Scene

Ideal for locations that require fire protection such as factories, transit stations, equipment rooms, substations, computer rooms, and more. It is also great for enhancing the perimeter protection of industrial sites, historical and cultural sites, coal yards, and compounds with buildings.

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.

AI Functions

Supports multiple intelligent functions such as heat detection, tripwire, intrusion, and person and vehicle classification detection. It supports alarm linkages, such as sending emails and triggering external alarms.

Heat Detection & Alarm

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

Environment (−30 °C to +70 °C)

Developed to operate in extreme conditions, the camera can function in temperatures ranging from −30 °C to +70 °C (−22 °F to +158 °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.

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[1]	5 mm: Vehicle: 555 m (1,820.40 ft); Human: 208 m (682.24 ft) 9 mm: Vehicle: 1,000 m (3,280.00 ft) ; Human: 375 m (1,230.00 ft) 13 mm: Vehicle: 1,019 m (3,342.32); Human: 382 m (1,253.26ft) 19 mm: Vehicle: 1,490 m(4,887.20ft); Human: 558 m (1,830.68 ft) 25 mm: Vehicle: 1,960 m(6,428.80ft); Human: 735 m (2,411.38 ft) 35 mm: Vehicle: 2,745 m (9,003.60 ft); Human: 1,029 m (3,375.94 ft)
Recognition Distance[2]	5 mm: Vehicle: 139 m (455.92 ft); Human: 53 m (173.84 ft) 9 mm: Vehicle: 250 m (820.00 ft); Human: 96 m (314.88 ft) 13 mm: Vehicle: 255 m (836.60 ft); Human: 98 m (321.51 ft) 19 mm: Vehicle: 372 m (1,220.45 ft); Human: 143 m (469.15 ft) 25 mm: Vehicle: 490 m (1,607.59 ft); Human: 189 m (620.07 ft) 35 mm: Vehicle: 686 m (2,250.62 ft); Human: 264 m (866.13 ft)
Identification Distance[3]	5 mm: Vehicle: 69 m (226.32 ft); Human: 26 m (85.28 ft) 9 mm: Vehicle: 125 m (410.00 ft); Human: 48 m (157.44 ft) 13 mm: Vehicle: 127 m (416.66 ft); Human: 49 m (160.76ft) 19 mm: Vehicle: 186 m (610.22 ft); Human: 71 m (232.93 ft) 25 mm: Vehicle: 245 m (803.79 ft); Human: 94 m (308.39 ft) 35 mm: Vehicle: 343 m (1125.31 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	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: 15.5°; V: 11.6°
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 (illuminator off, heater off, speaker off) Max: 15 W (illuminator on, heater on, speaker on)
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

Focal Length	Heat Detection Distance (Recommended)	Heat Detection Distance (Max.)
5 mm	39.5 m (129.56 ft)	43.9 m (143.99 ft)
9 mm	90 m (295.60 ft)	78.9 m (258.79 ft)
13 mm	57 m (186.96 ft)	114 m (373.92 ft)
19 mm	83.3 m (273.22 ft)	166.7m (546.77 ft)
25 mm	109.6 m (359.49 ft)	219.3 m (719.30 ft)
35 mm	153.5 m (503.48 ft)	307 m (1,006.96 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	Perimeter Protection Distance (Human)	Perimeter Protection Distance (Vehicle)
5 mm	50 m (164.00 ft)	150 m (492.00 ft)
9 mm	90 m (295.60 ft)	270 m (885.60 ft)
13 mm	130 m (426.40 ft)	390 m (1,279.20 ft)
19 mm	190 m (623.20 ft)	570 m (1,869.60 ft)
25 mm	250 m (820.00 ft)	750 m (2,460.00 ft)
35 mm	350 m (1,148.00 ft)	1,050 m (3,444.00 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
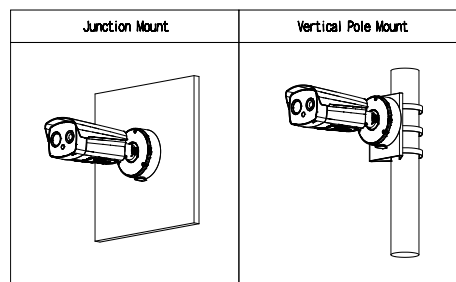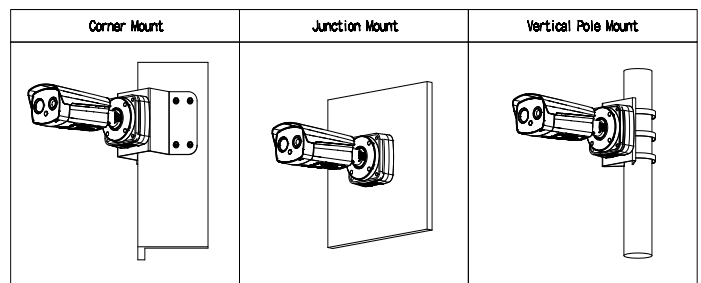
PFA121
Junction Mount

PFA150 + PFA121
Vertical Pole Mount Bracket

For Junction box model (-J):

PFA154
Vertical Pole Mount Bracket

Corner Mount	Junction Mount	Vertical Pole Mount

Junction Mount	Vertical Pole Mount

Dimensions (mm[inch])