L:legrand® Wattstopper®

Dual Technology Low Voltage Wall Switch Occupancy Sensor (V3)

Installation Instructions • Instructions d'Installation • Instrucciones de Instalación

Catalog Number • Numéro de Catalogue • Número de Catálogo: DW-100-24

Country of Origin: Made in China • Pays d'origine: Fabriqué en Chine • País de origen: Hecho en China

DESCRIPTION AND OPERATION

The DW-100-24 Dual Technology Low Voltage Wall Switch sensor combines advanced passive infrared (PIR) and ultrasonic technologies into one unit. The combined technologies help to eliminate false triggering even in difficult applications.

Selectable operating modes allow the sensor to turn a load **ON**, and hold it **ON** as long as either or both technologies detect occupancy. After no movement is detected for the selected time delay, the lights switch **OFF**. 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 DW-100-24 has one relay and one **ON/OFF** button. Pressing the button toggles the state of the relay.

The DW-100-24 also contains 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. Users can override this function by pressing the **ON/OFF** button. See Light Level Adjustment.
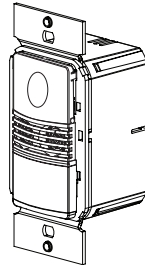
SPECIFICATIONS

Voltage .... 18-24VDC, 24VAC or Half-wave rectified AC
Current Consumption 35mA
Power Supply .... Wattstopper Power Packs
Isolated Relay Rating .... 1A @30VDC/VAC
Time Delay Adjustment .... 5 to 30 minutes
  Walk-Through Mode 3 minutes if no activity after 30 sec.
  Test Mode.... 5 sec. for 10 min. with DIP Switch setting
PIR Adjustment.............................. High or Low (DIP Switch)
Ultrasonic Adjustment......Minimum to Maximum (trimpot), Off
  Frequency... 40kHz
Light Level Adjustment .... 8fc to 180+fc
Alerts ....Selectable Audible
US Patent: 6617560

Turning ON the Load (ON Mode)

The DW-100-24 can be programmed for either **Auto ON** or **Manual ON** mode. In either mode, the load can be turned **ON** or **OFF** using the **ON/OFF** button.

Manual ON DIP#8 **ON**	With the **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-trigger 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**	With the **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.

Presentation Mode

This is a feature of the **Auto ON** mode. When the relay is manually turned **OFF** the DW holds the lights **OFF** until no motion has been detected for the duration of the Time Delay. With subsequent occupancy, the DW turns the load **ON**.

Time Delays

The DW-100-24 holds the load **ON** until no motion is detected for the selected time delay. Select the time delay using DIP Switch settings. In the DW-200, both relays use the same delay.

NOTE: Shaded cells below indicate default operation and switch setting.

Test/20 min (DIP#1 & 2 **OFF**)	A Test Mode with a short time delay of five seconds is set when DIP Switches 1 & 2 are **OFF**. It cancels automatically after ten minutes, or when you set a fixed time delay. When the Test Mode times out, the sensor will assume 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 (DIP#1 **ON**, & 2 **OFF**)	Time delays of 5, **15** (default), or 30 minutes are available. See DIP SWITCH SETTINGS for information.

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 #3 ON)	The DW 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 #3 OFF)	Walk-Through mode disabled.

PIR Sensitivity Adjustment

The DW-100-24 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 #4 OFF)	Default setting. Suitable for most applications.
Low, 50% (DIP #4 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 DW can provide audible alerts as a warning before the load turns OFF.

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.
No Audible Alerts (DIP #7 OFF)	No audible warnings provided.

Trigger Mode

The DW sensor has four occupancy trigger options, set with DIP Switches 5 and 6. Determine the appropriate option using the Trigger matrix.

In the Trigger Mode DIP Switch setting table, in order to deem the area occupied:

- **Both** requires motion detection by the PIR and the Ultrasonic.
- **Either** requires motion detection by only one technology.
- **PIR** requires motion detection by the PIR.

Initial Occupancy: The method that activates a change from "Standby" (area unoccupied and load OFF) to "Occupied" (area occupied and load may turn ON).

Maintain Occupancy: The method indicating that the area is still occupied and the lights should remain ON.

Re-trigger: In **Auto On** Mode, after the load turns OFF, detection by the selected technology within the number of seconds indicated turns the lights back ON. If the load was turned ON with the ON/OFF button, the re-trigger time is 30 seconds.

Trigger Mode	Initial Occupancy	Maintain Occupancy	Re-trigger	DIP Switch 5	6
Standard	Both	Either	Either	↓	↓
Option A	PIR	Either	Either	↓	↑
Option B	PIR	PIR	PIR	↑	↓
Option C	Both	Both	Both	↑	↑

↑ =ON   ↓ =OFF

COVERAGE PATTERNS

Coverage testing has been performed according to the NEMA WD 7 guideline. For best performance, use in spaces not larger than 18' x 15'.

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. You can eliminate coverage in unwanted areas. Since masking removes bands of coverage, take this into account when troubleshooting coverage problems.

Ultrasonic Sensor

The sensor has two ultrasonic transceivers operating at 40kHz. Detection sensitivity can be adjusted using the trimpot under the ON/OFF buttons.
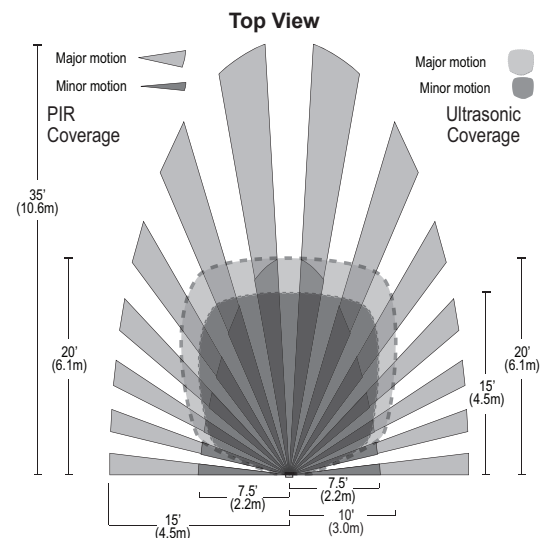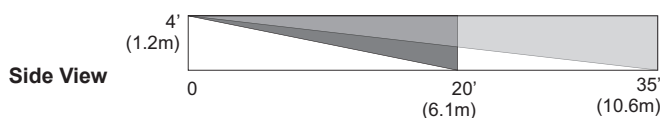
INSTALLATION

1. Install the power pack according to its instructions.
2. Connect the power pack wires to the sensor as follows:
   RED wire (+24VDC) to the +24V IN terminal on the sensor.
   BLACK wire (Return) to common (COMM.) terminal on the sensor.
   BLUE wire to control output (CTRL. OUT) terminal on the sensor.
3. Wire the Isolated Relay. The Isolated Relay is rated for 1A @ 30VAC/VDC. Connect the wires necessary to the application that requires this output:
   - Normally Closed (N.C.) - Open when occupancy is detected.
   - Relay Common (must be used for proper operation)
   - Normally Open (N.O.) - Closed when occupancy is detected.
   The bottom terminal on the sensor is not used.
4. Turn the power **ON**.
5. Test and adjust the sensor if necessary.
6. Install industry standard decorator wall switch cover plate (not included).

WARNING: TURN THE POWER OFF AT THE CIRCUIT BREAKER BEFORE WIRING.
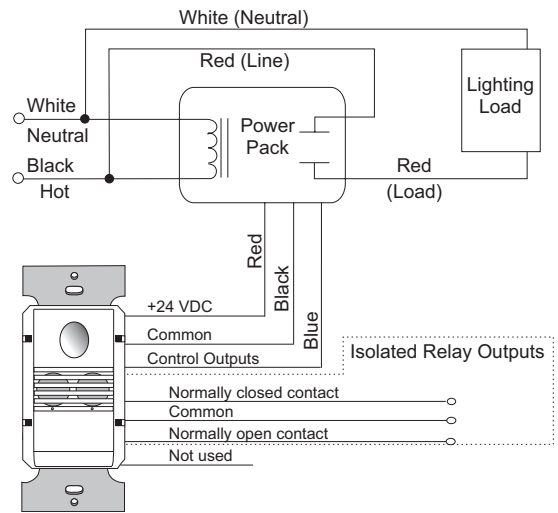
DIP SWITCH SETTINGS

Time Delay	1	2
Test/20 min	↓	↓
5 minutes	↓	↑
15 minutes	↑	↓ ◄
30 minutes	↑	↑

Walk-Through	3
Enabled	↑
Disabled	↓ ◄

PIR Sensivty	4
Low, 50%	↑
High	↓ ◄

Trigger Mode	Initial Occupancy	Maintain Occupancy	Re-trigger	5	6
Standard	Both	Either	Either	↓	↓ ◄
Option A	PIR	Either	Either	↓	↑
Option B	PIR	PIR	PIR	↑	↓
Option C	Both	Both	Both	↑	↑

Audible Alert	7
Enabled	↑ ◄
Disabled	↓

ON Mode	8
Manual On	↑ ◄
Auto On	↓

Switch 9 is not used

↑ =ON ↓ =OFF
◄ =Factory Setting

ON/OFF Button

Tabs

Button Hinges

Ultrasonic Sensitivity Adjustment Trimpot

DIP Switches

Ultrasonic Cones

Fig. 1: Detection LEDs Red = PIR Green = Ultrasonic

PIR Lens
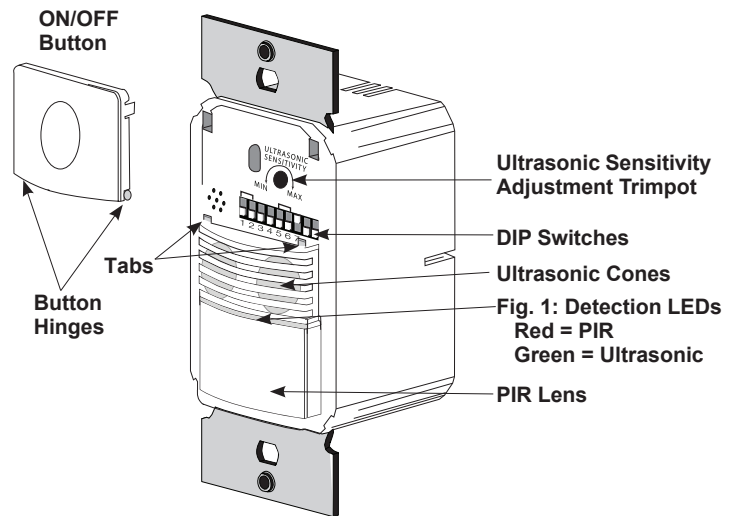
ADJUSTMENTS

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. You have 5 minutes to complete the procedure.
3. Press and hold the **ON/OFF** button for 3 seconds, until you hear a beep.
4. Step away from the sensor. After 25 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.

To disable light level control, press and hold the **ON/OFF** 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 DW press and hold the **ON/OFF** 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**).

Service Mode

To enter service mode set the ultrasonic trimpot to MIN (fully counter-clockwise).

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**. 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. Make sure that the correct lights come **ON**. If the lights turn **ON**, set PIR and Ultrasoic Sensitivity to High.
2. Check the wire connections, in particular, the Neutral and Line connections. 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 and 2 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 (such as a high wattage light bulb) mounted near the sensor.
3. Verify that the trimpot is not pointing at "Service" (red LED **ON**). If so, rotate the trimpot to it's middle setting (pointing up). The Service setting allows users to operate the sensor as a service switch in the unlikely event of a failure.
4. 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 4 = **ON**) if necessary.
2. Mask the PIR sensor's lens to eliminate unwanted coverage area.
3. Adjust the Ultrasonic Sensitivity. Rotate trimpot counterclockwise to reduce sensitivity.

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

1. Check the Ultrasonic trimpot. If it is set at fully counter-clockwise (MIN) the unit is in Service Mode. Set the trimpot to a mid-range position.
2. If resetting the trimpot does not clear the LED call technical support.

COVER PLATES

Wattstopper DW 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).

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