



BOSCH

MIC IP fusion 9000i

MIC-9502-Z30xxx



en

Installation Manual

Table of contents

1	Safety	4
1.1	About this Manual	4
1.2	Legal Information	4
1.3	Safety Precautions	4
1.4	Important Safety Instructions	5
1.5	Important Notices	6
1.6	Customer Support and Service	10
2	Unpacking	11
2.1	Parts List - Camera	11
2.2	Additional Tools	11
3	Product Description	12
4	Installation Overview	13
5	Configuration Programming in the Shipping Box	15
6	Configuration Programming on a Temporary Table-top Stand	16
7	Mounting	17
7.1	Mounting Location Options	17
7.2	Mounting Orientation Options	18
7.3	Mounting Bracket Options and Accessories	19
8	Installing the MIC Sunshield	23
9	Connections	26
9.1	About Camera Power and Control	26
9.2	Power Source Options	26
9.3	Ethernet Connections	27
9.4	Camera Connections	27
9.5	Connect the Camera to the Network	28
10	Typical System Configurations	29
11	Troubleshooting	30
12	Maintenance	33
13	Decommissioning	34
13.1	Transfer	34
13.2	Disposal	34
14	Appendices	35
14.1	Best Practices for Outdoor Installation	35
14.2	AUX Commands	37

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, Inc. 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

Read, follow, and retain all of the following safety instructions. Heed all warnings on the unit and in the operating instructions before operation.

**Caution!**

TO REDUCE THE RISK OF ELECTRIC SHOCK, DISCONNECT THE POWER SOURCE WHILE INSTALLING THE DEVICE.

**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, Inc. accepts no liability for any damages or losses caused by incorrect or improper installation.

**Warning!**

INSTALL EXTERNAL INTERCONNECTING CABLES IN ACCORDANCE TO NEC, ANSI/NFPA70 (FOR US APPLICATION) AND CANADIAN ELECTRICAL CODE, PART I, CSA C22.1 (FOR CAN APPLICATION) AND IN ACCORDANCE TO LOCAL COUNTRY CODES FOR ALL OTHER COUNTRIES. BRANCH CIRCUIT PROTECTION INCORPORATING A 20 A, 2-POLE LISTED CIRCUIT BREAKER OR BRANCH RATED FUSES ARE REQUIRED AS PART OF THE BUILDING INSTALLATION. A READILY ACCESSIBLE 2-POLE DISCONNECT DEVICE WITH A CONTACT SEPARATION OF AT LEAST 3 mm MUST BE INCORPORATED.

**Warning!**

ROUTING OF EXTERNAL WIRING MUST BE DONE THROUGH A PERMANENTLY EARTHED METAL CONDUIT.

**Warning!**

THE CAMERA MUST BE MOUNTED DIRECTLY AND PERMANENTLY TO A NON-COMBUSTIBLE SURFACE.

- Do not open the camera unit. Doing so will invalidate the warranty. Use common-sense safety precautions, especially in situations where there could be risk of injury if any part of the assembly becomes detached and falls. Bosch recommends using the hinged DCA, which allows installers to “hang” the MIC camera temporarily on the DCA to make electrical connections, before bolting the camera to the DCA.
 - Ensure that the unit case is properly earthed. If the product is at risk of being struck by lightning, ensure that earth bonding connections are made correctly to the mounting of the base of the unit.
 - Do not point the camera at the sun. Bosch Security Systems will not be liable for any damage to cameras that have been pointed directly at the sun.
- When transporting, take extra care to protect the wiper and the camera window(s).

**Warning!**

Do not manually back drive the camera

The motor/gear head combinations used in the MIC cameras were designed to provide smooth pan/tilt movement of the camera during powered operation. The gear heads were not specifically designed to be manually “back-driven” under any circumstance.

Although it might be possible to do so on unpowered units, there is no guarantee that “back-driving” will be possible on every unit. Some units may even enter a “locked-up” mechanical state.

If the camera becomes “locked-up,” simply apply power to the camera. The pan/tilt functions of the camera should now operate properly.

**Warning!**

Moving parts!

Moving parts may result in risk of injury, therefore, the device should be mounted so that it is accessible only to the technician/installer.

**Notice!**

Always use a shielded twisted pair (STP) connection cable and a shielded RJ45 network cable connector where the camera is used outdoors or the network cable is routed outdoors.

Always use shielded cables/connectors in demanding indoor electrical environments where the network cable is located in parallel with electrical mains supply cables, or where large inductive loads such as motors or contactors are near the camera or its cable.

**Notice!**

Bosch recommends the use of surge/lightning protection devices (sourced locally) to protect network and power cables and the camera installation site. Refer to NFPA 780, Class 1 & 2, UL96A, or the equivalent code appropriate for your country/region, and to local building codes. Refer also to the installation instructions of each device (surge protector where the cable enters the building, midspan, and camera).

1.5

Important Notices

For use in China: CHINA ROHS DISCLOSURE TABLE

Moving cameras

Hazardous substance table according to SJ/T 11364-2014						
	Pb (Pb)	Hg (Hg)	Cd (Cd)	Cr 6+ (Cr 6+)	PBB (PBB)	PBDE (PBDE)
Housing & enclosures	x	o	o	o	o	o
PCBA with connectors	x	o	x	o	o	o
Cable assemblies	o	o	o	o	o	o
Image sensor assembly	x	o	x	o	o	o
Lens assembly	x	o	x	o	o	o
PT Motor control assembly	x	o	x	o	o	o
Fan assembly	x	o	x	o	o	o

Hazardous substance table according to SJ/T 11364-2014

This table was created according to the provisions of SJ/T 11364

○: The content of such hazardous substance in all homogeneous materials of such component is below the limit defined in GB/T 26572

×: The content of such hazardous substance in a certain homogeneous material is above the limit defined in GB/T 26572

The manufacturing datecodes of the products are explained in:

<http://www.boschsecurity.com/datecodes/>

**Notice!**

This device is intended for use in public areas only.

U.S. federal law strictly prohibits surreptitious recording of oral communications.



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.

All-pole power switch - Incorporate an all-pole power switch, with a contact separation of at least 3 mm, into the electrical installation of the building. If the camera requires service, use this all-pole switch as the main disconnect device for switching off the voltage 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 unit 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.

Heat sources - Do not install unit near any heat sources such as radiators, heaters, or other equipment (including amplifiers) that produce heat.

Moving - Before moving the unit, disconnect both the 24 VAC connection and the Ethernet cable connection (if using PoE).

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, page 35" 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 parts.



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.



Notice!

Ce produit est un appareil de **Classe A**. Son utilisation dans une zone résidentielle risque de provoquer des interférences. Le cas échéant, l'utilisateur devra prendre les mesures nécessaires pour y remédier.

FCC & ICES Information

(U.S.A. and Canadian Models Only)

This device complies with part 15 of the FCC Rules. Operation is subject to the following conditions:

- this device may not cause harmful interference, and
- this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a **Class A** digital device, pursuant to Part 15 of the FCC Rules and ICES-003 of Industry Canada. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a **commercial environment**. This equipment generates, uses, and radiates radio frequency energy and, if not installed and used in accordance with the

instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his expense.

Intentional or unintentional modifications, not expressly approved by the party responsible for compliance, shall not be made. Any such modifications could void the user's authority to operate the equipment. If necessary, the user should consult the dealer or an experienced radio/television technician for corrective action.

The user may find the following booklet, prepared by the Federal Communications Commission, helpful: How to Identify and Resolve Radio-TV Interference Problems. This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

Informations FCC et ICES

(modèles utilisés aux États-Unis et au Canada uniquement)

Ce produit est conforme aux normes FCC partie 15. La mise en service est soumise aux deux conditions suivantes :

- cet appareil ne peut pas provoquer d'interférence nuisible et
- cet appareil doit pouvoir tolérer toutes les interférences auxquelles il est soumis, y compris les interférences qui pourraient influencer sur son bon fonctionnement.

AVERTISSEMENT: Suite à différents tests, cet appareil s'est révélé conforme aux exigences imposées aux appareils numériques de **Classe A** en vertu de la section 15 du règlement de la Commission fédérale des communications des États-Unis (FCC). Ces contraintes sont destinées à fournir une protection raisonnable contre les interférences nuisibles quand l'appareil est utilisé dans une **installation commerciale**. Cette appareil génère, utilise et émet de l'énergie de fréquence radio, et peut, en cas d'installation ou d'utilisation non conforme aux instructions, générer des interférences nuisibles aux communications radio. L'utilisation de ce produit dans une zone résidentielle peut provoquer des interférences nuisibles. Le cas échéant, l'utilisateur devra remédier à ces interférences à ses propres frais.

Au besoin, l'utilisateur consultera son revendeur ou un technicien qualifié en radio/télévision, qui procédera à une opération corrective. La brochure suivante, publiée par la Commission fédérale des communications (FCC), peut s'avérer utile : How to Identify and Resolve Radio-TV Interference Problems (Comment identifier et résoudre les problèmes d'interférences de radio et de télévision). Cette brochure est disponible auprès du U.S. Government Printing Office, Washington, DC 20402, États-Unis, sous la référence n° 004-000-00345-4.

1.6 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

Telephone: 800-366-2283

Fax: 800-366-1329

Email: cctv.repair@us.bosch.com

Customer Service

Telephone: 888-289-0096

Fax: 585-223-9180

Email: security.sales@us.bosch.com

Technical Support

Telephone: 800-326-1450

Fax: 717-735-6560

Email: technical.support@us.bosch.com

Canada

Telephone: 514-738-2434

Fax: 514-738-8480

Europe, Middle East, Africa, and Asia Pacific Regions

Please contact your local distributor or Bosch sales office. Use this link:

<https://www.boschsecurity.com/corporate/where-to-buy/index.html>

More Information

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

2 Unpacking

- 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 Bosch Security Systems Sales or Customer Service Representative.
- 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 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 IP fusion 9000i Camera
1	Safety and Unpacking Guide document
1	QIG
1	base gasket
1	RJ45 coupler (attached to RJ-45 connector of camera)
4	MAC address labels

2.2 Additional Tools

The following table lists additional tools (not supplied by Bosch) that may be required to install a MIC camera or its accessories:

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
--

3 Product Description

The MIC IP fusion 9000i camera is a day/night, IP PTZ camera with dual optical/thermal imagers. Ruggedized and weatherproof, the camera offers a reliable, robust, and high-quality surveillance solution for extreme security applications.

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

The following table identifies the optional accessories for MIC cameras. Refer to the datasheets of each accessory for details. Some accessories may not be available in all regions.

Accessories	Description	Accessories	Description
MIC-DCA-H - MIC-DCA-HB - MIC-DCA-HW - MIC-DCA-HG - MIC-DCA-HBA - MIC-DCA-HWA - MIC-DCA-HGA	Hinged Deep Conduit Adapter in Black White Grey Black with M25 to ¾" adapter White with M25 to ¾" adapter Grey with M25 to ¾" adapter	MIC-SCA - MIC-SCA-BD - MIC-SCA-WD - MIC-SCA-MG	Shallow Conduit Adapter in Black White Grey
MIC-CMB - MIC-CMB-BD - MIC-CMB-WD - MIC-CMB-MG	Corner Mount Bracket in Black White Grey	MIC-SPR - MIC-SPR-BD - MIC-SPR-WD - MIC-SPR-MG	Spreader Plate in Black White Grey
MIC-WMB - MIC-WMB-BD - MIC-WMB-WD - MIC-WMB-MG	Wall Mount Bracket in Black White Grey	MIC-PMB	Pole Mount Bracket (stainless steel only)
NPD-9501A	95 W midspan	MIC-WKT-IR	Washer Kit
VG4-A-PSU1 VG4-A-PSU2	24 VAC (96 VA) power supply	MIC-ALM-WAS-24	Alarm and washer interface accessory unit
MIC-9K-IP67-5PK	Connector kit	MIC-9K-SNSHLD-W	Sunshield (white)
MVS-FCOM-PRCL	Serial protocol license for IP cameras		

4 Installation Overview

**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, Inc. 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.

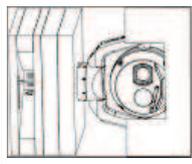
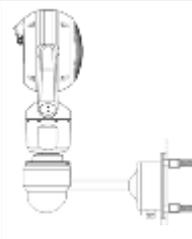
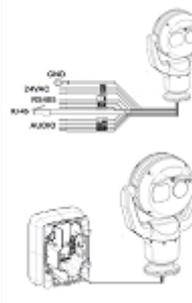
**Notice!**

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

**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*, page 35.

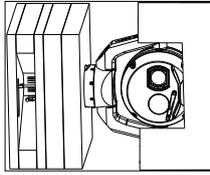
Depending on your installation requirements, you may need to complete the following steps:

	<p>Pre-configuration (Optional) Refer to <i>Configuration Programming in the Shipping Box</i>, page 15.</p>
	<p>Mounting options Refer to <i>Mounting Bracket Options and Accessories</i>, page 19.</p>
	<p>Camera connections (including power/communication) Refer to <i>Connections</i>, page 26.</p>
	<p>Optional accessories Refer to <i>Installing the MIC Sunshield</i>, page 23.</p>
	<p>Camera settings Refer to <i>Configuration</i>.</p>

5 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.

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 28. 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 Configuration for details.



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 *Configuration Programming on a Temporary Table-top Stand*, page 16.

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

6 Configuration Programming on a Temporary Table-top Stand

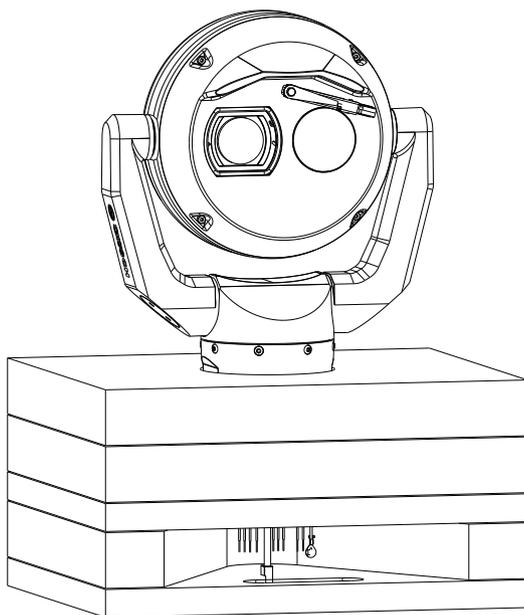


Caution!

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.
2. 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.



4. Supply power to the camera and *Connect the Camera to the Network*, page 28. Note that the wiper moves one to three times across the camera window, and then returns to parked position.
5. Configure the camera. Refer to Configuration 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.

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

7

Mounting

7.1

Mounting Location Options

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 position for the device. Ideally, this is a location where the device cannot be interfered with either intentionally or accidentally. 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



Notice!

Heat sources may obscure the thermal image

Heat sources in the direct FOV of the thermal camera or which can reflect from thermally reflective sources might obscure the thermal image.

- ▶ 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, 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 shipped with the camera are designed to resist corrosion. Always use Bosch-supplied screws and other fasteners when installing the camera.

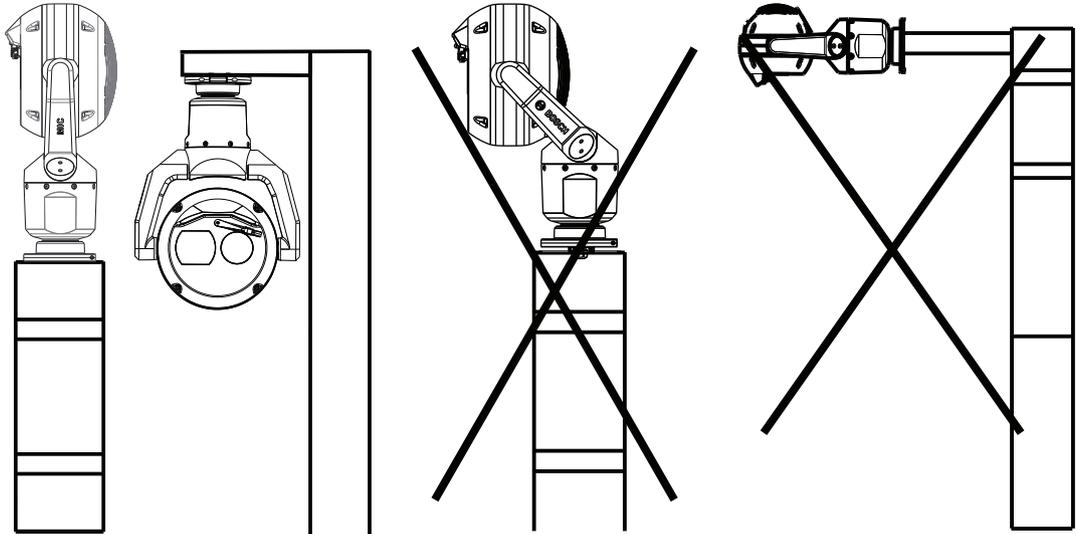
The camera head has factory-installed plastic screws that prevent corrosion in the screw holes when no MIC sunshield accessory is attached. Do not remove these screws until you install a sunshield accessory. For complete details, refer to the installation instructions for the sunshield accessory.

Before installation, inspect the metal parts of the camera for paint that is chipped or otherwise damaged. If you notice any paint damage, touch up the damage with paint or sealants available locally.

Avoid installation practices that may allow the camera's metal mountings to contact materials such as stainless steel. Such contact 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.

7.2 Mounting Orientation Options

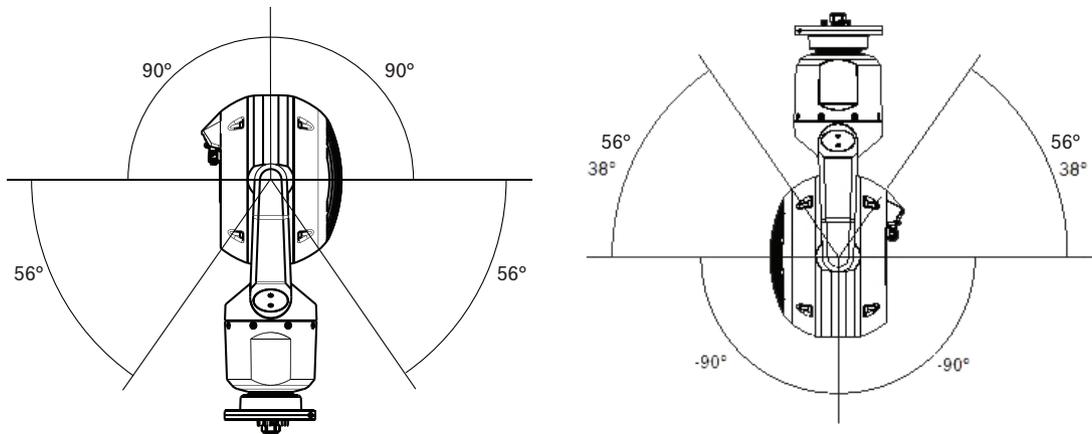
MIC cameras are designed to be mounted upright (straight up) or inverted (straight down). See the figures below for illustrations of the correct and the incorrect mounting orientations of MIC cameras.



Correct mounting orientation Canted and horizontal mounting orientations not allowed!

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.

The figures below illustrate the tilt range of the camera in upright orientation and in inverted orientation.



Tilt range of MIC IP fusion 9000i camera

7.3 Mounting Bracket Options and Accessories

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

You can install the camera:

- onto a MIC-DCA or a MIC wall mount
- or
- directly to a mounting surface using the supplied base gasket and the appropriate connector kit (sold separately):

MIC-9K-IP67-5PK (Connector kit for MIC IP fusion 9000i cameras)

Refer to the manual provided with the kit for installation instructions.



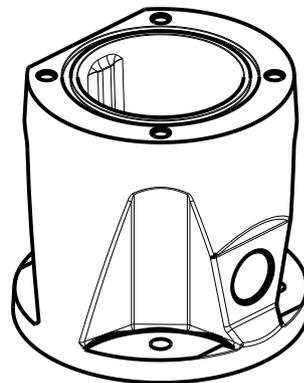
Notice!

Observe all appropriate safety precautions and local building regulations.

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

Deep Conduit Adapter

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



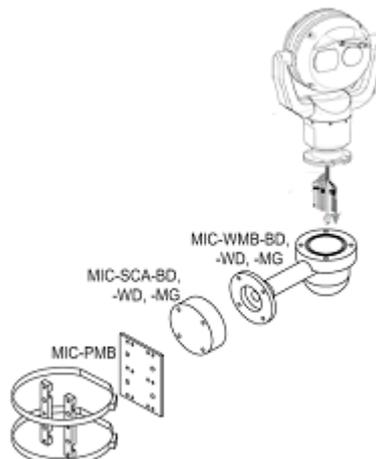
Typical hinged DCA mount configuration

Pole Mount

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.

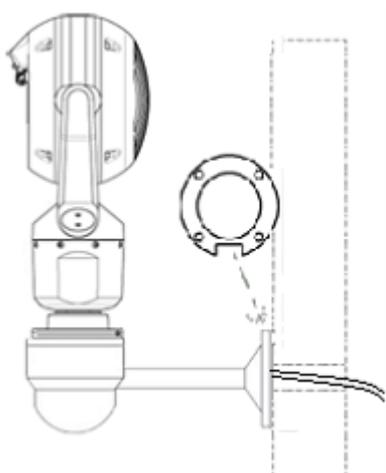
The figure below identifies the three mounting accessories (each sold separately) that are necessary to mount the MIC camera on the side of a pole.

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.



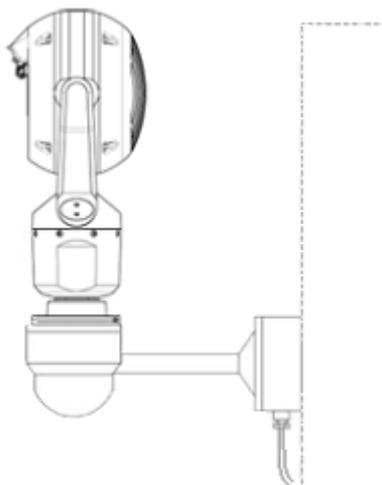
Typical pole mount configuration (MIC9000)

Through-wall Mount



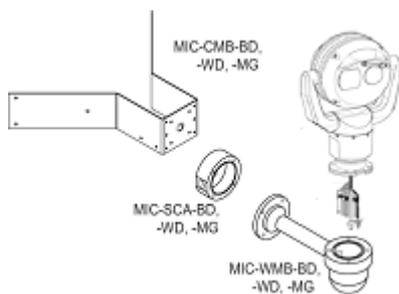
Typical direct wall mount (MIC9000 on WMB mounted directly to a wall (gasket required))

Down-wall Mount



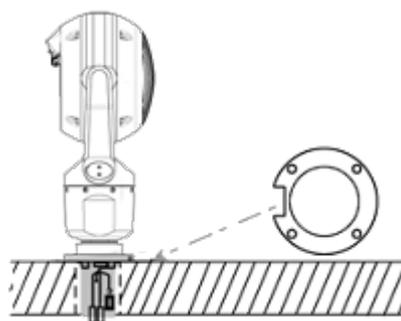
Typical wall mount with SCA (MIC9000)

Corner Mount

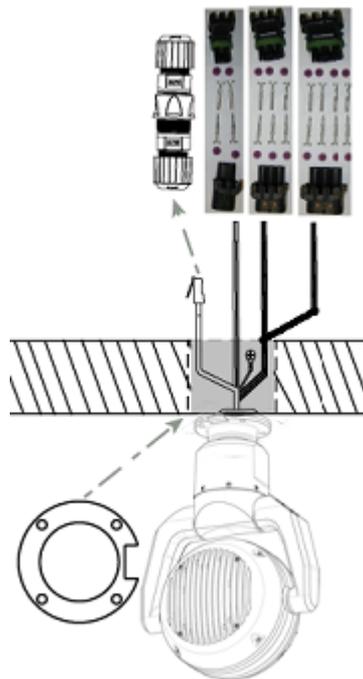


Typical corner mount configuration (MIC9000)

Surface Mount

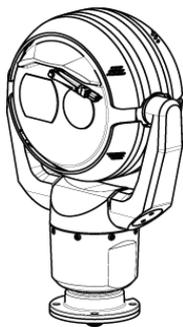


Direct surface mount (upright) with base gasket (MIC9000)



Direct surface mount (inverted) with base gasket + IP67 Weatherization/Connector Kit

Sunshield accessory



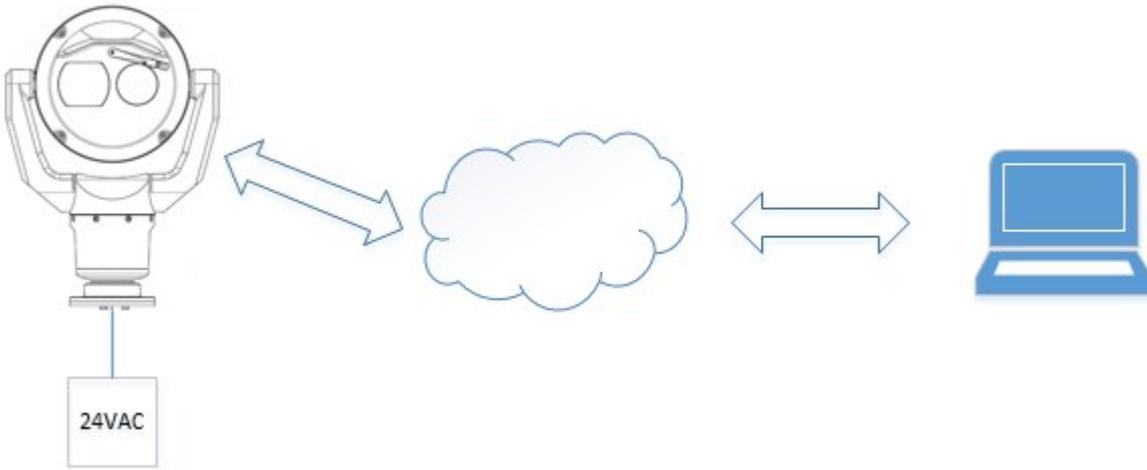
MIC IP fusion
9000i camera
with sunshield
(MIC-9K-
SNSHLD-W)
installed

8 Installing the MIC Sunshield

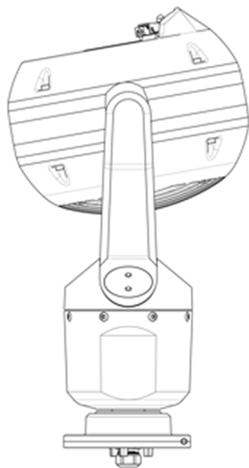
Quantity	Component
2	Sunshield shells
2	Spike strips
4	Screws
4	Flat washers
1	Quick Installation Guide

Additional Tools Required

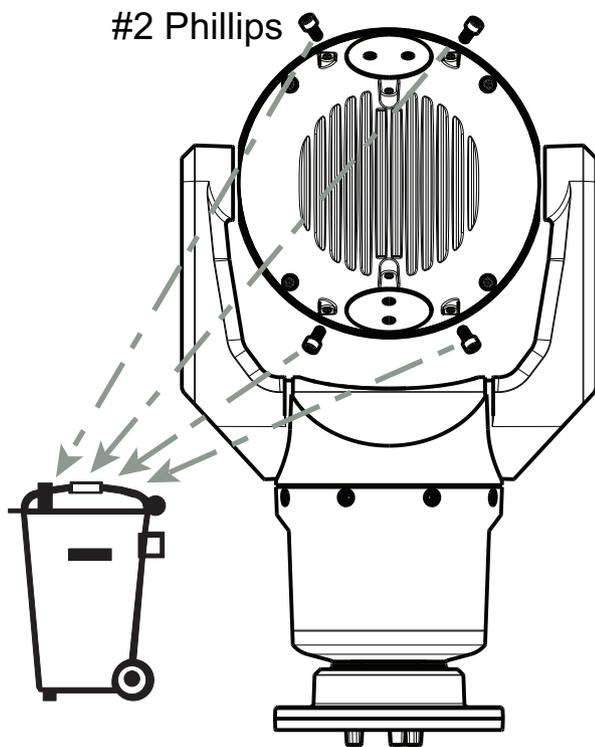
1	Phillips-head screwdriver, #2, to remove factory-installed plastic screws from the camera head
1	Torx driver, T20, for M4 Torx head screws



1. Mount the camera. Apply power (24 VAC or 95W High PoE). Connect using a web browser or VMS.



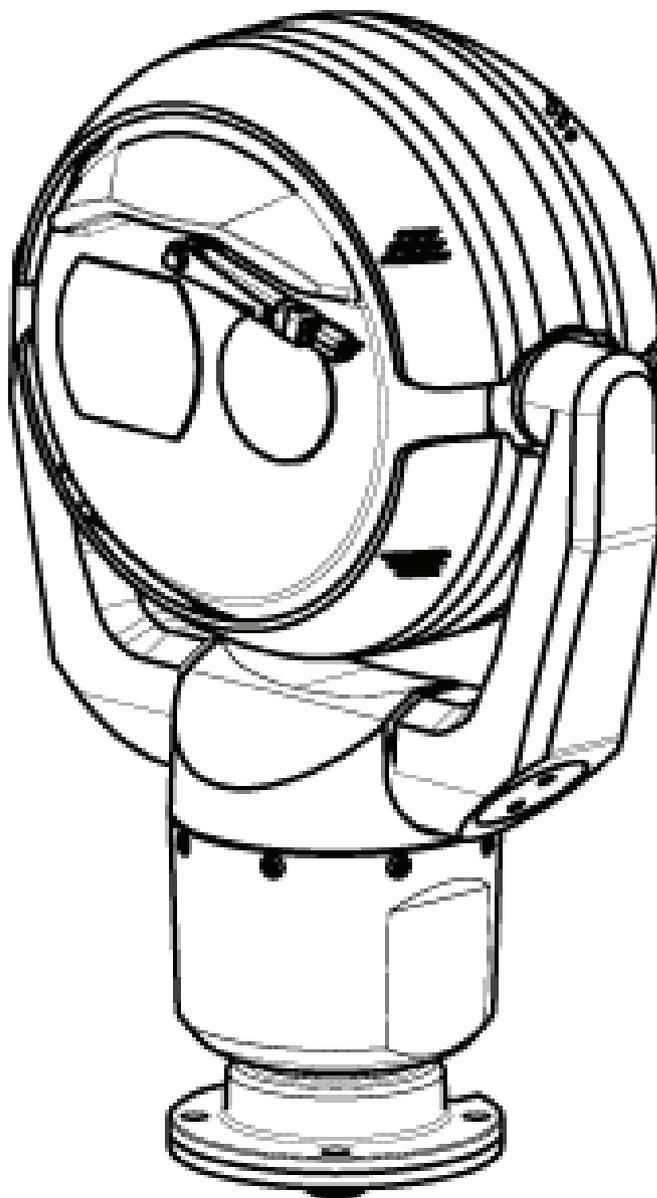
2. Operate the tilt to near the upper limit.



3. Remove and discard 4 screws.



- 4. Align the sunshield shells so that the pins slide into the bolt heads on the faceplate.
- 5. Ensure that the sunshield mounting holes align with the holes in the rear of the camera head. Install 4 screws and washers.
- 6. Ensure that the gap between the two sunshield halves is approximately 3.5 mm (1/8 in.).



MIC IP fusion 9000i camera with sunshield (MIC-9K-SNSHLD-W) installed

7. If the rear gap is not parallel, rework to ensure that the pins are seated properly in the bolt heads on the faceplate.

9 Connections

9.1 About Camera Power and Control

The camera transmits PTZ control commands and images over a TCP/IP or UDP/IP network. It also allows users to configure the camera display settings, camera operating settings, and to configure the network parameters.

The camera incorporates a network video server in the IP module. The primary function of the server is to encode video and control data for transmission over a TCP/IP or UDP/IP network. With its H.264 or H2.65 encoding, it is ideally suited for IP communication and for remote access to digital video recorders and multiplexers. The use of existing networks means that integration with CCTV systems or local networks can be achieved quickly and easily. Video images from a single camera can be received on several receivers simultaneously.

9.2 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) or other device known to be compatible. With this configuration, only a single (Cat5e/Cat6e) cable connection is required 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.

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:
95 W midspan (NPD-9501A)	24 VAC PSU: VG4-A-PSU1 or VG4-A-PSU2



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.

Maximum wire distances from 24 VAC power supply to MIC IP fusion 9000i camera

VA / Watts	14 AWG (2.5 mm)	16 AWG (1.5 mm)	18 AWG (1.0 mm)
90 / 65	39 m (127 ft)	24 m (80 ft)	15 m (50 ft)

9.3 Ethernet Connections



Caution!

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

Cable Type	Cat5e/Cat6e Ethernet (Shielded Twisted Pair (STP)) (directly to the camera, or to a network switch between the camera and the network) Note: Cat5e/Cat6e 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 (95 W)	Use a midspan sold by Bosch, or a midspan that is offered as a compatible alternative.

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

9.4 Camera Connections

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

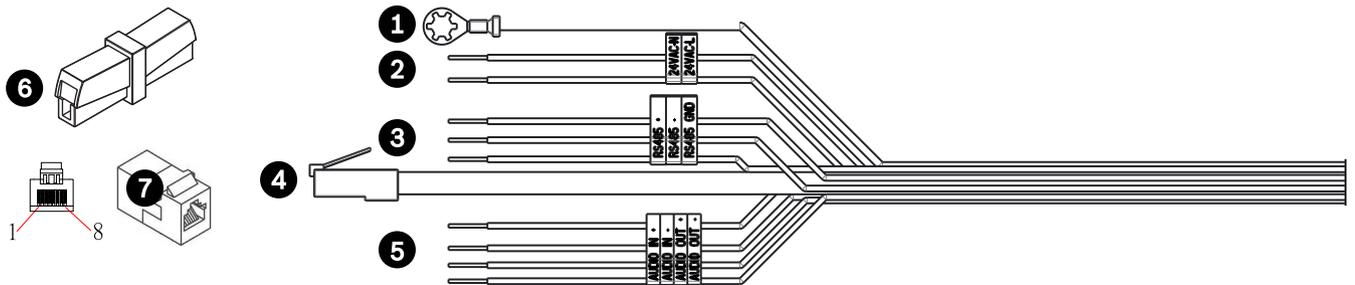


Figure 9.1: MIC9000 connectors

	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 GND = Brown
4	RJ45 (Cat5e/Cat6e) 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

	Description	Wire Color
6	Wire connectors on 9 wires (numbers 2, 3, and 5 in the MIC9000 connectors graphic) Note: 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)	

* 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-9K-IP67-5PK (Connector kit for MIC IP fusion 9000i cameras)

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

9.5

Connect the Camera to the Network

Note: The total length of Cat5e/Cat6e cable must be less than 100 m (328 ft) between the camera and the head-end system.

1. Make the appropriate network connections depending on the power source of your IP network:

- If using a High PoE **midspan** power source:
 - a. Connect one end of a standard Ethernet cable (Cat5e/Cat6e Shielded Twisted Pair (STP)) to the RJ45 connector of the camera.
 - b. Connect the other end of the Ethernet cable to the DATA + POWER OUT port on the midspan. **Note:** You must ground cable at both ends!
 - c. Connect a standard Ethernet cable from the DATA port of the midspan device to the Local Area Network (LAN).
- If **not using** High PoE: Connect a standard Ethernet cable from the RJ45 connector of the camera to the Local Area Network (LAN).
- If **not using PoE and if connecting directly** to a computer, DVR/NVR, or other related network device: Connect either a standard Ethernet cable or a **crossover** Ethernet cable between the RJ45 connector of the camera and the network device. **Note:** You must ground cable at both ends!

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

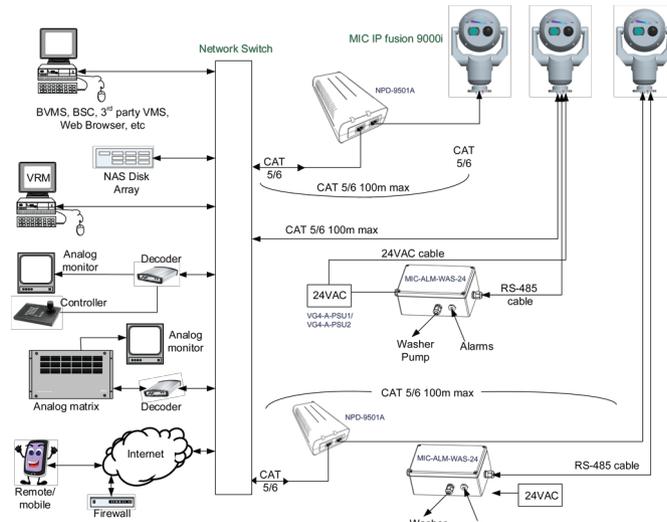
3. If applicable, connect the RS-485 wires to the MIC-ALM-WAS-24 (optional).

4. Attach the green ground wire (item 1 in the figure above) from the camera to an earth-ground connection on the mounting surface using the supplied screw or a suitable user-supplied fastener.

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

10

Typical System Configurations



MIC IP fusion 9000i System Configuration Options

11 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.

Problem	Questions to Ask/Actions to Resolve the Problem
No camera control.	<ul style="list-style-type: none"> - Ensure that the LAN cable has good connection and is secured. - Refresh the browser and ensure that video is updated. - Cycle the camera's power off and on. - Reboot the computer. - Refer to Status Code 17 in Error Codes.
Camera moves when attempting to move other cameras.	<ul style="list-style-type: none"> - Check that the camera's IP address is properly set. If the camera's IP address is not set, then: - Use Configuration Manager to confirm that two cameras do not have the same IP address. If they do, change the address of one of the cameras.
No Network Connection.	<ul style="list-style-type: none"> - Check all network connections. - Ensure that the maximum distance between any two Ethernet connections is 100 m (328 ft) or less. If OK, then if you are behind a firewall, ensure that the Video Transmission mode is set to UDP.
Camera does not operate at all, or does not operate as expected, after being subjected to extreme low temperatures (below -40 °C (-40 °F)).	<ul style="list-style-type: none"> - Allow the camera to warm up. The camera requires a 60-minute warm-up prior to PTZ operations. - If camera does not operate after this warm-up period, then reset the camera. In the URL line of your web browser, type "/reset" at the end of the IP address of the camera. - Refer to Status Code 7 in Error Codes.
The contrast on the screen is too weak.	<ul style="list-style-type: none"> - Adjust the contrast feature of the monitor. Is the camera exposed to strong light? If so, change the camera position. - Adjust the Optical or thermal camera picture settings for your scene as described in Picture Settings or Picture Settings Thermal in the User Manual.
No video.	<ul style="list-style-type: none"> - Check that the mains power to the power supply is on. - If providing power via 24VAC, ensure that the 24VAC voltage at the camera is between 21VAC and 30VAC. - If providing power via High PoE, ensure that the lights on the midspan indicate correct operation. If they do not, see the midspan manual for further details.

Problem	Questions to Ask/Actions to Resolve the Problem
	<ul style="list-style-type: none"> - Check to see if you can access a web page. - If you can, then cycle the camera's power off and on and check that the optical camera iris isn't closed. If this doesn't correct the problem, switch the Stream from Stream 1 or Stream 2 to M-JPEG. If this corrects the problem, re-install the latest Video SDK. - If you cannot, then you may have the wrong IP address. Use Configuration Manager to identify the correct IP address. <p>If OK, then check that there is 24 V output from the transformer.</p> <p>If OK, then check the integrity of all wires and mating connectors to the camera.</p>
Picture is dark (optical image).	<ul style="list-style-type: none"> - Check that the Gain Control is set to High. <p>If OK, then</p> <ul style="list-style-type: none"> - Check that the Auto Iris Level is set to the appropriate level.
Background is too bright to see subject (optical image).	Turn on backlight compensation.
Camera reboots frequently or intermittently	<p>Test your camera with another power supply.</p> <p>Check the Bosch website for a software update that might address the issue.</p>
No OSD messages appear.	Bosch's Video SDK is required. Video management software from third parties does not use the SDK.

Additional troubleshooting for MIC thermal imagers.

Problem	Explanation	Solution
A small square appears intermittently at the upper right of the video output.	This symbol warns that flat-field correction (FFC) is about to begin.	Do nothing; this is normal operation for the thermal camera.
The thermal image appears 'grainy'.	This often occurs when the temperature of the camera fluctuates, such as after the camera is powered on, or when ambient temperature is changing.	Wait for the camera to perform a flat-field correction (FFC).
The thermal image is of poor quality.	Thermal image settings are not optimized for the type of scene being viewed.	Adjust the thermal camera settings to optimize the quality of the image. Refer to section on Thermal Camera Settings in Operation Manual.

Problem	Explanation	Solution
The picture shows images that aren't present in the scene.		Check to see if there the heat of objects are being reflected off a surface causing thermal reflections.

12

Maintenance

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.

Note: Do not use water pressure greater than 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).

The following sticker appears on each side of the MIC camera head, just above the tilt arms, to warn that the surface may be hot:



13 Decommissioning

13.1 Transfer

The unit should only be passed on together with this installation guide.

13.2 Disposal

	<p>Disposal</p> <p>Your Bosch product has been developed and manufactured using high-quality materials and components that can be reused.</p> <p>This symbol means that electronic and electrical devices that have reached the end of their working life must be disposed of separately from household waste.</p> <p>In the EU, separate collecting systems are already in place for used electrical and electronic products. Please dispose of these devices at your local communal waste collection point or at a recycling center.</p>
---	---

14 Appendices

14.1 Best Practices for Outdoor Installation

Cameras installed outdoors are susceptible to surges and lightning. Always include surge and lightning protection when installing outdoor cameras.

The following figure is an illustration of the proper configuration for installing IP PTZ cameras (AUTODOME and MIC) outdoors with surge and lightning protection. Note that the illustration does not include representations of all models of AUTODOME and MIC cameras.

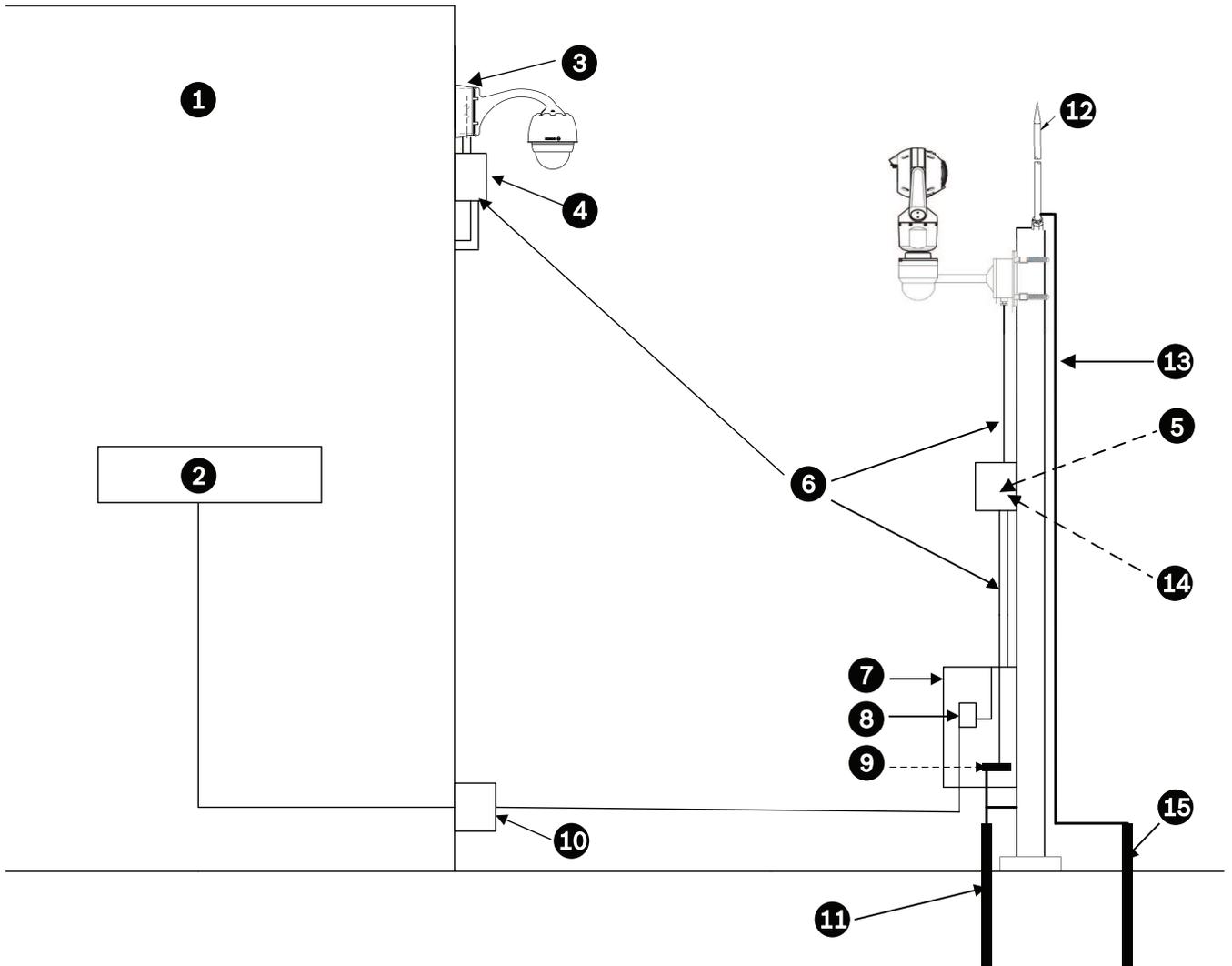


Figure 14.1: Correct outdoor installation with proper surge/lightning protection

1	Indoor main building	2	Network equipment
3	Connect the ground of the camera power supply to the building earth ground.	4	Surge protection
5	Connect the ground of the camera to the ground of the surge protector.	6	Install Cat5e/Cat6e Ethernet (Shielded Twisted Pair (STP)) cable. Route cable through grounded metal conduit.
7	Equipment enclosure	8	Outdoor rated High PoE-compatible midspan
9	Connect the Bus Bar to the Equipment Grounding Electrode.	10	Outdoor High PoE-compatible surge protection to protect indoor equipment
11	Equipment Grounding Electrode	12	Lightning Rod
13	Down Conductor; refer to NFPA 780, Class 1 and 2.	14	Install outdoor High PoE-compatible surge protection as close as possible to the camera. Connect to the Equipment Grounding Electrode.
15	Lightning Rod Grounding Electrode		

14.2 AUX Commands

AUX	Function	Command	Description
1	On/Off	Auto Pan without limits (Continuous)	
2	On/Off	Auto Pan between limits	
7	On/Off	Run Custom Pre-Position Tour	
8	On/Off	Run Pre-Position Tour	
18	On/Off	AutoPivot Enable	
20	On/Off	Backlight Compensation (BLC)	
24	On/Off	Video Stabilization	
40	On/Off	Restore camera settings [to factory defaults]	
43	On/Off	Auto Gain Control (AGC)	
50	On/Off	Playback A, continuous	
51	On/Off	Playback A, single	
52	On/Off	Playback B, continuous	
53	On/Off	Playback B, single	
57	On/Off	Night mode IR Filter In/Out	
60	On/Off	On-Screen Display (OSD)	
61	On/Off	Preset & Sector Titles Camera Block Overlay VDSK not required	
65	Off	Alarm Acknowledge	Acknowledges alarm events/rules or deactivates physical outputs.
67	On/Off	IR Focus Correction	
78	On/Off	Intelligent Tracking	
80	On/Off	Digital Zoom lock	
86	On/Off	Sector Blanking	
87	On/Off	Privacy Masking	
88	On/Off	Proportional Speed	
94	On/-	Recalibrate Azimuth Compass	
95	On/Off	Azimuth/Elevation Display	
96	On/Off	Compass Points Display	
100	On/Off	Record Tour A	
101	On/Off	Record Tour B	
102	On/Off	Wiper On/Off (Continuous)	

AUX	Function	Command	Description
103	On/Off	Wiper On/Off (Intermittent)	
104	On/Off	Wiper On/Off (One shot)	
105	On/Off	Wash/Wipe On/Off	
121	On/Off	Left Hard Pan Limit	
122	On/Off	Right Hard Pan Limit	
123	On/Off	Clear Hard Pan Limits	
606	On/Off	Power Mode	
700	On/Off	Proportional speed control adjustment	Aux On, entered repeatedly, cycles through increasing speeds Super Slow, Slow, Medium, and Fast. Aux Off, decreases speeds through the same settings.
804	On/Off	Mask Calibration Procedure	
908		Increase Privacy Mask Size while moving	
1-256	Set/-	Pre-position Programming	
1-256	-/Shot	Pre-position Recall	

The following commands are specific to MIC IP fusion 9000i models.

AUX	Function	Command
454	On/--	Activate color mode White hot
454	--/Off	Activate color mode Black hot
455	On/--	Activate color mode Flamma Arcticus
455	--/Off	Activate color mode Red light
456	On/--	Activate color mode SoftLight
456	--/Off	Activate color mode Memoriam
457	On/--	Activate color mode Rainbow
457	--/Off	Activate color mode Ocean
458	On/--	Activate color mode Sunset
458	--/Off	Activate color mode Rain
459	On/--	Activate color mode Arcus
460	On/--	Activate color mode Inferno
467	On/--	Execute Flat-field correction



Bosch Security Systems B.V.

Torenallee 49

5617 BA Eindhoven

Netherlands

www.boschsecurity.com

© Bosch Security Systems B.V., 2018