



## Motion Sensor Switch with Neutral

PIR Motion sensor switch 180° 3-Way Occupancy and Vacancy with neutral

Ordering code: MS1-800W-3-NL-XX-V2

### DESCRIPTION

The sensor switch is designed to replace a standard light or fan switch. This device can automatically turn lights or a fan on and off by detecting motion from a heat-emitting source such as a person entering an area. The lights or fan will stay on until no motion is detected and the time delay has expired. This product offers optimal coverage for random traffic areas such as hallways, stairways, or large spaces with multiple entries. Use indoors only.

### TOOLS NEEDED

You will need an insulated flathead screwdriver, wire strippers, and a small flathead screwdriver to adjust the sensor dials.

### SPECS

<b>Voltage</b>	120-277Vac, 60Hz
<b>Max Lamp Load</b>	6.7A, 800W Tungsten 6.7A, 800W Magnetic Ballast 6.7A, 800W Electronic Ballast
<b>Max Motor Load</b>	1/6 hp
<b>Time Delay Adjustment</b>	Preset intervals of 15 sec (Test), 1 min, 5 min, 15 min, and 30 min
<b>Environment</b>	Indoor use only
<b>Operating Temperature</b>	0° to 55°C
<b>Humidity Range</b>	95% RH, non-condensing
<b>Coverage Range</b>	180° (at optimal temperature of 20° to 25°C)
<b>Coverage Area</b>	47 m <sup>3</sup> (720ft <sup>3</sup> )
<b>Type of Action</b>	Type 1.B Action
<b>Pollution Degree</b>	2
<b>Rated Impulse Voltage</b>	2500V
<b>Software Class</b>	Class A

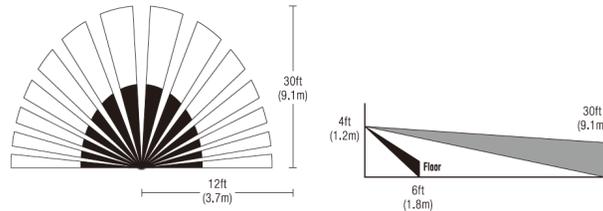


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### COVERAGE AREA

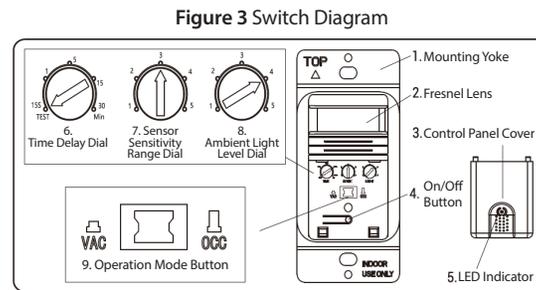
The sensor must have a clear and unobstructed view of the area. If an object blocks the sensor's lens, the sensor may not detect motion and may turn the lights or fan off even if someone is in the area. Windows, glass doors, and other transparent barriers will obstruct the sensor's view and prevent motion detection.

The coverage area data is measured under the best temperature condition (20 to 25° C), and a higher or lower temperature may not lead to an ideal coverage area (see figures 1 and 2).



**Figure 1** Sensor coverage area (top view) **Figure 2** Sensor coverage area (side view)

### SWITCH OVERVIEW



<b>1. Mounting Yolk</b>	Lets you mount the switch to the wall.
<b>2. Fresnel Lens</b>	Detects motion.
<b>3. Control Panel Cover</b>	Covers the switch's adjustment dials. Remove the cover to see the dials.
<b>4. On/Off Button</b>	Lets you turn the light or fan on or off.
<b>5. LED Indicator</b>	Indicates when the sensor detects motion. The LED lights up the On/Off button while the lights or fan are on, the LED turns off.
<b>6. Time Delay Dial</b>	Controls how long the light or fan stays on after no motion is detected.
<b>7. Sensor Sensitivity Range Dial</b>	Adjusts the sensitivity setting to avoid unwanted detection such as hallway traffic or adjacent movement.
<b>8. Ambient Light Level Dial</b>	Prevents the sensor from automatically turning the lights or fan on if the area has enough ambient lighting.
<b>9. Operation Mode Button</b>	The sensor has two positions that correspond to operation modes: vacancy (when the button is pressed) and occupancy (when the button is released).

## INSTALLATION INSTRUCTIONS

### BEFORE INSTALLATION

#### WARNING

- Before installing the sensor switch, disconnect power to the wall switch box by turning off the circuit breaker or removing the fuse for the circuit.
- For supply connections, use 18AWG or larger wires that are suitable for at least 90°C.
- Tightly secure the ground wire to ensure that the sensor functions properly.

#### IMPORTANT

A neutral wire is required for the switch to work properly. If the existing wiring does not match the description for a two-pole circuit, or if you do not have a neutral wire, consult a qualified electrician.

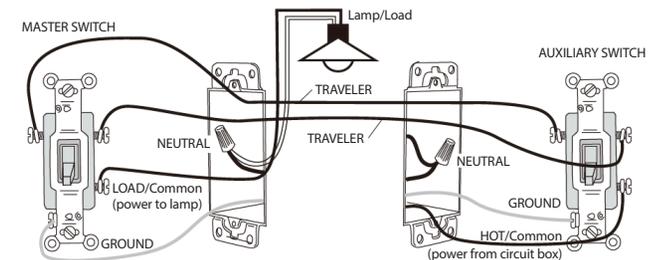
- These instructions describe only the 3-way circuit applications.
- For information about other applications, consult technical support.

### 1. Prepare the switch box

- After the power is turned OFF at the circuit breaker box, remove the existing wall plate and mounting screws. Pull the old switch out from the wall box.

### 2. Identify the type of circuit

- You may connect the switch to a single pole or multi-way circuit. If you are unable to clearly identify some or all of the wires mentioned in this manual, you should consult with a qualified electrician.
- In a 3-way circuit (see Fig. 4), two traveler wires connect to both switches. Another wire provides power from the circuit box to one of the switches. A wire connects from one switch to the load. A ground wire may also be connected to a ground terminal on the old switches. A neutral wire should also be present in both wall boxes.



**Figure 4 :** Typical 3-way switch wiring

## INSTALLATION AND WIRING

### OPTION A – WIRING WITH REGULAR 3-WAY SWITCH

Wire according to the wiring diagram below (see figure 5).

**IMPORTANT:** The switch must be installed in the wiring wall box that connects to the load.

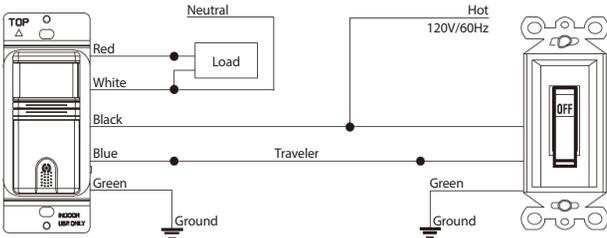
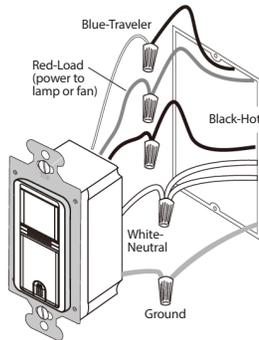


Figure 5 : Wire diagram with regular 3-way wall switch

## MOTION SENSOR INSTALLATION

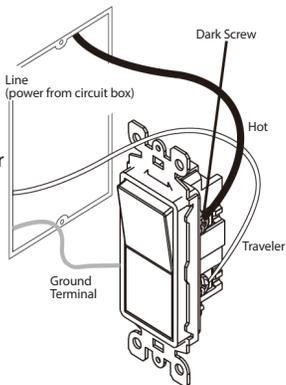
1. Connect the green or non-insulated (copper) GROUND wire in each wiring box to the green terminal
2. Connect the NEUTRAL wire to the White wire.
3. Connect the HOT wire to the Black wire.
4. Connect the lamp power (LOAD) to the Red wire.
5. Connect the TRAVELER wire to the other side Auxiliary switch and to the Blue wire.



## REGULAR SWITCH PART

1. Connect the green or non insulated (copper) GROUND wire in each wiring box to the green terminal on Regular Switch.
2. Connect the Hot wire to the Auxiliary switch Common screw dark screw).
3. Connect the TRAVELER wire to another silver screw.
4. Connect the lamp power (LOAD) to the Red wire.
5. Connect the TRAVELER wire to the other side Auxiliary switch and to the Blue wire.

**Note:** If the auxiliary switch does not have a HOT wire in the electrical box, please use another traveler wire instead.



## WIRING TWO MOTION SENSOR SWITCHES | 3-WAY

Wire according to the wiring diagram below (see figure 6).

- Connect the green or non-insulated (copper) GROUND wire from the circuit to the Green wire on each switches
- Connect the HOT wire to the Black on the Master and Auxiliary switches.
- Connect the NEUTRAL wire from the circuit and Load to the White wire on the Master and Auxiliary switches.
- Connect the TRAVELER wire to the Blue wire on Master and Auxiliary switches
- Connect the lamp power (LOAD) to the Red wire on the Master switch.
- Cap the Red wire on the Auxiliary switch.

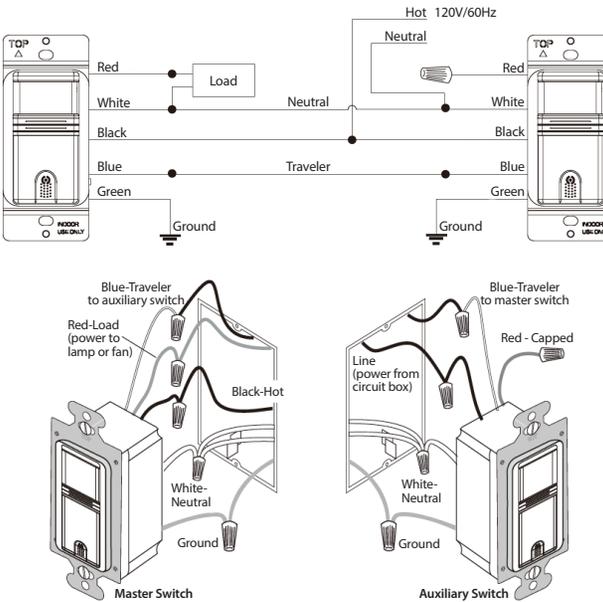


Figure 6 : Sensor orientation, wire connections, and wall box assembly when wiring the two motion switches together

**Note :** If auxiliary switch located not have HOT wire in the electrical box, please use the another travel wire instead.

## Finish Installation

1. Insert the switch into the wall box by positioning the lens at the top and the On/Off button at the bottom.
2. Secure the switch and cover plate to the wall box with the screw provided.
3. Turn on the power, the switch enters the initialization mode, **the whole process lasts about 30 seconds, during initialization please do not touch the switch.**
4. After initialization is complete, adjust the function according to your requirements.

## ADJUSTMENT AND PROGRAMMING

To program the sensor, first remove the cover:

1. Insert a small flathead screwdriver into the notch located on the bottom of the cover below the sensor.
2. Gently lift the screwdriver upward to unlatch the cover (see figure 7).

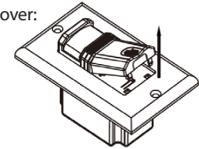


Figure 7:  
Lift the screwdriver upward to open the cover.

**Vacancy:** In VAC mode (manual on/off, auto off), press the on/off button to turn the light on or off like a standard switch. The switch automatically turns off the lights after the time delay. Note: After the time setting is expired, if motion is detected within 30 seconds, switch will turn on automatically.

**Occupancy:** In OCC mode (auto on, auto off with auto reset) the lights turn on automatically when the space is occupied. The switch automatically turns off the lights after the time delay.

**Note:** If the switch is manually turned off, the sensing function will close and return to normal after 15 seconds without detecting motion.

### Adjust the Time Delay

The Time Delay Dial, labeled as TIME, controls how long the light or fan stays on after no motion is detected. The minimum setting is 15 seconds (fully counterclockwise) and the maximum setting is 30 minutes (fully clockwise). Adjust the setting as desired for your area.

### Adjust the Sensitivity Range of the Sensor

- The Sensor Sensitivity Range Dial, labeled as SENSE, lets you adjust the sensor to avoid unwanted motion detection such as hallway traffic.
- To decrease sensitivity, turn the setting counterclockwise. To increase sensitivity, turn the setting clockwise. The sensor's default setting is 3 (75%). You can adjust it from setting 1 (50%) to setting 5 (100%).

### Adjust the Ambient Light Level

The Ambient Light Level Dial, labeled as LIGHT, lets you adjust the sensor to detect whether other light sources (such as sunlight) are enough to light the space without turning on the lights. If you would like the sensor to consider the amount of ambient light in your area, turn the dial counterclockwise. If you would rather not use the ambient light level, leave it on the maximum, default setting (5). This will allow the sensor to turn the light on and off regardless of ambient light.

## TROUBLESHOOTING

### Lights or Fan Will Not Turn On

Push the On/Off button. The load should turn on. If not:

1. Check the light bulb and/or motor switch on the fan.
2. Turn off power to the circuit and check the wire connections.

### Lights or Fan Will Not Turn Off

- Ensure that no motion is occurring in the coverage area until the set time period.
- Ensure that the sensor is at least 6 ft (2 m) away from devices that are a significant heat source (e.g., heater, heater vent, and high wattage light bulbs). Hot air currents and heat radiating devices (such as 100W incandescent bulbs) can cause false detection.
- Push the On/Off button to Off. If the lights or fan do not turn off, turn off power to the circuit and check wire connections.

### Lights or Fan Turn Off Too Quickly

The time delay or sensitivity range may be improperly set. Refer to the Adjustment and Programming section.

### Lights or Fan Turn on When Movement Is Detected in Adjacent Areas

If the sensor's location gives it a view of other areas or hallways, the lights will turn on when motion is detected in those areas. Try adjusting the sensitivity range (refer to the Adjustment and Programming section). You may need to move the sensor to another location.

### Lights or Fan Turn on When the Area is Unoccupied

The sensor may be mounted too closely to an air conditioning or heating vent. Move the sensor to another location or close the vent.