Part L Building Regulations Application Guide

Wireless lighting control solutions to meet UK building regulations

LUTRON

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Introduction

Applications

Shared Space

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Unowned Space

Managed Space

Why Lutron?

Lutron is a global organisation committed to delivering value to its customers. We developed the first solid state dimmer. Today, we continue to develop innovative, energy-saving lighting control solutions that provide flexibility, ambiance, and comfort in residential and commercial applications.

The company offers:

- Proven technology: 2,500 active patents
- Upfront project service support
- After-sales support
- Reduced end-user callbacks
- Products designed and manufactured for reliability with 100% pre-shipment inspection
- Significant portfolio to cover all your project requirements: +15,000 SKUs

Why Invest in Lighting Controls?

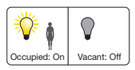
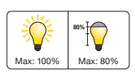
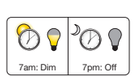
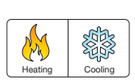
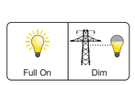
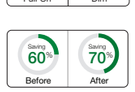
Occupant comfort — Increased productivity and well being

Meet demand — Lighting controls are growing in popularity to improve the aesthetics, functionality, and value of any space

Increase revenue — Lighting controls provide an additional revenue opportunity for the contractor

Comply with building regulations — Evolving rules are requiring stricter requirements for energy efficiency, while allowances are also being made for lighting controls

Energy-saving lighting control strategies

Strategy	Potential savings
 **Occupancy/vacancy sensing** turns lights on when occupants are in a space and off when they vacate the space.	20–60% Lighting*
 **Daylight harvesting** dims electric lights when daylight is available to light the space.	25–60% Lighting*
 **High-end trim** sets the maximum light level based on customer requirements in each space.	10–30% Lighting*
 **Personal dimming control** gives occupants the ability to adjust the light level.	10–20% Lighting*
 **Scheduling** provides pre-programmed changes in light levels based on time of day.	10–20% Lighting*
 **HVAC integration** controls heating, ventilation, and air conditioning systems through contact closure, or BACnet protocol.	5–15% HVAC*
 **Load shedding** automatically reduces lighting loads during peak electricity usage times.*	30–50% Peak Period*
 **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

*Go to lutron.com/references for more information

2021 Edition Compliance Summary

The 2021 edition of the approved document outlines an important requirement that could result in a significant increase in hardware and installation costs.

As outlined on point 6.61, general lighting should be metered by one of three methods:

a. Dedicated lighting circuits with a kWh meter for each circuit.

b. Local power meter coupled to, or integrated in the lighting controllers of a lighting management system.

c. A lighting management system that can both:

i. calculate the consumed energy

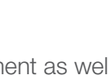
ii. make this information available to a building management system.

By using Lutron's lighting controls, it is possible to easily meet this requirement as well as the ones outlined below:

- Where there is low traffic, incorporate absence detection for automatic shutoff.
- Where there is high traffic, incorporate presence detection for automatic shutoff.
- In shared spaces, incorporate timeclocks to turn lighting off after-hours.
- Where there are windows, incorporate a daylight sensor for automatic dimming.
- Use wireless controls and detectors for easy placement and flexible control.

Lutron product capabilities to meet Part L requirements

This table shows the Lutron Vive products that can help meet Part L requirements for these space types and conditions. These solutions are shown in more detail starting on page 12.

Space Classification	Occupant Control	Daylight	Low Occupancy	High Occupancy
Shared Space **Example:** Open Office			OR	
Owned Space **Example:** Private Offices				
Temporarily Owned Space **Example:** Meeting Room				
Occasionally Visited Space **Example:** Toilet			 OR 	
Unowned Space **Example:** Corridor			 OR	
Managed Space **Example:** Restaurant	OR 			

Define your space

The appropriate control solution is defined by the needs of the space and its occupants. Use the following steps to plan and design an ideal energy-saving solution.

Step 1

Control your loads

- Select the controller appropriate for the loads on your job
- Options available for:
  - 0-10V, DALI
  - Switching CCO
- Simply wire control with power into your circuit.


Switching


Dimming


Contact Closure

Load control

Step 2

Control your lights where you need to

- Wireless devices can be mounted to any surface with no wiring needed.
- Controls communicate wirelessly to the controls in the ceiling.
- 10 year battery life


Switching


Dimming

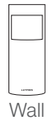
Pico wireless remote

Step 3

Add sensors to your job

- Occupancy/vacancy sensors turn lights on and/or off for convenience and energy savings.
- Wireless devices can be mounted to any surface with no wiring needed.
- Controls communicate wirelessly to the controls in the ceiling.
- 10 year battery life


Corner


Wall


Ceiling

Wireless occupancy/ vacancy sensors

Flexible, wireless controls and sensors for simple, scalable design


Remotes


Occupancy and daylight sensors


Lighting control modules

Add wireless hubs for centralised control and integration (optional)

Vive wireless hub


Demand response

BACnet integration

API integration

How to Use this Guide

This application guide is designed to help specifiers and contractors understand how Lutron controls help meet building regulations in a simple manner. Each of the pages will lay out different space types, the corresponding lighting control products for those spaces, and the way the system is set up in the space.

For Specifiers
Use this application guide for design suggestions, to understand the way the system operates and to specify the relevant products for each space.

For Contractors
Use this application guide to understand how the system is installed, the way the system must operate, and to order the correct products for each application.

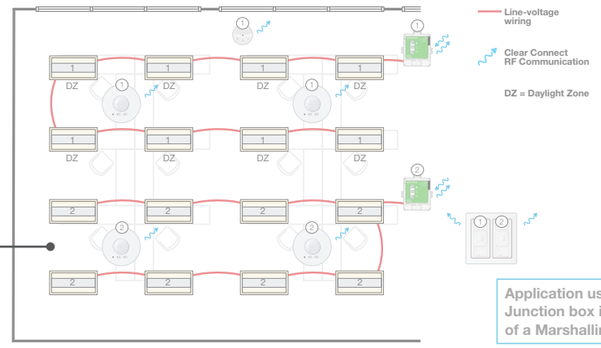
Space type

Type of solution

This guide offers up to two Part L compliant solutions per space type.
Switching: Basic functionality and energy savings.
Dimming: Increased control, ambiance, and energy savings.

Shared space with daylight | Dimming using a Junction Box | Part L 2022 Compliant

Examples: Open Plan Office, Large Workshop, Hospital Ward



Application uses a Junction box instead of a Marshalling box

Symbol	Model Number	Description	Qty
	RMKS-DAL32-SZ	PowPak Single Zone Module with DALI	2
	LRF3-OCR2B-P-WH	Radio Powr Savr Wireless Ceiling Occupancy Sensor	4
	LRF3-DCRB-P-WH	Radio Powr Savr Wireless Daylight Sensor	1
	PK2-3BRL-TAW-L01	Pico Wireless Control On/Off and Raise/Lower	2
	LPFP-S2-TAW	Pico Wireless Faceplate (Dual)	1

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Visible System Components

Pico wireless control

Radio Powr Savr wireless ceiling-mount occupancy sensor and daylight sensor

Lighting Functionality

Occupant Enters:
All lights automatically turn on to maximum light level.

When Occupied:
Automatic: Overhead lights dim/brighten based on daylight availability. There is one perimeter daylight zone.

Manual: Occupant uses wall dimmers to set desired light levels for all lights.

Occupant Exits:
All lights automatically shut off 15 minutes (by default) after all occupants exit.

Add a Vive wireless hub to enable simple setup and rezoning, system monitoring, timeclock functionality, and advanced integration.

Control Strategies

Occupancy/Vacancy

Daylight Harvesting

Lighting Energy Savings*

55%

* Go to lutron.com/references for more information.

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Type of solution

Learn about the products visible in the space and the different options available for these.

Learn what strategies are implemented in the space

Learn what energy savings you achieve over manual shut-off

Understand how the products are laid out in the space

Learn more about the products used in the space

Understand how the space functions with the installed system

Vive Local Solutions Layout

This is a high-level overview of the local solutions layout. For individual room requirements refer to the detailed room type solutions in this guide. A single PowPak module can control single or multiple fixtures. The products shown here are representative of local solutions. Multiple product options are available to meet the needs of the space.

Vive wireless hub*

PowPak module

Occupancy sensor

Pico wireless remote control

Daylight sensor

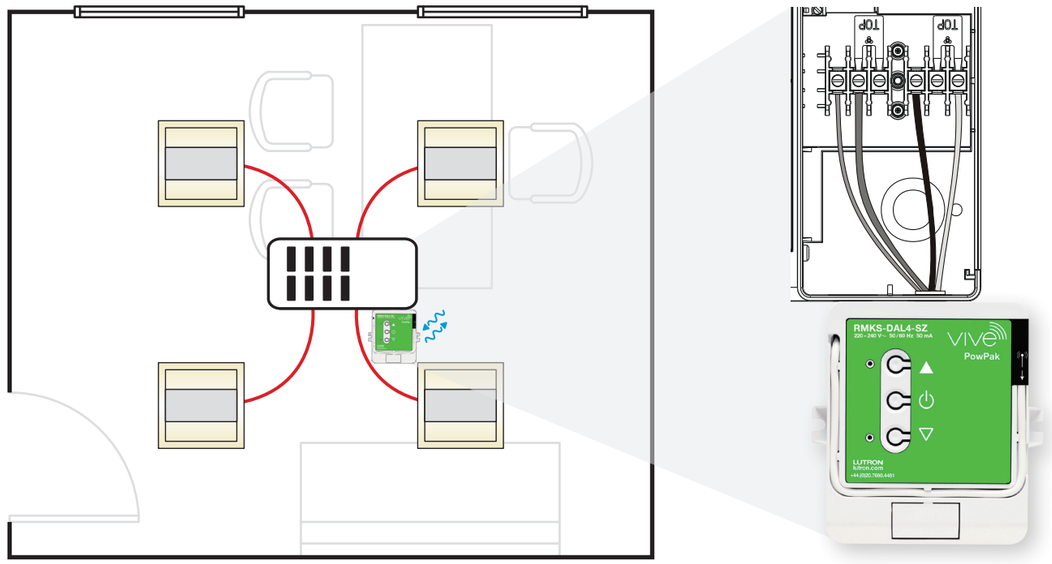
Vive wireless hub features:

- Central control, management, and monitoring of Vive devices via web browser
- Supports astronomic and time-of-day events
- Two contact closure inputs for third-party integration, such as Automatic Demand Response
- Wi-Fi access for easy commissioning
- Control up to 929 m^2 (10,000 ft^2) with a single hub
- Optional BACnet integration

* Go to **lutron.com/vive-europe** for complete compatibility and design details.

Working with Marshalling Boxes

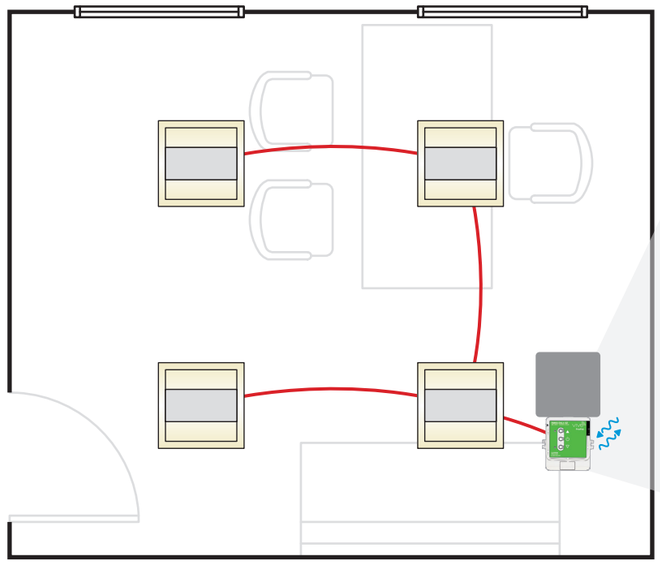
Lutron PowPaks offer unparallel versatility as lighting control modules. They work for both retrofit and new construction, allowing for easy upgrade of any building into a smart building. They can be wired into a junction box or into a marshalling box for maximum flexibility.

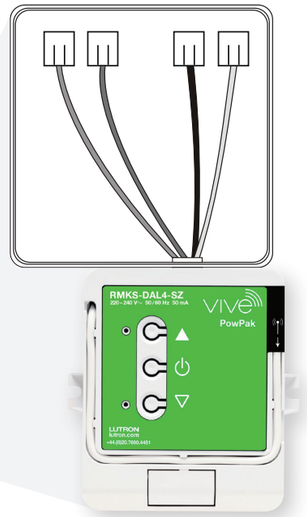


Marshalling Boxes

- Ideal for installations with drop ceilings
- Lutron's PowPaks work with any marshalling box. Simply connect PowPak through a knockout and wire it to the terminals inside the wiring compartment
- Connect multiple PowPaks to a marshalling box that has multiple circuits for additional functionality

Working with Junction Boxes



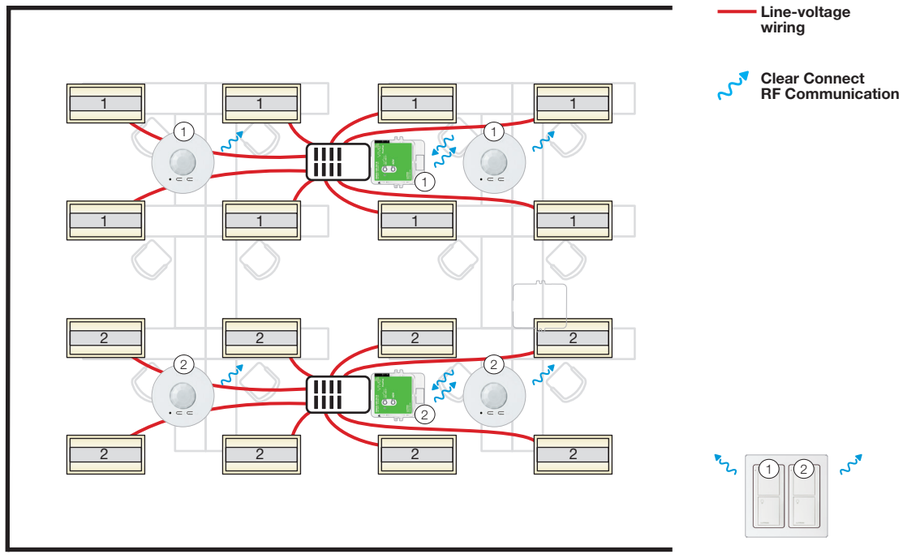


Junction Boxes

- Ideal for installations with exposed services, avoiding clutter in the ceiling
- Simply connect the PowPak through a knockout and wire it using the terminals provided with PowPak
- Connect multiple PowPaks to a junction box if you want to split circuits for added functionality

Shared space without daylight | Switching using a Marshalling Box

Examples: Open Plan Office, Large Workshop, Hospital Ward



Line-voltage wiring

Clear Connect RF Communication

Symbol	Model Number	Description	Qty
	RMKS-16R-DV-B	PowPak 16A Relay Module	2
	LRF3-OCR2B-P-WH	Radio Powr Savr Wireless Ceiling Occupancy Sensor	4
	PK2-2B-TAW-L01	Pico Wireless Control 2 Button On/Off	2
	LPFP-S2-TAW	Pico Wireless Faceplate (Dual)	1

Visible System Components

Pico wireless control

Radio Powr Savr wireless ceiling-mount occupancy sensor

Lighting Functionality

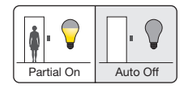
Occupant Enters:
All lights automatically turn on.

When Occupied:
Manual: Occupant uses wall switches to turn zones on and off.

Occupant Exits:
All lights automatically shut off 15 minutes (by default) after all occupants exit.

Add a Vive wireless hub to enable simple setup and rezoning, system monitoring, timeclock functionality, and advanced integration.

Control Strategies



Occupancy/Vacancy

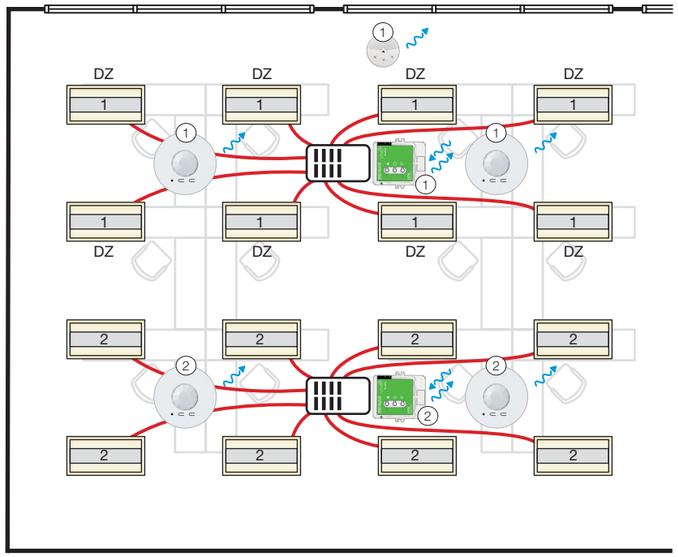
Lighting Energy Savings*

35%

* Go to lutron.com/references for more information.

Shared space with daylight | Dimming using a Marshalling Box

Examples: Open Plan Office, Large Workshop, Hospital Ward



Line-voltage wiring

Clear Connect RF Communication

DZ = Daylight Zone

Symbol	Model Number	Description	Qty
	RMKS-DAL32-SZ	PowPak Single Zone Module with DALI	2
	LRF3-OCR2B-P-WH	Radio Powr Savr Wireless Ceiling Occupancy Sensor	4
	LRF3-DCRB-P-WH	Radio Powr Savr Wireless Daylight Sensor	1
	PK2-3BRL-TAW-L01	Pico Wireless Control On/Off and Raise/Lower	2
	LPFP-S2-TAW	Pico Wireless Faceplate (Dual)	1

Visible System Components

Pico wireless control

Radio Powr Savr wireless ceiling-mount occupancy sensor and daylight sensor

Lighting Functionality

Occupant Enters:
All lights automatically turn on to maximum light level.

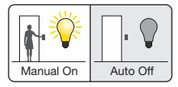
When Occupied:
Automatic: Overhead lights dim/brighten based on daylight availability. There is one perimeter daylight zone.

Manual: Occupant uses wall dimmers to set desired light levels for all lights.

Occupant Exits:
All lights automatically shut off 15 minutes (by default) after all occupants exit.

Add a Vive wireless hub to enable simple setup and rezoning, system monitoring, timeclock functionality, and advanced integration.

Control Strategies



Occupancy/Vacancy

Daylight Harvesting

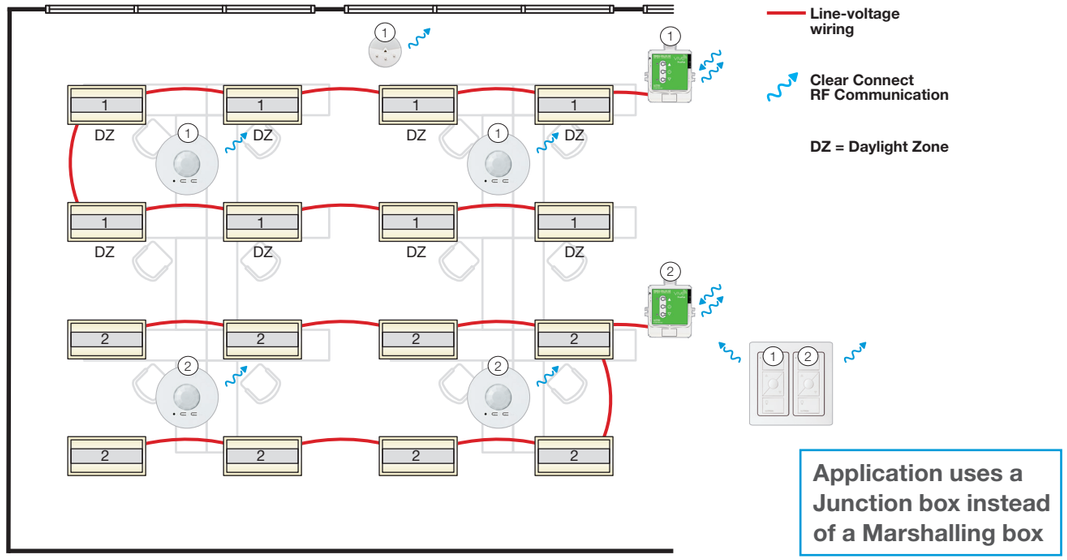
Lighting Energy Savings*

55%

* Go to lutron.com/references for more information.

Shared space with daylight | Dimming using a Junction Box

Examples: Open Plan Office, Large Workshop, Hospital Ward



Application uses a Junction box instead of a Marshalling box

Symbol	Model Number	Description	Qty
	RMKS-DAL32-SZ	PowPak Single Zone Module with DALI	2
	LRF3-OCR2B-P-WH	Radio Powr Savr Wireless Ceiling Occupancy Sensor	4
	LRF3-DCRB-P-WH	Radio Powr Savr Wireless Daylight Sensor	1
	PK2-3BRL-TAW-L01	Pico Wireless Control On/Off and Raise/Lower	2
	LPFP-S2-TAW	Pico Wireless Faceplate (Dual)	1

Visible System Components

Pico wireless control

Radio Powr Savr wireless ceiling-mount occupancy sensor and daylight sensor

Lighting Functionality

Occupant Enters:
All lights automatically turn on to maximum light level.

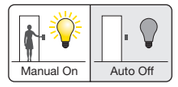
When Occupied:
Automatic: Overhead lights dim/brighten based on daylight availability. There is one perimeter daylight zone.

Manual: Occupant uses wall dimmers to set desired light levels for all lights.

Occupant Exits:
All lights automatically shut off 15 minutes (by default) after all occupants exit.

Add a Vive wireless hub to enable simple setup and rezoning, system monitoring, timeclock functionality, and advanced integration.

Control Strategies



Occupancy/Vacancy

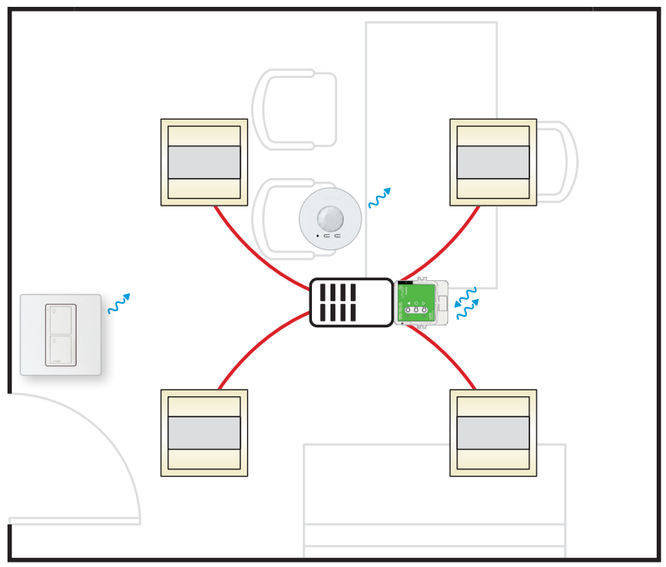
Daylight Harvesting

Lighting Energy Savings*

55%

* Go to lutron.com/references for more information.

Examples: Cellular Office, Consulting Room, Small Workshop



Symbol	Model Number	Description	Qty
	RMKS-16R-DV-B	PowPak 16A Relay Module	1
	LRF3-OCR2B-P-WH	Radio Powr Savr Wireless Ceiling Occupancy Sensor	1
	PK2-2B-TAW-L01	Pico Wireless Control 2 Button On/Off	1
	LPFP-S1-TAW	Pico Wireless Faceplate (Single)	1

Visible System Components

Pico wireless switch

Radio Powr Savr wireless ceiling-mount occupancy sensor

Control Functionality

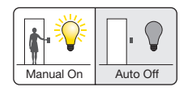
Occupant Enters:
Lights do not automatically turn on when an occupant enters the space; lights must be turned on manually.

When Occupied:
Manual: Occupant uses wall switch to turn on and turn off all lights.

Occupant Exits:
All lights automatically shut off 15 minutes (by default) after all occupants exit.

Add a Vive wireless hub to enable simple setup and rezoning, system monitoring, timeclock functionality, and advanced integration.

Control Strategies



Occupancy/Vacancy

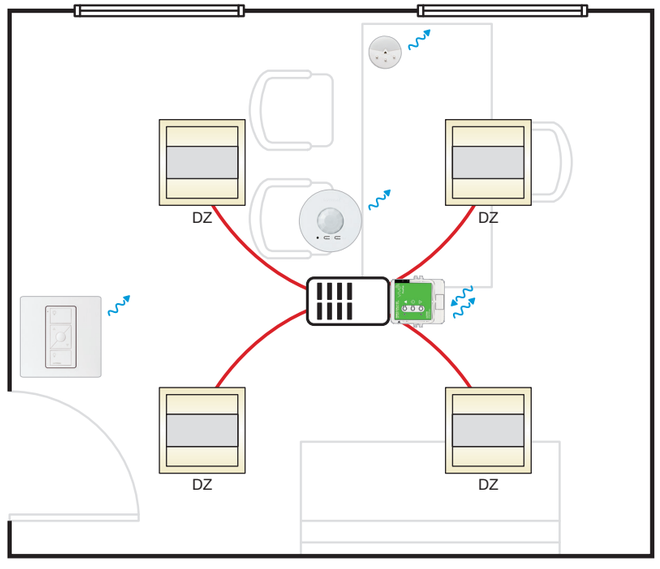
Lighting Energy Savings*

30%

* Go to lutron.com/references for more information.

Owned space with daylight | Dimming using a Marshalling Box

Examples: Cellular Office, Consulting Room, Small Workshop



Line-voltage wiring

Clear Connect RF Communication

DZ = Daylight Zones

Symbol	Model Number	Description	Qty
	RMKS-DAL4-SZ	PowPak Single Zone Module with DALI	1
	LRF3-OCR2B-P-WH	Radio Powr Savr Wireless Ceiling Occupancy Sensor	1
	LRF3-DCRB-P-WH	Radio Powr Savr Wireless Daylight Sensor	1
	PK2-3BRL-TAW-L01	Pico Wireless Control On/Off and Raise/Lower	1
	LPFP-S1-TAW	Pico Wireless Faceplate (Single)	1

Visible System Components

Pico wireless control

Radio Powr Savr wireless ceiling-mount occupancy sensor and daylight sensor

Control Functionality

Occupant Enters:
Lights do not automatically turn on when an occupant enters the space; lights must be turned on manually.

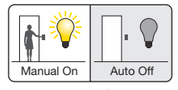
When Occupied:
Automatic: Overhead lights dim/brighten based on daylight availability.

Manual: Occupant uses wall dimmer to set desired light levels for all lights.

Occupant Exits:
All lights automatically shut off 15 minutes (by default) after all occupants exit.

Add a Vive wireless hub to enable simple setup and rezoning, system monitoring, timeclock functionality, and advanced integration.

Control Strategies



Occupancy/Vacancy

Daylight Harvesting

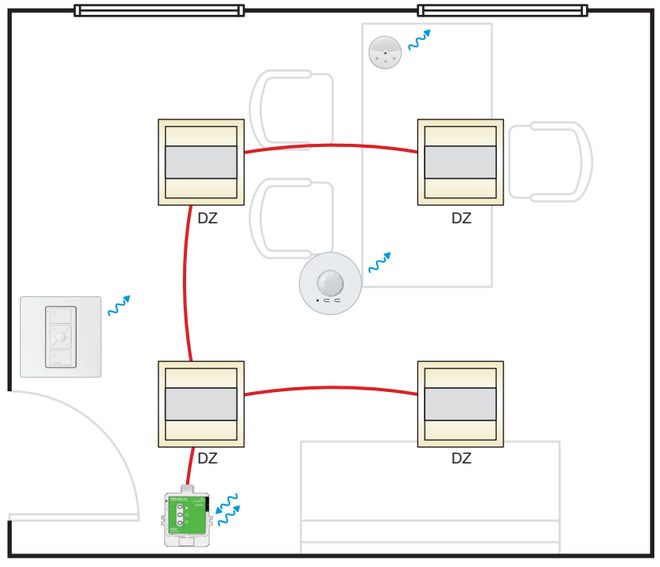
Personal Dimming

Lighting Energy Savings*

60%

* Go to lutron.com/references for more information.

Examples: Cellular Office, Consulting Room, Small Workshop



Line-voltage wiring

Clear Connect RF Communication

Application uses a Junction box instead of a Marshalling box

Symbol	Model Number	Description	Qty
	RMKS-DAL4-SZ	PowPak Single Zone Module with DALI	1
	LRF3-OCR2B-P-WH	Radio Powr Savr Wireless Ceiling Occupancy Sensor	1
	LRF3-DCRB-P-WH	Radio Powr Savr Wireless Daylight Sensor	1
	PK2-3BRL-TAW-L01	Pico Wireless Control On/Off and Raise/Lower	1
	LPFP-S1-TAW	Pico Wireless Faceplate (Single)	1

Visible System Components

Pico wireless control

Radio Powr Savr wireless ceiling-mount occupancy sensor and daylight sensor

Control Functionality

Occupant Enters:
Lights do not automatically turn on when an occupant enters the space; lights must be turned on manually.

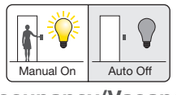
When Occupied:
Automatic: Overhead lights dim/brighten based on daylight availability.

Manual: Occupant uses wall dimmer to set desired light levels for all lights.

Occupant Exits:
All lights automatically shut off 15 minutes (by default) after all occupants exit.

Add a Vive wireless hub to enable simple setup and rezoning, system monitoring, timeclock functionality, and advanced integration.

Control Strategies



Occupancy/Vacancy

Daylight Harvesting

Personal Dimming

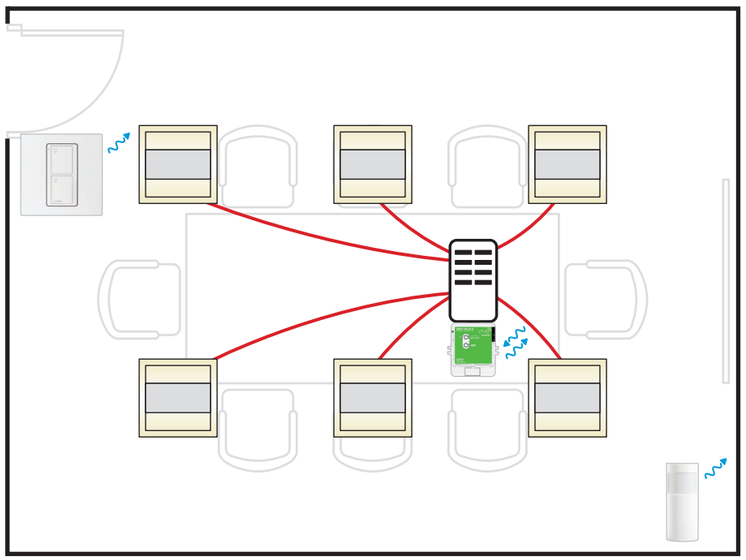
Lighting Energy Savings*

60%

* Go to lutron.com/references for more information.

Temporarily owned space without daylight | Switching using a Marshalling Box

Examples: Meeting Room, Classroom, Hotel Bedroom, Church Hall



Symbol	Model Number	Description	Qty
	RMKS-16R-DV-B	PowPak 16A Relay Module	1
	LRF3-OKLB-P-WH	Radio Powr Savr Wireless Corner Occupancy Sensor	1
	PK2-2B-TAW-L01	Pico Wireless Control 2 Button On/Off	1
	LPFP-S1-TAW	Pico Wireless Faceplate (Single)	1

Visible System Components

Pico wireless switch

Radio Powr Savr wireless ceiling-mount occupancy sensor

Control Functionality

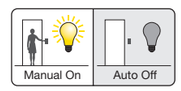
Occupant Enters:
Lights do not automatically turn on when an occupant enters the space; lights must be turned on manually.

When Occupied:
Manual: Occupant uses wall switch to turn on and turn off all lights.

Occupant Exits:
All lights automatically shut off 15 minutes (by default) after all occupants exit.

Add a Vive wireless hub to enable simple setup and rezoning, system monitoring, timeclock functionality, and advanced integration.

Control Strategies



Occupancy/Vacancy

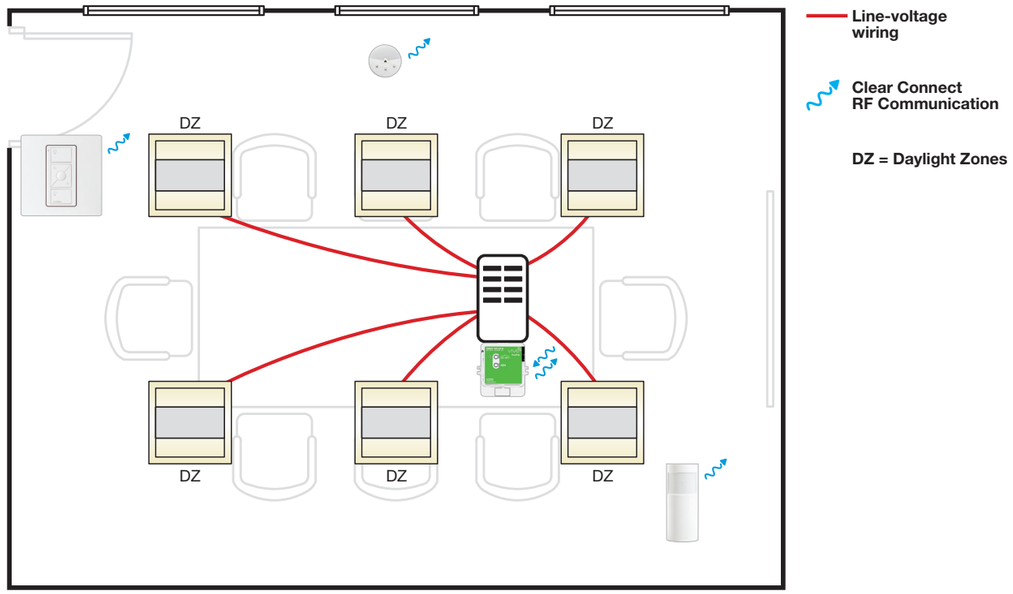
Lighting Energy Savings*

40%

* Go to lutron.com/references for more information.

Temporarily owned space with daylight | Dimming using a Marshalling Box

Examples: Meeting Room, Classroom, Hotel Bedroom, Church Hall



Symbol	Model Number	Description	Qty
	RMKS-DAL32-SZ	PowPak Single Zone Module with DALI	1
	LRF3-OKLB-P-WH	Radio Powr Savr Wireless Corner Occupancy Sensor	1
	LRF3-DCRB-P-WH	Radio Powr Savr Wireless Daylight Sensor	1
	PK2-3BRL-TAW-L01	Pico Wireless Control On/Off and Raise/Lower	1
	LPFP-S1-TAW	Pico Wireless Faceplate (Single)	1

Visible System Components

Pico wireless control

Radio Powr Savr wireless corner-mount vacancy sensor and daylight sensor

Control Functionality

Occupant Enters:
Lights do not automatically turn on when an occupant enters the space; lights must be turned on manually.

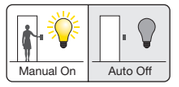
When Occupied:
Automatic: Overhead lights dim/brighten based on daylight availability.

Manual: Occupant uses wall dimmer to set desired light levels for all lights.

Occupant Exits:
All lights automatically shut off 15 minutes (by default) after all occupants exit.

Add a Vive wireless hub to enable simple setup and rezoning, system monitoring, timeclock functionality, and advanced integration.

Control Strategies



Occupancy/Vacancy

Daylight Harvesting

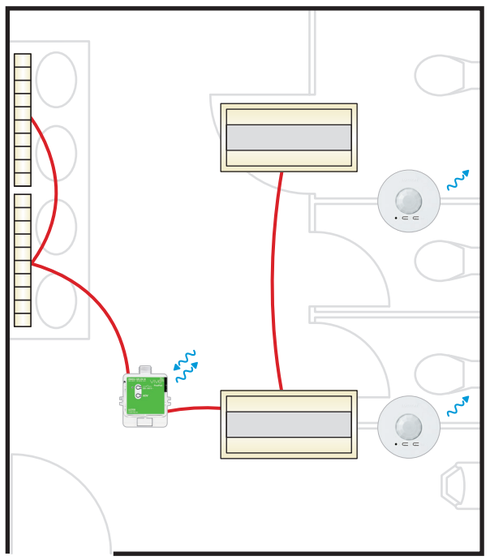
Lighting Energy Savings*

55%

* Go to lutron.com/references for more information.

Occasionally visited space without daylight | Switching using a Junction Box

Examples: Toilet, Bathroom, Storeroom



Application uses a Junction box instead of a Marshalling box

Symbol	Model Number	Description	Qty
	RMKS-16R-DV-B	PowPak 16A Relay Module	1
	LRF3-OCR2B-P-WH	Radio Powr Savr Wireless Ceiling Occupancy Sensor	2

Visible System Components

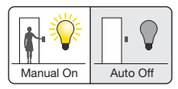
Radio Powr Savr
wireless ceiling-mount
occupancy sensor

Control Functionality

Occupant Enters:
All lights automatically turn on.

Occupant Exits:
All lights automatically shut off 15 minutes (by default) after all occupants exit.

Control Strategies



Occupancy/Vacancy

Add a Vive wireless hub to enable simple setup and rezoning, system monitoring, timeclock functionality, and advanced integration.

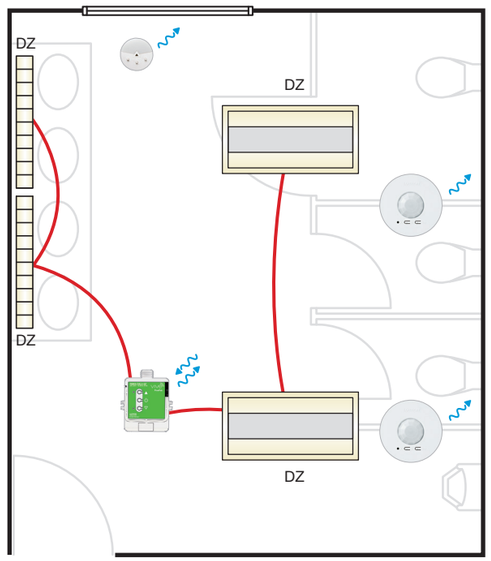
Lighting Energy Savings*

20%

* Go to lutron.com/references for more information.

Occasionally visited space with daylight | Dimming using a Junction Box

Examples: Toilet, Bathroom, Storeroom



Line-voltage wiring

Clear Connect RF Communication

DZ = Daylight Zone

Application uses a Junction box instead of a Marshalling box

Symbol	Model Number	Description	Qty
	RMKS-DAL4-SZ	PowPak with DALI	1
	LRF3-OCR2B-P-WH	Radio Powr Savr Wireless Ceiling Occupancy Sensor	2
	LRF3-DCRB-P-WH	Radio Powr Savr Wireless Daylight Sensor	1

Visible System Components

Radio Powr Savr wireless ceiling-mount occupancy sensor and daylight sensor

Control Functionality

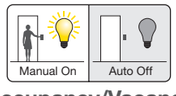
Occupant Enters:
All lights automatically turn on to maximum light level.

When Occupied:
Automatic: Overhead lights dim/brighten based on daylight availability.

Occupant Exits:
All lights automatically shut off 15 minutes (by default) after all occupants exit.

Add a Vive wireless hub to enable simple setup and rezoning, system monitoring, timeclock functionality, and advanced integration.

Control Strategies



Occupancy/Vacancy

Daylight harvesting

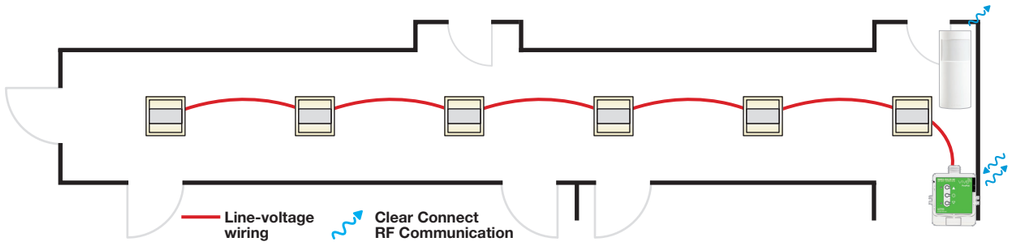
Lighting Energy Savings*

55%

* Go to lutron.com/references for more information.

Unowned space without daylight | Switching using a Junction Box

Examples: Corridor, Atrium, Staircase



Application uses a Junction box instead of a Marshalling box

Symbol	Model Number	Description	Qty
	RMKS-16R-DV-B	PowPak Single Zone Module with DALI	1
	LRF3-OKLB-P-WH	Radio Powr Savr Wireless Corner Occupancy Sensor	1

Visible System Components

Radio Powr Savr
wireless corner-mount
occupancy sensor

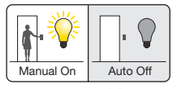
Control Functionality

Occupant Enters:
All corridor lights automatically turn on.

Occupant Exits:
All lights automatically shut off 15 minutes (by default) after all occupants exit.

Add a Vive wireless hub to enable simple setup and rezoning, system monitoring, timeclock functionality, and advanced integration.

Control Strategies



Occupancy/Vacancy

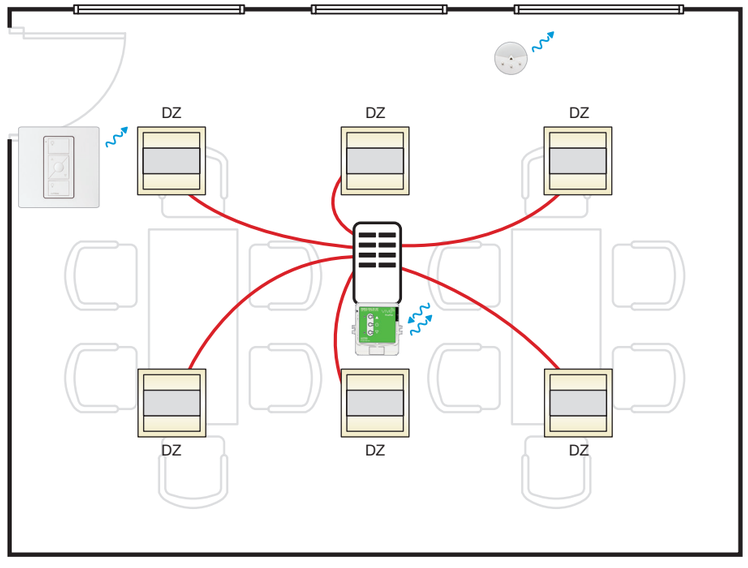
Lighting Energy Savings*

30%

* Go to lutron.com/references for more information.

Managed space with daylight | Dimming using a Marshalling Box

Examples: Restaurant, Library, Museum, Airport Terminal, Lecture Theatre



Line-voltage wiring

Clear Connect RF Communication

DZ = Daylight Zone

Symbol	Model Number	Description	Qty
	RMKS-DAL32-SZ	PowPak Single Zone Module with DALI	1
	LRF3-DCRB-P-WH	Radio Powr Savr Wireless Daylight Sensor	1
	PK2-3BRL-TAW-L01	Pico Wireless Control On/Off and Raise/Lower	1
	LPFP-S1-TAW	Pico Wireless Faceplate (Single)	1

Visible System Components

Pico wireless control

Daylight sensor

Control Functionality

Occupant Enters:
Lights do not automatically turn on when an occupant enters the space; lights must be turned on manually.

When Occupied:
Automatic: Overhead lights dim/brighten based on daylight availability.

Manual: Occupant uses wall switch to dim, or turn all lights off.

Occupant Exits:
All lights may be turned off manually. Timeclock will also turn lights off after hours.

Add a Vive wireless hub to enable simple setup and rezoning, system monitoring, timeclock functionality, and advanced integration.

Control Strategies

Daylight harvesting

Personal Dimming

Lighting Energy Savings*

25%

* Go to lutron.com/references for more information.

Further Information

Please visit **lutron.com/vive-europe** for more information, including videos and our Vive Wireless online training courses.

For more information or to join Vive training near you, please contact Lutron.

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