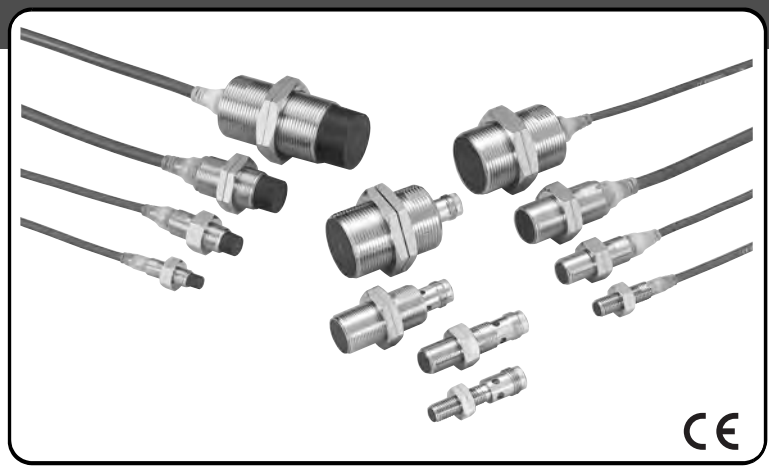
OMRON

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.

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			66 (86)	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			66 (80)	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	M8		M12	
		Type	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
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
Differential travel			10% max. of sensing distance			
Target			Ferrous metal (The sensing distance decreases with non-ferrous metal.)			
Standard target (mild steel ST37)			8×8×1 mm	12×12×1 mm	12×12×1 mm	24×24×1 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^2, 10 times each in X, Y and Z directions		1,000 m/s^2, 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. 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. For USA and CANADA : use class 2 circuit only.

■ DC 3-wire Models

Item		Size	M18		M30		
		Type	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^2, 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.

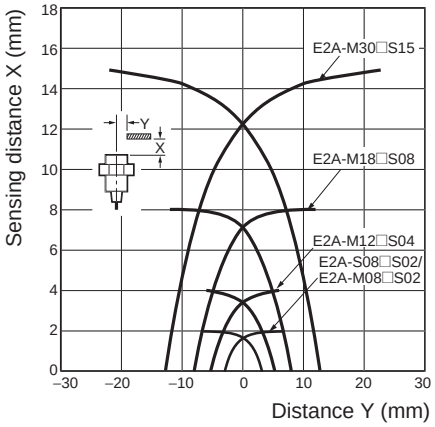
2. When using any model at an ambient temperature between -40°C and -25°C and a power voltage between 30 and 32 VDC, use a load current of 100 mA max.

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

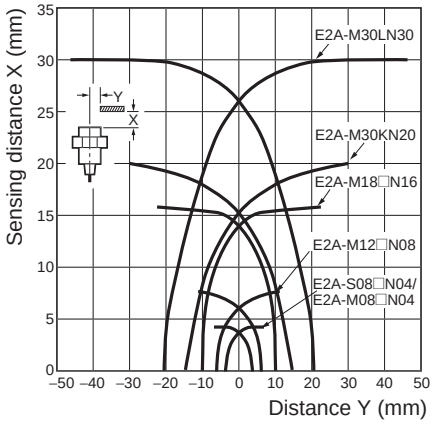
Engineering Data

Operating Range (Typical)

Shielded Models



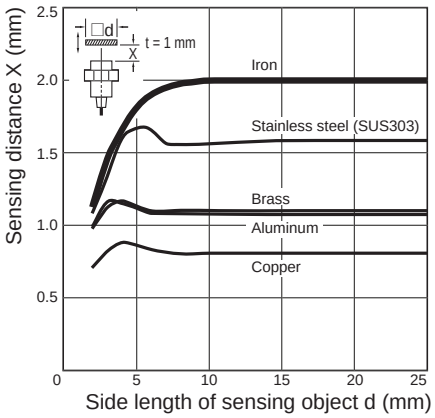
Non-shielded Models



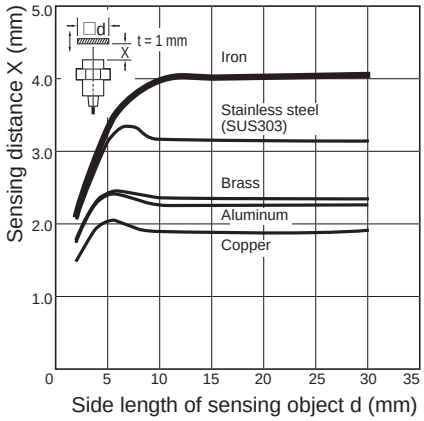
Influence of Sensing Object Size and Materials

Shielded Models

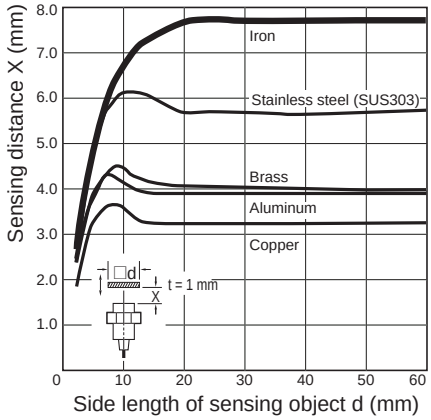
E2A-S08□S02/M08□S02



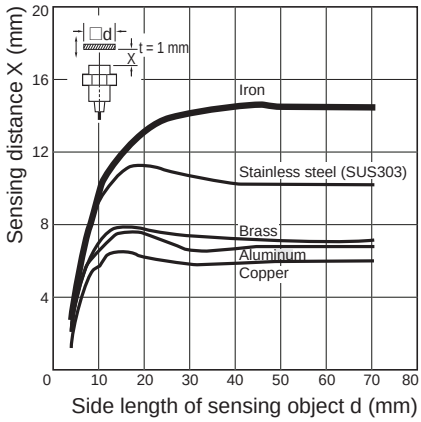
E2A-M12□S04



E2A-M18□S08

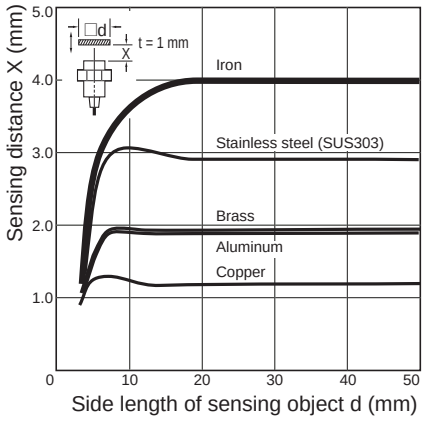


E2A-M30□S15

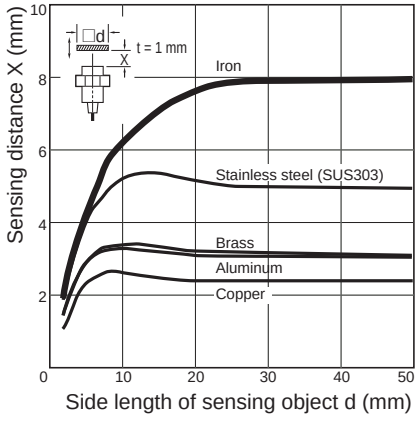


Non-shielded Models

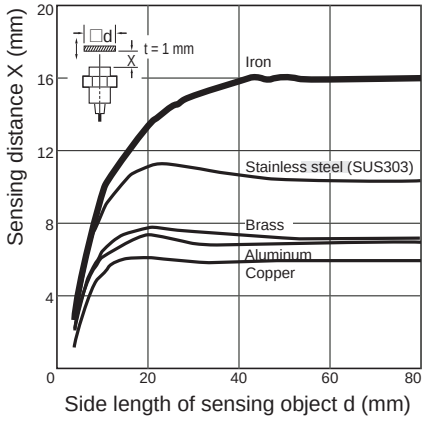
E2A-S08□N04/M08□N04



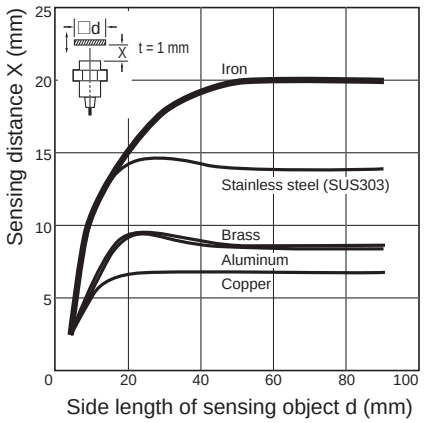
E2A-M12□N08



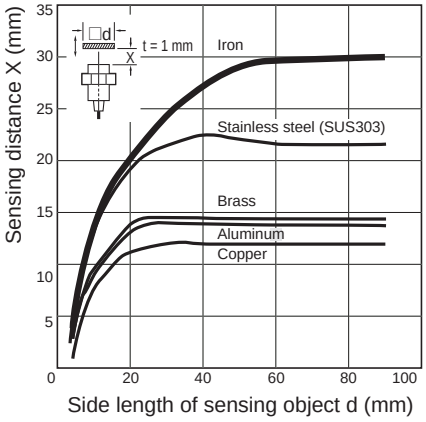
E2A-M18□N16



E2A-M30KN20

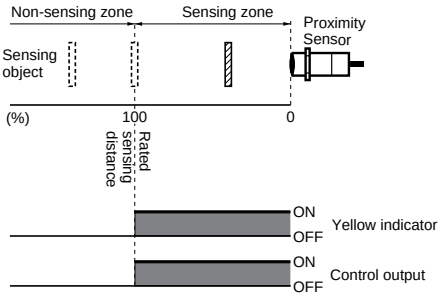
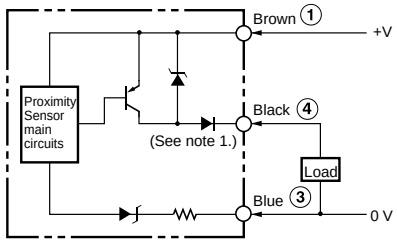


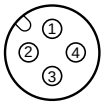
E2A-M30LN30

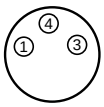


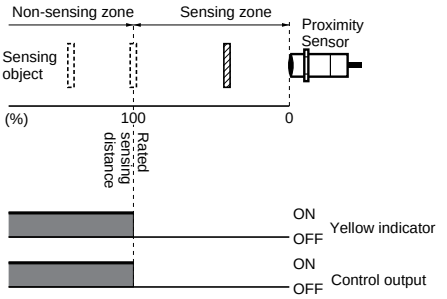
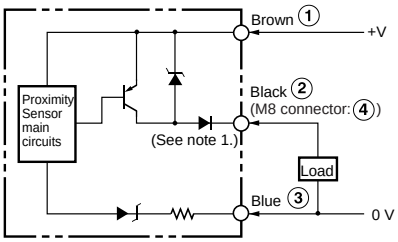
Operation

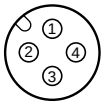
■ PNP Output

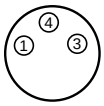
<table>
<tr><th>Operation mode</th><th>Model</th><th>Timing chart</th><th>Output circuit</th></tr>
<tr><td>NO</td><td>E2A-□-□-B1</td><td> 
</td><td> 

Note 1: With M8 connector models, there is no output reverse polarity protection diode.
M12 Connector Pin Arrangement (See note 2.)


M8 Connector Pin Arrangement


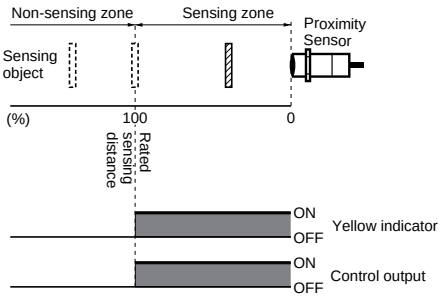
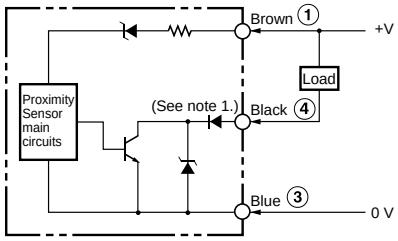
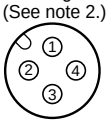
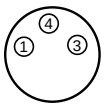
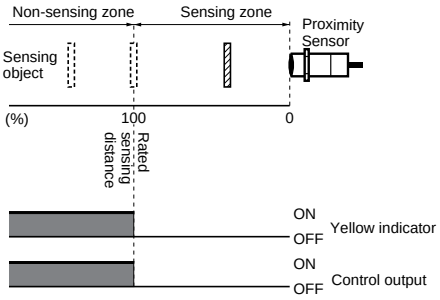
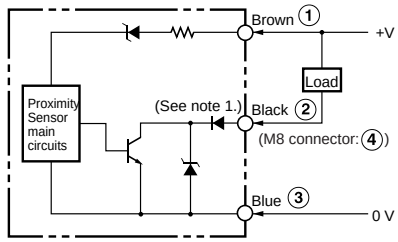
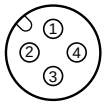
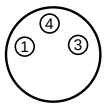
Note 2: Terminal 2 of the M12 connector is not used.</td></tr>
<tr><td>NC</td><td>E2A-□-□-B2</td><td> 
</td><td> 

Note 1: With M8 connector models, there is no output reverse polarity protection diode.
M12 Connector Pin Arrangement (See note 2.)


M8 Connector Pin Arrangement


Note 2: Terminal 4 of the M12 connector is not used.</td></tr>
</table>

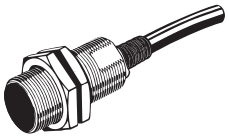
■ NPN Output

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

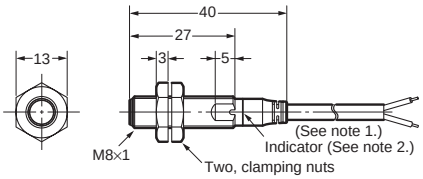
Dimensions

Note: All units are in millimeters unless otherwise indicated.

Pre-wired Models (Shielded)

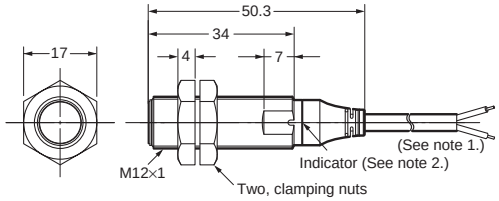


E2A-S08KS02-WP-□□



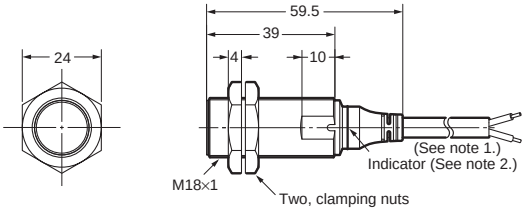
Note 1. 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm²; insulator diameter: 1.3 mm); standard length: 2 m
2. Operation indicator (yellow)

E2A-M12KS04-WP-□□



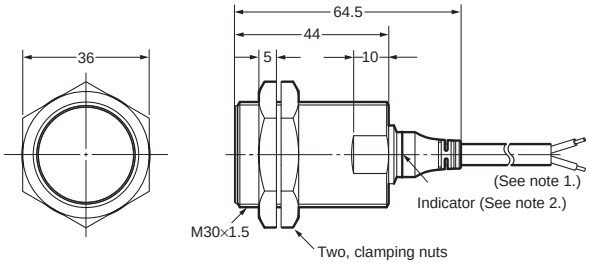
Note 1. 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm²; insulator diameter: 1.3 mm); standard length: 2 m
2. Operation indicator (yellow)

E2A-M18KS08-WP-□□



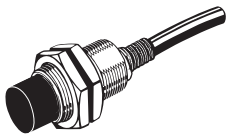
Note 1. 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm²; insulator diameter: 1.3 mm); standard length: 2 m
2. Operation indicator (yellow)

E2A-M30KS15-WP-□□

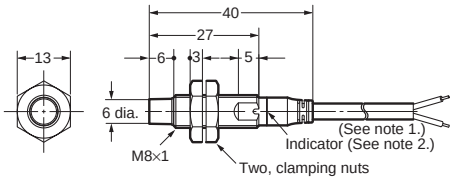


Note 1. 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm²; insulator diameter: 1.3 mm); standard length: 2 m
2. Operation indicator (yellow)

Pre-wired Models (Non-shielded)

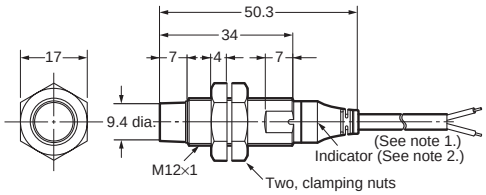


E2A-S08KN04-WP-□□



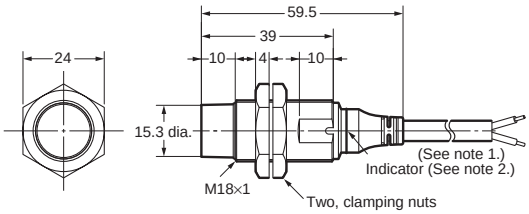
Note 1. 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm²; insulator diameter: 1.3 mm); standard length: 2 m
2. Operation indicator (yellow)

E2A-M12KN08-WP-□□



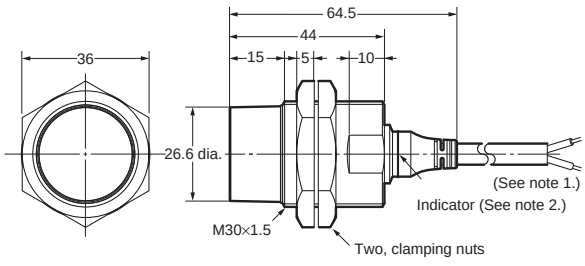
Note 1. 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm²; insulator diameter: 1.3 mm); standard length: 2 m
2. Operation indicator (yellow)

E2A-M18KN16-WP-□□



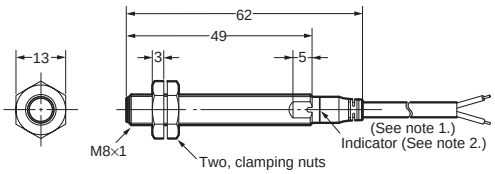
Note 1. 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm²; insulator diameter: 1.3 mm); standard length: 2 m
2. Operation indicator (yellow)

E2A-M30KN20-WP-□□



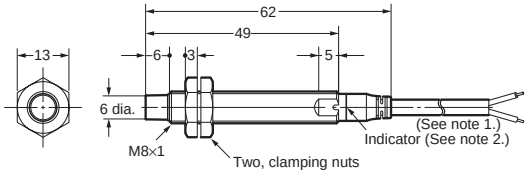
Note 1. 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm²; insulator diameter: 1.3 mm); standard length: 2 m
2. Operation indicator (yellow)

E2A-S08LS02-WP-□□



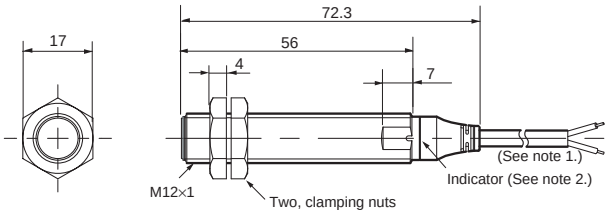
Note 1. 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm²; insulator diameter: 1.3 mm); standard length: 2 m
2. Operation indicator (yellow)

E2A-S08LN04-WP-□□



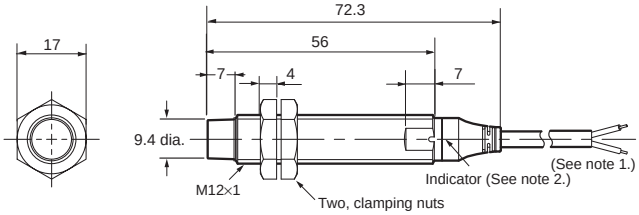
Note 1. 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm²; insulator diameter: 1.3 mm); standard length: 2 m
2. Operation indicator (yellow)

E2A-M12LS04-WP-□□



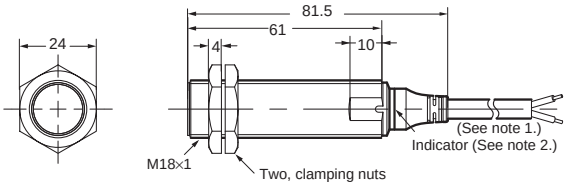
Note 1. 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm²; insulator diameter: 1.3 mm); standard length: 2 m
2. Operation indicator (yellow)

E2A-M12LN08-WP-□□



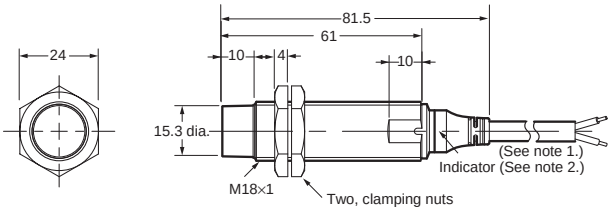
Note 1. 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm²; insulator diameter: 1.3 mm); standard length: 2 m
2. Operation indicator (yellow)

E2A-M18LS08-WP-□□



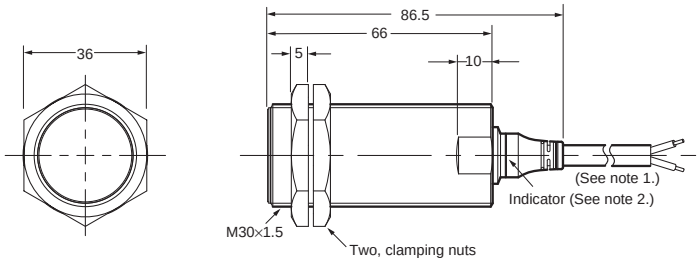
Note 1. 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm²; insulator diameter: 1.3 mm); standard length: 2 m
2. Operation indicator (yellow)

E2A-M18LN16-WP-□□



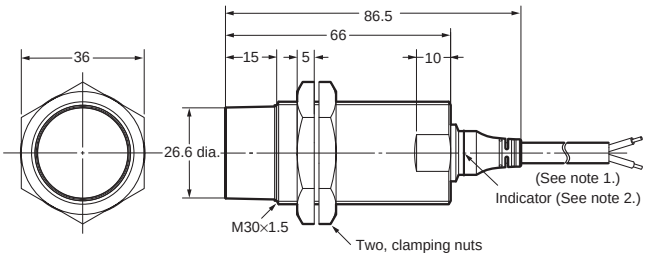
Note 1. 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm²; insulator diameter: 1.3 mm); standard length: 2 m
2. Operation indicator (yellow)

E2A-M30LS15-WP-□□



Note 1. 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm²; insulator diameter: 1.3 mm); standard length: 2 m
2. Operation indicator (yellow)

E2A-M30LN30-WP-□□

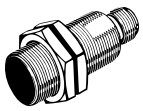


Note 1. 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm²; insulator diameter: 1.3 mm); standard length: 2 m
2. Operation indicator (yellow)

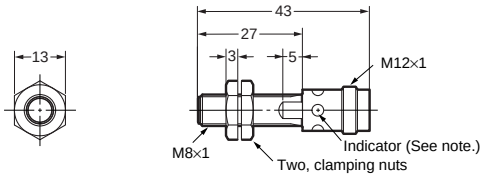
Mounting Hole Cutout Dimensions

External diameter of Proximity Sensor	Dimension F (mm)
M8	8.5 dia. $^{+0.5}_{0}$
M12	12.5 dia. $^{+0.5}_{0}$
M18	18.5 dia. $^{+0.5}_{0}$
M30	30.5 dia. $^{+0.5}_{0}$

M12 Connector Models (Shielded)

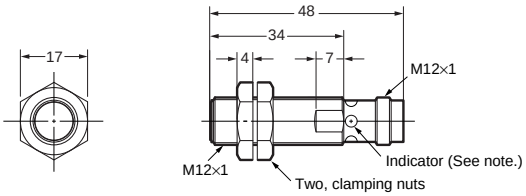


E2A-S08KS02-M1-□□
E2A-M08KS02-M1-□□



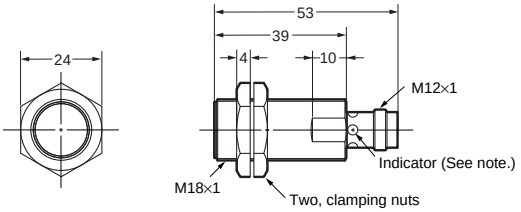
Note: Operation indicator (yellow LED, 4×90°)

E2A-M12KS04-M1-□□



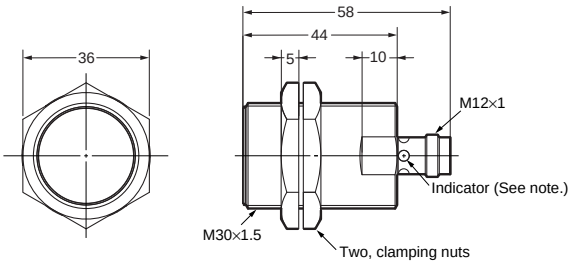
Note: Operation indicator (yellow LED, 4×90°)

E2A-M18KS08-M1-□□



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

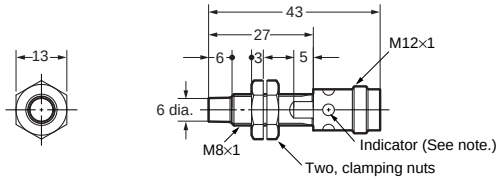
E2A-M30KS15-M1-□□



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

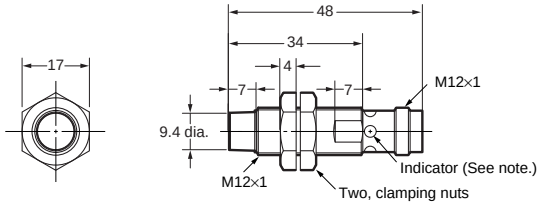
M12 Connector Models (Non-shielded)

E2A-S08KN04-M1-□□
E2A-M08KN04-M1-□□



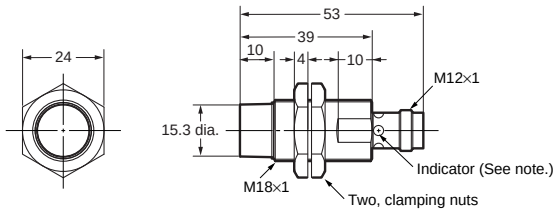
Note: Operation indicator (yellow LED, 4×90°)

E2A-M12KN08-M1-□□



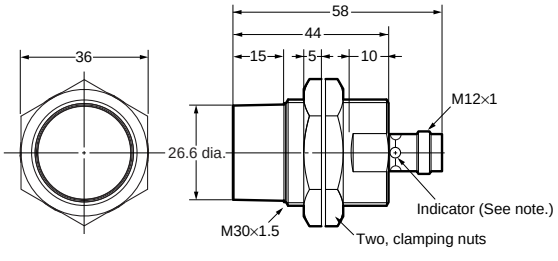
Note: Operation indicator (yellow LED, 4×90°)

E2A-M18KN16-M1-□□



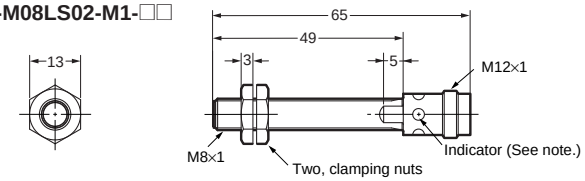
Note: Operation indicator (yellow LED, 4×90°)

E2A-M30KN20-M1-□□



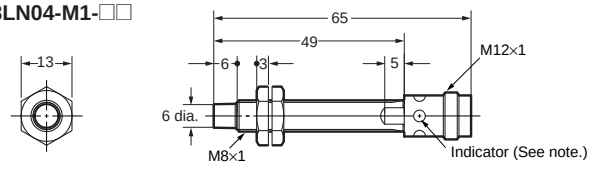
Note: Operation indicator (yellow LED, 4×90°)

E2A-S08LS02-M1-□□
E2A-M08LS02-M1-□□



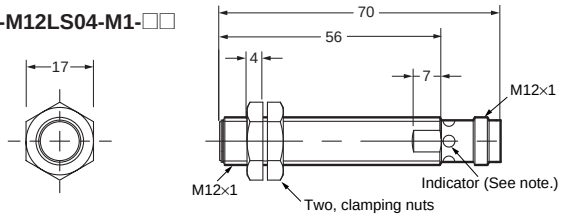
Note: Operation indicator (yellow LED, 4×90°)

E2A-S08LN04-M1-□□
E2A-M08LN04-M1-□□



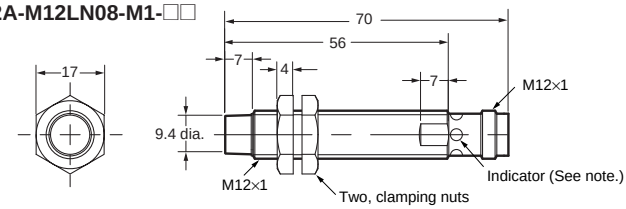
Note: Operation indicator (yellow LED, 4×90°)

E2A-M12LS04-M1-□□



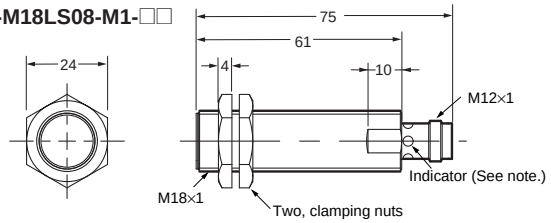
Note: Operation indicator (yellow LED, 4×90°)

E2A-M12LN08-M1-□□



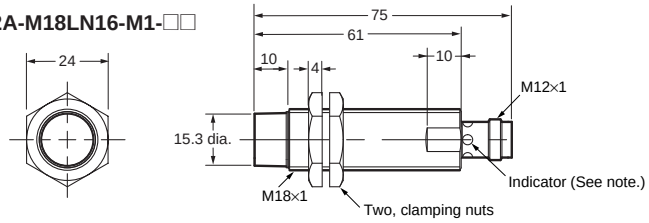
Note: Operation indicator (yellow LED, 4×90°)

E2A-M18LS08-M1-□□



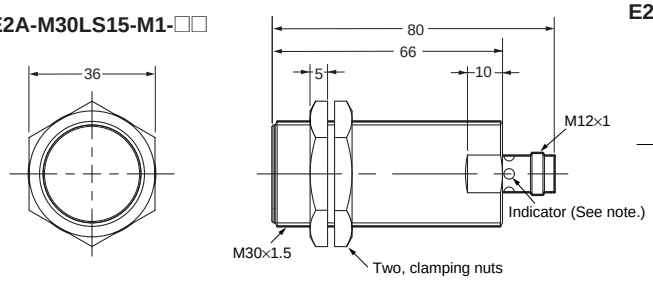
Note: Operation indicator (yellow LED, 4×90°)

E2A-M18LN16-M1-□□



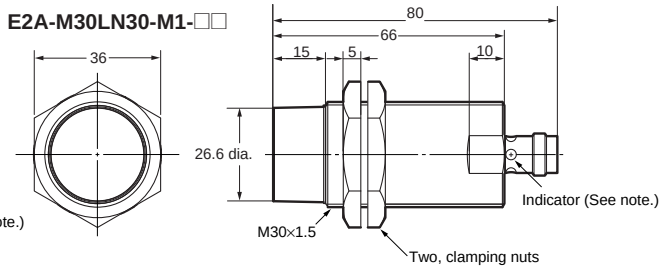
Note: Operation indicator (yellow LED, 4×90°)

E2A-M30LS15-M1-□□



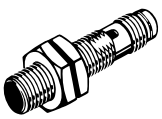
Note: Operation indicator (yellow LED, 4×90°)

E2A-M30LN30-M1-□□

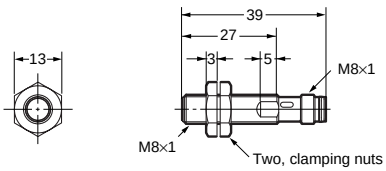


Note: Operation indicator (yellow LED, 4×90°)

M8 Connector Models (Shielded)

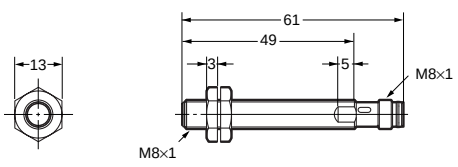


E2A-S08KS02-M5-□□



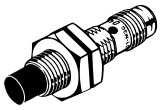
Note: Operation indicator (yellow LED, 4×90°)

E2A-S08LS02-M5-□□

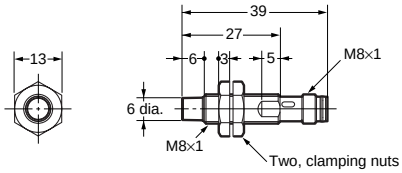


Note: Operation indicator (yellow LED, 4×90°)

M8 Connector Models (Non-shielded)

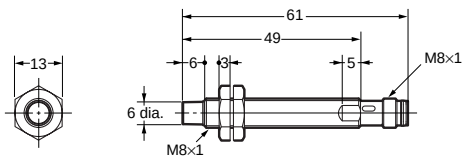


E2A-S08KN04-M5-□□



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

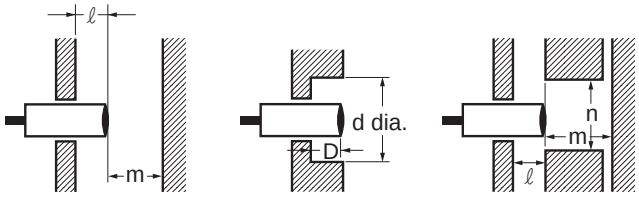
Designing

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.



(Unit: mm)

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.

Power OFF

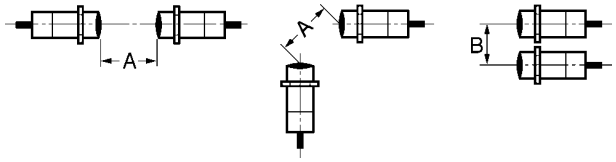
The Proximity Sensor may output a pulse signal when it is turned OFF. Therefore, it is recommended that the load be turned OFF before turning OFF the Proximity Sensor.

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.



(Unit: mm)

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 Nm
	Brass type	4 Nm
M12		30 Nm
M18		70 Nm
M30		180 Nm

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.

<SUITABILITY FOR USE>

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of the products in the customer's application or use of the products.

Take all necessary steps to determine the suitability of the product for the systems, machines, and equipment with which it will be used.

<CHANGE IN SPECIFICATIONS>

Product specifications and accessories may be changed at any time based on improvements and other reasons. Consult with your OMRON representative at any time to confirm actual specifications of purchased product.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Terms and Conditions of Sale

1. Offer; Acceptance. These terms and conditions (these "Terms") are deemed part of all quotes, agreements, purchase orders, acknowledgments, price lists, catalogs, manuals, brochures and other documents, whether electronic or in writing, relating to the sale of products or services (collectively, the "Products") by Omron Electronics LLC and its subsidiary companies ("Omron"). Omron 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.
2. Prices; Payment Terms. All prices stated are current, subject to change without notice by Omron. Omron reserves the right to increase or decrease prices on any unshipped portions of outstanding orders. Payments for Products are due net 30 days unless otherwise stated in the invoice.
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 Omron's payment terms and (ii) Buyer has no past due amounts.
4. Interest. Omron, at its option, may charge Buyer 1-1/2% interest per month or the maximum legal rate, whichever is less, on any balance not paid within the stated terms.
5. Orders. Omron will accept no order less than $200 net billing.
6. 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 Products.
7. 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 Omron or required to be collected directly or indirectly by Omron for the manufacture, production, sale, delivery, importation, consumption or use of the Products sold hereunder (including customs duties and sales, excise, use, turnover and license taxes) shall be charged to and remitted by Buyer to Omron.
8. Financial. If the financial position of Buyer at any time becomes unsatisfactory to Omron, Omron 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, Omron may (without liability and in addition to other remedies) cancel any unshipped portion of Products sold hereunder and stop any Products 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.
9. Cancellation; Etc. Orders are not subject to rescheduling or cancellation unless Buyer indemnifies Omron against all related costs or expenses.
10. Force Majeure. Omron 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.
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    a. Shipments shall be by a carrier selected by Omron; Omron will not drop ship except in "break down" situations.
    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 Products shall be FOB shipping point (unless otherwise stated in writing by Omron), at which point title and risk of loss shall pass from Omron to Buyer; provided that Omron shall retain a security interest in the Products until the full purchase price is paid;
    d. Delivery and shipping dates are estimates only; and
    e. Omron will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.
12. Claims. Any claim by Buyer against Omron for shortage or damage to the Products occurring before delivery to the carrier must be presented in writing to Omron within 30 days of receipt of shipment and include the original transportation bill signed by the carrier noting that the carrier received the Products from Omron in the condition claimed.
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17. Export Controls. Buyer shall comply with all applicable laws, regulations and licenses regarding (i) export of products or information; (iii) sale of products to "forbidden" or other proscribed persons; and (ii) disclosure to non-citizens of regulated technology or information.
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   (i) Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this document.
   (ii) Use in consumer products or any use in significant quantities.
   (iii) 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.
   (iv) Systems, machines and equipment that could present a risk to life or property. Please know and observe all prohibitions of use applicable to this Product.
   NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON'S PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.
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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 Product may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please consult with your Omron's representative at any time to confirm actual specifications of purchased Product.
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