

# FLEXIDOME IP starlight 8000i - 2MP

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**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](http://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](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.

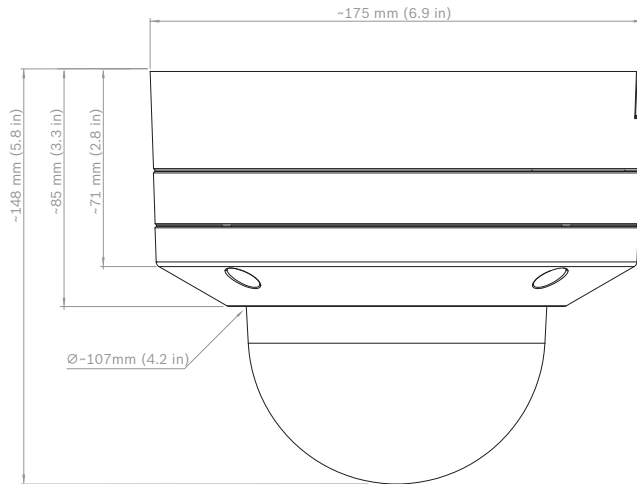
**Certifications and approvals**

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	
<b>Region</b>	<b>Regulatory compliance/quality marks</b>	
Europe	CE	EU Declaration of Conformity

## Installation/configuration notes

### Dimensions



## Technical specifications

### Power

Input voltage	PoE IEEE 802.3af / 802.3at Type 1, Class 3 24 VAC $\pm$ 10% 12-26 VDC $\pm$ 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	134 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: 117° x 59° (H x V) Tele: 37° x 21° (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: 32° x 18° (H x V) Tele: 14.4° x 8.1° (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	<ul style="list-style-type: none"> <li>Mirror (redundant storage)</li> <li>Failover (extended service interval)</li> <li>Extend (maximum retention time)</li> <li>Automatic Network Replenishment</li> </ul>
Industrial SD cards	Extreme lifetime and health monitoring support that provides early service indication. Recommended: Sony Industrial SD cards
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 145 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: 0° to +361° Tilt: -3.5° to +89° (NDE-8502-R), -3.5° to +90° (NDE-8502-RT) Roll: -95° to +95°
Dome bubble	Polycarbonate, clear with UV blocking anti-scratch coating
Housing	Aluminum with dehumidifying membranes and waterproof connection area

Environmental	
Operating temperature	-50 °C to +60 °C (-58 °F to +140 °F) for continuous operation; -34 °C to +74 °C (-30 °F to +165 °F) according to NEMA TS 2-2003 (R2008), para 2.1.5.1 using fig. 2.1 test profile
Storage temperature	-30 °C to +70 °C (-22 °F to +158 °F)
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 nm  
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**

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**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**

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**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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