Installation Instructions—E58-30 Series Thru-Beam Sensors

Document 108623-100 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
Detector	E58-30TD250-GL	E58-30TD250-GD	E58-30TD250-GLP	E58-30TD250-GDP	E58-30TD250-HL	E58-30TD250-HD	E58-30TD250-HLP	E58-30TD250-HDP
Source	E58-30TS250-GA		E58-30TS250-GAP		E58-30TS250-HA		E58-30TS250-HAP	

*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 it 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.

Environments like the Forest Industry where the sensor withstands high-impact shock and heavy vibration. It also resists anti-fungal and anti-stain agents, preservatives, pitch and lubricants, and operates reliably outdoors while constantly exposed to weather and bright sunlight.

RUGGED PHYSICAL CONSTRUCTION

A strong metal housing with mechanical seals and surface mount electronics stand up to heavy shock and vibration. Tempered glass lens cover provides protection from abrasive objects and the sturdy cable is physically clamped to the sensor body.

EXCEPTIONAL ENVIRONMENTAL PROTECTION AND CHEMICAL COMPATIBILITY

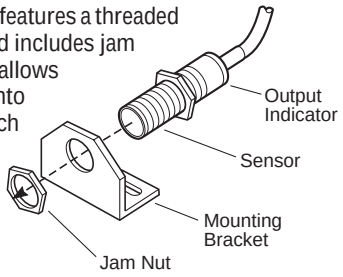
Extensive research dictated the choice of materials used in this sensor to provide exceptional protection in harsh environments. Stainless steel, PVDF and tempered glass components are mechanically assembled using Viton seals to ensure complete sealing and resistance to industry chemicals.

UNPARALLELED OPTICAL PERFORMANCE

Advanced 30 mm optics and extremely high sensing power combine to produce a thru-beam sensor with an impressive 800 foot sensing range. In addition, the visible sensing beam and wide field of view help to simplify the installation and alignment process.

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.



MOUNTING LOCATION AND SET-UP

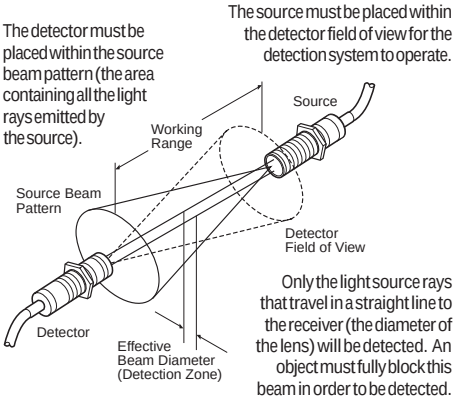
Mount the source and detector units so they are aimed directly at each other from opposite sides of the target. (The detector should be on the dirtier side because the light scattering effect of dirt collecting on the lens is less significant if it takes place at the detector.) Ensure that the area of the target to be detected will block the entire effective beam. Apply power to both the source and detector.

Accurate sensing depends on proper alignment of the source and detector. To begin, the source and detector must be positioned in rough alignment so that source light is received by the detector (check by placing a solid object in front of the source beam--the output indicator on the detector will change when the object blocks the beam, and change back when the object is removed). If the output indicator does not change, follow one or both of these two rough alignment methods:

1. The source emits visible red light. Look at the source with your eye positioned close to the detector. Mount the detector in the area where the source light is brightest.
2. Place a retroreflector over the lens of the detector. Look at the detector with your eye positioned close to the source. Mount the source in the area where the light reflected from the retroreflector is the brightest.

Obtain final alignment by moving the detector back and forth in the horizontal axis to find the extreme positions where the output indicator on the detector goes "off" (for dark operate models, or "on" for light operate models). Position the detector midway between the two extremes. Repeat this procedure for the vertical axis, then tighten the source in place.

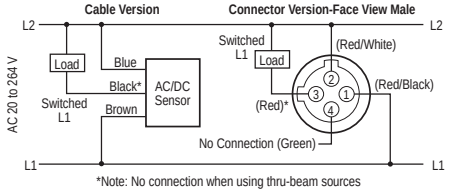
Now repeat the final alignment procedure for the source.



WIRING DIAGRAMS

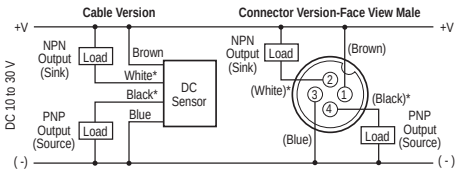
For wiring cable versions, the color codes shown are the actual wire colors emanating from the sensor. For connector versions, the pin numbering and color codes shown are typical of several manufacturers, however, variations are possible. **In case of discrepancies, rely on function indicated and pin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

AC/DC Models (AC Connection)



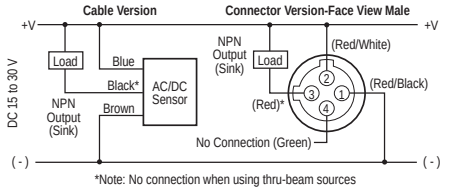
*Note: No connection when using thru-beam sources

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

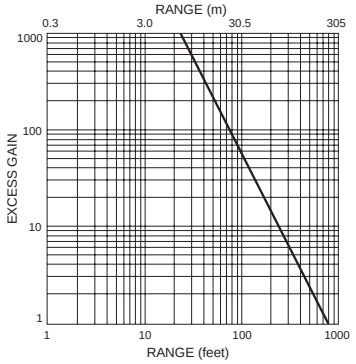
	AC/DC MODELS (AC Operation)	AC/DC MODELS (DC Operation)	DC-ONLY MODELS
Input Voltage	20 to 132 V ac, 50/60 Hz	15 to 30 V dc	10 to 30 V dc
Power Dissipation	3 W maximum	3 W maximum	2 W maximum
Output Type	VMOS (bi-directional)	NPN (sink)	NPN and PNP (dual outputs)
Current Switching	300 mA maximum	300 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	1 mS	1 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 Cable Clamp: 303 Stainless Steel Indicator Ring: PVDF (high-density fluorinated polymer)Body: 303 Stainless Steel (or 316 Stainless Steel for models ending in FC or FSC) Seals: Viton® (registered trademark of Dupont) Lens Cover: Tempered Glass (or hard-coated polycarbonate for models ending in FC or FSC)		
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	Source: Lights when power is ON; Detector: 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.

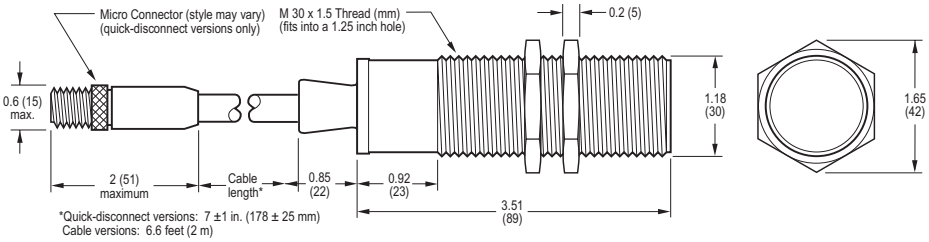
Dirt in the environment will affect optical performance by reducing the amount of light the sensor receives. For best results, sensors should be used at distances where excess gain is higher than 1.5 (1.5 times the amount of sensing power required to detect an object under ideal conditions). Higher excess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

	E58-30 Thru-Beam
Source Light	Visible red, 680 nm
Optimum Range	0.1 to 300 feet (0.03 to 90 m)
Maximum Range	800 feet (250 m)
Field of View	33 inch diameter at 25 feet

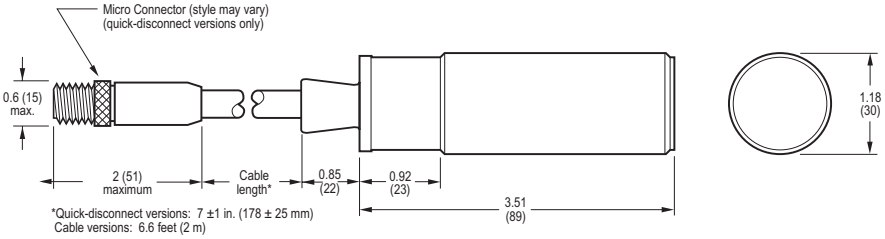


APPROXIMATE DIMENSIONS (SHOWN IN INCHES EXCEPT WHERE NOTED)

THREADED MODELS



SMOOTH-BODY MODELS (model numbers ending in FSC)



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