OPT Short Range (CMOS) Series
Photoelectric Sensors

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

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Price</th>
<th>Sensing Range</th>
<th>Laser Class</th>
<th>Measurement Rate</th>
<th>Resolution</th>
<th>Output State</th>
<th>Logic</th>
<th>Connection</th>
<th>Wiring</th>
<th>Characteristic Curves</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPT2001</td>
<td>$664.00</td>
<td>30-80 mm</td>
<td>2</td>
<td>1500/s (660 µs)</td>
<td>&lt;8 µm</td>
<td>Analog 4-20 mA or 0-10 V</td>
<td>—</td>
<td>8-pin M12 quick-disconnect</td>
<td>Diagram 1</td>
<td>See Characteristic Curve</td>
</tr>
<tr>
<td>OPT2002</td>
<td>$664.00</td>
<td>1</td>
<td>1</td>
<td>1000/s (1000 µs)</td>
<td>&lt;20 µm</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td>OPT2003</td>
<td>$664.00</td>
<td>40-160 mm</td>
<td>2</td>
<td>1500/s (660 µs)</td>
<td>&lt;8 µm</td>
<td>—</td>
<td>—</td>
<td>—</td>
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</tr>
<tr>
<td>OPT2004</td>
<td>$664.00</td>
<td>50-350 mm</td>
<td>1</td>
<td>1000/s (1000 µs)</td>
<td>&lt;20 µm</td>
<td>—</td>
<td>—</td>
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</tr>
<tr>
<td>OPT2005</td>
<td>$664.00</td>
<td>0-600 mm</td>
<td>2</td>
<td>800/s (1250 µs)</td>
<td>&lt;50 µm</td>
<td>Selectable (N.O., N.C.)</td>
<td>—</td>
<td>5-pin M12 quick-disconnect</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>OPT2006</td>
<td>$664.00</td>
<td>50-350 mm</td>
<td>1</td>
<td>500/s (2000 µs)</td>
<td>&lt;50 µm</td>
<td>Selectable (N.O., N.C.)</td>
<td>—</td>
<td>5-pin M12 quick-disconnect</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>OPT2007</td>
<td>$337.00</td>
<td>0 - 660 mm</td>
<td>1</td>
<td>100 Hz switching</td>
<td>Hysteresis &lt;1 % of range</td>
<td>Selectable (N.O., N.C.)</td>
<td>—</td>
<td>5-pin M12 quick-disconnect</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Wiring Diagrams

Diagram 1

Diagram 2

Connectors

PRODUCT MANUAL AVAILABLE VIA DOWNLOAD AT WWW.AUTOMATIONDIRECT.COM

NEED CABLES?

Note: Class 2 Power source required

For the latest prices, please check AutomationDirect.com.
OPT Short Range (CMOS) Series
Photoelectric Sensors

Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Sensing Distance</th>
<th>Light Spot Diameter (at maximum range)</th>
<th>Emission</th>
<th>Sensitivity</th>
<th>Output Type</th>
<th>Current Output Max Load</th>
<th>Voltage Output Min Load</th>
<th>Operating Voltage</th>
<th>No Load Supply Current</th>
<th>Operating (Load) Current</th>
<th>Off-state (Leakage) Current</th>
<th>Voltage Drop</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30-80 mm (1.18-3.15 in)</td>
<td>1 x 2 mm [0.04 x 0.08 in]</td>
<td>Class 2 Red laser 660 Nm</td>
<td>Adjustable via Teach</td>
<td>0-10 VDC or 4-20 mA: PNP error output</td>
<td>500Ω</td>
<td>NA</td>
<td>18-30 VDC</td>
<td>&lt;80 mA @ 24 VDC</td>
<td>max 200 mA</td>
<td>negligible</td>
<td>&lt;2.5V</td>
</tr>
<tr>
<td></td>
<td>30-80 mm (1.18-3.15 in)</td>
<td>0.7 x 1.4 mm [0.03 x 0.06 in]</td>
<td>Class 1 Red Laser 660 Nm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&lt;50 mA @ 24 VDC</td>
<td></td>
<td></td>
<td>&lt;1.5V</td>
</tr>
<tr>
<td></td>
<td>40-160 mm (1.57-6.30 in)</td>
<td>1 x 2.3 mm [0.04 x 0.10 in]</td>
<td>Class 2 Red laser 660 Nm</td>
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<tr>
<td></td>
<td>50-350 mm (1.97-13.78 in)</td>
<td>0.9 x 1.8 mm [0.04 x 0.07 in]</td>
<td>Class 1 Red Laser 660 Nm</td>
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<tr>
<td></td>
<td>50-350 mm (1.97-13.78 in)</td>
<td>1.5 x 4 mm [0.06 x 0.16 in]</td>
<td>Class 2 Red laser 660 Nm</td>
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<tr>
<td></td>
<td>50-350 mm (1.97-13.78 in)</td>
<td>1.4 x 3.1 mm [0.06 x 0.12 in]</td>
<td>Class 1 Red Laser 660 Nm</td>
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<tr>
<td></td>
<td>60-660 mm (2.36-25.98 in)</td>
<td>2.0 x 5.5 mm [0.08 x 0.22 in]</td>
<td>Class 1 Red Laser 655 Nm</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Other Specifications:

- **Measurement Rate/Resolution**:
  - 1500/s (660 µs) @ 12µm
  - 1000/s (1660 µs) @ 8µm
  - 1500/s (660 µs) @ 1000 µs
  - 1000/s (1660 µs) @ 2000 µs
  - 800/s (2500 µs) @ 30 µm
  - 500/s (2000 µs) @ 50 µm
  - 500/s (2000 µs) @ 80 µm
  - 400/s (2500 µs) @ 50 µm
  - 800/s (1250 µs) @ 80 µm
  - 500/s (2000 µs) @ 80 µm

- **Switching Frequency**:
  - 1.5 kHz
  - 1.0 kHz
  - 1.5 kHz
  - 1.0 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)

- **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 Terminology section.

- **Tightening Torque**: 0.5 N·m (mounting screws)

- **Weight (lbs)**: 0.2

- **Connectors**: M12 Quick Disconnect

- **Agency Approvals**: CE, cULUS, 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.

<table>
<thead>
<tr>
<th>Accessories for OPT2001 - OPT2011 Sensors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Part Number</strong></td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>OPT2031</td>
</tr>
<tr>
<td>OPT2038</td>
</tr>
</tbody>
</table>

Dimensions

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.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Price</th>
<th>Description</th>
<th>Mounting Head</th>
<th>Mounting Plate</th>
<th>Weight [lb]</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPT2122</td>
<td>$9.50</td>
<td>Mounting bracket, right-angle swivel, 360 vertical and horizontal adjustment, aluminum, 12mm rod mount. For use with OPT series 50x50mm photoelectric sensors.</td>
<td>Aluminum</td>
<td>304 Stainless Steel</td>
<td>0.19</td>
</tr>
<tr>
<td>OPT2123</td>
<td>$17.00</td>
<td>Mounting bracket, right-angle swivel, 360 vertical and horizontal adjustment, stainless steel, 12mm rod mount. For use with OPT series 50x50mm photoelectric sensors.</td>
<td>304 Stainless Steel</td>
<td>304 Stainless Steel</td>
<td>0.31</td>
</tr>
</tbody>
</table>

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

Dimensions

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