

# **Standard Proximity Sensor**

# **E2E**(DC 2/3-Wire)

# Your Search for Proximity Sensors Starts with the World-leading Performance and Quality of the E2E

- · Standard Sensors for detecting ferrous metals.
- Wide array of variations. Ideal for a variety of applications.
- Models with different frequencies are also available to prevent mutual interference.
- Superior environment resistance with standard cable made of oil-resistant PVC and sensing surface made of material that resists cutting oil.
- Useful to help prevent disconnection.
   Cable protector provided as a standard feature.





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

Be sure to read Safety Precautions on page 18.

Note: DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022.

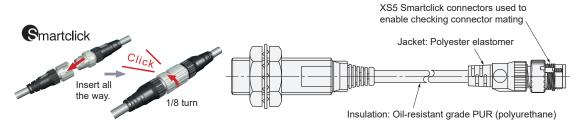
at the end of october 2022.

DC 3-Wire Models have been discontinued at the end of March 2022.

Refer to the catalog (Cat. No. D120) for details.

#### **Features**

## Lineup includes models with Smartclick pre-wired connectors for fast connection.



#### **UL-recognized Models Available**



## E2E

# **E2E Model Number Legend**

No.	Classification	Code	Meaning	Remarks
(1)	Appearance	Х	Cylindrical (threaded)	
(2)	Canaina diatana	Number	Sensing distance (Unit: mm)	Example:
(2)	Sensing distance	R	Indication of decimal point	1R5: 1.5 mm
(2)	Chialdina	Blank	Shielded Model	
(3)	Shielding	М	Unshielded Model	
		В	DC 3-wire PNP open-collector output	
		С	DC 3-wire NPN open-collector output	
		D	DC 2-wire polarity/no polarity	Whether D models have
(4)	Power supply and output specifications	E	DC 3-wire NPN collector load built-in output	polarity is defined by num-
	specifications	F	DC 3-wire PNP collector load built-in output	ber 10.
		Т	AC/DC 2-wire	
		Υ	AC 2-wire	
(5)	Form of output switching el-	1	Normally open (NO)	
(5)	ement	2	Normally closed (NC)	
(C)	On all ation for account of the	Blank	Standard frequency	Used to prevent mutual in-
(6)	Oscillation frequency type	5	Different frequency	terference.
(7)	Colf diagnosis	Blank	No	
(7)	Self-diagnosis	5	Yes	
		Blank	Pre-wired	
(8)	Connection method	M1	M12-size metal connector	
		М3	M8-size metal connector	
		Blank	Connector Model DC 3-wire and AC 2-wire, DC 2-wire with self-diagnosis output, DC 2-wire with old pin arrangement	
		G	Connector Model DC 2-wire with IEC pin arrangement	
(9)	Connector specifications	J	Pre-wired Connector Model DC 3-wire and AC 2-wire, DC 2-wire with old pin arrangement	
(-)	, , , , , , , , , , , , , , , , , , , ,	GJ	Pre-wired Connector Model DC 2-wire with IEC pin arrangement	
		TJ	Pre-wired Smartclick Connector Model DC 2-wire	
		TGJ	Pre-wired Smartclick Connector Model DC 2-wire with IEC pin arrangement	
(4.5)	D00 : 1 "	Blank	Polarity	
(10)	DC 2-wire polarity	Т	No polarity	
		Blank	Standard PVC cable (oil resistant)	
(11)	Cable specifications	R	Flexible PVC cable (oil resistant)	
` ,		U	Polyurethane cable (oil resistant and reinforced)	
(12)	New model	N	New model (Applies only to DC 2-wire pre-wired and shielded models.)	This is blank if the cable specification in number 11 is R or U.
	Standard-certified model	US	UL-recognized model (Applies to DC 2-wire pre-wired models and pre-wired connector models.)	
(13)	Cable length	Letter M	Cable length (Unit: m) (Applicable to Pre-wired Models and Pre-wired Connector Models.)	Example: 2M 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**

Note: DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. Refer to the catalog (Cat. No. D120) for details.

#### 2-Wire Models

#### Shielded DC 2-wire Models with No Self-diagnostic Output [Refer to Dimensions on page 20.]



Appear- ance	Sensing distance	Connection method	Cable specifications	Polar- ity	Opera- tion mode	Pin arrangement	Applicable connector code *2	Model
		M12 Pre-wired Smart- click Connector Mod- els (0.3m)	PVC (oil-resistant)		NO	1: +V, 4: 0 V	E	E2E-X2D1-M1TGJ 0.3M
		Pre-wired Models	DVC (eil registent)	Ī	NO			E2E-X2D1-N 2M
M8	2 mm	(2 m)	PVC (oil-resistant)	Yes	NC			E2E-X2D2-N 2M
IVIO		M12 Connector Mod-		103	NO	1: +V, 4: 0 V	Α	E2E-X2D1-M1G
		els			NC	1: +V, 2: 0 V	D	E2E-X2D2-M1G
		M8 Connector Models		Ī	NO	1: +V, 4: 0 V	F	E2E-X2D1-M3G
		IVIO COTTIECTOI IVIOGEIS			NC	1: +V, 2: 0 V	Г	E2E-X2D2-M3G
	M12 Pre-wired Smart- click Connector Mod- els (0.3m)  PVC (oil-resistant)			NO	1: +V, 4: 0 V	Е	E2E-X3D1-M1TGJ 0.3M	
		Pre-wired Models	DVC (eil registent)	Yes	NO			E2E-X3D1-N 2M *1
		(2 m)	PVC (oil-resistant)	165	NC	<del></del>		E2E-X3D2-N 2M
M12	3 mm	M12 Connector Mod-			NO	1: +V, 4: 0 V	Α	E2E-X3D1-M1G *1
IVI I Z	311111	els			NC	1: +V, 2: 0 V	D	E2E-X3D2-M1G
				Vaa	NO	1: +V, 4: 0 V	Α	E2E-X3D1-M1GJ 0.3M
		M12 Standard Pre-	DV0 ( ''L . ' L . ')	Yes	NC	1: +V, 2: 0 V	D	E2E-X3D2-M1GJ 0.3M
		wired Connector Mod- els (0.3 m)	PVC (oil-resistant)	NI *0	NO	(3, 4): (+V, 0 V)	С	E2E-X3D1-M1J-T 0.3M
		,		No *3	NC	(1, 2): (+V, 0 V)	D	
		M12 Pre-wired Smart- click Connector Mod- els (0.3m) PVC (oil-resistant)			NO	1: +V, 4: 0 V	E	E2E-X7D1-M1TGJ 0.3M
		Pre-wired Models	D) (0 ( '1	Yes	NO			E2E-X7D1-N 2M *1
		(2 m)	PVC (oil-resistant) Yes		NC			E2E-X7D2-N 2M
M18	7 mm	M12 Connector Mod-		Ť	NO	1: +V, 4: 0 V	Α	E2E-X7D1-M1G *1
IVITO	, , , , , , , , , , , , , , , , , , , ,	els			NC	1: +V, 2: 0 V	D	E2E-X7D2-M1G
				V	NO	1: +V, 4: 0 V	Α	E2E-X7D1-M1GJ 0.3M
		M12 Standard Pre- wired Connector Mod-	DVC (eil registent)	Yes	NC	1: +V, 2: 0 V	D	E2E-X7D2-M1GJ 0.3M
		els (0.3 m)	PVC (oil-resistant)	NI- #0	NO	(3, 4): (+V, 0 V)	С	E2E-X7D1-M1J-T 0.3M
				No *3	NC	(1, 2): (+V, 0 V)	D	E2E-X7D2-M1J-T 0.3M
		M12 Pre-wired Smart- click Connector Mod- els (0.3m)	PVC (oil-resistant)		NO	1: +V, 4: 0 V	E	E2E-X10D1-M1TGJ 0.3M
		Pre-wired Models	D) (O ( '')	Yes	NO			E2E-X10D1-N 2M *1
		(2 m)	PVC (oil-resistant)	168	NC	<del></del>		E2E-X10D2-N 2M
M30	10 mm	M12 Connector Mod-		İ	NO	1: +V, 4: 0 V	А	E2E-X10D1-M1G *1
IVIOU	10 111111	els			NC	1: +V, 2: 0 V	D	E2E-X10D2-M1G
				V	NO	1: +V, 4: 0 V	Α	E2E-X10D1-M1GJ 0.3M
		M12 Standard Pre-	DVC (-il iii)	Yes	NC	1: +V, 2: 0 V	D	E2E-X10D2-M1GJ 0.3M
		wired Connector Models (0.3 m)	PVC (oil-resistant)	NI- #0	NO	(3, 4): (+V, 0 V)	С	E2E-X10D1-M1J-T 0.3M
		, ,		No *3	NC	(1, 2): (+V, 0 V)	D	E2E-X10D2-M1J-T 0.3M

<sup>\*1.</sup> Models with different frequencies are also available. The model number is E2E-X D15 (example: E2E-X3D15-N 2M).
\*2. Refer to page 15 for details.
\*3. The residual voltage for models without polarity is 5 V, so use caution concerning the connection load interface conditions (e.g., PLC ON voltage). Refer to page 19

## Shielded DC 2-Wire UL-recognized Models with No Self-diagnostic Output [Refer to Dimensions on page 20.]



Appear- ance	Sensing distance		Connection method	Cable specifications	Polar- ity	Opera- tion mode	Pin arrangement	Applicable connector code *	Model
			M12 Pre-wired Smart- click Connector Models			NO	1: +V, 4: 0 V	E	E2E-X2D1-M1TGJ-US 0.3M
M8	2 mm		(0.3 m)			NC	1: +V, 2: 0 V	Ε.	E2E-X2D2-M1TGJ-US 0.3M
IVIO	2 111111		Pre-wired Models (2 m)			NO			E2E-X2D1-US 2M
			Fie-wired Models (2 III)			NC			E2E-X2D2-US 2M
	M12 Pre-wired Smart- click Connector Models (0.3 m)					NO	1: +V, 4: 0 V	Е	E2E-X3D1-M1TGJ-US 0.3M
M12					NC	1: +V, 2: 0 V	<u> </u>	E2E-X3D2-M1TGJ-US 0.3M	
2	3 111111					NO			E2E-X3D1-US 2M
			Pre-wired Models (2 m)	PVC (oil-resistant)	Yes	NC			E2E-X3D2-US 2M
			M12 Pre-wired Smart- click Connector Models	r v C (Oil-Tesistant)	163	NO	1: +V, 4: 0 V	E	E2E-X7D1-M1TGJ-US 0.3M
M18	7 mm	7 mm			1	NC	1: +V, 2: 0 V	<u> </u>	E2E-X7D2-M1TGJ-US 0.3M
WITO	,		Pre-wired Models (2 m)			NO			E2E-X7D1-US 2M
			Fie-wired Models (2111)			NC			E2E-X7D2-US 2M
	10 mm		M12 Pre-wired Smart- click Connector Models			NO	1: +V, 4: 0 V	Е	E2E-X10D1-M1TGJ-US 0.3M
M30			(0.3 m)			NC	1: +V, 2: 0 V	Ε.	E2E-X10D2-M1TGJ-US 0.3M
WOO			Pre-wired Models (2 m)			NO			E2E-X10D1-US 2M
			1 Te-wired Models (2 III)		NC				E2E-X10D2-US 2M

<sup>\*</sup> Refer to page 15 for details.

**Note:** DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. Refer to the catalog (Cat. No. D120) for details.

#### 2-Wire Models

#### Unshielded DC 2-Wire Models with No Self-diagnosis Output [Refer to Dimensions on page 20.]



Appear- ance	Sensing dis	tance	Connection method	Cable specifications	Polar- ity	Opera- tion mode	Pin arrangement	Applicable connector code *2	Model			
			Pre-wired Models (2 m)	PVC (oil-resistant)		NO			E2E-X4MD1 2M			
			Fie-wired Models (2 III)	F VC (OII-Tesistatit)		NC			E2E-X4MD2 2M			
M8	4 mm		M12 Connector Models			NO	1: +V, 4: 0 V	Α	E2E-X4MD1-M1G			
IVIO	4 111111		W12 Connector Wodels			NC	1: +V, 2: 0 V	D	E2E-X4MD2-M1G			
			M8 Connector Models			NO	1: +V, 4: 0 V	F	E2E-X4MD1-M3G			
			IVIO COMMECION IVIOGEIS			NC	1: +V, 2: 0 V	ļ	E2E-X4MD2-M3G			
			M12 Pre-wired Smart- click Connector Models (0.3m)	PVC (oil-resistant)		NO	1: +V, 4: 0 V	E	E2E-X8MD1-M1TGJ 0.3M			
			Pre-wired Models (2 m)	PVC (oil-resistant)		NO			E2E-X8MD1 2M *1			
M12	8 mm		Pre-wired Models (2 III)	PVC (oil-resistant)		NC			E2E-X8MD2 2M			
IVI I Z	0 111111		M12 Connector Models			NO	1: +V, 4: 0 V	Α	E2E-X8MD1-M1G *1			
			W12 Connector Wodels			NC	1: +V, 2: 0 V	D	E2E-X8MD2-M1G			
			M12 Standard Pre-	D) (O ( '')		NO	1: +V, 4: 0 V	Α	E2E-X8MD1-M1GJ 0.3M			
			wired Connector Mod- els (0.3 m)	PVC (oil-resistant)		NC	1: +V, 2: 0 V	D				
			M12 Pre-wired Smart- click Connector Models (0.3m)	PVC (oil-resistant)	Yes	NO	1: +V, 4: 0 V	E	E2E-X14MD1-M1TGJ 0.3M			
			,	) PVC (oil-resistant)	1	NO			E2E-X14MD1 2M *1			
M18	14 m					Pre-wired Models (2 III)	PVC (oil-resistant)		NC			E2E-X14MD2 2M
IVI I O	14 11	1111	M12 Connector Models			NO	1: +V, 4: 0 V	Α	E2E-X14MD1-M1G *1			
			W12 Connector Wodels			NC	1: +V, 2: 0 V	D	E2E-X14MD2-M1G			
			M12 Standard Pre-	D) (0 ( ii		NO	1: +V, 4: 0 V	Α	E2E-X14MD1-M1GJ 0.3M			
			wired Connector Mod- els (0.3 m)	PVC (oil-resistant)		NC	1: +V, 2: 0 V	D	E2E-X14MD2-M1GJ 0.3M			
			M12 Pre-wired Smart- click Connector Models (0.3m)	PVC (oil-resistant)		NO	1: +V, 4: 0 V	E	E2E-X20MD1-M1TGJ 0.3M			
			Dre wired Medele (2 :)	DVC (sil regist==+\)		NO			E2E-X20MD1 2M *1			
Mao		20 mm	Pre-wired Models (2 m)	PVC (oil-resistant)		NC	1		E2E-X20MD2 2M			
M30		20 111111	M12 Connector Models			NO	1: +V, 4: 0 V	Α	E2E-X20MD1-M1G *1			
			W 1∠ Connector Wodels			NC	1: +V, 2: 0 V	D	E2E-X20MD2-M1G			
			M12 Standard Pre-	D) (O ( 'il ( ')		NO	1: +V, 4: 0 V	Α	E2E-X20MD1-M1GJ 0.3M			
			wired Connector Mod- els (0.3 m)	PVC (oil-resistant)		NC	1: +V, 2: 0 V	D				

<sup>\*1.</sup> Models with different frequencies are also available. The model number is E2E-X  $\square$ D15 (example: E2E-X8MD15 2M). \*2. Refer to page 15 for details.

#### Unshielded DC 2-Wire UL-recognized Models with No Self-diagnostic Output [Refer to Dimensions on page 20.]



Appear- ance	Sensing dis	tance	Connection method	Cable specifications	Polar- ity	Opera- tion mode	Pin arrangement	Applicable connector code *	Model	
			M12 Pre-wired Smart- click Connector Models			NO	1: +V, 4: 0 V	Е	E2E-X4MD1-M1TGJ-US 0.3M	
M8	4 mm		(0.3 m)			NC	1: +V, 2: 0 V	Ε.	E2E-X4MD2-M1TGJ-US 0.3M	
IVIO	4	Pre-wired Models (2 m)			NO			E2E-X4MD1-US 2M		
			Pre-wired Models (2 III)			NC			E2E-X4MD2-US 2M	
			M12 Pre-wired Smart- click Connector Models			NO	1: +V, 4: 0 V	Е	E2E-X8MD1-M1TGJ-US 0.3M	
M12	8 mm			(0.3 m)			NC	1: +V, 2: 0 V	<u> </u>	E2E-X8MD2-M1TGJ-US 0.3M
Wiiz	0 111111		Pre-wired Models (2 m)			NO			E2E-X8MD1-US 2M	
			Fre-wired Models (2 III)	PVC (oil-resistant)	Yes	NC			E2E-X8MD2-US 2M	
			M12 Pre-wired Smart-	-	res	NO	1: +V, 4: 0 V	E	E2E-X14MD1-M1TGJ-US 0.3M	
M18	14 n	l mm	click Connector Models (0.3 m)			NC	1: +V, 2: 0 V		E2E-X14MD2-M1TGJ-US 0.3M	
WITO	1-7.11		Pre-wired Models (2 m)			NO			E2E-X14MD1-US 2M	
			Fre-wired Models (2 III)			NC			E2E-X14MD2-US 2M	
			M12 Pre-wired Smart-			NO	1: +V, 4: 0 V	L	E2E-X20MD1-M1TGJ-US 0.3M	
M30		click Connector Models (0.3 m)				NC	1: +V, 2: 0 V	E	E2E-X20MD2-M1TGJ-US 0.3M	
11100			Pre-wired Models (2 m)			NO			E2E-X20MD1-US 2M	
			Fie-wiled Models (2 III)			NC			E2E-X20MD2-US 2M	

<sup>\*</sup> Refer to page 15 for details.

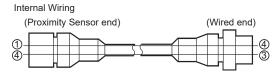
#### Connector Pin Assignments of DC 2-Wire Models

- The connector pin assignments of each New E2E DC 2-Wire Model conform to IEC 947-5-2 Table III. (Only DC 2-Wire Models have been changed in comparison to the previous models.)
- The following models with conventional connector pin assignments are available as well. (Only NO Models can be used.)

  The cable at the right should also be used if the XW3D-P□55-G11/

  XW3B-P□55-G11 Connector Junction Box is already being used.

Cable length	Model
500 mm	XS2W-D421-BY1



#### Models with conventional connector pin assignments are available as well.

Annorra	noo		Mo	Model									
Appearance		NO	Applicable connector code *	NC	Applicable connector code *								
	M8	E2E-X2D1-M1	С	E2E-X2D2-M1	D								
Shielded	M12	E2E-X3D1-M1	С	E2E-X3D2-M1	D								
	M18	E2E-X7D1-M1	С	E2E-X7D2-M1	D								
	M30	E2E-X10D1-M1	С	E2E-X10D2-M1	D								
	M8	E2E-X4MD1-M1	С	E2E-X4MD2-M1	D								
Unshielded	M12	E2E-X8MD1-M1	С	E2E-X8MD2-M1	D								
	M18	E2E-X14MD1-M1	С	E2E-X14MD2-M1	D								
	M30	E2E-X20MD1-M1	С	E2E-X20MD2-M1	D								

<sup>\*</sup> Refer to page 15 for details.

## Shielded DC 3-Wire Models [Refer to Dimensions on page 20.]



				Cable	0		Appli- cable	М	odel
Appear- ance	Sensin	ng distance	Connection method	specifica- tions	Opera- tion mode	Pin arrangement	connec- torcode *2	NPN output	PNP output
			Pre-wired Models	PVC (oil-re- sistant) NO				E2E-X1R5E1 2M	E2E-X1R5F1 2M
			(2 m)	PVC (oil-re- sistant)	NC			E2E-X1R5E2 2M	E2E-X1R5F2 2M
M8	1.5 mm		M12 Connector		NO	1: +V, 3: 0 V, 4: Control output	В	E2E-X1R5E1-M1	E2E-X1R5F1-M1
IVIO	1.5 mm		Models		NC	1: +V, 3: 0 V, 2: Control output	D	E2E-X1R5E2-M1	E2E-X1R5F2-M1
			M8 Connector		NO	1: +V, 3: 0 V, 4: Control output	F	E2E-X1R5E1-M3	E2E-X1R5F1-M3
			Models		NC	1: +V, 3: 0 V, 2: Control output		E2E-X1R5E2-M3	E2E-X1R5F2-M3
			Pre-wired Models	PVC (oil-re-	NO			E2E-X2E1 2M *1	E2E-X2F1 2M *1
			(2 m)	sistant)	NC			E2E-X2E2 2M	E2E-X2F2 2M
M12	2 mm		M12 Connector		NO	1: +V, 3: 0 V, 4: Control output	В	E2E-X2E1-M1	E2E-X2F1-M1
			Models		NC	1: +V, 3: 0 V, 2: Control output	D	E2E-X2E2-M1	E2E-X2F2-M1
			Pre-wired Models	PVC (oil-re-	NO			E2E-X5E1 2M *1	E2E-X5F1 2M *1
			(2 m)	sistant)	NC			E2E-X5E2 2M	E2E-X5F2 2M
M18	5 mm		M12 Connector		NO	1: +V, 3: 0 V, 4: Control output	В	E2E-X5E1-M1	E2E-X5F1-M1
			Models		NC	1: +V, 3: 0 V, 2: Control output	D	E2E-X5E2-M1	E2E-X5F2-M1
			Pre-wired Models	PVC (oil-re-	NO			E2E-X10E1 2M *1	E2E-X10F1 2M
			(2 m)	sistant)	NC			E2E-X10E2 2M	E2E-X10F2 2M
M30	10	) mm	M12 Connector		NO	1: +V, 3: 0 V, 4: Control output	В	E2E-X10E1-M1	E2E-X10F1-M1
			Models		NC	1: +V, 3: 0 V, 2: Control output	D	E2E-X10E2-M1	E2E-X10F2-M1

<sup>\*1.</sup> Models with different frequencies are also available. The model number is E2E-X□□□5 (example: E2E-X5E15 2M).
\*2. Refer to page 15 for details.

## Unshielded DC 3-Wire Models [Refer to Dimensions on page 20.]



					0		Appli-	Mo	del			
Appear- ance	Sensing dis	tance	Connection method	Cable specifications	Opera- tion mode	Pin arrangement	cable connec- torcode *2	NPN output	PNP output			
			Pre-wired Models	PVC (oil-resis-	NO			E2E-X2ME1 2M	E2E-X2MF1 2M			
			(2 m)	tant)	NC			E2E-X2ME2 2M	E2E-X2MF2 2M			
			M12 Connector		NO	1: +V, 3: 0 V, 4: Control output	В	E2E-X2ME1-M1	E2E-X2MF1-M1			
M8	2 mm		Models		NC	1: +V, 3: 0 V, 2: Control output	D	E2E-X2ME2-M1	E2E-X2MF2-M1			
			M8 Connector		NO	1: +V, 3: 0 V, 4: Control output	F	E2E-X2ME1-M3	E2E-X2MF1-M3			
			Models		NC	1: +V, 3: 0 V, 2: Control output	'	E2E-X2ME2-M3	E2E-X2MF2-M3			
			Pre-wired Models	PVC (oil-resis-	NO			E2E-X5ME1 2M *1	E2E-X5MF1 2M			
			(2 m)	tant)	NC			E2E-X5ME2 2M	E2E-X5MF2 2M			
M12	5 mm		M12 Connector		NO	1: +V, 3: 0 V, 4: Control output	В	E2E-X5ME1-M1	E2E-X5MF1-M1			
			Models		NC	1: +V, 3: 0 V, 2: Control output	D	E2E-X5ME2-M1	E2E-X5MF2-M1			
			Pre-wired Models	PVC (oil-resis-	NO			E2E-X10ME1 2M *1	E2E-X10MF1 2M			
			(2 m)	tant)	NC			E2E-X10ME2 2M	E2E-X10MF2 2M			
M18	10 mm		M12 Connector		NO	1: +V, 3: 0 V, 4: Control output	В	E2E-X10ME1-M1	E2E-X10MF1-M1			
			Models		NC	1: +V, 3: 0 V, 2: Control output	D	E2E-X10ME2-M1	E2E-X10MF2-M1			
			Pre-wired Models	PVC (oil-resis-	NO			E2E-X18ME1 2M *1	E2E-X18MF1 2M			
			(2 m)	tant)	NC			E2E-X18ME2 2M	E2E-X18MF2 2M			
M30	18 mm		1		M12 Conn	M12 Connector		NO	1: +V, 3: 0 V, 4: Control output	В	E2E-X18ME1-M1	E2E-X18MF1-M1
			Models		NC	1: +V, 3: 0 V, 2: Control output	D	E2E-X18ME2-M1	E2E-X18MF2-M1			

<sup>\*1.</sup> Models with different frequencies are also available. The model number is E2E-X□M□□5 (example: E2E-X5ME15 2M). \*2. Refer to page 15 for details.

Note: DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. Refer to the catalog (Cat. No. D120) for details.

#### **E2E-X**DDD DC 2-Wire Models

Size		ı	M8	M	112	M	118		И30				
	Shielded	Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded				
ltem	Model	E2E-X2D□	E2E-X4MD□	E2E-X3D□	E2E-X8MD□	E2E-X7D□	E2E-X14MD	E2E-X10D□	E2E-X20MD□				
Sensing	j distance	2 mm ±10%	4 mm ±10%	3 mm ±10%	8 mm ±10%	7 mm ±10%	14 mm ±10%	10 mm ±10%	20 mm ±10%				
Set dista	ance *1	0 to 1.6 mm	0 to 3.2 mm	0 to 2.4 mm	0 to 6.4 mm	0 to 5.6 mm	0 to 11.2 mm	0 to 8 mm	0 to 16 mm				
Differen	tial travel	15% max. of sensing distance 10% max. of sensing distance											
Detectal	ble object	Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to <i>Engineering Data</i> on pages 11 and 12.											
Standar object	d sensing	Iron, 8 × 8 × 1 mm	Iron, $20 \times 20 \times 1 \text{ mm}$	Iron, 12 × 12 × 1 mm	Iron, $30 \times 30 \times 1 \text{ mm}$	Iron, 18 × 18 × 1 mm	Iron, $30 \times 30 \times 1$ mm Iron, $54 \times 54$						
Respon:	se frequency	1.5 kHz	1 kHz	1	0.8 kHz	0.5 kHz	0.4 kHz		0.1 kHz				
	supply voltage ng voltage	Standard Model US Models and	ls: 12 to 24 VDC, Connector Model 12 to 24 VDC,	s Úseď as UL-cer	tified Models:	,	is also the same	.) *3					
Leakage	e current	12 to 24 VDC, ripple (p-p): 10% max. (The operating voltage range is also the same.) *3  0.8 mA max.											
	Load current	3 to 100 mA, Di	agnostic output: 5	0 mA for -D1(5)S	Models								
Control output	Residual voltage *4	3 V max. (Load	current: 100 mA,	Cable length: 2 m	n, M1J-T Models o	only: 5 V max.)							
Indicato	ors		eration indicator (r eration indicator (r		dicator (green)								
	on mode nsing object ching)	D1 Models: NO D2 Models: NC	Refer to the t	iming charts unde	r I/O Circuit Diagi	ams on page 13 t	for details.						
Diagnos delay	stic output	0.3 to 1 s											
Protecti	on circuits	Surge suppressor, Load short-circuit protection (for control and diagnostic output)											
Ambient temperature range Operating: -25 to 70°C, Storage: -40 to 85°C (with no icing or condensation)						ensation)							
Ambient humidit		Operating/stora	ge: 35% to 95% (	with no condensa	tion)								
Tempera 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											
Insulatio	on resistance	50 M $\Omega$ min. (at 500 VDC) between current-carrying parts and case											
Dielectr	ic strength	1000 VAC, 50/6	0 Hz for 1 minute	between current	carry parts and ca	ise							
Vibratio	n resistance	Destruction: 10	to 55 Hz, 1.5-mm	double amplitude	for 2 hours each	in X, Y, and Z dir	ections						
Shock r	esistance	Destruction: 500 10 times each in Z directions		Destruction: 1,0	00 m/s <sup>2</sup> 10 times	each in X, Y, and	Z directions						
Degree	of protection		els: IEC 60529 IP6 els: IEC 60529 IP		lards: oil-resistant								
Connec	tion method	Pre-wired Mode	els (Standard cabl	e length: 2 m), Co	onnector Models,	or Pre-wired Conr	nector Models (St	andard cable len	gth: 0.3 m)				
	Pre-wired Models	Approx. 60 g		Approx. 70 g		Approx. 130 g		Approx. 175 g					
Weight (pack- ed state)	Pre-wired Connector Models			Approx. 40 g		Approx. 70 g		Approx. 110 g					
Connector Models		Approx. 15 g		Approx. 25 g		Approx. 40 g		Approx. 90 g					
	Case	Stainless steel (	(SUS303)	Nickel-plated br	ass								
Motori	Sensing sur- face	PBT											
Materi- als	Clamping nuts	Nickel-plated br	rass										
	Toothed washer	Zinc-plated iron											
Accesso	ories	Instruction man	ual										

<sup>\*1.</sup> Use the E2E within the range in which the setting indicator (green LED) is ON (except D2 Models).

<sup>\*2.</sup> 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.

<sup>\*3.</sup> For the information on UL-certified connector models, refer to your OMRON website.

\*4. The residual voltage of each M1J-T Model is 5 V. When connecting to a device, make sure that the device can withstand the residual voltage. (Refer to page 19 for details.)

#### **E2E-X**□**E**□/**F**□ **DC** 3-Wire Models

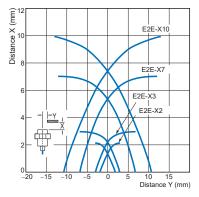
Size		N	<b>/</b> 18		M12	M	118		M30			
	Shielded	Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded	Shielded	Unshielded			
Item	Model	E2E -X1R5E□/F□	E2E -X2ME□/F□	E2E -X2E□/F□	E2E -X5ME□/F□	E2E -X5E□/F□	E2E -X10ME□/F□	E2E-X10E□/ F□	E2E -X18ME□/F□			
Sensing di	stance	1.5 mm ±10%	2 mm ±10%		5 mm ±10%	"	10 mm ±10%		18 mm ±10%			
Set distand	e	0 to 1.2 mm	0 to 1.6 mm		0 to 4 mm		0 to 8 mm		0 to 14 mm			
Differentia	l travel	10% max. of sensing distance										
Detectable	object	Ferrous metal (The sensing distance decreases with non-ferrous metal. Refer to Engineering Data on page 12.)										
Standard s object	ensing	Iron, $8 \times 8 \times 1 \text{ mm}$	Iron, 12 × 12 ×	1 mm	Iron, 15 ×15 × 1 mm	Iron, 18 × 18 × 1 mm	Iron, 30 × 30 ×	1 mm	Iron, 54 × 54 × 1 mr			
Response *1	frequency	2 kHz	0.8 kHz	1.5 kHz	0.4 kHz	0.6 kHz	0.2 kHz	0.4 kHz	0.1 kHz			
Power sup (operating range) *2	ply voltage voltage	12 to 24 VDC, ripple(p-p): 10% max. (10 to 30 VDC) Connector Models Used as UL-certified Models: 12 to 24 VDC, ripple (p-p): 10% max. (The operating voltage range is also the same.) *3										
Current co	nsumption	13 mA max.										
Control Load current *2		200 mA max.										
	Residual voltage	2 V max. (Load	current: 200 mA,	Cable length: 2 i	m)							
Indicators		Operation indica	ator (red)									
Operation (with sensi approachir	ing object	E1/F1 Models: NO E2/F2 Models: NC Refer to the timing charts under /O Circuit Diagrams on page 14 for details.										
Protection	circuits	Load short-circuit protection, Surge suppressor, Reverse polarity protection										
Ambient temperatui	re range *2	Operating/Storage: -40 to 85°C (with no icing or condensation)										
Ambient hi range	umidity	Operating/Storage: 35% to 95% (with no condensation)										
Temperatu influence	re	±15% max. of sensing distance at 23°C in the temperature range of –40 to 85°C ±10% max. of sensing distance at 23°C in the temperature range of –25 to 70°C										
Voltage inf	luence	±1% max. of sensing distance at rated voltage in the rated voltage ±15% range										
Insulation	resistance	50 M $\Omega$ min. (at 500 VDC) between current-carrying parts and case										
Dielectric s	strength	1,000 VAC, 50/60 Hz for 1 minute between current carry parts and case										
Vibration r	esistance	Destruction: 10	to 55 Hz, 1.5-mm	double amplitud	le for 2 hours each	in X, Y, and Z dir	ections					
Shock resi	stance	Destruction: 500 m/s <sup>2</sup> 10 times each in X, Y, and Z directions  Destruction: 1,000 m/s <sup>2</sup> 10 times each in X, Y, and Z directions										
Degree of p	protection	Pre-wired Models : IEC 60529 IP67, in-house standards: oil-resistant Connector Models : IEC 60529 IP67										
Connection	n method	Pre-wired Mode	ls (Standard cabl	e length: 2 m) ar	nd Connector Mode	els						
Weight	Pre- wired Models	Approx. 65 g		Approx. 75 g		Approx. 150 g		Approx. 195 g				
(packed state)	Connector Models	Approx. 15 g		Approx. 25 g		Approx. 40 g		Approx. 90 g				
	Case	Stainless steel (	SUS303)	Nickel-plated b	orass	•		•				
	Sensing surface	PBT		•								
Materials	Clamp- ing nuts	Nickel-plated br	ass									
	Toothed washer	Zinc-plated iron										

<sup>\*1.</sup> 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. When using an M8 Model at an ambient temperature between 70 and 85°C, supply 10 to 30 VDC to the Sensor and make sure that the Sensor has a control output of 100 mA maximum.
\*3. For the information on UL-certified connector models, refer to your OMRON website.

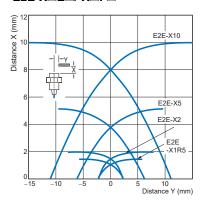
#### **Sensing Area**

#### **Shielded Models**

#### E2E-X□D□

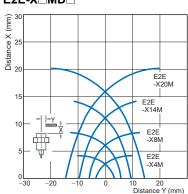


#### E2E-X E /-X F

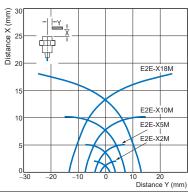


#### **Unshielded Models**

#### E2E-X□MD□

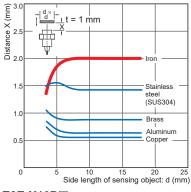


#### E2E-X ME /-X MF

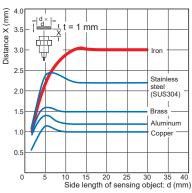


#### **Influence of Sensing Object Size and Material**

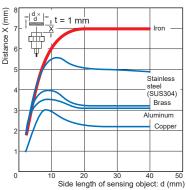
#### E2E-X2D



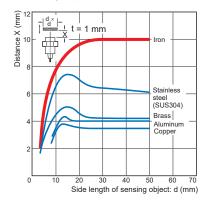
#### E2E-X3D



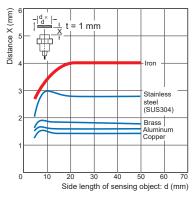
E2E-X7D□



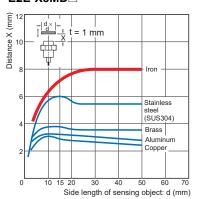
#### E2E-X10D

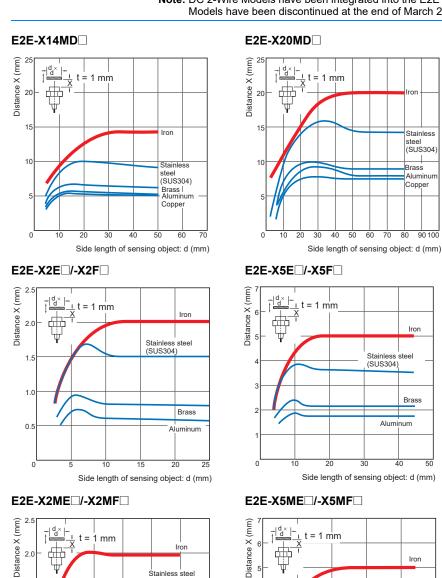


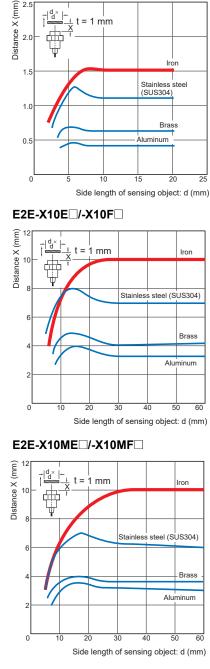
E2E-X4MD



E2E-X8MD





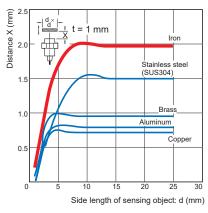


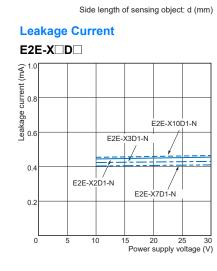
E2E-X1R5E /-X1R5F

t = 1 mm

-| d× |-

2.0

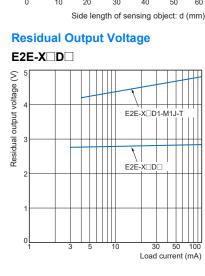




Stainless (SUS304)

Brass

Aluminum



E2E-X18ME /-X18MF

**Note:** DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. Refer to the catalog (Cat. No. D120) for details.

#### **E2E-X**□**D**□ **DC 2-Wire Models**

Operation mode	Model	Timing Chart	Output circuit
Without self-	E2E-X□D1-N E2E-X□D1-M1G(J) E2E-X□D1-M3G E2E-X□D1(-M1TGJ)-US	Non-sensing sensing Stable sensing area  Sensing Object  (%) 100 80 0	Polarity: Yes  The load can be connected to either the +V or 0 V side.
diagnostic output: NO	E2E-X□D1-M1J-T	Rated sensing distance ON OFF (green) ON OPERATION ON OPERATION ON OPERATION OFF COntrol output	Polarity: None    Prox-   (0 v)
Without self- diagnostic output: NC	E2E-X□D2-N E2E-X□D2-M1G E2E-X□D2-M3G E2E-X□D2(-M1TGJ)-US	Non-sensing area  Sensing object  (%) 100 0  Rated sensing distance  ON Operation indicator (red) ON OFF Control output	Proximity Sensor wain circuit 2  Note: The load can be connected to either the +V or 0 V side.

#### **DC 3-Wire Models**

Operation mode	Output specifica- tions	Model	Timing Chart	Output circuit
NO	NPN output	E2E-X□E□ F2E-X□E□-M1	Sensing Present object Not present Operation ON indicator (red) OFF Control output (between brown and black leads) OFF Output voltage (between black and blue leads)	Proximity Sensor main circuit Black Tr
NC	NPN output	E2E-X□E□-M1 E2E-X□E□-M3	Sensing object Present Not present Operation indicator ON (red) Control output (between brown and black leads) OFF Output voltage (between black and blue leads) Low	*Constant current output is 1.5 to 3 mA.  Note: For Connector Models, the connection between pins 1, 4 and 3 uses an NO contact, and the connection between pins 1, 2 and 3 uses an NC contact.
NO	PNP output	E2E-X□F□ E2E-X□F□-M1	Sensing object Present Not present Operation indicator (red) ON Control output OFF (Between blue and black leads) OFF Output voltage (between brown and black leads) Low	Brown  Brown  HV  Brown  HV  Black  Load
NC	— PNP output	E2E-X□F□-M3	Sensing object  Not present Operation indicator (red)  Control output (Between blue and black leads)  Otp Output voltage (between brown and black leads)  Low	*When a transistor is connected  Note: For Connector Models, the connection between pins 1, 4 and 3 uses an NO contact, and the connection between pins 1, 2 and 3 uses an NC contact.

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

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

[Refer to Dimensions for the XS2, XS3, and XS5.]

Note: DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. DC 3-Wire Models have been discontinued at the end of March 2022. Refer to the catalog (Cat. No. D120) for details.

Applicable connector code			Cable length 2m Cable length 5m  CablConnector CablConnector model number model number		Applicable Proximity Sensor model	Connection diagram
	Screw	Appearance *1			number	No. *2
Α		Straight	XS2F-D421-DA0-F	XS2F-D421-GA0-F	E2E-X□D1-M1G(J)	1
A		L-shape	XS2F-D422-DA0-F	XS2F-D422-GA0-F		'
В		Straight	XS2F-D421-DC0-F	XS2F-D421-GC0-F	E2E-X□E1-M1	9
ь		L-shape	XS2F-D422-DC0-F	XS2F-D422-GC0-F	E2E-X□F1-M1	9
		Straight	XS2F-D421-DD0	XS2F-D421-GD0	E2E-X□D1-M1J-T	3
С					E2E-X□D1-M1	2
J		L-shape	XS2F-D422-DD0	XS2F-D422-GD0	E2E-X□D1-M1J-T	3
		L onapo	X021 5 122 550	X021 5 122 050	E2E-X□D1-M1	2
					E2E-X□D2-M1G(J)	5
	M12	Straight	XS2F-D421-D80-F	XS2F-D421-G80-F	E2E-X□D2-M1J-T	7
					E2E-X□D2-M1	6
D					E2E-X□E2-M1 E2E-X□F2-M1	10
D			XS2F-D422-D80-F		E2E-X□D2-M1G(J)	5
		L-shape X		XS2F-D422-G80-F	E2E-X□D2-M1J-T	7
					E2E-X□D2-M1	6
					E2E-X□E2-M1 E2E-X□F2-M1	10
_		Smartclick Connector,	V055 D404 D00 5	XS5F-D421-G80-F	E2E-X□D1-M1TGJ(-US)	13
Е		Straight	XS5F-D421-D80-F	X55F-D421-G80-F	E2E-X□D2-M1TGJ-US	14
			XS3F-M421-402-A		E2E-X□D1-M3G	4
					E2E-X□D2-M3G	8
		Straight		XS3F-M421-405-A	E2E-X□E1-M3 E2E-X□F1-M3	11
F	MO				E2E-X□E2-M3 E2E-X□F2-M3	12
	M8				E2E-X□D1-M3G	4
					E2E-X□D2-M3G	8
		L-shape	XS3F-M422-402-A	XS3F-M422-405-A	E2E-X□E1-M3 E2E-X□F1-M3	11
					E2E-X□E2-M3 E2E-X□F2-M3	12

Note: Refer to Introduction to Sensor I/O Connectors/Sensor Controllers for details and for information on Cable length and Robotics Cables. \*1. Images of straight and L-shaped connectors.











<sup>\*2.</sup> Refer to Connection Diagrams on page 16 for information on Proximity Sensor and I/O Connector connections.

Note: DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. DC 3-Wire Models have been discontinued at the end of March 2022. Refer to the catalog (Cat. No. D120) for details.

Connection	Proximity Sensor		Sensor I/O Connector				
diagram No.	Туре	Operation mode	Model	model number	Connections		
1	DC 2-wire (IEC pin wiring)		E2E-X□D1-M1G/M1GJ	T: Straight 2: L-shape  XS2F-D42 - A0-F  D: 2-m cable G: 5-m cable	E2E XS2F		
2	DC 2-wire (previous pin wiring)	- NO	NO	NO	E2E-X□D1-M1	XS2F-D42D-D0  D: 2-m cable G: 5-m cable	E2E XS2F    O
3	DC 2-wire (no polarity)				E2E-X□D1-M1J-T	XS2F-D42D-D0  D: 2-m cable G: 5-m cable	E2E XS2F    O
4	DC 2-wire (M8 connector)		E2E-X□D1-M3G	T: Straight 2: L-shape  XS3F-M42□-40□-A 2: 2-m cable 5: 5-m cable	E2E XS3F *  O Brown (+) O White (not connected) O Blue (not connected) O Black (-)		
5	DC 2-wire (IEC pin wiring)		E2E-X□D2-M1G/M1GJ	1: Straight 2: L-shape  XS2F-D42	E2E XS2F *  O Brown (+) O White (-) O Blue (not connected) O Black (not connected)		
6	DC 2-wire (previous pin wiring)	NC	E2E-X□D2-M1	1: Straight 2: L-shape XS2F-D42 80-F D: 2-m cable G: 5-m cable	E2E XS2F*  O Brown (not connected) O White (+) O Blue (-) O Black (not connected)		
7	DC 2-wire (no polarity)	NC	E2E-X□D2-M1J-T	XS2F-D42	E2E XS2F*  Srown (+)(-)  White (-)(+)  Blue (not connected)  Black (not connected)		
8	DC 2-wire (M8 connector)		E2E-X□D2-M3G	1: Straight 2: L-shape XS3F-M42□-40□-A 2: 2-m cable 5: 5-m cable	E2E XS3F *  O Brown (+) O White (-) O Blue (not connected) O Black (not connected)		

<sup>\*</sup> Different from Proximity Sensor wire colors.

**Note:** DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. DC 3-Wire Models have been discontinued at the end of March 2022. Refer to the catalog (Cat. No. D120) for details.

Connection	Proximity Sensor		Sensor I/O Connector			
diagram No.	Туре	Operation mode	Model	model number	Connections	
9	DC 3-wire	NO	E2E-X□E/F1-M1	XS2F-D42 D: 2-m cable G: 5-m cable	E2E XS2F  Brown (+V)  Blue (0 V)  Black (output)	
10	2000	NC	E2E-X□E2/F2-M1	T: Straight 2: L-shape  XS2F-D42□-□80-F □ D: 2-m cable G: 5-m cable	E2E XS2F  O Brown (+V) O White (output) O Blue (0 V) O Black (not connected)	
11	DC 3-wire	NO	E2E-X□E1/F1-M3	1: Straight 2: L-shape  XS3F-M42 -40 -A  2: 2-m cable -5: 5-m cable	E2E XS3F  O Brown (+V)  O White (not connected)  O Blue (0 V)  O Black (output)	
12	(M8 connector)	NC	E2E-X□E2/F2-M3	1: Straight 2: L-shape  XS3F-M42 -40 -A  2: 2-m cable 5: 5-m cable	E2E XS3F  Brown (+V)  White (output)  Blue (0 V)  Black (not connected)	
13	DC 2-wire (Smartclick	NO	E2E-X□D1- M1TGJ(-US)	XS5F-D421-□80-F D: 2-m cable G: 5-m cable	E2E XSSF  O Brown (+) O White (not connected) O Black (-) O Black (-)	
14	connector)	NC	E2E-X□D2- M1TGJ-US	XS5F-D421-□80-F D: 2-m cable G: 5-m cable	E2E XSSF  O Brown (+) O White (-) O Blue (not connected) O Black (not connected)	

Refer to Introduction to Sensor I/O Connectors/Sensor Controllers for details.

## **Safety Precautions**

Note: DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. DC 3-Wire Models have been discontinued at the end of March 2022. Refer to the catalog (Cat. No. D120) for details.

#### Refer to Warranty and Limitations of Liability.



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



#### **A**CAUTION

- 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.



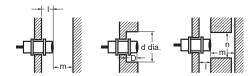
#### **Precautions for Correct Use**

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.



#### **Influence of Surrounding Metal**

(Unit: mm)

Model	Item	M8	M12	M18	M30	
		ı		0	)	
		d	8	12	18	30
	Shielded	D		0	)	
		m	4.5	8	20	40
DC 2-Wire Models		n	12	18	27	45
E2E-X□D□		I	12	15	22	30
		d	24	40	70	90
	Unshielded	D	12	15	22	30
		m	8	20	40	70
		n	24	40	70	90
		ı	0			
	Shielded	d	8	12	18	30
		D	0			
		m	4.5	8	20	40
DC 3-Wire Models E2E-X□E□		n	12	18	27	45
E2E-X□F□		ı	6	15	22	30
		d	24	40	55	90
	Unshielded	D	6	15	22	30
		m	8	20	40	70
		n	24	36	54	90

#### Relationship between Sizes and Models

	Model Model							
	Wiodei							
		E2E-X2D						
	Shielded	E2E-X1R5E□						
M8		E2E-X1R5F□						
1110		E2E-X4MD□						
	Unshielded	E2E-X2ME□						
		E2E-X2MF□						
-		E2E-X3D□						
	Shielded	E2E-X2E□						
M12		E2E-X2F□						
IVI I Z		E2E-X8MD□						
	Unshielded	E2E-X5ME□						
		E2E-X5MF□						
		E2E-X7D□						
	Shielded	E2E-X5E□						
M18		E2E-X5F□						
IVI I O		E2E-X14MD□						
	Unshielded	E2E-X10ME□						
		E2E-X10MF□						
		E2E-X10D□						
	Shielded	E2E-X10E□						
M30		E2E-X10F□						
IVISU		E2E-X20MD□						
	Unshielded	E2E-X18ME□						
		E2E-X18MF□						

Note: DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. DC 3-Wire Models have been discontinued at the end of March 2022. Refer to the catalog (Cat. No. D120) for details.

#### **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**

(Unit: mm)

Model	Item	M8	M12	M18	M30	
	Shielded	Α	20	30 (20)	50 (30)	100 (50)
DC 2-Wire Models	Silleided	В	15	20 (12) *	35 (18) *	70 (35)
E2E-X□D□	Unshielded	Α	80	120 (60)	200 (100)	300 (100)
	Orisilielded	В	60	100 (50)	110 (60)	200 (100)
	Shielded	Α	20	30 (20)	50 (30)	100 (50)
DC 3-Wire Models	Snieided	В	15	20 (12) *	35 (18) *	70 (35)
E2E-X□E□/X□F□	Unshielded	Α	80	120 (60)	200 (100)	300 (100)
	Orisinelded	В	60	100 (50)	110 (60)	200 (100)

Note: Values in parentheses apply to Sensors operating at different frequencies.

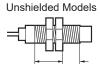
#### Mounting

#### **Tightening Force**

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







Note: 1. The allowable tightening strength depends on the distance from the edge of the head, as shown in the following table. (A is the distance from the edge of the head. B includes the nut on the head side. If the edge of the nut is in part A, the tightening torque for part A applies instead.)

Part B Part A

2. The following strengths assume washers are being used.

	Model	Pa	Part B	
Woder		Dimension Torque		Torque
M8 Shielded		9	9 N·m	12 N·m
IVIO	Unshielded	3	9 14 111	12 11 111
M12		30 N·m		
M18		70 N·m		
M30		180 N·m		

#### **Connecting a DC 2-Wire Proximity Sensor to a PLC (Programmable Controller)**

#### **Required Conditions**

Connection to a PLC is possible if the specifications of the PLC and the Proximity Sensor satisfy the following conditions. (The meanings of the symbols are given at the right.)

1. The ON voltage of the PLC and the residual voltage of the Proximity Sensor must satisfy the following.

 $V_{\text{ON}} \leq V_{\text{CC}} - V_{\text{R}}$ 

2. The OFF current of the PLC and the leakage current of the Proximity Sensor must satisfy the following.

loff ≥ Ileak

(If the OFF current is not listed in the PLC's input specifications, take it to be 1.3 mA.)

The ON current of the PLC and the control output of the Proximity Sensor must satisfy the following.

 $\mathsf{lout}\;(\mathsf{min.}) \leq \mathsf{lon} \leq \mathsf{lout}\;(\mathsf{max.})$ 

The ON current of the PLC will vary, however, with the power supply voltage and the input impedance, as shown in the following equation.

$$Ion = (Vcc - V_R - \underline{Vpc}) / Rin$$

#### **Example**

In this example, the above conditions are checked when the Proximity Sensor is the E2E-X7D1-N and the power supply voltage is 24 V.

- 1. Von  $(14.4 \text{ V}) \leq \text{Vcc} (20.4 \text{ V}) \text{Vr} (3 \text{ V}) = 17.4 \text{ V}$ : OK
- 2. Ioff (1.3 mA)  $\geq$  Ileak (0.8 mA): OK
- 3. Ion = [Vcc (20.4 V) VR (3 V)  $\underline{\text{VPc (4 V)}}$ ] / RIN (3 k $\Omega$ ) = Approx. 4.5 mA

Therefore, lout (min.) (3 mA)  $\leq$  lon (4.5 mA): OK Connection is thus possible.

#### Connection Example (Reference)

PLC	Von: ON voltage (14.4 V) Ion: ON current (typically 7 mA) Ior: OFF current (1.3 mA) Rin: Input impedance (3 kΩ) VPc: Internal residual voltage (4 V)
Proximity Sensor	VR: Output residual voltage (3 V) Ileak: Leakage current (0.8 mA) IouT: Control output (3 to 100 mA) Vcc: Power supply voltage (PLC: 20.4 to 26.4 V)

<sup>\*</sup> Mutual interference will not occur for close-proximity mounting if models with different frequencies are used together.

## E<sub>2</sub>E

#### **Dimensions**

(Unit: mm) Tolerance class IT16 applies to dimensions in this data sheet unless otherwise specified.

## **Main Units**

#### **Model Number-Dimensions Drawing Number Lookup Table**

		Model	DC 2-Wire Models		DC 3-Wire Models	3
Model	Shield	ed	Model	No.	Model	No.
		M8	E2E-X2D□(-US)	1	E2E-X1R5E□/F□	1
	Shielded	M12	E2E-X3D□(-US)	3	E2E-X2E□/F□	3
Dec mine d Me dela	Snieided	M18	E2E-X7D□(-US)	5	E2E-X5E□/F□	5
		M30	E2E-X10D□(-US)	7	E2E-X10E□/F□	7
Pre-wired Models		M8	E2E-X4MD□(-US)	2	E2E-X2ME□/F□	2
	I lookielded	M12	E2E-X8MD□(-US)	4	E2E-X5ME□/F□	4
	Unshielded	M18	E2E-X14MD□(-US)	6	E2E-X10ME□/F□	6
		M30	E2E-X20MD□(-US)	8	E2E-X18ME□/F□	8
		M8	E2E-X2D□-M1(G)	9	E2E-X1R5E/F□-M1	9
	05:-144	M12	E2E-X3D□-M1(G)	11	E2E-X2E/F□-M1	11
	Shielded	M18	E2E-X7D□-M1(G)	13	E2E-X5E/F□-M1	13
Connector Models		M30	E2E-X10D□-M1(G)	15	E2E-X10E/F□-M1	15
(M12)		M8	E2E-X4MD□-M1(G)	10	E2E-X2ME/F□-M1	10
	l la abiatal a	M12	E2E-X8MD□-M1(G)	12	E2E-X5ME/F□-M1 12	
	Unshielded	M18	E2E-X14MD□-M1(G)	14	E2E-X10ME/F□-M1 14	
		M30	E2E-X20MD□-M1(G)	16	E2E-X18ME/F□-M1	16
Connector Models	Shielded	M8	E2E-X2D□-M3G	17	E2E-X1R5E/F□-M3	17
(M8)	Unshielded	IVIO	E2E-X4MD□-M3G	18	E2E-X2ME/F□-M3	18
		M8	E2E-X2D□-M1TGJ	40		,
			E2E-X2D□-M1TGJ-US	19		
		M12	E2E-X3D□-M1(T)GJ	20		
			E2E-X3D□-M1TGJ-US	20		
	Shielded	M18	E2E-X7D□-M1(T)GJ	04	<del></del>	
			E2E-X7D□-M1TGJ-US	21		
		M30	E2E-X10D□-M1(T)GJ	22		
Pre-wired Connector Models		IVIOU	E2E-X10D□-M1TGJ-US	22		
Modello		M8	E2E-X4MD□-M1TGJ-US	23		
		M12	E2E-X8MD1-M1(T)GJ	24		
		IVI I Z	E2E-X8MD□-M1TGJ-US	24		
	Unshielded	MAO	E2E-X14MD1-M1(T)GJ	0.5		
		M18	E2E-X14MD□-M1TGJ-US	25		
		M30	E2E-X20MD1-M1(T)GJ	26		
		IVIOU	E2E-X20MD□-M1TGJ-US	20		
Pre-wired Connector		M12	E2E-X3D1-M1J-T	20		
Models	Shielded	M18	E2E-X7D□-M1J-T	21		
(no polarity)		M30	E2E-X10D□-M1J-T	22	1	

Note 1. Two clamping nuts and one toothed washer are provided with M8 to M30 Models.

<sup>2.</sup> The model numbers of M8 to M30 Pre-wired Models are laser-marked on the milled section and cable section.

Diagram 2

15 dia.

#### **Pre-wired Models (Shielded)**



#### **Pre-wired Models (Unshielded)**

E2E-X4MD

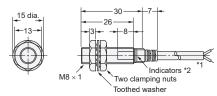
26

M8 × 1

E2E-X2ME /F



#### Diagram 1 E2E-X2D E2E-X1R5E /F



- \*1. 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.3 mm), Standard length: 2 m
  4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.3 mm), Standard length: 2 m
  Robotics Cable Models:
- Robotics Cable Models:

  4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.27 mm), Standard length: 2 m

  4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.27 mm), Standard length: 2 m

  Models with Highly Oil-resistant Cables:

  4-dia. polyurethane-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.3 mm), Standard length: 2 m

  The cable can be extended up to 200 m (separate metal conduit).

  \*2. D1 Models: Operation indicator (red) and setting indicator (green), D2/E/F Models: Operation indicator (red)

Indicators \*2

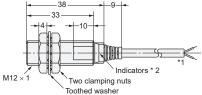
Two clamping nuts

Toothed washer

- \*1. 4-dia, vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.3 mm), Standard length: 2 m 4-dia, vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.3 mm), Standard length: 2 m Robotics Cable Models: 4-dia, vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.27 mm), Standard length: 2 m 4-dia, vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.27 mm), Standard length: 2 m 1 m 2 cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.27 mm), Standard length: 2 m 1 m 2 cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.27 mm), Standard length: 2 m 1 m 2 cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.27 mm), Standard length: 2 m 1 m 2 cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.27 mm), Standard length: 2 m 1 cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.27 mm), Standard length: 2 m 1 cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.27 mm), Standard length: 2 m 1 cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.27 mm), Standard length: 2 m 1 cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.27 mm), Standard length: 2 m 1 cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.27 mm), Standard length: 2 m 1 cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.27 mm), Standard length: 2 m 1 cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.27 mm), Standard length: 2 m 1 cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.27 mm), Standard length: 2 m 1 cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.27 mm), Standard lengt

#### E2E-X3D Diagram 3 E2E-X2E /F





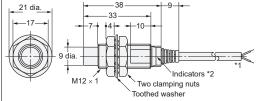
- \*1. 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm2, Insulator diameter
  - 1.3 mm), Standard length: 2 m 4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.3 mm), Standard length: 2 m Robotics Cable Models:
  - robouts Cable Models: 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.27 mm), Standard length: 2 m 4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter:
- 4-dia. vinyl-insulated round carbe with 3 conductors (conductor dross section, 0.0 mm, managed datasets 1.27 mm), Standard length: 2 m Models with Highly Oil-resistant Cables:

  4-dia. polyurethane-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.3 mm), Standard length: 2 m

  The cable can be extended (separate metal conduit) up to 200 m for the control output and up to 100 m for the diagnostic output.

  \*2. D1 Models: Operation indicator (red) and setting indicator (green), D2/E/F Models: Operation indicator (red)

#### Diagram 4 E2E-X8MD E2E-X5ME /F



- \*1. 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm²- Insulator diameter: 1.3 mm), Standard length: 2 m 4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.3 mm), Standard length: 2 m Robotics Cable Models: 4-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1-27 mm), Standard length: 2 m 4-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.3 mm², Insulator diameter: 1.27 mm), Standard length: 2 m The cable can be extended (separate metal conduit) up to 200 m for the control output and up to 100 m for the diagnostic output.
  \*2. D1 Models: Operation indicator (red) and setting indicator (green), D2/E/F Models: Operation indicator (red)

#### **Mounting Hole Dimensions**



Dimension	M8	M12
F (mm)	8.5 <sup>+0.5</sup> dia.	12.5 <sup>+0.5</sup> dia.

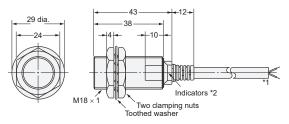
Note: DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. DC 3-Wire Models have been discontinued at the end of March 2022. Refer to the catalog (Cat. No. D120) for details.

#### **Pre-wired Models (Shielded)**

#### **Pre-wired Models (Unshielded)**



#### Diagram 5 E2E-X7D /E2E-X5E /F



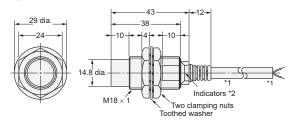
- \*1. 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 2 m 6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm²,
  - Insulator diameter: 1.9 mm), Standard length: 2 m Robotics Cable Models:
  - Robotics Cable Models.

    6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.74 mm), Standard length: 2 m

    6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm²,
  - Insulator diameter: 1.74 mm), Standard length: 2 m

    Models with Highly Oil-resistant Cables:
    6-dia. polyurethane-insulated round cable with 2 conductors (Conductor cross section:
- 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 2 m
  The cable can be extended (separate metal conduit) up to 200 m for the control output and up to 100 m for the diagnostic output
  \*2. D1 Models: Operation indicator (red), Setting indicator (green)
- D2/E/F Models: Operation indicator (red)

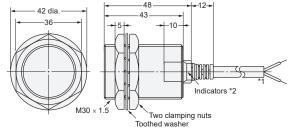
#### Diagram 6 E2E-X14MD /E2E-X10ME /F



- \*1. 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 2 m 6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm²,
  - b-dia. Vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 2 m Robotics Cable Models: 6-dia. Vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.74 mm), Standard length: 2 m 6-dia. Vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.74 mm), Standard length: 2 m The cable can be extended (separate metal conduit) up to 200 m for the control output part up to 1.00 m for the dispositio author.
- and up to 100 m for the diagnostic output.

  \*2. D1 Models: Operation indicator (red), Setting indicator (green)
  D2/E/F Models: Operation indicator (red)

#### Diagram 7 **E2E-X10D** / **E2E-X10E** / **F**



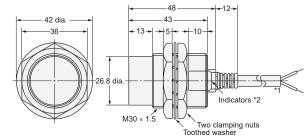
- \*1. 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm<sup>2</sup>,
  - Insulator diameter: 1.9 mm), Standard length: 2 m 6-dia. vinyl-insulator diameter: 1.9 mm), Standard length: 2 m 6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 2 m Robotics Cable Models:
  - Robotus Galme Models.

    6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.74 mm), Standard length: 2 m
    6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm²,
  - Insulator diameter: 1.74 mm), Standard length: 2 m

    Models with Highly Oil-resistant:
    6-dia. polyurethane-insulated round cable with 2 conductors (Conductor cross section:
- 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 2 m
  The cable can be extended (separate metal conduit) up to 200 m for the control output and up to 100 m for the diagnostic output.

  \*2. D1 Models: Operation indicator (red), Setting indicator (green)
- D2/E/F Models: Operation indicator (red)

#### Diagram 8 E2E-X20MD /E2E-X18ME /F



- \*1. 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm²,
  - Insulator diameter: 1.9 mm), Standard length: 2 m 6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.9 mm), Standard length: 2 m Robotics Cable Models:
  - 6-dia. vinyl-insulated round cable with 2 conductors (Conductor cross section: 0.5 mm<sup>2</sup>,
  - Insulator diameter: 1.74 mm), Standard length: 2 m 6-dia. vinyl-insulated round cable with 3 conductors (Conductor cross section: 0.5 mm², Insulator diameter: 1.74 mm), Standard length: 2 m
- The cable can be extended (separate metal conduit) up to 200 m for the control output and up to 100 m for the diagnostic output.

  \*2. D1 Models: Operation indicator (red), Setting indicator (green)
- D2/E/F Models: Operation indicator (red)

#### **Mounting Hole Dimensions**



Dimension	M12	M18	M30	
F (mm)	12.5 <sup>+0.5</sup> dia.	18.5 <sup>+0.5</sup> dia.	30.5 <sup>+0.5</sup> dia.	

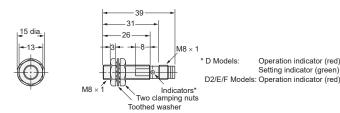
#### **M8 Connector Models** (Shielded)



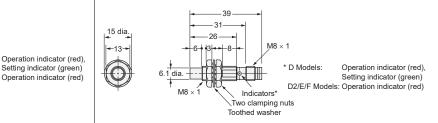
#### **M8 Connector Models** (Unshielded)



#### Diagram 17 E2E-X2D□-M3G/E2E-X1R5E□-M3/X1RF□-M3



#### Diagram 18 E2E-X4MD□-M3G/E2E-X2ME□-M3/X2MF□-M3



# **M12 Connector Models**

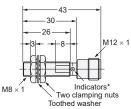
(Shielded)

#### **M12 Connector Models** (Unshielded)



#### Diagram 9 E2E-X2D□-M1(G) E2E-X1R5E -M1/E2E-X1R5F -M1





\* D1 Models: Operation indicator (red), Setting indicator (green) D2/E/F Models: Operation indicator (red)

#### Diagram 10 E2E-X4MD□-M1(G) E2E-X2ME -M1/E2E-X2MF -M1

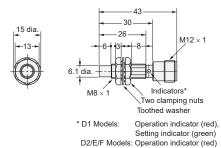
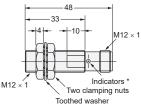


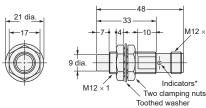
Diagram 11 E2E-X3D□-M1(G) E2E-X2E -M1/E2E-X2F -M1





\* D1 Models: Operation indicator (red), Setting indicator (green) D2/E/F Models: Operation indicator (red)

#### Diagram 12 E2E-X8MD□-M1(G) E2E-X5ME -M1/E2E-X5MF -M1

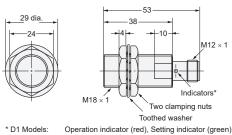


Operation indicator (red), Setting indicator (green) D2/E/F Models: Operation indicator (red)

M12 × 1

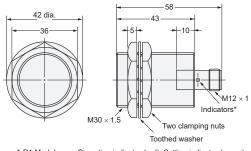
Indicators<sup>3</sup>

## Diagram 13 E2E-X7D□-M1(G)/E2E-X5E□-M1/X5F□-M1



#### D2/E/F Models: Operation indicator (red)

#### Diagram 15 E2E-X10D□-M1(G)/E2E-X10E□-M1/X10F□-M1



\* D1 Models: Operation indicator (red), Setting indicator (green) D2/E/F Models: Operation indicator (red)

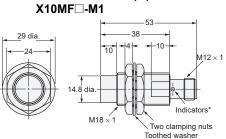
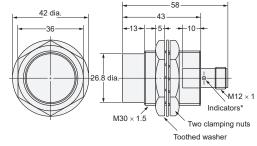


Diagram 14 E2E-X14MD□-M1(G)/E2E-X10ME□-M1

\* D1 Models: Operation indicator (red), Setting indicator (green) D2/E/F Models: Operation indicator (red)

#### 



\* D1 Models: Operation indicator (red), Setting indicator (green) D2/E/F Models: Operation indicator (red)

#### **Mounting Hole Dimensions**



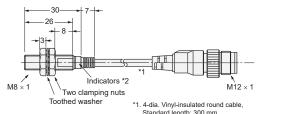
Dimensions	M8	M12	M18	M30
F (mm)	8.5 <sup>+0.5</sup> dia.	12.5 <sup>+0.5</sup> dia.	18.5 <sup>+0.5</sup> dia.	30.5 <sup>+0.5</sup> dia.

#### **Pre-wired Connector Models (Shielded)**



#### Diagram 19 E2E-X2D1-M1TGJ E2E-X2D□-M1TGJ-US





Standard length: 300 mm

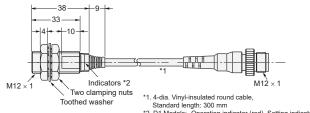
\*2. D1 Models: Operation indicator (red), Setting indicator (green)
D2 Models: Operation indicator (red)

## Diagram 20 E2E-X3D□-M1GJ

E2E-X3D1-M1J-T E2E-X3D1-M1TGJ

E2E-X3D□-M1TGJ-US





Standard length: 300 mm

\*2. D1 Models: Operation indicator (red), Setting indicator (green)
D2 Models: Operation indicator (red)

# Diagram 21 E2E-X7D□-M1GJ

E2E-X7D□-M1J-T

E2E-X7D1-M1TGJ

E2E-X7D□-M1TGJ-US



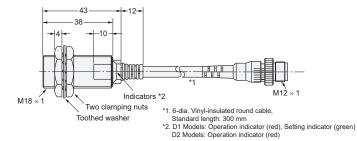
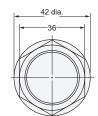
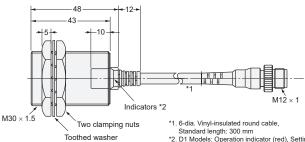


Diagram 22 E2E-X10D□-M1GJ E2E-X10D□-M1J-T

E2E-X10D1-M1TGJ

E2E-X10D□-M1TGJ-US





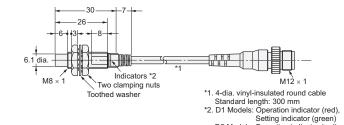
\*1. 6-dia. Vinyl-insulated round cable, Standard length: 300 mm '2. D1 Models: Operation indicator (red), Setting indicator (green) D2 Models: Operation indicator (red)

Note: DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. DC 3-Wire Models have been discontinued at the end of March 2022. Refer to the catalog (Cat. No. D120) for details.

#### **Pre-wired Connector Models (Unshielded)**

#### Diagram 23 E2E-X4MD□-M1TGJ-US





D2 Models: Operation indicator (red)

Diagram 24 E2E-X8MD1-M1GJ E2E-X8MD1-M1TGJ E2E-X8MD□-M1TGJ-US



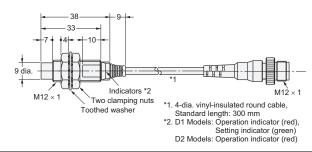


Diagram 25 E2E-X14MD□-M1GJ E2E-X14MD1-M1TGJ E2E-X14MD□-M1TGJ-US



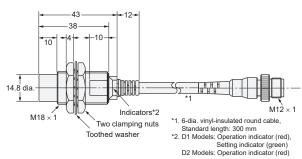
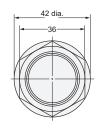
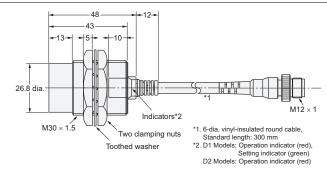


Diagram 26 E2E-X20MD1-M1GJ E2E-X20MD1-M1TGJ E2E-X20MD□-M1TGJ-US





## **Mounting Hole Dimensions**



Dimension	М8	M12	M18	M30
F (mm)	8.5 <sup>+0.5</sup> dia.	12.5 <sup>+0.5</sup> dia.	18.5 <sup>+0.5</sup> dia.	30.5 <sup>+0.5</sup> dia.

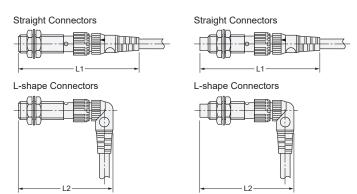
**Note:** DC 2-Wire Models have been integrated into the E2E NEXT Series at the end of october 2022. DC 3-Wire Models have been discontinued at the end of March 2022. Refer to the catalog (Cat. No. D120) for details.

#### **Dimensions for Proximity Sensors with Sensor I/O Connectors**

#### **Shielded Models**

#### **Unshielded Models**

# Dimensions with the XS2F/XS5F Connected (Unit: mm)



Dimension Sensor diameter		L1	L2
M8		Approx. 75	Approx. 62
M12*	DC	Approx. 80	Approx. 67
	AC	Approx. 85	Approx. 72
M18		Approx. 85	Approx. 72
M30		Approx. 90	Approx. 77

<sup>\*</sup> The overall length of the Sensor is different between AC and DC Models for Sensors with diameters of M12. This will change the dimension when the I/ O Connector is connected.

#### **Dimensions with the XS3F Connected** (Unit: mm)

Dimension Sensor diameter	L1	L2
M8	Approx. 65	Approx. 54

#### **Accessories (Order Separately)**

#### **Sensor I/O Connectors**

Refer to Introduction to Sensor I/O Connectors/Sensor Controllers for details.

**Mounting Brackets Protective Covers** 

**Sputter Protective Covers** 

Refer to Y92 ☐ for details.

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