**Miniature Self-Contained DC Photoelectric Sensors**

- Self-contained dc sensors in miniature right-angle housings; only 11 mm (0.43 in) thick
- Epoxy-encapsulated circuitry; IP54 (NEMA5) construction; hermetically-sealed optics
- 1.8 m (70 in) opposed range or 0.5 m (20 in) diffuse range
- Diffuse models have sensitivity adjustment
- Choose models for light operate or dark operate; choose either NPN (sinking) or PNP (sourcing) output models

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**WARNING: Not To Be Used for Personnel Protection**

Never use this device as a sensing device for personnel protection. Doing so could lead to serious injury or death. This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition.

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**Models**

**Note:** Models with a quick disconnect require a mating cordset.

**Table 1: Q10 Opposed Mode Emitter (E) and Receiver (R)**

<table>
<thead>
<tr>
<th>Models</th>
<th>Range</th>
<th>Cable</th>
<th>Supply Voltage</th>
<th>NPN/ PNP</th>
<th>L.O./ D.O.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q106E</td>
<td>1.8 m (70 in)</td>
<td>2 m (6.5 in)</td>
<td>10 V dc to 30 V dc</td>
<td>NPN</td>
<td>L.O.</td>
</tr>
<tr>
<td>Q106EQ</td>
<td></td>
<td>3-Pin Pico-style 150 mm (6 in)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q10AN6R</td>
<td></td>
<td>2 m (6.5 in)</td>
<td></td>
<td></td>
<td>D.O.</td>
</tr>
<tr>
<td>Q10AN6RQ</td>
<td></td>
<td>3-Pin Pico-style 150 mm (6 in)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q10RN6R</td>
<td></td>
<td>2 m (6.5 in)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q10RN6RQ</td>
<td></td>
<td>3-Pin Pico-style 150 mm (6 in)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q10AP6R</td>
<td></td>
<td>2 m (6.5 in)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q10AP6RQ</td>
<td></td>
<td>3-Pin Pico-style 150 mm (6 in)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q10RP6R</td>
<td></td>
<td>2 m (6.5 in)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q10RP6RQ</td>
<td></td>
<td>3-Pin Pico-style 150 mm (6 in)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 2: Q10 Diffuse Mode**

<table>
<thead>
<tr>
<th>Models</th>
<th>Range</th>
<th>Cable</th>
<th>Supply Voltage</th>
<th>NPN/ PNP</th>
<th>L.O./ D.O.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q10AN6D</td>
<td>0.5 m (20 in)</td>
<td>2 m (6.5 in)</td>
<td>10 V dc to 30 V dc</td>
<td>NPN</td>
<td>L.O.</td>
</tr>
<tr>
<td>Q10AN6DQ</td>
<td></td>
<td>3-Pin Pico-style 150 mm (6 in)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q10RN6D</td>
<td></td>
<td>2 m (6.5 in)</td>
<td></td>
<td></td>
<td>D.O.</td>
</tr>
<tr>
<td>Q10RN6DQ</td>
<td></td>
<td>3-Pin Pico-style 150 mm (6 in)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q10AP6D</td>
<td></td>
<td>2 m (6.5 in)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q10AP6DQ</td>
<td></td>
<td>3-Pin Pico-style 150 mm (6 in)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q10RP6D</td>
<td></td>
<td>2 m (6.5 in)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q10RP6DQ</td>
<td></td>
<td>3-Pin Pico-style 150 mm (6 in)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Quick disconnect (QD) wiring diagrams are functionally identical.

### Mounting Specifications

#### Flat Mounting

- **M2.5 x 0.45 Machine Screw** 12mm Long

#### Stand-Off Mounting

- **Nylon Spacer**
- **M2.5 x 0.45 Machine Screw** 25 mm (1.0 in) long
- **Split Lockwasher**
- **Hex Nut**

### Specifications

#### Sensing Beam
- Infrared, 880 nm

#### Supply Voltage and Current
- 10 V dc to 30 V dc (10% maximum ripple)
- Emitter or receiver: 15 mA
- Diffuse models: 20 mA (exclusive of load)

#### Supply Protection Circuitry
- Protected against reverse polarity

#### Output Configuration
- SPST solid-state dc switch
- Choose NPN (current sinking) or PNP (current sourcing) models
- Choose light operate (N.O.) or dark operate (N.C.) models

#### Output Rating
- 150 mA maximum
- Off-state leakage current: < 10 microamps at 30 V dc
- On-state saturation voltage: < 0.5 V at 10 mA dc; < 1.5 V at 150 mA dc

#### Output Protection Circuitry
- Protected against output short-circuit, continuous overload, and false pulse on power-up
- Overload trip point ≥ 220 mA, typical, at 20 °C

#### Output Response Time
- Opposed mode: 8 ms On, 4 ms Off
- Diffuse mode: 3 ms On and Off

#### Repeatability
- Opposed mode: 1.0 ms
- Diffuse mode: 0.75 ms

#### Adjustments
- Diffuse models (only): single-turn, top-mounted sensitivity control for adjustment of system gain (turn clockwise to increase)

#### Indicators
- Opposed mode receivers and diffuse mode sensors have two LEDs: Green and Amber
  - Green on = power to the sensor is On
  - Green flashing = output is overloaded
  - Amber on = light is sensed
  - Amber flashing = marginal excess gain (1 to 1.5×) in light condition
- Emitters have one Green LED; Green on = power to the sensor is On

#### Construction
- housings are black ABS; Rated UL 94V0
- Lenses are hermetically-sealed glass; lens covers are clear acrylic
- Circuitry is epoxy-encapsulated and completely sealed
- Stainless steel M2.5 mounting hardware is included

#### Connections
- 2 m (6.5 ft) attached cable, or 3-pin pico-style quick-disconnect fitting
- Cables for QD models are purchased separately

#### Environmental Rating
- IEC IP54 (NEMA 5)

#### Operating Conditions
- -40 °C to +70 °C (-40 °F to +158 °F)
- 90% at +50 °C maximum relative humidity (non-condensing)
Dimensions

Opposed Mode Models

Cabled Models

- 11.0 mm (0.43 in)
- 15.2 mm (0.60 in)
- 21.6 mm (0.85 in)
- 2X Clearance for M2.5 Screw

Yellow LED Signal Indicator (Receiver, Only)

Green LED Power Indicator

14.5 mm (0.57 in)

10.0 mm (0.39 in)

QD Models

- 28.9 mm (1.14 in)
- 14.5 mm (0.57 in)
- 20.0 mm (0.79 in)

2X Clearance for M2.5 Screw

Yellow LED Signal Indicator (Receiver, Only)

Cabled Models

- 2.8 mm (0.11 in)
- 2.8 mm (0.11 in)
- 20.0 mm (0.79 in)

Gain (Sensitivity) Adjustment

QD Models

- 42.4 mm (1.67 in)
- 14.5 mm (0.57 in)
- 20.0 mm (0.79 in)

Cabled Models

- 11.0 mm (0.43 in)
- 18.0 mm (0.70 in)
- 2X Clearance for M2.5 Screw

Yellow LED Signal Indicator (Receiver, Only)

Green LED Power Indicator

Performance Curves

Opposed Mode

Effective Beam: 5 mm

Diffuse Mode

Performance based on a 90% reflectance white test card.
### Cordsets

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

<table>
<thead>
<tr>
<th>Model</th>
<th>Length</th>
<th>Style</th>
<th>Dimensions</th>
<th>Pinout (Female)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PKG3M-2</td>
<td>2 m (6.56 ft)</td>
<td>Straight</td>
<td>ø 9.5</td>
<td>35 Typ.</td>
</tr>
<tr>
<td>PKG3M-5</td>
<td>5 m (16.40 ft)</td>
<td>Straight</td>
<td>M8 x 1</td>
<td>4 = Black</td>
</tr>
<tr>
<td>PKG3M-7</td>
<td>7 m (22.97 ft)</td>
<td>Straight</td>
<td>ø 9.5</td>
<td>28 Typ.</td>
</tr>
<tr>
<td>PKG3M-9</td>
<td>9 m (29.53 ft)</td>
<td>Straight</td>
<td>M8 x 1</td>
<td>4 = Black</td>
</tr>
<tr>
<td>PKG3M-10</td>
<td>10 m (32.81 ft)</td>
<td>Straight</td>
<td>ø 9.5</td>
<td>28 Typ.</td>
</tr>
<tr>
<td>PKW3M-2</td>
<td>2 m (6.56 ft)</td>
<td>Right-Angle</td>
<td>ø 9.5</td>
<td>1 = Brown</td>
</tr>
<tr>
<td>PKW3M-5</td>
<td>5 m (16.40 ft)</td>
<td>Right-Angle</td>
<td>ø 9.5</td>
<td>3 = Blue</td>
</tr>
<tr>
<td>PKW3M-9</td>
<td>9 m (29.53 ft)</td>
<td>Right-Angle</td>
<td>ø 9.5</td>
<td>4 = Black</td>
</tr>
</tbody>
</table>

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