

WORLD-BEAM® QS18 Universal Voltage Sensors



Datasheet



- Easily fits or retrofits almost any mounting configuration
- Exceptional optical performance in a compact right-angle housing
- 20 to 140 V ac/dc or 20 to 270 V ac/dc operation with P-MOSFET or N-MOSFET output, depending on model (see Specifications)
- Bright LED operating status indicators, visible from 360°
- Rugged, sealed housing, protected circuitry, 1200 PSI washdown
- Versatile mounting: front- and base-mount (M18), side-mount, and retrofit brackets



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.

Model	Sensing Mode / LED		Sensing Range	Output Type ¹	
QS18WE	940 nm Infrared Effective Beam: 10 mm (0.4 in)		20 m (66 ft)	N/A (Emitter)	
QS18ANWR				L.O.	N-MOSFET (Sinking)
QS18RNWR				D.O.	
QS18APWR				L.O.	P-MOSFET (Sourcing)
QS18RPWR				D.O.	
QS18ANWLP	660 nm Visible Red		3.5 m (12 ft)	L.O.	N-MOSFET (Sinking)
QS18RNWLP				D.O.	
QS18APWLP				L.O.	P-MOSFET (Sourcing)
QS18RPWLP				D.O.	
QS18ANWLV	660 nm Visible Red		6.5 m (21 ft)	L.O.	N-MOSFET (Sinking)
QS18RNWLV				D.O.	
QS18APWLV				L.O.	P-MOSFET (Sourcing)
QS18RPWLV				D.O.	
QS18ANWDL	624 nm Visible Red		450 mm (18 in)	L.O.	N-MOSFET (Sinking)
QS18RNWDL				D.O.	
QS18APWDL				L.O.	P-MOSFET (Sourcing)
QS18RPWDL				D.O.	
QS18ANWDXL	850 nm Infrared		1 m (39 in)	L.O.	N-MOSFET (Sinking)
QS18RNWDXL				D.O.	
QS18APWDXL				L.O.	P-MOSFET (Sourcing)
QS18RPWDXL				D.O.	

Standard 2 m (6.5 ft) cable models are listed. To order the 9 m (30 ft) cable model, add suffix "W/30" to the cabled model number. (e.g., QS18WE W/30) QD models: To order models with a 150 mm (6 in) pigtail cable with 4-pin AC Micro-style QD, add suffix "Q2" to the model number (e.g., QS18WEQ2). A model with a QD connector requires an accessory mating cordset. 600 V cable models: Standard models are supplied with 300 V cable. For 600 V cable, add suffix "C1" to the model number (e.g., QS18WEC1).

¹ MOSFET: Metal oxide semiconductor field-effect transistor.



Specifications

Supply Voltage

P-MOSFET Models: 20 to 140 V ac/dc at less than 10 mA, exclusive of load

N-MOSFET Models: 20 to 270 V ac/dc at less than 10 mA, exclusive of load

Supply Protection Circuitry

Protected against reverse polarity and transient voltages

Output Configuration

Single Discrete Output, 100 mA load rating; N-MOSFET or P-MOSFET, depending on model number; Light Operate or Dark Operate, depending on model number

Output Rating

Rating: 100 mA with short circuit protection

Off-state leakage current: less than 400 μ A

ON-state saturation voltage: P-MOSFET: 2.75 V; N-MOSFET: 2.5 V

Output Protection Circuitry

Protected against output short-circuit and false pulse on power up.

Latching short-circuit protection; reset by cycling power.

Delay at power up; outputs do not conduct during this time: 100 ms max. dc, 300 ms max. ac

Output Response

Opposed mode: 16.6 ms (1 cycle at 60 Hz)

All other modes: 8.3 ms (1/2 cycle at 60 Hz)

Repeatability

1.5 ms

Indicators

2 LED indicators on sensor top:

Green solid: Power on

Green flashing: Sensor output short circuit

Amber solid: Light sensed

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

Adjustments

Diffuse, Retroreflective and Polarized Retroreflective models only: 1-turn potentiometer Sensitivity (Gain) adjustment

Construction

ABS housing, PMMA lens, Acetal Gain Adjuster

Connections

2 m (6.5 ft) 3-conductor, 22 AWG PVC cable (300 V ac), or 150 mm (6 in) pigtail PVC cable with 4-pin threaded Micro-style connector; "C1" suffix models: 2 m (6.5 ft) 3-conductor, 22 AWG PVC cable (600 V ac).

Environmental Rating

IEC IP67; NEMA 6; UL Type 1

1200 PSI washdown; NEMA ICS5, Annex F-2002 (PW12)

Operating Conditions

Relative Humidity: 95% @ 55 °C (non-condensing)

Temperature: Less than 140 V ac/dc: -25 °C to 70 °C (-13 °F to 158 °F) (N-MOSFET and P-MOSFET models)

140 V ac/dc or greater: -25 °C to 55 °C (-13 °F to 131 °F) (N-MOSFET models only)

Certifications

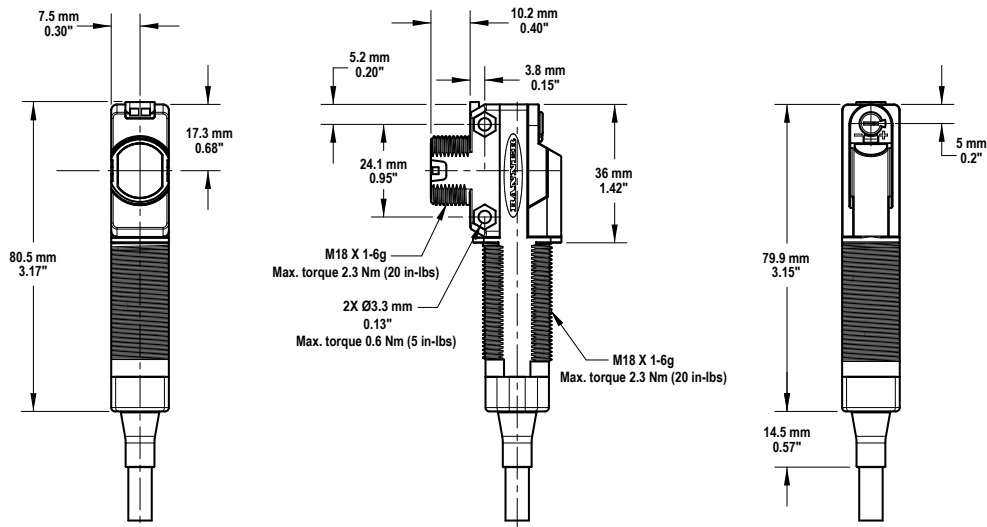


Indicators

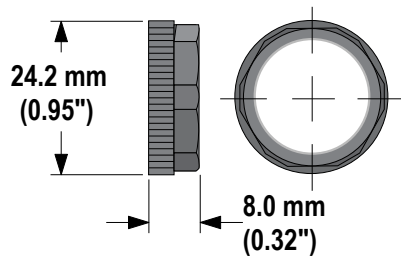


1. Green: Power Indicator
2. Amber: Output Indicator
3. Sensitivity (Gain) Potentiometer

Dimensions



All measurements are listed in millimeters (inches).



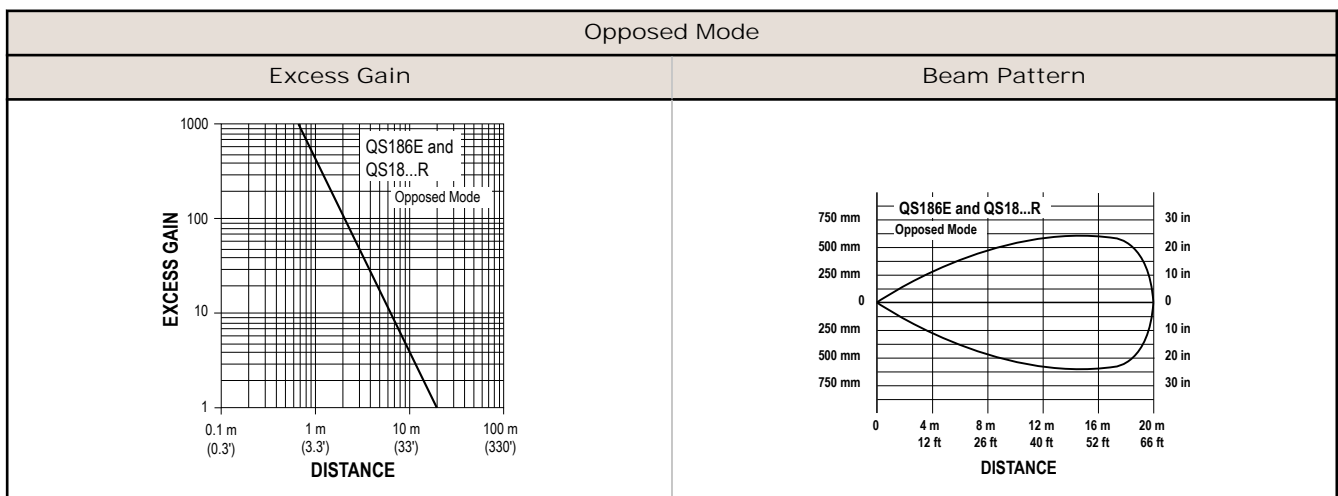
Packing List

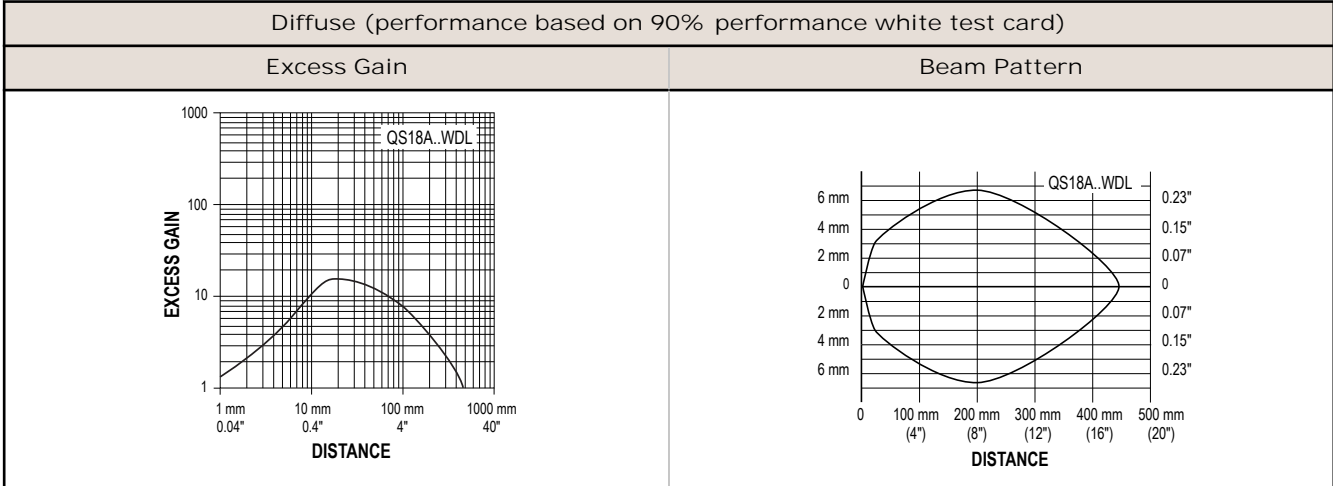
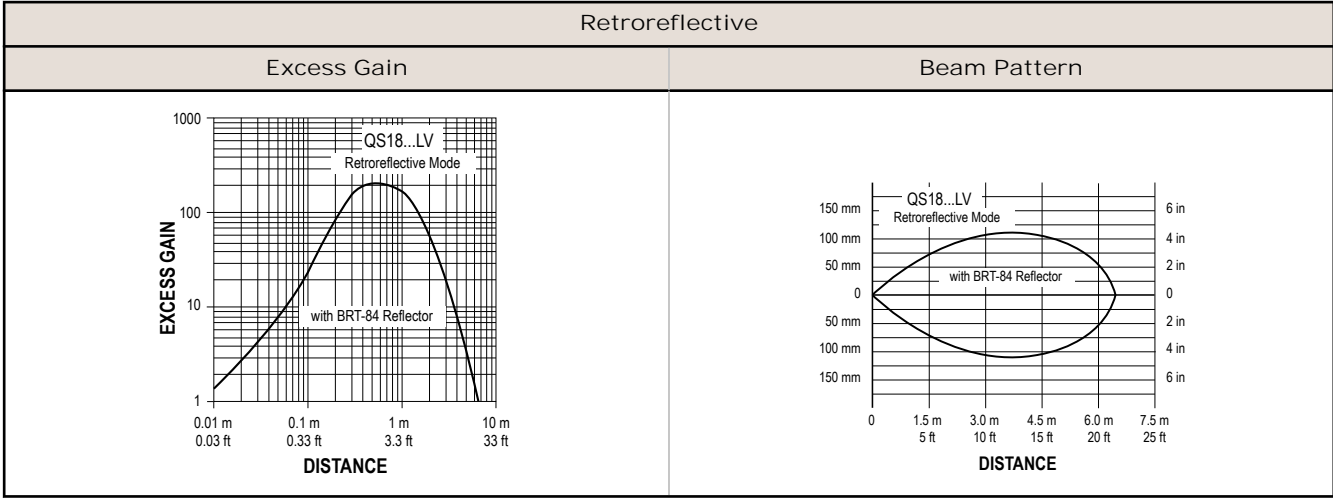
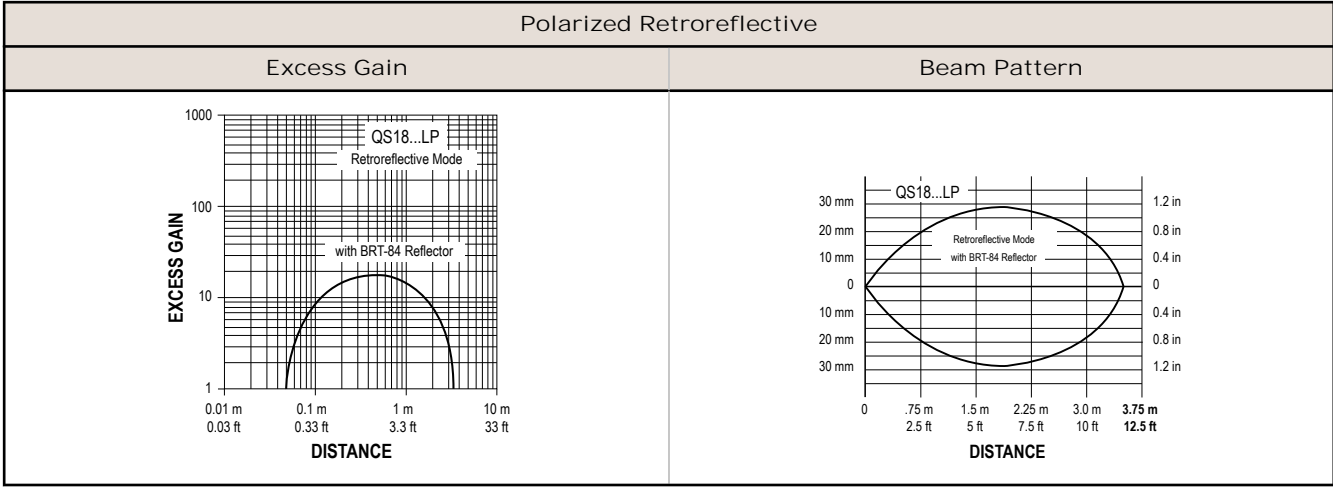
- Sensor
- M18 × 1 jam nut
- M3 hardware packet
- Datasheet

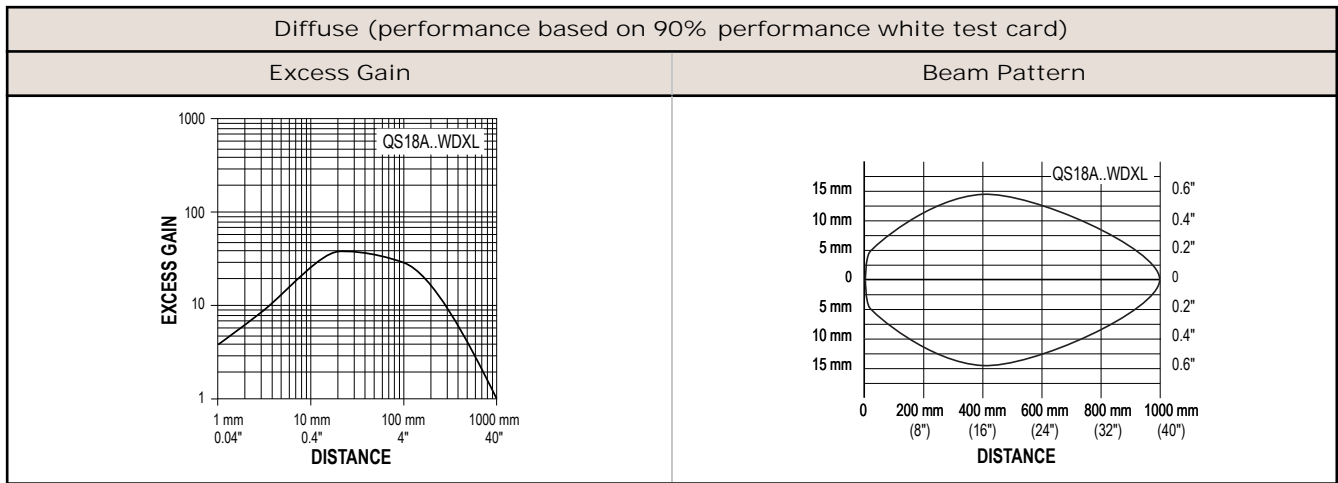
M3 Hardware Packet Contents

- 2 – M3 × 0.5 × 20 mm SS Screw
- 2 – M3 × 0.5 SS Hex Nut
- 2 – M3 SS Washer

Performance Curves







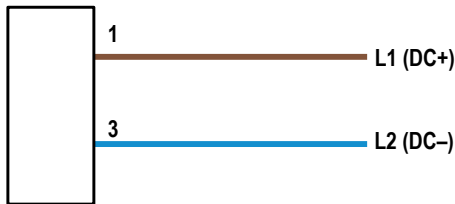
Wiring Diagrams

Cabled Models	Quick Disconnect (QD) Models
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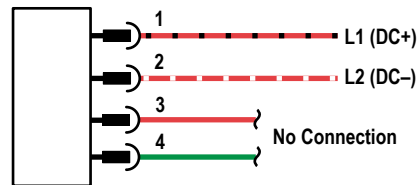
- 1 = Brown
- 3 = Blue
- 4 = Black (no connection for emitters)

- 1 = Red/Black
- 2 = Red/White
- 3 = Red (no connection for emitters)
- 4 = Green (no connection for emitters)

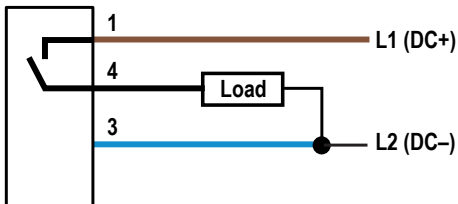
Emitter



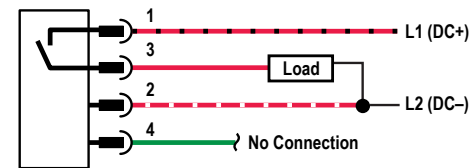
Emitter



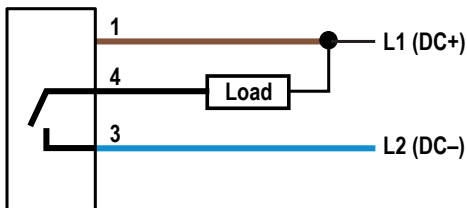
P-MOSFET



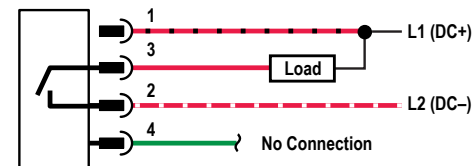
P-MOSFET



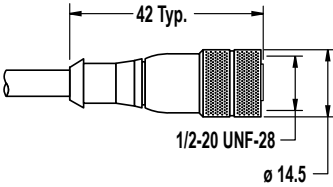
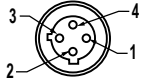
N-MOSFET

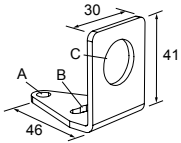



N-MOSFET

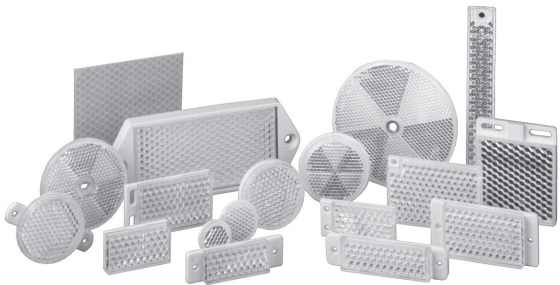


Accessories

4-Pin Micro-Style Cordsets				
Model	Length	Style	Dimensions	Pinout
MQAC-406	1.83 m (6 ft)	Straight		 <p>1 = Red/Black 2 = Red/White 3 = Red 4 = Green</p>
MQAC-415	4.57 m (15 ft)			
MQAC-430	9.14 m (30 ft)			

Mounting Brackets	
<p>SMB18A</p> <ul style="list-style-type: none"> Right-angle mounting bracket with a curved slot for versatile orientation 12-ga. stainless steel 18 mm sensor mounting hole Clearance for M4 (#8) hardware  <p>Hole center spacing: A to B = 24.2 Hole size: A = \varnothing 4.6, B = 17.0 x 4.6, C = \varnothing 18.5</p>	<p>SMBQS18WRS</p> <ul style="list-style-type: none"> Retrofit bracket for Universal voltage models; sensor base threads into bracket, bracket bolts to flat surface PBT construction Clearance for M3 or #6-32 hardware 
<p>Other sensor model shown with bracket above. Refer to your current Banner catalog for more mounting bracket options, including: SMB312S, SMB18SF, SMB3018SC, SMB18FA.</p>	

Retroflective Targets



See the Accessories section of your current Banner Photoelectric Sensors catalog for complete information.



NOTE: Polarized sensors require corner cube type retroflective targets only.

Apertures

Model	Description	Pieces	
Circular			
APQS18-020	0.5 mm dia.	6	
APQS18-040	1.0 mm dia.		
APQS18-100	2.5 mm dia.		
Horizontal Slot			
APQS18-020H	0.5 x 6.4 mm	6	
APQS18-040H	1.0 x 6.4 mm		
APQS18-100H	2.5 x 6.4 mm		
Vertical Slot			
APQS18-020V	0.5 x 12.7 mm	6	
APQS18-040V	1.0 x 12.7 mm		
APQS18-100V	2.5 x 12.7 mm		
Kit			
APQS18-DVHX2	2 of each aperture	18	

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