

# OPT Series Transit Time Photoelectric Sensors

## Rectangular Plastic Distance Sensors



- Diffuse and Retro-reflective (Transit time) laser distance measurement sensors
- 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)
- M12 and M8 quick-disconnect and pigtail versions; purchase cable separately
- Mounting hardware included

**OPT2010, OPT2015, OPT2019**

### OPT Series Photoelectric Sensors Selection Chart

| Part Number                     | Price    | Working Range<br>m [ft]        | Laser Class | Function                 | Measurement Rate  | Resolution                  | Output State                                                         | Connection                                              | Wiring Diagram                | Dims [mm]    | Drawing Link        |                     |
|---------------------------------|----------|--------------------------------|-------------|--------------------------|-------------------|-----------------------------|----------------------------------------------------------------------|---------------------------------------------------------|-------------------------------|--------------|---------------------|---------------------|
| Diffuse (Transit Time)          |          |                                |             |                          |                   |                             |                                                                      |                                                         |                               |              |                     |                     |
| <a href="#">OPT2010</a>         | \$306.00 | 0 - 3<br>[0 - 9.84]            | 1           | Switching                | 1kHz              | Hysteresis<br>< 15mm        | Complementary<br>(N.O./N.C.) PNP                                     | 5-pin M12<br>quick-disconnect                           | 1                             | 50 x 50 x 20 | <a href="#">PDF</a> |                     |
| <a href="#">OPT2011</a>         | \$384.00 | 0.05 - 3.05<br>[0.16 - 10.01]  |             | Measuring /<br>Switching | 500/s<br>[2ms]    | 1mm<br>[0.04 in]            | Analog 4-20 mA<br>or 0-10 VDC                                        | 4-pin M12<br>quick-disconnect                           | 2                             |              | <a href="#">PDF</a> |                     |
| <a href="#">OPT2012</a>         | \$407.00 | 0.2 - 6.2<br>[0.66 - 20.34]    |             |                          | 1-100/s<br>[10ms] | 1-12 mm<br>[0.04 - 0.47 in] |                                                                      | Switching<br>PNP/NPN<br>(N.O./N.C.)                     | 8-pin M12<br>quick-disconnect | 3            | 55 x 81 x 30        | <a href="#">PDF</a> |
| <a href="#">OPT2013</a>         | \$701.00 | 0.1 - 10.1<br>[0.33 - 33.14]   | 2           |                          |                   |                             | 4-pin M12<br>quick-disconnect                                        |                                                         |                               | 4            |                     | <a href="#">PDF</a> |
| <a href="#">OPT2014</a>         | \$423.00 |                                |             |                          |                   |                             |                                                                      |                                                         |                               | 3            |                     | <a href="#">PDF</a> |
| <a href="#">OPT2016</a>         | \$317.00 | 0 - 1<br>[0 - 3.28]            | 1           |                          | 1kHz              | Hysteresis<br>< 20mm        | Complementary<br>(N.O./N.C.) PNP                                     | 4-pin M8<br>quick-disconnect                            | 5                             | 22 x 32 x 12 | <a href="#">PDF</a> |                     |
| <a href="#">OPT2017</a>         | \$317.00 |                                |             |                          |                   |                             |                                                                      | 4-pin M12<br>quick-disconnect,<br>200mm [7.87 in] cable |                               |              | <a href="#">PDF</a> |                     |
| <a href="#">OPT2018</a>         | \$317.00 |                                |             |                          |                   |                             |                                                                      | 4-pin M8<br>quick-disconnect,<br>200mm [7.87 in] cable  |                               |              | <a href="#">PDF</a> |                     |
| <a href="#">OPT2019</a>         | \$317.00 |                                |             |                          |                   |                             |                                                                      | Pigtail,<br>2m [6.5 ft] cable                           |                               |              | <a href="#">PDF</a> |                     |
| <a href="#">OPT2170</a>         | \$259.00 | 0 - 3<br>[0 - 9.84]            | 1           | Switching                | 500HZ             | Hysteresis<br>< 15mm        | 2 mutually<br>independent<br>switching PNP                           | 5-pin M12<br>quick-disconnect                           | 6                             | 50 x 50 x 20 | <a href="#">PDF</a> |                     |
| <a href="#">OPT2171</a>         | \$259.00 |                                |             |                          |                   |                             | 2 mutually<br>independent<br>switching NPN                           |                                                         | 6                             |              | <a href="#">PDF</a> |                     |
| <a href="#">OPT2172</a>         | \$207.00 | 0 - 1<br>[0 - 3.28]            |             |                          |                   | Hysteresis<br>< 20mm        | 2 mutually<br>independent<br>switching PNP                           | 4-pin M8<br>quick-disconnect                            | 7                             | 22 x 32 x 12 | <a href="#">PDF</a> |                     |
| <a href="#">OPT2173</a>         | \$207.00 |                                |             |                          |                   |                             |                                                                      | 4-pin M8<br>quick-disconnect,<br>200mm [7.87 in] cable  |                               |              | <a href="#">PDF</a> |                     |
| <a href="#">OPT2174</a>         | \$207.00 |                                |             |                          |                   |                             |                                                                      |                                                         |                               |              | <a href="#">PDF</a> |                     |
| Retro-Reflective (Transit Time) |          |                                |             |                          |                   |                             |                                                                      |                                                         |                               |              |                     |                     |
| <a href="#">OPT2015*</a>        | \$807.00 | 0.2 - 100.2<br>[0.66 - 328.74] | 1           | Measuring/<br>Switching  | 1-100/s [10ms]    | 4-20 mm<br>[0.16 - 0.79 in] | Analog 4-20 mA<br>or 0-10 VDC<br>Switching<br>PNP/NPN<br>(N.O./N.C.) | 8-pin M12<br>quick-disconnect                           | 4                             | 55 x 81 x 30 | <a href="#">PDF</a> |                     |

\*Requires purchase of [OPT2030](#) reflector (see Accessories). <50m sensing distance requires 1 reflector. 50-100m sensing distance requires 4 reflectors.

# OPT Series Transit Time Photoelectric Sensors

## Wiring Diagrams

Diagram 1

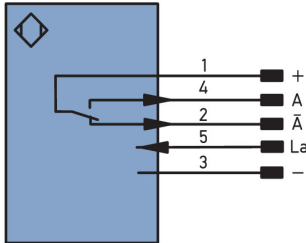


Diagram 2

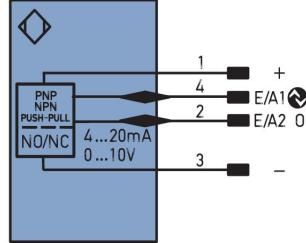


Diagram 3

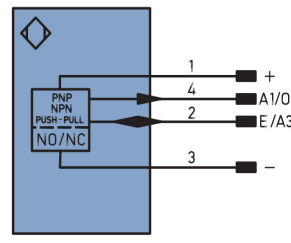


Diagram 4

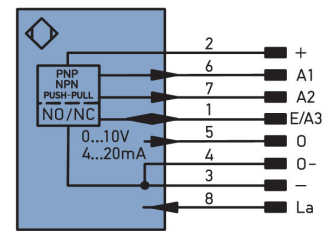


Diagram 5

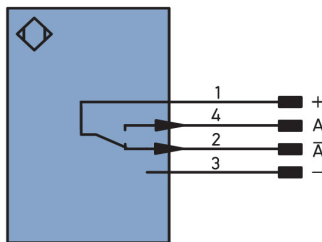


Diagram 6

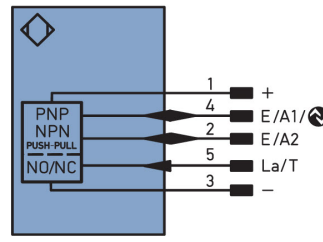
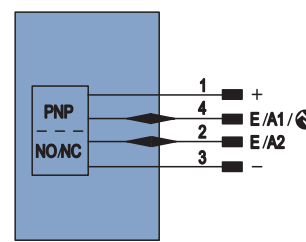


Diagram 7



### Legend

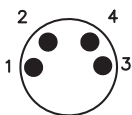
|          |                                            |
|----------|--------------------------------------------|
| +        | Supply Voltage +                           |
| -        | Supply Voltage 0 V                         |
| -        | Supply Voltage (AC Voltage)                |
| A        | Switching Output (NO)                      |
| Ā       | Switching Output (NC)                      |
| V        | Contamination/Error Output (NO)            |
| V̄       | Contamination/Error Output (NC)            |
| E        | Input (analog or digital)                  |
| T        | Teach Input                                |
| Z        | Time Delay (activation)                    |
| S        | Shielding                                  |
| RxD      | Interface Receive Path                     |
| TxD      | Interface Send Path                        |
| RDY      | Ready                                      |
| GND      | Ground                                     |
| CL       | Clock                                      |
| E/A      | Output/Input programmable                  |
| IO-Link  | IO-Link                                    |
| PoE      | Power over Ethernet                        |
| IN       | Safety Input                               |
| OSSD     | Safety Output                              |
| Signal   | Signal Output                              |
| BL_D +/- | Ethernet Gigabit bidirect. data line (A-D) |
| ENa      | Encoder 0-pulse 0-0̄ (TTL)                 |

|        |                                |
|--------|--------------------------------|
| PT     | Platinum measuring resistor    |
| nc     | not connected                  |
| U      | Test Input                     |
| Ū      | Test Input inverted            |
| W      | Trigger Input                  |
| W-     | Ground for the Trigger Input   |
| O      | Analog Output                  |
| Ō-     | Ground for the Analog Output   |
| BZ     | Block Discharge                |
| AWV    | Valve Output                   |
| a      | Valve Control Output +         |
| b      | Valve Control Output 0 V       |
| SY     | Synchronization                |
| SY-    | Ground for the Synchronization |
| E+     | Receiver-Line                  |
| S+     | Emitter-Line                   |
| ⊕      | Grounding                      |
| SnR    | Switching Distance Reduction   |
| Rx +/- | Ethernet Receive Path          |
| Tx +/- | Ethernet Send Path             |
| Bus    | Interfaces-Bus A(+)/B(-)       |
| La     | Emitted Light disengageable    |
| Mag    | Magnet activation              |
| RES    | Input confirmation             |
| EDM    | Contactors Monitoring          |

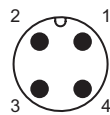
|                                    |                     |
|------------------------------------|---------------------|
| ENa                                | Encoder A/Ā (TTL)  |
| ENb                                | Encoder B/B̄ (TTL)  |
| ENa                                | Encoder A           |
| ENb                                | Encoder B           |
| AMIN                               | Digital output MIN  |
| AMAX                               | Digital output MAX  |
| AOK                                | Digital output OK   |
| SY In                              | Synchronization In  |
| SY OUT                             | Synchronization OUT |
| OLT                                | Brightness output   |
| M                                  | Maintenance         |
| rsv                                | reserved            |
| Wire Colors according to IEC 60757 |                     |
| BK                                 | Black               |
| BN                                 | Brown               |
| RD                                 | Red                 |
| OG                                 | Orange              |
| YE                                 | Yellow              |
| GN                                 | Green               |
| BU                                 | Blue                |
| VT                                 | Violet              |
| GY                                 | Grey                |
| WH                                 | White               |
| PK                                 | Pink                |
| GNYE                               | Green/Yellow        |

### Connectors

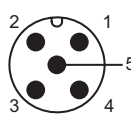
4-Pin M8 connector



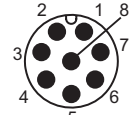
4-Pin M12 connector



5-Pin M12 connector



8-Pin M12 connector



### Switching Element Function

|          | Through-Beam and Reflective Models | Diffuse Models |
|----------|------------------------------------|----------------|
| Light-on | N.C.                               | N.O.           |
| Dark-on  | N.O.                               | N.C.           |

Note: Class 2 power source required

# OPT Series Transit Time Photoelectric Sensors Specifications

| OPT Series Transit Time Photoelectric Sensors Specifications |                                                  |                  |                  |                  |                               |                                                            |                               |                   |                  |                              |
|--------------------------------------------------------------|--------------------------------------------------|------------------|------------------|------------------|-------------------------------|------------------------------------------------------------|-------------------------------|-------------------|------------------|------------------------------|
| Part Number                                                  | OPT2016                                          | OPT2017          | OPT2018          | OPT2019          | OPT2010                       | OPT2011                                                    | OPT2012                       | OPT2013           | OPT2014          | OPT2015                      |
| Type                                                         | Diffuse (Transit time)                           |                  |                  |                  |                               |                                                            |                               |                   |                  | *Retro-Reflective            |
| Sensing distance – m [in]                                    | 1 [39.37]                                        |                  |                  |                  | 3 [118.11]                    | 3.05 [120.08]                                              | 6.2 [244.09]                  | 10.1 [397.64]     |                  | 100.2 [3944.90]              |
| Light spot diameter (at maximum range)                       | < 15mm                                           |                  |                  |                  | 9mm                           |                                                            | < 12mm                        | < 20mm            |                  | 80mm @ 40m<br>< 200mm @ 100m |
| Laser class (EN 60825-1)                                     | Class 1 Red Laser                                |                  |                  |                  | Class 1 Red Laser             |                                                            |                               | Class 2 Red Laser |                  | Class 1 Red Laser            |
| Emission                                                     | 680nm                                            |                  |                  |                  | 660nm                         |                                                            |                               |                   |                  |                              |
| Sensitivity                                                  | Adjustable via Potentiometer                     |                  |                  |                  | Adjustable via Teach          |                                                            |                               |                   |                  |                              |
| Output type                                                  | PNP N.O./N.C.                                    |                  |                  |                  |                               | Programmable: Analog 4-20 mA / 0-10 VDC, N.O./N.C. PNP/NPN |                               |                   |                  |                              |
| Current output max load                                      | N/A                                              |                  |                  |                  |                               | 500Ω                                                       |                               |                   |                  |                              |
| Operating voltage                                            | 10-30 VDC                                        |                  |                  |                  |                               | 18-30 VDC                                                  |                               |                   |                  |                              |
| No load supply current                                       | < 30mA                                           |                  |                  |                  | < 50mA                        | < 70mA                                                     | < 100mA                       |                   |                  |                              |
| Operating (load) current                                     | 100mA                                            |                  |                  |                  | 200mA                         | 100mA                                                      | 200mA                         |                   |                  |                              |
| Voltage drop                                                 | < 2.5 V (switching outputs)                      |                  |                  |                  |                               |                                                            |                               |                   |                  |                              |
| Measurement rate                                             | N/A                                              |                  |                  |                  |                               | 500/s                                                      | 1-100/s                       |                   |                  |                              |
| Switching frequency                                          | 1000Hz                                           |                  |                  |                  |                               | 250Hz                                                      | 50Hz                          |                   |                  |                              |
| Linearity                                                    | < 2.5%                                           |                  |                  |                  | NA                            |                                                            | 0.2 %                         |                   | 0.05%            |                              |
| Short-circuit protection                                     | Yes                                              |                  |                  |                  |                               |                                                            |                               |                   |                  |                              |
| Operating temperature                                        | -40 to 50°C<br>[-40 to 122°F]                    |                  |                  |                  | -40 to 60°C<br>[-40 to 140°F] | -40 to 50°C<br>[-40 to 122°F]                              | -25 to 60°C<br>[-13 to 140°F] |                   |                  |                              |
| Protection degree (DIN 40050)                                | IP67                                             |                  |                  |                  | IP68                          |                                                            |                               |                   |                  |                              |
| LED indicators - switching status                            | Yellow                                           |                  |                  |                  |                               | Screen Display                                             |                               |                   |                  |                              |
| LED indicators - power                                       | Green                                            |                  |                  |                  |                               | Screen Display                                             |                               |                   |                  |                              |
| Housing material                                             | Polycarbonate                                    |                  |                  |                  |                               |                                                            |                               |                   |                  |                              |
| Lens material                                                | PMMA (Polymethyl methacrylate)                   |                  |                  |                  |                               |                                                            |                               |                   |                  |                              |
| Shock/vibration                                              | Tested according to EN 60068-2-6 / EN 60068-2-27 |                  |                  |                  |                               |                                                            |                               |                   |                  |                              |
| Tightening torque                                            | 0.5 N·m (mounting screws)                        |                  |                  |                  |                               |                                                            |                               |                   |                  |                              |
| Weight (cable/connector)                                     | 8g<br>[0.28 oz]                                  | 22g<br>[0.78 oz] | 16g<br>[0.56 oz] | 48g<br>[1.69 oz] | 37g<br>[1.31 oz]              | 43g<br>[1.52 oz]                                           | 81g<br>[2.86 oz]              | 82g<br>[2.89 oz]  | 80g<br>[2.82 oz] | 82g<br>[2.89 oz]             |
| Connectors                                                   | 4-pin M8                                         | 4-pin M12        | 4-pin M8         | Pigtail          | 5-pin M12                     | 4-pin M12                                                  |                               | 8-pin M12         | 4-pin M12        | 8-pin M12                    |
| Agency approvals                                             | CE, cULUS, E189727, RoHs                         |                  |                  |                  |                               |                                                            |                               |                   |                  |                              |

\*Requires purchase of OPT2030 reflector (see Accessories). <50m sensing distance requires 1 reflector. 50-100m sensing distance requires 4 reflectors. To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

## 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.

# OPT Series Transit Time Photoelectric Sensors Specifications

OPT2170 - OPT2174 sensors guarantee reliable switching performance: Whether there is a glossy object in the background or a reflective surface or even reflectors in the working area these high-performance distance sensors continue to perform. Black surfaces are reliably detected even in extremely inclined positions depending on the surface characteristics and the distance from an angle of up to 89°. The sensors do not interact with each other if they are located in very close proximity to each other or even directly opposite each other.

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

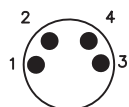
This class is eye-safe under all operating conditions.

| OPT Series Transit Time Photoelectric Sensors Specifications |                                                  |                  |                               |                   |                  |
|--------------------------------------------------------------|--------------------------------------------------|------------------|-------------------------------|-------------------|------------------|
| Part Number                                                  | OPT2170                                          | OPT2171          | OPT2172                       | OPT2173           | OPT2174          |
| Type                                                         | Diffuse (Transit time)                           |                  |                               |                   |                  |
| Sensing distance – m [ft]                                    | 3 [9.84]                                         |                  | 1 [3.28]                      |                   |                  |
| Light spot diameter (at maximum range)                       | 9mm                                              |                  | 15mm                          |                   |                  |
| Laser class (EN 60825-1)                                     | Class 1 Red Laser                                |                  |                               |                   |                  |
| Wavelength                                                   | 660nm                                            |                  | 680nm                         |                   |                  |
| Sensitivity                                                  | Adjustable via Teach                             |                  |                               |                   |                  |
| Output type                                                  | PNP N.O.                                         | NPN N.O.         | PNP N.O.                      |                   |                  |
| Current output max load                                      | 200mA                                            |                  | 100mA                         |                   |                  |
| Operating voltage                                            | 10-30 VDC                                        |                  |                               |                   |                  |
| Current consumption                                          | < 40mA                                           |                  | < 30mA                        |                   |                  |
| # Switching outputs                                          | 2                                                |                  |                               |                   |                  |
| Voltage drop                                                 | < 2.5 V (switching outputs)                      |                  |                               |                   |                  |
| Response time                                                | 1ms                                              |                  |                               |                   |                  |
| Switching frequency                                          | 500Hz                                            |                  |                               |                   |                  |
| Short-circuit protection                                     | Yes                                              |                  |                               |                   |                  |
| Operating temperature                                        | -40 to 60°C<br>[-40 to 140°F]                    |                  | -40 to 50°C<br>[-40 to 122°F] |                   |                  |
| Protection degree (DIN 40050)                                | IP68                                             |                  | IP67                          |                   |                  |
| LED indicators - switching status                            | Yellow                                           |                  |                               |                   |                  |
| LED indicators - power                                       | Green                                            |                  |                               |                   |                  |
| Housing material                                             | Polycarbonate                                    |                  |                               |                   |                  |
| Lens material                                                | PMMA (Polymethyl methacrylate)                   |                  |                               |                   |                  |
| Shock/vibration                                              | Tested according to EN 60068-2-6 / EN 60068-2-27 |                  |                               |                   |                  |
| Tightening torque                                            | 0.5 N·m (mounting screws)                        |                  |                               |                   |                  |
| Weight (cable/connector)                                     | 8g<br>[0.28 oz]                                  | 22g<br>[0.78 oz] | 16g<br>[0.56 oz]              | 48g<br>[1.69 oz]  | 82g<br>[2.89 oz] |
| Connectors                                                   | 5-pin M12                                        |                  | 4-pin M12                     | 4-pin M12 pigtail | 4-pin M8 pigtail |
| IO Link                                                      | IO-Link v1.1                                     |                  |                               |                   |                  |
| Agency approvals                                             | CE, cULUS, E189727, RoHs                         |                  |                               |                   |                  |

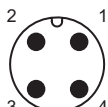
To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

## Connectors

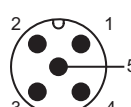
4-Pin M8 connector



4-Pin M12 connector



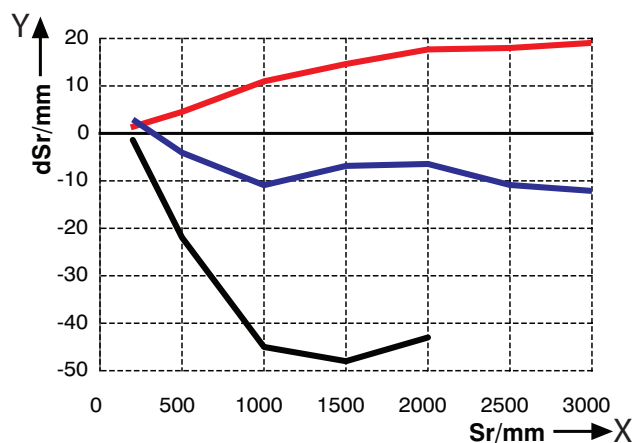
5-Pin M12 connector



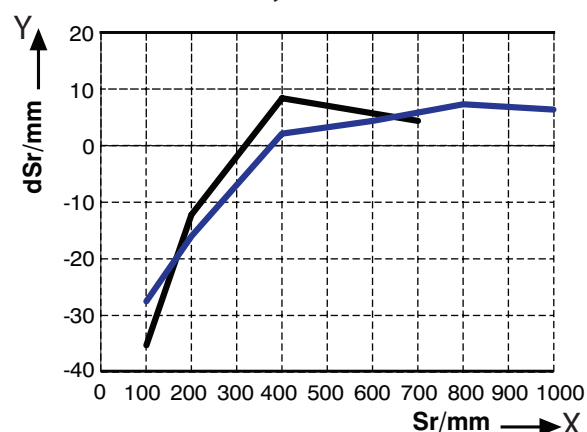
# OPT Series Transit Time Photoelectric Sensors

## Characteristic Curves

**OPT2010**



**OPT2016, OPT2017  
OPT2018, OPT2019**



Sr = Switching Distance

dSr = Switching Distance Change

— black 6 % remission

— blue 18 % remission

— Brushed aluminum

|   |                                                     |
|---|-----------------------------------------------------|
| X | Distance to target [mm]                             |
| Y | Minimum distance between object and background [mm] |

*Typical curves based on Kodak white (90% remission)*

# Accessories for OPT Series 32x12mm Photoelectric Sensors

## Right-Angle Mounting Brackets

Mounting bracket, right angle, vertical adjustment. For use with OPT series 32x12mm photoelectric sensors.

| Mounting Brackets for OPT 32x12mm Sensors |        |                                                                                                                                         |     |                            |               |
|-------------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------|-----|----------------------------|---------------|
| Part Number                               | Price  | Description                                                                                                                             | Qty | Drawing Link               | Weight lb [g] |
| <a href="#"><u>OPT2033</u></a>            | \$7.00 | Wenglor mounting bracket, right-angle, vertical adjustment, nickel plated steel. For use with OPT series 32x12mm photoelectric sensors. | 1   | <a href="#"><u>PDF</u></a> | 0.04 [16]     |



[OPT2033](#)

## Right-angle Swivel Mounting Systems

Mounting bracket, right-angle swivel, 360 degree vertical and horizontal adjustment, aluminum, 12mm rod mount. For use with OPT series 32x12mm photoelectric sensors.

| Accessories for 32x12mm Sensors |         |                                                                                                                                                                                          |                     |                     |                            |               |
|---------------------------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------|----------------------------|---------------|
| Part Number                     | Price   | Description                                                                                                                                                                              | Mounting Head       | Mounting Plate      | Drawing Link               | Weight lb [g] |
| <a href="#"><u>OPT2120</u></a>  | \$11.50 | Wenglor mounting bracket, right-angle swivel, 360 degree vertical and horizontal adjustment, aluminum, 12mm rod mount. For use with OPT series 32x12mm photoelectric sensors.            | Aluminum            | 304 Stainless Steel | <a href="#"><u>PDF</u></a> | 0.14 [63.50]  |
| <a href="#"><u>OPT2121</u></a>  | \$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 32x12mm photoelectric sensors. | 304 Stainless Steel | 304 Stainless Steel | <a href="#"><u>PDF</u></a> | 0.27 [122.46] |

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



[OPT2121](#)



[OPT2120](#)

# Accessories for OPT2012 - OPT2015

## Photoelectric Sensors

### Right-angle Mounting Brackets

Mounting bracket, right angle, steel and nickel plated. For use with [OPT2012](#)-[OPT2015](#) photoelectric sensors.

| Accessories for OPT2012-OPT2015 Photoelectric Sensors |        |                                                                                                                   |                     |                  |
|-------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------|---------------------|------------------|
| Part Number                                           | Price  | Description                                                                                                       | Drawing Link        | Weight lb (g)    |
| <a href="#">OPT2032</a>                               | \$7.00 | Wenglor mounting bracket, right-angle, nickel-plated brass. For use with OPT2012 - OPT2015 photoelectric sensors. | <a href="#">PDF</a> | 0.36<br>(163.29) |



[OPT2032](#)

### Right-angle Swivel Mounting Systems

Mounting bracket, right-angle swivel, 360 degree vertical and horizontal adjustment, 12mm rod mount. For use with [OPT2012](#)-[OPT2015](#) photoelectric sensors. Available in all stainless steel or with an aluminum head with a stainless steel mounting plate.

| Accessories for OPT2012-OPT2015 Photoelectric Sensors |         |                                                                                                                                                                                         |                     |                     |                     |                  |
|-------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------|---------------------|------------------|
| Part Number                                           | Price   | Description                                                                                                                                                                             | Mounting Head       | Mounting Plate      | Drawing Link        | Weight lb [g]    |
| <a href="#">OPT2126</a>                               | \$11.50 | Wenglor mounting bracket, right-angle swivel, 360 degree vertical and horizontal adjustment, aluminum, 12mm rod mount. For use with OPT2012 - OPT2015 photoelectric sensors.            | Aluminum            | 304 Stainless Steel | <a href="#">PDF</a> | 0.23<br>[104.32] |
| <a href="#">OPT2127</a>                               | \$21.00 | Wenglor mounting bracket, right-angle swivel, 360 degree vertical and horizontal adjustment, 304 stainless steel, 12mm rod mount. For use with OPT2012 - OPT2015 photoelectric sensors. | 304 Stainless Steel | 304 Stainless Steel | <a href="#">PDF</a> | 0.36<br>[163.29] |



[OPT2126](#)

[OPT2127](#)

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



# Mounting Rods and Brackets

## Mounting Rods

304 Stainless steel rods for mounting swivel brackets [OPT2112](#) - [OPT2127](#). Available in three lengths: 200mm, 300mm, and 500mm. 12mm diameter.

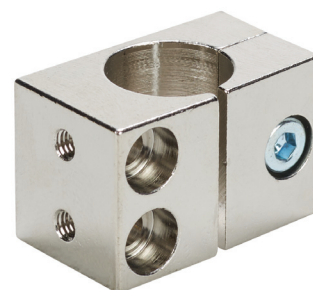
| Mounting Rods for OPT2112-2127 Swivel Mounting Brackets |         |                                                                         |                     |                  |
|---------------------------------------------------------|---------|-------------------------------------------------------------------------|---------------------|------------------|
| Part Number                                             | Price   | Description                                                             | Drawing Link        | Weight lb (g)    |
| <a href="#">OPT2109</a>                                 | \$13.00 | Wenglor mounting rod, 12mm diameter, 200mm length, 304 stainless steel. | <a href="#">PDF</a> | 0.41<br>[185.97] |
| <a href="#">OPT2110</a>                                 | \$16.00 | Wenglor mounting rod, 12mm diameter, 300mm length, 304 stainless steel. | <a href="#">PDF</a> | 0.60<br>[272.16] |
| <a href="#">OPT2111</a>                                 | \$21.00 | Wenglor mounting rod, 12mm diameter, 500mm length, 304 stainless steel. | <a href="#">PDF</a> | 0.98<br>[444.52] |



## Right-angle Mounting Bracket

Mounting bracket, right-angle, nickel-plated brass. For use with 12mm mounting rods [OPT2109](#), [OPT2110](#) & [OPT2111](#).

| Right-angle Mounting Brackets for 12mm Sensors |         |                                                                                                                         |                     |                |
|------------------------------------------------|---------|-------------------------------------------------------------------------------------------------------------------------|---------------------|----------------|
| Part Number                                    | Price   | Description                                                                                                             | Drawing Link        | Weight lb [g]  |
| <a href="#">OPT2108</a>                        | \$16.00 | Wenglor mounting bracket, right-angle, nickel-plated brass. For use with 12mm mounting rods OPT2109, OPT2110 & OPT2111. | <a href="#">PDF</a> | 0.07<br>[31.8] |





# Reflectors

## Reflectors for Photoelectric Laser Sensors

| Reflectors for OPT Series Photoelectric Sensors |         |                                                                              |                     |               |
|-------------------------------------------------|---------|------------------------------------------------------------------------------|---------------------|---------------|
| Part Number                                     | Price   | Description                                                                  | Drawing Link        | Weight lb [g] |
| <a href="#">OPT2030</a>                         | \$14.00 | Reflector, square, 100 x 100mm. For use with photoelectric laser sensors.    | <a href="#">PDF</a> | 0.20 [90.71]  |
| <a href="#">OPT2167</a>                         | \$13.50 | Wenglor reflector, rectangular, 61 x 51.5mm. For use with OPT2137 & OPT2138. | <a href="#">PDF</a> | 0.03 [13.60]  |

Note: [OPT2015](#) requires purchase of [OPT2030](#) reflector. <50m sensing distance requires 1 reflector. 50–100 m sensing distance requires 4 reflectors.



[OPT2167](#)



[OPT2030](#)