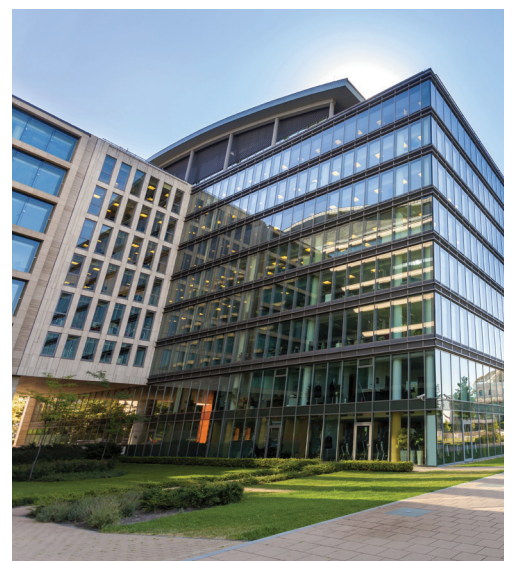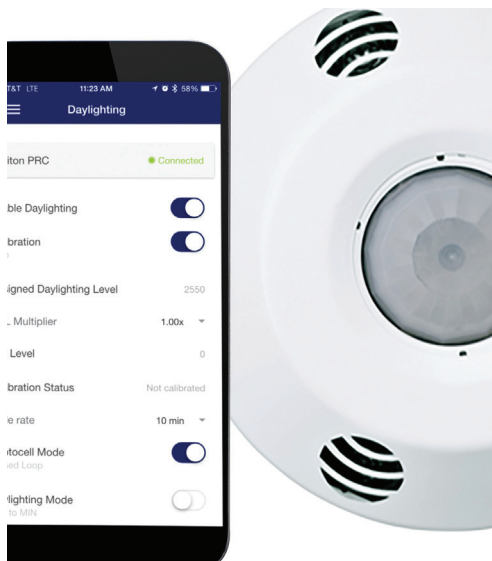# 2015 IECC

Design Guide for Smart Lighting Control and Energy Solutions

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

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

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

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

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

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

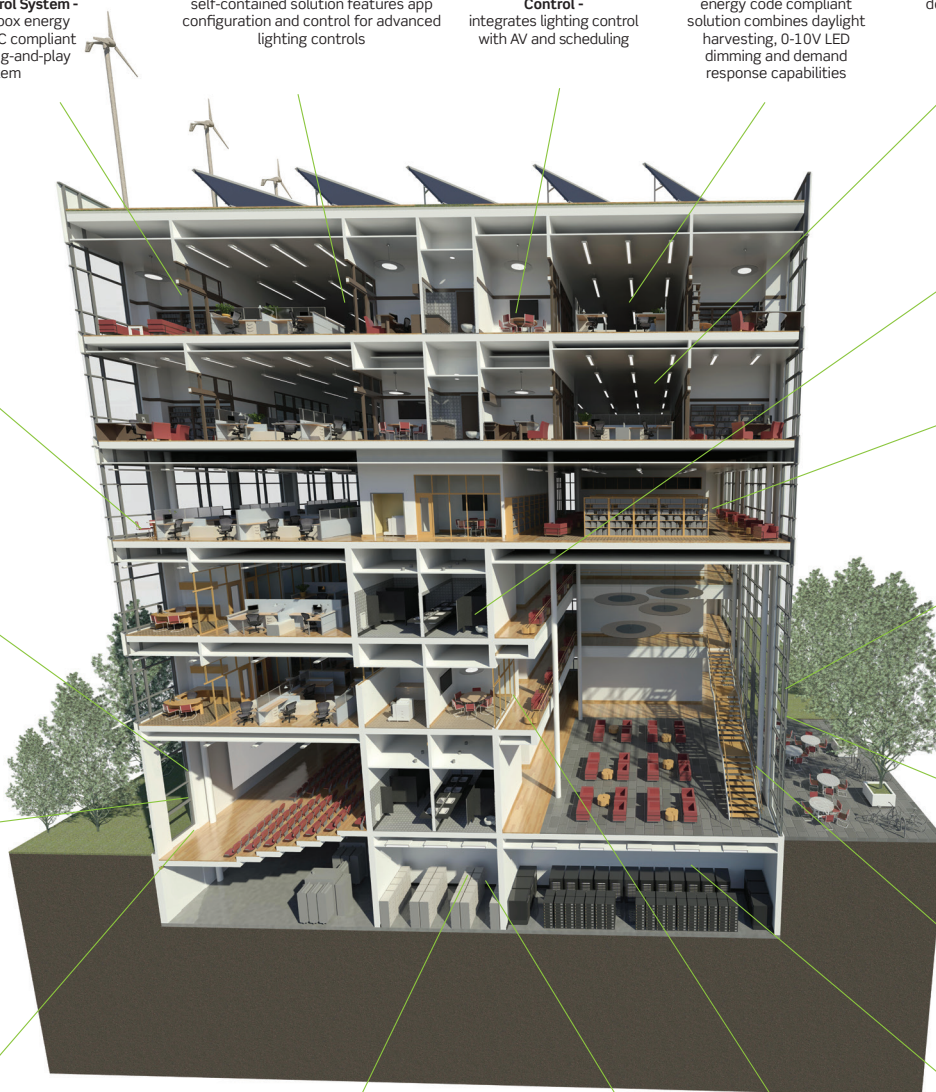**Sector® Distributed Lighting Control –** topology-free energy management control

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

Outdoor Occupancy Sensors – ensure lights remain off in the daytime

Photocells – takes advantage of natural light to save energy

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

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

Leviton Excellence for 2015 IECC Standards

2015 IECC provides the minimum requirements for energy-efficient design of most buildings (excluding low-rise residential buildings). IECC standards define the minimum energy efficiency requirements for new construction, as well as new systems installed in existing buildings.
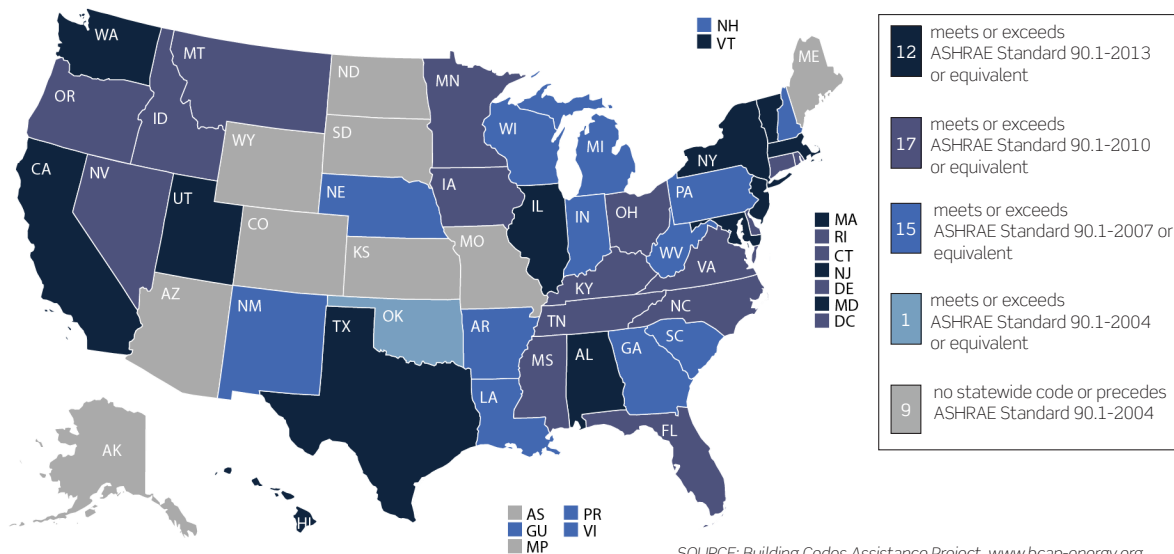
Leviton offers a wide spectrum of lighting and energy control solutions to bring any project up to standard. This reference guide provides examples of common applications, 2015 IECC compliance considerations, and Leviton solutions to meet the functionality and standards compliance needs of the space.

iecc.leviton.com

2015 IECC Design Guide

Energy Standards by State

Commercial State Energy Code Status as of June 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 2015 IECC standard compliance based on a variety of factors. Other exceptions or details may apply. Review the standard for specific requirements and/or consult with a professional advisor. Leviton Mfg. Co., Inc. is not responsible for any loss resulting from the use of any information found in this document.

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

Code Comparison: 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 use 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

Control Type	2015 IECC	ASHRAE Standard 90.1 2016	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 2016	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

2015 IECC Requirement Quick Reference

Control Type	Summary	Quick Take
C405.2.1.1 Interior Manual Lighting Controls (C405.2.2.3 in 2015)	Each area enclosed by walls or floor-to-ceiling partitions shall have at least one manual control for the lighting serving that area. The required controls shall be located within the area served by the controls or be a remote switch that identifies the lights served and indicates their status.* The control must also be readily accessible to occupants. • Exceptions for areas designated as security or emergency areas that need to be continuously lighted • Exception for lighting in stairways or corridors that are elements of the means of egress	Most indoor spaces must have at least one manual lighting control that controls that room. Exceptions include security and/or emergency areas, stairways and corridors. **Leviton Product Solutions** • Decora® Wall Switches • Wall Box Dimmers • Lumina™ RF Wireless • LevNet RF™ Wireless • Wall Switch Sensors • Sapphire™ • Dimensions®
C405.2.1.2 Light Reduction Controls (C405.2.2.2 in 2015) **50%**	Each area that is required to have a manual control shall also allow the occupant to reduce the connected lighting load in a reasonably uniform illumination pattern by at least 50%. Lighting reduction shall be achieved by one of the following or other approved method:* • Controlling all lamps or luminaires; • Dual switching of alternate rows of luminaires, alternate luminaires or alternate lamps; • Switching the middle lamp luminaires independently of the outer lamps; or • Switching each luminaire or each lamp Light reduction controls need not be provided in the following areas and spaces: • Areas that have only one luminaire, with rated power less than 100W • Areas that are controlled by an occupant-sensing device • Corridors, equipment rooms, storerooms, restrooms, public lobbies, electrical or mechanical rooms	Lighting that requires manual control as defined in Section C405.2.1.2 must also have partial-OFF capabilities that reduce lighting by at least 50%. **Leviton Product Solutions** • Decora® Wall Switches • Wall Box Dimmers • Sapphire • Dimensions • Lumina™ RF Wireless • LevNet RF™ Wireless • Wall Switch Sensors • Provolt™ Room Controller • IRC • EZ-MAX Plus • GreenMAX • Sector
C405.2.2 Additional Lighting Controls	Each area that is required to have a manual control shall also have controls that meet the requirements of Sections C405.2.2.1, C405.2.2.2 and C405.2.2.3.*	Lighting that requires manual control as defined in Section C405.2.2.1 must also meet the time switch, occupancy sensor and daylighting zone requirements (with several exceptions). **Leviton Product Solutions** • Occupancy sensors • Vacancy sensors • Sapphire • Dimensions • Lumina RF Wireless • LevNet RF Wireless • Provolt Room Controller • IRC • EZ-MAX Plus • GreenMAX • Sector

Control Type	Summary	Quick Take

C405.2.2.1 Automatic Time Switch Control	Automatic time switch controls shall be installed to control lighting in all areas of the building.*
	
	• Exception for emergency egress lighting, which does not need to be controlled by an automatic time switch
	• Lighting in spaces controlled by an occupancy sensor does not need to be controlled by an automatic time switch
	
	The automatic time switch control device shall include an override switching device that complies with the following:
	
	• The override switch shall be in a readily accessible location
	• The override switch shall be located where the lights controlled by the switch are visible; or the switch shall provide a mechanism which announces the area controlled by the switch
	• The override switch shall permit manual operation
	• The override switch, when initiated, shall permit the controlled lighting to remain on for a maximum of 2 hours
	• Any individual override switch shall control the lighting for a maximum area of 5,000 sq ft
	• Has a minimum 7-day clock
	• Is capable of being set for 7 different day types/schedules per week
	• Includes automatic holiday scheduling shutoff feature to turn off lighting loads for at least 24 hours for holiday closures
	• Has program backup capabilities to prevent loss of settings for a minimum 10 hours in case of power interruption
	
	Within malls, arcades, auditoriums, single tenant retail spaces, industrial facilities and arenas:
	
	• The time limit shall be permitted to exceed 2 hours provided the override switch is a captive key device
	• The area controlled by the override switch is permitted to exceed 5,000 sq ft but shall not exceed 20,000 sq ft
	
	• Exceptions for the following spaces:
	  - Sleeping units
	  - Spaces where patient care is directly provided
	  - Spaces where an automatic shutoff would endanger occupant safety or security
	  - Lighting intended for continuous operation
		Automatic time switches are required in most areas that are not controlled by an occupancy sensor. The switch must also have a manual override.
		
		Several applications, including malls, arcades, auditoriums, single-tenant retail and industrial, have specific requirements and exceptions.
		
		Leviton Product Solutions
		• Lumina RF Wireless
		• LevNet RF Wireless
		• Sapphire
		• Dimensions
		• Provolt Room Controller
		• IRC
		• EZ-MAX Plus
		• GreenMAX
		• Sector

C405.2.3 Specific Application Controls (C405.2.4 in 2015)	Specific application controls shall be provided for the following:
	• Display and accent lighting
	  - Must be independently controlled
	• Display case lighting
	  - Must be independently controlled
	• Hotel/motel sleeping units and guest suites
	  - Must have a master control device at the main room entry that controls all permanently installed luminaires and switched receptacles and switches OFF within 20 minutes of vacancy
	• Task lighting
	  - Must be independently controlled with an easily accessible wall-mounted device
	• Non-visual lighting (plant growth, food warming, etc.)
	  - Must be independently controlled
	• Demonstration lighting
	  - Must be independently controlled
		Several applications have specific requirements for independent controls.
		
		Leviton Product Solutions
		• Decora Wall Switches
		• Wall Box Dimmers
		• Lumina RF Wireless
		• LevNet RF Wireless
		• Wall Switch Sensors
		• Receptacle Controls

*Standard includes exceptions; please refer to 2012 and 2015 IECC for more information

2015 IECC Requirement Quick Reference

Control Type	Summary	Quick Take
C405.2.2.2 Occupancy Sensors (C405.2.1.1 in 2015)	Occupancy sensors shall be installed in the following locations: • Classrooms • Conference/meeting rooms • Employee lunch and break rooms • Private offices • Restrooms • Storage rooms • Janitorial closets • Other spaces 300 sq ft or less enclosed by floor-to-ceiling-height partitions • Copy/print rooms • Lounges • Locker rooms • Warehouses These automatic occupancy sensor control devices shall be installed to automatically turn lights off within 30 minutes of all occupants leaving the space, and shall either be manual-ON or controlled to automatically turn the lighting on to no more than 50% power. They must incorporate a manual control to allow occupants to turn lights off. Full auto-ON controls shall be permitted to control lighting in the following exempt areas: • Public corridors • Stairways • Restrooms • Primary building entrance areas and lobbies • Areas where manual-ON operation would endanger the safety or security of the room or building occupants In warehouses, aisleway and open area lighting must include occupancy sensing with each aisleway that is independently controlled.	Occupancy sensors are required in a number of common smaller-sized commercial applications. The installed occupancy sensors must auto-OFF after 30 minutes of vacancy, and either be manual-ON or auto-ON to no more than 50% power. They must also include a manual control. 2015 IECC also includes specific provisions for warehouses. **Leviton Product Solutions** • Occupancy sensors • Vacancy sensors
C405.2.3 Daylight Responsive Controls	Daylight responsive controls must control daylight zones within the following spaces: • Spaces with more than 150W of general lighting within sidelight daylight zones (excludes areas required to have specific application control) • Spaces with more than 150W of general lighting within toplight daylight zones Such controls must comply with the following guidelines: • Lighting in toplight daylight zones must be independently controlled separate from lights in sidelit daylight zones • Must allow calibration from within the space by authorized personnel with mechanisms that are readily accessible • In offices, classrooms, laboratories and library reading rooms, controls must dim lighting continuously from 15-100% of full power • Must be capable of complete shutoff of all controlled lighting • Lighting in sidelit daylight zones facing different directions (i.e. within 45 degrees of due north, east, south, west) must be controlled independently from one another Toplit and sidelit zones are defined and calculated within the code—see 2015 IECC for specific details.	Daylight responsive controls are required in both toplit and sidelit daylight areas, which must be independently controlled with accessible calibration devices. See code for specific calculations and guidelines for determining toplit and sidelit areas. **Leviton Product Solutions** • Photocells • Sapphire • Dimensions • Lumina RF Wireless • LevNet RF Wireless • Provolt Room Controller • IRC • EZ-MAX Plus • GreenMAX • Sector

Note: 2012 IECC mandates the implementation of energy saving design and control techniques.
For complete standards and more information, refer to www.iccsafe.org.

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Control Type	Summary	Quick Take
C405.2.2.3 Daylight Zone Control	Daylight zones shall be designed such that lights in the daylight zone are controlled independently of general area lighting and are controlled in accordance with the following guidelines. Each daylight control zone shall not exceed 2,500 sq ft. Contiguous daylight zones adjacent to vertical fenestration are allowed to be controlled by a single controlling device provided that they do not include zones facing more than two adjacent cardinal orientations. Daylight zones under skylights more than 15 ft from the perimeter shall be controlled separately from daylight zones adjacent to vertical fenestration. Daylight zones enclosed by walls or ceiling height partitions and containing two or fewer light fixtures are not required to have a separate switch for general area lighting. Manual controls shall be installed in daylight zones, unless automatic controls are installed in accordance to the following guidelines: Daylighting control devices shall be capable of automatically reducing the lighting power in response to available daylight by either of the following methods: • Continuous dimming using dimming ballasts and daylight-sensing automatic controls that are capable of reducing the power of general lighting in the daylit zone continuously to less than 35% of rated power at maximum light output • Stepped dimming using multi-level switching and daylight-sensing controls that are capable of reducing lighting power automatically. The system shall provide a minimum of two control channels per zone and be installed in a manner such that at least one control step is 50-70% of full-ON and another control step no greater than 35% of full-ON In areas with multi-level controls, lighting in the daylight zone shall be separately controlled by at least one multi-level lighting control that reduces the power in response to daylight available in the space. Where the daylight illuminance in the space is greater than the rated illuminance of the general lighting of daylight zones, the general lighting shall be automatically controlled so that it is no greater than 35% of full-ON. Multi-level lighting control shall be located so that calibration and set point adjustment controls are readily accessible and separate from the light sensor.	Daylighting zones must be controlled independently from general area lighting using either stepped or continuous dimming methods. Spaces with multi-level controls must have at least two levels that reduce full-ON in response to ambient light present in the space: one level of no more than 50-70% of full-ON, and the second to no more than 35% of full-ON. **Leviton Product Solutions** • Photocells • Sapphire • Dimensions • Lumina RF Wireless • LevNet RF Wireless • Provolt Room Controller • IRC • EZ-MAX Plus • GreenMAX • Sector

C405.2.4 Exterior Lighting Controls (C405.2.5 in 2015)	• Lighting not designated for dusk-to-dawn operation shall be controlled by either a combination of a photosensor and time switch, or an astronomical time switch
	• Lighting designated for dusk-to-dawn operation shall be controlled by an astronomical time switch or photosensor
	  - All time switches shall be capable of retaining programming and the time setting during loss of power for a period of at least 10 hours
	All exterior lighting (with the exception of emergency lighting) that is intended to be auto-OFF during building operation, is specifically required to meet health/safety requirements or decorative gas lighting systems must include controls that comply with the following:
	  • Auto-OFF as a function of available daylight
	  • For facade or landscape lighting, must auto-OFF as a function of sunrise/sunset clock and a set opening and closing time schedule
	  • For non-facade/landscape lighting, must be configured to automatically reduce lighting by at least 30% from midnight to 6 am, from one hour after business closing to one hour before business opening, or during any period when activity has not been detected for at least 15 minutes
		All exterior lighting requires a combination of specific controls, which vary depending on dusk-to-dawn operation.
		
		Leviton Product Solutions
		• Photocells
		• EZ-MAX Plus
		• GreenMAX
		• Sector
		• NorthStar Outdoor Controls

Product Solutions at a Glance

IECC Standards							
C405.2.1.1 Interior Manual Lighting Controls	**C405.2.1.2** Light Reduction Controls	**C405.2.2.1** Automatic Time Switch Control	**C405.2.2.2** Occupancy Sensors	**C405.2.2.3 & C405.2.3** Daylight Zone Control	**C405.2.3** Specific Application Controls	**C405.2.4** Exterior Lighting Control	**C408.3** Functional Testing

Product Solutions

	C405.2.1.1	C405.2.1.2	C405.2.2.1	C405.2.2.2	C405.2.2.3 & C405.2.3	C405.2.3	C405.2.4	C408.3
Occupancy Sensors	--	--	X	X	--	--	--	
Vacancy Sensors	--	--	X	X	--	--	--	
Wall Switch Sensors	X	X	--	--	--	X	--	
Wall Box Dimmers	X	X	--	--	--	X	--	
Photocells	--	--	--	--	X	--	--	
Receptacle Control Solutions	--	--	--	--	--	X	--	
Intellect™	X	X	X	--	X	X	--	
Sapphire®	--	--	X	--	X	--	--	
D4000	--	--	X	--	X	--	--	
Lumina™ RF Wireless	X	X	X	--	X	X	--	
LevNet RF™ Wireless	X	X	X	--	X	X	--	
Provolt™ Room Controller	X	X	X	--	X	--	--	
Integrated Room Control (IRC)	--	X	X	--	X	--	--	
EZ-MAX® Plus	--	X	X	--	X	--	--	
GreenMAX®	--	X	X	--	X	--	--	
NorthStar Outdoor Controls	--	--	--	--	--	--	X	
Sector®	--	X	X	--	X	--	--	

All Leviton solutions are manufactured to the highest quality and performance standards, which can easily be demonstrated at the time of installation to fulfill IECC 2012 Section C408.3.

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 IECC Applications Cookbook. Solutions represented in this Design Guide are represented by a **green X**.

IECC Standards / Product Solutions	Small Office	Open Office	Conference Room	Classroom	Library	Common Area	Parking Garage	Site Lighting Control	Warehouse	Retail Space	Restaurant	Convenience Store	Hospitality
Occupancy Sensors	X	X	X	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	--	--
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	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	--	--
GreenMAX®	X	**X**	**X**	X	--	X	**X**	X	**X**	X	X	--	--
NorthStar Outdoor Controls	--	--	--	--	--	--	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	--	--

Small Office—Single Zone
Provolt Room Controller (PRC)

Meets the Following Requirements:

- **Section C405.2.1.1**
  - Interior Manual Lighting Controls
- **Section C405.2.1.2**
  - Light Reduction Controls
- **Section C405.2.2.2**
  - Occupancy Sensors
- **Section C405.2.2.3**
  - Daylight Zone Control
- **Section C408.3**
  - Functional Testing
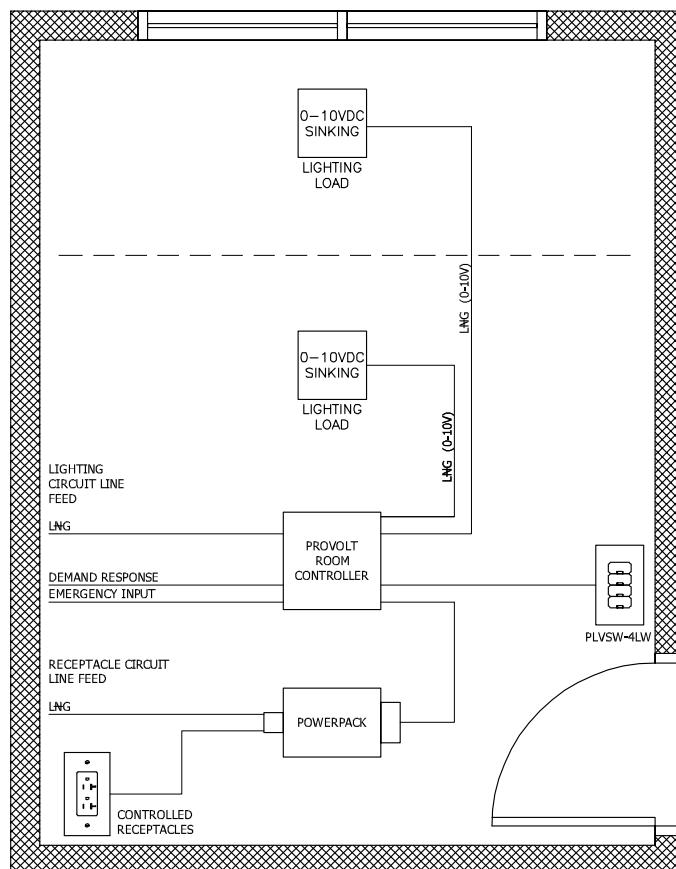- **Section C405.2.3**
  - Daylight Responsive Controls

Features:

- 0-10V Dimming Control
- Self-contained occupancy sensor, photocell and power pack
- Vacancy or Occupancy Sensing with Auto-OFF
- Auto Calibration
- Daylighting Set Point Adjustment through Entry Station

- Emergency Input
- Decora® 4-Button Entry Station
- Plug Load Control
- Time Clock Input
- Demand Response

▶ **FEATURED LEVITON IECC 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)

Meets the Following Requirements:

- **Section C405.2.1.1**
  - Interior Manual Lighting Controls
- **Section C405.2.1.2**
  - Light Reduction Controls
- **Section C405.2.2.2**
  - Occupancy Sensors
- **Section C405.2.2.3**
  - Daylight Zone Control
- **Section C408.3**
  - Functional Testing
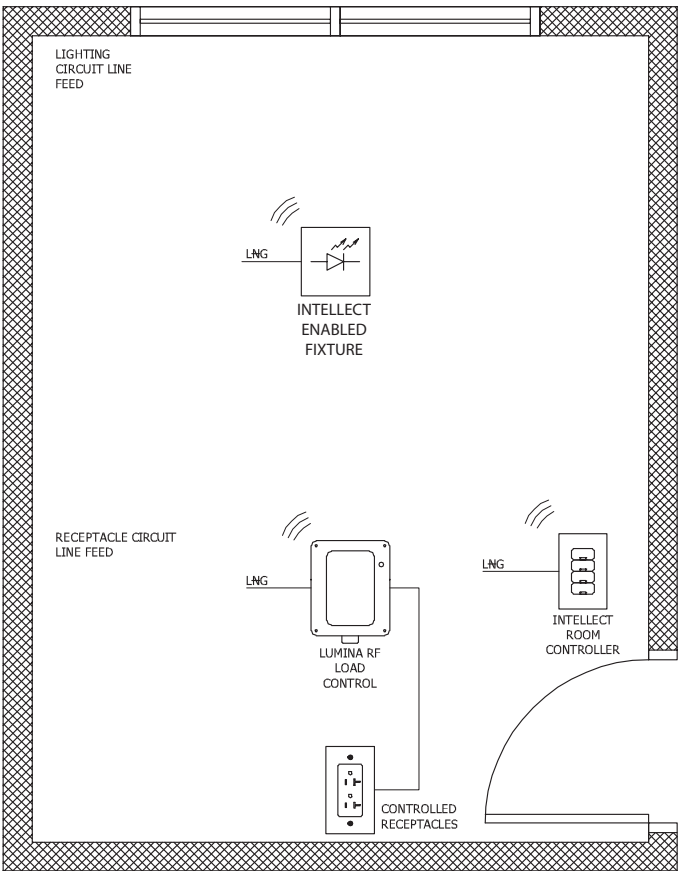- **Section C405.2.3**
  - Daylight Responsive Controls

Features:

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

▶ **FEATURED LEVITON IECC 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

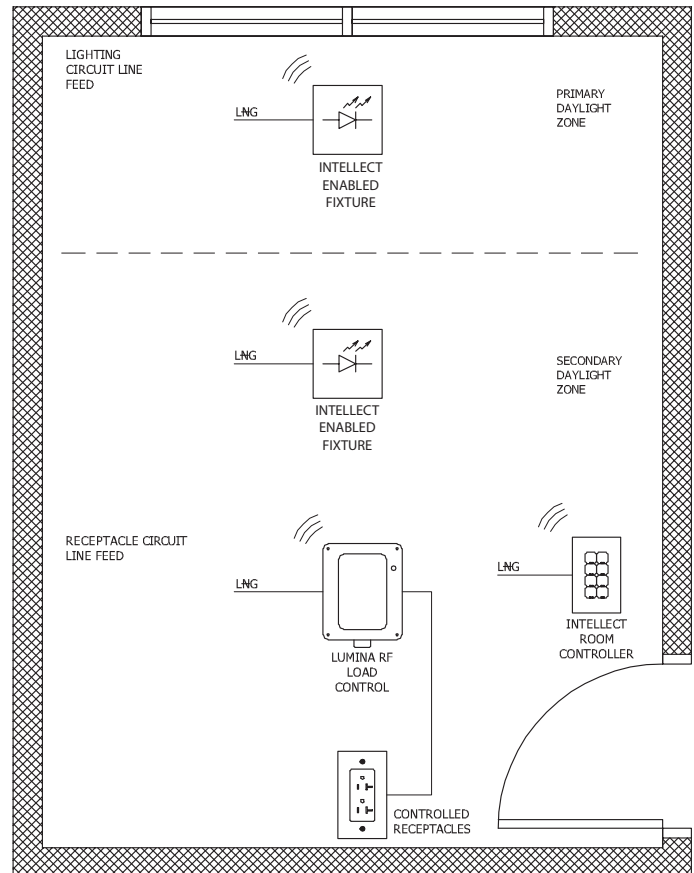|		
	Provolt Room Controller (PRC) O5C04-IDW	1
	Provolt Low-Voltage Keypad, 4-Button PLVSW-4LW	1
	OPP20 Super Duty Power Pack OPP20-0D1	1
	Marked "Controlled" Receptacles 16352-2PW	5

Small Office—Single Zone
Intellect Distributed Fixture Control

Meets the Following Requirements:

- **Section C405.2.1.1**
  - Interior Manual Lighting Controls
- **Section C405.2.1.2**
  - Light Reduction Controls
- **Section C405.2.2.2**
  - Occupancy Sensors
- **Section C405.2.2.3**
  - Daylight Zone Control
- **Section C408.3**
  - Functional Testing
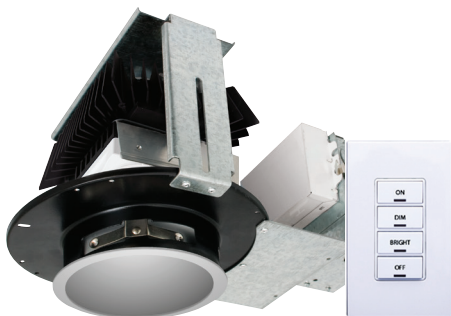- Section C405.2.3
  - Daylight Responsive Controls

Features:

- 0-10V Dimming Control
- Vacancy or Occupancy
  Sensing with Auto-OFF
- Partial-ON, Partial-OFF
- Multi-Zone Daylight Harvesting
- Decora® 1-, 2-, 4-, or 8-button keypads
- Scene Control
- Demand Response
- Wireless Communication via Mesh Network

▶ **FEATURED LEVITON IECC 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

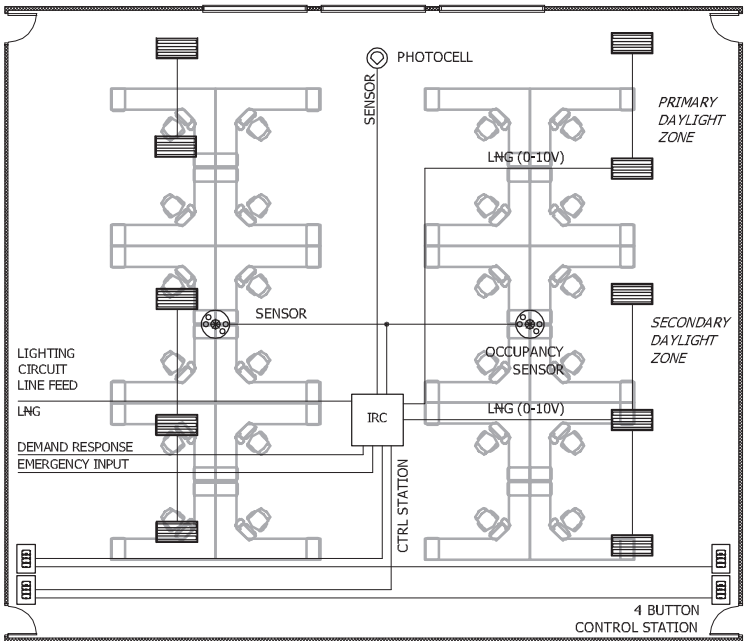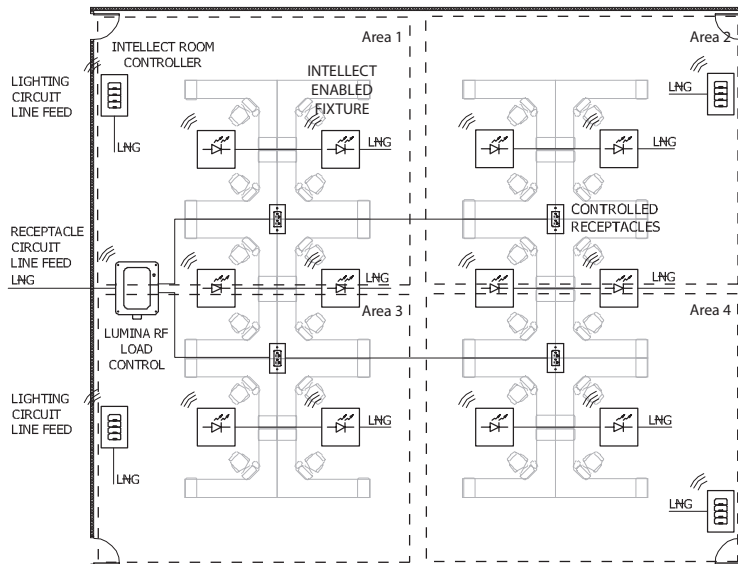|		
	Intellect-Enabled Fixture *Provided by others*	1
	Intellect Keypad, 4-Button ZLDNK-04W	1
	Lumina RF Load Control Module 73A00-3ZB	1
	Marked "Controlled" Receptacles 16352-2PW	5

Small Office—Dual Zone
Intellect Distributed Fixture Control

Meets the Following Requirements:

- **Section C405.2.1.1**
  - Interior Manual Lighting Controls
- **Section C405.2.1.2**
  - Light Reduction Controls
- **Section C405.2.2.2**
  - Occupancy Sensors
- **Section C405.2.2.3**
  - Daylight Zone Control
- **Section C408.3**
  - Functional Testing
- **Section C405.2.3**
  - Daylight Responsive Controls

Features:

- 0-10V Dimming Control
- Vacancy or Occupancy
  Sensing with Auto-OFF
- Partial-ON, Partial-OFF
- Multi-Zone Daylight Harvesting
- Decora® 1-, 2-, 4-, or 8-button keypads
- Scene Control
- Demand Response
- Wireless Communication via Mesh Network

▶ **FEATURED LEVITON IECC 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 with Cubicles Retrofit
Integrated Room Control (IRC)

Meets the Following Requirements:

- **Section C405.2.1.1**
  - Interior Manual Lighting Controls
- **Section C405.2.1.2**
  - Light Reduction Controls
- **Section C405.2.2.2**
  - Occupancy Sensors
- **Section C405.2.2.3**
  - Daylight Zone Control
- **Section C408.3**
  - Functional Testing
- **Section C405.2.3**
  - Daylight Responsive Controls

Features:

- Daylighting
- Vacancy Sensing
- Manual-ON
- 0-10V Dimming Control
- Vacancy or Occupancy Sensing with Auto-OFF
- Daylighting with Photocell
- Auto Calibration
- Emergency Input
- Demand Response
- Decora 4-Button Entry Station

- Daylighting Set Point Adjustment through Entry Station
- Time Clock Input
- Demand Response
- HVAC and Emergency Interface

▶ **FEATURED LEVITON IECC 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 (RCD20-C02—347V)	
	IRC for 2 Zones, 2 Relays MZD20-102	1
	Multi-Tech Ceiling Mount Occupancy Sensor OSC20-RMW (+1 additional)	
	Photocell, Indoor ODC0P-00W	
	Lighting Control Station RLVSW-4LW (+3 additional)	
	OPP20 Super Duty Power Pack OPP20-0D1	1
	Marked "Controlled" Receptacles 16352-2PW	5

Open Office
Intellect Distributed Fixture Control

Meets the Following Requirements:

- **Section C405.2.1.1**
  - Interior Manual Lighting Controls
- **Section C405.2.1.2**
  - Light Reduction Controls
- **Section C405.2.2.1**
  - Automatic Time Switch Control
- **Section C405.2.2.2**
  - Occupancy Sensors
- **Section C405.2.2.3**
  - Daylight Zone Control
- **Section C408.3**
  - Functional Testing
- **Section C405.2.3**
  - Daylight Responsive Controls

Features:

- 0-10V Dimming Control
- Vacancy or Occupancy Sensing with Auto-OFF
- Partial-ON, Partial-OFF
- Multi-Zone Daylight Harvesting
- Decora® 1-, 2-, 4-, or 8-button keypads
- Scene Control
- Demand Response
- Wireless Communication via Mesh Network

▶ **FEATURED LEVITON IECC 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 with Cubicles
GreenMAX® Relay Control and DRC

Meets the Following Requirements:

- **Section C405.2.1.1**
  - Interior Manual Lighting Controls
- **Section C405.2.1.2**
  - Light Reduction Controls
- **Section C405.2.2.1**
  - Automatic Time Switch Control
- **Section C405.2.2.2**
  - Occupancy Sensors
- **Section C405.2.2.3**
  - Daylight Zone Control
- **Section C408.3**
  - Functional Testing
- **Section C405.2.3**
  - Daylight Responsive Controls

Features:

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

▶ FEATURED LEVITON IECC 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
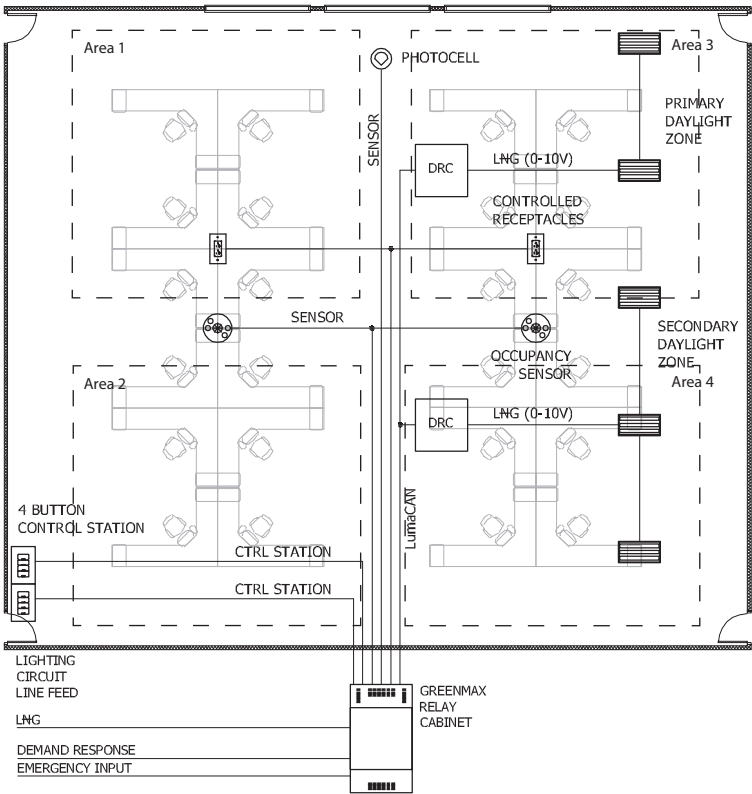
| List of Equipment		
	GreenMAX Relay Control System RxxTC-100 | RPMxx-xxx | Rxxxx-xxx | RHDU1-xxx | RELAY-xxx	1
	DRC Smart Pack (DRC) DRD07-ED0	2
	Ceiling Mount Multi-Tech Occupancy Sensor OSCxx-M0W	2
	Photocell, Indoor PCIND-000	1
	GreenMAX Digital Switch RDGSW-xDW	2
	Marked "Controlled" Receptacles 16352-1PW	5

Open Office with Cubicles
Sector® Distributed Controls

Meets the Following Requirements:

- **Section C405.2.1.1**
  - Interior Manual Lighting Controls
- **Section C405.2.1.2**
  - Light Reduction Controls
- **Section C405.2.2.1**
  - Automatic Time Switch Control
- **Section C405.2.2.2**
  - Occupancy Sensors
- **Section C405.2.2.3**
  - Daylight Zone Control
- **Section C408.3**
  - Functional Testing
- **Section C405.2.3**
  - Daylight Responsive Controls

Features:

- Digital Address Control to the Device
- 0-10V Dimming Control
- Vacancy or Occupancy Sensing with Auto-OFF
- Daylighting with Photocell
- Software for User Interface (UI) and Commissioning
- Decora® 5-Button Entry Station
- Scheduling (Behavioral Control)
- Demand Response
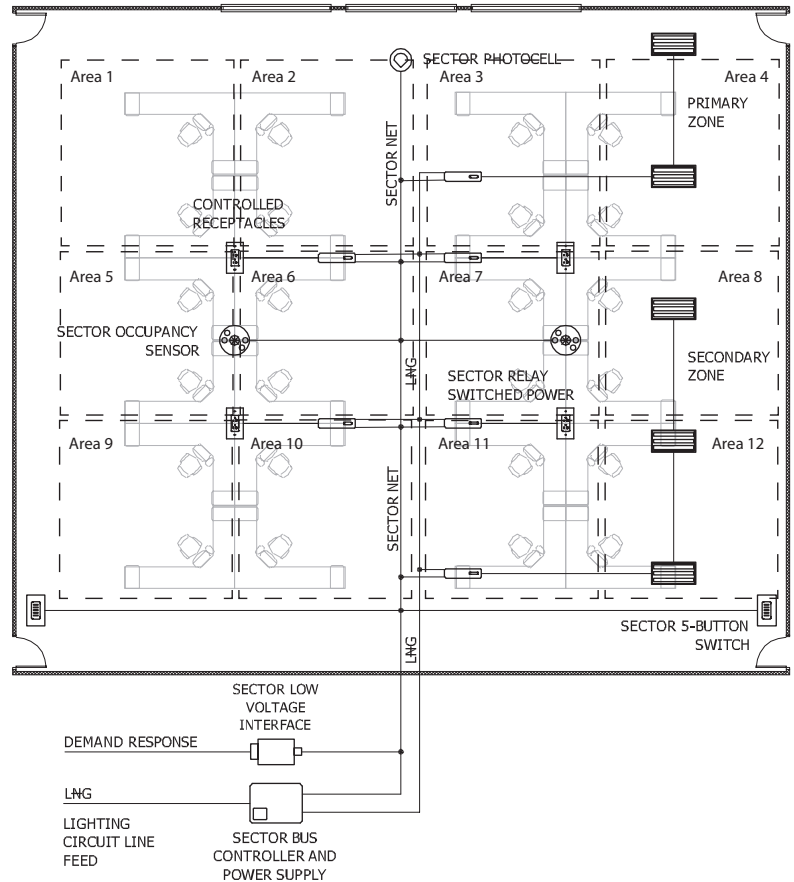
▶ **FEATURED LEVITON IECC SOLUTION**

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 SPB00-00M	1
	Sector Low Voltage Interface SLIQS-000	1
	Sector Occupancy Sensor OSC20-MSW	2
	Sector Photocell ODC0P-0SW	1
	Sector 5-Button Switch SDS00-15W	2
	Sector Relay SBCS0-L00	6

Conference Room
Dimensions® 4000 Lighting Control

Meets the Following Requirements:

- **Section C405.2.1.1**
  - Interior Manual Lighting Controls
- **Section C405.2.1.2**
  - Light Reduction Controls
- **Section C405.2.2.1**
  - Automatic Time Switch Control
- **Section C405.2.2.2**
  - Occupancy Sensors
- **Section C408.3**
  - Functional Testing

Features:

- 0-10V Continuous Dimming Control
- Multi-Level Dimming (Stepped) Control
- Vacancy or Occupancy Sensing with Auto-OFF
- Daylight Harvesting with Photocell
- Astronomical Time Clock
- Scheduling (Behavior Control)
- Demand Response

MULTI-ZONE LIGHTING CONTROL

POWER EXTENDER

OCCUPANCY SENSOR
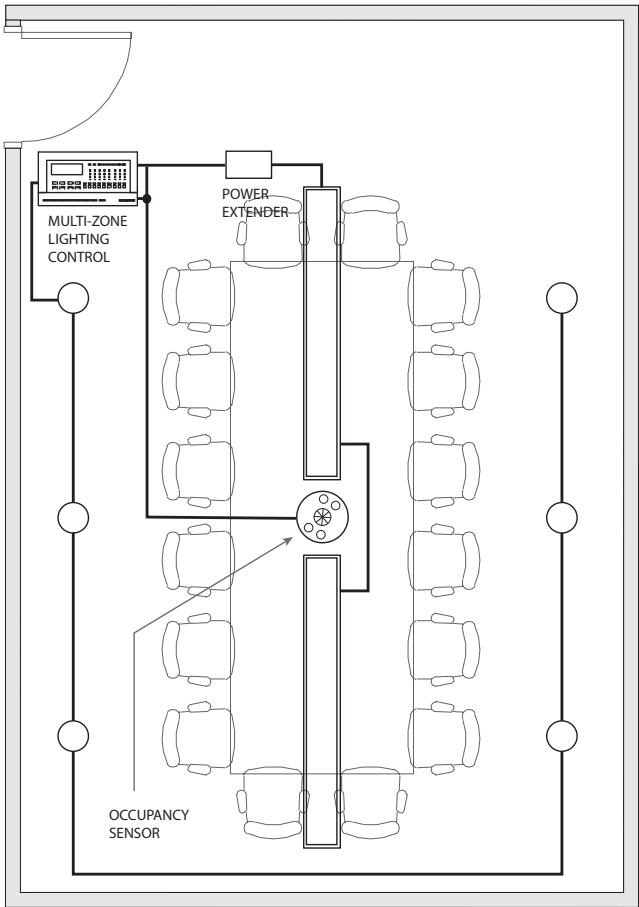
▶ **FEATURED LEVITON IECC SOLUTION**

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

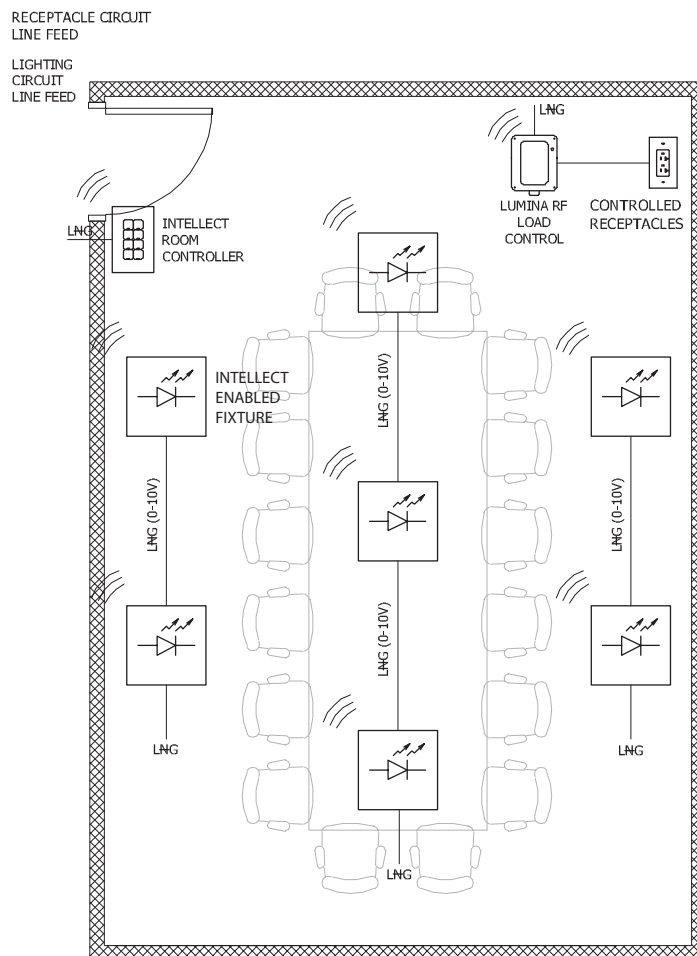| List of Equipment		
	Dimensions D4206 Multi-Zone Architectural Lighting Control System D4206-xLW	1
	Ceiling Mount Multi-Tech Occupancy Sensor OSCxx-RxW	1
	Power Extender PE300-D0W	1

Conference Room
Intellect Distributed Fixture Control

Meets the Following Requirements:

- **Section C405.2.1.1**
  - Interior Manual Lighting Controls
- **Section C405.2.1.2**
  - Light Reduction Controls
- **Section C405.2.2.1**
  - Automatic Time Switch Control
- **Section C405.2.2.2**
  - Occupancy Sensors
- **Section C408.3**
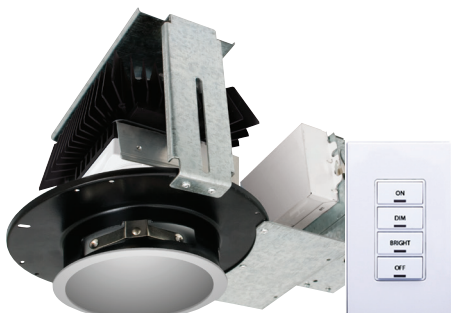 - Functional Testing

Features:

- 0-10V Dimming Control
- Vacancy or Occupancy Sensing with Auto-OFF
- Partial-ON, Partial-OFF
- Multi-Zone Daylight Harvesting
- Decora® 1-, 2-, 4-, or 8-button keypads
- Scene Control
- Demand Response
- Wireless Communication via Mesh Network

RECEPTACLE CIRCUIT LINE FEED
LIGHTING CIRCUIT LINE FEED
LNG
LUMINA RF LOAD CONTROL
CONTROLLED RECEPTACLES
INTELLECT ROOM CONTROLLER
INTELLECT ENABLED FIXTURE
LNG (0-10V)

▶ **FEATURED LEVITON IECC 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	4
	Lumina RF Load Control Module 73A00-3ZB	1
	Marked "Controlled" Receptacles 16352-2PW	5

Classroom
Provolt Room Controller (PRC)

Meets the Following Requirements:

- **Section C405.2.1.1**
  - Interior Manual Lighting Controls
- **Section C405.2.1.2**
  - Light Reduction Controls
- **Section C405.2.2.1**
  - Automatic Time Switch Control
- **Section C405.2.2.2**
  - Occupancy Sensors
- **Section C405.2.2.3**
  - Daylight Zone Control
- **Section C408.3**
  - Functional Testing
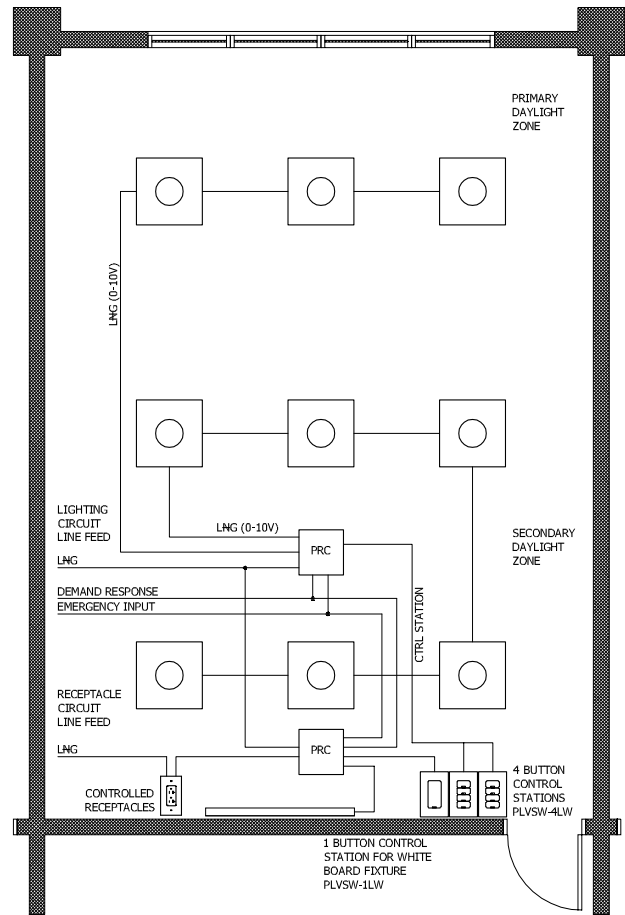- **Section C405.2.3**
  - Daylight Responsive Controls

Features:

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

▶ **FEATURED LEVITON IECC 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)

Meets the Following Requirements:

- Section C405.2.1.1
  - Interior Manual Lighting Controls
- Section C405.2.1.2
  - Light Reduction Controls
- Section C405.2.2.1
  - Automatic Time Switch Control
- Section C405.2.2.2
  - Occupancy Sensors
- Section C405.2.2.3
  - Daylight Zone Control
- Section C408.3
  - Functional Testing
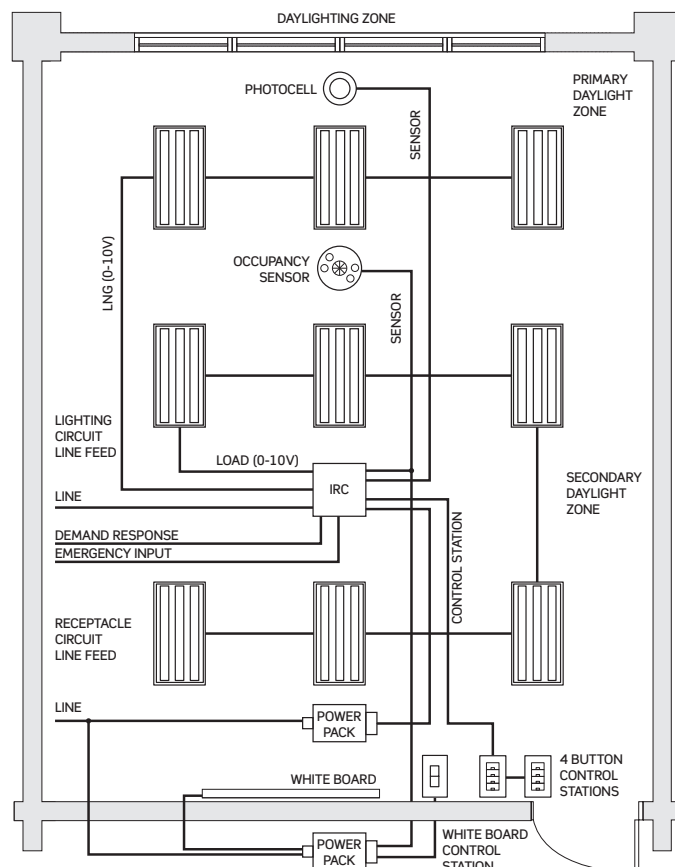- Section C405.2.3
  - Daylight Responsive Controls

Features:

- 0-10V Dimming Control
- Vacancy or Occupancy Sensing with Auto-OFF
- Auto Calibration
- Daylighting Set Point Adjustment through Entry Station
- Daylighting with Photocell
- Emergency Input
- Auto Calibration
- Emergency Input
- Decora 4-Button Entry Station
- HVAC and Emergency Interface
- Time Clock Input
- Demand Response

► **FEATURED LEVITON IECC 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 (RCD20-C02—347V)	
	IRC for 2 Zones, 2 Relays MZD20-102	1
	Multi-Tech Ceiling Mount Occupancy Sensor 1000SF, OSC10-M0W	
	Photocell, Indoor ODC0P-00W	
	Lighting Control Station RLVSW-4LW (+1 additional)	
	Low Voltage Switch 00LVS-01W	1
	OPP20 Super Duty Power Pack OPP20-0D2 (OSP15-R30—347V)	2

Classroom Retrofit
Intellect Distributed Fixture Control

Meets the Following Requirements:

- **Section C405.2.1.1**
  - Interior Manual Lighting Controls
- **Section C405.2.1.2**
  - Light Reduction Controls
- **Section C405.2.2.2**
  - Occupancy Sensors
- **Section C405.2.2.3**
  - Daylight Zone Control
- **Section C408.3**
  - Functional Testing
- **Section C405.2.3**
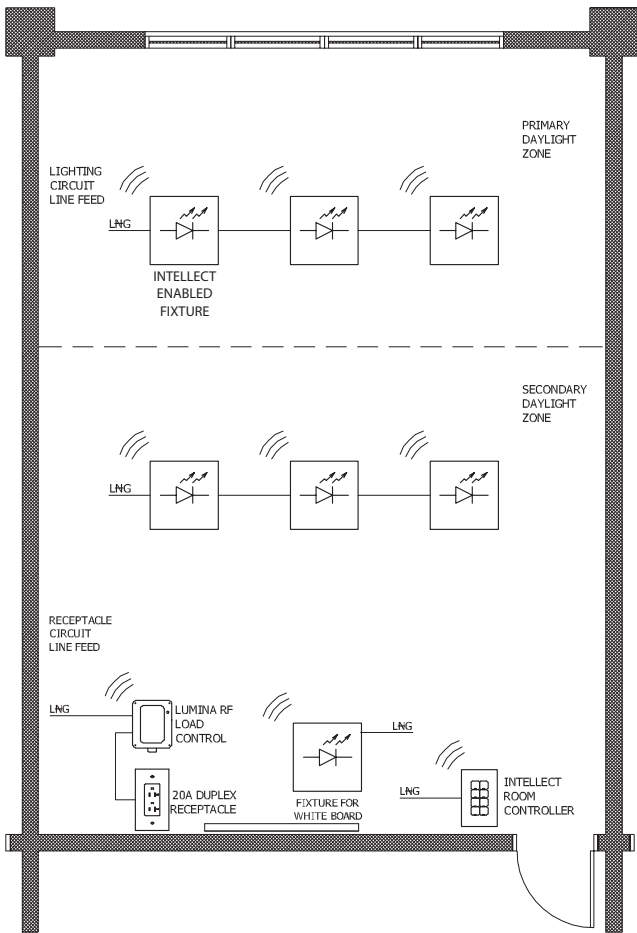 - Daylight Responsive Controls

Features:

- 0-10V Dimming Control
- Vacancy or Occupancy Sensing with Auto-OFF
- Partial-ON, Partial-OFF
- Multi-Zone Daylight Harvesting
- Decora® 1-, 2-, 4-, or 8-button keypads
- Scene Control
- Demand Response
- Wireless Communication via Mesh Network

▶ **FEATURED LEVITON IECC 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

Library
LevNet RF Energy Harvesting Wireless Solutions

Meets the Following Requirements:

- **Section C405.2.1.1**
  - Interior Manual Lighting Controls
- **Section C405.2.1.2**
  - Light Reduction Controls
- **Section C405.2.2.2**
  - Occupancy Sensors
- **Section C405.2.2.3**
  - Daylight Zone Control
- **Section C408.3**
  - Functional Testing
- **Section C405.2.3**
  - Daylight Responsive Controls

Features:

- 0-10V Dimming Control
- Vacancy or Occupancy Sensing with Auto-OFF
- Energy Harvesting (Sensors & Entry Station)
- Decora Rocker Entry Station
- WiFi Access Point
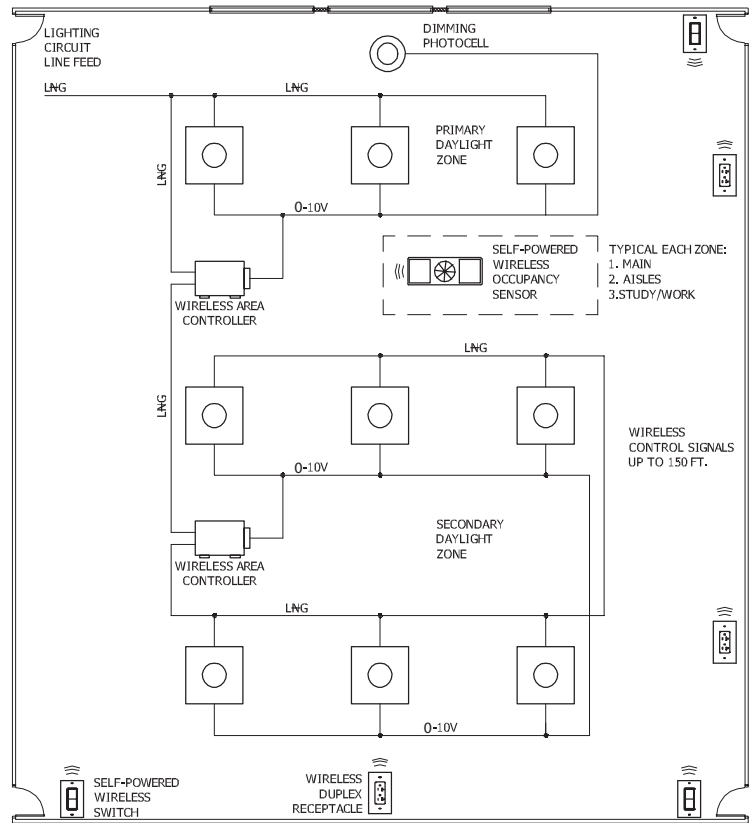
▶ **FEATURED LEVITON IECC SOLUTION**

LevNet RF Self-Powered 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 including a Receptacle and engraved cover plate to meet plug load control code requirements
- Enables rapid retrofit with minimal impact

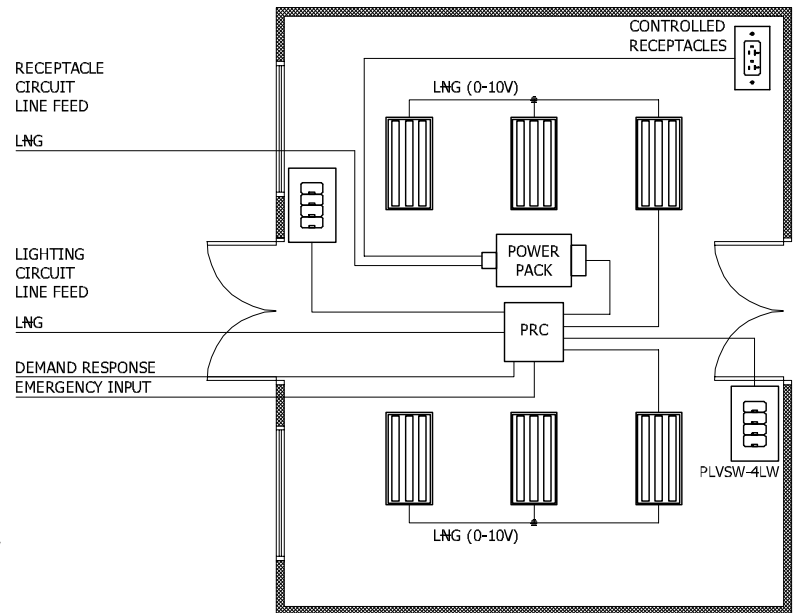| List of Equipment		
	Self-Powered Wireless Occupancy Sensor WSC12-M9N	1
	Dimming Photocell ODC0P-D0W	1
	Wireless 0-10V Dimming Area Controller WSD20-9D0	2
	Self-Powered Wireless Switch WSS0S-D9W	2
	LevNet RF Split Duplex Receptacle WSG15-D9W	5

Common Area
Provolt Room Controller (PRC)

Meets the Following Requirements:

- **Section C405.2.1.1**
  - Interior Manual Lighting Controls
- **Section C405.2.1.2**
  - Light Reduction Controls
- **Section C405.2.2.1**
  - Automatic Time Switch Control
- **Section C405.2.2.2**
  - Occupancy Sensors
- **Section C405.2.2.3**
  - Daylight Zone Control
- **Section C408.3**
  - Functional Testing
- **Section C405.2.3**
  - Daylight Responsive Controls

Features:

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

▶ **FEATURED LEVITON IECC 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

Meets the Following Requirements:
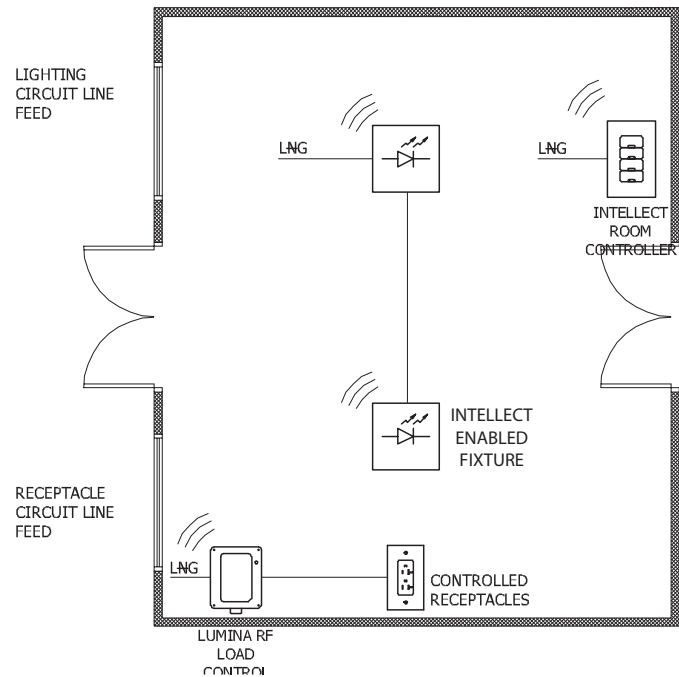
- **Section C405.2.1.1**
  - Interior Manual Lighting Controls
- **Section C405.2.1.2**
  - Light Reduction Controls
- **Section C405.2.2.1**
  - Automatic Time Switch Control
- **Section C405.2.2.2**
  - Occupancy Sensors
- **Section C405.2.2.3**
  - Daylight Zone Control
- **Section C408.3**
  - Functional Testing
- **Section C405.2.3**
  - Daylight Responsive Controls

Features:

- 0-10V Dimming Control
- Vacancy or Occupancy Sensing with Auto-OFF
- Partial-ON, Partial-OFF
- Multi-Zone Daylight Harvesting
- Decora® 1-, 2-, 4-, or 8-button keypads
- Scene Control
- Demand Response
- Wireless Communication via Mesh Network

LIGHTING CIRCUIT LINE FEED

L N G

INTELLECT ROOM CONTROLLER

L N G

INTELLECT ENABLED FIXTURE

RECEPTACLE CIRCUIT LINE FEED

L N G

CONTROLLED RECEPTACLES

LUMINA RF LOAD CONTROL

▶ FEATURED LEVITON IECC 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

Retail Space
Lumina™ RF Wireless Solutions

Meets the Following Requirements:

- **Section C405.2.1.1**
  - Interior Manual Lighting Controls
- **Section C405.2.1.2**
  - Light Reduction Controls
- **Section C405.2.2.1**
  - Automatic Time Switch Control
- **Section C405.2.2.2**
  - Occupancy Sensors
- **Section C405.2.2.3**
  - Daylight Zone Control
- **Section C405.2.3**
  Specific Application Controls
- **Section C408.3**
  - Functional Testing
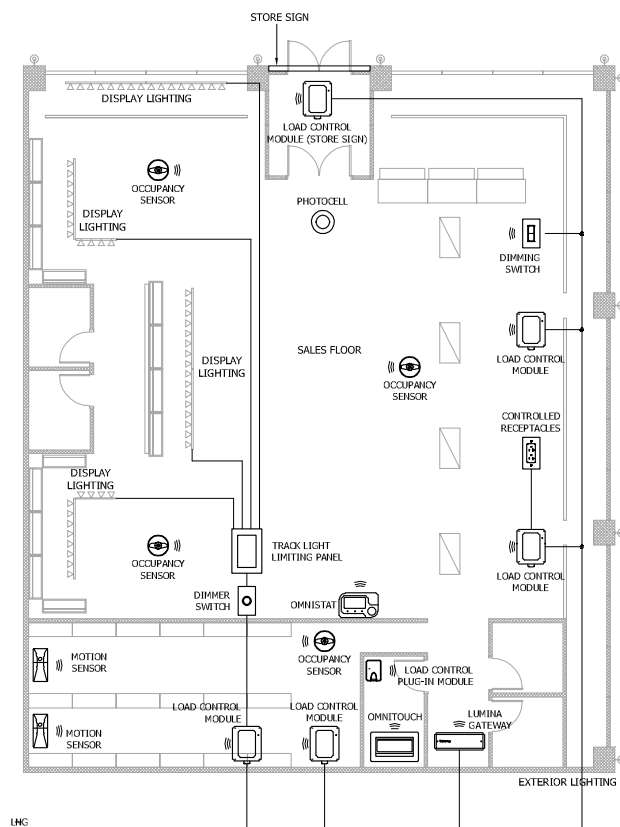- **Section C405.2.3**
  - Daylight Responsive Controls

Features:

- Relay Control
- Separate Control for Display Lighting
- Vacancy or Occupancy Sensing with Auto-OFF
- Architectural 0-10V Dimming Entry Station
- Daylight Harvesting with Photocell
- Configuration Tree Setup
- Astronomical Time Clock
- Scheduling (Behavior Control)
- Demand Response
- HVAC and Emergency Interface

▶ **FEATURED LEVITON IECC 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	2
	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

Meets the Following Requirements:

- **Section C405.2.1.1**
  - Interior Manual Lighting Controls
- **Section C405.2.1.2**
  - Light Reduction Controls
- **Section C405.2.2.1**
  - Automatic Time Switch Control
- **Section C405.2.2.2**
  - Occupancy Sensors
- **Section C405.2.2.3**
  - Daylight Zone Control
- **Section C405.2.3**
  - Specific Application Controls
- **Section C408.3**
  - Functional Testing
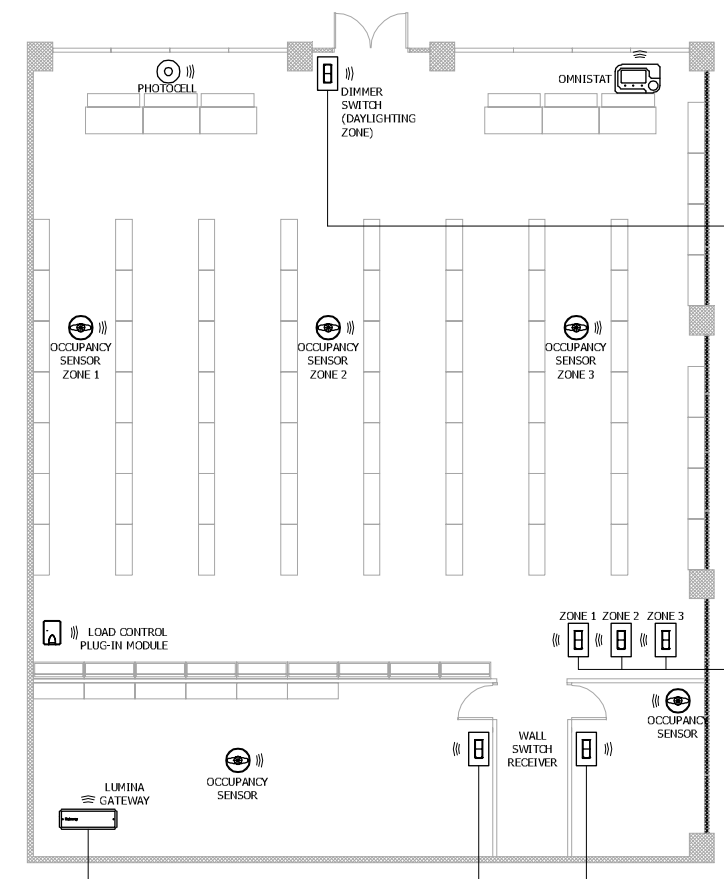- **Section C405.2.3**
  - Daylight Responsive Controls

Features:

- Relay Control
- Separate Control for Display Lighting
- Vacancy or Occupancy Sensing with Auto-OFF
- Architectural 0-10V Dimming Entry Station
- Daylight Harvesting with Photocell
- Configuration Tree Setup
- Astronomical Time Clock
- Scheduling (Behavior Control)
- Demand Response
- HVAC and Emergency Interface

▶ **FEATURED LEVITON IECC 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

Meets the Following Requirements:

- **Section C405.2.1.1**
  - Interior Manual Lighting Controls
- **Section C405.2.1.2**
  - Light Reduction Controls
- **Section C405.2.2.1**
  - Automatic Time Switch Control
- **Section C405.2.2.2**
  - Occupancy Sensors
- **Section C405.2.2.3**
  - Daylight Zone Control
- **Section C405.2.3**
  Specific Application Controls
- **Section C408.3**
  - Functional Testing
- **Section C405.2.3**
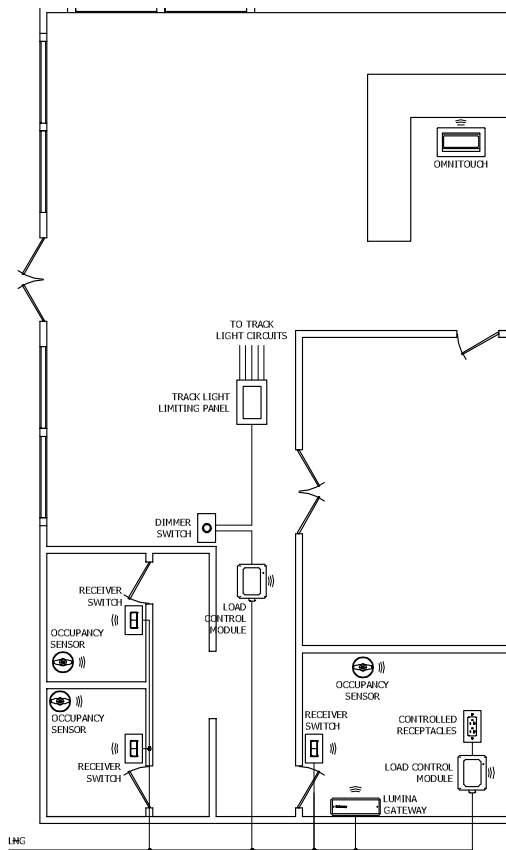 - Daylight Responsive Controls

Features:

- Relay Control
- Separate Control for Display Lighting
- Vacancy or Occupancy Sensing with Auto-OFF
- Architectural 0-10V Dimming Entry Station
- Daylight Harvesting with Photocell
- Configuration Tree Setup
- Astronomical Time Clock
- Scheduling (Behavior Control)
- Demand Response
- HVAC and Emergency Interface

▶ **FEATURED LEVITON IECC 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	2
	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

Warehouse
GreenMAX Relay Control

Meets the Following Requirements:

- **Section C405.2.1.1**
  - Interior Manual Lighting Controls
- **Section C405.2.1.2**
  - Light Reduction Controls
- **Section C405.2.2.1**
  - Automatic Time Switch Control
- **Section C405.2.2.2**
  - Occupancy Sensors
- **Section C405.2.2.3**
  - Daylight Zone Control
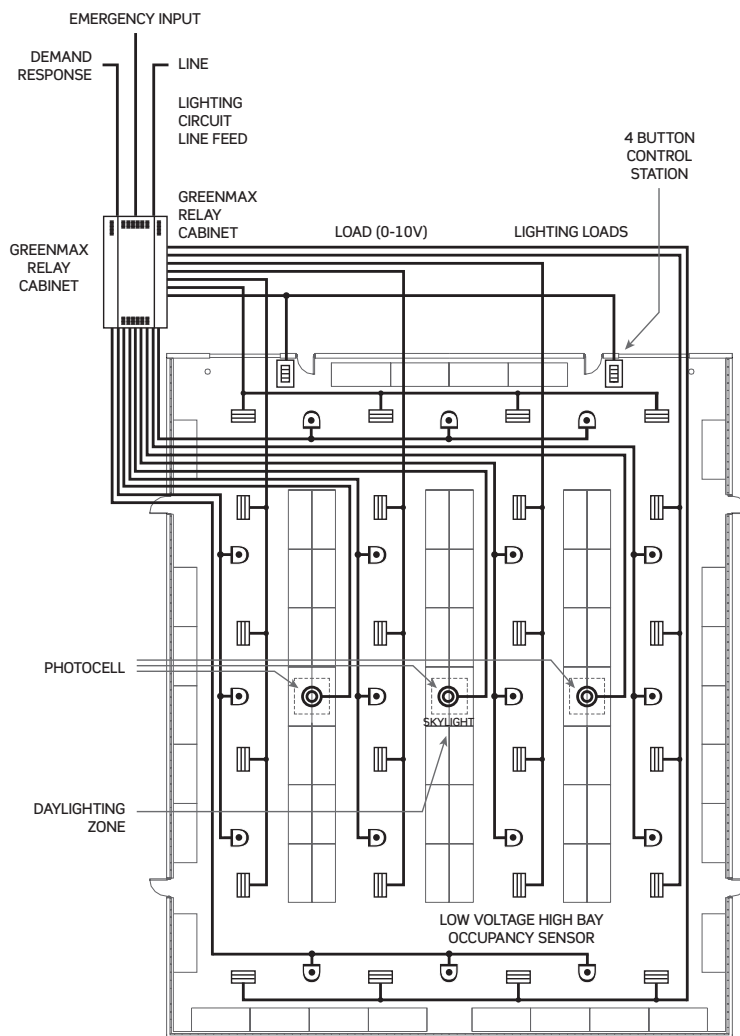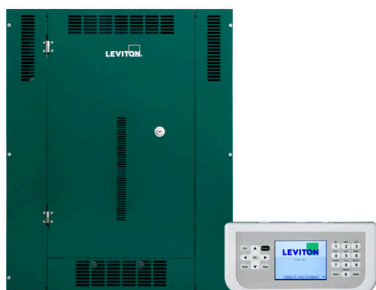- **Section C408.3**
  - Functional Testing

Features:

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

EMERGENCY INPUT
DEMAND RESPONSE
LINE
LIGHTING CIRCUIT LINE FEED
GREENMAX RELAY CABINET
GREENMAX RELAY CABINET
LOAD (0-10V)
LIGHTING LOADS
4 BUTTON CONTROL STATION
PHOTOCELL
SKYLIGHT
DAYLIGHTING ZONE
LOW VOLTAGE HIGH BAY OCCUPANCY SENSOR

▶ **FEATURED LEVITON IECC 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

Meets the Following Requirements:

- **Section C405.2.1.1**
  - Interior Manual Lighting Controls
- **Section C405.2.1.2**
  - Light Reduction Controls
- **Section C405.2.2.1**
  - Automatic Time Switch Control
- **Section C405.2.2.2**
  - Occupancy Sensors
- **Section C405.2.2.3**
  - Daylight Zone Control
- **Section C408.3**
  - Functional Testing

Features:

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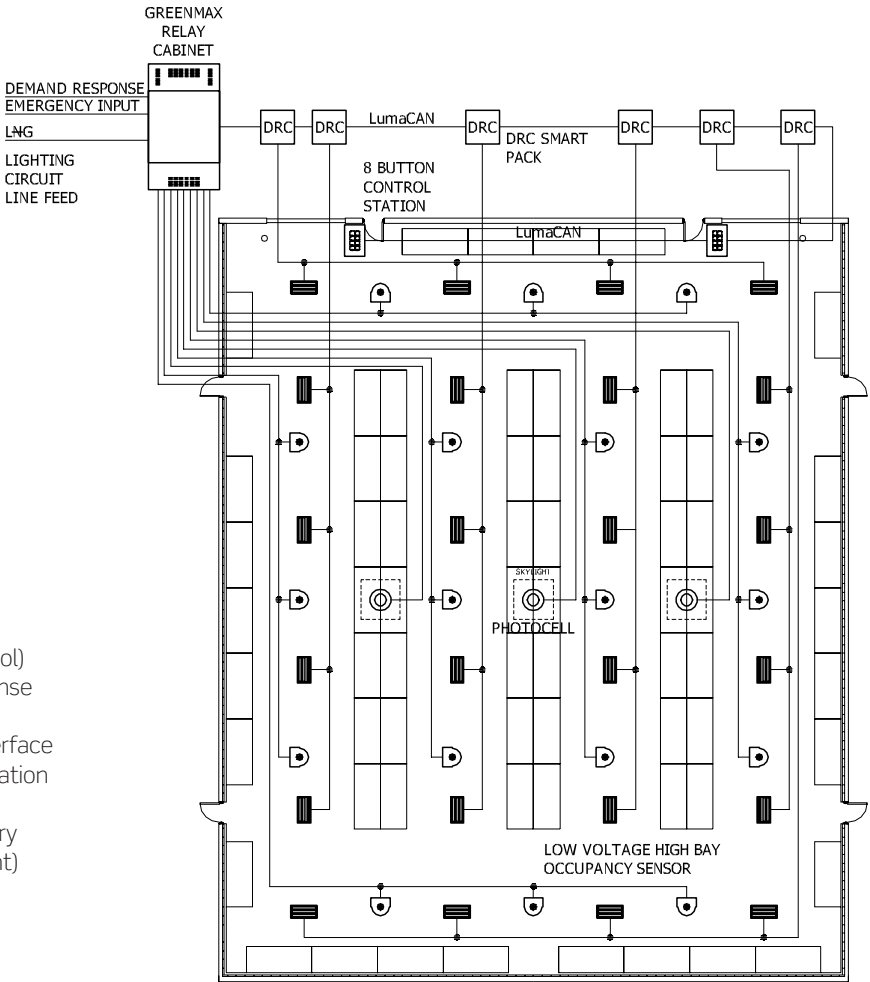- Fail-Safe Circuitry (NFPA Compliant)
- Partial-OFF

▶ **FEATURED LEVITON IECC 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
	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

Site Lighting
Northstar

Meets the Following Requirements:

- Section C405.2.4
  - Exterior Lighting Control
- Section C408.3
  - Functional Testing

Features:

- Self-healing mesh network
- 0-10V dimming
- Wireless commissioning
- Astronomical Time Clock
- Photocell integration
- Advanced control sequences

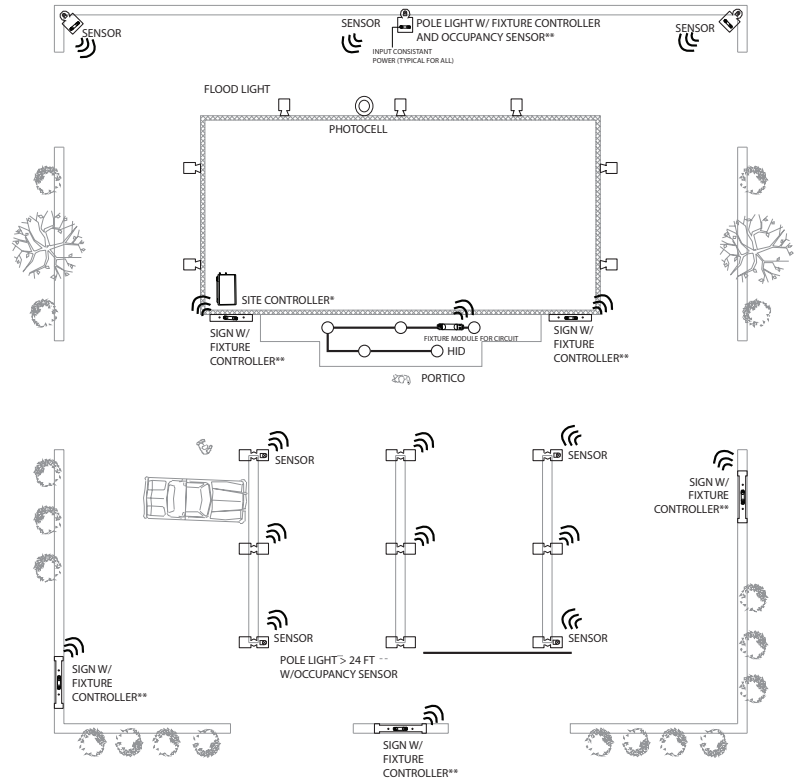► **FEATURED LEVITON IECC SOLUTION**

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	7
	Site Controller OC00G-00G	1
	Outdoor Occupancy Sensor OSF20-IUW	12
	Outdoor Photocell PCOUT-000	1

Hospitality
Lumina™ RF Hospitality Solutions

Meets the Following Requirements:

- **Section C405.2.1.1**
  - Interior Manual Lighting Controls
- **Section C405.2.1.2**
  - Light Reduction Controls
- **Section C405.2.2.2**
  - Occupancy Sensors
- **Section C405.2.2.3**
  - Daylight Zone Control
- **Section C405.2.3**
  - Specific Application Control
- **Section C408.3**
  - Functional Testing

Features:

- Wireless control
- HVAC, lighting and plug load control
- Key card control
- Window/door sensor with optional Balcony Mode
- Occupancy sensing

▶ **FEATURED LEVITON IECC SOLUTION**

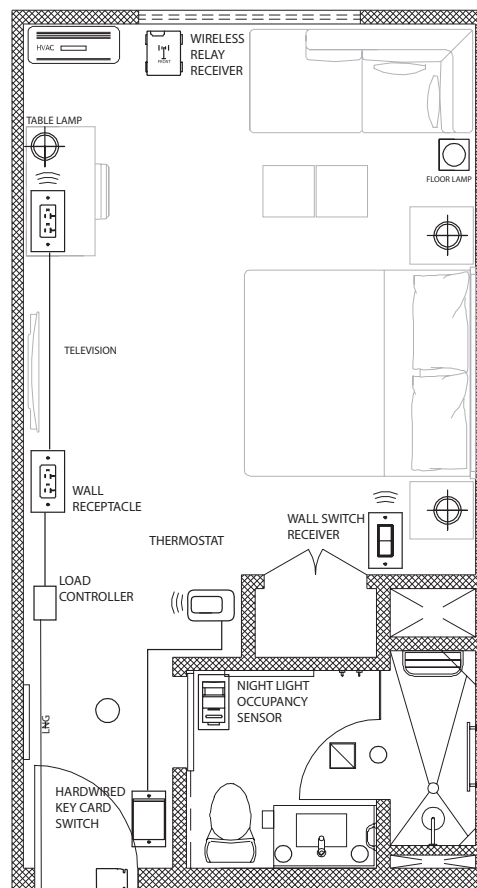## Lumina™ RF Hospitality Solutions

- 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

Leviton Non-Residential Solutions for IECC

Sensing Control

- Broadest range of sensors for any application
- Provolt™ integrates occupancy sensing, daylight harvesting, and manual-ON/auto-OFF override control in a single unit—no special control stations required
- 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
- Integrate with downlights, track fixtures and other general lighting to create an advanced intelligent lighting system that complies with energy codes

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 Self-Powered 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

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

Leviton Non-Residential Solutions for IECC

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 Lumina RF) and analog systems
- Software update through USB interface behind front panel

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
- Daylight switching and full range 0-10V dimming

Integrated Room Control (IRC)

- Combines occupancy sensing, daylighting, 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 daylighting control

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)

EZ-MAX® Plus Stand-Alone Relay System

- Centralized building lighting control and daylighting 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

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

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

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
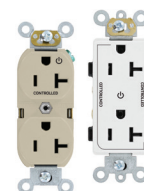
Service and Support
During Every Step of the Process

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 an IECC expert provide training in person or online exclusively for your team

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

- **IECC Web Portal** - access application diagrams and product solutions – visit **iecc.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**

- **LightLogger® Program** – get an accurate estimate of your energy-savings potential with this exclusive payback analysis tool – go to **www.leviton.com/logger**

- **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**