



# Energy Code Applications Guide

Design to meet code control provisions with Cooper Lighting Solutions'  
Digital Lighting Control Solution - WaveLinx

Title 24 (2022 edition)





The WaveLinx connected lighting system are utilized by designers, electrical contractors, engineers, and building owners/operators to meet the latest energy codes, enhance energy efficiency, and elevate the occupant experience.



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*This document summarizes the lighting and receptacle control requirements for commercial buildings. It is for information purposes only. It is not meant to replace your state's or local jurisdiction's official energy code. The recommendations presented in this guide are based on the originally published code prior to addenda. Please refer to your local building energy code or Authority Having Jurisdiction (AHJ) for your precise requirements. Only the AHJ can guarantee code compliance.*

# WaveLinx overview

**WaveLinx is a Cooper Lighting Solutions smart lighting system and more. It's an intelligent digital lighting system designed to help organizations drive down energy costs while creating healthier indoor and outdoor spaces.**

**WaveLinx offers an unparalleled choice of wired and wireless lighting control products, from simple switches to advanced automation, to fixtures with integrated sensors. It's one of the simplest systems to design, install, and commission.**

**With WaveLinx, you experience the next level of aesthetics and personalized ambiance and comfort, along with our largest offering of WaveLinx-enabled fixtures embedded with sensing and connectivity.**

**A smarter way to save energy is here.**

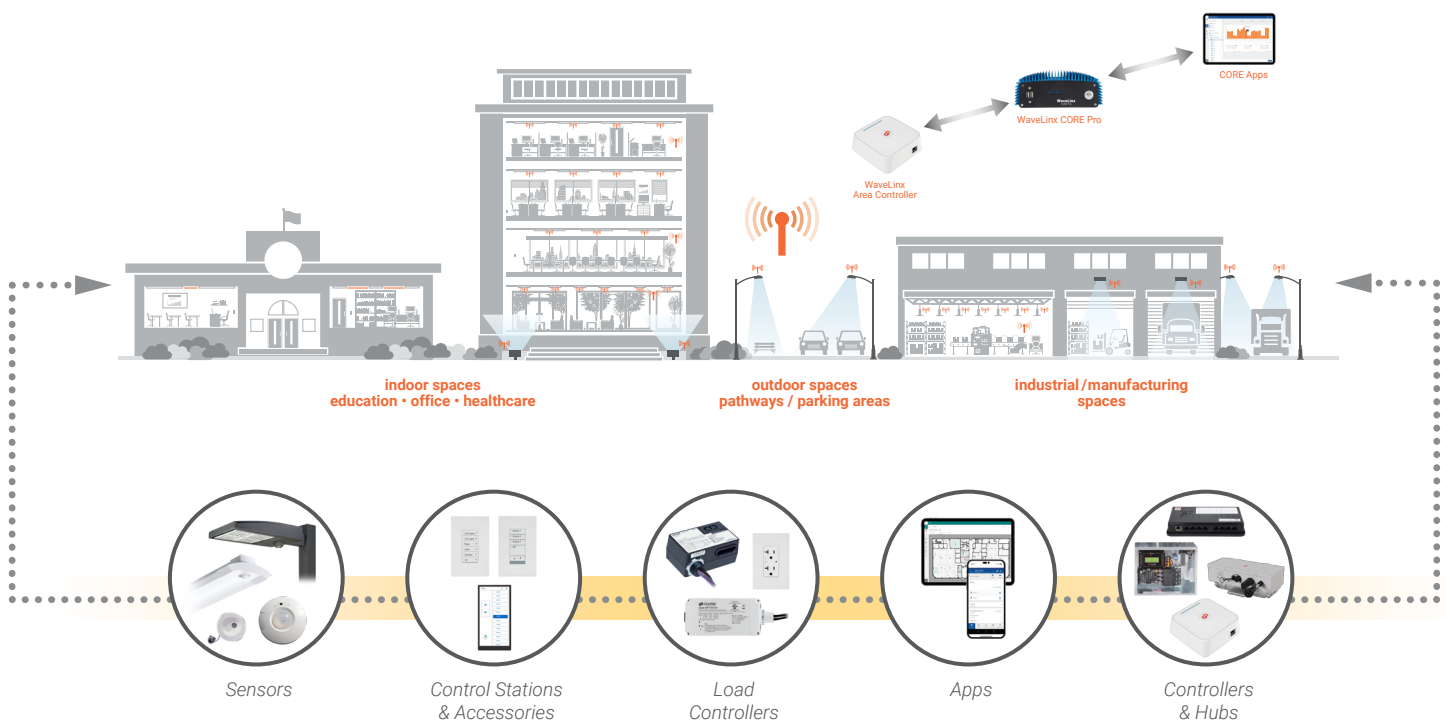




# How does WaveLinx work?

WaveLinx is a system of wired and wireless devices that controls lighting in multiple spaces.

- For a **single space**, use either wired CAT devices or wireless LITE devices.
- For **connected spaces**, use wired CAT and/or wireless PRO devices, and connect them with the WaveLinx Area Controller to link spaces together.
- For **central management, visual floorplans, dashboards and data exchange**, use a WaveLinx CORE on-prem, that offers standard and proprietary interfaces such as BACnet®/IP, OpenADR, APIs, and visualization applications.



# Save up to 60% or more in lighting energy with a WaveLinx system.

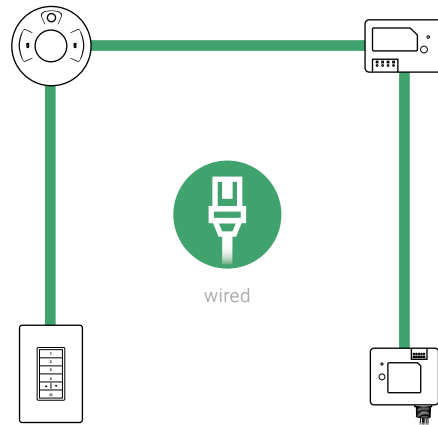
STRATEGY	DESCRIPTION	ESTIMATED SAVINGS
 Manual Dimmer	<b>Manual/personal dimming control</b> – one of five alternative methods that meets multi-level control requirements.	<b>10-20%</b>
 Occupancy Sensor	<b>Occupancy/vacancy sensing</b> – provides manual on/automatic off or automatic on/automatic off and partial off capabilities.	<b>20-60%</b>
 Daylighting Control	<b>Daylight dimming</b> – provides multiple daylight dimming zones that automatically adjust the lighting based on daylight available in the space, or fixture-integrated sensors, for completely granular daylighting control.	<b>20-45%</b>
 Receptacle Control	<b>Plug load control</b> – automatically turns on receptacles upon occupancy regardless of light status. Ensures receptacles are turned off when the space is vacant.	<b>15-50% controlled loads</b>
 Task Tuning	<b>High-end/task tuning</b> – lowers the maximum light level for automatic energy savings.	<b>10-30%</b>
 Demand Response	<b>Demand response</b> – automatically reduces light level based on signal from 3rd-party system.	<b>10-40%</b>
 Remote Signal Control	<b>BACnet</b> – coordinates control through BMS. <b>Remote signal control</b> – communicates to 3rd-party systems via API.	<b>20%</b>
 Outdoor Control	<b>Outdoor control</b> – automatically adjust area, site, and flood lighting via scheduling or astronomic clock.	<b>25%</b>
 HVAC System	<b>HVAC integration</b> – controls heating, ventilation, and air conditioning systems through contact closure or BACnet protocol.	<b>10-15%</b>



# 3 Different technologies for adaptability in any environment

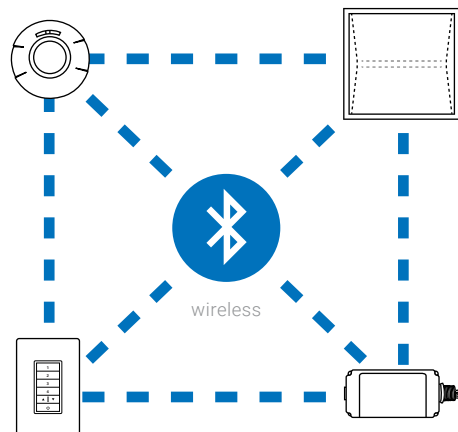
## WaveLinx CAT

WaveLinx CAT devices communicate through CAT5 cables and are used in single- and networked-space applications.



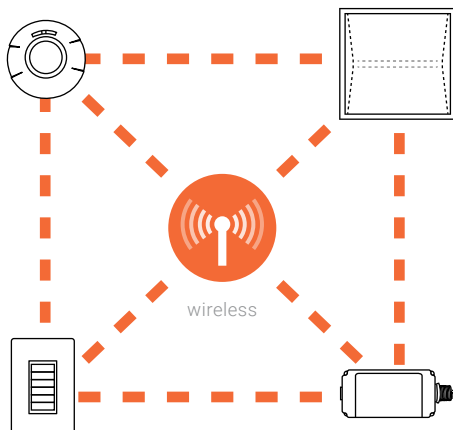
## WaveLinx LITE

WaveLinx LITE devices communicate wirelessly and are used in single-space applications.



## WaveLinx PRO

WaveLinx PRO devices communicate wirelessly and are used in networked-space applications.

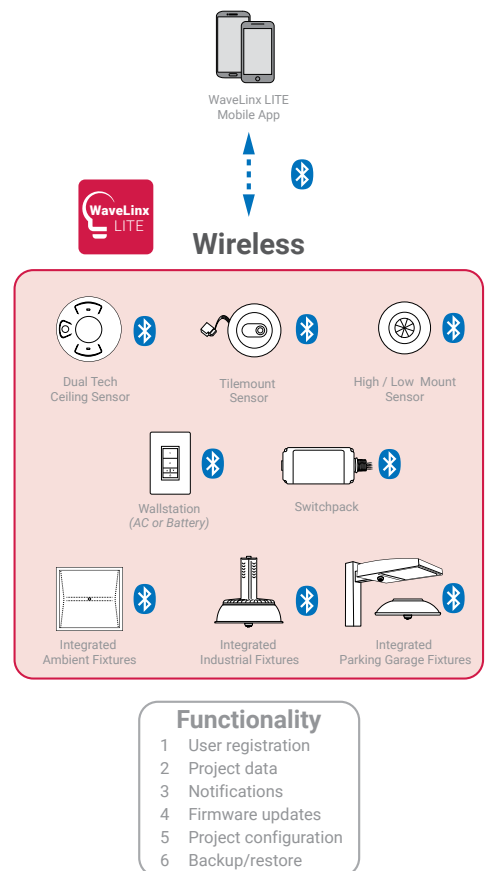
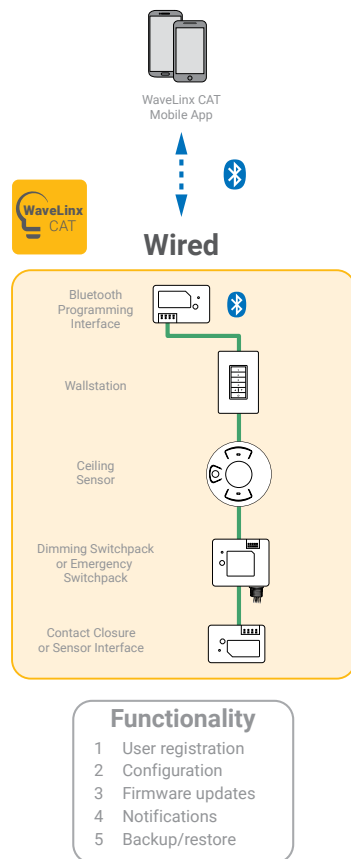


# From standalone to enterprise solutions

## Standalone spaces

### Single Room/Single Space

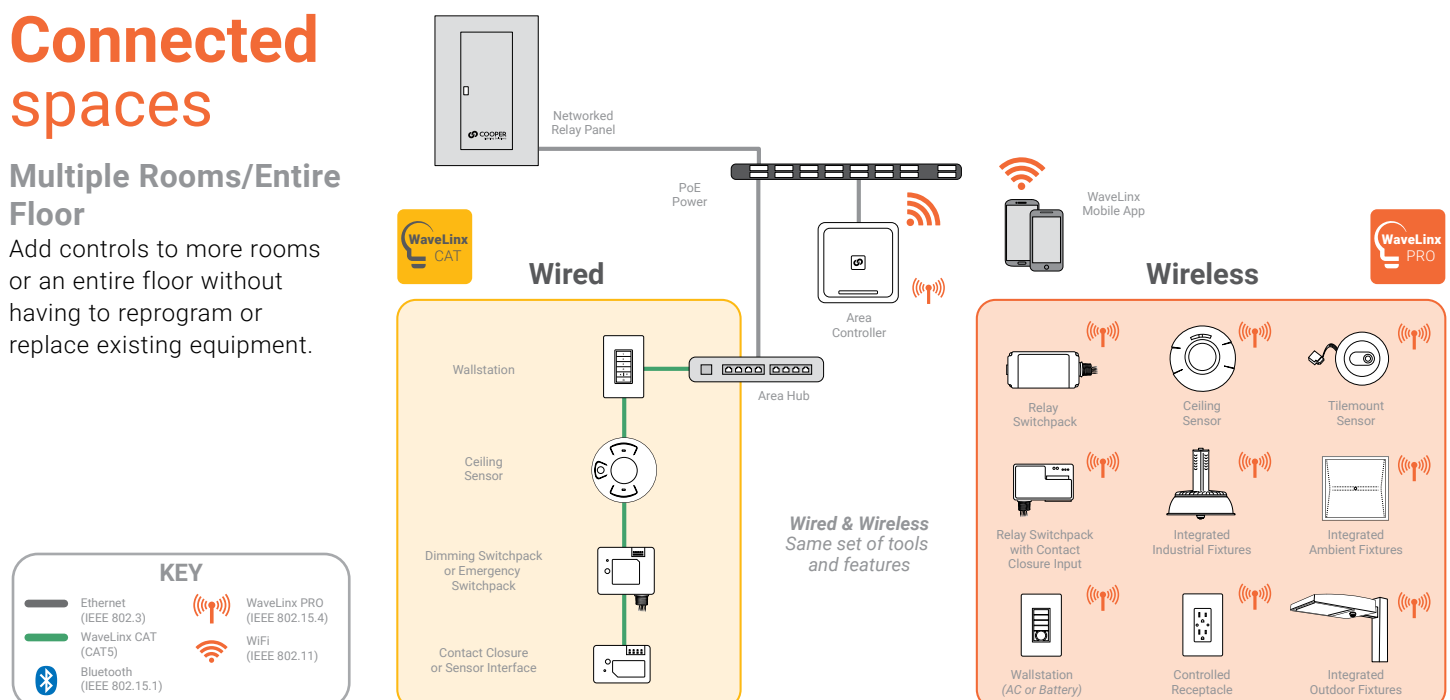
Start by implementing controls for a single room. Return at any time to easily upgrade to a connected system.



## Connected spaces

### Multiple Rooms/Entire Floor

Add controls to more rooms or an entire floor without having to reprogram or replace existing equipment.

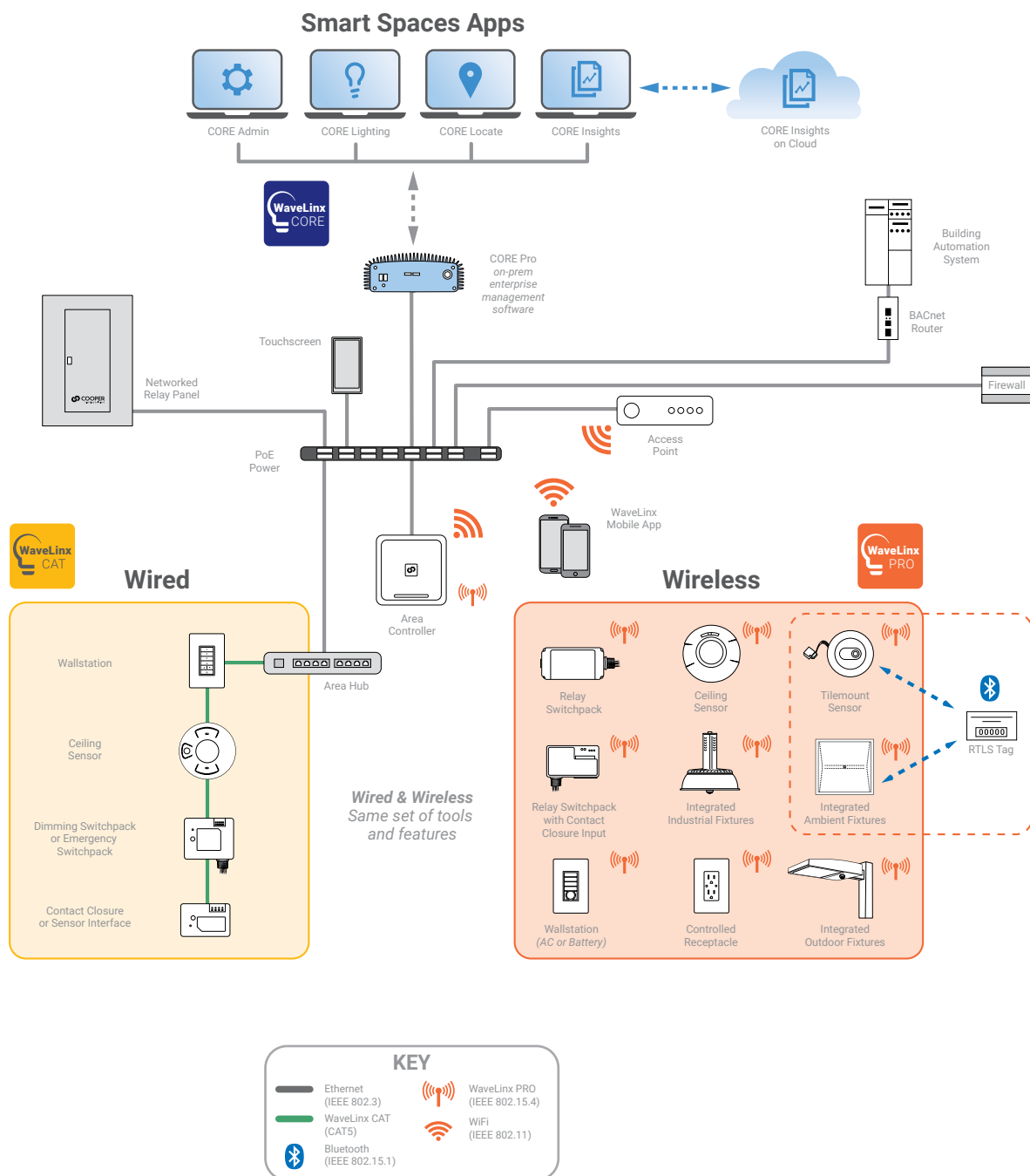




# Enterprise solutions

## Multiple Floors/Entire Building

Using WaveLinx Area Controller and CORE, controls can be scaled to multiple floors or an entire building on just one system, with independent control for each floor or network.



# Typical control strategies for code compliance



	WaveLinx CAT Wired solution for standalone or single spaces	WaveLinx LITE Wired solution for standalone or single spaces	WaveLinx PRO Wired & Wireless solution for connected spaces	WaveLinx PRO & CORE Wired & Wireless enterprise solution
Occupancy/Vacancy Sensing	●	●	●	●
Dimming Control	●	●	●	●
Daylight Control	●	●	●	●
Plug-Load Control	●	●	●	●
High-End Trim or Task Tuning	●	●	●	●
3rd Party Integration via Contact Closure Input	●	●	●	●
Emergency Lighting Control	●	●	●	●
Time-based Scheduling			●	●
Lighting dimming and Relay Panel			●	●
Demand Response Control	●	●	●	●
Energy Monitoring				●
Floorplan Visualization				●
BACnet Integration				●
3rd Party Integration via API				●
Alarms and Events				●
Asset tracking and Geofencing				●
Data insights				●

Energy codes can sometimes be complicated and difficult to navigate. This commercial application guide provides examples of how WaveLinx products can be used to meet or exceed code requirements. This guide focuses on CAT, LITE, and PRO. Keep in mind that to enable some advanced functionality, like BACnet integration, the CORE may be required. Please refer to the actual energy code document for details.

## What triggers the energy code and what are the mandatory control requirements?

- New construction
- Alterations or retrofit
  - More than 10% of the number of luminaires in the space are being retrofitted, and use less than 80% of the maximum allowed lighting power.
  - One-for-one luminaire replacements for buildings or tenant spaces less than 5,000 ft<sup>2</sup> when new lighting power is 40% lower than previous lighting power.





# Typical control strategies for code compliance

	Requirement	Provisions	Summary
Manual Control	Local Control / Switch	130.1 (a)	Lighting shall be capable of turning ON and OFF. There shall be in easily accessible location where the controlled lights are visible OR they can be in a remote area, but identify the area served by the lights and indicate their status.
	Multi-level lighting controls	130.1 (b)	Lighting shall be capable of multiple control steps in enclosed spaces 100 sq. ft. or larger. Light level requirements are defined in Table 130.1-A. There shall be at least one manual device for control of the lighting within a space. See code for spaces that allow remote location of control.
Automatic Control	Time-Switch Control	130.1 (c) 1 130.2 (c) 1, 2	<b>Interior:</b> Automatically turn off lights when a space is scheduled to be unoccupied. Occupancy sensors also comply as an alternate to using a time-switch. <b>Exterior:</b> Scheduled control, based on time-of-day and sunrise/sunset (requires astronomical timeclock), turns lighting ON or OFF based on typical occupancy and daylight."
	Occupant Sensor Controls	130.1 (c) 1, 5	Automatic control turns lighting ON or OFF after a vacancy of 20 minutes or less.
	Partial On	130.1 (c) 5	When initiated by a timeclock or occupancy sensor, lighting is automatically turned ON to 50% to 70% of maximum lighting power <b>Open Office:</b> Unoccupied control zones can turn on to not more than 20% (or remain unaffected)
	Partial Off	130.1 (c) 6 & 7 130.2 (c) 3	<b>Warehouse:</b> Automatically reduced by not more than 50% within 20 mins when unoccupied. <b>Open office:</b> Automatically reduced to not more than 20% within 20 mins when unoccupied. <b>Corridors:</b> Automatically reduced by not more than 50% within 20 mins when unoccupied. <b>Interior Parking:</b> Automatically reduced by 20% to 50% within 20 mins when unoccupied. <b>Exterior Lighting:</b> Parking lot pole- and wall-mounted luminaires 24 ft. or less in height must be controlled with motion sensors that reduce lighting power by 50% to 90% or turn the lighting off when the zone is vacant by more than 15 minutes. Automatic full OFF also complies.
	Full Off	130.1 (c) 5 130.2 (a)	When initiated by a timeclock or occupancy sensor, lighting is automatically turned OFF.
Other	Daylight responsive control	130.1 (d) 130.2 (c) 1	<b>Interior:</b> A sensor which adjusts lighting in response to available daylight is required for sidelight and skylight zones. <b>Exterior &amp; parking garages:</b> A photosensor can be used as an alternate to the dawn/dusk operation of an astronomical timeclock.
	Automatic Receptacle Control	130.5 (d)	At least 50% of the receptacles in certain spaces shall automatically turn OFF based on operating schedule or after a vacancy of 20 minutes or less. Each uncontrolled receptacle must have at least one controlled receptacle within 6 feet. Open offices with receptacles in modular furniture must include one controlled receptacle per workstation. Plug-in devices do not comply.
	Demand Response Control (capability)	130.1 (e) 110.12 (c)	Buildings using more than 4000 watts of lighting power shall have demand-responsive lighting controls that reduce lighting power in response to an OpenAPR signal.

# Control requirements by application type

	Requirement	Open Offices  > 250 ft <sup>2</sup>	Conference/ Meeting/ Multipurpose Rooms	Classroom/ Lecture Hall/ Training Room	Lobby	Corridor
Manual Control	Local Control / Switch	●	●	●	●	●
	Multi-level lighting controls	●	●	●	●	●
Automatic Control	Time-Switch					
	Occupancy Sensor	●	●	●	●	●
	Partial On	●				
	Full On	●			●	●
	Partial Off	●				●
	Full Off	●	●	●	●	
Other	Daylight responsive control	●	●	●	●	●
	Automatic receptacle control	●	●	●	●	
	Demand response	●	●	●	●	●

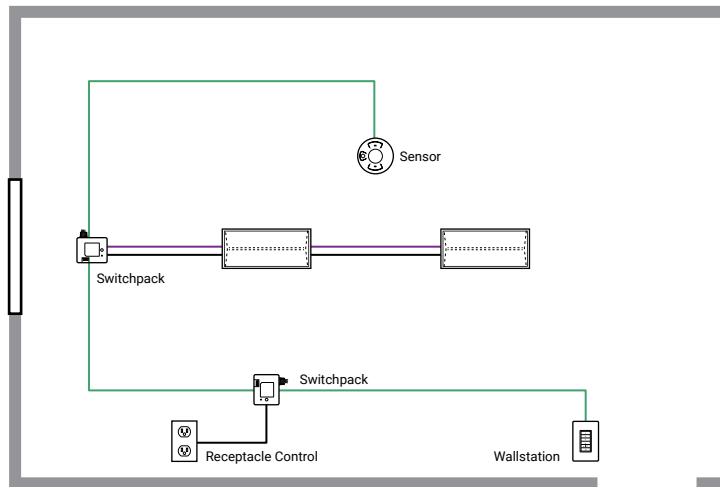
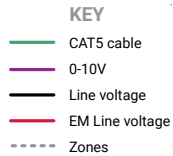




	Requirement	Restroom	Stairwell	Gymnasium/ Fitness Center	Warehouse/ Storage Area	Parking Garage	Exterior Lighting
Manual Control	Local Control / Switch	●	●	●	●		
	Multi-level lighting controls		●	●	●		
Automatic Control	Time-Switch					●	●
	Occupancy Sensor	●	●	●	●	●	
	Partial On					●	●
	Full On	●	●			●	●
	Partial Off	●	●			●	●
	Full Off	●		●			
	Daylight responsive control	●	●	●	●	●	●
Other	Automatic receptacle control						
	Demand response	●	●	●	●	●	●



# Private Office ( $\leq 250 \text{ ft}^2$ ) - Wired



## Control Strategies



Occupancy/  
Vacancy



Dimming  
Control



High-end/  
Task Tuning



Plug load  
control

## Control Functionality

### Occupant Enters

Lights and controlled receptacle automatically turn on to a level of 50% when an occupant enters the space.  
High-end trim set to 90%.

### When Occupied

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

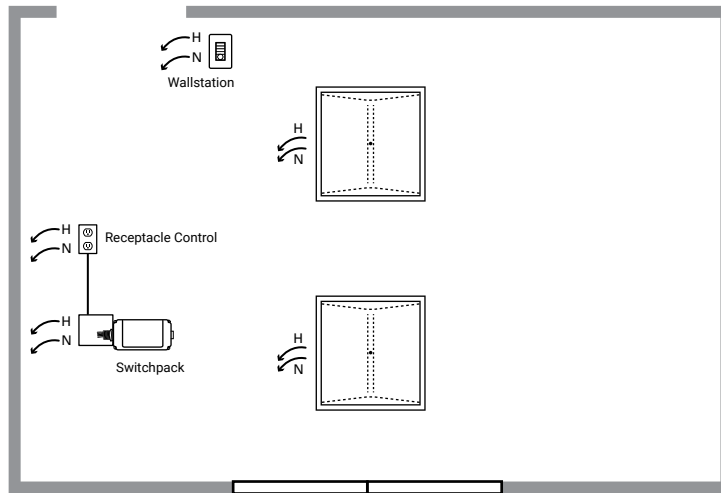
### Occupant Exits

All lights and receptacle automatically turn off 20 minutes after all occupants exit.

## Bill of Material

Quantity	Catalog #	Description	Code Provision
2	RSP-C-010-Z1	RSP-C Relay Switchpack – Zone 1	Multi-level lighting control 130.1 (b) Automatic receptacle control 130.1 (e) 110.12 (c)
1	WST-C-3D	WST-C Wallstation 3 button dimming	Local control / Switch 130.1 (a) Multi-level lighting control 130.1 (b)
1	OCS-C-P06	OCS-C Occupancy & Daylight ceiling sensor (600 ft <sup>2</sup> )	Occupancy Sensor Controls 130.1 (c) 1, 5 Automatic daylight responsive control 130.1 (d) 130.2 (c) 1
2	24EN-LD2-34-UNV-L835-CD1-U	Encounter 2x4 fixture with 0-10V dimming	

# Private Office ( $\leq 250 \text{ ft}^2$ ) - Wireless



## Control Strategies



Occupancy/  
Vacancy



Dimming  
Control



High-end/  
Task Tuning



Plug load  
control

## Control Functionality

### Occupant Enters

Lights and controlled receptacle automatically turn on to a level of 50% when an occupant enters the space.  
High-end trim set to 90%.

### When Occupied

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

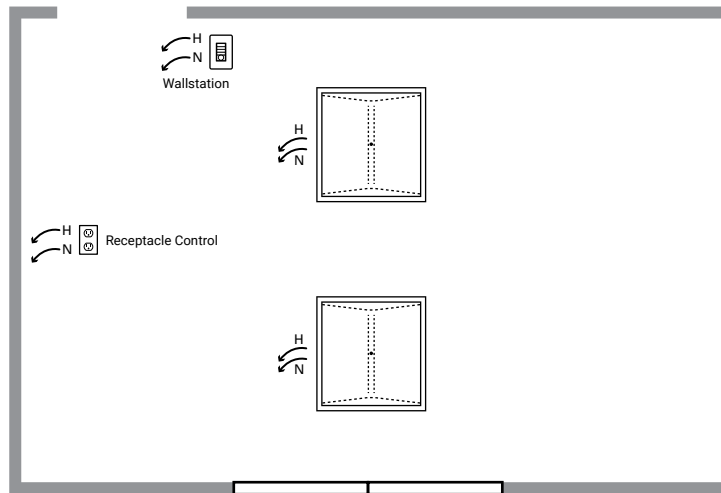
### Occupant Exits

All lights and receptacle automatically turn off 20 minutes after all occupants exit.

## Bill of Material

Quantity	Catalog #	Description	Code Provision
1	RSP-C-010-Z1	RSP-C Relay Switchpack – Zone 1	Multi-level lighting control 130.1 (b) Automatic receptacle control 130.1 (e) 110.12 (c)
1	WST-C-3D	WST-C Wallstation 3 button dimming	Local control / Switch 130.1 (a) Multi-level lighting control 130.1 (b)
2	22EN-LD2-34-UNVL835-CD1-WLS-U	Encounter 2x2 fixture with WLS integrated sensor	Occupancy Sensor Controls 130.1 (c) 1, 5 Automatic daylight responsive control 130.1 (d) 130.2 (c) 1

# Private Office ( $\leq 250 \text{ ft}^2$ ) - Wireless



## Control Strategies



Occupancy/  
Vacancy



Dimming  
Control



High-end/  
Task Tuning



Plug load  
control

## Control Functionality

### Occupant Enters

Lights and controlled receptacle automatically turn on to a level of 50% when an occupant enters the space.  
High-end trim set to 90%.

### When Occupied

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

### Occupant Exits

All lights and receptacle automatically turn off 20 minutes after all occupants exit.

## Bill of Material

Quantity	Catalog #	Description	Code Provision
1	WAC2-POE	WaveLinx Area Controller	
1	W4S-RL-W	WaveLinx PRO Wallstation	Local control / Switch 130.1 (a) Multi-level lighting control 130.1 (b)
1	WR-20	WaveLinx PRO Receptacle	Automatic receptacle control 130.1 (e) 110.12 (c)
2	22EN-LD2-34-UNVL835-CD1-WPS-U	Encounter 2x2 fixture with WPS integrated sensor	Occupancy Sensor Controls 130.1 (c) 1, 5 Automatic daylight responsive control 130.1 (d) 130.2 (c) 1

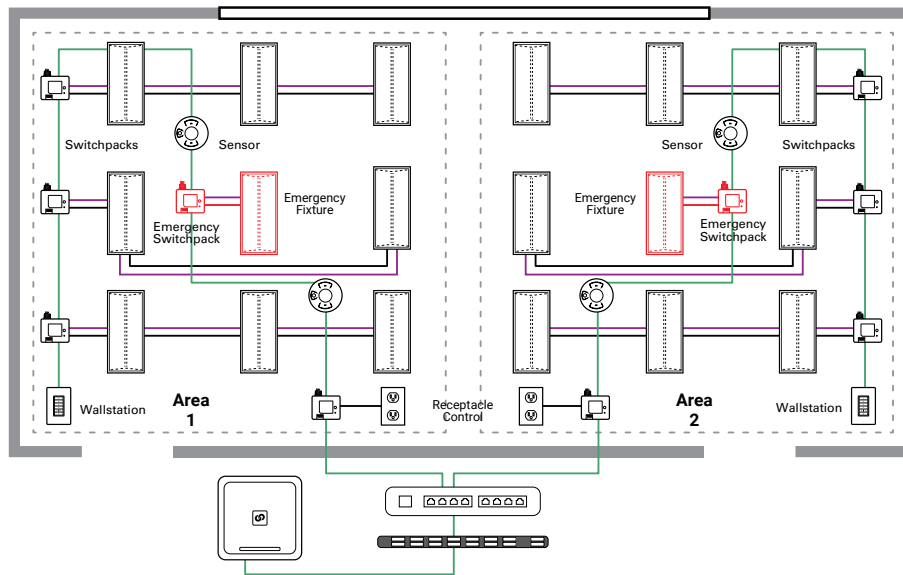


# Open Office\* (> 250 ft<sup>2</sup>) - Wired



**KEY**

- CAT5 cable
- 0-10V
- Line voltage
- EM Line voltage
- - - Zones



## Control Strategies

Occupancy/Vacancy

Dimming Control

Daylight Control

High-end/Task Tuning

Plug load control

## Control Functionality

### Occupant Enters

When the occupant enters Area 1, all fixtures in that area automatically turn on to 50% .  
Fixtures in Area 2, the unoccupied area, turn on to 20%.  
All controlled receptacles regain power.

### When Occupied

Automatic: fixtures close to the window dims/brightens based on local daylight availability.  
Manual: Occupant uses the Wallstation to set desired light levels for the area.  
Unoccupied areas: Dim to 20%

### Occupant Exits

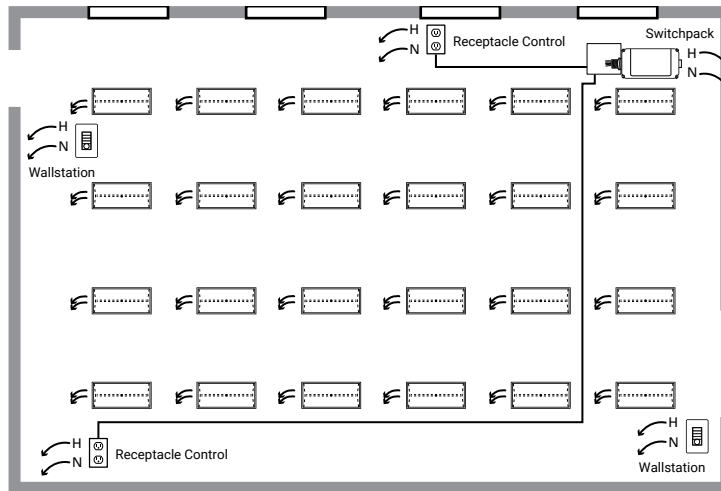
Each area automatically turns off after 20 minutes.  
Controlled receptacles also turn off.

## Bill of Material

Quantity	Catalog #	Description	Code Provision
8	RSP-C-010-Z1	RSP-C Relay Switchpack – Zone 1	Multi-level lighting control 130.1 (b) Automatic receptacle control 130.1 (e) 110.12 (c)
2	ESP-C-010-Z1	ESP-C-010-Z1	Multi-level lighting control 130.1 (b)
2	WST-C-3D	WST-C Wallstation 3 button dimming	Local control / Switch 130.1 (a) Multi-level lighting control 130.1 (b)
4	OSC-C-P06	OCS-C Occupancy & Daylight ceiling sensor (600 ft <sup>2</sup> )	Occupancy Sensor Controls 130.1 (c) 1, 5 Automatic daylight responsive control 130.1 (d) 130.2 (c) 1
18	24EN-LD2-34-UNVL835-CD1-U	Encounter 2x4 fixture with 0-10V dimming	

\* Control zones are limited to 600ft<sup>2</sup>

# Open Office\* (> 250 ft<sup>2</sup>) - Wireless



## Control Strategies



Occupancy/  
Vacancy



Dimming  
Control



Daylight  
Control



High-end/  
Task Tuning



Plug load  
control

## Control Functionality

### Occupant Enters

Each individual light automatically turns on to 50% light level as occupant approaches fixture proximity. High-end trim is set to 80%. Controlled receptacles automatically regain power when occupant enters.

### When Occupied

Automatic: Each individual overhead light dims/brightens based on local daylight availability. Manual: Occupant uses wall station to set desired light levels for all lights. Unoccupied zones: Dim to 20%

### Occupant Exits

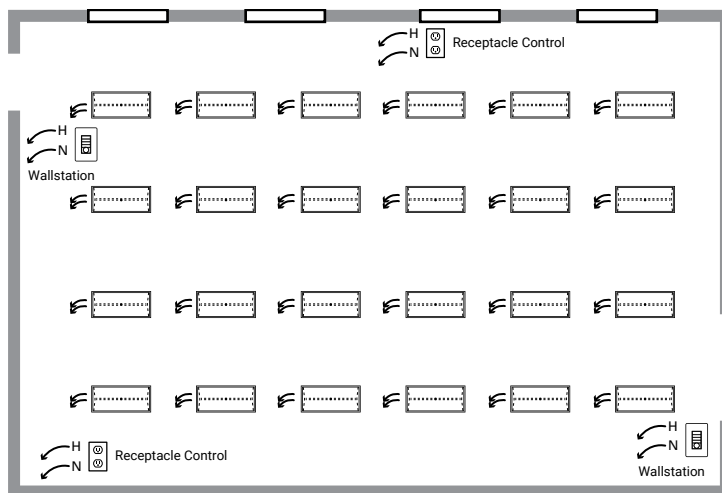
Each individual light automatically turns off 20 minutes after all occupants exit fixture proximity. 50% of all receptacles automatically turn off 20 minutes after all occupants exit.

## Bill of Material

Quantity	Catalog #	Description	Code Provision
1	RSP-L-010-347	RSP-L Relay switchpack	Automatic receptacle control 130.1 (e) 110.12 (c)
2	WWL3-RL-W	WaveLinx LITE Wallstation	Local control / Switch 130.1 (a) Multi-level lighting control 130.1 (b)
24	24EN-LD2-34-UNVL835-CD1-WLS-U	Encounter 2x4 fixture with WLS integrated sensor	Occupancy Sensor Controls 130.1 (c) 1, 5 Automatic daylight responsive control 130.1 (d) 130.2 (c) 1

\* Control zones are limited to 600ft<sup>2</sup>

# Open Office\* (> 250 ft<sup>2</sup>) - Wireless



## Control Strategies



Occupancy/  
Vacancy



Dimming  
Control



Daylight  
Control



High-end/  
Task Tuning



Plug load  
control

## Control Functionality

### Occupant Enters

Each individual light automatically turns on to 50% light level as occupant approaches fixture proximity. High-end trim is set to 80%. Controlled receptacles automatically regain power when occupant enters.

### When Occupied

Automatic: Each individual overhead light dims/brightens based on local daylight availability. Manual: Occupant uses wall station to set desired light levels for all lights. Unoccupied zones: Dim to 20%

### Occupant Exits

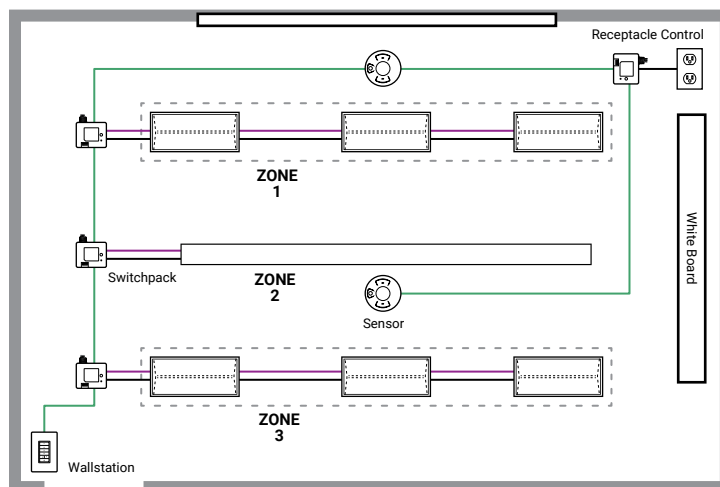
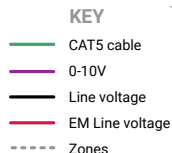
Each individual light automatically turns off 20 minutes after all occupants exit fixture proximity. 50% of all receptacles automatically turn off 20 minutes after all occupants exit.

## Bill of Material

Quantity	Catalog #	Description	Code Provision
1	WAC2-POE	WaveLinx Area Controller	
2	W4S-RL-W	WaveLinx PRO Wallstation	Local control / Switch 130.1 (a) Multi-level lighting control 130.1 (b)
2	WR-20	WaveLinx PRO Receptacle	Automatic receptacle control 130.1 (e) 110.12 (c)
24	24EN-LD2-34-UNVL835-CD1-WPS-U	Encounter 2x4 fixture with WPS integrated sensor	Occupancy Sensor Controls 130.1 (c) 1, 5 Automatic daylight responsive control 130.1 (d) 130.2 (c) 1

\* Control zones are limited to 600ft<sup>2</sup>

# Conference Room - Wired



## Control Strategies

	Occupancy/Vacancy
	Dimming Control
	Daylight Control
	High-end/Task Tuning
	Plug load control

## Control Functionality

### Occupant Enters

Lights do not automatically turn on when an occupant enters the space; lights must be turned on manually.  
High-end trim is set to 80%.  
Controlled receptacles automatically regain power when occupant enters.

### When Occupied

Automatic: Overhead lights dim/brighten based on daylight availability. Zone 1 is a primary daylight zone.  
Manual: Occupant uses wall dimmer to set desired light levels for all lights.

### Occupant Exits

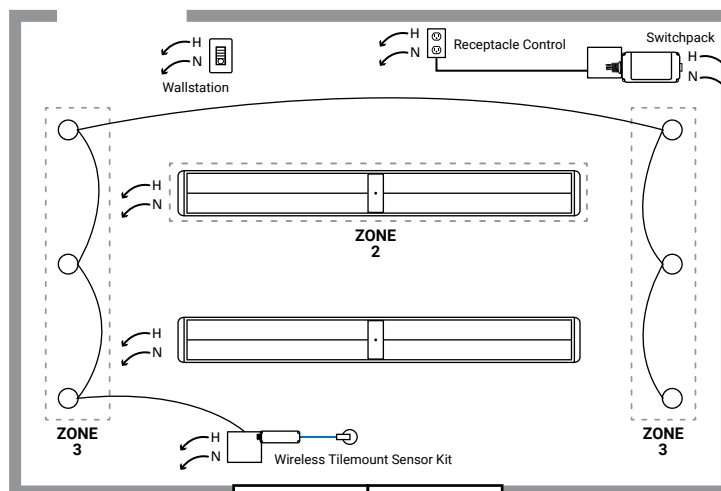
All lights and receptacle automatically turn off 15 minutes after all occupants exit.  
50% of all receptacles automatically turn off 15 minutes after all occupants exit.

## Bill of Material

Quantity	Catalog #	Description	Code Provision
2	RSP-C-010-Z1	RSP-C Relay Switchpack – Zone 1	Multi-level lighting control 130.1 (b) Automatic receptacle control 130.1 (e) 110.12 (c)
1	RSP-C-010-Z1	RSP-C Relay Switchpack – Zone 2	Multi-level lighting control 130.1 (b)
1	RSP-C-010-Z1	RSP-C Relay Switchpack – Zone 3	Multi-level lighting control 130.1 (b)
1	WST-C-3D	WST-C Wallstation 3 button dimming	Local control / Switch 130.1 (a) Multi-level lighting control 130.1 (b)
2	OSC-C-P06	OCS-C Occupancy & Daylight ceiling sensor (600 ft²)	Occupancy Sensor Controls 130.1 (c) 1, 5 Automatic daylight responsive control 130.1 (d) 130.2 (c) 1
6	24EN-LD2-34-UNVL835-CD1-U	Encounter 2x4 fixture with 0-10V dimming	
1	8WSL-LD2-80-SRC-UNV-L840-CD1-U	WSL 8ft linear	



# Conference Room - Wireless



## Control Strategies



Occupancy/  
Vacancy



Dimming  
Control



Daylight  
Control



High-end/  
Task Tuning



Plug load  
control

## Control Functionality

### Occupant Enters

Lights do not automatically turn on when an occupant enters the space; lights must be turned on manually.  
Maximum light level is set to 80%.  
Controlled receptacles automatically regain power when occupant enters.

### When Occupied

Automatic: Overhead lights dim/brighten based on daylight availability. Zone 1 is a primary daylight zone. Zone 2 is the secondary daylight zone.  
Manual: Occupant uses wall dimmer to set desired light levels for all lights.

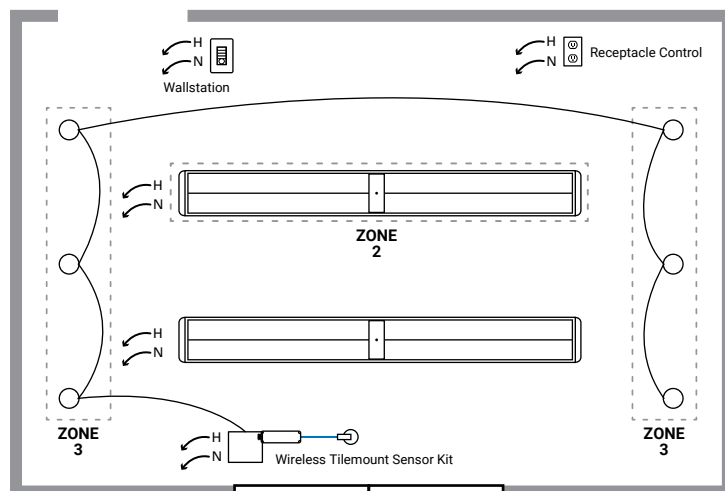
### Occupant Exits

All lights and receptacle automatically turn off 15 minutes after all occupants exit.  
50% of all receptacles automatically turn off 15 minutes after all occupants exit.

## Bill of Material

Quantity	Catalog #	Description	Code Provision
1	RSP-L-010-347	RSP-L Relay switchpack	Automatic receptacle control 130.1 (e) 110.12 (c)
1	WWL3-RL-W	WaveLinx LITE Wallstation	Local control / Switch 130.1 (a) Multi-level lighting control 130.1 (b)
1	WTK	WaveLinx LITE tile mount sensor kit	Occupancy Sensor Controls 130.1 (c) 1, 5 Zone 2 is the secondary daylight zone.
2	DSI-WS-40L835-1DUNV-STD-WLS-DC-WAC48-T1-8	Divide Suspended with WaveLinx Sensor	Occupancy Sensor Controls 130.1 (c) 1, 5 Automatic daylight responsive control 130.1 (d) 130.2 (c) 1
6	PR6FS12D010 (Housing) PR6M12MD8FSMW (LED Module)	PR6M12MD8FSMW (LED Module)	

# Conference Room - Wireless



## Control Strategies

Occupancy/Vacancy

Dimming Control

Daylight Control

High-end/Task Tuning

Plug load control

## Control Functionality

### Occupant Enters

Lights do not automatically turn on when an occupant enters the space; lights must be turned on manually.  
Maximum light level is set to 80%.  
Controlled receptacles automatically regain power when occupant enters.

### When Occupied

Automatic: Overhead lights dim/brighten based on daylight availability. Zone 1 is a primary daylight zone. Zone 2 is the secondary daylight zone.  
Manual: Occupant uses wall dimmer to set desired light levels for all lights.

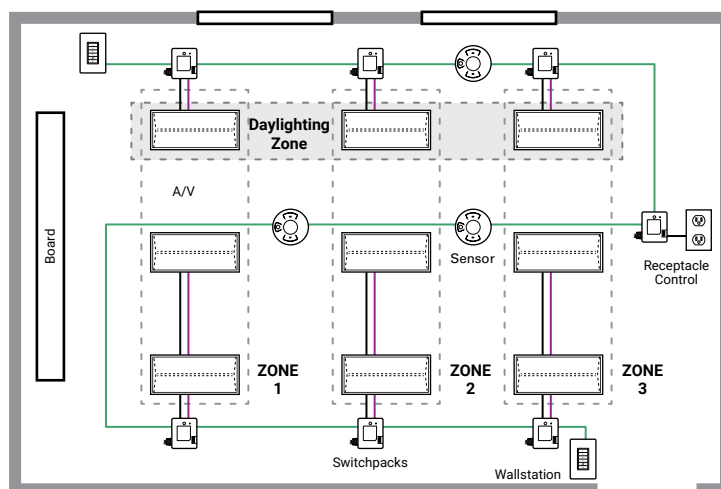
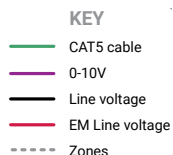
### Occupant Exits

All lights and receptacle automatically turn off 15 minutes after all occupants exit.  
50% of all receptacles automatically turn off 15 minutes after all occupants exit.

## Bill of Material

Quantity	Catalog #	Description	Code Provision
1	WAC2-POE	WaveLinx Area Controller	
1	W4S-RL-W	WaveLinx PRO Wallstation	Local control / Switch 130.1 (a) Multi-level lighting control 130.1 (b)
1	WTA	WaveLinx LITE tile mount sensor kit	Occupancy Sensor Controls 130.1 (c) 1, 5 Automatic daylight responsive control 130.1 (d) 130.2 (c) 1
1	WR-20	WaveLinx PRO Receptacle	Automatic receptacle control 130.1 (e) 110.12 (c)
2	DSI-WS-40L835-1DUNV-STD-WPS-DC-WAC48-T1-8	Divide Suspended with WaveLinx sensor	Occupancy Sensor Controls 130.1 (c) 1, 5 Automatic daylight responsive control 130.1 (d) 130.2 (c) 1
6	PR6FS12D010 (Housing) PR6M12MD8FSMW (LED Module)	PR6M12MD8FSMW (LED Module)	

# Classroom - Wired



## Control Strategies



Occupancy/  
Vacancy



Dimming  
Control



Daylight  
Control



High-end/  
Task Tuning



Plug load  
control

## Control Functionality

### Occupant Enters

Lights automatically turn on to 50% when an occupant enters the space.  
Maximum light level is set to 80%.  
Controlled receptacles automatically regain power when occupant enters.

### When Occupied

Automatic: Overhead lights dim/brighten based on daylight availability.  
3 fixtures close to the window is in a primary daylight zone.  
Manual: Occupant uses wall dimmer to set desired light levels for all lights.

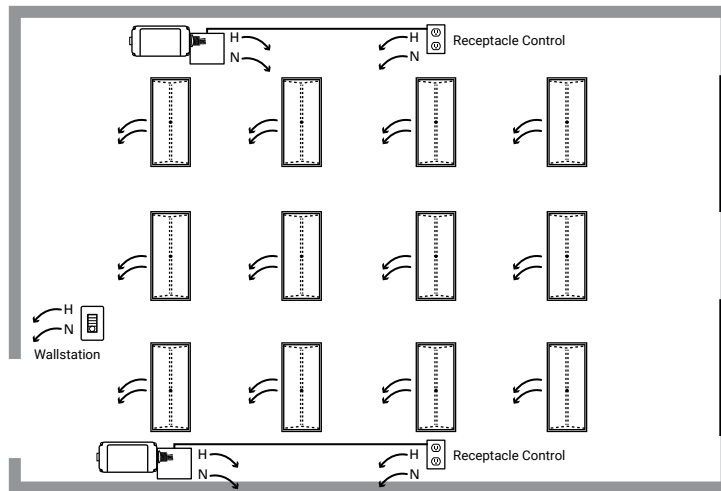
### Occupant Exits

All lights automatically turn off 15 minutes after all occupants exit.  
50% of all receptacles automatically turn off 15 minutes after all occupants exit.

## Bill of Material


Quantity	Catalog #	Description	Code Provision
7	RSP-C-010-Z1	RSP-C Relay Switchpack – Zone 1	Multi-level lighting control 130.1 (b) Automatic receptacle control 130.1 (e) 110.12 (c)
2	WST-C-3D	WST-C Wallstation 3 button dimming	Local control / Switch 130.1 (a) Multi-level lighting control 130.1 (b)
3	OCS-C-P06	OCS-C Occupancy & Daylight ceiling sensor (600 ft <sup>2</sup> )	Occupancy Sensor Controls 130.1 (c) 1, 5 Automatic daylight responsive control 130.1 (d) 130.2 (c) 1
9	24EN-LD2-34-UNV-L835-CD1-U	Encounter 2x4 fixture with 0-10V dimming	


# Classroom - Wireless



## Control Strategies

 Occupancy/  
Vacancy

 Dimming  
Control

 Daylight  
Control

 High-end/  
Task Tuning

 Plug load  
control

## Control Functionality

### Occupant Enters

Each individual light automatically turns on to 50% light level as occupant approaches fixture proximity. Maximum light level is set to 80%.  
Controlled receptacles automatically regain power when occupant enters.

### When Occupied

Automatic: Each individual overhead light dims/brightens based on local daylight availability.  
Manual: Occupant uses wall station to set desired light levels for all lights.  
Unoccupied zones: Dim to 20%

### Occupant Exits

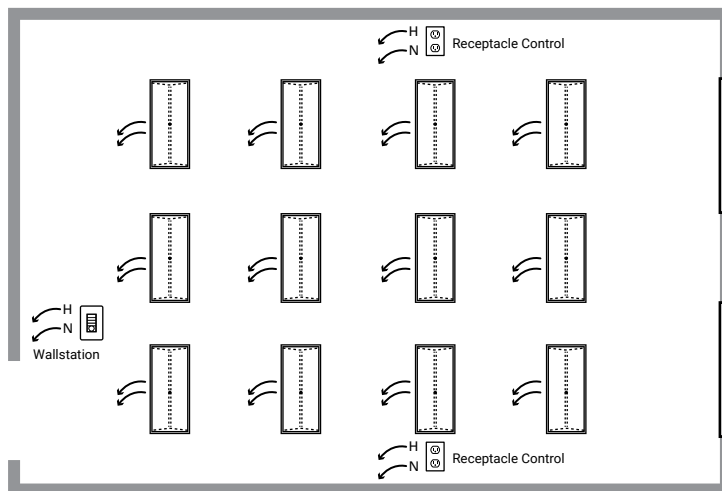
Each individual light automatically turns off 20 minutes after all occupants exit fixture proximity.  
50% of all receptacles automatically turn off 20 minutes after all occupants exit.

## Bill of Material

Quantity	Catalog #	Description	Code Provision
1	RSP-L-010-347	RSP-L Relay switchpack	Automatic receptacle control 130.1 (e) 110.12 (c)
2	WWL3-RL-W	WaveLinx LITE Wallstation	Local control / Switch 130.1 (a) Multi-level lighting control 130.1 (b)
12	24EN-LD2-34-UNVL835-CD1-WLS-U	Encounter 2x4 fixture with WLS integrated sensor	Occupancy Sensor Controls 130.1 (c) 1, 5 Automatic daylight responsive control 130.1 (d) 130.2 (c) 1



# Classroom - Wireless



## Control Strategies



Occupancy/  
Vacancy



Dimming  
Control



Daylight  
Control



High-end/  
Task Tuning



Plug load  
control

## Control Functionality

### Occupant Enters

Lights automatically turn on to 50% when an occupant enters the space.  
Maximum light level is set to 80%.  
Controlled receptacles automatically regain power when occupant enters.

### When Occupied

Automatic: Overhead lights dim/brighten based on daylight availability.  
Closed loop daylight responsive control is implemented in the full area due to large windows.  
Manual: Occupant uses wall dimmer to set desired light levels for all lights.

### Occupant Exits

All lights automatically turn off 20 minutes after all occupants exit.  
50% of all receptacles automatically turn off 20 minutes after all occupants exit.

## Bill of Material

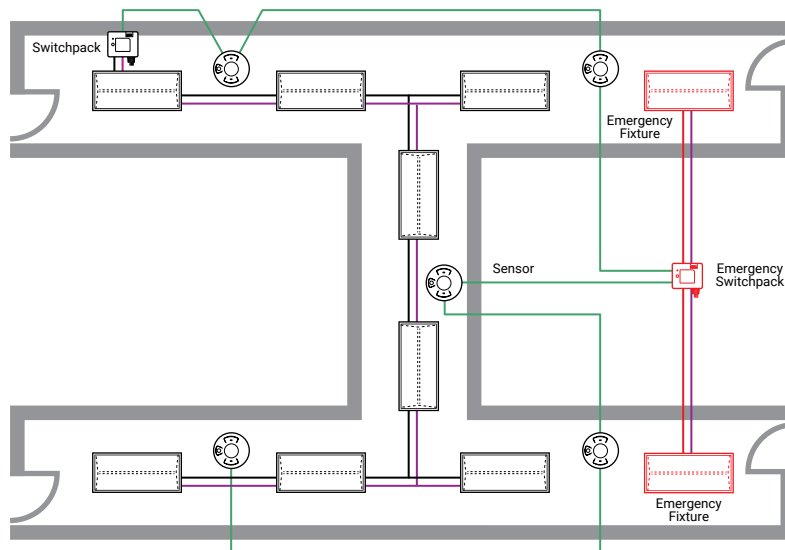
Quantity	Catalog #	Description	Code Provision
1	WAC2-POE	WaveLinx Area Controller	
1	W4S-RL-W	WaveLinx PRO Wallstation	Local control / Switch 130.1 (a) Multi-level lighting control 130.1 (b)
2	WR-20	WaveLinx PRO Receptacle	Automatic receptacle control 130.1 (e) 110.12 (c)
12	24EN-LD2-34-UNVL835-CD1-WPS-U	Encounter 2x4 fixture with WPS integrated sensor	Occupancy Sensor Controls 130.1 (c) 1, 5 Automatic daylight responsive control 130.1 (d) 130.2 (c) 1

# Corridor - Wired



**KEY**

- CAT5 cable
- 0-10V
- Line voltage
- EM Line voltage
- - - Zones



## Control Strategies



Occupancy/  
Vacancy

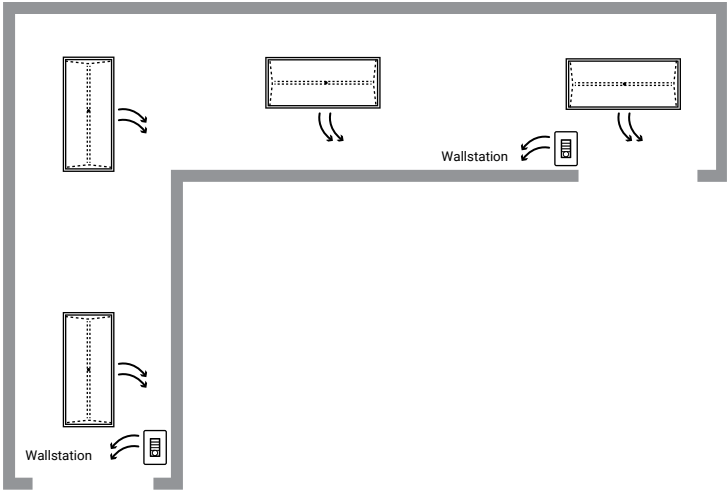
## Control Functionality

<b>Occupant Enters</b>	Lights automatically turn on to 50% when an occupant enters the space.
<b>Occupant Exits</b>	All lights dim to minimum light level 20 minutes after all occupants exit. Minimum light level is set to 10%.
<b>Emergency Mode</b>	Lighting connected to emergency power turns on to full output, during an emergency situation.


## Bill of Material

Quantity	Catalog #	Description	Code Provision
1	RSP-C-010-Z1	RSP-C Relay Switchpack – Zone 1	Multi-level lighting control 130.1 (b)
1	ESP-C-010-Z1	ESP-C Emergency Relay Switchpack - Zone 1	Multi-level lighting control 130.1 (b)
5	OCS-C-P06	OCS-C Occupancy & Daylight ceiling sensor (600 ft <sup>2</sup> )	Occupancy Sensor Controls 130.1 (c) 1, 5
10	24EN-LD2-34-UNV-L835-CD1-U	Encounter 2x4 fixture with 0-10V dimming	

# Corridor - Wireless



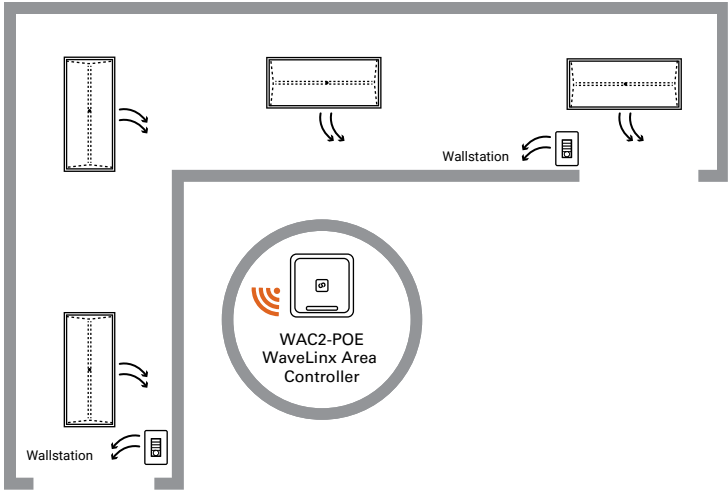
Control Strategies

Occupancy/  
Vacancy


Control Functionality	
Occupant Enters	Lights automatically turn on to 50%when an occupant enters the space.
Occupant Exits	All lights dim to minimum light level 20 minutes after all occupants exit. Minimum light level is set to 10%.

Bill of Material			
Quantity	Catalog #	Description	Code Provision
1	WWL3-RL-W	WaveLinx LITE Wallstation	Local control / Switch 130.1 (a) Multi-level lighting control 130.1 (b)
4	24EN-LD2-34-UNVL835- CD1-WLS-U	Encounter 2x4 fixture with WLS integrated sensor	Occupancy Sensor Controls 130.1 (c) 1, 5

# Corridor - Wireless



Control Strategies



Occupancy/  
Vacancy

## Control Functionality

Occupant Enters	Lights automatically turn on to 50% when an occupant enters the space.
Occupant Exits	All lights dim to minimum light level 20 minutes after all occupants exit. Minimum light level is set to 10%.

## Bill of Material

Quantity	Catalog #	Description	Code Provision
1	WAC2-POE	WaveLinx Area Controller	
2	W4S-RL-W	WaveLinx PRO Wallstation	Local control / Switch 130.1 (a) Multi-level lighting control 130.1 (b)
4	24EN-LD2-34-UNVL835-CD1-WPS-U	Encounter 2x4 fixture with WPS integrated sensor	Occupancy Sensor Controls 130.1 (c) 1, 5

# WaveLinx



# Service and Support

**A WaveLinx system creates incredible value, from the cost savings of occupancy detection to the flexibility and power of scheduled lighting control.**

To maximize the return on your lighting system investment, your WaveLinx system must perform at its peak.

We can help. With a network of experienced and skilled control specialists and a national presence, we can help with everything from system design, quote, implementation, and on-going maintenance.

## Service Plans

Service Plans offer proactive, onsite, and remote diagnostics, configuration changes, training, and software/firmware updates typical of maintaining lighting control systems. Service Plans help facility managers and owners maintain their investment for optimal performance and maximum value.

- Prepaid, budgeted services, with coverage options for planned and unplanned visits.
- Fully customizable to meet your unique requirements
- Optimize your system as your building needs evolve
- Our Service Plans are available in single or multi-year arrangements and are customized to fit your exact needs. Cooper Lighting Solutions has two Service Plans designed to fit your service requirements and budget.

We offer:

**Field Project  
Design Services**

**Pre-Commissioning Support**

**Field Project Startup**

**Verification Walkthrough**

**Optimization  
Services**



**SCAN**  
for more  
Support & Services  
information





## Support

The services and support team simplifies design and specification. We're committed to supporting your project needs from design to occupancy and beyond.

### Technical Support:

Phone:

**+1 (800) 553-3879 (24/7 Support)**

Email (US):

**[controltechsupport@cooperlighting.com](mailto:controltechsupport@cooperlighting.com)**



# COOPER

Lighting Solutions

a  **signify** business

## Why Cooper Lighting Solutions?

At Cooper Lighting Solutions, we build forward-thinking lighting solutions that make people's lives safer, while making buildings, homes and cities smarter and more sustainable. We deliver an industry-leading portfolio of residential, sports, infrastructure, industrial, and commercial LED lighting; plus lighting controls and smart lighting systems.

We question, we seek and we solve. Because building a better world means asking tough questions and pushing harder for answers. Together with our customers, we create solutions that build a better world. At Cooper Lighting Solutions, we push past the ordinary to build brighter.

Cooper Lighting Solutions is a business unit of Signify, the world leader in lighting. Together we have a shared purpose to unlock the extraordinary potential of light for brighter lives and a better world.



**Lighting Brands**

Ametrix  
AtLite  
Corelite  
Ephesus  
Fail-Safe  
HALO  
HALO Commercial  
Invue  
iO  
Iris  
Lumark  
LumarkAP  
Lumière  
McGraw-Edison  
Metalux  
MWS  
NeoRay  
Portfolio  
PrentaLux - 3D Printed Lighting  
RSA  
Shaper  
Streetworks  
Sure-Lites

**Controls Brands**

Greengate  
Fifth Light  
Intelligent Lighting Controls

**Connected Lighting Systems  
and Smart Spaces Platform**

WaveLinx  
Trellix Infrastructure



**SCAN**  
for more  
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