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LIGHTING CONTROL  
**INSTITUTE**

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**Radio Powr Savr™**

**Wireless Occupancy/Vacancy Sensor &  
Rania® Wireless RF Switch**

# What is the Radio Powr Savr Occupancy & Vacancy Sensor & Rania Wireless RF Switch

## Radio Powr Savr & Rania Wireless RF Switch

- A wireless battery powered ceiling mount occupancy and vacancy sensor & two-wire Rania Wireless RF switch (no neutral required)



## Value Proposition:

- Wireless, retrofit, energy savings solution that is easy to install and is flexible to adapt to your changing environment



# What does the Radio Powr Savr Occupancy & Vacancy Sensor & Rania Wireless RF Switch do?

## Occupancy Solution

- Enter the room - lights turn on automatically\*
- Leave the room, after a delay\*\*, lights automatically turn off when room is vacant

## Vacancy Solution

- Enter the room - no change in lighting
- User turns lights on
- Leave the room, after a delay\*\*, lights automatically turn off when room is vacant



\* Low Light setting also available - lights turn on only if there is not sufficient light in the room

\*\* User adjustable: 5, 15 and 30 minutes

# What is the Radio Powr Savr?

An innovative wireless occupancy / vacancy sensor

- Designed for easy installation and optimum savings
- Communicates with the Rania wireless RF switch via Radio Frequency
- Requires NO hard-wired electricity



# What does the Radio Powr Savr do?

- Communicates via RF with compatible Lutron controls
- Detects room occupancy and/or vacancy
- Feeds that information back to a compatible Lutron (RF) lighting control (Rania wireless RF Switch)
- The lighting control then responds with the appropriate course of action (turning lights on or shutting them off)
- Adds additional savings to lighting control strategy



# What does the Radio Powr Savr do?

Allows user to customize settings

Timeout Settings available:

- 30, 15\*, 5 minutes

Auto-On options:

- **Always\*** – Sensor turns lights on/off automatically
- **Low Light** – Sensor turns lights on automatically only in low ambient light conditions. Sensor turns lights off automatically
- **Disable** – Lights must be turned on manually from switching device. Sensor turns lights off automatically

Sensitivity Options:

- Low Activity\*
- Medium Activity
- High Activity

\* Out of Box Default Settings



## Important Radio Powr Savr details

- 10-Device Maximum
  - Sensor can control up to 10 RF switches
  - Rania Accessory Switches do not count towards 10 device maximum
- Up to 3 sensors can communicate to switch for maximum coverage
- 10 Meters (30-Foot) Distance
  - Maximum distance between sensor and switch is 10 meters (30 feet) through wall, 18 meters (60 feet) line-of-sight
- Ability to detect motion requires line-of-sight of room occupants

## Radio Powr Savr Coverage

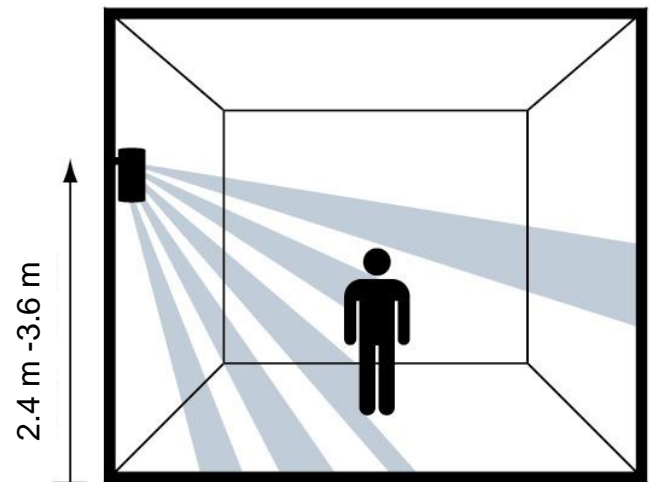
Ceiling Height	Max. Room Dimensions for Complete Floor Coverage	Square Meters
2.4 m	5.5 x 5.5 m	30.2 m <sup>2</sup>
2.7 m	6.1 x 6.1 m	37.2 m <sup>2</sup>
3.0 m	6.7 x 6.7 m	44.9 m <sup>2</sup>
3.7 m	7.9 x 7.9 m	62.4 m <sup>2</sup>



# Sensor Technology Review

## Passive Infrared (PIR)

- Detects difference between heat emitted from human body in motion and background space
- Requires unobstructed line-of-sight for accurate detection
- Generally good at detecting **major motion** (e.g. walking) but struggle with detecting **fine motion** (e.g. working at a desk) due to problems with sensitivity setting

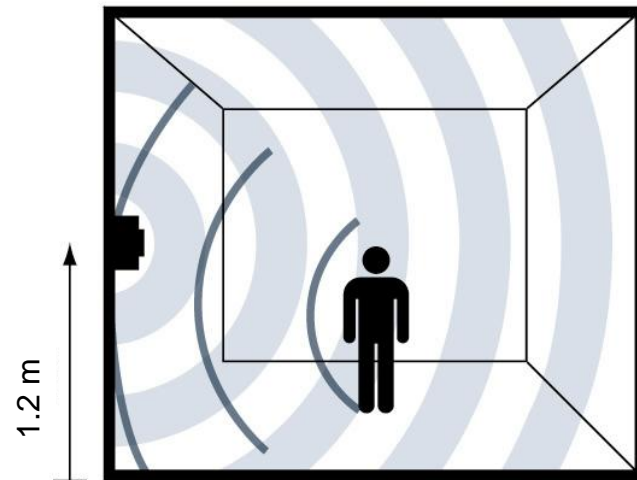


Example of wall mount PIR sensor

# Sensor Technology Review

## Ultrasonic (US)

- Bounces ultrasonic sound waves (32kHz-45kHz) off objects in space and detects frequency shifts between emitted and reflected sound waves
- Movement by a person or object causes a shift in wave frequency which is interpreted as occupancy
- Generally good at detecting **minor motion** (e.g. waving) but struggle with false triggering from HVAC and coverage spilling into adjacent areas

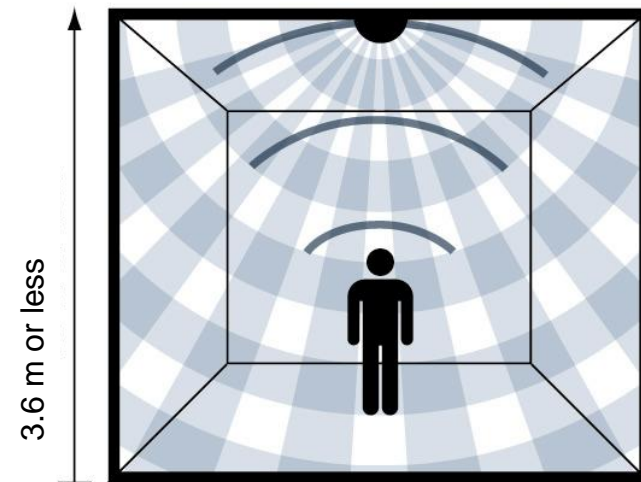


Example of wall switch sensor

# Sensor Technology Review

## Dual Tech (DT)

- Use both PIR and US technologies
- Both PIR and US must detect occupancy to turn lights on, while continued detection by only one technology will keep lights on
- Best performing sensor for most applications but most expensive



Example of ceiling mount DT sensor

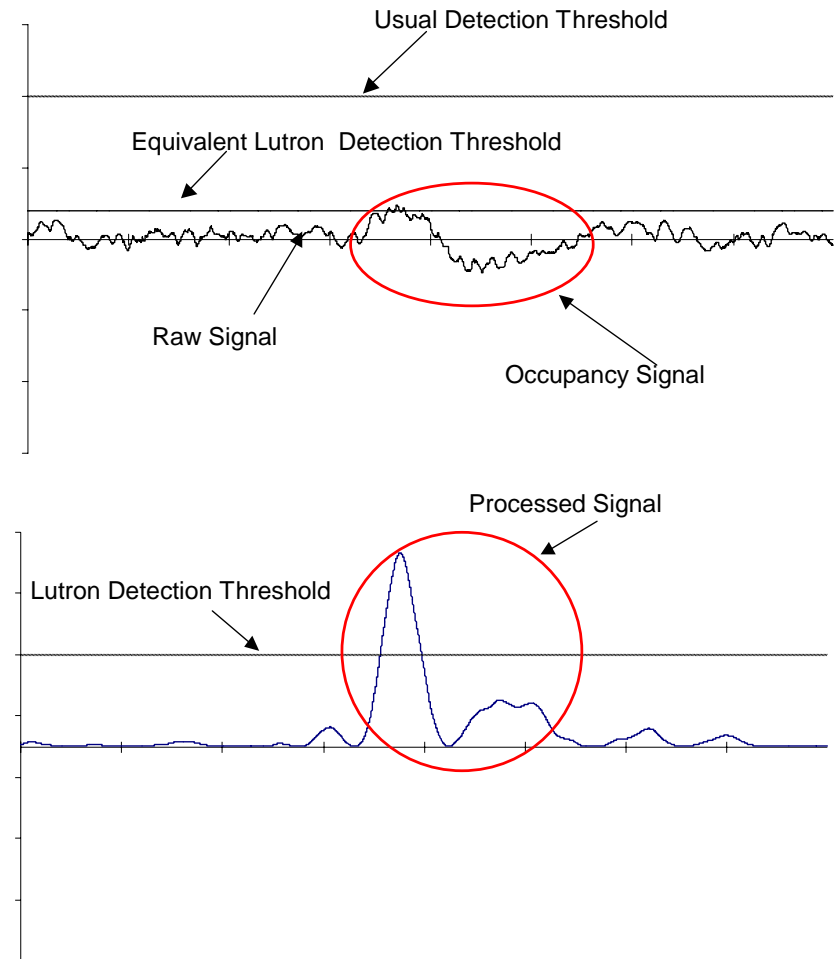
# Radio Powr Savr Technology

## Lutron's $\chi$ CT™ Technology

- Cutting edge detection technology distinguishes between noise (in the detector and interference in room) and actual motions without changing sensor's sensitivity
- Lutron has accumulated massive amount of data which has been reduced to models describing human motion
- Through Digital Signal Processing, fine motion signals are easily distinguished from noise

### RESULT?

- Allows Radio Powr Savr to detect fine movements (typing at a keyboard) and significantly reduce false-tripping of the sensor



# What is the Rania Wireless RF Switch ?

- A two-wire RF switch – No neutral required; No new wiring required
- RF: 868 MHz
- Reliable Clear Connect™ RF technology
- Toggle button turns lights on/off  
Press and hold toggle button to activate delayed off - 60 second delay before load turns off
- LED indicates load status; glows softly when off



# Important Rania Wireless RF Switch details

- 5 AX, 220 V – 240 V
  - 4A for motor loads
  - Maximum MLV transformer size of 100 VA. Multiple transformers permitted.
- 40 W minimum load
- Compatible load types
  - Fluorescent
  - CFL
  - Incandescent
  - mains voltage halogen
  - magnetic low voltage
  - electronic low voltage
  - motor loads



# Important Rania Wireless RF Switch details

- An external Shunt Capacitor is required for:
  - Screw in CFLs
  - Screw in replacement LEDs\*\*
- A Shunt Capacitor is **NOT** required for:
  - Fluorescent Ballasts
  - LED fixture with driver\*\*
  - Incandescent
  - Mains voltage halogen
  - Magnetic and electronic low voltage
  - Motor loads
- The Shunt Capacitor will be included with the Rania RF Switch



\*\*The product will be tested for compatibility with LED loads. The product will **not** be certified for LED loads due to not being a certifiable load type to control in the IEC standards.

## Important Rania Wireless RF Switch details

- Rania Accessory Switch will be available
  - For multi locations, use only one Rania RF Switch with up to 9 Rania Accessory Switches
- No Dual Rania RF Switch available at this time
- No non-RF Rania Switch available at this time





# Radio Powr Savr & Rania Wireless RF Switch

## Key Benefits/Features

### Easy Installation/Reduced Labor Costs & Time To Install

- Retrofit solution
  - Wireless Sensor – no wiring required
  - Two-Wire Switch – no neutral required/no new wiring required

### Energy Savings

- Detects occupancy and vacancy; turning lights off when not needed

### Superior Performance

- $\chi$ CT™ Technology detects fine movements and significantly reduces false-tripping of the sensor
- Clear Connect™ RF Technology for reliable wireless communication

# Radio Powr Savr & Rania Wireless RF Switch

## Key Benefits/Features

### Flexibility & Superior Coverage

- Ceiling Mounted sensor provides superior coverage compared to wallbox mounted sensor
- Allow multiple sensors in conjunction with each other to provide broader coverage of large and / or blocked-off spaces

### Easy Set-Up - Sensor

- Easy to mount and reposition
- Default settings are ideal for most situations
- Simple & intuitive methods for making adjustments if necessary
- Front accessible buttons
- Lens illuminates during test mode to verify ideal coverage

### Low Maintenance – Sensor

- Long battery lifetime-10 year design (Batteries CR123A-3V; 1 Included)
- Convenient low-battery indicator

# Radio Powr Savr & Rania Wireless RF Switch Set Up

Start with Associating the Sensor and Rania Wireless RF Switch

- From the off state, press and hold the on/off button on the Rania Wireless RF Switch for 6 seconds until LED on device begins flashing.
- Press and hold “Lights Off” button on front of Sensor for 6 seconds until lens flashes. Lights in room will flash 3 times, indicating a successful association.
- Both devices will exit association mode automatically.



# Radio Powr Savr & Rania Wireless RF Switch Installation

## Next, Test the Room Coverage & RF Communication

- 3M Command strip or ceiling tile mounting wire allows you to temporarily mount bracket and sensor to identify ideal location
- Press the “Test: Sensor” button
- Walk around the room – the lens glows as it detects movement
- Use this to verify that the sensor is in a good location to detect occupancy throughout the room and that it does not pick up in areas outside the room
- Press the “Test: Sensor” button again to end the test
- Press “Test: Lights On/Off” buttons to make sure lights turn on/off to test RF
- Relocate as needed



# Radio Powr Savr Installation

## Finally, Mount the Sensor Permanently

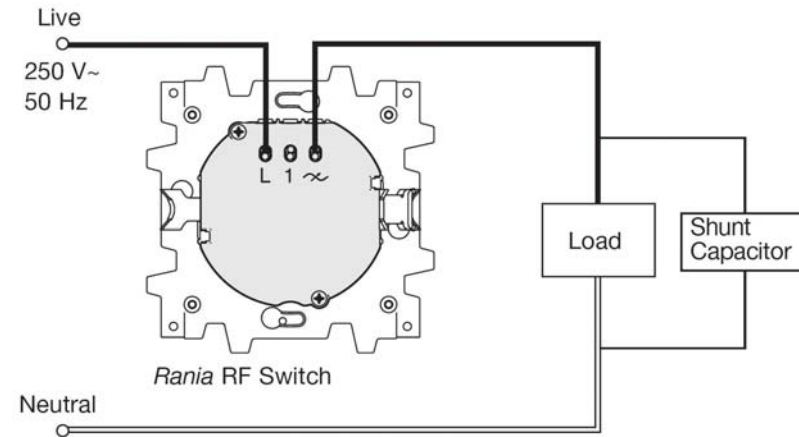
- For finished ceilings, the outer bracket attaches using screws & anchors
- For ceiling tile, the outer bracket attaches with mounting wire, twist legs of mounting wire together tightly above ceiling tile
- In both cases, the sensor rotates & locks into the bracket



# Shunt Capacitor Installation

In certain applications, a shunt capacitor will need to be added at the load (as shown) to allow current to leak through the load in the off-state.

The shunt capacitor will be included with the Rania RF Switch.



Shunt capacitor details: flying-lead, X1 rated, 310 VAC, 0.47  $\mu$ F

# What are typical applications?

## Commercial Applications:

- Break rooms, conference rooms, offices, classrooms, training rooms, storage areas, closets, hallways & restrooms
  - Use the occupancy control to make sure these areas are well lit and safe as people enter
  - Given that few people remember to turn lights off in public spaces, and that some of the areas may be unoccupied for hours at a time, use the vacancy control to keep these areas shut off when not in use

# What are typical applications?

- Residential Applications:
  - Laundry/Utility rooms, hallways, closets, garages & pantries
    - Areas where homeowners use both hands for hauling groceries, clothes baskets, storage boxes, plates, etc.
    - Use the occupancy control to safely & conveniently get the lights turned on
  - Playrooms, bathrooms, basement
    - Areas where lights are commonly left on unnecessarily
    - Use the vacancy control to shut these areas off when not in use



# Radio Powr Savr Model Numbers & Pricing

## Radio Powr Savr (Single Unit – Blue Box)

### Model LRF3-OCRB-P-WH Occupancy / Vacancy sensor

- Auto-On Always: lights will always turn on automatically
- Auto-On Low Light: lights will only turn on automatically when there is not sufficient ambient light in the room
- Auto-On Disable: converts sensor to vacancy sensor; manually turn lights on

ASD PRICING

USD

\$70

Only available in a white, matte finish (Arctic White)

# Rania Wireless RF Switch Model Numbers & Pricing

## Rania Wireless RF Switch – 868 MHz (Single Unit - Blue Box)

**Model Number:** RS-SA05-B-xyy-M

	ASD PRICING USD
Plastics ( x =F or I, I yy = AW)	\$105
Plastics <i>Painted</i> (x = F or I, yy = MC, AR)	\$112
Metal 1 <i>Black Frame</i> (x = B, yy = SN, BB, BC, BN,SB, SC)	\$124
Metal 1 <i>Metal Frame</i> (x = I, yy = SN, BB, BC, BN.SB, SC)	\$143
Metal 1 <i>Frameless</i> (x = F, yy = SN, BB, BC, BN, SB, SC)	\$124
Metal 2 <i>Black Frame</i> (x = B, yy = AU, QB, QZ)	\$136
Metal 2 <i>Metal Frame</i> (x = I, yy = AU, QB, QZ)	\$151
Metal 2 <i>Frameless</i> (x = F, yy = AU, QB, QZ)	\$136

Available in 12 colours and finishes

x = F for Frameless;I for Insert; B for Black Frame

Shunt Capacitor Included

# Rania Wireless RF Switch Model Numbers & Pricing

## Rania Wireless RF Switch & Radio Powr Savr (Combo Unit - Blue Box)

**Model Number:** RRF-SA05-B-xyy-M

### ASD PRICING

#### USD

Plastics ( x =F or I, I yy = AW)	\$175
Plastics <i>Painted</i> (x = F or I, yy = MC, AR)	\$182
Metal 1 <i>Black Frame</i> (x = B, yy = SN, BB, BC, BN,SB, SC)	\$194
Metal 1 <i>Metal Frame</i> (x = I, yy = SN, BB, BC, BN.SB, SC)	\$213
Metal 1 <i>Frameless</i> (x = F, yy = SN, BB, BC, BN, SB, SC)	\$194
Metal 2 <i>Black Frame</i> (x = B, yy = AU, QB, QZ)	\$206
Metal 2 <i>Metal Frame</i> (x = I, yy = AU, QB, QZ)	\$221
Metal 2 <i>Frameless</i> (x = F, yy = AU, QB, QZ)	\$206

x = F for Frameless;I for Insert; B for Black Frame  
Shunt Capacitor Included

# Rania Wireless RF Switch Model Numbers & Pricing

## Rania Accessory Switch – 868 MHz (Single Unit - Blue Box)

**Model Number:** RS-SNAS-B-xyy-M

	ASD PRICING USD
Plastics ( x =F or I, I yy = AW)	\$27
Plastics <i>Painted</i> (x = F or I, yy = MC, AR)	\$34
Metal 1 <i>Black Frame</i> (x = B, yy = SN, BB, BC, BN,SB, SC)	\$46
Metal 1 <i>Metal Frame</i> (x = I, yy = SN, BB, BC, BN.SB, SC)	\$65
Metal 1 <i>Frameless</i> (x = F, yy = SN, BB, BC, BN, SB, SC)	\$46
Metal 2 <i>Black Frame</i> (x = B, yy = AU, QB, QZ)	\$58
Metal 2 <i>Metal Frame</i> (x = I, yy = AU, QB, QZ)	\$73
Metal 2 <i>Frameless</i> (x = F, yy = AU, QB, QZ)	\$58

Available in 12 colours and finishes

x = F for Frameless;I for Insert; B for Black Frame

# Important Dates

Can Spec: Immediate

Can Ship: Oct 19, 2009

