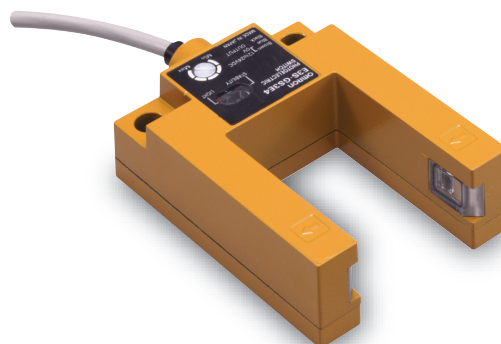



## A Grooved-type Sensor That Doesn't Require Optical Axes Alignment





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	<b>E3S-GS3E4 2M</b>

### 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: 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 $55^{\circ}\text{C}$ (with no icing or condensation) Storage: $-40$ to $70^{\circ}\text{C}$ (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 $\Omega$ 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 <sup>2</sup> , 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 ON (red) OFF ON Output transistor OFF ON Load 1 Operate (e.g., relay) Reset H (Between brown and black) Load 2 L (Between blue and black)	Brown cable: +V Blue cable: 0 V	
	Dark ON	Incident light No incident light Light indicator ON (red) OFF ON Output transistor OFF OFF Load 1 Operate (e.g., relay) Reset H (Between blue and black) Load 2 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**

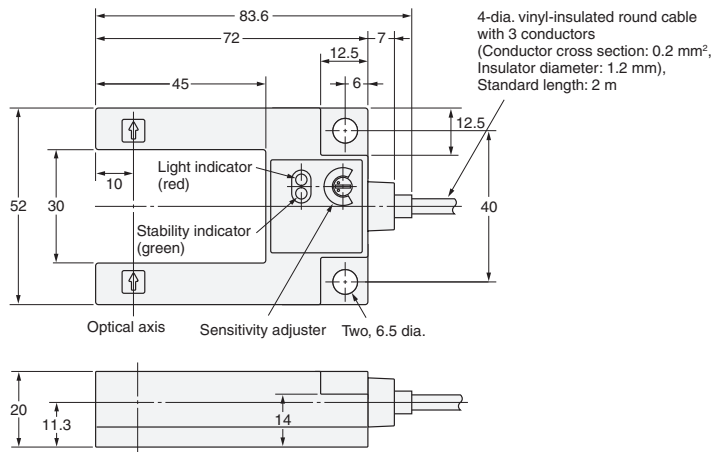
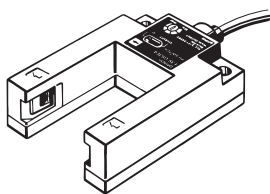
Do not use the product in atmospheres or environments that exceed product ratings.

Dimensions

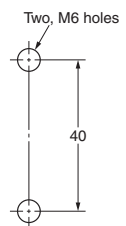
E3S-GS3E4

(Unit: mm)

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.

## Terms and Conditions Agreement

### 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.

### Warranties.

(a) Exclusive Warranty. Omron's exclusive warranty is that the Products will be free from defects in materials and workmanship for a period of twelve months from the date of sale by Omron (or such other period expressed in writing by Omron). Omron disclaims all other warranties, express or implied.

(b) Limitations. OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCTS. BUYER ACKNOWLEDGES THAT IT ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE.

Omron further disclaims all warranties and responsibility of any type for claims or expenses based on infringement by the Products or otherwise of any intellectual property right. (c) Buyer Remedy. Omron's sole obligation hereunder shall be, at Omron's election, to (i) replace (in the form originally shipped with Buyer responsible for labor charges for removal or replacement thereof) the non-complying Product, (ii) repair the non-complying Product, or (iii) repay or credit Buyer an amount equal to the purchase price of the non-complying Product; provided that in no event shall Omron be responsible for warranty, repair, indemnity or any other claims or expenses 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. Return of any Products by Buyer must be approved in writing by Omron before shipment. Omron Companies shall not be liable for the suitability or unsuitability or the results from the use of Products in combination with any electrical or electronic components, circuits, system assemblies or any other materials or substances or environments. Any advice, recommendations or information given orally or in writing, are not to be construed as an amendment or addition to the above warranty.

See <http://www.omron.com/global/> or contact your Omron representative for published information.

### Limitation on Liability; Etc.

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

Further, in no event shall liability of Omron Companies exceed the individual price of the Product on which liability is asserted.

### Suitability of Use.

Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases.

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

### Programmable Products.

Omron Companies shall not be responsible for the user's programming of a programmable Product, or any consequence thereof.

### Performance Data.

Data presented in Omron Company websites, catalogs and other materials 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 user must correlate it to actual application requirements. Actual performance is subject to the Omron's Warranty and Limitations of Liability.

### 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 part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Product may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please consult with your Omron's representative at any time to confirm actual specifications of purchased Product.

### Errors and Omissions.

Information presented by Omron Companies has been checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.

2015.9

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 2015 All Right Reserved.