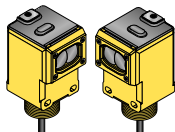


Q45VR2 Series Sensors

90 to 250V ac photoelectric sensors with electromechanical relay output



Because of their extremely high excess gain, these opposed-mode sensors are an excellent option for sensing in contaminated or dirty areas, and are also the best choice for long-range sensing.



Infrared, 880 nm

Features

- Advanced one-piece photoelectric sensors with outstanding optical performance and extremely rugged design
- Operate from 90 to 250V ac (50/60Hz)
- SPDT electromechanical relay output for economical, high-capacity switching and immunity to electrical noise
- Multiple sensing modes include: opposed, diffuse, retroreflective and convergent, plus glass and plastic fiber optic models
- Switchable light/dark operate
- Versatile plug-in modules available for output timing logic and/or signal strength display
- Highly visible Power, Signal (AID™ System*), and Output indicator LEDs
- Choice of prewired 2 m (6.5') or 9 m (30') unterminated cable or Mini-style quick-disconnect fitting
- Versatile mounting options
- Designed to withstand 1200 psi washdown; exceeds its NEMA 6P and IEC IP67 rating

*U.S. Patent no. 4356393

Opposed-Mode Emitter (E) and Receiver (R) Models

Models	Range	Cable†	Supply Voltage	Output Type	Excess Gain	Beam Pattern
Q452E Emitter	60 m (200')	2-wire 2 m (6.5') cable	90 to 250V ac	SPDT Electro-mechanical Relay		
Q45VR2R Receiver		5-wire 2 m (6.5') cable				
Q452EQ Emitter		3-Pin Mini-style QD				
Q45VR2RQ Receiver		5-Pin Mini-style QD				

† 9 m (30') cables are available by adding suffix "W/30" to the model number of any cabled sensor (e.g., Q452E W/30). A model with a QD connector requires a mating cable; see page 9.

Q45VR2 Series — ac-Voltage Sensors

These models are an excellent choice for glass fiber optic applications where faster sensor response is not important. Their high excess gain means that opposed individual fibers can operate reliably in many very hostile environments. Also, special miniature bifurcated fiber optic assemblies with bundle sizes as small as 0.5 mm (.020") dia. may be used successfully for diffuse-mode sensing when using sensor model Q45VR2F(Q). For more information on compatible glass fiber optics, refer to your current Banner Photoelectric Sensors catalog.





Infrared, 880 nm and Visible Red, 650 nm

Glass Fiber-Optic Models

Models	Range	Cable†	Supply Voltage	Output Type	Excess Gain		Beam Pattern	
					Diffuse mode performance based on 90% reflectance white test card			
Infrared, 880 nm								
Q45VR2F	Range varies by sensing mode and fiber optics used	5-wire 2 m (6.5') cable	90 to 250V ac	SPDT Electro-mechanical Relay				
Q45VR2FQ		5-Pin Mini-style QD						
Visible Red, 650 nm								
Q45VR2FV	Range varies by sensing mode and fiber optics used	5-wire 2 m (6.5') cable	90 to 250V ac	SPDT Electro-mechanical Relay				
Q45VR2FVQ		5-Pin Mini-style QD						

Q45VR2 Series — ac-Voltage Sensors

Specifications

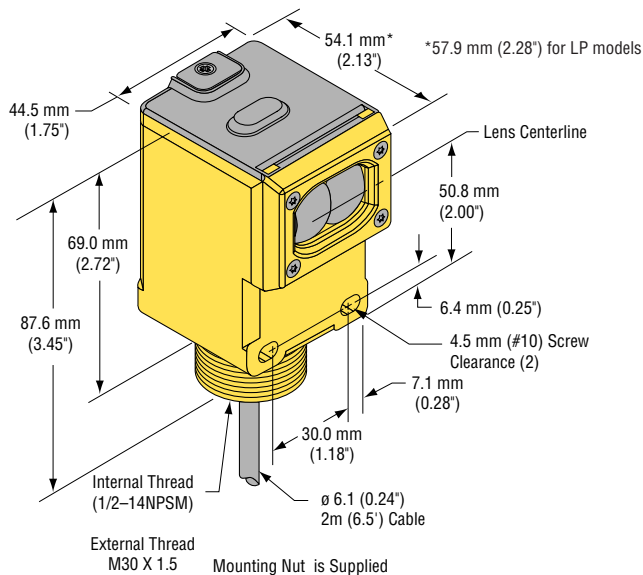
Supply Voltage and Current	90 to 250V ac (50/60 Hz). Average current 20 mA. Peak current 500 mA at 120V ac, 750 mA at 250V ac.
Supply Protection Circuitry	Protected against transient voltages.
Output Configuration	SPDT (Single-Pole Double-Throw) electromechanical relay output. All models except emitters.
Output Rating	<p>Max. switching power (resistive load): 150W, 600VA</p> <p>Max. switching voltage (resistive load): 250V ac, 30V dc</p> <p>Max. switching current (resistive load): 5A @ 250V ac</p> <p>Min. voltage and current: 5V dc, 0.1mA</p> <p>Mechanical life of relay: 10,000,000 operations</p> <p>Electrical life of relay at full resistive load: 100,000 operations</p>
Output Protection Circuitry	Protected against false pulse on power-up
Output Response Time	15 milliseconds ON and OFF (NOTE: 100 millisecond delay on power-up. Output is de-energized during this time.)
Repeatability	<p>Opposed mode: 0.25 milliseconds</p> <p>All other sensing modes: 0.5 milliseconds</p> <p>Response time and repeatability specifications are independent of signal strength.</p>
Adjustments	Beneath sensor's transparent cover: Light/Dark Operate select switch and multi-turn Sensitivity control (allows precise sensitivity setting – turn clockwise to increase gain). Optional logic and logic/display modules have adjustable timing functions (see page 10).
Indicators	<p>Indicator LEDs are clearly visible beneath a raised transparent Lexan® dome on top of the sensor.</p> <p>Power (green) LED lights whenever 90 to 250V ac power is applied</p> <p>Signal (red) AID™ System LED lights whenever the sensor sees its modulated light source, and pulses at a rate proportional to the strength of the received light signal</p> <p>Load (yellow) LED lights whenever the output relay is energized</p> <p>Optional 7-element LED signal strength display modules</p>
Construction	Molded reinforced thermoplastic polyester housing, o-ring-sealed transparent polycarbonate cover, molded acrylic lenses, and stainless steel hardware. Q45s are designed to withstand 1200 psi washdown. The base of cabled models has a 1/2" NPS integral internal conduit thread.
Environmental Rating	NEMA 6P, IEC IP67
Connections	PVC-jacketed 2-wire (emitters) or 5-wire (all others) 2 m (6.5') or 9 m (30') unterminated cables, or 3-pin (emitters) or 5-pin (all others) Mini-style quick-disconnect (QD) fittings are available ("Q" - suffix models). QD cables are ordered separately; see page 10.
Operating Conditions	<p>Temperature: -40° to +70°C (-40° to +158°F)</p> <p>Maximum relative humidity: 90% at 50°C (non-condensing)</p>
Application Notes	Transient suppression is recommended for contacts switching inductive loads. Optional output timing modules are available. See page 10 for more information.
Certifications	 

Q45VR2 Series — ac-Voltage Sensors

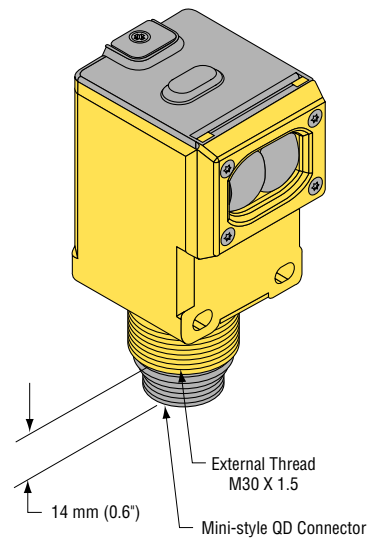
Dimensions

Opposed, Retro, and Diffuse Sensing Modes (model suffix E, R, D, DL, DX, LP and LV)

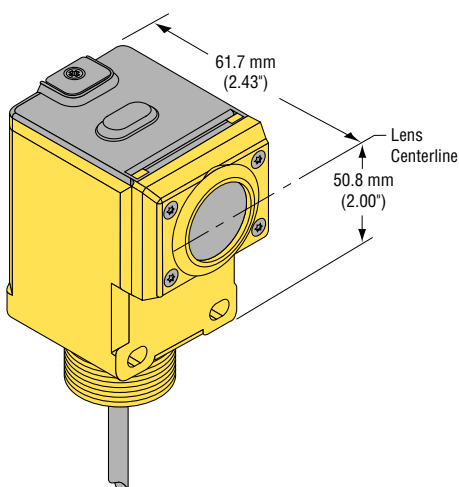
Cabled



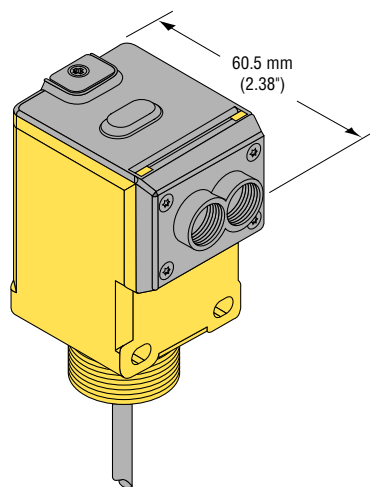
Quick-Disconnect



Convergent Sensing Mode (model suffix CV and CV4)



Glass Fiber Optic (model suffix F and FV)



Plastic Fiber Optic (model suffix FP)

