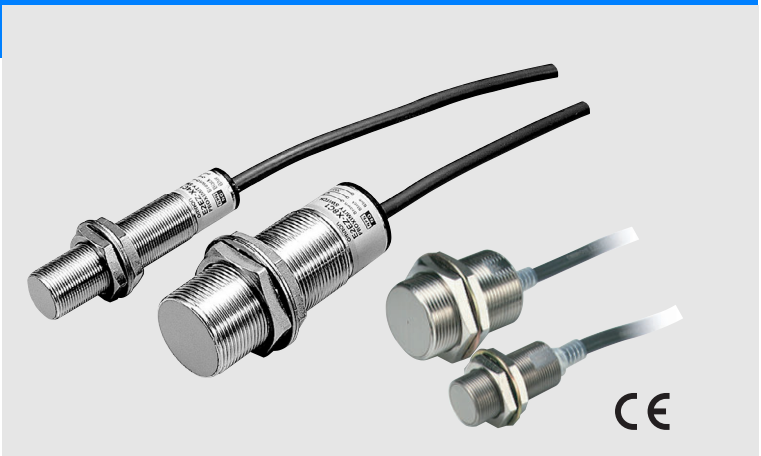
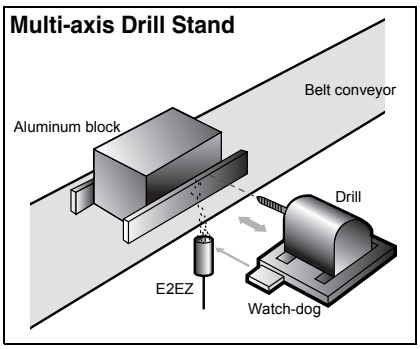
Anti-Aluminum Cut Chips Models

E2EZ

Specialized sensing method for immunity against small sized metal objects (e.g. aluminium chips)



Applications



Ordering Information

Sensors

Pre-wired Models

Shape		Sensing distance	Output specifications	Model	
				Operating status	
				NO	NC
Shielded	M18	4mm	DC 3-wire NPN	**E2EZ-X4C1**	---
			DC 2-wire	**E2EZ-X4D1-N**	**E2EZ-X4D2-N**
			AC 2-wire Models	**E2EZ-X4Y1**	---
	M30	8mm	DC 3-wire NPN	**E2EZ-X8C1**	---
			DC 2-wire	**E2EZ-X8D1-N**	**E2EZ-X8D2-N**
			AC 2-wire Models	**E2EZ-X8Y1**	

Connector Models

Shape		Sensing distance	Output specifications	Model	
				Operating status	
				NO	NC
Shielded	M18	4mm	DC 2-wire models (3) and (4) pin arrangement	**E2EZ-X4D1-M1J** NEW	---
			DC 2-wire models (1) and (4) pin arrangement	**E2EZ-X4D1-M1GJ** NEW	---
	M30	8mm	DC 2-wire models (3) and (4) pin arrangement	**E2EZ-X8D1-M1J** NEW	---
			DC 2-wire models (1) and (4) pin arrangement	**E2EZ-X8D1-M1GJ** NEW	---

Accessories (Order Separately)

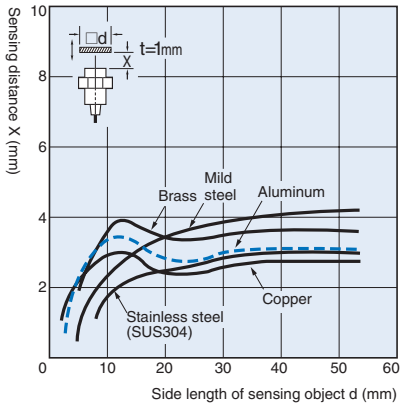
Sensor I/O Connectors

Shape	Cable length	Sensor I/O Connectors	Applicable proximity sensor models
Straight type	2 m	**XS2F-D421-DD0**	E2EZ-X4D□-M1J
	5 m	**XS2F-D421-GD0**	
L type	2 m	**XS2F-D422-DD0**	E2EZ-X8D□-M1J
	5 m	**XS2F-D422-GD0**	
Straight type	2 m	**XS2F-D421-DA0-A**	E2EZ-X4D□-M1GJ
	5 m	**XS2F-D421-GA0-A**	
L type	2 m	**XS2F-D422-DA0-A**	E2EZ-X8D□-M1GJ
	5 m	**XS2F-D422-GD0-A**	

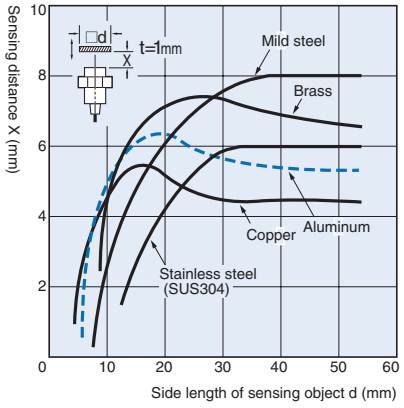
Characteristic data (typical)

Sensing Distance vs. Sensing Object

E2EZ-X4□



E2EZ-X8□



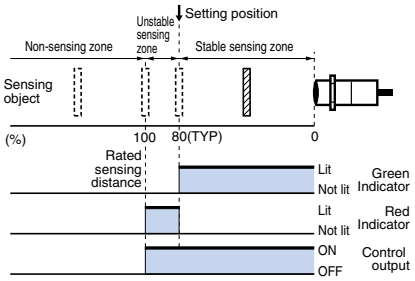
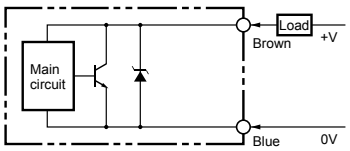
Rating/performance

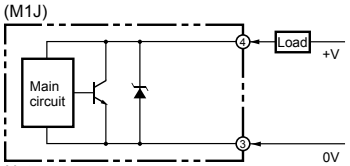
Item \ Model	E2EZ-X4C1 E2EZ-X4Y1	E2EZ-X8C1 E2EZ-X8Y1	E2EZ-X4D□-N E2EZ-X4D□-M1J E2EZ-X4D□-M1GJ	E2EZ-X8D□-N E2EZ-X8D□-M1J E2EZ-X8D□-M1GJ
Sensing distance	4 mm ±10%	8 mm ±10%	4 mm ±10%	8 mm ±10%
Setting distance*1	0 to 3.2 mm	0 to 6.4 mm	0 to 3.2 mm	0 to 6.4 mm
Differential distance	20% max. of sensing distance			
Sensing object	Ferrous metal (Sensitivity lowers with non-ferrous metals)			
Standard sensing object	Iron, 30 × 30 × 1 mm	Iron, 54 × 54 × 1 mm	Iron, 30 × 30 × 1 mm	Iron, 54 × 54 × 1 mm
Response frequency*2	C models: 12 Hz Y models: 5 Hz	C models: 8 Hz Y models: 5 Hz	100 Hz	30 Hz
Rated supply voltage (operating voltage)	C models: 12 to 24 VDC, ripple (p-p) : 10% max., (10 to 30 VDC)		12 to 24 VDC (10 to 30 VDC) ripple (p-p): 10% max.	
Current consumption	C models: 15 mA max.		---	
Leakage current	Y models: 2 mA max. (at 100 VAC), 3 mA max. (at 200 VAC)		0.8 mA max.	
Control output: Switching capacity	C models: NPN open collector output 12 VDC 100 mA max. (30 VDC max.) Y models: 10 to 200 mA		3 to 100 mA	
Control output: Residual voltage	C models: 2 V max. (load current: 200 mA with cable length: 2 m) Y models: Refer to the Specifications		3.0 V max. (under load current of 100 mA with cable length of 2 m)	
Indicator lamp	C models: Detection indicator (red LED) Y models: Operation indicator (red LED)		D1 models: Operation indicator (red LED), Operation set indicator (green LED) D2 models: Operation indicator (red LED)	
Operating status (with sensing object approaching)	NO		D1 models: NO D2 models: NC NO	
Protective circuits	C models: Reverse connection protection, load short-circuit protection, surge absorber Y models: None		Surge absorber, short-circuit protection	
Ambient temperature	Operating/Storage: 0°C to 50°C (with no icing or condensation)			
Ambient humidity	Operating/Storage: 35% to 95%RH (with no condensation)			
Temperature influence	±20% max. of sensing distance within a temperature range of 0°C to 50°C based on the sensing distance at a temperature of 23°C.			
Voltage influence	E models: ±2.5% max. of sensing distance within a range of ±10% of rated power supply voltage Y models: ±1% max. of sensing distance within a range of ±10% of rated power supply voltage		±2.5% max. of sensing distance within a range of ±10% of rated power supply voltage	
Insulation resistance	50 MΩ min. (at 500 VDC) between current carry parts and case			
Dielectric strength	C type: 1,000 VAC, 50/60 Hz for 1 min.)		1000 VAC 50/60 Hz for 1 min between current carrying part 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	Destruction: 1,000 m/s^2 for 10 times each in X, Y, and Z directions			
Protective structure	IEC60529 IP67			
Connection method	Pre-wired (standard length: 2 m) Connector Extension Models			
Weight (Packed state)	Approx. 170 g	Approx. 270 g	E2EZ-X4D□-N Approx. 160 g E2EZ-X4D□-M1J Approx. 90 g E2EZ-X4D□-M1GJ Approx. 90 g	E2EZ-X8D□-N Approx. 220 g E2EZ-X8D□-M1J Approx. 160 g E2EZ-X8D□-M1G Approx. 160 g
Material	Case: Brass, Sensing face: Heat-resistant ABS resin Screw: Brass, Mounting nut: Steel			
Accessories	Instruction manual			

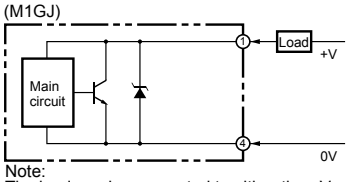
*1. Use within a range where the green indicator is lit.
*2. The response frequencies for DC switching are average values measured on condition that the distance between each sensing object is twice as large as the size of the sensing object and the sensing distance set is half of the maximum sensing distance.

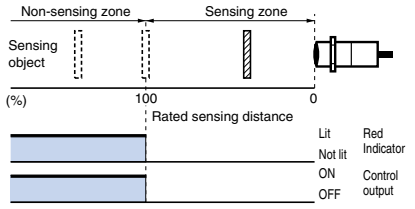
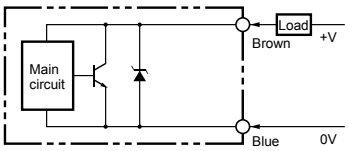
Output Circuit Diagram

DC 2-wire Models

<table>
<tr><th>Operating status</th><th>Model</th><th>Timing chart</th><th>Output circuit</th></tr>
<tr><td rowspan="2">NO</td><td>E2EZ-X4D1-N
E2EZ-X8D1-N</td><td rowspan="2"> 
</td><td> 

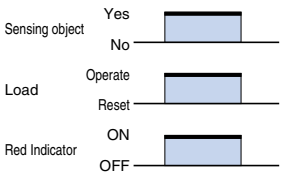
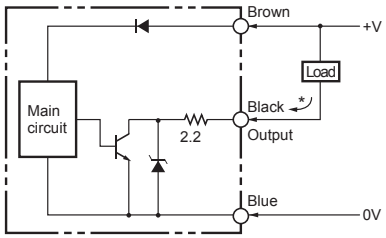
Note:
The load can be connected to either the +V or the 0-V line.</td></tr>
<tr><td>E2EZ-X4D1-M1J
E2EZ-X4D1-M1GJ
E2EZ-X8D1-M1J
E2EZ-X8D1-M1GJ</td><td>(M1J)
 

Pin arrangement
 
Note:
Terminals ① and ② are not used.
Note:
The load can be connected to either the +V or the 0-V line.
(M1GJ)
 

Pin arrangement
 
Note:
Terminals ② and ③ are not used.
Note:
The load can be connected to either the +V or the 0-V line.</td></tr>
<tr><td>NC</td><td>E2EZ-X4D2-N
E2EZ-X8D2-N</td><td> 
</td><td> 

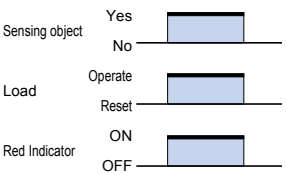
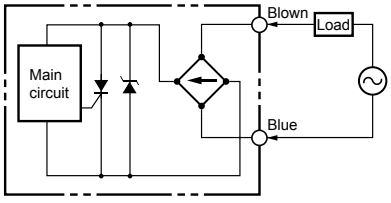
Note:
The load can be connected to either the +V or the 0-V line.</td></tr>
</table>

DC 3-wire Models

<table>
<tr><th>Operating status</th><th>Model</th><th>Timing chart</th><th>Output circuit</th></tr>
<tr><td>NO</td><td>E2EZ-X4C1
E2EZ-X8C1</td><td> 
</td><td> 

* Load current: 100mA max.
at 12 V and 200 mA max. at 24 V</td></tr>
</table>

AC 2-wire Models

<table>
<tr><th>Operating status</th><th>Model</th><th>Timing chart</th><th>Output circuit</th></tr>
<tr><td>NO</td><td>E2EZ-X4Y1
E2EZ-X8Y1</td><td> 
</td><td> 
</td></tr>
</table>

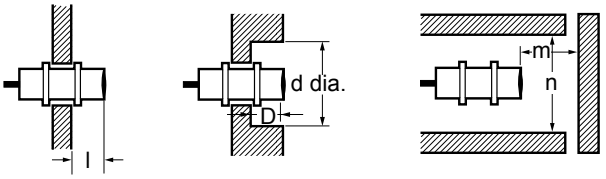
Precautions

Correct Use

Design

Effects of Surrounding Metal

Provide a minimum distance as shown in the table below between the Sensor and the surrounding metal.



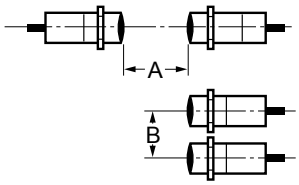
Effects of Surrounding Metal (Unit: mm)

Model	Item Surround-	l	d	D	m	n
E2EZ-X4□	Steel	0	18	0	16	27
	Aluminum	5	40	5		54
E2EZ-X8□	Steel	0	30	0	32	45
	Aluminum	10	70	10		90

Mutual Interference

When installing two or more E2EZ face to face or side by side, ensure that the minimum distances given in the following table maintained.

Mutual Interference (Unit: mm)



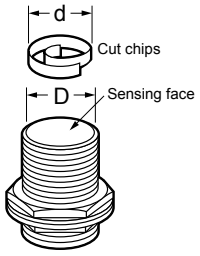
Model	Item	A	B
E2EZ-X4□		40	50
E2EZ-X8□		60	100

Aluminum and Cast Iron Cut Chips

A detection signal will not be output if aluminum or cast iron cut chips are stuck to the sensing face. Under the following conditions, however, the proximity sensor may output detection signals, in which case remove the cut chips from the sensing face.

(1) About the external diameter (d) of a cut chip and the diameter (D) of the sensing surface

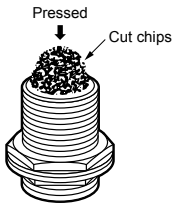
If the external diameter (d) of a cut chip is two-thirds the diameter (D) of the sensing face as shown in the illustration.



(Unit: mm)

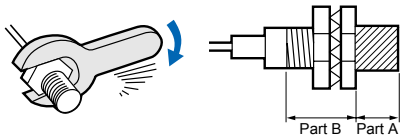
Model Length	D
E2EZ-X4□	16
E2EZ-X8□	28

(2) If cut chips are pressed onto the sending face as shown in the illustration.



Mounting

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

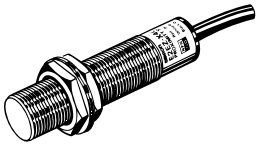


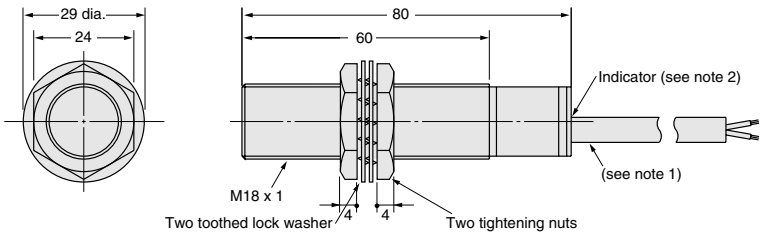
Note: 1. The table below shows the tightening torques for part A and part B nuts. In the previous examples, the nut is on the sensor head side (part B) and hence the tightening torque for part B applies. If this nut is in part A, the tightening torque for part A applies instead.
2. The table below shows the value of tightening torques when using toothed washers.

Tightening torgues Model	Part A Length (mm)	Part A Tensile strength (torque)	Part B Tensile strength (torque)
E2EZ-X4C1 E2EZ-X4Y1	20	15 N•m	29 N•m
E2EZ-X8C1 E2EZ-X8Y1	22	29 N•m	39 N•m
E2EZ-X4D□-□	29	15 N•m	---
E2EZ-X8D□-□	26	39 N•m	78 N•m

Dimensions (Unit: mm)

E2EZ-X4C1
E2EZ-X4Y1



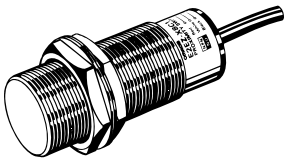


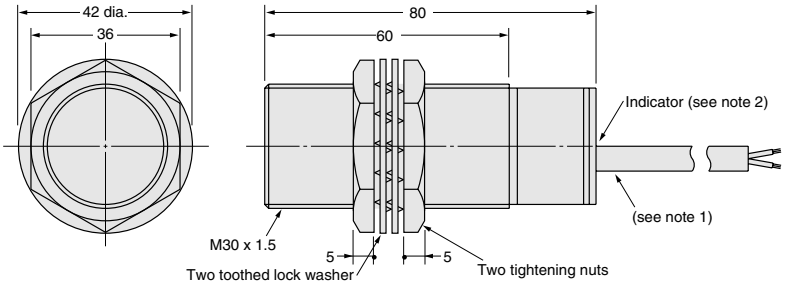
Note:
1. E2EZ-X4B1 and E2EZ-X4CI:
A 6 dia., 3-conductor, vinyl-insulated round cable (conductor cross-sectional area: 0.5 mm²; insulation diameter: 1.9 mm) is used.
Standard length: 2 m

E2EZ-X4Y1
A 6 dia., 2-conductor, vinyl-insulated round cable (conductor cross-sectional area: 0.5 mm²; insulation diameter: 1.9 mm) is used.
Standard length: 2 m

2. B, C Type: Detection indicator (red)
Y Type: Operation indicator (red)

E2EZ-X8C1
E2EZ-X8Y1



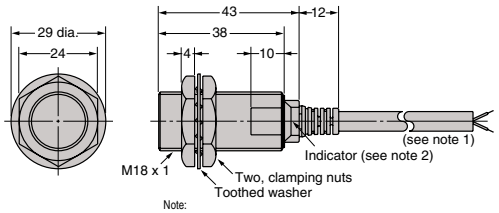


Note:
1. E2EZ-X8B1 and E2EZ-X8CI:
A 6 dia., 3-conductor, vinyl-insulated round cable (conductor cross-sectional area: 0.5 mm²; insulation diameter: 1.9 mm) is used.
Standard length: 2 m

E2EZ-X8Y1
A 6 dia., 2-conductor, vinyl-insulated round cable (conductor cross-sectional area: 0.5 mm²; insulation diameter: 1.9 mm) is used.
Standard length: 2 m

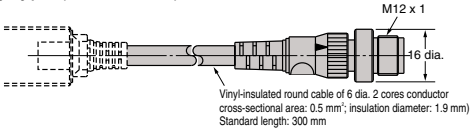
2. B, C Type: Detection indicator (red)
Y Type: Operation indicator (red)

E2EZ-X4D□-N

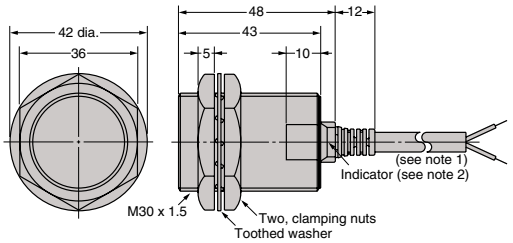


Note:
A 6 dia., 2-conductor, vinyl-insulated round cable (conductor cross-sectional area: 0.5 mm²; insulation diameter: 1.9 mm) is used.
Standard length: 2m
Cable extension (through a single metal conduit): 200 m max.
2. D1 type: Operation indicator (red);
Operation set indicator (green)
D2 type: Operation indicator (red)

Connector relay type (-M1J/M1GJ)

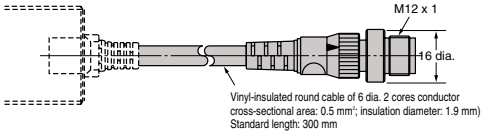


E2EZ-X8D□-N

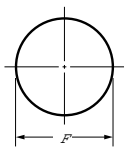


Note:
A 6 dia., 2-conductor, vinyl-insulated round cable (conductor cross-sectional area: 0.5 mm²; insulation diameter: 1.9 mm) is used.
Standard length: 2m
Cable extension (through a single metal conduit): 200 m max.
2. D1 type: Operation indicator (red);
Operation set indicator (green)
D2 type: Operation indicator (red)

Connector relay type(-M1J/M1GJ)



Mounting Holes



Model	F (mm)
E2EZ-X4□	18.5-mm dia. +0
E2EZ-X8□	30.5-mm dia. +0

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. D028-E2-04-X In the interest of product improvement, specifications are subject to change without notice.