

## Aluminum-detecting Proximity Sensor


## E2EY

**Proximity Sensor that Detects Aluminum, Brass, and Other Non-magnetic Metals, but Not Iron**

- Ignores magnetic metals (nickel, iron, etc.) but detects non-magnetic ones (aluminum, copper, brass, etc.).
- Easy to use with built-in amp.
- Easy-to-see operation indicator.

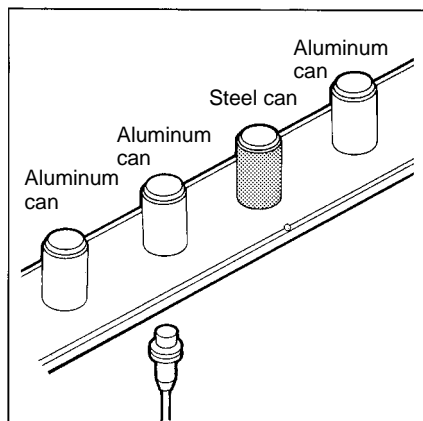


### Ordering Information

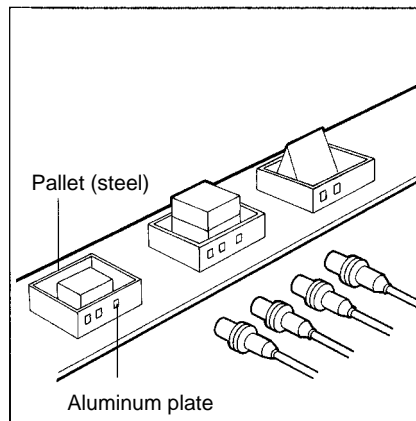
Shield	Size	Sensing distance	Output	Model
Shielded 	M18	4 mm	DC 3-wire models NPN-NO	E2EY-X4C1
	M30	8 mm		E2EY-X8C1

### Application Examples

**Detecting Cans of Specific Materials**



**Separating Products via Aluminum Plates on Pallets**



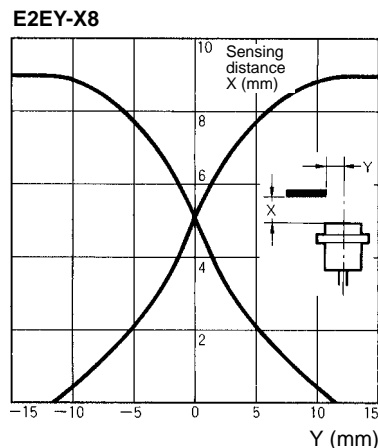
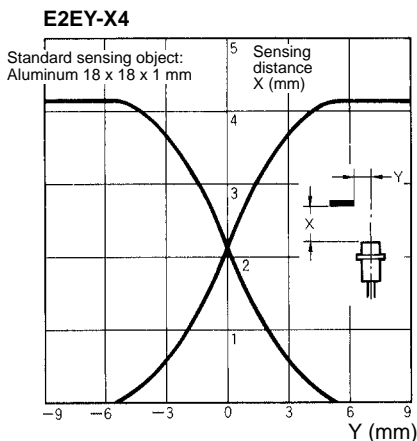
# Specifications

Item	E2EY-X4C1	E2EY-X8C1
Sensing distance	4.0 mm $\pm$ 10%	8.0 mm $\pm$ 10%
Supply voltage (operating voltage range)	12 to 24 VDC, ripple (p-p): 10% max. (10 to 30 VDC)	
Current consumption	20 mA max.	
Sensing object	Non-magnetic metals (Doesn't detect magnetic metals.)	
Sensing distance (standard object)	0 to 2.8 mm (aluminum: 18 x 18 x 1 mm)	0 to 5.6 mm (aluminum: 30 x 30 x 1 mm)
Differential travel	20% max. of sensing distance	
Response frequency (see note)	70 Hz	
Operating status (with sensing object approaching)	Load ON	
Control output	NPN-NO open collector (switching capacity: 100 mA max.)	
Circuit protection	Protection for load short circuit, surge voltage, reverse polarity	
Indicator	Operation indicator (red LED)	
Ambient temperature	Operating: $-10^{\circ}\text{C}$ to $55^{\circ}\text{C}$ (with no icing)	
Ambient humidity	Operating: 35% to 95%	
Temperature influence	$\pm$ 20% max. of sensing distance at $23^{\circ}\text{C}$ in the temperature range of $-10^{\circ}\text{C}$ to $55^{\circ}\text{C}$	
Voltage influence	$\pm$ 2.5% max. of sensing distance within a range of $\pm$ 15% of rated power supply voltage	
Residual voltage	2.0 V max. (100 mA load current with 2-m cable)	
Insulation resistance	50 M $\Omega$ min. (at 500 VDC) between current carry parts and case	
Dielectric strength	1,000 VAC, 50/60 Hz for 1 min between current carry parts and case	
Vibration resistance	Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 hr each in X, Y, and Z directions	
Shock resistance	Destruction: 1,000 m/s <sup>2</sup> (approx. 100G) 10 times each in X, Y, and Z directions	
Enclosure rating	IEC IP67	
Weight (with 2-m cord)	Approx. 140 g	Approx. 190 g
Material	Case	Brass
	Sensing surface	Heat-resistant ABS

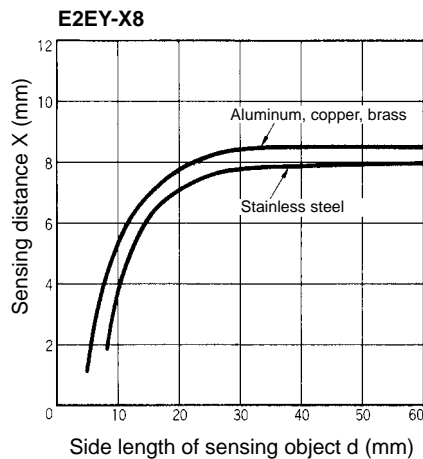
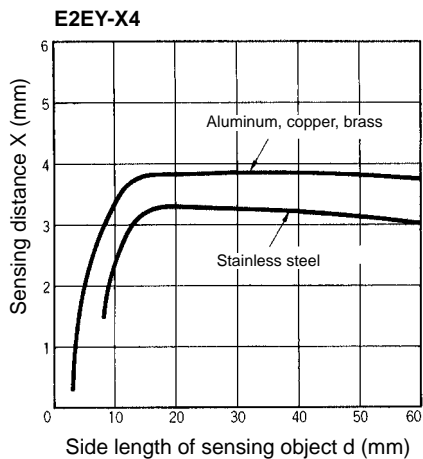
**Note:** The response frequency of the AC switch is the typical value measured with the standard reference objects separated by twice the width of the objects and separated from the Sensor by 1/2 of the sensing distance.

# Engineering Data

## Operating Range (Typical Example)



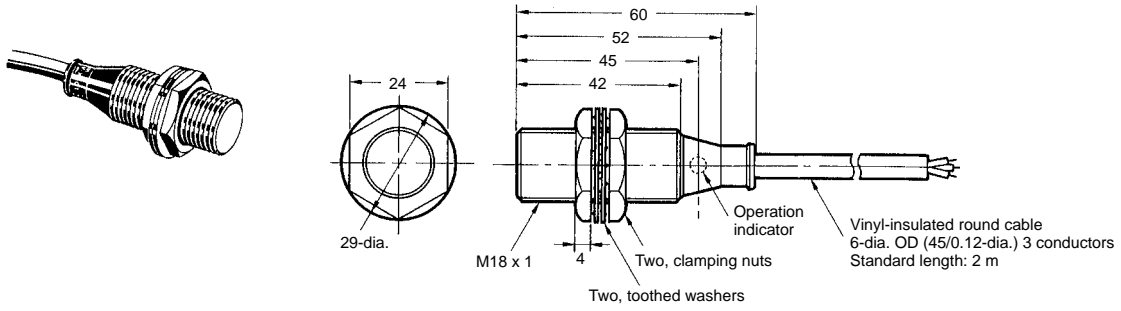
## Sensing Distance Vs. Sensing Object (Typical Example)



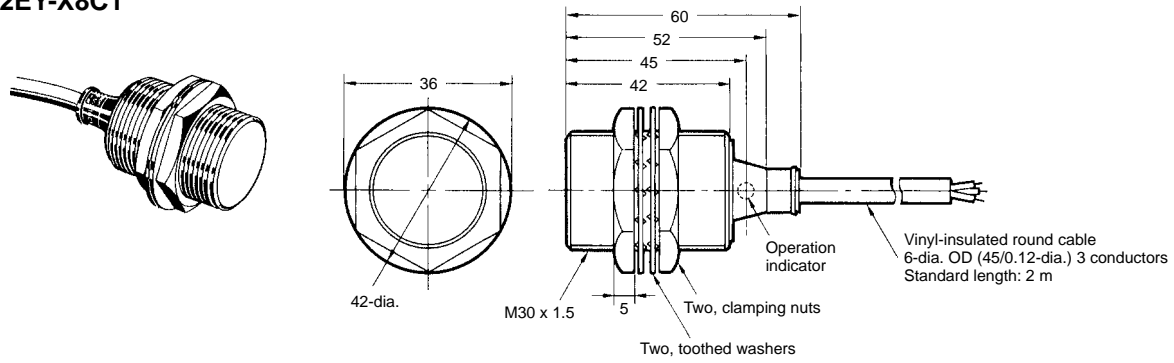
# Dimensions

**Note:** All units are in millimeters unless otherwise indicated.

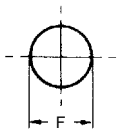
## E2EY-X4C1



## E2EY-X8C1



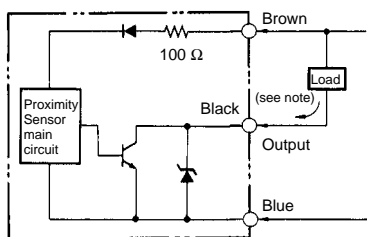
## Mounting Hole Dimensions



Model	F (mm)
E2EY-X4C1	18.5 <sup>+0.5</sup> <sub>-0</sub> dia.
E2EY-X8C1	30.5 <sup>+0.5</sup> <sub>-0</sub> dia.

# Installation

## ■ Output Circuit



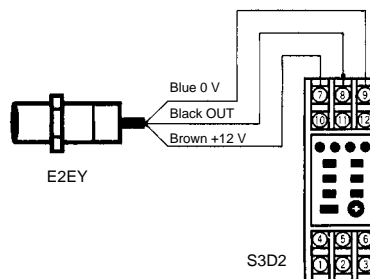
**Note:** The load current must be less than 100 mA.

<b>Sensing Object</b>	Yes	
	No	
<b>Output Transistor (load)</b>	ON	
	OFF	
<b>Operation Monitor (LED)</b>	ON	
	OFF	

## ■ Connection

### Connecting a S3D2 Sensor Controller

If a S3D2 is connected, reverse operation of the Sensor is possible by adjusting the signal input selector of the S3D2.

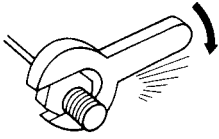


**Note:** Refer to the *S3D2 Datasheet* for details on the operation and characteristics of the S3D2.

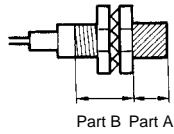
# Precautions

## ■ Mounting

- Do not tighten the nut with excessive force. A washer must be used with the nut.



Shielded Model

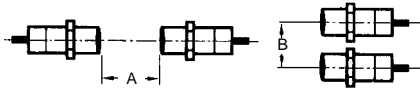


**Note:** The table below shows the tightening torques for part A and part B nuts. In the above example, the nut is on the sensor head side (part B) and hence the tightening torque for part B applies. If this nut is in part A, the tightening torque for part A applies instead.

Model	Part A		Part B
	Length	Torque	Torque
E2EY-X4C1	22 mm	150 kgf • cm (15 N • m)	500 kgf • cm (49 N • m)
E2EY-X8C1	26 mm	400 kgf • cm (39 N • m)	800 kgf • cm (78 N • m)

## ■ Mutual Interference

When installing two or more E2EY Sensors face to face or side by side, ensure the minimum distances given in the following table are maintained.

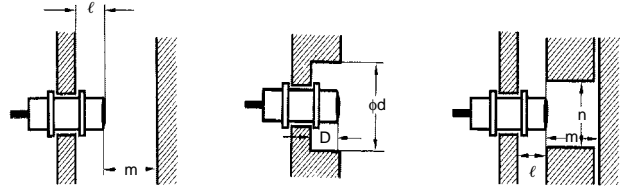


Model	E2EY-X4C1	E2EY-X8C1
A	50 mm	100 mm
B	35 mm	70 mm

**Note:** Aluminum (non-magnetic substance) cannot be detected through iron (magnetic substance).

## ■ Effects of Surrounding Metal

When mounting the E2EY within a metal panel, ensure the clearances given in the following table are maintained. Failure to maintain these distances may cause deterioration in the performance of the Sensor.



Model	E2EY-X4C1	E2EY-X8C1
$l$	0 mm	0 mm
$d$	18 mm	30 mm
$D$	0 mm	0 mm
$m$	20 mm	40 mm
$n$	27 mm	45 mm



**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. E219-E1-3 **In the interest of product improvement, specifications are subject to change without notice.**

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Printed in Japan  
0997-0.5M (0791) Ⓐ