

## 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](http://www.bannerengineering.com). Search for p/n 63908 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 <sup>1</sup>	Sensing Mode	Output Type
QS186E	20 m (66 ft) Opposed	Emitter
QS186EV		NPN
QS18VN6R		PNP
QS18VP6R		PNP
QS186EB	3 m (10 ft) Opposed	Emitter
QS18VN6RB		NPN
QS18VP6RB		PNP
QS18VN6LP	3.5 m (12 ft) Polarized Retro	NPN
QS18VP6LP		PNP
QS18VN6LV	6.5 m (21 ft) Non-Polarized Retro	NPN
QS18VP6LV		PNP
QS18VN6CV15	16 mm (0.63 in) Convergent	NPN
QS18VP6CV15		PNP
QS18VN6CV45	43 mm (1.7 in) Convergent	NPN
QS18VP6CV45		PNP
QS18VN6D	450 mm (18 in) Diffuse	NPN
QS18VP6D		PNP

Model <sup>1</sup>	Sensing Mode	Output Type
QS18VN6DB	450 mm (18 in) Diffuse	NPN
QS18VP6DB		PNP
QS18VN6DL	600 mm (24 in) Diffuse	NPN
QS18VP6DL		PNP
QS18VN6W	100 mm (4 in) Divergent Diffuse	NPN
QS18VP6W		PNP
QS18VN6FF50	50 mm (2 in) Fixed-Field	NPN
QS18VP6FF50		PNP
QS18VN6FF100	100 mm (4 in) Fixed-Field	NPN
QS18VP6FF100		PNP
QS18VN6FP	220 mm (8.7 in) Individual (Opposed) 60 mm (2.4 in) Bifurcated (Diffuse) Range specified using 1.5 mm plastic fiber optics	NPN
QS18VP6FP		PNP
QS18VN6F	500 mm (20 in) Individual (Opposed) 38 mm (1.5 in) Bifurcated ( Diffuse) Range specified using 3.2 mm plastic fiber optics	NPN
QS18VP6F		PNP

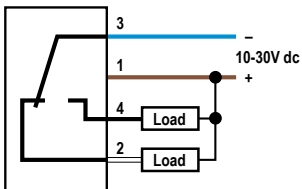
<sup>1</sup> 2 m (6.5 ft) cable models are listed.

- To order the 9 m (30 ft) 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.

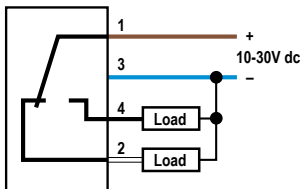


# Wiring Diagrams

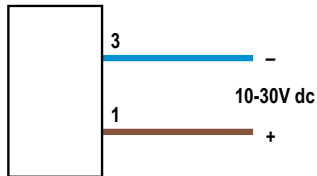
QS18 with NPN (Sinking) Outputs



QS18 with PNP (Sourcing) Outputs



QS18 Emitters



Key

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

Quick disconnect (QD) wiring diagrams are functionally identical.

# Specifications

**Supply Voltage**

10 V 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 and FF mode models: Visible red, 660 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 solid: Power on
- Amber solid: Light sensed
- Green flashing: Output overloaded
- Amber flashing: Marginal excess gain (1 to 1.5 times excess gain)



NOTE: Prior to date code 0223, the output indicator was red.

**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

**Repeatability**

- Opposed Mode: 100 microseconds
- FF Mode: 160 microseconds
- DL Mode: 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  
DL Mode 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  
FF and DL Modes: 850 microseconds ON/OFF  
All Other Modes: 600 microseconds ON/OFF  
Note: 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 Pico-style or Euro-style QD, 4-pin Pico-style or Euro-style 150 mm (6 in) QD, depending on model

**Environmental**

IEC IP67; NEMA 6

**Operating Conditions**

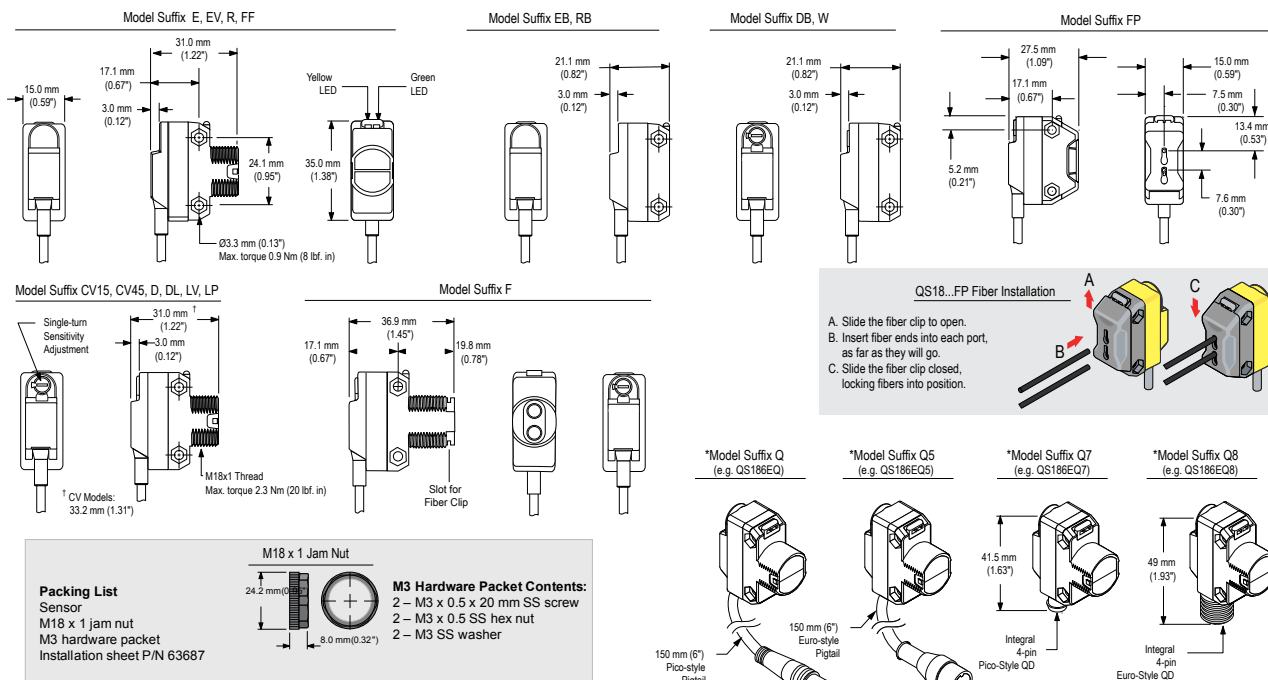
Temperature: -20 °C to 70 °C (-4 °F to 158 °F)  
Relative Humidity: 95% at +50 °C maximum relative humidity (non-condensing)

**Certifications**



## Dimensions

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



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