# INSTALLATION INSTRUCTIONS

**ENERLITES**®

## MWOS

Multi-Technology PIR/Ultrasonic Occupancy / Vacancy Sensor Switch
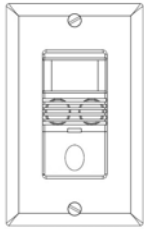
## SPECIFICATIONS

Voltage .............................................................................. 120/277VAC,50/60Hz
Incandescent ...........................................................................800VA@120VAC
Fluorescent/Ballast......................................800VA@120VAC /1600VA@277VAC
Motor ...................................................................................................... 1/4Hp
Time Delay................................................................................ 15Sec to 30Mins
Light Level.................................................................................... 100 Lux--Daylight
Operation Temperature......................................................................32° F--131° F

## DESCRIPTION

The MWOS is a Multi-Technology Wall Sensor Switch that combines advanced passive infrared (PIR) and ultrasonic technologies to help avoid false triggering. Selectable operating modes allow the sensor to turn a load on, and hold it on as long as either or both technologies detect motion. The sensor will automatically shut off the load at the end of the selected time delay. The countdown of the selected time delay starts after the last motion detected. The sensor is customizable with dials that can adjust *Time Delay*, detection *Range*, ambient *Light Level*, and switches to change between *Occupancy/ Vacancy* modes and select PIR/ Ultrasonic modes and levels.

## COVERAGE

As illustrated in Figure 1, The MWOS has a 180° PIR detection range with a maximum distance of 40' detection in front of the sensor and 20' on the sides for a total of 1200 s.f. The Ultrasonic detection range is 20' in the front and 10' on the sides for a total of 400 s.f. For maximum results, the sensor must be properly installed between the height of 4' to 5' and away from obstructions such as walls, furniture and transparent barriers like Low-E glass.
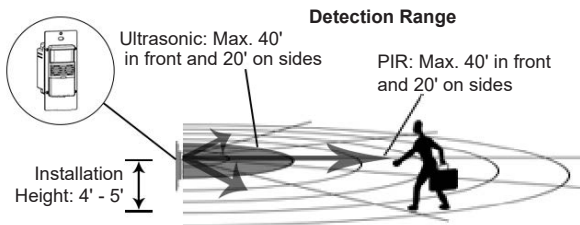
**Detection Range**



Ultrasonic: Max. 40' in front and 20' on sides

PIR: Max. 40' in front and 20' on sides

Installation Height: 4' - 5'

**Figure 1**

## WARNING

### Turn the POWER OFF at the circuit breaker before installing the sensor

Read and understand these instructions before installing. This device is intended for installation in accordance with the National Electric Code and local regulations. It is recommended that a qualified electrician performs this installation. Make sure to turn off the circuit breaker or fuse(s) and make sure power is off before wiring the device.

**Use copper wires only.**

## WIRING DIRECTIONS

1. Connect RED wire from sensor to the LOAD wire.
2. Connect BLACK wire from sensor to the HOT wire.
3. Connect WHITE wire from sensor to the NEUTRAL wire. The NEUTRAL WIRE IS REQUIRED.
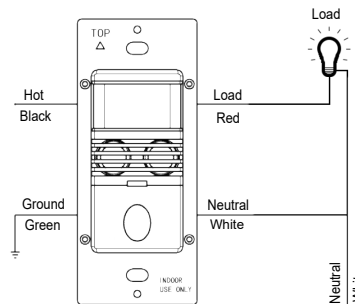4. Connect GREEN wire from sensor to the GROUND wire.



Hot / Black
Load / Red
Ground / Green
Neutral / White
Load
Neutral / White
TOP
INDOOR USE ONLY

**Figure 2**

## ADJUSTMENT

The control panel cover is also the push button on the switch. Remove the push-button cover plate by prying from the bottom of the push-button and pulling outward.
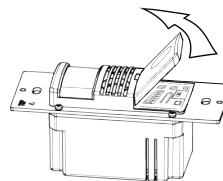


**Figure 3**

**Ultrasonic Sensitivity Dial**
Default position: Center at 65%
Adjustable: 30% (Position 1) to 100% (Position 4)
- Note: Turn toward right for greater room space. Turn toward left to avoid false alert in smaller room and near the door way or heat source.

**Light dial**
The sensor may be adjusted to operate at the desired level of ambient light.
- To do so, turn the dial to point the arrow toward the "-"sign for sensor to detect motion and operate during low light or no light. Point the arrow toward the "+"sign for sensor to operate when there's more light in the area or even during daylight.
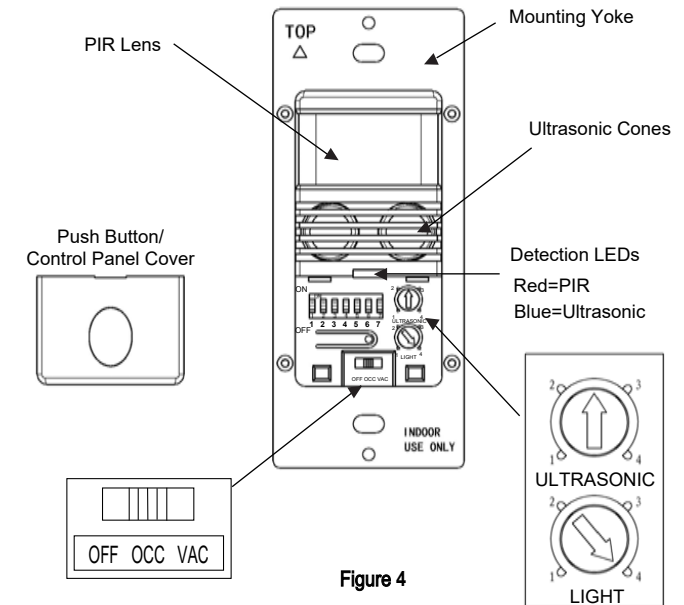


PIR Lens
Mounting Yoke
Ultrasonic Cones
Push Button/ Control Panel Cover
Detection LEDs
Red=PIR
Blue=Ultrasonic
TOP
INDOOR USE ONLY
OFF OCC VAC
ULTRASONIC
LIGHT

**Figure 4**

# DIP SWITCH SETTINGS

The MWOS has 7 DIP switches under the cover. They are used to set sensitivity, time delay, trigger mode, walk through mode feature settings.

↓ =OFF  ↑ =ON  ◄ =Factory Setting

| PIR Sensitivity | 1 |
|---|---|
| 50% | ↓ |
| 100% | ↑ ◄ |

| Trigger Mode | Initial Trigger | Maintain Load Output | Re-trigger | 2 | 3 |
|---|---|---|---|---|---|
| Option 1 | Both | Either | Either | ↓ | ↓ ◄ |
| Option 2 | PIR | PIR | PIR | ↓ | ↑ |
| Option 3 | US | US | US | ↑ | ↓ |
| Option 4 | Both | Both | Both | ↑ | ↑ |

| Time Delay | 4 | 5 | 6 |
|---|---|---|---|
| 15 Sec/Test | ↓ | ↓ | ↓ ◄ |
| 1 Minute | ↓ | ↓ | ↑ |
| 5 Minutes | ↓ | ↑ | ↓ |
| 10 Minutes | ↓ | ↑ | ↑ |
| 15 Minutes | ↑ | ↓ | ↓ |
| 20 Minutes | ↑ | ↓ | ↑ |
| 25 Minutes | ↑ | ↑ | ↓ |
| 30 Minutes | ↑ | ↑ | ↑ |

| Walk Through | 7 |
|---|---|
| Disabled | ↓ ◄ |
| Enabled | ↑ |

### PIR Sensitivity setting: Switch 1
**50%**, sensor's coverage about 600 square feet. **100%**, the maximum range of sensor's PIR coverage is 1200 square feet, see "coverage pattern".

### Trigger Mode: Switches 2, 3
The sensor has 4 trigger options. Use DIP switches 2 & 3 and follow the chart above for "Trigger Mode":
- **Both:** requires motion detection by the PIR and the Ultrasonic.
- **Either:** requires motion detection by only one technology (whichever detects motion first).
- **PIR:** requires motion detection only by the PIR.
- **US:** requires motion detection only by the Ultrasonic.

### Time Delay: Switches 4, 5, 6
The sensor will hold the lights on as long as occupancy is detected based on the trigger mode selected. The time delay countdown starts when no motion is detected and the sensor will turn the lights off when the time expires.

### Walk-through mode: Switch 7
If no motion is detected within the first 30 seconds after the initial detection, the sensor will turn the lights off in three minutes. If motion continues beyond the first 30 seconds, the selected time delay applies.

# OPERATION

**Off/ Occupancy/ Vacancy Mode Switch**

OFF  OCC  VAC
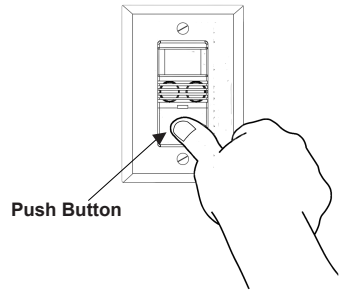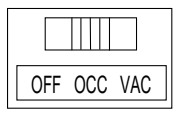
**Push Button**

| Mode | Position | Description | Push-Button Function |
|---|---|---|---|
| OFF | Left | Circuit is permanently opened. (switched off) | None |
| OCC | Center | Occupancy Mode: Automatic On, Automatic Off after selected time delay. | Manually toggles On / Off the load. |
| VAC | Right | Vacancy Mode: Manual On only, Automatic Off after selected time delay. | Manually toggles On/Off the load. |

**The *OFF* position:** Switch is turned off and will not detect motion. The push button will not function.

***OCC*upancy position:** The load will automatically turn on when motion is detected and automatically turn off when the selected time delay has expired. The push button may be used to manually turn ON/OFF the load and time delay will also take effect.

***VAC*ancy position:** The load will turn on ONLY when the push button is used and automatically turn off when the selected time delay has expired. The push button may be used to manually turn ON/OFF the load and time delay will also take effect. If the time delay has expired and the load turns off, the load will turn on again automatically if motion is detected within 30 seconds.

# TROUBLESHOOTING

**NOTE: There is a 1 minute warm-up time at initial power-up. The load may turn on/off several times.**

**The Load does not turn On. LED does not flash regardless of motion:**
1. Push Manual On/Off Button, if the load turns On; verify that the Ultrasonic dial is on high and/ or the PIR switch is set to 100%.
2. Check the wiring connections. Be sure the NEUTRAL wire is present.
3. Switch may be in VACancy mode. Select the OCC position on the Mode Switch if "Auto ON" is what's desired.

**The Load does not turn On when LED indicator flashes and motion is detected:**
1. Push Manual On/Off Button, if the load turns On; verify that the Ultrasonic dial is on high and/ or the PIR switch is set to 100%.
2. Check the wiring connections. Be sure the LOAD wire is connected.
3. Switch may be in VACancy mode. Select the OCC position on the Mode Switch if "Auto ON" is what's desired.
4. Check the *Light* dial. The pointer indicates the light level the ambient light needs to drop to before the load is automatically turned on.

**The Load does not turn Off:**
1. Motion may be detected. The time delay constantly restarts its countdown after the last motion detected.
2. To verify proper operation, turn the Time Delay Knob to 15s (Test Mode) and make sure there is no motion (no LED flashing). Tape may be used to cover the fresnel lens while testing.
3. Check for significant heat source emitting within six feet (two meters) such as high wattage light bulb, portable heaters or HAVC vents.Check the wiring. Make sure the HOT and LOAD wires aren't reversed.

**The Load turns on when its not desired:**
1. Motion may be detected. The time delay constantly restarts its countdown after the last motion detected. To verify proper operation, set the Time Delay switches to 15s (Test Mode) and make sure there is no motion (no LED flashing). Tape may be used to cover the fresnel lens and ultrasonic cones while testing.
2. Check for significant heat source emitting within six feet (two meters) such as high wattage light bulb, portable heaters or HAVC vents.
3. If Manual operation of push-button is desired, select VAC mode on the Mode Switch.
4. If the sensor is installed in a small room, turn the Range dial lower to avoid false or unwanted detection from open window or door.

# WARRANTY INFORMATION

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