Inductive proximity sensor with gold-plated pins

E2A-4

Inductive proximity sensor E2A-4 was created and tested for applications in the harsh environment and at though vibration conditions. Gold-plated contact pins provide increased protection against corrosion in high humidity and vibration.

- Gold-plated contact pins
- Connector type M8 and M12 models
- PNP/NPN NO

IP67 CE

Ordering Information

Size	Sensing distance	Connection	Body material	Thread length (overall length)	Output configuration	Operation mode	Order code
M8	2 mm	Connector M8 3 pin: gold-plated	Stainless steel	27 (40) mm	NPN	NO	E2A-S08KS02-M5-C1-4
				49 (62) mm			E2A-S08LS02-M5-C1-4
M12	4 mm	Connector M12 4 pin: gold-plated	Brass-nickel plated	34 (48) mm	PNP		E2A-M12KS04-M1-B1-4
	8 mm						E2A-M12KN08-M1-B1-4

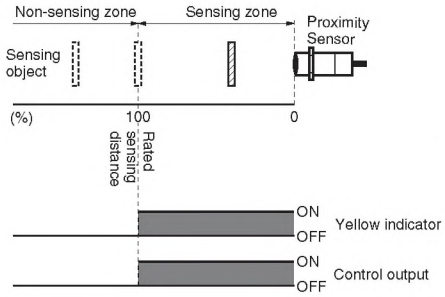
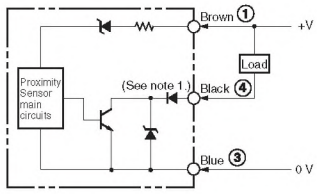
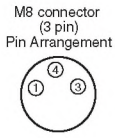
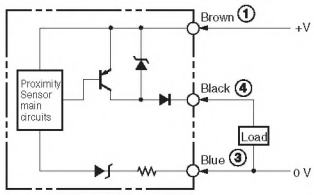
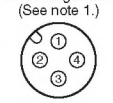
Specifications

Size		M8		M12	
Model		E2A-S08KS02-M5-C1-4	E2A-S08LS02-M5-C1-4	E2A-M12KS04-M1-B1-4	E2A-M12KN08-M1-B1-4
Sensing mode		High-frequency oscillation			
Output		DC-3 wire			
Output type		NPN open collector		PNP open collector	
Sensing surface		Shielded			Non-shielded
Size		M8		M12	
Operation mode		NO			
Indicator operation		Yellow LED			
Output		Output DC-3 wire, 3 pins		Output DC-3 wire, 4 pins	
Degree of protection		IEC60529 IP67			
Materials Case		Stainless steel		Brass-nickel plated	
Sensing surface		PBT			
Connector		M8		M12	
PIN		Bronze(C5441) / Gold-plated contacts			
Power supply voltage		12 to 24 VDC; Ripple (p-p) 10% max.			
Operating voltage range		10 to 32 VDC			
Current consumption		10 mA max.			
Sensing distance (Standard target: mild steel ST37 8×8×1 mm)		2 mm±10%		4 mm±10%	8 mm±10%
Target		Ferrous metal (The sensing distance decreases with non-ferrous metal)			
Differential travel/Hysteresis		10% max.of sensing distance			
Response frequency		1,500 Hz		1,000 Hz	800 Hz
Control output	Load current	200 mA max. (32 VDC max.)			
	Residual voltage	2 V max.			
Power reset time		100 ms max.			
Short-circuit protection		Yes			
Surge suppressor		Yes			

Size		M8		M12	
Model		E2A-S08KS02-M5-C1-4	E2A-S08LS02-M5-C1-4	E2A-M12KS04-M1-B1-4	E2A-M12KN08-M1-B1-4
Power source circuit reverse polarity protection		Yes			
Temperature influence		±10% max. of sensing distance at 23°C within temperature range of –25°C to 70°C			
		±15% max. of sensing distance at 23°C within temperature range of –40°C to 70°C			
Voltage influence		±1% max. of sensing distance in rated voltage range ±15%			
Insulation resistance		50 MΩ min. (at 500 VDC) between current carry parts and case			
Dielectric strength		1,000 VAC at 50/60Hz for 1 min between current carry parts and case			
Vibration resistance		10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y and Z directions			
Shock resistance		500 m/s², 10 times each in X, Y and Z directions			
Standard testing environment	Ambient air temperature	23°C			
	Ambient air humidity	65% RH			
Storage	Ambient air temperature	–40°C to +85°C (with no icing or condensation)			
	Ambient air humidity	35% to 95% RH			
Operating environment	Ambient air temperature	–40°C to +70°C (with no icing or condensation)			
	Ambient air humidity	35% to 95% RH			
Environment application requirements		(1) Do not use the proximity sensor underwater, outdoors, or in the rain. (2) Be sure to use the proximity Sensor within its operating ambient temperature range and do not use the proximity sensor outdoors for its reliability and life expectancy. (3) Do not use the proximity sensor in an environment with chemical gas or risk of explosion.			

Note: Refer to latest information of base product E2A-(base product) for specifications, dimensions, engineering data and installation instructions.

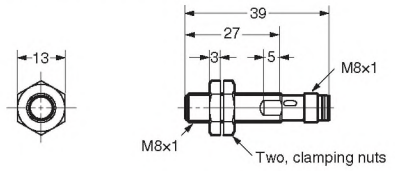
Operation

Model	Operation Mode	Timing chart	Output circuit
E2A-S08KS02-M5-C1-4	NO		 Note 1: With M8 connector models, there is no output reverse polarity protection diode. NPN type 
E2A-S08LS02-M5-C1-4			
E2A-M12KS04-M1-B1-4			 Note 1: Terminal 2 of the M12 connector is not used. PNP type 
E2A-M12KN08-M1-B1-4			

Dimensions

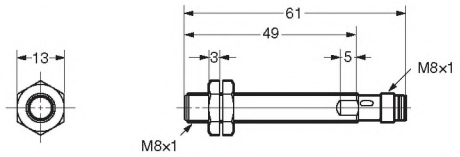
(Unit: mm)

E2A-S08KS02-M5-C1-4



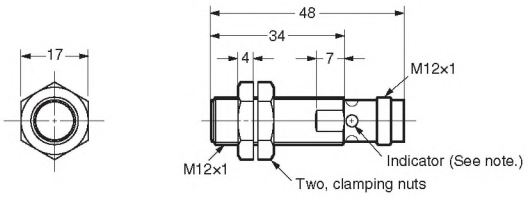
Note: Operation indicator (yellow LED, 4×90°)

E2A-S08LS02-M5-C1-4



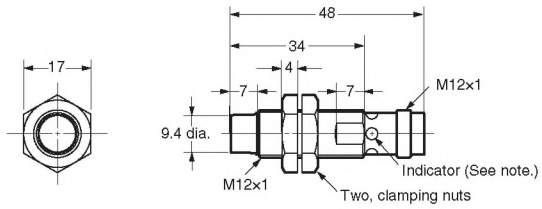
Note: Operation indicator (yellow LED, 4×90°)

E2A-M12KS04-M1-B1-4



Note 1: Operation indicator (yellow LED, 4×90°)

E2A-M12KN08-M1-B1-4



Note 1: Operation indicator (yellow LED, 4×90°)

Safety Precautions

Precautions for Safe Use

⚠ Warning

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

Power Supply

Do not impose an excessive voltage on the E2A, otherwise it maybe damaged. Do not impose AC current (100 to 240 VAC) on any DC-model, otherwise it may be damaged.

Load Short-circuit

Do not short-circuit the load, or the E2A may be damaged. The E2A's short-circuit protection function will be valid if the polarity of the supply voltage is correct and within the rated voltage range.

Wiring

Be sure to wire the E2A and load correctly, otherwise it may be damaged.

Connection with No Load

Be sure to insert a load when wiring. Make sure to connect a proper load to the E2A during operation, otherwise it may damage internal elements.

Do not expose the product to flammable or explosive gases.

Do not disassemble, repair, or modify the product.

Precautions for Correct Use

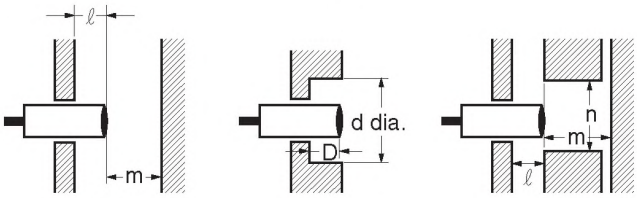
Designing

Power Reset Time

The Proximity Sensor is ready to operate within 100 ms after power is supplied. If separate power supplies are connected to the Proximity Sensor and load, be sure to supply power to the Proximity Sensor before supplying power to the load.

Effects of Surrounding Metal

When mounting the E2A within a metal panel, ensure that the clearances given in the following tables are maintained.



Type	Dimension	M12
Non-shielded	ℓ	15 mm
	m	20 mm
	d	40 mm
	D	15 mm
	n	40 mm

Power OFF

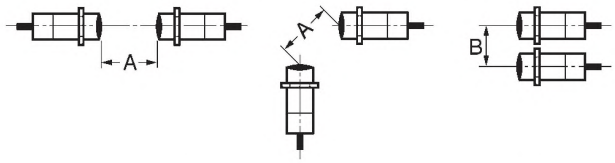
The Proximity Sensor may output a pulse signal when it is turned OFF. Therefore, it is recommended that the load is turned OFF before turning OFF the Proximity Sensor.

Power Supply Transformer

When using a DC power supply, make sure that the DC power supply has an insulated transformer. Do not use a DC power supply with an auto-transformer.

Mutual Interference

When installing two or more Sensors face-to-face or side-by-side, ensure that the minimum distances are maintained.



Type	Dimension	M12
Non-shielded	A	120
	B	100

Wiring

High-tension Lines

Wiring through Metal Conduit:
If there is a power or high-tension line near the cable of the Proximity Sensor, wire the cable through an independent metal conduit to prevent against Proximity Sensor damage or malfunctioning.

Cable Extension

The standard cable length is less than 200 m.
The tractive force is 50 N.

Mounting

The Proximity Sensor must not be subjected to excessive shock with a hammer when it is installed, otherwise the Proximity Sensor maybe damaged or loses its water-resistance.
Do not tighten the nut with excessive force. A washer must be used with the nut.

Type	Torque
M12	30 Nm

Accessories

Clamping nut	Material	Brass-nickel plated
	Number	2 pcs.

Maintenance and Inspection

Periodically perform the following checks to ensure stable operation of the Proximity Sensor over a long period of time.

1. Check for mounting position, dislocation, looseness, or distortion of the Proximity Sensor and sensing objects.
2. Check for loose wiring and connections, improper contacts, and line breakage.
3. Check for attachment or accumulation of metal powder or dust.
4. Check for abnormal temperature conditions and other environmental conditions.
5. Check for proper lighting of indicators (for models with a set indicator).

Never attempt to disassemble or repair the Sensor.

Environment

Water Resistivity

The Proximity Sensors are tested intensively on water resistance, but to ensure maximum performance and life expectancy, avoid immersion in water and provide protection from rain or snow.

Operating Environment

Store and operate the Proximity Sensor only within the given specifications.

Inrush Current

A load that has a large inrush current (e.g., a lamp or motor) will damage the Proximity Sensor. Connect the load to the Proximity Sensor through a relay

<SUITABILITY FOR USE>

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of the products in the customer's application or use of the products. Take all necessary steps to determine the suitability of the product for the systems, machines, and equipment with which it will be used.

<CHANGE IN SPECIFICATIONS>

Product specifications and accessories may be changed at any time based on improvements and other reasons. Consult with your OMRON representative at any time to confirm actual specifications of purchased product.

Notes

APPLICATION CONSIDERATIONS

1) READ AND UNDERSTAND THIS SPECIFICATION SHEET

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

2) 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.

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

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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.

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- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this document.
- 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 PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

5) SPECIFICATION SHEET FOR REFERENCE

When you have specification sheet only for Reference, OMRON will not inform you of the change in specifications. Please consult with your OMRON representative at any time to confirm the latest specifications of purchased product.

6) DIMENSIONS AND WEIGHTS

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

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