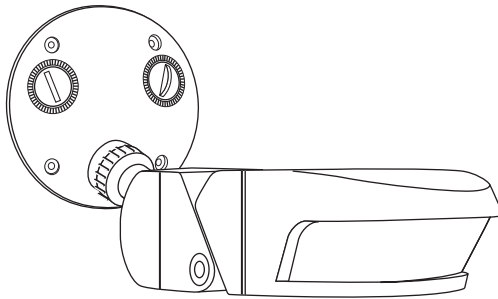


# EW-105-24 and EW-205-24 Low Voltage Outdoor Motion Sensors

180° & 270° PIR

Installation Instructions



## Specifications

### Voltage:

EW-105-24, EW-205-24 ..... +24VDC  
Current Consumption ..... .7mA

### Power Supply ..... The Watt Stopper Power Pack or DM-105 module

B Series power packs supply power for up to 11 sensors.  
BZ Series power packs supply power for up to 15 sensors.  
DM-105 HID Bi-Level control module supplies power for up to 2 sensors.  
DM-105-WP Outdoor HID Bi-Level control module supplies power for up to 2 sensors.

### Coverage:

EW-105-24 ..... 180°  
EW-205-24 ..... 270°

Time Delay Adjustment ..... 12sec.–16min.

Light Level Adjustment ..... 0.5FC–200FC

Operating Temperature ..... -40° to 130°F (-40° to 55°C)

Mountable Locations ..... Pole, wall, ceiling or under eaves

IEC-IP-55 Raintight Rated



Santa Clara, CA 95050  
800.879.8585

U.S. Patents:  
4,787,722  
5,640,113



**CAUTION**



**READ ALL OF THE INSTALLATION INSTRUCTIONS  
BEFORE INSTALLING THIS PRODUCT.**

**THIS UNIT MAY BE USED IN APPLICATIONS WITH DEVICES THAT USE HIGH  
VOLTAGE. IT SHOULD ONLY BE INSTALLED BY QUALIFIED PERSONS THAT ARE  
THOROUGHLY FAMILIAR WITH PROPER SAFETY PROCEDURES AND  
ELECTRICAL AND BUILDING CODES FOR THE INSTALLATION LOCATION.**

**WARNING: TO AVOID FIRE, SHOCK, ELECTROCUTION, OR DEATH—TURN OFF  
POWER AT THE CIRCUIT BREAKER OR FUSE BOX AND TEST TO  
ENSURE POWER IS OFF BEFORE WIRING.**

**TABLE OF CONTENTS**

**DESCRIPTION** .....2

**COVERAGE PATTERNS** .....2

**MOTION SENSOR PLACEMENT** .....3

**Mounting Options** .....3

**Mounting and Sensor Positioning Guidelines** .....4

**WIRING AND INSTALLATION** .....5

**Sensor Wire Functions** .....5

**Connecting to a Power Pack** .....6

**Connecting to a DM-105 HID Dimming Module** .....6

**Connecting to a DM-105-WP HID Dimming Module** .....6

**TESTING AFTER INSTALLATION** .....7

**DIAL ADJUSTMENTS** .....7

**SECURITY OVERRIDE** .....9

**TROUBLESHOOTING** .....9

**ORDERING INFORMATION** .....10

**WARRANTY INFORMATION** .....10

**Box Contents**

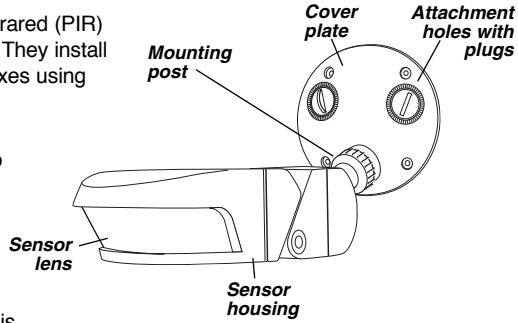
- One (1) EW-105-24 or EW-205-24
- Accessory bag:
  - Cover plate for 4" round outdoor junction box, with two cover plate attachment hole plugs,
  - cover plate gasket, cover plate screws & screw covers (4 ea), lens mask, wire nuts (3)
- Installation instructions

**DESCRIPTION**

The EW sensors are outdoor passive infrared (PIR) motion sensors rated for wet conditions. They install onto standard round outdoor junction boxes using the supplied junction box cover plate.

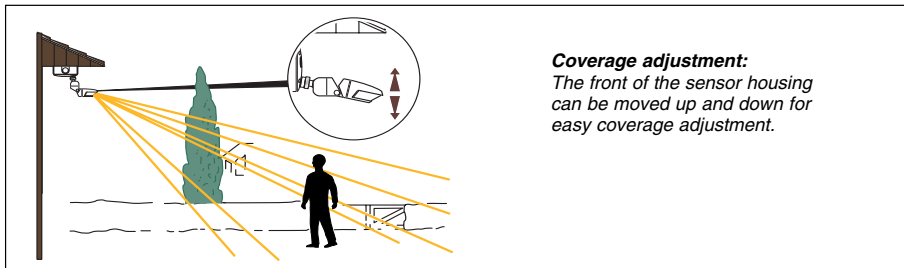
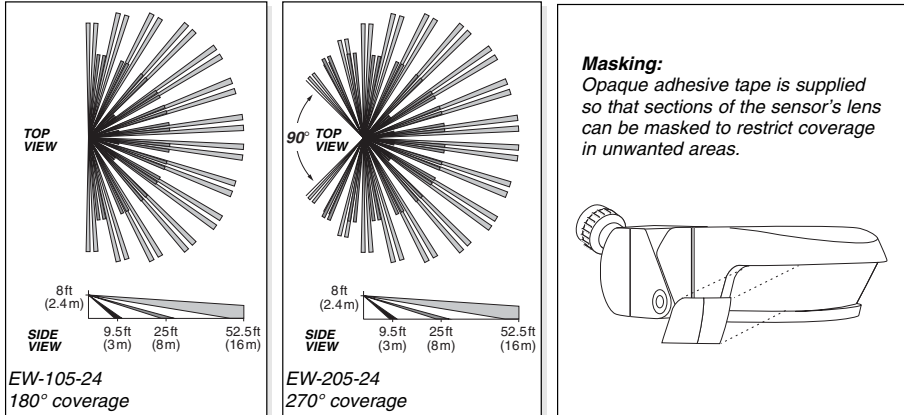
The EW sensors use advanced PIR technology and a superior lens design to detect motion. PIR sensing is passive, and detects the difference between infrared energy in motion and the background space.

The EW sensors provide a +24VDC control output upon motion detection. This output can be connected to a Watt Stopper power pack for on/off lighting control, or to a Watt Stopper DM-105 or DM-105-WP Outdoor HID Bi-Level control module for high/low control.



**COVERAGE PATTERNS**

Coverages shown are maximum and represent coverage for walking motion. Actual coverages will vary depending on mounting heights, ambient temperature and weather conditions.



## MOTION SENSOR PLACEMENT

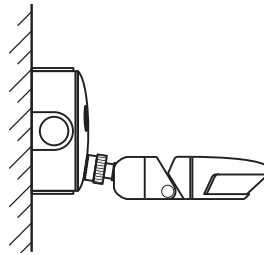
Careful consideration must be given to sensor placement. PIR sensors detect the difference between infrared energy in motion and the background space. To be detected, a person or vehicle must be within the sensor's coverage pattern and have an unobstructed view of the sensor.

### Mounting Options

- Install onto a standard 4" round outdoor junction box.
- Mount to a flat, stable, vibration-free surface.
- Mount **vertically** or **horizontally**, usually to a wall, ceiling or under an eave.

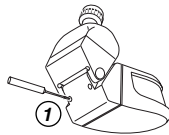
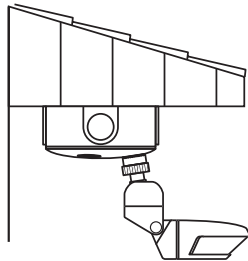
### Vertically mounted

The sensor comes assembled and ready for vertical cover plate mounting, as shown in the illustration on the right.

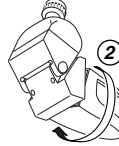


### Horizontally mounted

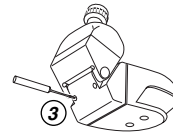
For horizontal mounting, such as under eaves, rotate the sensor housing as shown in the diagrams below. Make sure that the gasket is seated properly.



1  
*Remove the two screws at the back of the sensor.*



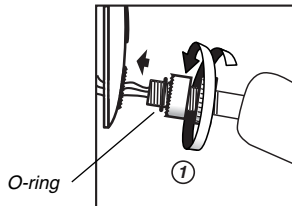
2  
*Rotate the sensor housing 180°.*



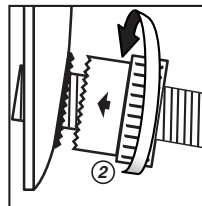
3  
*Replace and tighten the screws.*

### Attach mounting post to the cover plate:

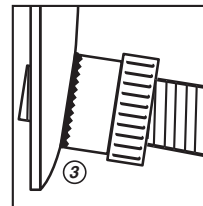
Make sure that the O-ring is on the threaded end of the mounting post before installing.



1  
*Lightly screw the mounting post into the cover plate by rotating the sensor.*



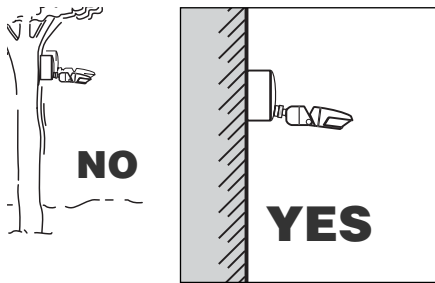
2  
*Adjust the sensor to the desired angle, then tighten the locking ring.*



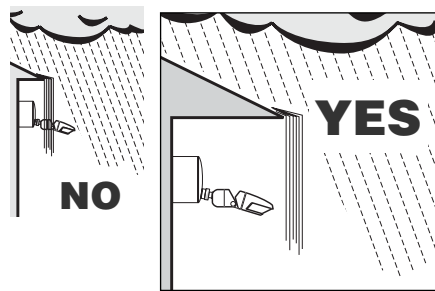
3  
*Locking ring and collar must be securely seated against the cover plate locking ring.*

**Mounting and Sensor Positioning Guidelines**

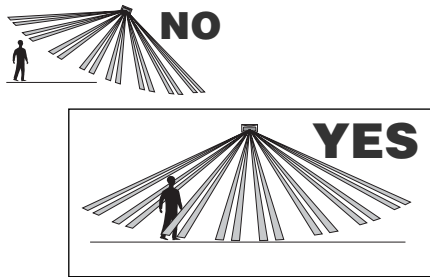
*Mount to flat, stable, vibration-free surface*



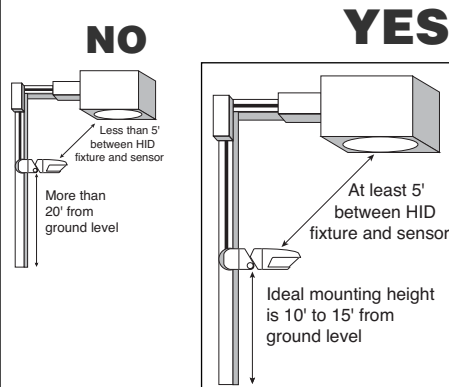
*Avoid runoff; sheltered locations preferred*



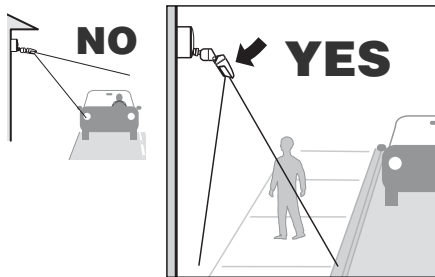
*Mount motion sensor level*



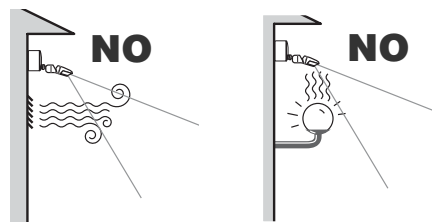
*Install sensor no higher than 20' from ground*



*Aim motion sensor downward to limit sensing*



*Do not mount by vents or above lamps*



## WIRING AND INSTALLATION

The EW-105-24 and EW-205-24 can be powered from either a Watt Stopper Power Pack, or a Watt Stopper HID Dimming Module.

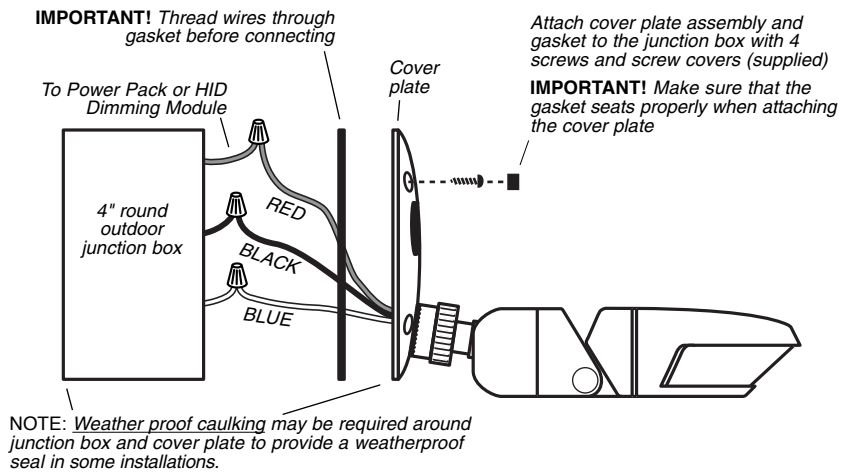
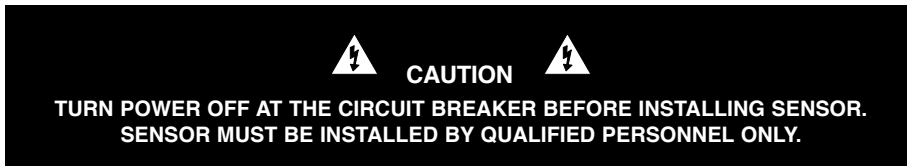
- Each Watt Stopper B series power pack can supply power for up to 11 sensors.
- Each Watt Stopper BZ series power pack can supply power for up to 15 sensors.
- Each DM-105 or DM-105-WP module can supply power for up to 2 sensors.

When power is initially applied to the sensor, or following restoration from a power failure, the lights will turn on. If no motion is detected by the sensor, the lights will remain on for the set time delay period (or minimum of approximately one minute) and then turn off (see Security Override).

### Sensor Wire Functions

The EW-105-24 and EW-205-24 have 3 wire connections to the power pack or DM-105 or DM-105-WP module. See the descriptions and wiring diagrams that follow for connections to each specific power source.

- RED: +24VDC input to sensor
- BLACK: Common
- BLUE: +24VDC control output from sensor

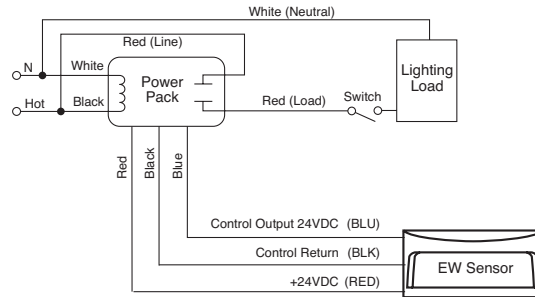


## WIRING AND INSTALLATION (continued)

### Connecting to a Power Pack

Wire the sensor to a Watt Stopper power pack as shown:

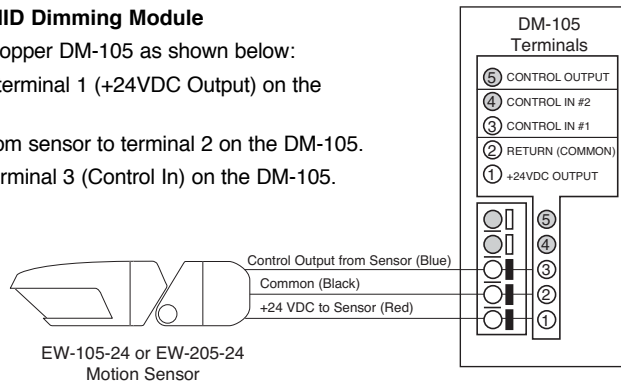
- RED wire from sensor to RED wire on power pack.
- BLACK (common) wire from sensor to BLACK wire on power pack.
- BLUE wire from sensor to BLUE wire on power pack.



### Connecting to a DM-105 HID Dimming Module

Wire the sensor to a Watt Stopper DM-105 as shown below:

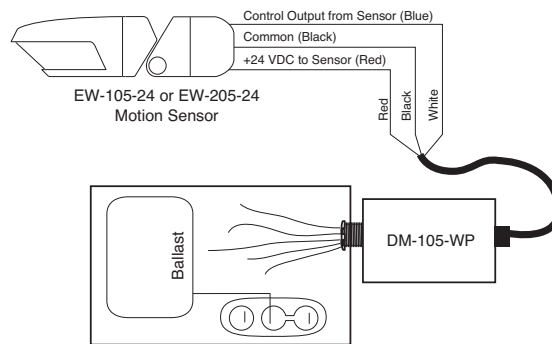
1. RED wire from sensor to terminal 1 (+24VDC Output) on the DM-105.
2. BLACK wire (common) from sensor to terminal 2 on the DM-105.
3. BLUE wire from sensor terminal 3 (Control In) on the DM-105.



### Connecting to a DM-105-WP HID Dimming Module

Wire the sensor to a Watt Stopper DM-105-WP as shown below:

- RED wire from sensor to RED wire from the DM-105-WP cable.
- BLACK (common) wire from sensor to BLACK wire from the DM-105-WP cable.
- BLUE wire from sensor to WHITE wire from the DM-105-WP cable.



## TESTING AFTER INSTALLATION

To facilitate coverage testing, the factory setting for Time Delay is 12 seconds, and the Light Level is at Maximum.

If you want to test a sensor for intended detection or operation:

1. Make sure that the time delay is set to 12 seconds and the light level is set to maximum (clockwise to the sun ☀ icon). The dials are located on the bottom of the sensor.
2. Adjust sensor to the desired position.
3. Ensure that power has been restored to the sensor.
4. Move into the location to be tested; lights should turn on (or switch to high if connected to a DM-105 HID Bi-Level control module). Stand still. In about 12 seconds the lights should turn off (or switch to low if connected to a DM-105 HID Bi-Level control module). Move or walk and the lights should turn on/high. Repeat this process to test other locations. Make sensor coverage adjustments as needed (see *Coverage adjustment* and *Masking*, page 2).

Note: When power is restored to the sensor, the lights will turn on/high for the set time delay, or a minimum of approximately one minute (see *Security Override*, page 9).

Note: If the lights do not turn on/high with movement in the area after they have turned off/low in step 4, the level of daylight may be too high and the sensor's light level adjustment is keeping the sensor inactive. Wait until daylight levels have reduced before testing again.

5. See Dial Adjustments, below, for guidelines to adjust the time delay and light level to the desired settings for operation.

## DIAL ADJUSTMENTS

Time Delay and Light Level control dials are located on the bottom of the sensor.

### 1. Adjust Time Delay:

The time delay is the amount of time that elapses before lights turn off since the sensor last detected motion. This can be set from 12 seconds to 16 minutes. Typically, the time delay should be set to 1 minute or more.

- In areas where there is mostly walk through movement, the time delay amount can be low.
- In areas where people may stop and remain for periods of time, the time delay should be set to a higher amount, preferably 16 minutes.

### 2. Adjust Light Level:

Turning the light level adjustment dial raises or lowers a light level detector in the sensor. When the light rises above this set level, the sensor becomes inactive; this keeps the lights off when there is enough light present.

We suggest initially setting the light level adjustment to half way between minimum and maximum. If a different setting is desired after installation, then follow the Making Changes procedures, next page.

### TIME DELAY DIAL



**Minimum: 12 seconds**  
**Maximum: 16 minutes**



### Making Changes

**If you want the lights to turn on/high sooner**—turn the light level dial toward the sun ☀ icon, as desired; this raises the light level setting. (Remember, the sensor must detect motion for lights to turn on.)

- The lights turn on/high sooner in the evening
- The lights stay on/high longer in the morning

**If you want the lights to turn on later**—turn the light level dial toward the moon ☾ icon, as desired; this lowers the light level setting. (Remember, the sensor must detect motion for lights to turn on.)

- The lights turn on/high later in the evening
- The lights turn off/low sooner in the morning

#### Notes:

- When testing adjustments, make sure not to block any of the light that is reaching the sensor or reflect any light into the sensor's lens.
- The sensor requires about 5 seconds for light level adjustments to take effect. This feature prevents the lights from turning on/high and off/low with quick light reflections, from car windows for example.
- The sensor will not turn lights off/low until no motion is detected and the time delay elapses.

### LIGHT LEVEL DIAL



**Minimum** = ☾  
**Maximum** = ☀

## SECURITY OVERRIDE

The EW sensors have an override-on feature which allows lights to be turned on/high for the set time delay period.

- If there is an installed switch—turning the switch off then on, turns the lights on/high. If no motion is detected by the sensor, the lights will remain on/high for the set time delay period (or minimum of approximately one minute) and then turn off/low.

This will also happen when power is restored after a power outage.

Note: If the lights do not turn on/high, the sensor may be inactive due to the light level. Turn the switch off for 5 seconds, then turn it on. The lights should turn on/high as described above.

## TROUBLESHOOTING

### Lights do not turn off/low:

1. The sensor may be detecting movement outside the desired coverage area. The sensor's lens may need to be masked to block unwanted coverage (see Masking, page 2). If this does not solve the problem, see step 2.
2. Test to see that the sensor is operating properly. Set the time delay to minimum (12 seconds). Remain still, or move out of range of the sensor. If there is no movement in the coverage area, the sensor should turn lights off/low in 12 seconds. Reset the time delay to the desired value.
  - If the lights do not turn off/low, have a person qualified to check high voltage connections verify that the sensor and lighting are wired correctly (see Wiring and Installation, page 5 & 6). CAUTION: Make sure power is turned off at the circuit breaker before checking wiring.
  - If the sensor is wired correctly, call our Technical Support number.

### Lights turn on/high when there is sufficient daylight:

1. Decrease the light level setting, as desired (counterclockwise toward the moon ☾ icon, see Dial Adjustments, page 7 & 8).

### Lights do not turn on/high:

1. If there is a controlling switch installed, make sure that it is turned on.
2. If the lights do not turn on/high when lights are needed—increase the light level setting, as desired (clockwise toward the sun ☀ icon, see Dial Adjustments, page 7 & 8).
3. Have a person qualified to check high voltage connections verify that the sensor and lighting are wired correctly (see Wiring and Installation, page 5 & 6). CAUTION: Make sure power is turned off at the circuit breaker before checking wiring.
  - If the sensor is wired correctly, call our Technical Support number.

**ORDERING INFORMATION**

Catalog #	Description
EW-105-24	+24VDC, 180° Outdoor PIR Motion Sensor, includes cover plate
EW-205-24	+24VDC, 270° Outdoor PIR Motion Sensor, includes cover plate
BZ-100	Power Pack: 120/277VAC, 60Hz, 150mA, 20A ballast or incandescent, 1HP@120/240VAC
B120E-P	Power Pack: 120VAC, 60Hz, 150mA, 20A ballast/13A incandescent
B230E-P	Power Pack: 230VAC, 50/60Hz, 150mA 20A ballast/13A incandescent
B277E-P	Power Pack: 277VAC, 60Hz, 150mA, 20A ballast
B347D-P	Power Pack: 347VAC, 60Hz, 150mA. 15A ballast
DM-105	HID Bi-Level Control Module
DM-105-WP	Outdoor HID Bi-Level Control Module

When ordering, add (-W) for Arctic White or (-G) for Architectural Gray to catalog numbers.

**THIRD-PARTY ORDERING INFORMATION**

Additional color-matched lamp holder accessories are available through your local distributor, or for further assistance call CANLET at 1-888-461-5307.

Outdoor incandescent lamp holders
Shrouds for PAR 20 & PAR 38 lamps
Round outdoor junction boxes & cover plates

**WARRANTY INFORMATION**

The Watt Stopper, Inc. warrants its products to be free of defects in materials and workmanship for a period of five years. There are no obligations or liabilities on the part of The Watt Stopper, Inc. 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.

***The Watt Stopper***<sup>®</sup>

***Putting a Stop to Energy Waste***<sup>®</sup>

2800 De La Cruz Boulevard, Santa Clara, CA 95050, USA

Technical Support: 800.879.8585 or 972.578.1699

[www.wattstopper.com](http://www.wattstopper.com)

03701r1 12/2003