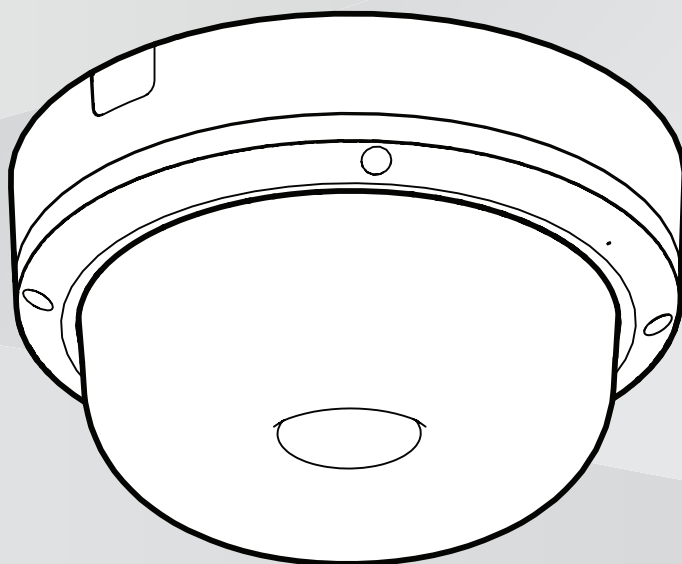




BOSCH

FLEXIDOME multi 7000i

NDM-7702-A | NDM-7703-A



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.

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 B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC suppliers Declaration of Conformity

FLEXIDOME multi 7000i: NDM-7702-A, NDM-7703-A

Responsible party

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

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.

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.



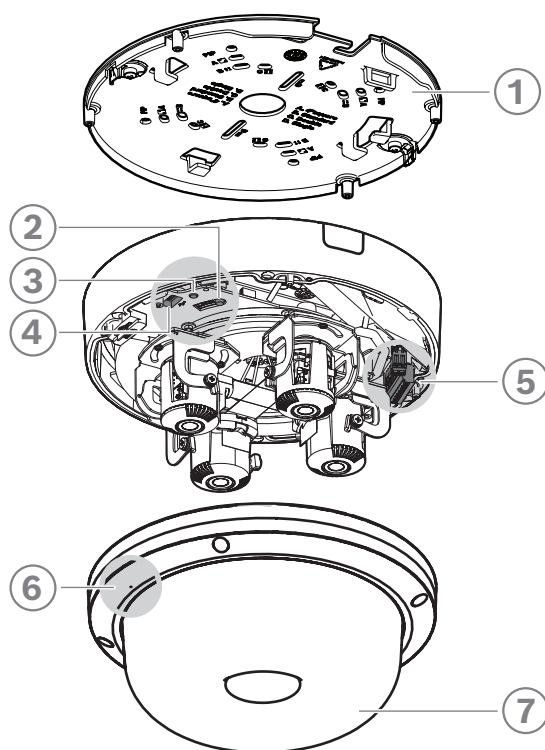
<https://www.boschsecurity.com/xc/en/product-catalog/>

3 System overview

3.1 Product description

The FLEXIDOME multi 7000i camera is built for high-quality performance, featuring four independent imagers with motorized zoom/focus lenses. It helps to simplify installation and lower costs while maintaining flexibility in coverage. With four scenes simultaneously in a single camera, it is perfect for wide area coverage, traffic intersections and building corners. When the lenses are tilted at the right angle, the camera can even cover an area up to full 360°. Additionally, the zoom capability allows the camera to obtain detailed coverage for more distant areas.

Product overview



1	Mounting plate	2	Reset button
3	LED	4	USB-C port
5	8-pin Audio and I/O connector	6	Microphone
7	Camera dome cover		

LED overview

LED behavior	Description
Red LED lights up	Startup is in progress.
Red LED flashes	The unit is faulty, for example following failed firmware upload. Refer to <i>Resolving problems</i> , page 32.
Green LED lights up	The unit is switched on and startup is completed.

LED behavior	Description
Green LED flashes	Video connection is active.

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

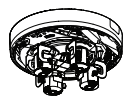
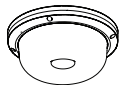
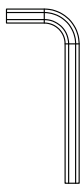
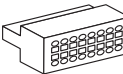
4.1 Unpacking

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
	1	8-pin Audio and I/O connector
	1	2-pin power connector
	1	RJ-45 punch-through aid
	2	M20 rubber grommets
	1	Quick installation guide

	Quantity	Component
	1	Safety information
	3	Installer UX 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 M5 and mounting plugs M4 or M5 are necessary. For installation with conduit, 5 screws M4 or M5 and mounting plugs M4 or M5 are necessary.
 - Appropriate size power drill.
 - Screwdriver and bit holder for TR20 bit, or use the provided TR20 Allen key.
 - Standard micro SD card (optional)
- Note:** Bosch recommends the use of industrial micro SD cards with health monitoring.
- Wireless USB dongle for wireless commissioning (optional) - available mid of 2021.

4.4 Network and PoE+



Notice!

Use only PoE+ IEEE 802.3at Type 2, Class 4 approved devices.

Power-over-Ethernet Plus (PoE+) can be connected at the same time as a 24V AC power supply. If auxiliary power (24V AC) 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.

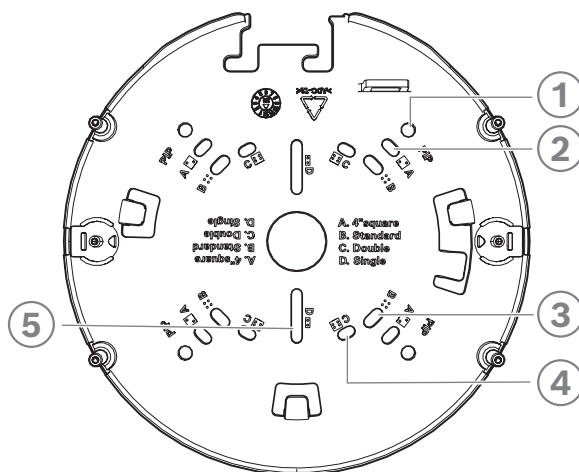
Cables

For cable requirements, refer to *Wiring the camera base*, page 20.

5 Installation

5.1 Installing the mounting plate

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



1	PIP Mounting holes for installation with NDA-7051-PIPW. Required screws are provided with NDA-7051-PIPW.	2	A Mounting holes for 4 in. 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.
3	B Mounting holes for standard wall or ceiling installation. Use four screws. If required, use plugs (for concrete walls/ceilings).	4	C Mounting holes for double gang box installation. Align the mounting plate with the four screw holes in the electrical gang box.
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.		

Installation options

The camera has two configurations for surface mounting:

- Refer to *Installing the mounting plate without conduit*, page 13, if the wires are not on the outside of the surface.
- Refer to *Installing the mounting plate with conduit (NDA-7051-CA)*, page 13, if the wires are on the outside of the surface.

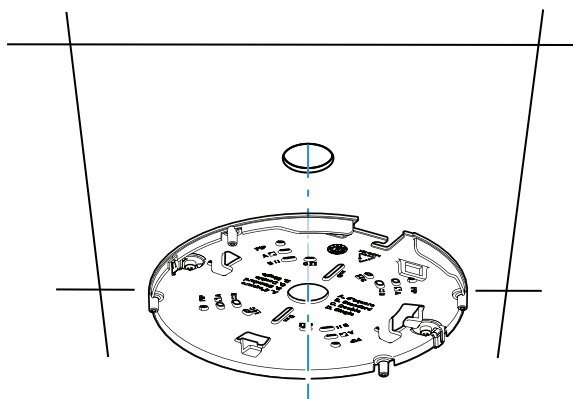
Additionally, the camera can cover various mounting options when combined with the available accessories. Refer to *Optional mounting accessories*, page 26 for the available accessories.

**Notice!**

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

5.1.1**Installing the mounting plate without conduit**

1. Remove the mounting plate from the box.
2. Position the mounting plate with the center hole on top of the cable exit on the surface, and mark the positions of the screw holes on the surface.
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 *Installing the mounting plate*, page 12.

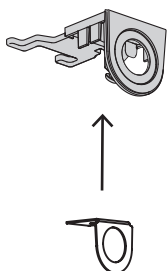


3. Drill the 4 holes with the appropriate diameter drill to support your 5-6 mm (0.2 in.) screws and plugs.
4. Install 4 plugs in the holes.
5. Put the cable through the center hole of the mounting plate.
6. Attach the mounting plate to the surface with 4 screws. Tighten the screws between 4 and 7 Nm (3 and 5.2 lbfft).

5.1.2**Installing the mounting plate with conduit (NDA-7051-CA)**

For installation with conduit, use the NDA-7051-CA Conduit adapter M25 (sold separately). NDA-7051-CA contains 5 conduit adapters. Use one conduit adapter per camera.

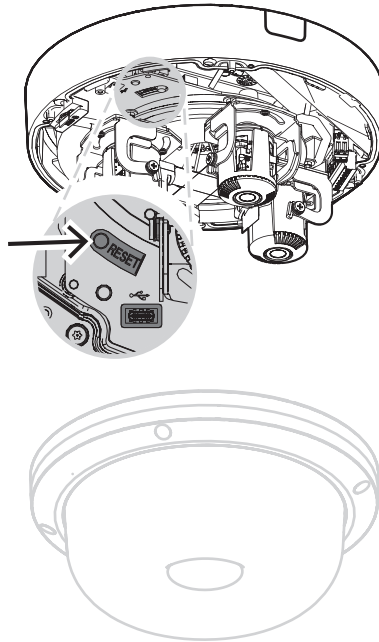
1. Remove one conduit adapter from the box.
2. Mark the position of the hole on the surface.
3. Drill the hole with the appropriate diameter drill.
4. Install a plug in the hole.



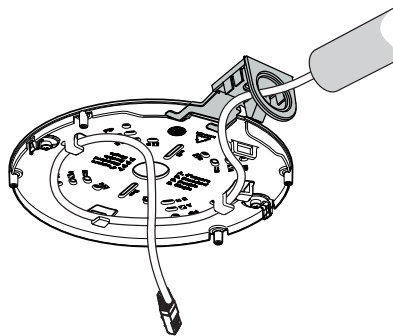
5. Put the cable through the hole of the conduit plate.

6. Attach the conduit plate with the conduit plate adapter to the surface with a 5-6 mm (0.2 in.) screw.
7. Remove the mounting plate from the box.
8. Mark the positions of the holes on the surface. The mounting plate has only one side available for the conduit. Make sure to position it accordingly.

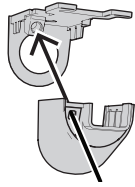
For standard installation, use the mounting holes marked with a B on the mounting plate. For a different installation, for example for an installation on an electrical box, use different mounting holes. For more information, refer to *Installing the mounting plate*, page 12.



9. Drill the 4 holes with the appropriate diameter drill to support your 5-6 mm (0.2 in.) screws and plugs.
10. Install 4 plugs in the holes.
11. Attach the mounting plate to the surface with 4 screws. Tighten the screws between 4 and 7 Nm (3 and 5.2 lbfft).



12. Install the conduit cover on the conduit plate with the bolt. Tighten the screw between 1.4 and 2 Nm (1 lbfft and 1.5 lbfft) with the TR20 Allen key.

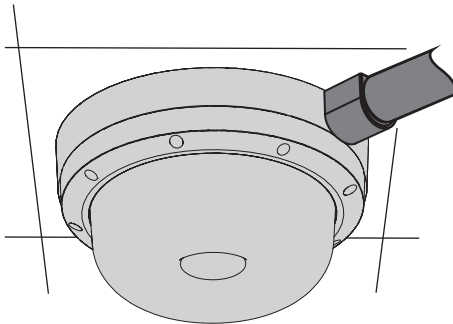


5.2 Installing the camera base

5.2.1

Before the installation

1. Remove the camera base from the box.
2. If the installation of the mounting plate was done with the conduit, remove the door on the camera base as shown in the image. Keep the screw and lid.



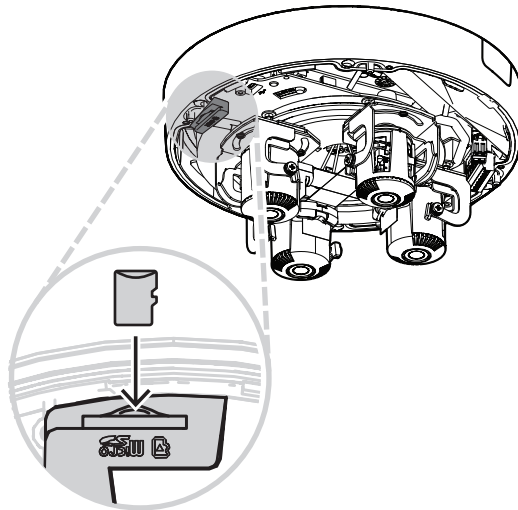
Local storage



Notice!

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

1. If necessary, install a micro SD card in the micro SD slot.
2. Press the micro SD card firmly until it latches into place in the slot.
3. To remove the card, press it into the slot until it unlatches again. Then, remove it from the SD slot.



Grounding



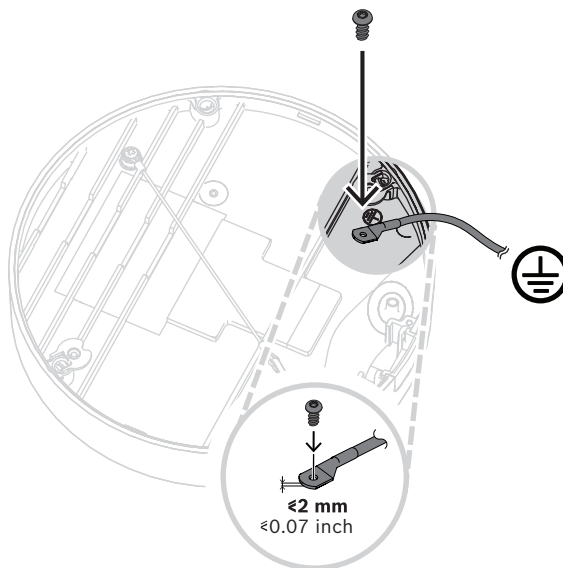
Warning!

Trained electricians only!

Work at electric appliances must only be carried out by qualified technicians.

To ground the camera:

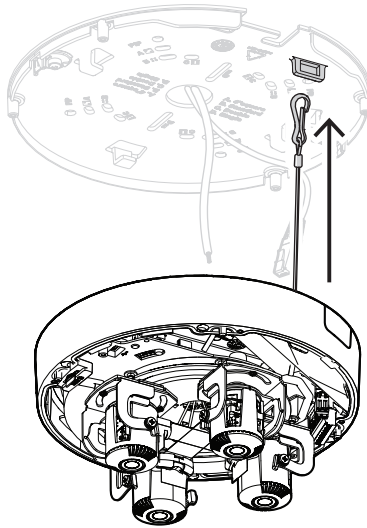
1. Remove the screw from the bottom of the camera base.
2. Install the ring terminal (not supplied with the camera) on the screw.
3. Hold the camera base and attach the screw with the grounding cable.



5.2.2

Installation steps

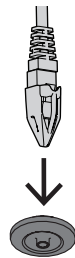
1. Put the cord of the camera base through the hook on the mounting plate to secure the camera base during installation.



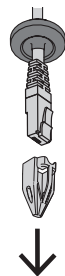
2. Put the RJ-45 punch-through aid on the network cable.



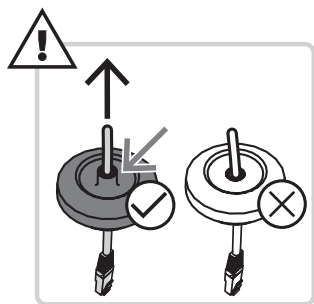
3. Remove the tubes from the M20 rubber grommets.
4. Put one M20 rubber grommet on the edge of the RJ-45 punch-through aid.



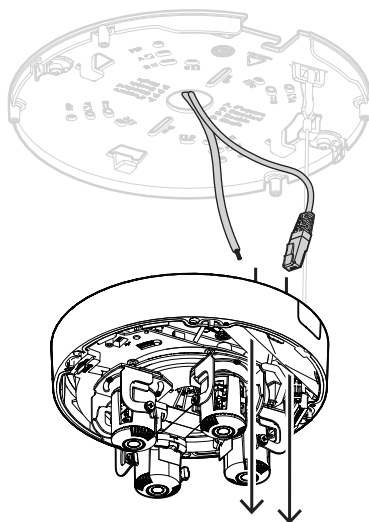
5. Pull the RJ-45 punch-through aid together with the network cable connector through the M20 rubber grommet. Leave about 13 cm (5 in.) between grommet and end of the cable.
6. Remove the RJ-45 punch-through aid.



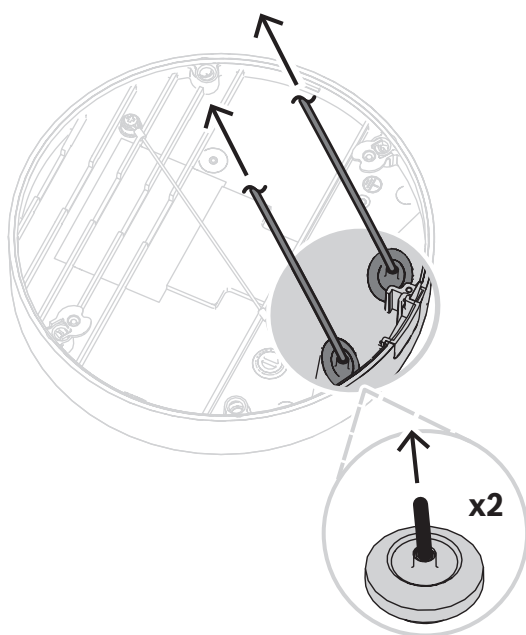
7. Put the other M20 rubber grommet on the edge of the auxiliary connections cable. Leave at least 5 cm (2 in.) between grommet and end of the cable.
8. Slightly pull back the M20 rubber grommets on both cables to make sure that the grommet sleeve faces the source of the cables.



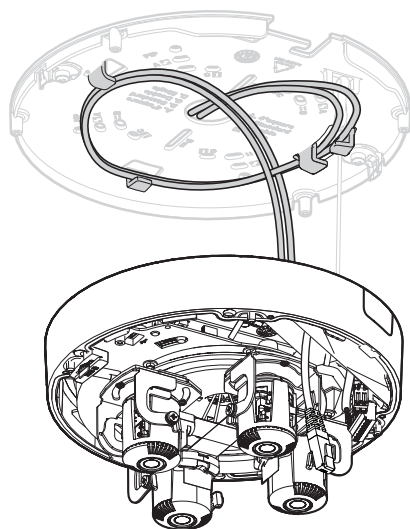
9. Put the network cable through the network cable inlet.
10. Put the auxiliary connections cable through the other cable inlet.



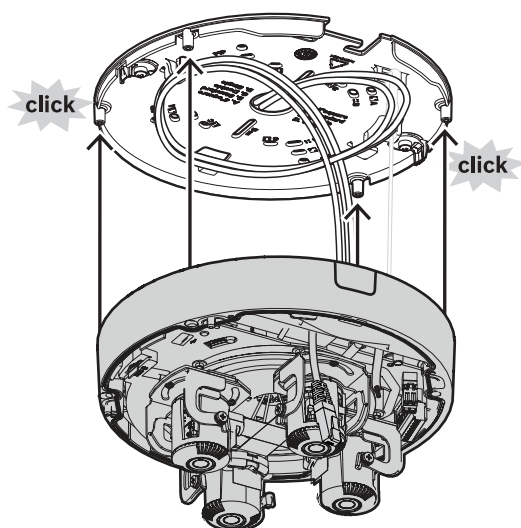
11. Fix the M20 rubber grommets in both cable inlets to make sure that the cable inlets are firmly closed.



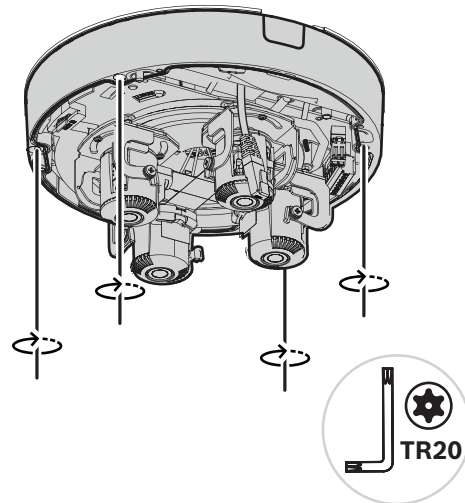
12. If required, do a loop with the cable on the hooks of the mounting plate.



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



14. Tighten the 4 captive screws of the screw holes in the camera base between 4 and 7 Nm (3 and 5.2 lbfft).

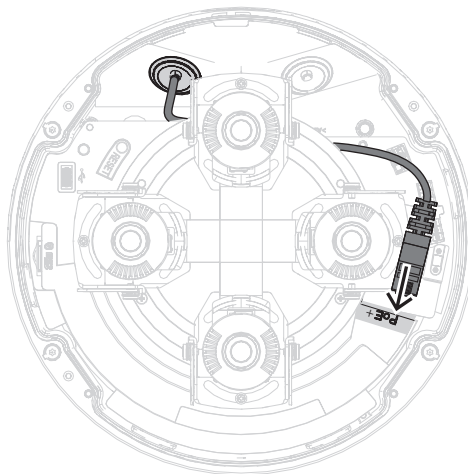


5.2.3

Wiring the camera base

Network connection

1. Connect the network cable to the network connector.



Auxiliary connections - power connection



Notice!

IP66 water/dust protection

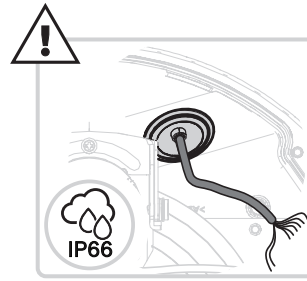
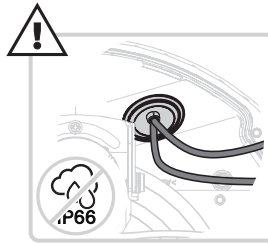
For IP66 water/dust protection, use cables with a diameter of at least 5 mm.



Notice!

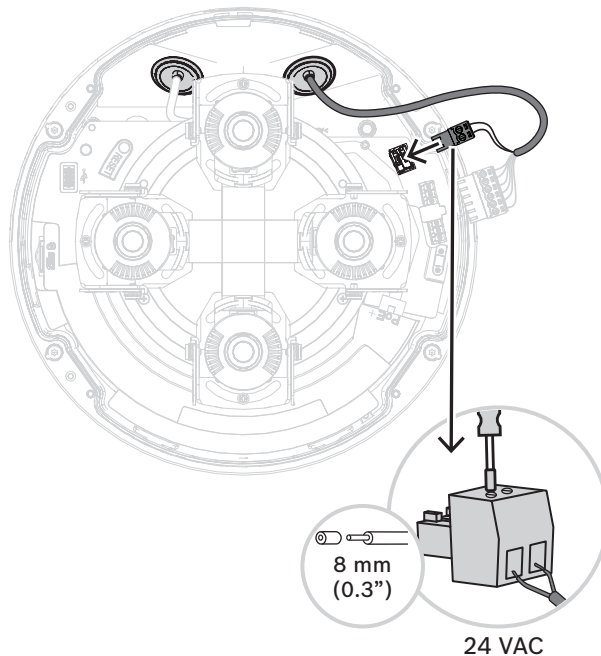
IP66 water/dust protection

If you split up the auxiliary connections into two cables before routing them through the M20 rubber grommet, the camera loses the IP66 water/dust protection. Route only one cable through the M20 rubber grommet to keep the IP66 water/dust protection.

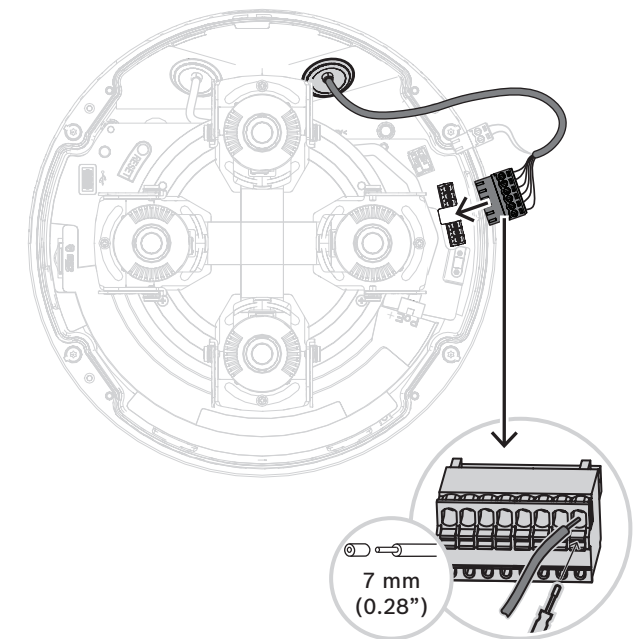
**Notice!**

If PoE+ is not available, use a 24V AC power supply.

1. Remove 8 mm (0.3 in.) of the power wires insulation.
2. Connect the power wires to the 2-pin power connector.
3. Connect the 2-pin power connector to the power connector of the camera base.

**Auxiliary connections - audio and alarm connection**

1. Remove 7 mm (0.28 in.) of the audio and alarm wires insulation.
2. Connect the audio and alarm wires to the 8-pin Audio and I/O connector.



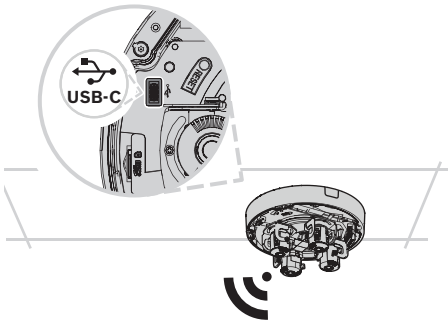
Audio				Alarm			
IN	GND	OUT	GND	IN	GND	OUT	OUT

5.2.4

Connecting a wireless USB dongle

The camera is equipped with a USB-C port for a wireless USB dongle (sold separately, available mid of 2021), so that you 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.

1. Connect the wireless USB dongle with a cable to the USB-C port on the camera base.



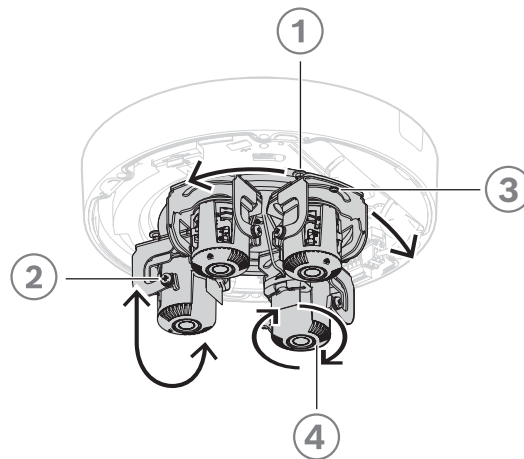
For more information on Bosch Project Assistant, refer to *Bosch Project Assistant*, page 30.

5.3

Setting the position of each of the four lenses

You can set the position of each multi-imager lens individually to achieve maximum flexibility. You can do the following 4-axis lens adjustments:

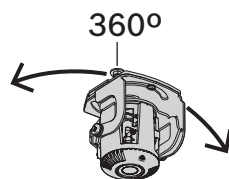
1. *Panning each of the four lenses over the ring*, page 23: 0° to 360°
2. *Tilting each of the four lenses*, page 23: 0° to 105°
3. *Rotating each of the four lenses*, page 24: -20° to 20°
4. *Rolling each of the four lenses*, page 25: -90° to 90°



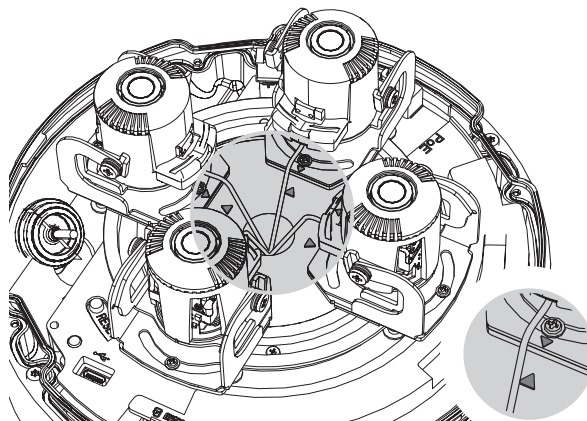
5.3.1

Panning each of the four lenses over the ring

1. Pan each of the four lenses to set the position that you need. You can pan 0° to 360° over the integrated transportation ring in the camera.



2. To set the camera in an optimal 360° overview position, pan each of the four lenses so that the white triangle icons match the screws. For an optimal 360° overview position, you also need to tilt the lenses at least 20° to have overlapping images. Refer to *Tilting each of the four lenses*, page 23.

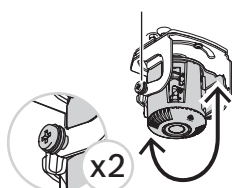


5.3.2

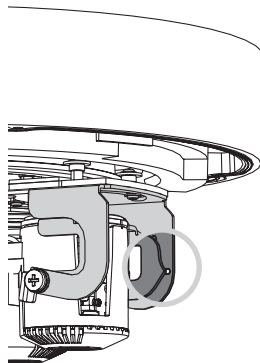
Tilting each of the four lenses

1. Tilt each of the four lenses to set the position that you need. You can tilt 0° to 105°.

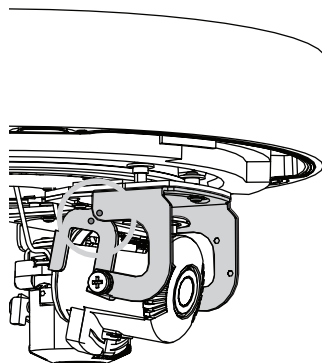
0° ~ 105°



- To set each of the four lenses at 0° tilting, which means that the lens captures an image at 90° to the mounted surface, make sure that the white dot in the middle of the larger lens holder meets the edge of the smaller lens holder.



- Do not tilt each of the four any further than until the two white dots on the edges of the lens holders meet. If you tilt any further, you might see a partly blurry image. Use this position only in specific use cases or when you need the lens to fully zoom in.



- To obtain 360° overlapping images, make sure to have a tilt angle from the ceiling of at least 20° up to 62°:
 - 20°: bottom half of the images shows overlap
 - 62°: full 360° overview with side by side overlap and without blind spots

5.3.3

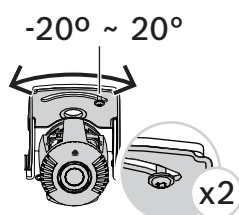
Rotating each of the four lenses

- Rotate each of the four lenses on the camera base to set the position that you need. You can rotate -20° to 20°.

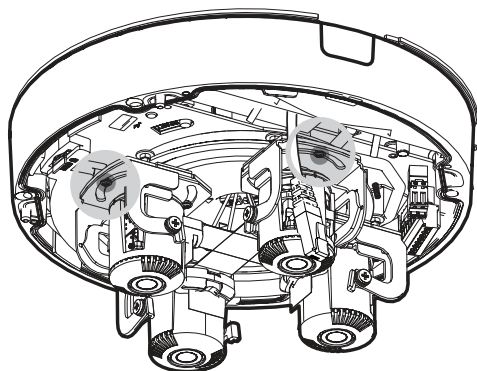


Notice!

Mechanically, each of the four lenses rotates -45° to 45°, but doing so will prevent you from closing the camera dome cover. Do not rotate more than -20° to 20°.

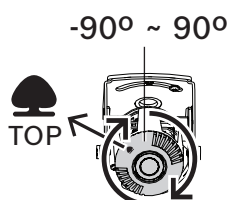


2. To set the camera in an optimal 360° overview position, rotate each of the four lenses so that the white triangle icons match.

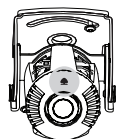


5.3.4 Rolling each of the four lenses

1. Roll each of the four lenses to set the position that you need. You can roll -90° to 90°.



2. To set the image straight, make sure that the tree icon on the lens is leveled horizontally.

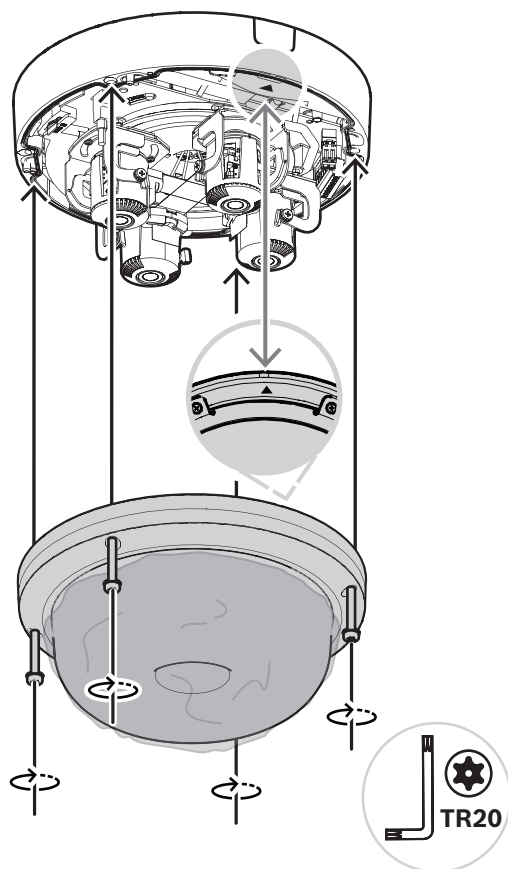


Notice!

Do not roll the lens more than 90°. To prevent damage, do not push it beyond the lens stop.

5.4 Installing the camera dome cover

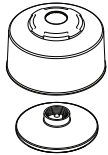
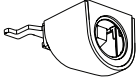
1. Position the camera dome cover on the camera base, so that the triangle icons on the camera base and on the camera dome cover match.
2. Tighten the 4 captive screws of the screw holes in the camera dome cover between 4 and 7 Nm (3 and 5.2 lbfft).

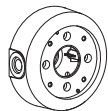
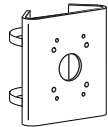
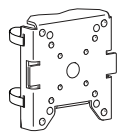
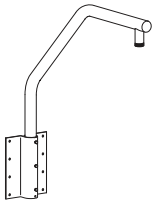


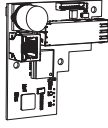
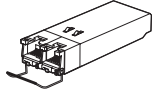
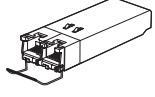
3. Remove the protective cover from the bubble.

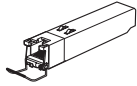
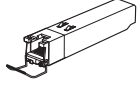
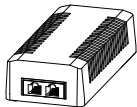
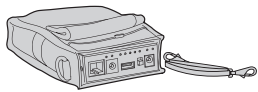
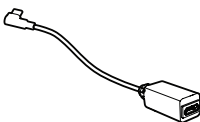
5.5

Optional mounting accessories

NDA-7051-PIPW	Pendant interface plate.	
NDA-7051-CA	Conduit adapter M25 (5 pieces).	
NDA-U-WMT	Universal wall mount for dome cameras, white.	

NDA-U-PMT	Universal pipe mount for dome cameras, 31 cm, white.	
NDA-U-PMTE	Extension for universal pipe mount, 50 cm, white.	
NDA-U-PMTS	Universal pendant pipe mount for dome cameras, 11 cm (4"), white.	
NDA-U-PSMB	Surface mount box (SMB) for wall mount or pipe mount.	
NDA-U-PMAS	Universal pole mount adapter, white; small.	
NDA-U-PMAL	Universal pole mount adapter, white; large.	
NDA-U-RMT	Universal roof mount for dome cameras, white.	

NDA-U-PA0	Surveillance cabinet, 24 VAC input, 24 VAC output, IP66.	
NDA-U-PA1	Surveillance cabinet, 100 - 120 VAC 50/60 Hz input, 24 VAC output, IP66.	
NDA-U-PA2	Surveillance cabinet, 230 VAC input, 24 VAC output, IP66.	
NDA-U-WMP	Back plate for universal wall mount, corner mount and pole mount, white, IP66.	
VG4-SFP SCKT	Ethernet media converter video transmitter/data receiver fiber optic kit.	
SFP-2	SFP Fiber Optic Module, 2 km (1.2 miles), 2 LC connectors. Multi-mode. 1310 nm.	
SFP-3	SFP Fiber Optic Module, 20 km (12.4 miles), 2 LC connectors. Single-mode. 1310 nm.	

SFP-25	SFP Fiber Optic Module, 2 km (1.2 miles), 1 SC connector. Multi-mode. 1310/1550 nm.	
SFP-26	SFP Fiber Optic Module, 2 km (1.2 miles), 1 SC connector. Multi-mode. 1550/1310 nm.	
NDA-U-PMTG	Universal pipe mount, compatible with gang box installation for fixed dome cameras only, white.	
NDA-U-WMTG	Universal wall mount, compatible with gang box installation for fixed dome cameras only, white.	
NPD-6001B	60 W indoor midspan for cameras without illuminators.	
NPD-3001-WAP	Bosch camera portable and wireless installation tool. Provides PoE only.	
Wireless USB dongle (available mid of 2021)	Wireless USB dongle for wireless commissioning with USB-C cable.	

6 Configuration

6.1 Bosch Project Assistant

If you have connected a wireless USB dongle, you can use the Bosch Project Assistant app on a mobile device (iOS, Windows, or Android) to perform the initial configuration wirelessly.

1. Download the Project Assistant app.



2. Do the necessary steps to configure the device. Use the step-by-step instructional video for help.



For more information on connecting a wireless USB dongle, refer to *Connecting a wireless USB dongle*, page 22.

6.2 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.

6.2.1 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.

6.2.2 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.

6.3 Bosch Video Client

The Bosch Video Client is a free Windows application to view, operate, control, and administer surveillance cameras. It can be downloaded from:

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

The Configuration Manager, which is part of the Video Client, is a useful tool for locating the IP addresses of cameras in your network. Refer to the relevant Operation Manual for more information.

6.4 Video Security Client

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.

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+ 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

Bubble Cleaning

If cleaning the bubble is required, use the following procedures and comply with all the warnings listed below.

Cleaning the Bubble Interior

The extremely soft interior surface should not be cleaned by rubbing or dusting with a cloth. Use clean dry compressed air, preferably from a spray can, to remove any dust from the interior surface.



Warning!

Do not use alcohol-based solutions to clean the polycarbonate bubble. This will cause the polycarbonate to cloud and over time cause stress aging, which makes the bubble brittle.

Cleaning the Bubble Exterior

The exterior of the polycarbonate bubble is hard coated for extra protection. If cleaning becomes necessary, only use cleaning solutions and cloths suitable for cleaning safety glass lenses. Dry the bubble thoroughly with a dry nonabrasive cloth to prevent water spots. Never scrub the bubble with any abrasive material or cleaners.

Bosch recommends cleaning the exterior of the bubble with NOVUS "No. 1" Plastic Clean & Shine (or equivalent), according to manufacturer's instructions. Refer to www.novuspolish.com to order or to find a local distributor.

Cautions

- Do Not clean bubbles in the hot sun or on very hot days.
- Do Not use abrasive or highly alkaline cleaners on the bubble.
- Do Not scrape the bubble with razor blades or other sharp instruments.
- Do Not use Benzene, Gasoline, Acetone, or Carbon Tetrachloride on the bubble.

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).

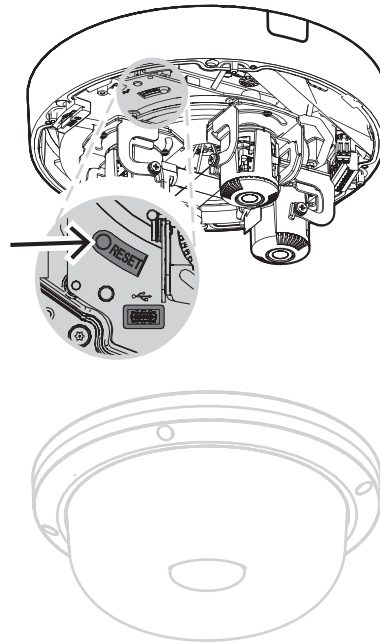
8.2 Repair

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

8.3 Reset

To reset the camera to factory settings:

1. Remove the camera dome cover from the camera base.
2. Press the reset button on the camera base.



3. Re-attach the camera dome cover onto the camera base.

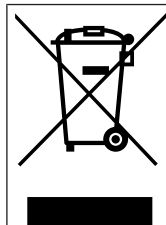
9 Decommissioning

9.1 Transfer

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

9.2 Disposal

Old electrical and electronic equipment



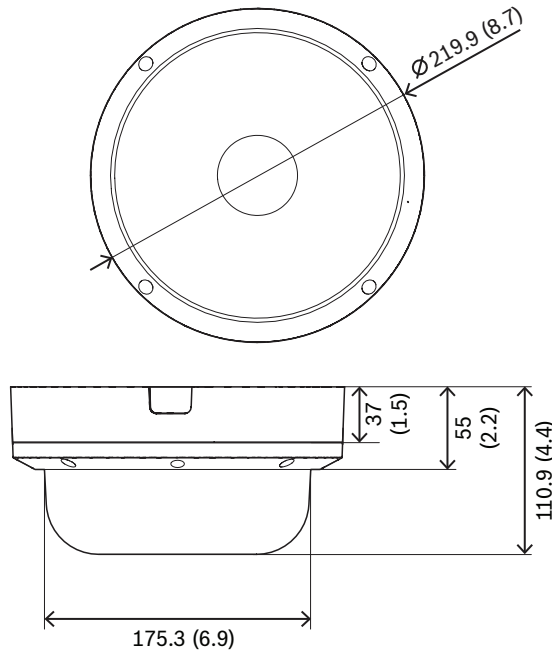
This product and/or battery must be disposed of separately from household waste. Dispose such equipment according to local laws and regulations, to allow their reuse and/or recycling. This will help in conserving resources, and in protecting human health and the environment.

10

Technical data

10.1

Dimensions



Dimensions in mm (in.)

10.2

Specifications

Power	
Input voltage	30 W (according to PoE+ IEEE 802.3at Type 2, Class 4) 24 VAC $\pm 10\%$ PoE+ and auxiliary power can be connected simultaneously for redundant operation
Power Consumption (typical / maximum)	PoE+: 18.02 W 24 VAC: 1.1 A / 16.0 W
Sensor	
Sensor type	4x 1/2.7-inch CMOS
Effective pixels (12 MP)	4x 2048 (H) x 1536 (V)
Effective pixels (20 MP)	4x 2592 (H) x 1944 (V)
Sensitivity	
Measured according to IEC 62676 Part 5 (1/25, F1.9)	
Color	0.091 lx
Mono	0.012 lx
Dynamic range	
High Dynamic Range	120 dB WDR

Dynamic range	
HDR Measured according to IEC 62676 Part 5	105 dB WDR
Optical	
Lens	3.7 - 7.7 mm F1.9
Adjustment	Motorized zoom/focus
Day/Night	Switchable IR-cut filter
Viewing angle (12 MP variant)	Wide: 81.9° x 59.8° (H x V) Tele: 39.5° x 28.9° (H x V)
Viewing angle (20 MP variant)	Wide: 85.6° x 62.4° (H x V) Tele: 39.0° x 29.2° (H x V)
Viewing angle (maximum combined)	Up to 360° coverage (depending on lens position and tilt)
Platform	
Common product platform	CPP14
Video streaming	
Video compression	H.265; H.264; M- JPEG
Streaming	Multiple configurable streams in H.264, H.265 and M-JPEG, configurable frame rate and bandwidth. Regions of Interest (ROI)
Camera latency	120 ms
GOP structure	IP, IBP, IBBP
Frame rate	1-30 fps
Signal-to-Noise Ratio (SNR)	>55 dB
Video resolution (H x V)	
Max. Resolution (12 MP variant)	4x 2048 x 1536 (4:3) @30 fps 4x 1920 x 1080 (16:9) @30 fps
Max. Resolution (20 MP variant)	4x 2592 x 1944 (4:3) @30 fps 4x 2560 x 1440 (16:9) @30 fps
Multiple lower resolutions available in 4:3 and 16:9 format individually selectable per stream and imager	
Image setup	
Mirror image	On / Off
Rotate image	0° / 180°
Positioning	Coordinates / Mounting height

Video functions	
White Balance	2300 to 10000K, 3 automatic modes (Basic, Standard, Sodium vapor), Manual mode and Hold mode
Shutter	Automatic Electronic Shutter (AES); Fixed shutter (1/25[30] to 1/15000) selectable; Default shutter
Day/Night	Auto (adjustable switch point), Color, Monochrome
Noise reduction	Dynamic noise reduction with 3 levels: Low, Medium and High
Scene modes	Standard, Sodium lighting, Sensitivity boost, Backlight, Vibrant, Color only
Privacy Masking	Eight independent areas per imager, fully programmable
Display stamping	Name; Logo; Time; Alarm message; fully programmable per imager
Additional functions	Contrast, Saturation level and control, Brightness, Sharpness, ALC level, Defog

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
Number of rules (simultaneously)	16 per imager
Object filters	Duration, Size, Aspect ratio, Speed, Direction, Color, Object classes (4)
Tracking modes	Standard (2D) tracking, 3D tracking, 3D people tracking, Ship tracking, Museum mode
Calibration / Geolocation	Automatic, based on gyro sensor, focal length and camera height

Additional functions	Tamper detection
----------------------	------------------

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	0.6 Vrms, 40 kOhm

Input/output	
Audio line out	1.0 Vrms, 10 kOhm
Microphone	1 integrated microphone (can be disabled)
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
Ethernet	RJ-45
USB	USB Type C, for use with Wi-Fi dongle for setup and commissioning (sold separately)
Fiber optics (sold separately)	The Fiber Optic Ethernet Media Converter kit (VG4-SFPSCKT) installed inside a Surveillance Cabinet (NDA-U-PA0, NDA-U-PA1 or NDA-U-PA2) provides the fiber optic interface to the mounted camera.
Audio streaming	
Standard	G.711, 8 kHz sampling rate L16, 16 kHz sampling rate AAC-LC, 48 Kbit/s at 16 kHz sampling rate AAC-LC, 80 Kbit/s at 16 kHz sampling rate
Signal-to-Noise Ratio	>50 dB
Audio Streaming	Full-duplex / half duplex
Network	
IP	One IP address for all four imagers
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
Interoperability	ONVIF Profile S; ONVIF Profile G; ONVIF Profile T
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

Mechanical	
Dimensions (D x H)	220 x 111 mm (8.7 x 4.4 in.)
Weight	2.33 kg (5.14 lbs)
Color	White (RAL9003)
Gyrosensor	Yes, 1 per imager
4-axis lens adjustment	Pan: 0° to 360° Rotate: -20° to 20° Tilt: 0° to 105° Roll: -90° to 90°
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	3/4-inch NPT (M25) conduit side entry (sold separately)
Environmental	
Operating temperature	-50 °C to +55 °C (-58 °F to +131 °F) for continuous operation; Up to +74 °C (+165 °F) according to NEMA TS 2-2003 (R2008), para 2.1.5.1 using fig. 2.1 test profile
Storage temperature	-40 °C to 70 °C (-40 °F to 158 °F)
Cold start temperature	-20 °C (-4 °F)
Operating humidity	5% to 93% RH non condensing 100% RH condensing
Storage humidity	Up to 98% RH
Impact protection	IK10
Water/dust protection	IP66 and NEMA Type 4X



Support

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