The MIC IP fusion 9000i camera is an advanced PTZ surveillance platform designed to provide early detection in mission-critical applications. With its dual visible/thermal imaging capabilities, the MIC IP fusion 9000i camera is the perfect solution for robust and high-quality imaging needs.

The camera’s distinctive, ruggedized design is well-suited for extreme environments and adverse weather conditions such as high winds, rain, fog, ice, and snow.

Precision engineered using Bosch’s domain expertise in material and mechanical engineering, the camera offers the most advanced imaging and positioning system solution available on the market.

**Functions**

**Exceptional imaging performance**

The MIC IP fusion 9000i camera incorporates a high-performance thermal imaging core and a 1080p starlight camera integrated in the same housing. This allows the camera to deliver simultaneous thermal and visible video streams, maximizing the ability to detect and react to long-range threats.

**Thermal imager**

The thermal imager incorporates the latest un-cooled vanadium oxide microbolometer technology. This high sensitivity thermal imager is equipped with a fixed focal length Athermal lens that balances the field-of-view with maximizing the detection distance. User-adjustable settings for contrast and gain allow operators to optimize the image, ensuring delivery of the highest quality video. In addition, a wide variety of user-selectable thermal color modes are available allowing further optimization of the thermal image. Depending on model mix, QVGA resolution (320 pixels) and VGA resolution (640 pixels) versions are available, with choice of low (<9Hz) or high (30/60Hz) frame rates.
Visible imager
The 1080p60-capable visible imager has starlight technology and a 30x optical/12x digital zoom lens that provides high-quality images, excellent color performance, and unbeatable low-light sensitivity. High dynamic range ensures clear image reproduction in the most challenging high-contrast scenes.

Ruggedized design for extreme applications
The MIC IP fusion 9000i camera is designed for surveillance applications beyond the mechanical capabilities of normal PTZ domes or conventional positioning systems.

• Ingress
  The camera is environmentally sealed and complies with Type 6P and IP68 standards, when attached to a MIC-DCA or a MIC-WMB. This level of protection eliminates any risk of dust or water ingress, making the camera a perfect choice for use in extreme environments with rain, dust, snow, flying debris, and other challenging conditions.
  In addition, the MIC camera’s ingress protection method does not need periodic maintenance, which is required on cameras with pressurized housings.

• Wide operating temperature range
  The camera’s operating temperature range of -40 °C to +65 °C (-40 °F to +149 °F) enables reliable surveillance monitoring in global locations from cold northern latitudes to hot equatorial and desert regions.

• Rugged construction
  The all-metal body has been engineered to withstand IK10-level impacts, and continuous low-frequency vibration. With its symmetrical, cross-section designed surfaces, the camera is also well-suited to operating in sites with high wind conditions.

• Excellent corrosion protection
  The camera benefits from Bosch Automotive domain knowledge in material engineering and coatings. As a result, the superior metallurgy, chromate based pre-coating, and paint finish of the camera provides unprecedented protection against corrosion. Reliability is ensured by the camera’s ability to withstand a 2000-hour salt atmosphere at elevated temperature corrosion resistance test, according to the ASTM B117 test method.

• Window Wiper and Defroster
  The camera features a highly durable, silicone wiper which removes moisture from both the glass and germanium windows. In addition, both windows incorporate embedded defrosters that minimize build-up of snow and ice, ensuring the highest-possible image details in extreme cold and moist conditions.
  The wiper can also be integrated with third-party washer systems for regular cleaning and maintenance activities.

Intelligent Video Analytics on the edge
The camera includes the latest release of Intelligent Video Analytics for monitoring both the visible and the thermal image streams.
The same scene viewed using the visible imager of the MIC IP fusion 9000i camera would include metadata fusion events detected by the thermal imager, as shown below.

Once alerted, operators can switch to the thermal image (below) of the scene, where they can easily see the objects creating the alarm. Hence, the metadata fusion feature provides enhanced situational awareness.

Intelligent Tracking
The newest generation of the Intelligent Tracking feature ensures smoother camera motion for more comfortable viewing and more reliably tracking objects even under challenging scenes.

On the visible imager, when Intelligent Video Analytics application detects objects or individuals, the camera can automatically activate the Intelligent Tracking feature, which controls the pan/tilt/zoom actions of the camera in order to track objects and keep them in view.

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.

H.265 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 new compression standard of choice for IP video surveillance systems.

Intelligent streaming
Smart encoding capabilities, together with Intelligent Dynamic Noise Reduction technology and analytics, make the bandwidth consumption drop to extremely low levels. Only relevant information in the scene, such as motion or objects found with the analytics, are encoded.

The camera is capable of providing 4 streams of thermal video and 4 streams of HD visible video simultaneously (8 streams total). This allows the camera to deliver independent, configurable streams for live viewing, recording, or remote monitoring via constrained bandwidths.

Image Stabilization
As PTZ cameras continue to increase their optical zoom capabilities, image stabilization becomes critical to eliminate movement caused by unstable camera mounts. Minor movement of the camera mount can shift the field of view by a large distance when the camera is zoomed to a high value. This can render images unusable. The camera incorporates an Image Stabilization algorithm that allows the camera to detect continuous vibration. If it detects vibration, the camera dynamically corrects the shaky video in both the vertical and horizontal axis, resulting in exceptional image clarity and a stable field of view on the monitor.

Note: Image stabilization is available on the visible camera only.

Other Features
The camera includes many advanced features that work to maximize performance and satisfy the most demanding system operation requirements.

Scene modes
The camera has a very intuitive user interface that allows fast and easy configuration to optimize image quality.

The visible imager has five user-selectable scene modes with pre-configured settings that optimize the imaging for a variety of applications, including Motion, Low light, and Vibrant. Operators can select different scene modes for day or night situations.

The thermal imager has 12 user-selectable thermal mode options, including White hot, Black hot, Red Light, Softlight, and Sunset.
Recording and storage management
The Bosch Video Recording Manager application can control recording management for the camera. Alternately, the camera can use its embedded local storage and iSCSI targets directly without any recording software. The camera’s embedded local storage (internal EMMC-based memory) can be used for recording “at the edge” or for Automatic Network Replenishment (ANR) to improve the overall recording reliability. At the worst case—full streaming conditions, comprising both visible and thermal image streams, metadata, and audio—up to 4 hours of local storage time is possible. Furthermore, pre-alarm recording is available to capture details of an incident before the alarm actually occurs.

High performance PTZ operations
The camera has a closed-loop feedback control system using a 15-bit position resolver. This resolver ensures high accuracy coordinates are linked with every pan/tilt position. Because the camera always knows where it is pointed, it will return automatically to its original position even if moved by extremely high winds. The pan and tilt mechanism of the camera is a ruggedized, spur gear system. The brushless motors directly control the pan and tilt movement using a finely-tuned gear train designed to minimize backlash and support continuous operation without much wear and tear. With a full 360° continuous rotation pan, 296° tilt control, and super-quick pan (120°/second) and tilt (90°/second) operational speeds, the camera outperforms other cameras in its class.

System integration and ONVIF conformance
The camera conforms to the Open Network Video Interface Forum (ONVIF) Profile S and Profile G specifications. For H.265 configuration the camera also supports Media Service 2 which is part of the future 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.

Access and Data Security
Special measures have been put in place to ensure the highest level of security for device access and data transport. The three-level password protection with security recommendations allows users to customize device access. Web browser access can be protected using HTTPS and firmware updates are always protected with authenticated secure uploads. The on-board Trusted Platform Module (TPM) and Public Key Infrastructure (PKI) support guarantee superior protection from malicious attacks. The 802.1x network authentication with EAP/TLS, supports TLS 1.2 with updated cipher suites including AES 256 encryption. 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
• Installed Bosch Escrypt certificate, which ensures that the product is produced by Bosch

Certifications and approvals

For a full list of all related certifications/standards, please 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, please contact your sales representative.

<table>
<thead>
<tr>
<th>Standards</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emissions</td>
<td>EN 55032 class A</td>
</tr>
<tr>
<td></td>
<td>FCC: 47 CFR Part 15 B, class A</td>
</tr>
<tr>
<td></td>
<td>RCM: AS/NZS CISPR 32</td>
</tr>
<tr>
<td>Immunity</td>
<td>EN 50130-4</td>
</tr>
<tr>
<td></td>
<td>EN 50121-4</td>
</tr>
<tr>
<td>Environmental</td>
<td>IEC 60068-2-1</td>
</tr>
<tr>
<td></td>
<td>IEC 60068-2-2</td>
</tr>
<tr>
<td></td>
<td>IEC 60068-2-30</td>
</tr>
<tr>
<td>Safety</td>
<td>EN 60950-1</td>
</tr>
<tr>
<td></td>
<td>EN 60950-22</td>
</tr>
<tr>
<td></td>
<td>UL 60950-1, Ed. 2</td>
</tr>
<tr>
<td></td>
<td>CAN/CSA C22.2 No. 60950-1-07, Ed. 2</td>
</tr>
<tr>
<td></td>
<td>EN 62368-1</td>
</tr>
<tr>
<td></td>
<td>UL 62368-1</td>
</tr>
<tr>
<td>Marks</td>
<td>cUL, CE, WEEE, RCM, EAC, FCC, RoHS</td>
</tr>
<tr>
<td>ISO Quality Systems</td>
<td>ISO 9001</td>
</tr>
<tr>
<td></td>
<td>ISO 14001</td>
</tr>
</tbody>
</table>

Region | Regulatory compliance/quality marks
---|---
Europe | CE
USA | UL

Installation/configuration notes

Interfaces for MIC IP fusion 9000i camera

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

The camera can be powered using a standard 24 VAC power source and/or by a network-compliant 95W High Power-over-Ethernet (Bosch’s version of High PoE). With a 95W High PoE Midspan (NPD-9501A, sold separately) from Bosch, a single (Cat5e/Cat6e) cable connection provides everything needed to view, power, and control the camera. Using High PoE makes installation easier and more cost effective, as cameras do not require a local power source.

Easy setup is guaranteed by using or Configuration Manager or the web browser built into the camera. Access to all settings, live video, and control functions is available in a user-friendly web page format.

Technical specifications

MIC IP fusion 9000i cameras are available with different housing colors, two thermal imager resolution options, and thermal frame rate options.

The last three letters of the model number identify the housing color (“B” (black), “W” (white), or “G” (grey)), the resolution, and the thermal frame rate. In the table below, “x” represents the letter for the housing color. Note: Some models are not available in all regions.

<table>
<thead>
<tr>
<th>Model</th>
<th>Resolution</th>
<th>Frame rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIC-9502-Z30-xQS</td>
<td>320 pixel (Standard)</td>
<td>&lt;9Hz</td>
</tr>
<tr>
<td>MIC-9502-Z30-xQF</td>
<td>320 pixel (Standard)</td>
<td>60Hz</td>
</tr>
<tr>
<td>MIC-9502-Z30-xVS</td>
<td>640 pixel (High)</td>
<td>&lt;9Hz</td>
</tr>
<tr>
<td>MIC-9502-Z30-xVF</td>
<td>640 pixel (High)</td>
<td>30Hz</td>
</tr>
</tbody>
</table>

Notice

All thermal camera models are export-controlled by the U.S. Department of Commerce (USDoC). Depending on country of installation and application, an export license may be required. For more information, contact your local Bosch Security Systems Customer Service Center.

Additional camera models with different combinations of housing color, resolution, and frame rate may be available. If you need a model not listed in the Ordering Information section, contact your local Bosch representative.

Thermal camera core, standard resolution (320 pixels)

<table>
<thead>
<tr>
<th>Imager</th>
<th>Focal Plane Array (FPA), un-cooled Vanadium Oxide microbolometer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution/Effective Picture Elements</td>
<td>320 x 240</td>
</tr>
<tr>
<td>Pixel Pitch</td>
<td>17 μm</td>
</tr>
</tbody>
</table>
### Frame rate
- <9Hz ("QS" models)
- 60Hz ("QF" models)

### Lens
- Athermal 19 mm (F1.1)

### Field of View (FOV)
- 16° x 12°

### Spectral Response
- 8 to 14 μm

### Thermal Sensitivity (NEDT)
- <62mK (at room temperature; Noise Reduction ON)

### Focus
- Factory-set at infinity

### Focus Distance
- 14 m to ∞ (46 ft to ∞)

### Contrast enhancement
- On/Off

### Gain Level
- User-adjustable

### Brightness Level
- User-adjustable

### Noise reduction
- On/Off

### User-selectable thermal color modes
- 12

### Approximate Performance Range in ideal conditions based on DRI criteria**

<table>
<thead>
<tr>
<th>Detection</th>
<th>Human 1.8 x 0.5 m (5.9 x 1.6 ft)</th>
<th>Object 2.3 x 2.3 m (7.5 x 7.5 ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>379 m (1243 ft)</td>
<td>1746 m (5728 ft)</td>
<td></td>
</tr>
<tr>
<td>95 m (312 ft)</td>
<td>436 m (1430 ft)</td>
<td></td>
</tr>
<tr>
<td>47 m (154 ft)</td>
<td>218 m (715 ft)</td>
<td></td>
</tr>
</tbody>
</table>

### Approximate Performance Range in ideal conditions based on DRI criteria**

<table>
<thead>
<tr>
<th>Human 1.8 x 0.5 m (5.9 x 1.6 ft)</th>
<th>Object 2.3 x 2.3 m (7.5 x 7.5 ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>982 m (3222 ft)</td>
<td>4517 m (14,820 ft)</td>
</tr>
<tr>
<td>245 m (804 ft)</td>
<td>1129 m (3704 ft)</td>
</tr>
<tr>
<td>123 m (404 ft)</td>
<td>565 m (1854 ft)</td>
</tr>
</tbody>
</table>

**For more information, including detection distances using video analytics, refer to the Video Analytics and Lens Calculator.

### Visible camera core

<table>
<thead>
<tr>
<th>Imager</th>
<th>1/2.8-type Exmor R CMOS sensor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective Picture Elements</td>
<td>1945 x 1097 (2.13 MP)</td>
</tr>
<tr>
<td>Resolution</td>
<td>Full HD (1080p)</td>
</tr>
<tr>
<td>Lens</td>
<td>30x motorized Zoom</td>
</tr>
<tr>
<td></td>
<td>4.3 mm to 129 mm F1.6 to F4.7</td>
</tr>
<tr>
<td>Field of View (FOV)</td>
<td>2.3° to 63.7°</td>
</tr>
<tr>
<td>Focus</td>
<td>Automatic with manual override</td>
</tr>
<tr>
<td>Iris</td>
<td>Automatic with manual override</td>
</tr>
<tr>
<td>Digital Zoom</td>
<td>12x</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>Color 0.0077 lx</td>
</tr>
<tr>
<td></td>
<td>Monochrome 0.0008 lx</td>
</tr>
<tr>
<td>Gain Control</td>
<td>AGC, Fixed</td>
</tr>
<tr>
<td>Aperture Correction</td>
<td>Horizontal and vertical</td>
</tr>
<tr>
<td>Electronic Shutter Speed (AES)</td>
<td>1/1 sec to 1/10000 sec (22 steps)</td>
</tr>
<tr>
<td>Signal-to-Noise Ratio (SNR)</td>
<td>&gt;55 dB</td>
</tr>
<tr>
<td>Day/Night switch</td>
<td>Automatic IR cut filter</td>
</tr>
<tr>
<td>White Balance</td>
<td>2000 K to 10,000 K</td>
</tr>
<tr>
<td></td>
<td>ATW, AWB Hold, Extended ATW, Manual, Sodium Lamp Auto, Sodium Lamp</td>
</tr>
<tr>
<td>Day/Night</td>
<td>Monochrome, Color, Auto</td>
</tr>
</tbody>
</table>
### Intelligent Defog feature
Improves visibility when viewing foggy or other low-contrast scenes.

High dynamic range (HDR) 120 dB (25/30 fps)

Image Stabilization On, Off, Auto

### DORI

<table>
<thead>
<tr>
<th>DORI</th>
<th>DORI definition</th>
<th>Distance to Object</th>
</tr>
</thead>
<tbody>
<tr>
<td>WIDE 1X</td>
<td>TELE 30X</td>
<td>Scene width</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Detect</td>
<td>25 px/m (8 px/ft)</td>
<td>62 m (203 ft)</td>
</tr>
<tr>
<td></td>
<td>1913 m (6276 ft)</td>
<td>77 m (252 ft)</td>
</tr>
<tr>
<td>Observe</td>
<td>63 px/m (19 px/ft)</td>
<td>25 m (81 ft)</td>
</tr>
<tr>
<td></td>
<td>765 m (2510 ft)</td>
<td>31 m (100 ft)</td>
</tr>
<tr>
<td>Recognize</td>
<td>125 px/m (38 px/ft)</td>
<td>12 m (41 ft)</td>
</tr>
<tr>
<td></td>
<td>383 m (1255 ft)</td>
<td>15 m (50 ft)</td>
</tr>
<tr>
<td>Identify</td>
<td>250 px/m (76 px/ft)</td>
<td>6 m (20 ft)</td>
</tr>
<tr>
<td></td>
<td>191 m (628 ft)</td>
<td>8 m (25 ft)</td>
</tr>
</tbody>
</table>

### Video content analysis

<table>
<thead>
<tr>
<th>Analysis type</th>
<th>Intelligent Video Analytics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configurations</td>
<td>Off / Global VCA / Profiles 1 - 16</td>
</tr>
</tbody>
</table>

### Object filters

<table>
<thead>
<tr>
<th>Duration</th>
<th>Size</th>
<th>Aspect ratio v/h</th>
<th>Speed</th>
<th>Direction</th>
<th>Object classes (Upright persons, Bikes, Cars, Trucks)</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

### Tracking Mode

<table>
<thead>
<tr>
<th>Standard tracking (2D)</th>
<th>3D tracking</th>
<th>3D people tracking</th>
<th>Ship tracking</th>
<th>Museum mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

### Network

Standard/Video compression H.265, H.264 (ISO/IEC 14496), M-JPEG, JPEG

Streaming

Four (4) streams: Two (2) configurable streams in H.264 or H.265
One (1) I-frames-only stream based on first stream
One (1) M-JPEG Stream
Regions of Interest (ROI)

Supported Streams

<table>
<thead>
<tr>
<th>SD</th>
<th>720p</th>
<th>1080p</th>
<th>D1 4:3 (cropped)</th>
<th>640x480</th>
<th>1280x1024 (cropped)</th>
</tr>
</thead>
</table>

Resolution (H x V)

<table>
<thead>
<tr>
<th>1080p HD</th>
<th>1920 x 1080</th>
</tr>
</thead>
<tbody>
<tr>
<td>720p HD</td>
<td>1280 x 720</td>
</tr>
<tr>
<td>432p SD</td>
<td>768 x 432</td>
</tr>
<tr>
<td>288p SD</td>
<td>512 x 288</td>
</tr>
<tr>
<td>144p SD</td>
<td>256 x 144</td>
</tr>
</tbody>
</table>
Protocols
IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP/RTCP, IGMP V2/V3, ICMP, ICMPv6, RTSP, FTP, ARP, DHCP, APIPA (Auto-IP, link local address), NTP (SNTP), SNMP (V1, V3, MIB-II), 802.1x, DNS, DNSv6, DDNS (DynDNS.org, selfHOST.de, no-ip.com), SMTP, iSCSI, UPnP (SSDP), DiffServ (GoS), LLDP, SOAP, Dropbox™, CHAP, digest authentication

Note: Dropbox is a trademark of Dropbox, Inc.

Ethernet
10BASE-T/100BASE-TX, auto-sensing, half/full duplex

Encryption
TLS 1.0, SSL, DES, 3DES, AES

Ethernet connector
RJ45

GOP Structure
IP, IBP, IBBP

Data Rate
H.265, 1080P: 61 kbps to 2.8 Mbps (depending on the scene, the frame rate, and the quality settings) H.264: 9.6 kbps to 6 Mbps

IP Delay (camera only)
30fps: 120ms 60fps: 67ms

Connectivity
ONVIF Profile S, ONVIF Profile G, Auto-MDIX

Quality of service (QoS)
User-selectable options

The average typical optimized bitrate in kbits/second for various visible imaging frame rates is shown in the following table:

<table>
<thead>
<tr>
<th>FPS</th>
<th>1080p</th>
<th>720p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H.264</td>
<td>H.265</td>
</tr>
<tr>
<td>60</td>
<td>4200</td>
<td>1649</td>
</tr>
<tr>
<td>30</td>
<td>2600</td>
<td>1413</td>
</tr>
<tr>
<td>15</td>
<td>2100</td>
<td>1157</td>
</tr>
<tr>
<td>12</td>
<td>1800</td>
<td>1075</td>
</tr>
<tr>
<td>5</td>
<td>1250</td>
<td>746</td>
</tr>
<tr>
<td>2</td>
<td>500</td>
<td>407</td>
</tr>
</tbody>
</table>

Optimized bit rates for thermal image stream will typically average less than 800kbits/second. Actual bitrate may vary depending on the scene complexities and encoding configurations.

Access and Data Security

Password protection
Three-level

Web browser protection type
HTTPS

Firmware updates
Protected with authenticated secure uploads

Trusted Platform Module (TPM)
Supported

Public Key Infrastructure (PKI)
Supported

802.1x network authentication with EAP/TLS
Supports TLS 1.2 with updated cipher suites including AES 256 encryption

802.1x authentication using a RADIUS (Remote Authentication Dial In User Service) server
Supported

SSL certificate for use with HTTPS
Supported

AES encryption
Supports independent encryption with 128-bit keys

Local Storage

Recording capacity
16GB of internal EMMC-based memory. Provides local recording for minimum of 4 hours that includes continuous recording at maximum fps of both visible and thermal image streams, metadata, and audio.

Miscellaneous

Sectors / Title
4, 8, 12, or 16 user-selectable, independent Sectors, each with 20 characters per Title

Privacy Masks
32, individually configurable; maximum 8 per Pre-position; programmable with 3, 4 or 5 corners; selectable color of Black, White, or Gray, as well as an “Auto” option in which the camera selects the most prevalent of the three colors (Black, White, or Gray) 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, 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/Watcher Interface Unit (MIC-ALM-WAS-24, sold separately) provides electrical interface to user supplied washer pump device.
### 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 internal diagnostic log. Critical fault conditions will also be displayed on screen.

### Supported mounting options (with applicable accessories)
- Direct to a surface
- On a wall (Conduit/cables down the wall)
- On the corner of a wall
- On a pole

### Additional functions
- **Video authentication**: Off / Watermark / MD5 / SHA-1 / SHA-256
- **Display Stamping**: Name, Time, Pre-position title, Sector title, Compass/telemetry, Lens zoom factor, Alarm message, Custom Logo bitmap
- **Pixel Counter**: Selectable area
- **Live image indicator**: On/Off

### Mechanical
- **Drive Unit**: Brushless, integral pan/tilt motor drive
- **Supported mounting orientation**: Upright, Inverted
- **Pan Range**: 360° continuous rotation
- **Tilt Angle**: 292°
- **Tilt Range**: Upright unit: -56° to +90°; Inverted unit: -90° to +56°
- **Variable Pan Speed**: 0.2°/second to 120°/second
- **Variable Tilt Speed**: 0.2°/second to 90°/second
- **Intelligent Tracking Speed**: 4°/second to 120°/second
- **Pre-position Speed**: Maximum 120°/second, with no more than 2.5 seconds to reach new position (excluding time to zoom and focus at new position)
- **Preposition Accuracy**: 0.05° (typical)
- **Proportional Pan / Tilt to Zoom**: Yes
- **Audible Noise**: <65 dB

### Electrical
- **Input Voltage**: 21-30 VAC, 50/60 Hz, and/or High Power over Ethernet 56VDC nominal
- **Current Consumption**: 4.0A (24 VAC) 1.5A (High PoE)

### Power Consumption (typical) (Includes integrated heater, defroster, and fan)
- 72W (24 VAC)
- 72W (High PoE)

### High PoE
- 95W High Power over Ethernet (Requires NPD-9501A midspan from Bosch (sold separately).) 56VDC

### Redundant configuration
- Connect both High PoE Midspan and a separate 24 VAC power source. If either the High PoE or 24 VAC power source fails, the camera seamlessly transitions over to use the remaining power source.

### Surge protection
- Built-in surge protection for power, data, and network interfaces

### Communications / Software Control
- **Camera Setup/Control**: Via Internet Explorer web browser version 7.0 or later, Bosch Configuration Manager, Bosch Video Management System (BVMS), Bosch Video Security Client (VSC), or support for third party software

### Supported Serial Protocols

### Cloud-based services
- Time-based or alarm-based JPEG posting to four different accounts. Accounts can address FTP servers or cloud-based storage facilities. Alarm events can be set up to trigger an e-mail or SMS notification.

### Firmware upload
- Completed over network using built-in web browser or from Bosch Configuration Manager

### User Connections
- **Accessory Interface/Control Data**: RS-485, Simplex, half and full duplex, 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.

### Power, network
- Ethernet High PoE (95 W)
- RJ45 10/100Base-Tx, male connector; Female-to-female RJ45 coupler included

### Power, pigtail
- 24 VAC (nominal)

### Chassis ground
- Ground wire with connector lug

### Audio
- **Compression**: G.711, AAC, and L16 (live and recording)
- **Signal-to-Noise Ratio (SNR)**
  - Audio-in: 47 dBA (A-weighting)
  - Audio out: 50 dBA (A-weighting)
**Mode**
Two-way, full duplex audio communication

**User connections**
- **Line in:** 15k ohm typical, 1.0Vrms, max
- **Line out:** 0.8Vrms at 12K ohm, typical

**Environmental**

<table>
<thead>
<tr>
<th>Ingress Protection Rating/Standard</th>
<th>IP68 / Type 6P (dust and immersion) when installed on a MIC-DCA or on a MIC wall mount</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP67 (moisture and dust) rating on connectors in the base of the camera when using the IP67 Connector Kit (MIC-9K-IP67-5PK), which is also required when using non-Bosch mounts</td>
<td></td>
</tr>
<tr>
<td>IP66 (directed spray) when installed on a MIC-DCA or on a MIC wall mount</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>External Mechanical Impact (IK Code or Impact rating)</th>
<th>IK10 (excluding windows)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Operating temperature</th>
<th>-40 °C to +65 °C (-40 °F to +149 °F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEMA TS 2-2003 (R2008), para 2.1.5.1 using fig. 2.1 test profile</td>
<td>-34 °C to +74 °C (-30 °F to +165 °F) for 15 hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Storage Temperature</th>
<th>-40 °C to +70 °C (-40 °F to +158 °F)</th>
</tr>
</thead>
</table>

| Humidity | 0 to 100% |
| Wind Load | 160 km/h (100 mph) (sustained) 241 km/h (150 mph) (gusts) |

| Effective Projected Area (EPA) | Camera: 0.0910 m² / 0.98 ft²  
Camera and sunshield: 0.0929 m² / (1.00) ft²  
MIC Wall Mount: 0.0483 m² / 0.52 ft² |
|--------------------------------|---------------------------------------------------------------------------------|

| Vibration | IEC 60068-2-6, Test Fc: Vibration (sinusoidal), 10m/s² (1.0g)  
Sinusoidal vibration test IAW MIL-STD-167-1A |
|-----------|---------------------------------------------------------------------|
| Shock     | IEC 60068-2-27, Test Ea: Shock, 45g, 6ms  
Half Sine Impulse |

**Construction**

<table>
<thead>
<tr>
<th>Dimensions (W x H x D)</th>
<th>421 mm x 298 mm x 181 mm (11.74 in. x 16.58 in. x 7.14 in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>9.0 kg (19.7 lb)</td>
</tr>
</tbody>
</table>
| Window                 | Borosilicate glass (optical)  
Germanium (thermal) |
| Construction Material  | Cast solid aluminum |
| Window Wiper           | Integrated, long-life silicone wiper |

**Heater**
Integrated

**Fan**
Integrated

**Defroster**
Embedded in optical and thermal windows, with de-icing capability

**Sunshield**
Optional; sold separately

**Standard Finish**
Chromate-based surface treatment with powder coat paint, sand finish

**Standard Colors**
Black (RAL 9005), White (RAL 9010), Grey (RAL 7001), Desert  
(Some colors may not be available in some regions.)
Ordering information

MIC-9502-Z30BQS PTZ thermal QVGA-19mm 2MP 30x 9Hz, black
Ruggedized dual thermal/visible PTZ camera. 30x visible zoom. Thermal imager with standard resolution (320x240 pixels), <9 Hz frame rate, and 19 mm lens. Black housing color.
Order number MIC-9502-Z30BQS

EWE-MIC9FS-IW 12mths wrty ext MIC 9000 Fusion
12 months warranty extension without moving parts, wear parts are excluded
Order number EWE-MIC9FS-IW

MIC-9502-Z30WQS PTZ thermal QVGA-19mm 2MP 30x 9Hz, white
Ruggedized dual thermal/visible PTZ camera. 30x visible zoom. Thermal imager with standard resolution (320x240 pixels), <9 Hz frame rate, and 19 mm lens. White housing color.
Order number MIC-9502-Z30WQS

EWE-MIC9FS-IW 12mths wrty ext MIC 9000 Fusion
12 months warranty extension without moving parts, wear parts are excluded
Order number EWE-MIC9FS-IW

MIC-9502-Z30GQS PTZ thermal QVGA-19mm 2MP 30x 9Hz, gray
Ruggedized dual thermal/visible PTZ camera. 30x visible zoom. Thermal imager with standard resolution (320x240 pixels), <9 Hz frame rate, and 19 mm lens. Grey housing color.
Order number MIC-9502-Z30GQS

EWE-MIC9FS-IW 12mths wrty ext MIC 9000 Fusion
12 months warranty extension without moving parts, wear parts are excluded
Order number EWE-MIC9FS-IW

MIC-9502-Z30BVS PTZ thermal VGA-50mm 2MP 30x 30Hz, black
Ruggedized dual thermal/visible PTZ camera. 30x visible zoom. Thermal imager with high resolution (640x480 pixels), <9 Hz frame rate, and 50 mm lens. Black housing color.
Order number MIC-9502-Z30BVS

EWE-MIC9FS-IW 12mths wrty ext MIC 9000 Fusion
12 months warranty extension without moving parts, wear parts are excluded
Order number EWE-MIC9FS-IW

MIC-9502-Z30WVS PTZ thermal VGA-50mm 2MP 30x 30Hz, white
Ruggedized dual thermal/visible PTZ camera. 30x visible zoom. Thermal imager with high resolution (640x480 pixels), <9 Hz frame rate, and 50 mm lens. White housing color.
Order number MIC-9502-Z30WVS

EWE-MIC9FS-IW 12mths wrty ext MIC 9000 Fusion
12 months warranty extension without moving parts, wear parts are excluded
Order number EWE-MIC9FS-IW

MIC-9502-Z30GVF PTZ thermal VGA-50mm 2MP 30x 30Hz, gray
Ruggedized dual thermal/visible PTZ camera. 30x visible zoom. Thermal imager with high resolution (640x480 pixels), <9 Hz frame rate, and 50 mm lens. Grey housing color.
Order number MIC-9502-Z30GVF

EWE-MIC9FS-IW 12mths wrty ext MIC 9000 Fusion
12 months warranty extension without moving parts, wear parts are excluded
Order number EWE-MIC9FS-IW

MIC-9502-Z30GVF PTZ thermal VGA-50mm 2MP 30x 30Hz, gray
Ruggedized dual thermal/visible PTZ camera. 30x visible zoom. Thermal imager with high resolution (640x480 pixels), <9 Hz frame rate, and 50 mm lens. Grey housing color.
Order number MIC-9502-Z30GVF

EWE-MIC9FS-IW 12mths wrty ext MIC 9000 Fusion
12 months warranty extension without moving parts, wear parts are excluded
Order number EWE-MIC9FS-IW
## Accessories

**NPD-9501A Midspan, high PoE, single port, AC in 95 W indoor midspan for AUTODOME 7000 and MIC IP cameras with or without illuminators**
Order number NPD-9501A

**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

**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

**MIC-ALM-WAS-24 Interface box, alarm, washer pump, 24VAC**
Order number MIC-ALM-WAS-24

**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

**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 an conduit adapter (male M25 to female 3/4" NPT). Available in specific regions only. Black (RAL 9005) color.**
Order number MIC-DCA-HBA

**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

**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 an conduit adapter (male M25 to female 3/4" NPT). Available in specific regions only. White (RAL 9010) color.**
Order number MIC-DCA-HWA

**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. Available in specific regions only.**
Order number MIC-DCA-HG

Order number MIC-DCA-HGA

**MIC-WMB-BD Wall mount bracket, black Wall mount bracket, black sand finish (RAL9005)**
Order number MIC-WMB-BD

**MIC-WMB-WD Wall mount bracket, white Wall mount bracket, white sand finish (RAL9010)**
Order number MIC-WMB-WD

**MIC-WMB-MG Wall mount for rugged PTZ camera, grey Wall Mount Bracket. Grey (RAL 7001). Available in specific regions only. Sand finish.**
Order number MIC-WMB-MG

**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

**MIC-CMB-BD Corner mount bracket, black Corner mount bracket, black sand finish (RAL9005) **
Order number MIC-CMB-BD

**MIC-CMB-WD Corner mount bracket, white Corner mount bracket, white sand finish (RAL9010) **
Order number MIC-CMB-WD

**MIC-CMB-MG Corner mount bracket, grey sand Corner mount bracket. Grey (RAL 7001). Available in specific regions only. Sand finish.**
Order number MIC-CMB-MG

**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

**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

**MIC-SPR-MG Wall mount spreader plate, grey sand Aluminum spreader plate suitable for brickwork surface mounting. Grey (RAL 7001). Available in specific regions only. Sand finish.**
Order number MIC-SPR-MG

**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
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

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). Available in specific regions only.
Sand finish.
Order number MIC-SCA-MG

MIC-M25XNPT34 Adapter, M25 to 3/4"NPT, stainless steel
Stainless Steel M25 to ¾” NPT thread adapter
Order number MIC-M25XNPT34

MIC-9K-SNSHLD-W Sunshield thermal PTZ camera, white
Sunshield kit for MIC IP fusion 9000i cameras, white color. Recommended for use with white color MIC IP fusion 9000i cameras installed in locations with high sun load.
Order number MIC-9K-SNSHLD-W

MIC-9K-IP67-5PK Connector kit thermal PTZ IP67 5pieces
5-pack weather protection kit for MIC IP fusion 9000i thermal cameras. Provides an IP67-rated barrier against dust or moisture. White color.
Order number MIC-9K-IP67-5PK

MIC-WKT-IR Washer kit, MIC IR
Washer kit for MIC IP starlight 7000i and MIC IP fusion 9000i camera models
Order number MIC-WKT-IR

Software Options
MVS-FCOM-PRCL License key for serial protocol
Serial Protocol Software License (e-license) for IP Cameras
Order number MVS-FCOM-PRCL

Services
EWE-MIC9FS-IW 12mths wrty ext MIC 9000 Fusion
12 months warranty extension without moving parts, wear parts are excluded
Order number EWE-MIC9FS-IW