OMRON

E2B PROXIMITY SENSORS

A new generation in global applications



» Time and cost savings

» Perfect fit for standard environments

» Global deliveries and support

realizing

A new generation in global applications

We asked our customers: "What do you – as a proximity sensor user - really want in a sensor?" Some people wanted reliability in extreme conditions. But most simply wanted reliable performance in standard industrial environments. These people also wanted attractive pricing, without compromising quality. So we put to work our 50-year heritage in proximity sensors: a heritage that has seen 200 million Omron proximity sensors shipped to satisfied customers across the globe. We put this heritage to work as well as our understanding of customer needs. The result is the new E2B sensor range: designed to give you quality, reliability and value-for-money.

- **Perfect fit for standard environments**
  - 372 models
  - Single and double sensing distances
  - M8, M12, M18 and M30
- **Time and cost saving**
- **Global deliveries and support**

Thanks to the simple construction and Omron's innovative "hot melt" production process, the E2B sensors embody two seemingly contradictory characteristics: value-for-money and high reliability.



Perfect fit for standard environments

The new E2B proximity sensors promise the perfect fit to your particular needs. With the wide range of models in the E2B family, you can choose the one that exactly meets your needs. For example, we have four different sizes: M8, M12, M18 and M30, each one with single or double sensing distances, shielded and unshielded. There's also a choice of short and long bodies, two connecting methods and four output types. With this range to choose from, you're certain to find the perfect fit.

ALL
372
Models

Output configuration:
PNP/NPN

Operation mode:
NO/NC

Short/long bodies



Long bodies for easy adjustment after mounting

Shielded/unshielded



Shielded models for better noise immunity

Pre-wired/Connectors



Connectors for easy maintenance

Wide range of size

Lineup of models from M8 to M30



M8 ×1 ×2



M12 ×1 ×2



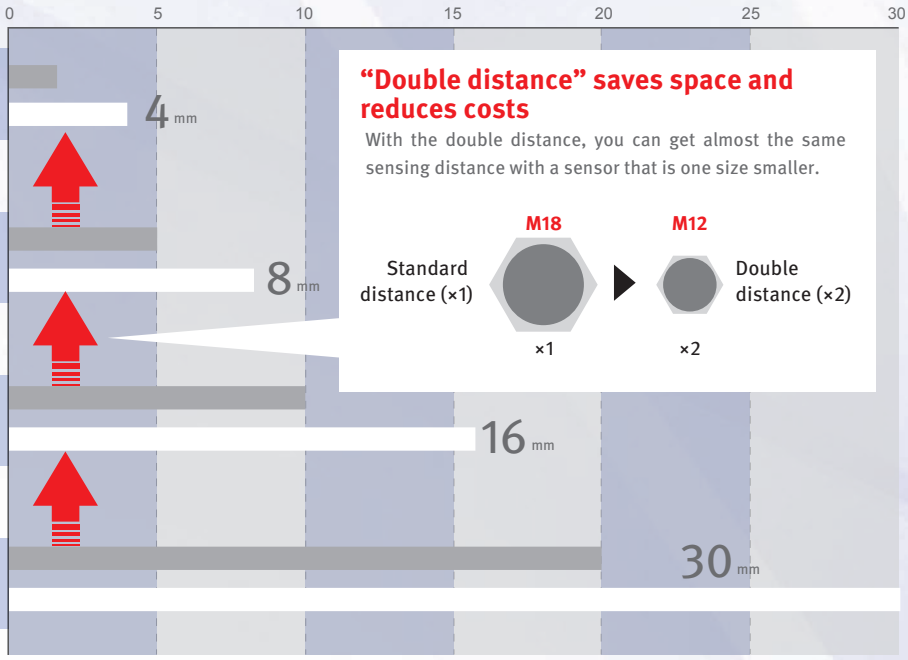
M18 ×1 ×2



M30 ×1 ×2

Sensing distance

Models available with standard distance(×1) and double distance (×2)



Sensing distances of unshielded models

"Double distance" saves space and reduces costs

With the double distance, you can get almost the same sensing distance with a sensor that is one size smaller.

Time and cost savings

For standard conditions you can easily select E2B sensors because they have an easy-to-read code without complex codification. They also have a bright circular LED indicator, so you can quickly determine their operating status. These two features reduce the effort in machine maintenance, so you will save time and money.



360-degree indication

Easy visibility for 360° even in dark locations so you can mount the sensor in any direction.

The ideal solution for standard industrial environments

Pay only for what you need
Most industrial applications are conducted in a standard environment, in a normal temperature range, without extremes such as high oil- or water-pressure, or strong electromagnetic fields, or constant high mechanical stresses. This makes E2B the ideal solution for the vast majority of applications. It's perfectly reliable for normal conditions. What's more, you get just what you need without paying for unnecessary extreme robustness. For example, in the machine-tool industry, E2B sensors are ideal for detecting tool positions or line encoders. For packaging machines they can be used for detecting the positions of welded or pressed elements.

IP67
We have performed not only a specified test for rating the degree of protection (IP67) for catalogs, but also tests with oil mist which appears onsite. Simulation tests has been performed with attachment of high concentration of oil mist.



Oil-mist environment resistant!

	E2B	E2A
Feature	Superior price	Superior robustness
Oil/water resistance	Good	Good
IP	IP67	IP69K
Temperature	-25 to 70°C	-40 to 70°C
Other		Lineup of 2-wire models, and AC types are available. NO+NC. Customization

Global deliveries and support

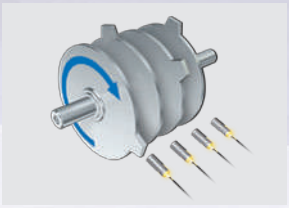
Our global network of 150 bases located in 40 countries ensure that we can support you with products and services without delay. This global product and service availability is especially important to those customers who manufacture machines in America for use in Asia, for example.

Ideal for a wide range of applications

Suitable sensors can be selected among the wide variety of sensors in order to satisfy your requirements. These sensors handle a wide range of applications, for example in machine tools and packaging.



Machine tools



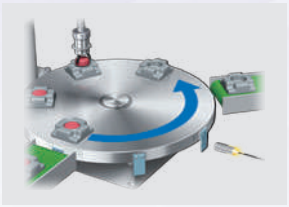
Cam detection



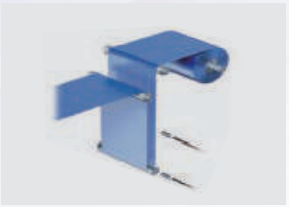
Position detection of cylinder



Packaging machines



Positioning on index tables



Tension control

Ordering Information

Size			Sensing distance	Connecting method (See note 1.)	Body length	Output configuration	Operation mode NO	Operation mode NC
M8 (Stainless steel) (See note 2.)	Single	Shielded	1.5 mm	Pre-wired	Short	PNP	E2B-S08KS01-WP-B1 2M	E2B-S08KS01-WP-B2 2M
						NPN	E2B-S08KS01-WP-C1 2M	E2B-S08KS01-WP-C2 2M
					Long	PNP	E2B-S08LS01-WP-B1 2M	E2B-S08LS01-WP-B2 2M
						NPN	E2B-S08LS01-WP-C1 2M	E2B-S08LS01-WP-C2 2M
				M8 Connector (3-pin)	Short	PNP	E2B-S08KS01-MC-B1	E2B-S08KS01-MC-B2
						NPN	E2B-S08KS01-MC-C1	E2B-S08KS01-MC-C2
					Long	PNP	E2B-S08LS01-MC-B1	E2B-S08LS01-MC-B2
						NPN	E2B-S08LS01-MC-C1	E2B-S08LS01-MC-C2
		Unshielded	2 mm	Pre-wired	Short	PNP	E2B-S08KN02-WP-B1 2M	E2B-S08KN02-WP-B2 2M
						NPN	E2B-S08KN02-WP-C1 2M	E2B-S08KN02-WP-C2 2M
					Long	PNP	E2B-S08LN02-WP-B1 2M	E2B-S08LN02-WP-B2 2M
						NPN	E2B-S08LN02-WP-C1 2M	E2B-S08LN02-WP-C2 2M
				M8 Connector (3-pin)	Short	PNP	E2B-S08KN02-MC-B1	E2B-S08KN02-MC-B2
						NPN	E2B-S08KN02-MC-C1	E2B-S08KN02-MC-C2
					Long	PNP	E2B-S08LN02-MC-B1	E2B-S08LN02-MC-B2
						NPN	E2B-S08LN02-MC-C1	E2B-S08LN02-MC-C2
	Double	Shielded	2 mm	Pre-wired	Short	PNP	E2B-S08KS02-WP-B1 2M	E2B-S08KS02-WP-B2 2M
						NPN	E2B-S08KS02-WP-C1 2M	E2B-S08KS02-WP-C2 2M
					Long	PNP	E2B-S08LS02-WP-B1 2M	E2B-S08LS02-WP-B2 2M
						NPN	E2B-S08LS02-WP-C1 2M	E2B-S08LS02-WP-C2 2M
				M8 Connector (3-pin)	Short	PNP	E2B-S08KS02-MC-B1	E2B-S08KS02-MC-B2
						NPN	E2B-S08KS02-MC-C1	E2B-S08KS02-MC-C2
					Long	PNP	E2B-S08LS02-MC-B1	E2B-S08LS02-MC-B2
						NPN	E2B-S08LS02-MC-C1	E2B-S08LS02-MC-C2
		Unshielded	4 mm	Pre-wired	Short	PNP	E2B-S08KN04-WP-B1 2M	E2B-S08KN04-WP-B2 2M
						NPN	E2B-S08KN04-WP-C1 2M	E2B-S08KN04-WP-C2 2M
					Long	PNP	E2B-S08LN04-WP-B1 2M	E2B-S08LN04-WP-B2 2M
						NPN	E2B-S08LN04-WP-C1 2M	E2B-S08LN04-WP-C2 2M
				M8 Connector (3-pin)	Short	PNP	E2B-S08KN04-MC-B1	E2B-S08KN04-MC-B2
						NPN	E2B-S08KN04-MC-C1	E2B-S08KN04-MC-C2
					Long	PNP	E2B-S08LN04-MC-B1	E2B-S08LN04-MC-B2
						NPN	E2B-S08LN04-MC-C1	E2B-S08LN04-MC-C2

Note: 1. Pre-wired Models are available in the cable lengths of 2 m and 5 m.
2. Material specifications for stainless steel housing case: 1.4305 (W.-No.), SUS 303 (AISI), 2346 (SS).

Size			Sensing distance	Connecting method (See note 1.)	Body length	Output configuration	Operation mode NO	Operation mode NC
M12 (Brass)	Single	Shielded	2 mm	Pre-wired	Short	PNP	E2B-M12KS02-WP-B1 2M	E2B-M12KS02-WP-B2 2M
						NPN	E2B-M12KS02-WP-C1 2M	E2B-M12KS02-WP-C2 2M
					Long	PNP	E2B-M12LS02-WP-B1 2M	E2B-M12LS02-WP-B2 2M
						NPN	E2B-M12LS02-WP-C1 2M	E2B-M12LS02-WP-C2 2M
				M12 Connector	Short	PNP	E2B-M12KS02-M1-B1	E2B-M12KS02-M1-B2
						NPN	E2B-M12KS02-M1-C1	E2B-M12KS02-M1-C2
					Long	PNP	E2B-M12LS02-M1-B1	E2B-M12LS02-M1-B2
						NPN	E2B-M12LS02-M1-C1	E2B-M12LS02-M1-C2
		Unshielded	5 mm	Pre-wired	Short	PNP	E2B-M12KN05-WP-B1 2M	E2B-M12KN05-WP-B2 2M
						NPN	E2B-M12KN05-WP-C1 2M	E2B-M12KN05-WP-C2 2M
					Long	PNP	E2B-M12LN05-WP-B1 2M	E2B-M12LN05-WP-B2 2M
						NPN	E2B-M12LN05-WP-C1 2M	E2B-M12LN05-WP-C2 2M
				M12 Connector	Short	PNP	E2B-M12KN05-M1-B1	E2B-M12KN05-M1-B2
						NPN	E2B-M12KN05-M1-C1	E2B-M12KN05-M1-C2
					Long	PNP	E2B-M12LN05-M1-B1	E2B-M12LN05-M1-B2
						NPN	E2B-M12LN05-M1-C1	E2B-M12LN05-M1-C2
	Double	Shielded (See note 2.)	4 mm	Pre-wired	Short	PNP	E2B-M12KS04-WP-B1 2M	E2B-M12KS04-WP-B2 2M
						NPN	E2B-M12KS04-WP-C1 2M	E2B-M12KS04-WP-C2 2M
					Long	PNP	E2B-M12LS04-WP-B1 2M	E2B-M12LS04-WP-B2 2M
						NPN	E2B-M12LS04-WP-C1 2M	E2B-M12LS04-WP-C2 2M
				M12 Connector	Short	PNP	E2B-M12KS04-M1-B1	E2B-M12KS04-M1-B2
						NPN	E2B-M12KS04-M1-C1	E2B-M12KS04-M1-C2
					Long	PNP	E2B-M12LS04-M1-B1	E2B-M12LS04-M1-B2
						NPN	E2B-M12LS04-M1-C1	E2B-M12LS04-M1-C2
		Unshielded	8 mm	Pre-wired	Short	PNP	E2B-M12KN08-WP-B1 2M	E2B-M12KN08-WP-B2 2M
						NPN	E2B-M12KN08-WP-C1 2M	E2B-M12KN08-WP-C2 2M
					Long	PNP	E2B-M12LN08-WP-B1 2M	E2B-M12LN08-WP-B2 2M
						NPN	E2B-M12LN08-WP-C1 2M	E2B-M12LN08-WP-C2 2M
				M12 Connector	Short	PNP	E2B-M12KN08-M1-B1	E2B-M12KN08-M1-B2
						NPN	E2B-M12KN08-M1-C1	E2B-M12KN08-M1-C2
					Long	PNP	E2B-M12LN08-M1-B1	E2B-M12LN08-M1-B2
						NPN	E2B-M12LN08-M1-C1	E2B-M12LN08-M1-C2

Note: 1. Pre-wired Models are available in the cable lengths of 2 m and 5 m.
2. There are restrictions that apply to Shielded sensors.
Please refer to “Effects of Surrounding Metal” on page 20.

Size			Sensing distance	Connecting method (See note 1.)	Body length	Output configuration	Operation mode NO	Operation mode NC
M18 (Brass)	Single	Shielded	5 mm	Pre-wired	Short	PNP	E2B-M18KS05-WP-B1 2M	E2B-M18KS05-WP-B2 2M
						NPN	E2B-M18KS05-WP-C1 2M	E2B-M18KS05-WP-C2 2M
					Long	PNP	E2B-M18LS05-WP-B1 2M	E2B-M18LS05-WP-B2 2M
						NPN	E2B-M18LS05-WP-C1 2M	E2B-M18LS05-WP-C2 2M
				M12 Connector	Short	PNP	E2B-M18KS05-M1-B1	E2B-M18KS05-M1-B2
						NPN	E2B-M18KS05-M1-C1	E2B-M18KS05-M1-C2
					Long	PNP	E2B-M18LS05-M1-B1	E2B-M18LS05-M1-B2
						NPN	E2B-M18LS05-M1-C1	E2B-M18LS05-M1-C2
		Unshielded	10 mm	Pre-wired	Short	PNP	E2B-M18KN10-WP-B1 2M	E2B-M18KN10-WP-B2 2M
						NPN	E2B-M18KN10-WP-C1 2M	E2B-M18KN10-WP-C2 2M
					Long	PNP	E2B-M18LN10-WP-B1 2M	E2B-M18LN10-WP-B2 2M
						NPN	E2B-M18LN10-WP-C1 2M	E2B-M18LN10-WP-C2 2M
				M12 Connector	Short	PNP	E2B-M18KN10-M1-B1	E2B-M18KN10-M1-B2
						NPN	E2B-M18KN10-M1-C1	E2B-M18KN10-M1-C2
					Long	PNP	E2B-M18LN10-M1-B1	E2B-M18LN10-M1-B2
						NPN	E2B-M18LN10-M1-C1	E2B-M18LN10-M1-C2
	Double	Shielded (See note 2.)	8 mm	Pre-wired	Short	PNP	E2B-M18KS08-WP-B1 2M	E2B-M18KS08-WP-B2 2M
						NPN	E2B-M18KS08-WP-C1 2M	E2B-M18KS08-WP-C2 2M
					Long	PNP	E2B-M18LS08-WP-B1 2M	E2B-M18LS08-WP-B2 2M
						NPN	E2B-M18LS08-WP-C1 2M	E2B-M18LS08-WP-C2 2M
				M12 Connector	Short	PNP	E2B-M18KS08-M1-B1	E2B-M18KS08-M1-B2
						NPN	E2B-M18KS08-M1-C1	E2B-M18KS08-M1-C2
					Long	PNP	E2B-M18LS08-M1-B1	E2B-M18LS08-M1-B2
						NPN	E2B-M18LS08-M1-C1	E2B-M18LS08-M1-C2
		Unshielded	16 mm	Pre-wired	Short	PNP	E2B-M18KN16-WP-B1 2M	E2B-M18KN16-WP-B2 2M
						NPN	E2B-M18KN16-WP-C1 2M	E2B-M18KN16-WP-C2 2M
					Long	PNP	E2B-M18LN16-WP-B1 2M	E2B-M18LN16-WP-B2 2M
						NPN	E2B-M18LN16-WP-C1 2M	E2B-M18LN16-WP-C2 2M
				M12 Connector	Short	PNP	E2B-M18KN16-M1-B1	E2B-M18KN16-M1-B2
						NPN	E2B-M18KN16-M1-C1	E2B-M18KN16-M1-C2
					Long	PNP	E2B-M18LN16-M1-B1	E2B-M18LN16-M1-B2
						NPN	E2B-M18LN16-M1-C1	E2B-M18LN16-M1-C2

Note: 1. Pre-wired Models are available in the cable lengths of 2 m and 5 m.
2. There are restrictions that apply to Shielded sensors.
Please refer to “Effects of Surrounding Metal” on page 20.

Size			Sensing distance	Connecting method (See note 1.)	Body length	Output configuration	Operation mode NO	Operation mode NC
M30 (Brass)	Single	Shielded	10 mm	Pre-wired	Short	PNP	E2B-M30KS10-WP-B1 2M	E2B-M30KS10-WP-B2 2M
						NPN	E2B-M30KS10-WP-C1 2M	E2B-M30KS10-WP-C2 2M
					Long	PNP	E2B-M30LS10-WP-B1 2M	E2B-M30LS10-WP-B2 2M
						NPN	E2B-M30LS10-WP-C1 2M	E2B-M30LS10-WP-C2 2M
				M12 Connector	Short	PNP	E2B-M30KS10-M1-B1	E2B-M30KS10-M1-B2
						NPN	E2B-M30KS10-M1-C1	E2B-M30KS10-M1-C2
					Long	PNP	E2B-M30LS10-M1-B1	E2B-M30LS10-M1-B2
						NPN	E2B-M30LS10-M1-C1	E2B-M30LS10-M1-C2
		Unshielded	20 mm	Pre-wired	Short	PNP	E2B-M30KN20-WP-B1 2M	E2B-M30KN20-WP-B2 2M
						NPN	E2B-M30KN20-WP-C1 2M	E2B-M30KN20-WP-C2 2M
					Long	PNP	E2B-M30LN20-WP-B1 2M	E2B-M30LN20-WP-B2 2M
						NPN	E2B-M30LN20-WP-C1 2M	E2B-M30LN20-WP-C2 2M
				M12 Connector	Short	PNP	E2B-M30KN20-M1-B1	E2B-M30KN20-M1-B2
						NPN	E2B-M30KN20-M1-C1	E2B-M30KN20-M1-C2
					Long	PNP	E2B-M30LN20-M1-B1	E2B-M30LN20-M1-B2
						NPN	E2B-M30LN20-M1-C1	E2B-M30LN20-M1-C2
	Double	Shielded (See note 2.)	15 mm	Pre-wired	Short	PNP	E2B-M30KS15-WP-B1 2M	E2B-M30KS15-WP-B2 2M
						NPN	E2B-M30KS15-WP-C1 2M	E2B-M30KS15-WP-C2 2M
					Long	PNP	E2B-M30LS15-WP-B1 2M	E2B-M30LS15-WP-B2 2M
						NPN	E2B-M30LS15-WP-C1 2M	E2B-M30LS15-WP-C2 2M
				M12 Connector	Short	PNP	E2B-M30KS15-M1-B1	E2B-M30KS15-M1-B2
						NPN	E2B-M30KS15-M1-C1	E2B-M30KS15-M1-C2
					Long	PNP	E2B-M30LS15-M1-B1	E2B-M30LS15-M1-B2
						NPN	E2B-M30LS15-M1-C1	E2B-M30LS15-M1-C2
		Unshielded	30 mm	Pre-wired	Long	PNP	E2B-M30LN30-WP-B1 2M	E2B-M30LN30-WP-B2 2M
						NPN	E2B-M30LN30-WP-C1 2M	E2B-M30LN30-WP-C2 2M
				M12 Connector	Long	PNP	E2B-M30LN30-M1-B1	E2B-M30LN30-M1-B2
						NPN	E2B-M30LN30-M1-C1	E2B-M30LN30-M1-C2

Note: 1. Pre-wired Models are available in the cable lengths of 2 m and 5 m.
2. There are restrictions that apply to Shielded sensors.
Please refer to “Effects of Surrounding Metal” on page 20.

Accessories (Order Separately)

Sensor I/O Connectors

Size	Cable	Shape	Cores	Cable length (m)	Model
M8 (3-pin)	PVC	Straight	3	2	**XS3F-M8PVC3S2M**
				5	**XS3F-M8PVC3S5M**
		Right-angle		2	**XS3F-M8PVC3A2M**
				5	**XS3F-M8PVC3A5M**
	PVC Robot	Straight		2	**XS3F-M321-302-R**
				5	**XS3F-M321-305-R**
		Right-angle		2	**XS3F-M322-302-R**
				5	**XS3F-M322-305-R**
M12 (4-pin)	PVC	Straight	4	2	**XS2F-M12PVC4S2M**
				5	**XS2F-M12PVC4S5M**
		Right-angle		2	**XS2F-M12PVC4A2M**
				5	**XS2F-M12PVC4A5M**
	PVC Robot	Straight		2	**XS2F-D421-D80-F**
				5	**XS2F-D421-G80-F**
		Right-angle		2	**XS2F-D422-D80-F**
				5	**XS2F-D422-G80-F**

Model Number Legend

E2B-□□□□□-□-□□ □
1 2 3 4 5 6 7 8 9 10

Example: E2B-M12LS04-M1-B1 **M12, Brass, Long body, Shielded, Sn = 4 mm, M12 connector, PNP, NO**
E2B-S08KN02-WP-C2 5M **M8, stainless steel, Short body, Unshielded, Sn = 2 mm, Pre-wired PVC cable, NPN, NC, Cable length = 5 m**

1. Basic name
E2B

2. Housing shape and material
M: Cylindrical, metric threaded, brass
S: Cylindrical, metric threaded, stainless steel

3. Housing size
08: 8 mm
12: 12 mm
18: 18 mm
30: 30 mm

4. Barrel length
K: Short body
L: Long body

5. Shield
S: Shielded
N: Unshielded

6. Sensing distance
Numeral: Sensing distance:
01 = 1.5 mm, 02 = 2 mm, 04 = 4 mm, 05 = 5 mm, 08 = 8 mm, 10 = 10 mm, 15 = 15 mm, 16 = 16 mm, 20 = 20 mm, 30 = 30 mm

7. Kind of connection
WP: Pre-wired, PVC, dia 4 mm
M1: M12 connector
MC: M8 connector (3 pin)

8. Power source and output
B: PNP
C: NPN

9. Operation mode
1: NO (Normally open)
2: NC (Normally closed)

10. Cable length
Blank: Connector type
Numeral: Cable length (2M and 5M are available.)

Ratings and Specifications

Item					
	Size	M8			
	Sensing distance	Single		Double	
	Type	Shielded	Unshielded	Shielded	Unshielded
	Model	E2B-S08□S01	E2B-S08□N02	E2B-S08□S02	E2B-S08□N04
Sensing distance		1.5 mm ± 10%	2 mm ± 10%	2 mm ± 10%	4 mm ± 10%
Setting distance		0 to 1.2 mm	0 to 1.6 mm	0 to 1.6 mm	0 to 3.2 mm
Differential travel		10% max. of sensing distance			
Detectable object		Ferrous metal (The sensing distance decreases with non-ferrous metal.)			
Standard sensing object (mild steel ST37)		8 × 8 × 1 mm	8 × 8 × 1 mm	8 × 8 × 1 mm	12 × 12 × 1 mm
Response frequency (See note 1.)		2,000 Hz	1,000 Hz	1,500 Hz	1,000 Hz
Power supply voltage		10 to 30 VDC. (including 10% ripple (p-p))			
Current consumption		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. (30 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			
Protection circuit		Output reverse polarity protection, Power source circuit reverse polarity protection, Surge suppressor, Short-circuit protection			
Ambient air temperature		Operation and storage : -25 to 70ºC (with no icing or condensation)			
Temperature influence (See note 2.)		±10% max. of sensing distance at 23ºC within temperature range of -10 to 55ºC ±15% max. of sensing distance at 23ºC within temperature range of -25 to 70ºC			
Ambient humidity		Operation and Storage: 35 to 95%			
Voltage influence		±1% max. of sensing distance in 24 V ±15%			
Insulation resistance		50 MΩ min. (at 500 VDC) between current-carrying parts and case			
Dielectric strength		1,000 VAC at 50/60 Hz for 1 min between current-carrying 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			
Standard and listings		(1) IP67 (IEC60529) (2) EMC (EN60947-5-2)			
Connecting method		Pre-wired models (standard is 4 mm dia. PVC cable with length = 2 m, 5 m). Connector models (M8-3pin)			
Weight (packaged)	Pre-wired model	Short body: Approx. 65 g, Long body: Approx. 65 g			
	Connector model	Short body: Approx. 20 g, Long body: Approx. 20 g			
Material	Case	Stainless steel (1.4305 (W.-No.), SUS 303 (AISI), 2346 (SS).)			
	Sensing surface	PBT			
	Cable	Standard cable is 4 mm dia. PVC.			
	Clamping nut	Brass-nickel plated			

Note: 1. The response frequency is an average value. Measurement conditions are as follows: standard sensing object, a distance of twice the standard sensing object between sensing objects, and a setting distance of half the sensing distance.
2. When using any model of M8 size at an ambient temperature between -25ºC and 60ºC, use a load current of 200mA max., at an ambient temperature between 60ºC and 70ºC, use a load current of 100 mA max.

Item					
	Size	M12			
	Sensing distance	Single		Double	
	Type	Shielded	Unshielded	Shielded	Unshielded
	Model	E2B-M12□S02	E2B-M12□N05	E2B-M12□S04	E2B-M12□N08
Sensing distance		2 mm ± 10%	5 mm ± 10%	4 mm ± 10%	8 mm ± 10%
Setting distance		0 to 1.6 mm	0 to 4 mm	0 to 3.2 mm	0 to 6.4 mm
Differential travel		10% max. of sensing distance			
Detectable object		Ferrous metal (The sensing distance decreases with non-ferrous metal.)			
Standard sensing object (mild steel ST37)		12 × 12 × 1 mm	15 × 15 × 1 mm	12 × 12 × 1 mm	24 × 24 × 1 mm
Response frequency (See note 1.)		1,500 Hz	800 Hz	1,000 Hz	800 Hz
Power supply voltage		10 to 30 VDC. (including 10% ripple (p-p))			
Current consumption		10 mA max.			
Output type		-B models: PNP open collector -C models: NPN open collector			
Control output	Load current	200 mA max. (30 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			
Protection circuit		Output reverse polarity protection, Power source circuit reverse polarity protection, Surge suppressor, Short-circuit protection			
Ambient air temperature		Operation and storage : -25 to 70ºC (with no icing or condensation)			
Temperature influence		±10% max. of sensing distance at 23ºC within temperature range of -10 to 55ºC ±15% max. of sensing distance at 23ºC within temperature range of -25 to 70ºC			
Ambient humidity		Operation and Storage: 35 to 95%			
Voltage influence		±1% max. of sensing distance in 24 V ±15%			
Insulation resistance		50 MΩ min. (at 500 VDC) between current-carrying parts and case			
Dielectric strength		1,000 VAC at 50/60 Hz for 1 min between current-carrying 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		(1) IP67 (IEC60529) (2) EMC (EN60947-5-2)			
Connecting method		Pre-wired models (standard is 4 mm dia. PVC cable with length = 2 m, 5 m). Connector models (M12-4pin)			
Weight (packaged)	Pre-wired model	Short body: Approx. 75 g, Long body: Approx. 80 g			
	Connector model	Short body: Approx. 35 g, Long body: Approx. 40 g			
Material	Case	Brass-nickel plated			
	Sensing surface	PBT			
	Cable	Standard cable is 4 mm dia. PVC.			
	Clamping nut	Brass-nickel plated			

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

Item		Size	M18			
		Sensing distance	Single		Double	
		Type	Shielded	Unshielded	Shielded	Unshielded
		Model	E2B-M18□S05	E2B-M18□N10	E2B-M18□S08	E2B-M18□N16
Sensing distance			5 mm ± 10%	10 mm ± 10%	8 mm ± 10%	16 mm ± 10%
Setting distance			0 to 4 mm	0 to 8 mm	0 to 6.4 mm	0 to 12.8 mm
Differential travel			10% max. of sensing distance			
Detectable object			Ferrous metal (The sensing distance decreases with non-ferrous metal.)			
Standard sensing object (mild steel ST37)			18 × 18 × 1 mm	30 × 30 × 1 mm	24 × 24 × 1 mm	48 × 48 × 1 mm
Response frequency (See note 1.)			600 Hz	400 Hz	500 Hz	400 Hz
Power supply voltage			10 to 30 VDC. (including 10% ripple (p-p))			
Current consumption			10 mA max.			
Output type			-B models: PNP open collector -C models: NPN open collector			
Control output	Load current		200 mA max. (30 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			
Protection circuit			Output reverse polarity protection, Power source circuit reverse polarity protection, Surge suppressor, Short-circuit protection			
Ambient air temperature			Operation and storage : -25 to 70ºC (with no icing or condensation)			
Temperature influence			±10% max. of sensing distance at 23ºC within temperature range of -10 to 55ºC ±15% max. of sensing distance at 23ºC within temperature range of -25 to 70ºC			
Ambient humidity			Operation and Storage: 35 to 95%			
Voltage influence			±1% max. of sensing distance in 24 V ±15%			
Insulation resistance			50 MΩ min. (at 500 VDC) between current-carrying parts and case			
Dielectric strength			1,000 VAC at 50/60 Hz for 1 min between current-carrying 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			(1) IP67 (IEC60529) (2) EMC (EN60947-5-2)			
Connecting method			Pre-wired models (standard is 4 mm dia. PVC cable with length = 2 m, 5 m). Connector models (M12-4pin)			
Weight (packaged)	Pre-wired model		Short body: Approx. 95 g, Long body: Approx. 110 g			
	Connector model		Short body: Approx. 60 g, Long body: Approx. 80 g			
Material	Case		Brass-nickel plated			
	Sensing surface		PBT			
	Cable		Standard cable is 4 mm dia. PVC.			
	Clamping nut		Brass-nickel plated			

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

Item					
	Size	M30			
	Sensing distance	Single		Double	
	Type	Shielded	Unshielded	Shielded	Unshielded
	Model	E2B-M30□S10	E2B-M30□N20	E2B-M30□S15	E2B-M30□N30
Sensing distance		10 mm ± 10%	20 mm ± 10%	15 mm ± 10%	30 mm ± 10%
Setting distance		0 to 8 mm	0 to 16 mm	0 to 11.25 mm	0 to 22.5 mm
Differential travel		10% max. of sensing distance			
Detectable object		Ferrous metal (The sensing distance decreases with non-ferrous metal.)			
Standard sensing object (mild steel ST37)		30 × 30 × 1 mm	60 × 60 × 1 mm	45 × 45 × 1 mm	90 × 90 × 1 mm
Response frequency (See note 1.)		400 Hz	100 Hz	250 Hz	100 Hz
Power supply voltage		10 to 30 VDC. (including 10% ripple (p-p))			
Current consumption		10 mA max.			
Output type		-B models: PNP open collector -C models: NPN open collector			
Control output	Load current	200 mA max. (30 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			
Protection circuit		Output reverse polarity protection, Power source circuit reverse polarity protection, Surge suppressor, Short-circuit protection			
Ambient air temperature		Operation and storage : -25 to 70ºC (with no icing or condensation)			
Temperature influence		±10% max. of sensing distance at 23ºC within temperature range of -10 to 55ºC ±15% max. of sensing distance at 23ºC within temperature range of -25 to 70ºC			
Ambient humidity		Operation and Storage: 35 to 95%			
Voltage influence		±1% max. of sensing distance in 24 V ±15%			
Insulation resistance		50 MΩ min. (at 500 VDC) between current-carrying parts and case			
Dielectric strength		1,000 VAC at 50/60 Hz for 1 min between current-carrying 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		(1) IP67 (IEC60529) (2) EMC (EN60947-5-2)			
Connecting method		Pre-wired models (standard is 4 mm dia. PVC cable with length = 2 m, 5 m). Connector models (M12-4pin)			
Weight (packaged)	Pre-wired model	Short body: Approx. 160 g, Long body: Approx. 210 g			
	Connector model	Short body: Approx. 140 g, Long body: Approx. 160 g			
Material	Case	Brass-nickel plated			
	Sensing surface	PBT			
	Cable	Standard cable is 4 mm dia. PVC.			
	Clamping nut	Brass-nickel plated			

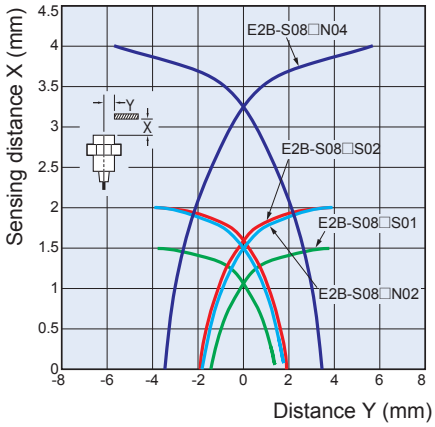
Note: 1. The response frequency is an average value. Measurement conditions are as follows: standard sensing object, a distance of twice the standard sensing object between sensing objects, and a setting distance of half the sensing distance.

Engineering Data (Reference Value)

Operating Range

M8

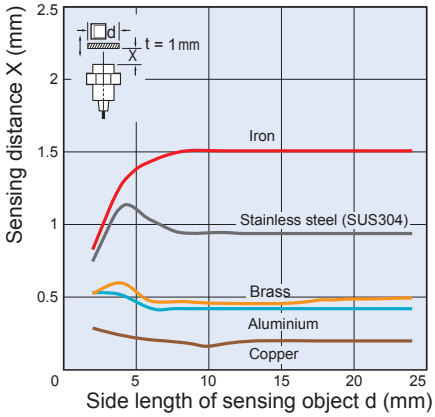
E2B-S08



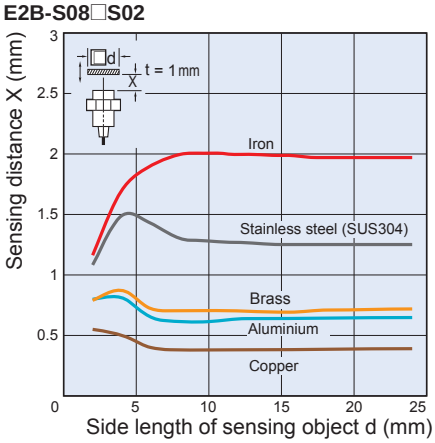
Influence of Sensing Object Size and Materials

Shielded Models

E2B-S08□S01

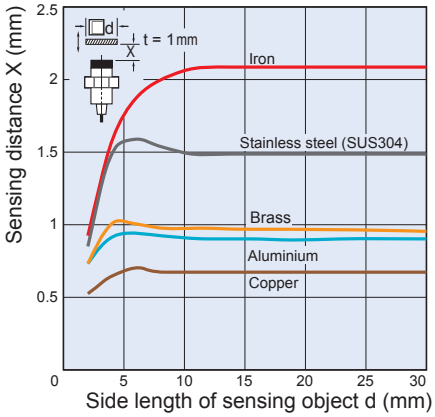


E2B-S08□S02

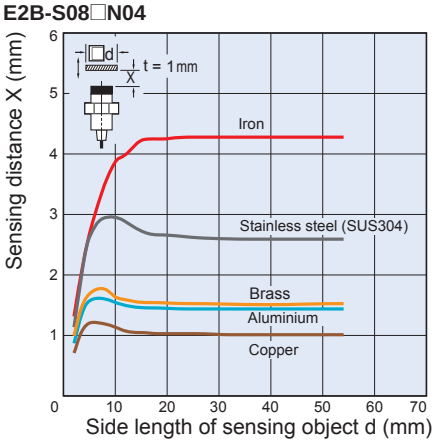


Unshielded Models

E2B-S08□N02



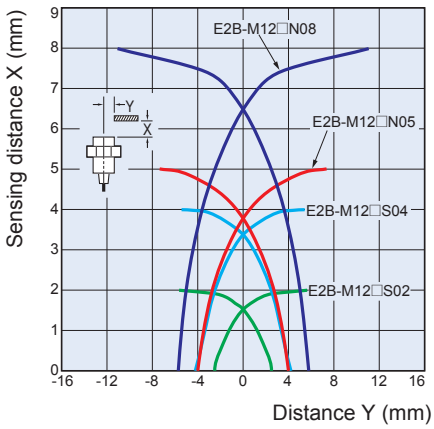
E2B-S08□N04



Operating Range

M12

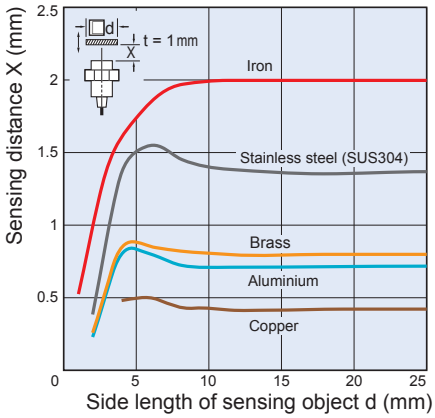
E2B-M12



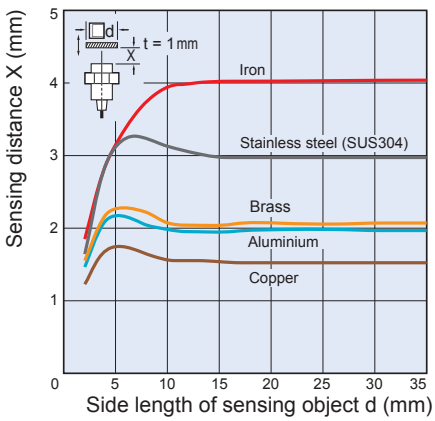
Influence of Sensing Object Size and Materials

Shielded Models

E2B-M12□S02

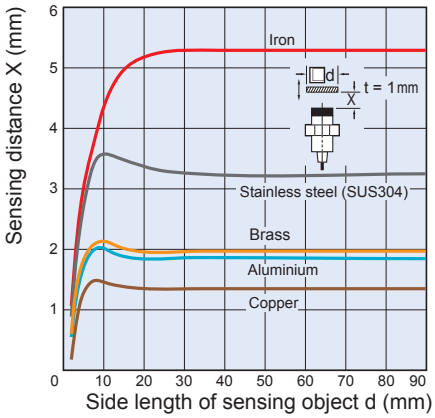


E2B-M12□S04

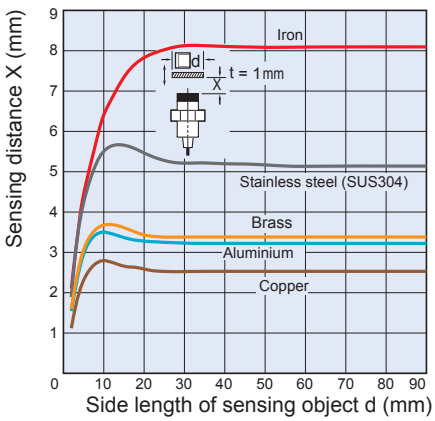


Unshielded Models

E2B-M12□N05



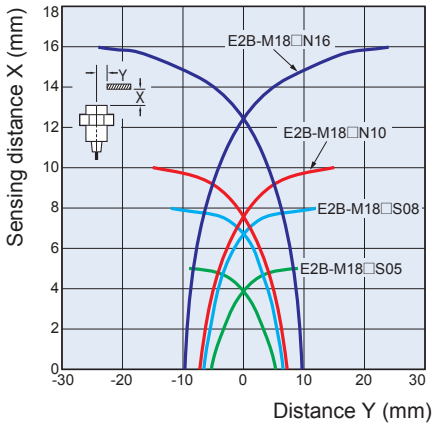
E2B-M12□N08



Operating Range

M18

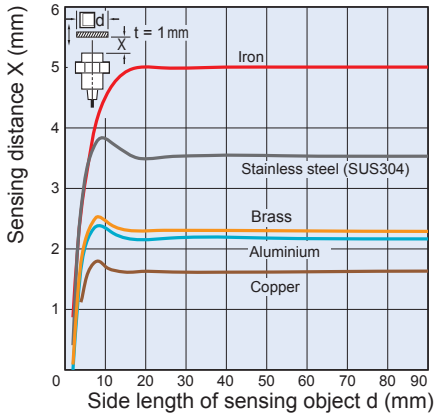
E2B-M18



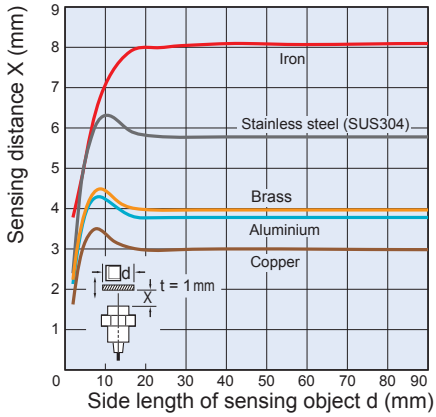
Influence of Sensing Object Size and Materials

Shielded Models

E2B-M18□S05

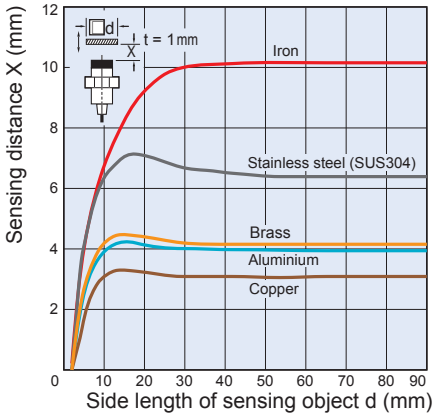


E2B-M18□S08

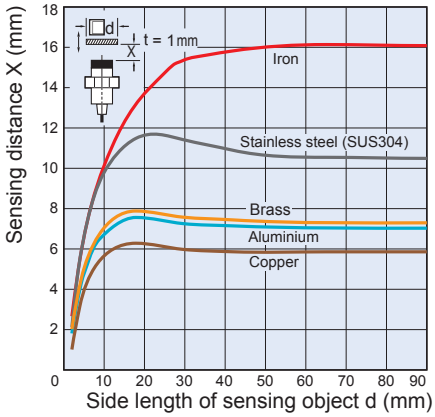


Unshielded Models

E2B-M18□N10



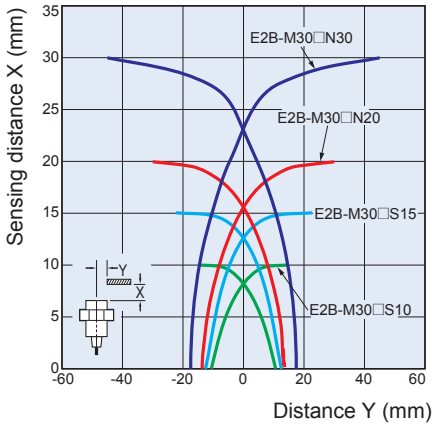
E2B-M18□N16



Operating Range

M30

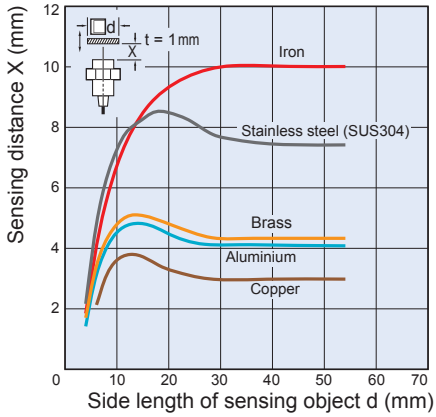
E2B-M30



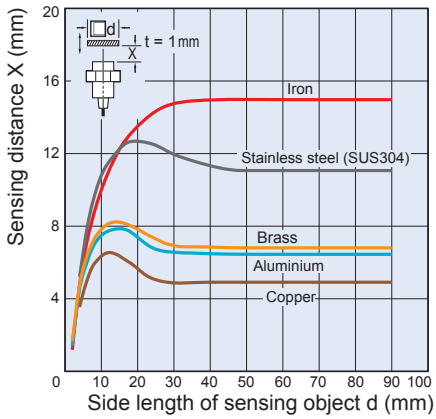
Influence of Sensing Object Size and Materials

Shielded Models

E2B-M30□S10

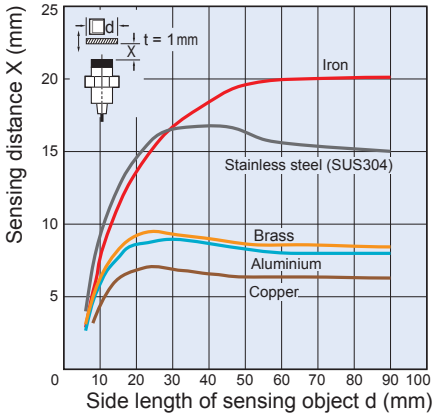


E2B-M30□S15

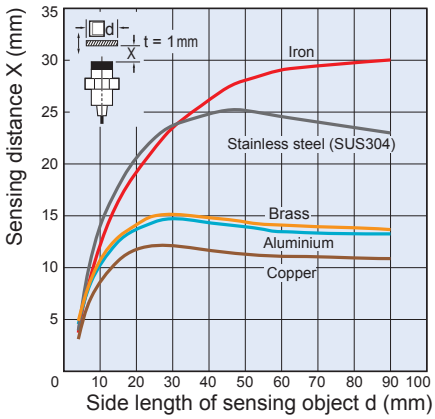


Unshielded Models

E2B-M30□N20



E2B-M30LN30



I/O Circuit Diagrams

PNP Output

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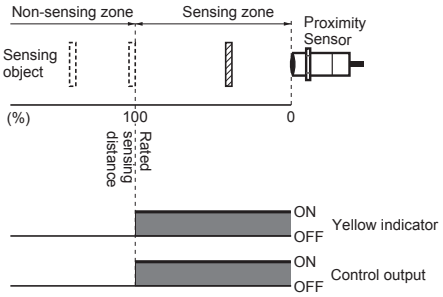
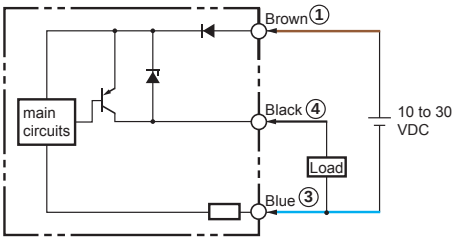
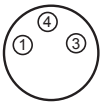
<tr><th>Operation mode</th><th>Model</th><th>Timing chart</th><th>Output circuit</th></tr>
<tr><td>NO</td><td rowspan="2">E2B-S08□-□-B□</td><td>
</td><td rowspan="2">

M8 connector
(3 pin)
Pin Arrangement

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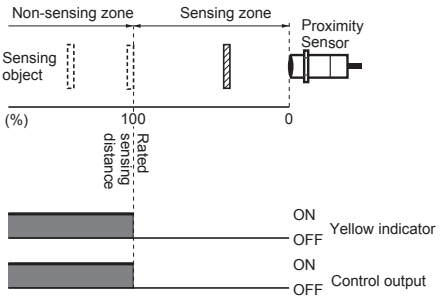
<tr><td>NC</td><td>
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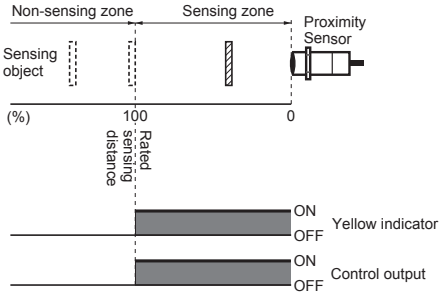
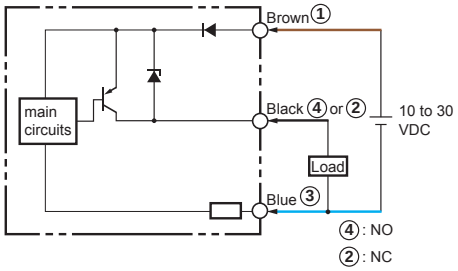
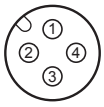
E2B-M30□-□-B□</td><td>
</td><td rowspan="2">

M12 Connector
(4 pin)
Pin Arrangement

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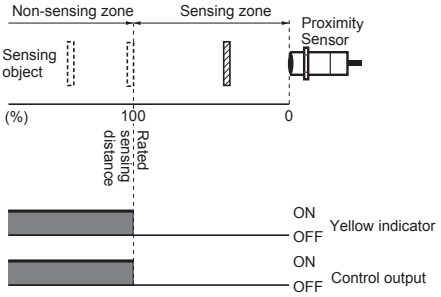
<tr><td>NC</td><td>
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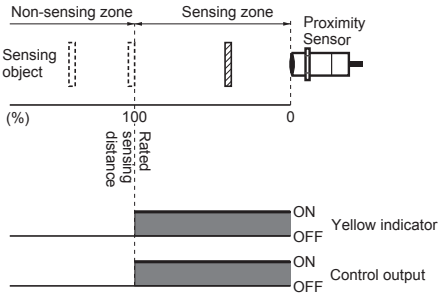
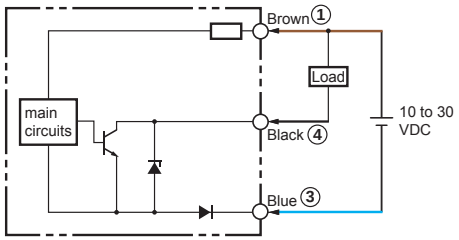
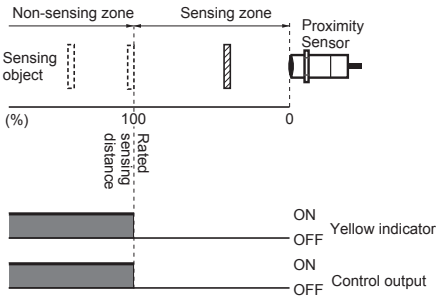
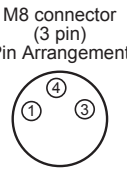
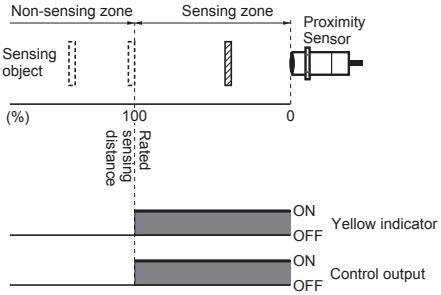
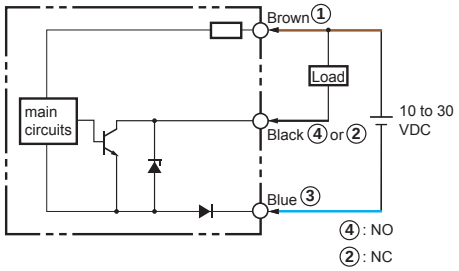
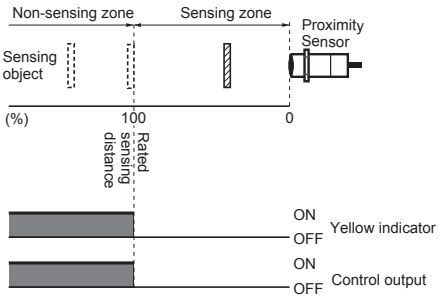
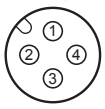
NPN Output

Operation mode	Model	Timing chart	Output circuit
NO	E2B-S08□-□-C□		
NC			
NO	E2B-M12□-□-C□ E2B-M18□-□-C□ E2B-M30□-□-C□		
NC			

M8 connector
(3 pin)
Pin Arrangement

M12 Connector
(4 pin)
Pin Arrangement

Dimensions

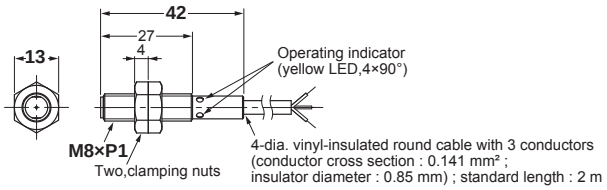
Note: All units are in millimeters unless otherwise indicated.

M8 Size

Pre-wired Models (Shielded)

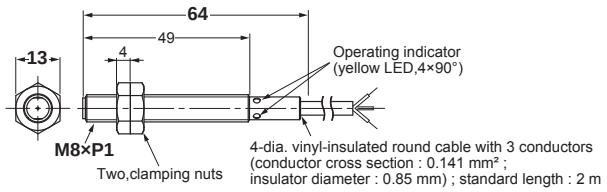
Short Body

E2B-S08KS01-WP-□□/E2B-S08KS02-WP-□□



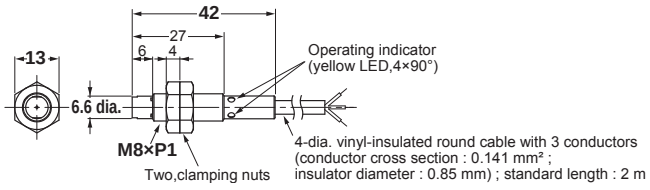
Long Body

E2B-S08LS01-WP-□□/E2B-S08LS02-WP-□□

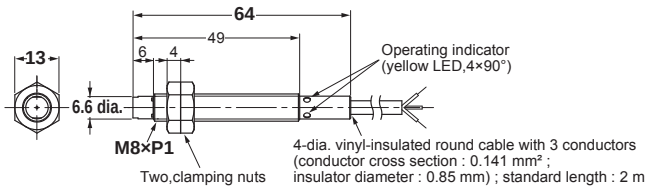


Pre-wired Models (Unshielded)

E2B-S08KN02-WP-□□/E2B-S08KN04-WP-□□



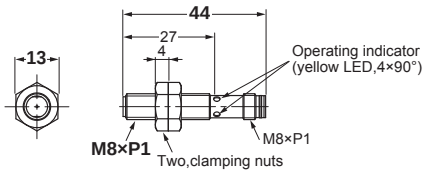
E2B-S08LN02-WP-□□/E2B-S08LN04-WP-□□



Connector Models (Shielded)

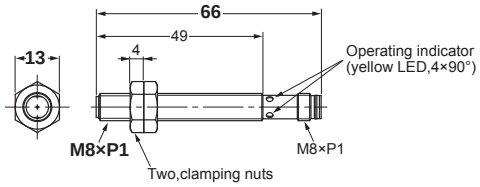
Short Body

E2B-S08KS01-MC-□□/E2B-S08KS02-MC-□□



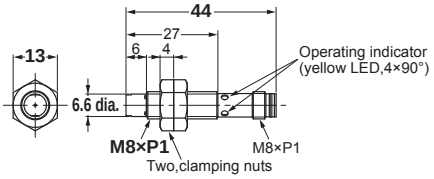
Long Body

E2B-S08LS01-MC-□□/E2B-S08LS02-MC-□□

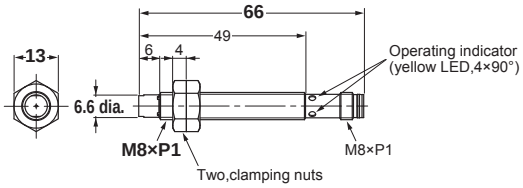


Connector Models (Unshielded)

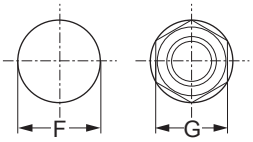
E2B-S08KN02-MC-□□/E2B-S08KN04-MC-□□



E2B-S08LN02-MC-□□/E2B-S08LN04-MC-□□



Mounting Hole Cutout Dimensions



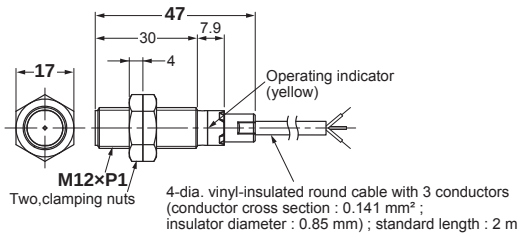
External diameter of Proximity Sensor	Dimension F (mm)	Dimension G (mm)
M8	8.5 dia. $^{+0.5}_{0}$	13

M12 Size

Pre-wired Models (Shielded)

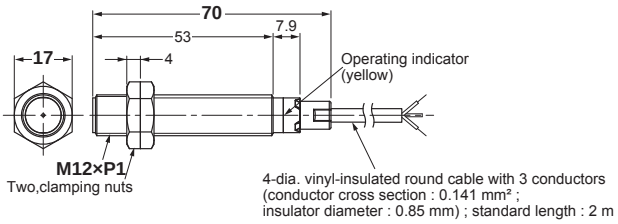
Short Body

E2B-M12KS02-WP-□□/E2B-M12KS04-WP-□□



Long Body

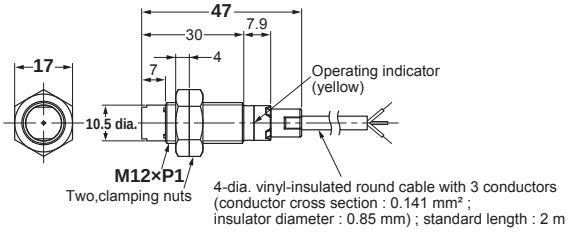
E2B-M12LS02-WP-□□/E2B-M12LS04-WP-□□



Pre-wired Models (Unshielded)

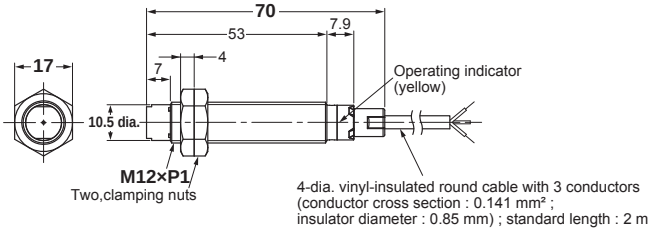
Short Body

E2B-M12KN05-WP-□□/E2B-M12KN08-WP-□□



Long Body

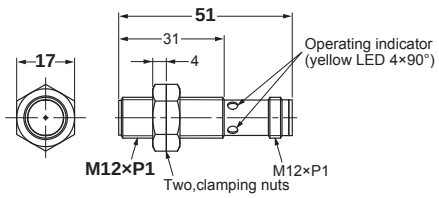
E2B-M12LN05-WP-□□/E2B-M12LN08-WP-□□



Connector Models (Shielded)

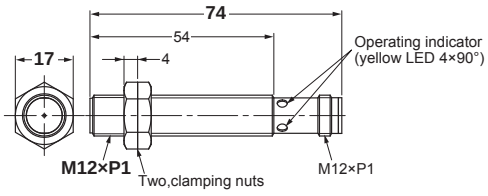
Short Body

E2B-M12KS02-M1-□□/E2B-M12KS04-M1-□□



Long Body

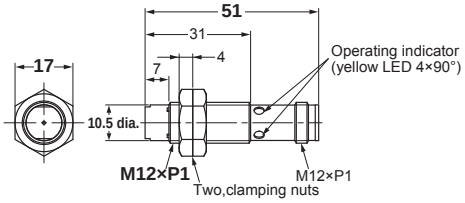
E2B-M12LS02-M1-□□/E2B-M12LS04-M1-□□



Connector Models (Unshielded)

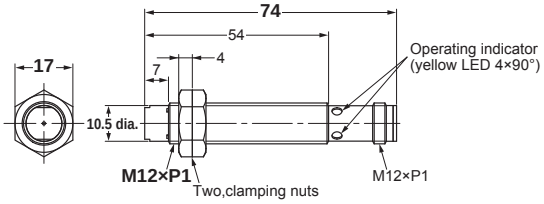
Short Body

E2B-M12KN05-M1-□□/E2B-M12KN08-M1-□□

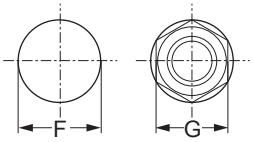


Long Body

E2B-M12LN05-M1-□□/E2B-M12LN08-M1-□□



Mounting Hole Cutout Dimensions



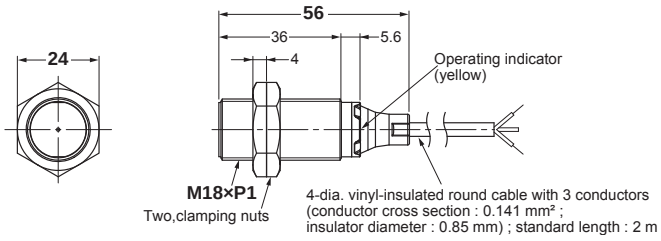
External diameter of Proximity Sensor	Dimension F (mm)	Dimension G (mm)
M12	12.5 dia. $^{+0.5}_{0}$	17

M18 Size

Pre-wired Models (Shielded)

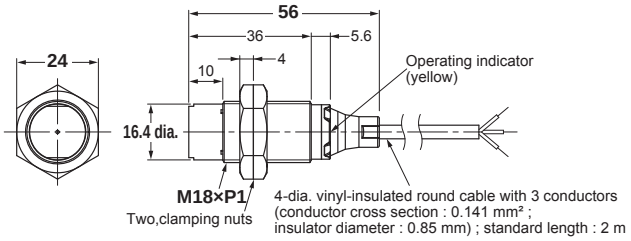
Short Body

E2B-M18KS05-WP-□□/E2B-M18KS08-WP-□□



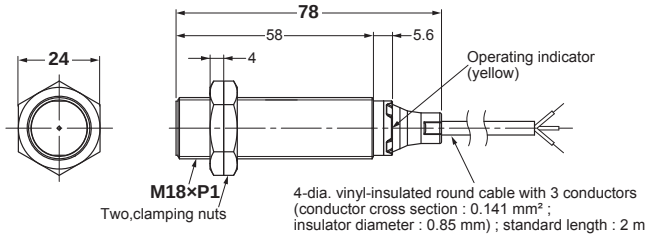
Pre-wired Models (Unshielded)

E2B-M18KN10-WP-□□/E2B-M18KN16-WP-□□

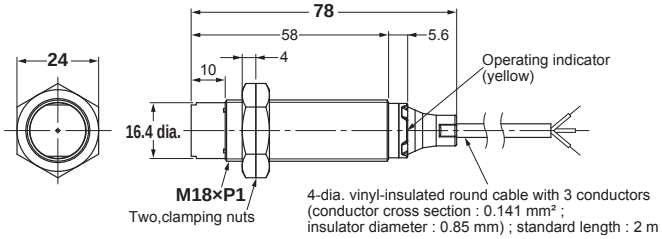


Long Body

E2B-M18LS05-WP-□□/E2B-M18LS08-WP-□□



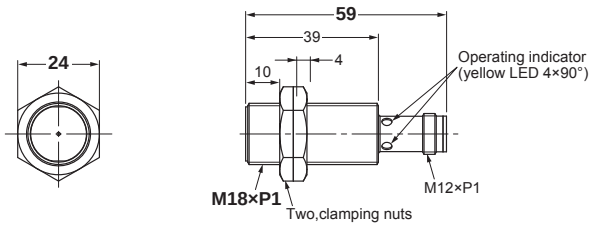
E2B-M18LN10-WP-□□/E2B-M18LN16-WP-□□



Connector Models (Shielded)

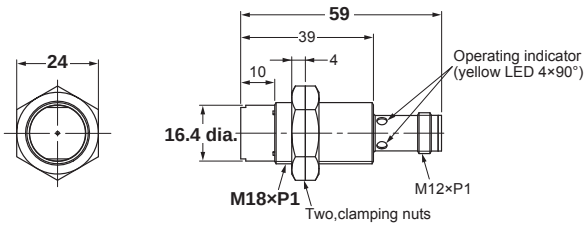
Short Body

E2B-M18KS05-M1-□□/E2B-M18KS08-M1-□□



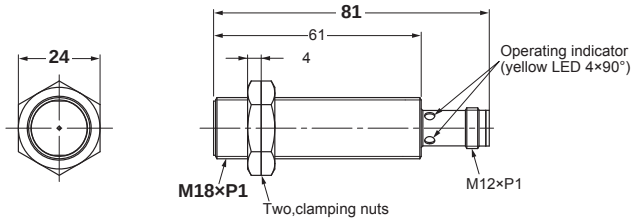
Connector Models (Unshielded)

E2B-M18KN10-M1-□□/E2B-M18KN16-M1-□□

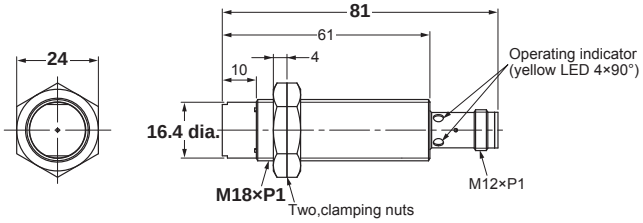


Long Body

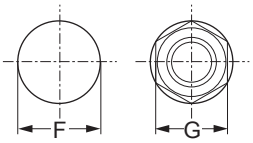
E2B-M18LS05-M1-□□/E2B-M18LS08-M1-□□



E2B-M18LN10-M1-□□/E2B-M18LN16-M1-□□



Mounting Hole Cutout Dimensions



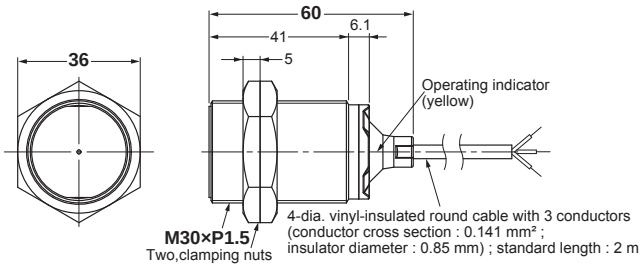
External diameter of Proximity Sensor	Dimension F (mm)	Dimension G (mm)
M18	18.5 dia. $^{+0.5}_{0}$	24

M30 Size

Pre-wired Models (Shielded)

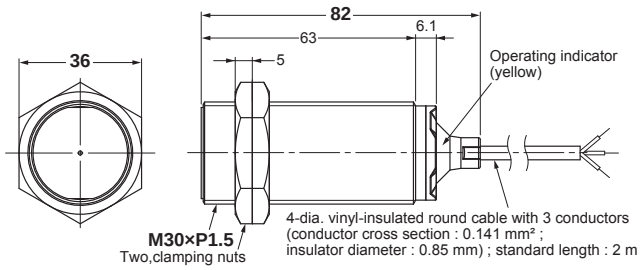
Short Body

E2B-M30KS10-WP-□□/E2B-M30KS15-WP-□□



Long Body

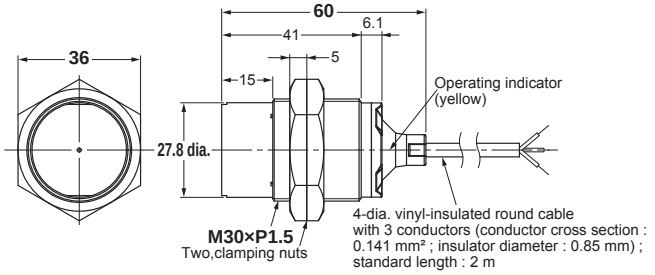
E2B-M30LS10-WP-□□/E2B-M30LS15-WP-□□



Pre-wired Models (Unshielded)

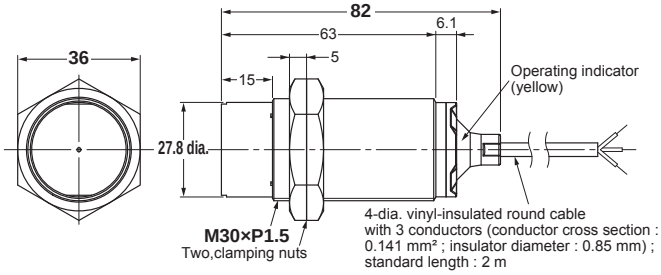
Short Body

E2B-M30KN20-WP-□□



Long Body

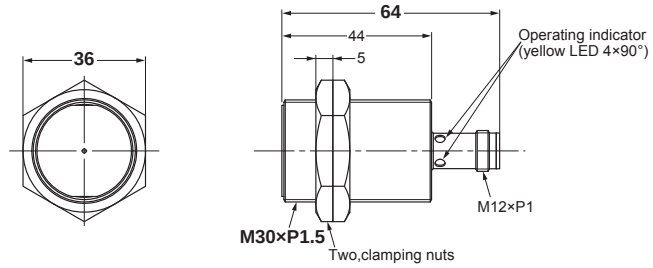
E2B-M30LN20-WP-□□/E2B-M30LN30-WP-□□



Connector Models (Shielded)

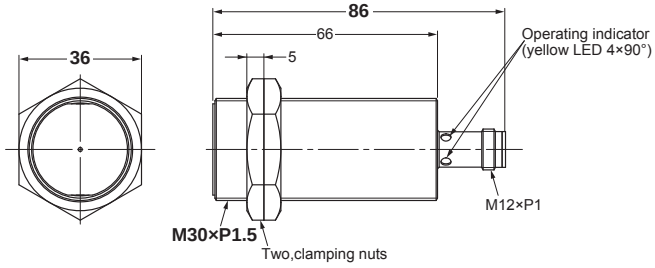
Short Body

E2B-M30KS10-M1-□□/E2B-M30KS15-M1-□□



Long Body

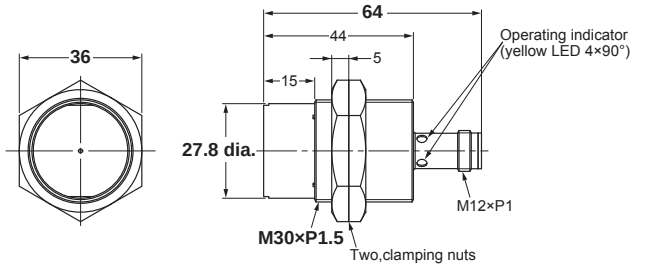
E2B-M30LS10-M1-□□/E2B-M30LS15-M1-□□



Connector Models (Unshielded)

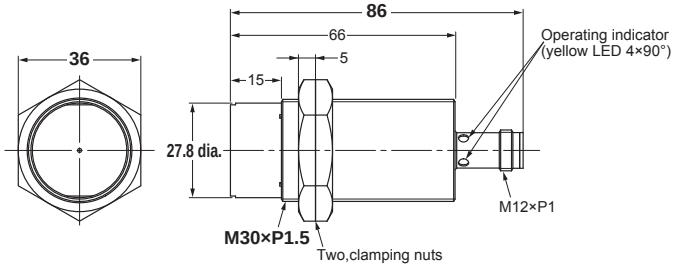
Short Body

E2B-M30KN20-M1-□□

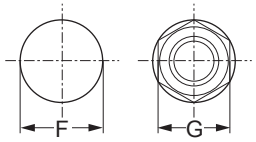


Long Body

E2B-M30LN20-M1-□□/E2B-M30LN30-M1-□□



Mounting Hole Cutout Dimensions



External diameter of Proximity Sensor	Dimension F (mm)	Dimension G (mm)
M30	30.5 dia.$^{+0.5}_{0}$	36

Accessories (Order Separately)

Sensor I/O Connectors
M8 Connector (3 pin)

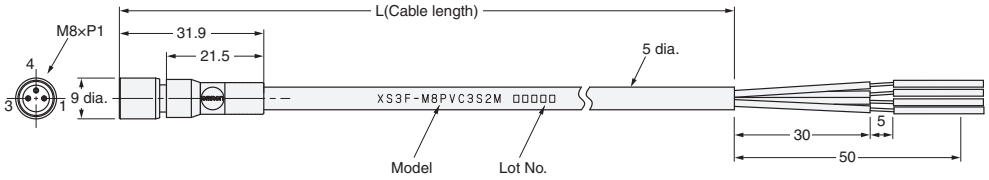
PVC Type

(Unit: mm)

Straight

XS3F-M8PVC3S2M (L = 2 m)
XS3F-M8PVC3S5M (L = 5 m)

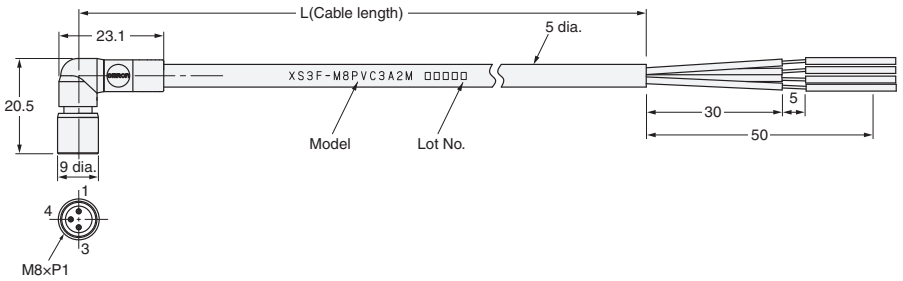




Right-angle

XS3F-M8PVC3A2M (L = 2 m)
XS3F-M8PVC3A5M (L = 5 m)



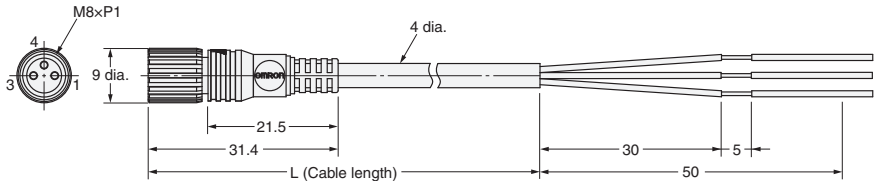


PVC Robot Type

Straight

XS3F-M321-302-R (L = 2 m)
XS3F-M321-305-R (L = 5 m)

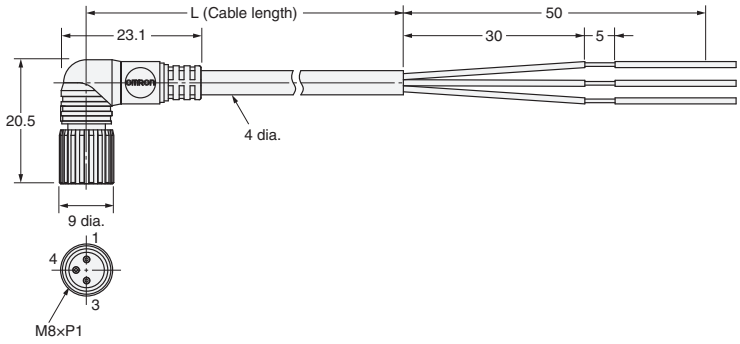




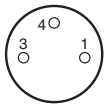
Right-angle

XS3F-M322-302-R (L = 2 m)
XS3F-M322-305-R (L = 5 m)





Pin arrangement



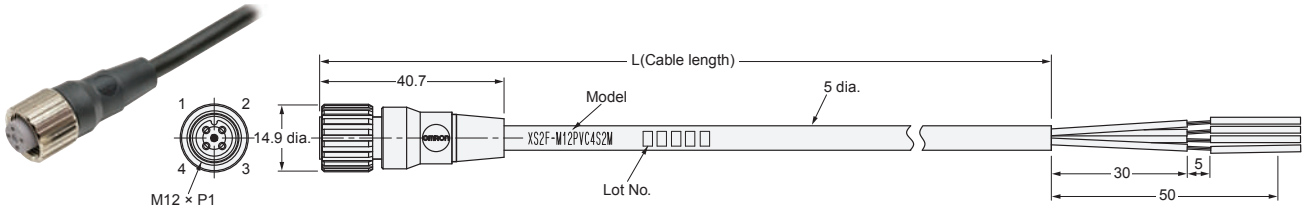
1-Brown
3-Blue
4-Black

Sensor I/O Connectors
M12 Connector (4 pin)

PVC Type

Straight

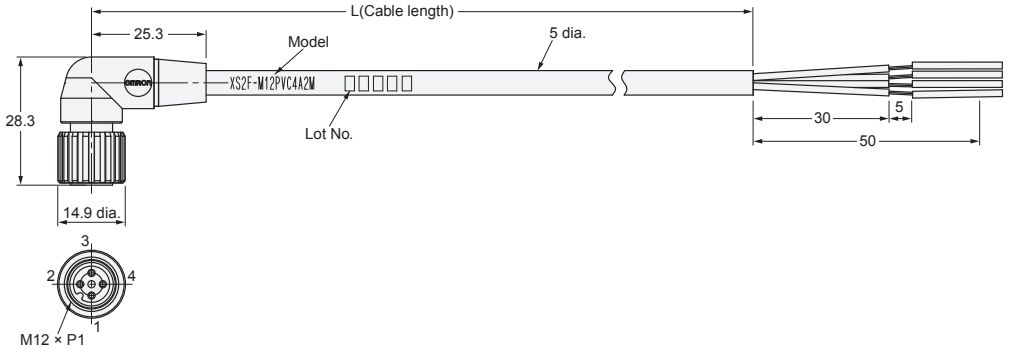
XS2F-M12PVC4S2M (L = 2 m)
XS2F-M12PVC4S5M (L = 5 m)



Right-angle

XS2F-M12PVC4A2M (L = 2 m)
XS2F-M12PVC4A5M (L = 5 m)

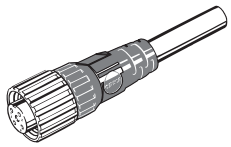


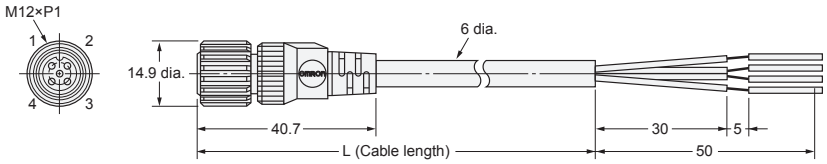


PVC Robot Type

Straight

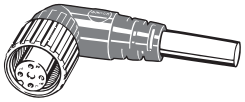
XS2F-D421-D80-F (L = 2 m)
XS2F-D421-G80-F (L = 5 m)

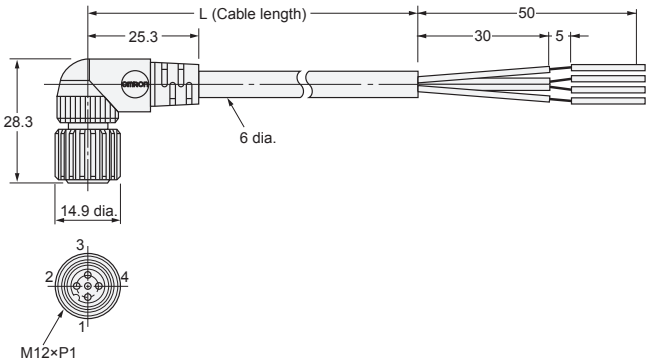




Right-angle

XS2F-D422-D80-F (L = 2 m)
XS2F-D422-G80-F (L = 5 m)





Pin arrangement



1-Brown
2-White
3-Blue
4-Black

Precautions

⚠ WARNING

This product is not designed or rated for ensuring safety of persons. Do not use it for such purpose.



Never use this product with an AC power supply. Otherwise, explosion may result.



Safety Precautions

Load Short-circuit

Do not short-circuit the load, or the E2B may be damaged.
The E2B'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 E2B 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 E2B 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.

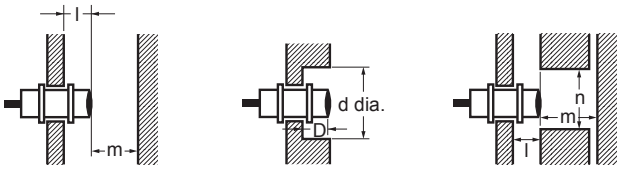
Effects of Surrounding Metal

When mounting the proximity sensor within a metal panel, ensure that the clearances given in the Table1 are maintained. Failure to maintain these distance may cause deterioration in the performance of the sensor.

Table 1

Single Sensing Distance Type

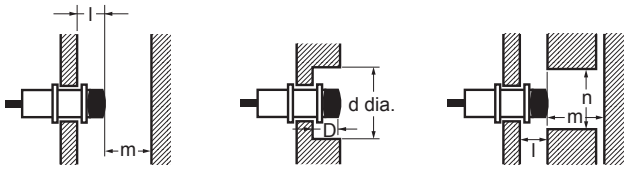
<Shielded>



(Unit: mm)

Item \ Size	M8	M12	M18	M30
l	0	0	0	0
d	8	12	18	30
D	0	0	0	0
m	4.5	8	20	40
n	12	18	27	45

<Unshielded>

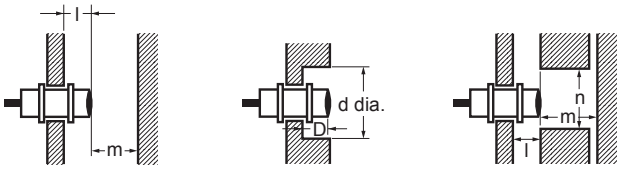


(Unit: mm)

Item \ Size	M8	M12	M18	M30
l	6	15	22	30
d	24	40	55	90
D	6	15	22	30
m	8	20	40	70
n	24	36	54	90

Double Sensing Distance Type

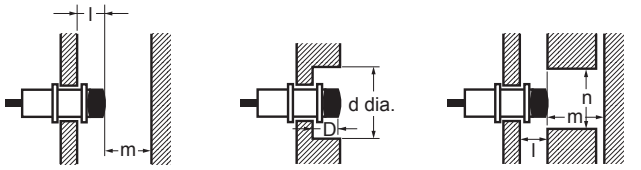
<Shielded>



(Unit: mm)

Item \ Size	M8	M12	M18	M30
l	0	2.4	3.6	6
d	8	18	27	45
D	0	2.4	3.6	6
m	4.5	12	24	45
n	12	18	27	45

<Unshielded>



(Unit: mm)

Item \ Size	M8	M12	M18	M30
l	12	15	25	45
d	24	40	70	140
D	12	15	25	45
m	8	20	48	90
n	24	40	70	140

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 proximity sensors face to face or side by side, ensure that the minimum distances given in the Table2 are maintained.

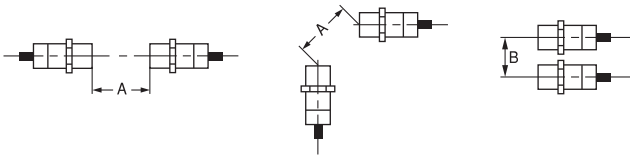


Table 2

Unit: (mm)

Size	M8				M12				M18				M30			
Type	Shielded		Unshielded		Shielded		Unshielded		Shielded		Unshielded		Shielded		Unshielded	
Model E2B-( )	S08□S01	S08□S02	S08□N02	S08□N04	M12□S02	M12□S04	M12□N05	M12□N08	M18□S05	M18□S08	M18□N10	M18□N16	M30□S10	M30□S15	M30□N20	M30□N30
A	20	20	80	80	30	30	120	120	50	60	200	200	100	110	300	350
B	15	15	60	60	20	20	100	100	35	35	110	120	70	90	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

Do not tighten the sensor mounting nuts with excessive force.

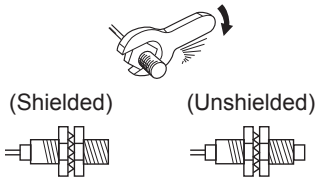


Table 3

Size	Torque
M8	7 N·m
M12	12 N·m
M18	30 N·m
M30	50 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

The Proximity Sensors are tested intensively on water resistance, but in order to ensure maximum performance and life expectancy avoid immersion in water and provide protection from rain or snow.

Operating Environment

Ensure storage and operation of the Proximity Sensor within the given specifications.

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.

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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.
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MEMO

MEMO

READ AND UNDERSTAND THIS DOCUMENT

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