DHI-TPC-SD2241

Thermal Network Hybrid Speed Dome Camera



- Vanadium oxide uncooled focal plane detector.
- 4Megapixel progressive scan CMOS.
- AI functions: heat detection, tripwire, intrusion, human/vehicle classification, smoking detection, and call detection.
- Built-in white light and audio alarm.
- Pan: 0° to 360°, tilt: –15° to +90°.
- Dual image fusion (visible and thermal images).
- Wide input voltage 12 VDC ± 20%, and PoE.
- IP66 rated.

Featuring thermal and visible channels, Thermal Network Hybrid Speed Dome Camera offers various AI functions such as heat detection, tripwire, intrusion, human/vehicle classification, smoking detection, and call detection. 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	256 (H) × 192 (V)
Pixel Pitch	12 μm
Spectral Range	8 μm–14 μm
Sensitivity (NETD)	≤40 mK@f/1.0
Focal Length	3.5 mm; 7 mm; 10 mm
Field of View	3.5 mm: H: 50.6°; V: 37.8° 7 mm: H: 24°; V: 18° 10 mm: H: 17.3° V: 13.1°
Thermal Focus Control	Fixed-focal
Close Focus Distance	3.5 mm: 0.5 m (1.64 ft) 7 mm: 1 m (3.28 ft) 10 mm: 1 m (3.28 ft)
Digital Detail Enhancement (DDE)	Yes
Digital Zoom	16 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	1/2.7" CMOS
Max. Resolution	2336 (H) × 1752 (V)
Pixel	4 MP
Horizontal Definition	≥1600 TVL
Min. Illumination	Color: 0.05 lux B/W: 0.005 lux 0 lux (IR on)
Visible AGC	Auto/Manual
Visible Noise Reduction	2D NR/3D NR
S/N Ratio	≥55 dB
White Balance	Auto; indoor; outdoor; tracking; manual; natural; street lamp
Defog	Electronic defog
Electronic Shutter Speed	1 s–1/30,000 s (auto/manual)
BLC	Yes
WDR	DWDR
HLC	Yes
Day/Night	Auto (ICR); Color; B/W
Iris Control	Fixed
Image Flip	180°
Exposure Compensation	Yes
Visible Focus Control	Fixed-focal

Focal Length	4 mm; 8 mm; 12 mm
Field of View	4 mm: H: 71.2°; V: 52° 8 mm: H: 33.4°; V: 25° 12 mm: H: 22° V: 16.6°
Close Focus Distance	4 mm: 1 m (3.28 ft) 8 mm: 2.5 m (8.20 ft) 12 mm: 2.5 m (8.20 ft)
Aperture	4 mm: F1.6 8 mm: F2.0 12 mm: F2.0
Illuminator On/Off Control	Auto/Manual
Illumination Distance	4 mm: 35 m (114.83 ft) 8 mm: 50 m (164.04 ft) 12 mm: 50 m (164.04 ft)

Audio and Video

Video Compression	H.265; H.264; H.264H
Resolution	Thermal: Main stream: 1.3M (1280 × 960); XVGA (1024 × 768); VGA (640 ×480/256 × 192); 1280 × 960 (default) Sub stream: VGA (640 ×480/256 × 192); 256 × 192 (default) Visible: Main stream: 2336 × 1752; 1080p (1920 × 1080); 720p (1280 × 720); D1 (704 × 576); 2336 × 1752 (default) Sub stream: 720p (1280 × 720); D1 (704 × 576); CIF (352 × 288); 352 × 288 (default)
Video Frame Rate	Thermal: Main stream: 1 fps–25 fps, 25 fps by default Sub stream: 1 fps–25 fps, 15 fps by default Visible: Main stream: 1 fps–25 fps, 25 fps by default Sub stream: 1 fps–25 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: –15° to +90°
Manual Control Speed	Pan: 0.1°/s –200°/s Tilt: 0.1°/s –120°/s
Preset Speed	Pan: 240°/s Tilt: 200°/s
Preset	300
Tour	8 (up to 32 presets per tour)
Pattern	5
Scan	5
Power-off Memory	Yes
Privacy Masking	4 areas in the same view
Idle Motion	Activate Preset/Scan/Tour/Pattern/Pan

Function

Two-way Audio	Yes
Sound and Light Alarm	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	Micro SD card
Micro SD Card (Max.)	256 GB
Interoperability	ONVIF; CGI; Dahua SDK
Browser	IE: IE 9 and later (Edge is not supported) Chrome: 42 and earlier Firefox: 42 and earlier
User/Host	Up to 10 (total bandwidth: 100 MB)
Security	Authorized username and password; attached MAC address; encrypted HTTPS; IEEE 802.1x; controlled network access
User Management	Up to 10 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	Warm color; cold color; fuse with iron oxide red
PIP	Yes (Intelligence automatically turns off when PIP is on)

Intelligence

Heat Detection	Yes
Cold/Hot Spot Trace	Yes
IVS (Perimeter Protection)	Yes. Supports tripwire and intrusion.
Target Distinction	Human/Vehicle Classification
Smoking Detection	Yes
Call Detection	Yes

Port

Analog Output	1-ch 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	12 VDC ± 20%, PoE+ (802.3at)
Power Consumption	Basic: <10.4 W (12 VDC); 10.5 W (PoE) Max: < 19.4 W (12 VDC); 19.6 W (PoE)

Environment

Operating Temperature	–30 °C to +60 °C (–22 °F to +140 °F)
Operating Humidity	≤95%
Storage Temperature	–40 °C to +70 °C (–40 °F to +158 °F)

Physical Characteristics

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

Structure

Product Dimensions	295 mm × Φ160 mm (11.61" × Φ6.30")
Packaging Dimensions	267 mm × 267 mm × 437 mm (10.51" × 10.51" × 17.20") (W × L × H)
Net Weight	≤3.2 kg (7.05 lb)
Gross Weight	≤4.7 kg (10.36 lb)

Heat Detection Distance

Focal Length	Max. Distance
3.5 mm	45 m (147.64 ft)
7 mm	86 m (282.15 ft)
10 mm	123 m (403.54 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 (IVS Distance)

Focal Length	Distance (Vehicle)	Distance (Human)
3.5 mm	73.5 m (241.14 ft)	24.5 m (80.38 ft)
7 mm	147 m (482.28 ft)	49 m (160.76 ft)
10 mm	210 m (688.98 ft)	70 m (229.66 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.

DRI Distance

Focal Length	Detection Distance①	Recognition Distance②	Identification Distance③
3.5 mm	Vehicle: 447 m (1,466.54 ft); Human: 146 m (479.00 ft)	Vehicle: 112 m (367.45 ft); Human: 36 m (118.11 ft)	Vehicle: 56 m (183.73 ft); Human: 18 m (59.06 ft)
7 mm	Vehicle: 894 m (2,933.07 ft); Human: 292 m (958.01 ft)	Vehicle: 224 m (734.91 ft); Human: 73 m (239.50 ft)	Vehicle: 112 m (367.45 ft); Human: 36 m (118.11 ft)
10 mm	Vehicle: 1,278 m (4,192.91 ft); Human: 417 m (1,368.11 ft)	Vehicle: 319 m (1,046.59 ft); Human: 104 m (341.21 ft)	Vehicle: 160 m (524.93 ft); Human: 52 m (170.60 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-SD2241-B3F4-DW-S2	Thermal: 3.5 mm; Visible: 4 mm
	DHI-TPC-SD2241-B7F8-DW-S2	Thermal: 7 mm; Visible: 8 mm
	DHI-TPC-SD2241-B10F12-DW-S2	Thermal: 10 mm; Visible: 12 mm
Accessories	PFB305W	Wall Mount Bracket
	PFB305W + PFA150	Wall Mount Braket + Pole Mount Bracket (Pole Mount)
	PFB305W + PFA151	Wall Mount Braket + Corner Mount Bracket (Corner Mount)
	PFA111 + PFB300C	Joint Connector + Hang Mount Bracket (Hang Mount)
	PFM320D	Power Adapter

Accessories

Included:



PFB305W
Wall Mount Bracket

Optional:



PFB305W + PFA150
Wall Mount Braket + pole Mount Bracket (Pole Mount)



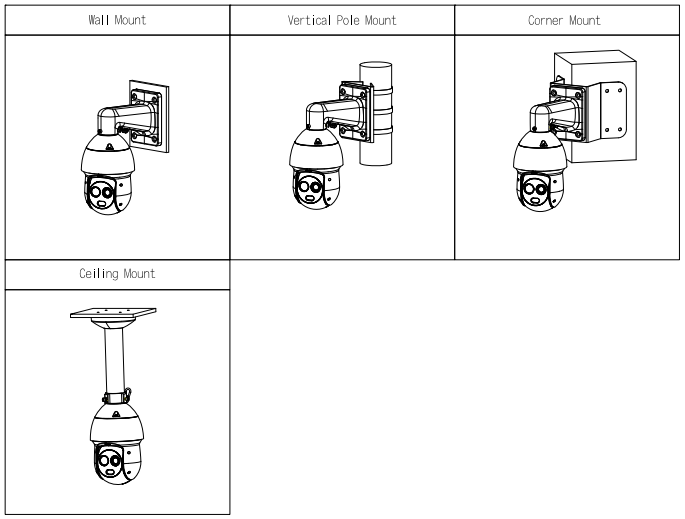
PFB305W + PFA151
Wall Mount Braket + Corner Mount Bracket (Corner Mount)



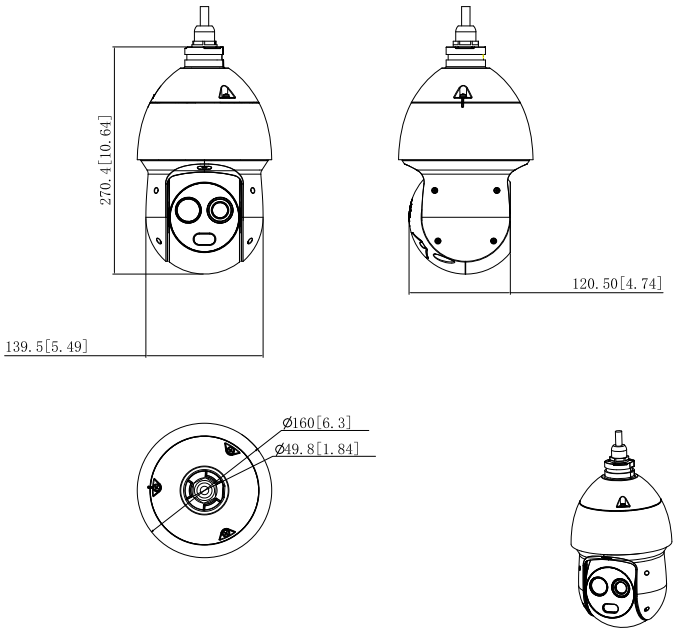
PFA111 + PFB300C
Joint Connector + Hang Mount Bracket (Hang Mount)



PFM320D
Power Adapter



Dimensions (mm[inch])



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