Automatic Doors—How They Work

To operate properly, every automatic door requires a *Door Control System* that can sense certain conditions in and near the doorway. In the majority of today's applications, the sensing tasks are performed by various combinations of three devices: (1) motion detectors, (2) presence detectors, and (3) safety beams. The function of each of these devices is described below. (Note: special rubber "switch" mats have been used to detect presence—however, such mats are used infrequently due to their unsightly appearance and high maintenance/installation costs.)

There are five types of automatic doors: swinging, sliding, folding, revolving, and overhead (illustrated on back cover). Figures 3-1 through 3-3 below indicate the basic function of each door control sensing device in a typical swinging door application. Although there are nearly an infinite number of ways that various combinations of sensors can be used to control the five types of doors, if you are familiar with the basic purpose of each device as described below you will have sufficient knowledge to understand the many different applications of door sensors.

Motion Detectors (Approach)

Motion detectors (microwave or infrared) are used to determine a person or object has entered the Activation Zone. Once motion is detected, an "open" command is sent to the door—which then automatically opens to permit passage through the doorway.

Safe Zone is clear. Door opens when pedestrian enters Activation Zone.

Door swings away from pedestrian

Safe Zone

Activation Zone

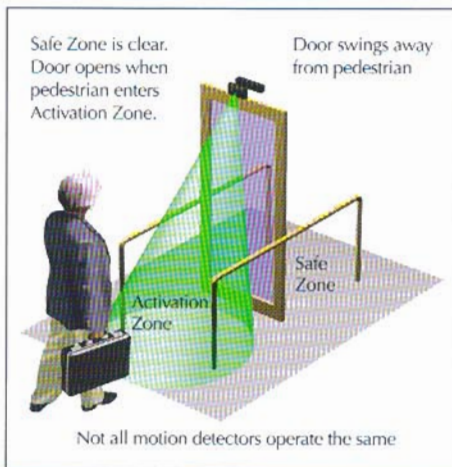Not all motion detectors operate the same

Figure 3-1

Presence Detectors (Safety)

Presence detectors (microwave or infrared technology) are used to "watch" a given area to decide if, due to safety concerns, there are any reasons the door should not be opened, should be kept open, or (in the case of sliding doors) should have door movement reversed.

Object sensed in Safe Zone. Door will not open.

Safe Zone

Activation Zone

Not all presence detectors operate the same

Figure 3-2

Safety Beams

Safety Beams (infrared technology) are used as "specific location" presence detectors. They, too, determine if, due to safety concerns, there are any reasons the door should not be opened, should be kept open, or (in the case of sliding doors) should have door movement reversed.
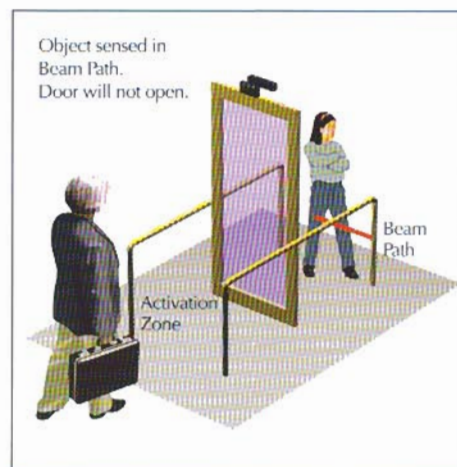

Object sensed in Beam Path. Door will not open.

Beam Path

Activation Zone

Figure 3-3