

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

			Model			
Appearan	ce	Sensing distance	Operatio	on mode		
			NO	NC		
Shielded	M12	3 mm	E2E2-X3D1 2M *	E2E2-X3D2 2M		
	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	14 mm	E2E2-X14MD1 2M *	E2E2-X14MD2 2M		
₽ <u></u> ⊥₽ −	M30	20 mm	E2E2-X20MD1 2M *	E2E2-X20MD2 2M		

* Models with different frequencies are also available. The model numbers are E2E2-XID15 (example: E2E2-X3D15).

DC 3-Wire Models

			Model		
Appearan	се	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	
	M18	10 mm	E2E2-X10MC1 2M	E2E2-X10MC2 2M	
	M30	18 mm	E2E2-X18MC1 2M	E2E2-X18MC2 2M	

AC 2-Wire Models

			Model			
Appearan	се	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

Mode E2E2-X3D E2E2-X8D T E2E2-X10D D 0 to 3.6 mm 0 to 1.1 mm 10% 10 mm ± 10% 20 mm ± 10% 20 mm ± 10% 20 mm ± 10% 20 mm ± 10% 14 mm ± 10% 10 mm ± 10% 0 to 8 mm 0 to 8 mm <t< th=""><th></th><th>Size</th><th>M</th><th>12</th><th colspan="2">M18</th><th colspan="2">M30</th></t<>		Size	M	12	M18		M30		
Sensing distance 3 mm±10% 8 mm±10% 7 mm±10% 14 mm±10% 10 mm±10% 20 mm±10% 0 to 5.6 mm 0 to 11.2 mm 0 to 8 mm 0 to 6 mm 0 to 7 mm 0 to		Shielding	Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded	
Set distance '1 0 to 2.4 mm 0 to 5.4 mm 0 to 5.6 mm 0 to 11.2 mm 0 to 8 mm 0 to 8 mm 0 to 6 mm Differential travel 10% max. of sensing distance Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to Engineering Data or 30 × 30 × 1 mm 18 × 18 × 11 mm 30 × 30 × 1 mm 170n, 12 × 12 × 12 × 11 mm 170n, 30 × 30 × 1 mm 18 × 18 × 11 mm 30 × 30 × 1 mm 180 × 18 × 18 × 11 mm 30 × 30 × 1 mm 160 × 54 × 1 Prover supply voltage operating voltage range 12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max. 100 Hz 500 Hz 400 Hz 100 Hz 500 Hz <th>Item</th> <th>Model</th> <th>E2E2-X3D</th> <th>E2E2-X8MD</th> <th>E2E2-X7D</th> <th>E2E2-X14MD</th> <th>E2E2-X10D</th> <th>E2E2-X20MD</th>	Item	Model	E2E2-X3D	E2E2-X8MD	E2E2-X7D	E2E2-X14MD	E2E2-X10D	E2E2-X20MD	
Differential travel 10% max. of sensing distance Provide the sensing distance Standard sensing object Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to Engineering Data of page 5.) Standard sensing object Iron, 12 × 12 × 1 mm at the sensing distance decreases with non-ferrous metal. Refer to Engineering Data of page 5.) Standard sensing object Iron, 12 × 12 × 1 mm at the sensing distance decreases with non-ferrous metal. Refer to Engineering Data of page 5.) Standard sensing object Iron, 12 × 12 × 1 mm at the sensing distance decreases with non-ferrous metal. Refer to Engineering Data of page 5.) Standard sensing object Iron, 12 × 12 × 1 mm at the sensing distance decreases with non-ferrous metal. Refer to Engineering Data of page 5.) Standard sensing object operation of the sensing distance decreases with non-ferrous metal. Refer to Engineering Data of page 5.) Iron, 12 × 12 × 1 mm at the sensing distance decreases with non-ferrous metal. Refer to the temperature influence decreases with non-ferrous metal. Standard sensing object op-operation indicator (red) 3 to 100 mA Protection circuits Surge absorber, Load short-circuit protection Surge absorber, Load short-circuit protection Uperating/Storage: 25 to 70°C (with no condensation) Standard sensing distance at rated voltage in the rated voltage in the rated voltage in the rated voltage decreases 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions	Sensing o	listance	3 mm±10%	8 mm±10%	7 mm±10%	14 mm±10%	10 mm±10%	20 mm±10%	
Sensing object Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to Engineering Data of page 5.) Standard sensing object Iron, 1/2 × 12 × 1 mm Iron, 1/2 × 12 × 1/2	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	
page 5.) page 5.) standard sensing object Iron, 12 × 12 × 11 mm Iron, 30 × 30 × 11 mm Iron, 54 × 54 × 1 tesponse frequency '2 1 kHz 800 Hz 500 Hz 400 Hz 100 Hz 100 Hz opperating voltage opperating voltage rape) 21 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max. Iron, 400 Hz Iron, 30 × 30 × 11 mm Iron, 54 × 54 × 1 standard sensing object ap- toperation voltage rapeity 0.8 mA max. 0.8 mA max. Iron, 30 voltage rapeity Iron, 100 mA seadage current 0.8 mA max. Iron, 10 Models: Operation indicator (red) and setting indicator (green) D2 Models: Operation indicator (red) D1 Models: NO D2 Models: Operation indicator (red) D1 Models: NO D2	Differentia	al travel	10% max. of sen	sing distance		ł	ł	ŀ	
tandard sensing object 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 tesponse frequency '2 1 kHz 800 Hz 500 Hz 400 Hz 100 Hz Power supply voltage operating voltage range) 12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max. 400 Hz 100 Hz 100 Hz ceakage current 0.8 mA max. 0.8 mA max. 0.8 mA max. 54 x 54 x 1 100 Hz teakage current 0.8 mA max. 0.8 mA max. 0.8 mA max. 54 x 54 x 1 100 Hz teakage current 0.8 mA max. 0.8 mA max. 54 x 54 x 1 100 Hz 100 Hz teakage current 0.8 mA max. 10 to 30 VDC), ripple (p-p): 10% max. 10 to Hz 100 Hz teakage current 0.8 mA max. 10 to 30 VDC), ripple (p-p): 10% max. 10 to Hz 10 to Hz teakage current 0.8 mA max. 10 to 30 VDC), ripple (p-p): 10% max. 10 to Hz 10 Hz teakage current 0.8 mA max. 10 to 30 VDC), ripple (p-p): 10% max. 10 to 10 mX 10 to 10 mX 10 to 10 mX teakage current D1 Models: Operation indicator (red) and setting indicator (green) 10 to 51 mx, of sensing distance at 23°C in	Sensing o	object		he sensing distan	ce decreases with	h non-ferrous met	al. Refer to <i>Engin</i>	<i>eering Data</i> on	
Power supply voltage operating voltage range) 12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max. ceakage current 0.8 mA max. Control Sa to 100 mA Residual voltage 3 V max. (Load current: 100 mA, Cable length: 2 m) Indicators D1 Models: Operation indicator (red) and setting indicator (green) D2 Models: Operation indicator (red) Operation mode with sensing object ap- oreaching) D1 Models: NO D2 Models: NC Protection circuits Surge absorber, Load short-circuit protection Ambient temperature Operating/Storage: -25 to 70°C (with no icing or condensation) Ambient humidity Operating/Storage: 35% to 95% (with no condensation) Ambient humidity Operating distance at 23°C in the temperature range of -25 to 70°C Yoltage influence ±1% max. of sensing distance at 23°C in the temperature range of -25 to 70°C Yoltage influence ±1% max. of sensing distance at 23°C in the temperature range of -25 to 70°C Yoltage influence ±1% max. of sensing distance at 23°C in the temperature range of -25 to 70°C Yoltage influence ±1% max. of sensing distance at 23°C in the temperature range of -25 to 70°C Yoltage influence ±1% max. of sensing distance at 23°C in the temperature range of -25 to 70°C Yoltage influence ±1% max. of sensing distance at 23°C in the temperature ran	Standard	sensing object		,	,	· ·		Iron, $54 \times 54 \times 1 \text{ mm}$	
operating voltage range) 12 16 24 VDC (10 16 30 VDC), hpple (p-p): 10% max. ceakage current 0.8 mA max. Sontrol utuputy Switching Residual voltage 3 to 100 mA Pasidual voltage 3 V max. (Load current: 100 mA, Cable length: 2 m) D1 Models: Operation indicator (red) and setting indicator (green) D2 Models: Operation indicator (red) D1 Models: Operation indicator (red) Operation mode with sensing object approaching) D1 Models: NO D2 Models: NC Refer to the timing charts under <i>I/O Circuit Diagrams</i> on page 8 for details. Protection circuits Surge absorber, Load short-circuit protection Toperating/Storage: -25 to 70°C (with no icing or condensation) Ambient temperature Operating/Storage: 35% to 95% (with no condensation) Toperating/Storage: 35% to 95% (with no condensation) remperature influence ±10% max. of sensing distance at rated voltage in the rated voltage ±15% range insulation resistance 50 MΩ min. (at 500 VDC) between current-carrying parts and case Note kersistance 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 Nock resistance 1,000 m/s ² 10 times each in X, Y, and Z directions Approx. 65 g Approx. 150 g Approx. 210 g	Response	e frequency *2	1 kHz	800 Hz	500 Hz	400 Hz		100 Hz	
Switching capacity 3 to 100 mA Residual voltage 3 V max. (Load current: 100 mA, Cable length: 2 m) Indicators D1 Models: Operation indicator (red) Deperation mode with sensing object ap- proaching) D1 Models: NO D2 Models: NO D2 Models: NO Potection circuits D1 Models: NO D2 Model: NO D2 Model: NO D2 Model: NO D2 MO			12 to 24 VDC (10) to 30 VDC), ripp	le (p-p): 10% max	κ.			
Capacity 3 to 100 mA Residual voltage 3 V max. (Load current: 100 mA, Cable length: 2 m) Indicators D1 Models: Operation indicator (red) and setting indicator (green) D2 Models: Operation indicator (red) Depration mode with sensing object ap- proaching) D1 Models: NO D2 Models: NC Refer to the timing charts under I/O Circuit Diagrams on page 8 for details. Protection circuits Surge absorber, Load short-circuit protection D1 Models: NC Ambient temperature Operating/Storage: -25 to 70°C (with no icing or condensation) Operating/Storage: -25 to 70°C (with no condensation) remperature influence ±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 Note N=N 50 MΩ min. (at 500 VDC) between current-carrying parts and case Dielectric strength 1000 VAC, 50/60 Hz for 1 minute 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 Noer kersistance destruction 100 to x5 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions Veight (packed state) Approx. 65 g Approx. 150 g Veight (packed state) Approx. 65 g Approx. 150 g Approx. 210 g<	Leakage o	current	0.8 mA max.						
Nesidual voltage 3 V max. (Load current: 100 mA, Cable length: 2 m) Indicators D1 Models: Operation indicator (red) and setting indicator (green) D2 Models: Operation indicator (red) Operation mode with sensing object ap- proaching) D1 Models: NO D2 Models: NO Protection circuits Refer to the timing charts under I/O Circuit Diagrams on page 8 for details. Protection circuits Surge absorber, Load short-circuit protection D1 Models: NC Ambient temperature Operating/Storage: -25 to 70°C (with no icing or condensation) emperature influence ±10% max. of sensing distance at 23°C in the temperature range of -25 to 70°C Ambient resistance 50 MΩ min. (at 500 VDC) between current-carrying parts and case Dielectric strength 1000 VAC, 50/60 Hz for 1 minute between current-carrying parts and case Objecter torion 1,000 m/s² 10 times each in X, Y, and Z directions Adstructor) IEC IP67, in-house standard for oil resistance Operation Pre-wired Models (Standard cable length: 2 m) Veight (parts Approx. 65 g Approx. 150 g Approx. 210 g Brass Sensing surface PBT Eaming surface Eaming surface Case Brass Sensing surface PBT Eaming surface Eaming surface Veight (orthe	Control		3 to 100 mA	to 100 mA					
D2 Models: Operation indicator (red) Depration mode with sensing object ap- proaching) D1 Models: NO D2 Models: NO Protection circuits Refer to the timing charts under I/O Circuit Diagrams on page 8 for details. Protection circuits Surge absorber, Load short-circuit protection	output	Residual voltage	3 V max. (Load current: 100 mA, Cable length: 2 m)						
With sensing object ap- protection circuits D1 Models: NO D2 Models: NO Refer to the timing charts under I/O Circuit Diagrams on page 8 for details. Protection circuits Surge absorber, Load short-circuit protection	Indicators	3							
Ambient temperature Operating/Storage: -25 to 70°C (with no icing or condensation) Ambient humidity Operating/Storage: 35% to 95% (with no condensation) Temperature influence ±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 Voltage influence ±1% max. of sensing distance at rated voltage in the rated voltage ±15% range Insulation resistance 50 MΩ min. (at 500 VDC) between current-carrying parts and case Dielectric strength 1000 VAC, 50/60 Hz for 1 minute between current-carrying parts and case Dielectric strength 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) Veight (packed state) Approx. 65 g Approx. 150 g Approx. 210 g Material Sensing surface PBT Inot-plated brass Inot-plated brass Toothed washer Zinc-plated iron Zinc-plated iron Inot-plated iron	(with sense	sing object ap-						ails.	
Ambient humidity Operating/Storage: 35% to 95% (with no condensation) Temperature influence ±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 Voltage influence ±1% max. of sensing distance at rated voltage in the rated voltage ±15% range Insulation resistance 50 MΩ min. (at 500 VDC) between current-carrying parts and case Dielectric strength 1000 VAC, 50/60 Hz for 1 minute 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/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) Veight (packed state) Approx. 65 g Approx. 150 g Approx. 210 g Materi- Sensing surface PBT Image: Sensing surface Image: Sensing surface Veight (packed state) Nickel-plated brass Toothed washer Zinc-plated iron Image: Zinc-plated iron	Protection	n circuits	Surge absorber, Load short-circuit protection						
emperature influence ±10% max. of sensing distance at 23°C in the temperature range of −25 to 70°C /oltage influence ±1% max. of sensing distance at rated voltage in the rated voltage ±15% range nsulation resistance 50 MΩ min. (at 500 VDC) between current-carrying parts and case Dielectric strength 1000 VAC, 50/60 Hz for 1 minute between current-carrying parts and case Dielectric strength 1000 VAC, 50/60 Hz for 1 minute between current-carrying parts and case /ibration 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) Veight (packed state) Approx. 65 g Approx. 150 g Approx. 210 g Materials Sensing surface PBT Image: Sensing surface PBT Clamping nuts Nickel-plated brass Image: Sinc-plated iron Image: Sinc-plated iron	Ambient t	emperature	Operating/Storag	je: –25 to 70°C (v	vith no icing or cor	ndensation)			
Voltage influence ±1% max. of sensing distance at rated voltage in the rated voltage ±15% range nsulation resistance 50 MΩ min. (at 500 VDC) between current-carrying parts and case Dielectric strength 1000 VAC, 50/60 Hz for 1 minute between current-carrying parts and case //ibration resistance 1000 VAC, 50/60 Hz for 1 minute between current-carrying parts and case //ibration resistance 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions Shock resistance destruction 1,000 m/s² 10 times 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) Veight (packed state) Approx. 65 g Approx. 150 g Approx. 210 g Materials Sensing surface PBT Inc-plated brass Toothed washer Zinc-plated iron Inc-plated iron Inc-plated iron	Ambient h	numidity	Operating/Storag	je: 35% to 95% (v	vith no condensat	ion)			
nsulation resistance 50 MΩ min. (at 500 VDC) between current-carrying parts and case Dielectric strength 1000 VAC, 50/60 Hz for 1 minute between current-carrying parts and case //ibration 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) Veight (packed state) Approx. 65 g Approx. 150 g Approx. 210 g Materi-list Case Brass Brass Toothed washer Nickel-plated brass Zinc-plated iron Zinc-plated iron	Temperat	ure influence	$\pm 10\%$ max. of se	nsing distance at	23°C in the temp	erature range of -	25 to 70°C		
Dielectric strength 1000 VAC, 50/60 Hz for 1 minute between current-carrying parts and case //ibration 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 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) Veight (packed state) Approx. 65 g Approx. 150 g Approx. 210 g Materi- Ils Gase Brass Brass Incellated brass Toothed washer Zinc-plated iron Zinc-plated iron Incellated brass	Voltage in	nfluence	\pm 1% max. of sen	sing distance at r	ated voltage in the	e rated voltage ± 1	5% range		
/ibration 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 Pre-wired Models (Standard cable length: 2 m) Veight (packed state) Approx. 65 g Approx. 150 g Approx. 210 g Material Sensing surface PBT Image: Clamping nuts Nickel-plated brass Toothed washer Zinc-plated iron Zinc-plated iron Image: Clamping nuts Image: Clamping nuts	Insulation	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 Pre-wired Models (Standard cable length: 2 m) Veight (packed state) Approx. 65 g Approx. 150 g Approx. 210 g Material Sensing surface PBT Image: Sing surface Image: Sing surface Image: Clamping nuts Nickel-plated brass Sinc-plated iron Image: Sing surface Image: Sing surface	Dielectric	strength	1000 VAC, 50/60	Hz for 1 minute	between current-c	arrying parts and	case		
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) Veight (packed state) Approx. 65 g Approx. 150 g Approx. 210 g Material Sensing surface PBT Image: Clamping nuts Nickel-plated brass Toothed washer Zinc-plated iron Zinc-plated iron Image: Clamping nuts Xinc-plated iron			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) Veight (packed state) Approx. 65 g Approx. 150 g Approx. 210 g Materials Case Brass Sensing surface PBT Clamping nuts Nickel-plated brass Vickel-plated iron Zinc-plated iron			1,000 m/s ² 10 times each in X, Y, and Z directions						
Veight (packed state) Approx. 65 g Approx. 150 g Approx. 210 g Materials Case Brass Brass Clamping nuts Nickel-plated brass Sensing surface PBT Toothed washer Zinc-plated iron Zinc-plated iron	Degree of	protection	IEC IP67, in-house standard for oil resistance						
Case Brass Sensing surface PBT Clamping nuts Nickel-plated brass Toothed washer Zinc-plated iron									
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		
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. 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	М	18	М	30	
	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	1	1	1	1	
Sensing	object	Ferrous metal (T page 5.)	he sensing distar	ice decreases witl	h non-ferrous met	al. Refer to <i>Engin</i>	<i>eering Data</i> on	
Standard	sensing object	Iron, $12 \times 12 \times 1 \text{ mm}$	Iron, $15 \times 15 \times 1 \text{ mm}$	Iron, $18 \times 18 \times 1 \text{ mm}$	Iron, $30 \times 30 \times 1 \text{ mm}$	Iron, $30 \times 30 \times 1 \text{ mm}$	Iron, $54 \times 54 \times 1 \text{ mm}$	
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	0 to 30 VDC), ripp	ole (p-p): 10% max	κ.			
Leakage	current	13 mA max.						
Control	Load current	NPN open-collect	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	5	Operation indicator (red)						
Operation (with sen proaching	sing object ap-	C1 Models: NO Refer to the timing charts under <i>I/O Circuit Diagrams</i> on page 8 for details.				ails.		
Protectio	n circuits	Reverse polarity	protection, Surge	absorber, Load s	hort-circuit protec	tion		
Ambient	temperature	Operating/Storage: -40 to 85°C (with no icing or condensation)						
Ambient	humidity	Operating/Storag	ge: 35% to 95% (v	vith no condensat	ion)			
Temperat	ure influence		-	23°C in the temp 23°C in the temp	•			
Voltage in	nfluence	±1% max. of sen	sing distance at r	ated voltage in the	e rated voltage ± 1	5% range		
Insulation	n resistance	50 M Ω 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 (destruct	resistance ion)	10 to 55 Hz, 1.5-	mm double ampli	tude for 2 hours e	ach in X, Y, and Z	Z directions		
Shock res (destruct		1,000 m/s ² 10 times each in X, Y, and Z directions						
Degree of	f protection	IEC IP67, in-house standard for oil resistance						
Connecti	on method	Pre-wired Model	s (Standard cable	length: 2 m) and	Connector Model	s		
Weight (p	acked state)	Approx. 75 g Approx. 160 g Approx. 220 g						
	Case	Brass	Brass					
Materi- Sensing surface PBT								
als	Clamping nuts	Nickel-plated bra	ISS					
	Toothed washer	Zinc-plated iron						
Accessor	ies	Instruction sheet						

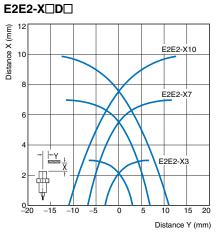
*1. The response frequency is an average value. Measurement conditions are as follows: standard sensing object, a distance of twice the standard sensing object, and a set distance of half the sensing distance.
*2. A full-wave rectification power supply of 24 VDC ±20% (average value) can be used.

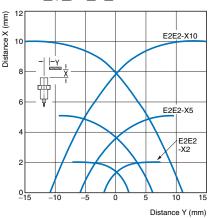
E2E2-X Y AC 2-Wire Models

	Size	М	M12 M18		М	30	
	Shielding	Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded
Item	Model	E2E2-X2Y	E2E2-X5MY	E2E2-X5Y	E2E2-X10MY	E2E2-X10Y	E2E2-X18MY
Sensing	distance	2 mm±10%	5 mm±10%	5 mm±10%	10 mm±10%	10 mm±10%	18 mm±10%
Set dista	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	ial travel	10% max. of ser	ising distance	1	1	1	1
Sensing	object	Ferrous metal (T page 5.)	he sensing distar	nce decreases with	h non-ferrous met	al. Refer to <i>Engin</i>	<i>eering Data</i> on
Standard	l sensing object	Iron, $12 \times 12 \times 1 \text{ mm}$	Iron, $15 \times 15 \times 1 \text{ mm}$	Iron, $18 \times 18 \times 1 \text{ mm}$	Iron, $30 \times 30 \times 1 \text{ mm}$	Iron, $30 \times 30 \times 1 \text{ mm}$	Iron, $54 \times 54 \times 1 \text{ mm}$
Response	e frequency	25 Hz					
	ipply voltage (op- oltage range) *1	24 to 240 VAC (20 to 264 VAC), 50/60 Hz					
Leakage	current	1.7 mA max.					
Control	Load current *2	5 to 200 mA 5 to 300 mA					
output	Residual voltage	Refer to Engineering Data on page 5.					
Indicator	S	Operation indicator (red)					
Operation (with sen proaching	sing object ap-	Y1 Models: NO Refer to the timing charts under <i>I/O Circuit Diagrams</i> on page 8 for details. Y2 Models: NC					ails.
Ambient	temperature *1, 2	Operating/Stora	ge: –40 to 85°C (v	vith no icing or co	ndensation)		
Ambient	humidity	Operating/Storag	ge: 35% to 95% (\	with no condensat	ion)		
Temperat	ture influence				erature range of – erature range of –		
Voltage i	nfluence	±1% max. of ser	ising distance at r	ated voltage in the	e rated voltage ± 1	5% range	
Insulation	n resistance	50 M Ω min. (at 5	00 VDC) betweer	n current-carrying	parts and case		
Dielectric	c strength	4,000 VAC, 50/6	0 Hz for 1 minute	between current	carry parts and ca	ise	
Vibration (destruct	resistance ion)	10 to 55 Hz, 1.5-	mm double ampli	tude for 2 hours e	ach in X, Y, and Z	Z directions	
Shock read (destruct		1,000 m/s ² 10 times each in X, Y, and Z directions					
Degree of	f protection	IEC IP67, in-house standard for oil resistance					
Connecti	on method						
Weight (p	backed state)	Approx. 65 g Approx. 150 g Approx. 210 g					
	Case Brass						
Materi-	Sensing surface	PBT					
als	Clamping nuts	Nickel-plated bra	ISS				
	Toothed washer	Zinc-plated iron					
Accesso	ries	Instruction sheet					

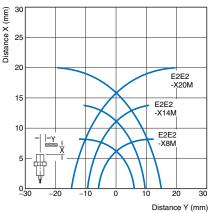
*1. When supplying 24 VAC to any of the above models, make sure that the operating ambient temperature range is at least -25°C to 85°C.
 *2. When using an M18 or M30 Connector Model at an ambient temperature between 70 and 85°C, make sure that the Sensor has a control output (load current) of 5 to 200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

Sensing Area Shielded Models

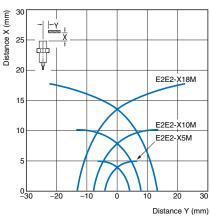




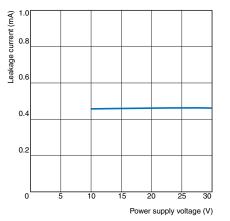


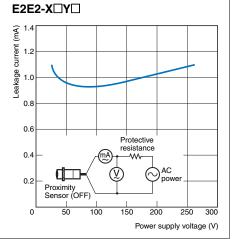






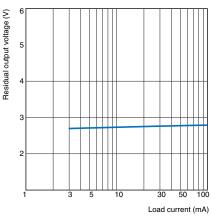
Leakage Current E2E2-X D

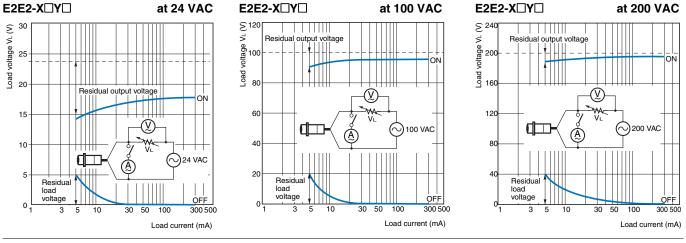




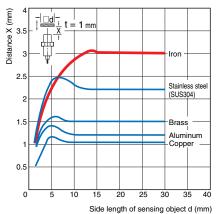
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Residual Output Voltage E2E2-X

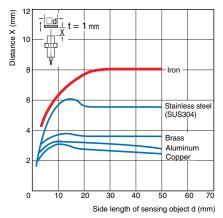


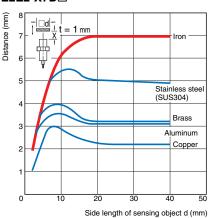


Influence of Sensing Object Size and Material E2E2-X3D E2E2-X7D

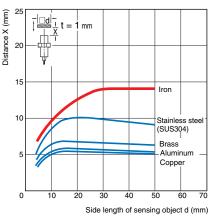


E2E2-X8MD

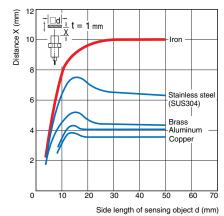




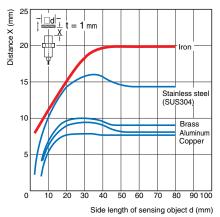
E2E2-X14MD

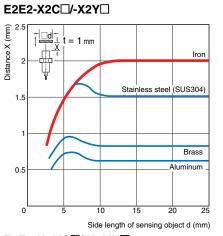


E2E2-X10D

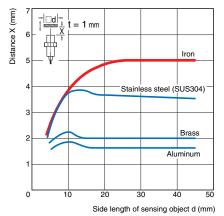


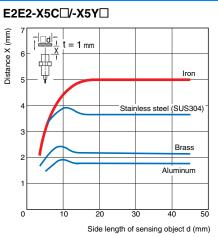
E2E2-X20MD



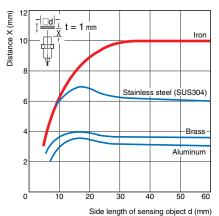


E2E2-X5MC□/-X5MY□

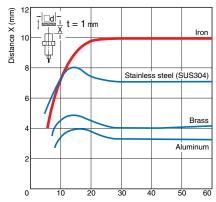




E2E2-X10MC^{_}/-X10MY^{_}

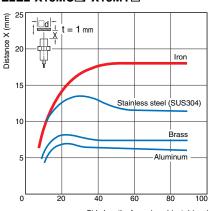


E2E2-X10C /-X10Y



Side length of sensing object d (mm)

E2E2-X18MC□/-X18MY□



Side length of sensing object d (mm)

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 area area Sensing object 0 (%) 100 80 (%) 100 80 ON Setting indicator OFF (green) 0 OFF (green) 0 ON Operation OFF indicator (red) ON Control output OFF	Proximity Sensor circuit
NC	E2E2-X3D2 E2E2-X7D2 E2E2-X10D2 E2E2-X8MD2 E2E2-X14MD2 E2E2-X20MD2	Non-sensing area Sensing object (%) 100 0 Rated sensing distance ON Operation OFF Indicator (red) ON Control output OFF	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 Not present Operation indicator (red) Control output OFF ON OFF	Proximity Sensor
NC	E2E2-X2C2 E2E2-X5C2 E2E2-X10C2 E2E2-X5MC2 E2E2-X10MC2 E2E2-X18MC2	Sensing object Not present Operation indicator (red) Control output OFF	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 Present Not present	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	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.

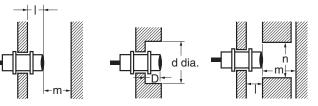
Precautions for Correct Use

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.

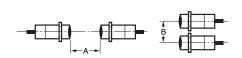


					(Onit: min)
Model		ltem	M12	M18	M30
		I	0	0	0
		d	12	18	30
	Shielded	D	0	0	0
		m	8	20	40
DC 2-Wire Models		n	18	27	45
E2E2-X D		I	15	22	30
		d	40	70	90
	Unshielded	D	15	22	30
		m	20	40	70
		n	40	70	90
		I	0	0	0
		d	12	18	30
	Shielded	D	0	0	0
DC 3-Wire Models E2E2-X□C□		m	8	20	40
		n	18	27	45
AC 2-Wire Models		I	15	22	30
E2E2-X□Y□		d	40	55	90
	Unshielded	D	15	22	30
		m	20	40	70
		n	36	54	90

(Unit: mm)

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 E2E2-X□D□	Shielded	А	30 (20)	50 (30)	100 (50)
		В	20 (12)	35 (18)	70 (35)
	Unshielded	А	120 (60)	200 (100)	300 (100)
		В	100 (50)	110 (60)	200 (100)
DC 3-Wire Models	Shielded	А	30	50	100
E2E2-X□C□ AC 2-Wire Models	Shielded	В	20	35	70
	Unshielded	А	120	200	300
E2E2-X□Y□	Unshielded	В	100	110	200

Note: Values in parentheses apply to Sensors operating at different frequencies.

Mounting

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

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

F2F2

(Unit: mm)

Dimensions

Unless otherwise specified, the tolerance class IT16 is used for dimensions in this data sheet.

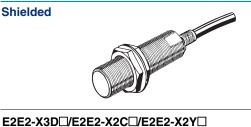
Shielded

-21 dia.

17

M12

Unshielded



-60

Two clamping nuts

*1. 4-dia. vinyl-insulated round cable with 2 conductors

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

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)

Toothed washer

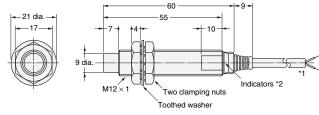
Standard length: 2 m

+ 10

Indicators *2

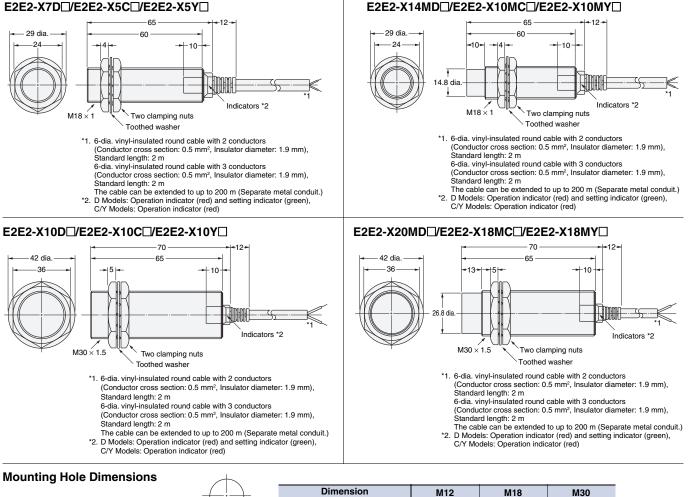
55

E2E2-X8MD / E2E2-X5MC / E2E2-X5MY



- *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-X14MD / E2E2-X10MC / E2E2-X10MY



F (mm)

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.

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

12.5^{+0.5} dia.

18.5^{+0.5}₀ dia.

30.5^{+0.5}₀ dia.

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2015.11

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