

Overview Standard Photoelectric Sensors

Cylindrical Photoelectric Sensors



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|------------------------------|---|--|---|--|--|--|
| Housing | Cylindrical | | | | | |
| Model | E3F2 | | | | | |
| Type | Standard, Axial | | | | | |
| Order reference | E3F2-LS | E3F2-DS1 | E3F2-DS3 | E3F2-R2 | E3F2-R2R | E3F2-7 |
| | Distance setting (BGS, FGS) | Diffuse reflective | | Retroreflective | | Through-beam |
| Housing material | Plastic (ABS), Brass, Stainless Steel | | | | | |
| Features | <ul style="list-style-type: none"> cylindrical housing for easy mounting and installation high quality for reliable object detection at excellent value for money wide portfolio range for all standard applications | | | | | |
| | <ul style="list-style-type: none"> thin beam for exact positioning visible light for simple installation | <ul style="list-style-type: none"> wide beam for reliable detection of structured objects | <ul style="list-style-type: none"> adjustable sensitivity for stable detection | <ul style="list-style-type: none"> without adjuster for higher protection against tampering | <ul style="list-style-type: none"> polarizing (MSR) for reliable detection of shiny objects | <ul style="list-style-type: none"> cost efficient through beam solution |
| Max. Sensing Distance | 0.1 m | 0.1 m | 0.3 m | 2 m | | 7 m |
| Light source | Red LED | Infrared LED | | Infrared LED | Red LED | Infrared LED |
| Key specifications | <ul style="list-style-type: none"> Light ON/Dark ON selectable 10 - 30 VDC IP67 IP69k | | | | | |
| Housing size | M18 | | | | | |
| Connection | Cable: PVC Cable connector: M8, M12, customer specific Connector: M12 | | | | | |
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Cylindrical Photoelectric Sensors



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|------------------------------|---|---|---|---|---|
| Housing | Cylindrical | | | | |
| Model | E3F2 | | | | |
| Type | Standard, Radial | | Long distance, Axial | | |
| Order reference | E3F2-DS3□41 | E3F2-R2R□41 | E3F2-D1 | E3F2-R4 | E3F2-10 |
| | Diffuse reflective | Retroreflective | Diffuse reflective | Retroreflective | Through-beam |
| Housing material | Plastic (ABS), Brass | | | | |
| Features | <ul style="list-style-type: none"> radial optics for easy mounting, installation and adjustment adjustable sensitivity for stable detection adjustable sensitivity for stable detection | | <ul style="list-style-type: none"> high power LEDs for increased sensing distance and increased reliability in dirty environments polarizing (MSR) for reliable detection of shiny objects adjustable sensitivity for stable detection polarizing (MSR) for reliable detection of shiny objects coaxial setup for precision detection test input for system reliability check | | |
| Max. Sensing Distance | 0.3 m | 2 m (typical 3.1 m with reflector E39-R8) | 1 m | 4 m (typical 5.6 m with reflector E39-R8) | 10 m |
| Light source | Infrared LED | Red LED | Infrared LED | Red LED | Infrared LED |
| Key specifications | <ul style="list-style-type: none"> Light ON/Dark ON selectable 10 - 30 VDC IP67, IP69k | | | |  <ul style="list-style-type: none"> Light ON/Dark ON selectable 12 - 24 VDC IP67, IP69k |
| Housing size | M18 | | | | |
| Connection |  Cable: PVC  Cable connector: M8, M12, customer specific  Connector: M12 | | | | |
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Square Photoelectric Sensors - General Purpose



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|------------------------------|---|--|---|--|
| Housing | Square | | | |
| Model | E3Z | | | |
| Type | Compact, general purpose | | | |
| Order reference | E3Z-LS | E3Z-D□2 E3Z-D□7 | E3Z-R | E3Z-T□2 E3Z-T□7 |
| | Distance setting (BGS, FGS) | Diffuse reflective | Retroreflective | Through-beam |
| Housing material | Plastic (PBT) | | | |
| Features | <ul style="list-style-type: none"> • Compact housing size and high power LED for excellent performance-size ratio. • Cost value-performance ratio for standard applications. • Intensive shielding for highest noise immunity (EMC). • Tough PBT housing for high mechanical resistance. | | | |
| | <ul style="list-style-type: none"> • Background suppression for reliable detection with changing backgrounds. • Foreground suppression for reliable detection of objects (e.g. glossy and structured) on conveyors. | <ul style="list-style-type: none"> • Standard beam for long distance detection. | <ul style="list-style-type: none"> • Polarizing (MSR) for reliable detection of shiny objects (red LED). | <ul style="list-style-type: none"> • High power infrared LED for increased sensing distance and high reliability in dirty environments. |
| Max. Sensing Distance | 200 mm | 1 m | 4 m | 15 m (typical 45 m) |
| Light source | Red LED Infrared LED | | | |
| Key specifications | <ul style="list-style-type: none"> • Light ON/Dark ON selectable • 10 - 24 VDC • IP67, IP69k | | |  |
| Housing size | 11 x 17 x 31 mm (W x H x D) | | | |
| Connection |  Cable: PVC  Cable connector: M8, M12, customer specific  Connector: M12 | | | |
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Square Photoelectric Sensors - General Purpose



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|------------------------------|---|--|--|--|
| Housing | Square | | | |
| Model | E3T | | | |
| Type | Miniature | | | |
| Order reference | --- | E3T-SL E3T-FD | E3T-SR | E3T-ST E3T-FT |
| | Distance setting (BGS, FGS) | Diffuse reflective | Retroreflective | Through-beam |
| Housing material | --- | Plastic (PBT) | | |
| Features | | <ul style="list-style-type: none"> Ultra small size with high output pin point LED where space is crucial. 3.5 mm thin flat shape or 7 mm side side view shape. Thin beam for precision detection of miniature objects (min 0.15 mm dia). | <ul style="list-style-type: none"> Thin visible beam for precision positioning. | <ul style="list-style-type: none"> Unmatched precision - sensor size ratio. |
| Max. Sensing Distance | | 30 mm | 200 mm | 1 m |
| Light source | Red LED | | | |
| Key specifications | <ul style="list-style-type: none"> Light ON or Dark ON 10 - 24 VDC IP67 | | | |
| Housing size | Flat: 12 x 21 x 3.5 mm (W x H x D) Side view: 7 x 21 x 11 mm (W x H x D) | | | |
| Connection |  Cable: PVC  Cable connector: M8, M12, customer specific | | | |
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|------------------------------|--|--------------------|-----------------|--------------|
| Housing | Square | | | |
| Model | E3NT | | | |
| Type | Long distance, high functionality, high protection | | | |
| Order reference | E3NT-L□-20 | --- | E3NT-R | E3NT-T |
| | Distance setting (BGS, FGS) | Diffuse reflective | Retroreflective | Through-beam |
| Housing material | Aluminium die cast | | | |
| Features | <ul style="list-style-type: none"> • Durable aluminium housing for highest resistance in harsh environments. • One button teaching for quick set up. • Double triangulation for highest reliability detecting glossy objects. • Window heating for reliable operation in icy and foggy environments. • Analog output for distance information. • Polarizing (MSR) for reliable detection of shiny objects. | | | |
| Max. Sensing Distance | 3 m | | 16 m | |
| Light source | Infrared LED | | | |
| Key specifications | <ul style="list-style-type: none"> • Two freely configurable output (e.g. NO, NC, NO+NC, window function for BGS type (2 different switching points)). • 10 - 30 VDC • IP67, IP69k | | | |
| Housing size | 27 x 89 x 65 mm (W x H x D) | | | |
| Connection |  Connector: M12 | | | |
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Square Photoelectric Sensors - General Purpose



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|------------------------------|---|---|--|--|--|
| Housing | Square | | | | |
| Model | E3S-C | | | | |
| Type | Compact, high protection | | | | |
| Order reference | E3S-CD | E3S-CR | E3S-CT | E3S-CL1 | E3S-CL2 |
| | Diffuse reflective | Retroreflective | Through-beam | Distance setting (BGS, FGS) | |
| Housing material | Zinc diecast | | | | |
| Features | <ul style="list-style-type: none"> High water, oil and detergent resistance for long life in often cleaned or aggressive environments. Enhanced performance at slightly larger housing compared with E3Z. | | | | |
| | <ul style="list-style-type: none"> Fuzzy logic interference prevention enables minimal mutual interference for close mounting of two sensors. | <ul style="list-style-type: none"> Polarizing (MSR) for reliable detection of shiny objects. | <ul style="list-style-type: none"> High power infrared LED for long distance detection. Precision detection of miniature objects (min 0.5 mm dia) with slits . | <ul style="list-style-type: none"> Minimal black/white error (2%) for highest reliability in detecting different colored objects. | <ul style="list-style-type: none"> Higher sensing distance but also higher black/white error compared to E3S-CL1. Invisible light. |
| Max. Sensing Distance | 2 m | 3 m (typical 4 m) | 30 m | 200 mm | 500 mm |
| Light source | Infrared LED | Red LED | Infrared LED | Red LED | Infrared LED |
| Key specifications | <ul style="list-style-type: none"> Light ON/Dark ON selectable 10 - 30 VDC IP67 | | | | |
| Housing size | 20 x 57 x 23 mm (W x H x D) | | | 15 x 42 x 40 mm (W x H x D) | |
| Connection | Cable: PVC Cable connector: M8, M12, customer specific | | | | |
| Page | A-101 | | | A-111 | |



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|------------------------------|--|--------------------|--|--------------|
| Housing | Square | | | |
| Model | E3G | | | |
| Type | Long distance | | | |
| Order reference | E3G-L7 | --- | E3G-R | --- |
| | Distance setting (BGS, FGS) | Diffuse reflective | Retroreflective | Through-beam |
| Housing material | Plastic (PBT) | --- | Plastic (PBT) | --- |
| Features | <ul style="list-style-type: none"> • One-touch teaching for quick set up. • High power infrared LED for stable detection of structured objects in long distances. | | <ul style="list-style-type: none"> • High power visible light LED for precision detection in long distances. | |
| Max. Sensing Distance | 2 m | | 10 m | |
| Light source | Infrared LED | | Red LED | |
| Key specifications | <ul style="list-style-type: none"> • Light ON/Dark ON selectable • 10 - 30 VDC • IP67 | | <ul style="list-style-type: none"> • Light ON/Dark ON selectable • 10 - 30 VDC • IP67 | |
| Housing size | 21 x 68 x 48 mm (W x H x D) | | 21 x 68 x 48 mm (W x H x D) | |
| Connection |  Cable: PVC  Cable connector: M8, M12, customer specific  Connector: M12 (turnable) | |  Cable: PVC  Cable connector: M8, M12, customer specific  Connector: M12 (turnable) | |
| Page | (CD) | | A-119 | |

Special Square Photoelectric Sensors



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|------------------------------|--|--|--|---|---|
| Housing | Square | | | | |
| Model | E3Z | | | | |
| Type | Special functions within compact size E3Z family | | | | |
| Order reference | E3Z-LS□3 E3Z-LS□8 | E3Z-L | E3Z-D□1 E3Z-D□6 | E3Z-T□1 E3Z-T□6 | E3Z-T□2 E3Z-T□7 |
| | Distance setting (BGS, FGS) | Diffuse reflective | | Through-beam | |
| Housing material | Plastic (PBT) | | | | |
| Features | <ul style="list-style-type: none"> • Compact housing size and high power LED for excellent performance-size ratio. • Best value-performance ratio for standard applications. | | | | |
| | • Thin beam and 2 mm spot size. | • Narrow beam | • Wide beam | <ul style="list-style-type: none"> • Precision detection of miniature objects (min 0.2 mm dia) with slits. • Precision positioning through visible light. • Close mounting (in a stack) with mutual interference prevention filters. | <ul style="list-style-type: none"> • Ultra high power infrared LED for very long sensing distance and maximum reliability in dirty environments. |
| Application areas | • Precision positioning. | • Miniature object detection (0.1 mm dia). | • Reliable detection of structured and uneven objects. | <ul style="list-style-type: none"> • Precision detection. • Movement precision passage detection. | <ul style="list-style-type: none"> • Dusty environments • Passage detection over long distances. |
| Max. Sensing Distance | 80 mm | 90 mm (± 30 mm) | 100 mm | 10 m | 30 m |
| Light source | | Red LED | Infrared LED | Red LED | Infrared LED |
| Key specifications | <ul style="list-style-type: none"> • Light ON/Dark ON selectable • 10 - 24 VDC • IP67, IP69k | | | |  |
| Housing size | 11 x 17 x 31 mm (W x H x D) | | | | |
| Connection | <ul style="list-style-type: none"> • Cable: PVC • Cable connector: M8, M12, customer specific • Connector: M8 | | | | |
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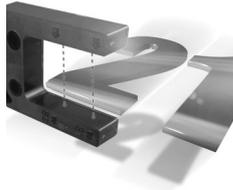
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|------------------------------|--|---------|---------|---|-----------------|--------------|
| Housing | Square | | | | | |
| Model | E3Z-□H | | | E3Z | | |
| Type | Compact, tampering protection | | | Preventive maintenance | | |
| Order reference | E3Z-D□H | E3Z-R□H | E3Z-T□H | E3Z-□-G0□ for 'Emission stop' E3Z-□-G2□ for 'Emission reduction' E3Z-□-J0□ for 'self diagnosis' | | |
| | E3Z-L□H | | | Diffuse reflective | Retroreflective | Through-beam |
| Housing material | Plastic (PBT) | | | | | |
| Features | <ul style="list-style-type: none"> • Sensors without sensitivity adjuster for maximum tampering protection. • Same as for general purpose E3Z but without adjuster for <ul style="list-style-type: none"> • Machine stop or sensor defect alarm output if beam interruption is too long. • Active sensor check by test input forcing state change at receiver. • Detection of dirt cover by power reduction. | | | | | |
| Application areas | <ul style="list-style-type: none"> • Conveying applications and other passage detections where malfunctions due to unskilled personal need to be prevented | | | <ul style="list-style-type: none"> • Preventive maintenance for all machines requiring maximum machine availability during production. | | |
| Max. Sensing Distance | Same as for general purpose E3Z | | | Same as for general purpose E3Z | | |
| Light source | | | | | | |
| Key specifications | | | | | | |
| Housing size | | | | | | |
| Connection | | | | | | |
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Special Square Photoelectric Sensors

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|------------------------------|--|--|--|--|---|
| |  | | |  | |
| Housing | Square | | | E3G | |
| Model | E3NT | | | E3G | |
| Type | Long distance, high functionality, high protection. | | | Special functions within long distance E3G family. | |
| Order reference | E3NT-L17 E3NT-L37 | E3NT-LH | E3NT-L27 E3NT-L47 | E3G-L1 | E3G-L3 |
| Housing material | Aluminium die cast | | | Plastic (PBT) | |
| Features | <ul style="list-style-type: none"> • Durable aluminium housing for highest resistance in harsh environments. • High response time. | | | <ul style="list-style-type: none"> • One-touch teaching for quick set up. | |
| | | <ul style="list-style-type: none"> • Window heating for reliable operation in humid and icy environments. | <ul style="list-style-type: none"> • Analog output for quick and easy distance information. | <ul style="list-style-type: none"> • Shine-proof optical system for reliable detection of different colored objects. | <ul style="list-style-type: none"> • Optimised sensing distance-minimal object size ratio. |
| Application areas | <ul style="list-style-type: none"> • Long distance counting applications. | <ul style="list-style-type: none"> • Object detection in low temperature (-40 °C) or areas with steam. | <ul style="list-style-type: none"> • Approach detection of moving objects. | <ul style="list-style-type: none"> • Passage detection of differently colored objects. | <ul style="list-style-type: none"> • Higher sensing distance passage detection of differently colored objects - requires larger objects than E3G-L1. |
| Max. Sensing Distance | 2 m | | | 50 mm | 200 mm |
| Light source | Infrared LED | | | Red LED | Infrared LED |
| Key specifications | <ul style="list-style-type: none"> • Two freely configurable output (e.g. NO, NC, NO+NC, window function (2 different switching points)). • 10 - 30 VDC • IP67, IP69k | | |  | <ul style="list-style-type: none"> • Light ON/Dark ON selectable • 10 - 30 VDC • IP67 |
| Housing size | 27 x 89 x 65 mm (W x H x D) | | | 18 x 40 x 30 mm (W x H x D) | |
| Connection |  Connector: M12 | | |  Cable: PVC  Cable connector: M8, M12, customer specific  Connector: M8 | |
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|------------------------------|--|---|---|--|--|
| |  |  |  |  |  |
| Housing | Square | | | | |
| Model | E3M-V | E3S-LS3 | E3JK | F3C-AA | F3C-AL |
| Type | Mark Sensor | PCB detection sensor | All voltage (AC and DC) | Conveyor sensor | Distance settable Laser sensor |
| Order reference | E3MV | E3S-LS3 | E3JK | F3C-AA | F3C-AL |
| | Distance setting | Diffuse reflective | Through beam Retroreflective Diffuse reflective | Distance setting (BGS, FGS) | Distance setting (BGS, FGS) |
| Housing material | Plastic (PBT) | | Plastic (ABS) | | |
| Features | <ul style="list-style-type: none"> Auto-teaching for simple teaching during setup. Coaxial optical system for reliable mark detection on laminated objects. | <ul style="list-style-type: none"> Wide beam for reliable structured object detection (objects with holes and different heights). | <ul style="list-style-type: none"> 12 - 240 VDC or 24 - 240 VAC power supply voltage. Product variety reduction through 'one sensor fits all requirements'. | <ul style="list-style-type: none"> Special housing shape fitting between conveyor segments. Reliable detection of multicolored objects even in changing backgrounds. Optionally with integrated jamming control unit. | <ul style="list-style-type: none"> Small spot for high precision detection and positioning. |
| Application areas | <ul style="list-style-type: none"> Mark detection on food packages on conveyors. | <ul style="list-style-type: none"> PCB detection on conveyors. | <ul style="list-style-type: none"> Installations of all standard power supplies for minimal product variety. | <ul style="list-style-type: none"> Conveyor belts | <ul style="list-style-type: none"> Counting and positioning on conveyors. |
| Max. Sensing Distance | 10+3 mm | 60 mm | 5 m | 900 mm | 700 mm |
| Light source | Green LED | Red LED | Red LED, Infrared LED | Infrared LED | Pulsed RED Laser class II |
| Key specifications | <ul style="list-style-type: none"> 10 - 30 VDC IP67 | <ul style="list-style-type: none"> Light ON 12 - 24 VDC IP40 | <ul style="list-style-type: none"> Light ON/ Dark ON or selectable Relay output with 250 VAC, 3 A IP64 | <ul style="list-style-type: none"> Dark ON 10 - 30 VDC IP54 | <ul style="list-style-type: none"> Light ON / Dark ON selectable 10 - 30 VDC IP40 |
| Housing size | 21 x 67.8 x 47.8 mm (W x H x D) | 10 x 34 x 19 mm (W x H x D) | 18 x 50 x 50 mm (W x H x D) | 18 x 90 x 45 mm (W x H x D) | 18 x 90 x 45 mm (W x H x D) |
| Connection |  Cable: PVC  Connector: M12 |  Cable: PVC  Cable connector: M8 |  Cable: PVC |  Cable connector: M12 |  Cable connector: M12 |
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Special Square Photoelectric Sensors

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|------------------------------|--|--|---|---|--|
| |  |  |  |  |  |
| Housing | Square | | | | |
| Model | E3S-G | E3MC | E3X-NL | E3Z-B | E3Z-G |
| Type | Mark Sensor | RGB Color sensor | Glossy object sensor | PET bottle sensor | Fork sensor |
| Order reference | E3S-GS1 | E3MC | E3X-NL | E3Z-B | E3Z-G |
| | Through beam | Fixed distance | Fixed Diffuse reflective | Retroreflective | Through-beam |
| Housing material | Plastic | Zinc diecast | PBT and ABS | Plastic (PBT) | Plastic (PBT) |
| Features | <ul style="list-style-type: none"> Simple installation and enhanced reliability against setup misalignment. | <ul style="list-style-type: none"> 4 channel models for multi product teaching analog output for continuous color differentiation | <ul style="list-style-type: none"> Teaching and unique optical system for reliable and simple gloss level detection. | <ul style="list-style-type: none"> Inner View optical system for reliable. PET bottle detection. | <ul style="list-style-type: none"> Simple installation and enhanced reliability against setup misalignment. 1 or 2 optical axis. |
| Application areas | <ul style="list-style-type: none"> Mark detection on food packages on conveyors. | <ul style="list-style-type: none"> Sorting of differently colored objects and bottles (with through beam fiber type). Color shade quality control. | <ul style="list-style-type: none"> Label detection Glue detection | <ul style="list-style-type: none"> Detection and counting of PET bottles on conveyors. | <ul style="list-style-type: none"> Passage detection of cranes, hangsliders and objects. |
| Max. Sensing Distance | 10 mm | 60±10 mm 0 - 200 mm | 10±3 mm 20±7 mm | 2 m | 25 mm |
| Light source | Green or Red LED | RGB LEDs | Red LED | Red LED | Infrared LED |
| Key specifications | <ul style="list-style-type: none"> 12 - 24 VDC IP65 | <ul style="list-style-type: none"> 12 - 24 VDC IP66 | <ul style="list-style-type: none"> 12 - 24 VDC IP50 | <ul style="list-style-type: none"> Light ON/Dark ON selectable 12 - 24 VDC IP67, IP69k | <ul style="list-style-type: none"> Light ON/Dark ON selectable 12 - 24 VDC IP64 |
| Housing size | 20 x 55 x 60 mm (W x H x D) Forkopening: 10 x 35 mm | 30 x 53 x 80 mm (W x H x D) | 10.4 x 29 x 29 mm (W x H x D) | 11 x 17 x 31 mm (W x H x D) | 40 x 11 x 50 mm (W x H x D) Forkopening: 25 x 35 mm |
| Connection |  Cable: PVC |  Connector: M12 |  Cable: PVC |  Cable: PVC  Cable connector: M8, M12  Connector: M8 |  Cable: PVC  Cable connector: M8, M12 |
| Page | Please contact your OMRON representative | (CD) | (CD) | A-43 | A-43 |



| | | |
|------------------------------|--|---|
| Housing | | Square |
| Model | E3S-CR | F3UV |
| Type | Transparent bottle sensor | UV Power Monitor |
| Order reference | E3S-CR | F3UV |
| | Retroreflective | Intensity monitor |
| Housing material | Zinc diecast | Zinc diecast |
| Features | <ul style="list-style-type: none"> • Special optic design for reliable detection of glass bottles compensating 'double-detection-effect'. | <ul style="list-style-type: none"> • Reliable UV light intensity monitoring up to 300 mW/cm². • Heat resistant up to 300 °C. |
| Application areas | <ul style="list-style-type: none"> • Detection and counting of transparent glass bottles on conveyors. | <ul style="list-style-type: none"> • UV light deterioration in food processing. • Resin hardening process. |
| Max. Sensing Distance | 1 m | n.a. |
| Light source | Red LED | n.a. |
| Key specifications | <ul style="list-style-type: none"> • Light ON/Dark ON selectable • 10 - 30 VDC • IP67 | <ul style="list-style-type: none"> • Analog output 1 - 5 V • 12 - 24 VDC • IP30 |
| Housing size | 20 x 57 x 23 mm (W x H x D) | 16.4 x 19.4 x 35.5 mm (W x H x D) |
| Connection |  Cable: PVC  Connector: M12 |  Cable: PVC |
| Page | A-157 | (CD) |

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.