

Ratings and Specifications

Straight type (E3FA/E3FB)

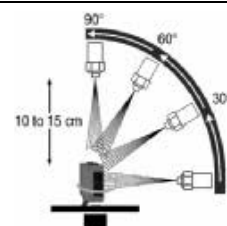
Model Item	Sensing method		Through-beam	Retro-reflective with MSR function
	PNP output	Pre-wired M12 Connector	E3F□-TP11-F2 2M E3F□-TP21-F2	E3F□-RP11-F2 2M E3F□-RP21-F2
Sensing distance			20 m	0.1 to 4 m (with E39-R1S)
Spot diameter (reference value)			—	
Standard sensing object			Opaque: 7 mm dia.min.	Opaque: 75 mm dia.min.
Differential travel			—	
Directional angle			2° min.	
Light source (wavelength)			Red LED (624 nm)	Red LED (624 nm)
Power supply voltage			10 to 30 VDC (include voltage ripple of 10%(p-p) max.)	
Current consumption			40 mA max. (Emitter 25 mA max. Receiver 15 mA max.)	25 mA max.
Control output			PNP (open collector) Load current: 100 mA max. (Residual voltage: 3 V max.), Load power supply voltage: 30 VDC max.	
Operation mode			Light-ON/Dark-ON selectable by wiring	
Indicator			Operation indicator (orange) Stability indicator (green) Power indicator (green): only Emitter of Through-beam	
Protection circuits			Power supply reverse polarity protection, Output short-circuit protection, and Output reverse polarity protection	
Response time			0.5 ms	
Sensitivity adjustment			One-turn adjuster	
Ambient illumination (Receiver side)			Incandescent lamp: 3,000 lx max./ Sunlight: 10,000 lx max.	
Ambient temperature range			Operating: -25 to 55°C/ Storage: -30 to 70°C (with no icing or condensation)	
Ambient humidity range			Operating: 35 to 85%/ Storage: 35 to 95% (with no condensation)	
Insulation resistance			20 MΩ min. at 500 VDC	
Dielectric strength			1,000 VAC at 50/60 Hz for 1 min. between current-carrying parts and case	
Vibration resistance			Destruction: 10 to 55 Hz, 1.5 mm double amplitude for 2 hours each in X, Y and Z directions	
Shock resistance			Destruction: 500 m/s ² 3 times each in X, Y and Z directions	
Degree of protection			IEC: IP67, DIN 40050-9: IP69K ¹⁾	
Weight (packed state/only sensor)	Pre-wired cable (2M)		E3FA: Approx. 110 g/ Approx. 50 g, respectively, E3FB: Approx. 175 g/ Approx. 65 g, respectively	E3FA: Approx. 60 g/ Approx. 50 g, E3FB: Approx. 95 g/ Approx. 65 g
	Connector		E3FA: Approx. 30 g/ Approx. 10 g, respectively, E3FB: Approx. 85 g/ Approx. 20 g, respectively	E3FA: Approx. 20 g/ Approx. 10 g, E3FB: Approx. 50 g/ Approx. 20 g
Material	Case		E3FA: ABS, E3FB: Nickel-brass	
	Lens and Display		PMMA	
	Adjuster		POM	
	Nut		E3FA: POM, E3FB: Nickel-brass	
Accessories			Instruction sheet M18 nuts (4 pcs)	Instruction sheet M18 nuts (2 pcs)

¹⁾ IP69K Degree of Protection Specifications

IP69K is a protection specification stipulated by DIN 40050 Part 9 of the German standards.

The test item is sprayed with 80°C water from a nozzle of a specified shape at a water pressure of 80 to 100 bar. The amount of water is 14 to 16 liters per minute.

The distance between the test item and the nozzle is 10 to 15 cm. The water is discharged at angles of 0°, 30°, 60°, and 90° from the horizontal plane for 30 seconds at each angle while the test item is rotated horizontally.



E3FA/B_-F2

Straight type (E3FA/E3FB)

Model	Sensing method		Diffuse-reflective					
	PNP output	Pre-wired	E3F□-DP11-F2 2M	E3F□-DP12-F2 2M	E3F□-DP13-F2 2M	E3F□-DP14-F2 2M	E3F□-DP15-F2 2M	E3F□-DP16-F2 2M
Item		M12 Connector	E3F□-DP21-F2	E3F□-DP22-F2	E3F□-DP23-F2	E3F□-DP24-F2	E3F□-DP25-F2	E3F□-DP26-F2
Sensing distance			100 mm (white paper: 300 × 300 mm)	300 mm (white paper: 300 × 300 mm)	1 m (white paper: 300 × 300 mm)	100 mm (white paper: 300 × 300 mm)	300 mm (white paper: 300 × 300 mm)	1 m (white paper: 300 × 300 mm)
Spot diameter (reference value)			40 × 45 mm Sensing distance of 100 mm	40 × 50 mm Sensing distance of 300 mm	120 × 150 mm Sensing distance of 1 m	40 × 45 mm Sensing distance of 100 mm	40 × 50 mm Sensing distance of 300 mm	120 × 150 mm Sensing distance of 1 m
Standard sensing object			—					
Differential travel			20% max.					
Directional angle			—					
Light source (wavelength)			Red LED (624 nm)			Infrared LED (850 nm)		
Power supply voltage			10 to 30 VDC (include voltage ripple of 10%(p-p) max.)					
Current consumption			25 mA max.					
Control output			PNP (open collector) Load current: 100 mA max. (Residual voltage: 3 V max.), Load power supply voltage: 30 VDC max.					
Operation mode			Light-ON/Dark-ON selectable by wiring					
Indicator			Operation indicator (orange) Stability indicator (green)					
Protection circuits			Power supply reverse polarity protection, Output short-circuit protection, and Output reverse polarity protection					
Response time			0.5 ms					
Sensitivity adjustment			One-turn adjuster					
Ambient illumination (Receiver side)			Incandescent lamp: 3,000 lx max./ Sunlight: 10,000 lx max.					
Ambient temperature range			Operating: -25 to 55°C/ Storage: -30 to 70°C (with no icing or condensation)					
Ambient humidity range			Operating: 35 to 85%/ Storage: 35 to 95% (with no condensation)					
Insulation resistance			20 MΩ min. at 500 VDC					
Dielectric strength			1,000 VAC at 50/60 Hz for 1 min. between current-carrying parts and case					
Vibration resistance			Destruction: 10 to 55 Hz, 1.5 mm double amplitude for 2 hours each in X, Y and Z directions					
Shock resistance			Destruction: 500 m/s ² 3 times each in X, Y and Z directions					
Degree of protection			IEC: IP67, DIN 40050-9: IP69K ^{*1}					
Weight (packed state/only sensor)	Pre-wired cable (2M)		E3FA: Approx. 60 g/ Approx. 50 g, E3FB: Approx. 95 g/ Approx. 65 g					
	Connector		E3FA: Approx. 20 g/ Approx. 10 g, E3FB: Approx. 50 g/ Approx. 20 g					
Material	Case		E3FA: ABS, E3FB: Nickel-brass					
	Lens and Display		PMMA					
	Adjuster		POM					
	Nut		E3FA: POM, E3FB: Nickel-brass					
Accessories			Instruction sheet M18 nuts (2 pcs)					

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