

## Ratings and Specifications

### DC 2-Wire Models

| Model                                            |                  | E2S-W11<br>E2S-W12                                                                                                                                                        | E2S-Q11<br>E2S-Q12 | E2S-W21<br>E2S-W22   | E2S-Q21<br>E2S-Q22 |
|--------------------------------------------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------|--------------------|
| Item                                             |                  |                                                                                                                                                                           |                    |                      |                    |
| Sensing surface                                  |                  | Top                                                                                                                                                                       | Front              | Top                  | Front              |
| Sensing distance                                 |                  | 1.6 mm ±15%                                                                                                                                                               |                    | 2.5 mm ±15%          |                    |
| Set distance                                     |                  | 0 to 1.2 mm                                                                                                                                                               |                    | 0 to 1.9 mm          |                    |
| Differential travel                              |                  | 10% max. of sensing distance                                                                                                                                              |                    |                      |                    |
| Detectable object                                |                  | Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to <i>Engineering Data</i> on page 4.)                                                        |                    |                      |                    |
| Standard sensing object                          |                  | Iron, 12 × 12 × 1 mm                                                                                                                                                      |                    | Iron, 15 × 15 × 1 mm |                    |
| Response frequency *                             |                  | 1 kHz min.                                                                                                                                                                |                    |                      |                    |
| Power supply voltage (operating voltage range)   |                  | 12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max.                                                                                                                       |                    |                      |                    |
| Leakage current                                  |                  | 0.8 mA max.                                                                                                                                                               |                    |                      |                    |
| Control output                                   | Load current     | 3 to 50 mA max.                                                                                                                                                           |                    |                      |                    |
|                                                  | Residual voltage | 3 V max. (under load current of 50 mA with cable length of 1 m)                                                                                                           |                    |                      |                    |
| Indicators                                       |                  | <input type="checkbox"/> 1 Models: Operation indicator (red), Setting indicator (green)<br><input type="checkbox"/> 2 Models: Operation indicator (red)                   |                    |                      |                    |
| Operation mode (with sensing object approaching) |                  | <input type="checkbox"/> 1 Models: NO<br><input type="checkbox"/> 2 Models: NC<br><br>Refer to the timing charts under <i>I/O Circuit Diagrams</i> on page 5 for details. |                    |                      |                    |

\* The response frequency is an average value.

Measurement conditions are as follows: standard sensing object, a distance of twice the standard sensing object, and a set distance of half the sensing distance.

### DC 3-Wire Models

| Model                                            |                  | E2S-W13<br>E2S-W14                                                                                                      | E2S-Q13<br>E2S-Q14 | E2S-W23<br>E2S-W24   | E2S-Q23<br>E2S-Q24 | E2S-W15<br>E2S-W16                                                                                                      | E2S-Q15<br>E2S-Q16 | E2S-W25<br>E2S-W26   | E2S-Q25<br>E2S-Q26 |
|--------------------------------------------------|------------------|-------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------|--------------------|
| Item                                             |                  | Top                                                                                                                     | Front              | Top                  | Front              | Top                                                                                                                     | Front              | Top                  | Front              |
| Sensing surface                                  |                  | Top                                                                                                                     | Front              | Top                  | Front              | Top                                                                                                                     | Front              | Top                  | Front              |
| Sensing distance                                 |                  | 1.6 mm ±15%                                                                                                             |                    | 2.5 mm ±15%          |                    | 1.6 mm ±15%                                                                                                             |                    | 2.5 mm ±15%          |                    |
| Set distance                                     |                  | 0 to 1.2 mm                                                                                                             |                    | 0 to 1.9 mm          |                    | 0 to 1.2 mm                                                                                                             |                    | 0 to 1.9 mm          |                    |
| Differential travel                              |                  | 10% max. of sensing distance                                                                                            |                    |                      |                    |                                                                                                                         |                    |                      |                    |
| Detectable object                                |                  | Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to <i>Engineering Data</i> on page 4.)      |                    |                      |                    |                                                                                                                         |                    |                      |                    |
| Standard sensing object                          |                  | Iron, 12 × 12 × 1 mm                                                                                                    |                    | Iron, 15 × 15 × 1 mm |                    | Iron, 12 × 12 × 1 mm                                                                                                    |                    | Iron, 15 × 15 × 1 mm |                    |
| Response frequency *                             |                  | 1 kHz min.                                                                                                              |                    |                      |                    |                                                                                                                         |                    |                      |                    |
| Power supply voltage (operating voltage range)   |                  | 12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max.                                                                     |                    |                      |                    |                                                                                                                         |                    |                      |                    |
| Current consumption                              |                  | 13 mA max. at 24 VDC (no-load)                                                                                          |                    |                      |                    |                                                                                                                         |                    |                      |                    |
| Control output                                   | Load current     | NPN open-collector output, 50 mA max. (30 VDC max.)                                                                     |                    |                      |                    | PNP open-collector output, 50 mA max. (30 VDC max.)                                                                     |                    |                      |                    |
|                                                  | Residual voltage | 1.0 V max. (under load current of 50 mA with cable length of 1 m)                                                       |                    |                      |                    |                                                                                                                         |                    |                      |                    |
| Indicators                                       |                  | Operation indicator (orange)                                                                                            |                    |                      |                    |                                                                                                                         |                    |                      |                    |
| Operation mode (with sensing object approaching) |                  | □□3 Models: NO<br>□□4 Models: NC<br>Refer to the timing charts under <i>I/O Circuit Diagrams</i> on page 5 for details. |                    |                      |                    | □□5 Models: NO<br>□□6 Models: NC<br>Refer to the timing charts under <i>I/O Circuit Diagrams</i> on page 5 for details. |                    |                      |                    |

\* The response frequency is an average value.

Measurement conditions are as follows: standard sensing object, a distance of twice the standard sensing object, and a set distance of half the sensing distance.

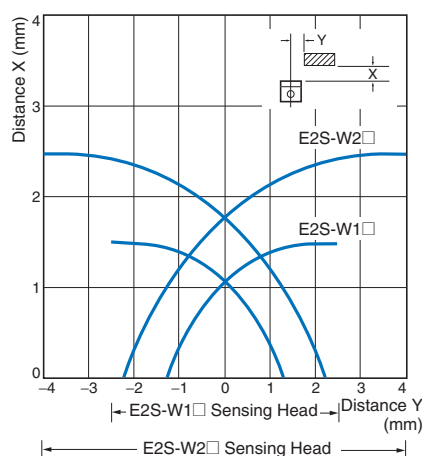
## Specifications

| Item                      | Model                                                                                                        | E2S-□□□           |
|---------------------------|--------------------------------------------------------------------------------------------------------------|-------------------|
| Protection circuits       | Reverse polarity protection, Surge suppressor                                                                |                   |
| Ambient temperature range | Operating: -25 to 70°C (with no icing or condensation), Storage: -40 to 85°C (with no icing or condensation) |                   |
| Ambient humidity range    | Operating: 35% to 90% (with no condensation), Storage: 35% to 95% (with no condensation)                     |                   |
| Temperature influence     | ±15% max. of sensing distance at 23°C in the temperature range of -25 to 70°C                                |                   |
| Voltage influence         | ±2.5% max. of sensing distance at rated voltage in rated voltage ±10% range                                  |                   |
| Insulation resistance     | 50 MΩ min. (at 500 VDC) between current-carrying parts and case                                              |                   |
| Dielectric strength       | 1,000 VAC for 1 min between current-carrying parts and case                                                  |                   |
| Vibration resistance      | Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions                 |                   |
| Shock resistance          | Destruction: 500 m/s <sup>2</sup> 3 times each in X, Y, and Z directions                                     |                   |
| Degree of protection      | IEC 60529 IP67                                                                                               |                   |
| Connection method         | Pre-wired Models (Standard cable length: 1 m)                                                                |                   |
| Weight (packed state)     | Approx. 10 g                                                                                                 |                   |
| Materials                 | Case                                                                                                         | Polyarylate resin |
| Accessories               | Mounting Brackets                                                                                            |                   |

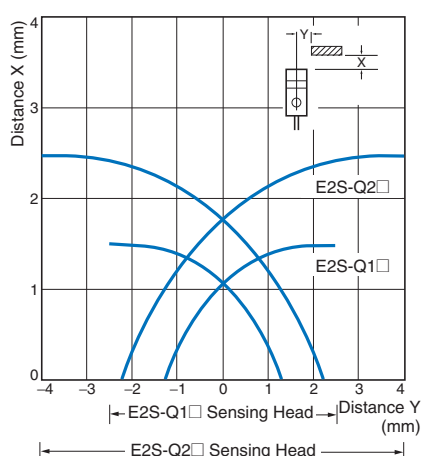
## Engineering Data (Reference Value)

### Sensing Area

E2S-W1□/-W2□

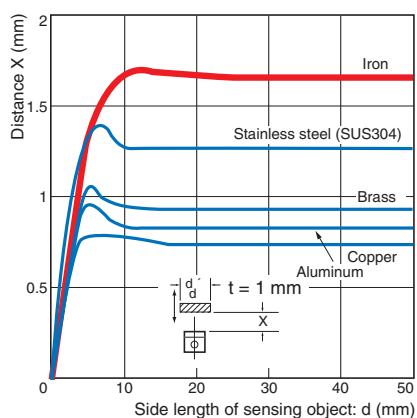


E2S-Q1□/-Q2□



### Influence of Sensing Object Size and Material

E2S-W1□/-Q1□



E2S-W2□/-Q2□

