

Features and Models



- Easily fits or retrofits almost any mounting configuration
- Exceptional optical performance in a compact right-angle housing
- 20 V AC/DC to 140 V AC/DC or 20 V AC/DC 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:



- **Do not use this device for personnel protection**
- Using this device for personnel protection could result in serious injury or death.
- This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A device failure or malfunction can cause either an energized (on) or de-energized (off) output condition.

Model	Sensing Mode / LED		Sensing Range	Output Type ⁽¹⁾	
QS18WE	940 nm Infrared Effective Beam: 10 mm (0.4 in)	 OPPOSED	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	 POLAR RETRO	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	 RETRO	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	 DIFFUSE	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	 DIFFUSE	1 m (39 in)	L.O.	N-MOSFET (Sinking)
QS18RNWDXL				D.O.	
QS18APWDXL				L.O.	P-MOSFET (Sourcing)
QS18RPWDXL				D.O.	

The standard 2 m (6.5 ft) cable models are listed. To order the 9 m (30 ft) cable models, add the suffix "W/30" to the cabled model number. (for example, 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

⁽¹⁾ MOSFET: Metal oxide semiconductor field-effect transistor.

the model number (for example, 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 (for example, QS18WEC1).

In light operate (LO) mode, the output is ON when the target returns the same or more light to the sensor and OFF when the sensor detects less light than the configured/taught target. In **opposed and retroreflective sensing modes**, light operate is active when the beam is unblocked. In **diffuse, fixed field, and adjustable field sensor modes**, light operate is active when the target is present.

In dark operate (DO) mode, the output is ON when the target returns less light to the sensor than the configured target and OFF when the sensor detects more light than the configured/taught target. In **opposed and retroreflective sensing modes**, dark operate is active when the beam is blocked. In **diffuse, fixed field, and adjustable field sensor modes**, dark operate is active when the target is absent.

QS18W Indicators



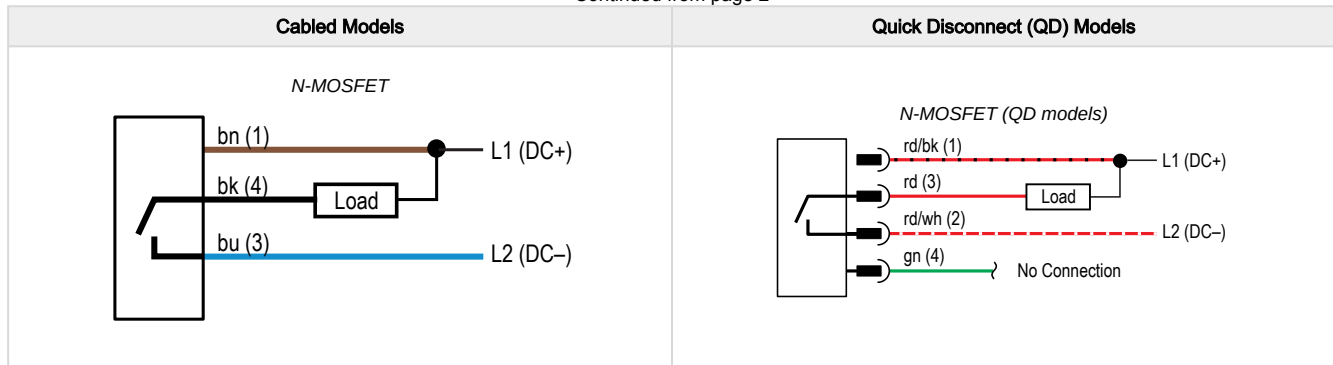
- 1. Green: Power Indicator
- 2. Amber: Output Indicator
- 3. Sensitivity (Gain) Potentiometer

Wiring Diagrams

Cabled Models	Quick Disconnect (QD) Models
<p>1 = Brown 3 = Blue 4 = Black (no connection for emitters)</p>	<p>1 = Red/Black 2 = Red/White 3 = Red (no connection for emitters) 4 = Green (no connection for emitters)</p>
<p><i>Emitter</i></p>	<p><i>Emitter (QD models)</i></p>
<p><i>P-MOSFET</i></p>	<p><i>P-MOSFET (QD models)</i></p>

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Specifications

Supply Voltage

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

N-MOSFET Models: 20 V /DC to 270 V /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 maximum DC, 300 ms maximum 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

Two 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, metal Gain Adjuster

Connections

2 m (6.5 ft) 3-conductor, 22 AWG PVC cable (300 V), or 150 mm (6 in) 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).

Environmental Rating

IEC IP67; NEMA 6; UL Type 1

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

Operating Conditions

Relative Humidity: 95% relative humidity at 55 °C (non-condensing)

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

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

Certifications



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GREAT BRITAIN



IND. CONT. EQ.

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 (A)	Supply Wiring (AWG)	Required Overcurrent Protection (A)
20	5.0	26	1.0
22	3.0	28	0.8
24	2.0	30	0.5

FCC Part 15 Class A for Unintentional Radiators

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

(Part 15.21) Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

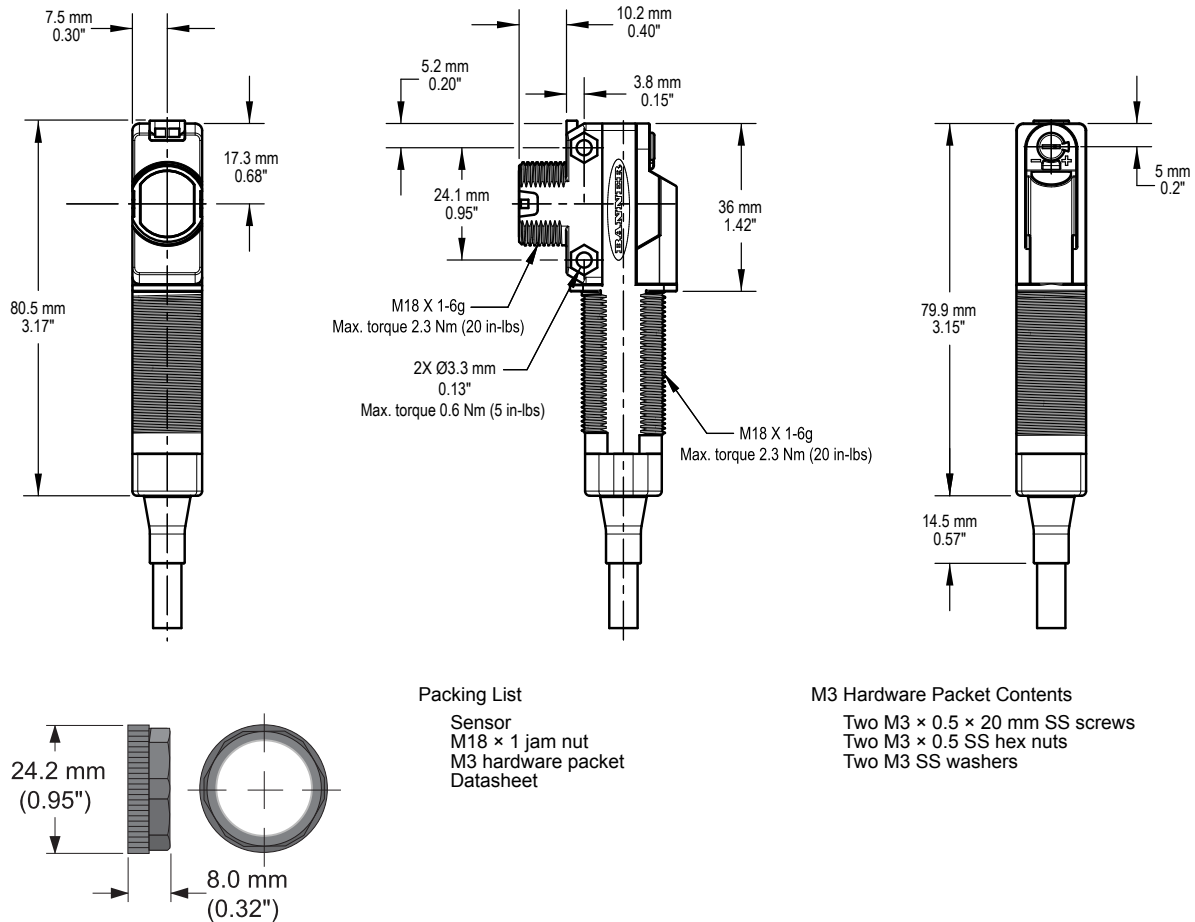
Industry Canada ICES-003(A)

This device complies with CAN ICES-3 (A)/NMB-3(A). Operation is subject to the following two conditions: 1) This device may not cause harmful interference; and 2) This device must accept any interference received, including interference that may cause undesired operation.

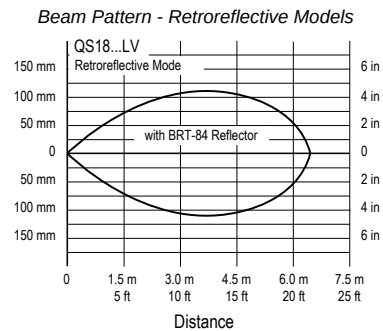
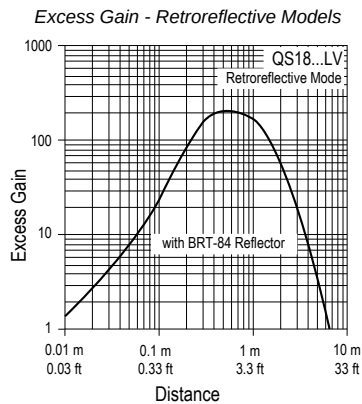
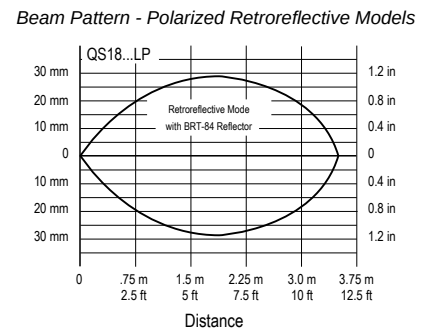
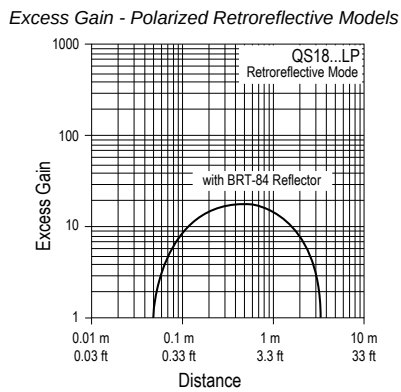
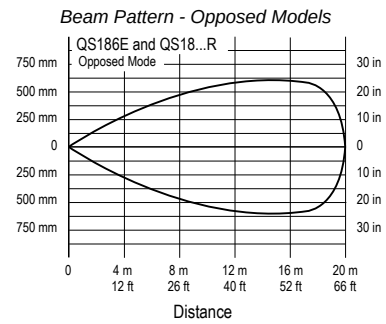
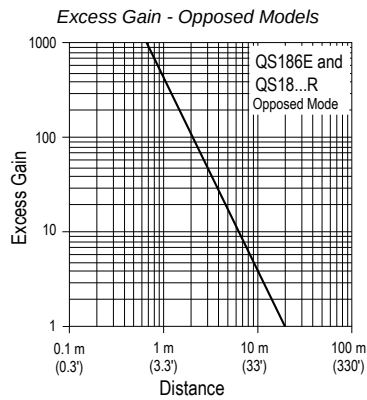
Cet appareil est conforme à la norme NMB-3(A). Le fonctionnement est soumis aux deux conditions suivantes : (1) ce dispositif ne peut pas occasionner d'interférences, et (2) il doit tolérer toute interférence, y compris celles susceptibles de provoquer un fonctionnement non souhaité du dispositif.

Dimensions

All measurements are listed in millimeters [inches], unless noted otherwise. The measurements provided are subject to change.

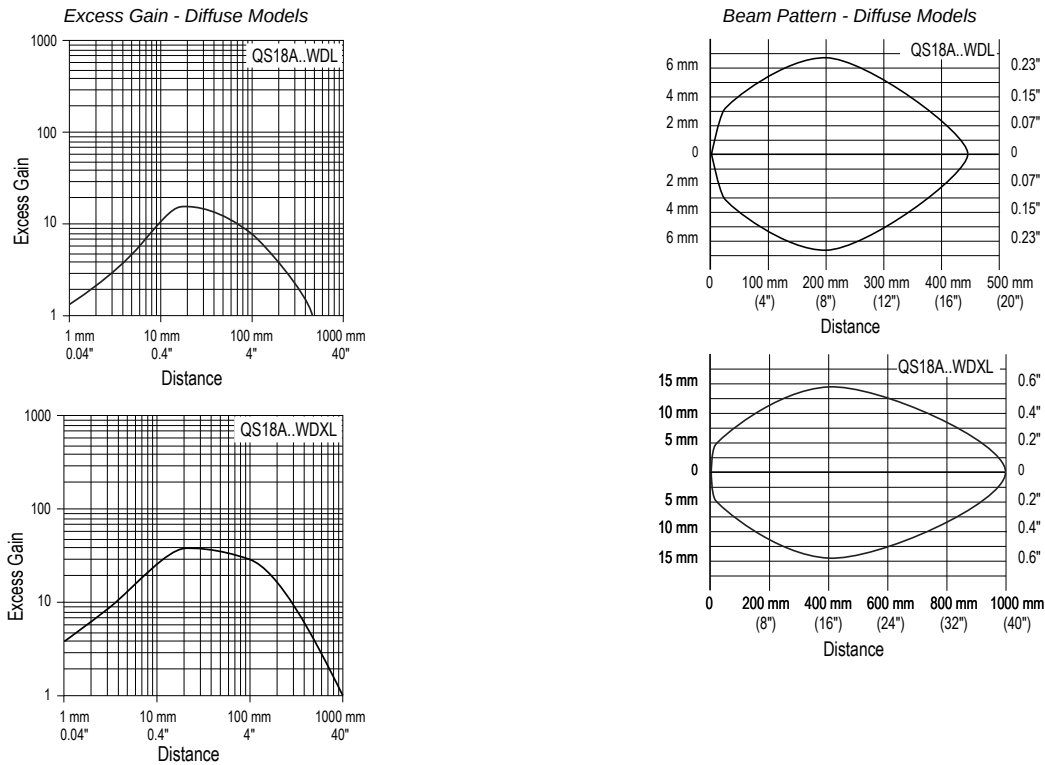


Performance Curves



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Diffuse performance is based on a 90% performance white test card.

Accessories

Cordsets

4-Pin Single-Ended 1/2-in Dual Key Female Cordsets				
Model	Length	Style	Dimensions	Pinout (Female)
MQAC-406	2 m (6.56 ft)	Straight		<p>1 = Red/Black 2 = Red/White 3 = Red 4 = Green</p>
MQAC-415	5 m (16.4 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 \times 4.6, C = \varnothing 18.5</p>	
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SMBQS18WRS

- 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



Other sensor models are shown with the bracket above. Refer to www.bannerengineering.com for more mounting bracket options, including: SMB312S, SMB18SF, SMB3018SC, SMB18FA.

Retroreflective Targets

Banner offers a wide selection of high-quality retroreflective targets. See www.bannerengineering.com for complete information.

NOTE: Polarized sensors require corner cube-type retroreflective targets. Non-polarized sensors may use any retroreflective target.



Apertures

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

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QS18W Universal Voltage Sensor

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