California Title 24 2016
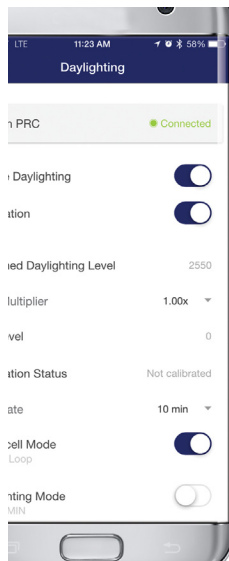
Design Guide for Smart Lighting Control and Energy Solutions

LEVITON®

Intellect™ Intelligent Fixture Control System - out-of-the-box energy code and DLC compliant wireless plug-and-play system

Provolt™ Room Control - self-contained solution features app configuration and control for advanced lighting controls

Sapphire™ Touch Screen Control - integrates lighting control with AV and scheduling

Integrated Room Control - energy code compliant solution combines daylight harvesting, 0-10V LED dimming and demand response capabilities

Lumina™ RF Eco-System – delivers wireless and remote access control for temps, lights and shades

Sensing Control – industry's most extensive line of sensors for any application

Marked "Controlled" Receptacles – to comply with plug load/receptacle control requirements for codes and standards

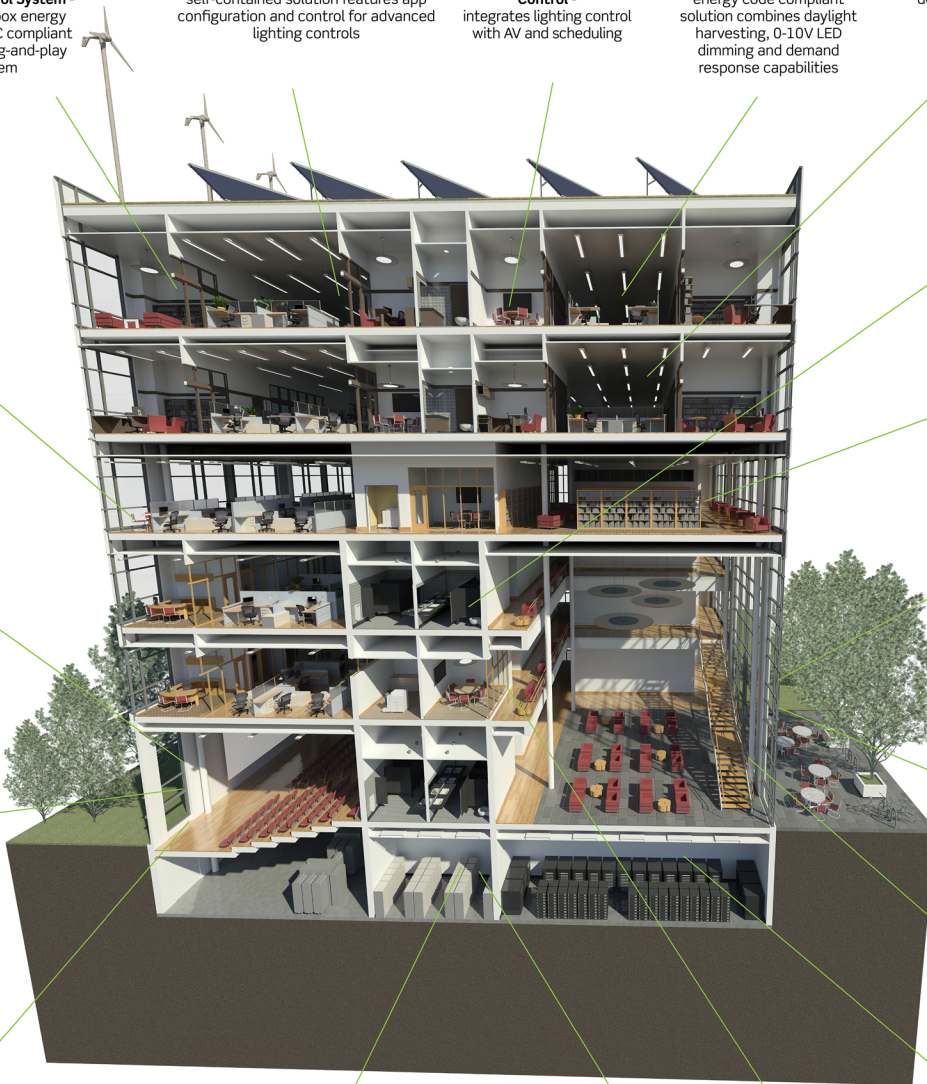**Sector® Distributed Lighting Control –** topology-free energy management control

Architectural Lighting Control Systems – multi-zone dimming control integrates with occupancy sensors and daylighting systems

NorthStar™ Outdoor Controls – code-compliant 0-10V dimming and control for outdoor spaces

High-Bay Occupancy Sensor - mounts to fixtures for a simple, energy-saving retrofit

Outdoor Occupancy Sensors – ensure lights remain off in the daytime

Photocells – takes advantage of natural light to save energy

Track Light Limiting Panel (TLLP) - limits track lighting capacity for reduced wattage in space

GreenMAX® Relay Control Systems – integrate centralized lighting control for an energy smart solution

VerifEye™ Submetering Solutions – M&V, measure and reduce energy use for electricity, gas, water and steam

Digital Switches - meets manual-ON and bypass requirements

LevNet RF™ Energy Harvesting Wireless Self-Powered Solutions - zero power consumption - no external power or batteries required

Leviton Excellence for Title 24 Standards

California Title 24 2016 provides the minimum requirements for energy-efficient design of most commercial and residential buildings in the state of California. Title 24 requirements define the minimum energy efficiency requirements for new construction, as well as new systems installed in existing buildings.
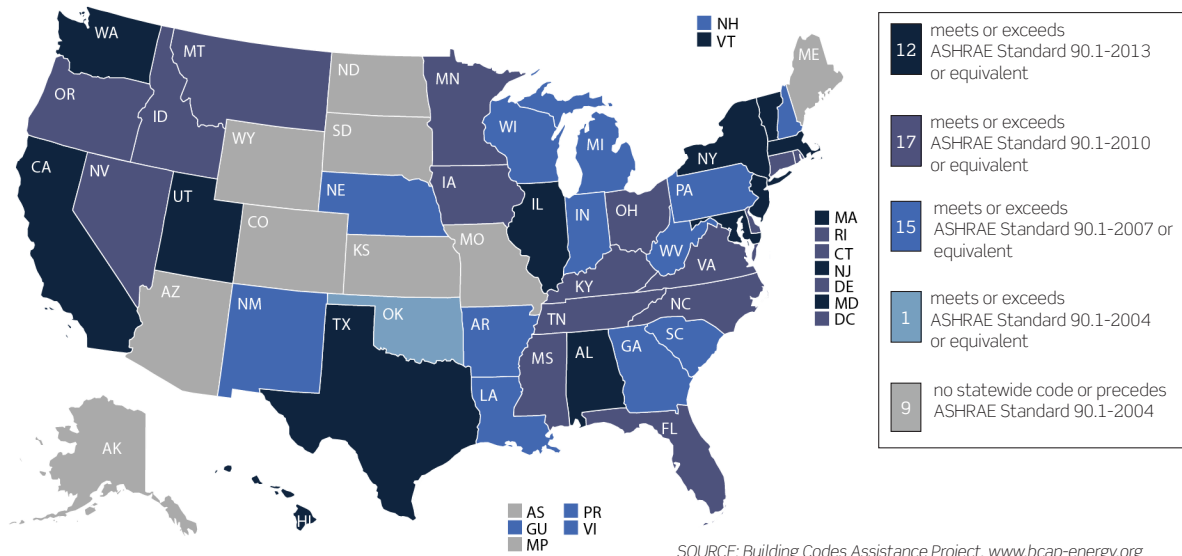
Leviton offers a wide spectrum of lighting and energy control solutions to bring any project up to standard. This reference guide provides examples of common applications, compliance considerations, and Leviton solutions to meet the functionality and standards compliance needs of the space.

California Title 24 2016 Design Guide

Energy Standards by State

Commercial State Energy Code Status as of November 1, 2017
Note: For Canadian code compliance, refer to your provincial code

12 — meets or exceeds ASHRAE Standard 90.1-2013 or equivalent

17 — meets or exceeds ASHRAE Standard 90.1-2010 or equivalent

15 — meets or exceeds ASHRAE Standard 90.1-2007 or equivalent

1 — meets or exceeds ASHRAE Standard 90.1-2004 or equivalent

9 — no statewide code or precedes ASHRAE Standard 90.1-2004

SOURCE: Building Codes Assistance Project, www.bcap-energy.org

Disclaimer:
This document is for informational purposes only. Each project will have its own specific requirements for satisfying Title 24 code compliance based on a variety of factors. Other exceptions or details may apply. Review the code 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: IECC, ASHRAE 90.1 & Title 24

Title 24 2016 is an expansion of the national ASHRAE Standard 90.1 2010/2013/2016, which is a more in-depth version of the national standard guidelines set forth in 2012/2015 IECC. See the table below for an overview of how the codes and standards compare. Note that the new code additions (2015 IECC, ASHRAE 90.1 2016 and Title 24 2016) are highlighted.

Control Type	2015 IECC	ASHRAE Standard 90.1 2016	California Title 24 2016
Automatic Receptacle Control	Required in: • Hotel/motel guest rooms	Required in: • Private offices • Open office spaces • Computer classrooms • Hotel/motel guest 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	Required in: • Private offices • Open office spaces • Reception lobbies • Conference rooms • Kitchenettes • Copy rooms • Hotel/motel guest rooms
Automatic Shutoff	• Automatic time switches are required in most areas that are not controlled by an occupancy sensor; the switch must also have a manual override. • Occupancy sensors are required in a number of applications that must auto-OFF after 30 minutes 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 of occupants leaving the space, and manual-ON or auto-ON to 50%	• 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: 　- 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	• 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
Manual Space Control	• 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% by controlling all lamps (dimming), dual switching, inboard/outboard switching or controlling each fixture/lamp independently	• 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	• 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 000000000use manual-ON/OFF control not accessible to unauthorized personnel: 　- Public restrooms with 2 or more stalls 　- Parking areas 　- Stairwells 　- Corridors • Display/accent/case lighting must be separately controlled

Control Type	2015 IECC	ASHRAE Standard 90.1 2016	California Title 24 2016
Parking Garage Control	• 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	• Parking garage lighting zones must be controlled by a device that reduces power by 30% after 20 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	• 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	• 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	• Sidelit and Toplit areas must be separately controlled by a photocontrol, which can be stepped or continuous dimming • Must reduce lighting power in response to available daylight with continuous dimming or with control steps between 50-70%, 20-40%, and OFF	• In general area lighting areas, photocontrols are required in all interior daylit spaces with at least 24 sq ft of glazing and a total of 120W or more of installed lighting power in daylight and skylight zones • Includes nearly every non-residential space with skylights or windows • Secondary zones must have the same level of functionality as those in the primary zone • Zones must be controlled separately • Photocontrols are required in parking garages with at least 36 sq ft of opening and at least 60W of installed lighting power in daylight areas

Multi-Level Area Lighting Controls	• Each area required to have manual control is also required to be able to reduce the lighting by 50%	• All spaces must have a lighting control that is either manual-ON or auto-ON to <50% of lighting load
		• In addition to controls that switch OFF all lighting, enclosed spaces must have controls that reduce the lighting by 30-70% of the full lighting load
			• 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:
			  - Areas with a single luminaire with no more than 2 lamps
			  - Partial-OFF areas including:
			    - Aisle ways and open areas in warehouses
			    - Library book stack aisles
			    - Corridors and stairwells
			    - Parking garages, parking areas, loading/unloading areas

Code Comparison: IECC, ASHRAE 90.1 & Title 24

Control Type	2015 IECC	ASHRAE Standard 90.1 2013	California Title 24 2016
Exterior Lighting Control	• Exterior lighting designated for dusk to dawn operation shall be controlled by an astronomical time clock or photocontrol • 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	• Exterior lighting must be controlled by a device to automatically turn lighting OFF as a function of available daylight • Controls must reduce advertising/sign lighting power by at least 30% after closing • Building facade lighting must be controlled based on opening/closing time • Any other lighting shall have controls configured to reduce connected lighting power by no less than 30% from midnight-6am, OR 1 hour of business closing to 1 hour of business opening, OR any time space is unoccupied for more than 15 minutes	• 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 • Lighting that is <24 ft from the ground must be controlled to automatically reduce lighting by 40-80% when the area is vacant, and auto-ON when occupied (see wattage exceptions) • Outdoor signage that is on all day and night, 24/7, must be controlled with a photocontrol and an automatic time switch OR astronomical time switch control, and reduce sign lighting by a minimum 65% during nighttime • Lights must be turned OFF during daylight hours via a photocontrol and an automatic time switch OR astronomical time switch control • If luminaires mounted <24 ft above ground, motion sensors or other occupancy-based controls must be used; not required >24 ft above ground • Maximum dimming permitted as part of a motion controlled lighting system increased to 90% • Outdoor lighting no longer must be separately circuited from other lighting, but it must remain independently controlled via automatic scheduling
Functional Testing	• 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	• The construction documents shall state the party who will conduct and certify the functional testing (removed from 2016 version) • The party responsible shall not directly be involved in either the design or construction of the project	• 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

Control Type	2015 IECC	ASHRAE Standard 90.1 2013	California Title 24 2016
Demand Response	--	--	• Required in all nonresidential buildings >10,000 sq ft • Must be capable of automatically reducing total lighting power usage by at least 15%

Service Metering	--	• Measurement devices must be installed in new buildings to separately monitor energy use for each of the following:
		  - Total energy
		  - HVAC systems
		  - Interior lighting
		  - Exterior lighting
		  - Receptacle circuits
		  - Measurements must record every 15 minutes, be available to each tenant, and maintained for 36 months
			Requirements include user accessible metering of total electrical use per Table 130.5-A

Disaggregation of Electrical Circuits	--	--	• 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

Title 24 Requirement Quick Reference

Control Type	Summary	Quick Take
130.1(a) Area Controls	All luminaires shall be functionally controlled with manually switched ON and OFF lighting controls. Each area enclosed by ceiling-height partitions shall be independently controlled with controls that meet the following requirements:* • Be readily accessible • Must be operated with a manual switch located in the same room or area as the lighting that is controlled by that lighting control • If controlling dimmable luminaires, be a dimmer switch that allows manual-ON and OFF functionality, and is capable of controlling lighting through all lighting control steps that are required in Section 130.1(b) Other lighting controls may be installed in addition to the manual lighting controls provided they don't override the functionality of controls installed in accordance with this section. In addition to the requirements above: • General lighting must be separately controlled from all other lighting systems in the area • Floor and wall display, window display, case display, ornamental, and special effect lighting must be separately controlled on circuits that are 20 amps or less • When track lighting is used, general, display, ornamental, and special effects lighting shall each be separately controlled	Area Controls contains 4 main points: (1) most indoor areas must have manual controls, (2) controls must be easily accessible and apply to the area in which they're located, (3) other lighting controls may be installed that do not interfere with manual control, (4) special lighting needs require separate and specific controls Many exceptions apply to 130.1(a); refer to code for details. **Leviton Product Solutions** • Occupancy sensors • Vacancy sensors • Wall box dimmers • Receptacle controls • Intellect™ • Sapphire™ • Dimensions® • Lumina™ RF Wireless • LevNet RF™ Wireless • Provolt™ Room Controller • IRC • EZ-MAX® Plus • GreenMAX® • TLLP • Sector®
130.1(b) Multi-Level Controls **50%**	The general lighting of any enclosed area 100 square feet or larger, with a connected lighting load that exceeds 0.5 watts per square foot shall provide multi-level control meeting the following requirements:* • Lighting must have the required number of control steps and meet the uniformity requirements in accordance with Table 130.1-A (see page 13) • Multi-level lighting controls shall not override the functionality of other lighting controls required for compliance with the following sections. • Dimmable luminaires must be controlled by a dimmer control capable of controlling lighting through all required lighting control steps, and also includes manual-ON/OFF Exceptions include classrooms with a connected general lighting load of 0.7 watts per square feet and less, which must have at least one control step between 30 and 70% of full rated power. The following areas may use manual-ON/OFF control not accessible to unauthorized personnel: • Public restrooms with 2 or more stalls • Parking areas • Stairwells • Corridors An area enclosed by ceiling height partitions that has only one luminaire and no more than two lamps is exempted from the requirements of 130.1(b).	In most indoor spaces, lighting must be dimmed to steps between OFF and full-ON. Refer to Table 130.1-A (see page 13) for full details. **Leviton Product Solutions** • Occupancy sensors • Vacancy sensors • Wall box dimmers • Intellect • Sapphire • Dimensions • Lumina RF Wireless • LevNet RF Wireless • Provolt Room Controller • IRC • EZ-MAX Plus • GreenMAX • TLLP • Sector

Note: California Title 24 2016 mandates the implementation of energy saving design and control techniques.
For complete codes and more information, refer to www.energy.ca.gov/title24
*Code includes exceptions; please refer to California Title 24 2013 for more information

Control Type	Summary	Quick Take

130.1(c) Shut-Off Controls	In addition to lighting controls installed to comply with Sections 130.1(a) and (b), all installed indoor lighting shall be equipped with controls that meet the following requirements:*
	
	• Shall be controlled with an occupant sensing control, automatic time-switch control, signal from another building system, or other control capable of automatically shutting OFF all of the lighting when the space is typically unoccupied
	
	• Separate controls for the lighting on each floor
	
	• Separate controls for a space enclosed by ceiling height partitions not exceeding 5,000 square feet
	
	• Separate control for general, display, ornamental, and display case lighting
	
	Countdown timer switches shall not be used to comply with the automatic shut-OFF control requirements outlined above.
	
	If an automatic time-switch control, other than an occupant sensing control, is installed to comply with the above section, it shall incorporate an automatic holiday "shut-OFF" feature that turns OFF all loads for at least 24 hours, and then resumes the normally scheduled operation.
	
	Areas where occupancy sensing controls are required to shut OFF all lighting include offices >250 sq ft, multipurpose rooms >1,000 sq ft, classrooms and conference rooms of any size. Sensor must automatically shut OFF all lighting when room is unoccupied. In addition, controls shall be provided that allow lights to be manually turned OFF in accordance with Section 130.1(a) regardless of their sensor status. In such areas, the occupancy sensing controls must function as:
	• Partial-ON to between 50-70% of controlled lighting power, OR
	• Vacancy sensor (manual-ON only)
	In areas not requiring multi-level controls, occupancy sensing controls must function as either:
	• Occupancy sensors
	• Partial-ON
	• Vacancy sensor (manual-ON only)
	All occupancy sensing controls must contain manual-OFF control capabilities.
	
	Full-OFF or partial-OFF occupancy sensing controls are required **in addition to** complying with Section 130.1(c)1 (full shut-off controls) in the following locations:
	
	• Aisle ways and open areas in warehouses
	
	• Library book stacks
	
	• Corridors and stairwells
	
	Full-OFF or Partial-OFF occupancy sensing controls are required **instead of** complying with Section 130.1(c)1 (full shut-off controls) in the following locations:
	
	• Stairwells and common area corridors that provide access to guestrooms and dwelling units (such as hallways in hotels and condos)
	
	• Occupancy sensors must reduce power by 20-50% in the following locations:
	   - Parking garages
	   - Parking areas
	   - Loading/unloading zones
	
	Hotel and motel guest rooms shall have captive key card controls, occupancy sensing controls, or automatic controls such that, no longer than 30 minutes after the guest room has been vacated, lighting power and 50% of receptacles are switched OFF.
	
	Please see the complete code text for a full list of exceptions and details.
		Indoor lighting must be controlled by:
		• Occupancy sensor
		• Time-switch control
		• BAS/EMS system control
		• OR other intelligent control that can keep lighting OFF when spaces are typically unoccupied and also allow for manual overrides.
		
		Occupancy sensors with manual-OFF switches required for:
		• Offices <250 sq ft or less
		• Multipurpose rooms <1000 sq ft or less
		• All classrooms
		• All conference rooms
		
		Stairwells and common area corridors must have full-OFF or partial-OFF capabilities.
		
		Parking structures must be occupancy sensor controlled to reduce power by 20-50%.
		
		Hotel/motel guest rooms must be controlled by:
		• Key card switch
		• Occupancy sensor
		• OR other automatic control
		Control must switch lights OFF after 30 minutes of vacancy.
		
		Many exceptions and further details apply to 130.1(c); refer to code for details.
		
		Leviton Product Solutions
		• Occupancy sensors
		• Vacancy sensors
		• Wall box dimmers
		• Receptacle controls
		• Sapphire
		• Dimensions
		• Lumina RF Wireless
		• LevNet RF Wireless
		• Provolt Room Controller
		• IRC
		• EZ-MAX Plus
		• GreenMAX
		• TLLP
		• Sector

*Code includes exceptions; please refer to California Title 24 2016 for more information

Title 24 Requirement Quick Reference

Control Type	Summary	Quick Take

130.1(d)
Daylighting
	Areas with 24 square feet of glazing must adhere to the following guidelines:
	
	• **Skylit Daylit Zone** is the rough area in plan view under each skylight, equal to the geometric shape of the skylight + 0.7 x ceiling height added around the geometric shape of the skylight
	
	• **Primary Sidelit Daylit Zone** is the area on a plan directly adjacent to each vertical glazing, one window-head height deep into the area, and the window width plus 0.5 times window head high wide on each side of the rough opening of the window
	
	• **Secondary Sidelit Daylit Zone** is the area on a plan directly adjacent to each vertical glazing, two window head heights deep into the area, and window width plus 0.5 times window head height wide on each side of the rough opening of the window
	
	Luminaires providing general lighting that are in or are partially in the Skylit Daylit Zones or the Primary Sidelit Daylit Zones shall be controlled independently by fully functional automatic daylighting controls that meet the applicable requirements of Section 110.9, and the applicable requirements below:
	
	• All Skylit Daylight Zones and Primary Sidelit Zones shall be shown on the plans
	
	• Luminaires in the Skylit Daylight Zone shall be controlled separately from those in the Primary Sidelit Daylit Zones
	
	• Luminaires that fall in both a Skylit and Primary Sidelit Daylit Zone shall be controlled as part of the Skylit Daylit Zone
	
	Automatic Daylighting Control Installation and Operation: For luminaires in daylight zones, automatic daylighting controls shall be installed and configured to operate according to all of the following requirements:
	
	• Photosensors shall be located so that they are not readily accessible to unauthorized personnel, and the location where calibration adjustments are made to automatic daylighting controls shall not be readily accessible to unauthorized personnel
	
	• Automatic daylighting controls shall provide functional multilevel lighting having at least the number of control steps specified in Table 130.1-A (see page 13)
	
	• For each space, the combined luminance from the controlled lighting and daylight shall not be less than the illuminance from controlled lighting when no daylight is available
	
	• In areas served by lighting that is daylight controlled, when the illuminance received from the daylight is greater than 150 percent of the design illuminance received from the general lighting system at full power, the general lighting power in that daylight zone shall be reduced by a minimum of 65%
	
	Parking Garage Daylighting Requirements: In a parking garage area with a combined total of 36 square feet or more of glazing or opening, luminaires providing general lighting that are in the combined primary and secondary sidelit daylit zones shall be controlled independently by automatic daylighting controls, and shall meet the following requirements as applicable:
	
	• All primary and secondary Sidelit Daylit Zones shall be shown on the plans
	
	• Automatic daylighting control must meet the following requirements:
	
	Photosensors that are located so that they are not readily accessible to unauthorized personnel, and the location where calibration adjustments are made to the automatic daylighting controls shall not be readily accessible to unauthorized personnel
	
	    - Must be multi-level, continuous dimming or bi-level as required per Table 130.1-A (see page 13)
	
	    - Automatic daylighting controls shall be multi-level, continuous dimming or ON/OFF
	
	    - The combined illuminance from the controlled lighting and daylight shall not be less than the illuminance from controlled lighting when no daylight is available
	
	    - When primary sidelit zones receive illuminance levels greater than 150% of the illuminance provided by the controlled lighting when no daylight is available, the controlled lighting power consumption shall be zero
		There are three types of daylighting zones:
		• Skylit
		• Primary sidelit
		• Secondary sidelit
		Each have slightly different requirements, and must be controlled separately and clearly shown on the construction/retrofit plans.
		
		All daylighting zones must contain automatic daylighting controls to dim a minimum of 65% by each zone.
		
		Daylit parking garages must also contain daylighting controls.
		
		Many exceptions apply to 130.1(d); refer to code for details and full definitions of each type of daylighting zone.
		
		Leviton Product Solutions
		• Occupancy sensors
		• Photocells
		• Intellect
		• Sapphire
		• Dimensions
		• Lumina RF Wireless
		• LevNet RF Wireless
		• Provolt Room Controller
		• IRC
		• EZ-MAX Plus
		• GreenMAX
		• Sector

Control Type	Summary	Quick Take
130.1(e) Demand Response Controls	Lighting power in buildings larger than 10,000 square feet shall be capable of being automatically reduced in response to a Demand Response Signal; so that the building's total lighting power can be lowered by a minimum of 15% below the total installed lighting power. Lighting shall be reduced in a manner consistent with uniform level of illumination requirements in Table 130.1-A (see page 13). Spaces that are non-habitable shall not be used to comply with this requirement, and spaces with a lighting power density of less than 0.5 watts per sq ft shall not be counted toward the building's total lighting power. Demand responsive controls and equipment shall be capable of receiving and automatically responding to at least one standards-based messaging protocol for demand response communications via BAS/EMS systems.	Demand response-enabled controls are required in buildings <10,000 sq ft to reduce lighting loads by at least 15% of full-ON. **Leviton Product Solutions** • Intellect • Sapphire • Dimensions • Lumina RF Wireless • LevNet RF Wireless • Provolt Room Controller • IRC • EZ-MAX Plus • GreenMAX • Sector • NorthStar Outdoor Controls

130.2(c)
Multi-Level Outdoor Lighting
	Outdoor lighting controls shall be installed that meet the following requirements as applicable:*
	
	• Controlled by a photocontrol or outdoor astronomical time-switch control or other control capable of automatically turning OFF the outdoor lighting when daylight is available
	
	• Circuited and independently controlled from other electrical loads by an automatic scheduling control (NOTE: does not need to be separately circuited in 2016 version)
	
	• Outdoor lighting where the bottom of the luminaire is mounted 24 feet or less above the ground shall be controlled with automatic lighting controls that meet all of the following requirements:
	  - Motion sensors or other lighting control systems that automatically control lighting in response to the area being vacated of occupants; and
	  - Must be capable of automatically reducing the lighting power of each luminaire by at least 40% but not exceeding 80% (90% in 2016), or provide continuous dimming through a range that includes 40-80% (90% in 2016); and
	  - Shall employ auto-ON functionality when the area becomes occupied; and
	  - No more than 1,500 watts of lighting power shall be controlled together
	
	• For outdoor sales frontage, outdoor sales lots, and outdoor sales canopies lighting, an automatic lighting control shall be installed that meets the following requirements:
	  - A part-night outdoor lighting control as defined in Section 100.1; or
	  - Motion sensors capable of automatically reducing lighting power by at least 40% but not exceeding 80% (90% in 2016), and which have auto-ON functionality
	
	• For building facade, ornamental hardscape and outdoor dining lighting, an automatic lighting control shall be installed that meets the following requirements:
	  - Part-night outdoor lighting control as defined in Section 100.1; or
	  - Motion sensors capable of automatically reducing lighting power by at least 40% but not exceeding 80% (90% in 2016), and which have auto-ON functionality; or
	  - A centralized time-based zone lighting control capable of automatically reducing lighting power by at least 50%
	  - Outdoor wall mounted luminaires having a bilaterally symmetric distribution as described in the IES Handbook (typically referred to as "wall packs") where the bottom of the luminaire is mounted 24 feet or less above the ground shall comply with the applicable requirements in Section 130.2(c)
		Outdoor lighting must be controlled by a photocontrol or time-switch that keeps lights OFF during daylight hours. Outdoor lighting that is installed <24 ft above finished grade must be controlled by occupancy sensors that can reduce the lighting power by 40-80% (90% in 2016).
		
		Facade, ornamental and outdoor dining lighting must be controlled by:
		• Outdoor lighting controls
		• Motion sensors
		• Centralized time-based controls
		• Wall pack controls
		
		Many exceptions apply to 130.2(c); refer to code for details.
		
		Leviton Product Solutions
		• Occupancy sensors
		• Photocells
		• Intellect
		• EZ-MAX Plus
		• GreenMAX
		• Sector
		• NorthStar Outdoor Controls

Title 24 Requirement Quick Reference

Control Type	Summary	Quick Take

130.3(a)
Sign Lighting Controls
 	
OPEN
	All sign lighting shall meet the following requirements:*
	
	• **Indoor Signs** shall be controlled with an automatic time switch control or astronomical time switch control
	
	• **Outdoor Signs** shall meet the following requirements as applicable:
	  - Controlled with a photocontrol in addition to an automatic time-switch control, or an astronomical time-switch control
	  - Outdoor sign lighting that is ON both day and night shall be controlled with a dimmer that provides the ability to automatically reduce sign lighting power by a minimum of 65% during nighttime hours. Signs that are illuminated at night and for more than 1 hour during daylight hours shall be considered ON both day and night
	
	• **Demand Responsive Electronic Message Center Control** (EMC) having a new connected lighting power load greater than 15 kW shall have a control installed that is capable of reducing the lighting power by a minimum of 30% when receiving a demand response signal
	
	• Exceptions include outdoor signs in tunnels and large, permanently covered outdoor areas, which must be illuminated 24 hours per day 365 days per year; and demand response applications that are not permitted by a health or life safety statute, ordinance, or regulation.
		Indoor lighted signs must be controlled with a time-switch control.
		
		Leviton Product Solutions
		• Photocells
		• Intellect
		• Lumina RF Wireless
		• LevNet RF Wireless
		• IRC
		• EZ-MAX Plus
		• GreenMAX
		• Sector
		• NorthStar Outdoor Controls

130.5(a) & 130.5(b) Service Metering & Disaggregation of Electrical Circuits	Each electrical service shall have permanently installed user-accessible metering of total electrical energy use per Table 130.5-A (see page 13). This does not apply to buildings for which the utility company provides a meter for occupant or user use that indicates instantaneous kW demand and kWh for a user-resettable period, or with data accessible online. Each newly installed switchboard, panel, and motor control center (in both existing and newly constructed buildings) must be designed to permit the disaggregated measurement of electrical load energy uses downstream according to the requirements of Table 130.5-B (see page 14).	Newly installed meters must be capable of measurement of electrical loads, which can be viewed downstream from the meter. **Leviton Product Solutions** • VerifEye™ Submetering
130.5(d) Receptacle Control	**Circuit Controls for 120V Receptacles**: In all buildings, both controlled and uncontrolled 120V receptacles shall be provided in each private office, open office area, reception lobby, conference room, kitchenette in office spaces, and copy room. Controlled receptacles shall meet the following requirements, as applicable: • Must include an auto-OFF control for the controlled receptacles when the space is typically unoccupied, including an override control to remain ON for no more than 2 hours and a holiday 24-hour shut-OFF control that may not be a countdown timer switch; and • At least one controlled receptacle shall be installed within 6 feet from each uncontrolled receptacle or a split-wired duplex receptacle with one controlled and one uncontrolled receptacle shall be installed; and • For open offices with modular furniture, at least one controlled receptacle shall be installed at each workstation; and • Controlled receptacles shall have a permanent marking to differentiate them from uncontrolled receptacles; and • For open office areas, controlled circuits shall be provided and marked to support installation and configuration of office furniture with receptacles that comply with Section 130.5(d) 1, 2, and 3; and • For hotel and motel guest rooms at least one-half of the 120V receptacles in each guest room must be controlled receptacles. Electric circuits serving controlled receptacles shall have captive key controls, occupancy sensing controls, or automatic controls such that, no longer than 30 minutes after the guest room has been vacated, power is switched OFF • Plug-in strips and other plug-in devices that incorporate an occupant sensor shall not be used to comply with this requirement	In all buildings, uncontrolled and controlled 120V receptacles must be provided in applicable areas and meet specific requirements. **Leviton Product Solutions** • Occupancy sensors • Receptacle control • Intellect • Lumina RF Wireless • LevNet RF Wireless • IRC • EZ-MAX Plus • GreenMAX • Sector

Note: California Title 24 2016 mandates the implementation of energy saving design and control techniques.
For complete codes and more information, refer to www.energy.ca.gov/title24
*Code includes exceptions; please refer to California Title 24 2016 for more information

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Table 130.1-A Multi-Level Lighting Controls & Uniformity

Luminaire Type	Minimum Required Control Steps (percent of full-rated power[1])				Uniform Level of Illuminance Shall Be Achieved By:
Line Voltage Sockets Except GU-24	Continuous dimming 10-100-%				
Low Voltage Incandescent Systems					
LED Luminaires and LED Source Systems					
GU-24 Rated for LED					
GU-24 Sockets Rated for Fluorescent > 20 Watts	Continuous dimming 20-100%				
Pin-Based Compact Fluorescent > 20 Watts[2]					
GU-24 Sockets Rated for Fluorescent < 20 Watts	Minimum one step between 30-70%				Stepped dimming or Continuous dimming; or Switching alternate lamps in a luminaire
Pin-Based Compact Fluorescent < 20 Watts[2]					
Linear Fluorescent and U-Bent Fluorescent < 13 Watts					
Linear Fluorescent and U-Bent Fluorescent > 13 Watts	Minimum one step in each range:				Stepped dimming or Continuous dimming; or Switching alternate lamps in each luminaire, having a minimum of 4 lamps per luminaire, illuminating the same area and in the same manner
	20-40%	50-70%	75-85%	100%	
Track Lighting	Minimum one step between 30-70%				Stepped dimming; or Continuous dimming; or Separately switching circuits in multi-circuit track with a minimum of two circuits
HID > 20 Watts	Minimum one step between 50-70%				Stepped dimming; or Continuous dimming; or Switching alternate lamps in each luminaire, having a minimum of 2 lamps per luminaire, illuminating the same area and in the same manner
Induction > 25 Watts					
Other Light Sources					

Table 130.5-A Minimum Requirements for Metering of Electrical Load

Meter Rating (kVA)	50 kVA or Less	> 50 kVA & < or Equal to 250 kVA	> 50 kVA & < or Equal to 1,000 kVA	> 1,000 kVA
Instantaneous (at the time) kW demand	Required	Required	Required	Required
Historical peak demand (kW)	Not Required	Not Required	Required	Required
Resettable kWh	Required	Required	Required	Required
kWh per rate period	Not Required	Not Required	Not Required	Required

Table 130.5-B Minimum Requirements for Metering of Electrical Load

Meter Rating (kVA)	50 kVA or Less	> 50 kVA & < or Equal to 250 kVA	> 50 kVA & < or Equal to 1,000 kVA	> 1,000 kVA
Lighting Including Exit and Egress Lighting and Exterior Lighting	Not Required	All Lighting in Aggregate	All lighting disaggregated by floor, type or area	All lighting disaggregated by floor, type or area
HVAC Systems and Components including chillers, fans, heaters, furnaces, package units, cooling towers, and circulation pumps associated with HVAC	Not Required	All HVAC in Aggregate	All HVAC in aggregate and each HVAC load rated at least 50 kVA	All HVAC in aggregate and each HVAC load rated at least 50 kVA
Domestic and service water system pumps and related systems and components	Not Required	All Loads in Aggregate	All Loads in Aggregate	All Loads in Aggregate
Plug load including appliances rated less than 25 kVA	Not Required	All plug load in aggregate; groups of plug loads exceeding 25 kVA connected load in an area less than 5,000 sq ft	All plug load separated by floor, type or area; groups of plug loads exceeding 25 kVA connected load in an area less than 5,000 sq ft	All plug loads separated by floor, type or area; all groups of plug loads exceeding 25 kVA connected load in an area less than 5,000 sq ft
Elevators, escalators, moving walks, and transit systems	Not Required	All Loads in Aggregate	All Loads in Aggregate	All Loads in Aggregate
Other individual non-HVAC loads or appliances rated 25 kVA or greater	Not Required	All All Loads in Aggregate	Each All Loads in Aggregate	Each All Loads in Aggregate
Industrial and commercial load centers 25 kVA or greater including theatrical lighting installations and commercial kitchens	Not Required	All All Loads in Aggregate	Each All Loads in Aggregate	Each All Loads in Aggregate
Renewable power source (net or total)	Each Group	Each Group	Each Group	Each Group
Loads associated with renewable power source	Not Required	All Loads in Aggregate	All Loads in Aggregate	All Loads in Aggregate
Charging stations for electrical vehicles	All Loads in Aggregate	All Loads in Aggregate	All Loads in Aggregate	All Loads in Aggregate

Product Solutions at a Glance

Title 24 Standards	130.1(a) Area Controls	130.1(b) Multi-Level Controls	130.1(c) Shut-Off Controls	130.1(d) Daylighting	130.1(e) Demand Response	130.2(c) Multi-Level Outdoor Lighting	130.3(a) Sign Lighting Controls	130.5(a & b) Service Metering and Disaggregation of Electrical Circuits	130.5(d) Receptacle Control
Product Solutions									
Occupancy Sensors	X	X	X	X	--	X	X	--	X
Vacancy Sensors	X	X	X	X	--	--	X	--	X
Wall Box Dimmers	X	X	X	--	--	--	--	--	--
Photocells	--	--	--	X	--	X	X	--	--
Receptacle Control Solutions	--	--	X	--	--	--	--	--	X
Intellect™	X	X	X	X	--	--	--	--	--
Sapphire™	X	X	X	X	X	--	--	--	X
D4000/D8000	X	X	X	X	X	--	--	--	X
Lumina™ RF Wireless	X	X	X	X	--	--	X	--	X
LevNet RF™ Wireless	X	X	X	X	--	--	X	--	X
Provolt™ Room Controller	X	X	X	X	X	--	X	--	X
Integrated Room Control (IRC)	X	X	X	X	X	--	X	--	X
EZ-MAX® Plus	X	X	X	X	X	X	X	--	X
GreenMAX®	X	X	X	X	X	X	X	--	X
NorthStar Outdoor Controls	--	--	X	X	--	X	X	--	--
Track Light Limiting Panel (TLLP)	X	X	X	--	--	--	--	--	--
Sector®	X	X	X	X	X	X	X	--	X
VerifEye™	--	--	--	--	--	--	--	X	--

NOTE: Solutions may require other products to complete a code compliant energy control solution—consult Leviton for more information.

Leviton Applications at a Glance

Note: All indicated applications can be found in the Title 24 Applications Cookbook. Solutions represented in this Design Guide are represented by a **green X**.

(Green X values indicated below with **X**.)

Title 24 Standards

Product Solutions	Small Office	Open Office	Conference Room	Classroom	Common Area	Parking Garage	Site Lighting Control	Warehouse	Retail Space	Convenience Store	Restaurant	Hospitality	Energy Metering
Occupancy Sensors	--	--	--	--	X	X	X	X	X	--	--	X	X
Vacancy Sensors	**X**	**X**	**X**	**X**	X	--	--	X	X	--	--	X	--
Wall Box Dimmers	X	X	X	X	X	--	--	X	X	--	--	X	--
Photocells	X	X	X	X	X	X	X	X	X	--	--	X	X
Receptacle Control Solutions	X	X	X	X	X	--	--	X	X	--	--	X	--
Intellect™	**X**	**X**	**X**	**X**	**X**	--	--	X	X	--	--	X	--
Sapphire™	X	X	X	X	X	--	--	X	X	--	--	X	--
D4000/D8000	X	X	**X**	X	X	--	--	X	X	--	--	X	--
Lumina™ RF Wireless	X	X	X	X	X	--	--	X	**X**	**X**	**X**	**X**	--
LevNet RF™ Wireless	X	X	X	X	X	--	--	X	X	--	--	X	--
Provolt™ Room Controller	**X**	**X**	**X**	**X**	**X**	--	--	X	X	--	--	X	--
Integrated Room Control (IRC)	X	**X**	X	**X**	X	--	--	X	X	--	--	X	--
EZ-MAX® Plus	X	X	X	X	X	**X**	X	X	X	--	--	X	X
GreenMAX®	X	**X**	X	X	X	X	X	**X**	X	--	--	X	X
NorthStar Outdoor Controls	--	--	--	--	--	**X**	**X**	--	--	--	--	--	X
Track Light Limiting Panel (TLLP)	--	--	--	--	--	--	--	--	X	--	--	X	--
Sector®	X	**X**	X	X	X	--	--	X	X	--	--	X	--
VerifEye™	X	X	X	X	X	--	--	X	X	--	--	X	**X**

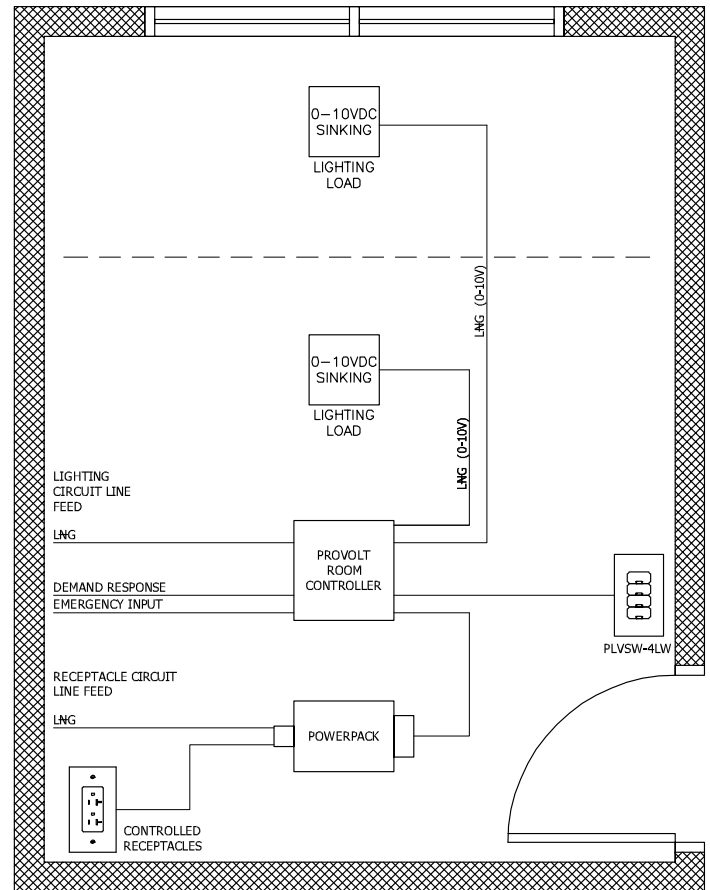title24.leviton.com

Small Office—Single Zone
Provolt Room Controller (PRC)

Can be Used to Comply with the Following Requirements:

- **Section 130.1(a)**
  - Area Controls
  - Manual ON/OFF
- **Section 130.1(b)**
  - Multi-Level Controls
  - Dimming
- **Section 130.1(c)**
  - Shut-Off Requirements
  - Occupancy Control
  - Partial-ON
  - Partial-OFF
- **Section 130.1(d)**
  - Daylighting
- **Section 130.1(e)**
  - Demand Response Power Reduction Controls
- **Section 130.5(d)**
  - Receptacle Control/Plug Load Control

Notes:
- Demand response required in all buildings larger than 10,000SF
- At least one controlled receptacle must be installed within 6 ft. of each uncontrolled receptacle or a split duplex can be used
- VerifEye Submetering Solutions can be used to comply with 2016 Title 24 service metering and disaggregation of electrical circuits requirements
- Where multi-level controls are required, sensors must act as partial-ON/vacancy sensors between 50-70% power

▶ **FEATURED LEVITON 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

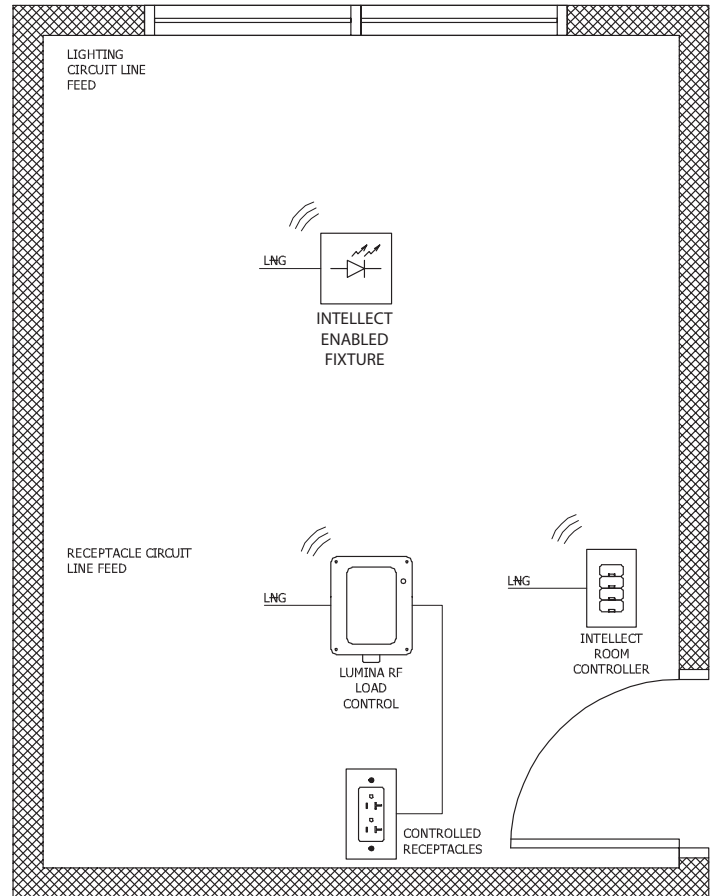| List of Equipment		
	Provolt Room Controller (PRC) O5C04-IDW	1
	Provolt Low-Voltage Keypad, 4-Button PLVSW-4LW	1
	OPP20 Super Duty Power Pack OPP20-0D1	1
	Marked "Controlled" Receptacles 16352-2PW	5

Small Office—Dual Zone
Provolt Room Controller (PRC)

Can be Used to Comply with the Following Requirements:

- **Section 130.1(a)**
  - Area Controls
  - Manual ON/OFF
- **Section 130.1(b)**
  - Multi-Level Controls
  - Dimming
- **Section 130.1(c)**
  - Shut-Off Requirements
  - Occupancy Control
  - Partial-ON
  - Partial-OFF
- **Section 130.1(d)**
  - Daylighting
- **Section 130.1(e)**
  - Demand Response Power Reduction Controls
- **Section 130.5(d)**
  - Receptacle Control/Plug Load Control

Notes:

- Demand response required in all buildings larger than 10,000SF
- At least one controlled receptacle must be installed within 6 ft. of each uncontrolled receptacle or a split duplex can be used
- VerifEye Submetering Solutions can be used to comply with 2016 Title 24 service metering and disaggregation of electrical circuits requirements
- Where multi-level controls are required, sensors must act as partial-ON/vacancy sensors between 50-70% power

▶ **FEATURED LEVITON 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

List of Equipment		
	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

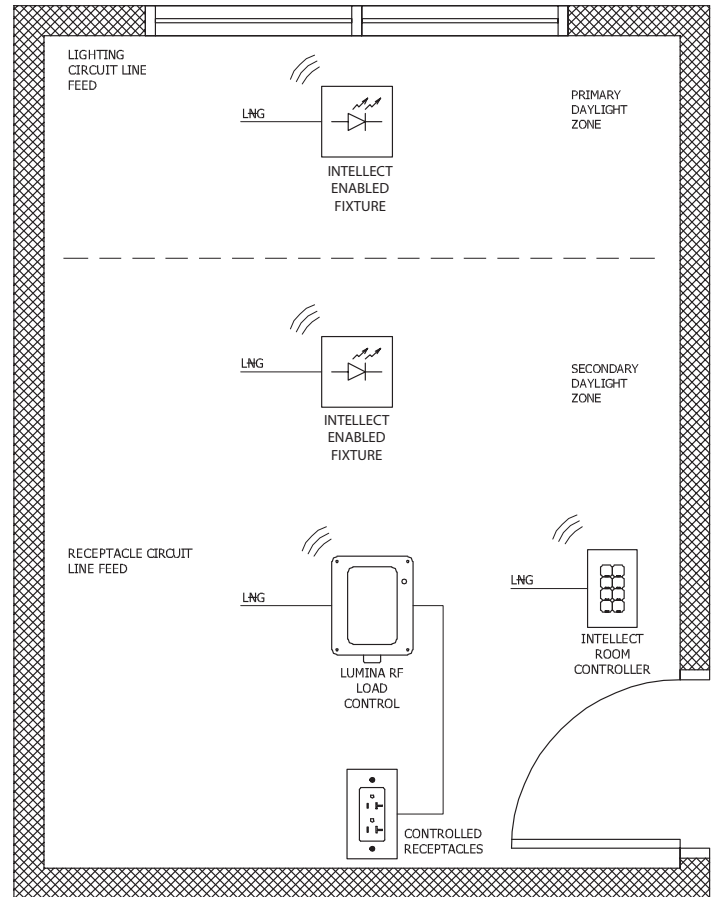# Small Office—Single Zone
Intellect Distributed Fixture Control

Can be Used to Comply with the Following Requirements:

- **Section 130.1(a)**
  - Area Controls
  - Manual ON/OFF
- **Section 130.1(b)**
  - Multi-Level Controls
  - Dimming
- **Section 130.1(c)**
  - Shut-Off Requirements
  - Occupancy Control
  - Partial-ON
  - Partial-OFF
- **Section 130.1(d)**
  - Daylighting
- **Section 130.5(d)**
  - Receptacle Control/Plug Load Control

Notes:

- At least one controlled receptacle must be installed within 6 ft. of each uncontrolled receptacle or a split duplex can be used
- VerifEye Submetering Solutions can be used to comply with 2016 Title 24 service metering and disaggregation of electrical circuits requirements
- Where multi-level controls are required, sensors must act as partial-ON/vacancy sensors between 50-70% power

LIGHTING CIRCUIT LINE FEED

L·N·G

INTELLECT ENABLED FIXTURE

RECEPTACLE CIRCUIT LINE FEED

L·N·G

LUMINA RF LOAD CONTROL

L·N·G

INTELLECT ROOM CONTROLLER

CONTROLLED RECEPTACLES

▶ FEATURED LEVITON SOLUTION

Intellect Distributed Fixture Control

- Easy energy savings out-of-the-box
- Controls integrated in fixtures
- Compliant with DesignLights Consortium (DLC) Advanced Lighting Control specifications
- Wirelessly configure, control, and monitor the Intellect system using a Bluetooth app designed for an Android or iOS smart phone

List of Equipment		
	Intellect-Enabled Fixture *Provided by others*	1
	Intellect Keypad, 4-Button ZLDNK-04W	1
	Lumina RF Load Control Module 73A00-3ZB	1
	Marked "Controlled" Receptacles 16352-2PW	5

Small Office—Dual Zone
Intellect Distributed Fixture Control
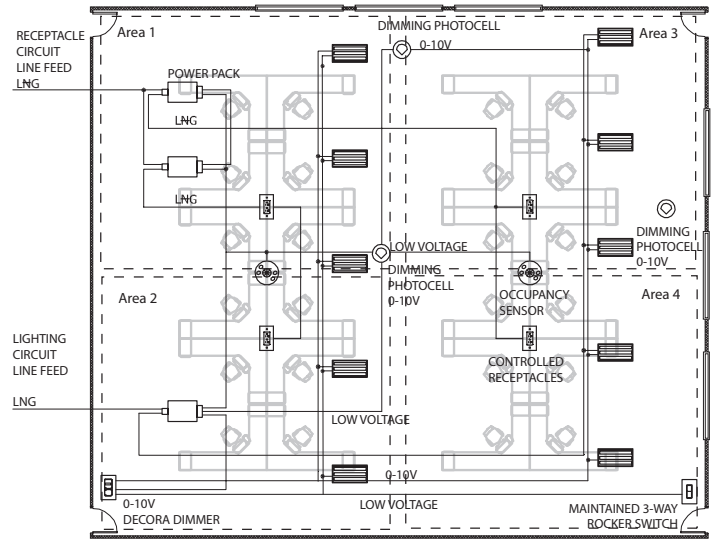
Can be Used to Comply with the Following Requirements:

- **Section 130.1(a)**
  - Area Controls
  - Manual ON/OFF
- **Section 130.1(b)**
  - Multi-Level Controls
  - Dimming
- **Section 130.1(c)**
  - Shut-Off Requirements
  - Occupancy Control
  - Partial-ON
  - Partial-OFF
- **Section 130.1(d)**
  - Daylighting
- **Section 130.5(d)**
  - Receptacle Control/Plug Load Control

Notes:

- At least one controlled receptacle must be installed within 6 ft. of each uncontrolled receptacle or a split duplex can be used
- VerifEye Submetering Solutions can be used to comply with 2016 Title 24 service metering and disaggregation of electrical circuits requirements
- Where multi-level controls are required, sensors must act as partial-ON/vacancy sensors between 50-70% power

▶ **FEATURED LEVITON SOLUTION**

Intellect Distributed Fixture Control

- Easy energy savings out-of-the-box
- Controls integrated in fixtures
- Compliant with DesignLights Consortium (DLC) Advanced Lighting Control specifications
- Wirelessly configure, control, and monitor the Intellect system using a Bluetooth app designed for an Android or iOS smart phone

List of Equipment		
	Intellect-Enabled Fixture *Provided by others*	2
	Intellect Keypad, 8-Button ZLDNK-08W	1
	Lumina RF Load Control Module 73A00-3ZB	1
	Marked "Controlled" Receptacles 16352-2PW	5

Open Office
Sensing and Plug Load Control

Can be Used to Comply with the Following Requirements:

- **Section 130.1(a)**
  - Area Controls
  - Manual ON/OFF
- **Section 130.1(b)**
  - Multi-Level Controls
  - Dimming
- **Section 130.1(c)**
  - Shut-Off Requirements
  - Occupancy Control
- **Section 130.1(d)**
  - Daylighting
- **Section 130.5(d)**
  - Receptacle Control/Plug Load Control

Notes:

- At least one controlled receptacle must be installed within 6 ft. of each uncontrolled receptacle or a split duplex can be used
- VerifEye Submetering Solutions can be used to comply with 2016 Title 24 service metering and disaggregation of electrical circuits requirements
- Where multi-level controls are required, sensors must act as partial-ON/vacancy sensors between 50-70% power

► FEATURED LEVITON SOLUTION

Sensing Control

- Broadest range of sensors for any application
- Recently released options include fixture mount, wet location, vacancy/occupancy wall switch sensors, programmable timers and more
- Plug load control with OPP20 Super Duty Power Pack
- 24V AC/DC input for integration with HVAC/BAS systems

Plug Load Control

- 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 (⏻)
- Ideal for new construction and renovation applications

List of Equipment		
	Ultrasonic Ceiling Mount Occupancy Sensor OSCxx-RxW	2
	Photocell, 0-10V Dimming ODC0P-D0W	2
	Decora Slider DS710-10Z	1
	Decora Rocker, 3-Way 05633-xxx	1
	Super Duty Power Pack OPP20-0D2	2
	Super Duty Power Pack (Photocell Ready) OPP20-RD4	1
	Marked "Controlled" Receptacles 16352-1PW	2

Open Office
Integrated Room Control (IRC)

Can be Used to Comply with the Following Requirements:

- **Section 130.1(a)**
  - Area Controls
  - Manual ON/OFF
- **Section 130.1(b)**
  - Multi-Level Controls
  - Dimming
- **Section 130.1(c)**
  - Shut-Off Requirements
  - Occupancy Control
  - Partial-ON
  - Partial-OFF
- **Section 130.1(d)**
  - Daylighting
- **Section 130.1(e)**
  - Demand Response Power Reduction Controls
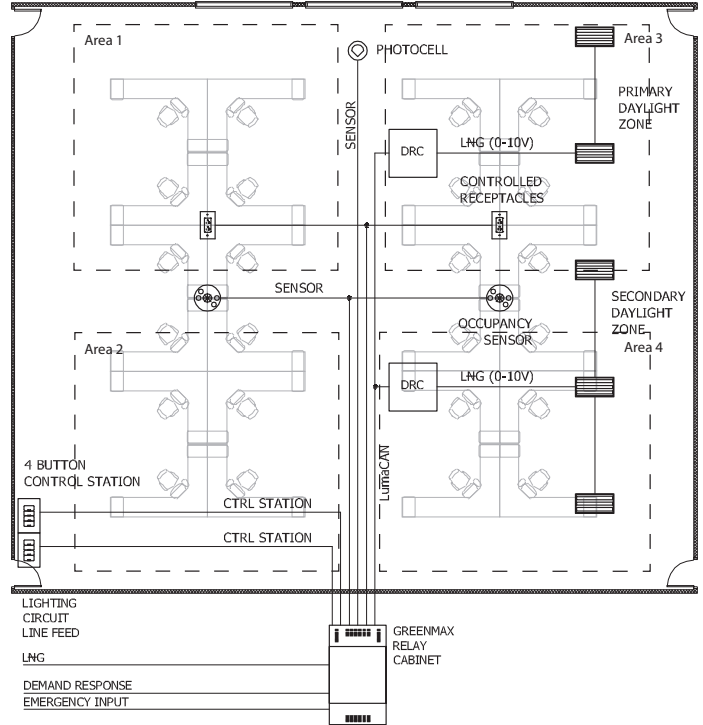- **Section 130.5(d)**
  - Receptacle Control/Plug Load Control

Notes:

- Demand response required in all buildings larger than 10,000SF
- At least one controlled receptacle must be installed within 6 ft. of each uncontrolled receptacle or a split duplex can be used
- VerifEye Submetering Solutions can be used to comply with 2016 Title 24 service metering and disaggregation of electrical circuits requirements
- Where multi-level controls are required, sensors must act as partial-ON/vacancy sensors between 50-70% power

▶ **FEATURED LEVITON SOLUTION**

Integrated Room Control (IRC)

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

List of Equipment

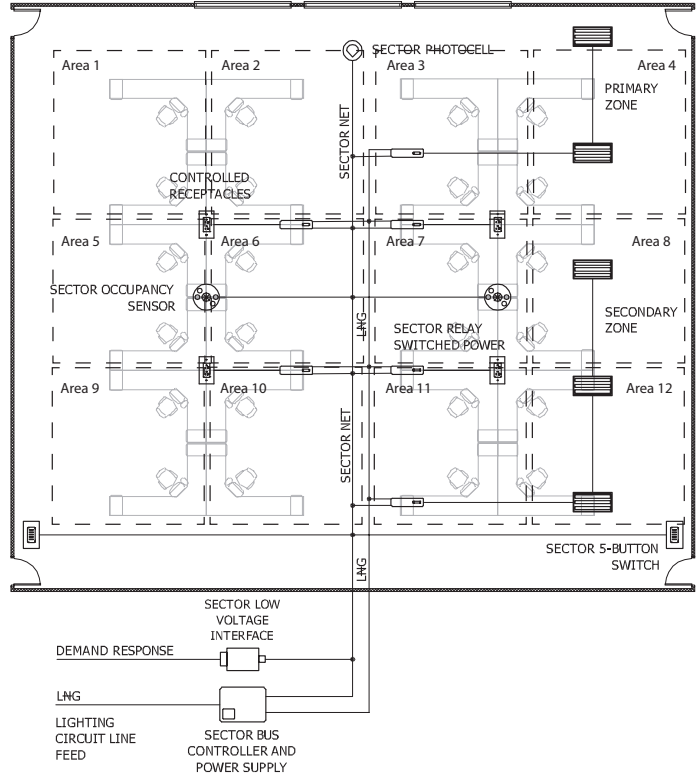|		
IRC Kit for 2 Zones, 2 Relays - includes IRC, sensor, photocell, and control station RCD20-102		
	IRC for 2 Zones, 2 Relays MZD20-102	1
	Multi-Tech Ceiling Mount Occupancy Sensor, 2000SF OSC20-M0W (+1 additional)	
	Photocell, Indoor ODC0P-00W	
	Lighting Control Station RLVSW-4LW (+3 additional)	
Multi-Tech Ceiling Mount Occupancy Sensor, 2000SF OSC20-M0W		2
OPP20 Super Duty Power Pack OPP20-0D1		1
Marked "Controlled" Receptacles 16352-2PW		2

Open Office
Intellect Distributed Fixture Control

Can be Used to Comply with the Following Requirements:

- **Section 130.1(a)**
  - Area Controls
  - Manual ON/OFF
- **Section 130.1(b)**
  - Multi-Level Controls
  - Dimming
- **Section 130.1(c)**
  - Shut-Off Requirements
  - Occupancy Control
  - Partial-ON
  - Partial-OFF
- **Section 130.1(d)**
  - Daylighting
- **Section 130.1(e)**
  - Demand Response Power Reduction Controls
- **Section 130.5(d)**
  - Receptacle Control/Plug Load Control

Notes:

- At least one controlled receptacle must be installed within 6 ft. of each uncontrolled receptacle or a split duplex can be used
- VerifEye Submetering Solutions can be used to comply with 2016 Title 24 service metering and disaggregation of electrical circuits requirements
- Where multi-level controls are required, sensors must act as partial-ON/vacancy sensors between 50-70% power

▶ **FEATURED LEVITON SOLUTION**

Intellect Distributed Fixture Control

- Easy energy savings out-of-the-box
- Controls integrated in fixtures
- Compliant with DesignLights Consortium (DLC) Advanced Lighting Control specifications
- Wirelessly configure, control, and monitor the Intellect system using a Bluetooth app designed for an Android or iOS smart phone

List of Equipment		
	Intellect-Enabled Fixture *Provided by others*	12
	Intellect Keypad, 4-Button ZLDNK-04W	4
	Lumina RF Load Control Module 73A00-3ZB	1
	Marked "Controlled" Receptacles 16352-2PW	5

Open Office
GreenMAX® Relay Control and DRC

Can be Used to Comply with the Following Requirements:

- **Section 130.1(a)**
  - Area Controls
  - Manual-ON/OFF
- **Section 130.1(b)**
  - Multi-Level Controls
  - Dimming
- **Section 130.1(c)**
  - Shut-Off Requirements
  - Occupancy Control
- **Section 130.1(d)**
  - Daylighting
- **Section 130.1(e)**
  - Demand Response Power Reduction Controls
- **Section 130.5(d)**
  - Receptacle Control/Plug Load Control

Notes:
- Demand response required in all buildings larger than 10,000SF
- At least one controlled receptacle must be installed within 6 ft. of each uncontrolled receptacle or a split duplex can be used
- VerifEye Submetering Solutions can be used to comply with 2016 Title 24 service metering and disaggregation of electrical circuits requirements
- Where multi-level controls are required, sensors must act as partial-ON/vacancy sensors between 50-70% power

▶ **FEATURED LEVITON SOLUTION**

GreenMAX® Relay Control System with DRC

- 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

List of Equipment		
	GreenMAX Relay Control System Contact factory for ordering information	1
	DRC Smart Pack (DRC) DRD07-ED0	2
	Ceiling Mount Multi-Tech Occupancy Sensor OSCxx-M0W	2
	Photocell, Indoor PCIND-000	1
	GreenMAX Digital Switch RDGSW-xDW	2
	Marked "Controlled" Receptacles 16352-1PW	5

Open Office
Sector® Distributed Lighting Control
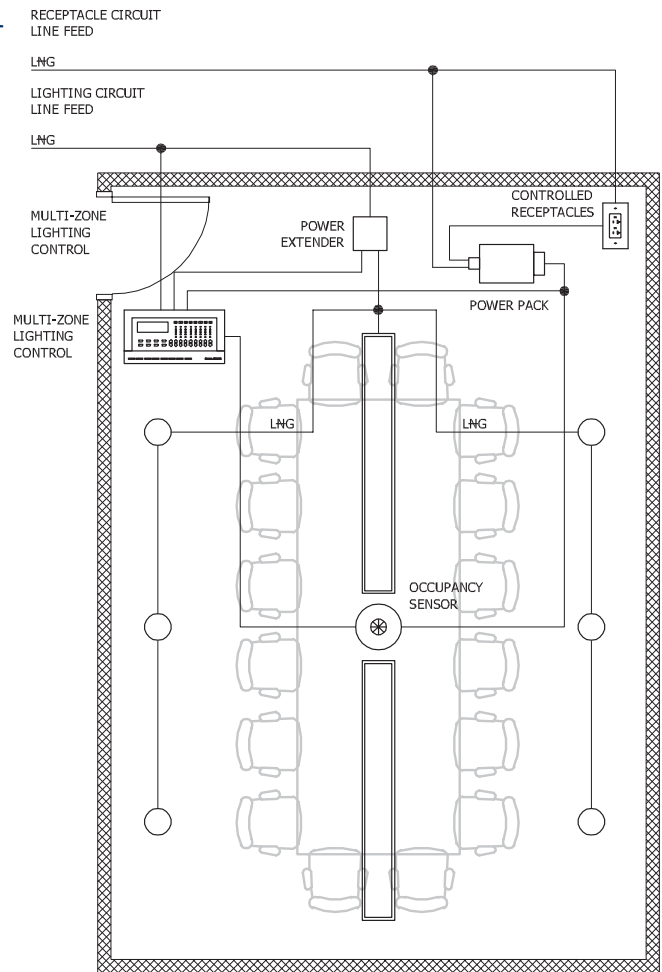
Can be Used to Comply with the Following Requirements:

- **Section 130.1(a)**
  - Area Controls
  - Manual-ON/OFF
- **Section 130.1(b)**
  - Multi-Level Controls
  - Dimming
- **Section 130.1(c)**
  - Shut-Off Requirements
  - Occupancy Control
- **Section 130.1(d)**
  - Daylighting
- **Section 130.1(e)**
  - Demand Response Power Reduction Controls
- **Section 130.5(d)**
  - Receptacle Control/Plug Load Control

Notes:

- Demand response required in all buildings larger than 10,000SF
- At least one controlled receptacle must be installed within 6 ft. of each uncontrolled receptacle or a split duplex can be used
- VerifEye Submetering Solutions can be used to comply with 2016 Title 24 service metering and disaggregation of electrical circuits requirements
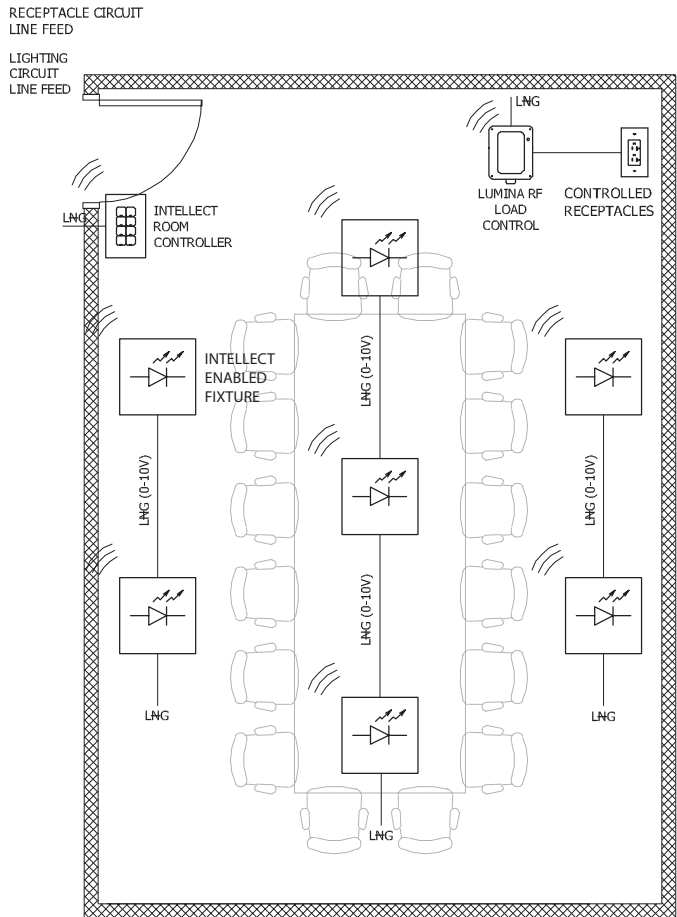- Where multi-level controls are required, sensors must act as partial-ON/vacancy sensors between 50-70% power

▶ **FEATURED LEVITON SOLUTION**

Sector® Distributed Lighting Control System

- Topology-free, polarity-free distributed control
- Combines all lighting management functions into a single system with the fewest connection points, simplest installation, greatest flexibility, and simple specification
- All components connect directly to the topology free 2-wire bus, not the ballast
- Relay controllers allow zone dimming and control for cost-effective system design

List of Equipment		
	Sector Bus Controller and Power Supply SBP00-000	1
	Sector Low Voltage Interface SLIQS-000	1
	Sector Relay SBCS0-L00	6
	Sector Photocell ODC0P-0SW	1
	Sector Occupancy Sensor, Multi-Tech, 2000 SF OSC20-MSW	2
	Sector 5-Button Digital Switch SDS00-1SW	2
	Marked "Controlled" Receptacles 16352-2PW	4

Conference Room
Dimensions® 4000 Lighting Control
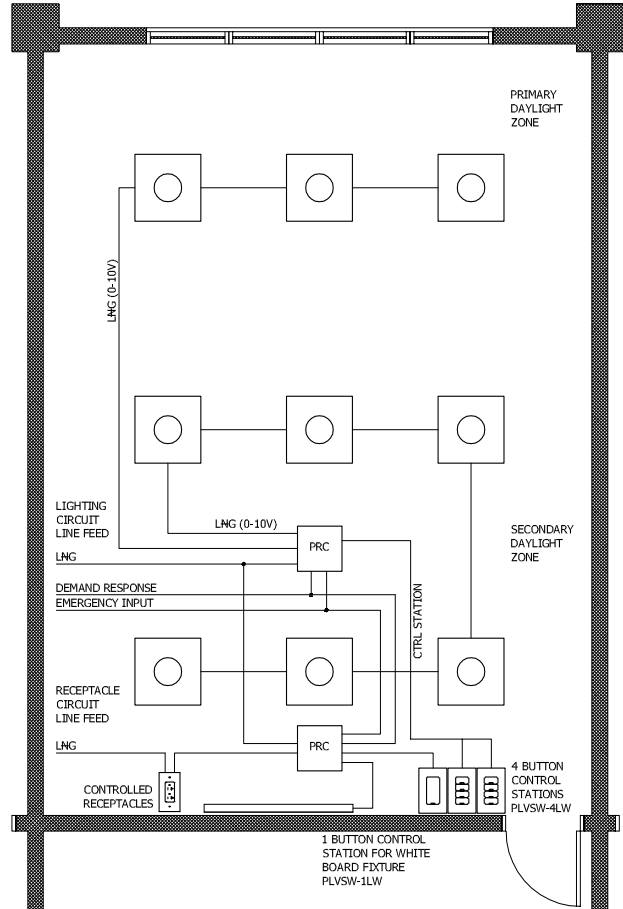
Can be Used to Comply with the Following Requirements:

- **Section 130.1(a)**
  - Area Controls
  - Manual ON/OFF
- **Section 130.1(b)**
  - Multi-Level Controls
  - Dimming
- **Section 130.1(c)**
  - Shut-Off Requirements
  - Occupancy Control
- **Section 130.1(d)**
  - Daylighting
- **Section 130.5(d)**
  - Receptacle Control/Plug Load Control

Notes:

- Demand response required in all buildings larger than 10,000SF
- At least one controlled receptacle must be installed within 6 ft. of each uncontrolled receptacle or a split duplex can be used
- VerifEye Submetering Solutions can be used to comply with 2016 Title 24 service metering and disaggregation of electrical circuits requirements
- Where multi-level controls are required, sensors must act as partial-ON/vacancy sensors between 50-70% power

▶ **FEATURED LEVITON SOLUTION**

Dimensions® 4000 Architectural Lighting Control System

- Offers both stand-alone and integrated room dimming and control
- LED compatible with power extender
- Complete multi-event scheduler and integrated astronomical time clock
- Interfaces with HVAC, emergency, time clock, and load shed auxiliary systems

List of Equipment		
	Dimensions D4206 Multi-Zone Architectural Lighting Control System D4206-1LW	1
	PE300 Power Extender PE300-D0W	1
	Ceiling Mount PIR Occupancy Sensor OSCxx-M0W	1
	OPP20 Super Duty Power Pack OPP20-0D1	1
	Marked "Controlled" Receptacles 16352-2Px	5

Conference Room
Intellect Distributed Fixture Control

Can be Used to Comply with the Following Requirements:

- Section 130.1(a)
  - Area Controls
  - Manual-ON/OFF
- Section 130.1(b)
  - Multi-Level Controls
  - Dimming
- Section 130.1(c)
  - Shut-Off Requirements
  - Occupancy Control
- Section 130.1(e)
  - Demand Response Power Reduction Controls
- Section 130.5(d)
  - Receptacle Control/Plug Load Control

Notes:

- At least one controlled receptacle must be installed within 6 ft. of each uncontrolled receptacle or a split duplex can be used
- VerifEye Submetering Solutions can be used to comply with 2016 Title 24 service metering and disaggregation of electrical circuits requirements
- Where multi-level controls are required, sensors must act as partial-ON/vacancy sensors between 50-70% power

▶ FEATURED LEVITON SOLUTION

Intellect Distributed Fixture Control

- Easy energy savings out-of-the-box
- Controls integrated in fixtures
- Compliant with DesignLights Consortium (DLC) Advanced Lighting Control specifications
- Wirelessly configure, control, and monitor the Intellect system using a Bluetooth app designed for an Android or iOS smart phone

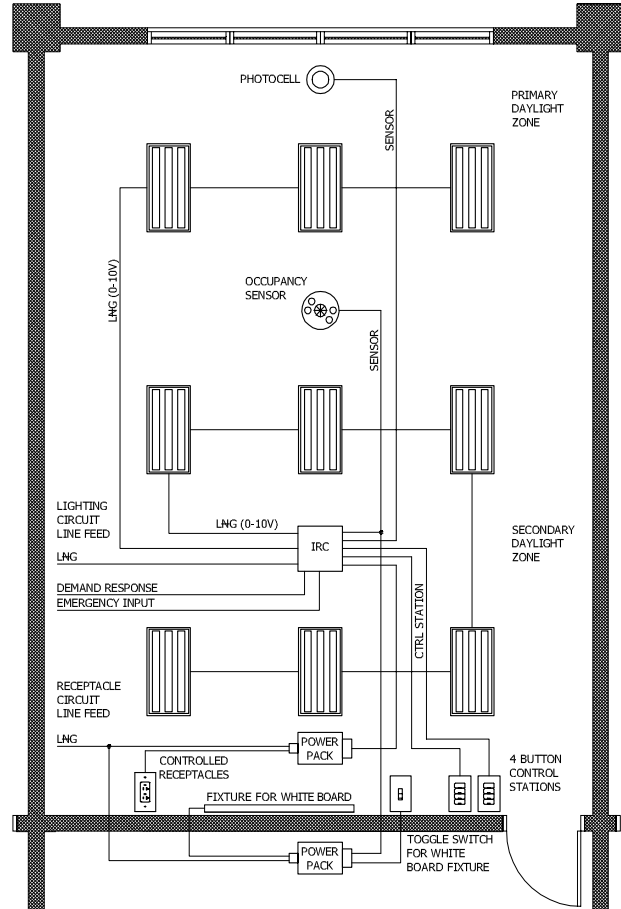| List of Equipment		
	Intellect-Enabled Fixture *Provided by others*	7
	Intellect Keypad, 8-Button ZLDNK-08W	1
	Lumina RF Load Control Module 73A00-3ZB	1
	Marked "Controlled" Receptacles 16352-2PW	5

Classroom
Provolt Room Controller (PRC)

Can be Used to Comply with the Following Requirements:

- **Section 130.1(a)**
  - Area Controls
  - Manual ON/OFF
- **Section 130.1(b)**
  - Multi-Level Controls
  - Dimming
- **Section 130.1(c)**
  - Shut-Off Requirements
  - Occupancy Control
  - Partial-ON
  - Partial-OFF
- **Section 130.1(d)**
  - Daylighting
- **Section 130.1(e)**
  - Demand Response Power Reduction Controls
- **Section 130.5(d)**
  - Receptacle Control/Plug Load Control
  (optional in classrooms)

Notes:
- Demand response required in all buildings larger than 10,000SF
- VerifEye Submetering Solutions can be used to comply with 2016 Title 24 service metering and disaggregation of electrical circuits requirements
- Where multi-level controls are required, sensors must act as partial-ON/vacancy sensors between 50-70% power

► **FEATURED LEVITON 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

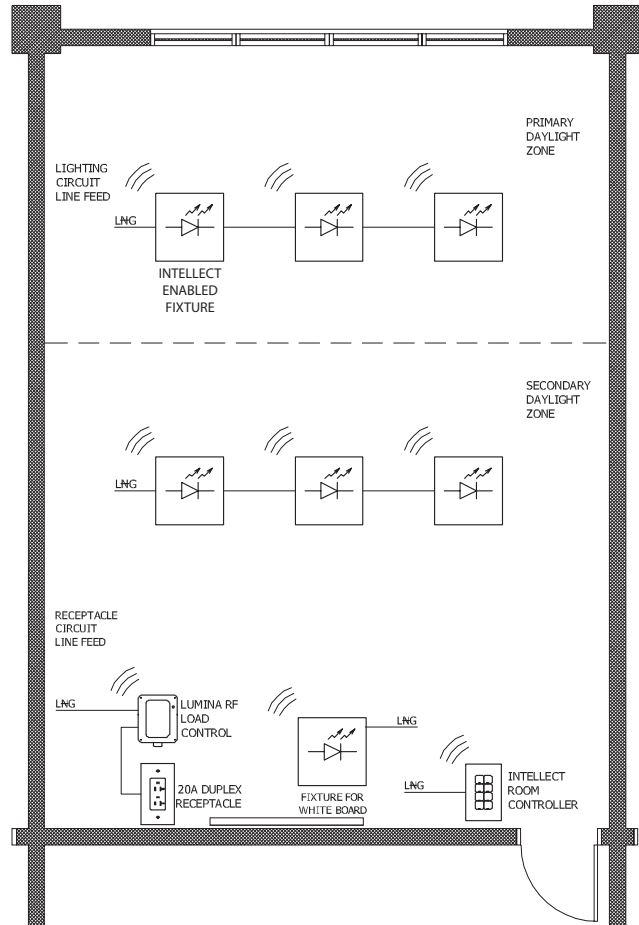| List of Equipment		
	Provolt Room Controller (PRC) O5C04-IDW	1
	Provolt Low-Voltage Keypad, 4-Button PLVSW-4LW	2
	Provolt Low-Voltage Keypad, 1-Button PLVSW-1LW	1
	Marked "Controlled" Receptacles 16352-2PW	5

Classroom
Integrated Room Control (IRC)

Can be Used to Comply with the Following Requirements:

- **Section 130.1(a)**
  - Area Controls
  - Manual ON/OFF
- **Section 130.1(b)**
  - Multi-Level Controls
  - Dimming
- **Section 130.1(c)**
  - Shut-Off Requirements
  - Occupancy Control
  - Partial-ON
  - Partial-OFF
- **Section 130.1(d)**
  - Daylighting
- **Section 130.1(e)**
  - Demand Response Power Reduction Controls
- **Section 130.5(d)**
  - Receptacle Control/Plug Load Control
    (optional in classrooms)

Notes:

- Demand response required in all buildings larger than 10,000SF
- VerifEye Submetering Solutions can be used to comply with 2016 Title 24 service metering and disaggregation of electrical circuits requirements
- Where multi-level controls are required, sensors must act as partial-ON/vacancy sensors between 50-70% power

▶ **FEATURED LEVITON SOLUTION**

Integrated Room Control (IRC)

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

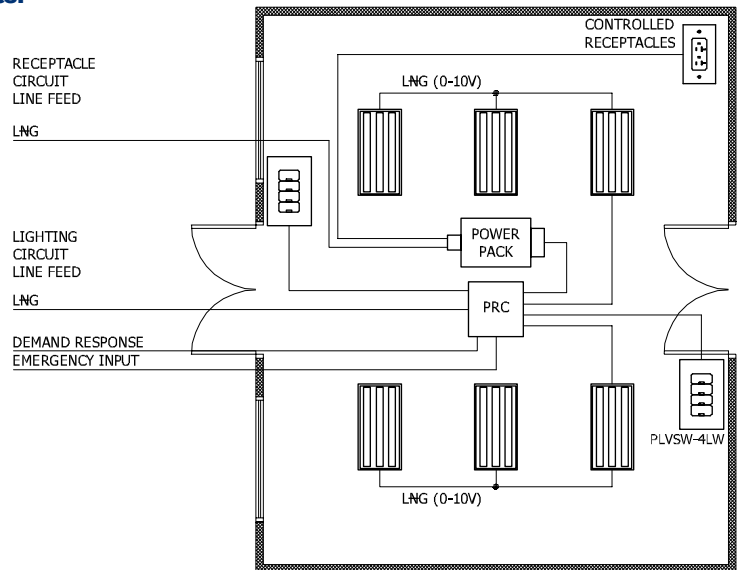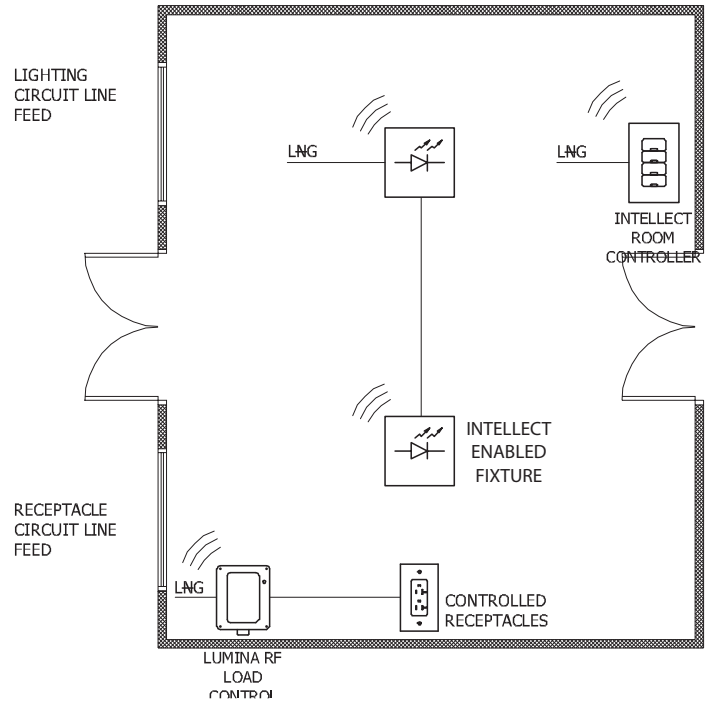| **List of Equipment**		
	IRC Kit for 2 Zones, 2 Relays - includes IRC, sensor, photocell, and control station RCD20-102	
	IRC for 2 Zones, 2 Relays MZD20-102	1
	Ceiling Mount Multi-Tech Occupancy Sensor 2000SF, OSC20-M0W	
	Photocell, Indoor ODC0P-00W	
	Lighting Control Station RLVSW-4LW (+1 additional)	
	Low Voltage Toggle Switch 12021-2W	1
	OPP20 Super Duty Power Pack, Auto-ON OPP20-0D1	1
	OPP20 Super Duty Power Pack, Auto-ON/ Manual-ON OPP20-0D2	1
	Marked "Controlled" Receptacles 5362-S1W	5

Classroom
Intellect Distributed Fixture Control

Can be Used to Comply with the Following Requirements:

- **Section 130.1(a)**
  - Area Controls
  - Manual ON/OFF
- **Section 130.1(b)**
  - Multi-Level Controls
  - Dimming
- **Section 130.1(c)**
  - Shut-Off Requirements
  - Occupancy Control
- **Section 130.1(d)**
  - Daylighting
- **Section 130.1(e)**
  - Demand Response Power Reduction Controls
- **Section 130.5(d)**
  - Receptacle Control/Plug Load Control
  (optional in classrooms)

Notes:
- VerifEye Submetering Solutions can be used to comply with 2016 Title 24 service metering and disaggregation of electrical circuits requirements
- Where multi-level controls are required, sensors must act as partial-ON/vacancy sensors between 50-70% power

▶ **FEATURED LEVITON SOLUTION**

Intellect Distributed Fixture Control

- Easy energy savings out-of-the-box
- Controls integrated in fixtures
- Compliant with DesignLights Consortium (DLC) Advanced Lighting Control specifications
- Wirelessly configure, control, and monitor the Intellect system using a Bluetooth app designed for an Android or iOS smart phone

List of Equipment		
	Intellect-Enabled Fixture *Provided by others*	7
	Intellect Keypad, 8-Button ZLDNK-08W	1
	Lumina RF Load Control Module 73A00-3ZB	1
	Marked "Controlled" Receptacles 16352-2PW	5

Common Area
Provolt Room Controller (PRC)

Can be Used to Comply with the Following Requirements:

- **Section 130.1(a)**
  - Area Controls
  - Manual ON/OFF
- **Section 130.1(b)**
  - Multi-Level Controls
  - Dimming
- **Section 130.1(c)**
  - Shut-Off Requirements
  - Occupancy Control
  - Partial-ON
  - Partial-OFF
- **Section 130.1(d)**
  - Daylighting
- **Section 130.1(e)**
  - Demand Response Power Reduction Controls
- **Section 130.5(d)**
  - Receptacle Control/Plug Load Control

Notes:

- Demand response required in all buildings larger than 10,000SF
- At least one controlled receptacle must be installed within 6 ft. of each uncontrolled receptacle or a split duplex can be used
- VerifEye Submetering Solutions can be used to comply with 2016 Title 24 service metering and disaggregation of electrical circuits requirements
- Where multi-level controls are required, sensors must act as partial-ON/vacancy sensors between 50-70% power

▶ **FEATURED LEVITON 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

List of Equipment		
	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

Common Area
Intellect Distributed Fixture Control

Can be Used to Comply with the Following Requirements:

- **Section 130.1(a)**
  - Area Controls
  - Manual ON/OFF
- **Section 130.1(b)**
  - Multi-Level Controls
  - Dimming
- **Section 130.1(c)**
  - Shut-Off Requirements
  - Occupancy Control
- **Section 130.1(d)**
  - Daylighting
- **Section 130.5(d)**
  - Receptacle Control/Plug Load Control

Notes:

- At least one controlled receptacle must be installed within 6 ft. of each uncontrolled receptacle or a split duplex can be used
- VerifEye Submetering Solutions can be used to comply with 2016 Title 24 service metering and disaggregation of electrical circuits requirements
- Where multi-level controls are required, sensors must act as partial-ON/vacancy sensors between 50-70% power

LIGHTING CIRCUIT LINE FEED

L N G

L N G

INTELLECT ROOM CONTROLLER

INTELLECT ENABLED FIXTURE

RECEPTACLE CIRCUIT LINE FEED

L N G

CONTROLLED RECEPTACLES

LUMINA RF LOAD CONTROL

▶ **FEATURED LEVITON SOLUTION**

Intellect Distributed Fixture Control

- Easy energy savings out-of-the-box
- Controls integrated in fixtures
- Compliant with DesignLights Consortium (DLC) Advanced Lighting Control specifications
- Wirelessly configure, control, and monitor the Intellect system using a Bluetooth app designed for an Android or iOS smart phone

| List of Equipment		
	Intellect-Enabled Fixture *Provided by others*	2
	Intellect Keypad, 4-Button ZLDNK-04W	1
	Lumina RF Load Control Module 73A00-3ZB	1
	Marked "Controlled" Receptacles 16352-2PW	5

Parking Garage
EZ-MAX® Plus Stand-Alone Relay Control

Can be Used to Comply with the Following Requirements:

- Section 130.1(b)
  - Multi-Level Controls
- Section 130.1(c)
  - Shut-Off Requirements
  - Occupancy Control
  - Partial-OFF
- Section 130.1(d)
  - Daylighting
- Section 130.1(e)
  - Demand Response Power Reduction Controls

Notes:
- Demand response required in all buildings larger than 10,000SF
- VerifEye Submetering Solutions can be used to comply with 2016 Title 24 service metering and disaggregation of electrical circuits requirements
- Solution features bi-level HID lighting, with each level controlled by an independent relay per zone
- Where multi-level controls are required, sensors must act as partial-ON/vacancy sensors between 50-70% power
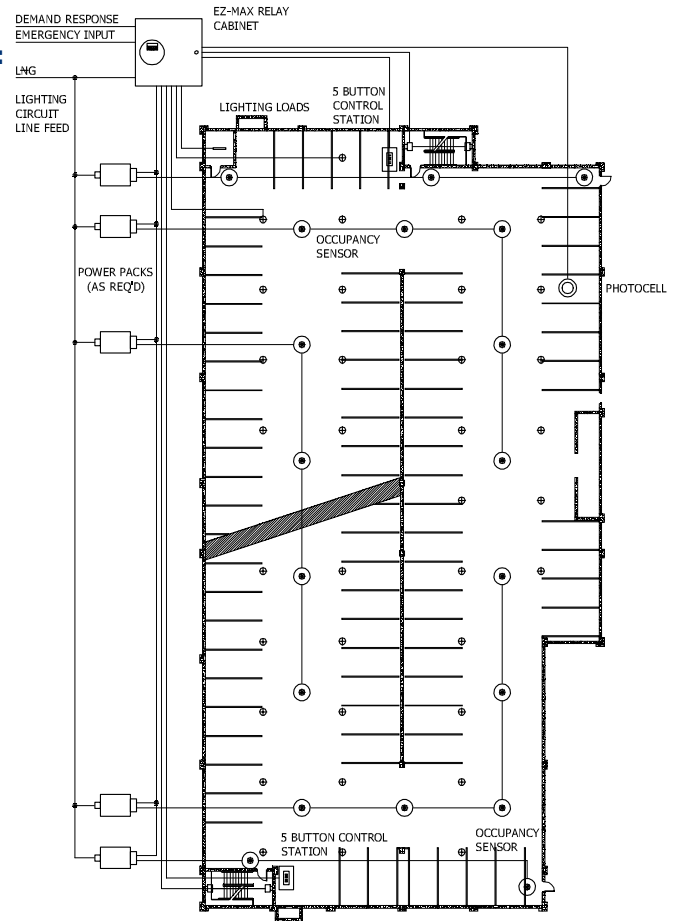
▶ FEATURED LEVITON SOLUTION

EZ-MAX® Plus Stand-Alone Relay Control
- Centralized building lighting control and daylight harvesting in a contractor-friendly, quick to install, simple to configure compact enclosure
- Low voltage inputs allow connection of photocells, occupancy sensors, low-voltage switches, and digital switches for a comprehensive yet easily installed energy management solution
- Built-in astronomical time clock and scheduler
- Auto-detection and auto-assign of installed network switches

List of Equipment		
	EZ-MAX Plus Relay Control Panel R08BD-L08	1
	Ceiling Mount PIR Occupancy Sensor OSCxx-RMW	19
	Indoor Photocell HBE11-IUB	1
	Low Voltage Switch, 5-Button 00LVS-0SW	2
	OPP20 Super Duty Power Pack* OPP20-0D2	5

*Application may require more power packs than shown in example drawing. Consult Leviton for more information.

Parking Garage
NorthStar

Can be Used to Comply with the Following Requirements:

- **Section 130.1(a)**
  - Area Controls
- **Section 130.1(b)**
  - Multi-Level Controls
  - Dimming
- **Section 130.1(c)**
  - Shut-Off Requirements
  - Partial-OFF Occupancy Control
- **Section 130.1(d)**
  - Daylighting
- **Section 130.1(e)**
  - Demand Response Power Reduction Controls

Notes:

- Demand response required in all buildings larger than 10,000SF
- VerifEye Submetering Solutions can be used to comply with 2016 Title 24 service metering and disaggregation of electrical circuits requirements
- Where multi-level controls are required, sensors must act as partial-ON/vacancy sensors between 50-70% power
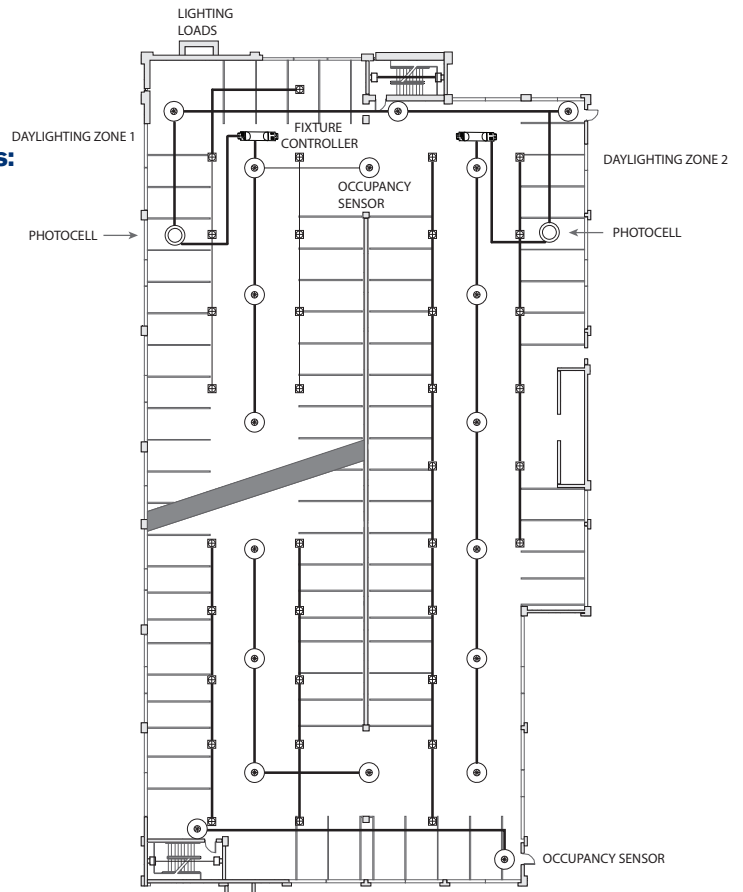
NOTE: Project site contains a NorthStar Site Controller.

▶ **FEATURED LEVITON SOLUTION**

NorthStar Outdoor Lighting Controls

- Wireless system with a self-healing mesh network
- Suitable for switching and 0-10V dimming load types
- Controlled by either a simple time clock, dusk-to-dawn photocell control or via customized control sequences
- Commission through the NorthStar Site Controller using any web browser and the Controller's wifi access point
- Use the Leviton Provisioning App to identify and locate the fixture modules by simply scanning the QR code on each fixture module at the point of installation using the GPS feature on your tablet or smart device

List of Equipment		
	Wireless Fixture Controller, 2 Zone OCF02-1RT	2
	Site Controller OC00G-00G	1
	Fixture Mount PIR Occupancy Sensor OSFHP-I4W	19
	Indoor Photocell ODC0P-0xW	2

NOTE: Application may require more power packs than shown in example drawing. Consult Leviton for more information.
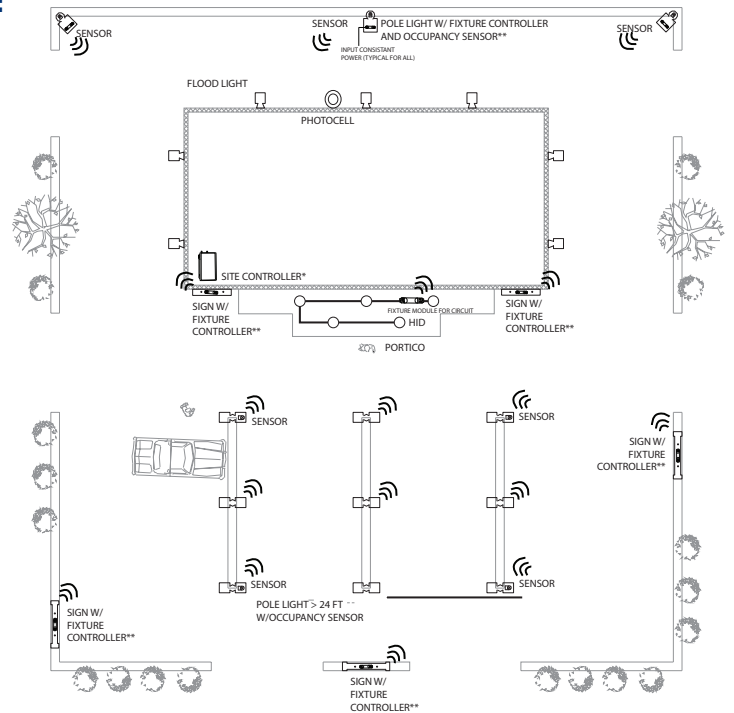
Site Lighting
Northstar

Can be Used to Comply with the Following Requirements:

- **Section 130.2(c)**
  - Outdoor Lighting Controls
  - Schedule Based Control
  - Partial-OFF Motion Sensing
- **Section 130.1(e)**
  - Demand Response
    Power Reduction Controls
- **Section 130.3(a)**
  - Sign Lighting Controls

Notes:

- VerifEye Submetering Solutions can be used to comply with 2016 Title 24 service metering and disaggregation of electrical circuits requirements
- No dimming required for the following exceptions:
  - Pole lights > 24'
  - Non-pole site lighting < 30 Watts
  - Pole site lighting < 75 Watts
  - Linear lighting < 4 Watts

► **FEATURED LEVITON SOLUTION**

NorthStar Outdoor Lighting Controls

- Wireless system with a self-healing mesh network
- Suitable for switching and 0-10V dimming load types
- Controlled by either a simple time clock, dusk-to-dawn photocell control or via customized control sequences
- Commission through the NorthStar Site Controller using any web browser and the Controller's wifi access point
- Use the Leviton Provisioning App to identify and locate the fixture modules by simply scanning the QR code on each fixture module at the point of installation using the GPS feature on your tablet or smart device

List of Equipment

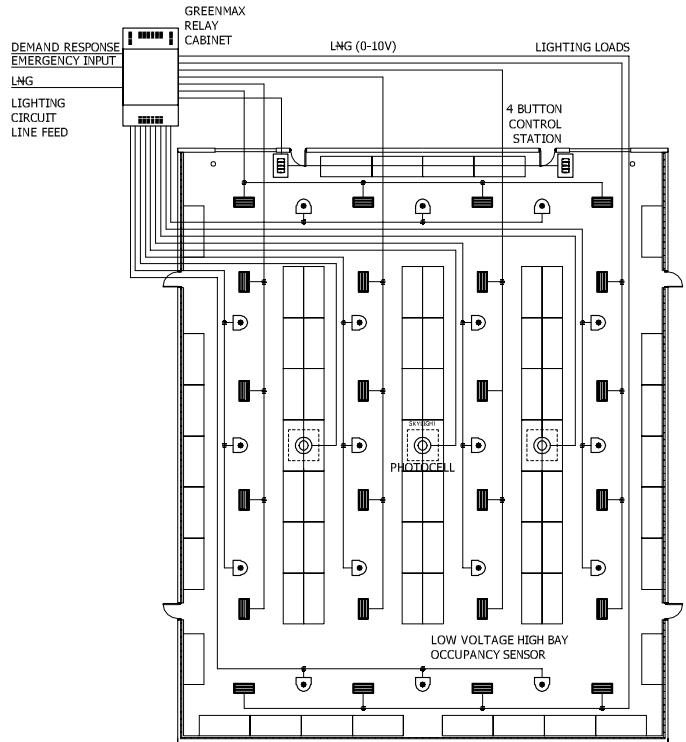|		
	Wireless Fixture Controller, 1 Zone OCF01-1RT	6
	Site Controller OC00G-00G	1
	Outdoor Occupancy Sensor OSF20-IUW	12
	Outdoor Photocell PCOUT-000	1

Warehouse
GreenMAX Relay Control

Can be Used to Comply with the Following Requirements:

- **Section 130.1(a)**
  - Area Controls
  - Manual-ON/OFF
- **Section 130.1(b)**
  - Multi-Level Controls
  - Dimming
- **Section 130.1(c)**
  - Shut-Off Requirements
  - Partial-OFF Occupancy Control
- **Section 130.1(d)**
  - Daylighting
- **Section 130.1(e)**
  - Demand Response Power Reduction Controls

  Notes:
- Demand response required in all buildings larger than 10,000SF
- VerifEye Submetering Solutions can be used to comply with 2016 Title 24 service metering and disaggregation of electrical circuits requirements
- LumaCAN repeaters/remote analog input panels required as needed

► FEATURED LEVITON SOLUTION

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

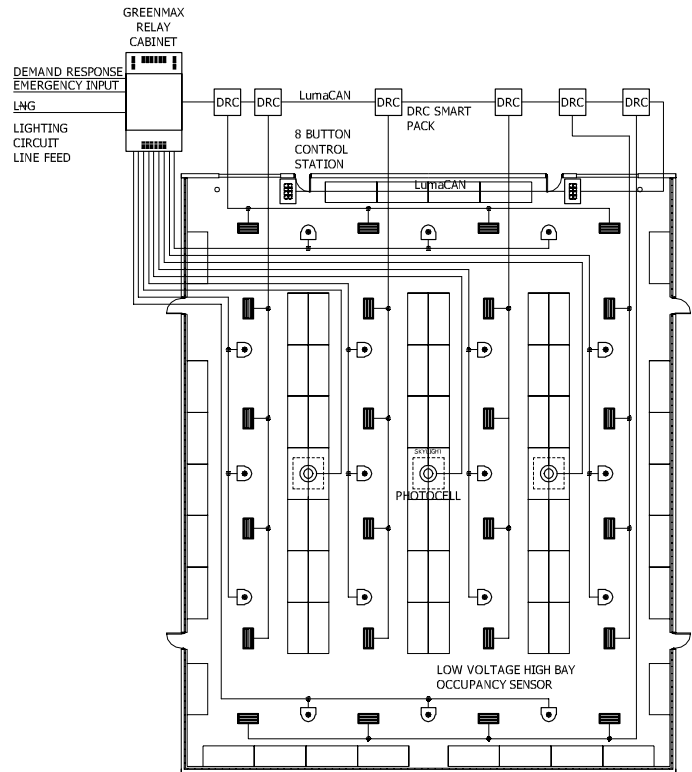| List of Equipment		
	GreenMAX Relay Control System RxxTC-100 | RPMxx-xxx | Rxxxx-xxx | RHDU1-xxx | RELAY-xxx	1
	Lighting Control Station RLVSW-4LW	2
	Low Voltage High Bay Occupancy Sensor OSFHD-xxW	18
	Indoor Photocell PCSKY-000	3

Warehouse
DRC Smart Packs

Can be Used to Comply with the Following Requirements:

- **Section 130.1(a)**
  - Area Controls
  - Manual-ON/OFF
- **Section 130.1(b)**
  - Multi-Level Controls
  - Dimming
- **Section 130.1(c)**
  - Shut-Off Requirements
  - Partial-OFF Occupancy Control
- **Section 130.1(d)**
  - Daylighting
- **Section 130.1(e)**
  - Demand Response Power Reduction Controls

  Notes:
- Demand response required in all buildings larger than 10,000SF
- VerifEye Submetering Solutions can be used to comply with 2016 Title 24 service metering and disaggregation of electrical circuits requirements
- LumaCAN repeaters/remote analog input panels required as needed

▶ **FEATURED LEVITON SOLUTION**

GreenMAX® Relay Control System with DRC

- 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

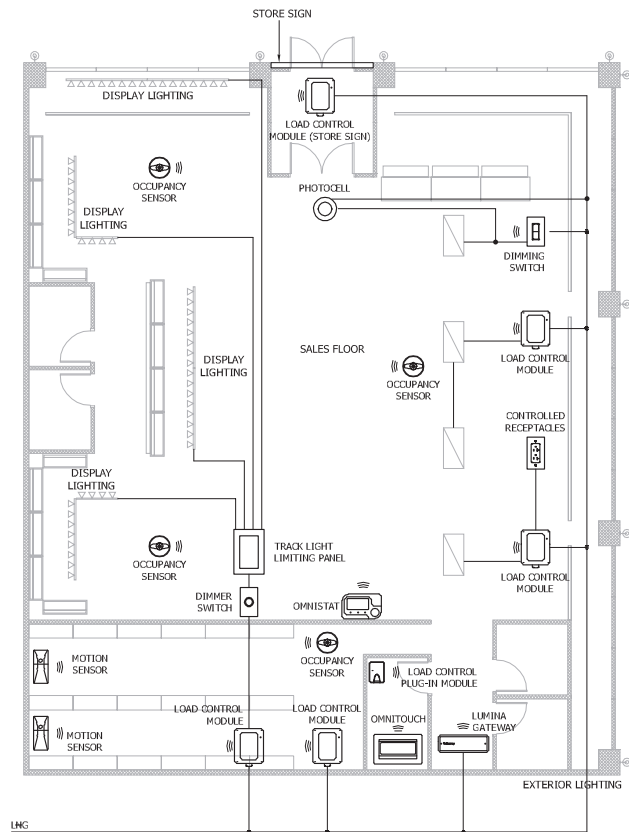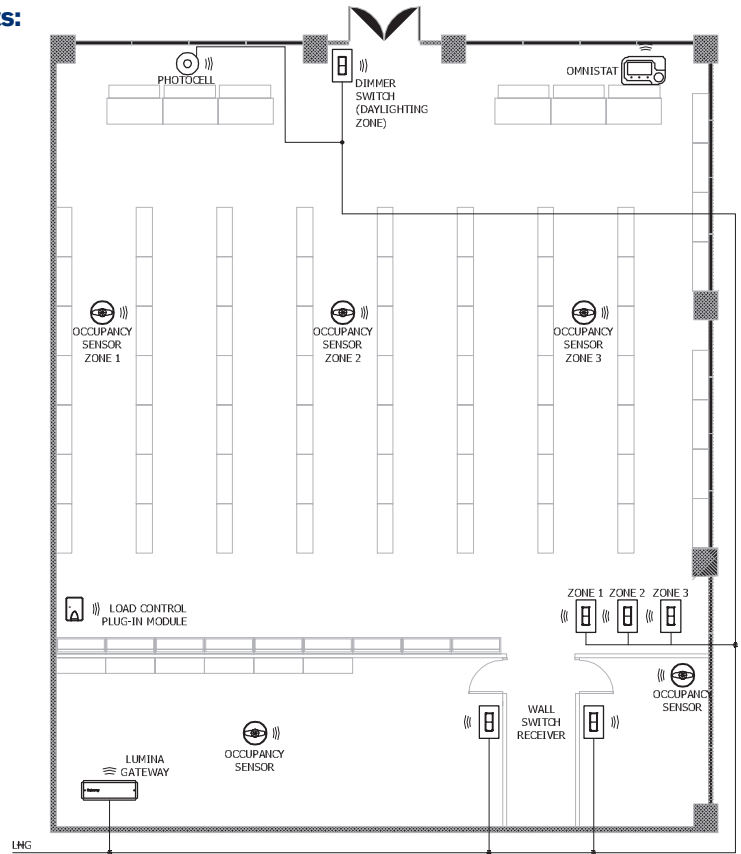| List of Equipment		
	GreenMAX Relay Control System RxxTC-100 | RPMxx-xxx | Rxxxx-xxx | RHDU1-xxx | RELAY-xxx	1
	DRC Smart Pack (DRC) DRD07-ED0	6
	Fixture Mount PIR High/Low Bay Dimming Occupancy Sensor HB011-PDX	18
	GreenMAX Digital Lighting Control Station, 8-Button RDGSW-8CW	2

Retail Space
Lumina™ RF Wireless Solutions

Can be Used to Comply with the Following Requirements:

- **Section 130.1(a)**
  - Area Controls
  - Manual ON/OFF
- **Section 130.1(b)**
  - Multi-Level Controls
  - Dimming
- **Section 130.1(c)**
  - Shut-Off Requirements
  - Occupancy Control
- **Section 130.1(d)**
  - Daylighting
- **Section 130.5(d)**
  - Receptacle Control/Plug Load Control

Notes:
- Demand response required in all buildings larger than 10,000SF
- At least one controlled receptacle must be installed within 6 ft. of each uncontrolled receptacle or a split duplex can be used
- VerifEye Submetering Solutions can be used to comply with 2016 Title 24 service metering and disaggregation of electrical circuits requirements
- Where multi-level controls are required, sensors must act as partial-ON/vacancy sensors between 50-70% power

► **FEATURED LEVITON SOLUTION**

Lumina™ RF Wireless Solutions

- Low cost wireless energy management solution for fast and simple installation at a fraction of a standard system's cost
- Connect up to 40 Leviton wireless devices including sensors, light switches, thermostats and heavy-duty load control modules
- Automated control of loads and remote control via the Lumina Mobile app

List of Equipment			
		Load Control Module 73A00-xZB	5
		Motion Sensor LURMD-00W	2
		Occupancy Sensor ZSCxx-IxW	3
		Load Control Plug-In Module 89A00-1ZB	1
		Lumina RF 0-10V Dimmer ZSD07-ADZ	1
		Track Light Limiting Panel Gxxxx-xxx	1
		Lumina RF Wireless Thermostat RT15Z-00W	1
		OmniTouch 7 Touchscreen 99A00-00x	1
		Photocell PCCXD-00W	1
		Lumina Gateway 74A00-1	1

Convenience Store
Lumina™ RF Wireless Solutions

LEVITON

Can be Used to Comply with the Following Requirements:

- **Section 130.1(a)**
  - Area Controls
  - Manual-ON/OFF
- **Section 130.1(b)**
  - Multi-Level Controls
  - Dimming
- **Section 130.1(c)**
  - Shut-Off Requirements
  - Occupancy Control
- **Section 130.1(d)**
  - Daylighting
- **Section 130.1(e)**
  - Demand Response Power Reduction Controls
- **Section 130.2(c)**
  - Outdoor Lighting Controls
  - Schedule Based Control

Notes:

- Demand response required in all buildings larger than 10,000SF
- VerifEye Submetering Solutions can be used to comply with 2016 Title 24 service metering and disaggregation of electrical circuits requirements
- Where multi-level controls are required, sensors must act as partial-ON/vacancy sensors between 50-70% power

▶ **FEATURED LEVITON SOLUTION**

Lumina™ RF Wireless Solutions

- Low cost wireless energy management solution for fast and simple installation at a fraction of a standard system's cost
- Connect up to 40 Leviton wireless devices including sensors, light switches, thermostats and heavy-duty load control modules
- Automated control of loads and remote control via the Lumina Mobile app

List of Equipment

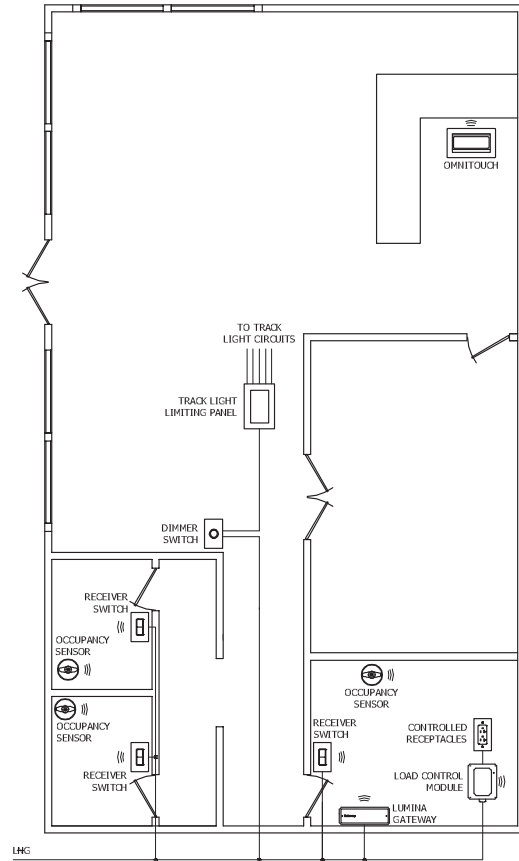|		
	Occupancy Sensor ZSCxx-IxW	5
	Load Control Plug-In Module 89A00-1ZB	1
	Lumina RF Receiver Switch ZSS10-x0Z	5
	Lumina RF Wireless Thermostat RT15Z-00W	1
	Photocell PCCXD-00W	1
	Lumina Gateway 74A00-1	1

Restaurant
Lumina™ RF Wireless Solutions

Can be Used to Comply with the Following Requirements:

- **Section 130.1(a)**
  - Area Controls
  - Manual-ON/OFF
- **Section 130.1(b)**
  - Multi-Level Controls
  - Dimming
- **Section 130.1(c)**
  - Shut-Off Requirements
  - Occupancy Control
- Section 130.1(d)
  - Daylighting

Notes:
- VerifEye Submetering Solutions can be used to comply with 2016 Title 24 service metering and disaggregation of electrical circuits requirements
- Power Extenders required for 0-10V LED lighting
- Where multi-level controls are required, sensors must act as partial-ON/vacancy sensors between 50-70% power

▶ **FEATURED LEVITON SOLUTION**

Lumina™ RF Wireless Solutions

- Low cost wireless energy management solution for fast and simple installation at a fraction of a standard system's cost
- Connect up to 40 Leviton wireless devices including sensors, light switches, thermostats and heavy-duty load control modules
- Automated control of loads and remote control via the Lumina Mobile app

List of Equipment		
	Load Control Module 73A00-xZB	1
	Occupancy Sensor ZSCxx-IxW	3
	Lumina RF 0-10V Dimmer ZSD07-ADZ	1
	Lumina RF Receiver Switch ZSS10-x0Z	3
	Track Light Limiting Panel Gxxxx-xxx	1
	OmniTouch 7 Touchscreen 99A00-00x	1
	Lumina Gateway 74A00-1	1

title24.leviton.com

Hospitality
Lumina™ RF Hospitality Solutions

Can be Used to Comply with the Following Requirements:

- **Section 130.1(c)**
  - Shut-Off Requirements
  - Occupancy Control
- **Section 130.5(d)**
  - Receptacle Control/
    Plug Load Control

Notes:

- At least one controlled receptacle must be installed within 6 ft. of each uncontrolled receptacle or a split duplex can be used
- VerifEye Submetering Solutions can be used to comply with 2016 Title 24 service metering and disaggregation of electrical circuits requirements
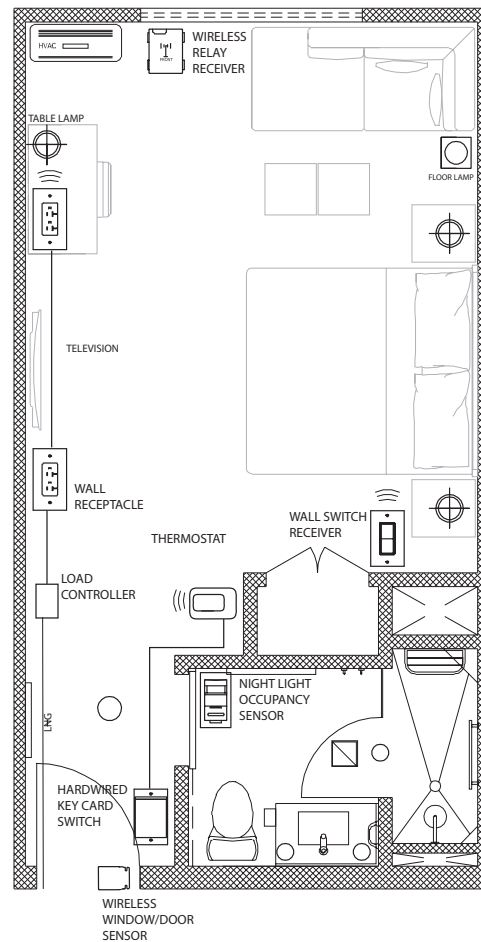
▶ **FEATURED LEVITON SOLUTION**

Lumina™ RF Hospitality Solutions

- Low cost wireless energy management solution for fast and simple installation at a fraction of a standard system's cost
- Connect up to 40 Leviton wireless devices including sensors, light switches, thermostats and heavy-duty load control modules
- Automated control of loads and remote control via the Lumina Mobile app

List of Equipment

	Lumina RF Hospitality Thermostat RC500-2EW	1
	Key Card Switch (Hardwired) HKSWP-0Dx	1
	Lumina RF Rocker Switch ZSS10-G0Z	1
	Lumina RF 30A Load Controller 73A00-3ZB	1
	Marked "Controlled" Receptacle 16352-2PW	2
	Decora PIR Wall Switch Sensor with LED Night Light OSSNL-IDW	1
	Window/Door Sensor LURDW-00W	1

Energy Metering Solution
VerifEye™ Submetering Solutions

Series 8000 Multi-Point High Density Meter → EMH+ All-in-One Meter and Hub → LAN → Cloud →

BMO 3.0
Web-Based Software:
- Base Module (free with purchase of EMH+ or any VerifEye hub)
- Code Compliance Module
- Executive Reporting Dashboard Module
- Tenant Billing Module
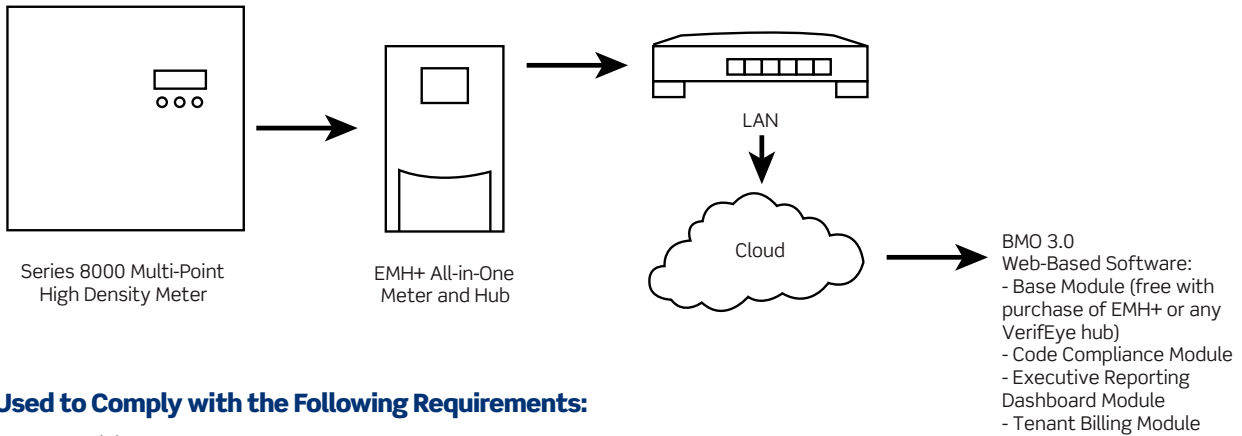
Can be Used to Comply with the Following Requirements:

- Section 130.5(a)
  - Service Metering, Disaggregation of Electrical Circuits

Notes:
Can be used to comply with ASHRAE 90.1, City of Seattle, New York Local Law 88, and 2016 Title 24 service metering and disaggregation of electrical circuits requirements

Contact your local Leviton Lighting Control Specialist for Title 24 compliant design assistance.

► FEATURED LEVITON 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

List of Equipment		
	Series 8000 Phase Config Multi-Point High Density Meter S8xxx-xxx*	1
	EMH+ All-in-One Meter and Hub A8814-xxx*	1
	BMO 3.0 Software Code Compliance Expansion Module BMOSW-COD	1

*Series 8000 Multi-Point High Density Meter and EMH+ All-in-One Meter and Hub are available in multiple configurations. See data sheets for more information.

Smart Residential Solutions

Dimming Controls

- NEMA SSL7A compliant dimmers are designed to optimize performance with dimmable LED, dimmable CFL, incandescent and halogen loads
- Compatible with 0-10V LED and other load type dimming solutions

Sensing Controls

- Vacancy sensors (manual-ON/auto-OFF)
- Universal dimming vacancy sensor available
- Humidity sensor and fan control detects excess humidity in a room and automatically activates the ventilation fan to reduce excess condensation
- Humidity sensor has adjustable set points that comply with CALGreen Part II, indoor air quality and exhaust requirements

Timer Switches

- Astronomical clock and daylight savings time feature
- Maximum 6-hour manual override
- Program 50 or more ON/OFF events
- Compatible with incandescent, LED, CFL, fluorescent and motor loads
- Battery back-up

Smart Non-Residential Solutions

Sensing Controls

- Broadest range of sensors for any application
- Recently released options include fixture mount, wet location, vacancy/occupancy wall switch sensors, programmable timers and more
- Plug load control with OPP20 Super Duty Power Pack
- 24V AC/DC input for integration with HVAC/BAS systems
- Industry-leading layout and application services

Intellect Distributed Fixture Control

- Easy energy savings out-of-the-box
- Compliant with DesignLights Consortium (DLC) Advanced Lighting Control specifications
- Wirelessly configure, control, monitor, provision and schedule the Intellect system using a Bluetooth app designed for an Android or iOS smart phone or other Bluetooth enabled devices within a 30-100' range

Smart Non-Residential Solutions

Provolt™ Room Controller

- High-performance, code-compliant capabilities in an industry-exclusive single self-contained unit including daylight harvesting, 0-10V control, partial-ON, partial-OFF, occupancy sensing and demand response
- Ladderless Commissioning through the smartphone Bluetooth app
- Fast room replication with multi-room templates

Integrated Room Control (IRC)

- Combines occupancy sensing, daylight harvesting, 0-10V dimming, partial-ON, partial-OFF, and demand response capabilities in a stand-alone package
- Kitted with factory configured 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

LevNet RF™ Energy Harvesting Wireless Solutions

- No wires to run and no batteries required—install in 1/4th the time—eliminating time and expense of control wiring
- Broad range of switches and control modules to meet virtually any control need
- Enables rapid retrofit with minimal impact

Lumina™ RF Wireless Solutions

- Wireless solutions ensure energy savings in new construction and retrofits with the Lumina Gateway functioning as an energy management coordinator
- Automated control of loads via remote control from a tablet or smartphone via the Lumina Mobile app

Dimensions® D4000 and D8000

- D4000 controls offer both stand-alone and integrated room dimming and control
- D8000 systems provide distributed control of up to 1,000 channels
- Complete multi-event scheduler and integrated astronomical time clock
- Interfaces with HVAC, emergency, time clock, and load shed auxiliary systems

Sapphire™ Architectural Lighting Controls

- Modern touchscreen user interface integrates with multiple Leviton lighting control systems
- Online and offline configuration
- Supports multiple interfaces—LumaCAN®, Ethernet, A/V, HVAC, wireless (LevNet RF) and analog systems
- Software update through USB interface behind front panel

EZ-MAX® Plus Stand-Alone Relay System

- Centralized building lighting control and daylight harvesting in a contractor-friendly, quick to install, simple to configure compact enclosure
- Low voltage inputs allow connection of photocells, occupancy sensors, low-voltage switches and digital switches for a comprehensive yet easily installed solution
- Built-in astronomical time clock and scheduler
- Auto-detection and auto-assign of installed network switches

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
- Programming is done with preset "Behaviors" via the industry-exclusive Handheld Display Unit (HDU)

Sector® Distributed Lighting Control System

- Topology-free, polarity-free distributed control
- Combines all lighting management functions into a single system with the fewest connection points, simplest installation, greatest flexibility, and simple specification
- All components connect directly to the topology free 2-wire bus, not the ballast
- Relay controllers allow zone dimming and control for cost-effective system design

Smart Non-Residential Solutions

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

NorthStar Outdoor Controls

- Wireless system with a self-healing mesh network
- Suitable for switching and 0-10V dimming load types
- Controlled by either a simple time clock, dusk-to-dawn photocell control or via customized control sequences
- Commission through the NorthStar Site Controller using any web browser and the Controller's wifi access point
- Use the Leviton Provisioning App to identify and locate the fixture modules by simply scanning the QR code on each fixture module at the point of installation using the GPS feature on your tablet or smart device

VerifEye™ Submetering Solutions

- Comprehensive line of submeters, communication products, and software solutions
- 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

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 (⏻) and the word "CONTROLLED" on the receptacle face—not the wallplate
- Ideal for new construction and renovation applications
- Available in back and side wired, side wired only, tamper-resistant and Decora® versions
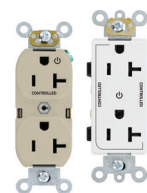
Service and Support
During Every Step of the Process

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 a Title 24 expert provide training in person or online exclusively for your team

- **Title 24 App** - simplifies Title 24 lighting control requirements and provides examples for common applications - available for Android and Apple devices - download at **www.leviton.com/apps**

- **Title 24 Web Portal** - access application diagrams and product solutions – visit **title24.leviton.com**

- **Dollars & Sensors® Online Energy Audit Tool** - makes energy audits easier than ever - use your smart device (Android, Apple, Windows or Blackberry) to enter audit information and your desktop to generate ROI reports, analyses, Bill of Materials, and a submittal package - go to **www.leviton.com/dollarsandsensors**

- **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 **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**

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tech line (8:30AM-7:30PM ET Monday-Friday) 800-824-3005

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