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)

c(UL) Listed   CE

⚠ 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	**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	**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	**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.
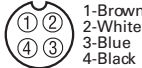 Example: E57SAL12T110 becomes E57SAL12T110**S5**.

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.

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Three-Wire Sensors

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

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						
AC	3-pin, 3-wire	22 AWG	6.0 ft (2m)	1-Green 2-Red/Black 3-Red/White	**CSAS3F3CY2202**	**CSAS3F3RY2202**
DC	4-pin, 4-wire	22 AWG	6.0 ft (2m)	1-Brown 2-White 3-Blue 4-Black	**CSDS4A4CY2202**	**CSDS4A4RY2202**

Micro-Style Straight Female

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**.

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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 AC Operation	DC Operation	Three-Wire DC Sensors
Operating voltage	40–250 Vac	40–250 Vac	20–250 Vdc	6–48 Vdc
Maximum load current	500 mA at 77°F (25°C); 250 mA at 158°F (70°C)	250 mA at 77°F (25°C)[1] 200 mA at 158°F (70°C)	250 mA at 77°F (25°C) 200 mA at 158°F (70°C)	500 mA at 6–32 Vdc 250 mA at 32–48 Vdc
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/Vdc 45/65 Hz DC wiring example	NO and NC (NPN)	BN — Load — L1 or +V BU — L2 or (–)	L2 — Load — ③ ② ① — L1
	NO and NC (PNP)	BN — L1 or +V BU — Load — L2 or (–)	L2 — ③ ② ① — Load — L1
20–250 Vac/Vdc and AC-only AC wiring example	NO and NC	BN — L1 BU — Load — L2	L2 — Load — ③ ② ① — L1
Three-Wire Sensors			
6–48 Vdc	NO (NPN)	BN — +V BK — Load BU — (–)	(–) — ② ① ③ ④ — Load — +V
	NO (PNP)	BN — +V BK — Load BU — (_)	(–) — ② ① ③ ④ — +V, Load
	NC (NPN)	BN — +V BK — Load BU — (–)	Load — ② ① ③ ④ — +V, (–)
	NC (PNP)	BN — +V BK — Load BU — (_)	(–) — Load — ② ① ③ ④ — +V

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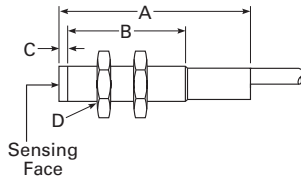
Dimensions
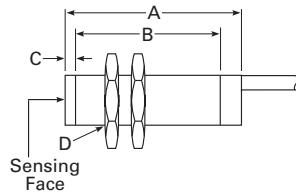
Approximate Dimensions in Inches (mm)

E57 Premium+ Series Short Barrel Sensors—Cable Models
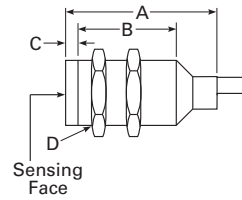
12 mm   **18 mm**   **30 mm**

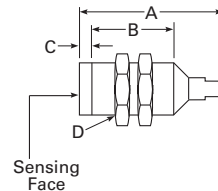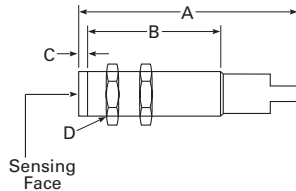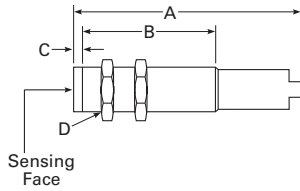| Size	Shielding	Overall Length A	Threaded Length B	Cap Height C	Thread Size D
Two-Wire AC Sensors					
12 mm	Shielded	2.04 (51.7)	1.56 (39.6)	0.02 (0.5)	M12 x 1
	Unshielded	2.04 (51.7)	1.38 (35.1)	0.20 (5)	M12 x 1
18 mm	Shielded	1.39 (35.3)	0.86 (21.82)	0.02 (0.5)	M18 x 1
	Unshielded	1.39 (35.3)	0.60 (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