PW-301/PW-301-347
PW-302/PW-302-347
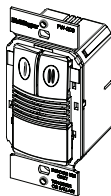**Passive Infrared Multi-Way Switch Occupancy Sensor**
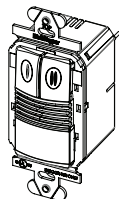
| **PW-301** | **PW-301-347** | **PW-302** | **PW-302-347** |

SPECIFICATIONS

Voltages:

PW-301 & PW-302	120/277 VAC, 50/60 Hz
PW-301-347 & PW-302-347	347 VAC, 50/60 Hz

Load Limits for relay 1:

@120 VAC	1000-W tungsten ballast, E-ballast, LED, 1/4 HP
@277 VAC	1200-W ballast, E-ballast, LED, 1/4 HP
@347 VAC	1500W ballast, LED, 1/4 HP

Load Limits for relay 2:

@120 VAC	800-W tungsten ballast, E-ballast, LED, 1/6 HP
@277 VAC	1200-W ballast, E-ballast, LED, 1/6 HP
@347 VAC	1500-W ballast, LED, 1/6 HP

Time Delay Adjustment	5 to 30 minutes
Walk-Through Mode	3 minutes if no activity after 30 sec.
Test Mode	10 min. with 5-sec. time delay
PIR Adjustment	High or Low
Light Level Adjustment	8fc to 180+fc
Alerts	Selectable Audible & Visual
Optional Neutral	All models
Multi-Way Capability	All models
Terminal screw torque	16 lbf-in (18 kgf-cm)

Watt Stopper®

UNIT DESCRIPTION AND OPERATION

The PW Passive Infrared Wall Switch sensors use advanced passive infrared (PIR) technology.

The PW sensor has Optional Neutral capability for applications requiring neutral wiring. It also has Multi-Way available on all models. A "walk-through" mode can turn lights off after only 3 minutes, if no activity is detected after 30 seconds following an occupancy detection.

The PW-301 has one relay and one **ON/OFF** button. The PW-302 contains two relays and two **ON/OFF** buttons to allow control of one or two loads independently. Pressing a button toggles the state of the corresponding relay.

PW sensors contain a light level sensor. If adequate daylight is present, the sensor holds the load OFF until light levels drop, even if the area is occupied. In the PW-302, light level only affects the load on Relay 2. Users can overrule the hold OFF function by pressing the **ON/OFF** button. See the **Light Level Adjustment** section.

Turning Load(s) ON (ON Mode)

The relays are programmed independently for either **Auto ON** or **Manual ON**. In either mode, the load can be turned ON or OFF using the **ON/OFF** button.

Manual ON DIP 8 **ON** for Relay 1 DIP 9** **ON** for Relay 2	With an **ON Mode** DIP switch in the **ON** position, the occupant must press the **ON/OFF** button to turn ON the load. The sensor keeps the load **ON** until no motion is detected for the selected time delay. There is a 30 second re-retrigger delay. If occupancy is detected during the delay, the sensor turns the load back **ON**. After the re-trigger delay elapses the **ON/OFF** button must be pressed to turn **ON** the load.
Auto ON DIP 8 **OFF** for Relay 1 DIP 9** **OFF** for Relay 2	With an **ON Mode** DIP switch in the **OFF** position, the load turns **ON** and **OFF** automatically based on occupancy. If the load is turned **OFF** manually, Presentation Mode operation applies. This prevents the load from turning **ON** automatically after it was deliberately turned **OFF**. Pressing the button to turn lights **ON** returns the sensor to **Auto ON** mode.

** PW-301: Switch 9 is not used. PW-302: Switch 9 default is **ON** to comply with CA Energy Commission Title 24 bi-level switching requirements.

Model #	Relay	Default ON Mode	DIP switch #	Setting
PW-301	1	Manual ON	8	ON
PW-301-347	1	Manual ON	8	ON

Model #	Relay	Default ON Mode	DIP switch #	Setting
PW-302	1	Auto ON	8	OFF
	2	Manual ON	9	ON
PW-302-347	1	Auto ON	8	OFF
	2	Manual ON	9	ON

Presentation Mode

Presentation Mode is a feature of the **Auto ON** mode. When both relays are manually turned OFF the PW holds the lights OFF until no motion has been detected for the duration of the Time Delay. With subsequent occupancy, the PW turns the load ON. If both relays are ON and one relay is manually turned OFF this relay remains OFF until both the Time Delay and retrigger delay expires for the relay that is ON, after that time the **ON Mode** control settings again apply.

Time Delays

The PW sensor holds the load ON until no motion is detected for the selected time delay. Select the time delay using DIP switch settings. In the PW-302, both relays use the same delay. See **DIP SWITCH SETTINGS** for more information.

Test/20 min (DIP 1, 2, 3, OFF)	A Test Mode with a short time delay of 5 seconds is set when DIP switches 1, 2, & 3 are OFF. It cancels automatically after ten minutes, or when you set a fixed time delay. When the Test Mode times out, the sensor assumes a 20 minute time delay. To restart Test Mode, change the time delay setting to any fixed amount and then return it to the Test setting.
Fixed Time Delay (20 min. DIP 1 ON, 2 & 3 OFF)	Time delays are 5, 10, 15, 20, 25, or 30 minutes. The default is a 20 minute delay.

Walk-Through

The Walk-Through mode shortens the time delay to reduce the amount of time the load is ON after a brief moment of occupancy, such as returning to an office to pick up a forgotten item then immediately exiting.

Walk-Through Mode (DIP #4 ON)	The PW sensor turns the load OFF three minutes after the area is initially occupied, if no motion is detected after the first 30 seconds. If motion continues beyond the first 30 seconds, the set time delay applies.
No Walk-Through (DIP #4 OFF)	Walk-Through mode disabled. This is the default.

Call 800.879.8585 for Technical Support

PIR Sensitivity Adjustment

The PW sensor constantly monitors the controlled environment and automatically adjusts the PIR to avoid common ambient conditions that can cause false detections, while providing maximum coverage.

High (DIP #5 **OFF**)	Default setting. Suitable for most applications.
Low, 50% (DIP #5 **ON**)	Reduces sensitivity by approximately 50%. Useful in cases where the PIR is detecting movement outside of the desired area (also consider masking the lens) and where heat sources cause unnecessary activation.

Alerts

The PW can provide audible and/or visible alerts as a warning before the load turns OFF.

Visible Alert (DIP #6 **ON**)	When only one minute is left in the time delay, the load connected to the relay turns **OFF** for one second. This provides a one minute warning before the load(s) are turned **OFF** by the sensor.
No Visible Alerts (DIP #6 **OFF**)	No visible warnings provided. This is the default.
Audible Alerts (DIP #7 **ON**)	Unit will beep at one minute*, at 30 seconds and at 10 seconds before turning **OFF** load. When Walk-Through is active, the unit beeps three times at 10 seconds before the load goes **OFF**. This is the default. *If Visible Alert is also **ON**, the one-minute time-out warning beep is replaced by the visible alert.
No Audible Alerts (DIP #7 **OFF**)	No audible warnings provided.

ADJUSTMENTS

Sensor Adjustment

Remove the wall plate. Remove the button cap by firmly squeezing together the top sides of the button assembly. Gently pull it away from the unit.

When the adjustments are completed, replace the button cap by inserting its hinges into the tabs on the main unit and then squeeze the top of the button while pressing it into the unit. Reinstall the cover plate.

Light Level Adjustment

The light level can be set with loads **ON** or **OFF**. To enable light level control and set the threshold:

1. Make sure the room is lit appropriately.
2. Put the sensor into **TEST** mode (see **Time Delay** switches). You have **10 minutes** to complete the procedure.
3. Press and hold the **ON/OFF** button (**Relay 1** button on the PW-302) for 3 seconds, until you hear a beep.
4. Step away from the sensor. After 10 seconds a beep sounds, indicating that the threshold level is set. This threshold is retained, even if power is lost, until it is re-set or disabled. In the PW-302, light level control only affects **Relay 2**.

To disable light level control, press and hold the **Relay 1** button for **7 seconds**, until a double beep tone sounds.

Reset to Default

Use the DIP Switch Settings tables on the previous page to return features to factory settings. To reset the PW, **press** and **hold** the **Relay 1** button for **10 seconds**, until a triple beep sounds. This resets the sensor and disables light level control (the brightest ambient light will not hold the light OFF).
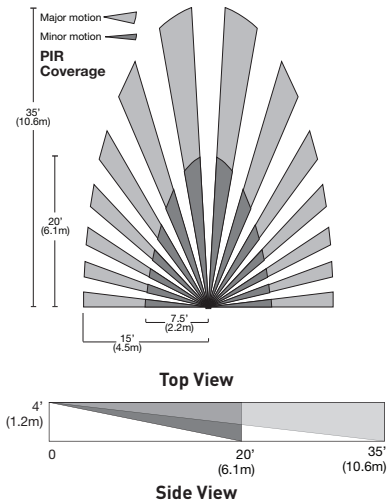
COVERAGE PATTERNS

Coverage testing has been performed according to the NEMA WD 7 guideline. For best performance, use in spaces not larger than 15' x 12'.

PIR Sensor

The sensor has a two-tiered, multi-cell viewing Fresnel lens with 180 degree field of view. The red LED on the sensor flashes when the PIR detects motion.

Masking the lens

Opaque adhesive tape is supplied so that sections of the PIR sensor's view can be masked. This allows you to eliminate coverage in unwanted areas. Since masking removes bands of coverage, remember to take this into account when troubleshooting coverage problems.


Major motion
Minor motion

PIR Coverage

35' (10.6m)

20' (6.1m)

7.5' (2.2m)

15' (4.5m)

Top View

4' (1.2m)

0   20' (6.1m)   35' (10.6m)

Side View

INSTALLATION

1. Make sure that the power has been turned OFF at the circuit breaker.

2. Connect wires to the PW flying leads as shown in the wiring diagram that is appropriate to the PW model and electrical supply. **The ground wire (green) must be fastened to ground for the sensor to work properly.**

   #12 – #14 AWG
   Strip Gage
   1/2"
   12.7mm
   Cu Wire Only

3. Attach the sensor to the wall box by inserting screws into the two wide holes on the top and bottom of the attached metal bracket. Match them up with the holes in the wall box and tighten.

4. Turn the circuit breaker **ON**. Wait one minute, then push the **Auto ON/OFF** switch for each load and the lights will turn **ON**. There is a delay due to initial power-up of the sensor that only occurs during installation.

5. Test and adjust the sensor if necessary.

6. Install industry standard decorator wall switch cover plate (not included).
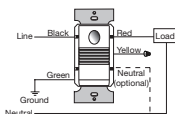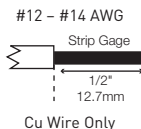
PW-301 and PW-301-347 Wiring
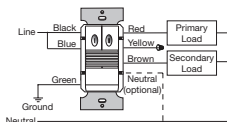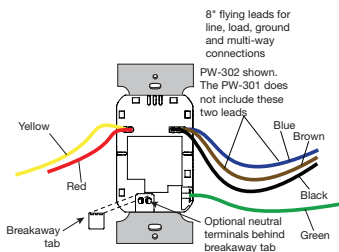
**PW-302 and PW-302-347
Bi-Level Wiring**
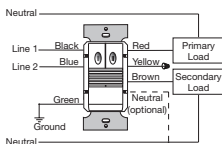
**PW-302 and PW-302-347
Dual Circuit Wiring**

Visit our website for FAQs: www.wattstopper.com

OPTIONAL NEUTRAL WIRING

For applications requiring neutral wiring, remove tab as shown to expose terminals for wiring.
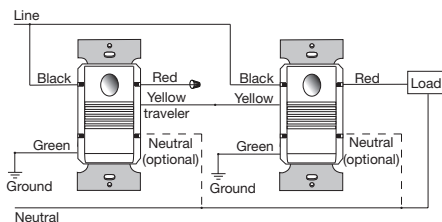
8" flying leads for line, load, ground and multi-way connections

PW-302 shown. The PW-301 does not include these two leads

Yellow

Red

Blue

Brown

Black

Green

Breakaway tab

Optional neutral terminals behind breakaway tab

Neutral Optional Wiring

MULTI-WAY

The Multi-Way capability is available on all models. Sensors can easily be wired together for convenient control of a common load. When wiring this way, only use 300 series sensors. Multi-Way in 300 series is not compatible with prior sensor models.

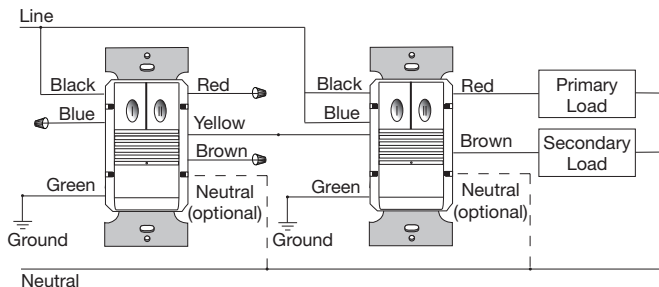The following princlples apply for Multi-Way:

- All units can see each other's push button events and respond accordingly.
- All units can see each other's PIR trigger event. The response will be determined by the Light Level setting and/or conditions of the space of the detecting sensor.
- The time delay for all units is defined by the unit with the smallest time delay.

Line

Black

Red
Yellow
traveler

Black
Yellow

Red

Load

Green

Neutral (optional)

Green

Neutral (optional)

Ground

Ground

Neutral

Typical Wiring
(PW-301 or PW-301-347 up to 4 sensors)

Bi-level Wiring
(PW-302 or PW-302-347 up to 4 sensors)

Note: Button 1 on any sensor controls load #1 and button 2 on any sensor controls load #2.
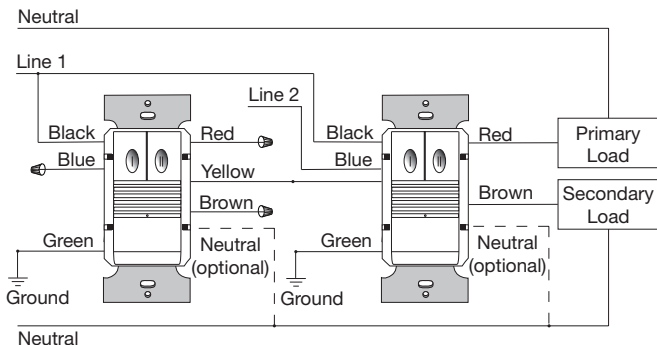
Two-phase Wiring

SENSOR OPERATING MODES

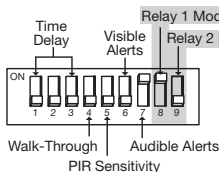| Sensor #1	Sensor #2	Light Fixture
Auto-ON	Auto-ON	The load turns **ON** and **OFF** automatically based on occupancy detection by either one of the sensors. The sensors keep the load **ON** until no motion is detected and will use the time delay of the sensor with the lowest value. At any time, the light can be turned **ON** and **OFF** using the **ON/OFF** button of any one of the sensors. If the load is turned **OFF** manually by pressing either one of the **ON/OFF** buttons, the unit will enter Presentation mode.
Auto-ON*	Manual ON*	The load can only be turned **ON** automatically by the sensor set in **Auto ON** mode. The sensors keep the load **ON** until no motion is detected and will use the time delay of the sensor with the lowest value. There is either a 30 second re-trigger delay for the sensor set in **Manual ON** mode or instant re-trigger for the sensor set in **Auto ON** mode. After the re-trigger delay elapses, the **ON/OFF** button of the sensor set in **Manual ON** mode must be pressed to turn the load back on unless the sensor set in **Auto ON** mode detects motion. If the light is turned **OFF** manualy by pressing the **ON/OFF** button set in **Auto ON**, it will enter Presentation mode.
Manual-ON	Manual-ON	The occupant must press the **ON/OFF** button on either one of the sensors to turn the light **ON**. The sensors keep the load **ON** until no motion is detected and will use the time delay of the sensor with the lowest value. There is a 30 second re-trigger delay, meaning the occupant has 30 seconds to be detected for the sensor to turn the load back on automatically. After the re-trigger delay elapses, the **ON/OFF** button of any one of the sensors must be pressed to turn the load back **ON**.

* Although this configuration may be selected, it is not recommended.

DIP SWITCH SETTINGS

Time Delay	1	2	3
Test/20 min	↓	↓	↓
5 minutes	↓	↓	↑
10 minutes	↓	↑	↓
15 minutes	↓	↑	↑
20 minutes	↑	↓	↓ ◄
25 minutes	↑	↓	↑
30 minutes	↑	↑	↓
⬟ Service	↑	↑	↑

Walk-Through	4
Enabled	↑
Disabled	↓ ◄

⬟ Service bypasses occupancy & light level functions. Control the load manually using **ON/OFF** button.

Time Delay — Visible Alerts — Relay 1 Mode — Relay 2 Mode

ON — 1 2 3 4 5 6 7 8 9

Walk-Through — PIR Sensitivity — Audible Alerts

PIR Sensitivity	5
Low, 50%	↑
High	↓ ◄

Visible Alert	6
Enabled	↑
Disabled	↓ ◄

↑=ON ↓=OFF

Audible Alert	7
Enabled	↑ ◄
Disabled	↓

Relay 1 Mode	8
Manual On	↑ ⬟
Auto On	↓ ⬟

PW-302 ONLY

Relay 2 Mode	9
Manual On	↑ ◄
Auto On	↓

Factory Settings:
◄ All models
⬟ PW-301 series
⬟ PW-302 series

ON/OFF Buttons
Relay 1
Relay 2

Button Hinges

Tabs

Dip Switches

Detection LED

PIR Lens

DELAY — WALK — PIR 50% — VIS. ALERT — AUD. ALERT — RLY 1 MAN — RLY 2 MAN
1 2 3 4 5 6 7

PW-302 shown. PW-301 has a single button.
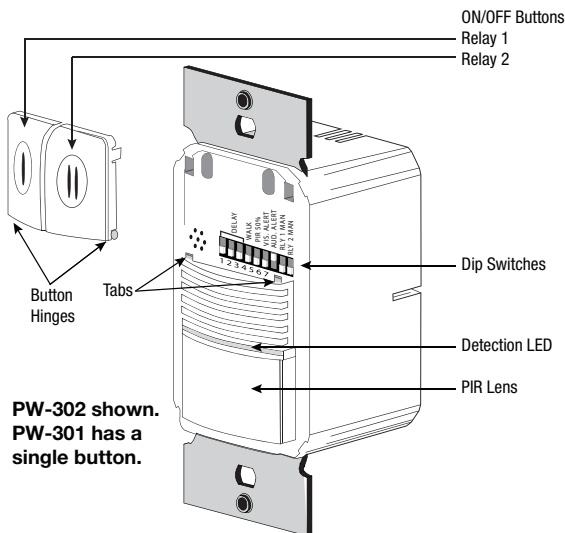
TROUBLESHOOTING

Lights do not turn ON with motion (LED does flash)

1. Press and release each button to make sure that the correct lights come ON for each relay. If the lights do **NOT** turn ON, check wire connections, especially the Load connection. If the lights turn ON, verify that the correct **On Mode** is selected in DIP switches 8 and 9.
2. Check to see if light level control is enabled: cover the sensor lens with your hand. If the lights come ON, adjust the light level setting.
3. If lights still do not turn ON, call 800.879.8585 for technical support.

Lights do not turn ON with motion (LED does not flash)

1. Press and release each button to make sure that the correct lights come ON for each relay. If the lights turn ON, verify that Sensitivity is on High.
2. Check the wire connections, in particular, the Line connection. Verify that connections are tightly secured.
3. If lights still do not turn ON, call 800.879.8585 for technical support.

Lights do not turn OFF

1. There can be up to a 30 minute time delay after the last motion is detected. To verify proper operation, set DIP switch 1 to ON, then reset switches 1, 2, and 3 to OFF to start Test Mode. Move out of view of the sensor. The lights should turn OFF in approximately 5 seconds.
2. Verify that the sensor is mounted at least six feet (2 meters) away from any heating/ventilating/air conditioning device that may cause false detection. Verify that there is no significant heat source (e.g., high wattage light bulb) mounted near the sensor.
3. If the lights still do not turn OFF, call 800.879.8585 for technical support.

Sensing motion outside desired areas

1. Select PIR Sensitivity – Low (DIP switch 5 = ON) if necessary.
2. Mask the PIR sensor's lens to eliminate unwanted coverage area.

Red LED is OFF all the time and the sensor features don't work.

1. Check DIP switches 1,2,3. If they are all ON the unit is in Service Mode. Set the DIP switches to a valid Time Delay setting.
2. If resetting the Time Delay switches does not set the sensor features, call technical support.

COVER PLATES

WattStopper PW series wall switches fit behind industry standard decorator-style switch cover plates. Cover plates are not included.

Units come in the following colors, which are indicated by the final suffix of the catalog number (shown here in parentheses):

- White (-W)
- Light Almond (-LA)
- Ivory (-I)
- Grey (-G)
- Black (-B)

A Group brand | **legrand**

WARRANTY INFORMATION

WattStopper warranties its products to be free of defects in materials and workmanship for a period of five (5) years. There are no obligations or liabilities on the part of WattStopper for consequential damages arising out of or in connection with the use or performance of this product or other indirect damages with respect to loss of property, revenue, or profit, or cost of removal, installation or reinstallation.

WattStopper®

2800 De La Cruz Boulevard, Santa Clara, CA 95050
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Please
Recycle