DHI-TPC-PT8441MA

Thermal Network Mini Hybrid Pan & Tilt Camera

· Vanadium oxide uncooled focal plane detector.

· 4Megapixel progressive scan CMOS.

· AI functions: face priority, heat detection, tripwire, intrusion, and human/vehicle classification.

· PTZ with encoder.

· Pan: 0° to 360°, tilt: −90° to 90°.

· Wide input voltage of 10–36 VDC.

· Auto rain-sensing wiper.

· Maximum IR illumination distance is 100 m.

· IP66 rated.

Featuring thermal and visible channels, Thermal Network Hybrid Mini Pan & Tilt Camera offers various AI functions such as heat detection, smoke detection, tripwire, intrusion, and huaman/vehicle classification. The PTZ with encoder keeps high precision through adjusting in real time. 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)
Focal Length	13 mm; 25 mm; 35 mm; 50 mm
Field of View	13 mm: H: 29.31°; V: 22.20° 25 mm: H: 15.49; V: 11.65° 35 mm: H: 11.10°; V: 8.33° 50 mm: H: 7.78°; V: 5.84°
Thermal Focus Control	Fixed-focal
Close Focus Distance	13 mm: 2.5 m (8.2 ft) 25 mm: 9.2 m (30.18 ft) 35 mm: 18 m (59.06 ftt) 50 mm: 37 m (121.39 ft)
Detection Distance[1]	13 mm: Vehicle: 1,176 m (3,858.27 ft); Human: 382 m (1,253.28 ft) 25 mm: Vehicle: 2,262 m (7421.26 ft); Human: 735 m (2,411.42 ft) 35 mm: Vehicle: 3,167 m (10,390.42 ft); Human: 1,029 m (3,375.98 ft) 50 mm: Vehicle: 4,525 m (14,845.8 ft); Human: 1,471 m (4,826.12 ft)
Recognition Distance[2]	13 mm: Vehicle: 289 m (948.16 ft); Human: 98 m (321.52 ft) 25 mm: Vehicle: 555 m (1,820.87 ft); Human: 189 m (620.08 ft) 35 mm: Vehicle: 777 m (2,549.21 ft ftt); Human: 265 m (869.42 ft) 50 mm: Vehicle: 1,110 m (3,641.73 ft); Human: 378 m (1,240.16 ft)
Identification Distance[3]	13 mm: Vehicle: 146 m (479 ft); Human: 49 m (160.76 ft) 25 mm: Vehicle: 280 m (918.64 ft); Human: 95 m (311.68 ft) 35 mm: Vehicle: 392 m (1,286.09 ft); Human: 132 m (433.07 ft) 50 mm: Vehicle: 560 m (1,837.27 ft); Human: 189 m (620.08 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
Thermal Image Stabilization	Electronic Image Stabilization (EIS)
Digital Zoom	19 levels
Thermal AGC	Auto/Manual
Thermal Noise Reduction	2D NR/3D NR

Image Flip	180°
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	Center ≥ 1200 TVL Edge ≥ 900 TVL
Min. Illumination	Color: 0.001 lux@F1.4 Black & white: 0.0001 lux@F1.4 0 lux (IR 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	Optical defog
Image Stabilization	Electronic Image Stabilization (EIS)
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	Manual/Auto
Image Flip	180°
Exposure Compensation	Yes
Visible Focus Control	Auto/semi-auto/manual
Focal Length	5.5 mm–248 mm
Field of View	H: 63.5°–1.9° V: 37.4°–1.1°
Close Focus Distance	0.5 m–2 m (1.64 ft–6.56 ft)
Illuminator On/Off Control	Manual/Auto
Illumination Distance	100 m (328.08 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; 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–50 fps, 50 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–60 fps, 60 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.711mu; PCM
Image Encoding Format	JPEG

PTZ

Pan/Tilt Range	Pan: 0° to 360° endless Tilt: −90° to +90°
Manual Control Speed	Pan: 0.1°/s –100°/s Tilt: 0.1°/s –80°/s
Preset Speed	Pan: 0.1°/s –100°/s Tilt: 0.1°/s –80°/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; tour; scan; pattern; pan

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
Storage	FTP; Micro SD card (optional)
Micro SD Card (Max.)	512 GB
Interoperability	ONVIF; CGI; Dahua SDK
Browser	IE: IE8 and later (includs 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
IVS (Perimeter Protection)	Yes. Supports tripwire and intrusion.
Target Distinction	Human/Vehicle Classification

Port

Analog Output	1 × CVBS output; BNC port
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	Wide input voltage 10–36 VDC
Power Consumption	Basic: 30 W (illuminator off, heater off) Max: 43 W (illuminator on, heater off); 50 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 +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	231.3 mm × 389.7 mm × 276.9 mm (9.11" × 15.34" × 10.9") (L × W × H)
Packaging Dimensions	485 mm × 360 mm × 390 mm (19.09" × 14.17" × 15.35") (L × W × H)
Net Weight	≤9 kg (19.84 lb)
Gross Weight	≤12 kg (26.46 lb)

Heat Detection Distance

Focal Length	Max. Distance
13 mm	900 m (2,952.76 ft)
25 mm	1,500 m (4,921.26 ft)
35 mm	2,100 m (6,889.76 ft)
50 mm	3,000 m (9,842.52 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)
13 mm	91 m (298.56 ft)	273 m (895.67 ft)
25 mm	175 m (574.15 ft)	525 m (1,722.44 ft)
35 mm	245 m (803.81 ft)	735 m (2,411.42 ft)
50 mm	350 m (1,148.29 ft)	1,050 m (3,444.88 ft)

Note:
The table displays the optimal distance obtained from using the target sizes 1.8 m × 0.5 m (human) and 4 m × 1.4 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.
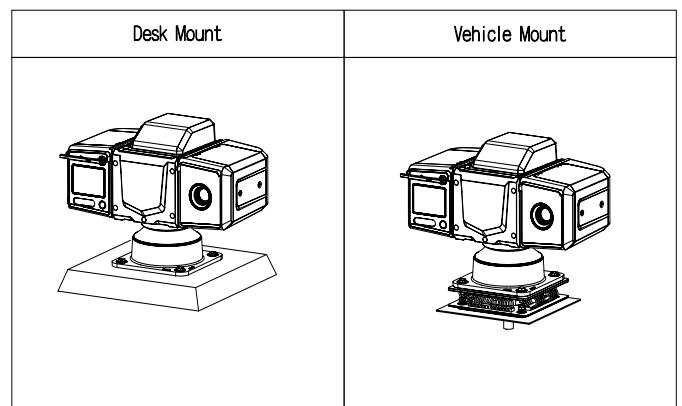
Ordering Information

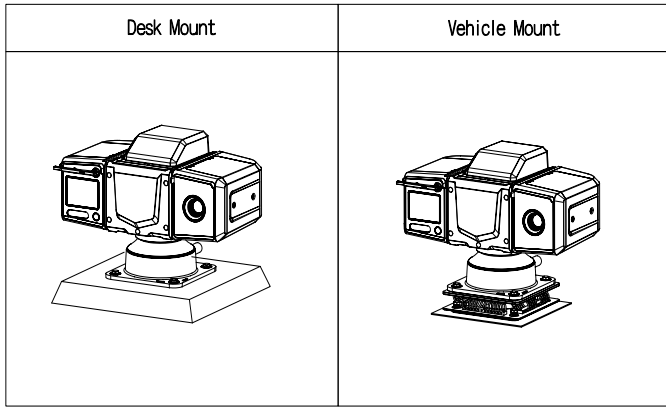| Type	Model	Description
Thermal Camera	DHI-TPC-PT8441MA-B13Z45V1-BC-IR-S22	Thermal: 13 mm; Visible: 5.5 mm–248 mm; PTZ outlet: side; Illuminator type: IR
	DHI-TPC-PT8441MA-B25Z45V1-BC-IR-S22	Thermal: 25 mm; Visible: 5.5 mm–248 mm; PTZ outlet: side; Illuminator type: IR
	DHI-TPC-PT8441MA-B35Z45V1-BC-IR-S22	Thermal: 35 mm; Visible: 5.5 mm–248 mm; PTZ outlet: side; Illuminator type: IR
	DHI-TPC-PT8441MA-B50Z45V1-BC-IR-S22	Thermal: 50 mm; Visible: 5.5 mm–248 mm; PTZ outlet: side; Illuminator type: IR
Accessories (Optional)	RAW021-00	Anti-vibration Isolator

Accessories

Optional:

RAW021-00
Anti-vibration Isolator

Desk Mount	Vehicle Mount

Desk Mount	Vehicle Mount

Dimensions (mm[inch])