

# SENSOR TECHNOLOGY & PLACEMENT GUIDE

## TECHNOLOGY PIR AND ULTRASONIC

A **Passive Infrared Sensor** (PIR sensor), is a device that measures infrared radiation (IR), or heat, from objects in its field of view. Because it only receives information, it is considered passive. The IR sensor views a human body as an IR generating object. The lens of the occupancy sensor breaks up the field of view into IR sensitive bands. The occupancy sensor is designed to only react when heat is sensed moving from band to band. For PIR occupancy sensors to work object must have direct "line of sight" to the PIR sensor.

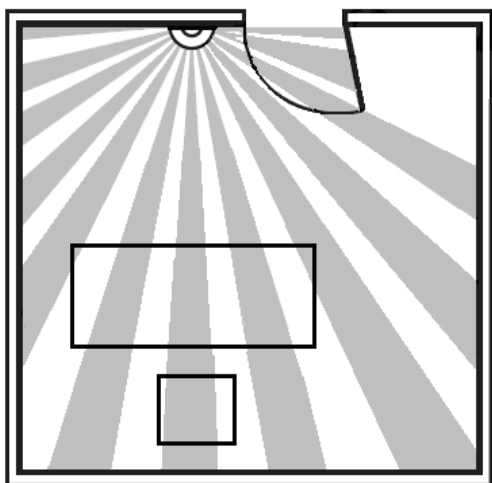
An **Ultrasonic Sensors** (US sensor) is a technology that works on a principle similar to radar or sonar. It is an active technology that sends and receives. It emits an inaudible high-frequency sound wave and evaluates the echo which is received back after bouncing around in the room. This allows the sensor to evaluate the whole room and can "look" over walls and obstructions to identify movement.

Both technologies show higher sensitivity closer to the sensor to allow small movements to be noticed. Sensitivity reduces further away from the sensor and may require a walking step to activate the sensor.

## PLACEMENT GUIDELINES WALL SENSOR

A **Wall Switch Sensor** provides a 180° coverage pattern, extending outward from the sensor. This will allow for instant turn ON when an occupant enters the space. Total area covered will be over 400 square feet.

- Proper placement gives the sensor a clear line of sight to the entry door without viewing the hallway.
- The occupant must be able to see the sensor from their normal work position otherwise the sensor will not be able to detect their presence.
- For offices where there are other obstructions between the sensor and the occupant or the entry door, a ceiling sensor is required.



## PLACEMENT GUIDELINES CEILING SENSOR

A **Ceiling Sensor** provides a 360° coverage pattern of up to 1200 square feet when using passive infrared only. When using dual technology the coverage pattern extends to over 2000 square feet. Barriers within the space that block line-of-sight to sensor detection will decrease coverage area when using passive infrared by itself, ultrasonic dual technology will allow the sensor to get around the obstructions.

- Designed for ceiling mounting at a height of 8-10 feet (mounting sensor at greater heights decreases the sensitivity to motion, while lower mounting height will decrease range).
- The sensor needs a visually unobstructed view of the normally occupied workspace and entry door(s).
- Avoid sensor placement with a direct view out a doorway. Placing the sensor offset from the center and away from the door is recommended.
- If the occupant cannot see a PIR sensor from their normal work position, the sensor will not be able to detect their presence.
- File cabinets, partitions, or walls are typical types of obstructions. If there are other obstructions between the sensor and the occupant, an ultra-sonic or dual technology ceiling sensor is recommended.
- When the light level feature is used, mount within 15 feet of the windows or skylight and avoid mounting the sensor close to lighting fixtures.
- Place the sensor no closer than 5 feet to an HVAC air duct when using dual technology sensors.
- Open office designs encourage placement of the sensors to allow overlapping coverage of small motion range and a clear view into each cubicle. Walking step motion may cover the entry to the space. Dual technology units provide added sensitivity to small motion.

