Grooved-type Photoelectric Sensor

E3S-GS3□4

CSM_E3S-GS3□4_DS_E_3_4

A Grooved-type Sensor That Doesn't Require Optical Axes Alignment



Be sure to read *Safety Precautions* on page 3.

Ordering Information

Grooved-type Photoelectric Sensor

□ Infrared light

Sensing method	Appearance	Sensing distance	Model	
			NPN	PNP
Grooved-type		□ 30 mm	**E3S-GS3E4 2M *1**	**E3S-GS3B4 2M *1**

*1. Models with 5-m cable length are also available with "5M" suffix. (Example:E3S-GS3E4 5M)

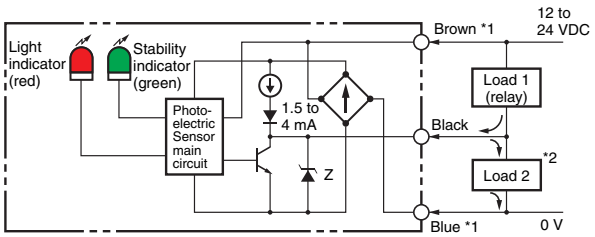
Ratings and Specifications

Item \ Sensing method	Grooved-type	
Output	NPN	PNP
Model	E3S-GS3E4	E3S-GS3B4
Sensing distance	30 mm	
Standard sensing object	Opaque, 6-mm dia. min.	
Minimum detectable object	3-mm dia. min. (black mark on transparent sheet)	
Light source (wavelength)	Infrared LED (940 nm)	
Power supply voltage	12 to 24 VDC ±10%, ripple (p-p): 10% max.	
Current consumption	40 mA max.	
Control output	Load power supply voltage: 24 VDC max., Load current: 80 mA max. (residual voltage: 2 V max.); NPN voltage output; Light-ON/Dark-ON mode selector	Load power supply voltage: 30 VDC max., Load current: 100 mA max. (residual voltage: 2 V max.); NPN voltage output; Light-ON/Dark-ON mode selector
Protection circuits	Power supply reverse polarity, Output short-circuit protection	
Response time	Operate or reset: 1 ms max.	
Sensitivity adjustment	One-turn adjuster	
Ambient illumination (Receiver side)	Incandescent lamp: 3,000 lx max. Sunlight: 10,000 lx max.	
Ambient temperature	Operating: –25 to 55°C (with no icing or condensation) Storage: –40 to 70°C (with no icing or condensation)	
Ambient humidity	Operating: 35% to 85% (with no condensation) 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	
Vibration resistance (destruction)	10 to 55 Hz with a 1.5-mm double amplitude for 2 h each in X, Y and Z directions	
Shock resistance (destruction)	500 m/s^2, for 3 times each in X, Y and Z directions	
Degree of protection	IEC60529 IP67	
Connection method	Pre-wired (standard length: 2 m)	
Weight (packed state)	Approx. 330 g	
Materials – **Case**	Zinc die-cast	
Materials – **Lens**	Polycarbonate	
Materials – **Indicator window**	Polycarbonate	
Accessories	Adjustment screwdriver, Sensitivity adjuster, Instruction sheet	

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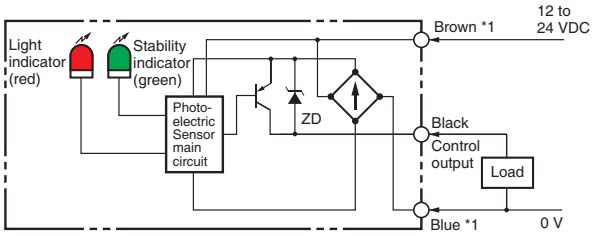
I/O Circuit Diagrams

NPN Output

Model	Operation mode	Timing charts	Connection method	Output circuit
E3S-GS3E4	Light ON	Incident light No incident light Light indicator (red) ON OFF Output transistor ON OFF Load 1 (e.g., relay) Operate Reset (Between brown and black) Load 2 H L (Between blue and black)	Brown cable: +V Blue cable: 0 V	
	Dark ON	Incident light No incident light Light indicator (red) ON OFF Output transistor ON OFF Load 1 (e.g., relay) Operate Reset (Between blue and black) Load 2 H L (Between brown and black)	Brown cable: 0 V Blue cable: +V	

*1. Invert the connection to switch between Light ON and Dark ON.
*2. Voltage output (When connecting a transistor circuit, etc.)

NPN Output

Model	Operation mode	Timing charts	Connection method	Output circuit
E3S-GS3B4	Light ON	Incident light No incident light Light indicator (red) ON OFF Output transistor ON OFF Load (e.g., relay) Operate Reset (Between blue and black)	Brown cable: +V Blue cable: 0 V	
	Dark ON	Incident light No incident light Light indicator (red) ON OFF Output transistor ON OFF Load (e.g., relay) Operate Reset (Between brown and black)	Brown cable: 0 V Blue cable: +V	

*1. Invert the connection to switch between Light ON and Dark ON.

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Safety Precautions

⚠ WARNING

This product is not designed or rated for ensuring safety of persons. Do not use it for such purpose.



Precautions for Correct Use

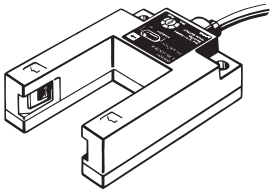
Do not use the product in atmospheres or environments that exceed product ratings.

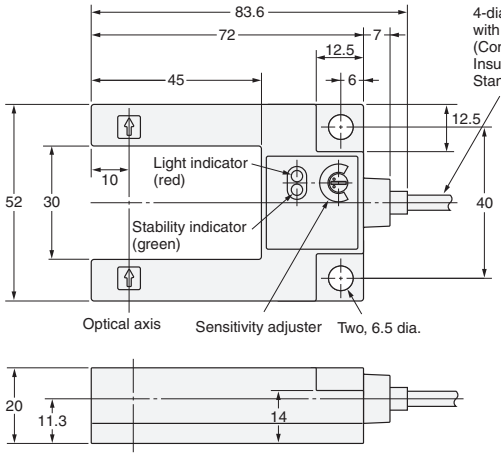
Dimensions

(Unit: mm)

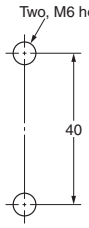
Unless otherwise specified, the tolerance class IT16 is used for dimensions in this data sheet.

E3S-GS3E4
E3S-GS3B4





Mounting Holes



In the interest of product improvement, specifications are subject to change without notice.

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