Radio Powr Savr™

Installation Instructions *Please Read Before Installing*

English

Wireless Battery-Powered Occupancy and Vacancy Sensors

California Title 24 Compliant

LRF2-OCRB-P 3 V⎓ 14 µA 434 MHz (Occupancy/Vacancy)

LRF2-VCRB-P 3 V⎓ 14 µA 434 MHz (Vacancy-Only)

Compatible Products

For a full list of compatible products visit www.lutron.com/occsensors

Product Description

Lutron's ceiling-mounted Occupancy and Vacancy Sensors are wireless, battery-powered, passive infrared (PIR) devices that automatically control lights via RF communication with a dimming or switching device. These Sensors detect the heat from people moving within an area to determine when the space is occupied. The Sensors then transmit the appropriate commands to the associated dimming or switching device to turn the lights on or off automatically, providing both convenience and exceptional energy savings.

- **Easy-to-follow Instructions**

P/N 041-272a

Important Notes

1. This Sensor is part of a system and cannot be used to control a load without a compatible dimming or switching device. Refer to the instruction sheets of the receiving device(s) for installation information.
2. ***Clean Sensor with a soft damp cloth only.*** **DO NOT** use any chemical cleaners.
3. The Sensor is intended for indoor use only. Operate between 32 °F and 104 °F (0 °C and 40 °C).
4. **DO NOT** paint Sensor.
5. Use only high-quality lithium batteries, size CR123, 3 V⎓ (ANSI-5018LC, IEC-CR17345). DO NOT use rechargeable batteries. Using improperly rated batteries could damage the Sensor.

   NOTICE: DO NOT disassemble, crush, puncture, or incinerate batteries. DO NOT dispose of batteries in normal household waste. Please recycle, take to a proper battery disposal facility, or contact your local waste disposal provider regarding local restrictions on the disposal or recycling of batteries.
6. The range and performance of the RF system is highly dependent on a variety of complex factors such as:
   - Distance between system components
   - Geometry of the building structure
   - Construction of walls separating system components
   - Electrical equipment located near system components

CAUTION: This product must not be used to control equipment which could create hazardous situations, such as entrapment, if operated accidentally. Examples of equipment which must not be controlled with this product include (but are not limited to) motorized gates, garage doors, industrial doors, etc.

Key Features

- **Low Maintenance**. 10-year battery life. Convenient low-battery indicator.
- **Multiple Devices.** Up to 3 Sensors can work together to control lights for broader coverage in large spaces. Each Sensor may be added to a maximum of 10 receiving devices.

Sensor Operation

Occupancy Version – The Sensor will automatically turn the lights on when the space is occupied and automatically turn the lights off after the space is vacated.

Vacancy-Only Version – The lights must be manually turned on* at the dimming or switching device. The Sensor will automatically turn the lights off after the space is vacated.

* There is a built-in 15-second occupancy grace period that begins when the lights are automatically turned off, during which the lights will automatically turn back on in response to motion. This grace period is provided as a safety and convenience feature in the event that the lights turn off while the room is still occupied, so that the user does not need to manually turn the lights back on. After 15 seconds, the grace period expires and the lights must be manually turned on.

NOTE: For either Sensor version, the lights can also be manually turned off at any time by using the dimming or switching device directly.

Technical Assistance

For questions concerning the installation or operation of this product, call the ***Lutron Technical Support Center.*** Please provide exact model number when calling.

U.S.A. and Canada (24 hrs / 7days)
1.800.523.9466 **Fax +1.610.282.6311**

Mexico 8am – 8pm ET
+1.888.235.2910

Other countries 8am – 8pm ET
+1.610.282.3800 **www.lutron.com**

FCC Information
NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio and television reception, which can be determined by turning the equipment off and on. The user is encouraged to try to correct the interference by one or more of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Changes or modifications not expressly approved by Lutron Electronics Co. could void the user's authority to operate this equipment.
This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:
1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Limited Warranty

(Valid only in U.S.A., Canada, Puerto Rico, and the Caribbean.)
Lutron will, at its option, repair or replace any unit that is defective in materials or manufacture within one year after purchase. For warranty service, return unit to place of purchase or mail to Lutron at 7200 Suter Rd., Coopersburg, PA 18036-1299, postage pre-paid.
THIS WARRANTY IS IN LIEU OF ALL OTHER EXPRESS WARRANTIES, AND THE IMPLIED WARRANTY OF MERCHANTABILITY IS LIMITED TO ONE YEAR FROM PURCHASE. THIS WARRANTY DOES NOT COVER THE COST OF INSTALLATION, REMOVAL OR REINSTALLATION, OR DAMAGE RESULTING FROM MISUSE, ABUSE, OR DAMAGE FROM IMPROPER WIRING OR INSTALLATION. THIS WARRANTY DOES NOT COVER INCIDENTAL OR CONSEQUENTIAL DAMAGES. LUTRON'S LIABILITY ON ANY CLAIM FOR DAMAGES ARISING OUT OF OR IN CONNECTION WITH THE MANUFACTURE, SALE, INSTALLATION, DELIVERY, OR USE OF THE UNIT SHALL NEVER EXCEED THE PURCHASE PRICE OF THE UNIT.
This warranty gives you specific legal rights, and you may have other rights which vary from state to state. Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitation on how long an implied warranty may last, so the above limitations may not apply to you.
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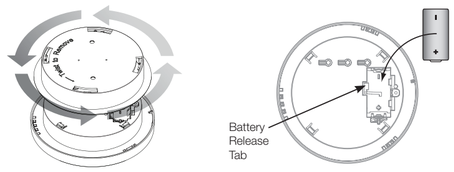
Instructions

Install a Sensor in as little as 15 minutes

A Pre-Installation

1 Before setting up the Sensor, the corresponding dimming or switching device(s) should be installed. Refer to that product's installation sheet for instructions.

2 Twist and remove mounting bracket to insert battery.



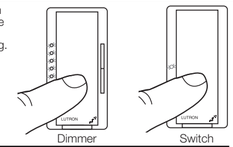
B Set-Up

In order for the Sensor to operate properly, it must first be set up with a corresponding dimming or switching device. The procedure for setting up a Sensor with a Maestro Wireless® (MRF2-only) Dimmer or Electronic Switch is detailed below.

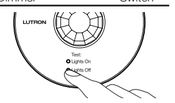
If setting up a Sensor with a different device, visit www.lutron.com/occsensors or consult the installation guide for that device for the correct set-up procedure.

1 Setting up a Sensor with a Maestro Wireless® Dimmer or Electronic Switch

1.1 Place the Dimmer or Electronic Switch in set-up mode by pressing and holding the tap button for approximately 6 seconds until all LEDs on the device begin flashing. Release the tap button.



1.2 Add the Sensor to the Dimmer or Electronic Switch by pressing and holding the "Lights Off" button on the front of the Sensor for approximately 6 seconds until the lens flashes briefly. The lights in the room will also flash 3 times, indicating the Sensor has been successfully added. The Dimmer or Electronic Switch will exit set-up mode automatically.

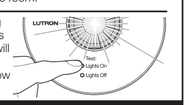


1.3 The "Lights On" and "Lights Off" buttons should now switch the lights in the room on and off, respectively, when pressed.
Repeat the above procedure to set up the Sensor with any additional devices.

2 Setting the Occupancy Light Level (Occupancy version, dimming devices only)

2.1 Set the Dimmer to the desired light level for entering the room.

2.2 Save the occupancy light level by pressing and holding the "Lights On" button on the front of a Sensor that has been set up. After approximately 6 seconds, the lens will flash rapidly several times, indicating the light level has been saved. All Sensors set up with the Dimmer will now use the saved occupancy light level.



C Sensor Placement and Coverage

Before mounting the Sensor, please note the following:

- The Sensor is designed for ceiling use only. **DO NOT** install on ceilings higher than 12 ft (3.7 m) or non-ceiling surfaces. Doing so may significantly inhibit the Sensor's performance.
- The Sensor should be installed in a location where it has a good view of all parts of the room. The Sensor requires line of sight to operate properly. **If you cannot see the Sensor, it cannot see you.** The Sensor cannot see through glass objects such as patio or shower doors.
- **DO NOT** mount the Sensor within 4 ft (1.2 m) of HVAC vents, within 6 in (15 cm) of other RF devices, or within 4 ft (1.2 m) of light bulbs installed below the ceiling line.
- The Sensor may be installed up to 60 ft (18.3 m) away from the associated dimming or switching device(s) if they are in direct line of sight. If there are walls or other barriers between the Sensor and receiving device(s), the Sensor should be located within 30 ft (9.1 m).
- Whenever possible, avoid placing the Sensor in a location where it has a broad view outside the intended space. If this is unavoidable, the lens can be masked to block the view of undesired areas (refer to section ***I. Lens Masking***).
- The Sensor's detection range is dependent on the ceiling height, as shown in the table below.

Coverage Chart (for sensor mounted in center of room)

Ceiling Height	Max. Room Dimensions for Complete Coverage	Radius of Coverage at Floor
8 ft (2.4 m)	18 x 18 ft (5.5 x 5.5 m)	13 ft (4.0 m)
9 ft (2.7 m)	20 x 20 ft (6.1 x 6.1 m)	14.5 ft (4.4 m)
10 ft (3.0 m)	22 x 22 ft (6.7 x 6.7 m)	16 ft (4.9 m)
12 ft (3.7 m)	26 x 26 ft (7.9 x 7.9 m)	19 ft (5.8 m)

D Temporary Mounting Methods

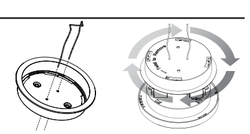
If you are uncertain about correctly positioning the Sensor, the following temporary mounting and testing procedures are recommended to verify proper performance before permanently installing the Sensor.

1 Temporary Mounting: Drop Ceiling

Use this procedure if the Sensor will be mounted on a ceiling tile.

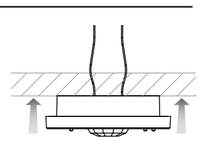
The ceiling tile mounting wire is provided for both temporary and permanent mounting of the Sensor to drop ceilings composed of multiple tiles. It is designed to allow temporary mounting, testing, and repositioning (if necessary) of the Sensor without damaging a ceiling tile. Once the Sensor's final position has been chosen, the mounting wire can be twisted to lock the Sensor in place permanently.

1.1 Insert the ceiling tile mounting wire through the two smaller holes in the mounting bracket and replace the mounting bracket.



1.2 Temporarily mount Sensor to a ceiling tile by inserting the wire legs through the tile, making sure the Sensor is flush to the tile.

Note: Do not twist wire legs together until ***Permanent Mounting (Section G).***



1.3 Perform the Sensor coverage and wireless communication tests as described in sections ***E. Testing Sensor Coverage*** and ***F. Testing Wireless Communication***.

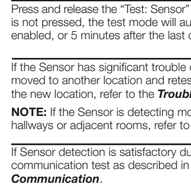
1.4 If the Sensor does not perform satisfactorily from this location, it may be moved to another location by pulling the Sensor straight down and repeating steps 1.2 and 1.3.

1.5 If the Sensor's performance is satisfactory, it should be permanently attached to the ceiling tile, as described in section ***G. Permanent Mounting***.

2 Temporary Mounting: Solid Ceiling

Use this procedure if the Sensor will be mounted on a solid, continuous ceiling surface such as drywall, plaster, concrete, or wood.
One 3M™ Command™ adhesive strip is provided for temporarily mounting and testing the Sensor on smooth, solid ceiling surfaces. This strip is designed for easy, damage-free removal and is not reusable. This strip should not be used for permanently mounting the Sensor (see section ***G. Permanent Mounting***). Carefully follow the removal instructions below to ensure the ceiling is not damaged during removal.
NOTE: DO NOT use the adhesive strip on ceiling tiles, as it will likely cause damage to the tile upon removal.

2.1 Peel the **red** "Command Strips" liner off and apply to the flat side of the mounting bracket as shown in the diagram. Press firmly.

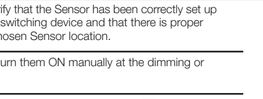


NOTE: DO NOT cover the bracket's screw holes because they will be used to mark screw hole locations on the ceiling.
NOTE: Leave the removal tab exposed past the edge of the bracket so it can be accessed for removal later.

2.2 Identify a location on the ceiling where the Sensor will have a good view of the room.

2.3 Remove the **black** "wall side" liner from the adhesive strip.

2.4 Position the mounting bracket on a clean, dry, dust-free ceiling and press firmly for several seconds.



2.5 Attach the Sensor to the mounting bracket by inserting and twisting in a clockwise direction until the Sensor locks into place.

2.6 Perform the Sensor coverage and wireless communication tests as described in sections ***E. Testing Sensor Coverage*** and ***F. Testing Wireless Communication***.

Removing Temporary Mounting Strip

2.7 Remove the Sensor from the mounting bracket by twisting in a counter-clockwise direction.
If the Sensor coverage and wireless communication tests have been successfully completed, use the mounting bracket as a template to mark the screw hole locations with a pencil.



2.8 To remove the bracket from the ceiling, grasp the removal tab on the adhesive strip and pull the tab **VERY SLOWLY** straight across the ceiling, stretching the strip until the bracket releases from the ceiling. Discard the strip. **NEVER** pull the strip at an angle, as it may break or damage the ceiling surface.

NOTE: Pull very slowly.

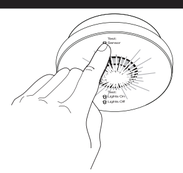


NOTE: Do not pull at an angle.



E Testing Sensor Coverage

1 With the Sensor mounted on the ceiling, press and release the "Test: Sensor" button on the front of the device. The lens will glow briefly, indicating the test mode has been entered.



NOTE: There is a warm-up period of approximately 90 seconds after the batteries are installed before the test mode can be activated. If the button is pressed during this time, the lens will flash continuously until the warm-up period is complete, and then the test mode will be automatically entered.

2 Confirm the coverage area by walking through the space and observing the lens. The lens will glow solid every time motion is detected. If the lens remains off during motion, the Sensor cannot detect motion at that location.

3 Press and release the "Test: Sensor" button again to exit the test mode. If the button is not pressed, the test mode will automatically time out 15 minutes after being enabled, or 5 minutes after the last detected motion if the room is vacated.

4 If the Sensor has significant trouble detecting motion during the test, it should be moved to another location and retested. If the Sensor still has poor detection from the new location, refer to the ***Troubleshooting*** section.

NOTE: If the Sensor is detecting motion in areas that are not desirable, such as hallways or adjacent rooms, refer to section ***I. Lens Masking***.

5 If Sensor detection is satisfactory during this test, perform the wireless communication test as described in section ***F. Testing Wireless Communication***.

F Testing Wireless Communication

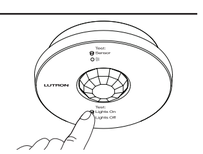
This test should be performed to verify that the Sensor has been correctly set up with the corresponding dimming or switching device and that there is proper wireless communication from the chosen Sensor location.

1 If the lights in the room are not on, turn them ON manually at the dimming or switching device.

2 Press and release the "Lights Off" button on the front of the Sensor. The lights should turn OFF.

3 Press and release the "Lights On" button on the front of the Sensor. The lights should turn ON.

If the lights do not respond correctly, refer to the ***Troubleshooting*** section.

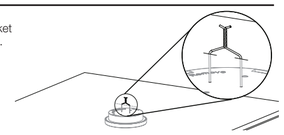


G Permanent Mounting Methods

1 Permanent Mounting: Drop Ceiling

1.1 After the Sensor has been temporarily mounted, leave the Sensor in place on the tile and either take the tile down or remove an adjacent tile to gain access to the legs of the mounting wire on the back of the tile.

1.2 Twist the wire legs together tightly so the mounting bracket remains snug against the tile. Then replace the tile.



2 Permanent Mounting: Solid Ceiling

2.1 Drill two 3/16 in (4.5/5 mm) pilot holes for the provided screw anchors.

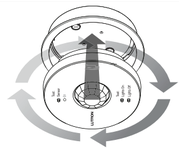
2.2 Press the anchors into the holes and tap flush with a hammer.

2.3 Place the flat side of the mounting bracket against the ceiling and install the two provided screws using a hand screwdriver.

NOTE: Do not over-tighten.



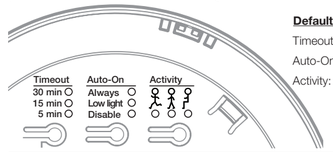
2.4 Attach the Sensor to the mounting bracket by inserting and twisting in a clockwise direction until the Sensor locks into place.



H Advanced Set-Up (Optional)

The Sensor features several advanced set-up modes. For the majority of installations, the default settings will provide the best performance and you will not need to utilize the advanced set-up.

The Occupancy version of the Sensor has three adjustable advanced set-up modes: Timeout, Auto-On, and Activity. The Vacancy-Only version has only two modes (Auto-On not available). The default settings are listed below.



Default Settings:
Timeout: 15 minutes
Auto-On: Always (Occupancy version only)
Activity: Low Activity

Advanced Set-Up Modes

Timeout
The Sensor will turn the lights off if no motion occurs for the duration of the timeout period. There are four available timeout settings: **1, 5, 15, and 30 minutes**.

Auto-On (Occupancy version only)
The automatic-on functionality of the Sensor can be adjusted to control how the lights respond upon initial occupancy. There are three available settings: Always, Low light, and Disable.

Always: The lights will always turn on.

Low light: The lights will only turn on automatically upon entry if there is not already sufficient ambient light in the room.

Disable: This setting converts the Sensor to vacancy mode. The lights will not automatically turn on but will still automatically turn off after vacancy. The lights must be manually turned on by using the associated dimming or switching device.

NOTE: The 15-second vacancy grace period is active in this mode. Refer to the ***Sensor Operation*** section at the beginning of this document for more details.

Activity
The sensitivity of the Sensor can be adjusted based on the expected level of activity within the room. There are three available activity settings: Low Activity, Medium Activity, and High Activity.

Low Activity: This is the most sensitive setting and will detect very slight motions. This is the recommended setting, as it will work well for nearly all applications. It is ideal for spaces where occupants will often be seated for long periods of time.

Medium Activity*: This setting is slightly less sensitive than the Low Activity setting and can be used for spaces that experience normal activity.

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

*The Low Activity setting is the default and will perform best for most applications. Rarely, if the Sensor is placed near external noise sources such as heating vents, air conditioning vents, or light bulbs, it may turn the lights on without occupancy or keep the lights on too long after vacancy. If this occurs, changing the sensitivity to Medium Activity or High Activity should resolve the problem.

Advanced Set-Up Operation

The advanced set-up is accessed by using the buttons on the back of the Sensor.

Check Settings
To display the current setting, press and release the desired button. An LED will illuminate briefly, indicating the current setting.

Change Settings
The standard settings for Timeout, Auto-On, and Activity are changed using the procedure described below in the left column. The procedure for selecting a 1-minute timeout is slightly different and described below in the right column.

Standard Modes

1. To adjust a setting, press and hold the desired button until the LED corresponding to the current setting begins flashing rapidly, indicating the setting can now be adjusted.
2. Each subsequent button press of less than 2 seconds will increment to the next available setting. Pressing any of the other buttons will have no effect.
3. To save the selected setting, press and hold the button until the LED turns on solid. This indicates the saved setting.

1-Minute Timeout*

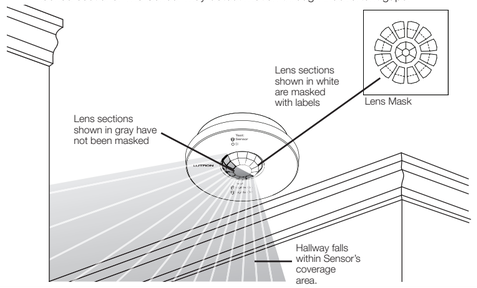
1. To select a 1-minute timeout, press and hold the timeout button for approximately 10 seconds until all 3 LEDs begin flashing rapidly.
2. To save the 1-minute timeout setting, press and hold the timeout button until all 3 LEDs turn on solid, indicating the 1-minute timeout has been saved.

* The 1-minute timeout is intended for use in high-activity, briefly occupied areas only (e.g., closet, laundry room, etc.). Do not use this setting in areas that experience minor motion or extended occupancy (e.g., office, bathroom, etc.), as the lights may unexpectedly turn off.

I Lens Masking (Optional)

Whenever possible, the Sensor should be installed in a location where it cannot easily see into areas outside the intended space, such as hallways or adjacent rooms. If this situation cannot be avoided, portions of the lens may be masked with the provided labels to block the Sensor's view of the undesired areas. **Note:** Apply mask to outside of lens only; do not disassemble sensor.

- It is recommended to remove the Sensor from the mounting bracket before applying the masking labels.
  NOTE: The Sensor can be screwed onto the mounting bracket in several different orientations. Be sure to note the Sensor's orientation before taking it down and replace the Sensor in the same orientation to ensure the intended area gets blocked.
- Outer lens sections correspond to the detection regions furthest away from the Sensor, while inner sections correspond to regions closer to the Sensor.
- Be careful when applying the labels to avoid creating gaps between adjacent masked sections. The Sensor may detect motion through inadvertent gaps.



Troubleshooting

Symptom	Possible Causes	Solution
Lights do not turn ON when space is occupied.	Sensor is not correctly added to dimming / switching device(s).	Refer to section **B. Set-Up.**
	Sensor's Auto-On setting is set to "Low light" or "Disable".	Refer to section **H. Advanced Set-Up.**
	The lights were recently turned off manually and the timeout has not yet expired.	For more details, refer to ***Frequently Asked Questions*** at www.lutron.com/occsensors
	Sensor does not have full view of room.	Refer to section **C. Sensor Placement.**
	Sensor is outside wireless range of dimming/switching device.	Refer to section **C. Sensor Placement** or **F. Testing Wireless Communication.**
	Battery has been installed incorrectly.	Refer to section **A. Pre-Installation.**
	Dimming/switching device has been improperly wired.	Refer to the instruction sheet of the receiving device or call Lutron Technical Support Center at 800.523.9466.
	Light bulb(s) burned out.	
	Breaker is off or tripped.	
Lights turn OFF while space is occupied.	Sensor's timeout is too short for this application.	Refer to section **H. Advanced Set-Up.**
	Sensor does not have full view of room.	Refer to section **C. Sensor Placement.**
	Lens mask is improperly applied.	Refer to section **I. Lens Masking.**
	Sensor's activity setting is too low.	Refer to section **H. Advanced Set-Up.**
Lights stay ON after space is vacated.	Sensor's timeout has not yet expired.	Refer to section **H. Advanced Set-Up.**
	An external noise source such as an HVAC vent is interfering.	Try moving Sensor to a new location or reducing sensitivity. Refer to section **C. Sensor Placement** or **H. Advanced Set-Up.**
	Battery has been installed incorrectly.	Refer to section **A. Pre-Installation.**
Lights turn ON when walking past room.	Sensor coverage extends beyond room perimeter.	Refer to section **C. Sensor Placement** or **I. Lens Masking.**
Behavior of lights does not match Sensor settings.	The intended setting was not saved.	Refer to section **H. Advanced Set-Up.**
	Multiple Sensors are added to a dimming/switching device and their settings do not match.	Refer to section **H. Advanced Set-Up.**
Sensor lens does not glow in response to motion during Sensor coverage testing.	Sensor cannot see motion due to obstruction.	Move Sensor to another location. Refer to section **C. Sensor Placement.**
	Room is too big or oddly shaped.	Multiple Sensors may be necessary for full room coverage. For more details, refer to ***Frequently Asked Questions*** at www.lutron.com/occsensors
	Battery has been installed incorrectly.	Refer to section **A. Pre-Installation.**
Lens does not stop glowing during Sensor coverage testing even when there is no motion.	An external noise source such as an HVAC vent is interfering.	Try moving Sensor to a new location or reducing sensitivity. Refer to section **C. Sensor Placement** or **H. Advanced Set-Up.**
Lights do not respond correctly during wireless communication testing.	Sensor is not correctly added to dimming / switching device.	Refer to section **B. Set-Up**.
	Sensor is outside wireless range of dimming/switching device.	Move Sensor closer to dimming/switching device and retry test. Refer to section **F. Testing Wireless Communication.**
	Battery has been installed incorrectly.	Refer to section **A. Pre-Installation.**
	Dimming/switching device has been improperly wired.	Refer to the instruction sheet of the receiving device or call Lutron Technical Support Center at 800.523.9466.
	Light bulb(s) burned out.	
	Breaker is off or tripped.	
Sensor lens flashes and lights do not turn ON when space is occupied.	Battery is low.	Replace battery. For more details, refer to ***Frequently Asked Questions*** at www.lutron.com/occsensors
	Sensor is in test mode.	Remove sensor from test mode. Refer to section **E. Testing Sensor Coverage.**