L'i legrand®

Wattstopper®
Ultrasonic Occupancy Sensors with Isolated relay

Catalog Numbers • Les Numéros de Catalogue • Números de Catálogo: WT-600, WT-1100, WT-2200, WT-2250

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

SPECIFICATIONS

Voltage 24VDC
Current Consumption:
WT-600...37mA Max.*
WT-1100, 2200 & 2250....................................40mA Max.*
Maximum Output Current.. 100mA
Isolated Relay Rating .... 1A @ 24VDC for resistive load
Ultrasonic Frequency 32kHz
Time Delay Adjustment .... 15 seconds-30 minutes
Sensitivity Adjustment .... Trimpot (min. to max.)
*Current consumption can be slightly higher when only one sensor per power pack is used.

UNIT DESCRIPTION

The WT series Wattstopper ultrasonic occupancy sensors operate on 24VDC and automatically turn lighting systems on and off based on occupancy. The sensors use Doppler technology to sense occupancy. They broadcast high frequency sound waves into the controlled area. Movement in the area will cause the sound waves to return to the sensor at a faster or slower rate resulting in a doppler shift and occupancy detection. When the ultrasonic sensor detects occupancy, it switches lighting on through a Wattstopper Power or Auxiliary Power Pack.
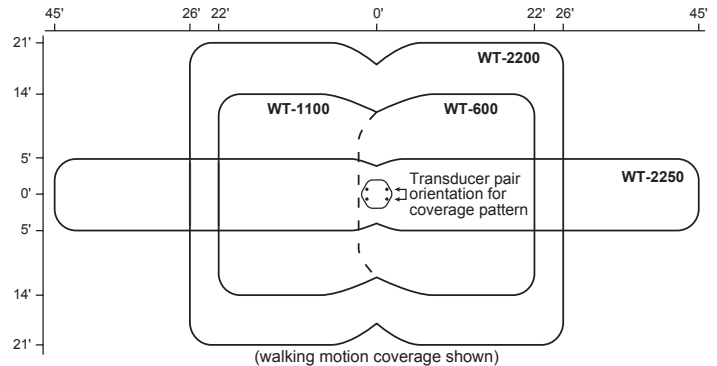
UNIT PLACEMENT

Placement of ultrasonic sensors is critical for proper operation. It is best to place the sensor so that it has a clear view of all desktops and work surfaces within the coverage area. Orientation of the sensor is also important. The WT-600 offers 360° one-sided coverage while the WT-1100, WT-2200, and WT-2250 provide 360° two-sided coverage.

Transducers (the two or four small round openings on the cover of the sensor) operate in pairs (see the Coverage Patterns graphic), and the centerline of the pair must be oriented correctly for proper coverage. You should take the following into account when mounting sensors:
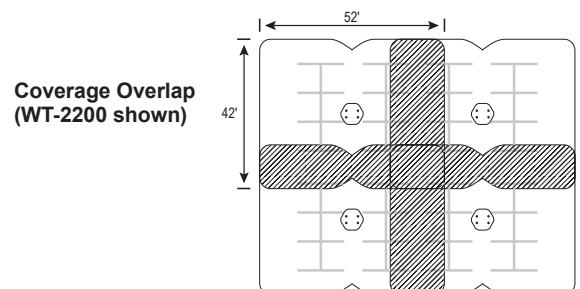
* The transducer pairs orientation determines the coverage pattern.
* Sensors should not be mounted so that transducers point toward a wall that is within 4 feet of the sensor.
* Ultrasonic sensors may false trigger when exposed to high volumes of air flow. Sensors should be installed at least 4 feet from supply ducts and a minimum of 6 feet from horizontal discharge ducts.
* Do not mount sensors within 6 inches of a power pack.
* Always mount the sensor on a rigid vibration free surface.
* When mounting multiple sensors in a large room, do not mount the sensors within 10 feet of each other.
* Mounting above 12 ft. or in areas of open ceiling heights of more than 12 ft will reduce overall coverage.

OPEN OFFICE SENSOR PLACEMENT

A typical layout for an open office space is to place the ultrasonic sensors so they control the office area in zones that overlap. A 20% coverage overlap is recommended.

(walking motion coverage shown)

WT-600: up to 600 sq ft for walking motion.
up to 300 sq ft for desktop motion.
WT-1100: up to 1100 sq ft for walking motion.
up to 550 sq ft for desktop motion.
WT-2200: up to 2200 sq ft for walking motion.
up to 1100 sq ft for desktop motion.
WT-2250: up to 10 ft x 90 linear ft for walking motion.
up to 10 ft x 45 linear ft for arm motion.

Note: Mounting at heights greater than 12' or in areas with open ceilings above 12' can reduce occupancy sensor coverage

Coverage Patterns

Coverage Overlap (WT-2200 shown)

ENCLOSED OFFICE SENSOR PLACEMENT

For smaller enclosed spaces, a WT-600 is recommended. Sensors should be placed so that they will not detect motion through an open door.

Transducers must face into the room and not be directed toward the closest walls or doors.
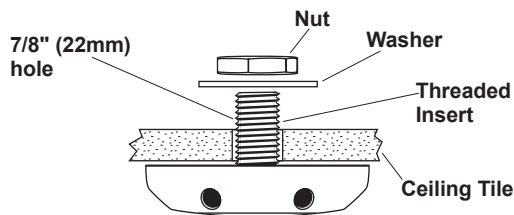
Fixtures

15' x 20'

Correct

Fixtures

15' x 20'

Incorrect
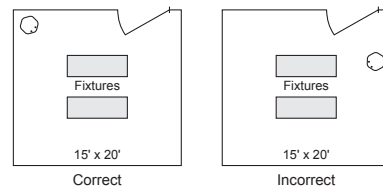
INSTALLATION

**NOTE:** Always try to attach the sensor to a vibration free surface.

Acoustic Tile Mounting

Install the Threaded Insert, flange side, into the hole on the back of the sensor and turn clockwise until it locks.

Nut

7/8" (22mm) hole

Washer

Threaded Insert

Ceiling Tile

❶ PLACE TEMPLATE on ceiling

❸ Pierce and Mark both CENTER POINTS for Mounting Screws

103 mm (4.1")

19°

16.5 mm (0.6")

33 mm (1.3")

❷ ALIGN ARROW to desired Transducer Pair Orientation

49 mm (1.9")

98 mm (3.8")

Keyhole Mounting

Positioning of keyhole mounting screws is important so that the transducer pairs point in the desired direction.

1. Use the template below to mark the location of mounting screws.
2. Install the provided screws—leaving approximately 3mm (1/8") space from the bottom of the screw head to the ceiling (see diagram).
3. Place the sensor's mounting keyholes over screw heads and rotate sensor clockwise until secured.

Screws: 103mm (4.1") apart

Space: 3mm/(1/8")

Ceiling

Rotate clockwise
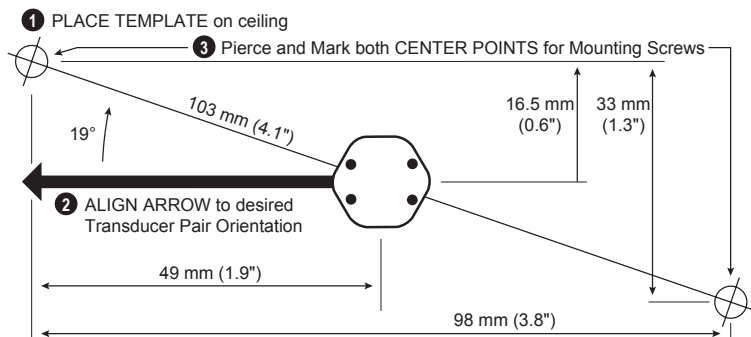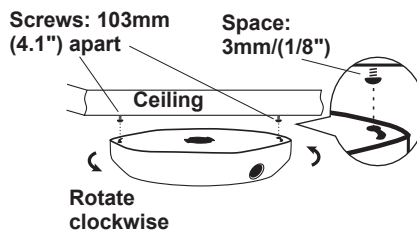
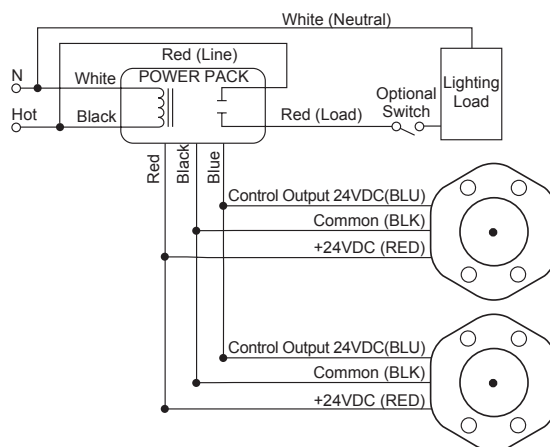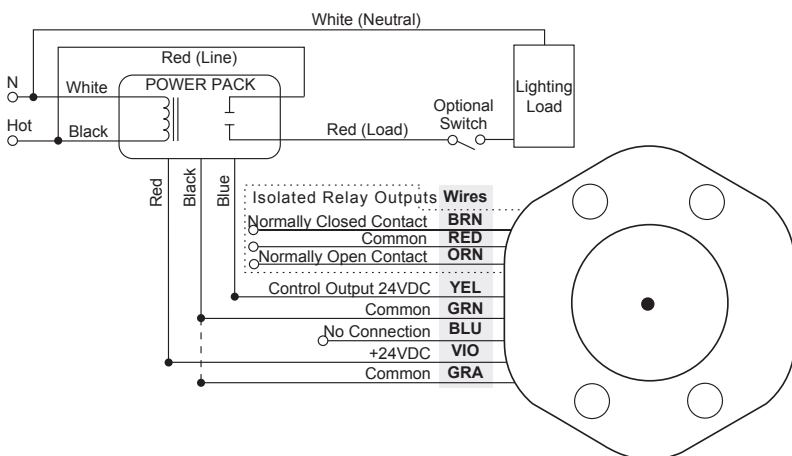## WIRING DIRECTIONS

Sensor wiring:

- BLUE wire from power pack to YELLOW wire from sensor.
- RED wire from power pack to VIOLET wire from sensor.
- BLACK wire from power pack to GRAY or GREEN wire from sensor.
  NOTE: Note: GRAY and GREEN sensor wires are common.

Isolated relay wiring: (The Isolated Relay is rated for 1A @ 24VDC)

- Connect the wires necessary to the application that requires this output.
- RED (Common) - must be used for proper operation.
- BROWN (Normally Closed) - with no occupancy detected.
- ORANGE (Normally Open) - with no occupancy detected.

WARNING

TURN POWER OFF AT THE CIRCUIT BREAKER BEFORE WORKING WITH OR NEAR HIGH VOLTAGE.

White (Neutral)

Red (Line)

POWER PACK

N

White

Hot

Black

Optional Switch

Lighting Load

Red (Load)

Red

Black

Blue

Isolated Relay Outputs	Wires
Normally Closed Contact	**BRN**
Common	**RED**
Normally Open Contact	**ORN**
Control Output 24VDC	**YEL**
Common	**GRN**
No Connection	**BLU**
+24VDC	**VIO**
Common	**GRA**

White (Neutral)

Red (Line)

POWER PACK

N

White

Hot

Black

Optional Switch

Lighting Load

Red (Load)

Red

Black

Blue

Control Output 24VDC(BLU)

Common (BLK)

+24VDC (RED)

Control Output 24VDC(BLU)

Common (BLK)

+24VDC (RED)

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SENSOR ADJUSTMENT

The Sensors are factory preset to allow for quick installation in most applications. However, verification of proper wiring, coverage, sensitivity, and time delay adjustments can be made through the following steps.

Sensitivity and Time Delay adjustments are both made under the sensor's front cover. Insert a small flat-blade screwdriver in the slot of the front cover to open it.

The **Sensitivity Adjustment Trimpot** (labeled "S") increases or decreases the occupancy detection sensitivity.

The **Time Delay** is the length of time the lights stay on after no motion has been detected. It is set with DIP Switches #1–5.

The red LED flashes each time the unit senses motion. It remains on when the sensor is in Override mode.

Override: setting DIP switch #6 to "ON" will bypass (override) all the sensor's occupancy control functions. Lights can still be manually on/off controlled with a light switch.
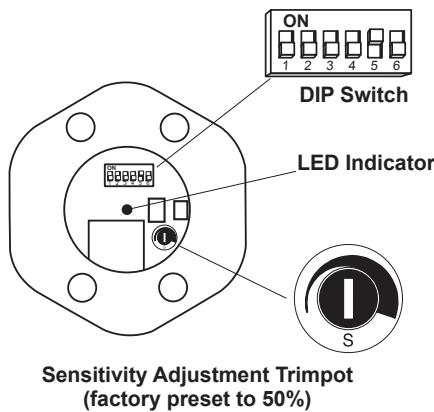
Output Disable: setting all DIP switches to "OFF" will disable the Control Output (see Wiring Directions). This can be used for troubleshooting sensor and power pack problems.

DIP Switch Settings

●=ON –=OFF	DIP Switch #					
Time Delay	1	2	3	4	5	6
15 seconds	●	–	–	–	–	–
2 minutes	–	●	–	–	–	–
4 minutes	–	–	●	–	–	–
6 minutes	–	●	●	–	–	–
8 minutes	–	–	–	●	–	–
10 minutes	–	●	–	●	–	–
12 minutes	–	–	●	●	–	–
14 minutes	–	●	●	●	–	–
*16 minutes	–	–	–	–	●	–
18 minutes	–	●	–	–	●	–
20 minutes	–	–	●	–	●	–
22 minutes	–	●	●	–	●	–
24 minutes	–	–	–	●	●	–
26 minutes	–	●	–	●	●	–
28 minutes	–	–	●	●	●	–
30 minutes	–	●	●	●	●	–
Output Disable	–	–	–	–	–	–
Override						●

Adjustment:

- Furnishings, carpeting or office structures can affect ultrasonic sensitivity and should be installed before adjustment, if possible.
- Ultrasonic sensors should have their sensitivity adjusted when interference from air movement is at its maximum. Override the the HVAC and VAV systems to the maximum "ON" position.

1. Set the Sensitivity adjustment trimpot to about mid-range.
2. Set the Time Delay to 15 seconds for this testing procedure.
3. Move out of the controlled area. The lights will turn off in about 15 seconds from the last flash of the red LED. If the LED continues to flash, the sensor is detecting some kind of movement. Turn the Sensitivity adjustment trimpot down slightly (counterclockwise) and repeat this step until the LED does not flash and the lights turn off.
4. Now walk into the controlled area. If the lights don't turn on, increase the Sensitivity slightly (clockwise) and try again. Repeat this procedure until the lights come on when entering the controlled area.
5. Also, if the lights turn off while the room is occupied, it may be necessary to increase the Sensitivity slightly.
6. Set the desired Time Delay—16 minutes works well for normal applications.
   Factory Presets: Sensitivity = 50% / Time Delay = 16 minutes.

ON

DIP Switch

LED Indicator

Sensitivity Adjustment Trimpot
(factory preset to 50%)

TROUBLESHOOTING

- Check that wiring connections are correct and secure.
- Make sure that the line voltage is +/- 10% of rating.

Lights do not turn off after the time delay elapses, and...:

... the red LED does not flash (does not sense motion)—possible sensor or power pack problem:

Set DIP switches to Output Disable, or disconnect the blue wire to the sensor.

- If lights go out—possible sensor problem (Call Tech Support).
- If lights do not go out—check wiring, if OK—possible power pack problem (Call Tech Support).

... the red LED flashes (senses motion):

Set DIP switches to Output Disable, or disconnect the blue wire to the sensor.

- If the lights do not go out—check the wiring.
- If lights still do not go off, check the distance between the power pack and sensor. Watstopper recommends a distance of at least 5 feet
- If the lights go out—reset the DIP switch to previous settings, or reconnect the blue wire. Note the sensitivity and time delay settings, then lower the sensitivity and time delay adjustment to minimum.
  ‣ If the lights go out after the set time delay period—the sensor may have been adjusted too high, so that vibration, air movement or other minor motion was activating it. Adjust the sensitivity down from its previous setting to a level needed for normal operation, and reset the time delay.
  ‣ If the lights still do not go out—possible sensor problem (Call Tech Support).

Lights do not turn on, even with motion in the room, and...:

... the red LED does not flash (does not sense motion):
- Make sure the circuit breaker has been turned back on.
- Check the sensitivity setting and increase as needed.
- Check that 24VDC is at the sensor red wire.
  - ‣ If 24VDC is present—possible sensor problem (Call Tech Support).
  - ‣ If 24VDC is not present at the sensor:
  - Make sure that the power pack has the correct voltage rating for your voltage (120 or 277VAC). Replace with correctly rated power pack.
  - If the power pack is correct—check the high-voltage going into the power pack—use proper safety precautions.
  - If 120 or 277VAC is present—possible power pack problem (Call Tech Support).

... the red LED flashes (senses motion):
- Turn the light switch ON, if off. The light switch needs to be on for automatic switching to occur.
- If the light switch is on, check for 24VDC at sensor blue wire.
  - ‣ If present, check wiring connections, if OK—possible power pack problem (Call Tech Support).
  - ‣ If 24VDC is not present—possible sensor problem (Call Tech Support).

Override:

Setting DIP switch #6 to on will bypass (override) all the sensor's occupancy control functions. Lights can still be manually on/off controlled with a light switch.

ORDERING INFORMATION

Catalog #	Description
WT-600	360° one-sided, 32kHz Ultrasonic Occupancy Sensor, up to 600 sq ft coverage, with isolated relay
WT-1100	360° two-sided, 32kHz Ultrasonic Occupancy Sensor, up to 1100 sq ft coverage, with isolated relay
WT-2200	360° two-sided, 32kHz Ultrasonic Occupancy Sensor, up to 2200 sq ft coverage, with isolated relay
WT-2250	360° two-sided, 32kHz Ultrasonic Occupancy Sensor, up to 80 linear ft coverage, with isolated relay
BZ-50	Power Pack: 120/277VAC, 50/60Hz, 20A ballast or incandescent
BZ-150	Power Pack: 120/277VAC, 50/60Hz, 20A ballast or incandescent, with Hold-On and Hold-Off capability
BZ-200	Power Pack: 120/277VAC, 50/60 Hz, 20A Ballast/ELV/MLV/Incandescent/LED, 16A, E-Ballast/CFL/Plug Load
BZ-250	Power Pack: 120/277VAC, 50/60 Hz, 20A, Ballast/ELV/MLV/Incandescent/LED, 16A E-Ballast/CFL/Plug Load, with Hold-On/Hold-Off capability
BZ-250-347	Power Pack: 120/347VAC, 50/60 Hz, 16A Ballast/ELV/MLV/Incandescent/LED/ E-Ballast/CFL, 15A Plug Load, with Hold-On/Hold-Off capability

All sensors available in White.

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