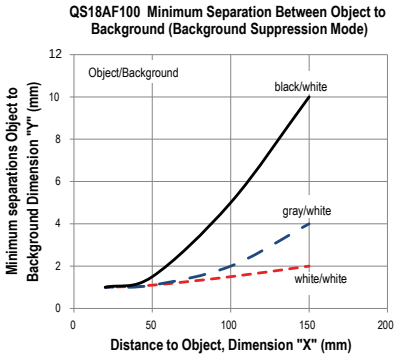


Figure 3. QS18AF100 minimum separation between object and background

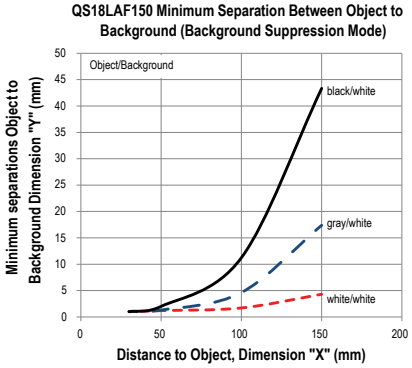


Figure 4. QS18LAF150 minimum separation between object and background

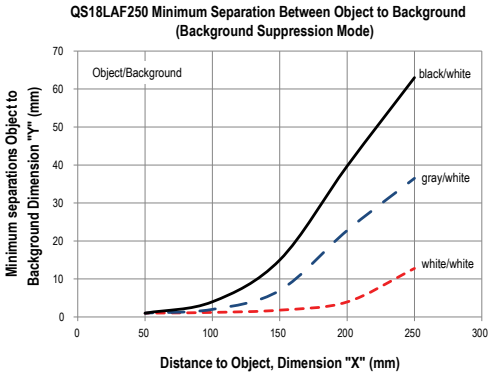
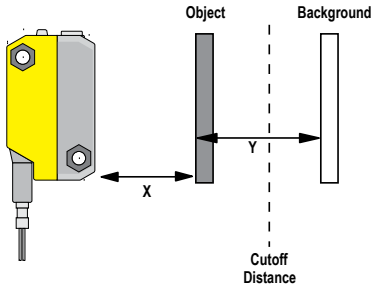


Figure 5. QS18LAF250 minimum separation between object and background



X: Distance to Object (mm)

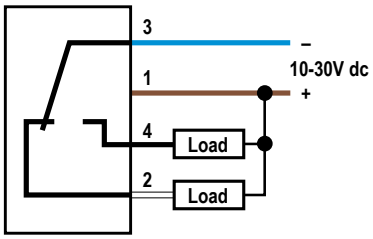
Y: Minimum Separation Between Object and Background (mm)

Installation

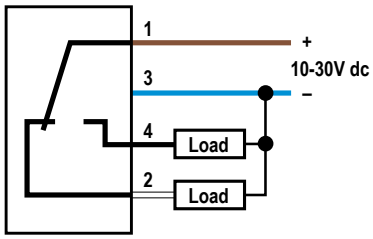
Wiring Diagrams

Cabled wiring diagrams are shown.Quick disconnect (QD) wiring diagrams are functionally identical.

NPN (Sinking) Outputs



PNP (Sourcing) Outputs



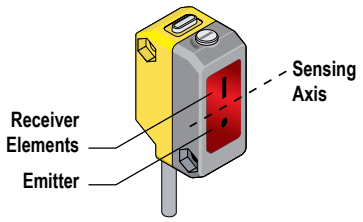
Wiring Key

1 = Brown
2 = White
3 = Blue
4 = Black

Setting the Cutoff Distance

The cutoff distance for the QS18AF models may be adjusted between 20 mm and 100 mm (0.8 in to 4 in); for QS18LAF models, between 30 mm and 150 mm (1.2 in to 6 in); and for QS18LAF250 models, between 50 mm and 250 mm (2 in to 10 in).

To properly set the cutoff point, position the lightest possible background to be used, at the closest position it will come to the sensor during use. Using a small screwdriver in the adjustment screw, adjust the cutoff distance until the threshold is reached and the yellow Light Sensed indicator changes state. (If the indicator never comes ON, the background is beyond the maximum sensing distance and will be ignored.) Repeat the procedure, using the darkest target, placed in its most distant position for sensing. Adjust the cutoff approximately midway between the two positions (*Figure 7* on page 4).



When an object approaches from the side, the most reliable sensing usually occurs when the line of approach is parallel to the sensing axis.

Figure 6. Sensing Axis

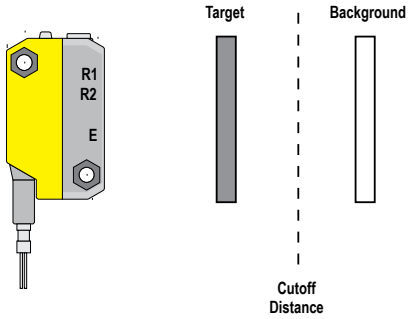


Figure 7. Set cutoff distance approximately midway between the farthest target and the closest background

Sensing Reliability

For highest sensitivity, position the target for sensing at or near the point of maximum excess gain. See the Performance Curves section for the excess gain curves. Maximum excess gain for model QS18VN6AF100 at a 20 mm cutoff occurs at a lens-to-object distance of about 7 mm, for example. Sensing at or near this distance makes the maximum use of each sensor's available sensing power. The background must be placed beyond the cutoff distance. Note that the reflectivity of the background surface also may affect the cutoff distance. Following these guidelines improves sensing reliability.

Background Reflectivity and Placement

Avoid mirror-like backgrounds that produce specular reflections. A false sensor response occurs if a background surface reflects the sensor's light more to the near detector (R1) than to the far detector (R2). The result is a false ON condition (*Figure 8* on page 5). Correct this problem by using a diffusely reflective (matte) background, or angling either the sensor or the background (in any plane) so the background does not reflect light back to the sensor (*Figure 9* on page 5). Position the background as far beyond the cutoff distance as possible.

An object beyond the cutoff distance, either stationary (and when positioned as shown in *Figure 10* on page 5), or moving past the face of the sensor in a direction perpendicular to the sensing axis, may cause unwanted triggering of the sensor if more light is reflected to the near detector than to the far detector. Correct the problem by rotating the sensor 90° (*Figure 11* on page 5). The object then reflects the R1 and R2 fields equally, resulting in no false triggering. A better solution, if possible, may be to reposition the object or the sensor.