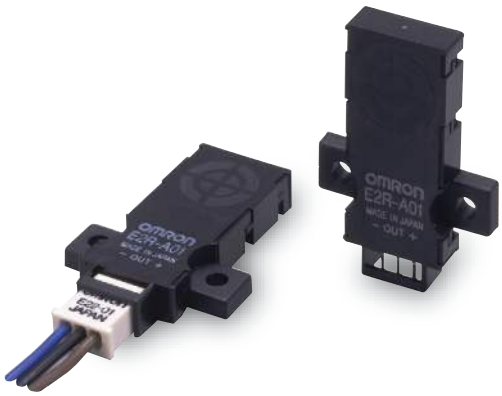
Flat-type Proximity Sensor

- Flat Sensor with a thickness of 6 mm.
- IEC IP50 degree of protection assures that dust or dirt will not affect operation.
- Non-contact sensor assuring a long service life.
- Assures high-response with a frequency of 5 kHz.



⚠ Be sure to read *Safety Precautions* on page 2.

Ordering Information

E2R Flat Proximity Sensor

Appearance	Sensing distance	Output configuration	Model
Unshielded	5 mm	NO	**E2R-A01**

Accessories (Order Separately)

Connector

Appearance	Cable length	Model
	1 m	**E22-01**

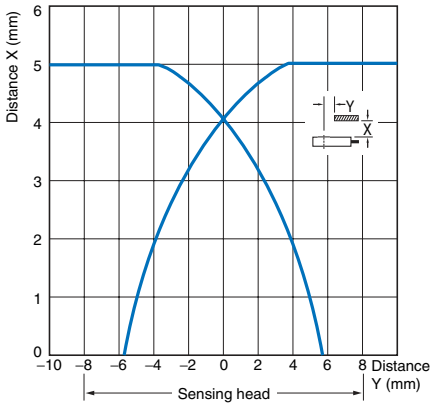
Ratings and Specifications

Item		Model: E2R-A01
Sensing distance		5 mm±15%
Setting distance		0 to 3.4 mm
Differential travel		10% max. of sensing distance
Sensing object		Ferrous metals (refer to *Engineering Data* for non-ferrous metals) The sensing distance decreases with non-magnetic metal.)
Standard sensing object		Iron, 18 × 18 × 1 mm
Response frequency *		5 kHz min.
Power supply voltage (operating voltage)		12 VDC −10% to 24 VDC +15%, ripple (p-p): 10% max.
Current consumption		8 mA
Control output	**Switching capacity**	NPN open-collector output, 100 mA max. (30 VDC max.)
	Residual voltage	1.0 V max. (under load current of 100 mA with cable length of 1 m)
Indicators		Operation indicator (red)
Operation mode (with sensing object approaching)		NO Refer to the timing charts under *I/O Circuit Diagrams* on the next page for details.
Ambient temperature		Operating: −10 to 55°C (with no icing or condensation) Storage: −25 to 65°C (with no icing or condensation)
Ambient humidity		Operating/Storage: 35% to 85% (with no condensation)
Temperature influence		±20% max. of sensing distance at 23°C in the temperature range of −10 to 55°C
Voltage influence		±2.5% max. of sensing distance within a range of ±10% of rated power supply voltage
Insulation resistance		50 MΩ min. (at 500 VDC) between current-carrying parts and case
Dielectric strength		1000 VAC, 50/60 Hz for 1 min between current-carrying parts and case
Vibration resistance (destruction)		10 to 55 Hz, 1.5-mm double amplitude for 2 hrs each in X, Y, and Z directions
Shock resistance (destruction)		500 m/s^2 3 times in each X, Y and Z directions
Degree of protection		IEC IP50
Connection method		Connector
Weight (packed state)		Approx. 5.5 g
Materials		Case: Polybutylene terephtalate Rear cover: ABS resin

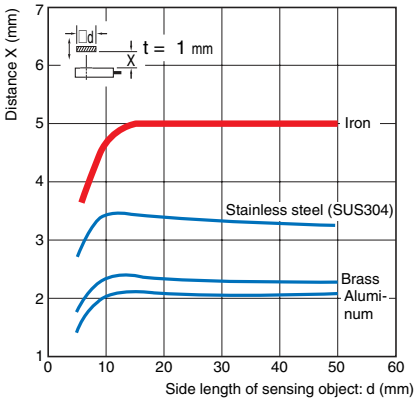
* The response frequencies for DC switching and average values measured on condition that the distance between each sensing object is twice as large as the size of the standard object and the sensing distance set is half of the maximum sensing distance.

Engineering Data (Typical)

Sensing Area



Influence of Sensing Object Size and Material



I/O Circuit Diagrams

Operation mode	Timing charts	Output circuits
NO	Sensing object: Present / Not present Output transistor (Load): ON / OFF Operation indicator (red): ON / OFF	1. Brown +V Load 2. Black* Output 3. Blue 0 V Proximity Sensor main circuit * Load current: 100 mA max.

Safety Precautions

⚠ WARNING

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

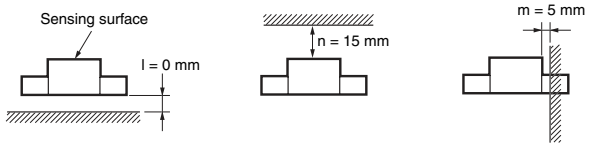
Precautions for Correct Use

Do not use this product under ambient conditions that exceed the ratings.

● **Design**

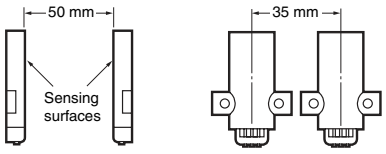
Effects of Surrounding Metal

If there is any metal near the Sensor, the metal may cause reset failure. Even if reset failure does not occur, the temperature of the metal may affect the sensing distance of the E2R. Make sure that the clearances given in the following illustrations are maintained for accurate sensing operation.



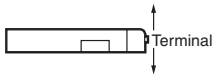
Mutual Interference

When installing two or more E2R units face to face or side by side, make sure that the minimum distances given in the following illustrations are maintained.



● **Mounting**

- The maximum tightening torque that should be applied to the mounting screws is 0.49 N·m.
- Do not impose external force on the terminal as shown in the following illustration, otherwise the terminal may be damaged.

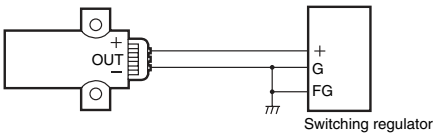


● Connections

- The E2R incorporates a connector. Do not solder connector pins to lead wires.
- Use the E22-01 Connector or Japan Molex connector block (housing 5209-03 and terminal 5103).
- Do not connect or disconnect the connector with the E2R turned on, otherwise the E2R may be damaged.

● Power Supply

When using a standard switching regulator with the E2R, ground the frame ground (FG) and ground (G) terminals of the switching regulator for stable operation.



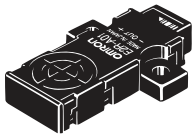
(Unit: mm)

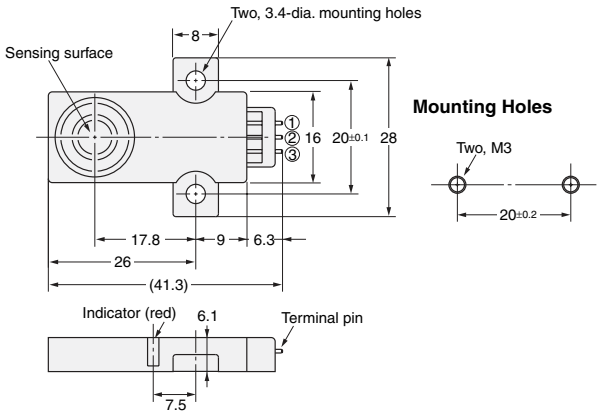
Dimensions

Unless otherwise specified, the tolerance class IT16 is used for dimensions in this data sheet.

E2R

E2R-A01



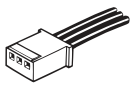


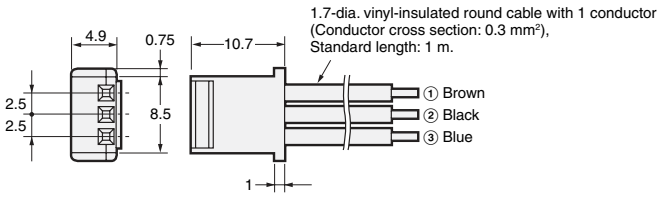
Terminal Arrangement

1	⊕	Power supply (+V)
2	OUT	Output
3	⊖	Power supply (0 V)

Accessories (Order Separately)

E22-01 Connector





Note: Japan Molex's connector block (housing 5209-03 and terminal 5103) is used.

In the interest of product improvement, specifications are subject to change without notice.

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