

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	Region of Interest (RoI)	Yes
Field of View	4 mm: H: 71.2°; V: 52° 8 mm: H: 33.4°; V: 25° 12 mm: H: 22° V: 16.6°	Storage	Micro SD card
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)	Micro SD Card (Max.)	256 GB
Aperture	4 mm: F1.6 8 mm: F2.0 12 mm: F2.0	Interoperability	ONVIF; CGI; Dahua SDK
Illuminator On/Off Control	Auto/Manual	Browser	IE: IE 9 and later (Edge is not supported) Chrome: 42 and earlier Firefox: 42 and earlier
Illumination Distance	4 mm: 35 m (114.83 ft) 8 mm: 50 m (164.04 ft) 12 mm: 50 m (164.04 ft)	User/Host	Up to 10 (total bandwidth: 100 MB)
Audio and Video		Security	Authorized username and password; attached MAC address; encrypted HTTPS; IEEE 802.1x; controlled network access
Video Compression	H.265; H.264; H.264H	User Management	Up to 10 users; supports multi-level user permissions (2 levels): management group and user group
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)	Malfunction Detection	Network disconnection detection; IP conflict detection; memory card state detection; memory space detection
	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	Fusion Mode	Warm color; cold color; fuse with iron oxide red
Audio Compression	G.711a; G.711mu; PCM	PIP	Yes (Intelligence automatically turns off when PIP is on)
Image Encoding Format	JPEG	Intelligence	
PTZ		Heat Detection	Yes
Pan/Tilt Range	Pan: 0° to 360° endless Tilt: -15° to +90°	Cold/Hot Spot Trace	Yes
Manual Control Speed	Pan: 0.1°/s –200°/s Tilt: 0.1°/s –120°/s	IVS (Perimeter Protection)	Yes. Supports tripwire and intrusion.
Preset Speed	Pan: 240°/s Tilt: 200°/s	Target Distinction	Human/Vehicle Classification
Preset	300	Smoking Detection	Yes
Tour	8 (up to 32 presets per tour)	Call Detection	Yes
Pattern	5	Port	
Scan	5	Analog Output	1-ch CVBS output, BNC port
Power-off Memory	Yes	Network Port	1 × RJ-45 (10/100 Base-T)
Privacy Masking	4 areas in the same view	Alarm Input	2
Idle Motion	Activate Preset/Scan/Tour/Pattern/Pan	Alarm Output	1
Function		Audio Input	1
Two-way Audio	Yes	Audio Output	1
Sound and Light Alarm	Yes	RS-485	1
Network Protocol		Power	
HTTPS; HTTP; TCP; ARP; RTSP; RTP; UDP; RTCP; SMTP; FTP; DHCP; DNS; DDNS; PPPOE; IPv4/v6; SNMP; QoS; UPnP; NTP		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		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		Physical Characteristics	
		Protection	IP66
		Reliability	Surge protection: 6 kV Air discharge of 15 kV Contact discharge of 8 kV

Structure

Product Dimensions	295 mm × Ø160 mm (11.61" × Ø6.30")
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 Distance ^①	Recognition Distance ^②	Identification Distance ^③
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)



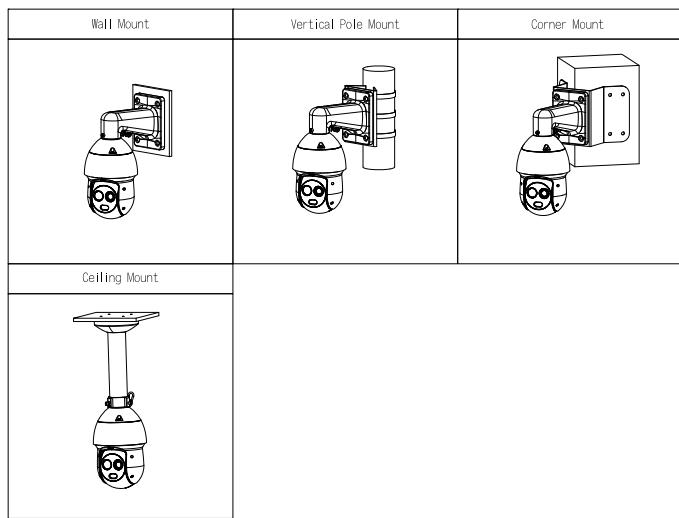
PFB305W + PFA151
Wall Mount Braket +
Corner Mount Bracket
(Corner Mount)



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



PFM320D
Power Adapter



Dimensions (mm[inch])

