

# DHI-TPC-SD5441-T

## Thermal Hybrid Speed Dome Camera



### System Overview

With its dual lens design, Thermal Hybrid Speed Dome Camera provides an all-in-one solution for video surveillance in outdoor and indoor scenarios. It adopts Thermal and Visible Technology to capture vivid, detailed images even in dark, small areas. Through its thermal camera, it can capture clear images even in poor or dark lighting, and can detect and reveal details through its visible camera that has Smart IR.

### Functions

#### Uncooled VOx Technology

Dahua thermal cameras use uncooled VOx sensor technology. The detector is small-sized, and highly sensitive allowing the camera to reveal images in greater detail, giving you more visual information on a monitored site. It also improves the accuracy of temperature measurements, ensuring that even minute temperature changes are detected.

#### High Sensitivity

High thermal sensitivity (< 50 mK) makes these cameras capture images in fine detail, and detect subtle and large temperature changes.

#### Intelligent Video System (IVS)

With its built-in intelligent video analytics, the camera detects and analyzes moving objects for improved video surveillance. The camera has a wide range of intelligent detection capabilities, allowing the detection of multiple types of objects and object behaviors, such as vehicle detection. IVS also supports tripwire analytics, allowing the camera to detect when a pre-determined line has been crossed.

#### Fire Detection & Alarm

With its extended detection range, the camera can detect fires that are in locations distant to it. It is also highly sensitive to temperature changes, allowing the accuracy of its fire detection to be higher than cameras that work in the visible light range.

- Vanadium oxide uncooled focal plane detector.
- 4Megapixel progressive scan CMOS.
- Visible lens offers 45× optical zoom.
- Offers various AI functions such as boat, smoke, and fire detection, tripwire, target filtering and intrusion detection.
- Built-in IR LED, and the IR illumination distance  $\geq 100$  m.
- Dual image fusion (visible and thermal images).
- 36 VDC  $\pm$  50%/Hi-PoE+ power supply.
- IP66 rated.
- Temperature measurement range of  $-20$  °C to  $+550$  °C.

### AI Functions

Supports multiple intelligent functions such as fire detection, tripwire, intrusion, and person and vehicle classification detection. It supports alarm linkages, such as sending emails and triggering external alarms.

### Temperature Measurement ( $-20$ °C to $+550$ °C)

Dahua thermal cameras (-T models) remotely measure temperatures. They are customizable, allowing you to freely set threshold alarms. Whether day or night, the temperature of objects can be measured, making the camera ideal for use in power plants or at oil extraction sites where overheating can be dangerous. When the temperature exceeds the set threshold, an alarm is immediately triggered. The camera can function in temperatures ranging from  $-20$  °C to  $550$  °C ( $-4$  °F to  $1022$  °F).

### Scene

It is suitable for use in factories, power stations, rivers, scenic spots, and other scenarios.

**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)	≤50 mK (@f/1.0)
Focal Length	7 mm; 13 mm; 19 mm; 25mm; 35 mm; 50mm
Field of View	7 mm: H: 53.5°; V: 39.5° 13 mm: H: 30.0°; V: 22.5° 19 mm: H: 20.5°; V: 15.4° 25 mm: H: 15.5°; V: 11.6° 35 mm: H: 11.1°; V: 8.3° 50mm:H: 7.8°;V: 5.8°
Thermal Focus Control	Fixed-focal
Close Focus Distance	7 mm: 0.5 m (1.64 ft) 13 mm: 0.5 m (1.64 ft) 19 mm: 0.5 m (1.64 ft) 25 mm: 0.5 m (1.64 ft) 35 mm: 0.5 m (1.64 ft) 50mm:0.5 m (1.64 ft)
Detection Distance <sup>①</sup>	7 mm: Vehicle: 549 m (1,801.18 ft); Human: 206 m (675.85 ft) 13 mm: Vehicle: 1020 m (3,346.46 ft); Human: 382 m (1,253.28 ft) 19 mm: Vehicle: 1,490 m (4,888.45 ft); Human: 559 m (1,833.99 ft) 25 mm: Vehicle: 1,961 m (6,433.73 ft); Human: 735 m (2,411.42 ft) 35 mm: Vehicle: 2,745 m (9,005.91 ft); Human: 1,029 m (3,375.98 ft) 50mm:Vehicle: 3,922 m (12,867.45 ft); Human: 1,470 m (4,822.83 ft)
Recognition Distance <sup>②</sup>	7 mm: Vehicle: 137 m (449.48 ft); Human: 53 m (173.88 ft) 13 mm: Vehicle: 255 m (836.61 ft); Human: 98 m (321.52 ft) 19 mm: Vehicle: 373 m (1,223.75 ft); Human: 144 m (472.44 ft) 25 mm: Vehicle: 490 m (1,607.61 ft); Human: 189 m (620.08 ft) 35 mm: Vehicle: 686 m (2,250.66 ft); Human: 265 m (869.42 ft) 50mm:Vehicle: 980 m (3,215.22 ft); Human: 378 m (1,240.16 ft)
Identification Distance <sup>③</sup>	7 mm: Vehicle: 69 m (226.38 ft); Human: 27 m (88.58 ft) 13 mm: Vehicle: 128 m (419.95 ft); Human: 49 m (160.76 ft) 19 mm: Vehicle: 186 m (610.24 ft); Human: 72 m (236.22 ft) 25 mm: Vehicle: 245 m (803.81 ft); Human: 95 m (311.68 ft) 35 mm: Vehicle: 343 m (1,125.33 ft); Human: 132 m (433.07 ft) 50mm:Vehicle: 490 m (1,607.61 ft); Human: 189 m (620.08 ft)

Note:

- ① Detection Distance: Detects objects, but cannot recognize their characteristics. Detected objects only cover a small amount of pixels (objects must cover more than 3.6 pixels of the image).
- ② Recognition Distance: Classifies objects into general categories, such as human, vehicle, and building (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 soldier, pickup truck, and gas station (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	1/2.8" CMOS
Max. Resolution	2688 (H) × 1520 (V)
Pixel	4 MP
Horizontal Definition	Center ≥150 TVL Edge ≥100 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
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	Auto
Image Flip	180°
Exposure Compensation	Yes
Visible Focus Control	Manual
Focal Length	3.95 mm–177.75 mm
Field of View	H: 67.5°–1.9° V: 39.4°–1.1°
Close Focus Distance	1 m–10 m (3.28 ft–32.81 ft)
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
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<b>Resolution</b>	Thermal: Main stream: 1280 × 1024; 1280 × 720; 640 × 512; 1280 × 1024 (default) Sub stream: 640 × 512; 320 × 256; 640 × 512 (default) Visible: Main stream: 2688 × 1520 (optional); 2560 × 1440; 1080p (1920 × 1080); 1280 × 720; 704 × 576; 2560 × 1440 (default) Sub stream: 1920 × 1080; 1280 × 720; 704 × 576
<b>Video Frame Rate</b>	Thermal: 50 Hz: (main stream) 1 fps–25 fps adjustable, 25 fps by default; (sub stream) 1 fps–25 fps adjustable, 15 fps by default 60 Hz: (main stream) 1 fps–30 fps adjustable, 30 fps by default; (sub stream) 1 fps–30 fps adjustable, 15 fps by default Visible: 50 Hz: (main stream) 1 fps–25 fps adjustable, 25 fps by default; (sub stream) 1 fps–25 fps adjustable, 15 fps by default 60 Hz: (main stream) 1 fps–30 fps adjustable, 30 fps by default; (sub stream) 1 fps–30 fps adjustable, 15 fps by default
<b>Audio Compression</b>	G.711a; G.711mu
<b>Image Encoding Format</b>	JPEG
<b>PTZ</b>	
<b>Pan/Tilt Range</b>	Pan: 0° to 360° endless Tilt: -10° to +90°
<b>Manual Control Speed</b>	Pan: 0.1°/s to 200°/s Tilt: 0.1°/s to 120°/s
<b>Preset Speed</b>	Pan: 240°/s Tilt: 200°/s
<b>Preset</b>	300
<b>Tour</b>	8 (up to 32 presets per tour)
<b>Pattern</b>	5
<b>Scan</b>	5
<b>Power-off Memory</b>	Yes
<b>Privacy Masking</b>	4 areas in the same view
<b>Idle Motion</b>	Preset; auto pattern; auto tour; pan; progressive scan
<b>Function</b>	
<b>Two-way Audio</b>	Yes
<b>Network Protocol</b>	HTTP; HTTPS; TCP; ARP; RTSP; RTP; UDP; RTCP; SMTP; FTP; DHCP; DNS; DDNS; PPPoE; IPv4/v6; SNMP; QoS; UPnP; NTP; Multicast; SFTP; 802.1x
<b>Region of Interest (RoI)</b>	Yes
<b>Storage</b>	Micro SD card
<b>Micro SD Card (Max.)</b>	512 GB
<b>Interoperability</b>	ONVIF; CGI; Dahua SDK
<b>Browser</b>	IE: IE8 and later Chrome: 42 and earlier Firefox: 42 and earlier
<b>User/Host</b>	Up to 20 (total bandwidth: 64 MB)
<b>Security</b>	Authorized username and password; attached MAC address; encrypted HTTPS; IEEE 802.1x; controlled network access

<b>User Management</b>	Up to 20 users; supports multi-level user permissions (2 levels); management group and user group
<b>Malfunction Detection</b>	Network disconnection detection; IP conflict detection; memory card state detection; memory space detection
<b>PIP</b>	Yes (Intelligence automatically turns off when PIP is on)

### Intelligence

<b>Fire Detection</b>	Yes
<b>Cold/Hot Spot Trace</b>	Yes
<b>IVS (Perimeter Protection)</b>	Yes. Supports tripwire and intrusion.
<b>Target Distinction</b>	Human/Vehicle Classification

### Port

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

### Power

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

### Environment

<b>Operating Temperature</b>	-30 °C to +60 °C (-22 °F to +140 °F)
<b>Operating Humidity</b>	≤95%
<b>Storage Temperature</b>	-30 °C to +70 °C (-22 °F to +158 °F)

### Physical Characteristics

<b>Protection</b>	IP66
<b>Reliability</b>	Surge protection: 6 kV Air discharge: 15 kV Contact discharge: 8 kV

### Structure

<b>Product Dimensions</b>	Φ240 mm × 382 mm (Φ9.45" × 15.04")
<b>Packaging Dimensions</b>	319 mm × 319 mm × 521 mm (12.56" × 12.56" × 20.51") (L × W × H)
<b>Net Weight</b>	≤8 kg (17.64 lb)
<b>Gross Weight</b>	≤10 kg (22.05 lb)

### Temperature Measurement Distance

<b>Focal Length</b>	7 mm	13 mm	19 mm	25 mm	35 mm	50 mm
<b>Temperature Measurement Distance (Min.)</b>	1 m (3.28 ft)	2 m (6.56 ft)	3 m (9.84 ft)	4 m (13.12 ft)	6 m (19.69 ft)	9 m (29.53 ft)

Temperature Measurement Distance (Max.)	5 m (16.40 ft)	10 m (32.81 ft)	15 m (49.21 ft)	20 m (65.62 ft)	30 m (98.43 ft)	45 m (147.64 ft)
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Note:  
 The table displays the measured distances obtained from using the target size 0.2 m x 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.

### Ordering Information

Type	Model	Description
Thermal Camera	DHI-TPC-SD5441-TB13Z45-BW-S24	Thermal: 13 mm; Visible: 3.95 mm–177.75 mm
	DHI-TPC-SD5441-TB19Z45-BW-S24	Thermal: 19 mm; Visible: 3.95 mm–177.75 mm
	DHI-TPC-SD5441-TB7Z45-BM-S24	Thermal: 7 mm; Visible: 3.95 mm–177.75 mm
	DHI-TPC-SD5441-TB13Z45-BM-S24	Thermal: 13 mm; Visible: 3.95 mm–177.75 mm
	DHI-TPC-SD5441-TB25Z45-BM-S24	Thermal: 25 mm; Visible: 3.95 mm–177.75 mm
	DHI-TPC-SD5441-TB35Z45-BM-S24	Thermal: 35 mm; Visible: 3.95 mm–177.75 mm
	DHI-TPC-SD5441-TB50Z45-BM-S24	Thermal: 50 mm; Visible: 3.95 mm–177.75 mm
Accessories	PFA111	Mount Adapter
	36 V/2.23 A	Power Supply
	10 A/250 V	Power Cord
	PFB303W	Wall Mount
	PFB303W + PFA120	Wall Mount
	PFB303W + PFA120 + PFA150	Vertical Pole Mount
	PFB300C	Ceiling Mount
PFB303W + PFA120 + PFA151	Corner Mount	

### Accessories

Included:



PFA111  
Wall Mount  
Bracket



36 V/2.23 A  
Power Supply



10 A/250 V  
Power Cord



PFB303W  
Wall Mount  
Bracket

Optional:



PFB303W + PFA120  
Wall Mount  
Bracket



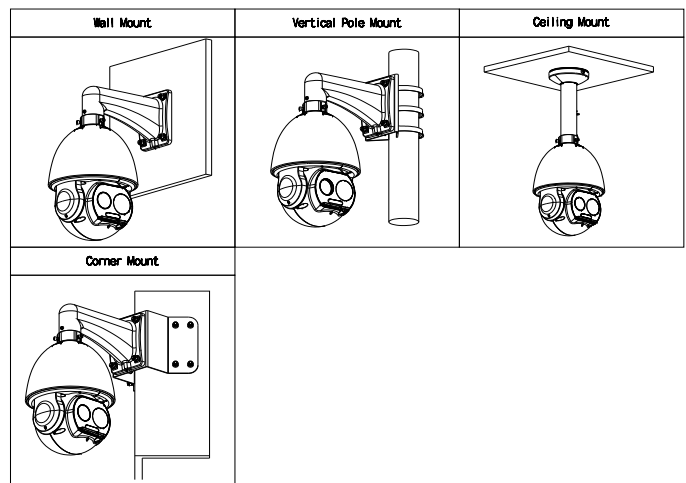
PFB303W + PFA120 +  
PFA150  
Vertical Pole Mount  
Bracket



PFB300C  
Ceiling Mount  
Bracket



PFB303W + PFA120 +  
PFA151  
Corner Mount Bracket



### Dimensions (mm[inch])

