WORLD-BEAM® QS18

Quick Start Guide

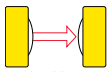
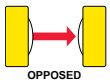
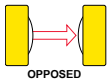
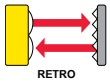
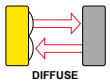
Miniature Self-Contained Photoelectric Sensors In Universal-Mount Housing

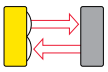
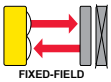
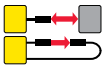
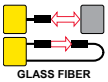
This guide is designed to help you set up and install the WORLD-BEAM® QS18. For complete information on programming, performance, troubleshooting, dimensions, and accessories, please refer to the Instruction Manual at *www.bannerengineering.com*. Search for p/n 63908 to view the Instruction Manual. Use 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[1]	Sensing Mode		Output Type
QS186E	20 m (66 ft) Opposed		Emitter
QS186EV			
QS18VN6R			NPN
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

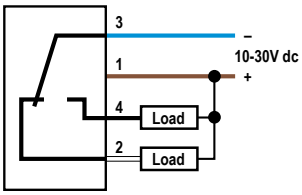
Model[1]	Sensing Mode		Output Type
QS18VN6DB	450 mm (18 in) Diffuse		NPN
QS18VP6DB			PNP
QS18VN6DL	600 nm (24 in) Diffuse		NPN
QS18VP6DL			PNP
QS18VN6W	100 mm (4 in) Divergent Diffuse		NPN
QS18VP6W			PNP
QS18VN6FF50	50 mm (2 in) Fixed-Field		NPN
QS18VP6FF50			PNP
QS18VN6FF100	100 mm (4 in) Fixed-Field		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

[1] 2 m (6.5 ft) cable models are listed.

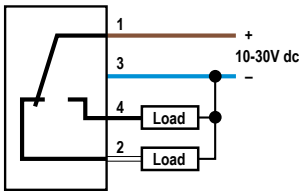
- To order the 9 m (30 ft) cable model, add the suffix "W/30" to the cabled model number. For example, QS186E W/30.
- To order the 4-pin M12/Euro-style integral quick disconnect model, add the suffix "Q8" to the model number. For example, QS186EQ8.
- To order the 150 mm (6 in) PVC cable model with a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

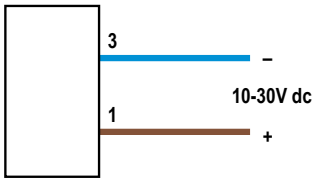
QS18 with NPN (Sinking) Outputs



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*.

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

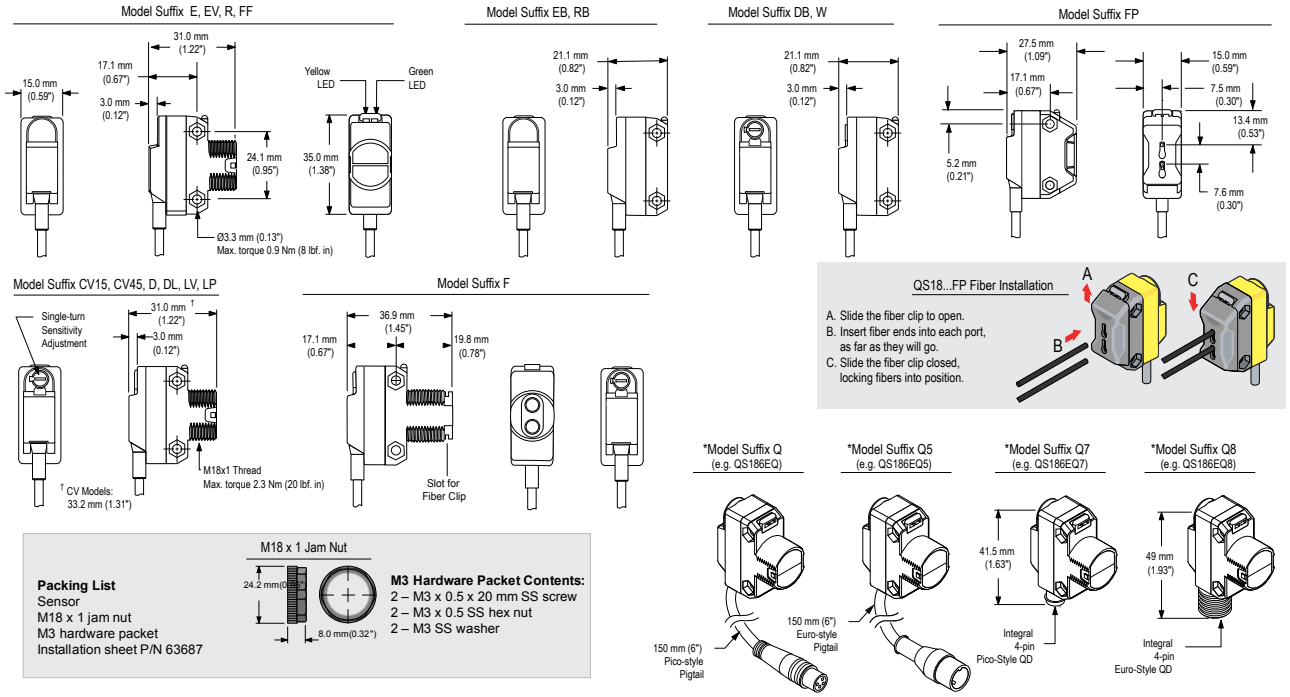
Environmental
IEC IP67; NEMA 6

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.



Packing List
Sensor
M18 x 1 jam nut
M3 hardware packet
Installation sheet P/N 63687

M3 Hardware Packet Contents:
2 – M3 x 0.5 x 20 mm SS screw
2 – M3 x 0.5 SS hex nut
2 – M3 SS washer

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.