

#### Metal Face Sensors

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### Metal Face Sensors

#### Product Description

Metal Face Inductive Proximity Sensors by Eaton's electrical sector incorporate tough stainless steel sensing faces in place of the plastic faces found in standard sensors. This provides a higher level of protection for more reliable operation and longer life in harsh environments.

The sensors stand up to abrasion and impact caused by flying metal chips, grit, and misaligned or vibrating targets. In addition, the stainless steel body resists corrosion and chemical attack.

Common sensor diameters, voltage styles and wiring connections make it easy to retrofit your existing, damaged sensors. Solve the problem of damaged sensors permanently with Eaton's Metal Face Sensors.

#### Features

- Two-wire AC/DC models and three-wire DC models are compatible with your existing wiring
- Common 12 mm, 18 mm and 30 mm housing diameters allow easy changeout of existing damaged sensors
- The 20 mil stainless steel sensing face is thicker than competing units for a higher level of protection
- The stainless steel body is damage and corrosion resistant
- Wide operating temperature range: -13° to 158°F (-25° to 70°C)

#### DANGER

**THIS SENSOR IS NOT A SAFETY DEVICE AND IS NOT INTENDED TO BE USED AS A SAFETY DEVICE. This sensor is designed only to detect and read certain data in an electronic manner and perform no use apart from that, specifically no safety-related use. This sensor product does not include self-checking redundant circuitry, and the failure of this sensor product could cause either an energized or de-energized output condition, which could result in death, serious bodily injury, or property damage.**



For the most current information on this product, visit our Web site: [www.eaton.com](http://www.eaton.com)

For Customer Service in the U.S. call 1-877-ETN CARE (386-2273), in Canada call 1-800-268-3578.  
For Application Assistance in the U.S. and Canada call 1-800-426-9184.



### Product Selection

#### Metal Face Sensors

#### Two-Wire Sensors




	Operating Voltage	Sensing Range (Sn)	Shielding	Connection Type	NO Output Catalog Number
<b>12 mm</b>	<b>12 mm Diameter</b>				
	20–250 Vac/Vdc 50/60 Hz	2 mm	Shielded	3-pin micro AC connector	<b>E57FAL12A2SA-M</b> ⓘ
<b>30 mm</b>	<b>30 mm Diameter</b>				
	20–250 Vac/Vdc 50/60 Hz	10 mm	Shielded	3-pin micro AC connector	<b>E57FAL30A2SA-M</b> ⓘ

#### Three-Wire Sensors

	Operating Voltage	Sensing Range (Sn)	Shielding	Connection Type	NO Output Catalog Number
<b>12 mm</b>	<b>12 mm Diameter</b>				
	10–30 Vdc	2 mm	Shielded (PNP)	4-pin micro DC connector	<b>E57FAL12T111SD-M</b> ⓘ
<b>18 mm</b>	<b>18 mm Diameter</b>				
	10–30 Vdc	5 mm	Shielded (PNP)	4-pin micro DC connector	<b>E57FAL18T111SD-M</b> ⓘ

#### Compatible Connector Cables

#### Standard Cables ⓘ

	Voltage Style	Number of Pins	Gauge	Length	Pin Configuration/Wire Colors (Face View Female Shown)	PVC Jacket Catalog Number	PUR Jacket Catalog Number
<b>Micro-Style Straight Female</b> 	<b>Micro-Style, Straight Female</b>						
	AC	3-pin, 3-wire	22 AWG	6.0 ft (2m)	 1-Green 2-Red/Black 3-Red/White	<b>CSAS3F3CY2202</b>	<b>CSAS3F3RY2202</b>
	DC	4-pin, 4-wire	22 AWG	6.0 ft (2m)	 1-Brown 2-White 3-Blue 4-Black	<b>CSDS4A4CY2202</b>	<b>CSDS4A4RY2202</b>

#### Notes

- ⓘ See listing of compatible connector cables above.
- ⓘ For a full selection of connector cables, see **Tab 10, section 10.1**.

**Accessories****Metal Face Sensors**

Description	Reference
Mounting brackets	See <b>Tab 8, section 8.2</b>
Replacement mounting nuts and other accessories	See <b>Tab 8, section 8.3</b>
Connector cables	See <b>Tab 10, section 10.1</b>

**Technical Data and Specifications****Metal Face Sensors**

Description	Two-Wire AC/DC Sensors	Three-Wire DC Only Sensors
Operating voltage	20–250 Vac/Vdc	10–30 Vdc
Maximum load current	100 mA	100 mA
Switching frequency		
12 mm	15 Hz	2000 Hz
18 mm	—	1000 Hz
30 mm	—	300 Hz
Leakage current	2.5 mA maximum	600 µA maximum
Voltage drop	10V maximum	1.5V maximum
Holding current	5 mA minimum	—
Burden current	—	17 mA
Protection	Transient, power on false pulse suppression	Short circuit protection
Switching hysteresis	<15% rated sensing distance	<15% rated sensing distance
Repeat accuracy	<1% sensing distance	<1% sensing distance
Time delay before availability	<200 ms	<200 ms
Output indicator LED	Lights when output is ON	Lights when output is ON
Operating temperature	–13° to 131°F (–25° to 55°C)	–13° to 131°F (–25° to 55°C)
Enclosure ratings	NEMA 4, 4X, 6, 6P, 12 and 13 (IP67)	NEMA 4, 4X, 6, 6P, 12 and 13 (IP67)
Shock	30g sine wave, 11 ms per IEC68-2-76	30g sine wave, 11 ms per IEC68-2-76
Vibration	10 to 55 Hz, 1 mm amplitude in all three planes	10 to 55 Hz, 1 mm amplitude in all three planes
Housing material	303 stainless steel	303 stainless steel
Face thickness	20 mils	20 mils

### Wiring Diagrams

Pin numbers are for reference, rely on pin location when wiring.

#### Metal Face Sensors

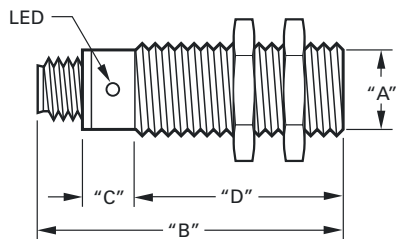
Operating Voltage	Output	Micro-Connector Models (Face View Male Shown)
<b>Two-Wire Sensors</b>		
20–250 Vac/Vdc 50/60 Hz	NO	
<b>Three-Wire Sensors</b>		
10–30 Vdc	NO (NPN)	
	NO (PNP)	

### Dimensions

Approximate Dimensions in Inches (mm)

#### Metal Face Sensors

#### Connector Models



Catalog Number	A	B	C	D
<b>Two-Wire Models</b>				
E57FAL12A2SA-M	M x 12	2.67 (68)	1.10 (28)	1.58 (40)
E57FAL30A2SA-M	M x 30	3.70 (94)	1.34 (34)	2.36 (60)
<b>Three-Wire Models</b>				
E57FAL12T111SD-M	M x 12	2.67 (68)	1.02 (26)	1.65 (42)
E57FAL18T110SD-M	M x 18	3.11 (79)	1.14 (29)	1.97 (50)
E57FAL18T111SD-M	M x 18	3.11 (79)	1.14 (29)	1.97 (50)