FLEXIDOME starlight 8000i
Data Sheets for 1080p, 6MP, and 4K

BOSCH
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FLEXIDOME starlight 8000i - 8MP

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- ▶ Wireless or remote configuration and commissioning with the Project Assistant app. Pan, Tilt, Roll and Zoom (PTRZ) to set the camera to the required field of view, without having to touch the camera or lens

- ▶ Intelligent streaming, IDNR and H.265 reduce bit rate by up to 80%

- ▶ 8MP (4K UHD) for exceptional detail at fast speeds

- ▶ Built-in Intelligent Video Analytics to trigger alerts and quickly retrieve data with the highest levels of accuracy

- ▶ High Dynamic Range to see every detail in both bright and dark areas of the scene

The FLEXIDOME IP starlight 8000i delivers an exceptional image quality and High Dynamic Range with 4K ultra HD resolution for highly detailed images even in challenging conditions. It delivers excellence in video security and data management and has built-in state-of-the-art Intelligent Video Analytics as standard. It's rugged and aesthetic design makes the camera suitable for any indoor or outdoor installation. 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. Wireless or remote configuration and commissioning can also be done at a later stage once all cameras have been installed. Simply connect the Bosch Project Assistant app, available for iOS, Windows or Android, wirelessly to the camera. Or connect to the camera remotely via the network using the camera's web interface or the Bosch Configuration Manager.

Fast performance

The high sensor resolution together with a frame rate of 30 frames per second makes this camera an ideal solution for images of fast moving objects in high resolutions. The high resolution provides a clear overview and detailed images.

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, make the bandwidth consumption drop 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.

Storage calculator

To calculate the bandwidth and storage capacity required for a camera setup please refer to the Bosch Storage Calculator on: www.boschsecurity.com/StorageCalculator

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 new compression standard of choice for IP video surveillance systems.

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.

DORI coverage

DORI (Detect, Observe, Recognize, Identify) is a standard system (EN-62676-4) for defining the ability of a camera 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:

8 MP Camera with 3.9 mm - 10 mm lens

DORI	DORI definition	Distance 3.9 mm / 10 mm	Horizontal width
Detect	25 px/m 8 px/ft	47 m / 190 m 147 ft / 594 ft	154 m 480 ft
Observe	63 px/m 19 px/ft	19 m / 75 m 62 ft / 250 ft	61 m 202 ft

DORI	DORI definition	Distance 3.9 mm / 10 mm	Horizontal width
Recognize	125 px/m 38 px/ft	9 m / 38 m 31 ft / 125 ft	31 m 101 ft
Identify	250 px/m 76 px/ft	5 m / 19 m 16 ft / 63 ft	15 m 51 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 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) 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.
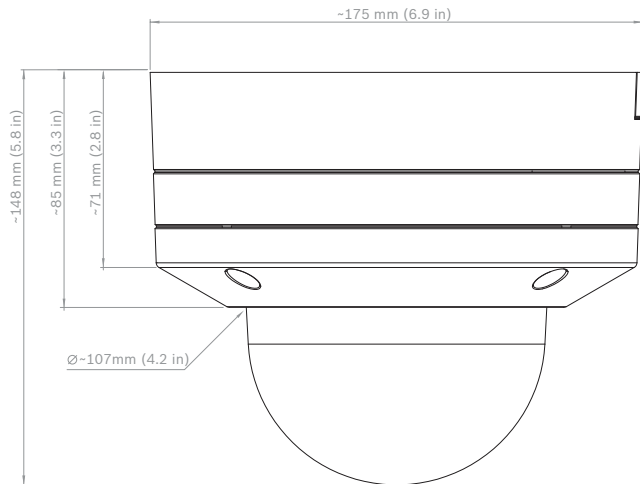
Certifications and approvals

Standards	Type
Emission	ETSI EN 301 489-1 EN 50121-4 47CFR15, class B (STP) and 47CFR15, class A (UTP) AS/NZS CISPR 32
Immunity	EN 50130-4 EN 50121-4
Environmental	EN 50130-5 (Class IV); EN 60068-2-1, EN 60068-2-2, EN 60068-2-6, EN 60068-2-18, EN 60068-2-27, EN 60068-2-30, EN 60068-2-52, EN 60068-2-75, EN 60068-2-78 UL 2043 combined with NDA-8000-PLEN NEMA TS-2 chapter 2.1
Safety	EN 62368-1 EN 60950-22 UL 62368-1 UL 60950-22 CAN/CSA-C22.2 No. 62368-1 CAN/CSA-C22.2 No. 60950-22-07
Image performance	IEC 62676-5
UHD	SMPTE 2036 (Resolution: 3840 x 2160) 4K UHD (2160p)
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) UL50E (Type 4X)
Environment	EN 50581 (RoHS)
Marks	CE, cULus, WEEE, RCM, EAC and China RoHS

Region	Regulatory compliance/quality marks	
Europe	CE	EU Declaration of Conformity
USA	UL	E243325-UL TC 20190122

Installation/configuration notes

Dimensions

Technical specifications

Power

Input voltage	PoE IEEE 802.3af / 802.3at Type 1, Class 3 24 VAC ±10% 12-26 VDC ±10% PoE and auxiliary power can be connected simultaneously for redundant operation
Power Consumption (typical / maximum)	PoE: 7 W / 13 W 24 VAC: 7.1 W - 12 VA / 13 W - 25 VA 12-26 VDC: 7.5 W / 16 W

Sensor

Sensor type	1/1.8-inch CMOS
Total sensor pixels	3840 (H) x 2160 (V), 8MP (approx.)

Starlight sensitivity (3.9 to 10 mm lens)

Measured according to IEC 62676 Part 5 (1/25, F1.5)

Color	0.041 lx
Mono	0.0072 lx

Video performance - Dynamic range

Wide Dynamic Range	120 dB WDR
Measured according to IEC 62676 Part 5	107 dB WDR (3.9 to 10 mm lens)

Optical (3.9 to 10 mm lens)

Lens	3.9 to 10 mm P-iris lens (IR corrected) F-stop 1.5 - 2.7
Adjustment	Motorized zoom/focus
Iris control	P-iris control
Viewing angle	Wide: 117º x 62º (H x V)

Optical (3.9 to 10 mm lens)

	Tele: 44º x 24º (H x V)

Video streaming

Video compression	H.265; H.264; M-JPEG
Sensor modes	20 fps, HDR, 3840 x 2160 (8 MP) 25 fps, 3840 x 2160 (8 MP) 30 fps, 3840 x 2160 (8 MP)
Streaming	Multiple configurable streams in H.264, H.265 and M-JPEG, configurable frame rate and bandwidth. Regions of Interest (ROI) Bosch Intelligent Streaming
Camera latency	120 ms (8 MP, 30 fps)
GOP structure	IP
Frame rate	1-30 fps
Signal-to-Noise Ratio (SNR)	>55 dB

Video resolution (H x V)

4K UHD	3840 x 2160
7.3 MP	3584 x 2016
2.8 MP (4:3)	1920 x 1440
1080p HD	1920 x 1080
Upright mode 1080p	1080 x 1920
1.3 MP (5:4)	1280 x 1024
720p HD	1280 x 720
Upright mode 720p	720 x 1280
480p SD	854 x 480
SD 4:3 (cropped)	704 x 480

Camera installation

Mirror image	On / Off
Rotate	0° / 90° upright / 180° / 270° upright
Camera LED	Enable/disable
Positioning	Coordinates / Mounting height
Camera view wizard	Motorized pan, tilt, roll, zoom, autofocus
Wireless commissioning	IEEE 802.11b/g/n

Video functions - color

Adjustable picture settings	Contrast, Saturation, Brightness
White Balance	2500 to 10000K, 4 automatic modes (Basic, Standard, Sodium lamp, Dominant color), Manual mode and Hold mode

Video functions - ALC

ALC level	Adjustable
Saturation	Adjustable from peak to average
Shutter	Automatic Electronic Shutter (AES); Fixed shutter (1/25[30] to 1/15000) selectable; Default shutter
Day/Night	Auto (adjustable switch points), Color, Monochrome

Video functions - enhance

Sharpness	Sharpness enhancement level selectable
Backlight compensation	On/off
Contrast enhancement	On/off
Noise reduction	Intelligent Dynamic Noise Reduction with separate temporal and spatial adjustments
Intelligent defog	Intelligent Defog automatically adjusts parameters for best picture in foggy or misty scenes (switchable)

Video content analysis

Analysis type	Intelligent Video Analytics
Configurations	Silent VCA / Profile1/2 / Scheduled / Event triggered
Alarm rules (combinable)	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
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
Calibration / Geolocation	Automatic, based on gyro sensor, focal length and camera height
Tamper detection	Maskable

Additional functions

Scene modes	10 default modes with scheduler: Indoor, Outdoor, Traffic, Night Optimized, Intelligent AE, Vibrant, Low bitrate, Sports & Gaming, Retail, License Plate Recognition (LPR)
Privacy Masking	Eight independent areas, fully programmable
Face detection	Image posting
Display stamping	Name; Logo; Time; Alarm message
Pixel counter	Selectable area

Local storage

Internal RAM	5 s pre-alarm recording
Memory card slots	Dual SDXC / SDHC / SD card slots.
Dual SD-card slot configurations	• Mirror (redundant storage) • Failover (extended service interval) • Extend (maximum retention time) • Automatic Network Replenishment
Industrial SD cards	Extreme lifetime and health monitoring support that provides early service indication.

Input/output

Power output	+12 VDC, max 50mA
Audio signal line in	10 kOhm typical; 1 Vrms max
Audio signal line out	1 Vrms; 1.5 kOhm typical
Alarm input	2 inputs, activation voltage: +3.3 VDC to +40 VDC
Alarm output	1 output, maximum: 30 VAC or +40 VDC, 0.5 A continuous, 10 VA
Ethernet	RJ45
Surge protection	Ethernet: 1 kV, 2 kA to ground (8/20 µs pulse)
Fiber optics (sold separately)	The Fiber Optic Ethernet Media Converter kit (VG4-SFPSCKT) installed inside a Surveillance Cabinet (NDA-U-PA0, NDA-U-PA1 or NDA-U-PA2) provides the fiber optic interface to the mounted camera.

Audio streaming

Standard	G.711, 8 kHz sampling rate L16, 16 kHz sampling rate AAC-LC, 48 kbps at 16 kHz sampling rate AAC-LC, 80 kbps at 16 kHz sampling rate
Signal-to-Noise Ratio	>50 dB
Audio Streaming	Full-duplex / half duplex

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
Ethernet	10/100 Base-T, auto-sensing, half/full duplex
Connectivity	Auto-MDIX
Interoperability	ONVIF Profile S; ONVIF Profile G; ONVIF Profile T GB/T 28181

Data security

Crypto Coprocessor (TPM)	RSA 2048 bit, AES/CBC 256 bit
FIPS	FIPS 140-2 Level 3 compliant
PKI	X.509 certificates
Encryption	Full end-to-end encryption with supported VMS Network: TLS1.0/1.2, AES128, AES256 Local storage: XTS-AES
Video authentication	checksum, MD5, SHA-1, SHA-256

Mechanical

Dimensions (D x H)	175 x 148 mm (6.9 x 5.7 in)
Weight	2.3 kg (5.07 lbs)
Mounting	Surface mount
Color	White (RAL9003)
Motorized PTR range	Pan: 0º to +361º Tilt: -3.5º to +89º Roll: -95º to +95º
Dome bubble	Polycarbonate, clear with UV blocking anti-scratch coating
Housing	Aluminum with dehumidifying membranes and waterproof connection area

Environmental

Operating temperature	-50 ºC to +60 ºC (-58 ºF to +140 ºF) for continuous operation; Up to +74 ºC (+165 ºF) according to NEMA TS 2-2003 (R2008), para 2.1.5.1 using fig. 2.1 test profile
Storage temperature	-30 ºC to +70 ºC (-22 ºF to +158 ºF)
Operating humidity	5% to 93% RH non condensing 5% to 100% RH condensing

Environmental

Storage humidity	Up to 98% RH
Impact resistance casing and dome	IK10+ (50 joules)
Water/dust protection	IP 66 and NEMA Type 4X

Ordering information

NDE-8504-R Fixed dome 8MP HDR 3.9-10mm PTRZ IP66
Fixed dome 8MP PTRZ H.265 IVA IP66
Order number **NDE-8504-R**

Accessories

NDA-U-CMT Corner mount adapter
Universal corner mount, white
Order number **NDA-U-CMT**

NDA-U-PA0 Surveillance cabinet 24VAC
Surveillance cabinet, 24 VAC input, 24 VAC output, IP66
Order number **NDA-U-PA0**

NDA-U-PA1 Surveillance cabinet 120VAC
Surveillance cabinet, 100 - 120 VAC 50/60 Hz input, 24 VAC output, IP66
Order number **NDA-U-PA1**

NDA-U-PA2 Surveillance cabinet 230VAC
Surveillance cabinet, 230 VAC input, 24 VAC output, IP66
Order number **NDA-U-PA2**

NDA-U-PMAL Pole mount adapter large
Universal pole mount adapter, white; large
Order number **NDA-U-PMAL**

NDA-U-PMAS Pole mount adapter small
Pole mount adapter small
Universal pole mount adapter, white; small.
Order number **NDA-U-PMAS**

NDA-U-PMT Pendant pipe mount, 12" (31cm)
Universal pipe mount for dome cameras, 31 cm, white
Order number **NDA-U-PMT**

NDA-U-PMTE Pendant pipe extension, 20" (50cm)
Extension for universal pipe mount, 50 cm, white
Order number **NDA-U-PMTE**

NDA-U-PSMB Pendant wall/ceiling mount SMB
Surface mount box (SMB) for wall mount or pipe mount.
Order number **NDA-U-PSMB**

NDA-U-RMT Pendant parapet mount
Universal roof mount for dome cameras, white
Order number **NDA-U-RMT**

NDA-U-WMP Wall mount plate
Back plate for universal wall mount, corner mount and pole mount, white, IP66
Order number **NDA-U-WMP**

NDA-U-WMT Pendant wall mount
Universal wall mount for dome cameras, white
Order number **NDA-U-WMT**

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**

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**

NDA-8000-CBL Clear replacement bubble
Clear replacement bubble.
Order number **NDA-8000-CBL**

NDA-8000-IC In-ceiling mount kit
In-ceiling mount kit for FLEXIDOME IP 8000i.
Order number **NDA-8000-IC**

NDA-8000-PC Paintable cover, 4 pcs
Paintable cover (4 pieces) for FLEXIDOME IP 8000i.
Order number **NDA-8000-PC**

NDA-8000-PLEN Plenum-rated in-ceiling mount kit
Plenum-rated in-ceiling mount kit for FLEXIDOME IP 8000i.
Order number **NDA-8000-PLEN**

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**

NDA-8000-TBL Tinted Bubble
Tinted bubble for FLEXIDOME IP 8000i.
Order number **NDA-8000-TBL**

NDA-8000-WP On-camera weather protector
On-camera weather protector for FLEXIDOME IP 8000i.
Order number **NDA-8000-WP**

VG4-SFPSCKT ETHERNET TO SFP INTERFACE KIT
Ethernet media converter video transmitter/data receiver fiber optic kit for AUTODOME cameras and for MIC-IP-PSU for MIC analog cameras.
Order number **VG4-SFPSCKT**

SFP-2 Fiber module, multimode, 1310nm, 2LC
SFP Fiber Optic Module, 2 km (1.2 miles), 2 LC connectors.
Multi-mode
1310 mm
Order number **SFP-2**

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**

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**

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**

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**

NDA-U-WMTG Pendant wall mount, gang box
Universal wall mount, compatible with gang box
installation for fixed dome cameras only, white
Extension for universal pipe mount, 50 cm, white
Order number **NDA-U-WMTG**

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▶ Intelligent streaming, IDNR and H.265 reduce bit rate by up to 80%

▶ Starlight technology provides highly detailed images in extreme low-light situations

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The FLEXIDOME IP starlight 8000i cameras offer starlight technology and High Dynamic Range with 6 megapixel resolution to provide crisp and highly detailed images even in extreme low-light situations. It delivers excellence in video security and data management and has built-in state-of-the-art Intelligent Video Analytics as standard.

It's rugged and aesthetic design makes the camera suitable for any indoor or outdoor installation.

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.

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Detect	25 px/m 8 px/ft	40 m / 162 m 125 ft / 505 ft	201 m / 591 m 628 ft / 1848 ft	131 m 408 ft
Observe	63 px/m 19 px/ft	16 m / 64 m 53 ft / 213 ft	80 m / 235 m 264 ft / 778 ft	52 m 172 ft
Recognize	125 px/m 38 px/ft	8 m / 32 m 26 ft / 106 ft	40 m / 118 m 132 ft / 389 ft	26 m 86 ft
Identify	250 px/m 76 px/ft	4 m / 16 m 13 ft / 53 ft	20 m / 59 m 66 ft / 195 ft	13 m 43 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 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) 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.
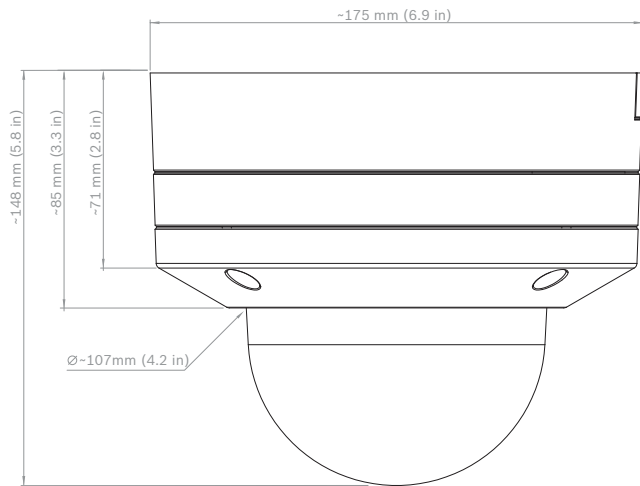
Certifications and approvals

Standards	Type
Emission	ETSI EN 301 489-1 EN 50121-4 47CFR15, class B (STP) and 47CFR15, class A (UTP) AS/NZS CISPR 32
Immunity	EN 50130-4 EN 50121-4
Environmental	EN 50130-5 (Class IV); EN 60068-2-1, EN 60068-2-2, EN 60068-2-6, EN 60068-2-18, EN 60068-2-27, EN 60068-2-30, EN 60068-2-52, EN 60068-2-75, EN 60068-2-78 UL 2043 combined with NDA-8000-PLEN NEMA TS-2 chapter 2.1
Safety	EN 62368-1 EN 60950-22 UL 62368-1 UL 60950-22 CAN/CSA-C22.2 No. 62368-1 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) UL50E (Type 4X)
Environment	EN 50581 (RoHS)

Marks	CE, cULus, WEEE, RCM, EAC and China RoHS

Region	Regulatory compliance/quality marks	
Europe	CE	EU Declaration of Conformity
USA	UL	E243325-UL TC 20190122

Installation/configuration notes

Dimensions

Technical specifications

Power

Input voltage	PoE IEEE 802.3af / 802.3at Type 1, Class 3 24 VAC ±10% 12-26 VDC ±10% PoE and auxiliary power can be connected simultaneously for redundant operation
Power Consumption (typical / maximum)	PoE: 7 W / 13 W 24 VAC: 7.1 W - 12 VA / 13 W - 25 VA 12-26 VDC: 7.5 W / 16 W

Sensor

Sensor type	1/1.8-inch CMOS
Effective pixels	3264 (H) x 1840 (V) pixels, 6.0MP (approx.)

Starlight sensitivity (3.9 to 10 mm lens)

Measured according to IEC 62676 Part 5 (1/25, F1.5)

Color	0.040 lx
Mono	0.0059 lx

Starlight sensitivity (12 to 40 mm lens)

Measured according to IEC 62676 Part 5 (1/25, F2.3)

Color	0.084 lx
Mono	0.0135 lx

Dynamic range

Wide Dynamic Range	120 dB WDR
Measured according to IEC 62676 Part 5	107 dB WDR (3.9 to 10 mm lens) 106 dB WDR (12 to 40 mm lens)

Optical (3.9 to 10 mm lens)

Lens	3.9 to 10 mm P-iris lens (IR corrected) F-stop 1.5 - 2.7
Adjustment	Motorized zoom/focus
Iris control	P-iris control
Viewing angle	Wide: 117º x 62º (H x V) Tele: 44º x 24º (H x V)

Optical (12 to 40 mm lens)

Lens	12 to 40 mm P-iris lens (IR corrected) F-stop 2.3 - 2.3
Adjustment	Motorized zoom/focus
Iris control	P-iris control
Viewing angle	Wide: 36º x 20º (H x V) Tele: 12.6º x 7.1º (H x V)

Video streaming

Video compression	H.265; H.264; M- JPEG
Sensor modes	25 fps, HDR, 3072 x 1728 (5.3 MP) 30 fps, HDR, 3072 x 1728 (5.3 MP) 25 fps, 3264 x 1840 (6 MP) 30 fps, 3264 x 1840 (6 MP)
Streaming	Multiple configurable streams in H.264, H. 265 and M-JPEG, configurable frame rate and bandwidth. Regions of Interest (ROI) Bosch Intelligent Streaming
Camera latency	120 ms (6 MP, 30 fps)
GOP structure	IP
Frame rate	1-30 fps
Signal-to-Noise Ratio (SNR)	>55 dB

Video resolution (H x V)

6.0 MP	3264 x 1840
5.3 MP	3072 x 1728
2.8 MP (4:3)	1920 x 1440
1080p HD	1920 x 1080
1.3 MP (5:4)	1280 x 1024
720p HD	1280 x 720

Video resolution (H x V)

480p SD	854 x 480
SD 4:3 (cropped)	704 x 480

Camera installation

Mirror image	On / Off
Rotate	0° / 90° upright / 180° / 270° upright
Camera LED	Enable/disable
Positioning	Coordinates / Mounting height
Camera view wizard	Motorized pan, tilt, roll, zoom, autofocus
Wireless commissioning	IEEE 802.11b/g/n

Video functions - color

Adjustable picture settings	Contrast, Saturation, Brightness
White Balance	2500 to 10000K, 4 automatic modes (Basic, Standard, Sodium lamp, Dominant color), Manual mode and Hold mode

Video functions - ALC

ALC level	Adjustable
Saturation	Adjustable from peak to average
Shutter	Automatic Electronic Shutter (AES); Fixed shutter (1/25[30] to 1/15000) selectable; Default shutter
Day/Night	Auto (adjustable switch points), Color, Monochrome

Video functions - enhance

Sharpness	Sharpness enhancement level selectable
Backlight compensation	On/off
Contrast enhancement	On/off
Noise reduction	Intelligent Dynamic Noise Reduction with separate temporal and spatial adjustments
Intelligent defog	Intelligent Defog automatically adjusts parameters for best picture in foggy or misty scenes (switchable)

Video content analysis

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

Video content analysis

Alarm rules (combinable)	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
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
Calibration / Geolocation	Automatic, based on gyro sensor, focal length and camera height
Tamper detection	Maskable

Additional functions

Scene modes	10 default modes with scheduler: Indoor, Outdoor, Traffic, Night Optimized, Intelligent AE, Vibrant, Low bitrate, Sports & Gaming, Retail, License Plate Recognition (LPR)
Privacy Masking	Eight independent areas, fully programmable
Face detection	Image posting
Display stamping	Name; Logo; Time; Alarm message
Pixel counter	Selectable area

Local storage

Internal RAM	5 s pre-alarm recording
Memory card slots	Dual SDXC / SDHC / SD card slots.
Dual SD-card slot configurations	• Mirror (redundant storage) • Failover (extended service interval) • Extend (maximum retention time) • Automatic Network Replenishment
Industrial SD cards	Extreme lifetime and health monitoring support that provides early service indication.

Input/output

Power output	+12 VDC, max 50mA
Audio signal line in	10 kOhm typical; 1 Vrms max
Audio signal line out	1 Vrms; 1.5 kOhm typical
Alarm input	2 inputs, activation voltage: +3.3 VDC to +40 VDC
Alarm output	1 output, maximum: 30 VAC or +40 VDC, 0.5 A continuous, 10 VA
Ethernet	RJ45

Input/output

Surge protection	Ethernet: 1 kV, 2 kA to ground (8/20 µs pulse)
Fiber optics (sold separately)	The Fiber Optic Ethernet Media Converter kit (VG4-SFPSCKT) installed inside a Surveillance Cabinet (NDA-U-PA0, NDA-U-PA1 or NDA-U-PA2) provides the fiber optic interface to the mounted camera.

Audio streaming

Standard	G.711, 8 kHz sampling rate L16, 16 kHz sampling rate AAC-LC, 48 kbps at 16 kHz sampling rate AAC-LC, 80 kbps at 16 kHz sampling rate
Signal-to-Noise Ratio	>50 dB
Audio Streaming	Full-duplex / half duplex

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
Ethernet	10/100 Base-T, auto-sensing, half/full duplex
Connectivity	Auto-MDIX
Interoperability	ONVIF Profile S; ONVIF Profile G; ONVIF Profile T GB/T 28181

Data security

Crypto Coprocessor (TPM)	RSA 2048 bit, AES/CBC 256 bit
FIPS	FIPS 140-2 Level 3 compliant
PKI	X.509 certificates
Encryption	Full end-to-end encryption with supported VMS Network: TLS1.0/1.2, AES128, AES256 Local storage: XTS-AES
Video authentication	checksum, MD5, SHA-1, SHA-256

Mechanical

Dimensions (D x H)	175 x 148 mm (6.9 x 5.7 in)
Weight	2.3 kg (5.07 lbs)
Mounting	Surface mount
Color	White (RAL9003)

Mechanical

Motorized PTR range	Pan: 0º to +361º Tilt: -3.5º to +89º (NDE-8503-R), -3.5º to +90º (NDE-8503-RT) Roll: -95º to +95º
Dome bubble	Polycarbonate, clear with UV blocking anti-scratch coating
Housing	Aluminum with dehumidifying membranes and waterproof connection area

Environmental

Operating temperature	-50 ºC to +60 ºC (-58 ºF to +140 ºF) for continuous operation; Up to +74 ºC (+165 ºF) according to NEMA TS 2-2003 (R2008), para 2.1.5.1 using fig. 2.1 test profile
Storage temperature	-30 ºC to +70 ºC (-22 ºF to +158 ºF)
Operating humidity	5% to 93% RH non condensing 5% to 100% RH condensing
Storage humidity	Up to 98% RH
Impact resistance casing and dome	IK10+ (50 joules)
Water/dust protection	IP 66 and NEMA Type 4X

Ordering information

NDE-8503-R Fixed dome 6MP HDR 3.9-10mm PTRZ IP66
Fixed dome 6MP PTRZ H.265 IVA IP66
Order number **NDE-8503-R**

NDE-8503-RT Fixed dome 6MP HDR 12-40mm PTRZ IP66
Fixed dome 6MP tele PTRZ H.265 IVA IP66
Order number **NDE-8503-RT**

Accessories

NDA-U-CMT Corner mount adapter
Universal corner mount, white
Order number **NDA-U-CMT**

NDA-U-PA0 Surveillance cabinet 24VAC
Surveillance cabinet, 24 VAC input, 24 VAC output,
IP66
Order number **NDA-U-PA0**

NDA-U-PA1 Surveillance cabinet 120VAC
Surveillance cabinet, 100 - 120 VAC 50/60 Hz input,
24 VAC output, IP66
Order number **NDA-U-PA1**

NDA-U-PA2 Surveillance cabinet 230VAC
Surveillance cabinet, 230 VAC input, 24 VAC output,
IP66
Order number **NDA-U-PA2**

NDA-U-PMAL Pole mount adapter large
Universal pole mount adapter, white; large
Order number **NDA-U-PMAL**

NDA-U-PMAS Pole mount adapter small
Pole mount adapter small
Universal pole mount adapter, white; small.
Order number **NDA-U-PMAS**

NDA-U-PMT Pendant pipe mount, 12" (31cm)
Universal pipe mount for dome cameras, 31 cm, white
Order number **NDA-U-PMT**

NDA-U-PMTE Pendant pipe extension, 20" (50cm)
Extension for universal pipe mount, 50 cm, white
Order number **NDA-U-PMTE**

NDA-U-PSMB Pendant wall/ceiling mount SMB
Surface mount box (SMB) for wall mount or pipe
mount.
Order number **NDA-U-PSMB**

NDA-U-RMT Pendant parapet mount
Universal roof mount for dome cameras, white
Order number **NDA-U-RMT**

NDA-U-WMP Wall mount plate
Back plate for universal wall mount, corner mount and
pole mount, white, IP66
Order number **NDA-U-WMP**

NDA-U-WMT Pendant wall mount
Universal wall mount for dome cameras, white
Order number **NDA-U-WMT**

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**

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**

NDA-8000-CBL Clear replacement bubble
Clear replacement bubble.
Order number **NDA-8000-CBL**

NDA-8000-IC In-ceiling mount kit
In-ceiling mount kit for FLEXIDOME IP 8000i.
Order number **NDA-8000-IC**

NDA-8000-PC Paintable cover, 4 pcs
Paintable cover (4 pieces) for FLEXIDOME IP 8000i.
Order number **NDA-8000-PC**

NDA-8000-PLEN Plenum-rated in-ceiling mount kit
Plenum-rated in-ceiling mount kit for FLEXIDOME IP
8000i.
Order number **NDA-8000-PLEN**

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**

NDA-8000-TBL Tinted Bubble
Tinted bubble for FLEXIDOME IP 8000i.
Order number **NDA-8000-TBL**

NDA-8000-WP On-camera weather protector
On-camera weather protector for FLEXIDOME IP
8000i.
Order number **NDA-8000-WP**

VG4-SFPSCKT ETHERNET TO SFP INTERFACE KIT
Ethernet media converter video transmitter/data
receiver fiber optic kit for AUTODOME cameras and for
MIC-IP-PSU for MIC analog cameras.
Order number **VG4-SFPSCKT**

SFP-2 Fiber module, multimode, 1310nm, 2LC
SFP Fiber Optic Module, 2 km (1.2 miles), 2 LC
connectors.
Multi-mode
1310 mm
Order number **SFP-2**

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**

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**

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**

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**

NDA-U-WMTG Pendant wall mount, gang box
Universal wall mount, compatible with gang box
installation for fixed dome cameras only, white
Extension for universal pipe mount, 50 cm, white
Order number **NDA-U-WMTG**

FLEXIDOME starlight 8000i - 2MP

www.boschsecurity.com

BOSCH
Invented for life

- ▶ Wireless or remote configuration and commissioning with the Project Assistant app. Pan, Tilt, Roll and Zoom (PTRZ) to set the camera to the required field of view, without having to touch the camera or lens

- ▶ Intelligent streaming, IDNR and H.265 reduce bit rate by up to 80%

- ▶ Starlight technology provides highly detailed images in extreme low-light situations

- ▶ Built-in Intelligent Video Analytics to trigger alerts and quickly retrieve data with the highest levels of accuracy

- ▶ High Dynamic Range to see every detail in both bright and dark areas of the scene

The FLEXIDOME IP starlight 8000i cameras offer starlight technology and High Dynamic Range with 1080p resolution to provide crisp and highly detailed images in even extreme low-light situations.
Fast moving objects are easily captured with frame rates of up to 60 frames per second. It delivers excellence in video security and data management and has built-in state-of-the-art Intelligent Video Analytics as standard.
It's rugged and aesthetic design makes the camera suitable for any indoor or outdoor installation.
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.
Wireless or remote configuration and commissioning can also be done at a later stage once all cameras have been installed. Simply connect the Bosch Project Assistant app, available for iOS, Windows or Android, wirelessly to the camera. Or connect to the camera remotely via the network using 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 ensures no critical data is lost.

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, make the bandwidth consumption drop 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.

Storage calculator
To calculate the bandwidth and storage capacity required for a camera setup please refer to the Bosch Storage Calculator on: www.boschsecurity.com/StorageCalculator

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 new compression standard of choice for IP video surveillance systems.

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.

DORI coverage
DORI (Detect, Observe, Recognize, Identify) is a standard system (EN-62676-4) for defining the ability of a camera 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 3 mm / 9 mm	Distance 10 mm / 23 mm	Horizontal width
Detect	25 px/m 8 px/ft	24 m / 115 m 74 ft / 359 ft	134 m / 304 m 419 ft / 950 ft	77 m 240 ft
Observe	63 px/m 19 px/ft	9 m / 46 m 31 ft / 151 ft	53 m / 121 m 176 ft / 400 ft	31 m 101 ft
Recognize	125 px/m 38 px/ft	5 m / 23 m 16 ft / 76 ft	27 m / 61 m 88 ft / 200 ft	15 m 51 ft
Identify	250 px/m 76 px/ft	2 m / 12 m 8 ft / 38 ft	13 m / 30 m 44 ft / 100 ft	8 m 25 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 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) 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.
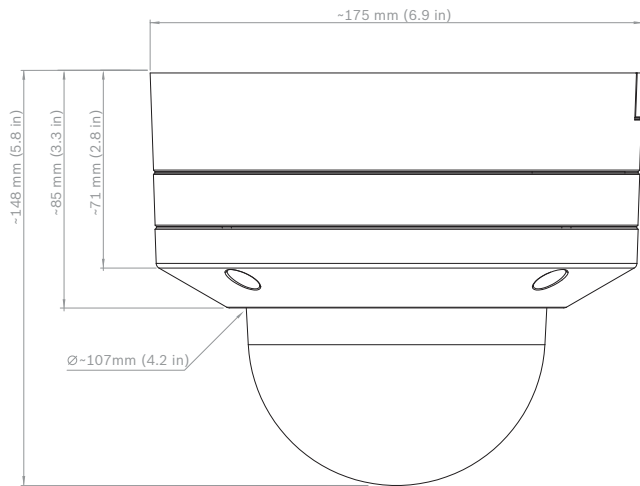
Certifications and approvals

Standards	Type
Emission	ETSI EN 301 489-1 EN 50121-4 47CFR15, class B (STP) and 47CFR15, class A (UTP) AS/NZS CISPR 32
Immunity	EN 50130-4 EN 50121-4
Environmental	EN 50130-5 (Class IV); EN 60068-2-1, EN 60068-2-2, EN 60068-2-6, EN 60068-2-18, EN 60068-2-27, EN 60068-2-30, EN 60068-2-52, EN 60068-2-75, EN 60068-2-78 UL 2043 combined with NDA-8000-PLEN NEMA TS-2 chapter 2.1
Safety	EN 62368-1 EN 60950-22 UL 62368-1 UL 60950-22 CAN/CSA-C22.2 No. 62368-1 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) UL50E (Type 4X)
Environment	EN 50581 (RoHS)

Marks	CE, cULus, WEEE, RCM, EAC and China RoHS

Region	Regulatory compliance/quality marks	
Europe	CE	EU Declaration of Conformity
USA	UL	E243325-UL TC 20190122

Installation/configuration notes

Dimensions

Technical specifications

Power

Input voltage	PoE IEEE 802.3af / 802.3at Type 1, Class 3 24 VAC ±10% 12-26 VDC ±10% PoE and auxiliary power can be connected simultaneously for redundant operation
Power Consumption (typical / maximum)	PoE: 7 W / 13 W 24 VAC: 7.1 W - 12 VA / 13 W - 25 VA 12-26 VDC: 7.5 W / 16 W

Sensor

Sensor type	1/2.8-inch CMOS
Effective pixels	1920 (H) x 1080 (V); 2.1MP (approx.)

Starlight sensitivity (3 to 9 mm lens)

Measured according to IEC 62676 Part 5 (1/25, F1.2)

Color	0.007 lx
Mono	0.0011 lx

Starlight sensitivity (10 to 23 mm lens)

Measured according to IEC 62676 Part 5 (1/25, F1.6)

Color	0.013 lx
Mono	0.0031 lx

Dynamic range

High Dynamic Range	146 dB WDR
Measured according to IEC 62676 Part 5	110 dB WDR (3 to 9 mm lens) 108 dB WDR (10 to 23 mm lens)

Optical (3 to 9 mm lens)

Lens	3 to 9 mm P-iris lens (IR corrected) F-stop 1.2 - 2.3
Adjustment	Motorized zoom/focus
Iris control	P-iris control
Viewing angle	Wide: 117º x 59º (H x V) Tele: 37º x 21º (H x V)

Optical (10 to 23 mm lens)

Lens	10 to 23 mm P-iris lens (IR corrected) F-stop 1.6 - 2.6
Adjustment	Motorized zoom/focus
Iris control	P-iris control
Viewing angle	Wide: 32º x 18º (H x V) Tele: 14.4º x 8.1º (H x V)

Video streaming

Video compression	H.265; H.264; M- JPEG
Sensor modes	25 fps, HDR, 1920 x 1080 (2 MP) 30 fps, HDR, 1920 x 1080 (2 MP) 50 fps, 1920 x 1080 (2 MP) 60 fps, 1920 x 1080 (2 MP)
Streaming	Multiple configurable streams in H.264, H. 265 and M-JPEG, configurable frame rate and bandwidth. Regions of Interest (ROI) Bosch Intelligent Streaming
Camera latency	67 ms (2 MP, 60 fps)
GOP structure	IP, IBP, IBBP
Frame rate	1-60 fps
Signal-to-Noise Ratio (SNR)	>55 dB

Video resolution (H x V)

1080p HD	1920 x 1080
Upright mode 1080p HD	1080 x 1920
1.3 MP (5:4)	1280 x 1024
720p HD	1280 x 720
Upright mode 720p	720 x 1280

Video resolution (H x V)

480p SD	854 x 480
SD 4:3 (cropped)	704 x 480

Camera installation

Mirror image	On / Off
Rotate	0° / 90° upright / 180° / 270° upright
Camera LED	Enable/disable
Positioning	Coordinates / Mounting height
Camera view wizard	Motorized pan, tilt, roll, zoom, autofocus
Wireless commissioning	IEEE 802.11b/g/n

Video functions - color

Adjustable picture settings	Contrast, Saturation, Brightness
White Balance	2500 to 10000K, 4 automatic modes (Basic, Standard, Sodium lamp, Dominant color), Manual mode and Hold mode

Video functions - ALC

ALC level	Adjustable
Saturation	Adjustable from peak to average
Shutter	Automatic Electronic Shutter (AES); Fixed shutter (1/25[30] to 1/15000) selectable; Default shutter
Day/Night	Auto (adjustable switch points), Color, Monochrome

Video functions - enhance

Sharpness	Sharpness enhancement level selectable
Backlight compensation	On/off
Contrast enhancement	On/off
Noise reduction	Intelligent Dynamic Noise Reduction with separate temporal and spatial adjustments
Intelligent defog	Intelligent Defog automatically adjusts parameters for best picture in foggy or misty scenes (switchable)

Video content analysis

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

Video content analysis

Alarm rules (combinable)	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
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
Calibration / Geolocation	Automatic, based on gyro sensor, focal length and camera height
Tamper detection	Maskable

Additional functions

Scene modes	10 default modes with scheduler: Indoor, Outdoor, Traffic, Night Optimized, Intelligent AE, Vibrant, Low bitrate, Sports & Gaming, Retail, License Plate Recognition (LPR)
Privacy Masking	Eight independent areas, fully programmable
Face detection	Image posting
Display stamping	Name; Logo; Time; Alarm message
Pixel counter	Selectable area

Local storage

Internal RAM	5 s pre-alarm recording
Memory card slots	Dual SDXC / SDHC / SD card slots.
Dual SD-card slot configurations	• Mirror (redundant storage) • Failover (extended service interval) • Extend (maximum retention time) • Automatic Network Replenishment
Industrial SD cards	Extreme lifetime and health monitoring support that provides early service indication.

Input/output

Power output	+12 VDC, max 50mA
Audio signal line in	10 kOhm typical; 1 Vrms max
Audio signal line out	1 Vrms; 1.5 kOhm typical
Alarm input	2 inputs, activation voltage: +3.3 VDC to +40 VDC
Alarm output	1 output, maximum: 30 VAC or +40 VDC, 0.5 A continuous, 10 VA
Ethernet	RJ45

Input/output

Surge protection	Ethernet: 1 kV, 2 kA to ground (8/20 µs pulse)
Fiber optics (sold separately)	The Fiber Optic Ethernet Media Converter kit (VG4-SFPSCKT) installed inside a Surveillance Cabinet (NDA-U-PA0, NDA-U-PA1 or NDA-U-PA2) provides the fiber optic interface to the mounted camera.

Audio streaming

Standard	G.711, 8 kHz sampling rate L16, 16 kHz sampling rate AAC-LC, 48 kbps at 16 kHz sampling rate AAC-LC, 80 kbps at 16 kHz sampling rate
Signal-to-Noise Ratio	>50 dB
Audio Streaming	Full-duplex / half duplex

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
Ethernet	10/100 Base-T, auto-sensing, half/full duplex
Connectivity	Auto-MDIX
Interoperability	ONVIF Profile S; ONVIF Profile G; ONVIF Profile T GB/T 28181

Data security

Crypto Coprocessor (TPM)	RSA 2048 bit, AES/CBC 256 bit
FIPS	FIPS 140-2 Level 3 compliant
PKI	X.509 certificates
Encryption	Full end-to-end encryption with supported VMS Network: TLS1.0/1.2, AES128, AES256 Local storage: XTS-AES
Video authentication	checksum, MD5, SHA-1, SHA-256

Mechanical

Dimensions (D x H)	175 x 148 mm (6.9 x 5.7 in)
Weight	2.2 kg (4.85 lbs)
Mounting	Surface mount
Color	White (RAL9003)

Mechanical

Motorized PTR range	Pan: 0º to +361º Tilt: -3.5º to +89º (NDE-8502-R), -3.5º to +90º (NDE-8502-RT) Roll: -95º to +95º
Dome bubble	Polycarbonate, clear with UV blocking anti-scratch coating
Housing	Aluminum with dehumidifying membranes and waterproof connection area

Environmental

Operating temperature	-50 ºC to +60 ºC (-58 ºF to +140 ºF) for continuous operation; Up to +74 ºC (+165 ºF) according to NEMA TS 2-2003 (R2008), para 2.1.5.1 using fig. 2.1 test profile
Storage temperature	-30 ºC to +70 ºC (-22 ºF to +158 ºF)
Operating humidity	5% to 93% RH non condensing 5% to 100% RH condensing
Storage humidity	Up to 98% RH
Impact resistance casing and dome	IK10+ (50 joules)
Water/dust protection	IP 66 and NEMA Type 4X

Ordering information

NDE-8502-R Fixed dome 2MP HDR 3-9mm PTRZ IP66
Fixed dome 2MP PTRZ H.265 IVA IP66
Order number **NDE-8502-R**

NDE-8502-RT Fixed dome 2MP HDR 10-23mm PTRZ IP66
Fixed dome 2MP tele PTRZ H.265 IVA IP66
Order number **NDE-8502-RT**

Accessories

NDA-U-CMT Corner mount adapter
Universal corner mount, white
Order number **NDA-U-CMT**

NDA-U-PA0 Surveillance cabinet 24VAC
Surveillance cabinet, 24 VAC input, 24 VAC output,
IP66
Order number **NDA-U-PA0**

NDA-U-PA1 Surveillance cabinet 120VAC
Surveillance cabinet, 100 - 120 VAC 50/60 Hz input,
24 VAC output, IP66
Order number **NDA-U-PA1**

NDA-U-PA2 Surveillance cabinet 230VAC
Surveillance cabinet, 230 VAC input, 24 VAC output,
IP66
Order number **NDA-U-PA2**

NDA-U-PMAL Pole mount adapter large
Universal pole mount adapter, white; large
Order number **NDA-U-PMAL**

NDA-U-PMAS Pole mount adapter small
Pole mount adapter small
Universal pole mount adapter, white; small.
Order number **NDA-U-PMAS**

NDA-U-PMT Pendant pipe mount, 12" (31cm)
Universal pipe mount for dome cameras, 31 cm, white
Order number **NDA-U-PMT**

NDA-U-PMTE Pendant pipe extension, 20" (50cm)
Extension for universal pipe mount, 50 cm, white
Order number **NDA-U-PMTE**

NDA-U-PSMB Pendant wall/ceiling mount SMB
Surface mount box (SMB) for wall mount or pipe
mount.
Order number **NDA-U-PSMB**

NDA-U-RMT Pendant parapet mount
Universal roof mount for dome cameras, white
Order number **NDA-U-RMT**

NDA-U-WMP Wall mount plate
Back plate for universal wall mount, corner mount and
pole mount, white, IP66
Order number **NDA-U-WMP**

NDA-U-WMT Pendant wall mount
Universal wall mount for dome cameras, white
Order number **NDA-U-WMT**

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**

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**

NDA-8000-CBL Clear replacement bubble
Clear replacement bubble.
Order number **NDA-8000-CBL**

NDA-8000-IC In-ceiling mount kit
In-ceiling mount kit for FLEXIDOME IP 8000i.
Order number **NDA-8000-IC**

NDA-8000-PC Paintable cover, 4 pcs
Paintable cover (4 pieces) for FLEXIDOME IP 8000i.
Order number **NDA-8000-PC**

NDA-8000-PLEN Plenum-rated in-ceiling mount kit
Plenum-rated in-ceiling mount kit for FLEXIDOME IP
8000i.
Order number **NDA-8000-PLEN**

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**

NDA-8000-TBL Tinted Bubble
Tinted bubble for FLEXIDOME IP 8000i.
Order number **NDA-8000-TBL**

NDA-8000-WP On-camera weather protector
On-camera weather protector for FLEXIDOME IP
8000i.
Order number **NDA-8000-WP**

VG4-SFPSCKT ETHERNET TO SFP INTERFACE KIT
Ethernet media converter video transmitter/data
receiver fiber optic kit for AUTODOME cameras and for
MIC-IP-PSU for MIC analog cameras.
Order number **VG4-SFPSCKT**

SFP-2 Fiber module, multimode, 1310nm, 2LC
SFP Fiber Optic Module, 2 km (1.2 miles), 2 LC
connectors.
Multi-mode
1310 mm
Order number **SFP-2**

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**

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**

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**

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**

NDA-U-WMTG Pendant wall mount, gang box
Universal wall mount, compatible with gang box
installation for fixed dome cameras only, white
Extension for universal pipe mount, 50 cm, white
Order number **NDA-U-WMTG**

Modular camera mounts & accessories

www.boschsecurity.com

BOSCH
Invented for life

▶ Modular design for fast and easy installation

▶ One accessory line for multiple camera families from Bosch

▶ Weather resistant finish to maintain cosmetic appearance

The modular camera mounts & accessories are a family of mounts, mounting adapters, pendant interface plates and surveillance cabinets which can be used with a wide range of Bosch cameras. The accessories are easy to install and can be combined to simplify installation in multiple locations whilst retaining the same look and feel.

System overview

Modular design: use with different cameras
The modular design is flexible and can be used to install Bosch cameras both indoors and outdoors. By choosing the relevant camera specific interface plate for the camera to be installed, common mounts can be used, making multi-camera installations simpler and ensuring common form and color (RAL9003). These accessories are compatible with:

- FLEXIDOME IP 4000i
- FLEXIDOME IP 5000i
- FLEXIDOME IP outdoor 4000 HD
- FLEXIDOME IP outdoor 5000 HD
- FLEXIDOME IP panoramic 5000 MP
- FLEXIDOME IP panoramic 7000 MP
- AUTODOME IP 4000i
- AUTODOME IP 5000i

Quality and robustness for all environments
The mechanical design of the mounts and accessories is driven by combining ease of use with reliability and robustness. All combinations are tested to Bosch standards to deliver the highest environmental performance including mechanical load, shock, vibration and impact testing. While the mechanical design makes these mounts and accessories vandal resistant, high quality coating provides protection against corrosion and maintains the highest level of cosmetic integrity over time.

Usability: easy and flexible installation
Usability is fundamental for these accessories. This starts with an easy selection process, using the Bosch Product Selector to determine the correct combination of accessories for the camera to be used.
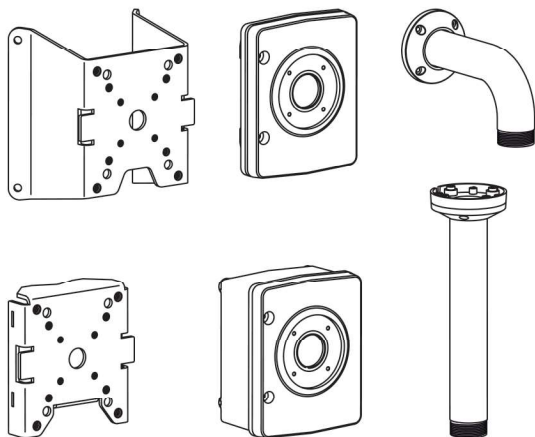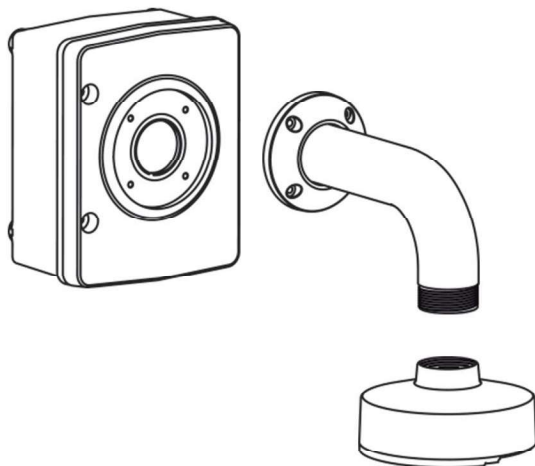
Depending on the installation scenario a wall mount, ceiling mount or roof mount can be used. Further options include pole mount and corner mount. The surveillance cabinet, wall mount plate and surface mount boxes offer extra flexibility to installers. A camera specific interface allows a range of cameras to be used with these mounting options.

Pendant interface plate
Each compatible camera has its own pendant interface plate. These adapters are designed especially for use with the modular accessories. It provides a safe and robust solution to mount the chosen camera to the NDA-U-WMT wall mount, the NDA-U-PMT pipe mount or the NDA-U-RMT parapet mount.

Pendant wall mount

The pendant wall mount supports multiple installation scenarios including direct installation to a wall, pole or corner through the use of a suitable adapter. The integrated swivel function ensures the installed camera is always level. The mount allows easy cable management or it can be combined with additional surface mount boxes to cater for conduit connections. You can extend your installation with a surveillance cabinet to provide a power supply plus additional room to safely install extra hardware.
Use a camera-specific interface plate to attach your camera to the mount.

Pendant parapet mount
The parapet mount can be used to install cameras on parapets, edges of a balcony wall or the side of bridges. These mounts are fitted to the inside or outside of a suitable wall and can be swiveled for ease of positioning and to make servicing of cameras simpler. An optional flat roof mount adapter (LTC9230/01) can be used for mounting on a flat surface.

Pendant pipe mount
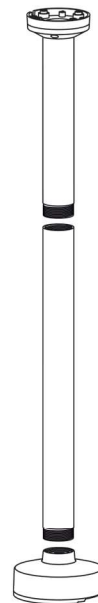
The pendant pipe mount allows the installation of a camera suspended from a ceiling. For high ceilings, the length can be extended by using an extension pipe. The mount supports easy cable management or can be combined with additional surface mount box for conduit connections.
You can extend your installation with a surveillance cabinet to provide a power supply plus additional room to safely install extra hardware.
Use a camera-specific interface plate to attach your camera to the mount.

Pole mount adapter
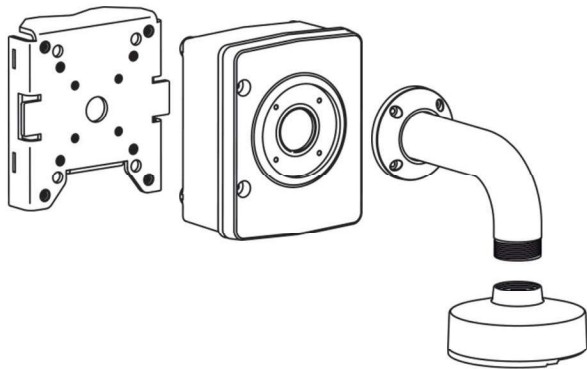
This adapter allows the camera to be installed to a pole or mast. Once the adapter is attached to the pole, a wall mount and surveillance cabinet can be added to provide a full weatherproof installation option.

Corner mount adapter
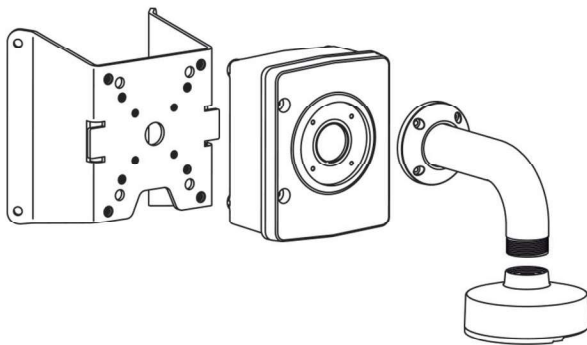
The corner mount adapter allows easy installation to the corner of a building. With the adapter fitted, a wall mount and surveillance cabinet can be added to provide a full weatherproof installation option.

Surveillance cabinets
Bosch surveillance cabinets are designed to meet the power and electrical safety requirements for cameras used in outdoor security applications. The surveillance cabinets provide a power supply for situations without

PoE. They are available without a transformer (for direct 24 VAC power input) and with either a 120 VAC or a 230 VAC transformer for mains supply. Each surveillance cabinet offers 100 Watt output with surge protection. The surveillance cabinet allows easy, direct interface for the wall mount. The full combination with wall mount is rated as IP66 and IK10. For more details about compatibility, refer to the Bosch Product Selector.

Fiber Optic Kits
The VG4-SFPSCKT fiber optic kit is a unique media converter module for use with the surveillance cabinet. This media converter is designed to accept a wide range of 10/100 Mbps Small Form-factor Pluggable (SFP) modules for use with Multimode or Singlemode fiber with LC or SC connectors. The media converter module and SFP module can be installed directly into the surveillance cabinet to provide an integrated fiber optic solution. The fiber optic kits extend the range that the camera can receive commands and transmit video and data.

Technical specifications

Mechanical	
Standard Color	White (RAL 9003)
Mounting	To a wall, a pole, a corner, a parapet (roof)

Ordering information

NDA-U-CMT Corner mount adapter
Universal corner mount, white
Order number **NDA-U-CMT**

NDA-U-PA0 Surveillance cabinet 24VAC
Surveillance cabinet, 24 VAC input, 24 VAC output, IP66
Order number **NDA-U-PA0**

NDA-U-PA1 Surveillance cabinet 120VAC
Surveillance cabinet, 120 VAC input, 24 VAC output, IP66
Order number **NDA-U-PA1**

NDA-U-PA2 Surveillance cabinet 230VAC
Surveillance cabinet, 230 VAC input, 24 VAC output, IP66
Order number **NDA-U-PA2**

NDA-U-PMAL Pole mount adapter large
Universal pole mount adapter, white; large
Order number **NDA-U-PMAL**

NDA-U-PMAS Pole mount adapter small
Pole mount adapter small
Universal pole mount adapter, white; small.
Order number **NDA-U-PMAS**

NDA-U-PMT Pendant pipe mount, 12" (31cm)
Universal pipe mount for dome cameras, 31 cm, white
Order number **NDA-U-PMT**

NDA-U-PMTE Pendant pipe extension, 20" (50cm)
Extension for universal pipe mount, 50 cm, white
Order number **NDA-U-PMTE**

NDA-U-PSMB Pendant wall/ceiling mount SMB
Surface mount box (SMB) for wall mount or pipe mount.
Order number **NDA-U-PSMB**

NDA-U-RMT Pendant parapet mount
Universal roof mount for dome cameras, white
Order number **NDA-U-RMT**

NDA-U-WMP Wall mount plate
Back plate for universal wall mount, corner mount and pole mount, white, IP66
Order number **NDA-U-WMP**

NDA-U-WMT Pendant wall mount
Universal wall mount for dome cameras, white
Order number **NDA-U-WMT**

NDA-3050-PIP Pendant interface plate panoramic 5000
Pendant interface plate for FLEXIDOME IP panoramic 5000 MP. For outdoor and indoor
Order number **NDA-3050-PIP**

NDA-4020-PIP Pendant interface plate AUTODOME 4000
Pendant interface plate for AUTODOME IP 4000i.
Order number **NDA-4020-PIP**

NDA-5030-PIP Pendant interface plate NDE-4/5000
Pendant interface plate for outdoor FLEXIDOME 4000i / 5000i.
Order number **NDA-5030-PIP**

NDA-5031-PIP Pendant interface plate NDI-4/5000
Pendant interface plate for indoor FLEXIDOME IP 4000i / 5000i.
Order number **NDA-5031-PIP**

NDA-7010-PIP Pendant interface plate FLEXIDOME 7000
Pendant interface plate for FLEXIDOME IP panoramic 7000.
Order number **NDA-7010-PIP**

NDA-8000-PIP Pendant interface plate, indoor
Pendant interface plate for FLEXIDOME IP 8000i, indoor.
Order number **NDA-8000-PIP**

NDA-8000-PIPW Pendant interface plate, outdoor
Pendant interface plate including weather protector for FLEXIDOME IP 8000i, outdoor.
Order number **NDA-8000-PIPW**

Accessories

NDA-4020-PLEN Plenum box for PTZ dome
In-ceiling housing for plenum spaces for AUTODOME IP 4000i and AUTODOME IP 5000i cameras. Available in specific regions only.
Order number **NDA-4020-PLEN**

VGA-IC-SP Suspended ceiling support kit,7"
Suspended ceiling support kit for dome cameras. Aperture Ø177 mm (Ø7 in). Maximum supported weight 11.3 kg (25 lb).
Order number **VGA-IC-SP**

VG4-SFPSCKT ETHERNET TO SFP INTERFACE KIT
Ethernet media converter video transmitter/data receiver fiber optic kit for AUTODOME cameras and for MIC-IP-PSU for MIC analog cameras.
Order number **VG4-SFPSCKT**

LTC 9230/01 Roof mount adapter
Flat Roof Mount Adapter for mounting a unit in an upright position on a flat surface.
Order number **LTC 9230/01**

SFP-2 Fiber module, multimode, 1310nm, 2LC
SFP Fiber Optic Module, 2 km (1.2 miles), 2 LC connectors.
Multi-mode
1310 mm
Order number **SFP-2**

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**

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**

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**

NDA-4020-PLEN Plenum box for PTZ dome
In-ceiling housing for plenum spaces for AUTODOME IP 4000i and AUTODOME IP 5000i cameras. Available in specific regions only.
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