

# Specifications

## DC 3-wire Models

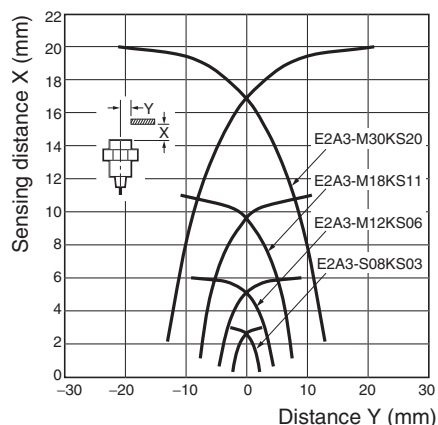
| Size                                           |                              | M8                                                                                                                                                                         | M12                                                                                                                              | M18                                      | M30                                      |
|------------------------------------------------|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|------------------------------------------|
| Type                                           |                              | Shielded                                                                                                                                                                   | Shielded                                                                                                                         | Shielded                                 | Shielded                                 |
|                                                | Item                         | E2A3-S08KS03-□□-B□<br>E2A3-S08KS03-□□-C□                                                                                                                                   | E2A3-M12KS06-□□-B□<br>E2A3-M12KS06-□□-C□                                                                                         | E2A3-M18KS11-□□-B□<br>E2A3-M18KS11-□□-C□ | E2A3-M30KS20-□□-B□<br>E2A3-M30KS20-□□-C□ |
| Sensing distance                               |                              | 3 mm ± 10%                                                                                                                                                                 | 6 mm ± 10%                                                                                                                       | 11 mm ± 10%                              | 20 mm ± 10%                              |
| Setting distance                               | Ambient temp. of -25 to 70°C | 0 to 2.1 mm                                                                                                                                                                | 0 to 4.2 mm                                                                                                                      | 0 to 7.7 mm                              | 0 to 14 mm                               |
|                                                | Ambient temp. of -10 to 60°C | 0 to 2.4 mm                                                                                                                                                                | 0 to 4.8 mm                                                                                                                      | 0 to 8.8 mm                              | 0 to 16 mm                               |
| Differential travel                            |                              | 20% max. of sensing distance                                                                                                                                               |                                                                                                                                  |                                          |                                          |
| Target                                         |                              | Ferrous metal (The sensing distance decreases with non-ferrous metal.)                                                                                                     |                                                                                                                                  |                                          |                                          |
| Standard sensing object                        |                              | 9 × 9 × 1 mm                                                                                                                                                               | 18 × 18 × 1 mm                                                                                                                   | 33 × 33 × 1 mm                           | 60 × 60 × 1 mm                           |
| Response frequency (See note 1.)               |                              | 700 Hz                                                                                                                                                                     | 350 Hz                                                                                                                           | 250 Hz                                   | 80 Hz                                    |
| Power supply voltage (operating voltage range) |                              | 12 to 24 VDC. Ripple (p-p): 10% max. (10 to 32 VDC)                                                                                                                        |                                                                                                                                  |                                          |                                          |
| 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. (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                                 |                              | -B1/-C1 models: NO<br>-B2/-C2 models: NC<br>For details, refer to the timing charts.                                                                                       |                                                                                                                                  |                                          |                                          |
| Protection circuits                            |                              | Power source circuit reverse polarity protection, Surge suppressor, Short-circuit protection                                                                               | Output reverse polarity protection, Power source circuit reverse polarity protection, Surge suppressor, Short-circuit protection |                                          |                                          |
| Ambient air temperature                        |                              | Operating: -25°C to 70°C, Storage: -25°C to 70°C                                                                                                                           |                                                                                                                                  |                                          |                                          |
| Temperature influence                          |                              | ±20% max. of sensing distance at 23°C within temperature range of -25°C to 70°C<br>-10% max. to +20% of sensing distance at 23°C within temperature range of -10°C to 60°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-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 <sup>2</sup> , 10 times each in X, Y, and Z directions                                                                                                             | 1,000 m/s <sup>2</sup> , 10 times each in X, Y and Z directions                                                                  |                                          |                                          |
| Standards and listings (See note 2.)           |                              | IP67 under IEC 60529<br>EMC under EN60947-5-2                                                                                                                              |                                                                                                                                  |                                          |                                          |
| Connection method                              |                              | -WP models: Pre-wired Models (4-mm dia. PVC cable with length of 2 m)<br>-M1 models: M12 4-pin Connector Models<br>-M5 models: M8 3-pin Connector Models                   |                                                                                                                                  |                                          |                                          |
| Weight (packed state)                          | Pre-wired Models             | Approx. 65 g                                                                                                                                                               | Approx. 85 g                                                                                                                     | Approx. 160 g                            | Approx. 280 g                            |
|                                                | Connector Models             | M12 Connector Models: Approx. 20 g                                                                                                                                         | Approx. 35 g                                                                                                                     | Approx. 70 g                             | Approx. 200 g                            |
| Material                                       | Case                         | Stainless steel                                                                                                                                                            | Brass-nickel plated                                                                                                              |                                          |                                          |
|                                                | Sensing surface              | PBT                                                                                                                                                                        |                                                                                                                                  |                                          |                                          |
|                                                | Cable                        | PVC                                                                                                                                                                        |                                                                                                                                  |                                          |                                          |
|                                                | Clamping nut                 | Stainless steel                                                                                                                                                            | Brass-nickel plated                                                                                                              |                                          |                                          |

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

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

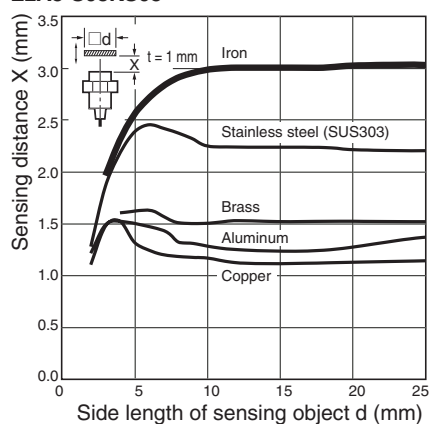
# Engineering Data

## Operating Range (Typical)

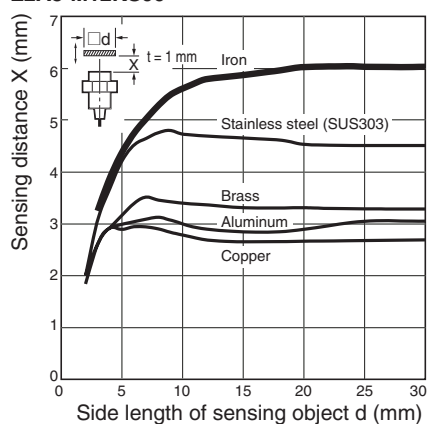


## Influence of Sensing Object Size and Materials

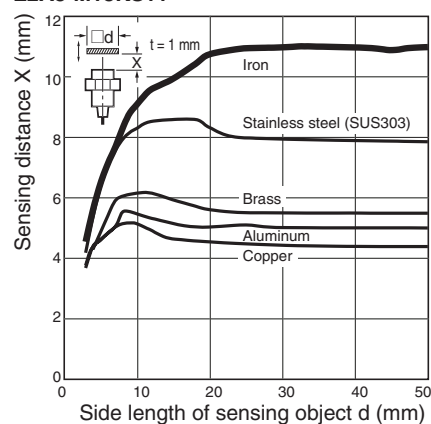
**E2A3-S08KS03**



**E2A3-M12KS06**



**E2A3-M18KS11**



**E2A3-M30KS20**

