

# prosense® RW Series Photoelectric Sensors

## Overview

The RW series photoelectric sensors are great for particularly small applications where space is restricted. They are reliable for position detection in feeding and handling technology, and offer precise detection of small, flat or highly reflective components. The compact light spot is ideal for precise detection even at longer distances.



RWRR-DN-0F

## 14x8x28 mm Plastic – DC

- Diffuse reflective with background suppression, diffuse reflective, polarized retroreflective, through-beam styles
- Axial cable or M8 quick-disconnect models; purchase cable separately
- Complete overload protection
- IP65/67 rated



RW Series Photoelectric Sensors Selection Table

| Part Number                                    | Price   | Sensing Distance <sup>1</sup>      | Switching Frequency | Light Emission | Logic | Output Function | Connection Type                                  | Wiring                                           | Drawing Link        |
|------------------------------------------------|---------|------------------------------------|---------------------|----------------|-------|-----------------|--------------------------------------------------|--------------------------------------------------|---------------------|
| Diffuse Reflective with Background Suppression |         |                                    |                     |                |       |                 |                                                  |                                                  |                     |
| <a href="#">RWRS-LP-1A</a>                     | \$46.00 | 3 to 15 mm<br>[0.11 to 0.59 in]    | 1000 Hz             | Visible red    | PNP   | Light-on        | 3-wire, pigtail, 2m [6.5ft] cable                | Diagram 2                                        | <a href="#">PDF</a> |
| <a href="#">RWRS-LP-1F</a>                     | \$48.00 |                                    |                     |                | PNP   |                 | 3-wire, 4-pin M8 quick-disconnect 300mm [11.8in] | Diagram 2                                        | <a href="#">PDF</a> |
| <a href="#">RWRS-LN-1F</a>                     | \$48.00 |                                    |                     |                | NPN   |                 |                                                  | Diagram 1                                        | <a href="#">PDF</a> |
| <a href="#">RWRS-LP-3A</a>                     | \$46.00 | 1 to 30 mm<br>[0.03 to 1.18 in]    |                     |                | PNP   |                 | 3-wire, pigtail, 2m [6.5ft] cable                | Diagram 2                                        | <a href="#">PDF</a> |
| <a href="#">RWRS-LP-3F</a>                     | \$48.00 |                                    |                     |                | PNP   |                 | 3-wire, 4-pin M8 quick-disconnect 300mm [11.8in] | Diagram 2                                        | <a href="#">PDF</a> |
| <a href="#">RWRS-LN-3F</a>                     | \$48.00 |                                    |                     |                | NPN   |                 |                                                  | Diagram 1                                        | <a href="#">PDF</a> |
| <a href="#">RWRS-LP-5A</a>                     | \$46.00 | 1 to 50 mm<br>[0.03 to 1.96 in]    |                     |                | PNP   |                 | 3-wire, pigtail, 2m [6.5ft] cable                | Diagram 2                                        | <a href="#">PDF</a> |
| <a href="#">RWRS-LP-5F</a>                     | \$48.00 |                                    |                     |                | PNP   |                 | 3-wire, 4-pin M8 quick-disconnect 300mm [11.8in] | Diagram 2                                        | <a href="#">PDF</a> |
| <a href="#">RWRS-LN-5F</a>                     | \$48.00 |                                    |                     |                | NPN   |                 |                                                  | Diagram 1                                        | <a href="#">PDF</a> |
| <a href="#">RWRS-LP-7A</a>                     | \$46.00 | 1 to 80 mm<br>[0.03 to 3.14 in]    |                     |                | PNP   |                 | 3-wire, pigtail, 2m [6.5ft] cable                | Diagram 2                                        | <a href="#">PDF</a> |
| <a href="#">RWRS-LP-7F</a>                     | \$48.00 |                                    |                     |                | PNP   |                 | 3-wire, 4-pin M8 quick-disconnect 300mm [11.8in] | Diagram 2                                        | <a href="#">PDF</a> |
| <a href="#">RWRS-LN-7F</a>                     | \$48.00 |                                    |                     |                | NPN   |                 |                                                  | Diagram 1                                        | <a href="#">PDF</a> |
| Diffuse Reflective                             |         |                                    |                     |                |       |                 |                                                  |                                                  |                     |
| <a href="#">RWRT-LP-0A</a>                     | \$46.00 | 180mm<br>[7.08 in]                 | 1000 Hz             | Visible red    | PNP   | Light-on        | 3-wire, pigtail, 2m [6.5ft] cable                | Diagram 2                                        | <a href="#">PDF</a> |
| <a href="#">RWRT-LP-0F</a>                     | \$46.00 |                                    |                     |                | PNP   |                 | 3-wire, 4-pin M8 quick-disconnect 300mm [11.8in] | Diagram 2                                        | <a href="#">PDF</a> |
| <a href="#">RWRT-LN-0F</a>                     | \$46.00 |                                    |                     |                | NPN   |                 |                                                  | Diagram 1                                        | <a href="#">PDF</a> |
| *Polarized Retroreflective                     |         |                                    |                     |                |       |                 |                                                  |                                                  |                     |
| <a href="#">RWRP-DP-0A</a>                     | \$46.00 | 0.02 to 1.8 m<br>[0.06 to 5.90 ft] | 1000 Hz             | Visible red    | PNP   | Dark-on         | 3-wire, pigtail, 2m [6.5ft] cable                | Diagram 2                                        | <a href="#">PDF</a> |
| <a href="#">RWRP-DP-0F</a>                     | \$46.00 |                                    |                     |                | PNP   |                 | 3-wire, 4-pin M8 quick-disconnect 300mm [11.8in] | Diagram 2                                        | <a href="#">PDF</a> |
| <a href="#">RWRP-DN-0F</a>                     | \$46.00 |                                    |                     |                | NPN   |                 |                                                  | Diagram 1                                        | <a href="#">PDF</a> |
| *Purchase reflector separately                 |         |                                    |                     |                |       |                 |                                                  |                                                  |                     |
| Through-beam Emitters                          |         |                                    |                     |                |       |                 |                                                  |                                                  |                     |
| <a href="#">RWRE-00-0A</a>                     | \$31.50 | 3m<br>[9.84 ft]                    | N/A                 | Visible red    | N/A   | N/A             | 2-wire, pigtail, 2m [6.5ft] cable                | Diagram 3                                        | <a href="#">PDF</a> |
| <a href="#">RWRE-00-0F</a>                     | \$31.50 |                                    |                     |                | N/A   |                 | N/A                                              | 2-wire, 3-pin M8 quick-disconnect 300mm [11.8in] | Diagram 3           |
| Through-beam Receivers                         |         |                                    |                     |                |       |                 |                                                  |                                                  |                     |
| <a href="#">RWRR-DP-0A</a>                     | \$39.50 | 3m<br>[9.84 ft]                    | 1000 Hz             | Visible red    | PNP   | Dark-on         | 3-wire, pigtail, 2m [6.5ft] cable                | Diagram 2                                        | <a href="#">PDF</a> |
| <a href="#">RWRR-DP-0F</a>                     | \$39.50 |                                    |                     |                | PNP   |                 | 3-wire, 4-pin M8 quick-disconnect 300mm [11.8in] | Diagram 2                                        | <a href="#">PDF</a> |
| <a href="#">RWRR-DN-0F</a>                     | \$39.50 |                                    |                     |                | NPN   |                 |                                                  | Diagram 1                                        | <a href="#">PDF</a> |

<sup>1</sup> Object with 90% reflectance (standard white paper)

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

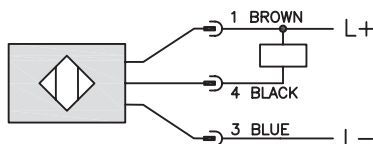
# prosense® RW Series Photoelectric Sensors

| RW Series Photoelectric Sensors Specifications |                                                                                                                                                                                          |                    |                           |                                     |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------------|-------------------------------------|
| Sensor type                                    | Diffuse Reflective with Background Suppression                                                                                                                                           | Diffuse Reflective | Polarized Retroreflective | Through-beam                        |
| Sensing Distance <sup>1</sup>                  | See selection table                                                                                                                                                                      |                    |                           |                                     |
| Light Spot Diameter at Max Distance            | 4mm                                                                                                                                                                                      | 18mm               | 120mm                     | 200mm                               |
| Emission                                       | Red light 633nm                                                                                                                                                                          |                    |                           |                                     |
| Sensitivity                                    | N/A                                                                                                                                                                                      |                    |                           |                                     |
| Output Types                                   | NPN or PNP                                                                                                                                                                               |                    |                           |                                     |
| Operating Voltage                              | 10-30 VDC                                                                                                                                                                                |                    |                           |                                     |
| Switching Output Current Rating                | 0.70 A                                                                                                                                                                                   | 1.00 A             | 0.95 A                    | N/A (emitter)/<br>0.64 A (receiver) |
| Operating (Load) Current                       | 20mA                                                                                                                                                                                     |                    |                           | 12mA (emitter)/<br>15mA (receiver)  |
| Off-state (Leakage) Current                    | 500 µa                                                                                                                                                                                   |                    |                           |                                     |
| Voltage Drop (Max)                             | 2.5 VDC                                                                                                                                                                                  |                    |                           |                                     |
| Response Time                                  | 300ms (max)                                                                                                                                                                              |                    |                           |                                     |
| Voltage Reversal Protection                    | Yes                                                                                                                                                                                      |                    |                           |                                     |
| Short-circuit Protection                       | Yes, pulsed                                                                                                                                                                              | Yes, non-latching  |                           |                                     |
| Operating Temperature                          | -25 to 60°C [-13 to 140°F]                                                                                                                                                               |                    |                           |                                     |
| Protection Degree                              | IP65/IP67                                                                                                                                                                                |                    |                           |                                     |
| Shock/Vibration                                | Shock: pulse shape – half-sine, peak acceleration – 30g (300 m/s²), impulse duration – 11 ms<br>Vibration: frequency range – 10 to 55 Hz, amplitude – 0.5 mm, vibration duration – 5 min |                    |                           |                                     |
| LED Indicators - Switching Status              | Green LED: power; yellow LED switching status                                                                                                                                            |                    |                           |                                     |
| Housing Material                               | ABS - Acrylonitrile Butadiene Styrene; Stainless steel 316L                                                                                                                              |                    |                           |                                     |
| Lens Material                                  | PMMA - Poly (methyl methacrylate)                                                                                                                                                        |                    |                           |                                     |
| EMC                                            | EN 60947-5-2                                                                                                                                                                             |                    |                           |                                     |
| Tightening Torque                              | 0.2 N•m [0.14 lb•ft] max                                                                                                                                                                 |                    |                           |                                     |
| Weight                                         | 21g [0.74 oz] Connector version<br>38g [1.34 oz.] Cable version                                                                                                                          |                    |                           |                                     |
| IO-Link                                        | N/A                                                                                                                                                                                      |                    |                           |                                     |
| Connectors                                     | PVC, 2m [6.5 ft] 28 AWG 3-wire or 2-wire;<br>3-wire, 4-pin M8 quick-disconnect 300mm [11.8in]                                                                                            |                    |                           |                                     |
| Agency Approvals                               | cULus, CE                                                                                                                                                                                |                    |                           |                                     |

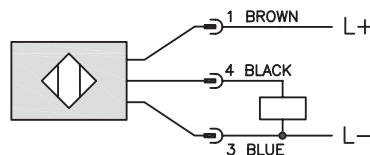
<sup>1</sup> Object with 90% reflectance (standard white paper)

## Wiring Diagrams

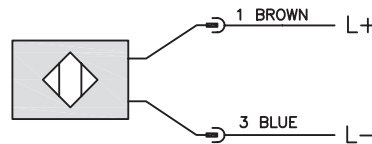
**Diagram 1**  
3-Wire NPN Output



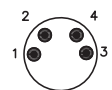
**Diagram 2**  
3-Wire PNP Output



**Diagram 3**  
Emitter



**M8 connector**



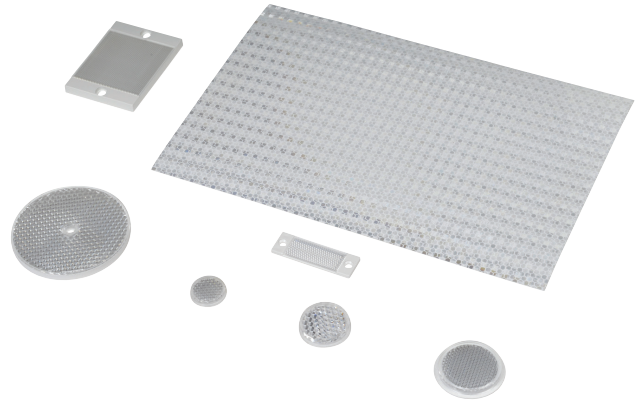
# Reflectors

## 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.