WATTSTOPPER®

OEM SENSOR GUIDE

INTEGRATED LIGHTING CONTROLS

designed to be better.™

L1 legrand®

INTEGRATED LIGHTING CONTROLS

Why Choose Wattstopper?
Leveraging over 50 years of high performance sensor development, Wattstopper sensors are more technologically advanced than any other leading brand.

Embedding controls directly into the lighting fixture maximizes the return on the lighting investment. Wattstopper fixture integrated sensors are engineered for optimal performance. Even in the most challenging applications effective lighting control provides significant energy savings.

What's Available?
Wattstopper offers one of the industry's most expansive selections of fixture integrated control products. With a control solution for nearly every fixture type, Wattstopper is a name you can rely on for industry-leading performance, reliability, and service.

Wattstopper offers an extensive line of both indoor and outdoor occupancy sensors utilizing a variety of sensing technologies to ensure optimal performance in any environment. Contact your local Wattstopper Representative or visit us online at legrand.us/wattstopper to learn even more about our extensive product lines.

How Do You Benefit?
Wattstopper works hand-in-hand to ensure your customer's have the best possible lighting and controls experience. Wattstopper controls paired with luminaires from the factory provides peace of mind that our products will work together directly out of the box.

Partnering with fixture manufacturers, we are able to deliver innovative, high-quality lighting products. When you choose Wattstopper controls you're leveraging one of the most trusted names in the industry to ensure a hassle-free controls experience. Together our success is built on you, our customer, we strive to provide you superior quality with every product and superior customer service with every transaction.

ENERGY EFFICIENCY AT THE FIXTURE LEVEL

With nearly every facility looking to increase efficiency, retrofitting lighting fixtures that feature fixture-specific occupancy sensors maximizes your energy savings. With individual fixture control, facilities can substantially improve energy performance by implementing simple control strategies such as automatic off or intensity control. For retrofit projects, energy-efficiency rebates, or facilities seeking LEED certification, maximizing energy performance through fixture-integrated control is ideal.

Benefit your customer or business in many ways:

- Provide energy savings by reducing lighting usage.
- Comply with energy codes such as Title 24, ASHRAE 90.1, IECC, and other energy codes.
- Enhance 'green' building practices, such as LEED, for greater sustainability.

Wattstopper offers a broad selection of fixture-integrated control products. With a solution for nearly every fixture type, Wattstopper is a name you rely on for consistent performance, reliability, and service.

While lighting sources continue to increase in efficiency, lighting still accounts for approximately 30% of the total electrical load in non-residential buildings. Every major energy code and sustainable building practice system recognizes that automatic lighting control plays a vital role in any successful energy efficiency program.

Some of the best opportunities include exterior lighting, warehouses, stairwells, and specialty applications. Bundling controls into your lighting solutions brings additional value to your customers, resulting in energy savings ranging from 30-40%.

CHOOSING A SENSOR IN FOUR EASY STEPS:

1. Applications Space

- Each sensing technology is best suited for a particular applicable space

Passive Infrared (PIR) is best suited to open spaces where ambient temperature of the sensing area is below 40C (100F). PIR senses body heat; if the ambient environment of the sensing area is near the temperature of the human body, the sensor is less likely to perform at its peak.

Ultrasonic is best suited to confined spaces like offices, conference rooms, or bathrooms. Ultrasonic sensors create a constant ultrasonic signal inside a confined space and senses disruptions in the signal. This is ideal for detecting minor motion or sensing occupancy within a bathroom. If ultrasonic is used in an open area, the ultrasonic signal is weak and detection is limited.

Dual Technology combines both PIR and ultrasonic into a single sensor. These sensors can work in both open and confined spaces. The sensing technology that is best suited for the environment will act as the dominate sensing technology. These sensors are useful if the final application space is unknown.

Microwave sensors can detect motion even when completely concealed behind non-metallic materials. These sensors can detect motion through walls or ceiling tiles, and they are often integrated out of sight within a lighting fixture. Without proper calibration, these sensors can detection motion beyond your target detection area.

2. Mountings Height/Coverage (PIR technology only)

- Choose the appropriate lens for a PIR sensor is critical to maximize sensor performance
- Lens coverage information is included at the end of this document

Focusing the PIR sensor's detection area enables more precise and accurate detection. Wattstopper offers a variety of lenses to choose from, all of which are tailored to specific mounting height or desired detection area. Wattstopper uses the best performing lens available to ensure our sensors give the best possible performance.

3. Voltage and Ambient Temperature Requirement

- Choosing the appropriate voltage and ambient temperature range to meet your installation environment

Wattstopper offers a variety of operating voltage and ambient temperature options in our extensive occupancy sensor line. From low voltage to dual-phase high voltage, from -40C to +70C, we have a sensor that will meet your application requirements.

4. Configuration Type

- How often will your customer make changes to the sensor's energy management settings?
- How easy will making changes be for the fixture manufacturer or the electrical contractor?

Adjusting your sensor configuration settings will maximize the energy savings it provides. Wattstopper offers sensors that are adjustable many ways.

On-board switches are the most cost-effective method of configuring your sensor. On-board switches offer limited adjustability and require physical contact with the sensor to make adjustments. If you're configuring the sensor during installation and don't intend on adjustments being made in the future, then these sensors are a great, cost-effective way to enhance energy efficiency.

Infrared (IR) configuration is accomplished by a handheld remote control. The remote control allows the sensor to be configured from up to 40ft away. These sensors have more configuration settings available to maximize energy savings.

Bluetooth (BLE) configuration is accomplished through a smartphone application. Using Bluetooth allows the sensor to be configured from up to 400ft away. The application offers the most flexibility when configuring the sensor. Bluetooth is also less susceptible to environmental interference.

PARKING GARAGES AND LOTS

Enable energy savings without compromising safety and security, by providing occupancy-based intensity control.
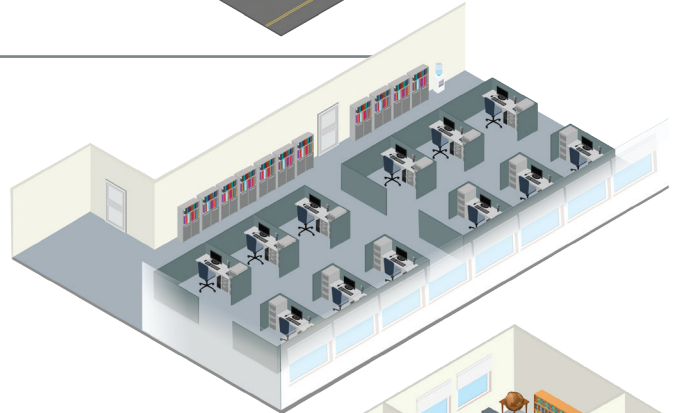
FSP SERIES

HB SERIES

OFFICE SPACES

From sleek, low-profile passive infrared controls to ultra-high-frequency sensors invisible to view, occupancy sensors offer convenient automatic shutoff of office lighting.

FSP SERIES

FS SERIES

STAIRWELLS

Energy codes mandate occupancy and daylighting responsive light level reduction in these spaces.

FSP SERIES

FS SERIES

FREEZER CASES

Pairing rugged occupancy sensors with LED lighted freezer cases can offer up to 70% in lighting energy savings.

FS-705

FSP SERIES

WAREHOUSES AND DISTRIBUTION CENTERS

Robust high bay occupancy sensors provide pinpoint control of aisleway, rack, and common area lighting for substantial energy savings even in 24/7 operations.

FSP SERIES

HBP SERIES

HB SERIES

Legrand®

MODEL	DESCRIPTION	INPUT VOLTAGE								OPERATING TEMPERATURE	MOUNTING HEIGHT				MTG OPT		RATINGS	DETECTION	COMMISSIONING	DIMMING	MATERIALS
		12V	24V	120V	208V	240V	277V	347V	480V		8 feet	10 feet	20 feet	40 feet	INTERRATED	EXTERNAL					
FIXTURE SENSORS																					
FSP-201	Wet Location Passive Infrared Occupancy Sensor	●	●							-40C -75C	●	●	●	●	●		UL/cUL, TUV, CE, IP66	PIR	IR	0-10V	PC, ROHS
FSP-211	Wet Location Passive Infrared Occupancy Sensor			●	●	●	●			-40C -75C	●	●	●	●	●		UL/cUL, TUV, CE, IP66	PIR	IR	0-10V	PC, ROHS
FSP-201B	Wet Location Passive Infrared Occupancy Sensor	●	●							-40C -75C	●	●	●	●		●	UL/cUL, IP66	PIR	IR	0-10V	PC, ROHS
FSP-211B	Wet Location Passive Infrared Occupancy Sensor			●	●	●	●			-40C -75C	●	●	●	●		●	UL/cUL, IP66	PIR	IR	0-10V	PC, ROHS
FSP-221B	Wet Location Passive Infrared Occupancy Sensor			●	●	●	●	●	●	-40C -75C	●	●	●	●		●	UL/cUL, IP66	PIR	IR	0-10V	PC, ROHS
FSP-202	Wet Location Passive Infrared Occupancy Sensor	●	●							-40C -75C	●	●	●	●	●		UL/cUL, IP66	PIR	SWITCHES	0-10V	PC, ROHS
FSP-212	Wet Location Passive Infrared Occupancy Sensor			●	●	●	●			-40C -75C	●	●	●	●	●		UL/cUL, IP66	PIR	SWITCHES	0-10V	PC, ROHS
FSP-301	Wet Location Passive Infrared Occupancy Sensor	●	●							-40C -75C	●	●	●	●	●		UL/cUL, FCC, IP66	PIR	BLE	0-10V	PC, ROHS
FSP-311	Wet Location Passive Infrared Occupancy Sensor			●	●	●	●			-40C -75C	●	●	●	●	●		UL/cUL, FCC, IP66	PIR	BLE	0-10V	PC, ROHS
FSP-321	Wet Location Passive Infrared Occupancy Sensor			●	●	●	●	●	●	-40C -75C	●	●	●	●	●		UL/cUL, FCC, IP66	PIR	BLE	0-10V	PC, ROHS
FSP-301B	Wet Location Passive Infrared Occupancy Sensor	●	●							-40C -75C	●	●	●	●		●	UL/cUL, FCC, IP66	PIR	BLE	0-10V	PC, ROHS
FSP-311B	Wet Location Passive Infrared Occupancy Sensor			●	●	●	●			-40C -75C	●	●	●	●		●	UL/cUL, FCC, IP66	PIR	BLE	0-10V	PC, ROHS
FSP-321B	Wet Location Passive Infrared Occupancy Sensor			●	●	●	●	●	●	-40C -75C	●	●	●	●		●	UL/cUL, FCC, IP66	PIR	BLE	0-10V	PC, ROHS
HB300W	Wet Location Passive Infrared Occupancy Sensor		●							-40C-70C	●	●	●	●		●	UL/cUL, IP65, UL 244A, UL 508	PIR	SWITCHES		PC, ROHS
HB330W	Wet Location Passive Infrared Occupancy Sensor			●	●					-40C-70C	●	●	●	●		●	UL/cUL, IP65, UL 244A, UL 508	PIR	SWITCHES		PC, ROHS
HB340W	Wet Location Passive Infrared Occupancy Sensor							●	●	-40C-70C	●	●	●	●		●	UL/cUL, IP65, UL 244A, UL 508	PIR	SWITCHES		PC, ROHS
HB350W	Wet Location Passive Infrared Occupancy Sensor		●			●				-40C-70C	●	●	●	●		●	UL/cUL, IP65, UL 244A, UL 508	PIR	SWITCHES		PC, ROHS
HB300C	Cold Location Passive Infrared Occupancy Sensor		●							-40C-55C	●	●	●	●		●	UL/cUL	PIR	SWITCHES		ABS, ROHS
HB350C	Cold Location Passive Infrared Occupancy Sensor		●			●				-40C-55C	●	●	●	●		●	UL/cUL	PIR	SWITCHES		ABS, ROHS
HB300B-Lx	High Bay Occupancy Sensor with Lens & Backbox		●							0C-70C	●	●		●		●	UL/cUL	PIR	SWITCHES		ABS, ROHS

OEM Sensor Guide

MODEL		DESCRIPTION	INPUT VOLTAGE								OPERATING TEMPERATURE	MOUNTING HEIGHT				MTG OPT		RATINGS	DETECTION	COMMISSIONING	DIMMING	MATERIALS
			12V	24V	120V	208V	240V	277V	347V	480V		8 feet	10 feet	20 feet	40 feet	INTERRATED	EXTERNAL					
FIXTURE SENSORS (CONTINUED)																						
HB330B-Lx		High Bay Occupancy Sensor with Lens & Backbox			●	●					0C-70C	●	●	●	●		●	UL/cUL	PIR	SWITCHES		ABS, ROHS
HB340B-Lx		High Bay Occupancy Sensor with Lens & Backbox						●	●		0C-70C	●	●	●	●		●	UL/cUL	PIR	SWITCHES		ABS, ROHS
HB350B-Lx		High Bay Occupancy Sensor with Lens & Backbox			●		●				0C-70C	●	●	●	●		●	UL/cUL	PIR	SWITCHES		ABS, ROHS
HBP-111		Passive Infrared Occupancy Sensor			●		●				0C - 55C	●	●	●	●		●	UL/cUL	PIR	IR		PC, ROHS
HBP-112		Passive Infrared Occupancy Sensor			●		●				0C - 55C	●	●	●	●		●	UL/cUL	PIR	SWITCHES		PC, ROHS
FS-3x5		Passive Infrared Occupancy Sensor	●	●	●	●					-40C-55C	●	●	●		●		UL/cUL	PIR	IR	0-10V	PC, ROHS
FS-155		Passive Infrared Occupancy Sensor			●		●				0C - 55C	●	●	●		●		UL/cUL	PIR	IR		ABS, ROHS
FS-205		Passive Infrared Occupancy Sensor		●							-40C-55C	●	●	●		●		UL/cUL	PIR	IR		ABS, ROHS
FS-5x5		Ultrasonic Fixture Integrated Occupancy Sensor	●	●			●				-40C-55C	●	●	●		●		UL/cUL	ULTRA SONIC	IR		ABS, ROHS
FM-105		Integrated Occupancy Sensor			●		●				-20C-55C	●	●	●	●	●		UL/cUL, FCC	MICROWAVE	SWITCHES		PC, ROHS
FS-705		Wide Angle Passive Infrared Occupancy Sensor		●							0C-55C	●	●				●	UL/cUL	PIR	IR	0-10V	ABS, ROHS
FD-301		Fixture Integrated Daylight Dimming Photosensor		●							-20C-50C	●	●	●	●	●		UL/cUL		IR	0-10V	ABS, ROHS
POWER PACKS																						
FS-PP		Fixture Integrated Power Pack			●		●				0C-55C							UL/cUL				ABS, ROHS
BZ-50		Power Pack			●		●				0C-55C							UL/cUL				ABS, ROHS
BZ-150		Power Pack			●		●				0C-55C							UL/cUL				ABS, ROHS
BZ-200		LED Fixture Power Pack			●	●	●				0C-40C							UL/cUL			0-10V	ABS, ROHS
BZ-250		LED Fixture Power Pack			●	●	●				0C-40C							UL/cUL			0-10V	ABS, ROHS
CONFIGURATION TOOLS																						
FSIR-100		IR Configuration Tool																		IR		ABS, ROHS
SENSOR CONFIGURATION APP		Bluetooth Configuration Tool																		BLE		

Llegrand®

LENSES FOR PASSIVE INFRARED FIXTURE-INTEGRATED OCCUPANCY SENSORS

|FSP-LX SERIES

Three interchangeable lenses for FSP series fixture sensors

Lenses available in 4 colors

Coverage choices for mounting heights between 8 and 40 feet

IP66 rated when installed in outdoor-rated fixture

Mounts easily onto sensor module from fixture exterior

Description

FPS-Lx lenses work with FSP series motion sensors to provide multi-level lighting control based on motion and the ambient light level. Three lens choices provide flexibility for varying mounting heights.

Operation

The lenses mount onto the sensor body from the exterior of the fixture, threading onto the sensor module's threaded collar. Three 360° lens choices provide coverage from 8, 20, and 40 foot mounting heights. The FSP-L2 provides maximum coverage of 48′ diameter mounted at eight feet. The FSP-L3 provides maximum coverage of 40′ diameter mounted at 20 feet. The wide angle FSP-L7 provides maximum coverage of 100′ diameter mounted at 40 feet.

Wet Location Rating

When fully assembled and installed in an outdoor-rated fixture, FSP sensors and FSP-Lx lenses are IP66 rated. To obtain this rating, the device underwent extremely rigorous testing. The IP66 rating means the device is completely protected against dust and against water jets from all directions.

Applications

FSP series sensors with FSP-Lx lenses are ideal for damp or wet indoor or outdoor locations. They are suitable for use in luminaires installed in parking facilities, gas stations, pedestrian pathways, warehouses, and other harsh locations.

Features

- IP66 rated (when fully assembled with an FSP series sensor and installed in IP66 rated fixture) for use in wet location environments (indoor and outdoor)
- Polycarbonate, flame retardant, UV resistant, impact resistant
- Recyclable
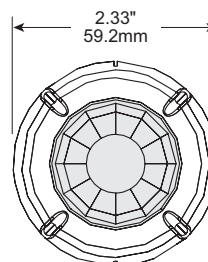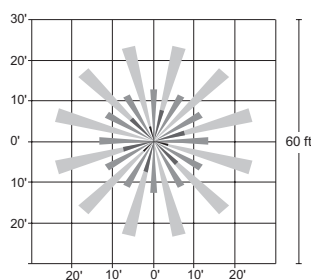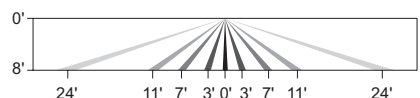- This product meets the materials restrictions of RoHS

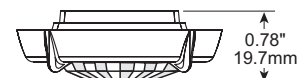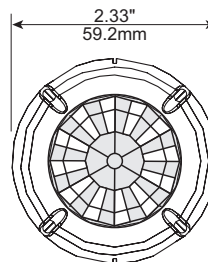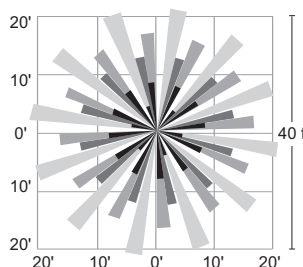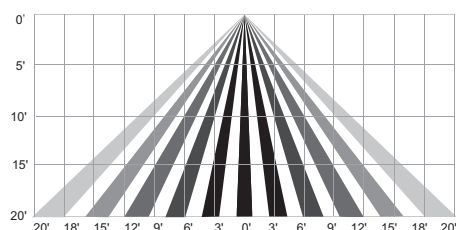| PROJECT		LOCATION/ TYPE	

Specifications

- Operating temperature: -40–167°F (-40–75°C)
- Storage temperature: -40–176°F (-40–80°C)
- Operating Humidity: 20–90%
- Five-year warranty
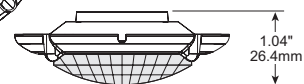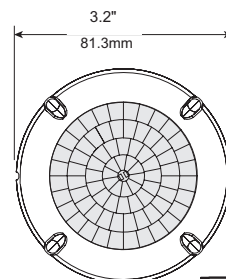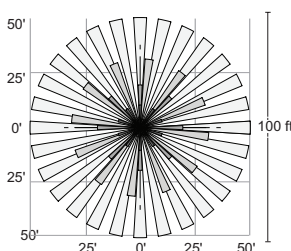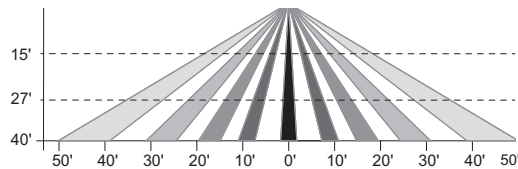
Coverage & Dimensions

FSP-L2

FSP-L3

FSP-L7

Ordering Information

Catalog #		Color	Description
☐	FSP-L2	White	360° lens, maximum coverage 48' diameter from 8' height
☐	FSP-L2-B	Black	
☐	FSP-L2-BR	Brown	
☐	FSP-L2-G	Grey	
☐	FSP-L3	White	360° lens, maximum coverage 40' diameter from 20' height
☐	FSP-L3-B	Black	
☐	FSP-L3-BR	Brown	
☐	FSP-L3-G	Grey	
☐	FSP-L7	White	360° lens, maximum coverage 100' diameter from 40' height
☐	FSP-L7-B	Black	
☐	FSP-L7-BR	Brown	
☐	FSP-L7-G	Grey	

CUTSHEETS

LENSES FOR PASSIVE INFRARED FIXTURE-INTEGRATED OCCUPANCY SENSORS

|FS-LXW

Four interchangeable lenses for FS-3x5 fixture sensors

Coverage choices for mounting heights between 8-40 feet

Mounts easily onto sensor component from fixture exterior

Description

FS-Lx lenses work with FS-305/FS-355 occupancy sensors to turn lights on and off automatically based on occupancy. Four lens choices provide flexibility for varying mounting heights.

Operation

The lenses mount onto the sensor body from the exterior of the fixture, threading onto the FS-305/FS-355 threaded collar. Four 360° lens choices provide coverage at 8, 20, and 40 foot mounting heights. The FS-L2W provides maximum coverage of 48′ diameter mounted at eight feet, the FS-L3W provides maximum coverage of 40′ diameter mounted at 20 feet, and the FS-L6 provides maximum coverage of 20′ diameter mounted at eight feet. The FS-L7W and FS-L7-G provide coverage of 100′ diameter mounted at 40 feet.

Features

• IP65 and UL 244A and 508 rated (when fully assembled and installed) for use in wet location environments (indoor and outdoor)
• Fixed sensitivity optimized for FS-LxW and FS-L6 lens coverages

• Polycarbonate, flame retardant, UV resistant, impact resistant (FS-LxW lenses)
• Recyclable

Wet Location Rating

When fully assembled and installed, the FS-305/FS-355 sensors and FS-L2W, FS-L3W, FS-L7W, and FS-L7-G lenses are IP65 and UL 244A and 508 rated. To obtain this rating, the device underwent extremely rigorous testing. The IP65 rating means the device is totally protected against dust and low-pressure jets from all directions.

Applications

FS-305/FS-355 sensors with FS-LxW lenses are ideal for damp or wet indoor or outdoor locations. They are suitable for use in parking garages and in parking lot luminaires. When equipped with the FS-L6 lens, the sensor provides superior coverage in any dry indoor application.
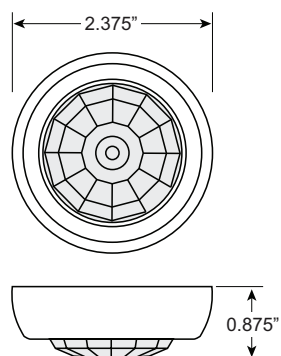
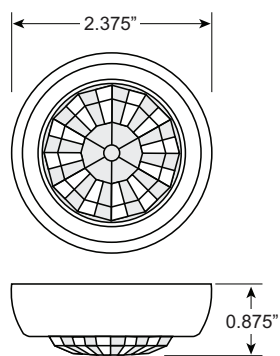| PROJECT | | LOCATION/ TYPE | |

Specifications

- Operating temperature: -40–131°F (-40–55°C)
- Storage temperature: -40–176°F (-40–80°C)
- Operating Humidity: 20–90%

- Five-year warranty
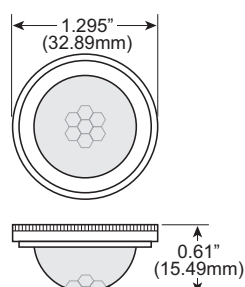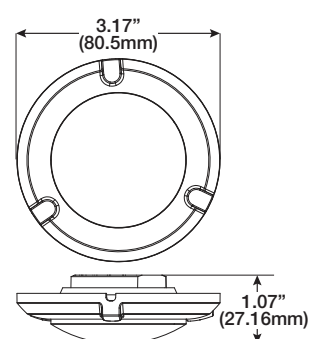- UL and cUL listed

Lens Dimensions

FS-L2W

2.375"
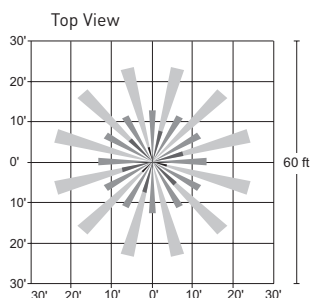
0.875"

FS-L3W

2.375"

0.875"

FS-L6

1.295"
(32.89mm)

0.61"
(15.49mm)

FS-L7W and FS-L7-G

3.17"
(80.5mm)

1.07"
(27.16mm)

Coverage Patterns

FS-L2W

Top View

Side View

60 ft

FS-L3W

Top View

Side View
Ceiling

40 ft

FS-L6

Top View

Side View

FS-L7W and FS-L7-G

Top View

Side View

100'
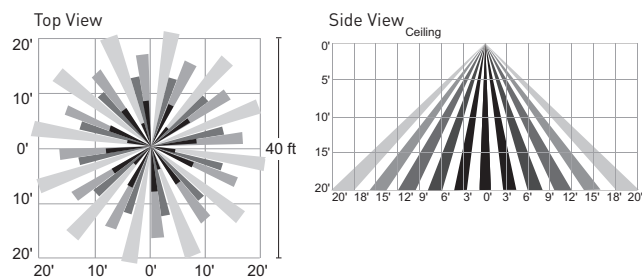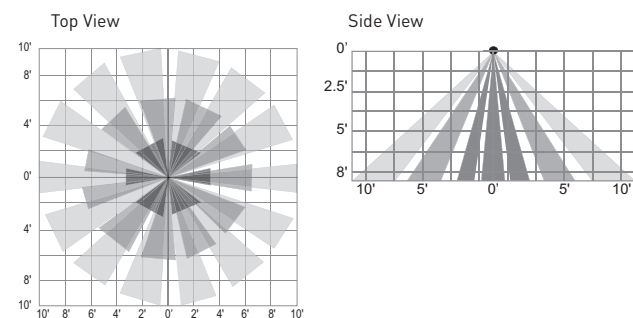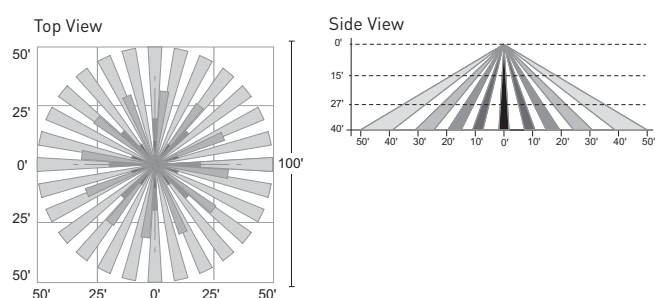
Ordering Information

Catalog #		Color	Description
☐	FS-L2W	White	360° lens, maximum coverage 48' diameter from 8' height, for indoor and outdoor environments
☐	FS-L3W	White	360° lens, maximum coverage 40' diameter from 20' height, for indoor and outdoor environments
☐	FS-L6	White	360° lens, maximum coverage 20' diameter from 8' height, for dry indoor environments only
☐	FS-L7W	White	360° lens, maximum coverage 100' diameter from 40' height, for indoor and outdoor environments
☐	FS-L7-G	Gray	360° lens, maximum coverage 100' diameter from 40' height, for indoor and outdoor environments

HIGH BAY OCCUPANCY SENSOR LENSES | HBL SERIES

Lenses utilize Fresnel technology

Lenses easily rotate 90˚to adjust coverage pattern

Swap lenses to achieve different coverage patterns

Lenses snap on for easy adjustment during installation

Description

The High Bay (HB3x0) Occupancy Sensor Modules (sold separately) require one of five available lenses to operate: the HBL1, HBL1M, HBL2, HBL3, or HBL7. Each Fresnel lens is designed for a different application, allowing for use at different mounting heights and locations. Each HB sensor lens snap-mounts to any module, and can be interchanged by simply un-snapping and re-snapping the ideal lens for the particular application. They can also be repositioned 90° on the sensor.

HBL1 & HBL1M Lenses

The HBL1 lens offers linear patterns best suited for high bay aisleway applications. The Fresnel lens is designed to detect walking motion when mounted at or around 40'. In optimal conditions, the lens has a 60' linear detection range. Identical to the HBL1, the HBL1M comes with opaque adhesive tape applied to the interior of the lens, cutting off 1/2 of the coverage pattern. This customized coverage is ideal for the beginning of aisleways where cross traffic could be an issue.

HBL2, HBL3, & HBL7 Lenses

The HBL2, HBL3, and HBL7 lenses offer 360° coverage and are best suited for open area and aisleway coverage in high bay applications. They are multi-cell, multi-tier Fresnel lenses offering a high-density coverage pattern.

For low bay applications, the HBL2 pattern spreads over a 48' diameter area at a height of 8'.

For mid bay applications, the HBL3 pattern spreads over a 40' diameter area at a height of 20'.

For high bay applications, the HBL7 is designed for mounting at heights between 20' and 40', with a coverage area up to 100' in diameter when mounted at 40'.

HBLxW Lenses

The HBL2W, HBL3W, and HBL7W lenses are designed for use with the HB3x0W series sensors, which are used in wet locations. They have the same coverage patterns as the dry environment lenses.

Features

HBL1 & HBL1M:
- Ideal for high ceiling aisleway applications
- Both are multi-cell, multi-tier Fresnel lenses
- 60' x 20' HBL1 coverage when mounted at 40' height
- 30' x 20' HBL1M coverage when mounted at 40' height

HBL2, HBL3, & HBL7:
- Ideal for high ceiling open area and aisleway coverage in high bay applications
- All are multi-cell, multi-tier Fresnel lenses
- 48' diameter coverage when mounted at a 8' height (HBL2)
- 40' diameter coverage when mounted at a 20' height (HBL3)
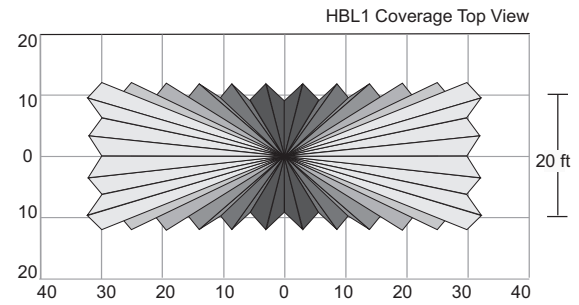- 100' diameter coverage when mounted at a 40' height (HBL7)
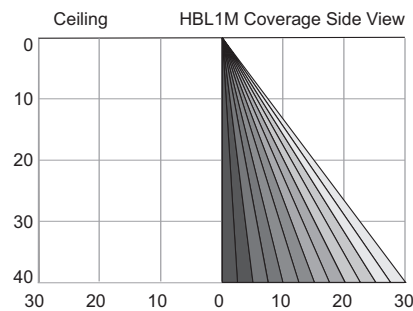
PROJECT		LOCATION/ TYPE	

CUTSHEETS
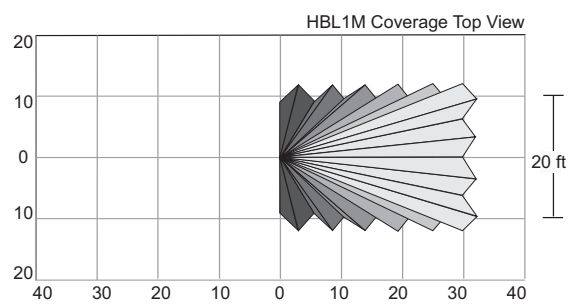
HBL1 Coverage Side View
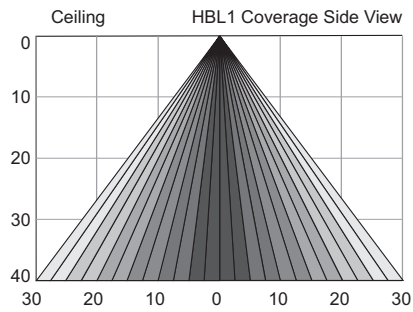
HBL1 Coverage Top View

HBL1M Coverage Side View

HBL1M Coverage Top View

HBL2 Coverage Side View
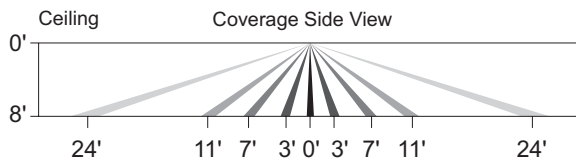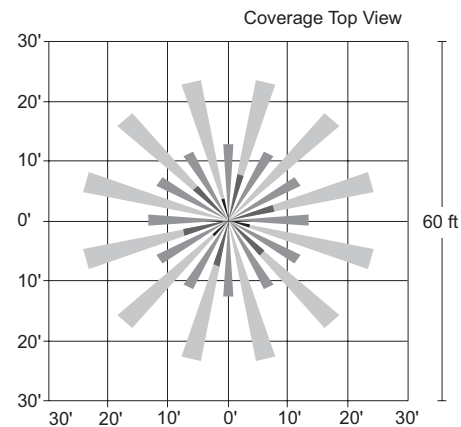

HBL2 Coverage Top View

HBL3 Coverage Side View

HBL3 Coverage Top View

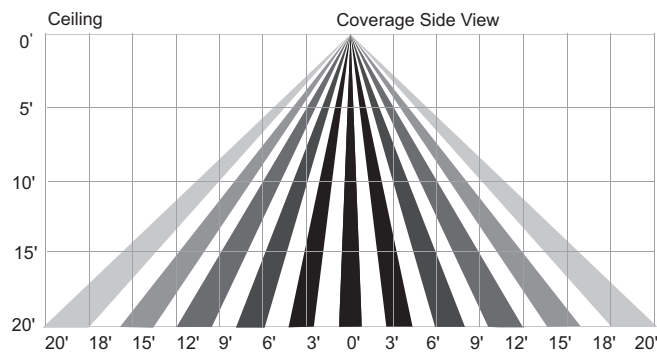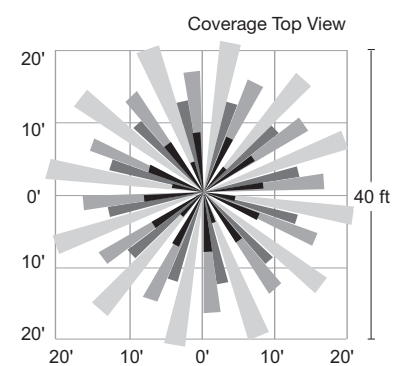HBL7 Coverage Side View
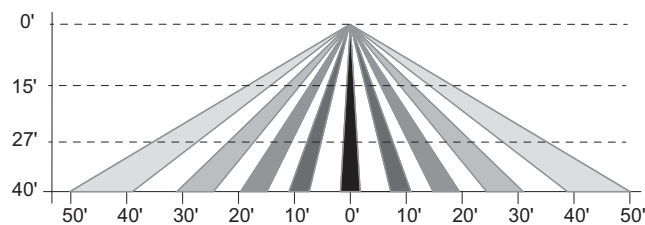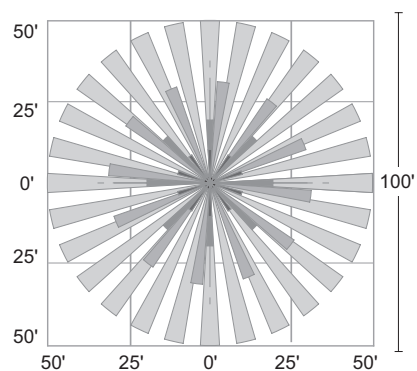
HBL7 Coverage Top View

Ordering Information

Catalog #	Color	Coverage
☐ HBL1	White	Coverage @ 40' height: 60' x 20'
☐ HBL1M	White	Coverage @ 40' height: 30' x 20'
☐ HBL2	White	Coverage @ 8' height: 48' in diameter
☐ HBL2W	White	Coverage @ 8' height: 48' in diameter – for wet location sensor models
☐ HBL3	White	Coverage @ 20' height: 40' in diameter
☐ HBL3W	White	Coverage @ 20' height: 40' in diameter – for wet location sensor models
☐ HBL7	White	Coverage @ 40' height: 100' in diameter
☐ HBL7W	White	Coverage @ 40' height: 100' in diameter – for wet location sensor models

Please note: 1. For a complete working system, separately order the correct module for your application (see module cutsheets).
2. When preparing P.O., order parts as separate line items (e.g., HB3xx, HBL1, HBEM3)
3. Parts ship separately.

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