### Welding Proximity Sensor **E2EW Series** DC 3-wire

## Stable detection in lines containing both aluminum and iron

- Equivalent sensing distances for both iron and aluminum <sup>1</sup>
- · Enables common design for lines with both iron and aluminum
- The exceptional sensing range, reduces unexpected downtime
- Equipped with a function, which effectively cancels pulse noise of current magnetic field <sup>1</sup>.
- Omron's unique fluororesin coating technologies enable longlasting spatter resistance, which lasts 60 times longer than previous models <sup>2</sup>.
- Durable full metal body to reduce downtime related to sensor damage.
- IO-Link is available for premium models.
- Sensing distances are laser printed on the sensor head for easy recognition <sup>3</sup>.
- UL certification (UL60947-5-2) and CSA certification (CSA C22.2 UL60947-5-2-14)
- 1. PREMIUM Models only.
- Comparison with E2EF-Q products. Based on June 2019 OMRON investigation.
- 3. Models without spatter-resistant coating only.



For the most recent information on models that have been certified for safety standards, refer to your Omron website.



### **E2EW Series Model Number Legend**

### DC 3-wire

E2EW - (1) X (2) (3) (4) (5) (6) - (7) (8)

No.	Туре	Code	Meaning	
(1)	Casa	Blank	Without spatter-resistant coating	
(1)	Case	Q	With spatter-resistant coating	
(2)	Sensing distance	Number Sensing distance (Unit: mm)		
(2)	Output configuration	В	PNP open collector	
(3)		С	NPN open collector	
		1	Normally open (NO)	
(4)	Operation mode	2	Normally closed (NC)	
		3	Normally open, Normally closed (NO+NC)	
		Blank	Non IO-Link compliant	
(5)	IO-Link baud rate	D	COM2 (38.4kbps)	
		Т	COM3 (230.4kbps)	
		12	M12	
(6)	Size	18	M18	
		30	M30	
(7)	Connection method	Blank	Pre-wired Models	
(7)		M1TJ	M12 Pre-wired Smartclick Connector Models	
(8)	Cable length	Number M	Cable length	

**Note:** The purpose of this model number legend is to provide understanding of the meaning of specifications from the model number. Models are not available for all combinations of code numbers.

### **Ordering Information**

PREMIUM Model

### E2EW Series (Quadruple distance model)

DC 3-wire [Refer to Dimensions on page 26.]

### Shielded <sup>1</sup>

Size	Connection method	Operation mode	Model		
(Sensing distance)	Connection method	Operation mode	PNP	NPN	
		NO	E2EW-X12B1T18 2M	E2EW-X12C118 2M	
	Pre-wired (2 m) <sup>2</sup>	NC	E2EW-X12B218 2M	E2EW-X12C218 2M	
M18		NO+NC	E2EW-X12B3T18 2M		
(12 mm)		NO	E2EW-X12B1T18-M1TJ 0.3M	E2EW-X12C118-M1TJ 0.3M	
	Smartclick Connector (0.3 m)	NC	E2EW-X12B218-M1TJ 0.3M	E2EW-X12C218-M1TJ 0.3M	
		NO+NC	E2EW-X12B3T18-M1TJ 0.3M		
		NO	E2EW-X22B1T30 2M	E2EW-X22C130 2M	
	Pre-wired (2 m) <sup>2</sup>	NC	E2EW-X22B230 2M	E2EW-X22C230 2M	
M30		NO+NC	E2EW-X22B3T30 2M		
(22 mm)		NO	E2EW-X22B1T30-M1TJ 0.3M	E2EW-X22C130-M1TJ 0.3M	
	M12 Pre-wired Smartclick Connector (0.3 m)	NC	E2EW-X22B230-M1TJ 0.3M	E2EW-X22C230-M1TJ 0.3M	
		NO+NC	E2EW-X22B3T30-M1TJ 0.3M		

1. When embedding the Proximity Sensor in metal, refer to Influence of Surrounding Metal on page 24.

2. Models with 5-m cable length are also available with "5M" suffix. (Example: E2EW-X12B1T18 5M)

Note: 1. Models in \_\_\_\_\_ are equipped with IO-Link (COM3). For IO-Link (COM2), select a model number with the format of "E2EW-X□□D□" (Example: E2EW-X12B1D18 2M).

Operation mode NO can be changed to NC via IO-Link communications.

PREMIUM Model

### E2EW Series (Triple distance model)

DC 3-wire [Refer to *Dimensions* on page 26.] Shielded <sup>1</sup>

Size	Connection method	Operation mode	Model		
(Sensing distance)	Connection method	Operation mode	PNP	NPN	
		NO	E2EW-X10B1T18 2M	E2EW-X10C118 2M	
	Pre-wired (2 m) <sup>2</sup>	NC	E2EW-X10B218 2M	E2EW-X10C218 2M	
M18		NO+NC	E2EW-X10B3T18 2M		
(10 mm)		NO	E2EW-X10B1T18-M1TJ 0.3M	E2EW-X10C118-M1TJ 0.3M	
	M12 Pre-wired Smartclick Connector (0.3 m)	NC	E2EW-X10B218-M1TJ 0.3M	E2EW-X10C218-M1TJ 0.3M	
		NO+NC	E2EW-X10B3T18-M1TJ 0.3M		
		NO	E2EW-X20B1T30 2M	E2EW-X20C130 2M	
	Pre-wired (2 m) <sup>2</sup>	NC	E2EW-X20B230 2M	E2EW-X20C230 2M	
M30		NO+NC	E2EW-X20B3T30 2M		
(20 mm)		NO	E2EW-X20B1T30-M1TJ 0.3M	E2EW-X20C130-M1TJ 0.3M	
	M12 Pre-wired Smartclick Connector (0.3 m)	NC	E2EW-X20B230-M1TJ 0.3M	E2EW-X20C230-M1TJ 0.3M	
		NO+NC	E2EW-X20B3T30-M1TJ 0.3M		

1. When embedding the Proximity Sensor in metal, refer to Influence of Surrounding Metal on page 24.

2. Models with 5-m cable length are also available with "5M" suffix. (Example: E2EW-X10B1T18 5M)

Note: 1. Models in \_\_\_\_\_ are equipped with IO-Link (COM3). For IO-Link (COM2), select a model number with the format of "E2EW-XIII DDI" (Example: E2EW-X10B1D18 2M).

Operation mode NO can be changed to NC via IO-Link communications.

PREMIUM Model

### E2EW-Q Series (Spatter-resistant Quadruple distance model)

DC 3-wire [Refer to *Dimensions* on page 26.] Shielded <sup>1</sup>

#### Model Size **Connection method** Operation mode (Sensing distance) PNP NPN NO E2EW-QX12B1T18 2M E2EW-QX12C118 2M Pre-wired (2 m)<sup>2</sup> NC E2EW-QX12B218 2M E2EW-QX12C218 2M NO+NC E2EW-QX12B3T18 2M M18 (12 mm) NO E2EW-QX12B1T18-M1TJ 0.3M E2EW-QX12C118-M1TJ 0.3M M12 Pre-wired NC E2EW-QX12B218-M1TJ 0.3M E2EW-QX12C218-M1TJ 0.3M Smartclick Connector (0.3 m) NO+NC E2EW-QX12B3T18-M1TJ 0.3M NO E2EW-QX22B1T30 2M E2EW-QX22C130 2M Pre-wired (2 m)<sup>2</sup> NC E2EW-QX22B230 2M E2EW-QX22C230 2M NO+NC E2EW-QX22B3T30 2M M30 (22 mm) NO E2EW-QX22B1T30-M1TJ 0.3M E2EW-QX22C130-M1TJ 0.3M M12 Pre-wired NC E2EW-QX22B230-M1TJ 0.3M E2EW-QX22C230-M1TJ 0.3M Smartclick Connector (0.3 m) NO+NC E2EW-QX22B3T30-M1TJ 0.3M

1. When embedding the Proximity Sensor in metal, refer to Influence of Surrounding Metal on page 24.

2. Models with 5-m cable length are also available with "5M" suffix. (Example: E2EW-QX12B1T18 5M)

Note: 1. Models in \_\_\_\_\_\_ are equipped with IO-Link (COM3). For IO-Link (COM2), select a model number with the format of "E2EW-QX 🗆 🗆 D 🗆 " (Example: E2EW-QX12B1D18 2M).

Operation mode NO can be changed to NC via IO-Link communications.

PREMIUM Model

### E2EW-Q Series (Spatter-resistant Triple distance model)

DC 3-wire [Refer to *Dimensions* on page 26.] Shielded <sup>1</sup>

Size	Connection method	Operation mode	Model		
(Sensing distance)	Connection method	Operation mode	PNP	NPN	
		NO	E2EW-QX10B1T18 2M	E2EW-QX10C118 2M	
	Pre-wired (2 m) <sup>2</sup>	NC	E2EW-QX10B218 2M	E2EW-QX10C218 2M	
M18		NO+NC	E2EW-QX10B3T18 2M		
(10 mm)		NO	E2EW-QX10B1T18-M1TJ 0.3M	E2EW-QX10C118-M1TJ 0.3M	
	M12 Pre-wired Smartclick Connector (0.3 m)	NC	E2EW-QX10B218-M1TJ 0.3M	E2EW-QX10C218-M1TJ 0.3M	
		NO+NC	E2EW-QX10B3T18-M1TJ 0.3M		
		NO	E2EW-QX20B1T30 2M	E2EW-QX20C130 2M	
	Pre-wired (2 m) <sup>2</sup>	NC	E2EW-QX20B230 2M	E2EW-QX20C230 2M	
M30		NO+NC	E2EW-QX20B3T30 2M		
(20 mm)		NO	E2EW-QX20B1T30-M1TJ 0.3M	E2EW-QX20C130-M1TJ 0.3M	
	M12 Pre-wired Smartclick Connector (0.3 m)	NC	E2EW-QX20B230-M1TJ 0.3M	E2EW-QX20C230-M1TJ 0.3M	
		NO+NC	E2EW-QX20B3T30-M1TJ 0.3M		

1. When embedding the Proximity Sensor in metal, refer to Influence of Surrounding Metal on page 24.

2. Models with 5-m cable length are also available with "5M" suffix. (Example: E2EW-QX10B1T18 5M)

Note: 1. Models in \_\_\_\_\_ are equipped with IO-Link (COM3). For IO-Link (COM2), select a model number with the format of "E2EW-QX 🗆 🗆 D 🗆" (Example: E2EW-QX10B1D18 2M).

Operation mode NO can be changed to NC via IO-Link communications.

BASIC Model

### E2EW Series (Single distance model)

DC 3-wire [Refer to *Dimensions* on page 26.] Shielded

Size	Connection method	Operation mode	Model		
(Sensing distance)	Connection method	Operation mode	PNP	NPN	
		NO	E2EW-X2B112 2M	E2EW-X2C112 2M	
	Pre-wired (2 m) <sup>1</sup>	NC	E2EW-X2B212 2M	E2EW-X2C212 2M	
M12		NO+NC	E2EW-X2B312 2M	E2EW-X2C312 2M	
(2 mm)		NO	E2EW-X2B112-M1TJ 0.3M	E2EW-X2C112-M1TJ 0.3M	
	M12 Pre-wired Smartclick Connector (0.3 m)	NC	E2EW-X2B212-M1TJ 0.3M	E2EW-X2C212-M1TJ 0.3M	
		NO+NC	E2EW-X2B312-M1TJ 0.3M	E2EW-X2C312-M1TJ 0.3M	
		NO	E2EW-X5B118 2M	E2EW-X5C118 2M	
	Pre-wired (2 m) <sup>1</sup>	NC	E2EW-X5B218 2M	E2EW-X5C218 2M	
M18		NO+NC	E2EW-X5B318 2M	E2EW-X5C318 2M	
(5 mm)		NO	E2EW-X5B118-M1TJ 0.3M	E2EW-X5C118-M1TJ 0.3M	
	M12 Pre-wired Smartclick Connector (0.3 m)	NC	E2EW-X5B218-M1TJ 0.3M	E2EW-X5C218-M1TJ 0.3M	
		NO+NC	E2EW-X5B318-M1TJ 0.3M	E2EW-X5C318-M1TJ 0.3M	
		NO	E2EW-X10B130 2M	E2EW-X10C130 2M	
	Pre-wired (2 m) <sup>1</sup>	NC	E2EW-X10B230 2M	E2EW-X10C230 2M	
M30		NO+NC	E2EW-X10B330 2M	E2EW-X10C330 2M	
(10 mm)		NO	E2EW-X10B130-M1TJ 0.3M	E2EW-X10C130-M1TJ 0.3M	
	M12 Pre-wired Smartclick Connector (0.3 m)	NC	E2EW-X10B230-M1TJ 0.3M	E2EW-X10C230-M1TJ 0.3M	
		NO+NC	E2EW-X10B330-M1TJ 0.3M	E2EW-X10C330-M1TJ 0.3M	

1. Models with 5-m cable length are also available with "5M" suffix. (Example: E2EW-X2B112 5M)

Note: IO-Link is not supported for all types of BASIC Model.

BASIC Model

### E2EW-Q Series (Spatter-resistant Single distance model)

DC 3-wire [Refer to Dimensions on page 26.] Shielded

Size	Connection method	Operation mode	Model		
(Sensing distance)	Connection method	Operation mode	PNP	NPN	
		NO	E2EW-QX2B112 2M	E2EW-QX2C112 2M	
	Pre-wired (2 m) <sup>1</sup>	NC	E2EW-QX2B212 2M	E2EW-QX2C212 2M	
M12		NO+NC	E2EW-QX2B312 2M	E2EW-QX2C312 2M	
(2 mm)		NO	E2EW-QX2B112-M1TJ 0.3M	E2EW-QX2C112-M1TJ 0.3M	
	M12 Pre-wired Smartclick Connector (0.3 m)	NC	E2EW-QX2B212-M1TJ 0.3M	E2EW-QX2C212-M1TJ 0.3M	
		NO+NC	E2EW-QX2B312-M1TJ 0.3M	E2EW-QX2C312-M1TJ 0.3M	
		NO	E2EW-QX5B118 2M	E2EW-QX5C118 2M	
	Pre-wired (2 m) <sup>1</sup>	NC	E2EW-QX5B218 2M	E2EW-QX5C218 2M	
M18		NO+NC	E2EW-QX5B318 2M	E2EW-QX5C318 2M	
(5 mm)		NO	E2EW-QX5B118-M1TJ 0.3M	E2EW-QX5C118-M1TJ 0.3M	
	M12 Pre-wired Smartclick Connector (0.3 m)	NC	E2EW-QX5B218-M1TJ 0.3M	E2EW-QX5C218-M1TJ 0.3M	
		NO+NC	E2EW-QX5B318-M1TJ 0.3M	E2EW-QX5C318-M1TJ 0.3M	
		NO	E2EW-QX10B130 2M	E2EW-QX10C130 2M	
	Pre-wired (2 m) <sup>1</sup>	NC	E2EW-QX10B230 2M	E2EW-QX10C230 2M	
M30		NO+NC	E2EW-QX10B330 2M	E2EW-QX10C330 2M	
(10 mm)		NO	E2EW-QX10B130-M1TJ 0.3M	E2EW-QX10C130-M1TJ 0.3M	
	M12 Pre-wired Smartclick Connector (0.3 m)	NC	E2EW-QX10B230-M1TJ 0.3M	E2EW-QX10C230-M1TJ 0.3M	
		NO+NC	E2EW-QX10B330-M1TJ 0.3M	E2EW-QX10C330-M1TJ 0.3M	

1. Models with 5-m cable length are also available with "5M" suffix. (Example: E2EW-QX2B112 5M)

Note: IO-Link is not supported for all types of BASIC Model.

### Accessories (Sold Separately)

### Sensor I/O Connectors

(Models for Pre-wired Connectors) A Sensor I/O Connector is not provided with the Sensor. Order separately as required. Round Water-resistant Connectors XS5 series

Appearance	Cable Specification	Туре	Cable diameter (mm)	Cable Connection Direction	Cable length (m)	Sensor I/O Connector model number	Applicable Proximity Sensor model number
					1	XS5F-D421-C80-F	
					2	XS5F-D421-D80-F	-
				Straight	3	XS5F-D421-E80-F	
					5	XS5F-D421-G80-F	
M12		Sockets on One	6 dia		10	XS5F-D421-J80-F	
Connector		Cable End	o ula.		1	XS5F-D422-C80-F	
					2	XS5F-D422-D80-F	
Straight type				Right-angle	3	XS5F-D422-E80-F	-
	PVC robot cable				5	XS5F-D422-G80-F	
10					10	XS5F-D422-J80-F	
OF				Straight (Socket)/ Straight (Plug)	1	XS5W-D421-C81-F	E2EW-X□□□-M1TJ E2EW-QX□□□-M1TJ
					2	XS5W-D421-D81-F	
					3	XS5W-D421-E81-F	
Right-angle type					5	XS5W-D421-G81-F	
					10	XS5W-D421-J81-F	
11		Socket and Plug	6 dia	Right-angle (Socket)/	2	XS5W-D422-D81-F	
All a		on Cable Ends	o ula.	Right-angle (Plug)	5	XS5W-D422-G81-F	
				Straight (Socket)/	2	XS5W-D423-D81-F	
				Right-angle (Plug)	5	XS5W-D423-G81-F	
				Right-angle (Socket)/	2	XS5W-D424-D81-F	-
				Straight (Plug)	5	XS5W-D424-G81-F	

Note: For details of the connector, refer to XS5 Series datasheet.

### **Ratings and Specifications**

PREMIUM Model

### E2EW Series (Quadruple/Triple distance model) E2EW-Q Series (Spatter-resistant Quadruple/Triple distance model)

DC 3-wire

Shielded

Туре		Quadruple di	stance model	Triple distance model			
	Size	M18	M30	M18	M30		
Item	Model	E2EW-(Q)X12□18	E2EW-(Q)X22□30	E2EW-(Q)X10□18	E2EW-(Q)X20□30		
Sensing distance		12 mm ±10%	22 mm ±10%	10 mm ±10%	20 mm ±10%		
Setting distance		0 to 8.4 mm	0 to 15.4 mm	0 to 7.0 mm	0 to 14 mm		
Differential travel		15% max. of sensing distan	ce				
Detectable object		Ferrous metals and non-ferr to <i>Engineering Data</i> on page	ous metals (The sensing dista e 11.)	ance depends on the material	of the sensing object. Refer		
Standard sensing	object	Iron, 36 × 36 × 1 mm	Iron, 66 × 66 × 1 mm	Iron, 30 × 30 × 1 mm	lron, 60 × 60 × 1 mm		
Response frequer	ncy <sup>12</sup>	2 Hz					
Power supply volt	age	10 to 30 VDC (including 10%	% ripple (p-p)), Class 2				
Current consumption	tion	720 mW max. (Current cons	sumption: 30 mA max. at pow	er supply voltage of 24 V)			
Output configurat	ion	B	ector, C□ Models: NPN open	collector			
Operation mode		1-output models (B1, C1): N 1-output models (B2, C2): N 2-output models (B3): NO+N	IO (Normally open), IC (Normally closed), NC (Normally open, Normally	closed)			
Control output	Load current	1-output models (B1,B2,C1, 2-output models (B3): 10 to	C2): 10 to 30 VDC, Class 2, 2 30 VDC, Class 2, 100 mA ma	200 mA max. ax.			
Control output	Residual voltage	1-output models (B1,B2,C1, 2-output models (B3): 2 V m	C2): 2 V max. (Load current: nax. (Load current: 100 mA, C	200 mA, Cable length: 2 m) Cable length: 2 m)			
Indicator		In the Standard I/O mode (S In the IO-Link communicatic (green, blinking at 1 s interv	IO mode): Operation indicato n mode (COM mode): Opera als)	r (orange, lit) and communica tion indicator (orange, lit) and	ation indicator (green, not lit) I communication indicator		
Protection circuits	3	Power supply reverse polarity protection, Surge suppressor, Output short-circuit protection, Output reverse polarity protection					
Ambient temperat	ure range	Operating: 0 to 85 °C, Storage: -15 to 85 °C (with no icing or condensation) <sup>3</sup>					
Ambient humidity	range	Operating/Storage: 35% to 95% (with no condensation)					
Temperature influ	ence	±20% max. of sensing distance at 23 °C in the temperature range of 0 to 85 °C					
Voltage influence		±1.5% max. of sensing distance at rated voltage in the rated voltage ±15% range					
Insulation resistar	nce	50 M $\Omega$ min. (at 500 VDC) between current-carrying parts and case					
Dielectric strength	ı	1,000 VAC, 50/60 Hz for 1 minute between current-carrying parts and case					
Vibration resistan	ce (destruction)	10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions					
Shock resistance	(destruction)	1,000 m/s <sup>2</sup> 10 times each in X, Y, and Z directions					
Degree of protecti	ion	IEC 60529: IP67					
Connection metho	bd	Pre-wired Models (Standard cable length: 2 m), Pre-wired Connector Models (Standard cable length: 0.3 m)					
Woight	Pre-wired	Approx. 165 g	Approx. 225 g	Approx. 165 g	Approx. 225 g		
(packed state)	M12 Pre-wired Smartclick Connector	Approx. 100 g	Approx. 160 g	Approx. 100 g	Approx. 160 g		
	Case	E2EW-X□: Stainless steel (	SUS303), E2EW-QX⊡: Fluor	oresin coating (Base materia	I: (SUS303))		
	Sensing surface	E2EW-X□: Stainless steel (	SUS303), E2EW-QX⊡: Fluor	oresin coating (Base materia	I: (SUS303))		
Materials	Sensing surface (Thickness)	0.4 mm	0.5 mm	0.4 mm	0.5 mm		
	Clamping nuts	E2EW-X : Stainless steel (	SUS303), E2EW-QX□: Fluor	oresin coating (Base materia	I: (SUS303))		
	Toothed washers	Zinc-plated iron					
Cable		Vinyl chloride (PVC)					
Main IO-Link functions <sup>4</sup>		Operation mode switching between NO and NC, self diagnosis, excessive target proximity, alarm selection, control output timer function (ON delay, OFF delay, one shot options), monitor output, operating hours read-out, readout of the sensor internal temperature, and initial reset					
	IO-Link specification	Ver.1.1					
IO-Link	Baud rate	E2EW(-Q) X B T C: COM	3 (230.4 kbps), E2EW(-Q) X	□B□D□: COM2 (38.4 kbps)			
specifications <sup>3</sup>	Data length	PD size: 2 bytes, OD size: 1	byte (M-sequence type: TYP	PE_2_2)			
	Minimum cycle time	COM2: 2.3 ms, COM3: 1.0 r	ms				
Accessories		Instruction manual, Clampin	g nuts, Toothed washer				
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The response frequency is an average value.
 Factory setting: (timer function: ONOFF delay, timer time: 200 ms).
 UL Temperature rating is between 0°Cto 60°C.
 IO-Link is not supported for NC-type PNP outputs or all types of NPN outputs.

BASIC Model

### E2EW Series (Single distance model) E2EW-Q Series (Spatter-resistant Single distance model)

DC 3-wire

Shielded

	Туре	Single distance model					
	Size	M12	M18	M30			
Item	Model	E2EW-(Q)X2□12	E2EW-(Q)X5□18	E2EW-(Q)X10□30			
Sensing distance		2 mm ±10%	5 mm ±10%	10 mm ±10%			
Setting distance		0 to 1.4 mm	0 to 3.5 mm	0 to 7 mm			
Differential travel		10% max. of sensing distance					
Detectable object		Ferrous metals and non-ferrous metal to <i>Engineering Data</i> on page 11.)	s (The sensing distance depends on th	e material of the sensing object. Refer			
Standard sensing	object	Iron, 12 × 12 × 1 mm	Iron, 18 × 18 × 1 mm	Iron, 30 × 30 × 1 mm			
Response freque	ncy <sup>1</sup>	100 Hz	80 Hz	40 Hz			
Power supply vol	tage	10 to 30 VDC (including 10% ripple (p	o-p)), Class 2				
Current consump	tion	1-output models (B1, B2, C1, C2): 16 2-output models (B3, C3): 20 mA max	mA max. x.				
Output configurat	tion	B ☐ Models: PNP open collector, C ☐ Models: NPN open collector					
Operation mode		1-output models (B1, C1): NO (Norma 1-output models (B2, C2): NC (Norma 2-output models (B3, C3): NO+NC (N	ally open), ally closed), lormally open, Normally closed)				
Control output	Load current	1-output models (B1, B2, C1, C2): 10 2-output models (B3, C3): 10 to 30 VI	to 30 VDC, Class 2, 200 mA max. DC, Class 2, 100 mA max.				
Control output	Residual voltage	1-output models (B1, B2, C1, C2): 2 V max. (Load current: 200 mA, Cable length: 2 m) 2-output models (B3, C3): 2 V max. (Load current: 100 mA, Cable length: 2 m)					
Indicator		Operation indicator (orange, lit) and communication indicator (green, not lit)					
Protection circuit	s	Power supply reverse polarity protection, Surge suppressor, Output short-circuit protection, Output reverse polarity protection					
Ambient tempera	ture range	Operating: 0 to 85 °C, Storage: -15 to 85 °C (with no icing or condensation) <sup>2</sup>					
Ambient humidity	range	Operating/Storage: 35% to 95% (with	no condensation)				
Temperature influ	ience	±20% max. of sensing distance at 23 °C in the temperature range of 0 to 85 °C					
Voltage influence		±1.5% max. of sensing distance at rat	ted voltage in the rated voltage $\pm 15\%$ r	ange			
Insulation resista	nce	50 M $\Omega$ min. (at 500 VDC) between current-carrying parts and case					
Dielectric strengt	h	1,000 VAC, 50/60 Hz for 1 minute between current-carrying parts and case					
Vibration resistan	ice (destruction)	10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions					
Shock resistance	(destruction)	1,000 m/s <sup>2</sup> 10 times each in X, Y, and Z directions					
Degree of protect	ion	IEC 60529: IP67					
Connection meth	od	Pre-wired Models (Standard cable ler	ngth: 2 m), Pre-wired Connector Model	s (Standard cable length: 0.3 m)			
Weight	Pre-wired	Approx. 140 g	Approx. 160 g	Approx. 225 g			
(packed state)	M12 Pre-wired Smartclick Connector	Approx. 70 g	Approx. 95 g	Approx. 160 g			
	Case	E2EW-X : Stainless steel (SUS303)	, E2EW-QX⊡: Fluororesin coating (Ba	se material: (SUS303))			
	Sensing surface	E2EW-X : Stainless steel (SUS303)	, E2EW-QX⊡: Fluororesin coating (Ba	se material: (SUS303))			
Materials	Sensing surface (Thickness)	0.8 mm	0.8 mm	0.8 mm			
	Clamping nuts	E2EW-X : Stainless steel (SUS303)	, E2EW-QX⊡: Fluororesin coating (Ba	se material: (SUS303))			
	Toothed washers	Zinc-plated iron					
	Cable	Vinyl chloride (PVC)					
Accessories		Instruction manual, Clamping nuts, Toothed washer					

1. 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. 2. UL Temperature rating is between 0°Cto 60°C.

### Engineering Data (Reference Value)

### Sensing Area

PREMIUM Model

#### Quadruple distance model/ Spatter-resistant Quadruple distance model Shielded

### Sensing object: iron



# $22 - 1 - \frac{1 - \frac{1}{2}}{1} - \frac{1}{2}$ $20 - \frac{1}{2} - \frac{1}{2} - \frac{1}{2}$ E2EW (Q)X22 - 30 E2EW (Q)X22 - 30 E2EW (Q)X22 - 30



#### Triple distance model/ Spatter-resistant Triple distance model Shielded

### Sensing object: iron



### Sensing object: Aluminum

Sensing object: Aluminum

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Distance X (mm)



### BASIC Model

#### Single distance model/ Spatter-resistant Single distance model Shielded

#### Sensing object: iron



### Influence of Sensing Object Size and Material

### PREMIUM Model

Quadruple distance model/ Spatter-resistant Quadruple distance model Shielded



Size: M30 E2EW-(Q)X22 30



Triple distance model/ Spatter-resistant Triple distance model Shielded

Size: M18 E2EW-(Q)X10 18



Size: M30 E2EW-(Q)X20 30



### BASIC Model

### Single distance model/ Spatter-resistant Single distance model Shielded





### Size: M18 E2EW-(Q)X5□18



### Size: M30 E2EW-(Q)X10 30



### Influence of Sensing Object Thickness and Material

#### PREMIUM Model

Quadruple distance model/ Spatter-resistant Quadruple distance model Shielded

### Size: M18 E2EW-(Q)X12□18



### Size: M30 E2EW-(Q)X22 30



Triple distance model/ Spatter-resistant Triple distance model Shielded





#### Size: M30 E2EW-(Q)X20 30



### BASIC Model

### Single distance model/ Spatter-resistant Single distance model Shielded

### Size: M12 E2EW-(Q)X2□12



### Size: M18 E2EW-(Q)X5□18



### Size: M30 E2EW-(Q)X10 30



### Monitor Output vs. Sensing Distance

#### PREMIUM Model

Size: M18 E2EW-(Q)X12□18

Quadruple distance model/ Spatter-resistant Quadruple distance model Shielded

300 Detection level \_d=36 mm =3 mm 250 ₿ Aluminum 200 roŕ 150 100 Stainless steel (SUS304) 50 0 L 5 10 15 Distance X (mm)

Size: M30 E2EW-(Q)X22 30



Triple distance model/ Spatter-resistant Triple distance model Shielded

Size: M18 E2EW-(Q)X10 18



Size: M30 E2EW-(Q)X20 30



### I/O Circuit Diagrams/Timing charts



In the IO-Link mode, the cord between the IO-Link master and sensor must have a length of 20 m or less.

### **Connector Pin Arrangement**

M12 Smartclick Connector



#### **PNP** output

		_1.	For models with	
Output mode		Unstable Set position Excessive proximity judgment distance 7 Nonsensing Stable Sensing Stable	2.	the IO-Link com If using a mode
	Operation mode <sup>1</sup>	Sensing object	3.	without IO-Link standard I/O mo The timer function output can be s
		Rated Sensing distance           (%)         100         80         20         0		communication ON delay, OFF
		ON OFF ON	_	timer time of 1 t
	NO	OFF Operation indicator (orange)	s	ensing Present
		ON Control output <sup>3</sup>	- 0	bject Not present T NO ON 1 OFF 0
		ON OFF ON	=	NC OFF 0
Standard	NC	OFF OFF	_	One shot
I/O mode (SIO mode) <sup>2</sup>		ON OFF Control output <sup>3</sup>	-	Sensing Present bbject Not present T +
		ON Comunication indicator (green) : Always OFF	_	NC OFF 0
	NO+NC	ON Operation indicator (orange)	4.	The excessive
		ON Control output 1 <sup>3</sup>		Link communication
		ON Control output 2 <sup>3</sup> OFF	5.	The instability of can be selected
		Flashing (1sec cycle) Comunication indicator (green)	6.	The judgment ti detection diagn
	NO	ON OFF Operation indicator (orange)		(For the ON dela
		Control output (PD1_bit0) <sup>3</sup>		setting can be s
		s Instability detection <sup>e</sup> (PD1_bit4)	7	1000 ms.)
		4 Excessive proximity detection (PD1_bit5)	1.	excessive proxi function can be
		Flashing (1sec cycle) Comunication indicator (green)	_	Link communication (The distance combination of
		ON Operation indicator (orange)		object detected
IO-Link	NC	1 Control output (PD1_bit0) <sup>3</sup>		distance of app
(COM mode)		s 1 Instability detection <sup>e</sup> (PD1_bit4)		30%. However, select a combin
		4 1 Excessive proximity detection (PD1_bit5) 0	Ple _rei	ease contact you
		Flashing (Isec cycle) Comunication indicator (green)	se	tup file (IODD file
		ON Operation indicator (orange)		
	NO+NC	Control output1 (PD1_bit0) <sup>3</sup>		
		0 Control output2 (PD1_bit1) <sup>3</sup>		
		s 1 Instability detection <sup>e</sup> (PD1_bit4)		
		4 Excessive proximity detection (PD1_bit5)		

lels with IO-Link, the n mode can be changed by ink communications.

a model with IO-Link as a sensor or using a model IO-Link, it operates in the d I/O mode (SIO mode).

er function of the control an be set up by the IO-Link nications. (It is able to select ay, OFF delay, one-shot, or delay function and select a ne of 1 to 16,383ms (T).)

OFF delay

Sensing object NO OFF NC ON OFF

hot **ONOFF** delay Sensing Present object Not NO ON 1 OFF 0 NC OFF 0 essive proximity diagnosis can be selected by the IOnmunications. ability detection diagnosis elected by the IO-Link nications. gment time for the instability n diagnosis can be selected O-Link communications. ON delay timer function, the can be selected from 0 10, 50, 100, 300, 500, or 5.) gment distance of the e proximity diagnosis can be selected by the IOnmunications. tance can be selected as a ation of the material of the etected, such as iron, m, or SUS and the judgment of approximately 10, 20, or owever, it is not allowed to combination of aluminum 6.) , act your Omron sales ve regarding the IO-Link ODD file).

Please contact your Omron sales representative regarding assignment of data.



#### **Connector Pin Arrangement**

M12 Smartclick Connector



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### **Connector Pin Arrangement**

M12 Smartclick Connector







Operation mode	Model	Timing chart	Output circuit
NO	E2EW-(Q)X□C1	Nonsensing area     Stable sensing area       Sensing object     Image: Constraint of the sensing distance       Rated Sensing distance     Image: Constraint of the sensing distance       (%)     100       ON OFF     Operation indicator OFF       ON OFF     Control output	DC10 to 30V Brown (1) +V Load OUT Black (4) Blue (3) 0V
NC	E2EW-(Q)X⊡C2	Nonsensing area     Stable sensing area       Sensing object     Image: Constraint of the sensing distance       Rated Sensing distance     Image: Constraint of the sensing distance       (%)     100       ON     Operation indicator       OFF     (orange)       ON     OFF       OFF     Control output	DC10 to 30V Brown (1) +V Load UUT Black (2) Blue (3) OV
NO+NC	E2EW-(Q)X□C3	Nonsensing area       Stable sensing area         Sensing object       Image: ProximitySensor         Rated Sensing distance       Image: ProximitySensor         (%)       100         ON       Operation indicator         OFF       (orange)         ON       OFF         ON       OFF         ON       OFF         OFF       Control output 1         OFF       OFF         OFF       Control output 2	DC10 to 30V Brown (1) +V Load Load Black (4) OUT1 white (2) OUT2 Blue (3) OV

### **Connector Pin Arrangement**

M12 Smartclick Connector

### **Connections for Sensor I/O Connectors**

### DC 3-Wire

Proximity Sensor			sor	Sensor I/O Connectors		
Types	Output	Operation mode	Model	Model	Connections *1	
DC 3-Wire (M12 Smartclick Connector)	PNP	NO	E2EW-(Q)X□B1□- M1TJ	XS5F-D421-□80-X□ XS5F-D42□-□80-F XS5W-D421-□81-X□ XS5W-D421-□81-F	E2EW Series XS5	
		NC	E2EW-(Q)X□B2□-M1TJ		E2EW Series XS5 '2 Brown (+) White (Output) Blue (-) Blue (-) Black (not connected)	
		NO+NC	E2EW-(Q)X□B3□-M1TJ		E2EW Series XS5	
		NO	E2EW-(Q)X□C1□-M1TJ	Note: For details of the connector, refer to XS5 Series on page 42.	E2EW Series XS5	
	NPN	NC	E2EW-(Q)X□C2□-M1TJ		E2EW Series XS5 *2 Brown (+) White (Output) @ Blue (-) @ Blue (-) @ Bluek (not connected)	
		NO+NC	E2EW-(Q)X□C3□-M1TJ		EZEW Series XS5	

\*1. If the XS5W Series Connector which has a socket and plug on the cable ends is connected to the Sensor, this part will be a plug. \*2. Different from Proximity Sensor wire colors.

### Safety Precautions

### Be sure to read the precautions for all models in the website at: http://www.ia.omron.com/. Warning Indications

	Warning level
	Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or may result in serious injury or death. Additionally there may be significant property damage.
Precautions for Safe Use	Supplementary comments on what to do or avoid doing, to use the product safely.
Precautions for Correct Use	Supplementary comments on what to do or avoid doing, to prevent failure to operate, malfunction or undesirable effect on product performance.

### Meaning of Product Safety Symbols

$\bigcirc$	<b>General prohibition</b> Indicates the instructions of unspecified prohibited action.
	<b>Caution, explosion</b> Indicates the possibility of explosion under specific conditions.

### 🕂 WARNING

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



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



### Precautions for Safe Use

The following precautions must be observed to ensure safe operation.

- 1. Do not use the product in environments subject to flammable or explosive gases.
- 2. Do not attempt to disassemble, repair, or modify the product.
- 3. Do not use a voltage that exceeds the rated operating voltage range

Applying a voltage that is higher than the operating voltage range may result in explosion or fire.

- 4. Be sure that the power supply polarity and other wiring is correct. Incorrect wiring may cause explosion or fire.
- 5. If the power supply is connected directly without a load, the internal elements may explode or burn.
- 6. Dispose of the product according to applicable regulations (laws).

### Precautions for Correct Use

Do not use the product in any atmosphere or environment that exceeds the ratings.

### **Operating Environment**

- 1. Do not install the Sensor in the following locations. (1) Outdoor locations directly subject to sunlight, rain, snow,
  - waterdroplets, or oil. (2) Locations subject to atmospheres with chemical vapors, inparticular solvents and acids.
  - (3) Locations subject to corrosive gases.
- 2. The Sensor may malfunction if used near ultrasonic cleaning equipment, high-frequency equipment, transceivers, cellular phones, inverters, or other devices that generate a high-frequency electric field. Please refer to the Precautions for Correct Use on the OMRON website (www.ia.omron.com) for typical measures.
- 3. Laying the Proximity Sensor wiring in the same conduit or duct as high-voltage wires or power lines may result in incorrect operation and damage due to induction. Wire the Sensor using a separate conduit or independent conduit.
- 4. Never use thinner or other solvents. Otherwise, the Sensor surface may be dissolved.
- 5. When turning on the power by influence of temperature environment, an outputmis-pulse sometimes occurs. After the sensor has passed for 300 msec after turning on, please use in the stable state.
- 6. The sensor is adjusted with a high degree of accuracy, so do not use in the environment with sudden temperature change.
- 7. Operation check is performed using an OMRON's IO-Link master. If using an IO-Link master from another company, perform the operation check in advance.
- 8. When connecting non IO-Link compliant models to the IO-Link master, use the SIO mode.
- 9. In the IO-Link mode, the cord between the IO-Link master and sensor must have a length of 20 m or less.

### Design

#### Influence of Surrounding Metal

When mounting the Proximity Sensor, ensure that the minimum distances given in the following table are maintained.

If you use a nut, only use the provided nut. And ensure that the minimum distances between the sensing surface and nut is bigger than the "L" given in the following table.

Other non-ferrous metals affect sensor's performance in the same way as aluminum. Perform the operation check in advance.



(Unit: mm)

#### Mounting panel material: Iron

Models	Model	L	d	D	m	n
Quadruple distance model	E2EW-(Q)X12□18	6	54	6	36	54
	E2EW-(Q)X22□30	8	90	8	66	90
Triple distance model	E2EW-(Q)X10□18	2	54	2	30	54
	E2EW-(Q)X20□30	0	30	0	60	90
Single distance model	E2EW-(Q)X2□12	0	12	0	8	40
	E2EW-(Q)X5□18	0	18	0	20	60
	E2EW-(Q)X10□30	0	30	0	40	100

#### Mounting panel material: Aluminum

Models	Model	L	d	D	m	n
Quadruple distance model	E2EW-(Q)X12□18	12	80	12	36	80
	E2EW-(Q)X22□30	16	120	16	66	120
Triple distance model	E2EW-(Q)X10□18	12	80	12	30	80
	E2EW-(Q)X20□30	16	120	16	60	120
Single distance model	E2EW-(Q)X2□12	12	70	12	8	70
	E2EW-(Q)X5□18	12	80	12	20	80
	E2EW-(Q)X10□30	16	120	16	40	120

\* If you use the model E2EW-(Q)X22⊡30, or E2EW-(Q)X20⊡30, the panel thickness (t) is 3 mm or less.

When the Proximity Sensor is mounted in metal, ensure that the minimum distances given in the following table are maintained.



#### Embedded material: Iron

Models	Model	Ι	d	D	m	n
Quadruple distance model	E2EW-(Q)X12□18	6	54	6	36	54
	E2EW-(Q)X22□30	8	90	8	66	90
Triple distance model	E2EW-(Q)X10□18	0	18	0	30	54
	E2EW-(Q)X20□30	0	30	0	60	90
Single distance model	E2EW-(Q)X2□12	0	12	0	8	40
	E2EW-(Q)X5□18	0	18	0	20	60
	E2EW-(Q)X10□30	0	30	0	40	100

(Unit: mm)

#### Embedded material: Aluminum

Models	Model	Ι	d	D	m	n
Quadruple distance model	E2EW-(Q)X12□18	12	80	12	36	80
	E2EW-(Q)X22□30	16	120	16	66	120
Triple distance model	E2EW-(Q)X10□18	12	80	12	30	80
	E2EW-(Q)X20□30	16	120	16	60	120
Single distance model	E2EW-(Q)X2□12	12	70	12	8	70
	E2EW-(Q)X5□18	12	80	12	20	80
	E2EW-(Q)X10□30	16	120	16	40	120

### **Mutual Interference**

When installing two or more Proximity Sensors face-to-face or sidebyside, ensure that the minimum distances given in the following table are maintained.



(Unit: mm)

Madala	Madal	Item			
woders	Woder	Α	В		
Quadruple	E2EW-(Q)X12□18	80	60		
distance model	E2EW-(Q)X22□30	135	110		
Triple distance model	E2EW-(Q)X10□18	80	60		
	E2EW-(Q)X20□30	135	110		
Single distance model	E2EW-(Q)X2□12	40	35		
	E2EW-(Q)X5□18	65	60		
	E2EW-(Q)X10□30	110	100		

#### **Chips from Cutting Aluminum**

Normally, chips from cutting aluminum will not cause a detection signal to be output even if it adheres to or accumulates on the detection surface. In the following cases, however, a detection signal may be output.

Remove the cutting chips in these cases.

1. If  $d \ge 2/3D$  at the center of the detection surface where d is the cutting chip size and D is the detection surface size

		(Unit: mm)
Model	Dimension	D
E2EW-(Q)X□12		10
E2EW-(Q)X□18		16
E2EW-(Q)X□30		28

2.If the cutting chips are pressed down





### Mounting

#### **Tightening Force**

Do not tighten the nut with excessive force.

A washer must be used with the nut.

The tightening force must be the same or less than the figures in the following table.



### Quadruple distance model, Triple distance model, Single distance model

Sizo	Torque			
Size	E2EW-X	E2EW-QX		
M12	30 N∙m	15 N·m		
M18	70 N·m	35 N∙m		
M30	180 N·m	60 N∙m		

Note: When mounting the Proximity Sensor, only use the provided nut. Do not use set screws. The Sensor may malfunction.

### Dimensions

### Sensors

PREMIUM Model

### E2EW/E2EW-Q Series (Quadruple distance/Triple distance/Spatter-resistant Quadruple distance, Spatter-resistant Triple distance model)







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E2EW-QX10B1T18-M1TJ 0.3M E2EW-QX10B218 2M E2EW-QX10B218 5M E2EW-QX10B218-M1TJ 0.3M E2EW-QX10B230 2M E2EW-X22C130 2M E2EW-X22B3D30 2M E2EW-X22B3D30 5M E2EW-X22B3D30-M1TJ 0.3M E2EW-X22B3T30 2M E2EW-X22B3T30 5M E2EW-X22B3T30-M1TJ 0.3M E2EW-QX2B212-M1TJ 0.3M E2EW-QX2B312 2M E2EW-QX12B218 5M E2EW-QX12B218-M1TJ 0.3M E2EW-X22B230 5M E2EW-X22B230-M1TJ 0.3M E2EW-X20B3T30 2M E2EW-X20B3T30 5M E2EW-X20B3T30-M1TJ 0.3M E2EW-X20C130 2M E2EW-QX2B212 2M E2EW-QX2B212 5M E2EW-X5C318-M1TJ 0.3M E2EW-X20B230 5M E2EW-X20B230-M1TJ 0.3M E2EW-X20B3D30 2M E2EW-X20B3D30 5M E2EW-X20B3D30-M1TJ 0.3M E2EW-X5C118-M1TJ 0.3M E2EW-X5C218 2M E2EW-X5C218 5M E2EW-X5C218-M1TJ 0.3M E2EW-X5C318 2M E2EW-X5C318 5M E2EW-X5B218-M1TJ 0.3M E2EW-X5B318 2M E2EW-X5B318 5M E2EW-X5B318-M1TJ 0.3M E2EW-X5C118 2M E2EW-X5C118 5M E2EW-X2C112 5M E2EW-X2C112-M1TJ 0.3M E2EW-X2C212 2M E2EW-X2C212 5M E2EW-X2C212-M1TJ 0.3M E2EW-X2C312 2M E2EW-X2B212 5M E2EW-X2B212-M1TJ 0.3M E2EW-X2B312 2M E2EW-X2B312 5M E2EW-X2B312-M1TJ 0.3M E2EW-X2C112 2M E2EW-QX12B1D18-M1TJ 0.3M E2EW-QX12B1T18 2M E2EW-QX12B1T18 5M E2EW-QX12B1T18-M1TJ 0.3M E2EW-QX12B218 2M E2EW-X2B212 2M E2EW-QX10C230-M1TJ 0.3M E2EW-QX10C330 2M E2EW-QX10C330 5M E2EW-QX10C330-M1TJ 0.3M E2EW-QX12B1D18 2M E2EW-QX12B1D18 5M E2EW-QX10C130-M1TJ 0.3M E2EW-QX10C218 2M E2EW-QX10C218 5M E2EW-QX10C218-M1TJ 0.3M E2EW-QX10C230 2M E2EW-QX10C230 5M E2EW-X12B3D18-M1TJ 0.3M E2EW-X12B3T18 2M E2EW-X12B3T18 5M E2EW-X12B3T18-M1TJ 0.3M E2EW-X12C118 2M E2EW-QX10C130 5M E2EW-X12B1T18-M1TJ 0.3M E2EW-X12B218 2M E2EW-X12B218 5M E2EW-X12B218-M1TJ 0.3M E2EW-X12B3D18 2M E2EW-X12B3D18 5M E2EW-X10C330-M1TJ 0.3M E2EW-X12B1D18 2M E2EW-X12B1D18 5M E2EW-X12B1D18-M1TJ 0.3M E2EW-X12B1T18 2M E2EW-X12B1T18 5M E2EW-X5B118 2M E2EW-X5B118 5M E2EW-X5B118-M1TJ 0.3M E2EW-X5B218 2M E2EW-X5B218 5M E2EW-X10C330 5M E2EW-QX10C118 2M E2EW-QX10C118 5M E2EW-QX10C118-M1TJ 0.3M E2EW-QX10C130 2M