

# Test the Best Photoelectric Sensors: SM Series



The SM Series redefines optical performance among compact photoeyes. When compared to the competition, Eaton sensors operate more reliably in the presence of dust, humidity and debris. Higher reliability means less downtime, less maintenance, and more money in your pocket.

If a sensor on your machine goes down, it can take your line with it. But what if there was a sensor smart enough to notify you of failure before it happens? The SM Series, with TargetLock™ marginal gain indication, does just that. As the sensor detects that its optical power is diminishing—either due to contamination or misalignment—the TargetLock indicator warns of an impending failure.

The intelligence of TargetLock, combined with best-in-class sensing power, make the SM Series a compact photoelectric sensor you can depend on, day in and day out.

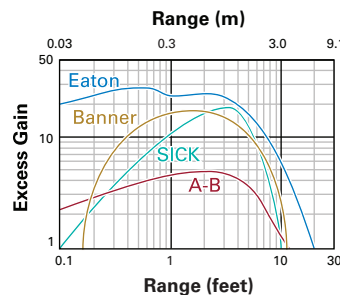
SM Series Sensor

## Understanding the Benefits of Excess Gain

Excess gain is a measurement of how much sensing power a photoelectric sensor has available beyond the power required to detect an object. An excess gain of 1.00 at a given range means there is just enough sensing power to detect an object under perfect conditions.

In the real world, there is contamination—dust, dirt, oils, and debris—that can settle in the air or the lens and reduce light transmission. As the level of contamination gets worse, more excess gain is needed to push through contamination in the environment.

The SM Series provides the highest excess gain in its operating class. In the chart below, the SM Series is compared to competitive units in its class.



Note: Competitive performance information obtained from publicly available literature. Models compared: Eaton E65-SMPR3-HL; Banner QS18VNLPL; A-B 42EF-P2MPB-A2; SICK EL3-N2415.

The SM Series exhibits superior excess gain. This means that in equal environments, with equal levels of contamination, the SM Series will perform more reliably over time, with less false trips.

## TargetLock: Taking the Guesswork Out of Alignment

The performance of a sensor matters little if its misaligned in the first place. Even if you've never touched a sensor before, TargetLock helps you setup with the speed and accuracy of an expert.



Compact, with industry-standard 18mm threaded barrel mounting.

Throughout the alignment process, an internal microprocessor constantly measures the signal strength received, and communicates this through an orange LED on the top of the unit. This LED changes from off, to short flash, to long flash, to solid-on as you approach optimum alignment with the reflector. It acts in a similar fashion with diffuse sensors to help you position the target at the optimum range for its size and reflectivity.

Optimizing performance provides a larger buffer against reliability problems due to dirty lenses or misalignment that can occur with impact or vibration over time. When problems occur, TargetLock alerts you to necessary maintenance—before your machine goes down.

## Test the Best

Want to learn more about the E58 Series or the rest of Eaton's line of rugged sensors? Visit us online and complete the *Test the Best* form. We're so confident in our sensors, we're willing to let you try one out—absolutely free.

Learn more at:  
[www.eaton.com/sensors](http://www.eaton.com/sensors)

# EATON

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## Product Description





The SM Series from Eaton provides the highest optical performance found in the compact photoelectric sensor class. The included TargetLock technology visually confirms the sensor is positioned to operate with the highest possible reliability and also provides diagnostic information during use to inform you of impending problems, before they result in equipment downtime.

Beyond TargetLock, the SM Series includes a number of features that simplify use. Visible sensing beams on all models show you exactly where the sensor is pointing. The durable housing features multiple mounting options to easily fit on your equipment, even in the tightest spaces. Bright LED status indicators are visible from all angles. Comprehensive electrical protections—overvoltage, reverse polarity, short circuit—reduce the change of damage.

## Features

- Highly visible LED indicators for power, output and TargetLock
- TargetLock simplifies setup and ensures optimum sensor performance
- Full family includes thru-beam, polarized reflex, diffuse and Perfect Prox® models
- Available Perfect Prox models sense different colored targets at the same range, ignoring background objects
- Available in AC/DC (18-264V AC, 18-50V DC) or DC-only (10-30V DC)
- Visible red sensing beams on all models
- Compact size to fit into tight spaces
- Multiple mounting options including industry-standard 18mm threads
- C-UL Listed, CE Approved

## Model Selection Table

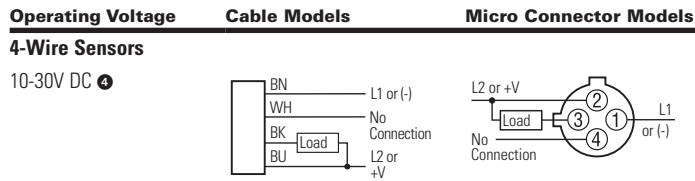
SM Series	Sensing Range	Optimum Range	Cutoff Range ❶	Field of View	Thru-Beam Component	Catalog Number	
						Light Operate	Dark Operate
Thru-Beam, 10-30 VDC Models with 2m Cable ❸							
	50 ft. (15m)	0.1-25 ft. (30mm-7.5m)	—	10 in. @ 10 ft. (254mm @ 3m)	Source	E65-SMTS15-HA	E65-SMTS15-HA
					Detector	E65-SMTD15-HL	E65-SMTD15-HD
Polarized Reflex, 10-30 VDC Models ❷ with 2m Cable ❸							
	10 ft. (3m)	0.1-5 ft. (30mm-1.5m)	—	1 in. @ 50 in. (25mm @ 1.3m)	—	E65-SMPR3-HL	E65-SMPR3-HD
Diffuse Reflective, 10-30 VDC Models ❷ with 2m Cable ❸							
	8 in. (200mm)	0.25-5 in. (6-127mm)	—	2 in. @ 5 in. (50mm @ 127mm)	—	E65-SMSD200-HL	E65-SMSD200-HD
Perfect Prox® Background Rejection, 10-30 VDC Models ❷ with 2m Cable ❸							
	2 in. (50mm)	0.4-1.8 in. (10-45mm)	2.3 in. (58mm)	0.25 in. @ 2.25 in. (6mm @ 57mm)	—	E65-SMPP050-HL	E65-SMPP050-HD
	4 in. (100mm)	0.5-3.0 in. (13-76mm)	5.0 in. (127mm)	0.35 in. @ 5.0 in. (9mm @ 127mm)	—	E65-SMPP10-HL	E65-SMPP100-HD

① Sensor will ignore a 90% reflectance white card at—and beyond—this range.

② This family is also available in AC/DC (18-264V AC, 18-50V DC) configuration. To specify an AC/DC model, simply substitute the H in the model number with a G (for example, E65-SMPR3-HL would become E65-SMPR3-GL). For a complete model selection table, see the Sensing Solutions Catalog (CA08100010E) available online at [www.eaton.com/sensors](http://www.eaton.com/sensors) and orderable from Eaton's Literature Fulfillment Center at 800-957-7050.

③ This family is also available with 4-pin micro connectors. To specify a micro connector model, simply add a D to the end of the model number (for example, E65-SMPR3-HL would become E65-SMPR3-HLD). For a complete model selection table, see the Sensing Solutions Catalog (CA08100010E) available online at [www.eaton.com/sensors](http://www.eaton.com/sensors) and orderable from Eaton's Literature Fulfillment Center at 800-957-7050.

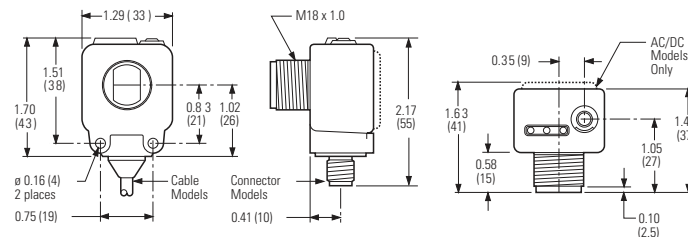
## Wiring Diagrams



④ This family is also available in AC/DC (18-264V AC, 18-50V DC) configuration. For a complete model selection table, see the Sensing Solutions Catalog (CA08100010E) available online at [www.eaton.com/sensors](http://www.eaton.com/sensors) and orderable from Eaton's Literature Fulfillment Center at 800-957-7050.

## Dimensions

Approximate dimensions in inches (mm).



## Eaton Corporation

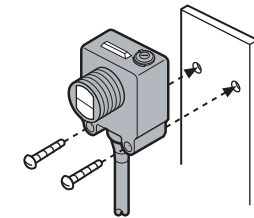
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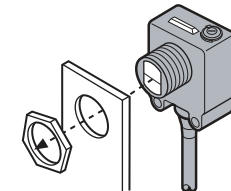
## Mounting

The SM Series features two mounting holes in the rectangular section of the body for mounting to a surface with #6 or smaller hardware. The threaded barrel and jam nut allow mounting into any 0.75 in. (19mm) hole. Additionally, a selection of accessory mounting brackets are available from Eaton (see Sensing Solutions Catalog for full model selection).

### Mounting Sensor Using #6 Hardware



### Mounting Sensor Using Jam Nut



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