

## 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

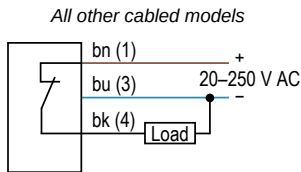
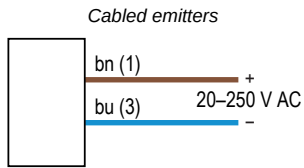
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Model	Range	Output	Connection
Q40AW3FF600	600 mm (24 in) cutoff	LO	2 m (6.5 ft) cable
Q40AW3FF600 W/30		LO	9 m cable
Q40AW3FF600Q1		LO	4-pin 1/2 in-20UNF (1/2-in Dual Key) male quick disconnect
Q40RW3FF600		DO	2 m (6.5 ft) cable
Q40RW3FF600Q1		DO	4-pin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

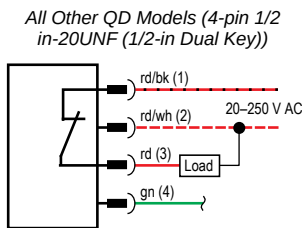
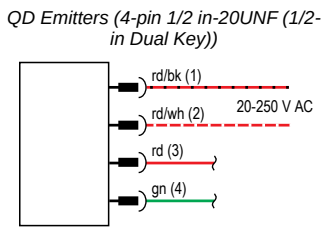
A model with a QD connector requires a mating cable.

## Wiring

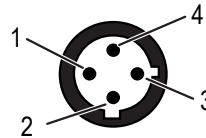


**Key**

- 1 = Brown
- 3 = Blue
- 4 = Black



*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 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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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.

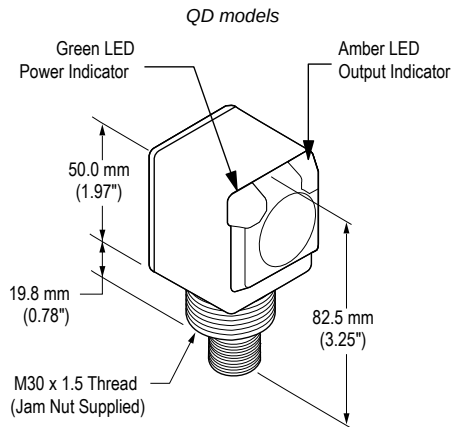
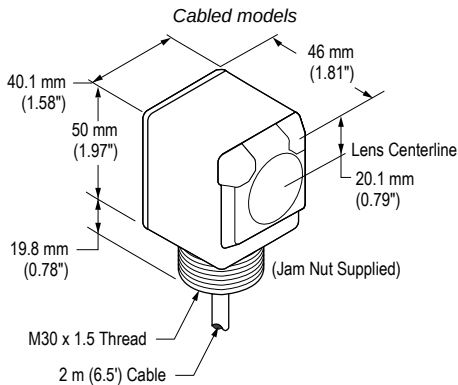
Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.

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 2 = Red/White 3 = Red 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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