



PacWave™ Sensors and Controls Catalog



About us

For over 25 years, McWong International, Inc. has been bridging the best of East and West in order to achieve an unparalleled mix of quality, service and innovation for our valued customers. A California corporation, McWong has grown to become a leader in the design and manufacture of high quality lighting control equipment and related electrical components. Our teams on both sides of the Pacific take great pride in the fact that the majority of our growth comes from healthy business development with long-term, world-class customers. Reliable, competitive products paired with committed customer service year in and year out have enabled us to sustained growth over more than two decades.

Today, the pace of technological change has quickened and competition continues to intensify. We are meeting these challenges through increased investment in capable individuals, promising technologies and advanced manufacturing facilities. McWong's disciplined approach to quality management, customer service, and cost control ensures that we are well-poised to accelerate our pace of growth as we partner with our stakeholders to achieve a brighter, more sustainable, more successful future.

PacWave™ Sensor

SAVING ENERGY & MEETING ENERGY CODES

With an Automatically "OFF" function, sensors and related products can help users comply with building codes such as CA Title 24, ASHRAE. Up to 50% energy savings can be realized by using these sensors. In addition, more functions such as bi-level switching, personal overload, and daylight harvesting are available.

MULTI DETECTION METHODS MEET DIFFERENT APPLICATIONS

Passive Infrared (PIR): Senses occupancy by detecting the difference between the heat emitted from the human body in motion and the background space. Best for use in areas with (1) an unobstructed view, (2) high air flow, and (3) ceiling mounts.

Ultrasonic: Detects motion by bouncing ultrasonic waves off of objects and analyzing the frequency shift between the emitted and reflected sound waves. Best for use in areas with (1) low air flow, (2) partitions and dividers, and (3) high levels of minor activity (e.g., an office space).

Microwave: Detects motion by bouncing ultra-high-frequency electromagnetic waves off of objects and calculating the frequency shift between the emitted and reflected waves. Best for use behind a fixture lens because it can detect motion through dense non-metallic materials.

Dual Tech: Uses both passive infrared and ultrasonic detection methods in order to maximize reliability and minimize "FALSE ON". Best overall performance for most applications.

ADVANCED CONTROL TECHNOLOGY

"SMART SWITCHING" technology helps maximize lamp life—by balancing lamp use. Moreover, it helps reduce costs and minimize labor.

DAYLIGHT HARVESTING

In combination with daylight harvesting technology, a single sensor can save even more energy. Plus it will also provide customers with more options and increased functionality.

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WARRANTY

McWong guarantees its products to be free of defects in materials and workmanship for a period of five years. McWong can not assume any obligations or liabilities 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. Interpretation of this warranty statement/policy belongs exclusively to McWong, Inc.

Applications

PacWave sensors almost can be used everywhere to help you save energy and save money. Typical applications are shown below:



A. Classrooms or open offices

Requires: Ceiling mount or wall switch occupancy/vacancy sensors



B. Public areas (hallways, lobbies, etc.)

Requires: ceiling mount or wall switch microwave occupancy/vacancy sensors



C. High bay applications

Requires: High bay occupancy sensors



D. Parking garages or parking lots

Requires: Outdoor sensors



E. Restrooms

Requires: Dual tech ceiling mount occupancy sensors or wall switch sensors



F. Conference rooms

Requires: Ceiling mount occupancy sensors or wall switch vacancy sensors

WALL SWITCH VACANCY/OCCUPANCY SENSOR

OVERVIEW

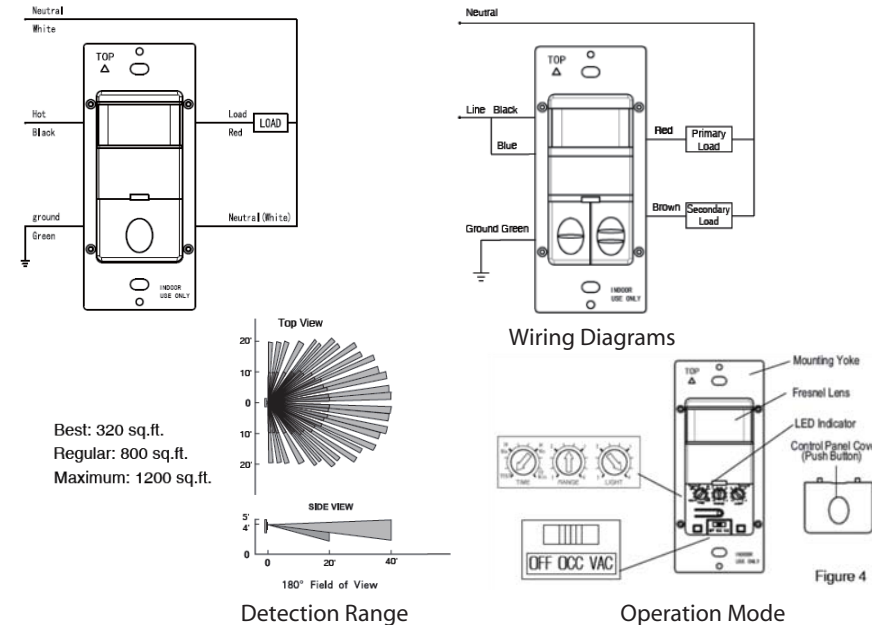
The PSC-ID-I-WS-xxxx series of PIR wall switch occupancy sensors come with multiple operation modes. These sensors can be used as either vacancy sensors or occupancy sensors, depending on the application requirements. PSC-ID-I-WS-xxxD sensors are designed for two loads (i.e., a single sensor can control two groups of loads) and are capable of bi-level lighting control. They offer convenient, cost-effective energy savings for end users.

SENSOR OPERATION

The movements of a room's occupants can be detected using passive infrared technology to compare the infrared energy between moving objects and the background space. The sensor automatically turns the lights off after a space becomes vacant following a preset time delay. The PSC-ID-I-WS series of sensors are designed to minimize FALSE ON while maximizing sensitivity. Users can quickly and easily set the time delay anywhere from 15 seconds to 30 minutes by adjusting a dial. Users can also manually turn the lights on or off at any time by pushing the ON/OFF button.

APPLICATIONS

PSC-ID-I-WM-xxxx sensors are well suited for small, enclosed spaces with clear line of sight of the room's occupants. Typical applications include offices, conference rooms, break rooms, bathrooms and even bedrooms. Users can select the appropriate ON/OFF mode and time delay settings to maximize potential energy savings.



Catalog No.	Description	Voltage	Load Capacity
PSC-ID-I-WS-110	PIR occupancy/vacancy sensor	120VAC/277VAC	0-800VA ballast at 120V 0-1600VA ballast at 277V
PSC-ID-I-WS-111N	PIR occupancy/vacancy sensor with nightlight	120VAC/277VAC	0-800VA ballast at 120V 0-1600VA ballast at 277V
PSC-ID-I-WS-120	Dual voltage input PIR occupancy/vacancy sensor	120VAC/277VAC	0-800VA ballast at 120V 0-1600VA ballast at 277V
PSC-ID-I-WS-121N	Dual voltage input PIR occupancy/vacancy sensor with nightlight	120VAC/277VAC	0-800VA ballast at 120V 0-1600VA ballast at 277V
PSC-ID-I-WS-130	PIR occupancy/vacancy sensor (no neutral required)	120VAC/277VAC	0-800VA ballast at 120V 0-1600VA ballast at 277V
PSC-ID-I-WS-130D	Dual relay PIR occupancy/vacancy sensor (no neutral required)	120VAC/277VAC	0-800VA ballast at 120V 0-1600VA ballast at 277V



SPECIFICATIONS

FEATURES

- Digital passive infrared sensor
- LED indicator light
- Adjustable time delay from 15 sec to 30 min
- Multiple operation modes:
 - Auto OFF (occupancy sensor)
 - Manual ON (vacancy sensor)
 - OFF (switched off)
- Universal input voltage version available
- Lux level from 30 Lux to Daylight
- Replaces a standard light or fan single-pole switch or dual-gang switch
- "Walk-through" mode available
- Adjustable sensitivity settings
- No neutral wire required for certain models

PHYSICAL SPECS

- Size 4.06"×1.69"×1.90" (103.2cm×42.8cm×48.2cm)
- Weight: 3.9oz
- Standard wall mount
- Color: White/Ivory/Almond

ELECTRICAL SPEC

- Maximum Load
800VA@ 120VAC
1600VA@ 277VAC
1/4 HP@120VAC
- Minimum Load: None
- Frequency: 60 Hz
- Neutral Required

ENVIRONMENTAL SPEC

- Operating Temp:
32° to 131°F (0° to 55°C)
- Storage Temp
14° to 160°F (-10° to 60°C)
- Relative Humidity:
95% non-condensing



SPECIFICATIONS

FEATURES

- Digital passive infrared and ultrasonic technologies
- Adjustable time delay from 15 sec to 30 min
- Manual-On operation
- Photocell version for daylight harvesting
- “Walk-through” sensing mode (increases energy savings by turning lights off shortly after momentary occupancy)
- Self-adaptive feature automatically adjusts time delay based on occupants behavior pattern.
- Replaces a standard light or fan single-pole switch

PHYSICAL SPECS

- Size 2.50"×1.69"×2.0" (65mm×43mm×50mm)
- Weight: 3.9oz
- Standard Wall Mount

ELECTRICAL SPEC

- Maximum Load
800VA incandescent @ 120VAC
1600VA fluorescent @ 277VAC
1/4 HP@120VAC
- Frequency: 60 Hz
- Neutral Required

ENVIRONMENTAL SPEC

- Operating Temp:
32° to 131°F (0° to 55°C)
- Storage Temp
14° to 160°F (-10° to 60°C)
- Relative Humidity:
95% non-condensing

WALL SWITCH OCCUPANCY SENSOR

OVERVIEW

The PSC-ID-I-WS-1xxx PIR wall switch occupancy sensor turns lights on or off automatically. It offers convenient, cost-effective energy savings for end users.

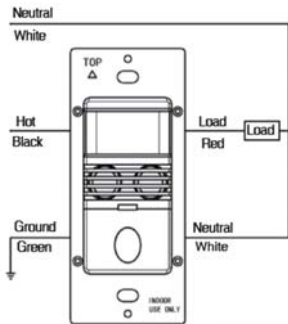
SENSOR OPERATION

The movements of a room’s occupants can be detected using passive infrared technology to compare the infrared energy between moving objects and the background space. The sensor automatically turns the lights off after a space becomes vacant following a preset time delay. The sensors in this series are designed to minimize FALSE ON while maximizing sensitivity. Users can quickly and easily set the time delay anywhere between 15 seconds to 30 minutes by adjusting a dial. Depending on occupancy, users can also set different sensitivity levels. The sensor comes with a built-in daylight sensor to provide daylight harvesting functions. Users can also manually turn lights on or off at any time by pushing the ON/OFF button.

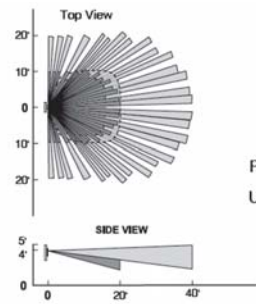
APPLICATIONS

The PSC-ID-I-WS-1xxx sensor is well suited for spaces with multiple doorways and multiple light switch locations—especially when nightlight is required. Typical commercial applications include offices, conference rooms, break rooms, and public restrooms. For residential applications, it can also be used in bedrooms.

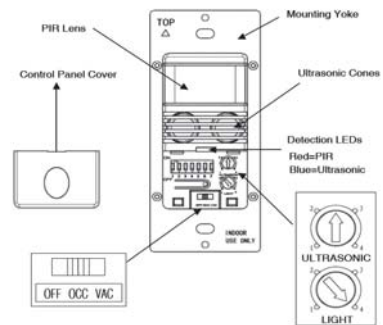
Users can select the appropriate ON/OFF mode and time delay settings to maximize potential energy savings. Models with nightlight numbers come with a built-in nightlight function. Adjustable sensitivity and daylight harvesting are optional.



Wiring Diagram



Detection Pattern



Operation Mode

PIR Coverage: 1200 ft²

Ultrasonic Coverage: 400 ft²

Catalog No.	Description	Voltage	Load Capacity
PSC-ID-D-WS-120	Dual technology occupancy/vacancy sensor	120VAC/277VAC	0-800VA ballast at 120VAC 0-1600VA ballast at 277VAC

CEILING MOUNT PIR OCCUPANCY SENSOR

OVERVIEW

The PSC-ID-I-CM-xxx series of PIR ceiling mount occupancy sensors provide 360° coverage to detect motion in the controlled area. These sensors can turn lights on or off automatically, depending on occupancy. They offer convenient, cost-effective energy savings for end users.

1xx line voltage 3xx dc voltage

SENSOR OPERATION

The movements of a room's occupants can be detected using passive infrared technology to compare the infrared energy between moving objects and the background space. The sensor automatically turns the lights off after a space becomes vacant following a preset time delay. The sensors in this series are designed to minimize FALSE ON while maximizing sensitivity. Users can set the time delay anywhere between 15 seconds to 30 minutes by flipping the dip switch. The PSC-ID-I-CM-xxx series of sensors can detect motion in areas up to 1200 ft.²

APPLICATIONS

The PSC-ID-I-CM-xxx series of sensors are well suited for large, open spaces with clear line of sight of the occupants. Applications include offices, conference rooms, and break rooms.



SPECIFICATIONS

FEATURES

- Digital passive infrared sensor
- LED indicator
- Adjustable time delay from 15 sec to 30 min
- 360° coverage pattern
- Photocell version for daylight harvesting
- Universal input voltage
- Adjustable sensitivity

PHYSICAL SPECS

- Size Φ 115mmx40(h)mm
- Weight: 6 oz
- Standard Ceiling mount
- Color: White

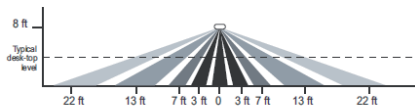
ELECTRICAL SPEC

- Operation voltage:
120/277VAC for 1xx
24VDC for 3xx
- Load:
800VA @120VAC for 1xx
1600VA @277VAC for 1xx
- Frequency: 60Hz for 1xx
- Use PSC-AC-PP-100 power pack for 3xx

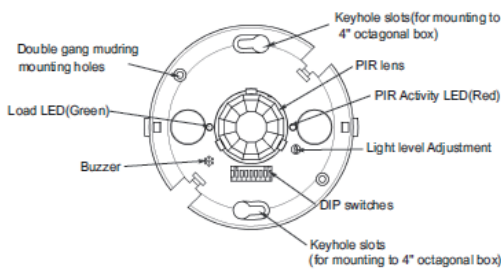
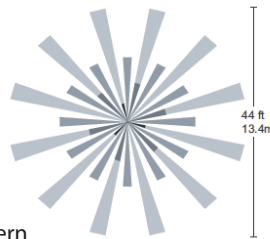
ENVIRONMENTAL SPEC

- Operating Temp:
32° to 131°F (0° to 55°C)
- Storage Temp
14° to 160°F (-10° to 60°C)
- Relative Humidity: 95% non-condensing

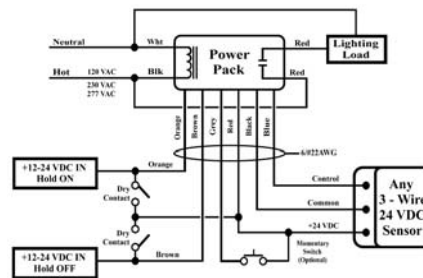
Drawings not to scale.



Detection Pattern



Operation Mode



Wiring Diagram

Catalog No.	Description	Load/output
PSC-AC-PP-100	Rectangular shape power pack	120-277V/20A 24VDC/150mA

Catalog No.	Description	Voltage	Coverage
PSC-ID-I-CM-101	PIR ceiling mount occupancy sensor	120/277VAC	360°, up to 1200 ft ²
PSC-ID-I-CM-301	PIR ceiling mount 24VDC occupancy sensor	24VDC	360°, up to 1200 ft ²



CEILING MOUNT DUAL TECH OCCUPANCY SENSOR

OVERVIEW

The PSC-ID-U-CM-3xx series of dual technology ceiling mount occupancy sensors combine the benefits of passive infrared and ultrasonic technologies. These sensors provide 360° coverage to detect motion in the controlled area by mounting onto a flat ceiling. They offer convenient, cost-effective energy savings for end users.

SENSOR OPERATION

The PSC-ID-U-CM-3xx is a 24VDC voltage sensor. The sensor turns the lights on only when both PIR and ultrasonic technologies detect motion. PIR technology senses occupancy by comparing the infrared energy between moving objects with the background space. Ultrasonic technology uses high frequency (32KHz) ultrasound to sense motion by comparing the frequency shift between the ultrasonic waves when they are transmitted and when they are bounced back to the sensor. Once the lights are on, any motion that is picked up by either technology will keep the lights on. When no occupancy is detected for the length of the pre-set time delay, the lights will turn off automatically. If desired, PSC-ID-U-CM-3xx sensors can also be set so that only one technology (PIR or ultrasonic) is required to turn the lights on, and they can be set so that both technologies are needed keep the lights on.

APPLICATIONS

The PSC-ID-U-CM-3xx series of sensors has numerous applications because of their flexibility. These sensors effectively minimize false triggers since the lights won't turn on until both technologies (PIR and ultrasonic) detect motion. They are suited for a wide range of spaces such as offices, conference rooms and break rooms. Because of their low costs and excellent energy-saving potential, these sensors also offer a very quick return on investment.

SPECIFICATIONS

FEATURES

- Both digital passive infrared sensors & ultrasonic sensors
- LED indicator light
- Adjustable time delay from 15 sec to 30 min
- 360° Coverage pattern
- Photocell version for daylight harvesting
- Adjustable sensitivity

PHYSICAL SPECS

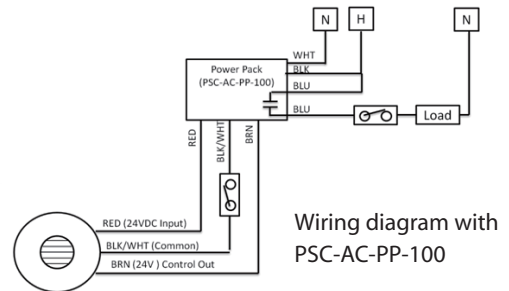
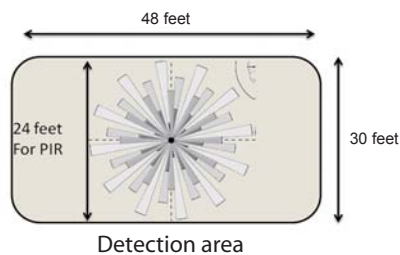
- Size $\Phi 115\text{mm} \times 40(\text{h})\text{mm}$
- Weight: 6 oz
- Standard Ceiling mount
- Color: White

ELECTRICAL SPEC

- Operation voltage: 24VDC
- Recommended Power Pack
- PSC-AC-PP-100

ENVIRONMENTAL SPEC

- Operating Temp: 32° to 131°F (0° to 55°C)
- Storage Temp: 14° to 160°F (-10° to 60°C)
- Relative Humidity: 95% non-condensing



For best usage, it should work with PacWave 24VDC power supply.

Catalog No.	Description	Load/output
PSC-AC-PP-100	Rectangular shape power pack	120-277V/20A 24VDC/150mA

Catalog No.	Description	Voltage	Coverage
PSC-ID-D-CM-101	Dual tech ceiling mount occupancy sensor	120/277VAC	180°, up to 1000 ft ²
PSC-ID-D-CM-301	Dual tech ceiling mount occupancy sensor	24VDC	360°, up to 1000 ft ²

POWER PACK

OVERVIEW

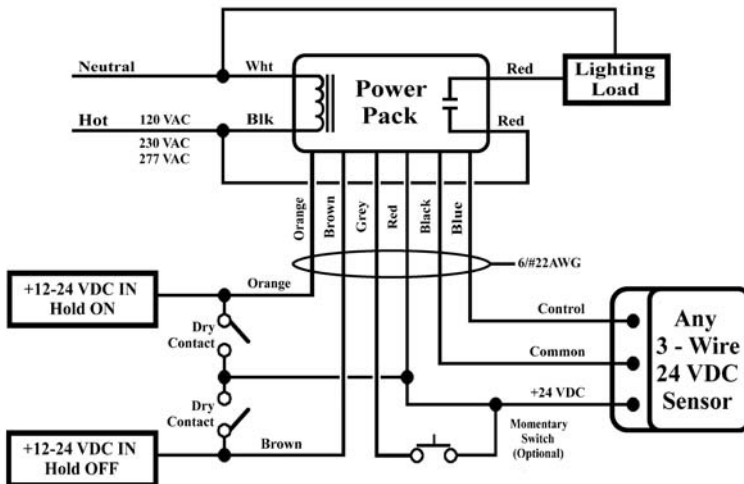
The PacWave PSC-AC-PP-100 Power Pack contains a 24 VDC supply as well as a 20A line voltage relay, and it provides this operating voltage to all PacWave 24 VDC occupancy sensors.

SENSOR OPERATION

PSC-AC-PP-100 Power Packs have a transformer and a high-current relay incorporated into them. The transformer has high voltage inputs of 120/277 VAC and 24 VDC low voltage output that powers PacWave sensors. When connected sensors detect occupancy they signal the power pack to close relays and turn on the connected lighting load.

APPLICATIONS

PacWave Power Packs are flexibly designed to work in a large variety of settings that require high voltage switching through low voltage controls. For example, PacWave Power Packs can control lighting circuits in classrooms, conference rooms, and offices. They can also control self-contained air conditioners, pumps, fans, motors, VAV systems, motorized damper controls, and setback thermostats. In short, PacWave Power Packs are ideal for use anywhere that optimal lighting and energy savings are desired.



Catalog No.	Description	Load/output
PSC-AC-PP-100	Rectangular shape power pack	120-277V/20A (Loading) 24VDC/150mA (DC)



SPECIFICATIONS

FEATURES

- Self-contained transformer relay system
- Powers low voltage sensors
- Capable of switching up to a 20A load (ballast)
- UL 2043 Plenum rated
- Installation in junction box not required

PHYSICAL SPECS

- Size: 40mm×70mm×60mm
- Weight: 5 oz
- Color: White
- UL 94V-0 casing

ELECTRICAL SPEC

- Operation voltage: 120/277 VAC
- Ballast Rating: 20A (13A Incandescent)
- HP: 1
- Output voltage/current: 24 VDC, 150 mA
- Frequency: 60 Hz

ENVIRONMENTAL SPECS

- Operating Temp: 32° to 131°F (0° to 55°C)
- Storage Temp: 14° to 160°F (-10° to 60°C)
- Relative Humidity: 95% non-condensing



HIGH BAY FIXTURE MOUNT OCCUPANCY SENSOR

SPECIFICATIONS

FEATURES

- Dual relay to turn on lights in alternation
- Maximize lamp's life
- Digital passive infrared sensor
- LED indicator
- Front dip switch for time delay and sensitivity control
- Supports mounting height up to 40ft
- Photocell version for daylight harvesting
- Universal input voltage
- 360° coverage pattern

PHYSICAL SPEC

- Size 4"H x 4"W x 2.16"D (102.58cm*102.58cm*55cm)
- Weight: 8 oz
- Mounting: 1/2" knockout Ceiling Mount
- Color: White

ELECTRICAL SPEC

- Maximum Load 800W@ 120VAC 1200W@ 277VAC
- Minimum Load None
- Frequency: 50/60 Hz

ENVIRONMENTAL SPEC

- Operating Temp: 14° to 160°F (-10° to 60°C)
- Storage Temp 14° to 160°F (-10° to 60°C)
- Relative Humidity: 20 to 90% non-condensing

OVERVIEW

The PSC-HB-I-FM-1xxx series of occupancy sensors are specifically designed to control multiple loads in the same fixture in applications such as warehouses, distribution centers and other high ceiling areas. The single relay occupancy sensor will turn the lights off after a set time delay. The PSC-HB-I-FM_1xxD, dual relay occupancy sensor, can turn two loads ON/OFF in alternation, which maximizes lamp life (lamp life up to twice as long). It can be easily installed directly inside fluorescent fixtures. Its well-developed PIR sensor technology and circuit design minimizes false triggers, while maximizing sensitivity. It comes with a 360° high bay lens which can accurately sense up to 40 ft.

SENSOR OPERATION

The movements of a room's occupants can be detected using passive infrared technology to compare the infrared energy between moving objects and the background space. The PSC-HB-I-FM-1xxD series of products use dual relays to turn lights on in alternation (i.e., when first turned on, only one group of lights in a room illuminate. The next time the lights are turned on, a second group illuminates). In this way, multiple loads will be turned on for roughly the same amount of time, which will maximize lamp life and minimize maintenance costs. The sensors in this series are designed to minimize FALSE ON while maximizing sensitivity. Users can use the dip switch to program both time delay and sensitivity.

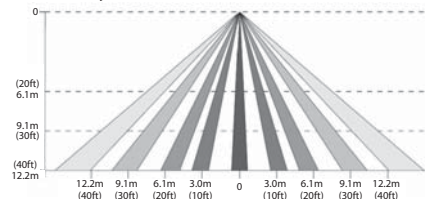
OPTIONS

- **Photocell**
Photocell can prevent lighting from turning on if adequate daylight is available.
- **Different input voltages**
120/277 V input voltage or 347/480V input voltage
- **Dual Relays**

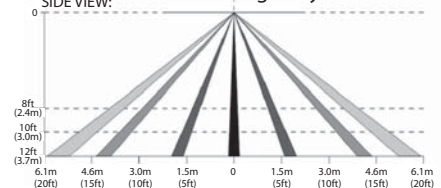
Accessories

- LBL: Low bay lens
- HBL: High bay lens
- AL1: Center aisle lens
- AL2: End of aisle lens
- EM1: Extended module

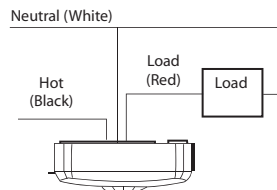
Low bay lens



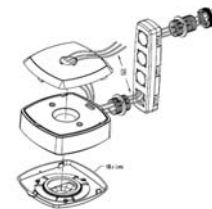
SIDE VIEW: High bay lens



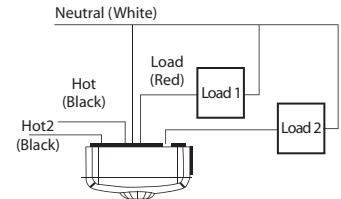
Detection patterns



Single relay wiring diagram



Installation diagram



Dual relays wiring diagram

Catalog No.	Description	Voltage	Coverage
PSC-HB-I-FM-100	PIR basic	120/277VAC	0-800W ballast @ 120V, 0-1200W ballast @ 277V
PSC-HB-I-FM-110	PIR w/photocell	120/277VAC	0-800W ballast @ 120V, 0-1200W ballast @ 277V
PSC-HB-I-FM-100D	PIR basic; dual load	120/277VAC	0-800W ballast @ 120V, 0-1200W ballast @ 277V
PSC-HB-I-FM-110D	PIR w/photocell; dual load	120/277VAC	0-800W ballast @ 120V, 0-1200W ballast @ 277V
PSC-HB-I-FM-100W	PIR basic; wet location	120/277VAC	0-800W ballast @ 120V, 0-1200W ballast @ 277V
PSC-HB-I-FM-110W	PIR w/ photocell; wet location	120/277VAC	0-800W ballast @ 120V, 0-1200W ballast @ 277V
PSC-HB-I-FM-100DW	PIR basic; dual load; wet location	120/277VAC	0-800W ballast @ 120V, 0-1200W ballast @ 277V
PSC-HB-I-FM-110DW	PIR w/photocell; dual load; wet location	120/277VAC	0-800W ballast @ 120V, 0-1200W ballast @ 277V

MICROWAVE OCCUPANCY SENSOR

OVERVIEW

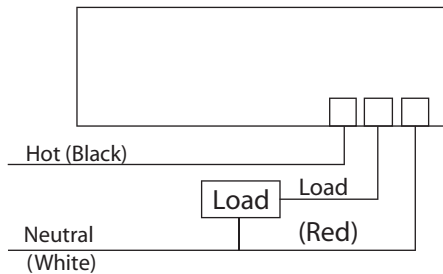
The PSC-ID-M-FM series of Doppler Occupancy sensors are line voltage sensors that turn the lights on or off depending on occupancy. It uses the electromagnetic wave with Doppler effect to detect motion. Since the electromagnetic wave can see through low intensity material, the Doppler occupancy sensor can be used behind light fixture's lens and hidden from view.

SENSOR OPERATION

The movements of a room's occupants can be sensed by means of the Doppler Effect (i.e., by comparing the frequency changes between the transmitted electromagnetic wave and return wave). When motion is detected, the sensor will turn on the load. With daylight sensor, the light won't be turned on unless the ambient light is lower than the setup value.

APPLICATIONS

The PSC-ID-M-FM series occupancy sensor can even function behind wood or plastic covers. It has superior detection in hard surfaced areas such as stairwells. For best performance, it should be mounted at 2-3m height for wall mounting and 2.5-4m for ceiling mounts. Depending on mounting method, the sensor will have different sensing patterns.



LUX:	Range (SENS):	Time Delay:
1	2 3	4 5 6
↓ Daylight	↓↓ 5-7 m	↓↓↓ 5 sec (test)
↑ Night	↓↑ 4-6 m	↓↓↓ ↑ 30 sec
	↑↓ 2-4 m	↑↑↑ ↓ 1 min
	↑↑ 1-2 m	↑↑↑ ↑ 3 min
		↑↑↑ ↓ 5 min
		↑↑↑ ↓ 10 min
		↑↑↑ ↓ 20 min
		↑↑↑ ↓ 30 min

↓ : off
↑ : on



SPECIFICATIONS

FEATURES

- Can be mounted behind low density fixture material
- Can be mounted hidden from view
- Comes with time delay and sensitivity control
- Simple line voltage connection without power pack requirement
- Photocell for daylight harvesting
- Universal input voltage
- Ceiling mount: sense up to 7m
- Wall mount: sense up to 12m

PHYSICAL SPECS

- Size 3-1/8"H x 1-3/4"W x 1 1-13/16"D
- Weight: 2.2 oz
- Color: White

ELECTRICAL SPEC

- Input Voltage: 120/277VAC, 50/60 Hz
- Electrical Loads:
800VA@120VAC, 6.7A Tungsten
400VA@120VAC, 3.4A Ballast
600VA@277VAC, 2.2A Ballast

ENVIRONMENTAL SPEC

- Operating Temp:
14° to 160°F (-10° to 60°C)
- Storage Temp
14° to 160°F (-10° to 60°C)
- Relative Humidity:
20 to 90% non-condensing

Catalog No.	Description	Voltage	Coverage
PCS-ID-M-FM-500	5.8Ghz microwave occupancy sensor	120/277VAC	800VA@120VAC, 6.7A Tungsten 400VA@120VAC, 3.4A Ballast 600VA@277VAC, 2.2A Ballast



MCWONG

McWong International, Inc

1921 Arena Blvd
Sacramento, California 95834
USA

Tel: 916-371-8080
Fax: 916-371-6666

www.McWonginc.com