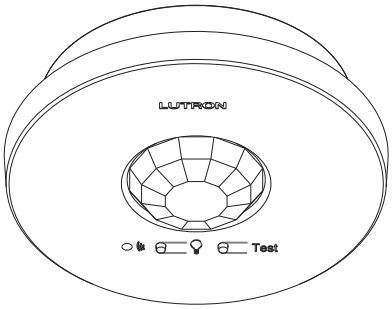
Best Practices for Occupancy Sensors in Server Rooms

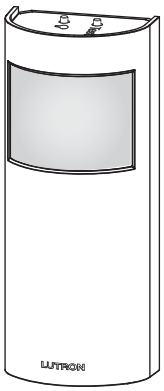
Server rooms present a challenging environment for occupancy sensors. They typically have a very high amount of airflow, the airflow is heated, and the space is usually a low-traffic area. Improper or inadequate sensor layouts can lead to undesirable performance in these spaces. Even with a good sensor layout, it is possible the sensors may not perform acceptably if the environment is extremely challenging. There are other methods of automatic shutoff, such as the Lutron® afterhours mode, that can be used instead of occupancy sensors in order to meet energy code requirements. Afterhours mode allows a button press to temporarily override the lights ON. Once the afterhours timeout has expired, the lights will blink to warn any occupants that the lights are about to turn off. After a set 'blink-warn' timeout, the lights turn off. Any button press during either the afterhours timeout or the 'blink-warn' timeout will restart the afterhours timeout. If occupancy sensors must be used, this document lays out best practices for using occupancy sensors in a server room or similar application.

Best Practices

1. Use Lutron® Radio Powr Savr™ passive infrared (PIR) sensors only. Ultrasonic (US) sensors are too susceptible to high airflow, which makes them a poor choice for server rooms.

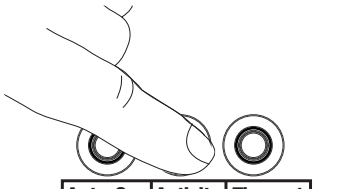


Ceiling-mounted occupancy/vacancy sensor



Wall-mounted occupancy/vacancy sensor

2. Use low sensitivity mode. Low sensitivity mode is recommend to avoid having the sensors being tripped by objects moving around in the space due to high airflow. For example, label tags on the side of a server blade may be blown around by the exhaust air coming from the server. If low sensitivity is still being falsely tripped by moving objects in the space, there is a special sensitivity mode available called ultra-low sensitivity mode. This mode is available on sensors with a date code of X01 or greater. This mode is enabled by pressing and holding the sensitivity button until all three LEDs are flashing. Then, release the button and press and hold it for 3 seconds to save. Ultra-low sensitivity mode is recommended to use ONLY when low sensitivity mode is being falsely tripped. When using ultra-low sensitivity mode, additional sensors may need to be added to ensure proper coverage as the effective range is reduced..



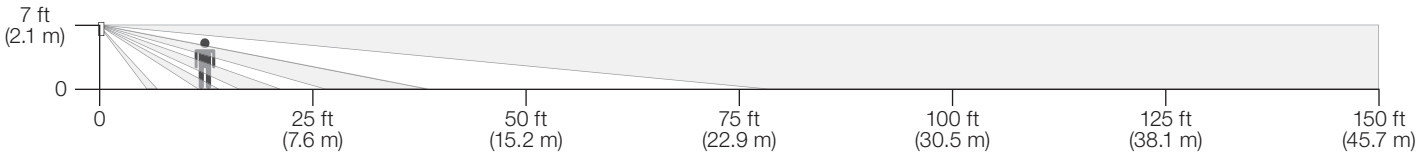
Auto-On	Activity	Timeout
Enabled		30 min
LowLight		15 min
Disabled	*	5 min

* This is the least sensitive setting and can be used for spaces that will generally only experience large motions, such as foot traffic.

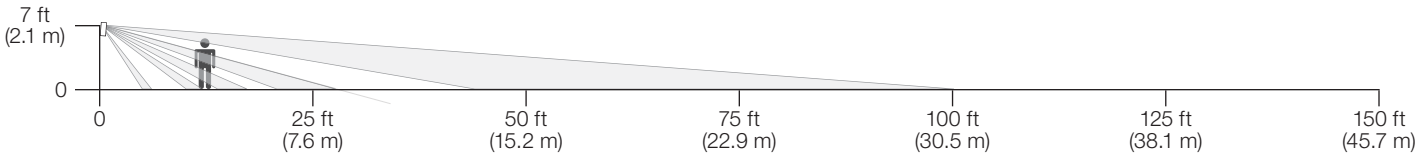
Best Practices *(continued)*

3. Keep the PIR sensors greater than or equal to 4 ft (1.22 m) away from any source of cooled/heated airflow. This includes HVAC vents, server rack units with fans, and sources of airflow that may be moving warm air off the servers.
4. The use of hallway PIR sensors is recommended. The flexible mounting bracket, LRF-ARM-WH can be used to adjust the coverage area by angling the sensor downwards. Ceiling- and/or wall-mounted Radio Powr Savr™ sensors can be used to augment the coverage provided by the hallway sensors.

Side View - Normal Sensor Mounting Angle*

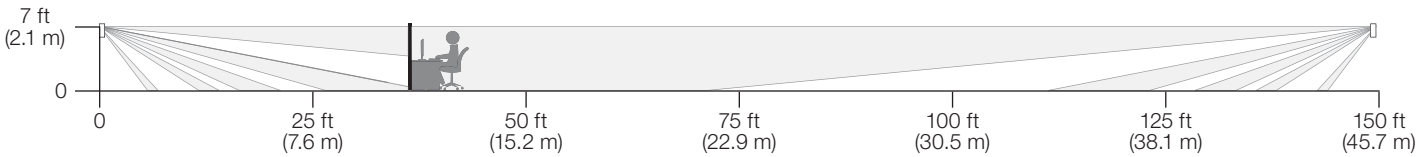


Side View - Sensor Angled Downward*



5. It is recommended to have hallway sensors pointing in both directions down a server hallway. This ensures that while one sensor may be temporarily blocked by a person working behind a mobile workstation, the other sensor will be able to detect them.

Side View - Sensor Angled at Both Ends of the Hallway*



6. It is recommended to use a 30 minute timeout where permissible by local code. This ensures that the sensors will have ample opportunity to detect a person doing work in the space and prevent the lights from going off when the space may be occupied.

7. PIR technology ultimately relies on a difference in temperature between the human body and the environment in which it surrounds. In the event a server room reaches temperatures similar to the surface of the human body, the sensor's detection range will be significantly reduced. If the HVAC design of your space allows for such temperatures to exist, it is highly recommended to overlap sensor coverage as much as possible to reduce potential gaps in coverage caused by a high-ambient temperature environment.

* Sensor mounting shown at 7 ft (2.1 m). Mounting height should be between 6 ft and 8 ft (1.6 m and 2.4 m) and centered within the hallway.

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