

ASHRAE 90.1 2019 Design Guide

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ASHRAE 90.1 2019 Design Guide

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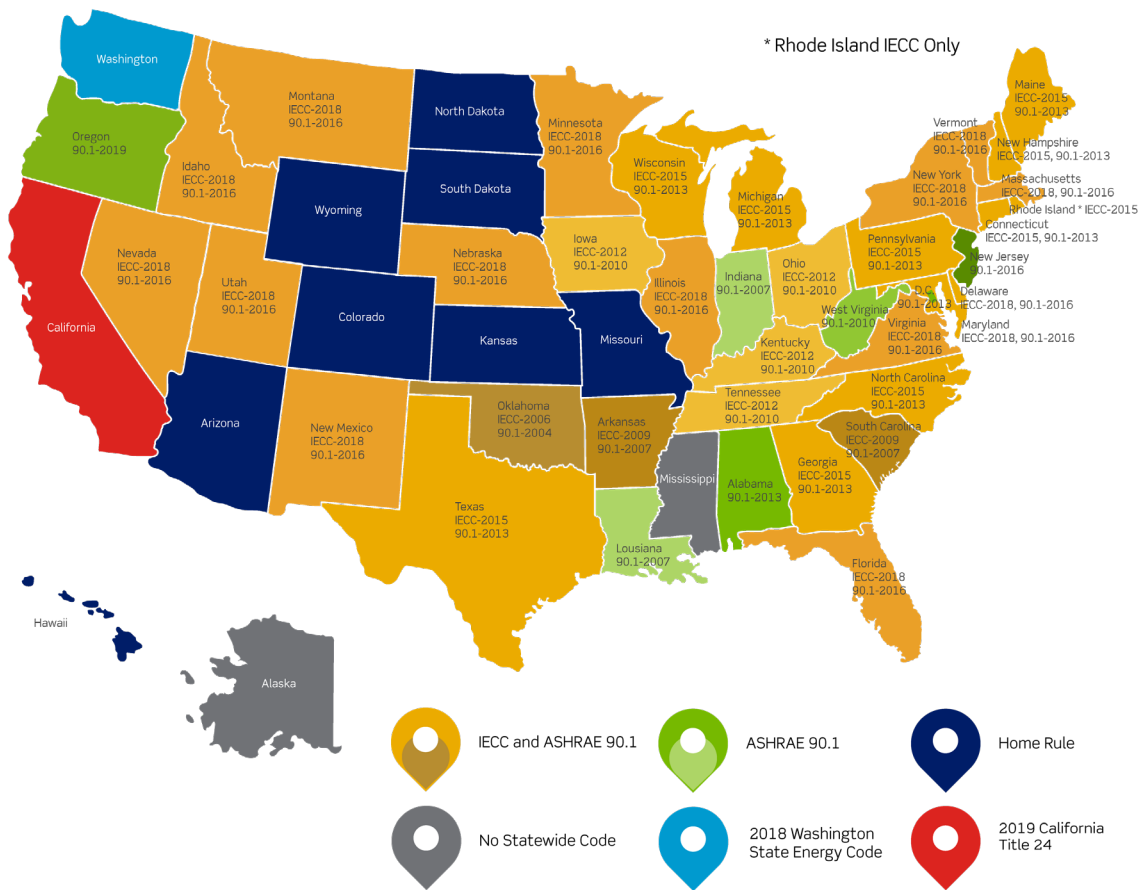
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Source: <https://www.energycodes.gov/status/commercial>

Disclaimer:

This document is for informational purposes only. Each project will have its own specific requirements for satisfying ASHRAE 90.1 standard compliance based on a variety of factors. Other exceptions or details may apply. Review the standard for specific requirements and/or consult with a professional advisor. Leviton Mfg. Co., Inc. is not responsible for any loss resulting from the use of any information found in this document.

Solutions are subject to change without notice. For additional assistance, contact your local Leviton representative.

Code Comparison: 2021 IECC, ASHRAE 90.1 2019 & 2019 Title 24, Part 6

2019 Title 24 is an expansion of the national ASHRAE Standard 90.1 2010/2013/2016/2019, which is a more in-depth version of the national standard guidelines set forth in 2012/2015/2018 IECC. See the table below for an overview of how the codes and standards compare.

Note that the new code additions (2018 IECC, ASHRAE 90.1 2019 and Title 24 2019) are highlighted.

Control Type	2021 IECC	ASHRAE 90.1 2019	2019 Title 24, Part 6
 <p>Automatic Receptacle Control</p>	<p>Required in:</p> <ul style="list-style-type: none"> Hotel/motel guest rooms 	<p>Required in:</p> <ul style="list-style-type: none"> Private offices Computer classrooms Break rooms Conference rooms Printing/copy rooms Classrooms Individual workstations 25% of branch circuit feeders installed for modular furniture Must be turned off via time-of-day control, or control system/occupancy sensor after 20 minutes of vacancy 	<p>Required in:</p> <ul style="list-style-type: none"> Private offices Open office spaces Reception lobbies Conference rooms Kitchenettes Copy rooms Hotel/motel guest rooms
 <p>Automatic Shutoff</p>	<ul style="list-style-type: none"> Automatic time switches are required in most areas that are not controlled by an occupancy sensor; the switch must also have a manual override (and allow for manual control in locations where occupants have ready access in 2019) Occupancy sensors are required in a number of applications that must auto-OFF after 30 minutes (20 minutes in 2018) of vacancy, and be manual-ON or auto-ON to no more than 50% power and include a manual control Occupancy sensors must auto-OFF within 30 minutes (20 minutes in 2018) of occupants leaving the space, and manual-ON or auto-ON to 50% 	<ul style="list-style-type: none"> Interior lighting must have an automatic control to turn the lights OFF This device can be a scheduling control, an occupancy sensor, or a BAS/BMS system Applicable spaces must be capable of the following: <ul style="list-style-type: none"> Manual-ON OR partial-ON—auto-ON to 50% Bi-level control—step between 30-70% or continuous dimming” Automatic daylight controls Automatic partial-OFF—reduce to 50% when unoccupied for some spaces Automatic full-OFF OR scheduled shutoff 	<ul style="list-style-type: none"> Interior lighting must have an automatic control to turn the lights OFF This device can be a scheduling control, an occupancy sensor, or a BAS/BMS system Different applications have specific guidelines for partial-OFF and auto-OFF sensors; see the code for details Where multi-level controls are required, sensors must act as a partial-ON sensor OR vacancy sensor Partial-ON may only activate lights between 50-70% power
 <p>Manual Space Control</p>	<ul style="list-style-type: none"> Every area enclosed by walls or floor-to-ceiling partitions must have a manual control Controls must be located within the area served by the controls, or must be a remote switch clearly identifying the lights it controls with a status indicator Occupancy sensors must also incorporate a manual control Manual control to reduce the connected load by at least 50% only in areas controlled by a time switch by controlling all lamps (dimming), dual switching, inboard/outboard switching or controlling each fixture/lamp independently 	<ul style="list-style-type: none"> All spaces shall include manual control devices that are continuous or stepped dimming control devices that control an area no larger than 2,500 sq ft if space is smaller than 10,000 sq ft. If 10,000 sq ft or more, then it must control an area no larger than 10,000 sq ft 	<ul style="list-style-type: none"> Manual-ON/OFF override control is required in each area enclosed by ceiling-height partitions If lighting is dimmable, controls must be on a dimmer with dimming and manual-ON/OFF capabilities The following areas may use manual-ON/OFF control not accessible to unauthorized personnel: <ul style="list-style-type: none"> Public restrooms with 2 or more stalls Parking areas Stairwells Corridors Display/accent/case lighting must be separately controlled

Code Comparison: IECC, ASHRAE 90.1 & Title 24, Part 6

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Note that the new code additions (2018 IECC, ASHRAE 90.1 2019 and Title 24 2019) are highlighted.

Control Type	2021 IECC	ASHRAE 90.1 2019	2019 Title 24, Part 6
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Parking Garage Control

- | | | |
|---|--|--|
| <ul style="list-style-type: none"> Must adhere to the standard requirements for lighting control, space control and automatic daylight control with stepped control or continuous dimming OR manual switched daylighting control | <ul style="list-style-type: none"> Parking garage lighting zones must be controlled by a device that reduces power by 30% (50% in 2019) after 20 (10 mins in 2019) mins of vacancy Open exterior walls must utilize automatic daylight harvesting Covered vehicle entrances and exits must automatically reduce lighting by 50% from sunset to sunrise Perimeter fixtures must be controlled in response to daylight | <ul style="list-style-type: none"> Occupancy sensors must reduce power with one control step between 20-50% of lighting power No more than 500W of lighting may be controlled per zone Automatic controls must turn lights to full-ON and be activated from all paths of egress |
|---|--|--|



Automatic Daylight Control

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> Control required in daylight control zones that provide these areas with separate control that is independent of the general lighting in the space, which can be stepped or continuous dimming Calibration must be readily accessible Required in spaces where more than 150W of lighting is installed in the Sidelit and Toplit zones Toplit zones must be controlled independent of lights in Sidelit zones Offices, classrooms, labs, and library reading rooms must dim lights continuously from full power to 15% of full light output and capable of full shutoff of all controlled lights Daylit zones in different orientations (N/S/E/W) over 150W must be controlled separately | <ul style="list-style-type: none"> Sidelit and toplit zones must be readily accessible for calibration and located no higher than 11 feet above finished floor. Calibration shall not require the physical presence of a person Photocell to reduce power to 20% or less and off General lighting in overlapping toplit and sidelit zones shall be controlled together with the general lighting in the daylight area under the skylights or rooftop monitors | <ul style="list-style-type: none"> For general lighting, automatic daylighting controls shall provide separate control for luminaires in each type of daylight zone. Luminaires that fall in both a skylit and sidelit daylight zone shall be controlled as part of the skylit zone. For parking garages, ensure that when illuminance levels measured at the farthest edge of the secondary sidelit zone away from the glazing or opening are greater than 150% of the illuminance provided by the controlled lighting when daylight is available, the controlled lighting power consumption is zero For areas other than parking garages, the general lighting power in a daylight zone must be reduced by a minimum of 65% when the daylight illuminance is greater than 150% of the design illuminance from the general lighting at full power |
|--|--|---|




Multi-Level Area Lighting Controls

- | | | |
|--|---|---|
| <ul style="list-style-type: none"> Each area required to have manual control is also required to be able to reduce the lighting by 50% (80% in 2018 for open offices) | <ul style="list-style-type: none"> For areas requiring bi-level lighting control, the space shall be controlled to provide at least one step in lighting power or continuous dimming between 30% and 70% | <ul style="list-style-type: none"> Manual-ON/OFF override control is required in each area enclosed by ceiling-height partitions All general area lighting in rooms >100 sq ft and < 0.5W/sq ft shall meet control step requirements of Table 130.1-A Multi-Level Lighting Controls & Uniformity The following areas do not require multi-level area control: <ul style="list-style-type: none"> Areas with a single luminaire Restrooms, healthcare facilities |
|--|---|---|

Code Comparison: 2021 IECC, ASHRAE 90.1 2019 & 2019 Title 24, Part 6

Title 24 2019 is an expansion of the national ASHRAE Standard 90.1 2010/2013/2016/2019, which is a more in-depth version of the national standard guidelines set forth in 2012/2015/2018 IECC. See the table below for an overview of how the codes and standards compare.


Note that the new code additions (2018 IECC, ASHRAE 90.1 2019 and Title 24 2019) are highlighted.

Control Type	2021 IECC	ASHRAE 90.1 2019	2019 Title 24, Part 6
 <p>Exterior Lighting Control</p>	<ul style="list-style-type: none"> Exterior lighting designated for dusk to dawn operation shall be controlled by an astronomical time clock or photocontrol Lights shall be automatically turned off when daylight is present and satisfies the lighting needs Lighting not designated for dusk to dawn operation shall be controlled by either a combination of a photocontrol and time switch, or an astronomical time clock Non-facade or landscape lighting must automatically reduce lighting by at least 30% in the following times: <ul style="list-style-type: none"> - From midnight to 6 am - During any period when activity has not been detected for 15 minutes Building facade or landscape lighting shall automatically shut off no later than one hour after business closing to no earlier than one hour before business opening 	<ul style="list-style-type: none"> All lighting exterior lighting must be turned off when sufficient daylight is available Facade and Landscape lighting must be automatically turned off during specified times of day. Not just dependent on opening and closing time. Lighting not specified as facade or landscape lighting and signage shall be automatically reduced by 50% during specified times of day Luminaires serving outdoor parking areas with a rated wattage greater than 78W and a mounting height of 24ft or less must be controlled to automatically reduce the lighting power by 50% when no activity has been detected or 15 minutes 	<ul style="list-style-type: none"> Exterior incandescent lighting >100W must be controlled with a motion sensor All outdoor lighting must be controlled with a photocontrol and an automatic time switch OR astronomical time switch control Automatic scheduling and motion sensing controls must be capable of reducing outdoor lighting power by at least 50% and no more than 90% and be capable of turning lights OFF during scheduled unoccupied periods Motion sensing controls are required to reduce outdoor lighting to its dim or OFF state no longer than 15 minutes after the area has been vacated, and of returning the lighting to its ON state when it becomes occupied Outdoor must remain independently controlled via automatic scheduling
 <p>Functional Testing</p>	<ul style="list-style-type: none"> All lighting controls must be tested by a party not involved with the design or construction team to ensure that the products are working properly 	<ul style="list-style-type: none"> The construction documents shall state the party who will conduct and certify the functional testing (Removed in 2019) The party responsible shall not directly be involved in either the design or construction of the project 	<ul style="list-style-type: none"> All lighting controls must be tested by a Certified Lighting Control Acceptance Test Technician (CLCATT) This can be done by the same electrical contractor that did the work if they are CLCATT
 <p>Demand Response</p>	--	--	<ul style="list-style-type: none"> Required in all nonresidential buildings >10,000 sq ft Must be capable of automatically reducing total lighting power usage by at least 15%
 <p>Disaggregation of Electrical Circuits</p>	--	--	<ul style="list-style-type: none"> Specifications for the separation of 10 types of electrical loads for switchboards, panels and motor control centers required to be disaggregated per Table 130.5-B

Code Comparison: IECC, ASHRAE 90.1 & Title 24, Part 6



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Note that the new code additions (2018 IECC, ASHRAE 90.1 2019 and Title 24 2019) are highlighted.

Control Type	2021 IECC	ASHRAE 90.1 2019	2019 Title 24, Part 6
 <p>Service Metering</p>	<ul style="list-style-type: none"> New buildings with a gross conditioned floor area of 25,000 square feet (2322 m²) or larger shall be equipped to measure, monitor, record and report energy consumption data in compliance with Sections C405.12.1 through C405.12.5 Electrical energy monitoring required for all electrical energy supplied to the building and its associated site Meters or other approved measurement devices shall be provided to collect energy use data for each end-use category indicated in Table C405.12.2 Meters or other measurement devices required by this section shall be configured to automatically communicate energy consumption data to the data acquisition system required by Section C405.12.4 	<ul style="list-style-type: none"> Measurement devices must be installed in new buildings to separately monitor energy usage for total electrical energy, HVAC systems, interior lighting, exterior lighting and receptacle circuits All data required above must be recorded a minimum of every 15 minutes and reported on hourly, daily, monthly, and annual intervals 	<ul style="list-style-type: none"> Requirements include user accessible metering of total electrical use per Table 130.5-A

ASHRAE 90.1 2019 Requirements Summary

Note that updates for ASHRAE 90.1 2019 are highlighted

Control Type	Summary	Quick Take
 <p>8.4.2 Automatic Receptacle Control</p>	<p>50% of all receptacles in private offices, open offices, computer classrooms, conference rooms, print/copy rooms, break rooms, classrooms and individual workstations must be controlled by occupancy sensor, time of day control, or by signal from another building control or alarm system that indicates that the space has become unoccupied:*</p> <ul style="list-style-type: none"> • Includes receptacles installed in modular partitions • Controlled receptacles must be marked to indicate that they are controlled 	<p>50% of all receptacles in private offices, open offices and computer classrooms must be controlled by an occupancy sensor.</p> <p>Leviton Product Solutions</p> <ul style="list-style-type: none"> • Occupancy sensors • Vacancy sensors • Smart Wallbox Sensors • Receptacle controls • Sapphire™ • Lumina RF Standalone Wireless Room Control System • Provolt™ Room Controller • IRC • GreenMAX • GreenMAXDRC
 <p>9.4.1.1 Interior Lighting Control-</p>	<p>Interior lighting must have an automatic control device to turn lights OFF. This device can be one of three options:*</p> <ul style="list-style-type: none"> • A scheduled basis controlling not more than 25,000 sq ft and not more than one floor • An occupancy sensor with a maximum timeout of 20 minutes • A signal from another building system that indicates the space is unoccupied <ul style="list-style-type: none"> - Must be programmed to account for weekends and holidays • Applicable spaces must be capable of the following: <ul style="list-style-type: none"> - Manual-ON OR Partial-ON—auto-ON to 50% - Bi-level control—step between 30-70% or continuous dimming - Automatic daylight controls - Automatic partial-OFF—reduce to 50% when unoccupied for some spaces* - Automatic full-OFF OR scheduled shutoff <p>Each space enclosed by ceiling height partitions must have at least one readily accessible control device to control General Lighting. Must meet the following requirements:*</p> <ul style="list-style-type: none"> • Controlled lighting shall have at least one step between 30 and 70% of Full and OFF, or continuous dimming • For all other spaces: <ul style="list-style-type: none"> - Maximum control area of 2,500 sq ft for spaces < 10,000 sq ft, or 10,000 sq ft for spaces >= 10,000 sq ft - Maximum override for time of day schedules is 2 hours <p>Refer to Table 9.6.1 in ASHRAE 90.1 for additional information and guidelines. General lighting in Primary Sidelighted areas must be separately controlled by a multi-level photocontrol.</p> <ul style="list-style-type: none"> • Calibration adjustment device must be readily accessible and located no higher than 11 ft above finished floor • Must reduce lighting power in response to available daylight with continuous dimming OR with control steps between 50-70%, 20-40%, and OFF <p>NOTE: Sidelit means the natural daylight enters a space through the side of the building, generally through windows.</p> <p>Toplit is when the natural daylight enters the space through the top of the building, most often through skylights. ASHRAE 90.1 distinguishes how control zones should be set up under both conditions.</p> <ul style="list-style-type: none"> • In most areas of egress designed for emergency use, lighting is exempted from daylight harvesting and demand response requirements 	<p>Interior lighting must have an automatic control to turn the lights OFF. The device can be a scheduling control, an occupancy sensor, or a BAS/EMS system signal.</p> <p>All spaces shall include visible control devices: (1) occupancy sensor, (2) continuous or stepped dimming control device (photocell, entry station or system controller) (Removed in 2019)</p> <p>Sidelit and Toplit areas must be separately controlled by a photocontrol, which can be stepped or continuous dimming. Calibration cannot be located on the photocell.</p> <p>Leviton Product Solutions</p> <ul style="list-style-type: none"> • Occupancy sensors • Vacancy sensors • Smart Wallbox Sensors • Wall box dimmers • Photocells • Sapphire • Lumina RF Standalone Wireless Room Control System • Provolt Room Controller • IRC • GreenMAX • GreenMAXDRC

ASHRAE 90.1 2019 Requirements Summary

Note that updates for ASHRAE 90.1 2019 are highlighted

Control Type	Summary	Quick Take
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9.4.1.2 Parking Garage Control

- Lighting must have auto shutoff per 9.4.1
- Lighting must be controlled in zones no larger than 3,600 sq ft
- Lighting within a zone must be controlled by a device that reduces power to all luminaires by 30% (50% in 2019) after 20 minutes (10 minutes in 2019) of vacancy
- Lighting for parking garages must have scheduled shutoff (automatic shutoff per 2019)
- Lighting power of each luminaire shall be automatically reduced by a minimum of 30% when there is no activity detected within a lighting zone for 20 minutes
- Daylight transition zones to be separately controlled to reduce the lighting no more than the general light level at night from sunset to sunrise
- Any fixture within 20 feet of the perimeter must be dimmed in response to available daylight

Parking garage lighting zones must be controlled by a device that reduces power by 30% after 20 minutes of vacancy, and open exterior walls must utilize automatic daylight harvesting.

Leviton Product Solutions

- Occupancy sensors
- Photocells
- IRC
- GreenMAX
- GreenMAXDRC



9.4.1.3 Special Applications

The following lighting applications require additional control:

- Display/accent/case lighting
- Non-visual and demonstration lighting
- Task lighting
- Guest room lighting—Master switch required to control all permanently installed luminaires and switched receptacles
- Automatic control required for bathroom lighting to turn off after 30 minutes of vacancy
- Stairwell lighting—Requires automatic control device to reduce lighting by at least 50% within 20 minutes of vacancy

Separate controls are required for specific applications. See ASHRAE 90.1 for more details on each application scenario.

Leviton Product Solutions

- Occupancy sensors
- Vacancy sensors
- Smart Wallbox Sensors
- Wall box dimmers
- Receptacle controls
- Sapphire
- Lumina RF Standalone Wireless Room Control System
- Provolt Room Controller
- IRC
- GreenMAX
- GreenMAX DRC
- TLLP



9.4.1.4 Exterior Lighting Control

- Exterior lighting must be controlled by a device to turn lighting OFF when sufficient daylight is available
- Facade and landscape lighting must be turned OFF between 12 am and 6 am, or opening and closing of business

Advertising and all other lighting must have a control device to reduce power by at least 30% (50% in 2019) in one of two ways:

- Using a time clock to reduce lighting power between 12 am and business opening
- Occupancy sensors to reduce lighting power after 15 minutes of vacancy in outdoor area
 - Lights must be controlled at night via a motion sensor or time-based control

Luminaires in parking garages mounted 24 ft or lower from the ground must automatically dim to at least 50% of full power when no activity has been detected in a time no longer than 15 minutes.

Exterior lighting must be controlled by a photocell to turn lighting OFF when sufficient daylight is available, and reduce advertising/sign lighting power by 30% during closing.

Leviton Product Solutions

- Occupancy sensors
- Photocells
- IRC
- GreenMAX
- GreenMAXDRC

ASHRAE 90.1 2019 Requirements Summary

Note that updates for ASHRAE 90.1 2019 are highlighted

Control Type	Summary	Quick Take
 9.4.1 Lighting Controls	<p>Spaces requiring Automatic Control Devices as identified in sections 9.4.1.1, 9.4.1.2, 9.4.1.3 and 9.4.1.4 shall be either manual-ON or auto-ON to no more than 50% power. The following exceptions allow for full auto-ON:*</p> <ul style="list-style-type: none">• Public corridors or stairwells• Restrooms• Primary building entrances and lobbies• Healthcare facilities*• Areas where manual-ON operation would be a safety or security issue	<p>More controls are required in every project. Manual-ON (Vacancy) or Auto-ON (Occupancy) to not more than 50% (with many exceptions).</p> <p>All Leviton ASHRAE 90.1 Solutions meet Section 9.4.1 for Lighting Controls.</p>
 9.4.3 (9.9.1 in 2019) Functional Testing	<p>All lighting controls must be tested to ensure they are working properly. The party responsible for the testing cannot be a member of the design or construction team.</p>	<p>All lighting controls must be tested by a party not involved with the design or construction team to ensure that the products are working properly.</p> <p>All Leviton solutions are manufactured to the highest quality and performance standards, which can easily be demonstrated at the time of installation to fulfill ASHRAE 90.1 Section 9.4.3.</p>
 8.4.3.1 & 8.4.3.2 Electrical Energy Monitoring	<p>Measurement devices must be installed in new buildings to separately monitor energy usage for total electrical energy, HVAC systems, interior lighting, exterior lighting and receptacle circuits. In applications with tenants, total building and individual tenant usage shall be separately metered.</p> <p>All data required above must be recorded a minimum of every 15 minutes and reported on hourly, daily, monthly, and annual intervals. This information must be available to tenants and maintained for a minimum of 36 months. Buildings with digital control systems complying with Section 6.4.3.10 must transmit data through the digital control system and be graphically displayed.</p>	<p>Submetering measurement and verification is now required to separately monitor energy-using facility systems, with separate metering for tenants. This information must be regularly collected and recorded, and made available to tenants.</p> <p>Leviton Product Solutions</p> <ul style="list-style-type: none">• VerifEye™ Submetering Solutions

*Standard includes exceptions; please refer to ASHRAE Standard 90.1 2019 for more information.



Leviton Solutions at a Glance

Note: All solutions are represented by a blue block. Solutions may require other products to complete a code compliant energy control solution—consult Leviton for more information.

ASHRAE 90.1 Standards and Leviton Solutions	9.4.1 Lighting Controls	9.4.1.1 Interior Lighting Control	9.4.1.2 Parking Garage Control	9.4.1.3 Special Applications	9.4.1.4 Exterior Lighting Control	8.4.2 Automatic Receptacle Control	8.4.3 Electrical Energy Monitoring
Occupancy Sensors	■	■	■	■	■	■	■
Vacancy Sensors	■	■	■	■	■	■	■
Smart Wallbox Sensors	■	■	■	■	■	■	■
Photocells	■	■	■	■	■	■	■
Provolt Room Controller (PRC)	■	■	■	■	■	■	■
IRC	■	■	■	■	■	■	■
Lumina RF Standalone Wireless Room Control System	■	■	■	■	■	■	■
Intellect - enabled Fixtures	■	■	■	■	■	■	■
GreenMAX DRC	■	■	■	■	■	■	■
GreenMAX	■	■	■	■	■	■	■
Track Light Limiting Panel (TLLP)	■	■	■	■	■	■	■
Sapphire	■	■	■	■	■	■	■
Marked Controlled Receptacles	■	■	■	■	■	■	■
VerifEye Submetering Solutions	■	■	■	■	■	■	■

Leviton Applications at a Glance

Note: All indicated applications represented by a blue or green block can be found in the ASHRAE 90.1 Applications Cookbook. Solutions represented in this Design Guide are represented by a green block.

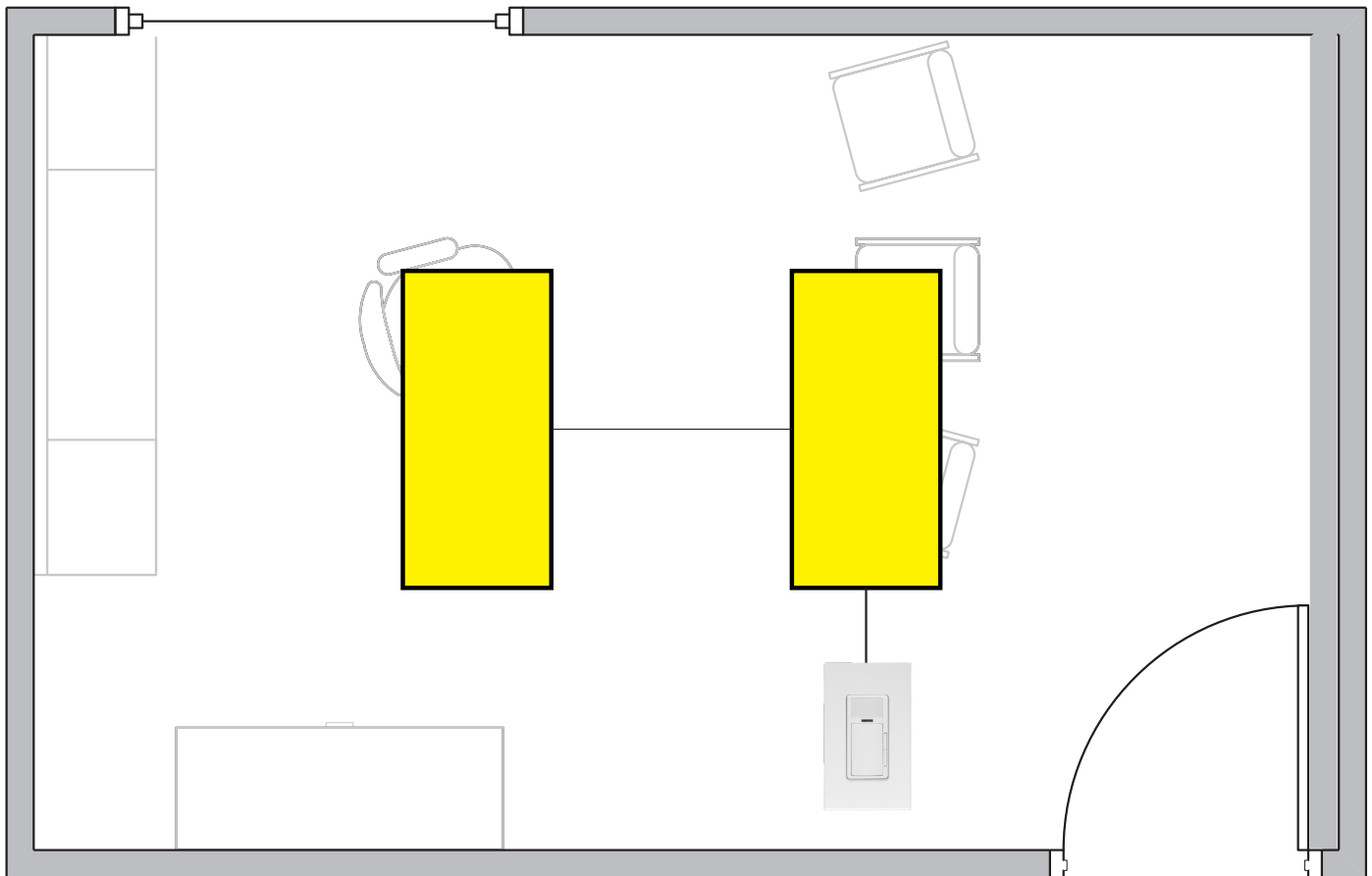
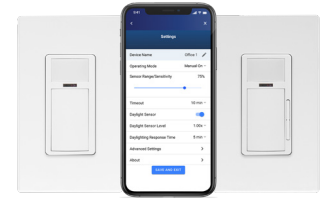
ASHRAE 90.1 Standards and Leviton Solutions	Small Office	Open Office	Conference Room	Classroom	Common Area	Library	Restaurant	Warehouse	Energy Monitoring
Occupancy Sensors	Green	Green	Blue	Blue	Blue	Blue	Blue	Green	
Vacancy Sensors	Green	Green	Blue	Blue	Blue	Blue	Blue	Green	
Smart Wallbox Sensors	Green				Blue				
Photocells	Green	Green	Blue	Blue	Blue	Blue	Blue	Blue	
Provolt Room Controller (PRC)	Green	Green	Blue	Blue	Green	Blue	Blue	Blue	
IRC	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	
Lumina RF Standalone Wireless Room Control System	Green	Green	Green	Green	Blue	Blue	Blue	Blue	
Intellect - enabled Fixtures	Green	Green	Blue	Blue	Blue	Blue	Blue	Blue	
GreenMAX DRC	Green	Green	Green	Blue	Blue	Blue	Blue	Blue	
GreenMAX	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	
Track Light Limiting Panel (TLLP)							Blue	Blue	
Sapphire	Blue	Blue	Blue	Blue	Blue		Blue		
Marked Controlled Receptacles	Green	Green	Blue	Green	Blue	Blue	Blue	Blue	
VerifEye Submetering Solutions	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Green

Small Office—Single Zone

FEATURED LEVITON ASHRAE 90.1 SOLUTION

Smart Wallbox Sensor

- Simple occupancy/vacancy sensing and dimming solution and fits in a standard wallbox
- Simple pushbutton programming
- Create multi-way capabilities for up to 5 devices on all models with Leviton Push to Pair (P2P) process
- App based configuration and customization make for a convenient, affordable solution that meets a range of needs



Meets the Following Requirements:

- **Section 9.4.1**
 - Lighting Controls
- **Section 9.4.1.1**
 - Interior Lighting Control
- **Section 9.4.3**
 - Functional Testing

Features:

- 0-10V Dimming and Partial-ON/OFF and Auto-ON/OFF Control
- Occupancy or Vacancy Sensing
- Sensitivity Timeouts

What you will need

Quantity

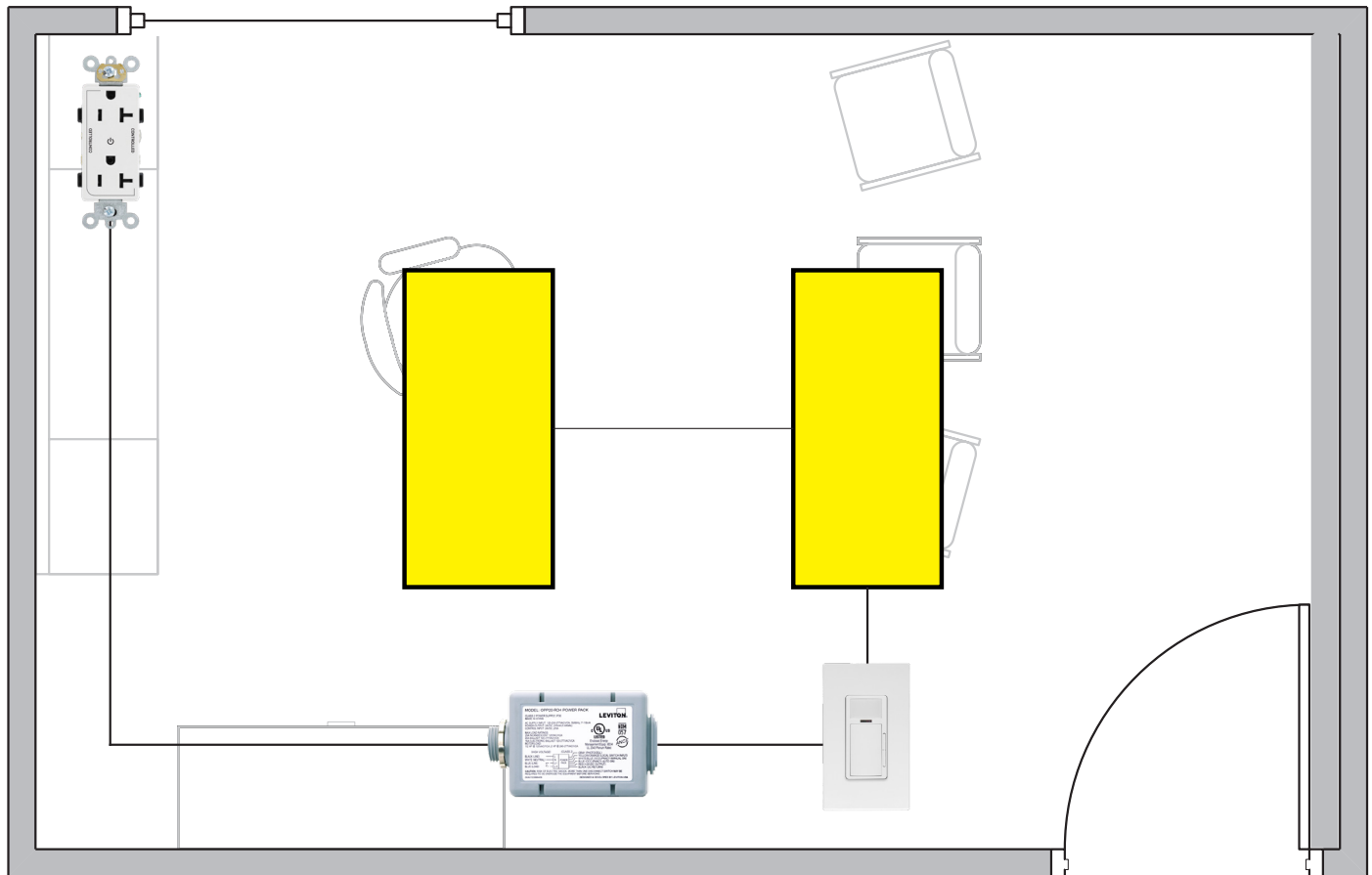
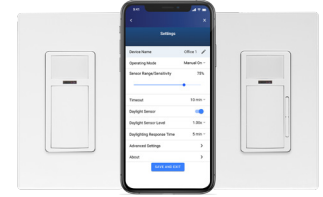
	Smart PIR 0-10V Dimming Wallbox Sensor ODD10-IDW/ODD10-IDI	1
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Small Office—Single Zone w/Plug Load Control

FEATURED LEVITON ASHRAE 90.1 SOLUTION

Smart Wallbox Sensor

- Simple occupancy/vacancy sensing and dimming solution and fits in a standard wallbox
- Simple pushbutton programming
- Create multi-way capabilities for up to 5 devices on all models with Leviton Push to Pair (P2P) process
- App based configuration and customization make for a convenient, affordable solution that meets a range of needs



Meets the Following Requirements:

- **Section 9.4.1**
- Lighting Controls
- **Section 9.4.1.1**
- Interior Lighting Control
- **Section 9.4.3**
- Functional Testing
- **Section 8.4.2**
- Automatic Receptacle Control

Features:

- 0-10V Dimming and Partial-ON/OFF and Auto-ON/OFF Control
- Occupancy or Vacancy Sensing
- Sensitivity Timeouts
- Plug Load Control

What you will need (sold separately)

Quantity

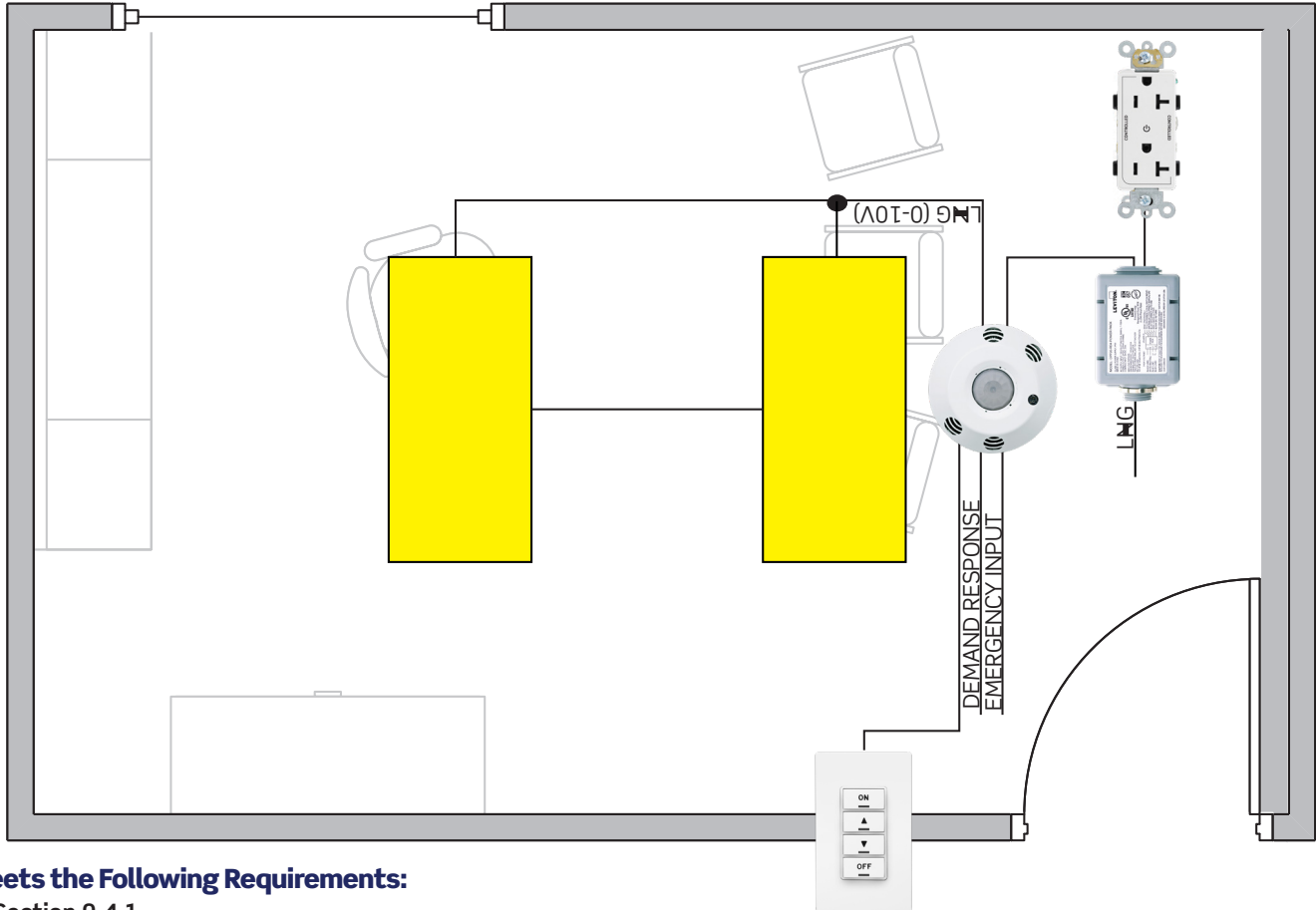
	What you will need (sold separately)	Quantity
	Smart PIR 24V Wallbox Sensor ODD24-IDW	1
	Super Duty Power Pack OPP20-RD4	1
	Marked "Controlled" Receptacles 16352-2PW	1

Small Office—Single Zone

FEATURED LEVITON ASHRAE 90.1 SOLUTION

Provolt™ Room Controller (PRC)

- Comprehensive solution integrates multiple lighting control strategies—occupancy sensing, 0-10V dimming, daylight harvesting, partial-ON, partial-OFF and demand response
- Combined line voltage multi-technology or PIR sensor, power pack and photocell in a self-contained, easy-to-install device
- Configure and test controls from an Android or Apple smart device via the Provolt Bluetooth Mobile App—reduces callbacks



Meets the Following Requirements:


- **Section 9.4.1**
- Lighting Controls
- **Section 9.4.1.1**
- Interior Lighting Control
- **Section 9.4.3**
- Functional Testing
- **Section 8.4.2**
- Automatic Receptacle Control

Features:

- 0-10V Dimming Control
- Self-contained occupancy sensor, photocell and power pack
- Occupancy or Vacancy Sensing with Auto-OFF
- Auto Calibration
- Daylighting Set Point Adjustment through Entry Station
- Emergency Input
- Decora® 4-Button Entry Station
- Plug Load Control
- Time Clock Input
- Demand Response

What you will need (sold separately)

Quantity

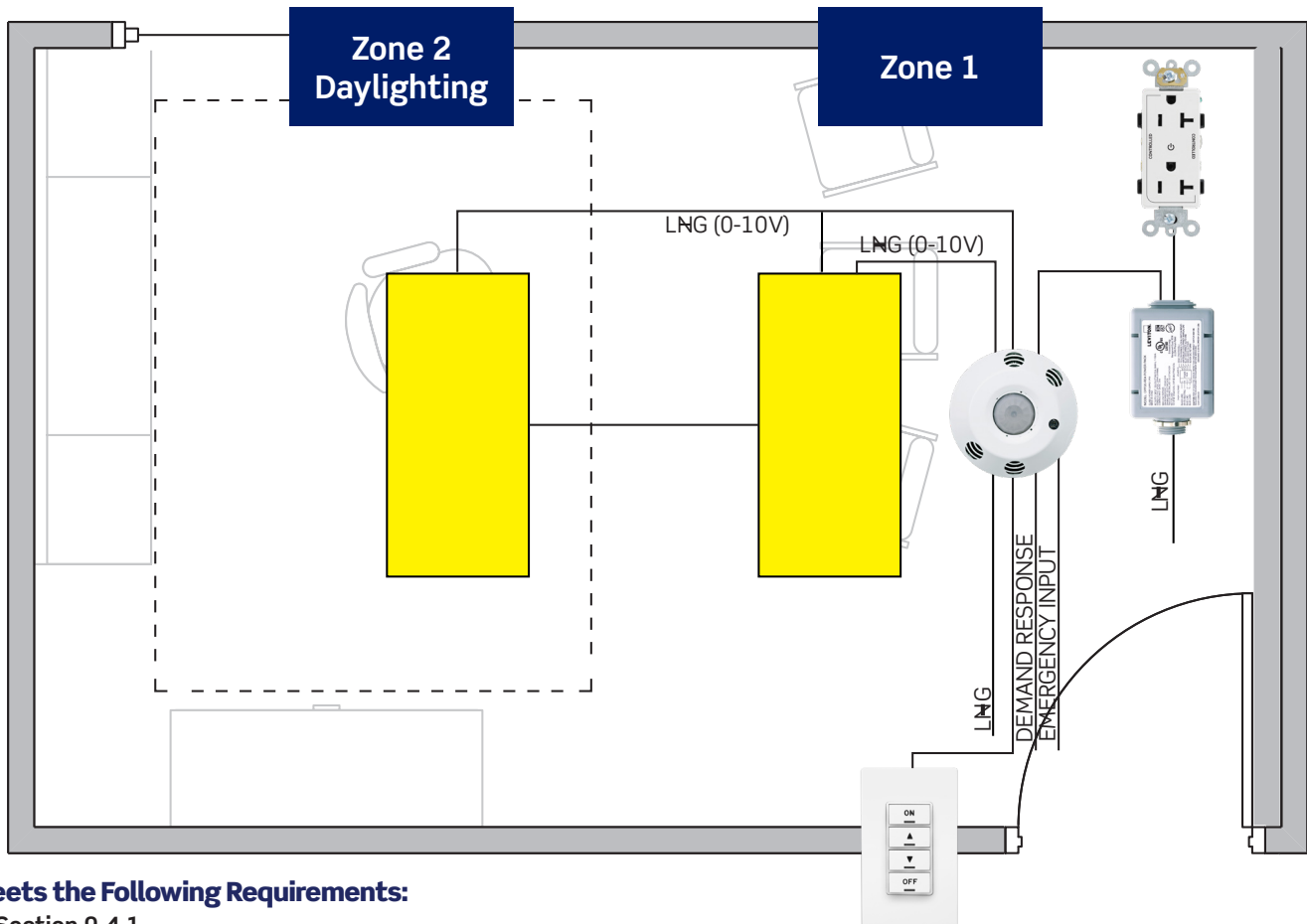
	What you will need (sold separately)	Quantity
	Provolt Room Controller (PRC) O5C04-IDW	1
	Provolt Low-Voltage Keypad, 4-Button PLVSW-4LW	1
	OPP20 Super Duty Power Pack OPP20-0D1	1
	Marked "Controlled" Receptacles 16352-2PW	5

Small Office—Dual Zone

FEATURED LEVITON ASHRAE 90.1 SOLUTION

Provolt™ Room Controller (PRC)

- Comprehensive solution integrates multiple lighting control strategies—occupancy sensing, 0-10V dimming, daylight harvesting, partial-ON, partial-OFF and demand response
- Combined line voltage multi-technology or PIR sensor, power pack and photocell in a self-contained, easy-to-install device
- Configure and test controls from an Android or Apple smart device via the Provolt Bluetooth Mobile App—reduces callbacks



Meets the Following Requirements:

- **Section 9.4.1**
- Lighting Controls
- **Section 9.4.1.1**
- Interior Lighting Control
- **Section 9.4.3**
- Functional Testing
- **Section 8.4.2**
- Automatic Receptacle Control

Features:

- 0-10V Dimming Control
- Self-contained occupancy sensor, photocell and power pack
- Occupancy or Vacancy Sensing with Auto-OFF
- Auto Calibration
- Daylighting Set Point Adjustment through Entry Station
- Emergency Input
- Decora® 4-Button Entry Station
- Plug Load Control
- Time Clock Input
- Demand Response

What you will need (sold separately)

Quantity

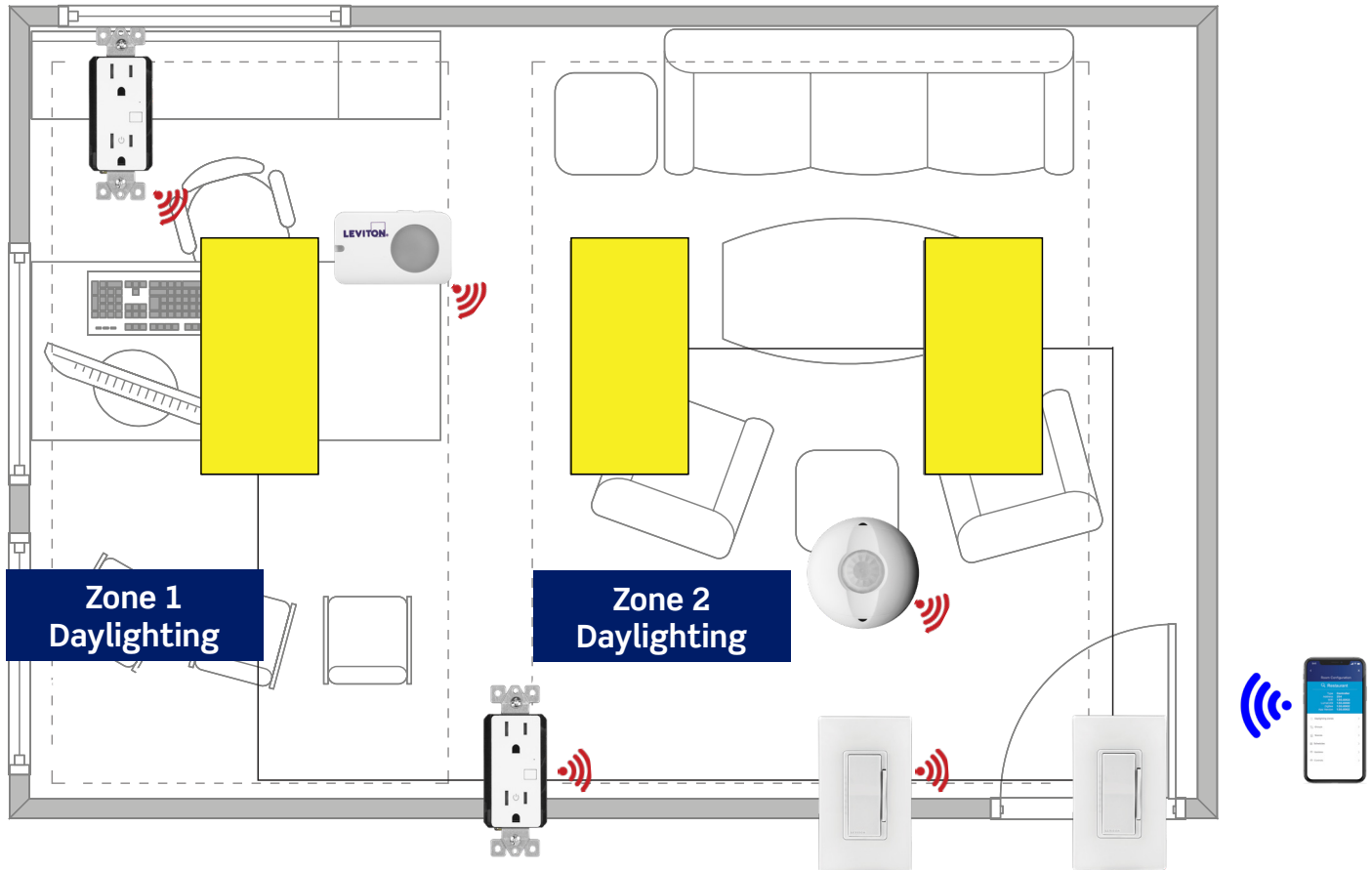
Image	What you will need (sold separately)	Quantity
	Provolt Room Controller (PRC) O5C04-IDW	1
	Provolt Low-Voltage Keypad, 4-Button PLVSW-4LW	1
	OPP20 Super Duty Power Pack OPP20-0D1	1
	Marked "Controlled" Receptacles 16352-2PW	5

Small Office—Dual Zone

FEATURED LEVITON ASHRAE 90.1 SOLUTION

Lumina™ RF Standalone Wireless Room Control System

- Add wireless control to virtually any ON/OFF or dimming device with Lumina RF devices
- Compatible with virtually all lamp fixtures and load control devices
- Scalable, flexible wireless mesh solution to meet the unique control needs of virtually any space all without having to pull new wires
- Configure, monitor, and control the system with the Lumina RF Standalone App using an Android or iOS smart device for Ladderless Commissioning



Meets the Following Requirements:

- **Section 9.4.1**
- Lighting Controls
- **Section 9.4.1.1**
- Interior Lighting Control
- **Section 9.4.3**
- Functional Testing
- **Section 8.4.2**
- Automatic Receptacle Control

Features:

- 0-10V Dimming Control
- Occupancy or Vacancy Sensing
- Multi-Zone Daylight Harvesting
- Plug Load Control
- Wireless Communication via Mesh Network

What you will need (sold separately)

Quantity

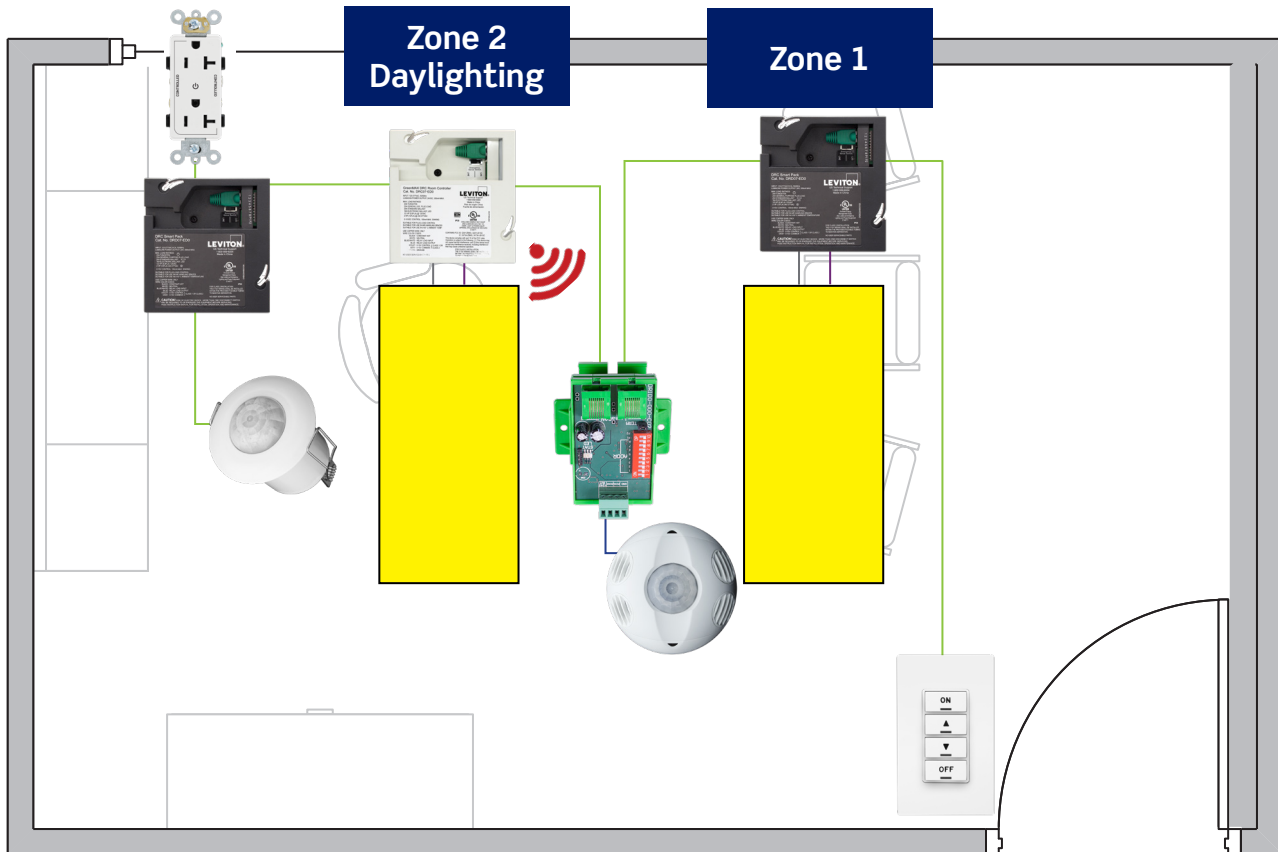
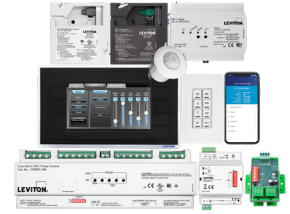
What you will need (sold separately)	Quantity
 Lumina RF 0-10V Dimmer Room Controller with 5A Relay DL057-D0Z	1
 Wireless 0-10V Wall Dimmer ZS057-D0Z	1
 Wireless PIR Occupancy Sensor ZSC04-INW	1
 Wireless Photocell LURPC-01W	1
 Zigbee Controlled Receptacle ZSTLR-1HW	2

Small Office—Dual Zone

FEATURED LEVITON ASHRAE 90.1 SOLUTION

GreenMAX® DRC Wired Room Control System

- Fully distributed room control system
- Room agnostic—each room operates independently of other rooms—not dependent on network processors or centralized controllers for operation
- Easy-to-specify, scalable—add and rearrange products to accommodate the evolving needs of any application, and re-zone/re-group and adjust settings with ease through the GreenMAX DRC App for smart devices



Meets the Following Requirements:

- **Section 9.4.1**
- Lighting Controls
- **Section 9.4.1.1**
- Interior Lighting Control
- **Section 9.4.3**
- Functional Testing
- **Section 8.4.2**
- Automatic Receptacle Control

Features:

- Occupancy/Vacancy Sensing
- Scene Control
- Daylighting
- Plug Load Control
- Emergency Lighting

What you will need (sold separately)

Quantity

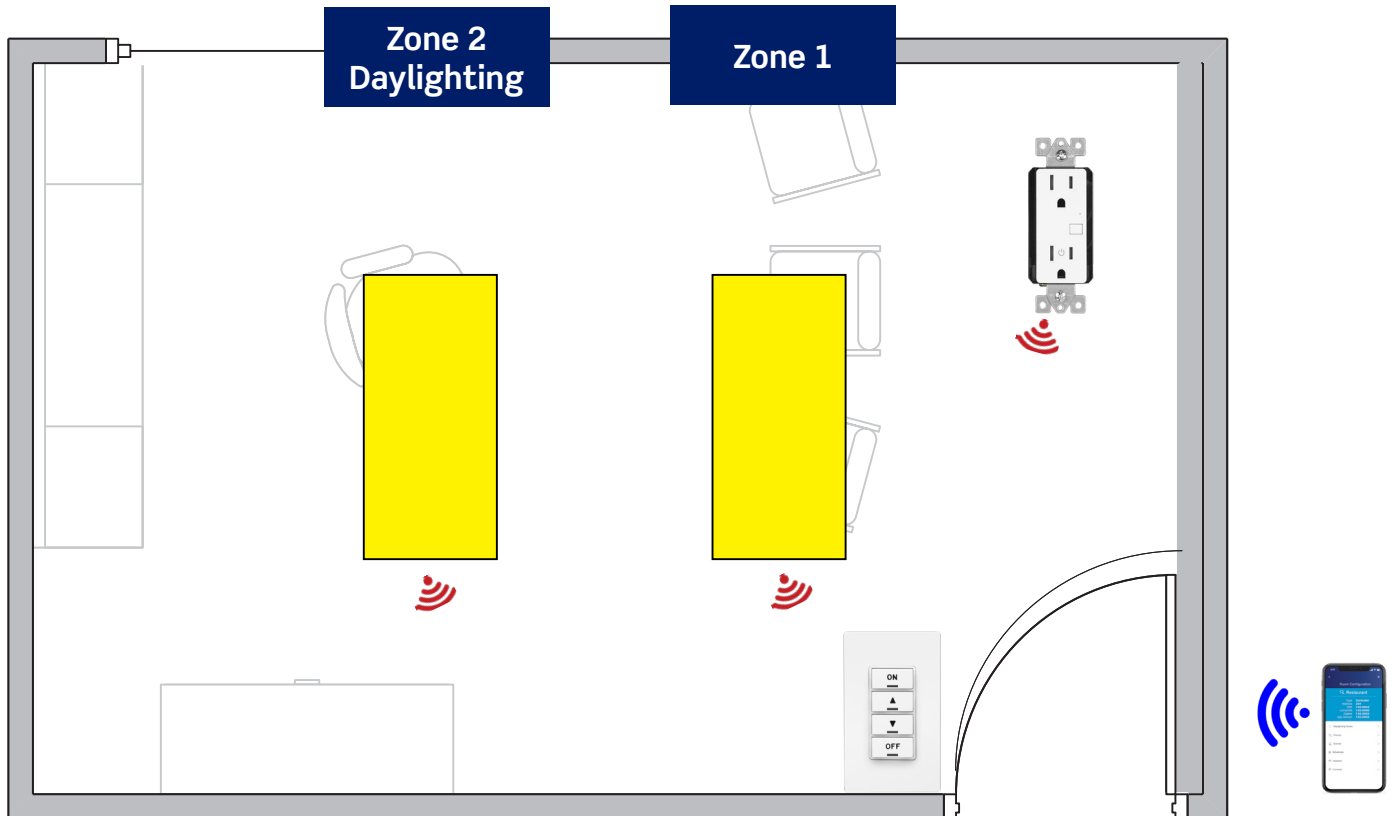
What you will need (sold separately)	Quantity
 GreenMAX DRC Line Voltage Room Controller DRC07-ED0	1
 GreenMAX DRC 0-10V Smart Pack DRD07-ED0	2
 GreenMAX DRC Digital Sensor OSR05-ICW	1
 GreenMAX DRC Analog Interface (AI) DRID0-C02	1
 Analog Occupancy Sensor OSCxx-MWW	1
 GreenMAX DRC 4-Button Digital Keypad DRKDN-C4W	1
 Marked Controlled Receptacle 16352-2PW	1

Small Office - Dual Zone

FEATURED LEVITON ASHRAE 90.1 SOLUTION

GreenMAX® DRC Room Control System

- Fully distributed room control system
- Room agnostic—each room operates independently of other rooms—not dependent on network processors or centralized controllers for operation
- Easy-to-specify, scalable—add and rearrange products to accommodate the evolving needs of any application, and re-zone/re-group and adjust settings with ease through the GreenMAX DRC App for smart devices



Meets the Following Requirements:

- **Section 9.4.1**
- Lighting Controls
- **Section 9.4.1.1**
- Interior Lighting Control
- **Section 9.4.3**
- Functional Testing
- **Section 8.4.2**
- Automatic Receptacle Control

Features:

- Wi-Fi Networking
- 2 Zones
- Occupancy/Vacancy Sensing
- Scheduling
- Scene Control
- Daylighting
- Plug Load Control
- Emergency Lighting

What you will need (sold separately)

Quantity

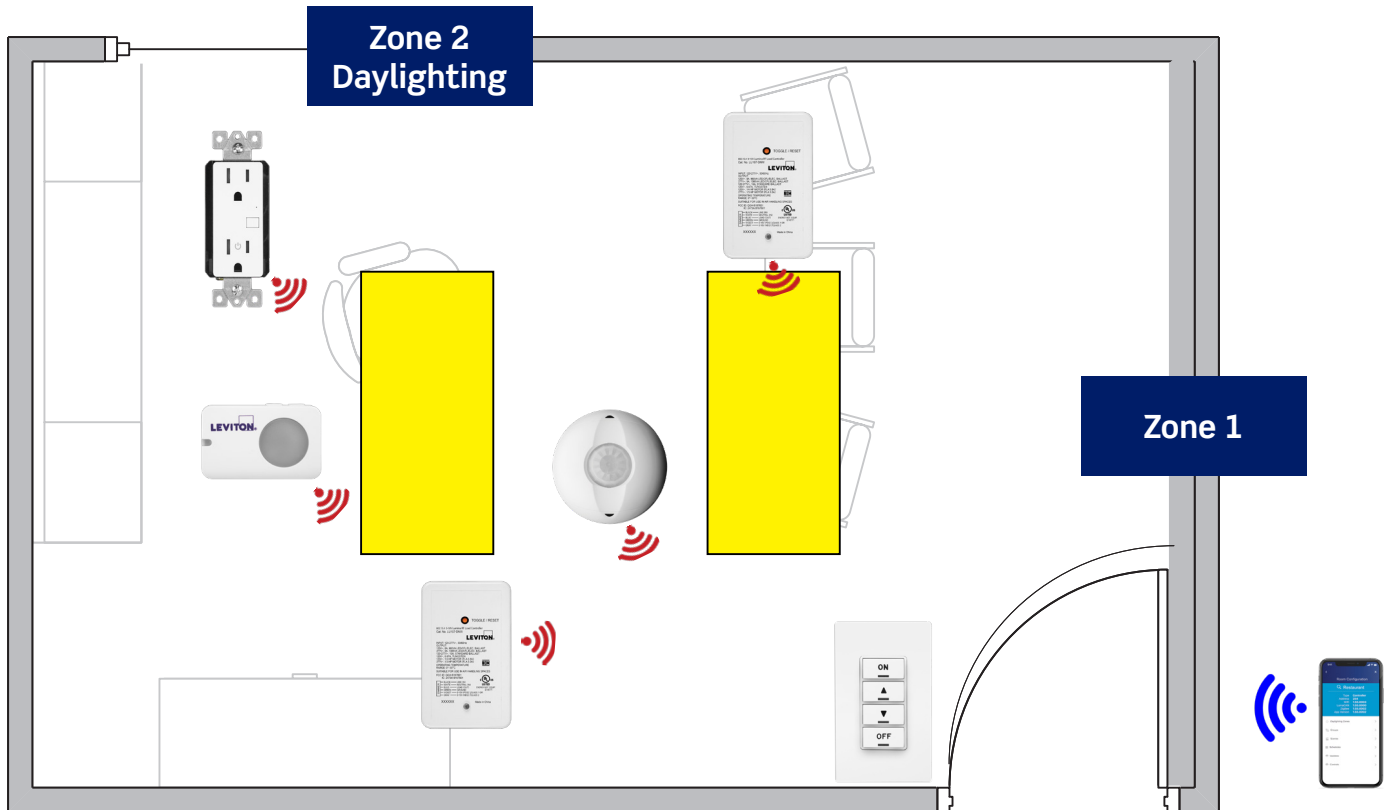
	GreenMAX DRC 4-Button Wireless Keypad Room Controller DRKDN-U4W	1
	Intellect-enabled Fixture LRTH2x2-LED835UNV-LV01	2
	Zigbee Controlled Receptacle ZSTLR-1HW	1

Small Office - Dual Zone

FEATURED LEVITON ASHRAE 90.1 SOLUTION

GreenMAX® DRC Wireless with 0-10V Dimming

- Fully distributed room control system
- Room agnostic—each room operates independently of other rooms—not dependent on network processors or centralized controllers for operation
- Easy-to-specify, scalable—add and rearrange products to accommodate the evolving needs of any application, and re-zone/re-group and adjust settings with ease through the GreenMAX DRC App for smart devices



Meets the Following Requirements:

- **Section 9.4.1**
- Lighting Controls
- **Section 9.4.1.1**
- Interior Lighting Control
- **Section 9.4.3**
- Functional Testing
- **Section 8.4.2**
- Automatic Receptacle Control

Features:

- Wi-Fi Networking
- 2 Zones
- Occupancy/Vacancy Sensing
- Scheduling
- Scene Control
- 0-10V Dimming
- Plug Load Control

What you will need (sold separately)

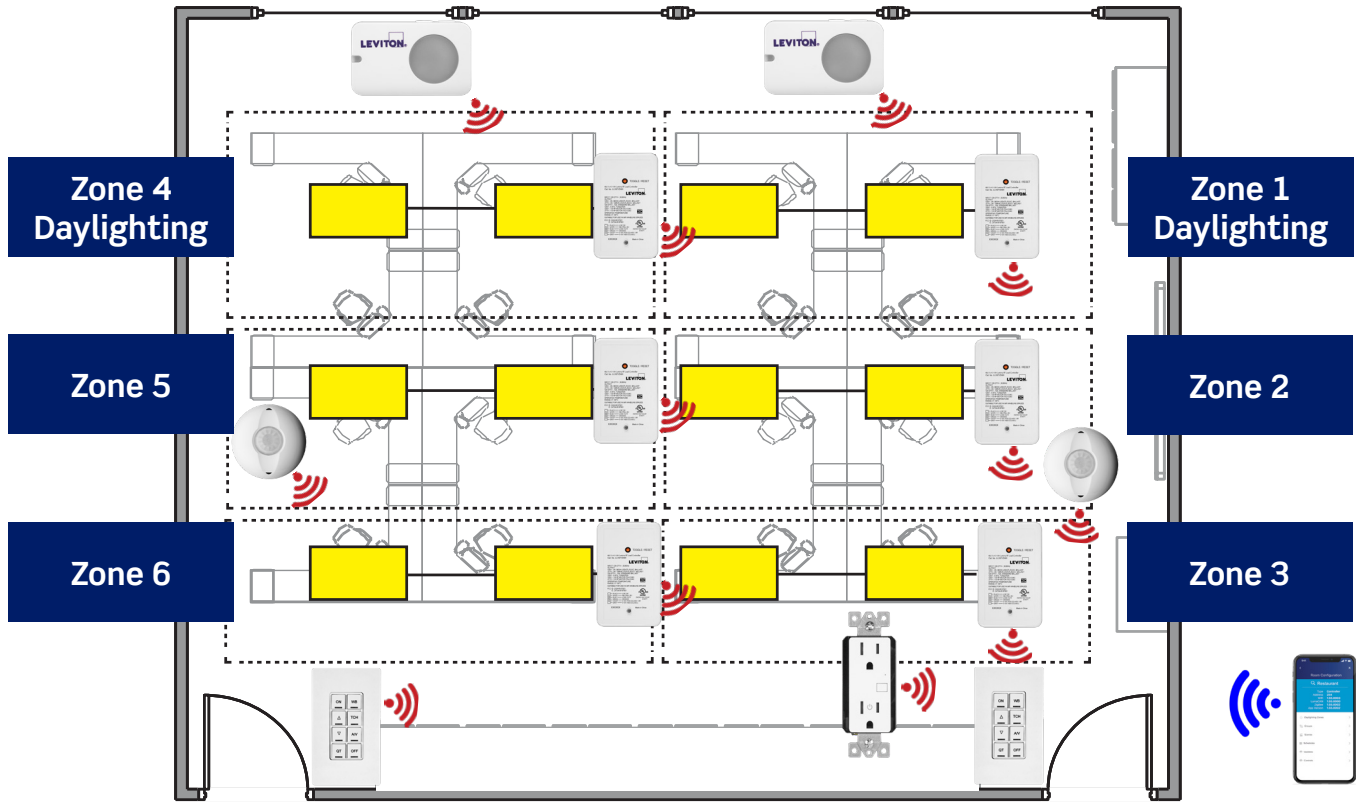
Quantity

What you will need (sold separately)	Quantity
 GreenMAX DRC 4-Button Wireless Keypad Room Controller DRKDN-U4W	1
 Wireless 10A, 0-10V Dimming Power Pack LU107-DNW	2
 Wireless PIR Occupancy Sensor ZSC04-INW	1
 Wireless Photocell LURPC-01W	1
 Zigbee Controlled Receptacle ZSTLR-1HW	Varies

Open Office

FEATURED LEVITON ASHRAE 90.1 SOLUTION GreenMAX® DRC Wireless Room Control System

- Fully distributed room control system
- Room agnostic—each room operates independently of other rooms—not dependent on network processors or centralized controllers for operation
- Easy-to-specify, scalable—add and rearrange products to accommodate the evolving needs of any application, and re-zone/re-group and adjust settings with ease through the GreenMAX DRC App for smart devices



Meets the Following Requirements:

- **Section 9.4.1**
- Lighting Controls
- **Section 9.4.1.1**
- Interior Lighting Control
- **Section 9.4.3**
- Functional Testing
- **Section 8.4.2**
- Automatic Receptacle Control

Features:

- Multiple zones
- Occupancy/Vacancy Sensing
- Scheduling
- Scene Control
- Daylighting
- Multi-Way Switching
- Plug Load Control
- Emergency Lighting
- Wi-Fi Networking

What you will need (sold separately)

Quantity

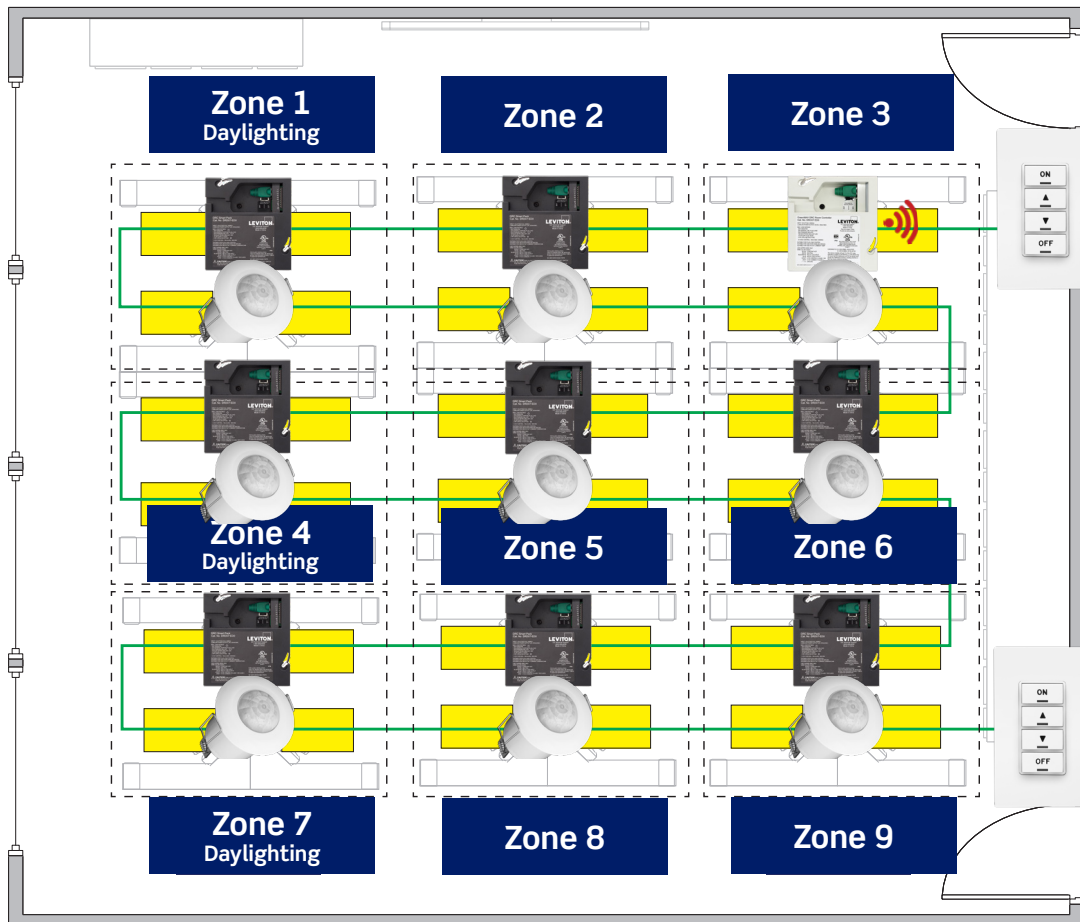
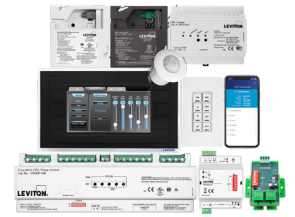
What you will need (sold separately)	Quantity
 GreenMAX DRC 8-Button Wireless Keypad Room Controller DRKDN-U8W	1
 8-Button Wireless Remote Keypad ZLDNK-08W	1
 Wireless 10A, 0-10V Dimming Power Pack LU107-DNW	6
 Wireless PIR Occupancy Sensor ZSC04-INW	2
 Wireless Photocell LURPC-01W	2
 Zigbee Controlled Receptacle ZSTLR-1HW	Varies

Open Office - 9 Zone

FEATURED LEVITON ASHRAE 90.1 SOLUTION

GreenMAX® DRC Wired Room Control System

- Fully distributed room control system
- Room agnostic—each room operates independently of other rooms—not dependent on network processors or centralized controllers for operation
- Easy-to-specify, scalable—add and rearrange products to accommodate the evolving needs of any application, and re-zone/re-group and adjust settings with ease through the GreenMAX DRC App for smart devices



Meets the Following Requirements:

- **Section 9.4.1**
- Lighting Controls
- **Section 9.4.1.1**
- Interior Lighting Control
- **Section 9.4.3**
- Functional Testing
- **Section 8.4.2**
- Automatic Receptacle Control

Features:

- Multiple zones
- Occupancy/Vacancy Sensing
- Scheduling
- Scene Control
- Daylighting
- Multi-Way Switching
- Plug Load Control
- Emergency Lighting

What you will need (sold separately)

Quantity

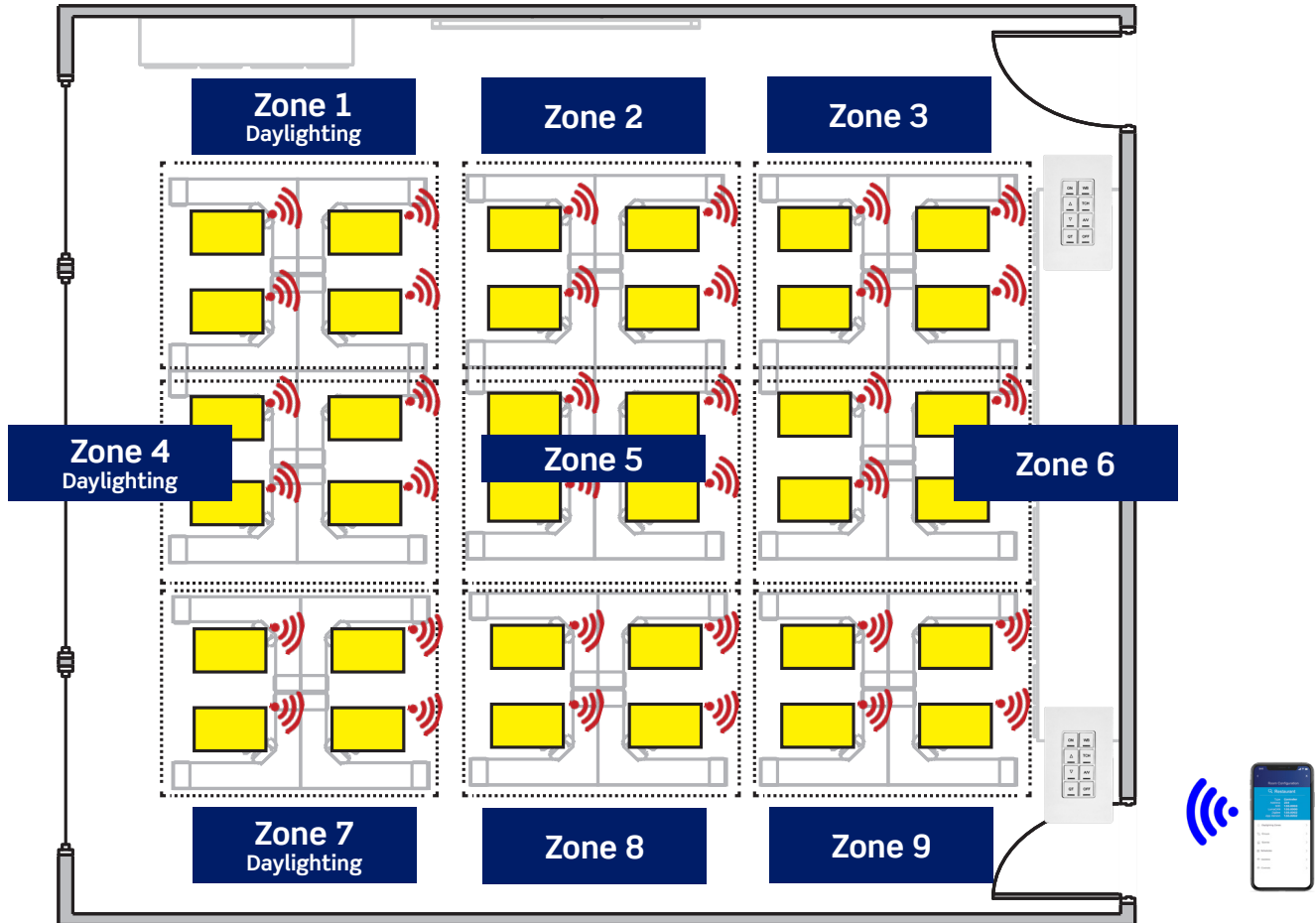
What you will need (sold separately)	Quantity
 GreenMAX DRC Line Voltage Room Controller DRC07-ED0	1
 GreenMAX DRC 0-10V Smart Pack DRD07-ED0	8
 GreenMAX DRC Digital Sensor OSR05-ICW	9
 Lighting Control Station RLVSW-4LW	2

Open Office - 9 Zone

FEATURED LEVITON ASHRAE 90.1 SOLUTION

GreenMAX® DRC Wireless with Intellect-Enabled Fixtures

- Fully distributed room control system
- Room agnostic—each room operates independently of other rooms—not dependent on network processors or centralized controllers for operation
- Easy-to-specify, scalable—add and rearrange products to accommodate the evolving needs of any application, and re-zone/re-group and adjust settings with ease through the GreenMAX DRC App for smart devices





Meets the Following Requirements:

- **Section 9.4.1**
- Lighting Controls
- **Section 9.4.1.1**
- Interior Lighting Control
- **Section 9.4.3**
- Functional Testing
- **Section 8.4.2**
- Automatic Receptacle Control

Features:

- Multiple zones
- Occupancy/Vacancy Sensing
- Scheduling
- Scene Control
- Daylighting
- Multi-Way Switching
- Emergency Lighting
- Wi-Fi Networking

What you will need (sold separately)

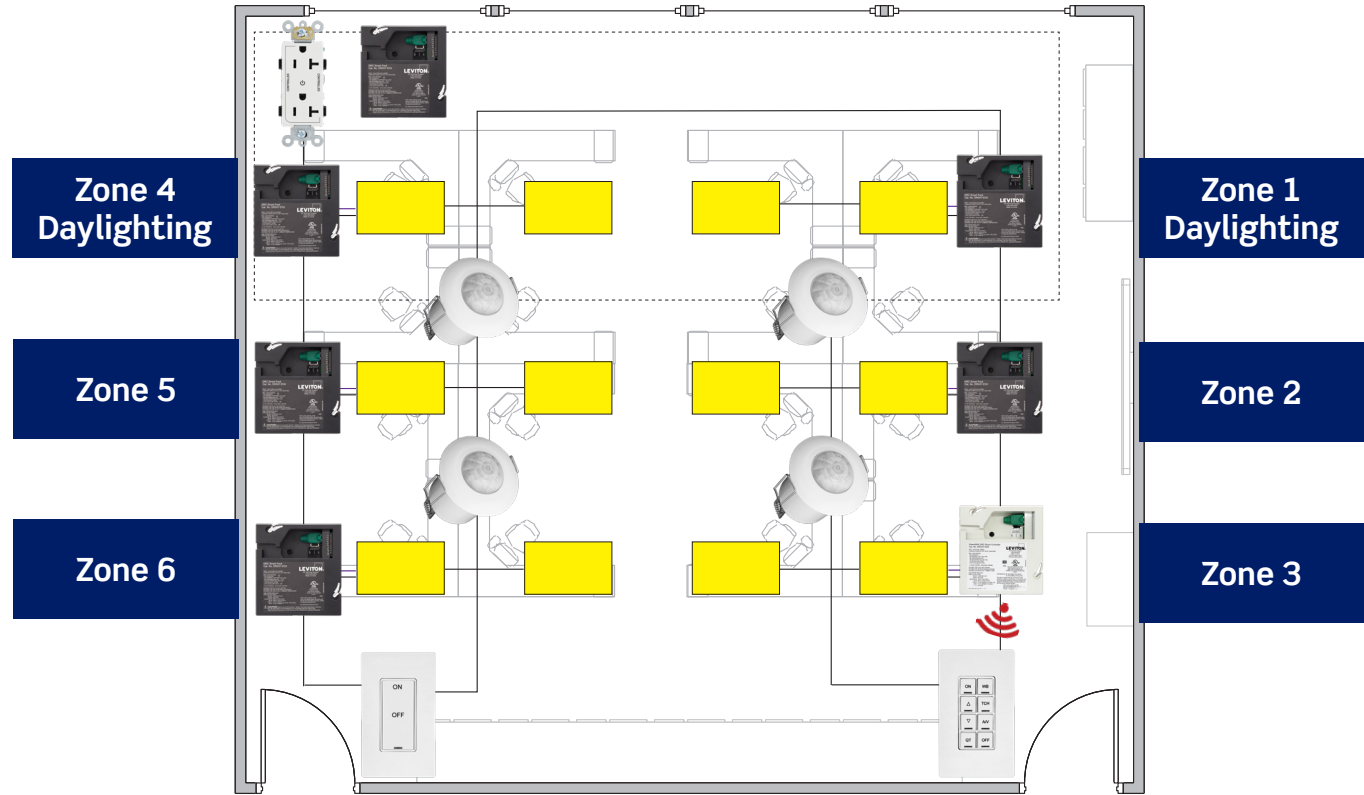
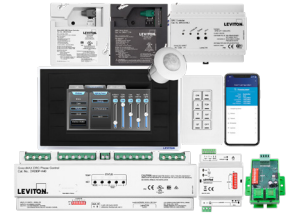
		Quantity
	GreenMAX DRC 8-Button Wireless Keypad Room Controller DRKDN-U8W	2
	Intellect-enabled Fixture LRTH2X2-LED835UNV-LV01	36

Open Office

FEATURED LEVITON ASHRAE 90.1 SOLUTION

GreenMAX® DRC Wired Room Control System

- Fully distributed room control system
- Room agnostic—each room operates independently of other rooms—not dependent on network processors or centralized controllers for operation
- Easy-to-specify, scalable—add and rearrange products to accommodate the evolving needs of any application, and re-zone/re-group and adjust settings with ease through the GreenMAX DRC App for smart devices



Meets the Following Requirements:







- **Section 9.4.1**
- Lighting Controls
- **Section 9.4.1.1**
- Interior Lighting Control
- **Section 9.4.3**
- Functional Testing
- **Section 8.4.2**
- Automatic Receptacle Control

Features:

- Multiple zones
- Occupancy/Vacancy Sensing
- Scheduling
- Scene Control
- Daylighting
- Multi-Way Switching
- Plug Load Control
- Emergency Lighting

What you will need (sold separately)

Quantity

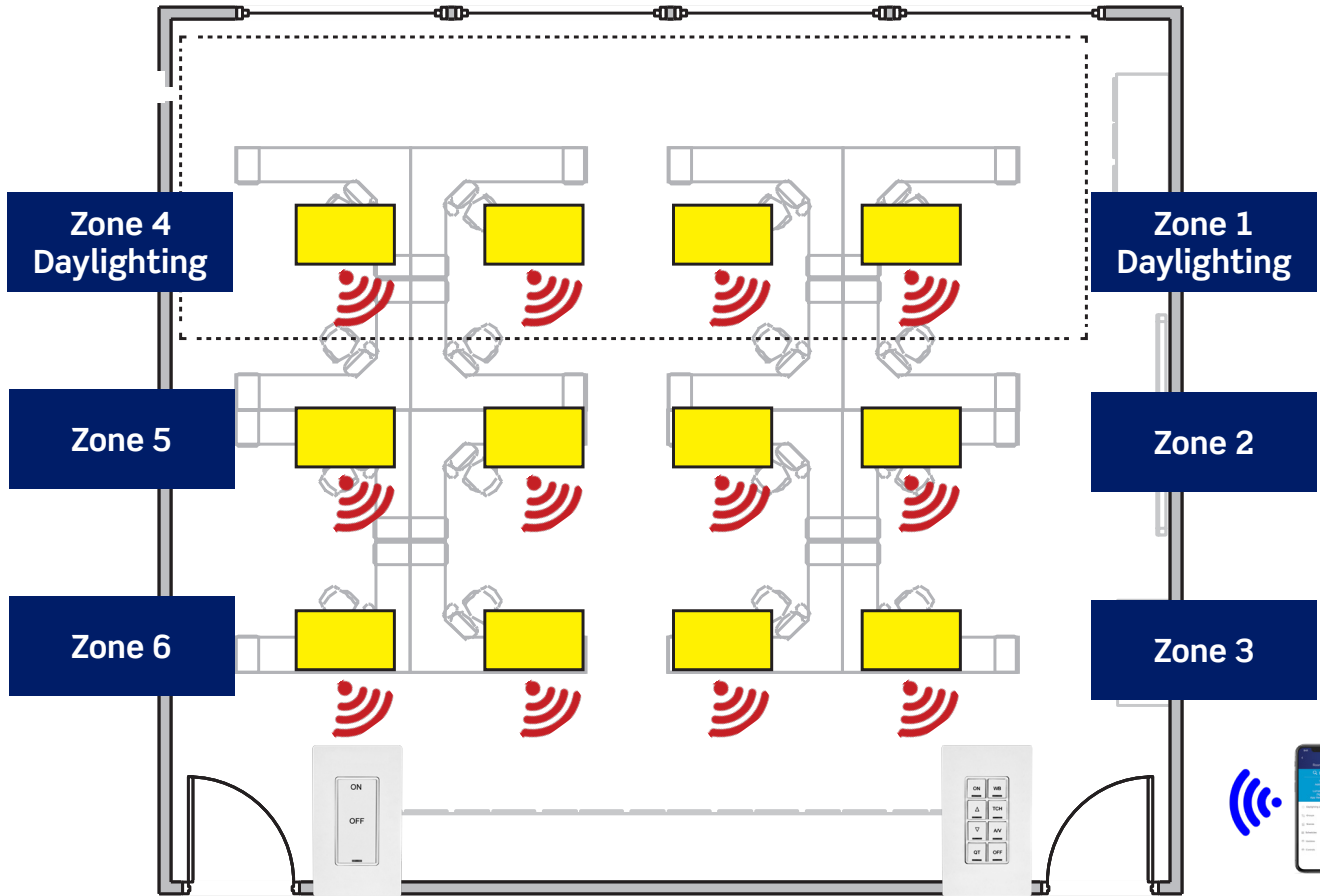
What you will need (sold separately)	Quantity
 GreenMAX DRC Line Voltage Room Controller DRC07-ED0	1
 GreenMAX DRC 0-10V Smart Pack DRD07-ED0	6
 GreenMAX DRC Digital Sensor OSR05-ICW	4
 GreenMAX DRC 8-Button Digital Keypad DRKDN-C8W	1
 GreenMAX DRC 1-Button Digital Keypad DRKDN-C1W	1
 Marked Controlled Receptacles 16352-2PW	1

Open Office

FEATURED LEVITON ASHRAE 90.1 SOLUTION

GreenMAX® DRC Wireless with Intellect-Enabled Fixtures

- Fully distributed room control system
- Room agnostic—each room operates independently of other rooms—not dependent on network processors or centralized controllers for operation
- Easy-to-specify, scalable—add and rearrange products to accommodate the evolving needs of any application, and re-zone/re-group and adjust settings with ease through the GreenMAX DRC App for smart devices



Meets the Following Requirements:




- **Section 9.4.1**
- Lighting Controls
- **Section 9.4.1.1**
- Interior Lighting Control
- **Section 9.4.3**
- Functional Testing
- **Section 8.4.2**
- Automatic Receptacle Control

Features:

- Multiple zones
- Occupancy/Vacancy Sensing
- Scheduling
- Scene Control
- Daylighting
- Multi-Way Switching
- Plug Load Control
- Emergency Lighting
- Wi-Fi Networking

What you will need (sold separately)

Quantity

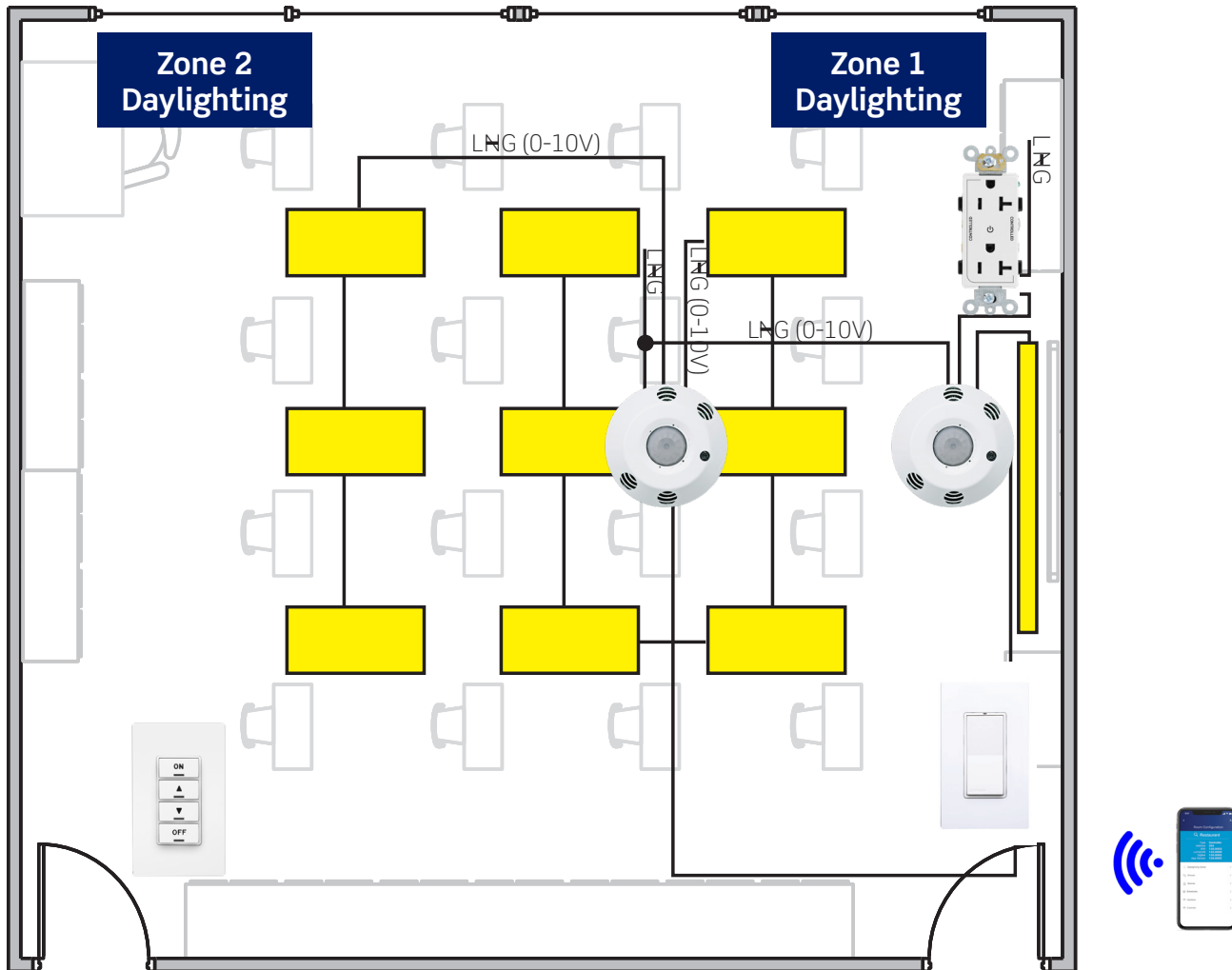
	GreenMAX DRC 8-Button Wireless Keypad Room Controller DRKDN-U8W	1
	GreenMAX DRC 1-Button Wireless Keypad Room Controller DRKDN-U1 W	1
	Intellect-enabled Fixture LRTH2x2-LED835UNV-LV01	12

Classroom

FEATURED LEVITON ASHRAE 90.1 SOLUTION

Provolt™ Room Controller (PRC)

- Comprehensive solution integrates multiple lighting control strategies—occupancy sensing, 0-10V dimming, daylight harvesting, partial-ON, partial-OFF and demand response
- Combined line voltage multi-technology or PIR sensor, power pack and photocell in a self-contained, easy-to-install compact device
- Configure and test controls from an Android or Apple smart device via the Provolt Bluetooth Mobile App—reduces callbacks



Meets the Following Requirements:

- **Section 9.4.1**
- Lighting Controls
- **Section 9.4.1.1**
- Interior Lighting Control
- **Section 9.4.3**
- Functional Testing
- **Section 8.4.2**
- Automatic Receptacle Control

Features:

- 0-10V Dimming Control
- Self-Contained Occupancy Sensor, Photocell and Power Pack
- Vacancy or Occupancy Sensing with Auto-OFF
- Auto Calibration
- Daylighting Set Point Adjustment through Entry Station

What you will need (sold separately)

Quantity

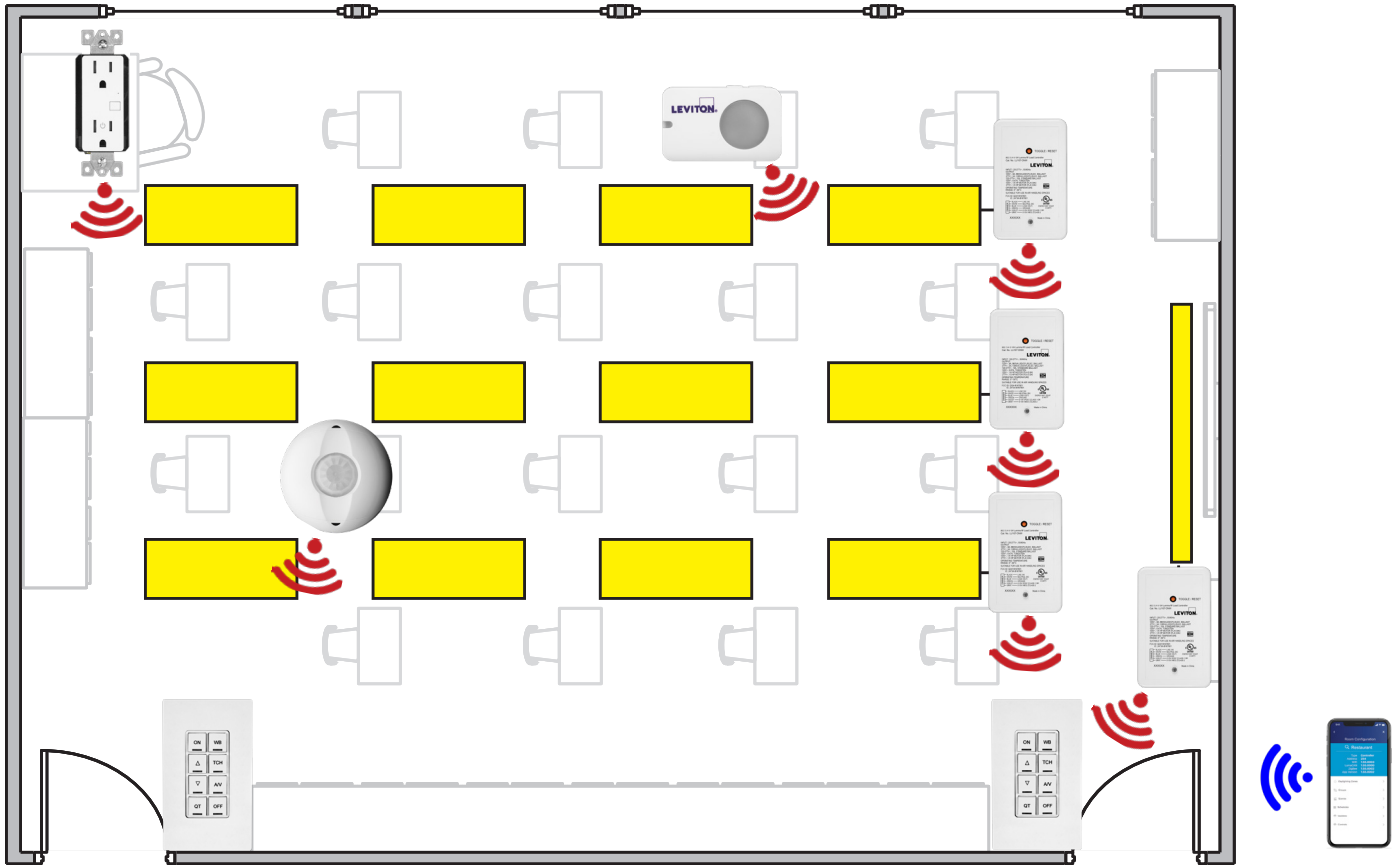
	Provolt Room Controller (PRC) O5C04-IDW	2
	Provolt Low-Voltage Keypad, 4-Button PLVSW-4LW	1
	Provolt Low-Voltage Keypad, 1-Button PLVSW-1LW	1
	Marked "Controlled" Receptacles 16352-2PW	5

Classroom

FEATURED LEVITON ASHRAE 90.1 SOLUTION

Lumina™ RF Standalone Wireless Room Control System

- Add wireless control to virtually any ON/OFF or dimming device with Lumina RF devices
- Compatible with virtually all lamp fixtures and load control devices
- Scalable, flexible wireless mesh solution to meet the unique control needs of virtually any space all without having to pull new wires
- Configure, monitor, and control the system with the Lumina RF Standalone App using an Android or iOS smart device for Ladderless Commissioning



Meets the Following Requirements:






- **Section 9.4.1**
- Lighting Controls
- **Section 9.4.1.1**
- Interior Lighting Control
- **Section 9.4.3**
- Functional Testing
- **Section 8.4.2**
- Automatic Receptacle Control

Features:

- 0-10V Dimming Control
- Occupancy or Vacancy Sensing
- Multi-Zone Daylight Harvesting
- Plug Load Control
- Wireless Communication via Mesh Network

What you will need (sold separately)

Quantity

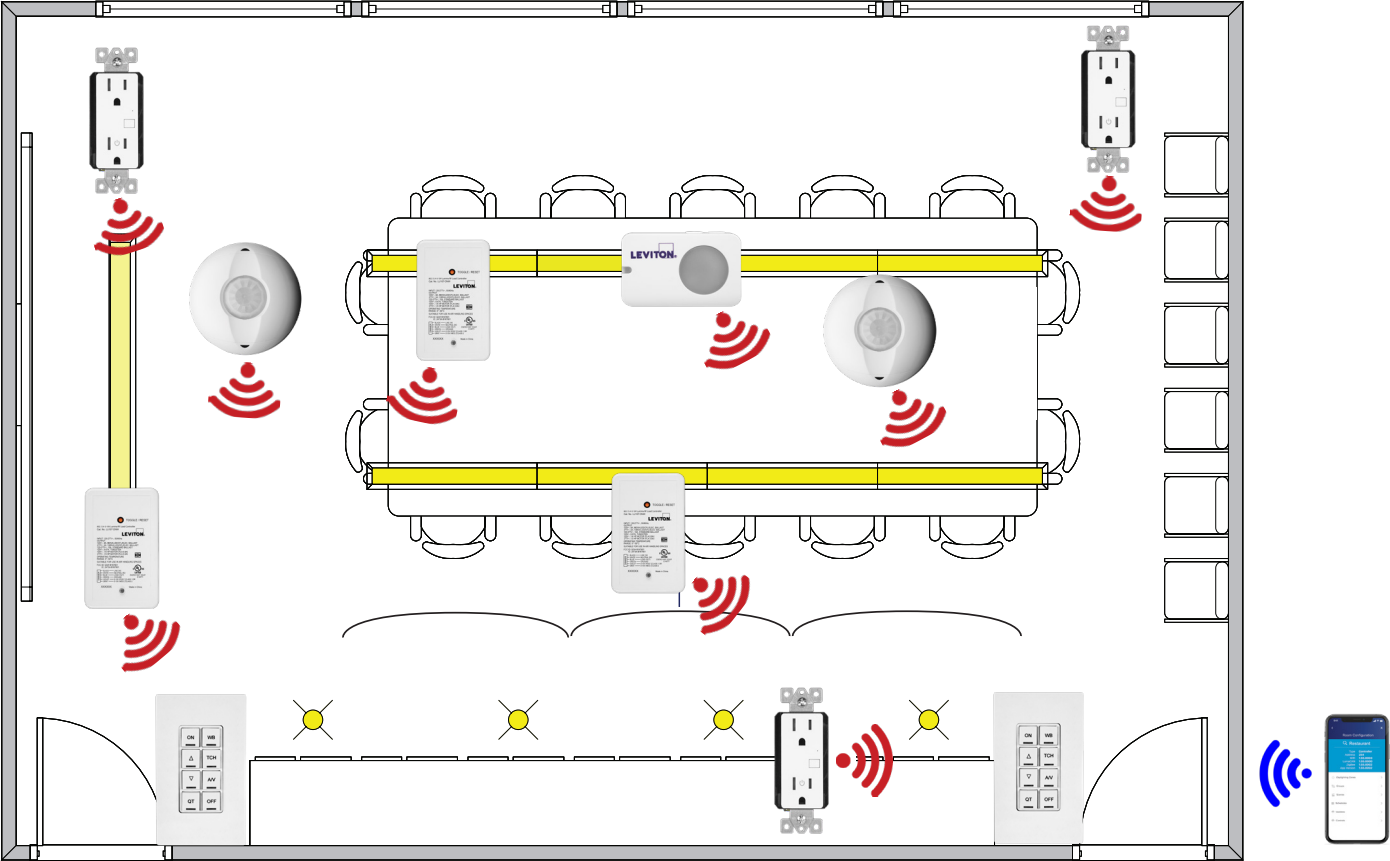
What you will need (sold separately)	Quantity
 GreenMAX DRC 8-Button Wireless Keypad Room Controller DRKDN-U8W	2
 Wireless 10A, 0-10V Dimming Power Pack LU107-DNW	4
 Wireless PIR Occupancy Sensor ZSC04-INW	1
 Wireless Photocell LURPC-01W	1
 Zigbee Controlled Receptacle ZSTLR-1HW	Varies

Conference Room

FEATURED LEVITON ASHRAE 90.1 SOLUTION

Lumina™ RF Standalone Wireless Room Control System

- Add wireless control to virtually any ON/OFF or dimming device with Lumina RF devices
- Compatible with virtually all lamp fixtures and load control devices
- Scalable, flexible wireless mesh solution to meet the unique control needs of virtually any space all without having to pull new wires
- Configure, monitor, and control the system with the Lumina RF Standalone App using an Android or iOS smart device for Ladderless Commissioning



Meets the Following Requirements:

- **Section 9.4.1**
- Lighting Controls
- **Section 9.4.1.1**
- Interior Lighting Control
- **Section 9.4.3**
- Functional Testing
- **Section 8.4.2**
- Automatic Receptacle Control

Features:

- 0-10V Dimming Control
- Occupancy or Vacancy Sensing
- Multi-Zone Daylight Harvesting
- Receptacle Control
- Wireless Communication via Mesh Network

What you will need (sold separately)

Quantity

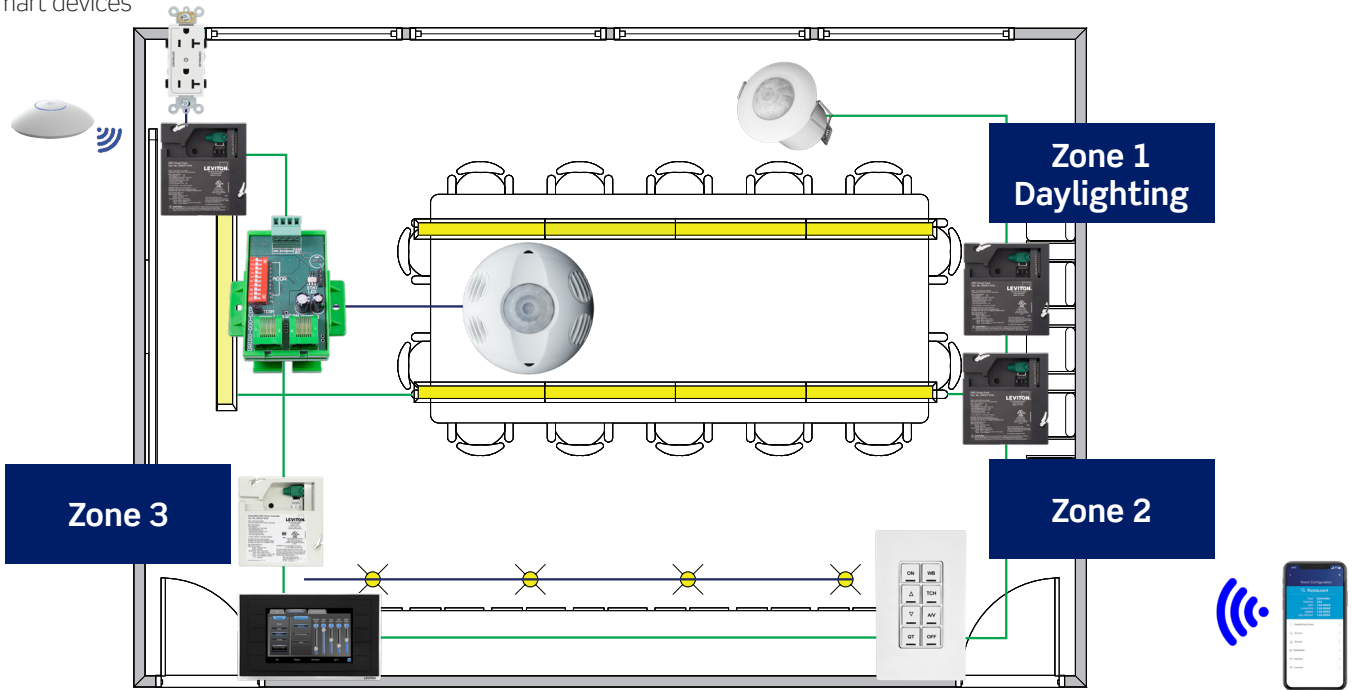
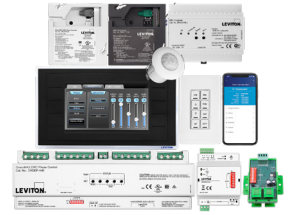
	Lumina RF Keypad Room Controller DLDNK-08W	2
	Wireless 0-10V Dimming Power Pack LU107-DNW	2
	Wireless PIR Occupancy Sensor ZSC15-INW	2
	Wireless Photocell LURPC-01W	1
	Zigbee Controlled Receptacle ZSTLR-1HW	Varies

Conference Room

FEATURED LEVITON ASHRAE 90.1 SOLUTION

GreenMAX® DRC Wired with 0-10V Dimming

- Fully distributed room control system
- Room agnostic—each room operates independently of other rooms—not dependent on network processors or centralized controllers for operation
- Easy-to-specify, scalable—add and rearrange products to accommodate the evolving needs of any application, and re-zone/re-group and adjust settings with ease through the GreenMAX DRC App for smart devices



Meets the Following Requirements:

- **Section 9.4.1**
- Lighting Controls
- **Section 9.4.1.1**
- Interior Lighting Control
- **Section 9.4.3**
- Functional Testing
- **Section 8.4.2**
- Automatic Receptacle Control

Features:

- Multiple zones
- Occupancy/Vacancy Sensing
- Scheduling
- Scene Control
- Daylighting
- Multi-Way Switching
- Plug Load Control
- Emergency Lighting

What you will need (sold separately)

Quantity

What you will need (sold separately)	Quantity
 GreenMAX DRC Line Voltage Room Controller DRC07-ED0	1
 GreenMAX DRC 0-10V Smart Pack DRD07-ED0	3
 GreenMAX DRC Digital Sensor OSR05-ICW	1
 GreenMAX DRC Analog Interface (AI) DRID0-C02	1
 Analog Occupancy Sensor OSCxx-MWW	1
 GreenMAX DRC 8-Button Digital Keypad DRKDN-C8W	1
 Sapphire™ Touch Screen TS007-000	1
 Marked Controlled Receptacles 16352-2PW	1
 PoE ACCESS POINT EMA00-000	1

Common Area

FEATURED LEVITON ASHRAE 90.1 SOLUTION

Provolt™ Room Controller (PRC)

- Comprehensive solution integrates multiple lighting control strategies—occupancy sensing, 0-10V dimming, daylight harvesting, partial-ON, partial-OFF and demand response
- Combined line voltage multi-technology or PIR sensor, power pack and photocell in a self-contained, easy-to-install compact device
- Configure and test controls from an Android or Apple smart device via the Provolt Bluetooth Mobile App—reduces callbacks



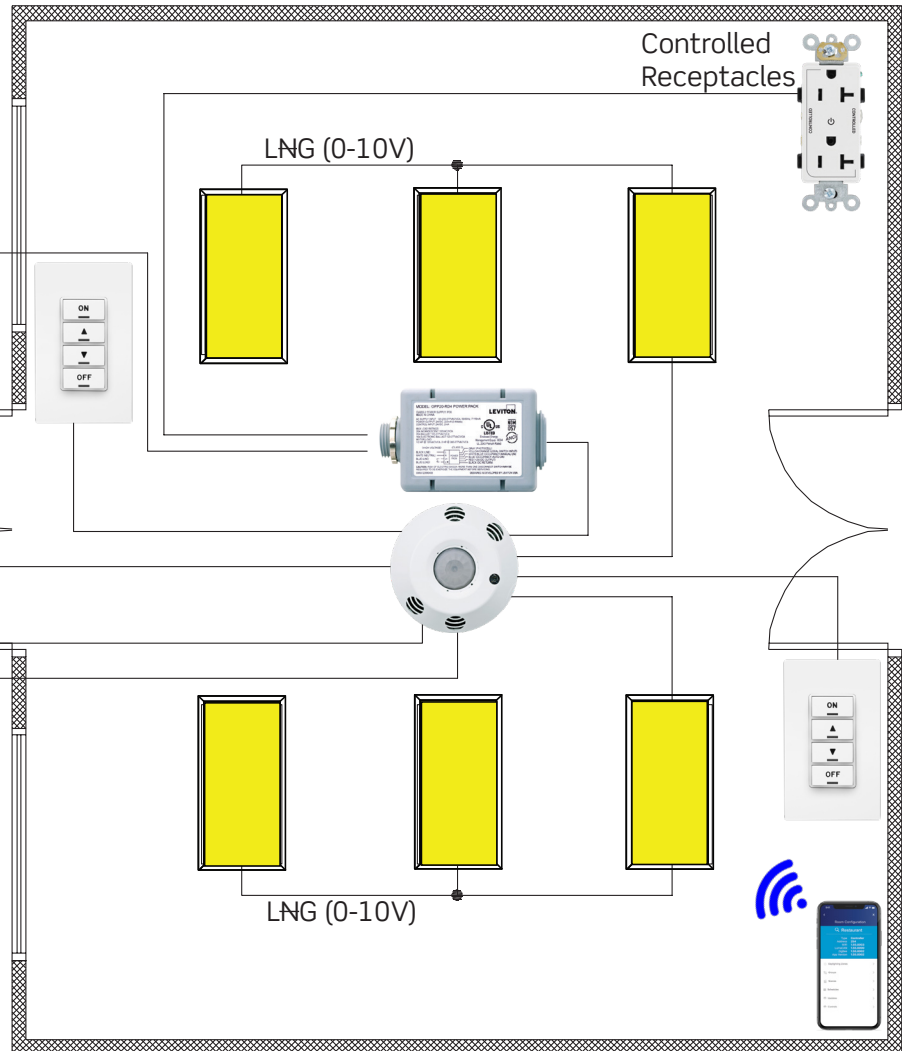
Receptacle
Circuit
Line Feed

LNG

Lighting
Circuit
Line Feed

LNG

Demand Response
Emergency Input



Meets the Following Requirements:

- **Section 9.4.1**
- Lighting Controls
- **Section 9.4.1.1**
- Interior Lighting Control
- **Section 9.4.3**
- Functional Testing
- **Section 8.4.2**
- Automatic Receptacle Control

Features:

- 0-10V Dimming Control
- Self-Contained Occupancy Sensor, Photocell and Power Pack
- Vacancy or Occupancy Sensing with Auto-OFF
- Auto Calibration
- Daylighting Set Point Adjustment through Entry Station
- Emergency Input
- Decora® 4-Button Entry Station
- Plug Load Control
- Time Clock Input
- Demand Response

What you will need (sold separately)

Quantity

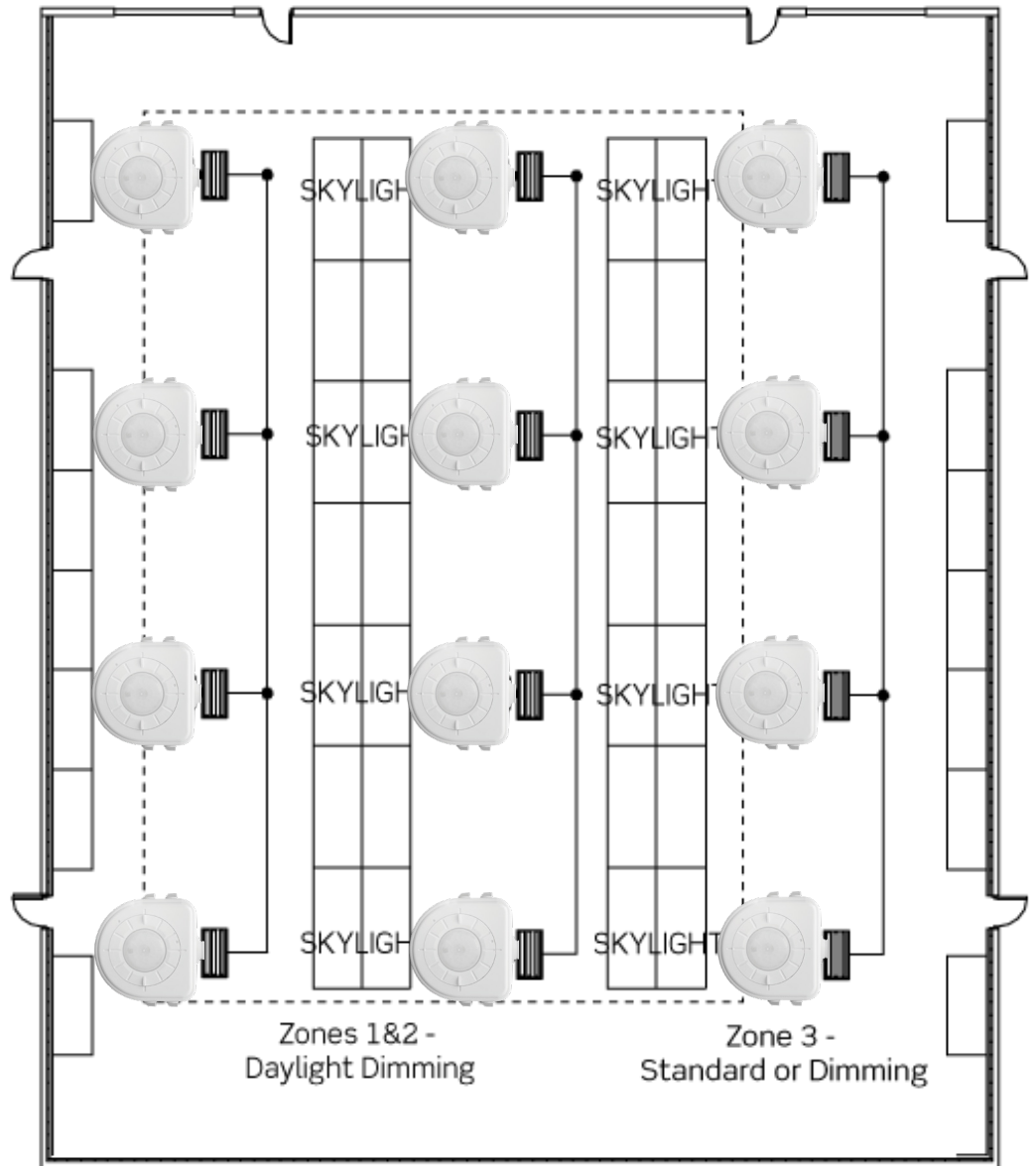
	Provolt Room Controller (PRC) O5C04-IDW	1
	Provolt Low-Voltage Keypad, 4-Button PLVSW-4LW	2
	OPP20 Super Duty Power Pack OPP20-0D1	1
	Marked "Controlled" Receptacles 16352-2PW	5

Warehouse

FEATURED LEVITON ASHRAE 90.1 SOLUTION

0-10V PIR High Bay/Low Bay Fixture Mount Occupancy Sensor

- Built-in photocell for convenient automatic daylight harvesting
- Set time delay—up to 30 minutes
- Includes high and low bay lenses to cover a variety of high ceiling applications
- Patented AutoCal™ for set-it and forget-it photocell calibration
- Suitable for use in standard and cold storage applications



Meets the Following Requirements:

- **Section 9.4.1**
- Lighting Controls
- **Section 9.4.1.1**
- Interior Lighting Control
- **Section 9.4.3**
- Functional Testing

Features:

- Occupancy Sensing
- Daylight Harvesting
- 0-10V LED Control
- Variable Time Delay
- False Detection Protection

What you will need (sold separately)

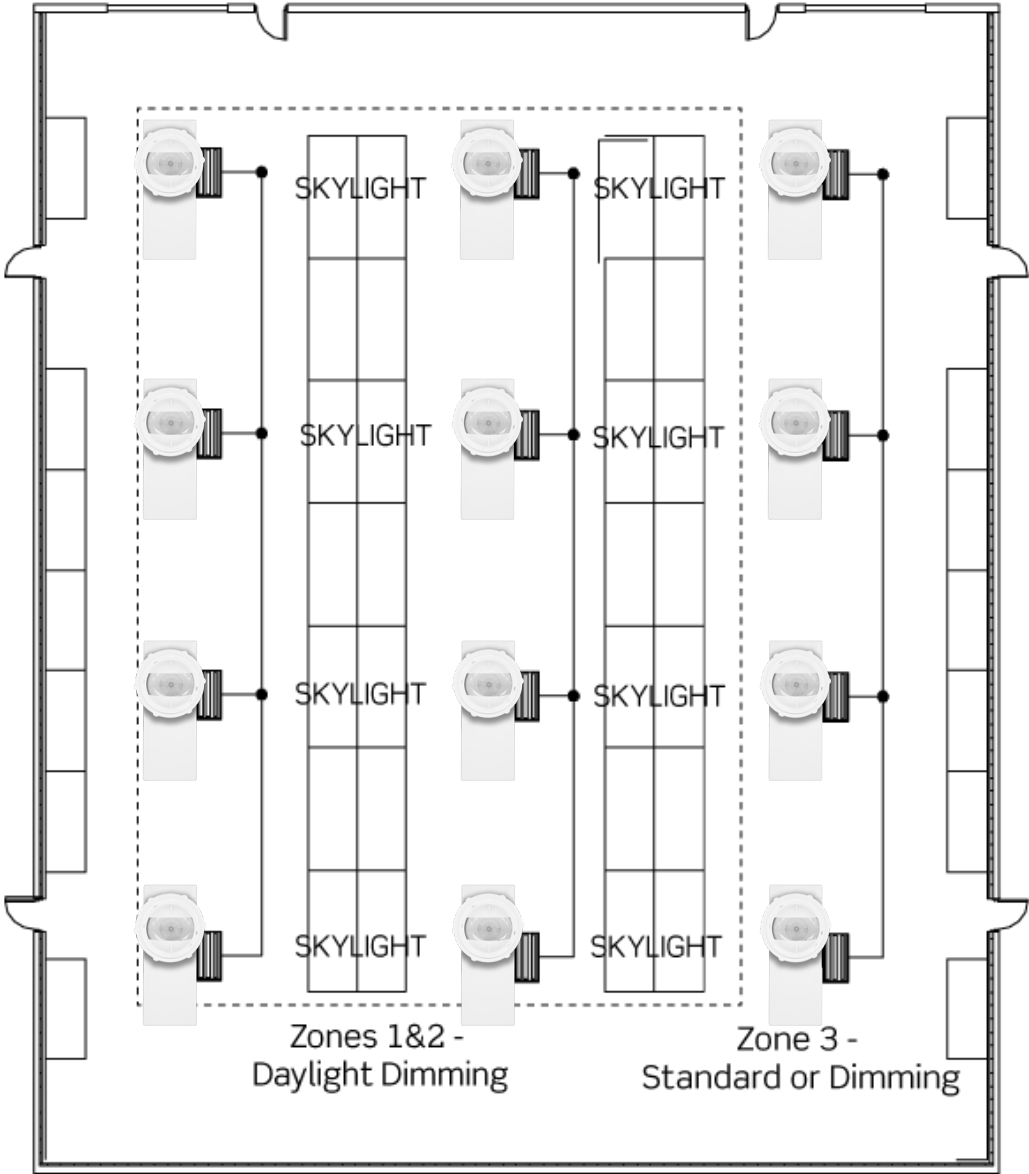
	Quantity
 Fixture Mount 0-10V PIR High/Low Bay Occupancy Sensor HB011-PDX	1 per fixture

Warehouse

FEATURED LEVITON ASHRAE 90.1 SOLUTION

Smart PIR Integrated Fixture Mount Sensor

- Designed for use with switching or 0-10V dimming ballasts/drivers
- Mounting heights from 8-40 ft.
- Multiple daylight modes as well as partial-OFF operation
- High and low bay lenses
- Auto and manual calibration
- Out-of-the-box configuration default modes



Meets the Following Requirements:

- **Section 9.4.1**
- Lighting Controls
- **Section 9.4.1.1**
- Interior Lighting Control
- **Section 9.4.3**
- Functional Testing

Features:

- Occupancy Sensing
- Daylight Harvesting
- 0-10V LED Control
- Variable Time Delay
- False Detection Protection

What you will need (sold separately)

Quantity

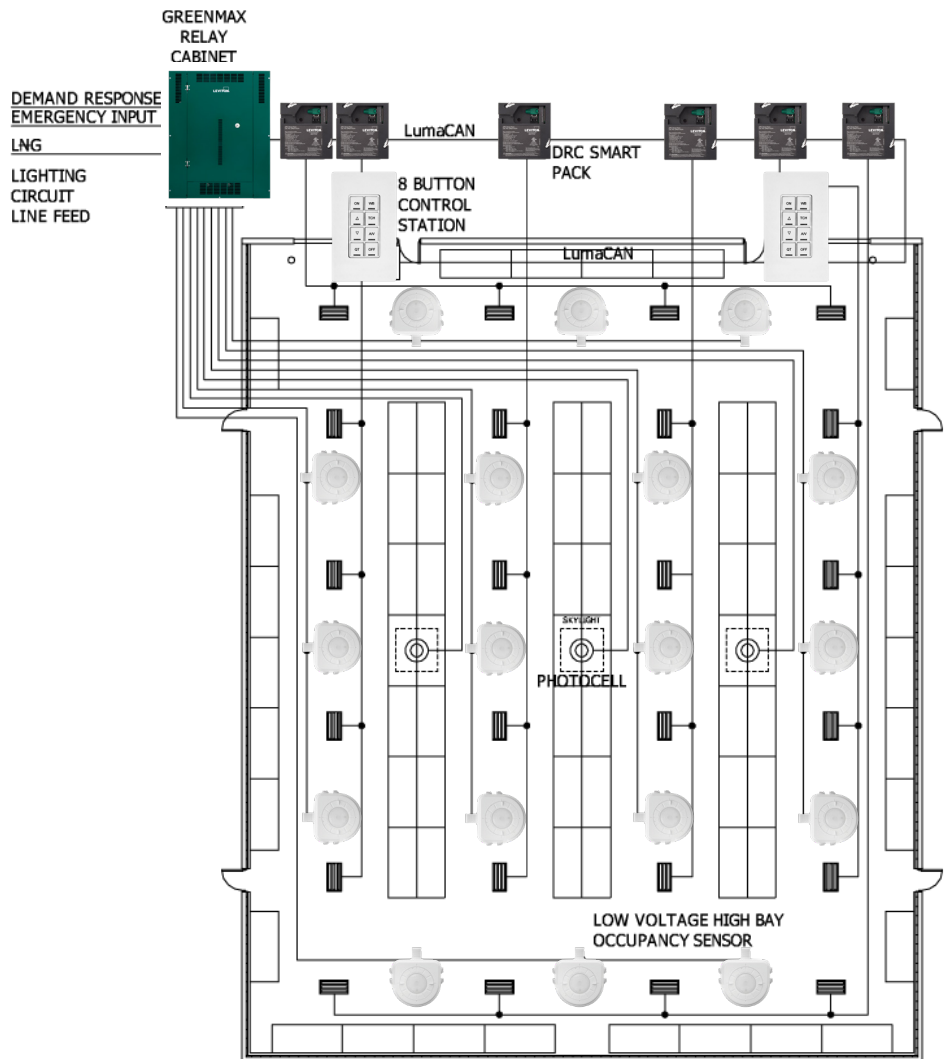
	Smart PIR Integrated Fixture Mount Sensor ZLD1Z-10W	1 per fixture
--	---	---------------

Warehouse

FEATURED LEVITON ASHRAE 90.1 SOLUTION

GreenMAX® DRC Smart Packs

- Integrates common sensing, dimming, switching, and advanced daylight harvesting applications from the same cabinet
- BACnet IP native in each cabinet for seamless BMS integration
- Industry leading 25,000A Short Circuit Current Rating (SCCR) at 277V
- Integrated 0-10V dimming/switching relay
- Built-in override switch allows manual control of each load individually



Meets the Following Requirements:

- **Section 9.4.1**
- Lighting Controls
- **Section 9.4.1.1**
- Interior Lighting Control
- **Section 9.4.3**
- Functional Testing

Features:

- Relay Control
- Occupancy Sensing
- Daylight Harvesting
- Decora® 4 Button Entry Stations
- Software and Handheld Remote Programming
- Astronomical Time Clock
- Scheduling (Behavior Control)
- Demand Response
- HVAC and Emergency Interface
- Building Automation (BACnet)
- Fail-Safe Circuitry (NFPA Compliant)
- Partial-OFF

What you will need (sold separately)

Quantity

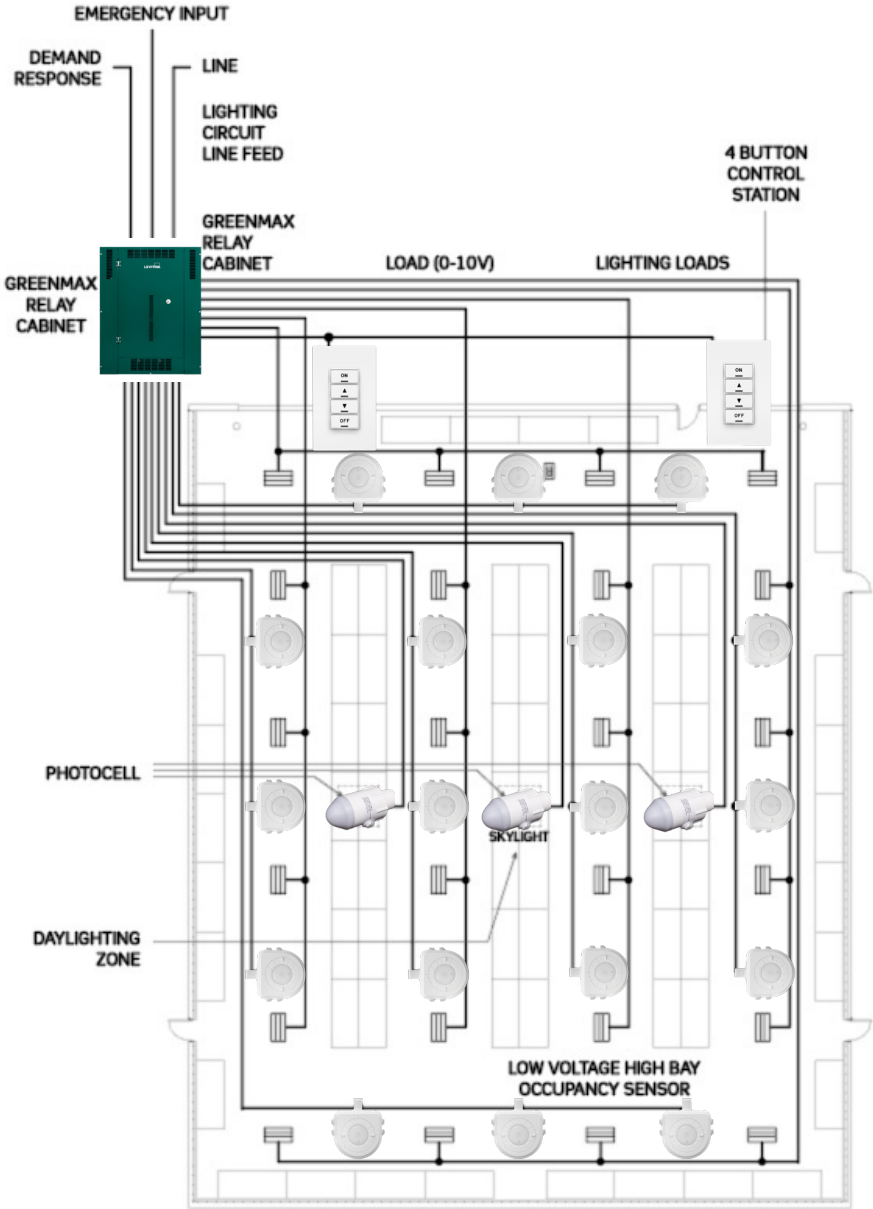
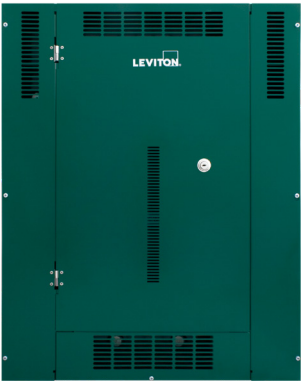
What you will need (sold separately)	Quantity
 GreenMAX Relay Control System RxxTC-100 RPMxx-xxx Rxxxx-xxx RHDU1-xxx RELAY-xxx	1
 GreenMAX DRC Smart Pack (DRC) DRD07-ED0	6
 Fixture Mount PIR High/Low Bay Dimming Occupancy Sensor HB011-PDX	18
 GreenMAX Digital Lighting Control Station, 8-Button RDGSW-8CW	2

Warehouse

FEATURED LEVITON ASHRAE 90.1 SOLUTION

GreenMAX® Relay Control System

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- BACnet IP native in each cabinet for seamless BMS integration
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Meets the Following Requirements:

- **Section 9.4.1**
- Lighting Controls
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- **Section 9.4.3**
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Features:

- Relay Control
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- Building Automation (BACnet)
- Fail-Safe Circuitry (NFPA Compliant)
- Partial-OFF

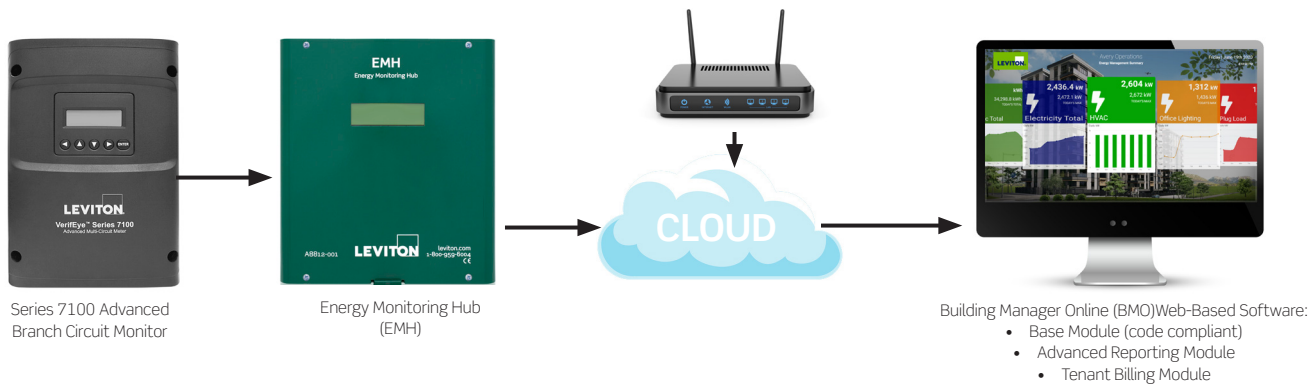
What you will need (sold separately)

		Quantity
	GreenMAX Relay Control System RxxTC-100 RPMxx-xxx Rxxxx-xxx RHDU1-xxx RELAY-xxx	1
	Lighting Control Station RLVSW-4LW	2
	Low Voltage High Bay Occupancy Sensor OSFHD-xxW	18
	Indoor Photocell PCSKY-000	3

Energy Monitoring Solution

FEATURED LEVITON ASHRAE 90.1 SOLUTION VerifEye™ Submetering Solutions

- Comprehensive line of submeters, communication products, and software solutions
- Simple installation in new or existing facilities
- Measurement & Verification (M&V) capabilities with data collection and storage
- Ideal for real-time energy monitoring and tenant billing
- Integrate with Building Management Systems for energy efficiency and savings
- Meets separation of load requirements with the ability to measure various loads



Meets the Following Requirements:

- Section C405.12-12.3
- Energy Monitoring

Notes

- Meets all local and national submetering requirements including IECC 2021, City of Seattle, and New York Local Law 88

What you will need (sold separately)

Quantity

	Series 7000-7100 Advanced Branch Circuit Monitor 71D48-XXX / 71D12-XXX	1
	Energy Monitoring Hub A8812-xxx	1
	Building Manager Online (BMO) BMOSW-050 / BMOSW-MTR	Varies by metering points required



Leviton Non-Residential Solutions for ASHRAE 90.1

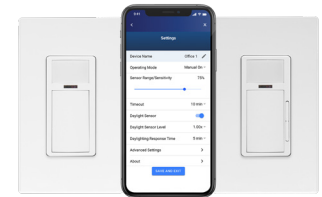
Sensing Controls

- Broadest range of occupancy and vacancy sensors for any application
- Plug load control with OPP20 Super Duty Power Pack
- 24 AC/DC input for integration with HVAC/BAS systems
- Industry-leading layout and applications



Smart Wallbox Sensors

- Combines occupancy/vacancy sensing with ON/OFF switching, 0-10V, or phase dimming
- Easy programming and configuration with default mode, pushbutton configuration, or the Smart Sensor App
- Add a Power Pack and Controlled Receptacles for plug load control
- Create multi-way control with up to 5 devices
- Non-neutral and antimicrobial models available



Provolt™ Room Controller (PRC)

- Requires only two devices to be installed for high performance lighting controls—0-10V dimming, occupancy and vacancy sensing, partial-ON, partial-OFF, daylight harvesting and demand response
- Perform all testing, configuration and control using the Provolt App
- Features customizable room templates for fast multi-room replication



Integrated Room Control (IRC)

- Combines 0-10V dimming, occupancy/vacancy sensing, partial-ON, partial-OFF, daylight harvesting and demand response capabilities in a stand-alone package
- Kitted with sensor, photocell, and 4-button switch
- Autocal™ automatic photocell calibration and Ladderless Commissioning™
- Easy automatic closed or open loop multi-zone daylight harvesting control
- Auto 100 hour burn-in



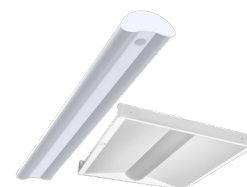
Lumina™ RF Standalone Wireless Room Control System

- Ideal retrofit solution for multi-zone control with wireless controls
- Compatible with virtually all lamps
- Wireless control for any ON/OFF, 0-10V and phase cut dimming applications
- Add additional components for multi-location control, occupancy/vacancy sensing, daylight harvesting and more
- Program using the Lumina RF Standalone App



Intellect™ - enabled Fixtures

- Virtually any fixture can be Intellect enabled for in fixture control
- Integrates wireless dimming, occupancy/vacancy sensing and multi-zone daylight harvesting
- Configure, monitor and control a space using the GreenMAX DRC App



GreenMAX® DRC Room Control System

- Scalable wired and wireless distributed room control system with each room operating independently of others
- Plug-and-play, Category 6, RJ45 hardwired digital network or wireless mesh system
- Fully configurable using the GreenMAX DRC App



GreenMAX® Relay Control System

- Integrates common sensing, dimming, switching, and advanced daylight harvesting applications from the same cabinet
- BACnet IP native in each cabinet for seamless BMS integration
- Industry leading 25,000A Short Circuit Current Rating (SCCR) at 277V
- Integrated 0-10V dimming/switching relay
- Built-in override switch allows manual control of each load individually
- Program with preset “Behaviors” using the handheld display Unit (HDU)



Track Light Limiting Panel (TLLP)

- Prevents overloaded circuits
- Provides tamper-proof current limiting protection for track lighting
- Sets a fixed power consumption limit for designer lighting installations by using the volt amperage rating of the breaker instead of watts per linear feet
- Factory configured to customer specifications—arrives ready to install
- Reduces installation costs—no programming required



Sapphire™ Touch Screen Room Controller

- Room Controller function — connects all energy management devices together in a space without requiring a gateway or hub
- Color turning—for circadian rhythms
- Scheduler—provides 7-day rotating schedule, holiday exception calendar, special events calendar and astronomical time clock
- AV controls—delivers single control interface for lighting and AV; ideal for classroom and restaurant application



Marked “Controlled” Receptacles

- Meets requirements for identifying receptacles that will automatically be de-energized as part of an overall plug load control program
- 2014 and 2017 NEC requires all 15A and 20A, 125V receptacles that are automatically controlled to be marked with a specific symbol (Ⓢ)



VerifEye™ Submetering Solutions

- Complete utility submetering solution
- Comprehensive line of submeters, communication products, and software solutions
- Simple installation in new or existing facilities
- Measurement & Verification (M&V) capabilities with data collection and storage
- Ideal for real-time energy monitoring and tenant billing



Service and Support

During Every Step of the Process

There is much more to making lighting more energy efficient than just installing a simple device or two. System design, product selection, installation and service: it all has to come together. That's where Leviton service and support options come in. We'll help you design your system and make the right product selections so you can create a lighting control system that does exactly what you want it to do while saving electricity, meeting codes and standards, and even garnering rebates.

It all starts with the Leviton sales representative. Our lighting control specialists are here to support you every step of the way. They can perform on-site facility audits and suggest specific products and strategies for improving lighting energy efficiency.

Exclusive Wealth of Resources

- **Exclusive Training** - contact your local Leviton representative to have an ASHRAE 90.1 expert provide training in person or online exclusively for your team
- **ASHRAE 90.1 App** - simplifies ASHRAE 90.1 lighting control requirements and provides examples for common applications - available for Android and Apple devices - download at [Leviton.com/apps](https://www.leviton.com/apps)
- **ASHRAE 90.1 Web Portal** - access application diagrams and product solutions - visit [Leviton/ashrae](https://www.leviton.com/ashrae)
- **Occupancy sensor layout services** - have a team of experts create occupancy sensor layouts directly on your CAD drawings, complete with a List of Equipment at no cost - go to portal.leviton.com
- **ez-Learn™** - get Leviton smart from the comfort of your home or office with this exclusive 24/7 online training - go to [Leviton.com/ezlearn](https://www.leviton.com/ezlearn)
- Lighting control specialists at your disposal
- Field service engineers for top-level support
- Factory commissioning service
- Dedicated technical support via phone at **800 959-6004**



Leviton Manufacturing Co., Inc. Lighting & Controls

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tech line (6:00AM-4:00PM PT Monday-Friday) 800-954-6004

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201 North Service Road, Melville, NY 11747-3138

tel 800-323-8920 **tech line** (8:00AM-10:00PM ET Mon-Fri, 9:00AM-7:00PM ET Sat, 9:00AM-5:00PM ET Sun) 800-824-3005

Visit our website at: www.leviton.com/ashrae

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