

## 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 197052 to view the Instruction Manual. Use of this document assumes familiarity with pertinent industry standards and practices.

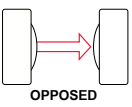
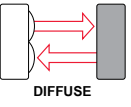
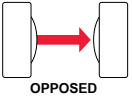
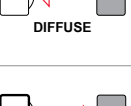
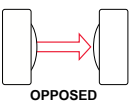
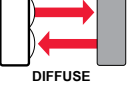

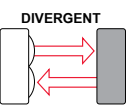
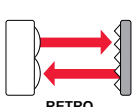
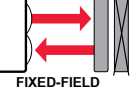
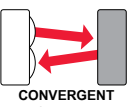
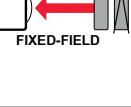
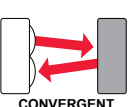

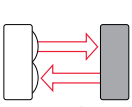
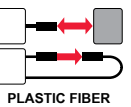
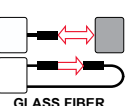


#### **WARNING: Not To Be Used for Personnel Protection**

**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

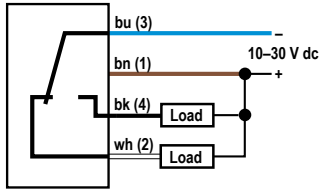
Model <sup>1</sup>	Sensing Mode	Output Type	Model <sup>1</sup>	Sensing Mode	Output Type
QS186E	 20 m (66 ft) Opposed	Emitter	QS18VN6DB	 450 mm (18 in) Diffuse	NPN
QS186EV		NPN	QS18VP6DB		PNP
QS18VN6R		NPN	QS18VN6DL		NPN
QS18VP6R	 20 m (66 ft) Opposed	PNP	QS18VP6DL	 600 mm (23.6 in) Diffuse	PNP
QS186EB	 3 m (10 ft) Opposed	Emitter	QS18VN6DVS	 250 mm (10 in) Diffuse Visible red	NPN
QS18VN6RB		NPN	QS18VP6DVS		PNP
QS18VP6RB		PNP	QS18VN6W		NPN
QS18VN6LP	 3.5 m (12 ft) Polarized Retro	NPN	QS18VP6W	 100 mm (4 in) Divergent Diffuse	PNP
QS18VP6LP		PNP	QS18VN6FF50		NPN
QS18VN6LV		NPN	QS18VP6FF50		PNP
QS18VP6LV	 6.5 m (21 ft) Non-Polarized Retro	PNP	QS18VN6FF100	 100 mm (4 in) Fixed-Field	NPN
QS18VN6CV15	NPN	QS18VP6FF100	PNP		
QS18VP6CV15	 16 mm (0.63 in) Convergent	PNP	QS18VP6FF125		 125 mm (5 in) Fixed-Field
QS18VN6CV45	NPN	QS18VN6FF150	NPN		
QS18VP6CV45	 43 mm (1.7 in) Convergent	PNP	QS18VP6FF150	 150 mm (6 in) Fixed-Field	PNP
QS18VN6D	 450 mm (18 in) Diffuse	NPN	QS18VN6FP	 220 mm (8.7 in) Individual (Opposed) 60 mm (2.4 in) Bifurcated (Diffuse) Range specified using 1.5 mm plastic fiber optics	PNP
QS18VP6D		PNP	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> Integral 2 m (6.5 ft) unterminated cable models are listed.

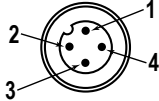
- To order the 9 m (30 ft) PVC cable model, add the suffix "W/30" to the cabled model number. For example, QS186E W/30.
- To order the 4-pin M12/Euro-style integral quick disconnect model, add the suffix "Q8" to the model number. For example, QS186EQ8.
- To order the 150 mm (6 in) PVC cable model with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

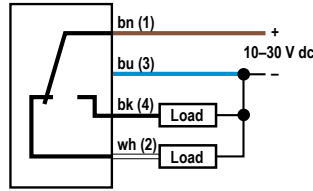
QS18 with NPN Outputs



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



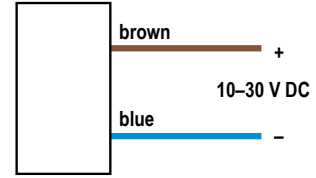
QS18 with PNP Outputs



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](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  
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**

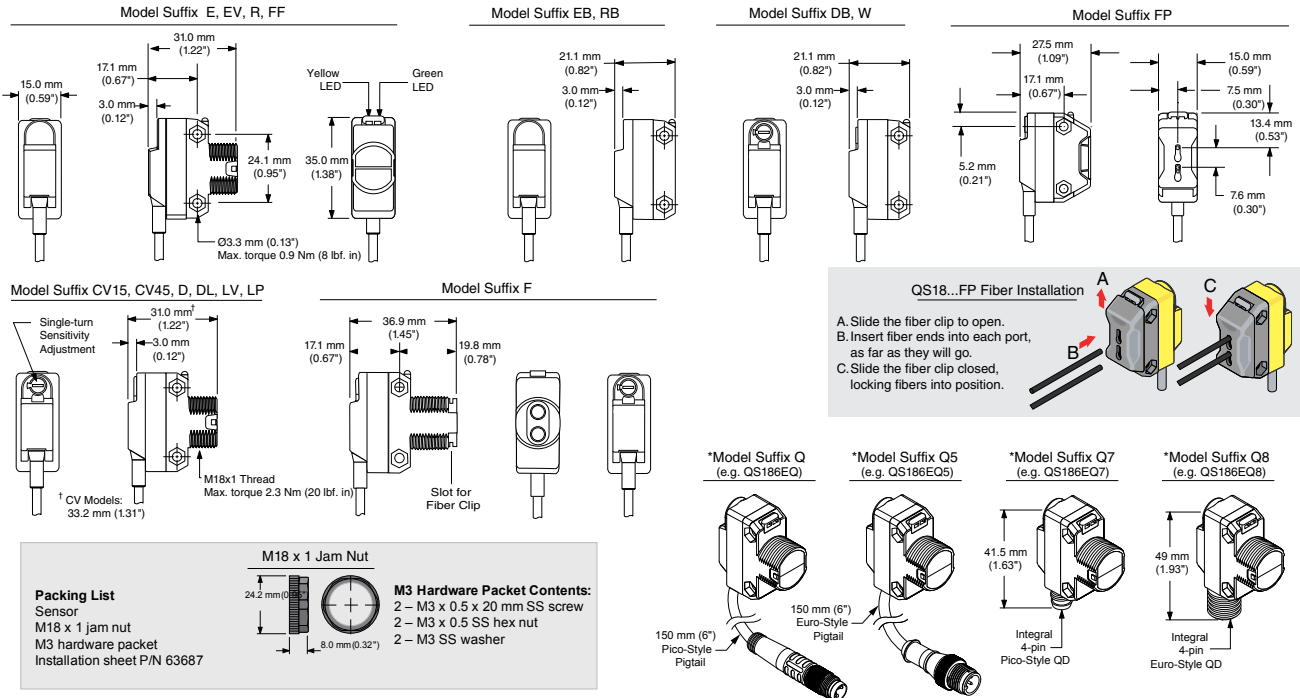
All models meet MIL-STD-202F, Method 201A (Vibration: 10 Hz to 60 Hz maximum, 0.06 inch (1.52 mm) double amplitude, 10G maximum acceleration) requirements. Also meets IEC 60947-5-2 (Shock: 30G 11 ms duration, half sine wave) requirements.



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

## Dimensions

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



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