



Q60AFV Series Sensors with Visible Red Emitter

Self-Contained Adjustable-Field Sensors

Q60AFV Adjustable-Field Features



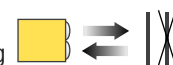
- Adjustable-field background suppression sensor detects objects within a defined sensing field, while ignoring objects located beyond the sensing field cutoff
- Two-turn, logarithmic adjustment of sensing field cutoff point from 0.2 to 1 m; allows easy setting of cutoff point at long range
- Rotating 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, highly collimated visible red sensing beam
- Tough ABS/polycarbonate blend housing is rated IEC IP67; NEMA 6

10-30V dc Models (Q60BB6AFV):

- 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 (Q60VR3AFV):

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



Visible Red, 665 nm

Q60 Adjustable-Field Models

Models	Minimum Range	Cutoff Point	Cable*	Supply Voltage	Output Type	Excess Gain at 200 mm Cutoff	Excess Gain at 1000 mm Cutoff
Q60BB6AFV1000	65 mm to 130 mm (2.5" to 5") depending on cutoff point setting	Adjustable: 200 mm to 1000 mm (8" to 40")	5-wire 2 m (6.5')	10-30V dc	Bipolar NPN/PNP		
Q60BB6AFV1000Q			5-pin Euro-style QD				
Q60VR3AFV1000			5-wire 2 m (6.5')	Universal Voltage 12-250V dc or 24-250V ac	E/M Relay (SPDT), normally closed and normally open contacts		
Q60VR3AFV1000Q1			4-pin Micro-style QD		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., Q60BB6AFV1000 W/30). A model with a QD connector requires a mating cable; see page 8.



WARNING . . . Not To Be Used for Personnel Protection

Never use these products as sensing devices for personnel protection. Doing so could lead to serious injury or death.

These sensors do NOT include the self-checking redundant circuitry necessary to allow their use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition. Consult your current Banner Safety Products catalog for safety products which meet OSHA, ANSI and IEC standards for personnel protection.

Q60V Series Adjustable-Field Sensors – Visible Red Emitter

Q60AFV Overview

The Q60AFV sensor is a full-featured adjustable-field sensor. These adjustable-field sensors are able to detect objects of relatively low reflectivity, while ignoring other objects in the background (beyond the cutoff point). The cutoff distance is mechanically adjustable, using the 2-turn adjustment screw on the sensor top (Figure 1). A rotating pointer indicates the relative cutoff position. (The indicator moves clockwise to show increasing distance.)

Two push buttons (ON Delay and OFF Delay) are used to set the output delay options, to toggle between light and dark operate modes and to lock out the push buttons for security purposes. These functions also may be accomplished using the remote wire.

Seven LED indicators show, during RUN mode, the sensor configuration and operating status. During Delay Configuration, 5 of the LEDs combine to form a single light bar that indicates relative ON or OFF delay time.

Adjustable-Field Sensing — Theory of Operation

In operation, the Q60AFV compares the reflections of its emitted light beam (E) from an object back to the sensor's two differently-aimed detectors R1 and R2 (see Figure 2). If the near detector (R1) light signal is stronger than the far detector (R2) light signal (see object A, closer than the cutoff distance), the sensor responds to the object. If the far detector (R2) light signal is stronger than the near detector (R1) light signal (see object B, object beyond the cutoff distance), the sensor ignores the object.

The cutoff distance for Q60AFV sensors is adjustable from 200 to 1000 millimeters (8" to 40"). Objects lying beyond the cutoff distance are ignored, even if they are highly reflective. However, it is possible to falsely detect a background object, under certain conditions (see Background Reflectivity and Placement, page 3).

In the drawings and discussion on this page and page 3, the letters E, R1, and R2 identify how the sensor's three optical elements (Emitter "E", Near Detector "R1", and Far Detector "R2") line up across the face of the sensor. The location of these elements defines the sensing axis (see Figure 3). The sensing axis becomes important in certain situations, such as those illustrated in Figures 8 and 9.

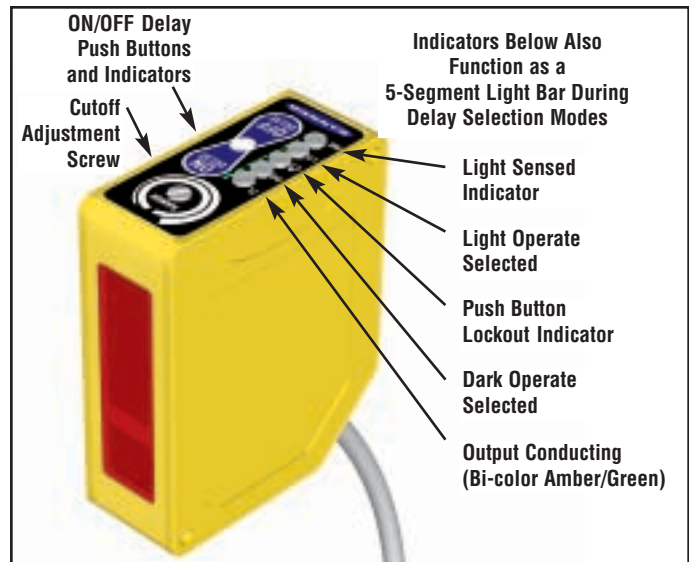


Figure 1. Q60V features

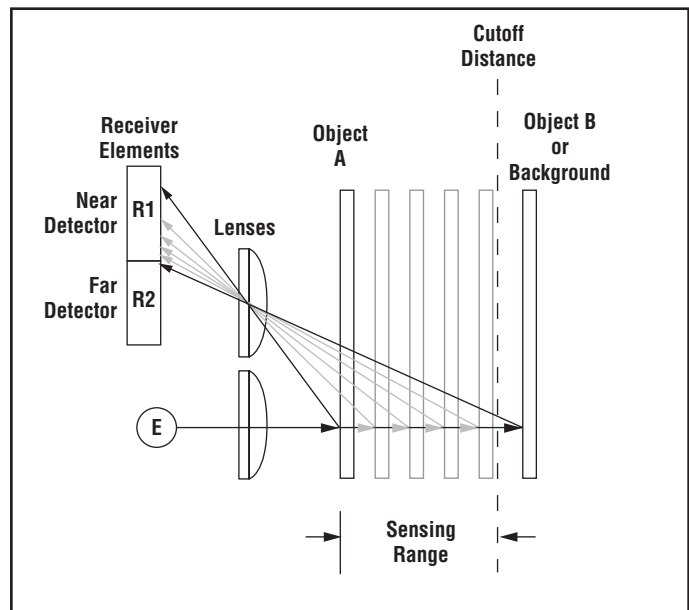


Figure 2. Adjustable field sensing concept

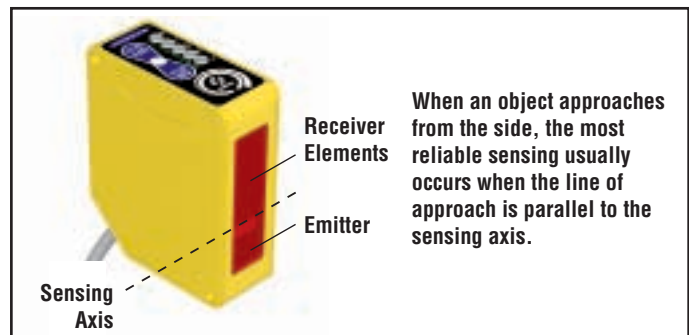


Figure 3. Q60V sensing axis