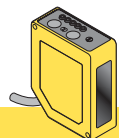




## Q60AF Sensors

Long-Range Self-Contained Adjustable-Field Sensors

### Q60AF Adjustable-Field Features



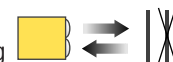
- Long-range adjustable-field background suppression sensor detects objects within a defined sensing field, while ignoring objects located beyond the sensing field cutoff
- Two-turn, logarithmic adjustment of sensing field cutoff point from 0.2 to 2 m; allows easy setting of cutoff point at long range
- 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

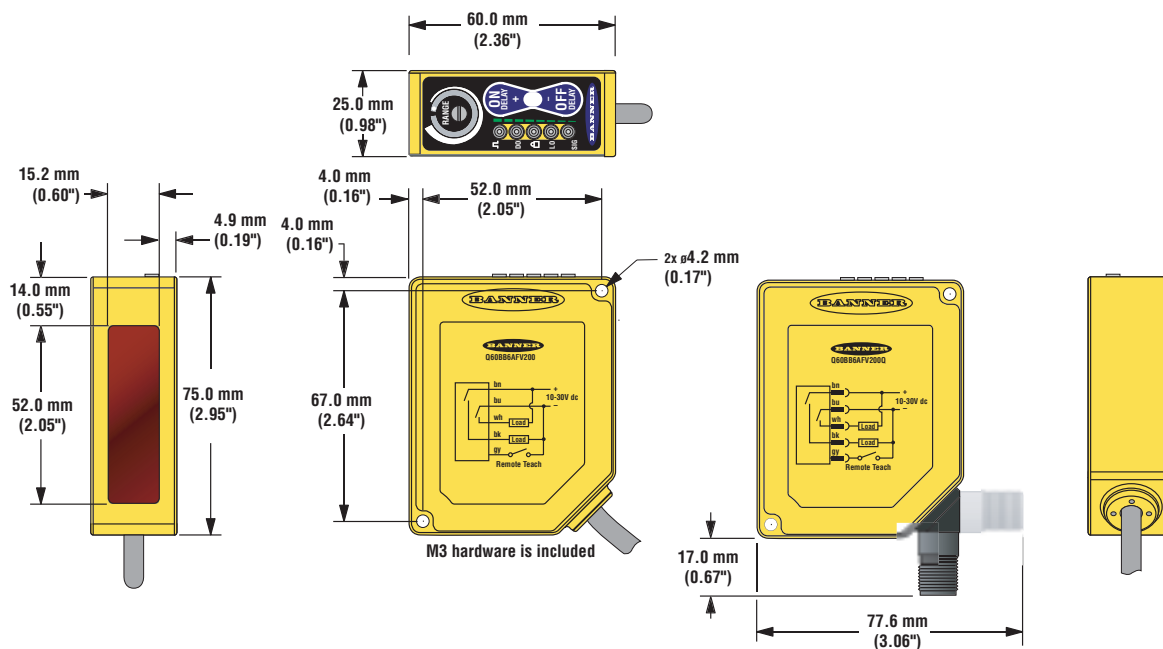
### Q60 Adjustable-Field Models

Models	Minimum Range	Cutoff Point	Cable*	Supply Voltage	Output Type	Excess Gain at 200 mm Cutoff	Excess Gain at 2000 mm Cutoff
Q60BB6AF2000	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')	10-30V dc	Bipolar NPN/PNP		
Q60BB6AF2000Q			5-pin Euro-style QD				
Q60VR3AF2000			5-wire 2 m (6.5')	<b>Universal Voltage</b> 12-250V dc or 24-250V ac	<b>E/M Relay (SPDT),</b> normally closed and normally open contacts		
Q60VR3AF2000Q1			4-pin Micro-style QD				

\* 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

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

# Q60 Series Adjustable-Field Sensors

## Q60 Specifications, continued

<b>Output Rating</b>	<p><b>Q60BB6AF models</b>  150 mA maximum each output @ 25° C  <b>Off-state leakage current:</b> &lt; 5µA @ 30V dc  <b>Output saturation NPN:</b> &lt; 200 mV @ 10 mA and &lt; 1V @150mA  <b>Output saturation PNP:</b> &lt; 1V at 10 mA; &lt; 1.5V at 150 mA</p> <p><b>Q60VR3AF Universal models</b>  <b>Min. voltage and current:</b> 5V dc, 10 mA  <b>Mechanical life of relay:</b> 50,000,000 operations  <b>Electrical life of relay at full resistive load:</b> 100,000 operations  <b>Max. switching power (resistive load):</b> Cabled models: 1250VA, 150 W QD models: 750VA, 90W  <b>Max. switching voltage (resistive load):</b> Cabled models: 250V ac, 125V dc QD models: 250V ac, 125V dc  <b>Max. switching current (resistive load):</b>  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>
<b>Output Protection Circuitry</b>	<p><b>Q60BB6AF models:</b> Protected against continuous overload or short circuit of outputs  <b>All models:</b> Protected against false pulse on power-up</p>
<b>Output Response Time</b>	<p><b>Q60BB6AF models:</b> 2 milliseconds ON and OFF  NOTE: 150 millisecond delay on power-up; outputs do not conduct during this time.  <b>Q60VR3AF Universal models:</b> 15 milliseconds ON and OFF  NOTE: 150 millisecond delay on power-up; relay is de-energized during this time.</p>
<b>Repeatability</b>	500 microseconds
<b>Sensing Hysteresis</b>	See Figure 12.
<b>Indicators</b>  NOTE: Outputs are active during on/off timing selection mode.	<p><b>ON Delay</b>      <b>Steady Green:</b> Run mode, ON delay is active  <b>Flashing Green:</b> ON Delay Selection mode is active</p> <p><b>OFF Delay</b>      <b>Steady Green:</b> Run mode, OFF delay is active  <b>Flashing Green:</b> OFF Delay Selection mode is active</p> <p><b>5-Segment Light Bar*:</b> Indicates relative delay time during ON or OFF Delay Selection modes</p> <p><b>Output</b>            <b>Steady Amber:</b> Outputs are conducting  <b>Steady Green:</b> During ON/OFF Delay Selection modes</p> <p><b>Dark Operate</b>    <b>Steady Green:</b> Dark Operate is selected</p> <p><b>Lockout</b>          <b>Steady Green:</b> Buttons are locked out</p> <p><b>Light Operate</b>   <b>Steady Green:</b> Light Operate is selected</p> <p><b>Signal</b>            <b>Steady Green:</b> Sensor is receiving signal  <b>Flashing Green:</b> 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>
<b>Adjustments</b>	<p>2 momentary push buttons: ON Delay (+) and OFF Delay (-) (DC models also have remote program wire)  <b>ON Delay select:</b> 8 ms to 16 seconds  <b>OFF Delay select:</b> 8 ms to 16 seconds  <b>LO/DO select</b>  <b>Push button lockout</b> for security</p> <p>Slotted, geared, 2-turn, cutoff range adjustment screw (mechanical stops on both ends of travel)</p>
<b>Construction</b>	<b>Housing:</b> ABS polycarbonate blend <b>Lens:</b> Acrylic <b>Cover:</b> Clear ABS
<b>Environmental Rating</b>	IEC IP67; NEMA 6
<b>Connections</b>	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.
<b>Operating Conditions</b>	<p><b>Temperature:</b> -20° to +55°C (-7° to +131°F)  <b>Maximum Relative Humidity:</b> 90% at 50°C (non-condensing)</p>