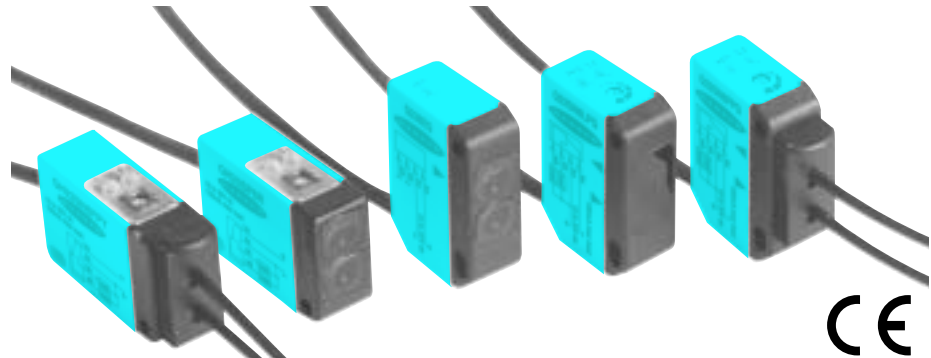


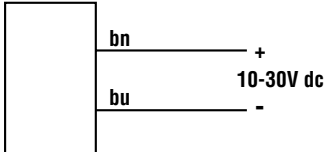
Additional information on this product is immediately available online at [www.bannerengineering.com/69509](http://www.bannerengineering.com/69509)

View or download additional information, including excess gain curves, beam patterns and additional accessories.  
For further assistance, contact a Banner Engineering Applications Engineer at (763) 544-3164 or (888) 373-6767.

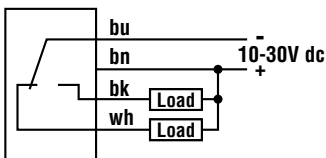


**Emitters**

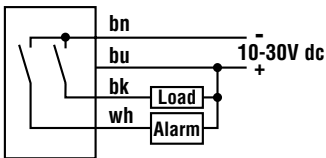
Note: No connection to bk and wh wires of QD cable.



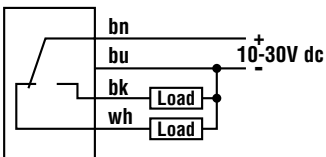
**NPN (Sinking) Output Models**  
Standard Hookup



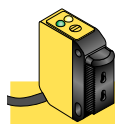
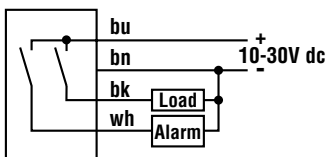
Alarm Hookup



**PNP (Sourcing) Output Models**  
Standard Hookup

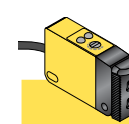


Alarm Hookup



**Q23 Models**

Sensing Mode		LED	Model*	Output Type
Opposed	8 m (26')	Visible Red 680 nm	Q236E	-
			Q23SN6R	NPN
			Q23SP6R	PNP
Polarized Retro	100 mm-2 m (4" to 80")	Visible Red 680 nm	Q23SN6LP	NPN
			Q23SP6LP	PNP
Diffuse Short Range	2-50 mm (0.1"-2") Opt. 200 mm (8") Max.	Visible Red 680 nm	Q23SN6D	NPN
			Q23SP6D	PNP
Diffuse Long Range	30-300 mm (1.2"- 12") Opt. 800 mm (32") Max.	Visible Red 680 nm	Q23SN6DL	NPN
			Q23SP6DL	PNP
Convergent	50 mm (2")	Visible Red 680 nm	Q23SN6CV50	NPN
			Q23SP6CV50	PNP
Plastic Fiber Optic	Range varies by sensing mode and fiber optics used	Visible Red 680 nm	Q23SN6FP	NPN
			Q23SP6FP	PNP
			Q23SN6FPY	NPN
Plastic Fiber Optic High Speed			Q23SP6FPY	PNP



**QH23 Models**

Sensing Mode		LED	Model*	Output Type
Opposed	8 m (26')	Visible Red 680 nm	QH236E	-
			QH23SN6R	NPN
			QH23SP6R	PNP
Polarized Retro	100 mm-2 m (4" to 80")	Visible Red 680 nm	QH23SN6LP	NPN
			QH23SP6LP	PNP
Diffuse Short Range	2-50 mm (0.1"-2") Opt. 200 mm (8") Max.	Visible Red 680 nm	QH23SN6D	NPN
			QH23SP6D	PNP
Diffuse Long Range	30-300 mm (1.2"- 12") Opt. 800 mm (32") Max.	Visible Red 680 nm	QH23SN6DL	NPN
			QH23SP6DL	PNP
Convergent	50 mm (2")	Visible Red 680 nm	QH23SN6CV50	NPN
			QH23SP6CV50	PNP
Plastic Fiber Optic	Range varies by sensing mode and fiber optics used	Visible Red 680 nm	QH23SN6FP	NPN
			QH23SP6FP	PNP
			QH23SN6FPY	NPN
Plastic Fiber Optic High Speed			QH23SP6FPY	PNP

\* Standard 2 m (6.5') cable models are listed.

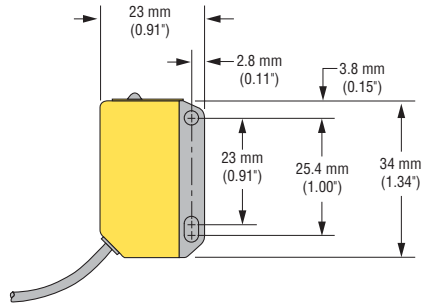
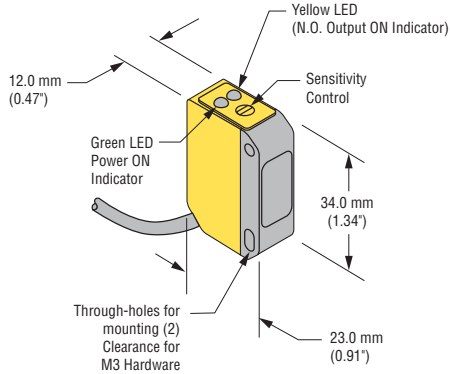
- 9 m (30') cable: add suffix "W/30" to the model number (e.g., QH23SP6FPY W/30).
- 4-pin Pico pigtail (150 mm/6") QD models: add suffix "Q" (e.g., QH23SP6FPYQ).

Cable and QD hookups are identical.

## Q23 Sensor Dimensions

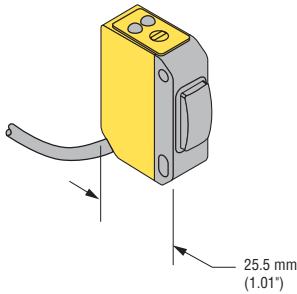
### Opposed, Diffuse and Retroreflective Models

(model suffix E, R, D, DL and LP)



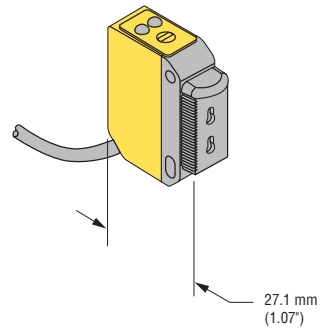
### Convergent Models

(model suffix CV)



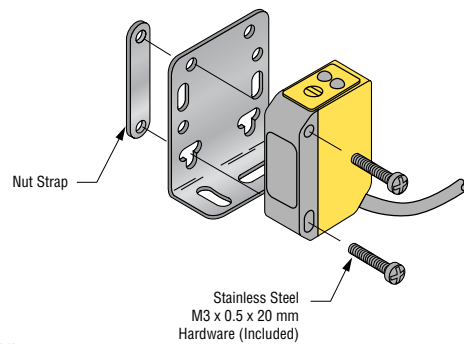
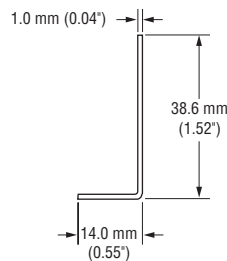
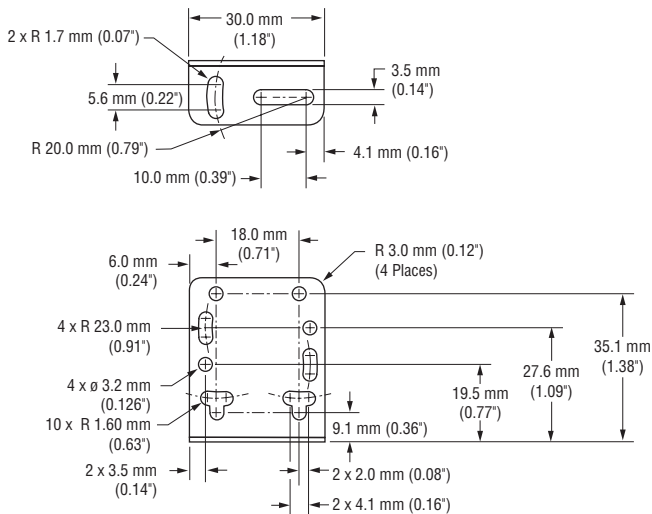
### Plastic Fiber Optic Models

(model suffix FP and FPY)



### Q23 Mounting Bracket

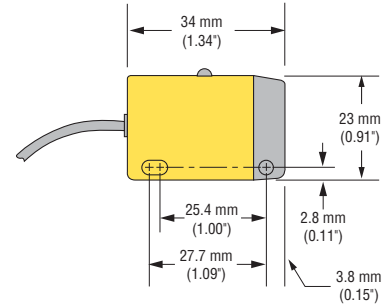
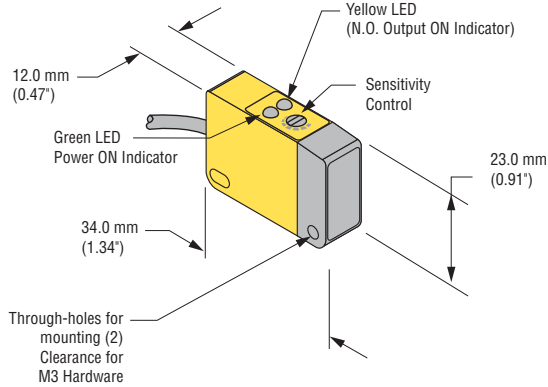
(included with sensor)



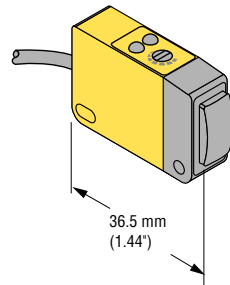
NOTE: Use of lockwashers is optional

QH23 Sensor Dimensions

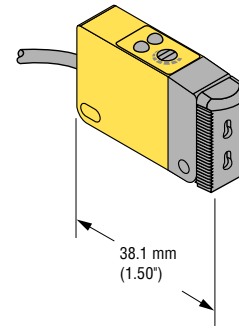
**Opposed, Diffuse and Retroreflective Models**  
(model suffix E, R, D, DL and LP)



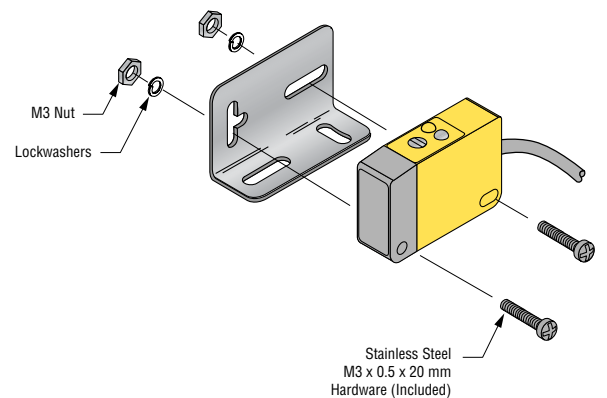
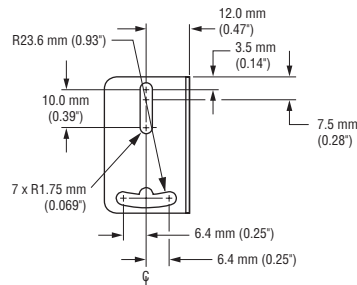
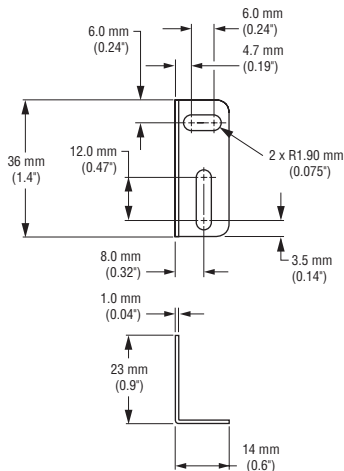
**Convergent Models**  
(model suffix CV)



**Plastic Fiber Optic Models**  
(model suffix FP and FPY)



**QH23 Mounting Bracket**  
(included with sensor)



## Specifications

### Supply Voltage and Current

10 to 30V dc (10% maximum ripple) at less than 25 mA (exclusive of load)  
(Opposed emitters and receivers draw 20 mA each)

### Supply Protection Circuitry

Protected against reverse polarity and transient voltages

### Output Configuration

Solid-state dc complementary outputs:

**Q(H)23SN6xx models:** NPN sinking, N.O. (normally open) & N.C. (normally closed) complementary

**Q(H)23SP6xx models:** PNP sourcing, N.O. & N.C. complementary

**Light operate:** N.O. output conducts when the sensor sees its own modulated light source

**Dark operate:** N.C. output conducts when the sensing beam is blocked

The N.C. output may be used as an alarm output, depending upon hookup to the power supply (see hookup diagrams)

### Output Rating

150 mA maximum each in standard hookup; when wired for alarm output, the total load may not exceed 150 mA

**Off-state leakage current** less than 1 microamp at 30V dc

**Output saturation voltage** less than 1 volt at 10 mA dc; less than 1.5V at 150 mA dc

### Output Protection Circuitry

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

### Output Response Time

1 millisecond on and off  
(FPY model high-speed sensors: 100 microsecond response time)

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

### Repeatability

**All opposed sensors:** 0.13 ms

**FPY model high-speed sensors:** 25 microseconds

**All other models:** 0.25 ms

Response time and repeatability specifications are independent of signal strength.

### Adjustments

Sensitivity control (single-turn, o-ring sealed potentiometer)

### Indicators

**Emitters:** green Power ON indicator

**All others:** green Power ON and yellow Output indicators

### Construction

Reinforced thermoplastic polyester housing, completely sealed, o-ring seal, acrylic lenses; stainless steel screws and mounting bracket.

### Environmental Rating

Meets NEMA standards 1, 2, 3, 3S, 4, 4X, 6, 12, and 13; IEC IP67.

Housing materials rated UL 94 V-0.

### Connections

PVC-jacketed 4-conductor 2 m (6.5') or 9 m (30 ') cables, or 6" pigtail with 4-pin Pico-style quick disconnect (QD) fitting are available. Mating QD cables are ordered separately.

### Operating Conditions

**Temperature:** -20° to +55°C (-5° to +131°F)

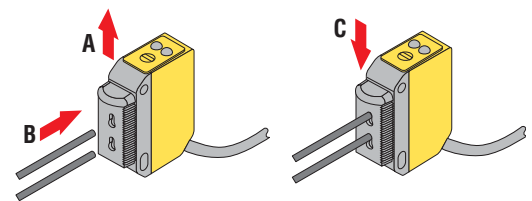
**Max. rel. humidity:** 90% at 50°C (non-condensing)

### Application Note

To avoid damage to the sensor caused by static discharge (ESD), use the plastic screwdriver supplied with each sensor (included in the hardware packet) to adjust the sensitivity control. Otherwise, use a screwdriver with an insulated handle.

## Plastic Fiber Installation

- Unlock the fiber gripper as shown. If 0.25 mm or 0.5 mm core fibers are being used, insert the small fiber adapter into the ports.
- Gently insert the prepared plastic fiber ends into the ports, as far as they will go.
- Slide the fiber gripper back to lock, as shown.



Additional information on this product is immediately available online at [www.bannerengineering.com/69509](http://www.bannerengineering.com/69509)

*View or download additional information, including excess gain curves, beam patterns and additional accessories.  
For further assistance, contact a Banner Engineering Applications Engineer at (763) 544-3164 or (888) 373-6767.*

**WARRANTY:** Banner Engineering Corp. warrants its products to be free from defects for one year. Banner Engineering Corp. will repair or replace, free of charge, any product of its manufacture found to be defective at the time it is returned to the factory during the warranty period. This warranty does not cover damage or liability for the improper application of Banner products. This warranty is in lieu of any other warranty either expressed or implied.



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

**Never use these products as sensing devices for personnel protection. Doing so could lead to serious injury or death.**

These sensors do NOT include the self-checking redundant circuitry necessary to allow their use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition. Consult your current Banner Safety Products catalog for safety products which meet OSHA, ANSI and IEC standards for personnel protection.