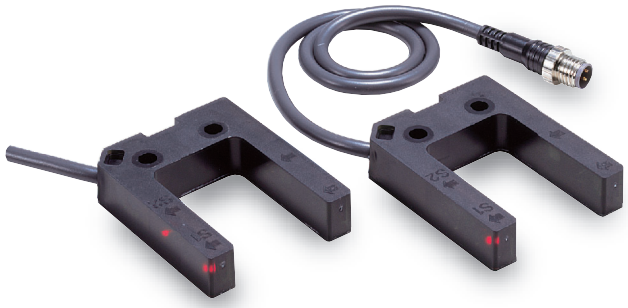
Grooved-type Photoelectric Sensor with Built-in Amplifier

E3Z-G

CSM_E3Z-G_DS_E_5_1

Grooved Design Eliminates Optical Axis Adjustment

- One- and two-axis models available.
- Provides mutual interference prevention and EN standard compliance.



⚠ Be sure to read *Safety Precautions* on page 4.

CE

Ordering Information

Sensors (Refer to *Dimensions* on page 4.)

Infrared light

Sensing method	Appearance	Connection method	Sensing distance	No. of optical axes	Model	
					NPN output	PNP output
Through-beam		Pre-wired (2 m)	25 mm	1	E3Z-G61 2M *	E3Z-G81 2M
		Pre-wired Connector (M8, 4 pins)			E3Z-G61-M3J 0.3M	E3Z-G81-M3J 0.3M
		Pre-wired (2 m)		2	E3Z-G62 2M *	E3Z-G82 2M
		Pre-wired Connector (M8, 4 pins)			E3Z-G62-M3J 0.3M	E3Z-G82-M3J 0.3M

Note: Models with a 0.5-m cable are available. When ordering, specify the cable length by adding the code "0.5M" to the model number (e.g., E3Z-G61 0.5M).
* The following table shows the model numbers of e-CON Pre-wired Connectors that are available. The Ratings and Specifications are the same as those for the E3Z-G61/G62.

No. of optical axes	Cable length	Model
1 axis	0.3 m	E3Z-G61-ECON 0.3M
	0.5 m	E3Z-G61-ECON 0.5M
	2 m	E3Z-G61-ECON 2M
2 axes	0.3 m	E3Z-G62-ECON 0.3M
	0.5 m	E3Z-G62-ECON 0.5M
	2 m	E3Z-G62-ECON 2M

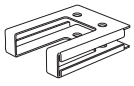
Accessories (Order Separately)

Sensor I/O Connectors (Refer to *Dimensions* on XS3.)

Cable specification	Appearance		Type of cable		Model
Standard cable	Straight		2 m	4-wire	XS3F-M421-402-A
			5 m		XS3F-M421-405-A
	L-shape		2 m		XS3F-M422-402-A
			5 m		XS3F-M422-405-A

Note: Refer to *Introduction to Sensor I/O Connectors* for details.

Protective Bracket (Refer to *Dimensions* on E39-L/F39-L/E39-S/E39-R)

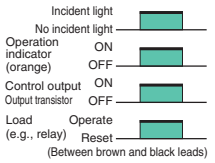
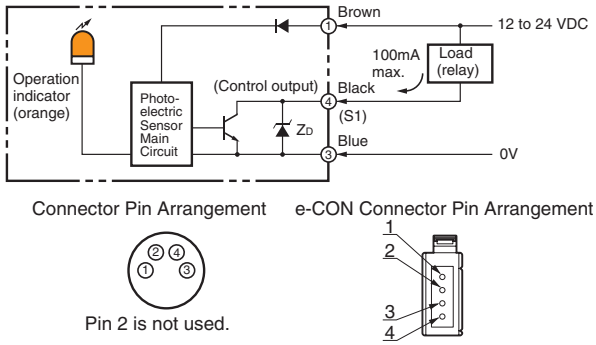
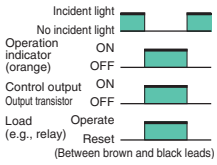
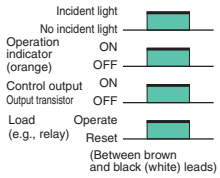
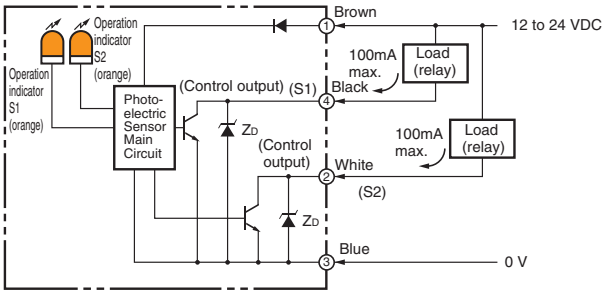
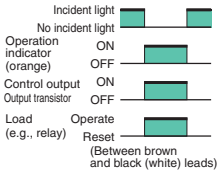
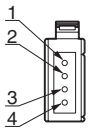
Appearance	Model	Applicable model
	E39-L149	E3Z-G

Ratings and Specifications

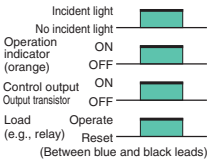
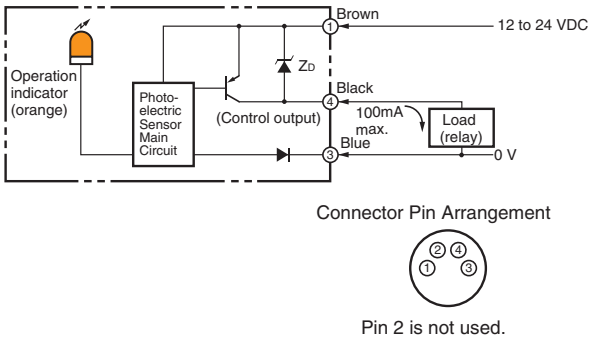
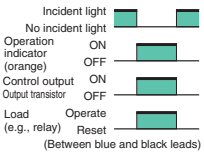
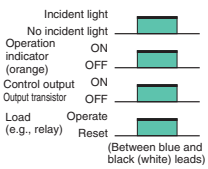
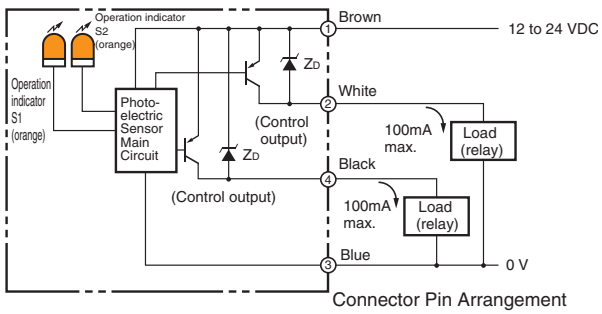
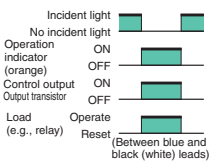
Item		Number of optical axes	1	2
	Model	NPN output	E3Z-G61/E3Z-G61-M3J	E3Z-G62/E3Z-G62-M3J
		PNP output	E3Z-G81/E3Z-G81-M3J	E3Z-G82/E3Z-G82-M3J
Sensing distance (distance between arms of groove)			25 mm	
Standard sensing object			Opaque, 1.5-mm dia. min.	
Light source (wavelength)			Infrared LED (940 nm)	
Power supply voltage			12 to 24 VDC±10%, ripple (p-p): 10% max.	
Current consumption			25 mA max.	40 mA max.
Control output			Load power supply voltage: 26.4 VDC max. Load current: 100 mA max. (Residual voltage: 1 V max.) Open collector output (NPN or PNP depending on model) Light-ON/Dark-ON selectable	
Protection circuits			Reversed power supply polarity protection, Output short-circuit protection, and Mutual interference prevention	
Response time			Operate or reset: 1 ms max.	
Ambient illumination (Receiver side)			Incandescent lamp: 3,000 lx max. Sunlight: 10,000 lx max.	
Ambient temperature range			Operating: −25 to 55°C, Storage: −40 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 between lead wires and case	
Dielectric strength			1,000 VAC, 50/60 Hz for 1 min between lead wires 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			IP64 (IEC 60529)	
Connection method			Pre-wired cable (standard length: 2 m and 0.5 m)/Pre-wired Connector (standard length: 300 mm)	
Indicator			Operation indicator (orange)	
Weight (packed state)	Pre-wired (with 2-m cable)		Approx. 65 g	
	Pre-wired Connectors		Approx. 30 g	
Material	Case		ABS (Acrylonitril Butadiene Styrene)	
Accessories			Instruction manual	

I/O Circuit Diagrams

NPN Output

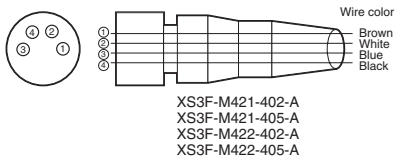
No. of optical axes/model	Operation mode	Timing charts	Operation selector	Output circuit
1 axis E3Z-G61 E3Z-G61-M3J	Light-ON		L side (LIGHT ON)	
	Dark-ON		D side (DARK ON)	Connector Pin Arrangement e-CON Connector Pin Arrangement
2 axes E3Z-G62 E3Z-G62-M3J	Light-ON		L side (LIGHT ON)	
	Dark-ON		D side (DARK ON)	Connector Pin Arrangement  e-CON Connector Pin Arrangement 

PNP Output

No. of optical axes/model	Operation mode	Timing charts	Operation selector	Output circuit
1 axis E3Z-G81 E3Z-G81-M3J	Light-ON		L side (LIGHT ON)	
	Dark-ON		D side (DARK ON)	Connector Pin Arrangement
2 axes E3Z-G82 E3Z-G82-M3J	Light-ON		L side (LIGHT ON)	
	Dark-ON		D side (DARK ON)	Connector Pin Arrangement 

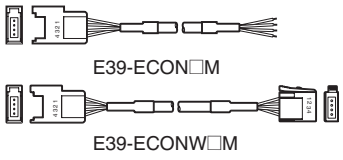
Plugs (Sensor I/O Connectors)

M8 connector



XS3F-M421-402-A
XS3F-M421-405-A
XS3F-M422-402-A
XS3F-M422-405-A

e-CON connector



E39-ECON□M

E39-ECONW□M

Pin arrangement

Classification	Wire color	Connector pin No.	Application	
			1-axis models	2-axis models
DC	Brown	1	Power supply (+V)	
	White	2	---	Output 2 (S2)
	Blue	3	Power supply (0 V)	
	Black	4	Output	Output 1 (S1)

Note: Pin 2 of 1-axis models is not used.

Safety Precautions

Refer to *Warranty and Limitations of Liability*.

⚠ WARNING

This product is not designed or rated for ensuring safety of persons either directly or indirectly. Do not use it for such purposes.

Precautions for Correct Use

- Do not use the product in atmospheres or environments that exceed product ratings.
- The degree of protection for this Product is IP64 (IEC). The degree of protection for other models in the E3Z Series is IP67.

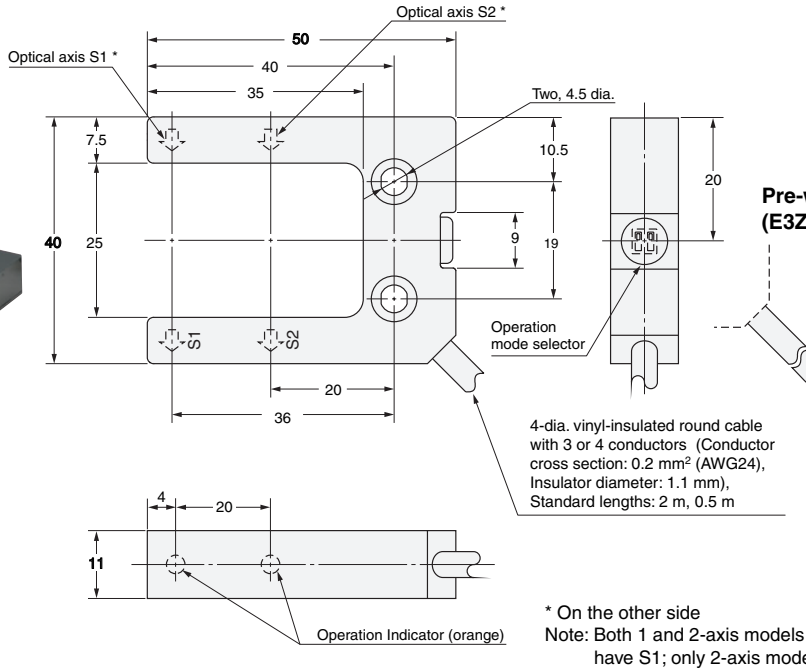
Dimensions

(Unit: mm)

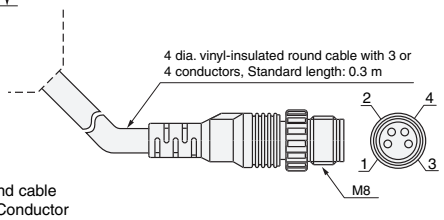
Tolerance class IT16 applies to dimensions in this datasheet unless otherwise specified.

Sensors

E3Z-G61
E3Z-G62

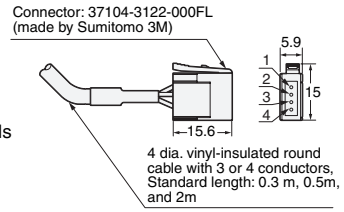


Pre-wired Connector Models (E3Z-G□□□-M3J)



* On the other side
Note: Both 1 and 2-axis models have S1; only 2-axis models have S2.
*S1 output: Black
*S2 output: White

e-CON Pre-wired Connector Model



Accessories (Order Separately)

Mounting Brackets

Refer to *E39-L* for details.

Sensor I/O Connectors

Refer to *XS3F and E3Z (E39-ECON□)* for details.

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.

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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.

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2009.5

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

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