

WORLD-BEAM® QS18 Series Sensor



Quick Start Guide

Miniature Self-Contained Photoelectric Sensors In Universal-Mount Housing

This guide is designed to help you set up and install the WORLD-BEAM® QS18. For complete information on programming, performance, troubleshooting, dimensions, and accessories, please refer to the Instruction Manual at www.bannerengineering.com. Search for p/n 197052 to view the Instruction Manual. Use of this document assumes familiarity with pertinent industry standards and practices.

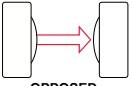
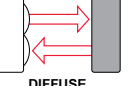
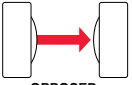
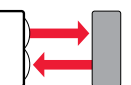
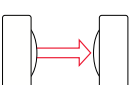
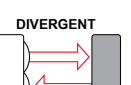



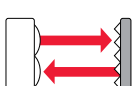

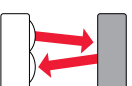

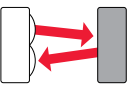
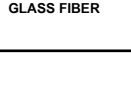


WARNING: Not To Be Used for Personnel Protection

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

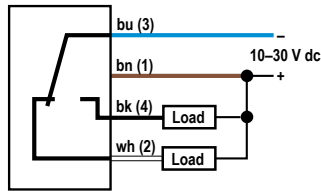
| Model ¹ | Sensing Mode | | Output Type | Model ¹ | Sensing Mode | | Output Type |
|--------------------|---|--------------------------------------|-------------|--------------------|---|---|-------------|
| QS186E |  | 20 m (66 ft) Opposed | Emitter | QS18VN6DB |  | 450 mm (18 in) Diffuse | NPN |
| QS186EV | | | NPN | QS18VP6DB | | | PNP |
| QS18VN6R | | | | QS18VN6DL | | | NPN |
| QS18VP6R |  | | PNP | QS18VP6DL |  | 600 mm (23.6 in) Diffuse | PNP |
| QS186EB |  | 3 m (10 ft) Opposed | Emitter | QS18VN6DVS |  | 250 mm (10 in) Diffuse Visible red | NPN |
| QS18VN6RB | | | NPN | QS18VP6DVS | | | PNP |
| QS18VP6RB | | | PNP | QS18VN6W |  | 100 mm (4 in) Divergent Diffuse | NPN |
| QS18VN6LP |  | 3.5 m (12 ft) Polarized Retro | NPN | QS18VP6W | | | PNP |
| QS18VP6LP | | | PNP | QS18VN6FF50 |  | 50 mm (2 in) Fixed-Field | NPN |
| QS18VN6LV | | | NPN | QS18VP6FF50 | | 100 mm (4 in) Fixed-Field | PNP |
| QS18VP6LV |  | 6.5 m (21 ft) Non-Polarized Retro | PNP | QS18VN6FF100 | | 125 mm (5 in) Fixed-Field | NPN |
| QS18VN6CV15 | | | NPN | QS18VP6FF100 |  | 150 mm (6 in) Fixed-Field | PNP |
| QS18VP6CV15 | | | PNP | QS18VN6FF125 | | 220 mm (8.7 in) Individual (Opposed) 60 mm (2.4 in) Bifurcated (Diffuse) | NPN |
| QS18VN6CV45 |  | 16 mm (0.63 in) Convergent | NPN | QS18VP6FF125 | | Range specified using 1.5 mm plastic fiber optics | PNP |
| QS18VP6CV45 | | | PNP | QS18VN6FF150 |  | 500 mm (20 in) Individual (Opposed) 38 mm (1.5 in) Bifurcated (Diffuse) | NPN |
| QS18VN6D | | | NPN | QS18VP6FF150 | | Range specified using 3.2 mm plastic fiber optics | PNP |
| QS18VP6D |  | 450 mm (18 in) Diffuse | PNP | QS18VN6FP |  | | NPN |
| | | | | QS18VP6FP | | | PNP |
| | | | | QS18VN6F | | | NPN |
| | | | | QS18VP6F | | | PNP |

¹ Integral 2 m (6.5 ft) unterminated cable models are listed.

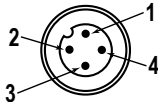
- To order the 9 m (30 ft) PVC cable model, add the suffix "W/30" to the cabled model number. For example, QS186E W/30.
- To order the 4-pin M12/Euro-style integral quick disconnect model, add the suffix "Q8" to the model number. For example, QS186EQ8.
- To order the 150 mm (6 in) PVC cable model with a 4-pin M12/Euro-style quick disconnect, add the suffix "Q5" to the model number. For example, QS186EQ5.
- To order the 4-pin M8/Pico-style integral quick disconnect model, add the suffix "Q7" to the model number. For example, QS186EQ7.
- To order the 150 mm (6 in) PVC cable model with a 4-pin M8/Pico-style quick disconnect, add the suffix "Q" to the model number. For example, QS186EQ.

Wiring Diagrams

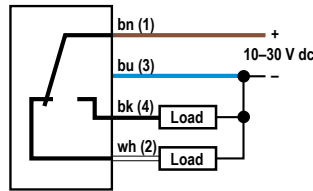
QS18 with NPN Outputs



4-pin M12/Euro-style Models (Male)



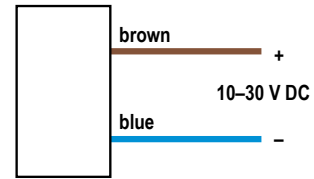
QS18 with PNP Outputs



4-pin M8/Pico-style Models (Male)



QS18 Emitters



Key

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

Specifications

Supply Voltage

10 V dc to 30 V dc (10% maximum ripple) at less than 25 mA, exclusive of load
Protected against reverse polarity and transient voltages

Light Source

Glass Fiber Optic, Opposed and Diffuse mode models: Infrared, 940 nm
Plastic Fiber Optic, Retroreflective, Convergent models: Visible red, 660 nm
Fixed-Field and DVS models: Visible red, 630 nm

Adjustments

Glass Fiber Optic, Plastic Fiber Optic, Convergent, Diffuse, and Retroreflective mode models (only): Single-turn sensitivity (Gain) adjustment potentiometer

Indicators

2 LED indicators on sensor top
Green: Power on
Amber: Light sensed
Amber flashing: Marginal excess gain (1 to 1.5 times excess gain)

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.

| 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 |

Repeatability

Opposed Mode: 100 microseconds
DVS, DL and FF Modes: 90 microseconds
All Other Modes: 150 microseconds

Output Configuration

Solid-state complementary (SPDT): NPN or PNP (current sinking or sourcing), depending on model;

Rating: 100 mA maximum each output at 25 °C

DVS, DL and FF Modes ON-state Saturation Voltage: less than 1.5 V at 10 mA; less than 3 V at 100 mA

All Other Modes: ON-state Saturation Voltage: less than 1 V at 10 mA; less than 1.5 V at 100 mA

Protected against false pulse on power-up and continuous overload or short circuit of outputs

Output Response

Opposed Mode: 750 microseconds ON; 375 microseconds OFF

DVS, FF and DL Modes: 850 microseconds ON/OFF

All Other Modes: 600 microseconds ON/OFF

100 millisecond delay on power-up; outputs do not conduct during this time

Construction

ABS housing

3 mm mounting hardware included

Connections

2 m (6.5 ft) 4-wire PVC cable; 9 m (30 ft) 4-wire PVC cable; 4-pin M8/Pico-style or M12/Euro-style QD; or 150 mm (6 in) cable with a 4-pin M8/Pico-style or M12/Euro-style QD, depending on model

Environmental

IEC IP67; NEMA 6

Operating Conditions

-20 °C to +70 °C (-4 °F to +158 °F)

95% at +50 °C maximum relative humidity (non-condensing)

Vibration and Mechanical Shock

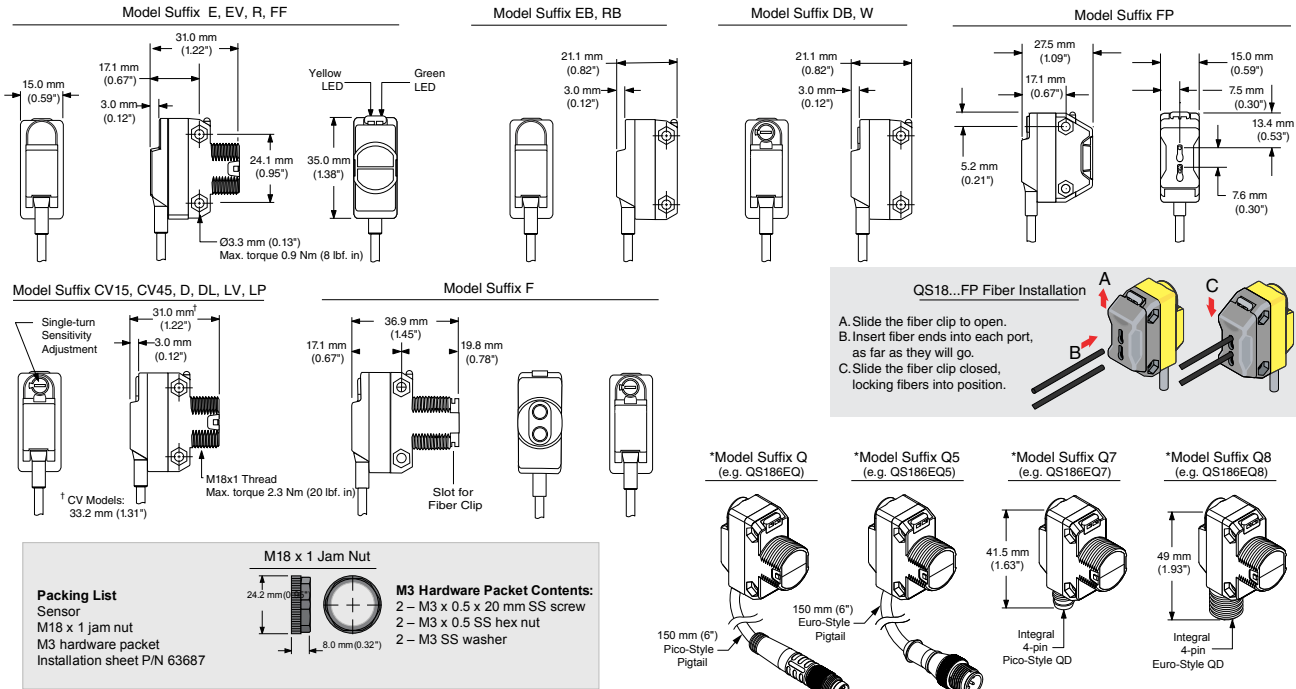
All models meet MIL-STD-202F, Method 201A (Vibration: 10 Hz to 60 Hz maximum, 0.06 inch (1.52 mm) double amplitude, 10G maximum acceleration) requirements. Also meets IEC 60947-5-2 (Shock: 30G 11 ms duration, half sine wave) requirements.



Note: For performance specifications of the FF50 and FF100 models built prior to date code 17090, refer to document p/n [63908](#).

Dimensions

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



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[QS18VN6FF100Q5](#) [QS18VN6FF100Q7](#) [QS18VN6FF100Q8](#) [QS18VN6FF150](#) [QS18VN6FF150 W/30](#)
[QS18VN6FF150Q](#) [QS18VN6FF150Q5](#) [QS18VN6FF150Q7](#) [QS18VN6FF150Q8](#) [QS18VN6FF50 W/30](#)
[QS18VN6FF50Q](#) [QS18VN6FF50Q5](#) [QS18VN6FF50Q7](#) [QS18VN6FF50Q8](#) [QS18VN6FP](#) [QS18VN6FPQ](#)
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[QS18VN6LPQ7](#)