HB-150-1/2/3/4
High Bay • Line Voltage • Passive Infrared Occupancy Sensors

SPECIFICATIONS

HB-150 Power Module
Voltagés .......................... 120/208/240/277VAC, 60Hz
Load Requirements
@ 120VAC, 60Hz .................. 0-800W ballast & tungsten
@ 208 or 240VAC, 2-phase ............. 0-800W ballast
@ 277VAC, 60Hz .......................... 0-1200W ballast
@ 120 or 250VAC .......................... 1/6 hp

HB-1, HB-2, HB-3 and HB-4 Control Modules
Time Delay Adjustment ............... 30 seconds – 30 minutes
Operating Temperature .................. 32° to 131°F (0° to 55°C)
For -C Models ...................... -4° to 131°F (-20° to 55°C)

 HB-1 Control Module
Coverage @ 40° height
60’ x 20’

 HB-2 360° Control Module
Coverage @ 20° height
44’ diameter (reduced density)

 HB-3 360° Control Module
Coverage @ 20° height
24’ diameter

 HB-4 360° Control Module
Coverage @ 40° height
68’ diameter

US Patents: 4,787,722
4,874,962 • 5,124,566
DESCRIPTION AND OPERATION

The HB-150-1/2/3/4 occupancy sensors turn lighting on and off based on occupancy. They are designed for warehouse and high bay applications. The sensors use passive infrared (PIR) sensing technology that reacts to changes in infrared energy (moving body heat) within the coverage area. Once the space is vacant and the time delay elapses (adjustable from 30 seconds to 30 minutes), lights will turn off. Sensors must directly “see” motion of an occupant to detect them, so careful consideration must be given to sensor placement. Avoid placing the sensor where shelving or other obstructions may block the sensor’s line of sight.

The HB sensors are modular and are made up of two parts, a Power Module (HB-150) and a Control Module (HB-1, HB-2, HB-3 or HB-4). The HB-150 operates with 120 or 277VAC single-phase, or 208 or 240VAC 2-phase.

Important Start-up Information

When the control module is installed and power is connected, it may take up to a minute before the lights turn on due to a sensor warm-up period required during initial power-up. This occurs during installation or after a power failure of 5 minutes or more only.

If the power module is installed and powered, and no control module is in place, the load comes on and remains on until the control module is installed.

Call 800.879.8585 or 972.578.1699 for Technical Support
INSTALLATION

CAUTION

TURN THE POWER OFF AT THE CIRCUIT BREAKER BEFORE INSTALLING THE SENSOR.

1. Connect the existing wires to the sensor terminals.
   • Do not allow bare wire to show below connector.
   • Make sure all connections are secure.

2. Remove the Control Module from the HB-150 as shown in Fig. 11.

3a. Ceiling Mount (See Fig. 1):
   • Secure the CP-1 J-Box adapter plate to the junction box.
   • Attach the sensor to the adapter plate using four #6 x 3/4” self tapping screws.

3b. Acoustic Tile or Fixture (See Fig. 2):
   • Cut a hole in the mounting surface using the “HB Cut-Out” template.
   • Use four #6 x 3/4” self tapping screws to attach the sensor to the mounting surface.

4. Reconnect the Control Module onto the HB-150 as shown in Fig. 4.
   • CAREFULLY align the four connector pins on the HB-150 with the receptacles on the Control Module.
   • Snap the HB-150 Power Module to the Control Module using firm pressure until they click into position at the top and bottom.

5. Restore power from the circuit breaker.

Visit our website for FAQs: www.wattstopper.com
**WIRING**

Fig 5: 120-277VAC
Single Phase Wiring

Fig 6: 208 or 240VAC
2-Phase Wiring

“C” terminal can connect to either the neutral or ground wire in the fixture. Neutral is recommended.

**COVERAGE**

Coverage patterns, density and range, are determined by the type of Control Module attached to the HB-150. The HB-1 is best suited for aisleway applications. The HB-2 and HB-3 Control Modules are best for open area coverage. The HB-4 can be used for both open area and aisleway coverage in high bay applications.

**HB-150-1: Aisleway Coverage**

The HB-150-1 Fresnel lens is designed to detect walking motion when mounted at 40’ above the floor. When mounted at 40’, in optimal conditions, the lens has a 60’ linear detection range.

Call 800.879.8585 or 972.578.1699 for Technical Support
**HB-150-2, HB-150-3 & HB-150-4: 360° Coverage**

The HB-150-2, HB-150-3 and HB-150-4 have multi-cell, multi-tier Fresnel lenses with a view of 360°. When mounted at a height of 20', the HB-2 wide range lens covers an area with a 44' diameter, with a slightly reduced coverage density. The HB-3 has a high density/reduced range lens that covers an area with a 24' diameter at a height of 20'. As shown in the coverage diagrams, the outer detection tiers are only effective at a mounting height of 10' or less. The HB-4 is designed for mounting at heights between 20' to 40'. It has a coverage pattern with a diameter of up to 68'.

Coverages shown in the diagrams below are maximum. They represent coverage for full-step walking motion, with no barriers or obstacles.

**Visit our website for FAQs: www.wattstopper.com**
ADJUSTMENT

WARNING
DO NOT OVERTURN TRIMPOT WHEN ADJUSTING THE SENSOR!

1. Remove the Control Module to access controls. Gently pry it from the base with a small screw driver.
2. To test unit operation:
   a) Turn the time delay to minimum.
   b) Replace the Control Module (see Installation section).
   c) Move out of the sensor’s view. Lights should turn off after 30 seconds.
   d) Move back into the detection area and lights should turn on.
   e) When testing is complete, remove the Control Module.
3. Set the time delay to the desired setting. The time delay can be set from 30 seconds to 30 minutes.
4. Replace the Control Module.

MASKING THE LENS

Opaque adhesive tape is supplied with the HB-1 so that sections of the sensor’s view can be masked. This allows you to eliminate coverage in unwanted areas. Remember to take this into account when troubleshooting coverage problems.

Visit our website for FAQs: www.wattstopper.com
Call 800.879.8585 or 972.578.1699 for Technical Support
TROUBLESHOOTING

During the sensor warm-up period, which can last up to a minute after power is applied to the Control Module (or after a power outage of 5 minutes or more), the load can be either on or off, depending on the status of the relay before the sensor was powered down. After warm-up, the sensor will open or close the relay to correspond to the occupancy status of the room.

To quickly test the unit, turn the time delay to minimum. Wait for the warm-up period to end. Move out of the sensor’s view. Lights should turn off after 30 seconds. Move into the sensor’s view. The sensor’s Red LED should blink and the lights should turn on.

Red LED on Control Module does not blink:
1. Remove Control Module and see Control Module Connector Pins, below.
2. Check sensor wire connections. Verify the neutral wire is tightly secured.

Red LED blinks but lights do not turn on:
1. Remove Control Module and see Control Module Connector Pins, below.
2. Check all sensor wire connections and verify the load wire is tightly secured.
3. Check power connections to the light fixture.

Lights will not turn off:
1. If there is no motion in the sensor’s view but the red LED blinks, check to see if an air blower is nearby. If so, turn off the blower, or move the sensor.
2. Remove Control Module and see Control Module Connector Pins, below.
   Before reconnecting the module, go to step 3.
3. Verify time delay. The time delay can be set from 30 seconds to 30 minutes. Ensure that the time delay is set to the desired delay and that there is no movement within the sensor’s view for that time period.
4. Check sensor wire connections. Verify load and neutral wires are secure.

Control Module Connector Pins
The connector pins supply power and relay operation signals between the modules. Always check to make sure that the modules are properly seated and securely snapped together. If the pins are not aligned correctly and then excessive force is used to snap the modules together, a pin can bend causing the sensor to malfunction. Gently bend any bent pin back into proper alignment before reconnecting the modules. Re-test the sensor to see if the problem is solved. If the problem persists, go on to the next troubleshooting step.

Passive infrared sensing in Warehouses
Warehouses can have ambient temperature variations that may affect sensor detection and coverage areas. When specifying high mount sensors, take into account the temperature at the coverage location. High temperatures at the covered area (above 89-92°F) will reduce the detection zone of the sensor. Consider adding more sensors for complete coverage when the ambient temperatures are expected to be high. Additionally, high floor level temperature may require larger movement for detection. In some cases, sensors mounted above 40° may only detect large heat signatures such as forklift trucks.
**ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>Catalog #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HB-150-#*</td>
<td>High bay, line voltage occupancy sensor consists of:</td>
</tr>
<tr>
<td></td>
<td>• HB-150 Power Module, 120/208/240/277 VAC, 60Hz</td>
</tr>
<tr>
<td></td>
<td>• An HB Control Module, see # below</td>
</tr>
<tr>
<td>HB-150NB-S-#</td>
<td>High bay, line voltage occupancy sensor, fixture side-mount with 18” flying</td>
</tr>
<tr>
<td></td>
<td>leads. Consists of:</td>
</tr>
<tr>
<td></td>
<td>• HB-150NB-S Power Module, 120/208/240/277 VAC, 60Hz</td>
</tr>
<tr>
<td></td>
<td>• An HB Control Module, see # below</td>
</tr>
<tr>
<td>HB-150NB-B-#</td>
<td>High bay, line voltage occupancy sensor, fixture bottom-mount with 18”</td>
</tr>
<tr>
<td></td>
<td>flying leads. Consists of:</td>
</tr>
<tr>
<td></td>
<td>• HB-150NB-B Power Module, 120/208/240/277 VAC, 60Hz</td>
</tr>
<tr>
<td></td>
<td>• An HB Control Module, see # below</td>
</tr>
</tbody>
</table>

# indicates the Control Module number:

- 1 HB-1  Aisleway lens: Max coverage 60’ x 20’ @40’ height  
- 2 HB-2  360° lens: Max coverage 40’ dia. @20’ height       
- 3 HB-3  360° high density lens: Max coverage 24’ dia. @20’ height  
- 4 HB-4  360° high mount lens: Max coverage 68’ dia. @40’ height 

| CP-1   | 4”x4” junction box and adapter plate                                      |
| MB-1   | L-Plate industrial mounting bracket                                       |
| MB-2   | J-Plate HID mounting bracket                                               |

* Add -C to the model number if you need a sensor designed for colder ambient temperature applications: -4° to 131°F (-20° to 55°C). All units are White.

**WARRANTY INFORMATION**

The Watt Stopper®, Inc. warrants 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 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.

*Putting a Stop to Energy Waste®*

2800 De La Cruz Boulevard, Santa Clara, CA 95050
Technical Support: 800.879.8585 • 972.578.1699
www.wattstopper.com
01764r 10/2004