

OPT Short Range (CMOS) Series Photoelectric Sensors



OPT2001

50 x 50mm 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 8μm - (analog scalable down to 5mm range)
- High speed response times down to 660μs
- M12 quick-disconnect; purchase cable separately
- Mounting hardware included

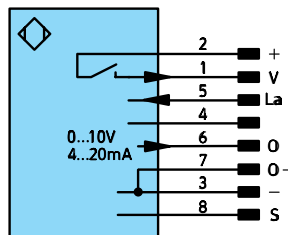


OPT Series Photoelectric Sensors Selection Chart

Part Number	Price	Sensing Range	Laser Class	Measurement Rate	Resolution	Output State	Logic	Connection	Wiring Diagram	Drawing Link	Characteristic Curves
Diffuse (Reflex)											
OPT2001	\$778.00	30-80mm [1.18-3.15 in]	2	1500/s [660 μs]	< 8μm	Analog 4-20mA or 0-10V	—	8-pin M12 quick-disconnect	Diagram 1	PDF	See Characteristic Curve
OPT2002	\$778.00		1	1000/s [1000 μs]			—			PDF	
OPT2003	\$778.00	40-160mm [1.57-6.30 in]	2	1500/s [660 μs]	< 20μm		—			PDF	
OPT2004	\$778.00		1	1000/s [1000 μs]			—			PDF	
OPT2005	\$778.00	50-350mm [1.97-13.80 in]	2	800/s [1250 μs]	< 50μm		—			PDF	
OPT2006	\$778.00		1	500/s [2000 μs]			—			PDF	
OPT2007	\$390.00	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	—

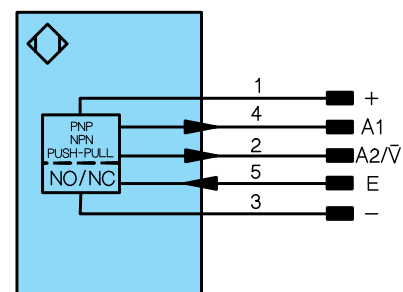
Wiring Diagrams

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

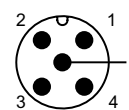
Diagram 2



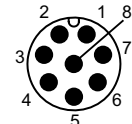
- + Supply Voltage “+”
- Supply Voltage “0 V”
- A1/A2 Switching output (NO)
- V Contamination Warning/
Error Output (NC)
- E Input (Teach Input, Emitted light can
be switched off)

Connectors

5-Pin M12 connector



8-Pin M12 connector



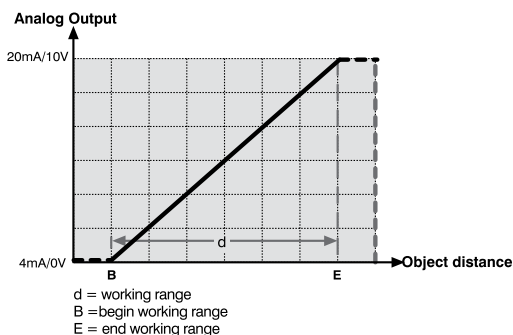
Note: Class 2 power source required

OPT Short Range (CMOS) Series

Photoelectric Sensors

Specifications	OPT2001	OPT2002	OPT2003	OPT2004	OPT2005	OPT2006	OPT2007
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]
<u>OPT2031</u>	\$7.00	Wenglor mounting bracket, right-angle, nickel-plated brass. For use with OPT series 50x50mm photoelectric sensors.	<u>PDF</u>	0.24
<u>OPT2038</u>	\$11.00	Wenglor mounting bracket, right-angle, vertical and horizontal adjustment, 304 stainless steel. For use with OPT series 50x50mm photoelectric sensors.	<u>PDF</u>	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]
<u>OPT2122</u>	\$11.50	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	<u>PDF</u>	0.19
<u>OPT2123</u>	\$21.00	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	<u>PDF</u>	0.31

NOTE:

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



[OPT2122,](#)
[OPT2123](#)