

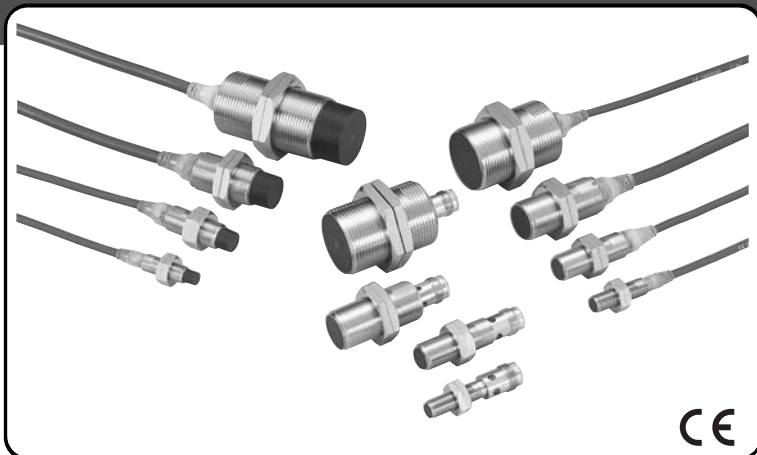
## Cylindrical Proximity Sensor E2A

### Safe Mounting with Greater Sensing Distance

- Ensures a sensing distance approximately 1.5 to 2 times larger than that of any conventional OMRON Sensor.
- Problems such as the collision of workpieces are eliminated.
- Full range of standard sizes (M8, M12, M18 and M30; both long and short barrels)
- Modular construction simplifies customization.

#### <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.



## Ordering Information

Size		Sensing distance	Connection	Body material	Thread length (overall length)	Output configuration	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			
			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					
		Non-shielded	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		
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					

Size		Sensing distance	Connection	Body material	Thread length (overall length)	Output configuration	Operation mode NO	Operation mode NC
M12	Shielded	4.0 mm	Pre-wired	Brass	34 (50)	PNP	E2A-M12KS04-WP-B1 2M	E2A-M12KS04-WP-B2 2M
						NPN	E2A-M12KS04-WP-C1 2M	E2A-M12KS04-WP-C2 2M
					56 (72)	PNP	E2A-M12LS04-WP-B1 2M	E2A-M12LS04-WP-B2 2M
						NPN	E2A-M12LS04-WP-C1 2M	E2A-M12LS04-WP-C2 2M
			M12 connector	Brass	34 (48)	PNP	E2A-M12KS04-M1-B1	E2A-M12KS04-M1-B2
						NPN	E2A-M12KS04-M1-C1	E2A-M12KS04-M1-C2
					56 (70)	PNP	E2A-M12LS04-M1-B1	E2A-M12LS04-M1-B2
						NPN	E2A-M12LS04-M1-C1	E2A-M12LS04-M1-C2
	Non-shielded	8.0 mm	Pre-wired	Brass	34 (50)	PNP	E2A-M12KN08-WP-B1 2M	E2A-M12KN08-WP-B2 2M
						NPN	E2A-M12KN08-WP-C1 2M	E2A-M12KN08-WP-C2 2M
					56 (72)	PNP	E2A-M12LN08-WP-B1 2M	E2A-M12LN08-WP-B2 2M
						NPN	E2A-M12LN08-WP-C1 2M	E2A-M12LN08-WP-C2 2M
			M12 connector	Brass	34 (48)	PNP	E2A-M12KN08-M1-B1	E2A-M12KN08-M1-B2
						NPN	E2A-M12KN08-M1-C1	E2A-M12KN08-M1-C2
					56 (70)	PNP	E2A-M12LN08-M1-B1	E2A-M12LN08-M1-B2
						NPN	E2A-M12LN08-M1-C1	E2A-M12LN08-M1-C2
M18	Shielded	8.0 mm	Pre-wired	Brass	39 (59)	PNP	E2A-M18KS08-WP-B1 2M	E2A-M18KS08-WP-B2 2M
						NPN	E2A-M18KS08-WP-C1 2M	E2A-M18KS08-WP-C2 2M
					61 (81)	PNP	E2A-M18LS08-WP-B1 2M	E2A-M18LS08-WP-B2 2M
						NPN	E2A-M18LS08-WP-C1 2M	E2A-M18LS08-WP-C2 2M
			M12 connector	Brass	39 (53)	PNP	E2A-M18KS08-M1-B1	E2A-M18KS08-M1-B2
						NPN	E2A-M18KS08-M1-C1	E2A-M18KS08-M1-C2
					61 (75)	PNP	E2A-M18LS08-M1-B1	E2A-M18LS08-M1-B2
						NPN	E2A-M18LS08-M1-C1	E2A-M18LS08-M1-C2
	Non-shielded	16.0 mm	Pre-wired	Brass	39 (59)	PNP	E2A-M18KN16-WP-B1 2M	E2A-M18KN16-WP-B2 2M
						NPN	E2A-M18KN16-WP-C1 2M	E2A-M18KN16-WP-C2 2M
					61 (81)	PNP	E2A-M18LN16-WP-B1 2M	E2A-M18LN16-WP-B2 2M
						NPN	E2A-M18LN16-WP-C1 2M	E2A-M18LN16-WP-C2 2M
			M12 connector	Brass	39 (53)	PNP	E2A-M18KN16-M1-B1	E2A-M18KN16-M1-B2
						NPN	E2A-M18KN16-M1-C1	E2A-M18KN16-M1-C2
					61 (75)	PNP	E2A-M18LN16-M1-B1	E2A-M18LN16-M1-B2
						NPN	E2A-M18LN16-M1-C1	E2A-M18LN16-M1-C2
M30	Shielded	15.0 mm	Pre-wired	Brass	44 (64)	PNP	E2A-M30KS15-WP-B1 2M	E2A-M30KS15-WP-B2 2M
						NPN	E2A-M30KS15-WP-C1 2M	E2A-M30KS15-WP-C2 2M
					66 (86)	PNP	E2A-M30LS15-WP-B1 2M	E2A-M30LS15-WP-B2 2M
						NPN	E2A-M30LS15-WP-C1 2M	E2A-M30LS15-WP-C2 2M
			M12 connector	Brass	44 (58)	PNP	E2A-M30KS15-M1-B1	E2A-M30KS15-M1-B2
						NPN	E2A-M30KS15-M1-C1	E2A-M30KS15-M1-C2
					66 (80)	PNP	E2A-M30LS15-M1-B1	E2A-M30LS15-M1-B2
						NPN	E2A-M30LS15-M1-C1	E2A-M30LS15-M1-C2
	Non-shielded	20.0 mm	Pre-wired	Brass	44 (64) (See note.)	PNP	E2A-M30KN20-WP-B1 2M	E2A-M30KN20-WP-B2 2M
						NPN	E2A-M30KN20-WP-C1 2M	E2A-M30KN20-WP-C2 2M
					30.0 mm	PNP	E2A-M30LN30-WP-B1 2M	E2A-M30LN30-WP-B2 2M
						NPN	E2A-M30LN30-WP-C1 2M	E2A-M30LN30-WP-C2 2M
		20.0 mm	M12 connector	Brass	44 (58) (See note.)	PNP	E2A-M30KN20-M1-B1	E2A-M30KN20-M1-B2
						NPN	E2A-M30KN20-M1-C1	E2A-M30KN20-M1-C2
					30.0 mm	PNP	E2A-M30LN30-M1-B1	E2A-M30LN30-M1-B2
						NPN	E2A-M30LN30-M1-C1	E2A-M30LN30-M1-C2

**Note:** M30 non-shielded 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.

## ■ Model Number Legend

E2A□-□□□□□-□-□□-□□  
 1 2 3 4 5 6 7 8 9 10 11 12

**Example:** E2A-M12LS04-M1-B1 Standard, M12, long barrel, shielded, Sn=4 mm, M12 connector, PNP-NO  
 E2A-M08KN04-WP-B1 5M Standard, M8, short barrel, non-shielded, Sn=4 mm, pre-wired PVC cable, PNP-NO, cable length=5 m

### 1. Basic name

E2A

### 2. Sensing technology

Blank: Standard double distance

### 3. Housing shape and material

M: Cylindrical, metric threaded, brass

S: Cylindrical, metric threaded, stainless steel

### 4. Housing size

08: 8 mm

12: 12 mm

18: 18 mm

30: 30 mm

### 5. Barrel length

K: Standard length

L: Long body

### 6. Shield

S: Shielded

N: Non-shielded

### 7. Sensing distance

Numeral: Sensing distance: e.g. 02=2 mm, 16=16 mm

### 8. Kind of connection

WP: Pre-wired, PVC

M1: M12 connector (4-pole)

M3: M8 connector (4-pole)

M5: M8 connector (3-pole)

### 9. Power source and output

B: DC, 3-wire, PNP open collector

C: DC, 3-wire, NPN open collector

D: DC, 2-wire

E: DC, 3-wire, NPN voltage output

F: DC, 3-wire, PNP voltage output

### 10. Operation mode

1: Normally open (NO)

2: Normally closed (NC)

### 11. Specials (e.g., cable material, oscillating frequency)

### 12. Cable length

Blank: Connector type

Numeral: Cable type

# Specifications

## ■ DC 3-wire Models

Item	Size Type	M8		M12	
		Shielded	Non-shielded	Shielded	Non-shielded
		E2A-M08□S02-M1-B1 E2A-M08□S02-M1-B2 E2A-M08□S02-M1-C1 E2A-M08□S02-M1-C2 E2A-S08□S02-□□-B1 E2A-S08□S02-□□-B2 E2A-S08□S02-□□-C1 E2A-S08□S02-□□-C2	E2A-M08□N04-M1-B1 E2A-M08□N04-M1-B2 E2A-M08□N04-M1-C1 E2A-M08□N04-M1-C2 E2A-S08□N04-□□-B1 E2A-S08□N04-□□-B2 E2A-S08□N04-□□-C1 E2A-S08□N04-□□-C2	E2A-M12□S04-□□-B1 E2A-M12□S04-□□-B2 E2A-M12□S04-□□-C1 E2A-M12□S04-□□-C2	E2A-M12□N08-□□-B1 E2A-M12□N08-□□-B2 E2A-M12□N08-□□-C1 E2A-M12□N08-□□-C2
<b>Sensing distance</b>		2 mm ± 10%	4 mm ± 10%	4 mm ± 10%	8 mm ± 10%
<b>Setting distance</b>		0 to 1.6 mm	0 to 3.2 mm	0 to 3.2 mm	0 to 6.4 mm
<b>Differential travel</b>		10% max. of sensing distance			
<b>Target</b>		Ferrous metal (The sensing distance decreases with non-ferrous metal.)			
<b>Standard target (mild steel ST37)</b>		8×8×1 mm	12×12×1 mm	12×12×1 mm	24×24×1 mm
<b>Response frequency (See note 1.)</b>		1,500 Hz	1,000 Hz	1,000 Hz	800 Hz
<b>Power supply voltage (operating voltage range)</b>		12 to 24 VDC. Ripple (p-p): 10% max. (10 to 32 VDC)			
<b>Current consumption (DC 3-wire)</b>		10 mA max.			
<b>Output type</b>		-B models: PNP open collector -C models: NPN open collector			
<b>Control output</b>	<b>Load current (See note 2.)</b>	200 mA max. (32 VDC max.)			
	<b>Residual voltage</b>	2 V max. (under load current of 200 mA with cable length of 2 m)			
<b>Indicator</b>		Operation indicator (Yellow LED)			
<b>Operation mode (with sensing object approaching)</b>		-B1/-C1 models: NO -B2/-C2 models: NC For details, refer to the timing charts.			
<b>Protection circuit</b>		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	
<b>Ambient air temperature</b>		Operating: -40°C to 70°C, Storage: -40°C to 85°C (with no icing or condensation)			
<b>Temperature influence (See note 2.)</b>		±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			
<b>Ambient humidity</b>		Operating: 35% to 95%, Storage: 35% to 95%			
<b>Voltage influence</b>		±1% max. of sensing distance in rated voltage range ±15%			
<b>Insulation resistance</b>		50 MΩ min. (at 500 VDC) between current carry parts and case			
<b>Dielectric strength</b>		1,000 VAC at 50/60 Hz for 1 min between current carry parts and case			
<b>Vibration resistance</b>		10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y and Z directions			
<b>Shock resistance</b>		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	
<b>Standard and listings (See note 3.)</b>		IEC60529: IP67, Degree of protection EN60947-5-2: EMC			
<b>Connection method</b>		-WP models: Pre-wired models (Standard length: 2 m) -M1 models: M12 4-pin connector models -M5 models: M8 3-pin connector models			
<b>Weight (packaged)</b>	<b>Pre-wired model</b>	Approx. 65 g		Approx. 85 g	
	<b>M12 connector model</b>	M12 connector models: Approx. 20 g M8 connector models: Approx. 15 g		Approx. 35 g	
<b>Material</b>	<b>Case</b>	Stainless steel or brass-nickel plated		Brass-nickel plated	
	<b>Sensing surface</b>	PBT			
	<b>Cable</b>	PVC			
	<b>Clamping nut</b>	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.** For USA and CANADA : use class 2 circuit only.

■ DC 3-wire Models

Item	Size Type	M18		M30			
		Shielded	Non-shielded	Shielded	Non-shielded	Non-shielded	
		E2A-M18□S08-□□-B1 E2A-M18□S08-□□-B2 E2A-M18□S08-□□-C1 E2A-M18□S08-□□-C2	E2A-M18□N16-□□-B1 E2A-M18□N16-□□-B2 E2A-M18□N16-□□-C1 E2A-M18□N16-□□-C2	E2A-M30□S15-□□-B1 E2A-M30□S15-□□-B2 E2A-M30□S15-□□-C1 E2A-M30□S15-□□-C2	E2A-M30KN20-□□-B1 E2A-M30KN20-□□-B2 E2A-M30KN20-□□-C1 E2A-M30KN20-□□-C2	E2A-M30LN30-□□-B1 E2A-M30LN30-□□-B2 E2A-M30LN30-□□-C1 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
Differential travel	10% max. of sensing distance						
Target	Ferrous metal (The sensing distance decreases with non-ferrous metal.)						
Standard target (mild steel ST37)	24×24×1 mm		48×48×1 mm		45×45×1 mm	60×60×1 mm	90×90×1 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						
Standard and listings (See note 3.)	IEC60529: IP67, Degree of protection EN60947-5-2: EMC						
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.

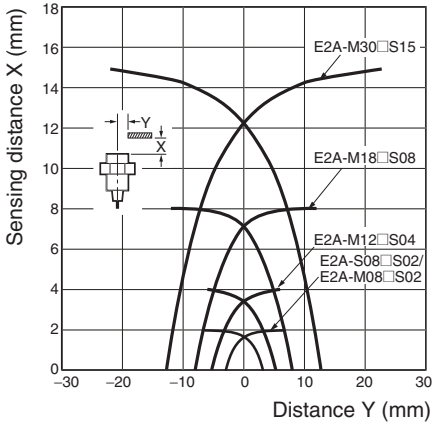
**2.** When using any model at an ambient temperature between -40°C and -25°C and a power voltage between 30 and 32 VDC, use a load current of 100 mA max.

**3.** For USA and CANADA : use class 2 circuit only.

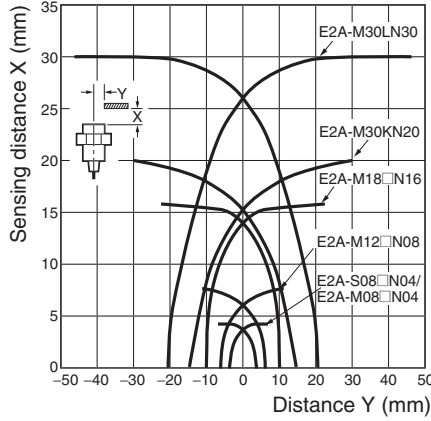
# Engineering Data

## Operating Range (Typical)

### Shielded Models



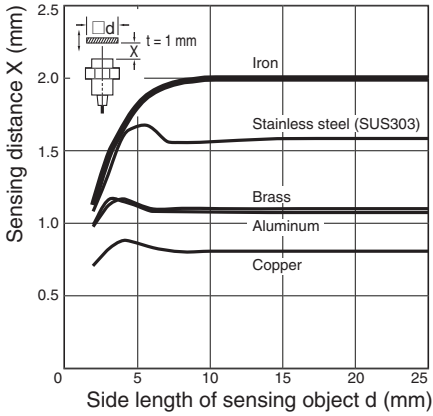
### Non-shielded Models



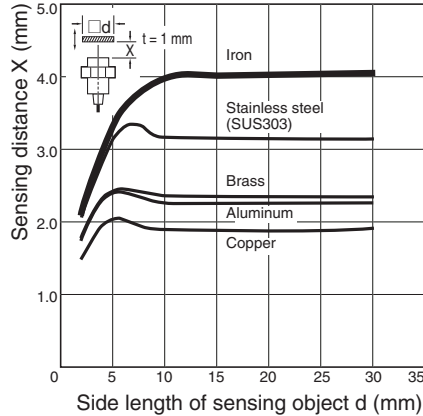
## Influence of Sensing Object Size and Materials

### Shielded Models

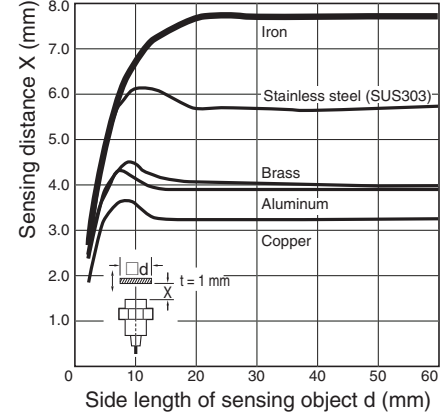
#### E2A-S08□S02/M08□S02



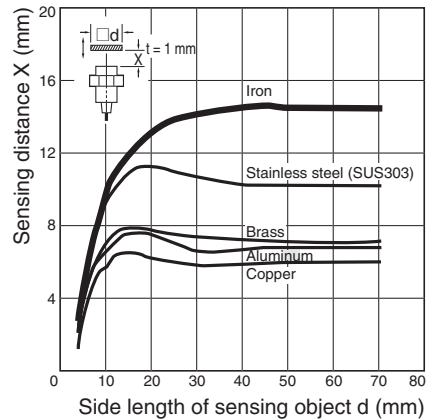
#### E2A-M12□S04



#### E2A-M18□S08



#### E2A-M30□S15

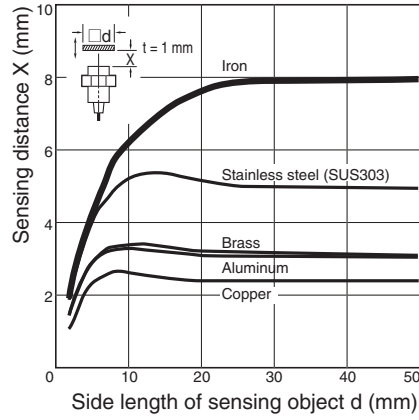


Non-shielded Models

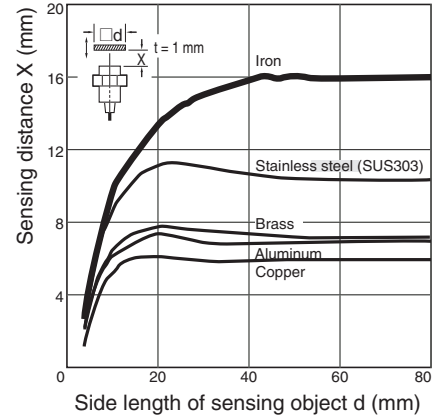
E2A-S08□N04/M08□N04



E2A-M12□N08



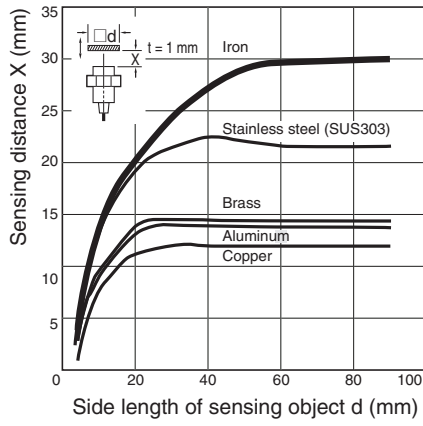
E2A-M18□N16



E2A-M30KN20



E2A-M30LN30



# Operation

## ■ PNP Output

Operation mode	Model	Timing chart	Output circuit
NO	E2A-□-□- <b>B1</b>	<p>Non-sensing zone    Sensing zone    Proximity Sensor</p> <p>Sensing object</p> <p>(%)    100    0</p> <p>Rated sensing distance</p> <p>ON    OFF    Yellow indicator</p> <p>ON    OFF    Control output</p>	<p>Brown ① +V</p> <p>Black ④</p> <p>Blue ③ 0V</p> <p>Proximity Sensor main circuits</p> <p>(See note 1.)</p> <p>Load</p> <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-□-□- <b>B2</b>	<p>Non-sensing zone    Sensing zone    Proximity Sensor</p> <p>Sensing object</p> <p>(%)    100    0</p> <p>Rated sensing distance</p> <p>ON    OFF    Yellow indicator</p> <p>ON    OFF    Control output</p>	<p>Brown ① +V</p> <p>Black ②</p> <p>Blue ③ 0V</p> <p>Proximity Sensor main circuits</p> <p>(See note 1.)</p> <p>Load</p> <p>(M8 connector: ④)</p> <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>



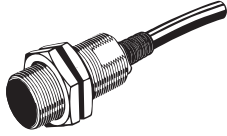
## ■ NPN Output

Operation mode	Model	Timing chart	Output circuit
NO	E2A-□-□-C1	<p>Non-sensing zone    Sensing zone    Proximity Sensor</p> <p>Sensing object</p> <p>(%)    100    0</p> <p>Rated sensing distance</p> <p>ON    Yellow indicator</p> <p>OFF</p> <p>ON    Control output</p> <p>OFF</p>	<p>Brown ① +V</p> <p>Load</p> <p>Black ④ (See note 1.)</p> <p>Blue ③ 0 V</p> <p>Proximity Sensor main circuits</p> <p>(See note 1.)</p> <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>Non-sensing zone    Sensing zone    Proximity Sensor</p> <p>Sensing object</p> <p>(%)    100    0</p> <p>Rated sensing distance</p> <p>ON    Yellow indicator</p> <p>OFF</p> <p>ON    Control output</p> <p>OFF</p>	<p>Brown ① +V</p> <p>Load</p> <p>Black ② (M8 connector: ④) (See note 1.)</p> <p>Blue ③ 0 V</p> <p>Proximity Sensor main circuits</p> <p>(See note 1.)</p> <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-□□



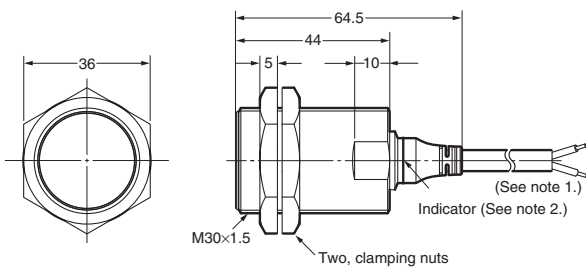
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

E2A-M18KS08-WP-□□



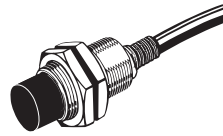
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

E2A-M30KS15-WP-□□

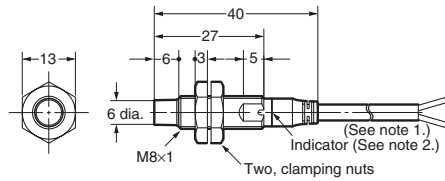


**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

## Pre-wired Models (Non-shielded)

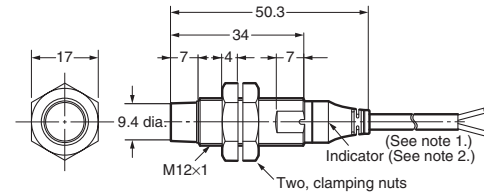


E2A-S08KN04-WP-□□



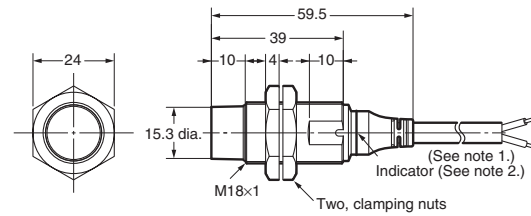
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

E2A-M12KN08-WP-□□



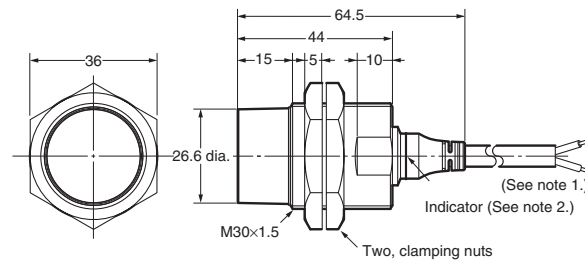
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

E2A-M18KN16-WP-□□



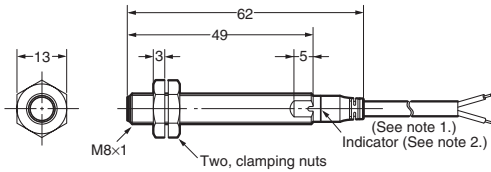
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

E2A-M30KN20-WP-□□



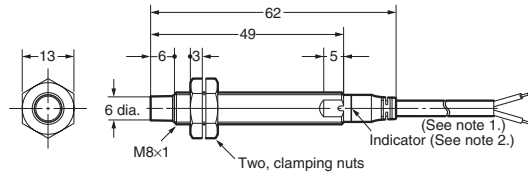
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

**E2A-S08LS02-WP-□□**



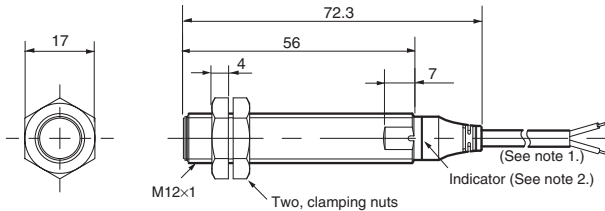
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

**E2A-S08LN04-WP-□□**



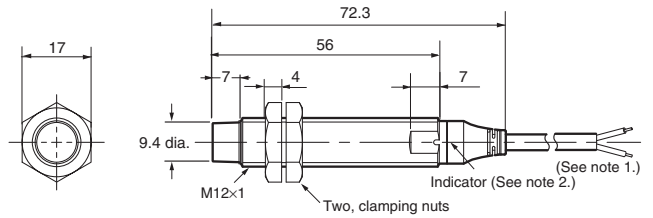
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

**E2A-M12LS04-WP-□□**



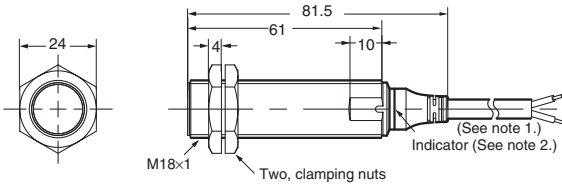
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

**E2A-M12LN08-WP-□□**



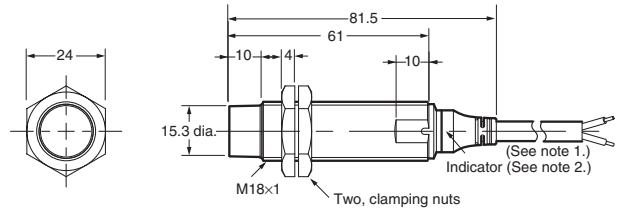
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

**E2A-M18LS08-WP-□□**



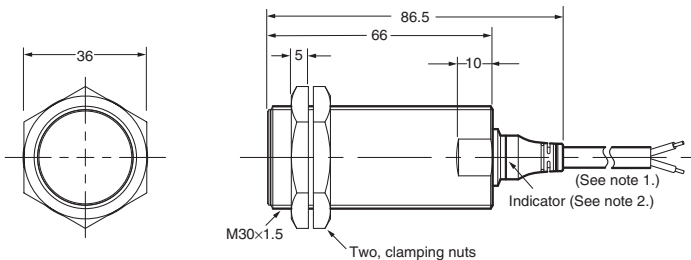
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

**E2A-M18LN16-WP-□□**



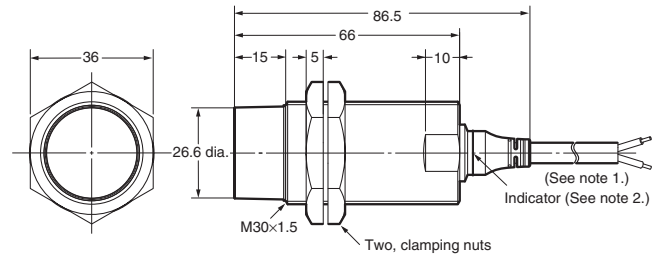
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

**E2A-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)

**E2A-M30LN30-WP-□□**



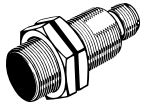
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

**Mounting Hole Cutout Dimensions**

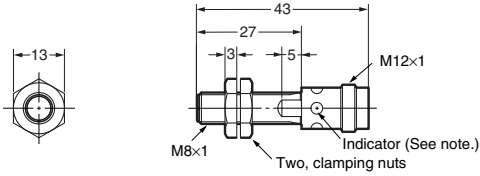


External diameter of Proximity Sensor	Dimension F (mm)
<b>M8</b>	8.5 dia. <sup>+0.5</sup> / <sub>0</sub>
<b>M12</b>	12.5 dia. <sup>+0.5</sup> / <sub>0</sub>
<b>M18</b>	18.5 dia. <sup>+0.5</sup> / <sub>0</sub>
<b>M30</b>	30.5 dia. <sup>+0.5</sup> / <sub>0</sub>

**M12 Connector Models (Shielded)**

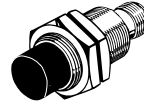


E2A-S08KS02-M1-□□  
E2A-M08KS02-M1-□□

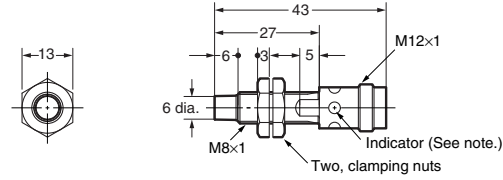


**Note:** Operation indicator (yellow LED, 4×90°)

**M12 Connector Models (Non-shielded)**

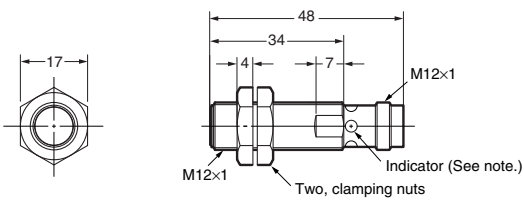


E2A-S08KN04-M1-□□  
E2A-M08KN04-M1-□□



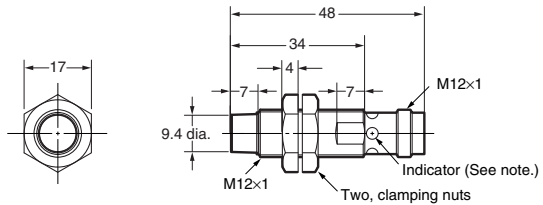
**Note:** Operation indicator (yellow LED, 4×90°)

E2A-M12KS04-M1-□□



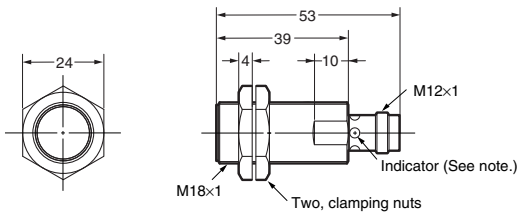
**Note:** Operation indicator (yellow LED, 4×90°)

E2A-M12KN08-M1-□□



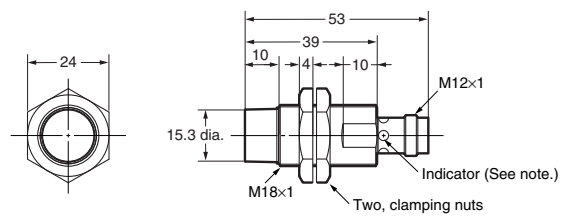
**Note:** Operation indicator (yellow LED, 4×90°)

E2A-M18KS08-M1-□□



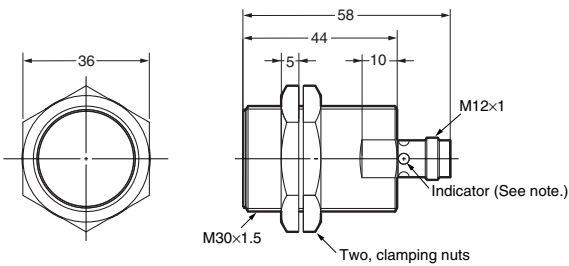
**Note:** Operation indicator (yellow LED, 4×90°)

E2A-M18KN16-M1-□□



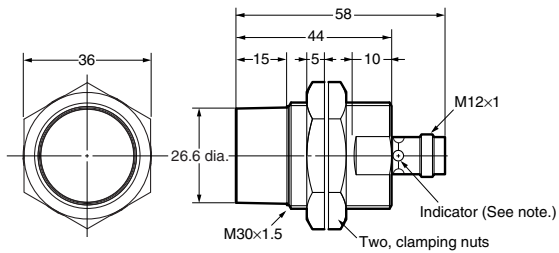
**Note:** Operation indicator (yellow LED, 4×90°)

E2A-M30KS15-M1-□□



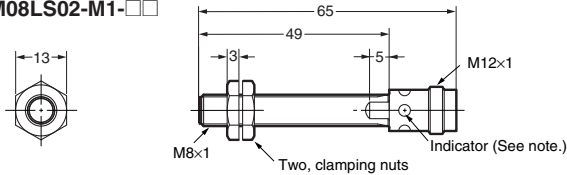
**Note:** Operation indicator (yellow LED, 4×90°)

E2A-M30KN20-M1-□□



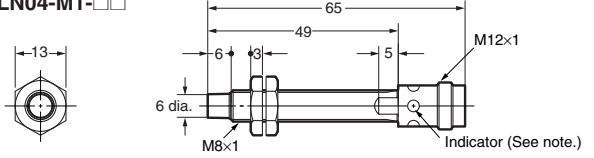
**Note:** Operation indicator (yellow LED, 4×90°)

**E2A-S08LS02-M1-□□**  
**E2A-M08LS02-M1-□□**



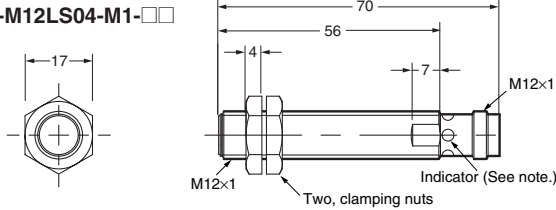
**Note:** Operation indicator (yellow LED, 4×90°)

**E2A-S08LN04-M1-□□**  
**E2A-M08LN04-M1-□□**



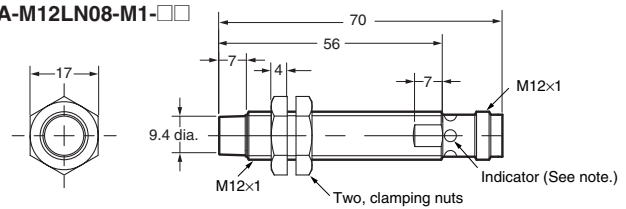
**Note:** Operation indicator (yellow LED, 4×90°)

**E2A-M12LS04-M1-□□**



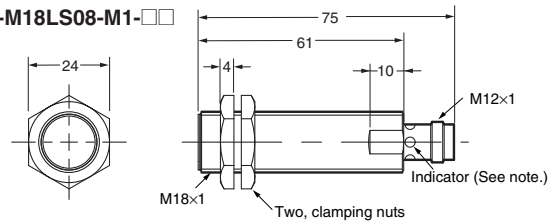
**Note:** Operation indicator (yellow LED, 4×90°)

**E2A-M12LN08-M1-□□**



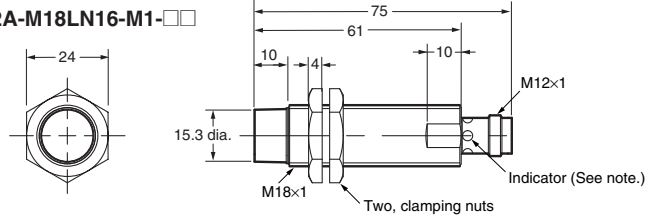
**Note:** Operation indicator (yellow LED, 4×90°)

**E2A-M18LS08-M1-□□**



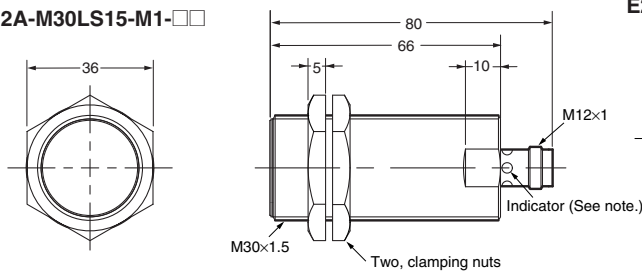
**Note:** Operation indicator (yellow LED, 4×90°)

**E2A-M18LN16-M1-□□**



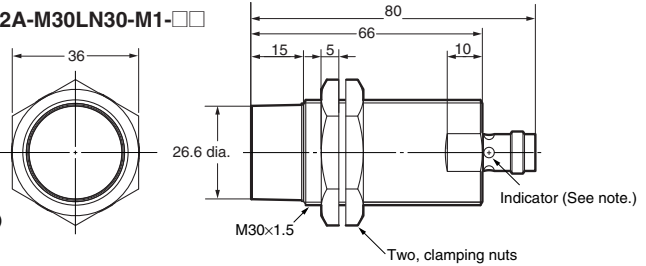
**Note:** Operation indicator (yellow LED, 4×90°)

**E2A-M30LS15-M1-□□**



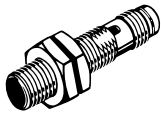
**Note:** Operation indicator (yellow LED, 4×90°)

**E2A-M30LN30-M1-□□**

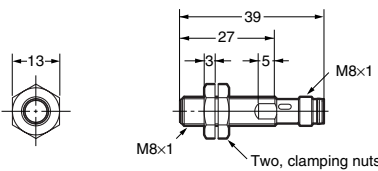


**Note:** Operation indicator (yellow LED, 4×90°)

### M8 Connector Models (Shielded)

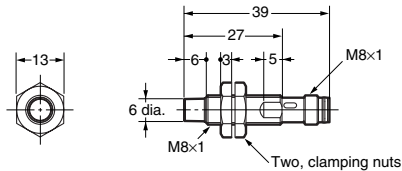


**E2A-S08KS02-M5-□□**



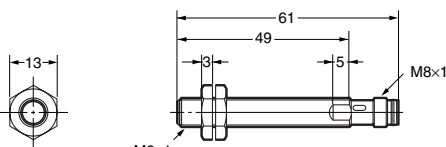
**Note:** Operation indicator (yellow LED, 4×90°)

**E2A-S08KN04-M5-□□**



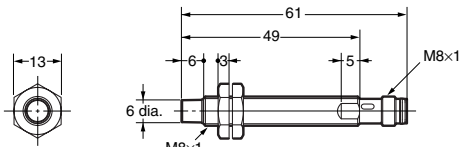
**Note:** Operation indicator (yellow LED, 4×90°)

**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.

## ■ Correct Use

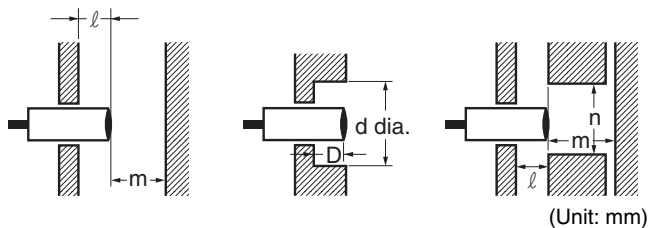
### Designing

#### 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
Shielded	$l$	0	0	0 (See note 1.)	0 (See note 2.)	
	$m$	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 flash mounting is necessary, apply a free zone of 1.5 mm.

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

## 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.**

### Power OFF

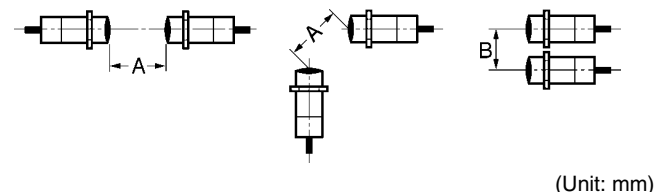
The Proximity Sensor may output a pulse signal when it is turned OFF. Therefore, it is recommended that the load be turned OFF before turning OFF the Proximity Sensor.

### 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.