

Sensing for standard and special applications

Cylindrical M18 Series Photoelectric Sensors



- » Simplicity in setup & installation
- » Compact size for increased installation flexibility
- » Robust waterproof housing

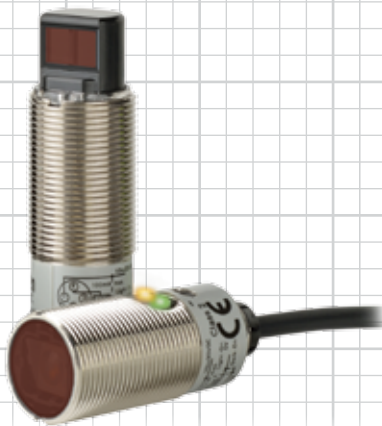
One Family for All Applications

Omron's next generation of photoelectric sensors represents one of the largest varieties of dependable and easy-to-use photoelectric sensors on the market. Regardless of your industry or application, Omron offers the right sensor for the job.



E3FA/E3RA

ABS Plastic Housing



E3FB/E3RB

Nickel-Plated Brass Housing



E3FC

Stainless Steel Housing

Key Features

- » Universal M18 cylindrical plastic or nickel-plated brass housing in straight or 90° angled (radial) models
- » SUS316L stainless steel E3FC rated for food grade applications
- » Rugged housing withstands high-pressure and high-temperature wash down
- » High power red LED for easy sensor alignment and dependable outputs in dusty environments
- » All retro reflective models are polarized to prevent false reads on mirrored surfaces
- » High EMC protection and ambient light immunity for detection stability in environments with excess noise or background light
- » Compact size and shape for increased installation flexibility

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For complete specifications and additional models and accessories visit **Omron247.com**.

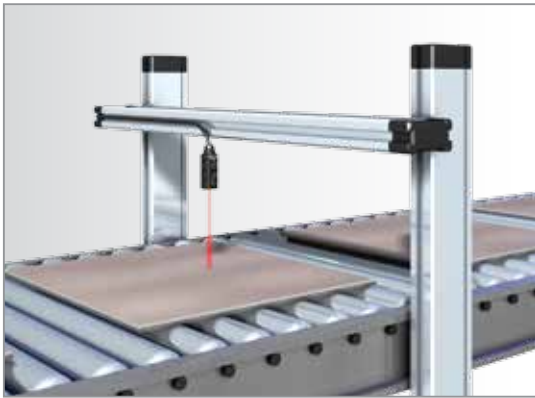
Special Models for Challenging Applications

The cylindrical M18 series includes special models to meet the needs of demanding applications.

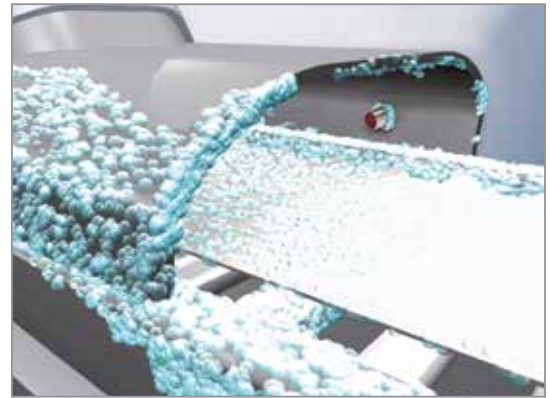
- » **Background Suppression** - Provides stable detection of objects of varying color and stable detection without false outputs from objects in the background.
- » **Limited Distance Detection** - Suitable for detecting transparent, shiny, or mirrored film.
- » **Transparent Object Detection** - Retro-reflective sensing with Omron's added P-opaquin function to improve detection of challenging clear targets.
- » **Radial Models** - A full line-up of 90° angled sensing to increase mounting flexibility.
- » **E3FC Series** - A full offering of stainless steel, epoxy-sealed sensors designed for superior environmental and chemical resistance.



Radial E3RA/E3RB



Background suppression sensors for stable detection independent of color or background.



E3FC is best fit for wash-down, detergent applications. Proven with industrial cleaning agents of Ecolab and Diversey.

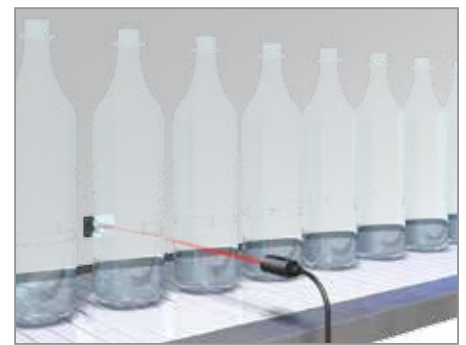
Unrivaled Detection with Simplicity in Setup and Installation



The short body of the fits in tighter mounting spaces when compared to conventional M18 sensors.



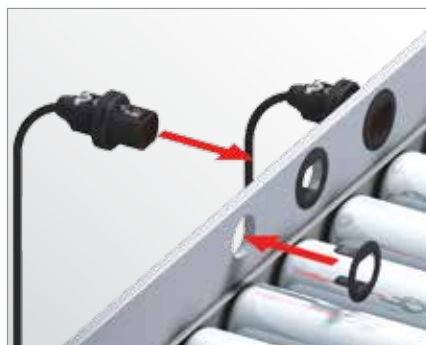
Visible red LED light for easy alignment.



Transparent object detection sensors utilize Omron's unique technology for detecting objects with birefringent (double refraction) properties.



Bright LED indicators for status visibility and large sensor adjusters for use with a standard size screwdriver.



Flush mounting option for quick and easy installation.



High power LED to compensate for dirt and misalignment.








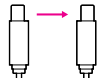
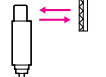
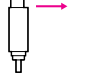
E3FA/E3RA Plastic Housing Sensors

- » ABS plastic housing for standard applications
- » Compact size with flush mounting option
- » IP67, IP69K for wash down water resistance
- » Straight or Radial models available
- » Background Suppression, Limited Distance, and Transparent Detection models available



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Ordering Information

| Setup | Sensor type | | Sensing distance | PNP | | NPN | |
|----------------------|---|--|------------------|----------------|---------------|----------------|---------------|
| | | | | Pre-wired (2m) | M12 connector | Pre-wired (2m) | M12 connector |
| Straight |  | Through-beam * 1 | 20m | E3FA-TP11 2M | E3FA-TP21 | E3FA-TN11 2M | E3FA-TN21 |
| |  | Retro-reflective (using reflector E39-R1S sold separately.) | 0.1 to 4m | E3FA-RP11 2M | E3FA-RP21 | E3FA-RN11 2M | E3FA-RN21 |
| |  | Retro-reflective (coaxial) (using reflector E39-R1S sold separately.) | 0 to 500mm | E3FA-RP12 2M | E3FA-RP22 | E3FA-RN12 2M | E3FA-RN22 |
| |  | Diffuse-reflective | 100mm | E3FA-DP11 2M | E3FA-DP21 | E3FA-DN11 2M | E3FA-DN21 |
| | 300mm | | E3FA-DP12 2M | E3FA-DP22 | E3FA-DN12 2M | E3FA-DN22 | |
| | 1m | | E3FA-DP13 2M | E3FA-DP23 | E3FA-DN13 2M | E3FA-DN23 | |
| Special Applications |  | BGS (Background suppression) | 100mm | E3FA-LP11 2M | E3FA-LP21 | E3FA-LN11 2M | E3FA-LN21 |
| | | | 200mm | E3FA-LP12 2M | E3FA-LP22 | E3FA-LN12 2M | E3FA-LN22 |
| |  | Limited distance reflective | 10 to 50mm | E3FA-VP11 2M | E3FA-VP21 | E3FA-VN11 2M | E3FA-VN21 |
| |  | Transparent detection with P-opaquin function (using reflector E39-RP1 sold separately.) | 100 to 500mm | E3FA-BP11 2M | E3FA-BP21 | E3FA-BN11 2M | E3FA-BN21 |
| | 0.1 to 2m | | E3FA-BP12 2M | E3FA-BP22 | E3FA-BN12 2M | E3FA-BN22 | |
| Radial |  | Through-beam * 1 | 15m | E3RA-TP11 2M | E3RA-TP21 | E3RA-TN11 2M | E3RA-TN21 |
| |  | Retro-reflective (using reflector E39-R1S sold separately.) | 0.1 to 3m | E3RA-RP11 2M | E3RA-RP21 | E3RA-RN11 2M | E3RA-RN21 |
| |  | Diffuse-reflective | 100mm | E3RA-DP11 2M | E3RA-DP21 | E3RA-DN11 2M | E3RA-DN21 |
| | | | 300mm | E3RA-DP12 2M | E3RA-DP22 | E3RA-DN12 2M | E3RA-DN22 |
| 700mm | | | E3RA-DP13 2M | E3RA-DP23 | E3RA-DN13 2M | E3RA-DN23 | |

* 1 The set type includes the emitter and receiver.

Note: All sensors are 10-30 VDC. Light-On/Dark-On selectable by wiring.

Note: Please reference the data sheet for infrared emitter options for through-beam and diffuse type E3FA sensors.








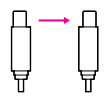
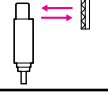
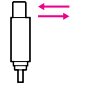
E3FB/E3RB Nickel-Plated Brass Housing Sensors

- » Nickel-plated brass housing for applications that require a more ruggedized sensor
- » Compact size with metal flush mounting option
- » IP67, IP69K for wash down water resistance
- » Straight or Radial models available
- » Background Suppression, Limited Distance, and Transparent Detection models available



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Ordering Information

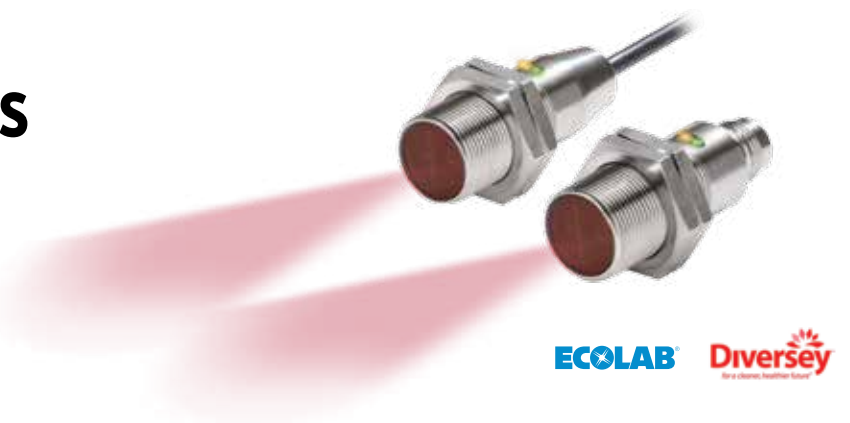
| Setup | Sensor type | Sensing distance | PNP | | NPN | |
|---|---|------------------|----------------|---------------|----------------|---------------|
| | | | Pre-wired (2m) | M12 connector | Pre-wired (2m) | M12 connector |
| Straight |  Through-beam *1 | 20m | E3FB-TP11 2M | E3FB-TP21 | E3FB-TN11 2M | E3FB-TN21 |
| |  Retro-reflective (using reflector E39-R1S sold separately.) | 0.1 to 4m | E3FB-RP11 2M | E3FB-RP21 | E3FB-RN11 2M | E3FB-RN21 |
| |  Coaxial Retro-reflective (using reflector E39-R1S sold separately.) | 0 to 500mm | E3FB-RP12 2M | E3FB-RP22 | E3FB-RN12 2M | E3FB-RN22 |
| |  Diffuse-reflective | 100mm | E3FB-DP11 2M | E3FB-DP21 | E3FB-DN11 2M | E3FB-DN21 |
| | | 300mm | E3FB-DP12 2M | E3FB-DP22 | E3FB-DN12 2M | E3FB-DN22 |
| | | 1m | E3FB-DP13 2M | E3FB-DP23 | E3FB-DN13 2M | E3FB-DN23 |
| Special Applications |  BGS (background suppression) | 100mm | E3FB-LP11 2M | E3FB-LP21 | E3FB-LN11 2M | E3FB-LN21 |
| | | 200mm | E3FB-LP12 2M | E3FB-LP22 | E3FB-LN12 2M | E3FB-LN22 |
| |  Limited distance reflective | 10 to 50mm | E3FB-VP11 2M | E3FB-VP21 | E3FB-VN11 2M | E3FB-VN21 |
|  Transparent detection with P-opaquing function (using reflector E39-RP1 sold separately.) | 100 to 500mm | E3FB-BP11 2M | E3FB-BP21 | E3FB-BN11 2M | E3FB-BN21 | |
| | 0.1 to 2m | E3FB-BP12 2M | E3FB-BP22 | E3FB-BN12 2M | E3FB-BN22 | |
| Radial |  Through-beam | 15m | E3RB-TP11 2M | E3RB-TP21 | E3RB-TN11 2M | E3RB-TN21 |
| |  Retro-reflective (using reflector E39-R1S sold separately.) | 0.1 to 3m | E3RB-RP11 2M | E3RB-RP21 | E3RB-RN11 2M | E3RB-RN21 |
| |  Diffuse reflective | 100mm | E3RB-DP11 2M | E3RB-DP21 | E3RB-DN11 2M | E3RB-DN21 |
| | | 300mm | E3RB-DP12 2M | E3RB-DP22 | E3RB-DN12 2M | E3RB-DN22 |
| 700mm | | E3RB-DP13 2M | E3RB-DP23 | E3RB-DN13 2M | E3RB-DN23 | |

*1 The set type includes the emitter and receiver.

Note: All sensors are 10-30 VDC. Light-On/Dark-On selectable by wiring.



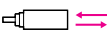
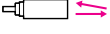
E3FC Stainless Steel Metal Housing Sensors

- » High grade stainless steel housing (SUS316L)
- » IP67, IP68, and IP69K to resist high temperature wash down
- » Epoxy resin preventing water ingress if connector is not fixed properly
- » Proven with various industrial detergents of Ecolab and Diversey
- » Background Suppression models available



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Ordering Information

| Sensor type | | Sensing distance | PNP | | NPN | |
|--|---|------------------|----------------|---------------|----------------|---------------|
| | | | Pre-wired (2m) | M12 connector | Pre-wired (2m) | M12 connector |
|  | Through-beam *1 | 20m | E3FC-TP11 2M | E3FC-TP21 | E3FC-TN11 2M | E3FC-TN21 |
|  | Retro-reflective (using reflector E39-R1S sold separately.) | 0.1 to 4m | E3FC-RP11 2M | E3FC-RP21 | E3FC-RN11 2M | E3FC-RN21 |
|  | Diffuse-reflective | 300mm | E3FC-DP12 2M | E3FC-DP22 | E3FC-DN12 2M | E3FC-DN22 |
| | | 1m | E3FC-DP13 2M | E3FC-DP23 | E3FC-DN13 2M | E3FC-DN23 |
|  | BGS (background suppression) | 100mm | E3FC-LP11 2M | E3FC-LP21 | E3FC-LN11 2M | E3FC-LN21 |
| | | 200mm | E3FC-LP12 2M | E3FC-LP22 | E3FC-LN12 2M | E3FC-LN22 |

*1 The set type includes the emitter and receiver.

Note: All sensors are 10-30 VDC. Light-On/Dark-On selectable by wiring.

Refer to the following when using these agents:

| Manufacturer | Product name | Concentration | Test time |
|--|----------------------|---------------|-----------|
|  | Diverfoam SMS HD | 5% | 720 h |
| | Oxofoam | 5% | 720 h |
| | Acifoam | 5% | 720 h |
| | Divosan Hypochlorite | 1% | 720 h |
| | Divosan Forte | 1% | 720 h |
|  | P3-topactive® 200 | 5% | 720 h |
| | P3-topax® 56 | 5% | 720 h |
| | P3-topactive® OKTO | 3% | 720 h |
| | P3-topax® 990 | 3% | 720 h |
| | P3-topax® 66 | 3% | 720 h |




E3FC Cylindrical M18

- Models without adjusters**
 - Eliminate build-up of bacteria and tampering with sensor settings
- Epoxy Resin**
 - Prevent water ingress if connector is not properly fixed
- Case: SUS316L**
 - High grade stainless steel for excellent corrosion resistance
- Powerful red LED**
 - Blasts through debris build-up in the environment or on the sensing face
- Laser-Marked Labels**
 - Eliminate risk of contamination with standard paint or sticker labels

Accessories

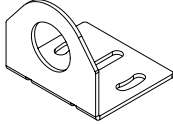


Reflectors

Reflectors required for Retro-reflective Sensors: A Reflector is not provided with the Sensor. Be sure to order a Reflector separately.

| Sensor | Sensing distance | Appearance | Model | Quantity | Remarks |
|----------------------|------------------|---|---------|----------|--|
| E3FA-R□1 E3FB-R□1 | 0.1 to 4 m |  | E39-R1S | 1 | for E3FA-R□, E3RA-R□, for E3FB-R□ and E3RB-R□ |
| E3FA-R□2 E3FB-R□2 | 0 to 500 mm | | | | |
| E3FA-B□1 E3FB-B□1 | 100 to 500 mm |  | E39-RP1 | 1 | for E3FA-B□ and E3FB-B□ |
| E3FA-B□2 E3FB-B□2 | 0.1 to 2 m | | | | |
| E3FC-R□ | 0.1 to 4 m |  | E39-R50 | 1 | IP67, IP69K Ecolab tested plastic material |





Mounting Brackets

A Mounting Bracket is not included with the Sensor. Order a Mounting Bracket separately if required.

| Sensor | Appearance | Model (Material) | Quantity | Remarks |
|------------------|---|--------------------|----------|------------------------|
| All types |  | E39-L183 (SUS304) | 1 | Mounting bracket |
| E3FA-□ E3RA-□ |  | E39-L182 (POM) | 1 | Flush mounting bracket |
| E3FB-□ E3FC-□ |  | E39-EL16 (SUS316L) | 1 | M18 Flush mounting nut |

Sensor I/O connectors

Models for Connectors: A Connector is not provided with the Sensor. Be sure to order a Connector separately.

| Size | Cable | Appearance | Cable Type | | Remarks |
|------|-------------------------------------|--|------------|--------|-------------------|
| M12 | Standard | Straight  | 2 m | 4-wire | XS2F-M12PVC4S2M |
| | | | 5 m | | XS2F-M12PVC4S5M |
| | | Angle  | 2 m | | XS2F-M12PVC4A2M |
| | | | 5 m | | XS2F-M12PVC4A5M |
| | Detergent resistant connector cable | Straight  | 2 m | 4-wire | Y92E-S12PVC4S2M-L |
| | | | 5 m | | Y92E-S12PVC4S5M-L |
| | | Angle  | 2 m | | Y92E-S12PVC4A2M-L |
| | | | 5 m | | Y92E-S12PVC4A5M-L |

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