HB330*

High Bay • 208/240VAC • Passive Infrared Occupancy Sensor Power Module

Installation Instructions

DESCRIPTION AND OPERATION

The HB330* occupancy sensors are designed for automatic lighting control in warehouse high bay applications. All models contain a passive infrared sensor (PIR). The HB330 series sensors are modular and are made up of two parts, a Power Module (HB330*) and a Lens (HBLx). The coverage area is determined by the lens module. The lenses are interchangeable with any HB3xx series sensor. See the Coverage Guide for more information.

All models in the HB330 series use a set of DIP switches to set the time delay, PIR sensitivity and feature overrides (for PIR occupancy sensing and daylighting). The HB330 basic model contains two relays for controlling both phases of a 208VAC or 240VAC load. The HB330D adds daylighting control.

Daylighting (HB330D only)

Daylighting turns off the luminaire 3 minutes after the ambient light level goes above the adjustable setpoint (2 to 200fc) regardless of occupancy. This time delay helps avoid cycling the luminaire unnecessarily. A factory set 20% deadband on the lower end provides a slight delay before turning the lights ON. Lights turn ON only when ambient daylight goes below the setpoint and motion is detected.

The HB330D is designed to control a load according to both occupancy and ambient light. Daylighting models are designed so that they can measure light levels by looking up toward a skylight, or down toward the task area. The daylighting feature can be disabled by turning DIP switch #9 ON.

To configure the daylight sensor use a small flat-blade screwdriver to pry off the appropriate lens cover.

- To look up toward a light source such as a skylight, remove the lens cover from the top of the daylight sensor.
- To look down toward the task area, remove the lens cover from the bottom of the daylight sensor.

COVERAGE

Coverage patterns, density and range, are determined by the type of Lens attached to the HB330*.

For a complete description of each lens coverage pattern, see the HBLx Lens COVERAGE GUIDE.

HB330D-L3

HB330D-L1

SPECIFICATIONS

HB330* Power Module

Voltages 208/240VAC, 60Hz
Load Requirements
@ 208VAC, 60Hz ..... 5AMP ballast load
@ 240VAC, 60Hz ..... 5AMP ballast load

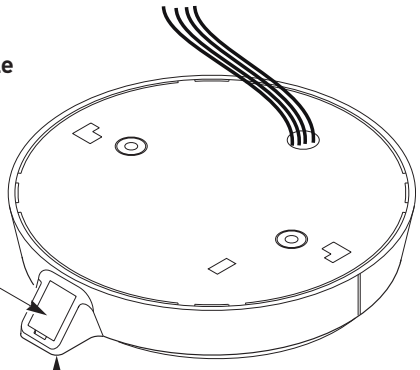
HB330D* Power Module (Daylighting features)

Light Level 2-200fc
Adjustment ..... Trimpot

US Patents: ..... 4,787,722 • 4,874,962 • 5,124,566

* The HB330 is the base model providing PIR occupancy sensing and control of a single load. Daylighting features are added to the HB330D.

HB330 Power Module



INSTALLATION

CAUTION

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

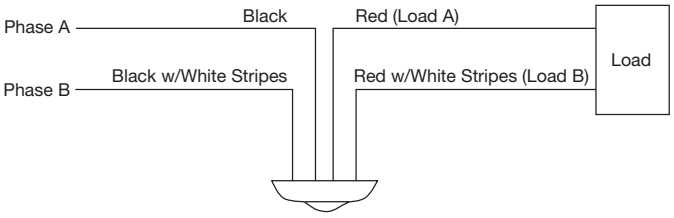
1. Determine the mounting location appropriate to the features of the power module and the coverage area. Careful consideration must be given to sensor placement. Avoid placing the sensor where shelving or other obstructions may block the sensor's line of sight.

   Daylighting models must be located so that the daylight sensor on the unit is not obstructed. The light sensor is designed so that it can either look UP toward a skylight or DOWN toward the task area. (See Daylighting.)
2. Make sure that you have the appropriate accessories for the sensor mounting configuration. (See Mounting Options.)
3. Assemble any necessary mounting accessories and attach them to the power module, making sure that the flying leads from the power module are accessible.
4. Connect the line voltage and load wires to the sensor leads as shown in the Wiring Diagram for the unit's application.
   - Do not allow bare wire to show.
   - Make sure all connections are secure.
5. Attach the Lens to the HB330* as shown on the next page.
6. Restore power from the circuit breaker.

WIRING

Use the wiring diagram below that is appropriate for your application of the HB330 or HB330D.

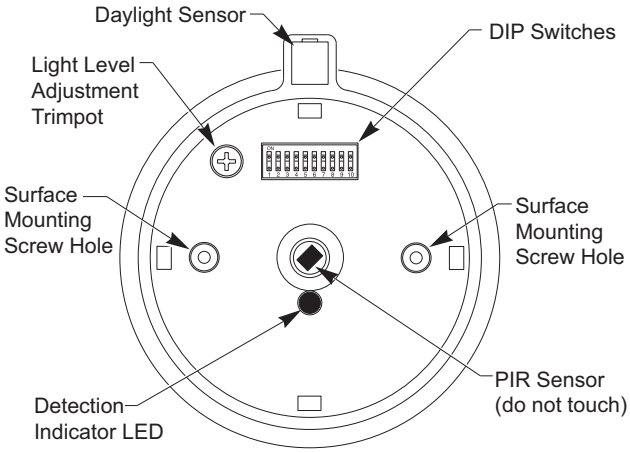
208/240VAC Wiring



MOUNTING OPTIONS

The HB330* can be attached either directly to the fixture surface via the two screw holes provided in the Power Module or using the HBNB3 back box and chase nipple. The Extender Module (HBEM3) allows attaching the sensor to the side of the fixture in a number of configurations using provided chase nipples.

Surface mounting requires holes in the fixture to pass wires and attach 2 screws through the surface mounting screw holes on the component side of the Power Module as shown below.

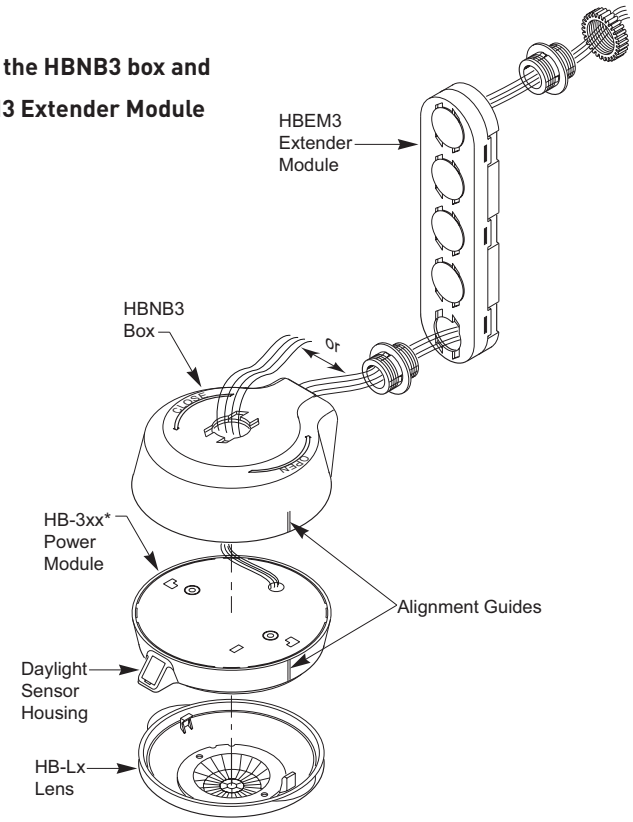


HBNB3 back box mounting requires a standard 1/2" knockout for the chase nipple. The box comes ready for side mounting. It can be modified for rear mounting as follows:

1. Pop out the cap in the rear knockout.
2. Un-snap the chase nipple from the side mount and snap into the rear mounting hole.
3. Use the cap to close the side mount hole.
4. The chase nipple provided can be pushed into a standard 1/2" knockout in a metal fixture (max of 1 mm (0.04") thick metal) without the need for the included internal nut. The nut can be used for added security if it is felt to be necessary.
5. The Power Module mounts to the back box with a bayonet type fitting requiring a slight twist of the units to lock them into place.

The HBEM3 extender module allows threading the wires through its chase nipples and into the fixture for connection. The two sides of the HBEM3 are then snapped together to protect the wires. The short chase nipple is designed to snap into the HBNB3 connection box while the longer chase nipple snaps into any metal fixture or connection box with a standard knockout. The caps on the HBEM3 can be removed in various configurations to allow moving the chase nipples and adjusting the height of the sensor on the fixture.

Using the HBNB3 box and HBEM3 Extender Module



ADJUSTMENTS

The sensor is factory pre-set as follows:

Light level trimpot
("D" models only) .....Maximum, fully clockwise: when ambient light measured by the sensor is above 200fc, the sensor holds OFF the load

PIR Sensitivity (switches 1 & 2)....Medium 85%

Time Delay (switches 3-7).....10 minutes

Overrides (switches 8-9) .....See table on bottom of this page

Factory Switch Settings

1	2	3	4	5	6	7	8	9	10
ON	OFF	OFF	OFF	ON	ON	ON	OFF	OFF	n/a

PIR Sensitivity (Switches 1-2)

The factory setting of 85% is suitable for most applications, but it may be necessary to adjust the PIR sensitivity if there is any environmental interference causing false triggers or if sensitivity needs to be increased for your particular application. Use DIP switches 1 & 2 to adjust sensitivity.

Switch	1	2	PIR SENSITIVITY
	OFF	OFF	100% (HIGH)
	ON	OFF	85% (MEDIUM)
	OFF	ON	75% (LOW)
	ON	ON	60% (LOW)

Time Delay (Switches 3-7)

Use DIP switches 3 to 7 to adjust the time delay.

Switch	3	4	5	6	7	TIME DELAY
	ON	ON	ON	ON	ON	for HB330: 15 seconds for HB330D: 30 seconds
	OFF	ON	ON	ON	ON	5 minutes
	OFF	OFF	ON	ON	ON	10 minutes
	OFF	OFF	OFF	ON	ON	15 minutes
	OFF	OFF	OFF	OFF	ON	20 minutes
	OFF	OFF	OFF	OFF	OFF	30 minutes

PIR and Light Level Overrides (Switches 8-9)

Overrides can disable features of the HB330* power module. The table at the bottom of this page describes the override functions of each HB330* model.

Setting the Light Level Adjustment Trimpot

The light level setpoint is factory set at maximum (>200fc) with the light level trimpot in the fully clockwise position. Once the sensor is installed the trimpot can be adjusted (turned down, counter-clockwise) so that the luminaire is forced to turn OFF when there is enough ambient light. This is best done at the time of day that the ambient light level is that which is required and gives enough light at the work surface. Adjustments should be made in small increments, waiting 3 minutes between them for the sensor to react to the change. Care should be taken not to block the daylight sensor port.

Switch		HB330 PIR sensor	HB330D PIR sensor + Daylighting
8	Off	Occupancy controlled	Load ON when daylight level below setpoint and occupancy detected
	On	Override PIR, Load always ON	Override PIR: Load ON when below light level setpoint, Load OFF when above light level setpoint even if motion is detected
9	Off	Not Used	Load ON when daylight level below setpoint and occupancy detected
	On	Not Used	Override Daylighting: Load controlled by occupancy only.
10	Off	Not Used	Not Used
	On	Not Used	Not Used

IMPORTANT START-UP INFORMATION

When the power module is installed and power is connected, the load comes ON and stays ON for 50 seconds regardless of light level. This warm-up period only occurs during installation or after a power failure of 5 minutes or more.

- If the sensor detects occupancy during the warm-up, the lights stay ON as long as it continues to detect motion, plus the Time Delay.
- If no occupancy is detected during the warm-up, the light turns OFF after the initial 50 second warm-up period.

See table below for the light level and motion detection functions:

PIR sensor	Ambient Light	Delay Time	Light Level Relay Status
No detection	High	N/A	OFF
No detection	Low	N/A	OFF
Valid detection	Change from HIGH to LOW	ON delay for 45 seconds	ON in 45 seconds
Valid detection	Change from LOW to HIGH	OFF delay for 3 minutes	OFF in 3 minutes

TROUBLESHOOTING

During the sensor warm-up period, which can last up to a minute after power is applied to the power 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 power module does not blink:

Check sensor wire connections. Verify the wires are tightly secured.

Red LED blinks but lights do not turn ON:

1. Make sure that power to the sensor has been ON continuously for at least one minute, then
   a) Turn OFF power to the sensor.
   b) The relay will close.
   c) Turn ON power to the sensor.
   d) The load should come ON. If not, continue with 2 below.
2. If the power module has the light level feature (model number contains "D"), cover the light sensor lens to simulate darkness. If the light turns ON, the light level setting needs to be adjusted. If set for minimum, more than 2fc of ambient light causes the lights to be held OFF. See ADJUSTMENTS: Setting the Light Level Adjustment Trimpot.
3. Check power connections to the light fixture.
4. Check all sensor wire connections. Verify the load wire is tightly secured.

Lights will not turn OFF:

1. If there is no motion from people or equipment in the sensor's view but the red LED blinks, look for any nearby source of IR energy in motion, such as turbulent air from a heating or cooling supply, or other sources. Divert the air supply away from the sensor, or move the sensor.
2. Verify time delay. The time delay can be set from 15 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.
3. Check DIP switch 8 setting. If it is ON, it overrides the PIR function and keeps the load ON.
4. Check sensor wire connections. Verify that all wires are tightly secured.

ORDERING INFORMATION

Catalog #	Description
HB330*-L#+	High bay line voltage occupancy sensor consists of: • HB330* Power Module • An HBL# lens (L# indicates the lens number) (see COVERAGE GUIDE)
HBNB3	Back box with 2 chase nipples and nuts; 1 short (0.88") for connection to plastic, 1 long (1.24") for connection to metal
HBEM3	Extender module with 2 chase nipples and nuts 1 short (0.88") for connection to plastic, 1 long (1.24") for connection to metal

* See available feature suffix indicators below:

P indicates dual PIR detectors,

D indicates daylight feature

C is for colder ambient temperature applications: -40° to 131°F (-40° to 55°C)

+ an additional -B suffix includes the HBNB3 back box

All units are White.

WARRANTY INFORMATION

Watt Stopper/Legrand warranties 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 Watt Stopper/Legrand 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.

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