Installation Instructions—E58-30 Series Polarized Reflex Sensors

Document 108623-400 Rev 02

Models covered in this manual:

	AC/DC Models w/ Cable		AC/DC Models w/ Connector		DC-only Models w/ Cable		DC-only Models w/ Connector	
	Light Operate	Dark Operate	Light Operate	Dark Operate	Light Operate	Dark Operate	Light Operate	Dark Operate
Polarized	E58-30RP10-GL	E58-30RP10-GD	E58-30RP10-GLP	E58-30RP10-GDP	E58-30RP10-HL	E58-30RP10-HD	E58-30RP10-HLP	E58-30RP10-HDP

*This manual also covers the model numbers above with the options suffix -FC and -FSC (see "Specifications" on last page for differences)

WARNING!

- These products are not designed, tested, or recommended for use in human safety applications.
- This product has no user-serviceable parts—please return to the factory for repairs. The cable clamp on the back of the sensor does not require adjustment. Any attempt to tighten or loosen this part will compromise sealing and void warranty.
- AC/DC connector version sensors are equipped with an AC-type connector. The use of DC power with AC-type connectors may not conform with established standards.

INTRODUCTION

The E58-30 Photoelectric Sensor line was designed to withstand your harshest physical, chemical, and optical environments. Tough environments like:

Automotive—Survives constant exposure to lubricants, cutting fluids, coolants and glycols, plus flying metal cutting chips and tough physical abuse.

Food processing—Unaffected by high-pressure chemical washdowns using sanitizers, surfactants, and cleaning agents including diluted bases & acids.

Forest industry—Resists anti-fungal and anti-stain agents, wood preservatives, pitch and lubricants.

RUGGED PHYSICAL CONSTRUCTION

A strong metal housing with mechanical seals and surface mount electronics stand up to heavy shock and vibration.

EXCEPTIONAL ENVIRONMENTAL PROTECTION AND CHEMICAL COMPATIBILITY

Extensive research dictated the choice of materials used in this sensor to provide exceptional protection in harsh environments. Components are mechanically assembled using Viton seals to ensure complete sealing and resistance to industry chemicals.

UNPARALLELED OPTICAL PERFORMANCE

Advanced 30 mm optics and extremely high sensing power combine to produce a polarized reflex sensor with an impressive 34 foot sensing range.

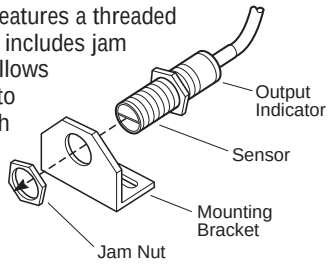
REFLEX SENSING

A reflex sensor has both a light source and detector in the same unit. The source sends a beam of light to a retroreflector which returns it back to the detector. A break in the light beam causes the sensor to change output state.

The polarizing filter conditions the beam so that light reflected off the retroreflector is detected, but light reflected by the target is not. This ensures reliable detection of shiny targets.

MOUNTING

The sensor features a threaded housing and includes jam nuts. This allows mounting into any 1.25 inch hole, or a variety of accessory mounting brackets.



USING RETROREFLECTIVE TAPE

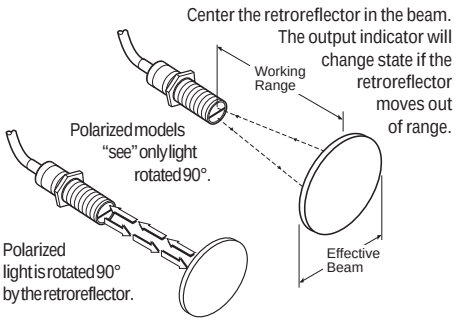
Retroreflective tapes can have vastly different properties than corner-cube reflectors. Polarized reflex sensors will not function with some types of tape (use only corner-cube style tape). Also, signal strength can drop dramatically as the distance between tape and sensor is reduced. **If you intend to use tape with a polarized sensor, especially if mounted closer than 18 inches from the sensor, we recommend that you test your particular tape prior to installation.**

MOUNTING LOCATION AND SET-UP

Locate the sensor and retroreflector on opposite sides of the target. Ensure that the area of the target to be detected will block the entire effective beam.

With power applied to the sensor, aim the unit directly at the center of the retroreflector. Move the sensor back and forth in one plane to find the extreme positions where the output indicator goes "off" (for light-operate mode, or "on" for dark-operate mode). Position the sensor midway between the two extremes. Repeat this procedure for the other plane. After alignment, tighten all mounting screws. An alternate method is to look at the retroreflector with your eye as close to the sensor as possible and align the sensor until reflected light is brightest.

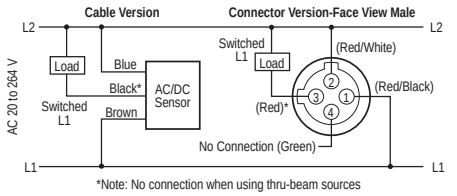
Stretch wrap material over a shiny surface may reflect enough light to false trigger a polarized reflex sensor. In this case, tilt the alignment axis of the sensor relative to the shiny surface.



WIRING DIAGRAMS

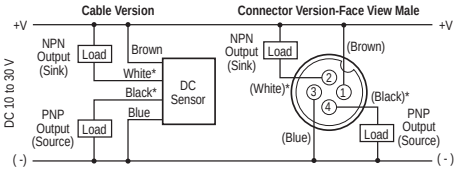
For wiring cable versions, the color codes shown are the actual wire colors emanating from the sensor. For connector versions, the pin numbering and color codes shown are typical of several manufacturers, however, variations are possible. **In case of discrepancies, rely on function indicated and pin location rather than pin number or color code.**

AC/DC Models (AC Connection)



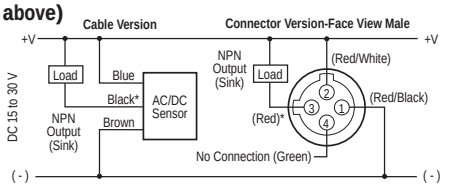
*Note: No connection when using thru-beam sources

DC Models



*Note: No connection when using thru-beam sources

AC/DC Models (DC Connection, see Warning above)



*Note: No connection when using thru-beam sources

SPECIFICATIONS

	AC/DC MODELS (AC Operation)	AC/DC MODELS (DC Operation)	DC-ONLY MODELS
Input Voltage	20 to 132 V ac, 50/60 Hz	15 to 30 V dc	10 to 30 V dc
Power Dissipation	3 W maximum	3 W maximum	2 W maximum
Output Type	VMOS (bi-directional)	NPN (sink)	NPN and PNP (dual outputs)
Current Switching	300 mA maximum	300 mA maximum	PNP (source): 100 mA max.; NPN (sink): 250 mA max.
Voltage Switching	375 V peak maximum	375 V peak maximum	30 VDC maximum
Off-State Leakage	250 µA typical; 500 µA maximum	250 µA typical; 500 µA maximum	10 µA maximum
Surge Current	2 A maximum	2 A maximum	1 A maximum
On-State Voltage Drop	- - -	1.8 V at 10 mA; 4.0 V at 300 mA	NPN: 1.2 V at 10 mA, 2.0 V at 250 mA; PNP: 2.8 V at 100 mA
Response Time	10 mS	2 mS	2 mS
Short Circuit Protection	Sensor will turn off immediately when a short or overload is detected (Indicator LED will flash). Turn power OFF and back ON to reset.		
Light/Dark Operation	By model		
Temperature Range	Operating and Storage: -40° to +131° F (-40° to +55° C)		
Enclosure Material	Cable Jacket: PVC Indicator Ring: PVDF (high-density fluorinated polymer) Seals: Viton® (registered trademark of Dupont)	Lens Cover: Glass (or hard-coated cast acrylic for models ending in FC or FSC) Body: 303 Stainless Steel (or 316 Stainless Steel for models ending in FC or FSC) Cable Clamp: 303 Stainless Steel	
Cable/Connector	6-foot cable, 3-wire (AC/DC models), 4-wire (DC-only models); Micro Connector, 4-pin male		
Vibration and Shock	Vibration: 30 g over 20 Hz to 2 kHz; Shock: 100 g for 3 mS 1/2 sinewave pulse		
Indicator LED	Lights steady when output is ON; Flashes when short circuit protection is in latch condition		
Sunlight Immunity	10,000 foot-candles		
Enclosure Ratings	NEMA 1, 2, 3, 3R, 3S, 4, 4X, 6, 6P, 12, 12K, and 13; This product is suitable for high temperature, high pressure washdown (1200 psi).		
Chemical Compatibility	This product was designed to withstand chemicals commonly used in the automotive, machine tool, food processing and forest industries. Consult factory for compatibility with specific chemicals.		
Approvals	Contact factory for the latest list of agency approvals		

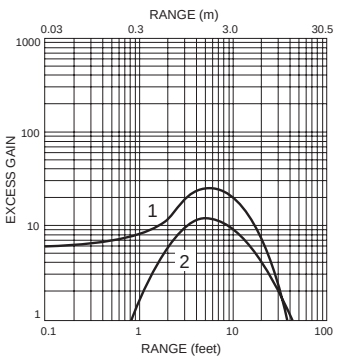
OPTICAL PERFORMANCE

All optical specifications are guaranteed to be the minimum performance under clean conditions of any product delivered from stock. Typical performance may be higher.

Dirt in the environment will affect optical performance by reducing the amount of light the sensor receives. For best results, sensors should be used at distances where excess gain is higher than 1.5 (1.5 times the amount of sensing power required to detect an object under ideal conditions). Higher excess gain will allow the sensor to overcome higher levels of contamination on the lens or retroreflector.

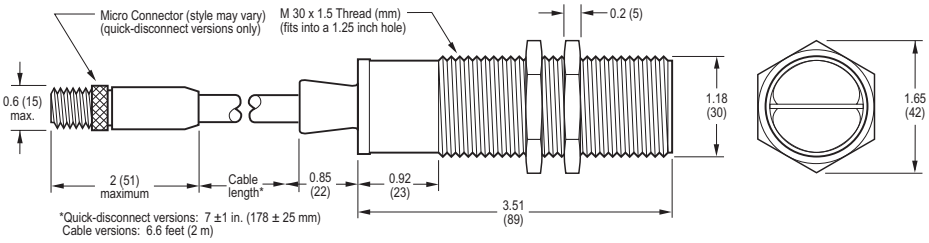
	E58-30 Polarized Reflex
Source Light	Visible red, 680 nm
Optimum Range	1 to 20 feet (0.3 to 6 m)
Maximum Range	34 feet (10 m)
Field of View	6 inch diameter at 20 feet

1. Performance to 3-inch retroreflector
2. Performance to corner-cube retroreflective tape

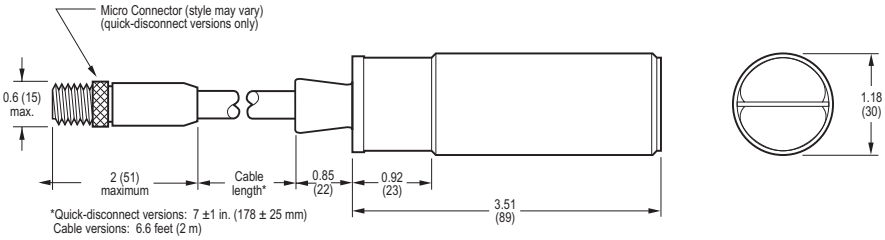


APPROXIMATE DIMENSIONS (SHOWN IN INCHES EXCEPT WHERE NOTED)

THREADED MODELS



SMOOTH-BODY MODELS (model numbers ending in FSC)



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