HIKVISION®

# Perimeter Protection in All Weather

Hikvision Thermal Products

# ABOUT HIKVISION

### Industry Pioneer

Since 2001, Hikvision has grown from being a single-product supplier to the world's leading provider of security products and solutions. From the early digital age to today's intelligence era, we have seized every opportunity to advance the industry with our innovative technologies. And venturing into new areas of inspiring technology – such as artificial intelligence, cloud computing, and the fusion of deep learning and multi-dimensional perception technologies, to name a few – Hikvision leads the security industry as an IoT provider with video as the core competency.

### Global Operations

Hikvision has established one of the most extensive marketing networks in the industry, comprising 44 international subsidiaries and branch offices to ensure quick responses to the needs of customers, users and partners.

**Core Technologies**

| Visual Perception | Cloud Storage | Big Data | Video Codec | Audio and Video Data Storage | Cross-Media Perception and Reasoning | Streaming Media Networking and Management | Embedded Systems Development |

# BASIC PRINCIPLES OF THERMAL CAMERAS

Each type of radiation has a unique wavelength. Any object with a temperature above absolute zero can emit a detectable amount of infrared radiation. The higher an object's temperature, the more infrared radiation is emitted.
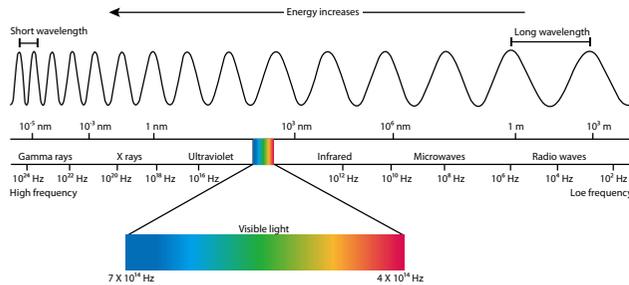


While invisible to human eyes, thermal cameras detect this kind of radiation (from wavelength 8 to 14 μm, or 8,000 – 14,000 nm) and produce images using temperature differences, making it possible to see the environment without visible light.

An infrared camera's effective range is what is meant by "seeing an object". Defined thresholds, known as Johnson's Criteria, refer to the minimum number of pixels necessary to either detect, recognize, or identify targets captured by scene imagers. The lower limits of detection, recognition, and identification (DRI), according to Johnson criteria are:

**Detection**: In order to distinguish an object from the background, the image must be covered by 1.5 or more pixels.
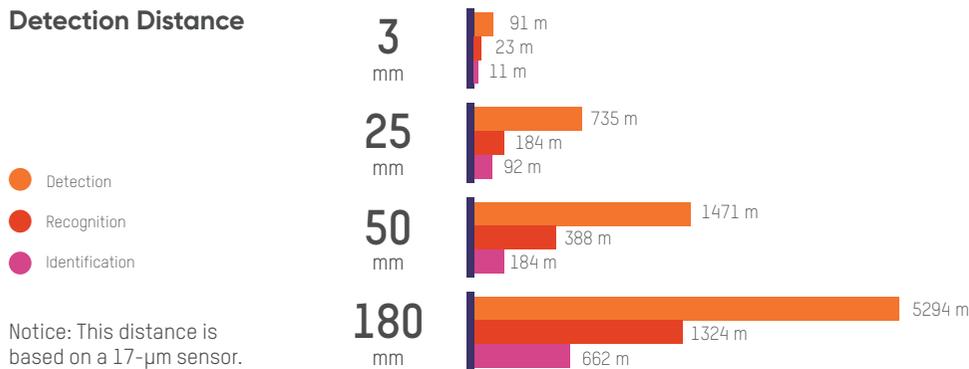
**Recognition**: In order to classify the object (animal, human, vehicle, boat, etc.), the image must have at least 6 pixels across its critical dimension.

**Identification**: In order to identify the object and describe it in details, the critical dimension must be at least 12 pixels across.
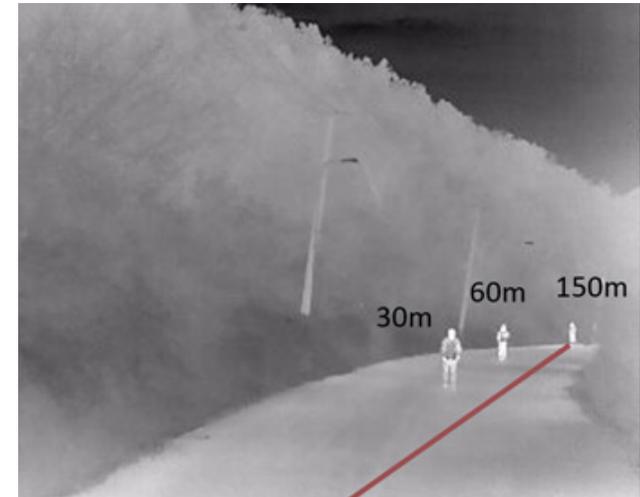


Detection, recognition and identification distances (with 8 mm lens)

## Detection Distance

- ● Detection
- ● Recognition
- ● Identification

Notice: This distance is based on a 17-μm sensor.

**3 mm**
- 91 m
- 23 m
- 11 m

**25 mm**
- 735 m
- 184 m
- 92 m

**50 mm**
- 1471 m
- 388 m
- 184 m
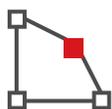
**180 mm**
- 5294 m
- 1324 m
- 662 m

## VCA Distance

VCA rules: line crossing, intrusion, region entrance, region exit

- ● Vehicle
- ● Human

Notice: This distance is based on a 17-μm sensor.

**15 mm**
- 450 m
- 150 m

**25 mm**
- 750 m
- 250 m

**35 mm**
- 1050 m
- 350 m
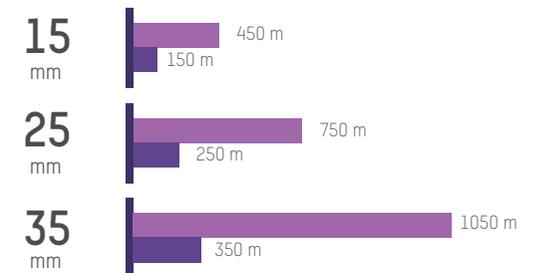
# WHY DO WE USE THERMAL CAMERAS
## FOR PERIMETER PROTECTION?

### Superior Environmental Adaptability

Thermal cameras capture sharp images around-the-clock, regardless of environmental factors such as light levels, contrast, backlighting, shadows, fog, smog, rain, etc.

### High Alarm Accuracy
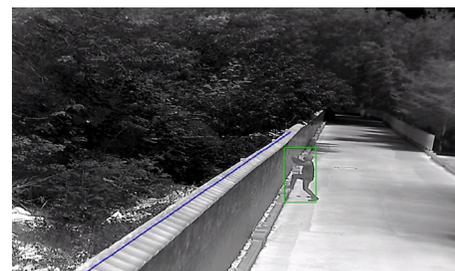
Based on deep learning algorithms, thermal cameras provide ultra-effective detection for line crossing, intrusion, and region entry and exit. False alarms triggered by non-human and non-vehicle objects are vastly reduced.

### Better Visuals

Image fusion
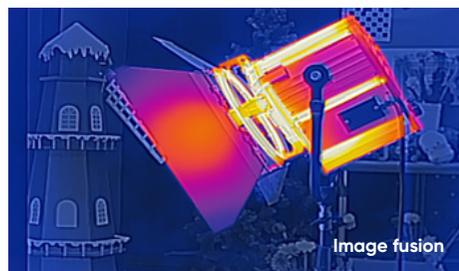
With thermal cameras, you can easily discover objects and potential risks that are invisible to conventional cameras. In addition to thermal images, the built-in visible-light module can provide supplementary recorded evidence – lowering costs for installation.

### Extended Distances
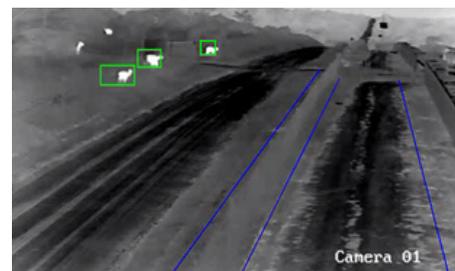
Camera 01

Thermal detection covers much larger distances and requires fewer devices to do it, compared against conventional, optical cameras.

# SHORT-RANGE PROTECTION

## 3-steps VCA

With a 3-step configuration, users can easily set up VCA rules for the camera with no need to calibrate manually.

**Enable VCA**

**Draw a detection area**

**Set human/vehicle as the target**

## Human & Vehicle Classification

Hikvision's VCA 2.0 is an intelligent video content analysis technology based on deep learning algorithms. It detects and classifies targets into human or vehicle types while filtering out the other objects.

*Thermal Lens Detection*

*Deep Learning Classification*

Human

Vehicle

## Light & Audio Warning

Our cameras detect intrusion threats in a timely manner and trigger the strobe light and customizable audio alarms. You can achieve arm or disarm easily with a few taps via Hik-Connect.

*Rule Determination*

HeatPro

# MEDIUM-RANGE PROTECTION

## Advanced Intelligence

Based on deep learning algorithms, Hikvision's thermal products deliver powerful and accurate behavior analyses, including detections such as line crossing, intrusion, region entrance and exit, and more. The intelligent human/vehicle detection feature helps reduce false alarms caused by animals, camera shake, falling leaves, or other irrelevant objects, significantly improving alarm accuracy.

Deep-learning-based dynamic fire source detection takes advantage of Hikvision's security big data, containing over 100,000 samples of global climate information to provide the highest possible detection accuracy. This front-end device can detect fire based on raw, frame-by-frame data, ensuring firsthand image analysis and rapid alarm triggering.

**Region Exit**

**Region Entrance**

![Hikvision logo]

# Smart Tracking Linkage

The Hikvision Thermal Smart Linkage Tracking System is formed by one bi-spectrum bullet camera offering panorama and one optical PTZ camera smartly tracking moving targets.

The bullet camera for all-weather protection offers live view 24/7 of significant passageways, highly accurate detection in specified areas and human & vehicle classifications. The speed dome identifies trespassers with auto or manual tracking for multiple targets and can be zoomed in for more details.

Within the linkage system, it is easy to achieve one-touch connection and automatic alignment between the bi-spectrum bullet camera and optical PTZ camera.
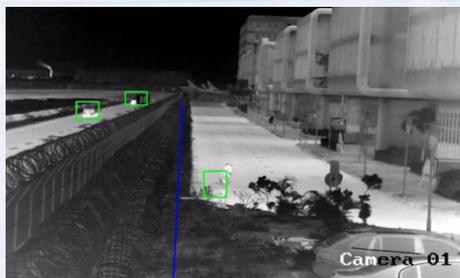
Camera 01

# LONG-RANGE PROTECTION





Ship warning



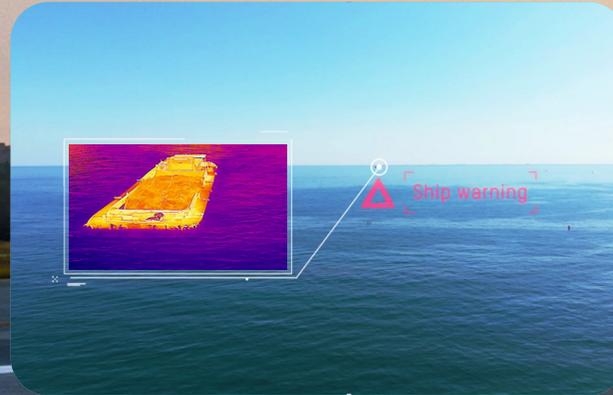Hikvision's thermal PTZ cameras are tailored for super long detection, providing highly accurate and effective perimeter protection with a smaller number of devices.

These cameras can detect with excellent image performance of moving vehicles within 38 km and humans within 12 km.

Hikvision's thermal cameras for vessel detection use deep learning algorithms, discerning the different heat emissions of various targets.

These cameras provide accurate ship flow and dredger detections, meet or exceed requirements for specific scenarios such as fishery, offshore windfarms, salmon/shrimp farms, ports, offshore oilfields, and more.

In a drone response system, the radar detects unmanned aircraft and sends the location to the PTZ positioning system.

This way, it tracks the targets fast, zooms in for detailed information, and identifies potentially dangerous payloads attached to the drone.

# PRODUCT MODELS

## DS-2TD2628/QA

**Thermal Network
Bullet Camera**

Thermal: 256 × 192, 12 µm, Optical: 2688 x 1520
Lens (thermal) : 3 / 7 / 10 mm
Lens (optical) : 4 / 6/ 8 mm
VCA : Line crossing / Intrusion / Region entrance /
Region exitingAudible Alert and Strobe Light
Temperature Exception
Temperature Exception Range : -20 to 150°C
Temperature Accuracy : ±8°C
Working Temperature :
-40°C to 65°C (-40° F to 149° F)
IP67

## DS-2TD1228/QA

**Thermal Network
Turret Camera**

Thermal: 256 × 192, 12 µm, Optical: 2688 x 1520
Lens (thermal) : 2 / 3 / 7 mm
Lens (optical) : 2 / 4 / 6 mm
VCA : Line crossing / Intrusion / Region entrance /
Region exitingAudible Alert and Strobe Light
Temperature Exception
Temperature Exception Range : -20 to 150°C
Temperature Accuracy : ±8°C
Working Temperature :
-40°C to 65°C (-40° F to 149° F)
IP66

## DS-2TD2617/QA

**Bi-Spectrum Network
Bullet Camera**

Thermal : 160 x 120, 17 µm; Optical : 2688 x 1520
Lens (thermal) : 3 / 6 / 10 mm
Lens (Optical) : 4/ 6 / 8 mm
VCA : Line crossing / Intrusion / Region entrance /
Region exitingAudible Alert and Strobe Light
Temperature Exception
Temperature Exception Range : -20 to 150°C
Temperature Accuracy : ±8°C
Working Temperature :
-40°C to 65°C (-40° F to 149°F)
IP67

## DS-2TD1217/QA

**Thermal Network
Turret Camera**

Thermal : 160 x 120, 17 µm; Optical : 2688 x 1520
Lens (thermal) : 2 / 3 / 7  mm
Lens (Optical) : 2/ 4 / 6 mm
VCA : Line crossing / Intrusion / Region entrance /
Region exitingAudible Alert and Strobe Light
Temperature Exception
Temperature Exception Range : -20 to 150°C
Temperature Accuracy : ±8°C
Working Temperature :
-40°C to 65°C (-40° F to 149°F)
IP66

## Effective Coverage   Short Range (20–70 m)

**HeatPro Series Cameras**

VCA Range (Humans: 1.8 × 0.5 m)
VCA Range (Vehicles: 1.4 × 4.0 m)

| Model | Humans | Vehicles | Model | Humans | Vehicles |
|---|---|---|---|---|---|
| DS-2TDxx17-2/QA | 9 | 26.5 | DS-2TD1228-2/QA | 17 | 50.4 |
| DS-2TDxx17-3/QA | 15 | 45.6 | DS-2TDxx28-3/QA | 29 | 86.4 |
| DS-2TDxx17-6/QA | 30 | 91.2 | DS-2TDxx28-7/QA | 55 | 165.6 |
| DS-2TD2617-10/PA(QA) | 48 | 142.6 | DS-2TD2628-10/QA | 78 | 232.8 |

## DS-2TD2138/QY

**Thermal Network Bullet Camera**

Thermal: 384 × 288, 12 μm
Lens : 7 / 10 / 15 / 25 mm
7 mm: 42.0° × 32.0° / 10 mm:  26.0° × 20.0°/
15 mm: 17.0° × 13.0°/25 mm: 11.0° × 8.0°
VCA : Line crossing / Intrusion / Region entrance /
Region exiting
Temperature Exception Range : -20 to 150°C
Temperature Accuracy : ±8°C
Alarm Input : 2-ch inputs (0-5 VDC)
Alarm Output : 2-ch relay outputs, alarm response
actions configurable
Working Temperature :
-40°C to 65°C (-40° F to 149° F)
Anti-corrosion Coating
IP67

## DS-2TD2167/P(Y)

**Thermal Network Bullet Camera**

Thermal: 640 × 512, 17 μm
Lens : 7 / 15 / 25 / 35 mm
7 mm: 88.5° x 73.2° / 15 mm: 42.5° x 33.6° / 25 mm:
24.55° x 19.75° / 35 mm: 17.67° x 14.18°
VCA : Line crossing / Intrusion / Region entrance /
Region exiting
Temperature Exception Range : -20 to 150°C
Temperature Accuracy : ±8°C
Alarm Input : 2-ch inputs (0-5 VDC)
Alarm Output : 2-ch relay outputs, alarm response
actions configurable
Working Temperature :
-40°C to 65°C (-40° F to 149° F)
Anti-corrosion Coating (PY)
IP67

## DS-2TD2367/P(Y)

**Thermal Network Bullet Camera**

Thermal: 640 × 512, 17 μm
Lens : 50 / 75 / 100 mm
50 mm: 12.4° x 10° / 75 mm: 8.3° x 6.6° / 100 mm: 6.22 x
4.96
VCA : Line crossing / Intrusion / Region entrance /
Region exiting
Temperature Exception Range : -20 to 150°C
Temperature Accuracy : ±8°C
Alarm Input : 2-ch inputs (0-5 VDC)
Alarm Output : 2-ch relay outputs, alarm response
actions configurable
Working Temperature :
-40°C to 65°C (-40° F to 149° F)
Anti-corrosion Coating (PY)
IP67

## DS-2TX3742-A(P)/P

**Bi-Spectrum Network Smart Linkage System**

Thermal: 384 × 288, 12 μm,
Optical: 2688 x 1520
Lens (thermal) : 10 / 15 / 25 / 35 mm
10mm: 37.5°× 28.5° / 15mm: 24.5° × 18.5° / 25mm: 14.9°
× 11.2° / 35mm: 10.7° × 8°
Lens (optical) : 6.0-252 mm
VCA : Line crossing / Intrusion / Region entrance /
Region exitingTemperature Exception
Temperature Exception Range : -20 to 150°C
Temperature Accuracy : ±8°C
Working Temperature :
-40°C to 65°C (-40° F to 149° F)
Anti-corrosion Coating (PY)
IP67

## DS-2TD2637/P(Y)

**Bi-Spectrum Network Bullet Camera**

Thermal: 384 × 288, 17 μm, Optical: 2688 x 1520
Lens (thermal) : 10 / 15 / 25 / 35 mm
10mm: 37.5° × 28.5° / 15mm: 24.5° × 18.5° / 25mm: 14.9°
× 11.2° / 35mm: 10.7° × 8.0°
Lens (optical) : 4 / 6 / 12 / 15 mm
VCA : Line crossing / Intrusion / Region entrance /
Region exitingTemperature Exception
Temperature Exception Range : -20 to 150°C
Temperature Accuracy : ±8°C
Working Temperature :
-40°C to 65°C (-40° F to 149° F)
Anti-corrosion Coating (PY)
IP67

## DS-2TD2667/P(Y)

**Bi-Spectrum Network Bullet Camera**

Thermal: : 640  512, 17 μm, Optical: 2688 x 1520
Lens (thermal) : 15 / 25 / 35 mm
15mm: 42.5° × 33.6° / 25mm: 24.55° × 19.75° / 35mm:
17.67° × 14.18°
Lens (optical) : 4 / 6 / 8 mm
VCA : Line crossing / Intrusion / Region entrance /
Region exitingTemperature Exception
Temperature Exception Range : -20 to 150°C
Temperature Accuracy : ±8°C
Working Temperature :
-40°C to 65°C (-40° F to 149° F)
Anti-corrosion Coating (PY)
IP67

## DS-2TD4228-10/W

**Network Bi-Spectrum Speed Dome**

Thermal:  256 × 192  12 μm
Optical: 1920 × 1080
Lens (thermal) : 10 mm; Optical: 4.8-153 mm
FOV: 10mm: 18° × 13.5°
VCA : Line crossing / Intrusion / Region entrance /
Region exiting
Temperature Exception
Temperature Exception Range : -20 to 150°C
Temperature Accuracy : ±8°C
Working Temperature :
-40°C to 65°C (-40° F to 149° F)
IP66

## DS-2TD4137W(Y)

**Network Bi-Spectrum Speed Dome**

Thermal: 384 × 288, 17 μm,
Optical: 2688 x 1520
Lens (thermal) : 25 / 50 mm; Optical: 6–252 mm
25 mm: 14.9° × 11.2° , 50 mm: 7.5° × 5.6°
VCA : Line crossing / Intrusion / Region entrance /
Region exitingTemperature Exception
Temperature Exception Range : -20 to 150°C
Temperature Accuracy : ±8°C
Working Temperature :
-40°C to 65°C (-40° F to 149° F)
Anti-corrosion Coating (PY)
IP66

### DS-2TD4167W(Y)

**Network Bi-Spectrum Speed Dome**

Thermal: 640 × 512, 17 μm
Optical: 2688 x 1520
Lens (thermal) : 25 / 50 mm; Optical: 6–252 mm
FOV: 25 mm : 24.5° × 19.7°, 50 mm : 7.5° × 5.6°
VCA : Line crossing / Intrusion / Region entrance / Region exitingTemperature Exception
Temperature Exception Range : -20 to 150°C
Temperature Accuracy : ±8°C
Working Temperature :
-40°C to 65°C (-40° F to 149° F)
Anti-corrosion Coating (PY)
IP66

### DS-2TD6237-H4L/W(Y)

**Network Bi-Spectrum Speed Dome**

Thermal: 384 × 288, 17 μm,
Optical: 1920 × 1080
Lens (thermal) : 10 / 25 mm; Optical: 4.8-153 mm
FOV: 10 mm: 37.7° × 28.7°, 25 mm: 14.88° × 11.19°
VCA : Line crossing / Intrusion / Region entrance / Region exitingTemperature Exception
Temperature Exception Range : -20 to 150°C
Temperature Accuracy : ±8°C
Working Temperature :
-40°C to 65°C (-40° F to 149° F)
IP66

### DS-2TD6267-H4L/W(Y)

**Network Bi-Spectrum Positioning System**

Thermal : 640 × 512, 17 μm
Optical : 2688 × 1520
Thermal : 50 / 75 / 100 mm
Optical : H (6–240 mm) / C (6–336 mm)
VCA: Line crossing / Intrusion / Region entrance / Region exitingTemperature Exception
Temperature Exception Range : -20 to 150°C
Temperature Accuracy : ±8°C
Working Temperature :
-40°C to 65°C (-40° F to 149° F)
Anti-corrosion Coating (PY)
IP66

### DS-2TD8167-ZC(E/G)F(L)W(Y)

**Network Bi-Spectrum Positioning System**

Thermal : 640 × 512, 17 μm
Optical : -C: 2688 × 1520 / -E: 1920 × 1080
Lens (thermal) : 150 / 190 / 230 mm
Lens (optical) : C (6.7-330 mm) / E (12.5-775 mm) / G (16.7-1000 mm)
FOV: 150 mm: 20.56° × 16.51° / 190 mm: 17.19° × 13.79° / 230 mm: 26.61° × 21.43°
VCA: Line crossing / Intrusion / Region entrance / Region exitingTemperature Exception
Temperature Exception Range : -20 to 150°C
Temperature Accuracy : ±8°C
Working Temperature : -40°C to 65°C (-40° F to 149° F)
Anti-corrosion Coating (PY)
IP66

## Effective Coverage   Medium Range (70–350 m)

**Industrial Fixed Cameras**  ▮ VCA Range (Humans: 1.8 × 0.5 m)   ▮ VCA Range (Vehicles: 1.4 × 4.0 m)

| Model | Humans | Vehicles | Model | Humans | Vehicles |
|---|---|---|---|---|---|
| DS-2TD2137-4/P | 30.8 | 92.4 | DS-2TD2x37-35/P | 245 | 735.0 |
| DS-2TD2137-7/P | 45.5 | 136.5 | DS-2TD2138-4/QY | 44 | 132 |
| DS-2TD2x37-10/P | 67.9 | 203.7 | DS-2TD2138-7/QY | 65 | 195 |
| DS-2TD2x37-15/P | 105 | 315.0 | DS-2TD2138-10/QY | 97 | 291 |
| DS-2TD2x37-25/P | 175 | 525.0 | DS-2TD2138-15/QY | 150 | 450 |

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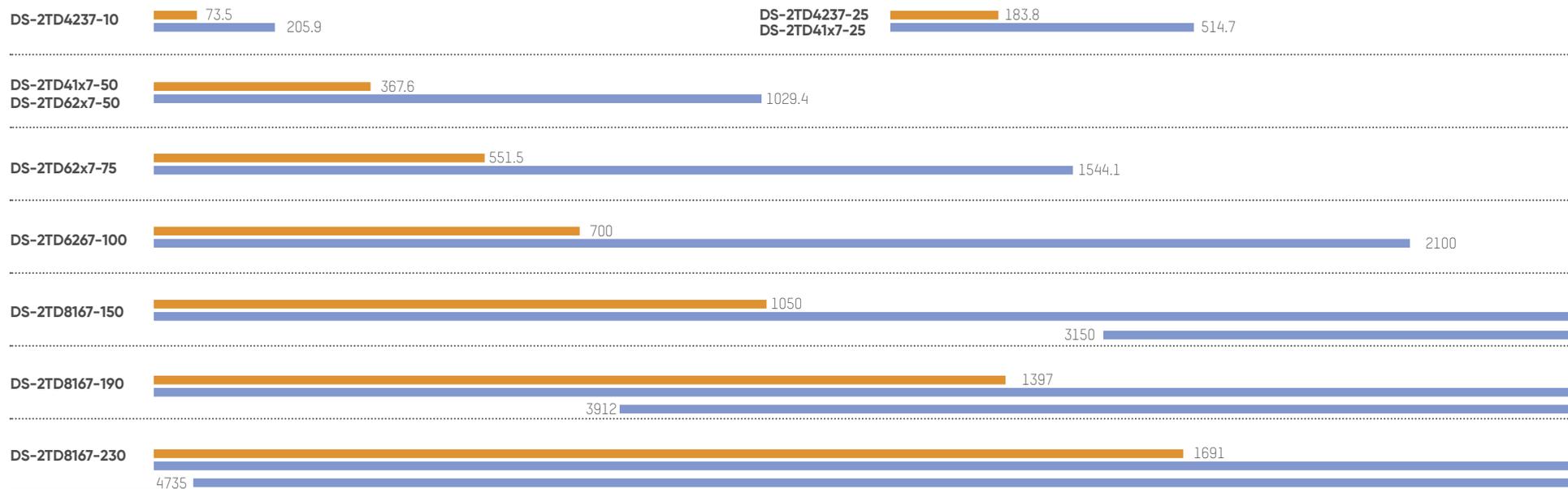| Model | Humans | Vehicles |
|---|---|---|
| DS-2TD2138-25/QY | 250 | 750 |
| DS-2TD2167-7/P | 45.5 | 136.5 |
| DS-2TD2x67-15 | 105 | 315.0 |
| DS-2TD23X6-75 | 525 | 1575.0 |
| DS-2TD23x6-100 | 700 | 2100.0 |
| DS-2TD2x67-25 | 175 | 525.0 |
| DS-2TD2x67-35 | 245 | 735.0 |
| DS-2TD23x6-50 / DS-2TD28x6-50 | 350 | 1050.0 |
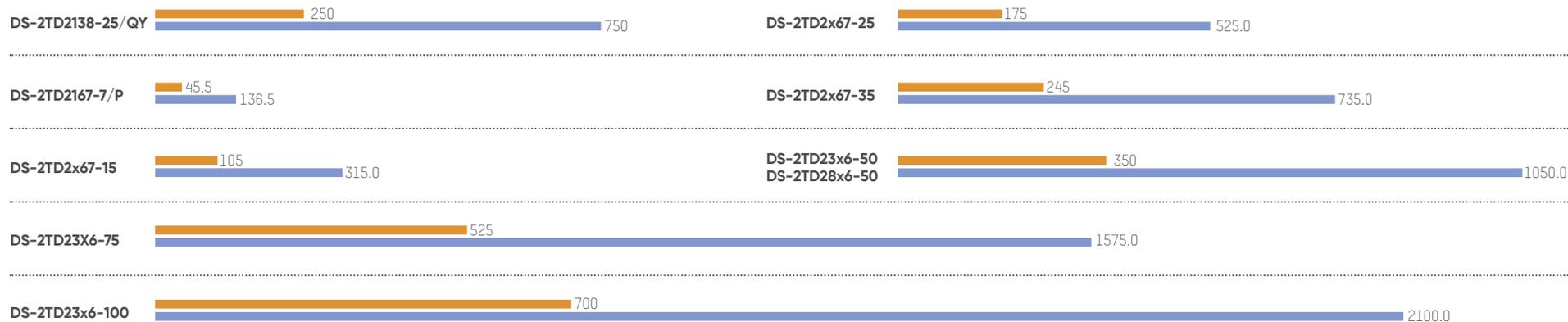
## Effective Coverage   Long Range (over 350 m)

**Industrial PT Cameras** — VCA Range (Humans: 1.8 × 0.5 m), VCA Range (Vehicles: 1.4 × 4.0 m)

| Model | Humans | Vehicles |
|---|---|---|
| DS-2TD4237-10 | 73.5 | 205.9 |
| DS-2TD41x7-50 / DS-2TD62x7-50 | 367.6 | 1029.4 |
| DS-2TD62x7-75 | 551.5 | 1544.1 |
| DS-2TD6267-100 | 700 | 2100 |
| DS-2TD8167-150 | 1050 | 3150 |
| DS-2TD8167-190 | 1397 | 3912 |
| DS-2TD8167-230 | 1691 | 4735 |
| DS-2TD4237-25 / DS-2TD41x7-25 | 183.8 | 514.7 |

Hikvision Thermal Products

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# Perimeter Protection in All Weather

Hikvision Thermal Products

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