

# 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<sup>®</sup> 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

		Output Type	Model <sup>1</sup>	Sensing Mo	DOB	Output Type
		E-111	QS18VN6DB	450 mm (18 in)		NPN
20 m (66 ft) Opposed		Emitter	QS18VP6DB	Diffuse	DIFFUSE	PNP
		NPN	QS18VN6DL	600 mm (23.6 in) Diffuse		NPN
QS18VP6R		PNP	QS18VP6DL			PNP
			QS18VN6DVS			NPN
3 m (10 ft) Opposed		Emitter	QS18VP6DVS	250 mm (10 in) Diffuse Visible red	DIFFUSE	PNP
		NPN				
	OPPOSED	PNP	QS18VN6W	100 mm (4 in) Divergent Diffuse		NPN
2.5 m (10.ft)	etro	NPN	QS18VP6W			PNP
Polarized Retro		PNP	QS18VN6FF50	50 mm (2 in) Fixed-Field	Fixed-Field	NPN
		NPN	QS18VP6FF50			PNP
6.5 m (21 ft) Non-Polarized Retro			QS18VN6FF100	100 mm (4 in) Fixed-Field		NPN
	RETRO	PNP	QS18VP6FF100			PNP
5 16 mm (0.63 in) Convergent Convergent		NPN QS18VN6FF150	150 mm (6 in)		NPN	
		21/2	QS18VP6FF150	Fixed-Field		PNP
	CONVERGENT VISIBLE RED	PNP	QS18VN6FP	220 mm (8.7 in) Individual (Opposed) 60 mm (2.4 in) Biturcated (Diffuse)		NPN
		NPN				
43 mm (1.7 in) Convergent	PNP	QS18VP6FP	Range specified using 1.5 mm plastic fiber optics	PLASTIC FIBER	PNP	
	450 mm (18 in) Diffuse	NPN	QS18VN6F	500 mm (20 in) Individual (Opposed) 38 mm (1.5 in) Bifurcated ( Diffuse) Bange specified using 3.2		NPN
		PNP	QS18VP6F			PNP
	Opposed 3 m (10 ft) Opposed 3.5 m (12 ft) Polarized Retro 6.5 m (21 ft) Non-Polarized Retro 16 mm (0.63 in) Convergent 43 mm (1.7 in) Convergent 450 mm (18 in)	Opposed Image: Convergent   3 m (10 ft) Image: Convergent   3 m (10 ft) Image: Convergent   3.5 m (12 ft) Image: Convergent   Polarized Retro Image: Convergent   6.5 m (21 ft) Image: Convergent   16 mm (0.63 in) Image: Convergent   43 mm (1.7 in) Image: Convergent   450 mm (18 in) Image: Convergent	Opposed Image: Convergent of the con	20 m (66 ft) Opposed OPPOSED NPN QS18VN6DL   20 m (66 ft) Opposed OPPOSED PNP QS18VN6DL   3 m (10 ft) Opposed OPPOSED PNP QS18VN6DVS   3 m (10 ft) Opposed OPPOSED Emitter QS18VN6DVS   3.5 m (12 ft) Polarized Retro PNP QS18VN6FF50   3.5 m (12 ft) Polarized Retro PNP QS18VN6FF50   6.5 m (21 ft) Non-Polarized Retro NPN QS18VN6FF50   16 mm (0.63 in) Convergent Opposed NPN   43 mm (1.7 in) Convergent Opposed NPN   450 mm (18 in) Diffuse NPN NPN	20 m (66 ft) Opposed OPPOSED NPN QS18VN6DL 600 mm (23.6 in) Diffuse   3 m (10 ft) Opposed OPPOSED PNP QS18VP6DVS 250 mm (10 in) Diffuse   3 m (10 ft) Opposed OPPOSED PNP QS18VP6DVS 250 mm (10 in) Diffuse   3.5 m (12 ft) Polarized Retro PNP NPN QS18VP6DVS 100 mm (4 in) Divergent Diffuse   6.5 m (21 ft) Non-Polarized Retro PNP NPN QS18VP6FF50 50 mm (2 in) Fixed-Field   16 mm (0.63 in) Convergent Operation NPN QS18VN6FF150 100 mm (4 in) Fixed-Field   43 mm (1.7 in) Convergent Operation NPN QS18VN6FF 150 mm (6 in) Fixed-Field   430 mm (18 in) Diffuse Operation NPN QS18VN6FF 220 mm (8.7 in) Individual (Opposed) 60 mm (2.4 in) Bifurcated (Diffuse)   450 mm (18 in) Diffuse NPN NPN QS18VN6F 200 mm (2.1 in) Bifurcated (Diffuse)   450 mm (18 in) Diffuse NPN NPN QS18VN6F S00 mm (2.0 in) Individual (Opposed) 38 mm (1.5 in)	20 m (66 ft) Opposed   opposed   NPN   S18VN6DL   600 mm (23.6 in) Diffuse   Diffuse     3 m (10 ft) Opposed   Image: Construction of the construct

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.



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### Wiring Diagrams



Quick disconnect 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 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 solid: Power on

Amber solid: Light sensed

Amber flashing: Marginal excess gain (1 to 1.5 times excess gain)

#### **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 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)

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



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

Certifications

### Dimensions

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



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