

Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from, Europe, America and south Asia, supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts, Customers Priority, Honest Operation, and Considerate Service", our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip, ALPS, ROHM, Xilinx, Pulse, ON, Everlight and Freescale. Main products comprise IC, Modules, Potentiometer, IC Socket, Relay, Connector. Our parts cover such applications as commercial, industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China







E2E2

CSM_E2E2_DS_E_4_3

Proximity Sensor with a Long Screw Length

- Increased tightening strength. Cable protectors provided as a standard feature.
- Increased indicator visibility. A milled section for wrench grip on all models.





Be sure to read Safety Precautions on page 9.

Ordering Information

Sensors

DC 2-Wire Models

Appearance		Sensing distance		Model Operation mode		
				NO	NC	
Shielded	M12	3 mm		E2E2-X3D1 2M *	E2E2-X3D2 2M	
Ornolada 🗸	M18	7 mm		E2E2-X7D1 2M *	E2E2-X7D2 2M	
	M30	10 mm		E2E2-X10D1 2M *	E2E2-X10D2 2M	
Unshielded	M12	8 mm		E2E2-X8MD1 2M *	E2E2-X8MD2 2M	
	M18	M18 14 mm E2E	E2E2-X14MD1 2M *	E2E2-X14MD2 2M		
	M30	20 mm		E2E2-X20MD1 2M *	E2E2-X20MD2 2M	

^{*}Models with different frequencies are also available. The model numbers are E2E2-X□D15 (example: E2E2-X3D15).

DC 3-Wire Models

			Model		
Appearance	ce	Sensing distance	Operation mode		
			NO	NC	
Shielded	M12	2 mm	E2E2-X2C1 2M	E2E2-X2C2 2M	
	M18	5 mm	E2E2-X5C1 2M	E2E2-X5C2 2M	
	M30	10 mm	E2E2-X10C1 2M	E2E2-X10C2 2M	
Unshielded	M12	5 mm	E2E2-X5MC1 2M	E2E2-X5MC2 2M	
Orioniciaea	M18	10 mm	E2E2-X10MC1 2M	E2E2-X10MC2 2M	
	M30	18 mm	E2E2-X18MC1 2M	E2E2-X18MC2 2M	

AC 2-Wire Models

			Model		
Appearance	ce	Sensing distance	Operation mode		
			NO	NC	
Shielded	M12	2 mm	E2E2-X2Y1 2M	E2E2-X2Y2 2M	
	M18	5 mm	E2E2-X5Y1 2M	E2E2-X5Y2 2M	
	M30	10 mm	E2E2-X10Y1 2M	E2E2-X10Y2 2M	
Unshielded	M12	5 mm	E2E2-X5MY1 2M	E2E2-X5MY2 2M	
	M18	10 mm	E2E2-X10MY1 2M	E2E2-X10MY2 2M	
	M30	18 mm	E2E2-X18MY1 2M	E2E2-X18MY2 2M	

Accessories (Order Separately)

Mounting Brackets Protective Covers Sputter Protective Covers

Ratings and Specifications

E2E2-X□D□ DC 2-Wire Models

Size		M:	12	M18		M30		
	Shielding	Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded	
Item	Model	E2E2-X3D□	E2E2-X8MD□	E2E2-X7D□	E2E2-X14MD□	E2E2-X10D□	E2E2-X20MD□	
Sensing distance		3 mm±10%	8 mm±10%	7 mm±10%	14 mm±10%	10 mm±10%	20 mm±10%	
Set distar	nce *1	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	
Differentia	al travel	10% max. of sen	sing distance					
Sensing of	bject	Ferrous metal (T page 5.)	he sensing distan	ce decreases with	n non-ferrous meta	al. Refer to <i>Engin</i>	eering Data on	
Standard	sensing object	Iron, 12 × 12 × 1 mm	Iron, $30 \times 30 \times 1 \text{ mm}$	Iron, 18 × 18 × 1 mm	Iron, $30 \times 30 \times 1 \text{ mm}$	Iron, $30 \times 30 \times 1 \text{ mm}$	Iron, 54 × 54 × 1 mm	
Response	e frequency *2	1 kHz	800 Hz	500 Hz	400 Hz		100 Hz	
	pply voltage g voltage range)	12 to 24 VDC (10	to 30 VDC), ripp	le (p-p): 10% max	ζ.			
Leakage of	current	0.8 mA max.						
Control output	Switching capacity	3 to 100 mA						
output	Residual voltage	3 V max. (Load o	current: 100 mA, 0	Cable length: 2 m)				
Indicators	3		ration indicator (re ration indicator (re	ed) and setting ind ed)	licator (green)			
Operation (with sense) proaching	sing object ap-	D1 Models: NO D2 Models: NC	Refer to the timin	g charts under I/C) Circuit Diagrams	on page 8 for det	ails.	
Protection	n circuits	Surge absorber,	Load short-circuit	protection				
Ambient t	emperature	Operating/Storag	ge: –25 to 70°C (w	vith no icing or cor	ndensation)			
Ambient I	numidity	Operating/Storag	ge: 35% to 95% (v	vith no condensat	ion)			
Temperat	ure influence	±10% max. of se	nsing distance at	23°C in the temper	erature range of -	25 to 70°C		
Voltage in	nfluence	±1% max. of sen	sing distance at r	ated voltage in the	e rated voltage ±1	5% range		
Insulation	resistance	50 M Ω min. (at 5	00 VDC) betweer	current-carrying	parts and case			
Dielectric	strength	1000 VAC, 50/60	Hz for 1 minute l	between current-c	arrying parts and	case		
Vibration (destructi	resistance on)	10 to 55 Hz, 1.5-	mm double ampli	tude for 2 hours e	ach in X, Y, and Z	directions		
Shock res (destructi		1,000 m/s ² 10 tin	nes each in X, Y,	and Z directions				
Degree of	protection	IEC IP67, in-house standard for oil resistance						
Connection	Connection method Pre-wired Models (Standard cable length: 2 m)							
Weight (packed state) Approx. 65 g Approx. 150 g Approx. 210 g				Approx. 210 g				
	Case	Brass						
Materi-	Sensing surface	PBT						
als	Clamping nuts	Nickel-plated bra	ISS					
	Toothed washer	Zinc-plated iron						
Accessor	ies	Instruction sheet						

^{*1.} Use the E2E2 within the range in which the setting indicator (green LED) is ON (except D2 Models).
*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.

E2E2-X□**C**□ **DC** 3-Wire Models

	Size	M [.]	12	M18		M30	
	Shielding	Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded
Item	Model	E2E2-X2C□	E2E2-X5MC□	E2E2-X5C□	E2E2-X10MC□	E2E2-X10C□	E2E2-X18MC□
Sensing of	distance	2 mm±10%	5 mm±10%	5 mm±10%	10 mm±10%	10 mm±10%	18 mm±10%
Set distar	nce	0 to 1.6 mm	0 to 4 mm	0 to 4 mm	0 to 8 mm	0 to 8 mm	0 to 14 mm
Differenti	al travel	10% max. of sen	sing distance				
Sensing of	object	Ferrous metal (T page 5.)	he sensing distar	ice decreases with	n non-ferrous met	al. Refer to <i>Engin</i>	eering Data on
Standard	sensing object	Iron, $12 \times 12 \times 1 \text{ mm}$	Iron, $15 \times 15 \times 1 \text{ mm}$	Iron, 18 × 18 × 1 mm	Iron, $30 \times 30 \times 1 \text{ mm}$	Iron, $30 \times 30 \times 1 \text{ mm}$	Iron, 54 × 54 × 1 mm
Response	e frequency *1	1.5 kHz	400 Hz	600 Hz	200 Hz	400 Hz	100 Hz
	pply voltage (op- oltage range) *2	12 to 24 VDC (10	to 30 VDC), ripp	ole (p-p): 10% max	(.		
Leakage (current	13 mA max.					
Control	Load current	NPN open-collec	tor output, 200 m	A max. (30 VDC r	max.)		
output	Residual voltage	2 V max. (Load o	current: 200 mA, 0	Cable length: 2 m)			
Indicators	S	Operation indicate	tor (red)				
Operation (with sense) proaching	sing object ap-	C1 Models: NO C2 Models: NC Refer to the timing charts under I/O Circuit Diagrams on page 8 for details.					ails.
Protection	n circuits	Reverse polarity	protection, Surge	absorber, Load s	short-circuit protec	tion	
Ambient 1	temperature	Operating/Storag	ge: –40 to 85°C (v	vith no icing or co	ndensation)		
Ambient I	humidity	Operating/Storag	ge: 35% to 95% (v	vith no condensat	ion)		
Temperat	ure influence			23°C in the temporal 23°C in t			
Voltage in	nfluence	±1% max. of sen	sing distance at r	ated voltage in the	e rated voltage ±1	5% range	
Insulation	resistance	50 $\text{M}\Omega$ min. (at 5	00 VDC) betweer	n current-carrying	parts and case		
Dielectric	strength	1,000 VAC, 50/6	0 Hz for 1 minute	between current	carry parts and ca	ise	
Vibration (destruction	resistance on)	10 to 55 Hz, 1.5-	mm double ampli	tude for 2 hours e	ach in X, Y, and Z	Z directions	
Shock res (destructi		1,000 m/s ² 10 tin	nes each in X, Y,	and Z directions			
Degree of	ree of protection IEC IP67, in-house standard for oil resistance						
Connection method Pre-wired Models (Standard cable le				length: 2 m) and	Connector Model	s	
Weight (p	acked state)	Approx. 75 g		Approx. 160 g		Approx. 220 g	
	Case	Brass					
Materi-	Sensing surface	PBT					
als	Clamping nuts	Nickel-plated bra	ISS				
	Toothed washer	Zinc-plated iron					
Accessor	essories Instruction sheet						

^{*1.} 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.

*2. A full-wave rectification power supply of 24 VDC ±20% (average value) can be used.

E2E2-X□**Y**□ **AC 2-Wire Models**

Shielding Model EZE2-X2YC EZE2-X5MY EZE2-X5MY EZE2-X10MY		Size	M	12	M18		M30	
Sensing distance 2 mm±10% 5 mm±10% 10 mm±10% 10 mm±10% 18 mm±10%		Shielding	Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded
Set distance 0 to 1.6 mm 0 to 4 mm 0 to 4 mm 0 to 8 mm 0 to 8 mm 0 to 18 mm 0 to 14 mm 0 to 14 mm 0 to 4 mm 0 to 8 mm 0 to 18 mm 0 to 14 mm 0 to 14 mm 0 to 18 mm 0 to 18 mm 0 to 14 mm 0 to 18 mm 0 to 18 mm 0 to 14 mm 0 to 18 mm 0 to 18 mm 0 to 18 mm 0 to 14 mm 0 to 18 mm 0 to 14 mm 0 to 18 mm 0 t	Item	Model	E2E2-X2Y□	E2E2-X5MY□	E2E2-X5Y□	E2E2-X10MY□	E2E2-X10Y□	E2E2-X18MY□
Differential travel 10% max. of sensing distance	Sensing of	distance	2 mm±10%	5 mm±10%	5 mm±10%	10 mm±10%	10 mm±10%	18 mm±10%
Sensing object Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to Engineering Data on page 5.) Standard sensing object Iron, 12 × 12 × 1 mm 15 × 15 × 1 mm 18 × 18 × 1 mm 30 × 30 × 1 mm 30 × 30 × 1 mm 54 × 54 × 1 mm Response frequency 25 Hz Power supply voltage (operating voltage range) 11 Leakage current 1.7 mA max. 24 to 240 VAC (20 to 264 VAC), 50/60 Hz Residual voltage Refer to Engineering Data on page 5. Operation mode (with sensing object approaching) Ambient temperature *1, 2 Ambient temperature *1, 2 Ambient humidity Operating/Storage: -40 to 85°C (with no icing or condensation) Temperature influence ±15% max. of sensing distance at 23°C in the temperature range of -40 to 85°C, ±10% max. of sensing distance at 23°C in the temperature range of -25 to 70°C Voltage influence ±15% max. of sensing distance at 23°C in the temperature range of -25 to 70°C Voltage influence ±15% max. of sensing distance at 26°C in the temperature range of -25 to 70°C Voltage influence ±10% max. of sensing distance at 26°C in the temperature range of -25 to 70°C Voltage influence ±10% max. of sensing distance at 26°C in the temperature range of -25 to 70°C Voltage influence ±10% max. of sensing distance at 26°C in the temperature range of -25 to 70°C Voltage influence ±10% max. of sensing distance at 26°C in the temperature range of -25 to 70°C Voltage influence ±10% max. of sensing distance at 26°C in the temperature range of -25 to 70°C Voltage influence ±10% max. of sensing distance at 26°C in the temperature range of -25 to 70°C Voltage influence ±10% max. of sensing distance at 26°C in the temperature range of -25 to 70°C Voltage influence ±10% max. of sensing distance at 26°C in the temperature range of -25 to 70°C Voltage influence ±10% max. of sensing distance at 26°C in the temperature range of -25 to 70°C Voltage influence ±10% max. of sensing distance at 26°C in the temperature range of -25 to 70°C Voltage influence ±10% max. of sensing distance at	Set distar	nce	0 to 1.6 mm	0 to 4 mm	0 to 4 mm	0 to 8 mm	0 to 8 mm	0 to 14 mm
Standard sensing object Iron, 12 × 12 × 1 mm Iron, 18 × 18 × 1 mm 30 × 30 × 1 mm 54 × 54 × 1 mm 54 × 54 × 1 mm 18 × 18 × 1 mm 30 × 30 × 1 mm 54 × 54 × 1 mm	Differentia	al travel	10% max. of sen	sing distance	1	1		
Response frequency Power supply voltage (operating voltage range) 11 Leakage current 1.7 mA max. Control Output Residual voltage Refer to Engineering Data on page 5. Indicators Operation mode (with sensing object approaching) Ambient humidity Operating/Storage: -40 to 85°C (with no icing or condensation) Temperature influence 115% max. of sensing distance at 23°C in the temperature range of -40 to 85°C, ±10% max. of sensing distance at 23°C in the temperature range of -25 to 70°C Voltage influence 116 max. of sensing distance at 23°C in the temperature range of -25 to 70°C Voltage influence 117 max. of sensing distance at 23°C in the temperature range of -25 to 70°C Voltage influence 118 max. of sensing distance at 23°C in the temperature range of -25 to 70°C Voltage influence 119 max. of sensing distance at 23°C in the temperature range of -25 to 70°C Voltage influence 110 max. of sensing distance at 23°C in the temperature range of -25 to 70°C Voltage influence 110 max. of sensing distance at rated voltage in the rated voltage ±15% range Insulation resistance (destruction) 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions Connection method Pre-wired Models (Standard cable length: 2 m) and Connector Models Weight (packed state) Approx. 65 g	Sensing of	object	,	he sensing distan	ce decreases with	n non-ferrous met	al. Refer to <i>Engin</i>	eering Data on
Power supply voltage (operating voltage range) 1 24 to 240 VAC (20 to 264 VAC), 50/60 Hz	Standard	sensing object	,	- ,	- ,	,	· ·	· ·
erating voltage range) *1 24 to 240 VAC (20 to 264 VAC), 50/60 Hz Leakage current 1.7 mA max. 5 to 200 mA 5 to 300 mA Control output Load current *2 5 to 200 mA 5 to 300 mA Indicators Operation indicator (red) Operation mode (with sensing object approaching) Y1 Models: NO Y2	Response	e frequency	25 Hz					
Control output Load current *2 Residual voltage 5 to 200 mA 5 to 300 mA Indicators Operation indicator (red) Operation mode (with sensing object approaching) Y1 Models: NO Y2 Models: NO			24 to 240 VAC (2	20 to 264 VAC), 5	0/60 Hz			
Residual voltage Refer to Engineering Data on page 5.	Leakage o	current	1.7 mA max.					
Departion mode (with sensing object approaching)	Control	Load current *2	5 to 200 mA		5 to 300 mA			
Operation mode (with sensing object approaching)Y1 Models: NCRefer to the timing charts under I/O Circuit Diagrams on page 8 for details.Ambient temperature *1, 2Operating/Storage: -40 to 85°C (with no icing or condensation)Ambient humidityOperating/Storage: 35% to 95% (with no condensation)Temperature influence±15% max. of sensing distance at 23°C in the temperature range of -40 to 85°C, ±10% max. of sensing distance at 23°C in the temperature range of -25 to 70°CVoltage influence±1% max. of sensing distance at rated voltage in the rated voltage ±15% rangeInsulation resistance50 MΩ min. (at 500 VDC) between current-carrying parts and caseDielectric strength4,000 VAC, 50/60 Hz for 1 minute between current carry parts and caseVibration resistance (destruction)10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directionsShock resistance (destruction)1,000 m/s² 10 times each in X, Y, and Z directionsDegree of protectionIEC IP67, in-house standard for oil resistanceConnection methodPre-wired Models (Standard cable length: 2 m) and Connector ModelsWeight (packed state)Approx. 65 gApprox. 150 gApprox. 210 gMaterialsCaseBrassSensing surface alsPBTClamping nuts Toothed washerNickel-plated brassToothed washerZinc-plated iron	output	Residual voltage	Refer to Enginee	ering Data on page	e 5.			
(with sensing object approaching) Ambient temperature *1, 2 Operating/Storage: -40 to 85°C (with no icing or condensation) Ambient humidity Operating/Storage: 35% to 95% (with no condensation) Temperature influence ±15% max. of sensing distance at 23°C in the temperature range of -40 to 85°C, ±10% max. of sensing distance at 23°C in the temperature range of -25 to 70°C Voltage influence ±1% max. of sensing distance at 23°C in the temperature range of -25 to 70°C Insulation resistance 50 MΩ min. (at 500 VDC) between current-carrying parts and case Dielectric strength 4,000 VAC, 50/60 Hz for 1 minute between current carry 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/s² 10 times each in X, Y, and Z directions Connection method Pre-wired Models (Standard cable length: 2 m) and Connector Models Weight (packed state) Approx. 65 g Approx. 150 g Approx. 210 g Materials Sensing surface Clamping nuts Nickel-plated brass Toothed washer Zinc-plated iron	Indicators	3	Operation indicate	tor (red)				
Ambient humidityOperating/Storage: 35% to 95% (with no condensation)Temperature influence±15% max. of sensing distance at 23°C in the temperature range of -40 to 85°C, ±10% max. of sensing distance at 23°C in the temperature range of -25 to 70°CVoltage influence±1% max. of sensing distance at rated voltage in the rated voltage ±15% rangeInsulation resistance50 MΩ min. (at 500 VDC) between current-carrying parts and caseDielectric strength4,000 VAC, 50/60 Hz for 1 minute between current carry parts and caseVibration resistance (destruction)10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directionsShock resistance (destruction)1,000 m/s² 10 times each in X, Y, and Z directionsDegree of protectionIEC IP67, in-house standard for oil resistanceConnection methodPre-wired Models (Standard cable length: 2 m) and Connector ModelsWeight (packed state)Approx. 65 gApprox. 150 gApprox. 210 gMaterialsCaseBrassSensing surface (Imping nuts)Nickel-plated brassToothed washerZinc-plated iron	(with sens	sing object ap-		Refer to the timin	g charts under I/C	Circuit Diagrams	on page 8 for deta	ails.
# 15% max. of sensing distance at 23°C in the temperature range of -40 to 85°C, ±10% max. of sensing distance at 23°C in the temperature range of -25 to 70°C Voltage influence	Ambient t	temperature *1, 2	Operating/Storag	je: –40 to 85°C (v	vith no icing or cor	ndensation)		
### ±10% max. of sensing distance at 23°C in the temperature range of -25 to 70°C ### Voltage influence ### ±1% max. of sensing distance at rated voltage in the rated voltage ±15% range ### Insulation resistance ### Insulation resis	Ambient I	humidity	Operating/Storag	je: 35% to 95% (v	vith no condensat	ion)		
Insulation resistance 50 MΩ min. (at 500 VDC) between current-carrying parts and case Dielectric strength 4,000 VAC, 50/60 Hz for 1 minute between current carry 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/s² 10 times each in X, Y, and Z directions Degree of protection IEC IP67, in-house standard for oil resistance Connection method Pre-wired Models (Standard cable length: 2 m) and Connector Models Weight (packed state) Approx. 65 g Approx. 150 g Approx. 210 g Materials Case Brass Sensing surface PBT Clamping nuts Nickel-plated brass Toothed washer Zinc-plated iron	Temperat	ure influence						
Dielectric strength 4,000 VAC, 50/60 Hz for 1 minute between current carry parts and case Vibration resistance (destruction) Shock resistance (destruction) 1,000 m/s² 10 times each in X, Y, and Z directions Degree of protection IEC IP67, in-house standard for oil resistance Connection method Pre-wired Models (Standard cable length: 2 m) and Connector Models Weight (packed state) Approx. 65 g Approx. 150 g Approx. 210 g Materials Clamping nuts Nickel-plated brass Toothed washer Zinc-plated iron	Voltage in	nfluence	±1% max. of sen	sing distance at r	ated voltage in the	e rated voltage ±1	5% range	
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/s² 10 times each in X, Y, and Z directions Degree of protection IEC IP67, in-house standard for oil resistance Connection method Pre-wired Models (Standard cable length: 2 m) and Connector Models Weight (packed state) Approx. 65 g Approx. 150 g Approx. 210 g Materials Sensing surface PBT Clamping nuts Nickel-plated brass Toothed washer Zinc-plated iron	Insulation	resistance	50 M Ω min. (at 5	00 VDC) betweer	current-carrying	parts and case		
(destruction) Shock resistance (destruction) Degree of protection IEC IP67, in-house standard for oil resistance Connection method Pre-wired Models (Standard cable length: 2 m) and Connector Models Weight (packed state) Approx. 65 g Approx. 150 g Approx. 210 g Materials Clamping nuts Nickel-plated brass Toothed washer Toothed washer	Dielectric	strength	4,000 VAC, 50/6	0 Hz for 1 minute	between current	carry parts and ca	se	
1,000 m/s² 10 times each in X, Y, and Z directions			10 to 55 Hz, 1.5-	mm double ampli	tude for 2 hours e	ach in X, Y, and Z	directions	
Connection method Pre-wired Models (Standard cable length: 2 m) and Connector Models Weight (packed state) Approx. 65 g Approx. 150 g Approx. 210 g Materials Sensing surface PBT Clamping nuts Nickel-plated brass Toothed washer Zinc-plated iron			1,000 m/s ² 10 tin	nes each in X, Y,	and Z directions			
Weight (packed state) Approx. 65 g Approx. 150 g Approx. 210 g Materials Case Brass Sensing surface PBT Clamping nuts Nickel-plated brass Toothed washer Zinc-plated iron	Degree of	protection	IEC IP67, in-hou	se standard for oi	l resistance			
Materials Case Brass Sensing surface PBT Clamping nuts Nickel-plated brass Toothed washer Zinc-plated iron	Connection	on method	Pre-wired Models (Standard cable length: 2 m) and Connector Models					
Materials Sensing surface PBT Clamping nuts Nickel-plated brass Toothed washer Zinc-plated iron	Weight (p	acked state)	Approx. 65 g Approx. 150 g Approx. 210 g					
Als Clamping nuts Nickel-plated brass Toothed washer Zinc-plated iron		Case	Brass					
Toothed washer Zinc-plated iron	Materi-	Sensing surface	PBT					
· ·	als	Clamping nuts	Nickel-plated bra	ss				
Accessories Instruction sheet		Toothed washer	Zinc-plated iron					
	Accessor	ies	Instruction sheet					

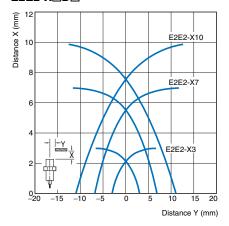
^{*1.} When supplying 24 VAC to any of the above models, make sure that the operating ambient temperature range is at least –25°C to 85°C.
*2. When using an M18 or M30 Connector Model at an ambient temperature between 70 and 85°C, make sure that the Sensor has a control output (load current) of 5 to 200 mA max.

Engineering Data (Reference Value)

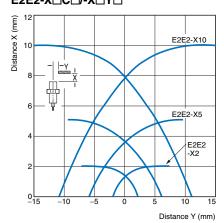
Sensing Area

Shielded Models

E2E2-X□D□

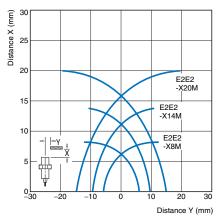


$E2E2-X\square C\square/-X\square Y\square$

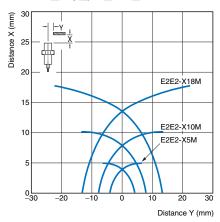


Unshielded Models

E2E2-X□MD□

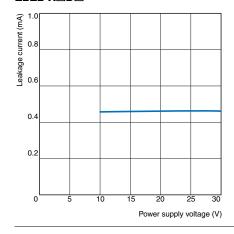


$E2E2-X\square MC\square/-X\square MY\square$

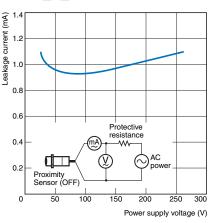


Leakage Current

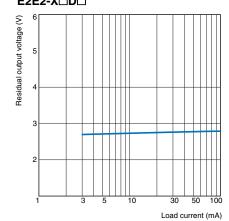
E2E2-X□D□

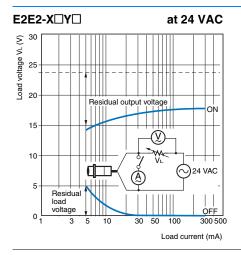


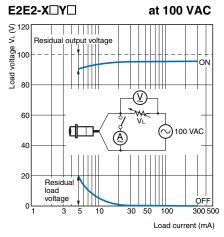
E2E2-X□Y□

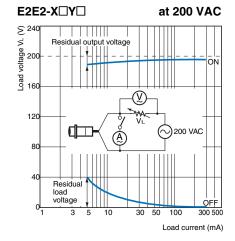


Residual Output Voltage E2E2-X□D□



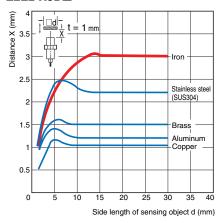




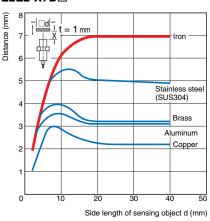


Influence of Sensing Object Size and Material

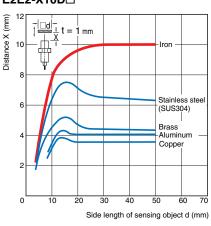
E2E2-X3D□



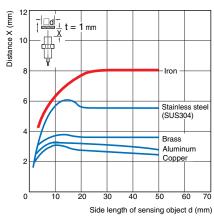
E2E2-X7D□



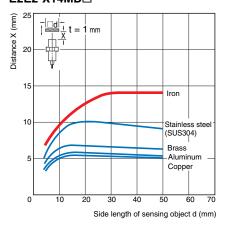
E2E2-X10D□



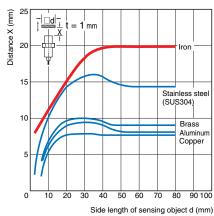
E2E2-X8MD□



E2E2-X14MD□



E2E2-X20MD□



80

Side length of sensing object d (mm)

E2E2-X2C /-X2Y E2E2-X5C□/-X5Y□ **E2E2-X10C**□/-X10Y□ Distance X (mm) Distance X (mm) Iron Iron Iron Stainless steel (SUS304) Stainless steel (SUS304) 1.5 Stainless steel (SUS304) Brass Brass Brass Aluminum Aluminum Aluminum 0.5 Side length of sensing object d (mm) Side length of sensing object d (mm) Side length of sensing object d (mm) E2E2-X5MC□/-X5MY□ E2E2-X10MC□/-X10MY□ **E2E2-X18MC**□/-X18MY□ $\int_{-\frac{1}{1}}^{\frac{1}{1}} \frac{1}{t} = 1 \text{ mm}$ Distance X (mm) $\begin{array}{c|c} \hline \downarrow & \hline \downarrow$ Distance X (mm) Distance X (mm) t = 1 mm 10 20 Iron Iron 15 Stainless steel (SUS304) Stainless steel (SUS304) Stainless steel (SUS304) 10 -Brass Brass Brass Aluminum Aluminum Aluminum

Side length of sensing object d (mm)

Side length of sensing object d (mm)

0

I/O Circuit Diagrams

DC 2-Wire Models

Operation mode	Model	Timing Charts	Output circuit
NO	E2E2-X3D1 E2E2-X7D1 E2E2-X10D1 E2E2-X8MD1 E2E2-X14MD1 E2E2-X20MD1	Non-sensing area Unstable Set position Sensing area Stable sensing area Proximity Sensor ON Setting indicator OFF (green) ON Operation OFF indicator (red) ON Control output OFF	Proximity Sensor main circuit
NC	E2E2-X3D2 E2E2-X7D2 E2E2-X10D2 E2E2-X8MD2 E2E2-X14MD2 E2E2-X20MD2	Sensing area Sensing object Sensing object Sensing object Sensing object ON Operation OFF indicator (red) ON Control output	Note: The load can be connected to either the +V or 0 V side.

DC 3-Wire Models

Operation mode	Model	Timing Charts	Output circuit
NO	E2E2-X2C1 E2E2-X5C1 E2E2-X10C1 E2E2-X5MC1 E2E2-X10MC1 E2E2-X18MC1	Sensing object Present Not present Operation indicator ON (red) OFF Control output OFF	Brown 100 Ω Proximity Sensor Black
NC	E2E2-X2C2 E2E2-X5C2 E2E2-X10C2 E2E2-X5MC2 E2E2-X10MC2 E2E2-X18MC2	Sensing object Not present Not present Operation indicator (red) Control output OFF	main circuit Blue 0 V

AC 2-Wire Models

Operation mode	Model	Timing Charts	Output circuit
NO	E2E2-X2Y1 E2E2-X5Y1 E2E2-X10Y1 E2E2-X5MY1 E2E2-X10MY1 E2E2-X18MY1	Sensing object Not present Operation indicator (red) Control output OFF ON OFF	Proximity Sensor
NC	E2E2-X2Y2 E2E2-X5Y2 E2E2-X10Y2 E2E2-X5MY2 E2E2-X10MY2 E2E2-X18MY2	Sensing object Not present Operation indicator (red) Control output OFF	main circuit Blue

Safety Precautions



This product is not designed or rated for ensuring safety of persons either directly or indirectly.



Do not use it for such purposes.

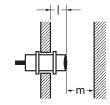
Precautions for Correct Use

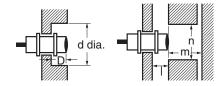
Do not use this product under ambient conditions that exceed the ratings.

Design

Influence of Surrounding Metal

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



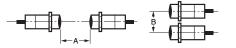


(Unit: mm)

Model		Item	M12	M18	M30
		1	0	0	0
		d	12	18	30
	Shielded	D	0	0	0
		m	8	20	40
DC 2-Wire Models		n	18	27	45
E2E2-X□D□		1	15	22	30
		d	40	70	90
	Unshielded	D	15	22	30
		m	20	40	70
		n 40 70	70	90	
		1	0	0	0
		d	12	18	30
	Shielded	D	0	0	0
DC 3-Wire Models		m	8	20	40
E2E2-X□C□		n	18	27	45
AC 2-Wire Models		1	15	22	30
E2E2-X□Y□		d	40	55	90
	Unshielded	D	15	22	30
		m	20	40	70
		n	36	54	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	M12	M18	M30
DC 2-Wire Models	Shielded	Α	30 (20)	50 (30)	100 (50)
	Snielded	В	20 (12)	35 (18)	70 (35)
E2E2-X□D□	Unshielded	Α	120 (60)	200 (100)	300 (100)
		В	100 (50)	110 (60)	200 (100)
DC 3-Wire Models	Shielded	Α	30	50	100
E2E2-X□C□	Silielded	В	20	35	70
AC 2-Wire Models	Unshielded	Α	120	200	300
E2E2-X□Y□	Orisinelaca	В	100	110	200

Note: Values in	parentheses app	ly to Sensors	operating at	different free	quencies.

Relationship between Sizes and Models

	Size	Model
M12	Shielded	E2E2-X3D□
		E2E2-X2C□
		E2E2-X2Y□
	Unshielded	E2E2-X8MD□
		E2E2-X5MC□
		E2E2-X5MY□
M18	Shielded	E2E2-X7D□
		E2E2-X5C□
		E2E2-X5Y□
	Unshielded	E2E2-X14MD□
		E2E2-X10MC□
		E2E2-X10MY□
M30	Shielded	E2E2-X10D□
		E2E2-X10C□
		E2E2-X10Y□
	Unshielded	E2E2-X20MD□
		E2E2-X18MC□
		E2E2-X18MY□

Mounting

Ţ.

tening Torque

Do not tighten the nut with excessive force.

A washer must be used with the nut.

The following strengths assume washers are being used.

Model	Torque
M12	30 N·m
M18	70 N·m
M30	180 N⋅m

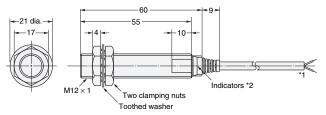
Shielded



Unshielded



E2E2-X3D\(\text{\beta}/\text{E2E2-X2C}\(\text{\beta}/\text{E2E2-X2Y}\(\text{\beta}\)



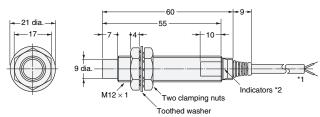
*1. 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm2, Insulator diameter: 1.3 mm),

Standard length: 2 m 4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.3 mm), Standard length: 2 m

The cable can be extended to up to 200 m (Separate metal conduit.)

*2. D Models: Operation indicator (red) and setting indicator (green),
C/Y Models: Operation indicator (red)

E2E2-X8MD\(\text{\texts}/\text{\text{E2E2-X5MC}}\)

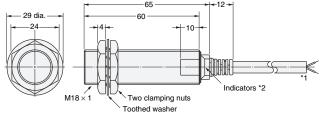


*1. 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.3 mm), Standard length: 2 m

4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.3 mm), Standard length: 2 m

The cable can be extended to up to 200 m (Separate metal conduit.) *2. D Models: Operation indicator (red) and setting indicator (green), C/Y Models: Operation indicator (red)

E2E2-X7D | / **E2E2-X5C** | / **E2E2-X5Y** |

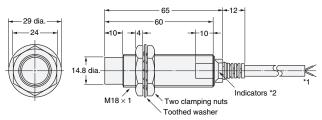


*1. 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 2 m $\,$

6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 2 m
The cable can be extended to up to 200 m (Separate metal conduit.)

*2. D Models: Operation indicator (red) and setting indicator (green), C/Y Models: Operation indicator (red)

$E2E2-X14MD\square/E2E2-X10MC\square/E2E2-X10MY\square$

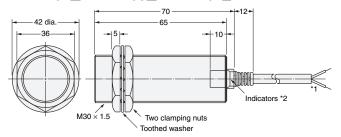


*1. 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 2 m

6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 2 m

The cable can be extended to up to 200 m (Separate metal conduit.) *2. D Models: Operation indicator (red) and setting indicator (green), C/Y Models: Operation indicator (red)

E2E2-X10D / E2E2-X10C / E2E2-X10Y

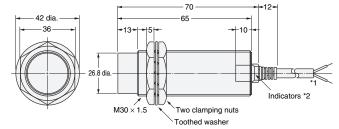


*1. 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm2, Insulator diameter: 1.9 mm), Standard length: 2 m 6-dia. vinyl-insulated round cable with 3 conductors

(Conductor cross section: 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 2 m

The cable can be extended to up to 200 m (Separate metal conduit.) *2. D Models: Operation indicator (red) and setting indicator (green), C/Y Models: Operation indicator (red)

E2E2-X20MD□/E2E2-X18MC□/E2E2-X18MY□



*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 6-dia. vinyl-insulated round cable with 3 conductors

(Conductor cross section: 0.5 mm², Insulator diameter: 1.9 mm),

Standard length: 2 m

The cable can be extended to up to 200 m (Separate metal conduit.)

*2. D Models: Operation indicator (red) and setting indicator (green),

C/Y Models: Operation indicator (red)

Mounting Hole Dimensions



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

Note 1. Two clamping nuts and one toothed washer are provided with each Sensors.

2. The model number is laser-marked on the cable section and milled section.

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.
- (b) Limitations. OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCTS. BUYER ACKNOWLEDGES THAT IT ALONE HAS DETERMINED THAT THE

PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE.

Omron further disclaims all warranties and responsibility of any type for claims or expenses based on infringement by the Products or otherwise of any intellectual property right. (c) Buyer Remedy. Omron's sole obligation hereunder shall be, at Omron's election, to (i) replace (in the form originally shipped with Buyer responsible for labor charges for removal or replacement thereof) the non-complying Product, (ii) repair the non-complying Product, or (iii) repay or credit Buyer an amount equal to the purchase price of the non-complying Product; provided that in no event shall Omron be responsible for warranty, repair, indemnity or any other claims or expenses regarding the Products unless Omron's analysis confirms that the Products were properly handled, stored, installed and maintained and not subject to contamination, abuse, misuse or inappropriate modification. Return of any Products by Buyer must be approved in writing by Omron before shipment. Omron Companies shall not be liable for the suitability or unsuitability or the results from the use of Products in combination with any electrical or electronic components, circuits, system assemblies or any other materials or substances or environments. Any advice, recommendations or information given orally or in writing, are not to be construed as an amendment or addition to the above warranty.

See http://www.omron.com/global/ or contact your Omron representative for published information.

Limitation on Liability; Etc.

OMRON COMPANIES SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE OR STRICT LIABILITY.

Further, in no event shall liability of Omron Companies exceed the individual price of the Product on which liability is asserted.

Suitability of Use.

Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases.

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

Programmable Products.

Omron Companies shall not be responsible for the user's programming of a programmable Product, or any consequence thereof.

Performance Data.

Data presented in Omron Company websites, catalogs and other materials is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of Omron's test conditions, and the user must correlate it to actual application requirements. Actual performance is subject to the Omron's Warranty and Limitations of Liability.

Change in Specifications.

Product specifications and accessories may be changed at any time based on improvements and other reasons. It is our practice to change part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Product may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please consult with your Omron's representative at any time to confirm actual specifications of purchased Product.

<u>Errors and Omissions.</u> <u>Information presented by Omron Companies has been checked and is believed to be accurate; however, no responsibility is accurate.</u> assumed for clerical, typographical or proofreading errors or omissions.

2015.11

In the interest of product improvement, specifications are subject to change without notice.

