OMRON

Proximity Sensor Series

E2E NEXT / E2EW /E2ER / E2NC

Superior Proximity Solutions: Super Robust, Super Long distance detection, Short Body



IO-Link

Proximity sensors often break. Want to prevent broken sensors that would stop the manufacturing line?



Super Long *1

Collisions avoided by increasing clearances

Long-distance model > P4

*1. Based on OMRON investigation in October 2025. *2. Compared to our previous model based on in-house verification tests.



Fully armored with a full metal body

Full metal model > P6

Super robust *2

Short bodies seamlessly integrated into existing equipment

Super long distance detection with short bodies



E2E NEXT Series

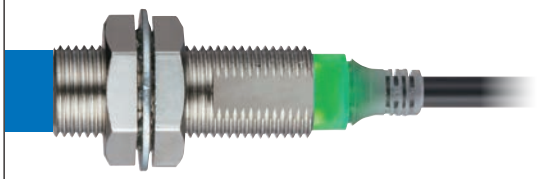
Previous model

Sensing distance 3 mm 0.12”



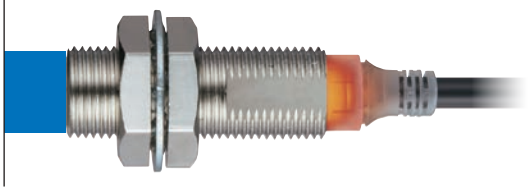
E2E NEXT triple distance model

Sensing distance **7 mm** 0.28”



E2E NEXT quadruple distance model

Sensing distance **9 mm** 0.35”

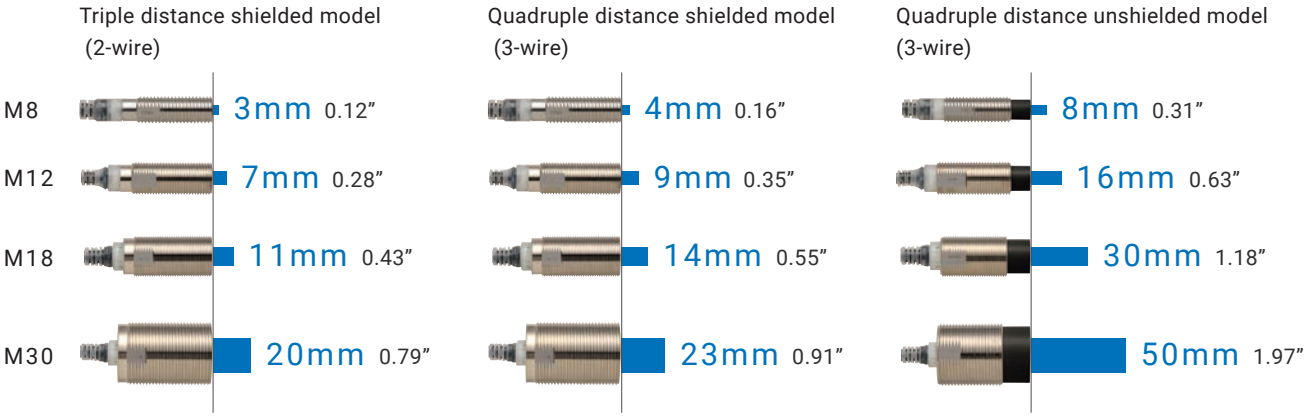


World’s longest among 2-wire models *1

3-wire, quadruple distance

Super long distance detection with short bodies, available in 2-wire and 3-wire models

Sensing distances

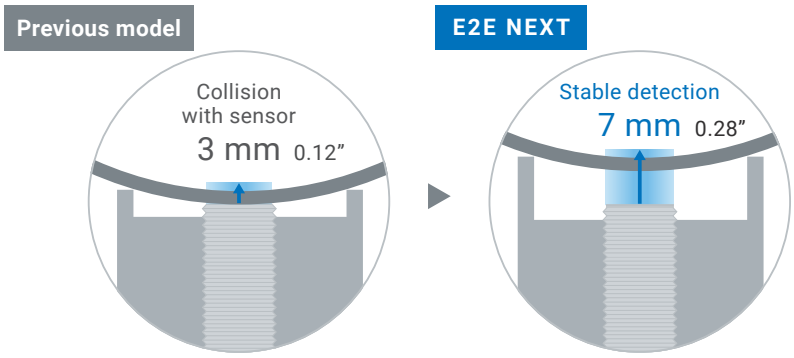


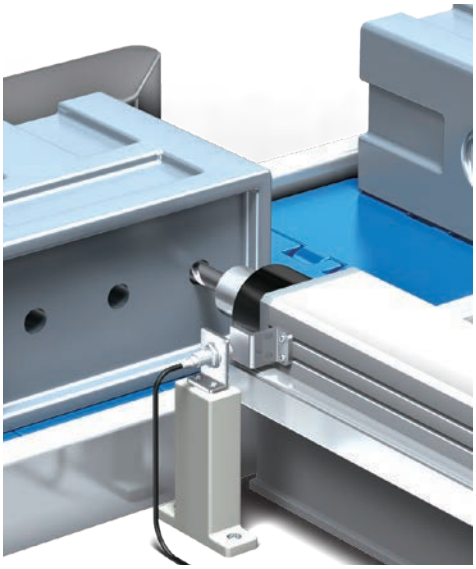
*1. Based on OMRON investigation in October 2025.



No collisions

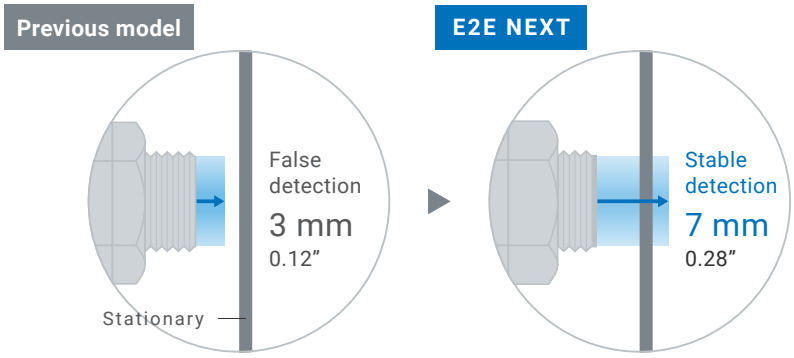
When the detection of automotive parts, proximity sensors often collide with workpieces. This leads to sensor breakage and causes equipment downtime. E2E NEXT long distance models can reduce such collisions and improve the equipment uptime.





No malfunctions

Highly vibrating equipment or heavy-load pallets may cause the stationary to be displaced from a proximity sensor, resulting in sensor malfunctions and stoppages. E2E NEXT long distance models can reduce such malfunctions and improve the equipment uptime.



“Thermal Distance Control”, the technology for stable long distance detection, combined with IoT

By combining the Thermal Distance Control technology for stable long distance detection with the analog-digital hybrid IC, the E2E NEXT Series eliminates the influence of temperature changes and individual sensor variations, which were hindering the increase of the sensing distance.

DC 2-wire, triple distance model (Thermal Distance Control)

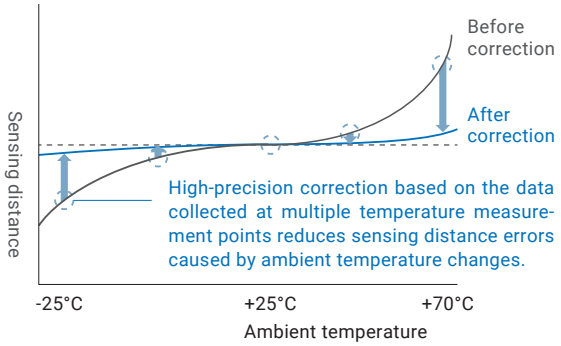
Temperature correction values are written into “PROX2”, the analog-digital hybrid IC, as the factory setting, which was not possible with previous analog ICs, to minimize the influence of temperature changes on the sensing distance.

DC 3-wire, quadruple distance model (Thermal Distance Control combined with IoT)

Patented *2

Temperature characteristics of each sensor are measured inline during the IoT-enabled production process, and then optimal correction values are calculated based on the unique algorithm and written into “PROX3”, the analog-digital hybrid IC. Thus the influence of temperature changes on the sensing distance and individual sensor variations can be minimized.

Sensing distance variation due to ambient temperature



*2. “Patent Pending” means that we applied for a patent in Japan, and “Patented” means that we obtained a patent in Japan. (As of October 2025)

Super robust full-metal body in a short-body form.



E2EW Series

The resin detection surface can be easily damaged by impact or wear.



Previous model

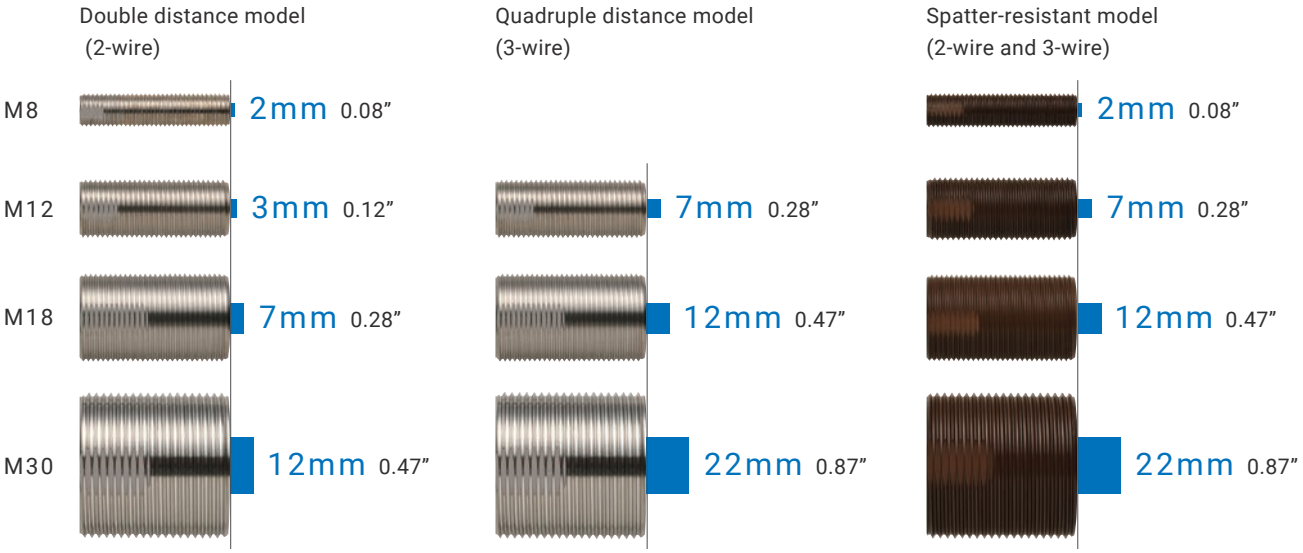
The metal detection surface prevents damage from external forces.



E2EW Series full metal model

Full metal body highly resistant to impact and wear, available in 2-wire and 3-wire models

Metal model's sensing distances





Super robust full-metal body contributes to stable equipment operation

The metal head is highly resistant to friction and collision with workpieces and metal cleaning brushes, reducing unexpected downtime and replacement frequency due to failure caused by wear or collision compared to previous resin heads.



Spatter-resistant model E2EW-Q

Specialized models tailored to specific environmental needs also available

In addition to the standard models, the lineup includes compact models and spatter-resistant models coated with fluororesin that resists spatter adhesion. They can be safely used even in special environments.

Thick metal head structure

Resistant to friction with workpieces and metal cleaning brushes

In wear resistance tests using stainless-steel brushes rotating at 130 rpm, insulation breakdown occurred in 50 minutes for resin heads, while no insulation breakdown occurred even after 400 minutes for metal heads.

Note: Tests performed on an M18 quadruple distance model (with 0.4 mm (0.016") sensing surface thickness).



Brush test

Resin head

E2E-X7D1



Initial state



After 50 minutes

Insulation breakdown in 50 minutes

Metal head

E2EW-X12□18



Initial state



After 50 minutes

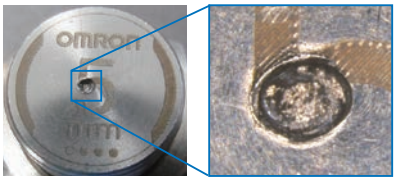


After 400 minutes

No insulation breakdown after 400 minutes

Resistant to collision with workpieces





Continuous impact test

Continuous impact test results showed that the sensing surface was not penetrated even after impact was repeated 200,000 times. No insulation breakdown occurred.

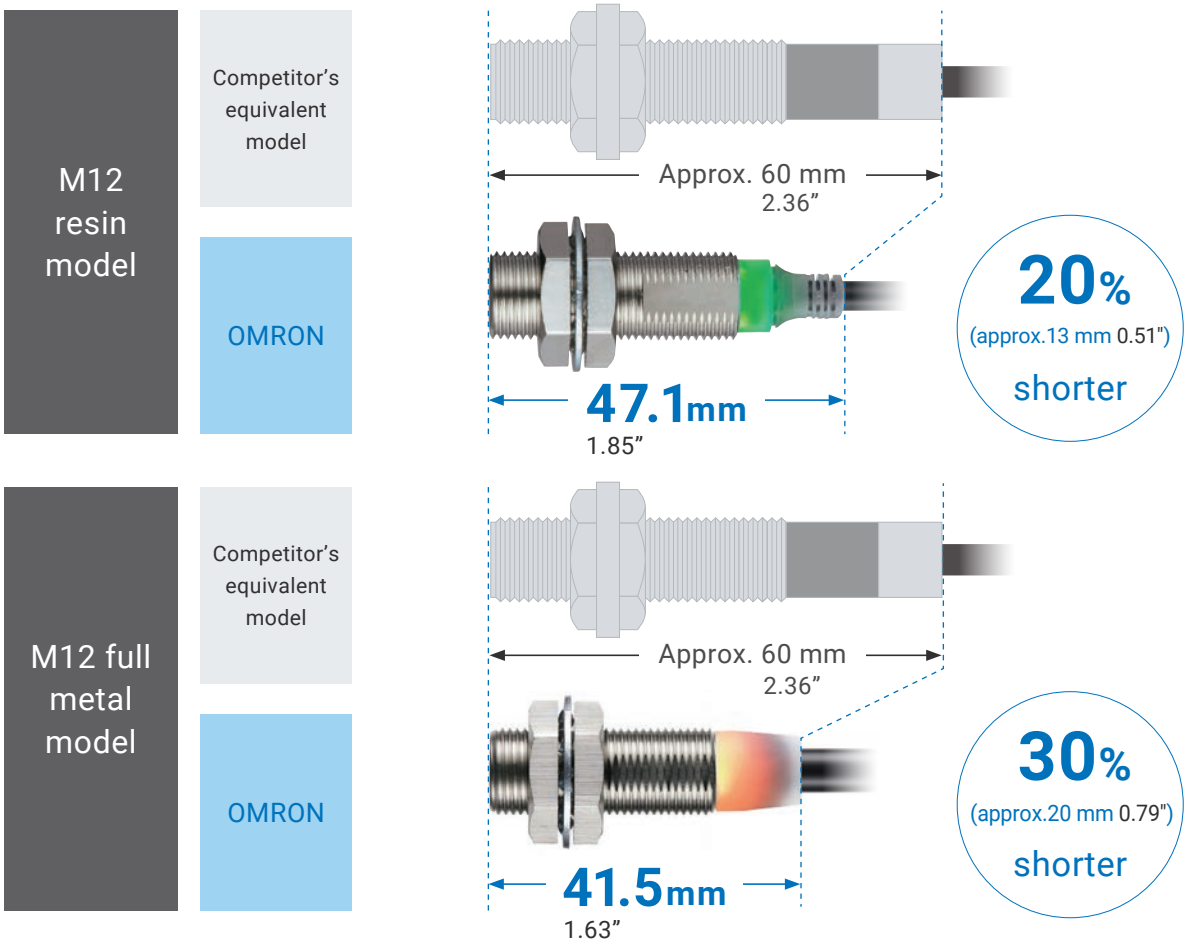
Note: Sensing surface thickness varies for different models. Refer to the datasheet for details.

*1. This value assumes that the sensor operates 10 hours a day in an arc welding environment and is cleaned once a month (12 times a year). If our previous model (E2EF-Q) needs to be replaced once every 3 times it is cleaned, the E2EW-Q Proximity Sensor needs to be replaced once every 180 times it is cleaned. This means that there is no need to replace the E2EW-Q Proximity Sensor for 10 or more years.

Short body to fit in narrow spaces

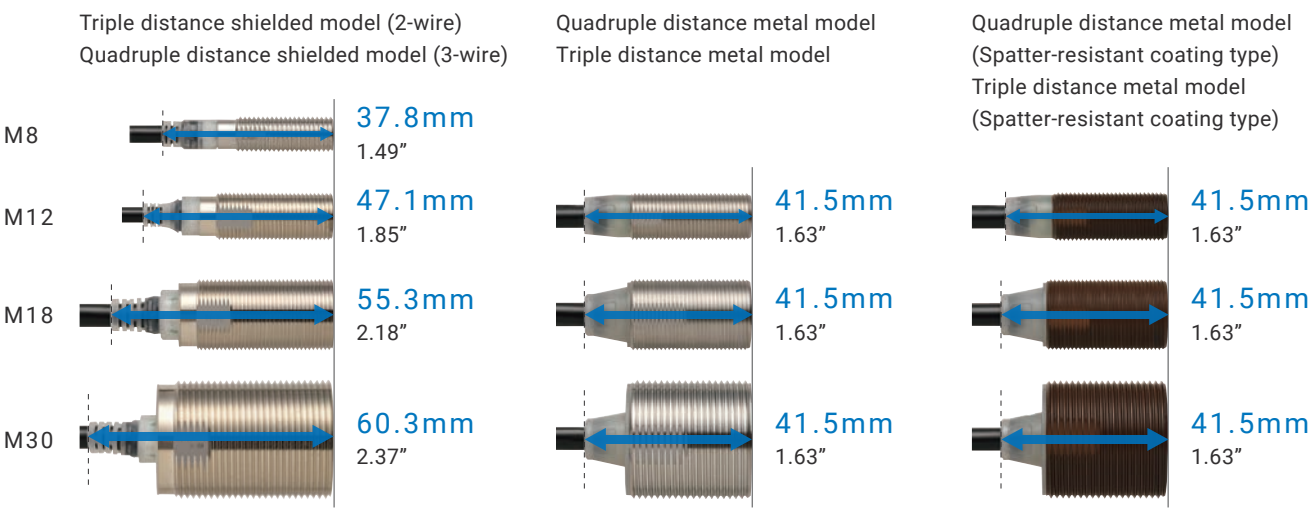


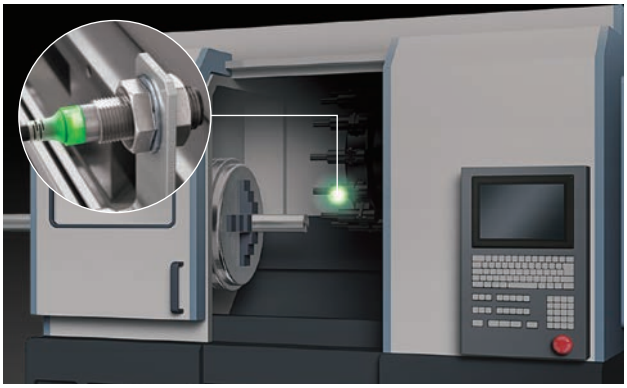
E2E NEXT Series E2EW Series



Short body, easy to install during setup and maintenance

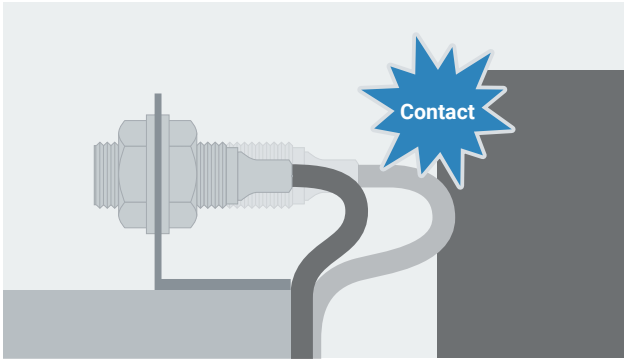
Body sizes





Seamless integration into existing environment

The long-distance or metal models can fit into even a limited installation space.



No large clearance required behind a sensor

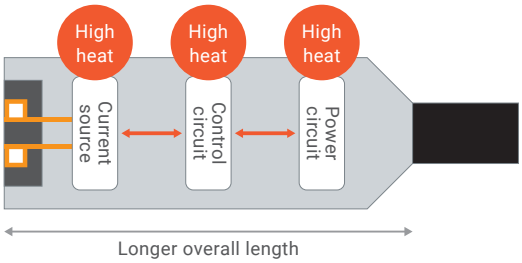
The short body with minimal protrusion at the back enables compact cable routing. This reduces the risk of cables trapping or coming into contact with objects.

Super long distance detection with short bodies

The pulse response method, which is well-suited for long distance detection, requires a large current that passes through the detection coil during detection, causing high power consumption and large heat generation. Excessive thermal stress from large heat generation will lower the reliability of electronic components, so they need a large clearance for heat dissipation between each other, leading to a longer overall sensor body.
The E2EW quadruple/triple distance models adopt an algorithm that simultaneously enhances detection performance and reduces power consumption, thereby minimizing heat generation in electronic components. This allows electronic components to be positioned near each other, shortening an overall sensor body.

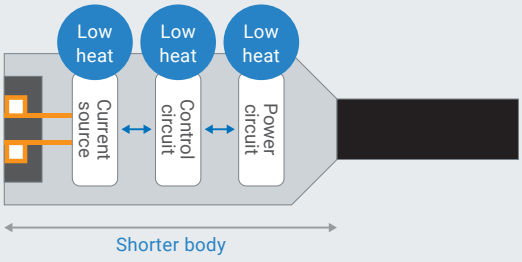
Common proximity sensor

With large heat generation in electronic components, they need a large clearance between each other, leading to a longer overall sensor body.



E2EW

An algorithm is adopted that simultaneously enhances detection performance and reduces power consumption. No large clearance for heat dissipation is necessary between electronic components, enabling high-density circuit layout and a shorter body.



Lineup to meet various application needs



General-purpose metal model

For a wide range of applications

E2EW Series





Stable long distance detection with full metal body

The sensing distance with a high margin is secured to reduce detection errors, minimizing unexpected stoppages.

Detection Distance markings to prevent errors

In addition to a wide lineup of various sensing distance models, the sensor distance is laser-printed*1 on the sensor head’s sensing surface, reducing mistakes during sensor installation and replacement.



Amplifier-integrated, small-diameter model

E2E, small diameter



Extensive lineup of compact models

The lineup includes a wide range of diameters—ø3, ø4, ø5.4, ø6.5, M4, M5, and more—for installation in confined spaces. Unshielded long-distance models are also available.



Amplifier-relayed, small-diameter model

E2EC-M/-Q



Compact, robust full metal models

For applications requiring compactness and durability, amplifier-relayed, compact metal models with short head body are provided. Models with fluororesin-coated head and featuring fluororesin cable are also available for welding processes.

*1. Only for M12/M18/M30 sizes of E2EW full metal models

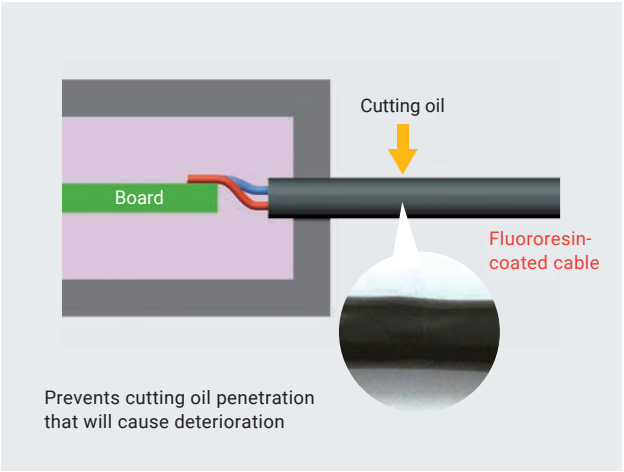


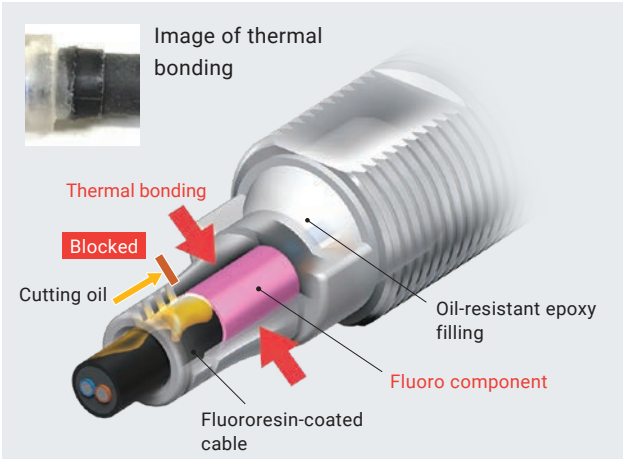
Oil-resistant model

For environments exposed to oil

Oil resistance 4 years

E2ER Series





Blocking oil entry through cables

Using fluororesin, a highly corrosion-resistant material, for the cable sheath suppresses swelling and deterioration of cables, preventing cutting oil from entering and reaching the board inside the sensor.

Blocking oil entry at cable joints with the advanced sealing technology

A fluororesin cable is heat-welded with a fluoro component which has a high bondability and a melting point close to that of the cable. This blocks the ingress of cutting oil from the joined surfaces.

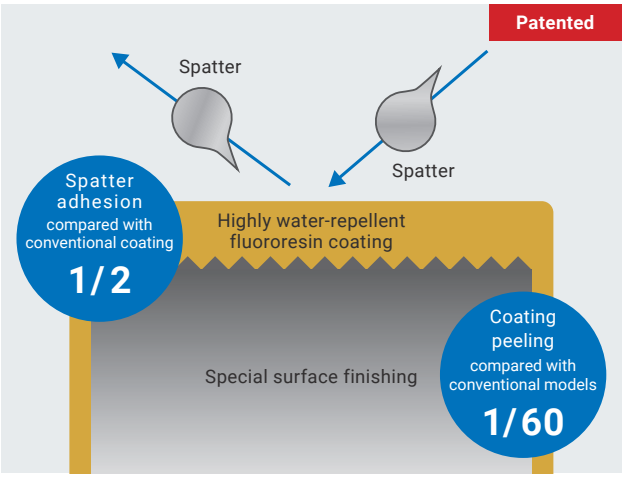


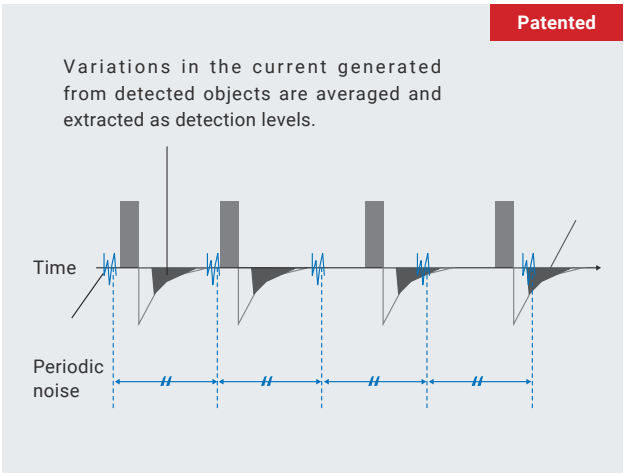
Spatter-resistant model

For welding applications

No need to replace for 10 years

E2EW-Q Series





Durable fluororesin coating that enhances resistance to spatter

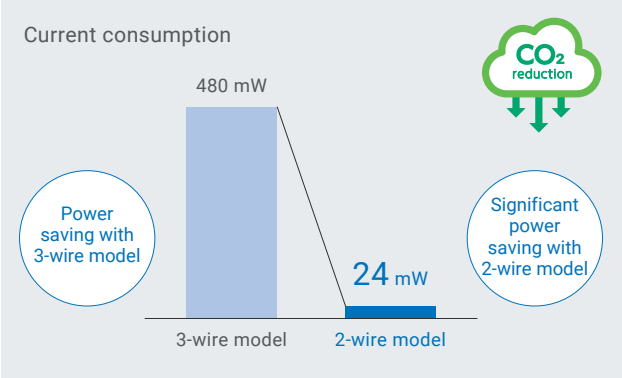
OMRON has combined the coating film technology that creates a highly water-repellent surface with the special processing of a substrate surface to achieve spatter resistance that eliminates the need for replacement for 10 years.*3

Noise suppression technology providing resistance to welding noise

The technology randomizes the timing of pulsed current to reduce the impact of periodic noise on the detection signals. By combining a delay timer, it cancels the magnetic field noise generated during welding, preventing malfunctions.

*2. "Patent Pending" means that we applied for a patent in Japan, and "Patented" means that we obtained a patent in Japan. (As of October 2025)
*3. This value assumes that the sensor operates 10 hours a day in an arc welding environment and is cleaned once a month (12 times a year). If our previous model (E2EF-Q) needs to be replaced once every 3 times it is cleaned, the E2EW-Q Proximity Sensor needs to be replaced once every 180 times it is cleaned. This means that there is no need to replace the E2EW-Q Proximity Sensor for 10 or more years.

Proximity sensors designed for ease of use



Environmentally friendly, low power consumption design

OMRON's proprietary noise suppression technology has achieved extended sensing distances with low power consumption. With 2-wire models that can reduce power consumption to 1/20, you can design more environmentally friendly equipment.



Protecting joints to prevent cable breakage

The most common point of cable breakage in proximity sensors is the joint between the sensor and the cable. OMRON prevents easy breakage by adopting a cable protector structure that flexes with the cable and by chamfering to prevent excessive bending.



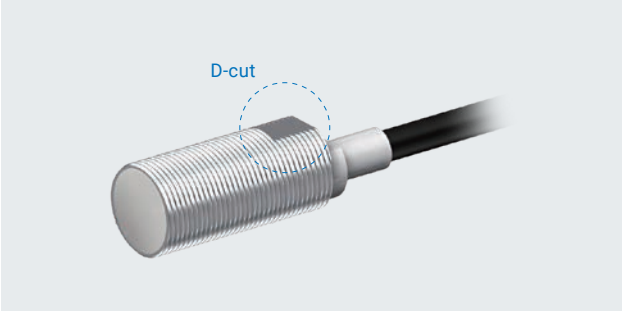
Reducing impact of chips and spatter

E2EW (with the same resistance to chips and spatter as short-distance models) enables workpiece detection while reducing the impact of chips and spatter. It is also spatter-resistant coated to suppress spatter adhesion to the sensing surface.



Detecting iron and aluminum at the same long distance

OMRON's unique technology enables the detection of both iron and aluminum at the same long sensing distance. E2EW with the same sensing distance for both iron and aluminum eliminates the need to change the sensor size according to the workpiece. This enables the use of common production equipment and mechanical drawings.



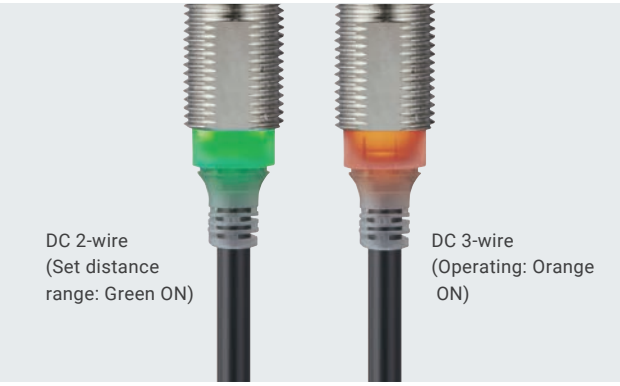
D-cut for easy installation

The cylindrical (screw-type) models feature a D-cut for secure grip with a wrench during installation, preventing sensor rotation and enabling smooth installation.



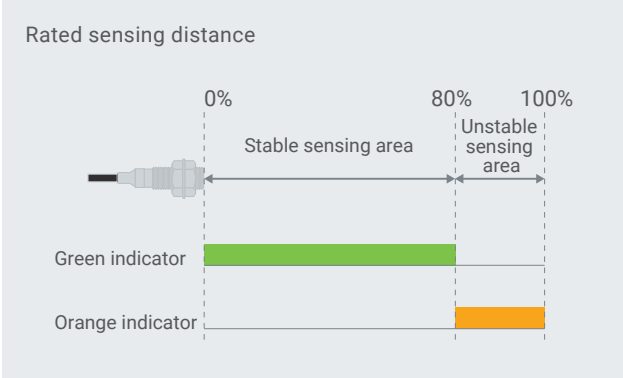
Flush mounting without changing the sensing distance

E2EW triple distance models (sensing distance: 6 mm (0.24")) can be embedded into an iron component and flush-mounted without changing the sensing distance.



360° visible indicator

The highly visible indicator light can be seen from any direction. This eliminates the need for troublesome sensor orientation adjustments and simplifies installation during startup and maintenance.



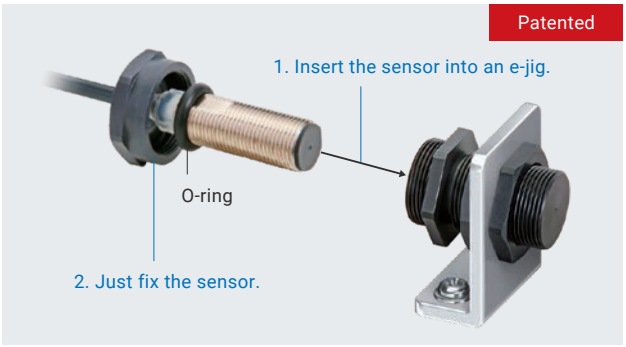
Color-coded stable sensing with 2-wire models

The 2-wire models feature a bi-color (green and orange) operation/setting indicator. The indicator lights green in the stable sensing area and orange in the unstable sensing area, allowing you to check stable detection at a glance.



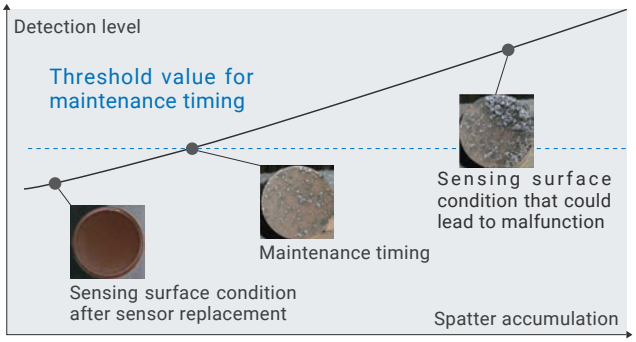
Models with bend-resistant cable available in the lineup

Highly flexible cables with excellent resistance to repeated bending are also available. They can reduce the risk of equipment downtime due to cable breakage even when used in moving parts.



Simple 10-second*2 replacement using e-jig

Combining a long-distance model with an e-jig allows anyone to easily fix a proximity sensor in place, greatly reducing replacement time. You can easily upgrade existing equipment to the one that enables sensor replacement within 10 seconds only.



Detection level and temperature visualization with IO-Link

Various data such as control signals and numerical values can be acquired via IO-Link communication. In addition, excessive proximity and unstable sensing alarms can be output or internal temperatures can be acquired via IO-Link, enabling predictive monitoring of equipment.



Suitable for rechargeable battery manufacturing lines

The lineup includes zinc- and copper-free models for rechargeable battery manufacturing lines. All nuts and washers are made of SUS303/304 stainless steel, ensuring reliable use.

*1. "Patent Pending" means that we applied for a patent in Japan, and "Patented" means that we obtained a patent in Japan. (As of October 2025)
*2. Time required to adjust the distance during sensor installation. Based on OMRON investigation.

Amplifier-separated, multifunctional digital model

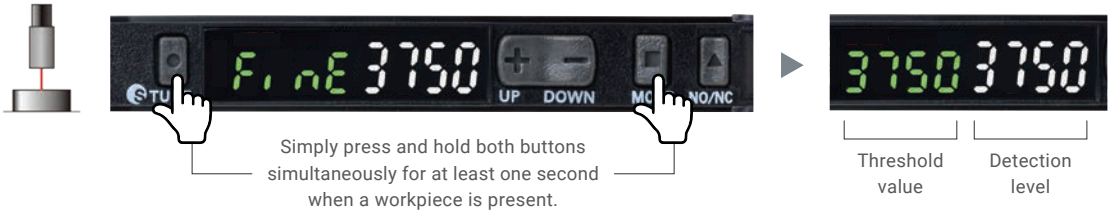
Smart proximity sensor that quantifies the detection status for easy high-precision sensitivity setting

E2NC Series



Fine Positioning (FP) function that maximizes variations, for high-precision positioning and screening

The E2NC's Fine Positioning function adjusts sensitivity to the detection level of 3750, where the variation is maximized when a workpiece is present. Not only does this enable precise ON/OFF detection, but by intentionally not setting it to 9999, it allows detection of excessive proximity conditions, reducing the risk of contact.





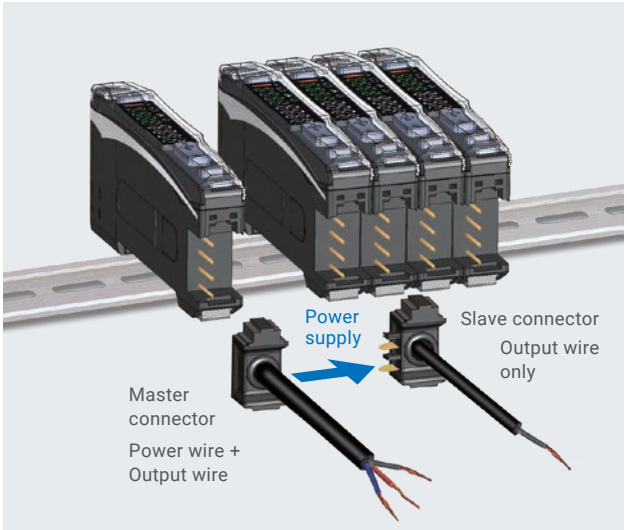
Wide variety of sensor heads to match your application

The lineup features seven head types, including compact heads with a minimum diameter of ø3 and heat-resistant heads. The preamplifier-to-amplifier connection uses a flexible cable, ensuring reliable performance even in moving parts.



High resistance to changes in ambient temperature with temperature characteristics of 0.08%/°C

High precision in detection requires accurate temperature characteristics. The E2NC head incorporates a preamplifier, making it less susceptible to ambient temperature changes and limiting distance variation to 0.08%/°C.



Reduced wiring x Mutual interference prevention

This wire-saving connector allows the expansion of up to 30 units and reduces wiring efforts. It also features mutual interference prevention capability for up to five units, which enables detection with sensor heads placed adjacent to each other.

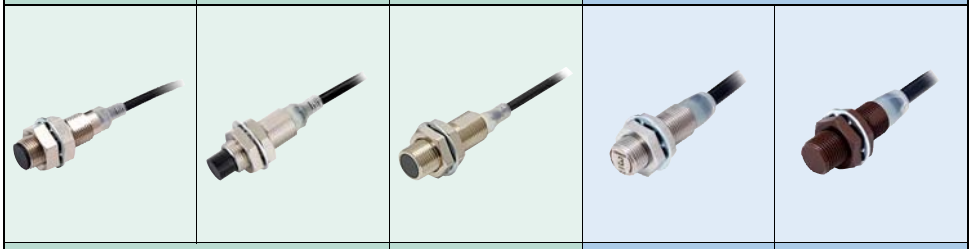


High-speed 150 µs response

Stable detection is possible even for fast-moving small objects and rotating objects.

Functions and Specifications

DC 2-wire

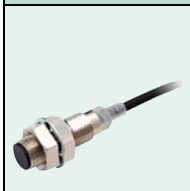
		Built-in Amplifier				
		Fluororesin model			Metal model	
		Triple distance type		Oil-resistant type	Full metal type	Spatter-resistant coating type
		Shielded	Unshielded	Shielded	Shielded	
						
		E2E NEXT		E2ER	E2EW	E2EW-Q
					Double distance	Double distance
Sensing distance Triple distance Double distance Single distance	M8	3 mm (0.12")	6 mm (0.24")	2 mm (0.08")	2 mm (0.08")	2 mm (0.08")
	M12	7 mm (0.28")	10 mm (0.39")	3 mm (0.12")	3 mm (0.12")	3 mm (0.12")
	M18	11 mm (0.43")	20 mm (0.79")	7 mm (0.28")	7 mm (0.28")	7 mm (0.28")
	M30	20 mm (0.79")	40 mm (1.57")	10 mm (0.39")	12 mm (0.47")	12 mm (0.47")
360° visible indicator		Available	Available	Available	Available ✻1	Available ✻1
Chip-immune		---	---	Available	Available	Available
Long distance detection regardless of material		---	---	---	---	---
Flush with surface		---	---	Available	Available	Available
Environmental resistance	Degree of protection	IP67/IP67G/IP69K		IP67/IP67G	IP67	IP67
	Operating Ambient Temperature	-25 to 70°C		0 to 50°C	0 to 85°C ✻2	0 to 85°C ✻2
Datasheet		page 21	page 21	page 39	page 33	page 33

✻1. The visibility of the indicator light differs for M8 size sensors. For details, refer to the dimensions in *E2EW Series Catalog* (Cat.No.D122).
✻2. Only the M8 size: -10 to 70°C

		Amplifier-intermediate	
		Metal model	
		Compact Metal Type	Compact Spatter-Resistant Type
		Shielded	
			
		E2EC-M	E2EC-Q
Sensing distance	8 dia.	2 mm (0.08")	
360° visible indicator		---	
Chip-immune		---	
Long distance detection regardless of material		---	
Flush with surface		---	
Environmental resistance	Degree of protection	IP67	
	Operating Ambient Temperature	-25 to 70°C	
Datasheet		page 41	page 41

Functions and Specifications

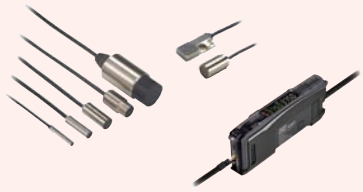
DC 3-wire

		Built-in Amplifier				
		Fluororesin model		Metal model		
		Quadruple distance type		Full metal type	Spatter-resistant coating type	
		Shielded	Unshielded	Shielded		
						
		E2E NEXT		E2EW	E2EW-Q	
				Quadruple distance/ Triple distance	Quadruple distance/ Triple distance	Single distance
Sensing distance Quadruple distance Triple distance Single distance	**M8**	4 mm (0.16")	8 mm (0.31")	---	---	1.5 mm (0.06")
	M12	9 mm (0.35")	16 mm (0.63")	7 mm (0.28") 6 mm (0.24")	7 mm (0.28") 6 mm (0.24")	--- ✻4
	M18	14 mm (0.55")	30 mm (1.18")	12 mm (0.47") 10 mm (0.39")	12 mm (0.47") 10 mm (0.39")	--- ✻4
	M30	23 mm (0.91")	50 mm (1.97")	22 mm (0.87") 20 mm (0.79")	22 mm (0.87") 20 mm (0.79")	--- ✻4
360° visible indicator		Available	Available	Available	Available	Available ✻1
Chip-immune		---	---	Available	Available	Available
Long distance detection regardless of material		---	---	Available	Available	---
Flush with surface		---	---	Available ✻2	Available ✻2	Available
Environmental resistance	**Degree of protection**	IP67/IP67G/IP69K		IP67		
	Operating Ambient Temperature	-25 to 70°C ✻3	-25 to 70°C	0 to 85°C	0 to 85°C	-25 to 70°C
Datasheet		page 25	page 25	page 33	page 33	page 33

✻**1.** The visibility of the indicator light differs for M8 size sensors. For details, refer to the dimensions in *E2EW Series Catalog* (Cat.No.D122).
✻**2.** For the Quadruple distance type, the sensing distance may vary, so please check it in your actual operating environment.
✻**3.** Only the M8 size: -25 to 60°C
✻**4.** For details on the Single distance type, refer to the *E2EW/E2EQ NEXT Series Catalog* (Cat.No.D121).

		Built-in Amplifier	Amplifier-intermediate
		Fluororesin model	Metal model
		Small-diameter resin type	Compact Metal Type
		Shielded	Shielded
			
		E2E-C□/S□	E2EC-M
Sensing distance	3 dia.	0.8 mm (0.03")	---
	4 dia.	1.2 mm (0.05")	---
	5.4 dia.	1 mm (0.04")	---
	6.5 dia.	2 mm (0.08")	---
	M4	0.8 mm (0.03")	---
	M5	1.2 mm (0.05")	---
	8 dia.	---	2 mm (0.08")
Flush with surface		---	---
Environmental resistance	Degree of protection	IP67	IP67
	Operating Ambient Temperature	-25 to 70°C	-25 to 70°C
Datasheet		page 43	page 41

Note: Small-diameter resin models are also available in unshielded type. For details, refer to the *E2E Data Sheet* (Cat.No.D115).

		Separate Amplifier	
		Degital model	
		Shielded	Unshielded
			
		E2NC	
Sensing distance	3 dia.	0.6 mm (0.02")	---
	5.4 dia.	1 mm (0.04")	---
	8 dia.	2 mm (0.08")	---
	M10	2 mm (0.08")	---
	Heat-resistant M12	2 mm (0.08")	---
	Flat t=4.8	5 mm (0.20")	---
	M18	---	7 mm (0.28")
Mutual interference prevention		Available	Available
Environmental resistance	Degree of protection	IP67	
	Operating Ambient Temperature	-10 to 60°C (Heat-resistant type: -10 to 200°C)	
Datasheet		page 49	

Note: For specifications of the amplifier unit, please refer to page 53.

MEMO

E2E NEXT Series

DC 2-wire (Triple distance model)

Long-distance Detection Prevents Unexpected Facility Stoppages

- The world's longest sensing distance *1
  Nearly double the sensing distance of previous
- With high-brightness LED, the indicator is visible anywhere from 360°.
- Only 10 Seconds *2 to Replace a Proximity Sensor with the "e-jig" (Mounting Sleeve).
- Cables with enhanced oil resistance enabled 2-year oil resistance *3.
- IP69K compliant for water resistance and wash resistance.
- UL certification (UL60947-5-2) and CSA certification (CSA C22.2 UL60947-5-2-14)

*1. Based on October 2025 OMRON investigation.
*2. Time required to adjust the distance when installing a Sensor. Based on OMRON investigation.
*3. Refer to page 24 for details.



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

Refer to the *E2E NEXT Series* (Cat.No.D121) for *Safety Precautions*.

Model Number Legend

E2E - X (1) (2) D (3) (4) (5) - (6) - (7) (8) (9)

No.	Classification	Code	Meaning
(1)	Sensing distance	Number	Sensing distance (Unit: mm) (R: Indication of decimal point)
(2)	Shielding	Blank	Shielded Models
		M	Unshielded Models
(3)	Operation mode	1	Normally open (NO)
		2	Normally closed (NC)
(4)	Body size	Blank	Standard
		L	Long Body
(5)	Size	8	M8
		12	M12
		18	M18
		30	M30
(6)	Connecting method	Blank	Pre-wired Models
		M1TGJ	M12 Pre-wired Smartclick Connector Models
		M1TGJR	M12 Pre-wired Smartclick Connector Models (Robot (bending-resistant) PVC cable)
(7)	Polarity	Blank	Polarity
		T	No polarity
(8)	Cable specifications (Only shown in the model number of Pre-wired Models.)	Blank	Standard PVC cable
		R	Robot (bending-resistant) PVC cable
(9)	Cable length	Number M	Cable length

Note: 1. The purpose of this model number legend is to provide understanding of the meaning of specifications from the model number.

Ordering Information

Sensors

DC 2-wire (Triple distance model)

Shielded Models

Size (Sensing distance)	Connection method	Polarity	Model
			Operation mode: NO
M8 (3 mm)	Pre-wired (2 m) ✻1 ✻2	Yes	E2E-X3D18 2M
	M12 Pre-wired Smartclick Connector (0.3 m) ✻3		E2E-X3D18-M1TGJ 0.3M
M12 (7 mm)	Pre-wired (2 m) ✻1 ✻2		E2E-X7D112 2M
	M12 Pre-wired Smartclick Connector (0.3 m) ✻3		E2E-X7D112-M1TGJ 0.3M
M18 (11 mm)	Pre-wired (2 m) ✻1 ✻2		E2E-X11D118 2M
	M12 Pre-wired Smartclick Connector (0.3 m) ✻3		E2E-X11D118-M1TGJ 0.3M
M30 (20 mm)	Pre-wired (2 m) ✻1 ✻2		E2E-X20D130 2M
	M12 Pre-wired Smartclick Connector (0.3 m) ✻3		E2E-X20D130-M1TGJ 0.3M

Unshielded Models

Size (Sensing distance)	Connection method	Polarity	Model
			Operation mode: NO
M8 (6 mm)	Pre-wired (2 m) ✻1 ✻2	Yes	E2E-X6MD18 2M
	M12 Pre-wired Smartclick Connector (0.3 m) ✻3		E2E-X6MD18-M1TGJ 0.3M
M12 (10 mm)	Pre-wired (2 m) ✻1 ✻2		E2E-X10MD112 2M
	M12 Pre-wired Smartclick Connector (0.3 m) ✻3		E2E-X10MD112-M1TGJ 0.3M
M18 (20 mm)	Pre-wired (2 m) ✻1 ✻2		E2E-X20MD1L18 2M
	M12 Pre-wired Smartclick Connector (0.3 m) ✻3		E2E-X20MD1L18-M1TGJ 0.3M
M30 (40 mm)	Pre-wired (2 m) ✻1 ✻2		E2E-X40MD1L30 2M
	M12 Pre-wired Smartclick Connector (0.3 m) ✻3		E2E-X40MD1L30-M1TGJ 0.3M

✻1. Models with 5-m cable length are also available with "5M" suffix. (Example: E2E-X3D18 5M)
✻2. Models with a 2-m or 5-m robot (bending-resistant) cables are also available with "-R" in the model number. (Example: E2E-X3D18-R 2M/ E2E-X3D18-R 5M)
✻3. Models with M12 Pre-wired Smartclick Connectors and robot (bending-resistant) cables are also available with "R" in the model number. (Example: E2E-X3D18-M1TGJR 0.3M)

Accessories (Sold Separately)

e-jig (Mounting Sleeves)

A Mounting Bracket is not provided with the Sensor. It must be ordered separately as required.

Appearance	Model	Applicable Sensor size	Applicable Sensor type
	**Y92E-J8S12**	M8	Triple distance Shielded Pre-wired models Standard body-sized
	Y92E-J12S18	M12	
	Y92E-J18S30	M18	

Nut Sets

A Nut Set is included with the Sensor. Order a Nut Set when required, e.g., if you lose the nuts.

Model	Applicable Sensors	Applicable Sensor diameter	Set contents
Y92E-NWM08-E2EN	Triple distance Shielded models	M8	Clamping nuts (bronze with nickel plating): 2 Toothed washer (iron with zinc plating): 2
Y92E-NWM12-E2EN		M12	
Y92E-NWM18-E2EN		M18	Clamping nuts (bronze with nickel plating): 2 Toothed washer (iron with zinc plating): 1
Y92E-NWM30-E2EN		M30	
Y92E-NWM08-E2E	Triple distance Unshielded models	M8	
Y92E-NWM12-E2E		M12	
Y92E-NWM18-E2E		M18	
Y92E-NWM30-E2E		M30	

Sensor I/O Connectors (Sold Separately) (Models for Pre-wired Connectors)

A Sensor I/O Connector is not provided with the Sensor. It must be ordered separately as required.

XS5 NEXT Series Round Oil-resistant Connectors (M12 Smartclick)

Appearance	Cable Specification	Type	Cable diameter (mm)	Cable Connection Direction	Cable length (m)	Sensor I/O Connector model number
M12 Smartclick Connector Straight type 	Oil-resistant PVC cable	Sockets on One Cable End	6 dia.	Straight	2	**XS5F-D421-D80-X**
					5	**XS5F-D421-G80-X**
					10	**XS5F-D421-J80-X**
	Oil-resistant PVC robot cable	Sockets on One Cable End	6 dia.	Straight	2	**XS5F-D421-D80-XR**
					5	**XS5F-D421-G80-XR**
					10	**XS5F-D421-J80-XR**
	Oil-resistant PVC cable	Socket and Plug on Cable Ends	6 dia.	Straight (Socket)/ Straight (Plug)	2	**XS5W-D421-D81-X**
					5	**XS5W-D421-G81-X**
					10	**XS5W-D421-J81-X**
	Oil-resistant PVC robot cable	Socket and Plug on Cable Ends	6 dia.	Straight (Socket)/ Straight (Plug)	2	**XS5W-D421-D81-XR**
					5	**XS5W-D421-G81-XR**
					10	**XS5W-D421-J81-XR**

Note: For details, refer to *XS5 NEXT* on your OMRON website.

XS5 Round Water-resistant Connectors (M12 Smartclick)

Appearance	Cable Specification	Type	Cable diameter (mm)	Cable Connection Direction	Cable length (m)	Sensor I/O Connector model number
M12 Smartclick Connector Straight type 	PVC robot cable	Sockets on One Cable End	6 dia.	Straight	2	**XS5F-D421-D80-F**
					5	**XS5F-D421-G80-F**
					10	**XS5F-D421-J80-F**
				Right-angle	2	**XS5F-D422-D80-F**
					5	**XS5F-D422-G80-F**
Right-angle type 					10	**XS5F-D422-J80-F**
		Socket and Plug on Cable Ends	6 dia.	Straight (Socket)/ Straight (Plug)	2	**XS5W-D421-D81-F**
					5	**XS5W-D421-G81-F**
					10	**XS5W-D421-J81-F**

Note: For details, refer to *XS5* on your OMRON website.

Ratings and Specifications

DC 2-wire (Triple distance model)

Item	Size	M8		M12		M18		M30	
	Shielded	Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded
	Model	E2E-X3D□	E2E-X6MD□	E2E-X7D□	E2E-X10MD□	E2E-X11D□	E2E-X20MD□	E2E-X20D□	E2E-X40MD□
Sensing distance		3 mm ±10%	6 mm ±10%	7 mm ±10%	10 mm ±10%	11 mm ±10%	20 mm ±10%	20 mm ±10%	40 mm ±10%
Setting distance ✻1		0 to 2.4 mm	0 to 4.8 mm	0 to 5.6 mm	0 to 8 mm	0 to 8.8 mm	0 to 16 mm	0 to 16 mm	0 to 32 mm
Differential travel		15% max. of sensing distance							
Detectable object		Ferrous metal							
Standard sensing object		Iron, 9 × 9 × 1 mm	Iron, 18 × 18 × 1 mm	Iron, 21 × 21 × 1 mm	Iron, 30 × 30 × 1 mm	Iron, 33 × 33 × 1 mm	Iron, 60 × 60 × 1 mm	Iron, 60 × 60 × 1 mm	Iron, 120 × 120 × 1 mm
Response frequency ✻2		350 Hz	250 Hz	350 Hz	200 Hz	250 Hz	200 Hz	200 Hz	50 Hz
Power supply voltage		10 to 30 VDC, (including 10% ripple (p-p))							
Leakage current		0.8 mA max.							
Control output	Load current	3 to 100 mA							
	Residual voltage	Polarity: 3 V max. (Load current: 100 mA, Cable length: 2 m)							
Indicator		D1 Models: Operation indicator (orange), Setting indicator (green)							
Operation mode		D1 Models: NO							
Protection circuits		Surge suppressor, Load short-circuit protection							
Ambient temperature range		Operating: -25 to 70°C, Storage: -40 to 85°C (with no icing or condensation)							
Ambient humidity range		Operating and Storage: 35% to 95% (with no condensation)							
Temperature influence		±10% max. of sensing distance at 23°C in the temperature range of -25 to 70°C				±20% max. of sensing distance at 23°C in the temperature range of -25 to 70°C	±10% max. of sensing distance at 23°C in the temperature range of -25 to 70°C	±20% max. of sensing distance at 23°C in the temperature range of -25 to 70°C	
Voltage influence		±1% max. of sensing distance at rated voltage in the rated voltage ±15% range							
Insulation resistance		50 MΩ min. (at 500 VDC) between current-carrying parts and case							
Dielectric strength		1,000 VAC, 50/60 Hz for 1 minute between current-carrying parts and case							
Vibration resistance (destruction)		10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions							
Shock resistance (destruction)		500 m/s^2 10 times each in X, Y, and Z directions		1,000 m/s^2 10 times each in X, Y, and Z directions					
Degree of protection		Pre-wired Models/Pre-wired Connector Models: IP67 (IEC 60529), IP67G ✻3 (JIS C 0920 Annex 1) Passed OMRON's Oil-resistant Component Evaluation Standards ✻4 (Cutting oil type: specified in JIS K 2241:2000, Temperature: 35 °C max.) and ISO 20653 (old standard: DIN 40050 PART9) IP69K							
Connecting method		Pre-wired Models (Standard cable length: 2 m) and Pre-wired Connector Models (Standard cable length: 0.3 m)							
Weight (packed state)	Pre-wired Models	Approx. 60 g		Approx. 70 g		Approx. 130 g	Approx. 150 g	Approx. 180 g	Approx. 210 g
	Pre-wired Connector Models	Approx. 30 g		Approx. 40 g		Approx. 70 g	Approx. 90 g	Approx.110 g	Approx. 140 g
Materials	Case	Nickel-plated brass	Stainless steel (SUS303)	Nickel-plated brass					
	Sensing surface	Polybutylene terephthalate (PBT)							
	Clamping nuts	Nickel-plated brass							
	Toothed washer	Zinc-plated iron							
	Cable	Vinyl chloride (PVC)							
Accessories		Instruction manual, Clamping nuts, Toothed washer							

✻**1.** Use the Sensor within the range in which the setting indicator (green LED) is ON.
✻**2.** 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.
✻**3.** The IP67G is the degree of protection which is defined according to the JIS (Japanese Industrial Standards).
The IP67 indicates the same level of protection as defined by the IEC, and the G indicates that a device has resistance to oil.
✻**4.** The Oil-resistant Component Evaluation Standards are OMRON's own durability evaluation standards.
2-year oil resistance indicates the median value of the product design and the oil-resistance performance criterion result (=Typical value).
The Pre-wired Connector Model verifies 2 years of oil resistance when mating with Round Oil-resistant Connectors XS5 NEXT series correctly.
The degree of protection is not satisfied with the part where cable wires are uncovered for the Pre-wired Models.

Note: 1. For details such as *Engineering Data*, *I/O Circuit Diagrams* and *Dimensions* refer to the *E2E NEXT Series* (Cat.No.D121).

E2E NEXT Series

DC 3-wire

Enables easier and standardized designs previously not possible

- Nearly double the sensing distance of previous
- With high-brightness LED, the indicator is visible anywhere from 360°.
- Only 10 Seconds *1 to Replace a Proximity Sensor with the "e-jig" (Mounting Sleeve).
- Cables with enhanced oil resistance enabled 2-year oil resistance *2.
- IP69K compliant for water resistance and wash resistance
- Comes in a wide variation to make sensor selection easy
- UL certification (UL60947-5-2) and CSA certification (CSA C22.2 UL60947-5-2-14)



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

***1.** Time required to adjust the distance when installing a Sensor. Based on OMRON investigation.
***2.** Refer to *Ratings and Specifications* for details. However, E2E Connector Models is excluded.

Refer to the *E2E NEXT Series* (Cat.No.D121) for *Safety Precautions*.

Model Number Legend

E2E - X (1) (2) (3) (4) (5) (6) (7) (8) - (9) - (10) (11)

No.	Type	Code	Meaning
(1)	Sensing distance	Number	Sensing distance (Unit: mm) (R: Indication of decimal point)
(2)	Shielding	Blank	Shielded
		M	Unshielded
(3)	Output configuration	B	PNP open collector
		C	NPN open collector
(4)	Operation mode	1	Normally open (NO)
		2	Normally closed (NC)
		3	Normally open, Normally closed (NO+NC)
(5)	Oscillation frequency type	Blank	Standard frequency
		5	Different frequency
(6)	IO-Link baud rate	Blank	Non IO-Link compliant
		D	COM2 (38.4 kbps)
		T	COM3 (230.4 kbps)
(7)	Body size	Blank	Standard
		L	Long Body
(8)	Size	8	M8
		12	M12
		18	M18
		30	M30
(9)	Connection method	Blank	Pre-wired Models
		M1	M12 Connector Models
		M3	M8 (4-pin) Connector Models
		M5	M8 (3-pin) Connector Models
		M1TJ	M12 Pre-wired Smartclick Connector Models
		M1TJR	M12 Pre-wired Smartclick Connector Models Robot (bending-resistant) cable
(10)	Cable specifications (Only shown in the model number of Pre-wired Models.)	Blank	Standard PVC cable
		R	Robot (bending-resistant) cable
(11)	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.

Ordering Information

PREMIUM Model

DC 3-wire (Quadruple distance model)

Shielded

Size (Sensing distance)	Connection method	Body size	Operation mode	Model	
				PNP	NPN
M8 (4 mm)	Pre-wired (2 m) ✻1 ✻2	38 mm	NO	E2E-X4B1D8 2M	E2E-X4C18 2M
	M12 Pre-wired Smartclick Connector (0.3 m) ✻3	38 mm		E2E-X4B1D8-M1TJ 0.3M	E2E-X4C18-M1TJ 0.3M
	M8 Connector (3-pin)	39 mm		E2E-X4B1D8-M5	---
		49 mm		E2E-X4B1DL8-M5	---
M12 (9 mm)	Pre-wired (2 m) ✻1 ✻2	47 mm		E2E-X9B1D12 2M	E2E-X9C112 2M
	M12 Pre-wired Smartclick Connector (0.3 m) ✻3	47 mm		E2E-X9B1D12-M1TJ 0.3M	E2E-X9C112-M1TJ 0.3M
	M12 Connector	48 mm		E2E-X9B1D12-M1	---
		70 mm		E2E-X9B1DL12-M1	---
M18 (14 mm)	Pre-wired (2 m) ✻1 ✻2	55 mm		E2E-X14B1D18 2M	E2E-X14C118 2M
	M12 Pre-wired Smartclick Connector (0.3 m) ✻3	55 mm		E2E-X14B1D18-M1TJ 0.3M	E2E-X14C118-M1TJ 0.3M
	M12 Connector	53 mm		E2E-X14B1D18-M1	---
M30 (23 mm)	Pre-wired (2 m) ✻1 ✻3	60 mm	NO	E2E-X23B1D30 2M	E2E-X23C130 2M
	M12 Pre-wired Smartclick Connector (0.3 m) ✻3	60 mm		E2E-X23B1D30-M1TJ 0.3M	E2E-X23C130-M1TJ 0.3M
	M12 Connector	58 mm		E2E-X23B1D30-M1	---

Unshielded

Size (Sensing distance)	Connection method	Body size	Operation mode	Model	
				PNP	NPN
M8 (8 mm)	Pre-wired (2 m) ✻1 ✻2	38 mm	NO	E2E-X8MB1D8 2M	E2E-X8MC18 2M
	M8 Connector (3-pin)	39 mm		E2E-X8MB1D8-M5	---
		49 mm		E2E-X8MB1DL8-M5	---
M12 (16 mm)	Pre-wired (2 m) ✻1 ✻2	47 mm		E2E-X16MB1D12 2M	E2E-X16MC112 2M
	M12 Connector	48 mm		E2E-X16MB1D12-M1	---
		70 mm		E2E-X16MB1DL12-M1	---
M18 (30 mm)	Pre-wired (2 m) ✻1 ✻2	77 mm		E2E-X30MB1DL18 2M	E2E-X30MC1L18 2M
	M12 Connector	75 mm		E2E-X30MB1DL18-M1	---
M30 (50 mm)	Pre-wired (2 m) ✻1 ✻2	97 mm		E2E-X50MB1DL30 2M	E2E-X50MC1L30 2M
	M12 Connector	95 mm		E2E-X50MB1DL30-M1	---

✻1. Models with 5-m cable length are also available with "5M" suffix. (Example: E2E-X9B1D12 5M)
✻2. Models with 2-m and 5-m robot (bending-resistant) cables are also available with "-R" in the model number. (Example: E2E-X9B1D12-R 2M/ E2E-X9B1D12-R 5M)
✻3. Models with M12 Smartclick connector model robot (bending-resistant) cables are also available with "R" in the model number. (Example: E2E-X9B1D12-M1TJR 0.3M)

Note: 1. Models in ☐ are equipped with IO-Link (COM2). For IO-Link (COM3), select a model number with the format of "E2E-X□□1T□" (Example: E2E-X9B1T12 2M).
Operation mode NO can be changed to NC via IO-Link communications.
Note: 2. IO-Link is not supported for NPN outputs.

Accessories (Sold Separately)

e-jig (Mounting Sleeves)

A Mounting Bracket is not provided with the Sensor. It must be ordered separately as required.

Appearance	Model	Applicable Sensor size	Applicable Sensor type
	**Y92E-J8S12**	M8	Quadruple distance Shielded Pre-wired models Standard body-sized
	Y92E-J12S18	M12	
	Y92E-J18S30	M18	

Nut Sets

A Nut Set is included with the Sensor. Order a Nut Set when required, e.g., if you lose the nuts.

Model	Applicable Sensors	Applicable Sensor diameter	Set contents
Y92E-NWM08-E2EN	Quadruple distance Shielded models	M8	Clamping nuts (bronze with nickel plating): 2 Toothed washer (iron with zinc plating): 2
Y92E-NWM12-E2EN		M12	
Y92E-NWM18-E2EN		M18	Clamping nuts (bronze with nickel plating): 2 Toothed washer (iron with zinc plating): 1
Y92E-NWM30-E2EN		M30	
Y92E-NWM08-E2E	Quadruple distance Unshielded models	M8	
Y92E-NWM12-E2E		M12	
Y92E-NWM18-E2E		M18	
Y92E-NWM30-E2E		M30	

Sensor I/O Connectors (Sold Separately) (Models for Pre-wired Connectors)

A Sensor I/O Connector is not provided with the Sensor. It must be ordered separately as required.

XS5 NEXT Series Round Oil-resistant Connectors (M12 Smartclick)

Appearance	Cable Specification	Type	Cable diameter (mm)	Cable Connection Direction	Cable length (m)	Sensor I/O Connector model number
M12 Smartclick Connector Straight type 	Oil-resistant PVC cable	Sockets on One Cable End	6 dia.	Straight	2	**XS5F-D421-D80-X**
					5	**XS5F-D421-G80-X**
					10	**XS5F-D421-J80-X**
	Oil-resistant PVC robot cable	Sockets on One Cable End	6 dia.	Straight	2	**XS5F-D421-D80-XR**
					5	**XS5F-D421-G80-XR**
					10	**XS5F-D421-J80-XR**
	Oil-resistant PVC cable	Socket and Plug on Cable Ends	6 dia.	Straight (Socket)/ Straight (Plug)	2	**XS5W-D421-D81-X**
					5	**XS5W-D421-G81-X**
					10	**XS5W-D421-J81-X**
	Oil-resistant PVC robot cable	Socket and Plug on Cable Ends	6 dia.	Straight (Socket)/ Straight (Plug)	2	**XS5W-D421-D81-XR**
					5	**XS5W-D421-G81-XR**
					10	**XS5W-D421-J81-XR**

Note: For details, refer to *XS5 NEXT* on your OMRON website.

XS5 Round Water-resistant Connectors (M12 Smartclick)

Appearance	Cable Specification	Type	Cable diameter (mm)	Cable Connection Direction	Cable length (m)	Sensor I/O Connector model number
M12 Smartclick Connector Straight type 	PVC robot cable	Sockets on One Cable End	6 dia.	Straight	2	**XS5F-D421-D80-F**
					5	**XS5F-D421-G80-F**
					10	**XS5F-D421-J80-F**
				Right-angle	2	**XS5F-D422-D80-F**
					5	**XS5F-D422-G80-F**
					10	**XS5F-D422-J80-F**
Right-angle type 		Socket and Plug on Cable Ends	6 dia.	Straight (Socket)/ Straight (Plug)	2	**XS5W-D421-D81-F**
					5	**XS5W-D421-G81-F**
					10	**XS5W-D421-J81-F**

Note: For details, refer to *XS5* on your OMRON website.

XS3 Series Round Water-resistant Connectors (M8)

Appearance	Cable specification	Type	Cable diameter (mm)	No. of cable cores (Poles)	Cable connection direction	Cable length (m)	Sensor I/O Connector model number	Applicable Proximity Sensor model number
M8 Connector Straight type  Right-angle type 	PVC robot cable	Sockets on One Cable End	4 dia.	3	Straight	2	**XS3F-M321-302-R**	E2E-X□□□-M5
						5	**XS3F-M321-305-R**	
						10	**XS3F-M321-310-R**	
					Right-angle	2	**XS3F-M322-302-R**	
						5	**XS3F-M322-305-R**	
						10	**XS3F-M322-310-R**	
		Socket and Plug on Cable Ends			Straight (Plug)/ Straight (Socket)	2	**XS3W-M321-302-R**	
						5	**XS3W-M321-305-R**	
						10	**XS3W-M321-310-R**	

Note: For details, refer to *XS3* on your OMRON website.

Ratings and Specifications

PREMIUM Model

DC 3-wire (Quadruple model)

Shielded

Item \ Types		Quadruple distance model			
Size		M8	M12	M18	M30
Item \ Model		E2E-X4□8	E2E-X9□12	E2E-X14□18	E2E-X23□30
Sensing distance		4 mm±10%	9 mm±10%	14 mm±10%	23 mm±10%
Setting distance		0 to 3 mm	0 to 6.8 mm	0 to 10.6 mm	0 to 17.6 mm
Differential travel		15% max. of sensing distance			
Detectable object		Ferrous metals (The sensing distance decreases with non-ferrous metal.)			
Standard sensing object		Iron, 12 × 12 × 1 mm	Iron, 27 × 27 × 1 mm	Iron, 42 × 42 × 1 mm	Iron, 69 × 69 × 1 mm
Response frequency ※1		700 Hz	700 Hz	350 Hz	200 Hz
Power supply voltage		10 to 30 VDC (including 10% ripple (p-p)), Class 2			
Current consumption		1-output models: 16 mA max.			
Output configuration		B□ Models: PNP open collector, C□ Models: NPN open collector			
Operation mode (with sensing object approaching)		1-output models (B1, C1): NO (Normally open), 1-output models (B2, C2): NC (Normally closed)			
Control output	Load current	1-output models: 10 to 30 VDC, Class 2, 50 mA max.			
	Residual voltage	1-output models: 2 V max. (Load current: 50 mA, Cable length: 2 m)			
Indicator ※2		In the Standard I/O mode (SIO mode): Operation indicator (orange, lit) and communication indicator (green, not lit) In the IO-Link communication mode (COM mode): Operation indicator (orange, lit) and communication indicator (green, blinking at 1 s intervals)			
Protection circuits		Power supply reverse polarity protection, Surge suppressor, Output short-circuit protection, Output reverse polarity protection			
Ambient temperature range		Operating: -25 to 60°C Storage: -25 to 70°C (with no icing or condensation)	Operating/Storage: -25 to 70°C (with no icing or condensation)		
Ambient humidity range		Operating/Storage: 35% to 95% (with no condensation)			
Temperature influence		-15% to 25% max. of sensing distance at 23°C in the temperature range of -25 to 60°C	±15% max. of sensing distance at 23°C in the temperature range of -25 to 70°C		
Voltage influence		±1% max. of sensing distance at rated voltage in the rated voltage ±15% range			
Insulation resistance		50 MΩ min. (at 500 VDC) between current-carrying parts and case			
Dielectric strength		1,000 VAC, 50/60 Hz for 1 minute between current-carrying parts and case			
Vibration resistance (destruction)		10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions			
Shock resistance (destruction)		500 m/s² 10 times each in X, Y, and Z directions	1,000 m/s² 10 times each in X, Y, and Z directions		
Degree of protection		Pre-wired Models, Pre-wired Connector Models: IEC 60529: IP67, ISO 20653 (old standard: DIN 40050 PART9): IP69K, JIS C 0920 Annex 1: IP67G, Passed OMRON's Oil-resistant Component Evaluation Standards ※3 (Cutting oil type: specified in JIS K 2241: 2000; Temperature: 35°C max.) Connector Models: IEC 60529: IP67, ISO 20653 (old standard: DIN 40050 PART9): IP69K			
Connection method		Pre-wired Models (Standard cable length: 2 m), Pre-wired Connector Models (Standard cable length: 0.3 m) and Connector Models (M12 Connector, M8 (4-pin) Connector and M8 (3-pin) Connector)			
Weight ※4 (packed state)	Pre-wired	Approx. 85 g	Approx. 95 g	Approx. 180 g	Approx. 260 g
	M12 Pre-wired Smartclick Connector	Approx. 55 g	Approx. 70 g	Approx. 115 g	Approx. 200 g
	Connector	Approx. 40 g (M8/M12 Connector)	Approx. 55 g	Approx. 95 g	Approx. 180 g
Materials	Case	Nickel-plated brass			
	Sensing surface	Polybutylene terephthalat (PBT)			
	Clamping nuts	Nickel-plated brass			
	Toothed washers	Zinc-plated iron			
	Cable	Vinyl chloride (PVC) Note: Material of Pre-wired Models and Pre-wired Connector Models.			
Main IO-Link functions ※2		Operation mode switching between NO and NC, self diagnosis enabling, excessive proximity judgment distance selecting, timer function of the control output and timer time selecting, instability output (IO-Link mode) ON delay timer time selecting function, monitor output, operating hours read-out, readout of the sensor internal temperature, and initial reset			

Item		Types	Quadruple distance model			
		Size	M8	M12	M18	M30
		Model	E2E-X4□8	E2E-X9□12	E2E-X14□18	E2E-X23□30
IO-Link Communication specifications ✻2	IO-Link specification		Ver 1.1			
	Baud rate		COM2 (38.4 kbps), COM3 (230.4 kbps)			
	Data length		PD size: 2 bytes, OD size: 1 byte (M-sequence type: TYPE_2_2)			
	Minimum cycle time		COM2: 2.3 ms, COM3: 0.4 ms			
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. IO-Link is not supported for NC-type PNP outputs or all types of NPN outputs.
✻3. The Oil-resistant Component Evaluation Standards are OMRON's own durability evaluation standards.
2-year oil resistance indicates the median value of the product design and the oil-resistance performance criterion result (=Typical value).
The Pre-wired Connector Model verifies 2 years of oil resistance when mating with Round Oil-resistant Connectors XS5 NEXT series correctly.
The degree of protection is not satisfied with the part where cable wires are uncovered for the Pre-wired Models.
✻4. Weight of the standard body-sized model.
Note: 1. For details such as *Engineering Data*, *I/O Circuit Diagrams* and *Dimensions* refer to the *E2E NEXT Series* (Cat.No.D121).

PREMIUM Model

DC 3-wire (Quadruple distance model)

Unshielded

Item \ Types		Quadruple distance model			
Size		M8	M12	M18	M30
Model		E2E-X8M□8	E2E-X16M□12	E2E-X30M□18	E2E-X50M□30
Sensing distance		8 mm±10%	16 mm±10%	30 mm±10%	50 mm±10%
Setting distance		0 to 6 mm	0 to 12.2 mm	0 to 23 mm	0 to 38.2 mm
Differential travel		15% max. of sensing distance			
Detectable object		Ferrous metals (The sensing distance decreases with non-ferrous metal.)			
Standard sensing object		Iron, 24 × 24 × 1 mm	Iron, 48 × 48 × 1 mm	Iron, 90 × 90 × 1 mm	Iron, 150 × 150 × 1 mm
Response frequency ※1		500 Hz	400 Hz	200 Hz	100 Hz
Power supply voltage		10 to 30 VDC (including 10% ripple (p-p)), Class 2			
Current consumption		1-output models: 16 mA max.			
Output configuration		B□ Models: PNP open collector C□ Models: NPN open collector			
Operation mode (with sensing object approaching)		1-output models (B1, C1): NO (Normally open), 1-output models (B2, C2): NC (Normally closed)			
Control output	Load current	1-output models: 10 to 30 VDC, Class 2, 50 mA max.			
	Residual voltage	1-output models: 2 V max. (Load current: 50 mA, Cable length: 2 m)			
Indicator ※2		In the Standard I/O mode (SIO mode): Operation indicator (orange, lit) and communication indicator (green, not lit) In the IO-Link communication mode (COM mode): Operation indicator (orange, lit) and communication indicator (green, blinking at 1 s intervals)			
Protection circuits		Power supply reverse polarity protection, Surge suppressor, Output short-circuit protection, Output reverse polarity protection			
Ambient temperature range		Operating/Storage: -25 to 70°C (with no icing or condensation)			
Ambient humidity range		Operating/Storage: 35% to 95% (with no condensation)			
Temperature influence		±15% max. of sensing distance at 23°C in the temperature range of -25 to 70°C			
Voltage influence		±1% max. of sensing distance at rated voltage in the rated voltage ±15% range			
Insulation resistance		50 MΩ min. (at 500 VDC) between current-carrying parts and case			
Dielectric strength		1,000 VAC, 50/60 Hz for 1 minute between current-carrying parts and case			
Vibration resistance (destruction)		10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions			
Shock resistance (destruction)		500 m/s² 10 times each in X, Y, and Z directions	1,000 m/s² 10 times each in X, Y, and Z directions		
Degree of protection		Pre-wired Models, Pre-wired Connector Models: IEC 60529:IP67, ISO 20653 (old standard: DIN 40050 PART9): IP69K, JIS C 0920 Annex 1: IP67G, Passed OMRON's Oil-resistant Component Evaluation Standards ※3 (Cutting oil type: specified in JIS K 2241: 2000; Temperature: 35°C max.) Connector Models: IEC 60529: IP67, ISO 20653 (old standard: DIN 40050 PART9): IP69K			
Connection method		Pre-wired Models (Standard cable length: 2 m) and Connector Models (M12 Connector, M8 (4-pin) Connector and M8 (3-pin) Connector)			
Weight ※4 (packed state)	Pre-wired	Approx. 85 g	Approx. 95 g	Approx. 190 g	Approx. 310 g
	Connector	Approx. 40 g (M8/M12 Connector)	Approx. 55 g	Approx. 105 g	Approx. 230 g
Materials	Case	Stainless (SUS303)	Nickel-plated brass		
	Sensing surface	Polybutylene terephthalat (PBT)			
	Clamping nuts	Nickel-plated brass			
	Toothed washers	Zinc-plated iron			
	Cable	Vinyl chloride (PVC) Note: Material of Pre-wired Models.			
Main IO-Link functions ※2		Operation mode switching between NO and NC, self diagnosis enabling, excessive proximity judgment distance selecting, timer function of the control output and timer time selecting, instability output (IO-Link mode) ON delay timer time selecting function, monitor output, operating hours read-out, readout of the sensor internal temperature, and initial reset			
IO-Link Communication specifications ※2	IO-Link specification	Ver1.1			
	Baud rate	COM2 (38.4 kbps), COM3 (230.4 kbps)			
	Data length	PD size: 2 bytes, OD size: 1 byte (M-sequence type: TYPE_2_2)			
	Minimum cycle time	COM2: 2.3 ms, COM3: 0.4 ms			
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. IO-Link is not supported for NC-type PNP outputs or all types of NPN outputs.
※3. The Oil-resistant Component Evaluation Standards are OMRON's own durability evaluation standards. 2-year oil resistance indicates the median value of the product design and the oil-resistance performance criterion result (=Typical value). Actual performance can be expected to decline after two years on average from shipment. The Pre-wired Connector Model verifies 2 years of oil resistance when mating with Round Oil-resistant Connectors XS5 NEXT series correctly. The degree of protection is not satisfied with the part where cable wires are uncovered for the Pre-wired Models.
※4. Weight of the standard body-sized model.

Note: 1. For details such as *Engineering Data*, *I/O Circuit Diagrams* and *Dimensions* refer to the *E2E NEXT Series* (Cat.No.D121).

MEMO

E2EW Series

DC 2-wire/DC 3-wire

Stable detection in lines containing both aluminum and iron

- Equivalent sensing distances for both iron and aluminum *1
- Enables common design for lines with both iron and aluminum *1
- The long distance sensing range, which means fewer false detections and thereby fewer unexpected stoppages.
- OMRON's unique fluororesin coating technologies enable long-lasting spatter resistance *3, eliminates the need to replace for 10 years *2.
- Durable full metal body to reduce unexpected stoppages
- 2-output (NO+NC) models and models with IO-Link *1 are also available.
- Laser printed information (sensing distance on the sensor head, model on the cable, and model on the metal part of the connector model) can be reducing errors during sensor replacement. *4
- Equipped with a function, which effectively cancels pulse noise of current magnetic field. *1
- UL certification (UL60947-5-2) and CSA certification (CSA C22.2 UL60947-5-2-14)



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

Refer to the *E2EW Series* (Cat.No.D122) for *Safety Precautions*.

***1.** PREMIUM Models only.
***2.** This value assumes that the sensor operates 10 hours a day in an arc welding environment and is cleaned once a month (12 times a year). If our previous model (E2EF-Q) needs to be replaced once every 3 times it is cleaned, the E2EW-Q Proximity Sensor needs to be replaced once every 180 times it is cleaned. This means that there is no need to replace the E2EW-Q Proximity Sensor for 10 or more years.
***3.** Models with spatter-resistant coating only.
***4.** Models without spatter-resistant coating only.

E2EW Series Model Number Legend

E2EW - (1) X (2) (3) (4) (5) (6) - (7) - (8) (9)

No.	Type	Code	Meaning	Remarks
(1)	Case	Blank	Without spatter-resistant coating	
		Q	With spatter-resistant coating	
(2)	Sensing distance	Number	Sensing distance (Unit: mm) (R: Indication of decimal point)	
(3)	Output configuration	B	DC 3-wire PNP open collector	Whether the D model has polarity is defined by number (8).
		C	DC 3-wire NPN open collector	
		D	DC 2-wire polarity/no polarity	
(4)	Operation mode	1	Normally open (NO)	
		2	Normally closed (NC)	
		3	Normally open, Normally closed (NO+NC)	
(5)	IO-Link baud rate	Blank	Non IO-Link compliant	
		D	COM2 (38.4kbps)	
		T	COM3 (230.4kbps)	
(6)	Size	8	M8	
		12	M12	
		18	M18	
		30	M30	
(7)	Connection method	Blank	Pre-wired Models	
		M1	M12 Connector Models	
		M1TGJ	M12 Pre-wired Smartclick Connector Models DC 2-wire	
		M1TJ	M12 Pre-wired Smartclick Connector Models DC 3-wire	
(8)	DC 2-wire polarity	Blank	Polarity	
		T	No polarity	
(9)	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.

Ordering Information

BASIC Model

E2EW Series (Double distance model)

DC 2-wire

Size (Sensing distance)	Connection method	Polarity	Model
			Operation mode: NO
M8 (2 mm)	Pre-wired (2 m)	Yes	E2EW-X2D18 2M ✻1
	M12 Pre-wired Smartclick Connector (0.3 m)		E2EW-X2D18-M1TGJ 0.3M
M12 (3 mm)	Pre-wired (2 m) ✻1		E2EW-X3D112 2M
	M12 Pre-wired Smartclick Connector (0.3 m)		E2EW-X3D112-M1TGJ 0.3M
M18 (7 mm)	Pre-wired (2 m) ✻1		E2EW-X7D118 2M
	M12 Pre-wired Smartclick Connector (0.3 m)		E2EW-X7D118-M1TGJ 0.3M
M30 (12 mm)	Pre-wired (2 m) ✻1		E2EW-X12D130 2M
	M12 Pre-wired Smartclick Connector (0.3 m)		E2EW-X12D130-M1TGJ 0.3M

E2EW-Q Series (Spatter-resistant Double distance model)

DC 2-wire

Size (Sensing distance)	Connection method	Polarity	Model
			Operation mode: NO
M8 (2 mm)	Pre-wired (2 m)	Yes	E2EW-QX2D18 2M ✻1
	M12 Pre-wired Smartclick Connector (0.3 m)	Yes	E2EW-QX2D18-M1TGJ 0.3M
M12 (3 mm)	Pre-wired (2 m)	Yes	E2EW-QX3D112 2M ✻1
	M12 Pre-wired Smartclick Connector (0.3 m)	Yes	E2EW-QX3D112-M1TGJ 0.3M
		No	E2EW-QX3D112-M1TGJ-T 0.3M
M18 (7 mm)	Pre-wired (2 m)	Yes	E2EW-QX7D118 2M ✻1
	M12 Pre-wired Smartclick Connector (0.3 m)	Yes	E2EW-QX7D118-M1TGJ 0.3M
		No	E2EW-QX7D118-M1TGJ-T 0.3M
M30 (12 mm)	Pre-wired (2 m)	Yes	E2EW-QX12D130 2M ✻1
	M12 Pre-wired Smartclick Connector (0.3 m)	Yes	E2EW-QX12D130-M1TGJ 0.3M
		No	E2EW-QX12D130-M1TGJ-T 0.3M

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

DC 3-wire

Size (Sensing distance)	Connection method	Operation mode ✻2	Model
			PNP
M8 (1.5 mm)	M12 Connector	NO	E2EW-QX1R5B18-M1

✻1. Models with 5-m cable length are also available with "5M" suffix. (Example: E2EW-X3D112 5M)

Note: 1. IO-Link is not supported for BASIC Model.

PREMIUM Model

E2EW Series (Quadruple distance model)

DC 3-wire

Size (Sensing distance)	Connection method ※2	Operation mode ※3	Model	
			PNP	NPN
M12 (7 mm)	Pre-wired (2 m) ※1	NO	E2EW-X7B1T12 2M	E2EW-X7C112 2M
	M12 Pre-wired Smartclick Connector (0.3 m)	NO+NC	E2EW-X7B3T12-M1TJ 0.3M	---

E2EW Series (Triple distance model)

DC 3-wire

Size (Sensing distance)	Connection method ※2	Operation mode ※3	Model	
			PNP	NPN
M18 (10 mm)	Pre-wired (2 m) ※1	NO	E2EW-X10B1T18 2M	---
	M12 Pre-wired Smartclick Connector (0.3 m)	NO+NC	E2EW-X10B3T18-M1TJ 0.3M	---
M30 (20 mm)	Pre-wired (2 m) ※1	NO	E2EW-X20B1T30 2M	E2EW-X20C130 2M
	M12 Pre-wired Smartclick Connector (0.3 m)	NO+NC	E2EW-X20B3T30-M1TJ 0.3M	E2EW-X20C330-M1TJ 0.3M

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

DC 3-wire

Size (Sensing distance)	Connection method ※2	Operation mode ※3	Model	
			PNP	NPN
M12 (7 mm)	Pre-wired (2 m) ※1	NO	E2EW-QX7B1T12 2M	E2EW-QX7C112 2M
	M12 Pre-wired Smartclick Connector (0.3 m)	NO+NC	E2EW-QX7B3T12-M1TJ 0.3M	---

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

DC 3-wire

Size (Sensing distance)	Connection method ※2	Operation mode ※3	Model	
			PNP	NPN
M18 (10 mm)	Pre-wired (2 m) ※1	NO	E2EW-QX10B1T18 2M	E2EW-QX10C118 2M
	M12 Pre-wired Smartclick Connector (0.3 m)	NO+NC	E2EW-QX10B3T18-M1TJ 0.3M	---

※1. Models with 5-m cable length are also available with "5M" suffix. (Example: E2EW-X7B1T12 5M)
※2. Model with M12 Connector are also available with "-M1" suffix. (Example: E2EW-X7B1T12 -M1)
※3. Operation model NC are also available with "E2EW-X□□2□□". (Example: E2EW-X7B212 2M)

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-X7B1D12 2M).
Operation mode NO can be changed to NC via IO-Link communications.
2. IO-Link is not supported for NC-type PNP outputs or all types of NPN outputs.

Sensor I/O Connectors (Sold Separately) (Models for Connectors and Pre-wired Connectors)

A Sensor I/O Connector is not provided with the Sensor. It must be ordered separately as required.

XS5 Round Water-resistant Connectors (M12 Smartclick)

Appearance	Cable Specification	Type	Cable diameter (mm)	Cable Connection Direction	Cable length (m)	Sensor I/O Connector model number
M12 Smartclick Connector Straight type 	PVC robot cable	Sockets on One Cable End	6 dia.	Straight	2	**XS5F-D421-D80-F**
					5	**XS5F-D421-G80-F**
					10	**XS5F-D421-J80-F**
				Right-angle	2	**XS5F-D422-D80-F**
					5	**XS5F-D422-G80-F**
					10	**XS5F-D422-J80-F**
Right-angle type 		Socket and Plug on Cable Ends	6 dia.	Straight (Socket)/ Straight (Plug)	2	**XS5W-D421-D81-F**
					5	**XS5W-D421-G81-F**
					10	**XS5W-D421-J81-F**

Note: For details, refer to *XS5* on your OMRON website.

Ratings and Specifications

BASIC Model

E2EW Series (Double distance model)

E2EW-Q Series (Spatter-resistant Double distance model/Spatter-resistant Single distance model)

Item \ Type		DC 2-wire				DC 3-wire
		Double distance model/Spatter-resistant Double distance model				Spatter-resistant Single distance model
Item \ Size		M8	M12	M18	M30	M8
Item \ Model		E2EW-(Q)X2D□8	E2EW-(Q)X3D□12	E2EW-(Q)X7D□18	E2EW-(Q)X12D□30	E2EW-QX1R5B18
Sensing distance		2 mm ±10%	3 mm ±10%	7 mm ±10%	12 mm ±10%	1.5 mm ±10%
Setting distance		0 to 1.4 mm	0 to 2.1 mm	0 to 4.9 mm	0 to 8.4 mm	0 to 1.05 mm
Differential travel		15% max. of sensing distance				
Detectable object		Ferrous metal (The sensing distance decreases with non-ferrous metal.)				
Standard sensing object (Iron)		12 × 12 × 1 mm	21 × 21 × 1 mm	30 × 30 × 1 mm	54 × 54 × 1 mm	8 × 8 × 1 mm
Response frequency ✻1		100 Hz	80 Hz	90 Hz	50 Hz	100 Hz
Power supply voltage		10 to 30 VDC (including 10% ripple (p-p)), Class 2				
Leakage current		0.8 mA max.				10 mA max.
Output configuration		D□ models: Polarity D1-T models: No polarity				B□ Models: PNP open collector
Operation mode		D1 models: NO (Normally open)				1-output models (B1): NO (Normally open)
Control output	Load current	3 to 100 mA				1-output models (B1): 10 to 30 VDC Class 2, 200 mA max.
	Residual voltage	Polarity: 3 V max. (Load current: 100 mA, Cable length: 2 m) No polarity: 5 V max. (Load current: 100 mA, Cable length: 2 m)				1-output models (B1): 2 V max. (Load current: 200 mA, Cable length: 2 m)
Indicator		D1 models: Operation indicator (orange LED, lit) and communication indicator (green LED, not lit)				Operation indicator (orange LED, lit)
Protection circuits		Surge suppressor, Output short-circuit protection				Power supply reverse polarity protection, Surge suppressor, Output short-circuit protection, Output reverse polarity protection
Ambient temperature range		M8 Size Operating: -10 to 70°C, Storage: -25 to 70°C (with no icing or condensation) ✻2 M12/M18/M30 Size Operating: 0 to 85°C, Storage: -15 to 85°C (with no icing or condensation) ✻2				Operating: -25 to 70°C, Storage: -25 to 70°C (with no icing or condensation) ✻2
Ambient humidity range		Operating/Storage: 35% to 95% (with no condensation)				
Temperature influence		M8 Size ±20% max. of sensing distance at 23°C in the temperature range of -10 to 70°C M12/M18/M30 Size ±20% max. of sensing distance at 23°C in the temperature range of 0 to 85°C				±20% max. of sensing distance at 23°C in the temperature range of -25 to 70°C
Voltage influence		±1.5% max. of sensing distance at rated voltage in the rated voltage ±15% range				
Insulation resistance		50 MΩ min. (at 500 VDC) between current-carrying parts and case				
Dielectric strength		1,000 VAC, 50/60 Hz for 1 minute between current-carrying parts and case				
Vibration resistance (destruction)		10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions				
Shock resistance (destruction)		M8 Size 500 m/s^2 10 times each in X, Y, and Z directions M12/M18/M30 Size 1,000 m/s^2 10 times each in X, Y, and Z directions				500 m/s^2 10 times each in X, Y, and Z directions
Degree of protection		IEC 60529: IP67				IEC 60529: IP67
Connection method		Pre-wired Models (Standard cable length: 2 m), Pre-wired Connector Models (Standard cable length: 0.3 m)				M12 Connector Models
Weight (packed state)	Pre-wired	Approx. 105 g	Approx. 140 g	Approx. 165 g	Approx. 225 g	---
	M12 Pre-wired Smartclick Connector	Approx. 65 g	Approx. 70 g	Approx. 100 g	Approx. 160 g	---
	M12 Connector	---	---	---	---	Approx. 43 g
Materials	Case	E2EW-X□: Stainless steel (SUS303), E2EW-QX□: Fluororesin coating (Base material: (SUS303))				Fluororesin coating (Base material: (SUS303))
	Sensing surface	E2EW-X□: Stainless steel (SUS303), E2EW-QX□: Fluororesin coating (Base material: (SUS303))				Fluororesin coating (Base material: (SUS303))
	Sensing surface (Thickness)	0.2 mm	0.4 mm	0.4 mm	0.5 mm	0.4 mm
	Clamping nuts	E2EW-X□: Stainless steel (SUS303), E2EW-QX□: Fluororesin coating (Base material: (SUS303))				Fluororesin coating (Base material: (SUS303))
	Toothed washers	Zinc-plated iron				Zinc-plated iron
	Cable	Vinyl chloride (PVC)				Vinyl chloride (PVC)
MTTFd (Year)		2,041	2,015	1,979	1,979	3,427
Accessories		Instruction manual, Clamping nuts, Toothed washer				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°C to 60°C.

Note: 1. For details such as *Engineering Data*, *I/O Circuit Diagrams* and *Dimensions* refer to the *E2EW Series* (Cat.No.D122).

PREMIUM Model

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

DC 3-wire

Item		Type	Quadruple distance model/ Spatter-resistant Quadruple distance model	Triple distance model/ Spatter-resistant Triple distance model	Triple distance model
		Size	M12	M18	M30
		Model	E2EW-(Q)X7□12	E2EW-(Q)X10□18	E2EW-X20□30
Sensing distance			7 mm ±10%	10 mm ±10%	20 mm ±10%
Setting distance			0 to 4.9 mm	0 to 7.0 mm	0 to 14 mm
Differential travel			15% max. of sensing distance		
Detectable object			Ferrous metals and non-ferrous metals (The sensing distance depends on the material of the sensing object.)		
Standard sensing object (Iron)			21 × 21 × 1 mm	30 × 30 × 1 mm	60 × 60 × 1 mm
Response frequency ✻1			2 Hz (Equipped with a function, which effectively cancels pulse noise of current magnetic field.)		
Power supply voltage			10 to 30 VDC (including 10% ripple (p-p)), Class 2		
Current consumption			720 mW max. (Current consumption: 30 mA max. at power supply voltage of 24 V)		
Output configuration			B□ Models: PNP open collector, C□ Models: NPN open collector		
Operation mode			1-output models (B1, C1): NO (Normally open), 2-output models (B3, C3): NO+NC (Normally open, Normally closed)		
Control output	Load current		1-output models (B1, C1): 10 to 30 VDC, Class 2, 200 mA max. 2-output models (B3, C3): 10 to 30 VDC, Class 2, 100 mA max.		
	Residual voltage		1-output models (B1, C1): 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			In the Standard I/O mode (SIO mode): Operation indicator (orange, lit) and communication indicator (green, not lit) In the IO-Link communication mode (COM mode): Operation indicator (orange, lit) and communication indicator (green, blinking at 1 s intervals)		
Protection circuits			Power supply reverse polarity protection, Surge suppressor, Output short-circuit protection, Output reverse polarity protection		
Ambient temperature range			Operating: 0 to 85 °C, Storage: -15 to 85°C (with no icing or condensation) ✻3		
Ambient humidity range			Operating/Storage: 35% to 95% (with no condensation)		
Temperature influence			±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 resistance			50 MΩ min. (at 500 VDC) between current-carrying parts and case		
Dielectric strength			1,000 VAC, 50/60 Hz for 1 minute between current-carrying parts and case		
Vibration resistance (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^2 10 times each in X, Y, and Z directions		
Degree of protection			IEC 60529: IP67		
Connection method			Pre-wired Models (Standard cable length: 2 m), Pre-wired Connector Models (Standard cable length: 0.3 m)		
Weight (packed state)	Pre-wired		Approx. 140 g	Approx. 165 g	Approx. 225 g
	M12 Pre-wired Smartclick Connector		Approx. 70 g	Approx. 100 g	Approx. 160 g
Materials	Case		E2EW-X□: Stainless steel (SUS303), E2EW-QX□: Fluororesin coating (Base material: (SUS303))		
	Sensing surface		E2EW-X□: Stainless steel (SUS303), E2EW-QX□: Fluororesin coating (Base material: (SUS303))		
	Sensing surface (Thickness)		0.4 mm	0.4 mm	0.5 mm
	Clamping nuts		E2EW-X□: Stainless steel (SUS303), E2EW-QX□: Fluororesin coating (Base material: (SUS303))		
	Toothed washers		Zinc-plated iron		
	Cable		Vinyl chloride (PVC)		
Main IO-Link functions ✻2			Operation mode switching between NO and NC, self diagnosis enabling, excessive proximity judgment distance selecting, timer function of the control output and timer time selecting, instability output (IO-Link mode) ON delay timer time selecting function, monitor output, operating hours read-out, readout of the sensor internal temperature, and initial reset		
IO-Link Communication specifications ✻2	IO-Link specification		Ver.1.1		
	Baud rate		E2EW(-Q) X□B□T□: COM3 (230.4 kbps), E2EW(-Q) X□B□D□: COM2 (38.4 kbps)		
	Data length		PD size: 2 bytes, OD size: 1 byte (M-sequence type: TYPE_2_2)		
	Minimum cycle time		COM2: 2.3 ms, COM3: 1.0 ms		
MTTFd (Year)			679	681	681
Accessories			Instruction manual, Clamping nuts, Toothed washer		

✻1. The response frequency is an average value. Factory setting: (timer function: ONOFF delay)
✻2. IO-Link is not supported for NPN outputs.
✻3. UL temperature rating is between 0°C to 60°C.
Note: 1. For details such as *Engineering Data*, *I/O Circuit Diagrams* and *Dimensions* refer to the *E2EW Series* (Cat.No.D122).

Proximity Sensors That Withstand Cutting Oil to Reduce Failures Caused by Ingress of Cutting Oil

- Fluororesin cable that withstands cutting oil.
- A sealing method that eliminates gaps at cable joints and the resin filling work together to block ingress of cutting oil.
- IP67G ✻ degree of protection (JIS C 0920 Annex 1).



Refer to the *Environment-resistant Series Oil-resistant Components* (Cat.No.Y215) for *Safety Precautions*.

✻ The IP67G is the degree of protection which is defined according to the JIS (Japanese Industrial Standards).
The IP67 indicates the same level of protection as defined by the IEC, and the G indicates that a device has resistance to oil.

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

Ordering Information

Sensors

Standard Proximity Sensors

Appearance		Sensing distance	Connection method	Cable specifications	Model	
					Operation mode: NO	Operation mode: NC
Shielded	M8	2 mm	Pre-wired Models (2 m)	Fluororesin	**E2ER-X2D1 2M** ✻	**E2ER-X2D2 2M** ✻
			M12 Pre-wired Smartclick Connector Models (0.3 m)		**E2ER-X2D1-M1TGJ 0.3M**	**E2ER-X2D2-M1TGJ 0.3M**
	M12	3 mm	Pre-wired Models (2 m)		**E2ER-X3D1 2M** ✻	**E2ER-X3D2 2M** ✻
			M12 Pre-wired Smartclick Connector Models (0.3 m)		**E2ER-X3D1-M1TGJ 0.3M**	**E2ER-X3D2-M1TGJ 0.3M**
	M18	7 mm	Pre-wired Models (2 m)		**E2ER-X7D1 2M** ✻	**E2ER-X7D2 2M** ✻
			M12 Pre-wired Smartclick Connector Models (0.3 m)		**E2ER-X7D1-M1TGJ 0.3M**	**E2ER-X7D2-M1TGJ 0.3M**
	M30	10 mm	Pre-wired Models (2 m)		**E2ER-X10D1 2M** ✻	**E2ER-X10D2 2M** ✻
			M12 Pre-wired Smartclick Connector Models (0.3 m)		**E2ER-X10D1-M1TGJ 0.3M**	**E2ER-X10D2-M1TGJ 0.3M**

✻ Models with 5-m cable length are also available with "5M" suffix. (Example: E2ER-X2D1 5M)
Aluminum-chip resistant type also available. (Example: E2ERZ-□□)

Accessories (Sold Separately)

Sensor I/O Connectors (M12, Sockets on One Cable End)

(Models for Pre-wired Connectors) A Sensor I/O Connector is not provided with the Sensor. It must be ordered separately as required.

Appearance	Cable diameter (mm)	Cable length	Sensor I/O Connector model number	Applicable Proximity Sensor model number
Straight, Smartclick Oil-resistant Connectors	4 dia.	2 m	**XS5FR-D423-D80-RB1**	E2ER-X□D□-M1TGJ E2ERZ-X□D□-M1TGJ
		5 m	**XS5FR-D423-G80-RB1**	
		10 m	**XS5FR-D423-J80-RB1**	

Note: For details, refer to XS5□R on your OMRON website.

Ratings and Specifications

Standard Proximity Sensors

Item	Size	M8	M12	M18	M30
	Shielded	Shielded			
	Model	E2ER-X2D□	E2ER-X3D□	E2ER-X7D□	E2ER-X10D□
Sensing distance		2 mm ±10%	3 mm ±10%	7 mm ±10%	10 mm ±10%
Set distance ✻1		0 to 1.6 mm	0 to 2.4 mm	0 to 5.6 mm	0 to 8 mm
Differential travel		15% max. of sensing distance	10% max. of sensing distance		
Detectable object		Ferrous metal (The sensing distance decreases with non-ferrous metal.)			
Standard sensing object		Iron, 8 × 8 × 1 mm	Iron, 12 × 12 × 1 mm	Iron, 18 × 18 × 1 mm	Iron, 30 × 30 × 1 mm
Response frequency ✻2		1.5 kHz	1 kHz	0.5 kHz	0.4 kHz
Power supply voltage		10 to 30 VDC, (including 10% ripple (p-p))			
Leakage current		0.8 mA max.			
Control output	Load current	3 to 100 mA			
	Residual voltage	3 V max. (Load current: 100 mA, Cable length: 2 m)			
Indicators		D1 Models: Operation indicator (red), Setting indicator (green) D2 Models: Operation indicator (red)			
Operation mode (with sensing object approaching)		D1 Models: NO D2 Models: NC			
Protection circuits		Surge suppressor, Load short-circuit protection			
Ambient temperature range		Operating: -25 to 70°C, Storage: -40 to 85°C (with no icing or condensation)			
Ambient humidity range		Operating and Storage: 35% to 95% (with no condensation)			
Temperature influence		±15% max. of sensing distance at 23°C in the temperature range of -25 to 70°C	±10% max. of sensing distance at 23°C in the temperature range of -25 to 70°C		
Voltage influence		±1% max. of sensing distance at rated voltage in the rated voltage ±15% range			
Insulation resistance		50 MΩ min. (at 500 VDC) between current-carrying parts and case			
Dielectric strength		1,000 VAC, 50/60 Hz for 1 minute between current-carrying parts and case			
Vibration resistance (destruction)		10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions			
Shock resistance (destruction)		500 m/s^2 10 times each in X, Y, and Z directions	1,000 m/s^2 10 times each in X, Y, and Z directions		
Degree of protection		IP67 (IEC 60529) and IP67G ✻3 (JIS C 0920 Annex 1) Passed OMRON's Oil-resistant Component Evaluation Standards ✻4 (Cutting oil type: specified in JIS K 2241:2000, Temperature: 35 °C max.)			
Connection method		Pre-wired Models (Standard cable length: 2 m) and Pre-wired Connector Models (Standard cable length: 300 mm)			
Weight (packed state)	Pre-wired Models	Approx. 65 g	Approx. 75 g	Approx. 145 g	Approx. 215 g
	Pre-wired Connector Models	Approx. 30 g	Approx. 40 g	Approx. 90 g	Approx. 155 g
Materials	Case	Stainless steel (SUS303)	Nickel-plated brass		
	Sensing surface	Polybutylene terephthalate (PBT)			
	Clamping nuts	Nickel-plated brass			
	Toothed washer	Zinc-plated iron			
Accessories		Instruction manual			

✻1. Use the Sensor within the range in which the setting indicator (green LED) is ON (except D2 Models).
✻2. 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.
✻3. The IP67G is the degree of protection which is defined according to the JIS (Japanese Industrial Standards).
The IP67 indicates the same level of protection as defined by the IEC, and the G indicates that a device has resistance to oil.
✻4. The Oil-resistant Component Evaluation Standards are OMRON's own durability evaluation standards.
The Pre-wired Connector Model meets the degree of protection when it is correctly connected with an XS5□R Oil-resistant Connector.
The degree of protection is not satisfied with the part where there is no XS5FR Oil-resistant Connector connected and cable wires are uncovered.
And as for the Pre-wired Models, the degree of protection is not satisfied with the part where cable wires are uncovered.

Note: 1. For details such as *Engineering Data*, *I/O Circuit Diagrams* and *Dimensions* refer to the *Environment-resistant Series Oil-resistant Components* (Cat.No.Y215).

E2EC-M/-Q



Improved Durability with Stainless Steel Sensing Head

Models with improved spatter resistance ideal for welding also available.



E2EC-M
E2EC-Q
Sensing Surface has 10 times the strength against wear, compared to previous models.



E2EC-M
E2EC-Q
Sensing head is 18 mm in length. Ideal for use embedded in devices.



E2EC-Q
Prevents adherence of weld spatter to the Sensing Head. (Improved spatter-resistant model)



E2EC-Q
Employs a fluoride cable (Improved spatter-resistant model)

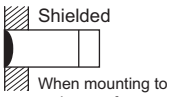


For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

⚠ For *Safety Precautions*, refer to the *E2EC-M/Q* on your website (www.fa.omron.co.jp/).

Ordering Information

Sensors

Appearance		Sensing distance	Output configuration	Model
				Operation mode: NO
 Shielded / When mounting to an iron surface	8 dia.	2 mm	DC 3-wire PNP	**E2EC-MC2B1 2M**
			DC 2-wire (polarity)	**E2EC-MC2D1 2M**
			DC 2-wire (no polarity) (3)-(4) pin arrangement	**E2EC-QC2D1-M1GJ-T 0.3M**

Accessories (Order Separately)

Sensor I/O Connector (M12, Sockets on One Cable End)

Models with Pre-wired Connectors: A Connector is not provided with the Sensor. Be sure to order a Connector separately.

Appearance	Cable length	Sensor I/O Connector model	Applicable Proximity Sensors
Straight 	2 m	**XS2F-D421-DD0**	E2EC-QC2D1-M1GJ-T
	5 m	**XS2F-D421-GD0**	
L-shape 	2 m	**XS2F-D422-DD0**	
	5 m	**XS2F-D422-GD0**	

Note: 1. The Sensor I/O Connector models in the previous table are for standard cables. Be sure to use a heat-resistant cable (XS2F-D42□-□80F) when using the Sensor in environments susceptible to spatter.
Note: 2. Refer to your OMRON website for details on the XS2.

Ratings and Specifications

Type			DC 3-Wire PNP Models	DC 2-Wire Models	DC 2-Wire Models (no polarity) (spatter-resistant type)
Size			8 dia. (Sensing Head)		
Shielding			Shielded		
Model			E2EC-MC2B1	E2EC-MC2D1	E2EC-QC2D1-M1GJ-T
Sensing distance			2 mm ±15%	2 mm ±10%	
Set distance			0 to 1.2 mm	0 to 1.4 mm	
Differential travel			15% max. of sensing distance		
Detectable object			Ferrous metals (The sensing distance will decreases with non-ferrous metal.)		
Standard sensing object			Iron, 8 × 8 × 1 mm		
Response frequency			100 Hz		
Power supply voltage (operating voltage range)			12 to 24 VDC, ripple (p-p): 10% max. (10 to 30 VDC)		
Current consumption			10 mA max.	---	
Leakage current			---	0.8 mA max.	
Control output	Load current		100 mA max.	3 to 50 mA	
	Residual voltage		2 V max. (Load current: 100 mA, Cable length: 2 m)	3 V max. (Load current: 50 mA, Cable length: 2 m)	5 V max. (Load current: 50 mA, Cable length: 2 m)
Indicators			Operation indicator (yellow)	Operation indicator (red), Setting indicator (green)	
Operation mode (with sensing object approaching)			NO (normally open)		
Protection circuits			Power supply reverse polarity protection, Surge suppressor, Load short-circuit protection, Reversed output polarity protection	Surge suppressor, Load short-circuit protection	
Ambient temperature range			Operating and storage: -25 to 70°C (with no icing or condensation)		
Ambient humidity range			Operating and storage: 35% to 95% (with no condensation)		
Temperature influence			±20% max. of sensing distance at 23°C in the temperature range of -25 to 70°C		
Voltage influence			±5% max. of sensing distance at rated voltage in the rated voltage ±15% range	±1% max. of sensing distance at the rated voltage range in the voltage range of ±15%	
Insulation resistance			50 MΩ min. (at 500 VDC) between current-carrying parts and case		
Dielectric strength			1,000 VAC for 1 min between current carrying-parts and case		
Vibration resistance			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^2 10 times each in X, Y, Z directions		
Degree of protection			IEC IP67, In-house standards: oil-resistant (For Sensor Head only)		
Connection method			Pre-wired Connector Models (Standard cable length: 2 m)		Connector Models (Standard cable length: 0.3 m)
Weight (packed state)			Approx. 65 g		Approx. 95 g
Materials	Sensor Head	Case	Stainless steel (SUS303)		Stainless steel (SUS303) Fluororesin coated
		Sensing surface (thickness)	Stainless steel (SUS303) (0.2 mm)		Stainless steel (SUS303) Fluororesin coated (0.2 mm)
		Cable	Polyester elastomer (TPEE) (Shielded)		Fluoro-rubber (Shielded)
	Cable Amplifier	Case	ABS resin		Stainless steel (SUS303)
		Cable	Polyvinyl chloride (PVC)		Fluorocarbon cable (flame-resistant)
Accessories			Amplifier Mounting Bracket, instruction manual		

Note: 1. Time is required for the sensing distance to stabilize after the power supply is turned ON. Confirm operation sufficiently in the actual operating environment and use the Sensor within the set distance to obtain a sufficient sensing distance.

Note: 2. For details such as *Engineering Data*, *I/O Circuit Diagrams* and *Dimensions* refer to the *E2EC-M/Q* on your website (www.fa.omron.co.jp/).

Ultra small size, but surprisingly easy installation!

- With the addition of M4, 5.4-dia., 6.5-dia. size, unshielded, pre-wired connector model, and connector model, a total of 108 model variations are available.
- High-speed response frequency stably detects moving objects: 5 kHz max.
- Four indicator lamps for easier indicator positioning.
- Special mounting brackets reduce time and efforts for installation.
- Protective Stainless-steel Spiral Tube against wire breakage is available (M4, M5 only).
- Models also available with standard cables that are 5 m long or with robot (bending-resistant) cables.



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

Refer to the *E2E Series* (Cat.No.D115) for *Safety Precautions*.

Features

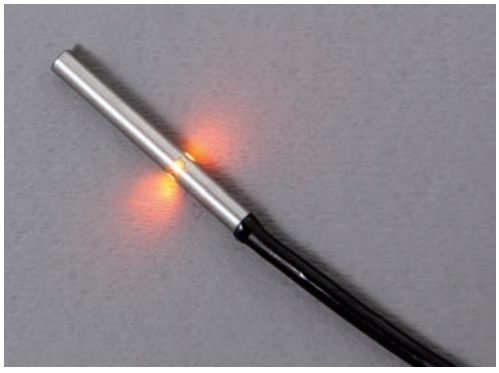
Lineup of global small-diameter types (3 dia., 4 dia., 5.4 dia., 6.5 dia., M4, M5)

- A lineup of unshielded models for long distance sensing is also available. Stable long distance sensing performance enables worry-free use even when the work flow is unsteady.



Bright operation indicators make it easy to check operation status

- Four indicator lamps in a 360 degree layout can be easily seen.



High-speed response enables sharp detection timing

- 5 kHz response frequency max.

Protection circuits prevent failures due to wiring mistakes.

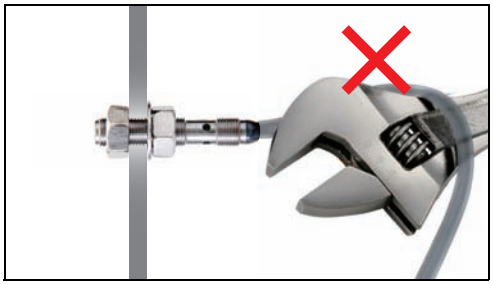
- Load short-circuit protection and output reverse polarity protection circuits are incorporated.

Environment friendly, low current consumption only 2/3 that of previous models

- All have a current consumption of 10 mA max.

Protective Stainless-steel Spiral Tube against wire breakage is available

- Lineup of protective tubes for M4 and M5 sizes. Reduces wire breakage due to catching and shock.



E2E (Small Diameter) Model Number Legend

E2E- (1) (2) (3) (4) - (5) - (6) (7) - (8) (9)

No.	Classification	Code	Meaning
(1)	Case material and shape	C	Cylindrical
		S	SUS, threaded
(2)	Size	03	Outer diameter 3 mm
		04	Outer diameter 4 mm
		05	Threaded: Outer diameter 5 mm, Cylindrical: Outer diameter 5.4 mm
		06	Outer diameter 6.5 mm
(3)	Shielding	S	Shielded Models
		N	Unshielded Models
(4)	Sensing distance	Number	R8: 0.8 mm, 01: 1 mm, 12: 1.2 mm, 02: 2 mm, 03: 3 mm, 04: 4 mm
(5)	Connecting method	WC	PVC Pre-wired Model
		MC	M8 Connector, 3-pin
		CJ	M8 Pre-wired Connector, 3-pin
(6)	Output specifications	B	DC 3-wire PNP open-collector output
		C	DC 3-wire NPN open-collector output
(7)	Operation mode	1	Normally open (NO)
		2	Normally closed (NC)
(8)	Cable specifications	Blank	Standard PVC cable
		R	Robot (bending-resistant) PVC cable
(9)	Cable length	Blank	Connector Models
		Number M	Cable length (Unit: m) (Applicable to Pre-wired Models 2M/5M and Pre-wired Connector Models 0.3M)

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

Sensors

Shielded Models 

Appearance	Sensing distance	Connecting method	Cable specifications	Operation mode	Wire color/ pin arrangement	Model	
						NPN output	PNP output
3 dia.	0.8 mm	Pre-wired Models (2 m)	PVC (oil-resistant)	NO	Brown: +V Black: Output Blue: 0 V	**E2E-C03SR8-WC-C1 2M** ∗1	**E2E-C03SR8-WC-B1 2M** ∗1
		M8 Pre-wired Connector Models (0.3 m)	PVC (oil-resistant)	NO	1: +V, 3: 0 V, 4: Control output	**E2E-C03SR8-CJ-C1 0.3M**	**E2E-C03SR8-CJ-B1 0.3M**
4 dia.	1.2 mm	Pre-wired Models (2 m)	PVC (oil-resistant)	NO	Brown: +V Black: Output Blue: 0 V	**E2E-C04S12-WC-C1 2M** ∗1 ∗2 ∗3	**E2E-C04S12-WC-B1 2M** ∗1 ∗2 ∗3
		M8 Pre-wired Connector Models (0.3 m)	PVC (oil-resistant)	NO	1: +V, 3: 0 V, 4: Control output	**E2E-C04S12-CJ-C1 0.3M**	**E2E-C04S12-CJ-B1 0.3M**
		M8 Connector Models	---	NO		**E2E-C04S12-MC-C1**	**E2E-C04S12-MC-B1**
5.4 dia.	1 mm	Pre-wired Models (2 m)	PVC (oil-resistant)	NO	Brown: +V Black: Output Blue: 0 V	**E2E-C05S01-WC-C1 2M** ∗1 ∗2 ∗3	**E2E-C05S01-WC-B1 2M** ∗1 ∗2 ∗3
6.5 dia.	2 mm	Pre-wired Models (2 m)	PVC (oil-resistant)	NO	Brown: +V Black: Output Blue: 0 V	**E2E-C06S02-WC-C1 2M** ∗1 ∗2 ∗3	**E2E-C06S02-WC-B1 2M** ∗1 ∗2 ∗3
		M8 Pre-wired Connector Models (0.3 m)	PVC (oil-resistant)	NO	1: +V, 3: 0 V, 4: Control output	**E2E-C06S02-CJ-C1 0.3M**	**E2E-C06S02-CJ-B1 0.3M**
		M8 Connector Models	---	NO		**E2E-C06S02-MC-C1**	**E2E-C06S02-MC-B1**
M4	0.8 mm	Pre-wired Models (2 m)	PVC (oil-resistant)	NO	Brown: +V Black: Output Blue: 0 V	**E2E-S04SR8-WC-C1 2M** ∗1	**E2E-S04SR8-WC-B1 2M** ∗1
		M8 Pre-wired Connector Models (0.3 m)	PVC (oil-resistant)	NO	1: +V, 3: 0 V, 4: Control output	**E2E-S04SR8-CJ-C1 0.3M**	**E2E-S04SR8-CJ-B1 0.3M**
M5	1.2 mm	Pre-wired Models (2 m)	PVC (oil-resistant)	NO	Brown: +V Black: Output Blue: 0 V	**E2E-S05S12-WC-C1 2M** ∗1 ∗2 ∗3	**E2E-S05S12-WC-B1 2M** ∗1 ∗2 ∗3
		M8 Pre-wired Connector Models (0.3 m)	PVC (oil-resistant)	NO	1: +V, 3: 0 V, 4: Control output	**E2E-S05S12-CJ-C1 0.3M**	**E2E-S05S12-CJ-B1 0.3M**
		M8 Connector Models	---	NO		**E2E-S05S12-MC-C1**	**E2E-S05S12-MC-B1**

∗1. Models with 5-m cable length are also available with "5M" suffix. (Example: E2E-C04S12-WC-C1 5M)
∗2. Models with robot (bending-resistant) cable are also available with "-R" in the model number. (Example: E2E-C04S12-WC-C1-R 2M)
∗3. Models with 5-m robot (bending-resistant) cable are also available with "-R" and the "5M" suffix in the model number.
(Example: E2E-C04S12-WC-C1-R 5M)

Accessories (Sold separately)

Sensor I/O Connector (Socket on One Cable End)

A Sensor I/O Connector is not provided with the Sensor. It must be ordered separately as required.

Size	Cable specifications	Number of cable wires (conductors)	Cable length L (m)	Straight	Right-angle
				Model	
M8	Standard cable	3	2	XS3F-M321-302-A	XS3F-M322-302-A
			5	XS3F-M321-305-A	XS3F-M322-305-A
	Robot (bendingresistant) cable		2	XS3F-M321-302-R	XS3F-M322-302-R
			5	XS3F-M321-305-R	XS3F-M322-305-R

Note: For details, refer to *XS3* on your OMRON website.

Mounting Brackets

A Mounting Bracket is not provided with the Sensor. It must be ordered separately as required.

Applicable Sensors	Appearance	Model	Quantity	Remarks
E2E-C03□		**Y92E-SC03**	1	Mounting block for 3 dia., M3-20 Hexagon socket head cap screws: 2pieces, M3 × P0.5 Hexagon nuts: 2pieces, Washers: 2pieces
E2E-C04□		**Y92E-SC04**	1	Mounting block for 4 dia., M3-20 Hexagon socket head cap screws: 2pieces, M3 × P0.5 Hexagon nuts: 2pieces, Washers: 2pieces
E2E-C05□		**Y92E-SC05**	1	Mounting block for 5.4 dia., M3-20 Hexagon socket head cap screws: 2 pieces, M3 × P0.5 Hexagon nuts: 2 pieces, Washers: 2 pieces
E2E-C06□		**Y92E-SC06**	1	Mounting block for 6.5 dia., M3-20 Hexagon socket head cap screws: 2pieces, M3 × P0.5 Hexagon nuts: 2pieces, Washers: 2pieces
E2E-S04□		**Y92E-SS04**	1	L-shaped Mounting Bracket for M4 screws
E2E-S05□		**Y92E-SS05**	1	L-shaped Mounting Bracket for M5 screws

Nut Set

A Nut Set is included with the Sensor. Order a Nut Set when required, e.g., if you lose the nuts.

Applicable Sensors	Model	Applicable sensor outer diameter	Set contents
E2E-S04□	**Y92E-NWS04**	M4	Clamping nuts: 2 pieces, toothed washer: 1 piece
E2E-S05□	**Y92E-NWS05**	M5	

Protective Stainless-steel Spiral Tube against Wire Breakage

A Spiral Tube is not provided with the Sensor. It must be ordered separately as required.

Applicable Sensors	Model	Applicable sensor outer diameter	Length
E2E-S04□	**Y92E-STS04-05**	M4	0.5 m
	Y92E-STS04-10		1 m
E2E-S05□	**Y92E-STS05-05**	M5	0.5 m
	Y92E-STS05-10		1 m

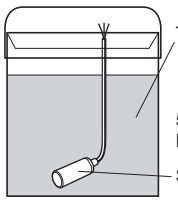
Ratings and Specifications

Item	Size	3 dia.		4 dia.		5.4 dia.	6.5 dia.		M4		M5	
	Type	Shielded	Unshielded	Shielded	Unshielded	Shielded	Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded
	Model	E2E-C03SR8□	E2E-C03N02□	E2E-C04S12□	E2E-C04N03□	E2E-C05S01□	E2E-C06S02□	E2E-C06N04□	E2E-S04SR8□	E2E-S04N02□	E2E-S05S12□	E2E-S05N03□
Sensing distance (at 23°C)		0.8 mm ±10%	2 mm ±10%	1.2 mm ±10%	3 mm ±10%	1 mm ±10%	2 mm ±10%	4 mm ±10%	0.8 mm ±10%	2 mm ±10%	1.2 mm ±10%	3 mm ±10%
Setting distance ✻1 (Sensing distance × 0.7)		0 to 0.56 mm	0 to 1.4 mm	0 to 0.84 mm	0 to 2.1 mm	0 to 0.7 mm	0 to 1.4 mm	0 to 2.8 mm	0 to 0.56 mm	0 to 1.4 mm	0 to 0.84 mm	0 to 2.1 mm
Differential travel		15% max. of sensing distance										
Detectable object		Ferrous metal (The sensing distance decreases with non-ferrous metal.)										
Standard sensing object		Iron, 3 × 3 × 1 mm	Iron, 6 × 6 × 1 mm	Iron, 4 × 4 × 1 mm	Iron, 9 × 9 × 1 mm	Iron, 5.4 × 5.4 × 1 mm	Iron, 6.5 × 6.5 × 1 mm	Iron, 12 × 12 × 1 mm	Iron, 3 × 3 × 1 mm	Iron, 6 × 6 × 1 mm	Iron, 4 × 4 × 1 mm	Iron, 9 × 9 × 1 mm
Response frequency ✻2		5 kHz	3.5 kHz	4 kHz	2 kHz	4 kHz	3 kHz	3 kHz	5 kHz	3.5 kHz	4 kHz	2 kHz
Power supply voltage ✻3		10 to 30 VDC (including 10% ripple (p-p))										
Current consumption		10 mA max.										
Control output ✻4	Load current	50 mA max.		100 mA max.			200 mA max. (60 to 70°C: 100 mA)		50 mA max.		100 mA max.	
	Residual voltage	2 V max. ✻5										
Indicators		Operation indicator: Yellow (complies with European standard EN60947-5-2) Lights during output.										
Operation mode		B1/B2: PNP open collector, C1/C2: NPN open collector B1/C1 models: NO, B2/C2 models: NC										
Protection circuits		Output reverse polarity protection, Power source circuit reverse polarity protection, Surge suppressor, Load short-circuit protection										
Ambient temperature range		Operation and storage: –25 to 70°C (with no icing or condensation)										
Ambient humidity range		Operation and storage: 35% to 95% (with no condensation)										
Temperature influence		±15% max. of sensing distance at 23°C within temperature range of –25 to 70°C										
Voltage influence		±2.5% max. of sensing distance at rated voltage in the rated voltage ±15% range										
Insulation resistance		50 MΩ min. (at 500 VDC) between current-carrying parts and case										
Dielectric strength		500 VAC, 50/60 Hz for 1 minute between current-carrying parts and case										
Vibration resistance		Destruction: 10 to 55 Hz, 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions										
Shock resistance		Destruction: 500 m/s² 10 times each in X, Y, and Z directions										
Degree of protection		IEC 60529 IP67, in-house standards: oil-resistant ✻6										
Connecting method	Pre-wired Models	Yes		Yes		Yes	Yes		Yes		Yes	
	M8 Pre-wired Connector Models	Yes		Yes		No	Yes		Yes		Yes	
	M8 Connector Models	No		Yes		No	Yes		No		Yes	
Weight (packed state)	Pre-wired Models	Approx. 25 g	Approx. 30 g	Approx. 35 g	Approx. 35 g	Approx. 35 g	Approx. 55 g	Approx. 55 g	Approx. 30 g	Approx. 30 g	Approx. 35 g	Approx. 40 g
	M8 Pre-wired Connector Models	Approx. 20 g	Approx. 20 g	Approx. 15 g	Approx. 20 g	---	Approx. 20 g	Approx. 25 g	Approx. 20 g	Approx. 20 g	Approx. 20 g	Approx. 20 g
	M8 Connector Models	---	---	Approx. 10 g	Approx. 10 g	---	Approx. 10 g	Approx. 15 g	---	---	Approx. 15 g	Approx. 15 g
Materials	Case	SUS303 (EN 1.4305) ✻7				Nickel-plated brass	SUS303 (EN 1.4305) ✻7					
	Sensing surface	Heat-resistant ABS										
	Clamping nuts ✻8	No							SUS430 (EN 1.4016) ✻7			
	Toothed washer ✻8	No							SUS303 (EN 1.4305) ✻7			
	Cable	Polyvinyl chloride (PVC)										
Accessories	Instruction manual	Yes										
	Model label	Yes										
	Mounting brackets	Sold separately										

✻1. Using within the set distance enables high-speed responsiveness and a more stable repeat accuracy.
✻2. The response frequency is an average value.
✻3. When used at a power of 12 V, the Sensor is less susceptible to the effects of internal self heat generation and therefore a more stable repeat accuracy can be obtained.
✻4. When the control output is 20 mA or less, the Sensor is less susceptible to the effects of internal self heat generation and therefore a more stable repeat accuracy can be obtained.
✻5. 3 dia., M4: load current 50 mA, cable length 2 m
4 dia., 5.4 dia., M5: load current 100 mA, cable length 2 m
6.5 dia.: load current 200 mA, cord length 2 m
✻6. Oil resistance in-house standard:
Performance with respect to water insoluble oil.
(Test at right)
✻7. Material name in EN standards.
✻8. Clamping nuts: 2 pieces, toothed washer: 1 piece
Note: 1. For details such as *Engineering Data*, *I/O Circuit Diagrams* and *Dimensions* refer to the *E2E Datasheet* (Cat.No.D115).

Oil resistance test

After the test time elapses, the characteristics below are checked for problems.
(1) Visual appearance (no damage that affects product characteristics)
(2) Operation check (ON/OFF)
(3) Insulation resistance (50 MΩ min. at 500 VDC)
(4) Dielectric strength (500 VAC, 1 min.)
(5) Water resistance (IP67)



MEMO

Smart Proximity Sensor with Separate Amplifier Enables Easily Making Highprecision Sensitivity Settings.



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

- Wide variety of Sensor Heads to select according to the application. Flexible cables are used between Preamplifiers and Amplifier Units of the Sensor Heads.
- High resistance to changes in ambient temperature. Temperature characteristics of 0.08%/°C ✻
- Make simple and reliable detection settings with micronlevel precision using the teaching function.
- Check the sensing excess gain level on the digital display.
- Support for high-precision positioning and screening with fine positioning to maximize variations.
- The Model for Sensor Communications Units support an EtherCAT Sensor Communications Unit or CC-Link Sensor Communications Unit.

✻ Refer to the *Ratings and Specifications*.

⚠ Refer to the *E2NC Series* (Cat.No.E473) for *Safety Precautions*.

Ordering Information

Sensors

Sensor Heads

Type	Appearance		Sensing Distances	Repeat accuracy	Cable specification	Model
Shielded	Cylindrical 	3 dia. × 18 mm	0.6 mm	1 µm	Free cutting ✻2	**E2NC-EDR6-F**
		5.4 dia. × 18 mm	1 mm	1 µm	Standard ✻2	**E2NC-ED01**
					Free cutting ✻2	**E2NC-ED01-F**
					With Protective Spiral Tube ✻1✻2	**E2NC-ED01-S**
		8 dia. × 22 mm	2 mm	2 µm	Standard ✻2	**E2NC-ED02**
					Free cutting ✻2	**E2NC-ED02-F**
					With Protective Spiral Tube ✻1✻2	**E2NC-ED02-S**
	Screw 	M10 × 22 mm	2 mm	2 µm	Standard ✻2	**E2NC-EM02**
					Free cutting ✻2	**E2NC-EM02-F**
					With Protective Spiral Tube ✻1✻2	**E2NC-EM02-S**
	Flat 	30 × 14 × 4.8 mm	5 mm	2 µm	Standard ✻2	**E2NC-EV05**
					Free cutting ✻2	**E2NC-EV05-F**
					With Protective Spiral Tube ✻1✻2	**E2NC-EV05-S**
Unshielded	Screw 	M18 × 46.3 mm	7 mm	5 µm	Standard ✻2	**E2NC-EM07M**
					Free cutting ✻2	**E2NC-EM07M-F**
					With Protective Spiral Tube ✻1✻2	**E2NC-EM07M-S**
Heatresistant	Screw 	M12 × 22 mm	2 mm	2 µm	Standard ✻2	**E2NC-EM02H**

✻1. Ask your OMRON representative for information on the Protective Spiral Tube.
✻2. Standard models and models with Protective Spiral Tube: The standard cable length is 2.6 m, Free-cut models: The standard cable length is 3.6 m. (Standard cable length is the length containing the preamplifier and connector.)

Amplifier Units

Type	Appearance	Connection method	Input/output	Model	
				NPN output	PNP output
Advanced models		Pre-wired (2 m)	2 outputs + 1 input	**E2NC-EA21 2M**	**E2NC-EA51 2M**
		Wire-saving Connectors	2 outputs	**E2NC-EA7TW**	**E2NC-EA9TW**
		Wire-saving Connectors	1 output + 1 input	**E2NC-EA7**	**E2NC-EA9**
Model for Sensor Communications Unit ✻		Connector for Sensor Communications Unit	---	**E2NC-EA0**	
		Connector for Sensor Communications Unit Pre-wired (2 m)	1 output	**E2NC-EA10 2M**	**E2NC-EA40 2M**

✻ A Sensor Communications Unit is required if you want to use the Amplifier Unit on a network.

Accessories (Sold Separately)

Wire-saving Connectors (Required for models for Wire-saving Connectors.)

Connectors are not provided with the Fiber Amplifier Unit and must be ordered separately. ✻Protective stickers are provided.

Type	Appearance	Cable length	No. of conductors	Model	Applicable Amplifier Units
Master Connector		2 m	4	**E3X-CN21**	**E2NC-EA7TW** **E2NC-EA9TW** **E2NC-EA7** **E2NC-EA9**
Slave Connector			2	**E3X-CN22**	

End Plate

Two End Plates (PFP-M) are provided with the Sensor Communications Unit.
End Plates (PFP-M and E39-EP1) are not provided with the Amplifier Unit. They must be ordered separately as required.

Appearance	Model	Quantity	Applicable Amplifier Units
	**PFP-M**	1	**E2NC-EA21** **E2NC-EA51** **E2NC-EA7□□** **E2NC-EA9□□** **E2NC-EA0**
	**E39-EP1**	1	**E2NC-EA10** **E2NC-EA40**

Related Products

Sensor Communications Units

Type	Appearance	Model
Sensor Communications Unit for EtherCAT		**E3NW-ECT**
Sensor Communications Unit for CC-Link		**E3NW-CCL**
Distributed Sensor Unit ✻		**E3NW-DS**

Refer to your OMRON website for details.
✻ The Distributed Sensor Unit can be connected to any of the Sensor Communications Units.

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CC-Link is a registered trademark of Mitsubishi Electric Corporation. The trademark is managed by the CC-Link Partner Association.

E2NC Series

Ratings and Specifications

Sensor Heads

Model		E2NC-EDR6-F	E2NC-ED01(-□)	E2NC-ED02(-□)	E2NC-EM02(-□)	E2NC-EV05(-□)	E2NC-EM07M(-□)	E2NC-EM02H
Item		**3 dia. × 18 mm**	**5.4 dia. × 18 mm**	**8 dia. × 22 mm**	**M10 × 22 mm**	**30 × 14 × 4.8 mm**	**M18 × 46.3 mm**	**M12 × 22 mm**
Sensing Distances		0.6 mm	1 mm	2 mm	2 mm	5 mm	7 mm	2 mm
Sensing object		Ferrous metal (The sensing distance decreases with non-ferrous metal.)						
Standard sensing object		5 × 5 mm	5 × 5 mm	10 × 10 mm	10 × 10 mm	15 × 15 mm	22 × 22 mm	20 × 20 mm
		Material: iron (t = 3, S50C)						
Repeatability ✻**1**		1 μm	1 μm	2 μm	2 μm	2 μm	5 μm	2 μm
Hysteresis distance		Variable						
Temperature characteristics ✻**2**	**Sensor Head**	0.3%/°C	0.08%/°C	0.08%/°C	0.08%/°C	0.04%/°C	0.08%/°C	0.2%/°C
	Preamplifier and Amplifier	0.08%/°C						
Ambient temperature range ✻**3**	**Operating**	-10°C to 60°C (with no icing or condensation)						-10°C to 200°C (with no icing or condensation) ✻4
	Storage	-10°C to 60°C (with no icing or condensation)	-20°C to 70°C (with no icing or condensation)					
Ambient humidity		Operating/storage: 35% to 85% (with no condensation)						
Insulation resistance		50 MΩ min. (at 500 VDC)						
Dielectric strength		1,000 VAC at 50/60 Hz for 1 min between current carry parts and case						
Vibration resistance (destruction)		10 to 55 Hz with a 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions						
Shock resistance (destruction)		500 m/s^2 for 3 times each in X, Y, and Z directions						
Degree of protection (Sensor Head)		IEC60529 IP67						IEC60529 IP60 ✻5
Weight (packed state) ✻**6**		Approx. 120 g						
Materials	**Sensor Head**	Brass	SUS	Brass	Brass	Zinc	Brass	Brass
	Sensing surface	Heat-resistant ABS						PEEK
	Clamping nut	---			Nickel-plated brass	---	Nickel-plated brass	
	Toothed washer	---			Zinc-plated iron	---	Zinc-plated iron	
	Preamplifier	PES						
Connection method ✻**7**		Connector (Standard models and models with Protective Spiral Tube: The standard cable length is 2.6 m, Free-cut models: The standard cable length is 3.6 m.)						
Accessories		Instruction Manual, Mounting Brackets						

✻**1.** Repeatability: The standard reference object at 1/2 of the measurement range.
✻**2.** Temperature characteristic: The standard reference object at 1/2 of the measurement range.
✻**3.** Do not expose the product to rapid temperature changes, otherwise the characteristics may be deteriorated.
✻**4.** Sensor Head only (The ambient temperature of other parts is -10 to 60°C)
✻**5.** Do not expose the product to steam. This product does not have any protection mean against water.
✻**6.** The protective spiral tube adds another 90 g to the weight.
✻**7.** Standard length is the length containing the preamplifier and connector.

Amplifier Unit

Item		Types	Advanced models			Model for Sensor Communications Unit ✻1	
		NPN output	E2NC-EA21	E2NC-EA7TW	E2NC-EA7	E2NC-EA10	E2NC-EA0
		PNP output	E2NC-EA51	E2NC-EA9TW	E2NC-EA9	E2NC-EA40	
		Connecting method	Pre-wired (2 m)	Wire-saving Connectors		Connector for Sensor Communications Unit Pre-wired (2 m)	Connector for Sensor Communications Unit
Input/ output	Output		2 outputs		1 output	1 output ✻2	2 outputs ✻3
	External inputs ✻4		1 input	---	1 input	---	---
Power supply voltage			10 to 30 VDC, including 10% ripple (p-p)			Refer to the communication unit specifications.	
Power consumption ✻5			At Power Supply Voltage of 24 VDC Normal mode: 1,080 mW max. (Current consumption at 45 mA max.), Eco function ON: 840 mW max. (Current consumption at 35 mA max.), Eco function LO: 960 mW max. (Current consumption at 40 mA max.)				
Control output			Load power supply voltage: 30 VDC max., open collector output Load current: Groups of 1 to 3 Amplifier Units: 100 mA max., Groups of 4 to 30 Amplifier Units: 20 mA max. Residual voltage: At load current of less than 10 mA: 1 V max. At load current of 10 to 100 mA: 2 V max. OFF current: 0.1 mA max.				Refer to the communication unit specifications.
Indicators			7-segment displays (Sub digital display: green, Main digital display: white) Display direction: Switchable between normal and reversed. OUT indicator (orange), NO/NC indicator (orange), ST indicator (blue) and OUT selection indicator (orange, only on models with 2 outputs)				
Protection circuits			Power supply reverse polarity protection, output short-circuit protection and output reverse polarity protection				Power supply reverse polarity protection, output short-circuit protection
Response time	Super-high-speed mode (SHS)		Operate or reset: 150 µs				
	High-speed mode (HS)		Operate or reset: 300 µs (default setting)				
	Standard mode (Stnd)		Operate or reset: 1 ms				
	GIGA power mode (GIGA)		Operate or reset: 4 ms				
Sensitivity adjustment			Smart Tuning (Fine Positioning, 2-point Tuning, Position Tuning, Percentage Tuning (-99% to 99%), Full Auto Tuning, or manual adjustment				
Maximum connectable Units			30 units			16 units	With E3NW-ECT: 30 units ✻6 With E3NW-CCL: 16 units
No. of Units for mutual interference prevention			Up to five units, intermittent oscillation method (response time = (No. of connected units + 1) x 15 ms) **Note:** The mutual interference prevention function is disabled if Super High Speed mode (SHS) is selected for detection function.				
Functions	Operation mode		NO (Normally Open)/NC (Normally closed)				
	Timer		Select from timer disabled, OFF-delay, ON-delay, one-shot, or ON-delay + OFF-delay timer: 1 to 9,999 ms				
	Differential detection		Single edge: Can be set to 250 µs, 500 µs, 1 ms, 10 ms, or 100 ms.				
	Zero reset		Provided Zero-reset is accompanied by a change of detection distance. After zero-reset, some threshold level may also cause a change of the indication by influence of other settings.				
	Resetting settings ✻7		Select from initial reset (factory defaults) or user reset (saved settings).				
	Eco mode		Select from OFF (digital display lit), Eco ON (digital display not lit), and Eco LO (digital display dimmed).				
	Bank switching		Select from banks 1 to 4.				
	Output 1		Select from normal detection mode, area detection mode or differential detection mode.				
	Output 2		Select from normal detection mode, alarm output mode, error output mode or disconnection detection output mode.		---	---	Select from normal detection mode, alarm output mode, error output mode or disconnection detection output mode.
	External input		Select from input OFF, 2-point Tuning, Percentage Tuning, Full Auto Tuning, Fine Positioning, zero reset, synchronization detection, or bank switching.	---	Select from input OFF, 2-point Tuning, Percentage Tuning, Full Auto Tuning, Fine Positioning, zero reset, synchronization detection, or bank switching.	---	---
	Hysteresis width		Select from standard setting or user setting. For a user setting, the hysteresis width can be set from 0 to 9,999.				
	Changing the displays		Threshold/ Detected intensity ratio, Peak receiving Detected amount/ Bottom Detected amount, Threshold bar display, Peak Detected amount/ Receiving Detected and CH number/ Detected amount			Threshold/ Detected intensity ratio, Peak receiving Detected amount/ Bottom Detected amount, Threshold bar display, Peak Detected amount/ Receiving Detected and CH number/ Detected amount	

Item		Types	Advanced models			Model for Sensor Communications Unit ✻1	
		NPN output	E2NC-EA21	E2NC-EA7TW	E2NC-EA7	E2NC-EA10	E2NC-EA0
		PNP output	E2NC-EA51	E2NC-EA9TW	E2NC-EA9	E2NC-EA40	
		Connecting method	Pre-wired (2 m)	Wire-saving Connectors		Connector for Sensor Communications Unit Pre-wired (2 m)	Connector for Sensor Communications Unit
Ambient temperature range			Operating: Groups of 1 or 2 Amplifier Units: -25 to 55°C, Groups of 3 to 10 Amplifier Units: -25 to 50°C, Groups of 11 to 16 Amplifier Units: -25 to 45°C, Groups of 17 to 30 Amplifier Units: -25 to 40°C Storage: -30 to 70°C (with no icing or condensation)			Operating: Groups of 1 or 2 Amplifier Units: 0 to 55°C, Groups of 3 to 10 Amplifier Units: 0 to 50°C, Groups of 11 to 16 Amplifier Units: 0 to 45°C, Groups of 17 to 30 Amplifier Units: 0 to 40°C Storage: -30 to 70°C (with no icing or condensation)	
Ambient humidity range			Operating and storage: 35 to 85% (with no condensation) within the surrounding air temperature range shown above				
Altitude			2,000 m max.				
Installation environment			Pollution degree 3				
Insulation resistance			20 MΩ min. (at 500 VDC)				
Dielectric strength			1,000 VAC at 50/60 Hz for 1 min				
Vibration resistance (destruction)			10 to 55 Hz with a 1.5-mm double amplitude for 2 hours each in X, Y, and Z directions				
Shock resistance (destruction)			500 m/s² for 3 times each in X, Y, and Z directions			150 m/s² for 3 times each in X,Y, and Z directions	
Weight (packed state/Sensor only)			Approx. 115 g/ Approx. 75 g	Approx. 60 g/ Approx. 20 g	Approx. 60 g/ Approx. 20 g	Approx. 95 g/ Approx. 45 g	Approx. 65 g/ Approx. 25 g
Materials	Case		Polycarbonate (PC)				
	Cover		Polycarbonate (PC)				
	Cable		PVC				
Accessories			Instruction Manual				

✻**1.** The communication unit is compatible with EtherCAT type E3NW-ECT and E3NW-CCL of CC-Link. This unit is not usable with E3NW-CRT.
✻**2.** Channel 1 of each amplifier unit is output as the output drawn by the cord.
✻**3.** Output signals from two sensors are assigned to the PLC via the network.
Various settings can be changed and detected values can be read by operating the PLC via the network.
✻**4.** The following details apply to the input.

	Contact input (relay or switch)	Non-contact input (transistor)	Input time ✻4-1
NPN output E2NC-EA21 E2NC-EA7	ON: Shorted to 0 V (Sourcing current: 1 mA max.). OFF: Open or shorted to Vcc.	ON: 1.5 V max. (Sourcing current: 1 mA max.) OFF: Vcc - 1.5 V to Vcc (Leakage current: 0.1 mA max.)	ON: 9 ms min. OFF: 20 ms min.
PNP output E2NC-EA51 E2NC-EA9	ON: Shorted to Vcc (Sinking current: 3 mA max.). OFF: Open or shorted to 0 V.	ON: Vcc - 1.5 V to Vcc (Sinking current: 3mA max.) OFF: 1.5 V max. (Leakage current: 0.1 mA max.)	

✻4-1. Input time is 25 ms (ON)/(OFF) only when (in tUnE) or (in PtUn) input is selected.

✻**5.** At Power supply voltage of 10 to 30 VDC
Normal mode: 1,110 mW max. (Current consumption: 37 mA max. at 30 VDC, 76 mA max. at 10 VDC)
Eco function ON: 900 mW max. (Current consumption: 30 mA max. at 30 VDC, 48 mA max. at 10 VDC)
Eco function LO: 1,020 mW max. (Current consumption: 34 mA max. at 30 VDC, 58 mA max. at 10 VDC)
✻**6.** When connected to an OMRON NJ-series Controller. For details, refer to the communication unit manual.
✻**7.** The bank is not reset by the user reset function or saved by the user save function.
Note: For details such as *Engineering Data*, *I/O Circuit Diagrams* and *Dimensions* refer to the *E2NC Datasheet* (Cat.No.E473).

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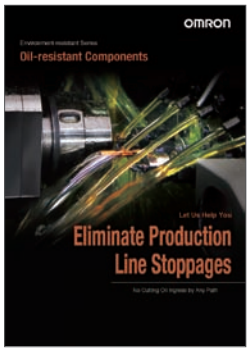
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