MIC Series 612 Thermal Camera

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Invented for life



- User-switchable (single) or simultaneous (dual) thermal/optical video output
- Two thermal imager options: standard resolution with 35 mm (includes on-screen temperature display with alarm) or high resolution with 50 mm lens,
- Human detection range up to 1500 m (almost twice the range of previous MIC thermal models)
- Video and control over IP when powered by MIC IP Power Supply (sold separately)
- Robust design rated to an industry-leading IP68/ NEMA 6P/IK10

The MIC Series 612 camera has been designed to offer an extremely reliable, robust, and high-quality surveillance solution for security applications that demand the very best performance. Precision engineered to exacting standards, the camera offers the most ruggedized dual optical/thermal image capture solution available on the market today. When powered by a MIC IP Power Supply, the MIC camera becomes an IP-enabled device with extra features such as Intelligent Video Analysis (IVA), and the ability to record video on a network-attached RAID iSCSI storage device or locally on a user-supplied SD or SDHC card (32 GB maximum). Operators can select either the visible video image or the thermal video image through the network connection provided by the MIC IP Power Supply. The optional “hybrid” operation provides video and control of the MIC camera over both analog (Bilinx over coax) and IP connections simultaneously. For more information, see the MIC Series IP Power Supply datasheet on the online Product Catalog at boschsecurity.com.

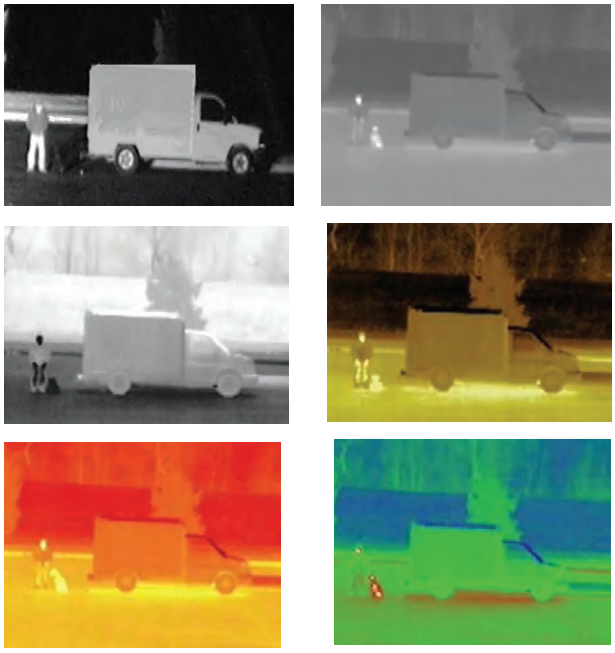
System overview

High-performance camera with simultaneous thermal/optical video output

Image control and quality are integral aspects of any PTZ camera, and the MIC612 delivers. A high-quality day/night camera core with 36x optical zoom lens and a full 12x digital zoom, and a high-performance, un-cooled thermal imaging core sit side-by-side within the housing. Each MIC612 has two video outputs – one for the optical camera, and one that is user-switchable between the optical camera and the thermal imager. The optical camera provides 550 TVL of horizontal resolution for outstanding clarity and image detail, and incorporates Wide Dynamic Range (WDR) that dramatically improves the dynamic range by 128 times and results in clear image reproduction in extreme high-contrast environments. Features of AutoScaling (proportional zoom) and AutoPivot (automatically rotates and flips the camera) ensure optimal control. Day/night capabilities and outstanding sensitivity make the MIC612 an exceptional performer in all lighting conditions. In low light, the optical camera automatically switches from color to monochrome by

removing the IR filter to boost sensitivity, while maintaining superior image quality. For operation in the darkest conditions, the SensUp control feature automatically reduces the shutter speed to as little as one second. This increases sensitivity by more than 50 times. In addition to low light applications, the optical camera is also an exceptional performer when viewing under a sodium vapor lamp (for example, a street lamp or tunnel lamp) which normally gives a yellowish tint to images. The camera automatically compensates and restores objects to their original color.
The thermal imager has user-selectable color options including White Hot, Black Hot, and many others, and built-in sun protection that allows the camera to self-heal if pointed directly at the sun. Standard-resolution models include a user-selectable on-screen temperature display (spot meter) feature. These models allow users to set high or low thermal temperature limits and then to use the measured temperature value from the spot meter to trigger alarm functions based on those limits.

Examples of optical and thermal modes



Optical image / Thermal image, White Hot mode; (middle) Black Hot / Sepia; (bottom) Globow / Rainbow

Robust design rated to an industry-leading IP68/ NEMA 6P
Subjected and certified to rigorous dust and immersion tests (IP68 and NEMA 6P), MIC Series cameras are perfectly suited for installation in even the most unforgiving environments. 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 the seal, the factory subjects each MIC camera to a 100% leak test before shipping. In addition, the cameras' aluminum construction is protected from corrosion by two different processes: first, the cameras receive a coating of Alodine 5200, a chromate-free conversion coating of aluminum that is used in the aerospace and defense industries where a protective layer is required to improve corrosion resistance. Second, they receive a robust, powder coat layer of paint.

Functions

Multi-protocol operation
The MIC612 incorporates Bosch's standard controller interface supporting familiar on-screen menus and multiple protocols, including Bosch "Biphase (OSRD)," "Bilinx," and Pelco "P" and "D." This makes it simple to integrate and use the camera within systems that already use Bosch AutoDome cameras and systems.

High performance PTZ operations
Brushless motor technology ensures ultra-reliable operation with full 360° continuous rotation pan for exceptional viewing capability. The camera supports 99 pre-positions and two styles of Guard Tours: Preset and Record/Playback. The preset tour has capability for up to 99 pre-positions with a configurable dwell time between pre-positions, and can be customized as to the order and frequency each preset is visited. The camera also provides support for two recorded tours, which have a combined duration of 15 minutes of movements. These are recorded macros of an operator's movements, including pan, tilt, and zoom activities, and can be played back in a continuous manner.

Superior privacy masking and Image Stabilization
The MIC612 has 24 individual privacy masks, with up to eight displayed in the same scene. Unlike conventional privacy masks, these can be programmed with three, four, or even five corners each to cover more complex shapes. Each mask changes size and shape smoothly and quickly, ensuring that the covered object cannot be seen. 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.
As PTZ cameras continue to increase their optical zoom capabilities, image stabilization becomes critical to eliminate movement caused by unstable camera mounts. A mere quarter-inch of movement of the camera mount can shift the field of view by more than 6 m (20 feet) when the camera is zoomed to a high value. This can render images unusable. Image stabilization algorithms in the optical camera reduce camera shake in both the vertical and horizontal axis, resulting in exceptional image clarity (pixel displacement up to +/- 10% for frequencies up to 10 Hz) without reducing camera sensitivity.

Easy installation and servicing
The MIC612 is compatible with all MIC Series brackets and control equipment for easy installation, integration, and operation. These brackets, as well as connection cables and power supply units for the

camera, are sold separately. The camera can be installed upright or inverted. No matter the installation position, the camera will operate faultlessly.
Bosch's Configuration Tool for Imaging Devices (CTFID) allows users to control the PTZ, change camera settings, and update firmware from remote locations without need for additional wiring.
The camera has advanced built-in diagnostics to simplify service and minimize downtime. Using the On-screen Display (OSD), a technician can quickly and easily check critical parameters (such as internal temperature) to verify that the camera is functioning within acceptable operating limits.

Integrated long-life silicone wiper
Thanks to its integrated wiper, the MIC612 is able to capture the highest possible quality image regardless of the weather.

Certifications and approvals

Electromagnetic Compatibility (EMC)	Complies with FCC part 15, ICES-003, and CE regulations including EN 50130-4: 2011, EN 55022: 2010, EN 50121-4: 2006, EN 61000-3-2:2006 + A2:2009, EN 61000-3-3:2008
Safety	Complies with CE regulations, UL, EN, and IEC standards 60950-1:2006 / A11:2009 = A1:2010 + A12:2011
Ingress Protection Rating/Standard	IP68, NEMA 6P
IK Code	IK10

Installation/configuration notes

The table below identifies the resolution and the thermal frame rate for the various model mixes of MIC612.

Model	Resolution	Frame Rate
MIC612TI-	Standard	7.5Hz (NTSC) 8.3Hz (PAL)
MIC612TF-	Standard	25Hz (PAL) 30Hz (NTSC)
MIC612HI-	High	7.5Hz (NTSC) 8.3Hz (PAL)
MIC612HF-	High	25Hz (PAL) 30Hz (NTSC)

Notice
MIC612 models with 25 Hz or 30 Hz frame rates are export-controlled by the U.S. Department of Commerce (USDoC).
For many countries, no license is required as long as the camera will not be used for non-standard applications as defined by the USDoC.
For other countries, an export license application must be submitted and approved before delivery is possible. For more information, contact your local Bosch Security Systems Customer Service Center.

Parts included

Quantity	Part
1	MIC612 Camera
1	Installation Manual
4	M8 stainless screws and washers
1	Nebar gasket

Technical specifications

Optical Camera Core, 36x Day/Night

Imager	¼ in.-type EXview HAD CCD (progressive scan)	
Resolution/ Effective Picture Elements	PAL: Approximately 440,000; 752(H) x 582(V) NTSC: Approximately 380,000; 768(H) x 494(V)	
Lens	36x Zoom (3.4 mm to 122.4 mm) F1.6 to F4.5	
Zoom Movement Speed	4.0 seconds (optical Wide to optical TELE) 6.2 seconds (optical wide to digital TELE)	
Focus	Automatic with manual override	
Iris	Automatic with manual override	
Field of View (FOV)	1.7° to 57.8°	
Video Output	1.0 Vp-p, 75 Ohm	
Gain Control	Auto/Manual/Max. (-3 dB to +28 dB, 2 dB steps)	
Aperture Correction	Horizontal and vertical	
Digital Zoom	12x	
Horizontal Resolution	550 TVL (NTSC, PAL) typical	
Sensitivity [1]	**30 IRE**	**50 IRE**
Day Mode		
SensUp Off	0.66 lux	1.4 lux

SensUp On (NTSC: 1/4s, 15X; PAL 1/3s, 16.7X)	0.04 lux	0.1 lux
Night Mode		
SensUp Off	0.104 lux	0.209 lux
SensUp On (NTSC: 1/4s, 15X; PAL 1/3s, 16.7X)	0.0052 lux	0.0103 lux
Filter	Automatic IR cut filter	
Electronic Shutter Speed	1/1 to 1/10,000 seconds (22 steps)	
Wide Dynamic Range (WDR)	92 dB (50 dB with WDR Off)	
Signal-to-Noise Ratio (SNR)	>50 dB	
White Balance	2000 K to 10,000 K	

1 Unless otherwise stated, test conditions are: F1.6; shutter = NTSC 1/60s, PAL 1/50s; max AGC

Thermal Camera Core, Standard Resolution (35 mm)

Imager	Focal Plane Array (FPA), un-cooled Vanadium Oxide microbolometer with user-selectable on-screen temperature display (spot meter) and alarm - 7.5 Hz NTSC, 8.3 Hz PAL - 30 Hz NTSC, 25 Hz PAL; US export license may be required. Refer to the section "Installation/configuration notes" for more details.	
Resolution/Effective Picture Elements	PAL: 320 x 256 NTSC: 320 x 240	
Lens	35 mm (F1.2)	
Field of View (FOV)	13° x 10°	
Spectral Response	7.5 to 13.5 µm	
Thermal Sensitivity (NEDT)	<50mk f/1.0	
Digital Zoom	2x, 4x	
Focus	Factory-set at infinity focus	
Performance Range	**Human 1.8 x 0.5 m (5.9 x 1.6 ft)**	**Object 2.3 x 2.3 m (7.5 x 7.5 ft)**
Detection	800 m (2625 ft)	2250 m (7382 ft)
Recognition	200 m (656 ft)	590 m (1936 ft)
Identification	105 m (344 ft)	290 m (951 ft)

User-selectable AGC Modes	Outdoor (default mode) Indoor Low Contrast
User-selectable Thermal Modes (Color Options)	White Hot (default mode) Black Hot Fusion Rainbow Globow Ironbow 1 Ironbow 2 Sepia Color 1 Color 2 IceFire Rain

Thermal Camera Core, High Resolution (50 mm)

Imager	Focal Plane Array (FPA), un-cooled Vanadium Oxide microbolometer - 7.5 Hz NTSC, 8.3 Hz PAL - 30 Hz NTSC, 25 Hz PAL; US export license may be required. Refer to the section "Installation/configuration notes" for more details.	
Resolution/Effective Picture Elements	PAL: 640 x 512 NTSC: 640 × 480	
Lens	50 mm (F1.2)	
Field of View (FOV)	12.4° x 9.9°	
Spectral Response	7.5 to 13.5 µm	
Thermal Sensitivity (NEDT)	<50mk f/1.0	
Digital Zoom	2x, 4x	
Focus	Factory-set at infinity focus	
Performance Range	**Human 1.8 x 0.5 m (5.9 x 1.6 ft)**	**Object 2.3 x 2.3 m (7.5 x 7.5 ft)**
Detection	1500 m (4921 ft)	3900 m (12,795 ft)
Recognition	380 m (1247 ft)	1060 m (3478 ft)
Identification	190 m (623 ft)	540 m (1772 ft)

User-selectable AGC Modes	Outdoor (default mode) Indoor Low Contrast
User-selectable Thermal Modes (Color Options)	White Hot (default mode) Black Hot Fusion Rainbow Globow Ironbow 1 Ironbow 2 Sepia Color 1 Color 2 IceFire Rain RedHot GreenHot

Mechanical

Drive Unit	Brushless integral pan/tilt motor drive
Pan Range	360° continuous rotation
Tilt Angle	180°
Tilt Range	-58° to +90°
Variable Speed	Pan: 0.2° to 72° per second (variable) Tilt: 0.2° to 90° per second (variable)
Pre-Position Speed	120°/second
Preset Accuracy	±0.30° (typical)
Proportional Pan / Tilt to Zoom	Yes
Audible Noise	<66dB

Electrical

Input Voltage (dual source)	18 VAC, ±10%, 50/60 Hz
Power Consumption	Camera: 20.5 VA Heater: 8.5 VA Total: 29 VA
Input Current	Camera: 1.1 A Heater: 0.5 A

Miscellaneous

Sectors / Titling	16 independent sectors, each with 20-character title
Privacy Masking	24 individually-configurable privacy masks
Prepositions	99, each with 20-character title
Guard Tours	Recorded Tours - two (2), total duration 15 minutes Preset Tours – one (1), consisting of up to 99 scenes, consecutively, and one (1) customized up to 99 scenes

Camera Setup / Control	RS-485, Bilinx (coax)
Communications Protocols	Bosch (Bilinx, OSRD), Pelco D/P Bosch OSRD requires use of converter device (MIC-BP3 or MIC-BP4, sold separately). (Bicom/Bilinx support on visible channel only.)
Washer Drive	Optional washer kit (MIC-WKT Kit used with the appropriate HAC-WAS washer pump)
Supported Languages	English, Czech*, Dutch, French, German, Italian, Portuguese, Russian*, Spanish * Available with separate language upload

User Connections

Power	Via composite cable (sold separately)
Control Data	RS-485 (Twisted pair; Simplex, half and full duplex operation via composite cable) Biphase ± (Optional; requires MIC Biphase module with external power supply.)
Video	Dual coaxial via composite cable (sold separately) (Optical and optical/thermal cameras selectable.)
Alarm Inputs	One (1) tamper input (eight (8) additional inputs possible with optional alarm card)
Relay Outputs	Two (2) relay outputs and washer relay output only with optional alarm card
Alarm Communication	Tamper switch (ground connection)
Software	CTFID software allows direct connection to a USB-equipped PC via the MIC Series PSU over a full duplex to provide access to all camera functions and useful diagnostic tools.

Environmental

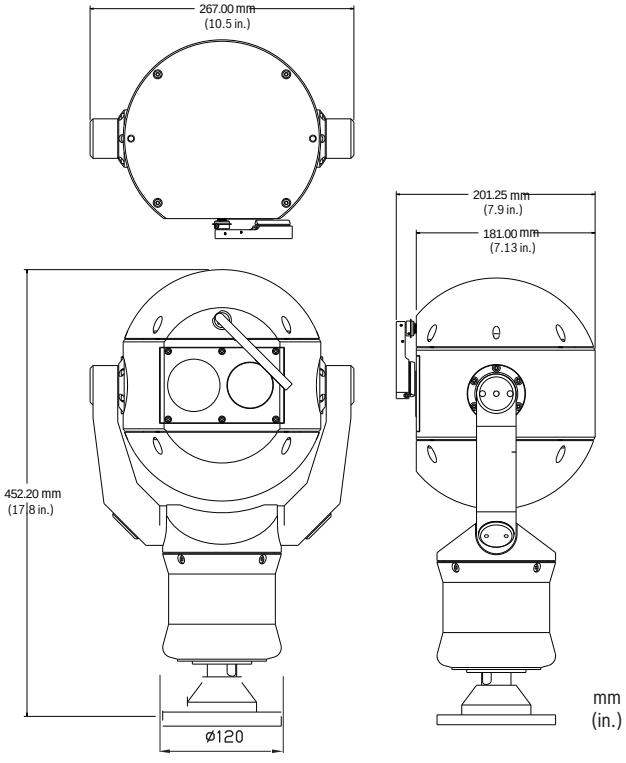
Ingress Protection Rating/Standard	IP68/NEMA 6P
Operating Temperature (with heater)	-40 °C to +60 °C (-40 °F to +140 °F)
Cold Start-up Temperature	-40 °C (-40 °F) (Requires 30-minute warm-up prior to PTZ operations.)
Storage Temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Humidity	0-100%
Wind Load (Estimated)	240 kph (150 mph) (sustained) Camera: 517 N (116 lbf) Wall Mount: 130 N (29 lbf) Effective Projected Area (EPA): Camera: 0.192 m² / 2.06 ft² Wall Mount: 0.0483 m² / 0.52 ft²
Vibration	IEC 60068-2-6, Test Fc: Vibration (operational), 10m/s² (1.0g)

Shock	IEC 60068-2-27, Test Ea: Shock, 30g
IK Code	IK10

Construction

Dimensions (W x H x D)	267 mm x 452 mm x 201 mm (10.5 in. x 17.8 in. X 7.9 in.)
Weight	10.66 kg (23.50 lb) (including 4-in. pitch circle diameter (PCD) base)
Viewing Window	Tempered flat glass (optical) and germanium covering (thermal)
Construction Material	Machined aluminum
Standard Colors	Black (RAL9005), White (RAL9010); Grey (RAL9006, available in specific regions)
Standard Finish	Alodine 5200 surface treatment with powder coat paint, sand finish
Window Wiper	Standard, long-life silicone wiper
Heater	Standard
Sunshield	Optional; sold separately

Dimensional Drawings



Ordering information

MIC-612TIALB36N
PTZ, dual thermal/optical camera, NTSC, Black, 36x optical zoom, 320x240 thermal picture elements, 7.5 Hz thermal imager frame rate, 35 mm thermal lens.
Order number **MIC-612TIALB36N**

MIC-612TIALW36N
PTZ, dual thermal/optical camera, NTSC, White, 36x optical zoom, 320x240 thermal picture elements, 7.5 Hz thermal imager frame rate, 35 mm thermal lens.
Order number **MIC-612TIALW36N**

MIC-612TIALB36P
PTZ, dual thermal/optical camera, PAL, Black, 36x optical zoom, 320x256 thermal picture elements, 8.3 Hz thermal imager frame rate, 35 mm thermal lens.
Order number **MIC-612TIALB36P**

MIC-612TIALW36P
PTZ, dual thermal/optical camera, PAL, White, 36x optical zoom, 320x256 thermal picture elements, 8.3 Hz thermal imager frame rate, 35 mm thermal lens.
Order number **MIC-612TIALW36P**

MIC-612TIALG36P
PTZ, dual thermal/optical camera, PAL, Grey, 36x optical zoom, 320x256 thermal picture elements, 8.3 Hz thermal imager frame rate, 35 mm thermal lens.
Order number **MIC-612TIALG36P**

MIC-612TFALB36N
PTZ, dual thermal/optical camera, NTSC, Black, 36x optical zoom, 320x240 thermal picture elements, 30 Hz thermal imager frame rate, 35 mm thermal lens. This camera may require an export license. Refer to the section "Installation/configuration notes" for details.
Order number **MIC-612TFALB36N**

MIC-612TFALW36N
PTZ, dual thermal/optical camera, NTSC, White, 36x optical zoom, 320x240 thermal picture elements, 30 Hz thermal imager frame rate, 35 mm thermal lens. This camera may require an export license. Refer to the section "Installation/configuration notes" for details.
Order number **MIC-612TFALW36N**

MIC-612TFALD36N
PTZ, dual thermal/optical camera, NTSC, Sand, 36x optical zoom, 320x240 thermal picture elements, 30 Hz thermal imager frame rate, 35 mm thermal lens. This camera may require an export license. Refer to the section "Installation/configuration notes" for details.
Order number **MIC-612TFALD36N**