Reflex Sensors

Photoelectric reflex switches (designated by an "L," as in the WL 2000) contain both the sender and receiver in a single housing. The emitted light is returned by the corner cube reflector and evaluated by the sensor (Fig. 1). With the corner cube reflector this becomes a two-part device that requires wiring on only one side, making it more economical than a through beam sensor.

Polarizing filters (p. 39 for more information) prevent false readings on reflective objects. There are many different types of reflectors, from the very simple to the very specialized, and each will provide a different sensing distance.

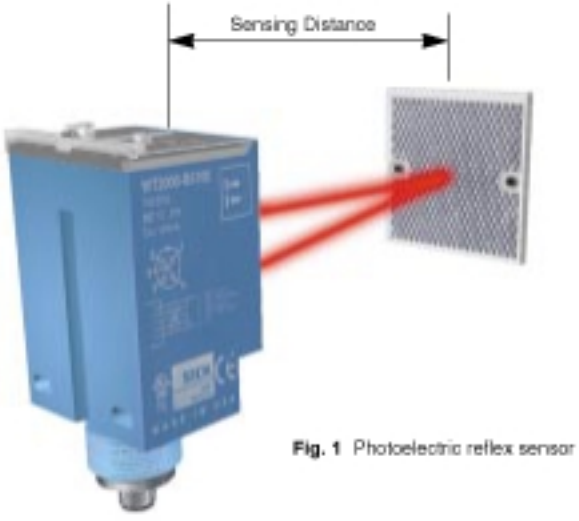

Fig. 1 Photoelectric reflex sensor

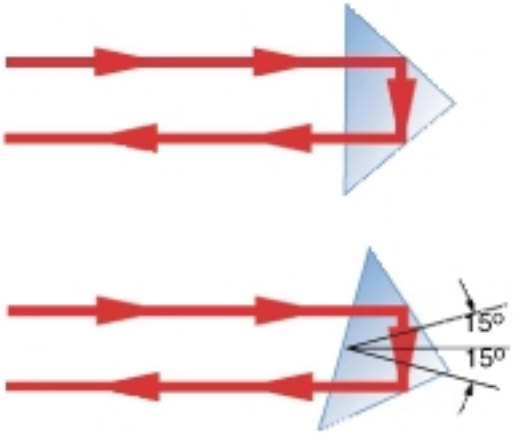

Fig. 2 Corner cube elements within a reflector

Corner cube reflectors are most common in opto-electronics. They can absorb deviations in alignment of up to ±15°. This parallel reflection of light, (Fig. 2), allows higher tolerances in alignment of reflex photoelectric switches, as opposed to mirrors which require perfect alignment and might fail from external influences (vibration, etc.). SICK 2000X tape uses microcorner cube technology.

Some retroreflective tape consists of small glass or plastic beads of approximately 0.1 mm (0.004 in) diameter which are embedded side-by-side on a tape having an adhesive backing (Fig. 3). This relatively low-cost reflector is used for temporarily marking cartons and similar applications.

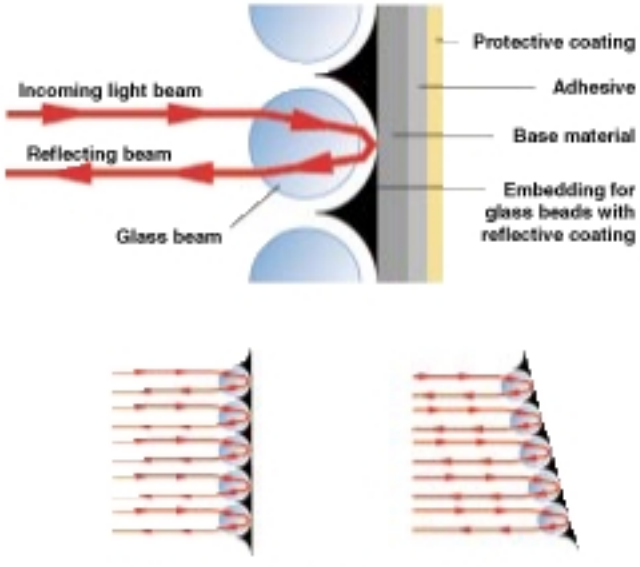

Fig. 3 Glass or plastic bead type reflector

Retroreflective tapes have a reflectivity which can vary with quality from 200 to 2000 times greater than a 90% reflective test card. Beads create only a triple shift and cannot be used with systems using polarized light.