

# WORLD-BEAM® QS18LD Laser Diffuse Series Sensors



## Datasheet



- Visible Class 1 laser
- Visible Class 1 laser for diffuse sensing
- Narrow effective beam provides small-object detection and precise position control
- Crosstalk rejection algorithm protects against optical disturbance from adjacent sensors
- Excellent optical performance throughout sensing range, even close up
- 10 V dc to 30 V dc operation, with complementary (SPDT) NPN or PNP outputs, depending on model
- Bright LED operating status indicators are visible from 360°
- Compact, rugged sealed housing, protected circuitry
- Mounting versatility – popular 18 mm threaded barrel or side-mount
- Choose 2 m (6.5 ft) or 9 m (30 ft) cable or one of four QD options



### 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.

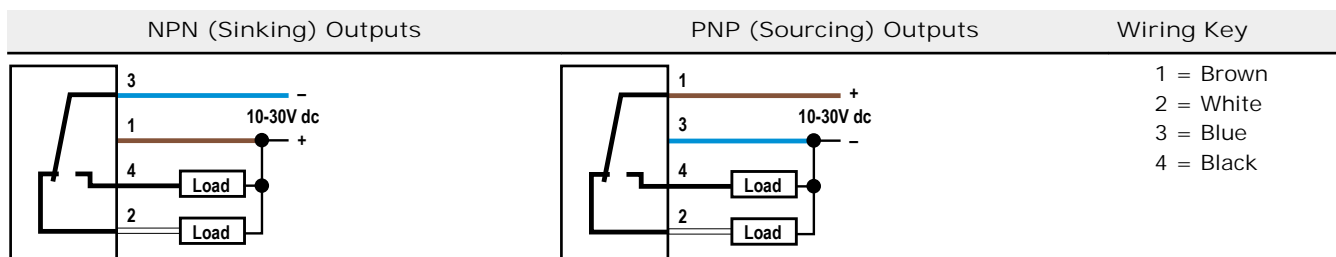
## Models

Model	Sensing Range	Spot Size at Focus	Cable	Output
QS18VN6LD	650 nm Visible Red Class 1 Laser 300 mm (12 in)	Approximately 1 mm at 300 mm (0.039 in at 12 in)	4-wire, 2 m (6.5 ft) integral cable	NPN
QS18VP6LD				PNP

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, QS18VN6LD W/30. Models with a quick disconnect require a mating cordset. To order the QD models:

- To order the 4-pin M12/Euro-style integral quick disconnect model, add the suffix "Q8" to the model number. For example, QS18VN6LDQ8.
- To order the 4-pin M8/Pico-style integral quick disconnect model, add the suffix "Q7" to the model number. For example, QS18VN6LDQ7.
- 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, QS18VN6LDQ5.
- 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, QS18VN6LDQ.

## Wiring Diagrams



Cabled wiring diagrams are shown. Quick disconnect (QD) wiring diagrams are functionally identical.



## Specifications

**Supply Voltage**  
10 to 30 V dc (10% maximum ripple) at less than 15 mA, exclusive of load

**Sensing Beam**  
Visible red LED, 650 nm

**Laser Characteristics**  
Wavelength: 650 nm visible red Class 1 laser  
Pulse Width: 7 microseconds  
Rep Rate: 130 microseconds  
Average Output Power: 0.065 mW

**Supply Protection Circuitry**  
Protected against reverse polarity and transient voltages

**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:  
NPN: less than 200 µA at 30 V dc (See Application Note 1)  
PNP: less than 10 µA at 30 V dc  
ON-state saturation voltage:  
NPN: less than 1.6 V at 100 mA  
PNP: less than 3.0 V at 100 mA

**Output Protection Circuitry**  
Protected against false pulse on power-up and continuous overload or short circuit of outputs

**Laser Classification**  
Class 1 laser product; Complies with IEC 60825-1:2001 and 21 CFR 1040.10, except for deviations pursuant to Laser Notice 50, dated 7-26-01

**Environmental Ratings**  
IEC IP67; NEMA 6; UL Type 1

**Operating Conditions**  
-10 °C to +50 °C (+14 °F to +122 °F)  
95% at +50 °C maximum relative humidity (non-condensing)

**Application Notes**  
NPN off-state leakage current is < 200 µA for load resistances > 3 kΩ or optically isolated loads. For load current of 100 mA, leakage is < 1% of load current.

**Certifications**



**Output Response**  
700 microseconds ON/OFF  
Note: 200 millisecond delay on power-up; outputs do not conduct during this time

**Repeatability**  
130 microseconds

**Sensing Hysteresis**  
15% of range typical

**Adjustments**  
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 1.5x excess gain)

**Construction**  
ABS housing, acrylic lens cover, 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) pigtail QD, depending on model

**Required Overcurrent Protection**



**WARNING:** Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

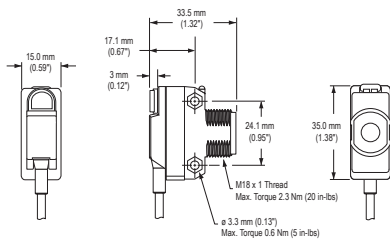
Overcurrent protection is required to be provided by end product application per the supplied table.  
Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.  
Supply wiring leads < 24 AWG shall not be spliced.  
For additional product support, go to [www.bannerengineering.com](http://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

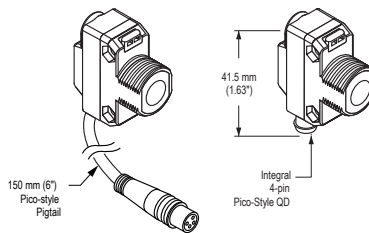
## Dimensions

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

Cabled Models



Pico-Style QD Models



Euro-Style QD Models

