

# DHI-TPC-PT8441D-AC

## Thermal Network Anti-corrosion Multi-spectral Pan & Tilt Camera



- Vanadium oxide uncooled focal plane detector.
- 4 Megapixel progressive scan CMOS.
- AI functions such as heat detection, smoke detection, tripwire, intrusion, boat detection, human/vehicle classification.
- Pan: 0° to 360° endless, tilt: -45° to +90°.
- Optical defog and Optical Image Stabilization (OIS).
- Auto rain-sensing wiper.
- Wide input voltage 24–57 VDC.
- IP66 rated.
- Anti-corrosion

Featuring thermal and visible channels, Thermal Network Anti-corrosion Multi-spectral Pan & Tilt Camera offers various AI functions such as heat detection, smoke detection, tripwire, intrusion, human/vehicle classification, and boat detection. The camera has flexible configuration with the laser illuminator and laser ranging optional. It is applied in outdoor scenes of the long-distance perimeter protection and heat detection. With the anti-corrosion coating, the camera can be used in scenes where anti-corrosion is required, such as coasts, ports, and coastal cities.

### 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
Focal Length	50 mm; 75 mm; 100 mm
Field of View	50 mm: H: 7.8°; V: 5.8° 75 mm: H: 5.2°; V: 3.9° 100 mm: H: 3.9°; V: 2.9°
Focus Control	Auto; Manual
Aperture	50 mm: F1.0 75 mm: F1.0 100 mm: F1.1
Detection Distance <sup>①</sup>	50 mm: Vehicle: 4,525 m (14,845.43 ft); Human: 1,471 m (4,826.12 ft) 75 mm: Vehicle: 6,787 m (22,268.14 ft); Human: 2,206 m (7,237.53 ft) 100 mm: Vehicle: 9,050 m (29,690.86 ft); Human: 2,941 m (9,648.95 ft)
Recognition Distance <sup>②</sup>	50 mm: Vehicle: 1,110 m (3,641.33 ft); Human: 378 m (1,240.16 ft) 75 mm: Vehicle: 1,665 m (5,462.00 ft); Human: 567 m (1,860.24 ft) 100 mm: Vehicle: 2,220 m (7,282.66 ft); Human: 756 m (2,480.31 ft)

#### Identification Distance<sup>③</sup>

50 mm: Vehicle: 560 m (1,838.01 ft);  
Human: 189 m (620.08 ft)  
75 mm: Vehicle: 840 m (2,757.01 ft);  
Human: 284 m (931.76 ft)  
100 mm: Vehicle: 1,120 m (3,676.01 ft);  
Human: 378 m (1,240.16 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

#### Image Stabilization

Electronic Image Stabilization (EIS)

#### Digital Zoom

19 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; icfire; 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
Min. Illumination	Color: 0.005 lux Black & white: 0.0005 lux 0 lux (IR on)
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	Optical Image Stabilization
Electronic Shutter Speed	1 s–1/30,000 s (auto/manual)
BLC	Yes
WDR	Yes
HLC	Yes
Digital Zoom	Yes
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
Zoom Speed	<3.5 s
Field of View	H: 64.4°–1.28° V: 38.37°–0.72°
Close Focus Distance	0.1 m–5 m (0.33 ft–16.4 ft)
Optical Zoom	56x
Aperture	F1.5–F5.3
IR Illumination Distance	150 m (492.13 ft)
IR Illuminator On/Off Control	Auto; Manual

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; 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 +90°
Manual Control Speed	Pan: 0.1°/s–140°/s Tilt: 0.1°/s–50°/s
Preset Speed	Pan: 0.1°/s–140°/s Tilt: 0.1°/s–50°/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; auto pattern; auto tour; pan; progressive scan
Timing Task	Preset; auto pattern; auto tour; pan; progressive scan
Position Display	ON/OFF
Preset Video Freeze	Yes
Telephoto Speed Limit	Yes
Positioning Accuracy	± 0.1°
Wiper	Manual/Auto. Supports setting wiper running times, frequency, and period
3D Positioning	Yes

Laser Illumination (Optional)

Laser Illumination Consumption	Laser 800 m	4.2 ± 0.4 W
	Laser 2 km	>12 W
Laser Illumination Wavelength	Laser 800 m	850 ± 10 nm
	Laser 2 km	808 ± 5 nm
Laser Illumination Distance	Laser 800 m	≥800 m (2,624.67 ft)
	Laser 2 km	≥2,000 m (6,561.67 ft)
Angle of Laser Illuminator	Laser 800 m	2° to 70° adjustable
	Laser 2 km	0.56° to 45° adjustable
Laser Zoom Speed	Laser 800 m	<5 s
	Laser 2 km	<3 s
Brightness Setting for Laser Illumination	Auto; Manual	

Function

Two-way Audio	Yes
Network Protocol	HTTP; HTTPS; TCP; ARP; RTSP; RTP; UDP; RTCP; SMTP; FTP; DHCP; DNS; DDNS; PPPOE; IPv4/v6; SNMP; QoS; UPnP; NTP; Multicast; SFTP; 802.1x
Region of Interest (RoI)	Yes (customizable)
Storage	FTP; Micro SD card (256 G, hot swapping)

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

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
Target Tracking	Yes
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	7
Alarm Output	2
Alarm Event	No SD card; low SD card space; SD card error; network disconnection; IP conflict; motion detection; video tampering; intrusion; tripwire; audio detection; defocus on thermal channel
Audio Input	1
Audio Output	1
RS-485	1

## Power

Power Supply	Wide input voltage 24–57 VDC
Power Consumption	Basic: 39 W (illuminator off, heater off) Max: 66 W (illuminator on, heater off); 89 W (illuminator on, heater on)

## Environment

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

## Physical Characteristics

Protection	IP66
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Product Dimensions	520 mm × 266 mm × 427 mm (20.47" × 10.47" × 16.81") (L × W × H)
Packaging Dimensions	722 mm × 675 mm × 443 mm (28.43" × 26.57" × 17.44") (L × W × H)
Net Weight	≤22 kg (48.50 lb)
Gross Weight	≤25 kg (55.12 lb)
Installation	Desk mount
Power Adapter	Included
Lens	Included
PTZ Outlet	Side

## Certification

Certifications	CE; FCC; NEMA 4X
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## Heat Detection Distance

Focal Length	Max.Distance
50 mm	3,000 m (9,842.52 ft)
75 mm	4,500 m (14,763.78 ft)
100 mm	6,000 m (19,685.04 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

Focal Length	Distance (Human)	Distance (Vehicle)
50 mm	350 m (1,148.29 ft)	1,050 m (3,444.88 ft)
75 mm	525 m (1,722.44 ft)	1,575 m (5,167.32 ft)
100 mm	700 m (2,296.59 ft)	2,100 m (6,889.76 ft)

### Note:

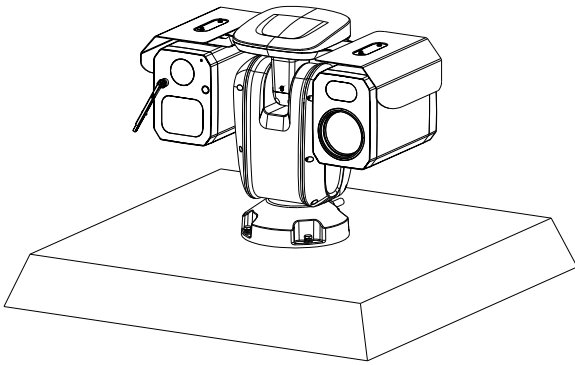
The table displays the measured distances obtained from using the target sizes 1.8 m × 0.5 m (human) and 1.4 m × 4 m (vehicle) for testing in an environment where the temperature is 23 °C and the relative humidity is below 60%.

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-PT8441D-B50Z56L-BM-AC-DC48-S23	Visible Focal Length: 6 mm–336 mm; Thermal Focal Length: 50 mm; Laser Illumination Distance ≥800 m (2,624.67 ft)
Security	DHI-TPC-PT8441D-BM75Z56L2-BM-AC-DC48-S23	Visible Focal Length: 6 mm–336 mm; Thermal Focal Length: 75 mm; Laser Illumination Distance ≥2 km (6,561.67 ft)
Security	DHI-TPC-PT8441D-BM100Z56L2-BM-AC-DC48-S23	Visible Focal Length: 6 mm–336 mm; Thermal Focal Length: 100 mm; Laser Illumination Distance ≥2 km (6,561.67 ft)

Installation



Dimensions (mm[inch])

