

DHI-TPC-PT8641B

Thermal Network Hybrid PTZ Camera



- Vanadium oxide uncooled focal plane detector.
- 4Megapixel progressive scan CMOS.
- Vari-focus thermal lens.
- Pan: 0° to 360°, tilt: -45° to +60°.
- AI functions: heat detection, tripwire, intrusion, and human/vehicle classification.
- Auto rain-sensing wiper.
- Optical defog and Optical Image Stabilization (OIS).
- Wide input voltage of 100 –300 VAC.
- IP66 rated.

Featuring thermal and visible channels, Thermal Network Hybrid Pan & Tilt Camera offers various AI functions such as heat detection, smoke detection, tripwire, intrusion, human/vehicle classification and boat detection. It is widely applied in outdoor scenes of the long-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	17 μm
Spectral Range	8 μm–14 μm
Sensitivity (NETD)	≤35 mK@f/1.0
Focal Length	100 mm; 150 mm; 20 mm–100 mm; 30 mm–150 mm; 38 mm–190 mm; 23 mm–230 mm
Field of View	100 mm: H: 6.2°; V: 5.0° 150 mm: H: 4.15°; V: 3.32° 20 mm–100 mm: H: 31.6°–6.2°; V: 25.1°–5° 30 mm–150 mm: H: 20.6°–4.2°; V: 16.5°–3.3° 38 mm–190 mm: H: 16.7°–3.5°; V: 12.5°–2.6° 23 mm–230 mm: H: 26.6°–2.7°; V: 21.4°–2.2°
Focus Control	Manual; Auto; Semi-auto
Close Focus Distance	100 mm: 5 m (16.4 ft) 150 mm: 15 m (49.21 ft) 20 mm–100 mm: 2 m (6.56 ft) 30 mm–150 mm: 5 m (16.4 ft) 38 mm–190 mm: 5 m (16.4 ft) 23 mm–230 mm: 2 m (6.56 ft)
Optical Zoom	100 mm: None 150 mm: None 20 mm–100 mm: 5× 30 mm–150 mm: 5× 38 mm–190 mm: 5× 23 mm–230 mm: 10×
Digital Detail Enhancement (DDE)	Yes
Image Stabilization	Electronic Image Stabilization (EIS)

Digital Zoom	24 levels
AGC	Auto; Manual
Noise Reduction	2D NR; 3D NR
Image Flip	180°
Color Palettes	18 (white hot; black hot; fusion; rainbow; globow; ironbow1; ironbow2; sepia; color1; color2; icefire; rain; red hot; green hot; spring; summer; autumn; winter)

Visible

Image Sensor	1/1.8" CMOS
Max. Resolution	2688 (H) × 1520 (V)
Pixel	4 MP
Horizontal Definition	6 mm–336 mm: Center ≥ 1200 TVL; Edge ≥ 900 TVL 10 mm–600 mm: Center ≥ 1200 TVL; Edge ≥ 900 TVL 10 mm–860 mm: Center ≥ 1200 TVL; Edge ≥ 900 TVL
Min. Illumination	6 mm–336 mm: Color: 0.005 lux@F1.5; Black & white: 0.0005 lux@F1.5 10 mm–600 mm: Color: 0.002 lux@F1.5; Black & white: 0.0005 lux@F1.5 10 mm–860 mm: Color: 0.002 lux (F2.8); Black & white: 0.002 lux (F2.8)
AGC	Auto; Manual
Noise Reduction	2D NR; 3D NR
S/N Ratio	≥55 dB
White Balance	Auto; manual; indoor; outdoor; tracking; sodium lamp; street lamp; natural
Defog	Optical defog

Image Stabilization	6 mm–336 mm: Optical Image Stabilization 10 mm–600 mm: Electronic Image Stabilization (EIS) 10 mm–860 mm: Optical Image Stabilization
Electronic Shutter Speed	1 s–1/30,000 s (auto/manual)
BLC	Yes
WDR	Yes
HLC	Yes
Digital Zoom	16 ×
Day/Night	Auto (ICR); Color; B/W
Image Flip	180°
Exposure Compensation	Yes
Focus Control	Auto; Semi-auto; Manual
Focal Length	6 mm–336 mm; 10 mm–600 mm; 10 mm–860 mm
Zoom Speed	6 mm–336 mm: <8.8 s 10 mm–600 mm: <12 s 10 mm–860 mm: <10 s
Field of View	6 mm–336 mm: H: 64.4°–1.28° ; V: 38.37°–0.72° 10 mm–600 mm: H: 41.2°–1.2°; V: 22.6°–0.7° 10 mm–860 mm: H: 29.13°–0.58°; V: 16.72°–0.33°
Close Focus Distance	6 mm–336 mm: 0.1 m–5 m (0.33 ft–16.4 ft) 10 mm–600 mm: 1.5 m (4.92 ft) 10 mm–860 mm: 1 m–10 m (3.28 ft–32.81 ft)
Optical Zoom	6 mm–336 mm: 56 × 10 mm–600 mm: 60 × 10 mm–860 mm: 86 ×
Aperture	6 mm–336 mm: F1.5–F5.3 10 mm–600 mm: F1.8–F5.0 10 mm–860 mm: F2.8–F8.2

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; 1920 × 1080; 1280 × 720; 704 × 576; 2688 × 1520 (default) Sub stream: 704 × 576; 352 × 288; 352 × 288 (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 Encoding	G.711a; G.711mu; PCM
Image Encoding Format	JPEG
PTZ	
Pan/Tilt Range	Pan: 0° to 360° endless Tilt: –45° to +60°

Manual Control Speed	Pan: 0.01°/s to 30°/s Tilt: 0.01°/s to 15°/s
Preset Speed	Pan: 0.01°/s to 30°/s Tilt: 0.01°/s to 15°/s
Preset	300
Tour	8 (up to 32 presets per tour)
Pattern	5
Scan	5
Power-off Memory	Yes
Privacy Masking	4 blocks
Idle Motion	Preset; Pattern; Tour; Scan; Pan
Timing Task	Preset; Pattern; Tour; Horizontal Scan
Position Display	ON/OFF
Preset Video Freeze	Yes
PTZ Limit	Yes
Telephoto Speed Limit	Yes
Positioning Accuracy	± 0.1°
Wiper	Manual/Auto. Supports setting wiper running times, frequency, and period
3D Positioning	Yes

Function

Two-way Audio	Yes
Network Protocol	HTTPS; HTTP; TCP; ARP; RTSP; RTP; UDP; RTCP; SMTP; FTP; DHCP; DNS; DDNS; PPPOE; IPv4/v6; SNMP; QoS; UPnP; NTP
Region of Interest (RoI)	Yes
Storage	FTP; Micro SD card (optional)
Micro SD Card (Max.)	512 GB
Interoperability	ONVIF; CGI; DaHuaSDK
Browser	IE: IE8 and later (includes the browsers with IE kernel, such as 360 Explorer, Sougou Explorer) Chrome: 42 and earlier Firefox: 42 and earlier
User/Host	Up to 12 (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
PIP	Yes (Intelligence automatically turns off when PIP is on)

Intelligence

Heat Detection	Yes. Marks the detected anomaly.
Cold/Hot Spot Trace	Yes
Perimeter Protection	Yes. Supports tripwire and intrusion.

Target Distinction	Human/Vehicle Classification
Target Filtering	Yes (by pixel size)
Target Tracking	Manual tracking/alarm linking tracking
Smoke Detection	Yes
Boat Detection	Yes

Port

Analog Output	1 × CVBS output; BNC port
Network Port	1 × RJ-45 (10/100 Base-T)
Alarm Input	2
Alarm Output	1
Audio Input	1
Audio Output	1
RS-485	1

Power

Power Supply	100–300 VAC (adapter included)
Power Consumption	Basic: <100 W Max: <210 W (heater on, illuminator off)

Environment

Operating Temperature	−40 °C to +70 °C (−40 °F to +158 °F)
Operating Humidity	≤95%
Storage Temperature	−40 °C to +80 °C (−40 °F to +176 °F)

Physical Characteristics

Protection	IP66
Reliability	Surge protection: 6 kV Air discharge: 15 kV Contact discharge: 8 kV

Structure

Product Dimensions	640 mm × 400 mm × 615.2 mm (25.2" × 15.75" × 24.22") (L × W × H)
Packaging Dimensions	877 mm × 567 mm × 892 mm (34.53" × 22.32" × 35.12") (L × W × H)
Net Weight	≤50 kg (110.23 lb)
Gross Weight	≤75 kg (165.35 lb)

Heat Detection Distance

Focal Length	Max. Distance
100 mm	6,000 m (19,685.04 ft)
150 mm	9,000 m (29,527.56 ft)

Note:
The table displays the measured distances obtained from using the target size 2 m × 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 (IVS Distance)

Focal Length	Distance (Vehicle)	Distance (Human)
100 mm	2,100 m (6,889.76 ft)	700 m (2,296.59 ft)
150 mm	3,150 m (10,334.65 ft)	1,050 m (3,444.88 ft)
20 mm–100 mm	2,100 m (6,889.76 ft)	700 m (2,296.59 ft)
30 mm–150 mm	3,150 m (10,334.65 ft)	1,050 m (3,444.88 ft)
38 mm–190 mm	3,990 m (13,090.55 ft)	1,330 m (4,363.52 ft)
23 mm–230 mm	4,830 m (15,846.46 ft)	1,610 m (5,282.15 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.

DRI Distance

Focal Length	Detection Distance ^①	Recognition Distance ^②	Identification Distance ^③
100 mm	Vehicle: 9,020 m (29,593.18 ft); Human: 2,941 m (9,648.95 ft)	Vehicle: 2,255 m (7,398.29 ft); Human: 735 m (2,411.42 ft)	Vehicle: 1,127 m (3,697.51 ft); Human: 368 m (1,207.35 ft)
150 mm	Vehicle: 13,529 m (44,386.48 ft); Human: 4,412 m (14,475.07 ft)	Vehicle: 3,382 m (11,095.80 ft); Human: 1,103 m (3,618.77 ft)	Vehicle: 1,691 m (5,547.90 ft); Human: 551 m (1,807.74 ft)
20 mm–100 mm	Vehicle: 9,020 m (29,593.18 ft); Human: 2,941 m (9,648.95 ft)	Vehicle: 2,255 m (7,398.29 ft); Human: 735 m (2,411.42 ft)	Vehicle: 1,127 m (3,697.51 ft); Human: 368 m (1,207.35 ft)
30 mm–150 mm	Vehicle: 13,529 m (44,386.48 ft); Human: 4,412 m (14,475.07 ft)	Vehicle: 3,382 m (11,095.80 ft); Human: 1,103 m (3,618.77 ft)	Vehicle: 1,691 m (5,547.90 ft); Human: 551 m (1,807.74 ft)
38 mm–190 mm	Vehicle: 17,137 m (56,223.75 ft); Human: 5,588 m (18,333.33 ft)	Vehicle: 4,284 m (14,055.12 ft); Human: 1,397 m (4,583.33 ft)	Vehicle: 2,142 m (7,027.56 ft); Human: 699 m (2,293.31 ft)
23 mm–230 mm	Vehicle: 20,745 m (68,061.02 ft); Human: 6,765 m (22,194.88 ft)	Vehicle: 5,186 m (17,014.44 ft); Human: 1,691 m (5,547.90 ft)	Vehicle: 2,593 m (8,507.22 ft); Human: 846 m (2,775.59 ft)

- ①Detection Distance: Detects objects, but cannot recognize their characteristics (objects must cover more than 1.5 pixels of the image).
②Recognition Distance: Classifies objects into general categories, such as human, vehicle (the object must cover more than 6 pixels of the image).
③Identification Distance: Classifies objects into specific categories based on their characteristics, such as engineering truck, car (the object must cover more than 12 pixels of the image).

Note:
The table is the standard theoretical calculation and is for reference only. The distances within it are subject to actual conditions including atmospheric conditions, target size, the installation site, and more. For the intelligent detection distance, refer to the table of Perimeter Protection Distance (IVS Distance) above.

Ordering Information		
Type	Model	Description
Thermal Camera	DHI-TPC-PT8641B-BM100Z56-BM-S53	Thermal: 100 mm; Visible: 6 mm–336 mm
	DHI-TPC-PT8641B-BM150Z60-BM-S53	Thermal: 150 mm; Visible: 10 mm–600 mm
	DHI-TPC-PT8641B-B20100Z56-BM-S53	Thermal: 20 mm–100 mm; Visible: 6 mm–336 mm
	DHI-TPC-PT8641B-B30150Z60-BM-S53	Thermal: 30 mm–150 mm; Visible: 10 mm–600 mm

Installation

