# vive

## Simple and scalable
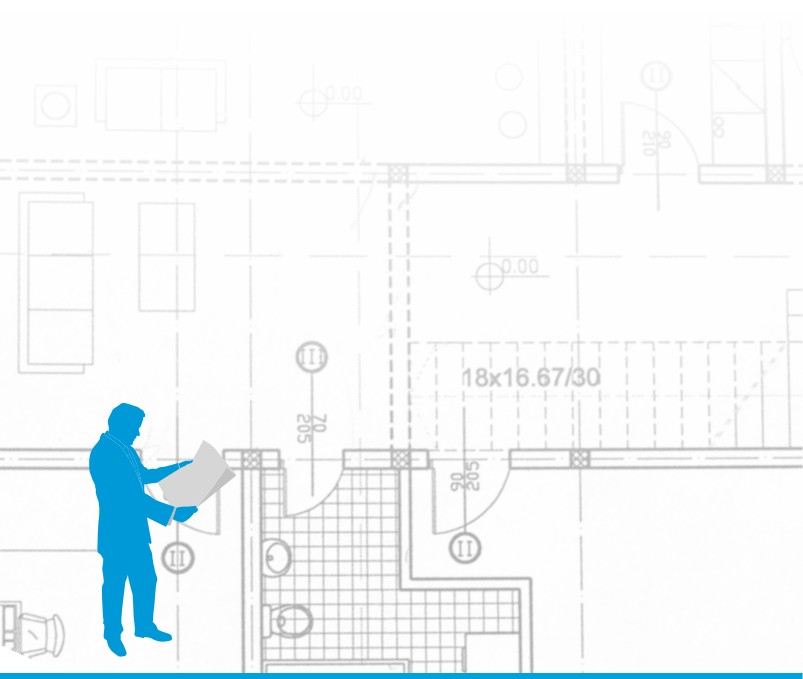## lighting control

- Å DESIGN
- ⚙ INSTALL
- ↻ MAINTAIN

## Flexible control every step of the way

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

**❖LUTRON**

Vive
Wireless
Hub

Vive Vue
software

# 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 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**

# Scalable solutions — start small and grow

Vive wireless solutions offer a multi-strategy approach that accommodates your budget and performance needs now, and for the future of your building.
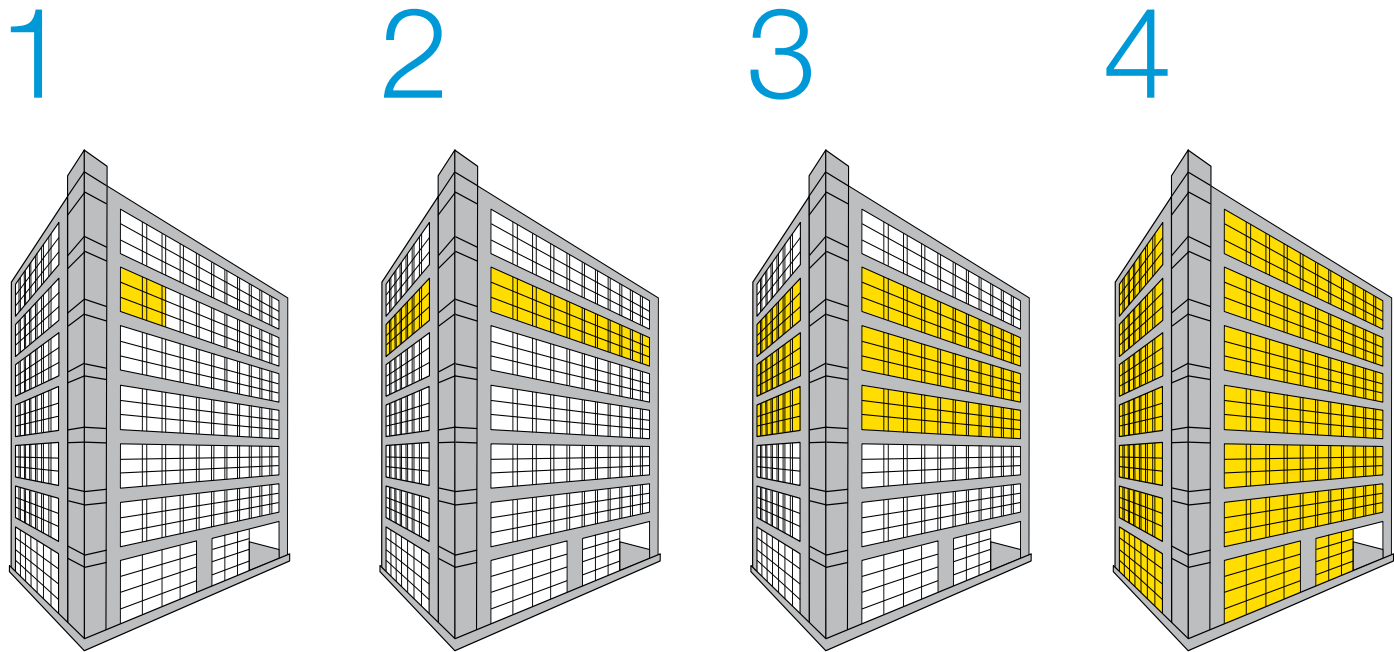
## 1
### Single office space
Start by adding control in a single space and expand as budgets and occupant schedules allow.

## 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.
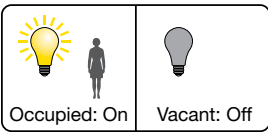
## 4
### Entire building
Vive offers seamless integration to other building management systems to control every light in your building.

# Energy-saving control strategies

Combine lighting control strategies to maximize efficiency

**What is the savings opportunity?**
Lutron solutions can save 60%[3] or more lighting energy.

**Potential savings**

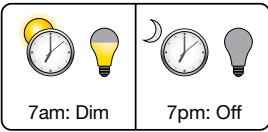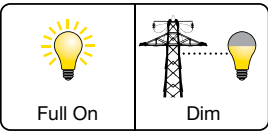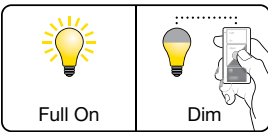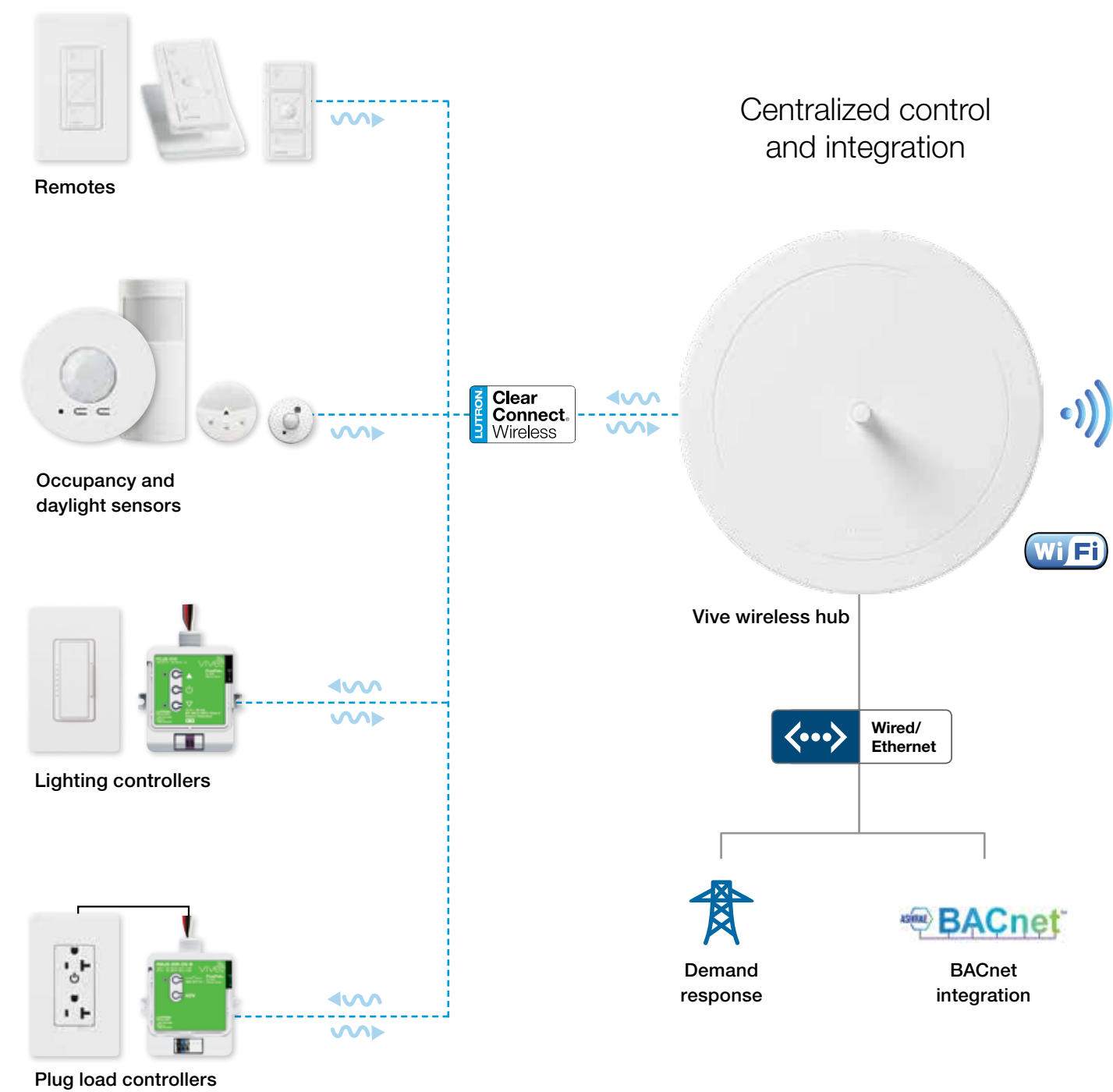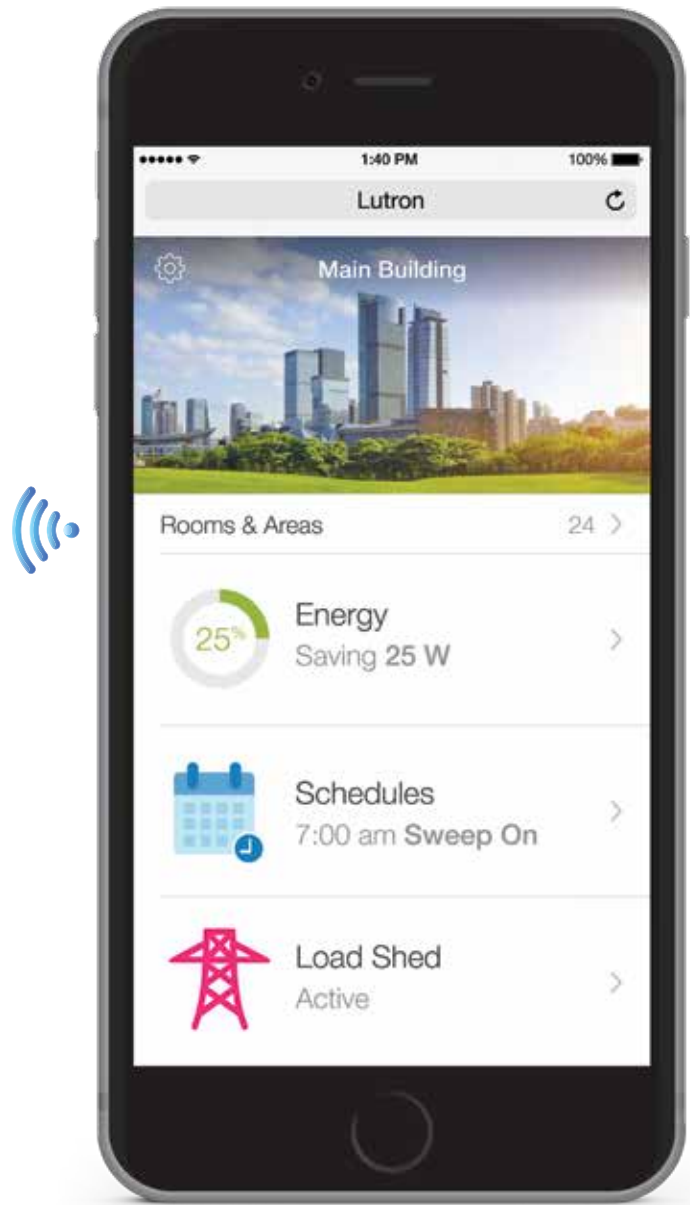| Icons | Strategy | Savings |
|---|---|---|
| Occupied: On / Vacant: Off | **Occupancy/vacancy sensing** turns lights on when occupants are in a space and off when they vacate the space. | 20−60% Lighting[4] |
| Full On / Dim | **Daylight harvesting** dims electric lights when daylight is available to light the space. | 25−60% Lighting[5] |
| 7am: Dim / 7pm: Off | **Scheduling** provides pre-programmed changes in light levels based on time of day. | 10−20% Lighting[6] |
| Full On / Dim | **Demand response** automatically reduces lighting loads during peak electricity usage times. | 30−50% Peak Period[7] |
| Appliance On / Appliance Off | **Plug load control** automatically turns off loads after occupants leave a space. | 15−50% Controlled Load[8] |
| Max: 100% / Max: 80% | **High-end trim** sets the maximum light level based on customer requirements in each space. | 10−30% Lighting[9] |
| Full On / Dim | **Personal dimming control** gives occupants the ability to adjust the light level. | 10−20% Lighting[10] |
| Heating / Cooling | **HVAC integration** controls heating, ventilation, and air conditioning systems through contact closure, or BACnet protocol. | 5−15% HVAC[11] |
| Saving 60% Before / Saving 70% After | **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 |
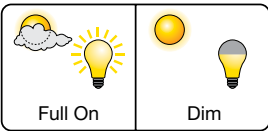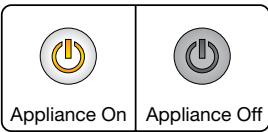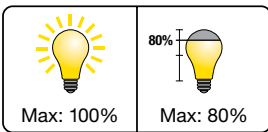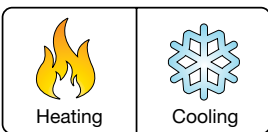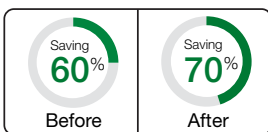
## Wireless controls and sensors

**Remotes**

**Occupancy and daylight sensors**

**Lighting controllers**

**Plug load controllers**

**Clear Connect Wireless**

### Centralized control and integration

**Wi Fi**

**Vive wireless hub**

**Wired/Ethernet**

**Demand response**

**BACnet integration**

## Simple-to-use software

1:40 PM 100%

Lutron

Main Building

Rooms & Areas    24 >

**Energy** 25%
Saving 25 W >

**Schedules**
7:00 am Sweep On >

**Load Shed**
Active >

**Vive Vue software**

### Communication protocols

**Clear Connect Wireless**    Communicate via RF to control components

**Wi Fi**    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.

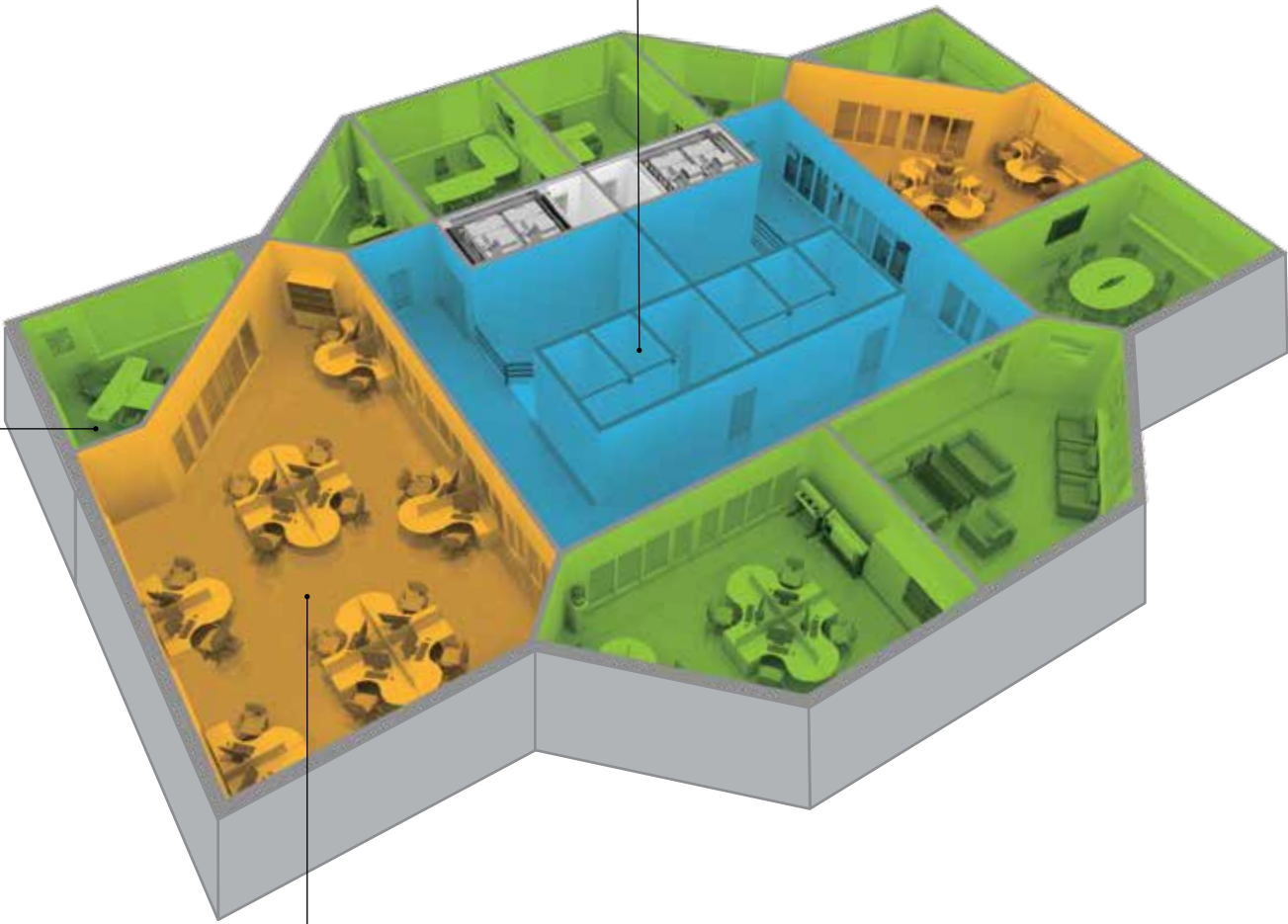Dimming module | Occupancy sensor | Daylight sensor | Pico remote

### Individual fixture dimming and sensing

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

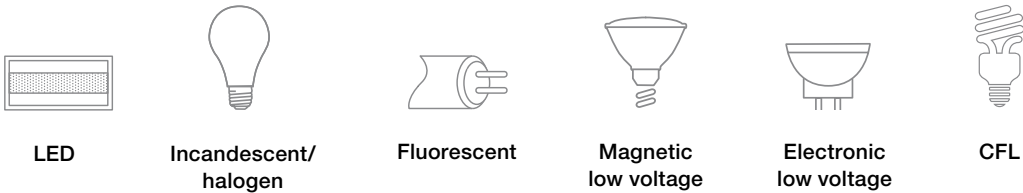Fixture control | Fixture sensor | Pico remote

## 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**

| LED | Incandescent/ halogen | Fluorescent | Magnetic low voltage | Electronic low voltage | CFL |

# 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
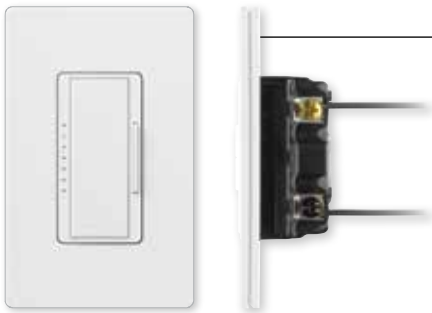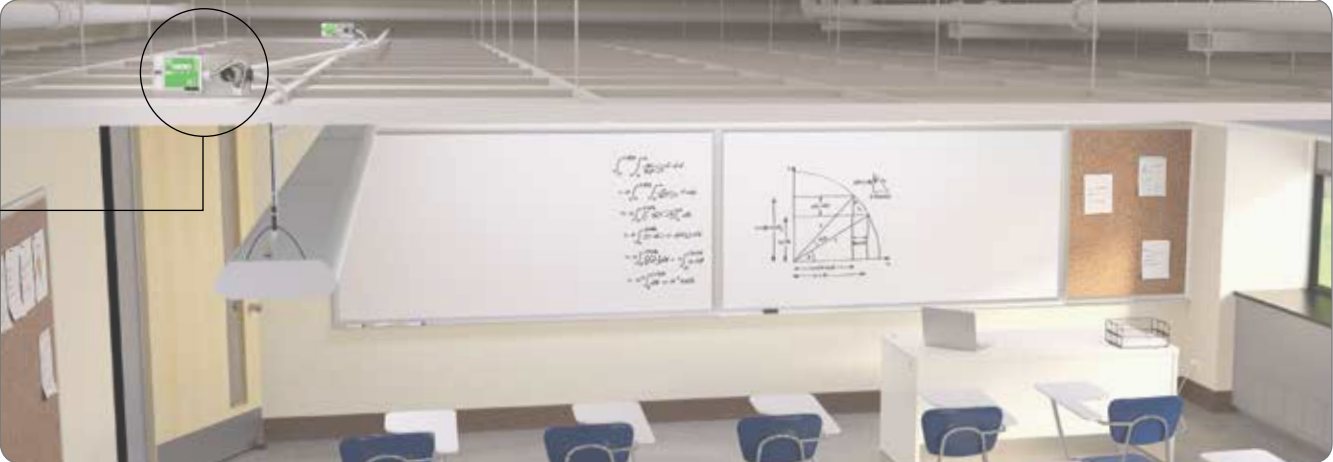


Wireless switch/dimmer

## 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
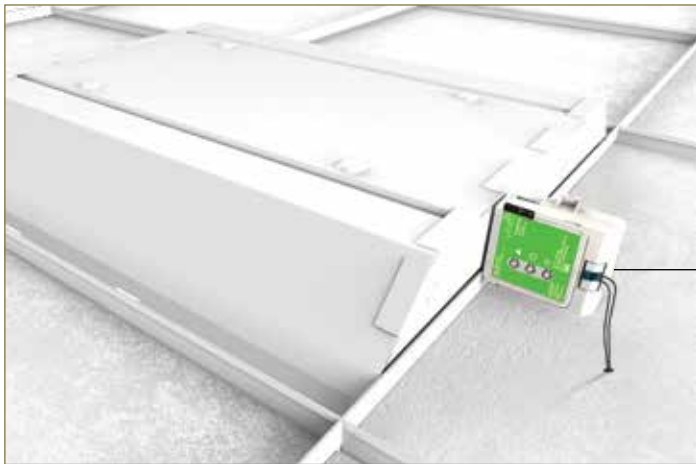- Communicates wirelessly to sensors and remotes
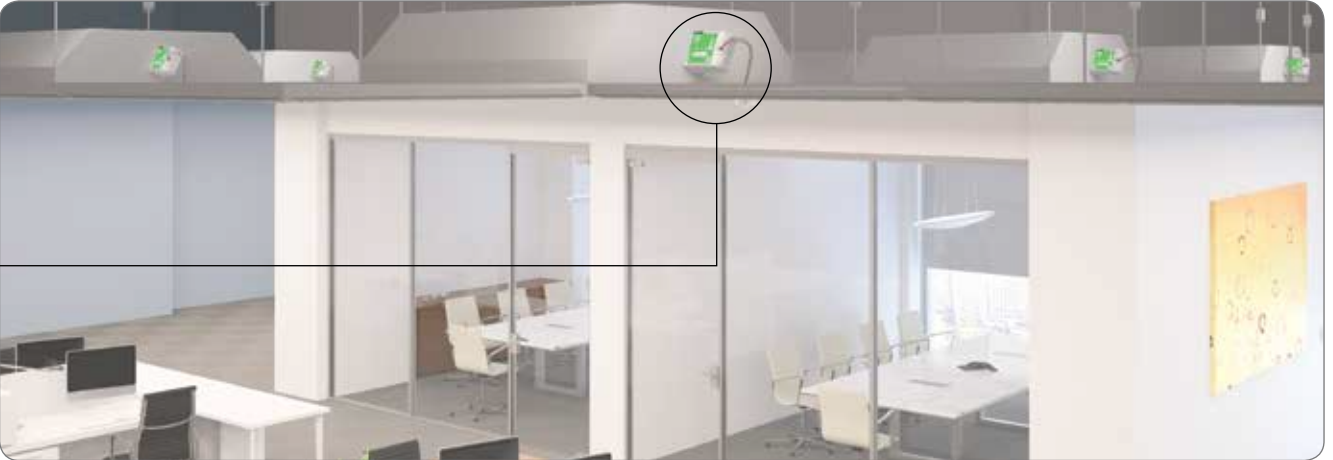


PowPak with J-box

## 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

## Wallbox mount



## Ceiling mount



## 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.
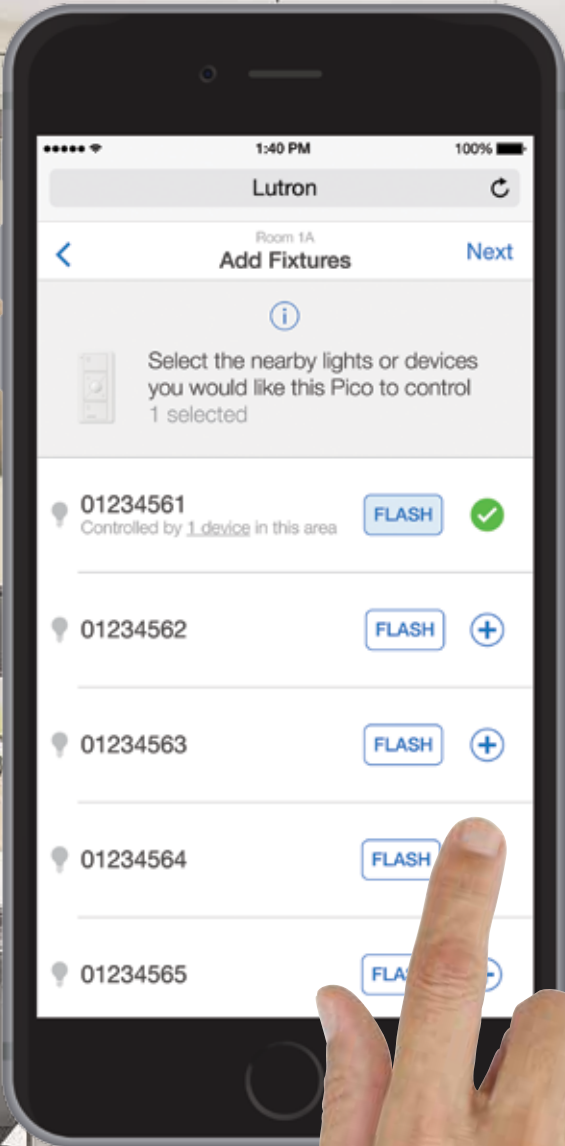
**1** **Press and hold on wireless device**

**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.
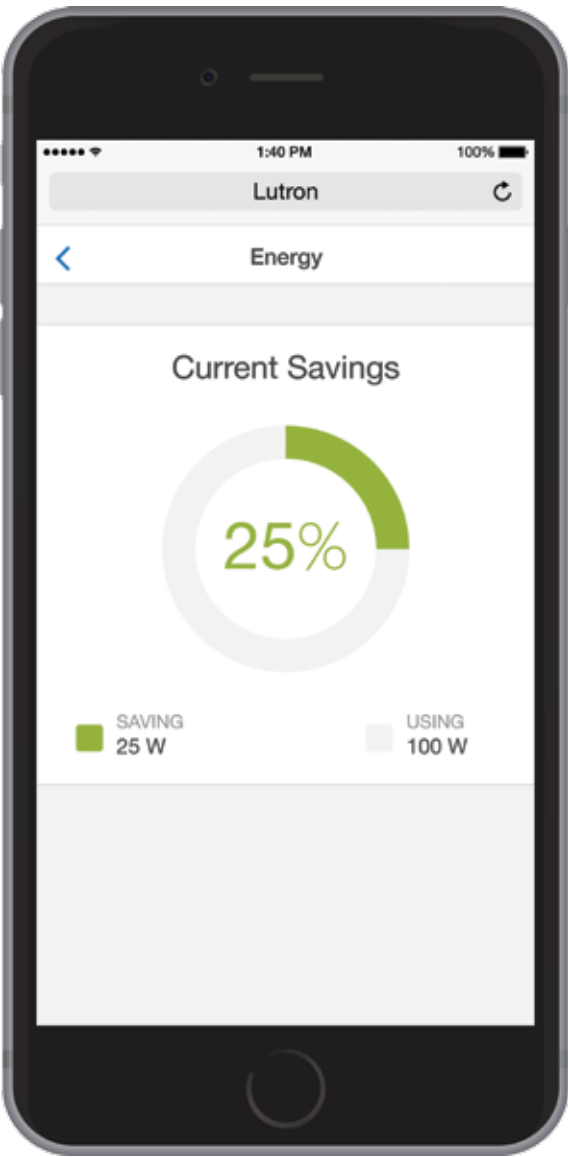
Wireless dimmer

### Press and hold for 6 seconds

Occupancy sensor

### Press and hold for 6 seconds

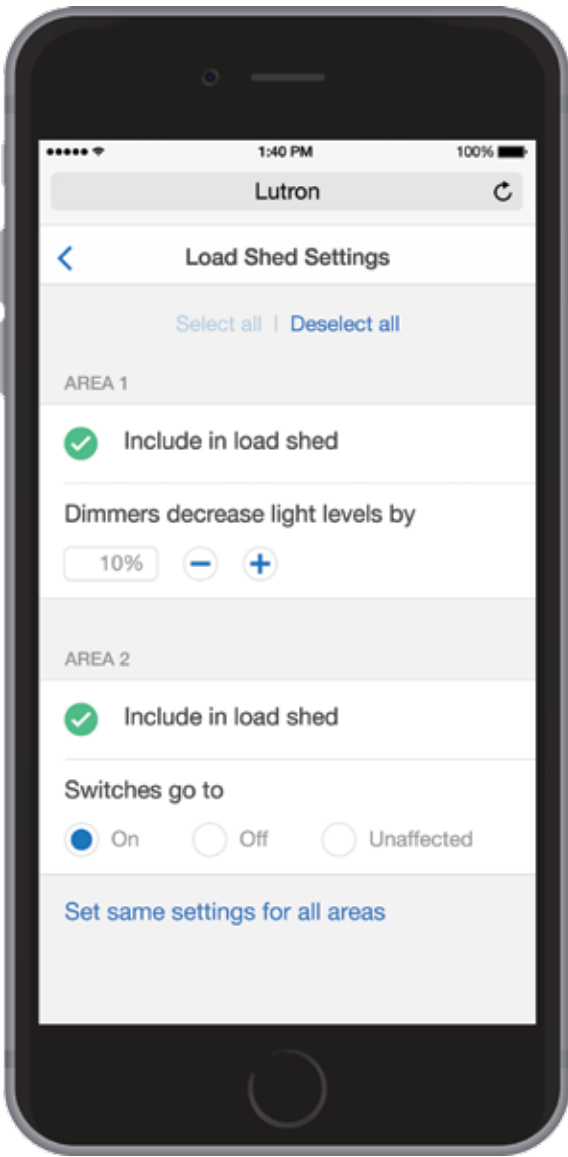**It works! Sensor now talks to the wireless dimmer**

## Energy reporting

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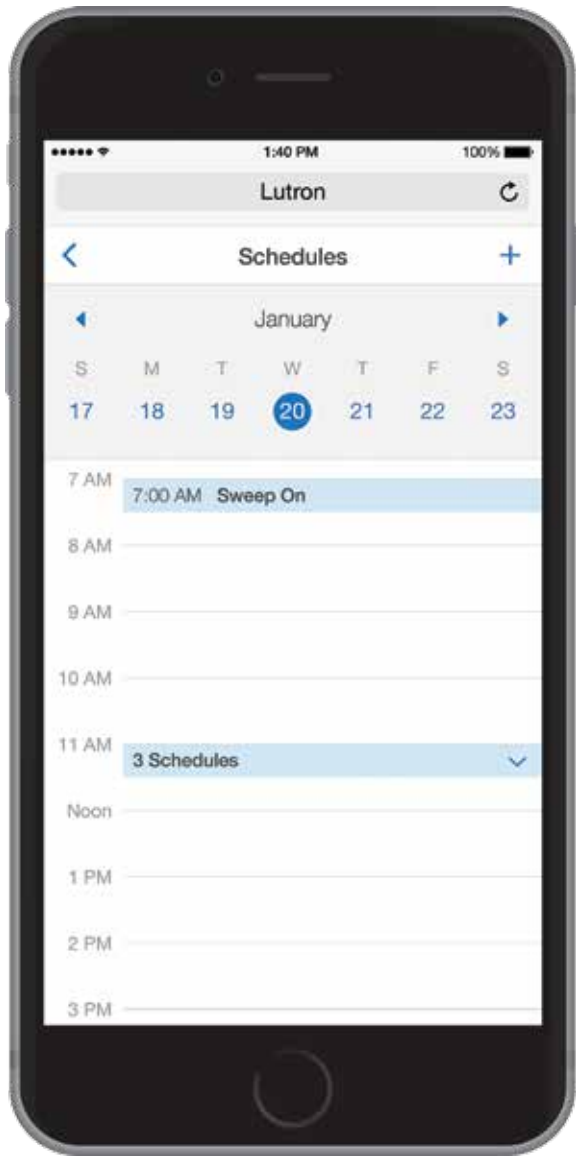
## Load shed

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.

---

### Energy (phone screen)

1:40 PM    Lutron    100%

Energy

**Current Savings**

**25%**

SAVING
25 W

USING
100 W

---

### Load Shed Settings (phone screen)

1:40 PM    Lutron    100%

Load Shed Settings

Select all | Deselect all

AREA 1

✓ Include in load shed

Dimmers decrease light levels by

10%   —   +

AREA 2

✓ Include in load shed

Switches go to

● On    ○ Off    ○ Unaffected

Set same settings for all areas

---

### Schedules (phone screen)

1:40 PM    Lutron    100%

Schedules

◄  January  ►

S    M    T    W    T    F    S
17   18   19   20   21   22   23

7 AM
7:00 AM  Sweep On
8 AM
9 AM
10 AM
11 AM
3 Schedules
Noon
1 PM
2 PM
3 PM

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## Seamlessly integrate with your building system

### ASHRAE BACnet™

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**

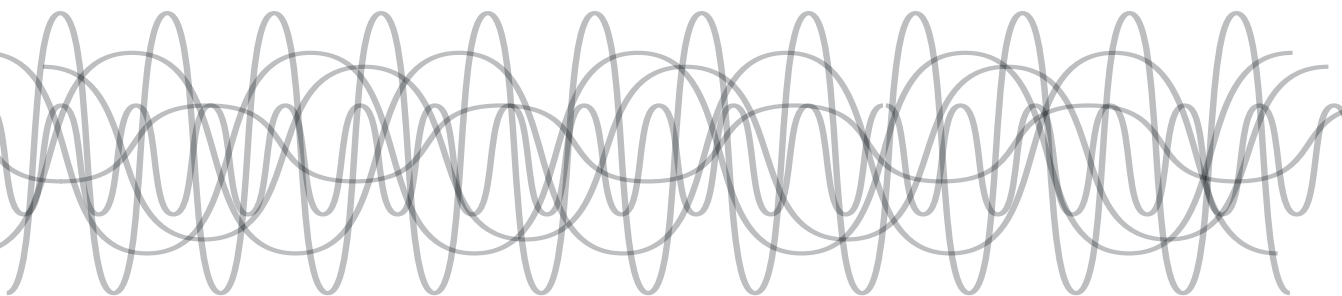**434 MHz: Lutron Clear Connect wireless technology**

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

**Clear Connect®** Wireless
LUTRON

## "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.

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

Contact your local Lutron sales representative to discuss your project.

## 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.

## 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.
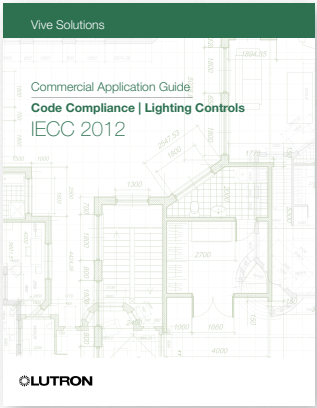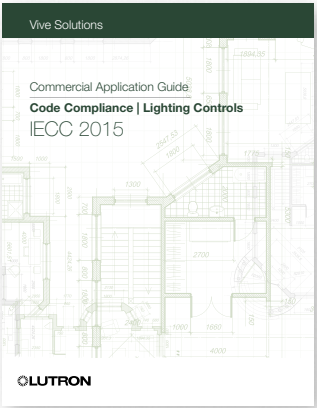
Available online at
**www.lutron.com/appguides**
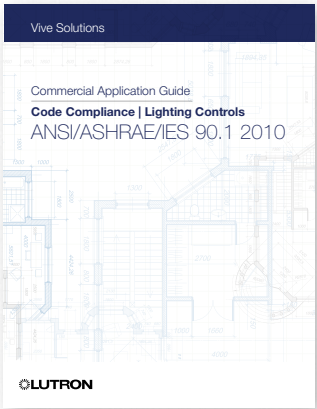
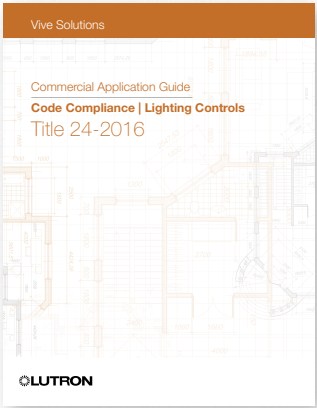**ASHRAE 2010**
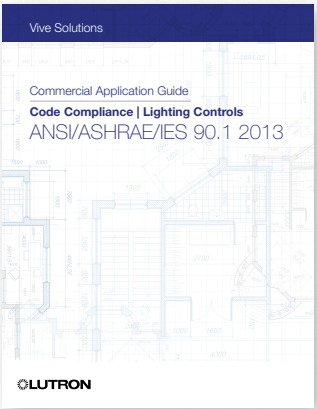
**ASHRAE 2013**

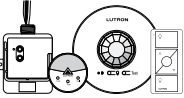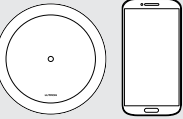**IECC 2012**

**IECC 2015**

**Title 24 2016**

## Summary of code requirements for lighting control

Vive wireless solutions ensure you can meet new construction and retrofit (lighting alterations[12]) code requirements for ASHRAE 2010, ASHRAE 2013, IECC 2012, IECC 2015, and Title 24-2016[13].

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 | • | • | • •(LA) | • •(LA) | • •(LA) | ✓ | ✓ |
| Occupancy Sensing[14] | • •(LA) | • •(LA) | • •(LA) | • •(LA) | • •(LA) | ✓ | ✓ |
| Bi-level Control | • | • | • •(LA) | • •(LA) | • •(LA) | ✓ | ✓ |
| Multi-level dimming | | | | | • •(LA) | ✓ | ✓ |
| Automatic Daylighting | • | • | | • •(LA) | • •(LA) | ✓ | ✓ |
| Demand Response | | | | | • •(LA) | | ✓ |
| 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**

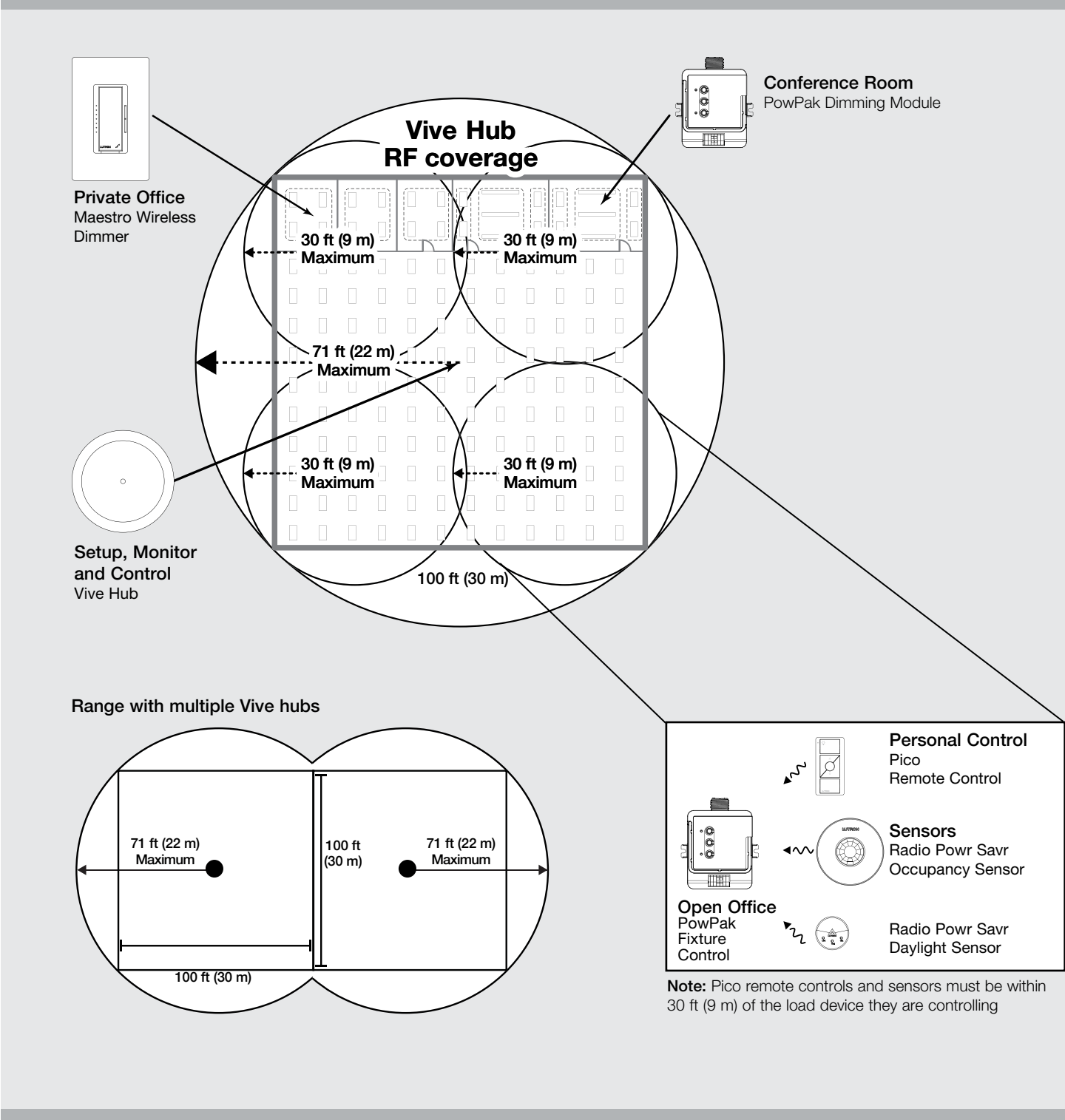| | |
|---|---|
| **HJS-1-FM** | Flush mount |
| **HJS-1-SM** | Surface mount |

**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.

**Private Office**
Maestro Wireless Dimmer

**Setup, Monitor and Control**
Vive Hub

**Conference Room**
PowPak Dimming Module

**Vive Hub RF coverage**

30 ft (9 m) Maximum

30 ft (9 m) Maximum

71 ft (22 m) Maximum

30 ft (9 m) Maximum

30 ft (9 m) Maximum

100 ft (30 m)

**Range with multiple Vive hubs**

71 ft (22 m) Maximum

100 ft (30 m)

71 ft (22 m) Maximum

100 ft (30 m)

**Personal Control**
Pico Remote Control

**Sensors**
Radio Powr Savr Occupancy Sensor

**Open Office**
PowPak Fixture Control

Radio Powr Savr Daylight Sensor

**Note:** Pico remote controls and sensors must be within 30 ft (9 m) of the load device they are controlling

**wireless hub**

**PowPak relay module**

**Dimensions**

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

## 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

  **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

- **Contact closure output**
  For sending occupancy information to third-party equipment such as HVAC systems

- **Input**    120/277 V

## Product options

### 5 A models

**RMJS-5R-DV-B**

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

### 16 A models

**RMJS-16R-DV-B**

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

**PowPak dimming module with 0-10V control**

**Dimensions**

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

## How to design and specify

- **One dimming module with 0-10V control**
  For each controlled 0-10 V lighting zone in the space

- **Control**
  **8A:**    0-10 V controlled fixtures and switches compatible with third-party 0-10 V fluorescent ballasts, LED drivers, and fixtures

- **Input**    120/277 V

## Product options

### 8A models with 0-10V control

**RMJS-8T-DV-B**

**PowPaks**

**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-CCO1-24-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.



Filter | Cooling coil | Supply fan

VAV — Damper open

VAV — Damper closed

**Occupied**

**Unoccupied**
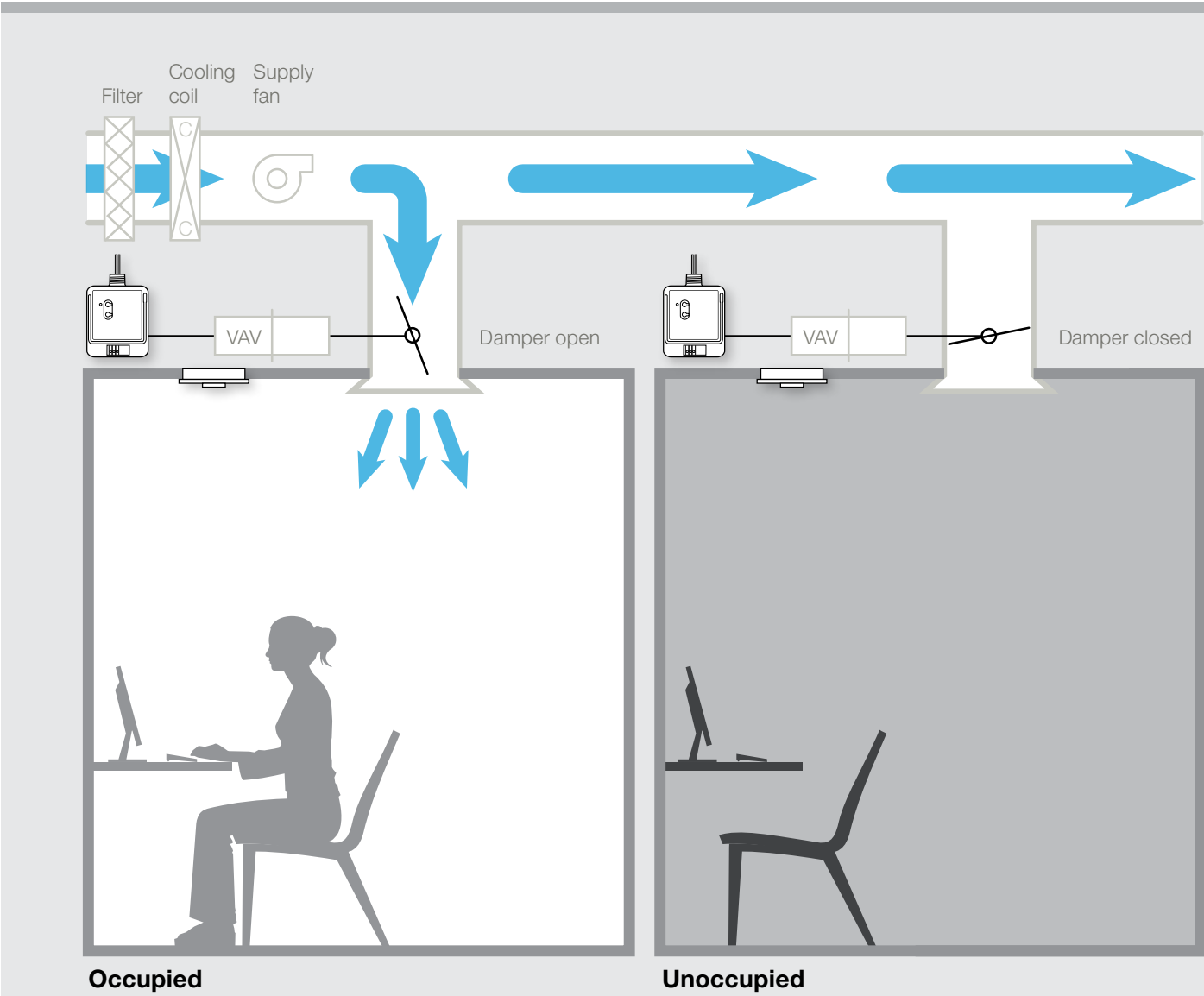
Radio Powr Savr occupancy/vacancy sensor (ceiling mount)

PowPak contact closure output module

PowPaks

**PowPak relay module**

**Dimensions**

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

## How to design and specify

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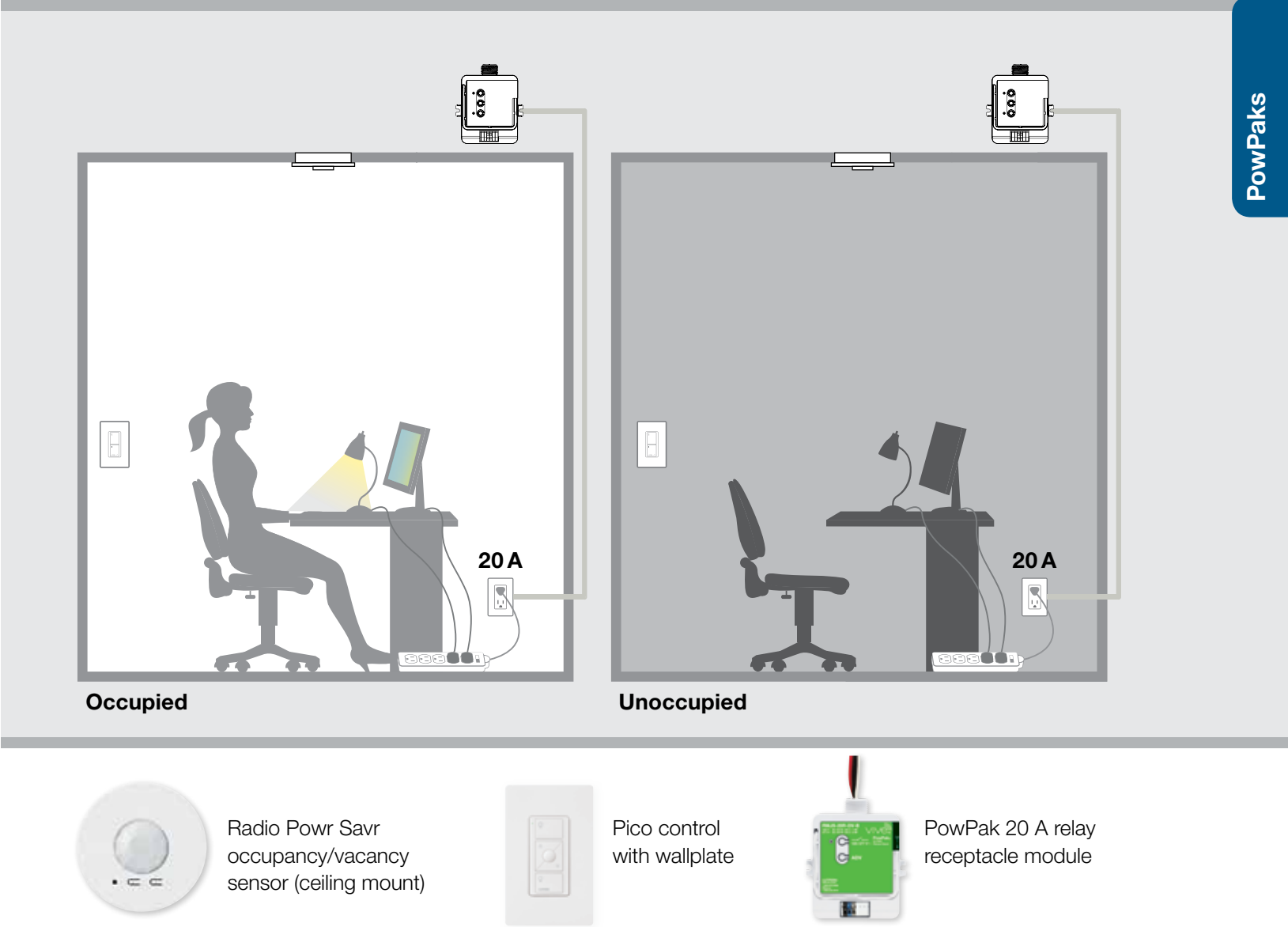
- **Input** 120/277 V

## Product options

### 20 A models

| | |
|---|---|
| **RMJS-20R-DV-B** | General purpose switch 120-277 V receptacles |
| **RMJS-20RCCO1-DV-B** | General purpose switch 20 A, 120-277 V 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 usage[3]. 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.

**PowPaks**

20 A

20 A

**Occupied**

**Unoccupied**

Radio Powr Savr occupancy/vacancy sensor (ceiling mount)

Pico control with wallplate

PowPak 20 A relay receptacle module

**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** 120/277 V
- **PowPak fixture sensor** Combined occupancy/daylight sensor

## Product options

### 0-10 V control models

| | |
|---|---|
| FCJS-010 | |
| FCJS-010-BULK8 | 8-pack |

### EcoSystem control models

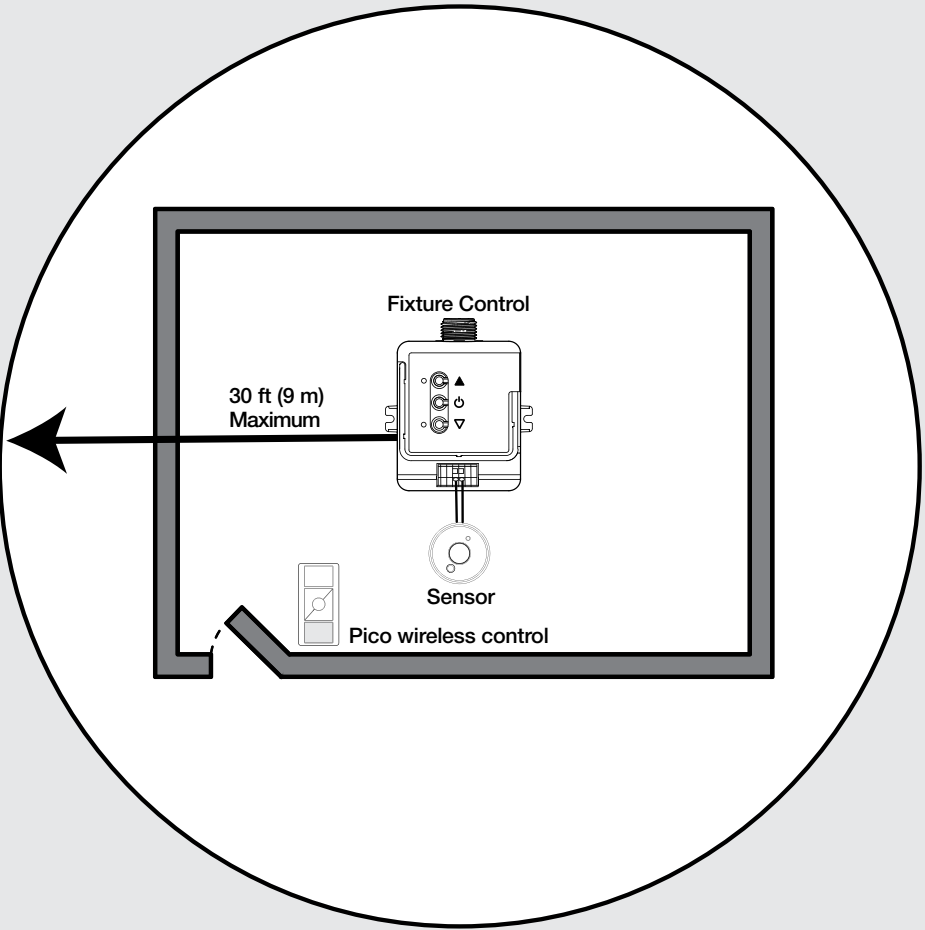| | |
|---|---|
| FCJS-ECO | |
| FCJS-ECO-BULK8 | 8-pack |

### Sensor models

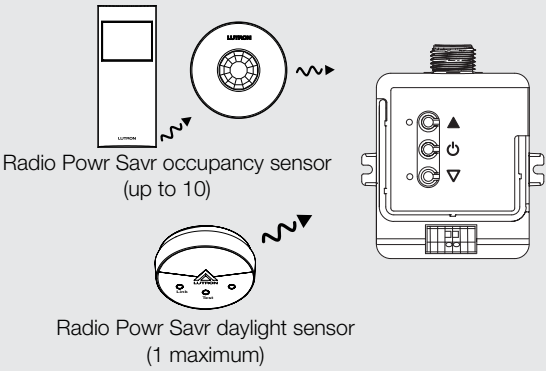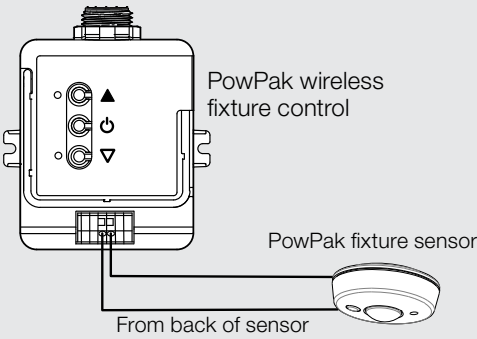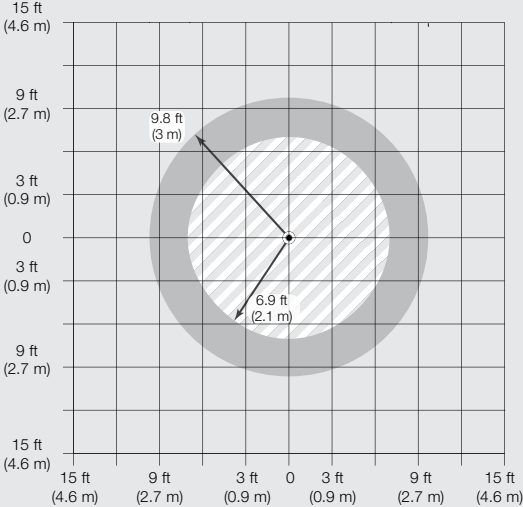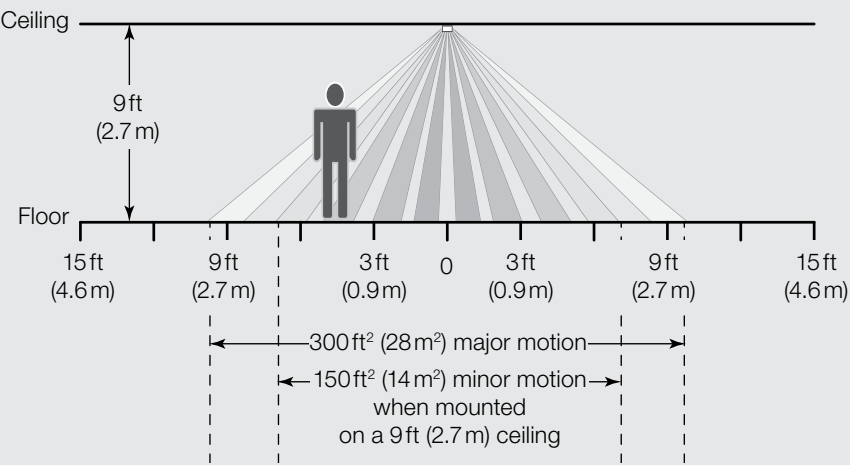| | |
|---|---|
| FC-SENSOR | Occupancy/Daylight sensor |
| FC-VSENSOR | Vacancy/Daylight sensor |

## 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 Control

30 ft (9 m) Maximum

Sensor

Pico wireless control

**PowPaks**

## Fixture sensor coverage diagrams



Ceiling

9 ft (2.7 m)

Floor

| 15 ft (4.6 m) | 9 ft (2.7 m) | 3 ft (0.9 m) | 0 | 3 ft (0.9 m) | 9 ft (2.7 m) | 15 ft (4.6 m) |

300 ft² (28 m²) major motion
150 ft² (14 m²) minor motion when mounted on a 9 ft (2.7 m) ceiling



15 ft (4.6 m)
9 ft (2.7 m)
3 ft (0.9 m)
0
3 ft (0.9 m)
9 ft (2.7 m)
15 ft (4.6 m)

9.8 ft (3 m)

6.9 ft (2.1 m)

15 ft (4.6 m) | 9 ft (2.7 m) | 3 ft (0.9 m) | 0 | 3 ft (0.9 m) | 9 ft (2.7 m) | 15 ft (4.6 m)



PowPak wireless fixture control

PowPak fixture sensor

From back of sensor



Radio Powr Savr occupancy sensor (up to 10)

Radio Powr Savr daylight sensor (1 maximum)

**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
  - **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 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 |

### 8 A switches

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

---

**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 |

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

**Switch/Dimmers**

**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" (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 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

Dim lights to reduce glare on screen
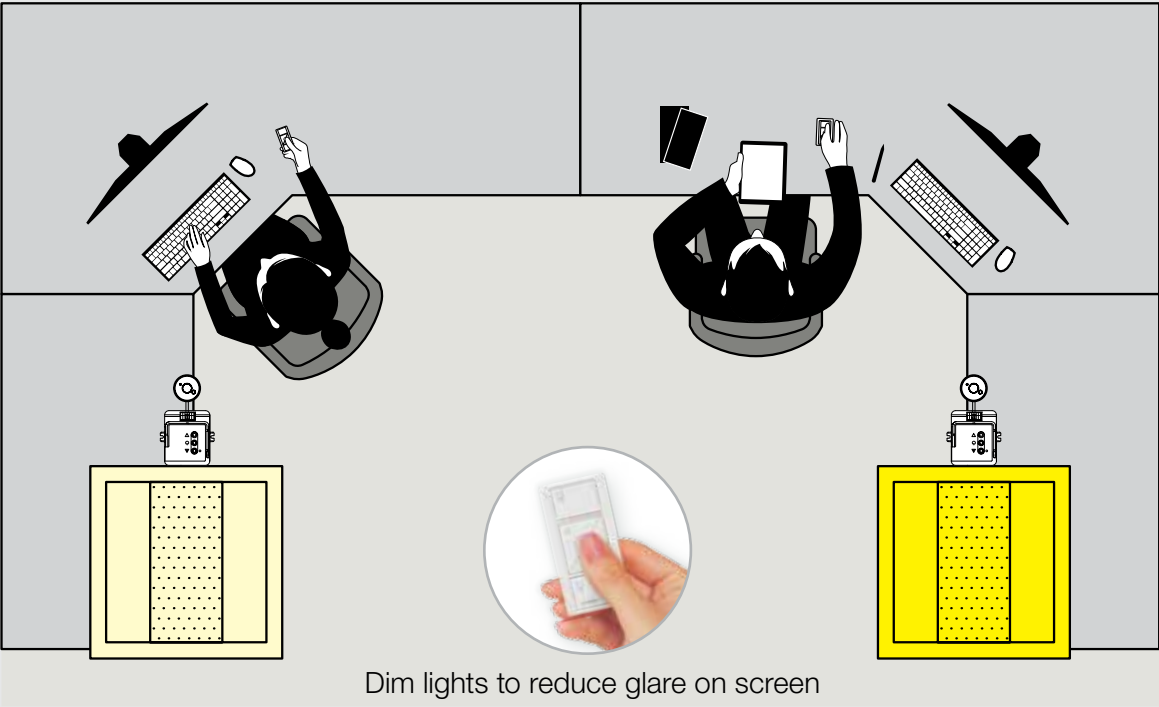
Pico wall mounted (in a wallplate) — Add a new point of control anywhere with absolutely no wires

Raise lights for reading visibility

Individual fixture control

**Pico remote**

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

## 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" (75 mm)
**H:** 4.69" (119 mm)
**D:** 1.44" (38 mm)

## 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 |

**Pico remote**

**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 ft$^2$
- For 12 ft ceilings: 676 ft$^2$

## 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 |

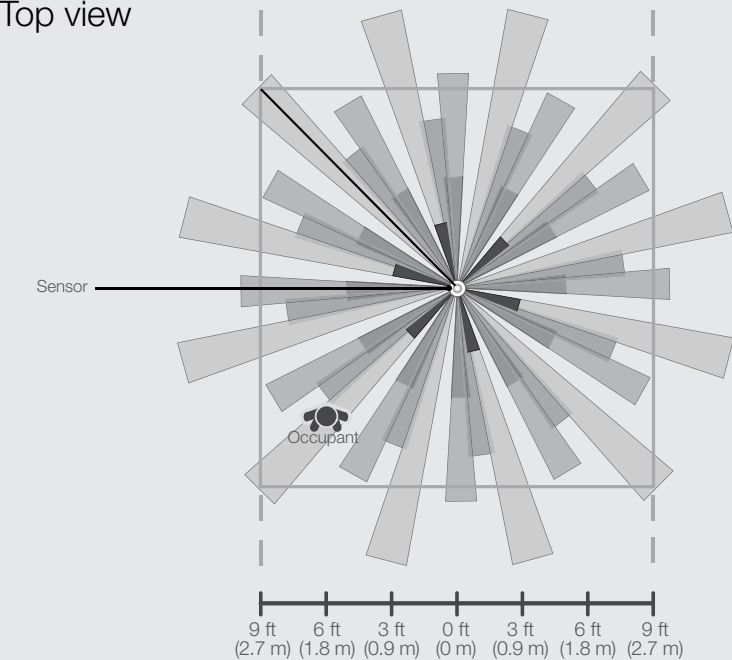## Sensor coverage diagrams

**Ceiling mount, 360°**

Floor view
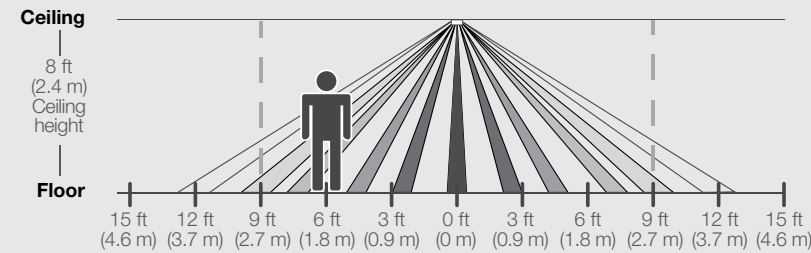


Top view



**Coverage varies by ceiling height**

**Key:**

Minor motion

Major motion

## 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 ft$^2$ (30.2 m$^2$) | 13 ft (4.0 m) |
| 9 ft (2.7 m) | 20 x 20 ft (6.1 x 6.1 m) | 400 ft$^2$ (37.2 m$^2$) | 14.5 ft (4.4 m) |
| 10 ft (3.0 m) | 22 x 22 ft (6.7 x 6.7 m) | 484 ft$^2$ (44.9 m$^2$) | 16 ft (4.9 m) |
| 12 ft (3.7 m)** | 26 x 26 ft (7.9 x 7.9 m) | 676 ft$^2$ (62.4 m$^2$) | 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.

Sensors

**Radio Powr Savr Wireless sensors**

**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

## Product options

### 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

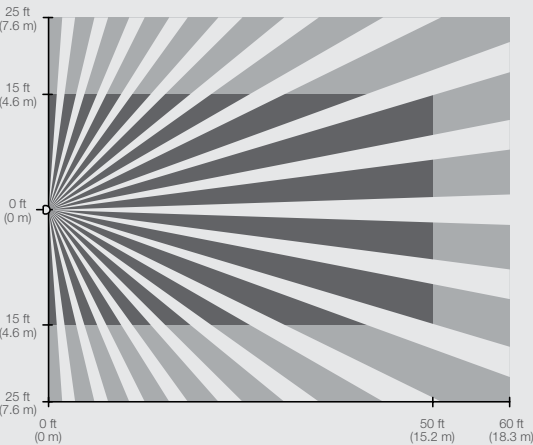| | |
|---|---|
| LRF2-OHLB-P-WH | Occupancy/vacancy |
| LRF2-VHLB-P-WH | Vacancy only |

### Accessories

| | |
|---|---|
| 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

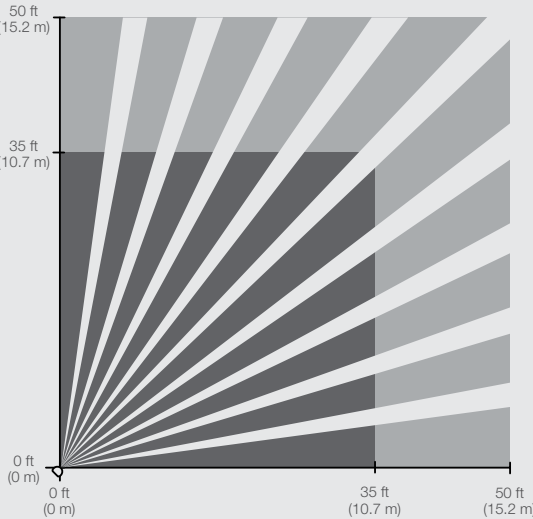**Wall mount\*, 180°**

1,500 ft$^2$ —minor motion
3,000 ft$^2$ —major motion

Top view



**Corner mount\*, 90°**

1,225 ft$^2$ —minor motion
2,500 ft$^2$ —major motion
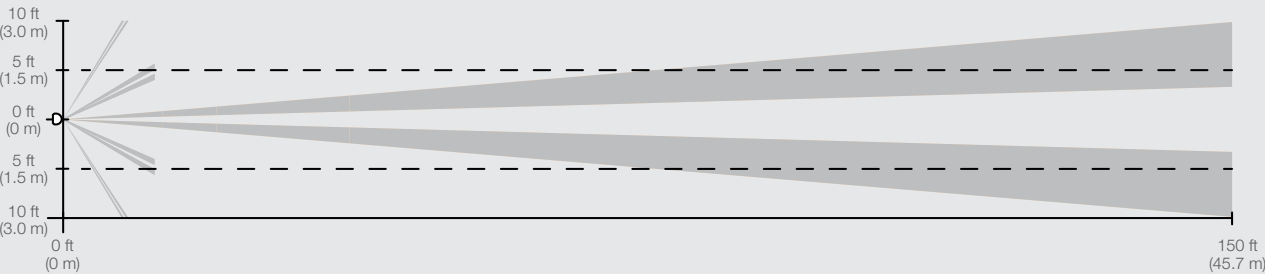
Top view



**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 |

\* 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.
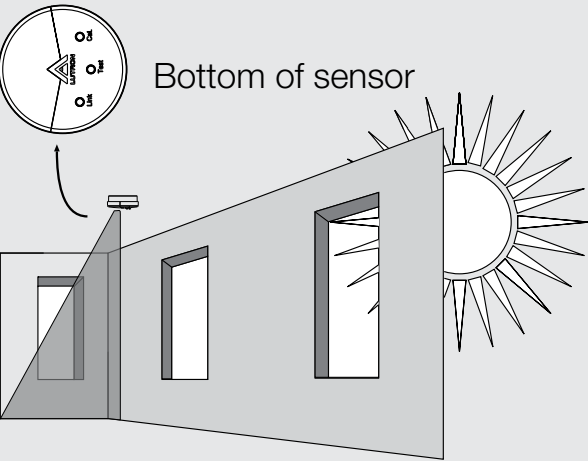
## Sensor coverage diagrams

Bottom of sensor

### Location for average size areas

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

1-2 H

H

3 ft (1 m)
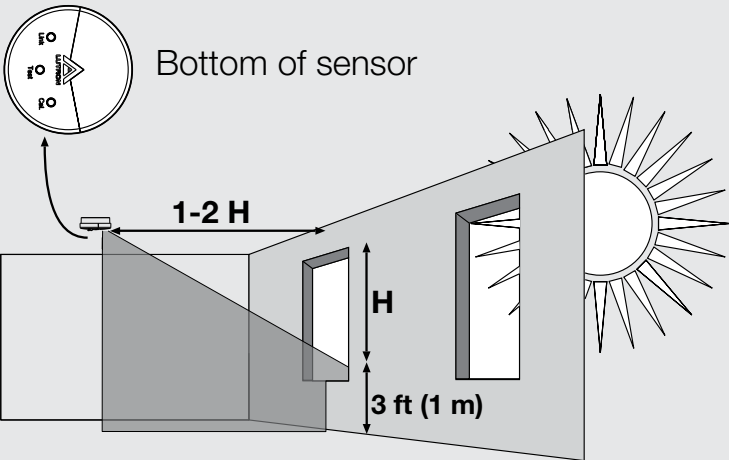
**H** = Effective Window Height

Bottom of sensor

### Location for narrow areas (corridors, private offices)

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

Sensors

**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 |

**Service Solutions**

**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 |

## 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 | | | • | • |

Service Solutions

| Model number | Description | List Price (US) |
|---|---|---|
| **Vive wireless hub** | | |
| HJS-1-FM | Vive wireless hub, flush mount | |
| HJS-1-SM | Vive wireless hub, surface mount | Contact Lutron sales for a quote |
| 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 | 5 A relay | 109.00 |
| RMJS-5RCCO1-DV-B | 5 A relay with one contact closure output | 124.00 |
| RMJS-16R-DV-B | 16 A relay | 129.00 |
| RMJS-16RCCO1-DV-B | 16 A relay with one contact closure output | 144.00 |
| **PowPak dimming module with 0-10 V control** | | |
| RMJS-8T-DV-B | Controls up to 8 A of 0-10 V 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 | 20 A general purpose switch | 139.00 |
| RMJS-20OCC1DV-B | 20 A general purpose switch with one contact closure output | 154.00 |
| **Individual fixture control** | | |
| FCJS-010 | 0-10 V Control Module | 78.00 |
| FCJS-ECO | EcoSystem Control Module | 78.00 |
| FCJS-010-BULK8 | 0-10 V 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, 3 A fan (1/10 HP motor), 120 V | 108.00 |
| MRF2S-8S-DV-XX | 8 A lighting, 3 A fan (1/10 HP motor, 120 V only), spec grade | 170.00 |
| MRF2S-8ANS-120-XX | 8 A lighting, 5.8 A fan (1/4 HP motor), spec grade, 120 V | 140.00 |
| **Maestro Wireless dimmers*** | | |
| MRF2S-6CL-XX | 150 W dimmable CFL/LED, 600 W incandescent halogen, 600 VA MLV, 120 V, no neutral | 108.00 |
| MRF2S-6ELV-XX | 600 W ELV, 120 V | 209.00 |
| MA-R-XX | Accessory dimmer for multi-location lighting controls, 120 V | 160.00 |
| **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 |

\* (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 |

| Model number | Description | List Price (US) |
|---|---|---|
| **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)
- Ivory (IV)
- Light Almond (LA)
- White/Gray (WG)
- Black (BL)

| 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 |

| Model number | Description | List Price (US) |
|---|---|---|
| **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 |

| Model number | Description | List Price (US) |
|---|---|---|
| **Radio Powr Savr daylight sensor** | | |
| LRF2-DCRB-WH | Ceiling-mount daylight sensor | 120.00 |

| Model number | Description | List Price (US) |
|---|---|---|
| **Lamp Socket Wiring Tester** | | |
| FDB-LSWT-T5/T8 | 600 V, 100 KHz, 0.125 A max, CAT III | 180.00 |

| Model number | Description | List Price (US) |
|---|---|---|
| **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.

# Ordering Information

| Model number | Description | List Price (US) |
|---|---|---|
| **Vive Startup Services** | | |
| LSC-OS-SU-VIVE | Onsite full-scope startup | |
| LSC-RMT-SU-VIVE | Remote full-scope startup | |
| LSC-AH-SU | After hours startup | **Contact Lutron sales for a quote** |
| 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 | |
| LSC-OS-PROG4-SP | Onsite programming —4-hour block | |
| LSC-RMT-PROG8-SP | Remote programming —8-hour block | |
| LSC-PREWIRE | Prewire visit | **Contact Lutron sales for a quote** |
| 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 | |
| LSC-SYSOPT | System optimization service | |
| LSC-OS-PROG8-EN | 8 hours of onsite reconfiguration support | **Contact Lutron sales for a quote** |
| 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 | |
| LSC-SILV-IW | Silver level technology support plan | |
| LSC-GOLD-IW | Gold level technology support plan | **Contact Lutron sales for a quote** |
| LSC-PLAT-IW | Platinum level technology support plan | |
| LSC-WARR-AUD | Warranty audit visit | |

# Stand Alone Solutions

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

**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

- **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 ft$^2$ major motion coverage and 400 ft$^2$ 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

### Meastro 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 |

### Meastro 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.) See Maestro colors on page 49.

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

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**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

- **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 ft$^2$ major motion coverage and 400 ft$^2$ 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 |

### Meastro 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. 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 ft$^2$ major motion coverage and 400 ft$^2$ 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 |
|---|---|

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 |
|---|---|

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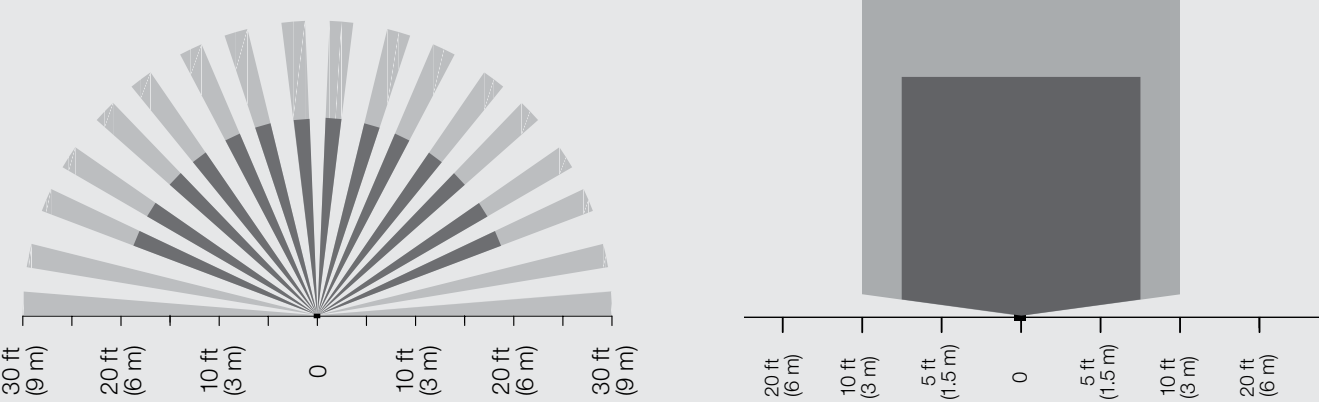
[†] Vacancy-only models available. Replace the "O" in the model number with a "V".

[‡] 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).

| 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 |
| **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 |
| **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 |

\* Vacancy models available to meet California Title 24 section 119(j) requirements.

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

## Notes

# 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). $CO_2$ reduction is based on 1.9 pounds of $CO_2$ 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

**Questions?**
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