

Cylindrical Proximity Sensor

E2E



















Well established Series of Easy-to-use and Tough E2E Models



Ordering Information

Sensors

DC 2-wire/Pre-wired Models (3-wire with a self-diagnostic function.)







Self diagnostic output function	Shape	Sensing distance	Model		
			NO	NC	
ON or OFF delay 0 to 5 s (adjustable)	Shielded 	M12  3 mm	E2E-X3D1S	*1	---
		M18  7 mm	E2E-X7D1S	*1	---
		M30  10 mm	E2E-X10D1S	*1	---
	Unshielded 	M12  8 mm	E2E-X8MD1S	*1	---
		M18  14 mm	E2E-X14MD1S	*1	---
		M30  20 mm	E2E-X20MD1S	*1	---
No	Shielded 	M8  2 mm	E2E-X2D1-N	*2*3	E2E-X2D2-N *3
		M12  3 mm	E2E-X3D1-N	*1*2*3	E2E-X3D2-N *3
		M18  7 mm	E2E-X7D1-N	*1*2*3	E2E-X7D2-N *3
		M30  10 mm	E2E-X10D1-N	*1*2*3	E2E-X10D2-N
	Unshielded 	M8  4 mm	E2E-X4MD1	*2*3	E2E-X4MD2
		M12  8 mm	E2E-X8MD1	*1*2*3	E2E-X8MD2
		M18  14 mm	E2E-X14MD1	*1*2*3	E2E-X14MD2
		M30  20 mm	E2E-X20MD1	*1*2*3	E2E-X20MD2

*1. A different frequency type is prepared. (E2E-X□D15; e.g.E2E-X3D15-N)

*2. E2E models with a robotic cable are available as well. The model number of a model with a robotic cable has the suffix "-R" (e.g., E2E-X3D1-R).



*3. Beside standard cable length 2 m the 5 m long cable is the preferred length. Please designate a cable length to the bottom of model number. (e.g. E2E-X2D1-N 5M)

DC 2-wire/Connector Models (3-wire with a self-diagnostic function.)

Con- nector	Self diagnostic output function	Shape	Sensing distance	Model			
				NO	Appli- cable con- nector	NC	Appli- cable con- nector
M12	ON or OFF delay 0 to 5 s (adjustable)	Shielded 	M12 3 mm	E2E-X3D1S-M1	D	---	---
			M18 7 mm	E2E-X7D1S-M1	D	---	---
			M30 10 mm	E2E-X10D1S-M1	D	---	---
		Unshielded 	M12 8 mm	E2E-X8MD1S-M1	D	---	---
			M18 14 mm	E2E-X14MD1S-M1	D	---	---
			M30 20 mm	E2E-X20MD1S-M1	D	---	---
	No	Shielded 	M8 2 mm	E2E-X2D1-M1G	A	E2E-X2D2-M1G	D
			M12 3 mm	E2E-X3D1-M1G *1	A	E2E-X3D2-M1G	D
			M18 7 mm	E2E-X7D1-M1G *1	A	E2E-X7D2-M1G	D
			M30 10 mm	E2E-X10D1-M1G *1	A	E2E-X10D2-M1G	D
		Unshielded 	M8 4 mm	E2E-X4MD1-M1G	A	E2E-X4MD2-M1G	D
			M12 8 mm	E2E-X8MD1-M1G *1	A	E2E-X8MD2-M1G	D
			M18 14 mm	E2E-X14MD1-M1G *1	A	E2E-X14MD2-M1G	D
			M30 20 mm	E2E-X20MD1-M1G *1	A	E2E-X20MD2-M1G	D
M8	Shielded 	M8	2 mm	E2E-X2D1-M3G	G	E2E-X2D2-M3G	G
			Unshielded 	4 mm	E2E-X4MD1-M3G	G	E2E-X4MD2-M3G


*1. A different frequency type is prepared. (E2E-X□D15-M1G; e.g.E2E-X3D15-M1G)

DC 2-wired/Connector Extension Models

Shape	Sensing distance	Operating status	Model			
			Yes polarity	Applicable connector	No polarity	Applicable connector
Shielded 	M12 3 mm	NO	E2E-X3D1-M1GJ	A	E2E-X3D1-M1J-T	B
	M18 7 mm		E2E-X7D1-M1GJ	A	E2E-X7D1-M1J-T	B
	M30 10 mm		E2E-X10D1-M1GJ	A	E2E-X10D1-M1J-T	B
Unshielded 	M12 8 mm		E2E-X8MD1-M1GJ	A	---	---
	M18 14 mm		E2E-X14MD1-M1GJ	A	---	---
	M30 20 mm		E2E-X20MD1-M1GJ	A	---	---



Note: 1. Since non-polarity type residual voltage is 5V, check interface conditions with connection load (e.g. ON voltage of PLC etc.).
2. Standard cable length is 300 mm. Besides a cable length of 500 mm and 1 m type can be created.

DC 3-wire/Pre-wired Models

Shape	Sensing distance	Model				
		PNP - NO	PNP - NC	NPN - NO	NPN - NC	
Shielded 	4 mm dia.	0.8 mm	E2E-CR8B1	E2E-CR8B2	E2E-CR8C1	E2E-CR8C2
	M5	1 mm	E2E-X1B1	E2E-X1B2	E2E-X1C1	E2E-X1C2
	5.4 mm dia.	1 mm	E2E-C1B1	E2E-C1B2	E2E-C1C1	E2E-C1C2



Beside standard cable length 2 m, the 5 m cable is the preferred length. Please allocate a cable length to the bottom of model number. (e.g. E2EG-X2C1-5M)

AC 2-wire/Pre-wired Models

Shape		Sensing distance		Model	
				NO	NC
Shielded 	M8	1.5 mm		E2E-X1R5Y1	E2E-X1R5Y2
	M12	2 mm		E2E-X2Y1 *1	E2E-X2Y2 *1
	M18	5 mm		E2E-X5Y1 *1	E2E-X5Y2 *1
	M30	10 mm		E2E-X10Y1 *1	E2E-X10Y2 *1
Unshielded 	M8	2 mm		E2E-X2MY1	E2E-X2MY2
	M12	5 mm		E2E-X5MY1 *1	E2E-X5MY2 *1
	M18	10 mm		E2E-X10MY1 *1	E2E-X10MY2 *1
	M30	18 mm		E2E-X18MY1 *1	E2E-X18MY2 *1

*1. A different frequency type is prepared. (E2E-X □Y□5; e.g.E2E-X5Y15)

AC 2-wire/Connector Models

Connector	Shape		Sensing distance		Model			
					operating configuration, NO	Applicable connector*	operating configuration, NC	Applicable connector*
M12	Shielded 	M12	2 mm		E2E-X2Y1-M1	E	E2E-X2Y2-M1	F
		M18	5 mm		E2E-X5Y1-M1	E	E2E-X5Y2-M1	F
		M30	10 mm		E2E-X10Y1-M1	E	E2E-X10Y2-M1	F
	Unshielded 	M12	5 mm		E2E-X5MY1-M1	E	E2E-X5MY2-M1	F
		M18	10 mm		E2E-X10MY1-M1	E	E2E-X10MY2-M1	F
		M30	18 mm		E2E-X18MY1-M1	E	E2E-X18MY2-M1	F

* Refer to E-33 page for details.

Rating/Performance

DC 2-wire Models (E2E-X□□□)

Item	Size Shielded Model	M8		M12		M18		M30	
		Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded
		E2E -X2D□	E2E -X4MD□	E2E -X3D□	E2E -X8MD□	E2E -X7D□	E2E -X14MD□	E2E -X10D□	E2E -X20MD□
Sensing distance		2 mm ±10%	4 mm ±10%	3 mm ±10%	8 mm ±10%	7 mm ±10%	14 mm ±10%	10 mm ±10%	20 mm ±10%
Setting distance*1		0 to 1.6 mm	0 to 3.2 mm	0 to 2.4 mm	0 to 6.4 mm	0 to 5.6 mm	0 to 11.2 mm	0 to 8 mm	0 to 16 mm
Differential distance		15% max. of sensing distance		10% max.					
Sensing object		Ferrous metal (Sensitivity lowers with non-ferrous metals)							
Standard sensing object (mild steel)		8 x 8 x 1 mm	20 x 20 x 1 mm	12 x 12 x 1 mm	30 x 30 x 1 mm	18 x 18 x 1 mm	30 x 30 x 1 mm		54 x 54 x 1 mm
Response frequency*2		1.5 kHz	1 kHz		0.8 kHz	0.5 kHz	0.4 kHz		0.1 kHz
Power supply (Operating voltage range)		12 to 24 VDC (10 to 30 VDC) ripple (p-p): 10% max.							
Leakage current		0.8 mA max.							
Control output	Switching capacity	3 to 100 mA (5 to 100 mA for -M1J-T models), Diagnostic output: 50 mA for D1 (5) S models							
	Residual voltage*3	3.0 V max. (under load current of 100 mA with cable length of 2 m), 5.0 V min. for -M1J-T models							
Indicator lamp		D1 type: Operation indicator (red), operation setting indicator (green)D2 type: Operation indicator (red)							
Operating status (with sensing object approaching)		D1 type: NO D2 type: NC							
Diagnostic output delay		0.3 to 1s							
Protective circuits		Surge absorber, load short-circuit protection (for control and diagnostic output)							
Ambient temperature		Operating: -25°C to 70°C, Storage: -40°C to 85°C (with no icing or condensation)							
Ambient humidity		Operating/Storage: 35% to 95%RH (with no condensation)							
Temperature influence		±15% max. of sensing distance at 23°C within temperature range of -25°C to 70°C		±10% max. sensing distance at 23°C within temperature range of -25°C to 70°C					
Voltage influence		±1% max. of sensing distance in rated voltage range ±15%							
Insulation resistance		50 MΩ min. (500 VDC) between energized part and case							
Dielectric strength		1000 VAC 50/60 Hz for 1 min between energized 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: 500 m/s ² for 10 times each in X, Y, and Z directions		Destruction: 1,000 m/s ² for 10 times each in X, Y, and Z directions					
Protective structure		Pre-wired, Connector Extension models: IEC60529 IP67 Connector type: IP67							
Connection method		Pre-wired models (Standard length: 2 m), Connector models, Connector extension models (Standard length: 300 mm)							

Item	Size	M8		M12		M18		M30	
	Shielded	Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded
	Model	E2E -X2D□	E2E -X4MD□	E2E -X3D□	E2E -X8MD□	E2E -X7D□	E2E -X14MD□	E2E -X10D□	E2E -X20MD□
Weight (Packed state)	Pre-wired models	Approx. 45 g		Approx. 55 g		Approx. 130 g		Approx. 180 g	
	Sensor with Connector Relay	---		Approx. 40g		Approx. 70 g		Approx. 110 g	
	Connector	Approx. 10 g		Approx. 20 g		Approx. 40g		Approx. 90 g	
Material	Case	Stainless steel (SUS303)		Brass					
	Sensing surface	PBT							
Accessories		Instruction manual							

*1. Use within a range where the green indicator is lit. (Excluding the D2 models.)

*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.

*3. Since the residual voltage turns 5V when using an M1J-T type, please use it after checking interface conditions with connection device.

DC 3-wire Models (E2E-C□B□/C□, E2E-X1B□/C□)

Item	Size	4 mm dia.	5.4 mm dia.	M5
	Shielded Model	Shielded		
		E2E-CR8B□/C□	E2E-X1B□/C□	E2E-C1B□/C□
Sensing distance		0.8 mm ±15%	1 mm ±15%	
Setting distance		0 to 0.5 mm	0 to 0.7 mm	
Differential distance		15% max. of sensing distance		
Sensing object		Ferrous metal (Sensitivity lowers with non-ferrous metals)		
Standard sensing object		Mild steel, 5 x 5 x 1 mm		
Response frequency		3 kHz		
Power supply (Operating voltage range)		12 to 24 VDC (10 to 30 VDC) ripple (p-p): 10% max.		
Current consumption		17 mA max.		
Control output	Switching capacity	Open collector output 100 mA max. (30 VDC max.)		
	Residual voltage	2 V max. (under load current of 100 mA with cable length of 2 m)		
Indicator lamp		Operation indicator (red)		
Operating status (with sensing object approaching)		C1/B1 type: NO C2/B2 type: NC		
Protective circuits		Reverse connection protection, surge absorber		
Ambient temperature		Operating/Storage: -25°C to 70°C (with no icing or condensation)		
Ambient humidity		Operating/Storage: 35% to 95%RH		
Temperature influence		±15% max. of sensing distance at 23°C within temperature range of -25°C to 70°C		
Voltage influence		±2.5% max. of sensing distance within rated voltage range ±25%		
Insulation resistance		50 MΩ min. (500 VDC) between energized part and case		
Dielectric strength		500 VAC 50/60 Hz for 1 min between energized 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: 500 m/s ² for 10 times each in X, Y, and Z directions		
Protective structure		IEC60529 IP67		
Connection method		Pre-wired models (Standard length: 2 m)		
Weight (Packed state)		30 g		
Material	Case	Stainless steel (SUS303)	Brass	
	Sensing surface	Heat-resistant ABS resin		
Accessories		Instruction manual		

* 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.

AC 2-wire Models (E2E-X□Y□)

Item	Size		M8		M12		M18		M30			
	Shielded	Model	Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded		
			E2E -X1R5Y□	E2E -X2MY□	E2E -X2Y□	E2E -X5MY□	E2E -X5Y□	E2E -X10MY□	E2E -X10Y□	E2E -X18MY□		
Sensing distance			1.5 mm ±10%		2 mm ±10%		5 mm ±10%		10 mm ±10%		18 mm ±10%	
Setting distance			0 to 1.2 mm		0 to 1.6 mm		0 to 4 mm		0 to 8 mm		0 to 14 mm	
Differential distance			10% max.									
Sensing object			Ferrous metal (Sensitivity lowers with non-ferrous metals)									
Standard sensing object (Mild steel)			8 x 8 x 1 mm		12 x 12 x 1 mm		15 x 15 x 1 mm		18 x 18 x 1 mm		30 x 30 x 1 mm	54 x 54 x 1 mm
Response frequency			25 Hz									
Power supply (Operating voltage range)*1			24 to 240 VAC 50/60Hz (20 to 264 VAC)									
Leakage current			1.7 mA max.									
Control output	Switching capacity*2	5 to 100 mA		5 to 200 mA			5 to 300 mA					
	Residual voltage	Refer to Specifications										
Indicator lamp			Operation indicator (red)									
Operating status (with sensing object approaching)			Y1 type: NO Y2 type: NC									
Protective circuits			Surge absorber									
Ambient temperature			Operating: -25°C to 70°C Preservation: -25°C to 70°C (with no icing)			Operating/Storage: -40°C to 85°C (with no icing or condensation)						
Ambient humidity			Operating/Storage: 35% to 95%RH (with no condensation)									
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 -40°C to 85°C±10% max. of sensing distance at 23°C within temperature range -25°C to 70°C						
Voltage influence			±1% max. of sensing distance within rated voltage range ±15%									
Insulation resistance			50 MΩ min. (500 VDC) between energized part and case									
Dielectric strength			4,000 VAC for 1 min between energized parts and case (2,000 VAC for M8 types)									
Vibration resistance			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 for 10 times each in X, Y, and Z directions			Destruction: 1,000 m/s ² for 10 times each in X, Y, and Z directions						
Protective structure			IEC60529 IP67									
Connection method			Pre-wired models (Standard length: 2 m), Connector models									
Weight	Pre-wired models	Approx. 45 g		Approx. 55 g			Approx. 130 g		Approx. 180 g			
	Connector	Approx. 10 g		Approx. 20 g			Approx. 40g		Approx. 90 g			
Material	Case	Stainless steel (SUS303)			Brass							
	Sensing surface	PBT (polybutylene terephthalate)										
Accessories			Instruction manual									

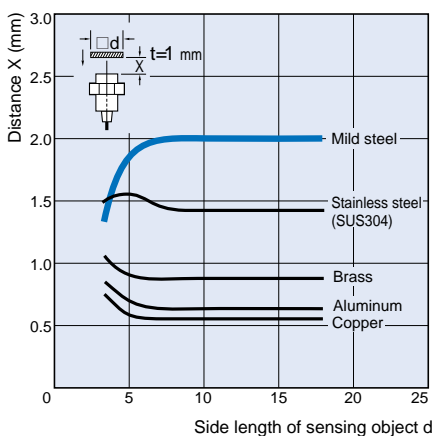
*1. For the 24 VAC supply to any of the aforesaid models, ensure that the operating ambient temperature range exceeds -25°C.

*2. When using M18-or M30-sized E2E within an ambient temperature range of 70°C to 85°C, ensure that E2E has a control output of 200 mA maximum.

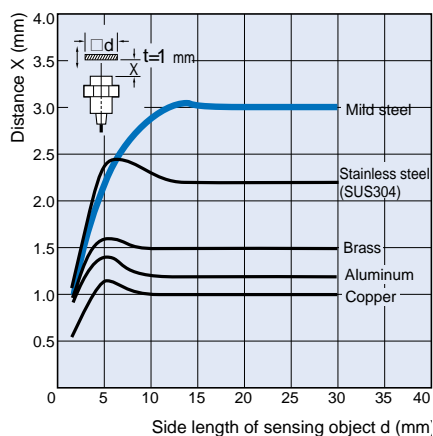
Characteristic data (typical)

Sensing Distance vs. Sensing Object

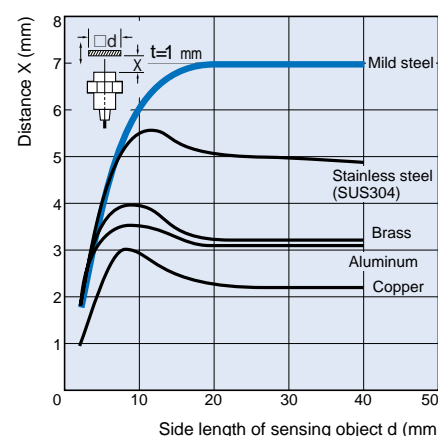
E2E-X2D



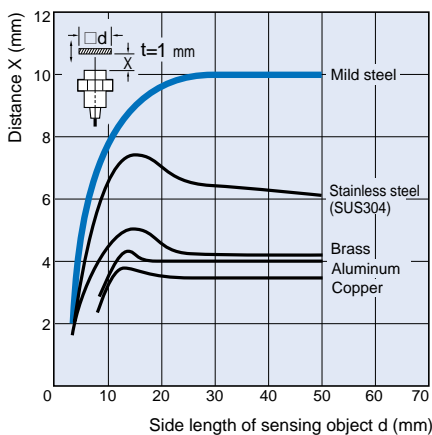
E2E-X3D



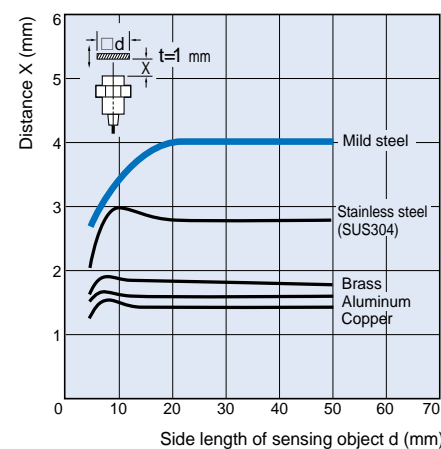
E2E-X7D



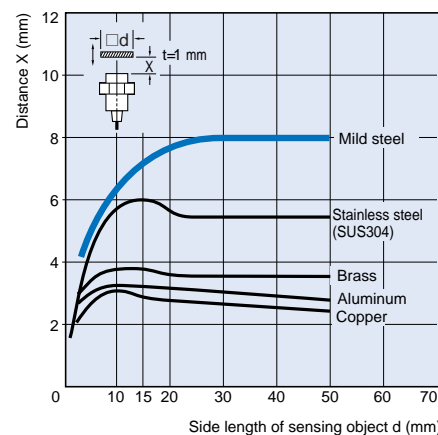
E2E-X10D



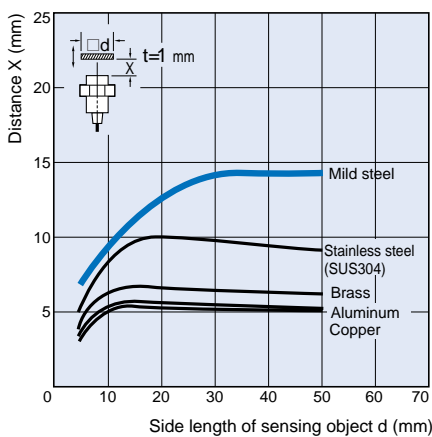
E2E-X4MD



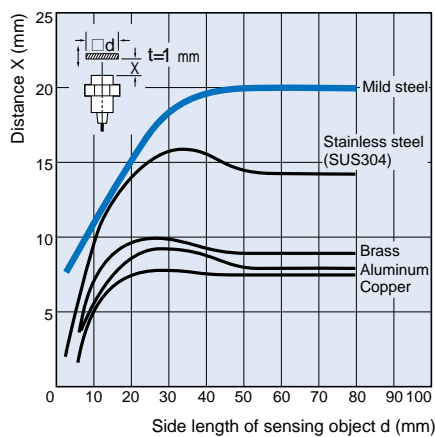
E2E-X8MD



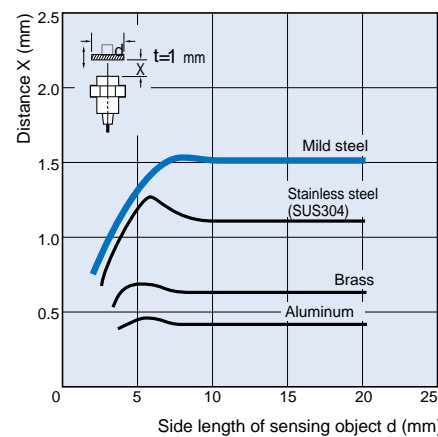
E2E-X14MD



E2E-X20MD

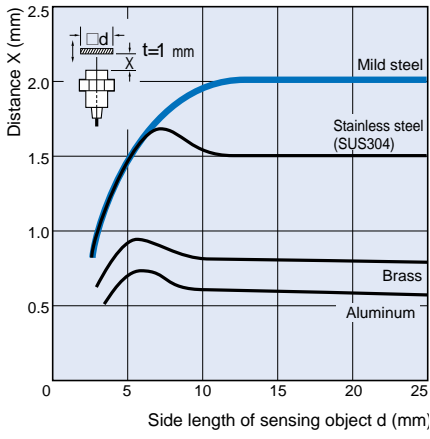


E2E-X1R5Y

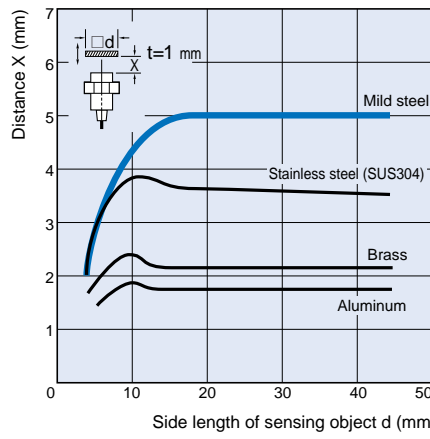


E2E

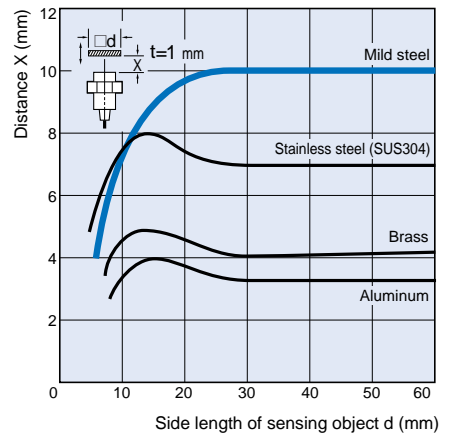
E2E-X2Y



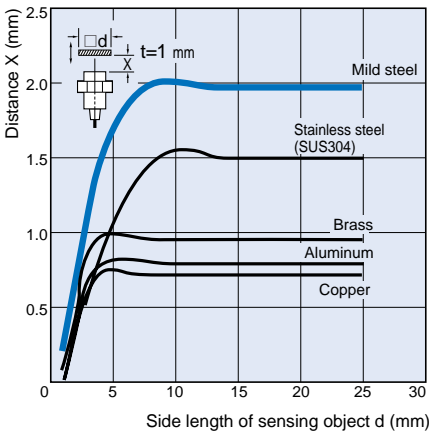
E2E-X5Y



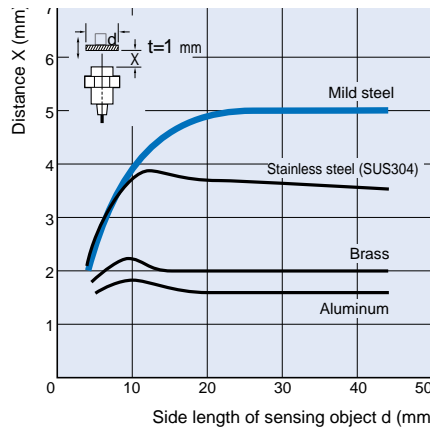
E2E-X10Y



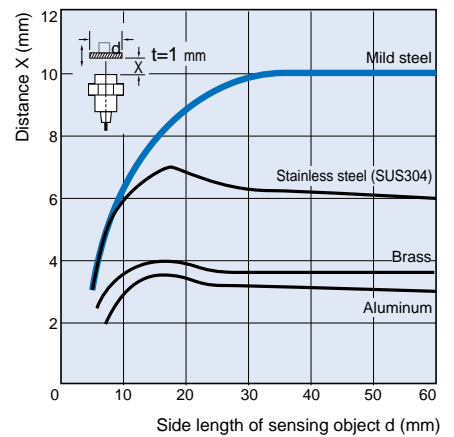
E2E-X2MY



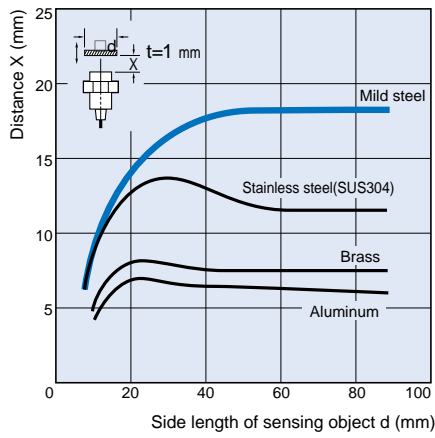
E2E-X5MY



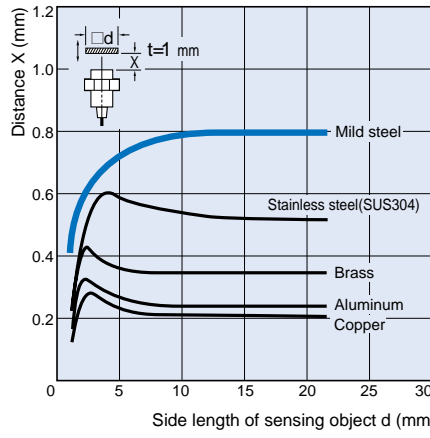
E2E-X10MY



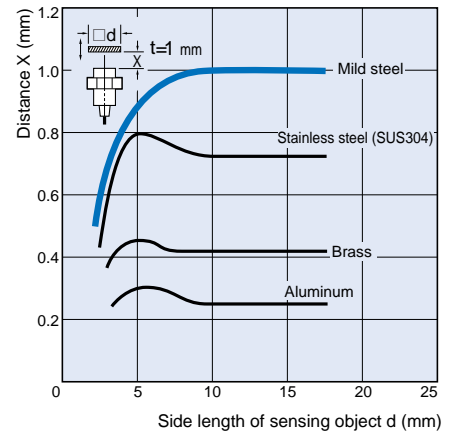
E2E-X18MY



E2E-CR8



E2E-X1/-C1



Output Circuit Diagram

DC 2-wire Models (E2E-X□□□)

Operating status	Model	Timing chart	Output circuit
<p>No self-diagnostics output, NO</p>	<p>E2E-X□D1-N E2E-X□D1-M1G(J) E2E-X□D1-M3G</p>		<p>Polarised</p> <p>Note: The load can be connected to either the +V or 0-V side.</p>
	<p>E2E-X□D1-M1J-T</p>		<p>No polarity</p> <p>Note: 1. The load can be connected to either the +V or 0-V side. 2. The E2E-X□D1-M1J-T has no polarity. Therefore, terminals 3 and 4 have no polarity.</p>
<p>No self-diagnostic output, NC</p>	<p>E2E-X□D2-N E2E-X□D2-M1G E2E-X□D2-M3G</p>		<p>Note: The load can be connected to either the +V or 0-V side.</p>
<p>With self-diagnostic output, NO</p>	<p>E2E-X□D1S E2E-X□D1S-M1</p>	<p>Note: The diagostic output is ON when there is coil burnout or the sensing object is located in the unstable sensing range for 0.3 s or more.</p>	<p>Note: The load connects to the +V side both control output and self-diagnostic output.</p>

E2E

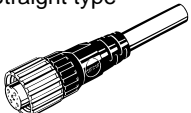



DC 3-wire

Operating status	Output specifications	Model	Timing chart	Output circuit
NO	NPN open collector output	E2E-C/X□C□	Sensing object: Yes (High), No (Low) Red indicator: Lit (High), Not lit (Low) Control output: ON (High), OFF (Low)	
			Sensing object: Yes (High), No (Low) Red indicator: Lit (High), Not lit (Low) Control output: ON (High), OFF (Low)	
NO	PNP open collector output	E2E-C/X□B□	Sensing object: Yes (High), No (Low) Red indicator: Lit (High), Not lit (Low) Control output: ON (High), OFF (Low)	
			Sensing object: Yes (High), No (Low) Red indicator: Lit (High), Not lit (Low) Control output: ON (High), OFF (Low)	

AC 2-wire Models

Operating status	Model	Timing chart	Output circuit
NO	E2E-X□Y□ E2E-X□Y□-M1	Sensing object: Yes (High), No (Low) Yellow indicator: Lit (High), Not lit (Low) Control output between brown and black lines: ON (High), OFF (Low)	<p>About connector type: NO type: 3 and 4 NC type: 1 and 2</p>
NC		Sensing object: Yes (High), No (Low) Red indicator: Lit (High), Not lit (Low) Control output: ON (High), OFF (Low)	

Sensor I/O Connectors

Connector			Applicable connector	Part number	Applicable proximity sensor mode	Figure No.*1		
Screw	Shape	Cable length						
M12	Straight type 	2 m	A	XS2F-D421-DA0-A	E2E-X□D1-M1G E2E-X□D1-M1GJ	1		
			B	XS2F-D421-DC0-A	E2E-X□D1-M1J-T	2		
			D	XS2F-D421-D80-A	E2E-X□D2-M1(G)	5		
					E2E-X□D1S-M1	4		
			E	XS2F-A421-DB0-A	E2E-X□Y1-M1	7		
			F	XS2F-A421-D90-A	E2E-X□Y2-M1	8		
		5 m	A	XS2F-D421-GA0-A	E2E-X□D1-M1G E2E-X□D1-M1GJ	1		
			B	XS2F-D421-GC0-A	E2E-X□D1-M1J-T	2		
			D	XS2F-D421-G80-A	E2E-X□D2-M1(G)	5		
					E2E-X□D1S-M1	4		
			E	XS2F-A421-GB0-A	E2E-X□Y1-M1	7		
			F	XS2F-A421-G90-A	E2E-X□Y2-M1	8		
	L type 	2 m	A	XS2F-D422-DA0-A	E2E-X□D1-M1G E2E-X□D1-M1GJ	1		
			B	XS2F-D422-DC0-A	E2E-X□D1-M1J-T	2		
			D	XS2F-D422-D80-A	E2E-X□D2-M1(G)	5		
					E2E-X□D1S-M1	4		
			E	XS2F-A422-DB0-A	E2E-X□Y1-M1	7		
			5 m	A	XS2F-D422-GA0-A	E2E-X□D1-M1G E2E-X□D1-M1GJ	1	
B		XS2F-D422-GC0-A		E2E-X□D1-M1J-T	2			
D		XS2F-D422-G80-A		E2E-X□D2-M1(G)	5			
				E2E-X□D1S-M1	4			
E		XS2F-A422-GB0-A		E2E-X□Y1-M1	7			
M8		Straight type 		2 m	G	XS3F-M421-402-A	E2E-X□D1-M3G	3
			E2E-X□D2-M3G				6	
	5 m		XS3F-M421-405-A	E2E-X□D1-M3G			3	
				E2E-X□D2-M3G			6	
	L type 		2 m	XS3F-M422-402-A			E2E-X□D1-M3G	3
							E2E-X□D2-M3G	6
		5 m	XS3F-M422-405-A			E2E-X□D1-M3G	3	
						E2E-X□D2-M3G	6	

*1. Refer to the column of the following page "connection figure No." for connection of a proximity sensor and an I/O connector.

Connection with a sensor I/O connector

Figure No.	Proximity Sensors			Sensor I/O Connectors	Connection
	Type	Operating status	Model		
1	DC 2-wire (IEC pin arrangement)	NO	E2E-X□D1-M1G(J)	<p>1: Straight type 2: L type D: Cable length 2 m G: Cable length 5 m</p>	<p>○ Brown (+) ○ Blue (-)</p>
2	DC 2-wire (No polarity)		E2E-X□D1-M1J-T	<p>1: Straight type 2: L type D: Cable length 2 m G: Cable length 5 m</p>	<p>○ Brown (unused) ○ Blue (+) (-) ○ Black (-) (+)</p>
3	DC 2-wire (M8 connector)		E2E-X□D1-M3G	<p>1: Straight type 2: L type 2: Cable length 2 m 5: Cable length 5 m</p>	<p>○ Brown (+) ○ Blue (unused) ○ Black (-)</p>
4	DC 2-wire (diagnostic type)		E2E-X□D1S-M1	<p>1: Straight type 2: L type D: Cable length 2 m G: Cable length 5 m</p>	<p>○ Brown (unused) ○ White (self-diagnostic output) (+) ○ Blue (0-V) ○ Black (control output) (+)</p>
5	DC 2-wire (IEC pin arrangement)	NC	E2E-X□D2-M1G	<p>1: Straight type 2: L type D: Cable length 2 m G: Cable length 5 m</p>	<p>○ Brown (+) ○ White (-) ○ Blue (unused) ○ Black (unused)</p>
6	DC 2-wire (M8 connector)		E2E-X□D2-M3G	<p>1: Straight type 2: L type 2: Cable length 2 m 5: Cable length 5 m</p>	<p>○ Brown (+) ○ White (-) ○ Blue (unused) ○ Black (unused)</p>
7	AC 2-wire Models	NO	E2E-X□Y1-M1	<p>1: Straight type 2: L type D: Cable length 2 m G: Cable length 5 m</p>	<p>○ Brown ○ Blue</p>
8			NC	E2E-X□Y2-M1	<p>D: Cable length 2 m G: Cable length 5 m</p>

* Please take note that it differs from the cable color of a proximity sensor.

Precautions

⚠ Caution

Do not short-circuit the load, otherwise E2E may explode or burn.

Do not impose an excessive voltage on E2E, otherwise it may explode or burn.



Item

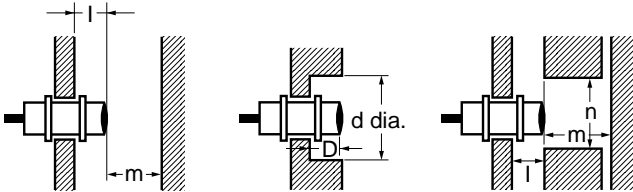
- E2E-CR8□
- E2E-X1□
- E2E-C1□

Correct Use

Design

Effects of Surrounding Metal

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



Effects of Surrounding Metal (unit: mm) (Relationship between Screw Sizes and Models)

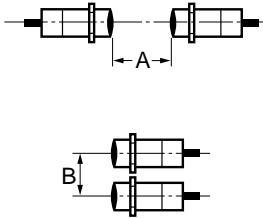
Type	Item	M8	M12	M18	M30	
DC 2-wire E2E-X□D□	Shielded	l	0			
		d	8	12	18	30
		D	0			
		m	4.5	8	20	40
		n	12	18	27	45
	Unshielded	l	12	15	22	30
		d	24	40	70	90
		D	12	15	22	30
		m	8	20	40	70
		n	24	40	70	90
DC 3-wire E2E-X□B□/C□	Shielded	l	0			
		d	8	12	18	30
		D	0			
	Unshielded	m	4.5	8	20	40
		n	12	18	27	45
AC 2-wire Models E2E-X□Y□	Unshielded	l	6	15	22	30
		d	24	40	55	90
		D	6	15	22	30
		m	8	20	40	70
		n	24	36	54	90

Type	Model
4 mm dia.	E2E-CR8C□ E2E-CR8B1
	M5
5.4 mm dia.	
	M8
M12	
	M18
M30	
	M18
M30	
	M30
M30	

Type	Item	4 dia.	M5	5.4 mm dia.	
DC 3-wire E2E-X□C/B□ E2E-C□C/B□	Shielded	l	0		
		d	4	5	5.4
		D	0		
		m	2.4	3	
		n	6	8	

Mutual Interference

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



Mutual Interference

Type		Item	M8	M12	M18	M30
DC 2-wire E2E-X□D□	Shielded	A	20	30 (20)	50 (30)	100(50)
		B	15	20(12)	35 (18)	70(35)
	Unshielded	A	80	120(60)	200(100)	300(100)
		B	60	100(50)	110(60)	200(100)
AC 2-wire Models E2E-X□Y□	Shielded	A	20	30 (20)	50 (30)	100(50)
		B	15	20(12)	35 (18)	70(35)
	Unshielded	A	80	120(60)	200(100)	300(100)
		B	60	100(50)	110(60)	200(100)

Type		Item	4 mm dia.	M5	5.4 mm dia.
DC 3-wire E2E-X□C/B□ E2E-C□C/B□	Shielded	A	20		
		B	15		

Note: Values in parentheses: Using a different frequency type model value.

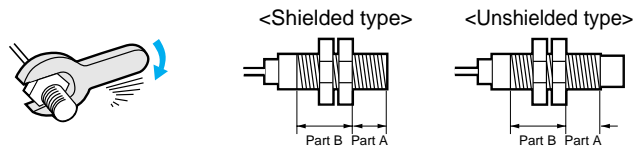
Inrush Current

A load that has a large inrush current (e.g., a lamp or motor) will damage the Proximity Sensor, in such case connect the load to the Proximity Sensor by means of a relay.

Mounting

Mounting

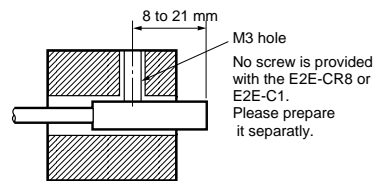
Do not tighten the nut with excessive force.
A washer must be used with the nut.



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. Following table bolting permission intensity shows the value at the time of using a washer.

Type	Part A		Part B
	Length (mm)	Tensile strength (torque)	Tensile strength (torque)
M5	1 Nm		
M8	Shielded	9	9 Nm / 12 Nm
	Unshielded	3	
M12	30 Nm		
M18	70 Nm		
M30	180 Nm		

How to attach a pillar-screwless type (E2 E-CR8, -C1).



If you use a set screw, please increase the below bolting torque by 0.2 Nm.
(E2E-C1: 0.4 Nm max.)

Dimensions (Unit: mm)

Sensors

Models and dimensions chart

Model	Shielded	Type	DC 2-wire		DC 3-wire		AC 2-wire Models				
		Model	Figure No.	Model	Figure No.	Model	Figure No.				
Pre-wired	Shielded	4 mm dia.	---		E2E-CR8□	1	---				
		M5			E2E-X1□	3					
		5.4 mm dia.			E2E-C1□	2					
		M8			E2E-X2D□	4			---	E2E-X1R5Y□	6
		M12			E2E-X3D□	8				E2E-X2Y□	10
		M18			E2E-X7D□	13				E2E-X5Y□	13
	M30	E2E-X10D□	15	E2E-X10Y□	15						
	Unshielded	M8	E2E-X4MD□	5	---	E2E-X2MY□	7				
		M12	E2E-X8MD□	9		E2E-X5MY□	11				
		M18	E2E-X14MD□	14		E2E-X10MY□	14				
		M30	E2E-X20MD□	16		E2E-X18MY□	16				
	Connector (M12)	Shielded	M8	E2E-X2D□-M1(G)	17	---	---	---			
M12			E2E-X3D□-M1(G)	19	E2E-X2Y□-M1		21				
M18			E2E-X7D□-M1(G)	23	E2E-X5Y□-M1		23				
M30			E2E-X10D□-M1(G)	25	E2E-X10Y□-M1		25				
Unshielded		M8	E2E-X4MD□-M1(G)	18	---	---	---				
		M12	E2E-X8MD□-M1(G)	20		E2E-X5MY□-M1	22				
		M18	E2E-X14MD□-M1(G)	24		E2E-X10MY□-M1	24				
		M30	E2E-X20MD□-M1(G)	26		E2E-X18MY□-M1	26				
Connector(M8)	Shielded	M8	E2E-X2D□-M3G	27	---	---	---				
	Unshielded	M8	E2E-X4MD□-M3G	28	---	---	---				
Connector extension	Shielded	M12	E2E-X3D1-M1GJ	29	---	---	---				
		M18	E2E-X7D1-M1GJ	31							
		M30	E2E-X10D1-M1GJ	33							
	Unshielded	M12	E2E-X8MD1-M1GJ	30	---	---	---				
		M18	E2E-X14MD1-M1GJ	32							
		M30	E2E-X20MD1-M1GJ	34							
Connector extension (no polarity)	^	M12	E2E-X3D1-M1J-T	29	---	---	---				
		M18	E2E-X7D1-M1J-T	31							
		M30	E2E-X10D1-M1J-T	33							

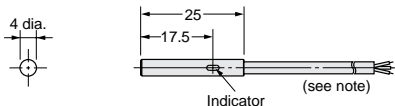
Note: 1. Two clamping nuts and one toothed washer are attached to M8 to M30 type.
 2. The pre-wired models of M8 to M30 mark model number to a cable and a milling cutter by laser.

Pre-wired Models (Shielded)



fig.1 E2E-CR8□

CAD file E2E_02

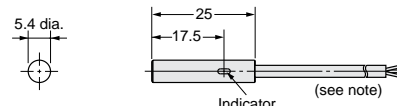


Note:
 Round vinyl-insulated cable (oil-and vibration-resistive), 0.14 mm², 3 coi
 Standard length: 2 m,
 The cable can be extended up to 100 m



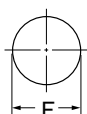
fig.2 E2E-C1□

CAD file E2E_01



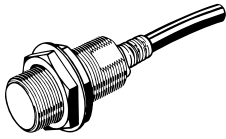
Note:
 Round vinyl-insulated cable (oil-and vibration-resistive), 0.14 mm², 3 cores
 Standard length: 2 m,
 The cable can be extended up to 100 m

Mounting Holes



Outer diameter	4 mm dia.	5.4 mm dia.
F (mm)	4.2 dia. ^{+0.5} ₀	5.7 dia. ^{+0.5} ₀

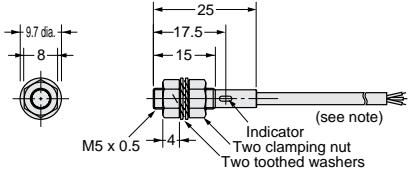
Pre-wired Models (Shielded)



Dimensions	M5	M8	M12
F (mm)	5.5 dia. ^{+0.5} ₀	8.5 dia. ^{+0.5} ₀	12.5 dia. ^{+0.5} ₀

fig.3 E2E-X1□

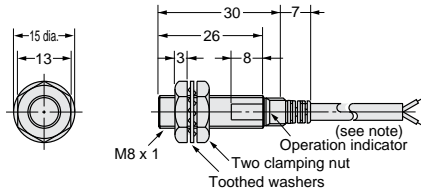
CAD file E2E_19



Note: Round vinyl-insulated cable (oil-and vibration-resistive), 0.14 mm², 3 cores 2.9 dia.
Standard length: 2 m,
The cable can be extended up to 100 m

fig.4 E2E-X2D□

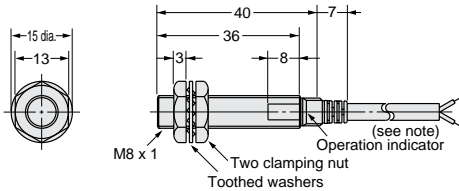
Model	CAD file
E2E-X2D□	E2E_26



Note: Round vinyl-insulated cable 4 dia. (0.08 dia. x 60), 2/3 cores 4 dia. (0.08 dia x 6/10) for robotics cable models
Standard length: 2 m

fig.6 E2E-X1R5Y□

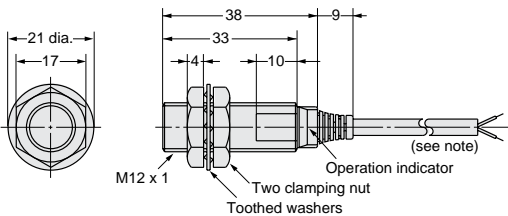
CAD file E2E_21



Note: Round vinyl-insulated cable 4 dia. (0.08 dia x 60), 2 cores
Standard length: 2 m

fig.8 E2E-X3D□

Model	CAD file
E2E-X3D□	E2E_37



Note: Round vinyl-insulated cable 4 dia. (0.08 dia. x 60), 2/3 cores 4 dia. (0.08 dia. x 6/10) for robotics cable models
Standard length: 2 m

Pre-wired Models (Unshielded)

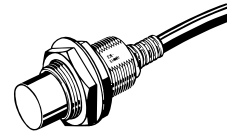
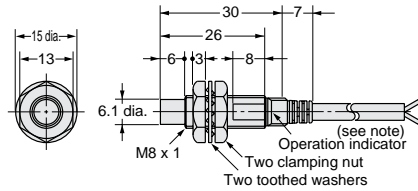


fig.5 E2E-X4MD□

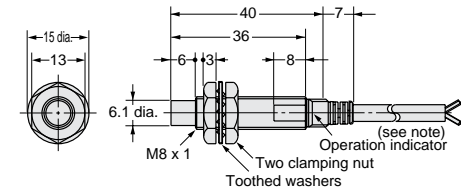
Model	CAD file
E2E-X4MD□	E2E_40



Note: Round vinyl-insulated cable 4 dia. (0.08 dia. x 60), 2/3 cores 4 dia. (0.08 dia. x 6/10) for robotics cable models
Standard length: 2 m

fig.7 E2E-X2MY□

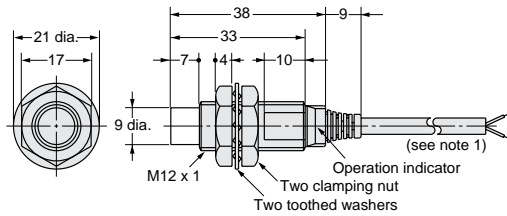
CAD file E2E_31



Note: Round vinyl-insulated cable 4 dia. (0.08 dia x 60), 2 cores
Standard length: 200 m

fig.9 E2E-X8MD□

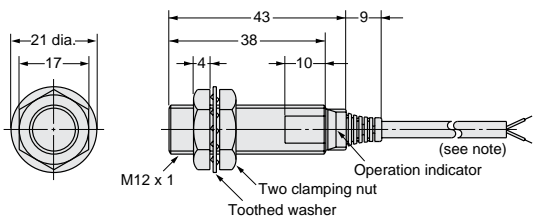
Model	CAD file
E2E-X8MD□	E2E_55



Note: Round vinyl-insulated cable 4 dia. (0.08 dia. x 60), 2/3 cores 4 dia. (0.08 dia x 6/10) for robotics cable models
Standard length: 2 m

fig.10 E2E-X2Y□

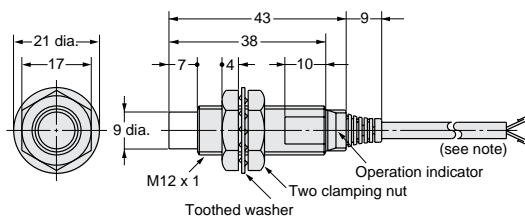
CAD file E2E_32



Note:
Round vinyl-insulated cable 4 dia. (0.08 dia. x 60),
2 cores
Standard length: 2 m

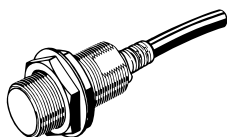
fig.11 E2E-X5MY□

CAD file E2E_46



Note:
Round vinyl-insulated cable 4 dia. (0.08 dia. x 60),
2 cores
Standard length: 2 m

Pre-wired Models (Shielded)



Pre-wired Models (Unshielded)

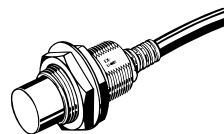
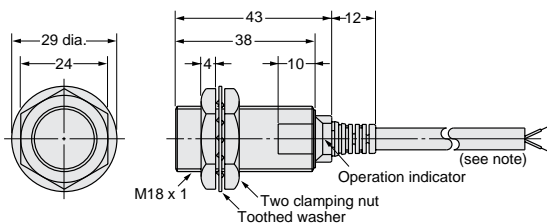
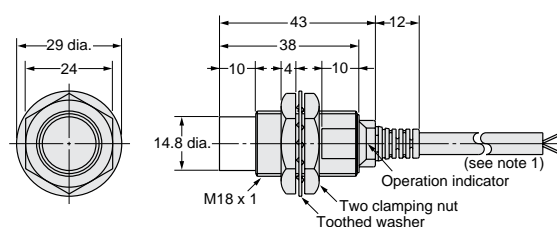


fig.13 E2E-X7D□/E2E-X5Y□



Note:
Round vinyl-insulated cable 4 dia. (0.12 dia. x 45),
2/3 cores
6 dia. (0.08 dia. x 6/17) for robotics cable models
Standard length: 2 m

fig.14 E2E-X14MD□/E2E-X10MY□

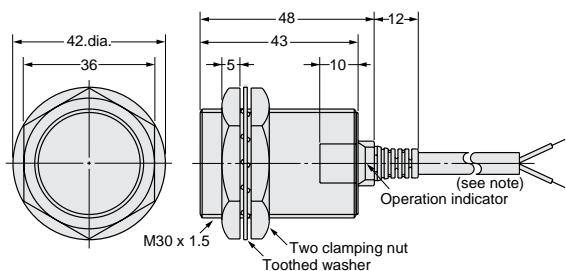


Note:
Round vinyl-insulated cable 6 dia. (0.12 dia. x 45),
2/3 cores
6 dia. (0.08 dia. x 6/17) robotics cable models
Standard length: 2 m

Model	CAD file
E2E-X7D□	E2E_42
E2E-X5Y□	E2E_48

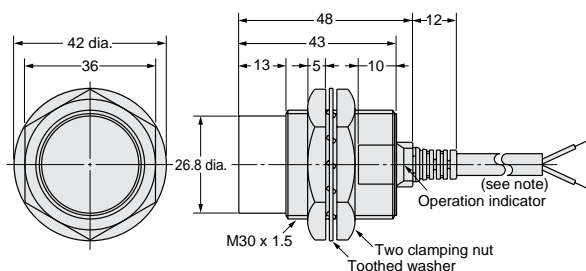
Model	CAD file
E2E-X14MD□	E2E_16
E2E-X10MY□	E2E_10

fig.15 E2E-X10D□/E2E-X10Y□



Note:
Round vinyl-insulated cable 4 dia. (0.12 dia. x 45),
2/3 cores
6 dia. (0.08 dia. x 6/17) for robotics cable models
Standard length: 2 m

fig.16 E2E-X20MD□/E2E-X18MY□



Note:
Round vinyl-insulated cable 4 dia. (0.12 dia. x 45),
2/3 cores
6 dia. (0.08 dia. x 6/17) for robotics cable models
Standard length: 2 m

Model	CAD file
E2E-X10D□	E2E_07
E2E-X10Y□	E2E_06

Model	CAD file
E2E-X20MD□	E2E_25
E2E-X18MY□	E2E_17

E2E

M8 Connector Models
(Shielded)

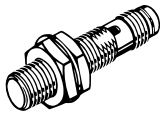
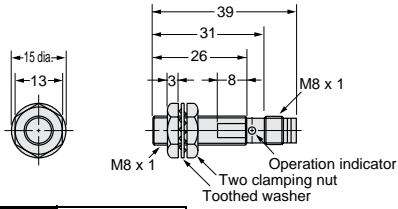


fig.27 E2E-X2D□-M3G



CAD file E2E_59

M8 Connector Models
(Unshielded)

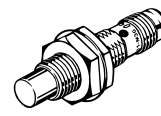
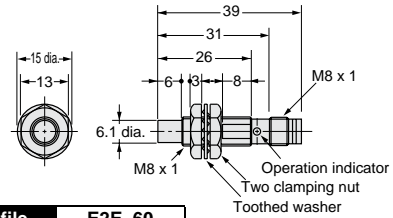


fig.28 E2E-X4MD□-M3G



CAD file E2E_60

M12 Connector Models
(Shielded)

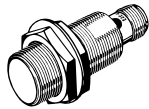
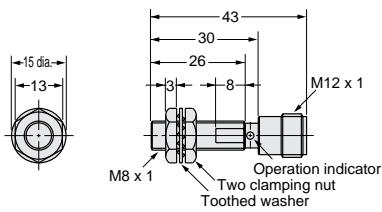


fig.17 E2E-X2D□-M1(G)



CAD file E2E_27

M12 Connector Models
(Unshielded)

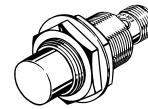
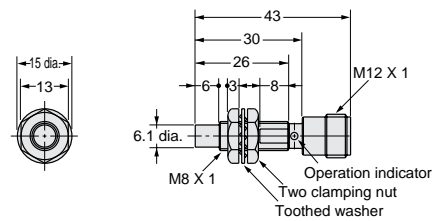
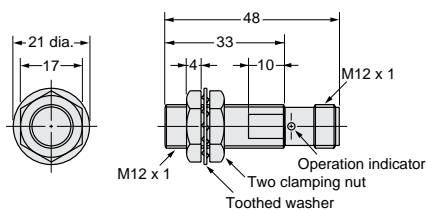


fig.18 E2E-X4MD□-M1(G)



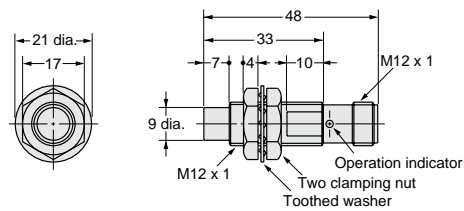
CAD file E2E_41

fig.19 E2E-X3D□-M1G



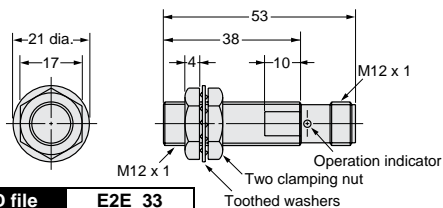
CAD file E2E_34

fig.20 E2E-X8MD□-M1G



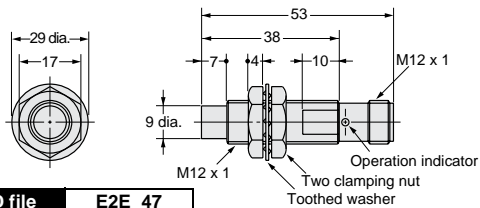
CAD file E2E_57

fig.21 E2E-X2Y□-M1



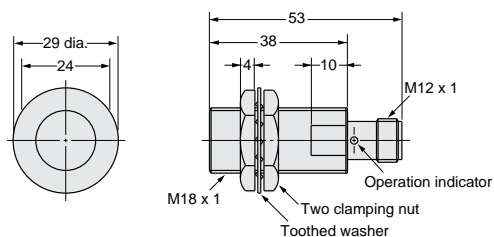
CAD file E2E_33

fig.22 E2E-X5MY□-M1



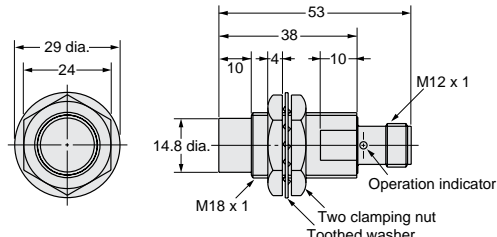
CAD file E2E_47

fig.23 E2E-X7D□-M1G/E2E-X5Y□-M1



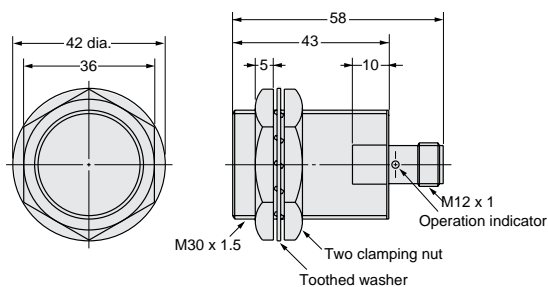
CAD file E2E_49

fig.24 E2E-X14MD□-M1(G)/E2E-X10MY□-M1



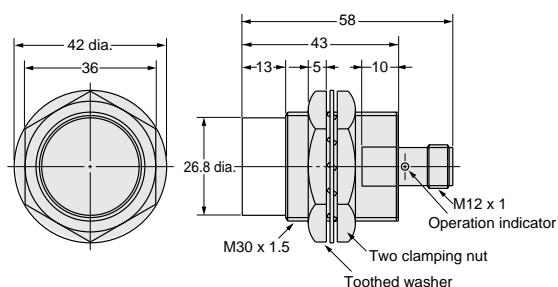
CAD file E2E_14

fig.25 E2E-X10D□-M1(G)/E2E-X10Y□-M1



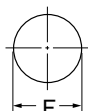
CAD file E2E_04

fig.26 E2E-X20MD□-M1(G)/E2E-X18MY□-M1



CAD file E2E_23

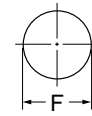
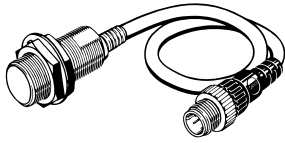
Mounting Holes



Dimensions	M5	M8	M12	M18	M30
F (mm)	5.5 dia. ₀ ^{0.5}	8.5 dia. ₀ ^{0.5}	12.5 dia. ₀ ^{0.5}	18.5 dia. ₀ ^{0.5}	30.5 dia. ₀ ^{0.5}

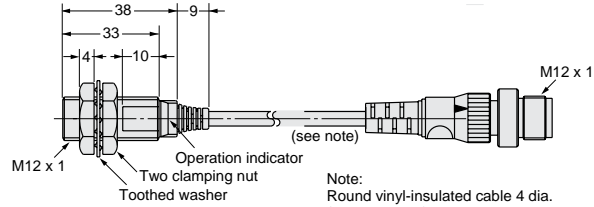
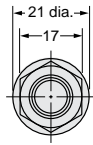
Connector Extension Models (Shielded)

Mounting Holes



Dimensions	M12	M18	M30
F (mm)	12.5 dia. ₀ ^{+0.5}	18.5 dia. ₀ ^{+0.5}	30.5 dia. ₀ ^{+0.5}

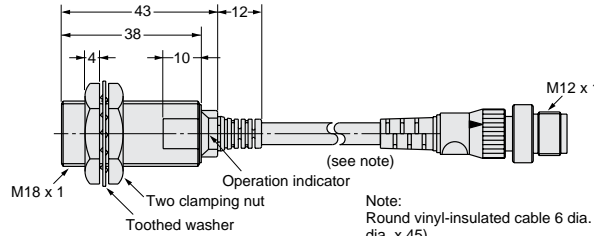
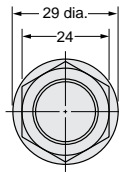
fig.29 E2E-X3D1-M1GJ
E2E-X3D1-M1J-T



Note:
Round vinyl-insulated cable 4 dia.
(0.08 dia. x 60)
Standard length: 0.3 m

CAD file E2E_36

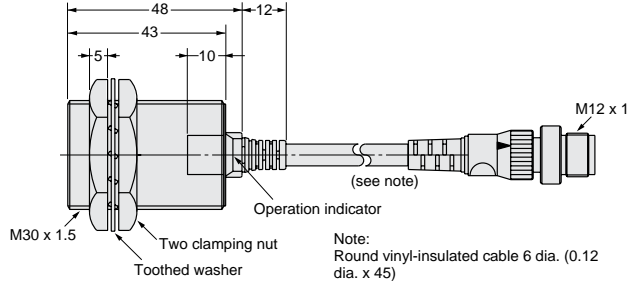
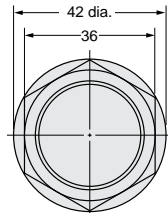
fig.31 E2E-X7D1-M1GJ
E2E-X7D1-M1J-T



Note:
Round vinyl-insulated cable 6 dia. (0.12
dia. x 45)
Standard length: 0.3 m

CAD file E2E_52

fig.33 E2E-X10D1-M1GJ
E2E-X10D1-M1J-T

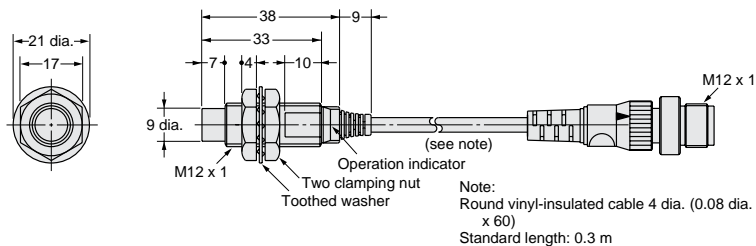


Note:
Round vinyl-insulated cable 6 dia. (0.12
dia. x 45)
Standard length: 0.3 m

CAD file E2E_05

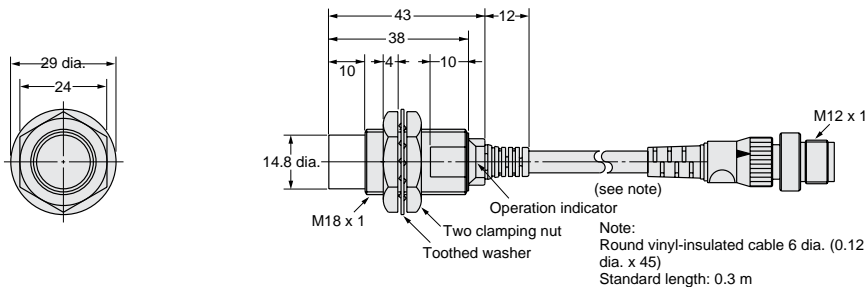
Connector Extension Models (Unshielded)

fig.30 E2E-X8MD1-M1GJ



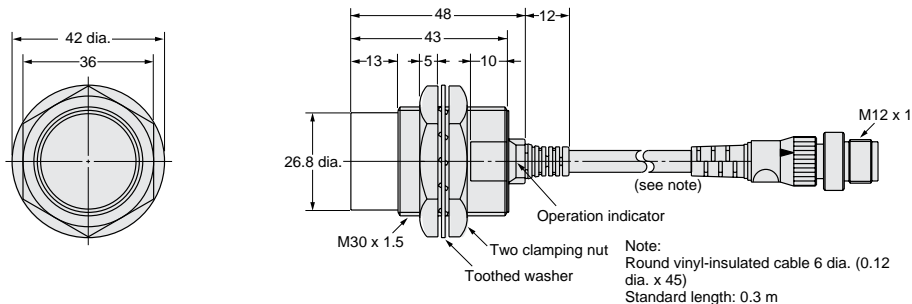
CAD file E2E_58

fig.32 E2E-X14MD1-M1GJ



CAD file E2E_15

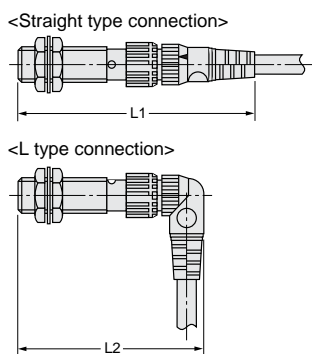
fig.34 E2E-X20MD1-M1GJ



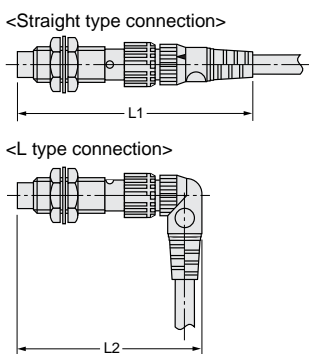
CAD file E2E_24

Dimensions of connection with proximity sensor and sensor I/O connector

Shielded



Unshielded



Dimensions of connection with XS2F

Size	Length	L1	L2
M8		Approx.75	Approx.62
M12*	DC Models	Approx.80	Approx.67
	AC Models	Approx.85	Approx.72
M18		Approx.85	Approx.72
M30		Approx.90	Approx.77

* Only in the diameter M12 of a sensor, dimensions (sensor full length) differ for AC or DC. Therefore, please consider that a connection with I/O connector changes dimensions.

Dimensions of connection with XS3F

Size	Length	L1	L2
M8		Approx.65	Approx.54

Accessories (Order Separately)

Sensor I/O Connectors

E-33