

OEM Prism Series Sensors



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OEM Prism Series Sensors

Product Description

The OEM Prism Series from Eaton's Electrical Sector is very similar to our standard cost-effective Prism Series and has been optimized for high volume OEM use. In place of the isolated output found in the standard models, the OEM Prism features dual or single discrete outputs for simple wiring. In addition, OEM Prism sensors are shipped bulk packaged for easier handling by both the receiver and the installer. Forward and Right Angle viewing models feature identical gain and optical characteristics for the best fit on your machine. A gain control allows quick adjustment for peak optical performance in a variety of applications. Both diffuse reflective and polarized reflex models are available.

All models are 10–30 Vdc only to meet the evolving needs of your customers. Polarized reflex units eliminate reliability problems when sensing shiny objects. Visible red sensing beams allow you to see exactly where the sensors are aimed for easier setup. Models are available preconfigured in either light or dark operate modes.

The unique threaded body with flat sides allows quick mounting in a 3/4 in hole or against any flat surface. Internal components are rigidly sealed in a solid encapsulated package for excellent performance in high-vibration and high-shock applications.

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Features

- Small size for use in a wide variety of applications and locations
- Sensors are shipped bulk-packaged for the convenience of high volume users
- High sensing power for longer ranges and resistance to dust and dirt
- Adjustable gain control to ensure peak optical performance
- High noise immunity, which greatly reduces problems associated with electrical noise
- NPN and PNP outputs provided in a single sensor for simple wiring
- Short circuit protection
- Quick 1.2 ms response time
- Output status LED is highly visible from a wide 300° angle
- Cable models allow for lowest cost wiring
- Micro-connector models provide for quick installation or replacement
- Custom cable length options

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

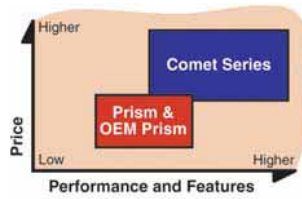
For Customer Service in the U.S. call 1-877-ETN CARE (386-2273), in Canada call 1-800-268-3578. For Application Assistance in the U.S. and Canada call 1-800-426-9184.

Product Overview

Product Comparison

Eaton’s cost-effective Prism Series, OEM Prism and premium Comet Series all share the same 18 mm flat-sided housing. This results in the largest interchangeable sensor family available, allowing you to select from well over 250 different models to solve the widest variety of sensing applications.

Comparison






Compared to the similar-looking Comet, the OEM Prism is optimized for value, with a basic feature set best suited for OEMs.

Product Selection

OEM Prism Series Sensors

Three-Wire and Four-Wire Sensors

	Operating Voltage	Sensing Range	Optimum Range	Field of View	Output Type	Connection Type	Light Operate Catalog Number	Dark Operate Catalog Number
Polarized Reflex Forward Viewing ^{①②}								
Polarized Reflex Forward Viewing Sensor  Retroreflector ^③	10–30 Vdc	10 ft (3m) ^④	0.1 to 8 ft (0.03 to 2.4m)	3 in (76 mm) diameter at 12 ft (3.6m)	NPN and PNP	6 ft cable	14156AL17B1	14156AD17B1
						4-pin micro DC connector	14156AL07B1 [⊕]	14156AD07B1 [⊕]
Polarized Reflex Right Angle Viewing ^{①②}								
Polarized Reflex Right Angle Viewing Retroreflector ^③  Sensor	10–30 Vdc	10 ft (3m) ^④	0.1 to 8 ft (0.03 to 2.4m)	3 in (76 mm) diameter at 12 ft (3.6m)	NPN and PNP	6 ft cable	14156RL17B1	14156RD17B1
						4-pin micro DC connector	14156RL07B1 [⊕]	14156RD07B1 [⊕]
Diffuse Reflective Right Angle Viewing ^①								
Diffuse Reflective Right Angle Viewing 	10–30 Vdc	8 in (200 mm) ^⑤	0.1 to 5 in (3 to 127 mm)	2 in (51 mm) diameter at 5 in (127 mm)	NPN and PNP	6 ft cable	13156RL17B1	13156RD17B1
			4-pin micro DC connector	13156RL07B1 [⊕]	13156RD07B1 [⊕]			
			24 in (609 mm) ^⑤	0.1 to 15 in (3 to 381 mm)	6 in (152 mm) diameter at 15 in (381 mm)	NPN and PNP	6 ft cable	13157RL17B1
						4-pin micro DC connector	13157RL07B1 [⊕]	13157RD07B1 [⊕]

Notes

- ⊕ See listing of compatible connector cables on **Page V8-T5-80**.
- ① Contact factory for approval status.
- ② For a complete system, order sensor and retroreflector (see **Tab 8, section 8.1**).
- ③ Retroreflector not included.
- ④ Ranges based on a 3 in diameter retroreflector.
- ⑤ Sensor will detect a 90% reflectance white card at this range.

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Photoelectric Sensors

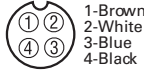
OEM Prism Series Sensors

Compatible Connector Cables

Micro-Style,
Straight Female



Standard Cables—Micro ^①

Voltage Style	Number of Pins	Gauge	Length	Pin Configuration/ Wire Colors (Face View Female Shown)	PVC Jacket Catalog Number	PUR Jacket Catalog Number	IRR PUR Jacket Catalog Number
Micro-Style, Straight Female							
DC	4-pin, 4-wire	22 AWG	6 ft (2m)		CSDS4A4CY2202	CSDS4A4RY2202	CSDS4A4IO2202

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Accessories

OEM Prism Series Sensors

Description	Catalog Number
Retroreflectors	
Retroreflectors and retroreflective tape	See Tab 8, section 8.1
Mounting Brackets	
A wide variety of mounting brackets for tubular sensors	See Tab 8, section 8.2
Flush Mount Bracket	
Contoured design is ideal for flush mounting of right angle OEM Prism Series polarized reflex to mounting surface using 1/4 in hardware. No alignment adjustment. Sensor mounts on #4 studs. 304 stainless steel	6161AS5296
Flush Mount Bracket	
Same as above except without contour. Ideal for right angle diffuse sensors. 304 stainless steel	6161AS5297
Adjustable Protective Bracket	
Heavy-duty bracket protects the sensor from damage. Works with all OEM Prism Series sensors. Ideal for material handling applications with the OEM Prism Series right angle polarized reflex sensor. Provides locking vertical and horizontal adjustments for independent adjustment in each axis. Sensor mounts on #4 studs. 10 ga. painted steel	E58KS5200
Comet/Prism Ball Swivel Bracket	
Allows 360° rotation and 10° vertical tilt. Hole spacing is identical to our 50 and 55 Series sensors. Ideal for mounting Right Angle sensors. Made of Noryl.	6181AS5200
Accessories	
Replacement mounting nuts and other accessories	See Tab 8, sections 8.2 and 8.3
Connector Cables	
A variety of cables, connector blocks and accessories	See Tab 10, section 10.1
Dimensions, see Page V8-T5-77.	

Note

^① For a full selection of connector cables, see **Tab 10, section 10.1**.

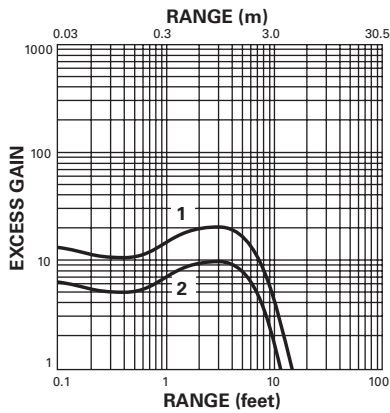
Technical Data and Specifications

OEM Prism Series Sensors

Description	DC Only Models
Input voltage	10 to 30 Vdc
Power dissipation	1W maximum
Output type	NPN and PNP
Current switching capacity	100 mA maximum
OFF-state leakage	10 μ A maximum
ON-state voltage drop	NPN: 2.0V at 100 mA; PNP: 2.5V at 100 mA
Short circuit protection	Sensor will turn off immediately when short or overload is detected (indicator LED flashes). Sensor will reset when short is removed.
Response time	1.2 ms
Light/dark operation	Specified by catalog number
Temperature range	
Operating	-13° to 131°F (-25° to 55°C)
Storage	-13° to 158°F (-25° to 70°C)
Sunlight immunity	1000 ft-candles
Material of construction	Lens: polycarbonate; cable jacket: PVC; body: structural polyurethane foam (do not expose to concentrated acids, alcohols or ketones)
Cable versions	2m length; 4 conductor cable
Connector versions	Micro-connector, 4-pin male, DC key, on nominal 8 in pigtail
Vibration and shock	Vibration: 30g over 10 Hz to 2 kHz; shock: 50g for 10 ms 1/2 sine wave pulse
Indicator LED	Lights steady when output is ON; OFF when output is OFF; OFF when output is in short circuit mode
Enclosure ratings	NEMA 1, 2, 3, 4, 4X, 6, 12 and 13 [Ⓢ]

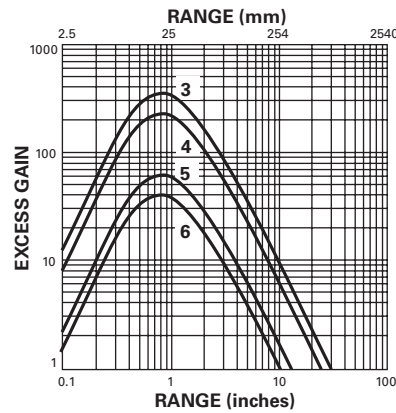
Excess Gain

Polarized Reflex (3 in diameter retroreflector)



- 1. 14156 Typical performance
- 2. 14156 Minimum performance

Diffuse Reflective (90% reflective white card)



- 3. 13157 Typical performance
- 4. 13157 Minimum performance
- 5. 13156 Typical performance
- 6. 13156 Minimum performance

Note

[Ⓢ] Photoelectric sensors conform to NEMA tests as indicated above, however, some severe washdown applications can exceed these NEMA test specifications.

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Photoelectric Sensors

OEM Prism Series Sensors

Wiring Diagrams

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

OEM Prism Series Sensors

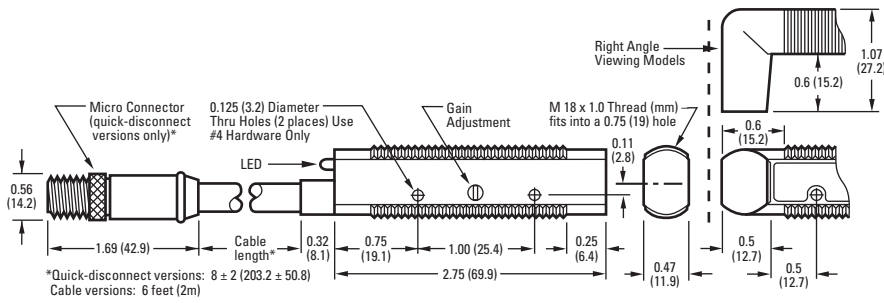
Operating Voltage	Output	Cable Models	Micro-Connector Models (Face View Male Shown)
Four-Wire Sensors			
10–30 Vdc	NPN and PNP		

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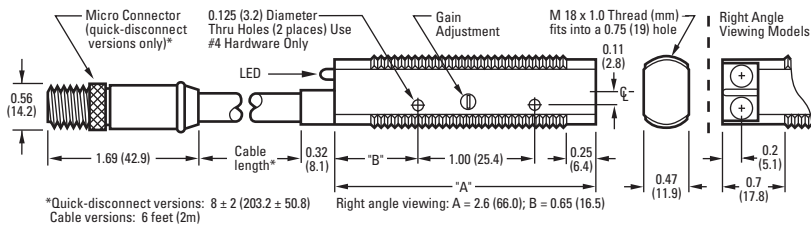
Dimensions

Approximate Dimensions in Inches (mm) except where noted

Polarized Reflex Models



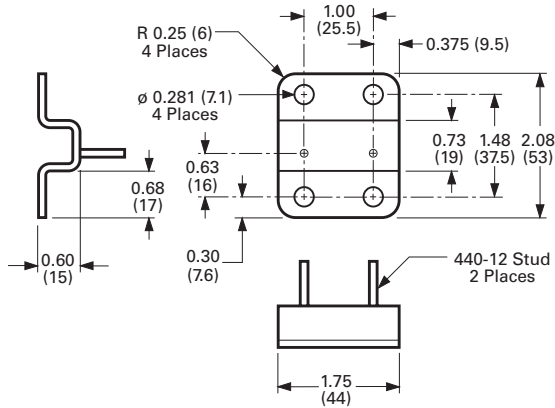
Diffuse Reflective Models



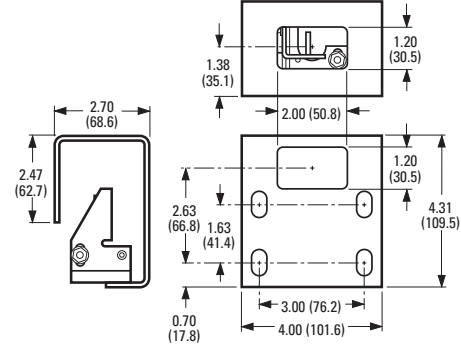
Approximate Dimensions in Inches (mm)

Accessories

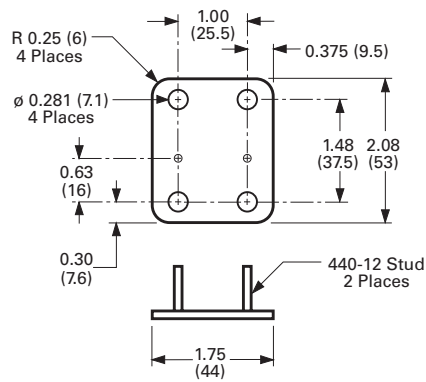
Flush Mount Bracket—6161AS5296



Adjustable Protective Bracket



Flush Mount Bracket—6161AS5297



Comet/Prism Ball Swivel Bracket

