

# Motion Sensitive Wall Light Switches

## **Covered Products:**

Wall-mounted motion sensitive wall light switches.

## **Goal:**

To reduce the amount of lighting used in a building when individual rooms are not occupied. These sensors are not meant to be used for daylight harvesting control systems, but to appropriately turn off lighting in an unoccupied room.

## **Background:**

Many rooms in many types of building do not have 100% occupancy during designed building use times, and it is beneficial to turn off overhead lighting in unoccupied spaces to not only save money, but to reduce the burden on the electric grid. Lighting control sensors must also maintain comfort and usability of the room, provide light consistently when occupied, and be sensitive enough to maintain lighting levels even in sometimes passive (seated) office use patterns.

## **Definitions:**

**PIR:** Passive Infrared

- Relies on “line-of-sight” coverage to detect occupancy by sensing the difference in heat emitted by humans in motion from that of the background space.
- Wall Switch Sensors use PIR Technology for smaller unobstructed rooms, including small private offices, copy rooms, closets and other smaller enclosed spaces

**RFI:** Radio Frequency Interference and **EMI:** Electromagnetic Interference –

- Two terms that reference a disturbance that affects an electrical circuit due to either electromagnetic conduction or electromagnetic radiation emitted from an external source.
- The disturbance may interrupt, obstruct, or otherwise degrade or limit the effective performance of the circuit.

**LEED** (Leadership in Energy and Environmental Design) is an internationally recognized green building certification system, providing third-party verification that a building or community was designed and built using strategies intended to improve performance in metrics such as energy savings, water efficiency, CO<sub>2</sub> emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts.

## **Standard Setting and Certifying Programs:**

**American Society of Heating Refrigeration and Air-Conditioning Engineers (ASHRAE)** is an international organization committed to its mission of advancing heating, ventilation, air conditioning and refrigeration (HVAC&R) to serve humanity and promote a sustainable world through research, standards writing, publishing and continuing education. It is committed to the advancement of HVAC&R for the benefit of society. For additional information on ASHRAE, visit the organization website at <http://www.ashrae.org/>.

## **Specifications:**

**Affected entities shall** provide sensors meeting the following specifications:

- Meet ASHRAE 90.1 2007 requiring a shut off of not more than 30 minutes lag time between occupant leaving space and the light shutting off.
- Be certified by Underwriters Laboratory, Inc., with UL labels.
- Be capable of replacing an existing toggle or plate switch without additional wiring to switch location.
- Provide sensors sufficient to cover the square footage and configuration of the room, per manufacturer's recommendations. See also [http://www.aboutlightingcontrols.org/education/papers/Occupancy\\_sensors\\_a-z.shtml](http://www.aboutlightingcontrols.org/education/papers/Occupancy_sensors_a-z.shtml)
- Provide small motion detection up to 20ft.
  - Respond only to signals caused by human motion.
  - Provide high immunity to false triggering.
- Provide 180 degree coverage capability with a multiple segmented lens.
- Be compatible with magnetic and electronic ballasts and small fan motors.
- Provide a field selectable option to convert sensor operation from Auto-"On" to Manual-"On".
- Provide a manual "Off" operation.
- Provide push-button short term override for "on" activation.
  - Provide field adjustable time delay.
  - Provide NO ability to fully override sensor for full-time "on".
- Provide immunity from RFI and EMI.
- Included sensing technology shall not release any radiation that is known to interfere with certain types of electronic devices.

**Affected entities are encouraged to:**

- Provide sensors with a reduced lag-time (better than ASHRAE 90.1 2007) of 20 minutes between occupant leaving space and the light shutting off, or set adjustable-time delays to low-end of range.
- Include a photocell option that will prevent lights from turning on during periods of occupancy with adequate daylight available.
- Replace existing toggle wall switches in offices, copy rooms, closets, toilets, etc. where applicable.
- Advise and educate occupants, including cleaning staff and maintenance staff, of the purpose and what to expect for the operation of the wall switch sensors, including education for cleaning staff in particular about using the manual "Off" function when leaving a room during nighttime cleaning rounds.
- Reduce the State's carbon footprint by procuring local or regional products.
  - For projects registered with a LEED rating system, some contribution to achievement of credits may be realized in purchasing units that are manufactured within 500 miles of the project site.

## **Toxics in Packaging:**

In accordance with Environmental Conservation Law section 37-0205, packaging shall not contain inks, dyes, pigments, adhesives, stabilizers, or any other additives to which any lead, cadmium, mercury or hexavalent chromium exceed the following concentration level: 100 parts per million by weight (0.01%).