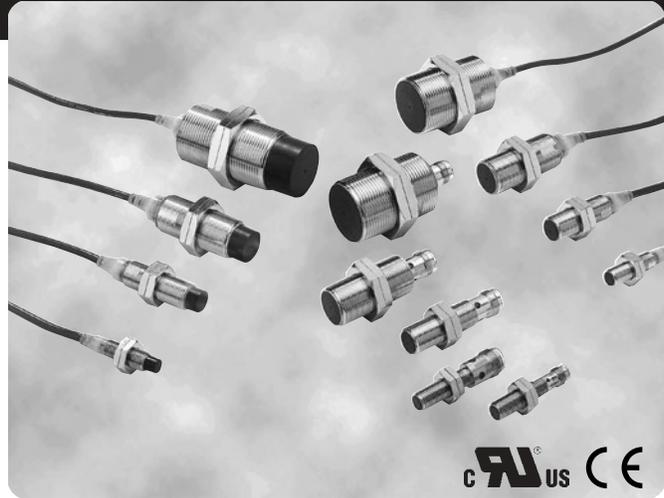


Cylindrical Proximity Sensor

# E2A

## Extended Range DC-3 Wire Proximity Sensors

- Ensures a sensing distance approximately 1.5 to 2 times longer than standard proximity sensors.
- Minimizes collisions.
- Full range of standard sizes (M8, M12, M18 and M30; both long and short barrels).
- Choose from prewired, M8 or M12 connector versions.



Ordering Information (Shaded models are normally stocked.)

Size	Type	Sensing distance	Connection	Body material	Thread Length (overall length)	Output configuration	Model number		
							Operation mode NO	Operation mode NC	
M8	Shielded	2.0 mm	Pre-wired	Stainless steel	27 (40)	PNP	E2A-S08KS02-WP-B1 2M	E2A-S08KS02-WP-B2 2M	
						NPN	E2A-S08KS02-WP-C1 2M	E2A-S08KS02-WP-C2 2M	
					49 (62)	PNP	E2A-S08LS02-WP-B1 2M	E2A-S08LS02-WP-B2 2M	
						NPN	E2A-S08LS02-WP-C1 2M	E2A-S08LS02-WP-C2 2M	
			M12 connector	Stainless steel	27 (43)	PNP	E2A-S08KS02-M1-B1	E2A-S08KS02-M1-B2	
						NPN	E2A-S08KS02-M1-C1	E2A-S08KS02-M1-C2	
					49 (65)	PNP	E2A-S08LS02-M1-B1	E2A-S08LS02-M1-B2	
						NPN	E2A-S08LS02-M1-C1	E2A-S08LS02-M1-C2	
			Nickel-plated Brass	27 (43)	PNP	E2A-M08KS02-M1-B1	E2A-M08KS02-M1-B2		
					NPN	E2A-M08KS02-M1-C1	E2A-M08KS02-M1-C2		
				49 (65)	PNP	E2A-M08LS02-M1-B1	E2A-M08LS02-M1-B2		
					NPN	E2A-M08LS02-M1-C1	E2A-M08LS02-M1-C2		
	M8 connector (3-pin)	Stainless steel	27 (39)	PNP	E2A-S08KS02-M5-B1	E2A-S08KS02-M5-B2			
				NPN	E2A-S08KS02-M5-C1	E2A-S08KS02-M5-C2			
			49 (61)	PNP	E2A-S08LS02-M5-B1	E2A-S08LS02-M5-B2			
				NPN	E2A-S08LS02-M5-C1	E2A-S08LS02-M5-C2			
	Unshielded	4.0 mm	Pre-wired	Stainless steel	27 (40)	PNP	E2A-S08KN04-WP-B1 2M	E2A-S08KN04-WP-B2 2M	
						NPN	E2A-S08KN04-WP-C1 2M	E2A-S08KN04-WP-C2 2M	
						49 (62)	PNP	E2A-S08LN04-WP-B1 2M	E2A-S08LN04-WP-B2 2M
							NPN	E2A-S08LN04-WP-C1 2M	E2A-S08LN04-WP-C2 2M
M12 connector					Stainless steel	27 (43)	PNP	E2A-S08KN04-M1-B1	E2A-S08KN04-M1-B2
							NPN	E2A-S08KN04-M1-C1	E2A-S08KN04-M1-C2
						49 (65)	PNP	E2A-S08LN04-M1-B1	E2A-S08LN04-M1-B2
							NPN	E2A-S08LN04-M1-C1	E2A-S08LN04-M1-C2
Nickel-plated Brass					27 (43)	PNP	E2A-M08KN04-M1-B1	E2A-M08KN04-M1-B2	
						NPN	E2A-M08KN04-M1-C1	E2A-M08KN04-M1-C2	
					49 (65)	PNP	E2A-M08LN04-M1-B1	E2A-M08LN04-M1-B2	
						NPN	E2A-M08LN04-M1-C1	E2A-M08LN04-M1-C2	
M8 connector (3-pin)			Stainless steel	27 (39)	PNP	E2A-S08KN04-M5-B1	E2A-S08KN04-M5-B2		
					NPN	E2A-S08KN04-M5-C1	E2A-S08KN04-M5-C2		
				49 (61)	PNP	E2A-S08LN04-M5-B1	E2A-S08LN04-M5-B2		
					NPN	E2A-S08LN04-M5-C1	E2A-S08LN04-M5-C2		

Ordering Information continued (Shaded models are normally stocked.)

Size	Type	Sensing distance	Connection	Body material	Thread Length (overall length)	Output configuration	Model number						
							Operation mode NO	Operation mode NC					
M12	Shielded	4.0 mm	Pre-wired	Nickel-plated	34 (50)	PNP	E2A-M12KS04-WP-B1 2M	E2A-M12KS04-WP-B2 2M					
					Brass	56 (72)	NPN	E2A-M12KS04-WP-C1 2M	E2A-M12KS04-WP-C2 2M				
				M12 connector		Nickel-plated	34 (48)	PNP	E2A-M12KS04-M1-B1	E2A-M12KS04-M1-B2			
					Brass		56 (70)	NPN	E2A-M12KS04-M1-C1	E2A-M12KS04-M1-C2			
			Unshielded	8.0 mm		Pre-wired	Nickel-plated	34 (50)	PNP	E2A-M12KN08-WP-B1 2M	E2A-M12KN08-WP-B2 2M		
					Brass			56 (72)	NPN	E2A-M12KN08-WP-C1 2M	E2A-M12KN08-WP-C2 2M		
							M12 connector	Nickel-plated	34 (48)	PNP	E2A-M12KN08-M1-B1	E2A-M12KN08-M1-B2	
					Brass				56 (70)	NPN	E2A-M12KN08-M1-C1	E2A-M12KN08-M1-C2	
	M18	Shielded				8.0 mm	Pre-wired	Nickel-plated	39 (59)	PNP	E2A-M18KS08-WP-B1 2M	E2A-M18KS08-WP-B2 2M	
					Brass				61 (81)	NPN	E2A-M18KS08-WP-C1 2M	E2A-M18KS08-WP-C2 2M	
								M12 connector	Nickel-plated	39 (53)	PNP	E2A-M18KS08-M1-B1	E2A-M18KS08-M1-B2
					Brass					61 (75)	NPN	E2A-M18KS08-M1-C1	E2A-M18KS08-M1-C2
			Unshielded	16.0 mm			Pre-wired	Nickel-plated	39 (59)	PNP	E2A-M18KN16-WP-B1 2M	E2A-M18KN16-WP-B2 2M	
					Brass				61 (81)	NPN	E2A-M18KN16-WP-C1 2M	E2A-M18KN16-WP-C2 2M	
								M12 connector	Nickel-plated	39 (53)	PNP	E2A-M18KN16-M1-B1	E2A-M18KN16-M1-B2
					Brass					61 (75)	NPN	E2A-M18KN16-M1-C1	E2A-M18KN16-M1-C2
M30		Shielded				15.0 mm	Pre-wired	Nickel-plated	44 (64)	PNP	E2A-M30KS15-WP-B1 2M	E2A-M30KS15-WP-B2 2M	
					Brass				66 (86)	NPN	E2A-M30KS15-WP-C1 2M	E2A-M30KS15-WP-C2 2M	
								M12 connector	Nickel-plated	44 (58)	PNP	E2A-M30KS15-M1-B1	E2A-M30KS15-M1-B2
					Brass					66 (80)	NPN	E2A-M30KS15-M1-C1	E2A-M30KS15-M1-C2
			Unshielded	20.0 mm			Pre-wired	Nickel-plated	44 (64)	PNP	E2A-M30KN20-WP-B1 2M	E2A-M30KN20-WP-B2 2M	
					Brass				(See note.)	NPN	E2A-M30KN20-WP-C1 2M	E2A-M30KN20-WP-C2 2M	
								30.0 mm	M12 connector	Nickel-plated	66 (86)	PNP	E2A-M30LN30-WP-B1 2M
					Brass						(See note.)	NPN	E2A-M30LN30-WP-C1 2M
	20.0 mm	M12 connector		Nickel-plated		44 (58)	PNP	E2A-M30KN20-M1-B1	E2A-M30KN20-M1-B2				
					Brass	(See note.)	NPN	E2A-M30KN20-M1-C1	E2A-M30KN20-M1-C2				
				30.0 mm		M12 connector	Nickel-plated	66 (80)	PNP	E2A-M30LN30-M1-B1	E2A-M30LN30-M1-B2		
					Brass			(See note.)	NPN	E2A-M30LN30-M1-C1	E2A-M30LN30-M1-C2		

Note: M30 unshielded Models with double sensing distance and short barrels cannot be mounted due to the necessary separation distance from the surrounding metal. Standard sensing models are thus available.

Specifications

DC 3-wire Models

Size		M8		M12	
Type		Shielded	Unshielded	Shielded	Unshielded
Item		E2A-M08□S02-M1-B1	E2A-M08□N04-M1-B1	E2A-M12□S04-□□-B1	E2A-M12□N08-□□-B1
		E2A-M08□S02-M1-B2	E2A-M08□N04-M1-B2	E2A-M12□S04-□□-B2	E2A-M12□N08-□□-B2
		E2A-M08□S02-M1-C1	E2A-M08□N04-M1-C1	E2A-M12□S04-□□-C1	E2A-M12□N08-□□-C1
		E2A-M08□S02-M1-C2	E2A-M08□N04-M1-C2	E2A-M12□S04-□□-C2	E2A-M12□N08-□□-C2
		E2A-S08□S02-□□-B1	E2A-S08□N04-□□-B1		
		E2A-S08□S02-□□-B2	E2A-S08□N04-□□-B2		
		E2A-S08□S02-□□-C1	E2A-S08□N04-□□-C1		
		E2A-S08□S02-□□-C2	E2A-S08□N04-□□-C2		
Sensing distance		2 mm ±10%	4 mm ±10%	4 mm ±10%	8 mm ±10%
Setting distance		0 to 1.6 mm	0 to 3.2 mm	0 to 3.2 mm	0 to 6.4 mm
Hysteresis		10% max. of sensing distance			
Target		Ferrous metal (The sensing distance decreases with non-ferrous metal.)			
Standard target (mild steel ST37)		8 x 8 x 1 mm	12 x 12 x 1 mm	12 x 12 x 1 mm	24 x 24 x 1 mm
Response frequency (See note 1.)		1,500 Hz	1,000 Hz	1,000 Hz	800 Hz
Power supply voltage (operating voltage range)		12 to 24 VDC. Ripple (p-p): 10% max. (10 to 32 VDC)			
Current consumption (DC 3-wire)		10 mA max.			
Output type		-B models: PNP open collector -C models: NPN open collector			
Control output	Load current (See note 2.)	200 mA max. (32 VDC max.)			
	Residual voltage	2 V max. (under load current of 200 mA with cable length of 2 m)			
Indicator		Operation indicator (Yellow LED)			
Operation mode (with sensing object approaching)		-B1/-C1 models: NO -B2/-C2 models: NC; For details, refer to the timing charts.			
Protection circuit		Power source circuit reverse polarity protection, Surge suppressor, Short-circuit protection		Output reverse polarity protection, Power source circuit reverse polarity protection, Surge suppressor, Short-circuit protection	
Ambient air temperature		Operating: -40°C to 70°C, Storage: -40°C to 85°C (with no icing or condensation)			
Temperature influence (See note 2.)		±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 of -40°C to 70°C			
Ambient humidity		Operating: 35% to 95%, Storage: 35% to 95%			
Voltage influence		±1% max. of sensing distance in rated voltage range ±15%			
Insulation resistance		50 MΩ min. (at 500 VDC) between current carry parts and case			
Dielectric strength		1,000 VAC at 50/60 Hz for 1 min between current carry parts 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		500 m/s <sup>2</sup> , 10 times each in X, Y and Z directions		1,000 m/s <sup>2</sup> , 10 times each in X, Y and Z directions	
Standards and listings		IEC60529: IP67, Degree of protection EN60947-5-2: EMC UL (CSA) [E196555] (See note 3.)			
Connection method		-WP models: Pre-wired models (Standard length: 2 m) -M1 models: M12 4-pin connector models -M5 models: M8 3-pin connector models			
Weight (packaged)	Pre-wired model	Approx. 65 g		Approx. 85 g	
	M12 connector model	M12 connector models: Approx. 20 g M8 connector models: Approx. 15 g		Approx. 35 g	
Material	Case	Stainless steel or brass-nickel plated		Brass-nickel plated	
	Sensing surface	PBT			
	Cable	PVC			
	Clamping nut	Brass-nickel plated			

Note 1. The response frequency is an average value. Measurement conditions are as follows: standard target, a distance of twice the standard target distance between targets, and a setting distance of half the sensing distance.

2. When using any model at an ambient temperature between -40°C and -25°C and a power voltage between 30 and 32 VDC, use a load current of 100 mA max.

3. UL (CSA) [E196555]: Use class 2 circuit only.

Specifications continued

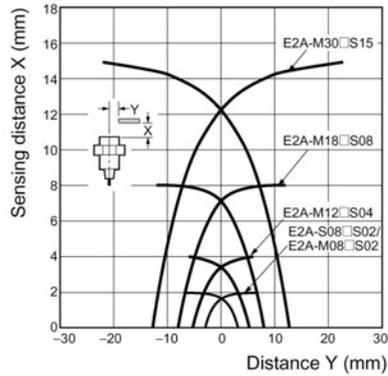
DC 3-wire Models

Size	M18		M30		
Type	Shielded	Unshielded	Shielded	Unshielded	Unshielded
Item	E2A-M18□S08-□□-B1	E2A-M18□N16-□□-B1	E2A-M30□S15-□□-B1	E2A-M30KN20-□□-B1	E2A-M30LN30-□□-B1
	E2A-M18□S08-□□-B2	E2A-M18□N16-□□-B2	E2A-M30□S15-□□-B2	E2A-M30KN20-□□-B2	E2A-M30LN30-□□-B2
	E2A-M18□S08-□□-C1	E2A-M18□N16-□□-C1	E2A-M30□S15-□□-C1	E2A-M30KN20-□□-C1	E2A-M30LN30-□□-C1
	E2A-M18□S08-□□-C2	E2A-M18□N16-□□-C2	E2A-M30□S15-□□-C2	E2A-M30KN20-□□-C2	E2A-M30LN30-□□-C2
Sensing distance	8 mm ±10%	16 mm ±10%	15 mm ±10%	20 mm ±10%	30 mm ±10%
Setting distance	0 to 6.4 mm	0 to 12.8 mm	0 to 12 mm	0 to 16 mm	0 to 24 mm
Hysteresis	10% max. of sensing distance				
Target	Ferrous metal (The sensing distance decreases with non-ferrous metal.)				
Standard target (mild steel ST37)	24 x 24 x 1 mm	48 x 48 x 1 mm	45 x 45 x 1 mm	60 x 60 x 1 mm	90 x 90 x 1 mm
Response frequency (See note 1.)	500 Hz	400 Hz	250 Hz	100 Hz	100 Hz
Power supply voltage (operating voltage range)	12 to 24 VDC. Ripple (p-p): 10% max. (10 to 32 VDC)				
Current consumption (DC 3-wire)	10 mA max.				
Output type	-B models: PNP open collector -C models: NPN open collector				
Control output	Load current (See note 2.)	200 mA max. (32 VDC max.)			
	Residual voltage	2 V max. (under load current of 200 mA with cable length of 2 m)			
Indicator	Operation indicator (Yellow LED)				
Operation mode (with sensing object approaching)	-B1/-C1 models: NO -B2/-C2 models: NC; For details, refer to the timing charts.				
Protection circuit	Output reverse polarity protection, Power source circuit reverse polarity protection, Surge suppressor, Short-circuit protection				
Ambient air temperature	Operating: -40°C to 70°C, Storage: -40°C to 85°C (with no icing or condensation)				
Temperature influence (See note 2.)	±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 of -40°C to 70°C				
Ambient humidity	Operating: 35% to 95%, Storage: 35% to 95%				
Voltage influence	±1% max. of sensing distance in rated voltage range ±15%				
Insulation resistance	50 MΩ min. (at 500 VDC) between current carry parts and case				
Dielectric strength	1,000 VAC at 50/60 Hz for 1 min between current carry parts 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	1,000 m/s <sup>2</sup> , 10 times each in X, Y and Z directions				
Standards and listings	IEC60529: IP67, Degree of protection EN60947-5-2: EMC UL (CSA) [E196555] (See note 3.)				
Connection method	-WP models: Pre-wired models (Standard length: 2 m) -M1 models: M12 4-pin connector models -M5 models: M8 3-pin connector models				
Weight (packaged)	Pre-wired model	Approx. 160 g	Approx. 280 g	Approx. 280 g	Approx. 370 g
	M12 connector model	Approx. 70 g	Approx. 200 g	Approx. 200 g	Approx. 260 g
Material	Case	Brass-nickel plated			
	Sensing surface	PBT			
	Cable	PVC			
	Clamping nut	Brass-nickel plated			

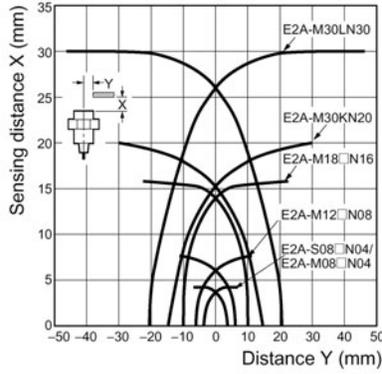
- Note 1. The response frequency is an average value. Measurement conditions are as follows: standard target, a distance of twice the standard target distance between targets, and a setting distance of half the sensing distance.  
 2. When using any model at an ambient temperature between -40°C and -25°C and a power voltage between 30 and 32 VDC, use a load current of 100 mA max.  
 3. UL (CSA) [E196555]: Use class 2 circuit only.

Operating Range (Typical)

Shielded Models



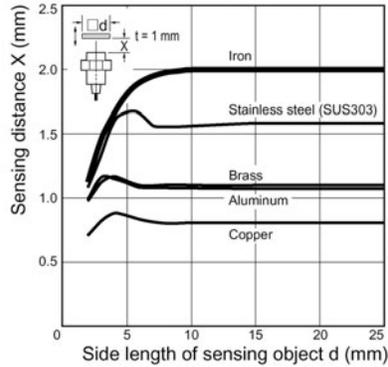
Unshielded Models



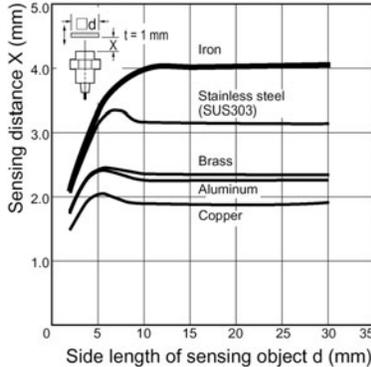
Influence of Sensing Object Size and Materials

Shielded Models

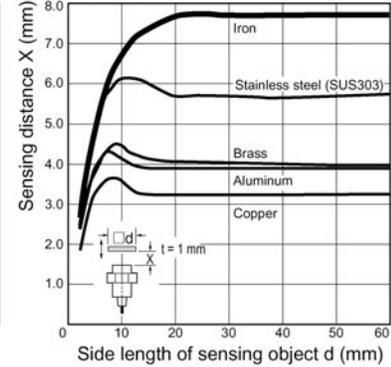
E2A-S08□S02/M08□S02



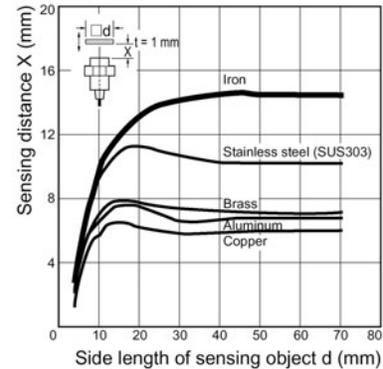
E2A-M12□S04



E2A-M18□S08

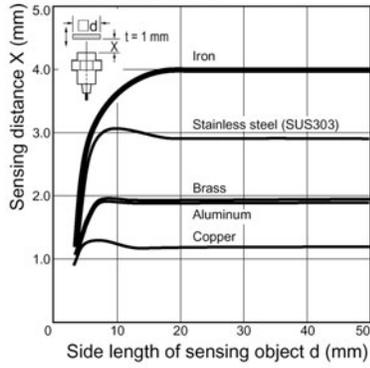


E2A-M30□S15

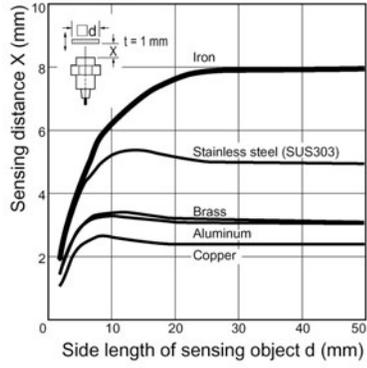


Unshielded Models

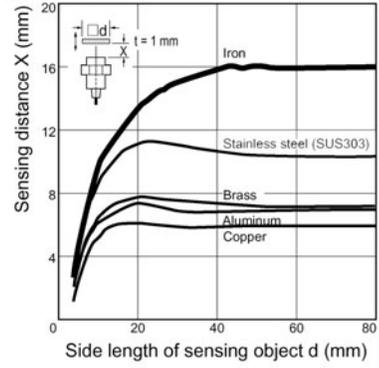
E2A-S08□N04/M08□N04



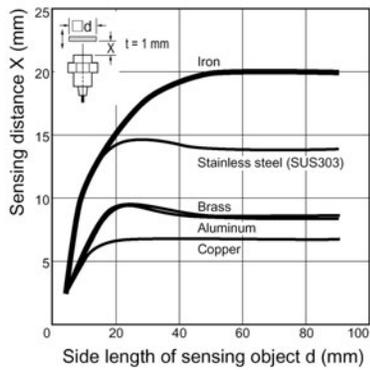
E2A-M12□N08



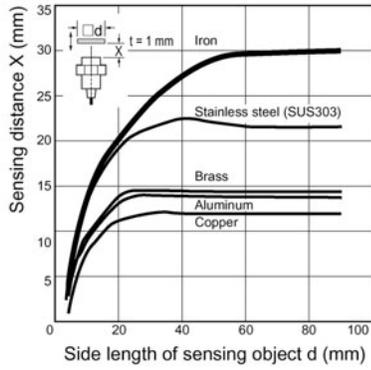
E2A-M18□N16



E2A-M30KN20



E2A-M30LN30



Operation

PNP Output

Operation mode	Model	Timing chart	Output circuit
NO	E2A-□-□-B1		<p><b>Note 1:</b> With M8 connector models, there is no output reverse polarity protection diode.</p> <p>M12 Connector Pin Arrangement (See note 2.)</p> <p>M8 Connector Pin Arrangement</p> <p><b>Note 2:</b> Terminal 2 of the M12 connector is not used.</p>
NC	E2A-□-□-B2		<p><b>Note 1:</b> With M8 connector models, there is no output reverse polarity protection diode.</p> <p>M12 Connector Pin Arrangement (See note 2.)</p> <p>M8 Connector Pin Arrangement</p> <p><b>Note 2:</b> Terminal 4 of the M12 connector is not used.</p>

NPN Output

Operation mode	Model	Timing chart	Output circuit
NO	E2A-□-□-C1		<p><b>Note 1:</b> With M8 connector models, there is no output reverse polarity protection diode.</p> <p>M12 Connector Pin Arrangement (See note 2.)</p> <p>M8 Connector Pin Arrangement</p> <p><b>Note 2:</b> Terminal 2 of the M12 connector is not used.</p>
NC	E2A-□-□-C2		<p><b>Note 1:</b> With M8 connector models, there is no output reverse polarity protection diode.</p> <p>M12 Connector Pin Arrangement (See note 2.)</p> <p>M8 Connector Pin Arrangement</p> <p><b>Note 2:</b> Terminal 4 of the M12 connector is not used.</p>

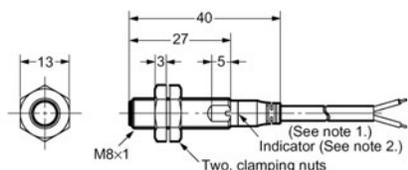
Dimensions

Note: All units are in millimeters unless otherwise indicated.

Pre-wired Models (Shielded)

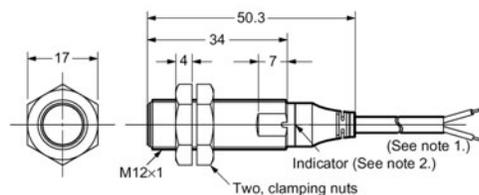


E2A-S08KS02-WP-□□



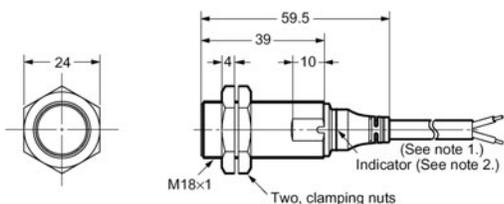
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

E2A-M12KS04-WP-□□



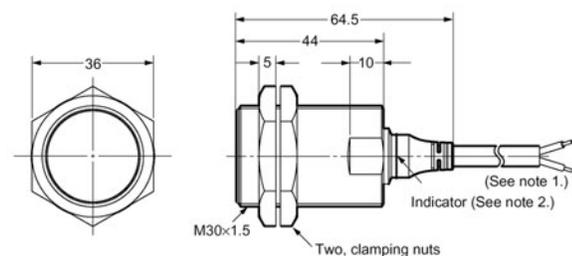
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

E2A-M18KS08-WP-□□



**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

E2A-M30KS15-WP-□□

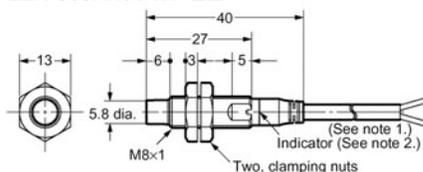


**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

Pre-wired Models (Unshielded)

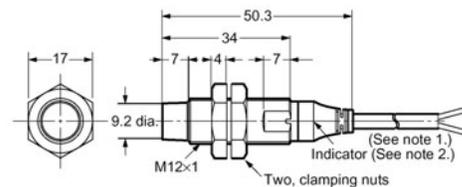


E2A-S08KN04-WP-□□



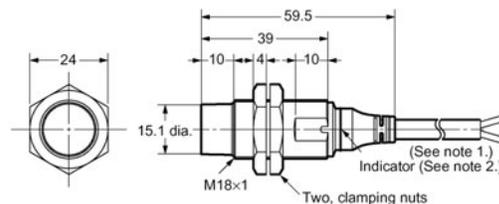
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

E2A-M12KN08-WP-□□



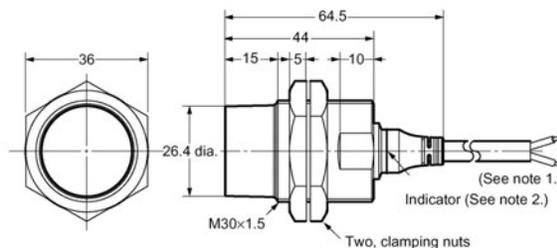
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

E2A-M18KN16-WP-□□



**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

E2A-M30KN20-WP-□□



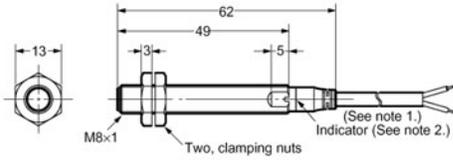
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

Dimensions continued

Note: All units are in millimeters unless otherwise indicated.

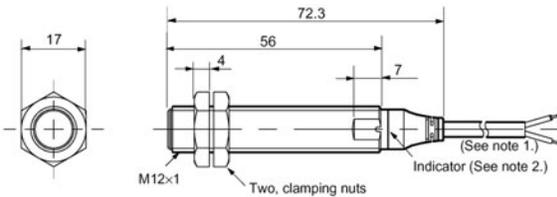
Pre-wired Models (Shielded)

E2A-S08LS02-WP-□□



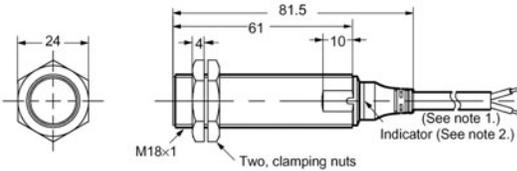
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

E2A-M12LS04-WP-□□



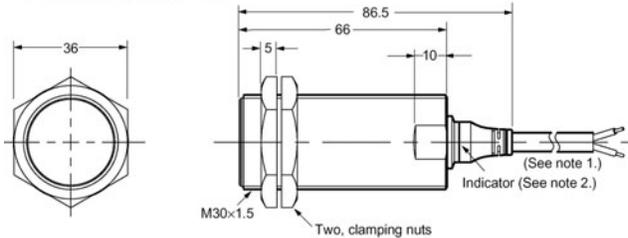
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

E2A-M18LS08-WP-□□



**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

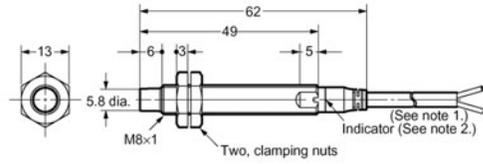
E2A-M30LS15-WP-□□



**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

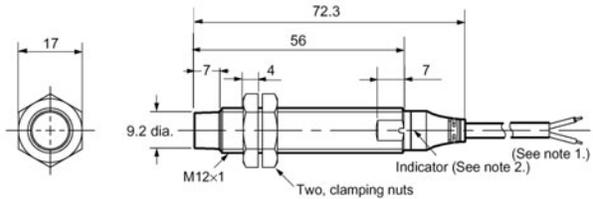
Pre-wired Models (Unshielded)

E2A-S08LN04-WP-□□



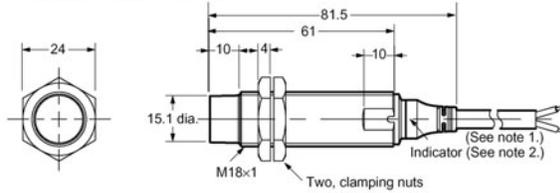
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

E2A-M12LN08-WP-□□



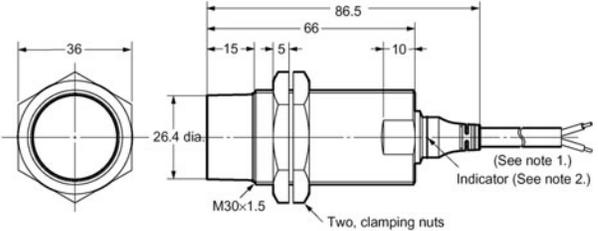
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

E2A-M18LN16-WP-□□



**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

E2A-M30LN30-WP-□□



**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

Mounting Hole Cutout Dimensions



External diameter of Proximity Sensor	Dimension F (mm)
M8	8.5 dia. <sup>+0.5</sup> / <sub>0</sub>
M12	12.5 dia. <sup>+0.5</sup> / <sub>0</sub>
M18	18.5 dia. <sup>+0.5</sup> / <sub>0</sub>
M30	30.5 dia. <sup>+0.5</sup> / <sub>0</sub>

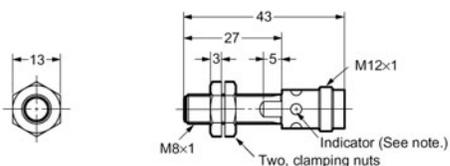
Dimensions continued

Note: All units are in millimeters unless otherwise indicated.

M12 Connector Models (Shielded)



E2A-S08KS02-M1-□□  
E2A-M08KS02-M1-□□

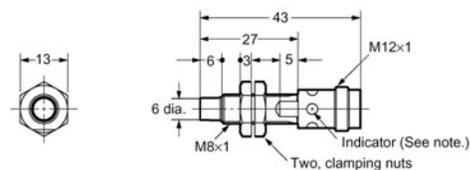


Note: Operation indicator (yellow LED, 4×90°)

M12 Connector Models (Unshielded)

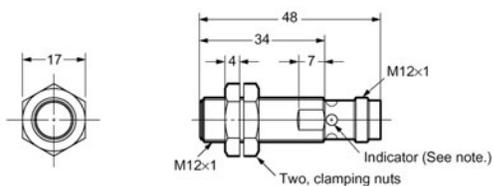


E2A-S08KN04-M1-□□  
E2A-M08KN04-M1-□□



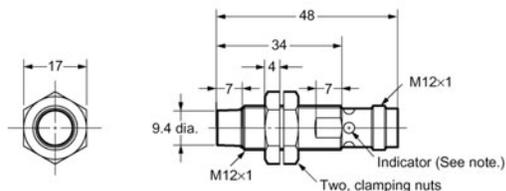
Note: Operation indicator (yellow LED, 4×90°)

E2A-M12KS04-M1-□□



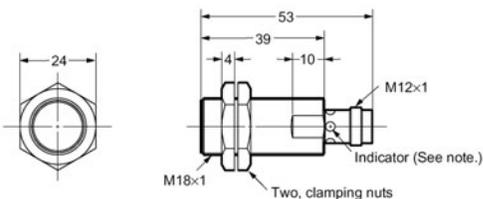
Note: Operation indicator (yellow LED, 4×90°)

E2A-M12KN08-M1-□□



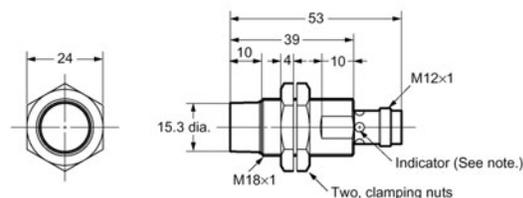
Note: Operation indicator (yellow LED, 4×90°)

E2A-M18KS08-M1-□□



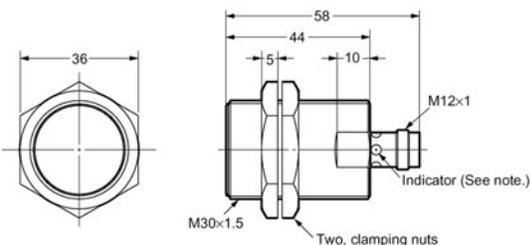
Note: Operation indicator (yellow LED, 4×90°)

E2A-M18KN16-M1-□□



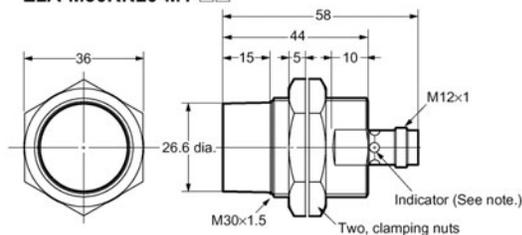
Note: Operation indicator (yellow LED, 4×90°)

E2A-M30KS15-M1-□□



Note: Operation indicator (yellow LED, 4×90°)

E2A-M30KN20-M1-□□

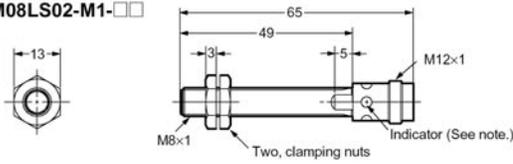


Note: Operation indicator (yellow LED, 4×90°)

Dimensions continued

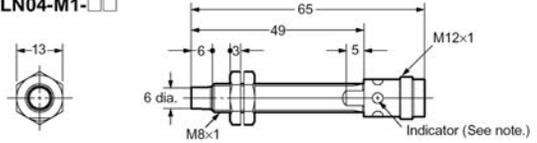
Note: All units are in millimeters unless otherwise indicated.

E2A-S08LS02-M1-□□  
E2A-M08LS02-M1-□□



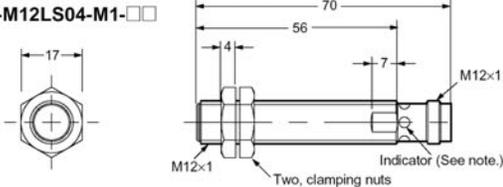
Note: Operation indicator (yellow LED, 4×90°)

E2A-S08LN04-M1-□□  
E2A-M08LN04-M1-□□



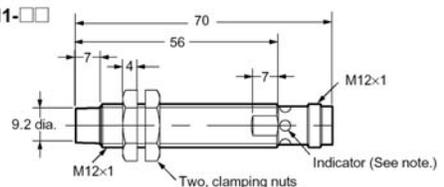
Note: Operation indicator (yellow LED, 4×90°)

E2A-M12LS04-M1-□□



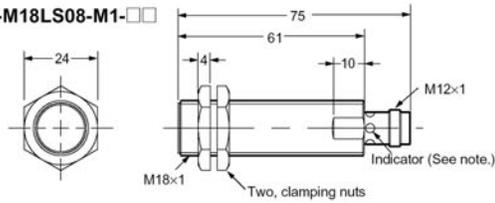
Note: Operation indicator (yellow LED, 4×90°)

E2A-M12LN04-M1-□□



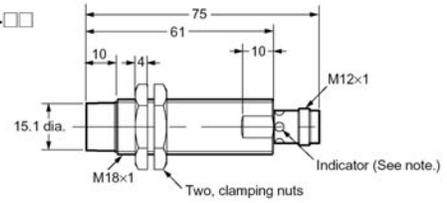
Note: Operation indicator (yellow LED, 4×90°)

E2A-M18LS08-M1-□□



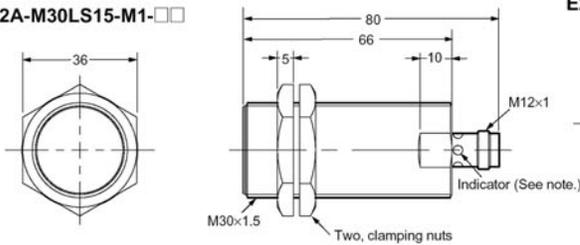
Note: Operation indicator (yellow LED, 4×90°)

E2A-M18LN16-M1-□□



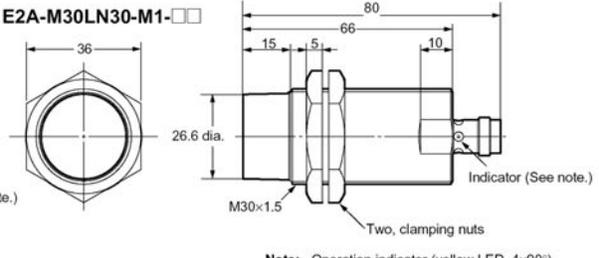
Note: Operation indicator (yellow LED, 4×90°)

E2A-M30LS15-M1-□□



Note: Operation indicator (yellow LED, 4×90°)

E2A-M30LN30-M1-□□

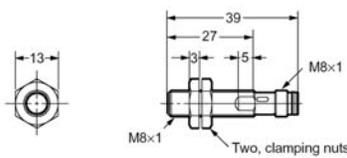


Note: Operation indicator (yellow LED, 4×90°)

M8 Connector Models (Shielded)

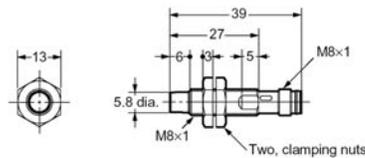


E2A-S08KS02-M5-□□



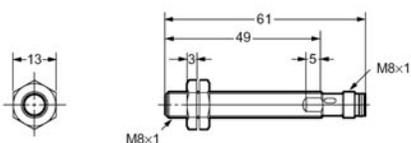
Note: Operation indicator (yellow LED, 4×90°)

E2A-S08KN04-M5-□□



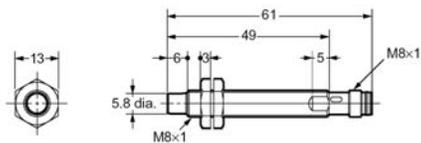
Note: Operation indicator (yellow LED, 4×90°)

E2A-S08LS02-M5-□□



Note: Operation indicator (yellow LED, 4×90°)

E2A-S08LN04-M5-□□



Note: Operation indicator (yellow LED, 4×90°)

Precautions

Safety Precautions

**Power Supply**

Do not impose an excessive voltage on the E2A, otherwise it may be damaged. Do not impose AC current (100 to 240 VAC) on any DC model, otherwise it may be damaged.

**Load Short-circuit**

Do not short-circuit the load, or the E2A may be damaged.

The E2A's short-circuit protection function will be valid if the polarity of the supply voltage imposed is correct and within the rated voltage range.

**Wiring**

Be sure to wire the E2A and load correctly, otherwise it may be damaged.

**Connection with No Load**

Be sure to insert loads when wiring. Make sure to connect a proper load to the E2A in operation, otherwise it may damage internal elements.

**Do not expose the product to flammable or explosive gases.**

**Do not disassemble, repair, or modify the product.**

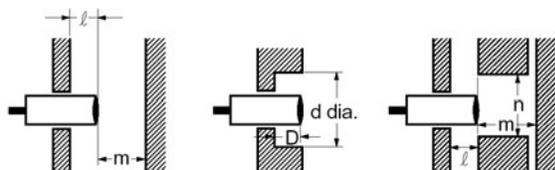
Correct Use

**Power Reset Time**

The Proximity Sensor is ready to operate within 100 ms after power is supplied. If power supplies are connected to the Proximity Sensor and load respectively, be sure to supply power to the Proximity Sensor before supplying power to the load.

**Effects of Surrounding Metal**

When mounting the E2A within a metal panel, ensure that the clearances given in the following table are maintained.



Type	Dimension	M8		M12		M18		M30	
		Short barrel	Long barrel	Short barrel	Long barrel	Short barrel	Long barrel	Short barrel	Long barrel
Shielded	$l$	0	0	0 (See note 1)	0 (See note 2)	0	0	0	0
	$m$	4.5	12	24	45				
	$d$	—	—	27	45				
	$D$	0	0	1.5	4				
	$n$	12	18	27	45				
Non-shielded	$l$	12	15	22	30	40			
	$m$	8	20	48	70	90			
	$d$	24	40	70	90	120			
	$D$	12	15	22	30	40			
	$n$	24	40	70	90	120			

Note 1. In the case of using the supplied nuts. If true flush mounting is necessary, apply a free zone of 1.5 mm.

Note 2. In the case of using the supplied nuts. If true flush mounting is necessary, apply a free zone of 4 mm.

**Power OFF**

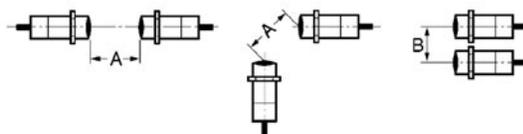
The Proximity Sensor may output a pulse signal when it is turned OFF. Therefore, it is recommended that the load be turned OFF before turning OFF the Proximity Sensor.

**Power Supply Transformer**

When using a DC power supply, make sure that the DC power supply has an insulated transformer. Do not use a DC power supply with an auto-transformer.

**Mutual Interference**

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



Type	Dimension	M8		M12		M18		M30	
		Short barrel	Long barrel						
Shielded	A	20	30	60	110				
	B	15	20	35	70				
Non-shielded	A	80	120	200	300	300			
	B	60	100	120	200	300			

## Wiring

### High-tension Lines

Wiring through Metal Conduit:

If there is a power or high-tension line near the cable of the Proximity Sensor, wire the cable through an independent metal conduit to prevent against Proximity Sensor damage or malfunctioning.

### Cable Extension

Standard cable length is less than 200 m.

The tractive force is 50 N.

## Mounting

The Proximity Sensor must not be subjected to excessive shock with a hammer when it is installed, otherwise the Proximity Sensor may be damaged or lose its water-resistivity.

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



Type		Torque
M8	Stainless steel type	9 N·m
	Brass type	4 N·m
M12		30 N·m
M18		70 N·m
M30		180 N·m

## Maintenance and Inspection

Periodically perform the following checks to ensure stable operation of the Proximity Sensor over a long period of time.

1. Check for mounting position, dislocation, looseness, or distortion of the Proximity Sensor and sensing objects.
2. Check for loose wiring and connections, improper contacts, and line breakage.
3. Check for attachment or accumulation of metal powder or dust.
4. Check for abnormal temperature conditions and other environmental conditions.
5. Check for proper lighting of indicators (for models with a set indicator.)

Never disassemble or repair the Sensor.

## Environment

### Water Resistivity

Do not use the Proximity Sensor underwater, outdoors, or in the rain.

### Operating Environment

Be sure to use the Proximity Sensor within its operating ambient temperature range and do not use the Proximity Sensor outdoors so that its reliability and life expectancy can be maintained. Although the Proximity Sensor is water resistive, a cover to protect the Proximity Sensor from water or water-soluble machining oil is recommended so that its reliability and life expectancy can be maintained.

Do not use the Proximity Sensor in an environment with chemical gas (e.g., strong alkaline or acid gasses including nitric, chromic, and concentrated sulfuric acid gases).

### Inrush Current

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

## Certain Terms and Conditions of Sale

1. **Offer: Acceptance.** These terms and conditions (these "Terms") are deemed part of all catalogs, manuals or other documents, whether electronic or in writing, relating to the sale of goods or services (collectively, the "Goods") by Omron Electronics LLC and its subsidiary companies ("Seller"). Seller hereby objects to any terms or conditions proposed in Buyer's purchase order or other documents which are inconsistent with, or in addition to, these Terms. Please contact your Omron representative to confirm any additional terms for sales from your Omron company.
2. **Prices.** All prices stated are current, subject to change without notice by Seller. Buyer agrees to pay the price in effect at time of shipment.
3. **Discounts.** Cash discounts, if any, will apply only on the net amount of invoices sent to Buyer after deducting transportation charges, taxes and duties, and will be allowed only if (i) the invoice is paid according to Seller's payment terms and (ii) Buyer has no past due amounts owing to Seller.
4. **Orders.** Seller will accept no order less than \$200 net billing.
5. **Governmental Approvals.** Buyer shall be responsible for, and shall bear all costs involved in, obtaining any government approvals required for the importation or sale of the Goods.
6. **Taxes.** All taxes, duties and other governmental charges (other than general real property and income taxes), including any interest or penalties thereon, imposed directly or indirectly on Seller or required to be collected directly or indirectly by Seller for the manufacture, production, sale, delivery, importation, consumption or use of the Goods sold hereunder (including customs duties and sales, excise, use, turnover and license taxes) shall be charged to and remitted by Buyer to Seller.
7. **Financial.** If the financial position of Buyer at any time becomes unsatisfactory to Seller, Seller reserves the right to stop shipments or require satisfactory security or payment in advance. If Buyer fails to make payment or otherwise comply with these Terms or any related agreement, Seller may (without liability and in addition to other remedies) cancel any unshipped portion of Goods sold hereunder and stop any Goods in transit until Buyer pays all amounts, including amounts payable hereunder, whether or not then due, which are owing to it by Buyer. Buyer shall in any event remain liable for all unpaid accounts.
8. **Cancellation: Etc.** Orders are not subject to rescheduling or cancellation unless Buyer indemnifies Seller fully against all costs or expenses arising in connection therewith.
9. **Force Majeure.** Seller shall not be liable for any delay or failure in delivery resulting from causes beyond its control, including earthquakes, fires, floods, strikes or other labor disputes, shortage of labor or materials, accidents to machinery, acts of sabotage, riots, delay in or lack of transportation or the requirements of any government authority.
10. **Shipping: Delivery.** Unless otherwise expressly agreed in writing by Seller:
  - a. Shipments shall be by a carrier selected by Seller;
  - b. Such carrier shall act as the agent of Buyer and delivery to such carrier shall constitute delivery to Buyer;
  - c. All sales and shipments of Goods shall be FOB shipping point (unless otherwise stated in writing by Seller), at which point title to and all risk of loss of the Goods shall pass from Seller to Buyer, provided that Seller shall retain a security interest in the Goods until the full purchase price is paid by Buyer;
  - d. Delivery and shipping dates are estimates only.
  - e. Seller will package Goods as it deems proper for protection against normal handling and extra charges apply to special conditions.
11. **Claims.** Any claim by Buyer against Seller for shortage or damage to the Goods occurring before delivery to the carrier must be presented in writing to Seller within 30 days of receipt of shipment and include the original transportation bill signed by the carrier noting that the carrier received the Goods from Seller in the condition claimed.
12. **Warranties.** (a) Exclusive Warranty. Seller's exclusive warranty is that the Goods will be free from defects in materials and workmanship for a period of twelve months from the date of sale by Seller (or such other period expressed in writing by Seller). Seller disclaims all other warranties, express or implied. (b) Limitations. SELLER MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE GOODS. BUYER ACKNOWLEDGES THAT IT ALONE HAS DETERMINED THAT THE GOODS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. Seller further disclaims all warranties and responsibility of any type for claims or expenses based on infringement by the Goods or otherwise of any intellectual property right. (c) Buyer Remedy. Seller's sole obligation hereunder shall be to replace (in the form originally shipped with Buyer responsible for labor charges for removal or replacement thereof) the non-complying Good or, at Seller's election, to repay or credit Buyer an amount equal to the purchase price of the Good; provided that in no event shall Seller be responsible for warranty, repair, indemnity or any other claims or expenses regarding the Goods unless Seller's analysis confirms that the Goods were properly handled, stored, installed and maintained and not subject to contamination, abuse, misuse or inappropriate modification. Return of any goods by Buyer must be approved in writing by Seller before shipment. Seller shall not be liable for the suitability or unsuitability or the results from the use of Goods 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.
13. **Damage Limits: Etc.** SELLER SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE GOODS, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE OR STRICT LIABILITY. Further, in no event shall liability of Seller exceed the individual price of the Good on which liability is asserted.
14. **Indemnities.** Buyer shall indemnify and hold harmless Seller, its affiliates and its employees from and against all liabilities, losses, claims, costs and expenses (including attorney's fees and expenses) related to any claim, investigation, litigation or proceeding (whether or not Seller is a party) which arises or is alleged to arise from Buyer's acts or omissions under these Terms or in any way with respect to the Goods. Without limiting the foregoing, Buyer (at its own expense) shall indemnify and hold harmless Seller and defend or settle any action brought against Seller to the extent that it is based on a claim that any Good made to Buyer specifications infringed intellectual property rights of another party.
15. **Property: Confidentiality.** The intellectual property embodied in the Goods is the exclusive property of Seller and its affiliates and Buyer shall not attempt to duplicate it in any way without the written permission of Seller. Notwithstanding any charges to Buyer for engineering or tooling, all engineering and tooling shall remain the exclusive property of Seller. All information and materials supplied by Seller to Buyer relating to the Goods are confidential and proprietary, and Buyer shall limit distribution thereof to its trusted employees and strictly prevent disclosure to any third party.
16. **Miscellaneous.** (a) Waiver. No failure or delay by Seller in exercising any right and no course of dealing between Buyer and Seller shall operate as a waiver of rights by Seller. (b) Assignment. Buyer may not assign its rights hereunder without Seller's written consent. (c) Amendment. These Terms constitute the entire agreement between Buyer and Seller relating to the Goods, and no provision may be changed or waived unless in writing signed by the parties. (d) Severability. If any provision hereof is rendered ineffective or invalid, such provision shall not invalidate any other provision. (e) Setoff. Buyer shall have no right to set off any amounts against the amount owing in respect of this invoice. (f) As used herein, "including" means "including without limitation".

## Certain Precautions on Specifications and Use

1. **Suitability of Use.** Seller shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Good in the Buyer's application or use of the Good. At Buyer's request, Seller will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Good. This information by itself is not sufficient for a complete determination of the suitability of the Good in combination with the end product, machine, system, or other application or use. The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of this Good, nor is it intended to imply that the uses listed may be suitable for this Good:
  - (i) Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this document.
  - (ii) Energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
  - (iii) Systems, machines and equipment that could present a risk to life or property. Please know and observe all prohibitions of use applicable to this Good.
 NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE SELLER'S PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.
2. **Programmable Products.** Seller shall not be responsible for the user's programming of a programmable Good, or any consequence thereof.
3. **Performance Data.** Performance data given in this catalog is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of Seller's test conditions, and the user must correlate it to actual application requirements. Actual performance is subject to the Seller's Warranty and Limitations of Liability.
4. **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 Good 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 Seller's representative at any time to confirm actual specifications of purchased Good.
5. **Errors and Omissions.** The information in this catalog has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors, or omissions.

