


**BOSCH**

Invented for life

# MIC Series 440 Explosion-Protected Camera



- ▶ **Explosion-protected unit certified to ATEX Directive 94/9/EC Exd IIC T6**
- ▶ **CSA and Inmetro certified**
- ▶ **Industry leading IP68 rating**
- ▶ **Integrated wiper**

The MIC Series 440 explosion-protected camera has been designed to offer an extremely reliable, robust, and high quality surveillance solution for potentially volatile security applications that demand the very best performance. Precision engineered to exacting standards, the range meets the requirements of ATEX Directive 94/9/EC Exd IIC T6 and CSA Class I, Division 1, Groups CD, Class II, Division 1, Groups EFG, T6 for safe use in explosive atmospheres such as those found in oil, gas, chemical processing sites, and petrochemical refineries. Rated to an industry leading IP68, the specially designed camera housing is machined from solid aluminum. The MIC Series 440 camera ensures corrosion protection by using two different processes; first an Alocrom 1200 coating, then a robust polyester powder paint coating. Alocrom 1200 is a chromate conversion coating of aluminum, used in the aerospace and defense industries where a protective layer is required to improve corrosion resistance. Sealed with 'O'-rings, the MIC Series 440 camera can operate permanently submerged up to 1 meter (3.3 feet) underwater by virtue of its design and construction, suitable for installation in the harshest of environments. The optically-perfect flat viewing window and integrated wiper ensure razor sharp images are captured in even the most demanding conditions. This

allows the MIC Series 440 explosion-protected range to function perfectly in highly hazardous areas, such as offshore oil rigs.

The use of high-specification motors ensures reliable operation, while ground-breaking resolver technology provides pin-point accuracy and affords the user full 360° continuous rotation pan and 240° tilt control.

A choice of true day/night camera modules, offering up to 36x optical zoom (12x digital), coupled with flexible upright or inverted mounting capability, allows the perfect field of view to be achieved every time.

## Functions

### **ATEX and CSA Certified**

Meets the requirements of ATEX Directive 94/9/EC Exd IIC T6 and CSA Class I, Division 1, Groups CD, Class II, Division 1, Groups EFG, T6 for safe use in explosive atmospheres.

### **Rated to an industry leading IP68**

Zero dust ingress and ability to withstand sustained periods of immersion under water, the MIC Series 440 explosion-protected range is perfectly suited for installation, in even the most unforgiving environments.

### Integrated wiper

Regardless of the weather, the MIC Series 440 explosion-protected camera is able to capture the highest possible quality image year round, thanks to its integrated wiper.

## Certifications and Approvals

### Approvals

Region	Certification	
Europe	CE	Sira Examination, Issue 9
Canada	CSA	
Brazil	INMETRO	NCC4939/08 X
ATEX certified		Directive 94/9/EC Ex d IIC T6
CSA C/US		Class I, Division 1, Groups CD Class II, Division 1, Groups EFG Temperature Code T6
IECEX SIR		11.0023X
INMETRO		NCC4939/08 X Ex d IIC T6
Electromagnetic Compatibility (EMC)		Complies with FCC part 15, ICES-003, and CE regulations, including EN50130-4, EN61000-3-2:2006, EN61000-3-3:1995, and EN55022:2006 inc AL:2007
Safety		Complies with CE regulations, UL, EN, and IEC standards 60950-1 & 22
Weatherproofing		IP68 (1m submersion for 24 hrs)

## Technical Specifications

### Camera Module

Image sensor	1/4-inch EXview CCD
Picture elements	380 K NTSC / 440 K PAL (WIDE)
Horizontal resolution	18x module: 470 TVL NTSC/PAL typical 36x module: 470 TVL NTSC/PAL typical
Filter	Automatic mechanical IR cut filter
Focus system	Auto or manual
Iris	Auto or manual with slow shutter integration modes
Synchronization	Internal / External (V-Lock)
Recommended illumination	100 to 100,000 lx
Signal-to-Noise ratio (SNR)	50 dB or more
Back Light Compensation (BLC)	On/Off
White balance	Automatic
Automatic Gain Control (AGC)	-3 to -28 dB, 2 dB steps
Aperture control	16 Steps

### 18x optical zoom module

Lens	F=4.1 mm (WIDE) to 73.8 mm (TELE), F1.4 to F3.0
Zoom	18x optical (12x digital)
Angle of view	48° (WIDE end) to 2.8° (TELE end)
Minimum illumination	0.7 lux (F1.4, 1/60s NTSC, 1/50s PAL, 50 IRE), 0.11 lux (F1.4, 1/4s NTSC, 1/3s PAL, 50 IRE), 0.01 lux or less (F1.4, 1/4s NTSC, 1/3s PAL, ICR ON)
Shutter speed	1/1 to 1/10,000s (22 steps) NTSC, PAL

### 36x optical zoom module

Lens	F=3.4 mm (WIDE) to 122.4 mm (TELE), F1.6 to F4.5
Zoom	36x optical (12x digital)
Angle of view	57.8° (WIDE end) to 1.7° (TELE end)
Minimum illumination	1.4 lux (1/60 s NTSC, 1/50 s PAL, typical, 50 IRE) 0.1 lux (1/4 s NTSC, 1/3 s PAL, typical, 50 IRE) ICR-ON mode: 0.01 lux (1/4 s NTSC, 1/3 s PAL)
Shutter speed	1/4 to 1/10,000s (20 steps) NTSC, 1/3 to 1/10,000s (20 steps) PAL

### Operational

Auto flip	Yes
Manual flip	Yes
Presets	64 telemetry presets utilizing resolver technology (using FV protocol, 10 camera set-up presets to allow ANPR, color correction, etc.)*
Preset tours	6 tours each with up to 32 presets
Sector titles	Yes (64 sectors) 20 characters per title
Preset titles	20 character caption for each of the 64 presets
Home position	Yes (preset 1 or tour)

\*Functions available when used with the Forward Vision Protocol, other protocols may vary.

### Communication and Protocols

Communication	RS485 / RS422
Control protocol	Bosch, Forward Vision, Pelco, American Dynamics, and VCL protocol variants available. Bi-phase control requires Biphase to RS485 converter (MIC-BP4) to be installed in the power supply (available separately).

### Connectivity

Video	Co-axial via composite cable
Telemetry	Twisted pair. Simplex, half and full duplex operation via composite cable
Power	Via composite cable

### Alarms

Alarm inputs	1 tamper input (additional inputs possible with optional alarm card in PSU)
Alarm communication	Tamper switch (ground connection)

**Mechanical**

Drive unit	Integral pan/tilt motor drive
Pan angle	360° continuous rotation
Pan speed	Up to 90° per second (variable)
Tilt angle	240°
Tilt speed	0.2° to 90° per second (variable)
Speed control	Closed-loop electronics
Preset accuracy	Better than 0.08°
Proportional Pan/Tilt to zoom	Yes

**Electrical**

Input voltage	18VAC
Power consumption	25.2 W max

**Environmental**

Operating temperature	-20 °C to +60 °C (-4 °F to 160 °F)
Weatherproofing	IP68 (1m submersion for 24 hours maximum)

**Physical**

Dimensions (W x H x D)	286 x 523.6 x 189 mm (11.26 x 20.61 x 7.44 in.) (including deep conduit adapter)
Weight	15.5 Kg (34.17 lb) (including 4-in. PCD base and supplied deep conduit adapter)
Viewing window	Tempered flat glass
Construction material	Machined aluminum
Standard colors	Black (RAL9005), White (RAL9003)
Standard finish	Alocrom 1200 surface treatment with powder coat paint.
Window wiper	Standard

Note: MIC Series power supplies and accessories are not ATEX compliant. These should be located outside the hazardous area or provided with ATEX-compliant enclosures and cable conduit or cable glands.

**Ordering Information**

<b>MIC440AXBUA14618N 18X NTSC Explosion-Protected Camera, AD Protocol, Black</b> MIC 18x Optical zoom, Explosion-Protected, black, upright, AD Protocol, wiper fitted, NTSC	<b>MIC440AXBUA14618N</b>
<b>MIC440AXBUA14618P 18X PAL Explosion-Protected Camera, AD Protocol, Black</b> MIC 18x Optical zoom, Explosion-Protected, black, upright, AD Protocol, wiper fitted, PAL	<b>MIC440AXBUA14618P</b>
<b>MIC440AXBUA14636N 36X NTSC Explosion-Protected Camera, AD Protocol, Black</b> MIC 36x Optical zoom, Explosion-Protected, black, upright, AD Protocol, wiper fitted, NTSC	<b>MIC440AXBUA14636N</b>
<b>MIC440AXBUA14636P 36X PAL Explosion-Protected Camera, AD Protocol, Black</b> MIC 36x Optical zoom, Explosion-Protected, black, upright, AD Protocol, wiper fitted, PAL	<b>MIC440AXBUA14636P</b>
<b>MIC440AXBUD14618N 18X NTSC Explosion-Protected (ATEX) Camera, Pelco Protocol, Black</b> MIC 18x Optical zoom, Explosion-Protected, black, upright, Pelco Protocol, wiper fitted, NTSC	<b>MIC440AXBUD14618N</b>
<b>MIC440AXBUD14618P 18X PAL Explosion-Protected (ATEX) Camera, Pelco Protocol, Black</b> MIC 18x Optical zoom, Explosion-Protected, black, upright, Pelco Protocol, wiper fitted, PAL	<b>MIC440AXBUD14618P</b>
<b>MIC440AXBUD14636N 36X NTSC Explosion-Protected (ATEX) Camera, Pelco Protocol, Black</b> MIC 36x Optical zoom, Explosion-Protected, black, upright, Pelco Protocol, wiper fitted, NTSC	<b>MIC440AXBUD14636N</b>
<b>MIC440AXBUD14636P 36X PAL Explosion-Protected (ATEX) Camera, Pelco Protocol, Black</b> MIC 36x Optical zoom, Explosion-Protected, black, upright, Pelco Protocol, wiper fitted, PAL	<b>MIC440AXBUD14636P</b>
<b>MIC440AXBUL14618N 18X NTSC Explosion-Protected Camera, VCL Protocol, Black</b> MIC 18x Optical zoom, Explosion-Protected, black, upright, VCL Protocol, wiper fitted, NTSC	<b>MIC440AXBUL14618N</b>

## Ordering Information

<b>MIC440AXBUL14618P 18X PAL Explosion-Protected Camera, VCL Protocol, Black</b> MIC 18x Optical zoom, Explosion-Protected, black, upright, VCL Protocol, wiper fitted, PAL	<b>MIC440AXBUL146 18P</b>
<b>MIC440AXBUL14636N 36X NTSC Explosion-Protected Camera, VCL Protocol, Black</b> MIC 36x Optical zoom, Explosion-Protected, black, upright, VCL Protocol, wiper fitted, NTSC	<b>MIC440AXBUL146 36N</b>
<b>MIC440AXBUL14636P 36X PAL Explosion-Protected camera, VCL Protocol, Black</b> MIC 36x Optical zoom, Explosion-Protected, black, upright, VCL Protocol, wiper fitted, PAL	<b>MIC440AXBUL146 36P</b>
<b>MIC440AXBUP14618N 18X NTSC Explosion-Protected (ATEX) Camera, Bosch Protocol, Black</b> MIC 18x Optical zoom, Explosion-Protected, black, upright, Bosch Protocol, wiper fitted, NTSC	<b>MIC440AXBUP146 18N</b>
<b>MIC440AXBUP14618P 18X PAL Explosion-Protected (ATEX) Camera, Bosch Protocol, Black</b> MIC 18x Optical zoom, Explosion-Protected, black, upright, Bosch Protocol, wiper fitted, PAL	<b>MIC440AXBUP146 18P</b>
<b>MIC440AXBUP14636N 36X NTSC Explosion-Protected (ATEX) Camera, Bosch Protocol, Black</b> MIC 36x Optical zoom, Explosion-Protected, black, upright, Bosch Protocol, wiper fitted, NTSC	<b>MIC440AXBUP146 36N</b>
<b>MIC440AXBUP14636P 36X PAL Explosion-Protected (ATEX) Camera, Bosch Protocol, Black</b> MIC 36x Optical zoom, Explosion-Protected, black, upright, Bosch Protocol, wiper fitted, PAL	<b>MIC440AXBUP146 36P</b>
<b>MIC440AXBUL14618N 18X NTSC Explosion-Protected (ATEX) Camera, FV Protocol, Black</b> MIC 18x Optical zoom, Explosion-Protected, black, upright, FV Protocol, wiper fitted, NTSC	<b>MIC440AXBUL146 18N</b>
<b>MIC440AXBUL14618P 18X PAL Explosion-Protected (ATEX) Camera, FV Protocol, Black</b> MIC 18x Optical zoom, Explosion-Protected, black, upright, FV Protocol, wiper fitted, PAL	<b>MIC440AXBUL146 18P</b>

## Ordering Information

<b>MIC440AXBUL14618P 18X PAL Explosion-Protected (ATEX) Camera, FV Protocol, Black</b> MIC 18x Optical zoom, Explosion-Protected, black, upright, FV Protocol, wiper fitted, PAL	<b>MIC440AXBUL146 18P</b>
<b>MIC440AXBUL14636N 36X NTSC Explosion-Protected (ATEX) Camera, FV Protocol, Black</b> MIC 36x Optical zoom, Explosion-Protected, black, upright, FV Protocol, wiper fitted, NTSC	<b>MIC440AXBUL146 36N</b>
<b>MIC440AXBUL14636P 36X PAL Explosion-Protected (ATEX) Camera, FV Protocol, Black</b> MIC 36x Optical zoom, Explosion-Protected, black, upright, FV Protocol, wiper fitted, PAL	<b>MIC440AXBUL146 36P</b>
<b>MIC440AXWUA14618N 18X NTSC Explosion-Protected Camera, AD Protocol, White</b> MIC 18x Optical zoom, Explosion-Protected, white, upright, AD Protocol, wiper fitted, NTSC	<b>MIC440AXWUA146 18N</b>
<b>MIC440AXWUA14618P 18X PAL Explosion-Protected Camera, AD Protocol, White</b> MIC 18x Optical zoom, Explosion-Protected, white, upright, AD Protocol, wiper fitted, PAL	<b>MIC440AXWUA146 18P</b>
<b>MIC440AXWUA14636N 36X NTSC Explosion-Protected Camera, AD Protocol, White</b> MIC 36x Optical zoom, Explosion-Protected, white, upright, AD Protocol, wiper fitted, NTSC	<b>MIC440AXWUA146 36N</b>
<b>MIC440AXWUA14636P 36X PAL Explosion-Protected Camera, AD Protocol, White</b> MIC 36x Optical zoom, Explosion-Protected, white, upright, AD Protocol, wiper fitted, PAL	<b>MIC440AXWUA146 36P</b>
<b>MIC440AXWUD14618N 18X NTSC Explosion-Protected Camera, Pelco Protocol, White</b> MIC 18x Optical zoom, Explosion-Protected, white, upright, Pelco Protocol, wiper fitted, NTSC	<b>MIC440AXWUD146 18N</b>
<b>MIC440AXWUD14618P 18X PAL Explosion-Protected Camera, Pelco Protocol, White</b> MIC 18x Optical zoom, Explosion-Protected, white, upright, Pelco Protocol, wiper fitted, PAL	<b>MIC440AXWUD146 18P</b>
<b>MIC440AXWUD14636N 36X NTSC Explosion-Protected Camera, Pelco Protocol, White</b> MIC 36x Optical zoom, Explosion-Protected, white, upright, Pelco Protocol, wiper fitted, NTSC	<b>MIC440AXWUD146 36N</b>

**Ordering Information**

<b>MIC440AXWUD14636P 36X PAL Explosion-Protected Camera, Pelco Protocol, White</b> MIC 36x Optical zoom, Explosion-Protected, white, upright, Pelco Protocol, wiper fitted, PAL	<b>MIC440AXWUD146 36P</b>
<b>MIC440AXWUL14618N 18X NTSC Explosion-Protected Camera, VCL Protocol, White</b> MIC 18x Optical zoom, Explosion-Protected, white, upright, VCL Protocol, wiper fitted, NTSC	<b>MIC440AXWUL146 18N</b>
<b>MIC440AXWUL14618P 18X PAL Explosion-Protected Camera, VCL Protocol, White</b> MIC 18x Optical zoom, Explosion-Protected, white, upright, VCL Protocol, wiper fitted, PAL	<b>MIC440AXWUL146 18P</b>
<b>MIC440AXWUL14636N 36X NTSC Explosion-Protected Camera, VCL Protocol, White</b> MIC 36x Optical zoom, Explosion-Protected, white, upright, VCL Protocol, wiper fitted, NTSC	<b>MIC440AXWUL146 36N</b>
<b>MIC440AXWUL14636P 36X PAL Explosion-Protected Camera, VCL Protocol, White</b> MIC 36x Optical zoom, Explosion-Protected, white, upright, VCL Protocol, wiper fitted, PAL	<b>MIC440AXWUL146 36P</b>
<b>MIC440AXWUP14618N 18X NTSC Explosion-Protected Camera, Bosch Protocol, White</b> MIC 18x Optical zoom, Explosion-Protected, white, upright, Bosch Protocol, wiper fitted, NTSC	<b>MIC440AXWUP146 18N</b>
<b>MIC440AXWUP14618P 18X PAL NTSC Explosion-Protected Camera, Bosch Protocol, White</b> MIC 18x Optical zoom, Explosion-Protected, white, upright, Bosch Protocol, wiper fitted, PAL	<b>MIC440AXWUP146 18P</b>
<b>MIC440AXWUP14636N 36X NTSC Explosion-Protected Camera, Bosch Protocol, White</b> MIC 36x Optical zoom, Explosion-Protected, white, upright, Bosch Protocol, wiper fitted, NTSC	<b>MIC440AXWUP146 36N</b>
<b>MIC440AXWUP14636P 36X PAL Explosion-Protected Camera, Bosch Protocol, White</b> MIC 36x Optical zoom, Explosion-Protected, white, upright, Bosch Protocol, wiper fitted, PAL	<b>MIC440AXWUP146 36P</b>

**Ordering Information**

<b>MIC440AXWUW14618N 18X NTSC Explosion-Protected Camera, FV Protocol, White</b> MIC 18x Optical zoom, Explosion-Protected, white, upright, FV Protocol, wiper fitted, NTSC	<b>MIC440AXWUW14 618N</b>
<b>MIC440AXWUW14618P 18X PAL Explosion-Protected Camera, FV Protocol, White</b> MIC 18x Optical zoom, Explosion-Protected, white, upright, FV Protocol, wiper fitted, PAL	<b>MIC440AXWUW14 618P</b>
<b>MIC440AXWUW14636N 36X NTSC Explosion-Protected Camera, FV Protocol, White</b> MIC 36x Optical zoom, Explosion-Protected, white, upright, FV Protocol, wiper fitted, NTSC	<b>MIC440AXWUW14 636N</b>
<b>MIC440AXWUW14636P 36X PAL Explosion-Protected Camera, FV Protocol, White</b> MIC 36x Optical zoom, Explosion-Protected, white, upright, FV Protocol, wiper fitted, PAL	<b>MIC440AXWUW14 636P</b>
<b>Accessories</b>	
<b>MIC440 Sunshield</b> Sunshield for the MIC440 camera.	<b>MIC440SUNSHIELD</b>
<b>MIC-24PSU-UL 24 VAC Camera Power Supply</b> 24 VAC, 50/60 Hz power supply for MIC Ser- ies cameras	<b>MIC-24PSU-UL</b>
<b>MIC-115PSU-UL 115 VAC Camera Power Supply</b> 115 VAC, 60 Hz power supply for MIC Series cameras	<b>MIC-115PSU-UL</b>
<b>MIC-240PSU-UL 240 VAC Camera Power Supply</b> 240 VAC, 50 Hz power supply for MIC Series cameras	<b>MIC-240PSU-UL</b>
<b>UPA-2450-50 Power Supply, 220 V, 50 Hz</b> 220 VAC, 50 Hz, 24 VAC, 50 VA Out For use with certain 24 VAC camera models.	<b>UPA-2450-50</b>
<b>UPA-2450-60 Power Supply, 120 V, 60 Hz</b> 120 VAC, 60 Hz, 24 VAC, 50 VA Out	<b>UPA-2450-60</b>
<b>MIC-2M-S 2 m Shielded Composite Cable</b> Shielded Composite 2 m cable that provides power, telemetry and video connection from a MIC Series camera to a MIC Series power supply	<b>MIC-2M-S</b>
<b>MIC-10M-S 10 m Shielded Composite Cable</b> Shielded Composite 10 m cable that pro- vides power, telemetry and video connection from a MIC Series camera to a MIC Series power supply	<b>MIC-10M-S</b>

## Ordering Information

<b>MIC-20M-S 20 m Shielded Composite Cable</b> Shielded Composite 20 m cable that provides power, telemetry and video connection from a MIC Series camera to a MIC Series power supply	<b>MIC-20M-S</b>
<b>MIC-25M-S 25 m Shielded Composite Cable</b> Shielded Composite 25 m cable that provides power, telemetry and video connection from a MIC Series camera to a MIC Series power supply	<b>MIC-25M-S</b>
<b>MIC-SPR Spreader Plate</b> Aluminum spreader plate suitable for brick-work surface mounting – black leatherette finish RAL9005	<b>MIC-SPR</b>
<b>MIC-SPR-W Spreader Plate, White</b> Aluminum spreader plate suitable for brick-work surface mounting, white leatherette finish (RAL9003)	<b>MIC-SPR-W</b>
<b>MIC-CMB-B Corner Mount Bracket, Black</b> Corner mount bracket, black leatherette finish (RAL9005)	<b>MIC-CMB-B</b>
<b>MIC-CMB-W Corner Mount Bracket, White</b> Corner mount bracket, white leatherette finish (RAL9003)	<b>MIC-CMB-W</b>
<b>MIC-PMB Pole Mount Bracket</b> Pole mount bracket (includes 2 x 455 mm stainless steel banding straps for pole diameters 75 to 145 mm)	<b>MIC-PMB</b>
<b>MIC-WMB-B Wall Mount Bracket, Black</b> Wall mount bracket, black leatherette finish (RAL9005)	<b>MIC-WMB-B</b>
<b>MIC-WMB-W Wall Mount Bracket, White</b> Wall mount bracket, white leatherette finish (RAL9003)	<b>MIC-WMB-W</b>
<b>MIC-BP4 Biphase Converter</b> Biphase converter for non-IR versions of MIC series power supply units	<b>MIC-BP4</b>
<b>MIC-ALM Alarm and Washer Pump Drive Card</b> 8 Input alarm and washer pump drive card for PSU (Not for IR PSU)	<b>MIC-ALM</b>
<b>MIC-WKT Washer Kit</b> Washer kit for non infrared MIC models (includes washer pump drive card, washer nozzle and mounting brackets for wall and 4 in. PCD base)	<b>MIC-WKT</b>
<b>HAC-WAS05-20 24 VAC Washer</b> 24 VAC washer inst. 5M 25L	<b>HAC-WAS05-20</b>

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