

# WORLD-BEAM® QS30 Series Sensor (DC Voltage)



## Datasheet



To view or download the latest technical information about this product, including specifications, dimensions, accessories, and wiring, see [www.bannerengineering.com](http://www.bannerengineering.com). Search for Instruction Manual p/n 119165.



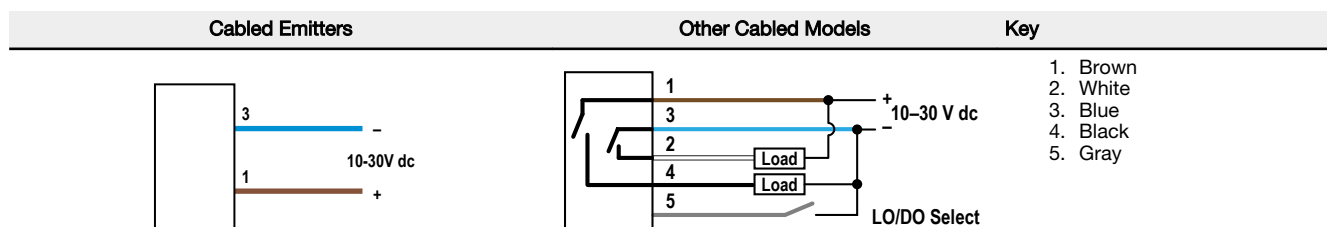
### WARNING: Not To Be Used for Personnel Protection

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 <sup>1</sup>	Sensing Mode	Beam	Range <sup>2</sup>	Output
QS30E (emitter)	Opposed	875 nm Infrared	60 m (200 ft)	N/A
QS30R (receiver)		Effective Beam: 18 mm (0.7 in)		
QS30LP	Polarized Retroreflective	630 nm Visible Red	8 m (26 ft)	Bipolar NPN/PNP
QS30LV	Retroreflective		12 m (40 ft)	
QS30D	Diffuse	940 nm Infrared	1 m (3.3 ft)	
QS30FF200	Fixed Field	680 nm Visible Red	200 mm (8 in)	
QS30FF400			400 mm (16 in)	
QS30FF600			600 mm (24 in)	

## Wiring Diagrams



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

<sup>1</sup> Only standard 2 m (6.5 ft) cabled models are listed.

- To order the 9 m (30 ft) integral cable model, add suffix "W/30" to the model number (for example, QS30E W/30).
- To order the 5-pin integral M12/Euro-style quick disconnect (QD), add suffix "Q" (for example, QS30EQ).

<sup>2</sup> Polarized Retroreflective and Retroreflective ranges are specified using a model BRT-84 retroreflector.



## Specifications

### Supply Voltage

10 V dc to 30 V dc (10% max. ripple) at less than 40 mA, exclusive of load  
Protected against reverse polarity and transient voltages

### Output Response

Opposed Mode: 5 milliseconds ON and OFF  
All others: 2 milliseconds  
NOTE: 100 millisecond delay on power-up; outputs do not conduct during this time

### Repeatability

Opposed Mode: not applicable  
All others: 500 microseconds

### Output Configuration

Bipolar: One current sourcing and one current sinking  
Rating: 100 mA maximum each output at 25 °C  
Off-state leakage current:  
NPN: less than 200 µA  
PNP: less than 10 µA  
ON-state saturation voltage:  
NPN: less than 1.6 V at 100 mA  
PNP: less than 2.0 V at 100 mA

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

### Indicators

2 LEDs on sensor top:

	Green	Yellow
On	Power on	Light sensed
Flashing	Output overloaded (except receivers)	Marginal excess gain (1–1.5x excess gain)

Large oval LED on sensor back (except emitters): Yellow on indicates the output is conducting

### Cutoff Point Tolerance

Fixed-Field only: ± 5% of nominal cutoff distance

### Construction and Mounting

ABS housing, rated IEC IP67; NEMA 6; Acrylic lens cover  
3 mm mounting hardware included

### Connections

2 m (6.5 ft) unterminated 5-wire PVC cable; 9 m (30 ft) unterminated 5-wire PVC cable ; or Integral 5-pin M12/Euro-style male quick disconnect (QD)

### Application Tip for the QS30LV Model

For best sensing reliability, targets should be a minimum of 0.5m from the sensor

### Adjustments

Selectable Light/Dark Operate is achieved via the gray wire.  
Opposed, Retroreflective, and Polarized Retroreflective models:

Light Operate - Low (0 to 3 V)\*  
Dark Operate - High (open or 5 to 30 V)\*

Diffuse and Fixed-Field models:

Light Operate - High (open or 5 to 30 V)\*  
Dark Operate - Low (0 to 3 V)\*

Diffuse, Retroreflective, and Polarized Retroreflective mode models (only):

Single-turn Sensitivity (Gain) adjustment potentiometer

\* Input impedance 10 kΩ

### Operating Conditions

-20 °C to +70 °C (-4 °F to +158 °F)  
95% at +50 °C maximum relative humidity (non-condensing)

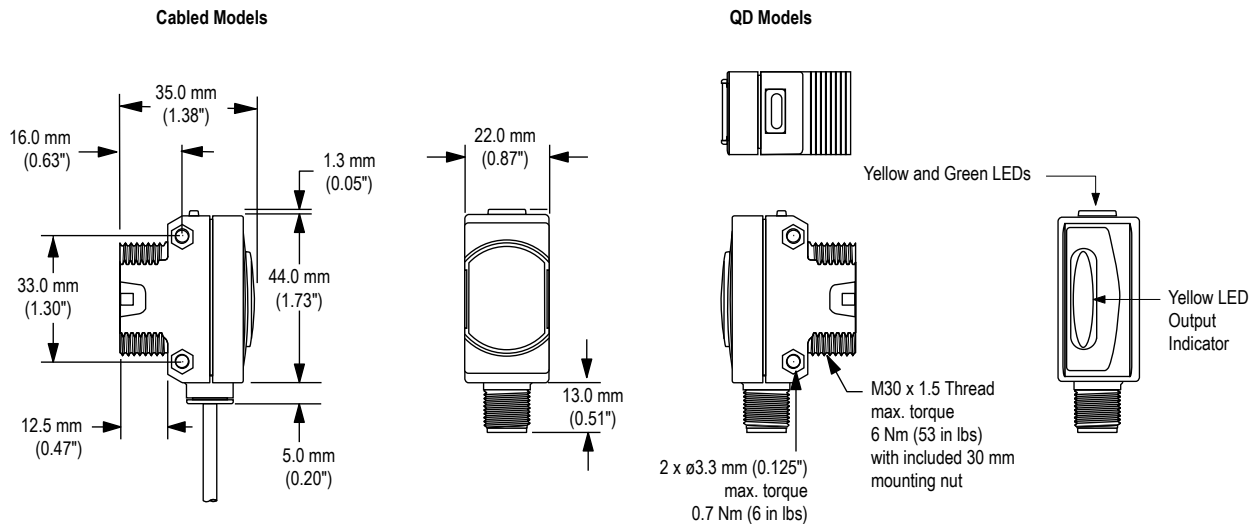
### Vibration and Mechanical Shock

All models meet Mil Std. 202F requirements. Method 201A (vibration: 10 Hz to 60 Hz max., double amplitude 0.06 inch, maximum acceleration 10G). Also meets IEC 947-5-2 requirements: 30G 11 ms duration, half sine wave.

### Certifications

Pending

## Dimensions



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

## 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.

**THIS LIMITED WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED (INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE), AND WHETHER ARISING UNDER COURSE OF PERFORMANCE, COURSE OF DEALING OR TRADE USAGE.**

This Warranty is exclusive and limited to repair or, at the discretion of Banner Engineering Corp., replacement. **IN NO EVENT SHALL BANNER ENGINEERING CORP. BE LIABLE TO BUYER OR ANY OTHER PERSON OR ENTITY FOR ANY EXTRA COSTS, EXPENSES, LOSSES, LOSS OF PROFITS, OR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES RESULTING FROM ANY PRODUCT DEFECT OR FROM THE USE OR INABILITY TO USE THE PRODUCT, WHETHER ARISING IN CONTRACT OR WARRANTY, STATUTE, TORT, STRICT LIABILITY, NEGLIGENCE, OR OTHERWISE.**

Banner Engineering Corp. reserves the right to change, modify or improve the design of the product without assuming any obligations or liabilities relating to any product previously manufactured by Banner Engineering Corp. Any misuse, abuse, or improper application or installation of this product or use of the product for personal protection applications when the product is identified as not intended for such purposes will void the product warranty. Any modifications to this product without prior express approval by Banner Engineering Corp will void the product warranties. All specifications published in this document are subject to change; Banner reserves the right to modify product specifications or update documentation at any time. Specifications and product information in English supersede that which is provided in any other language. For the most recent version of any documentation, refer to: [www.bannerengineering.com](http://www.bannerengineering.com).

# WORLD-BEAM® QS30 Series Sensor (DC Voltage)



## Datasheet



To view or download the latest technical information about this product, including specifications, dimensions, accessories, and wiring, see [www.bannerengineering.com](http://www.bannerengineering.com). Search for Instruction Manual p/n 119165.



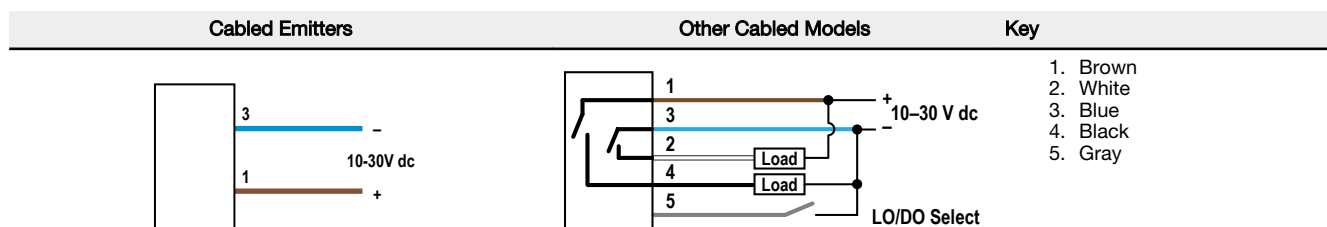
### WARNING: Not To Be Used for Personnel Protection

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 <sup>1</sup>	Sensing Mode	Beam	Range <sup>2</sup>	Output
QS30E (emitter)	Opposed	875 nm Infrared	60 m (200 ft)	N/A
QS30R (receiver)		Effective Beam: 18 mm (0.7 in)		
QS30LP	Polarized Retroreflective	630 nm Visible Red	8 m (26 ft)	Bipolar NPN/PNP
QS30LV	Retroreflective		12 m (40 ft)	
QS30D	Diffuse	940 nm Infrared	1 m (3.3 ft)	
QS30FF200	Fixed Field	680 nm Visible Red	200 mm (8 in)	
QS30FF400			400 mm (16 in)	
QS30FF600			600 mm (24 in)	

## Wiring Diagrams



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

<sup>1</sup> Only standard 2 m (6.5 ft) cabled models are listed.

- To order the 9 m (30 ft) integral cable model, add suffix "W/30" to the model number (for example, QS30E W/30).
- To order the 5-pin integral M12/Euro-style quick disconnect (QD), add suffix "Q" (for example, QS30EQ).

<sup>2</sup> Polarized Retroreflective and Retroreflective ranges are specified using a model BRT-84 retroreflector.



# Specifications

### Supply Voltage

10 V dc to 30 V dc (10% max. ripple) at less than 40 mA, exclusive of load  
Protected against reverse polarity and transient voltages

### Output Response

Opposed Mode: 5 milliseconds ON and OFF  
All others: 2 milliseconds  
NOTE: 100 millisecond delay on power-up; outputs do not conduct during this time

### Repeatability

Opposed Mode: not applicable  
All others: 500 microseconds

### Output Configuration

Bipolar: One current sourcing and one current sinking  
Rating: 100 mA maximum each output at 25 °C  
Off-state leakage current:  
NPN: less than 200 µA  
PNP: less than 10 µA  
ON-state saturation voltage:  
NPN: less than 1.6 V at 100 mA  
PNP: less than 2.0 V at 100 mA

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

### Indicators

2 LEDs on sensor top:

	Green	Yellow
On	Power on	Light sensed
Flashing	Output overloaded (except receivers)	Marginal excess gain (1–1.5x excess gain)

Large oval LED on sensor back (except emitters): Yellow on indicates the output is conducting

### Cutoff Point Tolerance

Fixed-Field only: ± 5% of nominal cutoff distance

### Construction and Mounting

ABS housing, rated IEC IP67; NEMA 6; Acrylic lens cover  
3 mm mounting hardware included

### Connections

2 m (6.5 ft) unterminated 5-wire PVC cable; 9 m (30 ft) unterminated 5-wire PVC cable ; or Integral 5-pin M12/Euro-style male quick disconnect (QD)

### Application Tip for the QS30LV Model

For best sensing reliability, targets should be a minimum of 0.5m from the sensor

### Adjustments

Selectable Light/Dark Operate is achieved via the gray wire.  
Opposed, Retroreflective, and Polarized Retroreflective models:

- Light Operate - Low (0 to 3 V)\*
- Dark Operate - High (open or 5 to 30 V)\*

Diffuse and Fixed-Field models:

- Light Operate - High (open or 5 to 30 V)\*
- Dark Operate - Low (0 to 3 V)\*

Diffuse, Retroreflective, and Polarized Retroreflective mode models (only):

- Single-turn Sensitivity (Gain) adjustment potentiometer

\* Input impedance 10 kΩ

### Operating Conditions

-20 °C to +70 °C (-4 °F to +158 °F)  
95% at +50 °C maximum relative humidity (non-condensing)

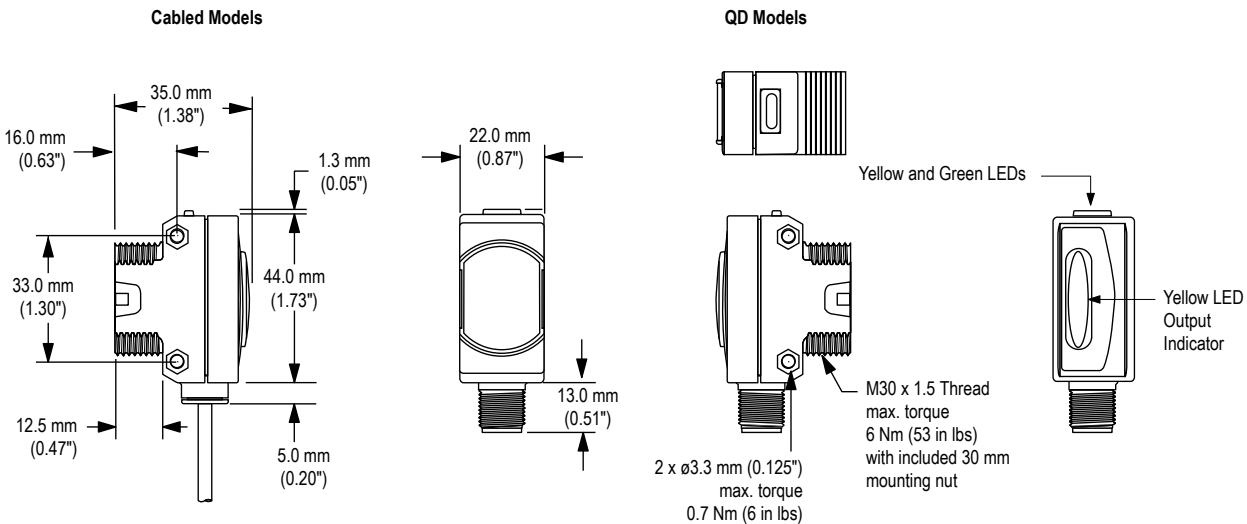
### Vibration and Mechanical Shock

All models meet Mil Std. 202F requirements. Method 201A (vibration: 10 Hz to 60 Hz max., double amplitude 0.06 inch, maximum acceleration 10G). Also meets IEC 947-5-2 requirements: 30G 11 ms duration, half sine wave.

### Certifications

Pending

# Dimensions



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

# 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.

**THIS LIMITED WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED (INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE), AND WHETHER ARISING UNDER COURSE OF PERFORMANCE, COURSE OF DEALING OR TRADE USAGE.**

This Warranty is exclusive and limited to repair or, at the discretion of Banner Engineering Corp., replacement. **IN NO EVENT SHALL BANNER ENGINEERING CORP. BE LIABLE TO BUYER OR ANY OTHER PERSON OR ENTITY FOR ANY EXTRA COSTS, EXPENSES, LOSSES, LOSS OF PROFITS, OR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES RESULTING FROM ANY PRODUCT DEFECT OR FROM THE USE OR INABILITY TO USE THE PRODUCT, WHETHER ARISING IN CONTRACT OR WARRANTY, STATUTE, TORT, STRICT LIABILITY, NEGLIGENCE, OR OTHERWISE.**

Banner Engineering Corp. reserves the right to change, modify or improve the design of the product without assuming any obligations or liabilities relating to any product previously manufactured by Banner Engineering Corp. Any misuse, abuse, or improper application or installation of this product or use of the product for personal protection applications when the product is identified as not intended for such purposes will void the product warranty. Any modifications to this product without prior express approval by Banner Engineering Corp will void the product warranties. All specifications published in this document are subject to change; Banner reserves the right to modify product specifications or update documentation at any time. Specifications and product information in English supersede that which is provided in any other language. For the most recent version of any documentation, refer to: [www.bannerengineering.com](http://www.bannerengineering.com).