OMRON

Small-diameter Proximity Sensor E2E

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 Safety Precautions on page 10.

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

E2E (Small Diameter) Model Number Legend

E2E	- 1 2 3 4 - 5 -	67-8	
No.	Classification	Code	Meaning
	Case motorial and shape	С	Cylindrical
0	Case material and shape	S	SUS, threaded
		03	Outer diameter 3 mm
۲	Sizo	04	Outer diameter 4 mm
2	Size	05	Threaded: Outer diameter 5 mm, Cylindrical: Outer diameter 5.4 mm
		06	Outer diameter 6.5 mm
	Shielding	S	Shielded Models
3	Sillelulity	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
		WC	PVC Pre-wired Model
5	Connecting method	MC	M8 Connector, 3-pin
		CJ	M8 Pre-wired Connector, 3-pin
	Output aposifications	В	DC 3-wire PNP open-collector output
0	Output specifications	С	DC 3-wire NPN open-collector output
	Operation mode	1	Normally open (NO)
()	Operation mode	2	Normally closed (NC)
	Oakla anasifiastiana	Blank	Standard PVC cable
(8)	Cable specifications	R	Robot (bending-resistant) PVC cable
		Blank	Connector Models
9	Cable length	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.

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Ordering Information

Sensors

Shielded Models [Refer to Dimensions on page 12.]

Appear-	Sensing	Connecting	Cable	Operation	Wire color /	Mo	del
ance	distance	method	specifications	mode	pin arrangement	NPN output	PNP output
		Pre-wired Models	PVC	NO	Brown: +V	E2E-C03SR8-WC-C1 2M *1	E2E-C03SR8-WC-B1 2M *1
0 dia		(2 m)	(oil-resistant)	NC	Blue: 0 V	E2E-C03SR8-WC-C2 2M *1	E2E-C03SR8-WC-B2 2M *1
3 dia.	0.8 mm	M8 Pre-wired	PVC	NO	1: +V,	E2E-C03SR8-CJ-C1 0.3M	E2E-C03SR8-CJ-B1 0.3M
		Models (0.3 m)	(oil-resistant)	NC	4: Control output	E2E-C03SR8-CJ-C2 0.3M	E2E-C03SR8-CJ-B2 0.3M
		Pre-wired Models	PVC	NO	Brown: +V	E2E-C04S12-WC-C1 2M *1 *2 *3	E2E-C04S12-WC-B1 2M *1 *2 *3
		(2 m)	(oil-resistant)	NC	Blue: 0 V	E2E-C04S12-WC-C2 2M *1 *2 *3	E2E-C04S12-WC-B2 2M *1 *2 *3
4 dio		M8 Pre-wired	PVC	NO		NPN output PNP output E2E-C03SR8-WC-C1 2M *1 E2E-C03SR8-WC-B1 2M *1 E2E-C03SR8-WC-C2 2M *1 E2E-C03SR8-WC-B2 2M *1 E2E-C03SR8-CJ-C1 0.3M E2E-C03SR8-CJ-B1 0.3M E2E-C03SR8-CJ-C2 0.3M E2E-C03SR8-CJ-B1 0.3M E2E-C04S12-WC-C1 2M *1 *2 *3 E2E-C04S12-WC-B1 2M *1 *2 *3 E2E-C04S12-WC-C2 2M *1 *2 *3 E2E-C04S12-WC-B1 2M *1 *2 *3 E2E-C04S12-CJ-C1 0.3M E2E-C04S12-CJ-B1 0.3M E2E-C04S12-CJ-C2 0.3M E2E-C04S12-CJ-B1 0.3M E2E-C04S12-CJ-C2 0.3M E2E-C04S12-CJ-B1 0.3M E2E-C04S12-MC-C1 E2E-C04S12-MC-B1 E2E-C04S12-MC-C2 E2E-C04S12-MC-B1 E2E-C04S12-MC-C2 E2E-C04S12-MC-B1 E2E-C05S01-WC-C1 2M *1 *2 *3 E2E-C05S01-WC-B1 2M *1 *2 *3 E2E-C06S02-WC-C1 2M *1 *2 *3 E2E-C06S02-WC-B1 2M *1 *2 *3 E2E-C06S02-WC-C2 2M *1 *2 *3 E2E-C06S02-WC-B2 2M *1 *2 *3 E2E-C06S02-MC-C1 E2E-C06S02-WC-B1 2M *1 *2 *3 E2E-C06S02-MC-C1 E2E-C06S02-MC-B1 E2E-C06S02-MC-C1 E2E-C06S02-MC-B1 E2E-C06S02-MC-C2 E2E-C06S02-MC-B1 E2E-C06S02-MC-C2 E2E-S04SR8-WC-B1 2M *1	
4 ula.	1.2 mm	Models (0.3 m)	(oil-resistant)	NC	1: +V,	E2E-C04S12-CJ-C2 0.3M	E2E-C04S12-CJ-B2 0.3M
		M8 Connector	PVC (oil-resistant)NC3: 0 V, 4: Control outputE2E-ielsPVC (oil-resistant)NOBrown: +V Black: OutputE2E-i)PVC (oil-resistant)NO1: +V, 3: 0 V, 4: Control outputE2E-i)PVC (oil-resistant)NO1: +V, 3: 0 V, 4: Control outputE2E-inNO1: +V, 4: Control outputE2E-inNOBrown: +V Black: OutputE2E-inNO1: +V, Black: OutputE2E-inNOBrown: +V Black: OutputE2E-inNO1: +V, Black: OutputE2E-inNOBrown: +V Black: Outpu	E2E-C04S12-MC-C1	E2E-C04S12-MC-B1		
		Models		NC		E2E-C04S12-MC-C2	E2E-C04S12-MC-B2
E 4 dia		Pre-wired Models	PVC	NO	Brown: +V	E2E-C05S01-WC-C1 2M *1 *2 *3	E2E-C05S01-WC-B1 2M *1 *2 *3
5.4 uia.	l mm	(2 m)	(oil-resistant)	NC	Blue: 0 V	E2E-C05S01-WC-C2 2M *1 *2	E2E-C05S01-WC-B2 2M *1 *2
		Pre-wired Models	PVC (oil-resistant)	NO	Brown: +V	E2E-C06S02-WC-C1 2M *1 *2 *3	E2E-C06S02-WC-B1 2M *1 *2 *3
6.5 dia.		(2 m)		NC	Blue: 0 V	E2E-C06S02-WC-C2 2M *1 *2 *3	E2E-C06S02-WC-B2 2M *1 *2 *3
		M8 Pre-wired	PVC	NO	1: +V, 3: 0 V, 4: Control output	E2E-C06S02-CJ-C1 0.3M	E2E-C06S02-CJ-B1 0.3M
6.5 uia.	 a. 2 mm 0.8 mm P; R P; P; R P; R P; R R P; R R	Models (0.3 m)	(oil-resistant)	NC		E2E-C06S02-CJ-C2 0.3M	E2E-C06S02-CJ-B2 0.3M
3 dia. 0.4 4 dia. 1. 5.4 dia. 1 6.5 dia. 2 M4 0.4 M5 1.		M8 Connector		NO		E2E-C06S02-MC-C1	E2E-C06S02-MC-B1
		Models		NC		E2E-C06S02-MC-C2	E2E-C06S02-MC-B2
		Pre-wired Models	PVC	NO	Brown: +V	E2E-S04SR8-WC-C1 2M *1	E2E-S04SR8-WC-B1 2M *1
M4	0.0	(2 m)	(oil-resistant)	NC	Blue: 0 V	E2E-S04SR8-WC-C2 2M *1	E2E-S04SR8-WC-B2 2M *1
1014	0.8 mm	M8 Pre-wired	PVC	NO	1: +V,	E2E-S04SR8-CJ-C1 0.3M	E2E-S04SR8-CJ-B1 0.3M
		Models (0.3 m)	(oil-resistant)	NC	4: Control output	E2E-S04SR8-CJ-C2 0.3M	E2E-S04SR8-CJ-B2 0.3M
		Pre-wired Models	PVC	NO	Brown: +V	E2E-S05S12-WC-C1 2M *1 *2 *3	E2E-S05S12-WC-B1 2M *1 *2 *3
		(2 m)	(oil-resistant)	NC	Blue: 0 V	E2E-S05S12-WC-C2 2M *1 *2 *3	E2E-S05S12-WC-B2 2M *1 *2 *3
МБ		M8 Pre-wired	PVC	NO		E2E-S05S12-CJ-C1 0.3M	E2E-S05S12-CJ-B1 0.3M
CIVI	1.2 mm	Models (0.3 m)	(oil-resistant)	NC	1: +V,	E2E-S05S12-CJ-C2 0.3M	E2E-S05S12-CJ-B2 0.3M
		M8 Connector		NO	4: Control output	E2E-S05S12-MC-C1	E2E-S05S12-MC-B1
		Models		NC		E2E-S05S12-MC-C2	E2E-S05S12-MC-B2

*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 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 2M)

Appear-	Sensing	Connecting	Cable	Operation	Wire color /	Ma	del
ance	distance	method	specifications	mode	pin arrangement	NPN output	PNP output
		Pre-wired Models	PVC	NO	Brown: +V	E2E-C03N02-WC-C1 2M *1	E2E-C03N02-WC-B1 2M *1
2 dia	0	(2 m)	(oil-resistant)	NC	Blue: 0 V	E2E-C03N02-WC-C2 2M *1	E2E-C03N02-WC-B2 2M *1
5 ula.	2 mm	M8 Pre-wired	PVC	NO	1: +V,	E2E-C03N02-CJ-C1 0.3M	E2E-C03N02-CJ-B1 0.3M
		Models (0.3 m)	(oil-resistant)	NC	4: Control output	E2E-C03N02-CJ-C2 0.3M	E2E-C03N02-CJ-B2 0.3M
		Pre-wired Models	PVC	NO	Brown: +V	E2E-C04N03-WC-C1 2M *1 *2	E2E-C04N03-WC-B1 2M *1 *2
		(2 m)	(oil-resistant)	NC	Blue: 0 V	E2E-C04N03-WC-C2 2M *1 *2	E2E-C04N03-WC-B2 2M *1 *2
4 dia	0	M8 Pre-wired	PVC	NO		E2E-C04N03-CJ-C1 0.3M	E2E-C04N03-CJ-B1 0.3M
4 uia.	3 mm	Models (0.3 m)	(oil-resistant)	NC	1: +V,	E2E-C04N03-CJ-C2 0.3M	E2E-C04N03-CJ-B2 0.3M
		M8 Connector		NO	4: Control output	E2E-C04N03-MC-C1	E2E-C04N03-MC-B1
		Models		NC		E2E-C04N03-MC-C2	E2E-C04N03-MC-B2
		Pre-wired Models	PVC	NO	Brown: +V	E2E-C06N04-WC-C1 2M *1 *2	E2E-C06N04-WC-B1 2M *1 *2
6.5 dia.		(2 m)	(oil-resistant)	NC	Blue: 0 V	E2E-C06N04-WC-C2 2M *1 *2	E2E-C06N04-WC-B2 2M *1 *2
	4	M8 Pre-wired	PVC	NO	Brown: +V Black: Output Blue: 0 V E2E-C03N02-WC-C1 2M *1 E2E-C03N02-WC 1: +V, 3: 0 V, 4: Control output E2E-C03N02-CJ-C1 0.3M E2E-C03N02-CJ Brown: +V Black: Output Blue: 0 V E2E-C04N03-WC-C2 2M *1 *2 E2E-C04N03-WC 1: +V, 3: 0 V, 4: Control output E2E-C04N03-WC-C1 2M *1 *2 E2E-C04N03-WC Brown: +V Black: Output E2E-C04N03-WC-C2 2M *1 *2 E2E-C04N03-WC 1: +V, 3: 0 V, 4: Control output E2E-C04N03-CJ-C1 0.3M E2E-C04N03-CJ Brown: +V Black: Output E2E-C04N03-MC-C1 E2E-C04N03-MC Brown: +V Black: Output E2E-C06N04-WC-C1 2M *1 *2 E2E-C06N04-WC Brown: +V Black: Output E2E-C06N04-WC-C2 2M *1 *2 E2E-C06N04-WC 1: +V, 3: 0 V, 4: Control output E2E-C06N04-CJ-C2 0.3M E2E-C06N04-CJ Brown: +V Black: Output Blue: 0 V E2E-C06N04-MC-C1 E2E-C06N04-MC Brown: +V Black: Output E2E-S04N02-WC-C2 2M *1 E2E-S04N02-WC Brown: +V Black: Output E2E-S04N02-WC-C2 2M *1 E2E-S04N02-CJ. Brown: +V Black: Output E2E-S04N02-CJ-C1 0.3M E2E-S04N02-CJ. Brown: +V Black: Output E2E-S05N03-WC-C2 2M *1 E2E-S05N03-WC-CJ.	E2E-C06N04-CJ-C1 0.3M	E2E-C06N04-CJ-B1 0.3M
0.5 UIA.	4 mm	Models (0.3 m)	(oil-resistant)	NC		E2E-C06N04-CJ-B2 0.3M	
		M8 Connector		NO	4: Control output	E2E-C06N04-MC-C1	E2E-C06N04-MC-B1
		Models		NC		E2E-C06N04-MC-C2	E2E-C06N04-MC-B2
		Pre-wired Models	PVC	NO	Brown: +V	E2E-S04N02-WC-C1 2M *1	E2E-S04N02-WC-B1 2M *1
N44		(2 m)	(oil-resistant)	NC	Blue: 0 V	E2E-S04N02-WC-C2 2M *1	E2E-S04N02-WC-B2 2M *1
1014	2 mm	M8 Pre-wired	PVC	NO	1: +V,	E2E-S04N02-CJ-C1 0.3M	E2E-S04N02-CJ-B1 0.3M
		Models (0.3 m)	(oil-resistant)	NC	4: Control output	E2E-S04N02-CJ-C2 0.3M	E2E-S04N02-CJ-B2 0.3M
		Pre-wired Models	PVC	NO	Brown: +V	E2E-S05N03-WC-C1 2M *1 *2	E2E-S05N03-WC-B1 2M *1 *2
		(2 m)	(oil-resistant)	NC	Blue: 0 V	E2E-S05N03-WC-C2 2M *1 *2	E2E-S05N03-WC-B2 2M *1 *2
ME		M8 Pre-wired	PVC	NO		E2E-S05N03-CJ-C1 0.3M	E2E-S05N03-CJ-B1 0.3M
CIVI	3 mm	Models (0.3 m)	(oil-resistant)	NC	1: +V,	E2E-S05N03-CJ-C2 0.3M	E2E-S05N03-CJ-B2 0.3M
		M8 Connector		NO	4: Control output	E2E-S05N03-MC-C1	E2E-S05N03-MC-B1
		Models		NC		E2E-S05N03-MC-C2	E2E-S05N03-MC-B2

Unshielded Models [Refer to Dimensions on page 13.]

*1. Models with 5-m cable length are also available with "5M" suffix. (Example: E2E-C04N03-WC-C1 5M)
*2. Models with robot (bending-resistant) cable are also available with "-R" in the model number. (Example: E2E-C04N03-WC-C1-R 2M)

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.

[Refer to Dimensions on page 16.]

Size	Cable	Number of cable	Cable length L (m)	Straight	Right-angle	
3120	specifications	wires (conductors)		Model		
MO	Robot (bending- resistant) cable	2	2	XS3F-M321-302-R	XS3F-M322-302-R	
M8		resistant) cable 3 5		5	XS3F-M321-305-R	XS3F-M322-305-R

Mounting Brackets

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

[Refer to Dimensions on page 15.]

Applicable Sensors	Appearance	Model	Quantity	Remarks
E2E-C03	El)	Y92E-SC03	1	Mounting block for 3 dia., M3-20 Hexagon socket head cap screws: 2pieces, M3 \times P0.5 Hexagon nuts: 2pieces, Washers: 2pieces
E2E-C04	A A A A A A A A A A A A A A A A A A A	Y92E-SC04	1	Mounting block for 4 dia., M3-20 Hexagon socket head cap screws: 2pieces, M3 \times P0.5 Hexagon nuts: 2pieces, Washers: 2pieces
E2E-C05	A A	Y92E-SC05	1	Mounting block for 5.4 dia., M3-20 Hexagon socket head cap screws: 2 pieces, M3 \times 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□	0	Y92E-SS04	1	L-shaped Mounting Bracket for M4 screws
E2E-S05	0	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 puter 2 pieces toothad weaker: 1 piece
E2E-S05	Y92E-NWS05	M5	Clamping huis. 2 pieces, tootned washer. 1 piece

Protective Stainless-steel Spiral Tube against Wire Breakage

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

[Refer to Dimensions on page 16.]

Applicable Sensors	Model	Applicable sensor outer diameter	Length
	Y92E-STS04-05	M4	0.5 m
E2E-304	Y92E-STS04-10	1014	1 m
	Y92E-STS05-05	M5	0.5 m
L2L-305L	Y92E-STS05-10	CIVI	1 m

	Sizo	30	lia	1.0	lia	5 / dia	65	dia	Δ	14	n.	15	
	Jize	Shielded	llachielded	Shielded	llachielded	Shielded	Chielded	ula. Unobioldod	Shielded	Unahioldad	Shielded	Unchielded	
	Type	F2E-	E2E-	F2E-	E2E-	F2E-	F2E-	E2E-	F2E-	E2E-	F2E-	F2E-	
Item	Model			C04S12	C04N03	C05S01	C06S02		S04SR8	S04N02	S05S12	S05N03	
Sensing (at 23°C	distance)	0.8 mm ±10%	2 mm ±10%	1.2 mm ±10%	3 mm ±10%	1mm ±10%	2 mm ±10%	4 mm ±10%	0.8 mm ±10%	2 mm ±10%	1.2 mm ±10%	3 mm ±10%	
Setting (distance *1	0 to 0.56	0 to 1.4	0 to 0.84	0 to 2.1	0 to 0.7	0 to 1.4	0 to 2.8	0 to 0.56	0 to 1.4	0 to 0.84	0 to 2.1	
Differen	tial travel	15% max (of sensing dis	tance									
Detectal	ble object	Ferrous metal (The sensing distance decreases with non-ferrous metal Refer to Engineering Data on page 7.)											
Standar	d sensing	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	Iron, 6.5×6.5 × 1 mm	Iron, 12×12 × 1 mm	Iron, 3×3 × 1 mm	Iron, 6×6	Iron, 4×4 × 1 mm	Iron, 9×9 × 1 mm	
Respons	e 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 su	pply voltage *3	10 to 30 VE	C (including	10% ripple (D-D))				•				
Current	consumption	10 mA max		FF - V	F F77								
Control	Load current	50 mA max		100 mA ma	x.		200 mA ma (60 to 70°C	x. : 100 mA)	50 mA max	ς.	100 mA ma	IX.	
output *4	Residual	2 V max. *5	2 V max. *5										
Indicato	rs	Operation indicator: Yellow (complies with European standard EN60947-5-2) Lights during output.											
Operatio	on mode	B1/B2: PNF	open collec	tor, C1/C2: N	IPN open col	lector							
operation		B1/C1 mod	els: NO, B2/0	C2 models: N	IC								
Protecti	on circuits	Output reve	erse polarity p	protection, Po	ower source	circuit revers	e polarity pro	tection, Surg	e suppresso	r, Load short	-circuit prote	ction	
tempera	ture range	Operation a	and storage:	–25 to 70°C (with no icing	or condensa	ation)						
Ambient	t y range	Operation a	and storage:	35% to 95%	(with no cond	lensation)							
Tempera influenc	ature e	±15% max.	of sensing d	istance at 23	°C within ten	nperature rar	nge of -25 to	70°C					
Voltage	influence	±2.5% max	. of sensing o	distance at ra	ted voltage i	n the rated v	oltage ±15%	range					
Insulatio	on resistance	50 MΩ min.	. (at 500 VDC	c) between c	urrent-carryin	g parts and	case						
Dielectri	ic strength	500 VAC, 5	0/60 Hz for 1	minute betw	/een current-	carrying part	s and case	(
Shock r	esistance	Destruction	: 10 10 55 Hz	, 1.5-mm uou) times each	in X Y and Z	7 directions		, and z unec	10115				
Degree	of protection	JEC 60529	IP67 in-house	se standards	oil-resistant	*6							
Dogioo	Pre-wired												
Con	Models	Yes Yes				res	res		res		res		
necting method	Connector Models	Yes		Yes		No	Yes		Yes		Yes		
	M8 Connector Models	No		Yes		No	Yes		No		Yes		
	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	
Weight (packed state)	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	
	Case	SUS303 (E	N 1.4305) *7		1	Nickel- plated brass	SUS303 (E	N 1.4305) *7		1		<u> </u>	
Materi-	Sensing surface	Heat-resista	ant ABS										
als	Clamping nuts *8	No							SUS430 (E	N 1.4016) *7			
	Toothed washer *8	No							SUS303 (E	N 1.4305) *7			
	Cable	Polyvinyl ch	nloride (PVC)										
A	Instruction manual	Yes											
sories	Model label	Yes											
	Mounting brackets	Sold separa	ately										

*1. Using within the set distance enables high-speed responsiveness and a more stable repeat accuracy.

*2. The response frequency is an average value.

*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

Oil resistance test

After the test time elapses, the characteristics below are checked for problems.

Test oil: Water insoluble oil

50°C × 250 hours

Depth 10 cm

Sensor

5

Velocite No. 3

(manufactured by Exxon Mobil)

- (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)

^{*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.

Engineering Data (Reference Value)

Sensing Area





Unshielded Models



Note: The workpiece is a standard sensing object. For details, refer to *Ratings and Specifications* on page 6.

Influence of Sensing Object Size and Material

Shielded Models



Side length of sensing object: d (mm)



Unshielded Models E2E-C03N02
/E2E-S04N02



1. Distance X (mm) 1.4 1.2 Iron t = 1 mm 1.0 ₩ 0.8 Stainless stee (SUS304) 0.6 0.4 Brass Aluminum 0.2 Copper 0 10 15 20 25 30 35 Side length of sensing object: d (mm)

E2E-C04S12 / E2E-S05S12

E2E-C05S01





E2E-C06N04



Distance - Horizontal Repeat Accuracy

Shielded Models



Distance X (mm) _--12 VDC 1 8 24 VDC 1.6 1.2 .5 × 1 mm ON point repeat accuracy 0.8 X 品 0.6 0.4 0.2 0 0.05 0.1 0.15 0.2

E2E-C04S12 / E2E-S05S12



E2E-C05S01



E2E-C06S02

Unshielded Models



E2E-C03N02 / E2E-S04N02 1 ----12 VDC 24 VDC



E2E-C04N03 /E2E-S05N03 (mm) 12 VDC 24 VDC Distance X (1. □9 × 1 mm ON point repeat accuracy 222 х ¢ 0.5 0.2 0 0.1 0.4 0.5 0.3 Repeat accuracy (mm)

E2E-C06N04



Sensing distance vs. repeat accuracy graphs

By using within the sensor installation distance, the repeat accuracy stabilizes.

This data is reference data based on a standard sensing object, and is not a guarantee of performance.

The repeat accuracy varies depending on the effects of temperature, the material and surface condition of the sensing object, and other conditions.

Minimum measurement gap

Model	Minimum gap (mm)
E2E-C03S/S04S	0.3
E2E-C03N/S04N	0.6
E2E-C04S/S05S	0.4
E2E-C04N/S05N	0.9
E2E-C05S	0.3
E2E-C06S	0.6
E2E-C06N	1.2

Note: Measured at constant temperature of 23°C using an iron sensing object of size at least as large as standard sensing object (see right).



I/O Circuit Diagrams



Connection to I/O Connector (Connector Models, Pre-wired Connector Models)



Safety Precautions

Refer to Warranty and Limitations of Liability.

\Lambda WARNING

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



<u> CAUTION</u>

• Do not short the load. Explosion or burning may result.

 Do not supply power to the Sensor with no load, otherwise Sensor may be damaged.



Precautions for Correct Use

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

Design

Influence of Surrounding Metal

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

(Shielded Models)

Size

Item L

m

d

D

n

с

3 dia

0

З

3

0

8

0

0

10

0



0

8

0

				(21110.111
•	4 dia.	5.4 dia.	6.5 dia.	M4	M5
	0	0	0	0	0
	5	3	6	3	5
	4	5.4	6.5	4	5

0

12

2

(Unshielded Models)

(Unit: mm)

Size Item	3 dia.	4 dia.	6.5 dia.	M4	M5
L	6	6	12	6	6
m	6	9	8	6	9
d	9	12	24	9	12
D	6	6	12	6	6
n	16	20	24	16	20

If mounted in a surrounding non-magnetic metal such as aluminum or copper, the sensing distance may shorten by about 40 to 50%. If used in a recessed installation, take into consideration the effects of the material on the sensing distance.

0

10

0

Mutual Interference

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



Mutual Interference

Mutual Interference (Unit: mm												
	Size	3	dia.	4	dia.	5.4 dia.	ia. 6.5 dia.		M4		M5	
Item		Shielded	Unshielded	Shielded	Unshielded	Shielded	Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded
Α		20	80	20	80	20	20	80	20	80	20	80
В*		15	60	15	60	15	15	60	15	60	15	60

* Values when the connector size is not taken into consideration.



0

8

0

Mounting

Tightening Force

$\langle \text{Mounting threaded models (E2E-S} \rangle \rangle$

Do not tighten the nut with excessive force.

A washer must be used with the nut.



Note: 1. Only use the provided nut and toothed washer. Risk of changes in the sensing distance and damage if a different material is used. If you lose the nut or washer, purchase an optional nut

set. 2. The following strengths assume washers are being used.

Size	N	14	M5		
Item	Shielded Unshielded		Shielded	Unshielded	
Tr	0.8	N∙m	1 N·m		

Note: Only use the provided nut.

(Mounting unthreaded cylindrical models (E2E-CD))



	Size	3 dia.		4 (dia.	5.4 dia.	6.5 dia.	
Item		Shielded	Unshielded	Shielded	Unshielded	Shielded	Shielded	Unshielded
L*		9 to 21 mm	15 to 27 mm	8 to 21 mm	14 to 27 mm	8 to 21 mm	12 to 26 mm	
Tora	Ie	0.2 N·m max 0.4 N·m max				ах		

* Excluding the operation indicator area.

When using a set screw, tighten it to the torque indicated in the table above. Using a set screw in any area other than specified by the above dimensions may result in fire or other occurrences due to damage to the internal circuit.

Oil resistance

In accordance with our oil resistance standard, we test oil resistance based on water insoluble oil (complies with test oil based on JIS C0920, Appendix 1).

When water soluble cutting oil is used, durability varies due to the dilution ratio and other factors.

Please test oil resistance using the actual oil that will be used.

• High-speed responsiveness

To obtain a better high-speed response, it is recommended that you use the sensor at about 50% of the possible sensing distance. A high-speed response may not be obtained with some sensing object surfaces, materials, and shapes, or when the sensing distance is greater than the set distance.

For the effects of materials, refer to *Engineering Data* on page 7.

Protective Stainless-steel Spiral Tube

The spiral tube is in a fixed state and is intended to provide protection against wire breakage due to shock from tools or other objects.

Repeated cable bending tolerance

If you require repeated bending tolerance, use a sensor with a robot (bending-resistant) cable or use a Connector Model together with a connector cable that is specified for bending tolerance. (Example: XS3F-M321-□□-R)

Refer to Sensor I/O Connector on page 5.

Block type mounting accessories

Due to differences in dimensional tolerances, these cannot be used with older small diameter proximity sensors. (E2E-CR6□, E2E-CR8□, E2E-C1□)

Bending radius for mounting

If the cable is bent from its base, the resin on the surface of the cable may peel off, however, this will not affect the protective structure or sensing performance.

Avoid bending the cable at less than 10 mm from the base. When bending the cable, refer to the table below.

Cable diameter	Bending radius*			
3 dia., M4	7 mm			
4 dia., 5.4 dia., M5	9 mm			
6.5 dia.	12 mm			



* For a robot (bending-resistant) cable, multiply the bending radius in the above table by 1.7.

Total Cable Length

If you extend the cable length, use a conductor cross section of 0.14 mm² or greater and do not exceed a total length of 200 m for standard cables or robot (bending-resistant) cables. It is assumed that an independent metal conduit will be used.

E2E

Dimensions

Sensors

Pre-wired Models M	ounting Hole Din	nensions						
(Shielded)	(-)	Dimension	3 dia.	4 dia.	5.4 dia.	6.5 dia.	M4	M5
	↓ → F →	F (mm)	3.3 ^{+0.5}	4.2 ^{+0.5}	5.7 ^{+0.5}	7 ^{+0.5}	4.5 ^{+0.5} ₀	5.5 ^{+0.5}
E2E-C03SR8-WC-			E2E-C04S	12-WC-□□]			
3.0.1 dia. 18 18 0peration indicators	insulated round cable with 3 ross section: 0.09 mm², neter: 0.7 mm), Standard le (yellow) 4 × 90°	3 conductors ngth: 2 m	4 0.1 dia. * 2.9-dia 0.14 m Model with 3	25.1 18.5 Deperation indica . vinyl-insulated m ² , Insulator dia with robot (benc conductors (Cor	tors (yellow) 4 × round cable with ameter: 0.8 mm) ling-resistant) ca dductor cross se mm). Chadra	90° h 3 conductors I, Standard leng able: 2.9-dia. vir ction: 0.15 mm ²	(Conductor cros th: 2 m yl-insulated rou	ss section: nd cable
		F	2E-C06S0		5 mm), Standar	a length: 2 m		
 5.4.0.1 dia. 5.4.0.1 dia. 5.4.0.1 dia. 5.4.0.1 dia. 5.4.0.1 dia. 18.5	uctors (Conductor cross sec rd length: 2 m dia. vinyl-insulated round ca 5 mm ² , 2 m	stion:	6.5 ⁰ .1 dia.	24.1 24.1 24.1 24.1 0peration indicat a. vinyl-insulated mm ² , Insulator lel with robot (be 3 conductors (C 1 conductors)	ors (yellow) 4 x diameter: 0.85 r inding-resistant) conductor cross 2 mm) Standa	90° th 3 conductors mm), Standard I cable: 4-dia. vii section: 0.3 mm	(Conductor cros ength: 2 m nyl-insulated rou r ² ,	ss section: ind cable
	2 111	F	2E-905912		.2 mm), Stanua	ia lengui. 2 m		
8.5 dia.	yl-insulated round cable with cross section: 0.09 mm ² , ameter: 0.7 mm), Standard * Threaded sect the Protective Spiral Tube (or Mounting with and a toothed possible here.	h 3 conductors length: 2 m ion to secure Stainless-steel tional). clamping nuts washer is not	10 dia.	25.1- - 18.5	4 Conc Insu Mod (Corr Insu Vinyl Ation indicators washer	dia. vinyl-insulat luctors (Conduc lator diameter: (el with robot (el -insulated roun- insulated roun- iductor cross se lator diameter: " (yellow) 4 × 90°	ed round cable v tor cross section 0.8 mm), Standa anding-resistant) d cable with 3 cc totion: 0.15 mm ² 1.05 mm), Stand * Threaded sec the Protective ' Spiral Tube (c Mounting with and a toothec possible here	with 3 n: 0.14 mm ² , rd length: 2 m cable: 2.9-dia. nductors i, lard length: 2 m ction to secure Stainless-steel optional). n clamping nuts 4 washer is not
		neided)						
E2E-C03SR8-CJ-			E2E-C04S	12-CJ-□□				
3.0.1 dia. -27.1	tia. vinyl-insulated round cal dard length: 300 mm $I_{\rm R} {}^{\rm H}{}_{\rm R} {}^{\rm H}{}_{\rm R} {}^{\rm H}$ $() 4 \times 90^{\circ}$ M	ble, 8 × P1	4 <u>0,1</u> dia	− 2 − 18.5 −	Operation indic	2.9-dia. vinyl-in Standard lengt	sulated round ca h: 300 mm	able, 18 × P1
E2E-C06S02-CJ-□□			E2E-S04SI	R8-CJ-□□				
6.5 0 dia.	4-dia. vinyl-insulated rou Standard length: 300 m $h_{\rm H}^{\rm H} h_{\rm H}^{\rm H} h_{\rm H}^{\rm H}$	m M8 × P1	8.5 dia.	× P0.5/ Coping nuts	peration indicat	.4-dia. vinyl-insu itandard length:	ulated round cab 300 mm M 90° n clamping nuts.	ole, 18 × P1
E2E-S05S12-CJ-□□								
10 dia. 18.5 18.5 15.1 18.5 15.1 15.	. vinyl-insulated round cable rd length: 300 mm M8 ; dd d d d d (yellow) 4 × 90° (yellow) 4 × 90° ting with clamping nuts and er is not possible on this thr	o, × P1] d a toothed readed section.						

12

M8 Connector Models (Shielded)

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Accessories (Sold Separately)

Mounting Brackets





L = 2 m (XS3F-M322-302-R) 5 m (XS3F-M322-305-R)

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OMRON Corporation Tokyo, JAPAN

Industrial Automation Company

Contact: www.ia.omron.com

Regional Headquarters OMRON EUROPE B.V.

Sensor Business Unit Carl-Benz-Str. 4, D-71154 Nufringen, Germany Tel: (49) 7032-811-0/Fax: (49) 7032-811-199

OMRON ASIA PACIFIC PTE. LTD. No. 438A Alexandra Road # 05-05/08 (Lobby 2), Alexandra Technopark, Singapore 119967 Tel: (65) 6835-3011/Fax: (65) 6835-2711

OMRON ELECTRONICS LLC

2895 Greenspoint Parkway, Suite 200 Hoffman Estates, IL 60169 U.S.A Tel: (1) 847-843-7900/Fax: (1) 847-843-7787

OMRON (CHINA) CO., LTD. Room 2211, Bank of China Tower, 200 Yin Cheng Zhong Road, PuDong New Area, Shanghai, 200120, China Tel: (86) 21-5037-2222/Fax: (86) 21-5037-2200

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