

*Miniature self-contained photoelectric sensors in universal-mount housing*

For complete technical information about this product, including dimensions, accessories, and specifications, see [www.bannerengineering.com](http://www.bannerengineering.com) and search 63908.

**Models**

| Model <sup>1</sup> | Sensing Mode                            | Output Type |
|--------------------|---|-------------|
| QS186E             | 20 m (66 ft)<br>Opposed                 | Emitter     |
| QS186EV            |   | NPN         |
| QS18VN6R           |   | PNP         |
| QS18VP6R           |   |             |
| QS186EB            | 3 m (10 ft)<br>Opposed                  | Emitter     |
| QS18VN6RB          |   | NPN         |
| QS18VP6RB          |   | PNP         |
| QS18VN6LP          |   | NPN         |
| QS18VP6LP          | 3.5 m (12 ft)<br>Polarized Retro        | PNP         |
| QS18VN6LV          |   | NPN         |
| QS18VP6LV          | 6.5 m (21 ft)<br>Non-Polarized<br>Retro | PNP         |
| QS18VN6CV15        |   | NPN         |
| QS18VP6CV15        | 16 mm (0.63 in)<br>Convergent           | PNP         |
| QS18VN6CV45        |   | NPN         |
| QS18VP6CV45        | 43 mm (1.7 in)<br>Convergent            | PNP         |
| QS18VN6D           |   | NPN         |
| QS18VP6D           | 450 mm (18 in)<br>Diffuse               | PNP         |

| Model <sup>1</sup> | Sensing Mode   | Output Type |
|--------------------|--|-------------|
| QS18VN6DB          | 450 mm (18 in)<br>Diffuse  | NPN         |
| QS18VP6DB          |  | PNP         |
| QS18VN6W           | 100 mm (4 in)<br>Divergent Diffuse   | NPN         |
| QS18VP6W           |  | PNP         |
| QS18VN6FF50        | 50 mm (2 in)<br>Fixed-Field  | NPN         |
| QS18VP6FF50        |  | PNP         |
| QS18VN6FF100       | 100 mm (4 in)<br>Fixed-Field   | NPN         |
| QS18VP6FF100       |  | PNP         |
| QS18VN6FP          | 220 mm (8.7 in)<br>Individual (Opposed)<br>60 mm (2.4 in)<br>Bifurcated (Diffuse)<br>Range specified using<br>1.5 mm plastic fiber op-<br>tics | NPN         |
| QS18VP6FP          |  | PNP         |
| QS18VN6F           | 500 mm (20 in)<br>Individual (Opposed)<br>38 mm (1.5 in)<br>Bifurcated ( Diffuse)<br>Range specified using<br>3.2 mm plastic fiber op-<br>tics | NPN         |
| QS18VP6F           |  | PNP         |

**QD Models:**

- 4-pin integral Euro-style QD: add suffix **Q8**, for example, **QS186EQ8**.
- 4-pin 150 mm (6 in) Euro-style pigtail QD: add suffix **Q5**, for example, **QS186EQ5**.
- 4-pin integral Pico-style pigtail QD: add suffix **Q7**, for example, **QS186EQ7**.
- 4-pin 150 mm (6 in) Pico-style pigtail QD: add suffix **Q**, for example, **QS186EQ**.



**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.

<sup>1</sup> Only standard 2 m (6.5 ft) cable models are listed. For 9 m (30 ft) cable, add suffix **W/30** to the model number, for example, **QS186E W/30**.

## Wiring

### QS18 Sensors with NPN (Sinking) Outputs

### QS18 Sensors with PNP (Sourcing) Outputs

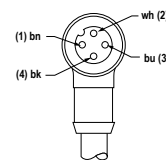
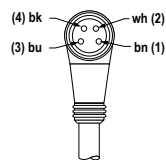
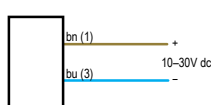
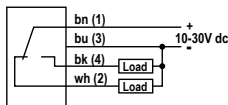
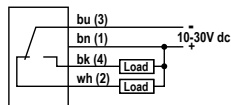
### QS18 Emitters

### 4-Pin Pico-Style Pin-Out (Cable Connector Shown)

### 4-Pin Euro-Style Pin-Out (Cable Connector Shown)

Cable and QD hookups are functionally identical.

QD wh and bk wires are unused.



## Specifications

### Supply Voltage

10 to 30V 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: 940 nm infra-red;

Plastic Fiber Optic, Retroreflective, Convergent and FF mode models: 660 nm visible red

### 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

**Off-state leakage current:**

FF Mode - less than 200  $\mu$ A at 30V dc

All others - less than 50  $\mu$ A at 30V dc

**ON-state saturation voltage:** less than 1V at 10 mA; less than 1.5V 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 Mode:** 850 microseconds On/Off

**All others:** 600 microseconds On/Of

NOTE: 100 millisecond delay on power-up; outputs do not conduct during this time

### Repeatability

**Opposed Mode:** 100 microseconds

**FF Mode:** 160 microseconds

**All others:** 150 microseconds

### Adjustments

**Glass Fiber Optic, Plastic Fiber Optic, Convergent, Diffuse, and Retro-reflective mode models (only):** Single-turn sensitivity (Gain) adjustment potentiometer

### Indicators

2 LED indicators:

**Green steady:** Power On

**Green flashing:** Output overloaded

**Yellow\* steady:** Light sensed

**Yellow\* flashing:** Marginal excess gain (1.0 to 1.5x excess gain)

NOTE: Prior to date code 0223, the output indicator was red.

### Construction

ABS housing, rated IEC IP67; NEMA 6; UL Type 1

### Connections

2 m (6.5 ft) 4-wire PVC cable; 4-pin Pico-style QD; 4-pin Euro-style QD

9 m (30 ft) 4-wire PVC cable; 4-pin Pico-style 150 mm (6 in) pigtail QD; 4-pin

Euro-style 150 mm (6 in) pigtail QD

### Operating Conditions

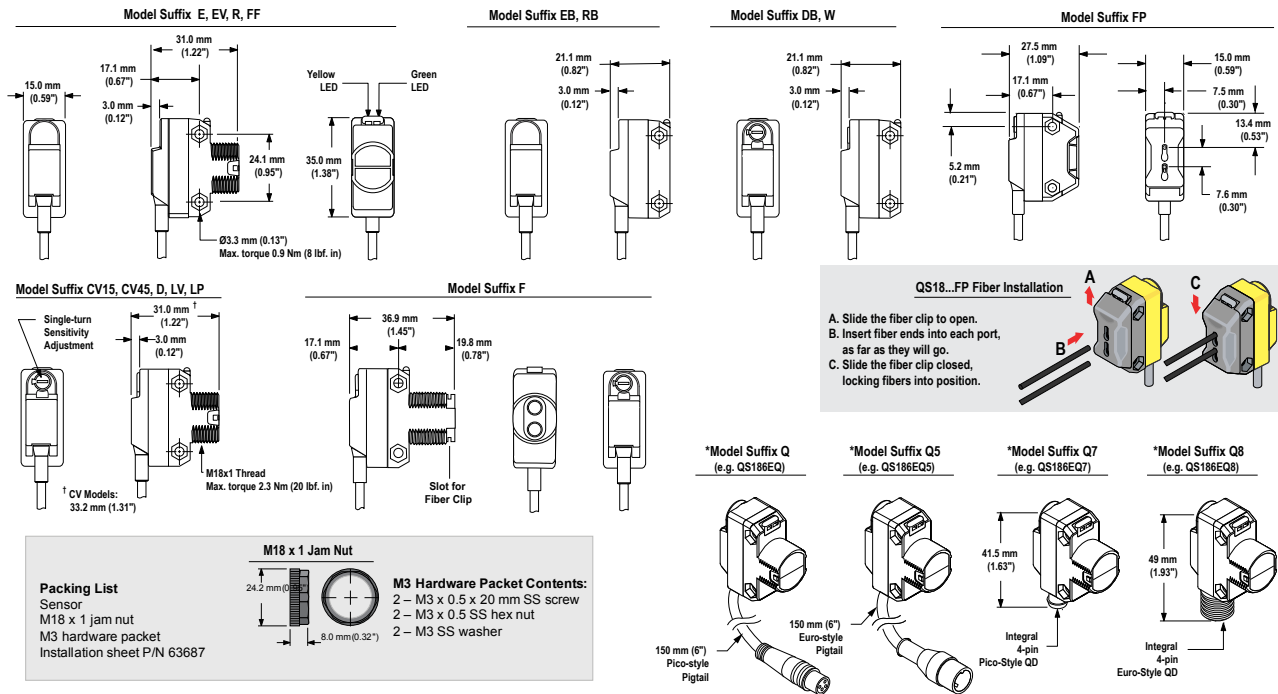
**Temperature:** -20 °C to +70 °C (-4 °F to +158 °F)

**Relative Humidity:** 90% at 50 °C (non-condensing)

### Certifications



## Dimensions



## 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.

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|--------------------|---|-------------|--------------------|--|-------------|
| QS186E             | 20 m (66 ft)<br>Opposed                 | Emitter     | QS18VN6DB          | 450 mm (18 in)<br>Diffuse  | NPN         |
| QS186EV            |   | NPN         | QS18VP6DB          |  | PNP         |
| QS18VN6R           |   | PNP         | QS18VN6W           | 100 mm (4 in)<br>Divergent Diffuse   | NPN         |
| QS18VP6R           |   | Emitter     | QS18VP6W           |  | PNP         |
| QS186EB            | 3 m (10 ft)<br>Opposed                  | Emitter     | QS18VN6FF50        | 50 mm (2 in)<br>Fixed-Field  | NPN         |
| QS18VN6RB          |   | NPN         | QS18VP6FF50        |  | PNP         |
| QS18VP6RB          |   | PNP         | QS18VN6FF100       | 100 mm (4 in)<br>Fixed-Field   | NPN         |
| QS18VN6LP          | 3.5 m (12 ft)<br>Polarized Retro        | NPN         | QS18VP6FF100       |  | PNP         |
| QS18VP6LP          |   | PNP         | QS18VN6FP          | 220 mm (8.7 in)<br>Individual (Opposed)<br>60 mm (2.4 in)<br>Bifurcated (Diffuse)<br>Range specified using<br>1.5 mm plastic fiber op-<br>tics | NPN         |
| QS18VN6LV          | 6.5 m (21 ft)<br>Non-Polarized<br>Retro | NPN         | QS18VP6FP          |  | PNP         |
| QS18VP6LV          |   | PNP         | QS18VN6F           | 500 mm (20 in)<br>Individual (Opposed)<br>38 mm (1.5 in)<br>Bifurcated ( Diffuse)<br>Range specified using<br>3.2 mm plastic fiber op-<br>tics | NPN         |
| QS18VN6CV15        | 16 mm (0.63 in)<br>Convergent           | NPN         | QS18VP6F           |  | PNP         |
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| QS18VP6CV45        |   | PNP         |                    |  |             |
| QS18VN6D           | 450 mm (18 in)<br>Diffuse               | NPN         |                    |  |             |
| QS18VP6D           |   | PNP         |                    |  |             |

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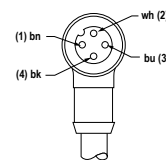
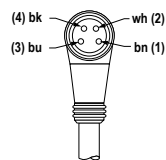
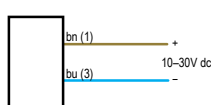
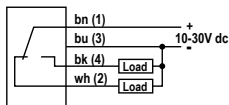
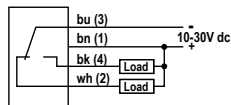
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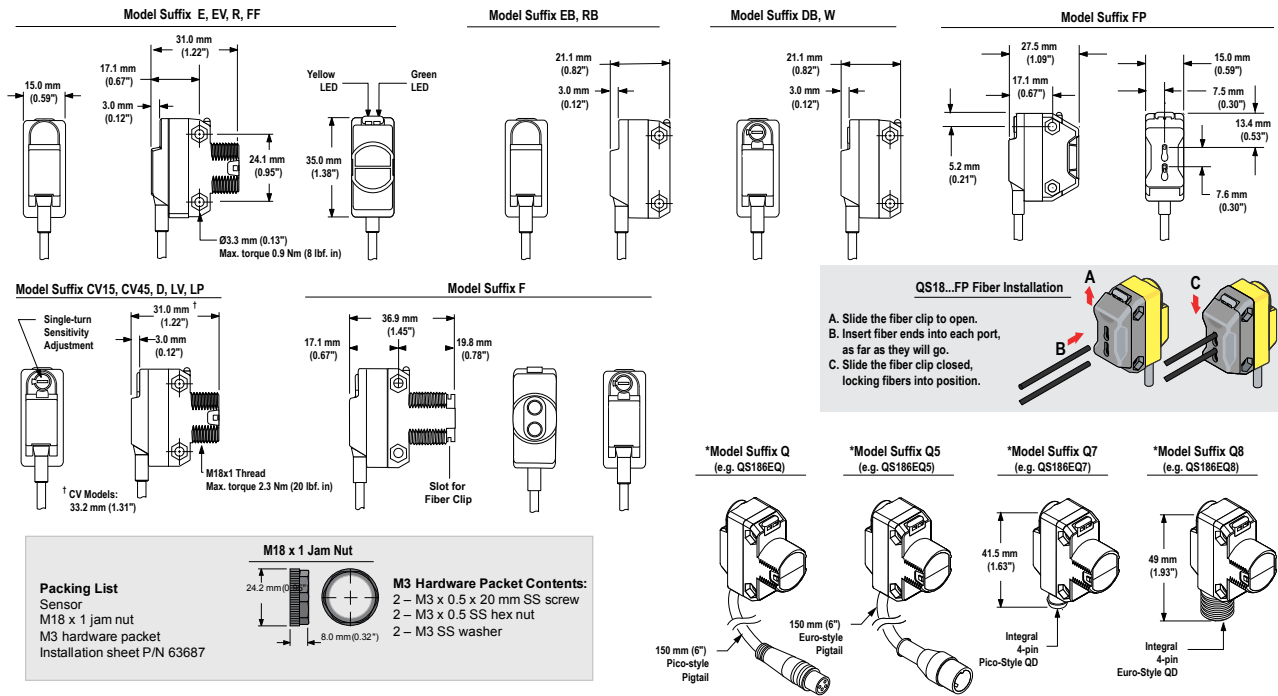
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