Multi-Technology Wall Mounted Occupancy Sensor
Cat. No. OSW12
To be used with 24VDC OSPxx Series, OPB15, miniZ and CN100 Power Pack Class II Low-Voltage Wiring

INSTALLATION INSTRUCTIONS

1. Select location for mounting of sensor for your application. Note: The neck can be rotated 360° to achieve any orientation.

2. Drill holes for mounting screws using mounting base as template. (refer to Mounting Option Diagram C)

3. Connect the wires from the sensor to the appropriate locations on the terminal block. (Note: the terminal block is shown backward in the diagram)

4. Install the mounting base of the wall sensor to the wallboard or ceiling using the included screws, nuts and washers. (refer to Mounting Diagram B)

5. Pass wires through the base cover/neck assembly (refer to Mounting Option Diagram A)

6. Class II Wiring: Connect low-voltage wires from Power Pack to Sensor per WIRING DIAGRAM as follows: Twist strands of each lead tightly and, with circuit conductors, push firmly into appropriate wire connector. Secure each connector with electrical tape.

7. Push wire connections through the center hole of the back cover and into the wall or ceiling.

8. Snap neck and base cover onto mounting base in the desired orientation. Align arrows on mounting base and base cover, push on and turn to lock base cover to mounting base.

9. Push wires through the hole and begin to fasten the plastic nut around the back of the sensor body. Move the sensor body to the desired orientation and then continue to tighten the nut around the sensor body. Note: The neck is a two position assembly with catches to hold it in position for either ceiling or wall mounting.

10. Restore power at circuit breaker or fuse to Power Pack.

WARRANTS 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.
- Do not touch the surface of the lens. Clean outer surface with a damp cloth only.

NOTE:
- This device complies with part 15 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.

INSTRUCTIONS CONT'D

- The Occupancy Sensor is a low-voltage infrared sensor that works with the OSPxx Series, OPB15, miniZ 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 the 'delayed-off time' has expired.
- The latest microprocessor-based technology which permits it to continually adjust and optimize its performance.
- Infrared motion detection gives higher false triggering immunity that yields a sensor turnout rate of 99.99%, the highest rate obtainable with any sensor.
- This device complies with the latest Part 15 of the FCC Rules and has been tested and determined 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 communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or 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 manufacturer or an experienced radio/TV technician for help.

NOTE: This device has been approved by UL to be used with 24VDC OSPxx Series, OPB15, miniZ and CN100 power pack Class II Low-Voltage Wiring. Other methods of installation may be possible but they have not been described in the manual.

LISTED ARE 3 TYPICAL INSTALLATION OPTIONS (A, B AND C). CHOOSE ONE THAT BEST SUITS YOUR NEEDS. OTHER METHODS OF INSTALLATION MAY BE POSSIBLE BUT THEY HAVE NOT BEEN DESCRIBED IN THE MANUAL.

A. Wall or Ceiling Installation Using Screws (Mounting Option A):
- This gives greater flexibility in attaining the desired coverage.
- Listed are 3 typical installation options (A, B and C). Choose one that best suits your needs. Other methods of installation may be possible but they have not been described here. Note that the wall sensor can be wall mounted or ceiling mounted simply by rotating the neck. This gives greater flexibility in attaining the desired coverage.
- Select location for mounting of sensor for your application (refer to Mounting Location Diagram).
- Make a hole in the wallboard or ceiling large enough to pass the wire connections and wire nuts through (approximately 1” diameter).
- Drill holes for mounting screws using mounting base as template.
- In addition to the regular mounting methods shown, the OSWxx can be mounted to the OPB15 Power Base.

B. Wall or Ceiling Using Junction Box or Surface Mount Raceway (Mounting Option B):
- Note: You may use your own mounting screws, nuts and washers included or your own commercially available wall anchors.
- This device can be mounted both in a surface mount raceway or in a pre-cut wall opening using the provided base.
- The sensor continues to turn on and off to stop the plastic nut or base cover assembly.
- Place the sensor and base cover on the wallboard or ceiling and rotate the neck to lock the sensor in place for either ceiling or wall mounting.

C. OPB15 Power Base Installation:
- In addition to the regular mounting methods shown, the OSWxx can be mounted to the OPB15 Power Base.

3. Drill holes for mounting screws using mounting base as template.

4. Install the mounting base of the wall sensor to the wallboard or ceiling using the included screws, nuts and washers.

5. Pass wires through the base cover/neck assembly (refer to Mounting Option Diagram A)

6. Class II Wiring: Connect low-voltage wires from Power Pack to Sensor per 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.

7. Push wire connections through the center hole of the back cover and into the wall or ceiling.

8. Snap neck and base cover onto mounting base in the desired orientation. Align arrows on mounting base and base cover, push on and turn to lock base cover to mounting base.

9. Push wires through the hole and begin to fasten the plastic nut around the back of the sensor body. Move the sensor body to the desired orientation and then continue to tighten the nut around the sensor body. Note: The neck is a two position assembly with catches to hold it in position for either ceiling or wall mounting.

10. Restore power at circuit breaker or fuse to Power Pack.

INSTALLING YOUR OCCUPANCY SENSOR

NOTE: Use checklist when Steps are completed.

1. Preparing and connecting wires:

2. Strip Gage (measure bare wire here)

3. Typical Installations:

   Listed are 3 typical installation options (A, B and C). Choose one that best suits your needs. Other methods of installation may be possible but they have not been described here. Note that the wall sensor can be wall mounted or ceiling mounted simply by rotating the neck. This gives greater flexibility in attaining the desired coverage.

   A. Wall or Ceiling Installation Using Screws (Mounting Option A):
   - Note: You may use the mounting screws, nuts and washers included, or screws in combination with commercially available wall anchors.
   - 1. Select location for mounting of sensor for your application (refer to Mounting Location Diagram).
   - 2. Make a hole in the wallboard or ceiling large enough to pass the wire connections and wire nuts through (approximately 1” diameter).
   - 3. Drill holes for mounting screws using mounting base as template.
   - 4. Push the terminal block from the sensor to the appropriate locations on the terminal block.
   - 5. Connect the wires from the sensor to the appropriate locations on the terminal block. (Note: the terminal block is shown backward in the diagram)
   - 6. Push the terminal block onto the OPB15 pins.
   - 7. Align the raised arrow on the side of the base cover with the arrow on the mounting ring of the OPB15 and push on and twist to install.
   - 8. Rotate the assembly and adjust the neck for either ceiling or wall configuration aiming per the diagram.
   - 9. Tighten the plastic nut on the neck to lock the sensor in position for either ceiling or wall mounting.

3. Step 3 cont’d

   B. Wall or Ceiling Using Junction Box or Surface Mount Raceway:
   - Note: You may use the mounting screws, nuts and washers included, or screws in combination with commercially available wall anchors.
   - Listed below are suggested JUNCTION BOX installation applications which require mounting to be done in one of the following ways.

   C. OPB15 Power Base Installation:
   - In addition to the regular mounting methods shown, the OSWxx can be mounted to the OPB15 Power Base.
Multi-Tech Mode – This is the default mode of operation for most Sensor. PIR technology turns lights on in this mode; however, motion detection by other technology will keep the lights on. If neither technology detects motion, the lights turn off after the delayed-off time.

Single-Tech Mode – Only one technology is active in this mode. The technology is selected by the dip switches. Motion detection by the selected technology (PIR or ultrasonic) will turn on the lights as well as keep them on. When motion is detected, the lights will turn off after the delayed-off time.

Delayed-Off Time – The sensor is designed to turn off the lights 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 modify the delayed-off time to fit the parameters of each installation based on environmental conditions and occupancy patterns.

Walk-through Mode – The walk-through feature is useful when a room is momentarily occupied. With this feature, the sensor will turn the lights off shortly after the person leaves the room. The walk-through feature works as follows: When a person enters the room, the lights will turn on. If the person leaves the room but default walk-through time (5 minutes), the sensor will turn on the lights if off. If the person remains in the room for longer than 2.5 minutes, the sensor will proceed to the standard operation.

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 (refer to Table 2). Green flash indicates motion detection by ultrasonic technology. Red flash indicates motion detection by infrared technology.

Occupancy Pattern Learning

The Sensor continually analyzes the parameters of the motion detection signal and adjusts its internal operation to maximize detection of motion while minimizing the effects of noise (electrical noise, air currents, temperature changes, etc.)

Operation: When the lights turn on, the sensor initially enters the “walk-through” mode. Once the room is occupied for longer than 2.5 minutes, the sensor enters the “Occupied” mode. When the sensor is first installed, the delayed-off time for the occupied mode is based on the Time adjustments setting. While the sensor is in use, the delayed-off time will change, based on how the sensor adapts to the room conditions. Whenever the sensor subsequently turns off, the value of the delayed-off time will be the adapted value (Occupancy Pattern Learning for Deliberate On-Time).

The adapted settings can be viewed using the DIP switch.

Occupancy Pattern Learning for Deliberate On-Time:

The sensor will automatically change the delayed-off time in response to the occupancy and environmental conditions of the space it is installed in. The sensor analyzes the parameters of the motion detection signal and adjusts the delayed-off time to fit the parameters of each installation.

In the case of a false-off condition (lights turn off when the room is occupied), the delayed-off time will be the adapted value.

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Occupancy Pattern Learning for Deliberate On-Time:

The sensor will automatically change the delayed-off time in response to the occupancy and environmental conditions of the space it is installed in. The sensor analyzes the parameters of the motion detection signal and adjusts the delayed-off time to fit the parameters of each installation.

In the case of a false-off condition (lights turn off when the room is occupied), the delayed-off time will be the adapted value.

Setting:

Adjustment knobs settings as per “Factory Default Setting”, (refer to Table 1 and Figure 1).

All switches in the OFF position, except A4, which is in the ON position (refer to Table 2).

TABLE 1: ADJUST KNOB SETTINGS

<table>
<thead>
<tr>
<th>Knob Color</th>
<th>Symbol</th>
<th>Function</th>
<th>Knob Setting</th>
<th>Factory Default Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>遇 the ultrasonic sensitivity</td>
<td>Range setting</td>
<td>Full CCW = min. (OFF)</td>
<td>Full ON = max</td>
</tr>
<tr>
<td>Red</td>
<td>遇 the infrared sensitivity</td>
<td>Range setting</td>
<td>Full CCW = min. (OFF)</td>
<td>Full ON = max</td>
</tr>
<tr>
<td>Black</td>
<td>Delayed-Off Time</td>
<td>Full CCW = min (30 sec.)</td>
<td>30 sec. (30 min.)</td>
<td></td>
</tr>
<tr>
<td>Blue</td>
<td>Amb Light Override</td>
<td>Full CCW = min (30 sec.)</td>
<td>30 sec. (30 min.)</td>
<td></td>
</tr>
<tr>
<td>Gray</td>
<td>Adjustable Light Override (Gray area only)</td>
<td>Full CCW = min (30 sec.)</td>
<td>30 sec. (30 min.)</td>
<td></td>
</tr>
</tbody>
</table>

Adjust Knob Rotation Direction: Delayed-Off Time Selection (Black Knob)

NOTE: The settings for this sensor are only used if the Single Technology Option (switch A1) is selected. Test Mode: To set the delayed-off time to 6 seconds for performing a walk test. While the sensor is in test mode, the LED will flash amber once a second.

1. ENSURE POWER IS ON.
2. Remove front cover.
3. Locate Dip Switch B in Bank B (refer to Figure). B3 will be in the OFF position from the factory.
4. To enter Test Mode, move switch ON to and OFF. The test mode can be entered by simply moving the OFF position.

NOTES:

1. The time will remain in the 6 second test mode for 15 minutes, then automatically will test mode and reset to the delayed-off time setting as defined by the timer.
2. To manually take the time out of the 6 second test mode, simply toggle the switch B3 from OFF to ON and back to OFF.

Photocell (Ambient Light Override) adjustment:

In order to use the Ambient Light Override functionality of the sensor, the sensor must be wired to the power pack (OSPFx) using the Gray wire instead of the Blue wire. This feature allows the user to conserve energy by keeping the controlled lights off when not necessary. The sensor does this by measuring the amount of ambient light in the installed area and keeping the controlled lights off if there is high ambient light available. To use this feature, the Photocell adjustment (Blue knob) must be adjusted from the default position. Once the adjustment is made, the controlled lights will only turn on if the ambient light present is less than the setting.

To set the Photocell level (used with the Gray wire connection):

NOTE: This setting must be performed when the light is too high to ensure that:
1. The cover from the sensor.
2. Make note of the position of the Red knobs. Rotate the Red knob full CCW and enter the factory default settings as defined above.
3. Rotate the Blue knob full CCW.
4. Wait for the lights to fully turn ON.
5. Rotate the Red knob full CW.
6. Slowly rotate the blue knobs clockwise until the lights turn on. This is the correct setting.
7. Return the Red knobs to its original position.
8. Replace cover. Setting is complete.

Mounting Location Diagram

Wiring Diagram

Multiple Sensor, Single Power Pack

OSPFx Series

Power Pack

Sensor

PRODUCT INFORMATION

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

For Canada only

Leviton warrants its products against defects in material and workmanship for a period of five years from date of purchase and supplies a five year limited warranty. For warranty information and/or product returns, residents of Canada should contact Leviton in writing at Leviton Manufacturing of Canada Ltd. to the attention of the Quality Assurance Department, 165 Hymus Blvd, Pointe-Claire (Quebec), Canada H9R 1E9 or by telephone at 1 800 405-5320.

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LIMITED 5 YEAR WARRANTY AND EXCLUSIONS

Leviton warrants its products against defects in material and workmanship for a period of five years from date of purchase and supplies a five year limited warranty. The warranty excludes and there is no statutory liability to repair or replace the product or reimbursement. This warranty is void if the product is installed improperly or in an improper environment, abused, installed, repaired, altered, or damaged in any manner, or is used under normal operating conditions or not in accordance with specifications, instructions. There are no other implied warranties of any kind, including merchantability and fitness for a particular purpose. If any implied warranty is required by applicable law, the duration of any such original warranty, including merchantability and fitness for a particular purpose, is limited to three years. Leviton is not liable for incidental, indirect, special, or consequential damages, including without limitation, damage to, or loss of use of, any equipment, lost sales or profits or delay or failure to perform this warranty obligations. The remedies provided herein are the exclusive remedies under this warranty, whether based on contract, tort or otherwise.

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