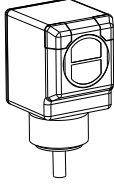


# Q40 Sensor: AC Voltage

## Quick Start Guide

Self-contained, ac-operated sensors



**WARNING:**

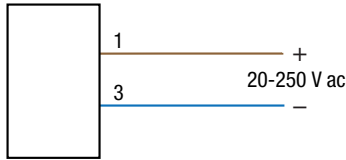
- Do not use this device for personnel protection
- Using this device for personnel protection could result in serious injury or death.
- This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A device failure or malfunction can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

## Models

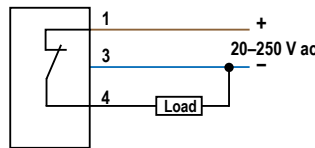
Model <sup>1</sup>	Sensing Mode	Range	LED	Output
Q403E	 OPPOSED	60 m (200 ft)	Infrared, 950 nm	-
Q40AW3R				LO
Q40RW3R				DO
Q40AW3LP	 POLAR RETRO	6 m (20 ft)	Visible red, 680 nm	LO
Q40RW3LP				DO
Q40AW3FF200	 FIXED-FIELD	200 mm (8 in) cutoff	Infrared, 880 nm	LO
Q40RW3FF200				DO
Q40AW3FF400		400 mm (16 in) cutoff		LO
Q40RW3FF400				DO
Q40AW3FF600		600 mm (24 in) cutoff		LO
Q40RW3FF600				DO

## Wiring Diagrams

**Cabled Emitters**



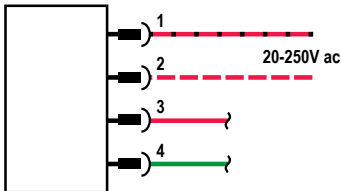
**All Other Cabled Models**



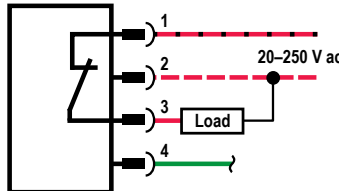
**Key**

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

**QD Emitters (4-pin Micro-Style)**



**All Other QD Models (4-pin Micro-Style)**



**Key**

- 1 = Red/Black
- 2 = Red/White
- 3 = Red
- 4 = Green

<sup>1</sup> Standard 2 m (6.5 ft) cable models are listed.

- To order **9 m (30 ft) cable**: add suffix "W/30" (for example, **Q403E W/30**).
- To order **4-pin Euro-style QD models**: add suffix "Q1" (for example, **Q403EQ1**). A model with a QD connector requires a mating cable.



## 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 sensor sees its own (or the emitter's) modulated light

**Dark Operate:** Output conducts when the sensor sees dark

### 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 Protection Circuitry

Protected against false pulse on power-up

### 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 steady:** power to sensor is ON  
**Amber ON steady:** sensor sees light  
**Amber flashing:** excess gain marginal (1 to 1.5x) in light condition

### Construction

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

### Environmental Rating

Leakproof design rated NEMA 6P, DIN 40050 (IP69K per DIN 40050-9)

### Connections

2 m (6.5 ft) or 9 m (30 ft) attached cable, or 4-pin Micro-style quick-disconnect fitting

### 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



### 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.

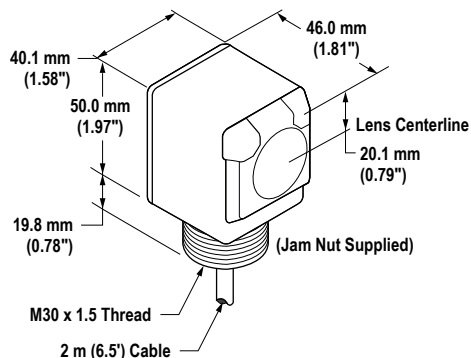
Supply wiring leads < 24 AWG shall not be spliced.

For additional product support, go to [www.bannerengineering.com](http://www.bannerengineering.com).

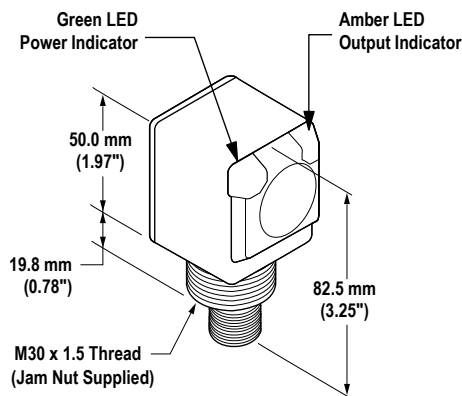
Supply Wiring (AWG)	Required Overcurrent Protection (Amps)
20	5.0
22	3.0
24	2.0
26	1.0
28	0.8
30	0.5

## Dimensions

### Cabled Models



### QD Models



All measurements are listed in millimeters [inches], unless noted otherwise.