

**Enhanced 50 Series™  
Photoelectric Sensors**

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The new Enhanced versions of the Cutler-Hammer® 50 Series™ Photoelectric Sensors from Eaton’s electrical business offer flexibility, durability and high optical performance in a cost-effective self-contained package. Choose from three output types, four time delay functions, six sensing modes and four connection styles to tailor the sensor to exactly meet your needs.

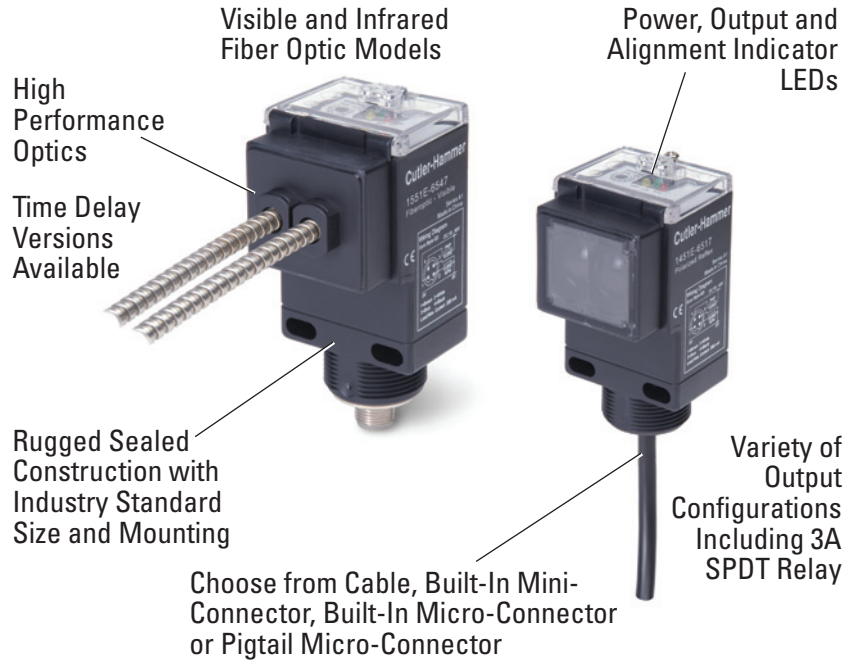
Sensors are available in thru-beam, reflex, polarized reflex, diffuse reflective, clear object, and fiber optic sensing modes. Brackets are available for easy mounting and to allow precise adjustment of sensor alignment.

**Approvals**

- CSA Approved
- Certified to UL Standard, UL 508



**High Performance Sensors for Demanding Applications**





**Product Features**

- High optical performance models including a 500-foot (152m) Thru-Beam and a 10-foot (3m) Diffuse Reflective unit
- Output options include a 3 Amp SPDT relay
- All units offer light/dark selection
- Logic options include ON-delay, OFF-delay and One-Shot delay
- Fiber optic sensors operate in thru-beam or diffuse reflective mode depending on the fiber optic cable selected
- Fully potted construction for use in areas subject to washdown, high shock and/or vibration
- Choice of pre-wired power cable, built-in mini-connector, built-in micro-connector and pigtail micro-connector versions. Standard pre-wired cable length is 6 feet (1.8m)
- Variety of brackets available including ball swivel

**Connection Options**



**Model Selection — Sensors (Continued)**

	Voltage Range	Sensing Range ①	Optimum Range ①	Sensing Beam	Output Type	Time Delay	Connection Type	Catalog Number												
 <p><b>Standard Reflex ③</b></p> <p><i>Field of View: 1.0°</i></p> <p>For a complete system, order one Sensor and one Retroreflector (see <b>Section 8</b>)</p>	10 – 40V DC	30 ft. (9m)	0.5 – 15 ft. (0.2 – 4.6m)	Visible Red	NPN/PNP 250 mA	no	6-foot Cable	1450E-6517												
						yes		1450E-8517												
						no	4-pin Euro (Micro) Connector	1450E-6547 ⊕												
						yes		1450E-8547 ⊕												
						no	4-pin Euro (Micro) Connector (pigtail)	1450E-6537 ⊕												
						yes		1450E-8537 ⊕												
						no	4-pin Mini-Connector	1450E-6507 ⊕												
						yes		1450E-8507 ⊕												
						12 – 240V DC 24 – 240V AC	30 ft. (9m)	0.5 – 15 ft. (0.2 – 4.6m)	Visible Red	NPN/PNP 250 mA	Isolated Output Solid-State Relay 300 mA @ 240V AC/DC	no	6-foot Cable	1450E-6513						
												yes		1450E-8513						
	no	4-pin Micro Connector	1450E-6543 ⊕																	
	yes		1450E-8543 ⊕																	
	no	4-pin Micro Connector (pigtail)	1450E-6533 ⊕																	
	yes		1450E-8533 ⊕																	
	no	4-pin Mini-Connector	1450E-6503 ⊕																	
	yes		1450E-8503 ⊕																	
	12 – 240V DC 24 – 240V AC	16 ft. (4.9m)	0.5 – 8 ft. (0.2 – 2.5m)	Visible Red	NPN/PNP 250 mA							Non-isolated Output Solid-State Relay 300 mA @ 240V AC/DC	no	4-pin Micro Connector	1450E-6545 ⊕					
													yes		1450E-8545 ⊕					
						12 – 240V DC 24 – 240V AC	16 ft. (4.9m)	0.5 – 8 ft. (0.2 – 2.5m)	Visible Red	NPN/PNP 250 mA	SPDT EM Relay 3A @ 120V AC		no	6-foot Cable	1450E-6514					
													yes		1450E-8514					
no													5-pin Micro Connector (pigtail)	1450E-6534 ⊕						
yes														1450E-8534 ⊕						
no													5-pin Mini-Connector	1450E-6504 ⊕						
yes														1450E-8504 ⊕						
 <p><b>Polarized Reflex ②③</b></p> <p><i>Field of View: 1.0°</i></p> <p>For a complete system, order one Sensor and one Retroreflector (see <b>Section 8</b>)</p>													10 – 40V DC	16 ft. (4.9m)	0.5 – 8 ft. (0.2 – 2.5m)	Visible Red	NPN/PNP 250 mA	no	6-foot Cable	1451E-6517
																		yes		1451E-8517
	no	4-pin Euro (Micro) Connector	1451E-6547 ⊕																	
	yes		1451E-8547 ⊕																	
	no	4-pin Euro (Micro) Connector (pigtail)	1451E-6537 ⊕																	
	yes		1451E-8537 ⊕																	
	no	4-pin Mini-Connector	1451E-6507 ⊕																	
	yes		1451E-8507 ⊕																	
	12 – 240V DC 24 – 240V AC	16 ft. (4.9m)	0.5 – 8 ft. (0.2 – 2.5m)	Visible Red	NPN/PNP 250 mA	Isolated Output Solid-State Relay 300 mA @ 240V AC/DC	no	6-foot Cable	1451E-6513											
							yes		1451E-8513											
							no	4-pin Micro Connector	1451E-6543 ⊕											
							yes		1451E-8543 ⊕											
							no	4-pin Micro Connector (pigtail)	1451E-6533 ⊕											
							yes		1451E-8533 ⊕											
							no	4-pin Mini-Connector	1451E-6503 ⊕											
							yes		1451E-8503 ⊕											
							12 – 240V DC 24 – 240V AC	16 ft. (4.9m)	0.5 – 8 ft. (0.2 – 2.5m)	Visible Red	NPN/PNP 250 mA	Non-isolated Output Solid-State Relay 300 mA @ 240V AC/DC	no	4-pin Micro Connector	1451E-6545 ⊕					
													yes		1451E-8545 ⊕					
	12 – 240V DC 24 – 240V AC	16 ft. (4.9m)	0.5 – 8 ft. (0.2 – 2.5m)	Visible Red	NPN/PNP 250 mA	SPDT EM Relay 3A @ 120V AC							no	6-foot Cable	1451E-6514					
													yes		1451E-8514					
no													5-pin Micro Connector (pigtail)	1451E-6534 ⊕						
yes														1451E-8534 ⊕						
no													5-pin Mini-Connector	1451E-6504 ⊕						
yes														1451E-8504 ⊕						

① Ranges based on 3-inch retroreflector for reflex sensors.  
 ② Polarized sensors may not operate with reflective tape. Test tape selection before installation.  
 ③ For brackets compatible with these sensors, see Accessories on **Page 5-19**.

⊕ ⊗ See listing of compatible connector cables on **Page 5-14**.  
 ■ Stocked product, typical order quantities guaranteed in stock.

**Wiring Diagrams** (Pin numbers are for reference only, rely on pin location when wiring)

Operating Voltage	Models	Cable Models	Mini-Connector Models (Face View Male Shown)	Micro-Connector Models (Face View Male Shown)
10 – 40V DC	Thru-Beam Source			
	All others			
12 – 240V DC or 24 – 240V AC	Thru-Beam Source			
	All others with Isolated AC/DC Output			
	All others with Non-isolated AC/DC Output	—	—	
12 – 240V DC or 24 – 240V AC	Thru-Beam Source			
	All others			

- ① Connect load to appropriate output for either sinking or sourcing operation.
- ② Connecting the Test input to 0V DC allows you to switch the light source off for troubleshooting while leaving the sensor under power.
- ③ Over current protection is to be provided in the field. Conductor size for 20 AWG: 5 amp; 22 AWG: 3 amp; 24 AWG: 2 amp.

**Specifications**

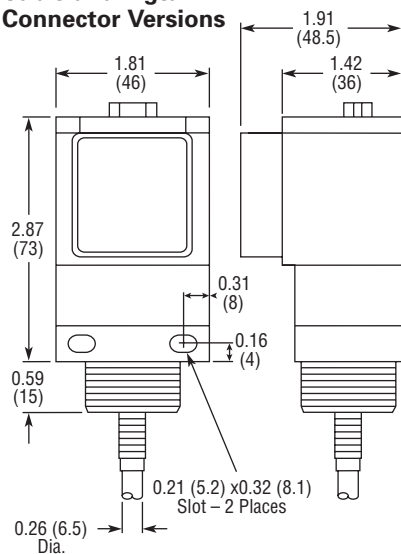
	AC/DC EM Relay Models	AC/DC Solid-State Relay Models	DC Only Standard Range Models	DC Only Extended Range Models
Input Voltage	12 – 240V DC 24 – 240V AC			10 – 40V DC
Light/Dark Operation	Switch selectable			
Operating Temperature	-13 – 131°F (-25 – 55°C)			
Humidity	95% Relative humidity, non-condensing			
Case Material	Fiberglass reinforced plastic			
Lens Material	Acrylic			

**Specifications (Continued)**

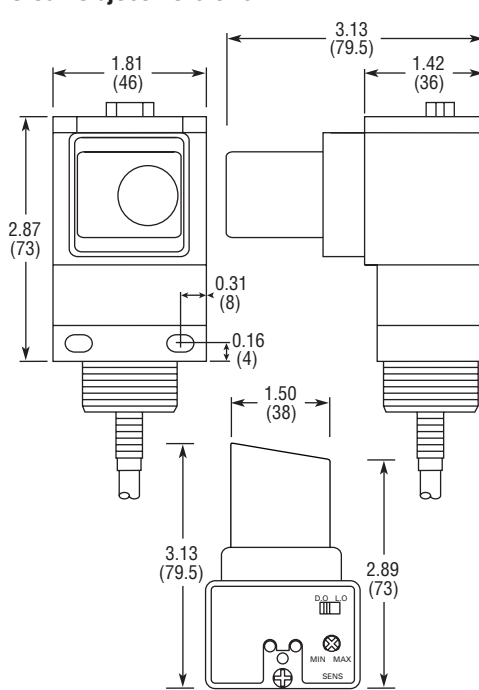
	AC/DC EM Relay Models	AC/DC Solid-State Relay Models	DC Only Standard Range Models	DC Only Extended Range Models
Vibration	IEC 60947-5-2 part 7.4.2			
Shock	IEC 60947-5-2 part 7.4.1			
Protection	Output short circuit and overcurrent protection Reverse polarity protection			
Enclosure Ratings	IP67			
Output Load	3A @ 120V AC 3A @ 240V AC 3A @ 28V AC	300 mA @ 240V AC/ DC	250 mA @ 40V DC	
Response Time	15 mS	2 mS		
Timer Timing Response	0 – 15 sec.			
No Load Current	<30 mA			
Leakage Current (max.)	—	1 mA @ 240V AC	<10 μA	
Indicator LEDs	Green: Output; Yellow: Power; Red: Alignment			
Emitter LED	Diffuse, Infrared Fiber Optic, Thru-Beam Models: Infrared 880 nm Reflex, Polarized Reflex, Clear Object, Visible Fiber Optic Units: Visible Red 660 nm			

**Approximate Dimensions in Inches (mm)**

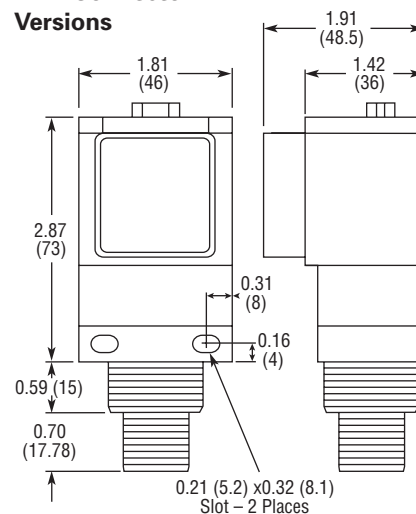
**Cable and Pigtail  
Connector Versions**



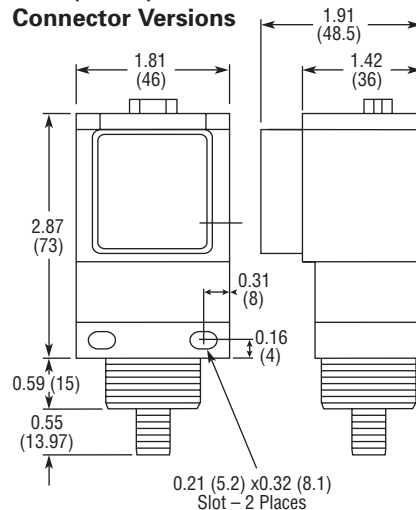
**Clear Object Versions**



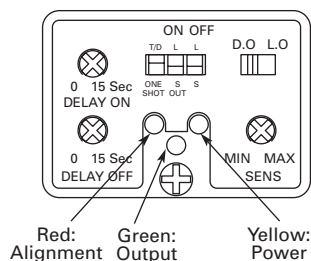
**Mini-Connector  
Versions**



**AC/DC Micro or  
Euro (Micro)  
Connector Versions**



**Top View with Timing**



**Top View without Timing**

