

## NDE-8512-RT Fixed dome 2MP HDR 10-23mm PTRZ IP66

### FLEXIDOME IP starlight 8000i



- ▶ Motorized Pan, Tilt, Roll, and Zoom (PTRZ) to set the required field of view, without having to touch the camera or lens allows for remote configuration and commissioning
- ▶ Starlight technology provides highly detailed images in extreme low-light situations
- ▶ High Dynamic Range to see every detail in both bright and dark areas of the scene
- ▶ Built-in Intelligent Video Analytics with object detection to trigger alerts and quickly retrieve data with the highest levels of reliability
- ▶ Camera Trainer to train the camera to recognize user-specified target objects for both moving and non-moving objects

The FLEXIDOME IP starlight 8000i - 2MP performance line camera offers starlight performance and High Dynamic Range with 1080p resolution to provide crisp and highly detailed images even in extreme low-light situations.

The camera's remote commissioning functionality makes sure installation and commissioning can be done in very little time. Using a PC or a mobile device with the Bosch Project Assistant app, you can pan, tilt, roll and zoom (PTRZ) and point the camera to the required field of view with a single click - without ever having to touch the camera or lens.

#### Functions

##### Full Remote Commissioning

Installing a professional IP video surveillance camera has never been so easy. In fact, as an installer, you'll never want to go back to the old methods of installing cameras again. We've simplified the installation and commissioning stages to such a degree that they can be done in very little time.

With the FLEXIDOME IP starlight 8000i camera's remote commissioning functionality there's no need to go up and down ladders. Using a PC or a mobile device with the Bosch Project Assistant app, you can

pan, tilt, roll and zoom (PTRZ) and point the camera to the required field of view with a single click - without ever having to touch the camera or lens. Remote configuration and commissioning can also be done at a later stage once all cameras have been installed. Simply connect to the camera remotely via the network using the Bosch Project Assistant app, the camera's web interface, or the Bosch Configuration Manager.

##### Fast performance

The 60 frames per second mode provides for optimum performance in fast action scenes that makes sure no critical data is lost and video is captured with excellent detail.

##### Starlight performance

The latest sensor technology combined with the sophisticated image processing and noise suppression results in an exceptional sensitivity in color. The low-light performance is so good that the camera continues to provide excellent color performance even with a minimum of ambient light.

### High Dynamic Range

The high dynamic range mode is based on a multiple-exposure process that captures more details in the highlights and in the shadows even in the same scene. The result is that you can easily distinguish objects and features, for example, faces with bright backlight. The actual dynamic range of the camera is measured using Opto-Electronic Conversion Function (OECF) analysis according to IEC 62676 Part 5.

### Scene modes

Nine configurable modes are provided with the best settings for a variety of applications. In one click fully optimized image settings can be selected to suit the conditions. Different scene modes can be selected for different situations such as traffic or retail environments.

### Intelligent streaming

Smart encoding capabilities, together with Intelligent Dynamic Noise Reduction technology and analytics, reduce the bandwidth consumption to extremely low levels. Only relevant information in the scene, like motion, or objects found with the analytics, need to be encoded.

The camera is capable of quad streaming which allows the camera to deliver independent, configurable streams for live viewing, recording, or remote monitoring via constrained bandwidths.

Each of these streams can be adapted independently to deliver high quality video, perfectly tailored to purpose, while reducing bit rate by up to 90% compared to a standard camera.

### H.265 high-efficiency video encoding

The camera is designed on the most efficient and powerful H.264 and H.265/HEVC encoding platform. The camera is capable of delivering high-quality and high-resolution video with very low network load. With a doubling of encoding efficiency, H.265 is the compression standard of choice for IP video surveillance systems.

### Bitrate optimized profile

The average bitrate for the bitrate optimized profile using H.265 encoding in kbps for different frame rates can be found in the table provided below.

FPS at 2.1MP	Low activity	Medium activity	High activity
60	836	1261	2753
30	504	753	1647
25	441	661	1440
15	306	461	992
10	229	347	740
5	140	214	450

FPS at 2.1MP	Low activity	Medium activity	High activity
3	97	150	313
1	45	70	144

### **i** Notice

Actual bitrate values may vary depending on scene complexity/activity and picture settings.

### Recording and storage management

Recording management can be controlled by the Bosch Video Recording Manager application, or the camera can use local storage and iSCSI targets directly without any recording software.

Local storage can be used for recording "at the edge" or for Automatic Network Replenishment (ANR) technology to improve the overall recording reliability. Pre-alarm recording in RAM reduces bandwidth consumption on the network and extends the effective life of the memory card.

### Advanced edge recording

Advanced edge recording provides the most reliable storage solution possible due to the combination of the following functionalities:

- Dual SD cards that can be set up as either:
  - Mirrored, for redundant storage
  - Failover, for extended service intervals
  - Extended, for maximum retention time
- Industrial SD card support allows for extreme lifetime
- Health monitoring of industrial SD cards provide early service indications

### Intelligent Video Analytics on the edge

The camera includes the latest release of the Intelligent Video Analytics application from Bosch. Specifically designed for the most demanding environments. It delivers the highest levels of accuracy for mission-critical applications such as perimeter protection of airports, critical infrastructures and government buildings, border patrol, ship tracking and traffic monitoring (e.g. wrong-way detection, traffic counts, monitoring roadsides for parked cars).

Intelligent Video Analytics is extremely resistant to false triggers caused by challenging environments with snow, wind (moving trees), rain, hail, and water reflections. It is ideal for providing automatic object detection over large distances.

The set-up of Bosch's video analytics is also second to none, which is great news for installers. Should your customer decide to use Intelligent Video Analytics, configuration and calibration couldn't be easier. Simply enter the height of the camera and the rest of the calibration is carried out by the video analytics itself based on information provided by the camera's built-in gyro sensor.

### Camera Trainer

Based on examples of target objects and non-target objects, the Camera Trainer program uses machine learning to allow the user to define objects of interest and generate detectors for them. In contrast to the moving objects that the Intelligent Video Analytics application detects, the Camera Trainer program detects both moving and non-moving objects and classifies them immediately. Using Configuration Manager, you can configure the Camera Trainer program using both live video as well as recordings available through the respective camera. The resulting detectors can be downloaded and uploaded for distribution to other cameras.

A free of charge license is required to activate the Camera Trainer program.

### DORI coverage

DORI (Detect, Observe, Recognize, Identify) is a standard system (EN-62676-4) for defining the ability of a person viewing the video to distinguish persons or objects within a covered area. The maximum distance at which a camera/lens combination can meet these criteria is shown below:

#### 2 MP Camera with 3 mm - 9 mm lens or 10 mm - 23 mm lens

DORI	DORI definition	Distance	Distance	Horizontal width
		3 mm / 9 mm	10 mm / 23 mm	
Detect	25 px/m	24 m / 115 m	134 m /	77 m
	8 px/ft	74 ft / 359 ft	304 m 419 ft / 950 ft	
Observe	63 px/m	9 m / 46 m	53 m / 121 m	31 m
	19 px/ft	31 ft / 151 ft	176 ft / 400 ft	
Recognize	125 px/m	5 m / 23 m	27 m / 61 m	15 m
	38 px/ft	16 ft / 76 ft	88 ft / 200 ft	
Identify	250 px/m	2 m / 12 m	13 m / 30 m	8 m
	76 px/ft	8 ft / 38 ft	44 ft / 100 ft	

### Data security

Special measures ensure the highest level of security for device access and data transport. On initial setup, the camera is only accessible over secure channels and enforces a password. Web browser and viewing client access can be protected using HTTPS or other secure protocols that support state-of-the-art TLS 1.2 with updated cipher suites including AES encryption with 256 bit keys. No software can be installed in the camera, and only authenticated firmware can be uploaded. A three-level password protection with security recommendations allows users to customize device access.

Network and device access can be protected using 802.1x network authentication with EAP/TLS. Superior protection from malicious attacks is guaranteed by the Embedded Login Firewall, on-board Trusted Platform Module (TPM) and Public Key Infrastructure (PKI) support.

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

### System integration and ONVIF conformance

The camera conforms to the ONVIF Profile S, ONVIF Profile G, ONVIF Profile M, and ONVIF Profile T specifications. For H.265 configuration, the camera supports Media Service 2, which is part of ONVIF Profile T. 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.

### Universal accessories

A full line of universal accessories are available that allow a consistent design across different platforms and a wide range of installation possibilities. Several dedicated accessories are available that seamlessly fit to the camera and expand the different installation options over previous generations. Available options include: a paintable cover, an on-camera weather protector, a clear or tinted replacement bubble, in-ceiling mounting kits, a surveillance cabinet with power and fiber optic options and different mounting options.

### Regulatory information

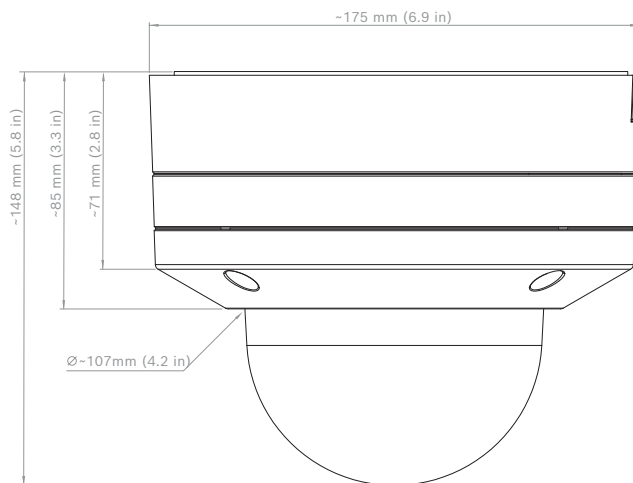
Standards	Type
Emission	EN 301 489-1, EN 50121-4 (EN 55016-2-1, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6), CFR 47 FCC, part 15, Class B, AS/NZS CISPR 32
Immunity	EN 301 489-1, EN 50130-4 (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6), EN 50121-4 (EN 55016-2-1, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6)
Environmental	EN 50130-5 Class IVA (EN 60068-2-2, EN 60068-2-5, EN 60068-2-6, EN 60068-2-18, EN 60068-2-27, EN 60068-2-30, EN 60068-2-42, EN 60068-2-52, EN 60068-2-75, EN 60068-2-78, EN 60529), UL 2043 when combined with NDA-8001-PLN, Nema TS 2 Section 2

Standards	Type
Safety	EN 62368-1, EN 60950-22, UL 62368-1, UL 60950-22, CSA C22.2 No. 62368-1-14, CAN/CSA-C22.2 No. 60950-22:07
Image performance	IEC 62676-5
HD	SMPTE 296M-2001 (Resolution: 1280x720) SMPTE 274M-2008 (Resolution: 1920x1080)
Color representation	ITU-R BT.709-6
ONVIF conformance	EN 50132-5-2, EN 62676-2
Impact protection	EN 62262 (IK10)
Water/dust protection	EN 60529 (IP66), ISO 20653 (IP6K9K), UL50E (Type 4X), UL 60950-22
Environment	2011/65/EU RoHS (EN 50581 and EN IEC 63000), 1999/45/EC and 1907/2006 REACH, 2012/19/EU WEEE, 94/62/EC Packaging
Marks	CE, cULus, WEEE, RCM, China RoHS, Cmm, UKCA

Region	Regulatory compliance/quality marks	
Great Britain	UKCA	FLEXIDOME IP startlight 8000i
Europe	CE	FLEXIDOME IP starlight 8000i

## Installation/configuration notes

### Dimensions



## Parts included

Quantity	Component
1	FLEXIDOME IP 8000i camera
1	T-20 security Torx bit
1	Quick installation guide
1	Safety information

Quantity	Component
2	Rubber grommet for the Ethernet cable
1	Network patch cable 50 cm
1	10-pin I/O connector
1	2-pin power connector
1	Cable conduit for side entry
1	Washer for cable conduit
1	Adapter plate for cable conduit (Ø 3/4" / M25)
1	Adapter plate for cable conduit (Ø 1/2" / M20)
3	Identification label

## Technical specifications

### Electrical

Input voltage (VAC)	24 VAC
Input voltage (VDC)	12 VDC – 26 VDC
Output current (A)	50 A
Output current (mA)	50 mA
Output voltage (VDC)	12 VDC
PoE input	PoE IEEE 802.3af / 802.3at Type 1, Class 3; PoE IEEE 802.3at Type 1, Class 3
Power consumption (W)	16 W

### Sensor

Total sensor pixels (MP)	2.10 MP
Sensor type	1/2.8 inch CMOS
Effective pixels (H x V px)	1920 px x 1080 px

### Optical

Zoom/focus control	Motorized
Iris control	Automatic
Field of View wide (°)	14.40° – 32°
Field of View tele (°)	8.10° – 18°
Lens focal length (mm)	10 mm – 23 mm

**Video functions**

Camera functionality	Mirror image; Geolocation; Face detection; Backlight compensation (BLC); Intelligent dynamic noise reduction; Contrast enhancement; Sharpness enhancement; Intelligent defog; Pixel counter; Camera view wizard
Minimum illumination in color (lx)	0.0130 lx
Minimum illumination in monochrome (lx)	0.0031 lx
Number of privacy masks	8
Shutter speed	Electronical
Sensitivity	F1.2
White balance modes	Basic; Standard; Sodium vapor; Dominant color; Manual mode; Hold mode
White balance (K)	2500 K – 10000 K
Day/night modes	Auto; Auto (adjustable switch points); Color; Monochrome
Scene modes with scheduler	Traffic; Night optimized; Vibrant; Low bitrate; Sports & gaming; Retail; Intelligent AE; Indoor; Outdoor; License plate recognition
Shutter modes	Automatic Electronic Shutter (AES); 1/25 min; 1/15.000 max; Default shutter
High dynamic range (HDR) (dB)	146 dB
Display stamping	Name; Logo; Date/time; Alarm message

**Video streaming**

Camera processing latency	<67ms
Frame rate (fps)	1 fps – 60 fps
GOP structure	IP; IBP; IBBP
Number of encoder output streams	Multiple configurable streams in H.265; H.264 and M-JPEG; Configurable framerate and bandwidth; Region of Interest (ROI); Bosch Intelligent Streaming
Resolution	1920 x 1080; 1280 x 1024; 1280 x 720; 704 x 480; 854 x 480

Video compression	H.264 (ISO/IEC 14496-10); M-JPEG; JPEG
Video stream signal-to-noise ratio (dB)	>55 dB

**Video content analysis**

Alarm triggers	Any object; Object in field; Line crossing; Enter / leave field; Loitering; Follow route; Idle / removed object; Counting; Occupancy; Crowd density estimation; Condition change; Similarity search; Flow / counter flow; 3D tracking
Calibration	Automatic based on gyro sensor, focal length, and camera height
Configurations	Silent VCA; Profile 1; Profile 2; Scheduled; Event triggered
Object filters	Duration; Size; Aspect ratio; Speed; Direction; Color; Object classes (4)
Tracking modes	Standard (2D) tracking; 3D tracking; 3D people tracking; Ship tracking; Museum mode
Analysis type	Intelligent Video Analytics

**Capacity**

Alarm inputs	2
Alarm outputs	1
Host interface	Ethernet

**Audio**

Audio streaming	Full duplex; Half duplex
Compression and sampling rate	G.711 8 kHz; L16 16 kHz; AAC-LC 80kbps 16 kHz; AAC-LC 48kbps 16 kHz

**Storage**

Internal storage	RAM
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**Data security****Network**

Cloud services	Dropbox
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Ethernet type	10/100BASE-T; Auto-sensing; Full / half duplex
Wi-Fi standard	IEEE 802.11n; IEEE 802.11g; IEEE 802.11b

### System integration

Conformity	ONVIF Profile S; ONVIF Profile G; ONVIF Profile; ONVIF Profile T; Auto-MDIX
Protocols / standards	UDP; TCP; HTTP; HTTPS; IGMP V2/V3; ICMPv6; RTSP; FTP; ARP; DHCP; APIPA (Auto-IP, link local address); NTP (SNTP); SNMP (V1, MIBII); 802.1x, EAP/TLS; DDNS (DynDNS.org, selfHOST.de, no-ip.com); SMTP; iSCSI; UPnP (SSDP); DiffServ (QoS); CMP; LLDP; SOAP; CHAP; Digest authentication; DynDNS

### Mechanical

Bubble material	Polycarbonate
Color	White
Color in RAL	RAL 9003 Signal white
Dimension (Ø x H) (in)	6.9 in x 5.7 in
Dimension (Ø x H) (mm)	175 mm x 148 mm
Material	Housing: Aluminum
Tilt range (°)	-3.50° – 90°
Mounting type	Surface-mounted
Pan range (°)	0° – 360° continuous
Roll range (°)	-95° – 95°
Weight (kg)	2.20 kg
Weight (lb)	4.85 lb

### Environmental

Operating temperature (°C)	-50 °C – 60 °C
Operating temperature (°F)	-58 °F – 140 °F
Storage temperature (°C)	-30 °C – 70 °C
Storage temperature (°F)	-22 °F – 158 °F

Operating relative humidity, non-condensing (%)	5% – 93%
Storage relative humidity (%)	0% – 98%
Usage	Indoor; Outdoor
IP rating	IP66
Impact protection (EN 50102)	IK10
Environmental class (EN 50130-5)	IV
Environmental class (VdS 2110)	IV

### Camera installation

Positioning	Mounting height; Coordinates; WGS 84 Coordinates
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### Ordering information

#### NDE-8512-RT Fixed dome 2MP HDR 10-23mm PTRZ IP66

Fixed dome with tele lens.

NDAA compliant

Order number **NDE-8512-RT | F.01U.404.122**

#### Accessories

##### NDA-8000-PC Paintable cover, 4 pcs

Paintable cover (4 pieces) for FLEXIDOME IP 8000i.

Order number **NDA-8000-PC | F.01U.324.966**

##### NDA-8000-CBL Clear replacement bubble

Clear replacement bubble.

Order number **NDA-8000-CBL | F.01U.324.934**

##### NDA-8000-TBL Tinted Bubble

Tinted bubble for FLEXIDOME IP 8000i.

Order number **NDA-8000-TBL | F.01U.324.973**

##### NDA-8001-IC In-ceiling mount kit

In-ceiling mount kit for FLEXIDOME IP 8000i with microphone support

Order number **NDA-8001-IC | F.01U.398.407**

##### NDA-8001-PLEN Plenum-rated mount kit

Plenum-rated in-ceiling mount kit for FLEXIDOME IP 8000i with microphone support

Order number **NDA-8001-PLEN | F.01U.398.393**

##### NDA-8000-SP In-ceiling mount support kit

Soft ceiling support for in-ceiling mount kit for FLEXIDOME IP 8000i.

Order number **NDA-8000-SP | F.01U.324.937**

##### NDA-8000-WP On-camera weather protector

On-camera weather protector for FLEXIDOME IP 8000i.

Order number **NDA-8000-WP | F.01U.324.929**

##### NDA-8000-PIP Pendant interface plate, indoor

Pendant interface plate for FLEXIDOME IP 8000i and FLEXIDOME IP panoramic 6000/7000 outdoor.

Order number **NDA-8000-PIP | F.01U.324.938**

**NDA-8000-PIPW Pendant interface plate, outdoor**

Pendant interface plate including weather protector for FLEXIDOME IP 8000i and FLEXIDOME IP panoramic 6000/7000 outdoor.

Order number **NDA-8000-PIPW | F.01U.324.967**

**NDA-U-WMT Pendant wall mount**

Universal wall mount for dome cameras, white

Order number **NDA-U-WMT | F.01U.324.939**

**NDA-U-PMT Pendant pipe mount, 12" (31cm)**

Universal pipe mount for dome cameras, 31 cm, white

Order number **NDA-U-PMT | F.01U.324.940**

**NDA-U-PMTS Pendant pipe mount, 4" (11 cm)**

Universal pendant pipe mount for dome cameras, 11 cm (4"), white

Order number **NDA-U-PMTS | F.01U.385.046**

**NDA-U-PMTE Pendant pipe extension, 20" (50cm)**

Extension for universal pipe mount, 50 cm, white

Order number **NDA-U-PMTE | F.01U.324.941**

**NDA-U-PSMB Pendant wall/ceiling mount SMB**

Surface mount box (SMB) for wall mount or pipe mount.

Order number **NDA-U-PSMB | F.01U.324.942**

**NDA-U-PA0 Surveillance cabinet 24VAC**

Surveillance cabinet, 24 VAC input, 24 VAC output, IP66

Order number **NDA-U-PA0 | F.01U.324.947**

**NDA-U-PA1 Surveillance cabinet 120VAC**

Surveillance cabinet, 100 - 120 VAC 50/60 Hz input, 24 VAC output, IP66

Order number **NDA-U-PA1 | F.01U.324.948**

**NDA-U-PA2 Surveillance cabinet 230VAC**

Surveillance cabinet, 230 VAC input, 24 VAC output, IP66

Order number **NDA-U-PA2 | F.01U.324.949**

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

Universal pole mount adapter, white; large

Order number **NDA-U-PMAL | F.01U.324.944**

**NDA-U-PMAS Pole mount adapter small**

Pole mount adapter small

Universal pole mount adapter, white; small.

Order number **NDA-U-PMAS | F.01U.324.943**

**NDA-U-RMT Pendant parapet mount**

Universal roof mount for dome cameras, white

Order number **NDA-U-RMT | F.01U.324.945**

**NDA-U-WMTG Pendant wall mount, gang box**

Universal wall mount, compatible with gang box installation for fixed dome cameras only, white

Order number **NDA-U-WMTG | F.01U.358.358**

**NDA-U-PMTG Pendant pipe mount, gang box**

Universal pipe mount, compatible with gang box installation for fixed dome cameras only, white

Order number **NDA-U-PMTG | F.01U.358.359**

**VG4-SFPSCKT Ethernet to SFP interface kit**

Ethernet media converter video transmitter/data receiver fiber optic kit for AUTODOME cameras, for MIC-IP-PSU for MIC analog cameras and for the Surveillance cabinets (NDA-U-PA0, NDA-U-PA1 and NDA-U-PA2).

Order number **VG4-SFPSCKT | F.01U.142.529**

**SFP-2 Fiber module, multimode, 1310nm, 2LC**

SFP Fiber Optic Module, 2 km (1.2 miles), 2 LC connectors.

Multi-mode

1310 nm

Order number **SFP-2 | F.01U.136.537**

**SFP-3 Fiber module, single-mode, 1310nm, 2LC**

SFP Fiber Optic Module, 20 km (12.4 miles), 2 LC connectors.

Single-mode

1310 nm

Order number **SFP-3 | F.01U.136.538**

**SFP-25 Fiber module, 1310/1550nm, 1SC**

SFP Fiber Optic Module, 2 km (1.2 miles), 1 SC connector

Multi-mode

1310/1550 nm

Order number **SFP-25 | F.01U.136.541**

**SFP-26 Fiber module, 1550/1310nm, 1SC**

SFP Fiber Optic Module, 2 km (1.2 miles), 1 SC connector

Multi-mode

1550/1310 nm

Order number **SFP-26 | F.01U.136.542**

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