

MIC inteox 7100i - 2MP



- ▶ Open platform that allows third-party apps from the Application store from Azena
- ▶ Starlight camera technology with excellent low-light sensitivity (color = 0.0047 lx) and High dynamic range (120 dB) (to see details in bright and dark areas simultaneously)
- ▶ Flexible streaming capabilities powering three independent streams
- ▶ Edge intelligence and object detection even when the camera is moving
- ▶ Optional illuminator with multispectral LEDs that distribute IR light uniformly in the field (up to 550 m (1804.50 ft)) to avoid dark spots or an over-illuminated scene

The MIC inteox 7100i camera is an advanced PTZ surveillance platform “driven by OSSA,” ensuring seamless connectivity with the Azena Application Store to add easily third-party software apps that meet customer-specific requirements.

With starlight imaging technology and excellent low-light sensitivity, the camera is the perfect solution for robust and high-quality imaging needs for mission-critical applications.

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

The camera is the ideal choice for:

- Transportation: highways, bridges/tunnels, and ports
- Critical infrastructure: power generation/transmission, refineries/pipelines, and mining
- High-security: government facilities and data centers
- Mission-critical applications involving harsh environments that require high-resolution imaging

- Complex scenes with many details under any lighting condition
- Installations where downtime is undesired because of high service costs

Intelligent open, flexible, and extendable camera platform

The camera has a powerful, embedded processor with dedicated hardware to support advanced machine learning and neural-network-based Video Analytics. All cameras with this platform have high image quality, built-in Video Analytics, intelligent bitrate management, and the highest levels of data security. The platform also gives you the flexibility to customize your camera to your specific requirements. The camera platform integrates with the cloud infrastructure of Azena for app management across devices. Also, Bosch offers advanced device management and services through the Remote Portal (<https://remote.boschsecurity.com/>). From the Remote Portal you can (remotely):

- Complete initial configuration of your online and connected Bosch devices.
- Update firmware for single or multiple devices.
- Manage certificates through Configuration Manager or the web interface of your camera.

- Monitor the health of and receive alerts for your connected Bosch devices.
- Connect your Bosch devices to the Azena portal for app management.

The table that follows identifies the differences between the basic models and the enhanced models.

| Feature | Enhanced models (MIC-7602- Z30BR, -WR, -GR) | Basic models (MIC-7602- Z30B, -W, -G) |
|---------------------------|---|---|
| Anti-backlash drive train | X | |
| Window defroster | X | |
| Local storage (SD card) | X | |

Functions

Exceptional low-light performance

The latest sensor technology combined with the sophisticated noise suppression results in an exceptional sensitivity in color. The low-light performance is so good that the camera continues to provide excellent color performance even with a minimum of ambient light.

High dynamic range

The dynamic range of the camera is outstanding and is obvious in real-world performance comparisons. In extended dynamic range mode, the camera uses an electronic shutter to capture four images with different exposure time and reproduce a high-contrast frame. The result is that you can view details in both the bright areas (highlights) and the dark areas (shadows) of a scene at the same time. You can easily distinguish objects and features (for example, faces) with bright backlight.

Ruggedized design for extreme applications

The camera is designed to last in surveillance applications that are beyond the mechanical capabilities of conventional positioning systems. The entire metal body is anodized and has been engineered to withstand high-impact, low-frequency vibration. The camera models comply to IK10 rating for impact resistance and to the IEC 60068 standards applicable to vibration and shock.

The camera has a closed-loop positioning system. The system allows the camera to maintain its position under continuous vibration or after an extreme shock event, even without homing or pre-position calibration.

The camera benefits from Bosch domain knowledge in material engineering and coatings. As a result, the superior metallurgy and the finish of the camera provide unprecedented protection against corrosion. The camera has been tested to and meets the ISO 12944:6 standard C5-M - very high (marine) on Aluminum Housing Components.

Defroster on the viewing window

Note: This feature is available on enhanced models only.

For installations in environments where ice build-up or condensation is a possibility, the enhanced MIC models have an automatic defrosting function. The inside of the camera window has a transparent coating that puts heat directly on the glass. The heat on the glass helps to decrease and to prevent a build-up of ice as well as condensation on the camera window.

Based on the same technology used to de-ice aircraft windscreens, the defroster can melt 1 cm (0.4 in.) of accumulated ice in five minutes in environments as cold as -25 °C (-13 °F). The defroster starts automatically at ≤ 5 °C (41 °F). Even in very cold environments, where other cameras suffer from frosted windows, the enhanced MIC models let you see more and see better.

Both the defroster and the IP67 kit, correctly installed on the connectors in the camera base, help to decrease condensation on the camera window.

Robust design rated to an industry-leading IP68, Type 6P, IK10

Subjected and certified to rigorous dust and immersion tests (IP68, Type 6P) and impact test (IK10), MIC cameras are perfectly suited for installation in even the most unforgiving environments. Anodized aluminum housing and robust, powder coat paint give unequalled corrosion protection to each MIC camera. Reliable O-ring seals completely protect the internal components from the external environment, meaning that there is no need to pressurize the camera. To guarantee unit integrity, the factory tests each MIC camera for leaks before shipping.

Pan and tilt drive mechanism

The pan and tilt mechanisms use ruggedized, all-metal intermeshing gears, which are more resistant to shock and to vibration. Cameras with all-metal gears have a longer operational life than cameras with plastic gears and drive belt systems of rubber. High-efficiency motors with brushless positioning control the pan and tilt movement directly to support continuous operation without significant wear and tear.

Innovative dual spring-loaded gears on the pan and tilt stage reduce backlash and further improve positional accuracy. The spring-loaded gears provide a more stable image compared to belt-driven cameras.

Note: The anti-backlash drivetrain is available on enhanced models only.

Dual-mode Illumination

The MIC illuminator accessory (sold separately) has IR LEDs and White light LEDs. The illuminator is field-installable.

Note: The cameras in this product family are compatible with MIC-ILx-400 models only. The distances and the performance depend on the environmental light conditions.

Refer to individual product datasheets for detection distance.
The following table identifies the application for each type of LED.

| Application | Type of illuminator |
|------------------------------|---------------------|
| Close-range illumination | 940 nm IR LEDs |
| Long-range detection | 850 nm IR LEDs |
| Identification and deterrent | White light LEDs |

The MIC camera can steer the IR beam dynamically to match the illumination intensity with the camera's field of view according to the zoom level. Beam intensity is controlled automatically or manually, depending on user preference. Decreasing intensity reduces overexposure.

The patented, integrated Constant Light technology supplies a consistent level of illumination during the life of the product, even in changing temperatures. White light mode allows operators to capture full scene details in color or use the light as a deterrent effect.

H.265 high-efficiency video encoding

The camera is designed on the most efficient and powerful H.264 and H.265/HEVC encoding platform. The camera is capable of delivering high-quality and high-resolution video with very low network load. With a doubling of encoding efficiency, H.265 is the compression standard of choice for IP video surveillance systems.

More flexibility in streaming capabilities

The camera has three independent encoder streams. Users can configure each stream individually to change the video resolution and the frame rate. Users have two options:

1. Let the camera deliver what is possible based on its encoding performance across the streams equally.
2. Select one of the three streams to be prioritized, for example, to guarantee "quality of service" for the recording stream.

Users can select the coding standard (H.264/H.265) for each stream.

Each stream also has its own set of 8 encoder profiles that users can configure.

Recording and storage management

Control recording management with the Bosch Video Recording Manager application, or use the local storage and iSCSI targets in the camera directly without any recording software.

Use a memory card of a maximum of 2 TB for recording "at the edge" or for Automatic Network Replenishment (ANR) technology to improve the reliability of the recording.

Pre-alarm recording in RAM reduces bandwidth consumption on the network and extends the effective life of the memory card.

Note: The memory card feature is available for enhanced models only.

i Notice

Use full size SD cards for maximum reliability, and to eliminate the risk of bad connections in a microSD to full size SD adapter. Bosch recommends the use of industrial SD cards with health monitoring.

Intelligent Video Analytics on the edge

The camera includes the latest release of Intelligent Video Analytics application for use on pre-positions. Designed for mission-critical applications, the video analytics can reliably detect, track, and analyze moving objects while suppressing unwanted alarms from spurious sources in the image, even in harsh weather conditions.

Advanced tasks like multiple line crossing, loitering, idle / removed object detection, crowd density estimation, occupancy and people counting are available for live alarming and forensic search. Object filters based on size, speed, direction, aspect ratio, and color can be defined.

A simplified calibration mode reduces installation time significantly, because you only need to enter the installation height once for each camera, independent of pre-positions.

After the camera is calibrated, the analytics engine can automatically classify objects as upright person, car, bike, or truck.

Support for specific use cases

Intelligent Video Analytics 8.10 offers easy setup by providing optimal default values for several applications. Calibrate the camera, then simply select the desired use case and adapt the offered alarm fields and lines to your field of view. This is available for the following scenarios:

- Intrusion detection (smaller area, single alarm field)
- Intrusion detection (long distance, 2 alarm fields must trigger)
- People counting
- Traffic monitoring (automatic incident detection with wrong way detection, pedestrian detection, slow vehicles, stopped vehicles and dropped objects)
- Traffic monitoring (wrong way detection)

With a future-proof design, the camera can tackle new use cases by delivering more reliable detections, more detailed classifications, and thus more insights on what is happening in a scene. Based on the open platform principle, these capabilities are leveraged by Intelligent Video Analytics by Bosch as well as by third-party apps from the Application store from Azena.

Video Analytics while camera is moving

Outside of pre-positions and even while the PTZ camera is moving, whether on guard tours or manually, the Intelligent Video Analytics application can detect and start alarms when objects are in alarm fields. These alarm fields are defined once across all PTZ camera views. The camera can automatically trigger an alarm if any part of a field within the camera's view becomes active while on a guard tour sweeping across the monitored areas.

Intelligent Tracking

When the Intelligent Video Analytics application in the camera detects objects or individuals, the camera can automatically activate the Intelligent Tracking feature, which controls the pan/tilt/zoom actions of the camera to track objects and keep them in view. The newest generation of the Intelligent Tracking feature ensures smoother camera motion for more comfortable viewing and more reliable tracking of objects even under challenging scenes.

Areas with potentially interfering background motion (moving trees, pulsating lights, and busy roads) can be masked out.

The camera supports 2 Intelligent Tracking modes:

- **Auto mode:** In this mode, the camera follows any object that has triggered an alarm in the Intelligent Video Analytics application. This mode is most useful for scenarios where the alarm cases can be clearly defined, for example, when no motion is expected at all.
- **Click mode:** In this mode, users can click on any object detected by the Intelligent Video Analytics application to enable the camera to track the movement of the selected object. This mode is most useful for scenarios where normal scene activity is expected.

Camera Trainer

Based on examples of target objects and non-target objects, the Camera Trainer program uses machine learning to allow the user to define objects of interest and generate detectors for them. In contrast to the moving objects that the Intelligent Video Analytics application detects, the Camera Trainer program detects both moving and non-moving objects and classifies them immediately. Using Configuration Manager, you can configure the Camera Trainer program using both live video as well as recordings available through the respective camera. The resulting detectors can be downloaded and uploaded for distribution to other cameras.

A free of charge license is required to activate the Camera Trainer program.

Image Stabilization

Cameras on unstable mounts can move sufficiently to change the field of view. The higher the zoom value, the larger the change of the field of view. This change can make images unusable.

The camera has an Image stabilization algorithm that lets the camera sense continuous vibration. If it detects vibration, the camera corrects the shaky video in the vertical axis and the horizontal axis. The result is excellent image clarity and a stable field of view on the monitor. The Image stabilization function is important to eliminate movement that unstable camera mounts cause.

Auto Exposure (AE) region and Focus region

With the Auto Exposure (AE) function, the camera computes the lighting condition of the entire scene. Then the camera determines the optimum level of iris, gain, and shutter speed.

In AE region mode, users can designate a specified area of the scene, based on pre-positions. The camera computes the lighting condition of the specified area. Then the camera determines the optimum level of iris, gain, and shutter speed to get an image.

Focus region mode, unlike normal auto focus mode, allows users to focus on a specified area of the scene.

Snap to zoom

Drawing a box in the image will trigger the camera to zoom to the correct position.

Simple set-up

The camera has a very intuitive user interface that allows fast and easy configuration. Configurable scene modes are provided with the best settings for a variety of applications.

- **Standard**

This mode is optimized for most standard scenes both indoor and outdoor.

- **Sensitivity boost**

This mode provides maximum sensitivity in low light scenes by using longer exposure times, resulting in bright images even in extreme low light.

- **Fast movement**

This mode is used for monitoring fast moving objects like cars in traffic scenes. Motion artifacts are minimized and the image is optimized for a sharp and detailed picture in color and monochrome.

- **Vibrant**

This mode provides a more vivid image with increased contrast, sharpness, and saturation.

- **Color Only (Traffic)**

In this mode, the camera does not switch to monochrome mode at low light levels. The mode is optimized to minimize motion artifacts and to capture the color of vehicles/pedestrians and traffic lights, even at night, for scenarios such as city surveillance and traffic monitoring.

- **Illuminator**

This mode gives optimized performance when using the MIC illuminator accessory.

Custom mode #1 and **Custom mode #2** give users the option to customize 2 scene modes of their own.

Data security

Special measures are necessary to ensure the highest level of security for device access and data transport. On initial setup, the camera is only accessible over secure channels. A three-level password protection with security recommendations lets users customize device access. Unsecure ports are disabled. Firmware updates are only possible with Bosch-signed firmware files. The Embedded Login Firewall improves robustness against Denial of Service (DoS) attacks. The software sealing functionality can detect changes in a configuration. HTTPS or other secure protocols prevent access to the web browser and the viewing client. With the feature of secure and verified boot, you can trust all executed code in the device. TPM functionality is provided by “Secure Element” (dedicated AES/DES/PKI crypto co-processor) that:

- Is independently certified with Assurance Level (EAL) 6+ based on Common Criteria for Information Technology Security Evaluation [out of 7 levels according to ISO/IEC 15408]
- Has cryptography with a maximum of 4096 bit RSA keys for TLS (maximum version 1.3) and device identity (Future-proof until 2031 and beyond) [according to NIST Special Publication 800-57, part 1, page 56]

The advanced certificate handling offers:

- Self-signed, unique certificates automatically created when required
- Client and server certificates for authentication
- Client certificates for proof of authenticity
- Certificates with encrypted private keys

Only trusted and authenticated third-party apps can be uploaded. A safe sandbox environment enables the secure execution of trusted third-party software. There is full transparency on individual app requirements to access system resources (listed in the Application store from Azena).

Software sealing

After camera configuration is set and should not be changed, system administrators can enable software protection that seals the camera configuration. Any change of the sealing status and any change to static configuration, accidentally or intentional, will break the seal. The camera then sends an alarm message that the video management system can use to start an appropriate alarm scenario. The camera creates a separate log file of all changes that have an effect on the sealing status.

System integration and ONVIF conformance

The camera conforms to the ONVIF Profile S, ONVIF Profile G, ONVIF Profile M, and ONVIF Profile T specifications. For H.265 configuration, the camera supports Media Service 2, which is part of ONVIF Profile T. Compliance with these standards guarantees interoperability between network video products regardless of manufacturer.

Third-party integrators can easily access the internal feature set of the camera for integration into large projects. Visit the Bosch Integration Partner Program (IPP) website (ipp.boschsecurity.com) for more information.

The camera is also compliant to NTCIP for intelligent traffic systems.

Cameras with this platform are intended to be backwards compatible with existing VMS integrations. Compatibility of the app feature set that is available in the Application store is the responsibility of the app developer and of Azena.

Ease of installation

The camera has been designed for quick and easy installation, a key feature from Bosch IP video security products.

The camera supports mounting in upright, inverted, or canted orientation. The on-site canting functionality lets installers tilt down the upper section of the camera at a 35° angle. At this angle, operators can see the scene directly below the camera.

Power options

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

For maximum reliability, the camera can operate with a redundant power system of a High PoE Midspan and a separate 24 VAC power source connected simultaneously. If either the High PoE or 24 VAC power source fails, the camera seamlessly transitions to the remaining power source.

The 60 W midspan can supply power to models without an illuminator accessory. The 95 W midspans can supply power to MIC cameras with or without the illuminator accessory.

The camera can also accept a standard 24 VAC power source if a High PoE network interface will not be used. User-supplied wiring must be in compliance with electrical codes (Class 2 power levels). Refer to the table in the Installation/configuration notes section for more information.

Camera Diagnostics

The camera has several built-in sensors / advanced diagnostics that display warnings on the camera's OSD about the health of the camera. The diagnostics log records the events such as:

- Low voltage - a drop in incoming power below the level where the camera becomes non-functional
- High temperature - the internal temperature exceeds specifications
- Low temperature - the internal temperature exceeds minimum levels
- High humidity - the internal humidity exceeds 70%
- High vibration - the acceptable level of acceleration forces was exceeded

- Total hours of camera operation
 - Illuminator aging history
- Certain events also appear on the camera's OSD. These diagnostic records are available for the installation or service technician to review.

Unsurpassed reliability

As with all Bosch products, the camera is designed using the industry's best design process and is subjected to the most stringent testing standards such as HALT (highly accelerated life testing), which pushes the limits of products to ensure reliability throughout their lifetime.

Project Assistant

Project Assistant by Bosch is the market's most easy-to-use app for initial installation and basic configuration of IP cameras. Off-site and without connection to the camera, basic configurations can be created and then shared with colleagues. On-site, these pre-configurations can be pushed onto the camera, making the installation procedure easier and less time-consuming. Cameras previously configured can be integrated as well. The app allows easy viewing and adjustment of the camera's field of view. The app automatically generates a comprehensive report of the commissioned cameras.

Regulatory information

For a full list of all related certifications/standards, refer to the Product Tests Report, available on the online catalog, on the Documents tab of the product page for your device. If the document is unavailable on the product page, contact your sales representative.

| | |
|-------------------------------------|--|
| Electromagnetic Compatibility (EMC) | Complies with FCC 47 CFR Part 15, ICES-003, and CE regulations, including latest versions of: EN 50130-4 EN 50121-4 (Railway applications) EN 55032 CISPR 32 |
| Product Safety | Complies with UL, CE, CSA, EN, and IEC Standards including: UL 62368-1 UL 60950-1, Ed. 2 CAN/CSA-C22.2 No. E60950-1-07 EN 62368-1 EN 60950-1 EN 60950-22 CAN/CSA-C22.2 No. 62368-1-14 IEC 62368-1 Ed.2* IEC 60950-1 Ed.2** IEC 60950-22 Ed.2 |

| | |
|-------|-----------------------------------|
| Marks | UL, CE, WEEE, EAC, FCC, RoHS, RCM |
|-------|-----------------------------------|

- * Except the Steady-state test (6.2.2.2) for Australia
- ** Except the Steady-state test (5.4.10.2.3) for Australia

| Region | Regulatory compliance/quality marks | |
|---------------|-------------------------------------|---------------------------------|
| Great Britain | UKCA | |
| Europe | CE | Declaration of Conformity (DoC) |

Installation/configuration notes

In the table below, an "X" identifies the power source options for MIC IP camera models.

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

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

Mounting Bracket Options

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

The following figure identifies the optional mounting brackets for MIC cameras. Refer to the datasheets of each bracket for details. Some brackets may not be available in all regions.

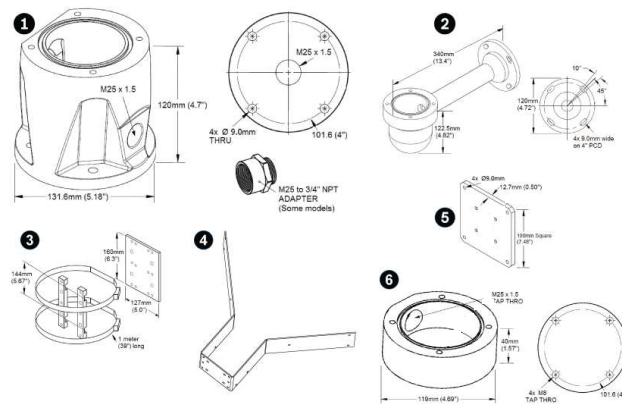


Fig. 1: Optional Mounts, MIC IP 7100i series

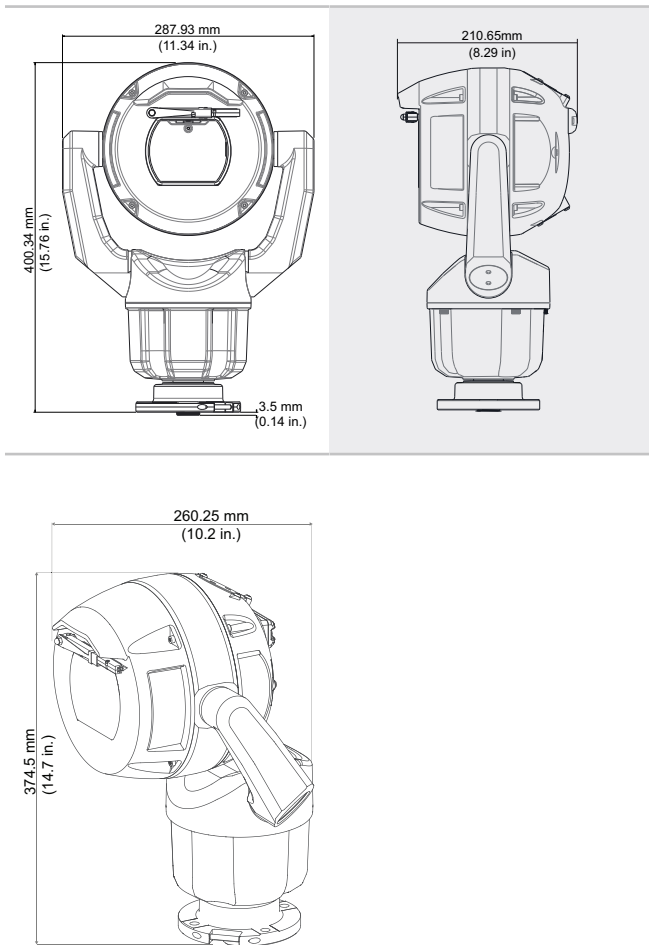
- 1 Deep conduit adapter
- 2 Wall mount bracket
- 3 Pole mount bracket
- 4 Corner mount bracket
- 5 Wall mount spreader plate
- 6 Shallow conduit adapter

For more options, refer to the [MIC IP cameras Accessory Quick Selection Guide](#).

Wiring requirements for outdoor installation

- Ethernet cable must use shielded cable such as F/UTP shielded cable with twisted pairs (often referred to as FTP) or S/UTP braided shield with twisted pairs (often referred to as STP).
- Make sure that the routing of external wiring is through a permanently earthed metal conduit.
- Bosch highly recommends that you use surge/lightning protection devices (sourced locally) to protect network and power cables and the camera installation site.

Dimensional Drawings



Technical specifications

| | |
|-------------------------------------|--|
| Imager | 1/2 in. CMOS sensor |
| Effective Picture Elements (Pixels) | 1937 x 1097 (2.12 MP) |
| Lens | 30x motorized Zoom; 6.6 mm to 198 mm; F1.5 to F4.8 |
| Field of view | 2.1° to 58.3° |

| | |
|--------------|---|
| Focus | Automatic with manual override, Region per pre-position |
| Iris | Automatic with manual override |
| Digital zoom | 12x |
| Day/night | Automatic IR cut-off filter |

Video performance - Sensitivity

(3100K, reflectivity 89%, 1/30, F1.6, 30 IRE)

| | |
|------------|-----------|
| Color | 0.0047 lx |
| Monochrome | 0.0013 lx |

Video performance - Dynamic range

| | |
|---|--------|
| High dynamic range | 120 dB |
| Measured according to IEC 62676 Part 5) | 106 dB |

| DORI | Distance | to | Object |
|--|------------------|---------------------|------------------|
| | WIDE 1X | TELE 30X | Scene width |
| Detection 25 pixels/m (8 pixels/ft) | 69 m (226 ft) | 2095 m (6873 ft) | 77 m (253 ft) |
| Observation 63 pixels/m (19 pixels/ft) | 27 m (89 ft) | 831 m (2726 ft) | 31 m (102 ft) |
| Recognition 125 pixels/m (38 pixels/ft) | 14 m (46 ft) | 419 m (1375 ft) | 15 m (49 ft) |
| Identification 250 pixels/m (76 pixels/ft) | 7 m (23 ft) | 210 m (689 ft) | 8 m (26 ft) |

| | |
|---|---|
| Modes for viewing the video area of pre-position settings | Automatic exposure, either full-screen or defined to a specific area Focus |
|---|---|

| | |
|--------------------------------|-------------------------------------|
| Gain control | AGC, Fixed, Region per pre-position |
| Aperture Correction | Horizontal and vertical |
| Electronic Shutter Speed (AES) | 1/1 sec to 1/60,000 sec |
| Signal-to-Noise Ratio (SNR) | >55 dB |

| | |
|------------------------------|--|
| Backlight compensation (BLC) | On Off Intelligent Auto Exposure (IAE) |
| White balance | 2000 K to 10,000 K ATW, AWB Hold, Extended ATW, Manual, Sodium Lamp Auto, Sodium Lamp |
| Day/night | Monochrome Color Auto |
| Defog mode feature | Improves visibility when viewing foggy or other low-contrast scenes. |
| Noise Reduction | Intelligent Dynamic Noise Reduction |
| Sectors | 4, 6, 8, 9, 12, or 16 user-selectable, independent Sectors, each with 20 characters per Title |
| Privacy Masks | 32 individually configurable Privacy Masks; maximum 8 per Pre-position; programmable with 3, 4 or 5 corners; selectable color of Black, White, Gray, or Mosaic, as well as an "Auto" option in which the camera selects the most prevalent of the three colors in the background scene as the pattern color. |
| Virtual Masks | 24 individually configurable Virtual Masks to hide parts of the scene (background motion such as moving trees, pulsating lights, busy roads, etc.) which should not be considered for flow analysis to trigger Intelligent Tracking. |
| Pre-positions | 256 Pre-positions, each with 20 characters per Title |
| Guard Tours | Custom Recorded Tours - two (2), total duration 30 minutes: Pre-position tour - one (1), consisting of up to 256 scenes consecutively, and one (1) customized with up to 256 user-defined scenes |
| Supported Languages | English, Czech, Dutch, French, German, Italian, Polish, Portuguese, Russian, Spanish, Japanese, Chinese |
| Alarm control | Rules-based logic supports basic and complex pre-defined user-specified commands In its most basic form, a "rule" could define which input(s) should activate which output(s). |
| Washer Pump Interface | Control functions integrated. Alarm/Washer Interface Unit (MIC-ALM-WAS-24, sold separately) provides electrical interface to a washer pump device (user-supplied). |
| Camera status monitoring | Integrated sensors monitor operational status such as internal temperature, humidity level, incoming voltage level, vibration, and shock events. |

| | |
|-------------|---|
| Diagnostics | Various status conditions are tracked in the internal diagnostic log. Critical fault conditions will also be displayed on screen. |
|-------------|---|

Video content analysis

| | |
|----------------|---|
| Analysis type | Intelligent Video Analytics |
| Configurations | Off / Global VCA / Profiles 1 - 16 |
| Calibration | Automatic self-calibrating when height is set |

| | |
|---------------------------------|---|
| Alarm rules (combinable) | Any object, Object in field, Crossing line, Entering field, Leaving field, Loitering, Following route, Idle object, Removed object, Counter, Occupancy, Crowd detection, Condition change, Similarity search, Tampering |
|---------------------------------|---|

| | |
|-----------------------|--|
| Object filters | Duration, Size, Aspect ratio v/h, Speed, Direction, Object classes (Upright persons, Bikes, Cars, Trucks), Color |
|-----------------------|--|

Firmware

| | |
|-------------------------|-------|
| Common Product Platform | CPP13 |
|-------------------------|-------|

Network

| | |
|----------------------------|---|
| Standard/Video compression | H.265, H.264 (ISO/IEC 14496), M-JPEG, JPEG |
| Streaming | 3 fully configurable streams, with the option to activate or deactivate VCA overlays on each stream |

| Resolution (H x V) | Pixels |
|--------------------------------|-------------|
| 1080p HD | 1920 x 1080 |
| 1.3 MP (16:9) | 1536 x 864 |
| 720p HD / 1.3 MP 5:4 (cropped) | 1280 x 720 |
| 432p SD | 768 x 432 |
| 288p SD | 512 x 288 |

| | |
|-----------|--|
| Protocols | IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP/RTCP, IGMP V2/V3, ICMP, ICMPv6, RTSP, FTP, ARP, DHCP, NTP (SNTP), DNS, DNSv6, DDNS (DynDNS.org, selfHOST.de, noip.com), SMTP, iSCSI, UPnP (SSDP), DiffServ (QoS), LLDP, SOAP, CHAP, digest authentication |
|-----------|--|

NTCIP Protocols

| | |
|--------------------------|--|
| CCTV Camera Control | NTCIP 1205 v1.08 |
| Application Layer | SNMP per NTCIP 1101:1996 & NTCIP 2301 |
| Transport/Network Layers | TCP/IP per NTCIP 2202:2001 |
| Sub-network Layer | PMPP (Point to Multi-Point Protocol) per NTCIP 2101:2001 & NTCIP 2102:2003 |
| Ethernet | 100BASE-TX/1000 Base-T, auto-sensing, half/full duplex, Auto-MDI-X |
| Encryption | TLS 1.0, TLS 1.1, TLS 1.2, AES128, AES256 |
| Ethernet connector | RJ45 |
| GOP structure | IP, IBP, IBBP |
| Camera internal delay | 30 fps: 247 ms (typical) |
| Interoperability | ONVIF Profile S, ONVIF Profile G, ONVIF Profile T, ONVIF Profile M |

The table that follows shows the average typical optimized bitrate, in kbits/s, for different frame rates: The average is for the highest resolution of the camera.

| FPS | H.264 | H.265 |
|-----|-------|-------|
| 30 | 2740 | 2060 |
| 15 | 1690 | 1260 |
| 2 | 420 | 310 |
| 1 | 260 | 190 |

Actual bitrate may vary depending on the scene, picture settings, and encoder profile settings.

Mechanical

| | |
|--------------------------------|---|
| Drive Unit | Brushless, integral pan/tilt motor drive |
| Supported mounting orientation | Upright, Inverted, Canted |
| Pan Range | 360° continuous rotation |
| Tilt Angle | 290° (with or without illuminator) |
| Tilt Range | (With or without illuminator) Upright: -55° to +90°; Inverted: -95° to +55°; Canted: -80° to +65° |
| Variable Pan Speed | 0.2°/second - 120°/second |
| Variable Tilt Speed | 0.2°/second - 90°/second |

| | |
|---------------------------------|-------------|
| Speed of Pre-positions | 120°/second |
| Pre-position Accuracy | +/-0.05° |
| Proportional Pan / Tilt to Zoom | Yes |
| Audible Noise | <65 dB |

Electrical

| | |
|--|--|
| Input voltage | 24 VAC, 50/60 Hz High Power over Ethernet 56VDC nominal |
| Power Consumption (typical), without illuminator | 40 W |
| Power Consumption (typical), with illuminator | 70 W |
| Current consumption, 24 VAC | ~3.15A |
| Current consumption, High PoE | ~1.5A |
| Redundant configuration | Connect both a High PoE Midspan and a separate 24 VAC power source. If either power source fails, the camera automatically switches to the other power source. |
| Surge protection | Built-in surge protection for power, data, and network interfaces (Refer to the A&E Specifications for details.) |

Communications / Software Control

| | |
|----------------------|--|
| Camera Setup/Control | Via web browser [Refer to the Release Letter of your camera's firmware for specific requirements.], Bosch Configuration Manager, Bosch Video Management System (BVMS), Video Security Client (VSC), Project Assistant, or support for third party software |
| Software Update | Network firmware upload |

Local Storage

| | |
|------------------|--|
| Memory card slot | User-supplied full SD card (maximum 2 TB) on enhanced models only Recommended: Industrial SD cards from Western Digital (sold by Bosch) |
|------------------|--|

User Connections

| | |
|-----------------------------------|---|
| Accessory Interface/ Control Data | RS-485, simplex, user-selectable baud rate or auto-baud |
|-----------------------------------|---|

| | |
|------------------------------------|---|
| | Used to communicate with optional Alarm/washer interface box (MIC-ALM-WAS-24) or with Bosch OSRD, Pelco P/D, Forward Vision, and Cohu serial protocols. |
| Chassis ground | Ground wire with connector lug |
| Input voltage, without illuminator | RJ45 connector to 60 W High PoE Midspan (NPD-6001B) or 95 W High PoE Midspan (NPD-9501A or NPD-9501-E), or 24 VAC, 50/60 Hz; Female-to-female RJ45 coupler included |
| Input voltage, with illuminator | RJ45 connector to 95 W High PoE Midspan (NPD-9501A or NPD-9501-E)* or 24 VAC, 50/60 Hz; Female-to-female RJ45 coupler included |
| Power, Camera | 24 VAC (power supply) |
| Video and Control | RJ45 100BASE-TX Ethernet; RS-485 half-duplex 57600 baud (dedicated for MIC-ALM-WAS-24) |

* Must purchase NPD-9501A or NPD-9501-E in order to use the High PoE solution.

Audio

| | |
|-----------------------------|---|
| Compression | G.711, AAC, and L16 (live and recording) |
| Signal-to-Noise Ratio (SNR) | Audio in: 47 dBA Audio out: 50 dBA |
| Mode | Two-way, full duplex audio communication |
| User connections | Line in: 130k ohm typical / 1.0Vrms, max Line out: 0.8Vrms at 2.4 ohm, typical |

Environmental

The customer is responsible for making sure that the installation complies with the specified stresses that follow.

Note: Unit includes internal heater and fan.

| | |
|------------------------------------|---|
| Ingress Protection Rating/Standard | IEC 60529 IP66 / IP68 / Type 6P (dust and immersion) when installed on a MIC-DCA, or on a MIC wall mount with a MIC-SCA. IP67 (moisture and dust) with the IP67 Connector Kit (MIC-9K-IP67-5PK) on the connectors in the camera base. This kit is also required when using non-Bosch mounts. |
|------------------------------------|---|

| | |
|--|--|
| External Mechanical Impact (IK Code / Impact rating) | IEC 62262 IK10 (excluding glass window) |
| Operating temperature | -40 °C to +65 °C (-40 °F to +149 °F) |
| NEMA TS 2-2003 (R2008), para 2.1.5.1 using fig. 2.1 test profile | -34 °C to +74 °C (-30 °F to +165 °F) for 15 hours |
| Cold Start-up Temperature | -40 °C (-40 °F) (Requires 60-minute warm-up prior to PTZ operations.) |
| Storage temperature | -45 °C to +70 °C (-49 °F to +158 °F) |
| Humidity | 0-100% |
| Wind Load | Sustained winds up to 161 kph (100 mph) An upright camera or an inverted camera with an illuminator will hold its position in gusts up to 241 kph (150 mph). A canted camera with an illuminator will hold its position in gusts up to 257 km/h (160 mph). |
| Effective Projected Area (EPA) | Camera + DCA: 0.0725 m ² (0.78 ft ²) Camera + DCA + illuminator: 0.0854 m ² (0.92 ft ²) |
| Vibration | IEC 60068-2-6: 10-150 Hz, 1.0G (0.5G on canted unit), 10m/s ² , 20 Sweeps NEMA TS-2 Section 2.2.8: 5-30 Hz, 0.5G MIL-STD-167-1A |
| Shock | IEC 60068-2-27, Test Ea: Shock, half sine impulse, 11 ms, 45G (20G on canted unit), non-repetitive shocks (three shocks in each axis and in each direction) NEMA TS 2 Section 2.2.9 Shock (Impact) Test Half sine wave 11 ms, 10G |
| Power Service Transients | NEMA TS2 Section 2.2.7.2 |
| Power Interruption | NEMA TS2 Section 2.2.10 |
| MIL-STD-810 Military Standard Test Methods | MIL-STD-810-G, 501.5 High Temperature; MIL-STD-810-G, 502.5 Low Temperature; MIL-STD-810-G, 503.5 Temperature Shock; MIL- |

| | |
|---|---|
| | STD-810-G, 505.5 Solar Radiation; MIL-STD-810-G, 506.5 Rain; MIL-STD-810-G, 509.5 Salt Fog; MIL-STD-810-G, 510.5 Sand and Dust |
| Salt Mist Spray (Corrosion Test) | ISO 12944-6: C5-M (High); Aluminum Housing Components |
| Construction | |
| Dimensions (W x H x D) | Without illuminator accessory or sunshield: <i>Upright, Inverted:</i> 287.93 mm x 400.34 mm x 210.65 mm (11.34 in. x 15.76 in. x 8.29 in.) <i>Canted:</i> 260.25 mm (10.2 in.) x 374.5 mm (14.7 in.) |
| Weight | 8.7 Kg (19.2 lb) |
| Window | Flat glass (with defroster on enhanced models only) Defroster starts automatically at <= 5 °C (41 °F). |
| Construction Material | Anodized cast aluminum |
| Window Wiper | Integrated, long-life silicone wiper |
| Sunshield (to prevent sun load in hot climates) | Optional (sold separately) |
| Canting | On-site canting functionality |
| Color | Black (RAL 9005) |
| Color | White (RAL 9010) |
| Color | Grey (RAL 7001) |
| Standard Finish | Corrosion-resistant, powder coat paint, sand finish |

Ordering information

MIC-7602-Z30B PTZ 2MP 30x starlight black

Ruggedized, outdoor PTZ camera; 1080p HD, 30x, starlight imaging, H.265, IVA open camera platform
Black (RAL 9005). Sand finish.
NDA compliant
Order number **MIC-7602-Z30B | F.01U.382.403 F.01U.386.569**

MIC-7602-Z30W PTZ 2MP 30x starlight white

Ruggedized, outdoor PTZ camera; 1080p HD, 30x, starlight imaging, H.265, IVA open camera platform
White (RAL 9010). Sand finish.
NDA compliant
Order number **MIC-7602-Z30W | F.01U.382.404 F.01U.386.570**

MIC-7602-Z30G PTZ 2MP 30x starlight gray

Ruggedized, outdoor PTZ camera; 1080p HD, 30x, starlight imaging, H.265, IVA open camera platform
Grey (RAL 7001) color. Sand finish.
NDA compliant
Order number **MIC-7602-Z30G | F.01U.382.405 F.01U.386.571**

MIC-7602-Z30BR PTZ 2MP 30x starlight enhanced black

Ruggedized PTZ camera; 1080p, 30x, starlight imaging, defroster
open camera platform
Black (RAL 9005). Sand finish.
NDA compliant
Order number **MIC-7602-Z30BR | F.01U.381.145 F.01U.386.563**

MIC-7602-Z30WR PTZ 2MP 30x starlight enhanced white

Ruggedized PTZ camera; 1080p, 30x, starlight imaging, defroster
open camera platform
White (RAL 9010). Sand finish.
NDA compliant
Order number **MIC-7602-Z30WR | F.01U.381.146 F.01U.386.564**

MIC-7602-Z30GR PTZ 2MP 30x starlight enhanced gray

Ruggedized PTZ camera; 1080p, 30x, starlight imaging, defroster
open camera platform
Grey (RAL 7001) color. Sand finish.
NDA compliant
Order number **MIC-7602-Z30GR | F.01U.381.147 F.01U.386.565**

Accessories

MIC-ILB-400 Illuminator, white-IR light, black

Illuminator accessory for certain MIC IP cameras, IR Light (850 nm/940 nm) + White light LEDs
Black (RAL 9005). Sand finish.
Order number **MIC-ILB-400 | F.01U.370.191**

MIC-ILW-400 Illuminator, white-IR light, white

Illuminator accessory for certain MIC IP cameras, IR Light (850 nm/940 nm) + White light LEDs
White (RAL 9010). Sand finish.
Order number **MIC-ILW-400 | F.01U.370.192**

MIC-ILG-400 Illuminator, white-IR light, gray

Illuminator accessory for certain MIC IP cameras, IR Light (850 nm/940 nm) + White light LEDs
Grey (RAL 7001) color. Sand finish.
Order number **MIC-ILG-400 | F.01U.370.193**

NPD-6001B Midspan, 60W, single port, AC in
60 W indoor midspan for cameras without illuminators
Order number **NPD-6001B | F.01U.347.358**
F.01U.392.458

NPD-9501A Midspan, 95W, single port, AC in
95 W indoor PoE midspan for AUTODOME and MIC cameras
Order number **NPD-9501A | F.01U.286.250**

NPD-9501-E Midspan 95W 1 port outdoor
95 W outdoor PoE midspan for AUTODOME and MIC cameras
Order number **NPD-9501-E | F.01U.365.279**

VG4-A-PSU1 PSU, 120VAC, for AUTODOME, MIC7000
Power supply for AUTODOME 7000, MIC IP cameras without illuminators.
120VAC in, 24VAC out
Order number **VG4-A-PSU1 | F.01U.081.593**
F.01U.009.667 F.01U.261.377

VG4-A-PSU2 Power supply, 230VAC, AUTODOME, MIC7000
Power supply for AUTODOME 7000, MIC IP cameras without illuminators.
230VAC in, 24VAC out
Order number **VG4-A-PSU2 | F.01U.009.668**
F.01U.096.639 F.01U.097.433 F.01U.081.604
F.01U.261.378

MIC-ALM-WAS-24 Interface box, alarm, washer pump, 24VAC
Grey polycarbonate interface box for alarms and washer pump connections for MIC IP cameras
Order number **MIC-ALM-WAS-24 | F.01U.286.248**

MIC-DCA-HB Deep conduit mount, M25 holes, black
DCA mount for MIC7000 family and MIC IP fusion 9000i cameras. Aluminum. Two M25 holes for conduit/cable glands.
Black (RAL 9005) color.
Order number **MIC-DCA-HB | F.01U.286.244**

MIC-DCA-HBA Deep conduit mount, M25 holes, black
DCA mount for MIC7000 and MIC IP fusion 9000i cameras. Aluminum. Two M25 holes for conduit/cable glands. Includes a conduit adapter (male M25 to female 3/4" NPT). Available in specific regions only.
Black (RAL 9005) color.
Order number **MIC-DCA-HBA | F.01U.303.166**

MIC-DCA-HW Deep conduit mount, two M25 holes, white
DCA mount for MIC7000 family and MIC IP fusion 9000i cameras. Aluminum. Two M25 holes for conduit/cable glands.
White (RAL 9010) color.
Order number **MIC-DCA-HW | F.01U.286.245**

MIC-DCA-HWA Deep conduit mount, M25 holes, white
DCA mount for MIC7000 and MIC IP fusion 9000i cameras. Aluminum. Two M25 holes for conduit/cable glands. Includes a conduit adapter (male M25 to female 3/4" NPT). Available in specific regions only.
White (RAL 9010) color.
Order number **MIC-DCA-HWA | F.01U.303.167**

MIC-DCA-HG Deep conduit mount, two M25 holes, grey
DCA mount for MIC7000 family and MIC IP fusion 9000i cameras. Aluminum. Two M25 holes for conduit/cable glands.
Grey (RAL 7001) color.
Order number **MIC-DCA-HG | F.01U.286.246**

MIC-DCA-HGA Deep conduit mount, M25 holes, grey
DCA mount for MIC7000 and MIC IP fusion 9000i cameras. Aluminum. Two M25 holes for conduit/cable glands. Includes a conduit adapter (male M25 to female 3/4" NPT). Available in specific regions only.
Grey (RAL 7001) color.
Order number **MIC-DCA-HGA | F.01U.303.168**

MIC-WMB-BD Wall mount bracket, black
Wall mount bracket, black sand finish (RAL9005)
Order number **MIC-WMB-BD | F.01U.143.155**

MIC-WMB-WD Wall mount bracket, white
Wall mount bracket, white sand finish (RAL9010)
Order number **MIC-WMB-WD | F.01U.143.156**

MIC-WMB-MG Wall mount for rugged PTZ camera, grey
Wall Mount Bracket.
Grey (RAL 7001) color. Sand finish.
Order number **MIC-WMB-MG | F.01U.296.299**

MIC-SCA-BD Shallow conduit adapter, black sand
Shallow conduit adapter for a MIC-WMB, a MIC-PMB, or a MIC-SPR, black sand finish (RAL9005)
Order number **MIC-SCA-BD | F.01U.143.153**

MIC-SCA-WD Shallow conduit adapter, white sand
Shallow conduit adapter for a MIC-WMB, a MIC-PMB, or a MIC-SPR mount, white sand finish (RAL9010)
Order number **MIC-SCA-WD | F.01U.143.154**

MIC-SCA-MG Conduit adapter, shallow, grey sand
Shallow conduit adapter for a MIC-WMB, a MIC-PMB, or a MIC-SPR.
Grey (RAL 7001) color. Sand finish.
Order number **MIC-SCA-MG | F.01U.296.297**

MIC-PMB Pole mount bracket
Pole mount bracket (includes 2 x 455 mm stainless steel banding straps for pole diameters 75 to 145 mm)
Order number **MIC-PMB | F.01U.087.283**

MIC-CMB-BD Corner mount bracket, black
Corner mount bracket, black sand finish (RAL9005)
Order number **MIC-CMB-BD | F.01U.143.158**

MIC-CMB-WD Corner mount bracket, white
Corner mount bracket, white sand finish (RAL9010)
Order number **MIC-CMB-WD | F.01U.143.159**

MIC-CMB-MG Corner mount bracket, grey sand
Corner mount bracket.
Grey (RAL 7001) color. Sand finish.
Order number **MIC-CMB-MG | F.01U.296.296**

MIC-SPR-BD Wall mount spreader plate, black sand
Aluminum spreader plate suitable for brickwork surface mounting, black sand finish (RAL9005)
Order number **MIC-SPR-BD | F.01U.143.164**

MIC-SPR-WD Wall mount spreader plate, white sand
Aluminum spreader plate suitable for brickwork surface mounting, white sand finish (RAL9010)
Order number **MIC-SPR-WD | F.01U.143.163**

MIC-SPR-MG Wall mount spreader plate, grey sand

Aluminum spreader plate suitable for brickwork surface mounting.

Grey (RAL 7001) color. Sand finish.

Order number **MIC-SPR-MG | F.01U.296.298**

MIC-M25XNPT34 Adapter, M25 to 3/4" NPT, stainless steel

Stainless Steel M25 to 3/4" NPT thread adapter

Order number **MIC-M25XNPT34 | F.01U.301.975**

MIC-WKT-IR Washer kit, MIC IR

Washer kit for MIC IP starlight 7000i and MIC IP fusion 9000i camera models

Washer kit for analog infrared MIC camera models

Order number **MIC-WKT-IR | F.01U.087.255**

MIC-IP67-5PK Connector kit, IP67, 5pcs

5-pack weather protection kit for MIC7000 cameras.

Provides an IP67-rated barrier against dust or moisture.

Recommended when MIC camera is mounted directly to installation surface (instead of onto a MIC-DCA or MIC wall mount).

Order number **MIC-IP67-5PK | F.01U.294.750**

MIC-7100I-SNSHLD-W Sunshield for MIC 7100i white

Sunshield for MIC IP ultra 7100i camera models

Order number **MIC-7100I-SNSHLD-W | F.01U.353.591**

SD-064G IP SECURITY SD CARD 64GB

64 GB industrial SD card with health status monitoring

Order number **SD-064G | F.01U.394.677**

SD-128G IP SECURITY SD CARD 128GB

128 GB industrial SD card with health status monitoring

Order number **SD-128G | F.01U.394.678**

SD-256G IP SECURITY SD CARD 256GB

256 GB industrial SD card with health status monitoring

Order number **SD-256G | F.01U.394.679**

Services**EWE-MIC7IF-IWMP 12 mths wrty ext MIC IP 7000i mov par.**

12 months warranty extension

Order number **EWE-MIC7IF-IWMP | F.01U.402.734**

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