

DHI-TPC-SD5441

Thermal Hybrid Speed Dome Camera



- Vanadium oxide uncooled focal plane detector.
- 4Megapixel progressive scan CMOS.
- AI functions: boat detection, smoke detection, heat detection, tripwire, intrusion, and human/vehicle classification.
- Maximum IR illumination distance is 100 m.
- Pan: 0° to 360°, tilt: -10° to +90°.
- Wide input voltage 36 VDC ± 50%.
- IP66 rated.

Featuring thermal and visible channels, Thermal Network Hybrid Speed Dome Camera offers various AI functions such as heat detection, smoke detection, tripwire, intrusion, human/vehicle classification, and boat detection. The camera is widely applied in outdoor scenes of the medium-distance perimeter protection and heat detection.

Technical Specification

General

Appearance	Thermal Network Hybrid Speed Dome Camera
Type	Security

Thermal

Detector Type	Vanadium oxide uncooled focal plane detector
Effective Pixels	400 (H) × 300 (V)
Pixel Pitch	12 μm
Spectral Range	8 μm–14 μm
Sensitivity (NETD)	<35 mK (@f/1.0, 25 Hz, 300 K)
Focal Length	13 mm; 19 mm; 25 mm; 35 mm; 50 mm
Field of View	13 mm: H: 21.24°; V: 15.94° 19 mm: H: 14.5°; V: 10.9° 25 mm: H: 11°; V: 8.2° 35 mm: H: 7.85°; V: 5.89° 50 mm: H: 5.5°; V: 4.12°
Thermal Focus Control	Fixed-focal
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	1/2.8" CMOS
Max. Resolution	2688 (H) × 1520 (V)
Pixel	4 MP
Horizontal Definition	Center ≥ 1200 TVL Edge ≥ 900 TVL
Min. Illumination	Color: 0.01 lux Black & white: 0.001 lux 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	Electronic defog
Visible 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	DC Auto
Exposure Compensation	Yes
Visible Focus Control	Auto/Semi-auto/Manual
Focal Length	3.95 mm–177.75 mm
Zoom Speed	<7 s
Close Focus Distance	1 m–10 m (3.28 ft–32.81 ft)
Optical Zoom	45×
Illuminator On/Off Control	Auto/Manual
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: 4MP (2688 × 1520); 4MP (2560 × 1440); 2MP (1920 × 1080); 720p (1280 × 720); D1 (704 × 576); 4MP (2560 × 1440) (default); Sub stream: 2MP (1920 × 1080); 720p (1280 × 720); D1 (704 × 576); CIF (352 × 288); CIF (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–50 fps, 50 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–60 fps, 60 fps by default Sub stream: 1 fps–30 fps, 15 fps by default
Audio Compression	G.711a; G.711mu; AAC
Image Encoding Format	JPEG

PTZ

Pan/Tilt Range	Pan: 0° to 360° endless Tilt: –10° to +90°
Manual Control Speed	Pan: 0.1°/s to 200°/s Tilt: 0.1°/s to 120°/s
Preset Speed	Pan: 240°/s Tilt: 200°/s
Preset	300
Tour	8 (up to 32 presets per tour)
Pattern	5
Scan	2
Power-off Memory	Yes
Privacy Masking	4 blocks
Idle Motion	Preset; pattern; tour; pan; scan

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
Regional Focus	Yes
Storage	FTP; Micro SD card (optional)
Interoperability	ONVIF; CGI; DaHua SDK
Browser	IE: IE8 and later (including the browsers with IE kernel, such as 360 Explorer, Sougou Explorer) Chrome: 42 and earlier Firefox: 42 and earlier
User/Host	Up to 20 (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
Micro SD Card (Max.)	512 GB

IVS

IVS	Yes
-----	-----

Intelligence

Heat Detection	Yes
Cold/Hot Spot Trace	Yes
IVS (Perimeter Protection)	Yes. Supports tripwire and intrusion.
Target Distinction	Human/Vehicle Classification
Target Tracking	Yes
Smoke Detection	Yes
Smoke Detection Distance	4,000 m (13,123.36 ft)
Boat Tracking	Yes

Port

Analog Output	1 × CVBS output; BNC port
Network Port	1 × RJ-45 (10/100 Base-T)
Alarm Input	7
Alarm Output	2
Audio Input	1
Audio Output	1
RS-485	1

Power

Power Supply	36 VDC ± 50%, Hi-PoE
Power Consumption	Basic: ≤21 W Max: ≤40 W

Environment

Operating Temperature	–30 °C to +60 °C (–22 °F to +140 °F)
-----------------------	--------------------------------------

Operating Humidity	≤95%
Storage Temperature	−30 °C to +70 °C (−22 °F to +158 °F)

Physical Characteristics

Protection	IP66
Product Dimensions	Φ240.0 mm × 382.0 mm (Φ9.45" × 15.04")
Packaging Dimensions	319.0 mm × 319.0 mm × 521.0 mm (12.56" × 12.56" × 20.51") (L × W × H)
Net Weight	≤8 kg (17.64 lb)
Gross Weight	≤10 kg (22.05 lb)
Lens	Included
Reliability	Surge protection: 6 kV Air discharge of 15 kV Contact discharge of 8 kV
Anti-corrosion Level	Basic Protection

Certification

Certifications	CE
----------------	----

Heat Detection Distance

Focal Length	Max. Distance
13 mm	780 m (2,559.06 ft)
19 mm	1,140 m (3,740.16 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 (IVS Distance)

Focal Length	Distance (Vehicle)	Distance (Human)
13 mm	273 m (895.67 ft)	91 m (298.56 ft)
19 mm	399 m (1,309.06 ft)	133 m (436.35 ft)
25 mm	525 m (1,722.44 ft)	175 m (574.15 ft)
35 mm	735 m (2,411.42 ft)	245 m (803.81 ft)
50 mm	1,050 m (3,444.88 ft)	350 m (1,148.29 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
13 mm	Vehicle: 1,661 m (5,449.48 ft); Human: 542 m (1,778.22 ft)	Vehicle: 415 m (1,361.55 ft); Human: 135 m (442.91 ft)	Vehicle: 208 m (682.41 ft); Human: 68 m (223.10 ft)
19 mm	Vehicle: 2,428 m (7,965.88 ft); Human: 792 m (2,598.43 ft)	Vehicle: 607 m (1,991.47 ft); Human: 198 m (649.61 ft)	Vehicle: 303 m (994.09 ft); Human: 99 m (324.80 ft)
25 mm	Vehicle: 3,194 m (10,479.00 ft); Human: 1,042 m (3,418.64 ft)	Vehicle: 799 m (2,578.74 ft); Human: 260 m (857.98 ft)	Vehicle: 399 m (1,309.06 ft); Human: 130 m (426.51 ft)
35 mm	Vehicle: 4,472 m (14,671.92 ft); Human: 1,458 m (4,783.46 ft)	Vehicle: 1,118 m (3,667.98 ft); Human: 365 m (1,197.51 ft)	Vehicle: 559 m (1,833.99 ft); Human: 182 m (597.11 ft)
50 mm	Vehicle: 6,389 m (20,961.29 ft); Human: 2,083 m (6,833.99 ft)	Vehicle: 1,579 m (5,180.45 ft); Human: 521 m (1,709.32 ft)	Vehicle: 799 m (2,621.39 ft); Human: 260 m (853.02 ft)

① Detection Distance: Detects objects, but cannot recognize their characteristics (objects must cover more than 1.5 pixels of the image).
② Recognition Distance: Classifies objects into general categories, such as human, vehicle (the object must cover more than 6 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 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-SD5441-B13Z45-DC-S24	Thermal: 13 mm Visible: 3.95 mm–177.75 mm
	DHI-TPC-SD5441-B19Z45-DC-S24	Thermal: 19 mm Visible: 3.95 mm–177.75 mm
	DHI-TPC-SD5441-B25Z45-DC-S24	Thermal: 25 mm; Visible: 3.95 mm–177.75 mm
	DHI-TPC-SD5441-B35Z45-DC-S24	Thermal: 35 mm; Visible: 3.95 mm–177.75 mm
	DHI-TPC-SD5441-B50Z45-DC-S24	Thermal: 50 mm; Visible: 3.95 mm–177.75 mm
Accessories (Optional)	PFB300C	Ceiling Mount Bracket
	PFB303W	Wall Mount Bracket

Accessories

Optional:



PFB300C
Ceiling Mount Bracket



PFB303W
Wall Mount Bracket

Vertical Pole Mount	Vertical Pole Mount	Plane Mount
Wall Mount	Wall Mount	Parapet Mount
Corner Mount	Corner Mount	Ceiling Mount

Dimensions (mm[inch])

