

Pressure-Sensitive Sensing Edges

What safety edges are and how they work



What are they?

A Tapeswitch pressure sensitive sensing or safety edge is an electrical switching device consisting of a compliant housing and an internal ribbon switch. The housing may be constructed from a number of different materials, including PVC, EPDM, and TPE. When activated, sensing or safety edges function as normally-open, momentary-contact switches. Activation occurs when a force applied to the housing is transferred to the switching element and causes a contact closure. When the force is removed, the contacts open again.



Key Properties

A pressure sensitive sensing edge has a number of properties that define its operating characteristics.

Profile: The cross section of the sensing edge. It varies in height, width, number of compartments and mechanical elements, all of which affect the actuation characteristics. The photo above shows examples of many different profiles.

Actuation Force: The amount of force necessary to cause a contact closure of the switching element inside the sensing edge housing using an object of specific size and shape.

Compliance : The amount of deformation the sensing edge undergoes before the switch actuates. Low compliance is desirable when immediate actuation is required. Higher compliance gives added cushioning and offers some immunity to false or inadvertent actuations.

Overtravel : The amount of deformation the sensing edge can accommodate after switch actuation. Overtravel determines the amount of cushioning after contact with the edge.

Typical Applications

Pressure sensitive sensing edges are typically used to protect personnel from injury or equipment from damage. In industrial settings, they can be used on mechanized door edges to detect obstructions or on scissor lifts to provide pinch protection. They are suitable for collision sensors on AGVs, impact detectors on moving platforms, and positioning switches on moving conveyors. In medical applications, such as scanners, they can protect the patient from the moving parts of the equipment.

Sensing edges are most often used in safety applications. For this reason, Tapeswitch includes [4-lead fail-safe](#) wiring on all standard models. When used with a [Tapeswitch safety controller](#), the integrity of the sensing edge and all interconnecting wires can be continuously monitored.