

## Features

Self-contained, AC-operated sensors

For complete technical information about this product, including installation instructions, application requirements and guidelines, technical specifications, and accessories, go to [www.bannerengineering.com](http://www.bannerengineering.com) and search 121517.



**WARNING:**

- Do not use this device for personnel protection
- Using this device for personnel protection could result in serious injury or death.
- This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A device failure or malfunction can cause either an energized (on) or de-energized (off) output condition.

## Models

### Opposed mode sensors

| Model   | Output | Range          | Connector   |
|---------|--------|----------------|---|
| Q253E   | N/A    | 20 m (65.6 ft) | 2 m (6.5 ft) cable  |
| Q253EQ1 | N/A    |                | 4-pin 1/2 in-20UNF (1/2-in Dual Key) male quick disconnect (QD) |
| Q25AW3R | LO     |                | 2 m (6.5 ft) cable  |
| Q25RW3R | DO     |                | 2 m (6.5 ft) cable  |

### Polarized retroreflective mode sensors

| Model      | Output | Range        | Connector   |
|------------|--------|--------------|---|
| Q25AW3LP   | LO     | 2 m (6.6 ft) | 2 m (6.5 ft) cable  |
| Q25AW3LPQ1 | LO     |              | 4-pin 1/2 in-20UNF (1/2-in Dual Key) male quick disconnect (QD) |
| Q25RW3LP   | DO     |              | 2 m (6.5 ft) cable  |
| Q25RW3LPQ1 | DO     |              | 4-pin 1/2 in-20UNF (1/2-in Dual Key) male quick disconnect (QD) |

### Fixed-field mode sensors

| Model         | Output | Range                  | Connector   |
|---------------|--------|------------------------|---|
| Q25AW3FF25Q1  | LO     | 25 mm (0.9 in) cutoff  | 4-pin 1/2 in-20UNF (1/2-in Dual Key) male quick disconnect (QD) |
| Q25AW3FF50    | LO     | 50 mm (1.9 in) cutoff  | 2 m (6.5 ft) cable  |
| Q25AW3FF50Q1  | LO     |                        | 4-pin 1/2 in-20UNF (1/2-in Dual Key) male quick disconnect (QD) |
| Q25AW3FF100Q1 | LO     | 100 mm (3.9 in) cutoff | 4-pin 1/2 in-20UNF (1/2-in Dual Key) male quick disconnect (QD) |
| Q25RW3FF100   | DO     |                        | 2 m (6.5 ft) cable  |
| Q25RW3FF100Q1 | DO     |                        | 4-pin 1/2 in-20UNF (1/2-in Dual Key) male quick disconnect (QD) |

A model with a QD connector requires a mating cable.

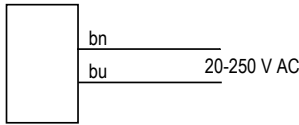
In light operate (LO) mode, the output is ON when the target returns the same or more light to the sensor and OFF when the sensor detects less light than the configured/taught target. In **opposed and retroreflective sensing modes**, light operate is active when the beam is unblocked. In **diffuse, fixed field, and adjustable field sensor modes**, light operate is active when the target is present.

In dark operate (DO) mode, the output is ON when the target returns less light to the sensor than the configured target and OFF when the sensor detects more light than the configured/taught target. In **opposed and retroreflective sensing modes**, dark operate is active when the beam is blocked. In **diffuse, fixed field, and adjustable field sensor modes**, dark operate is active when the target is absent.

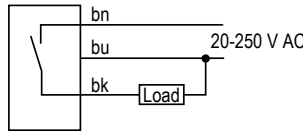


## Wiring Diagrams

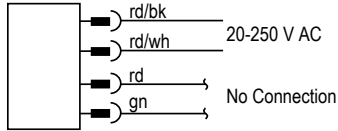
Cabled emitters



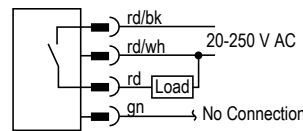
All other cabled models



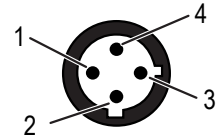
4-pin 1/2 in-20UNF (1/2-in Dual Key) quick disconnect emitters



All other 4-pin 1/2 in-20UNF (1/2-in Dual Key) quick disconnect models



4-pin 1/2 in-20UNF (1/2-in Dual Key) male pinout



Key:

- 1 - Red/black
- 2 - Red/white
- 3 - Red
- 4 - Green

## Specifications

### Supply Voltage and Current

20 V to 250 V AC (50 Hz/60 Hz)

**Average current:** 20 mA

**Peak current:**

- 200 mA at 20 V AC
- 500 mA at 120 V AC
- 750 mA at 250 V AC

### Sensing LED Beam

- Opposed mode: Infrared, 950 nm
- Polarized retroreflective mode: Visible red, 680 nm
- Fixed-field mode: Infrared, 880 nm

### Supply Protection Circuitry

Protected against transient voltages

### Output Configuration

- SPST solid-state AC switch; three-wire connection; light operate or dark operate, depending on model
- Light Operate:** Output conducts when the sensor sees its own (or the emitter's) modulated light
- Dark Operate:** Output conducts when the sensor sees dark

### Output Response

- Time Opposed mode:** 16 ms ON, 8 ms OFF
- Other models:** 16 ms ON and OFF

**NOTE:** 100 ms delay on power-up; outputs do not conduct during this time

### Output Rating

- 300 mA maximum (continuous)
- Fixed-Field models:** derate 5 mA/°C above +50° C (+122° F)
- Inrush capability:** 1 amp for 20 ms, non-repetitive
- OFF-state leakage current:** < 100 µA
- ON-state saturation voltage:** 3 V at 300 mA AC; 2 V at 15 mA AC

### Output Protection Circuitry

Protected against false pulse on power-up

### Repeatability

- Opposed mode:** 2 ms
- Other models:** 4 ms
- Repeatability and response are independent of signal strength

### Indicators

- Two LEDs (Green and Amber)
- Green ON steady:** Power to the sensor is ON
- Amber ON steady:** The sensor sees light
- Amber flashing:** Excess gain marginal (1 to 1.5 times) in light condition

### Construction

PBT polyester housing; polycarbonate (opposed-mode) or acrylic lens

### Environmental Rating

Leakproof design rated NEMA 6P, DIN 40050 (IP69K per ISO 20653)

### Connections

2 m (6.5 ft) attached cable or 4-pin 1/2 in-20UNF (1/2-in Dual Key) quick-disconnect fitting, depending on the model ordered

### Operating Conditions

- Temperature:** -40 °C to +70 °C (-40 °F to +158 °F)
- Humidity:** 90% at +50 °C maximum relative humidity (non-condensing)

### Vibration and Mechanical Shock

All models meet MIL-STD-202F, Method 201A (Vibration: 10 Hz to 60 Hz maximum, 0.06 inch (1.52 mm) double amplitude, 10G acceleration) requirements. Method 213B conditions H&I. (Shock: 75G with device operating; 100G for non-operation)

### Certifications



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1831 Diegem, BELGIUM



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Blenheim Court  
Wickford, Essex SS11 8YT  
GREAT BRITAIN



### 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 [www.bannerengineering.com](http://www.bannerengineering.com).

| Supply Wiring (AWG) | Required Overcurrent Protection (A) | Supply Wiring (AWG) | Required Overcurrent Protection (A) |
|---------------------|-------------------------------------|---------------------|-------------------------------------|
| 20                  | 5.0                                 | 26                  | 1.0                                 |
| 22                  | 3.0                                 | 28                  | 0.8                                 |
| 24                  | 2.0                                 | 30                  | 0.5                                 |

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