Q26 Series Sensors

Datasheet

Coaxial polarized retroreflective sensor for clear object detection

- Reliable detection of clear, translucent, or opaque objects—including PET and glass containers, transparent films, and mirror-like surfaces
- Coaxial optics enable reliable detection of targets to the face of the sensor
- Simple set-up and adjustment with a single turn sensitivity adjuster potentiometer
- Light Operate and Dark Operate selection by rotary switch
- Compact sensor housing size of 14 x 25 x 42 mm

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.

Models

<table>
<thead>
<tr>
<th>Model</th>
<th>Mode</th>
<th>Range</th>
<th>Output</th>
<th>Connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q26PXLPQ7</td>
<td>COAXIAL POLAR RETRO</td>
<td>5 to 800 mm sensor to reflector distance on BRT-60x40C</td>
<td>PNP</td>
<td>4-pin Threaded/Snap M8/Pico-Style QD connector</td>
</tr>
<tr>
<td>Q26PXLPQ5</td>
<td>4-pin 150 mm (6 in) Euro-style pigtail QD with PVC cable jacket</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q26NXLPQ7</td>
<td>NPN</td>
<td>4-pin Threaded/Snap M8/Pico-Style QD connector</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q26NXLPQ5</td>
<td>4-pin 150 mm (6 in) Euro-style pigtail QD with PVC cable jacket</td>
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</tbody>
</table>

Overview

The Banner Q26 sensor is a high performance clear object sensor. The polarized coaxial optical design ensures reliable detection of transparent, opaque, or reflective targets at any distance between the sensor and the reflector. Sensitivity adjustment of the sensor is done with a single turn potentiometer. Light Operate and Dark Operate selection is made by a sealed rotary switch.

Set-Up Procedure for Maximum Sensitivity

1. Mount and align the Q26 sensor and the reflector.
2. Turn the sensitivity adjustment potentiometer (C) fully clockwise.
3. Select light operate (LO) or dark operate (DO).
   - If an output is desired when the reflector is blocked, turn the LO / DO rotary switch (D) fully clockwise to select dark operate (DO).
   - If an output is desired when the reflector is not blocked, turn the LO / DO rotary switch (D) fully counterclockwise to select light operate (LO).
4. With no target present, turn the sensitivity adjustment potentiometer counterclockwise until the yellow output LED (B) changes state.
5. With no target present, slowly turn the sensitivity adjustment potentiometer clockwise until the output changes state again.
6. Place the transparent target between the sensor and the reflector.
7. Adjust the potentiometer as necessary to achieve reliable detection of the transparent target.

A. Green LED Power ON
B. Yellow LED Output Conducting
C. Sensitivity Adjustment Potentiometer
D. LO / DO Rotary Selection Switch (DO = fully clockwise, LO = fully counter clockwise)

**Health Mode Output Overview**

Health Mode communicates to the user that there is adequate or inadequate excess gain for reliable sensor operation. It provides a continuous signal that the sensor is operating normally and is connected properly. When the Q26 sensor is set up for maximum sensitivity, the excess gain will often be between 1.0 and 1.5 excess gain with no target present and the Health output will be OFF. This is normal operation for clear object sensing.

In Health Mode, the Health output is ON when the excess gain of the sensor is greater than 1.5X threshold or less than 1X threshold. The Health Mode output provides a signal to the customer’s PLC that the sensor is operating with adequate excess gain, or the beam is blocked.

**Specifications**

- **Supply Voltage and Current**
  12 to 30 V dc (10% maximum ripple within specified limits)
  Supply Current (exclusive of load current): 15 mA
- **Supply Protection Circuitry**
  Protected against reverse polarity and transient voltages
- **Output Configuration**
  Primary output (pin 4) NPN or PNP (current sinking or sourcing), depending on model; secondary output (pin 2) is a Health mode output.
- **Output Rating**
  100 mA max
  OFF-state leakage current: less than 1 microamp at 30 V dc
  ON-state saturation voltage: less than 1 V at 10 mA dc; less than 1.5 V at 150 mA dc
- **Output Protection Circuitry**
  Protected against false power-up and continuous overload or short circuit of outputs
- **Emitter LED Wavelength**
  660 nm
- **Emitter Beam Diameter**
  See Figure 6 on page 4
- **Output Response Time**
  250 μs ON and OFF
- **Repeatability**
  50 microseconds
- **Construction**
  ABS plastic housing; glass window
- **Indicators**
  Green steady: Power ON
  Yellow steady: Output conducting
- **Connection**
  4-pin Threaded/Snap MB/Pico-Style QD connector or 4-pin 150 mm (6 in) Euro-style pigtail QD with PVC cable jacket
Environmental Rating
Leakproof design rated IP67

Operating Conditions
Temperature: \(-10 °C \) to +55 °C \((+14 °F \) to +131 °F\)
Humidity: 90% at +50 °C maximum relative humidity (non-condensing)

Vibration and Shock
EN60068-2-6
EN60068-2-27

Certifications

Required Overcurrent Protection

**WARNING:** Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

Overcurrent protection is required to be provided by end product application per the supplied table.
Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.
Supply wiring leads < 24 AWG shall not be spliced.
For additional product support, go to [http://www.bannerengineering.com](http://www.bannerengineering.com).

<table>
<thead>
<tr>
<th>Supply Wiring</th>
<th>Required Overcurrent Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>5.0 Amps</td>
</tr>
<tr>
<td>22</td>
<td>3.0 Amps</td>
</tr>
<tr>
<td>24</td>
<td>2.0 Amps</td>
</tr>
<tr>
<td>26</td>
<td>1.0 Amps</td>
</tr>
<tr>
<td>28</td>
<td>0.8 Amps</td>
</tr>
<tr>
<td>30</td>
<td>0.5 Amps</td>
</tr>
</tbody>
</table>

Beam Pattern and Spot Diameter Diagram
Figure 6. Spot Diameter Diagram

Dimensions

All measurements are listed in millimeters (inches), unless noted otherwise.
Wiring

<table>
<thead>
<tr>
<th>NPN</th>
<th>PNP</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Wiring Diagram" /></td>
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</tbody>
</table>

Accessories

Cordsets

4-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>PKG4M-2</td>
<td>2 m (6.56 ft)</td>
<td>Straight</td>
<td><img src="image" alt="Straight Diagram" /></td>
<td>1 = Brown, 2 = White, 3 = Blue, 4 = Black</td>
</tr>
<tr>
<td>PKG4M-5</td>
<td>5 m (16.4 ft)</td>
<td>Straight</td>
<td><img src="image" alt="Straight Diagram" /></td>
<td>1 = Brown, 2 = White, 3 = Blue, 4 = Black</td>
</tr>
<tr>
<td>PKG4M-9</td>
<td>9 m (29.5 ft)</td>
<td>Straight</td>
<td><img src="image" alt="Straight Diagram" /></td>
<td>1 = Brown, 2 = White, 3 = Blue, 4 = Black</td>
</tr>
<tr>
<td>PKW4M-2</td>
<td>2 m (6.56 ft)</td>
<td>Right Angle</td>
<td><img src="image" alt="Right Angle Diagram" /></td>
<td>1 = Brown, 2 = White, 3 = Blue, 4 = Black</td>
</tr>
<tr>
<td>PKW4M-5</td>
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4-Pin Threaded M12/Euro-Style Cordsets

<table>
<thead>
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<th>Dimensions</th>
<th>Pinout (Female)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MQDC-406</td>
<td>1.83 m (6 ft)</td>
<td>Straight</td>
<td><img src="image" alt="Straight Diagram" /></td>
<td>1 = Brown, 2 = White, 3 = Blue, 4 = Black</td>
</tr>
<tr>
<td>MQDC-415</td>
<td>4.57 m (15 ft)</td>
<td>Straight</td>
<td><img src="image" alt="Straight Diagram" /></td>
<td>1 = Brown, 2 = White, 3 = Blue, 4 = Black</td>
</tr>
<tr>
<td>MQDC-430</td>
<td>9.14 m (30 ft)</td>
<td>Straight</td>
<td><img src="image" alt="Straight Diagram" /></td>
<td>1 = Brown, 2 = White, 3 = Blue, 4 = Black</td>
</tr>
<tr>
<td>MQDC-450</td>
<td>15.2 m (50 ft)</td>
<td>Straight</td>
<td><img src="image" alt="Straight Diagram" /></td>
<td>1 = Brown, 2 = White, 3 = Blue, 4 = Black</td>
</tr>
<tr>
<td>MQDC-406RA</td>
<td>1.83 m (6 ft)</td>
<td>Right-Angle</td>
<td><img src="image" alt="Right-Angle Diagram" /></td>
<td>1 = Brown, 2 = White, 3 = Blue, 4 = Black</td>
</tr>
<tr>
<td>MQDC-415RA</td>
<td>4.57 m (15 ft)</td>
<td>Right-Angle</td>
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<tr>
<td>MQDC-430RA</td>
<td>9.14 m (30 ft)</td>
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</tbody>
</table>

Brackets

All measurements are listed in millimeters, unless noted otherwise.
**Reflectors**

**BRT-35X20A, BRT-35X20AB**
- Rectangular, acrylic target
- Reflectivity Factor: 1.4
- Temperature: −20 °C to +60 °C (−4 °F to +140 °F)
- Mounting base available in white (BRT-35X20A) or black (BRT-35X20AB)
- Approximate size: 23 mm × 40 mm

**BRT-60X40C**
- Rectangular, acrylic target
- Reflectivity Factor: 1.4
- Temperature: −20 °C to +60 °C (−4 °F to +140 °F)
- Optional brackets are available
- Approximate size: 40 mm × 60 mm

**BRT-60X40AF**
- Rectangular, acrylic target
- Reflectivity Factor: 1.4
- Temperature: −20 °C to +60 °C (−4 °F to +140 °F)
- Anti-fogging coating for use around steam
- Optional brackets are available
- Approximate size: 40 mm × 60 mm

**BRT-60X40IP69K**
- Rectangular, acrylic target (color is amber)
- Reflectivity Factor: 0.7
- Temperature: −20 °C to +140 °C (−4 °F to +284 °F)
- Chemically resistant
- IP69K washdown rated
- Optional brackets are available
- Approximate size: 40 mm × 60 mm

**BRT-84X84A**
- Square, acrylic target
- Reflectivity Factor: 2.0
- Temperature: −20 °C to +60 °C (−4 °F to +140 °F)
- Approximate size: 84 mm × 84 mm

**Reflective Tape**

<table>
<thead>
<tr>
<th>Model</th>
<th>Reflectivity Factor</th>
<th>Maximum Temperature</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRT-THG-1-100</td>
<td>0.7</td>
<td>+60 °C (+140 °F)</td>
<td>25 mm (1 in) wide, 2.5 m (100 in) long</td>
</tr>
</tbody>
</table>

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