

# Sensing for standard and special applications

Cylindrical M18 Series Photoelectric Sensors



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

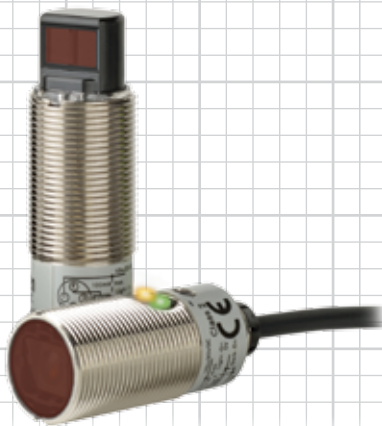
# One Family for All Applications

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**.

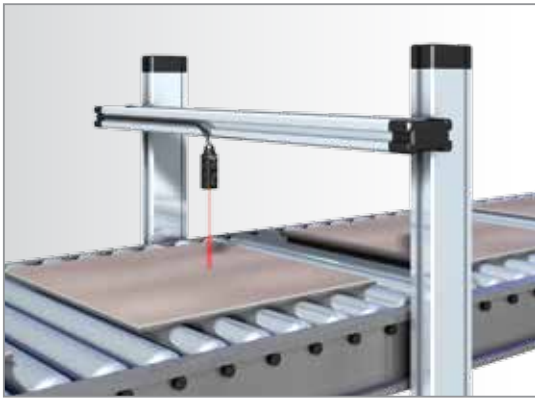
# Special Models for Challenging Applications

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

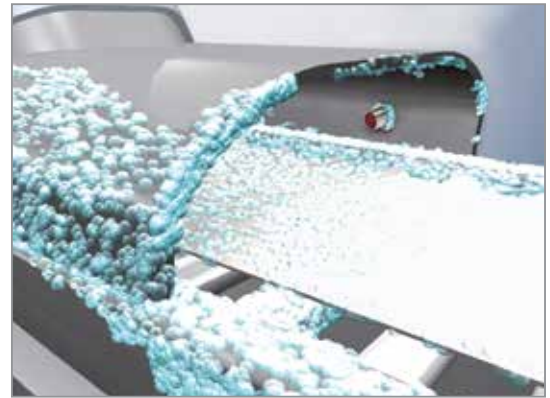
- » **Background Suppression** - Provides stable detection of objects of varying color and stable detection without false outputs from objects in the background.
- » **Limited Distance Detection** - Suitable for detecting transparent, shiny, or mirrored film.
- » **Transparent Object Detection** - Retro-reflective 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.

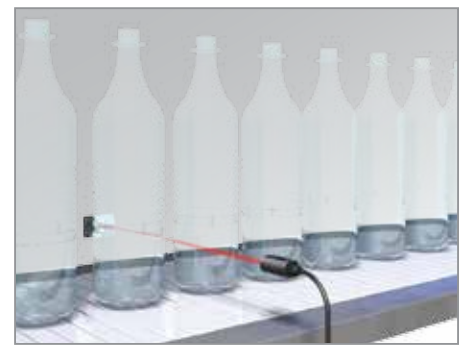
# Unrivaled Detection with Simplicity in Setup and Installation



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



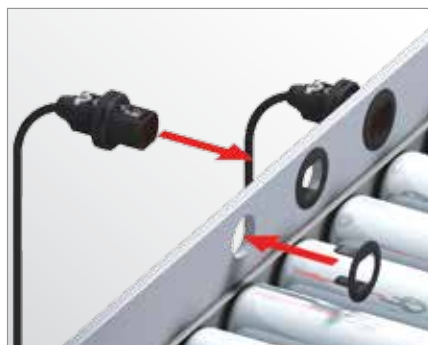
Visible red LED light for easy alignment.



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








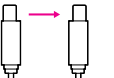


## Plastic Housing Sensors

- » 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

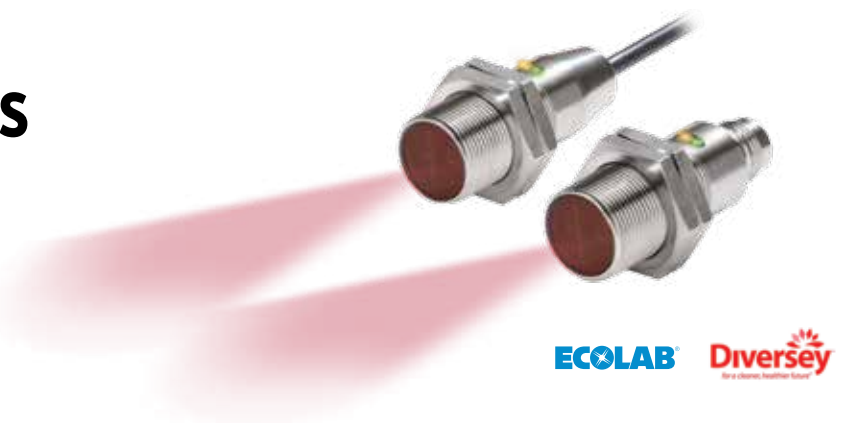
Setup	Sensor type	Sensing distance	PNP		NPN	
			Pre-wired (2m)	M12 connector	Pre-wired (2m)	M12 connector
Straight	 Through-beam *1	20m	E3FB-TP11 2M	E3FB-TP21	E3FB-TN11 2M	E3FB-TN21
	 Retro-reflective (using reflector E39-R1S sold separately.)	0.1 to 4m	E3FB-RP11 2M	E3FB-RP21	E3FB-RN11 2M	E3FB-RN21
	 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.



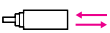
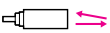
# E3FC Stainless Steel Metal Housing Sensors

- » 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

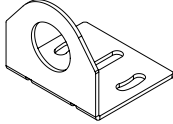
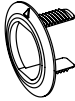

## Reflectors

**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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