

## Change the Sensing Direction Freely

- Change the sensing direction from front to back. Adjustable up, down, left and right, in 90° units.
- Mounts like a Limit Switch.



**!** Be sure to read *Safety Precautions* on page 5.



## Ordering Information

### Sensors

#### DC Models

Appearance	Sensing distance	Model	
		Output configuration NPN NO + NC (both outputs)	Output configuration PNP NO + NC (both outputs)
Shielded	20 mm	E2Q2-N20E3-H	E2Q2-N20F3-H
Unshielded	30 mm	E2Q2-N30ME3-H	E2Q2-N30MF3-H

#### AC Models

Appearance	Sensing distance	Model	
		Operation mode NO/NC (selectable)	
Shielded	15 mm	E2Q2-N15Y4-H	
Unshielded	30 mm	E2Q2-N30MY4-H	

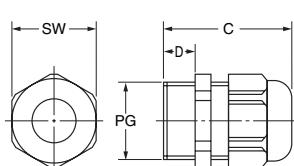
### Accessories (Order Separately)

The recommended cable clamp is the ST Model manufactured by K.MECS Co., Ltd.

Product number	Screw size	SW	C	D	Applicable cable outer diameter
ST-M20 × 1.5	M20 × 1.5	25	37	9	7 to 13

### Applicable seal packing

GPM20



For purchasing details, contact the sales company.  
Contact information is provided below.

#### K.MECS Co.,Ltd.

Yusen Iwamotocho Bldg. 3F  
2-3-3 Iwamotocho, Chiyodaku, Tokyo, Japan 101-0032.  
Telephone: +81-3-5825-5333  
Facsimile: +81-3-5825-8550

## Ratings and Specifications

Item	Shielding Model	Shielded	Unshielded	Shielded	Unshielded						
		E2Q2-N20□3-H	E2Q2-N30M□3-H	E2Q2-N15Y4-H	E2Q2-N30MY4-H						
<b>Sensing distance</b>	20 mm±10%	30 mm±10%	15 mm±10%	30 mm±10%							
<b>Set distance</b>	0 to 16 mm	0 to 24 mm	0 to 12 mm	0 to 24 mm							
<b>Differential travel</b>	15% max. of sensing distance										
<b>Sensing object</b>	Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to <i>Engineering Data</i> on page 3.)										
<b>Standard sensing object</b>	Iron, 60 × 60 × 1 mm	Iron, 90 × 90 × 1 mm	Iron, 60 × 60 × 1 mm	Iron, 90 × 90 × 1 mm							
<b>Response frequency</b>	150 Hz	100 Hz	20 Hz								
<b>Power supply voltage (operating voltage range)</b>	12 to 48 VDC (10 to 60 VDC), ripple (p-p): 10% max.			24 to 240 VAC (20 to 253 VAC), 50/60 Hz							
<b>Current consumption/Leakage current</b>	20 mA max.		1.7 mA max Refer to <i>Engineering Data</i> on page 3.								
<b>Control output</b>	<b>Switching capacity</b>	200 mA max.		8 to 500 mA							
	<b>Residual voltage</b>	3 V max. with a 200 mA load current		Refer to <i>Engineering Data</i> on page 3.							
<b>Indicators</b>	Power indicator (green) Detection indicator (yellow)			Power indicator (green) Operation indicator (yellow)							
<b>Operation mode (with sensing object approaching)</b>	E3 Models: NPN NO+NC F3 Models: PNP NO+NC Refer to the timing charts under <i>I/O Circuit Diagrams</i> on page 4 for details.			AC: NO or NC (selectable) Refer to the timing charts under <i>I/O Circuit Diagrams</i> on page 4 for details.							
<b>Protection circuits</b>	Reverse polarity protection, load short-circuit protection			---							
<b>Ambient temperature</b>	Operating: -25 to 70°C (with no icing or condensation) Storage: -40 to 70°C (with no icing or condensation)										
<b>Ambient humidity</b>	Operating: 35% to 85% (with no condensation) Storage: 35% to 95% (with no condensation)										
<b>Temperature influence</b>	<b>Shielded model</b>	±10% max. of sensing distance at 23°C in the temperature range of -25 to 70°C									
	<b>Unshielded model</b>	±15% max. of sensing distance at 23°C in the temperature range of -25 to 70°C									
<b>Voltage influence</b>	±2% max. of sensing distance at within a range of ±10% of rated power supply voltage										
<b>Insulation resistance</b>	50 MΩ min. (at 500 VDC) between current-carrying parts and case										
<b>Dielectric strength</b>	E□ Model and F□ Model: 1,000 VAC, 50/60 Hz for 1 min. between current-carrying parts and case Y Model: 4,000 VAC, 50/60 Hz for 1 min. between current-carrying parts and case										
<b>Vibration resistance (destruction)</b>	10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions										
<b>Shock resistance (destruction)</b>	500 m/s <sup>2</sup> 10 times each in X, Y, and Z directions										
<b>Degree of protection</b>	IEC IP67 *										
<b>Connection method</b>	Terminal block										
<b>Weight</b>	Approx. 240 g										
<b>Materials</b>	<b>Case</b>	Polybutylene terephthalate (PBT)									
	<b>Terminal block</b>	Polybutylene terephthalate (PBT)									
	<b>Sensing surface</b>	Polybutylene terephthalate (PBT)									

\*When the recommended cable clamp is used.

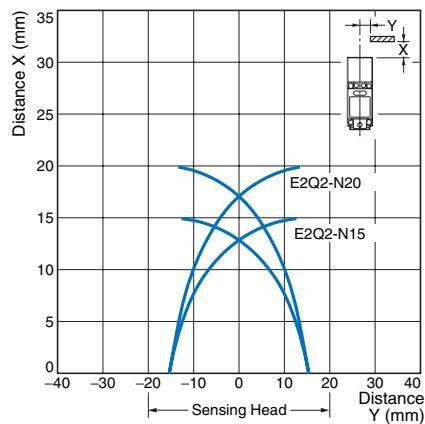
## Engineering Data (Typical)

## Sensing Area

## Shielded Models

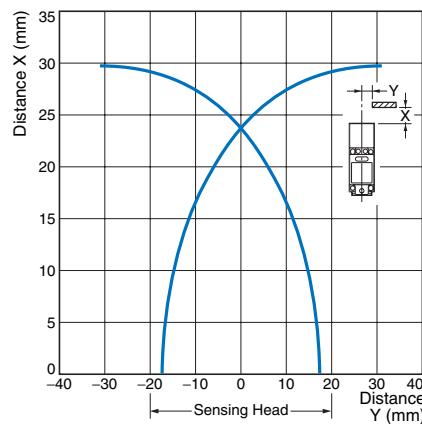
E2Q2-N20□3-H

E2Q2-N15Y4-H



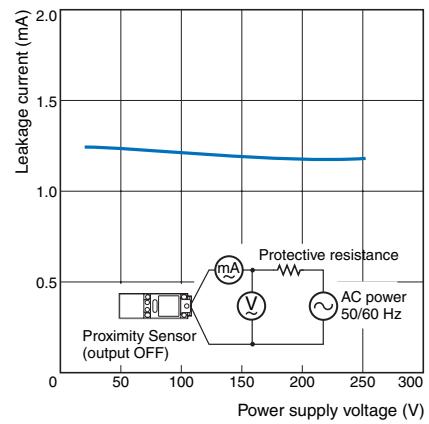
## Unshielded Models

E2Q2-N30M□□-H



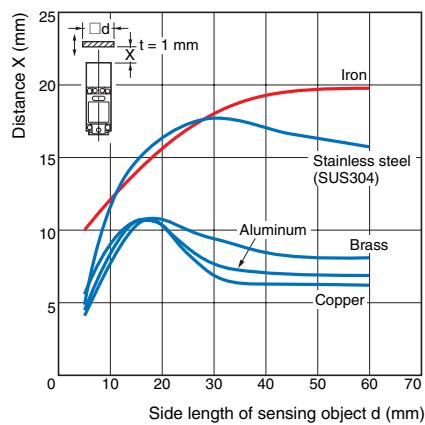
## Leakage Current

E2Q2-N□Y4-H

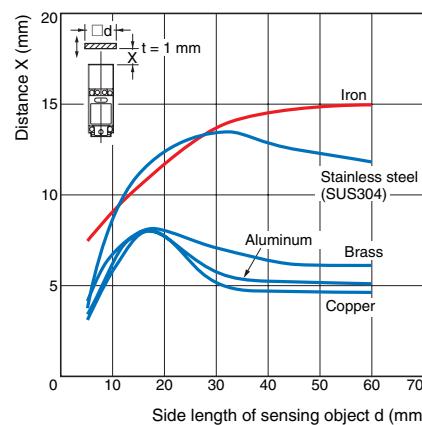


## Influence of Sensing Object Size and Material

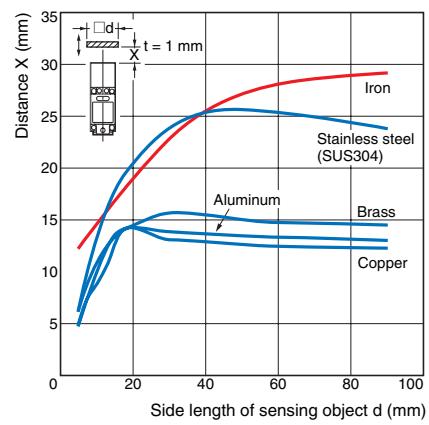
E2Q2-N20□3-H



E2Q2-N15Y4-H



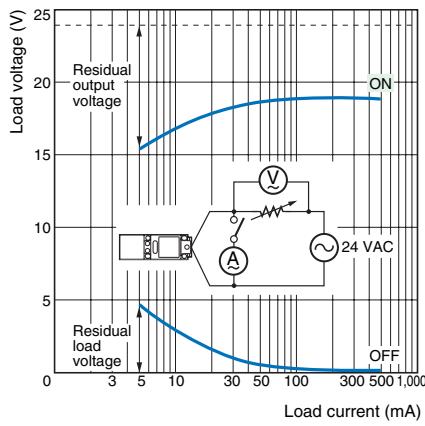
E2Q2-N30M□□-H



## Residual Output Voltage

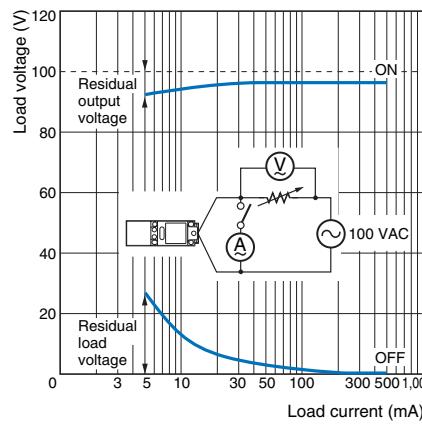
E2Q2-N□Y4-H

at 24 VAC



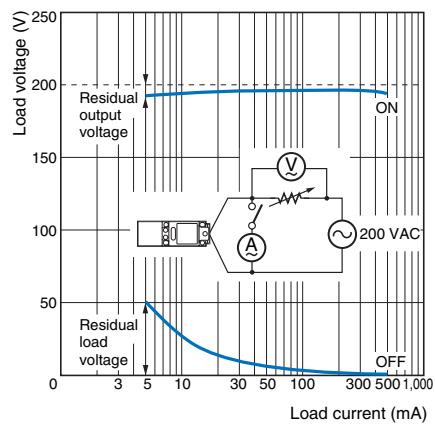
E2Q2-N□Y4-H

at 100 VAC



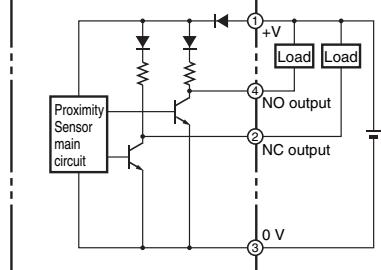
E2Q2-N□Y4-H

at 200 VAC

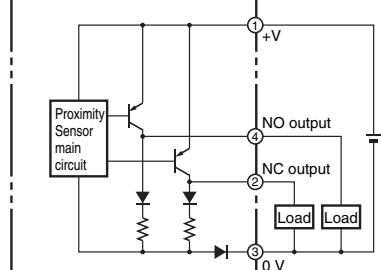


## I/O Circuit Diagrams

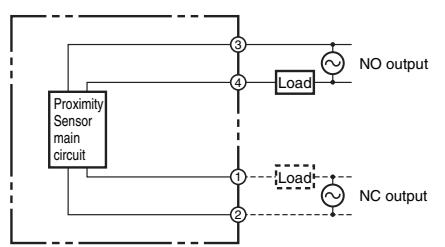
## NPN

Operation mode	Models	Timing charts	Output circuits
NO+NC	E2Q2-N20E3-H E2Q2-N30ME3-H	<p>Sensing object Present NO Not present NC</p> <p>Detection indicator (yellow) ON OFF</p> <p>Control output ON OFF</p> <p>Sensing object Present NO Not present NC</p> <p>Detection indicator (yellow) ON OFF</p> <p>Control output ON OFF</p>	

## PNP

Operation mode	Models	Timing charts	Output circuits
NO+NC	E2Q2-N20F3-H E2Q2-N30MF3-H	<p>Sensing object Present NO Not present NC</p> <p>Detection indicator (yellow) ON OFF</p> <p>Control output ON OFF</p> <p>Sensing object Present NO Not present NC</p> <p>Detection indicator (yellow) ON OFF</p> <p>Control output ON OFF</p>	

## AC

Operation mode	Models	Timing charts	Output circuits
NO/NC	E2Q2-N15Y4-H E2Q2-N30MY4-H	<p>Sensing object Present NO Not present NC</p> <p>Detection indicator (yellow) ON OFF</p> <p>Control output ON OFF</p> <p>Sensing object Present NO Not present NC</p> <p>Detection indicator (yellow) ON OFF</p> <p>Control output ON OFF</p>	 <p>Note: Connect either NO or NC.</p>

## Safety Precautions

### WARNING

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



### Precautions for Safe Use

#### Precautions for Compliance with UL Standards

The product is compliant with UL standards. To meet the requirements for the standards, however, metal connectors or conduits must not be used. When using for UL applications, be sure to use a UL-listed cable clamp.

### Precautions for Correct Use

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

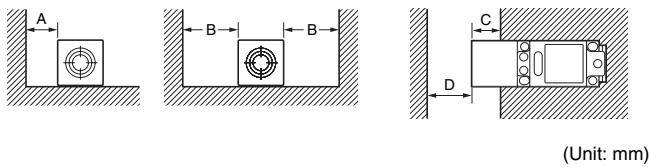
#### ● Design

#### Power Reset Time

The Sensor is ready to operate 300 ms after the Sensor is turned ON. If the load and Sensor are connected to independent power supplies respectively, be sure to turn ON the Sensor before supplying power to the load.

#### Influence of Surrounding Metal

When mounting the Sensor within a metal panel, ensure that the clearances given in the following table are maintained.

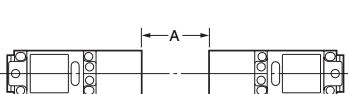


Model	Item	A	B	C	D
E2Q2-N□□□-H		0	10	0	40
E2Q2-N□M□□-H		15	25	25	40

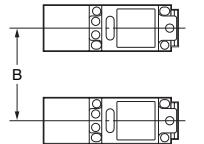
#### Mutual Interference

When installing Sensors face-to-face or side-by-side, ensure that the minimum distances given in the following table are maintained.

#### Face-to-face



#### Parallel



(Unit: mm)

Model	Item	A	B
E2Q2-N□□□-H		170	100
E2Q2-N□M□□-H		280	200

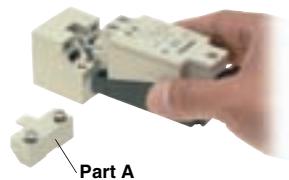
#### ● Mounting

#### Changing the sensing surface direction.

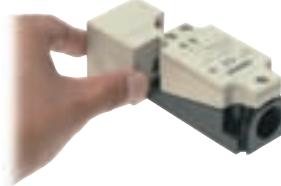
1. Remove the 2 screws on the back of the Sensor.



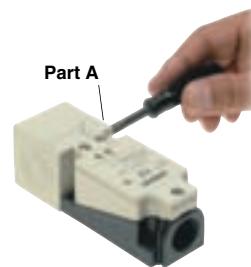
2. Removing part A allows the sensing surface position to be changed to the front or sides of the Sensor.



3. When positioning the sensing surface to the side, rotate it to the required position, then fit it into the case. The possible positions are 0, 90, 180, and 270°. Do not forcefully rotate the sensing surface.



4. Secure part A with the screws.



#### ● Operating Environment

#### Ambient Atmosphere

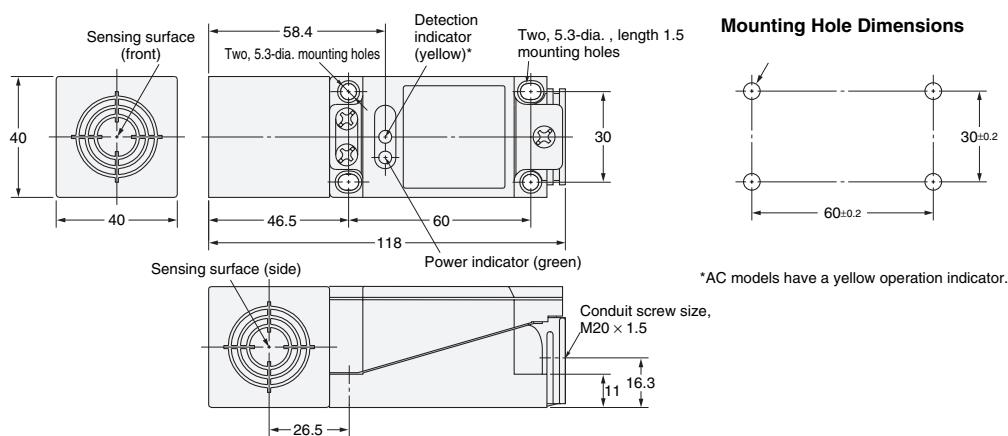
Do not install the product in the following locations. Doing so may result in product failure or malfunction.

1. Locations subject to corrosive gas.
2. Locations subject to shock or vibration.
3. Locations subject to exposure to water, oil, or chemicals.

(Unit: mm)

**Dimensions**

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

**Sensors**

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