

| Package Contents   | Tools Required  |
|--|---|
| <ul style="list-style-type: none"> <li>• Occupancy Sensor</li> <li>• 2 screws, 2 wall anchors</li> <li>• 1 wide angle lens (installed)</li> <li>• 1 long range lens</li> </ul> | <ul style="list-style-type: none"> <li>• Power drill, 3/16" bit</li> <li>• Screwdriver</li> <li>• Leveling tool</li> <li>• Light meter</li> <li>• Battery (CR2032) for testing</li> </ul> |

### 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.

### Product 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 (typical values)

|   |  |
|---|--|
| Power Supply:                                     | Indoor light energy harvesting   |
| Optional:   | Supplemental battery (CR2032) 2-wire connector for external power or remote solar cell (3-5 VDC) |
| RF Transmission Range                             | 80' (25 m)   |
| Motion Sensing Range                              | Up to 100' (30 m)<br>(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<br>(after full charge)  |
| Minimum Operating Light                           | 50 lux (for auto-off only)   |
| Optional Battery Life:                            | 20 yrs (with 200 lux for 2 hrs/day, 7 days/week)   |
| Infrequent Bright Light                           | 15 yrs (with 65 lux for 5 hrs/day, 7 days/week)  |
| Consistent Low Light                              | 6.5 yrs  |
| Total Darkness                                    |  |
| Motion Transmission Interval                      | 2 minutes  |
| Unoccupied Transmission                           | 10 and 30 minutes since last motion  |
| Heartbeat Transmission Interval (unoccupied)      | Disabled by default<br>Enabled = heartbeat @ 1 hr interval (after unoccupied messages)           |
| EnOcean Equipment Profile                         | A5-07-01 (EEP)   |
| RF Communications                                 | 868 MHz  |
| Dimensions  | 5.83" L x 2.52" W x 1.8" D<br>(148 mm x 64 mm x 45.7 mm)   |
| Weight  | 4.09 oz. (116 g)   |
| Mounting Height                                   | 6 to 8' (1.8 - 2.5m) recommended   |
| Environment                                       | Indoor use only<br>14 to 104°F (-10 to 40°C)<br>20% to 95% relative humidity (non-condensing)    |

\* 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.

## 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 time. 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.

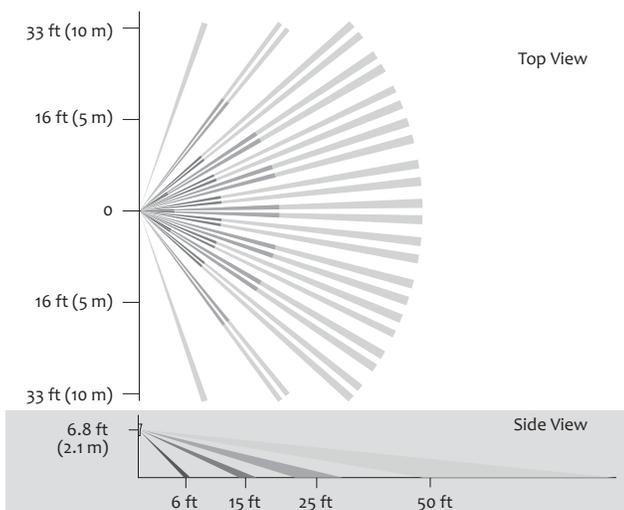
Remove the sensor from its packaging and place it under a bright light to provide the required startup charge. Optionally, to ensure the sensor energy storage is fully charged, insert a CR2032 battery for 5 minutes while in a well-lit location.

- Ensure the location provides consistent and adequate light
- Install with the appropriate lens for the required coverage
- Locate the sensor between 6 and 8' (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' (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

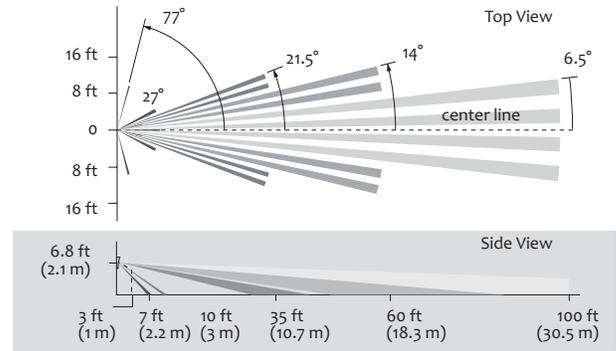
### Sensor Range

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

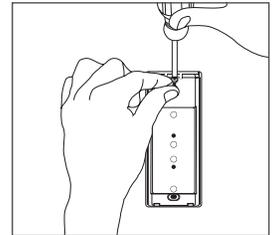
**The mounting plate can be installed flush to the wall or angled in a corner.**

**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:

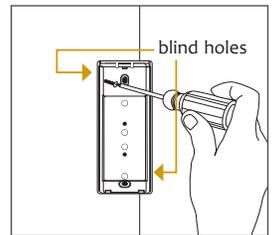
#### A. Flush to the Wall

- 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 second screw then hand-tighten the 1st screw.

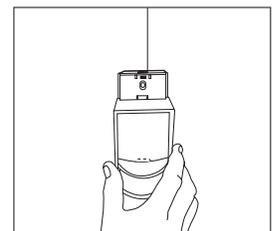
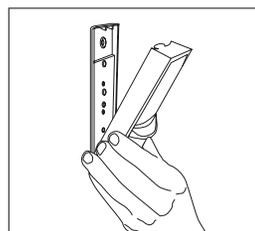


#### B. Angled in a Corner

- 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.

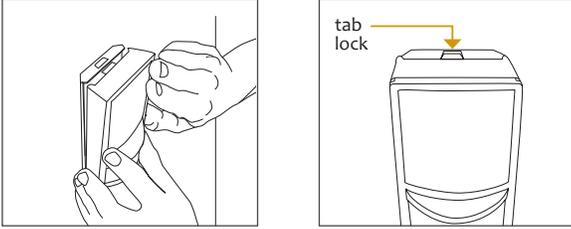


3. Fit the sensor into the groove at the bottom of the mounting plate and close the top.



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The sensor snaps into the tab at the top.



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.

### 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.

Press and hold the Set button for 5 seconds.

••> **Red LED will blink to confirm that a walk test is active.**

Move in and out of the sensor's range to determine its coverage area.

••> **Sensor will blink when it detects motion.**

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.

Create a realistic lighting condition (the test measures the real-time light level).

Press and hold the Set button for 10 seconds.

••> **Red & green LEDs will blink to confirm light test is active.**

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.

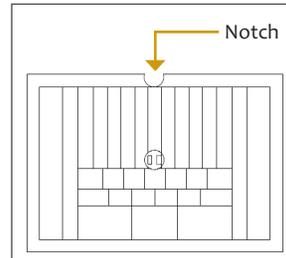
- Disabled = 3 blinks from red Set LED

## 3. CHANGING THE LENS

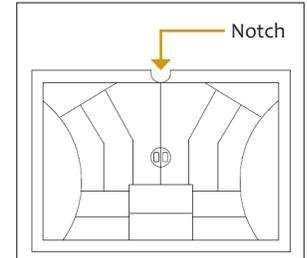
The Occupancy Sensor package contains two lenses: a wide angle lens and a long range lens. The wide angle lens is installed by default and can be distinguished from the long range lens by the pattern.

**NOTE:** Ensure smooth side of lens faces out.

Lens Patterns



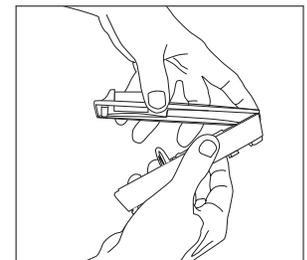
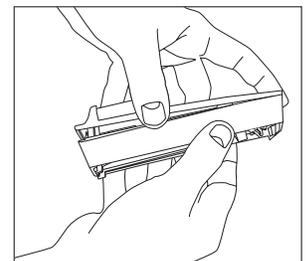
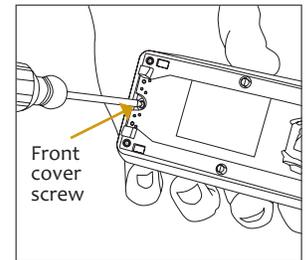
Wide Angle Len



Long Range Lens

To change the lens:

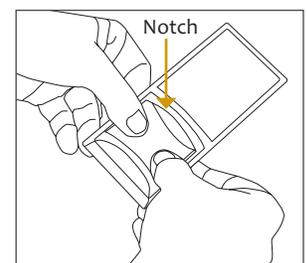
1. If the sensor is mounted, press the top tab and remove it from the mounting plate.
2. Unscrew the small screw on the back at the bottom and remove the front cover.
3. Remove the installed lens by gently squeezing it to ease one side out of its groove, and then the other.
4. Insert the lens you want 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.

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.

Replace the bottom screw and remount sensor on the plate



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## 4. 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.

Remove the sensor from the mounting plate.

Unsnap sensor cover and identify the battery holder and Aux power connector on the circuit board.

Connect auxiliary power source as follows (choose either option A or option B):

- A. Insert the battery under the clip with the positive pole (+) up and press it in place.
- B. Insert 3 to 5 VDC wire leads into + and - screw terminals. Replace cover and remount the sensor on the wall.

## 5. TROUBLESHOOTING

| Problem  | Solution Checklist   |
|--|--|
| Sensor does not generate a wireless message                | Press Set button to transmit motion message<br>Verify the LED blinks when motion is detected during a walk test<br>Verify the device is charged properly   |
| Sensor is activated when there is nothing to detect        | Verify there is 4' (1.2 m) clearance from heat sources that may disturb sensing<br>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<br>Check for environment or range issues<br>Verify the device is linked<br>Check the transceiver connection and the wiring for errors<br>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)<br>Data Byte 2: Solar Panel Current, 0-127 uA<br>Data Byte 1: 0xFF (occupied) or 0x00 (unoccupied)<br>Data Byte 0: 0x09 (wall sensor) or 0x0B (ceiling sensor)  |

