


Sensing distance	Supply voltage	Output
1.5 mm 2 mm 5 mm	12 to 24 VDC	 100 mA, NPN


# Inductive Proximity Sensor

# E2C-H

## Proximity Sensor that Resists Ambient Temperatures of 200°C

- A wide operating temperature range of -10% to 200°C. Suitable for checking the contact between casts and sensing solder bath levels.
- The compact, 14-mm wide amplifier can be mounted to DIN track.

## Ordering Information

Sensing head		Sensing distance	Model	Applicable Amplifier Unit
M8	Shielded 	1.5 mm	E2C-X1R5AH	E2C-JC4CH
M12		2 mm	E2C-X2AH	E2C-JC4DH
M18		5 mm	E2C-X5AH	E2C-JC4EH

## Specifications

### ■ Ratings/Characteristics Sensor

Item	E2C-X1R5AH	E2C-X2AH	E2C-X5AH
<b>Detectable object</b>	Magnetic metals (for non-magnetic metals, refer to "Engineering Data")		
<b>Standard object</b>	Iron, 8 x 8 x 1 mm	Iron, 12 x 12 x 1 mm	Iron, 18 x 18 x 1 mm
<b>Sensing distance</b>	0 to 1.5 mm	0 to 2 mm	0 to 5 mm
<b>Differential travel</b>	0.04 mm max.	0.04 mm max.	0.1 mm max.
<b>Response frequency*</b>	300 Hz		
<b>Ambient temperature</b>	Operating: -10% to 200°C (with no icing)		
<b>Ambient humidity</b>	Operating: 35% to 95%		
<b>Influence of temperature</b>	+0.2%/°C		
<b>Vibration resistance</b>	Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 hrs each in X, Y, and Z directions		
<b>Shock resistance</b>	Destruction: 500 m/s <sup>2</sup> (approx. 50G) 3 times each in X, Y, and Z directions		
<b>Enclosure rating</b>	IEC IP60**		
<b>Cord length</b>	3-m coaxial cable for high frequencies		
<b>Weight</b>	Approx. 50 g	Approx. 60 g	Approx. 140 g
<b>Material</b>	Case: Brass Sensing face: Polyether ketonic resin		

The sensing distance and differential travel are typical values measured with a standard reference object separated from the sensor by 1/2 of the maximum sensing distance.

\*The response frequency is a typical value measured with standard reference objects separated from one another by twice the width of the object and separated from the sensor by 1/2 of the maximum sensing distance.

\*\*Do not use the sensor in steam because the sensor is not water resistive.

## Amplifier Unit

Rated supply voltage* (operating voltage)	12 to 24 VDC (10 to 30 VDC), ripple (p-p): 10% max.
Current consumption	45 mA max.
Sensing distance adjustable range**	Adjustable with a 4-turn potentiometer between 20% and 100% of the rated sensing distance
Control output	NPN open collector; switching capacity: 100 mA max. (40 V); (residual voltage: 0.7 V max.)
Output configuration	NO/NC selectable
Cord length compensation	3 or 5 m (selectable)
Indicator	OPERATION indicator (red LED)
Ambient temperature	Operating: -10% to 55°C (with no icing)
Ambient humidity	Operating: 35% to 85%
Influence of temperature	+0.08%/°C
Influence of voltage	+1% differences within a range of +20% of the rated voltage
Insulation resistance	50 MW min. (at 500 VDC) between current carry parts and case
Dielectric strength	1,000 VAC, 50/60 Hz for 1 min between current carry 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: 100 m/s <sup>2</sup> (approx. 10G) 3 times each in X, Y, and Z directions
Weight	Approx. 80 g
Enclosure rating	IEC IP20

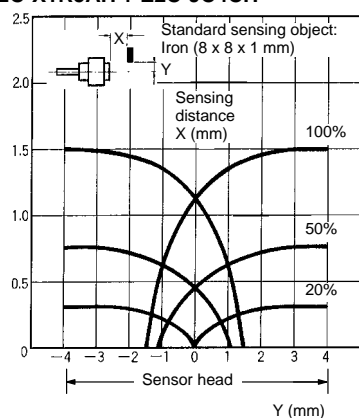
\*A power supply with an output of 24 VDC+10% (mean value) incorporating all wave rectifying circuitry with no smoothing circuit can be used.

\*\*The sensing distance adjustable range applies when the amplifier is used in combination with the sensor.

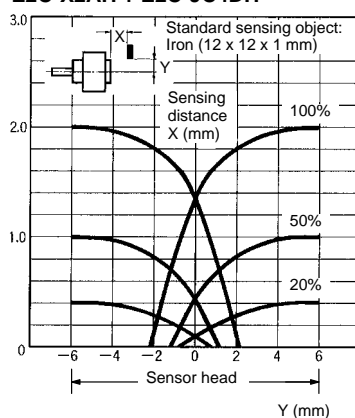
## Engineering Data

## Operating Range (Typical)

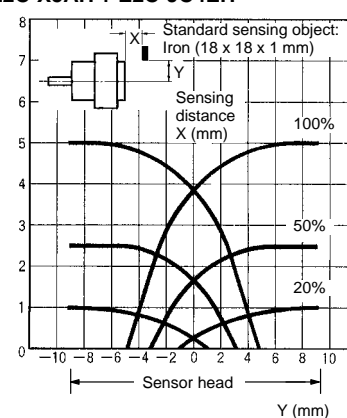
## E2C-X1R5AH + E2C-JC4CH



## E2C-X2AH + E2C-JC4DH

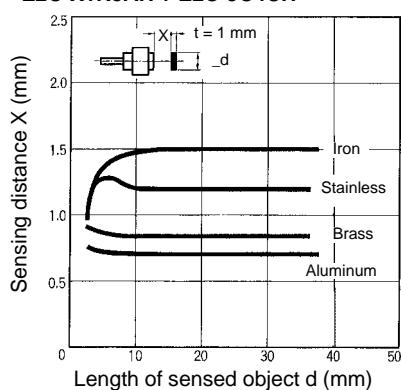


## E2C-X5AH + E2C-JC4EH

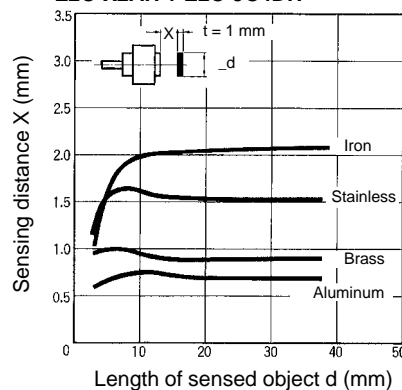


## Sensing Distance vs. Sensing Object (Typical)

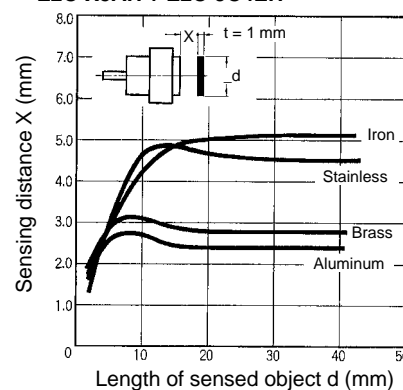
## E2C-X1R5AH + E2C-JC4CH



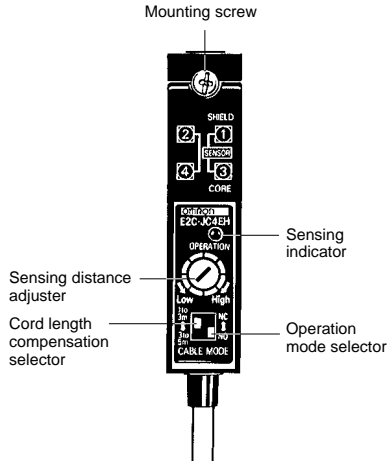
## E2C-X2AH + E2C-JC4DH



## E2C-X5AH + E2C-JC4EH



# Nomenclature



# Operation

## ■ Operation of Amplifier Unit

### Switches

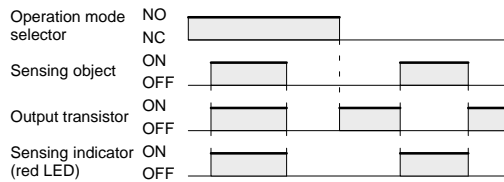
#### Operation Mode

- NC  NO  Output transistor is ON when the sensor detects a sensing object.
- NC  NO  Output transistor is OFF when the sensor detects a sensing object.

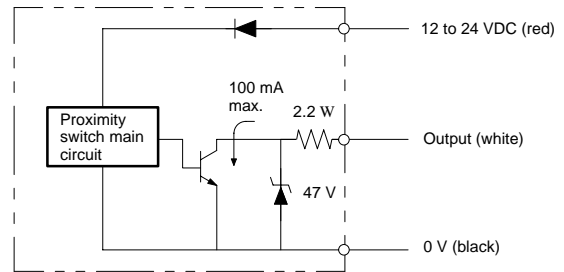
#### Cord Length Compensation

- 3 m  5 m Set to 3 m when the length of the cord that you use is 3 m long.
- 3 m  5 m Set to 5 m when the length of the cord that you use is 3 m long.

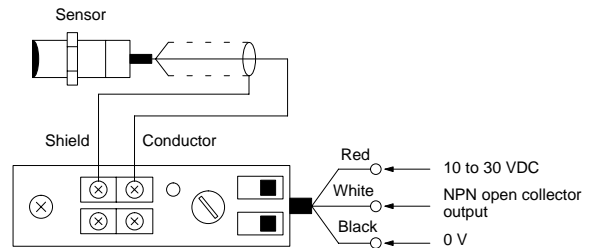
## ■ Operation Chart



## ■ Output Circuit Diagram



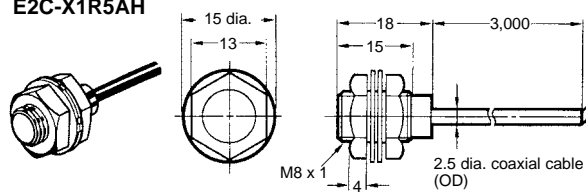
## ■ Connection



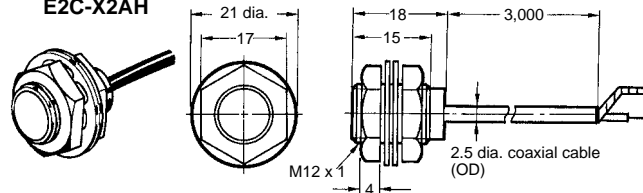
# Dimensions

**Note:** All units are in millimeters unless otherwise indicated.

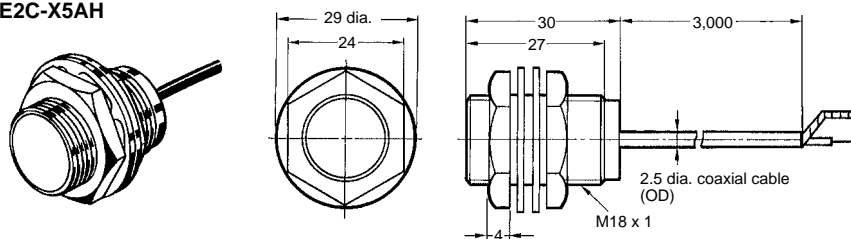
## E2C-X1R5AH



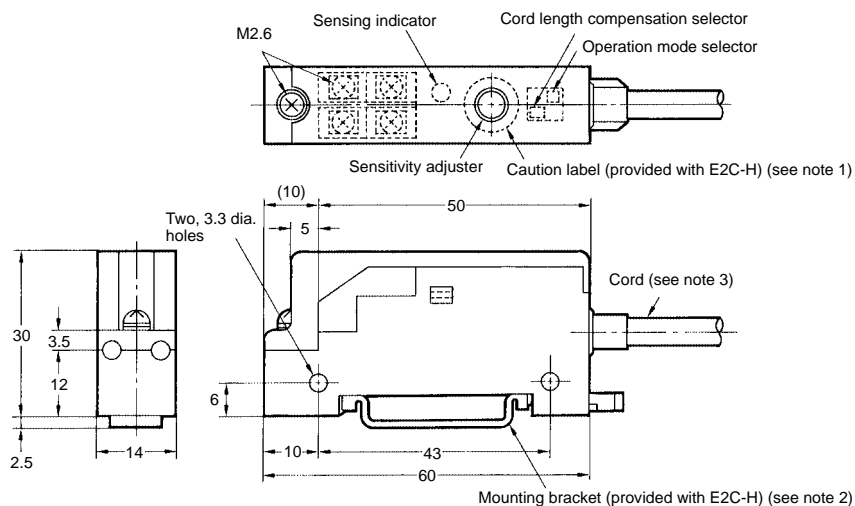
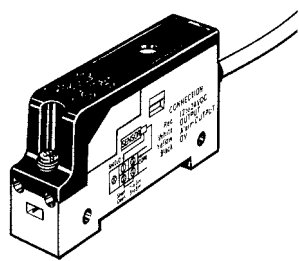
## E2C-X2AH



## E2C-X5AH

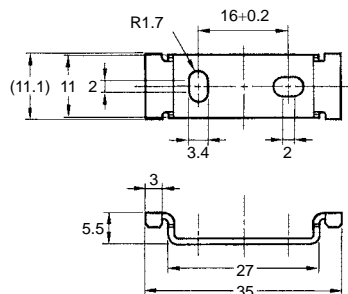


## E2C-JC4\_H



- Note:**
1. Use the caution label for prevention of improper operation after sensitivity adjustment.
  2. The mounting bracket is not required in the case of DIN-track mounting.
  3. Cord: 4.5 dia. (OD), 18/0.12, 4-conductor, vinyl-insulated round cord, standard length: 2 m (It is possible to extend the cord up to 200 m using an independent metal conduit).

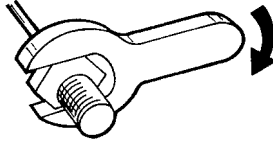
## Mounting Bracket



## Precautions

### Installation

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

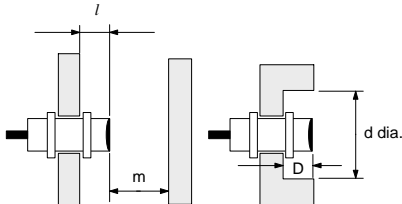


Model	Torque
E2C-X1R5AH	20 kgf \$ cm (2.0 N \$ m)
E2C-X2AH	60 kgf \$ cm (5.9 N \$ m)
E2C-X5AH	150 kgf \$ cm (15 N \$ m)

**Note:** The above torque values apply when you use a toothed washer with the nut that you tighten.

### Effects of Surrounding Metal

When mounting the E2C-H within a metal panel, ensure that the clearances given in the following table are maintained. Failure to maintain these distances may cause deterioration in the performance of the sensor.

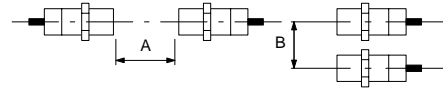


Model	l	d	D	m
E2C-X1R5AH	0 mm	(8 mm)	0 mm	4.5 mm
E2C-X2AH	0 mm	(12 mm)	0 mm	6 mm
E2C-X5AH	0 mm	(18 mm)	0 mm	15 mm

**Note:** Data in parentheses apply to shielded models.

### Mutual Interference

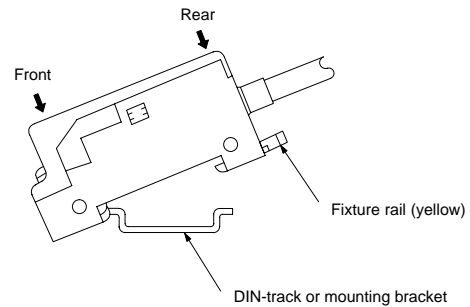
When installing two or more E2C-H face to face or side by side, ensure the minimum distances given in the following table are maintained.



Model	A	B
E2C-X1R5AH	20 mm	15 mm
E2C-X2AH	30 mm	20 mm
E2C-X5AH	50 mm	35 mm

### Mounting

Mount the front part to a DIN track or mounting bracket first, and then mount the rear part. The mounting bracket is provided with the E2C-H.



### Dismount

You can dismount the E2C-H with ease by pulling the yellow fixture rail on the lower part of the rear panel with a flat-blade screwdriver.

### Others

Do not use the sensor in the steam or places where water may be sprayed because the sensor is not water resistive.

Do not cut or extend the sensor cord or the sensor will not maintain its characteristics.

After you adjust the sensing distance, paste the caution label (provided with the E2C-H) on the amplifier to cover the surface of the sensitivity adjuster hole.

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