


**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 an unprecedented 320° 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<br>Sira Examination, Issue 8  |
| Canada                              | CSA  |
| ATEX certified                      | Directive 94/9/EC Exd IIC T6   |
| CSA C/US                            | Class I, Division 1, Groups CD<br>Class II, Division 1, Groups EFG<br>Temperature Code 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   |

## Technical Specifications

### Camera Module

|                               |  |
|-------------------------------|--|
| Image sensor                  | 1/4-inch EXview CCD  |
| Picture elements              | 380 K NTSC / 440 K PAL (WIDE)  |
| Horizontal resolution         | 18x module:<br>470 TVL NTSC/PAL typical<br>36x module:<br>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/Noise ratio            | 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), 0.11 lux (F1.4, 1/4s NTSC, 1/3s PAL), 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)<br>0.1 lux (1/4 s NTSC, 1/3 s PAL, typical)<br>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.<br>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               | 320°                              |
| Tilt speed               | 0.2° to 90° per second (variable) |
| Speed control            | Closed-loop electronics           |
| Preset accuracy          | Better than 0.08°                 |
| Proportional P/T to zoom | Yes                               |

**Physical**

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

**Environmental**

|                         |                                    |
|-------------------------|------------------------------------|
| Operational temperature | -20 °C to +60 °C (-4 °F to 160 °F) |
| Weatherproofing         | IP68                               |

**Electrical**

|                   |            |
|-------------------|------------|
| Input voltage     | 18VAC      |
| Power consumption | 25.2 W max |

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</b><br>MIC 18x Optical zoom, Explosion-Protected, black, upright, AD Protocol, wiper fitted, NTSC | <b>MIC440AXBUA14618N</b> |
| <b>MIC440AXBUA14618P</b><br>MIC 18x Optical zoom, Explosion-Protected, black, upright, AD Protocol, wiper fitted, PAL  | <b>MIC440AXBUA14618P</b> |
| <b>MIC440AXBUA14636N</b><br>MIC 36x Optical zoom, Explosion-Protected, black, upright, AD Protocol, wiper fitted, NTSC | <b>MIC440AXBUA14636N</b> |
| <b>MIC440AXBUA14636P</b><br>MIC 36x Optical zoom, Explosion-Protected, black, upright, AD Protocol, wiper fitted, PAL  | <b>MIC440AXBUA14636P</b> |

**Ordering Information**

|   |                           |
|---|---------------------------|
| <b>MIC440AXBUD14618N MIC440 ATEX</b><br>MIC 18x Optical zoom, Explosion-Protected, black, upright, Pelco Protocol, wiper fitted, NTSC | <b>MIC440AXBUD14618N</b>  |
| <b>MIC440AXBUD14618P MIC440 ATEX</b><br>MIC 18x Optical zoom, Explosion-Protected, black, upright, Pelco Protocol, wiper fitted, PAL  | <b>MIC440AXBUD14618P</b>  |
| <b>MIC440AXBUD14636N MIC440 ATEX</b><br>MIC 36x Optical zoom, Explosion-Protected, black, upright, Pelco Protocol, wiper fitted, NTSC | <b>MIC440AXBUD14636N</b>  |
| <b>MIC440AXBUD14636P MIC440 ATEX</b><br>MIC 36x Optical zoom, Explosion-Protected, black, upright, Pelco Protocol, wiper fitted, PAL  | <b>MIC440AXBUD14636P</b>  |
| <b>MIC440AXBUL14618N</b><br>MIC 18x Optical zoom, Explosion-Protected, black, upright, VCL Protocol, wiper fitted, NTSC               | <b>MIC440AXBUL14618N</b>  |
| <b>MIC440AXBUL14618P</b><br>MIC 18x Optical zoom, Explosion-Protected, black, upright, VCL Protocol, wiper fitted, PAL                | <b>MIC440AXBUL14618P</b>  |
| <b>MIC440AXBUL14636N</b><br>MIC 36x Optical zoom, Explosion-Protected, black, upright, VCL Protocol, wiper fitted, NTSC               | <b>MIC440AXBUL14636N</b>  |
| <b>MIC440AXBUL14636P</b><br>MIC 36x Optical zoom, Explosion-Protected, black, upright, VCL Protocol, wiper fitted, PAL                | <b>MIC440AXBUL14636P</b>  |
| <b>MIC440AXBUP14618N MIC440 ATEX</b><br>MIC 18x Optical zoom, Explosion-Protected, black, upright, Bosch Protocol, wiper fitted, NTSC | <b>MIC440AXBUP14618N</b>  |
| <b>MIC440AXBUP14618P MIC440 ATEX</b><br>MIC 18x Optical zoom, Explosion-Protected, black, upright, Bosch Protocol, wiper fitted, PAL  | <b>MIC440AXBUP14618P</b>  |
| <b>MIC440AXBUP14636N MIC440 ATEX</b><br>MIC 36x Optical zoom, Explosion-Protected, black, upright, Bosch Protocol, wiper fitted, NTSC | <b>MIC440AXBUP14636N</b>  |
| <b>MIC440AXBUP14636P MIC440 ATEX</b><br>MIC 36x Optical zoom, Explosion-Protected, black, upright, Bosch Protocol, wiper fitted, PAL  | <b>MIC440AXBUP14636P</b>  |
| <b>MIC440AXB UW14618N MIC440 ATEX</b><br>MIC 18x Optical zoom, Explosion-Protected, black, upright, FV Protocol, wiper fitted, NTSC   | <b>MIC440AXB UW14618N</b> |
| <b>MIC440AXB UW14618P MIC440 ATEX</b><br>MIC 18x Optical zoom, Explosion-Protected, black, upright, FV Protocol, wiper fitted, PAL    | <b>MIC440AXB UW14618P</b> |

## Ordering Information

|  |                          |
|--|--------------------------|
| <b>MIC440AXBWU14636N MIC440 ATEX</b><br>MIC 36x Optical zoom, Explosion-Protected, black, upright, FV Protocol, wiper fitted, NTSC | <b>MIC440AXBWU14636N</b> |
| <b>MIC440AXBWU14636P MIC440 ATEX</b><br>MIC 36x Optical zoom, Explosion-Protected, black, upright, FV Protocol, wiper fitted, PAL  | <b>MIC440AXBWU14636P</b> |
| <b>MIC440AXWUA14618N</b><br>MIC 18x Optical zoom, Explosion-Protected, white, upright, AD Protocol, wiper fitted, NTSC             | <b>MIC440AXWUA14618N</b> |
| <b>MIC440AXWUA14618P</b><br>MIC 18x Optical zoom, Explosion-Protected, white, upright, AD Protocol, wiper fitted, PAL              | <b>MIC440AXWUA14618P</b> |
| <b>MIC440AXWUA14636N</b><br>MIC 36x Optical zoom, Explosion-Protected, white, upright, AD Protocol, wiper fitted, NTSC             | <b>MIC440AXWUA14636N</b> |
| <b>MIC440AXWUA14636P</b><br>MIC 36x Optical zoom, Explosion-Protected, white, upright, AD Protocol, wiper fitted, PAL              | <b>MIC440AXWUA14636P</b> |
| <b>MIC440AXWUD14618N</b><br>MIC 18x Optical zoom, Explosion-Protected, white, upright, Pelco Protocol, wiper fitted, NTSC          | <b>MIC440AXWUD14618N</b> |
| <b>MIC440AXWUD14618P</b><br>MIC 18x Optical zoom, Explosion-Protected, white, upright, Pelco Protocol, wiper fitted, PAL           | <b>MIC440AXWUD14618P</b> |
| <b>MIC440AXWUD14636N</b><br>MIC 36x Optical zoom, Explosion-Protected, white, upright, Pelco Protocol, wiper fitted, NTSC          | <b>MIC440AXWUD14636N</b> |
| <b>MIC440AXWUD14636P</b><br>MIC 36x Optical zoom, Explosion-Protected, white, upright, Pelco Protocol, wiper fitted, PAL           | <b>MIC440AXWUD14636P</b> |
| <b>MIC440AXWUL14618N</b><br>MIC 18x Optical zoom, Explosion-Protected, white, upright, VCL Protocol, wiper fitted, NTSC            | <b>MIC440AXWUL14618N</b> |
| <b>MIC440AXWUL14618P</b><br>MIC 18x Optical zoom, Explosion-Protected, white, upright, VCL Protocol, wiper fitted, PAL             | <b>MIC440AXWUL14618P</b> |
| <b>MIC440AXWUL14636N</b><br>MIC 36x Optical zoom, Explosion-Protected, white, upright, VCL Protocol, wiper fitted, NTSC            | <b>MIC440AXWUL14636N</b> |
| <b>MIC440AXWUL14636P</b><br>MIC 36x Optical zoom, Explosion-Protected, white, upright, VCL Protocol, wiper fitted, PAL             | <b>MIC440AXWUL14636P</b> |

## Ordering Information

|  |                          |
|--|--------------------------|
| <b>MIC440AXWUP14618N</b><br>MIC 18x Optical zoom, Explosion-Protected, white, upright, Bosch Protocol, wiper fitted, NTSC              | <b>MIC440AXWUP14618N</b> |
| <b>MIC440AXWUP14618P</b><br>MIC 18x Optical zoom, Explosion-Protected, white, upright, Bosch Protocol, wiper fitted, PAL               | <b>MIC440AXWUP14618P</b> |
| <b>MIC440AXWUP14636N</b><br>MIC 36x Optical zoom, Explosion-Protected, white, upright, Bosch Protocol, wiper fitted, NTSC              | <b>MIC440AXWUP14636N</b> |
| <b>MIC440AXWUP14636P</b><br>MIC 36x Optical zoom, Explosion-Protected, white, upright, Bosch Protocol, wiper fitted, PAL               | <b>MIC440AXWUP14636P</b> |
| <b>MIC440AXWUW14618N</b><br>MIC 18x Optical zoom, Explosion-Protected, white, upright, FV Protocol, wiper fitted, NTSC                 | <b>MIC440AXWUW14618N</b> |
| <b>MIC440AXWUW14618P</b><br>MIC 18x Optical zoom, Explosion-Protected, white, upright, FV Protocol, wiper fitted, PAL                  | <b>MIC440AXWUW14618P</b> |
| <b>MIC440AXWUW14636N</b><br>MIC 36x Optical zoom, Explosion-Protected, white, upright, FV Protocol, wiper fitted, NTSC                 | <b>MIC440AXWUW14636N</b> |
| <b>MIC440AXWUW14636P</b><br>MIC 36x Optical zoom, Explosion-Protected, white, upright, FV Protocol, wiper fitted, PAL                  | <b>MIC440AXWUW14636P</b> |
| <b>Accessories</b>   |                          |
| <b>MIC-24PSU-UL 24 VAC Camera Power Supply</b><br>24 VAC, 50/60 Hz power supply for MIC Series cameras                                 | <b>MIC-24PSU-UL</b>      |
| <b>MIC-115PSU-UL 115 VAC Camera Power Supply</b><br>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><br>240 VAC, 50 Hz power supply for MIC Series cameras                                 | <b>MIC-240PSU-UL</b>     |
| <b>MIC-BP4 Biphas Converter</b><br>BiPhase converter for non-IR versions of MIC series power supply units                              | <b>MIC-BP4</b>           |
| <b>MIC-SPR Spreader Plate</b><br>Aluminum spreader plate suitable for brick-work surface mounting – black leatherette finish RAL9005   | <b>MIC-SPR</b>           |
| <b>MIC-SPR-W Spreader Plate</b><br>Aluminum spreader plate suitable for brick-work surface mounting – white leatherette finish RAL9003 | <b>MIC-SPR-W</b>         |

| <b>Ordering Information</b>   |                     |
|---|---------------------|
| <b>MIC-CMB-B Corner Mount Bracket</b><br>Corner mount bracket – black leatherette finish RAL9005  | <b>MIC-CMB-B</b>    |
| <b>MIC-CMB-W Corner Mount Bracket</b><br>Corner mount bracket - white leatherette finish RAL9003  | <b>MIC-CMB-W</b>    |
| <b>MIC-PMB Pole Mount Bracket</b><br>Pole mount bracket (includes 2 x 455 mm banding ties for pole diameters 75 to 145 mm)  | <b>MIC-PMB</b>      |
| <b>MIC-WMB-B Wall Mount Bracket</b><br>Wall mount bracket - black leatherette finish RAL9005  | <b>MIC-WMB-B</b>    |
| <b>MIC-WMB-W Wall Mount Bracket</b><br>Wall mount bracket - white leatherette finish RAL9003  | <b>MIC-WMB-W</b>    |
| <b>MIC-ALM Alarm and Washer Pump Drive Card</b><br>8 Input alarm and washer pump drive card for PSU (Not for IR PSU)  | <b>MIC-ALM</b>      |
| <b>MIC-WKT Washer Kit</b><br>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><br>24 VAC washer inst. 5M 25L   | <b>HAC-WAS05-20</b> |
| <b>UPA-2450-50 Power Supply</b><br>220 VAC, 50 Hz, 24 VAC, 50 VA Out  | <b>UPA-2450-50</b>  |
| <b>UPA-2450-60 Power Supply</b><br>120 VAC, 60 Hz, 24 VAC, 50 VA Out  | <b>UPA-2450-60</b>  |
| <b>MIC-2M-S 2 m Shielded Composite Cable</b><br>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><br>Shielded Composite 10 m cable that provides power, telemetry and video connection from a MIC Series camera to a MIC Series power supply | <b>MIC-10M-S</b>    |
| <b>MIC-20M-S 20 m Shielded Composite Cable</b><br>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><br>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>    |

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