

## NDE-8702-RX Dome PTRZ 2MP HDR X 4.4-10mm IP6K9K

### FLEXIDOME 8100i - X series



- ▶ Remote configuration and commissioning. Pan, Tilt, Roll and Zoom (PTRZ) remotely to set the camera to the required field of view, without having to touch the camera or lens
- ▶ Starlight X technology with 1/1.8" HD 1080p sensor for next level low-light performance with maximum detail
- ▶ HDR X - High Dynamic Range to see every detail in both bright and dark areas of the scene without HDR motion blur and artefacts
- ▶ IVA Pro brings highly reliable deep-learning based detection of persons and vehicles to scenes ranging from sterile to crowded and congested zones
- ▶ Electronic image stabilization (EIS) measures the frequency and amplitude of the device's vibrations to offset their impact on the image

The FLEXIDOME 8100i 2MP – X series camera has a 1/1.8" sensor, starlight X and HDR X technology at HD 1080p resolution.

Starlight X technology provides extreme low-light sensitivity ensuring highly detailed images even in the most challenging situations. HDR X enables the camera to capture video across different light levels and without motion blur and artefacts on moving objects.

The camera's remote commissioning functionality ensures installation and commissioning in the minimum amount of time. Using a PC or a mobile device with the 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.

The latest CPP14 platform provides powerful processing capabilities and built-in neural processing engine to enable deep learning based IVA Pro video analytics, bringing highly reliable detection of persons and vehicles, even in crowded scenes.

The extreme rugged design is suited for diverse applications in sectors like government, transportation, city and traffic surveillance and education.

#### Functions

##### Starlight X - Next level starlight performance

Starlight X technology combines the latest high performance, large pixel sensors, optics, improved image processing and noise suppression, resulting in a 70% improved sensitivity compared to the standard starlight camera.

##### HDR X - High Dynamic Range

HDR X technology combines unique sensor functionality and advanced algorithms. It captures high quality video of moving objects in scenes with a large dynamic range. It also allows HDR imaging at lower light levels in which traditional HDR technologies are non-functional.

This is possible because the HDR X - Motion optimized mode takes two different readouts from one exposure to capture details in both the highlights and shadows of the scene, instead of blending multiple exposures like standard HDR technologies. Blending multiple exposures reduces sharpness and creates unwanted imaging artefacts on moving objects. HDR X resolves these issues, providing a crisp image with improved dynamic range.

In case an even larger dynamic range is required, HDR X - Optimized DR or HDR X - Extreme DR will further increase performance to an absolute maximum by adding another fast exposure. This combines the benefits from HDR X - Motion optimized and traditional HDR.

### **Intelligent Video Analytics Pro (IVA Pro)**

The camera comes with IVA Pro Buildings, IVA Pro Perimeter and IVA Pro Privacy pre-installed. Other options can be licensed to optimize the camera analytics for enhanced surveillance capabilities tailored to the application.

The advanced analytics brings highly reliable deep-learning-based detection and tracking of persons and vehicles to scenes ranging from sterile zones to crowded and congested areas. Resilient against false triggers caused by challenging environmental conditions such as rain, wind-induced movements (such as trees), snow, hail, water reflections, shadows, and insects, the camera ensures accurate and reliable object detection, tracking, and classification. A smart set of alarm and counter rules ensures that you are promptly alerted when predefined alarms are triggered.

Configuration effort is made easy with the camera already classifying objects out of the box. With these advanced features, the camera provides comprehensive security coverage across a wide range of environments and scenarios.

### **Intelligent Video Analytics Pro (IVA Pro) - optional licenses**

With the introduction of IVA Pro Appearance, users can conduct forensic searches based on distinct characteristics, such as color of clothing, bags, hats, or other features, enabling a more precise search of individuals. Furthermore, the integration of IVA Pro Gun Detection enhances security measures by automatically detecting and classifying people brandishing firearms, ensuring comprehensive threat detection.

Additionally, the camera now features IVA Pro Personal Protective Equipment (PPE), designed to detect the proper use of personal protective equipment, which can reduce accident risk and promote health and safety in various environments. IVA Pro Traffic can be licensed to optimize the camera analytics for ITS applications such as counting and classification, as well as Automatic Incident Detection, which are necessary for highway

and urban infrastructure planning. IVA Pro License Plate excels in real-time identification of license plates in parking applications or city environments for automated ticketing systems, traffic enforcement, and smart parking solutions.

### **Camera Trainer**

The Camera Trainer program uses machine learning to allow the user to define objects of interest and generate detectors for them.

### **Auto-calibration**

The camera offers auto-calibration by transforming 2D pixels into 3D real world measures, such as size, speed and geolocation of objects for tracking use cases. AI technology allows the camera to detect and analyze persons and vehicles in the scene to determine calibration parameters. Calibration efforts are now reduced to a single click, followed by the usual human verification. This reduces the calibration effort or time investment, ensuring optimal accuracy while keeping costs to a minimum.

### **Intelligent streaming**

Smart encoding capabilities, utilizing video analytics, reduce bandwidth consumption to extremely low levels. Only relevant information in the scene, such as motion or objects found through analytics, needs to be encoded. The camera is capable of quad streaming, allowing it to deliver independent and 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.

### **Electronic image stabilization**

The image quality of a camera can be affected if its mounting is unstable or prone to vibration. The larger the zoom value, the bigger the impact of these vibrations will be, making images unusable and causing fatigue for the user. The camera's image stabilization algorithm uses the built-in gyro sensor to detect continuous vibration and to correct the shaky video in the vertical and horizontal axis. This results in a stable and smooth video on the monitor. The EIS crop factor is adjustable. This helps the camera deliver exceptional image clarity, by allowing you to optimize the balance between field of view and the maximum vibration amplitude.

### **DORI coverage**

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

**2MP camera with 4.4 mm - 10 mm lens\***

| DORI      | DORI definition | Distance       | Horizontal width |
|-----------|-----------------|----------------|------------------|
| Detect    | 25 px/m         | 27 m / 86 m    | 77 m             |
|           | 8 px/ft         | 84 ft / 270 ft | 240 ft           |
| Observe   | 63 px/m         | 11 m / 34 m    | 31 m             |
|           | 19 px/ft        | 35 ft / 114 ft | 101 ft           |
| Recognize | 125 px/m        | 5 m / 17 m     | 15 m             |
|           | 38 px/ft        | 18 ft / 57 ft  | 50 ft            |
| Identify  | 250 px/m        | 3 m / 9 m      | 8 m              |
|           | 76 px/ft        | 9 ft / 28 ft   | 25 ft            |

\*The numbers in this table do not reflect IVA distances. For IVA distances, refer to the lens calculator / Bosch IP video design tool.

**Scene modes**

Multiple configurable modes are provided with the best settings for a variety of applications. With one click, fully optimized image settings can be selected to suit the conditions. Different scene modes can be selected for different situations such as sodium lighting, fast moving objects or dark environments.

**Resists rain, dust, and tampering with reliable operation across a wide temperature range**

Suitable for indoor and outdoor usage.

The robust design of the camera is rated to IP66 / IP67 and IK11 standards, safeguarding the camera and its bubble against rain and dust while also offering protection against vandalism and tampering. The camera can operate in a wide ambient temperature range between -50°C up to +60°C (-58°F to +140°F).

**Full Remote Commissioning**

Installing a professional IP video surveillance camera has never been so easy. In fact, as an installer, you will never want to go back to the old methods of installing cameras again. Installation and commissioning can now be done much quicker with the simplified stages saving time on site. With the FLEXIDOME 8100i 2MP – X series camera's remote commissioning functionality, there's no need to go up and down ladders. Using a PC or a mobile device with the Bosch Project Assistant app, you can pan, tilt, roll and zoom (PTRZ) and point the camera to the required field of view with a single click - without ever having to touch the camera or lens. Remote configuration and commissioning can also be done at a later stage once all cameras have been installed. Simply connect the Bosch Project Assistant app, available for iOS, Windows or Android, to the camera wirelessly to the local network. Or connect

to the camera remotely via the network using the camera's web interface or the Bosch Configuration Manager.

**Easy installation**

The mechanical design follows the Bosch installation philosophy by using an installation surface mount box (SMB) and easy cable management.

Power can be supplied via Power-over-Ethernet (PoE). With this configuration, only a single cable connection is required to view, power, and control the camera. Using PoE makes installation easier and more cost effective, as cameras do not require a local power source.

The AVF (Automatic Varifocal) feature makes it easy for installers to adjust zoom position without opening the camera. The automatic motorized zoom/focus adjustment with 1:1 pixel mapping ensures the camera is always accurately focused.

**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 1.2/1.3 with updated cipher suites including AES encryption with 256 bit keys. Only authenticated firmware can be uploaded, the boot process is secured. 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 Secure Element with 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
- Up to 4096 bit key length

**Advanced edge recording**

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

- Dual microSD cards that can be set up as either:
  - Mirrored, for redundant storage
  - Failover, for extended service intervals
  - Extended, for maximum retention time
- Industrial microSD card support allows for extreme lifetime
- Health monitoring on industrial microSD card (slot 1) provides early service indication

### Cloud-based services

Using the Bosch Security Cloud, you can configure, troubleshoot, and update supported devices using the browser-based interface or standard tools. With one click on Remote Portal, you can activate additional value-added services, such as Alarm Management in Cloud VMS, or VideoView+. VideoView+ provides an easy-to-use and cost-effective solution to remotely connect to your device from anywhere, at any time. Leverage the power of the Bosch cloud to monitor your premises and get notified about any incident. VideoView+ also enables live streaming, locally and from remote, of up to 8 concurrent devices via Video Security Client, or of up to 4 concurrent devices on the Android and iOS app clients. This includes replay and export functionality, as well as forensic search to define and perform search criteria for recorded events.

### Bosch Remote Portal

With the secure cloud infrastructure, Remote Portal, you can manage your connected Bosch devices. From the Remote Portal you can:

- Complete initial configuration of your connected Bosch devices (online or offline).
- Update firmware for single or multiple devices.
- Manage certificates.
- Monitor the health of your connected Bosch devices.

### System integration and ONVIF conformance

The camera conforms to the ONVIF Profile S, ONVIF Profile G, ONVIF Profile M, and ONVIF Profile T specifications. For H.265 configuration, the camera supports Media Service 2, which is part of ONVIF Profile T. Compliance with these standards guarantees interoperability between network video products regardless of manufacturer.

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

### Modular camera mounts and accessories

A full line of modular camera mounts and accessories are available that allow a consistent design across different platforms and a wide range of installation possibilities.

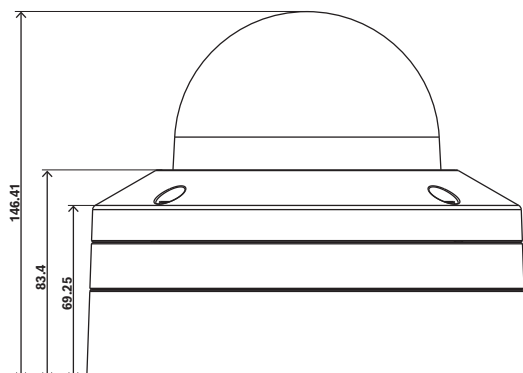
Several dedicated accessories are available that seamlessly fit to the camera and expand the different installation options over previous generations. Available options include: a paintable cover, an on-camera weather protector, a clear, tinted or hydrophilic bubble, in-ceiling mounting kits, a surveillance cabinet with power and fiber optic options and different mounting options.

### Regulatory information

| Standards             | Type                                                                                                                                                                                                                                               |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Emission              | EN 55032 (class A), EN IEC 61000-6-4, EN 50121-4 (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6), CFR 47 FCC, part 15B (class A), ICES-003, AS/NZS CISPR 32                                                                 |
| Immunity              | EN 55035, EN IEC 61000-6-2, EN 50130-4 (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6), EN 50121-4 (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6)                                                   |
| Environmental         | EN 50130-5 Class IV-A (EN 60068-2-2, EN 60068-2-5, EN 60068-2-6, EN 60068-2-18, EN 60068-2-27, EN 60068-2-30, EN 60068-2-42, EN 60068-2-52, EN 60068-2-75, EN 60068-2-78, EN 60529), UL 2043 when combined with NDA-8002-PLEN, Nema TS 2 Section 2 |
| Safety                | EN 62368-1, UL 62368-1, CSA 62368-1                                                                                                                                                                                                                |
| Image performance     | IEC 62676-5                                                                                                                                                                                                                                        |
| HD                    | SMPTE 296M-2001 (Resolution: 1280x720)<br>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 (IK11)                                                                                                                                                                                                                                    |
| Water/dust protection | EN 60529 (IP66/IP67), ISO 20653 (IP6K9K), UL50E (Type 4X)                                                                                                                                                                                          |
| Environment           | 2011/65/EU RoHS (EN IEC 63000), 1999/45/EC and 1907/2006 REACH, 2012/19/EU WEEE, 94/62/EC Packaging                                                                                                                                                |
| Marks                 | CE, cULus, WEEE, RCM, VCCI, BIS, KCC, China RoHS, Cmm                                                                                                                                                                                              |
| Compliance            | NDAA and TAA compliant                                                                                                                                                                                                                             |

| Region | Regulatory compliance/quality marks |                                      |
|--------|-------------------------------------|--------------------------------------|
| Europe | CE                                  |                                      |
| Global | IEC 62443                           | Industrial Cyber Security Capability |
| USA    | UL CAP                              | Cybersecurity Assurance Program      |

## Installation/configuration notes



Dimensions in mm (inch)

### Parts included

| Quantity | Component                             |
|----------|---------------------------------------|
| 1        | FLEXIDOME 8100i 2MP - X series camera |
| 1        | T-20 security Torx bit                |
| 1        | Mini screwdriver                      |
| 1        | IP66 rubber grommet                   |
| 1        | IP67 grommet                          |
| 1        | Network patch cable 50 cm             |
| 3        | Identification label                  |
| 1        | Quick installation guide              |
| 1        | Safety and security information       |

## Technical specifications

### Electrical

|                                               |                                                                                                                               |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| PoE input                                     | PoE IEEE 802.3af / 802.3at Type 1, Class 3<br>PoE and auxiliary power can be connected simultaneously for redundant operation |
| Input voltage (VAC)                           | 24 VAC $\pm 10\%$                                                                                                             |
| Input voltage (VDC)                           | 12 VDC – 26 VDC $\pm 10\%$                                                                                                    |
| Power consumption PoE (W) (typical – maximum) | 7 W – 12.95 W                                                                                                                 |

|                                                |                 |
|------------------------------------------------|-----------------|
| Power consumption VAC (VA) (typical – maximum) | 12 VA – 23.3 VA |
| Power consumption VAC (W) (typical – maximum)  | 6.9 W – 12.6 W  |
| Power consumption VDC (W) (typical – maximum)  | 7.2 W – 19 W    |

### Sensor

|                          |                                       |
|--------------------------|---------------------------------------|
| Total sensor pixels      | 2.10 MP approx.                       |
| Sensor type              | 1/1.8 inch CMOS;<br>4.1 $\mu\text{m}$ |
| Effective pixels (H x V) | 1,920 x 1,080                         |

### Sensitivity

|                                                                      |                  |
|----------------------------------------------------------------------|------------------|
| Low light technology                                                 | starlight X      |
| Color (lx) (sensitivity measured according to IEC 62676 Part 5)      | 0.0090 lx (F1.3) |
| Monochrome (lx) (sensitivity measured according to IEC 62676 Part 5) | 0.0007 lx (F1.3) |

### Dynamic range

|                               |            |
|-------------------------------|------------|
| WDR technology                | HDR        |
| High Dynamic Range (HDR) (dB) | 120 dB HDR |

### Optical

|                                         |                |
|-----------------------------------------|----------------|
| Lens focal length (mm)                  | 4.4 mm – 10 mm |
| Iris control                            | P-iris         |
| Horizontal field of view ( $^{\circ}$ ) | 110° – 48°     |
| Vertical field of view ( $^{\circ}$ )   | 56° – 27°      |
| Lens aperture (/F)                      | F1.3 - F1.97   |
| Zoom/focus control                      | Motorized      |

### Video streaming

|                   |                                                                                                                                               |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Video compression | H.264 (ISO/IEC 14496-10); M-JPEG; H.265/HEVC                                                                                                  |
| Sensor modes      | 25 fps, HDR X, 1920 x 1080 (2.1 MP);<br>30 fps, HDR X, 1920 x 1080 (2.1 MP);<br>50 fps, 1920 x 1080 (2.1 MP);<br>60 fps, 1920 x 1080 (2.1 MP) |

|                                  |                                                                                                                                                                                                                                                                                                    |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Streaming                        | Multiple configurable streams in H.265; H.264 and M-JPEG; Configurable framerate and bandwidth; Bosch Intelligent Streaming                                                                                                                                                                        |
| Frame rate (fps)                 | 1 fps – 60 fps                                                                                                                                                                                                                                                                                     |
| Camera processing latency        | <67ms                                                                                                                                                                                                                                                                                              |
| GOP structure                    | IP; IBP; IBBP                                                                                                                                                                                                                                                                                      |
| Video signal-to-noise ratio (dB) | >55 dB                                                                                                                                                                                                                                                                                             |
| Resolution                       | 2MP (16:9):<br>2MP - 1920 x 1080<br>1.3MP - 1536 x 864<br>1MP - 1280 x 720<br>0.3MP - 768 x 432<br>0.3MP - 720 x 400<br>0.1MP - 512 x 288<br><br>2MP Upright (9:16):<br>2MP - 1080 x 1920<br>1.3MP - 864 x 1536<br>1MP - 720 x 1280<br>0.3MP - 432 x 768<br>0.3MP - 400 x 720<br>0.1MP - 288 x 512 |

### Video functions

|                          |                                                                                                                                                                                                                                                                              |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ALC                      | Mode (standard, fluorescent), Level, Average vs. peak, Speed, Maximum gain; Adjustable                                                                                                                                                                                       |
| Shutter modes            | Automatic Electronic Shutter (AES); 1/25 min; 1/15,000 max; Default shutter                                                                                                                                                                                                  |
| Day/night modes          | Auto (adjustable switch points); Color; Monochrome                                                                                                                                                                                                                           |
| Field of view adjustment | Motorized pan, tilt, roll; Autofocus                                                                                                                                                                                                                                         |
| Camera functionality     | Mirror image; Rotation 90°; Rotation 180°; Rotation 270° including up-right mode; Backlight compensation (BLC); Intelligent dynamic noise reduction; Contrast enhancement; Sharpness enhancement; Intelligent defog; Pixel counter; Tamper detection; Saturation; Brightness |
| Camera LED               | Auto disable; Enable; Disable                                                                                                                                                                                                                                                |

|                         |                                                                                                                                     |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| White balance (K)       | 2,000 K – 10,000 K                                                                                                                  |
| White balance modes     | Basic; Standard; Dominant color; Manual mode; Hold mode; 4 automatic modes; Sodium lamp                                             |
| Number of privacy masks | 8 independent areas, fully programmable                                                                                             |
| Display stamping        | Name; Logo; Date/time; Alarm message                                                                                                |
| Scene modes             | Traffic; Night optimized; Vibrant; Low bitrate; Sports & gaming; Retail; Intelligent AE; Indoor; Outdoor; License plate recognition |
| Positioning             | Mounting height; Coordinates                                                                                                        |

### Video content analysis

|                                                 |                                                                                                                                                                                                                                                                |
|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Analysis type                                   | IVA Pro Buildings; IVA Pro Perimeter; IVA Pro Privacy; Camera Trainer                                                                                                                                                                                          |
| Alarm triggers                                  | Any object; Object in field; Line crossing; Enter / leave field; Loitering; Follow route; Idle / removed object; Counting; Occupancy; Crowd density estimation; Condition change; Similarity search; Flow / counter flow; Objects stopping or starting to move |
| Object filters                                  | Duration; Size; Aspect ratio; Speed; Direction; Color; Object classes (6)                                                                                                                                                                                      |
| Tracking modes                                  | Standard (2D) tracking; 3D tracking; 3D people tracking; Ship tracking; Museum mode                                                                                                                                                                            |
| Calibration                                     | 3D auto calibration                                                                                                                                                                                                                                            |
| Number of possible alarm rules (simultaneously) | 16                                                                                                                                                                                                                                                             |
| Additional functionalities                      | Tamper detection                                                                                                                                                                                                                                               |
| Supported analytics                             | IVA Pro Traffic; IVA Pro Appearance; IVA Pro Personal Protective Equipment; IVA Pro Visual Gun Detection; IVA Pro License Plate; IVA Pro Vehicle Make Model; IVA Pro Dangerous Good Signs; IVA Pro License Plate + Make Model; Intelligent Audio Analytics     |

### Storage

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

|                                        |                                                                                                                                    |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Memory card slot                       | Dual micro SDHC; Dual micro SDXC;<br>Dual micro SD card up to 2 TB                                                                 |
| Dual micro SD-card slot configurations | Mirror (redundant storage); Failover (extended service interval); Extend (maximum retention time); Automatic Network Replenishment |

### Inputs and outputs

|                                |                                                                                                                                                             |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ethernet                       | Shielded RJ45                                                                                                                                               |
| Audio line in                  | 10 kOhm typical; max. 1 Vrms                                                                                                                                |
| Audio line out                 | 1.5 kOhm typical; 1 Vrms                                                                                                                                    |
| Alarm inputs                   | 2                                                                                                                                                           |
| Alarm outputs                  | 1                                                                                                                                                           |
| Power output                   | 12 VDC, max 50mA                                                                                                                                            |
| Surge protection               | 1 kV; 1 kA to ground (8/20 µs)                                                                                                                              |
| Fiber optics (sold separately) | The Fiber Optic Ethernet Media Converter kit (VG4-SFPSCKT) installed inside a Surveillance Cabinet provides the fiber optic interface to the mounted camera |

### Audio

|                                    |                                                                     |
|------------------------------------|---------------------------------------------------------------------|
| Compression and sampling rate      | G.711 8 kHz; L16 16 kHz; AAC-LC 80kbps 16 kHz; AAC-LC 48kbps 16 kHz |
| Minimum signal-to-noise ratio (dB) | >50 dB                                                              |
| Audio streaming                    | Full duplex; Half duplex                                            |

### Network

|                       |                                                                                                                                                                                                                                                                                                           |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Protocols / standards | IPv4; IPv6; UDP; TCP; HTTP; HTTPS; RTP/SRTP/RTCP; RTSP/RTSPS; IGMP V2/V3; ICMPv6; FTP/Secure FTP; ARP; DHCP; APIPA (Auto-IP, link local address); NTP (SNTP); SNMP (V1, MIBII); SNMP (V3, MIBII); 802.1x, EAP/TLS; DNS; DNSv6; SMTP; iSCSI; DiffServ (QoS); LLDP; SOAP; CHAP; Digest authentication, SCEP |
| Ethernet type         | 10/100/1000BASE-T; Auto-sensing; Full / half duplex                                                                                                                                                                                                                                                       |

|            |                                                                               |
|------------|-------------------------------------------------------------------------------|
| Conformity | ONVIF Profile S; ONVIF Profile G; ONVIF Profile T; Auto-MDIX; ONVIF Profile M |
|------------|-------------------------------------------------------------------------------|

### Platform

|                         |       |
|-------------------------|-------|
| Common Product Platform | CPP14 |
|-------------------------|-------|

### Data security

|                          |                                                |
|--------------------------|------------------------------------------------|
| Crypto coprocessor (TPM) | RSA 4096 bit; AES/CBC 256 bit                  |
| PKI                      | X.509 certificates                             |
| End-to-end encryption    | Full end-to-end with supported VMS             |
| Encryption               | TLS 1.2; AES 256; AES 128; TLS 1.3             |
| Local storage encryption | XTS-AES                                        |
| Video authentication     | MD5; SHA-1; SHA-256; Checksum                  |
| Firmware protection      | Signed firmware; Secure boot; Software sealing |

### Mechanical

|                         |                       |
|-------------------------|-----------------------|
| Material                | Housing: Aluminum     |
| Bubble material         | Clear polycarbonate   |
| Pan range (°)           | 0° – 361°             |
| Tilt range (°)          | -3° – 85°             |
| Roll range (°)          | -95° – 95°            |
| Dimensions (Ø x H) (mm) | 175 mm x 148 mm       |
| Dimensions (Ø x H) (in) | 6.9 in x 5.7 in       |
| Weight (kg)             | 2.30 kg               |
| Weight (lb)             | 5.07 lb               |
| Color (RAL)             | RAL 9003 Signal white |
| Mounting type           | Surface-mounted       |

### Environmental

|                            |                                                                                                  |
|----------------------------|--------------------------------------------------------------------------------------------------|
| Operating temperature (°C) | -50 °C – 60 °C; Up to 74°C according to NEMA TS 2-2021, para 2.1.5.1 using fig. 2.1 test profile |
|----------------------------|--------------------------------------------------------------------------------------------------|

|                                                 |                                                                                                    |
|-------------------------------------------------|----------------------------------------------------------------------------------------------------|
| Operating temperature (°F)                      | -58 °F – 140 °F; Up to 165°F according to NEMA TS 2-2021, para 2.1.5.1 using fig. 2.1 test profile |
| Storage temperature (°C)                        | -30 °C – 70 °C                                                                                     |
| Storage temperature (°F)                        | -22 °F – 158 °F                                                                                    |
| Cold start temperature (°C)                     | -40 °C                                                                                             |
| Cold start temperature (°F)                     | -40 °F                                                                                             |
| Operating relative humidity, non-condensing (%) | 5% – 93%                                                                                           |
| Operating relative humidity, condensing (%)     | 5% – 100%                                                                                          |
| Storage relative humidity (%)                   | 0% – 98%                                                                                           |
| Impact protection                               | IK11                                                                                               |
| IP rating                                       | IP66; IP67; IP6K9K                                                                                 |
| Degree of protection                            | NEMA type 4X                                                                                       |
| Country of origin                               | Portugal                                                                                           |

### Ordering information

#### NDE-8702-RX Dome PTRZ 2MP HDR X 4.4-10mm IP6K9K

Fixed dome camera 2 MP with starlight X, HDR X, IVA Pro Buildings, IVA Pro Perimeter, IVA Pro Privacy, IP66/IP67, IK11, H.264/H.265, 4.4-10 mm lens  
Order number **NDE-8702-RX**

### Accessories

#### NDA-8000-CND Conduit adapter, 4 pcs

Conduit adapter for cameras, 4 pcs  
Order number **NDA-8000-CND**

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

Clear replacement bubble for FLEXIDOME IP 8000i and FLEXIDOME 8100i cameras.  
Order number **NDA-8000-CBL**

#### NDA-8000-TBL Tinted Bubble

Tinted bubble for FLEXIDOME IP 8000i and FLEXIDOME 8100i cameras  
Order number **NDA-8000-TBL**

#### NDA-8000-HCBL Hydrophilic bubble

Hydrophilic bubble for FLEXIDOME IP 8000i and FLEXIDOME 8100i cameras  
Order number **NDA-8000-HCBL**

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

On-camera weather protector for FLEXIDOME IP 8000i and FLEXIDOME 8100i cameras  
Order number **NDA-8000-WP**

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

Pendant interface plate for FLEXIDOME IP 8000i and FLEXIDOME 8100i cameras  
Order number **NDA-8000-PIP**

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

Pendant interface plate including weather protector for FLEXIDOME IP 8000i and FLEXIDOME 8100i cameras  
Order number **NDA-8000-PIPW**

#### NDA-8002-PLEN In-ceiling plenum rated kit

Plenum-rated in-ceiling mount kit for FLEXIDOME IP 8000i and FLEXIDOME 8100i cameras.  
Order number **NDA-8002-PLEN**

#### NDA-8002-IC In-ceiling mount kit

In-ceiling mount kit with microphone support for FLEXIDOME 8000i and FLEXIDOME 8100i cameras.  
Order number **NDA-8002-IC**

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

Soft ceiling support for in-ceiling mount kit for FLEXIDOME IP 8000i and FLEXIDOME 8100i cameras  
Order number **NDA-8000-SP**

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

Paintable cover (4 pieces) for FLEXIDOME IP 8000i and FLEXIDOME 8100i cameras  
Order number **NDA-8000-PC**

#### NDA-U-WMT Pendant wall mount

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

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

Universal pipe mount for dome cameras, 31 cm, white  
Order number **NDA-U-PMT**

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

Universal pendant pipe mount for dome cameras, 11 cm (4"), white  
Order number **NDA-U-PMTS**

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

Universal wall mount, compatible with gang box installation for fixed dome cameras only, white  
Order number **NDA-U-WMTG**

#### 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-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-PMAS Pole mount adapter small

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

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

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

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

Universal roof mount for dome cameras, white, for outdoor usage

Order number **NDA-U-RMT**

**LTC 9230/01 Parapet roof mount adapter**

Flat roof mount adapter for mounting NDA-U-RMT on a flat surface.

Order number **LTC 9230/01**

**NDA-U-DWMT Dual pendant wall mount**

Universal dual wall mount for dome cameras

Order number **NDA-U-DWMT**

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

Surveillance cabinet, 24 VAC input, 24 VAC output

Order number **NDA-U-PA0**

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

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

Order number **NDA-U-PA1**

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

Surveillance cabinet, 230 VAC input, 24 VAC output

Order number **NDA-U-PA2**

**NBA-7070-PA0 Direct-mount surveillance cabinet 24VAC**

Direct-mount surveillance cabinet, 24 VAC

Order number **NBA-7070-PA0**

**NBA-7070-PA1 Direct-mount surveillance cabinet 120VAC**

Direct-mount surveillance cabinet, 120 VAC

Order number **NBA-7070-PA1**

**NBA-7070-PA2 Direct-mount surveillance cabinet 230VAC**

Direct-mount surveillance cabinet, 230 VAC

Order number **NBA-7070-PA2**

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

Ethernet media converter video transmitter/data receiver fiber optic kit

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**

**Software Options****MVC-IVA-TRA IVA Pro Traffic**

Video analytics software based on deep neural network technology for traffic monitoring and Automatic Incident Detection.

Order number **MVC-IVA-TRA**

**MVC-IVA-APC IVA Pro Appearance**

Video analytics software based on deep neural network technology for detailed person appearance attributes allowing advanced forensic search.

Order number **MVC-IVA-APC**

**MVC-IVA-PPE IVA Pro PPE**

Video analytics software based on deep neural network technology for detecting personal protective equipment.

Order number **MVC-IVA-PPE**

**MVC-IVA-LPR IVA Pro License Plate**

Video analytics software based on deep neural network technology for detecting license plate information.

Order number **MVC-IVA-LPR**

**MVC-IVA-MMR IVA Pro Vehicle Make Model**

Video analytics software based on deep neural network technology for detecting vehicle information.

Order number **MVC-IVA-MMR**

**MVC-IVA-DGS IVA Pro Dangerous Good Signs**

Video analytics software based on deep neural network technology for detecting dangerous good signs.

Order number **MVC-IVA-DGS**

**MVC-IVA-LPRX IVA Pro License Plate + Make Model**

Video analytics software based on deep neural network technology for detecting license plate and vehicle information.

Order number **MVC-IVA-LPRX**

**MVC-IVA-VGD IVA Pro Visual Gun Detection**

Video analytics software based on deep neural network technology, designed to detect upright persons and brandished guns.

Order number **MVC-IVA-VGD**

**MVC-IAA-GUN Gunshot Detector License, perpetual**

Gunshot Detector License, perpetual

Order number **MVC-IAA-GUN**



<https://www.boschsecurity.com>