

# DHI-TPC-SD5441-T

## Thermal Hybrid Speed Dome Camera



- Vanadium oxide uncooled focal plane detector.
- 4Megapixel progressive scan CMOS.
- Visible lens offers 45× optical zoom.
- AI functions: boat detection, heat detection, tripwire, intrusion, and human/vehicle classification.
- Temperature measurement range of  $-20^{\circ}\text{C}$  to  $+550^{\circ}\text{C}$ .
- Maximum IR illumination distance is 100 m.
- Dual image fusion (visible and thermal images).
- Pan:  $0^{\circ}$  to  $360^{\circ}$ , tilt:  $-10^{\circ}$  to  $+90^{\circ}$ .
- Wide input voltage  $36\text{ VDC} \pm 50\%$ , and Hi-PoE.
- IP66 rated.

Featuring thermal and visible channels, Thermal Network Hybrid Speed Dome Camera measures temperature through the thermal channel, with high accuracy Max ( $\pm 2^{\circ}\text{C}$ ,  $\pm 2\%$ ), the camera supports multiple temperature measurement rules of spot, line and region at the same time, and generates alarm when the temperature is abnormal, which can help user find potential hazard. The image details can be confirmed by the visible channel.

### Technical Specification

#### Thermal

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Detector Type                   | Vanadium oxide uncooled focal plane detector                                                                                                                                                                                                                                                                                                                                                                               |
| Effective Pixels                | 400 (H) × 300 (V)                                                                                                                                                                                                                                                                                                                                                                                                          |
| Pixel Pitch                     | 17 $\mu\text{m}$                                                                                                                                                                                                                                                                                                                                                                                                           |
| Spectral Range                  | 8 $\mu\text{m}$ –14 $\mu\text{m}$                                                                                                                                                                                                                                                                                                                                                                                          |
| Sensitivity (NETD)              | $\leq 35\text{ mK}$ (@f/1.0)                                                                                                                                                                                                                                                                                                                                                                                               |
| Focal Length                    | 7 mm; 13 mm; 19mm; 25mm; 35 mm; 50 mm                                                                                                                                                                                                                                                                                                                                                                                      |
| Field of View                   | 7 mm: H: $51.8^{\circ}$ ; V: $38.8^{\circ}$<br>13 mm: H: $30.2^{\circ}$ ; V: $22.6^{\circ}$<br>19 mm: H: $20.3^{\circ}$ ; V: $15.3^{\circ}$<br>25 mm: H: $15.5^{\circ}$ ; V: $11.7^{\circ}$<br>35 mm: H: $11.1^{\circ}$ ; V: $8.3^{\circ}$<br>50 mm: H: $7.8^{\circ}$ ; V: $5.8^{\circ}$                                                                                                                                   |
| Detection Distance <sup>①</sup> | 7 mm: Vehicle: 549 m (1,801.18 ft); Human: 206 m (675.85 ft)<br>13 mm: Vehicle: 1,020 m (3,346.46 ft); Human: 382 m (1,253.28 ft)<br>19 mm: Vehicle: 1,490 m (4,888.45 ft); Human: 559 m (1,833.99 ft)<br>25 mm: Vehicle: 1,961 m (6,433.73 ft); Human: 735 m (2,411.42 ft)<br>35 mm: Vehicle: 2,745 m (9,005.91 ft); Human: 1,029 m (3,375.98 ft)<br>50 mm: Vehicle: 3,922 m (12,867.45 ft); Human: 1,471 m (4,826.12 ft) |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recognition Distance <sup>②</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 7 mm: Vehicle: 137 m (449.48 ft)<br>Human: 53 m (173.88 ft)<br>13 mm: Vehicle: 255 m (836.61 ft)<br>Human: 98 m (321.52 ft)<br>19 mm: Vehicle: 373 m (1,223.75 ft)<br>Human: 144 m (472.44 ft)<br>25 mm: Vehicle: 490 m (1,607.61 ft)<br>Human: 181 m (593.83 ft)<br>35 mm: Vehicle: 686 m (2,250.66 ft)<br>Human: 265 m (869.42 ft)<br>50 mm: Vehicle: 980 m (3,215.22 ft)<br>Human: 378 m (1,240.16 ft) |
| Identification Distance <sup>③</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 7 mm: Vehicle: 69 m (226.38 ft)<br>Human: 27 m (88.58 ft)<br>13 mm: Vehicle: 128 m (419.95 ft)<br>Human: 49 m (160.76 ft)<br>19 mm: Vehicle: 186 m (610.24 ft)<br>Human: 72 m (236.22 ft)<br>25 mm: Vehicle: 245 m (803.81 ft)<br>Human: 95 m (311.68 ft)<br>35 mm: Vehicle: 343 m (1,125.33 ft)<br>Human: 132 m (433.07 ft)<br>50 mm: Vehicle: 490 m (1,607.61 ft)<br>Human: 189 m (620.08 ft)           |
| Note:<br>① Detection Distance: Detects objects, but cannot recognize their characteristics (objects must cover more than 3.6 pixels of the image).<br>② Recognition Distance: Classifies objects into general categories, such as human, vehicle (the object must cover more than 14 pixels of the image).<br>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) |
| Temperature Measurement Range    | Low temperature mode:<br>–20 °C (–4 °F) to +150 °C (+302 °F)<br>High temperature mode:<br>0 °C (+34 °F) to +550 °C (+1022 °F)<br>Auto mode                |
| Temperature Measurement Accuracy | Max. (±2 °C, ±2%); Operating temperature:<br>–20 °C (–4 °F) to +60 °C (+140 °F)                                                                           |
| Temperature Measurement Mode     | Spot: 12<br>Line: 12<br>Area: 12<br>Supports 12 rules simultaneously                                                                                      |

## Visible

|                          |                                                                            |
|--------------------------|----------------------------------------------------------------------------|
| Image Sensor             | 1/2.8" CMOS                                                                |
| Max. Resolution          | 2688 (H) × 1520 (V)                                                        |
| Pixel                    | 4 MP                                                                       |
| Horizontal Definition    | Center ≥ 1200 TVL<br>Edge ≥ 900 TVL                                        |
| Min. Illumination        | Color: 0.01 lux<br>Black & white: 0.001 lux<br>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°<br>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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Resolution            | Thermal:<br>Main stream: 1280 × 1024; 1280 × 720; 640 × 512; 1280 × 1024 (default)<br>Sub stream: 640 × 512; 320 × 256; 640 × 512 (default)<br>Visible:<br>Main stream: 2688 × 1520 (optional); 2560 × 1440; 1080p (1920 × 1080); 1280 × 720; 704 × 576; 2560 × 1440 (default)<br>Sub stream: 1920 × 1080; 1280 × 720; 704 × 576                                                                                                                                                                                                     |
| Video Frame Rate      | Thermal:<br>50 Hz: (main stream) 1 fps–25 fps adjustable, 25 fps by default; (sub stream) 1 fps–25 fps adjustable, 15 fps by default<br>60 Hz: (main stream) 1 fps–30 fps adjustable, 30 fps by default; (sub stream) 1 fps–30 fps adjustable, 15 fps by default<br>Visible:<br>50 Hz: (main stream) 1 fps–25 fps adjustable, 25 fps by default; (sub stream) 1 fps–25 fps adjustable, 15 fps by default<br>60 Hz: (main stream) 1 fps–30 fps adjustable, 30 fps by default; (sub stream) 1 fps–30 fps adjustable, 15 fps by default |
| Audio Compression     | G.711a; G.711mu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Image Encoding Format | JPEG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## PTZ

|                      |                                                        |
|----------------------|--------------------------------------------------------|
| Pan/Tilt Range       | Pan: 0° to 360° endless<br>Tilt: –10° to +90°          |
| Manual Control Speed | Pan: 0.1°/s to 200°/s<br>Tilt: 0.1°/s to 120°/s        |
| Preset Speed         | Pan: 240°/s<br>Tilt: 200°/s                            |
| Preset               | 200                                                    |
| Tour                 | 8 (up to 32 presets per tour)                          |
| Pattern              | 5                                                      |
| Scan                 | 2                                                      |
| Power-off Memory     | Yes                                                    |
| Privacy Masking      | 4 areas in the same view                               |
| Idle Motion          | Preset; auto pattern; auto tour; pan; progressive 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                                                                                                                                    |
| Storage                  | Micro SD card                                                                                                                          |
| Micro SD Card (Max.)     | 512 GB                                                                                                                                 |
| Interoperability         | ONVIF; CGI; Dahua SDK                                                                                                                  |

|                       |                                                                                                                 |
|-----------------------|-----------------------------------------------------------------------------------------------------------------|
| Browser               | IE: IE8 and later<br>Chrome: 42 and earlier<br>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     |
| 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          |

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 (36 VDC); 16 W (PoE)<br>Max: ≤40 W (36 VDC); 41 W (PoE) |

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                                                                      |
| Reliability | Surge protection: 6 kV<br>Air discharge: 15 kV<br>Contact discharge: 8 kV |

Structure

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

Temperature Measurement Distance

| Focal Length | Min.Distance   | Max. Distance    |
|--------------|----------------|------------------|
| 7 mm         | NA             | 6.5 m (21.33 ft) |
| 13 mm        | NA             | 11 m (36.09 ft)  |
| 19 mm        | 3 m (9.84 ft)  | 16 m (52.49 ft)  |
| 25 mm        | 4 m (13.12 ft) | 21 m (68.90 ft)  |
| 35 mm        | 6 m (19.69 ft) | 30 m (98.43 ft)  |
| 50 mm        | 9 m (29.53 ft) | 42 m (137.80 ft) |

Note:  
The table displays the measured distances obtained from using the target size 0.1 m × 0.1 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

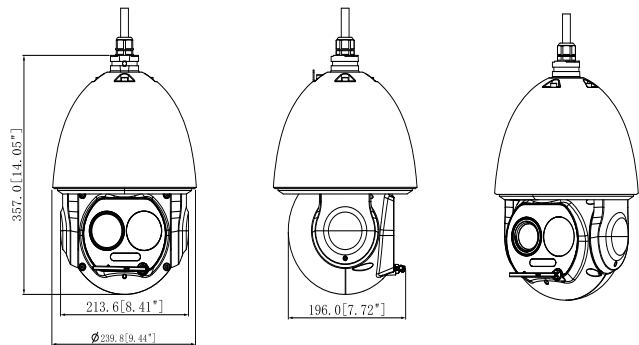
| Type           | Model                          | Description                                                                             |
|----------------|--------------------------------|-----------------------------------------------------------------------------------------|
| Thermal Camera | DHI-TPC-SD5441-TB7Z45-BC-S24   | Thermal: 7 mm;<br>Visible: 3.95 mm–177.75 mm;<br>Thermal Focus Control: Fixed-focal     |
|                | DHI-TPC-SD5441-TB13Z45-BC-S24  | Thermal: 13 mm;<br>Visible: 3.95 mm–177.75 mm;<br>Thermal Focus Control: Fixed-focal    |
|                | DHI-TPC-SD5441-TB19Z45-BC-S24  | Thermal: 19 mm;<br>Visible: 3.95 mm–177.75 mm;<br>Thermal Focus Control: Fixed-focal    |
|                | DHI-TPC-SD5441-TB25Z45-BC-S24  | Thermal: 25 mm;<br>Visible: 3.95 mm–177.75 mm;<br>Thermal Focus Control: Fixed-focal    |
|                | DHI-TPC-SD5441-TB35Z45-BC-S24  | Thermal: 35 mm;<br>Visible: 3.95 mm–177.75 mm;<br>Thermal Focus Control: Fixed-focal    |
|                | DHI-TPC-SD5441-TB50Z45-BC-S24  | Thermal: 50 mm;<br>Visible: 3.95 mm–177.75 mm;<br>Thermal Focus Control: Fixed-focal    |
|                | DHI-TPC-SD5441-TBM25Z45-DC-S24 | Thermal:25 mm;<br>Visible: 3.95 mm–177.75 mm;<br>Thermal Focus Control: Manual/<br>Auto |
| Accessories    | PFA111                         | Joint Connector                                                                         |
|                | 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:

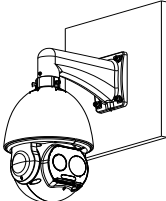
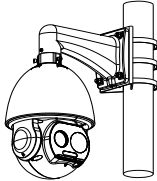
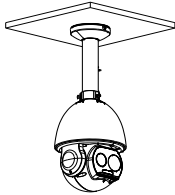
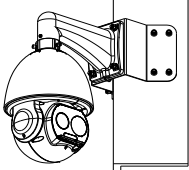


Dimensions (mm[inch])



Optional:



| Wall Mount                                                                          | Vertical Pole Mount                                                                 | Ceiling Mount                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |
| Corner Mount                                                                        |                                                                                     |                                                                                     |
|  |                                                                                     |                                                                                     |