Wattstopper®

360° Passive Infrared Low Voltage Occupancy Sensor (version 5) with Manual On feature

Détecteur de mouvement basse tension à infra-rouge passif 360° (v5) avec marche en mode manuel

Sensor de ocupación con tecnología infrarroja pasiva de baja tensión 360° con función de encendido manual (v5)

Installation Instructions • Instructions d'Installation • Instrucciones de Instalación

No: 24054 – 09/20 rev. 2

Catalog Numbers • Les Numéros de Catalogue • Números de Catálogo: CI-305, CI-305-1

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

SPECIFICATIONS

Voltage	18-28VDC/VAC, half wave rectified AC
Current Consumption	10 mA
Power Supply	Wattstopper Power Packs
Operating Temperature	32° to 131°F (0° to 55°C)
Time Delay Adjustment	30 seconds to 30 minutes
Walk-Through Mode	3 minutes if no activity after 30 sec.
Test Mode	5 sec. upon DIP switch reset
PIR Coverage	
Model CI-305	up to 1200ft2
Model CI-305-1	up to 500ft2
Sensitivity Adjustment	High or Low (DIP switch)

UL & CUL Listed for use with Wattstopper Power Packs

DESCRIPTION AND OPERATION

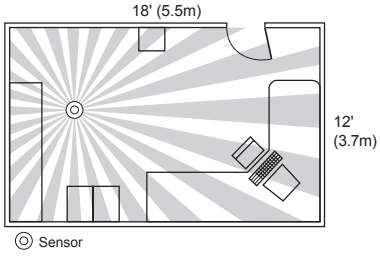
The Wattstopper CI-305 360° passive infrared (PIR) occupancy sensors turn lighting systems on and off based on occupancy.

The sensors can be configured to turn lighting on, and hold it on as long as the sensor detects occupancy. After no movement is detected for a user specified time (30 seconds to 30 minutes) the lights are switched off. A "walk-through" mode can turn lights off after only 3 minutes, if no activity is detected after 30 seconds of an occupancy detection.

The CI-305 operates on 24V supplied by Wattstopper Power Packs, 24VAC or half wave rectified AC.

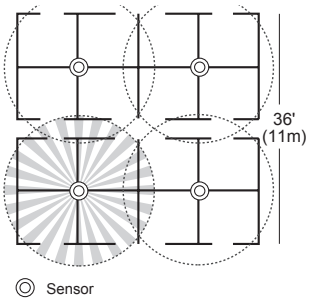
PLACEMENT GUIDELINES

Depending upon obstacles such as furniture or partitions, the area of coverage may be less or more than the sensing distances shown in the coverage pattern. This must be considered when planning the number of sensors and their placement. It is also recommended to place the sensor 4 to 6 feet away from air supply ducts as rapid air currents or the differences in temperatures may cause false activations.



Mount the sensor to the ceiling. The CI-305 sensors are designed for a ceiling height of about 8-10 feet. Mounting above or below this range will significantly affect the coverage patterns. Be aware that as you decrease the mounting height, you decrease the range and increase the sensitivity to smaller motions. Conversely, when you increase the height, you increase the range and decrease the sensitivity to smaller motions. At heights of more than 12-14 feet, you may start to significantly reduce sensitivity. As a general rule, each occupant should be able to clearly view the sensor.

Often the best location to install a CI-305 in a closed office is off-center. Avoid placing a sensor directly in line with an open door through which it has a clear view out, as the sensor may detect people walking by.



Open Office Area Coverage

To get complete coverage in an open office area, install multiple sensors so that there is an overlap with each adjacent sensor's coverage area.

For open office areas with partitions it is best to place sensors over intersection of four workstations.

For large areas of coverage use multiple sensors.

Masking the PIR Lens

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

WIRING DIRECTIONS

Each Wattstopper BZ series power pack can supply power for 14 CI-305 sensors. When using more sensors than this, multiple power packs are required.

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

Refer to the wiring diagram for the following procedures:

Connect the **low voltage**:

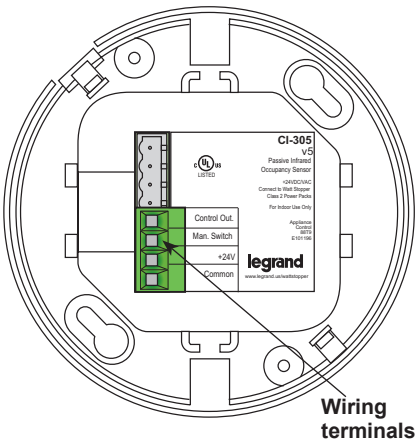
- RED wire (+24VDC) from power pack to the **+24V** terminal on the sensor.
- BLACK wire (Return) from power pack to **Common** terminal on the sensor.
- BLUE wire from power pack to **Control Out** terminal on sensor.

To add a manual switch such as the LVS-1 Momentary Toggle Switch, or RS2-3 Low Voltage Momentary Switch to the above applications–connect:

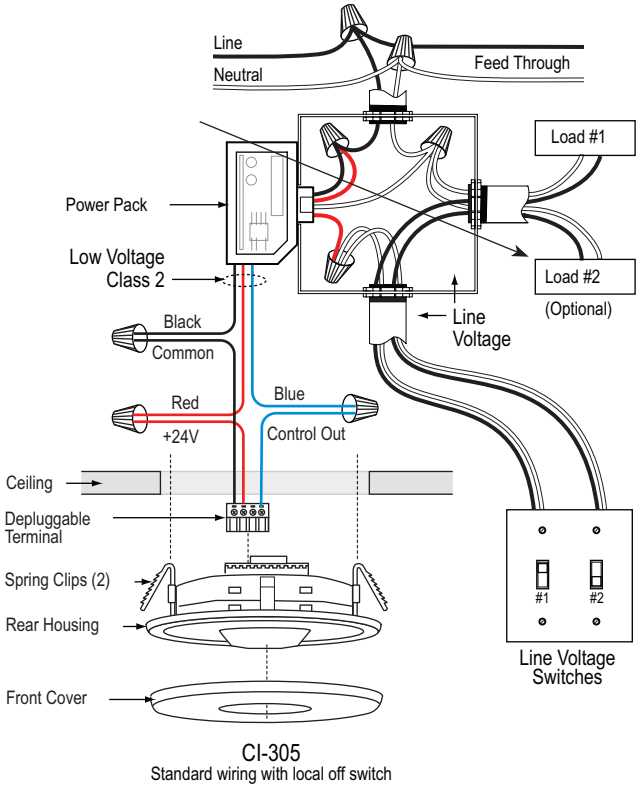
- Wire from one side of switch to +24 terminal on sensor.
- Wire from other side of switch to Man Switch terminal on sensor.

Care should be taken to separate high voltage power from low voltage (Class 2) control wiring.

All connections to sensor are low voltage, Class 2.

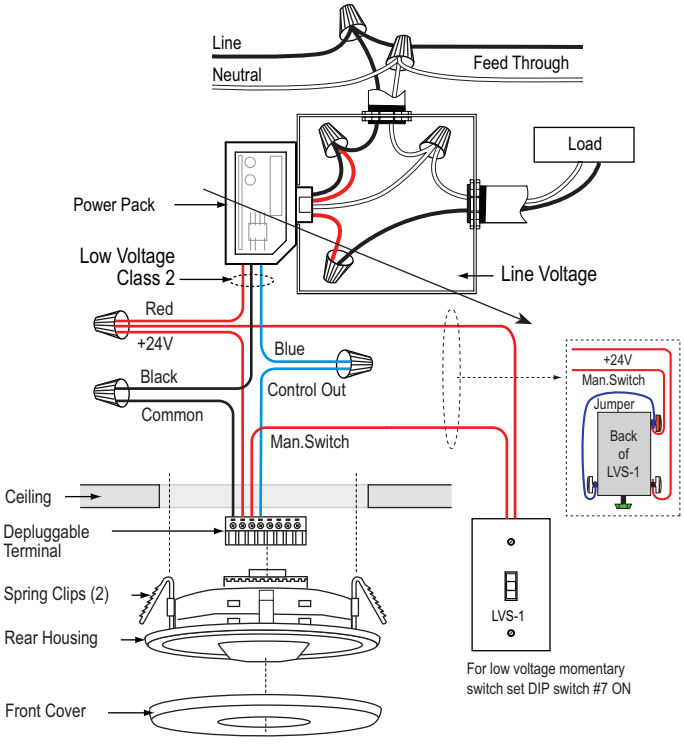


Standard wiring with local off switch



CI-305
Standard wiring with local off switch

Manual-On wiring with low voltage momentary switch

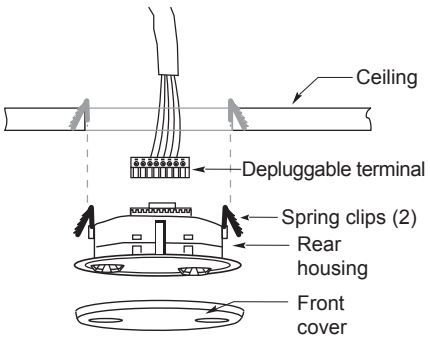


CI-305

MOUNTING THE SENSOR DIRECTLY TO CEILING

1. Attach the plastic spring clips to the edge of the sensor in the slots provided.
2. Cut a 3.5” to 4” round hole in the acoustic ceiling tile at the mounting location. A 3.5” hole is recommended for a secure fit.
3. Pull the low voltage wire from the power pack to the sensor through the hole.
4. Connect the low voltage wires to the appropriate terminals on the sensor.
5. Push the sensor up through the hole until the Spring Clips hold the sensor securely in place.
6. Snap the front cover onto the sensor. Using an Octagonal J-Box
7. Pull the low voltage wires from the power pack into the J-Box through the conduit knockout.

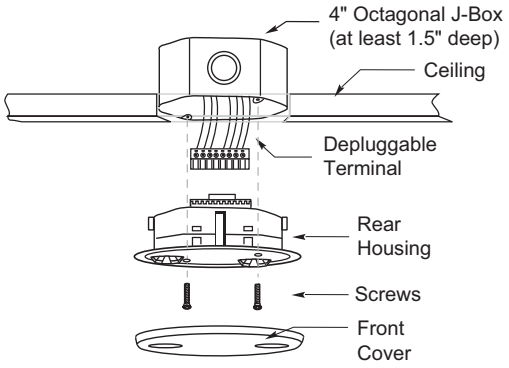
Ceiling Mount



Using an Octagonal J-Box

1. Pull the low voltage wires from the power pack into the J-Box through the conduit knockout.
2. Connect the low voltage wires to the appropriate terminals on the sensor.
3. Loosen the appliance mounting screws attached to the J-Box
4. Align the sensor in the J-Box so that the mounting screws on the box match the key holes on the sensor's rear housing.
5. Push the sensor up into the J-Box and twist it so that the mounting screws are seated in the keyhole slots.
6. Tighten the two screws to secure the sensor to the J-Box.
7. Snap the front cover onto the sensor.

J-Box Mount

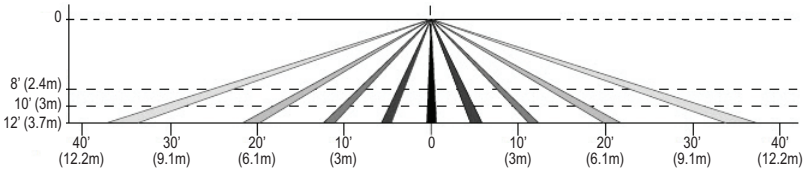


COVERAGE PATTERN

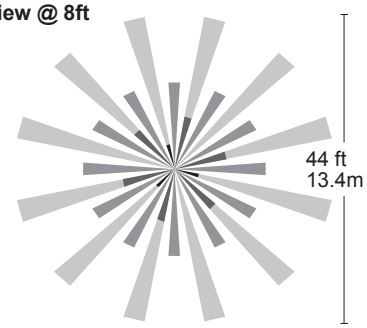
The CI-305 provides a 360° coverage pattern. Two lens patterns are available. The CI-305 provides up to 1200 square feet of coverage and the CI-305-1 provides up to 500 square feet of coverage. The coverage shown represents walking motion at a mounting height of 8 feet. For building spaces with lower levels of activity or with obstacles and barriers, coverage size may decrease.

C-305 Coverage Pattern (Extended Range Lens – Standard)

Side View

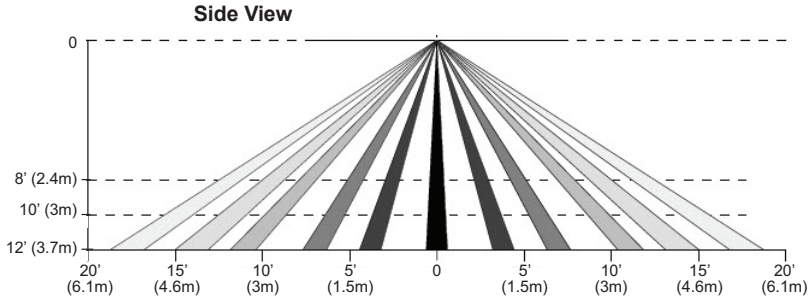


Top View @ 8ft

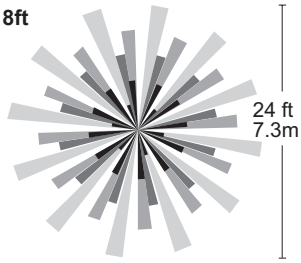


C-305 Coverage Pattern (High Density Reduced Range Lens)

Side View



Top View @ 8ft



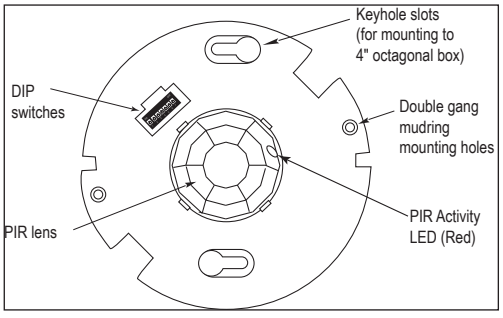
SENSOR ADJUSTMENT

This unit is pre-set for basic operation as described in this guide. Adjustment is optional.

The sensors are factory preset to allow for quick installation in most applications. Verification of proper wiring or coverage, or customizing the sensor's settings can be done using the following procedures. To make adjustments, open the Front Cover by pulling on the cover tab.

There is a 30 second warm-up period when power is first applied.

Before making adjustments, make sure the office furniture is installed, lighting circuits are turned on, and the HVAC systems are in the overridden/on position. VAV systems should be set to their highest airflow. Set the DIP switches to the desired settings. See **DIP Switch Setting**.



To Test Occupancy Sensors

1. Ensure the Time Delay is set for **Test Mode*** using the "Test Mode/20 minutes" setting. (DIP switches 1 ,2, & 3 are **OFF**).
2. Remain still. The red LED should not flash. The lights should turn off after 5 seconds. (If not, see **Troubleshooting**.)
3. Move about the coverage area. The lights should come on.
4. When testing and adjustment are complete, reset DIP Switches to the desired settings, and replace the cover on the sensor.

*** Test Mode** is a temporary state that starts when you first set the sensor's DIP switches for the "Test Mode/20 minutes" (switches 1, 2, 3, **OFF**). If you need to invoke the **Test Mode** and the DIP switches are already set for Test Mode/20 minutes, toggle DIP switch 1 **ON** then back to the **OFF** position. This provides a 10 minute test period. During the test period, the Time Delay is only 5 seconds.

DIP SWITCH SETTING

The CI-305 has 7 DIP switches under the cover.

Time Delay: Switches 1, 2, 3

The sensor will hold the lights ON as long as occupancy is detected. The time delay countdown starts when no motion is detected. After no motion is detected for the length of the time delay, the sensor will turn the lights OFF.

Walk-Through Switch 4

Walk-through mode turns the lights 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 selected time delay applies.

PIR Sensitivity: Switch 5

- Minimum forces a reduced detection range for the PIR.
- Maximum forces the sensitivity to the maximum coverage area. This setting is constantly updated.

Service: Switch 6

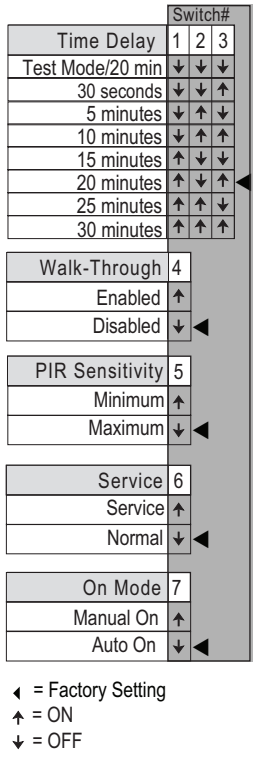
To override all sensor functions, set DIP switch 6 to the **ON** position. The red LED will come on and stay on for the duration of the override. This bypasses the occupancy control functions of the sensor, but still allows the lights to be manually controlled with a light switch, if one is installed.

On Mode: Switch 7

The Manual **ON** function is facilitated by installing a momentary switch such as a Wattstopper LVS-1 Momentary Toggle Switch, or RS2-3 Low Voltage Momentary Switch. This switch connects to the sensor's Manual (Man.) Switch and +24V terminals as shown in the wiring diagram. Each time the switch is pressed, the load changes state. The sensor's operation as related to the manually operated switch is determined by the setting for DIP switch 7.

Manual On: In this mode, the switch is required to turn on the load. The sensor is then used to keep the load on, based on occupant activity. After the time delay ends, if there is no movement detected within the 30 second re-trigger period the manual switch must be used to turn **ON** the load.

DIP Switch Setting Chart



◀ = Factory Setting
↑ = ON
↓ = OFF

Automatic On: This mode uses occupancy as well as switch activation to turn the load **ON**. A manual switch provides the following additional functionality:

1. The load can be turned **ON** by manual switch activation and it stays on as long as occupancy is detected. The sensor time delay operates as programmed. When the load turns **OFF** due to lack of occupancy detection, the load can be turned **ON** again by occupancy detection or switch activation.
2. Activating the manual switch while the load is **ON** turns the load **OFF**.
   - When the load is turned **OFF** manually, as long as the sensor continues to detect occupancy the load stays **OFF**. For the selected time delay, the lights stay off and the sensor reverts to the automatic-on mode.
   - When the load is turned **OFF** manually, pressing the switch again turns the load **ON** and the sensor reverts to the automatic-on mode.
   - Once the sensor returns to automatic-on mode, either the switch or occupancy detection can turn the load **ON**.

OVERLOAD PROTECTION

The occupancy sensor has a built in overload protection function that will automatically turn off the control output when the load current exceeds 200mA. The sensor LED will then blink rapidly (~ 10Hz) to provide a visual indication of an overload condition. When the load current is corrected or returns to normal, the control output will turn back on.

TROUBLESHOOTING

Lights do not turn ON with occupancy, and the following condition exists:

Red LED does not flash:

1. Check that the circuit breaker has been turned back on.
2. Check all sensor and power pack wire connections.
3. Check for 24V input to the sensor.
   - f 24V is present, replace the sensor.
   - If 24V is not present, check that high voltage is present to power pack.
   - If it is, replace power pack.
4. Make sure that PIR Sensitivity is set to minimum (DIP switch #5 set to on).
5. If it still does not flash, call 800.879.8585 for Technical Support.

LED flashes:

1. Check all sensor and power pack wire connection.
2. Check for 24VDC at the power pack's blue wire connection to sensor while sensor is activated. If there is no voltage, replace the sensor. If there is voltage, replace the power pack
3. If LED is flashing rapidly (~10Hz), an overload condition exists. When this is corrected, the sensor will return to normal operation. Check the blue wire connection. If necessary, replace the power pack.
   - Turn sensitivity and time delay to minimum and allow the sensor to time out.
   - If the lights turn off, the sensor is working properly (see number 1, above, and "Sensor Adjustment" for readjustment of sensor).

Line voltage switch connected as shown in wiring example.

1. Make sure switch is set to ON position.

Lights do not turn OFF automatically:

1. The sensor technology (PIR) may be experiencing activations from outside the controlled area or from some type of interference (see "Unwanted Sensor Activations" below).
2. Check all sensor and power pack wire connections.
3. Disconnect power pack's blue wire:
4. If the lights do not turn off, replace power pack.
5. Reconnect blue wire.
6. If the lights turn off, the problem may be in the sensor.
   To check:
   - Reconnect the blue wire.
   - Turn sensitivity and time delay to minimum and allow the sensor to time out.
   - If the lights turn off, the sensor is working properly (see number 1, above, and "Sensor Adjustment" for readjustment of sensor).

ORDERING INFORMATION

Catalog Number	Description
CI-305	Passive Infrared Occupancy Sensor, Low Voltage, 360° lens, up to 1200 square ft.
CI-305-1	Passive Infrared Occupancy Sensor, Low Voltage, 360° high density/reduced range lens, up to 500 square ft.
BZ-50/BZ-150	Power Pack: 120/277VAC, 50/60Hz, 20A ballast or incandescent (BZ-150 with Hold-On and Hold-Off capability)
BZ-200/BZ-250	Power Pack: 120/277VAC, 50/60 Hz, 20A Ballast/ELV/MLV/Incandescent/LED, 16A, E-Ballast/CFL/Plug Load, (BZ-250 with Hold-On and 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 are white.
BZ series power packs supply power for up to 14 CI-305 sensors.