Cylindrical Proximity Sensor

# E2B

## Perfect fit for standard environments

- Embody two seemingly contradictory characteristics: value-for-money and high reliability
- All 372 Models
- Four different sizes: M8, M12, M18 and M30
- Single and double sensing distances, Shielded and unshielded
- A choice of short and long bodies, two connecting methods and four output types
- Operating temperature: –25ºC to 70ºC
- Water resistance: IP67
- With an all-round 360º visible indicator

⚠ Refer to *Safety Precautions* on page 20.



For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

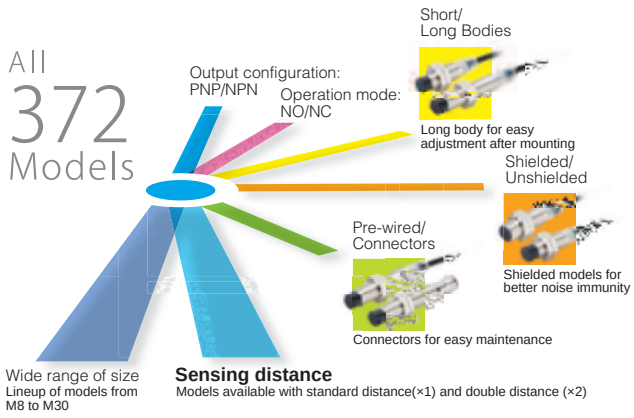
## Features

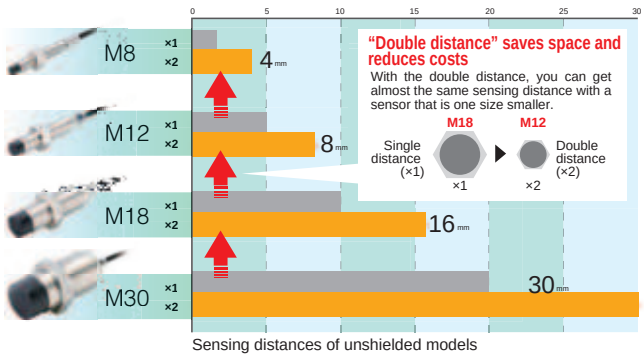
### Wide Variation

#### "Double Distance" Close at Hand

#### Perfect Fit to Your Application Needs

With no less than 372 models in the family.
You can choose the one that exactly meets your needs.
E2B series can save cost & your time via single source.




Sensing distances of unshielded models

### Reliable Performance

#### 360-degree indication

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

* The 360-degree indication is only for Pre-wired Models of M12, M18, and M30.
* The other models (Pre-wired Models of M8 and all the Connector Models) have 4 LEDs at 90-degree intervals, which realize clear visibility from a 360-degree angle.




#### Oil-mist environment resistant!

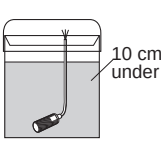


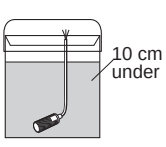
#### IP67

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.

| Degree of Protection | E2B | E2E (M8/M12/M18/ M30 size) | Small Dia E2E (3 dia./4 dia./ 6.5 dia/M4/M5) |
|---|---|---|---|
| Water resistance | IP67 | IP67<br>IP69K *1 | IP67 |
| Oil resistance | In oil-mist of soluble cutting oil diluted, 250 hours, the temperature of atmosphere is 23ºC | Soaked in oil (soluble type and insoluble) 500 hours, temperature of oil 50ºC | Soaked in insoluble oil 250 hours, temperature of oil 50ºC |






*1. There are so many kinds of E2E, not all IP69K rated. In detailed part#, please contact your OMRON representative.

## 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**
WZ: Pre-wired, PVC, dia 4 mm
Conductor cross section : 0.3 $mm^2$
Insulator diameter : 1.3 mm
(See note 1.)
WP: Pre-wired, PVC, dia 4 mm
Conductor cross section : 0.141 $mm^2$
Insulator diameter : 0.85 mm
M1: M12 connector
MC: M8 connector (3 pin)
(See note 2.)

**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.)

Note: 1. Only M12, M18, M30 type.
2. "WP", "M1" and "MC" are listed products of UL.

## 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<br>-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<br>-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<br>±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 VDC ±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).<br>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 | | | |
| | Toothed washer | | Zinc-plated iron | | | |

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<br>-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<br>-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<br>±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 VDC ±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).<br>Connector models (M12-4pin) | | | |
| Weight (packaged) | Pre-wired model | | Short body: Approx. 75 g, Long body: Approx. 80 g (See note 2.) | | | |
| | 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 | | | |
| | Toothed washer | | Zinc-plated iron | | | |

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. In case of 'WP' cable type.

| 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<br>-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<br>-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<br>±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 VDC ±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).<br>Connector models (M12-4pin) | | | |
| Weight (packaged) | Pre-wired model | | Short body: Approx. 95 g, Long body: Approx. 110 g (See note 2.) | | | |
| | 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 | | | |
| | Toothed washer | | Zinc-plated iron | | | |

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. In case of 'WP' cable type.

| 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<br>-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<br>-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<br>±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 VDC ±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).<br>Connector models (M12-4pin) | | | |
| Weight (packaged) | Pre-wired model | | Short body: Approx. 160 g, Long body: Approx. 210 g (See note 2.) | | | |
| | 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 | | | |
| | Toothed washer | | Zinc-plated iron | | | |

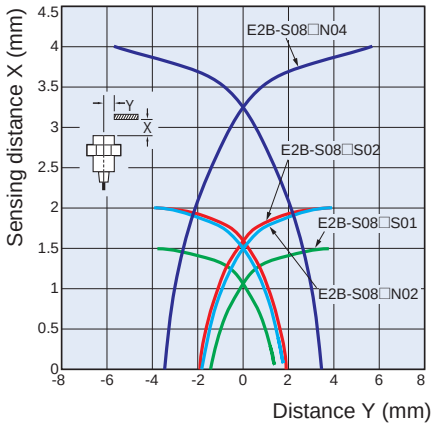
Note: 1. The response frequency is an average value. Measurement conditions are as follows: standard sensing object, a distance of twice the standard sensing object between sensing objects, and a setting distance of half the sensing distance.
2. In case of 'WP' cable type.

# Engineering Data (Reference Value)

## Operating Range

### M8

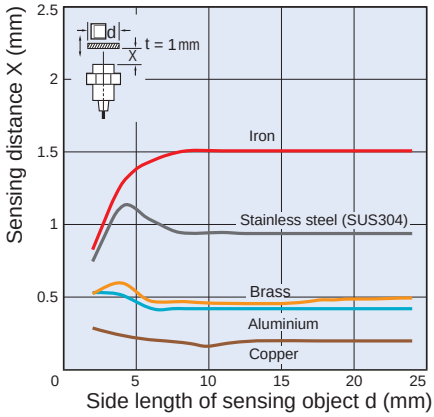
**E2B-S08**



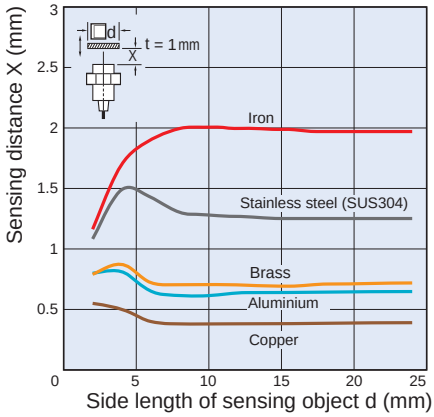

## Influence of Sensing Object Size and Materials

### Shielded Models

**E2B-S08□S01**

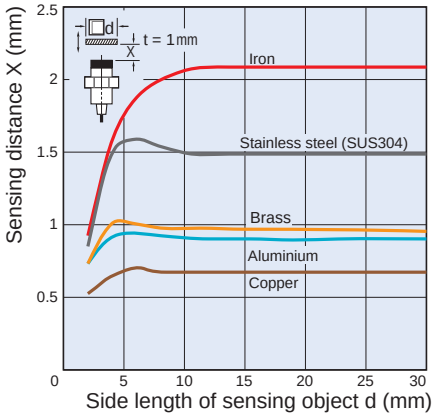



**E2B-S08□S02**

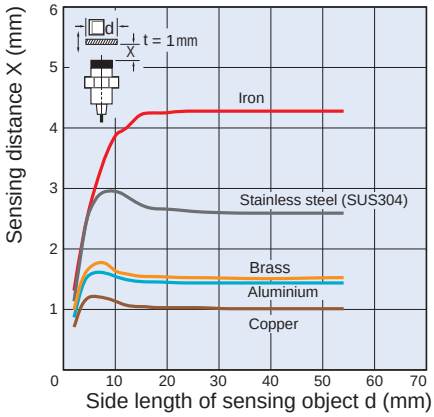



### Unshielded Models

**E2B-S08□N02**



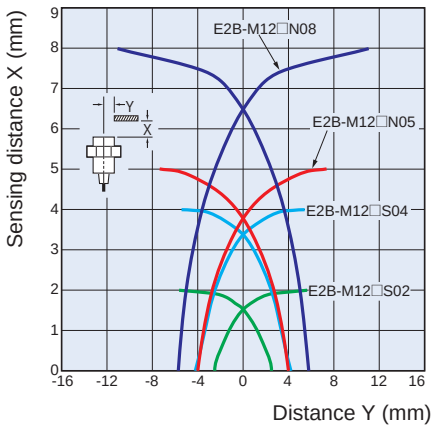

**E2B-S08□N04**




## Operating Range

### M12

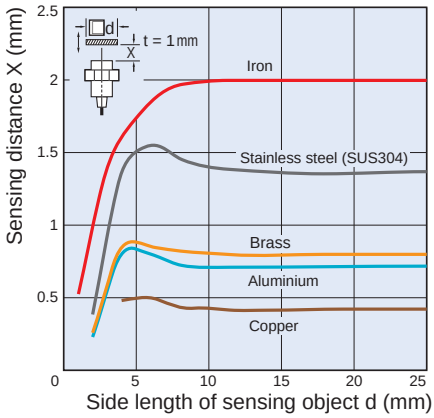
**E2B-M12**



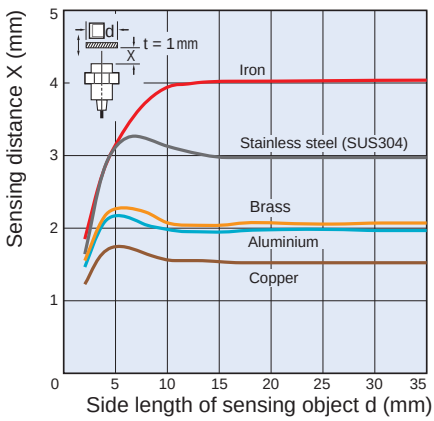

## Influence of Sensing Object Size and Materials

### Shielded Models

**E2B-M12□S02**

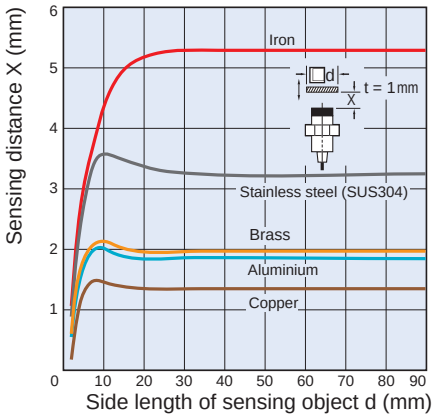



**E2B-M12□S04**

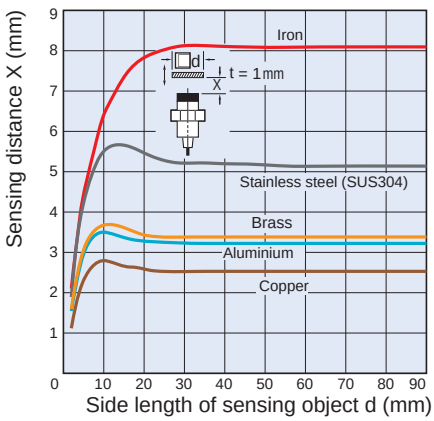



### Unshielded Models

**E2B-M12□N05**



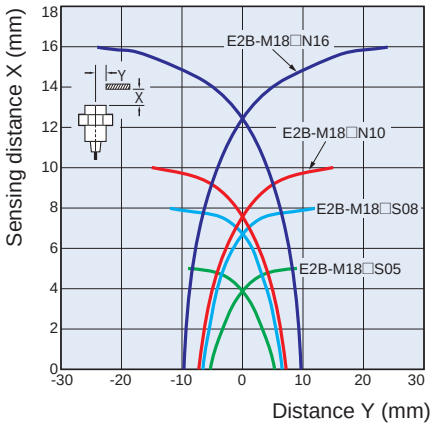

**E2B-M12□N08**



## Operating Range

### M18

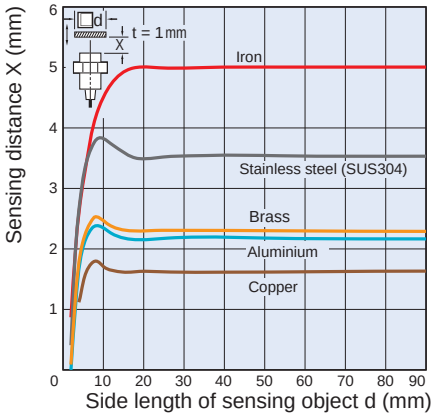
**E2B-M18**



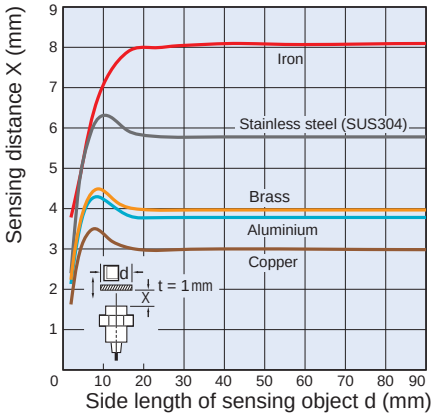

## Influence of Sensing Object Size and Materials

### Shielded Models

**E2B-M18□S05**

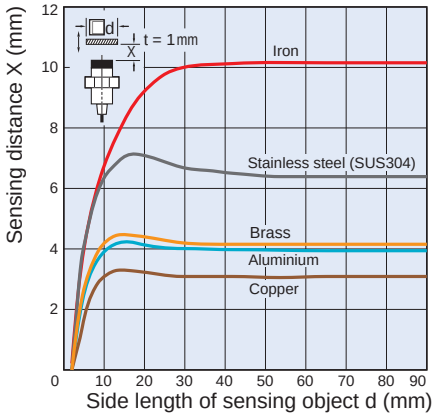



**E2B-M18□S08**

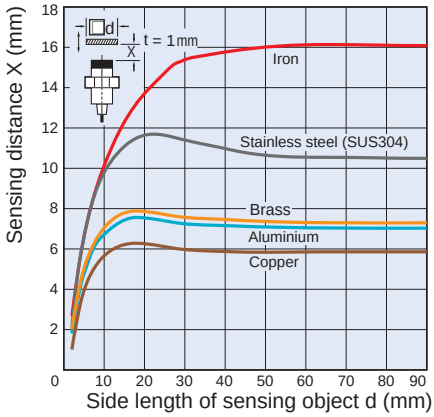



### Unshielded Models

**E2B-M18□N10**



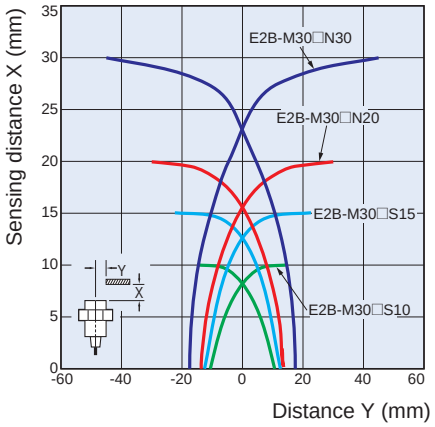

**E2B-M18□N16**




## Operating Range

### M30

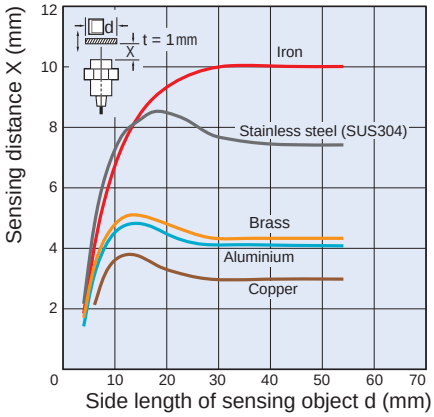
**E2B-M30**



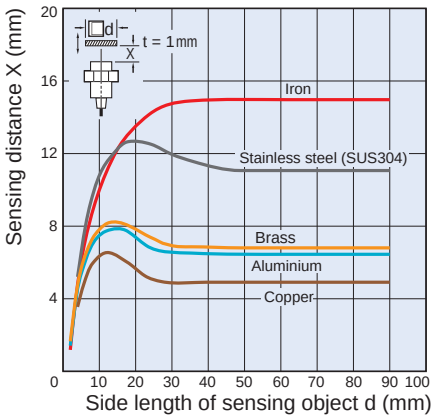

## Influence of Sensing Object Size and Materials

### Shielded Models

**E2B-M30□S10**

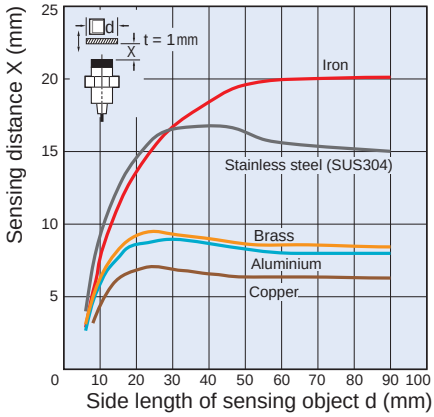



**E2B-M30□S15**

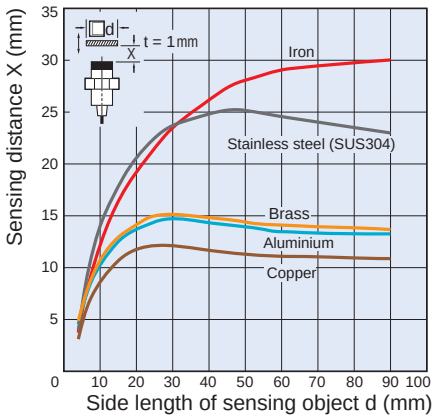



### Unshielded Models

**E2B-M30□N20**

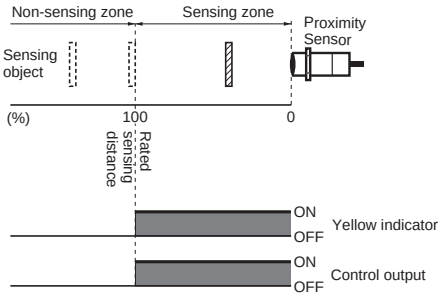
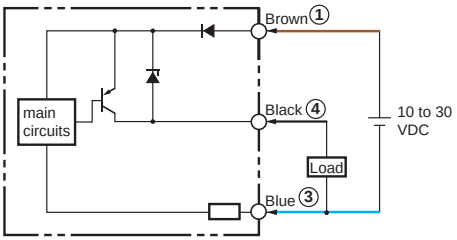


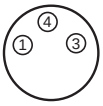
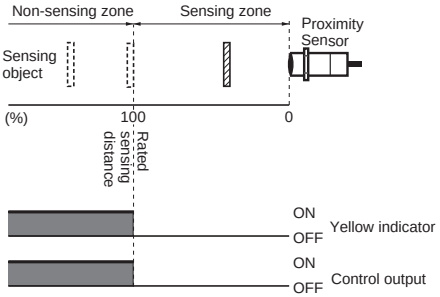
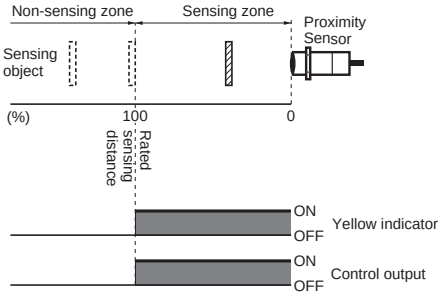
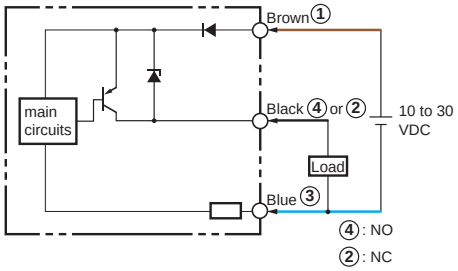

**E2B-M30LN30**

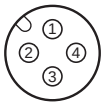
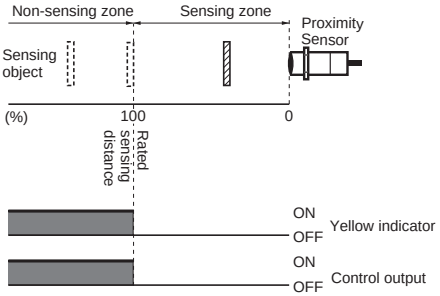


## I/O Circuit Diagrams

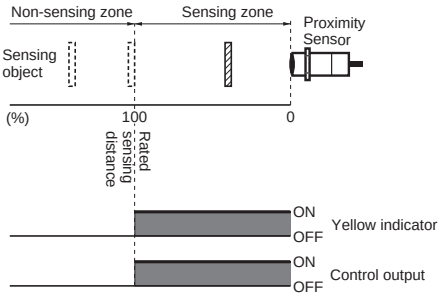
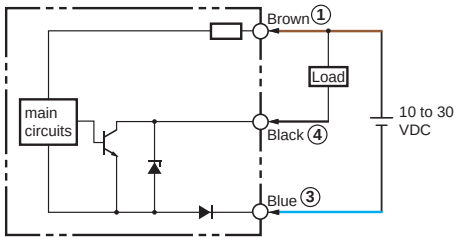
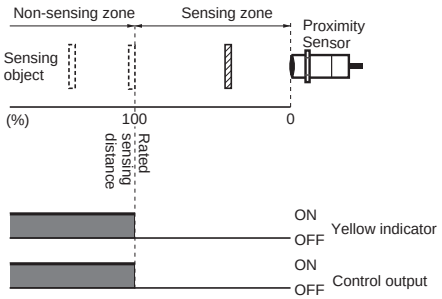
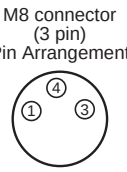
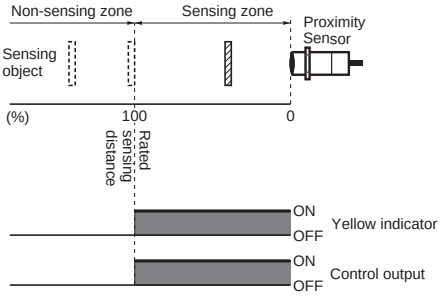
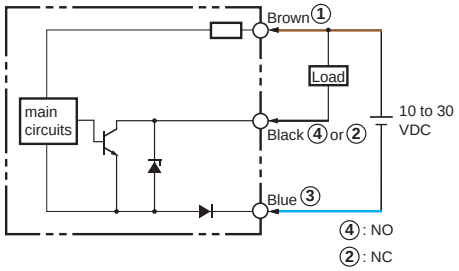
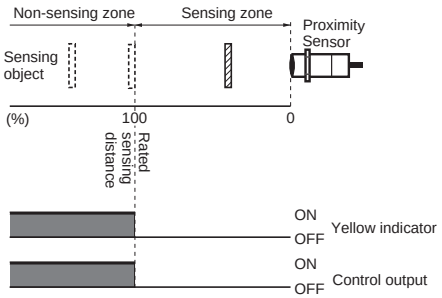
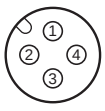
### PNP Output

<table>
<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<br>(3 pin)<br>Pin Arrangement

</td></tr>
<tr><td>NC</td><td>
</td></tr>
<tr><td>NO</td><td rowspan="2">E2B-M12□-□-B□<br>E2B-M18□-□-B□<br>E2B-M30□-□-B□</td><td>
</td><td rowspan="2">

M12 Connector<br>(4 pin)<br>Pin Arrangement

</td></tr>
<tr><td>NC</td><td>
</td></tr>
</table>

## NPN Output

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





M8 connector
(3 pin)
Pin Arrangement





M12 Connector
(4 pin)
Pin Arrangement

## Dimensions

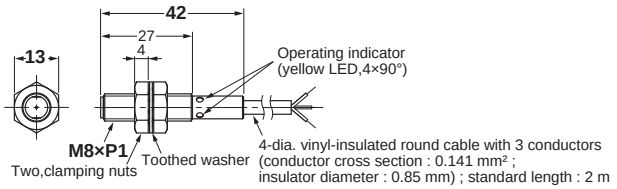
Note: All units are in millimeters unless otherwise indicated.

### M8 Size

#### Pre-wired Models (Shielded)

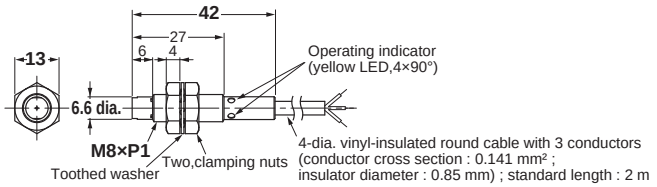
**Short Body**

**E2B-S08KS01-WP-□□/E2B-S08KS02-WP-□□**



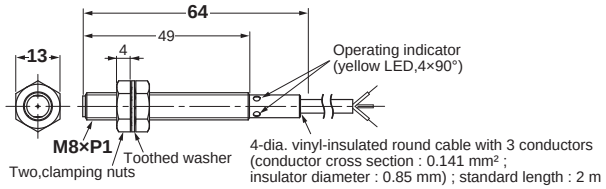

#### Pre-wired Models (Unshielded)

**E2B-S08KN02-WP-□□/E2B-S08KN04-WP-□□**

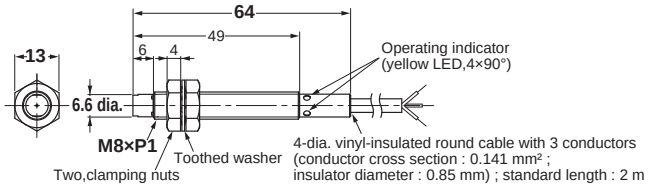



**Long Body**

**E2B-S08LS01-WP-□□/E2B-S08LS02-WP-□□**



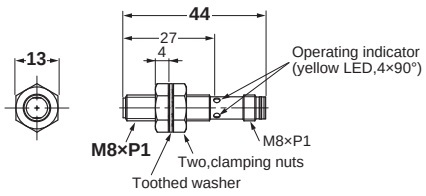

**E2B-S08LN02-WP-□□/E2B-S08LN04-WP-□□**




#### Connector Models (Shielded)

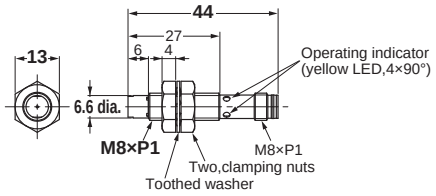
**Short Body**

**E2B-S08KS01-MC-□□/E2B-S08KS02-MC-□□**



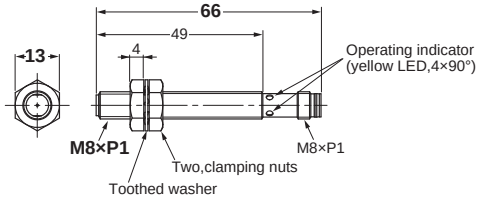

#### Connector Models (Unshielded)

**E2B-S08KN02-MC-□□/E2B-S08KN04-MC-□□**

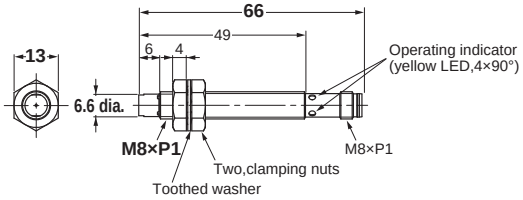



**Long Body**

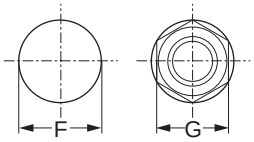
**E2B-S08LS01-MC-□□/E2B-S08LS02-MC-□□**




**E2B-S08LN02-MC-□□/E2B-S08LN04-MC-□□**




**Mounting Hole Cutout Dimensions**



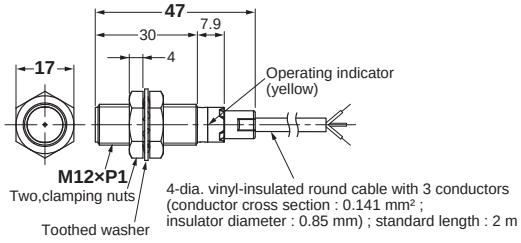

| External diameter of Proximity Sensor | Dimension F (mm) | Dimension G (mm) |
|---|---|---|
| M8 | 8.5 dia. $^{+0.5}_{0}$ | 13 |

# M12 Size

## Pre-wired Models (Shielded)

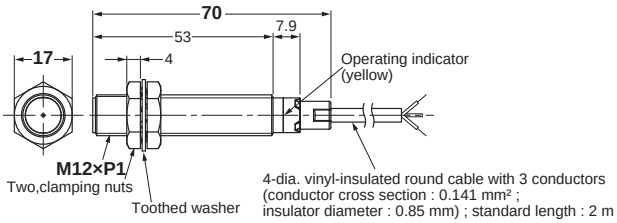
### Short Body

**E2B-M12KS02-WP-□□/E2B-M12KS04-WP-□□**




### Long Body

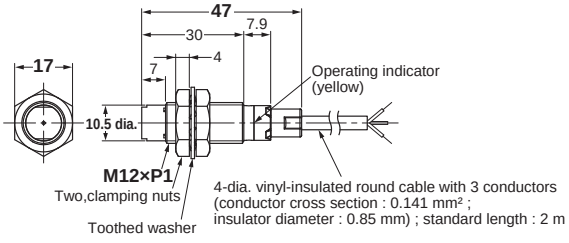
**E2B-M12LS02-WP-□□/E2B-M12LS04-WP-□□**




## Pre-wired Models (Unshielded)

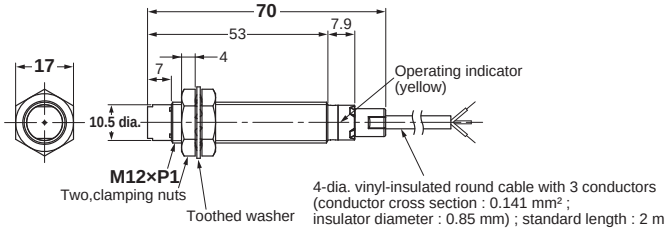
### Short Body

**E2B-M12KN05-WP-□□/E2B-M12KN08-WP-□□**




### Long Body

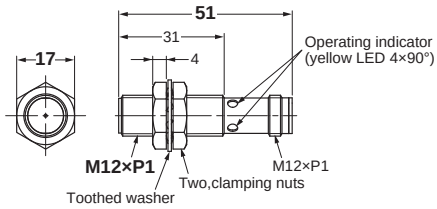
**E2B-M12LN05-WP-□□/E2B-M12LN08-WP-□□**




## Connector Models (Shielded)

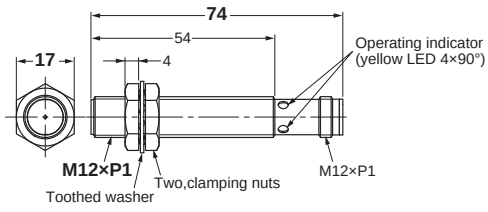
### Short Body

**E2B-M12KS02-M1-□□/E2B-M12KS04-M1-□□**




### Long Body

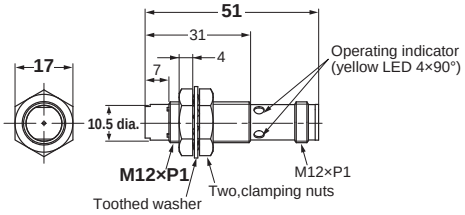
**E2B-M12LS02-M1-□□/E2B-M12LS04-M1-□□**




## Connector Models (Unshielded)

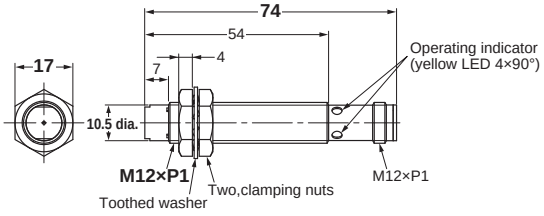
### Short Body

**E2B-M12KN05-M1-□□/E2B-M12KN08-M1-□□**

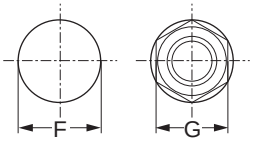



### Long Body

**E2B-M12LN05-M1-□□/E2B-M12LN08-M1-□□**




### Mounting Hole Cutout Dimensions



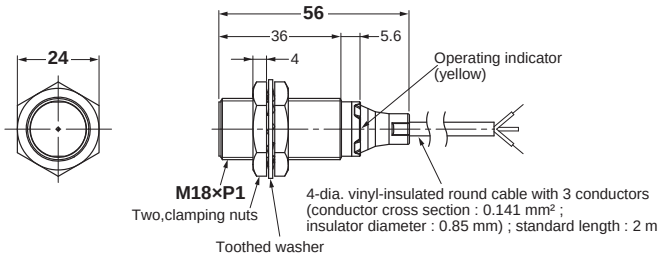

| External diameter of Proximity Sensor | Dimension F (mm) | Dimension G (mm) |
|---|---|---|
| M12 | 12.5 dia.$^{+0.5}_{0}$ | 17 |

## M18 Size

### Pre-wired Models (Shielded)

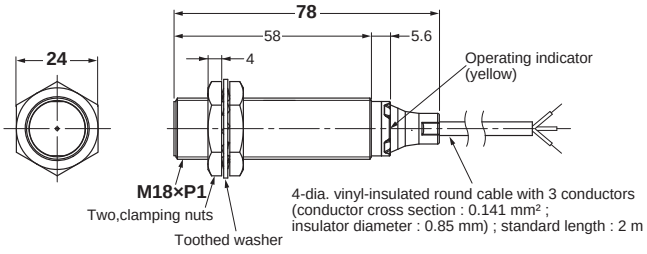
#### Short Body

**E2B-M18KS05-WP-□□/E2B-M18KS08-WP-□□**




#### Long Body

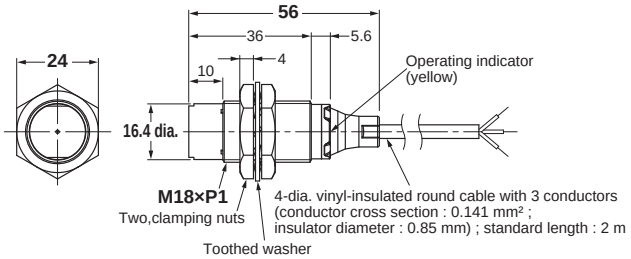
**E2B-M18LS05-WP-□□/E2B-M18LS08-WP-□□**




### Pre-wired Models (Unshielded)

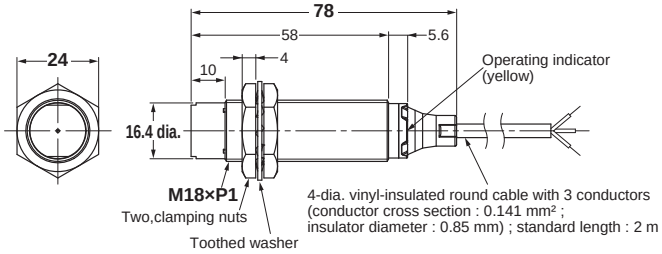
#### Short Body

**E2B-M18KN10-WP-□□/E2B-M18KN16-WP-□□**




#### Long Body

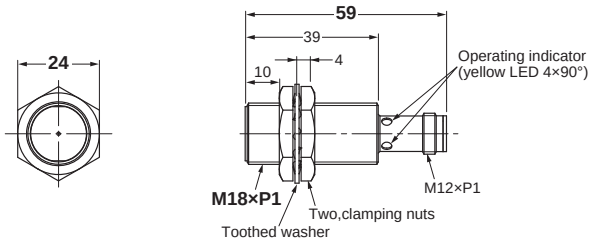
**E2B-M18LN10-WP-□□/E2B-M18LN16-WP-□□**




### Connector Models (Shielded)

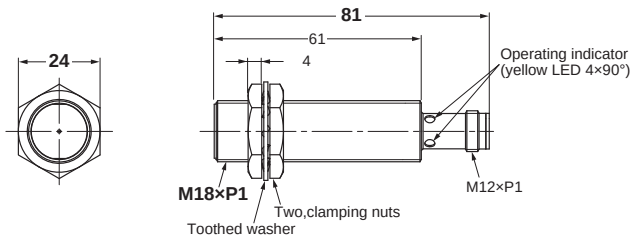
#### Short Body

**E2B-M18KS05-M1-□□/E2B-M18KS08-M1-□□**




#### Long Body

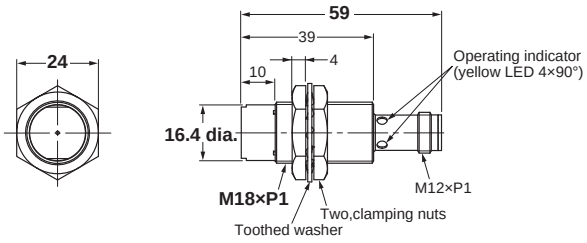
**E2B-M18LS05-M1-□□/E2B-M18LS08-M1-□□**




### Connector Models (Unshielded)

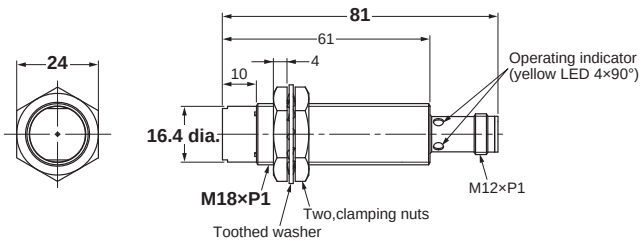
#### Short Body

**E2B-M18KN10-M1-□□/E2B-M18KN16-M1-□□**

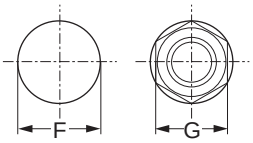



#### Long Body

**E2B-M18LN10-M1-□□/E2B-M18LN16-M1-□□**




### Mounting Hole Cutout Dimensions



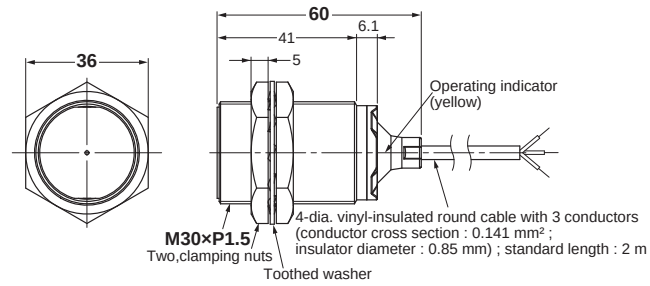

| External diameter of Proximity Sensor | Dimension F (mm) | Dimension G (mm) |
|---|---|---|
| M18 | 18.5 dia.$^{+0.5}_{0}$ | 24 |

## M30 Size

### Pre-wired Models (Shielded)

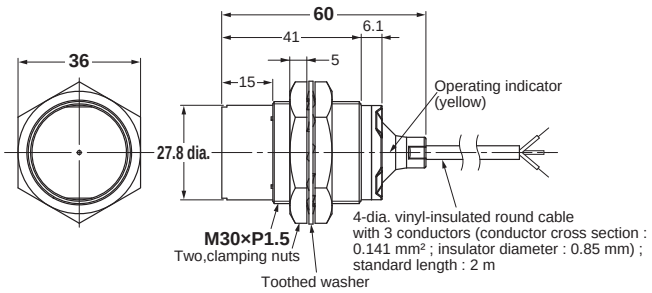
#### Short Body

**E2B-M30KS10-WP-□□/E2B-M30KS15-WP-□□**



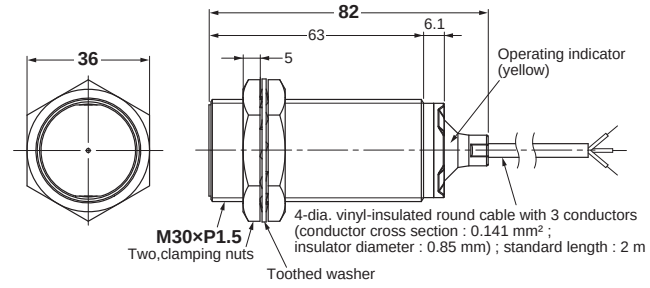

### Pre-wired Models (Unshielded)

**E2B-M30KN20-WP-□□**

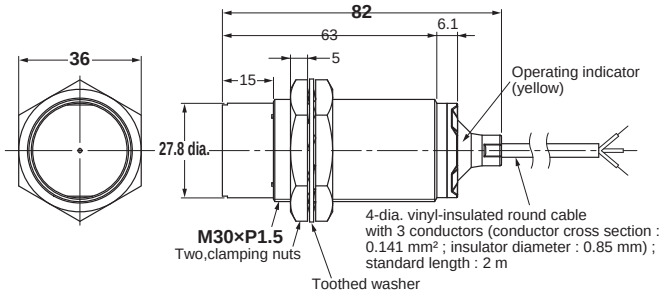



#### Long Body

**E2B-M30LS10-WP-□□/E2B-M30LS15-WP-□□**



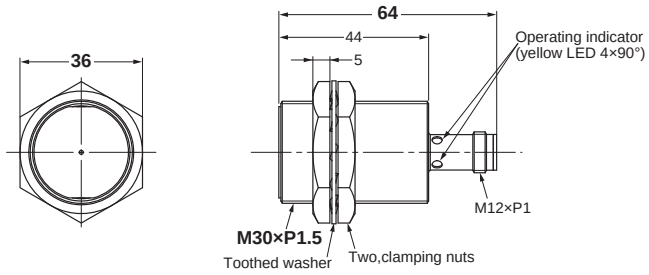

**E2B-M30LN20-WP-□□/E2B-M30LN30-WP-□□**




### Connector Models (Shielded)

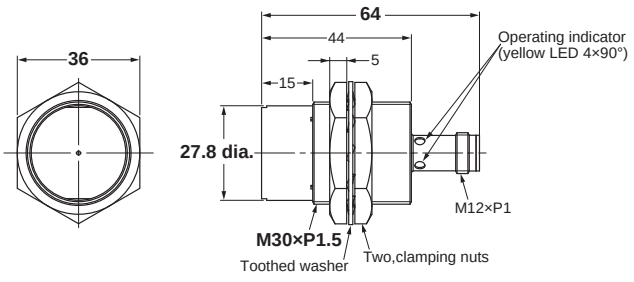
#### Short Body

**E2B-M30KS10-M1-□□/E2B-M30KS15-M1-□□**



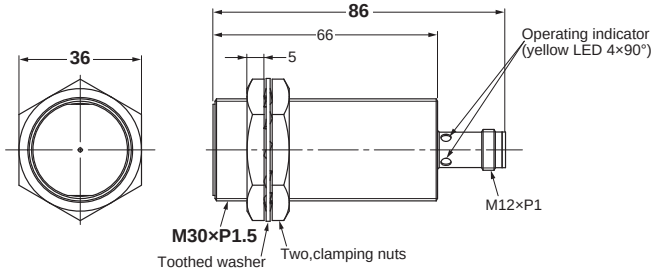

### Connector Models (Unshielded)

**E2B-M30KN20-M1-□□**

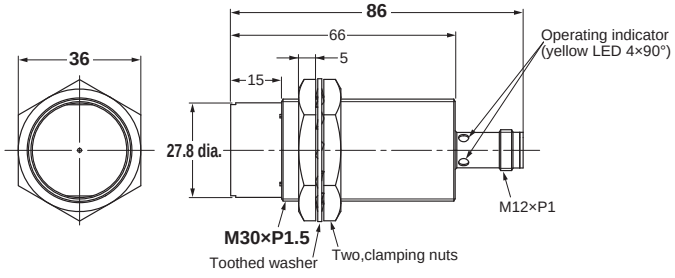



#### Long Body

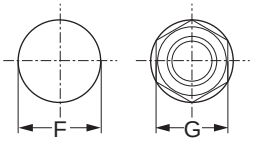
**E2B-M30LS10-M1-□□/E2B-M30LS15-M1-□□**




**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)**

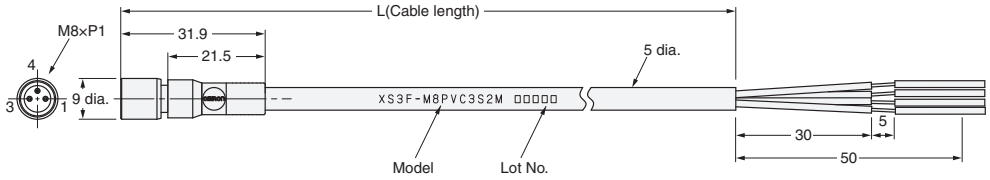
### PVC Type

(Unit: mm)

#### Straight

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

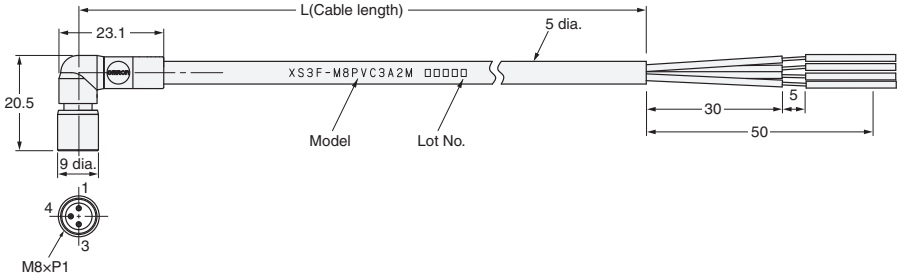





#### Right-angle

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



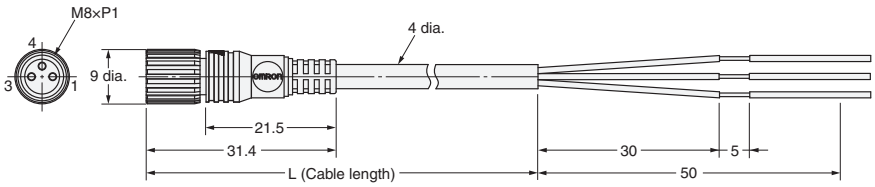



### PVC Robot Type

#### Straight

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

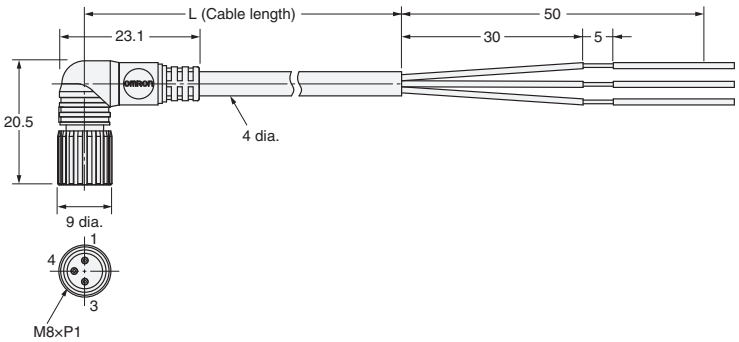




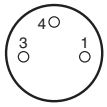

#### Right-angle

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






### Pin arrangement



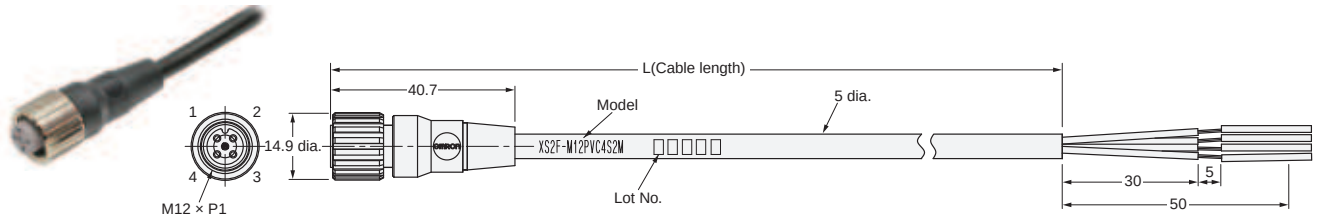

1-Brown
3-Blue
4-Black

**Sensor I/O Connectors**
**M12 Connector (4 pin)**

## PVC Type

### Straight

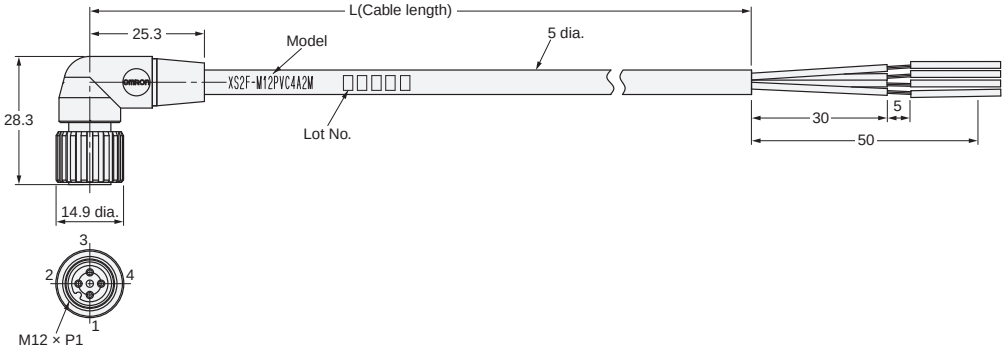
**XS2F-M12PVC4S2M (L = 2 m)**
**XS2F-M12PVC4S5M (L = 5 m)**




### Right-angle

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

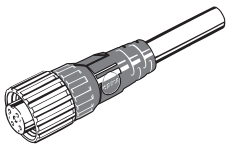


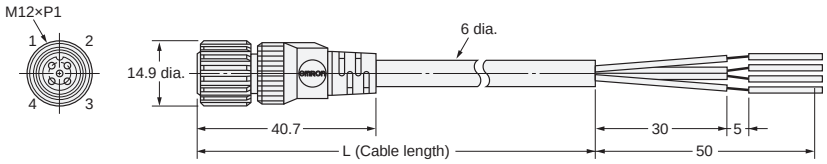



## PVC Robot Type

### Straight

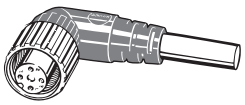
**XS2F-D421-D80-F (L = 2 m)**
**XS2F-D421-G80-F (L = 5 m)**

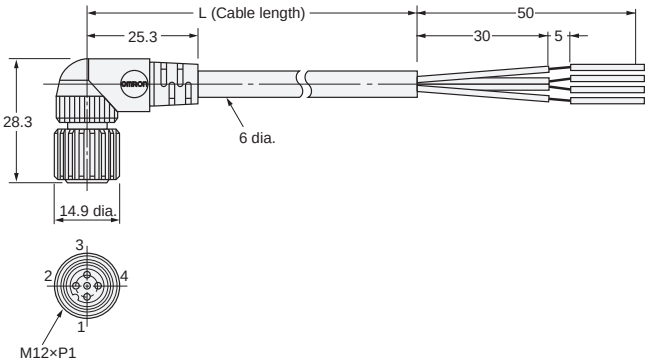





### Right-angle

**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.**

When provided with the UL Listing Mark, the E2B series with M1 or MC suffix shall be used with a Listed cable/connector assembly rated minimum 30V, minimum 200mA, in the final installation.

### 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.

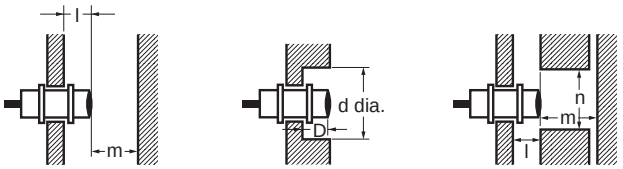
##### Effects of Surrounding Metal

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**

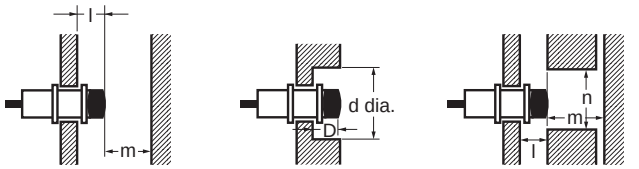
**<Shielded>**




**(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>**

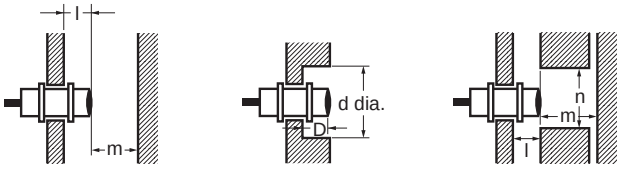



**(Unit: mm)**

| 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**

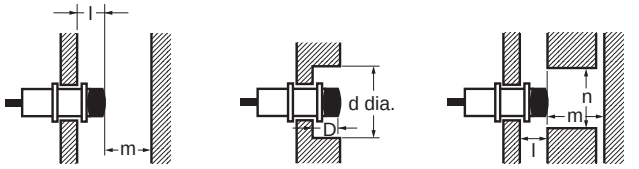
**<Shielded>**




**(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.

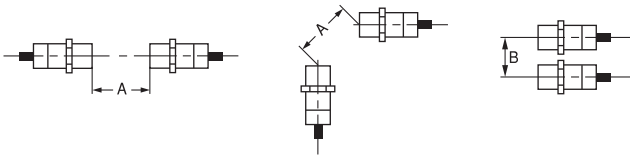



**Table 2**

**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.

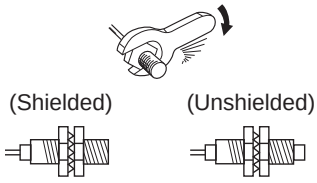



**Table 3**

| 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.

### <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.

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