

Polarizing Filters



A reflex sensor detects objects when the beam of emitted light is not returned by its reflector. When the objects to be detected are themselves reflective, the sensor may falsely register that there is no object present.

These false readings can be eliminated by using a polarizing filter. A polarizing filter has two parts; the sender filter is "striped" horizontally, and the receiver filter is "striped" vertically. The sensor emits light which oscillates on an arbitrary plane, but the sender filter will only allow horizontally oscillating light to pass through it. If no object is present, the beam of light will

strike the reflector. The reflectors we recommend are "optically active"; when the beam strikes the reflector it rotates the light 90° . When the light returns to the receiver it has been vertically aligned and can pass through the receiver filter (Fig. 1). A reflective object will still reflect the beam, but without rotating it. The light will not be able to pass through the receiver filter and the sensor will register an object as being present (Fig. 2).

The possible exception to this is the case of materials such as plastic wraps, films, and coatings. As the light passes through this material, it is turned 45° . The beam then hits

the reverse side of the material and is directed back to the sensor; however, as it passes back through the material it is turned a further 45° . The light is then able to pass through the receiver filter, and the sensor reacts as if no object were present.

This type of false reflection is generally less intense than a reflection from the reflector, and the problem can be solved by adjusting the optical alignment or sensitivity control. In extreme cases it may be necessary to use a clear material sensor.

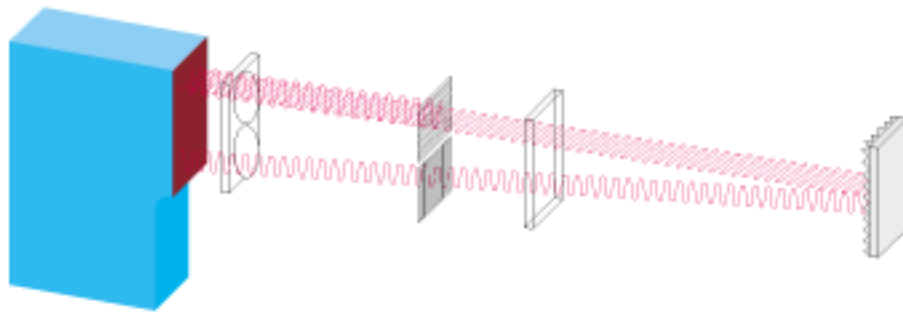


Fig. 1 When the light beam is reflected by the reflector, it can pass through the filter.

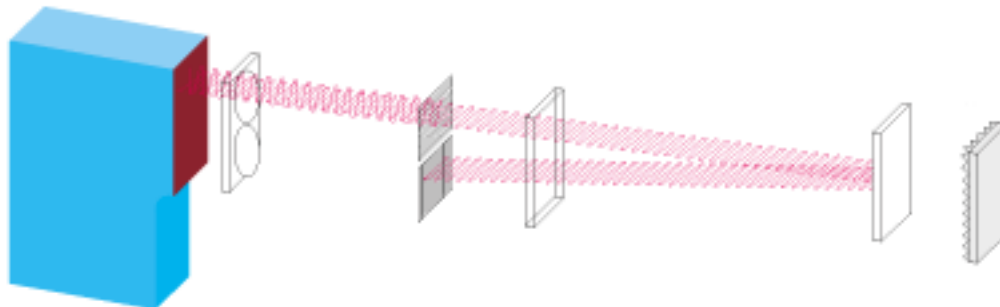


Fig. 2 When the light beam is reflected by the object, it cannot pass through the filter.