

## DINION IP thermal 8000



This thermal IP camera provides high-sensitivity thermal images using an un-cooled vanadium oxide microbolometer that delivers outstanding image quality. The camera is designed to combine the benefits of thermal imaging with the market leading Intelligent Video Analytics from Bosch. There is no need for natural or artificial lighting of the area of interest. The camera produces crisp and clear images day and night, even in challenging environments with smoke, dust, haze or fog.

### Versions

The camera comes with a choice of narrow field-of-view (NFOV) or wide field-of-view (WFOV) lenses. The QVGA resolution variant is available with a frame rate of 9 or 60 fps; the VGA resolution variant is available with a frame rate of 9 or 30 fps.

The camera is enclosed in a robust outdoor housing making it ideal for a wide range of applications in demanding environments.

### System overview

#### Range Performance

The following tables give the approximate range performance under ideal conditions of the various lenses for standard monitoring.

| 7.5 mm lens QVGA<br>FoV: 41.8°H x 30°V | Human*         | Object*         |
|--|----------------|-----------------|
| Detection                              | 140 m (459 ft) | 640 m (2100 ft) |
| Recognition                            | 35 m (115 ft)  | 160 m (525 ft)  |

- ▶ Integrated Intelligent Video Analytics
- ▶ Long detection range (up to 5850 m)
- ▶ 640 x 480 resolution version available for even sharper images
- ▶ High access security for data protection
- ▶ High sensitivity LWIR (Long wave infrared) sensor module with variant lens options

| 7.5 mm lens QVGA<br>FoV: 41.8°H x 30°V | Human*       | Object*       |
|--|--------------|---------------|
| Identification                         | 18 m (59 ft) | 80 m (262 ft) |

| 9 mm lens VGA<br>FoV: 70°H x 52°V | Human          | Object          |
|-----------------------------------|----------------|-----------------|
| Detection                         | 155 m (509 ft) | 700 m (2297 ft) |
| Recognition                       | 40 m (131 ft)  | 175 m (574 ft)  |
| Identification                    | 20 m (66 ft)   | 88 m (289 ft)   |

| 16.7 mm lens VGA<br>FoV: 37.5°H x 28°V | Human           | Object           |
|--|-----------------|------------------|
| Detection                              | 315 m (1033 ft) | 1450 m (4757 ft) |
| Recognition                            | 80 m (262 ft)   | 360 m (1181 ft)  |
| Identification                         | 40 m (131 ft)   | 180 m (591 ft)   |

| 19 mm lens QVGA<br>FoV: 16°H x 12°V | Human           | Object           |
|-------------------------------------|-----------------|------------------|
| Detection                           | 380 m (1247 ft) | 1750 m (5741 ft) |
| Recognition                         | 95 m (312 ft)   | 440 m (1444 ft)  |

| 19 mm lens QVGA<br>FoV: 16°H x 12°V | Human         | Object         |
|-------------------------------------|---------------|----------------|
| Identification                      | 48 m (157 ft) | 220 m (722 ft) |

| 35 mm lens VGA<br>FoV: 17.6°H x 13.2°V | Human           | Object            |
|--|-----------------|-------------------|
| Detection                              | 690 m (2264 ft) | 3200 m (10499 ft) |
| Recognition                            | 170 m (558 ft)  | 800 m (2625 ft)   |
| Identification                         | 85 m (279 ft)   | 400 m (1312 ft)   |

| 65 mm lens VGA<br>FoV: 9.6°H x 7.2°V | Human            | Object            |
|--------------------------------------|------------------|-------------------|
| Detection                            | 1270 m (4167 ft) | 5850 m (19193 ft) |
| Recognition                          | 320 m (1050 ft)  | 1460 m (4790 ft)  |
| Identification                       | 160 m (525 ft)   | 730 m (2395 ft)   |

\*Human: 1.8 x 0.5 m (5.9 x 1.6 ft); Object: 2.3 x 2.3 m (7.5 x 7.5 ft)

| Lens    | Focus distance |
|---------|----------------|
| 65 mm*  | 141 m to ∞     |
| 35 mm*  | 41 m to ∞      |
| 19 mm   | 13.2 m to ∞    |
| 16.7 mm | 9.0 m to ∞     |
| 9 mm    | 2.4m to ∞      |
| 7.5 mm  | 1.7 m to ∞     |

\*The focus distance of the 35 mm and 65 mm lenses can be adjusted manually in the application, please check the Bosch website to download the guide if required.

## Functions

### Intelligent Video Analytics

The integrated video analytics is both robust and intelligent. The Intelligence-at-the-Edge concept now delivers even more powerful features:

- Simple calibration
- False alarm reduction
- Extended range identification

The mission critical video analytics reliably detects, tracks, and analyzes objects, and alerts you when predefined alarms are triggered. A smart set of alarm rules, together with object filters and tracking modes, makes complex tasks easy.

The system is also extremely robust and is able to reduce false alarms, for example from foliage or shaking objects, even in harsh weather conditions.

Metadata is attached to your video to add sense and structure. This enables you to quickly retrieve the relevant images from hours of stored video. Metadata can also be used to deliver irrefutable forensic evidence or to optimize business processes based on people counting or crowd density information. Calibration is quick and easy – just enter the height of the camera. The internal gyro/accelerometer sensor provides the rest of the information to precisely calibrate the video analytics.

### Intelligent Video Analytics distance table

| Resolution | Lens    | Max. range* | Min. range* |
|------------|---------|-------------|-------------|
| QVGA       | 7.5 mm  | 90 m        | 10 m        |
| QVGA       | 19 mm   | 228 m       | 25 m        |
| VGA        | 9 mm    | 98 m        | 5.5 m       |
| VGA        | 16.7 mm | 193 m       | 10.7 m      |
| VGA        | 35 mm   | 415 m       | 41 m        |
| VGA        | 65 mm   | 763 m       | 141 m       |

\*The distance table is the theoretical distances based on minimal and maximal resolution of objects, and thus covers only optimal conditions. Human target: 1.8 x 0.5 m (5.9 x 1.6 ft)

### Bitrate optimized profile

The table that follows shows the average typical optimized bitrate, in kbits/s, for different frame rates:

|    | IPS | VGA | QVGA |
|----|-----|-----|------|
| 60 |     | -   | 360  |
| 30 |     | 850 | 196  |
| 15 |     | 510 | 125  |
| 9  |     | 250 | 91   |
| 3  |     | 105 | 52   |

### Multiple streams

The innovative multi-streaming feature delivers various H.264 streams together with an M-JPEG stream.

These streams facilitate bandwidth-efficient viewing and recording as well as integration with third-party video management systems.

The camera can run multiple independent streams that allows to set a different resolution and frame rate on the first and second stream. The user can also choose to use a copy of the first stream.

The third stream uses the I-frames of the first stream for recording; the fourth stream shows a JPEG image at a maximum of 10 Mbit/s.

### Storage management

Recording management can be controlled by the Bosch Video Recording Manager (Video Recording Manager) or the camera can use iSCSI targets directly without any recording software.

### Edge recording

Insert a memory card into the card slot to store up to 2 TB of local alarm recording. Pre-alarm recording in RAM reduces recording bandwidth on the network, and extends the effective life of the memory card.

### Hybrid operation

A surge-protected analog video output allows full hybrid operation. This means that high resolution IP video streaming and an analog video output are available simultaneously. The hybrid functionality offers an easy migration path from legacy CCTV to a modern IP-based system.

### Data security

Special measures have been put in place to ensure the highest level of security for device access and data transport. The three-level password protection with security recommendations allows users to customize device access. Web browser access can be protected using HTTPS and firmware updates can also be protected with authenticated secure uploads. The on-board Trusted Platform Module (TPM) and Public Key Infrastructure (PKI) support, guarantee superior protection from malicious attacks. The 802.1x network authentication with EAP/TLS, supports TLS 1.2 with updated cipher suites including AES 256 encryption.

The advanced certificate handling offers:

- Self-signed unique certificates automatically created when required
- Client and server certificates for authentication
- Client certificates for proof of authenticity
- Certificates with encrypted private keys

### Complete viewing software

There are many ways to access the camera's features: using a web browser, with the Bosch Video Management System, with the free-of-charge Bosch Video Client or Video Security Client, with the video security mobile app, or via third-party software.

### System integration

The camera conforms to the ONVIF Profile Q, ONVIF Profile T, ONVIF Profile M specifications. Compliance with these standards guarantees interoperability between network video products regardless of manufacturer.

Third-party integrators can easily access the internal feature set of the camera for integration into large projects. Visit the Bosch Integration Partner Program (IPP) website ([ipp.boschsecurity.com](http://ipp.boschsecurity.com)) for more information.

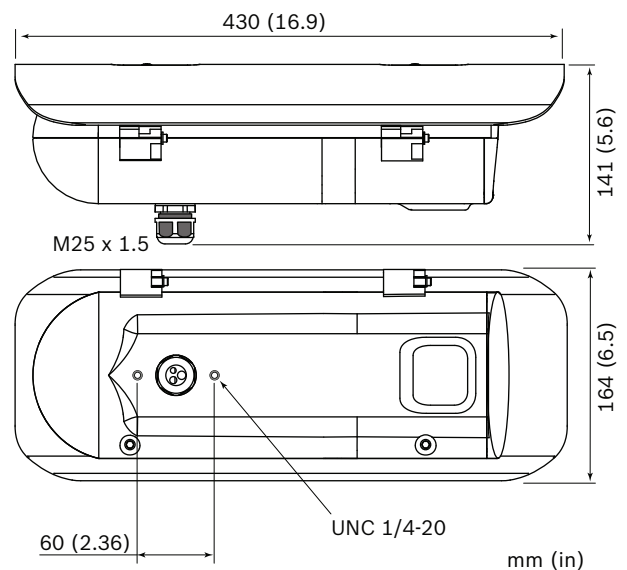
## Regulatory information

| Standards     | Type   |
|---------------|--|
| Emission      | EN 55032: 2012 /AC: 2013 class B<br>FCC: 47 CFR Part 15 B, class B<br>RCM: AS/NZS CISPR 22: 2009 /A1: 2010<br>VCCI: V2 & V3 /2015.04   |
| Immunity      | EN 50130-4: 2011 /A1: 2014<br>EN 50121-4: 2016 /AC: 2008<br>EN 55024: 2010 /A1: 2015   |
| Environmental | EN 50130-5:2011 Class IV, Salt mist 28 days passed   |
| Safety        | EN 60950-1: 2006 /A11: 2009 /A1: 2010 /A12: 2011 /A2: 2013<br>EN 60950-22: 2006 /A11: 2008<br>UL 60950-1, Ed. 2, October 14, 2014<br>CAN/CSA C22.2 No. 60950-1-07, Ed. 2, October 2014 |
| Marks         | cUL, CE, WEEE, RCM, EAC, VCCI, FCC, RoHS   |

| Region | Regulatory compliance/quality marks |                        |
|--------|-------------------------------------|------------------------|
| Europe | CE                                  |                        |
| USA    | UL                                  | DINION IP thermal 8000 |

## Installation/configuration notes

### Dimensions



## Technical specifications

### Power

|                   |                             |
|-------------------|-----------------------------|
| Input voltage     | 24 VAC (SELV) ±10% 50/60 Hz |
| Power consumption | 34 W max.                   |

### Thermal module

|                     |  |
|---------------------|--|
| Image sensor        | Focal Plane Array (FPA), un-cooled vanadium oxide microbolometer |
| Picture elements    | 320(H) x 240(V) or 640(H) x 480(V)                               |
| Pixel pitch         | 17 µm  |
| Thermal sensitivity | < 50 mK  |

### Video resolution

|      |                              |
|------|------------------------------|
| QVGA | 320 x 240 at 9 fps or 60 fps |
| VGA  | 640 x 480 at 9 fps or 30 fps |

### Video functions – color

|                             |                     |
|-----------------------------|---------------------|
| Adjustable picture settings | Contrast            |
| Thermal color mapping       | 12 selectable modes |

### Lenses FoV (H x V)

|         | QVGA        | VGA           |
|---------|-------------|---------------|
| 7.5 mm  | 41.8° x 30° | -             |
| 9 mm    | -           | 70° x 52°     |
| 16.7 mm | -           | 37.5° x 28°   |
| 19 mm   | 16° x 12°   | -             |
| 35 mm   | -           | 17.6° x 13.2° |
| 65 mm   | -           | 9.6° x 7.2°   |

### Video streaming

|                           |  |
|---------------------------|--|
| Video compression         | H.264 (MP); M- JPEG  |
| Streaming                 | Multiple configurable streams in H.264 and M- JPEG, configurable frame rate and bandwidth. Regions of Interest (ROI) |
| Camera processing latency | <55 ms   |

### Video streaming

|               |               |
|---------------|---------------|
| GOP structure | IP, IBP, IBBP |
|---------------|---------------|

### Camera installation

|               |                                      |
|---------------|--------------------------------------|
| Analog output | Off, 4:3, 16:9 pillar box, 16:9 crop |
| Positioning   | Coordinates / Mounting height        |

### Video content analysis

|                |   |
|----------------|---|
| Analysis type  | Intelligent Video Analytics                           |
| Configurations | Silent VCA / Profile1/2 / Scheduled / Event triggered |

|                          |   |
|--------------------------|---|
| Alarm rules (combinable) | Any object<br>Object in field<br>Line crossing<br>Enter / leave field<br>Loitering<br>Follow route<br>Counting<br>Occupancy<br>Condition change<br>Similarity search<br>Flow / counter flow |
|--------------------------|---|

|                |  |
|----------------|--|
| Object filters | Duration<br>Size<br>Aspect ratio<br>Speed<br>Direction<br>Object classes (4) |
|----------------|--|

|                |  |
|----------------|--|
| Tracking modes | Standard (2D) tracking<br>Ship tracking<br>Museum mode |
|----------------|--|

|             |  |
|-------------|--|
| Calibration | Automatic based on gyro / accelerometer data and camera height |
|-------------|--|

### Additional functions

|                      |   |
|----------------------|---|
| Video authentication | Off / Watermark / MD5 / SHA-1 / SHA-256 |
| Display stamping     | Name; Logo; Time; Alarm message         |
| Pixel counter        | Selectable area                         |

### Local storage

|              |                         |
|--------------|-------------------------|
| Internal RAM | 5 s pre-alarm recording |
|--------------|-------------------------|

| Local storage                  |   |
|--------------------------------|---|
| Memory card slot               | Supports up to 32 GB microSDHC / 2 TB microSDXC card. (A memory card of Class 6 or higher is recommended for HD recording)                    |
| Recording                      | Continuous recording, ring recording, alarm/ events/schedule recording  |
| Input/output                   |   |
| Analog video out               | CVBS (NTSC), 1 Vpp, SMB, 75 Ohm (surge protected)   |
| Audio connectors               | 3.5 mm stereo jack (x2)   |
| Audio line in                  | 12 kOhm typical, 1 Vrms max   |
| Audio line out                 | 1 Vrms at 1.5 kOhm typical,   |
| Alarm input connectors         | Clamp (x2 non-isolated closing contact)   |
| Alarm input activation voltage | +5 VDC to +40 VDC<br>(+3.3 VDC with DC-coupled 22 kOhm pull-up resistor)  |
| Alarm output connector         | Clamp   |
| Alarm output voltage           | 30 VAC or +40 VDC<br>Maximum 0.5 A continuous, 10VA   |
| Ethernet                       | RJ45  |
| Data port                      | RS-232/422/485  |
| Audio streaming                |   |
| Standard                       | G.711, 8 kHz sampling rate<br>L16, 16 kHz sampling rate<br>AAC-LC, 48 kbps at 16 kHz sampling rate<br>AAC-LC, 80 kbps at 16 kHz sampling rate |
| Signal-to-Noise Ratio          | >50 dB  |
| Audio Streaming                | Full-duplex / half duplex   |
| Software                       |   |
| Unit discovery                 | IP Helper   |
| Unit configuration             | Via web browser or Configuration Manager  |
| Firmware update                | Remotely programmable   |
| Software viewing               | Web browser;<br>Video Security Client;<br>Video Security App;   |

| Software                     |   |
|------------------------------|---|
|                              | BVMS;<br>Bosch Video Client;<br>or third party software   |
| Latest firmware and software | <a href="http://downloadstore.boschsecurity.com/">http://downloadstore.boschsecurity.com/</a>   |
| Network                      |   |
| Protocols                    | IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP/RTCP, IGMP V2/V3, ICMP, ICMPv6, RTSP, FTP, ARP, DHCP, APIPA (Auto-IP, link local address), NTP (SNTP), SNMP (V1, V3, MIB-II), 802.1x, DNS, DNSv6, DDNS (DynDNS.org, selfHOST.de, no-ip.com), SMTP, iSCSI, UPnP (SSDP), DiffServ (QoS), LLDP, SOAP, Dropbox™, CHAP, digest authentication |
| Encryption                   | TLS 1.2   |
| Ethernet                     | 10/100 Base-T, auto-sensing, half/full duplex   |
| Connectivity                 | Auto-MDIX   |
| Interoperability             | ONVIF Profile S, ONVIF Profile G, ONVIF Profile M   |
| Mechanical                   |   |
| Dimensions (H x W x L)       | 141 x 164 x 430 mm (5.6 x 6.5 x 16.9 in.) including sunshield   |
| Weight                       | <3.5 kg (7.72 lb)   |
| Construction                 | Aluminum casing, silicone gaskets   |
| Color                        | RAL 9003 White  |
| Window                       | Germanium glass (Ø52 x 3 mm)  |
| Environmental                |   |
| Operating temperature        | -40°C to +55°C (-40°F to +131°F) for continuous operation;  |
| Storage temperature          | -55°C to +70°C (-67°F to +158°F)  |
| Operating Humidity           | 5% to 95% RH non-condensing   |
| Storage Humidity             | up to 98% RH  |
| Ingress protection           | IP66, NEMA-4X   |
| Enclosure protection         | Wind load 150 mph; NEMA TS2 vibration, shock  |

## Ordering information

### **NHT-8000-F07QS DINION THERMAL, <9Hz, QVGA, 7.5mm**

Thermal imaging IP camera  
QVGA  
9 fps  
7.5 mm lens  
NDAA compliant  
Order number **NHT-8000-F07QS | F.01U.321.192**

### **NHT-8000-F07QF DINION THERMAL, 60Hz, QVGA, 7.5mm**

Thermal imaging IP camera  
QVGA  
60 fps  
7.5 mm lens  
NDAA compliant  
Order number **NHT-8000-F07QF | F.01U.321.193**

### **NHT-8000-F19QS DINION THERMAL, <9Hz, QVGA, 19mm**

Thermal imaging IP camera  
QVGA  
9 fps  
19 mm lens  
NDAA compliant  
Order number **NHT-8000-F19QS | F.01U.321.185**

### **NHT-8000-F19QF DINION THERMAL, 60Hz, QVGA, 19mm**

Thermal imaging IP camera  
QVGA  
60 fps  
19 mm lens  
NDAA compliant  
Order number **NHT-8000-F19QF | F.01U.321.186**

### **NHT-8001-F09VS DINION THERMAL, <9Hz, VGA, 9mm**

Thermal imaging IP camera  
VGA  
9 fps  
9 mm lens  
NDAA compliant  
Order number **NHT-8001-F09VS | F.01U.321.187**

### **NHT-8001-F09VF DINION THERMAL, 30Hz, VGA, 9mm**

Thermal imaging IP camera  
VGA  
30 fps  
9 mm lens  
NDAA compliant  
Order number **NHT-8001-F09VF | F.01U.321.188**

### **NHT-8001-F17VS DINION THERMAL, <9Hz, VGA, 16.7mm**

Thermal imaging IP camera  
VGA  
9 fps  
16.7 mm lens  
NDAA compliant  
Order number **NHT-8001-F17VS | F.01U.321.189**

### **NHT-8001-F17VF DINION THERMAL, 30Hz, VGA, 16.7mm**

Thermal imaging IP camera  
VGA  
30 fps  
16.7 mm lens  
NDAA compliant  
Order number **NHT-8001-F17VF | F.01U.321.190**

### **NHT-8001-F35VS DINION THERMAL, <9Hz, VGA, 35mm**

Thermal imaging IP camera  
VGA  
9 fps  
35 mm lens  
NDAA compliant  
Order number **NHT-8001-F35VS | F.01U.321.394**

### **NHT-8001-F35VF DINION THERMAL, 30Hz, VGA, 35mm**

Thermal imaging IP camera  
VGA  
30 fps  
35 mm lens  
NDAA compliant  
Order number **NHT-8001-F35VF | F.01U.321.395**

### **NHT-8001-F65VS DINION THERMAL, <9Hz, VGA, 65mm**

Thermal imaging IP camera  
VGA  
9 fps  
65 mm lens  
NDAA compliant  
Order number **NHT-8001-F65VS | F.01U.323.216**

### **NHT-8001-F65VF DINION THERMAL, 30Hz, VGA, 65mm**

Thermal imaging IP camera  
VGA  
30 fps  
65 mm lens  
NDAA compliant  
Order number **NHT-8001-F65VF | F.01U.321.191**

## Accessories

### **NHA-U-WMT Bracket housing for DINION thermal 8000**

Universal Wall Mount Bracket  
Order number **NHA-U-WMT | F.01U.328.278**

### **NDA-U-PMAL Pole mount adapter large**

Universal pole mount adapter, white; large  
Order number **NDA-U-PMAL | F.01U.324.944**

### **NDA-U-CMT Corner mount adapter**

Universal corner mount, white  
Order number **NDA-U-CMT | F.01U.324.946**

## Services

### **EWE-D8IT09-IW 12 mths wrty ext DINION thermal 9mm**

12 months warranty extension  
Order number **EWE-D8IT09-IW | F.01U.346.365**

### **EWE-D8IT16-IW 12 mths wrty ext DINION thermal 16,7 mm**

12 months warranty extension  
Order number **EWE-D8IT16-IW | F.01U.346.366**

### **EWE-D8IT19-IW 12 mths wrty ext DINION thermal 19 mm**

12 months warranty extension  
Order number **EWE-D8IT19-IW | F.01U.346.370**

**EWE-D8IT35-IW 12 mths wrty ext DINION thermal 35 mm**

12 months warranty extension

Order number **EWE-D8IT35-IW | F.01U.346.368****EWE-D8IT65-IW 12 mths wrty ext DINION thermal 65 mm**

12 months warranty extension

Order number **EWE-D8IT65-IW | F.01U.346.369****EWE-D8IT75-IW 12 mths wrty ext DINION thermal 7,5mm**

12 months warranty extension

Order number **EWE-D8IT75-IW | F.01U.346.367****Represented by:****Europe, Middle East, Africa:**

Bosch Security Systems B.V.  
P.O. Box 80002  
5600 JB Eindhoven, The Netherlands  
Phone: + 31 40 2577 284  
[www.boschsecurity.com/xc/en/contact/](http://www.boschsecurity.com/xc/en/contact/)  
[www.boschsecurity.com](http://www.boschsecurity.com)

**Germany:**

Bosch Sicherheitssysteme GmbH  
Robert-Bosch-Ring 5  
85630 Grasbrunn  
Tel.: +49 (0)89 6290 0  
Fax: +49 (0)89 6290 1020  
[de.securitysystems@bosch.com](mailto:de.securitysystems@bosch.com)  
[www.boschsecurity.com](http://www.boschsecurity.com)

**North America:**

Bosch Security Systems, LLC  
130 Perinton Parkway  
Fairport, New York, 14450, USA  
Phone: +1 800 289 0096  
Fax: +1 585 223 9180  
[onlinehelp@us.bosch.com](mailto:onlinehelp@us.bosch.com)  
[www.boschsecurity.com](http://www.boschsecurity.com)

**Asia-Pacific:**

Robert Bosch (SEA) Pte Ltd, Security Systems  
11 Bishan Street 21  
Singapore 573943  
Phone: +65 6571 2808  
Fax: +65 6571 2699  
[www.boschsecurity.com/xc/en/contact/](http://www.boschsecurity.com/xc/en/contact/)  
[www.boschsecurity.com](http://www.boschsecurity.com)