

Q60AF Sensors

Long-Range Self-Contained Adjustable-Field Sensors



Q60AF Adjustable-Field Features

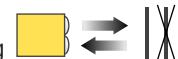
- Long-range adjustable-field background suppression sensor detects objects within a defined sensing field, while ignoring objects located beyond the sensing field cutoff
- Two-turn, logarithmic adjustment of sensing field cutoff point from 0.2 to 2 m; allows easy setting of cutoff point at long range
- Rotating pointer indicates relative cutoff point setting
- Easy push-button or remote programming 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
- Powerful infrared sensing beam
- Tough ABS/polycarbonate blend housing is rated IEC IP67; NEMA 6

10-30V dc Models (Q60BB6AF):

- Powered by 10 to 30V dc; bipolar (one NPN and one PNP) outputs
- Available with integral cable or rotating Euro-style quick-disconnect fitting

Universal Voltage Models (Q60VR3AF):

- 12-250V dc or 24-250V ac, 50/60 Hz
- Available with integral cable or rotating Micro-style quick-disconnect fitting



Infrared, 880 nm

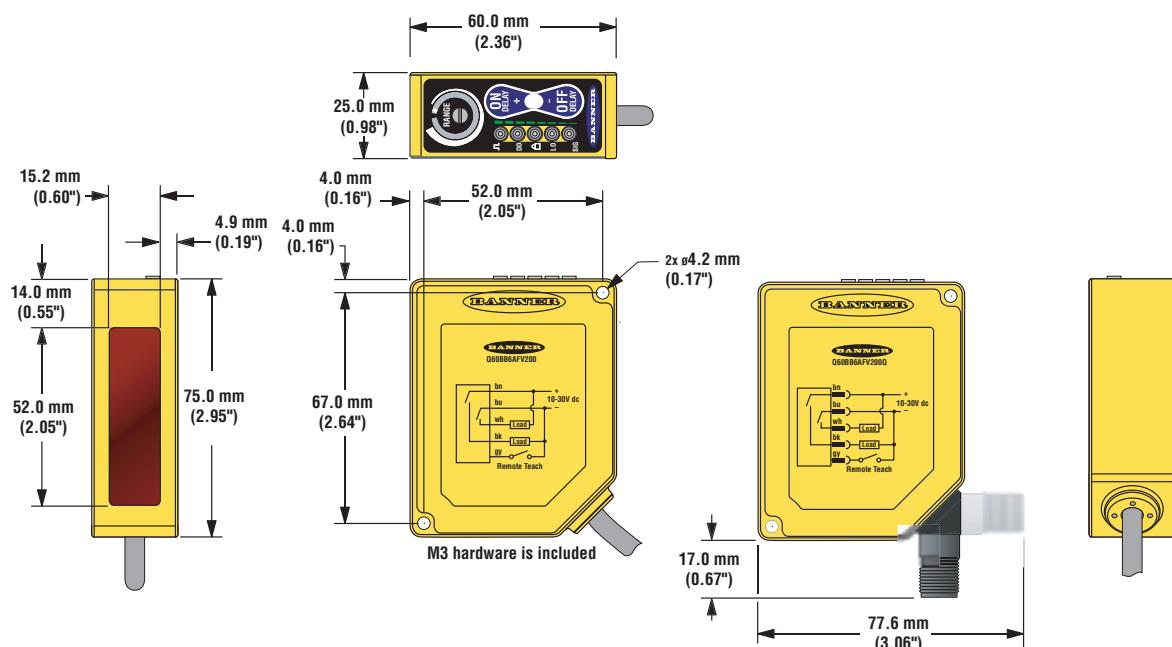
Q60 Adjustable-Field Models

Models	Minimum Range	Cutoff Point	Cable*	Supply Voltage	Output Type	Excess Gain at 200 mm Cutoff	Excess Gain at 2000 mm Cutoff
Q60BB6AF2000			5-wire 2 m (6.5')				
Q60BB6AF2000Q			5-pin Euro-style QD	10-30V dc	Bipolar NPN/PNP		
Q60VR3AF2000	50 mm to 125 mm (2" to 5") depending on cutoff point setting	Adjustable: 200 mm to 2000 mm (8" to 80")	5-wire 2 m (6.5')		E/M Relay (SPDT), normally closed and normally open contacts		
Q60VR3AF2000Q1			4-pin Micro-style QD	12-250V dc or 24-250V ac	E/M Relay (SPST), normally open contact		

* 9 meter cables are available by adding suffix "W/30" to the model number of any cabled sensor (e.g., Q60BB6AF2000 W/30). A model with a QD connector requires a mating cable; see page 8.

Q60 Series Adjustable-Field Sensors

Q60 Adjustable-Field Sensor Dimensions



Q60 Specifications

Supply Voltage and Current	Q60BB6AF models: 10 to 30V dc (10% maximum ripple) at less than 50 mA exclusive of load Q60VR3AF Universal models: 12 to 250V dc or 24 to 250V ac, 50/60 Hz
Supply Protection Circuitry	Protected against reverse polarity and transient voltages (Q60VR3 models' dc hookup is without regard to polarity)
Output Configuration	Q60BB6AF models: Bipolar; one NPN (current sinking) and one PNP (current sourcing) open-collector transistor Q60VR3AF cabled model: E/M Relay (SPDT), normally closed and normally open contacts Q60VR3AFQ1 (QD) model: E/M Relay (SPST), normally open contact

Q60 Series Adjustable-Field Sensors

Q60 Specifications, continued

Output Rating	<p>Q60BB6AF models</p> <p>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</p> <p>Q60VR3AF Universal models</p> <p>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</p>
Output Protection Circuitry	<p>Q60BB6AF models: Protected against continuous overload or short circuit of outputs All models: Protected against false pulse on power-up</p>
Output Response Time	<p>Q60BB6AF models: 2 milliseconds ON and OFF NOTE: 150 millisecond delay on power-up; outputs do not conduct during this time.</p> <p>Q60VR3AF Universal models: 15 milliseconds ON and OFF NOTE: 150 millisecond delay on power-up; relay is de-energized during this time.</p>
Repeatability	500 microseconds
Sensing Hysteresis	See Figure 12.
Indicators NOTE: Outputs are active during on/off timing selection mode.	<p>ON Delay Steady Green: Run mode, ON delay is active Flashing Green: ON Delay Selection mode is active</p> <p>OFF Delay Steady Green: Run mode, OFF delay is active Flashing Green: OFF Delay Selection mode is active</p> <p>5-Segment Light Bar*: Indicates relative delay time during ON or OFF Delay Selection modes</p> <p>Output Steady Amber: Outputs are conducting Steady Green: During ON/OFF Delay Selection modes</p> <p>Dark Operate Steady Green: Dark Operate is selected</p> <p>Lockout Steady Green: Buttons are locked out</p> <p>Light Operate Steady Green: Light Operate is selected</p> <p>Signal Steady Green: Sensor is receiving signal Flashing Green: Marginal signal (1.0 to 2.25 excess gain)</p> <p>*Output, Dark Operate, Lockout, Light Operate and Signal indicators function as 5-Segment Light Bar during ON or OFF Delay Selection modes</p>
Adjustments	<p>2 momentary push buttons: ON Delay (+) and OFF Delay (-) (DC models also have remote program wire)</p> <p>ON Delay select: 8 ms to 16 seconds</p> <p>OFF Delay select: 8 ms to 16 seconds</p> <p>LO/DO select</p> <p>Push button lockout for security</p> <p>Slotted, geared, 2-turn, cutoff range adjustment screw (mechanical stops on both ends of travel)</p>
Construction	Housing: ABS polycarbonate blend Lens: Acrylic Cover: Clear ABS
Environmental Rating	IEC IP67; NEMA 6
Connections	2 m (6.5') or 9 m (30') attached cable, 5-pin Euro-style fitting, or 5-pin Mini-style 150 mm (6") QD pigtail, depending on model. QD cables are ordered separately; see page 8.
Operating Conditions	<p>Temperature: -20° to +55°C (-7° to +131°F)</p> <p>Maximum Relative Humidity: 90% at 50°C (non-condensing)</p>