

OPT Short Range (CMOS) Series Photoelectric Sensors



OPT2001

50 x 50mm rectangular plastic - DC

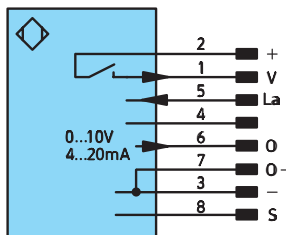
- Diffuse (Reflex) laser distance measurement sensors with CMOS technology
- Analog and switching outputs available
- Measured value independent of material, color, and brightness
- Class 1 and 2 lasers available (safety label included with Class 2 lasers)
- High resolution down to 8µm - (analog scalable 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 | Drawing Link | Characteristic Curves |
| Diffuse (Reflex) | | | | | | | | | | | |
| OPT2001 | \$778.00 | 30-80mm | 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 | [1.18-3.15 in] | 1 | 1000/s [1000 µs] | | | | | | | |
| OPT2003 | \$778.00 | 40-160mm | 2 | 1500/s [660 µs] | < 20µm | — | 8-pin M12 quick- disconnect | Diagram 1 | PDF | | |
| OPT2004 | \$778.00 | [1.57-6.30 in] | 1 | 1000/s [1000 µs] | | | | | | | |
| OPT2005 | \$778.00 | 50-350mm | 2 | 800/s [1250 µs] | < 50µm | — | 8-pin M12 quick- disconnect | Diagram 1 | PDF | | |
| OPT2006 | \$778.00 | [1.97-13.80 in] | 1 | 500/s [2000 µs] | | | | | | | |
| 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 | — |

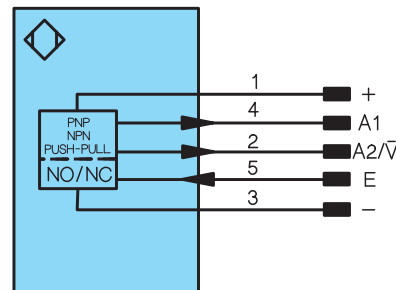
Wiring Diagrams

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

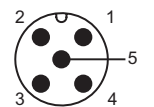
Diagram 2



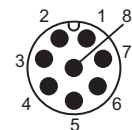
- + Supply Voltage "+"
- Supply Voltage "0 V"
- A1/A2 Switching output (NO)
- ∇ Contamination Warning/
Error Output (NC)
- E Input (Teach Input, Emitted light can
be switched off)

Connectors

5-Pin M12 connector



8-Pin M12 connector

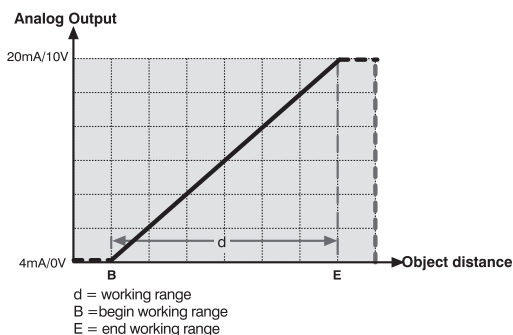


Note: Class 2 power source required

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] |
| OPT2031 | \$7.00 | Wenglor mounting bracket, right-angle, nickel-plated brass. For use with OPT series 50x50mm photoelectric sensors. | PDF | 0.24 |
| OPT2038 | \$11.00 | 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] |
| <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](#)