MIC Series 550

MIC550, MIC550 IR

BOSCH

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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

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.

Caution!
Medium risk: Indicates a potentially hazardous situation. If not avoided, this may result in minor or moderate injury. Alerts the user to important instructions accompanying the unit.

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 SUPPLY BEFORE OPENING THE POWER SUPPLY UNIT.
POWER DISCONNECT: POWER SUPPLY UNITS HAVE POWER SUPPLIED WHENEVER THE POWER CORD IS INSERTED INTO THE POWER SOURCE.

Warning!
INSTALLATION SHOULD BE CARRIED OUT BY QUALIFIED PERSONNEL ONLY, IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE, ANSI/NFPA, CANADIAN ELECTRICAL CODE, AND ALL LOCAL COUNTRY CODES.

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 place a canted (45°) camera upright; it can fall over easily. Place the canted camera on its side.
- Do not open the camera unit. Doing so will invalidate the warranty.
- Ensure that the unit case is properly earthed. If the product is likely to be 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.
- Do not manually back drive the pan or tilt axis of the camera. Doing so will damage the motor drive gear train and will invalidate the warranty.
- Before transporting, power on the camera and rotate the ball so that the window points toward the base. This will help to protect the wiper and the window during transit.

1.5 Important Notices

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 the cart, stand, tripod, bracket, or table specified by the manufacturer. When a cart is used, use caution and care when moving the cart/apparatus 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 manufacturer's instructions.

All-pole power switch - Incorporate an all-pole power switch, with a contact separation of at least 3 mm in each pole, into the electrical installation of the building.If it is needed to open the housing for servicing and/or other activities, use this all-pole switch as the main disconnect device for switching off the voltage to the unit.

Camera grounding - For mounting the camera in potentially damp environments, ensure to ground the system using the ground connection of the power supply connector (see section: Connecting external power supply).

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

Cleaning - Unplug 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.

– Do not use caustic or abrasive cleaning products on the camera.

Coax grounding:

– Ground the cable system if connecting an outside cable system to the unit.
– Connect outdoor equipment to the unit's inputs only after this unit has had its grounding plug connected to a grounded outlet or its ground terminal is properly connected to a ground source.
– Disconnect the unit's input connectors from outdoor equipment before disconnecting the grounding plug or 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, grounding of the coax to a discharge unit, size of grounding conductors, location of discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

	**Disposal** Your Bosch product has been developed and manufactured using high-quality materials and components that can be reused. 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. 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.

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 CMOS/MOS-FET handling precautions to avoid electrostatic discharge. NOTE: Wear required grounded wrist straps and observe proper ESD safety precautions when handling the electrostatic-sensitive printed circuit boards.

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)*.

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

Moving - Disconnect the power before moving the unit. Move the unit with care. Excessive force or shock may damage the unit.

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)*.

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.

Water - Do not install the camera power supply near water for example near a bathtub, washbowl or swimming pool. The power supplies have an IP65 rating and are suitable for outside installation; however, for security reasons, Bosch recommends that they are installed in a suitable equipment cabinet. The camera is sealed to IP68 and can be used safely in damp environments or outdoors, as long as the base cable connector is suitably sealed.

Lightning – For added protection during a lightning storm, or when leaving the device unattended and unused for long periods, unplug the device and disconnect the cable system. This will prevent damage to the device from lightning and power line surges.

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

Power sources - Use only the power source indicated in this manual / on the device label. Ensure that the rating of current of the supply cable is adequate for the device. Before proceeding, disconnect the power from the cable to be installed into the device.

- For external-power-supplied devices, use only the recommended or approved power supplies.
- For limited power source devices, this power source must comply with EN 60950. Substitutions may damage the device or cause fire or shock.
- For 24 VAC devices, voltage applied to the device's power input should not exceed ±10% (or 28 VAC). User-supplied wiring must comply with local electrical codes (Class 2 power levels). Do not ground the supply at the terminals or at the device's power supply terminals.
- If unsure of the type of power supply to use, contact your dealer or local power company.

Damage requiring service – Unplug the device 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 cord or plug is damaged;
- liquid has been spilled into the device;
- an object has fallen into the device;
- the device has been dropped, or its enclosure or the equipment cabinet in which it is located has been damaged;
- the device exhibits a distinct change in performance;
- 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.

Replacement parts - Use only replacement parts specified by the manufacturer. Unauthorized substitutions may cause fire, electrical shock, or other hazards.
Safety check – Safety checks should be performed upon completion of service or repairs to the device to ensure proper operating condition.

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 soumises 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 soumit, y compris les interférences qui pourraient influer 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'energie 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.

UL Disclaimer

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

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.

Service Centers

USA

Telephone: 800-366-2283 or 585-340-4162
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: 585-223-3508 or 717-735-6560
Email: technical.support@us.bosch.com

Repair Center

Telephone: 585-421-4220
Fax: 585-223-9180 or 717-735-6561
Email: security.repair@us.bosch.com

Canada

Telephone: 514-738-2434
Fax: 514-738-8480

Europe, Middle East & Africa Region

Please contact your local distributor or Bosch sales office. Use this link:
http://www.boschsecurity.com/startpage/html/europe.htm

Asia Pacific Region

Please contact your local distributor or Bosch sales office. Use this link:
http://www.boschsecurity.com/startpage/html/asia_pacific.htm

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 MIC550/MIC550IR cameras because of their weight (7 / 7.75 kg (15 / 17 lb)).

2.1 Parts List

The package containing the MIC Series 550 / MIC Series 550 IR camera should include the following items:

Quantity	Part
1	MIC Series 550 / MIC Series 550 IR Camera
1	MIC Series 550 / MIC Series 550 IR Installation Manual
4	M8 stainless screws and washers
1	Nebar gasket

2.2 Additional Products Required

Mounting accessories are sold separately by Bosch. (Refer to the chapter Product Description for a list.) Users must supply all wiring/cabling for power, video, and telemetry.
The following table lists additional products, sold separately by Bosch, required to operate each MIC camera:

Quantity	Product	Part Number	Size
1 per camera	Shielded Composite Cable for MIC cameras (See the model numbers and lengths at right.)	MIC-CABLE-2M	2 m
		MIC-CABLE-10M	10 m
		MIC-CABLE-20M	20 m
		MIC-CABLE-25M	25 m

Quantity	Product	Part Number
1 per camera	Power Supply Unit (PSU) for MIC cameras	MIC-240PSU-2, MIC-115PSU-2, MIC-24PSU-2

Quantity	Product	Part Number
1 per camera	Power Supply Unit (PSU) for MIC IR cameras	MIC-IR-240PSU-UL, MIC-IR-115PSU-UL, MIC-IR-24PSU-UL

2.3 Additional Tools Required

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

Quantity	Part
1	13 mm wrench for the mounting bolts
1	3 mm screwdriver for the terminal blocks in the MIC PSU
1	8 mm screwdriver for captive screws for the MIC PSU enclosure
1	Silicone sealant for ensuring a water tight seal [if not using the Nebar gasket]
1	Roll of PTFE tape
1	#2 Phillips screwdriver for adjusting the rain shield, if required

3 Product Description

MIC Series 550 / MIC Series 550 IR cameras are high-performance, weatherproof, ruggedized, fully functional day/night PTZ cameras that have been designed to offer a reliable, robust, and high-quality surveillance solution for extreme security applications.
MIC550/MIC550IR models have a 28x or 36x optical zoom (12x digital) and flexible mounting options (upright, inverted, or canted) to achieve the perfect field of view.
Precision-engineered to exacting standards, MIC cameras offer numerous benefits over traditional dome and PTZ cameras. Rated to an industry-leading IP68, the compact, vandal-resistant, cast aluminum camera housing is pre-treated and then painted with polyester powder coat paint (black, white, or grey). Brushless motor technology ensures ultra-reliable operation with full 360° continuous pan and up to 320° tilt control. The optically perfect, flat viewing window and integrated wiper ensure that razor-sharp images are captured in even the most demanding environmental conditions.
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
MIC-DCA	Deep Conduit Adapter
MIC-SCA	Shallow Conduit Adapter
MIC-CMB	Corner Mount Bracket
MIC-PMB	Pole Mount Bracket
MIC-WMB	Wall Mount Bracket
MIC-SPR	Spreader Plate
MIC-ALM	Alarm and washer pump drive card for non-IR PSU; 8 inputs.
MIC-WKT-IR	Washer kit for **IR** models, containing mounting bracket and nozzle. (The washer pump drive card is built into the power supply for IR models.)
MIC-BP3	Bosch Biphase converter card for MIC power supplies **without** an available expansion slot.
MIC-BP4	Bosch Biphase converter card for MIC power supplies **with** an available expansion slot.

4 Electrical Connections

4.1 About the MIC Shielded Composite Cable

All connections (power, telemetry, video) to the MIC camera are provided through the screw terminal connections in the MIC power supply. MIC shielded composite cables are multi-conductor cables of various lengths (and gauges ranging from 14 - 18) that provide all power, video, and telemetry connections between the MIC PSU and the MIC camera. The cables are pre-made with a female terminated connector (12-pin) at one end for attachment to the male connector installed into the base of the camera. The other end of the cables has free (non-terminated) wires for wiring into terminals in the MIC PSU. The composite cable consists of two pairs (24AWG) plus 4 cores of (22 AWG), 2 cores of (24 AWG), and one coax core for the video signal to a maximum distance of 25 m.

Notice!
Bosch Security Systems does not recommend using the shielded composite cable for distances greater than 25 m between the MIC camera and the MIC power supply.

For installations that require the camera to be more than 25 m from the power supply, Bosch recommends that a 2 m cable be connected to a junction box (Exd rated for MIC440) from which telemetry, video, and power can be broken out into separate cables and appropriate wiring used to extend the distance to suit.

Warning!
Bosch recommends connecting the cable to the unit before taking the unit for mounting on-site.

MIC shielded composite cable before connection to a MIC550 or MIC550IR camera

MIC shielded composite cable connected to a MIC550 or MIC550IR camera

4.2 Composite Cable Color-coding

The standard color coding used in MIC composite cables is as follows:

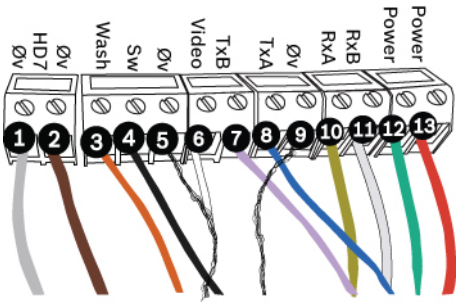


Figure 4.1: Exploded View of Composite Cable Connections

Camera Cable Connector Pin	Signal Name	Description	Cable Wire Color
1	Washer Drive Rtn	Auxiliary Connection	Grey
2	Tamper Sw Rtn	Auxiliary Connection	Brown
3	Washer Drive	Wash Signal	Orange
4	Tamper Sw	Alarm Communications	Black
5	Video Return	Video Signal Ground	Coax Screen
6	Video Output	Video Output to Control Room	Coax Core
7	Full Duplex Tx B+	Telemetry I/O to RS-422/485	Violet
8	Full Duplex Tx A-	Telemetry I/O to RS-422/485	Blue
9	0v	Ground	Shield
10	Full Duplex Rx A- Half Duplex Tx/Rx A	Telemetry I/O to RS-422/485	Yellow
11	Full Duplex Rx B+ Half Duplex Tx/Rx B	Telemetry I/O to RS-422/485	White
12	Power Input 2	Low Voltage Power Input	Green
13	Power Input 1	Low Voltage Power Input	Red

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

To install your MIC camera, follow these steps in sequence.
Note: Depending on your model of camera, your desired mounting location and orientation, as well as your mounting brackets and chosen camera accessories, you may not need to complete every step.

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.

1. *Select the Mounting Location and Orientation, page 18*.
2. *Install the MIC (standard) PSU , page 28* (sold separately). Refer to the Installation Manual for MIC Series Power Supplies for installation instructions.
3. Install metal conduit (user-supplied) to the DCA (sold separately) (and to the PSU if necessary), install wiring (user-supplied), and then make the necessary connections for power, telemetry, and video.
4. *Reverse the Rain Shield for Inverted Operation, page 27* (for cameras mounted in inverted position).
6. *Mount the Camera, page 22*.
7. (Optional) *Cant the Camera, page 25*.
8. Connect the camera to the computer.

6 Select the Mounting Location and Orientation

6.1 Mounting Location Overview

MIC Series cameras are designed for easy installation in various locations such as directly onto buildings and dedicated CCTV poles. Bosch sells a complete series of mounting brackets designed to allow the camera to achieve the optimal field of view.

The most common type of mounting location is the top of a dedicated CCTV pole that provides a robust mounting platform that minimizes camera motion and typically has a large base cabinet for mounting ancillary equipment such as power supplies.

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.

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.

Surveillance cameras are susceptible to vibrations caused by wind or vibrations emanating from the medium to which the camera is attached. Cameras attached to a pole, roof, or bridge are especially vulnerable. Bosch offers the following recommendations to stabilize your camera and to decrease the effects of vibration on transmitted images.

Pole and mast mounts

- Use a pole designed for CCTV cameras.
- Do not use a tapered pole.
- Do not use a pole that has signs or other equipment attached.
- Consult EPA rating/Wind load data to select an appropriate pole.

Roof mounts

- Mount the camera in the most stable location on the roof.
- Avoid locations affected by vibrations such as those caused by a rooftop air conditioner.
- Use guy wires to stabilize the camera against strong windows.

Extreme mount applications

Unique camera mounting applications that are impacted by extreme high winds, heavy traffic, or other conditions may require additional measures to stabilize the camera. Contact a manufacturer that specializes in passive vibration suppression using either damping or isolation.

The three figures directly below illustrate the arrangement of mounting brackets for installing a MIC camera. The camera (not shown) is attached to the bowl of the MIC-WMB.

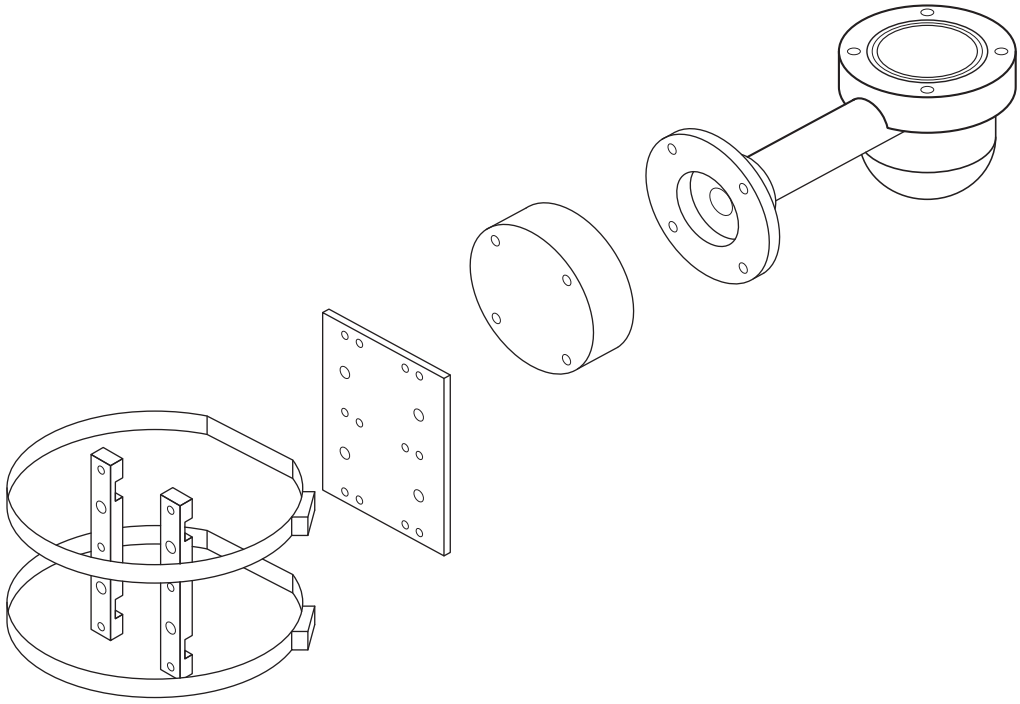


Figure 6.1: Typical pole mount (from left: Pole Mount Bracket (MIC-PMB) [2 mounting blocks, 2 pole bands, and 1 mounting plate], Shallow Conduit Adapter (MIC-SCA), and Wall Mount Bracket (MIC-WMB))

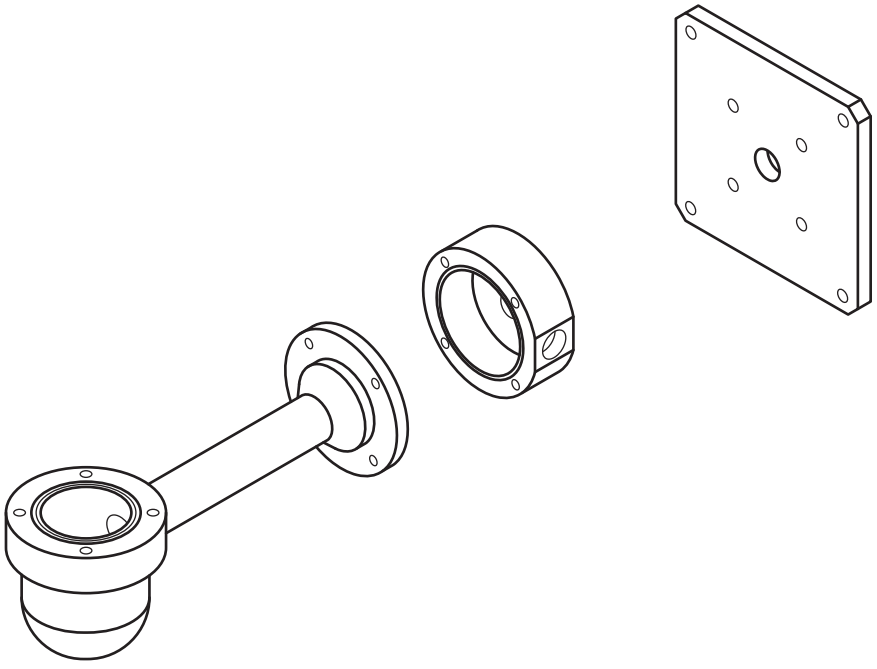


Figure 6.2: Typical wall mount (from left: Wall Mount Bracket (MIC-WMB), Shallow Conduit Adapter (MIC-SCA), and Spreader Plate (MIC-SPR))

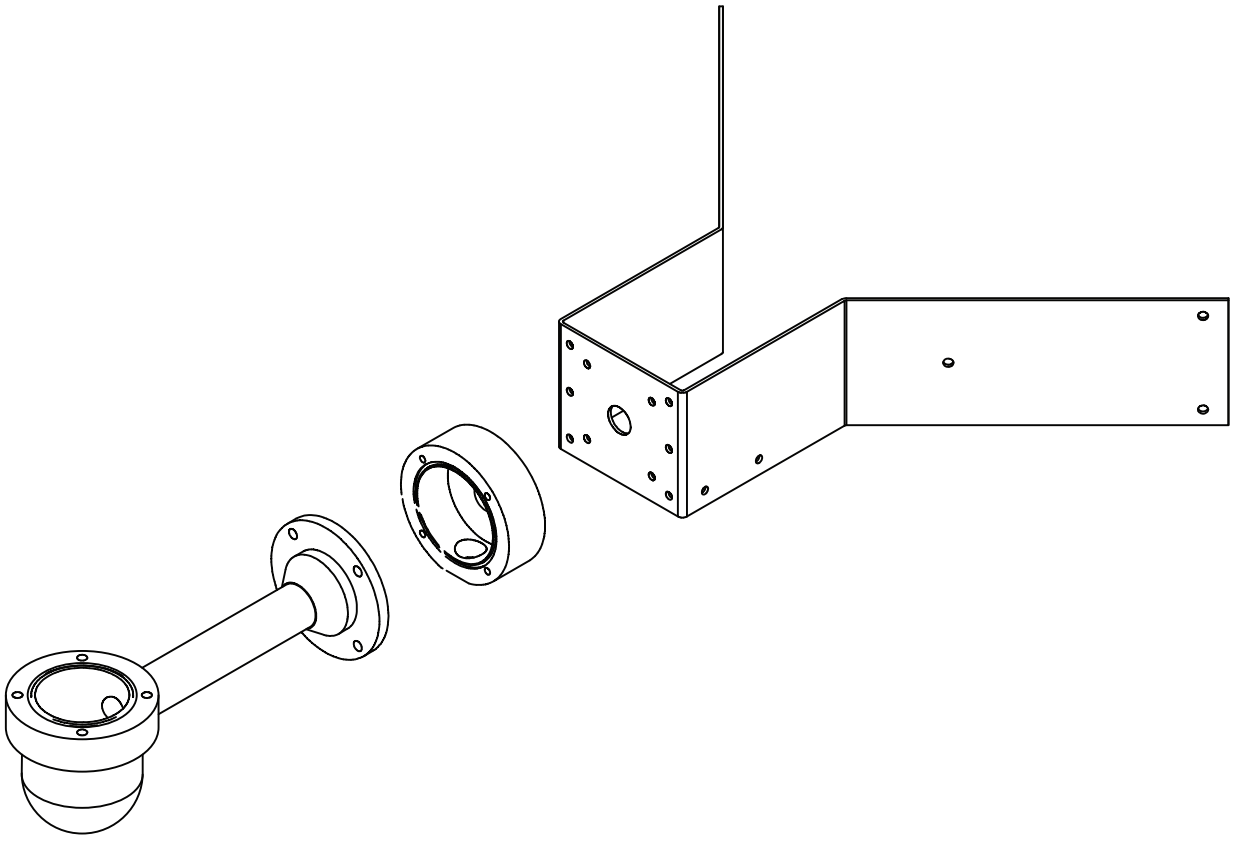


Figure 6.3: Typical corner mount (from left: Wall Mount Bracket (MIC-WMB), Shallow Conduit Adapter (MIC-SCA), and Corner Mount Bracket (MIC-CMB))

Warning!
To minimize the potential for corrosion on the housing, use only Bosch hardware and mounts.

6.2 Select the Mounting Location

1. Select the mounting location.
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

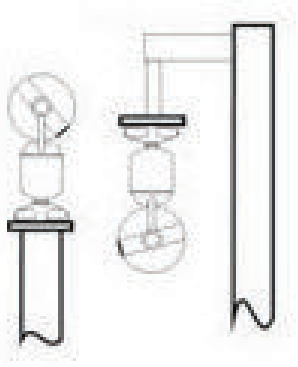
▸ Ensure that the selected mounting surface is capable of supporting the combined weight of the camera and mounting hardware (sold separately) under all expected conditions of load, vibration, and temperature.

Notice!
MIC cameras must be secured to one of the following surfaces:
- Concrete (Solid/Cast)
- Concrete Masonry Unit (Concrete Block)
- Brick (all types)
- Metal (Steel/Aluminum, minimum 1/8-in. thick)

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.

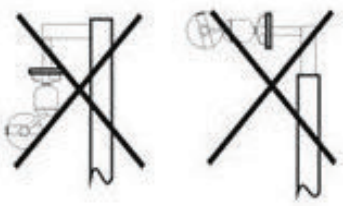
6.3 Select the Mounting Orientation

2. After selecting the mounting location, select the appropriate mounting orientation.
MIC Series cameras are designed to be mounted upright (straight up, 90°), inverted (straight down, 90°), or canted upright (ball up, 45°). 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 of MIC camera - upright, inverted

Correct mounting orientation of MIC camera - canted



Incorrect mounting orientation of MIC camera

6.4 Considerations for Inverted Cameras

6.5 Install the Mounting Brackets

3. Install the mounting brackets.
Observe all appropriate safety precautions and local building regulations.
Refer to the MIC Series Mounting Brackets Installation Guide for installation instructions.

7 Mount the Camera

To mount a MIC Series camera, follow these steps:

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

1. Carefully lift the camera to the mounting location.
2. Connect the female cable connector end (12-pin) of the shielded composite cable to the male plug in the base of the camera. Screw the cable connector sleeve onto the plug until it is secured firmly (approximately four (4) turns from the start of thread engagement).

8 Earthing the Camera

Earth the MIC Camera to metal on or attached to the mount.

Warning!
The camera must be earthed / grounded to meet EMC immunity standards.

Earth the camera using one of the supplied securing bolts. Only earth the camera at a single point to prevent earth loops and video distortion (hum bars), caused by electrical interference, from appearing on the camera picture in the control room. Please note:

- The camera module and housing are electrically isolated, so the housing should be safety earthed regardless. The safety earth should be a bonding connection (for example, one of the securing bolts) to the camera housing, or should be attached to the Earth terminal post on the PCD base of the camera.
- If the system is copper throughout and the camera pictures are fed back to the control room via coaxial copper cable, then the camera should be earthed only at the video termination point in the control room. In this case, the "Earth Link" on the PCB should be broken. Refer to Earth Link on PCB.
- If the video is transmitted back to the control room via some non-electrical connecting medium (for example, fiber optic, radio, or microwave link), then the camera should be earthed at the transmitter point in the power supply unit. The PSU "Earth Link" may be used for this purpose.
- If dual earthing is unavoidable, then a video isolation transformer should be fitted between the two earths.

9 Finalize Camera Mounting

Finalize Camera Mounting

Warning!
It is essential that the connections and the base of the camera are completely sealed from water ingress. Any water getting into the connector is liable to cause corrosion to the connector pins, leading to unreliable operation of the camera unit. This is especially imperative for a camera mounted in inverted orientation.

1. To prevent water ingress, seal the threads of the securing bolts using PTFE tape (not supplied). An additional gasket or suitable silicone sealant can be applied liberally to the threads prior to final tightening to ensure a watertight seal between the base of the camera and the mounting surface.
2. Use M8 x 20 mm stainless steel nuts, bolts, and washers to secure the base of the camera to the mounting surface.
3. Tighten all bolts securely.
4. Secure all cabling and conduit.

Caution!
The upright unit can be mounted either with the camera ball up or down. So that the picture from a camera installed with the camera ball down appears properly, rotate the camera tilt axis 180°. For more information, see Configuring the Camera for Inverted Operation.

10 Cant the Camera

MIC550/MIC550IR cameras feature twist-lock on-site canting functionality.
Installers can adjust the camera from an upright position to a canted position if desired. This allows the camera to be installed at a 45º angle to achieve the perfect field of view at the bottom of a pole.
The following graphic shows the camera in both upright and canted positions.

Figure 10.1: MIC550 cameras (from left: Front view, canted (1); Front view, upright (2); Side view, upright (3); Side view, canted (4))

To cant the camera, follow these steps:

1. Firmly secure the camera base by the 4-inch PCD foot bolts.
2. Locate and remove the two (2) pan body fixing screws (identified by arrows in the figure below). Once the screws have been loosened, lift them up and continue turning to lock the screws open. Ensure not to damage the paint work on the camera.

Figure 10.2: Pan body fixing screws

Notice!
The small security screws (identified in the figure in step 4 below) are not designed to be removed. Any attempt to remove these screws will void the warranty and potentially cause serious damage to the camera.

3. Grasp the lower camera body beneath the pan body joint and then carefully twist the upper camera body clockwise, as shown in the figure below, until the camera body has rotated 180° around. The top part of the camera will now be at a 45° angle (canted).

Figure 10.3: Canting in progress

4. Align the two (2) pan body fixing screws, then carefully replace and tighten them. The camera is now ready to be installed and configured.

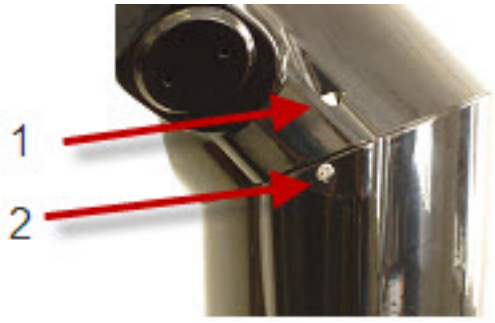


Figure 10.4: Camera in canted position; arrows point to pan body fixing screws (1) and security screws (2)

Warning!
Do not stand the canted (45°) MIC Series 550 / MIC Series 550 IR camera upright (on the camera base or, if mounted to a DCA, with the DCA base upright)! It is unstable unless properly mounted.

11 Reverse the Rain Shield for Inverted Operation

The upright unit can be mounted with the camera ball up or down. When the camera will be in inverted position, you should reverse the rain shield to provide weather protection for the window glass.

Figure 11.1: Rain shield

To reverse the rain shield, follow these steps:

1. Remove the four (4) M3 x 6 screws that hold the rain shield to the face of the camera. Two screws are on the left of the rain shield; two screws are on the right of the rain shield.

Figure 11.2: Screw removal

2. Reverse the rain shield.
3. Reattach the rain shield to the camera face.

Figure 11.3: Inverted rain shield installed on camera

12 Install the MIC (standard) PSU

12.1 MIC PSU Overview

Caution!
Use only the power supply specified for your specific model of camera.

Bosch provides a range of power supply units (PSUs) for MIC Series cameras. These units have a variety of common voltages and provide all the connections needed for power, telemetry and video.

Model Number	Input Voltage	Dimensions (H x W x D)	Weight
MIC-24PSU-2	24 VAC	90 x 260 x 160 mm (3.54 x 10.24 x 6.3 in.)	3.2 kg (7.1 lb)
MIC-115PSU-2	115 VAC	90 x 260 x 160 mm (3.54 x 10.24 x 6.3 in.)	3.2 kg (7.1 lb)
MIC-240PSU-2	230 VAC	90 x 260 x 160 mm (3.54 x 10.24 x 6.3 in.)	3.2 kg (7.1 lb)

Table 12.1: PSUs for MIC550/MIC550IR

Model Number	Input Voltage	Dimensions (H x W x D)	Weight
MIC-IR-24PSU-UL	24 VAC	90 x 260 x 160 mm (3.54 x 10.24 x 6.3 in.)	3.2 kg (7.1 lb)
MIC-IR-115PSU-UL	115 VAC	90 x 260 x 160 mm (3.54 x 10.24 x 6.3 in.)	3.2 kg (7.1 lb)
MIC-IR-240PSU-UL	230 VAC	90 x 260 x 160 mm (3.54 x 10.24 x 6.3 in.)	3.2 kg (7.1 lb)

Table 12.2: PSUs for MIC550IR

Each MIC PSU provides all of the connections needed for power, video, and telemetry for a single MIC camera. Each MIC PSU has CE and FCC approval and has a cast-aluminum enclosure that is weather-resistant (rated IP65). Features include:

- A provision for driving various optional interface cards mounted internally to the MIC power supply enclosure (for example, an 8-input alarm card (MIC-ALM))
- A provision for a signal interface card (MIC-BP4) to connect telemetry to Bosch Biphase equipment
- Screw termination of all cables (composite, telemetry, and ancillary) into and out of the enclosure
- Earth isolation and termination within the unit to control video earthing correctly and thus prevent earth loops

Each MIC PSU ships with the following parts:

- Three (3) M12 cable glands for telemetry, video and ancillary equipment
- One (1) M16 gland for connection of the shielded composite cable to the MIC camera
- One (1) 1/2 in. NPT cable gland for the power cable connection

– One (1) 1/2 in. NPT and one (1) M12 blanking plug

12.2 About the MIC Shielded Composite Cable

All connections (power, telemetry, video) to the MIC camera are provided through the screw terminal connections in the MIC power supply. MIC shielded composite cables are multi-conductor cables of various lengths (and gauges ranging from 14 - 18) that provide all power, video, and telemetry connections between the MIC PSU and the MIC camera. The cables are pre-made with a female terminated connector (12-pin) at one end for attachment to the male connector installed into the base of the camera. The other end of the cables has free (non-terminated) wires for wiring into terminals in the MIC PSU. The composite cable consists of two pairs (24AWG) plus 4 cores of (22 AWG), 2 cores of (24 AWG), and one coax core for the video signal to a maximum distance of 25 m.

Notice!
Bosch Security Systems does not recommend using the shielded composite cable for distances greater than 25 m between the MIC camera and the MIC power supply.

For installations that require the camera to be more than 25 m from the power supply, Bosch recommends that a 2 m cable be connected to a junction box (Exd rated for MIC440) from which telemetry, video, and power can be broken out into separate cables and appropriate wiring used to extend the distance to suit.

Warning!
Bosch recommends connecting the cable to the unit before taking the unit for mounting on-site.

MIC shielded composite cable before connection to a MIC550 or MIC550IR camera

MIC shielded composite cable connected to a MIC550 or MIC550IR camera

12.3 Composite Cable Color-coding

The standard color coding used in MIC composite cables is as follows:

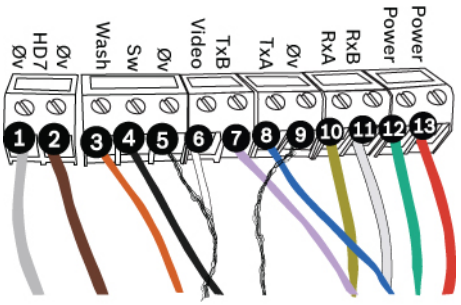


Figure 12.1: Exploded View of Composite Cable Connections

Camera Cable Connector Pin	Signal Name	Description	Cable Wire Color
1	Washer Drive Rtn	Auxiliary Connection	Grey
2	Tamper Sw Rtn	Auxiliary Connection	Brown
3	Washer Drive	Wash Signal	Orange
4	Tamper Sw	Alarm Communications	Black
5	Video Return	Video Signal Ground	Coax Screen
6	Video Output	Video Output to Control Room	Coax Core
7	Full Duplex Tx B+	Telemetry I/O to RS-422/485	Violet
8	Full Duplex Tx A-	Telemetry I/O to RS-422/485	Blue
9	0v	Ground	Shield
10	Full Duplex Rx A- Half Duplex Tx/Rx A	Telemetry I/O to RS-422/485	Yellow
11	Full Duplex Rx B+ Half Duplex Tx/Rx B	Telemetry I/O to RS-422/485	White
12	Power Input 2	Low Voltage Power Input	Green
13	Power Input 1	Low Voltage Power Input	Red

12.4 Alarm Inputs

The table below identifies the number of alarm inputs and outputs available in MIC power supply units, depending on whether or not an 8-input alarm card is installed.

MIC PSU	8-input Alarm Card (MIC-ALM)?	Number of Alarm Inputs	Number of Alarm Outputs
MIC-24PSU-2, MIC-115PSU-2, MIC-240PSU-2	No	1	0
	Yes	8	2

Table 12.3: Number of alarm inputs and outputs in MIC PSUs

The table below identifies the number of alarm inputs and outputs available in MIC IR power supply units. MIC IR PSUs do not have the option of a separate card for additional alarm inputs or outputs.

MIC PSU	Number of Alarm Inputs	Number of Alarm Outputs
MIC-IR-24PSU-UL, MIC-IR-115PSU-UL, MIC-IR-240PSU-UL	4	0

Table 12.4: Number of alarm inputs and outputs in MIC IR PSUs

12.5 Simultaneous IP and Analog Video/Control ("Hybrid" Operation)

The figure below illustrates how to configure your system to achieve simultaneous video and control over both IP and analog connections.

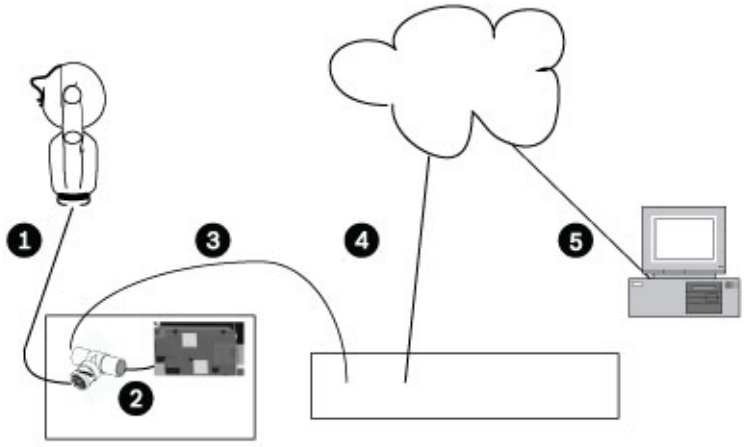


Figure 12.2: System configuration for simultaneous video/control

Number	Description
1	Connection between MIC camera and BNC T-connector in BNC socket on PCB in MIC IP PSU
2	Connection between BNC T-connector and encoder in MIC IP PSU
3	Connection between BNC T-connector and Bilinx-based control (head-end) system
4	Connection between Bilinx-based control (head-end) system and Local Area Network (LAN) (or the "cloud")
5	Connection between the Local Area Network (LAN) and PC connected to video monitor

13 Getting Started

Install and wire the camera according to the instructions in this manual and in the manuals that accompany the power supply and mounting devices. A typical system includes a keyboard, matrix switcher, monitor, and appropriate wiring connections. Refer to the individual product manuals for complete installation and setup instructions for each of the system components.

13.1 Establishing Control of the Camera

The MIC Series 550 / MIC Series 550 IR supports two communication protocols (Biphase and RS-485), and both Bosch and Pelco D and P (keyboard) controller protocols that allow you to send commands to the camera and to receive information from the camera.

13.1.1 Establishing Control of the Camera via Biphase Protocol

Notice!
Biphase protocol works only with Bosch controller protocol. It does not work with Pelco controller protocol.

Biphase is the standard Bosch protocol used to send Pan/Tilt/Zoom control data. Biphase connections require a MIC-BP3 or a MIC-BP4 Biphase converter (sold separately).

Cable Type	Shielded Twisted Pair (STP)
System	Half-duplex, multidrop
Maximum Distance	1524 m (5000 ft) [Belden 8760 recommended]
Transmission Rate	31.25 KHz
Gauge	1.02 mm (18 AWG)
Termination Resistance	100 Ω
Terminal Connector	Screw terminals
Voltage	4 Vp-p

Caution!
The Biphase shield must be connected to the head end only.

13.1.2 Establishing Control of the Camera via RS-485 Protocol

Notice!
In **Pelco** controller protocol, RS-485 is the only communication protocol that the camera supports. It does not transmit responses back to the controller.

RS-485 is capable of controlling a true multidrop network and is specified for up to 32 drivers and 32 receivers on a single 2-wire bus.
The MIC550 camera uses the 2-wire mode, although RS-485 can be connected in a 2- or 4-wire mode.

Notice!
For MIC550, the wire shield must be tied to signal at both ends, if 2-wire twisted pair is used. After connecting the wires for RS-485 operation, ensure that the slide switch on the main board to the camera head is positioned toward the LEDs (default).

Cable / Wire Type	2-wire Shielded Twisted Pair (STP)

Maximum Distance	1219 m (4000 ft)
Maximum Baud Rate	57.6 kb
Gauge	0.511 mm (24 AWG)
Wire Impedance	120 Ω

Caution!
Bosch recommends that multiple RS-485 connections be arranged as a connected series of point-to-point (multidropped) nodes, as a line or as a bus. It is **not** recommended to arrange RS-485 connections as a star, ring, or as a multiple-connected network. Star and ring topologies may cause signal reflections or excessively low or high termination impedance.

In Pelco Protocol Mode, the camera is configured from the factory for RS-485 operation.

1. Connect the controller's Tx terminals to the Tx terminals in the power supply box. See the *MIC Series Power Supplies Installation Manual* for complete wiring instructions.
2. Pan or tilt the keyboard joystick to confirm that control has been established to the camera (approximately five (5) seconds).

13.2 Powering On

When you turn on power to the camera, the camera adjusts the lens focus. After approximately 20 seconds, a splash screen appears, with text that displays the type of device (MIC-550), the camera model, the video type (PAL or NTSC), and the firmware version.

13.3 Controlling the Camera

After the camera is on and homing is complete, you must set the camera address. You may also want to assign a password and to customize some of the default settings of the camera. To do this, you must control the camera.
The most common ways to control the MIC are:

– Using a keyboard and on-screen display (OSD) menus. This method is the most common. See *Basic Keyboard Operation, page 33*.
– Using the Configuration Tool for Imaging Devices (CTFID) software running on a PC with Bilinx or the RS-232/RS-485 communication protocol. Go to www.boschsecurity.com to download the latest version of the software and the *CTFID User Manual*.
– Using a PC-based graphical user interface (GUI).

13.3.1 Basic Keyboard Operation

The following tables summarize the basic operations for a standard keyboard and the functions available to control a MIC camera.

Typical Keyboard Features	Usage
Function Keys	Selects a specific control setting.
Number Keys	Inputs a number from 0 to 9.
Camera Key	Selects a camera number.
Enter Key	Inputs a selection.
Focus Key	Sets the lens focus or makes a menu selection in **OSD** mode.
Iris Key	Sets the lens iris setting or makes a menu selection in **OSD** mode.
Key LEDs	Indicates an active key.
LCD	Displays the current status.
Joystick	Controls the pan/tilt/zoom (PTZ) functions of the camera.

Table 13.1: Typical Keyboard Functions

Camera Operation	Control Method
To Pan Side to Side	Move the joystick left or right.
To Tilt Up and Down	Move the joystick forward and back.
To Zoom In	Twist the joystick clockwise.
To Zoom Out	Twist the joystick counterclockwise.

Table 13.2: Typical Keyboard Controls for a MIC Camera

13.3.2 Navigating the On-Screen Display (OSD) Menus

The OSD menus provide access to the programmable settings of the camera. The OSD displays only the submenus that are applicable to a particular MIC configuration. Some menu items (indicated as (L)) are locked and require a system password to use. Menu items marked with an asterisk (***)** are default factory settings, unless otherwise noted.

Notice!
After 4.5 minutes of inactivity, the OSD menu times out and exits without warning. Some unsaved settings in the current menu can be lost.

To navigate the OSD menus:

1. Use the joystick to highlight a menu item.
2. Press either the **Focus** or the **Iris** key to open a menu item.
3. Follow the on-screen instructions.

Note: To select the **Exit Menu** item from anywhere in the current menu, use the Zoom command.

13.3.3 Keyboard Commands, Bosch Protocol

Keyboard control commands are composed of a sequence of three (3) inputs with the following convention: 1) a **Function** key + 2) a **Command** number key(s) + 3) the **Enter** key.

– Depending on the type of keyboard, the control function keys are labeled: **ON** or **AUX ON**

OFF or **AUX OFF**
SET or **SET SHOT**
SHOT or **SHOW SHOT**

Notice!
The convention used for control key commands in this manual is ON, OFF, SET, and SHOT. Refer to your keyboard manual for the key naming conventions.

– Command numbers range from 1 to 999. See *Keyboard Commands (Bosch Protocol) By Number, page 81* for a complete list of keyboard commands for Bosch protocol.
– The **Enter** key can also be labeled with the ∞ symbol.

For example, the keyboard command to make the camera pan 360º continuously is:
ON-1-ENTER (Press the **ON** key, then press the number **1** key, and then press **ENTER**.)
Refer to Keyboard Commands (Bosch Protocol) By Number for a complete list of commands.

13.3.4 Keyboard Commands, Pelco Protocol

Pelco control commands are composed of a sequence of two (2) keyboard inputs with the following convention: 1) a **Command Number** and 2) a **Function** key input.
The camera uses the **PRESET** command key to save and recall presets (pre-positions) 1 through 99.

Notice!
To save a preset, enter the desired number and hold the **PRESET** key for approximately two (2) seconds. To recall a preset, enter the desired preset number (or command) and momentarily press and release the **PRESET** key.

Keyboard Command	User Action	Description
0-Pattern	Press	Initiates recording continuous playback based upon current Recording setting (A or B) in the Setup Menu.
	Press and hold	Initiates recording based upon current Recording setting (A or B) in the Setup Menu. Press ACK to end recording.
1-Pattern	Press	Initiate Recording A continuous playback.
	Press and hold	Initiate Recording A. Press ACK to end recording.
2-Pattern	Press	Initiate Recording B continuous playback.
	Press and hold	Initiate Recording B. Press ACK to end recording.
3-Pattern	Press	Initiate the standard preset tour (Tour 1).
4-Pattern	Press	Initiate the custom preset tour (Tour 2).
1 – Aux On / Aux Off	Press	Activates / deactivates alarm output 1. This command is supported with Non-IR models only if an optional 8-input alarm card is installed in the PSU powering the camera.

Keyboard Command	User Action	Description
2 – Aux On / Aux Off	Press	Activates / deactivates alarm output 2. This command is supported with Non-IR models only if an optional 8-input alarm card is installed in the PSU powering the camera.
91 – Aux On	Press	Activate Zone Scan (display zone titles).
92 – Aux On	Press	Deactivate Zone Scan (re-move zone titles)

13.3.5 Special Preset Commands, Pelco Protocol

Some **Pelco** mode preset commands have a special meaning and override the normal Pelco preset function as follows:

Preset Command	Description
33-PRESET	Pans the camera 180° (Flip).
34-PRESET	Goes to **Zero Pan** (original home position).
80-PRESET	Toggles the **Synchronization Mode** between Line Lock and Internal (Pelco Frame Scan). This command is available if commands are unlocked using the Main menu.
81-PRESET	Initiates **Preset Tour 1**.
82-PRESET	Initiates **Preset Tour 2**.
92-PRESET	Sets the **Left** pan limit for an AutoScan with **Limit Stops** enabled.
93-PRESET	Sets the **Right** pan limit for an AutoScan with **Limit Stops** enabled.
94-PRESET	Initiates a **Preset Tour**.
95-PRESET	Enables or disables **Limit Stops** in the **Setup Menu** for AutoScan. Invokes the Pelco main **Setup Menu** when pressed for 2 seconds.
96-PRESET	Stops a scan.
97-PRESET	Initiates FastAddress (Pelco Random Scan).
98-PRESET	Toggles the **Synch. Mode** between **Line Lock** and **Internal** (Pelco Frame Scan). This command is available only for two (2) minutes after the power is applied and then reverts to normal preset functionality.
99-PRESET	Starts an AutoScan.

Notice!
Some Pelco controllers do not support all of the preset command numbers. Refer to the documentation of the specific Pelco controller for supported preset commands.

13.4 About Setting the Camera Address via FastAddress

The camera offers remote addressing via the feature "FastAddress," which allows you to set or to change a camera address using the keyboard and on-screen menus. The FastAddress feature allows you to install all cameras first, then to set the addresses via the control system. This feature makes it easier to re-address cameras at a later time because you do not need to go to the physical location of the camera to change the camera's address.

Notice!
You do not need to set a camera address if using Bilinx communication.
FastAddress is stored in nonvolatile memory and does not change if the power is turned off or if the default settings are restored.

13.5 FastAddress, Bosch Protocol

In Bosch protocol, there are three (3) **FastAddress** commands:

– **ON-999-ENTER**: Displays and programs all cameras without an address in the system.

Notice!
If a keyboard is set to a camera number that already has an address, that camera also responds to this command.

– **ON-998-ENTER**: Displays and programs all cameras with or without an address in the system.
– **ON-997-ENTER**: Displays the current address status of all cameras in the system simultaneously.

To set an address for a camera without an address:

1. Select the camera number that you want to **FastAddress**. The system displays the camera number on the keyboard and the image on the corresponding monitor.
2. Press **#-ENTER** (where **#** is the camera number without an address).
3. Press **ON-999-ENTER** to invoke an on-screen display of cameras on the system without an address.
4. Follow the on-screen instructions. You receive an on-screen confirmation when the **FastAddress** is complete.

To change or clear an address for a camera with an address:

1. Select the camera number that you want to **FastAddress**. The system displays the camera number on the keyboard and the image on the corresponding monitor.
2. Press **#-ENTER** (where **#** is the camera number with an address).
3. Press **ON-998-ENTER** to invoke an on-screen display of all cameras on the system, with or without an address.
4. Follow the on screen instructions. You receive an on-screen confirmation when the **FastAddress** is complete.

13.6 FastAddress, Pelco Protocols

This section provides instructions to set a FastAddress with a Pelco keyboard or controller.

– A MIC550 with an address set to 0 responds to commands set to any address.
– **Pelco-P** protocol must use addresses 1 to 32.
– **Pelco-D** protocol must use addresses 1 to 254.

Notice!

A previously-configured MIC with an address above 32 (Pelco-P upper limit) or 254 (Pelco-D upper limit) can be used without readdressing the unit. However, no two (2) addresses can be the same. For example:
Pelco-P addresses above 32 are repeated in multiples of 32 (1, 33, 65, 97 are the same).
Pelco-D addresses above 254 are repeated in multiples of 254 (1, 255, 509, 763 are the same).

To set FastAddress with a Pelco Keyboard:

1. Press and hold **95-PRESET** for two seconds to open the Pelco Setup menu.
2. Move the joystick to select the **Command Lock** menu.
3. Press the **FOCUS** or the **IRIS** button to turn Command Lock to **OFF**.
4. Move to the FastAddress menu and press the **FOCUS** button or the **IRIS** button to open the menu.
5. Use the joystick to enter the unique identifier for the camera.
   Move the joystick up or down to select the number.
   Move the joystick right to move to the next number position.
6. Move the joystick right to select Continue. Then, press the **FOCUS** or the **IRIS** button.
7. Use the keyboard to enter the FastAddress number. Then, press the **Camera** button.
   Note: To use a FastAddress number that is already assigned to a different camera, you must clear the number first.
8. Move the joystick down then up again to set the FastAddress number.
9. Press the **FOCUS** or the **IRIS** button to store the FastAddress number. The on-screen display menu confirms that the camera stored the FastAddress number.

13.7 Setting Passwords

Passwords are used to control access to locked command menus. Unlocked commands are available to all users. Passwords are four (4) digits in length.

13.7.1 Special Passwords

The table below identifies special passwords and their function and security level.

Password	Function / Security Level
0000 (default)	Enables security and requires a user to enter the unlock command **OFF-90-ENTER** before invoking a locked command.
9999	Disables all security and allows all users to access locked commands.

13.7.2 Setting Passwords, Bosch Protocol

To set or change a password (locked command):

1. Press **OFF-90-ENTER** to turn off the command lock.
2. Press **SET-802-ENTER** to access the password menu.
3. Tilt the joystick up or down to choose a number. Tilt the joystick right to move to the next number position.
4. Follow the on-screen instructions and save the password. You receive an on-screen confirmation.

14 On-Screen Display (OSD) Menus (Bosch Protocol)

This chapter identifies and describes each OSD menu option, as well as the default setting for each option, for Bosch protocol. For step-by-step instructions, see Common User Commands (unlocked) and Advanced Features.

To open the main Setup Menu in Bosch protocol: (locked commands)

1. Press **OFF-90-ENTER** to turn off the command lock.
2. Press **ON-46-ENTER** to access the **Setup Menu**. The screen **Setup Menu** appears.

Setup Menu		
Exit...		
Camera Setup		
Lens Setup		
PTZ Setup		
Display Setup		
Communication Setup		
Alarm Setup		
Language		
Diagnostics		
Focus / Iris: Select		

Setup Menu Choices:

Menu	Description
Exit	Exits the menu.
Camera Setup	Accesses adjustable camera settings such as: white balance, gain, sharpness, sync, line lock, backlight, shutter, and night mode.
Lens Setup	Accesses adjustable lens settings such as: focus, iris, zoom speed, and digital zoom.
PTZ Setup	Accesses adjustable pan/tilt/zoom (PTZ) settings such as: Autopan, tours, PTZ speed, inactivity period, AutoPivot, and tilt limits.
Display Setup	Accesses adjustable display settings such as: OSD, sector blanking, and privacy masking.
Communication Setup	Accesses communication settings such as: AutoBaud and Bilinx.
Alarm Setup	Accesses the alarm settings such as: inputs, outputs, and rules.
Language	Displays the language.
Diagnostics	Displays the status of diagnostic events.

14.1 Camera Setup Menu

The **Camera Setup Menu** contains settings that can be changed/customized for the optical (visible) camera.

	Camera Setup		
	Exit...		
*	White Bal:	EXT ATW	
*	Gain Control:	AUTO	
*	Max Gain Level:	6 (4**)	
*	Sharpness:	12	
*	Backlight Comp:	OFF	
	WDR:	OFF	
*	Shutter Mode:	Auto SensUP	
*	Shutter:	1/60	
*	Auto SensUP Max:	15x	
*	Night Mode:	AUTO	
*	Night Mode Color:	OFF	
*	Night Mode Threshold:	55	
*	Pre-Comp:	1	
	Stabilization:	ON	
	Restore Defaults...		
	* = Factory Setting		
	Focus / Iris: Select		

White Bal
Maintains proper color reproduction (white balance) as the color temperature of a scene changes (for example, from daylight to fluorescent lighting).

Option	Description
Extended ATW	(Default setting) Adjusts camera color using extended range.
ATW	Adjusts camera color constantly.
Indoor W.B.	Optimizes camera color for typical indoor conditions.
Outdoor W.B.	Optimizes camera color for typical outdoor conditions.
AWB Hold	Sets the camera's color settings for the current scene.
Manual	Allows users to adjust the Red and Blue gain. Sliding scale: –(1 to 100)+
Outdoor Auto	Automatically adjusts camera color in outdoor scenes.
Sodium Lamp Auto	Automatically adjusts camera color in scenes with sodium vapor lighting.
Sodium Lamp	Allows users to adjust color in scenes with sodium vapor lighting.

Gain Control
Electronically brightens darker scenes which may cause graininess in low light scenes. Options: Auto (default setting), OFF.

Max Gain Level
Adjusts the maximum gain level to which the gain control adjusts when set to **AUTO**.
Sliding scale: –(1 to 6)+ (1=8db, 2=12db, 3=16db, 4=20db, 5=24db, 6=28db)
Default setting: 6 (for 28x camera); 4 (for 36X camera).

Sharpness
Adjusts the sharpness level of the picture.
Sliding scale: –(1 to 16)+. Default setting: 8

Backlight Comp
Improves image quality when the background illumination level is high. Options: ON, OFF (default setting).

WDR
Wide Dynamic Range. Options: ON, OFF (default setting), AUTO.

Shutter Mode
Turns Auto SensUP on or off. Options: Auto SensUP (default setting), OFF.

Shutter
Adjusts the electronic shutter speed (AES). Sliding scale: –(60 to 1/10000) +.
1/60 sec. (NTSC) or **1/50 sec.** (PAL)

Auto SensUP Max.

Sets the limit for sensitivity when the shutter speed is set to Auto SensUP. Options: 2x, 4x, 7.5x, 15x (default setting).

Night Mode
Selects night mode (B/W) to enhance lighting in low light scenes. Options: ON, OFF, AUTO (default setting).

Night Mode Color
Determines if color processing remains in effect while in night mode. Options: ON, OFF (default setting).

Night Mode Threshold
Adjusts the level of light at which the camera automatically switches out of night mode (B/W) operation. Sliding scale: –(10 to 55)+, (in increments of 5) 10 is earlier, 55 is later. Default setting: 55

Pre-Comp
Amplifies the video gain to compensate for long distance cable runs.
Sliding scale: –(1 to 10)+. Default setting: 1

Stabilization
Eliminates shaking of the camera in both the vertical and horizontal axes, resulting in exceptional image clarity without reducing camera sensitivity or picture quality. Options: ON, OFF (default setting).

14.2 Lens Setup Menu

The **Lens Setup Menu** contains lens settings that can be changed/customized.

	Lens Setup		
	Exit...		
*	Auto Focus:	SPOT	
*	Auto Iris:	CONSTANT	
*	Auto Iris Level:	8	
*	Focus Speed:	2	
*	Iris Speed:	5	
*	Max Zoom Speed:	FAST	
*	Digital Zoom:	ON	
	Restore Defaults		
	* = Factory Setting		
	Focus / Iris: Select		

Auto Focus
Automatically focuses on the subject in the center of the screen. Options:

Option	Description
CONSTANT	Auto Focus is always active, even while the camera is moving.
MANUAL	Auto Focus is inactive; manual focus must be used.
SPOT	(Default setting) The camera activates Auto Focus after the camera stops movement. Once focused, Auto Focus is inactive until the camera moves again.

Auto Iris
Automatically adjusts to varying light conditions. Options:

Option	Description
MANUAL	Iris must be adjusted manually.
CONSTANT	(Default setting) Auto Iris is constantly active.

Auto Iris Level
Reduces the camera's iris level for proper exposure. Sliding scale: – (1 to 15) +. Default setting: 8.

Focus Speed
Adjusts the manual focus speed. Sliding scale: – (1 to 15) +. Default setting: 2.

Iris Speed
Adjusts the manual iris speed. Sliding scale: – (1 to 10) +. Default setting: 5.

Max. Zoom Speed
Adjusts the manual zoom speed. Options: SLOW, MEDIUM, FAST (default setting).

Digital Zoom
Enables or disables digital zoom. Options: ON (default setting), OFF.

14.3 PTZ Setup Menu

The **PTZ Setup Menu** contains pan/tilt/zoom settings that can be changed/customized.

	PTZ Setup		
	Exit...		
*	Autopan:	30 deg/sec	
*	Tour 1 Period:	5 sec	
*	Tour 2 Period:	5 sec	
*	PTZ Fixed Speed:	4	
*	Inactivity:	OFF	
*	Inact. Period:	2 min	
*	Autopivot:	ON	
*	Orientation	NORMAL	
*	Freeze Frame on Preposition	ON	
	Tilt Up Limit...		
	Azimuth Zero...		
	Restore Defaults...		
	* = Factory Setting		
	Focus/Iris: Select		

AutoPan
Adjusts speed of camera during AutoPan and AutoScan. Sliding scale: –(1°/sec. to 60°/sec.)+. Default setting: 30°/sec.

Tour 1 Period
Changes dwell time between presets during the tour. Sliding scale: –(3 sec. to 10 min.)+. Default setting: 5 sec.

Tour 2 Period
Changes dwell time between presets during the tour. Sliding scale: –(3 sec. to 10 min.)+. Default setting: 5 sec.

PTZ Fixed Speed
Sets pan and tilt speed when controlled by a fixed speed controller. Sliding scale: –(1 to 15)+. Default setting: 4.

Inactivity
Selects the mode to which the camera reverts after the period of inactivity set in the inactivity period. Options:

Option	Description
Scene 1	Returns to Preset 1.
Prev Aux	Returns to previous activity, such as Aux commands 1, 2, 7, 8, 50, or 52.
OFF	(Default setting) Remains on the current scene indefinitely.

Inact. Period
Sets the time period of inactivity before the above action occurs.
Sliding scale: – (3 sec. to 10 min.) +. Default setting: 2 min.

Autopivot
Automatically rotates the camera 180º when following a subject traveling directly beneath the camera. Options: ON (default setting), OFF.

Orientation
Selects mounting options. Options:

Option	Description
NORMAL	(Default setting) The camera is straight, upright; the software does not rotate the view.
INVERTED	The sofware rotates the video 180º automatically.

Freeze Frame On Preposition
Holds a preposition video frame while moving to another preposition. Options: ON (default setting), OFF.

Tilt Up Limit...
Sets the upper tilt limit of the camera. Use the joystick to move to a scene.

Azimuth Zero...
Sets the zero degree pan position. Use the joystick to move to a scene that you want to set as the zero degree pan position and as the North compass heading. For more details, refer to *Azimuth, Elevation, and Compass Directions, page 76*.

14.4 Display Setup Menu

The **Display Setup Menu** contains display settings that can be changed/customized.

	Display Setup		
	Exit...		
*	Title OSD:	MOMENTARY	
*	Camera OSD:	ON	
	Display Adjust		
*	Azimuth:	OFF	
*	Compass:	OFF	
	Sector Blanking...		
	Privacy Masking...		
	Edit Sector Title...		
	Edit Scene Title...		
	Restore Defaults...		
	* = Factory Setting		
	Focus / Iris: Select		

Title OSD

Controls how the OSD displays sector or shot titles. Options:

Option	Description
OFF	Titles are hidden.
ON	Titles are displayed continuously.
MOMENTARY	(Default setting) Titles are displayed for a few seconds, then disappear from the screen.

Camera OSD

Controls how the OSD displays camera response information, such as Digital Zoom, Iris open/close, and Focus near/far. Options: ON (default setting), OFF.

Display Adjust

Adjusts the text brightness and vertical position of the on-screen title. Options:

Option	Description
Up	Moves screen title up.
Down	Moves screen title down.
Brighter	Brightens the intensity of the on-screen text.
Darker	Darkens the intensity of the on-screen text.

Azimuth
Display azimuth/elevation values. Options: ON, OFF (default setting). For more details, refer to *Azimuth, Elevation, and Compass Directions, page 76*.

Compass
Displays compass heading. Options: ON, OFF (default setting). For more details, refer to *Azimuth, Elevation, and Compass Directions, page 76*.

Sector Blanking
Allows video blanking of selected sectors. Press **Focus/Iris** to blank or clear a sector (1 through 16). Follow the on-screen instructions.

Privacy Masking
Allows masking of sensitive areas. Select option **Mask** and follow the on-screen instructions to set a mask for up to 24 privacy masks are available, with a maximum limit of eight (8) to a scene. For more details, refer to *Privacy Masking, page 75*.

Edit Sector Title
Allows editing of existing Sector (Zone) Titles. Select a sector title to access the character palette. For instructions, refer to *Specifying a Shot or a Sector Title, page 68*.

Edit Scene Title
Allows editing existing Scene (Shot) Titles. Select a scene title, and then select a menu option:
- **Edit Scene Title** to access the character palette. For instructions, refer to *Specifying a Shot or a Sector Title, page 68*.
- **Clear Scene** to delete the selected scene title.

14.5 Communication Setup Menu

The **Communication Setup Menu** contains baud rate and Bilinx control settings.

	Communication Setup		
	Exit...		
*	AutoBaud:	ON	
*	Baud Rate:	9600	
	Bilinx		
	Restore Defaults		
	* = Factory Setting		
	Focus / Iris: Select		

AutoBaud

Turns on AutoBaud detection, which detects and adjusts the camera protocol and baud rate to match that of the controller. Options: ON (default setting), OFF. ON automatically accepts baud rates from 2400 to 57600.

Note: If stepping from 2400 to 57600 baud, you must first set the Baud Rate to 19200 for AutoBaud to detect the higher baud rate.

Baud Rate

Manually sets the baud rate when AutoBaud is set to OFF. Options are 2400, 4800, 9600 (default setting), 19200, 38400, and 57600.

Bilinx

Activates Bilinx control communication. (Only available when not connected to a Bilinx data interface unit.) Options: ON (default setting), OFF.

14.6 Alarm Setup

The **Alarm Setup Menu** contains alarm inputs, outputs and rules.

Notice!
The maximum number of Alarm Inputs is eight (8), available only on the Alarm and Washer Pump Drive Card (MIC-ALM) (sold separately). This card is available for non-IR power supply units (PSUs) only. IR models only will show Alarm Inputs 1–4 and numbers 5–12 will display NONE. See Layout of MIC-240PSU-2 and MIC-115PSU-2 for the specific number of alarm Inputs and Outputs per PSU.

Alarm Setup				**Inputs Setup**			
Exit...				Exit...			
Multi Alarm Setup				1. Alarm Input 1	N.O.		
Inputs Setup...				2. Alarm Input 2	N.O.		
Outputs Setup...				3. Alarm Input 3	N.O.		
Rule Setup...				4. Alarm Input 4	N.O.		
Restore Defaults...				5. Alarm Input 5	N.O.		
				6. Alarm Input 6	N.O.		
				7. Alarm Input 7	N.O.		
				8. Alarm Input 8	N.O.		
				9. NONE			
				10. NONE			
				12. NONE			
				12. NONE			
				Focus / Iris: Select Type			
Focus / Iris: Select				Right / Left: Select Mode			

Multi Alarm Setup
Allows setup of multiple alarms. Options: On; Off. Checkbox button to "Select."

Inputs Setup Submenu Choices:

Inputs Setup
Defines physical inputs or events and commands that can be used in a rule. There are twelve (12) alarm inputs available.

Inputs 1-8
Defines the type of physical input (dry contact): N.O. (Normally Open) (default setting) or N.C. (Normally closed).
Inputs 1–4 are available for Standard and IR models.
Inputs 5–8 are available for Standard models with optional alarm card installed.

Inputs 9-12
Defines input commands that can be used in a rule. Command inputs can also be customized by using non-assigned keyboard command numbers.

Option	Description
NONE	(Default setting) No command defined.
Aux On	Responds to a standard or custom keyboard **ON** (1-99) command.
Aux Off	Responds to a standard or custom keyboard **OFF** (1-99) command.
Shot	Responds to a Preset shot or scene from 1-99.

On models with the 35 mm thermal lens, you can also select either High Temp Thermal Meter or Low Temp Thermal Meter, to trigger an alarm on the OSD if the thermal spot meter identifies that the temperature of an object in the view of the camera is outside of the temperature threshold set in the system. By default, the option is "Not Set." For more details, see *Section 8.4 Triggering Alarms On Detection of Objects Outside of Set Thermal Temperature Threshold, page 58*.

Outputs Setup Submenu

Outputs Setup...			
Exit...			
1. NONE			
2. NONE			
3. NONE			
4. NONE			
5. NONE			
6. NONE			
7. NONE			
8. NONE			
9. NONE			
10. NONE			
11. NONE			
12. NONE			
Focus / Iris: Select Type			
Right / Left: Select Mode			

Outputs Setup Submenu Choices:

Outputs Setup
Defines physical outputs and keyboard commands for use in a rule.

Outputs 1–2
Defines a physical output: N.O. (Normally Open circuit) (default setting) or N.C. (Normally closed circuit).

Outputs 3–12
Defines a command output for use in a rule.

Option	Description
None	(Default setting) No command defined.
Aux On	Responds to a keyboard **ON** command.
Aux Off	Responds to a keyboard **OFF** command.
Shot	Responds to a Preset shot.
OSD	Displays the output on the on-screen display.
Transmit	Transmits a message back to the head end (available with RS-232 serial and Bilinx connections).
NONE	(Default setting) No command defined.

Rule Setup Submenu

Notice!
You can program a total of twelve rules. You must define the inputs and outputs before you program a rule. See *Alarm Setup, page 50*, to configure alarm inputs and outputs.

Rule Setup...				**Rule 1**		
Exit...				Exit...		
1. Rule 1	Enabled			Enabled	YES	
2. Rule 2	Disabled			Input:		
3. Rule 3	Invalid			NONE		
4. Rule 4	Empty			NONE		
5. Rule 5	Empty			NONE		
6. Rule 6	Empty					
7. Rule 7	Empty			Output:		
8. Rule 8	Empty			OSD		
9. Rule 9	Empty			Shot 2		
10. Rule 10	Empty			Alarm Relay	2 sec	
11. Rule 11	Empty			NONE		
12. Rule 12	Empty					
				Right / Left: Select Period Time		
Focus / Iris: Select				Focus / Iris: Select Type		

Rule Setup Submenu Choices:

Rule Setup
Displays the status of rules and lets you add new rules or modify an existing rule.
Rule 1-12
Displays the status of a rule on the right side of the menu. Rule status options:

Option	Description
Enabled	The rule inputs and outputs are properly defined and the rule is turned on.
Disabled	The rule inputs and outputs are defined but the rule is turned off.
Invalid	The rule has a missing or invalid input or output.
Empty	(Default setting) The rule has no inputs or outputs defined.

Selecting a **Rule** number provides access to its configuration menu. The **Rule # Menu** allows you to configure a rule from previously-defined alarm inputs and outputs. Once an alarm is configured with valid inputs and outputs, it can be turned on or off (enabled or disabled) through its configuration menu.

Rule # Choices:
Enabled
Turns the rule on or off after its inputs and outputs have been defined. **YES** to enable or **NO** to disable (default setting).
Input
Toggles through a list of valid inputs set in the **Alarm I/O Setup > Inputs Setup Menu** that defines the rule's inputs. A rule can have up to four (4) inputs.
Inputs which were set in the **Inputs Setup Menu** include **Aux On/Off (1–99), Shot,** and NONE (default setting).
Output
Toggles through a list of valid outputs set in the **Alarm I/O Setup > Outputs Setup Menu** that defines a rule's outputs.
Outputs set in the **Outputs Setup Menu** include **Alarm Relay, Aux On/Off (1–9), Shot, OSD, Transmit**, and **NONE** (default setting).
Some outputs, such as **Alarm Outputs 1–2** and **Aux On/Off** can be set to be active for a specific duration of time as follows:
Seconds: 1–5, 10, 15, or 30
Minutes: 1–5 or 10
Latched: The alarm stays active until acknowledged.
Follows: The alarm follows the alarm rule.
Default setting: **NONE**

Notice!
You can include up to four (4) **Input** and **Output** events in a single rule. Each input and output, however, must be true for the alarm's rule to be valid and enabled.

14.7 Language Menu

The **Language Menu** contains a list of languages in which the on-screen menus are available.

Language		
Exit...		
English		
Spanish		
French		
German		
Portuguese		
Polish		
Italian		
Dutch		
Russian		
Czech		
Focus / Iris: Save and Exit		

14.8 Diagnostics Menu

The **Diagnostics** menu contains a list of diagnostic tools and events. Most of these menu items are display items only; you cannot select different values to change.

Diagnostics		
Exit...		
Alarm Status...		
BIST...		
Internal Temp:	Deg F / Deg C	
High Temp Events:	Deg F / Deg C	
Highest Temp	Deg F / Deg C	
Low Temp Events:	Deg F / Deg C	
Lowest Temp:	Deg F / Deg C	
Internal Humidity	%	
Humidity Events	0	
Security Access:	0	
CTFID Access:	0	
Restart Events:		
Power-up Events:	0	
Low-Volt Events:	0	
Video Loss Events:	0	
Total Time On	0hr 0min	
Thermal Camera Test Pattern	On/Off	
Focus / Iris: Save and Exit		

Alarm Status

Enters the Alarm Status menu and displays the real time status of alarm inputs and outputs. Alarm Inputs 1 to 8, Alarm Outputs 1 to 2 (Closed or Open)

BIST

Enters the Perform **Built-in Self Tests** menu. **YES** to start test. If confirmed, the BIST tests start and the results are displayed. Typical results are:

Data Flash: PASS
FPGA: PASS
Bilinx: PASS

Internal Temp.
Displays the current temperature of the camera, in degress Fahrenheit and in degrees Celsius.

High Temp Events
Displays the number of times that the threshold of high temperature was exceeded.

Highest Temp
Displays the highest temperature reached, in degrees Fahrenheit and in degress Celsius.

Low Temp Events
Displays the number of times that the threshold of low temperature was exceeded.

Lowest Temp
Displays the lowest temperature reached, in degrees Fahrenheit and in degress Celsius.

Internal Humidity
Displays the percentage of humidity inside the camera housing.

Humidity Events
Displays the number of times that the threshold of the humidity inside the camera housing was exceeded.

Security Access
Displays the number of times that the locked-command menu is unlocked.

CTFID Access
Displays the number of times that the Configuration Tool is accessed.

Restart Events
Displays the number of restart events.

Power Up Events
Displays the number of power up events.

Low Volt Events
Displays the number of times that the camera dropped below the acceptable voltage limit.

Video Loss Events
Displays the number of time that video was lost.
Total Time On
Displays the total time that the video has been on.
Alarm Status Submenu
This menu displays the status of the alarm inputs and outputs.
The Alarm Status submenu appears differently depending upon the Multi-Alarm setting.

Alarm Status	
Exit...	
Alarm Input 1	Open
Alarm Input 2	Open
Alarm Input 3	Open
Alarm Input 4	Open
Alarm Input 5	Open
Alarm Input 6	Open
Alarm Input 7	Open
Alarm Input 8	Open
Alarm Output 1	Open
Focus / Iris: Save and Exit	

Alarm Input 1...8
Displays the status of alarm inputs 1 through 7.
High
Low
Open (Normally Open)
Closed (Normally Closed)

Alarm Output
Displays the status of the alarm output.

15 On-Screen Display (OSD) Menus (Pelco Protocol)

This chapter identifies and describes each OSD menu option, as well as the default setting for each option, for Pelco protocol. For step-by-step instructions, see *Common User Commands, page 68* and *Advanced Features, page 74*.

To open the main Setup Menu in Pelco protocol: Press **95**-**PRESET** for approximately 2 seconds. The screen **Setup Menu** appears.

Setup Menu		
Exit...		
Command Lock:	OFF	
Bosch Menu		
Camera Setup		
PTZ Setup		
Edit Password		
*FastAddress:	Not Set	
Advanced		
Software Version		
Ack and Reset Alarms		
Restore All Settings		
Reset All Memory		
* = Factory Setting		
Focus / Iris: Select		

Setup Menu Choices:

Menu	Description
Exit	Exits the menu.
Command Lock	Allows or prohibits accessing locked commands. (If password is set, you are prompted to enter the password. The default setting is **ON**.
Bosch Menu	Accesses the full configuration menu and all camera settings.
Camera Setup	Accesses adjustable camera settings such as White Balance and Night Mode.
PTZ Setup	Accesses adjustable pan/tilt/zoom (PTZ) settings such as tours, scan speed, edit presets, limit stops, recording, and AutoPivot settings.
Edit Password	Changes the password.
FastAddress	Sets or changes a camera address.
Advanced	
Software Version	Displays the current software versions.
Ack and Reset Alarms	Acknowledges and resets active alarms.
Restore All Settings	Restores all settings to their original default setting.
Reset All Memory	Clears all settings, including scene shots, tours, and recordings stored in the camera memory.

Notice!
If commands are locked and you press **Focus** or **Iris**, the camera displays the on-screen message: “Command is Locked.”

15.1 Bosch Menu

The **Bosch Menu** allows full access to the main **Setup Menu** and all camera configuration settings.

Pelco menu					**Bosch menu**		
Setup Menu					**Setup Menu**		
Exit...							
Command Lock:	OFF				Exit...		
Bosch Menu					Camera Setup		
Camera Setup					Lens Setup		
PTZ Setup					PTZ Setup		
Edit Password					Display Setup		
*FastAddress:	Not Set				Communication Setup		
Advanced					Alarm Setup		
Software Version					Language		
Ack and Reset Alarms					Advanced		
Restore All Settings					Diagnostics		
Reset All Memory							
* = Factory Setting							
Focus / Iris: Select					Focus / Iris: Select		

Refer to *On-Screen Display (OSD) Menus (Bosch Protocol), page 39* for a complete description of Bosch menus and configuration settings.

15.2 Camera Setup

The Pelco **Camera Setup Menu** provides access to camera settings.

	Camera Setup		
	Exit...		
*	White Bal:	OUTDOOR	
*	Night Mode:	AUTO	
*	Wiper	CONTINUOUS	
	* = Factory Setting		
	Focus / Iris: Select		

Camera Setup Menu Choices:

Menu	Description	Sub-menu / Description	Default Setting
Exit	Exits the menu. 		
White Balance	Sets a default value in case the Pelco controller disables the white balance.	**OUTDOOR**: Sets a default setting if the controller disables white balance. **INDOOR**: Sets a default setting if the controller disables white balance.	**OUTDOOR**
Night Mode	Switches from color to monochrome.	**ON**: Sets Night Mode on. **OFF**: Sets Night Mode off. **AUTO**: Sets Night Mode to Auto set.	**ON** (Day/Night models only)
Wiper		**ON/OFF**: Activates/deactivates the selected wiper mode, respectively. **CONTINUOUS**: Wiper wipes continuously until deactivated manually or by the five-minute time-out built in to the system. **INTERMITTENT**: Wipes twice, then turns off after 15 seconds. **ONE SHOT**: Wipes five times, then turns off. **WASH WIPE**: Wiper washes and wipes.	Continuous

15.3 PTZ Setup

The Pelco **PTZ Setup Menu** provides access to the PTZ settings such as tours, scan speed, presets, limit stops, recording, and AutoPivot.

	PTZ Setup		
	Exit...		
*	Edit Tour 1...		
*	Edit Tour 2...		
*	Tour 1 Period:	5 sec	
*	Tour 2 Period:	5 sec	
*	Scan Speed	30 deg/sec	
	Edit Presets...		
*	Limit Stops:	OFF	
*	Recording:	“A”	
*	Autopivot:	ON	
	* = Factory Setting		
	Focus / Iris: Select		

PTZ Setup Menu Choices:

Menu	Description	Sub-menu / Description	Default Setting
Exit	Exits the menu.		
Edit Tour 1	Accesses the **Add / Remove Scenes On Standard Tour 1 Menu**.	**Exit**: Exits the menu. **Scene (1 - 5)**: Adds or removes scenes from the **Standard Tour**.	
Edit Tour 2	Accesses the **Edit Custom Tour Menu**.	**Exit**: Exits the menu. **Scene (1 - 5)**: Adds or removes scenes from the **Custom Tour**.	
Tour 1 Period	Changes the length of waiting time between presets.	Sliding scale: – (3 sec. to 10 min.) +	**5 sec.**
Tour 2 Period	Changes the length of waiting time between presets.	Sliding scale: – (3 sec. to 10 min.) +	**5 sec.**
Scan Speed	Changes the Autopan and AutoScan speeds.	Sliding scale: – (1°/sec to 60°/sec) +	**30°/ sec.**
Edit Presets	Modifies preset scenes.	1-99 scenes	
Limit Stops	Toggles the Limit Stops for AutoScan.	**ON** or **OFF**	**OFF**
Recordings	Selects record Pattern 1 or 2, if normal pattern command does not respond.	“**A**” or “**B**”	**“A”**
AutoPivot	Follows a subject while beneath the camera, without inverting the picture.	**ON or OFF**	**ON**

15.4 AUX Setup Menu

The **AUX Setup menu** provides an area to remain Aux commands.

	AUX Setup
	Exit...
*	WASH WIPE
*	Alarm Output 2:
*	Not Set
	Not Set
	Not Set
	Not Set
	* = Factory Setting
	Focus / Iris: Select

15.5 Other Menus

Menu	Description	Default Setting
Edit Password	Sets or displays the password. See *Setting Passwords, page 38*.	
FastAddress	Sets or changes the address.	**Not Set**
Software Version	Displays the camera software version.	
Ack and Reset Alarms	Acknowledges and resets alarms. If there is no active alarm input, the OSD displays the following message: “No Active Alarms.”	
Restore All Settings	Restores all settings to their original factory default settings.	
Reset All Memory	Restores all settings to their original factory default settings and clears all user programmed settings such as preset scenes and recordings.	

16 Common User Commands

This chapter details common user commands. See *Keyboard Commands (Bosch Protocol) By Number, page 81* for a complete list of commands.

16.1 Programming the Inactivity Operation

You can program the MIC camera to change its operating mode automatically after a period of inactivity.

16.2 Setting AutoPan Mode

AutoPan mode pans the MIC camera 360º or pans between user-defined limits (when programmed). The MIC camera continues to pan until stopped by moving the joystick.

To pan 360º:

1. Press **ON-1-ENTER**.
2. Move the joystick to stop the pan.

To set left and right pan limits:

1. Move the camera to the starting position and press **SET-101-ENTER** to set the left limit.
2. Move the camera to the end position and press **SET-102-ENTER** to set the right limit.

To start AutoPan between limits:

1. Press **ON-2-ENTER**.
2. Move the joystick to stop the pan.

16.3 Setting Preset Shots

Preset shots are saved camera positions. Shots are saved as scenes, therefore, the terms **SHOT** and **SCENE** are used interchangeably.

To set a Shot:

1. Move the camera to the position you want to save.
2. Press **SET-#-ENTER**, where **#** can be a number from 1 to 99 that identifies the camera position of the scene.
3. To specify a title for the shot, see the procedure below.

To view a Shot:

- Press **SHOT-#-ENTER**, where # is the number of the scene position that you want to view.

To store or clear a Shot:

1. Press **SET-100-ENTER** to access the **Store/Clear Scene Menu**.
2. Follow the on-screen instructions.

To disable overwrite confirmations:

If you overwrite a preset shot, the MIC camera issues a confirmation message prompting you to approve the overwrite. To disable this confirmation message, press **OFF-89-ENTER**.

16.4 Specifying a Shot or a Sector Title

The MIC camera provides an alphanumeric character palette used to specify a title for a shot (scene) or for a sector (zone).

To specify a title:

1. Navigate to the shot or scene:
   - for a shot: set a new shot or view a stored shot, then press **ON-62-ENTER**.
   - for a scene: move the MIC-550 to the scene (zone), then press **ON-63-ENTER**.
2. Use the joystick to move the cursor to highlight a character.
3. Press Focus/Iris to select the character.
4. Continue to select characters (up to 20) until you have created the title.

To clear a character from a title:

1. Use the joystick to highlight the **Clear OR Position Character** prompt.
2. Move the joystick left or right until the cursor is below the title character that you need to clear.
3. Press Focus/Iris to clear the character.
4. Move the joystick up to bring the cursor back into the character palette.

To save a title:

1. Use the joystick to highlight the Exit prompt.
2. Press Focus/Iris to save the title.

16.5 Configuring Preposition Tours

A **Preposition Tour** automatically moves the camera through a series of preset or saved shots. The MIC camera has one (1) standard preset tour and one (1) customized preset tour. Tour 1 is a standard tour that moves the camera through a series of shots in the sequence that they were set. **Tour 2** is a custom tour that allows you to change the sequence of shots in the tour by inserting and deleting scenes.

To start Preposition Tour 1:

1. Set a series of preset shots in the order that you want the MIC camera to cycle through.
2. Press **ON-8-ENTER** to start the tour. The tour then cycles through the series of shots until it is stopped.

To stop a Preposition Tour:

- Press **OFF-8-ENTER** or move the joystick to stop either type of tour.

To add or remove scenes to Preposition Tour 1:

1. Press **SHOT-900-ENTER** to access the **Add/Remove Scenes Menu**.
2. Use the **Focus/Iris** buttons to add or remove the selected scene from the tour.

To start custom Preposition Tour 2:

- Press **ON-7-ENTER** to start a tour. The tour cycles through the series of shots (in the order that they were defined) until it is stopped.

To edit a custom Preposition Tour 2:

1. Press **SET-900-ENTER** to access the **Add/Remove Menu**.
2. Press the **Focus/Iris** buttons to add or remove the selected scene.

To change the dwell period of a tour:

1. Press **ON-15-ENTER** to access the **Tour Period Menu**.
2. Select the tour (**Tour 1** or **Tour 2**) and follow the on-screen instructions.

16.6 Recording Tours

The MIC camera can make up to two (2) recorded tours. A **Recorded Tour** saves all manual camera movements made during the recording, including its rate of pan, tilt and zoom speeds and other lens setting changes.

To Record Tour A:

1. Press **ON-100-ENTER** to start recording a tour.
2. Press **OFF-100-ENTER** to stop recording.

To play back Recorded Tour A:

1. Press **ON-50-ENTER** to begin continuous playback.
2. Press **OFF-50-ENTER** or move the joystick to stop playback.

To Record Tour B:

1. Press **ON-101-ENTER** to start recording the tour.
2. Press **OFF-101-ENTER** to stop the tour.

To play back Recorded Tour B:

1. Press **ON-52-ENTER** to begin continuous playback.
2. Press **OFF-52-ENTER** or move the joystick to stop playback.

16.7 Remapping Aux Commands (Pelco Protocol, firmware version 2.10 and higher)

The camera has a Pelco submenu called AUX Setup. Pelco controller keyboards (for protocols D and P) support 8 different auxiliaries (AUX On/OFF commands), but do not define what function each should perform. In the AUX Setup submenu, some common commands from these keyboards can be “remapped” to one of the 8 AUX commands:
The common commands for MIC analog cameras are:

AUX Command	Function when ON	Function when OFF
Wiper		
WASH WIPE		
Setup Menu	Enters the Setup Menu using an AUX command, instead of Preset 95.	
Backlight Comp.		

Additionally for the MIC550, the following commands are available:

AUX Command	Function when ON	Function when OFF
IR Illuminator		
Gain Control		
Night Mode		
Night Mode Auto		

For the MIC612, an additional AUX command is “Thermal.” When “ON,” the “Switched output” is the thermal camera video. When “OFF,” the “Switched output” is the optical camera video.
By default, the Aux numbers of the functions are mapped as follows in MIC550:

1	WASH WIPE
2	Alarm Output 2
5	Not Set
6	Not Set
7	Not Set
8	Not Set

To change a mapping, select the auxiliary number from the 8 available, press right to select, and then scroll through the available functions using up and down control inputs.
For example, to remap the Aux command for the wiper in the MIC550 camera to match the number of the Aux command used in an existing installation, follow these steps:
1. Select option one ("WASH WIPE" by default). Set the value to "Not Set."
2. Select option two ("Alarm Output 2" by default). Set the value to "WASH WIPE." The MIC550 camera will now activate the wash/wipe function in response to the Aux 2 command.

16.8 Using the Wiper/Washer (Pelco Protocol)

To activate the washer/wiper in Pelco protocol, follow these steps:

1. From the submenu Wiper Mode in the menu Camera Setup, select "WASH WIPE," and then exit the menu.
2. Position the camera so that the nozzle of the washer will spray the camera window.
3. Press 62 and then Preset. Press and hold "Preset" for 2 seconds until the text "Scene 62 Stored" appears on the OSD. (See Chapter 9.2: Setting Preset Shots).

Note: If you already have a preset stored at that position, the system prompts you to overwrite the current scene.

4. Activate the wash/wiper function. Press 1 and then AUX-ON on the keyboard. The camera moves to preset 62. The nozzle sprays cleaner onto the camera window, and then the wiper wipes the window. The camera then returns to where it was positioned previously, or it continues to perform the tour that it was performing when you activated the wash/wipe function.

Notice!
Depending on your camera settings, your monitor may display a freeze frame image of the wiper during or at the end of the wipe cycle. If you prefer not to see this freeze frame, you can turn off the Freeze Frame on Preposition in the PTZ Setup menu.

16.9 Using the Wiper/Washer (Bosch Protocol)

The "predefined position" for the wash/wipe function is preset 62. The installer must define preset 62 (preferably where the washer nozzle is located and can direct washer fluid towards the camera window) before using the wiper/washer function.

To activate the washer/wiper function, press ON-105-ENTER and confirm this sequence:

1. The wiper moves to a predefined position.
2. The washer turns on for five seconds. Simultaneously, the wiper turns on and wipes five times.
3. The washer turns off. The wiper turns off.
4. The camera returns to its previous PTZ position (and to inactive mode if applicable).

To activate the wiper manually (or if the corresponding alarm was activated or deactivated):
Press **ON-102-ENTER**.

Note: The wiper will turn off automatically after 5 minutes of use.

To activate intermittent wipe:
Press **ON-103-ENTER**. The wiper wipes twice, then returns to parked position, and then turns off 15 seconds later.

To activate the wiper to wipe five (5) times:
Press **ON-104-ENTER**. The wiper wipes five times, then returns to parked position and turns off.

Notice!
If the power fails while the wiper is activated, the wiper will return to parked position, after power is restored, before turning off. The wiper will not stop in front of the camera window.

16.10 Configuring Settings for IR Illumination

The following table provides the valid combinations of settings for activating IR illumination. To activate IR illumination, set the menus Night Mode, IR Illuminator, and IR Focus Correction to the values identified in the table below, depending on your desired results.

				RESULTS	**Notes**
Menu	Night Mode	IR Illuminator	IR Focus Correction		
Model: MIC camera *with* IR					
Setting	Auto	Auto	Auto (or ON if Auto not available)	Within 10 seconds of switching to Night Mode, the IR lamps turn on.	This is the recommended configuration.
	Auto	Off	Auto (or ON if Auto not available)	IR lamps turn on with Aux 54 or alarms.	Use this for manual control of the IR lamps.
	Off	Auto	Auto (or ON if Auto not available)	Camera enters Night Mode with Aux 57 or alarms.	Use this for manual control of Night Mode.
Model: MIC camera *without* IR					
Setting	Auto	--	On	When using external IR lamps, user must control the IR Focus Correction using Aux 67 or alarms.	For control of IR Focus Correction with a MIC camera (non-IR).

There are no other valid combinations. Any other combination can cause the camera to have problems focusing ("focus issues").An example of an invalid combination is:

– Night Mode = Auto
– IR Illuminator = Auto
– IR Focus Correction = Off

This combination of settings causes a blurred view at *wide* angle. (When zoomed in (at TELE angle), the view is focused.)

17 Advanced Features

This chapter details advanced user commands, which are more complicated than those in *Common User Commands, page 68*.

17.1 Alarm Rules

MIC cameras feature a powerful alarm rule engine. In its simplest form, an alarm rule defines those inputs that activate specific outputs. In its more complex form, a rule can be programmed to take any combination of inputs and keyboard commands to perform a camera function. There are numerous combinations of alarm inputs and outputs that can be programmed into twelve (12) alarm rules.

17.1.1 Controlling Alarm Rules

The AUX 69 command allows a user to enable or disable all alarm rules. By default, alarm rules are enabled until the OFF-69-ENTER command is issued from a keyboard (there is no corresponding menu item for this command). Disabling alarms rules does not erase the rule, the MIC camera preserves the user-defined settings and the rule data is restored when the ON-69-ENTER command is issued.

The OFF-69-ENTER command performs the following actions:

- Disables all alarm rules
- Displays the message “Ack and Reset Alarms” if an alarm-rule triggered alarm is active when the camera receives the disable command. You must acknowledge the alarm before the rule is disabled.
- Prevents the modification of an alarm rule while disabled.

17.1.2 Alarm Rule Examples

Following are two examples for setting up alarm rules.

Example 1: Basic Alarm Rule

Scenario: We want a door alarm contact to:

1. Flash an OSD message (***ALARM 1***) on the display when the alarm is triggered.
2. Move the MIC camera to a saved position. (For this example, Shot 7.)
3. Transmit a Bilinx signal over the coax cable to the head-end system, such as an Allegiant, to trigger an alarm response.

The sequence to program the above alarm rule example is as follows:

1. Wire the door contact to Input 1 in the camera. This circuit is normally open.
2. Define the Alarm Input(s): From the **Inputs Setup** menu, ensure that Alarm Input 1 is set to **N.O.** (the default setting for Input 1).
3. Define the Alarm Outputs:
   From the **Outputs Setup** menu, ensure that Output 5 is set to **OSD** (the default setting for Output 5).
   Set Output 6 to **Shot 7**.
   Set Output 7 to **Transmit** (a Bilinx signal to the head end).
4. Set up the Alarm Rule by selecting the Inputs and Outputs from the **Rule Setup** menu:
   Select **Rule 1**.
   Set the first input to **Alarm Input 1**.
   Set the first output to **OSD**.
   Set the second output to **Shot 7**.
   Set the third output to **Transmit**.
5. Enable the Alarm Rule: Highlight Enabled and select **YES**.

Example 2: Advanced Alarm Rule

Scenario: A MIC camera located at an airport is set to AutoPan Between Limits from the parking garage to the airport terminal. The gate entering the airport has an alarm contact connected to the camera, and the perimeter fence in the area of the gate has an infrared (IR) sensor for motion detection (motion detector) that is connected to the camera.

When the alarms for the gate contact and the motion detector are activated at the same time, we want the alarm rule to:

1. Flash an OSD message (***ALARM 2***) on the monitor.
2. Stop the AutoPan and move the camera to a saved position (Shot 5) viewing the fence.
3. Transmit a Bilinx signal to the head end system to trigger an alarm response.

The sequence to program this alarm rule example is as follows:

1. Wire and set the alarm Input(s).
   - Wire the motion detector to Input 1. (This circuit is normally open.)
   - Wire the gate alarm contact to Input 5. (This circuit is normally closed.)
2. From the **Inputs Setup** menu:
   - Ensure that Input 1 (the motion detector) is set to **N.O.** (This setting is the default for Input 1.)
   - Ensure that Input 5 (the gate contact) is set to **N.C.**
3. Set the alarm Outputs from the **Outputs Setup** menu:
   - Set Output 5 to **OSD**.
   - Set Output 6 to **Transmit**.
   - Set Output 7 to **Shot 5**.
4. Set up the Alarm Rule by selecting the Inputs and Outputs from the **Rule Setup** menu:
   - Select **Rule 2**.
   - Set the first input to **Alarm Input 1** (the motion detector).
   - Set the second input to **Alarm Input 5** (the gate alarm contact).
   - Set the first output to **OSD**.
   - Set the second output to **Shot5** viewing the fence.
   - Set the third output to **Transmit** (a Bilinx signal to the headend).
5. Enable the Alarm Rule: Highlight Enabled and select **YES**.

17.2 Pre-position Tour

MIC cameras feature two (2) preset tours. Each preset scene is saved for playback later.

Tour 1 is a standard tour that only recalls the scenes in the exact sequence they were shot. Scenes can be added or deleted on the tour, but the sequence cannot be changed. To add or remove scenes on Tour 1 enter the keyboard command **SHOT-900-ENTER** and follow the on-screen instructions.

Tour 2 is a customizable tour that allows you to rearrange the sequence of scenes on the tour by inserting and deleting scenes. To enter the Edit Tour 2 menu, enter the keyboard command **SET-900-ENTER** and follow the on-screen instructions.

17.3 Privacy Masking

Privacy Masking is used to block out a specific area of a scene from being viewed. Each mask changes size and shape smoothly and quickly, ensuring that the covered object cannot be seen. The MIC Series 612 camera allows for a total of 24 individual privacy masks, with up to eight in the same scene. Masks can be programmed with three, four, or five corners each. Each mask can appear in black, white, or blurred. Blurred is useful when privacy is an issue, but determining the presence of motion is still required.

– To configure a Privacy Mask, open the **Main** menu, select **Display Setup**, and then select **Privacy Mask**. Alternatively, enter the keyboard command **ON-87-ENTER**. To setup a privacy mask, follow the on-screen menu instructions.
– In Pelco Mode, open the **Pelco Main** menu, open the **Bosch** menu, select the **Display Setup** menu, and then select **Privacy Masking**. To setup a privacy mask, follow the on-screen menu instructions.

Notice!
Draw the mask 10% larger than the object to ensure that the mask completely covers the object as the MIC612 zooms in and out.

17.4 Image Stabilization

Image Stabilization becomes increasingly important as zoom ranges are extended. The advanced image stabilization algorithms of the MIC612 eliminate camera shake for exceptional image clarity. Bosch achieves this clarity without reducing camera sensitivity or picture quality. To activate image stabilization, open the **Main** menu, select the **Camera Setup** menu, and then select **Stabilization** to turn on the feature.

17.5 Azimuth, Elevation, and Compass Directions

The MIC550 or the MIC612 allows a user to display the azimuth and elevation position, and the compass heading of the camera. The MIC550 or the MIC612 displays the position data in the lower-right corner of the image display. These readings are described as:

Azimuth The pan angle from zero to 359 degrees in one degree increments. An azimuth of zero degrees corresponds to North.

Elevation The tilt position from zero (horizon) to –90 degrees (camera pointing straight down) in one degree increments.

Compass The cardinal or intercardinal (N, NE, E, SE, S, SW, W, NW) heading in which the camera is pointing.

The MIC550 or the MIC612 uses the azimuth to determine the compass direction. The following table shows the azimuth range and its corresponding compass heading:

Azimuth Range	**Compass Direction**
21° to 65°	NE (Northeast)
66° to 110°	E (East)
111° to 155°	SE (Southeast)
156° to 200°	S (South)
201° to 245°	SW (Southwest)
246° to 290°	W (West)
291° to 335°	NW (Northwest)
336° to 20°	N (North)

17.5.1 Setting the Azimuth Zero Point

The MIC550 or the MIC612 uses the Azimuth Zero point, usually set to magnetic North, as the zero degree pan position and as the North compass heading. The MIC550 or the MIC612 then displays the azimuth reading and the compass heading based on the number of degrees from the Azimuth Zero point.

Caution!
Bosch recommends that only the installer calibrate the Azimuth Zero point. A recalibration to the Azimuth Zero point may cause inaccurate compass headings.

To set the Azimuth Zero point:

1. Determine the North compass heading, then move the camera to that position.
2. Press **OFF-90-ENTER** to turn off the command lock (if active).
3. Press **ON-94-ENTER** to set the Azimuth Zero point.

17.5.2 Displaying Azimuth, Elevation, and Compass Headings

You can display only the azimuth/elevation readings or only the compass reading, or you can display both readings at the same time. The MIC550 or the MIC612 displays the azimuth/elevation readings and the compass heading in the following way:

180 / –45 S

where:

– **180** is the Azimuth or the pan location in degrees.
– **–45** is the Elevation or the tilt location in degrees.
– **S** is the compass direction (cardinal or intercardinal).

1. Press **ON-95-ENTER** to display the azimuth/elevation reading.
2. Press **ON-96-ENTER** to display the compass heading.
3. Press **OFF-95-ENTER** to hide the azimuth/elevation reading.
4. Press **OFF-96-ENTER** to hide the compass heading.

18 Maintenance and Troubleshooting

Cleaning - Unplug 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.

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).

Table of Troubleshooting Issues

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

Problem	Questions to Ask/Actions to Resolve the Problem
No camera control.	– 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.
Video is rolling, noisy, or distorted.	– Check the integrity of all connectors and splices of the Ethernet cable. If O.K., then: – Contact Bosch Technical Support.
Camera moves when attempting to move other cameras.	– Check that the camera’s IP address is properly set. If 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.	– Check all network connections. – Ensure that the maximum distance between any two Ethernet connections is 100 m (328 ft) or less. If O.K., 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 ° (-40 °F)).	- 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.

Nothing appears on the screen.	Are the power cord and line connection between the camera and monitor made properly?
The image on the screen is dim.	Is the lens dirty? If so, clean the lens with a soft, clean cloth.
The contrast on the screen is too weak.	Adjust the contrast feature of the monitor. Is the camera exposed to strong light? If so, change the camera position.
The image on the screen flickers.	Does the camera face directly into the sun or fluorescent lighting? If so, reposition camera.
The image on the screen is distorted.	Is the power frequency set properly in sync? If the power frequency is not set correctly, the line lock synchronization mode cannot be used. Set the synchronization mode to INT. (NTSC Model power frequency in LL mode: 60 Hz.)
No video.	– Check that the mains power to the power supply is on. – For IP-enabled cameras: Check to see if you have a web page. If you do, then try cycling the camera's power off and on. If you do not, then you may have the wrong IP address. Use Configuration Manager to identify the correct IP address. If O.K., then: – Check that there is 24 V output from the transformer. If O.K., then: – Check the integrity of all wires and mating connectors to the camera.
Picture is dark.	– Check that the Gain Control is set to High. If O.K., then: – Check that the Auto Iris Level is set to the appropriate level. If O.K., then: – Check that the camera lens cover is removed. If O.K., then: – Check that the maximum Ethernet cable distance has not been exceeded. If O.K., then: – Restore all camera settings.
Background is too bright to see subject.	Turn on backlight compensation.

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.

20 Appendices

20.1 Keyboard Commands (Bosch Protocol) By Number

20.1.1 Commands, Optical Camera

Locked	Function Key	Command No.	Command	Description
	On/Off	1	Scan 360° / Auto Pan (Continuous)	Activates/deactivates Autopan without limits.
	On/Off	2	Autopan (within Limits)	Activates/deactivates Autopan between limits.
*	On/Off	3	Iris Control	Enters the menu (auto, manual) for iris control.
*	On/Off	4	Focus Control	Enters the menu (spot, auto, manual) for focus control.
	On/Off	7	Play Custom Pre-position Tour	Activates/Deactivates the playback of a custom, pre-position tour.
	On/Off	8	Play Pre-position Tour	Activates/Deactivates the playback of a pre-position tour.
*	On/Off	9	Inactivity Mode	Enters the inactivity menu (Off, Return to Scene 1, Recall Previous PTZ Command).
*	On/Off	11	Auto Iris Level Adjust	Enters the Iris Level Adjustment menu.
	On/Off	14	Set Autopan and Scan Speed	Enters the speed adjustment slide bar.
	On/Off	15	Set Pre-position Tour Period (dwell)	Enters the dwell adjustment slide bar.
*	On/Off	18	AutoPivot Enable	Enables/disables AutoPivot.
	On/Off	20	Backlight Comp	Turns Backlight Compensation on or off.
*	On/Off	23	Electronic Shutter	Enters the Shutter Speed slide bar.
	On/Off	24	Stabilization	Turns Electronic Stabilization on or off.
	On/Off	26	Wide Dynamic Range	Activates/deactivates Wide Dynamic Range.
	On/Off	30	White Balance	Enters the White Balance menu.
*	On/Off	35	Fixed White Balance	Enters the White Balance menu.
*	On	40	Restore Camera Settings	Restores all settings to their original defaults.
*	On/Off	43	Auto Gain Control	Switches AGC modes (On, Auto, Off).
*	On/Off	44	Aperturn Correction (Sharpness)	Enters the Sharpness menu.
*	On	46	Advanced Menu	Enters the Main Setup menu.
	On	47	View Factory Settings	Displays all menu default settings.

Locked	Function Key	Command No.	Command	Description
	On/Off	50	Playback A, continuous	Activates/Deactivates continuous playback A.
	On/Off	51	Playback A, single	Activates/Deactivates single playback A.
	On/Off	52	Playback B, continuous	Activates/Deactivates continuous playback B.
	On/Off	53	Playback B, single	Activates/Deactivates single playback B.
	On/Off/	56	Night Mode Menu	Enters the Night Mode memnu (On, Off; Auto (Day/Night only))
	On/Off	57	Night Mode Control (IR Filter In/ Out)	Enables/disables Night Mode (Day = Off / Night = On).
*	On/Off	58	Day/Night Threshold	Enables/disables the day/nigh threshold (On–menu (Day/Night only)).
	On/Off	59	Night Mode Priority	Motion–Activates Night Mode before slow shutter, preserving full-frame integration as light is reduced. Color–Activates slow shutter before Night Mode, preserving color longer as light is reduced.
*	On/Off	60	On Screen Display	On–Enables on-screen display. Off–Disables on-screen display.
*	On	61	OSD Display (Adjust)	Adjusts the view of the On-screen Display.
	On	62	Pre-position (Scene) Title menu	Enters the Pre-position Title menu. Refer to *Specifying a Shot or a Sector Title, page 68*.
*	On	63	Zone/Sector Title Menu	Enters the Zone Title menu. Refer to *Specifying a Shot or a Sector Title, page 68*.
	On	64	Alarm Status	Enters the Alarm Status menu.
	Off	65	Alarm Acknowledge	Acknowledges alarms or deactivates physical outputs.
	On	66	Display Software Version	Displays the number of the software version.
	On/Off	67	Focus Adjust for IR Illuminators	On - Automatically adjusts camera focus with IR illumination is present.
*	On/Off	69	Alarm Rule Activation/Deactivation	On–Enables all alarm rules. Off–Disables all alarm rules.
	On	72	Re-initialize Camera	Performs camera/lens re-initialization functions.
*	On/Off	80	Digital Zoom Lock	Turns digital zoom on and off.

Locked	Function Key	Command No.	Command	Description
	On/Off	81	Alarm Output 1 Open Collector	On–Activates output. Off–Deactivates output.
	On/Off	82	Alarm Output 2 Open Collector	On–Activates output. Off–Deactivates output.
	On/Off	83	Alarm Output 3 Open Collector	On–Activates output. Off–Deactivates output.
	On/Off	84	Alarm Relay	On–Activates alarm relay. Off–Deactivates alarm relay.
*	On/Off	86	Sector Blanking / Masking	Enters / Exits the Sector Blanking menu.
*	On/Off	87	Privacy Masking	Enters / Exits the Privacy Masking menu.
	On/Off	89	Preposition Overwrite Confirmation (toggle)	On–Isues a message that prompts for approval to overwrite a preposition. Off–No confirmation message issued.
	On/Off	90	Command Lock/Unlock	On–Lock on Off–Lock off
*	On/Off	91	Zoom Polarity	On–Reverse Off–Normal
*	On/Off	92	Focus Polarity	On–Reverse Off–Normal
*	On/Off	93	Iris Polarity	On–Reverse Off–Normal
*	On/Off	94	Set Azimuth Zero Point / Recalibrate Azimuth Compass	Sets the zero degree pan position. Refer to *Azimuth, Elevation, and Compass Directions, page 76*.
	On/Off	95	Display Azimuth/Elevation Readings	On–Displays azimuth/elevation readings. Off–Hides azimuth/elevation readings. Refer to *Azimuth, Elevation, and Compass Directions, page 76*.
	On/Off	96	Display Compass (Point) Readings	On–Displays compass heading. Off–Hides compass heading. Refer to *Azimuth, Elevation, and Compass Directions, page 76*.
	On/Off	97	Video channel (toggle)	On - Switches view to thermal camera. Off - Switches view to optical camera.
	On	99	Factory P/T Home Position	Recalibrates home position; can be used as an Alarm Output.
	On/Off	100	Record A	Activates/deactivates recording A.
	On/Off	101	Record B	Activates/deactivates recording B.

Locked	Function Key	Command No.	Command	Description
	On/Off	102	Wiper continuous	Turns on/off continous wiper mode.
	On/Off	103	Wiper intermittent	Activates the wiper in Intermittent mode (the wiper wipes twice, then turns off after 15 seconds).
	On/Off	104	Wiper one shot	Activates (One shot) to wipe five times, then turn off.
	On/Off	105	Wash/Wipe	Activates wash/wip mode. Cameras moves to designated washer preset (62), wiper starts automatically.
	On	997	FastAddress, display	Display the current FastAddress of the camera.
	On	998	FastAddress, all units	Displays the current FastAddress of the camera and programs all units.
	On	999	FastAddress, unaddressed cameras	Displays and programs unaddressed MIC units.
	Set	“1-99”	Pre-position Programming	Set ##–Programs a preset view.
	Shot	“1-99”	Pre-position Recall	Shot ##–Recall programmed preset.
	Set	100	Pre-position Menu	Enters the Pre-position menu.
	Set/ Shot	101	Autopan Left Limit	Set–Programs left limit. Shot–Shows limit.
	Set/ Shot	102	Autopan Right Limit	Set–Programs right limit. Shot–Shows limit.
	Set	110	Factory P/T Home Position	Set–Recalibrate home position.
*	Set	802	Edit Password	Enters the Edit Password menu.
*	Set	899	Reset ALL	Restores all settings to original defaults and clears all user-programmed settings.
	Set	900	Edit Tour 1 (Standard)	Enters the Standard Tour Scene menu.
	Shot	900	Edit Tour 2 (Custom)	Enters the Custom Tour Scene menu.
	Set/ Shot	901-999	Adds/Removes a Preposition Shot from Tour 1	Set ###–Adds preset. Shot ###–Removes preset.

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