

OPT Short Range (CMOS) Series Photoelectric Sensors



OPT2001

50 x 50 mm rectangular plastic - DC

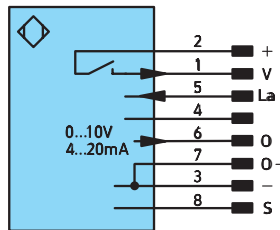
- Diffuse (Reflex) laser distance measurement sensors with CMOS technology
- Analog and switching outputs available
- Measured value independent of material, color, and brightness
- Class 1 and 2 lasers available (safety label included with Class 2 lasers)
- High resolution down to 8 μm - (analog scalable 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	Characteristic Curves
Diffuse (Reflex)										
OPT2001	\$629.00	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	See Characteristic Curve
OPT2002	\$629.00		1	1000/s (1000 μs)			—			
OPT2003	\$629.00	40-160 mm [1.57 - 6.30 in]	2	1500/s (660 μs)	<20 μm		—			
OPT2004	\$629.00		1	1000/s (1000 μs)			—			
OPT2005	\$629.00	50-350 mm [1.97 - 13.80 in]	2	800/s (1250 μs)	<50 μm		—			
OPT2006	\$629.00		1	500/s (2000 μs)			—			
OPT2007	\$319.00	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, con- figurable as PNP, NPN, or Push-Pull	5-pin M12 quick-disconnect	Diagram 2	—

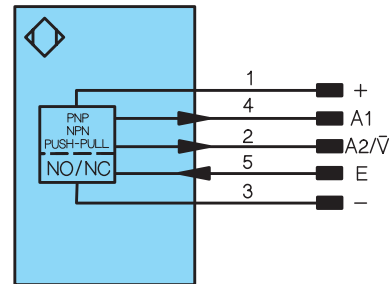
Wiring Diagrams

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



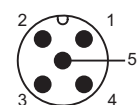
- + Supply Voltage "+"
- Supply Voltage "0 V"
- A1/A2 Switching output (NO)
- ∇ Contamination Warning/
Error Output (NC)
- E Input (Teach Input, Emitted light can
be switched off)



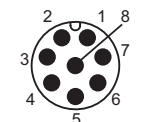
PRODUCT MANUAL AVAILABLE VIA DOWNLOAD AT
WWW.AUTOMATIONDIRECT.COM

Connectors

5-Pin M12 connector



8-Pin M12 connector

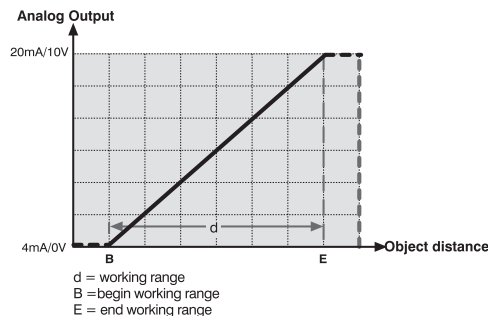


NOTE: CLASS 2 POWER SOURCE REQUIRED

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 660 Nm	Class 1 Red laser 660 Nm	Class 2 Red laser 660 Nm	Class 1 Red laser 660 Nm	Class 2 Red laser 660 Nm	Class 1 Red laser 660 Nm	Class 1 Red laser 655 Nm
Sensitivity	Adjustable via Teach						
Output Type	0-10 VDC or 4-20 mA; 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	<80 mA @ 24 VDC						<50 mA @ 24 VDC
Operating (Load) Current	max 200 mA						
Off-state (Leakage) Current	negligible						
Voltage Drop	<2.5V						<1.5V
Measurement Rate/ Resolution	1500/s (660 μs) @ 12 μm 600/s (1660 μs) @ 8 μm	1000/s (1000 μs) @ 12 μm 500/s (2000 μs) @ 8 μm	1500/s (660 μs) @ 30 μm 600/s (1660 μs) @ 20 μm	1000/s (1000 μs) @ 30 μm 500/s (2000 μs) @ 20 μm	800/s (1250 μs) @ 80 μm 400/s (2500 μs) @ 50 μm	500/s (2000 μs) @ 80 μm 250/s (4000 μs) @ 50 μm	NA
Switching Frequency	1.5 kHz	1.0 kHz	1.5 kHz	1.0 kHz	800 Hz	500 Hz	100 Hz
Linearity	0.1%				0.15%		NA
Time Delay Before Availability (tv)	NA						
Short-Circuit Protection	Yes						
Operating Temperature	-25°C to 50°C [13°F to 122°F]						-25°C to 60°C [13°F 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	Poly(methyl methacrylate) (PMMA)						
Shock/Vibration	See <i>Terminology</i> section.						
Tightening Torque	0.5 N·m (mounting screws)						
Weight (lbs) (cable/connector)	0.2						
Connectors	M12 Quick Disconnect						
Agency Approvals	CE, cJULUS, E189727, RoHs						

Characteristic Curves



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.

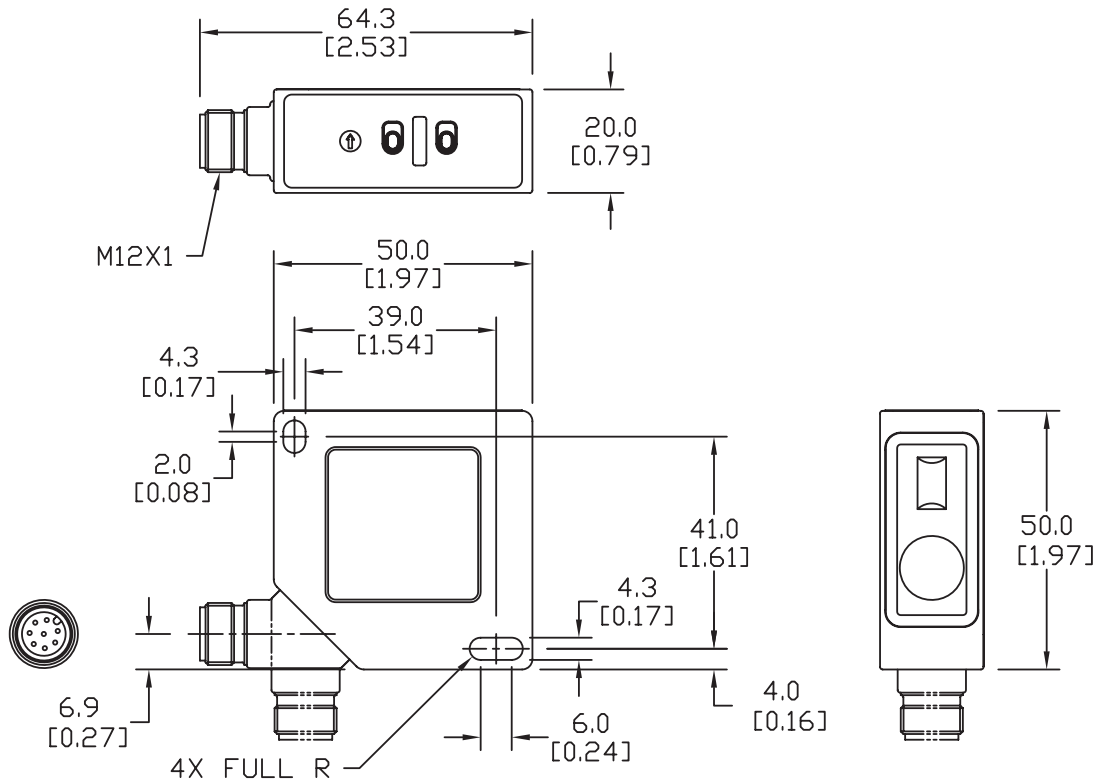
Class 2

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 s, by overcoming their natural aversion response to the very bright light.

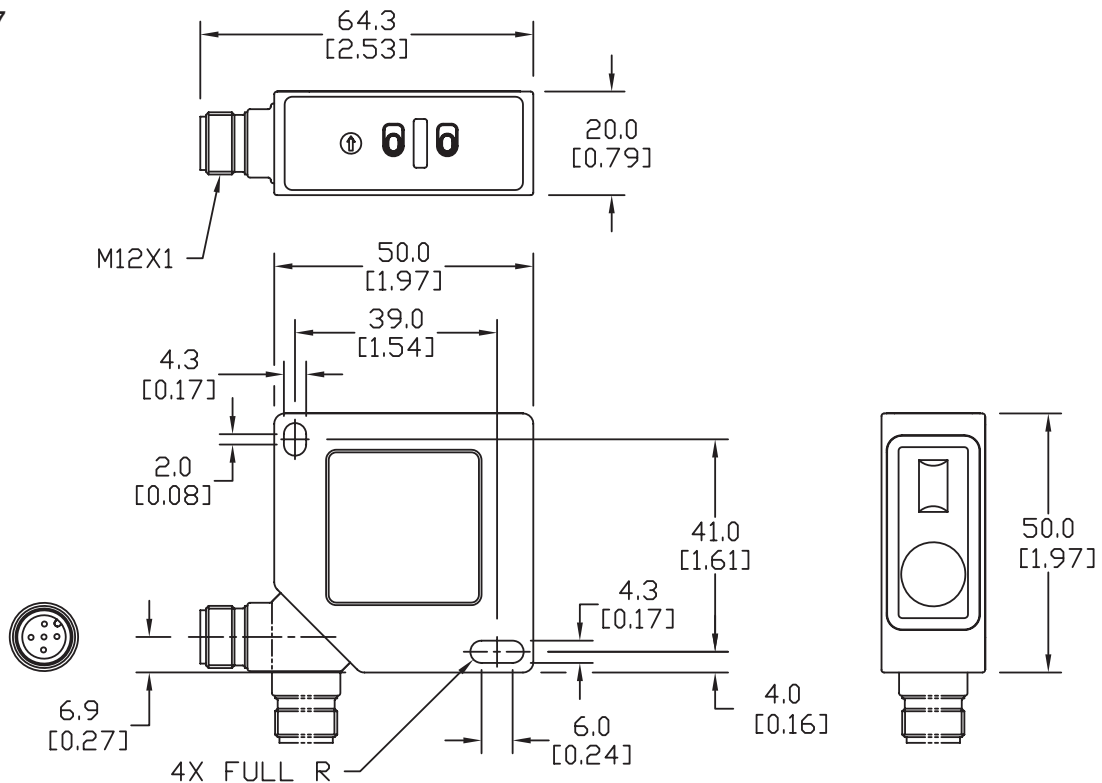
OPT Short Range (CMOS) Series Photoelectric Sensors

Dimensions mm [inches]

OPT2001
OPT2002
OPT2003
OPT2004
OPT2005
OPT2006



OPT2007



Accessories for OPT Series 50x50mm Photoelectric Sensors

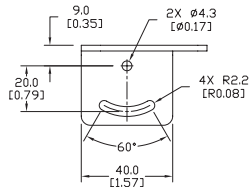
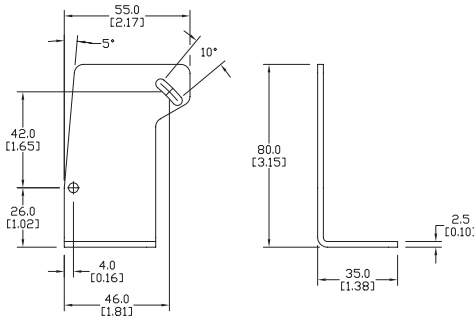
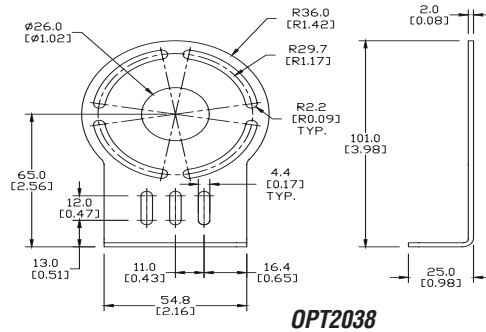
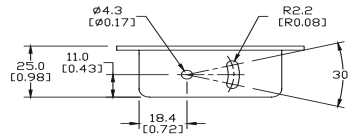
Right-angle Brackets

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

Accessories for OPT2001 - OPT2011 Sensors			
Part Number	Price	Description	Weight [lb]
OPT2031	\$5.50	Mounting bracket, right-angle, nickel-plated steel. For use with OPT series 50x50mm photoelectric sensors.	0.24
OPT2038	\$8.50	Mounting bracket, right-angle, vertical and horizontal adjustment, 304 stainless steel. For use with OPT series 50x50mm photoelectric sensors.	0.19

Dimensions

mm [inches]



OPT2031

See our website: www.AutomationDirect.com for complete engineering drawings

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 OPT2001 - OPT2011 Sensors					
Part Number	Price	Description	Mounting Head	Mounting Plate	Weight [lb]
OPT2122	\$9.00	Mounting bracket, right-angle swivel, 360 vertical and horizontal adjustment, aluminum, 12mm rod mount. For use with OPT series 50x50mm photoelectric sensors.	Aluminum	304 Stainless Steel	0.19
OPT2123	\$16.00	Mounting bracket, right-angle swivel, 360 vertical and horizontal adjustment, stainless steel, 12mm rod mount. For use with OPT series 50x50mm photoelectric sensors.	304 Stainless Steel	304 Stainless Steel	0.31

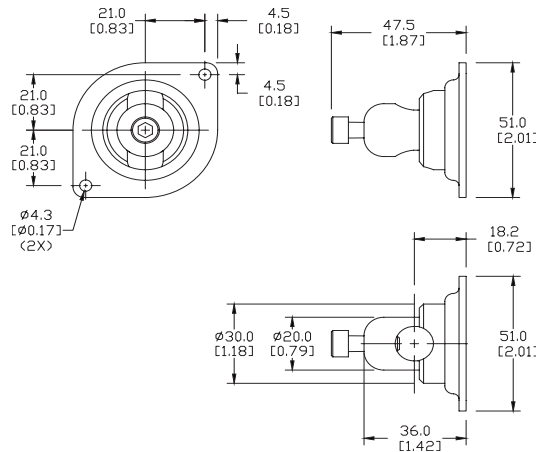
Note: 304 Stainless steel mounting rods sold separately: OPT2109 (200mm length), OPT2110 (300mm length), and OPT2111 (500mm length).



OPT2122, OPT2123

Dimensions

mm [inches]



See our website: www.AutomationDirect.com for complete engineering drawings