

# NDV-5702-AL-GOV Fixed dome 2MP HDR 3.2-10.5mm IR I/O GOV FLEXIDOME indoor 5100i IR



The camera is a versatile and professional surveillance camera for indoor monitoring. It delivers exceptional image quality, starlight performance and High Dynamic Range at resolution HD 1080p for highly detailed image for demanding security and surveillance network requirements.

Built-in Intelligent Video Analytics Pro (IVA Pro) enriches full situational awareness and triggers relevant alerts.

The camera offers a 1/2.8" sensor and HDR technology at HD 1080p resolution with a built-in active infrared illuminator that provides high performance in extreme low-light environments. The modular structure design uses a click and rotate mechanism on mounting plate or base that requires no hardware to secure the camera to housing for fast installation, including compatibility with various mounting options.

#### Functions

## 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 has become the new compression standard of choice for IP video surveillance systems.



- > 1080p60 for highly detailed images
- Starlight camera technology with excellent lowlight performance
- IVA Pro brings highly reliable deep-learning based detection of persons and vehicles to scenes ranging from sterile zones to crowded and congested
- High Dynamic Range to see every detail in both bright and dark areas of the scene
- Built-in intelligent IR illuminator with up to 45 m (148 ft) viewing distance

## Intelligent Video Analytics Pro (IVA Pro)

The camera comes with IVA Pro Buildings preinstalled and brings highly reliable deep-learning based detection and tracking of persons and vehicles to scenes ranging from sterile zones to crowded and congested. Being extremely resistant to false triggers caused by challenging environments with rain, wind (moving trees), snow, hail, and water reflections as well as shadows and bugs, it reliable detects, tracks, and classifies objects. A smart set of alarm and counter rules allows to alert you when predefined alarms are triggered, and to forensically search with high efficiently though recordings. Configuration effort is minimized and made easy by removing the need for calibration.

Optionally the camera can be licensed with IVA Pro Perimeter or IVA Pro Traffic to optimize the camera analytics for specific enterprise use-cases.

#### Two-way audio and built-in microphone

Two-way audio allows the operator to communicate with visitors or intruders via an external audio line input and output. Alternatively, there is an integrated microphone to capture crisp and clear audio. By using the integrated or external microphone, audio detection can be used to generate alarms to alert the security operator quicker and act more proactively. If required by local laws, the microphone can be locked via a secure license key.

#### **DORI coverage**

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

#### 2 MP camera with 3.2-10.5 mm lens\*

DORI	DORI definition	Distance 3.2 mm / 10.5 mm	Horizontal width
Detect	25 px/m	31 m / 138 m	77 m
	(8 px/ft)	(102 ft / 453 ft)	(252 ft)
Observe	63 px/m	12 m / 55 m	30 m
	(19 px/ft)	(39 ft / 180 ft)	(100 ft)
Recognize	125 px/m	6 m / 28 m	15 m
	(38 px/ft)	(20 ft / 92 ft)	(50 ft)
Identify	250 px/m	3 m / 14 m	8 m
	(76 px/ft)	(10 ft / 46 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. 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 sodium lighting, fast moving objects, or dark environments.

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

The camera is suitable for indoor usage. The camera can operate in a wide ambient temperature range between -20 °C to +50 °C (-4 °F to +122 °F). The robust design of the camera is rated to IP54 and IK10 standards, safeguarding the camera against rain and dust while also offering protection against vandalism and tampering.

#### Easy installation

The mechanical design follows the Bosch installation philosophy by using an installation mount plate and easy cable management.

Power can be supplied via Power-over-Ethernet. 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.

For trouble-free network cabling, the camera supports Auto-MDIX which allows the use of straight or cross-over cables.

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 have been put in place to ensure the highest level of security for device access and data transport. The three-level password protection with security recommendations allows users to customize device access. Web browser access can be protected using HTTPS and firmware updates can also be protected with authenticated secure uploads. The cameras have built-in Secure Element (SE) hardware providing main Trusted Platform Module (TPM) functionality to ensure the highest levels of data security and privacy protection. Together with Public Key Infrastructure (PKI) support, superior protection from malicious attacks is guaranteed. With future firmware updates, it will also support RSA encryption key lengths of up to 4096 bits, ensuring data safety beyond 2030. 802.1x network authentication with EAP/TLS will also be added. The advanced certificate handling offers:

- · Bosch origin device certificate pre-installed
- 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

#### More flexibility in streaming capabilities

The camera has four independent encoder streams. Users can do the following:

- Configure each stream individually to change the video resolution and the frame rate
- Select the coding standard (H.264/H.265) for each stream
- Configure a set of eight encoder profiles for each stream

#### Edge recording

Insert a memory card into the card slot to store up to 2 TB of local alarm recording. Pre-alarm recording in RAM reduces recording bandwidth on the network, and extends the effective life of the memory card. It has advanced edge recording providing a reliable storage solution possible due to the combination of these functions:

- Industrial SD card support allows for extreme lifetime
- Health monitoring of industrial SD cards provide early service indications.

#### **High Dynamic Range**

The camera has High Dynamic Range. This 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. This method is used to provide standardized measurements, which can be used to compare different cameras.

#### Automatic image rotation

The integrated gyro/accelerometer sensor automatically corrects the image orientation in steps of 90° if the camera is mounted at right angles or upside down. The sensor image can also be rotated manually through steps of 90°.

To efficiently capture details in long hallways without loss of resolution, mount the camera at right angles. The image is displayed upright at full resolution on your monitor.

#### Hybrid mode

An analog video output enables the camera to operate in hybrid mode. This mode provides simultaneous high resolution HD video streaming and an analog video output via an SMB connector. The hybrid functionality offers an easy migration path from legacy CCTV to a modern IP-based system.

#### System Integration and ONVIF conformance

The camera conforms to the ONVIF Profile S, ONVIF Profile G, ONVIF Profile T, and ONVIF Profile M 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.

#### Modular accessories

A full line of modular accessories is available, which allows a consistent design across different cameras and a wide range of installation possibilities. Available options include wall or pipe mount, a surveillance cabinet with power, and an in-ceiling mounting kit.

#### **IR Illumination**

The device offers integrated intelligent infrared (IR) capability, on top of adaptive power based on-the-scene content. The IR range covers a distance of up to 45 m (148 ft).

The IR coverage is always optimized for the scene in order to avoid over-exposure of objects that are close to the device.

#### **Cloud-based services**

The camera supports time-based or alarm-based JPEG posting to four different accounts. These accounts can address FTP servers or cloud-based storage. Video clips or JPEG images can also be exported to these accounts.

Alarms can be set up to trigger an e-mail or SMS notification so you are always aware of abnormal events.

#### **Bosch Remote Portal**

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

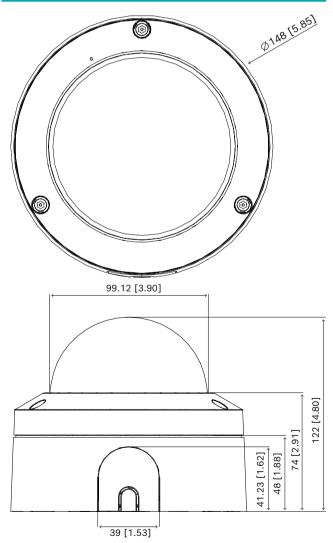
#### **Project Assistant app**

As the camera is equipped with a USB-C port for a wireless USB dongle (sold separately: NCA-WLAN-EU, NCA-WLAN-NA), the installer can easily perform the initial configuration wirelessly. Using a mobile device with the Bosch Project Assistant app, you can do initial set-up and lens zoom-focus to find the right scene. Simply connect the wireless USB dongle and go to the Bosch Project Assistant app, available for iOS, Windows, or Android.

Regulatory information		
Standard	Туре	
Emission	EN 55032 (Class B)	
	CFR 47 FCC part 15 (Class B)	
	ICES-003 (Class B)	
	VCCI CISPR 32	
	AS/NZS CISPR 32	
Immunity	EN 50121-4	
	EN 50130-4	
Environmental	EN 50130-5, Class II	
	EN IEC 63000	
	RoHS EU, 2011/65/EU and 2015/863/EU	
	WEEE EU, 2012/19/EU	
Safety	EN 62368-1	
	IEC 62368-1	
	UL 62368-1	
Image per- formance	IEC 62676-5	
Impact protec- tion	EN 62262 (IK10): 2002	

Standard	Туре	
Ingress protec- tion	EN 60529 (IP54)	
ONVIF con- formance	EN 50132-5-2, EN 62676-2	
Marks	CE, FCC, UL, WEEE, RCM, VCCI, UKCA, China RoHS	
Compliance	NDAA and TAA compliant	
Region	Regulatory	compliance/quality marks
-	Ticgulator y	
Europe	CE	
Great Britain	UKCA	
Global	IEC 62443	Industrial Cyber Security Capability

# Installation/configuration notes



Dimensions in mm (inch)

Parts included		
Quantity	Component	
1	FLEXIDOME indoor 5100i IR - 2 MP camera	
1	T-20 security Torx Allen key	
1	8-pin terminal block	
1	Adapter plate for cable conduit (Ø 3/4" / M25)	
1	Adapter plate for cable conduit (Ø 1/2" / M20)	
1	RJ45 guider	
1	Mount plate	
1	Safety information	
1	Quick installation guide	

## **Technical specifications**

## Electrical

48 VDC nominal
4.80 W - 7.30 W
PoE IEEE 802.3af / 802.3at Type 1, Class 3
CPP14
2 MP approx.
1/2.8 inch CMOS
1,920 x 1,080
0.0210 lx
0.0040 lx
0.0 lx

#### **Dynamic range**

White balance modes

Measured according to IEC 62676 Part 5 (dB)	105 dB
Video streaming	
Video compression	H.264 (ISO/IEC 14496-10); M- JPEG; H.265/HEVC
Streaming	Multiple configurable streams in H.265; H.264 and M-JPEG; Config- urable framerate and bandwidth; Bosch Intelligent Streaming
Camera processing latency	<70 ms (at 1080p60) (Camera-in- ternal latency only, achievable with settings excluding all image en- hancements)
GOP structure	IP; IBP; IBBP
Frame rate (fps)	1 fps – 60 fps
Video signal-to-noise ratio (dB)	>55 dB
Video resolution	
1080p HD	1920 × 1080
Upright mode 1080p	1080 × 1920
1.3 MP (16:9)	1536 × 864
Upright mode 1.3 MP (16:9)	864 × 1536
720p	1280 × 720
Upright mode 720p	720 × 1280
SD	768 × 432
Video functions	
Day/night modes	Auto (adjustable switch points); Color; Monochrome
Camera functionality	Mirror image; Rotation 90°; Rotation 180°; Rotation 270° including up- right mode; Backlight compensation (BLC); Sharpness enhancement; In- telligent defog; Pixel counter; Satur- ation; Brightness; Video watermark- ing; Display stamping; Location; Electronic image stabilization (gyro- based)
White balance (K)	2,500 K – 10,000 K

	matic modes
Shutter modes	Automatic Electronic Shutter (AES); 1/25 min; 1/15,000 max; Default shutter
Number of privacy masks	8
Scene modes	Multiple default modes
Video content analysis	5
Analysis type	Intelligent Video Analytics Pro Build- ings
Alarm triggers	Any object; Object in field; Line crossing; Enter / leave field; Loiter- ing; Follow route; Counting; Occu- pancy; Condition change; Similarity search; Objects stopping or starting to move
Object filters	Duration; Size; Aspect ratio; Direc- tion; Color; Object classes
Object classes	Available by default: Person, Vehicle Available with optional IVA Pro: Bi- cycle, Motorcycle, Truck, Bus
Audio detection	Detection of audio to generate an alarm
Supported analytics	IVA Pro Perimeter (license); IVA Pro Traffic (license)
Night vision	
IR function	On; Off; Auto; Intelligent
Built-in IR (m)	45 m
Built-in IR (ft)	148 ft
IR intensity	Manually adjustable; Automatic
Wavelength (nm)	850 nm
Optical	
Lens type	3.2 to 10.5 mm
F-stop	1.6

P-iris

Yes

Iris control

IR corrected

Basic; Standard; Sodium vapor; Manual mode; Hold mode; 3 auto-

Day / Night	Switchable IR-cut filter
Zoom/focus control	Motorized
Horizontal field of view	105º - 31º
Vertical field of view	570 - 180

## Inputs and outputs

SMB connector, CVBS (PAL/NTSC), 1 Vpp, 75 Ohm, approx. 500 TVL
0.6 Vrms max, 10 kOhm typical
1.0 Vrms at 10 kOhm typical
Short or DC 3.3 V activation
40 VDC, max. load 1 A
Shielded RJ45
Built-in microphone; Line-in; Mic- level input
Line-out
G.711 8 kHz; L16 16 kHz; AAC-LC 80kbps 16 kHz; AAC-LC 48kbps 16 kHz
50 dB
Full duplex; Half duplex
5-s-pre-alarm-recording
Micro SDHC; Micro SDXC (a memory card of Class 6 or higher is recom- mended for HD recording)
32 GB for Micro SDHC; 2 TB for Mi- cro SDXC
Extreme lifetime and health monitor- ing support that provides early ser- vice indication (if supported by the SD card)
Continuous (ring); Scheduled; Alarm; Event

# Data security

Data security	
Crypto coprocessor (TPM)	AES/CBC 256 bit; RSA 4096 bit
РКІ	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
Capacity	
Alarm inputs	1
Alarm outputs	1
Number of RJ45 connections	1
Connectivity	
Number of USB ports	1 (USB 2.0 Type C, for use with wireless USB dongle for setup and commissioning, sold separately)
Network	
Ethernet type	10/100BASE-T; Auto-sensing; Full / half duplex
System integration	
Protocols / standards	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, MIBII); SNMP (V3, MIBII); 802.1x, EAP/ TLS; DNS; DNSv6; DDNS (DynDNS.org, selfHOST.de, no- ip.com); SMTP; iSCSI; UPnP (SSDP); DiffServ (QoS); LLDP; SOAP; CHAP; Digest authentication
Conformity	ONVIF Profile S; ONVIF Profile G; ONVIF Profile T; Auto-MDIX; ONVIF Profile M
Mechanical	
3-axis adjustment (pan / tilt / rota- tion)	355º / 85º / 350º

Dimensions (Ø x H) (mm)	148 mm x 122 mm
Dimensions (Ø x H) (in)	5.83 in x 4.80 in
Weight (g)	920 g
Weight (lb)	2.03 lb
Color	White, Black
Color in RAL	RAL 9003 Signal white, RAL 9017 Traffic black
Gyroscope	Yes
Bubble material	Clear polycarbonate, clear with anti- scratch and anti-reflection coating
Material	Polycarbonate, re-paintable
Mounting type	Surface-mounted (mount plate in- cluded); 4-inch square junction box, single and double gang box, 1/4-inch 20 UNC screw thread
Conduit	3/4-inch NPT(M25) and 1/2 -inch NPT (M20) conduit side entry
Environmental	
Operating temperature (°C)	-20 °C – 50 °C for continuous opera- tion
Operating temperature (°F)	-4 °F – 122 °F for continuous opera- tion
Cold start temperature (°C)	-20 °C
Cold start temperature (°F)	-4 °F
Storage temperature (°C)	-30 °C – 70 °C
Storage temperature (°F)	-22 °F − 158 °F
Operating relative humidity, non- condensing (%)	5% - 93%
Operating relative humidity, con- densing (%)	5% - 100%
Storage relative humidity (%)	0% - 98%
Impact protection	IK10
IP rating	IP54
Usage	Indoor
Sustainability	PVC-free

Country of origin	Taiwan
Ordering information	
NDV-5702-AL-GOV Fixed dome 2MP HDR 3.2-10.5mm IR I/O GOV Professional IP fixed dome camera for indoor 60 fps surveillance with H.264/H.265 and IVA Pro Buildings, 2 MP, IR, IP54, IK10 NDAA compliant TAA compliant Order number NDV-5702-AL-GOV	
Accessories NDA-5070-IC In-ceiling mount kit In-ceiling mount kit for FLEXIDOME indoor 5100i, FLEXIDOME indoor 5100i IR, FLEXIDOME outdoor 5100i, and FLEXIDOME outdoor 5100i IR Order number NDA-5070-IC	
NDA-5070-PLEN In-ceiling Plenum-rated in-ceiling mo FLEXIDOME indoor 5100i, FLEXIDOME outdoor 5100 FLEXIDOME outdoor 5100 Order number NDA-5070-I	ount kit for FLEXIDOME indoor 5100i IR, i, and i IR
NDA-5070-LWMT L shape 5100i L-shaped wall mount for F FLEXIDOME indoor 5100i FLEXIDOME outdoor 5100i FLEXIDOME outdoor 5100i FLEXIDOME IP 3000i IR Order number NDA-5070-I	IR, i, i IR, and
NDA-5080-PIP Pendant interface plate, 148mm Pendant interface plate for FLEXIDOME indoor 5100i, FLEXIDOME indoor 5100i IR, and FLEXIDOME panoramic 5100i IR Order number NDA-5080-PIP	
NDA-5070-PC Paintable cover, FLEXIDOME 5100i, 4pcs Paintable cover (4 pieces) for FLEXIDOME 5100i and FLEXIDOME 5100i IR Order number NDA-5070-PC	
NDA-5070-CBLI Bubble, clear for FLEXIDOME 5100i IR Clear replacement bubble for FLEXIDOME indoor 5100i IR and FLEXIDOME outdoor 5100i IR Order number NDA-5070-CBLI	
NDA-5070-TBLI Bubble, tinted for FLEXIDOME 5100i IR Tinted bubble for FLEXIDOME indoor 5100i IR and FLEXIDOME outdoor 5100i IR Order number NDA-5070-TBLI	
NDA-MCSMB-03M Cable, SMB to BNC, 0.3m 0.3 m (1 ft) analog cable, SMB (female) to BNC (female) to connect camera to coaxial cable Order number NDA-MCSMB-03M	

#### NDA-MCSMB-30M Cable, SMB to BNC, 3.0m

3 m (9 ft) analog cable, SMB (female) to BNC (female) to connect camera to coaxial cable Order number NDA-MCSMB-30M

NDA-U-CBB Conduit back box, 148mm Outdoor conduit back box, 148mm, IP66 rated Order number NDA-U-CBB

NDA-U-CMT Corner mount adapter

Universal corner mount. white Order number NDA-U-CMT

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-PSMB Pendant wall/ceiling mount SMB Surface mount box (SMB) for wall mount or pipe mount.

Order number NDA-U-PSMB

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

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

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

Order number NDA-U-PMTS

#### NPD-3001-WAP Portable installation tool

Bosch camera portable and wireless installation tool Order number NPD-3001-WAP

NPD-5001-POE Midspan, 15W, single port, AC in Power-over-Ethernet midspan injector for use with PoE enabled cameras; 15.4 W, 1-port Weight: 200 g (0.44 lb) Order number NPD-5001-POE

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#### NPD-5004-POE Midspan, 4 port x 15W, AC in

Power-over-Ethernet midspan injector for use with PoE enabled cameras; 15.4 W, 4-ports Weight: 620 g (1.4 lb) Order number NPD-5004-POE

MSD-064G IP SECURITY MICROSD CARD 64GB

64 GB industrial microSD card with health status monitoring

Order number MSD-064G

MSD-128G IP SECURITY MICROSD CARD 128GB 128 GB industrial microSD card with health status monitoring

## Order number MSD-128G

MSD-256G IP SECURITY MICROSD CARD 256GB

256 GB industrial microSD card with health status monitoring

Order number MSD-256G

#### MNT-ICP-FDC Drop ceiling support kit for FLEXIDOME

Suspension ceiling support kit for FLEXIDOME IP 2000/4000/5000/5100i/7000 (except RD series) and panoramic 5000/7000 series cameras Order number MNT-ICP-FDC

NCA-WLAN-EU Wireless installation dongle EU Wireless installation dongle for wireless commissioning Order number NCA-WLAN-EU

NCA-WLAN-NA Wireless installation dongle NA Wireless installation dongle for wireless commissioning for North America

Order number NCA-WLAN-NA

#### **Software Options MVC-IVA-PER IVA Pro Perimeter**

Video analytics software for mission-critical perimeter security.

Order number MVC-IVA-PER

#### **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

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