Occupancy & Vacancy Sensors & Timers

Pass & Seymour

legrand

Occupancy & Vacancy Sensors & Timers make saving energy and saving money easy.

- Occupancy sensors turn lights on when you enter a room and save energy by automatically turning them off when room is unoccupied.

- Vacancy sensors save more energy by requiring anyone entering the room to manually turn on the lights. When the room is unoccupied, the lights will turn off.

- Using occupancy and vacancy sensors may contribute to LEED certification and help make buildings sustainable.

Pass & Seymour Sensors and Timers help meet energy codes. They are convenient, easy-to-install, and compatible with all standard types of lighting.

Sensors add to the comfort, safety and security of the people who occupy the building.

Timers turn loads off when no longer needed.

TITLE 24 ENERGY SAVER

U.S. GREEN BUILDING COUNCIL MEMBER

Index

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Occupancy & Vacancy Sensors & Timers
Technology

Passive Infrared Sensors (PIR)

Using a patented fresnel lens which minimizes optical aberrations, each Pass & Seymour/ Legrand PIR sensor breaks its coverage area into zones. Upon detecting an infrared energy change within a zone, one of the elements in the dual-element pyroelectric sensing device of an occupancy sensor generates a positive pulse. Within milliseconds, the other element produces a negative pulse and the lights are turned on. Vacancy sensors turn lights off when the room is vacant for a period of time, or when there is no infrared energy detected within a zone.

Passive infrared sensors are unable to detect occupancy around barriers, and are more effective when sensing movement across their field of sight rather than towards or away from it.

All Pass & Seymour/Legrand PIR occupancy sensors feature:
- Patented fresnel lenses with multi-segment design
- Dual-element pyroelectric sensors
- Low-profile design
- Daylight filter systems
- Adjustable settings for time and sensitivity
- Custom Detection Signature Analysis for high immunity to RFI and EMI, and reliability
- Self-adaptive technology is available on some models

Ultrasonic Sensors

Ultrasonic sensors use a multi-directional transmitter/receiver system to broadcast ultrasonic sound waves generated by a quartz crystal oscillator, and then measure the amount of time it takes the waves to return. Movement within the area results in the sound waves returning to the sensor at a slower or faster rate, and thus occupancy is detected.

Ultrasonic sensors broadcast in three dimensions, and are therefore able to detect smaller movements than PIR sensors. Proper placement of the sensors is essential as sound waves can escape through open doorways, resulting in false triggering.

While Pass & Seymour/Legrand ultrasonic sensors use special circuitry to filter out air-flow movement caused by HVAC equipment or fans, sensors should be kept away from breezy areas. Also, heavy carpeting and other sound-absorbing materials used in the construction of a room will reduce coverage.

Pass & Seymour/Legrand ultrasonic occupancy sensor features:
- Temperature- and humidity-resistant tuned receivers
- Signal Processing Circuitry
- Solid-state, crystal-controlled transmitter
- Adjustable controls for time and sensitivity

Dual Technology

Dual Technology sensors combine PIR and Ultrasonic sensing in one device. This minimizes false ONs and nuisance OFFs. Sensitivity adjustments and user selectable operational characteristics make dual technology sensors the most versatile, even in the most difficult installations.

Use dual technology sensors for the most demanding sensor applications. Odd shaped rooms, lots of partitions, and changing floor plans can be handled best by dual technology sensors.

Applications

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| P&S Model	Catalog Page #	Best Suited For:
Residential Occupancy Sensors		
RW500U	M-5	Storage rooms, walk-in closets, pantries, garage where no neutral is available
RWU600U	M-5	Storage rooms, walk-in closets, pantries, garage where a neutral is available
Residential Vacancy Sensors (T24 Compliant)		
RW500B	M-4	Bedrooms, basements bathrooms, laundry rooms, where no neutral is available
RWU600B	M-4	Bedrooms, basements bathrooms, laundry rooms, where a neutral is available
3-Way Residential Occupancy/Vacancy Sensor (T24 Compliant)		
RW3U600	M-6	Any room/hall with multiple entrances — allows manual ON/OFF control from both locations. Can be switched between occupancy and vacancy.
Residential Occupancy/Vacancy Sensor with Dimmer		
RWDU500	M-7	Any room where adjustable light level is desired
Commercial Passive Infrared (PIR) Wall Box Sensors		
WSP200	M-8	Small offices, closets, utility rooms with no partitions or obstructions
OS300S	M-9	Small offices, closets, small conference rooms with no partitions or obstructions
OSR300S	M-10	Small rooms with two individually-controlled loads or bi-level lighting with no partitions or obstructions
Commercial Passive Infrared (PIR) Ceiling Sensors		
CS500	M-12	Open offices, lunch, utility, storage, and computer rooms with no partitions or obstructions
CS1200	M-12	Larger rooms, up to 1200 sq. ft., with open floor plans, no partitions or obstructions
Commercial Passive Infrared (PIR) Wall or Ceiling Mount Sensors		
HS1001	M-11	Hallways, or aisles
WA1001	M-11	Entrances, vestibules, classrooms, for wide-angle applications
Commercial Ultrasonic Ceiling Mount Sensors		
CSU600	M-13	Offices, computer, meeting, copy, and restrooms
CSU1100	M-13	Offices, lunch, break and classrooms, restrooms, and conference rooms
CSU2200	M-13	Offices, lunch, break and classrooms, restrooms, conference rooms, halls, storage areas
Commercial Dual Technology Sensors		
CSD1000	M-14	Meeting, conference and classrooms, restrooms, dressing rooms, libraries, interview rooms, testing areas, lunch and break rooms
Timers		
RT1	M-17	Closets, bathroom fans, exhaust fans, heat lamps, bedrooms
RT12	M-18	Garages, basements, laundry rooms, fans, motors, landscape lights
RT24	M-18	Exterior lights, landscape lighting, security lighting, holiday lighting
97015, 30, 60	M-19	Bathroom fans, heat lamps, guest rooms
97115, 30, 60	M-19	Bathroom fans, heat lamps, guest rooms where a hold function is desired
97352	M-19	Dual control for bathroom light and fan

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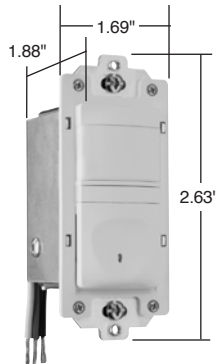
Occupancy & Vacancy Sensors & Timers
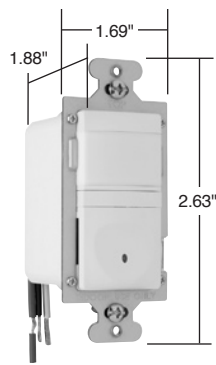
Occupancy & Vacancy Sensors & Timers
Residential Vacancy Sensors
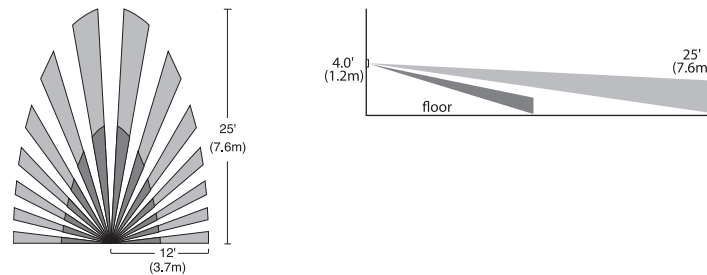Passive Infrared (PIR)

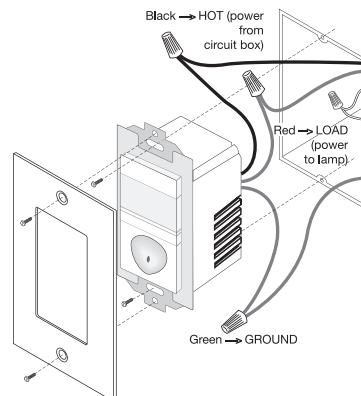**TITLE 24 ENERGY SAVER**

Features

- California Title 24 compliant.
- Replaces a standard light or fan single pole switch.
- Lighted switch for visibility in darkened rooms.
- Manual-ON operation.
- Fixed 30-minute time delay, no adjustment necessary.
- Low-profile styling with uniform color-matched lens and device.
- Coverage: 180°, max. 600 ft.^{2} (56m^2).

- cULus listed.
- 5-year warranty.

RW500B only
- Incandescent.

RWU600B only
- Load: Incandescent, fluorescent, compact fluorescent (CFL), magnetic low-voltage (MLV) and electronic low-voltage (ELV), 1/6 hp.

1.69"
1.88"
2.63"

RW500BLACC4

NEW

Catalog Number	Description	Voltage	Load	Auto ON	Manual ON	Selectable Auto/Man. ON	Color
Single Pole Vacancy Sensors							
RW500BICC4	No neutral required, ideal for bedrooms and baths	120VAC 60 Hz	25-500W Incandescent	No	Yes	No	Ivory
RW500BWCC4				No	Yes	No	White
RW500BBKCC4				No	Yes	No	Black
RW500BLACC4				No	Yes	No	Lt. Almond
RWU600BICC4	Neutral required, ideal for bedrooms and baths	120VAC 60 Hz	0-600W All	No	Yes	No	Ivory
RWU600BWCC4				No	Yes	No	White
RWU600BBKCC4				No	Yes	No	Black
RWU600BLACC4				No	Yes	No	Lt. Almond

1.69"
1.88"
2.63"

RWU600BLACC4

Coverage

25'
(7.6m)
12'
(3.7m)

4.0'
(1.2m)
floor
25'
(7.6m)

RW500B Wiring

Black → HOT (power from circuit box)
Red → LOAD (power to lamp)
Green → GROUND

Wiring for RW500B does not require a neutral.

RWU600B Wiring

Red → LOAD (power to lamp or fan)
Black → HOT (power from circuit box)
White → NEUTRAL
Green → GROUND Terminal
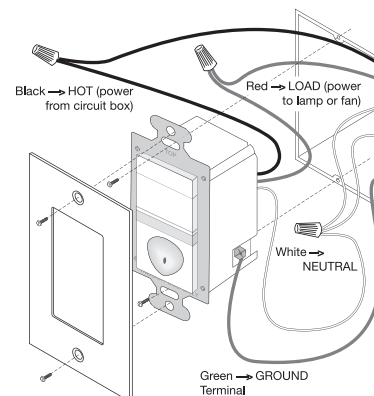
Wiring for RWU600B requires a neutral.

All devices listed on this page conform to NEMA WD-1 and WD-6.

Residential Vacancy Sensors

Occupancy & Vacancy Sensors & Timers
Residential Occupancy Sensors
Passive Infrared (PIR)

Pass & Seymour

L-1 legrand

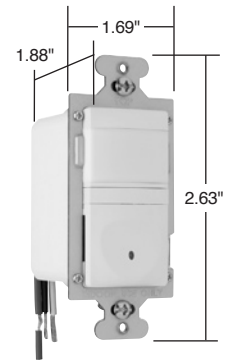## Features

- Replaces a standard light or fan single pole switch.
- Lighted switch for visibility in darkened rooms.
- Automatic-ON operation.
- Fixed five-minute time delay.
- Low-profile styling with uniform color-matched lens and device.
- Coverage: 180°, max. 600 ft.² (56m²)

- cULus listed.
- 5-year warranty.
- Works with most common residential lighting types

RWU600U only
- Load: Incandescent, fluorescent, compact fluorescent (CFL), magnetic low-voltage (MLV) and electronic low-voltage (ELV), 1/6 hp
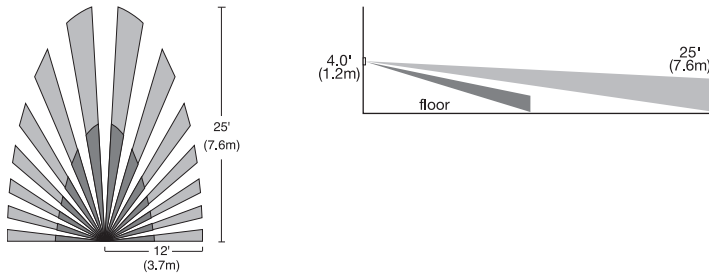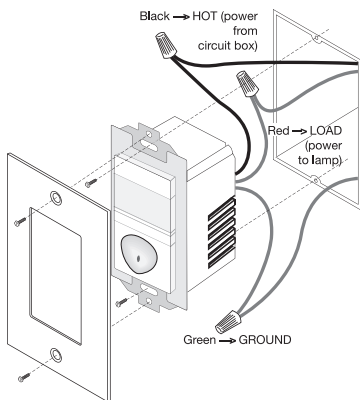
NEW

Catalog Number	Description	Voltage	Load	Auto ON	Manual ON	Selectable Auto/Man. ON	Color
Single Pole Occupancy Sensors							
RW500UICC4	No neutral required, ideal for storage and utility rooms	120VAC 60 Hz	25-500W Incandescent	Yes	No	No	Ivory
RW500UWCC4				Yes	No	No	White
RW500UBKCC4				Yes	No	No	Black
RW500ULACC4				Yes	No	No	Lt. Almond
RWU600UICC4	Neutral required, controls most types of lighting, ideal for storage & utility rooms	120VAC 60 Hz	0-600W All	Yes	No	No	Ivory
RWU600UWCC4				Yes	No	No	White
RWU600UBKCC4				Yes	No	No	Black
RWU600ULACC4				Yes	No	No	Lt. Almond

1.69"
1.88"
2.63"

RW500ULACC4

1.69"
1.88"
2.63"

RWU600ULACC4

Coverage

25' (7.6m)
12' (3.7m)

4.0' (1.2m)
floor
25' (7.6m)

RW500U Wiring

Black → HOT (power from circuit box)
Red → LOAD (power to lamp)
Green → GROUND

Wiring for RW500U does not require a neutral.

RWU600U Wiring

Black -> HOT (power from circuit box)
Red -> LOAD (power to lamp or fan)
White -> NEUTRAL
Green -> GROUND Terminal
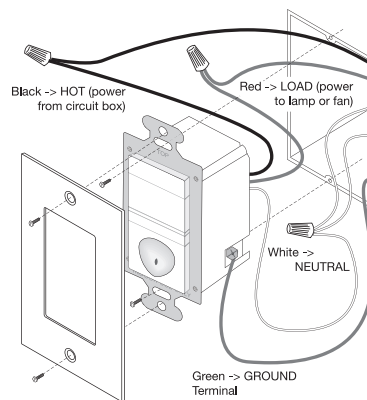
Wiring for RWU600U requires a neutral.

All devices listed on this page conform to NEMA WD-1 and WD-6.

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Occupancy & Vacancy Sensors & Timers
Residential Occupancy/ Vacancy Sensors
3-Way Passive Infrared (PIR)

RW3U600W shown with SWP26W

2.8" **1.5"** **4.8"**

RW3U600W

Applications
The RW3U600 has the flexibility to work in a variety of applications including hallways, stairways, bathrooms, living and dining rooms, and other areas with multiple entries. The RW3U600 vacancy sensor allows true multi-way operation with automatic ON/OFF control.
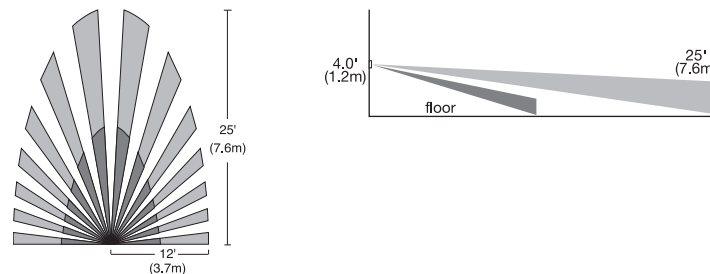
Features
- California Title 24 compliant.
- Occupancy-based control plus multi-way operation.
- Two or more RW3U600s connected together will allow enhanced coverage of the controlled space.
- Works with most common residential lighting types.
- Adjustable time delay of 15 seconds to 30 minutes.
- Light level sensing prevents automatic ON of lights when adequate daylight exists.
- Replaces three-way or four-way switches when used with other RW3U600s.
- Lighted switch for visibility in darkened rooms.
- Manual- or automatic-ON operation.
- Adjustable light level setting of 10 to 150 fc (100 to 1500 lux).
- Coverage: 180°, max. 600 ft.^{2} (56m^2).
- cULus listed.
- 5-year warranty.
- Load: Incandescent, fluorescent, compact fluorescent (CFL), magnetic low-voltage (MLV) and electronic low-voltage (ELV), 1/6 hp
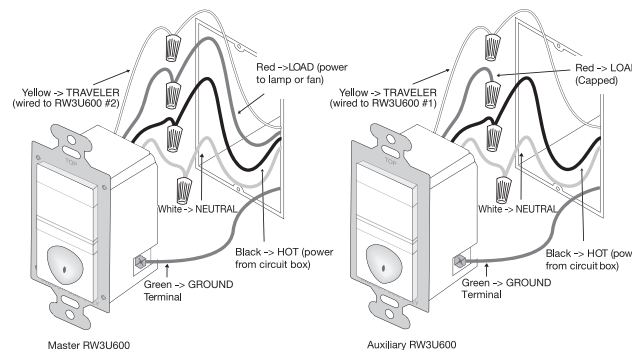
Catalog Number	Description	Voltage	Load	Auto ON	Manual ON	Selectable Auto/Man. ON	Color	Light Level Sensing
Single Pole/3-Way Occupancy/Vacancy Sensors*								
RW3U600I	Light-level sensing for	120VAC 60Hz	0-600W All	Yes	Yes	Yes	Ivory	Yes
RW3U600W	optimum operation –			Yes	Yes	Yes	White	Yes
RW3U600BK	ideal for rooms with			Yes	Yes	Yes	Black	Yes
RW3U600LA	multiple entrances			Yes	Yes	Yes	Lt. Almond	Yes

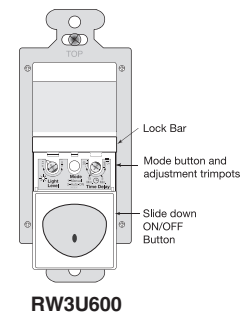*In multi-way circuits, unit operates properly when used with other RW3U600 sensors only.

Coverage

25' (7.6m), 12' (3.7m), 4.0' (1.2m), 25' (7.6m), floor

RW3U600 Wiring for 3-Way Operation

Master RW3U600 — Auxiliary RW3U600

Product Controls

Lock Bar, Mode button and adjustment trimpots, Slide down ON/OFF Button

RW3U600

All devices listed on this page conform to NEMA WD-1 and WD-6.

Occupancy & Vacancy Sensors & Timers
Residential Occupancy/ Vacancy Sensors

Passive Infrared (PIR) with Dimmer

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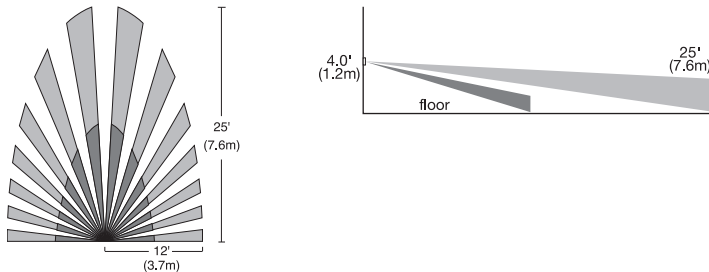**legrand**

TITLE **24** ENERGY SAVER

Features

- California Title 24 compliant.
- Replaces standard single pole switch or incandescent dimmer.
- Low-profile styling with uniform color-matched lens and device.
- Lighted pushbutton for visibility in darkened rooms.
- Manual- or automatic-ON operation.
- Adjustable time delay from 15 seconds to 30 minutes.
- Soft start technology to prolong lamp life.

- Air gap isolation switch for safe relamping.
- If enabled, light level sensing prevents automatic-ON when adequate daylight exists.
- Adjustable light level setting from 10-150 fc (100-1500 lux) for daylight sensing.
- Operating conditions: 32°-104°F (0°-40°C), 95% RH, noncondensing.
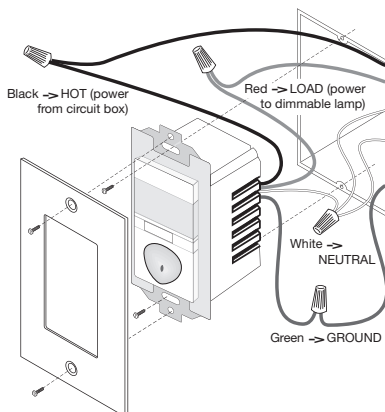- Coverage: 180°, max. 600 ft^2 (56 m^2).
- cULus listed.
- 5-year warranty.

1.73"
1.77"
2.67"
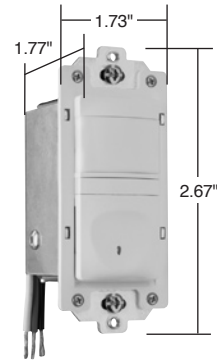
RWDU500W

Catalog Number	Description	Voltage	Load	Auto ON	Manual ON	Selectable Auto/Man. ON	Color
Occupancy/Vacancy Sensors with Preset Dimmers							
RWDU500I	Neutral required, ideal for living, dining and family rooms, master bathrooms and bedrooms	120VAC 60Hz	25-500 Incandescent	Yes	Yes	Yes	Ivory
RWDU500W				Yes	Yes	Yes	White
RWDU500BK				Yes	Yes	Yes	Black
RWDU500LA				Yes	Yes	Yes	Lt. Almond

Coverage

25' (7.6m)

12' (3.7m)

4.0' (1.2m)

floor

25' (7.6m)

RWDU500 Wiring

Black → HOT (power from circuit box)

Red → LOAD (power to dimmable lamp)
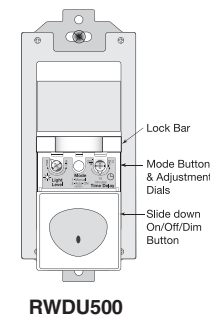
White → NEUTRAL

Green → GROUND

De-rating

When more that one dimmer is installed in a multi-gang box, it is necessary to reduce the maximum load on each dimmer.

- For an RWDU500 in either end position of a multi-gang box, reduce the maximum load by 50W.

- For an RWDU500 in a central position of a multi-gang box, reduce its maximum load by 100W. Mounting in a deep electrical box is recommended.
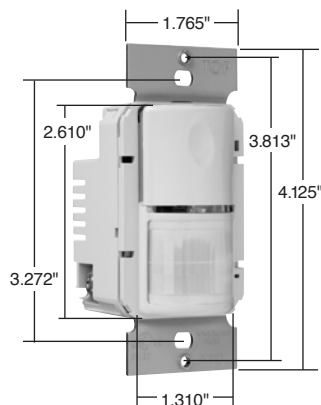
Product Controls

Lock Bar

Mode Button & Adjustment Dials

Slide down On/Off/Dim Button

RWDU500

All devices listed on this page conform to NEMA WD-1 and WD-6.

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Occupancy & Vacancy Sensors & Timers
Commercial Occupancy Sensors
Wall Box Passive Infrared (PIR)

1.765"

2.610"

3.813"

4.125"

3.272"

1.310"

WSP200LA

Features

- Detection Signature Analysis provides high immunity to RFI and EMI.
- Compact, decorator design replaces existing wall switch.
- Integrated light level sensor works from 10 to 150 footcandles.
- Compatible with all electronic and magnetic ballasts, PL lamp ballasts, compact fluorescent.
- Adjustable time delay of 30 seconds to 30 minutes.
- Dual 120/277VAC operation.

- 30% to 60% energy savings.
- Positive detection indicator.
- No minimum load requirement.
- Adjustable sensitivity from 20% to 100%.
- Patented voltage drop protection.
- Patented Zero Crossing Circuitry.
- 180° coverage of up to 900 sq. ft.
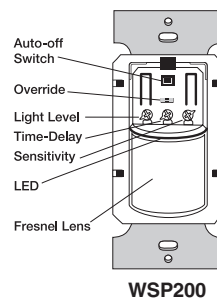- cULus listed.
- 5-year warranty.

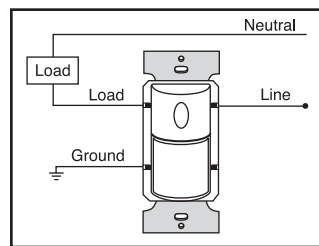| Catalog Number	Description	Voltage	Load	Color
Automatic Wall Switches – 3 Wire Technology				
WSP200I WSP200W WSP200GRY WSP200LA	PIR Occupancy Sensor	120/277VAC; 60 Hz	800W Max. at 120V 1200W Max. at 277V	Ivory White Gray Light Almond

Planning a Layout

The WSP200's 2-level lens provides superior coverage at desktop level by allowing the sensor to detect vertical as well as horizontal motion. Coverage shown is for walking motion. Under optimum conditions with a high level of activity and with no barriers or obstacles, coverage can reach a maximum of 900 square feet. Under a typical, desktop level of activity, when mounted at 4 feet, coverage is 300 square feet.

4.0'

floor

35'

35'

15'

12'

15'

PANEL

PANEL

PANEL

■ WSP200

18'

12'
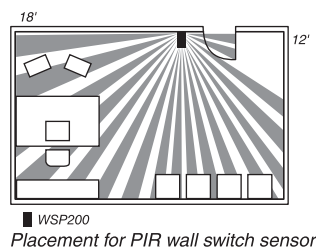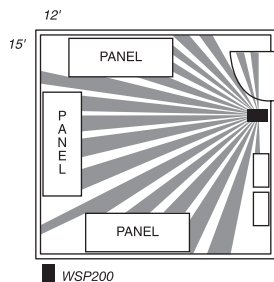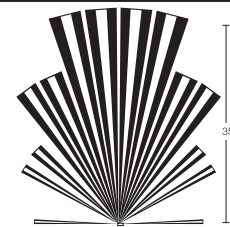
■ WSP200

Placement for PIR wall switch sensor

Auto-off Switch

Override

Light Level

Time-Delay

Sensitivity

LED

Fresnel Lens

Factory settings: 30 min. time delay, maximum light level and sensitivity

WSP200

Neutral

Load

Load

Line

Ground

Single Level Lighting
WSP200

Neutral

Load

Load

Load

Line

Ground
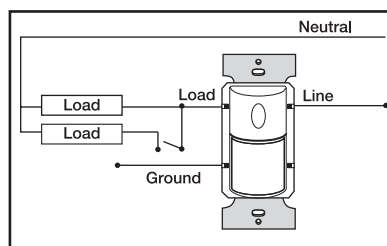
Manual Bi-level Lighting
WSP200

Technical Specifications on Page U-127.
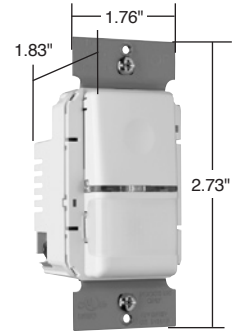All devices listed on this page conform to NEMA WD-1 and WD-6.

Occupancy & Vacancy Sensors & Timers
Commercial Occupancy/Vacancy Sensors
Wall Box Passive Infrared (PIR)
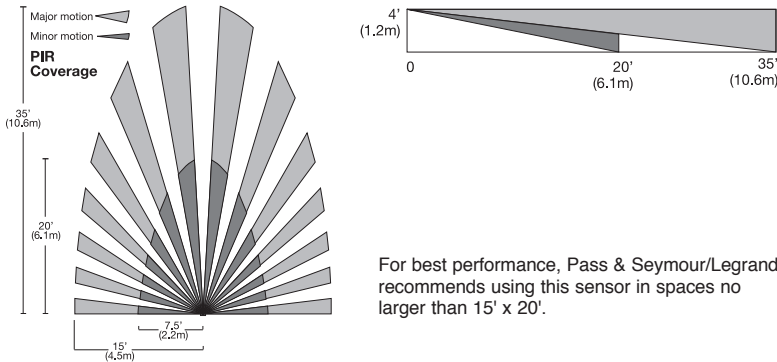
Pass & Seymour

legrand

TITLE 24 ENERGY SAVER

Features

- Detection signature processing eliminates false triggers and provides immunity to RFI and EMI.
- Zero-crossing for long relay life.
- Vandal-resistant lens combines precise coverage with durability.
- Choice of Auto-ON or Manual-ON operation.
- Auto adjustable time delays: automatic, fixed (5, 10, 15, 20, 25 or 30 minutes), walk-through, test-mode.
- Selectable time delay automatically adjusts for maximum savings.
- Walk-through mode turns lights off 3 minutes after the area is initially occupied – ideal for brief visits such as mail delivery.
- Selectable test mode allows quick and easy adjustments.
- Selectable audible alert for impending shutoff.

- In AUTO-ON mode, if the sensor is manually turned OFF, AUTO-ON will not enable until no motion is detected for 5 minutes. This prevents the light from turning ON when it was intended they remain OFF. Ideal for presentations.
- LED indicates occupancy detection.
- Built-in light level sensing with simple, one-step setup.
- Override mode allows sensor to operate as a service switch in the unlikely event of a failure.
- NEMA WD 7 guideline utilized for coverage testing.
- Sensitivity adjustment: PIR (high/low).
- Coverage: 180°, up to 1050 sq. ft.; major motion 35' x 30'; minor motion 20' x 15'.
- cULus listed.
- 5-year warranty.
- Load: Incandescent, fluorescent, compact fluorescent (CFL), magnetic low-voltage (MLV) and electronic low-voltage (ELV), 1/6 hp

1.76" 1.83" 2.73"

OS300SW

Catalog Number	Description	Rating	Load	Occupant Warning Before OFF	Selectable Auto/Man. ON	Color
Single-Pole Occupancy/Vacancy Sensors						
OS300SI	Self-adaptive design remembers ON/OFF cycles	120/230/277VAC; 50/60 Hz. @ 120VAC, 0-800 W ballast or tungsten, 1/6 hp. @ 230/277VAC, 0-1200 W ballast.	All	Yes	Yes	Ivory
OS300SW				Yes	Yes	White
OS300SGRY				Yes	Yes	Gray
OS300SLA				Yes	Yes	Lt. Almond

NEW

Coverage

Major motion
Minor motion
PIR Coverage

35' (10.6m)
20' (6.1m)
7.5' (2.2m)
15' (4.5m)

4' (1.2m)
0   20' (6.1m)   35' (10.6m)

For best performance, Pass & Seymour/Legrand recommends using this sensor in spaces no larger than 15' x 20'.

Product Controls

- ON/OFF Button
- DIP Switches
- Detection LED
- PIR Lens

OS300S
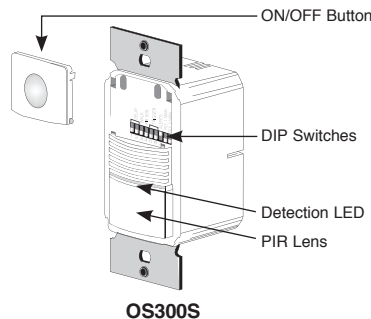
DIP Switch Settings

DIP Switch #s:	1	2	3
Time Delay			
SmartSet/Test	↓	↓	↓ ◄
5 minutes	↓	↓	↑
10 minutes	↓	↑	↓
15 minutes	↓	↑	↑
20 minutes	↑	↓	↓
25 minutes	↑	↓	↑
30 minutes	↑	↑	↓
⊘ override	↑	↑	↑

DIP Switch #	5
ON Mode	
Auto On	↓ ◄
Manual On	↑

DIP Switch #	6
Sensitivity	
High	↓ ◄
Low, 50%	↑

DIP Switch #	7
Audible Alerts	
Disabled	↓
Enabled	↑ ◄

DIP Switch #	8
Visible Alerts	
Disabled	↓ ◄
Enabled	↑

⊘ Bypass occupancy & light level functions. Load is manually controlled with WS300 button.

DIP Switch #	4
Walk Through	
Disabled	↓ ◄
Enabled	↑

On Mode
Time Delay   Audible Alerts
ON
FACTORY PRESETS
1 2 3 4 5 6 7 8
Walk Through   Visible Alerts
Sensitivity

Technical Specifications on Page U-127.

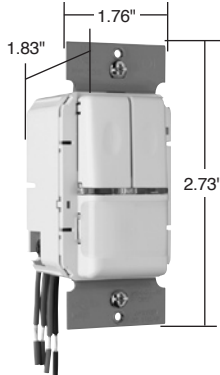All devices listed on this page conform to NEMA WD-1 and WD-6.

◄ Factory Settings   ↑=ON ↓=OFF

Occupancy & Vacancy Sensors & Timers
Commercial Occupancy/ Vacancy Sensors
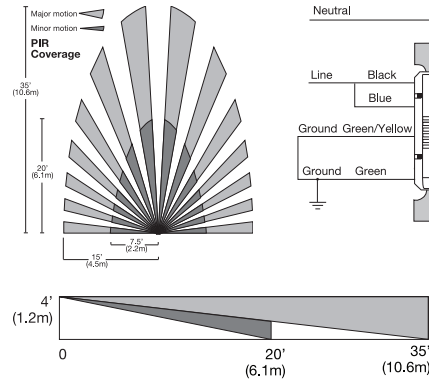
Bi-Level Wall Box Passive Infrared (PIR)

TITLE 24 ENERGY SAVER

1.76"
1.83"
2.73"

OSR300SW

Features

- Detection signature processing eliminates false triggers and provides immunity to RFI and EMI.
- Zero-crossing for long relay life.
- Vandal-resistant lens combines precise coverage with durability.
- Choice of Auto-ON or Manual-ON operation, selectable for each relay.
- Auto adjustable time delays: automatic, fixed (5, 10, 15, 20, 25 or 30 minutes), walk-through, test-mode.
- Selectable time delay automatically adjusts for maximum savings.
- Selectable walk-through mode turns lights off three minutes after the room is initially occupied if no motion is detected after the first 30 seconds.
- Selectable test mode allows quick and easy adjustments.
- Selectable audible alert for impending shutoff.

- In AUTO-ON mode, if the sensor is manually turned OFF, AUTO-ON will not enable until no motion is detected for 5 minutes. This prevents the light from turning ON when it was intended they remain OFF. Ideal for presentations.
- LED indicates occupancy detection.
- Built-in light level sensing with simple, one-step setup.
- Override mode allows sensor to operate as a service switch in the unlikely event of a failure.
- NEMA WD 7 guideline utilized for coverage testing.
- Sensitivity adjustment: PIR (high/low).
- Coverage: 180°, up to 1050 sq. ft.; major motion 35' x 30'; minor motion 20' x 15'.
- cULus listed.
- 5-year warranty.
- Load: Incandescent, fluorescent, compact fluorescent (CFL), magnetic low-voltage (MLV) and electronic low-voltage (ELV), 1/6 hp.
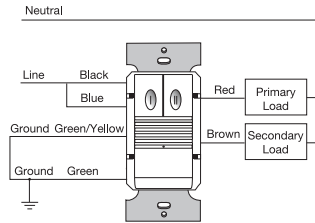
NEW

Catalog Number	Description	Rating	Load	Occupant Warning Before OFF	Selectable Auto/Man. ON	Color
Single–Pole Dual–Relay Occupancy/Vacancy Sensors						
OSR300SI	Operates both circuits of a bi-level lighting system	120/230/277VAC; 50/60 Hz. @ 120VAC, 0-800 W ballast or tungsten, 1/6 hp. @ 230/277VAC, 0-1200 W ballast.	All	Yes	Yes	Ivory
OSR300SW				Yes	Yes	White
OSR300SGRY				Yes	Yes	Gray
OSR300SLA				Yes	Yes	Lt. Almond

Coverage

Major motion
Minor motion
PIR Coverage

35' (10.6m)
20' (6.1m)
15' (4.5m)
7.5' (2.2m)

4' (1.2m)
0
20' (6.1m)
35' (10.6m)

OSR300S Bi-Level Wiring

Neutral
Line   Black
Blue
Ground Green/Yellow
Ground   Green
Red   Primary Load
Brown   Secondary Load

OSR300S Two Circuit Level Wiring

Neutral
Line 1 Black
Line 2 Blue
Ground Green/Yellow
Ground Green
Neutral
Red   Primary Load
Brown   Secondary Load
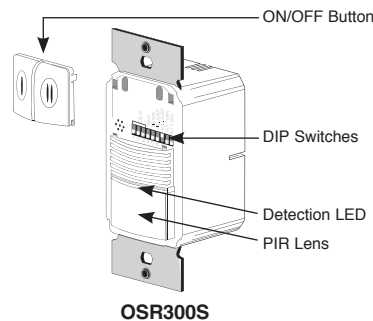
For best performance, Pass & Seymour/Legrand recommends using this sensor in spaces no larger than 15' x 20'.

Product Controls

ON/OFF Button
DIP Switches
Detection LED
PIR Lens

OSR300S

DIP Switch Settings

DIP Switch #s:	1	2	3
Time Delay			
SmartSet/Test	↓	↓	↓ ◄
5 minutes	↓	↓	↑
10 minutes	↓	↑	↓
10 minutes	↓	↑	↑
15 minutes	↑	↓	↓
15 minutes	↑	↓	↑
20 minutes	↑	↑	↑
30 minutes	↑	↑	↓

DIP Switch #	4
Delay Relay 2 Disconnect	
Use Relay 1 Delay	↓ ◄
Add 10 minutes*	↑

*10 seconds in Test mode

DIP Switch #	5
Relay 1 ON Mode	
Auto On	↓ ◄
Manual On	↑

DIP Switch #	6
Relay 2 ON Mode	
Auto On	↓ ◄
Manual On	↑

DIP Switch #	7
Audible Alerts	
Disabled	↓
Enabled	↑ ◄

DIP Switch #	8
Sensitivity	
High/SmartSet	↓ ◄
Low	↑

◄ Factory Settings
Walk-Through Mode enabled

FACTORY PRESETS
Relay 1 On Mode
Time Delay   Audible Alerts
ON
1 2 3 4 5 6 7 8
Delay Relay 2   Sensitivity
Disconnect
Relay 2 On Mode

↑=ON ↓=OFF

Technical Specifications on Page U-127.
All devices listed on this page conform to NEMA WD-1 and WD-6.

Pass & Seymour
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Occupancy & Vacancy Sensors & Timers
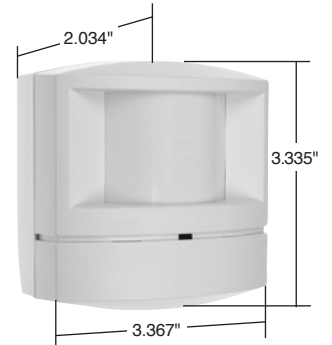# Commercial Occupancy Sensors
Wall or Ceiling Mount Passive Infrared (PIR)
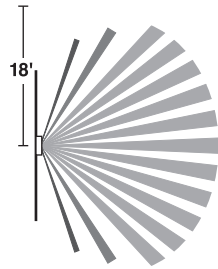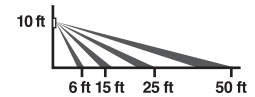
Pass & Seymour

legrand

Features – WA1001 and HS1001

- Detection Signature Analysis provides high immunity to RFI and EMI.
- 2 coverage patterns to choose from.
- Wall mount or ceiling mount.
- Adjustable sensitivity settings.
- Digital time delay from 15 seconds to 30 minutes.
- Dual-element, temperature-compensated pyroelectric sensor.

- LED occupancy detection indicator.
- Compatible with 120VAC or 277VAC, 60 Hz lighting systems.
- Class 2 low-voltage device.
- Positive detection indicator.
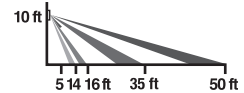- cULus listed.
- 5-year warranty.

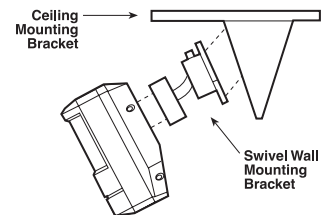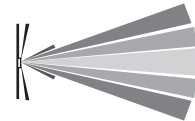| Catalog Number	Description	Voltage	Current Draw	Coverage	Color
Wall/Ceiling Mount Sensors					
WA1001	Wide Angle PIR Occupancy Sensor	24VDC	8mA	Up to 1200 sq. ft.	White
HS1001	Long Range PIR Occupancy Sensor	24VDC	8mA	Up to 50 linear ft.	White

Reference Page M-15 for Power Packs.

2.034"
3.335"
3.367"

WA1001
HS1001

Wide Angle
WA1001

10 ft
6 ft   15 ft   25 ft   50 ft

18'

WA1001

Large Conference Room
42'
34'
WA1001

Lunch/Break Rooms
28'
28'
WA1001

Conference Room
30'
25'
WA1001

Break Room
15'
12'
WA1001

HS1001

Hallways
Key areas to cover
HS1001
The key areas to cover well in hallways are entrances and corners.

Hallway
HS1001

10 ft
5 14 16 ft   35 ft   50 ft

Detection of motion toward the sensor begins at a max. of 50'. Reliable detection occurs at 35' to 40'.

Wiring Diagram

White / Neutral
Red (Line)
N
White
Power Pack
Hot
Black
Red (Load)
Switch
Lighting Load
Red
Black
Blue
Add-A-Relay
Blue   Control Output 24VDC
Black   Control Return
Red   +24VDC
Blue
Black
LED
Hot
OFF switch
Lighting Load
Sensitivity
Red (load)
Time-Delay Setting
Mounting Screw
N
on 1 2 3 4 5 off

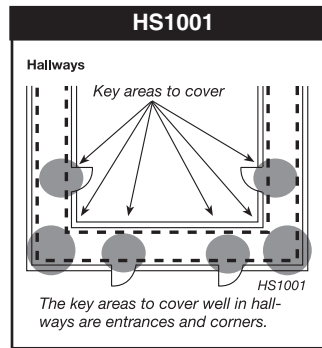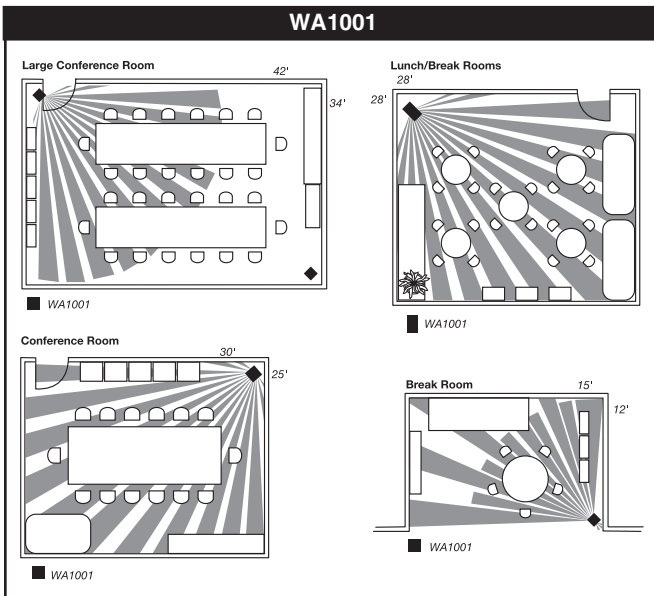**Ceiling Mounting Bracket**

Swivel Wall Mounting Bracket

For best results, the bracket should be used in every installation to allow for greatest flexibility of adjustment. Brackets are included with each unit.
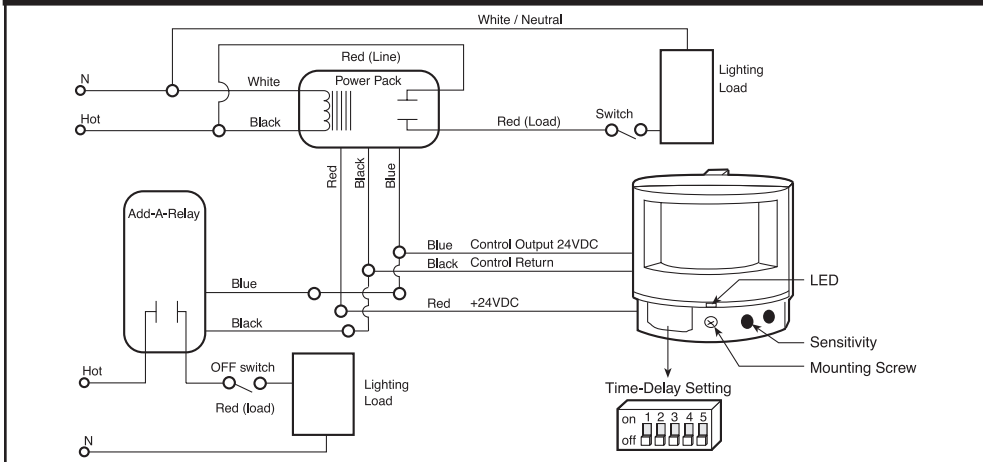
All devices listed on this page conform to NEMA WD-1 and WD-6.

Technical Specifications on Page U-128 and U-129.

Pass & Seymour

L'i legrand

Occupancy & Vacancy Sensors & Timers
Commercial Occupancy Sensors
Ceiling Mount Passive Infrared (PIR)
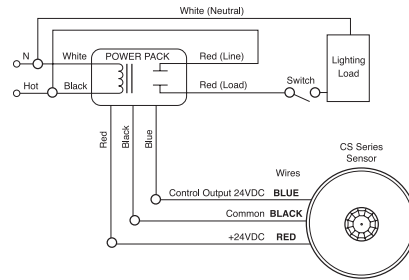
2.2"

3.3"

**CS500
CS1200**

Features

- ASIC technology reduces components and enhances reliability.
- Pulse count processing eliminates false offs without reducing sensitivity.
- Detection signature analysis eliminates false triggers and proves immunity to RFI and EMI.
- Low-profile design ensures a clean and uncluttered ceiling appearance.
- User-adjustable time delay from 15 seconds to 30 minutes by two minute increments.

- Sensitivity is programmed through a DIP switch and has four settings from minimum to maximum.
- Dual-element, temperature compensated pyro-electric sensor.
- Mounting options: ceiling tile or 3.0 inch round mudring.
- Units per power pack: up to 13.
- cULus listed.
- 5-year warranty.

Catalog Number	Description	Rating	Coverage	Override and Output Disable	Color
NEW **Low-Profile Ceiling Mount Sensors**					
CS500	PIR Occupancy Sensor	24VDC Input, requires Power Pack 11mA	360°, 500 sq. ft.	No	White
CS1200	PIR Occupancy Sensor		360°, 1200 sq. ft.	No	White

Reference Page M-15 for Power Packs.

CS500/CS1200 Wiring

White (Neutral)

N — White — POWER PACK — Red (Line)
Hot — Black — Red (Load) — Switch — Lighting Load

Red Black Blue

CS Series Sensor

Wires

Control Output 24VDC **BLUE**
Common **BLACK**
+24VDC **RED**

Mounting – CS1200

Ceilin
3-0" mud-ring hole
Ceiling attachment ring
Rear housing
Front housing

DIP Switch Settings

DIP Switch #	1	2	3	4	5	6
Time Delays						
15 seconds	●	●	●	●	●	●
2 minutes	–	–	●	●	●	●
4 minutes	–	●	–	●	●	●
6 minutes	–	–	–	●	●	●
8 minutes	–	●	●	–	●	●
10 minutes	–	–	●	–	●	●
12 minutes	–	●	–	–	●	●
14 minutes	–	–	–	–	●	●
16 minutes	–	●	●	●	–	●
18 minutes	–	–	●	●	–	●
▶ 20 minutes	–	●	–	●	–	●
22 minutes	–	–	–	●	–	●
24 minutes	–	●	●	–	–	●
26 minutes	–	–	●	–	–	●
28 minutes	–	●	–	–	–	●
30 minutes	–	–	–	–	–	●

DIP Switch #	7	8
Sensitivity		
Minimum	–	–
Medium Low	–	●
Medium High	●	–
▶ Maximum	●	●

● = ON   – = OFF
▶ = Factory Presets

Coverage

44 ft

Extended Range Lens (Standard) CS1200

8 ft
Typical desk-top level
22 ft 13 ft 7 ft 3 ft 0 3 ft 7 ft 13 ft 22 ft

24 ft

High Density Lens CS500

8 ft
Typical desk-top level
12 ft 9 ft 7 ft 5 ft 3 ft 0 3 ft 5 ft 7 ft 9 ft 12 ft
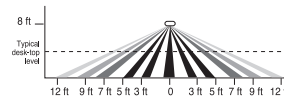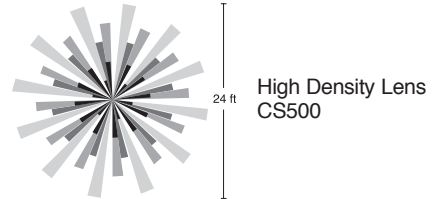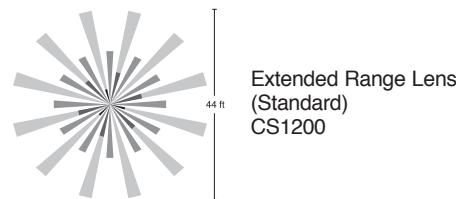
Technical Specifications on Page U-130.
All devices listed on this page conform to NEMA WD-1 and WD-6.

Occupancy & Vacancy Sensors & Timers
# Commercial Occupancy Sensors
Ultrasonic Ceiling Mount

Pass & Seymour

legrand

Features

- Advanced signal processing circuitry helps to eliminate false ONs.
- Utilizes advanced, omni-directional (360°), Doppler technology for reliable occupancy detection.
- Angled transmitter and receiver pairs help optimize sensitivity while eliminating unwanted detection from ceiling air movement.
- Digital DIP switch time delay (15 seconds to 30 minutes).

- LED indicates occupancy detection.
- Reliable solid-state construction.
- Temperature and humidity resistant 32 kHz receivers.
- Mounts to ceiling tiles or box.
- Units per power pack: up to 4.
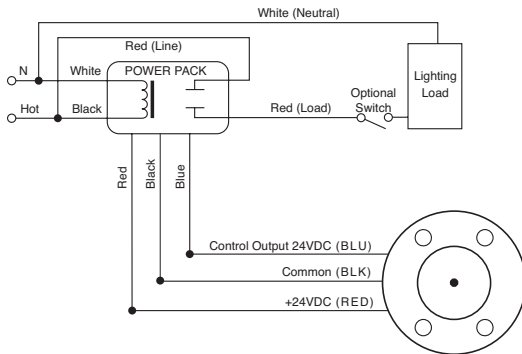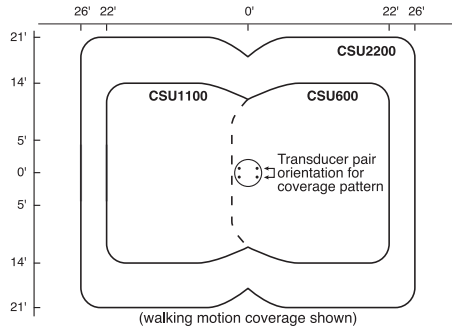- cULus listed.
- 5-year warranty.

1.5"
4.8"
CSU600
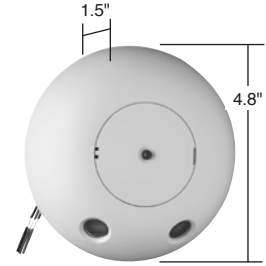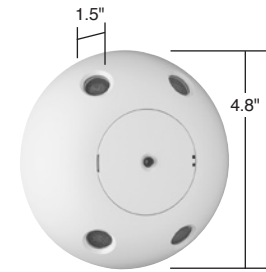
1.5"
4.8"
CSU1100
CSU2200

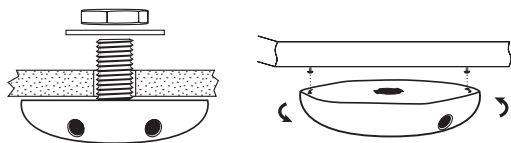| Catalog Number	Description	Rating	Coverage	Override and Output Disable	Color
Ultrasonic Ceiling Mount Sensors NEW					
CSU600	Ultrasonic Occupancy Sensor	24VDC Input, requires Power Pack 27mA	360°, 500 sq. ft. One-sided	Yes	White
CSU1100	Ultrasonic Occupancy Sensor	24VDC Input, requires Power Pack 30mA	360°, 1100 sq. ft. Two-sided	Yes	White
CSU2200	Ultrasonic Occupancy Sensor	24VDC Input, requires Power Pack 30mA	360°, 2200 sq. ft. Two-sided	Yes	White

Reference Page M-15 for Power Packs.

CSU600/CSU1100/CSU2200 Wiring

White (Neutral)
Red (Line)
N — White — POWER PACK
Hot — Black
Red (Load)
Optional Switch
Lighting Load
Red
Black
Blue
Control Output 24VDC (BLU)
Common (BLK)
+24VDC (RED)

Coverage

26' 22'   0'   22' 26'
21'
14'
5'
0'
5'
14'
21'

CSU2200
CSU1100   CSU600
Transducer pair orientation for coverage pattern

(walking motion coverage shown)

Mounting

Attached to a vibration-free surface. Mount the sensors with the receivers facing the area of coverage. Note: Place 4' away from supply ducts, 6' from horizontal discharge ducts, and 6" from power packs.

DIP Switch Settings

●=ON —=OFF		DIP Switch #					
Time Delay	1	2	3	4	5	6
15 seconds	●	–	–	–	–	–
2 minutes	–	●	–	–	–	–
4 minutes	–	–	●	–	–	–
6 minutes	–	●	●	–	–	–
8 minutes	–	–	–	●	–	–
10 minutes	–	●	–	●	–	–
12 minutes	–	–	●	●	–	–
14 minutes	–	●	●	●	–	–
*16 minutes	–	–	–	–	●	–
18 minutes	–	●	–	–	●	–
20 minutes	–	–	●	–	●	–
22 minutes	–	●	●	–	●	–
24 minutes	–	–	–	●	●	–
26 minutes	–	●	–	●	●	–
28 minutes	–	–	●	●	●	–
30 minutes	–	●	●	●	●	–
Output Disable	–	–	–	–	–	–
Override						●

* = factory preset

Technical Specifications on Page U-131.

All devices listed on this page conform to NEMA WD-1 and WD-6.

Pass & Seymour

Ln legrand

Occupancy & Vacancy Sensors & Timers
Commercial Occupancy Sensors
Dual Technology Ceiling Mount

1.02"

4.5"

CSD1000
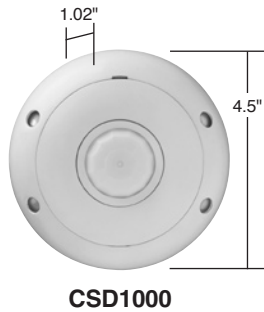
Features

- Advanced control logic based on RISC microcontroller provides:
  - Detection signature processing eliminates false triggers and provides immunity to RFI and EMI.
- Walk-through mode turns lights off three minutes after the area is initially occupied – ideal for brief visits such as mail delivery.
- Simple, one-step setup.
- Ultrasonic diffusion technology spreads coverage to a wider area (patented).
- LEDs indicate occupancy detection.
- Four occupancy logic options give users the ability to customize control to meet application needs.

- Ultrasonic frequency of 40 kHz.
- Time delays: automatic, fixed (5, 10, 15, 20, or 30 minutes), walk-through, test-mode.
- Sensitivity adjustment: reduce sensitivity (for PIR sensitivity); ultrasonic sensitivity is variable with trimpot
- Multi-level, 360° Fresnel lens for superior occupancy detection.
- Mounting options: ceiling tile; 4 square junction box with double gang mudring.
- Units per power pack: up to 4.
- cULus listed.
- 5-year warranty.

Catalog Number	Description	Rating	Coverage	Override and Output Disable	Color
Low-Profile Ceiling Mount Sensors					
CSD1000	Dual Technology Occupancy Sensor	24VDC Input, requires Power Pack 35mA	360°, 1000 sq. ft. Two-sided	Yes	White

NEW

CSD1000 Wiring

White (Neutral)

Red (Line)

POWER PACK

N / White

Hot / Black

Red (Load)

Optional Switch

Lighting Load

Red / Black / Blue

Control Output 24VDC (BLU)

Common (BLK)

+24VDC (RED)

Coverage

44 ft (13.4m)

40 ft x 40 ft (12.2m x 12.2m)

Mounting

Nut

Washer

7/8" (22mm) hole

Threaded Insert

Ceiling Tile

Screws: 103mm (4.1") apart

Space: 3mm/(1/8")

Ceiling

Rotate clockwise

DIP Switch Settings

Switch #

PIR Sensitivity	1
Minimum 30%	▬
Maximum 100%	● ◄

◄ = Factory Setting
● = ON
▬ = OFF
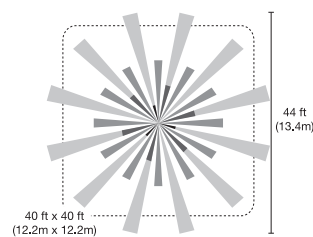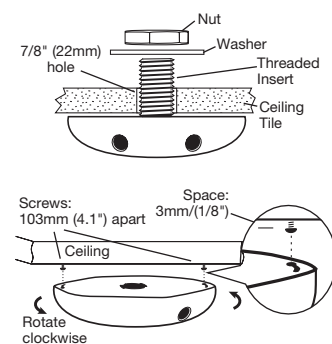
Occupancy Logic	Trigger	Initial Occupancy	Maintain Occupancy	Re-trigger	Switch # 2	3
	Standard	Both	Either	Either	▬	▬ ◄
	Option 1	Either	Either	Either	▬	●
	Option 2	PIR	Either	Either	●	▬
	Option 3	Both	Both	Both	●	●

	Switch #			
Time Delay	4	5	6	7
15 sec	●	●	●	●
2 min	▬	●	●	●
4 min	●	▬	●	●
6 min	▬	▬	●	●
8 min	●	●	▬	●
10 min	▬	●	▬	●
12 min	●	▬	▬	●
14 min	▬	▬	▬	●
16 min	●	●	●	▬
18 min	▬	●	●	▬ ◄
20 min	●	▬	●	▬
22 min	▬	▬	●	▬
24 min	●	●	▬	▬
26 min	▬	●	▬	▬
28 min	●	▬	▬	▬
30 min	▬	▬	▬	▬

Switch #

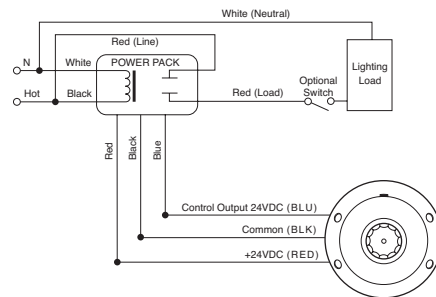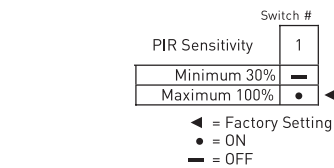| Override	8
On	●
Off	▬ ◄
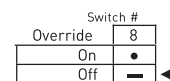
Technical Specifications on Page U-132.
All devices listed on this page conform to NEMA WD-1 and WD-6.

Occupancy & Vacancy Sensors & Timers
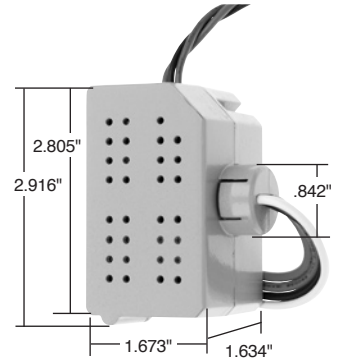# Power Packs & Add-A-Relay

Pass & Seymour

L-I legrand

A cost-effective way to power Pass & Seymour/Legrand® occupancy sensors.

Pass & Seymour/Legrand power packs consist of a transformer and high-current relay in one small unit. In addition to a primary high input, power packs have a secondary output of 24VDC, 100mA which provides operating power to sensors. Upon sensing motion or insufficient light, sensors electrically close an internal circuit and send 24VDC back to the power packs or Add-A-Relays that control lighting systems. Unlike power packs, Add-A-Relay does not have transformer power supply, only an isolated relay.

Power packs can switch a maximum 20 Amps of fluorescent lighting. Both power packs and Add-A-Relay are available for 120 and 277 Volt systems.

2.805"
2.916"
.842"
1.673"
1.634"

**PWP2120
PWP2277
AR120/277**

Features

- Essential to ceiling mount sensor systems.
- Self-contained transformer and relay.
- Easy-to-install.
- Teflon-coated wire leads suitable for plenum applications.
- Secondary voltage: 24VDC; Secondary output: 150mA.
- UL-rated 94 V0 plastic enclosure.
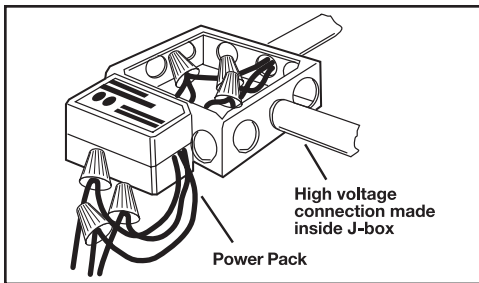- cULus listed.
- 5-year warranty.

Catalog Number	Description	Input Voltage	Load Ratings (Amps)			Output
			Ballast	Incan.	Motor	
Power Packs & Add-A-Relay						
PWP2120	Power Pack	120	20	13	1HP	24VDC; 150mA
PWP2277	Power Pack	277	20	—	1HP	24VDC; 150mA
AR120/277	Add-A-Relay	120/277	20	13	1HP	*0

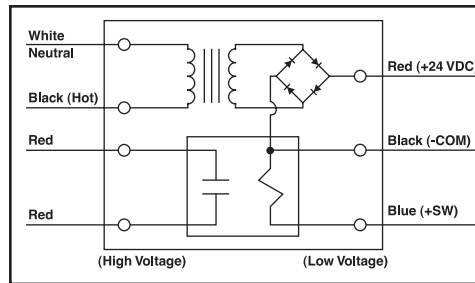*Add-A-Relay has a current consumption of 36mA.

Installation

Power packs should be installed in accordance with state, local, and national electrical codes. They are designed to attach to electrical enclosures with 1/2 inch knockouts. In plenum ceilings, power packs should be installed in approved electrical enclosures. Most applications require UL listed, 18-22 AWG, 3-conductor, class 2 cable for low-voltage wiring. For plenum rated ceilings use UL listed plenum-approved cables.
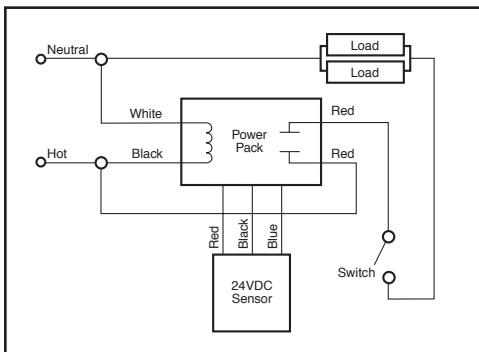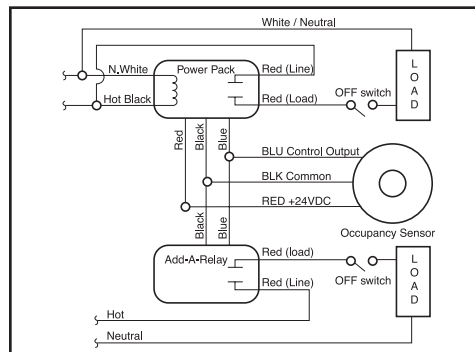
J-Box Installation

High voltage connection made inside J-box

Power Pack

Power Pack Schematics

White Neutral
Black (Hot)
Red
Red
Red (+24 VDC)
Black (-COM)
Blue (+SW)
(High Voltage) (Low Voltage)

Ceiling Sensor with Power Pack

Neutral
Load
Load
White
Red
Hot
Black
Power Pack
Red
Red
Black
Blue
Switch
24VDC Sensor

Sensor Schematic with Add-A-Relay

White / Neutral
N. White Power Pack Red (Line)
Hot Black Red (Load) OFF switch LOAD
Red
Black
Blue
BLU Control Output
BLK Common
RED +24VDC
Black
Blue
Occupancy Sensor
Add-A-Relay Red (load)
Red (Line) OFF switch LOAD
Hot
Neutral

All devices listed on this page conform to NEMA WD-1 and WD-6.

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Occupancy & Vacancy Sensors & Timers
Useful Calculations

Occupancy & Vacancy Sensors & Timers

Useful Calculations

Examples of savings and payback

EXAMPLE 1

Large office using a WA1001 Passive Infrared Sensor

Six 88-watt, 3-lamp fixtures = 0.528 kW x $0.086/kWh* = $0.04541/hr

Savings = 35 hours per week

Total hours saved = 1,820 hrs/yr

Annual Savings = $82.65; 5 Year Savings = $413.23

Total estimated cost including power pack: (Product and Labor) = $140.00

Payback = 20.33 months

ROI = $82.65 ÷ $140.00 = 59.03%

EXAMPLE 2

Individual office using a CS500 PIR Ceiling Sensor

Three 88-watt, 3-lamp fixtures = 0.264 kW x $0.086/kWh* = $0.02270/hr

Savings = 50 hours per week

Total hours saved = 2,600 hrs/yr

Annual Savings = $59.02; 5 Year Savings = $295.10

Total estimated cost: (Product and Labor) = $54.00

Payback = 10.98 months

ROI = $59.02 ÷ $54.00 = 109.30%

EXAMPLE 3

Restroom using a CSU1100 Ultrasonic Occupancy Sensor

Four 88-watt, 3-lamp fixtures = 0.352 kW x $0.086/kWh* = $0.03027/hr

Savings = 75 hours per week

Total hours saved = 3,900 hrs/yr

Annual Savings = $118.05; 5 Year Savings = $590.27

Total estimated cost: (Product and Labor) = $160.00

Payback = 16.26 months

ROI = $118.05 ÷ $160.00 = 73.78%

*Based on 2004 US Government National average cost.

Multi-Sensor Installation

For applications requiring more than one sensor, **the load per power pack should not exceed 150mA**. Use the following table to calculate the maximum number of sensors per power pack.

WA1001	CS500/1200	HS1001	CSU600	CSU1100/2200	AR120/277	CSD1000
8mA	11mA	8mA	27mA	30mA	36mA	35mA

Examples:

2 x CSU1100 (30mA) = 60mA ✔
This is an acceptable load because it is less than 150mA.

4 x CSU1100 (30mA) + 1 x AR120/277(36mA) = 156mA ✗
This is **not** an acceptable load because it is greater than 150mA.
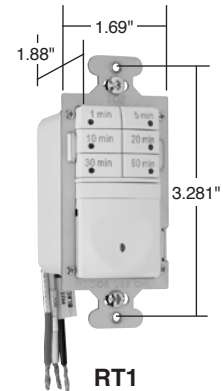
Timers

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Features

- Seven-button preset time switch.
- Manual ON/OFF.
- Adjustable time delay: 1, 5, 10, 20, 30, 60 minutes.
- Lighted switch for visibility in darkened rooms.
- Controls most types of lighting.
- cULus listed.
- 5-year warranty.
- Load: Incandescent, fluorescent, compact fluorescent (CFL), magnetic low-voltage (MLV) and electronic low-voltage (ELV), 1/6 hp
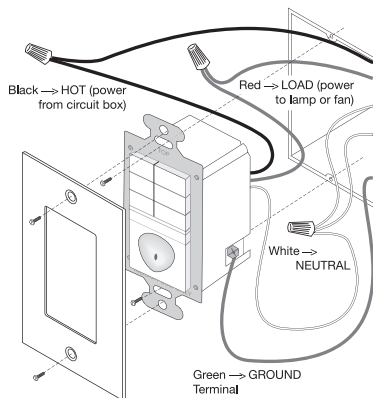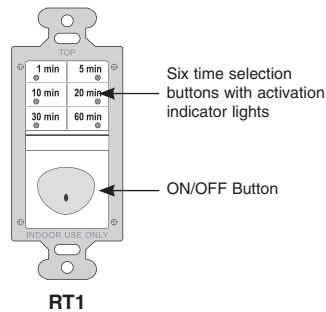
RT1 shown with SWP26

Catalog Number	Description	Rating	Load	Time-Running-Out Warning	Color
NEW **Digital Timers**					
RT1I	7-Button Digital Timer, Neutral required	0-600W, 1/6 hp @ 120VAC 60 Hz	All	No	Ivory
RT1W				No	White
RT1BK				No	Black
RT1LA				No	Light Almond

1.69"
1.88"
3.281"

RT1

RT1 Wiring

Black → HOT (power from circuit box)

Red → LOAD (power to lamp or fan)

White → NEUTRAL

Green → GROUND Terminal

Product Controls

TOP

1 min 5 min
10 min 20 min
30 min 60 min

Six time selection buttons with activation indicator lights

ON/OFF Button

INDOOR USE ONLY

RT1

All devices listed on this page conform to NEMA WD-1 and WD-6.
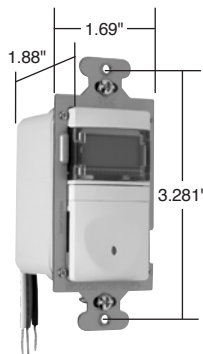
Occupancy & Vacancy Sensors & Timers
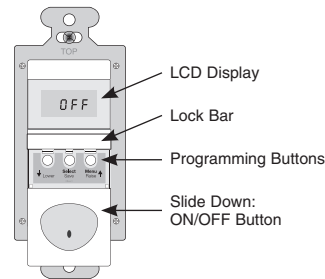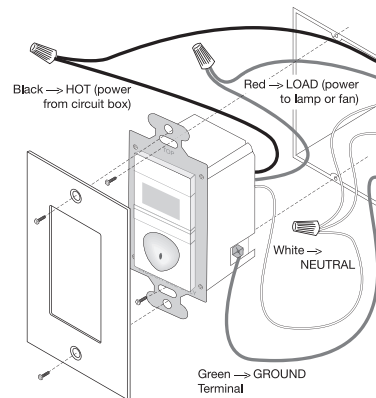
Occupancy & Vacancy Sensors & Timers
Timers

Features

- Programmable countdown time switch
- Manual ON/OFF.
- Digital countdown display.
- Adjustable time delay from 5-55 minutes (five-minute increments) to 1-12 hours (15-minute increments).
- Audible beep and visible light flash warnings before automatic-OFF.
- Lighted switch for visibility in darkened rooms.
- Works with most common lighting types.
- cULus listed.
- 5-year warranty.
- Load: Incandescent, fluorescent, compact fluorescent (CFL), magnetic low-voltage (MLV) and electronic low-voltage (ELV), 1/6 hp

1.69"
1.88"
3.281"

RT12

Catalog Number	Description	Rating	Load	Time-Running-Out Warning	Color
Digital Timers					
RT12I	12-Hour Digital Timer, Neutral required	0-600W, 1/6 hp @ 120VAC 60 Hz	All	Yes	Ivory
RT12W				Yes	White
RT12BK				Yes	Black
RT12LA				Yes	Light Almond

RT12 Wiring

Black → HOT (power from circuit box)
Red → LOAD (power to lamp or fan)
White → NEUTRAL
Green → GROUND Terminal

LCD Display
Lock Bar
Programming Buttons
Slide Down: ON/OFF Button

RT12

RT24 shown with wall plate

Features

- Manual or programmed ON/OFF switching.
- Real time clock with day/date calendar.
- Easy to read LED display.
- Programming buttons accessible without removing wall plate.
- Eight programs can be assigned to any day or combination of days of the week.
- Automatically calculates sunrise and sunset times based on latitude and longitude.
- Audible or visual occupant warning before OFF.
- Power failure memory.
- Zero crossing circuitry.
- cULus listed.
- 5-year warranty.
- Load: Incandescent, fluorescent, compact fluorescent (CFL), magnetic low-voltage (MLV) and electronic low-voltage (ELV), 1/6 hp

Catalog Number	Description	Rating	Load	Time-Running-Out Warning	Color
Astronomic Programmable Timers					
RT24I	24-Hour Programmable Timer	0-800W @ 120V 0-1200W @ 277V 1/6 hp @ 120/277V	All	Yes	Ivory
RT24W				Yes	White
RT24BK				Yes	Black
RT24LA				Yes	Light Almond

Available Spring 2009.

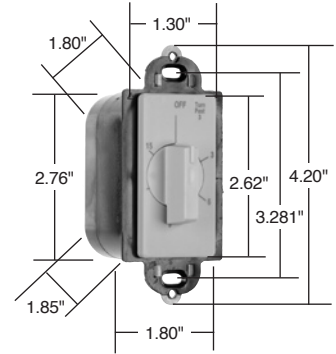All devices listed on this page conform to NEMA WD-1 and WD-6.

Timers

Wall Box Timers
125, 125-T, 250 & 277VAC, 60 Hz

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Applications

- Lighting
- Exhaust fans
- Whirlpools and spas
- Saunas
- Heating and heat lamps
- Ventilating and air conditioning

Features

- Units with "Hold" feature may be turned counter-clockwise to hold the load on without timing function.
- Turning clockwise causes unit to time load off after desired time delay.
- Quiet operation.
- Time range from 5 minutes to 12 hours.
- Available with or without hold.
- Decorator styling.
- Easily installed.
- Large head screw terminals.
- Accurate to ± 5 percent.
- Motor rated.
- Energy saving.

97015I

Catalog Number	Description	Time Range	Color
Specification Grade Decorator Rotary Timers			
97015I **97015W** **97015LA**	Timeout, No Hold	15 Minutes	Ivory White Light Almond
97030I **97030W** **97030LA**	Timeout, No Hold	30 Minutes	Ivory White Light Almond
97060I **97060W**	Timeout, No Hold	60 Minutes	Ivory White
97115I **97115W**	Timeout, With Hold	15 Minutes	Ivory White
97130I **97130W**	Timeout, With Hold	30 Minutes	Ivory White
97160I **97160W**	Timeout, With Hold	60 Minutes	Ivory White

Catalog Number	Color
Replacement Knobs (without plate)	
PS55A1	White
PS55B1	Ivory
PS55G1	Light Almond

VAC	Hz	Amp	HP
Ratings			
125	60	20	1
125T	60		7
250	60	10	1
277	60	10	

Features

- Eliminates the need for two switches.
- Fits standard toggle opening for easy ganging.
- Time range adjustable from 1-60 minutes.
- Easily installed.
- May control one or two loads simultaneously.
- Motor rated.
- Silent operation.
- Reliable solid-state construction.
- Energy saving.

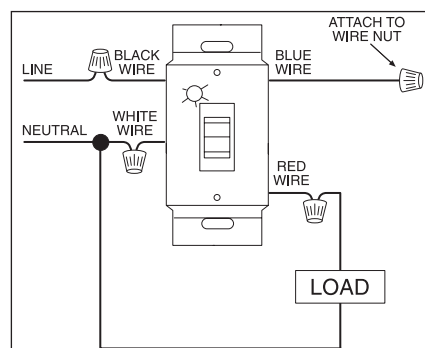| Catalog Number	Description	Time Range	Rating	Color
Specification Grade Toggle Time Delay Switches Center Off				
97352I **97352W**	Double Pole, Double Throw	1-60 Minutes, Adjustable	500W, 1/3 HP, 120VAC, 60 Hz	Ivory White
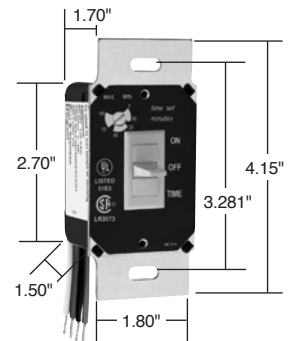
97352I

Operation: Catalog Number 97352

- When toggle is up, one or two loads remain on.
- When toggle is down, load "A" is off, load "B" times-off at preset time. In the center position, both loads are off.

Wiring Diagram: Single Timed Load Application

LINE — BLACK WIRE — BLUE WIRE — ATTACH TO WIRE NUT

NEUTRAL — WHITE WIRE

RED WIRE

LOAD

All devices listed on this page conform to NEMA WD-1 and WD-6.