

## Features

### Self-contained, AC-operated sensors



This guide is designed to help you set up and install the Q40 Series Sensor. For complete information on programming, performance, troubleshooting, dimensions, and accessories, please refer to the Product Manual at [www.bannerengineering.com](http://www.bannerengineering.com). Search for part number 121515 to view the Product Manual. Use of this document assumes familiarity with pertinent industry standards and practices.



#### 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 models

| Model     | Range         | Output | Connection                                                 |
|-----------|---------------|--------|------------------------------------------------------------|
| Q403E     | 60 m (200 ft) | -      | 2 m (6.5 ft) cable                                         |
| Q403EQ1   |               |        | 4-pin 1/2 in-20UNF (1/2-in Dual Key) male quick disconnect |
| Q40AW3R   |               | LO     | 2 m (6.5 ft) cable                                         |
| Q40AW3RQ1 |               | LO     | 4-pin 1/2 in-20UNF (1/2-in Dual Key) male quick disconnect |
| Q40RW3R   |               | DO     | 2 m (6.5 ft) cable                                         |
| Q40RW3RQ1 |               | DO     | 4-pin 1/2 in-20UNF (1/2-in Dual Key) male quick disconnect |

### Polarized retroreflective mode models

| Model      | Range       | Output | Connection                                                 |
|------------|-------------|--------|------------------------------------------------------------|
| Q40AW3LP   | 6 m (20 ft) | LO     | 2 m (6.5 ft) cable                                         |
| Q40AW3LPQ1 |             | LO     | 4-pin 1/2 in-20UNF (1/2-in Dual Key) male quick disconnect |
| Q40RW3LP   |             | DO     | 2 m (6.5 ft) cable                                         |
| Q40RW3LPQ1 |             | DO     | 4-pin 1/2 in-20UNF (1/2-in Dual Key) male quick disconnect |
| Q40RW3LPQ3 |             | DO     | 5-pin M12 male quick disconnect                            |

### Fixed-field mode models

| Model         | Range                 | Output | Connection                                                 |
|---------------|-----------------------|--------|------------------------------------------------------------|
| Q40AW3FF200   | 200 mm (8 in) cutoff  | LO     | 2 m (6.5 ft) cable                                         |
| Q40AW3FF200Q1 |                       | LO     | 4-pin 1/2 in-20UNF (1/2-in Dual Key) male quick disconnect |
| Q40RW3FF200Q1 |                       | DO     | 4-pin 1/2 in-20UNF (1/2-in Dual Key) male quick disconnect |
| Q40AW3FF400   | 400 mm (16 in) cutoff | LO     | 2 m (6.5 ft) cable                                         |
| Q40AW3FF400Q1 |                       | LO     | 4-pin 1/2 in-20UNF (1/2-in Dual Key) male quick disconnect |
| Q40AW3FF400Q4 |                       | LO     |                                                            |
| Q40RW3FF400   |                       | DO     | 2 m (6.5 ft) cable                                         |
| Q40RW3FF400Q1 |                       | DO     | 4-pin 1/2 in-20UNF (1/2-in Dual Key) male quick disconnect |

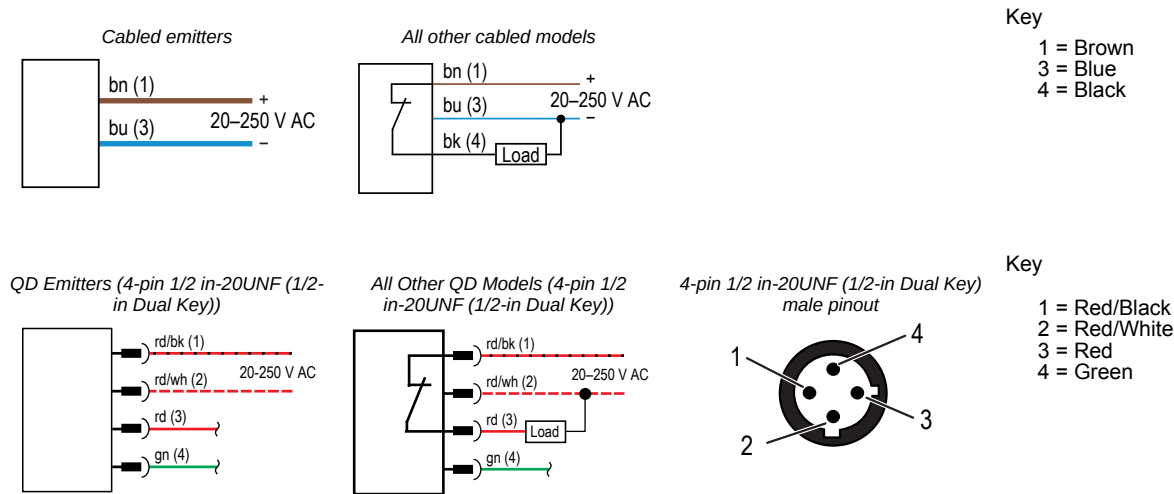
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| Model            | Range                 | Output | Connection                                                   |
|------------------|-----------------------|--------|--------------------------------------------------------------|
| Q40AW3FF600      | 600 mm (24 in) cutoff | LO     | 2 m (6.5 ft) cable                                           |
| Q40AW3FF600 W/30 |                       | LO     | 9 m cable                                                    |
| Q40AW3FF600Q1    |                       | LO     | 4-pin 1/2 in-20UNF (1/2-in Dual Key) male quick disconnect   |
| Q40RW3FF600      |                       | DO     | 2 m (6.5 ft) cable                                           |
| Q40RW3FF600Q1    |                       | DO     | 4-pin 1/2 in-20UNF (1/2-in Dual Key) 2 male quick disconnect |

A model with a QD connector requires a mating cable.

## Wiring



## Specifications

### Supply Voltage and Current

20 V AC to 250 V AC (50/60 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

### Supply Protection Circuitry

Protected against transient voltages

### Output Configuration

SPST solid-state ac switch; Three-wire hookup; Choose light operate or dark operate models

Light Operate: N.O. output conducts when the sensor sees its own (or the emitter's) modulated light

Dark Operate: Output conducts when the sensor sees dark

### Sensing Beam

Opposed mode models: Infrared, 950 nm

Polarized retroreflective mode models: Visible red, 680 nm

Fixed-field mode models: Infrared, 880 nm

### Output Rating

300 mA maximum (continuous)

Fixed-Field models: derate 5 mA/°C above +50°C (122°F)

Inrush Capability: 1 amp for 20 milliseconds, non-repetitive

OFF-state leakage current: < 100 microamps

ON-state saturation voltage: 3 V at 300 mA ac; 2 V at 15 mA ac

### Output Response Time

Opposed mode: 16 milliseconds ON, 8 milliseconds OFF

Other models: 16 milliseconds ON and OFF

**NOTE:** 100 ms delay on power-up

### Repeatability

Opposed mode: 2 milliseconds

Other modes: 4 milliseconds

Repeatability and response are independent of signal strength

### Indicators

Two LEDs (Green and Amber)

Green ON: power to the sensor is ON

Amber ON: sensor sees light

Amber flashing: excess gain marginal (1 to 1.5x) in light conditions

### Connections

2 m (6.5 ft) cable, 9 m (30 ft) cable, or 4-pin 1/2 in-20UNF (1/2-in Dual Key) quick-disconnect fitting, depending on the model

### Construction

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

**Environmental Rating**

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

**Operating Conditions**

**Temperature:** -40 °C to +70 °C (-40 °F to +158 °F)

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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Park Lane, Culliganlaan 2F bus 3  
1831 Diegem, BELGIUM



Turck Banner LTD Blenheim House  
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.

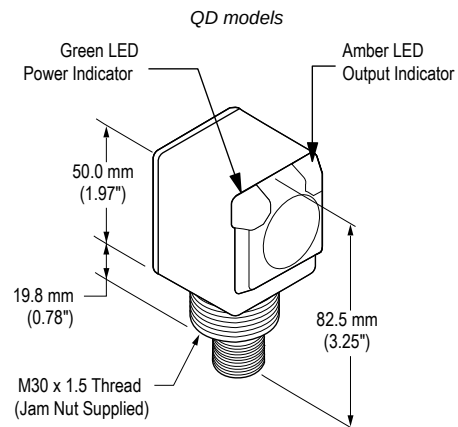
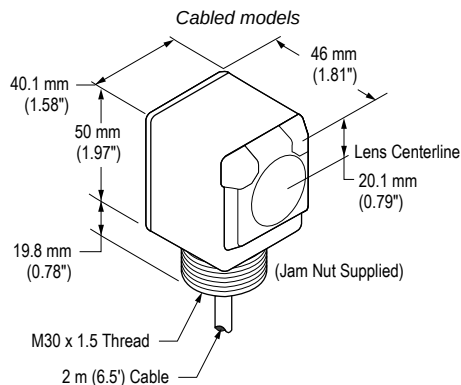
Overcurrent protection is required to be provided by end product application per the supplied table.

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).

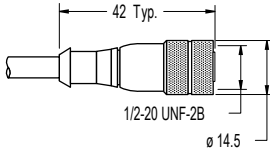
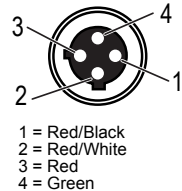
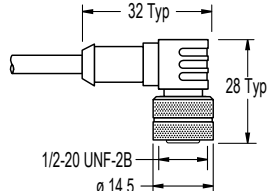
| Supply Wiring (AWG) | Required Overcurrent Protection (A) | Supply Wiring (AWG) | Required Overcurrent Protection (A) |
|---------------------|-------------------------------------|---------------------|-------------------------------------|
| 20                  | 5.0                             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

**Dimensions**

All measurements are listed in millimeters [inches], unless noted otherwise. The measurements provided are subject to change.

## Accessories

### Quick-Disconnect (QD) Cables

| 4-Pin Single-Ended 1/2-in Dual Key Female Cordsets |                |             |                                                                                    |                                                                                                                                                      |
|----------------------------------------------------|----------------|-------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Model                                              | Length         | Style       | Dimensions                                                                         | Pinout (Female)                                                                                                                                      |
| MQAC-406                                           | 2 m (6.56 ft)  | Straight    |  |  <p>1 = Red/Black<br/>2 = Red/White<br/>3 = Red<br/>4 = Green</p> |
| MQAC-415                                           | 5 m (16.4 ft)  |             |                                                                                    |                                                                                                                                                      |
| MQAC-430                                           | 9.14 m (30 ft) |             |                                                                                    |                                                                                                                                                      |
| MQAC-406RA                                         | 1.83 m (6 ft)  | Right-Angle |  |                                                                                                                                                      |
| MQAC-415RA                                         | 5 m (16.4 ft)  |             |                                                                                    |                                                                                                                                                      |
| MQAC-430RA                                         | 9.14 m (30 ft) |             |                                                                                    |                                                                                                                                                      |

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