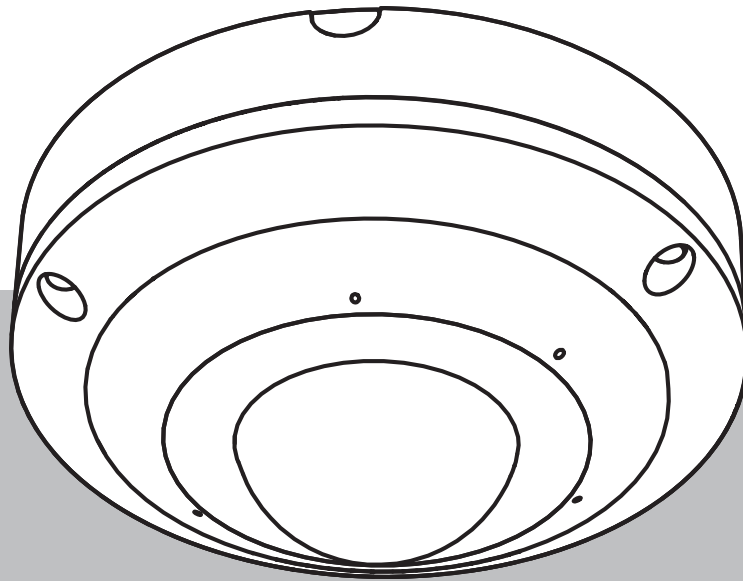




BOSCH

FLEXIDOME panoramic 5100i IR

NDS-5703-F360LE | NDS-5704-F360LE



en

Installation manual

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1 Safety

Read, follow, and retain for future reference all of the following safety instructions. Follow all warnings before operating the device.

1.1 Safety message explanation

In this manual, the following symbols and notations are used to draw attention to special situations:

**Danger!**

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

**Warning!**

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

**Caution!**

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

**Notice!**

Indicates a situation which, if not avoided, could result in damage to the equipment or environment, or data loss.

1.2 Safety precautions

**Caution!**

Installation should only be performed by qualified service personnel in accordance with the National Electrical Code (NEC 800 CEC Section 60) or applicable local codes.

1.3 Important safety instructions

- To clean the device, do not use liquid cleaners or aerosol cleaners.
- Do not install the device near any heat sources such as radiators, heaters, stoves, or other equipment (including amplifiers) that produce heat.
- Do not spill liquids on the device before installation is completed.
- Take precautions to protect the device from power and lightning surges.
- Adjust only those controls specified in the operating instructions.
- Operate the device only from the type of power source indicated on the label.
- Unless qualified, do not attempt to service a damaged device yourself. Refer all servicing to qualified service personnel.
- Install in accordance with the manufacturer's instructions in accordance with applicable local codes.
- Use only attachments/accessories specified by the manufacturer.
- Protect all connection cables from possible damage, particularly at connection points.
- When using a Class I adapter with your product, the power cord shall be connected to a socket-outlet with a connection to ground.

- The Low Voltage power supply unit used must comply with EN 62368-1.
- For PoE connections, the adapter shall be rated 55 VDC, 0.50 A minimum, with an ambient operating temperature of at least 55°C.
- NDS-5703-F360LE, NDS-5704-F360LE: the adapter shall have the following requirements:
 - the adapter shall be rated 12 VDC, 1.12 A minimum; or
 - the adapter shall be rated 24 VAC, 60 Hz, 0.70 A minimum
- NDS-5703-F360LE, NDS-5704-F360LE: when your product is powered by a power adapter, the adapter shall be powered by a Listed Power Adapter, or DC power source, marked **L.P.S.** - Limited Power Source.

1.4

Notices

UL Disclaimer

Underwriter Laboratories Inc. ("UL") has not tested the performance or reliability of the security or signaling aspects of this product. UL has only tested fire, shock and/or casualty hazards as outlined in Standard(s) for Safety for Information Technology Equipment, UL 60950-1, UL 62368-1, UL 60950-22. UL Certification does not cover the performance or reliability of the security or signaling aspects of this product.

UL MAKES NO REPRESENTATIONS, WARRANTIES, OR CERTIFICATIONS WHATSOEVER REGARDING THE PERFORMANCE OR RELIABILITY OF ANY SECURITY OR SIGNALING-RELATED FUNCTIONS OF THIS PRODUCT.

FCC statement (USA)

1. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
 - This device may not cause harmful interference.
 - This device must accept any interference received, including interference that may cause undesired operation.
2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FLEXIDOME panoramic 5100i IR: NDS-5703-F360LE and NDS-5704-F360LE.

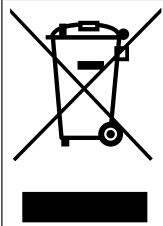
Responsible party

Bosch Security Systems Inc
130 Perinton Parkway
14450 Fairport, NY, USA
www.boschsecurity.us

The manufacturing datecodes of the products are explained in:
<http://www.boschsecurity.com/datecodes>

IC statement (Canada)

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Old electrical and electronic equipment

This product and/or battery must be disposed of separately from household waste. Dispose such equipment according to local laws and regulations, to allow their reuse and/or recycling. This will help in conserving resources, and in protecting human health and the environment.

2 Short information

This manual has been compiled with great care and the information it contains has been thoroughly verified. The text was correct at the time of publication, however, the content can change without notice. Bosch Security Systems accepts no liability for damage resulting directly or indirectly from faults, incompleteness or discrepancies between this manual and the product described.

Copyright

This manual is the intellectual property of Bosch Security Systems and is protected by copyright.

All rights reserved.

Trademarks

All hardware and software product names used in this document are likely to be registered trademarks and must be treated accordingly.

More information

For more information please contact the nearest Bosch Security Systems location or visit www.boschsecurity.com.



<https://www.boschsecurity.com/xc/en/product-catalog/>

3 System overview

3.1 Product description

The FLEXIDOME panoramic 5100i IR camera is built for high-quality performance, featuring 360° panoramic overview in 6MP and 12MP resolution without blind spots. The camera offers full situational awareness and simultaneous high-resolution zoomed-in images. The high-end system on chip (SoC) provides dewarping for easy integration and flexible viewing and recording. The camera's integrated IR provides the flexibility to control IR intensity in multiple zones to prevent IR saturation. Additionally, with its wide range of inputs and outputs, such as Alarm and HDMI, it can be used for any application.

3.2 Intended use

The camera is designed to be integrated in professional IP video surveillance solutions as a surveillance camera. Installation, commissioning and operation of the camera shall be carried out by trained professionals only.

The use of surveillance cameras is restricted by national laws and regulations. Use the camera accordingly.

3.3 Using the camera

To access the features of the camera, use a web browser. The browser provides live viewing of the camera streams in the interface window, and also allows you to access and change the extensive list of settings and parameters for camera configuration. Refer to the software manual for more information on the browser interface.

The camera recording and storage functions include local alarm recording and recording to iSCSI-based systems. The camera can also use the Bosch Video Recording Manager (VRM) to control recording and storage. Integration with the many Bosch recording solutions is seamless.

3.4 Operation with external systems

The web browser is the most direct way of using the camera, however, the Bosch download store provides several other free applications (listed below) for viewing and controlling the camera.

Download store

Download the latest applications and firmware from:

<http://downloadstore.boschsecurity.com/>

Configuration Manager

Use the Configuration Manager application to configure general Video Client settings like the default path for workstation recording or the use of an IntuiKey keyboard.

If you decide to work with a pre-configured monitoring system, use the Configuration Manager application to set up your monitoring system:

- Easily configure basic system settings with the integrated configuration wizard
- Manage user groups and rights
- Add devices to your system and arrange them in groups

Video Security Client

The Video Security Client is a free, easy-to-use video-surveillance application provided by Bosch for local and remote monitoring of IP cameras and appliances. The software supports up to 16 cameras.

The Video Security Client has extensive dewarping capabilities and can be used for client-side dewarping as well as for viewing the available modes.

Bosch Video Client

The Bosch Video Client is a free Windows application to view, operate, control, and administer surveillance cameras and installations at remote locations. It offers a user-friendly interface for easy live viewing of multiple cameras, playback, forensic search and export.

4 Planning information



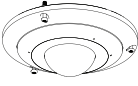
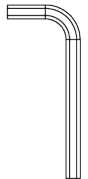
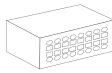




4.1 Unpacking



This equipment should be unpacked and handled with care. If an item appears to have been damaged in shipment, notify the shipper immediately.

Verify that all parts are included. If any items are missing, notify your Bosch Security Systems sales or customer service representative.

The original packaging is the safest container in which to transport the unit and can be used if returning the unit for service.

4.2 Parts included

	Quantity	Component
	1	Mounting plate
	1	Camera base
	1	Camera dome cover
	1	TR20 Allen key for camera installation
	1	8-pin Audio and I/O connector
	1	2-pin power connector
	1	RJ-45 punch-through aid
	2	M20 rubber grommets (preassembled in the camera base)
	1	Quick installation guide

	Quantity	Component
	1	Safety information
	3	Identification labels

4.3 Preparation

Before installation, prepare and plan the installation process and materials needed.

Pre-requisites

- Remove the components from the box. Make sure that all parts are included and are not damaged.
- The necessary material and equipment:
 - 4 screws M4 or no. 7.
 - Appropriate size power drill.
 - Screwdriver and bit holder and TR20 bit, or use the provided TR20 Allen key.
 - microSD card (optional)

4.4 Network and PoE



Notice!

Use only PoE IEEE 802.3at / 802.3af Type 1, Class 3 approved devices.

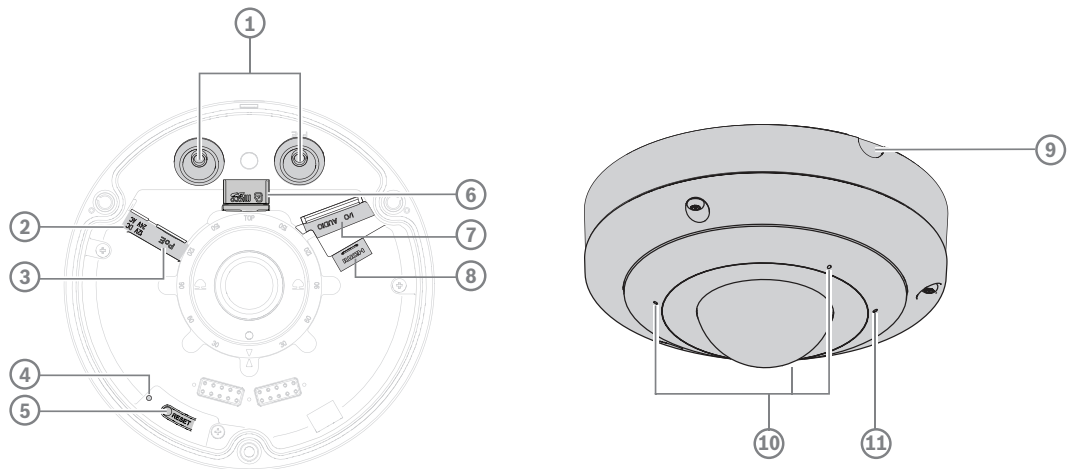
Power-over-Ethernet (PoE) can be connected at the same time as a 24 VAC and 12 VDC power supply. If auxiliary power and PoE is applied simultaneously, the camera draws its power from PoE by default, and seamlessly switches to auxiliary input if PoE fails.

When PoE returns, the camera seamlessly switches back to PoE as its default power source.

Cables

For cable requirements, refer to Wiring the camera base.

5 Installation



1	M20 Grommets	2	Power input
3	RJ45 connector	4	Activity LED interior
5	Reset button	6	MicroSD card slot
7	Alarm and Audio	8	Micro HDMI
9	Cable side-entry door	10	3-microphone array
11	Activity LED exterior		

5.1 Installing the camera base

5.1.1 Before the installation

Remove the camera base from the box.

Local storage



Notice!

Bosch recommends the use of industrial micro SD cards with health monitoring.

To install the micro SD card:

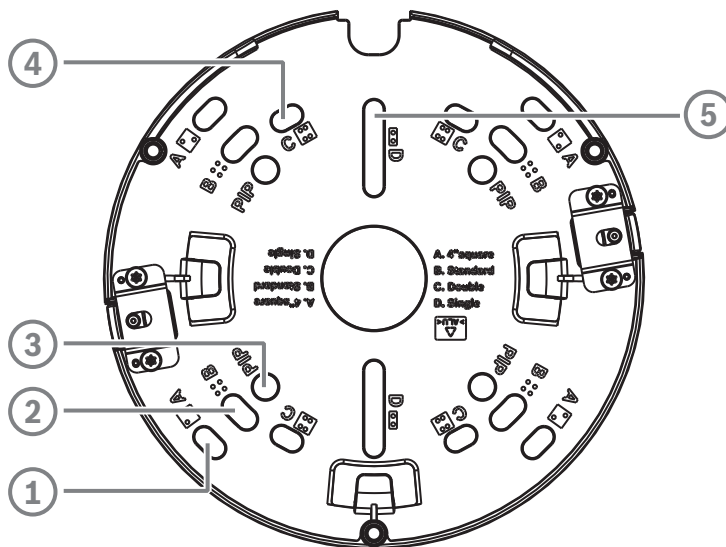
1. Install a micro SD card in the micro SD slot using the TR15 tool.
2. Press the micro SD card firmly until it latches into place in the slot.

To remove the micro SD card:

1. Press the micro SD card into the slot until it unlatches again.
2. Remove the card from the SD slot.
3. Close the lock again with TR15 tool.

5.1.2 Installing the mounting plate

The mounting plate is used to fix the camera to a flat surface or together with a mounting accessory. It offers different holes and slots for a variety of mounting options.



<p>1 A Mounting holes for 4 inch or 4S electrical box installation. There are four mounting holes available on the mounting plate, but you need only two for the installation. You can install the mounting plate in different orientations.</p>	<p>2 B Mounting holes for standard wall or ceiling installation. Use four screws. If required, use plugs (for concrete walls/ceilings).</p>
<p>3 PIP Mounting holes for installation with NDA-5080-PIP and NDA-5080-PIPW. Required screws are provided with NDA-5080-PIP and NDA-5080-PIPW.</p>	<p>4 C Mounting holes for double gang box installation. Align the mounting plate with the four screw holes in the electrical gang box.</p>
<p>5 D Mounting holes for single gang box. Align the two slotted holes on the mounting plate with the two screw holes in the electrical gang box.</p>	

Additionally, the camera can cover various mounting options when combined with the available accessories. Refer to Optional mounting accessories for the available accessories.



Notice!

The plugs and screws for surface mounting are not supplied with the camera.

1. Position the mounting plate with the center hole on top of the cable exit on the surface.

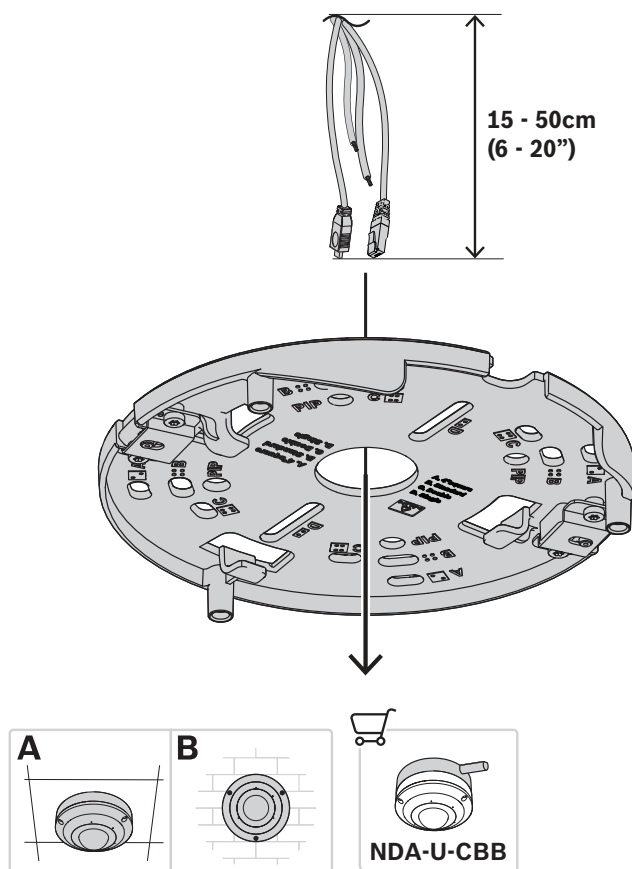
2. Mark the positions of the screw holes on the surface.

Note: For standard installation, use the mounting holes marked with a B on the mounting plate. For a different installation, for example for an installation on an electrical box, use different mounting holes. For more information, refer to the table above.



Notice!

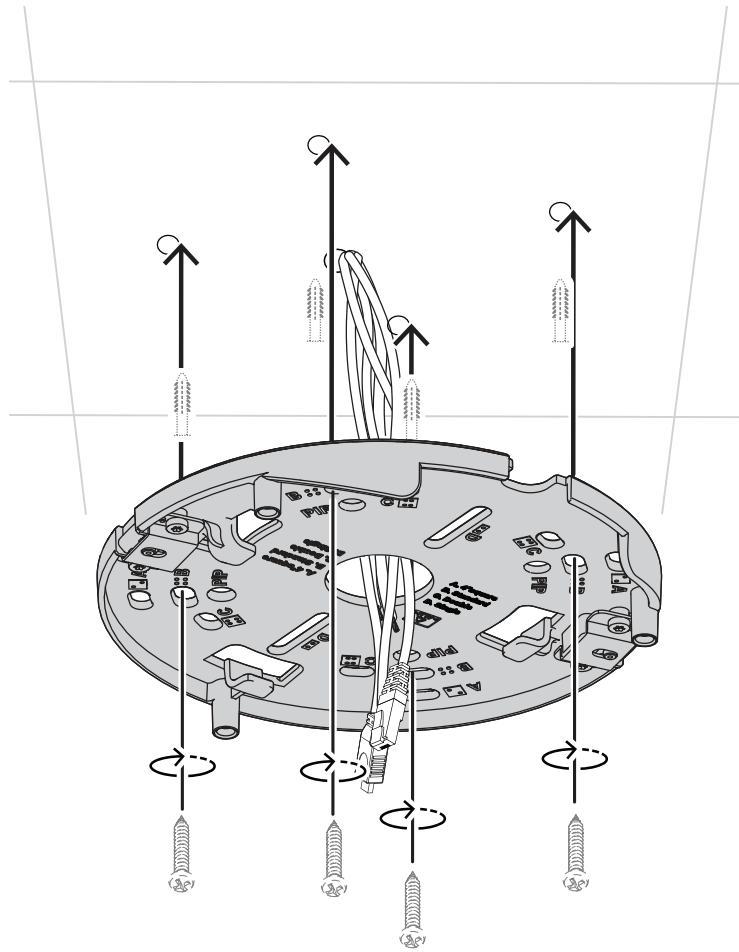
If you need more space for cables, NDA-U-CBB provides additional space underneath the camera for wiring and cables.

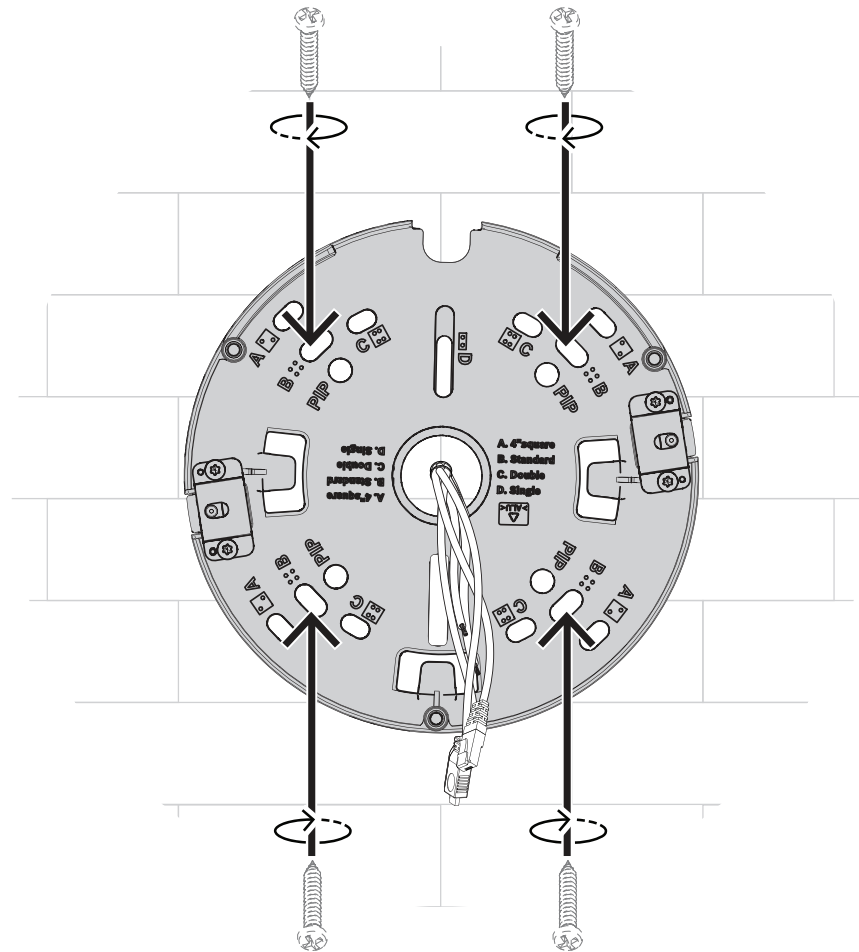


3. Pull the cable through the center hole of the mounting plate.

Note: If the cable is not coming out the wall, but along the wall, then the mounting plate needs to be installed in line with the cable. That way the cable won't come through the center hole. The mounting plate has one side available for side entry of a cable. Remove the door on the camera base.

4. If you are installing on a concrete wall/ceiling, use an appropriate size drill and screws.
Note: Allow 15-50 cm (6-20 inch) cable length to ensure proper installation and to prevent excessive cable length. If you are using 4S box or installing on wood, this step is not needed.



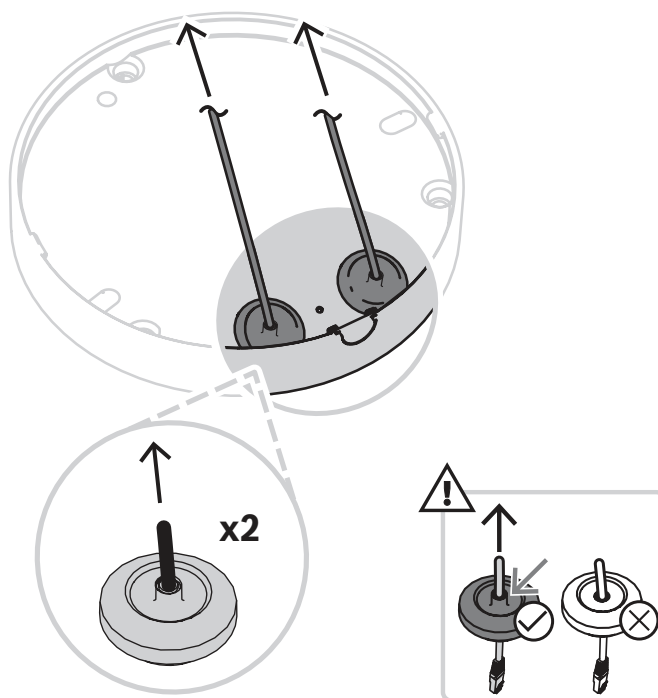


In order to ensure proper wall installation with the Bosch logo showing up straight on top, the mounting plate needs to be install as shown above.

5.1.3

Installing the camera base

1. Put the RJ-45 punch-through aid on the network cable.
2. Remove the tube(s) from the M20 rubber grommet(s).
3. Put one M20 rubber grommet on the tip of the RJ-45 punch-through aid.
4. If auxiliary connection cables are used, pull it through the other cable inlet. Only one cable per grommet to ensure watertight installation.
5. Slightly pull back the M20 rubber grommets on both cables to make sure that the grommet sleeve faces the source of the cables.
6. Fix the M20 rubber grommets in both cable inlets to make sure that the cable inlets are firmly closed.



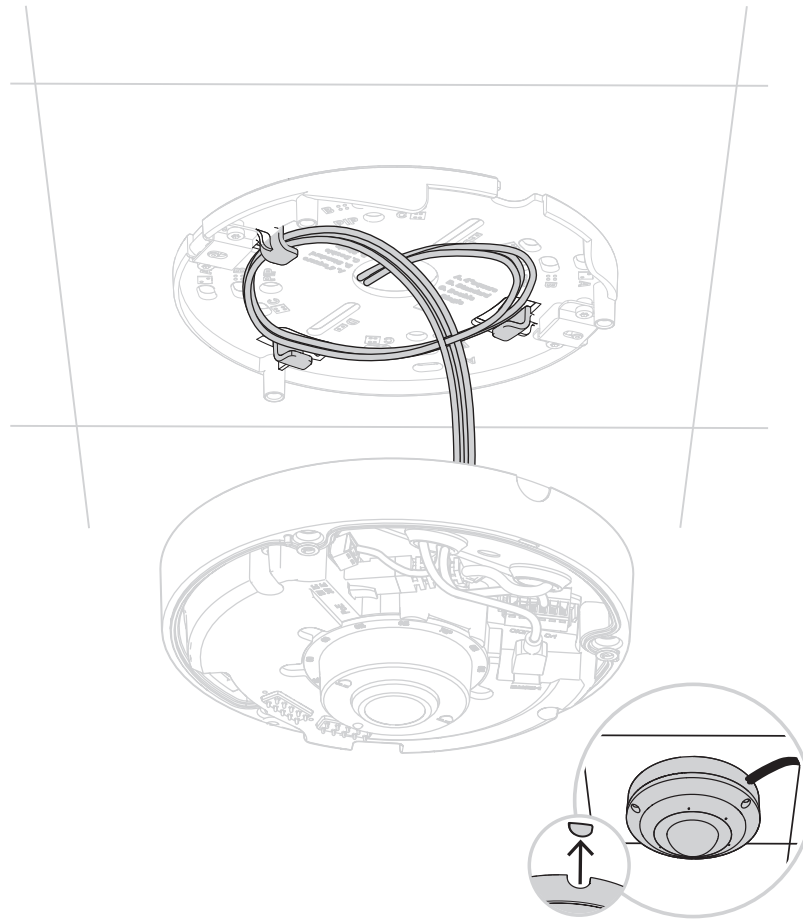
7. Connect the network cable to the network connector in the camera.



Notice!

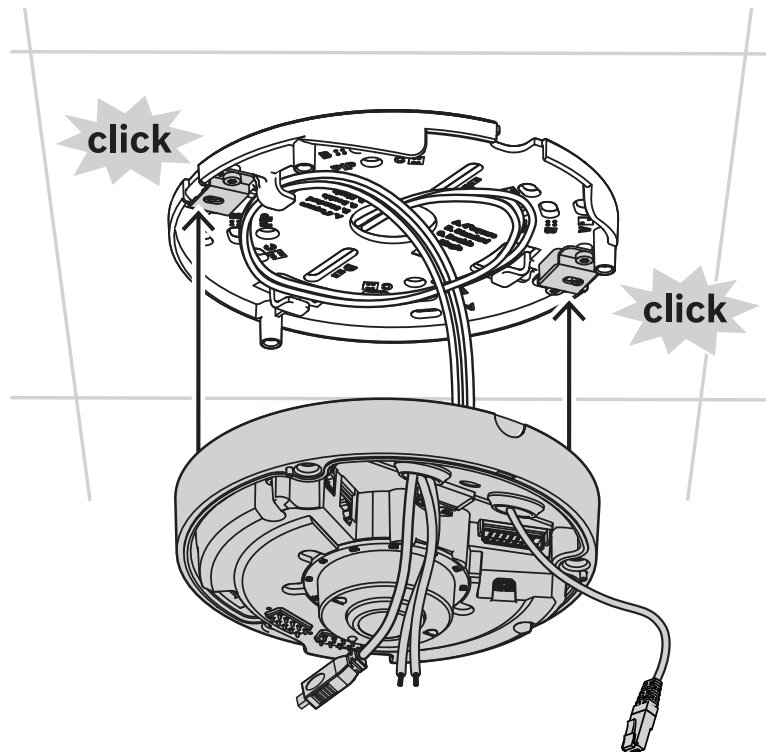
To ensure proper watertight installation, the cable entry marked with PoE needs to be used for RJ45/PoE cable.

8. If used, connect the audio and alarm wires to the 8-pin Audio and I/O connector. The camera Audio input only accepts line level input. Direct connection of a passive microphone input is not supported.
9. Use a micro HDMI connector in order to connect the camera directly to a Public View Monitor with HDMI input for retail usage or for local video display.
10. If required, make a loop with the cable on the hooks of the mounting plate.

**Notice!**

Remove the side entry door, if a cable comes from outside the camera. The side entry door can stay in place, if a cable comes from the back.

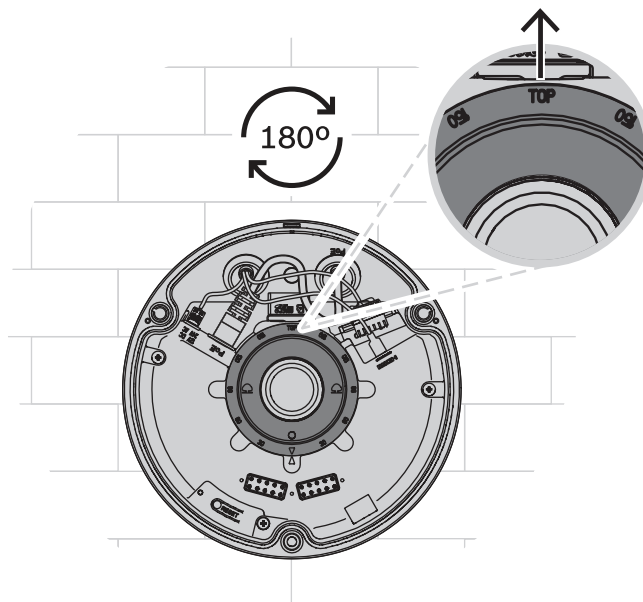
11. Position the camera base on the mounting plate, so that the screw holes of camera base and mounting plate match.
12. Slightly press the camera base onto the mounting plate until you hear/feel a click.
13. Make sure that the camera base is secured.



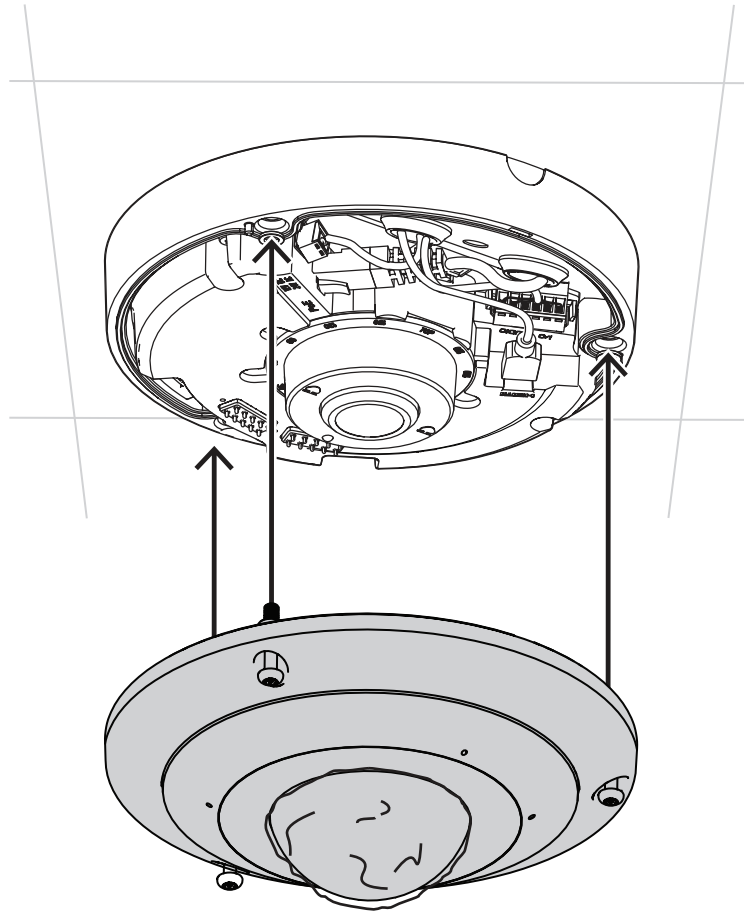
5.2

Installing the camera dome cover

1. On the wall mount scenario, confirm that the lens module marking “TOP” is facing up. If not, turn the lens module in the correct orientation to ensure the images shows up correctly in the system or browser.



2. Put the camera cover on the camera base in the right orientation.
Note: Red arrows are printed on both parts to indicate the right orientation.
3. Tighten the screws in the camera cover using the supplied TR20 allen key.



4. Remove the protective foil.

5.3 Removing the camera

Follow the below steps in case the camera needs to be removed or opened:

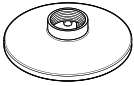
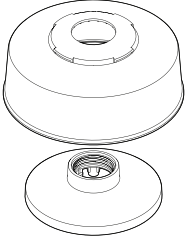

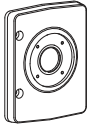
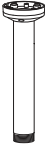


1. Untighten the three captive screws in the camera.
2. Disconnect the Ethernet cable.
3. Take out the grommets.
4. Hold the camera base and give it a sudden snap to release the click hooks.
5. Remove the camera.

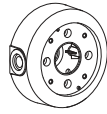
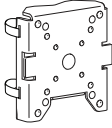
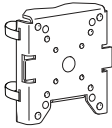
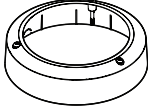

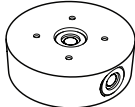
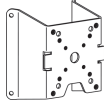


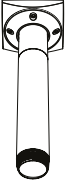

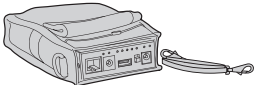
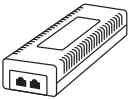

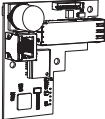
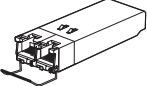
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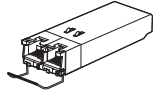
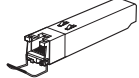
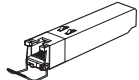
The box comes with the mounting plate, camera base and camera dome cover separated. In case you click the mounting plate into the camera base, place one finger in the center hole of the mounting plate, and hold the camera base with the other hand. Then give an instant pull to the mounting plate to release the two click hooks on the mounting plate.

5.4 Optional mounting accessories

NDA-5080-PIP	Pendant interface plate, 148mm	
NDA-5080-PIPW	Pendant interface plate, 148mm	
NDA-U-WMT	Pendant wall mount	
NDA-U-WMP	Wall mount plate	
NDA-U-PMT	Pendant pipe mount, 12" (31cm)	
NDA-U-PMTE	Pendant pipe extension, 20" (50cm)	
NDA-U-PMTS	Pendant pipe mount, 4" (11 cm)	

NDA-U-PSMB	Pendant wall/ceiling mount SMB	
NDA-U-PMAS	Pole mount adapter small	
NDA-U-PMAL	Pole mount adapter large	
NDA-5080-PC	Paintable cover, F360E, 4pcs	
NDA-5080-TM	Tilt mount 20-deg, 148mm	
NDA-U-CBB	Conduit back box, 148mm	
NDA-U-CMT	Corner mount adapter	

NDA-U-PMTG	Pendant pipe mount, gang box	
NDA-U-WMTG	Pendant wall mount, gang box	
NPD-3001-WAP	Portable installation tool	
NPD-5001-POE	Midspan, 15W, single port, AC in	
NPD-5004-POE	Midspan, 4 port x 15W, AC in	
VG4-SFPSCKT	Ethernet to SFP interface kit	
SFP-2	Fiber module, multimode, 1310nm, 2LC	

SFP-3	Fiber module, single-mode, 1310nm, 2LC	
SFP-25	Fiber module, 1310/1550nm, 1SC	
SFP-26	Fiber module, 1550/1310nm, 1SC	

6 Configuration

6.1 Browser connection

A computer with a web browser (Google Chrome, Microsoft Edge, or Mozilla Firefox) is used to receive live images, control the unit, and replay stored sequences. The unit is configured over the network using the browser.

6.1.1 Establishing the network

The unit must have a valid IP address to operate on your network and a compatible subnet mask.

By default, DHCP is pre-set at the factory to **On plus Link-Local** so a DHCP server assigns an IP address or, if no DHCP server is available, a link-local address (auto-IP) is assigned within the range 169.254.1.0 to 169.254.254.255.

You can use the Configuration Manager to find the IP address. Download the software from <http://downloadstore.boschsecurity.com>.

1. Start the Web browser.
2. Enter the IP address of the unit as the URL.
3. During initial installation, confirm any security questions that appear.

6.1.2 Protected network

If a RADIUS server is used for network access control (802.1x authentication), the unit must be configured first. To configure the unit, connect it directly to a computer using a network cable and configure the two parameters, **Identity** and **Password**. Only after these have been configured can communication with the unit via the network occur.

7 Troubleshooting

7.1 Resolving problems

The following table is intended to help identify the causes of malfunctions and correct them where possible.

Malfunction	Possible causes	Solution
Unit does not operate.	Power failure.	Check power supply. Check if PoE, 12 V or 24 V auxiliary input is used.
	Faulty cable connections.	Check all cables, plugs, contacts and connections.
No connection established, no image transmission.	Incorrect unit configuration.	Check all configuration parameters (reset to factory default if necessary).
	Faulty installation.	Check all cables, plugs, contacts and connections.
	Wrong IP address.	Check the IP addresses (ping).
	Faulty data transmission within the LAN.	Check the data transmission with ping.
	The maximum number of connections has been reached.	Wait until there is a free connection and call the transmitter again.
The unit is not operational after a firmware upload.	Power failure during programming by firmware file.	Have the unit checked by Customer Service and replace if necessary.
	Incorrect firmware file.	Enter the IP address of the unit followed by /main.htm in your Web browser and repeat the upload. Only use CPP14 firmware files.
Web browser contains empty fields.	Active proxy server in network.	Create a rule in the local computer's proxy settings to exclude local IP addresses.

7.2 Testing the network

The ping command can be used to check the connection between two IP addresses. This allows testing whether a device is active in the network.

1. Open the DOS command prompt.
2. Type `ping` followed by the IP address of the device.

If the device is found, the response appears as "Reply from ... ", followed by the number of bytes sent and the transmission time in milliseconds. Otherwise, the device cannot be accessed via the network. This might be because:

- The device is not properly connected to the network. Check the cable connections in this case.
- The device is not correctly integrated into the network. Check the IP address, subnet mask, and gateway address.

7.3 Customer service

If a fault cannot be resolved, please contact your supplier or system integrator, or go directly to Bosch Security Systems Customer Service.

The version numbers of the internal firmware can be viewed on a service page. Please note this information before contacting Customer Service.

1. In the address bar of your browser, after the unit IP address, enter: /version
for example: 192.168.0.80/version
2. Write down the information or print out the page.

8 Maintenance

8.1 Cleaning

Lens cleaning

It is important to keep the lens clean to ensure optimum performance. Dust, grease, or fingerprints should be removed from the lens surface. When cleaning the lens, take extra care not to damage the special coating used to reduce light reflections.

- Remove dust with a blower-brush or grease-free soft brush.
- Wipe water drops off the lens with a clean soft lint-free cloth and dry the lens surface.
- Use special lens cleaning paper or cloth treated with lens cleaning fluid to gently wipe off any remaining dirt (wipe spirally from the lens center towards the edge).

8.2 Repair

The unit does not contain any user-serviceable parts. Refer all repairs to suitable qualified specialists.

8.3 Reset

To restore the unit of its original settings, push the reset button for 10 seconds. Any changes to the settings are overwritten by the factory defaults. A reset may be necessary, for example, if the unit has invalid settings that prevent it from functioning as desired.

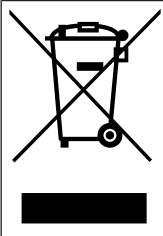
9 Decommissioning

9.1 Transfer

The device should only be passed on together with this Installation manual.

9.2 Disposal

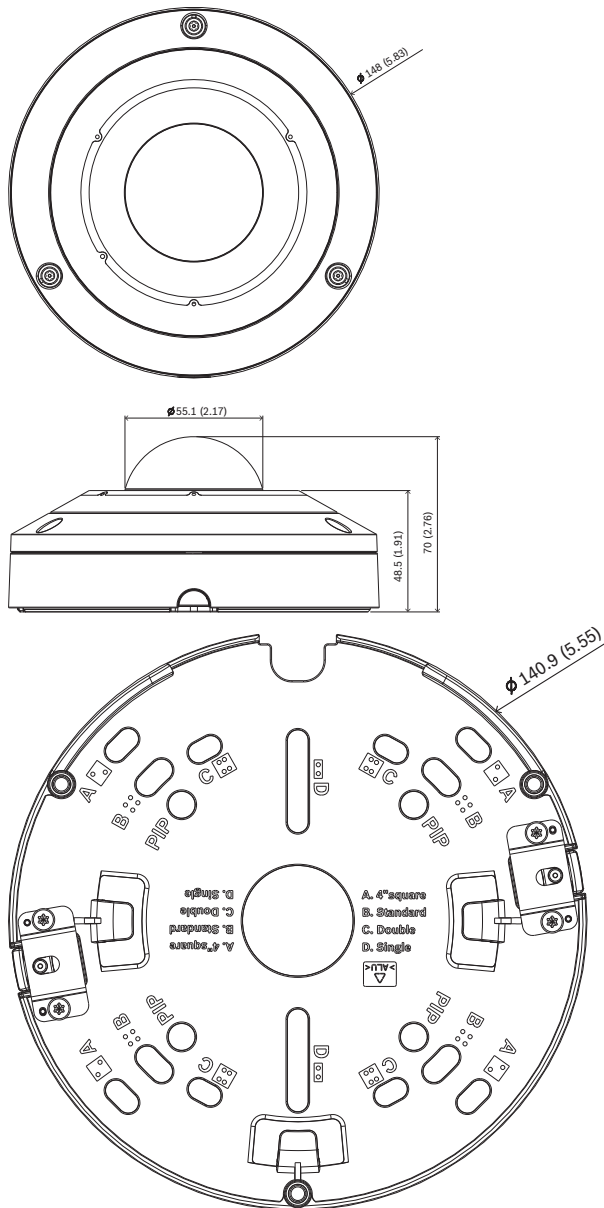
Old electrical and electronic equipment



This product and/or battery must be disposed of separately from household waste. Dispose such equipment according to local laws and regulations, to allow their reuse and/or recycling. This will help in conserving resources, and in protecting human health and the environment.

10 Technical data

10.1 Dimensions



Dimensions in mm (inch)

10.2 Specifications

Power	
Input voltage	PoE IEEE 802.3af / 802.3at Type 1, Class 3 24 VAC $\pm 10\%$ 12 VDC $\pm 10\%$ PoE and auxiliary power can be connected simultaneously for redundant operation
Power consumption (DC)	13.4 W max.
Power consumption (AC)	13.3 W max.

Power	
Power consumption (PoE)	11.4 W max.
Sensor	
Total sensor pixels	6 MP
Type (6 MP)	1/1.8-inch CMOS
Used pixels (6 MP)	2112 x 2112 (4.5 MP)
Total sensor pixels	12 MP
Type (12 MP)	1/2.3 inch CMOS
Used pixels (12 MP)	3008 x 3008 (9 MP)
Video performance - Sensitivity	
Measured according to IEC 62676 Part 5 (1/25, F2.0)	
Color (6 MP)	0.099 lx
Mono (6 MP)	0.008 lx
With IR (6 MP)	0 lx
Color (12 MP)	0.150 lx
Mono (12 MP)	0.048 lx
With IR (12 MP)	0 lx
Video performance - Dynamic range	
Wide Dynamic Range (6 MP)	120 dB WDR
Measured according to IEC 62676 Part 5 (6 MP)	105 dB WDR
Wide Dynamic Range (12 MP)	120 dB WDR
Measured according to IEC 62676 Part 5 (12 MP)	106 dB WDR
Video streaming	
Video compression	H.265; H.264; M-JPEG
Streaming	Multiple configurable streams in H.265, H.264 and M-JPEG, configurable frame rate and bandwidth. Multiple channels with edge dewarping (available with a future firmware version) Regions of Interest (ROI)
Overall IP Delay	Min. 120 ms, Max. 340 ms
GOP structure	IP, IBP, IBBP
Frame rate (6 MP)	1-30fps
Frame rate (12 MP)	1-30fps 1-25fps in HDR mode

Video streaming		
Encoder regions	Eight independent areas for setting encoder quality to optimize bitrate.	
Video resolution (H x V)		
Video 1 channel	Full image circle	6 MP: 2112 x 2112 (4.5 MP) 12 MP: 3008 x 3008 (9 MP)
Video 2 channel (available with a future firmware version)	Various dewarped modes (Full panoramic, double panoramic, quad, corridor, E-PTZ)	
Video 3 channel (available with a future firmware version)	E-PTZ	
Multiple lower resolutions available and individually selectable per channel and stream		
Video functions		
Day/Night	Color, Monochrome, Auto (adjustable switchover points)	
Adjustable picture settings	Contrast, Saturation level and control, Brightness, Sharpness	
White Balance	2500 to 10000K, 3 automatic modes (Basic, Standard, Sodium vapor), Manual mode and Hold mode	
Shutter	Automatic Electronic Shutter (AES) Default shutter (1/30 [1/25] to 1/500) selectable	
Backlight compensation	Off / On	
Noise reduction	Dynamic Noise Reduction	
Privacy Masking	Eight independent areas, fully programmable	
Scene modes	Multiple default modes with scheduler	
Pre-positions	Six independent sectors (available with a future firmware version)	
Display stamping	Individual names and stamps for all video channels	
Other functions	Pixel counter, Video watermarking, Location	
Video content analysis		
Analysis type	Intelligent Video Analytics, Camera Trainer	
Alarm rules (combinable)	Any object, Object in field, Line crossing, Enter / leave field, Loitering, Follow route, Idle / removed object, Counting, Occupancy, Crowd density estimation, Condition change, Similarity search, Flow / counter flow	
Object filters	Duration, Size, Aspect ratio, Speed, Direction, Color, Object classes (4)	

Video content analysis	
Tracking modes	Standard (2D) tracking, 3D tracking, 3D people tracking, Ship tracking, Museum mode
Object classes	Person, car, bike, truck
Calibration / Geolocation	Automatic, based on gyro sensor and camera height
Audio AI	Gunshot detection, glass-break detection, loud noises detection (available with a future firmware version)

Night vision	
Distance	20 m (66 ft)
LED	360° LED high efficiency array, 850 nm
IR intensity	5 controllable zones

Optical	
Lens	1.155 mm fixed-focus lens F2.0 (6 MP) 1.26 mm fixed-focus lens F2.0 (12 MP)
Lens mount	Board mounted
Iris control	Fixed iris
Day/Night	Switchable IR-cut filter
Field of view	182° (H) x 182° (V)
Minimum object distance	0.1 m

Local storage	
Internal RAM	5 s pre-alarm recording
Memory card slot	Micro SDXC / SDHC / SD card
Industrial SD cards	Extreme lifetime and health monitoring support (if supported by the SD card) that provides early service indication.

Input/output	
Audio line in	0.707 Vrms max, 10 kOhm typical
Audio line out	0.707 Vrms at 16 Ohm typical
Alarm input	1 input
Alarm input activation	Short or DC 5V activation
Alarm output	1 output
Alarm output voltage	30 VDC, max. load 0.5 A
Video output for HDMI-compatible devices	Micro HDMI connector and 1080p resolution with dewarped viewing possibilities (dewarped viewing available with a future firmware version)
Microphone	Integrated array with 3 digital MEMS audio sensors

Input/output	
Ethernet	RJ-45
Fiber optics (sold separately)	The Fiber Optic Ethernet Media Converter kit (VG4-SFPSCKT) installed inside a Surveillance Cabinet (NDA-U-PA0, NDA-U-PA1 or NDA-U-PA2) provides the fiber optic interface to the mounted camera.
Audio streaming	
Standard	G.711, 8 kHz sampling rate L16, 16 kHz sampling rate AAC-LC, 96 kbps at 32/48 kHz sampling rate
Signal-to-Noise Ratio	>50 dB
Audio Streaming	Full-duplex / half duplex
Platform	
Common product platform	CPP14
Data security	
Secure Element ("TPM")	RSA 4096 bit, AES/CBC 256 bit
PKI	X.509 certificates
Encryption	Full end-to-end encryption with supported VMS Network: TLS1.0/1.1/1.2, AES128, AES256 Local storage: XTS-AES
Video authentication	checksum, MD5, SHA-1, SHA-256
Firmware protection	Signed firmware, secure boot
Network	
Protocols	IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP/RTCP, IGMP V2/V3, ICMP, ICMPv6, RTSP, FTP, ARP, DHCP, APIPA (Auto-IP, link local address), NTP (SNTP), SNMP (V1, V3, MIB-II), 802.1x, DNS, DNSv6, DDNS (DynDNS.org, selfHOST.de, no-ip.com), SMTP, iSCSI, UPnP (SSDP), DiffServ (QoS), LLDP, SOAP, Dropbox™, CHAP, digest authentication
Ethernet	10/100/1000 Base-T, auto-sensing, half/full duplex
Connectivity	Auto-MDIX
Interoperability	ONVIF Profile S ONVIF Profile G ONVIF Profile M ONVIF Profile T
Mechanical	
Dimensions (Ø x H)	148 x 70 mm (5.83 x 2.76 in)
Lens adjustment (rotation)	355°
Weight	0.82 kg (1.81 lbs)

Mechanical	
Color	White (RAL9003)
Gyrosensor	Yes
Dome bubble	Polycarbonate, clear with UV blocking anti-scratch coating
Housing	Aluminum with dehumidifying membrane and waterproof connection area
Mounting	Mounting plate included for surface mount, 4-inch square junction box, single and double gang box
Conduit	Compatible with conduit back box for 3/4-inch NPT (M25) conduit side entry (sold separately)
Environmental	
Operating temperature	IR on: -40 °C to +50 °C (-40 °F to 122 °F) IR off: -40 °C to +55 °C (-40 °F to 131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to 158 °F)
Operating humidity	5% to 93% RH non-condensing 5% to 100% RH condensing
Storage humidity	Up to 98% RH
Impact protection	IK10
Ingress protection	IP66 and NEMA Type 4X
Sustainability	PVC free

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