

OPT Short Range (CMOS) Series Photoelectric Sensors



OPT2001

50 x 50 mm rectangular plastic - DC

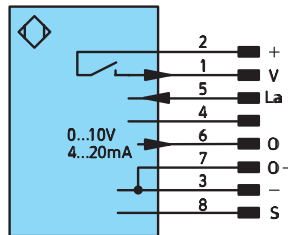
- Diffuse (Reflex) laser distance measurement sensors with CMOS technology
- Analog and switching outputs available
- Measured value independent of material, color, and brightness
- Class 1 and 2 lasers available (safety label included with Class 2 lasers)
- High resolution down to 8 μm - (analog scalable down to 5 mm range)
- High speed response times down to 660 μs
- M12 quick-disconnect; order cable separately
- Mounting hardware included



OPT Series Photoelectric Sensors Selection Chart											
Part Number	Price	Sensing Range	Laser Class	Measurement Rate	Resolution	Output State	Logic	Connection	Wiring	Drawing Link	Characteristic Curves
Diffuse (Reflex)											
OPT2001		30-80 mm [1.18 - 3.15 in]	2	1500/s (660 μs)	< 8 μm	Analog 4-20 mA or 0-10 V	—	8-pin M12 quick- disconnect	Diagram 1	PDF	See Characteristic Curve
OPT2002			1	1000/s (1000 μs)						PDF	
OPT2003		40-160 mm [1.57 - 6.30 in]	2	1500/s (660 μs)	< 20 μm				PDF		
OPT2004			1	1000/s (1000 μs)					PDF		
OPT2005		50-350 mm	2	800/s (1250 μs)	< 50 μm				PDF		
OPT2006		[1.97 - 13.80 in]	1	500/s (2000 μs)					PDF		
OPT2007		0 - 660 mm [0 - 25.98 in] working range 60-660 mm [2.36 - 25.98 in] adjustable range	1	100 Hz switching	Hysteresis <1 % of range	Selectable (N.O.,N.C.)	5-wire, configurable as PNP, NPN, or Push-Pull	5-pin M12 quick- disconnect	Diagram 2	PDF	—

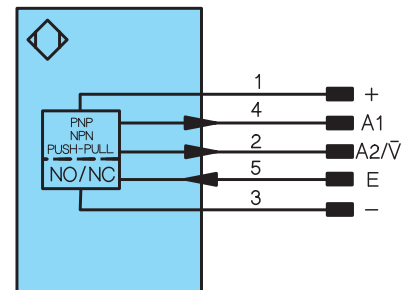
Wiring Diagrams

Diagram 1



- + Supply Voltage "+"
- V Contamination/Error output (NO)
- O Analog output
- O- Ground for the analog output
- Supply Voltage "0 V"
- S Shielding
- La Emitted Light disengageable

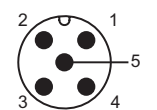
Diagram 2



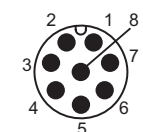
- + Supply Voltage "+"
- Supply Voltage "0 V"
- A1/A2 Switching output (NO)
- V Contamination Warning/
Error Output (NC)
- E Input (Teach Input, Emitted light can
be switched off)

Connectors

5-Pin M12 connector



8-Pin M12 connector



Note: Class 2 power source required

Photoelectric Sensors

tSEN-75

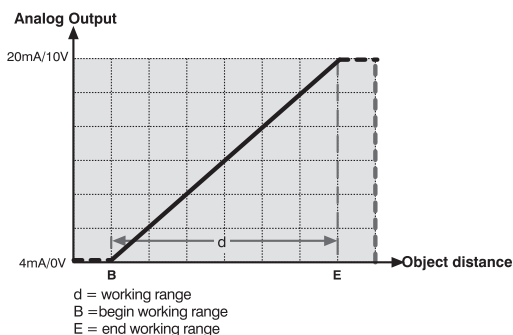


Product manual available via download at

OPT Short Range (CMOS) Series Photoelectric Sensors

Specifications	OPT 2001	OPT 2002	OPT 2003	OPT 2004	OPT 2005	OPT 2006	OPT 2007
Type	Diffuse Reflex						
Sensing Distance	30-80 mm [1.18-3.15 in]	30-80 mm [1.18-3.15 in]	40-160 mm [1.57- 6.30 in]	40-160 mm [1.57- 6.30 in]	50-350 mm [1.97-13.78 in]	50-350 mm [1.97-13.78 in]	60-660 mm [2.36-25.98 in]
Light Spot Diameter (at maximum range)	1 x 2 mm [0.04 x 0.08 in]	0.7 x 1.4 mm [0.03 x 0.06 in]	1 x 2.5 mm [0.04 x 0.10 in]	0.9 x 1.8 mm [0.04 x 0.07 in]	1.5 x 4 mm [0.06 x 0.16 in]	1.4 x 3.1 mm [0.06 x 0.12 in]	2.0 x 5.5 mm [0.08 x 0.22 in]
Emission	Class 2 Red laser 660Nm	Class 1 Red laser 660Nm	Class 2 Red laser 660Nm	Class 1 Red laser 660Nm	Class 2 Red laser 660Nm	Class 1 Red laser 660Nm	Class 1 Red laser 655Nm
Sensitivity	Adjustable via Teach						
Output Type	0-10 VDC or 4-20mA: PNP error output						Complementary N.O./N.C. (Light-on, Dark-on) PNP or NPN
Current Output Max Load	500Ω						NA
Voltage Output Min Load	10 KΩ						NA
Operating Voltage	18-30 VDC						10-30 VDC
No Load Supply Current	< 80mA @ 24VDC						<50mA @ 2VDC
Operating (Load) Current	max 200mA						
Off-state (Leakage) Current	negligible						
Voltage Drop	< 2.5V						<1.5V
Measurement Rate/ Resolution	1500/s (660μs) @ 12μm 600/s(1660μs) @ 8μm	1000/s (1000μs) @ 12μm 500/s (2000μs) @ 8μm	1500/s (660μs) @ 30μm 600/s (1660μs) @ 20μm	1000/s (1000μs) @ 30μm 500/s (2000μs) @ 20μm	800/s (1250μs) @ 80μm 400/s (2500μs) @ 50μm	500/s (2000μs) @ 80μm 250/s (4000μs) @ 50μm	NA
Switching Frequency	1.5 kHz	1.0 kHz	1.5 kHz	1.0 kHz	800Hz	500Hz	100Hz
Linearity	0.1%				0.15%		NA
Time Delay Before Availability (tv)	NA						
Short-Circuit Protection	Yes						
Operating Temperature	-25 to 50°C [13 to 122°F]						-25 to 60°C [13 to 140°F]
Protection Degree (DIN 40050)	IEC IP67						IEC IP68
LED Indicators - Switching Status	Yellow						
LED Indicators - Power	Green						
Housing Material	Polycarbonate						
Lens Material	Polymethyl methacrylate (PMMA)						
Shock/Vibration	See terminology section.						
Tightening Torque	0.5 N·m (mounting screws)						
Weight (lbs) (cable/connector)	0.2						
Connectors	M12 quick-disconnect						
Agency Approvals	CE, cULUS, E189727, RoHs						

Characteristic Curves



IMPORTANT NOTE

The Laser Classification Systems for the standards IEC (EN) 60825-1 defines the following safety classes:

Class 1

This class is eye-safe under all operating conditions.

Class 2

These are visible lasers. This class is safe for accidental viewing under all operating conditions. However, it may not be safe for a person who deliberately stares into the laser beam for longer than 0.25 seconds, by overcoming their natural aversion response to the very bright light.

Accessories for OPT Series 50x50mm Photoelectric Sensors

Right-angle Brackets

Mounting bracket, right-angle, nickel-plated steel or 304 stainless steel.
For use with OPT series 50x50mm photoelectric sensors.

Accessories for OPT Series 50x50mm Photoelectric Sensors				
Part Number	Price	Description	Drawing Link	Weight [lb]
OPT2031		Wenglor mounting bracket, right-angle, nickel plated brass. For use with OPT series 50x50mm photoelectric sensors.	PDF	0.24
OPT2038		Wenglor mounting bracket, right-angle, vertical and horizontal adjustment, 304 stainless steel. For use with OPT series 50x50mm photoelectric sensors.	PDF	0.19



OPT2031



OPT2038

Accessories for OPT Series 50x50mm Photoelectric Sensors

Right-angle Swivel Mounting Systems

Mounting bracket, right-angle swivel, 360 degree vertical and horizontal adjustment, 12mm rod mount. For use with OPT series 50x50mm photoelectric sensors. Available in all stainless steel or with an aluminum head with a stainless steel mounting plate.

Accessories for OPT Series 50x50mm Photoelectric Sensors						
Part Number	Price	Description	Mounting Head	Mounting Plate	Drawing Link	Weight [lb]
OPT2122		Wenglor mounting bracket, right-angle swivel, 360 degree vertical and horizontal adjustment, aluminum, 12mm rod mount. For use with OPT series 50x50mm photoelectric sensors.	Aluminum	304 Stainless Steel	PDF	0.19
OPT2123		Wenglor mounting bracket, right-angle swivel, 360 degree vertical and horizontal adjustment, 304 stainless steel, 12mm rod mount. For use with OPT series 50x50mm photoelectric sensors.	304 Stainless Steel	304 Stainless Steel	PDF	0.31

Note: 304 Stainless steel mounting rods sold separately: OPT2109 (200mm length), OPT2110 (300mm length), and OPT2111 (500mm length).



OPT2122,
OPT2123