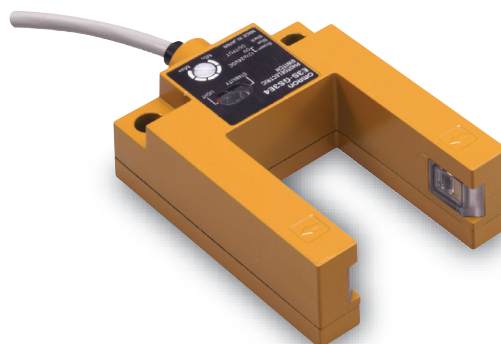



A Grooved-type Sensor That Doesn't Require Optical Axes Alignment





CE

 Be sure to read *Safety Precautions* on page 2.

Ordering Information

Grooved-type Photoelectric Sensor

 Infrared light

Sensing method	Appearance	Sensing distance	Model
Grooved-type		 30 mm	E3S-GS3E4

Ratings and Specifications

Item	Sensing method	
	Model	Grooved-type
		E3S-GS3E4
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 (950 nm)	
Power supply voltage	12 to 24 VDC $\pm 10\%$, 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: 1.5 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 M Ω 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	IEC IP67	
Connection method	Pre-wired (standard length: 2 m)	
Weight (packed state)	Approx. 330 g	
Materials	Case	Zinc die-cast
	Lens	Polycarbonate
	Indicator window	Polycarbonate
Accessories	Adjustment screwdriver, Sensitivity adjuster, Instruction sheet	

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 Operate (e.g., relay) Reset H (Between brown and black) 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 Operate (e.g., relay) Reset H (Between blue and black) 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.)

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

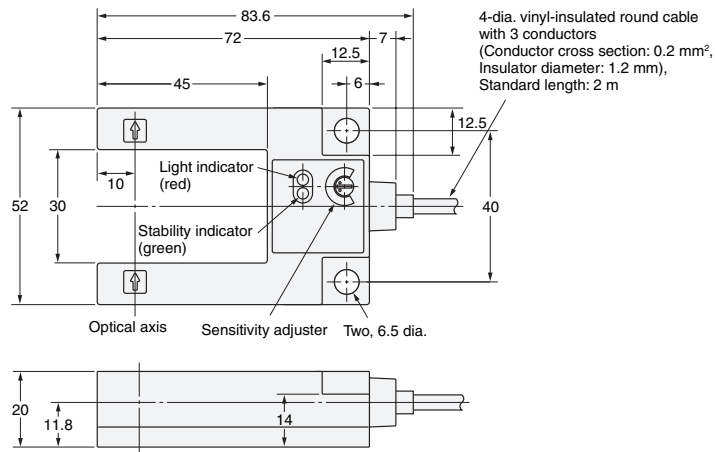
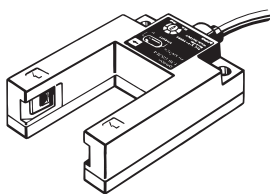
Do not use the product in atmospheres or environments that exceed product ratings.

Dimensions

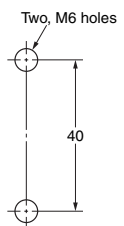
(Unit: mm)

E3S-GS3E4

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



Mounting Holes



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

Read and Understand This Catalog

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

Warranty and Limitations of Liability

WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

LIMITATIONS OF LIABILITY

OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

Application Considerations

SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products.

At the customer's request, OMRON will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this catalog.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

PROGRAMMABLE PRODUCTS

OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof.

Disclaimers

CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons.

It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the products may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased products.

DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

PERFORMANCE DATA

Performance data given in this catalog is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.

ERRORS AND OMISSIONS

The information in this document has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical, or proofreading errors, or omissions.

2008.9

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

OMRON Corporation
Industrial Automation Company

<http://www.ia.omron.com/>

(c)Copyright OMRON Corporation 2008 All Right Reserved.