Cylindrical Proximity Sensor in Antimicrobial Plastic Housing

E2F-D

- Bacteria reducing additive in plastic housing for improved machine hygiene
- IP69k tested and certified for highest water resistance

Ordering Information

Sensors

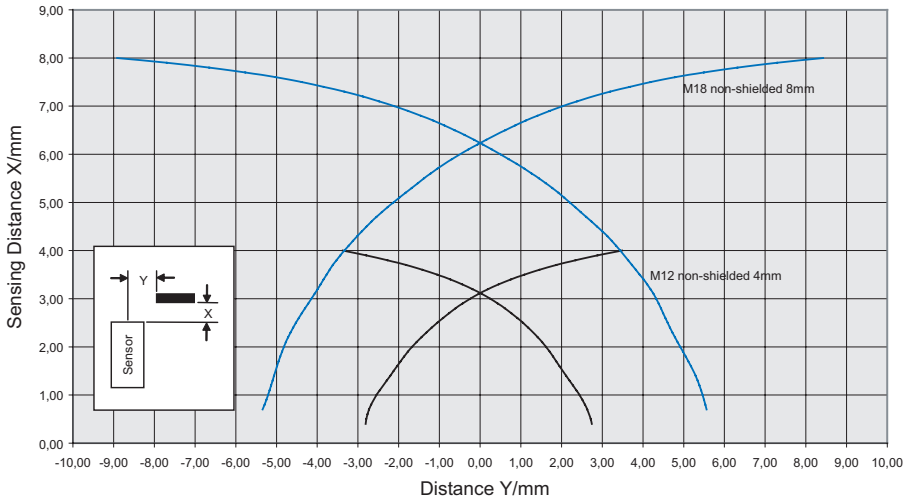
Model		Sensing distance	Output specifications		Model	
					Operating status	
					NO	NC
Unshielded	M12	4 mm	short	DC 3-wire PNP	E2F-DX4MF1 2M	E2F-DX4MF2 2M
				DC 3-wire NPN	E2F-DX4ME1 2M	E2F-DX4ME2 2M
			long	DC 3-wire PNP	E2F-DX4MF1-L 2M	E2F-DX4MF2-L 2M
				DC 3-wire NPN	E2F-DX4ME1-L 2M	E2F-DX4ME2-L 2M
	M18	8 mm	short	DC 3-wire PNP	E2F-DX8MF1 2M	E2F-DX8MF2 2M
				DC 3-wire NPN	E2F-DX8ME1 2M	E2F-DX8ME2 2M
			long	DC 3-wire PNP	E2F-DX8MF1-L 2M	E2F-DX8MF2-L 2M
				DC 3-wire NPN	E2F-DX8ME1-L 2M	E2F-DX8ME2-L 2M

Rating/performance

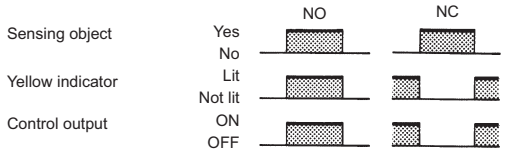
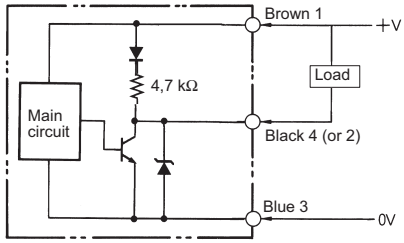
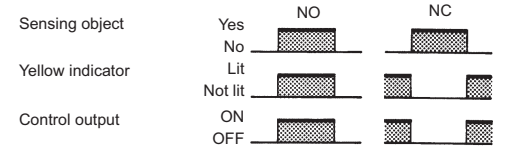
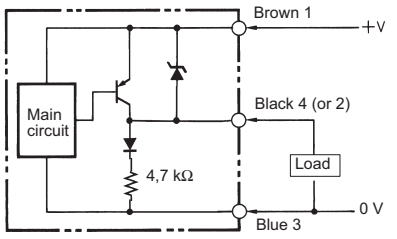
Item		E2F-DX4M□	E2F-DX8M□
Sensing distance S_n		4 mm ±10%, non shielded	8 mm ±10%, non shielded
Setting distance		0 to 3.2 mm	0 to 6.4 mm
Sensing object		Ferrous metal (Sensitivity lowers with non-ferrous metals)	
Standard sensing object		Iron, 12 × 12 × 1 mm	Iron, 24 × 24 × 1 mm
Operating voltage		10 to 35 VDC	
Rated supply voltage		12 to 24 VDC, ripple(p-p): 10% max.	
Current consumption		max. 15 mA at 24 VDC	
Differential travel		>1%...<15% of sensing distance	
Response frequency		2,000 Hz	1,000 Hz
Control output		E1 type: NPN-NO E2 type: NPN-NC F1 type: PNP-NO F2 type: PNP-NC	E1 type: NPN-NO E2 type: NPN-NC F1 type: PNP-NO F2 type: PNP-NC
Control output (switching capacity)		max. 300 mA	
Residual voltage		max. 2.5 VDC at 300 mA	
Circuit protection		Reverse polarity, output short circuit	
Indicator		Operating indicator (yellow LED)	
Ambient temperature		Operating/Storage: -25° to 70 °C	
Ambient humidity		Operating/Storage: 35% to 95% RH	
Temperature influence		±10% max. of S_n at 23 °C in temperature range of -25 to 70 °C	
Insulation resistance		50 MΩ min. (at 500 VDC) between current carry parts and case	
Dielectric strength		1,500 VAC, 50/60 Hz for 1 min between current carry parts and case	
Electromagnetic compatibility EMC		EN 60947-5-2	
Vibration resistance		10 to 70 Hz, 1.5 mm double amplitude for 1 hour each in X, Y, and Z directions	
Shock resistance		Destruction: 300 m/s² (approx. 30 G) for 6 times each in X, Y, and Z directions	
Enclosure rating		IP67, IP69k	
Connection method		Pre-wired models PVC (standard length: 2 m) 3 x 0.25 mm²	
Weight		56 g	65 g
Material	Case	PBT with antimicrobial additive based on silver ions	
	Nuts	PA with antimicrobial additive based on silver ions	

Characteristic data (typical)

Sensing Distance vs. Sensing Object

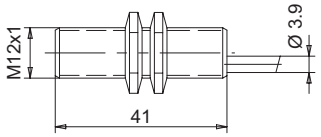


Output Circuit Diagram

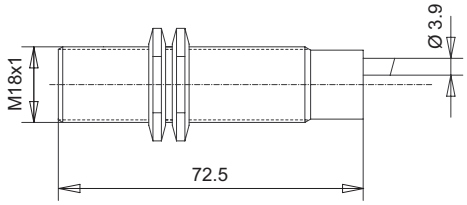
Output	Model	Timing chart	Output circuit
NPN	E2F-DX□E□		
PNP	E2F-DX□F□		

Dimensions (Unit: mm)

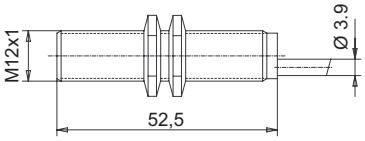
E2F-DX4M□ 2M



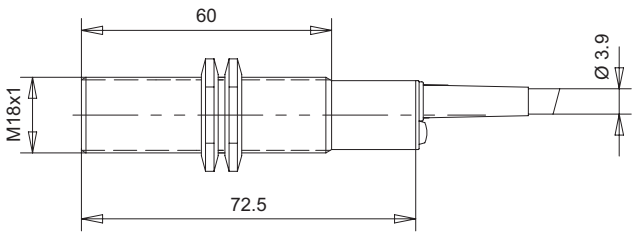
E2F-DX8M□ 2M



E2F-DX4M□-L 2M



E2F-DX8M□-L 2M



Precautions

Safety Precautions

Power Supply

Do not impose an excessive voltage on the E2F-D, otherwise it may be damaged. Do not impose AC current (100 to 240 VAC) on any DC model, otherwise it may be damaged.

Load Short-circuit

Do not short-circuit the load, or the E2F-Dmay be damaged.

The E2F-D's short-circuit protection function will be valid if the polarity of the supply voltage imposed is correct and within the rated voltage range.

Wiring

Be sure to wire the E2F-D and load correctly, otherwise it may be damaged.

Connection with No Load

Be sure to insert loads when wiring. Make sure to connect a proper load to the E2F-D in operation, otherwise it may damage internal elements.

Do not expose the product to flammable or explosive gases.

Do not disassemble, repair, or modify the product.

Correct Use

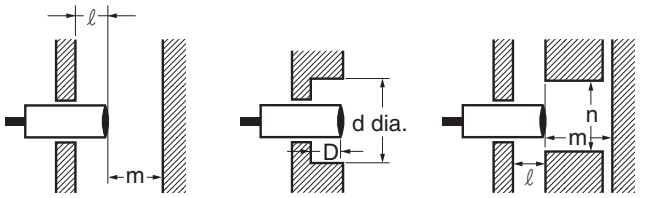
Designing

Power Reset Time

The Proximity Sensor is ready to operate within 100 ms after power is supplied. If power supplies are connected to the Proximity Sensor and load respectively, be sure to supply power to the Proximity Sensor before supplying power to the load.

Effects of Surrounding Metal

When mounting the E2F-D within a metal panel, ensure that the clearances given in the following table are maintained.



(Unit: mm)

Type	Dimension	M12	M18
Non-shielded	l	15	22
	m	20	48
	d	40	70
	D	15	22
	n	40	70

Power OFF

The Proximity Sensor may output a pulse signal when it is turned OFF. Therefore, it is recommended that the load be turned OFF before turning OFF the Proximity Sensor.

Power Supply Transformer

When using a DC power supply, make sure that the DC power supply has an insulated transformer. Do not use a DC power supply with an auto-transformer.

Wiring

High-tension Lines

Wiring through Metal Conduit**:**
If there is a power or high-tension line near the cable of the Proximity Sensor, wire the cable through an independent metal conduit to prevent against Proximity Sensor damage or malfunctioning.

Cable Extension

Standard cable length is less than 200 m.

The tractive force is 50 N.

Mounting

The Proximity Sensor must not be subjected to excessive shock with a hammer when it is installed, otherwise the Proximity Sensor may be damaged or lose its water-resistivity.

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

Type	Torque
M12	1.5 Nm
M18	2.0 Nm

Maintenance and Inspection

Periodically perform the following checks to ensure stable operation of the Proximity Sensor over a long period of time.

1. Check for mounting position, dislocation, looseness, or distortion of the Proximity Sensor and sensing objects.
2. Check for loose wiring and connections, improper contacts, and line breakage.
3. Check for attachment or accumulation of metal powder or dust.
4. Check for abnormal temperature conditions and other environmental conditions.
5. Check for proper lighting of indicators (for models with a set indicator.)

Never disassemble or repair the Sensor.

Environment

Water Resistivity

The Proximity Sensors are tested intensively on water resistance, but in order to ensure maximum performance and life expectancy avoid immersion in water and provide protection from rain or snow.

Operating Environment

Ensure storage and operation of the Proximity Sensor within the given specifications.

Inrush Current

A load that has a large inrush current (e.g., a lamp or motor) will damage the Proximity Sensor, in which case connect the load to the Proximity Sensor through a relay.

<SUITABILITY FOR USE>

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of the products in the customer's application or use of the products.

Take all necessary steps to determine the suitability of the product for the systems, machines, and equipment with which it will be used.

<CHANGE IN SPECIFICATIONS>

Product specifications and accessories may be changed at any time based on improvements and other reasons. Consult with your OMRON representative at any time to confirm actual specifications of purchased product.

Cat. No. D15E-EN-01 **In the interest of product improvement, specifications are subject to change without notice.**

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