

OMRON

NEW

# Cylinder Sensor

E2SS



Mounts to Any Type  
of Cylinder



realizing

CE

# Cylinder Sensor E2SS

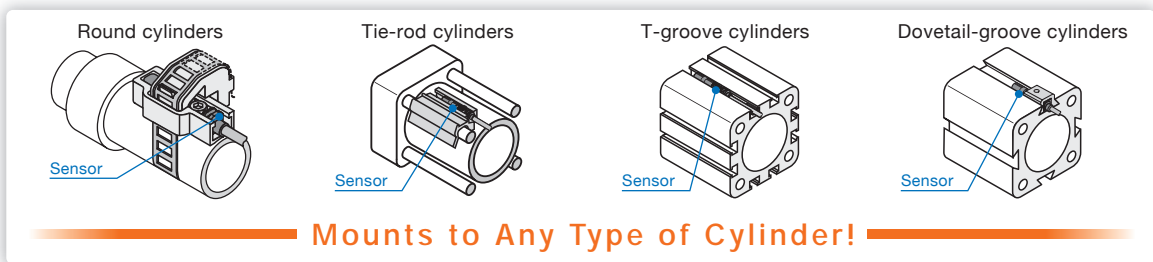
One shape of Sensor mounts to all types of cylinders. This greatly reduces stocked items and makes product selection easier.



## Reduce Stocked Items

→ One shape of Sensor for all types of cylinders.

Just select a Mounting Bracket to mount the Sensor to any of four types of cylinders. You do not need to stock Sensors for each type of cylinder. One shape of Sensor is all that is required. This also simplifies selecting a Sensor model.

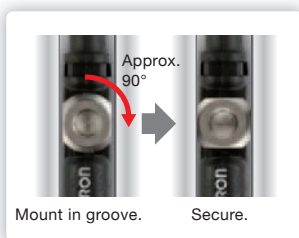


## Easier Mounting

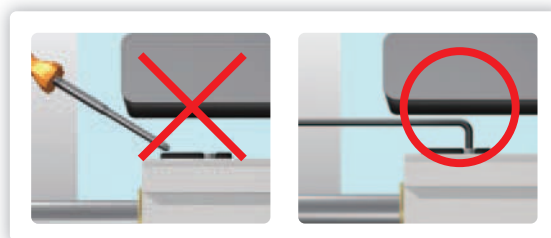
→ Mounting is simple even in narrow spaces.

Mount the Sensor simply by turning a Hexagon-head screw approximately 90°.\* All you need is an L-shaped Hexagon wrench to mount the Sensor even when there is limited space above it.

\*Approximately one full turn is required for some shapes of groove.



Mount the Sensor simply by turning a Hexagon-head screw approximately 90°.



Mount the Sensor using an L-shaped Hexagon wrench even in spots where a screwdriver does not fit.

## Easy Onsite Operation Confirmation

→ Operating condition is confirmable at a glance.

The operation indicator can be seen from a 180° view range so that you can easily check the operating condition from any angle during mounting work or during system operation.



From the Top or the Side, an Easy-to-see Operation Indicator

From the Top

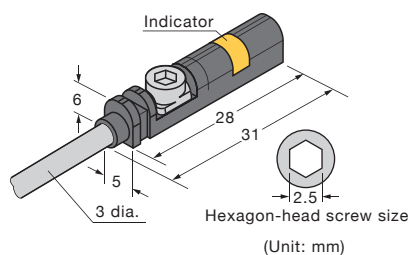


From the Side

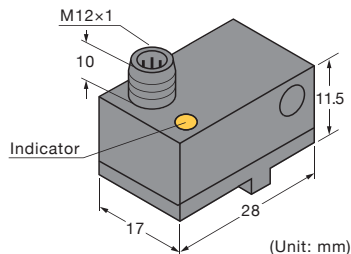


# Ratings/Performance

## Standard Models: E2SS-M Series



## Magnetic Field Immune Models\*: E2SS-W Series



\* These models prevent malfunction in environments in which AC welding is being performed. The Sensor will hold the ON or OFF control output condition when subjected to an AC magnetic field of 50 to 60 Hz and 10 to 100 mT. When the field subsides, the Sensor returns to normal operation. (Standard models will malfunction under magnetic field noise of approximately 1 mT or higher.)

| Item   | Model   | E2SS-M Series                                      |  | E2SS-W Series                                      |             |
|--|---|--|--|--|-------------|
|  |   | E2SS-MC1(-M1J)                                     | E2SS-MB1(-M1J)                           | E2SS-WC1-P1  | E2SS-WB1-P1 |
| Power supply voltage                         | 10 to 30 VDC (including ripple(p-p):10%)  |  |  |  |             |
| Detection sensitivity (magnetic sensitivity) | 2.8 mT max.   |  |  |  |             |
| Current consumption                          | 15 mA max.  |  |  |  |             |
| Hysteresis                                   | 1 mm max.   |  |  |  |             |
| Repeat accuracy                              | ±0.1 mm max.  |  |  |  |             |
| Pass speed                                   | 10 m/s max.   |  | 1 m/s max.                               |  |             |
| Switching frequency                          | 1 kHz max.  |  | 20 Hz max.                               |  |             |
| Control output                               | Switching capacity  | 150 mA max.  |  | 100 mA max.  |             |
|  | Residual voltage  | 2 V max. (Load current: 150 mA, Cable length: 2 m) |  | 2 V max. (Load current: 100 mA, Cable length: 2 m) |             |
| Indicator                                    | Operation indicator (yellow)  |  |  |  |             |
| Operation mode                               | NPN open-collector, NO (normally open)  | PNP open-collector, NO (normally open)             | NPN open-collector, NO (normally open)   | PNP open-collector, NO (normally open)             |             |
| Protective circuits                          | Power supply reverse polarity protection, output reverse polarity protection, and load short-circuit protection |  |  |  |             |
| Ambient temperature                          | Operating/Storage: -25 to 70°C (with no icing or condensation)  |  |  |  |             |
| Ambient humidity                             | Operating/Storage: 35% to 95% (with no condensation)  |  |  |  |             |
| Insulation resistance                        | 50 MΩ min. (at 500 VDC) between charged parts and case  |  |  |  |             |
| Dielectric strength                          | 500 VAC, 50/60 Hz for 1 min between charged parts and case  |  |  |  |             |
| Vibration resistance (endurance)             | 10 to 55 Hz with 1.0-mm double amplitude for 2 hours each in X, Y, and Z directions                             |  |  |  |             |
| Shock resistance (endurance)                 | 300 m/s <sup>2</sup> 10 times each in X, Y, and Z directions  |  |  |  |             |
| Degree of protection                         | IEC 60529 IP67  |  |  |  |             |
| Connection method                            | Blank: Pre-wired (standard cable length: 2 m)<br>-M1J: Pre-wired M12 connector (cable length: 0.3 m)            |  | M12 connector                            |  |             |
| Weight (when packed)                         | Pre-wired models: Approx. 35 g<br>Pre-wired M12 connector models: Approx. 30 g                                  |  | Approx. 25 g                             |  |             |
| Materials                                    | Case: PP, Cable: PUR  |  | Case: PA, Connector: PA                  |  |             |
| Accessories                                  | Instruction Manual, cable clip (one)  |  | Instruction Manual, mounting screw (one) |  |             |

## Applicable Cylinders and Mounting Brackets for E2SS-M Series

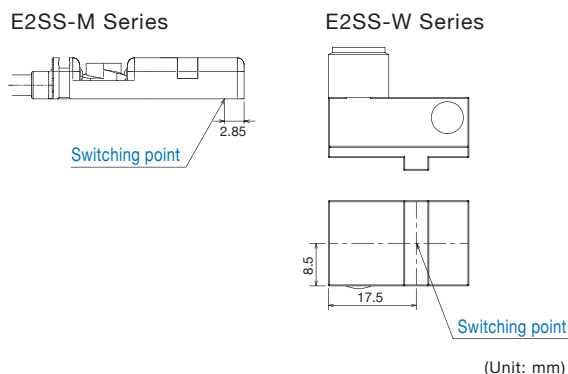
| Cylinder                   | Name       | Round cylinders |                   | Tie-rod cylinders |                      | T-groove cylinders               |          | Dovetail-groove cylinders |              |
|----------------------------|------------|-----------------|-------------------|-------------------|----------------------|----------------------------------|----------|---------------------------|--------------|
|                            |            | Model           | Cylinder diameter | Model             | Cylinder diameter *2 | Model                            | Model    | Model                     | Groove width |
| Mounting Bracket           | Appearance | E2SS-MR1        | 8 to 25 mm dia.   | E2SS-MT1          | 32 to 40 mm dia.     | Not necessary (mounted directly) | E2SS-MV1 | 7mm                       |              |
|                            |            | E2SS-MR2        | 25 to 63 mm dia.  | E2SS-MT2          | 50 to 63 mm dia.     |                                  | E2SS-MV2 | 9.4mm                     |              |
|                            |            | -               | -                 | E2SS-MT3          | 80 to 100 mm dia.    |                                  | E2SS-MV3 | 11.5mm                    |              |
|                            |            | -               | -                 | E2SS-MT4 *1       | 160 to 200 mm dia.   |                                  | E2SS-MV4 | 12.6mm                    |              |
| Sensor mounted to cylinder | Appearance |                 |                   |                   |                      |                                  |          |                           |              |

\*2 The E2SS-MR□ can be mounted to the cylinder tubes of some tie-rod cylinders, depending on the shape of the cylinders. When selecting the E2SS-MT□, make sure that the following condition is met for the diameter of tie-rod.  
E2SS-MT1: 7 mm max. E2SS-MT2: 9 mm max. E2SS-MT3: 11 mm max., and E2SS-MT4: 16 mm max.

## Applicable Cylinders and Mounting Brackets for E2SS-W Series

| Cylinder                   | Name       | T-groove cylinders |                   | Dovetail-groove cylinders |                   |
|----------------------------|------------|--------------------|-------------------|---------------------------|-------------------|
|                            |            | Model              | Cylinder diameter | Model                     | Cylinder diameter |
| Mounting Bracket           | Appearance | E2SS-WV1           |                   |                           |                   |
|                            |            |                    |                   |                           |                   |
| Sensor mounted to cylinder | Appearance |                    |                   |                           |                   |

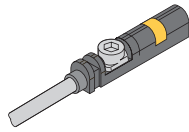
## Switching point



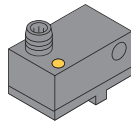
# Ordering Information

## Sensors

| Series | Connection method   | Model             |                   |
|--------|---------------------|-------------------|-------------------|
|        |                     | NPN output        | PNP output        |
| E2SS-M | Pre-wired           | E2SS-MC1 2M       | E2SS-MB1 2M       |
|        | Pre-wired connector | E2SS-MC1-M1J 0.3M | E2SS-MB1-M1J 0.3M |
| E2SS-W | Connector           | E2SS-WC1-P1       | E2SS-WB1-P1       |



E2SS-M Series



E2SS-W Series

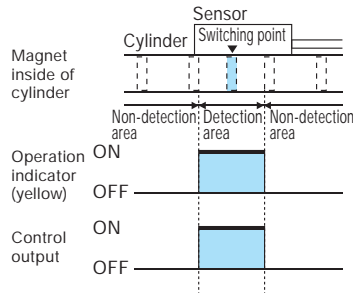
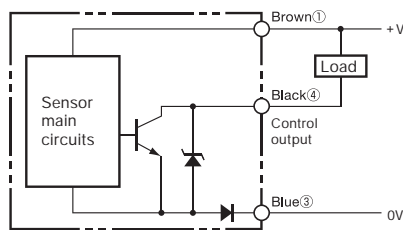
## Mounting Brackets

| Series  | Applicable cylinders        | Cylinder diameter or groove width | Model    |
|---------|-----------------------------|-----------------------------------|----------|
| E2SS-M  | Round                       | 8 to 25 mm dia.                   | E2SS-MR1 |
|         |                             | 25 to 63 mm dia.                  | E2SS-MR2 |
|         | Tie-rod                     | 32 to 40 mm dia.                  | E2SS-MT1 |
|         |                             | 50 to 63 mm dia.                  | E2SS-MT2 |
|         |                             | 80 to 100 mm dia.                 | E2SS-MT3 |
|         |                             | 160 to 200 mm dia.                | E2SS-MT4 |
|         | T-groove                    | Not necessary (mounted directly)  |          |
|         | Dovetail-groove             | 7 mm                              | E2SS-MV1 |
|         |                             | 9.4 mm                            | E2SS-MV2 |
|         |                             | 11.5 mm                           | E2SS-MV3 |
| 12.6 mm |                             | E2SS-MV4                          |          |
| E2SS-W  | T-groove or dovetail-groove | -                                 | E2SS-WV1 |

## I/O Circuit Diagrams

### NPN output

E2SS- □C1(-M1J/-P1)



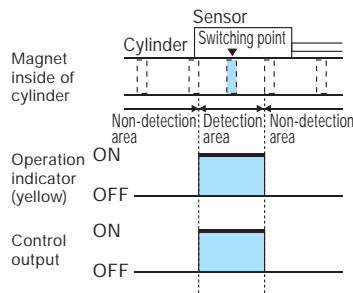
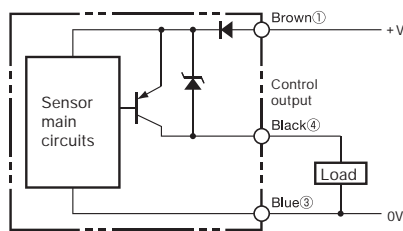
E2SS- □C1(-M1J/-P1)

E2SS- □B1(-M1J/-P1)

| Symbol | Meaning                     |
|--------|-----------------------------|
| M      | Standard model              |
| W      | Magnetic field immune model |

### PNP output

E2SS- □B1(-M1J/-P1)



#### M12 Connector Pin Layout

E2SS-□1-M1J: Pin 2 is not used.  
Applicable OMRON Connecting Cable: XS2F Series



E2SS-□1-P1: There is no pin 2.  
Applicable OMRON Connecting Cable: XS2F Series



## Safety Precautions

**WARNING**

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



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



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