WARNINGs AND CAUTIONS:

- Occupancy Sensor is used for the control Emergency Lighting Equipment. If this equipment is being used for Emergency Lighting and Power Equipment, please refer to the following information. This equipment is rated for only 250V AC on Emergency Lighting Equipment. Apply the “Emergency Circuit label” (provided to the front cover). Important SAFEGUARDS:

When using electronic equipment, basic safety precautions should always be followed, including the following:

- READ AND FOLLOW ALL SAFETY INSTRUCTIONS.
- Do NOT use outdoors.
- Do NOT mount near gas or electric heaters.
- Equipment should be mounted in locations and at heights where it will not readily be tampered with unauthorized personnel.
- This use of accessory equipment not recommended by manufacturer may cause an unsafe condition.
- Do NOT use this equipment for other than the intended use. Save THESE INSTRUCTIONS.

All servicing shall be performed by qualified service personnel. If any Emergency Circuits are fed or controlled from this panel, it must be located electrically where fed from a UPS, generator, or other guaranteed sources of power during emergencies and power outage situations.

## INSTALLING YOUR OCCUPANCY SENSOR

**TOOLS NEEDED TO INSTALL YOUR SENSOR**

- Phillips Screwdriver
- Small Slotted Screwdriver
- Wire stripper

**PARTS INCLUDED LIST**

- 4" x 4" Mounting Plate (1)
- Angled Light Pipe (1)
- #6-32 x 1-1/2" Screw (2)

**DESCRIPTION**

The Occupancy Sensor is a LiVe-voltage ultrasonic sensor to automatically control the lighting. The sensor turns the lights ON and keeps them ON as long as there is sufficient light. The sensor is continuously adjustable and is adjusted to changing conditions. The sensor uses the latest technology to provide a sensor with excellent performance.

**INSTALLING YOUR OCCUPANCY SENSOR**

**NOTE:** Use check boxes if Steps are completed.

1. **Step 1:**
   - Identify your wiring:
   - a) Line wire to Line terminal.
   - b) Neutral wire to Neutral terminal.
   - c) Load wire to Load terminal.
   - e) Emergency Interface to your selected marked terminals.

2. **Step 2:**
   - Mount Sensor in Electrical Box with Mud Ring
   - a) To mount inside 4" octagon 2.125" deep ceiling electrical box, refer to Mount Sensor in Electrical Box.
   - b) Ensure that conduit/cable entry clamp is located in corner of electrical box.
   - c) Connect wires per WIRING DIAGRAM as follows:
     - Line wire to Line terminal.
     - Neutral wire to Neutral terminal.
     - Load wire to Load terminal.
     - Emergency Interface to your selected marked terminals.

3. **Step 3:**
   - Prepare and Connect Wires:
     - Line: Hot - L1
     - Neutral - N
     - Load - L2
   - a) Pull out the two coasters that align with the two screws.
   - b) Install a two-gang mud ring (not included) on electrical box.
   - c) Pull out the two coasters that align with the two screws.
   - d) Align sensor so that it fits between the mounting holes of the electrical box and insert over mounting screws.
   - e) Tighten mounting screws firmly.

4. **Step 4:**
   - Mount Sensor in Electrical Box with Mud Ring:
     - To mount inside 4" square 1/2" deep ceiling electrical box with mud ring, refer to Figure 2 below.
   - a) Ensure that conduit/cable entry clamp is located in corner of electrical box.
   - b) Connect wires per WIRING DIAGRAM as follows:
     - Line wire to Line terminal.
     - Neutral wire to Neutral terminal.
     - Load wire to Load terminal.
     - Emergency Interface to your selected marked terminals.

**WIRING SENSOR**

**NOTE:** Wires need to be inserted from the top through the wire holes provided in the sensor and clipped down using the washer to the terminals.

**MOUNT SENSOR IN ELECTRICAL BOX WITH MUD RING**

To mount inside 4" octagon 2.125" deep ceiling electrical box, refer to Figure 2 below:

- a) Wire three wires to provide enough clearance in electrical box when device is installed.
- b) Flat thread #5-22 screw (not included) into the mounting holes of the electrical box.
- c) Push the two coasters that align with the two screws.
- d) Pull out the two coasters that align with the two screws.
- e) Mount Sensor in Electrical Box with Mud Ring

When the sensor is first installed, the delayed-off time for the occupied mode is based on the Time adjustment settings. The walk-through feature is useful when a room is momentarily occupied.

**M.rotation**

Motion detection by the ultrasonic sensor will turn the lights ON as well as keep them ON.

- When the sensor is in test mode, the LED’s will flash yellow once every second.
- The walk-through feature works as follows: When a person enters the room, the lights will turn ON.
- The sensor will turn the lights OFF after the “delayed-off time” has expired. The sensor will turn the lights OFF 2.5 minutes later. If the person stays in the room for longer than 2.5 minutes, the sensor will turn the lights OFF after the “delayed-off time” has expired.
- The walk-through feature is useful when a room is momentarily occupied.

**MODES OF OPERATION**

- 1. **Emergency Mode:**
  - The sensor turns the lights ON and keeps them ON whenever there is sufficient light.
  - The sensor turns the lights OFF when sufficient ambient light is present. Typical light levels are measured in foot-candles or lux.

- 2. **Walk-through Mode:**
  - The sensor will automatically change the walk-through time in response to detected motion (on-vation). Walk-through time is increased for a period of time if a room is vacated, which will result in energy savings. The Delayed-Off time will be increased if light levels are detected.

- 3. **Test Mode:**
  - To enter Test mode, move switch to ON. The Test mode has now been entered with the following conditions:
    - a) The sensor is in test mode, the LED’s will flash yellow once every second.
    - b) The walk-through feature is turned OFF.
    - c) The sensor turns the lights ON and keeps them ON whenever there is sufficient light.

**OCCUPANCY SENSOR OPERATION**

- a) Motion detection by the ultrasonic sensor will turn the lights ON as well as keep them ON.
- b) The sensor turns the lights OFF after the “delayed-off time” has expired. The sensor will turn the lights OFF 2.5 minutes later. If the person stays in the room for longer than 2.5 minutes, the sensor will turn the lights OFF after the “delayed-off time” has expired.
- c) The walk-through feature is useful when a room is momentarily occupied.

**PHOTOCELL AND DAYLIGHTING OPERATIONS**

- Daylight harvesting is used for additional energy savings. The photoelectric control, or photocontrol, is an automatic device that controls the amount of artificial light from the lights it is controlling.

**PHOTOCELL CALIBRATION**

After the sensor is installed, the photocell must be configured correctly to maintain the desired light levels and gain additional energy savings. To achieve this, the installer first needs to understand Closed and Open Loop Daylighting, then decide which application best fits the customer’s needs before configuring and calibrating the device.

- **Closed Loop:**
  - When a photocell (light pipe) is focused on an area which is primarily illuminated by natural light from windows or skylights, a minimum amount of artificial light from the lights it is controlling. USE: The light pipe for closed Loop applications. Use closed Loop MUST be used only with Manual Calibration. Achieve best fits the customer’s needs before configuring and calibrating the device.

- **Open Loop:**
  - When a photocell (light pipe) is focused on an area which is primarily illuminated by artificial light from the lights it is controlling. USE: The light pipe for closed Loop applications. Use closed Loop MUST be used only with Manual Calibration. Calibrate the sensor to maintain the desired light levels and gain additional energy savings.
Please allow a 30 second warm up period after applying power. For best calibration results, personnel should maintain at least a 6 foot distance from the device 2 minutes after the start of Auto and Manual Calibration. NOTE: to disable photocell or cancel calibration turn knob to SET/OFF for longer than 5 seconds (RED LED followed by YELLOW flash). When changing photocell modes or recalibrating, disable photocell and follow directions below.

**Procedure** - for both Open and Closed Loop applications to quickly configure the Daylight Design Level (DDL). Calibration should always be done when ambient light is at user's desired level.

1. **Open Loop – Close Loop**
   - Move dip switch C4 to OFF position.
   - Install appropriate light pipe.
   - Open Loop: Install the flat light pipe (factory installed).
   - Turn the photocell knob (fully clockwise) to SET/OFF for 2 seconds (LED will be solid GREEN indicating the device has entered Manual Calibration mode). Then turn the knob to SET/ON (3-4) – see Figure 5.
   - Re-install sensor cover.
   - When Manual Calibration is complete, the LED will resume normal operation. The device is now operating in Manual mode.

2. **Auto Mode** - Auto mode is available ONLY for Closed Loop applications to configure the DDL in 24 hours. The sensor will not enter Auto Calibration mode if Open Loop Daylight Harvesting is selected.

3. **Closed Loop** - If the photocell knob (fully clockwise) in AUTO (LED will be solid GREEN) for 24 hours during photocell calibration.
   - For technical assistance, contact us at 1-800-624-3003
   - Visit our website at www.leviton.com

### Troubleshooting

- **Lights do not turn ON**
  - Check switch settings. Typical setting is 100% Auto Adapting Enabled.
- **Auto Adapting Not Working**
  - Turn the photocell knob (fully clockwise) to SET/OFF for 3 minutes during photocell manual calibration. Solid when device malfunction.

<table>
<thead>
<tr>
<th>Switch Setting</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Auto Adapting Enabled</td>
</tr>
<tr>
<td>B1</td>
<td>Off</td>
</tr>
<tr>
<td>A2</td>
<td>Manual ON</td>
</tr>
<tr>
<td>B2</td>
<td>On</td>
</tr>
<tr>
<td>A3</td>
<td>Auto Adapting Enabled</td>
</tr>
<tr>
<td>B3</td>
<td>Off</td>
</tr>
<tr>
<td>A4</td>
<td>Override ON</td>
</tr>
<tr>
<td>B4</td>
<td>On</td>
</tr>
<tr>
<td>A5</td>
<td>Override OFF</td>
</tr>
<tr>
<td>B5</td>
<td>Off</td>
</tr>
</tbody>
</table>

**TABLE 1: ADJUSTMENT KNOB SETTINGS**

<table>
<thead>
<tr>
<th>Knob Color</th>
<th>Symbol</th>
<th>Function</th>
<th>Knob Setting</th>
<th>Factory Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>![Green Symbol]</td>
<td>Set the ultra-ir range</td>
<td>Full CCW (60 in)</td>
<td>1x (10 min)</td>
</tr>
<tr>
<td>Black</td>
<td>![Black Symbol]</td>
<td>Off Delay Time</td>
<td>Full CCW = min. (30 sec)</td>
<td>30 sec</td>
</tr>
<tr>
<td>Blue</td>
<td>![Blue Symbol]</td>
<td>Ultra-ir On Delay Time</td>
<td>Full CW = max. (20 sec)</td>
<td>10 sec</td>
</tr>
<tr>
<td>Red</td>
<td>![Red Symbol]</td>
<td>Ultra-ir Off Delay Time</td>
<td>Full CCW = max. (28 sec)</td>
<td>20 sec</td>
</tr>
</tbody>
</table>

**TABLE 2: SWITCH SETTINGS**

**COLOR**

- **Light blue**
  - 24 hours during photocell auto calibration.
- **Solid for 3 minutes then blinks for 3 minutes** during photocell manual calibration.

**Color**

- **Solid RED**
  - Indicates the device has entered Manual Calibration mode.

- **Blue**
  - Indicates the device has entered Auto Calibration mode.

- **Solid for 24 hours during photocell auto calibration.**

**Diagrams**

**Figure 4B**

- Flat light pipe
- C4: OFF

**Figure 5**

- **Knob Settings**
  - Auto ON/OFF trigger point levels can be adjusted at any time using the Photocell knob.
  - **Default Settings** - Adj. knob settings as per “recommended manual settings.” (refer to Page 4 and Table 1). All switches in the OFF position, except A3, A4, C1, C2, C3 are set to ON (refer to Table 2).

**Figure 6**

- **Field-of-View Ranges**
  - Major Motion, Ultrasonic
  - Minor Motion, Ultrasonic

**Figure 7**

- **Field-of-View Ranges**
  - Major Motion, Ultrasonic
  - Minor Motion, Ultrasonic

**Figure 8**

- **Field-of-View Ranges**
  - Major Motion, Ultrasonic
  - Minor Motion, Ultrasonic

**Figure 4A**

- **CLOSED LOOP**
  - The graph in Figure 4A tracks the value of a linear photocell throughout a day. It is assumed that it is a cloudy day and that the desired light level is the same level without external light influence and only by the fixture(s).
  - At the left, the lights are OFF because the area is occupied and ambient light, there is no contribution from daylighting. As dawn arrives, the photocell begins to increase above the threshold point, the lights will begin to turn OFF since there is no contribution from the daylight.
  - The photocell reading will begin to decrease around noon until the level matches the trigger point, then lights will begin back ON.

**Figure 5**

- **Knob Settings**
  - **4. Re-install sensor cover.
  - 5. Turn the photocell knob (fully clockwise) to SET/OFF for 2 seconds (LED will be solid RED indicating the device has entered Manual Calibration mode). Then turn the knob to SET/ON (3-4) – see Figure 5.
  - **NOTE:** in order to make quick adjustments to DDL, the delay time for lights ON/OFF will be reduced from 1 min/ON and 30 sec/OFF to 30 sec/ON or OFF once photocell knob change is recognized. The reduced delay time will expire 2 minutes after knob change is made.

- **5. When Auto Calibration is complete, the LED will resume normal operation.** The device is now operating in Auto mode.

**Figure 6**

- **Field-of-View Ranges**
  - Major Motion, Ultrasonic
  - Minor Motion, Ultrasonic

**Figure 7**

- **Field-of-View Ranges**
  - Major Motion, Ultrasonic
  - Minor Motion, Ultrasonic

**Figure 8**

- **Field-of-View Ranges**
  - Major Motion, Ultrasonic
  - Minor Motion, Ultrasonic

**Figure 4B**

- **CLOSED LOOP**
  - The graph in Figure 4B tracks the value of a linear photocell throughout a day. It is assumed that it is a cloudy day and that the desired light level is the same level without external light influence and only by the fixture(s).
  - At the left, the lights are OFF because the area is occupied and ambient light, there is no contribution from daylighting. As dawn arrives, the photocell begins to increase above the threshold point, the lights will begin to turn OFF since there is no contribution from the daylight.
  - The photocell reading will begin to decrease around noon until the level matches the trigger point, then lights will begin back ON.

**Figure 4A**

- **CLOSED LOOP**
  - The graph in Figure 4A tracks the value of a linear photocell throughout a day. It is assumed that it is a cloudy day and that the desired light level is the same level without external light influence and only by the fixture(s).
  - At the left, the lights are OFF because the area is occupied and ambient light, there is no contribution from daylighting. As dawn arrives, the photocell begins to increase above the threshold point, the lights will begin to turn OFF since there is no contribution from the daylight.
  - The photocell reading will begin to decrease around noon until the level matches the trigger point, then lights will begin back ON.

**Figure 6**

- **Field-of-View Ranges**
  - Major Motion, Ultrasonic
  - Minor Motion, Ultrasonic

**Figure 7**

- **Field-of-View Ranges**
  - Major Motion, Ultrasonic
  - Minor Motion, Ultrasonic

**Figure 8**

- **Field-of-View Ranges**
  - Major Motion, Ultrasonic
  - Minor Motion, Ultrasonic