

# DHI-TPC-SD2241-T

## 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.
- Temperature measurement range of  $-20^{\circ}\text{C}$  to  $+550^{\circ}\text{C}$  ( $-4^{\circ}\text{F}$  to  $+1022^{\circ}\text{F}$ ).
- Built-in white light and audio alarm.
- Pan:  $0^{\circ}$  to  $360^{\circ}$ , tilt:  $-15^{\circ}$  to  $+90^{\circ}$ .
- Dual image fusion (visible and thermal images).
- Wide input voltage  $12\text{ VDC} \pm 20\%$ , and PoE.
- IP66 rated.

Featuring thermal and visible channels, Eureka series thermal network camera offers various AI functions such as tripwire, intrusion, call detection, smoking detection, heat detection and temperature monitoring. It can be used in short-distance monitoring scenes such as perimeter protection and heat monitoring, which provides an all-in-one video surveillance solution for small and medium scenes.

### Technical Specification

#### Thermal

|                                   |                                                                                                                                                                                                              |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Detector Type                     | Vanadium oxide uncooled focal plane detector                                                                                                                                                                 |
| Effective Pixels                  | 256 (H) $\times$ 192 (V)                                                                                                                                                                                     |
| Pixel Pitch                       | 12 $\mu\text{m}$                                                                                                                                                                                             |
| Spectral Range                    | 8 $\mu\text{m}$ –14 $\mu\text{m}$                                                                                                                                                                            |
| Sensitivity (NETD)                | $\leq 40\text{ mK}@f/1.0$                                                                                                                                                                                    |
| Focal Length                      | 3.5 mm; 7 mm; 10 mm                                                                                                                                                                                          |
| Field of View                     | 3.5 mm: H: $50.6^{\circ}$ ; V: $37.8^{\circ}$<br>7 mm: H: $24^{\circ}$ ; V: $18^{\circ}$<br>10 mm: H: $17.3^{\circ}$ ; V: $13.1^{\circ}$                                                                     |
| Thermal Focus Control             | Fixed-focal                                                                                                                                                                                                  |
| Close Focus Distance              | 3.5 mm: 0.5 m (1.64 ft)<br>7 mm: 1 m (3.28 ft)<br>10 mm: 1 m (3.28 ft)                                                                                                                                       |
| Detection Distance <sup>①</sup>   | 3.5 mm: Vehicle: 449 m (1,472.17 ft);<br>Human: 146 m (479.00 ft)<br>7 mm: Vehicle: 897 m (2,944.34 ft);<br>Human: 292 m (958.01 ft)<br>10 mm: Vehicle: 1,282 m (4,206.20 ft);<br>Human: 416 m (1,364.83 ft) |
| Recognition Distance <sup>②</sup> | 3.5 mm: Vehicle: 110 m (361.10 ft);<br>Human: 38 m (124.67 ft)<br>7 mm: Vehicle: 220 m (722.20 ft);<br>Human: 75 m (246.06 ft)<br>10 mm: Vehicle: 314 m (1,031.71 ft)<br>Human: 107 m (351.05 ft)            |

#### Identification Distance<sup>③</sup>

3.5 mm: Vehicle: 56 m (182.27 ft);  
Human: 19 m (62.34 ft)  
7 mm: Vehicle: 111 m (364.54 ft);  
Human: 38 m (124.67 ft)  
10 mm: Vehicle: 159 m (520.77 ft);  
Human: 53 m (173.88 ft)

#### Note:

- ① Detection Distance: Detects objects, but cannot recognize their characteristics (objects must cover more than 3.6 pixels of the image).
- ② Recognition Distance: Classifies objects into general categories, such as human, vehicle (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 engineering truck, car (the object must cover more than 28 pixels of the image).

#### 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)

#### Temperature Measurement Range

High temperature mode:  
 $0^{\circ}\text{C}$  to  $+550^{\circ}\text{C}$  ( $+32^{\circ}\text{F}$  to  $+1022^{\circ}\text{F}$ )  
Low temperature mode:  
 $-20^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$  ( $-4^{\circ}\text{F}$  to  $+302^{\circ}\text{F}$ )  
Auto mode:  $-20^{\circ}\text{C}$  to  $+550^{\circ}\text{C}$  ( $-4^{\circ}\text{F}$  to  $+1022^{\circ}\text{F}$ )

#### Temperature Measurement Accuracy

Max. ( $\pm 2^{\circ}\text{C}$ ,  $\pm 2\%$ ); (Temperature:  $-20^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$ )

|                              |                                                                             |
|------------------------------|-----------------------------------------------------------------------------|
| Temperature Measurement Mode | Spot: 12<br>Line: 12<br>Area: 12<br>Supports 12 rules simultaneously        |
| 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<br>B/W: 0.005 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; 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°<br>8 mm: H: 33.4°; V: 25°<br>12 mm: H: 22° V: 16.6°  |
| Close Focus Distance         | 4 mm: 1 m (3.28 ft)<br>8 mm: 2.5 m (8.20 ft)<br>12 mm: 2.5 m (8.20 ft)      |
| Aperture                     | 4 mm: F1.6<br>8 mm: F2.0<br>12 mm: F2.0                                     |
| Illuminator On/Off Control   | Auto/Manual                                                                 |
| Illumination Distance        | 4 mm: 35 m (114.83 ft)<br>8 mm: 50 m (164.04 ft)<br>12 mm: 50 m (164.04 ft) |

## Audio and Video

|                   |                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Video Compression | H.265; H.264; H.264H                                                                                                                                                                                                                                                                                                                                                                            |
| Resolution        | Thermal:<br>Main stream: 1.3M (1280 × 960); XGA (1024 × 768);<br>VGA (640 × 480/256 × 192); 1280 × 960 (default)<br>Sub stream: VGA (640 × 480/256 × 192); 256 × 192 (default)<br>Visible:<br>Main stream: 2336 × 1752; 1080p (1920 × 1080); 720p (1280 × 720);<br>D1 (704 × 576); 2336 × 1752 (default)<br>Sub stream: 720p (1280 × 720); D1 (704 × 576); CIF (352 × 288); 352 × 288 (default) |

|                       |                                                                                                                                                                                                                    |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Video Frame Rate      | Thermal:<br>Main stream: 1 fps–25 fps, 25 fps by default<br>Sub stream: 1 fps–25 fps, 15 fps by default<br>Visible:<br>Main stream: 1 fps–25 fps, 25 fps by default<br>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<br>Tilt: –15° to +90° |
| Manual Control Speed | Pan: 0.1°/s –200°/s<br>Tilt: 0.1°/s –120°/s   |
| Preset Speed         | Pan: 240°/s<br>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)<br>Chrome: 42 and earlier<br>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)<br>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<br>Air discharge of 15 kV<br>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:<br>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%.<br>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. |                   |

| Temperature Measurement Distance                                                                                                                                                                                                                                                                                                                                                       |               |                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------------|
| Focal Length                                                                                                                                                                                                                                                                                                                                                                           | Min. Distance | Max. Distance   |
| 3.5 mm                                                                                                                                                                                                                                                                                                                                                                                 | 1 m (3.28 ft) | 5 m (16.40 ft)  |
| 7 mm                                                                                                                                                                                                                                                                                                                                                                                   | 2 m (6.56 ft) | 8 m (26.25 ft)  |
| 10 mm                                                                                                                                                                                                                                                                                                                                                                                  | 3 m (9.84 ft) | 12 m (39.37 ft) |
| Note:<br>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%.<br>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-SD2241-TB3F4-DW-S2   | Thermal: 3.5 mm; Visible: 4 mm                          |
|                      | DHI-TPC-SD2241-TB7F8-DW-S2   | Thermal: 7 mm; Visible: 8 mm                            |
|                      | DHI-TPC-SD2241-TB10F12-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)       |

Accessories

Included:



PFB305W  
Wall Mount Bracket

Optional:



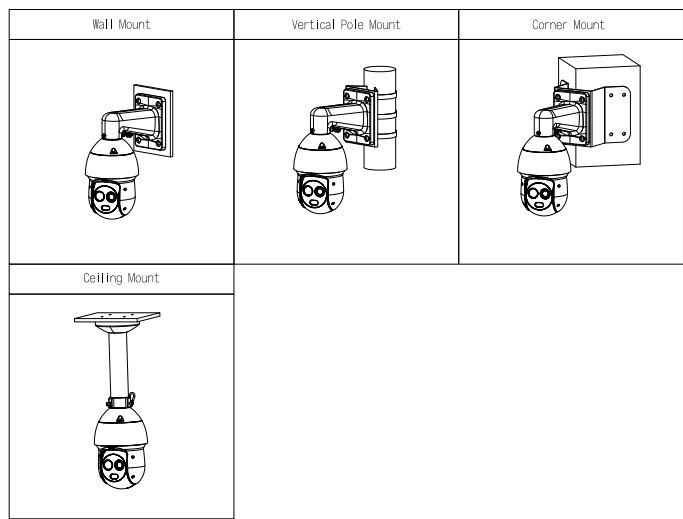
PFB305W + PFA150  
Wall Mount Braket + pole Mount Bracket (Pole Mount)



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



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



Dimensions (mm[inch])

