NEW
CFL, LED, 0-10 V Control

Lutron Energi TriPak®

Wireless energy-saving solutions at an affordable price

Sensor sends wireless signal to switch or dimmer to turn off lights

Pico® remote sends wireless signal to switch or dimmer to adjust lights

Wireless occupancy/ vacancy sensor

Wireless switch

Wireless remote

- **Build an energy-saving solution for any budget**
- **Simple retrofit—installs 70%[1] faster than wired systems**
  - Minimizes disruption to people in space
  - Easy set up and adjustment—no knobs or dials
- **No callbacks—sensors use XCT™ Technology**
  - 2–3 times more sensitive to fine motion than other sensors
  - Recognizes the difference between fine human motion and background noise
- **Superior Clear Connect® wireless communication**
  - Proven, patented technology that works
- **Meet energy codes and standards**

Pico wireless remote—control from anywhere

Wall-mounted, on a pedestal, or handheld

www.lutron.com/etp

24/7 Lutron service and support
1.888.LUTRON1
(1.888.588.7661)

LUTRON®

Energi TriPak®

Occupancy/vacancy and daylight sensors

Wireless ceiling-mount occupancy/vacancy sensor
Turns lights on when room is occupied and off when room is vacant

Wireless wall-/corner-/hall-mount occupancy/vacancy sensor
Turns lights on when room is occupied and off when room is vacant

Wireless ceiling-mount daylight sensor
Adjusts lights based on the amount of available daylight

Remotes

Wireless remotes

- Battery-powered Pico® remote wirelessly controls lights and appliances
- Pico can be used free standing, wall-mounted, or on a pedestal for convenient wireless dimming or switching control

Load controllers

Wireless switch
(pictured) **and dimmer**

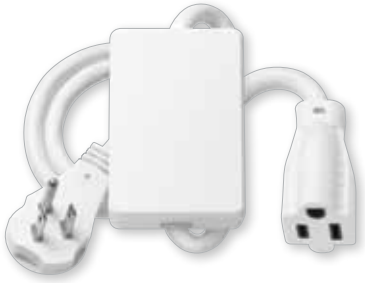
Models available for:

- Incandescent/halogen
- Screw-base LED & CFL
- Magnetic low voltage
- 3-wire fluorescent
- Electronic low voltage
- Dual-voltage switches

Tabletop lamp dimmer
Integrates floor and table lamps into wireless lighting control system

J-box mounted modules

- Dimming
- Switching
- Contact closure output



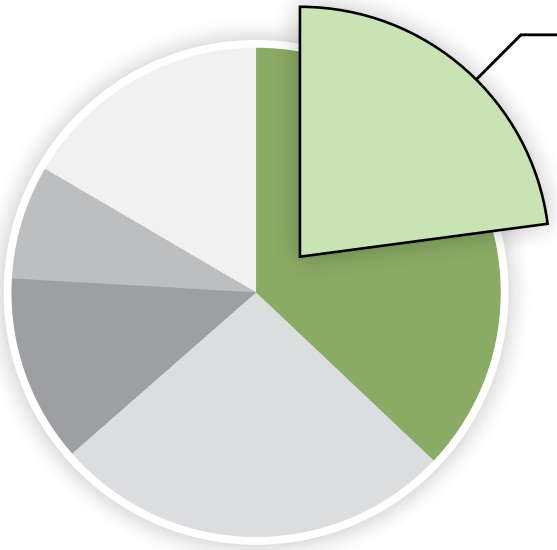
Plug-in modules

- Dim/switch version for lighting loads
- General purpose switch for appliance loads

Stairwell retrofit solution
Lighting fixture with integral lighting control device and programmed ballast

Energy Savings

Build an energy-saving solution for any budget or space



What is the savings opportunity?

Lighting represents 38%[2] of electricity use in commercial buildings. **Lutron solutions can save 60%[3] or more lighting energy.**

Annual electricity use[2]

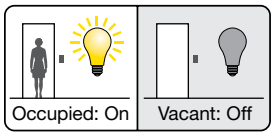
Lighting	**38%**
HVAC	29%
Refrigeration	12%
Office Equipment	7%
Other	14%

- Combine energy-saving control strategies like occupancy sensing, daylighting, and dimming to maximize the savings opportunity.
- Help your customers increase their ROI – your projects may qualify for a utility incentive. Visit **www.lutron.com/incentives** for details.

Lutron makes it easy to build a control solution with its Energi Advisor app for the iPad®/iPhone®

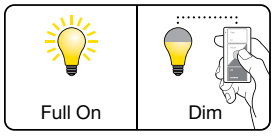
- **Complete solution**—all-in-one app for lighting energy audit and proposal creation
- **Efficient workflow**—saves time on your audit and proposal process
- **Cloud-based analysis**—recommends retrofit solution based on audit
- **Accurate proposals**—ensures that you have the most up to date product information
- **Sells system value**—provides high-quality energy savings estimates

Energy-saving control strategies



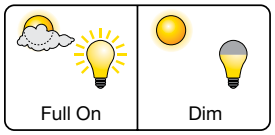
Occupancy/vacancy sensing
Turns lights on when occupants are in a space and dims lights to a low level or turns lights off when they vacate the space.

Potential lighting energy savings: 20-60%[4]



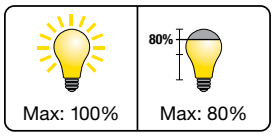
Personal dimming control
Gives occupants the ability to set the light levels.

Potential lighting energy savings: 10-20%[5]



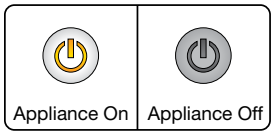
Daylight harvesting
Dims electric light when daylight is available to light the space.

Potential lighting energy savings: 25-60%[6]



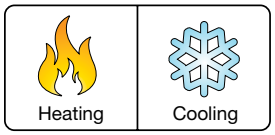
High-end trim
Sets the maximum light level based on customer requirements in each space.

Potential lighting energy savings: 10-30%[7]



Plug load control
Automatically turns off loads after occupants leave a space.

Potential controlled load savings: 15-50%[8]



HVAC integration
Controls heating, ventilation, and air conditioning systems through contact closure.

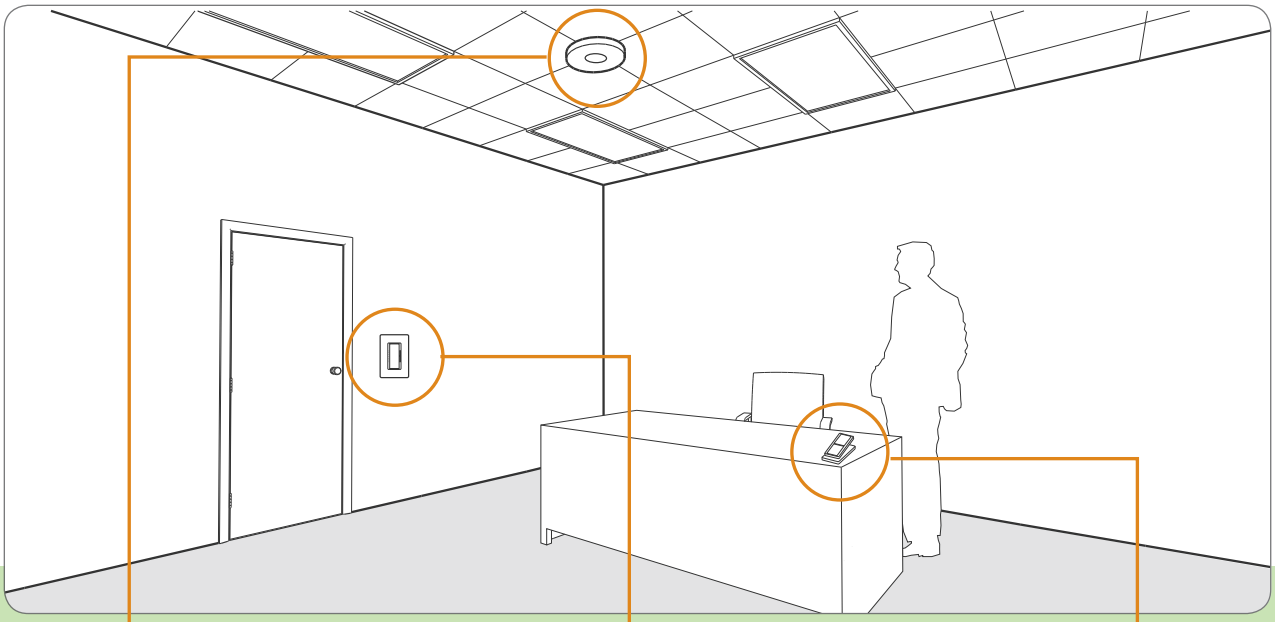
Potential HVAC savings: 5-15%[9]

Sources located on back cover.

Simple solution—three basic parts

Sensor, switch, and Pico® wireless remote cover most applications

Save up to 60%[3] lighting energy



Wireless occupancy sensor
ceiling mount

- XCT™ Technology with cross-correlation—won't leave you in the dark
- No wires—easily mount it anywhere
- Vacancy-only models available
- Wall- and corner-mount models also available (see page 2)

Wireless switch
wallbox mount

- Replaces existing switch
- Mistake-proof wiring
  — No neutral
  — Polarity-free
- Single model for 120-277 V
- 30-year switch life

Pico wireless remote
tabletop

- No wires—put it where it's most accessible
- Pedestal mount for tabletop use
- Surface mount anywhere with Claro® wallplate
- 10-year battery life

Installs 70%[1] faster than wired systems

1 Replace the existing switch in a few minutes or less—works with existing wires

Wireless switch

Mistake-proof wiring

- No neutral required
  (neutral-based products also available)
- No polarity for line or load wiring

2 Add a sensor or wall control—no wiring

Wireless occupancy/ vacancy sensor

Sensor profile view

Wireless remote

Remote profile

Wireless

- No wires required
- Easy to mount and adjust location
- 10-year battery life

3 Simple button-press set up—no commissioning

1. Press and hold **6 seconds**
2. Press and hold **6 seconds**
3. Press and hold **6 seconds**

It works!
Sensor and Pico wireless remote now talk to the switch

Reliable technologies

XCT™ technology with cross-correlation—won't leave you in the dark

Lutron sensors detect fine motion better than other passive infrared (PIR) sensors

- Provides exceptional prevention of false-ons and false-offs
- Superior sensitivity—recognizes the difference between fine human motion and background noise

☑ Major Motion

Person walking 3 feet

☑ Minor Motion

Movements like extending your arms

☑ Fine Motion

Small movements like flipping pages of a book

☑ No False-on

Lights stay off when room is unoccupied

Exclusive, reliable technologies—no callbacks

Clear Connect® wireless communication technology—wireless that works!

Proven technology

- Lutron invented its first wireless lighting control system in 1993
- **Highest quality—**best communications reliability of any system on the market

Proven reliability

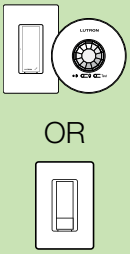
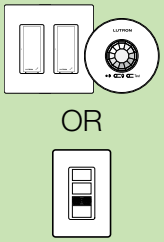
- **Case study:** Encana, Calgary Canada
- Over 30,000 Clear Connect devices performing reliably throughout the building

Meet energy codes and standards

Summary of code requirements for lighting control

Energi TriPak® ensures you can meet new construction and retrofit (lighting alterations[10]) code requirements for ASHRAE 90.1-2010, IECC 2012, and Title 24-2013[11].

For specific commercial building code lighting requirements in your state, please visit **www.lutron.com/energycodes**.

	Code Requirements					Solution(s)		
Control Method(s)	ASHRAE 90.1-2010: Lighting Alterations	ASHRAE 90.1-2010: New Construction	IECC 2012	Title 24-2013: Luminaire Alterations[12]	Title 24-2013: New Construction	 OR	 OR	
Local Switch	● ●	● ●	● ● ○	● ● ○	● ● ○	✓	✓	✓
Occupancy Sensing[13]	● ● ○	● ● ○	● ● ○	● ● ○	● ● ○	✓	✓	✓
Bi-level Control		● ●	● ●	● ● ○			✓	✓
Dimming Control		● ●	●		● ● ○	✓	✓	✓
Daylighting[14]		● ●	● ● ○		● ● ○	✓	✓	✓

Key

- ● Primary spaces, large—lecture halls, open offices, conference rooms
- ● Primary spaces, small—private offices, storage
- ○ Secondary spaces—corridors, stairwells, restrooms

Disclaimer: This table is a summary only; other exceptions or details may apply. Jurisdictions may have requirements that differ from these standards. See page back cover for notes/references. For specific code requirements please visit **www.lutron.com/energycodes**.

Energi TriPak® application: Public restroom

In public spaces, such as bathrooms, lighting is often on even when the space is unoccupied. Automatic lighting control with occupancy sensing is an ideal energy-saving solution.

Energy-saving strategies

- Occupancy sensing

Potential lighting energy savings:

50%[4]

Codes met:

- Area control
- Automatic lighting shutoff
- Functional testing
- Occupancy sensor control

Radio Powr Savr™ ceiling-mount occupancy/vacancy sensor communicates with load controllers to turn lights on or off

PowPak® relay module with Softswitch® switches loads in response to wireless sensors and controls (mounted in ceiling)

Energi TriPak® application: Private office

Providing personal lighting control in a private office application helps improve occupant comfort.

Energy-saving strategies

- Occupancy sensing
- Daylight harvesting
- Plug load control

Potential lighting energy savings:

45%

Codes met:

- Area control
- Automatic lighting shutoff
- Functional testing
- Occupancy sensor control
- Daylight control
- Manual on or partial on
- Multi-level lighting control

Radio Powr Savr™ daylight sensor communicates with load controllers to turn lights on or off based on amount of daylight available

PowPak® plug-in appliance module turns phantom loads on or off in response to wireless sensors and controls (located under desk)

Radio Powr Savr ceiling-mount occupancy/vacancy sensor communicates with load controllers to turn lights on or off based on occupancy

Maestro Wireless® switch provides manual control and switches lighting loads in response to wireless sensors and controls

Pico® wireless remote allows manual control of loads; place on desktop or mount to wall

Maestro Wireless tabletop lamp dimmer provides manual control and dims table lamps in response to wireless sensors and controls

Energi TriPak® application: Conference room

A conference room must accommodate a wide range of activities and users. The lighting control must be able to adapt to different scenarios while being simple and easy to use.

Energy-saving strategies

- Occupancy sensing
- Daylight harvesting
- Personal dimming control
- High-end trim
- HVAC integration

Potential lighting energy savings:

50%

Codes met:

- Area control
- Automatic lighting shutoff
- Functional testing
- Occupancy sensor control
- Daylight control
- Manual on or partial on
- Multi-level lighting control
- Receptacle control

Radio Powr Savr™ daylight sensor communicates with load controllers to turn lights on or off based on amount of daylight available

Pico® wireless remote allows manual control of loads; place on desktop or mount to wall

Radio Powr Savr ceiling-mount occupancy/vacancy sensor
communicates with load controllers to turn lights on or off based on occupancy

PowPak® dimming module with 0-10 V control
dims lighting loads in response to wireless sensors and controls (mounted in ceiling)

PowPak receptacle module
Switches receptacle loads in response to wireless occupancy sensors

Energi TriPak® application: Classroom

A best-practice classroom combines energy efficiency with a high-quality learning environment. Classroom lighting plays a particularly critical role because of the direct relationship between good lighting and student performance.[15]

Energy-saving strategies

- Occupancy sensing
- Daylight harvesting
- Personal dimming control
- High-end trim
- HVAC integration
- Plug load control

Potential lighting energy savings:

60%

Codes met:

- Area control
- Automatic lighting shutoff
- Functional testing
- Occupancy sensor control
- Daylight control
- Manual on or partial on
- Multi-level lighting control

PowPak® dimming module with EcoSystem® dims lighting loads in response to wireless sensors and controls (mounted in ceiling)

Pico® wireless remotes allows manual control of loads; place on desktop or mount to wall

EcoSystem 5-Series LED driver
dims continuously from 100% to 5% for virtually any LED fixture

Radio Powr Savr™ daylight sensor
communicates with load controllers to dim lights based on amount of daylight available

PowPak contact closure output module
integrates with HVAC system or other third-party equipment through contact closures, allowing the equipment to respond to wireless commands (mounted in ceiling)

Radio Powr Savr corner-mount occupancy/ vacancy sensor
communicates with load controllers to turn lights on or off based on occupancy

How to design a system

Define your space

Use the following steps to plan and design an ideal energy-saving solution based on the use of the space and the needs of its occupants.

Step 1a Is control of overhead lighting required?

Select the control(s) required based on style (wall or jbox) and load capacity (switching, dimming, 0-10 V, or EcoSystem®) ..... **pages 20-24**

Step 1b Is the lighting in a stairwell?

Select model based on load type and number of landings ..... **page 25**

Step 1c Are you dimming fluorescent or LED lights?

If selecting an EcoSystem load controller, select an LED driver or fluorescent ballast ..... **pages 26-28**

Step 2 Is occupancy/vacancy sensing required?

Select the model and number of Radio Powr Savr™ occupancy/vacancy sensors based on mounting and coverage requirements ..... **page 29**

Step 3 Is daylight harvesting required?

Add a Radio Powr Savr daylight sensor ..... **page 30**

Step 4a Is control of plug loads required?

Select the style and number of plug load controllers ..... **pages 31-32**

Step 4b Is control of task lighting required?

Select the style and number of plug-in devices required.....**page 33**

Step 5 Is third-party equipment integration required?

Select the number of PowPak® contact closure output models .....**page 34**

Step 6 Are personal or additional points of control required?

a. Select the style of the Pico® wireless remote required.....**page 35**
b. Select accessories for the Pico wireless remote .....**page 36**

Use the chart below to determine the number of wireless devices that can be assigned to your load controllers

	Occupancy/Vacancy	Daylight	Pico
PowPak®	6	1	9
Maestro®	Any 10 but only 1 daylight		
Stairwell	6	0	0
PowPak plug-in	Any 10 but only 1 daylight		

Energi TriPak® components

Step 1a Is control of overhead lighting required?

Wireless switches

Maestro Wireless® switch dimensions
W: 2.94" (75 mm)
H: 4.69" (119 mm)
D: 1.44" (38 mm)

5 A 2-button switch dimensions
W: 2.94" (75 mm)
H: 4.69" (119 mm)
D: 1.44" (38 mm)

How to design and specify

- Select one switch per lighting zone
- Select appropriate model based on the size of the connected load
  - 5 A: 600 W lighting @ 120 V or 1385 W @ 277 V
  - 6 A: 600 W lighting @ 120 V
  - 8 A: 960 W lighting @ 120 V or 2216 W @ 277 V
- If existing switch does not have a neutral, choose the model available for 120/277 V with no neutral required
- Select from up to 27 colors to complement the décor*
- Add an additional Pico® remote in step 6 for rooms with multiple switches for a single zone

Maestro Wireless switch

MRF2-8S-DV-XX – 8 A lighting, 1/10 HP fan @ 120 V only, 120-277 V, no neutral

MRF2-6ANS-XX – 6 A lighting, 1/10 HP fan, 120 V only

MRF2-8ANS-120-XX – 8 A lighting, 1/4 HP fan, 120 V only

5 A 2-button switch

PD-5S-DV-XX – 5 A lighting, 120/277 V, no neutral

* 5 A 2-button switch only available in White, Ivory, Light Almond, Black (XX in the model number represents color/finish code; use WH for White; please visit **www.lutron.com** for other color choices.)

Step 1a Is control of overhead lighting required?

Wireless dimmers

Maestro Wireless dimmer dimensions
W: 2.94" (75 mm)
H: 4.69" (119 mm)
D: 1.44" (38 mm)

How to design and specify

- Select one wireless dimmer per lighting zone
- Select appropriate model based on the size and type of existing load
- Most models do not require a neutral
- Select from up to 27 colors to complement the décor*
- Add an accessory dimmer for rooms with multiple switches for a single zone

Maestro Wireless dimmers

MRF2-6CL-XX – 150 W dimmable CFL/LED, 600 W incandescent/halogen, 600 VA MLV, 120 V, no neutral

MRF2-600M-XX – 600 W incandescent/halogen, 120 V, no neutral

MRF2-6MLV-XX – 600 W/VA incandescent/halogen/MLV, 120 V, no neutral

MRF2-6ND-120-XX – 600 W/VA incandescent/halogen/MLV, 120 V

MRF2-10D-120-XX – 1000 W/VA incandescent/halogen, 120 V

MRF2-F6AN-DV-XX – 6 A, 3-wire fluorescent, 120-277 V

MRF2-6ELV-120-XX – 600 W ELV, 120 V

MA-R-XX – accessory dimmer for multi-location lighting controls, 120 V

MA-R-277-XX – Accessory dimmer for multi-location lighting controls, 277 V

* (XX in the model number represents color/finish code; use WH for White; please visit **www.lutron.com** for other color choices.)

Energi TriPak® components

Step 1a Is control of overhead lighting required?

Relay module

PowPak® relay module dimensions
W: 2.89" (48 mm)
H: 3.44" (87 mm)
D: 1.25" (32 mm)

How to design and specify

- Include one relay module for each controlled lighting zone in the space
- Select appropriate model based on the size of the connected load
  - 5 A: 600 W or 1/6 HP @ 120 V or 1385 W or 1/3 HP @ 277 V
  - 16 A: 1920 W or 1/2 HP @ 120 V or 4432 W or 1 1/2 HP @ 277 V
- Select the model with a dry contact closure output for sending occupancy information to third-party equipment such as HVAC systems
- 120/277 V input for all models

PowPak relay modules

RMJ-5R-DV-B – 5 A model

RMJ-5RCCO1-DV-B – 5 A model with one contact closure output

RMJ-16R-DV-B – 16 A model

RMJ-16RCCO1-DV-B – 16 A model with one contact closure output

Step 1a Is control of overhead lighting required?

Dimming module with 0-10 V control

PowPak dimming module with 0-10 V control dimensions
W: 2.89" (48 mm)
H: 3.44" (87 mm)
D: 1.25" (32 mm)

How to design and specify

- Include one dimming module with 0-10 V control for each controlled 0-10 V lighting zone in the space
- Controls 5 A of 0-10 V controlled fixtures and switches compatible with third-party 0-10 V fluorescent ballasts, LED drivers, and fixtures
- 120-277 V input

PowPak dimming module
RMJ-5T-DV-B – 5 A, 0-10 V control dimming module

Energi TriPak® components

Step 1a Is control of overhead lighting required?

Dimming module with EcoSystem®

PowPak® dimming module with EcoSystem dimensions
W: 2.89" (48 mm)
H: 3.44" (87 mm)
D: 1.25" (32 mm)

How to design and specify

- Select one dimming module for each room (up to 32 EcoSystem-enabled ballasts, drivers, or light fixtures)
- A single PowPak dimming module is capable of controlling
  - up to nine dimming/switching Pico® zones
  - up to two daylight zones
  - one occupancy sensing zone
- Zone configurations can be changed after installation, providing complete flexibility with no rewiring
- 120/277 V input

PowPak dimming module
RMJ-ECO32-DV-B – EcoSystem digital dimming module

Dimming ballasts require rapid start sockets. For more information, see Lutron App Note #122.

Lamp socket wiring tester available to easily troubleshoot ballast wiring issues; see page 49 for ordering information and pricing.

Step 1b Is the lighting in a stairwell?

Stairwell fluorescent and LED fixture

For more information on the stairwell solution, see to page 37.

4 ft stairwell fixture dimensions
W: 51.125" (1299 mm)*
H: 4.375" (111 mm)
D: 3.875" (98 mm)

How to design and specify

- Stairwell fixtures are both ceiling and surface mountable
- Select one stairwell light fixture for each fixture location
- Select the lamp type based on design requirements
- Select the size based on the existing or new fixture specification
- Select the default occupied/unoccupied level based on allowable decrease in light level (NOTE: light levels are field adjustable)
  - 50%/10%: Provides a 50% light reduction when occupied and 90% light reduction when unoccupied
  - 80%/20%: Provides a 20% light reduction when occupied and 80% light reduction when unoccupied
- Select the sensor type based on design requirements.
- All models can be installed with 120-277 V
- Additional stairwell fixture types are available including a retrofit kit solution, alternate lamp types (T8 reduced wattage) and fixture lengths (2 ft, 8 ft). For a complete list visit **www.lutron.com/stairwellfixture.**

4 ft stairwell fluorescent fixtures**

FXSWXX14SL232U51SMXXWH – 2 lamp, T8, 32 W, fluorescent 50%/10%

FXSWXX14SL232U82SMXXWH – 2 lamp, T8, 32 W, fluorescent 80%/20%

4 ft stairwell LED fixtures**

FXSWXX14SLLC1U51SMXXWH – 17 W, 1500 lumens, 4000 K LED, 50%/10%

FXSWXX14SLLC1U82SMXXWH – 17 W, 1500 lumens, 4000 K LED, 80%/20%

* Width provided for 4 ft fixture; consult the product specification submittal for width measurements for 2 ft fixtures; 8 ft fixtures available, but in fluorescent only.
** Partial list only, for complete list of available fixtures, including information on the stairwell retrofit kit solution, visit **www.lutron.com/stairwellfixture**.

Energi TriPak® components

Step 1c Are you dimming fluorescent or LED lights?

Hi-lume® A-Series LED drivers

Choose your lighting solution with a fixture and driver at **www.lutron.com/findafixture**.

Hi-lume A-Series LED driver dimensions (K case)
W: 4.90" (124 mm)
H: 3.00" (76 mm)
D: 1.00" (25 mm)

Hi-lume A-Series LED driver dimensions (M case)
W: 14.13" (124 mm)
H: 1.18" (30 mm)
D: 1.00" (25 mm)

Drivers are embedded in fixture

How to design and specify

- Specifying a Lutron LED driver, which integrates with Lutron digital controls, will provide smooth, continuous dimming from 100% to 1% for virtually any LED fixture*
- If dimming, Lutron LED drivers can be specified as a part of the lighting fixture package

* For a complete list of compatible controls go to **www.lutron.com/HilumeLED**

Step 1c Are you dimming fluorescent or LED lights?

EcoSystem® 5-Series LED drivers

Choose your lighting solution with a fixture and driver at **www.lutron.com/findafixture**.

EcoSystem 5-Series LED driver dimensions (K case)
W: 4.90" (124 mm)
H: 3.00" (76 mm)
D: 1.00" (25 mm)

Drivers are embedded in fixture

How to design and specify

- Specifying a Lutron LED driver, which integrates with Lutron digital controls, will provide smooth, continuous dimming from 100% to 5%*
- If dimming, Lutron LED drivers can be specified as a part of the lighting fixture package

* For a complete list of compatible controls go to **www.lutron.com/EcoSystem**

Energi TriPak® components

Step 1c Are you dimming fluorescent or LED lights?

EcoSystem® H-Series digital ballasts

T8, T5, and T5HO digital ballast dimensions (C case)
W: 18.00" (457 mm)
H: 1.18" (30 mm)
D: 1.00" (25 mm)

T8, T5, and T5HO digital ballast dimensions (M case)
W: 14.13" (359 mm)
H: 1.18" (30 mm)
D: 1.00" (25 mm)

T8, 3-lamp digital ballast dimensions (G case)
W: 9.50" (241 mm)
H: 2.38" (60 mm)
D: 1.00" (25 mm)

How to design and specify

- Specifying a Lutron fluorescent ballast, which integrates with Lutron digital controls, will provide smooth, continuous dimming for any fluorescent fixture that integrates with Lutron digital controls
- If dimming, select the corresponding ballast based on lamp type and lamp quantity for each dimming light fixture
- All ballasts listed can be used for 120-277 V
- Additional linear and compact fluorescent ballast types available. Visit **www.lutron.com/BallastTool** to select the correct ballast
- If purchasing light fixtures, check with the fixture manufacturer to determine if Lutron Ecosystem ballasts can be included

Featured model numbers (120-277 V):

EHDT832MU110 – T8 linear, 32 W, 1-lamp, 1.0 ballast factor
EHDT832MU117 – T8 linear, 32 W, 1-lamp, 1.17 ballast factor
EHDT832MU210 – T8 linear, 32 W, 2-lamp, 1.0 ballast factor
EHDT832MU217 – T8 linear, 32 W, 2-lamp, 1.17 ballast factor
EHDT528MU110 – T5 linear, 28 W, 1-lamp, 1.0 ballast factor
EHDT528MU210 – T5 linear, 28 W, 2-lamp, 1.0 ballast factor
EHDT554MU110 – T5HO linear, 54 W, 1-lamp, 1.0 ballast factor
EHDT554MU210 – T5HO linear, 54 W, 2-lamp, 1.0 ballast factor
EHDT817MU110 – T8 linear, 17 W, 1-lamp, 1.0 ballast factor
EHDT817MU210 – T8 linear, 17 W, 2-lamp, 1.0 ballast factor
EHDT825MU110 – T8 linear, 25 W, 1-lamp, 1.0 ballast factor
EHDT825MU210 – T8 linear, 25 W, 2-lamp, 1.0 ballast factor
EHDT514MU110 – T5 linear, 14 W, 1-lamp, 1.0 ballast factor
EHDT514MU210 – T5 linear, 14 W, 2-lamp, 1.0 ballast factor
EHDT521MU110 – T5 linear, 21 W, 1-lamp, 1.0 ballast factor
EHDT521MU210 – T5 linear, 21 W, 2-lamp, 1.0 ballast factor
EHDT524MU110 – T5HO linear, 24 W, 1-lamp, 1.0 ballast factor
EHDT524MU210 – T5HO linear, 24 W, 2-lamp, 1.0 ballast factor
EHDT539MU110 – T5HO linear, 39 W, 1-lamp, 1.0 ballast factor
EHDT539MU210 – T5HO linear, 39 W, 2-lamp, 1.0 ballast factor
EHDT832GU310 – T8 linear, 32 W, 3-lamp, 1.0 ballast factor
EHDT832GU317 – T8 linear, 32 W, 3-lamp, 1.17 ballast factor

Step 2 Is occupancy/vacancy sensing required?

Wireless occupancy/vacancy sensors

See page 44-45 for coverage diagrams.

Radio Powr Savr™ wireless ceiling-mount occupancy/ vacancy sensor dimensions
W: 3.57" (91 mm)
H: 3.57" (91 mm)
D: 1.13" (29 mm)

Radio Powr Savr wireless wall-/hall-/corner-mount occupancy/vacancy sensor dimensions
W: 1.8" (46 mm)
H: 4.35" (110 mm)
D: 1.35" (34 mm)

How to design and specify

- A single occupancy sensor can communicate to all control devices in the room

Ceiling-mount sensors
- Use in small rooms or areas with medium to high partitions
- For 8 ft ceilings: 484 ft^2
- For 12 ft ceilings: 676 ft^2

LRF2-OCR2B-P-WH – Occupancy/vacancy
LRF2-VCR2B-P-WH – Vacancy only

Wall-mount sensors
- Use in large open rooms with few tall obstructions
- Coverage: 3,000 ft^2

LRF2-OWLB-P-WH – Occupancy/vacancy
LRF2-VWLB-P-WH – Vacancy only

Corner-mount sensors
- Use in medium to large open rooms with few tall obstructions
- Coverage: 2,500 ft^2

LRF2-OKLB-P-WH – Occupancy/vacancy
LRF2-VKLB-P-WH – Vacancy only

Hallway sensors
- For a 6 ft wide hallway: 50 ft coverage
- For a 10 ft wide hallway: 150 ft coverage

LRF2-OHLB-P-WH – Occupancy/vacancy
LRF2-VHLB-P-WH – Vacancy only

Accessories
L-CMDPIRKIT – ceiling-mount sensor lens masking kit
L-CRMK-WH – ceiling-mount sensor recess-mounting bracket
WGOMNI-CPN3688 – wire guard for ceiling-mount sensor
WGWS-CPN3688 – wire guard for wall-mount and hallway sensors
STI-9618-CPN3688 – wire guard for corner-mount sensor
CPN5991 – flexible armature mounting kit for hallway sensors

Step 3 Is daylight harvesting required?

Wireless daylight sensor

Radio Powr Savr™ wireless daylight sensor dimensions
W: 1.60" (41 mm)
H: 1.60" (41 mm)
D: 0.7" (17 mm)

How to design and specify

- Select one daylight sensor per room
- A single daylight sensor is capable of controlling:
  - All Maestro® switching and dimming zones
  - All PowPak® switching zones
  - All PowPak dimming modules with 0-10 V control
  - Up to two zones for each PowPak dimming module with EcoSystem®

Daylight sensor
LRF2-DCRB-WH – daylight sensor

Step 4a Is control of plug loads required?

Relay modules

PowPak 20 A relay receptacle module dimensions
W: 3.40" (86mm)
H: 3.23" (82 mm)
D: 1.73" (44 mm)

How to design and specify

- Select one relay module for each 20 A receptacle circuit you want to control
- 120-277 V input

PowPak relay module
RMJ-H20R-DV-B – 20 A general purpose switch (20 A, 120-277 V receptacles)

Step 4a Is control of plug loads required?

Plug-in load controller module

PowPak® plug-in load controller module dimensions
W: 2.3" (58 mm)
H: 3.3" (84 mm)
D: 1.2" (30 mm)

How to design and specify

- Select one 3-receptacle plug-in appliance module if you would like ON/OFF control for up to three devices together, for a maximum total load of 15 A (1800 W @ 120 V)
- Select a 1-receptacle PowPak plug-in appliance module for each device where you would like independent ON/OFF control

Plug-in load controller

MRF2-15APS-3-XX – 3-receptacle, 15 A, 120 V

MRF2-15APS-1-XX – 1-receptacle, 15 A, 120 V

(XX in the model number represents color/finish code; use WH for White or BL for Black)

Step 4b Is control of task lighting required?

Tabletop lamp dimmer and plug-in dimming modules

Maestro Wireless® tabletop lamp dimmer dimensions
W: 2.44" (62 mm)
H: 3.25" (83 mm)
D: 0.94" (24 mm)

PowPak plug-in dimming module dimensions
W: 2.3" (58 mm)
H: 3.3" (84 mm)
D: 1.2" (30 mm)

How to design and specify

Tabletop lamp dimmer

- Select if you want lamp control with a tabletop control device
- Select a tabletop dimmer to control each incandescent or halogen lamp up to 300 W

MRF2-3LD-XX – 300 W tabletop lamp dimmer, incandescent/halogen, 120 V

Plug-in dimming modules

- Select if you want lamp control but want to conceal the controller
- Select one 3-receptacle tabletop dimmer if you would like to control up to three incandescent/halogen lamps together with a maximum total load of 300 W
- Select a 1-receptacle tabletop dimmer if you would like to control a single lamp incandescent/halogen, with a maximum total load of 300 W

MRF2-3PD-3-XX – 3-receptacle, 300 W, incandescent/halogen, 120 V

MRF2-3PD-1-XX – 1-receptacle, 300 W, incandescent/halogen, 120 V

(XX in the model number represents color/finish code; use WH for White or BL for Black)

Step 5 Is third-party equipment integration required?

Contact closure output module

PowPak® contact closure output module dimensions
W: 2.89" (48 mm)
H: 3.44" (87 mm)
D: 1.25" (32 mm)

How to design and specify

- Select one contact closure output module for each additional contact closure output you require
- Note: If using a relay module with the contact closure output, you do not need to add a contact closure output module unless a second contact closure output is needed

PowPak contact closure output module
RMJ-CCO1-24-B – contact closure output

Step 6 Are personal or additional points of control required?

Wireless remotes

3-button with raise/lower

2-button with raise/lower

3-button

2-button

Nightlight 3-button with raise/lower

Nightlight 2-button

Pico® wireless remote dimensions
W: 1.28" (33 mm)
H: 2.60" (66 mm)
D: 0.33" (8 mm)

How to design and specify

- Select one 2-button Pico® wireless remote to add a location with ON/OFF control
- Select one 3-button Pico wireless remote to add a location with ON/OFF and one preset control
- Select one 2-button with raise/lower Pico wireless remote to add a location with ON/OFF and BRIGHTEN/DIM remote
- Select one 3-button with raise/lower Pico wireless remote to add a location with ON/OFF, BRIGHTEN/DIM, and one preset control
- Select whether a nightlight is needed (2-button and 3-button with raise/lower only)

  Note: Spaces with a PowPak® relay or dimming module will not have a local control in the room unless a Pico is added

Pico wireless remotes

PJ2-3BRL-GXX-L01 – 3-button with raise/lower wireless remote

PJ2-2BRL-GXX-L01 – 2-button with raise/lower wireless remote

PJ2-3B-GXX-L01 – 3-button wireless remote

PJ2-2B-GXX-L01 – 2-button wireless remote

PJN-3BRL-GXX-L01 – Nightlight 3-button with raise/lower wireless remote

PJN-2B-GXX-L01 – Nightlight 2-button wireless remote

(XX in the model number represents color/finish code)

Energi TriPak® components

Step 6 Are personal or additional points of control required?

Wireless remote accessories

Wall-mount Pico® remotes with Claro® wallplate and Pico wallplate adapter

Tabletop pedestals

How to design and specify

Wall-mount accessories

- Select one Pico wallbox adapter for each Pico that you would like wall mounted with a Claro style wallplate
- Select one Claro wallplate (up to 4-gang) for all Pico and Maestro Wireless® wall-mounted control locations where Claro style is desired

PICO-WBX-ADAPT – Pico wallbox adaptor

CW-1-WH – Claro 1-gang wallplate

CW-2- WH – Claro 2-gang wallplate

CW-3- WH – Claro 3-gang wallplate

CW-4- WH – Claro 4-gang wallplate

Tabletop accessories

- Select one Pico pedestal for each tabletop location based on the number of Pico remotes at each location

L-PED1-WH – pedestal for one Pico

L-PED2-WH – pedestal for two Pico remotes

L-PED3-WH – pedestal for three Pico remotes

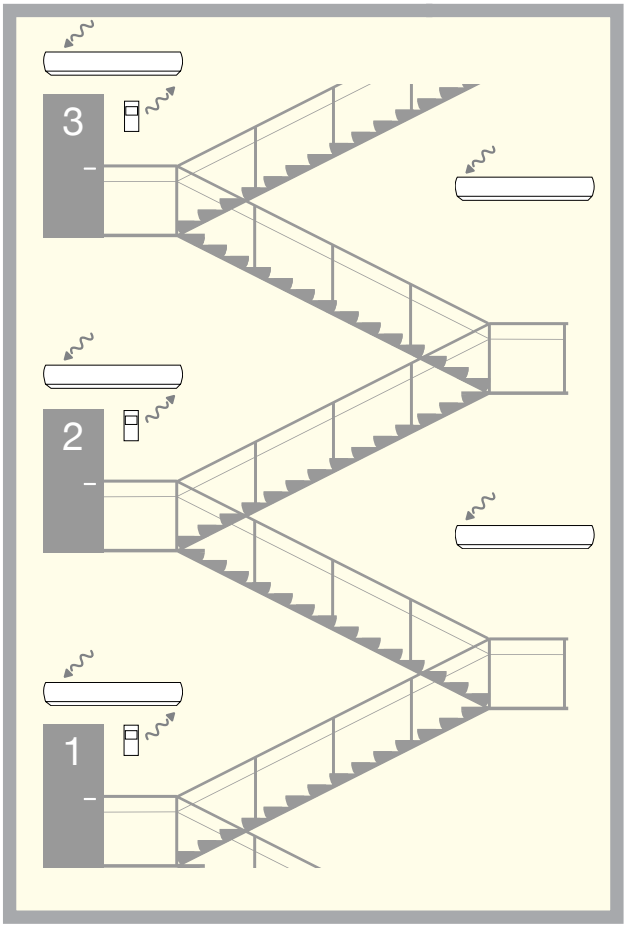
L-PED4-WH – pedestal for four Pico remotes

How it works

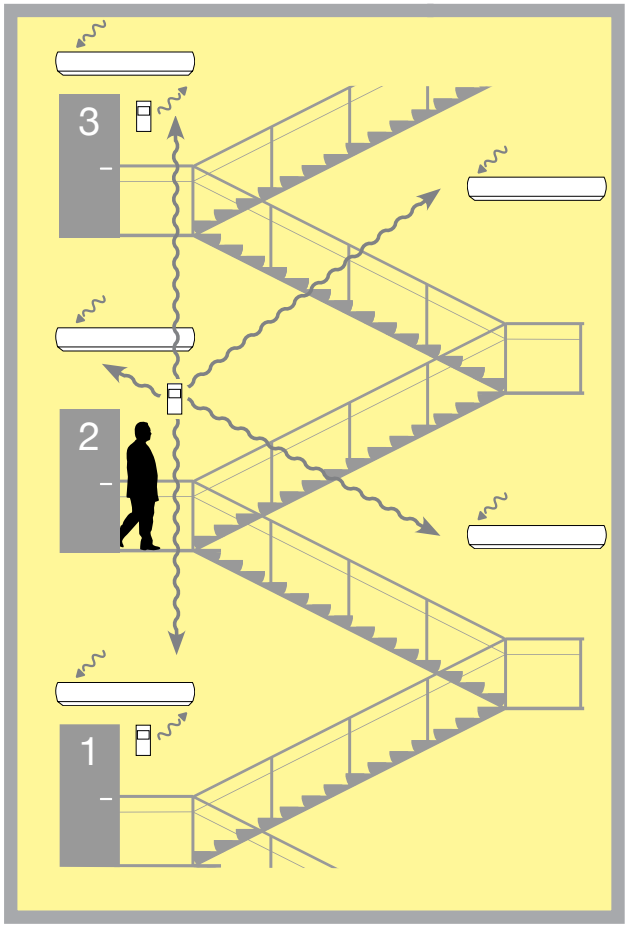
Stairwell solution

The stairwell fixture communicates wirelessly with Radio Powr Savr™ occupancy sensors. Based on the stairwell occupancy information received from the sensors, the fixture automatically adjusts the light output. The occupied and unoccupied light levels are field adjustable to meet the project's code requirements.

Unoccupied: 10% light level



Occupied: 50% light level



Stairwell standard fixture with PowPak® stairwell controller

Radio Powr Savr occupancy/vacancy sensor (wall mount)

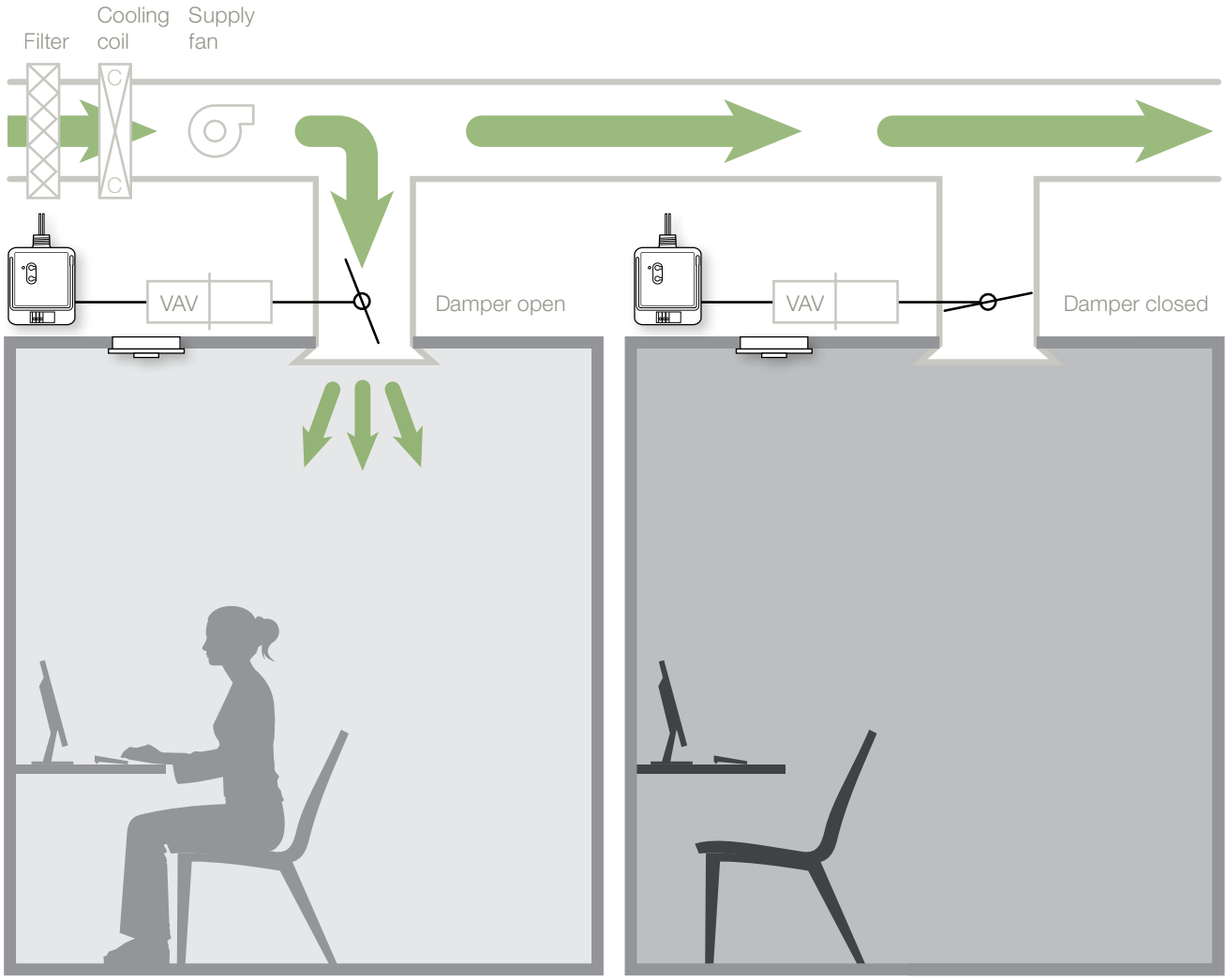
Lutron® Clear Connect® Wireless Signal **Sent**

Lutron® Clear Connect® Wireless Signal **Received**

Note: typical application is one sensor per two fixtures (control up to nine fixtures per sensor)

Variable Air Volume (VAV) integration

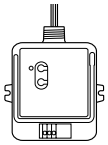
In response to information received from a Radio Powr Savr™ occupancy/vacancy sensor, the PowPak® contact closure output module communicates room occupancy to the VAV terminal unit. By not heating or cooling an unoccupied room, the electricity consumed by the HVAC system can be reduced.



Occupied **Unoccupied**

Radio Powr Savr occupancy/vacancy sensor (ceiling mount)

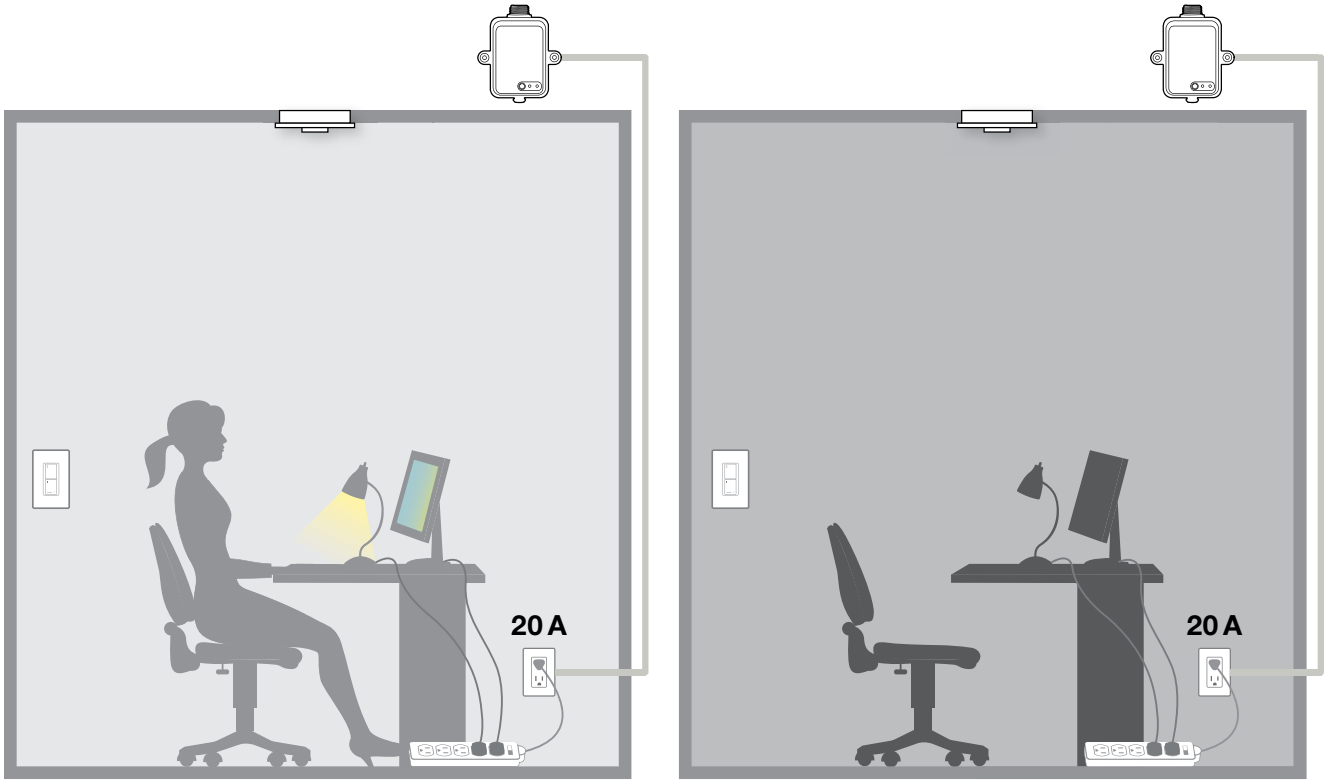
PowPak contact closure output module



Plug load control by switching receptacles

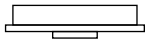
Plug loads, such as task lighting, computer monitors, and printers, account for greater than 5% of commercial electricity usage[2].

The occupancy/vacancy sensor communicates room occupancy wirelessly to the relay module. Based on the occupancy status received, the relay module switches the power to the receptacles on or off, reducing the amount of energy consumed.



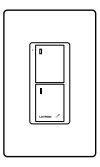
Occupied **Unoccupied**

Radio Powr Savr occupancy/vacancy sensor (ceiling mount)



PowPak 20 A relay receptacle module

Pico® control with wallplate



Energy-saving solutions for smaller spaces with unobstructed views

In-wall PIR occupancy/vacancy sensor switches

Maestro® sensor dimensions
W: 2.94" (75 mm)
H: 4.69" (119 mm)
D: 1.44" (38 mm)

Maestro dual-circuit sensor switch dimensions
W: 2.94" (75 mm)
H: 4.69" (119 mm)
D: 1.44" (38 mm)

Features and benefits

- Lutron XCT™ technology for superior sensitivity prevents false ons and false offs
- Automatically turns lights off when space is unoccupied
- Easy to install; directly replaces an existing control
- Lutron's Smart Ambient Light Detection learns your preferences over time and adapts accordingly
- Lutron's Adaptive Zero-Cross Switching extends relay lifetime
- 180° sensor field-of-view; must have unobstructed view
- Up to 900 ft² major motion coverage and 400 ft² minor motion coverage
- Adjustable timeout—1, 5, 15, 30 minutes
- Vacancy/partial-on models available to meet CA Title 24 requirements
- Dual-circuit sensors provide bi-level control of two circuits, as required by specific energy codes
- Select from up to 27 colors to complement the décor*

Sensor switch†

MS-OPS2-XX – 2 A lighting, 120 V PIR occupancy/vacancy; single pole, no neutral

MS-OPS5M-XX – 5 A lighting, 120 V PIR occupancy/vacancy; 3 A fan, multi-location/3-way/single pole, no neutral

MS-OPS6M2-DV-XX – 6 A lighting, 120-277 V PIR occupancy/vacancy, 3 A fan (120 V only); no neutral

MS-OPS6M2N-DV-XX – 6 A lighting, 120-277 V PIR occupancy/vacancy, 3 A fan (120 V only); neutral required

Dual-circuit sensor switch

MS-OPS6-DDV-XX – 6 A lighting per circuit, 120-277 V PIR dual-circuit occupancy/vacancy; 4.4 A fan (120 V only) per circuit; single pole

* (XX in the model number represents color/finish code; use WH for White; please visit **www.lutron.com** for other color choices.)

† Vacancy-only models available. Replace the "O" in the model number with a "V".

In-wall dual-technology occupancy/vacancy sensor switches

Maestro dual-technology sensor switch dimensions
W: 2.94" (75 mm)
H: 4.69" (119 mm)
D: 1.44" (38 mm)

Maestro dual-technology, dual-circuit sensor switch dimensions
W: 2.94" (75 mm)
H: 4.69" (119 mm)
D: 1.44" (38 mm)

Features and benefits

- Lutron XCT™ technology greatly enhances the performance of dual-technology sensors, enabling them to detect very fine motion like typing
- Automatically turns lights off when space is unoccupied
- Easy to install; directly replaces an existing control
- Lutron's Smart Ambient Light Detection learns your preferences over time and adapts accordingly
- Lutron's Adaptive Zero-Cross Switching extends relay lifetime
- 180° sensor field-of-view; must have unobstructed view
- Up to 900 ft² major motion coverage and 400 ft² minor motion coverage
- Adjustable timeout—1, 5, 15, 30 minutes
- Vacancy models available to meet CA Title 24 requirements
- Dual-circuit sensors provide bi-level control of two circuits, as required by specific energy codes
- Select from up to 27 colors to complement the décor*

Sensor switch†

MS-A102-XX – 6 A lighting, 120-277 V dual-tech occupancy/vacancy sensor, 4.4 A fan (120 V only); single pole, no neutral

MS-B102-XX – 6 A lighting, 120-277 V dual-tech occupancy/vacancy sensor, 4.4 A fan (120 V only); multi-location/3-way, neutral required

Dual-circuit sensor switch

MS-A202-XX – 6 A lighting per circuit, 120-277 V dual-tech occupancy/vacancy, 4.4 A fan (120 V only) per circuit; single pole, no neutral

MS-B202-XX – 6 A lighting per circuit, 120-277 V dual-tech occupancy/vacancy sensor, 4.4 A fan (120 V only) per circuit; 3-way, neutral required

* (XX in the model number represents color/finish code; use WH for White; please visit **www.lutron.com** for other color choices.)

† Vacancy only models available. Add "-V-" before the color code (XX).

Energy-saving solutions for smaller spaces with unobstructed views

In-wall PIR dimmer sensors

Maestro® 0-10 V dimmer sensor dimensions
W: 2.94" (75 mm)
H: 4.69" (119 mm)
D: 1.44" (38 mm)

Maestro C•L® dimmer sensor dimensions
W: 2.94" (75 mm)
H: 4.69" (119 mm)
D: 1.44" (38 mm)

Features and benefits

- Lutron XCT™ technology for superior sensitivity prevents false ons and false offs
- Automatically turns lights off when space is unoccupied
- Easy to install; directly replaces an existing control
- Lutron's Smart Ambient Light Detection learns your preferences over time and adapts accordingly
- 180° sensor field-of-view; must have unobstructed view
- Up to 900 ft² major motion coverage and 400 ft² minor motion coverage
- Adjustable timeout—1, 5, 15, 30 minutes
- Vacancy models available to meet CA Title 24 requirements
- Select from up to 27 colors to complement the décor*

0-10 V dimmer sensor‡

Controls electronic LED drivers and fluorescent ballasts

- Miswire and load incompatibility alert —lens will flash red if control is miswired or connected to an incompatible fixture
- Selectable dimming curve optimizes performance of 0-10 V LED drivers
- Lutron's Adaptive Zero-Cross Switching extends relay lifetime

MS-Z101-XX – 8 A lighting 120-277 V; occupancy/vacancy; multi-location/3-way/single pole

C•L dimmer sensor†

C•L dimmer for control of screw-based CFLs and LEDs

MSCL-OP153M-XX – C•L dimmer with PIR sensor; occupancy/vacancy; multi-location/3-way/single pole; 150 W CFL/LED, 600 W incandescent/halogen

* (XX in the model number represents color/finish code; use WH for White; please visit **www.lutron.com** for other color choices.)

† Vacancy-only models available. Replace the "O" in the model number with a "V".

‡ For dual-tech or 0-10 V vacancy models, add "-V-" before the color code (XX).

In-wall sensor application: Private office

In small spaces, such as a private office, Maestro® 0-10 V dimmer sensors can easily replace an existing control to add automatic shutoff and dimming to the room.

Energy-saving strategies

- Occupancy sensing
- High end trim

Potential lighting energy savings:

40%

Codes met:

- Area control
- Automatic lighting shutoff
- Functional testing
- Occupancy sensor control
- Multi-level control

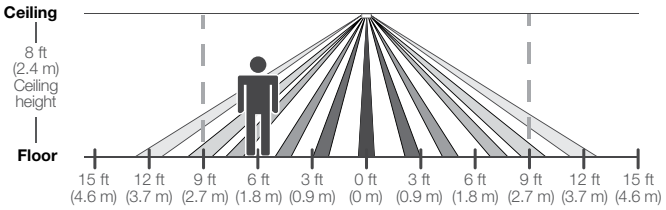
Maestro 0-10 V dimmer sensor turns lights off when space is unoccupied

Sensor coverage diagrams

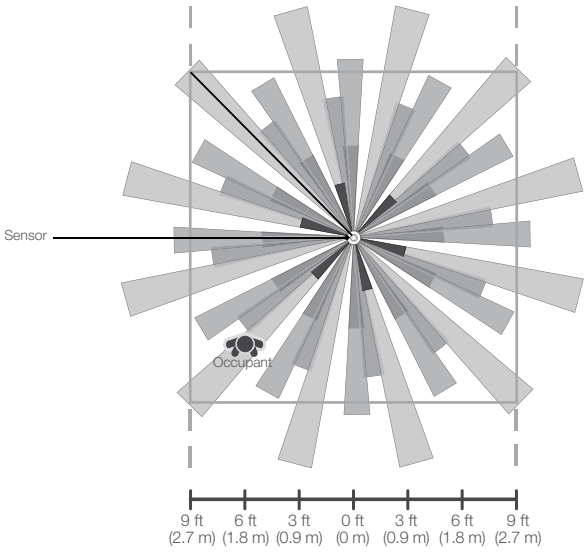
Ceiling mount, 360°

Coverage varies by ceiling height

Floor view



Top view



Key:

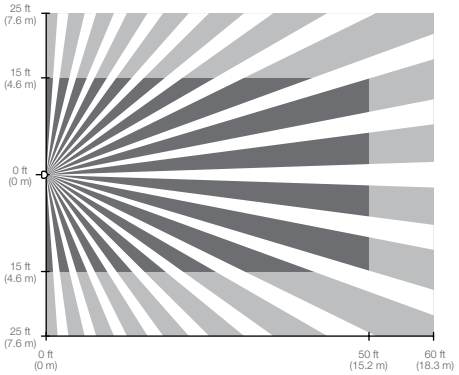
Minor motion

Major motion

Wall mount*, 180°

1,500 ft² — minor motion; 3,000 ft² — major motion

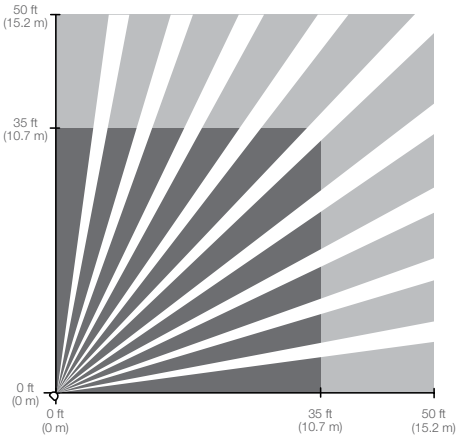
Top view



Corner mount*, 90°

1,225 ft² — minor motion; 2,500 ft² — major motion

Top view



Ceiling-mount sensor coverage chart (for sensor mounted in center of room)

Ceiling height	Maximum room dimensions for complete floor coverage		Radius of coverage at floor	
8 ft (2.4 m)	18 x 18 ft (5.5 x 5.5 m)	324 ft² (30.2 m²)	13 ft	(4.0 m)
9 ft (2.7 m)	20 x 20 ft (6.1 x 6.1 m)	400 ft² (37.2 m²)	14.5 ft	(4.4 m)
10 ft (3.0 m)	22 x 22 ft (6.7 x 6.7 m)	484 ft² (44.9 m²)	16 ft	(4.9 m)
12 ft (3.7 m)**	26 x 26 ft (7.9 x 7.9 m)	676 ft² (62.4 m²)	19 ft	(5.8 m)

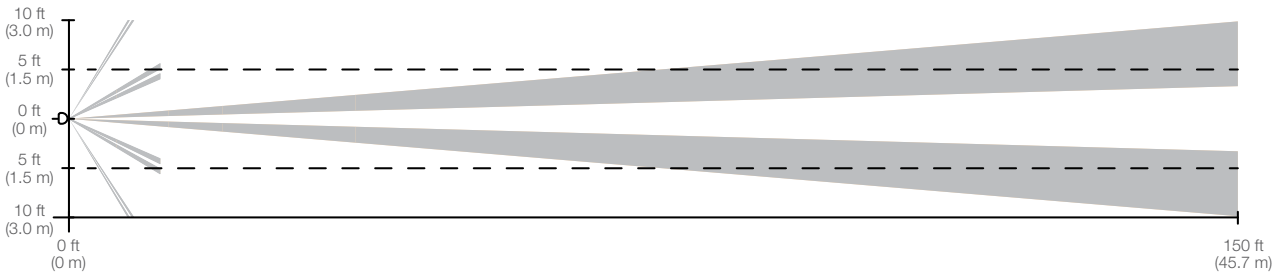
* Sensor mounting shown at 7 ft (2.1 m). Mounting height should be between 6 and 8 ft (1.6 and 2.4 m).

** 12 ft (3.7 m) is the maximum mounting height allowed.

Hallway*, long narrow field of view

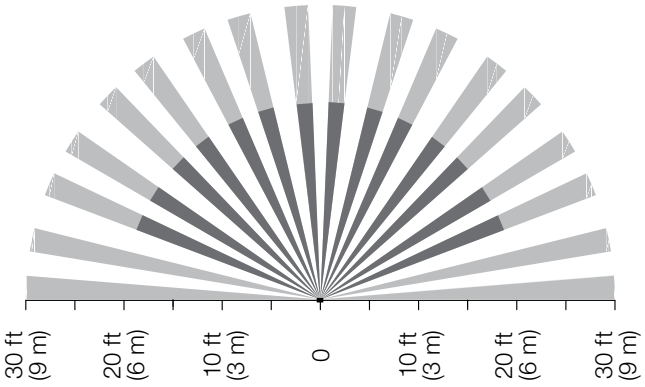
Coverage varies by hallway width and length

Top view

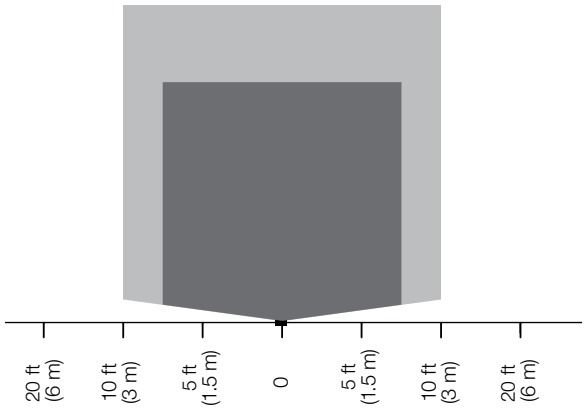


In-wall

PIR beam diagram
(for reference only)



Ultrasonic coverage
(for reference only)



Hallway sensor maximum recommended length chart (sensor centered within hallway)

Width of hallway		Length of hallway	
6 ft	(1.6 m) or less	50 ft	(15.2 m)
8 ft	(2.4 m)	100 ft	(30.5 m)
10 ft	(3.0 m) or more	150 ft	(45.7 m)

* Sensor mounting shown at 7 ft (2.1 m). Mounting height should be between 6 and 8 ft (1.6 and 2.4 m).

Ordering information

Model number	Description	List Price (US)
Maestro Wireless® switches and 5 A 2-button RF switch*		
PD-5S-DV-XX	5 A lighting, 3 A fan (1/10 HP motor, 120 V only) 120-277 V, no neutral	89.00
MRF2-6ANS-XX	6 A lighting, 3 A fan (1/10 HP motor), 120 V	88.00
MRF2-8ANS-120-XX	8 A lighting, 5.8 A fan (1/4 HP motor), spec grade, 120 V	120.00
MRF2-8S-DV-XX	8 A lighting, 3 A fan (1/10 HP motor, 120 V only), spec grade	150.00

Maestro Wireless dimmers*		
MRF2-6CL-XX	150 W dimmable CFL/LED, 600 W incandescent/halogen, 120 V	88.00
MRF2-6MLV-XX	600 W/600 VA incandescent/halogen/MLV, 120 V	100.00
MRF2-6ND-120-XX	600 W/600 VA incandescent/halogen/MLV, neutral wire, 120 V	130.00
MRF2-10D-120-XX	1000 W/1000 VA incandescent/halogen/MLV, spec grade, 120 V	130.00
MRF2-F6AN-DV-XX	6 A lighting, 3-wire fluorescent, spec grade, 120–277 V	180.00
MRF2-6ELV-120-XX	600 W ELV, 120 V	189.00

Maestro Wireless tabletop lamp dimmer*		
MRF2-3LD-XX	300 W lamp dimmer, incandescent/halogen, 120 V	130.00

Stairwell fixtures**		
FXSWXX14SL232U51SMXXWH	4 ft, 2 lamp, T8 fluorescent, 50% high-end, 10% low-end, 120/277 V	390.00
FXSWXX14SL232U82SMXXWH	4 ft, 2 lamp, T8 fluorescent, 80% high-end, 20% low-end, 120/277 V	390.00
FXSWXX14SLLC1U51SMXXWH	4 ft, 17 W, 1500 lumens, 4000 K LED, 50% high-end, 10% low-end, 120/277 V	660.00
FXSWXX14SLLC1U82SMXXWH	4 ft, 17 W, 1500 lumens, 4000 K LED, 80% high-end, 20% low-end, 120/277 V	660.00

PowPak® relay module		
RMJ-5R-DV-B	5 A relay	89.00
RMJ-5RCCO1-DV-B	5 A relay with one contact closure output	104.00
RMJ-16R-DV-B	16 A relay	109.00
RMJ-16RCCO1-DV-B	16 A relay with one contact closure output	124.00
RMJ-H20R-DV-B	20 A general purpose switch	300.00

Model number	Description	List Price (US)
PowPak® dimming module with EcoSystem®		
RMJ-ECO32-DV-B	Controls up to 32 EcoSystem, EcoSystem H-Series or Hi-lume® 3D ballasts, or Hi-lume A-Series LED drivers	170.00
PowPak dimming module with 0-10 V control		
RMJ-5T-DV-B	Controls up to 5 A of 0-10 V controlled fixtures	130.00
PowPak contact closure output module		
RMJ-CCO1-24-B	one contact closure output	89.00

PowPak plug-in dimming module		
MRF2-3PD-1-XX	300 W, 1-receptacle, incandescent/halogen, 120 V	99.00
MRF2-3PD-3-XX	300 W, 3-receptacle, incandescent/halogen, 120 V	99.00

PowPak plug-in appliance module		
MRF2-15APS-1-XX	15 A plug-in switch, 1-receptacle, 120 V	99.00
MRF2-15APS-3-XX	15 A plug-in switch, 3-receptacle, 120 V	99.00

EcoSystem H-Series ballasts†		
EHDT832MU110	T8 linear, 32 W, 1-lamp, 120-27 V, 1.0 ballast factor	79.00
EHDT832MU117	T8 linear, 32 W, 1-lamp, 120-277 V, 1.17 ballast factor	79.00
EHDT832MU210	T8 linear, 32 W, 2-lamp, 120-277 V, 1.0 ballast factor	79.00
EHDT832MU217	T8 linear, 32 W, 2-lamp, 120-277 V, 1.17 ballast factor	79.00
EHDT528MU110	T5 linear, 28 W, 1-lamp, 120-277 V, 1.0 ballast factor	89.00
EHDT528MU210	T5 linear, 28 W, 2-lamp, 120-277 V, 1.0 ballast factor	89.00
EHDT554MU110	T5HO linear, 54 W, 1-lamp, 120-277 V, 1.0 ballast factor	89.00
EHDT554MU210	T5HO linear, 54 W, 2-lamp, 120-277 V, 1.0 ballast factor	89.00
EHDT817MU110	T8 linear, 17 W, 1-lamp, 120-277 V, 1.0 ballast factor	89.00
EHDT817MU210	T8 linear, 17 W, 2-lamp, 120-277 V, 1.0 ballast factor	89.00
EHDT825MU110	T8 linear, 25 W, 1-lamp, 120-277 V, 1.0 ballast factor	89.00
EHDT825MU210	T8 linear, 25 W, 2-lamp, 120-277 V, 1.0 ballast factor	89.00
EHDT514MU110	T5 linear, 14 W, 1-lamp, 120-277 V, 1.0 ballast factor	89.00
EHDT514MU210	T5 linear, 14 W, 2-lamp, 120-277 V, 1.0 ballast factor	89.00
EHDT521MU110	T5 linear, 21 W, 1-lamp, 120-277 V, 1.0 ballast factor	89.00
EHDT521MU210	T5 linear, 21 W, 2-lamp, 120-277 V, 1.0 ballast factor	89.00
EHDT524MU110	T5HO linear, 24 W, 1-lamp, 120-277 V, 1.0 ballast factor	89.00
EHDT524MU210	T5HO linear, 24 W, 2-lamp, 120-277 V, 1.0 ballast factor	89.00
EHDT539MU110	T5HO linear, 39 W, 1-lamp, 120-277 V, 1.0 ballast factor	89.00
EHDT539MU210	T5HO linear, 39 W, 2-lamp, 120-277 V, 1.0 ballast factor	89.00
EHDT832GU310	T8 linear, 32 W, 3-lamp, 120-277 V, 1.0 ballast factor	129.00
EHDT832GU317	T8 linear, 32 W, 3-lamp, 120-277 V, 1.17 ballast factor	129.00

* Price indicated for gloss finish products.

** Partial list only; for complete list of available fixtures visit **www.lutron.com/stairwellfixture**.

† Dimming ballasts require rapid start sockets. For more information see Lutron App Note #122.

Ordering information

Model number	Description	List Price (US)
Radio Powr Savr™ occupancy/vacancy sensors*		
LRF2-OCR2B-P-WH	Ceiling-mount, 360° field-of-view, occupancy/vacancy sensor	85.00
LRF2-OWLB-P-WH	Wall-mount, 180° field-of-view, occupancy/vacancy sensor	85.00
LRF2-OKLB-P-WH	Corner-mount, 90° field-of-view, occupancy/vacancy sensor	85.00
LRF2-OHLB-P-WH	Hallway, occupancy/vacancy sensor	85.00

Simple Energy Retrofit packages**		
MRF2-1S8A-1OC*	One Maestro Wireless® 8 A, no neutral switch, 120/277 V, one Claro® 1-gang wallplate, one Radio Powr Savr wireless ceiling-mount occupancy/vacancy sensor	198.00
MRF2-1S8A-1OW	One Maestro Wireless 8 A, no neutral switch, 120/277 V, one Claro 1-gang wallplate, one Radio Powr Savr wireless wall-mount occupancy/vacancy sensor	198.00

MRF2-1S8A-1OK	One Maestro Wireless 8 A, no neutral switch, 120/277 V, one Claro 1-gang wallplate, one Radio Powr Savr wireless corner-mount occupancy/vacancy sensor	198.00
MRF2-1S8A-1OH	One Maestro Wireless 8 A, no neutral switch, 120/277 V, one Claro 1-gang wallplate, one Radio Powr Savr wireless hallway occupancy/vacancy sensor	350.00
Occupancy/vacancy sensor accessories		
L-CMDPIRKIT	Sensor lens masking kit for Radio Powr Savr ceiling sensor	11.80
L-CRMK-WH	Recess-mounting bracket for Radio Powr Savr ceiling sensor	17.00
LRF-ARM-WH	Flexible armature mounting kit for Radio Powr Savr wall, hall, corner sensors	59.00
L-WIRECAGE-WBX	Wire guard for in-wall sensor, White	65.00
L-WIRECAGE-C	Wire guard for ceiling-mount sensor, White	65.00
L-WIRECAGE-W	Wire guard for wall-mount and hallway sensors, White	65.00

Radio Powr Savr daylight sensor		
LRF2-DCRB-WH	Ceiling-mount daylight sensor	120.00

Pico® wireless remotes*†		
PJ2-3BRL-GXX-L01	3-button with raise/lower	21.00
PJ2-2BRL-GXX-L01	2-button with raise/lower	25.00
PJ2-3B-GXX-L01	3-button	25.00
PJ2-2B-GXX-L01	2-button	25.00
PJN-3BRL-GXX-L01	Nightlight 3-button with raise/lower	58.00
PJN-2B-GXX-L01	Nightlight 2-button	58.00

Model number	Description	List Price (US)
Pico® accessories		
L-PED1-XX	Pico wireless remote single pedestal	25.00
L-PED2-XX	Pico wireless remote double pedestal	40.00
L-PED3-XX	Pico wireless remote triple pedestal	100.00
L-PED4-XX	Pico wireless remote quadruple pedestal	120.00
PICO-WBX-ADAPT	Pico wireless remote wallbox adapter	8.00
Lamp Socket Wiring Tester		
FDB-LSWT-T5/T8	600 V, 100 KHz, 0.125 A max, CAT III	180.00

Maestro Wireless/Maestro® occupancy sensing control companion devices††		
MA-AS-XX	Multi-location companion switch, 120 V	35.50
MA-AS-277-XX	Multi-location companion switch, 277 V	44.00
MA-R-XX	Multi-location companion dimmer, 120 V	27.50
MA-R-277-XX	Multi-location companion dimmer, 277 V	44.00

Wallplates††		
CW-1-XX	Claro® 1-gang wallplate	4.90
CW-2-XX	Claro 2-gang wallplate	9.80
CW-3-XX	Claro 3-gang wallplate	15.00
CW-4-XX	Claro 4-gang wallplate	20.00

Gloss colors:

- S White (WH)
- S Ivory (IV)
- S Almond (AL)
- S Light Almond (LA)
- S Gray (GR)
- S Brown (BR)
- S Black (BL)

Satin Colors®:

- Hot (HT)
- Merlot (MR)
- Plum (PL)
- Turquoise (TQ)
- Sea Glass (SG)
- Midnight (MN)
- Sienna (SI)
- Terracotta (TC)
- Greenbriar (GB)
- Bluestone (BG)
- Taupe (TP)
- Eggshell (ES)
- Biscuit (BI)
- Snow (SW)
- Palladium (PD)
- Mocha Stone (MS)
- Goldstone (GS)
- Desert Stone (DS)
- Stone (ST)
- Limestone (LS)

Availability

S ☐ = Stock items, ship in 2 days

☐ = Satin Colors, ship in 2–10 days

* Vacancy models available to meet California Title 24 section 119(j) requirements.
** Available in White only.
† Price indicated for light or power text/icon labeling only.
†† Price indicated for gloss finish only.

Maestro® in-wall sensor

	Model number	Description	List Price (US)*
	**Sensor switches†**		
	MS-OPS2-XX	2 A lighting, 120 V PIR occupancy/vacancy; single pole, no neutral	29.00
	MS-OPS5M-XX	5 A lighting, 120 V PIR occupancy/vacancy; 3 A fan, multi-location/3-way/single pole, no neutral	41.50
	MS-OPS6M2-DV-XX	6 A lighting, 120-277 V PIR occupancy/vacancy, 3 A fan (120 V only); no neutral	53.00
	MS-OPS6M2N-DV-XX	6 A lighting, 120-277 V PIR occupancy/vacancy, 3 A fan (120 V only); neutral required	53.00
	MS-OPS6M2U-DV-XX	6 A lighting, 120-277 V PIR occupancy/vacancy, 3 A fan (120 V only); configurable ground or neutral wire	54.00
	**Dual-circuit sensor switches†**		
	MS-OPS6-DDV-XX	6 A lighting per circuit, 120-277 V PIR dual-circuit occupancy/vacancy; 4.4 A fan (120 V only) per circuit; single pole	89.00
	MS-PPS6-DDV-XX	6 A lighting per circuit, 120-277 V PIR dual-circuit partial-on occupancy/vacancy, 4.4 A fan (120 V only) per circuit; single pole	89.00
	**Sensor dimmers**		
	MS-Z101-XX‡	8 A lighting 120-277 V; occupancy/vacancy; multi-location/3-way/single pole	110.00
	MSCL-OP153M-XX†	C•L® dimmer with PIR sensor; occupancy/vacancy; single pole/3-way/multi-location; 150 W CFL/LED, 600 W incandescent/halogen	54.00
	**Dual-technology sensor switches‡**		
	MS-A102-XX	6 A lighting, 120-277 V dual-tech occupancy/vacancy sensor, 4.4 A fan (120 V only); single pole, no neutral	100.00
	MS-B102-XX	6 A lighting, 120-277 V dual-tech occupancy/vacancy sensor, 4.4 A fan (120 V only); multi-location/3-way, neutral required	100.00
	**Dual-technology dual-circuit sensor switches‡**		
	MS-A202-XX	6 A lighting per circuit, 120-277 V dual-tech occupancy/vacancy, 4.4 A fan (120 V only) per circuit; single pole, no neutral	125.00
	MS-B202-XX	6 A lighting per circuit, 120-277 V dual-tech occupancy/vacancy sensor, 4.4 A fan (120 V only) per circuit; 3-way, neutral required	125.00

* Price indicated for gloss finish only.
† Vacancy-only models available. Replace the "O" in the model number with a "V".
‡ For dual-tech or 0-10V vacancy models, add "-V-" before the color code (XX).

Wired sensors

Model number	Description	List Price (US)
LOS W Series		
LOS-WIR-WH	PIR self-adaptive with closure output, 20-24 VDC	141.90
LOS-WDT-WH	dual-technology self-adaptive, 20-24 VDC	194.00
LOS-WDT-R-WH	dual-technology self-adaptive with second output, 20-24 VDC	202.50

LOS C Series		
LOS-CDT-500-WH	dual-technology self-adaptive, 500 ft² (152 m²), 20-24 VDC	140.50
LOS-CDT-500R-WH	dual-technology self-adaptive with additional contact closure output, 500 ft² (152 m²), 20-24 VDC	152.20
LOS-CDT-1000-WH	dual-technology self-adaptive, 1000 ft² (305 m²), 20-24 VDC	179.70
LOS-CDT-1000R-WH	dual-technology self-adaptive with additional contact closure output, 1000 ft² (305 m²), 20-24 VDC	191.40
LOS-CDT-2000-WH	dual-technology self-adaptive, 2000 ft² (600 m²), 20-24 VDC	198.30
LOS-CDT-2000R-WH	dual-technology self-adaptive with additional contact closure output, 2000 ft² (600 m²), 20-24 VDC	210.00
LOS-CIR-1500-WH	PIR self-adaptive, 1500 ft² (457 m²), 20-24 VDC	109.10
LOS-CIR-450-WH	PIR self-adaptive, 450 ft² (137 m²), 20-24 VDC	114.80
LOS-CUS-500-WH	ultrasonic self-adaptive, 500 ft² (152 m²), 20-24 VDC	135.90
LOS-CUS-1000-WH	ultrasonic self-adaptive, 1000 ft² (305 m²), 20-24 VDC	155.20
LOS-CUS-2000-WH	ultrasonic self-adaptive, 2000 ft² (600 m²), 20-24 VDC	179.20

High Bay		
LUT-WSPEM24V-180-CPN6112	end-mount high bay occupancy sensor, 180° lens	270.00
FHB140NP24V-CPN5190	end-mount high bay occupancy sensor, 360° lens	270.00
LUT-WSPSM24V-180-CPN6111	surface-mount high bay occupancy sensor, 180° lens	270.00
LUT-WSPSM24V-360-CPN6111	surface-mount high bay occupancy sensor, 360° lens	270.00

1. Savings based on a comparison of installing a typical wired solution (including one wall switch, one wired sensor, and one power pack) at an estimated installation of 50 minutes, to a Lutron wireless solution (including one Maestro® wireless switch and one Radio Powr Savr™ occupancy sensor) at an estimated 15 minutes. Labor time may vary based on room size and conditions.

2. Energy Information Administration. 2003 Commercial Building Energy Consumption Survey, released September 2008.

3. Compared with manual (non-automated) controls, up to 60% lighting energy savings is possible on projects that utilize all of the lighting control strategies (occupancy sensing, high-end trim, personal control and daylight harvesting). Actual energy savings may vary, depending on prior occupant usage, among other factors.

4. VonNieda B, Maniccia D, & Tweed A. 2000. An analysis of the energy and cost savings potential of occupancy sensors for commercial lighting systems. Proceedings of the Illuminating Engineering Society. Paper #43.

5. Galasiu AD, et al. 2007. Energy saving lighting control systems for open-plan offices: A field study. Leukos. 4(1) pg 7-29.

6. Reinhart CF. 2002. Effects of interior design on the daylight availability in open plan offices. Study of the American Commission for an Energy Efficient Environment (ACE) Conference Proceedings. To achieve maximum lighting savings, automated shades are utilized.

7. Williams A, et al. 2012. Lighting Controls in Commercial Buildings. Leukos. 8(3) pg 161-180.

8. Ecos. 2011. Commercial office plug load savings assessment. California Energy Commission PIER Program.

9. Lutron study based on reduction in heating (base 60 °F) and cooling (base 55 °F) degree days with a 2 °F thermostat setback and 60% space un-occupancy. EnergyPlus modeling simulations were conducted and predicted similar savings.

10. Lighting alterations and control requirements
    - ASHRAE 90.1-2010: Lighting alterations that involve more than 10% of the lighting load in a space must meet the Automatic Lighting Shutoff provision (9.4.1.1). A lighting alteration includes the addition or removal of luminaires, or the replacement of lamps plus ballasts in a space.
    - IECC 2012: Lighting alterations require compliance with all of the lighting control requirements. A lighting alteration is defined as a replacement of 50% or more of the luminaires in a space. The replacement of only the lamps plus ballasts within an existing luminaire is exempt from meeting the control requirements in the space as long as the alteration doesn't increase the lighting power density (W/ft^2).
    - Title 24-2013: Replacement of more than 10% of the luminaires, or modifying 40 or more existing luminaires, requires compliance with all the control requirements for the altered space (daylight control and demand responsive control are not always required; see the Table 141.0E and 141.0F in the Standard for details).

11. Demand response is required in Title 24-2013 for buildings larger than 10,000 ft^2.

12. Luminaire alteration requirements are defined in Tables 141.0-E and F of Title 24-2013.

13. Occupancy sensing requires automatic shut-off after 30 minutes of vacancy.

14. Check codes for specific daylighting area size requirements.

15. Phillips, R. W. (1997). Educational Facility Age and the Academic Achievement of Upper Elementary School Students. Unpublished Doctoral Dissertation. University of Georgia.

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