WARNINGs AND CAUTIONs:

- To Avoid Fire, Shock, Or Death; Turn Off Power at circuit breaker or fuse and test that power is off before wiring.
- To be installed and/or used in accordance with appropriate electrical codes and regulations.
- If you are unsure about any part of these instructions, consult an electrician.
- Sensors must be mounted on a vibration-free surface.
- All sensors must be mounted at least 6 feet away from air vents.
- Do not mount sensors closer than 10 feet from each other.

Ultrasonic Ceiling Mounted Occupancy Sensor

Cat. No. OSC05-U, OSC10-U, OSC20-U

To be used with 24VDC OSPxx Series and CN100 Power Pack Class II Low-Voltage Wiring

INSTALLATION INSTRUCTIONS

CATALOG ITEMS

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Description</th>
<th>Current Consumption</th>
<th>Operating Frequency</th>
<th>Coverage</th>
<th>Suggested Mounting Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSC05-U</td>
<td>5-way Ultrasonic</td>
<td>24mA</td>
<td>40kHz</td>
<td>500 sq. ft.</td>
<td>Mount in center of rooms</td>
</tr>
<tr>
<td>OSC10-U</td>
<td>2-way Ultrasonic</td>
<td>4mA</td>
<td>40kHz</td>
<td>1000 sq. ft</td>
<td>Mount in center of rooms</td>
</tr>
<tr>
<td>OSC20-U</td>
<td>2-way Ultrasonic</td>
<td>2mA</td>
<td>40kHz</td>
<td>3200 sq. ft</td>
<td>Mount in center of rooms</td>
</tr>
</tbody>
</table>

FCC COMPLIANCE STATEMENT:

This device complies with part 15 and part 18 of the FCC rules. Operation is subject to the following two conditions: (1) This device must not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

Tools needed to install your Sensor:

- Slot/screwdriver
- Electrical Tape
- Pliers
- Pencil
- #8-32 x 1-1/2" Screw (2)
- Plastic Washer (1)
- Pencil

Parts Included List:

- Sensor (1)
- #8-32 Washer and Nut (2)
- Threaded Rod (1) and Hex Nut (1)
- Plastic Washer (1)

DESCRIPTION:

The Occupancy Sensor is a low-voltage ultrasonic sensor that works with the OSPxx Series and CN100 power pack to automatically control lighting. The sensor turns the lights on and keeps them on whenever occupancy is detected and will turn them off after a delayed-off time has expired. Ultrasonic (doppler shift) motion detection gives maximum sensitivity that yields a sensor with excellent performance. The sensor continually analyzes and adjusts to changing conditions. The sensor uses a microprocessor-based control system to optimize its performance.

INSTALLING YOUR OCCUPANCY SENSOR:

NOTE: Use caution with #8 screws when installing.

Step 1: WARNING: To Avoid Fire, Shock, or Death; Turn Off Power at circuit breaker or fuse and test that power is off before wiring!

Step 2: Preparing and connecting wires:

- 1/2" (1.3 cm) strip of bare wire here
- 6. Push wire connections through the center hole of the back cover and into the ceiling.
- 7. Insert the sensor wires through the flared end of the threaded rod. Position the threaded rod into the lower end of the sensor and twist to lock into place.
- 8. Rotate the sensor to the desired orientation. Note that the sensor body and back cover are keyed. To lock the device in place, ensure that the arrows are not aligned.
- 9. Restore power at circuit breaker or fuse to Power Pack. INSTALLATION IS COMPLETE.

WIRING DIAGRAM as follows: Twist strands of each lead tightly and, with circuit conductors, push firmly into appropriate wire connector. Screw connectors on clockwise making sure that no bare conductor shows below the wire connectors. Secure each connector with electrical tape.

NOTE: Listed below are suggested JUCTION BOX installation applications which require mounting to conduit in one of the following three ways:

1. Box installed flush to wallboard ceiling:

   - Wallboard Ceiling
   - Mounting Screw (4 places)

2. Wallboard or Drop Ceiling installation (Mounting Option B):  

   - Wallboard or Drop Ceiling
   - 6.8-32 Screw (2 places)

3. Drop Ceiling Installation (Mounting Option A):  

   - Drop Ceiling
   - Mounting Screws (4 places)

Installing Option Diagram A

Occupancy Sensor Mounted to Drop Ceiling Using Threaded Rod

NOTE: Use caution with #8 screws when installing.

Step 3 cont’d:

A. Drop Ceiling Installation (Mounting Option A):

   - Select location for mounting of sensor for your application (refer to Mounting Location Diagram).
   - Use the supplied threaded rod or other methods to make a hole (1/2" to 1") in the ceiling tile large enough to pass the body of the threaded rod through.
   - Insert the sensor wires through the flared end of the threaded rod. Position the threaded rod into the lower end of the sensor.
   - Insert the threaded rod into the opening in the bottom of the sensor and twist to lock into place.

B. Wallboard or Drop Ceiling Installation (Mounting Option B):

   - Select location for mounting of sensor for your application (refer to Mounting Location Diagram).
   - Use the supplied threaded rod or other methods to make a hole (1/2" to 1") in the wallboard or drop ceiling large enough to pass the body of the threaded rod through.
   - Insert the sensor wires through the flared end of the threaded rod. Position the threaded rod into the lower end of the sensor. Twist to lock into place.

C. Junction Box or Surface Mount Raceway Installation (refer to Mounting Diagrams):

   - Restore power at circuit breaker or fuse to Power Pack. INSTALLATION IS COMPLETE.

NOTE: Listed below are suggested JUCTION BOX installation applications which require mounting to conduit in one of the following three ways:

1. Box installed flush to wallboard ceiling:

   - Wallboard Ceiling
   - Mounting Screw (4 places)

2. Wallboard or Drop Ceiling installation (Mounting Option B):

   - Wallboard or Drop Ceiling
   - 6.8-32 Screw (2 places)

3. Drop Ceiling Installation (Mounting Option A):

   - Drop Ceiling
   - Mounting Screws (4 places)
**OPERATION**
Motion detection by the ultrasonic sensor will turn on the lights as well as keeping them on. When motion is not detected, the lights will turn off after the delay-off time.

- **Delayed-Off Time** – The sensor is designed to turn the lights off if no motion is detected after a specified time. This length of time is called the delayed-off time and is set using the timer (Black) knob on the sensor. The adapting patterns will modify the delay-off time to fit the parameters of each installation based on motion and environmental conditions.

- **Walk-through Mode** – The walk-through feature is useful when a room is momentarily occupied. With this feature, the sensor will turn the lights on/off shortly after the person leaves the room.

- **LED Operation** – There are two LED indicators that will flash when motion is detected. The LED flash can be disabled using the LED disable switch setting. Green flash indicates motion detection by ultrasonic technology.

**ADAPTIVE FUNCTIONS**

- **Sensor Continuously Actuates the Photocell** – The sensor detects motion and signals its internal operation to maximize detection of motion while minimizing the effects of noise (electrical noise, air currents, temperature changes, etc.).

- **Operation**
  - When the light on, the sensor initially enters the "walk-through mode." Once the motion is detected for longer than 2.5 minutes, the sensor exits the "Occupied" mode. When the sensor is first installed, the delayed-off time is set during the Factory setting, and the delay-off time will not change, based on how the sensor adapts to the room's environment. Whenever the sensor subsequently turns on, the value of the delayed-off time will be the adapted value (refer to Occupancy Pattern Learning For Delayed Off Time).

  - The adapted settings can be reset using the DIP switch.

- **Occupancy Pattern Learning For Delayed Off Time**
  - The sensor automatically changes the delay-off time to respond to the occupancy and environmental conditions of the space it is installed in. The sensor analyzes the motion signal properties and will minimize the delayed-off time duration when there is frequent motion detection, and lengthen the delayed-off time duration when there is weak and infrequent motion detection.

  - In the case of a false-alarm condition (lights turn on when the room is occupied), the delayed-off time will immediately be lengthened to prevent further false turn offs.

- **Occupancy Pattern Learning For Ultrasonic Technology**
  - The sensor learns the occupancy pattern of a space during the course of a day, for a seven-day period. At any given time, the sensor will look at the collected data and adjust its ultrasonic sensitivity. The sensor will adjust the sensitivity to make its less likely to turn on during a period of non-occupancy and more likely to turn on during a period of occupancy.

**SETTINGS**

- **Default Settings**: Adjustment knob settings as per “recommended manual settings,” (refer to Table 3 and Figure 1). All switches in the off position (refer to Table 4).

**TABLE 3: ADJUSTMENT KNOB SETTINGS**

<table>
<thead>
<tr>
<th>Knob Code</th>
<th>Symbol</th>
<th>Function</th>
<th>Knob Setting</th>
<th>Setting/View Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td></td>
<td>Select the ultrasonic range</td>
<td>Range setting</td>
<td>MIN: OFF, MAX: FULL CCW</td>
</tr>
<tr>
<td>Black</td>
<td></td>
<td>Delayed-Off Time</td>
<td>Full CCW: 10 min (OFF), MIN CCW: 2.5 min</td>
<td>50% (MIN CCW)</td>
</tr>
<tr>
<td>Blue</td>
<td></td>
<td>Ambient Light Override (gray wire only)</td>
<td>Full CCW: lights stay on, MIN CCW: lights turn off (100% Range – 100-055 Lux)</td>
<td>100%</td>
</tr>
</tbody>
</table>

**TABLE 4: SWITCH SETTINGS**

<table>
<thead>
<tr>
<th>Switch Location</th>
<th>Function</th>
<th>Switch Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1</td>
<td>To Test</td>
<td>OFF, ON, OFF, ON (Black)</td>
</tr>
</tbody>
</table>

**TROUBLESHOOTING**

- **Low-voltage miswired.** To Test: Connect RED to BLUE wire at power pack to force lights ON.
- **Low-voltage miswired.** To Test: Connect BLUE to RED relay wires at power pack to force the lights OFF.
- **Lights stay ON.** To Test: Reduce Green knob by 15%; remove motion source; unsatisfactory, move sensor. Light turns ON too long.

**PRODUCT INFORMATION**

- For technical assistance, contact us at 1-800-824-3005
- Visit our website at www.leviton.com