

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.

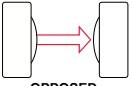
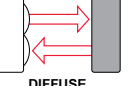
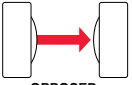
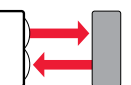
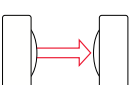
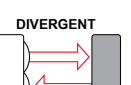



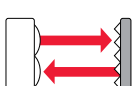

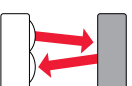

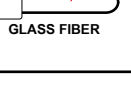
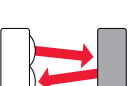
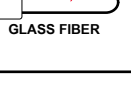


WARNING: Not To Be Used for Personnel Protection

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

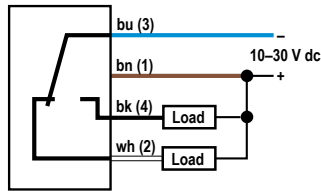
Model ¹	Sensing Mode		Output Type	Model ¹	Sensing Mode		Output Type
QS186E		20 m (66 ft) Opposed	Emitter	QS18VN6DB		450 mm (18 in) Diffuse	NPN
QS186EV			NPN	QS18VP6DB			PNP
QS18VN6R				QS18VN6DL			NPN
QS18VP6R			PNP	QS18VP6DL		600 mm (23.6 in) Diffuse	PNP
QS186EB		3 m (10 ft) Opposed	Emitter	QS18VN6DVS		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				QS18VP6FF50			PNP
QS18VP6LV		6.5 m (21 ft) Non-Polarized Retro	NPN	QS18VN6FF100		100 mm (4 in) Fixed-Field	NPN
QS18VP6LV			PNP	QS18VP6FF100			PNP
QS18VN6CV15				QS18VP6FF125		125 mm (5 in) Fixed-Field	PNP
QS18VP6CV15		16 mm (0.63 in) Convergent	NPN	QS18VN6FF150		150 mm (6 in) Fixed-Field	NPN
QS18VP6CV15			PNP	QS18VP6FF150			PNP
QS18VN6CV45				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
QS18VP6CV45		43 mm (1.7 in) Convergent	NPN	QS18VP6FP			PNP
QS18VN6D				QS18VN6F		500 mm (20 in) Individual (Opposed) 38 mm (1.5 in) Bifurcated (Diffuse) Range specified using 3.2 mm plastic fiber optics	NPN
QS18VP6D			PNP	QS18VP6F			PNP

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

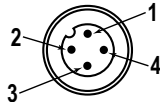
- To order the 9 m (30 ft) PVC cable model, add the suffix "W/30" to the cabled model number. For example, QS186E W/30.
- To order the 4-pin M12/Euro-style integral quick disconnect model, add the suffix "Q8" to the model number. For example, QS186EQ8.
- To order the 150 mm (6 in) PVC cable model with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

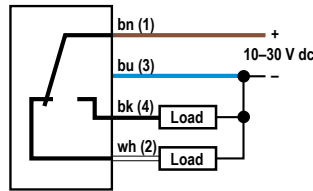
QS18 with NPN Outputs



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



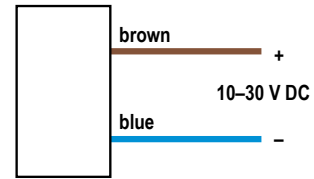
QS18 with PNP Outputs



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

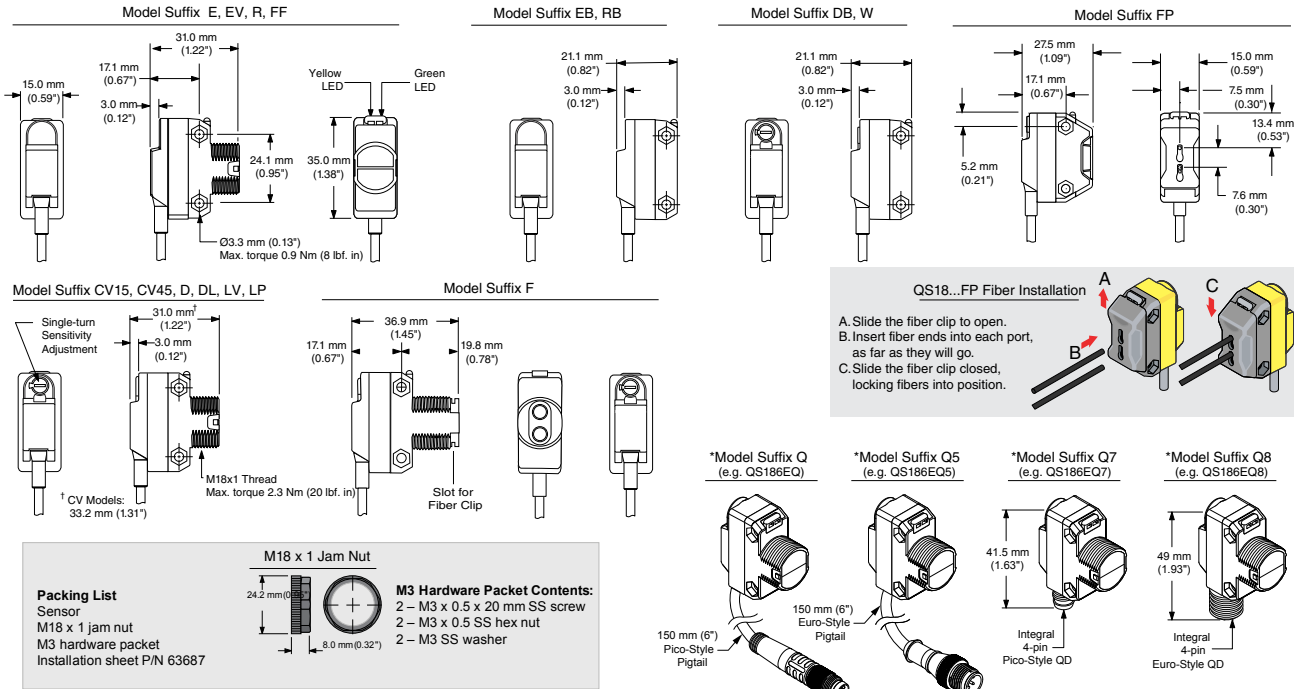
All models meet MIL-STD-202F, Method 201A (Vibration: 10 Hz to 60 Hz maximum, 0.06 inch (1.52 mm) double amplitude, 10G maximum acceleration) requirements. Also meets IEC 60947-5-2 (Shock: 30G 11 ms duration, half sine wave) requirements.



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.



Banner Engineering Corp. Limited Warranty

Banner Engineering Corp. warrants its products to be free from defects in material and workmanship for one year following the date of shipment. Banner Engineering Corp. will repair or replace, free of charge, any product of its manufacture which, at the time it is returned to the factory, is found to have been defective during the warranty period. This warranty does not cover damage or liability for misuse, abuse, or the improper application or installation of the Banner product.

THIS LIMITED WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED (INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE), AND WHETHER ARISING UNDER COURSE OF PERFORMANCE, COURSE OF DEALING OR TRADE USAGE.

This Warranty is exclusive and limited to repair or, at the discretion of Banner Engineering Corp., replacement. **IN NO EVENT SHALL BANNER ENGINEERING CORP. BE LIABLE TO BUYER OR ANY OTHER PERSON OR ENTITY FOR ANY EXTRA COSTS, EXPENSES, LOSSES, LOSS OF PROFITS, OR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES RESULTING FROM ANY PRODUCT DEFECT OR FROM THE USE OR INABILITY TO USE THE PRODUCT, WHETHER ARISING IN CONTRACT OR WARRANTY, STATUTE, TORT, STRICT LIABILITY, NEGLIGENCE, OR OTHERWISE.**

Banner Engineering Corp. reserves the right to change, modify or improve the design of the product without assuming any obligations or liabilities relating to any product previously manufactured by Banner Engineering Corp. Any misuse, abuse, or improper application or installation of this product or use of the product for personal protection applications when the product is identified as not intended for such purposes will void the product warranty. Any modifications to this product without prior express approval by Banner Engineering Corp will void the product warranties. All specifications published in this document are subject to change; Banner reserves the right to modify product specifications or update documentation at any time. Specifications and product information in English supersede that which is provided in any other language. For the most recent version of any documentation, refer to:

www.bannerengineering.com.

For patent information, see www.bannerengineering.com/patents.