

Installation Instructions

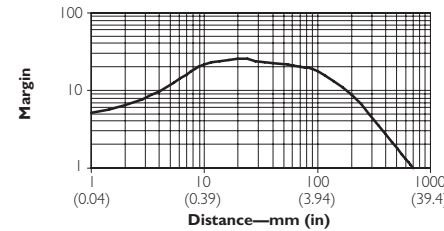
RightSight™ PHOTOSWITCH® Photoelectric Sensors with Teach Function

Specifications

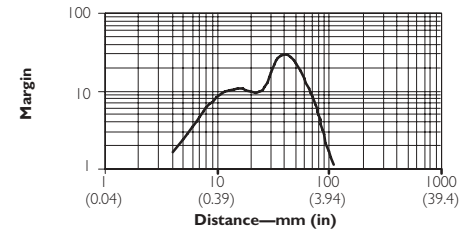
		Standard Diffuse	Fixed Focus Diffuse—White	Fixed Focus Diffuse—Red	Fixed Focus Diffuse—Green
Catalog No.	Dark Operate	42EF-D1KBCK-a	42EF-F5KBC-a	42EF-F2KBC-a	42EF-F3KBC-a
	Light Operate	42EF-D1JBCK-a	42EF-F5JBC-a	42EF-F2JBC-a	42EF-F3JBC-a
Optical	Sensing Distance	700mm (27.5in)	43mm (1.7in)		
	Field of View	5°	Not Applicable		
Optical	Spot Size	Not Applicable	4mm (0.15in)		
Optical	Transmitting LED	Infrared 880nm	Visible White	Visible Red 660nm	Visible Green 525nm
	Sensitivity Adjustment	Teach Button with 5 second lock out			
Mechanical	Housing Material	Mindel			
	Lens Material	Acrylic			
	Cover Material	Udel			
	Connection Type	(-A2) 2m PVC, 300V cable, (-F4) 4-pin DC micro QD on six inch pigtail			
	LED Indicators	See table below			
	Supplied Accessories	One 18mm mounting nut			
	Optional Accessories	See accessories for mounting brackets, reflectors, apertures, fiber optic cables, cord sets, and patchcords			
Environmental	Operating Temperature	-25° to +70°C (-13° to +158°F)			
	Operating Environment	NEMA 3R, 4X, 6P, IP67; 8270kPa (1200psi) washdown			
	Vibration/Shock	5g, 10-55Hz, 1mm amplitude, meets or exceeds IEC 947-5-2 / 30G, 1ms pulse duration, meets or exceeds IEC 947-5-2			
	Relative Humidity	95%			
	Approvals	UL, CSA, CE for all applicable directives			
Electrical	Voltage/Current/Power Consumption	10.8 to 30V DC @ 30mA maximum (1W maximum)			
	Sensor Protection	Input reverse polarity, over voltage, false pulse protected, output short-circuit (SCP) to 100mA, overload			
	Output Type	Dual NPN and PNP, light or dark operate by catalog no.			
	Output Rating	30V DC @ 100mA maximum			
	Output Leakage Current	0.1mA maximum			
	Response Time	1ms max.			
	Power ON Delay	<1s			

Typical Response Curves

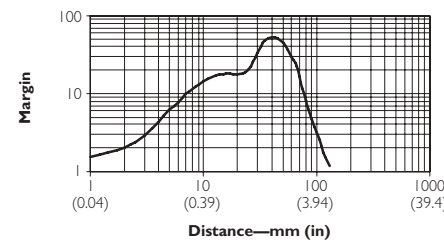
Standard Diffuse



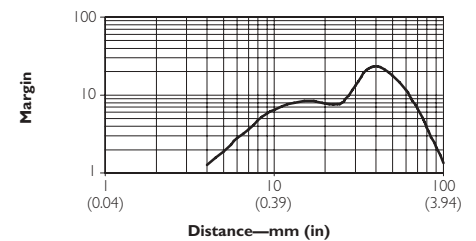
White Fixed Focus



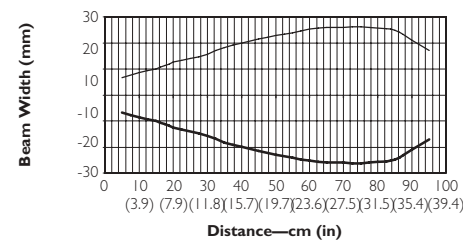
Red Fixed Focus



Green Fixed Focus



Standard Diffuse Beam Pattern



Fixed Focus Beam Pattern

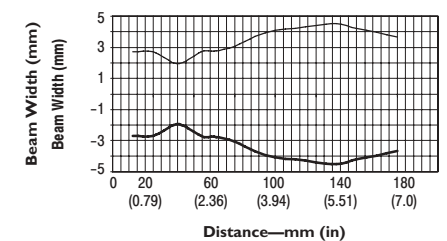


Table I—LED Function

Label	Color	State	Status
OUT	Yellow	OFF	Output de-energized
		ON	Output energized
SET/SCP	Orange	OFF	Normal operation
		ON	Teach Mode Active
		Flashing	Teach Mode Active or Output SCP active
PWR/STAB	Green	OFF	Sensor unpowered or teach mode active
		ON	Sensor powered
		Flashing	Unstable margin condition or output SCP active

Mounting the Sensor

Securely mount the sensor on a firm, stable surface or support. A mounting which is subject to excessive vibration or shifting may cause intermittent operation. Refer to www.ab.com/sensors for information on vertical and horizontal adjustment as well as fixed mounting brackets. The sensor is supplied with a single 18mm mounting nut for either nose or base mounting options.

Wiring the Sensor

The RightSight photoelectric sensor is available in either a 2m (6.5ft) cable or 4-pin micro quick disconnect as identified on page 1. Rockwell Automation recommends the use of the 889D Series of cordsets and patchords for the QD models. All external wiring should conform to the National Electrical Code and all applicable local codes.

Configuring the Sensor

These versions of the RightSight contain a teach function with pushbutton rather than a manual adjustment knob for adjusting the sensors sensitivity level. This function allows the sensor to “learn” both a light and a dark condition (background/target) presented to it and automatically adjusts sensitivity to its optimal level for the application. Follow the steps below to configure the sensor for your specific application.

1. Ensure that the sensor is securely mounted and wired. The green LED will be illuminated indicating that power is applied to the sensor.
2. With the sensor pointed at the light condition, press the pushbutton for five seconds and then release. The green PWR/STAB LED will turn OFF and the orange SET/SCP LED will turn ON to indicate that the sensor is learning the light condition. When this condition has been learned, it will then flash prompting the user to present the dark condition.
3. With the sensor pointed at the dark condition, press the pushbutton for five seconds and then release. The orange SET/SCP LED will turn ON to indicate that the sensor is learning the dark condition. When this condition has been learned, it will turn OFF and the green PWR/STAB LED will turn ON. The sensor is now ready for operation.

Note

- The light condition must be presented first followed by the dark condition. Depending on the operation, this may be either the background or target. If there is no background, in the case of a diffuse sensor, present the target first.
- A flashing green PWR/STAB LED indicates an unstable application condition (little contrast between the light and dark conditions). If this occurs, the sensor will provide reliable detection of a target, but may deteriorate over time due to contamination (dirt/dust).
- If insufficient contrast is present between both conditions, it may be necessary to skew the sensor by up to 20° or change the reflectivity of one of the conditions. For example, when using a standard diffuse sense mode, painting a reflective background with a nonreflective finish may help. With fixed focus sensing modes, it may be necessary to use a model with different light source color to achieve maximum contrast.

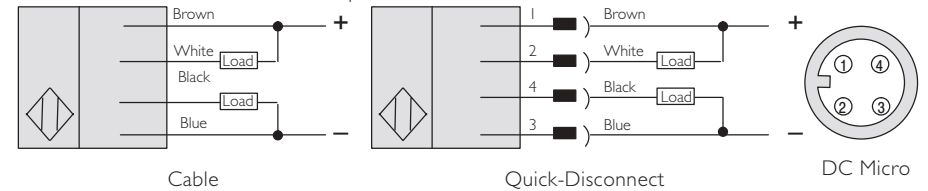
Short-Circuit Protection

RightSight photoelectric sensors provide short-circuit protection (SCP) on the output leads. This feature is intended to protect the sensor from damage in the event that the output load is shorted to ground. If this condition does occur, the SCP will activate and the orange LED and green LED will flash until the source of the short is removed. The SCP limits are set to 100mA over the entire voltage range.

Wiring Diagrams

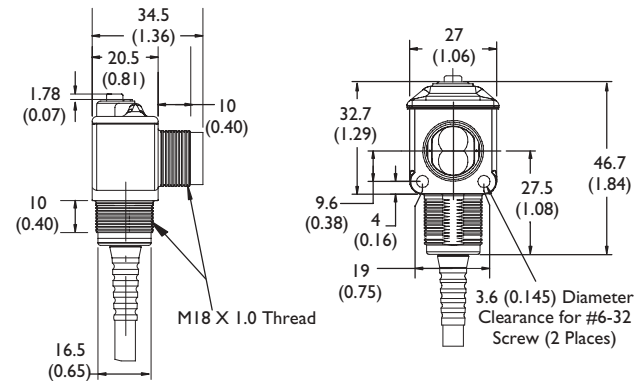
10.8–30V DC Sensors

Models with Dual NPN and PNP Outputs



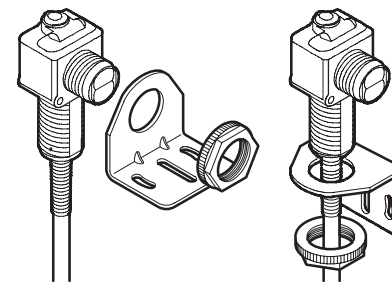
Note: All wire colors on quick-disconnect models shown refer to Allen-Bradley cordsets.

Dimensions—mm (inches)

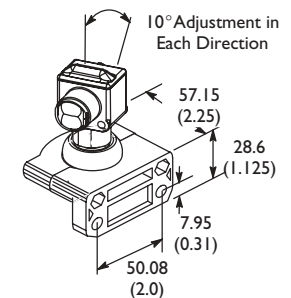


Accessories

Right Angle Bracket #60–2657



Swivel/Tilt Bracket #60–2649



Notes

1. Damage may occur to sensor housing if torque above 20in-lb is applied to the 18mm locknut.
2. Optional mounting kit (60–2716) comes with two 75012–025–01, one 75012–097–01 locknut, internal tooth star washer, and screws/nuts for through-hole mounting.