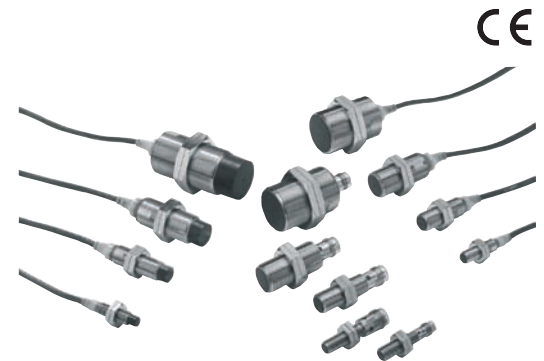


# Inductive proximity sensor with stainless steel body

# E2A-S

Inductive proximity sensor E2A-S was created and tested for applications in the harsh environment and at tough vibration conditions with stainless body.

- M8, M12, M18, and M30 housings with connector or pre-wired connection
- PNP or NPN output
- NO, NC, or NO+NC operation mode



## Ordering Information

### DC 3-wire Models (NO, NC) / DC 4-wire Models (NO+NC)

| Size                 | Sensing distance     | Connection           | Body material     | Thread length (overall length) | Output configuration | Operation mode NO    | Operation mode NC    | Operation mode NO + NC |      |
|----------------------|----------------------|----------------------|-------------------|--------------------------------|----------------------|----------------------|----------------------|------------------------|------|
| M8                   | Shielded             | Pre-wired            | Stainless steel   | 27 (40)                        | PNP                  | E2A-S08KS02-WP-B1 2M | E2A-S08KS02-WP-B2 2M | n.a.                   |      |
|                      |                      |                      |                   |                                | NPN                  | E2A-S08KS02-WP-C1 2M | E2A-S08KS02-WP-C2 2M | n.a.                   |      |
|                      |                      |                      |                   | 49 (62)                        | PNP                  | E2A-S08LS02-WP-B1 2M | E2A-S08LS02-WP-B2 2M | n.a.                   |      |
|                      |                      |                      |                   |                                | NPN                  | E2A-S08LS02-WP-C1 2M | E2A-S08LS02-WP-C2 2M | n.a.                   |      |
|                      |                      | M12 connector        |                   | 27 (43)                        | PNP                  | E2A-S08KS02-M1-B1    | E2A-S08KS02-M1-B2    | n.a.                   |      |
|                      |                      |                      |                   |                                | NPN                  | E2A-S08KS02-M1-C1    | E2A-S08KS02-M1-C2    | n.a.                   |      |
|                      |                      |                      |                   | 49 (65)                        | PNP                  | E2A-S08LS02-M1-B1    | E2A-S08LS02-M1-B2    | n.a.                   |      |
|                      |                      |                      |                   |                                | NPN                  | E2A-S08LS02-M1-C1    | E2A-S08LS02-M1-C2    | n.a.                   |      |
|                      |                      | M8 connector (3-pin) |                   | 27 (39)                        | PNP                  | E2A-S08KS02-M5-B1    | E2A-S08KS02-M5-B2    | n.a.                   |      |
|                      |                      |                      |                   |                                | NPN                  | E2A-S08KS02-M5-C1    | E2A-S08KS02-M5-C2    | n.a.                   |      |
|                      |                      |                      |                   | 49 (61)                        | PNP                  | E2A-S08LS02-M5-B1    | E2A-S08LS02-M5-B2    | n.a.                   |      |
|                      |                      |                      |                   |                                | NPN                  | E2A-S08LS02-M5-C1    | n.a.                 | n.a.                   |      |
|                      | M8 connector (4-pin) | 27 (39)              |                   | PNP                            | E2A-S08KS02-M3-B1    | E2A-S08KS02-M3-B2    | n.a.                 |                        |      |
|                      |                      |                      |                   | NPN                            | E2A-S08KS02-M3-C1    | n.a.                 | n.a.                 |                        |      |
|                      |                      | 49 (61)              |                   | PNP                            | E2A-S08LS02-M3-B1    | n.a.                 | E2A-S08LS02-M3-B3    |                        |      |
|                      |                      |                      |                   | NPN                            | n.a.                 | n.a.                 | n.a.                 |                        |      |
|                      | Non-shielded         | 4.0 mm               |                   | Pre-wired                      | 27 (40)              | PNP                  | E2A-S08KN04-WP-B1 2M | E2A-S08KN04-WP-B2 2M   | n.a. |
|                      |                      |                      |                   |                                |                      | NPN                  | E2A-S08KN04-WP-C1 2M | E2A-S08KN04-WP-C2 2M   | n.a. |
|                      |                      |                      |                   |                                | 49 (62)              | PNP                  | E2A-S08LN04-WP-B1 2M | n.a.                   | n.a. |
|                      |                      |                      |                   |                                |                      | NPN                  | E2A-S08LN04-WP-C1 2M | n.a.                   | n.a. |
|                      |                      |                      |                   | M12 connector                  | 27 (43)              | PNP                  | E2A-S08KN04-M1-B1    | E2A-S08KN04-M1-B2      | n.a. |
|                      |                      |                      |                   |                                |                      | NPN                  | E2A-S08KN04-M1-C1    | n.a.                   | n.a. |
|                      |                      |                      |                   |                                | 49 (65)              | PNP                  | E2A-S08LN04-M1-B1    | E2A-S08LN04-M1-B2      | n.a. |
|                      |                      |                      |                   |                                |                      | NPN                  | E2A-S08LN04-M1-C1    | n.a.                   | n.a. |
| M8 connector (3-pin) |                      |                      | 27 (39)           | PNP                            | E2A-S08KN04-M5-B1    | E2A-S08KN04-M5-B2    | n.a.                 |                        |      |
|                      |                      |                      |                   | NPN                            | E2A-S08KN04-M5-C1    | E2A-S08KN04-M5-C2    | n.a.                 |                        |      |
|                      |                      |                      | 49 (61)           | PNP                            | E2A-S08LN04-M5-B1    | E2A-S08LN04-M5-B2    | n.a.                 |                        |      |
|                      |                      |                      |                   | NPN                            | E2A-S08LN04-M5-C1    | n.a.                 | n.a.                 |                        |      |
| M8 connector (4 pin) | 27 (39)              | PNP                  | E2A-S08KN04-M3-B1 | E2A-S08KN04-M3-B2              | n.a.                 |                      |                      |                        |      |
|                      |                      | NPN                  | n.a.              | n.a.                           | n.a.                 |                      |                      |                        |      |
|                      | 49 (61)              | PNP                  | E2A-S08LN04-M3-B1 | n.a.                           | n.a.                 |                      |                      |                        |      |
|                      |                      | NPN                  | n.a.              | n.a.                           | n.a.                 |                      |                      |                        |      |

# E2A-S

| Size          | Sensing distance     | Connection    | Body material   | Thread length (overall length) | Output configuration   | Operation mode NO    | Operation mode NC    | Operation mode NO + NC |      |
|---------------|----------------------|---------------|-----------------|--------------------------------|------------------------|----------------------|----------------------|------------------------|------|
| M12           | Shielded             | Pre-wired     | Stainless steel | 34 (50)                        | PNP                    | E2A-S12KS04-WP-B1 2M | E2A-S12KS04-WP-B2 2M | n.a.                   |      |
|               |                      |               |                 |                                | NPN                    | E2A-S12KS04-WP-C1 2M | n.a.                 | n.a.                   |      |
|               |                      |               |                 | 56 (72)                        | PNP                    | E2A-S12LS04-WP-B1 2M | n.a.                 | n.a.                   |      |
|               |                      | NPN           |                 |                                | E2A-S12LS04-WP-C1 2M   | n.a.                 | n.a.                 |                        |      |
|               |                      | M12 connector |                 | 34 (48)                        | PNP                    | E2A-S12KS04-M1-B1    | E2A-S12KS04-M1-B2    | n.a.                   |      |
|               |                      |               |                 |                                | NPN                    | E2A-S12KS04-M1-C1    | n.a.                 | n.a.                   |      |
|               | 56 (70)              |               |                 | PNP                            | E2A-S12LS04-M1-B1      | n.a.                 | n.a.                 |                        |      |
|               |                      | NPN           |                 | E2A-S12LS04-M1-C1              | n.a.                   | n.a.                 |                      |                        |      |
|               | M8 connector (3-pin) | 34 (48)       |                 | PNP                            | E2A-S12KS04-M5-B1      | E2A-S12KS04-M5-B2    | n.a.                 |                        |      |
|               |                      |               |                 | NPN                            | n.a.                   | n.a.                 | n.a.                 |                        |      |
|               | Non-shielded         | Pre-wired     |                 | 34 (50)                        | PNP                    | E2A-S12KN08-WP-B1 2M | n.a.                 | n.a.                   |      |
|               |                      |               |                 |                                | NPN                    | E2A-S12KN08-WP-C1 2M | n.a.                 | n.a.                   |      |
| 34 (48)       |                      |               | PNP             | E2A-S12KN08-M1-B1              | n.a.                   | n.a.                 |                      |                        |      |
|               |                      | NPN           | n.a.            | n.a.                           | n.a.                   |                      |                      |                        |      |
| M12 connector |                      | 56 (70)       | PNP             | E2A-S12LN08-M1-B1              | n.a.                   | E2A-S12LN08-M1-B3    |                      |                        |      |
|               |                      |               | NPN             | n.a.                           | n.a.                   | E2A-S12LN08-M1-C3    |                      |                        |      |
| M18           | Shielded             | Pre-wired     | Stainless steel | 39 (59)                        | PNP                    | E2A-S18KS08-WP-B1 2M | n.a.                 | n.a.                   |      |
|               |                      |               |                 |                                | NPN                    | E2A-S18KS08-WP-C1 2M | n.a.                 | n.a.                   |      |
|               |                      |               |                 | 61 (81)                        | PNP                    | E2A-S18LS08-WP-B1 2M | n.a.                 | n.a.                   |      |
|               |                      | NPN           |                 |                                | E2A-S18LS08-WP-C1 2M   | n.a.                 | n.a.                 |                        |      |
|               |                      | M12 connector |                 | 39 (53)                        | PNP                    | E2A-S18KS08-M1-B1    | E2A-S18KS08-M1-B2    | n.a.                   |      |
|               |                      |               |                 |                                | NPN                    | E2A-S18KS08-M1-C1    | n.a.                 | n.a.                   |      |
|               | 61 (75)              |               |                 | PNP                            | E2A-S18LS08-M1-B1      | n.a.                 | E2A-S18LS08-M1-B3    |                        |      |
|               |                      | NPN           |                 | n.a.                           | n.a.                   | n.a.                 |                      |                        |      |
|               | M8 connector (3-pin) | 39 (53)       |                 | PNP                            | E2A-S18KS08-M5-B1      | n.a.                 | n.a.                 |                        |      |
|               |                      |               |                 | NPN                            | n.a.                   | n.a.                 | n.a.                 |                        |      |
|               | Non-shielded         | Pre-wired     |                 | 39 (59)                        | PNP                    | E2A-S18KN16-WP-B1 2M | n.a.                 | n.a.                   |      |
|               |                      |               |                 |                                | NPN                    | n.a.                 | n.a.                 | n.a.                   |      |
| 61 (81)       |                      |               | PNP             | n.a.                           | n.a.                   | n.a.                 |                      |                        |      |
|               |                      | NPN           | n.a.            | n.a.                           | n.a.                   |                      |                      |                        |      |
| M12 connector |                      | 39 (53)       | PNP             | E2A-S18KN16-M1-B1              | n.a.                   | n.a.                 |                      |                        |      |
|               |                      |               | NPN             | n.a.                           | n.a.                   | n.a.                 |                      |                        |      |
|               | 61 (75)              | PNP           | n.a.            | n.a.                           | E2A-S18LN16-M1-B3      |                      |                      |                        |      |
| NPN           |                      | n.a.          | n.a.            | n.a.                           |                        |                      |                      |                        |      |
| M30           | Shielded             | Pre-wired     | Stainless steel | 44 (64)                        | PNP                    | E2A-S30KS15-WP-B1 2M | n.a.                 | n.a.                   |      |
|               |                      |               |                 |                                | NPN                    | n.a.                 | n.a.                 | n.a.                   |      |
|               |                      |               |                 | 66 (86)                        | PNP                    | n.a.                 | n.a.                 | n.a.                   |      |
|               |                      | NPN           |                 |                                | n.a.                   | n.a.                 | n.a.                 |                        |      |
|               |                      | M12 connector |                 | 44 (58)                        | PNP                    | E2A-S30KS15-M1-B1    | n.a.                 | n.a.                   |      |
|               |                      |               |                 |                                | NPN                    | n.a.                 | n.a.                 | n.a.                   |      |
|               | M8 connector (3-pin) | 44 (58)       |                 | PNP                            | E2A-S30KS15-M5-B1      | n.a.                 | n.a.                 |                        |      |
|               |                      |               |                 | NPN                            | n.a.                   | n.a.                 | n.a.                 |                        |      |
|               | Non-shielded         | 20.0 mm       |                 | M12 connector                  | 44 (58)<br>(See note.) | PNP                  | E2A-S30KN20-M1-B1    | n.a.                   | n.a. |
|               |                      |               |                 |                                |                        | NPN                  | n.a.                 | n.a.                   | n.a. |

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

## Specifications

| Size   |                            | M8   |  |
|--|----------------------------|--|--|
| Type   |                            | Shielded   | Non-shielded                           |
| Model  |                            | E2A-S08□S02-□□-B1<br>E2A-S08□S02-□□-C1   | E2A-S08□N04-□□-B1<br>E2A-S08□N04-□□-C1 |
| Sensing distance                                 |                            | 2 mm ± 10%   | 4 mm ± 10%                             |
| Setting distance                                 |                            | 0 to 1.6 mm  | 0 to 3.2 mm                            |
| Differential travel                              |                            | 10% max. of sensing distance   |  |
| Target   |                            | Ferrous metal (The sensing distance decreases with non-ferrous metal.)   |  |
| Standard target (mild steel ST37)                |                            | 8×8×1 mm   | 12×12×1 mm                             |
| Response frequency (See note 1.)                 |                            | 1,500 Hz   | 1,000 Hz                               |
| Power supply voltage (operating voltage range)   |                            | 12 to 24 VDC. Ripple (p-p): 10% max. (10 to 32 VDC)  |  |
| Current consumption (DC 3-wire)                  |                            | 10 mA max.   |  |
| Output type                                      |                            | -B models: PNP open collector<br>-C models: NPN open collector   |  |
| Control output                                   | Load current (See note 2.) | 200 mA max. (32 VDC max.)  |  |
|  | Residual voltage           | 2 V max. (under load current of 200 mA with cable length of 2 m)   |  |
| Indicator  |                            | Operation indicator (Yellow LED)   |  |
| Operation mode (with sensing object approaching) |                            | -B1/-C1 models: NO<br>-B2/-C2 models: NC<br>-B3/ -C3 models: NO+NC<br>For details, refer to the timing charts. (See note 4.)   |  |
| Protection circuit                               |                            | Power source circuit reverse polarity protection, Surge suppressor, Short-circuit protection   |  |
| Ambient air temperature                          |                            | Operating: -40°C to 70°C, Storage: -40°C to 85°C (with no icing or condensation)   |  |
| Temperature influence (See note 2.)              |                            | ±10% max. of sensing distance at 23°C within temperature range of -25°C to 70°C<br>±15% max. of sensing distance at 23°C within temperature range of -40°C to 70°C                     |  |
| Ambient humidity                                 |                            | Operating: 35% to 95%, Storage: 35% to 95%   |  |
| Voltage influence                                |                            | ±1% max. of sensing distance in rated voltage range ±15%   |  |
| Insulation resistance                            |                            | 50 MΩ min. (at 500 VDC) between current carry parts and case   |  |
| Dielectric strength                              |                            | 1,000 VAC at 50/60 Hz for 1 min between current carry parts and case   |  |
| Vibration resistance                             |                            | 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y and Z directions   |  |
| Shock resistance                                 |                            | 500 m/s <sup>2</sup> , 10 times each in X, Y and Z directions  |  |
| Standard and listings (See note 3.)              |                            | IP67 after IEC 60529<br>IP69k after DIN 40050<br>EMC after EN60947-5-2   |  |
| Connection method                                |                            | Pre-wired models (standard is dia 4mm PVC cable with length = 2m).<br>Please see chapter 'Connectivity' for details on different cable materials and lengths and M8 or M12 connectors. |  |
| Weight (packaged)                                | Pre-wired model            | Approx. 65 g   |  |
|  | Connector model            | M12 connector models: Approx. 20 g<br>M8 connector models: Approx. 15 g  |  |
| Material   | Case                       | Stainless steel (SUS 303 EN1.4305)   |  |
|  | Sensing surface            | PBT  |  |
|  | Cable                      | Standard cable is PVC dia 4mm.<br>For other cable materials or diameters please refer to chapter 'Connectivity'  |  |
|  | Clamping nut               | Brass-nickel plated  |  |

- Note:**
1. The response frequency is an average value. Measurement conditions are as follows: standard target, a distance of twice the standard target distance between targets, and a setting distance of half the sensing distance.
  2. When using any model at an ambient temperature between -40°C and -25°C and a power voltage between 30 and 32 VDC, use a load current of 100 mA max.,
  3. For USA and Canada: use class 2 circuit only.
  4. -B3/ -C3 NO+NC models are available in M12, M18 and M30 housings with M12 connectors, pre-wired and with cable end connectors.

| Size   |                            | M12  |  |
|--|----------------------------|--|--|
| Type   |                            | Shielded   | Non-shielded                           |
| Item   | Model                      | E2A-S12□S04-□□-B□<br>E2A-S12□S04-□□-C□   | E2A-S12□N08-□□-B□<br>E2A-S12□N08-□□-C□ |
| Sensing distance                                 |                            | 4 mm ± 10%   | 8 mm ± 10%                             |
| Setting distance                                 |                            | 0 to 3.2 mm  | 0 to 6.4 mm                            |
| Differential travel                              |                            | 10% max. of sensing distance   |  |
| Target   |                            | Ferrous metal (The sensing distance decreases with non-ferrous metal.)   |  |
| Standard target (mild steel ST37)                |                            | 12×12×1 mm   | 24×24×1 mm                             |
| Response frequency (See note 1.)                 |                            | 1,000 Hz   | 800 Hz                                 |
| Power supply voltage (operating voltage range)   |                            | 12 to 24 VDC. Ripple (p-p): 10% max. (10 to 32 VDC)  |  |
| Current consumption (DC 3-wire)                  |                            | 10 mA max.   |  |
| Output type                                      |                            | -B models: PNP open collector<br>-C models: NPN open collector   |  |
| Control output                                   | Load current (See note 2.) | 200 mA max. (32 VDC max.)  |  |
|  | Residual voltage           | 2 V max. (under load current of 200 mA with cable length of 2 m)   |  |
| Indicator  |                            | Operation indicator (Yellow LED)   |  |
| Operation mode (with sensing object approaching) |                            | -B1/-C1 models: NO<br>-B2/-C2 models: NC<br>-B3/ -C3 models: NO+NC<br>For details, refer to the timing charts. (See note 4.)   |  |
| Protection circuit                               |                            | Output reverse polarity protection, Power source circuit reverse polarity protection, Surge suppressor, Short-circuit protection   |  |
| Ambient air temperature                          |                            | Operating: -40°C to 70°C, Storage: -40°C to 85°C (with no icing or condensation)   |  |
| Temperature influence (See note 2.)              |                            | ±10% max. of sensing distance at 23°C within temperature range of -25°C to 70°C<br>±15% max. of sensing distance at 23°C within temperature range of -40°C to 70°C                     |  |
| Ambient humidity                                 |                            | Operating: 35% to 95%, Storage: 35% to 95%   |  |
| Voltage influence                                |                            | ±1% max. of sensing distance in rated voltage range ±15%   |  |
| Insulation resistance                            |                            | 50 MΩ min. (at 500 VDC) between current carry parts and case   |  |
| Dielectric strength                              |                            | 1,000 VAC at 50/60 Hz for 1 min between current carry parts and case   |  |
| Vibration resistance                             |                            | 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y and Z directions   |  |
| Shock resistance                                 |                            | 500 m/s <sup>2</sup> , 10 times each in X, Y and Z directions  |  |
| Standard and listings (See note 3.)              |                            | IP67 after IEC 60529<br>IP69K after DIN 40050<br>EMC after EN60947-5-2   |  |
| Connection method                                |                            | Pre-wired models (standard is dia 4mm PVC cable with length = 2m).<br>Please see chapter 'Connectivity' for details on different cable materials and lengths and M8 or M12 connectors. |  |
| Weight (packaged)                                | Pre-wired model            | Approx. 85 g   |  |
|  | Connector model            | Approx. 35 g   |  |
| Material   | Case                       | Stainless steel (SUS 303 EN1.4305)   |  |
|  | Sensing surface            | PBT  |  |
|  | Cable                      | Standard cable is PVC dia 4mm.<br>For other cable materials or diameters please refer to chapter 'Connectivity'  |  |
|  | Clamping nut               | Stainless steel (SUS 303 EN1.4305)   |  |

- Note:**
1. The response frequency is an average value. Measurement conditions are as follows: standard target, a distance of twice the standard target distance between targets, and a setting distance of half the sensing distance.
  2. When using any model at an ambient temperature between -40°C and -25°C and a power voltage between 30 and 32 VDC, use a load current of 100 mA max.,
  3. For USA and Canada: use class 2 circuit only.
  4. -B3/ -C3 NO+NC models are available in M12, M18 and M30 housings with M12 connectors, pre-wired and with cable end connectors.

| Size  |                                   | M18  |  | M30                                    |  |
|---|-----------------------------------|--|--|--|--|
| Type  |                                   | Shielded   | Non-shielded                           | Shielded                               | Non-shielded                           |
| Item  | Model                             | E2A-S18□S08-□□-B□<br>E2A-S18□S08-□□-C□   | E2A-S18□N16-□□-B□<br>E2A-S18□N16-□□-C□ | E2A-S30□S15-□□-B□<br>E2A-S30□S15-□□-C□ | E2A-S30KN20-□□-B□<br>E2A-S30KN20-□□-C□ |
|   | <b>Sensing distance</b>           |  | 8 mm±10%                               | 16 mm±10%                              | 15 mm±10%                              |
| <b>Setting distance</b>                                 |                                   | 0 to 6.4 mm  | 0 to 12.8 mm                           | 0 to 12 mm                             | 0 to 16 mm                             |
| <b>Differential travel</b>                              |                                   | 10% max. of sensing distance   |  |  |  |
| <b>Target</b>   |                                   | Ferrous metal (The sensing distance decreases with non-ferrous metal.)   |  |  |  |
| <b>Standard target (mild steel ST37)</b>                |                                   | 24×24×1 mm   | 48×48×1 mm                             | 45×45×1 mm                             | 60×60×1 mm                             |
| <b>Response frequency (See note 1.)</b>                 |                                   | 500 Hz   | 400 Hz                                 | 250 Hz                                 | 100 Hz                                 |
| <b>Power supply voltage (operating voltage range)</b>   |                                   | 12 to 24 VDC. Ripple (p-p): 10% max. (10 to 32 VDC)  |  |  |  |
| <b>Current consumption (DC 3-wire)</b>                  |                                   | 10 mA max.   |  |  |  |
| <b>Output type</b>                                      |                                   | -B models: PNP open collector<br>-C models: NPN open collector   |  |  |  |
| <b>Control output</b>                                   | <b>Load current (See note 2.)</b> | 200 mA max. (32 VDC max.)  |  |  |  |
|   | <b>Residual voltage</b>           | 2 V max. (under load current of 200 mA with cable length of 2 m)   |  |  |  |
| <b>Indicator</b>  |                                   | Operation indicator (Yellow LED)   |  |  |  |
| <b>Operation mode (with sensing object approaching)</b> |                                   | -B1/-C1 models: NO<br>-B2/-C2 models: NC<br>-B3/-C3 models: NO+NC<br>For details, refer to the timing charts.  |  |  |  |
| <b>Protection circuit</b>                               |                                   | Output reverse polarity protection, Power source circuit reverse polarity protection, Surge suppressor, Short-circuit protection   |  |  |  |
| <b>Ambient air temperature</b>                          |                                   | Operating: -40°C to 70°C, Storage: -40°C to 85°C (with no icing or condensation)   |  |  |  |
| <b>Temperature influence (See note 2.)</b>              |                                   | ±10% max. of sensing distance at 23°C within temperature range of -25°C to 70°C<br>±15% max. of sensing distance at 23°C within temperature range of -40°C to 70°C                     |  |  |  |
| <b>Ambient humidity</b>                                 |                                   | Operating: 35% to 95%, Storage: 35% to 95%   |  |  |  |
| <b>Voltage influence</b>                                |                                   | ±1% max. of sensing distance in rated voltage range ±15%   |  |  |  |
| <b>Insulation resistance</b>                            |                                   | 50 MΩ min. (at 500 VDC) between current carry parts and case   |  |  |  |
| <b>Dielectric strength</b>                              |                                   | 1,000 VAC at 50/60 Hz for 1 min between current carry parts and case   |  |  |  |
| <b>Vibration resistance</b>                             |                                   | 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y and Z directions   |  |  |  |
| <b>Shock resistance</b>                                 |                                   | 1,000 m/s <sup>2</sup> , 10 times each in X, Y and Z directions  |  |  |  |
| <b>Standard and listings (See note 3.)</b>              |                                   | IP67 after IEC 60529<br>IP69K after DIN 40050<br>EMC after EN60947-5-2   |  |  |  |
| <b>Connection method</b>                                |                                   | Pre-wired models (standard is dia 4mm PVC cable with length = 2m).<br>Please see chapter 'Connectivity' for details on different cable materials and lengths and M8 or M12 connectors. |  |  |  |
| <b>Weight (packaged)</b>                                | <b>Pre-wired model</b>            | Approx. 160 g  |  | Approx. 280 g                          | Approx. 280 g                          |
|   | <b>Connector model</b>            | Approx. 70 g   |  | Approx. 200 g                          | Approx. 200 g                          |
| <b>Material</b>   | <b>Case</b>                       | Stainless steel (SUS 303 EN1.4305)   |  |  |  |
|   | <b>Sensing surface</b>            | PBT  |  |  |  |
|   | <b>Cable</b>                      | Standard cable is PVC dia 4mm. For other cable materials or diameters please refer to chapter 'Connectivity'   |  |  |  |
|   | <b>Clamping nut</b>               | Stainless steel (SUS 303 EN1.4305)   |  |  |  |

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

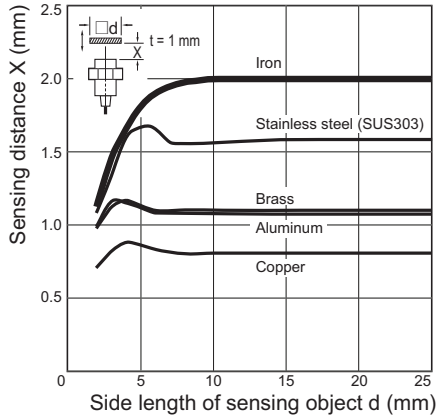
2. When using any model at an ambient temperature between -40°C and -25°C and a power voltage between 30 and 32 VDC, use a load current of 100 mA max.

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

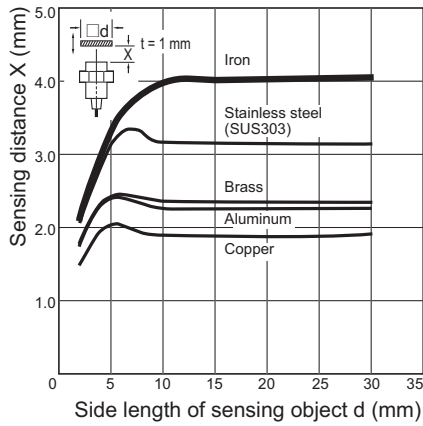
Influence of Sensing Object Size and Materials

Shielded Models

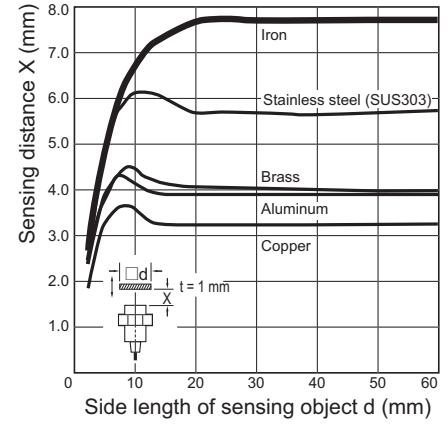
E2A-S08□S02



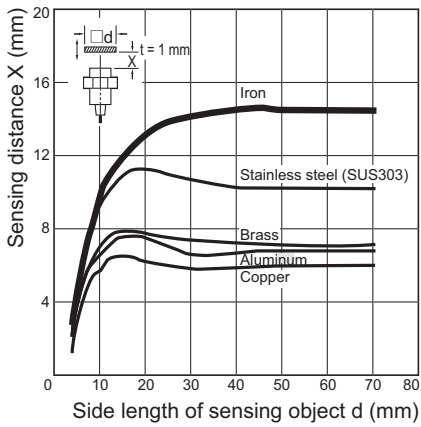
E2A-S12□S04



E2A-S18□S08

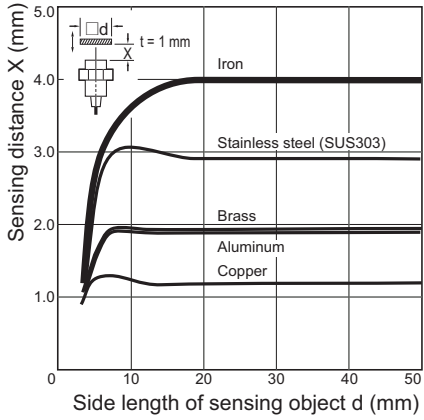


E2A-S30□S15

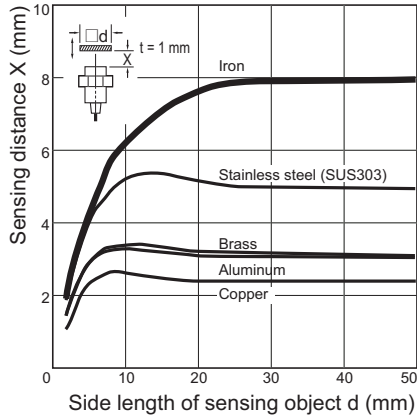


Non-shielded Models

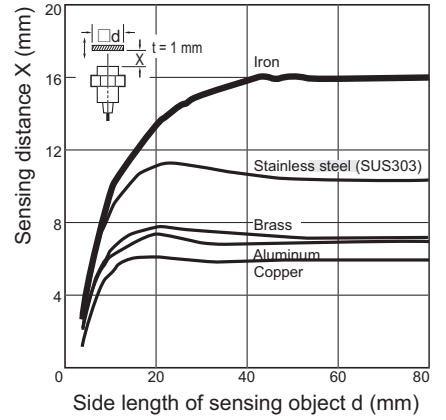
E2A-S08□N04



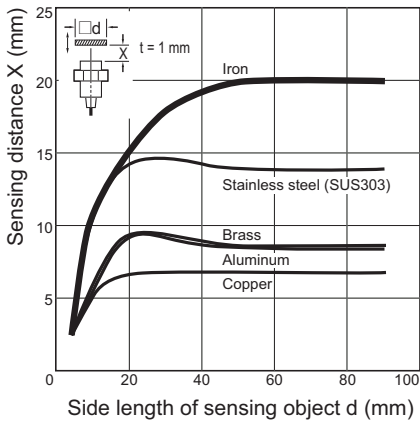
E2A-S12□N08



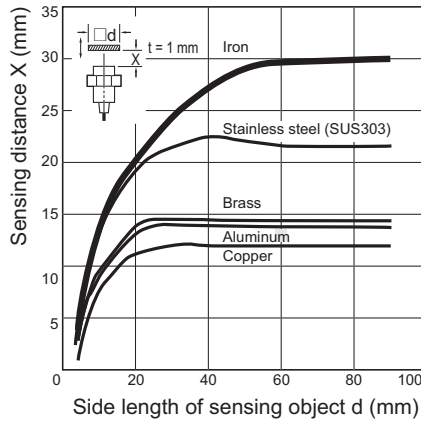
E2A-S18□N16



E2A-S30KN20



E2A-S30LN30



# E2A-S

## Operation

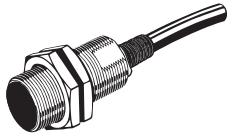
### PNP Output

| Operation mode | Model                 | Timing chart  | Output circuit  |
|----------------|-----------------------|---|---|
| NO             | E2A-S□-□-□- <b>B1</b> | <p>Non-sensing zone      Sensing zone      Proximity Sensor</p> <p>Sensing object</p> <p>(%)      100      0</p> <p>Rated sensing distance</p> <p>ON      OFF      Yellow indicator</p> <p>ON      OFF      Control output</p>                              | <p>Brown ① +V</p> <p>Black ④</p> <p>Blue ③ 0 V</p> <p>Proximity Sensor main circuits</p> <p>(See note 1.)</p> <p>Load</p> <p><b>Note 1:</b> With M8 connector models, there is no output reverse polarity protection diode.</p> <p>M12 Connector Pin Arrangement (See note 2.)      M8 connector (3 pin) Pin Arrangement      M8 Connector (4 pin) Pin Arrangement (See note 2.)</p> <p><b>Note 2:</b> Pin 2 of the M12 connector and M8 connector is not used.</p>                   |
| NC             | E2A-S□-□-□- <b>B2</b> | <p>Non-sensing zone      Sensing zone      Proximity Sensor</p> <p>Sensing object</p> <p>(%)      100      0</p> <p>Rated sensing distance</p> <p>ON      OFF      Yellow indicator</p> <p>ON      OFF      Control output</p>                              | <p>Brown ① +V</p> <p>Black ② (M8 connector: ④)</p> <p>Blue ③ 0 V</p> <p>Proximity Sensor main circuits</p> <p>(See note 1.)</p> <p>Load</p> <p><b>Note 1:</b> With M8 connector models, there is no output reverse polarity protection diode.</p> <p>M12 Connector Pin Arrangement (See note 2.)      M8 connector (3 pin) Pin Arrangement      M8 Connector (4 pin) Pin Arrangement (See note 2.)</p> <p><b>Note 2:</b> Pin 4 of the M12 connector and M8 connector is not used.</p> |
| NO + NC        | E2A-S□-□-□- <b>B3</b> | <p>Non-sensing zone      Sensing zone      Proximity Sensor</p> <p>Sensing object</p> <p>(%)      100      0</p> <p>Rated sensing distance</p> <p>ON      OFF      Yellow indicator</p> <p>ON      OFF      NO output</p> <p>ON      OFF      NC output</p> | <p>Brown ① +V</p> <p>Black ④ NO output</p> <p>White ② NC output</p> <p>Blue ③ 0 V</p> <p>Proximity Sensor main circuits</p> <p>Load</p> <p>Load</p> <p>M12 Connector Pin Arrangement      M8 Connector (4 pin) Pin Arrangement</p>  |

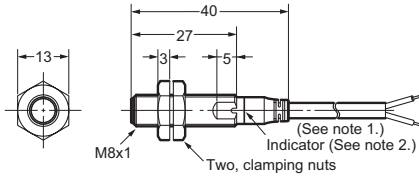




### Pre-wired Models (Shielded)

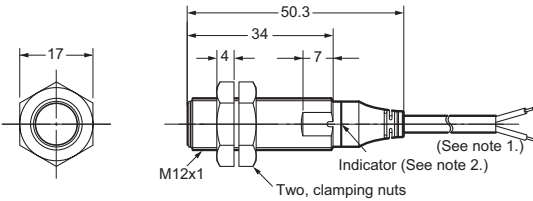


#### E2A-S08KS02-WP-□□



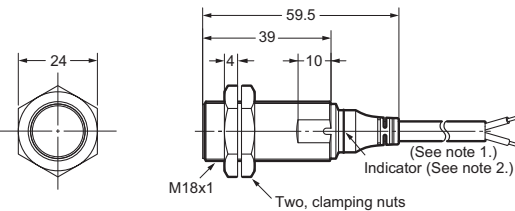
- Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

#### E2A-S12KS04-WP-□



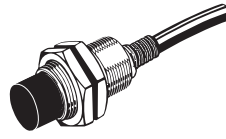
- Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)  
**3.** for NO+NC (-B3 / -C3) models the total length is 4 mm longer

#### E2A-S18KS08-WP-□

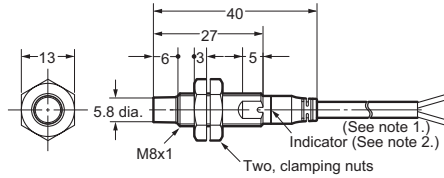


- Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

### Pre-wired Models (Non-shielded)

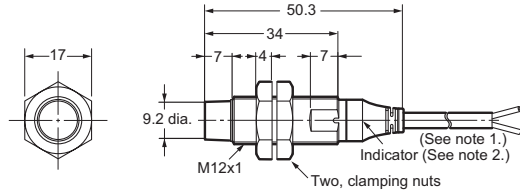


#### E2A-S08KN04-WP-□□



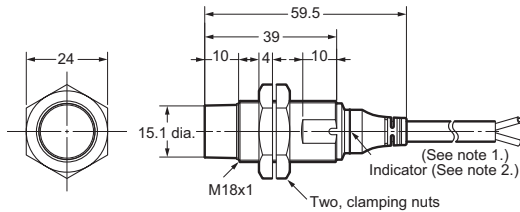
- Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

#### E2A-S12KN08-WP-□



- Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)  
**3.** for NO+NC (-B3 / -C3) models the total length is 4 mm longer

#### E2A-S18KN16-WP-□



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

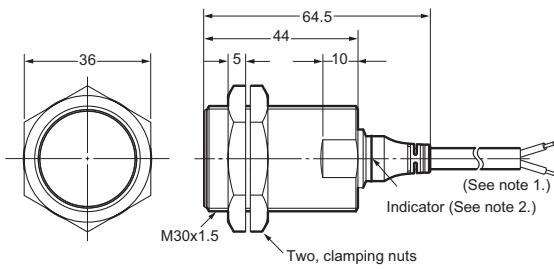
### Mounting Hole Cutout Dimensions



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

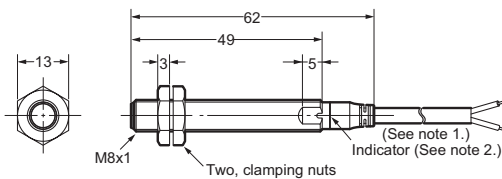
Pre-wired Models (Shielded)

E2A-S30KS15-WP-□



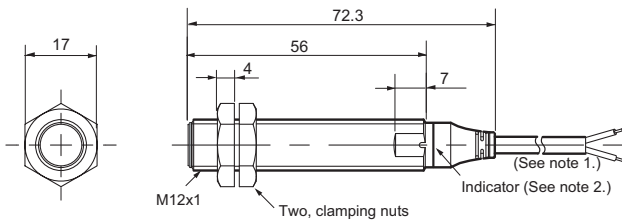
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

E2A-S08LS02-WP-□□



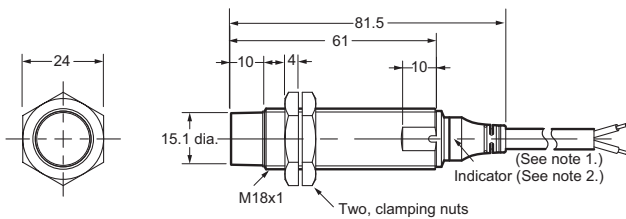
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

E2A-S12LS04-WP-□



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

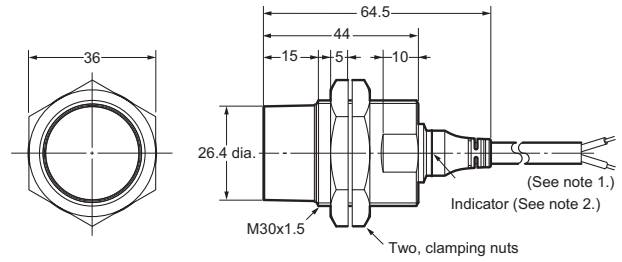
E2A-S18LN16-WP-□



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

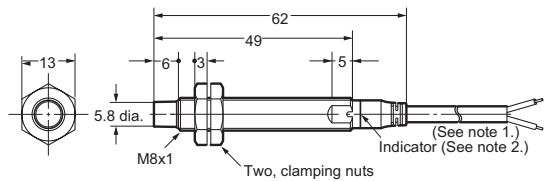
Pre-wired Models (Non-shielded)

E2A-S30KN20-WP-□



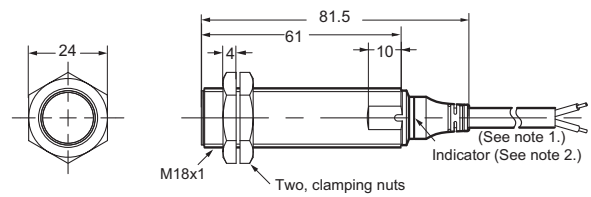
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

E2A-S08LN04-WP-□□



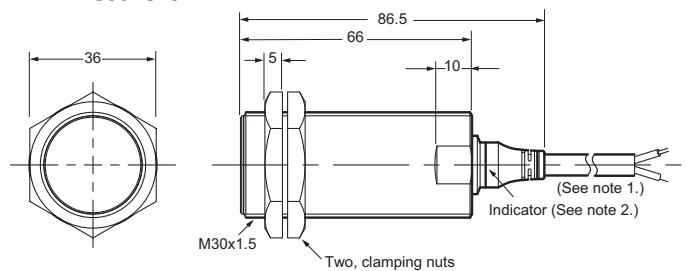
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

E2A-S18LS08-WP-□



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

E2A-S30LS15-WP-□



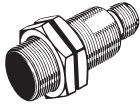
**Note 1.** 4-dia. vinyl-insulated round cable with 3 conductors (conductor cross section: 0.3 mm<sup>2</sup>; insulator diameter: 1.3 mm); standard length: 2 m  
**2.** Operation indicator (yellow)

Mounting Hole Cutout Dimensions

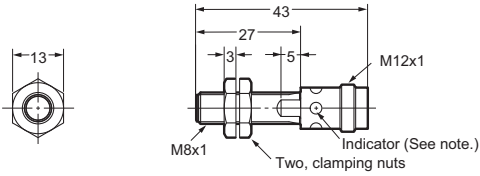


| External diameter of Proximity Sensor | Dimension F (mm)                         |
|---------------------------------------|--|
| M8                                    | 8.5 dia. <sup>+0.5</sup> / <sub>0</sub>  |
| M12                                   | 12.5 dia. <sup>+0.5</sup> / <sub>0</sub> |
|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

## M12 Connector Models (Shielded)

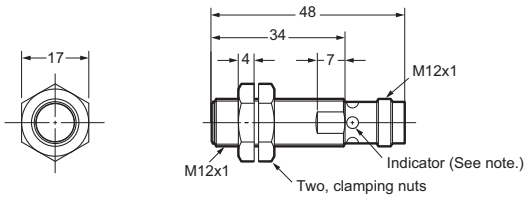


**E2A-S08KS02-M1-□□**



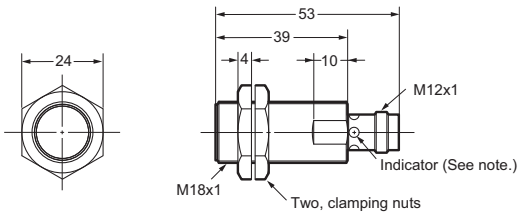
**Note:** Operation indicator (yellow LED, 4x90°)

**E2A-S12KS04-M1-□**



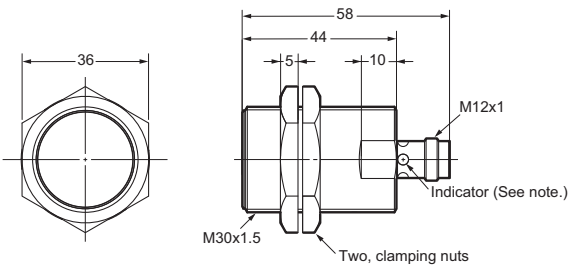
**Note 1:** Operation indicator (yellow LED, 4x90°)  
**Note 2:** for NO+NC (-B3 / -C3) models the total length is 4 mm longer

**E2A-S18KS08-M1-□**



**Note:** Operation indicator (yellow LED, 4x90°)

**E2A-S30KS15-M1-□**

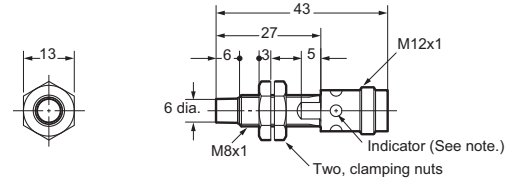


**Note:** Operation indicator (yellow LED, 4x90°)

## M12 Connector Models (Non-shielded)

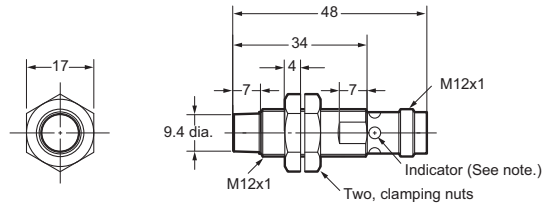


**E2A-S08KN04-M1-□□**



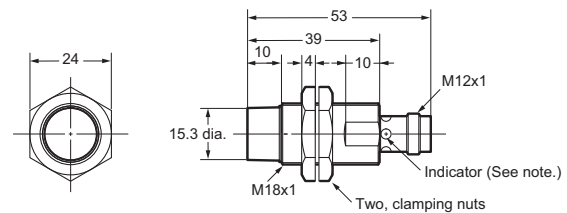
**Note:** Operation indicator (yellow LED, 4x90°)

**E2A-S12KN08-M1-□**



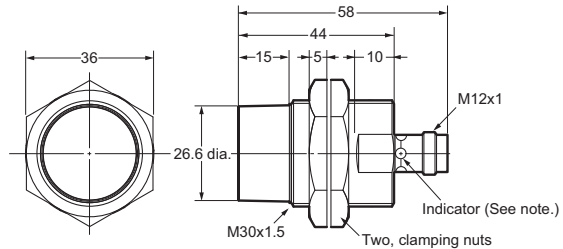
**Note 1:** Operation indicator (yellow LED, 4x90°)  
**Note 2:** for NO+NC (-B3 / -C3) models the total length is 4 mm longer

**E2A-S18KN16-M1-□**



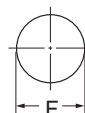
**Note:** Operation indicator (yellow LED, 4x90°)

**E2A-S30KN20-M1-□**



**Note:** Operation indicator (yellow LED, 4x90°)

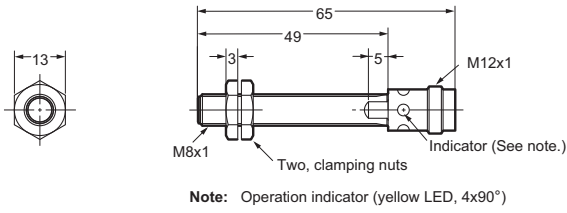
### Mounting Hole Cutout Dimensions



| External diameter of Proximity Sensor | Dimension F (mm)      |
|---------------------------------------|-----------------------|
| <b>M8</b>                             | 8.5 dia. $^{+0.5}_0$  |
| <b>M12</b>                            | 12.5 dia. $^{+0.5}_0$ |
| <b>M18</b>                            | 18.5 dia. $^{+0.5}_0$ |
| <b>M30</b>                            | 30.5 dia. $^{+0.5}_0$ |

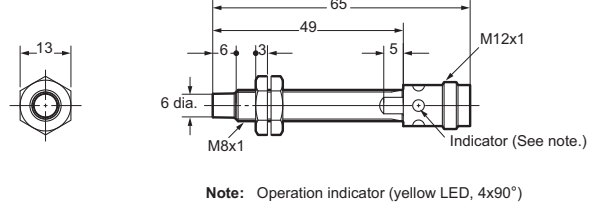
**M12 Connector Models (Shielded)**

**E2A-S08LS02-M1** □□

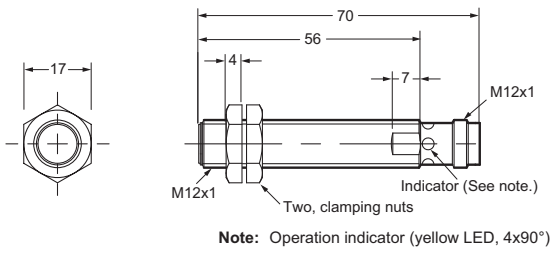


**M12 Connector Models (Non-shielded)**

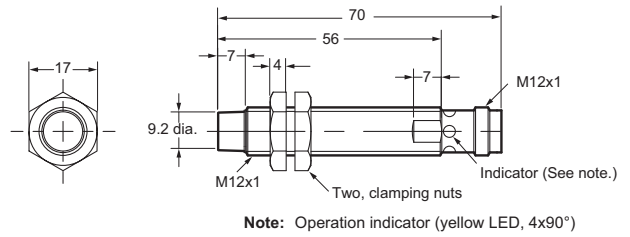
**E2A-S08LN04-M1** □□



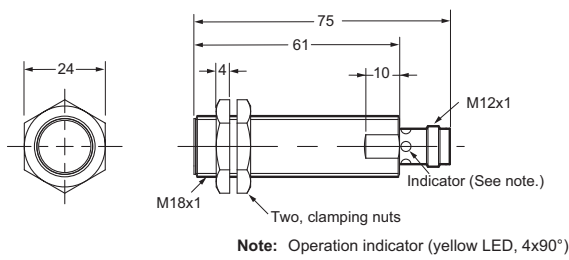
**E2A-S12LS04-M1** □



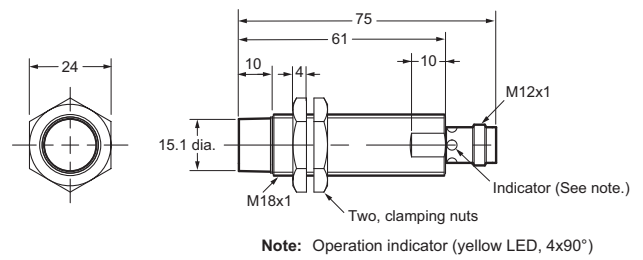
**E2A-S12LN08-M1** □



**E2A-S18LS08-M1** □



**E2A-S18LN16-M1** □



**Mounting Hole Cutout Dimensions**

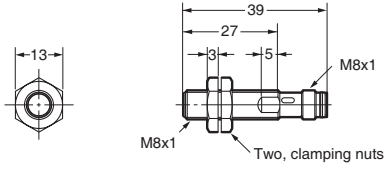


| External diameter of Proximity Sensor | Dimension F (mm)      |
|---------------------------------------|-----------------------|
| <b>M8</b>                             | 8.5 dia. $^{+0.5}_0$  |
| <b>M12</b>                            | 12.5 dia. $^{+0.5}_0$ |
| <b>M18</b>                            | 18.5 dia. $^{+0.5}_0$ |
| <b>M30</b>                            | 30.5 dia. $^{+0.5}_0$ |

## M8 Connector Models (Shielded)

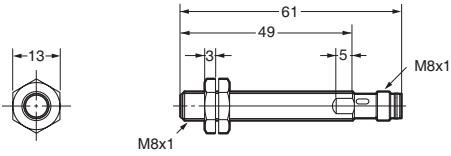


**E2A-S08KS02-M5-□□/ E2A-S08KS02-M3-□**



**Note:** Operation indicator (yellow LED, 4x90°)

**E2A-S08LS02-M5-□□/ E2A-S08LS02-M3-□**

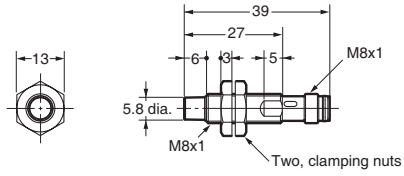


**Note:** Operation indicator (yellow LED, 4x90°)

## M8 Connector Models (Non-shielded)

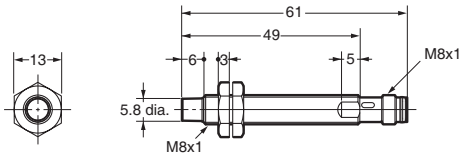


**E2A-S08KN04-M5-□□/ E2A-S08KN04-M3-□**



**Note:** Operation indicator (yellow LED, 4x90°)

**E2A-S08LN04-M5-□□/ E2A-S08LN04-M3-□**



**Note:** Operation indicator (yellow LED, 4x90°)

### Mounting Hole Cutout Dimensions



| External diameter of Proximity Sensor | Dimension F (mm)      |
|---------------------------------------|-----------------------|
| <b>M8</b>                             | 8.5 dia. $^{+0.5}_0$  |
| <b>M12</b>                            | 12.5 dia. $^{+0.5}_0$ |
| <b>M18</b>                            | 18.5 dia. $^{+0.5}_0$ |
| <b>M30</b>                            | 30.5 dia. $^{+0.5}_0$ |

Note: Please contact your OMRON sales representative for dimension drawings not listed here.

## Safety Precautions

### Precautions for Safe Use

#### Power Supply

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

#### Load Short-circuit

Do not short-circuit the load, or the E2A may be damaged. The E2A's short-circuit protection function will be valid if the polarity of the supply voltage imposed is correct and within the rated voltage range.

#### Wiring

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

#### Connection with No Load

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

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

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

### Precautions for Correct Use

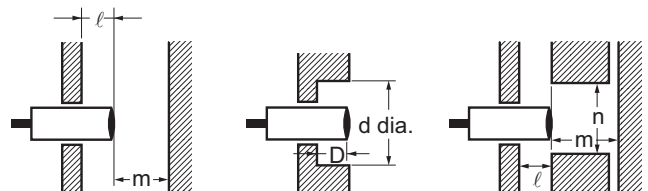
#### Designing

##### Power Reset Time

The Proximity Sensor is ready to operate within 100 ms (160ms for NO+NC -B3 / -C3 types) after power is supplied. If power supplies are connected to the Proximity Sensor and load respectively, be sure to supply power to the Proximity Sensor before supplying power to the load.

##### Effects of Surrounding Metal

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



(Unit: mm)

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

**Note:** 1. In the case of using the supplied nuts.  
If true flush mounting is necessary, apply a free zone of 1.5 mm.  
2. In the case of using the supplied nuts.  
If true flush mounting is necessary, apply a free zone of 4 mm.

##### Power OFF

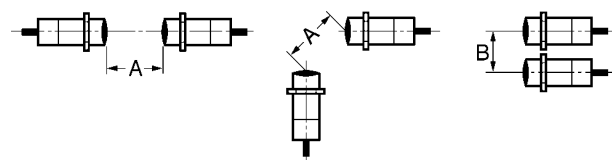
The Proximity Sensor may output a pulse signal when it is turned OFF. Therefore, it is recommended that the load be turned OFF before turning OFF the Proximity Sensor.

##### Power Supply Transformer

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

##### Mutual Interference

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



(Unit: mm)

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

## Wiring

### High-tension Lines

Wiring through Metal Conduit:

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

### Cable Extension

Standard cable length is less than 200 m.

The tractive force is 50 N.

## Mounting

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

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



| Type | Torque |
|------|--------|
| M8   | 9 Nm   |
| M12  | 30 Nm  |
| M18  | 70 Nm  |
| M30  | 180 Nm |

### <SUITABILITY FOR USE>

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

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

### <CHANGE IN SPECIFICATIONS>

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

## 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.



# Terms and Conditions Agreement

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**Note: Do not use this document to operate the Unit.**

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