**S12-2 Emitter/Receiver Pair Photoelectric Sensor**

**Datasheet**

- Small 12 mm (0.47 inch) diameter tubular opposed mode sensor pair
- Fully threaded barrel allows easy mounting to bracket or panel with included M12 nuts
- Easy-to-see status LED indicators for Power ON, Output Overload, Signal Received, and Marginal Signal
- Wide beam pattern makes sensor alignment easy at long ranges
- Emitter beam inhibit to verify normal sensor operation before motion
- Robust epoxy encapsulated electronics for reliable use in industrial environments

880 nm Infrared

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>Range</th>
<th>Output Type</th>
<th>Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>S12-2NAEL-2M</td>
<td>Emitter</td>
<td></td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>S12-2NAEJ-2M</td>
<td>Emitter</td>
<td></td>
<td>N/A</td>
<td>Beam Inhibit</td>
</tr>
<tr>
<td>S12-2ANRL-2M</td>
<td>Receiver</td>
<td>20 m (65.6 feet)</td>
<td>NPN/LO</td>
<td>N/A</td>
</tr>
<tr>
<td>S12-2RNRL-2M</td>
<td>Receiver</td>
<td></td>
<td>NPN/DO</td>
<td>N/A</td>
</tr>
<tr>
<td>S12-2APRL-2M</td>
<td>Receiver</td>
<td></td>
<td>PNP/LO</td>
<td>N/A</td>
</tr>
<tr>
<td>S12-2RPRL-2M</td>
<td>Receiver</td>
<td></td>
<td>PNP/DO</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Standard 2 m (6.5 ft) cable models are listed. To order the 3-pin 150 mm (6 inch) pigtail with threaded Pico-style M8 connector models, replace the suffix “-2M” with “-Q3” on the model number. For example, S12-2NAEL-Q3.

**Wiring Diagrams**

<table>
<thead>
<tr>
<th>Emitter</th>
<th>Emitter with Beam Inhibit (Cabled)</th>
<th>Emitter with Beam Inhibit (QD with Pigtail)</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="#" alt="Emitter Diagram" /></td>
<td><img src="#" alt="Emitter with Beam Inhibit (Cabled) Diagram" /></td>
<td><img src="#" alt="Emitter with Beam Inhibit (QD with Pigtail) Diagram" /></td>
</tr>
</tbody>
</table>

Cabled emitters with beam inhibit use the white wire to error-proof wiring in the cabinet. QD models use the standard pinout and the beam inhibit (pin 4) wire color is determined by the cordset used, but is typically black.
Specifications

**Sensing Beam**
880 nm Invisible Infrared beam

**Sensing Range**
20 m (65.6 ft)

**Supply Voltage and Current Consumption**
10 to 30 V dc; less than 25 mA (emitters) or 15 mA (receivers) exclusive of load

**Supply Protection Circuitry**
Protected against reverse polarity and transient over voltages

**Delay at Power-up**
Less than 1 second

**Output Configuration**
One solid state output, NPN (sinking) or PNP (sourcing), depending on model

**Output Rating**
100 mA
OFF-state leakage current: < 10 µA
ON-state saturation voltage: < 0.2 V at 10 mA; < 0.8 V at 100 mA

**Output Protection Circuitry**
Protected against output short circuit, continuous overload, and transient over voltages

**Output Response Time**
11 ms ON, 7 ms OFF

**Input Configuration (emitter only)**
Emitter beam inhibit

**Repeatability**
1.5 ms

**Indicators**
Green Power LED (emitter and receiver):
- ON indicates power on
- Flashing indicates output short circuited (receiver only)

Red Output LED (receiver only):
- ON indicates light sensed
- Flashing indicates marginal excess gain (1.0 to 1.5x excess gain)

**Construction**
Housing: Polycarbonate with epoxy encapsulated electronics
Lens: Polycarbonate
Cable: PVC jacket

**Environmental rating**
IP67

**Connections**
2 m (6.5 ft) cable or 150 mm (6 inch) pigtail with M8 threaded connection

**Operating Conditions**
Temperature: −25 °C to +50 °C (−13 °F to +122 °F)

**Certifications**

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2 www.bannerengineering.com - tel: 763-544-3164 P/N 176293 Rev. A
### Dimensions

All measurements are listed in millimeters.

![Dimensions Diagram](image)

**M12 x 1-6 g**

### Accessories

#### 3-Pin Threaded M8/Pico-Style Cordsets

<table>
<thead>
<tr>
<th>Model</th>
<th>Length</th>
<th>Style</th>
<th>Dimensions</th>
<th>Pinout</th>
</tr>
</thead>
<tbody>
<tr>
<td>PKG3M-2</td>
<td>2 m (6.56 ft)</td>
<td>Straight</td>
<td><img src="image" alt="Straight Pinout" /></td>
<td>1 = Brown, 3 = Blue, 4 = Black</td>
</tr>
<tr>
<td>PKG3M-5</td>
<td>5 m (16.40 ft)</td>
<td>Straight</td>
<td><img src="image" alt="Straight Pinout" /></td>
<td>1 = Brown, 3 = Blue, 4 = Black</td>
</tr>
<tr>
<td>PKG3M-7</td>
<td>7 m (22.97 ft)</td>
<td>Straight</td>
<td><img src="image" alt="Straight Pinout" /></td>
<td>1 = Brown, 3 = Blue, 4 = Black</td>
</tr>
<tr>
<td>PKG3M-9</td>
<td>9 m (29.53 ft)</td>
<td>Straight</td>
<td><img src="image" alt="Straight Pinout" /></td>
<td>1 = Brown, 3 = Blue, 4 = Black</td>
</tr>
<tr>
<td>PKG3M-10</td>
<td>10 m (32.81 ft)</td>
<td>Straight</td>
<td><img src="image" alt="Straight Pinout" /></td>
<td>1 = Brown, 3 = Blue, 4 = Black</td>
</tr>
<tr>
<td>PKW3M-2</td>
<td>2 m (6.56 ft)</td>
<td>Right-Angle</td>
<td><img src="image" alt="Right-Angle Pinout" /></td>
<td>1 = Brown, 3 = Blue, 4 = Black</td>
</tr>
<tr>
<td>PKW3M-5</td>
<td>5 m (16.40 ft)</td>
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