



Simple and scalable
lighting control



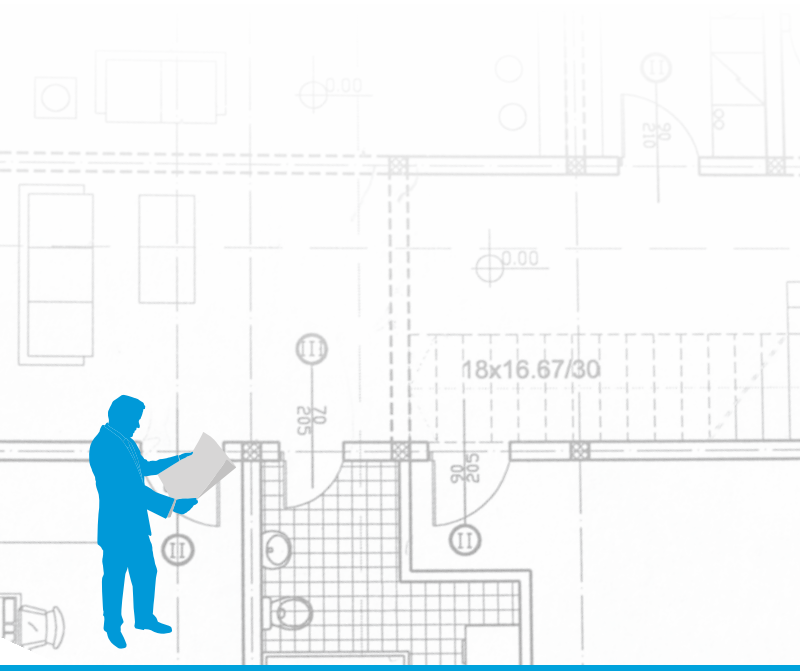
- DESIGN
- INSTALL
- MAINTAIN



Flexible control every step of the way

Introducing a revolutionary wireless lighting control solution for new and existing commercial buildings.





DESIGN

The flexibility you need to design your building

Build your system from a full suite of products — specify a simple occupancy sensor solution, or design a fully integrated lighting management system using the same suite of products

Combine individual fixture control and area control — Vive wireless solutions do not limit your options

Easily match controls to the fixture package — switching, 0-10V, phase control, EcoSystem, or any combination

Expand the system at any time — add control options, add new areas, easily upgrade software to add new features

Guaranteed reliability and performance — provide flicker-free dimming down to 0.1% with Lutron Hi-lume Premier LED drivers. This end-to-end solution delivers ultra-reliable operation and high performance

INSTALL

Wireless simplifies installation and reduces callbacks

Less wiring makes installation faster — reduce labor time by up to 70%¹

Setup is as simple as pushing a button or using your smart device — no manufacturer commissioning required, further reducing time and labor cost (the Lutron services team is always available if you want some additional support)

Start small and expand at any time — with no new wiring — meet budget requirements and changing space needs

Eliminate callbacks — Lutron's proven reliability helps you stay within budget and reduces your time on the job

MAINTAIN

Maximize productivity and building performance

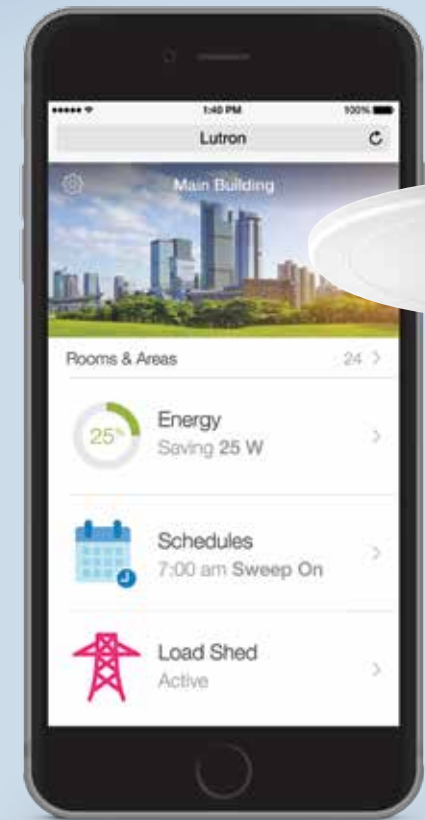
Monitor, adjust, and manage your system from any smart device — easily adjust the lighting control to accommodate building churn, improve occupant comfort, and enhance energy efficiency

Energy savings — lighting uses more electricity than any other building system. Lutron solutions can save up to 60%² or more of that lighting energy

Minimize down time — wireless controls install quickly to minimize disruption to building occupants

Expand capability — add new controls or upgrade software at any time without replacing the existing system

Simple integration — using BACnet protocol, connect with other building systems at the time of initial installation or whenever you expand the system



Vive Wireless Hub



Vive Vue software

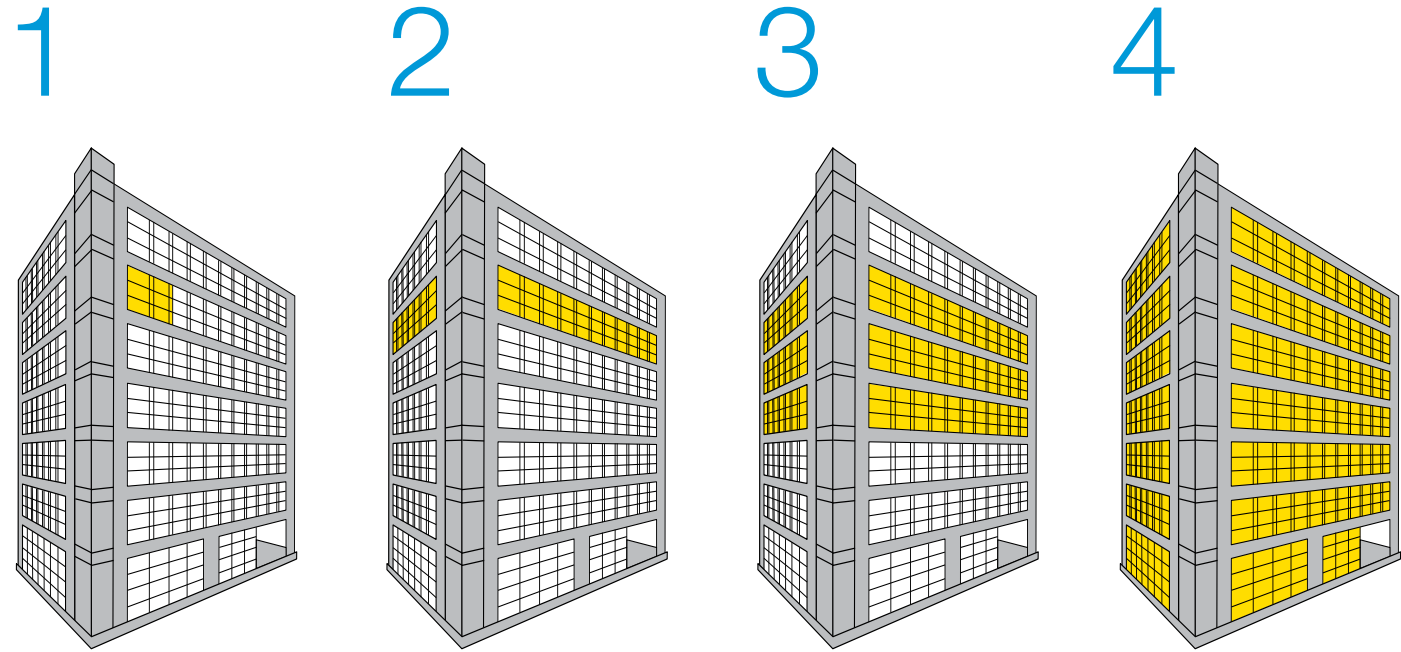
Vive wireless solutions give you the right solution now and for years to come

- Any budget
- Area, fixture and sensor controls
- Meet latest energy codes and standards
- No factory setup required

When you choose Lutron solutions, you can be confident that the system just works, and it will keep working



Vive wireless solutions offer a multi-strategy approach that accommodates your budget and performance needs now, and for the future of your building.



1
Single office space

Start by adding control in a single space and expand as budgets and occupant schedules allow.

2
Single floor

Expand to new areas or an entire floor at any time without reprogramming or replacing existing equipment.

3
Multiple floors

Duplicate the success of one floor across other floors as your business expands or tenants change. Control can be independent on each floor, or linked via Vive wireless hubs.

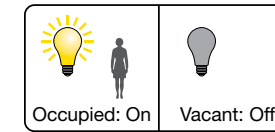
4
Entire building

Vive offers seamless integration to other building management systems to control every light in your building.

Combine lighting control strategies to maximize efficiency

What is the savings opportunity?

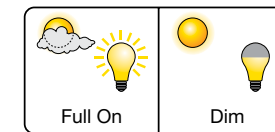
Lutron solutions can save 60%³ or more lighting energy.



Occupancy/vacancy sensing turns lights on when occupants are in a space and off when they vacate the space.

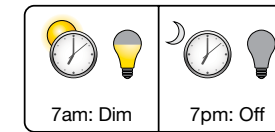
Potential savings

20–60%
Lighting⁴



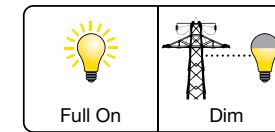
Daylight harvesting dims electric lights when daylight is available to light the space.

25–60%
Lighting⁵



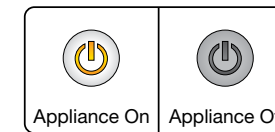
Scheduling provides pre-programmed changes in light levels based on time of day.

10–20%
Lighting⁶



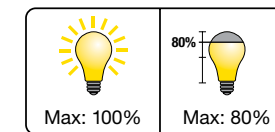
Demand response automatically reduces lighting loads during peak electricity usage times.

30–50%
Peak Period⁷



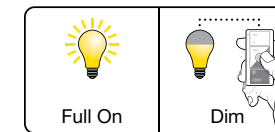
Plug load control automatically turns off loads after occupants leave a space.

15–50%
Controlled Load⁸



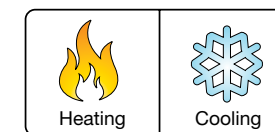
High-end trim sets the maximum light level based on customer requirements in each space.

10–30%
Lighting⁹



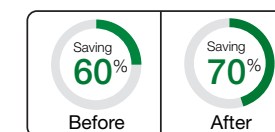
Personal dimming control gives occupants the ability to adjust the light level.

10–20%
Lighting¹⁰



HVAC integration controls heating, ventilation, and air conditioning systems through contact closure, or BACnet protocol.

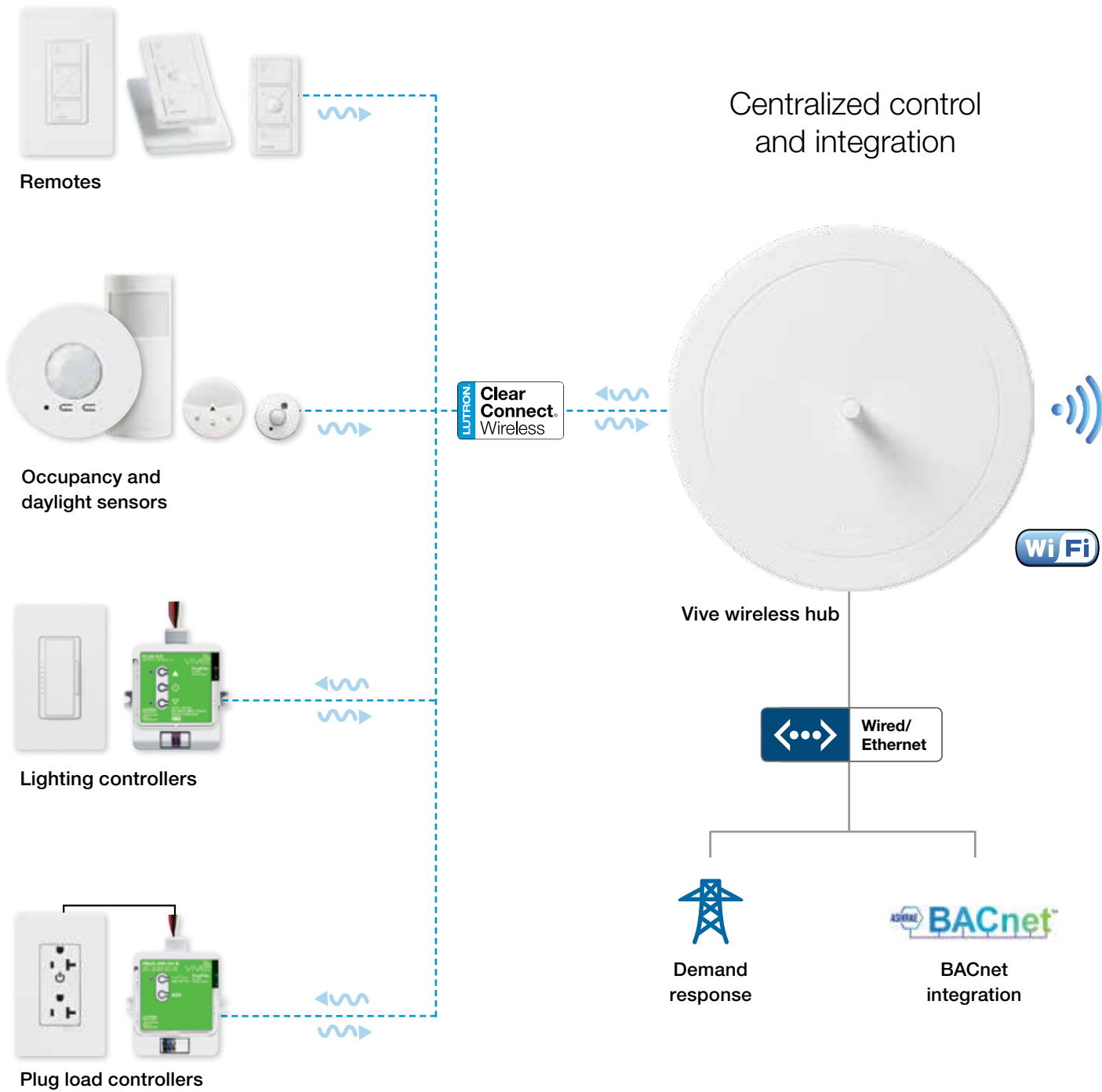
5–15%
HVAC¹¹



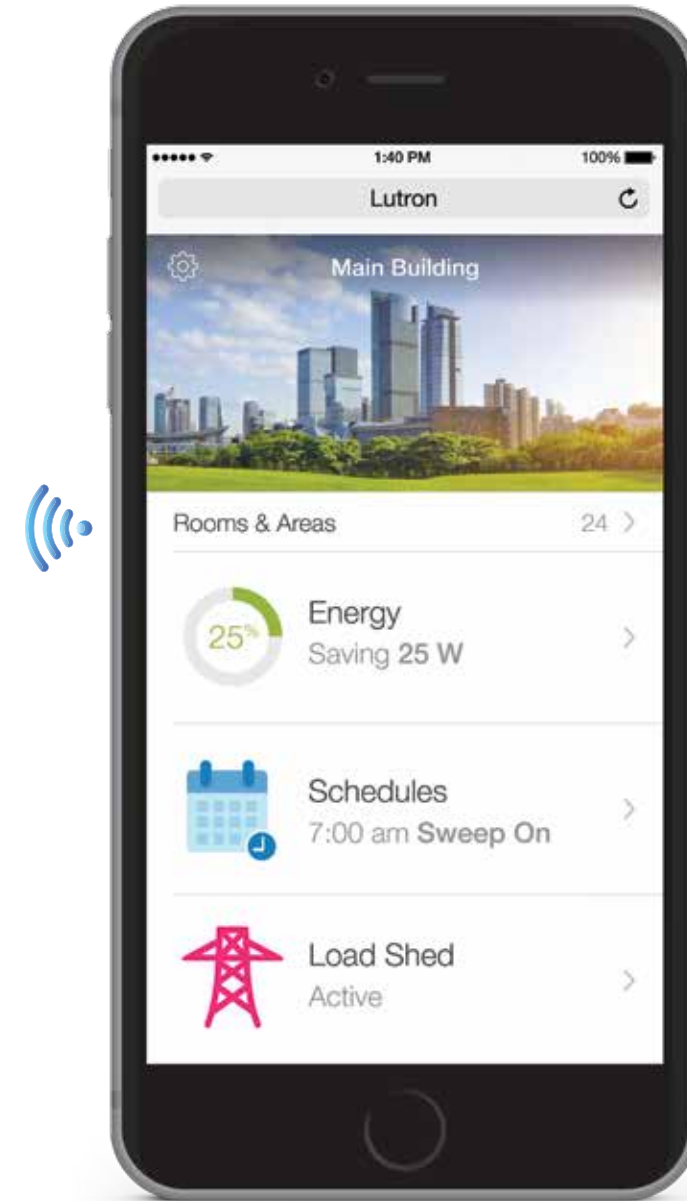
System Optimization Service from Lutron identifies important lighting control adjustments to save additional energy and create a more productive work environment on an ongoing basis.

Variable

Wireless controls and sensors



Simple-to-use software



Vive Vue software

Communication protocols



Communicate via RF to control components



Communicate via WiFi to smart devices



Communicate with wired Ethernet to Vive hub

The right control in the right space

The Vive product family lets you personalize control to each space in your building without locking you into more or less control than you need

Simple switching

Restroom

Occupancy sensors control all lights together by switching lights on and off in response to room occupancy.



Switch | Occupancy sensor

Area dimming and sensing

Private office

Dim a group of lights together while also providing manual control. Save additional energy with daylight harvesting.



Dimming module | Occupancy sensor | Daylight sensor | Pico remote

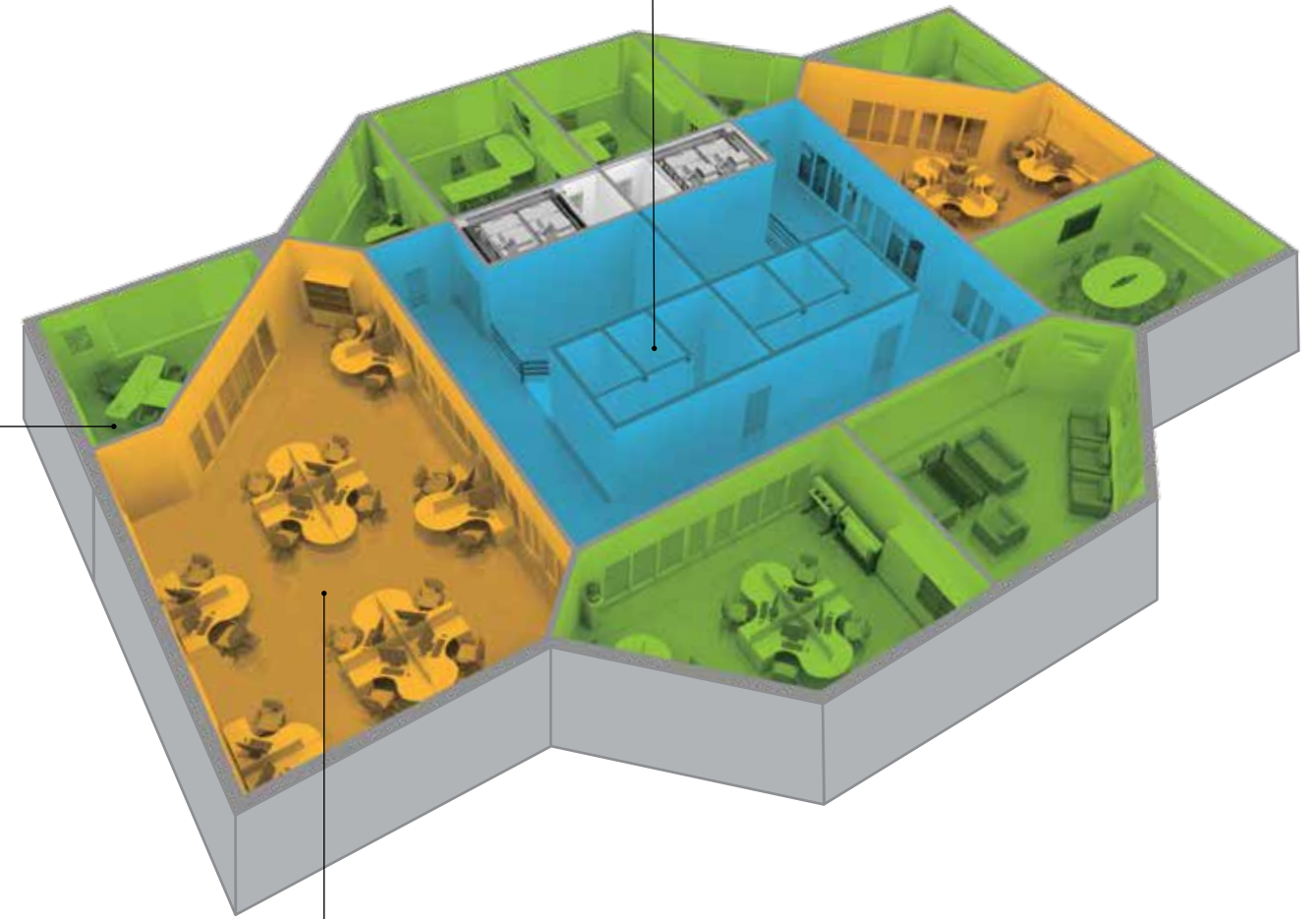
Individual fixture dimming and sensing

Open office

Maximize energy savings and give each occupant personal dimming control to increase comfort and enhance productivity.



Fixture control | Fixture sensor | Pico remote

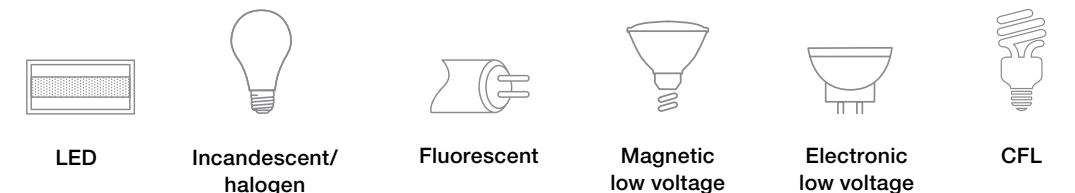


Vive wireless solutions — Choose any load and control type

Any control type

- High-performance dimming with Lutron Hi-lume EcoSystem
- Other control types
 - 0-10V
 - Phase control
 - Switching
 - CCO

Any load type

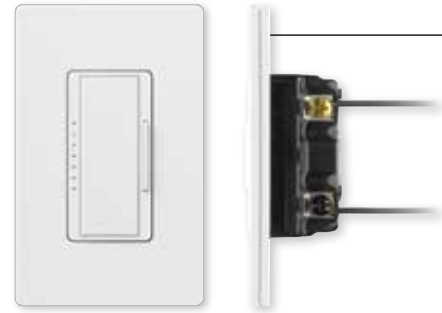


Simple retrofit — installs 70%¹ faster than wired systems

Vive wireless solutions reduce installation time and cost regardless of what space or solution you choose.

Wallbox mount

- Replace an existing switch in a standard wallbox to control a group of lights
- No new wiring required – works with the existing wiring
- Switching and dimming options available
- Communicates wirelessly to sensors and remotes



Wireless switch/dimmer

Wallbox mount



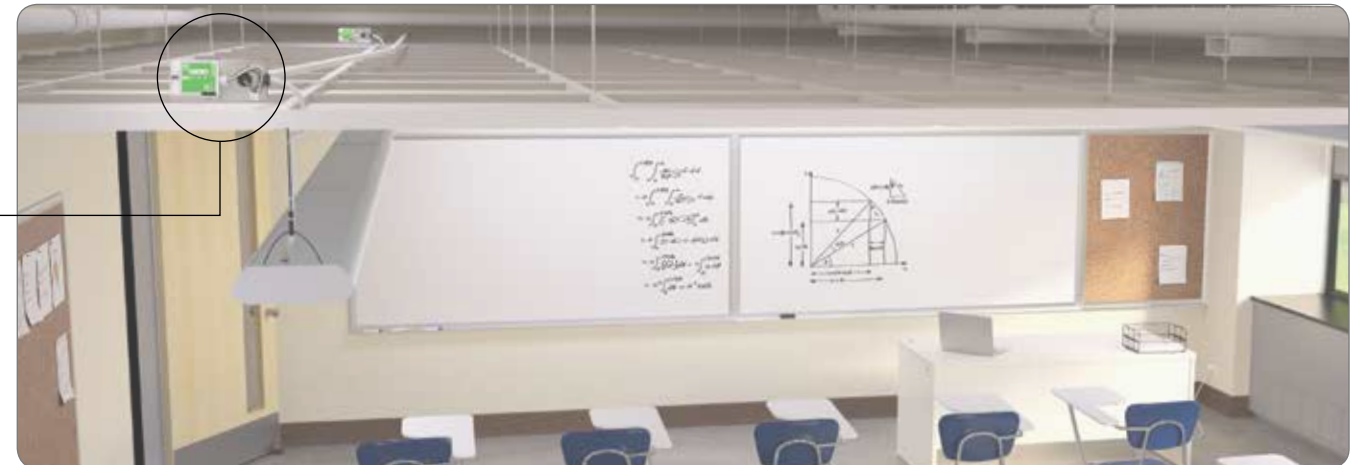
Ceiling mount

- PowPak modules mount on a standard junction box in the ceiling to control a group of lights
- Saves installation time by eliminating wiring down through walls
- Switching and dimming options available
- Communicates wirelessly to sensors and remotes



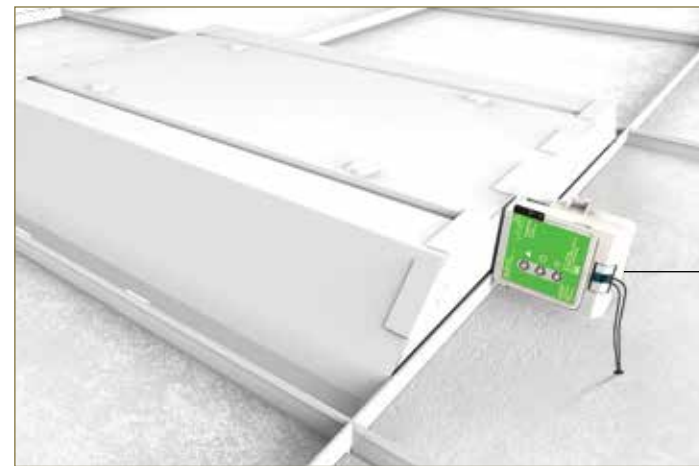
PowPak with J-box

Ceiling mount



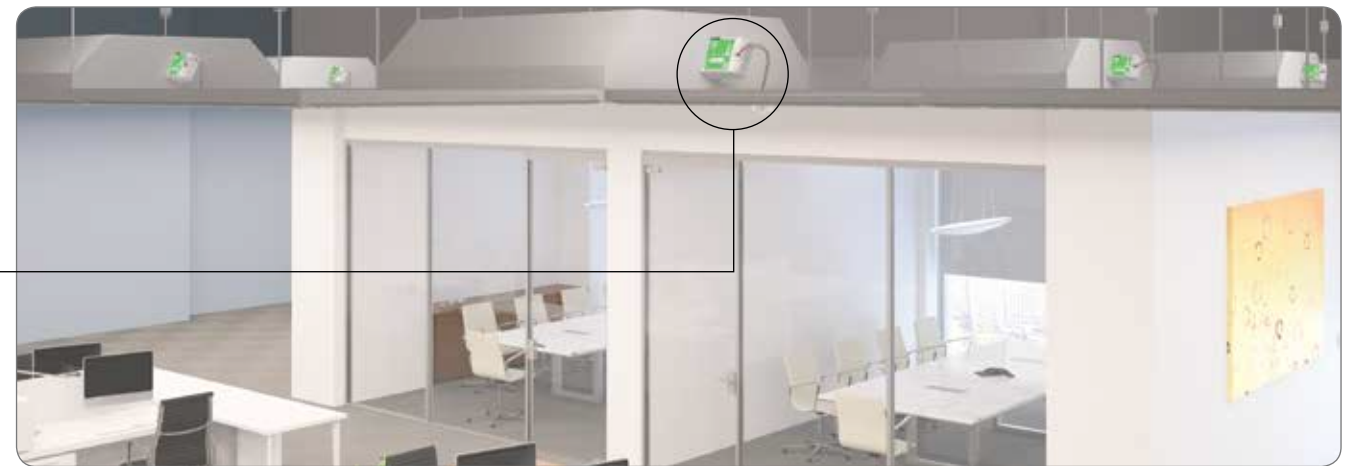
Fixture mount

- Simple to design and estimate—just count the fixtures
- PowPak wireless fixture control installs on each fixture
- No additional wiring
 - Works with existing high-voltage wiring, regardless of room layout
 - No new wiring between fixtures
- Provides personal control for each occupant to maximize comfort and energy savings
- Communicates wirelessly to sensors and remotes
- Works with any 0-10V or EcoSystem driver or ballast
- High-performance dimming with Lutron Hi-lume EcoSystem drivers



PowPak wireless fixture control

Fixture mount



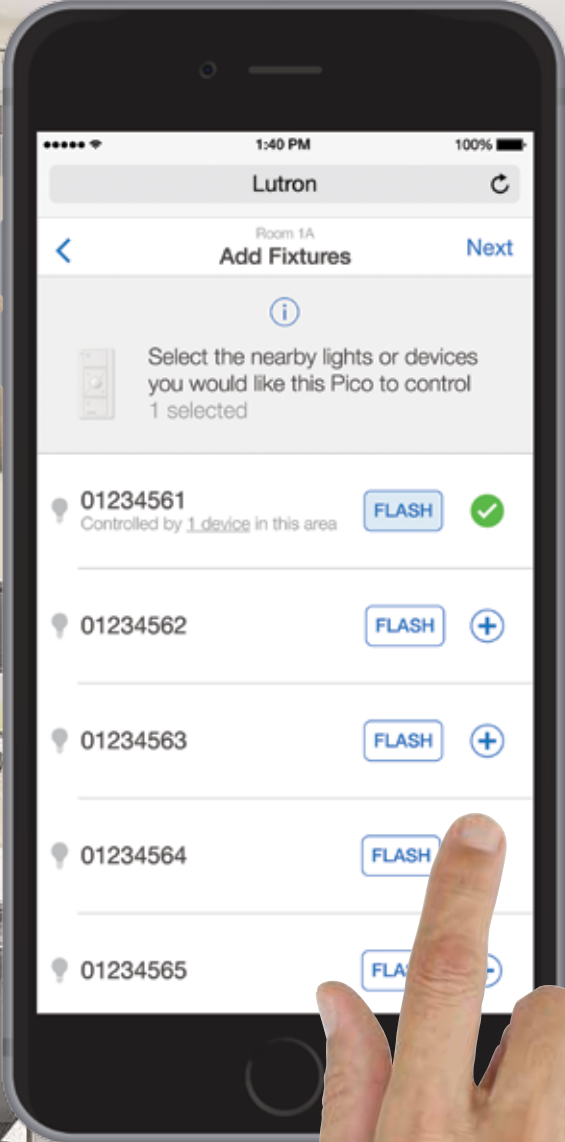
Simple setup and programming options with the Vive wireless hub

Mobile phone setup

Using Vive Vue software on any smart device you can wirelessly connect system controls and program system settings—no ladder required. Lutron’s patent pending RF signal strength detection automatically finds nearby devices making job setup faster.

1 Press and hold on wireless device

2 Automatic fixture identification
Lutron patent pending technology automatically finds and sorts the wireless devices closest to the control



For systems without a Vive wireless hub

Push button set up

Use simple button-press programming to select and associate wireless devices—it’s as easy as setting a station on your car radio.



Wireless dimmer

Press and hold for 6 seconds



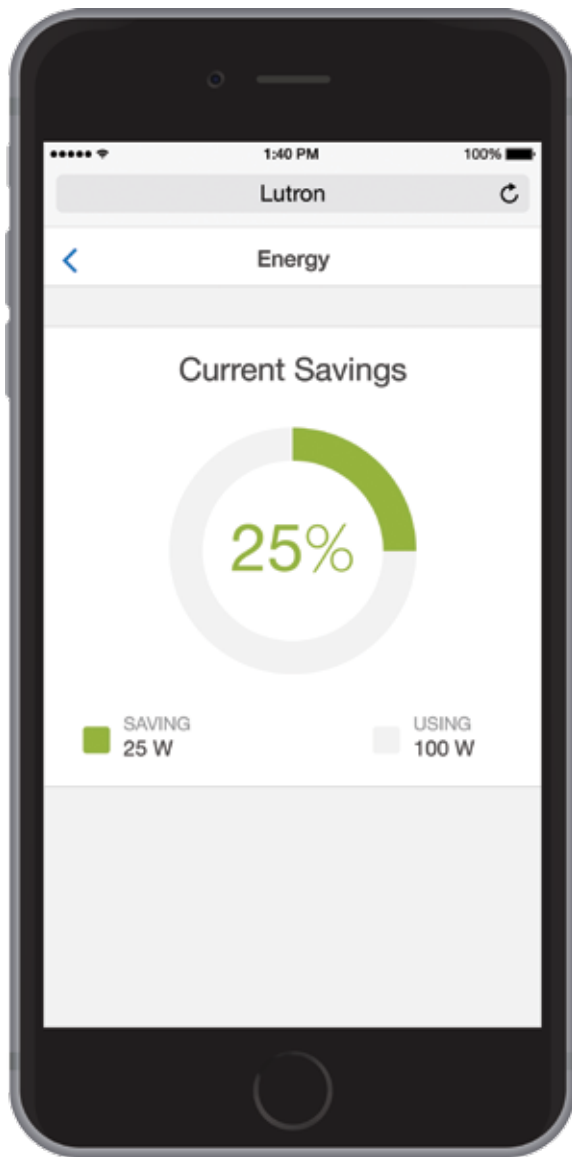
Occupancy sensor

Press and hold for 6 seconds
It works! Sensor now talks to the wireless dimmer



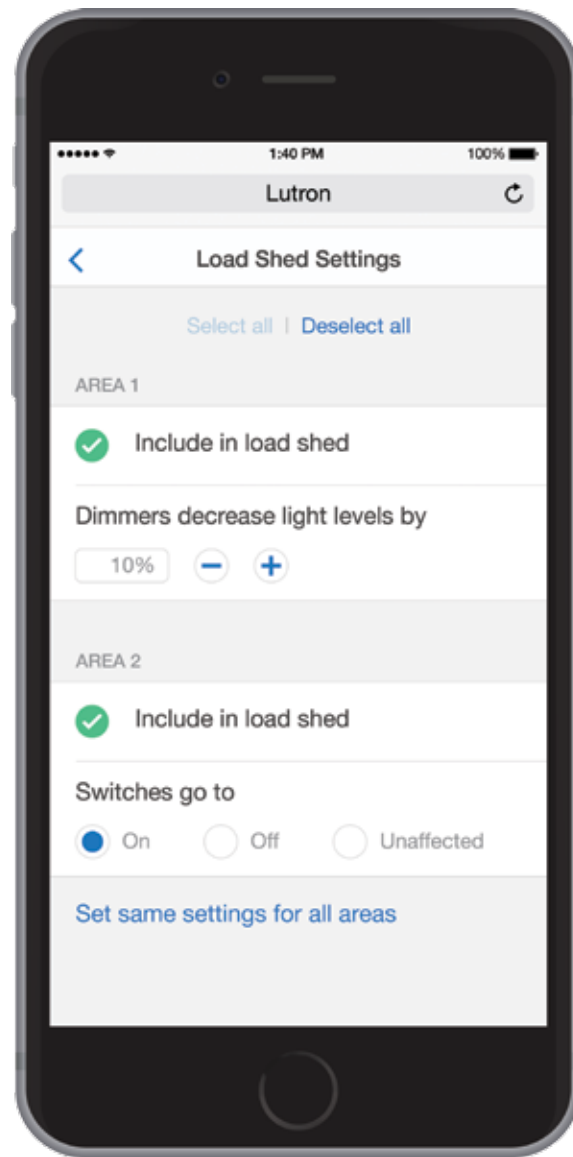
Energy reporting

Quickly view and display energy usage information to drive decision making and demonstrate savings.



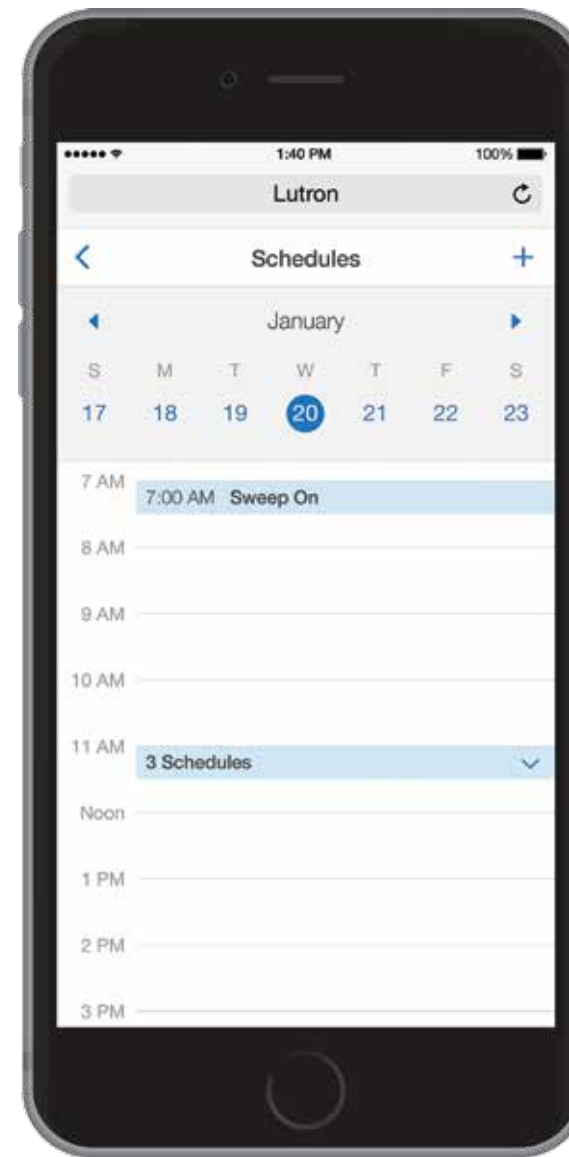
Load shed

Easily set lighting reduction levels that automatically respond during peak electricity usage times.



Schedules






Use a simple, weekly calendar to automatically adjust lights based on time of day.



Seamlessly integrate with your building system



The BACnet/IP protocol is the primary means of integration. BACnet is embedded or native in the Vive wireless hub, which means no external interfaces or gateways are required in order to communicate with other systems.

-  **Building/Energy Management Systems (BMS/EMS)**
-  **HVAC**
-  **IT**
-  **Audio & Video**
-  **Energy Dashboards and Analytics Packages**



Clear Connect wireless technology

All Lutron wireless products utilize Lutron patented Clear Connect wireless technology which operates in an uncongested radio frequency band. The result is ultra-reliable communication and smooth dimming performance with no flicker or delay. Other devices will not interfere with the Lutron lighting control system.

Clear Connect

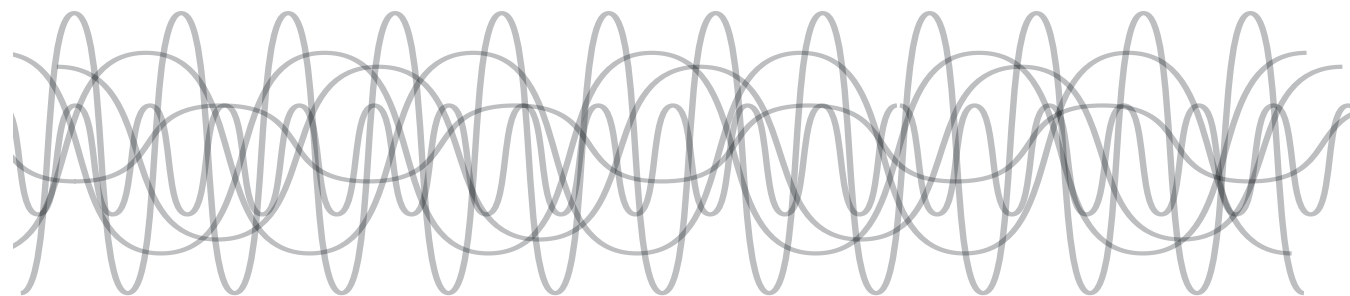


434 MHz: Lutron Clear Connect wireless technology

Lutron devices operate in an uncongested frequency band, providing ultra-reliable operation



“Other” frequency bands



2.4 GHz: Cordless phones | Bluetooth devices | Wireless security cameras

Other devices operate in congested frequency bands, creating a high potential for wireless interference

XCT sensing technology

Lutron’s occupancy sensing won’t leave occupants in the dark, eliminating callbacks

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



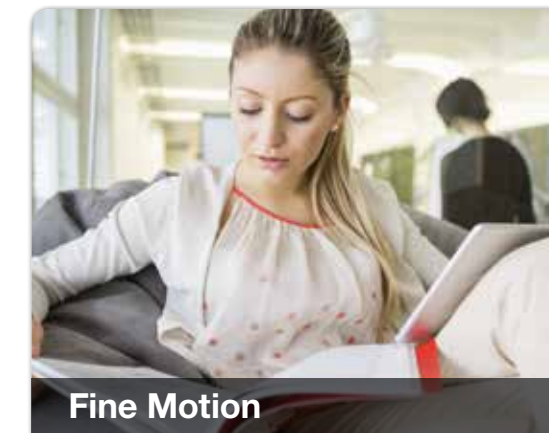
Major Motion

Person walking 3 feet



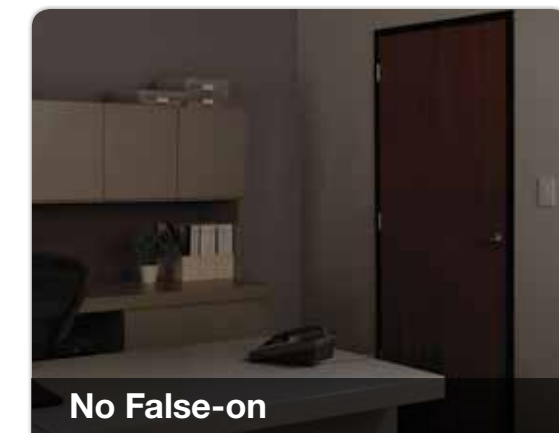
Minor Motion

Movements like extending our arms



Fine Motion

Small movements like flipping pages of a book



No False-on

Lights stay off when room is unoccupied

Setup the system yourself, or choose the right mix of support services.

Lutron offers a variety of flexible, scalable support options to meet the needs of your project and your budget.



Do it yourself

Vive is designed to make installation and setup easy. Instructions are included with the product, and comprehensive online help is available 24/7 on Lutron.com/ViveResources.

Simple-to-follow videos and product guides are just a click away.



Get a little help

If you're looking for some extra peace of mind, Lutron Services can be purchased in flexible blocks of time to provide just the right amount of support.

The Services Team can provide training, walk you through setup for a specific project area, answer any other questions you have, or help finish setup by closing punch list items.

Choose from remote (online or phone-based) setup support, or have a Lutron Service Technician come to your site.



Leave the setup to us

If you prefer, the Lutron Services Team can execute the full system setup.

Both remote and onsite setup services are available. Remote startup is generally a lower cost option and requires less lead time.

Remote setup — a designated member of your team works with an off-site, Lutron-certified remote technician.

Onsite setup — a Lutron-certified service technician will perform the complete system setup at your project site.

Access to tools and resources is at your fingertips.

Exclusive access and quick answers keep your project moving.



Designer+ for Vive

Lutron Designer+ for Vive is an intuitive, easy to use design software tool that allows you to design a Lutron Vive lighting control system with visual “drag and drop” layout and connections. It also allows you to generate comprehensive system design documentation, including bills of materials, one-line diagrams, and sequence of operations.

For access to Lutron Designer+ for Vive, please contact lutrondesigner@lutron.com.



Vive Videos

Get access to Lutron Vive videos 24/7. Step-by-step setup, installation, and programming help whenever you need it. Lutron.com/ViveResources.



Vive Forum & FAQs

Have a question? Go to Forums.lutron.com to search Frequently asked Questions, pose a question, or talk to other Vive users in a live forum.

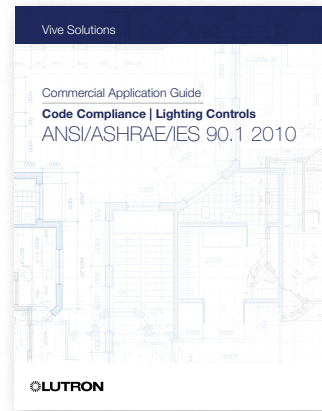
If you are not sure what kind of support you need, Lutron can help.

Contact your local Lutron sales representative to discuss your project.

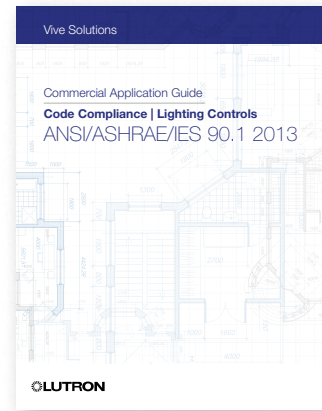
App guides to help you meet codes

Codes can often be complicated and difficult to navigate. We have commercial application guides that include examples of different spaces and corresponding Lutron products for those spaces, which show you how you can use Lutron solutions to meet or exceed major energy code requirements.

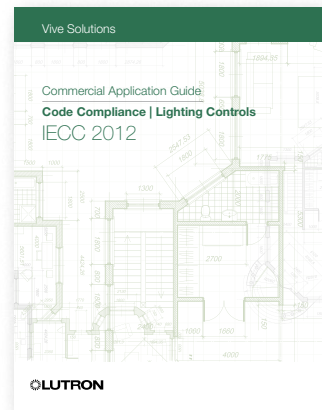
Available online at www.lutron.com/appguides



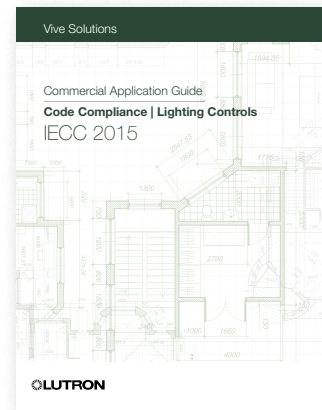
ASHRAE 2010



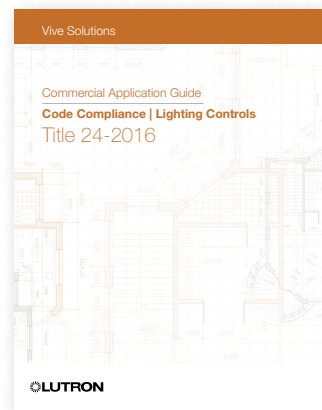
ASHRAE 2013



IECC 2012



IECC 2015



Title 24 2016

Summary of code requirements for lighting control

Vive wireless solutions ensure you can meet new construction and retrofit (lighting alterations¹²) code requirements for ASHRAE 2010, ASHRAE 2013, IECC 2012, IECC 2015, and Title 24-2016¹³.

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

Control Method(s)	Code Requirements					Solution(s)	
	ASHRAE 90.1-2010	ASHRAE 90.1-2013	IECC 2012	IECC 2015	Title 24-2016	Vive	Vive with wireless hub
Local Switch	•	•	• •	• •	• •	✓	✓
Occupancy Sensing ¹⁴	• •	• •	• •	• •	• •	✓	✓
Bi-level Control	•	•	• •	• •	• •	✓	✓
Multi-level dimming					• •	✓	✓
Automatic Daylighting	•	•		• •	• •	✓	✓
Demand Response					• •		✓
Energy Monitoring		•			•		✓

Key: • New Construction • Lighting Alteration

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.



Vive wireless hub

Dimensions

- W: 6.5" (165 mm)
- H: 1.5" (38 mm)
- D: 2.8" (71 mm)



Vive hub power supply

Dimensions

- W: 4.0" (102 mm)
- H: 1.7" (43 mm)
- D: 2.8" (71 mm)

Features and benefits

- Communicates with controls on a floor using Lutron wireless Clear Connect technology (range radius of 71 ft [22 m])
- Distributed system architecture
 - Pico remote controls and sensors communicate directly with the load devices they control and must be located within 30 ft (9 m) of the device with which they are associated
- Supports timeclock events based on both sunrise and sunset or fixed time-of-day
- Integrated multi-color LED provides feedback on what mode the hub is in
- Two contact closure Inputs for integration with devices by others including devices for Title 24 Automatic Demand Response

Product options

Vive wireless hub models

Standard

HJS-1-FM	Flush mount
HJS-1-SM	Surface mount

Premium

HJS-2-FM	Flush mount
HJS-2-SM	Surface mount

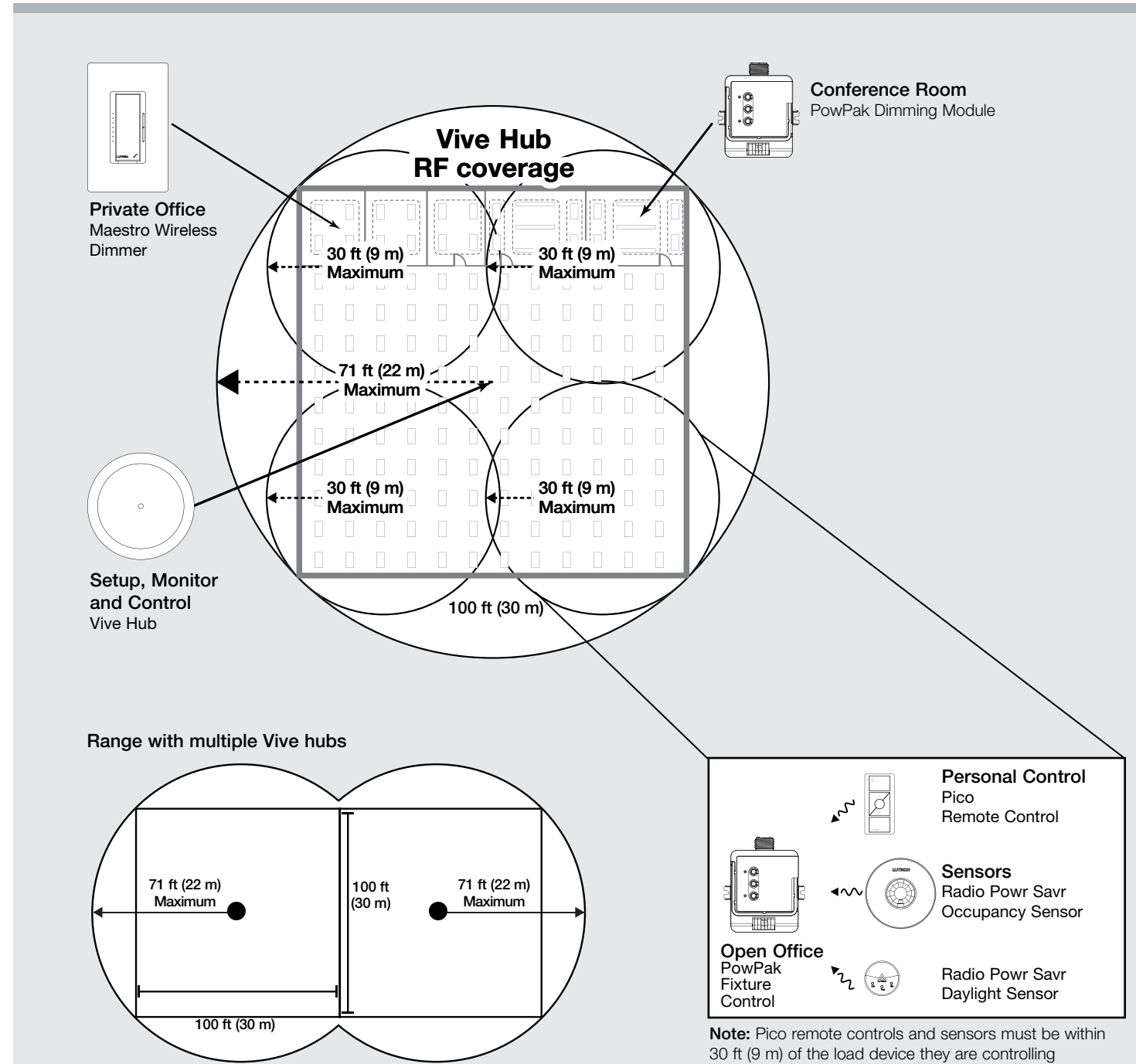
Note: A minimum distance of 10 ft (3 m) between Vive wireless hubs on the same floor is required.

Note: A corporate Wi-Fi network can interfere with the Wi-Fi on the Vive wireless hub. Where a corporate Wi-Fi network exists, it is recommended to do one of the following: 1) Connect to the Vive wireless hub and change the Wi-Fi channel to one that isn't used by the corporate network or 2) Connect the Vive wireless hub to the corporate network using the Ethernet connection on the hub, and disable the hub's Wi-Fi.

Note: Vive wireless hub must be mounted a minimum of 10 ft (3 m) from a Wi-Fi router or access point.

How it works

All wireless devices to be associated to the Vive wireless hub must be within 71 ft (22 m) of the Vive wireless hub and must be on the same floor as the Vive wireless hub.





PowPak relay module

Dimensions

W: 2.89" (48mm)
H: 3.44" (87mm)
D: 1.25" (32mm)

How to design and specify

- **One relay module**
For each controlled lighting zone in the space
- **Control**
Select appropriate model based on the size of the connected load
 - 5A:** 600 W or 1/6 HP @ 120V or 1385 W or 1/3 HP @ 277V
 - 16A:** 1920 W or 1/2 HP @ 120V or 4432 W or 1 1/2 HP @ 277V
- **Contact closure output**
For sending occupancy information to third-party equipment such as HVAC systems
- **Input** 120/277V

Product options

5A models

RMJS-5R-DV-B

RMJS-5RCCO1-DV-B One contact closure output

16A models

RMJS-16R-DV-B

RMJS-16RCCO1-DV-B One contact closure output



PowPak dimming module with 0-10V control

Dimensions

W: 2.89" (48mm)
H: 3.44" (87mm)
D: 1.25" (32mm)

How to design and specify

- **One dimming module with 0-10V control**
For each controlled 0-10V lighting zone in the space
- **Control**
8A: 0-10V controlled fixtures and switches compatible with third-party 0-10V fluorescent ballasts, LED drivers, and fixtures
- **Input** 120/277V

Product options

8A models with 0-10V control

RMJS-8T-DV-B



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

- **One contact closure output module**
For each additional contact closure output you require

Product options

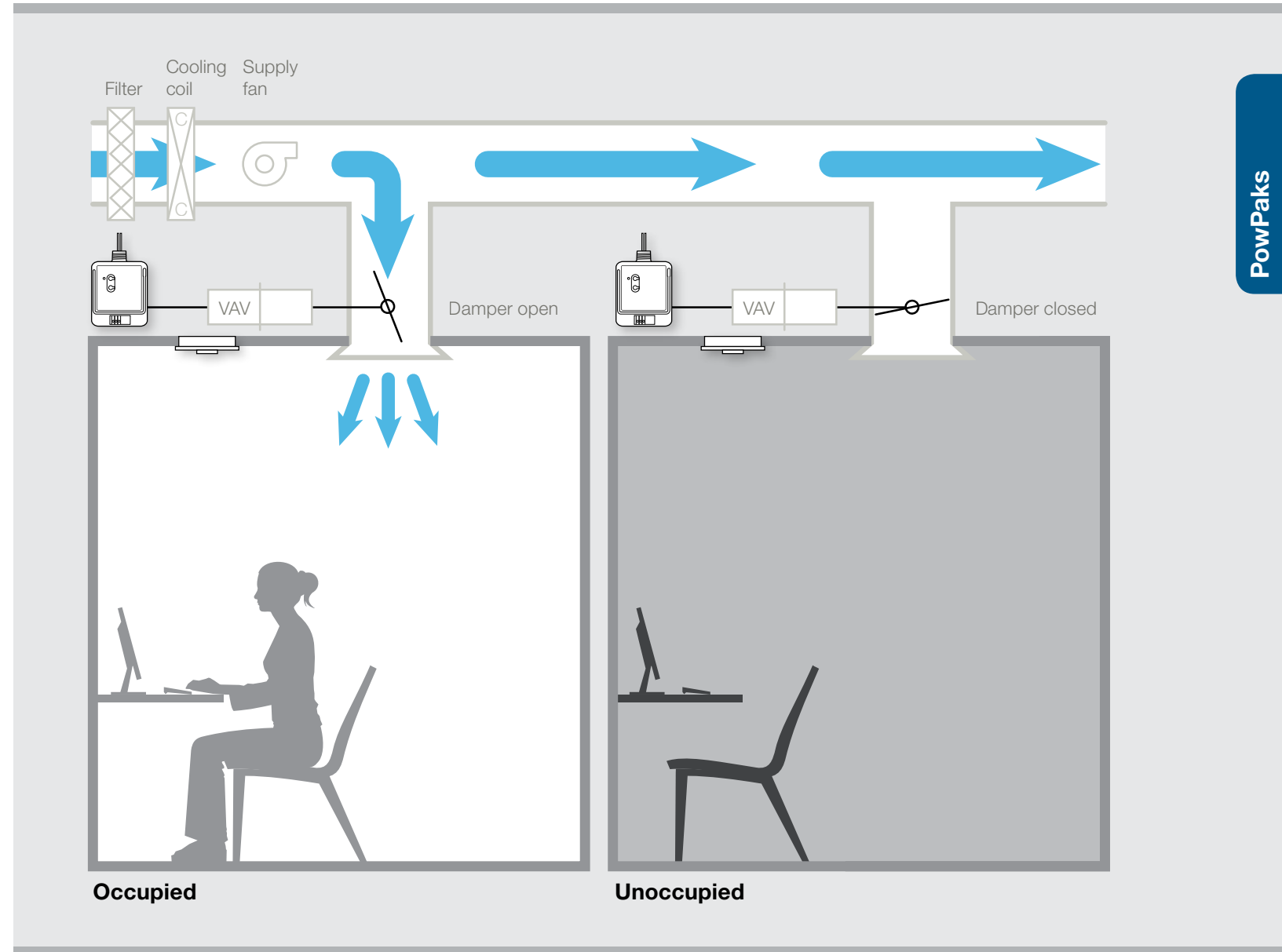
Standard

RMJS-CC01-24-B Contact closure output

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

How it works

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.



Radio Powr Savr occupancy/vacancy sensor (ceiling mount)



PowPak contact closure output module

PowPaks



PowPak relay module

Dimensions

- W: 2.89" (48mm)
- H: 3.44" (87mm)
- D: 1.25" (32mm)

How to design and specify

- **One relay module**
For each 20A receptacle circuit you want to control
- **Input** 120/277V

Product options

20A models

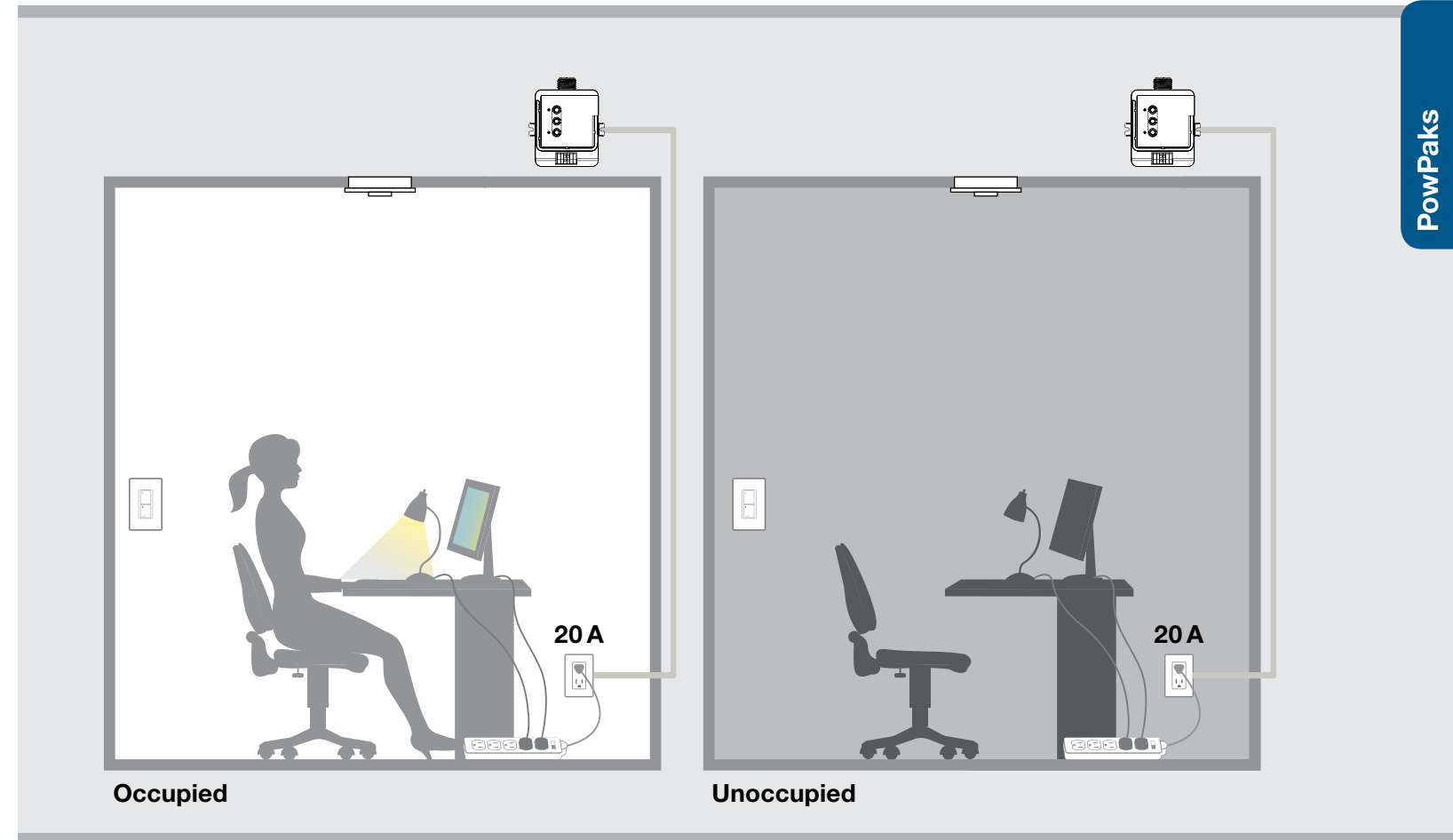
RMJS-20R-DV-B	General purpose switch 120-277V receptacles
RMJS-20RCCO1-DV-B	General purpose switch 20A, 120-277V receptacles with one contact closure output

How it works

Plug loads, such as task lighting, computer monitors, and printers, account for greater than 5% of commercial electricity usage³. Many energy codes now require control of receptacles for compliance.

The occupancy/vacancy sensor wirelessly communicates room occupancy 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.



Radio Powr Savr occupancy/vacancy sensor (ceiling mount)



Pico control with wallplate



PowPak 20 A relay receptacle module

PowPaks



Wireless individual fixture control

Dimensions

W: 2.89" (48 mm)
 H: 3.44" (87 mm)
 D: 1.25" (32 mm)



Fixture control sensor

Dimensions

W: 1.50" (38 mm)
 H: 0.65" (16 mm)

How to design and specify

- **One PowPak wireless fixture control**
For each fixture in the space
- **Controls** 1A of load or up to three drivers/ballasts
- **Select either** Area sensing or individual fixture sensing
- **Input** 120/277V
- **PowPak fixture sensor** Combined occupancy/daylight sensor

Product options

0-10V control models

FCJS-010	
FCJS-010-BULK8	8-pack

EcoSystem control models

FCJS-ECO	
FCJS-ECO-BULK8	8-pack

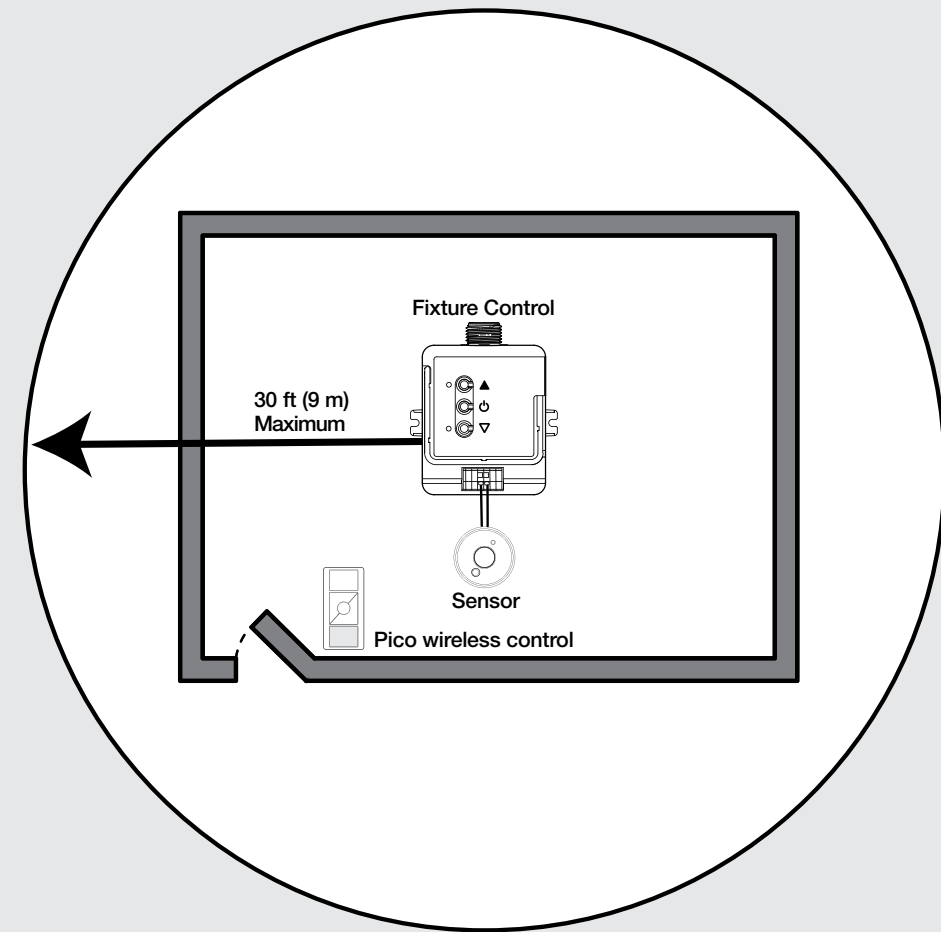
Sensor models

FC-SENSOR	Occupancy/Daylight sensor
FC-VSENSOR	Vacancy/Daylight sensor

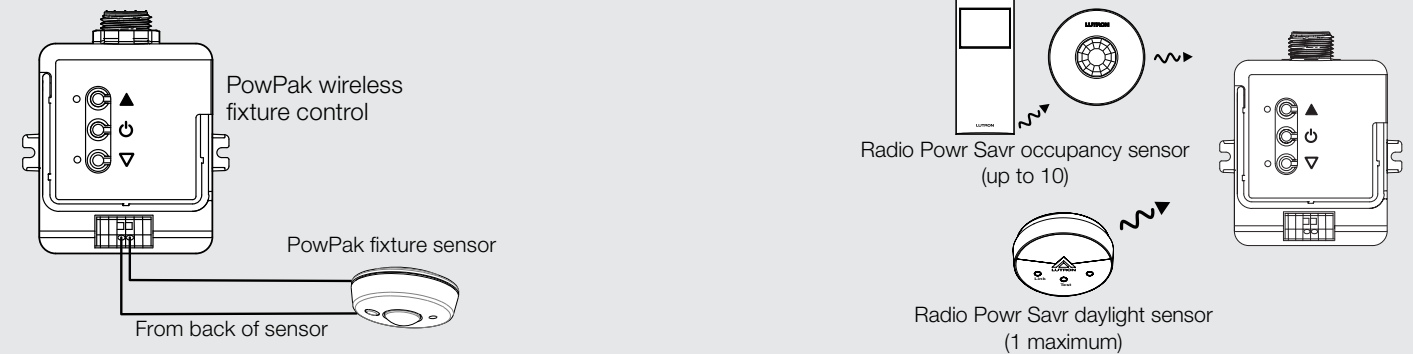
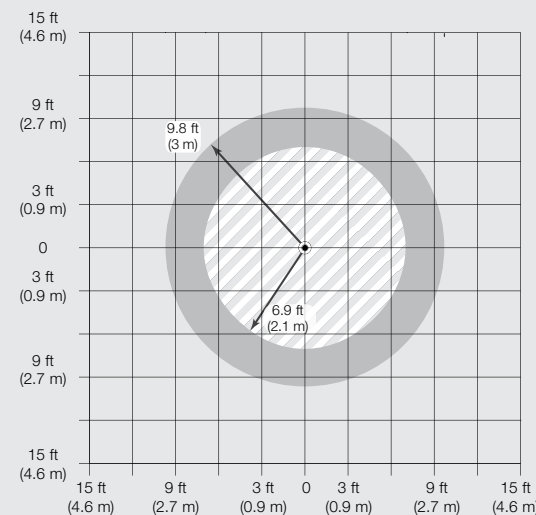
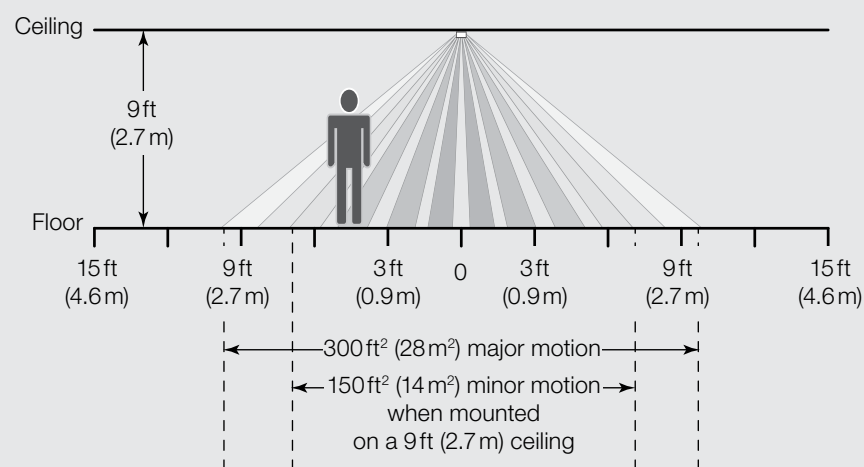
How it works

Install the fixture control directly to a fixture or on a junction box nearest to the fixture. Install the sensor on the ceiling near the fixture to optimize coverage in the desired area.

Note: Avoid mounting the fixture sensor in direct sunlight or in the light which is cast from the fixture.



Fixture sensor coverage diagrams



PowPaks



Maestro wireless switches

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
 - **6A:** 600 W lighting @ 120 V
 - **8A:** 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 for rooms with multiple switches for a single zone

Product options

6 A switches

MRF2S-6ANS-XX	6 A lighting, 1/10 HP fan, 120 V only
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8 A switches

MRF2S-8S-DV-XX	8 A lighting, 1/10 HP fan @ 120 V only, 120-277 V, no neutral
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MRF2-8ANS-120-XX	8 A lighting, 1/4 HP fan, 120 V only
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Maestro wireless dimmers

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 or a Pico wireless remote for rooms with multiple switches for a single zone

Product options

Maestro Wireless dimmers

MRF2S-6CL-XX	150 W dimmable CFL/LED, 600 W incandescent/halogen, 600 VA MLV, 120 V, no neutral
MRF2S-6ELV-XX	600 W ELV, 120 V
MA-R-XX	Accessory dimmer for multi-location lighting controls, 120 V

Switch/Dimmers

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



Pico wireless remotes

3-button with raise/lower 3-button 3-button Nightlight with raise/lower



2-button with raise/lower 2-button 2-button Nightlight

Dimensions

W: 1.28" (33mm)
H: 2.60" (66mm)
D: 0.33" (8mm)

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 control and one preset
- Select one 2-button with raise/lower Pico wireless remote to add a location with ON/OFF and BRIGHTEN/DIM control
- Select one 3-button with raise/lower Pico wireless remote to add a location with ON/OFF, BRIGHTEN/DIM control and one preset
- 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

Product options

2-button remotes

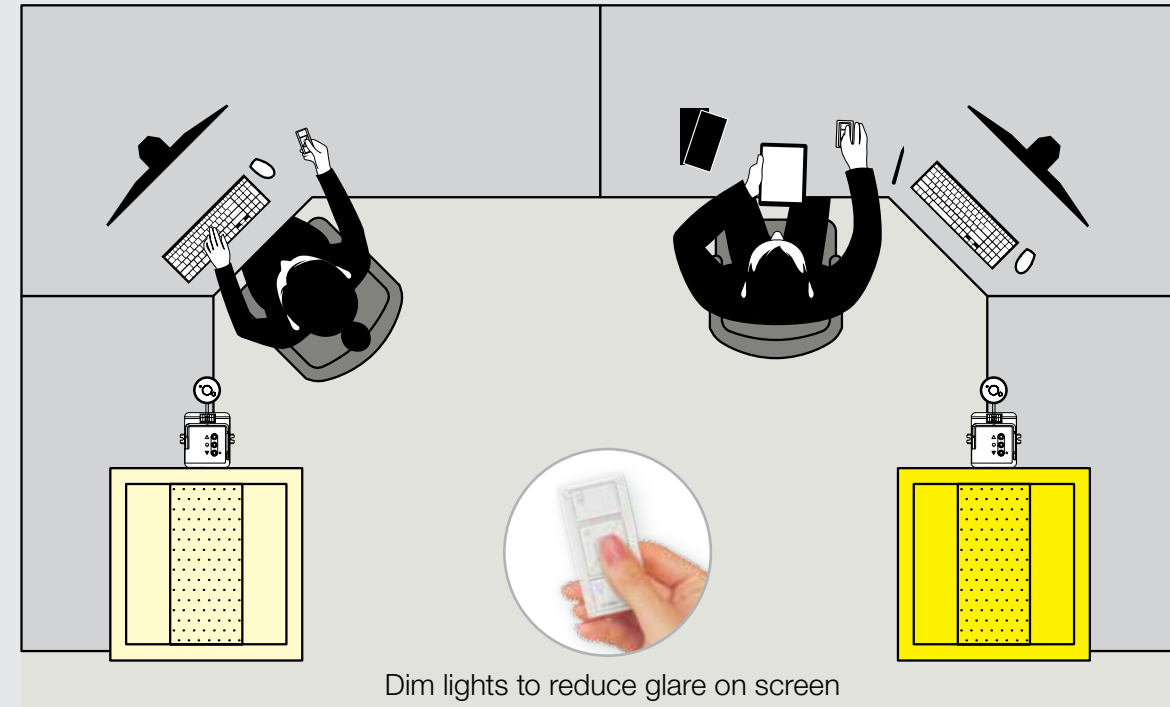
PJ2-2BRL-GXX-L01	2-button with raise/lower wireless remote
PJ2-2B-GXX-L01	2-button wireless remote
PJN-2B-GXX-L01	Nightlight 2-button wireless remote

3-button remotes

PJ2-3BRL-GXX-L01	3-button with raise/lower wireless remote
PJ2-3B-GXX-L01	3-button wireless remote
PJN-3BRL-GXX-L01	Nightlight 3-button with raise/lower wireless remote

How it works

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



Pico wall mounted (in a wallplate) — Add a new point of control anywhere with absolutely no wires



Raise lights for reading visibility



Individual fixture control

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



Pico wireless remotes

- 4-button 2-group control
- 4-button zone control
- 4-button scene control

Dimensions

- W:** 1.28" (33mm)
- H:** 2.60" (66mm)
- D:** 0.33" (8mm)

How to design and specify

- The Pico wireless remote is a flexible and easy-to-use device that allows the user to control Lutron wireless load-control devices from anywhere in the space. This battery-operated control requires no external power or communication wiring.

Product options

4-button remotes

PJ2-4B-GWH-L21P	2-group control
PJ2-4B-GWH-L01	Zone control
PJ2-4B-GWH-L31	Scene control

- Custom-engraved models for Zone control keypads (-L01, -S01) and Scene control keypads (-L31, -S31) are available but require a different set of button marking codes when ordering

Note: 2-Group (-L21, -S21, -LS21) and 4-Group Toggle (-L41) controls are not offered with the custom engraving option).

Button Marking Codes	Standard Engraving	Custom Engraving
Zone Control		
Lights	-L01	-EL1
Shades	-S01	-ES1
Scene Control		
Lights	-L31	-EL2
Shades	-S31	-ES2



Tabletop accessories



Wall-mount accessories

Pico wallplate adapter and Claro wallplate

Dimensions

- W:** 2.94" (75mm)
- H:** 4.69" (119mm)
- D:** 1.44" (38mm)

How to design and specify

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

Product options

Tabletop accessories

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 to design and specify

- 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

Product options

Wall-mount accessories

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



Wireless occupancy/vacancy sensors

Dimensions

W: 3.57" (91 mm)
 H: 3.57" (91 mm)
 D: 1.13" (29 mm)

How to design and specify

- A single occupancy sensor can communicate to all control devices in the room
- Use in small rooms or areas with medium to high partitions
- For 8 ft ceilings: 484 ft²
- For 12 ft ceilings: 676 ft²

Product options

Ceiling-mount sensors

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

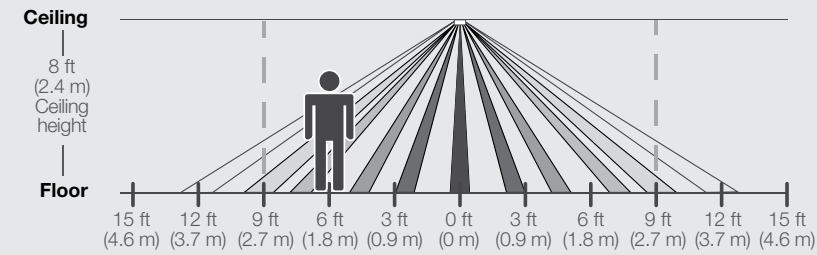
Accessories

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

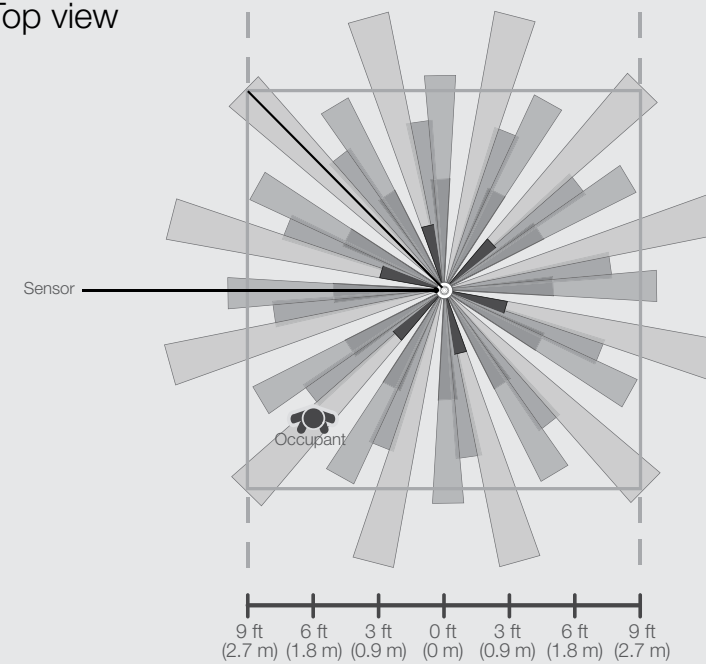
Sensor coverage diagrams

Ceiling mount, 360°

Floor view



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)	13 ft (4.0 m)
9 ft (2.7 m)	20 x 20 ft (6.1 x 6.1 m)	14.5 ft (4.4 m)
10 ft (3.0 m)	22 x 22 ft (6.7 x 6.7 m)	16 ft (4.9 m)
12 ft (3.7 m)**	26 x 26 ft (7.9 x 7.9 m)	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.



**Radio Powr Savr
Wireless sensors**

Dimensions

W: 1.8" (46mm)
H: 4.35" (110mm)
D: 1.35" (34mm)

How to design and specify

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

Product options

Wall-mount sensors

- Use in large open rooms with few tall obstructions
- Coverage: 3,000 ft²

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 ft²

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

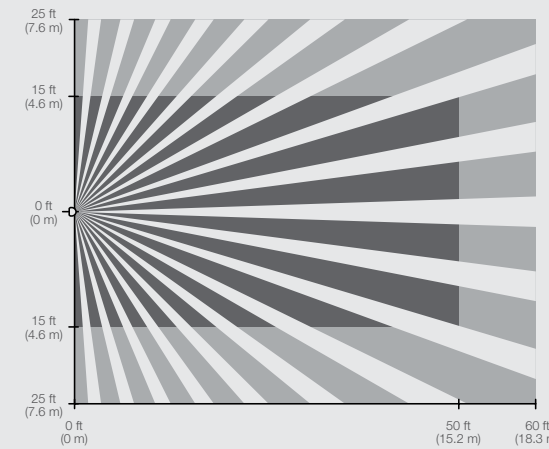
WGWS-CPN3688	Wire guard for wall-mount and hallway sensors
STI-9618-CPN3688	Wire guard for corner-mount sensor
CPN5991	Flexible armature mounting kit for hallway sensors

Sensor coverage diagrams

Wall mount*, 180°

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

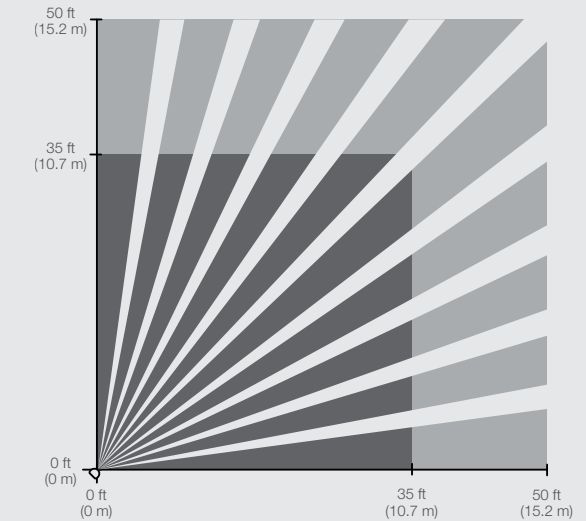
Top view



Corner mount*, 90°

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

Top view



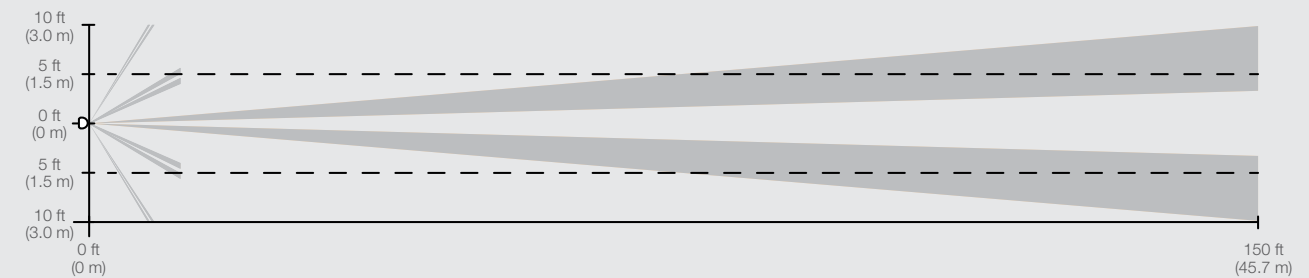
Key:

- Minor motion
- Major motion

Hallway*, long narrow field of view

Coverage varies by hallway width and length

Top view



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



Wireless daylight sensors

Dimensions

- W:** 1.6" (41 mm)
- H:** 1.6" (41 mm)
- D:** 0.7" (17 mm)

How to design and specify

- 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

Product options

Daylight sensor

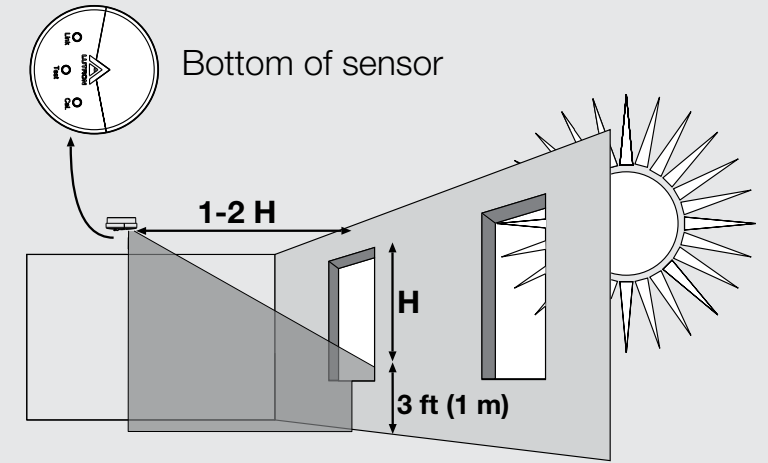
LRF2-DCRB-WH	Daylight sensor
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- * Sensor mounting shown at 7 ft (2.1 m). Mounting height should be between 6 and 8 ft (1.6 and 2.4 m).
- ** 12 ft (3.7 m) is the maximum mounting height allowed.

Sensor coverage diagrams

Location for average size areas

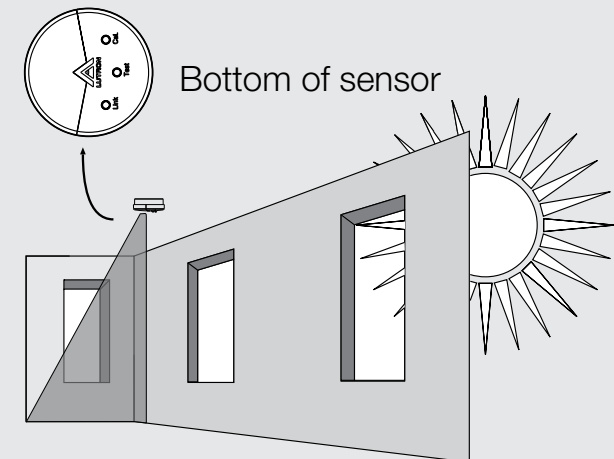
Arrow points towards the area viewed by the sensor (towards windows).



H = Effective Window Height

Location for narrow areas (corridors, private offices)

Arrow points towards the area viewed by the sensor (away from window).





Setup support services

- 4 & 8 Hour onsite blocks
- 4 Hour remote blocks
- Additional setup support services

Available setup support services

Blocks of setup support time

- Lutron Services Representative — either onsite or remotely — supports the installation team in setting up the system
- Utilize the technician’s time in the way that best suits your needs: training, punch list items, or complete programming independently
- Mix and match remote and onsite blocks of time and use them when you need them during the construction timeline
- Choose the amount of time you need

Product options

Blocks of setup support time

LSC-OS-PROG8-SP	8 hours of onsite setup support
LSC-OS-PROG4-SP	4 hours of onsite setup support
LSC-RMT-PROG4-SP	4 hours of remote setup support

Additional setup support services

available with blocks and startup

LSC-PREWIRE	Prewire visit
LSC-TRAINING	Customer-site solution training
LSC-AF-VISIT	Onsite scene and level tuning
LSC-WALK	Onsite performance— verification walk-through



Full-scope startup

- Onsite
- Remote

Available startup services

Onsite full-scope startup

- Lutron Service Representative onsite to ensure proper system startup and configuration
- Train facilities staff to best utilize and maintain the lighting control assets
- Reduce risk and keep your Installation team small by having us do the setup for you.
- Includes a Commercial System Limited Warranty
- Onsite startup enhancements available

Remote full-scope startup

- Dedicated Lutron Remote Technician works with your installation team to ensure proper system startup and configuration
- Introduce end user facilities staff to system components and resources available
- Less lead time to schedule than onsite startup
- Lower cost than onsite startup
- Commercial system limited warranty available

Product options

Setup service models

Full scope startup

LSC-OS-SU-VIVE	Onsite full-scope startup
LSC-RMT-SU-VIVE	Remote full-scope startup

Startup enhancements (Available with onsite full-scope startup)

LSC-AH-SU	Startup performed at night or weekends (weekend work available in certain locations)
LSC-SENS-LT	Sensor layout & tuning
LSC-SPV-DOC	System performance— verification documentation
LSC-SPV-DOC-T24	Title 24 acceptance test visit



Operational services

- Solution training
- System optimization
- Onsite reconfiguration
- Remote reconfiguration

Available Operational Services

- Support the facilities team to maximize system potential
- Reprogram the system as space needs change over time
- Support retro-commissioning requirements
- Pre-purchase with the system to capture costs in capital budget

Product options

Operational service models

Operational services

LSC-TRAINING	Customer-site solution training
LSC-SYSOPT	System optimization service
LSC-OS-PROG8-EN	8 hours of onsite reconfiguration support
LSC-OS-PROG4-EN	4 hours of onsite reconfiguration support
LSC-RMT-PROG4-EN	4 hours of remote reconfiguration support

Remote and onsite services are also available for purchase after the system is in operation at hourly, half-day and full-day rates; contact Lutron at lscwarranty@lutron.com for more information.

Commercial System Limited Warranty

The commercial system limited warranty offers 5 years of parts coverage, 2 years of first available onsite/remote response time for system issues, and 24/7 technical support. *Warranty included with onsite full-scope startup & available with remote full-scope startup*

Product options

Vive Limited Warranty

LSC-B2	Commercial System 2-Year Limited
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Technology Support Plans (TSPs)

All Lutron Technology Support Plans provide 100% parts and diagnostic labor coverage for up to 10 years. Optional response-time guarantees and preventive maintenance visits enable the coverage to be customized to meet the facility's needs. TSPs are available for any Vive system; a warranty audit visit will be included with the purchase of a TSP when full-scope startup is not purchased

Product options

Vive Technology Support Plans

LSC-SILV-IW	Silver Level Technology Support Plan
LSC-GOLD-IW	Gold Level Technology Support Plan
LSC-PLAT-IW	Platinum Level Technology Support Plan
LSC-WARR-AUD	Warranty Audit Visit

Note: For detailed warranty and technology support plan descriptions see lutron.com/services

Vive Warranty information

Vive wireless solutions are all covered by a 5-year parts warranty with registration of the product. Additional technology support options are available to meet your project needs. See the options below.

Support Options	Commercial System Limited Warranty	Silver (TSP)	Gold (TSP)	Platinum (TSP)
Duration up to 10 years of coverage		•	•	•
100% Replacement Parts	• (5 yrs)	•	•	•
Diagnostic Labor – First Available Response	• (2 yrs)	•		
Diagnostic Labor – 72-Hour Response			•	
Diagnostic Labor – 24-Hour Response				•
Annual Preventive Maintenance Visit			•	•



Model number	Description	List Price (US)
Vive wireless hub		
HJS-1-FM	Vive wireless hub, flush mount	Contact Lutron sales for a quote
HJS-1-SM	Vive wireless hub, surface mount	
HJS-2-FM	Premium Vive wireless hub, flush mount	
HJS-2-SM	Premium Vive wireless hub, surface mount	



PowPak relay module		
RMJS-5R-DV-B	5A relay	109.00
RMJS-5RCCO1-DV-B	5A relay with one contact closure output	124.00
RMJS-16R-DV-B	16A relay	129.00
RMJS-16RCCO1-DV-B	16A relay with one contact closure output	144.00



PowPak dimming module with 0-10 V control		
RMJS-8T-DV-B	Controls up to 8A of 0-10V controlled fixtures	150.00



PowPak contact closure output module		
RMJS-CCO1-24-B	one contact closure output	109.00

PowPak relay module		
RMJS-20R-DV-B	20A general purpose switch	139.00
RMJS-20OCC1DV-B	20A general purpose switch with one contact closure output	154.00

Individual fixture control		
FCJS-010	0-10V Control Module	78.00
FCJS-ECO	EcoSystem Control Module	78.00
FCJS-010-BULK8	0-10V Control Module 8-pack	600.00
FCJS-ECO-BULK8	EcoSystem Control Module 8-pack	600.00
FC-SENSOR	Occupancy/Daylight Sensor	35.00
FC-VSENSOR	Vacancy/Daylight Sensor	35.00



Model number	Description	List Price (US)
Maestro Wireless switches and 5 A 2-button RF switch*		
MRF2S-6ANS-XX	6 A lighting, 3A fan (1/10HP motor), 120V	108.00
MRF2S-8S-DV-XX	8A lighting, 3A fan (1/10HP motor, 120V only), spec grade	170.00
MRF2S-8ANS-120-XX	8A lighting, 5.8A fan (1/4HP motor), spec grade, 120V	140.00

Maestro Wireless dimmers*		
MRF2S-6CL-XX	150W dimmable CFL/LED, 600W incandescent halogen, 600VA MLV, 120V, no neutral	108.00
MRF2S-6ELV-XX	600W ELV, 120V	199.00
MA-R-XX	Accessory dimmer for multi-location lighting controls, 120V	160.00

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

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

Maestro Colors

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)

Model number Description List Price (US)

Pico wireless remotes

PJ2-2BRL-GXX-L01	2-button with raise/lower	25.00
PJ2-2B-GXX-L01	2-button	25.00
PJN-2B-GXX-L01	Nightlight 2-button	58.00
PJ2-3BRL-GXX-L01	3-button with raise/lower	21.00
PJ2-3B-GXX-L01	3-button	25.00
PJN-3BRL-GXX-L01	Nightlight 3-button with raise/lower	58.00
PJ2-4B-GXX-L21P	4-button with 2 group control	39.00
PJ2-4B-GXX-L01	4-button with zone control	25.00
PJ2-4B-GXX-L31	4-button with scene control	39.00

Pico accessories

PICO-WBX-ADAPT	Pico wireless remote wallbox adapter	8.00
CW-1-XX	Claro 1-gang wallplate	5.00
CW-2-XX	Claro 2-gang wallplate	10.00
CW-3-XX	Claro 3-gang wallplate	15.20
CW-4-XX	Claro 4-gang wallplate	21.00
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

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

Pico Colors

Gloss Colors

- White (WH)
- White/Gray (WG)
- Ivory (IV)
- Black (BL)
- Light Almond (LA)

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

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
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Lamp Socket Wiring Tester

FDB-LSWT-T5/T8	600V, 100KHz, 0.125 A max, CAT III	180.00
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Wallplates*

CW-1-XX	Claro 1-gang wallplate	5.00
CW-2-XX	Claro 2-gang wallplate	10.00
CW-3-XX	Claro 3-gang wallplate	15.20
CW-4-XX	Claro 4-gang wallplate	21.00

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

Model number	Description	List Price (US)
Vive Startup Services		
 LSC-OS-SU-VIVE	Onsite full-scope startup	Contact Lutron sales for a quote
LSC-RMT-SU-VIVE	Remote full-scope startup	
LSC-AH-SU	After hours startup	
LSC-SENS-LT	Sensor layout & tuning	
LSC-SPV-DOC	System performance-verification documentation	
LSC-SPV-DOC-T24	Title 24 acceptance test visit	
Vive Setup Support Services		
 LSC-OS-PROG8-SP	Onsite programming — 8-hour block	Contact Lutron sales for a quote
LSC-OS-PROG4-SP	Onsite programming — 4-hour block	
LSC-RMT-PROG8-SP	Remote programming — 8-hour block	
LSC-PREWIRE	Prewire visit	
LSC-TRAINING	Customer-site solution training	
LSC-AF-VISIT	Onsite scene and level tuning	
LSC-WALK	Onsite performance-verification walkthrough	
Vive Operational Services		
 LSC-TRAINING	Customer-site solution training	Contact Lutron sales for a quote
LSC-SYSOPT	System optimization service	
LSC-OS-PROG8-EN	8 hours of onsite reconfiguration support	
LSC-OS-PROG4-EN	4 hours of onsite reconfiguration support	
LSC-RMT-PROG4-EN	4 hours of remote reconfiguration support	
Vive Limited Warranty and Technology Support Plans		
LSC-B2	Commercial system limited warranty	Contact Lutron sales for a quote
LSC-SILV-IW	Silver level technology support plan	
LSC-GOLD-IW	Gold level technology support plan	
LSC-PLAT-IW	Platinum level technology support plan	
LSC-WARR-AUD	Warranty audit visit	

Standalone

Stand Alone Solutions

Standalone solutions are not compatible with the Vive hub



Maestro sensor

Dimensions

W: 2.94" (75mm)
H: 4.69" (119mm)
D: 1.44" (38mm)



Maestro dual-circuit sensor switch

Dimensions

W: 2.94" (75mm)
H: 4.69" (119mm)
D: 1.44" (38mm)

Features and benefits

- **Standalone solutions are not compatible with the Vive hub**
- 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*

Product options

Maestro 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

Maestro 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
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Maestro dual-technology sensor switch

Dimensions

W: 2.94" (75mm)
H: 4.69" (119mm)
D: 1.44" (38mm)



Maestro dual-technology, dual-circuit sensor switch

Dimensions

W: 2.94" (75mm)
H: 4.69" (119mm)
D: 1.44" (38mm)

Features and benefits

- **Standalone solutions are not compatible with the Vive hub**
- 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*

Product options

Maestro 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

Maestro 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.) See Maestro colors on page 49.

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

* (XX in the model number represents color/finish code; use WH for White; please visit www.lutron.com for other color choices.) See Maestro colors on page 49.

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



In-wall PIR occupancy/vacancy sensor switches

Dimensions

- W:** 2.94" (75 mm)
- H:** 4.69" (119 mm)
- D:** 1.44" (38 mm)

Features and benefits

- **Standalone solutions are not compatible with the Vive hub**
- 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*

Product options

0-10 V dimmer sensor[†]

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

* (XX in the model number represents color/finish code; use WH for White; please visit www.lutron.com for other color choices.) See Maestro colors on page 49.

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



C-L dimmer sensor[†]

Dimensions

- W:** 2.94" (75 mm)
- H:** 4.69" (119 mm)
- D:** 1.44" (38 mm)

Features and benefits

- **Standalone solutions are not compatible with the Vive hub**
- C-L dimmer for control of screw-based CFLs and LEDs

Product options

C-L dimmer sensor[†]

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
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* (XX in the model number represents color/finish code; use WH for White; please visit www.lutron.com for other color choices.) See Maestro colors on page 49.

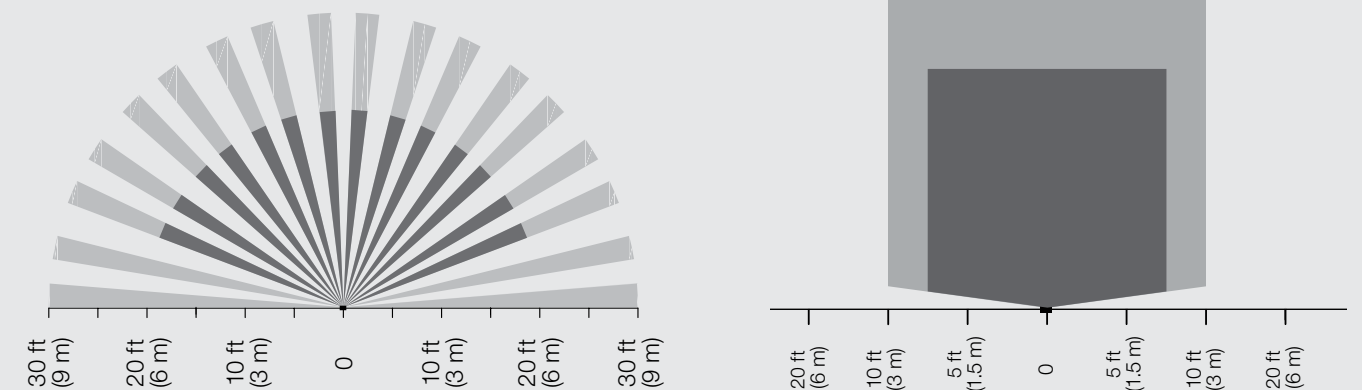
[†] Vacancy-only models available. Replace the "O" in the model number with a "V".

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

Sensor coverage diagrams

In-wall

PIR beam diagram
(for reference only)



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

Standalone

Sources

- 1 The savings are based on actual lighting usage for the full year of 2009 (annual average lighting power of 0.396 watts per square foot) compared to the installed code-compliant lighting power of 1.28 watts per square foot. The dollars are calculated using a New York City commercial electricity rate of \$0.18 per kWh (source: ConEdison). CO2 reduction is based on 1.9 pounds of CO2 prevented per kWh saved (source: Weighted average of fossil fuel energy sources from page 2 of a U.S. Department of Energy carbon dioxide emissions report in July 2000).
- 2 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
- 3 Energy Information Administration, 2003 Commercial Buildings Energy Consumption Survey, released September 2008.
- 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 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.
- 6 Energy savings estimated based on 50% reduction of after-hours lighting energy waste. Source: 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.
- 7 Newsham GR & Birt B. 2010. Demand-responsive lighting: a field study. Leukos. 6(3) pg 203–225.
- 8 Eces. 2011 Commercial office plug load assessment. California Energy Commission PIER Program.
- 9 Williams A, et al. 2012. Lighting Controls in Commercial Buildings. Leukos. 8(3) pg 161–180.
- 10 Galasiu AD, et al. 2007. Energy saving lighting control systems for open-plan offices: A field study. Leukos. 4(1) pg 7–29.
- 11 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.
12. 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/ft²).
 - 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).
13. Demand response is required in Title 24-2013 for buildings larger than 10,000 ft².
14. Occupancy sensing requires automatic shut-off after 30 minutes of vacancy.

For a list of all Vive wireless solutions product model numbers and pricing see lutron.com/vive



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