

Wireless High Bay Sensor (WHS20)

Installation Instructions

The Daintree® Networks® WHS20 Wireless High Bay Sensor is a low voltage powered control component within the Daintree wireless building controls platform. It enables wireless control of individual luminaires with integrated occupancy and ambient light sensors. Sensor lenses are available to provide occupancy based control for high, medium, and low mount lighting applications.



The WHS20 provides control of Digitally Addressable LED drivers with a Digital Power Bus. Its IP66 rating and mounting through a standard 1/2-inch knockout, allows installation on a variety of indoor and industrial fixture types.* The WHS20 mounts to the bottom of a fixture.

The WHS20 wireless communication based on the 802.15.4 standard provides secure and reliable communication with other wireless products in the Daintree® Network system. The WHS20 serves as a mesh network router.

Before starting the installation, be sure that all power to the fixture is turned OFF.

- Keep the sensor lens clean.
- Avoid touching the PIR sensor element.

Installation Process

1. Determine the mounting location. See [Mounting](#)
2. Record the sensor's IEEE address and location on the facility floor plan. Make sure the IEEE number will be visible after the sensor is mounted. See [IEEE Address Labels](#)
3. Insert the sensor wires and threaded nipple through the knockout on the fixture.
4. Thread the sensor wires through the tightening ring and screw the ring onto the nipple on the inside of the fixture to secure the sensor to the fixture wall.*
5. Connect the sensor to the Digital Addressable input of the driver. See [Wiring](#)
6. Apply power to the fixture.

After initialization, the Green LED flashes each time occupancy is detected.

The Red Network LED flickers while the WHS20 attempts to join a network. If it is unable to join, it automatically retries every 30 seconds until it succeeds. When successful, the Red LED either flashes slowly, or if the WHS20 is already assigned to a zone, the Red LED is off. See [LED Operation](#)

The sensor will not be able to join a network until a Wireless Area Controller (WAC) is commissioned and a WAC in range is commanded (through Daintree® Controls Software (DCS)) to “discover devices.” See [Joining the Daintree® Network](#)

To reset the WHS20, press and hold the Utility button for 5 seconds. Release the button when both the Red LED and the Green LED begin to flash rapidly.

Installation Test Mode

Momentarily press the Utility button located under the lens. Both Red and Green indicator LEDs will flash simultaneously with one short blip of the Green LED between each flash. The light of the fixture will also flash.

When correct operation is confirmed, momentarily press the Utility button again, or wait 5 minutes for the mode to time out to exit Installation Test Mode.

* For IP66 rating, the fixture or enclosure must also be IP66 rated.

Wireless High Bay Sensor (WHS20)

Installation Process continued

The 40ft (HIGH) lens is pre-installed. If a change is necessary, select a lens for the sensor according to the mounting height (see [Lens Coverage Options](#)), and affix the alternate lens as described in [Lens Installation](#)

Walk test the sensor. Walk outside the coverage area and wait for the Green LED to stop flashing. Step inside the desired coverage area and observe the Green LED.

If there is unwanted coverage, use the coverage mask to limit the sensor's view. Attach the mask to the inside of the control module next to the lens on the inside of the lens gasket.

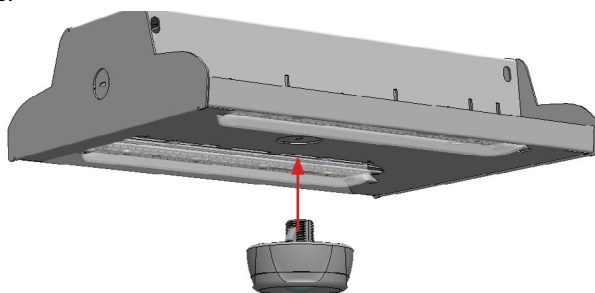
- Repeat from various positions in the coverage area.
- If you do not observe the proper behavior, see [Troubleshooting](#)

Placement Guidelines

- The PIR sensor must be 4ft to 6ft away from hot or cold sources such as heat or cooling vents, refrigerators, stoves, etc. Do not install the PIR sensor near strong air flows.
- The PIR sensor must have clear line of sight to the coverage area. It may not detect a person if it is blocked by the fixture housing, furniture, plants, glass, curtains, etc.
- Secure to a stable fixture to minimize sensor vibration.

Mounting

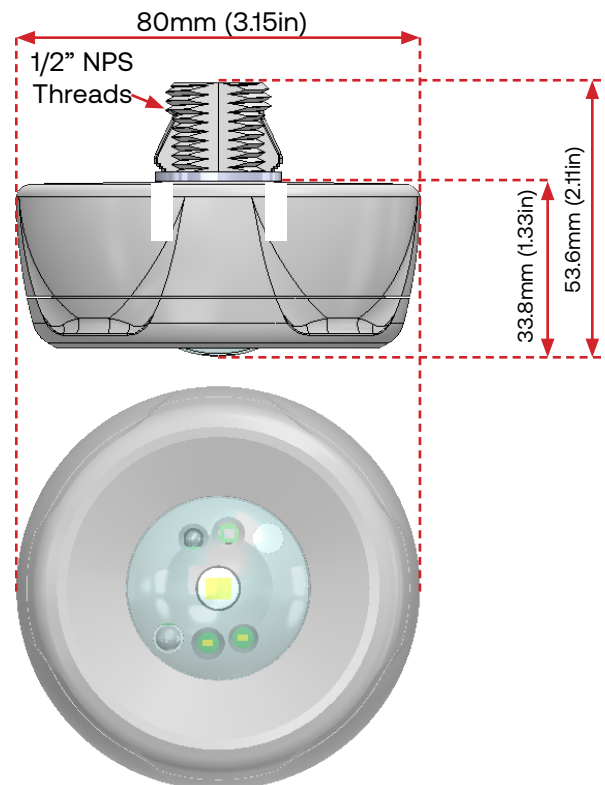
The dimensions of the WHS20 when mounted are 80mm (3.15in) DIA by 33.8mm (1.33in) H. The WHS20 has a threaded nipple on the base for mounting to the bottom of a fixture. For IP66 applications, attach the WHS20 to a IP66 fixture.



LED Operation

Red LED: Network Indicator	Description
Solid	Hardware problem
Fast Flash (1x/sec, 1 Hz)	Not connected to a Daintree® Network
Slow Flash (1x/10 sec, 0.1 Hz)	Connected to a Daintree® Network but not assigned to a zone
Off	Normal operation, connected to a Daintree® Network and assigned to a zone

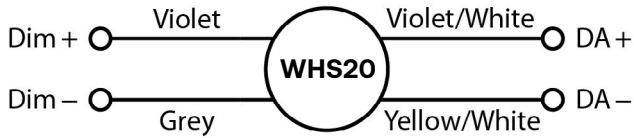
Green LED: Motion	Description
Flash	The Green LED flashes each time the sensor detects occupancy
Off	Normal operation, not detecting occupancy



Wireless High Bay Sensor (WHS20)

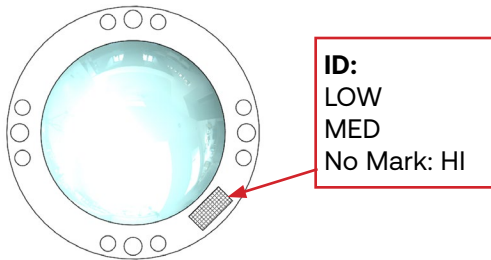
Wiring

Low Voltage	
Gray	0-10V Analog Ground
Violet	0-10V Analog Input
Violet/White	DA + 24 VDC, 250 mA max
Yellow/White	DA -



Lens Coverage Options

The WHS20 comes with a 40ft lens pre-installed and is compatible with two optional lenses and a coverage mask for use in various applications. Select the appropriate lens for the mounting height and desired coverage area. The optional lenses are marked with LOW and MED on the flange for identification.



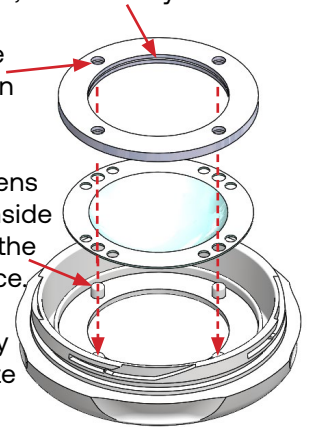
Lens Description	Height (ft)	Coverage Radius (ft)
LOW Bay	8	20
MED Bay	20	30
HIGH Bay (unmarked)	40	30

Use the coverage mask to avoid occupancy triggers from activity outside the desired coverage area. Attach the mask to the inside of the control module next to the lens on the inside of the lens gasket.

Changing the Lens

To maintain waterproofing, a 2-layer gasket is fitted around the edge of the lens before securing the lens assembly to the sensor.

1. Remove the pre-installed lens from the lens assembly on the sensor.
2. Remove the lens gasket from the pre-installed lens.
3. Tuck the edge of the optional lens into the inner edge of the gasket, between layers
4. Align the 4 holes on the gasket with the holes on the lens.
5. Align the holes on the lens with the studs on the inside of the cover and press the gasket assembly in place.
6. Place the lens assembly on the sensor and rotate the cover assembly clockwise to tighten it.

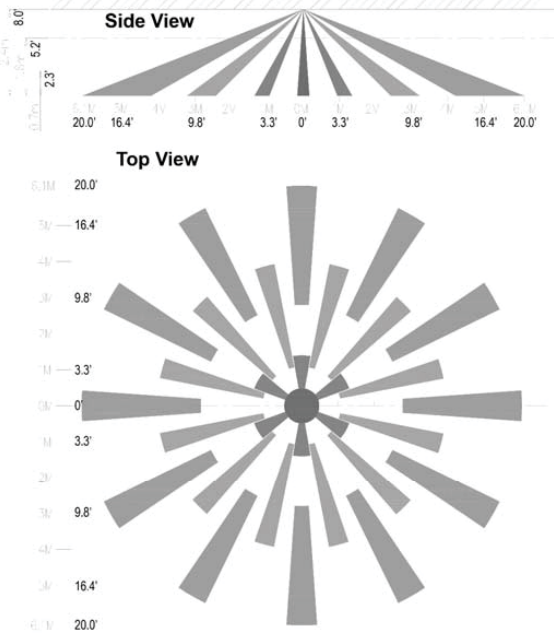


Video demonstrations of the lens mask procedure are available on Daintree® Networks Partner Portal.

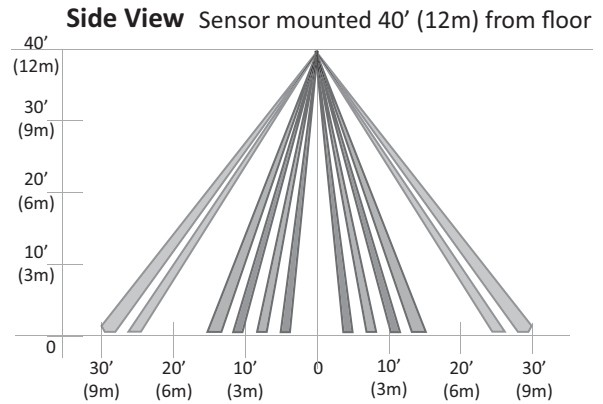
Wireless High Bay Sensor (WHS20)

Coverage Patterns

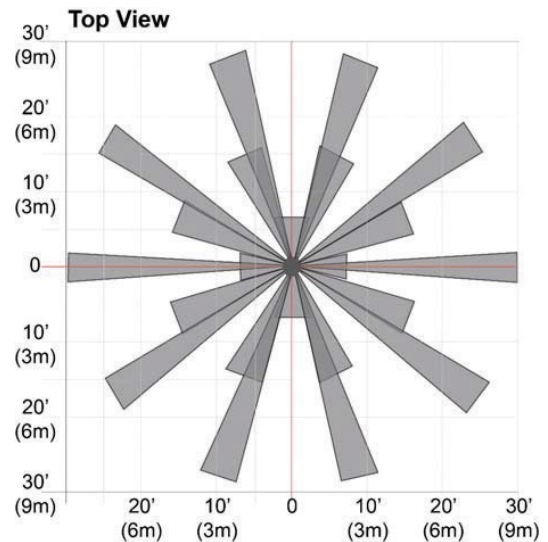
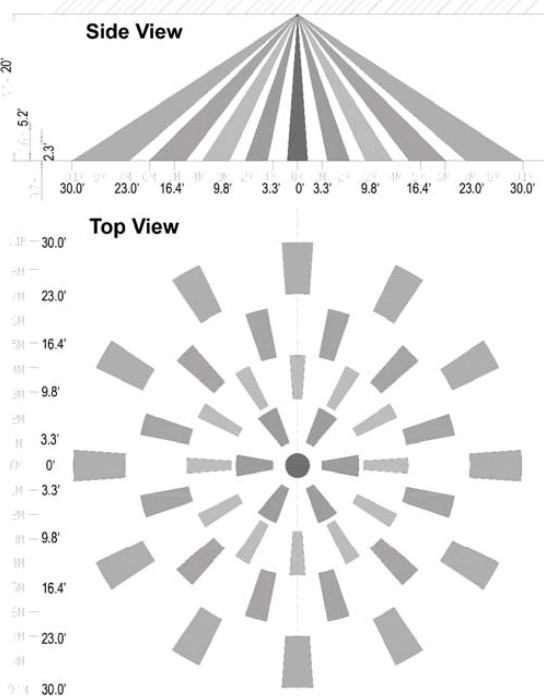
8 foot lens (LOW): 20 foot radius/40 foot diameter



40 foot lens (HIGH): 30 foot radius/60 foot diameter



20 foot lens (MED): 30 foot radius/60 foot diameter



Wireless High Bay Sensor (WHS20)

Joining the Daintree Network

After successfully completing the Installation Test, the WHS20 is ready to communicate with the Daintree® Wireless Area Controller (WAC) and the Daintree® Controls Software (DCS) web-based building controls management user interface.

A network join can be re-triggered manually at any time by resetting the WHS20 to factory defaults:

- Press and hold the Utility button for 5 seconds.
- Release the button when the LEDs begin to flash rapidly.
- This causes the device to leave any network to which it is currently joined. Following the reset, the device attempts to join a network.

For more information about configuring the lighting control network, see the instructions and on-line help provided with the DCS - Facility Manager guide.

Default Functionality

The WHS20 is designed to be part of the Daintree® Network. It should not be left to operate outside of the network indefinitely. The Daintree® Network provides many control efficiencies not otherwise available, including changing operational parameters.

As shipped from the factory, the WHS20 will operate in its default functionality before it is joined to the Daintree® Network. Once it joins the Daintree® Network, it will also operate in its default functionality until it is configured into a zone. In the default functionality, the WHS20 controls the connected light as follows:

- Light is ON at 100%.
- During occupancy Green LED flashes.

Functionality after Configured into a Zone

After the WHS20 is configured into a zone, it follows the control strategy for the zone, including delay time, light levels, and other features. The delay time is whatever the strategy dictates plus 20 seconds. For example, if the strategy is set for 8 minutes, the vacancy delay is 8 minutes and 20 seconds.

PIR Sensitivity Adjustment

There are no sensitivity adjustments on the WHS20 via DCS. Contact Daintree® support for further information.

Wireless High Bay Sensor (WHS20)

IEEE Address Labels

A label with the full IEEE address of the WHS20 should be affixed to the outside of the light fixture in a standard location where it can be seen after installation and mounting. A small plastic bag containing an additional small label (**Fixture Label**) is included with every sensor.

Record IEEE Addresses

A marked-up copy of the facility floor plan showing the identity and location of each wireless adapter (including associated fixtures and sensors) should be available after installation. This will simplify and expedite the commissioning process.

Be sure that each sensor's IEEE address (last 6 digits) is recorded on the facility floor plan. Use the **Plan Label** supplied with the adapter or write the last 6 digits on the floor plan. This information will be used during the commissioning process.

Troubleshooting

No LEDs turn on when I press the Utility Button?

- Check the wiring between the fixture/driver and sensor

Light doesn't operate as expected in Installation Test Mode?

- Make sure power is turned on to the fixture circuit
- Check all wiring between the fixture and the sensor
- Press the blue Utility button for 5 seconds to reset the unit

Green motion detection LED does not activate when walking through the coverage area?

- Check to see if the green LED turns on when you wave your hand directly in front of the lens
- If the LED turns on, check for objects or barriers obstructing the sensor's view of the coverage area

Green LED flashes when the coverage area is vacant?

- Check for sources of hot air flow in the coverage area
- See Placement Guidelines. Eliminate false trigger sources

Light doesn't turn Off after WHS20 joins the Daintree® network?

- Once the WHS20 is configured into a zone through DCS it follows the Off Delay for the zone's control strategy

Light doesn't turn Off after WHS20 is configured into a zone?

- Check the Off Delay for the zone in the DCS
- Check for other DCS scheduled events or manual overrides that may be keeping the lights on

Wireless High Bay Sensor (WHS20)

FCC Warning Message

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and radiates radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encourage to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna;
- Increase the separation between the equipment and receiver;
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected;
- Consult the dealer or an experienced radio/TV technician for help.

Regulatory Information

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate this equipment.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance 20 cm between the radiator and your body.

Specifications	
Ballast/Driver	Digital Addressable (DA), Digital Power Bus
Dimming Output	Digital Addressable
Indicators	Green LED (Occupancy Detection) Red LED (off for normal operation)
Occupancy Sensor	PIR technology
Ambient Light Sensor	Daylight harvesting
Power Consumption	6W
Dimensions (w/o mounting)	80mm Dia by 33.8mm H (3.15in Dia by 1.33in H)
Radio Properties	2.4GHz, +8dBm transmit power
Technology	Wireless communication based on the 802.15.4 standard
Lenses Available	360° Lenses 8ft, 20ft, 40ft and Aisle Mask
Off-Delay Timer	Configurable in DCS
Operating Environment	-40° C to +70° C (-40° F to +158° F) 5-95% RH, non-condensing
Enclosure	IP66 rated
Mounting	1/2-inch NPS thread for standard 1/2-inch knockout mount
Compliance	FCC Part 15, FCC ID: QOQMGM12P0 IC: 5123A-MGM12P0 CAN ICES (B) / NMB (B) UL Listed: E337125

Wireless High Bay Sensor (WHS20)

Regulatory Information (Continued)

This device contains licence-exempt transmitter(s)/ receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

ISED Radiation Exposure Statement

This equipment complies with RSS-102 radio frequency radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

ISDE Déclaration d'exposition aux radiations

Cet équipement est conforme aux limites d'exposition CNR-102 aux radiofréquences établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.