

Teflon Inductive Prox

E2FQ

Teflon® Housing Sensor Performs Accurately
Under Harsh Environmental Conditions

- Teflon resin housing and nuts resist weld spatter
- Rugged watertight Teflon housing provides chemical resistance and withstands washdowns
- Conforms to NEMA 1, 4X, 6, 12, 13 and IP67
- Oil-resistant cable



Ordering Information

■ SENSORS

Sensing head		M12	M18	M30
Type		Shielded		
Nominal sensing distance		2 mm (0.08 in.)	5 mm (0.20 in.)	10 mm (0.39 in.)
AC 2-wire switching type	NO	—	E2FQ-X5Y1	E2FQ-X10Y1
DC 3-wire switching type	PNP (NO)	E2FQ-X2F1	E2FQ-X5F1	E2FQ-X10F1
	NPN (NO)	E2FQ-X2E1	E2FQ-X5E1	E2FQ-X10E1
DC 2-wire switching type	NO	E2FQ-X2D1	E2FQ-X5D1	E2FQ-X10D1

■ REPLACEMENT PARTS

Description	Part number	
Teflon®-coated nuts and nickel-plated brass washers (2 each)	For M12 sensors	M12 THWS
	For M18 sensors	M18 THWS
	For M30 sensors	M30 THWS

Teflon—Reg TM E.I. DuPont de Nemours and Co.

Specifications

■ 3-WIRE DC SENSORS

Part number		3-wire	E2FQ-X2E1, E2FQ-X2F1		E2FQ-X5E1,E2FQ-X5F1		E2FQ-X10E1, E2FQ-X10F1	
		2-wire	E2FQ0X2D1		E2FQ-X5D1		E2FQ-X10D1	
Body		Size	M12		M18		M30	
		Type	Shielded					
Supply voltage			10 to 30 VDC					
Current consumption		3-wire sensors		17 mA max.				
		2-wire sensors		0.8 mA max.				
Detectable object type			Metal objects					
Effective maximum detecting distance (with standard target)			2 mm (0.08 in.) ±10%		5 mm (0.20 in.) ±10%		10 mm (0.39 in.) ±10%	
Usable detecting range (with standard target)			0 to 1.6 mm (0 to 0.06 in.)		0 to 4 mm (0 to 0.16 in.)		0 to 8 mm (0 to 0.31 in.)	
Standard target size (mild steel, L x W x H)			12 x 12 x 1 mm (0.47 x 0.47 x 0.04 in.)		18 x 18 x 1 mm (0.71 x 0.71 0.04 in.)		30 x 30 x 1 mm (1.18 x 1.18 x 0.04 in.)	
Differential travel			10% max. of effective detecting distance					
Control output	DC solid-state	Type	E2FQ-X□E1 (3-wire, NPN-NO with pull-up resistor) E2FQ-X□F1 (3-wire, PNP-NO with pull down resistor) E2FQ-X□D1 (2-wire, transistor)					
		Max. load	200 mA (3-wire sensors) 100 mA (2-wire sensors)					
		Max. on-state voltage drop	2 VDC (3-wire sensors) 4 VDC (2-wire sensors)					
OFF-state leakage current			Refer to "Engineering Data"					
Response frequency		3-wire	1.5 kHz		600 Hz		400 Hz	
		2-wire	800 Hz		500 Hz		300 Hz	
Circuit protection		Output short-circuit	Provided (3-wire models only); automatic resetting type					
		DC power supply reverse polarity	Provided, all models					
		Weld field immunity	—					
		RFI immunity	—					
Indicators			Target present (red LED)					
Materials		Housing	Teflon resin					
		Sensing face	Teflon resin					
		Cable sheath	PVC					
Mounting			Two Teflon-coated M12 nuts included.		Two Teflon-coated M18 nuts included.		Two Teflon-coated M30 nuts included.	
Connections		Prewired	Cable, 2 m (6.56 ft.) length					
Weight with cable			Approx. 50 g (1.8 oz.)		Approx. 130 g (4.6 oz.)		Approx. 170 g (6.0 oz.)	
Enclosure ratings		NEMA	1, 4X, 6, 12, 13					
		IEC 144	IP67					
Approvals		UL	—					
		CSA	—					
Ambient operating temperature			-25° to 70°C (-13° to 158°F)					
Vibration			10 to 55 Hz, 1.5 mm (0.06 in.) double amplitude					
Shock			Approx. 100 Gs					

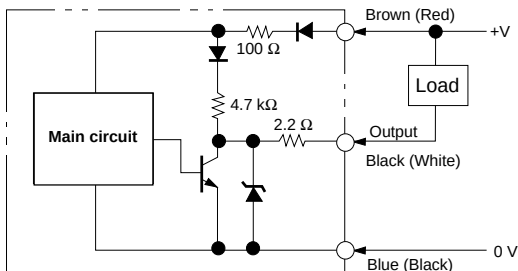
■ 2-WIRE AC SENSORS

Part number			E2FQ-X5Y1	E2FQ-X10Y1
Body		Size	M18	M30
		Type	Shielded	
Supply voltage			20 to 264 VAC, 50/60 Hz	
Current consumption			1.7 mA max. (at 200 VAC)	
Detectable object type			Metal objects	
Effective maximum detecting distance (with standard target)			5 mm (0.20 in.) ±10%	10 mm (0.39 in.) ±10%
Usable detecting range (with standard target)			0 to 4 mm (0 to 0.16 in.)	0 to 8 mm (0 to 0.31 in.)
Standard target size (mild steel, L x W x H)			18 x 18 x 1 mm (0.71 x 0.71 x 0.04 in.)	30 x 30 x 1 mm (1.18 x 1.18 x 0.04 in.)
Differential travel			10% max. of effective detecting distance	
Control output	AC solid-state	Type	E2FQ-X□□Y1 (SCR-NO)	
		Max. load	300 mA	
		Min. load	5 mA	
		Max. off-state leakage current	1.7 mA at 200 VAC	
		Max. on-state voltage drop	See "Residual Load Voltage Characteristics" graph in Engineering Data	
OFF-state leakage current			Refer to "Engineering Data"	
Response frequency			25 Hz	
Circuit protection		Output short-circuit	—	
		Weld field immunity	—	
		RFI immunity	—	
Indicators			Output operation (red LED)	
Materials		Housing	Teflon resin	
		Sensing face	Teflon resin	
		Cable sheath	PVC	
Mounting			Two Teflon M18 nuts included.	Two Teflon M30 nuts included.
Connections		Prewired	2-conductor cable, 2 m (6.56 ft.) length	
Weight with cable			Approx. 130 g (4.6 oz.)	Approx. 170 g (6.0 oz.)
Enclosure ratings		UL	—	
		NEMA	1, 4X, 6, 12, 13	
		IEC 144	IP67	
Ambient operating temperature			-25° to 70°C (-13° to 158°F)	
Vibration			10 to 55 Hz, 1.5 mm (0.06 in.) double amplitude	
Shock			Approx. 100 Gs	

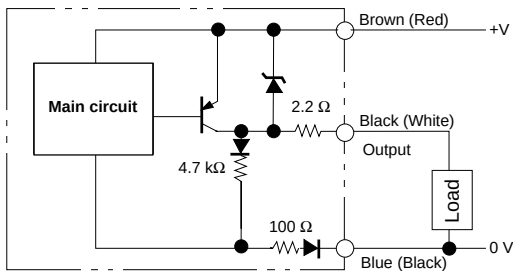
Operation

■ OUTPUT CIRCUIT DIAGRAM

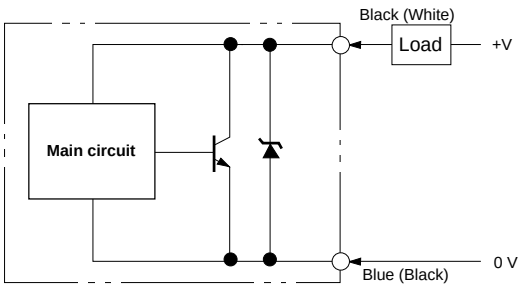
DC Switching Type
NPN Output
(E2FQ-X□E1)



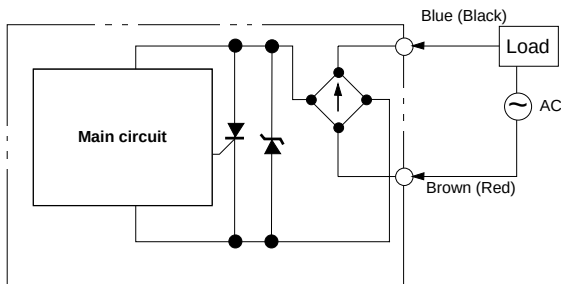
PNP Output
(E2FQ-X□F1)



DC Two-wire Type
(E2FQ-X□D1)

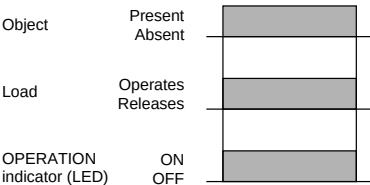


AC Switching Type
(E2FQ-X□Y1)



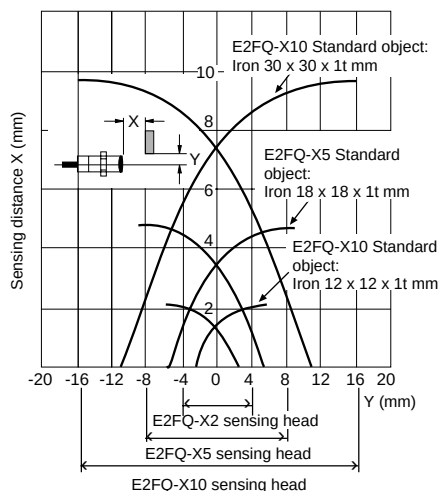
Note: IEC colors are shown in parentheses.

■ TIMING CHART



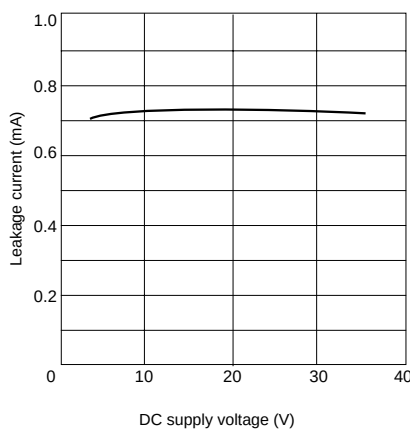
Engineering Data

■ OPERATING RANGE

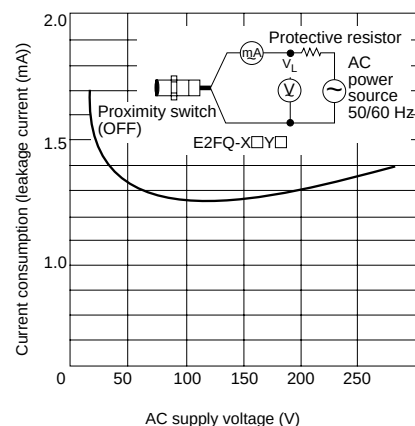


■ LEAKAGE CURRENT

E2FQ-X2D1, E2FQ-X5D1, E2FQ-X10D1



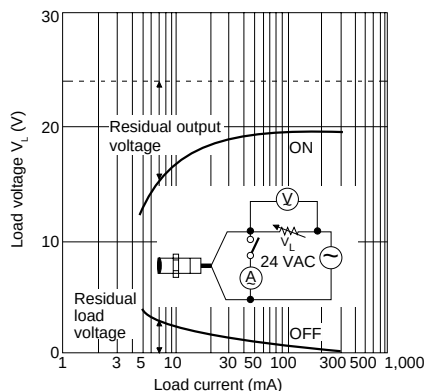
E2FQ-X5Y1, E2FQ-X10Y1



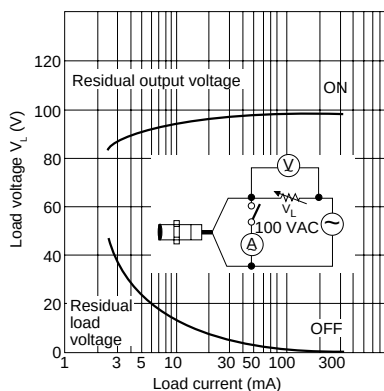
■ RESIDUAL LOAD VOLTAGE

E2EQ-X5Y1, E2FQ-X10Y1

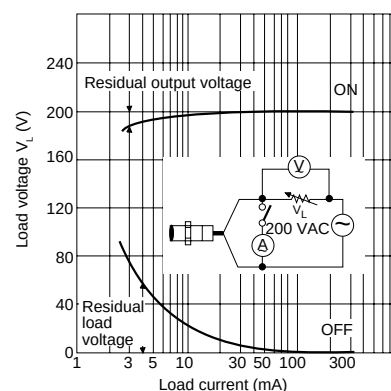
(at constant 24 VAC)



(at constant 100 VAC)



(at constant 200 VAC)

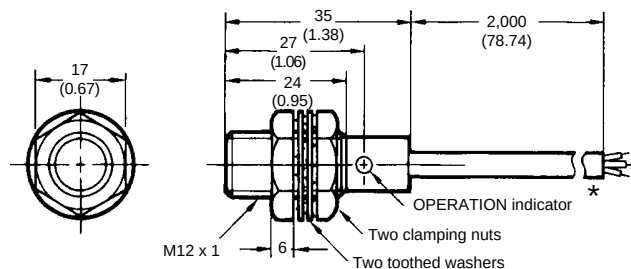


Dimensions

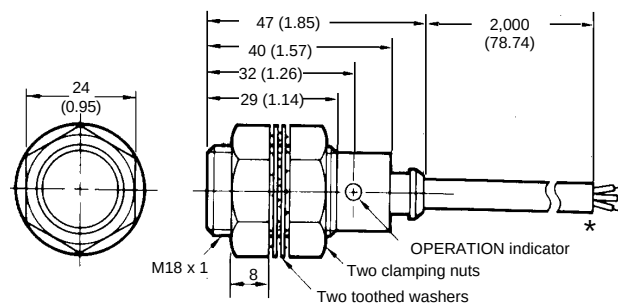
Unit : mm (inch)

Note: The following dimensions also apply to the models having 2 conductors.

E2FQ-X2□1

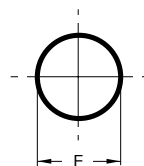
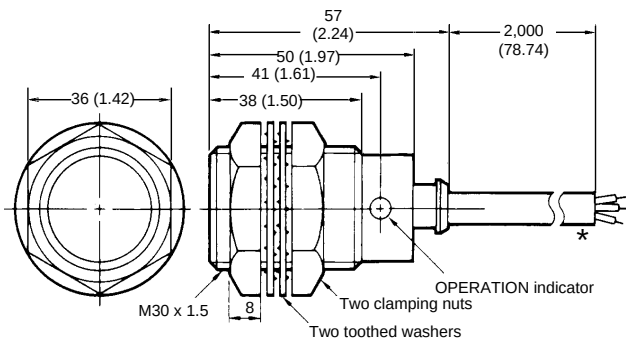


E2FQ-X5□1



E2FQ-X10□1

Mounting holes



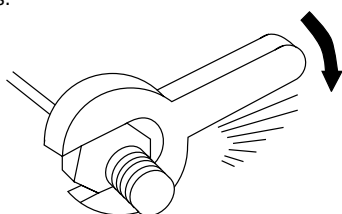
Part number	F
E2FQ-X2	12.5 ^{+0.5} ₋₀ mm (0.49 in.)
E2FQ-X5	18.5 ^{+0.5} ₋₀ mm (0.73 in.)
E2FQ-10	30.5 ^{+0.5} ₋₀ mm (1.20 in.)

★ Vinyl-insulated round cable (oil-tight, 3 conductors for E2FQ-X□E1 or E2FQ-X□F1, 2 conductors for E2FQ-X□D1, 6 mm outer diameter.
Standard length: 2 m Cable can be extended to 200 m (6.56 ft.) max. in individual metal conduit.

Precautions

■ TIGHTENING FORCE

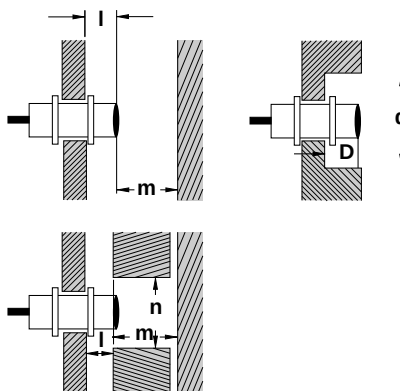
Do not exceed the torque listed in the table below when tightening the mounting nuts.



Model	Torque
E2FQ-X2	10 kgf-cm
E2FQ-X5	20 kgf-cm
E2FQ-X10	20 kgf-cm

■ EFFECTS OF SURROUNDING METALS

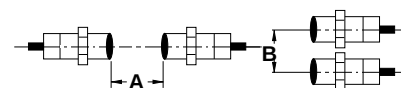
When mounting a proximity sensor flush with a metallic panel, provide the minimum distance shown. This prevents the sensor from being affected by metallic objects other than the target.



Model	E2FQ-X2	E2FQ-X5	E2FQ-X10
l	0	0	0
d	12 mm (0.47 in.)	18 mm (0.71 in.)	30 mm (1.18 in.)
D	0	0	0
m	8 mm (0.32 in.)	20 mm (0.79 in.)	40 mm (1.57 in.)
n	18 mm (0.71 in.)	27 mm (1.06 in.)	45 mm (1.77 in.)

■ MUTUAL INTERFERENCE

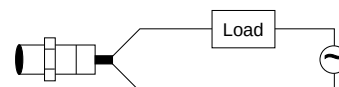
To prevent mutual interference between two sensors mounted opposite or parallel to each other, be sure to space the two sensors at a distance greater than that shown here.



Model		Minimum distance
E2FQ-X2	A	30 mm (1.18 in.)
	B	20 mm (0.79 in.)
E2FQ-X5	A	50 mm (1.97 in.)
	B	35 mm (1.38 in.)
E2FQ-X10	A	100 mm (3.94 in.)
	B	70 mm (2.76 in.)

■ CONNECTION TO POWER SOURCE

For AC type E2FQ sensors be sure to connect the proximity sensor to the power source through a load; direct connection may damage the sensor.



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