

# prosense® F8 Series Barrel Photoelectric Sensors



## M8 (8mm) barrel photoelectric sensors

- M8 small dimension housing
- LED status indicator for all models
- Complete protection against electrical damage
- IP67 protection
- Strong stainless steel housing
- Background suppression, diffuse, retroreflective and through- beam available
- Visible red light emission



### F8 Series 8mm Diameter Photoelectric Sensors Selection Chart

| Part Number                                                      | Price    | Sensing Range             | Switching Frequency | Light Type  | Through-Beam Component                                                 | Logic    | Output Function | Connection Type                   | Wiring    | Drawing Link               |
|------------------------------------------------------------------|----------|---------------------------|---------------------|-------------|------------------------------------------------------------------------|----------|-----------------|-----------------------------------|-----------|----------------------------|
| <b>Diffuse reflective with adjustable background suppression</b> |          |                           |                     |             |                                                                        |          |                 |                                   |           |                            |
| <a href="#"><u>F8RS-LP-2F</u></a>                                | \$168.00 | 7-30mm<br>[0.28 -1.18 in] | 450Hz               | Visible red | NA                                                                     | PNP N.O. | Light-on        | 3-wire, 3-pin M8 quick-disconnect | Diagram 1 | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>F8RS-LN-2F</u></a>                                | \$168.00 | 7-30mm<br>[0.28 -1.18 in] | 450Hz               | Visible red | NA                                                                     | NPN N.O. | Light-on        | 3-wire, 3-pin M8 quick-disconnect | Diagram 2 | <a href="#"><u>PDF</u></a> |
| <b>Diffuse reflective with fixed background suppression</b>      |          |                           |                     |             |                                                                        |          |                 |                                   |           |                            |
| <a href="#"><u>F8RS-LP-1F</u></a>                                | \$168.00 | 0-20mm<br>[0-0.79 in]     | 450Hz               | Visible red | NA                                                                     | PNP N.O. | Light-on        | 3-wire, 3-pin M8 quick-disconnect | Diagram 1 | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>F8RS-LN-1F</u></a>                                | \$168.00 | 0-20mm<br>[0-0.79 in]     | 450Hz               | Visible red | NA                                                                     | NPN N.O. | Light-on        | 3-wire, 3-pin M8 quick-disconnect | Diagram 2 | <a href="#"><u>PDF</u></a> |
| <b>Diffuse reflective</b>                                        |          |                           |                     |             |                                                                        |          |                 |                                   |           |                            |
| <a href="#"><u>F8R6-LP-1F</u></a>                                | \$101.00 | 1-60mm<br>[0.04 -2.36 in] | 500Hz               | Visible red | NA                                                                     | PNP N.O. | Light-on        | 3-wire, 3-pin M8 quick-disconnect | Diagram 1 | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>F8R6-LN-1F</u></a>                                | \$101.00 | 1-60mm<br>[0.04-2.36 in]  | 500Hz               | Visible red | NA                                                                     | NPN N.O. | Light-on        | 3-wire, 3-pin M8 quick-disconnect | Diagram 2 | <a href="#"><u>PDF</u></a> |
| <b>Retroreflective sensor *</b>                                  |          |                           |                     |             |                                                                        |          |                 |                                   |           |                            |
| <a href="#"><u>F8RP-DP-1F</u></a>                                | \$101.00 | 0-1m<br>[0-3.28 ft]       | 500Hz               | Visible red | NA                                                                     | PNP N.O. | Dark-on         | 3-wire, 3-pin M8 quick-disconnect | Diagram 1 | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>F8RP-DN-1F</u></a>                                | \$101.00 | 0-1m<br>[0-3.28 ft]       | 500Hz               | Visible red | NA                                                                     | NPN N.O. | Dark-on         | 3-wire, 3-pin M8 quick-disconnect | Diagram 2 | <a href="#"><u>PDF</u></a> |
| <b>Through-beam</b>                                              |          |                           |                     |             |                                                                        |          |                 |                                   |           |                            |
| <a href="#"><u>F8RE-00-1F</u></a>                                | \$90.00  | 0-2.2m<br>[0-7.22 ft]     | NA                  | Visible red | <a href="#"><u>F8RR-DP-1F</u></a> or <a href="#"><u>F8RR-DN-1F</u></a> | NA       | NA              | 2-wire, 3-pin M8 quick-disconnect | Diagram 3 | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>F8RR-DP-1F</u></a>                                | \$90.00  | 0-2.2m<br>[0-7.22 ft]     | 500Hz               | NA          | <a href="#"><u>F8RE-00-1F</u></a>                                      | PNP N.O. | Dark-on         | 3-wire, 3-pin M8 quick-disconnect | Diagram 1 | <a href="#"><u>PDF</u></a> |
| <a href="#"><u>F8RR-DN-1F</u></a>                                | \$90.00  | 0-2.2m<br>[0-7.22 ft]     | 500Hz               | NA          | <a href="#"><u>F8RE-00-1F</u></a>                                      | NPN N.O. | Dark-on         | 3-wire, 3-pin M8 quick-disconnect | Diagram 2 | <a href="#"><u>PDF</u></a> |

\* Purchase reflector separately

**Warning: These products are not safety sensors and are not suitable for use in personal safety applications.**

# prosense® F8 Series Barrel Photoelectric Sensors

## F8 Series 8mm Diameter Photoelectric Specifications

| Sensor type                         | Diffuse reflective with adjustable background suppression    | Diffuse reflective with fixed background suppression | Diffuse reflective        | Retroreflective      | Through-beam                               |
|-------------------------------------|--------------------------------------------------------------|------------------------------------------------------|---------------------------|----------------------|--------------------------------------------|
| Sensing Distance                    | 7-30 mm<br>[0.28-1.18 in]                                    | 0-20 mm<br>[0-0.79 in]                               | 1-60 mm<br>[0.04-2.36 in] | 0-1 m<br>[0-3.28 ft] | 0-2.2 m<br>[0-7.22 ft]                     |
| Light Spot Diameter                 | See Product Insert                                           |                                                      |                           |                      |                                            |
| Emission                            | Visible red                                                  |                                                      |                           |                      |                                            |
| Output Types                        | See Sensor Selection Chart                                   |                                                      |                           |                      |                                            |
| Operating Voltage                   | 10-30 VDC                                                    |                                                      |                           |                      |                                            |
| No Load Supply Current              | ≤ 15mA                                                       |                                                      |                           |                      |                                            |
| Operating (Load) Current            | 100mA                                                        |                                                      |                           |                      |                                            |
| Voltage Drop                        | ≤ 0.7 V                                                      |                                                      |                           |                      |                                            |
| Switching Frequency                 | 450Hz                                                        | 450Hz                                                | 500Hz                     | 500Hz                | 500Hz<br>NA for <a href="#">F8RE-00-1F</a> |
| Ripple                              | 5%                                                           |                                                      | 10%                       |                      |                                            |
| Time Delay Before Availability (tv) | ≤ 1.11 ms                                                    |                                                      | ≤ 1ms                     |                      |                                            |
| Short-circuit Protection            | Yes                                                          |                                                      |                           |                      |                                            |
| Operating Temperature               | -5 to 55°C [23 to 131°F]                                     |                                                      |                           |                      |                                            |
| Protection Degree                   | IP64                                                         | IP67                                                 | IP67                      | IP67                 | IP67                                       |
| LED Indicators - Switching Status   | Yellow LED: light received; yellow LED flashing: limit range |                                                      |                           |                      |                                            |
| Housing Material                    | Stainless steel                                              |                                                      |                           |                      |                                            |
| Lens Material                       | PMMA - Polymethyl methacrylate                               |                                                      |                           |                      |                                            |
| Shock/Vibration                     | IEC 60947-5-2                                                |                                                      |                           |                      |                                            |
| Tightening Torque                   | 6 N•m [4.42 lb•ft]                                           |                                                      |                           |                      |                                            |
| Weight                              | 5.5 g [0.19 oz]                                              | 5.1 g [0.17 oz]                                      | 5.2 g [0.18 oz]           |                      |                                            |
| Connectors                          | 3-pin M8 quick-disconnect                                    |                                                      |                           |                      |                                            |
| Agency Approvals                    | cULus, CE, WEEE, IEC 60947-5-2                               |                                                      |                           |                      |                                            |

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

## Wiring Diagrams

Diagram 1  
PNP Output

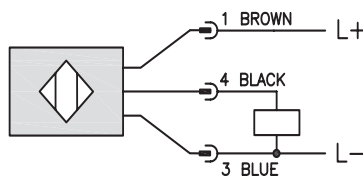


Diagram 2  
NPN Output

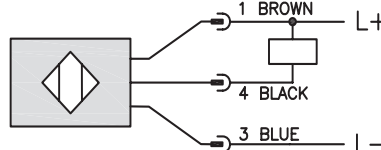
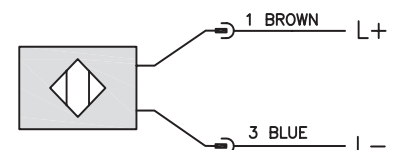
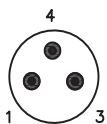


Diagram 3  
Emitter



M8 Connector



# Accessories for 8mm Sensors

## Axial Mounting Bracket

Mounting bracket, axial, zinc-plated steel. For use with 8mm sensors. Has two mounting holes (use 3 mm screws) and allows the rotation of an optical axis for axial sensors. Hexagonal nuts not included.

| Accessories for 8mm Sensors  |        |                                                                                          |                            |             |
|------------------------------|--------|------------------------------------------------------------------------------------------|----------------------------|-------------|
| Part Number                  | Price  | Description                                                                              | Drawing Link               | Weight [lb] |
| <a href="#"><u>ST08A</u></a> | \$2.00 | Micro Detectors mounting bracket, axial, zinc plated steel.<br>For use with 8mm sensors. | <a href="#"><u>PDF</u></a> | 0.04        |



[ST08A](#)

## Right-angle Mounting Bracket

Mounting bracket, right-angle, zinc-plated steel. For use with 8mm sensors. Has two mounting holes (use 3mm screws) and allows the rotation of an optical axis for right-beam-angle-adaptor sensors. Hexagonal nuts not included.

| Accessories for 8mm Sensors  |        |                                                                                                |                            |             |
|------------------------------|--------|------------------------------------------------------------------------------------------------|----------------------------|-------------|
| Part Number                  | Price  | Description                                                                                    | Drawing Link               | Weight [lb] |
| <a href="#"><u>ST08C</u></a> | \$2.00 | Micro Detectors mounting bracket, right-angle, zinc plated steel.<br>For use with 8mm sensors. | <a href="#"><u>PDF</u></a> | 0.04        |



[ST08C](#)

# Accessories for 8mm Sensors

## Right-angle Mounting Bracket

Mounting bracket, right-angle, plastic. For use with 8mm sensors.

| Accessories for 8mm Sensors    |        |                                                                              |                            |             |
|--------------------------------|--------|------------------------------------------------------------------------------|----------------------------|-------------|
| Part Number                    | Price  | Description                                                                  | Drawing Link               | Weight [lb] |
| <a href="#"><u>OPT2101</u></a> | \$8.00 | Wenglor mounting bracket, right-angle, plastic.<br>For use with 8mm sensors. | <a href="#"><u>PDF</u></a> | 0.02        |



[OPT2101](#)

## Right-angle Swivel Mounting Systems

Mounting bracket, right-angle swivel, 360 degree vertical and horizontal adjustment. For use with 8mm sensors. Available in all stainless steel or with an aluminum head and stainless steel mounting plate.

| Accessories for 8mm Sensors    |         |                                                                                                                                                             |                     |                     |                            |             |
|--------------------------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------|----------------------------|-------------|
| Part Number                    | Price   | Description                                                                                                                                                 | Mounting Head       | Mounting Plate      | Drawing Link               | Weight [lb] |
| <a href="#"><u>OPT2112</u></a> | \$11.50 | Wenglor mounting bracket, right-angle swivel, 360 degree vertical and horizontal adjustment, aluminum, 12mm rod mount. For use with 8mm sensors.            | Aluminum            | 304 Stainless Steel | <a href="#"><u>PDF</u></a> | 0.14        |
| <a href="#"><u>OPT2113</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 8mm sensors. | 304 Stainless Steel | 304 Stainless Steel | <a href="#"><u>PDF</u></a> | 0.26        |



[OPT2112 & OPT2113](#)

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

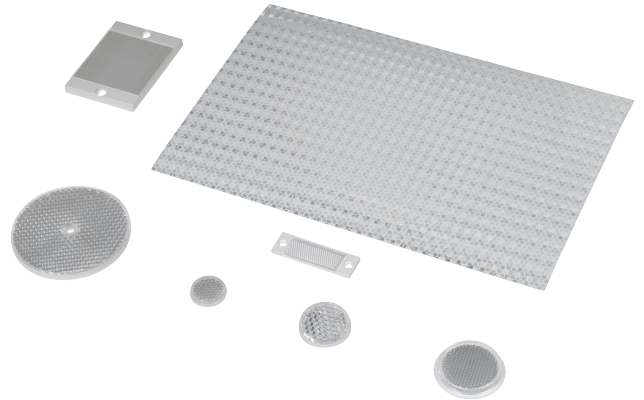
# Reflectors

## RL Series Reflectors for Polarized Reflective Photoelectric Sensors (All Models)

- Suitable for use with polarized light photoelectric sensors
- Shapes and sizes for most applications
- Miniature types for close mounting in multiple sensor installations
- Single hole, dual hole and self-adhesive mounting types available
- Single and 10-packs available

### Installation Notes

- Keep the reflector surface clean to ensure peak detection performance. This is especially true when the maximum sensing range is being used. Clean using a damp cloth.
- When selecting a reflector, it is important to consider the ambient conditions it will be exposed to. Dusty or high humidity conditions may reduce the sensing range as much as 90%.
- Reflectors should be positioned at a 90° angle to the optical axis with a tolerance of  $\pm 15^\circ$ .



| Reflector Specifications |         |                     |          |                    |                      |                                                                                                                         |                                                                                                                         |                                       |
|--------------------------|---------|---------------------|----------|--------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| Part number              | Price   | Drawing Link        | Quantity | Dimensions mm [in] | Degree of Protection | Mounting                                                                                                                | Materials                                                                                                               |                                       |
| <a href="#">RL102</a>    | \$38.00 | <a href="#">PDF</a> | 10       | 25                 | IEC IP67             | Customer-supplied adhesive or other mounting method required                                                            | Reflective face: PMMA<br>Polymethylmethacrylate (acrylic)<br><br>Base material: ABS<br>(Acrylonitrile-butadiene-styren) |                                       |
| <a href="#">RL102-1</a>  | \$4.25  |                     | 1        | [0.98]             |                      |                                                                                                                         |                                                                                                                         |                                       |
| <a href="#">RL103</a>    | \$42.50 | <a href="#">PDF</a> | 10       | 34.5               |                      |                                                                                                                         |                                                                                                                         |                                       |
| <a href="#">RL103-1</a>  | \$4.75  |                     | 1        | [1.36]             |                      |                                                                                                                         |                                                                                                                         |                                       |
| <a href="#">RL104</a>    | \$42.50 | <a href="#">PDF</a> | 10       | 46                 |                      |                                                                                                                         |                                                                                                                         |                                       |
| <a href="#">RL104-1</a>  | \$4.75  |                     | 1        | [1.81]             |                      |                                                                                                                         |                                                                                                                         |                                       |
| <a href="#">RL105G</a>   | \$38.00 | <a href="#">PDF</a> | 10       | 95 x 38            |                      | Two 4.3 mm holes                                                                                                        |                                                                                                                         |                                       |
| <a href="#">RL105G-1</a> | \$4.25  |                     | 1        | [3.74 x 1.50]      |                      |                                                                                                                         |                                                                                                                         |                                       |
| <a href="#">RL106G</a>   | \$42.50 | <a href="#">PDF</a> | 10       | 182 x 42           |                      | Two 6mm holes                                                                                                           |                                                                                                                         |                                       |
| <a href="#">RL106G-1</a> | \$4.75  |                     | 1        | [7.17 x 1.65]      |                      |                                                                                                                         |                                                                                                                         |                                       |
| <a href="#">RL110</a>    | \$19.00 | <a href="#">PDF</a> | 10       | 84                 |                      | One 5mm hole                                                                                                            |                                                                                                                         |                                       |
| <a href="#">RL110-1</a>  | \$2.00  |                     | 1        | [3.31]             |                      |                                                                                                                         |                                                                                                                         |                                       |
| <a href="#">RL116</a>    | \$19.00 | <a href="#">PDF</a> | 10       | 41 x 60            |                      | Two 3mm holes                                                                                                           |                                                                                                                         |                                       |
| <a href="#">RL116-1</a>  | \$2.00  |                     | 1        | [3.54 x 2.36]      |                      |                                                                                                                         |                                                                                                                         |                                       |
| <a href="#">RL100DA4</a> | \$38.50 | NA                  | 1        | 200 x 300          |                      | Self-adhesive                                                                                                           |                                                                                                                         | Paper (Acrylic tape with micro prism) |
| <a href="#">RL100DC4</a> | \$12.00 | NA                  | 1        | 50 x 300           |                      |                                                                                                                         |                                                                                                                         |                                       |
| <a href="#">RL100DQ1</a> | \$8.75  | NA                  | 1        | 100 x 100          |                      |                                                                                                                         |                                                                                                                         |                                       |
| <a href="#">RL111G</a>   | \$60.00 | <a href="#">PDF</a> | 10       | 22.5 x 47          | Two 3mm slots        | Reflective face: PMMA<br>Polymethylmethacrylate (acrylic)<br><br>Base material: ABS<br>(Acrylonitrile-butadiene-styren) |                                                                                                                         |                                       |
| <a href="#">RL111G-1</a> | \$7.25  |                     | 1        | [0.89 x 1.85]      |                      |                                                                                                                         |                                                                                                                         |                                       |
| <a href="#">RL112G</a>   | \$44.00 | <a href="#">PDF</a> | 10       | 19 x 73            |                      |                                                                                                                         |                                                                                                                         |                                       |
| <a href="#">RL112G-1</a> | \$4.75  |                     | 1        | [0.75 x 2.87]      |                      |                                                                                                                         |                                                                                                                         |                                       |
| <a href="#">RL113G</a>   | \$53.00 | <a href="#">PDF</a> | 10       | 51.4 x 60.3        | Two 4mm slots        |                                                                                                                         |                                                                                                                         |                                       |
| <a href="#">RL113G-1</a> | \$6.00  |                     | 1        | [2.02 x 2.37]      |                      |                                                                                                                         |                                                                                                                         |                                       |

Not recommended for applications involving moist air environments or water immersion.

# Reflectors

## RL Series Reflectors for Polarized Reflective Laser Photoelectric Sensors (FALN series)

- Suitable for use with polarized light laser photoelectric sensors
- Sizes for most applications
- Miniature types for close mounting in multiple sensor installations
- Single and 5-packs available

| Specifications                    |                              |                                |                              |                                |                                  |                                |
|-----------------------------------|------------------------------|--------------------------------|------------------------------|--------------------------------|----------------------------------|--------------------------------|
| Part Number                       | <a href="#"><i>RL201</i></a> | <a href="#"><i>RL201-1</i></a> | <a href="#"><i>RL203</i></a> | <a href="#"><i>RL203-1</i></a> | <a href="#"><i>RL204</i></a>     | <a href="#"><i>RL204-1</i></a> |
| Price                             | \$38.00                      | \$8.25                         | \$35.50                      | \$7.75                         | \$30.00                          | \$6.75                         |
| Quantity                          | 5                            | 1                              | 5                            | 1                              | 5                                | 1                              |
| Drawing Link                      | <a href="#">PDF</a>          |                                | <a href="#">PDF</a>          |                                | <a href="#">PDF</a>              |                                |
| Dimensions                        | 60 x 82 mm<br>2.36 x 3.23 in |                                | 19 x 6mm<br>0.75 x 2.36 in   |                                | 20mm x 32mm<br>0.80 in x 1.26 in |                                |
| Degree of Protection <sup>1</sup> | IEC IP67                     |                                |                              |                                |                                  |                                |
| Mounting                          | Two 0.4 mm holes             |                                | Two 0.4 mm holes             |                                | Two 0.3 mm holes                 |                                |
| Materials                         | Acrylic/polycarbonate        |                                |                              |                                |                                  |                                |

<sup>1</sup> Not recommended for applications involving moist air environments or water immersion.