

## Datasheet

### Miniature Self-Contained DC Photoelectric Sensors



- Self-contained dc sensors in miniature right-angle housings; only 11 mm (0.43 in) thick
- Epoxy-encapsulated circuitry; IP54 (NEMA5) construction; hermetically-sealed optics
- 1.8 m (70 in) opposed range or 0.5 m (20 in) diffuse range
- Diffuse models have sensitivity adjustment
- Choose models for light operate or dark operate; choose either NPN (sinking) or PNP (sourcing) output models



#### 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



Note: Models with a quick disconnect require a mating cordset.

Table 1: Q10 Opposed Mode Emitter (E) and Receiver (R)

Models	Range	Cable	Supply Voltage	NPN/ PNP	L.O./ D.O.
Q106E	1.8 m (70 in)	2 m (6.5 in)	10 V dc to 30 V dc	-	-
Q106EQ		3-Pin Pico-style 150 mm (6 in) QD			
Q10AN6R		2 m (6.5 in)		NPN	L.O.
Q10AN6RQ		3-Pin Pico-style 150 mm (6 in) QD			D.O.
Q10RN6R		2 m (6.5 in)		PNP	L.O.
Q10RN6RQ		3-Pin Pico-style 150 mm (6 in) QD			D.O.
Q10AP6R		2 m (6.5 in)		PNP	L.O.
Q10AP6RQ		3-Pin Pico-style 150 mm (6 in) QD			D.O.
Q10RP6R		2 m (6.5 in)			L.O.
Q10RP6RQ		3-Pin Pico-style 150 mm (6 in) QD			D.O.

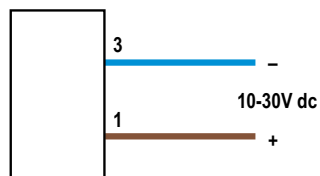
Table 2: Q10 Diffuse Mode

Models	Range	Cable	Supply Voltage	NPN/ PNP	L.O./ D.O.
Q10AN6D	0.5 m (20 in)	2 m (6.5 in)	10 V dc to 30 V dc	NPN	L.O.
Q10AN6DQ		3-Pin Pico-style 150 mm (6 in) QD			D.O.
Q10RN6D		2 m (6.5 in)		PNP	L.O.
Q10RN6DQ		3-Pin Pico-style 150 mm (6 in) QD			D.O.
Q10AP6D		2 m (6.5 in)		PNP	L.O.
Q10AP6DQ		3-Pin Pico-style 150 mm (6 in) QD			D.O.
Q10RP6D		2 m (6.5 in)			L.O.
Q10RP6DQ		3-Pin Pico-style 150 mm (6 in) QD			D.O.

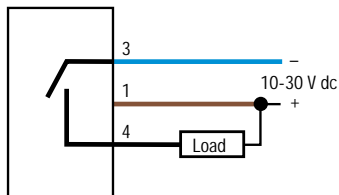


## Wiring Diagrams

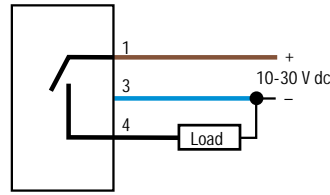
### Emitters



### NPN Receivers



### PNP Receivers



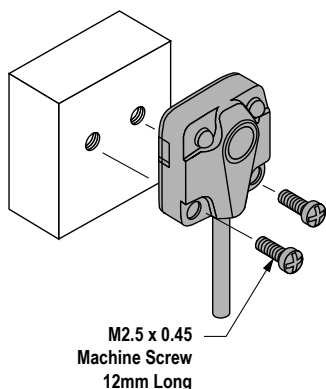
### Key

- 1 = Brown
- 3 = Blue
- 4 = Black

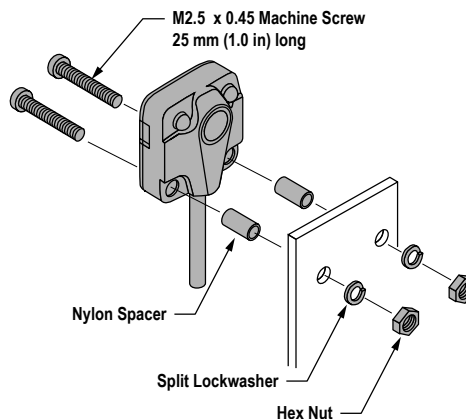
Quick disconnect (QD) wiring diagrams are functionally identical.

## Mounting Specifications

### Flat Mounting



### Stand-Off Mounting



## Specifications

### Sensing Beam

Infrared, 880 nm

### Supply Voltage and Current

10 V dc to 30 V dc (10% maximum ripple)

Emitter or receiver: 15 mA

Diffuse models: 20 mA (exclusive of load)

### Supply Protection Circuitry

Protected against reverse polarity

### Output Configuration

SPST solid-state dc switch

Choose NPN (current sinking) or PNP (current sourcing) models

Choose light operate (N.O.) or dark operate (N.C.) models

### Output Rating

150 mA maximum

Off-state leakage current: < 10 microamps at 30 V dc

On-state saturation voltage: < 0.5 V at 10 mA dc; < 1.5 V at 150 mA dc

### Output Protection Circuitry

Protected against output short-circuit, continuous overload, and false pulse on power-up

Overload trip point  $\geq$  220 mA, typical, at 20 °C

### Output Response Time

Opposed mode: 8 ms On, 4 ms Off

Diffuse mode: 3 ms On and Off

### Repeatability

Opposed mode: 1.0 ms

Diffuse mode: 0.75 ms

### Adjustments

Diffuse models (only): single-turn, top-mounted sensitivity control for adjustment of system gain (turn clockwise to increase)

### Indicators

Opposed mode receivers and diffuse mode sensors have two LEDs: Green and Amber

Green on = power to the sensor is On

Green flashing = output is overloaded

Amber on = light is sensed

Amber flashing = marginal excess gain (1 to 1.5 $\times$ ) in light condition

Emitters have one Green LED; Green on = power to the sensor is On

### Construction

Housings are black ABS; Rated UL 94V0

Lenses are hermetically-sealed glass; lens covers are clear acrylic

Circuitry is epoxy-encapsulated and completely sealed

Stainless steel M2.5 mounting hardware is included

### Connections

2 m (6.5 ft) attached cable, or 3-pin pico-style quick-disconnect fitting

Cables for QD models are purchased separately

### Environmental Rating

IEC IP54 (NEMA 5)

### Operating Conditions

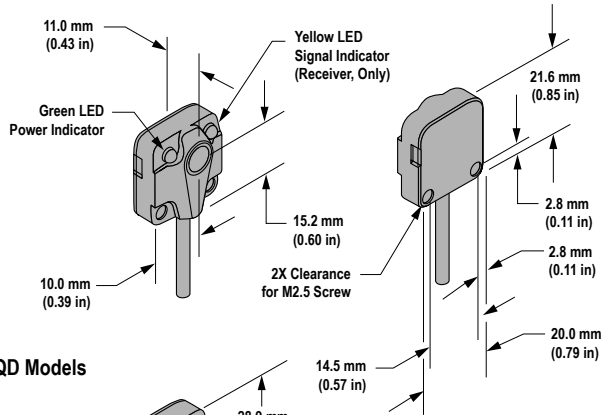
-40 °C to +70 °C (-40 °F to +158 °F)

90% at +50 °C maximum relative humidity (non-condensing)

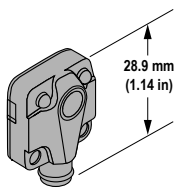
## Dimensions

### Opposed Mode Models

#### Cabled Models

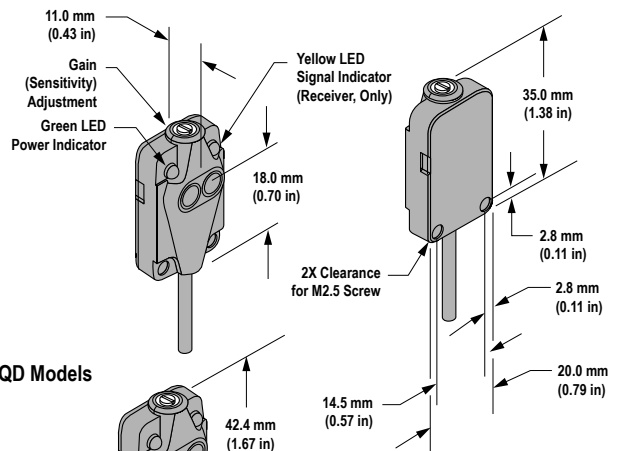


#### QD Models

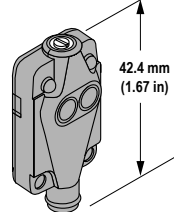


### Diffuse Mode Models

#### Cabled Models

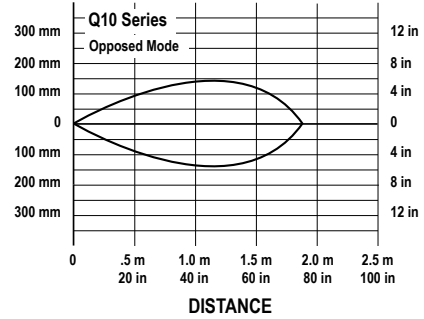
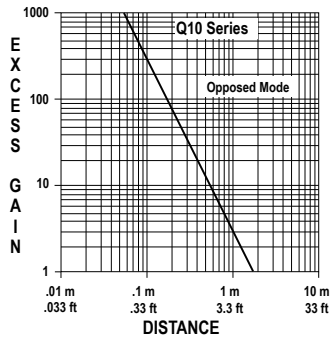


#### QD Models



## Performance Curves

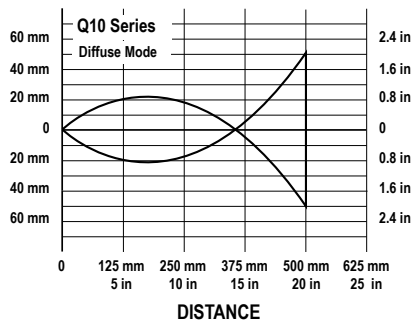
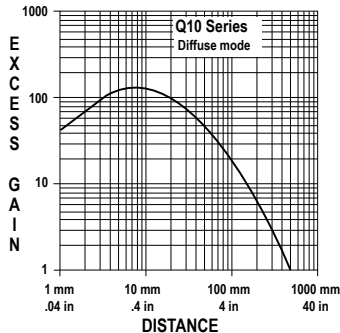
### Opposed Mode



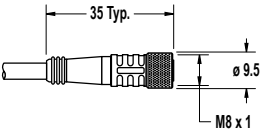
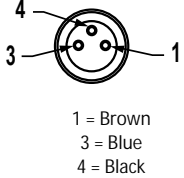
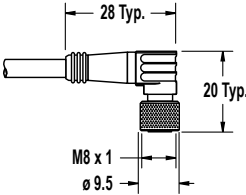
Effective Beam: 5 mm

### Diffuse Mode

Performance based on a 90% reflectance white test card.



## Cordsets

3-Pin Threaded M8/Pico-Style Cordsets				
Model	Length	Style	Dimensions	Pinout (Female)
PKG3M-2	2 m (6.56 ft)	Straight		 <p>1 = Brown 3 = Blue 4 = Black</p>
PKG3M-5	5 m (16.40 ft)			
PKG3M-7	7 m (22.97 ft)			
PKG3M-9	9 m (29.53 ft)			
PKG3M-10	10 m (32.81 ft)			
PKW3M-2	2 m (6.56 ft)	Right-Angle		
PKW3M-5	5 m (16.40 ft)			
PKW3M-9	9 m (29.53 ft)			

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