

### Miniature Short Body Sensors



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## Miniature Short Body Sensors

### Product Description

These unique Inductive Proximity Sensors by Eaton's electrical sector are designed to be used in extremely small spaces. A wide variety of models are available with housing diameters from 8 mm all the way down to 4 mm, allowing you to choose the one that best fits your application. The sensors are three-wire devices that operate from 10 to 30 Vdc. Both shielded and unshielded versions are available.

### Application Description

#### Typical Applications

- Automation equipment
- Robotics
- Machine tool
- Counting
- Sorting

### Features

- Small 4, 5, 6.5 and 8 mm diameters for use in applications with limited space for mounting sensors
- Stainless steel housings
- All models include an LED indicator to show output status
- Short circuit and reverse polarity protection
- Rated NEMA 4, 4X, 6, 6P, 12 and 13 (IP67) for high resistance to environmental factors

### Standards and Certifications

- 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](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

#### Miniature Short Body Sensors

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#### Three-Wire Sensors






	Operating Voltage	Sensing Range (Sn)	Shielding	Connection Type	NO Output Catalog Number	NC Output Catalog Number
	<b>4 mm Diameter (Unthreaded)</b>					
	10–30 Vdc	0.8 mm	Shielded (NPN)	2-meter cable	<b>E57EAL4T110SP</b>	—
				3-pin nano-connector	<b>E57EAL4T110SN</b> ☹	—
	Shielded (PNP)	2-meter cable	<b>E57EAL4T111SP</b>	—		
		3-pin nano-connector	<b>E57EAL4T111SN</b> ☹	—		
	<b>5 mm Diameter</b>					
	10–30 Vdc	0.8 mm	Shielded (NPN)	2-meter cable	<b>E57EAL5T110SP</b>	—
				3-pin nano-connector	<b>E57EAL5T110SN</b> ☹	—
	Shielded (PNP)	2-meter cable	<b>E57EAL5T111SP</b>	—		
		3-pin nano-connector	<b>E57EAL5T111SN</b> ☹	—		
<b>6.5 mm Diameter (Unthreaded)</b>						
	10–30 Vdc	1 mm	Shielded (NPN)	2-meter cable	<b>E57EAL6T110SP</b>	—
				3-pin nano-connector	<b>E57EAL6T110SN</b> ☹	—
				4-pin micro DC connector	<b>E57EAL6T110SD</b> ☹	—
			Shielded (PNP)	2-meter cable	<b>E57EAL6T111SP</b>	—
				3-pin nano-connector	<b>E57EAL6T111SN</b> ☹	—
				4-pin micro DC connector	<b>E57EAL6T111SD</b> ☹	—
	2 mm	Unshielded (NPN)	2-meter cable	<b>E57EAL6T110EP</b>	—	
			3-pin nano-connector	<b>E57EAL6T110EN</b> ☹	—	
		Unshielded (PNP)	2-meter cable	<b>E57EAL6T111EP</b>	—	
			3-pin nano-connector	<b>E57EAL6T111EN</b> ☹	—	
<b>8 mm Diameter</b>						
	10–30 Vdc	1 mm	Shielded (NPN)	2-meter cable	<b>E57EAL8T110SP</b>	<b>E57EAL8T110SP</b>
				3-pin nano-connector	<b>E57EAL8T110SN</b> ☹	<b>E57EAL8T110SN</b> ☹
				4-pin micro DC connector	<b>E57EAL8T110SD</b> ☹	<b>E57EAL8T110SD</b> ☹
			Shielded (PNP)	2-meter cable	<b>E57EAL8T111SP</b>	<b>E57EAL8T111SP</b>
				3-pin nano-connector	<b>E57EAL8T111SN</b> ☹	<b>E57EAL8T111SN</b> ☹
				4-pin micro DC connector	<b>E57EAL8T111SD</b> ☹	<b>E57EAL8T111SD</b> ☹
	2 mm	Unshielded (NPN)	2-meter cable	<b>E57EAL8T110EP</b>	<b>E57EAL8T110EP</b>	
			3-pin nano-connector	<b>E57EAL8T110EN</b> ☹	<b>E57EAL8T110EN</b> ☹	
			4-pin micro DC connector	<b>E57EAL8T110ED</b> ☹	<b>E57EAL8T110ED</b> ☹	
		Unshielded (PNP)	2-meter cable	<b>E57EAL8T111EP</b>	<b>E57EAL8T111EP</b>	
			3-pin nano-connector	<b>E57EAL8T111EN</b> ☹	<b>E57EAL8T111EN</b> ☹	
			4-pin micro DC connector	<b>E57EAL8T111ED</b> ☹	<b>E57EAL8T111ED</b> ☹	

**Note**

☹☹ See listing of compatible connector cables on **Page V8-T3-63**.

### Compatible Connector Cables

#### Standard Cables<sup>①</sup>

	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>						
	DC	4-pin, 3-wire	22 AWG	6.0 ft (2m)	 1-Brown 2-No Wire 3-Blue 4-Black	<b>CSDS4A3CY2202</b>	<b>CSDS4A3RY2202</b>
		4-pin, 4-wire	22 AWG	6.0 ft (2m)	 1-Brown 2-White 3-Blue 4-Black	<b>CSDS4A4CY2202</b>	<b>CSDS4A4RY2202</b>
<b>Nano-Style Straight Female</b> 	<b>Nano-Style, Straight Female</b>						
—	3-pin	24 AWG	6.0 ft (2m)	 1-Brown 3-Blue 4-Black	<b>CSNS3A3CY2402</b>	<b>CSNS3A3RY2402</b>	

### Accessories

#### Miniature Short Body 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>

#### Note

<sup>①</sup> For a full selection of connector cables, see **Tab 10, section 10.1**.

#### Technical Data and Specifications

##### Miniature Short Body Sensors

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Description	Three-Wire DC Only Sensors
Operating voltage	10–30 Vdc
Maximum load current	200 mA
Switching frequency	2 kHz
Leakage current	0.01 mA maximum
Voltage drop	1.5V maximum
Burden current	10 mA maximum
Protection	Transient, power on false pulse suppression, auto-reset short circuit
Switching hysteresis	<15% rated sensing distance
Repeat accuracy	<1% sensing distance
Time delay before availability	<50 ms
Output indicator LED	Lights when output is ON
Operating temperature	–13° to 158°F (–25° to 70°C)
Enclosure ratings	NEMA 4, 4X, 6, 6P, 12 and 13 (IP67)
Housing material	Stainless steel
Cable	PVC high flex, oil/water resistant, 22 AWG

#### Wiring Diagrams

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

##### Miniature Short Body Sensors

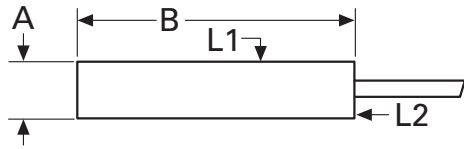
Operating Voltage	Output	Cable Models	Connector Models (Face View Male Shown)	
			Micro	Nano
<b>Three-Wire Sensors</b>				
10–30 Vdc	NO (NPN)			
	NO (PNP)			
	NC (NPN)			
	NC (PNP)			

### Dimensions

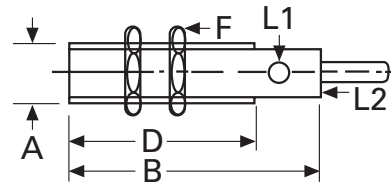
Approximate Dimensions in Inches (mm)

#### Cable Models

##### Unthreaded Barrel



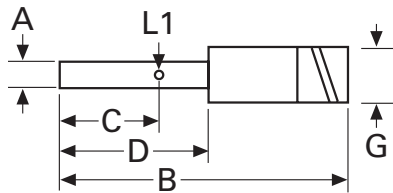
##### Threaded Barrel



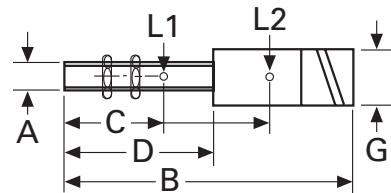
Size A	Barrel Type	Length B	D	Thread Size	Nut Width F	Connector Diameter G	LED Location
<b>Cable Models</b>							
4 mm	Unthreaded	1.0 (25)	—	—	—	—	L1
5 mm	Threaded	1.0 (25)	0.8 (21)	M5 x 0.5	SW8	—	L1
6.5 mm	Unthreaded	1.8 (45)	—	—	—	—	L2
8 mm	Threaded	1.2 (30)	1.2 (30)	M8 x 1	SW13	—	L2

#### Connector Models

##### Unthreaded Barrel



##### Threaded Barrel



Size A	Barrel Type	Length B	C	D	Thread Size	Nut Width F	Connector Diameter G	LED Location
<b>Nano-Connector Models</b>								
4 mm	Unthreaded	1.6 (40)	0.7 (18)	0.8 (21)	—	—	0.31 (8)	L1
5 mm	Threaded	1.6 (40)	0.7 (18)	0.8 (21)	M5 x 0.5	SW8	0.31 (8)	L1
6.5 mm	Unthreaded	2.4 (60)	1.5 (39)	2.0 (50)	—	—	0.31 (8)	L1
8 mm	Threaded	1.8 (45)	1.0 (25)	1.4 (36)	M8 x 1	SW13	0.31 (8)	L1
<b>Micro-Connector Models</b>								
6.5 mm	Unthreaded	2.9 (70)	1.4 (36)	1.5 (39)	—	—	0.47 (12)	L1
8 mm	Threaded	2.0 (50)	1.6 (40)	1.0 (25)	M8 x 1	SW13	0.47 (12)	L2