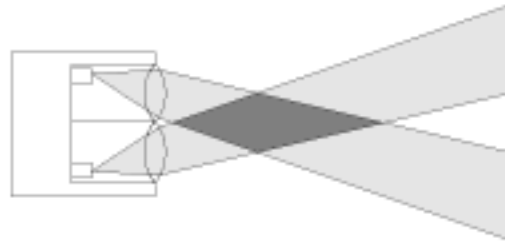
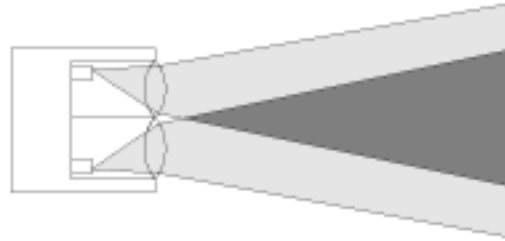


Diffuse Reflection
(continued)



A short-range sensor delivers high excess gain over a short sensing distance and drops off quickly. The source's beam and the detector's field of view converge a short distance from the lenses. The energy present in that area is very high, allowing the detection of small targets. The sensor also ignores objects in the near background.



A long-range sensor's source beam and detector's field of view are positioned close together on the same axis. The ability to sense extends quite a distance. Excess gain peaks out several inches from the sensor, then drops off slowly over distance.

FIGURE 93: SHORT-RANGE AND LONG-RANGE

To sense into holes or cavities, or to pick up very small objects, use a focused diffuse reflective sensor. Or, a sensor with a very small light spot size. The source and detector are positioned behind the lens in order to focus the energy to a point. The excess gain is extremely high at this point and then drops off on either side of the sensing zone.

Reflex

Calculating the excess gain for a reflex (retro-reflective) sensor is similar to the method used for diffuse reflective sensors.

With this type of sensor, excess gain and range are related to the light bouncing back from the reflector. Maximum operating range also depends upon lens geometry and detector amplifier gain.

The effective beam is defined as the actual size of the reflector surface. The target must be larger than the reflector before the sensor will recognize the target and switch its output.

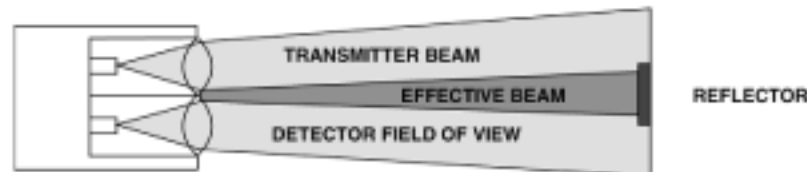


FIGURE 94: EFFECTIVE REFLEX SENSOR BEAM