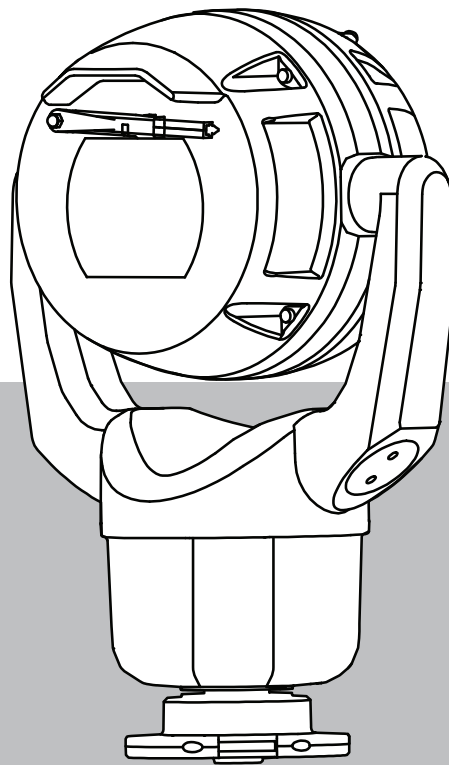


## MIC inteox 7100i

MIC-7602-Z30B | MIC-7602-Z30W | MIC-7602-Z30G | MIC-7602-Z30BR | MIC-7602-Z30WR | MIC-7602-Z30GR | MIC-7602-Z30BR-OC | MIC-7602-Z30WR-OC | MIC-7602-Z30GR-OC | MIC-7604-Z12BR | MIC-7604-Z12WR | MIC-7604-Z12GR | MIC-7604-Z12BR-OC | MIC-7604-Z12WR-OC | MIC-7604-Z12GR-OC





# Table of contents

<b>1</b>	<b>Safety</b>	<b>5</b>
1.1	About this Manual	5
1.2	Legal Information	5
1.3	Safety Precautions	6
1.4	Important Safety Instructions	7
1.5	Important Notices	7
1.6	Important Notices - Illumination Safety	10
1.7	Use latest software	11
1.8	Customer Support and Service	11
<b>2</b>	<b>Introduction</b>	<b>12</b>
2.1	Parts List - Camera	12
2.2	Additional Products Required	12
2.3	Additional Tools	13
2.4	Establishing the connection	13
2.5	Password protection in camera	13
<b>3</b>	<b>Product Description</b>	<b>15</b>
<b>4</b>	<b>Overview of Installation Steps</b>	<b>16</b>
<b>5</b>	<b>Mounting</b>	<b>17</b>
5.1	Mounting Location and Orientation Options	17
5.2	Mounting Options	19
5.3	Mounting Bracket Options	21
5.4	Considerations for Mounting the Camera in Inverted Orientation	22
<b>6</b>	<b>Installing the camera outdoors</b>	<b>24</b>
<b>7</b>	<b>(Optional) Installing an SD card</b>	<b>28</b>
<b>8</b>	<b>(Optional) Configuration Programming in the Shipping Box</b>	<b>29</b>
<b>9</b>	<b>(Optional) Configuration Programming on a Temporary Table-top Stand</b>	<b>30</b>
<b>10</b>	<b>Installing a MIC Camera on a Hinged DCA</b>	<b>31</b>
<b>11</b>	<b>(Optional) Installing a Sunshield</b>	<b>37</b>
<b>12</b>	<b>(Optional) Installing the Illuminator</b>	<b>40</b>
<b>13</b>	<b>(Optional) Canting the Camera</b>	<b>43</b>
<b>14</b>	<b>Connection</b>	<b>48</b>
14.1	About Camera Power and Control	48
14.2	Power Source Options	48
14.3	Ethernet Connections	49
14.4	Camera Connections	50
14.5	Connect the Camera to the Network	51
14.6	Installing the camera outdoors	52
<b>15</b>	<b>Typical System Configurations</b>	<b>53</b>
15.1	Typical IP Configuration with High PoE midspan (no I/O connections)	53
15.2	Typical Configuration with MIC-ALM-WAS-24	54
<b>16</b>	<b>Troubleshooting</b>	<b>55</b>
16.1	Physical reset button	55
<b>17</b>	<b>Maintenance</b>	<b>56</b>
17.1	Replacing a wiper assembly	57
<b>18</b>	<b>Decommissioning</b>	<b>65</b>
18.1	Transfer	65
18.2	Disposal	65
<b>19</b>	<b>Technical data</b>	<b>66</b>

---

20	<b>Support services and Bosch Academy</b>	<b>67</b>
----	---	-----------

# 1 Safety

## 1.1 About this Manual

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

## 1.2 Legal Information

### 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.

## 1.3 Safety Precautions

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

**Danger!**

High risk: This symbol indicates an imminently hazardous situation such as “Dangerous Voltage” inside the product. If not avoided, this will result in an electrical shock, serious bodily injury, or death.

---

**Warning!**

Medium risk: Indicates a potentially hazardous situation. If not avoided, this may result in minor or moderate injury.

---

**Caution!**

Low risk: Indicates a potentially hazardous situation. If not avoided, this may result in property damage or risk of damage to the unit.

---

**Notice!**

This symbol indicates information or a company policy that relates directly or indirectly to the safety of personnel or protection of property.

---

## 1.4 Important Safety Instructions



### Caution!

Installation must be made by qualified personnel and conform to ANSI/NFPA 70 (the National Electrical Code® (NEC)), Canadian Electrical Code, Part I (also called CE Code or CSA C22.1), and all applicable local codes. Bosch Security Systems accepts no liability for any damages or losses caused by incorrect or improper installation.



### Notice!

Outdoor installation

For details about the proper configuration for installing your camera outdoors with surge and lightning protection, refer to Best Practices for Outdoor Installation.



### Notice!

Ancillary power (UPS) required

To meet the Mains Supply Voltage Dips and Short Interruptions requirements per EN 50130-4 Alarm Standard, ancillary equipment (for example, an Uninterruptible Power Supply (UPS)) is necessary. The UPS must have a Transfer time between 2-6 ms and Backup Runtime of greater than 5 seconds for the power level as specified on the product data sheet.

- Make sure that the installation conditions comply with the specified stresses of vibration and shock as mentioned in the datasheet.



### Notice!

To maintain the Type 6P rating when the camera is mounted to a MIC-DCA, installers must make sure that the user-supplied cable glands or conduit connections have Type 6P ratings.



### Warning!

Risk of bodily injury

Do not put a canted (35°) camera in an upright position on the camera base or on an unsecured DCA. In this position, the camera can fall over and can cause injury or be damaged. Put the canted camera on its side until installation.



### Notice!

Risk of injury or damage

To prevent injury to your hands or damage to the wiper, do not touch the wiper with your hands, especially when the wiper is moving.

## 1.5 Important Notices



**Accessories** - Do not place this unit on an unstable stand, tripod, bracket, or mount. The unit may fall, causing serious injury and/or serious damage to the unit. Use only with mounting solutions specified by the manufacturer. When a cart is used, use caution and care when moving the cart/unit combination to avoid injury from tip-over. Quick stops, excessive force, or uneven surfaces may cause the cart/unit combination to overturn. Mount the unit per the installation instructions.

**Adjustment of controls** - Adjust only those controls specified in the operating instructions. Improper adjustment of other controls may cause damage to the unit.

**Camera signal** - Protect the cable with a primary protector if the camera signal is beyond 140 feet, in accordance with NEC800 (CEC Section 60).

**Environmental statement** - Bosch has a strong commitment towards the environment. This device has been designed to respect the environment as much as possible.

**Electrostatic-sensitive device** - Use proper ESD safety precautions when handling the camera to avoid electrostatic discharge.

**Fuse rating** - For security protection of the device, the branch circuit protection must be secured with a maximum fuse rating of 16A. This must be in accordance with NEC800 (CEC Section 60).

**Grounding:**

- Connect outdoor equipment to the unit's inputs only after this unit has had its ground terminal connected properly to a ground source.
- Disconnect the unit's input connectors from outdoor equipment before disconnecting the grounding terminal.
- Follow proper safety precautions such as grounding for any outdoor device connected to this unit.

U.S.A. models only - Section 810 of the National Electrical Code, ANSI/NFPA No.70, provides information regarding proper grounding of the mount and supporting structure, size of grounding conductors, location of discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

Refer to the section "Best Practices for Outdoor Installation" of the manual for more information on outdoor installations.

**Outdoor signals** - The installation for outdoor signals, especially regarding clearance from power and lightning conductors and transient protection, must be in accordance with NEC725 and NEC800 (CEC Rule 16-224 and CEC Section 60).

Refer to the "Best Practices for Outdoor Installation" section of the manual for more information on outdoor installations.

**Permanently connected equipment** - Incorporate a readily accessible disconnect device in the building installation wiring.

**Power lines** - Do not locate the camera near overhead power lines, power circuits, or electrical lights, nor where it may contact such power lines, circuits, or lights.

**Damage requiring service** – Unplug the devices from the main AC power source and refer servicing to qualified service personnel whenever any damage to the device has occurred, such as:

- the power supply cable is damaged;
- an object has fallen on the device;
- the device has been dropped, or its enclosure has been damaged;
- the device does not operate normally when the user follows the operating instructions correctly.

**Servicing** - Do not attempt to service this device yourself. Refer all servicing to qualified service personnel.

This device has no user-serviceable internal parts.

**FCC information**



**Notice!**

This is a **class A** product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.



**FCC suppliers Declaration of Conformity**

MIC inteox 7100i - 2MP	High-definition 2MP 30x PTZ camera with open camera platform
MIC inteox 7100i - 8MP	UHD 4K/8MP 12x PTZ camera with open camera platform

**Responsible party**

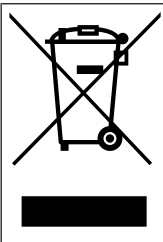
Bosch Security Systems, Inc.  
130 Perinton Parkway  
14450 Fairport, NY, USA  
[www.boschsecurity.us](http://www.boschsecurity.us)

**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 62368-1. 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.

**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.

## 1.6 Important Notices - Illumination Safety

The text in this section applies only to cameras which have the optional illuminator accessory.



### Notice!

This product has been tested according to standard IEC62471:2006 “Photobiological safety of lamps and lamp systems”. The product emissions exceed the EXEMPT Group limit for both Retinal Blue Light and Cornea/Lens infrared hazard as defined by IEC 62471:2006. The product was found to meet the Risk Group 1 exposure limits for IR and White LEDs.

The IEC 62471 provides the methods to determine the risk group of any lamp or any product incorporating a lamp. The risk groups in IEC 62471 indicate the degree of risk from potential optical radiation hazards. The risk groups were developed based upon decades of lamp use experience and the analysis of accidental injuries related to optical radiation emission.

**EXEMPT Group** – no optical hazard is considered reasonably foreseeable, even for continuous, unrestricted use. Typical examples are most frosted incandescent lamps and fluorescent lamps used in domestic applications.

**Exposure Hazard Value (EHV)** is a ratio of the Exposure Level (distance, exposure time) to Exposure Limit Value (ELV). When EHV is greater than 1, the device has exceeded the Exposure Limit Values for a particular Risk Group. The ELV is the level where optical radiation to the eye or skin is not expected to result in adverse biological effects.

The **Hazard Distance (HD)** is the distance from the source at which the Exposure Level equals the appropriate ELV. In other words, when  $EHV=1$  for a particular Risk Group.

Regarding the Cornea / Lens infrared hazard of this product, the Exposure Hazard Value (EHV) at a test distance of 200mm is 2.19 based on EXEMPT Group exposure limits. The EHV based on Risk Group 1 limits is 0.386. The HD for the Exempt Group is 297 mm.

These values have been summarized in the table below:

## 1.7 Use latest software

Before operating the device for the first time, make sure that you install the latest applicable release of your software version. For consistent functionality, compatibility, performance, and security, regularly update the software throughout the operational life of the device. Follow the instructions in the product documentation regarding software updates.

The following links provide more information:

- General information: <https://www.boschsecurity.com/xc/en/support/product-security/>
- Security advisories, that is a list of identified vulnerabilities and proposed solutions: <https://www.boschsecurity.com/xc/en/support/product-security/security-advisories.html>

Bosch assumes no liability whatsoever for any damage caused by operating its products with outdated software components.



### Notice!

Bosch strongly recommends upgrading to the latest firmware for the best possible functionality, compatibility, performance and security.

Check <http://downloadstore.boschsecurity.com/> regularly to see if there is a new firmware version available.

## 1.8 Customer Support and Service

If this unit needs service, contact the nearest Bosch Security Systems Service Center for authorization to return and shipping instructions.

### USA and Canada

Telephone: 800-289-0096, option 5

Fax: 800-366-1329

Email: [repair@us.bosch.com](mailto:repair@us.bosch.com)

### Customer Service

Telephone: 800-289-0096, option 3

Fax: 800-315-0470

Email: [orders@us.bosch.com](mailto:orders@us.bosch.com)

### Technical Support

Telephone: 800-289-0096, option 4

Fax: 800-315-0470

Email: [technical.support@us.bosch.com](mailto:technical.support@us.bosch.com)

### Europe, Middle East, Africa, and Asia Pacific Regions

Contact your local distributor or Bosch sales office. Use this link: <https://www.boschsecurity.com/xc/en/where-to-buy/>

### More Information

For more information, please contact the nearest Bosch Security Systems location or visit [www.boschsecurity.com](http://www.boschsecurity.com).

## 2 Introduction

- This equipment should be unpacked and handled with care. Check the exterior of the packaging for visible damage. If an item appears to have been damaged in shipment, notify the shipper immediately.
- Verify that all the parts listed in the Parts List below are included. If any items are missing, notify your Sales or Customer Service Representative from Bosch Security Systems.
- Do not use this product if any component appears to be damaged. Please contact Bosch Security Systems in the event of damaged goods.
- The original packing carton (if undamaged) is the safest container in which to transport the unit and must be used if returning the unit for service. Save it for possible future use.



### Caution!

Take extra care lifting or moving MIC cameras because of their weight.

The MIC packaging is designed:

- to allow installers to configure the camera inside the shipping box.
- to provide a temporary table-top or desk-top stand.

### 2.1 Parts List - Camera

Quantity	Component
1	MIC inteox 7100i camera
1	spanner tool [to remove and to attach the yoke caps in order to cant the camera if desired, and to remove the access plug from the camera head when installing the optional illuminator accessory (sold separately)]
1	base gasket
1	RJ45 coupler
1	MAC address labels
1	Quick Installation Guide
1	Safety instructions

### 2.2 Additional Products Required

Quantity	Component
100 m maximum	Ethernet cable (Cat5e or better)
*	Power cable (24 VAC)
*	Alarm wiring as needed
*	Audio wiring as needed
1	Full SD card. Recommended: industrial SD cards from Western Digital (sold separately by Bosch)

\* Refer to the chapter Preparing Wiring in the installation manual.

## 2.3 Additional Tools

1 Phillips-head screwdriver to secure the ground lug of the camera
1 Adjustable wrench or socket set to secure the base of the camera to mounting accessories
For canting cameras: 1 Torque wrench with a 5 mm Hex bit to remove/install bolts in the yoke arms

## 2.4 Establishing the connection

The unit must have a valid IP address and a compatible subnet mask to operate on your network. By default, DHCP is pre-set at the factory to **On** and so your DHCP server assigns an IP address. With no DHCP server the default address is 192.168.0.1

The Project Assistant app or Configuration Manager (version 7.50 or higher) can be used to find the IP address. Download the software from <https://downloadstore.boschsecurity.com>:

1. Start the web browser.
2. Enter the IP address of the device as the URL.
3. During the initial installation, confirm any security questions that show.

### Note:

If you cannot connect, the unit may have reached its maximum number of connections.

Depending on the device and network configuration, each unit can have up to 50 web browser connections, or up to 100 connections via Bosch Video Client or BVMS.

## 2.5 Password protection in camera

The device is password-protected. The first time that any user accesses the device, the device will prompt the user to set a password at the service level.

The camera requires a strong password. Follow the prompts in the dialog box, which specifies what is required. The system measures the strength of the password that you enter.

Make sure the password obeys these conditions:

- 8 to 19 characters in length
- Upper and lower case letters
- Minimum of 1 digit
- Minimum of 1 special character

These special characters are not allowed: '@', '&', '<', '>', ':', '+'

When you use Configuration Manager to access your device for the first time, you must set the initial password of the device in Configuration Manager. The Users section (General > Unit Access > Users) displays the message, "Before you can use this device you have to secure it with an initial password."

**Note:** After you set the initial password, a "lock" icon appears next to the device name in the **Devices** list in Configuration Manager.

You can also launch the device webpage directly. In the device webpage, an initial password page appears, displaying input fields and a password strength gauge.

Enter the user name ("**service**") and a password in the appropriate fields. Refer to the section **User Management** for more information.

After a service-level password is set for the device, the device displays a dialog box that prompts users to enter the user name ("**service**") and the service-level password every time that they access the device.

1. Fill in the fields **User name** and **Password**.
2. Click **OK**. If the password is correct, the desired page appears.

**Note:** New releases of software may require you to set a new and stronger password.

### 3 **Product Description**

The camera's ruggedized design meets customer expectations in demanding environments that exceed the capabilities of conventional IP cameras. Even in installations subject to harsh shock/vibration conditions and/or extreme weather, the camera provides high-quality video images.

- Make sure that the installation conditions comply with the specified stresses of vibration and shock as mentioned in the datasheet.

A long-life silicone wiper blade mounted on a spring-loaded arm is standard on all MIC cameras.

## 4 Overview of Installation Steps

**Caution!**

Installation must be made by qualified personnel and conform to ANSI/NFPA 70 (the National Electrical Code® (NEC)), Canadian Electrical Code, Part I (also called CE Code or CSA C22.1), and all applicable local codes. Bosch Security Systems accepts no liability for any damages or losses caused by incorrect or improper installation.

**Caution!****ELECTRIC SHOCK HAZARD**

To reduce the risk of electric shock, disconnect power to the camera and/or to the power supply unit before moving the camera, before installing any accessories, and before mounting the camera.

Before you install your MIC camera, inspect the camera for any scratches or damage to the surface finish/paint. If you notice damage to the paint, return the unit for a replacement.

1. Select the Mounting Location and Orientation.
2. Install the appropriate 24 VAC power supply (VG4-A-PSU1 or VG4-A-PSU2) or midspan (60 W version or 95 W version), and/or the alarm/washer interface (MIC-ALM-WAS-24) (each sold separately). If you use the illuminator accessory, you must use a 95W midspan. Refer to the Installation Manual of the appropriate device for installation instructions.
3. Install grounded metal conduit (user-supplied) to the MIC DCA (sold separately) (and to the PSU if necessary), install wiring (user-supplied), and then make the necessary connections for power, telemetry, and video.
5. (Optional) Complete pre-configuration in the shipping box or on a table.  
If installing the camera in inverted orientation, complete this step on a table-top stand only.
6. Install the DCA and then install the camera on the DCA.  
OR
6. Install the camera directly to a mounting surface (such as an eave).
7. (Optional) Install the sunshield (sold separately).
8. (Optional) Install the illuminator (sold separately).
9. (Optional) Cant the camera.
10. Make the appropriate power and control connections.



## 5

## Mounting

### 5.1

### Mounting Location and Orientation Options

Bosch designed MIC IP 7100i cameras for use in outdoor applications. In an enclosed installation area (for example, in a foundry, near a furnace, etc.), temperatures outside of the camera might exceed +65 °C (+149 °F). If you install a camera in an enclosed area, make sure that the operating temperature of the camera is a maximum of +60 °C (+140 °F). Make sure that air circulates around the camera to supply cooling.

MIC cameras are designed for easy installation in various locations such as directly onto buildings and poles suitable to support CCTV equipment.

Select a secure installation location and mounting orientation for the device. Ideally, this is a location where the device cannot be interfered with either intentionally or accidentally.

Select a location where the MIC camera will not touch materials such as steel straps or cables.

You can install the camera:

- onto a MIC-DCA or a MIC wall mount (MIC-WMB) with a MIC shallow conduit adapter (MIC-SCA). (Never install the wall mount only.)
- or
- directly to a mounting surface using the supplied base gasket and the appropriate connector kit (sold separately):
  - MIC-9K-IP67-5PK (IP67 Connector kit for MIC IP fusion 9000i, MIC IP ultra 7100i, and MIC IP starlight 7100i cameras)

To have an installation rated IP67, you must use the appropriate IP67 Connector Kit from Bosch.

Confirm that no residual water or moisture is in the bottom of camera. Ground the camera as described in the chapter “Installing a MIC Camera on a Hinged DCA.”

You can install the camera in one of three orientations:

- upright (straight up, 90°)
- inverted (straight down, 90°)
- canted upright (tilted forward 35°)

The most common type of mounting location is the top of a pole suitable to support CCTV equipment and that provides a robust mounting platform to minimize camera motion and typically has a large base cabinet for mounting ancillary equipment such as power supplies. Other locations for mounting the camera include the top of a building, the side (wall) of a building, the corner of a building, and under the eave of a building.

The camera can also be mounted on the side of a lamp post, pole, or similar column using the Pole Mount Bracket (MIC-PMB). Be aware that lamp posts can often be subject to movement and are not suitable platforms in all conditions or for all applications.



#### Notice!

Outdoor installation

For details about the proper configuration for installing your camera outdoors with surge and lightning protection, refer to Best Practices for Outdoor Installation.

Ensure that the location has the appropriate clearance from power and lightning conductors, in accordance with NEC725 and NEC800 (CEC Rule 16-224 and CEC Section 60).

Do not install the device near:

- Any heat sources
- Any overhead power lines, power circuits, or electrical lights, or where the device may contact power lines, circuits, or lights

Isolate shielded CAT5e or CAT6 cable from any high voltage power lines in a separate grounded, metal conduit. Refer to the datasheet for test conditions for allowable transients / voltage fluctuations.

#### **Mounting surface recommendations for MIC mounting accessories**

The mounting surface should be capable of supporting the combined weight of the MIC camera + MIC Illuminator + MIC mounting accessory (DCA, wall mount, corner bracket, etc.). All expected conditions of load, vibration and temperature should be considered when planning an installation. The material should accommodate a minimum pull-out strength of 275 kg (600 lb).

The mounting accessory should be secured to one of the following surfaces:

- Concrete (solid / cast)
- Concrete masonry unit (concrete block)
- Brick (all types)
- Metal (steel / aluminum, minimum 3 mm (0.125 in.) thick)

In all situations, Bosch recommends referencing any applicable building codes or professional structural engineering guidelines for a secure installation.

- ▶ Ensure that the selected mounting surface is capable of supporting the combined weight of the camera and mounting hardware (sold separately) under all expected conditions of load, vibration, wind, and temperature.

---

#### **Caution!**

Risk of lightning strikes



If the camera is installed in a highly exposed location where lightning strikes may occur, then Bosch recommends installing a separate lightning conductor within 0.5 m (1.6 ft) of the camera and at least 1.5 m (4.9 ft) higher than the camera. A good earth bonding connection to the camera housing itself will provide protection against damage from secondary strikes. The camera housing itself is constructed to cope with secondary strikes. If the correct lightning protection is applied, then no damage to the internal electronics or camera should result.

---

#### **Installation in a damp environment (for example, near a coastline)**

The fasteners and fixtures shipped with the camera help to keep the camera secure. Always use Bosch-supplied screws and other fasteners when installing or performing maintenance on the camera. Bosch-supplied hardware is properly treated and engineered for safe use with your MIC camera.

The camera head has three (3) plastic screws, factory-installed, around each IR port to prevent corrosion in units that do not have accessories installed on the camera head. If you install a sunshield or an illuminator accessory, you must remove the plastic screws and replace them with the metal screws that ship with each accessory.

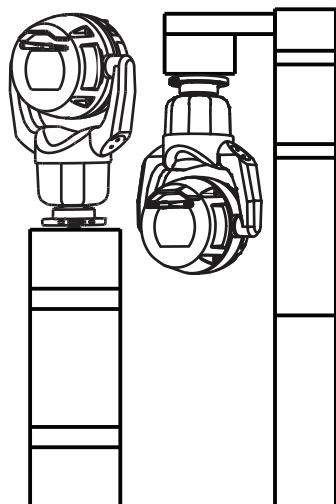
Before installation, and periodically, inspect the metal parts of the camera for paint that is chipped or otherwise damaged. If you notice any paint damage, return the unit for a replacement.

Avoid installation practices that may bring the camera's metal mountings in contact with materials such as stainless steel. Such contacts can result in galvanic corrosion and degrade the cosmetic appearance of the camera. These cosmetic damages caused by improper installation are not covered by warranty as they do not affect the functionality of the camera.

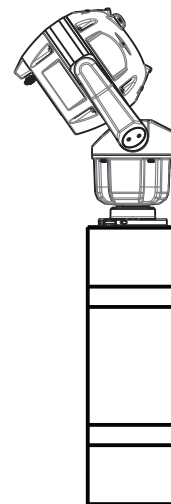
## 5.2 Mounting Options

See the figures that follow for illustrations of the correct and the incorrect mounting orientations of MIC cameras.

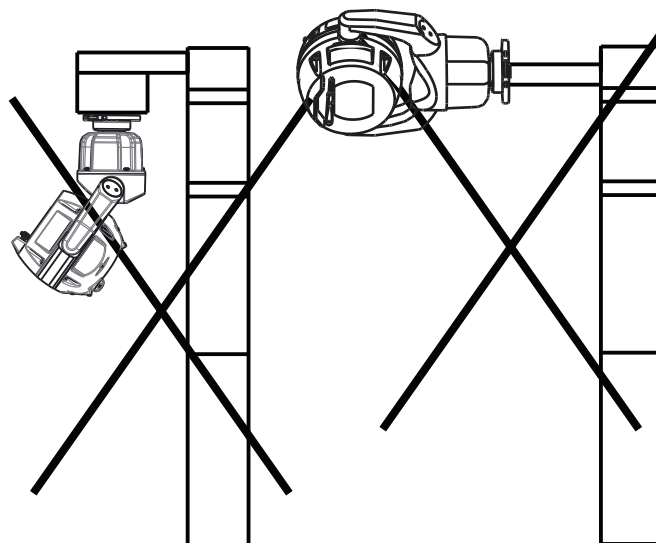
MIC cameras are designed to be mounted upright (straight up, 90°), inverted (straight down, 90°), or canted upright (ball up, 35°). The tilt limits for the canted unit prevent it from working properly if mounted ball down. See the figures below for illustrations of the correct and the incorrect mounting orientations of MIC cameras.



Correct mounting orientation - upright,  
inverted

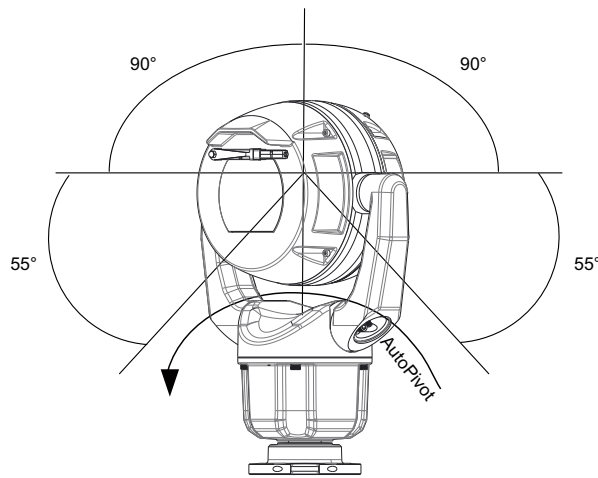


Correct mounting orientation - canted



**Figure 5.1:** Incorrect/not permitted mounting orientations (inverted + canted, horizontal)

The figure below illustrates the tilt range of the camera in upright orientation.



**Figure 5.2:** Tilt range, MIC IP ultra 7100i

## 5.3 Mounting Bracket Options

Bosch sells a complete series of mounting brackets that support multiple mounting configurations.

Always use only Bosch-supplied mounts, which are designed for safe installation of your MIC camera.

Refer to the MIC Series Mounting Brackets Installation Guide for complete installation instructions.

### Mounting hardware recommendations for MIC mounting accessories

Fasteners are not supplied with the MIC mounting accessories for attachment to the mounting surface. The type of fastener necessary is dependent on the mounting surface.

Fasteners can include wedge anchors, sleeve anchors, single expansion anchors, double expansion anchors, machine screws or 'Thru-Bolting' with a nut.

Fasteners are to be of a structural grade (ISO Class 10.9, SAE Grade 8) and zinc plated for moderate corrosion resistance. When installed in marine or similarly corrosive environments, stainless hardware (A2-800, A4-800) is recommended.

Fasteners are to be a minimum diameter of 8 mm (0.3125 in.).

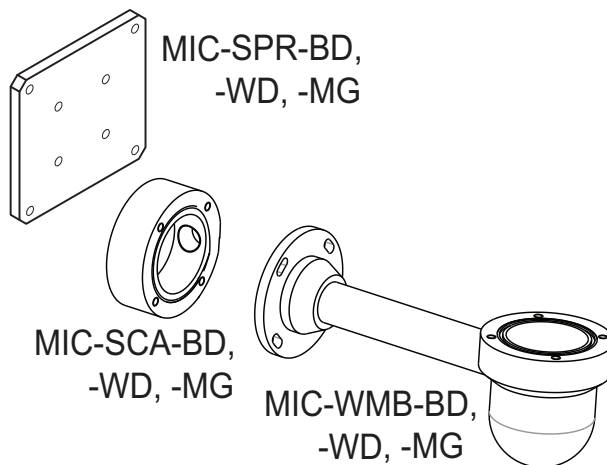
All bolts must extend through the mounting surface and be secured with a flat washer, lock washer and nut. All studs must be anchored to concrete or welded to a steel backing plate.

In all situations, Bosch recommends referencing any applicable building codes or professional structural engineering guidelines for a secure installation.

### Deep Conduit Adapter

The hinged DCA is well-suited to installations on top of a pole.

### Wall Mount



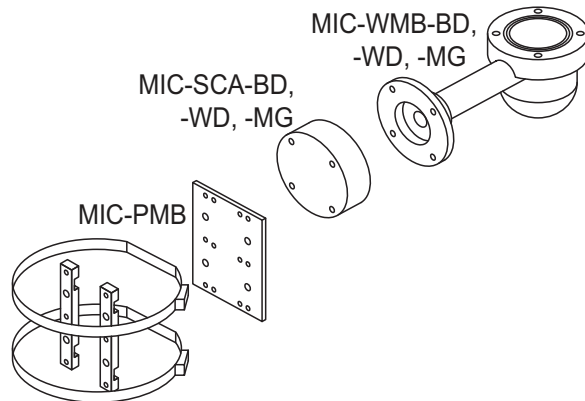
**Figure 5.3:** Typical Wall mount configuration

Note: Always install an SCA when you install a wall mount for any installation configuration. Route cables through the bottom of the SCA (to prevent water from running into the side or top of the SCA along the cables).

### Pole Mount

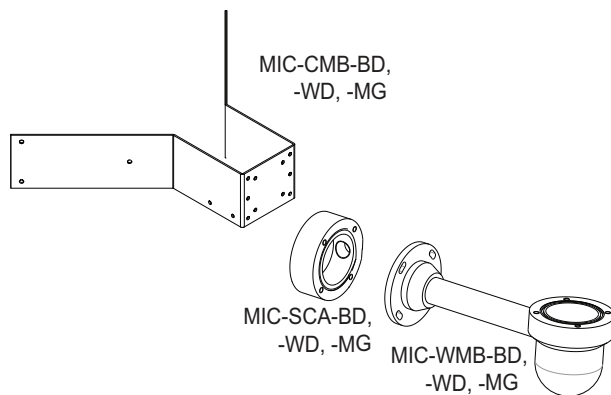
The figure below identifies the three mounting accessories (each sold separately) that are necessary to mount the MIC camera on the side of a pole.

**Note:** The figure identifies the part numbers, as well as the codes for the available colors (-BD for black, -WD for white, and -MG for grey) of each mounting accessory.



**Figure 5.4:** Typical Pole mount configuration

### Corner Mount



**Figure 5.5:** Typical Corner mount configuration

Note: Always install an SCA when you install a wall mount for any installation configuration. Route cables through the bottom of the SCA (to prevent water from running into the side or top of the SCA along the cables).

## 5.4

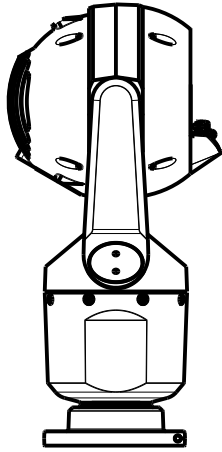
### Considerations for Mounting the Camera in Inverted Orientation

To change the camera orientation to “Inverted,” complete the following steps:

1. Remove the camera from the shipping box.
2. Apply power to the camera.
3. Access the web browser of the camera.
4. Access the page Configuration.
5. Navigate to Camera > Installer Menu > Orientation.
6. Select “Inverted.”

The camera head will rotate automatically into inverted position (180°).

Note the position of the visor when the camera is installed in inverted orientation. The visor will now be near the body of the camera.

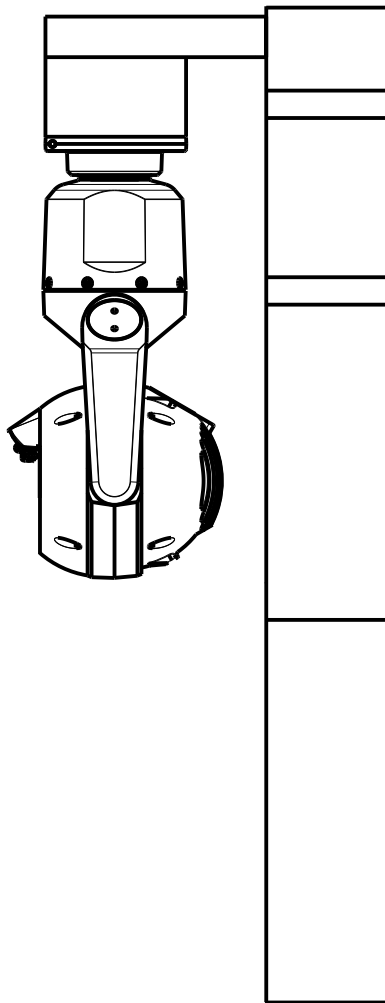


**Figure 5.6:** MIC camera with camera head inverted

Note: It is not necessary to remove the section for the illuminator on the sunshield because the illuminator is attached to the opposite side of the camera visor.

Seal the mount so that moisture or water cannot collect and stay in the bottom of the MIC camera.

The figure that follows shows the camera installed in inverted orientation on a pole.



**Figure 5.7:** MIC camera mounted in inverted orientation (on pole)

## 6 Installing the camera outdoors

Cameras installed outdoors are typically exposed to surges, transients, and lightning. The details for wiring and installation are based on common practices for proper surge and lightning suppression.

The figure that follows is an illustration of the best practices for installing IP cameras outdoors with surge and lightning suppression.

Note that the illustration has an AUTODOME camera and a MIC camera and does not include representations of all models of IP cameras, including AUTODOME and MIC.

The illustration can represent any IP camera. Mounting hardware varies between units.

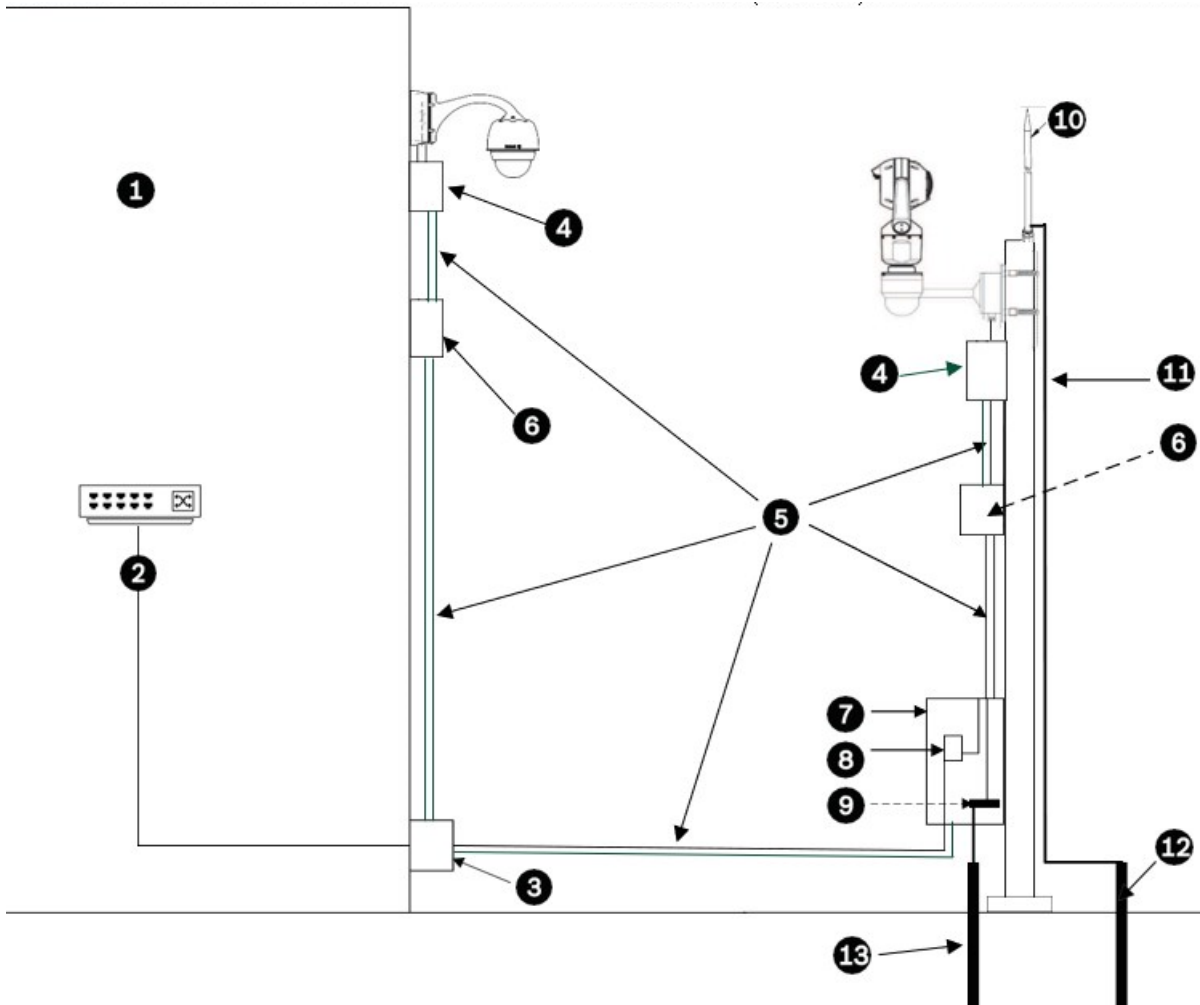


Figure 6.1: Correct outdoor installation with proper surge/lightning suppression



1	Indoor main building	2	Network switch with shielded ports and grounding as recommended by the manufacturer. All network cables must be terminated with shielded RJ45 connectors.
3	Surge suppression for indoor equipment at cable entry	4	Outdoor rated surge suppressor with shielded RJ45 connections that must be mounted as close to the camera as possible. Connect the ground per the manufacturer’s installation manual.
5	Install Cat5e/Cat6 shielded Ethernet cable such as F/UTP shielded cable with twisted pairs (often referred to as FTP) or S/UTP braided shield with twisted pairs (often referred to as STP) with shielded RJ45 connectors. The cable must be routed through a permanently earthed metal conduit that is Earth-grounded across the entire span. The cables must be a maximum length of 100 m (328 ft). Power and signal cables must be in separate conduits with the correct physical separation distance between them. (Refer to the section <b>Additional wiring guidelines.</b> )		
6	Outdoor rated midspan with shielded RJ45 connections	7	Equipment enclosure with AC power source for the midspan
8	Optional outdoor rated network switch or patch panel	9	Connect the Bus Bar to the Equipment Grounding Electrode.
10	Lightning Rod (Refer to the section <b>Lightning rod and electrode.</b> )	11	Down Conductor (Refer to the section <b>Lightning rod and electrode.</b> )
12	Lightning Rod Grounding Electrode (Refer to the section <b>Lightning rod and electrode.</b> )	13	Equipment Grounding Electrode

**Additional wiring guidelines**

Maintain the physical separation distance between the Ethernet cable and high voltage/EMF sources. These are typical recommendations, but also refer to local electrical codes.

Voltage range	Minimum separation distance
For <600 VAC	50 mm (2 in.)
For >600 VAC and <3 kV	1.5 m (5 ft)
For >3 kV	3 m (10 ft)

Also use shielded cables for alarms, audio, or any other connections when applicable.

**Lightning rod and electrode**

- Refer to NFPA 780, Class 1 & 2, UL96A, or follow the equivalent code appropriate for the country/region.
- Follow the manufacturer’s installation instructions.

**Camera Housings and Mounts**

- Use only Bosch mounts listed on the specific camera’s data sheet.
- Follow all grounding for the camera housings and mounts per the installation manual.

**How to ground the parapet mount**

1. Install the parapet mount per Section 2.5 of the installation mount, except for the 3/8 inch bolt at the bottom of the mount.
2. Attach the grounded metal conduit to the parapet and connected to an outdoor rated metal junction box. Install the junction box as close as possible to the opening at the bottom of the parapet mount. Note: If you can connect the suppressor to grounded metal conduit, you can replace the junction box with an outdoor rated surge suppressor.
3. Attach the ground wire (solid conductor, 8 AWG; labeled 3a in the figure that follows) to a grounding clamp conduit fitting that is connected to the metal conduit.
4. Stack the following onto one of the 3/8 inch bolts included with the pendant arm, using the sequence in the figure that follows (4a - 4c):
  - 3/8 inch split washer (labeled 4a in the figure that follows),
  - 3/8 inch ring terminal with the other end of the ground conductor crimped in it (labeled 4b in the figure that follows),
  - 3/8 inch flat washer (labeled 4c in the figure that follows)
5. Attach this stack to the bottom hole of the parapet mount. Do not tighten the bolt completely.
6. Install a surge suppressor if you did not already install one.
7. Put the Cat5e/Cat6 shielded Ethernet cable through a waterproof cable gland of the junction box (or the outdoor rated surge suppressor from step 2) to the sealed, shielded RJ45 connection of the surge suppressor.
8. Connect the ground of the surge suppressor per the manufacturer's installation manual.
9. Put the Ethernet cable from the output side of the surge suppressor through the parapet pipe.
10. Complete the installation of the AUTODOME pipe mount kit per sections 2.6 and 2.7 of the parapet mount installation guide.

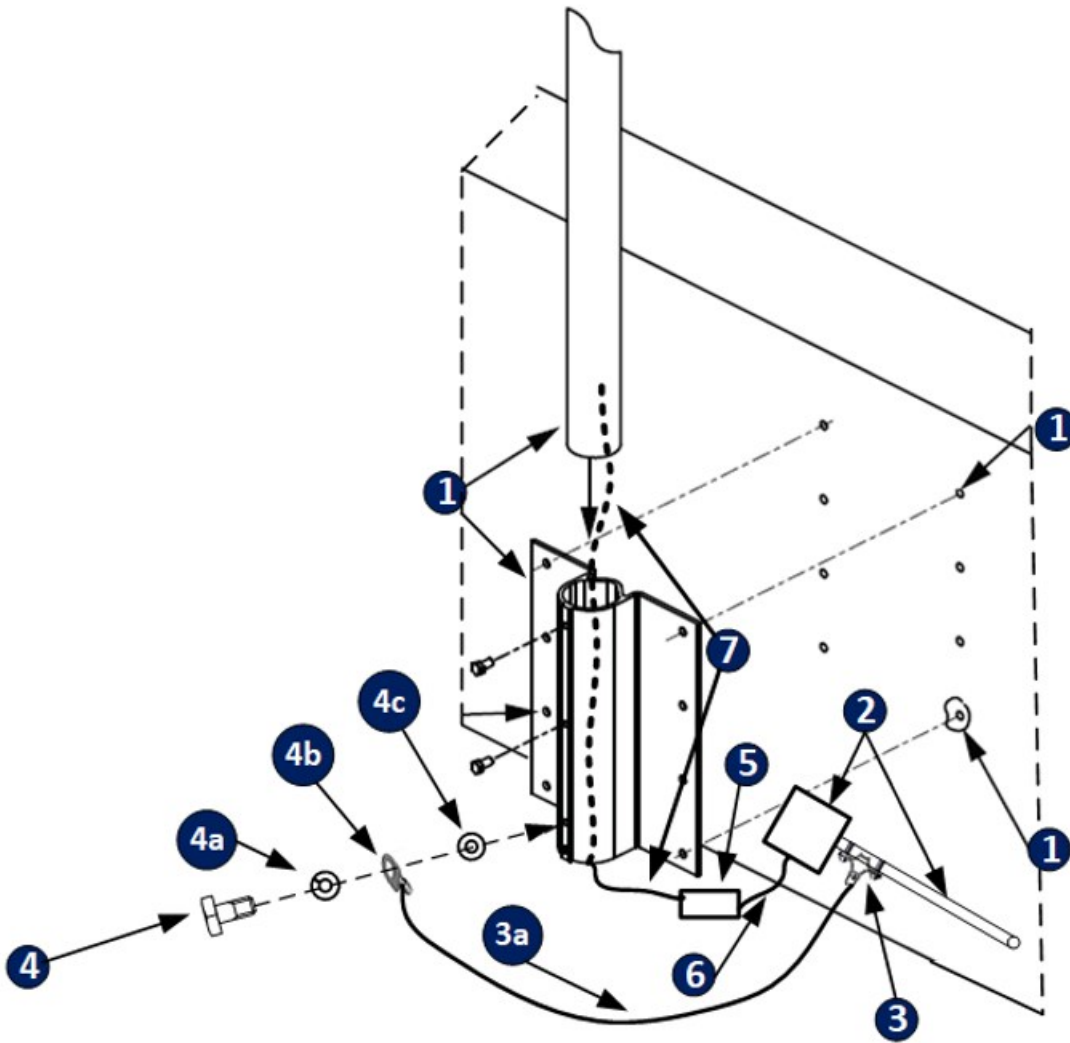


Figure 6.2: Grounding a parapet mount

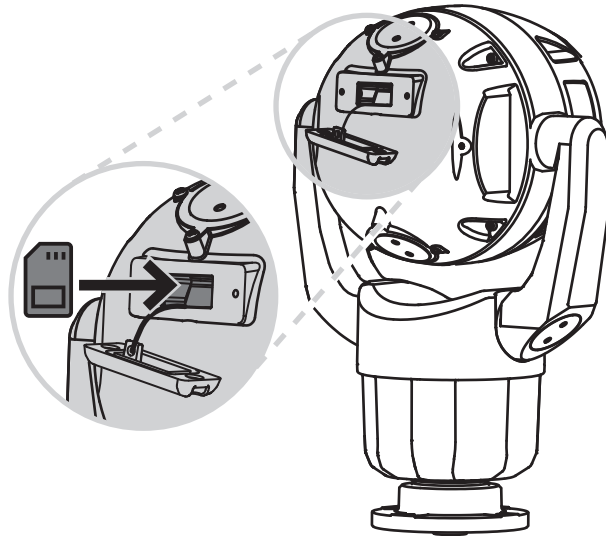
## 7 (Optional) Installing an SD card

The steps that follow are applicable for enhanced models of MIC cameras.

1. Use a T20 Torx driver to remove the two (2) fasteners from the SD card cover on the rear of the camera head.
2. Pull off the SD card cover. Allow the cover and the O-ring seal to hang loose from the tether.

**Note:** Do not drop the fasteners.

3. Install a standard SD card.



4. If necessary, put the O-ring seal into the cover.
5. Put on the cover.
6. Install the two (2) fasteners that you removed in step 1.
7. Tighten the fasteners to 1.8 N m (1.3 ft lb).

## 8 (Optional) Configuration Programming in the Shipping Box

The camera packaging allows installers to connect the camera to the network and configure the camera still in the box.



### Caution!

Risk of damage to camera

Do not change the camera orientation to “Inverted” while the camera is still in the box. The camera head must be free to rotate. If you must change the camera’s orientation to “Inverted,” remove the camera from the box and configure it by following the steps in (Optional) Configuration Programming on a Temporary Table-top Stand.

1. Remove the packing material to access the camera’s electrical connectors.
2. Supply power to the camera and *Connect the Camera to the Network, page 51*. Note that the wiper moves one to three times across the camera window, and then returns to parked position.
3. Configure the camera. Refer to the separate User Manual for details.
4. Disconnect the wires/cables from the connectors in the base of the camera.

### Refer to

- *(Optional) Configuration Programming on a Temporary Table-top Stand, page 30*

## 9 (Optional) Configuration Programming on a Temporary Table-top Stand

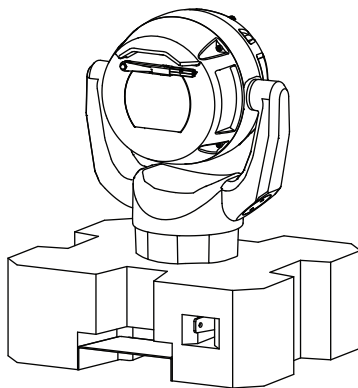


### Caution!

Take extra care lifting or moving MIC cameras because of their weight.

The camera (still in the foam) can stand temporarily on a flat, horizontal surface such as a desk or a table during initial network connection and configuration.

1. Remove the packing material to access the camera's electrical connectors.
  1. Remove the foam covering the head of the camera.
  3. Remove the camera, still in the foam, from the box. Place the camera upright on a flat, horizontal surface.



1. Supply power to the camera and *Connect the Camera to the Network, page 51*. Note that the wiper moves one to three times across the camera window, and then returns to parked position.
2. Configure the camera. Refer to the separate User Manual for details.



### Notice!

If you change the camera orientation to “**Inverted**” (from the page **Configuration** of the web browser: **Camera > Installer Menu > Orientation**), then the camera head will rotate automatically into inverted position (180°). Note that the visor will now be near the body of the camera.

3. Disconnect the wires/cables from the connectors in the base of the camera.

## 10 Installing a MIC Camera on a Hinged DCA

The hinge feature allows installers to “hang” the camera temporarily but securely during installation for easier connection of cables/wiring before final bolts are installed.

### Parts List

Quantity	Component
1	MIC Hinged DCA (MIC-DCA-Hx)
4	Stainless steel hex bolts, M8 x 30
4	Stainless steel plain washers, M8
1	O-ring, 80 mm x 3 mm
1	conduit adapter (male M25 to female 3/4" NPT) (Available in specific regions only.)
1	Blanking plug, M25 x 1.5, with O-ring
1	Quick Installation Guide

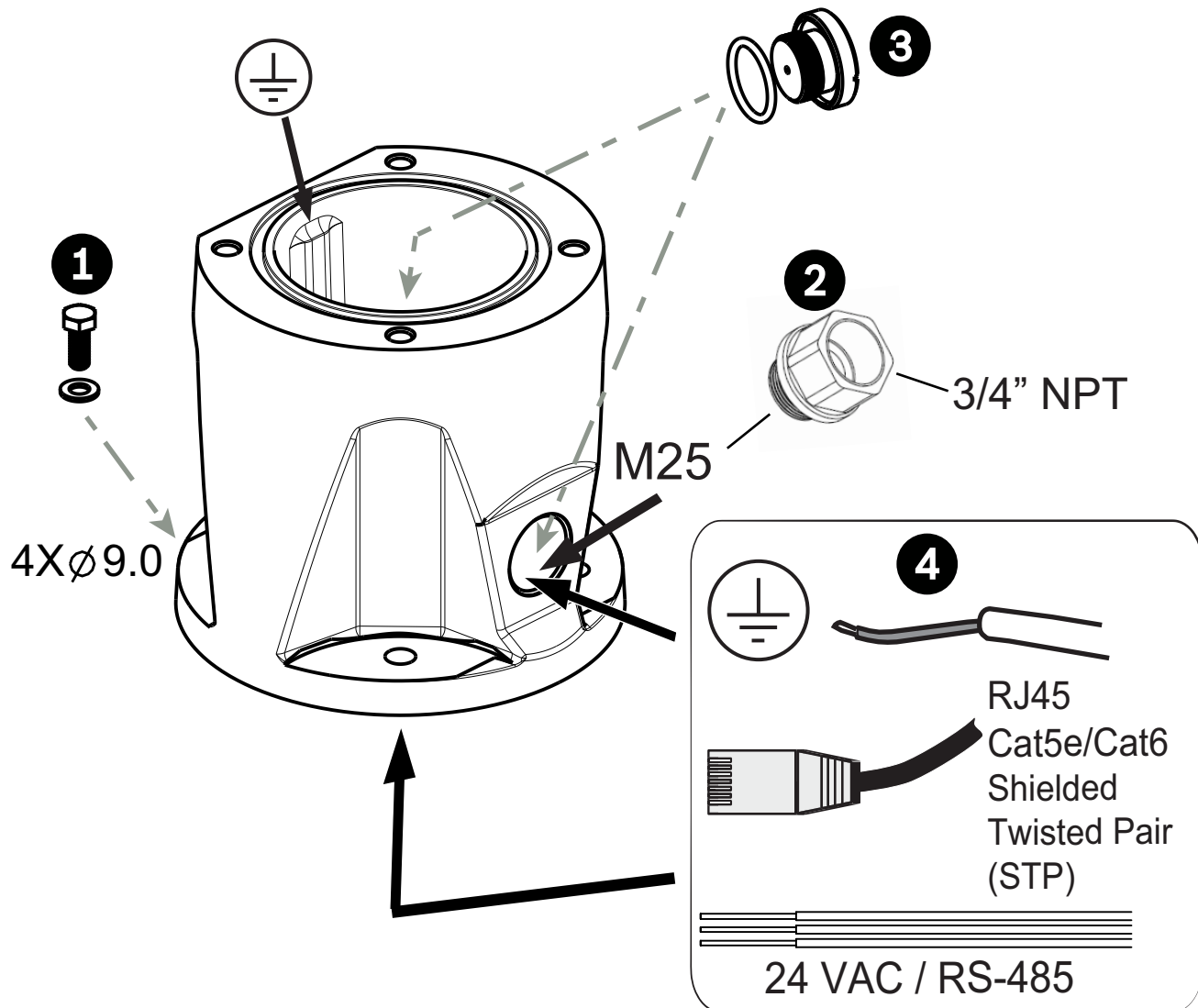
### Additional Tools Required

1	Torx driver, T25, to loosen and tighten the hook bolts
1	Wrench/driver to secure M8 bolts (supplied) to mount the camera onto the DCA
1	Wrench/driver to secure user-supplied bolts (maximum M8 or 5/16" diameter) to mount the DCA to the mounting location
1	Phillips-head screwdriver to attach ground wire
*	* (Optional) MOLYKOTE® 111 grease [from Dow Corning] for primary O-ring



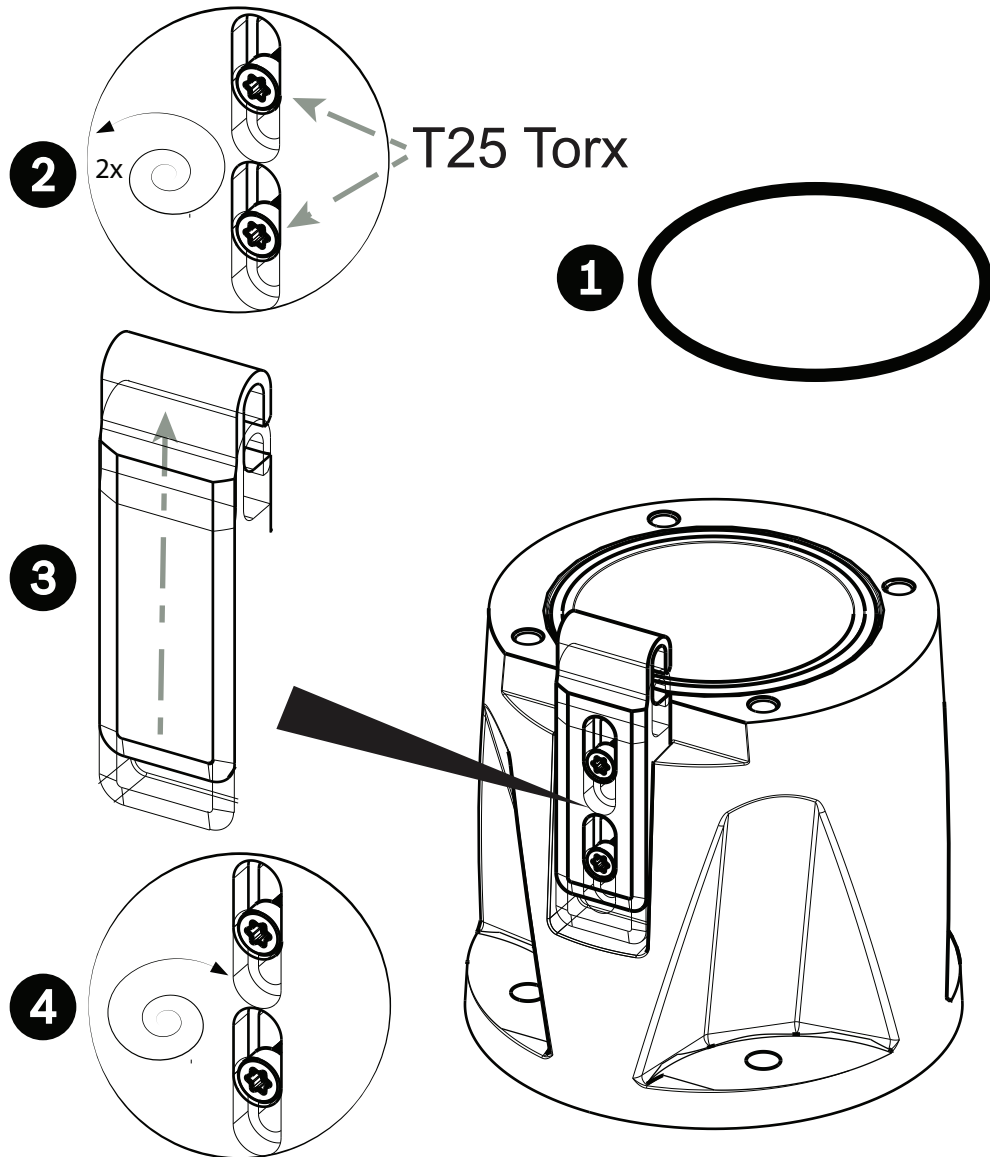
### Warning!

Ensure not to damage the paint on the housing of the camera or the mount.



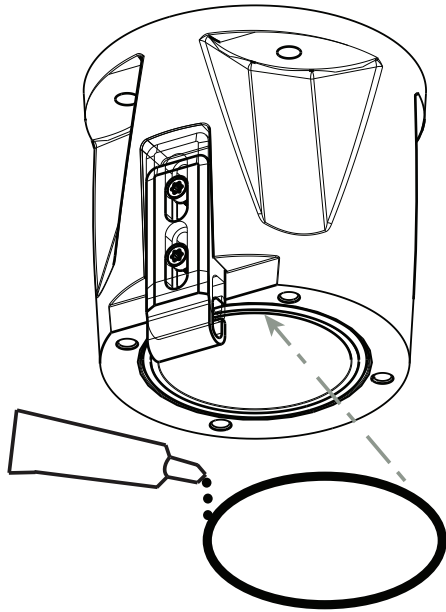
1. Attach the DCA to the mounting location using user-supplied hardware (item 1). (Bosch recommends stainless steel bolts and washers.)
2. Attach user-supplied conduit or glands to the side hole or to the bottom hole. If applicable, use the conduit adapter (male M25 to female 3/4 in. NPT) (item 2, included with the DCA).
3. Route cables into the DCA (item 4), either through the bottom or from the side.
4. Use the blanking plug and O-ring (item 3, included with the DCA) to close the unused hole (bottom or side) in the DCA.





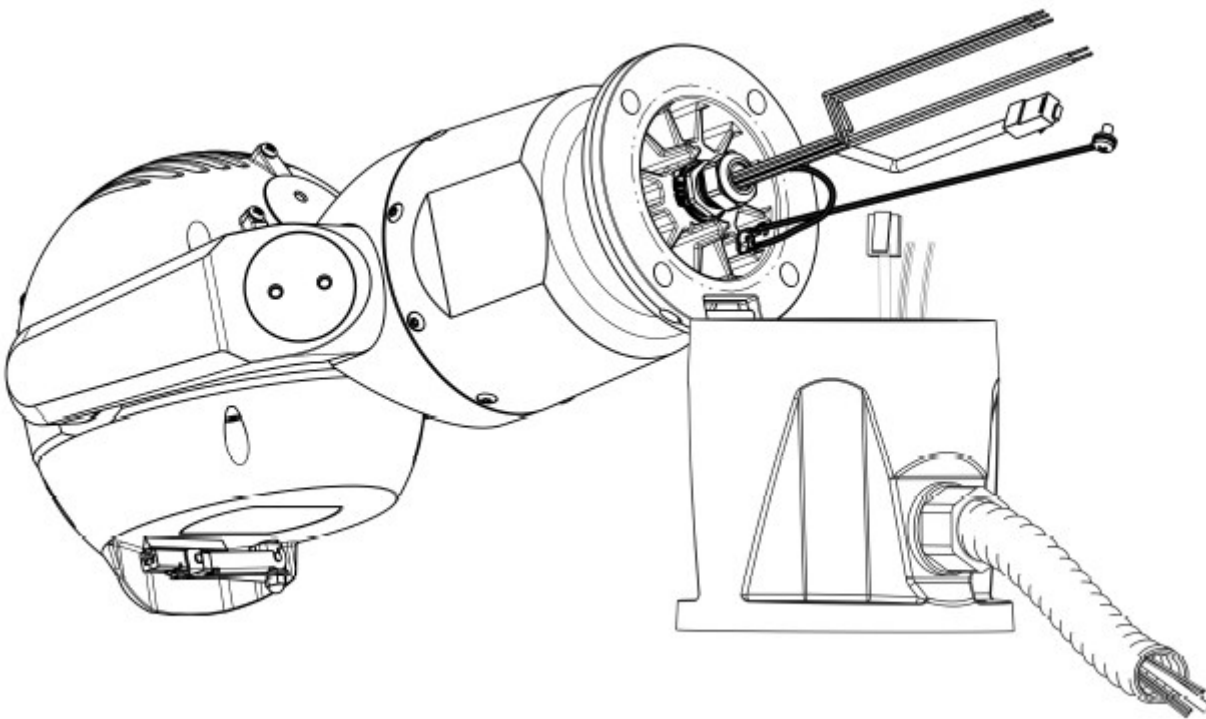
5. Insert the O-ring (item 1).

6. Loosen the Torx bolts two (2) turns (items 2). Slide the hook up (item 3). Tighten the bolts to hold the hook in place temporarily (item 4).



7. For inverted installation, apply a small amount of grease to the primary O-ring to hold it in place.

8. Push the wires from the camera base into the DCA while positioning the base pin of the camera under the DCA hook (item 1). Avoid pinching the wires! (item 2). Loosen the hook bolts, and then slide the hook down to secure the camera pin. Fully tighten the hook bolts (item 3).

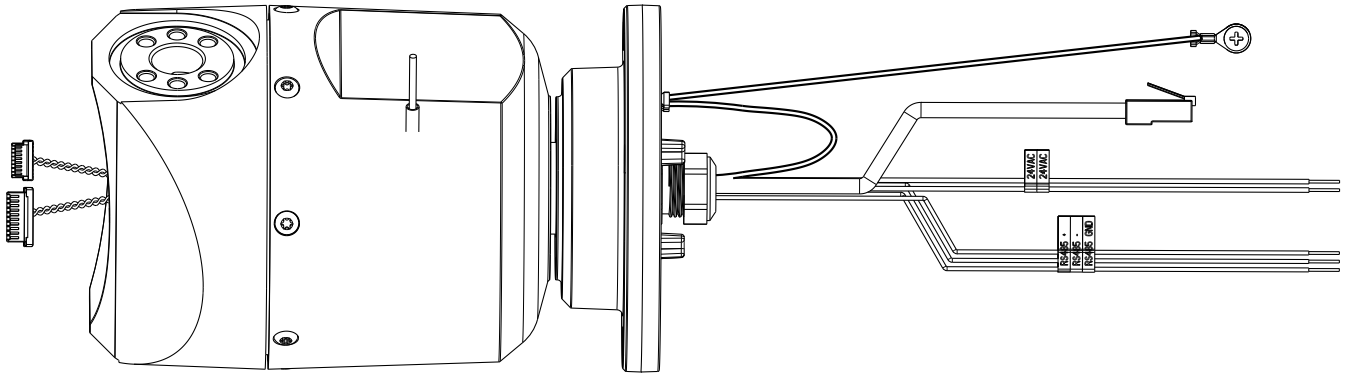


9. Carefully tilt the camera to the side with the pin under the hook.

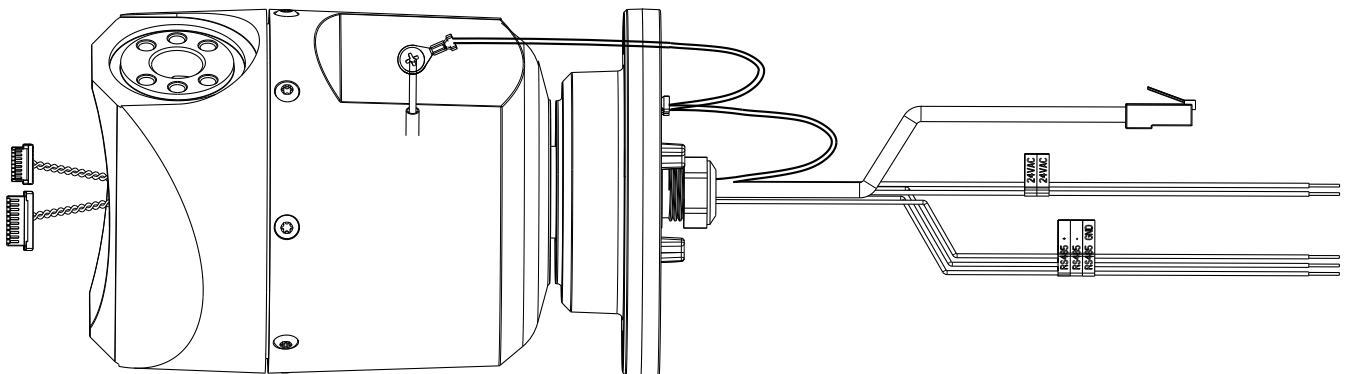
**Notice!**

Risk of damage to the camera!

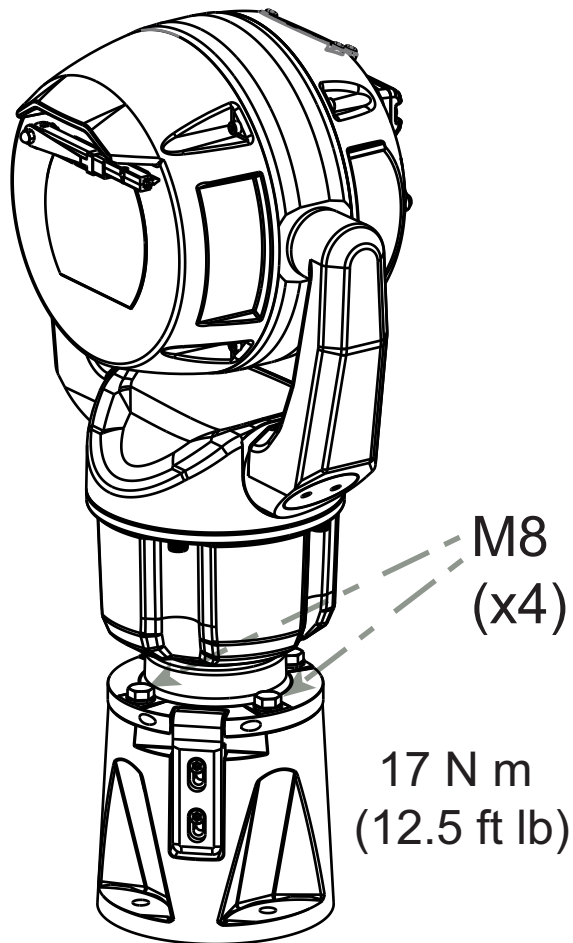
Ease the camera into position; do not allow it to fall unassisted into rotated position or allow head to slam into any surface or object!



10. Make the appropriate electrical connections. Refer to the chapter **Connections** for more information.



11. Connect the lead from the camera pigtail to the ground post on the pan base. The connection for the customer should be to the lead from the post.



12. Carefully tip the camera to its final position. Avoid pinching wires between the camera base and the DCA! Insert four washers and hex bolts (supplied).

# 11 (Optional) Installing a Sunshield

Quantity	Component
1	Sunshield shell
2	Screws, M4 x 10
2	Flat washers
1	Quick Installation Guide

### Additional Tools Required

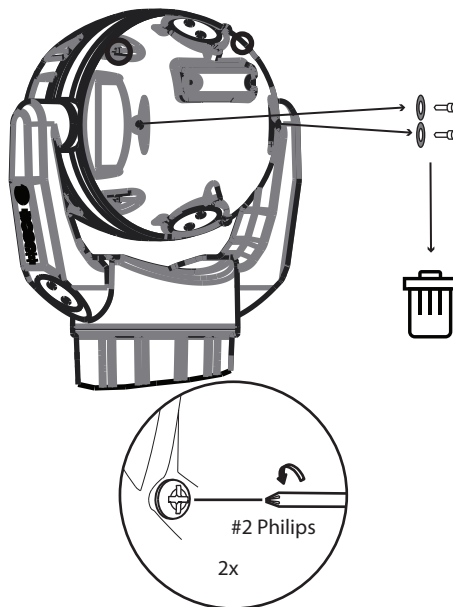
1	Phillips-head screwdriver, #2, to remove factory-installed plastic screws from the camera head
1	Torx driver, T20, for M4 Torx head screws
1	Pair of diagonal cutters, to remove the plastic insert for the illuminator from the sunshield shell, if necessary



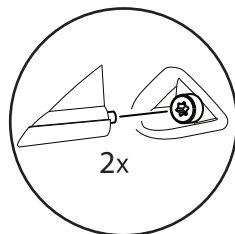
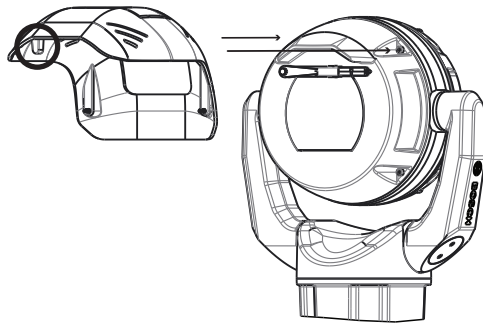
### Notice!

Install the applicable accessories (illuminator, sunshield) before you cant the camera.

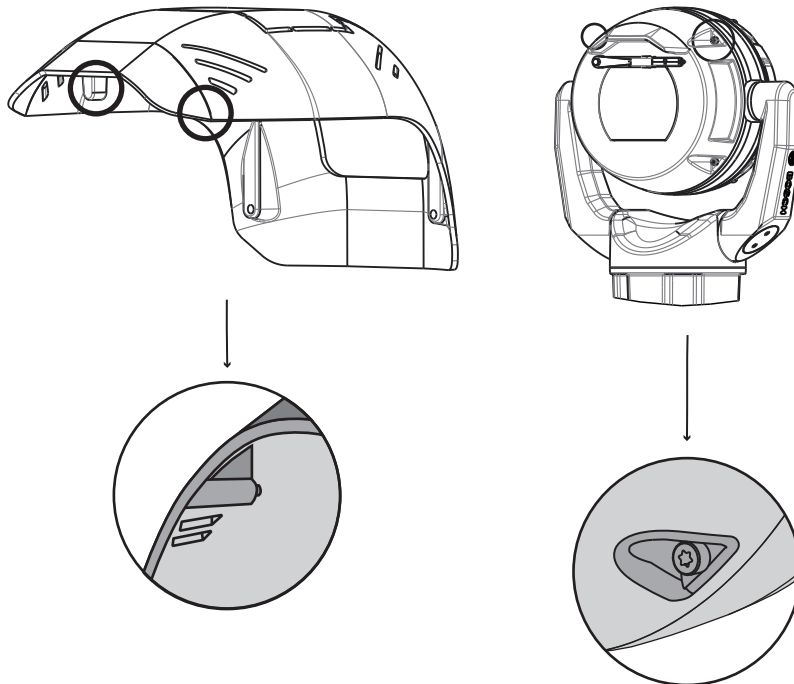
1. If you will install an illuminator on a unit mounted in upright orientation:  
 Cut out the inset area in the sunshield shell with a pair of diagonal cutters. The inset area provides space to attach the illuminator. Discard the cut-out plastic.  
 Note: This step does not apply to cameras mounted in inverted orientation.
2. Remove the screws from the camera head.



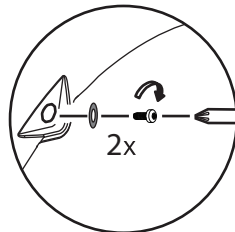
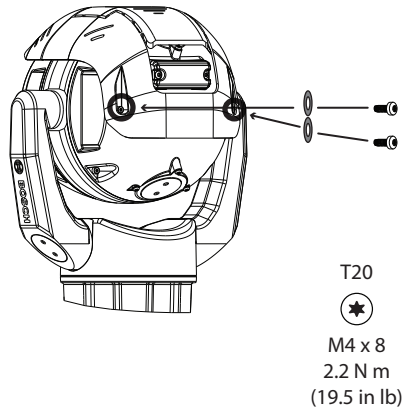
3. Attach the sunshield to the camera head.



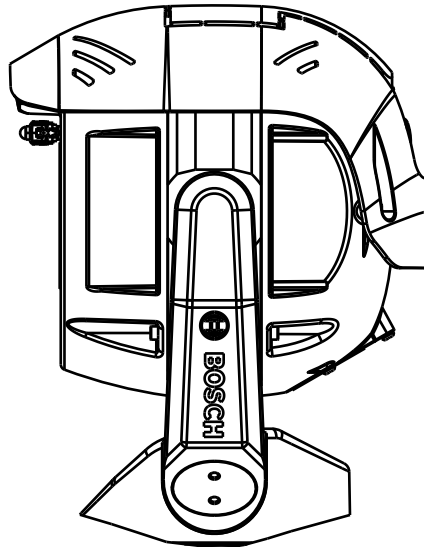
4. Make sure that the tabs in the sunshield lock into place in the camera head.



5. Install the M4 x 10 screws. Tighten the screws to 2.2 N m (19.5 in-lb).



6. Note that when you install the sunshield correctly, the sunshield appears as in the following figure.



**Figure 11.1:** Sunshield installation is complete.

## 12 (Optional) Installing the Illuminator

Use the correct set of tools as well as the recommended torque values given in the instructions that follow. The use of the wrong tools or torque values may cause damage to threads or seal caps, which may result in leaks or damage to paint, which then may lead to the start of corrosion.

### Parts List

Quantity	Component
1	MIC Illuminator accessory
1	Spanner wrench [to remove the access plug from the camera head]
3	M4x10 socket head Torx screws
1	Quick Installation Guide

### Additional Tools Required



#### Warning!

IR emitted from this product.  
Meets IEC 62471, Risk Group 1.



#### Notice!

This product has been tested according to standard IEC62471:2006 “Photobiological safety of lamps and lamp systems”. The product emissions exceed the EXEMPT Group limit for both Retinal Blue Light and Cornea/Lens infrared hazard as defined by IEC 62471:2006. The product was found to meet the Risk Group 1 exposure limits for IR and White LEDs.

Refer to the MIC7000 Operation Manual for complete information on illumination safety.



#### Notice!

If the MIC camera will have both illuminator and sunshield accessories, install the illuminator first.

1. Mount the camera or stand it temporarily in the packaging foam on a stable surface before proceeding. (Refer to the Operation Manual.)

If the camera will be mounted inverted, you must rotate the tilt head before attaching the illuminator.

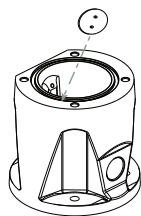
1. Apply power.
2. Connect to your network.
3. From the web browser, access the camera’s Configuration page. Select Camera > Installer Menu > Orientation.
4. Select “Inverted”. Click **Set** to confirm the selection. The camera head will rotate automatically into inverted position (180°).

Regardless of mounting orientation, the visor should always be above the camera window.

2. Remove and discard the three (3) plastic screws **surrounding the appropriate access port where the illuminator will be installed.**

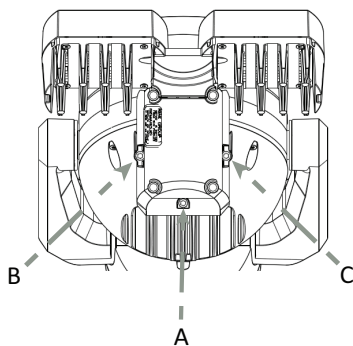
3. Remove the appropriate access plug from the camera head with the supplied spanner wrench. For upright cameras, remove the plug near the visor. For inverted cameras, remove the plug farther away from the visor.





Bosch suggests storing the access plug inside the DCA mount (or wall mount accessory) in case it becomes necessary to remove the illuminator.

4. Remove the plastic cap from the illuminator accessory. Discard.
5. Align the illuminator over the access port and carefully push into position on the camera head.



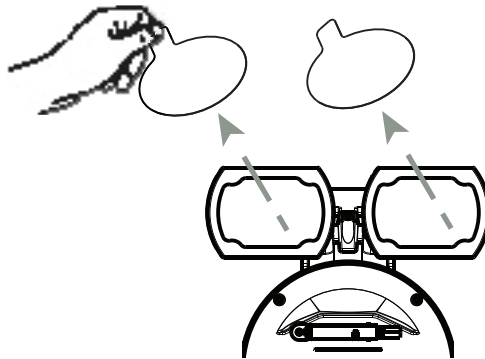
<b>1</b>		0 - 0.7 N m
<b>2</b>		0.7 - 1.4 N m
<b>3</b>		1.4 N m

6. Partially engage the threads of all three (3) screws. Do not tighten any one screw completely at this point.
  - Using the T20 Torx driver, tighten the screws to the proper torque using the sequence described in the previous figure.

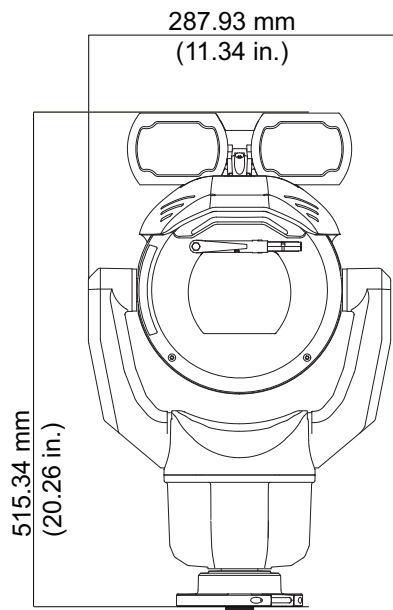


**Warning!**

Total engagement is not complete until you tighten all three (3) screws.



7. Remove the translucent film.



8. Installation of the illuminator is complete.

## 13 (Optional) Canting the Camera

**Note:**

For simplicity, the graphics in this section are only of the camera (and the specific accessory that you are installing, if applicable). The graphics do not depict other accessories that you may have installed already.

MIC inteox 7100i cameras have on-site canting functionality.

Installers can adjust the camera from an upright position to a canted position (35° angle) if necessary. In this position, the field of view (FOV) of the camera includes the scene directly beneath the camera.

When you select the mounting location for the camera, make sure that the location gives the necessary clearance for the camera head to pan.

Installation	Clearance radius required
Camera only	200 mm (7.9 in.)
Camera + illuminator	280 mm (11 in.)

You cannot install a canted unit in inverted orientation (with the camera head down). The tilt limits of the camera prevent correct operation in inverted and canted orientation.



**Warning!**

Risk of bodily injury.

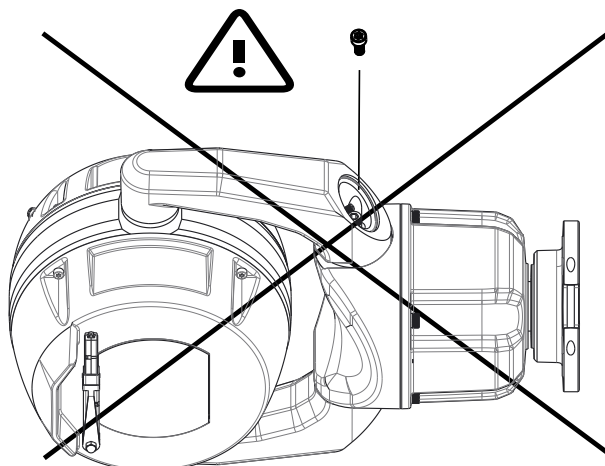
Unplug the device from its power source before canting the device. After removing the screws from the yoke arms, support the camera head so that it doesn't tilt downward unexpectedly and pinch fingers or other body parts.



**Notice!**

Risk of damage to the camera

Do not, under any circumstances, cant the camera while the camera is on its side. Cant the camera from an upright position only, in order to prevent screws or other objects from falling into the open spaces in the arms when the yoke caps are removed.



**Figure 13.1:** Do NOT allow screws or other objects to fall inside the camera.



**Warning!**

Risk of bodily injury

Do not put a canted (35°) camera in an upright position on the camera base or on an unsecured DCA. In this position, the camera can fall over and can cause injury or be damaged. Put the canted camera on its side until installation.

**Notice!**

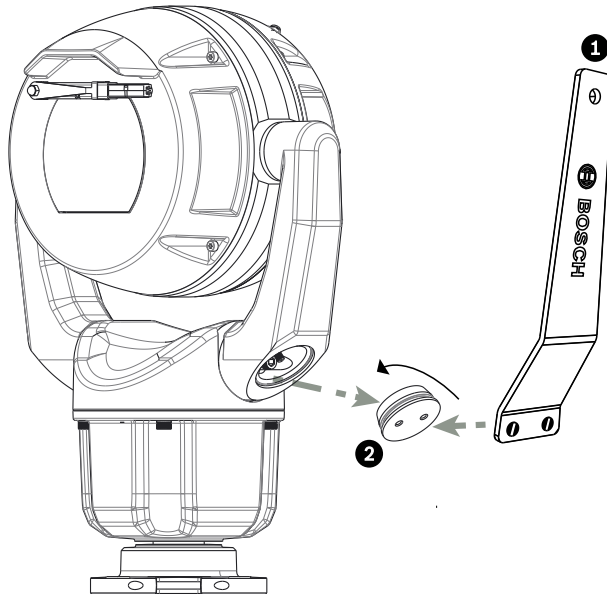
Install the applicable accessories (illuminator, sunshield) before you cant the camera.

Use the correct set of tools as well as the recommended torque values given in the instructions that follow. The use of the wrong tools or torque values may cause damage to threads or seal caps, which may result in leaks or damage to paint, which then may lead to the start of corrosion.

To cant the camera, follow these steps:

1. Install the camera on a DCA. Mount the DCA.
2. Remove the yoke cap (item 2 in the figure below) on one yoke arm of the camera, using the supplied spanner wrench (item 1).

Repeat for the second arm.



**Figure 13.2:** Remove the yoke caps with the spanner tool.

1. Remove the two (2) screws at the bottom of one yoke arm using a wrench (user-supplied) as described below.

**Notice!**

Risk of damage to the device.

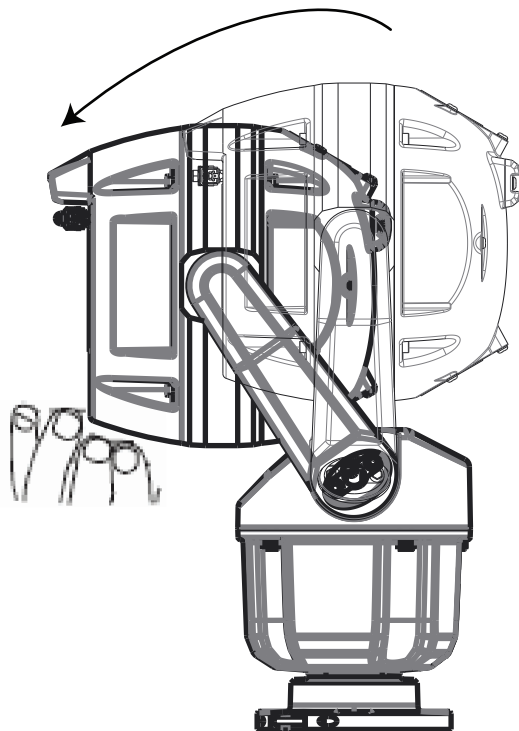
Without the yoke arm screws in position, the camera head can fall and be damaged. Hold the head of the camera as you complete the next four (4) steps.

3. Put the screws in a safe place. You will reinstall the screws at step 6.
4. Repeat steps 2 and 3 for the second yoke arm.
5. Rotate the arms and the head assembly forward.

**Notice!**

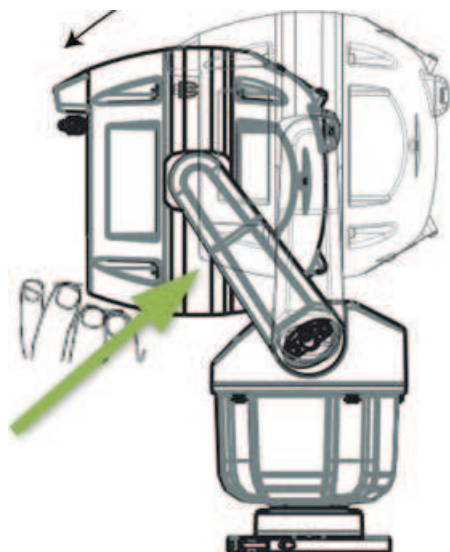
Risk of damage to the device.

Do not cant the camera, or let it fall, in the wrong direction. The camera should cant only in the direction indicated in the figure directly below.

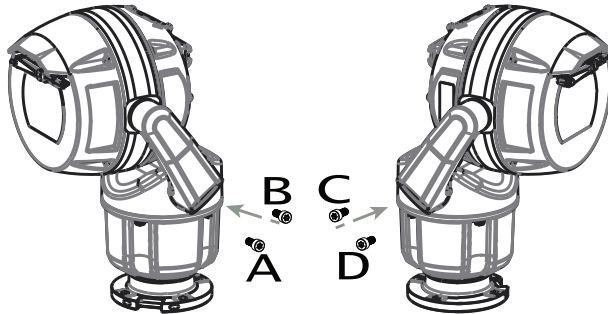


**Figure 13.3:** Cant the camera head.

6. Reinsert the screws into both yoke arms. As you tighten the bolts, carefully push the camera head up about 2 mm (0.08 in.), against gravity, towards the center of the camera (as in the arrow in the figure that follows). This action removes the slack in the arms and aligns the screw holes properly so that the camera head can move freely.



**Figure 13.4:** Push camera head up 2 mm (0.08 in.)


















**Figure 13.5:** Reinsert the screws in the yoke arms in the following sequence: ABCD.

7. Using a torque wrench (user-supplied), tighten the screws to the proper torque using the sequence described in the table below.

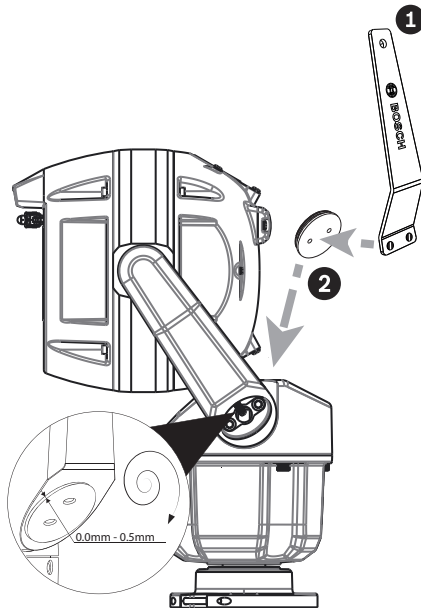
8. Recheck all four screws to ensure the proper torque value.

Do not use grease on the screws.

  
5mm Hex  
(T30 Torx)

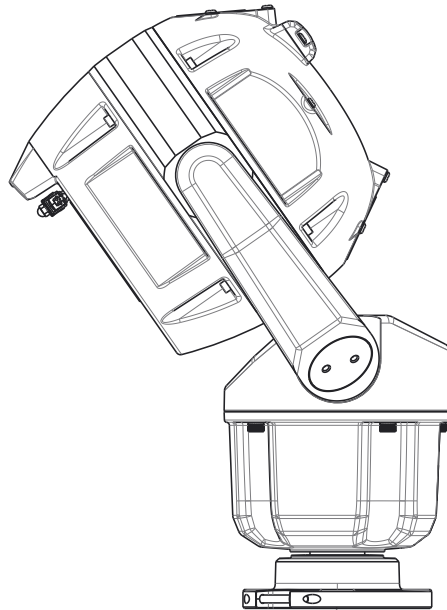
1.	 A >  B >  C >  D	≈ 7.5 Nm (5.5 ft lb)
2.	 A >  B >  A >  B	≈ 17 Nm (12.5 ft lb)
3.	 C >  D >  C >  D	≈ 17 Nm (12.5 ft lb)
4.	 A >  B >  C >  D	≈ 17 Nm (12.5 ft lb)

9. Attach the yoke caps using the supplied spanner wrench.



**Figure 13.6:** Attach the yoke caps.

10. Canting is complete.



**Figure 13.7:** Canting is complete.

11. Change the camera orientation to “Canted.” Complete the following steps:

- Access the page Configuration.
- Navigate to Camera > Installer Menu > Orientation.
- Select “Canted.”

# 14 Connection

## 14.1 About Camera Power and Control

The camera incorporates a network video server that encodes video images and PTZ control commands for transmission over a TCP/IP or UDP/IP network.

With its H.264 or H.265 encoding, it is ideally suited for IP communication and for remote access to digital video recorders and multiplexers. Use existing networks to achieve quick and easy integration with CCTV systems or local networks. Several receivers can receive video images simultaneously from a single camera.

## 14.2 Power Source Options

The camera can be powered by a network compliant to High Power-over-Ethernet using a Bosch model of High PoE Midspan (sold separately). With this configuration, only a single cable connection (Cat5e/Cat6 Shielded Twisted Pair (STP)) is needed to view, to power, and to control the camera.

For maximum reliability, the camera can be connected simultaneously to a High PoE Midspan and a separate 24 VAC power source. If High PoE and 24 VAC are applied simultaneously, the camera usually selects the High PoE Midspan and will draw minimal power from the auxiliary input (24 VAC). If the High PoE Midspan power source fails, the camera switches power input seamlessly to 24 VAC. After the High PoE Midspan power source is restored, the camera switches power input again to the High PoE Midspan.

Bosch recommends 24VAC power output of 24V at 100VA, 4A with a slow blow fuse.

The power supply must be certified to UL/IEC 60950-1 2nd Edition, AM1+AM2 or UL/IEC 62368-1 2nd Ed, Output 24 VAC, LPS, +65 °C (+149 °F) min.

Camera models	60 W midspan	95 W midspan	24 VAC PSU*
Models with illuminator		X	X
Models without illuminator	X	X	X

\* recommended: 24V at 100VA, 4A with a slow blow fuse

Bosch recommends only a midspan power source for models with an attached illuminator. The table below identifies the power devices that can be connected simultaneously to the camera.

If power is supplied from:	Camera can receive power simultaneously from:
60 W midspan	24 VAC PSU: VG4-A-PSU1 or VG4-A-PSU2
95 W midspan	



**Notice!**

Connect the 24 VAC connections from the MIC camera to the heater output of the power supply (VG4-A-PSU1 or VG4-A-PSU2).





**Caution!**

Compliance with EN50130-4 Alarm Standard – CCTV for Security Applications  
 To meet the requirements of the EN50130-4 Alarm Standard, an ancillary uninterruptable power (UPS) supply is necessary. The UPS must have a **Transfer Time** between 2–6 ms and a **Backup Runtime** of greater than 5 seconds for the power level as specified on the product datasheet.

### 14.3 Ethernet Connections



**Caution!**

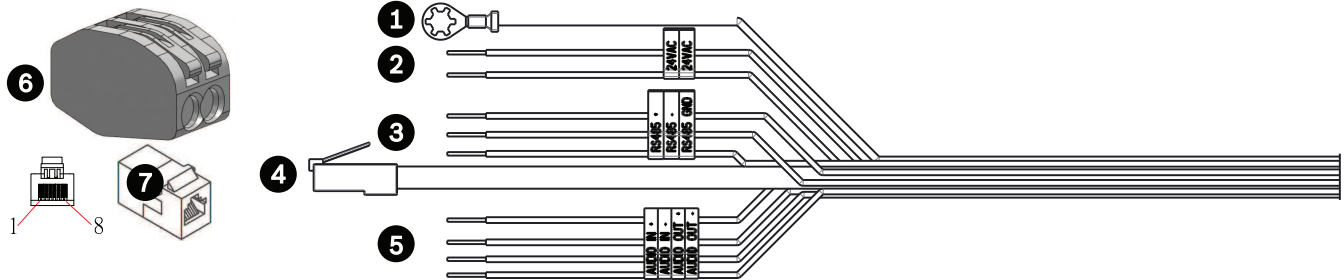
Ethernet cables must be routed through earth-grounded conduit capable of withstanding the outdoor environment.

Cable Type	Cat5e/Cat6 Shielded Twisted Pair (STP) Ethernet (directly to the camera, or to a network switch between the camera and the network) <b>Note:</b> Cat5e/Cat6 Shielded Twisted Pair (STP) cable is required in order to meet European regulatory EMC standards.
Maximum Distance	100 m (330 ft)
Ethernet	10BASE-T/100BASE-TX, auto-sensing, half/full duplex
Terminal Connector	RJ45, Male
High PoE	For models with attached illuminators: Use the 95 W midspan sold by Bosch. For models without illuminators: Use the 60 W midspan sold by Bosch, or a midspan that is compliant to the IEEE 802.3at, class 4 standard.

**Note:** Consult the National Electrical Code (NEC) or other regional standards for cable bundling requirements and limitations.

## 14.4 Camera Connections

All electrical and data connections from the camera are made from the connectors in the base of the camera.



	Description	Wire Color
1	Chassis (Earth) ground wire (18 gage) with connector lug	Green
2	24 VAC power wires (24 gage) to Pins 4 and 5 of connector labeled P107 in VG4-A-PSU1 or VG4-A-PSU2 (if not using a High PoE network)*	Line (L) = Black Neutral (N) = White
3	RS-485 connections for communication to / from the MIC-ALM-WAS-24 or other device providing legacy serial protocol signals *	+ = Purple - = Yellow <b>GND</b> = Brown
4	RJ45 (Cat5e/Cat6) connector (male) (supporting High PoE) for power and communication between a Bosch High PoE Midspan	
5	Audio wires (twisted pair cable recommended)	Audio IN + = Red Audio IN - = Light blue Audio OUT + = Orange Audio OUT - = Dark blue
6	Wire connectors on 9 wires (numbers 2, 3, and 5 in the corresponding graphic) <b>Note:</b> The quick clips should remain on unused wires. If the clips are removed, cover the exposed copper on the wires with electrical tape to prevent the unused wires from electrically shorting to one another or to the mount enclosure.	
7	RJ45 coupler (female to female)	

\* [Not available on MIC inteox models.]

\* For more information, refer to the installation manual Power Supply Units (AUTODOME VG5- and MIC IP Camera Models) (shipped with VG4-A-PSU1 and VG4-A-PSU2).

**Note:** If the MIC camera will be installed directly to a mounting surface, instead of onto a MIC DCA or a MIC wall mount bracket, Bosch recommends using the connector kit for your model of camera to protect the connections against moisture and dust particles. Each kit provides components for connecting as many as 5 MIC cameras.

- MIC-IP67-5PK (Connector kit for MIC IP ultra 7100i, MIC IP starlight 7100i, and MIC inteox 7100i cameras)
- MIC-9K-IP67-5PK (Connector kit for MIC IP fusion 9000i)

Not using the IP67 Connector Kit will void the camera warranty.

**Note:** The PoE connection is not intended to be connected to exposed (outside plant) networks.

Seal the base of the camera against moisture ingress (standing water).

## 14.5

### Connect the Camera to the Network

#### Option A (if using a 95 W midspan NPD-9501A):

1. Connect a straight Ethernet cable (Cat5e/Cat6 Shielded Twisted Pair (STP)) from the RJ45 connector of the camera to the DATA + POWER OUT port of the High PoE Midspan.

**Note:** Do NOT use a cross-over cable!

**Note:** You must ground cable at both ends!

2. Connect a straight Ethernet cable (Cat5e/Cat6e) from the DATA port of the High PoE Midspan to the network.

3. If applicable, connect the 24 VAC wires to the power source.

4. If applicable, connect the RS-485 wires to the MIC-ALM-WAS-24 (optional).

5. Attach the ground wire from the camera to an earth-ground connection on the mounting surface using the supplied screw or a suitable user-supplied fastener.

6. If applicable, connect the AUDIO IN and AUDIO OUT wires to the appropriate line level audio device.

#### Option B (if not using High PoE):

1. Connect either a straight or a **crossover** Ethernet cable (Cat5e/Cat6 Shielded Twisted Pair (STP)) from the RJ45 connector of the camera to the Local Area Network (LAN) or another device (a computer, a DVR/NVR, etc.).

**Note:** You must ground cable at both ends!

2. Connect the dedicated network switch to the RJ45 connector on the computer.

3. Connect the 24 VAC wires to the power source.

4. If applicable, connect the RS-485 wires to the MIC-ALM-WAS-24 (optional).

5. Attach the ground wire from the camera to an earth-ground connection on the mounting surface using the supplied screw or a suitable user-supplied fastener.

6. If applicable, connect the AUDIO IN and AUDIO OUT wires to the appropriate line level audio device.

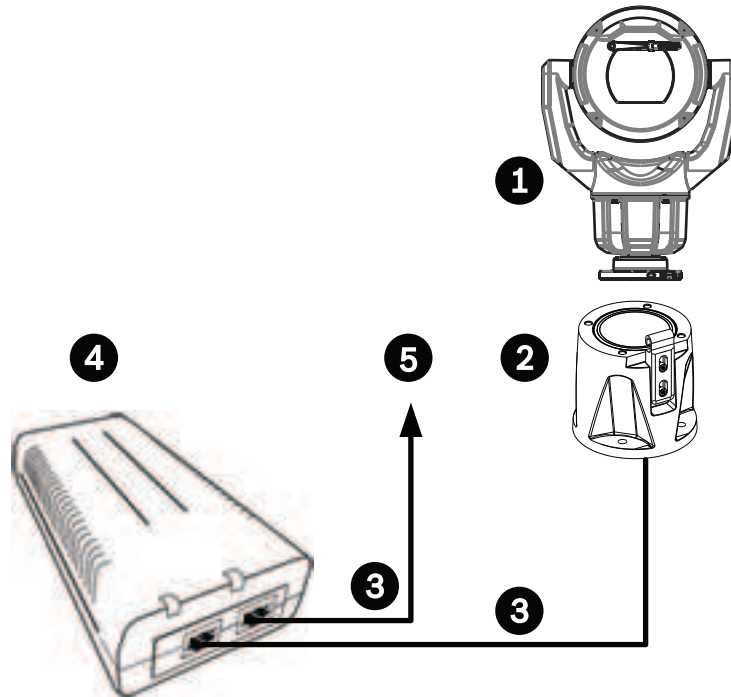
## **14.6**      **Installing the camera outdoors**

# 15

## Typical System Configurations

### 15.1

### Typical IP Configuration with High PoE midspan (no I/O connections)

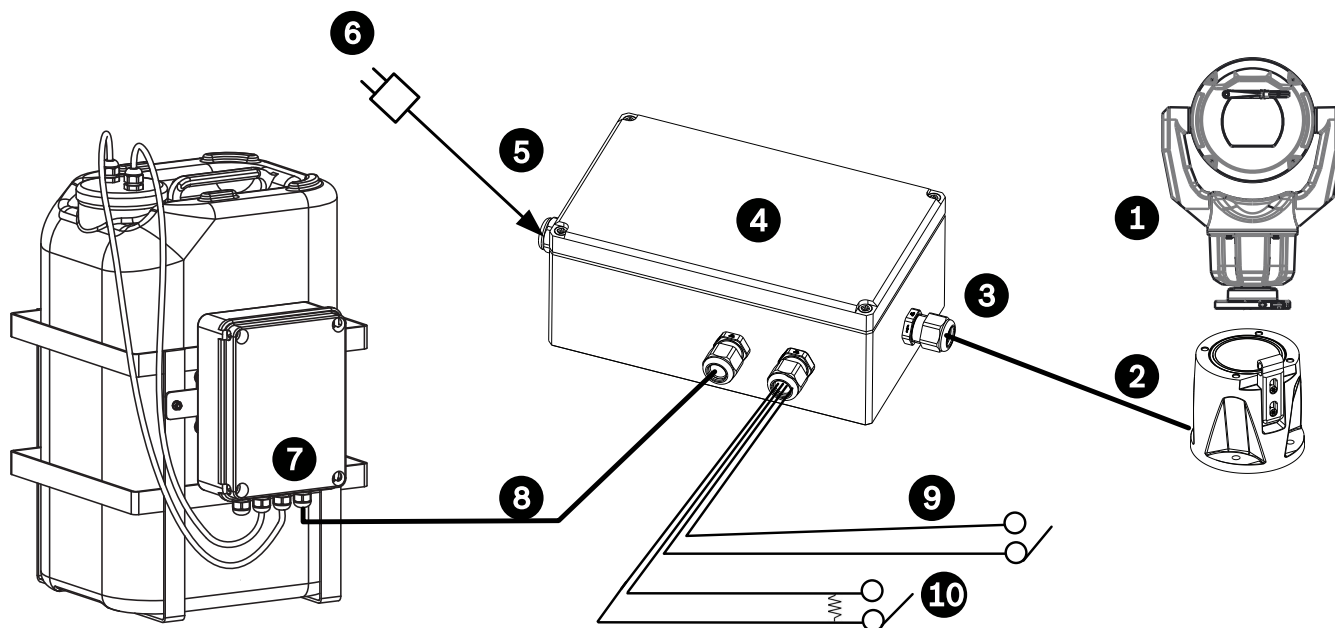


**Figure 15.1:** System Configuration with a midspan (no input or output connections)

1	MIC camera	2	MIC Hinged DCA (MIC-DCA-Hx)
3	High PoE (Network) cable (Cat5e/Cat6 Shielded Twisted Pair (STP)) (user-supplied) between the camera and the High PoE Midspan	4	High PoE Midspan
5	Data-only IP cable (Cat5e/Cat6 Shielded Twisted Pair (STP)) (user-supplied) between the High PoE Midspan and the head-end network		

**Note:** The total length of Cat5e/Cat6 Shielded Twisted Pair (STP) cable must be less than 100 m (328 ft) between the camera and the head-end system.

## 15.2 Typical Configuration with MIC-ALM-WAS-24



**Figure 15.2:** System Configuration with an MIC Alarm-Washer Box (MIC-ALM-WAS-24)

1	MIC camera	2	MIC Hinged DCA (MIC-DCA-Hx)
3	RS-485 cable, 3-conductor (user-supplied)	4	Enclosure of MIC-ALM-WAS-24
5	Interface cable for 24 VAC (for MIC-ALM-WAS-24) (user-supplied)	6	24 VAC Power pack, 1A, 50/60 Hz (user-supplied)
7	Washer pump accessory (user-supplied)	8	Interface cable for washer control (user-supplied)
9	Interface cables for alarm inputs and outputs (user-supplied)	10	Switch (monitored, normally open) for supervised alarm (user-supplied)

# 16 Troubleshooting

## Table of Troubleshooting Issues

The table below identifies issues that could occur with the camera, and how to resolve them.

**Note:** Refer to the Error Codes section of the manual for descriptions of the error codes that appear on the OSD. The section also lists recommended actions to resolve the error codes.

<p>Camera reboots frequently or intermittently</p>	<p>Your camera has an improper network connection. Test your camera with another power supply. Check the Bosch website for a software update that might address the issue.</p>
--	--

## 16.1 Physical reset button

Each camera has a hardware reset button. You may need to press the reset button to reset the camera to factory defaults if you encounter the following circumstances:

- You can power up the camera but cannot log on to the camera using the web browser.
- The camera doesn't start up, or fails to power up via PoE.
- The camera cannot search an IP address.
- The camera's firmware crashed.
- You forgot the password to access the camera.
- The image becomes frozen.
- You cannot update the firmware.
- The camera disconnects from the network at random and needs a reboot.
- The camera no longer finds pre-positions (preset positions).
- You cannot configure the camera using the web browser.
- The camera has no video out.



### Notice!

A factory default deletes all camera settings including passwords, network settings, and image settings.

Complete the following sequence of steps only if you have no other option to restore operation to the camera.

### Steps to complete a hardware reset for all camera models

1. Apply power to the camera.
2. Find the IP address of the camera.
3. Log on to the camera using the web browser. (**Note:** You can use Configuration Manager to identify the IP address.)
4. Find the hardware reset button on the camera. (Refer to the figure below to find the reset button for your camera model.)
5. Push and hold the reset button for more than 8 seconds. The red LED indicator on the PCBA board will come on to show that the hardware reset started.

**Note:** You can also use a conductive wire to short the terminal block.

1. Let the camera complete a self-check. When the self-check completes, the red LED will go off.
2. Find the IP address again.
3. Access the camera using the web browser.
4. Set the initial **service**-level password for the camera.

## 17 Maintenance

Regular maintenance of your MIC camera will preserve the MIC, especially the surface finish, for an extended period.

**Cleaning** – Remove power from the device before cleaning. Generally, using a dry cloth for cleaning is sufficient, but a moist, fluff-free cloth may also be used. Do not use liquid cleaners or aerosol cleaners.

In corrosive environments, you should clean the camera surface periodically with fresh water.

- ▶ Wash the camera thoroughly with fresh water:
- Regularly (1-2 times per quarter, or more frequently if possible)
- Immediately after an event such as a sea storm that could introduce a layer salt on the camera's surface

Use a flow rate of 150-145 liter/minute. Hold the nozzle a minimum distance of 1 m from the camera.

- ▶ In certain use cases, it might help to use a solution of hydrophobic liquid to prevent long-term buildup of salt layers on the camera's surface.

Note: Do not use water pressure greater than 96.5 kPa (14 psi) to wash the unit.

### No User-serviceable Parts

Except for the external wiper blade, the device contains no user-serviceable parts. Contact your local Bosch service center for device maintenance and repair. In the event of failure, the device should be removed from site for repair.

### On-Site Inspection

It is recommended that the device be inspected on-site every six months to check mounting bolts for tightness, security, and any signs of physical damage. Inspection of this device shall only be carried out by suitably-trained personnel in accordance with the applicable code of practice (for example, EN 60097-17).

### Information about cameras with illuminators

The text in this section applies only to cameras which have the optional illuminator accessory. When servicing the device, disconnect power to the device to avoid possible exposure to the eyes. If disconnecting power to the device is not possible, use appropriate shielding to block the LED arrays or wear appropriate eye protection.

### Illuminator removal

If you must remove the illuminator because it is damaged or has failed, follow these steps:

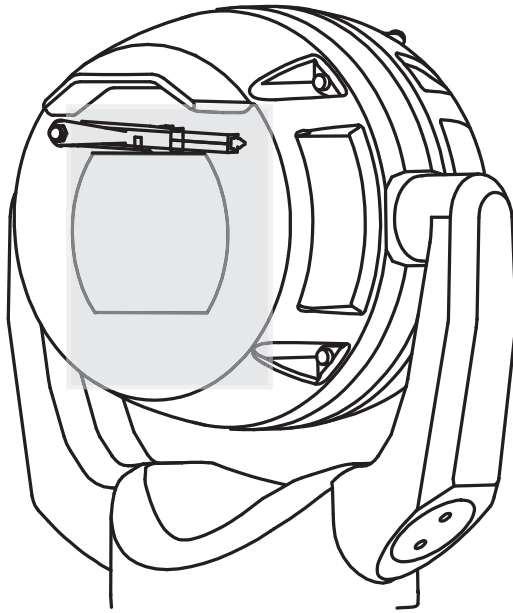
1. Remove the three (3) M4 Hex screws.
2. Install the access plug (which may be stored in an access hole of the MIC-DCA or the wall mount accessory; if not, see the note below).

**Note:** If you do not have an access plug, **do not remove the illuminator** until you request and receive a new access plug from Bosch.

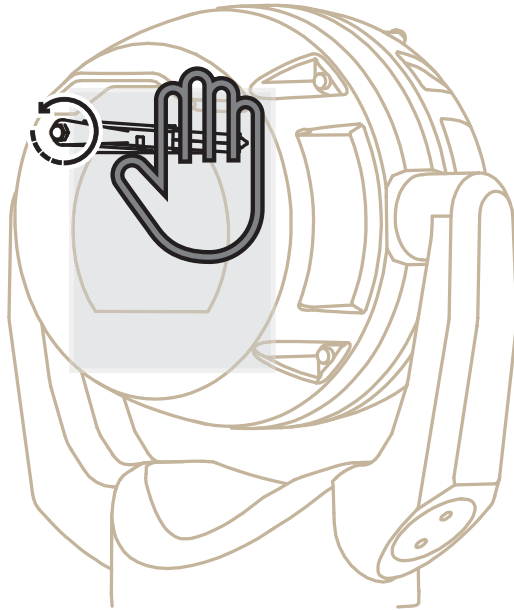


## 17.1 Replacing a wiper assembly

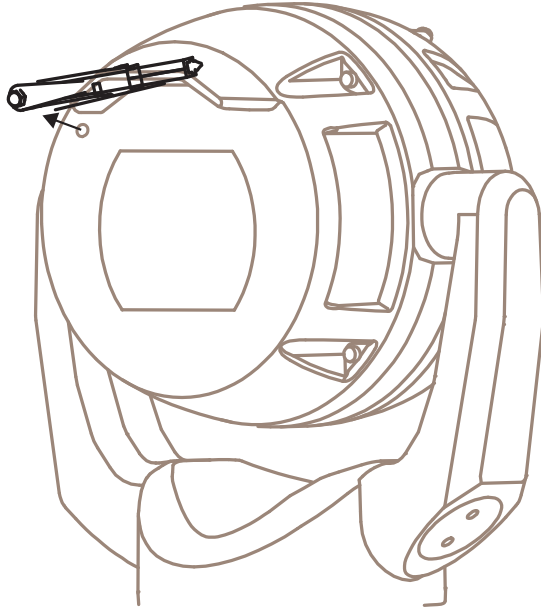
1. Put a piece of thin, protective material between the window glass and the wiper to prevent accidental damage.



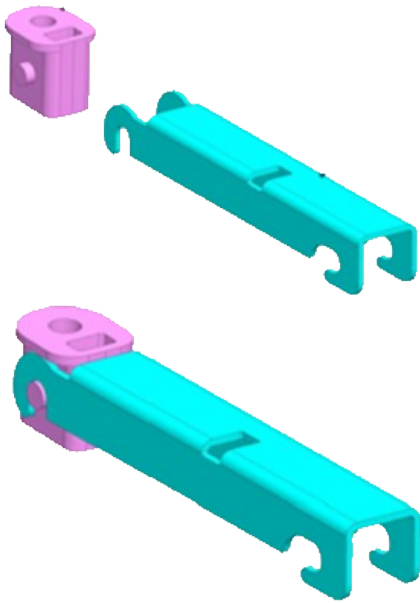
2. With one hand, hold the wiper arm firmly in place to restrict rotational movement.
3. With the other hand, using a 7mm Hex socket or nut driver, rotate the acorn nut counter-clockwise until the nut is free from the wiper shaft.



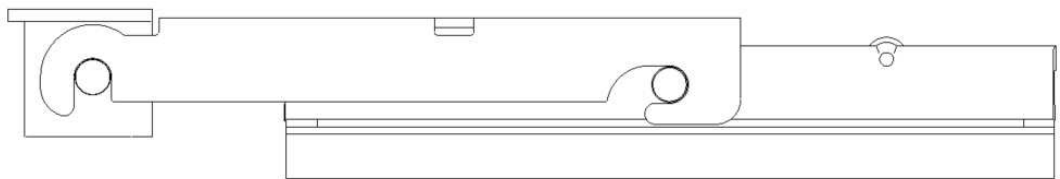
4. Remove the wiper spring, hub, arm, and blade assembly from the wiper shaft.



5. Connect the new wiper arm and the new wiper hub.



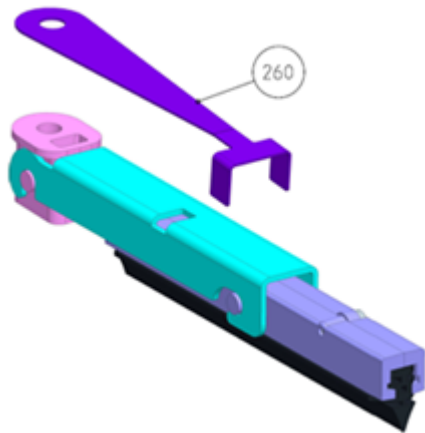
6. Insert the new blade assembly into the new wiper arm.



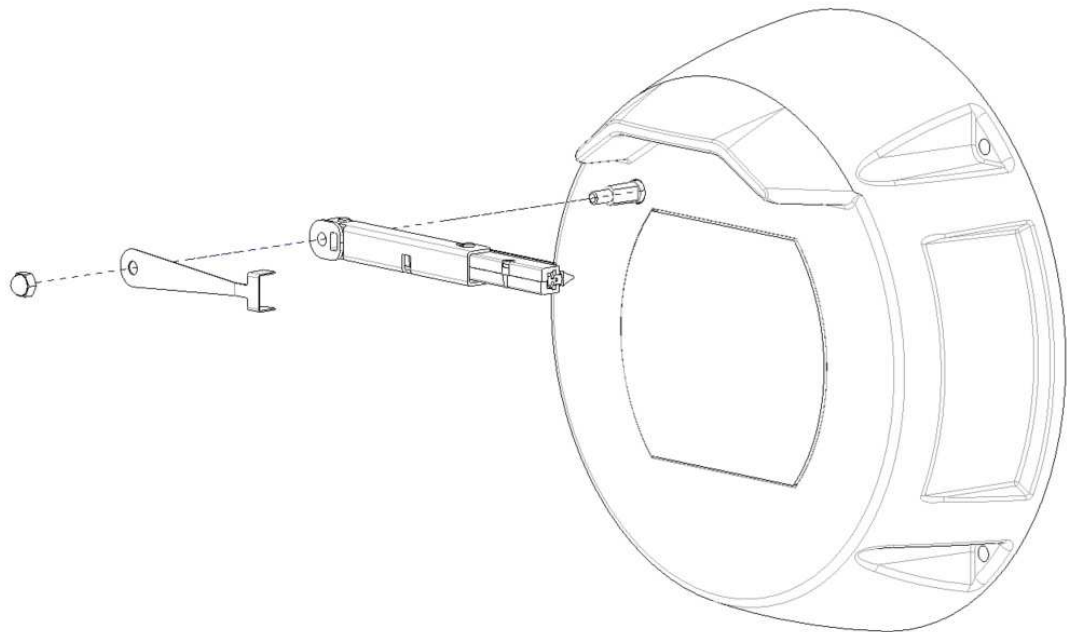
7. Slide the new wiper hub and the attached parts onto the wiper shaft.



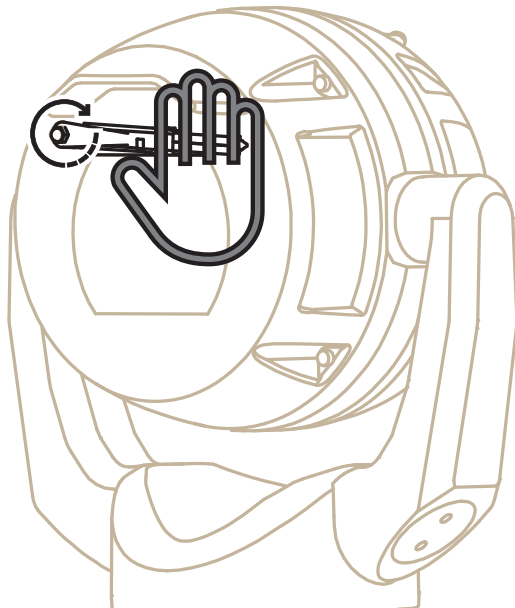
- Slide the new wiper spring onto the wiper shaft and over the new wiper arm.



9. Apply Loctite 243 to the hole of the acorn nut.
10. Lightly thread the new acorn nut onto the wiper shaft over the new wiper spring and new wiper hub.



11. With one hand, hold the new wiper arm firmly in place to restrict rotational movement and to keep the wiper assembly parallel with the flat top of the glass.
12. With the other hand, using a 7mm Hex socket or nut driver, tighten the new acorn nut clockwise to a torque value of 1.0 Nm.





## 18 Decommissioning

### 18.1 Transfer

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

### 18.2 Disposal



**Disposal** - Your Bosch product was developed and manufactured with high-quality material and components that can be recycled and reused. This symbol means that electronic and electrical appliances, which have reached the end of their working life, must be collected and disposed of separately from household waste material. Separate collecting systems are usually in place for disused electronic and electrical products. Please dispose of these units at an environmentally compatible recycling facility, per European Directive 2012/19/EU.

## 19 Technical data

For product specifications, see the datasheet for your camera, available on the appropriate product pages of the Online Product Catalog at [www.boschsecurity.com](http://www.boschsecurity.com).

## 20

# Support services and Bosch Academy



### Support

Access our **support services** at [www.boschsecurity.com/xc/en/support/](http://www.boschsecurity.com/xc/en/support/).



### Bosch Building Technologies Academy

Visit the Bosch Building Technologies Academy website and have access to **training courses**, **video tutorials** and **documents**: [www.boschsecurity.com/xc/en/support/training/](http://www.boschsecurity.com/xc/en/support/training/)









**Bosch Security Systems B.V.**

Torenallee 49

5617 BA Eindhoven

Netherlands

**[www.boschsecurity.com](http://www.boschsecurity.com)**

© Bosch Security Systems B.V., 2022

**Building solutions for a better life.**

202209071606