



Threaded Miniature Photoelectric Sensor

The EX-30 series of photoelectric sensors offers a fresh new alternative to traditional fiber optic sensors. Unparalleled in its ease of installation, this sensor is highly effective for basic production line sensing.

Simple Design

The design of this sensor has been simplified to offer a fully integrated solution in a package that only needs one anchor point. The sensing element is threaded to allow mounting through a 4 or 6mm size hole by utilizing a "nut and bolt" type screw mount. The sensing axis is the same as the center of the mounting hole, making placement on your assembly line incredibly easy.

The design also improves on the problems that currently plague traditional fiber optic sensors such as:

- **Difficulty finding a suitable place for the amplifier**
- **Fragile nature of fiber optics**
- **Extra space needed for bend radius of the fiber**
- **Need for protective tubing to protect the fiber**

By offering a built-in amplifier, no longer is there an issue of finding a location on your machine for an external amplifier. This feature also allows for the sensor cabling to be more robust and flexible, virtually eliminating any cable related issues during installation and usage.

The EX-30 is offered in thru-beam and diffuse reflective types both of which have available sensitivity adjustment built in. The thru-beam type has a long-range version that senses up to 800mm and the diffuse reflective type has a sensing distance of 50mm.

Model Name	Model Pic	Type	Output Operation	Output Configuration	Emitting Element	Max. Range (mm)	Max. Range (in)
Sort ▲ ▼		Sort ▲ ▼	Sort ▲ ▼	Sort ▲ ▼	Sort ▲ ▼	Sort ▲ ▼	Sort ▲ ▼
EX-31A		Thru-beam	Light-ON	NPN	Red LED	500	19.7
EX-31B		Thru-beam	Dark-ON	NPN	Red LED	500	19.7
EX-32A		Diffuse Reflective	Light-ON	NPN	Red LED	50	1.97
EX-32A-PN		Diffuse Reflective	Light-ON	PNP	Red LED	50	1.97
EX-32B		Diffuse Reflective	Dark-ON	NPN	Red LED	50	1.97
EX-33		Long Distance Thru-beam	Light-ON	NPN	Red LED	800	31.5

SPECIFICATIONS

Item	Model No.	Type	Thru-beam		Diffuse reflective	
		NPN output	EX-31A	EX-31B	EX-32A	EX-32B
		PNP output	EX-31A-PN	EX-31B-PN	EX-32A-PN	EX-32B-PN
Sensing range		500 mm 19.685 in			50 mm 1.969 in (Note)	
Sensing object		φ2 mm φ0.079 in or more opaque object			Opaque, translucent or transparent object	
Hysteresis		—			15 % or less of operation distance	
Repeatability (perpendicular to sensing axis)		0.05 mm 0.002 in or less			0.5 mm 0.020 in or less	
Supply voltage		12 to 24 V DC ± 10 % Ripple P-P10 % or less				
Current consumption		Emitter: 10 mA or less, Receiver: 15 mA or less			20 mA or less	
Output		<NPN output type> NPN open-collector transistor			<PNP output type> PNP open-collector transistor	
		<ul style="list-style-type: none"> • Maximum sink current: 50 mA • Applied voltage: 30 V DC or less (between output and 0 V) • Residual voltage: 1 V or less (at 50 mA sink current) 			<ul style="list-style-type: none"> • Maximum source current: 50 mA • Applied voltage: 30 V DC or less (between output and + V) • Residual voltage: 1 V or less (at 50 mA source current) 	
		0.4 V or less (at 16 mA sink current)			0.4 V or less (at 16 mA source current)	
		Utilization category		DC-12 or DC-13		
Output operation		Light-ON	Dark-ON	Light-ON	Dark-ON	
Short-circuit protection		Incorporated				
Response time		0.5 ms or less				
Operation indicator		Orange LED (lights up when the output is ON)(incorporated on the receiver for thru-beam type)				
Stability indicator		Green LED (lights up under stable light received condition or stable dark condition, incorporated on the receiver)			Green LED (lights up under stable light received condition or stable dark condition)	
Sensitivity adjuster		—			Continuously variable adjuster	
Environmental resistance	Pollution degree		3 (Industrial environment)			
	Protection		IP67 (IEC)			
	Ambient temperature		- 25 to + 55 °C - 13 to + 131 °F (No dew condensation or icing allowed), Storage: - 30 to + 70 °C - 22 to + 158 °F			
	Ambient humidity		35 to 85 % RH, Storage: 35 to 85 % RH			
	Ambient illuminance		Sunlight: 10,000 lx at the light-receiving face, Incandescent light: 3,000 lx at the light-receiving face			
	EMC		EN 50081-2, EN 50082-2, EN 60947-5-2			
	Voltage withstandability		1,000 V AC for one min. between all supply terminals connected together and enclosure			
	Insulation resistance		20 MΩ, or more, with 250 V DC megger between all supply terminals connected together and enclosure			
	Vibration resistance		10 to 500 Hz frequency, 3 mm 0.118 in amplitude (20 G max.) in X, Y and Z directions for two hours each			
	Shock resistance		500 m/s ² acceleration (50 G approx.) in X, Y and Z directions for three times each			
Emitting element		Red LED (modulated)				
Material		Enclosure: Die-cast zinc(Nickel plated), Lens: Polycarbonate [EX-32□(-PN): Acrylic], Enclosure cover: Polycarbonate				
Cable		0.1 mm ² 3-core (thru-beam type sensor emitter: 2-core) cabtyre cable, 2 m 6.562 ft long				
Cable extension		Extension up to total 50 m 164.042 ft is possible with 0.3 mm ² , or more, cable (thru-beam type: both emitter and receiver).				
Weight		Emitter: 20 g approx., Receiver: 20 g approx.			20 g approx.	
Accessories		Nut: 2 pcs., Toothed lock washer: 2 pcs.			Nut: 1 pc., Toothed lock washer: 1 pc.	

Note: The sensing range is specified of white non-glossy paper (100 × 100 mm 3.937 × 3.937 in) as the object.