

# NDE-5702-AL Fixed dome 2MP HDR 3.4-10.2mm IR IO IP66 FLEXIDOME outdoor 5100i IR





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 IR illuminator with 45 m (148 ft) viewing distance

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

The camera comes with the IVA Pro Buildings Pack pre-installed 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 other packs can be licensed to optimize the camera analytics for specific enterprise use-cases with the IVA Pro Perimeter Pack or IVA Pro Traffic Pack.

#### 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 3.4-10.2 mm lens\*

DORI	DORI definition	Distance 10.2 mm / 3.4 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)

<sup>\*</sup>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 outdoor usage. The camera can operate in a wide ambient temperature range between -40 °C up to +55 °C (-40 °F up to +131 °F). The robust design of the camera is rated to IP66, NEMA 4X, 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 SMB 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 crossover cables.

#### **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

#### **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, and ONVIF Profile T specifications. For H.265 configuration, the camera supports Media Service 2, which is part of ONVIF Profile T. Compliance with these standards guarantees interoperability between network video products regardless of manufacturer. Third-party integrators can easily access the internal feature set of the camera for integration into large projects. Visit the Bosch Integration Partner Program (IPP) website (ipp.boschsecurity.com) for more information.

#### 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 fiber optic options, and an inceiling mounting kit.

#### IR Illumination

The device offers integrated smart 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 facilities (for example, Dropbox). 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.

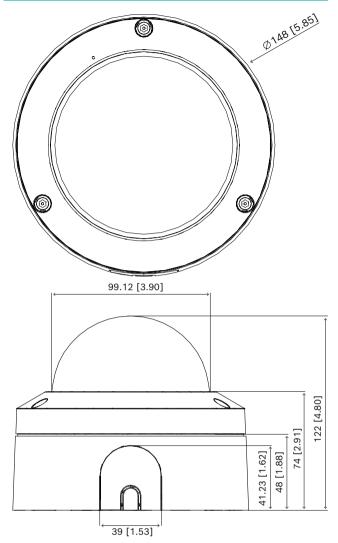
#### **Project Assistant app**

As the camera is equipped with a USB-C port for a wireless USB dongle (sold separately, available Q1 2023), the installer can easily perform the initial configuration wirelessly. Using a mobile device with the Bosch Project Assistant app, you can do initial setup 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 IV 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 EN/IEC/UL 60950-22 CAN/CSA-C22.2 No. 60950-22:17, Second Edition
Image performance	IEC 62676-5
Impact protection	EN 62262 (IK10): 2002
Ingress protection	EN 60529 (IP66) UL50E (NEMA Type 4X)
ONVIF conformance	EN 50132-5-2, EN 62676-2
IR lighting	IEC 62471
Marks	CE, FCC, UL, WEEE, RCM, VCCI, UKCA, China RoHS, BIS
Compliance	NDAA compliant

# Installation/configuration notes



Dimensions in mm (inch)

### **Parts included**

Quantity	Component
1	FLEXIDOME outdoor 5100i IR - 2 MP camera
1	T-20 security Torx Allen key
1	2-pin terminal block
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	Cable box
1	Safety information

Quantity	Component
1	Quick installation guide

# Technical specifications

#### **Electrical**

Input voltage (AC)	24 VAC ± 10%
Input voltage (DC)	12 VDC ± 10%
Power consumption PoE (W) (typical – maximum)	4.8 W - 7.3 W
Power consumption VDC (W) (typical – maximum)	4.08 W - 6.84 W
Power consumption VAC (W) (typical – maximum)	4.07 W - 6.75 W
PoE input	PoE IEEE 802.3af Type 1, Class 3

#### Sensor

Total sensor pixels (MP)	2 MP
Sensor type	1/2.8 inch CMOS
Effective pixels (H x V px)	1920 px x 1080 px

### Optical

Lens type	3.4 to 10.2 mm
F-stop	1.6
Iris control	P-iris
IR corrected	Yes
Day / Night	Switchable IR-cut filter
Zoom/focus control	Motorized
Field of View wide (°)	57° – 102°
Field of View tele (°)	18° - 31°

#### **Video functions**

Day/night modes	Auto (adjustable switch points); Color; Monochrome
Camera functionality	Mirror image; Rotation 90°; Rotation 180°; Flip image; Geolocation; Rotation 270° including upright mode; Backlight compensation (BLC); Sharpness enhancement; Pixel counter; Saturation;

Brightness; Video watermarking; Display stamping; Location; Electronic image stabilization (gyrobased)
2500 K – 10000 K
Basic; Standard; Sodium vapor; Manual mode; Hold mode; 3 automatic modes
Automatic Electronic Shutter (AES); 1/25 min; 1/15.000 max; Default shutter
8
Multiple default modes
0.0210 lx
0.0040 lx
0.0 lx
144 dB
105 dB
H.264 (ISO/IEC 14496-10); M- JPEG; H.265/HEVC
Multiple configurable streams in H.265; Configurable framerate and bandwidth; Region of Interest (ROI)
120 ms - 340 ms
IP; IBP; IBBP
1 fps – 60 fps
>55 dB
1920 x 1080; 1280 x 720; 768 x 432; 640 x 480; 1536 x 864; 720 x 480

# Video content analysis

video content analysis	
Analysis type	Intelligent Video Analytics Pro Buildings Pack
Alarm triggers	Any object; Object in field; Line crossing; Enter / leave field; Loitering; Follow route; Counting; Occupancy; Condition change; Similarity search; Objects stopping or starting to move
Object filters	Duration; Size; Aspect ratio; Direction; Color; Object classes (2)
Object classes	Person; Vehicle
Audio detection	Detection of audio to generate an alarm
Supported analytics	IVA Pro Perimeter Pack (license); IVA Pro Traffic Pack (license)
Night vision	
IR function	On; Off; Auto
Built-in IR (m)	45 m
Built-in IR (ft)	148 ft
IR intensity	Manually adjustable; Automatic
Inputs and outputs	
Analog video out	SMB connector, CVBS (PAL/NTSC), 1 Vpp, 75 Ohm, approx. 500 TVL
Audio line in	0.6 Vrms max, 10 kOhm typical
Audio line out	1.0 Vrms at 10 kOhm typical
Alarm input activation	Short or DC 3.3 V activation
Alarm output voltage	40 VDC, max. load 1 A
Ethernet	Shielded RJ45
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)
Audio	
Audio input	Built-in microphone; Line-in
Audio output	Line-out
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
Storage	
Internal RAM	5 s pre-alarm recording
Memory card slot	Micro SDHC; Micro SDXC (a memor card of Class 6 or higher is recommended for HD recording)
Memory card capacity (GB)	32 GB for Micro SDHC; 2 TB for Micro SDXC
Industrial SD cards	Extreme lifetime and health monitoring support that provides early service indication (if supporte by the SD card)
Recording mode	Continuous (ring); Scheduled; Alarm; Event
Data security	
Crypto coprocessor (TPM)	RSA 2048 bit; AES/CBC 256 bit; RSA 4096; ECDSA 256 bit
PKI	X.509 certificates
End-to-end encryption	Full end-to-end with supported VM
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

Firmware	
Common Product Platform	CPP14
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 / rotation)	355° / 85° / 350°
Dimension (Ø x H) (mm)	148 mm x 122 mm
Dimension (Ø x H) (in)	5.83 in x 4.8 in
Weight (g)	1130 g
Weight (lb)	2.49 lb
Color	White, Black
Color in RAL	RAL 9003 Signal white, RAL 9017 Traffic black
Gyroscope	Yes
Bubble material	Polycarbonate, clear with anti- scratch and antireflection coating
Material	Aluminum
Material finish	Dehumidifying membrane; Waterproof connection area
Mounting type	Surface-mounted (cable box included); 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)	-40 °C – 55 °C for continuous operation; Up to 74 °C according to NEMA TS2-2003 (R2008), para 2.1.5.1 using fig. 2.2.7.3~2.2.7.7 test profile
Operating temperature (°F)	-40 °F – 131 °F for continuous operation; Up to 165 °F according to NEMA TS2-2003 (R2008), para 2.1.5.1 using fig. 2.2.7.3~2.2.7.7 test profile
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, condensing (%)	5% - 100%
Storage relative humidity (%)	0% - 98%
Impact protection (EN 50102)	IK10
IP rating	IP66
Degree of protection (UL 50 NEMA)	4X
Usage	Outdoor
Sustainability	PVC-free
Country of origin	Thailand

#### **Ordering information**

# NDE-5702-AL Fixed dome 2MP HDR 3.4-10.2mm IR IO IP66

Professional IP fixed dome camera for outdoor 60 fps surveillance with H.264/H.265 and IVA Pro Buildings Pack, 2 MP, IR, IP66, IK10

NDAA compliant

Order number NDE-5702-AL | F.01U.394.559

#### **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 | F.01U.401.739

#### NDA-5070-PLEN In-ceiling plenum kit, 148mm

Plenum-rated in-ceiling mount kit for FLEXIDOME indoor 5100i, FLEXIDOME indoor 5100i IR, FLEXIDOME outdoor 5100i, and FLEXIDOME outdoor 5100i IR

Order number NDA-5070-PLEN | F.01U.399.151

# NDA-5070-PIPW Pendant interface plate with weather cap

Pendant interface plate including weather protector for FLEXIDOME outdoor 5100i and FLEXIDOME outdoor 5100i IR

Order number NDA-5070-PIPW | F.01U.399.154

# NDA-5070-LWMT L shape wall mount for FLEXIDOME 5100i

L-shaped wall mount for FLEXIDOME indoor 5100i, FLEXIDOME indoor 5100i IR, FLEXIDOME outdoor 5100i, FLEXIDOME outdoor 5100i IR, and FLEXIDOME IP 3000i IR

Order number NDA-5070-LWMT | F.01U.399.152

#### NDA-5070-PIP Pendant interface plate NDE-570\*

Pendant interface plate for FLEXIDOME outdoor 5100i, and FLEXIDOME outdoor 5100i IR

Order number NDA-5070-PIP | F.01U.399.146

## NDA-5070-PC Paintable cover, FLEXIDOME 5100i, 4pcs

Paintable cover (4 pieces) for FLEXIDOME 5100i and FLEXIDOME 5100i IR

Order number NDA-5070-PC | F.01U.399.153

#### 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 | F.01U.399.127

#### 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 | F.01U.399.149

#### 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 | F.01U.399.128

#### 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 | F.01U.399.126

#### NDA-U-CBB Conduit back box, 148mm

Outdoor conduit back box, 148mm, IP66 rated Order number NDA-U-CBB | F.01U.394.006

#### NDA-U-CMT Corner mount adapter

Universal corner mount, white

Order number NDA-U-CMT | F.01U.324.946

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

Pole mount adapter small

Universal pole mount adapter, white; small. Order number **NDA-U-PMAS | F.01U.324.943** 

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

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

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

Surface mount box (SMB) for wall mount or pipe mount. Order number **NDA-U-PSMB | F.01U.324.942** 

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

Universal wall mount for dome cameras, white Order number NDA-U-WMT | F.01U.324.939

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

Universal wall mount, compatible with gang box installation for fixed dome cameras only, white Order number NDA-U-WMTG | F.01U.358.358

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

Universal pipe mount for dome cameras, 31 cm, white Order number NDA-U-PMT | F.01U.324.940

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

Extension for universal pipe mount, 50 cm, white Order number **NDA-U-PMTE** | **F.01U.324.941** 

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

Universal pipe mount, compatible with gang box installation for fixed dome cameras only, white Order number NDA-U-PMTG | F.01U.358.359

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

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

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

#### NDA-U-RMT Pendant parapet mount

Universal roof mount for dome cameras, white Order number NDA-U-RMT | F.01U.324.945

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

Surveillance cabinet, 24 VAC input, 24 VAC output, IP66 Order number **NDA-U-PA0 | F.01U.324.947** 

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

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

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

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

Surveillance cabinet, 230 VAC input, 24 VAC output, IP66 Order number **NDA-U-PA2 | F.01U.324.949** 

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

Bosch camera portable and wireless installation tool Order number NPD-3001-WAP | F.01U.353.329

#### 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 | F.01U.305.288

#### 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 | F.01U.305.289

#### MSD-064G IP SECURITY MICROSD CARD 64GB

64 GB industrial microSD card with health status monitoring

Order number MSD-064G | F.01U.394.680

#### MSD-128G IP SECURITY MICROSD CARD 128GB

128 GB industrial microSD card with health status monitoring

Order number MSD-128G | F.01U.394.681

#### MSD-256G IP SECURITY MICROSD CARD 256GB

256 GB industrial microSD card with health status monitoring

Order number MSD-256G | F.01U.394.682

# MNT-ICP-FDC Drop ceiling suppport 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 | F.01U.316.129

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