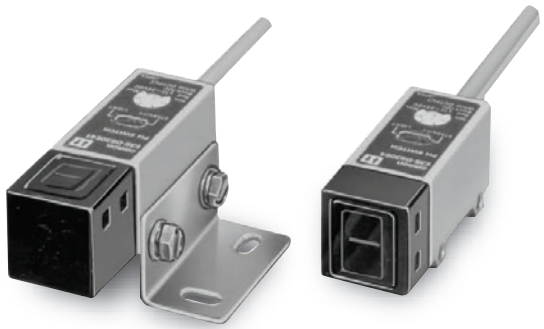
General-purpose Photoelectric Sensor for High Quality and Reliable Detection



Be sure to read *Safety Precautions* on page 8.

Ordering Information

General-purpose Sensors

Sensing method	Appearance	Sensing distance	Operation mode	Model
Through-beam *1		2 m	Light-ON/Dark-ON (selectable)	**E3S-2E4** Emitter E3S-2LE4 Receiver E3S-2DE4
		5 m		**E3S-5E4** Emitter E3S-5LE4 Receiver E3S-5DE4
Retro-reflective		0.1 to 2 m		**E3S-R2E4**
Diffuse-reflective		100 mm		**E3S-DS10E4**
		300 mm		**E3S-DS30E4**
Through-beam *1		2 m		**E3S-2E41** Emitter E3S-2LE41 Receiver E3S-2DE41
		5 m		**E3S-5E41 (42)** *2 Emitter E3S-5LE41 (42) Receiver E3S-5DE41 (42)
Retro-reflective		0.1 to 2 m		**E3S-R2E41**
Diffuse-reflective		100 mm		**E3S-DS10E41**
		300 mm		**E3S-DS30E41 (42)** *2
Convergent-reflective (narrow vision field)		30 to 100 mm (variable)		**E3S-LS10XE4**
Convergent-reflective (wide vision field)		50 to 250 mm (variable)		**E3S-LS20XE4**

Note: Sensors with open collectors and different frequencies are available.
*1. Through-beam Sensors are normally sold in sets that include both the Emitter and Receiver.
Orders for individual Emitters and Receivers are accepted.
*2. The difference between the E3S-□□ (□□□) 41 and E3S-□□ (□□□) 42 is in the lens direction when the Sensor is mounted.
For details, refer to the dimensions that are provided on page 10 for the E3S-5E41, page 11 for the E3S-DS30E41, and page 12 for the E3S-5E42 and E3S-DS30E42.

Ratings and Specifications

Sensing method		Through-beam		Retro-reflective	Diffuse-reflective			Convergent-reflective	
Item \ Model		E3S-2E4 E3S-2E41	E3S-5E4 E3S-5E41 (42)	E3S-R2E4 E3S-R2E41	E3S-DS10E4 E3S-DS10E41	E3S-DS30E41 (42)	E3S-DS30E4S	E3S-LS10XE4	E3S-LS20XE4
Sensing distance		2 m	5 m	0.1 to 2 m	100 mm (white paper 50 x 50 mm)	300 mm (white paper 100 x 100)		30 to 100 mm Continuously variable (10 x 10 mm)	50 to 250 mm Continuously variable (50 x 75 mm)
Standard sensing object		Opaque: 7-mm dia. min.	Opaque: 11-mm dia. min.	Opaque: 30-mm dia. min.	Transparent, opaque				
Differential travel		---			20% max. of setting distance			0.5 mm max. at 30 mm 3 mm max. at 100 mm	5% max. at 50 to 250 mm
Directional angle		Both emitter and receiver: 3° to 10°		3° to 10°	---				
Light source (wavelength)		Infrared LED (950 nm)						RED LED (660 nm)	Infrared LED (950 nm)
Power supply voltage		12 to 24 VDC ±10%, ripple (p-p): 10% max.							
Current consumption		50 mA max. (Emitter: 25 mA max., Receiver: 25 mA max.)		40 mA max.					
Control output (solid-state output)		Output current: 1.5 to 4 mA, Load current: 80 mA max. (residual voltage: 2 V max.) ➜ Refer to page 4.							
Response time		Operate or reset: 3 ms max.		Operate or reset: 1 ms max.					
Sensitivity adjustment		With an indicator							
Ambient illumination (Receiver side) *		Incandescent lamp: 3,000 lx max. Sunlight: 10,000 lx max.							
Ambient temperature		Operating: –25 to 55°C, Storage: –40 to 70°C (with no icing or condensation)							
Ambient humidity		Operating: 35% to 85%, Storage: 35% to 95% (with no condensation)							
Insulation resistance		20 MΩ min. at 500 VDC							
Dielectric strength		1,000 VAC, 50/60 Hz for 1 min							
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 IP65	IEC IP67		IEC IP65	IEC IP67			
Connection method		Pre-wired cable (standard length: 2 m)							
Indicators		Light indicator (red), Stability indicator (green)							
Material	Case	Polybutylene terephthalate	Zinc die-cast		Polybutylene terephthalate	Zinc die-cast			
	Lens *	Polycarbonate							
	Mounting Bracket	Iron							

*The ambient operating illumination is the illumination that changes the output ±20% at 200 lx. It is not the operational limit.