

E57 Premium+ Series Short Barrel Sensors



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E57 Premium+ Series Short Barrel Sensors

Product Description

The new Premium+ Series Short Barrel Inductive Proximity Sensors from Eaton's Electrical Sector feature the same sensing ranges as our standard length sensors, but in a body with a substantially shorter length. This allows the sensors to be used in applications where mounting space is limited.

Our robust Premium+ Series design has been added to the short barrel line. This means these sensors have been upgraded to include rugged stainless steel barrels, polycarbonate end bells, shock-resistant front cap and potting compound. Plus, the short barrel line now includes a choice of AC, AC/DC and DC-only, 12, 18 and 30 mm sensors. Cable models feature an optional extra long 5-meter cable. Every sensor is designed with 360° LED.

Features

- Manufactured to take physical and environmental abuse
- Designed with stainless steel barrel and impact-absorbing new potting compound for robust, high temperature, high pressure washdown, as well as intense shock and vibration applications
- Unmatched high noise immunity eliminates problems associated with electrical noise (all models >20V/meter)
- 360° output status indicator is visible from any angle and in any light condition
- Resettable short circuit protection in AC/DC and DC models
- Reverse polarity protection in three-wire DC versions
- Small size to fit in tight spaces
- Choice of cable for low cost wiring, or micro-connector for quick installation or replacement
- Cable models include an extra long 5-meter cable as option

Standards and Certifications

- cUL Listed
- CE (AC/DC and DC-only models)

**! 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

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

E57 Premium+ Series Short Barrel Sensors

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Two-Wire Sensors

	Operating Voltage	Sensing Range (Sn)	Shielding	Connection Type ①	NO Output Catalog Number	NC Output Catalog Number
	12 mm Diameter					
	20–250 Vac	2 mm	Shielded	2-meter cable	E57SAL12A4	E57SBL12A4
				3-pin micro AC connector	E57SAL12A4SA ☹	E57SBL12A4SA ☹
		4 mm	Unshielded	2-meter cable	E57SAL12A4E	E57SBL12A4E
				3-pin micro AC connector	E57SAL12A4EA ☹	E57SBL12A4EA ☹
	40–250 Vac 50/60 Hz② 20–250 Vdc	2 mm	Shielded	2-meter cable	E57SAL12A2	E57SBL12A2
				3-pin micro AC connector	E57SAL12A2SA ☹	E57SBL12A2SA ☹
		4 mm	Unshielded	2-meter cable	E57SAL12A2E	E57SBL12A2E
				3-pin micro AC connector	E57SAL12A2EA ☹	E57SBL12A2EA ☹
		18 mm Diameter				
20–250 Vac		5 mm	Shielded	2-meter cable	E57SAL18A4	E57SBL18A4
				3-pin micro AC connector	E57SAL18A4SA ☹	E57SBL18A4SA ☹
		8 mm	Unshielded	2-meter cable	E57SAL18A4E	E57SBL18A4E
				3-pin micro AC connector	E57SAL18A4EA ☹	E57SBL18A4EA ☹
40–250 Vac 50/60 Hz② 20–250 Vdc		5 mm	Shielded	2-meter cable	E57SAL18A2	E57SBL18A2
				3-pin micro AC connector	E57SAL18A2SA ☹	E57SBL18A2SA ☹
		8 mm	Unshielded	2-meter cable	E57SAL18A2E	E57SBL18A2E
				3-pin micro AC connector	E57SAL18A2EA ☹	E57SBL18A2EA ☹
		30 mm Diameter				
	20–250 Vac	10 mm	Shielded	2-meter cable	E57SAL30A4	E57SBL30A4
				3-pin micro AC connector	E57SAL30A4SA ☹	E57SBL30A4SA ☹
		15 mm	Unshielded	2-meter cable	E57SAL30A4E	E57SBL30A4E
				3-pin micro AC connector	E57SAL30A4EA ☹	E57SBL30A4EA ☹
	40–250 Vac 50/60 Hz② 20–250 Vdc	10 mm	Shielded	2-meter cable	E57SAL30A2	E57SBL30A2
				3-pin micro AC connector	E57SAL30A2SA ☹	E57SBL30A2SA ☹
		15 mm	Unshielded	2-meter cable	E57SAL30A2E	E57SBL30A2E
				3-pin micro AC connector	E57SAL30A2EA ☹	E57SBL30A2EA ☹




Notes

☹ See listing of compatible connector cables on **Page V8-T3-31**.

① Cable models are supplied as standard with a 2-meter cable. A 5-meter cable is available by adding **S5** to the catalog number. Example: E57SAL12T110 becomes E57SAL12T110**S5**.



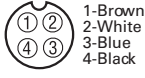
② Avoid wiring these AC/DC models in series as the sensors may not perform reliably. Contact Eaton's Applications Engineering at 1-800-426-9184 with questions.

Three-Wire Sensors

	Operating Voltage	Sensing Range (Sn)	Shielding	Connection Type ①	NO Output Catalog Number	NC Output Catalog Number
<div>12 mm</div> 	12 mm Diameter					
	6–48 Vdc	2 mm	Shielded (NPN)	2-meter cable	E57SAL12T110	—
				4-pin micro DC connector	E57SAL12T110SD ②	—
		4 mm	Shielded (PNP)	2-meter cable	E57SAL12T111	E57SBL12T111
				4-pin micro DC connector	E57SAL12T111SD ②	E57SBL12T111SD ②
			Unshielded (NPN)	2-meter cable	E57SAL12T110E	E57SBL12T110E
				4-pin micro DC connector	E57SAL12T110ED ②	E57SBL12T110ED ②
			Unshielded (PNP)	2-meter cable	E57SAL12T111E	E57SBL12T111E
				4-pin micro DC connector	E57SAL12T111ED ②	E57SBL12T111ED ②
<div>18 mm</div> 	18 mm Diameter					
	6–48 Vdc	5 mm	Shielded (NPN)	2-meter cable	E57SAL18T110	E57SBL18T110
				4-pin micro DC connector	E57SAL18T110SD ②	E57SBL18T110SD ②
			Shielded (PNP)	2-meter cable	E57SAL18T111	E57SBL18T111
				4-pin micro DC connector	E57SAL18T111SD ②	E57SBL18T111SD ②
		8 mm	Unshielded (NPN)	2-meter cable	E57SAL18T110E	E57SBL18T110E
				4-pin micro DC connector	E57SAL18T110ED ②	E57SBL18T110ED ②
			Unshielded (PNP)	2-meter cable	E57SAL18T111E	E57SBL18T111E
				4-pin micro DC connector	E57SAL18T111ED ②	E57SBL18T111ED ②
<div>30 mm</div> 	30 mm Diameter					
	6–48 Vdc	10 mm	Shielded (NPN)	2-meter cable	E57SAL30T110	E57SBL30T110
				4-pin micro DC connector	E57SAL30T110SD ②	E57SBL30T110SD ②
			Shielded (PNP)	2-meter cable	E57SAL30T111	E57SBL30T111
				4-pin micro DC connector	E57SAL30T111SD ②	E57SBL30T111SD ②
		15 mm	Unshielded (NPN)	2-meter cable	E57SAL30T110E	E57SBL30T110E
				4-pin micro DC connector	E57SAL30T110ED ②	E57SBL30T110ED ②
			Unshielded (PNP)	2-meter cable	E57SAL30T111E	E57SBL30T111E
				4-pin micro DC connector	E57SAL30T111ED ②	E57SBL30T111ED ②

Compatible Connector Cables

Standard Cables ②

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

Notes

ⓘ See listing of compatible connector cables above.

① Cable models are supplied as standard with a 2-meter cable. A 5-meter cable is available by adding **S5** to the catalog number. Example: E57SAL12T110 becomes E57SAL12T110**S5**.

② For a full selection of connector cables, see **Tab 10, section 10.1**.

Accessories

E57 Premium+ Series Short Barrel Sensors

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

Technical Data and Specifications

E57 Premium+ Series Short Barrel Sensors

Description	Two-Wire AC Sensors	Two-Wire AC/DC Sensors		Three-Wire DC Sensors
		AC Operation	DC Operation	
Operating voltage	40–250 Vac	40–250 Vac	20–250 Vdc	6–48 Vdc
Maximum load current	250 mA	200 mA	200 mA	250 mA
Switching frequency	20 Hz	60 Hz	60 Hz	12 mm: 800 Hz 18 mm: 500 Hz 30 mm: 300 Hz
Leakage current	1.7 mA maximum at 70°C	1.7V mA maximum at 120 Vac	≤2.0 mA	100 µA maximum
Voltage drop	7V maximum	≤4V at >25 mA	12V at <10 mA	≤2.5V
Holding current	5 mA minimum	5 mA minimum	5 mA maximum	≤10 mA
Protection	—	Resettable short circuit; overload protection	Resettable short circuit; overload protection	Auto reset
Switching hysteresis	2–20% of rated sensing distance	2–20% of rated sensing distance	2–20% of rated sensing distance	2–20% of rated sensing distance
Repeat accuracy	<3% sensing distance	<3% sensing distance	<3% sensing distance	<3% sensing distance
Output indicator LED	360° viewable LED	360° viewable LED	360° viewable LED	360° viewable LED
Operating temperature	–13° to 158°F (–25° to 70°C) ①	–13° to 158°F (–25° to 70°C) ①	–13° to 158°F (–25° to 70°C) ①	–13° to 158°F (–25° to 70°C) ①
Enclosure ratings	NEMA 4, 4X, 6, 6P, 12 and 13 (IP67)	NEMA 4, 4X, 6, 6P, 12 and 13 (IP67)	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	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	10 to 55 Hz, 1 mm amplitude	10 to 55 Hz, 1 mm amplitude	10 to 55 Hz, 1 mm amplitude
Material of construction	Stainless steel, polycarbonate end bells, Ryton® front cap	Stainless steel, polycarbonate end bells, Ryton® front cap	Stainless steel, polycarbonate end bells, Ryton® front cap	Stainless steel, polycarbonate end bells, Ryton® front cap
Cable	AWM Style 20387 (PVC)	AWM Style 20387 (PVC)	AWM Style 20387 (PVC)	AWM Style 20387 (PVC)

Notes

Ryton® is a registered trademark of Phillips Chemical (division of Phillips Petroleum).

① 240 Vac operation is limited to less than 122°F (50°C) in two-wire AC/DC models.

Wiring Diagrams

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

E57 Premium+ Series Short Barrel Sensors

Operating Voltage	Output	Cable Models	Micro-Connector Models (Face View Male Shown)
Two-Wire Sensors			
20–250 Vac/dc 45/65 Hz DC wiring example	NO and NC (NPN)		
	NO and NC (PNP)		
20–250 Vac/dc and AC-only AC wiring example	NO and NC		
Three-Wire Sensors			
6–48 Vdc	NO (NPN)		
	NO (PNP)		
	NC (NPN)		
	NC (PNP)		

3.3

Inductive Proximity Sensors

E57 Premium+ Series Short Barrel Sensors

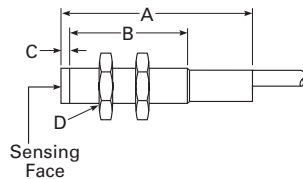
Dimensions

Approximate Dimensions in Inches (mm)

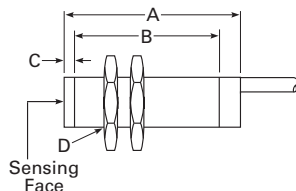
E57 Premium+ Series Short Barrel Sensors—Cable Models

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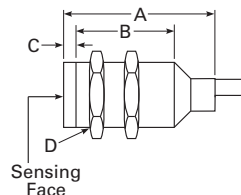
12 mm



18 mm



30 mm

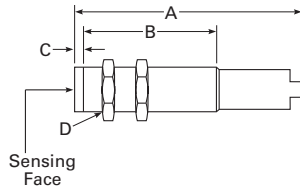


Size	Shielding	Overall Length A	Threaded Length B	Cap Height C	Thread Size D
Two-Wire AC Sensors					
12 mm	Shielded	2.04 (51.7)	1.56 (39.6)	0.02 (0.5)	M12 x 1
	Unshielded	2.04 (51.7)	1.38 (35.1)	0.20 (5)	M12 x 1
18 mm	Shielded	1.39 (35.3)	0.86 (21.82)	0.02 (0.5)	M18 x 1
	Unshielded	1.39 (35.3)	0.60 (15.32)	0.28 (7)	M18 x 1
30 mm	Shielded	1.58 (40.2)	0.99 (25.15)	0.03 (0.8)	M30 x 1.5
	Unshielded	1.77 (44.9)	0.68 (17.27)	0.52 (13.26)	M30 x 1.5
Two-Wire AC/DC Sensors					
12 mm	Shielded	2.46 (62.4)	1.98 (50.27)	—	M12 x 1
	Unshielded	2.46 (62.4)	1.80 (45.77)	0.20 (5)	M12 x 1
18 mm	Shielded	2.54 (64.5)	2.00 (50.9)	—	M18 x 1
	Unshielded	2.54 (64.5)	1.75 (44.4)	0.28 (7)	M18 x 1
30 mm	Shielded	2.72 (69.3)	2.12 (53.8)	—	M30 x 1.5
	Unshielded	2.72 (69.3)	1.63 (41.4)	0.52 (13.26)	M30 x 1.5
Three-Wire DC Sensors					
12 mm	Shielded	1.39 (35.3)	0.91 (23.09)	0.02 (0.5)	M12 x 1
	Unshielded	1.39 (35.3)	0.73 (18.59)	0.20 (5)	M12 x 1
18 mm	Shielded	1.39 (35.3)	0.86 (21.82)	0.02 (0.5)	M18 x 1
	Unshielded	1.39 (35.3)	0.60 (15.32)	0.28 (7)	M18 x 1
30 mm	Shielded	1.58 (40.2)	0.84 (21.26)	0.03 (0.8)	M30 x 1.5
	Unshielded	1.77 (44.9)	0.53 (13.46)	0.52 (13.26)	M30 x 1.5

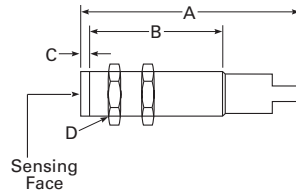
Approximate Dimensions in Inches (mm)

E57 Premium+ Series Short Barrel Sensors—Micro-Connector Models

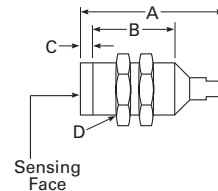
12 mm



18 mm



30 mm



Size	Shielding	Overall Length A	Threaded Length B	Cap Height C	Thread Size D
Two-Wire AC Sensors					
12 mm	Shielded	2.27 (57.8)	1.56 (39.6)	0.02 (0.5)	M12 x 1
	Unshielded	2.27 (57.8)	1.38 (35.1)	0.20 (5)	M12 x 1
18 mm	Shielded	1.57 (40.0)	0.86 (21.82)	0.02 (0.5)	M18 x 1
	Unshielded	1.57 (40.0)	0.60 (15.32)	0.28 (7)	M18 x 1
30 mm	Shielded	1.76 (44.8)	0.99 (25.15)	0.03 (0.8)	M30 x 1.5
	Unshielded	1.95 (49.5)	0.68 (17.27)	0.52 (13.26)	M30 x 1.5
Two-Wire AC/DC Sensors					
12 mm	Shielded	2.69 (68.4)	1.98 (50.27)	—	M12 x 1
	Unshielded	2.69 (68.4)	1.80 (45.77)	0.20 (5)	M12 x 1
18 mm	Shielded	2.72 (69.06)	2.00 (50.9)	—	M18 x 1
	Unshielded	2.72 (69.06)	1.75 (44.4)	0.28 (7)	M18 x 1
30 mm	Shielded	2.91 (73.8)	2.12 (53.8)	—	M30 x 1.5
	Unshielded	2.91 (73.8)	1.63 (41.4)	0.52 (13.26)	M30 x 1.5
Three-Wire DC Sensors					
12 mm	Shielded	1.64 (41.5)	0.91 (23.09)	0.02 (0.5)	M12 x 1
	Unshielded	1.64 (41.5)	0.73 (18.59)	0.20 (5)	M12 x 1
18 mm	Shielded	1.59 (40.3)	0.86 (21.82)	0.02 (0.5)	M18 x 1
	Unshielded	1.59 (40.3)	0.60 (15.32)	0.28 (7)	M18 x 1
30 mm	Shielded	1.77 (45.0)	0.84 (21.26)	0.03 (0.8)	M30 x 1.5
	Unshielded	1.96 (49.7)	0.53 (13.46)	0.52 (13.26)	M30 x 1.5