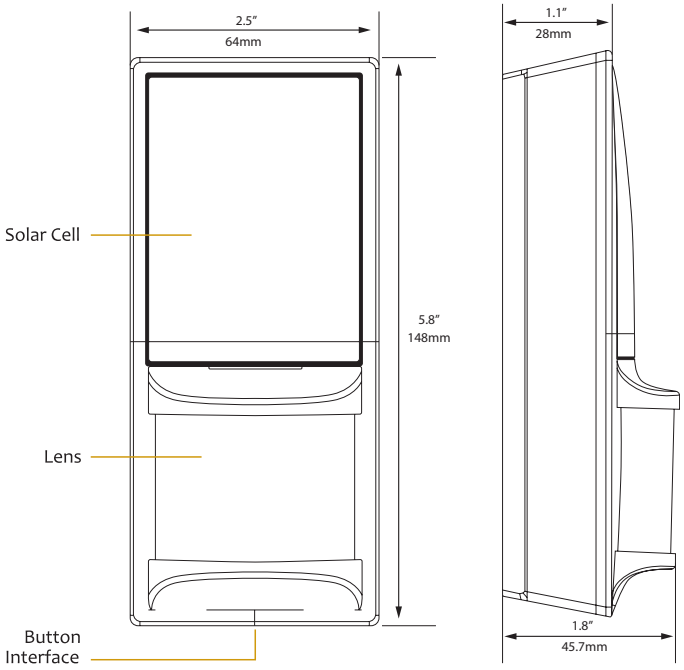
OCCUPANCY SENSOR (WALL)



Package Contents

- Occupancy Sensor
- 2 screws, 2 wall anchors
- 1 wide angle lens (installed)
- 1 long range lens

Tools Required

- Power drill, 3/16" bit
- Screwdriver
- Leveling tool
- Light meter
- Battery (CR2032) for testing

Product Description

The wall-mounted Occupancy Sensor saves energy and adds convenience by accurately detecting when an area is occupied or vacant.

It is wireless, solar-powered, and uses a passive infrared (PIR) sensor to detect motion. The occupancy sensor transmits RF signals to control lighting, HVAC and outlets more efficiently.

Features Include:

- Sends wireless signals to receiving devices when motion is detected
- Harvests indoor light to power the sensor and wireless communications
- Mounts flush on the wall or in a corner - adjustable ceiling and wall brackets also available
- Works with other sensors for enhanced occupancy tracking
- Interchangeable lenses for tailored sensor coverage
- Built-in tests to confirm operation at installed location
- Supplemental battery or alternative power supply options for extreme low-light conditions

Specifications (typ. values)

Power Supply: Optional:	Indoor light energy harvesting Supplemental battery (CR2032) 2-wire connector for external power or remote solar cell (3-5 VDC)
RF Transmission Range	80 ft. (25 m)
Motion Sensing Range	Up to 100 ft. (30 m) (refer to coverage diagrams)
Startup Charge Times*	(operation from empty energy storage)
First motion transmission / Linking	5 minutes @ 200 lux
Motion LED blink Light/Walk Test Modes	1.5 hours @ 2000 lux
Sustaining Charge Time for battery free operation	3 hours per 24 hours @ 200 lux
Time to Full Charge*	25 hours @ 200 lux
Operating Life in Total Darkness	80 hours (after full charge)
Minimum Operating Light	50 lux (for auto-off only)
Optional Battery Life:	
• Infrequent Bright Light	20 yrs (with 200 lux for 2 hrs/day, 7 days/week)
• Consistent Low Light	15 yrs (with 65 lux for 5 hrs/day, 7 days/week)
• Total Darkness	6.5 yrs
Motion Transmission Interval	2 minutes
Unoccupied Transmission	10 and 30 minutes since last motion
Heartbeat Transmission Interval (unoccupied)	Disabled by default Enabled = heartbeat @ 1 hr interval (after unnocupied messages)
EnOcean Equipment Profile	A5-07-01 (EEP)
RF Communications	EnOcean 902 MHz (EOSWU) EnOcean 868 MHz (EOSWA) EnOcean 315 MHz (EOSWC) EnOcean 928 MHz (EOSWJ)
Dimensions	5.83" L x 2.52" W x 1.8" D (148 mm x 64 mm x 45.7 mm)
Weight	4.09 oz. (116 g)
Mounting Height	6-8 feet (1.8 - 2.5m) recommended
Environment	Indoor use only 14° to 104°F (-10° to 40°C) 20% to 95% relative humidity (non-condensing)
Agency Compliance	FCC, IC, RoHS, CE, R&TTE

* Natural bright light (2000 lux) or a battery can be temporarily used to significantly shorten startup charge times. Specified lux values are for typical fluorescent lighting. Lux level requirements for LED and other types may vary. For lux reference, OSHA standards require a minimum of 323 lux for office areas.

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OCCUPANCY SENSOR (WALL)

Functional Description

If motion is detected by the permanently active PIR sensor, a radio telegram indicating the occupied status will transmit immediately. A transmission interval timer starts to run with a 2 minute lockout timer. No radio telegrams will be sent out until the timer expires.

After the timer has expired, the unit will transmit occupancy upon new motion detection. An unoccupied message will be sent if no motion is detected for an extended period - sending the first at 10 minutes, then again at 30 minutes. A heartbeat message can also be enabled.

1. Planning

Take a moment to plan for the sensor's successful operation and optimal communication with other system components.

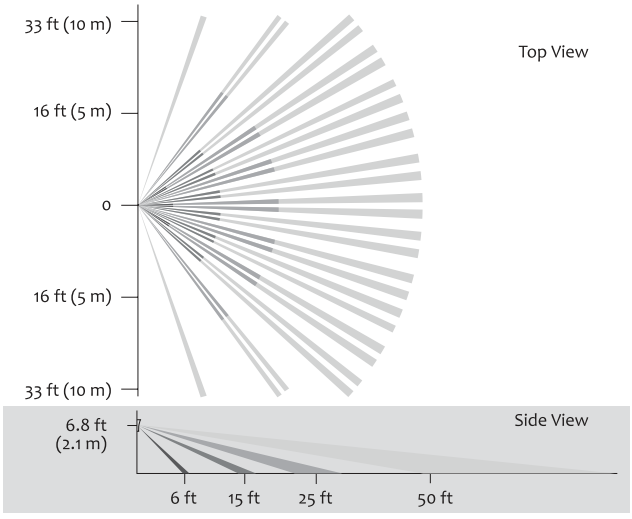
Remove the sensor from its packaging and place it under a bright light to provide the required startup charge. Optionally, to ensure the sensor energy storage is fully charged, insert a CR2032 battery for 5 minutes while in a well-lit location.

- Ensure the location provides consistent and adequate light
- Install with the appropriate lens for the required coverage
- Locate the sensor between 6 and 8 ft (1.8 to 2.4 m) high with an unobstructed view of the space
- For wide angle coverage, locate the sensor where traffic moves across the detection pattern, not in and out
- Consider the area's traffic patterns and principal use, for example, walking, lounging or sleeping
- Provide a minimum clearance of 4 ft. (1.2 m) away from heat sources, light bulbs, forced air, or ventilation systems
- Consider the construction materials (such as metal) in the space and obstacles that may interfere with RF signals

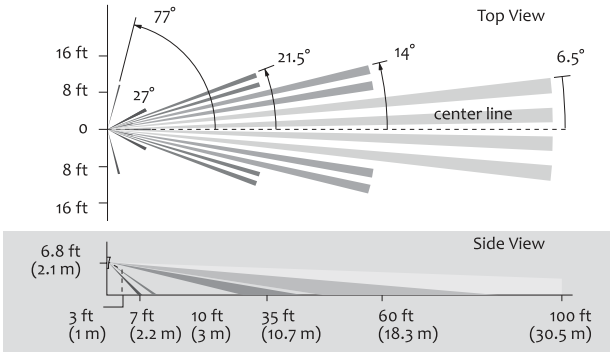
Sensor Range

A single occupancy sensor provides sufficient coverage for most applications. For some applications, multiple sensors may be required to provide complete coverage.

Wide Angle Coverage



Long Range Coverage



2. Installing

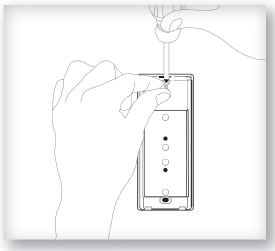
estimated time: 20 minutes

The mounting plate can be installed flush to the wall or angled in a corner.

NOTE: It is often easier to link the sensor before it is mounted on the wall. Refer to the Linking section.

1. Remove the mounting plate from the sensor assembly by pressing the release tab located on the top of the sensor.
2. Decide which of the two installation options is appropriate:

A. Flush to the Wall



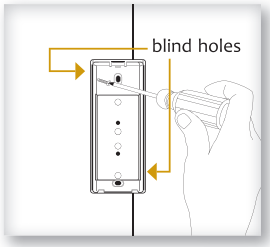
i. Orient the mounting plate using the pencil marks. Mark the two mounting screw drill points.

ii. Drill two holes with a 3/16" bit and insert wall anchors.

iii. Insert the first screw loosely and level the mounting plate.

iv. Insert the 2nd screw then hand-tighten the 1st screw.

B. Angled in a Corner



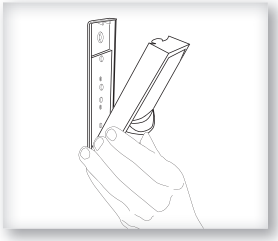
i. Orient the mounting plate using the pencil marks.

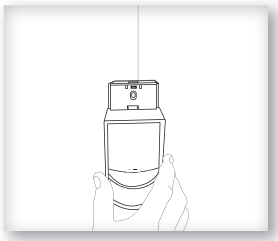
ii. Carefully drill through two of the four blind holes on the angled sides of the mounting plate (one on each side).

iii. Mark the two mounting screw drill points and drill two pilot holes with a 3/16" drill bit and insert the wall anchors.

iv. Insert the two screws and hand-tighten them.

3. Fit the sensor into the groove at the bottom of the mounting plate and close the top.





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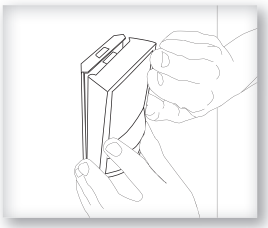
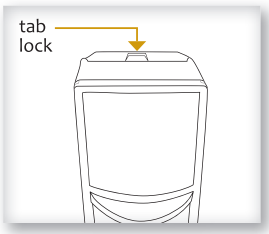
The sensor snaps into the tab at the top.





4. Confirm the sensor is properly positioned to detect motion and has sufficient light to operate, see the See Walk Test and See Light Test sections.

3. Linking

Two or more compatible devices can be linked and configured to provide the desired control. There are two basic types of devices in the system; transmitters and transceivers.

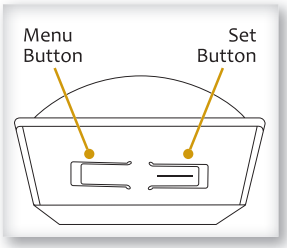
- **Transmit-only:** Transmitters are simple energy-harvesting devices that send RF messages to communicate a condition, level, or state. Transmitters can only be linked to transceivers. Examples > Rocker Switches, Occupancy Sensors
- **Transmit & Receive:** Transceivers are controlling devices that send as well as receive RF messages. They also process relevant control logic, and actuate the appropriate outputs (switching a light on or off for example). Transceivers can be linked with transmitters as well as other transceivers. Examples > Relays, Dimmers, Gateways

The Occupancy Sensor is a Transmit-only Device.
To link the sensor to a transceiver; the transceiver must first be powered, within wireless range, and set to accepts links.

Next, the desired transmitter, or another transceiver, is triggered to send a special link message. The awaiting transceiver receives and stores the link permanently so the devices can interact to provide a variety of intelligent control options.

To Link or Unlink an Occupancy Sensor

1. Set the desired transceiver to the desired Link/Unlink mode (refer to that device's installation guide).
2. Click the Menu button on the bottom of the sensor once. This sends a link/unlink radio telegram.



NOTE: The button interface on the sensor is used for linking and testing only. The occupancy timer settings are configured on the transceiver to which the sensor is linked.

Refer to the "Linking" section of the transceiver/controller installation guides to complete the linking & setup process.

Testing the Sensor

Before starting a test, ensure the sensor's energy storage is charged by placing it under bright light (2000 lux) for 1.5 hours, or insert a battery for 5 minutes while in a well-lit area.

NOTE: If the sensor does not have a sufficient charge, it cannot enter into the test modes. No LED light or 1 red blink when the test button is pressed indicates insufficient charge.

If a battery is used to charge the sensor for a light test, ensure it is removed to get an accurate light measurement.

A test mode will stay active for 3 minutes. To exit a test and resume normal operation, press and hold the Menu button for 5 seconds.

Walk Test

Use the walk test to confirm motion is within the sensor's range.

1. Press and hold the Set button for 5 seconds.
   ••> Red LED will blink to confirm that a walk test is active.
2. Move in and out of the sensor's range to determine its coverage area.
   ••> Sensor will blink when it detects motion.
3. Make small hand movements just inside the limit of the sensor's range to see if the motion triggers a response.

NOTE: Ensure the sensor does not falsely trigger from user activity outside the desired zone or other heat and motion sources. If false triggering occurs, adjust the sensitivity switch (under back cover, next to battery slot) from REG to LOW.

Light Test

Use the light test to measure real-time light levels and confirm whether the occupancy sensor has sufficient light.

1. Create a realistic lighting condition (the test measures the real-time light level).
2. Press and hold the Set button for 10 seconds.
   ••> Red & green LEDs will blink to confirm light test is active.
3. Watch the LED blink rate to determine the light strength.
   ••> The highest is 5 blinks which indicates very good light (200 lux or more). 1 blink indicates minimum light (<25 lux).

NOTE: If there is no blink rate, consider relocating the sensor or installing a battery to provide supplemental power.

Optional Settings

Two additional settings can be configured via button presses which may be useful in some installations. Note that these settings consume additional energy and are not advisable for low-light level installations:

LED Blink on Motion Transmision - Red LED under PIR lense will blink whenever motion is transmitted (disabled by default).

••> To enable/disable - press and hold Menu button for 3 seconds (green Menu LED will blink once)

-Enabled = 3 blinks from green Menu LED

-Disabled = 3 blinks from red Set LED

Heartbeat Transmision - unoccupied heartbeat message will be sent at 1 hr intervals with no motion (disabled by default).

••> To enable/disable - press and hold Menu button for 5 seconds (both green and red LEDs will blink once)

-Enabled = 3 blinks from green Menu LED

-Disabled = 3 blinks from red Set LED

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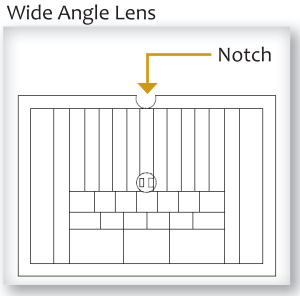
Changing the Lens

The Occupancy Sensor package contains two lenses: a wide angle lens and a long range lens. The wide angle lens is installed by default and can be distinguished from the long range lens by the pattern.

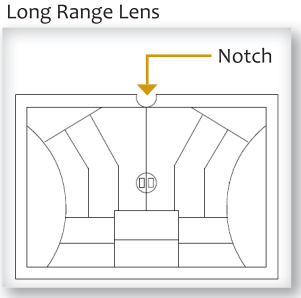
NOTE: Ensure smooth side of lens faces out.

Lens Patterns

Wide Angle Lens

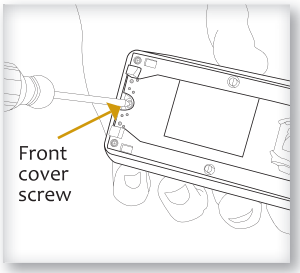


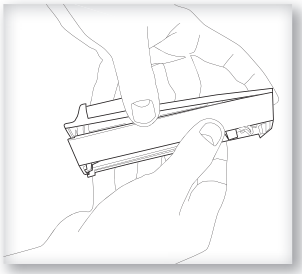
Long Range Lens



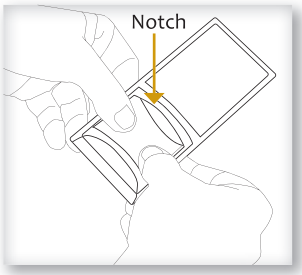
To change the lens:

1. If the sensor is mounted, press the top tab and remove it from the mounting plate.
2. Unscrew the small screw on the back at the bottom and remove the front cover.

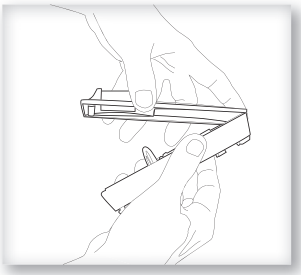




3. Remove the installed lens by gently squeezing it to ease one side out of its groove, and then the other.
4. Insert the lens you want to use by aligning the notch with the top on the front cover. Orient the smooth side facing out, and the textured side facing the sensor.



5. Hold both edges of the lens, flex it gently and push until it pops into the grooves. Make sure the edges are flush.
   NOTE: If the lens is out of position, the sensor will not detect activity properly.

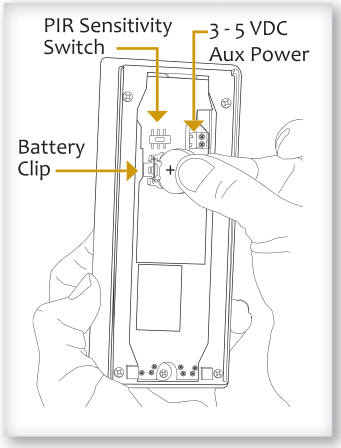


6. Replace the top edge of the front cover and then close it on the sensor. Ensure antenna is properly seated before replacing the front cover.
7. Replace the bottom screw and remount sensor on the plate.

Supplemental Power (optional)

In areas with consistently low lighting, or long periods of darkness, battery power (CR2032), or an auxiliary 3-5V DC power supply can be used to supplement the solar energy harvester.

1. Remove the sensor from the mounting plate.
2. Unsnap sensor cover and identify the battery holder and Aux power connector on the circuit board.
3. A. Insert the battery under the clip with the positive pole (+) up and press it in place.
4. B. Insert 3 - 5 VDC wire leads into + and - screw terminals
5. Replace cover and remount the sensor on the wall.



Troubleshooting

Problem	Solution Checklist
Sensor does not generate a wireless message	▪ Press Set button to transmit motion message ▪ Verify the LED blinks when motion is detected during a walk test ▪ Verify the device is charged properly
Sensor is activated when there is nothing to detect	▪ Verify there is 4 ft. (1.2 m) clearance from heat sources that may disturb sensing ▪ Reduce sensitivity setting by moving the PIR sensitivity switch on the back from REG to LOW (the left-hand position)
Linked device does not respond to wireless messages	▪ Force motion message by pressing Set button ▪ Check for environment or range issues ▪ Verify the device is linked ▪ Check the transceiver connection and the wiring for errors ▪ Check if appropriate devices are linked according to good system planning
Explanation of Occupied & Heartbeat Message Data Telegrams	Data Byte 3: Super Capacitor Voltage, 0-250 (0-5V) Data Byte 2: Solar Panel Current, 0-127 uA Data Byte 1: 0xFF (occupied) or 0x00 (unoccupied) Data Byte 0: 0x09 (wall sensor) or 0x0B (ceiling sensor)

FC

	contains:		
902 MHz:	FCC: SZV-STM300U IC: 5713A-STM300U	315 MHz:	FCC: SZV-EOSW01 IC: 5713A-EOSW01

This device complies with part 15 of the FCC rules and Industry Canada ICES-003. 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.

IMPORTANT! Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, meme si le brouillage est susceptible d'en compromettre le fonctionnement.

IMPORTANT! Tous les changements ou modifications pas expressément approuvés par la partie responsable de la conformité ont pu vider l'autorité de l'utilisateur pour actioner cet équipment.

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