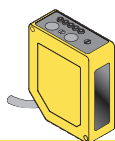




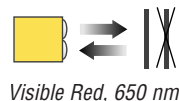
Q60LAF Series Laser Adjustable-Field Sensors

Long-Range Self-Contained Adjustable-Field Laser Sensors



Features

- Long-range adjustable-field background suppression sensor detects objects within a defined sensing field, and ignores objects located beyond the sensing field cutoff
- Powerful visible red laser sensing beam, class 1 and class 2 models available
- Two-turn, logarithmic cutoff point adjustment for easy setting of cutoff point at long range; rotating pointer indicates relative cutoff point setting
- Easy push-button or remote setting of light/dark operate and output timing; continuous status indicators verify all settings at a glance
- Output ON and/or OFF delays adjustable from 8 milliseconds to 16 seconds
- Tough ABS/polycarbonate blend housing is rated IEC IP67; NEMA 6
- Models available for 10-30V dc operation or universal voltage (12 to 250V dc or 24 to 250V ac, 50/60 Hz)



Models

Models	Cutoff Point	Cable*	Supply Voltage	Output Type	Excess Gain (performance based on 90% reflectance white test card)
Class 1 Laser					
Q60BB6LAF1400	Adjustable: 200 mm to 1400 mm (8" to 55")	5-wire 2 m (6.5')	10 to 30V dc	Bipolar NPN/PNP	
Q60BB6LAF1400Q		5-pin Euro-style QD fitting			
Q60BB6LAF1400QP		5-pin Euro-style QD pigtail			
Q60VR3LAF1400		5-wire 2 m (6.5')	Universal Voltage 12 to 250V dc or 24 to 250V ac	E/M Relay (SPDT), N.C. and N.O. contacts	
Q60VR3LAF1400Q1		4-pin Micro-style QD fitting		E/M Relay (SPST), N.O. contact	
Class 2 Laser					
Q60BB6LAF2000	Adjustable: 200 mm to 2000 mm (8" to 80")	5-wire 2 m (6.5')	10 to 30V dc	Bipolar NPN/PNP	
Q60BB6LAF2000Q		5-pin Euro-style QD fitting			
Q60BB6LAF2000QP		5-pin Euro-style QD pigtail			
Q60VR3LAF2000		5-wire 2 m (6.5')	Universal Voltage 12 to 250V dc or 24 to 250V ac	E/M Relay (SPDT), N.C. and N.O. contacts	
Q60VR3LAF2000Q1		4-pin Micro-style QD fitting		E/M Relay (SPST), N.O. contact	

* 9 meter cables are available by adding suffix "W/30" to the model number of any cabled sensor (e.g., Q60BB6LAF1400 W/30). A model with a QD connector requires a mating cable; see page 8.

Q60LAF Series Laser Adjustable-Field Sensors

Specifications

Supply Voltage and Current	Q60BB6LAF models: 10 to 30V dc (10% maximum ripple) at less than 35 mA exclusive of load Q60VR3LAF Universal models: 12 to 250V dc or 24 to 250V ac, 50/60 Hz Input power 1.5 W maximum
Supply Protection	Protected against reverse polarity and transient voltages (Q60VR3 models' dc hookup is without regard to polarity)
Output Configuration	Q60BB6LAF models: Bipolar; one NPN (current sinking) and one PNP (current sourcing) open-collector transistor Q60VR3LAF cabled model: E/M Relay (SPDT), normally closed and normally open contacts Q60VR3LAFQ1 (QD) model: E/M Relay (SPST), normally open contact
Output Rating	Q60BB6LAF models 150 mA maximum each output @ 25° C Off-state leakage current: < 5µA @ 30V dc Output saturation NPN: < 200 mV @ 10 mA and < 1V @150mA Output saturation PNP: < 1V at 10 mA; < 1.5V at 150 mA Q60VR3LAF Universal models Min. voltage and current: 5V dc, 10 mA Mechanical life of relay: 50,000,000 operations Electrical life of relay at full resistive load: 100,000 operations Max. switching power (resistive load): Cabled models: 1250VA, 150 W QD models: 750VA, 90W Max. switching voltage (resistive load): Cabled models: 250V ac, 125V dc QD models: 250V ac, 125V dc Max. switching current (resistive load): Cabled models: 5 A @ 250V ac, 5 A @ 30V dc derated to 200 mA @ 125V dc QD models: 3 A @ 250V ac, 3 A @ 30V dc derated to 200 mA @ 125V dc
Output Protection Circuitry	Q60BB6LAF models: Protected against continuous overload or short circuit of outputs All models: Protected against false pulse on power-up NOTE: 1 second max. delay at power up (outputs do not conduct during this time).
Output Response Time	Q60BB6LAF models: 2 milliseconds ON and OFF Q60VR3LAF Universal models: 15 milliseconds ON and OFF
Repeatability	500 microseconds
Sensing Hysteresis	See Figure 4.
Indicators (see Figure 1) NOTE: Outputs are active during on/off timing selection mode.	ON-Delay ON Green: RUN mode, ON-delay active Flashing Green: ON-Delay Selection mode OFF-Delay ON Green: RUN mode, OFF-delay active Flashing Green: OFF-Delay Selection mode 5-Segment Light Bar* ON/OFF-Delay Selection: Indicates relative delay time RUN Mode: Output ON Yellow: Outputs are conducting ON Green: ON/OFF-Delay Selection Dark Operate ON Green: Dark Operate selected Lockout ON Green: Buttons locked out Light Operate ON Green: Light Operate selected Signal ON Green: Sensor receiving signal Flashing Green: Marginal signal (1.0 to 2.25 excess gain)
Laser Characteristics	Spot Size: approximately 4 x 2 mm throughout range (collimated beam) Angle of Divergence: 5 milliradians NOTE: Contact factory for custom laser spot size.

Q60LAF Series Laser Adjustable-Field Sensors

Specifications, continued

Adjustments	Slotted, geared, 2-turn, cutoff range adjustment screw (mechanical stops on both ends of travel) 2 momentary push buttons: ON-Delay (+) and OFF-Delay (-) (DC models also have remote program wire) ON-Delay select: 8 ms to 16 seconds OFF-Delay select: 8 ms to 16 seconds LO/DO select Push button lockout for security Laser Enable/Disable (remote wire only)
Construction	Housing: ABS/polycarbonate Window: Acrylic
Environmental Rating	IEC IP67; NEMA 6
Connections	Q60BB6LAF (DC) models: 2 m (6.5') or 9 m (30') attached cable, 5-pin Euro-style integral QD fitting, or 5-pin Euro-style 150 mm (6") QD pigtail Q60VR3LAF Universal models: 2 m (6.5') or 9 m (30') attached cable, or 5-pin Micro-style 150 mm (6") QD fitting
Operating Conditions	Temperature: Q60BB6LAF (DC) models: -10° to +50°C (+14° to 121°F) Q60VR3LAF Universal models: -10° to +45°C (+14° to 113°F) Maximum Relative Humidity: 90% at 50°C (non-condensing)

Dimensions

