




Chip-immune Inductive Proximity Sensor

- Correct operation even with aluminum or iron chips sticking to the Sensor.
Only the sensing object is detected.
- Pre-wired Smartclick Connector Models also available.




 Be sure to read *Safety Precautions* on page 7.


For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

Ordering Information


Sensors [Refer to *Dimensions* on page 8.]
Pre-wired Models

Appearance		Sensing distance			Output configuration	Model	
						Operation mode	
						NO	NC
 Shielded	M12	2 mm			DC 2-Wire Models	E2EZ-X2D1-N 2M	E2EZ-X2D2-N 2M
	M18	4 mm			DC 3-wire, NPN	E2EZ-X4C1 2M	—
					DC 2-wire	E2EZ-X4D1-N 2M	E2EZ-X4D2-N 2M
					AC 2-wire	E2EZ-X4Y1 2M	—
	M30	8 mm			DC 3-wire, NPN	E2EZ-X8C1 2M	—
					DC 2-wire	E2EZ-X8D1-N 2M	E2EZ-X8D2-N 2M
					AC 2-wire	E2EZ-X8Y1 2M	

Pre-wired Smartclick Connector Models (M12)

Appearance		Sensing distance			Output configuration	Model	
						Operation mode	
						NO	NC
 Shielded	M12	2 mm			DC 2-wire, (3)-(4) pin arrangement	E2EZ-X2D1-M1TJ 0.3M	—
					DC 2-wire, (1)-(4) pin arrangement	E2EZ-X2D1-M1TGJ 0.3M	—
	M18	4 mm			DC 2-wire, (3)-(4) pin arrangement	E2EZ-X4D1-M1TJ 0.3M	—
					DC 2-wire, (1)-(4) pin arrangement	E2EZ-X4D1-M1TGJ 0.3M	—
	M30	8 mm			DC 2-wire, (3)-(4) pin arrangement	E2EZ-X8D1-M1TJ 0.3M	—
					DC 2-wire, (1)-(4) pin arrangement	E2EZ-X8D1-M1TGJ 0.3M	—






Pre-wired Connector Models (M12)

Appearance	Sensing distance			Output configuration	Model	
					Operation mode	
					NO	NC
 Shielded	M12	2 mm		DC 2-wire, (3)-(4) pin arrangement	E2EZ-X2D1-M1J 0.3M	—
				DC 2-wire, (1)-(4) pin arrangement	E2EZ-X2D1-M1GJ 0.3M	—
	M18	4 mm		DC 2-wire, (3)-(4) pin arrangement	E2EZ-X4D1-M1J 0.3M	—
				DC 2-wire, (1)-(4) pin arrangement	E2EZ-X4D1-M1GJ 0.3M	—
	M30	8 mm		DC 2-wire, (3)-(4) pin arrangement	E2EZ-X8D1-M1J 0.3M	—
				DC 2-wire, (1)-(4) pin arrangement	E2EZ-X8D1-M1GJ 0.3M	—

Accessories (Order Separately)

Sensor I/O Connectors (M12, Sockets on One Cable End)

(Models for Pre-wired Connectors: A Connector is not provided with the Sensor. Be sure to order a Connector separately.) [Refer to Dimensions on XS2, XS5.]

Appearance	Cable length	Sensor I/O Connector model number	Applicable Proximity Sensor model number
 Straight	2 m	XS2F-D421-DD0	E2EZ-X□D1-M1J
	5 m	XS2F-D421-GD0	
 L-shape	2 m	XS2F-D422-DD0	
	5 m	XS2F-D422-GD0	
 Straight	2 m	XS2F-D421-DA0-F	E2EZ-X□D1-M1GJ
	5 m	XS2F-D421-GA0-F	
 L-shape	2 m	XS2F-D422-DA0-F	
	5 m	XS2F-D422-GA0-F	
 Smartclick Connector Straight	2 m	XS5F-D421-D80-F	E2EZ-X□D1-M1TJ E2EZ-X□D1-M1TGJ
	5 m	XS5F-D421-G80-F	

Mounting Brackets

Protective Covers

Sputter Protective Covers

Refer to Y92□ for details.

Ratings and Specifications

Item	Model	E2EZ-X2D□-N E2EZ-X2D□-M1J E2EZ-X2D□-M1GJ	E2EZ-X4D□-N E2EZ-X4D□-M1J E2EZ-X4D□-M1GJ	E2EZ-X8D□-N E2EZ-X8D□-M1J E2EZ-X8D□-M1GJ	E2EZ-X4C1 E2EZ-X4Y1	E2EZ-X8C1 E2EZ-X8Y1	
Sensing distance		2 mm ±10%	4 mm ±10%	8 mm ±10%	4 mm ±10%	8 mm ±10%	
Set distance ^{*1}		0 to 1.6 mm	0 to 3.2 mm	0 to 6.4 mm	0 to 3.2 mm	0 to 6.4 mm	
Differential travel	20% max. of sensing distance						
Detectable object	Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to <i>Engineering Data</i> on page 4.)						
Standard sensing object		Iron, 12 × 12 × 1 mm	Iron, 30 × 30 × 1 mm	Iron, 54 × 54 × 1 mm	Iron, 30 × 30 × 1 mm	Iron, 54 × 54 × 1 mm	
Response frequency ^{*2}		200 Hz	100 Hz	30 Hz	C Models: 12 Hz Y Models: 5 Hz	C Models: 8 Hz Y Models: 5 Hz	
Power supply voltage (operating voltage range)	12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max.				C Models: 12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max. Y Models: 100 to 220 VAC (90 to 250 VAC), 50/60 Hz		
Current consumption	---				C Models: 15 mA max.		
Leakage current	0.8 mA max.				Y Models: 2 mA max. at 100 VAC, 3 mA max. at 200 VAC		
Control output	Load current	3 to 100 mA max.				C Models: NPN open-collector output 100 mA max. at 12 VDC (30 VDC max.) 200 mA max. at 24 VDC (30 VDC max.) Y Models: 10 to 200 mA	
	Residual voltage	3 V max. (Load current: 100 mA, Cable length: 2 m)				C Models: 2 V max. (Load current: 200 mA, Cable length: 2 m) Y Models: Refer to residual voltage characteristic data Refer to page 4.	
Indicators	D1 Models: Operation indicator (red), Setting indicator (green) D2 Models: Operation indicator (red)				C Models: Detection indicator (red) Y Models: Operation indicator (red)		
Operation mode (with sensing object approaching)	D1 Models: NO D2 Models: NC For details, refer to the <i>Timing chart</i> on page 5.				NO For details, refer to the <i>Timing chart</i> on page 6.		
Protection circuits	Load short-circuit protection, Surge suppressor				C Models: Load short-circuit protection, Reverse polarity protection, Surge suppressor Y Models: Surge suppressor		
Ambient temperature range	Operating/Storage: 0 to 50°C (with no icing or condensation)						
Ambient humidity range	Operating/Storage: 35% to 95% (with no condensation)						
Temperature influence	±20% max. of sensing distance at 23°C in the temperature range of 0 to 50°C						
Voltage influence	±2.5% max. of sensing distance at rated voltage in the rated voltage ±10% range						
Insulation resistance	50 MΩ min. (at 500 VDC) between current-carrying parts and case						
Dielectric strength	1,000 VAC, 50/60 Hz for 1 minute between current-carrying parts and case				C Models: 1,000 VAC, 50/60 Hz for 1 min between current-carrying parts and case Y Models: 2,000 VAC, 50/60 Hz for 1 min between current-carrying parts 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: 1,000 m/s ² 10 times each in X, Y, and Z directions						
Degree of protection	IEC 60529 IP67, in-house standards: oil-resistant						
Connection method	Pre-wired Models (Standard cable length: 2 m) and Pre-wired Connector Models						
Weight (packed state)		E2EZ-X2D□-N: Approx. 70 g E2EZ-X2D□-M1J: Approx. 40 g E2EZ-X2D□-M1GJ: Approx. 40 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□-M1GJ: Approx. 160 g	Approx. 170 g	Approx. 270 g	
Materials	Case	Nickel-plated brass					
	Sensing surface	PBT				Heat-resistant ABS	
	Clamping nuts	Zinc-plated iron					
	Toothed washer	Zinc-plated iron					
Accessories	Instruction manual						

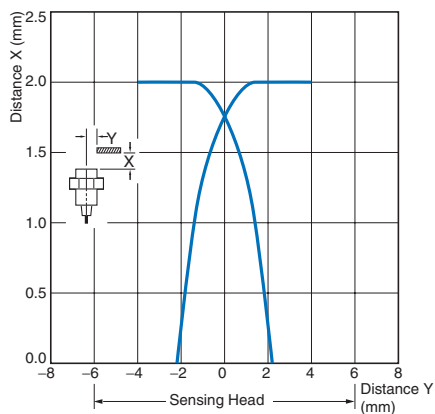
*1. Use the Sensor within the range in which the green indicator is ON.

*2. The response frequency is an average value. Measurement conditions are as follows: standard sensing object, a distance of twice the standard sensing object, and a set distance of half the sensing distance.

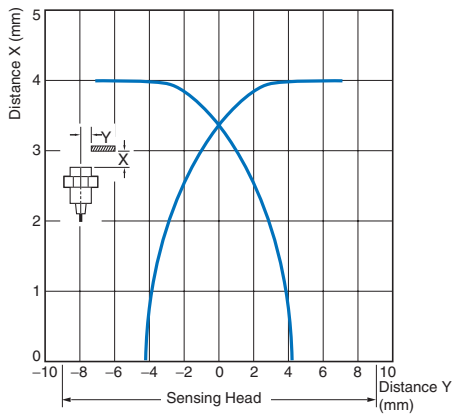
Engineering Data (Reference Value)

Sensing Area

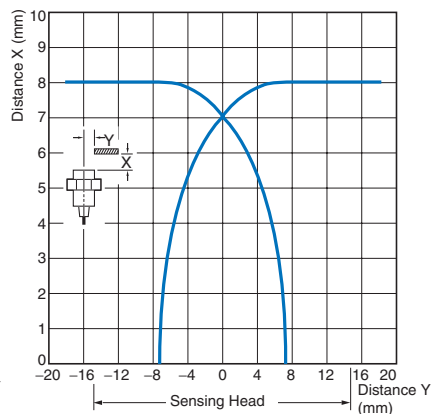
E2EZ-X2



E2EZ-X4

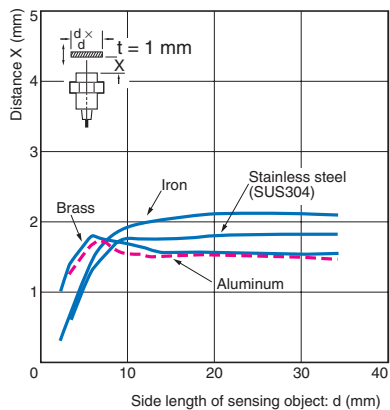


E2EZ-X8

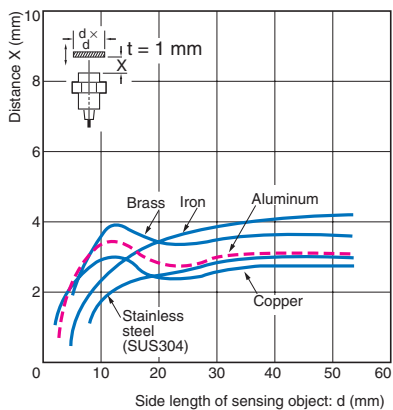


Influence of Sensing Object Size and Material

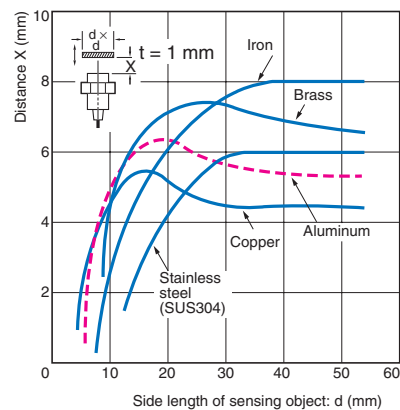
E2EZ-X2



E2EZ-X4

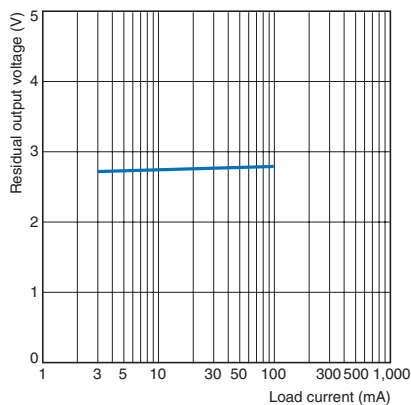


E2EZ-X8

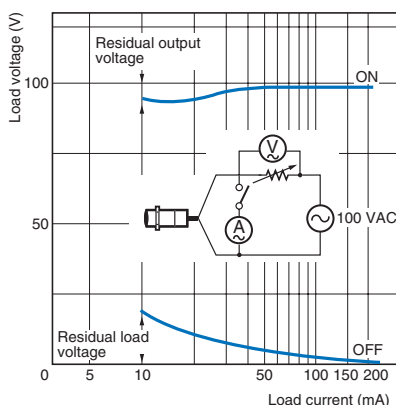


Residual Output Voltage

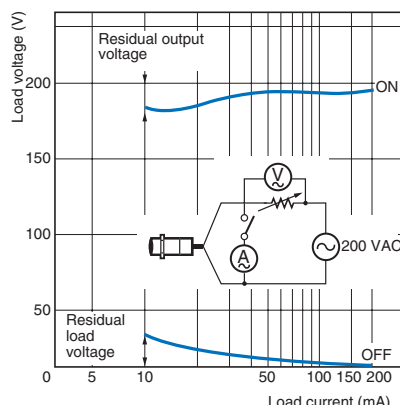
E2EZ-X□D□-N



E2EZ-X4Y1/-X8Y1 at 100 VAC

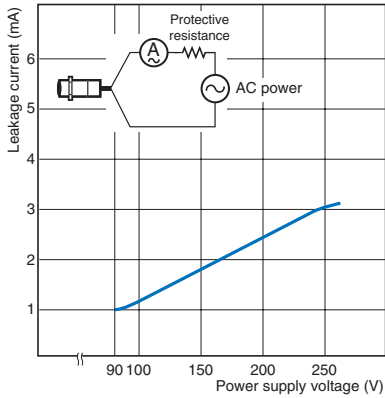


E2EZ-X4Y1/-X8Y1 at 200 VAC

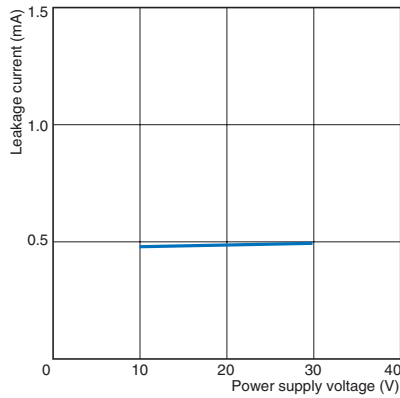


Leakage Current

E2EZ-X4Y1/-X8Y1



E2EZ-X□D□-N



I/O Circuit Diagrams

DC 2-Wire Models

Operation mode	Model	Timing chart	Output circuit
NO	E2EZ-X2D1-N E2EZ-X4D1-N E2EZ-X8D1-N	<p>Non-sensing area Unstable sensing area Stable sensing area</p> <p>Set position</p> <p>Sensing object (%)</p> <p>Rated sensing distance: 100, 80(TYP), 0</p>	<p>Note: The load can be connected to either the +V or 0 V side.</p>
	E2EZ-X2D1-M1J E2EZ-X2D1-M1GJ E2EZ-X4D1-M1J E2EZ-X4D1-M1GJ E2EZ-X8D1-M1J E2EZ-X8D1-M1GJ	<p>ON Setting indicator (green) OFF ON Operation indicator (red) OFF ON Control output OFF</p>	<p>(M1J) Connector Pin Arrangement: Pins 1 and 2 are not used.</p> <p>(M1GJ) Connector Pin Arrangement: Pins 2 and 3 are not used.</p> <p>Note: The load can be connected to either the +V or 0 V side.</p>
NC	E2EZ-X2D2-N E2EZ-X4D2-N E2EZ-X8D2-N	<p>Non-sensing area Sensing area</p> <p>Sensing object (%)</p> <p>Rated sensing distance: 100, 0</p> <p>ON Operation indicator (Red) OFF ON Control output OFF</p>	<p>Note: The load can be connected to either the +V or 0 V side.</p>

DC 3-wire Models

Operation mode	Model	Timing chart	Output circuit
NO	E2EZ-X4C1 E2EZ-X8C1	<p>Sensing object: Present (high), Not present (low)</p> <p>Load: Operate (high), Reset (low)</p> <p>Detection indicator (red): ON (high), OFF (low)</p>	<p>* 100 mA max. at 12 V, 200 mA max. at 24 V (load current).</p>

AC 2-Wire Models

Operation mode	Model	Timing chart	Output circuit
NO	E2EZ-X4Y1 E2EZ-X8Y1	<p>Sensing object: Present (high), Not present (low)</p> <p>Load: Operate (high), Reset (low)</p> <p>Operation indicator (red): ON (high), OFF (low)</p>	

Connections for Sensor I/O Connectors

Proximity Sensor		Sensor I/O Connectors		Connections
Model	Operation mode	Model	Model	
DC 2-Wire Models (IEC pin wiring)	NO	E2EZ-X□D1-M1GJ	XS2F-D42□-□A0-F 1: Straight 2: L-shape D: 2-m cable G: 5-m cable	
DC 2-Wire Models (previous pin wiring)		E2EZ-X□D1-M1J	XS2F-D42□-□D0 1: Straight 2: L-shape D: 2-m cable G: 5-m cable	
DC 2-Wire Models (IEC pin wiring)		E2EZ-X□D1-M1TGJ	XS5F-D421-□80-F D: 2-m cable G: 5-m cable	
DC 2-Wire Models (previous pin wiring)		E2EZ-X□D1-M1TJ		

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

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.



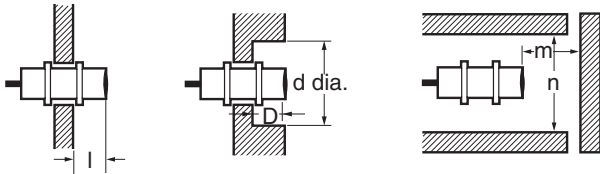
Precautions for Correct Use

Do not use this product under ambient conditions that exceed the ratings.

● **Design**

Influence of Surrounding Metal

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



Influence of Surrounding Metal (Unit: mm)

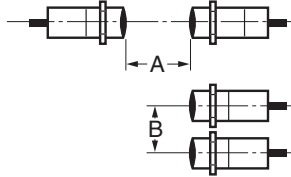
Model	Item Embedded material	l	d	D	m	n
E2EZ-X2□	Iron	0	12	0	8	18
	Aluminum	2	25	2		36
E2EZ-X4□	Iron	0	18	0	16	27
	Aluminum	5	40	5		54
E2EZ-X8□	Iron	0	30	0	32	45
	Aluminum	10	70	10		90

Mutual Interference

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

Mutual Interference (Unit: mm)

Model	Item	A	B
E2EZ-X2□		30	20
E2EZ-X4□		40	50
E2EZ-X8□		60	100



Aluminum and Iron Cuttings

Normally aluminum or iron cuttings will not be detected even if they adhere to or accumulate on the sensing surface. Detection signals may be output for the following: If this occurs, remove the cuttings from the sensing surface.

1. Relationship between the Size of the Cutting (d) and the Size of the Sensing Surface (D)

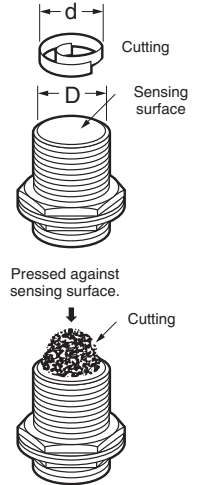
Cuttings of the size $d \geq \frac{2}{3}D$ on the sensing surface *

Cuttings of the size d* (Unit: mm)

Model	Size	D
E2EZ-X2□		10 *
E2EZ-X4□		16
E2EZ-X8□		28

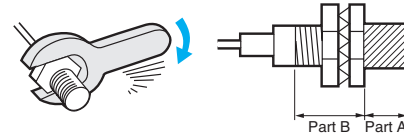
* E2EZ-X2□: $d \geq \frac{1}{3}D$ on the sensing surface.

2. Cuttings Pressed against the Sensing Surface



● **Mounting**

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



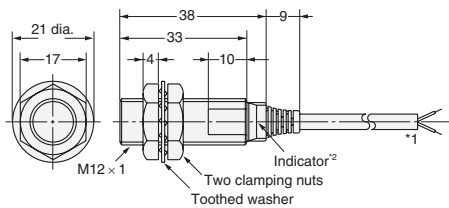
Note: 1. The allowable tightening strength depends on the distance from the edge of the head, as shown in the following table. (A is the distance from the edge of the head. B includes the nut on the head side. If the edge of the nut is in part A, the tightening torque for part A applies instead.)
2. The following torque assume washers are being used.

Model	Tightening Torque	
	Part A	Part B
E2EZ-X2D□-□	30 N·m	
E2EZ-X4D□-□	70 N·m	
E2EZ-X8D□-□	180 N·m	
E2EZ-X4C1	20	15 N·m
E2EZ-X4Y1		29 N·m
E2EZ-X8C1	22	29 N·m
E2EZ-X8Y1		39 N·m

Dimensions

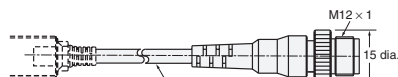
Tolerance class IT16 applies to dimensions in this data sheet unless otherwise specified.

E2EZ-X2D□-N



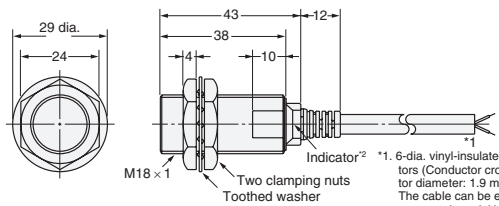
- *1. 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.3 mm), Standard length: 2 m
- *2. D1 Models: Operation indicator (red), Setting indicator (green), D2 Models: Operation indicator (red)

Pre-wired Connector Models (-M1J/M1GJ)



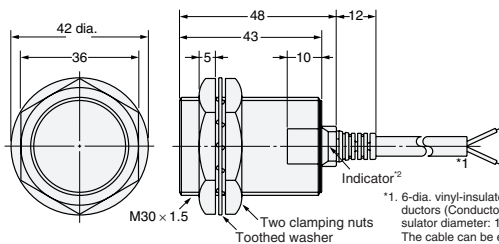
4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.3 mm), Standard length: 300 mm

E2EZ-X4D□-N



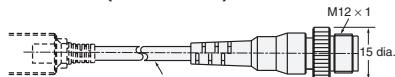
- *1. 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 2 m. The cable can be extended up to 200 m (separate metal conduit).
- *2. D1 Models: Operation indicator (red), Setting indicator (green), D2 Models: Operation indicator (red)

E2EZ-X8D□-N



- *1. 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 2 m. The cable can be extended up to 200 m (separate metal conduit).
- *2. D1 Models: Operation indicator (red), Setting indicator (green), D2 Models: Operation indicator (red)

Pre-wired Connector Models (-M1J/M1GJ)



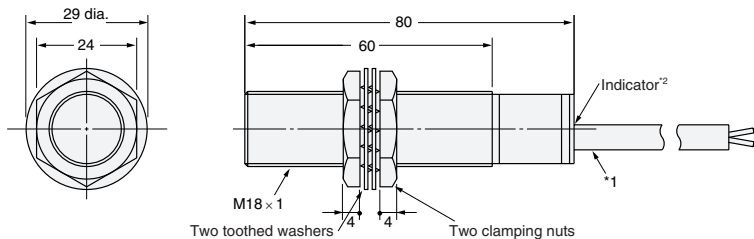
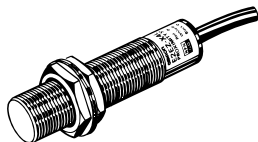
6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 300 mm

Pre-wired Connector Models (-M1J/M1GJ)



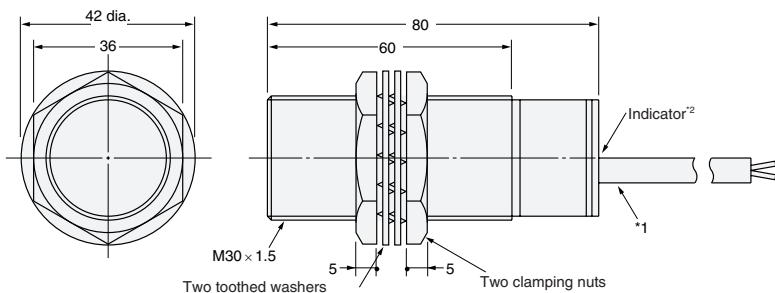
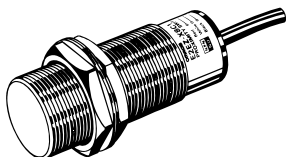
6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 300 mm

E2EZ-X4C1 E2EZ-X4Y1



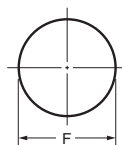
- *1. C Models: 6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 2 m
Y Models: 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 2 m
- *2. C Models: Detection indicator (red), Y Models: Operation indicator (red)

E2EZ-X8C1 E2EZ-X8Y1



- *1. C Models: 6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 2 m
Y Models: 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 2 m
- *2. C Models: Detection indicator (red), Y Models: Operation indicator (red)

Mounting Hole Dimensions



Model	F (mm)
E2EZ-X2□	12.5 dia. ^{+0.5} / ₋₀
E2EZ-X4□	18.5 dia. ^{+0.5} / ₋₀
E2EZ-X8□	30.5 dia. ^{+0.5} / ₋₀

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.

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