nLight®

Title 24

Applications Guide

www.acuitybrands.com/nLight

nLIGHT

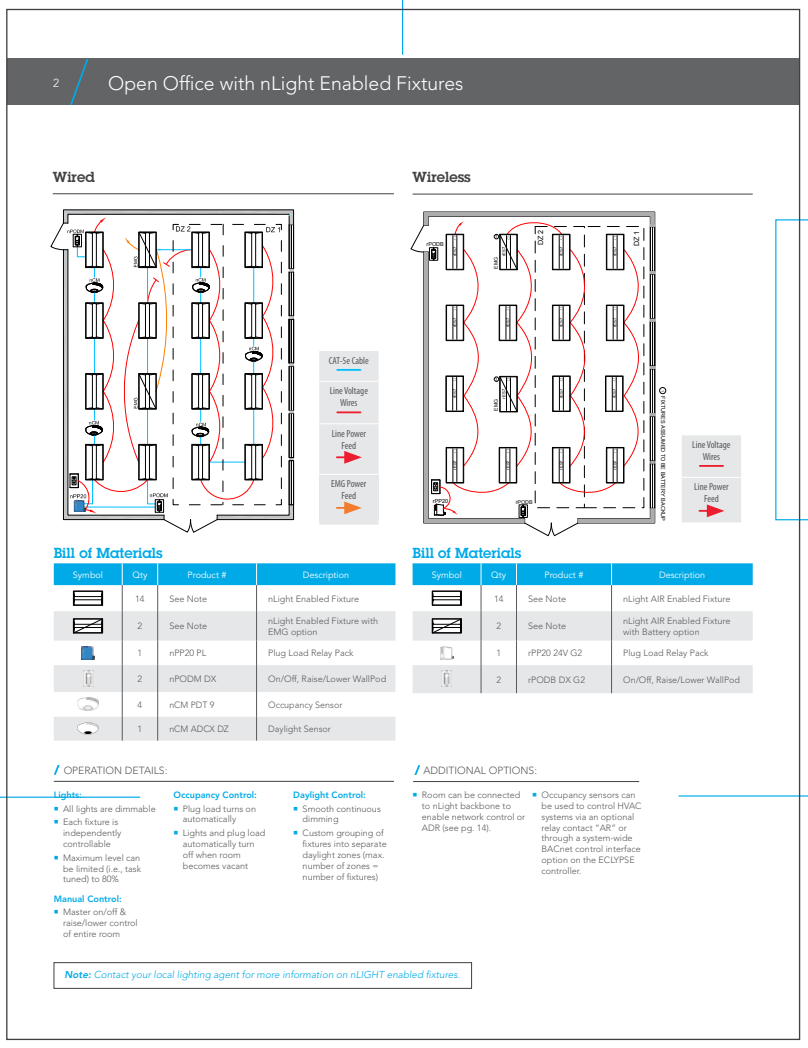
Today's nLight® platform is more powerful than ever, providing your environment with innovative networked control that is simple and sophisticated. From simple, convenient plug-and-play lighting controls to scalable BACnet™/IP-protocol systems, nLight connects a wide range of luminaires, sensors, I/O modules and other digital components to create a smart digital network.

An investment in nLight supports compliance with California's Title 24, Part 6, standards and transforms your space with a fully scalable, connected-building infrastructure that will serve the further needs of your business. Now *that's* powerful.

TABLE OF CONTENTS

This Title 24, Part 6, Applications Guide is designed to facilitate quicker and easier lighting controls solutions to help you comply with the requirements of the standards using nLight lighting controls. While there are many ways to design a space to support building energy codes, use this guide as a quick reference to get your project on the path toward compliance. Our Design Services Team is also available to support engineers and contractors with detailed design, submittal, and installation assistance. For additional information, please contact your Acuity Brands sales representative.

Room description



2 Open Office with nLight Enabled Fixtures

Wired

Wireless

CAT-5e Cable
Line Voltage Wires
Line Power Feed
EMG Power Feed

Bill of Materials

Symbol	Qty	Product #	Description
	14	See Note	nLight Enabled Fixture
	2	See Note	nLight Enabled Fixture with EMG option
	1	nPP20 PL	Plug Load Relay Pack
	2	nPODM DX	On/Off, Raise/Lower WallPod
	4	nCM PDT 9	Occupancy Sensor
	1	nCM ADCX DZ	Daylight Sensor

Bill of Materials

Symbol	Qty	Product #	Description
	14	See Note	nLight AIR Enabled Fixture
	2	See Note	nLight AIR Enabled Fixture with Battery option
	1	rPP20 24V G2	Plug Load Relay Pack
	2	rPODB DX G2	On/Off, Raise/Lower WallPod

OPERATION DETAILS:

Lights:
- All lights are dimmable
- Each fixture is independently controllable
- Maximum level can be limited (i.e., task tuned) to 80%

Occupancy Control:
- Plug load turns on automatically
- Lights and plug load automatically turn off when room becomes vacant

Daylight Control:
- Smooth continuous dimming
- Custom grouping of fixtures into separate daylight zones (max. number of zones = number of fixtures)

Manual Control:
- Master on/off & raise/lower control of entire room

ADDITIONAL OPTIONS:
- Room can be connected to nLight backbone to enable network control or ADR (see pg. 14).
- Occupancy sensors can be used to control HVAC systems via an optional relay contact "AR" or through a system-wide BACnet control interface option on the ECLYPSE controller.

Note: *Contact your local lighting agent for more information on nLIGHT enabled fixtures.*

Room layout diagram with control, fixture, and wiring type detail

List of devices required to implement room layout design above

Additional options that add control capacity beyond code requirements

Operation details describe the functionality provided by the equipment specified in the solution

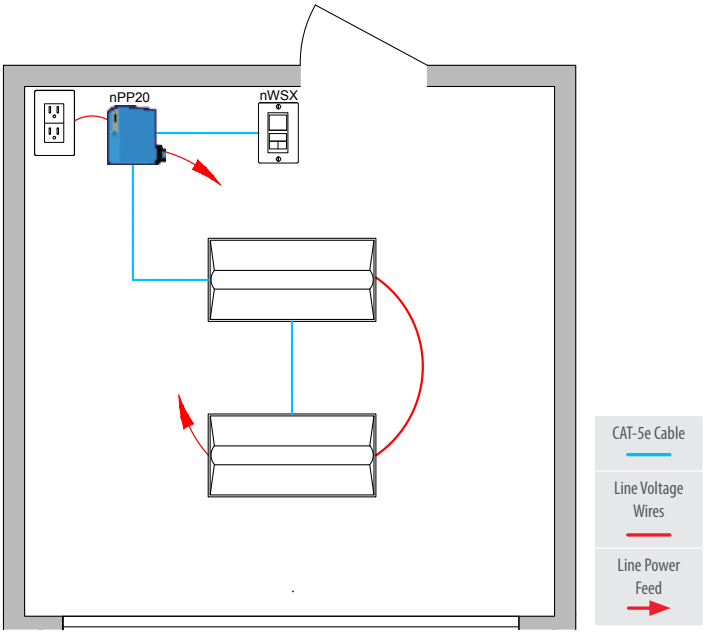
The chart below is an overview of the code requirements for typical building spaces. Please use this information as a guide. For specific code requirements, please refer to the California Code of Regulations, Title 24, Part 6.

	Control Requirement[1]	Code Provision	Code Summary[1]	Space Type				
				Office < 250 sq. ft.	Open Office > 250 sq. ft.	Classroom, Lecture Hall, Conference Room	Stairwell	Corridor
Shut-Off Control	Area Control[2]	130.1(a)	All luminaires shall be functionally controlled with manual on and off lighting controls.	✓	✓	✓	✓	✓
	Programmable Timeclock	130.1(c) 1 & 4	All areas not shut off by occupancy sensing must be shut off by a time switch control when the space is typically unoccupied.		✓ (or) ✓		✓ (or) ✓ (and) ✓	✓ (or) ✓ (and) ✓
	Automatic Full-Off via Occupancy Sensor[3]	130.1(c)5	Occupant-sensing controls must be used in specific areas to shut off lighting.	✓		✓		
	Automatic Partial-Off via Occupancy Sensor[3]	130.1(c) 6 & 7	Partial-off occupancy sensing may be used in combination with another form of full automatic shutoff (exception: parking garage areas may use just partial-off sensing).					
Light-Level Control	Multi-Level Lighting Controls	130.1(b)	Any enclosed area ≥ 100 ft² with a lighting power density > 0.5 W/ft², shall provide multi-level lighting control.	✓	✓	✓		
	Automatic Multi-Level Daylight Controls	130.1(d)	Areas in designated daylight zones with total power ≥ 120 watts and with a lighting power density > 0.3 W/ft² shall use automatic multi-level daylight controls.	✓	✓	✓	✓	✓
Additional Controls	Demand Response	130.1(e)	In buildings >10,000 ft², excluding areas <0.5 W/ft², lights shall be capable of automatically reducing power in response to a Demand Response Signal.	✓	✓	✓	✓	✓
	Receptacle (i.e., Plug Load) Control[4]	130.5(d)	Both controlled and uncontrolled 120-volt receptacles shall be provided in office areas, lobbies, conference rooms, kitchen areas in office spaces, and copy rooms.	✓	✓	✓		

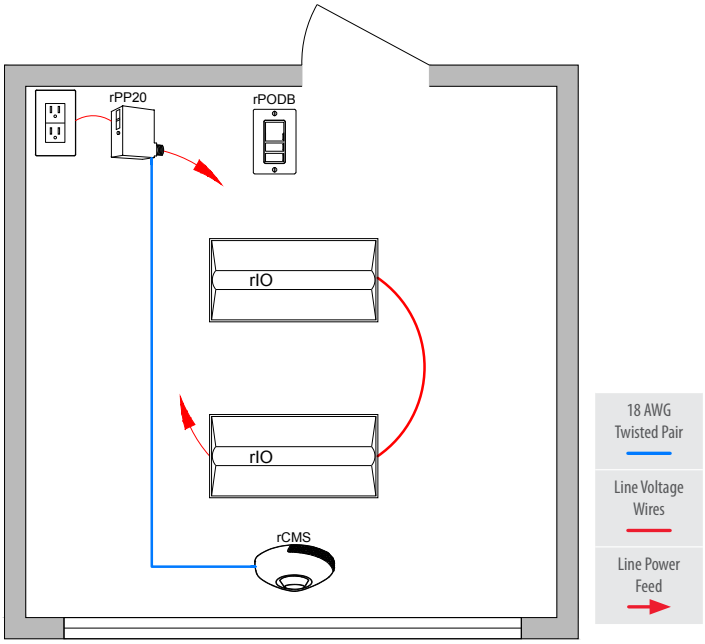
1. Note: This summary is for general information purposes only and is provided without any warranty as to accuracy, completeness, or otherwise. The user should read the applicable code sections for more complete and detailed descriptions of code requirements and exceptions and should consult with a professional engineer or other competent advisor before making any decision or taking any action based on this summary.
2. Can be inaccessible to unauthorized personnel
3. Not required in residential areas such as hotels, condos or dormitories
4. Does not apply to Classrooms and Lecture Halls

Office: < 250 sq. ft., Windows, nLight Enabled Fixtures

Wired



Wireless



Bill of Materials

Symbol	Qty	Product #	Description
	2	See Note	nLight Enabled Fixture
	1	nPP20 PL	Plug Load Relay Pack
	1	nWSX PDT LV DX	Wall Switch Occupancy Sensor with On/Off, Raise/Lower

Bill of Materials

Symbol	Qty	Product #	Description
	2	See Note	nLight AIR Enabled Fixture
	1	rPP20 24V G2	Plug Load Relay Pack
	1	rPODB DX G2	On/Off, Raise/Lower WallPod®
	1	rCMS PDT 9 G2	Occupancy Sensor

/ OPERATION DETAILS:

Lights:
- All lights are dimmable
- Each fixture is independently controllable
- Maximum level can be limited (i.e., task tuned) to 80%

Manual Control:
- On/off & raise/lower control of lights

Occupancy Control:
- Partial-on occupancy sensors automatically activate between 50-70% of controlled lighting power or fixtures must be turned on manually
- Plug load turns on automatically
- Lights and plug load automatically turn off when room becomes vacant

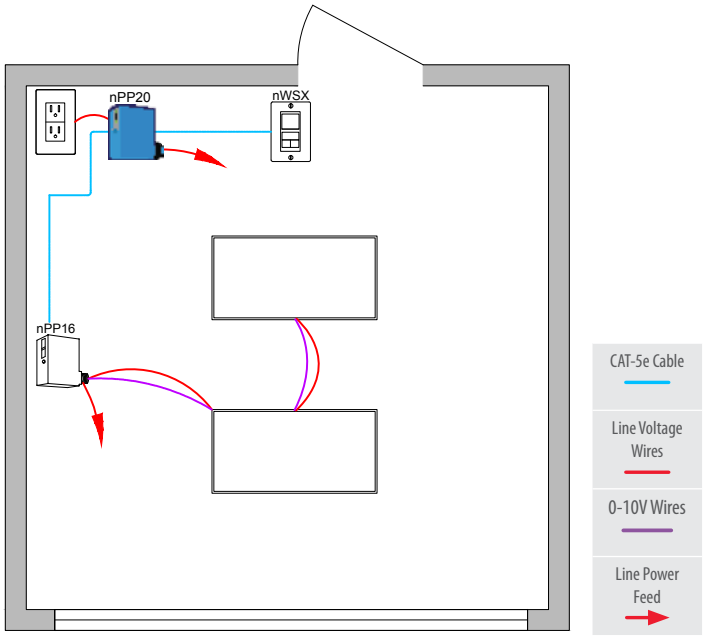
Daylight Control:
- Not required if room has < 24 ft². of glazing or lighting load < 120W in the skylit and the sidelit daylit zone

/ ADDITIONAL OPTIONS:

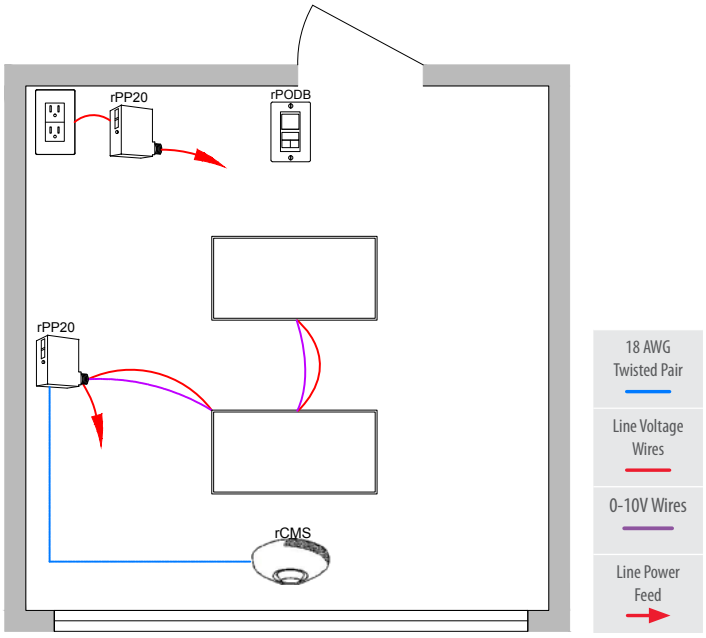
- Room can be connected to nLight backbone to enable network control or ADR (see pg. 14)
- Occupancy sensors can be used to control HVAC systems via an optional relay contact "AR" or through a system-wide BACnet control interface option on the ECLYPSE controller.

Note: *Contact your local lighting agent for more information on nLIGHT enabled fixtures.*

Wired



Wireless



Bill of Materials

Symbol	Qty	Product #	Description
	1	nPP16 D	Relay Pack with 0-10V Dimming Output
	1	nPP20 PL	Plug Load Relay Pack
	1	nWSX PDT LV DX	Wall Switch Occupancy Sensor with On/Off, Raise/Lower

Bill of Materials

Symbol	Qty	Product #	Description
	1	rPP20 DS 24V G2	Relay Pack with 0-10V Dimming Output
	1	rPP20 24V G2	Plug Load Relay Pack
	1	rPODB DX G2	On/Off, Raise/Lower WallPod
	1	rCMS PDT 9 G2	Occupancy and Daylight Sensor

/ OPERATION DETAILS:

Lights:
- All lights are dimmable
- Fixtures are controlled in zones based on power pack line voltage and 0-10V wiring
- Maximum level can be limited (i.e., task tuned) to 80%

Manual Control:
- On/off & raise/lower control of lights

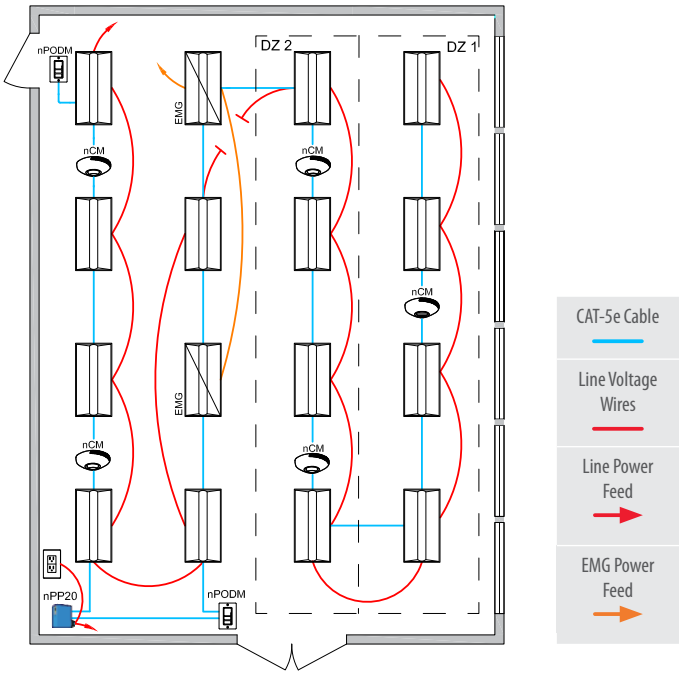
Occupancy Control:
- Partial-on occupancy sensors automatically activate between 50-70% of controlled lighting power or fixtures must be turned on manually
- Plug load turns on automatically
- Lights and plug load turn off when room becomes vacant

Daylight Control:
- Not required for rooms with < 24 ft². of glazing or lighting load < 120W in the skylit and the sidelit daylit zone

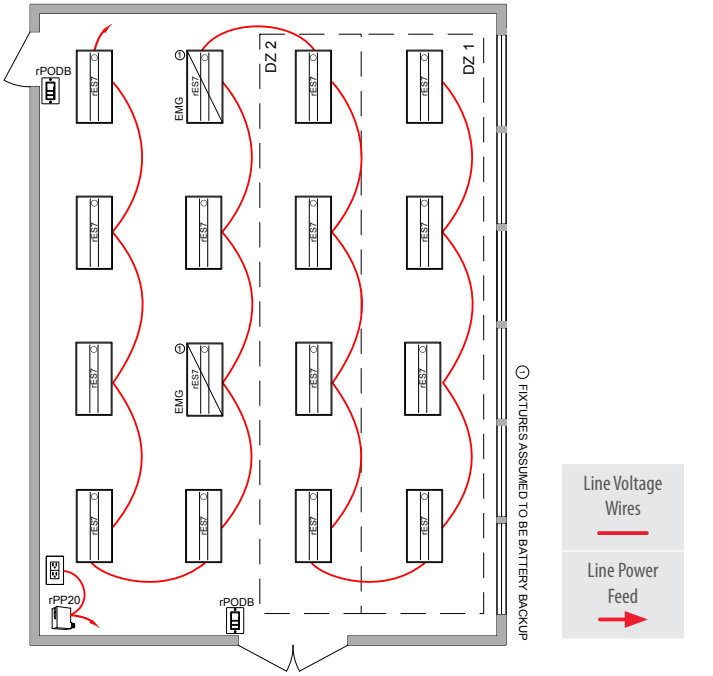
/ ADDITIONAL OPTIONS:

- Room can be connected to nLight backbone to enable network control or ADR (see pg. 14).
- For emergency lighting control use a power pack with ER option.
- Occupancy sensors can be used to control HVAC systems via an optional relay contact "AR" or through a system-wide BACnet control interface option on the ECLYPSE controller.

Wired



Wireless



Bill of Materials

Symbol	Qty	Product #	Description
	14	See Note	nLight Enabled Fixture
	2	See Note	nLight Enabled Fixture with EMG option
	1	nPP20 PL	Plug Load Relay Pack
	2	nPODM DX	On/Off, Raise/Lower WallPod
	4	nCM PDT 9	Occupancy Sensor
	1	nCM ADCX DZ	Daylight Sensor

Bill of Materials

Symbol	Qty	Product #	Description
	14	See Note	nLight AIR Enabled Fixture
	2	See Note	nLight AIR Enabled Fixture with Battery Option
	1	rPP20 24V G2	Plug Load Relay Pack
	2	rPODB DX G2	On/Off, Raise/Lower WallPod

/ OPERATION DETAILS:

Lights:
- All lights are dimmable
- Each fixture is independently controllable
- Maximum level can be limited (i.e., task tuned) to 80%

Manual Control:
- Master on/off & raise/lower control of entire room

Occupancy Control:
- Plug load turns on automatically
- Lights and plug load automatically turn off when room becomes vacant

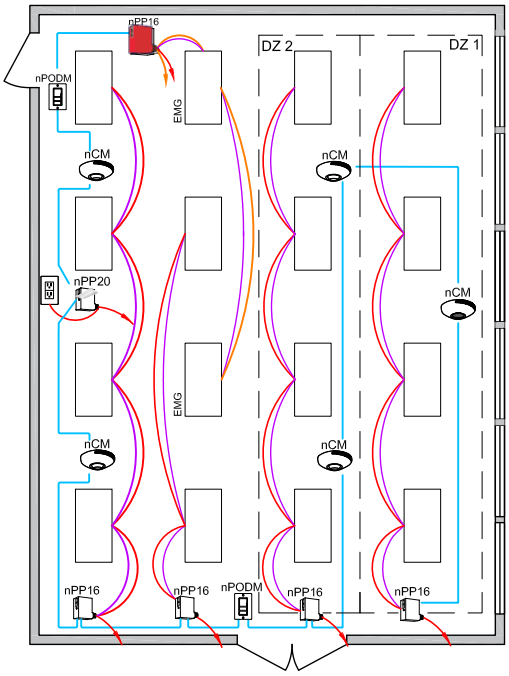
Daylight Control:
- Smooth continuous dimming
- Custom grouping of fixtures into separate daylight zones (max. number of zones = number of fixtures)

/ ADDITIONAL OPTIONS:

- Room can be connected to nLight backbone to enable network control or ADR (see pg. 14).
- Occupancy sensors can be used to control HVAC systems via an optional relay contact "AR" or through a system-wide BACnet control interface option on the ECLYPSE controller.

Note: *Contact your local lighting agent for more information on nLIGHT enabled fixtures.*

Wired



CAT-5e Cable

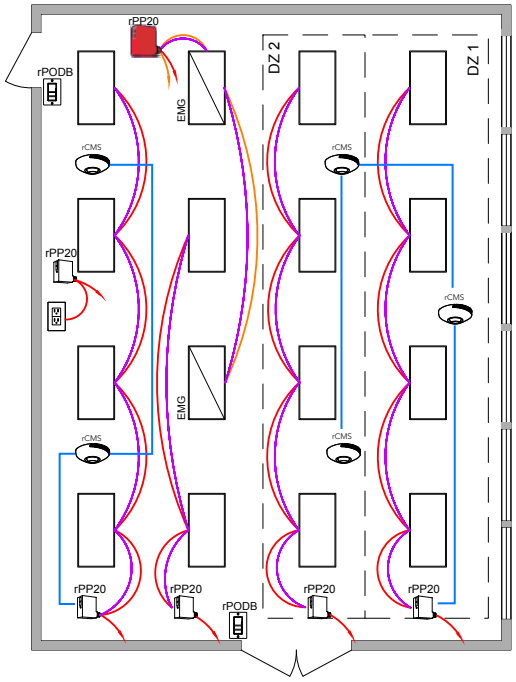
Line Voltage Wires

Line Power Feed

0-10V Wires

EMG Power Feed

Wireless



Line Voltage Wires

Line Power Feed

EMG Power Feed

Bill of Materials

Symbol	Qty	Product #	Description
	4	nPP16 D	Relay Pack with 0-10V Dimming Output
	1	nPP16 D ER	Emergency Relay Pack with 0-10V Dimming Output
	1	nPP20 PL	Plug Load Relay Pack
	2	nPODM DX	On/Off, Raise/Lower WallPod
	4	nCM PDT 9	Occupancy Sensor
	1	nCM ADCX DZ	Daylight Sensor

Bill of Materials

Symbol	Qty	Product #	Description
	4	rPP20 DS 24V G2	Relay Pack with 0-10V Dimming Output
	1	rPP20 DS ER G2	Emergency Relay Pack with 0-10V Dimming Output
	1	rPP20 24V G2	Plug Load Relay Pack
	2	rPODB DX G2	On/Off, Raise/Lower WallPod
	5	rCMS PDT 9 G2	Occupancy and Daylight Sensor

/ OPERATION DETAILS:

Lights:

- All lights are dimmable
- Fixtures are controlled in zones based on power pack line voltage and 0-10V wiring
- Maximum level can be limited (i.e., task tuned) to 80%

Manual Control:

- Master on/off & raise/lower control of entire room

Occupancy Control:

- Plug load turns on automatically
- Lights and plug load automatically turn off when room becomes vacant

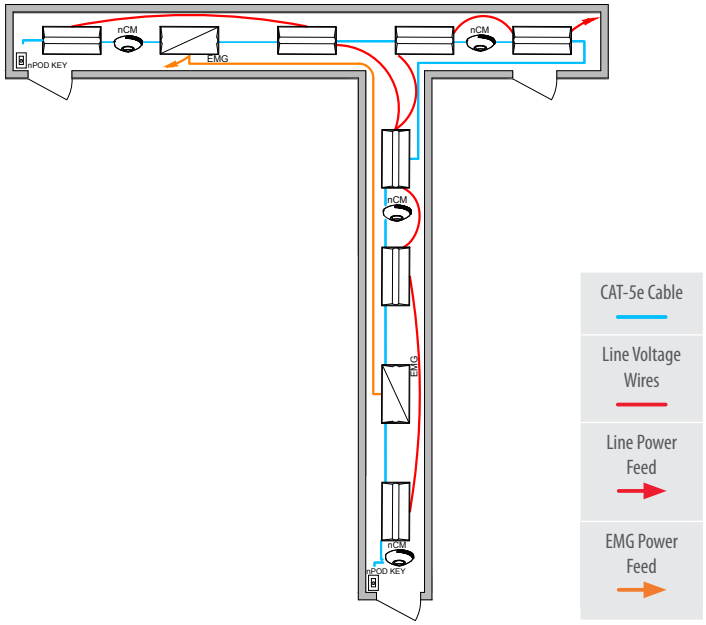
Daylight Control:

- Smooth continuous dimming
- Daylight zones defined by relay packs

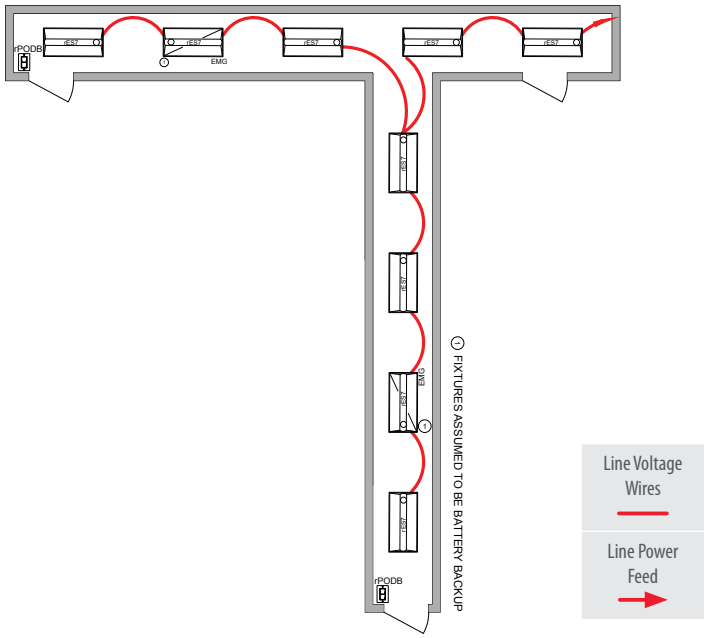
/ ADDITIONAL OPTIONS:

- Room can be connected to nLight backbone to enable network control or ADR (see pg. 14).
- Occupancy sensors can be used to control HVAC systems via an optional relay contact "AR" or through a system-wide BACnet control interface option on the ECLYPSE controller.

Wired



Wireless



Bill of Materials

Symbol	Qty	Product #	Description
	7	See Note	nLight Enabled Fixture
	2	See Note	nLight Enabled Fixture with EMG Option
	2	nPOD KEY	On/Off, Raise/Lower Key Switch
	4	nCM 10	Occupancy and Daylight Sensor

Bill of Materials

Symbol	Qty	Product #	Description
	7	See Note	nLight AIR Enabled Fixture
	2	See Note	nLight AIR Enabled Fixture with Battery Option
	2	rPODB G2	On/Off WallPod

/ OPERATION DETAILS:

Lights:
- All lights are dimmable
- Each fixture is independently controllable
- Maximum level can be limited (i.e., task tuned) to 80%

Manual Control:
- Master on/off

Auto-Off Control:
- Lights automatically turn off when the space becomes vacant or can be shut off via time clock (see pg. 14 for programmable time clock)

Occupancy Control:
- Lights automatically turn fully on when occupant enters
- Lights automatically drop to 50% (or lower) when space becomes vacant

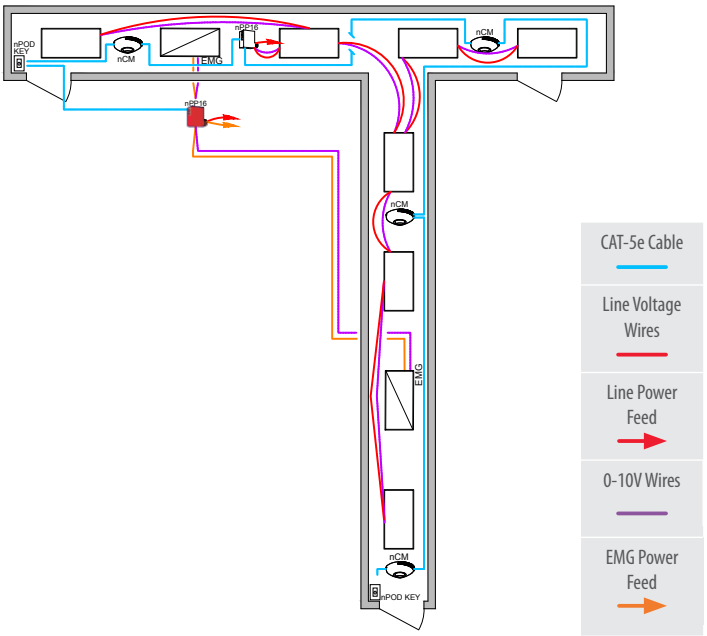
Daylight Control:
- Not required unless space has > 24 ft^2 of glazing and lighting load > 120W in the skylit and the sidelit daylit zone

/ ADDITIONAL OPTIONS:

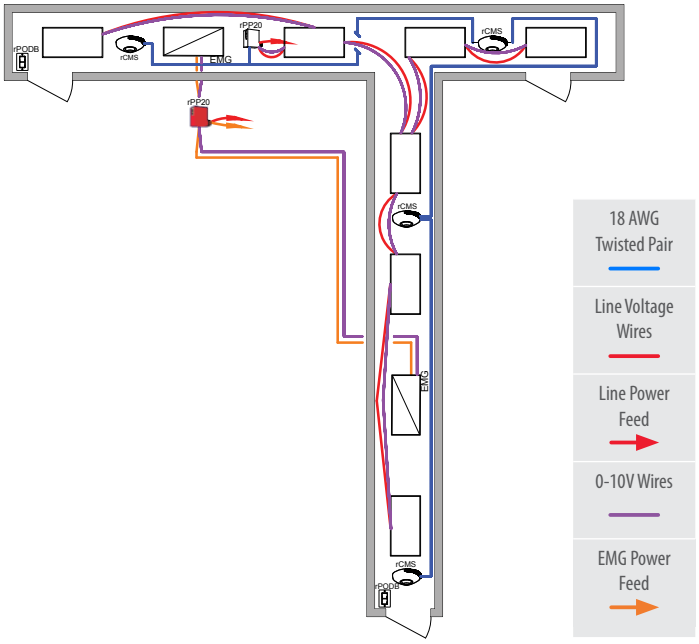
- Zone can be connected to nLight backbone to enable network control or ADR (see pg. 14).
- Occupancy sensors can be used to control HVAC systems via an optional relay contact "AR" or through a system-wide BACnet control interface option on the ECLYPSE controller.

Note: *Contact your local lighting agent for more information on nLIGHT enabled fixtures.*

Wired



Wireless



Bill of Materials

Symbol	Qty	Product #	Description
	1	nPP16 D	Relay Pack with 0-10V Dimming Output
	1	nPP16 D ER	Emergency Relay Pack with 0-10V Dimming Output
	2	nPOD KEY	On/Off, Raise/Lower Key Switch
	4	nCM 10	Occupancy and Daylight Sensor

Bill of Materials

Symbol	Qty	Product #	Description
	1	rPP20 DS 24V G2	Relay Pack with 0-10V Dimming Output
	1	rPP20 DS ER G2	Emergency Relay Pack with 0-10V Dimming Output
	2	rPODB G2	On/Off WallPod
	4	rCMS 10 G2	Occupancy and Daylight Sensor

/ OPERATION DETAILS:

Lights:

- All lights are dimmable
- Fixtures are controlled in zones based on power pack line voltage and 0-10V wiring
- Maximum level can be limited (i.e., task tuned) to 80%

Manual Control:

- Master on/off

Auto-Off Control:

- Lights automatically turn off when the space becomes vacant or can be shut off via time clock (see pg. 14 for programmable time clock)

Occupancy Control:

- Lights automatically turn fully on when occupant enters
- Lights automatically drop to 50% (or lower) when space becomes vacant

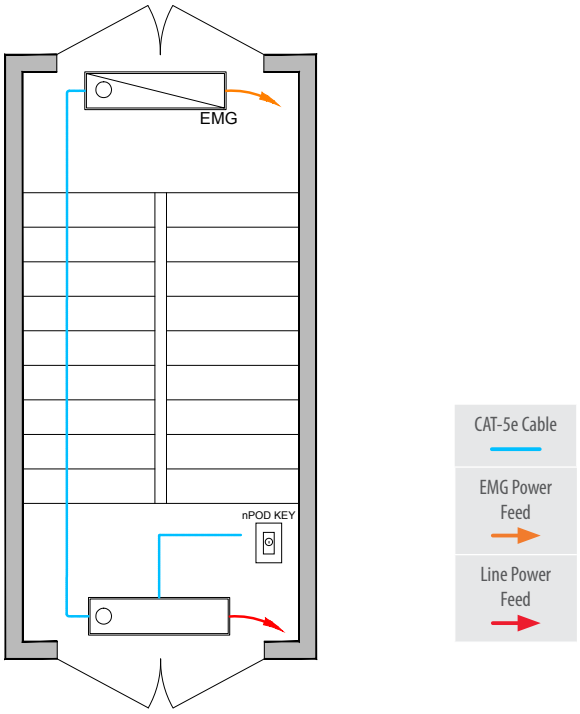
Daylight Control:

- Not provided in this wired solution
- Not required unless space has > 24 ft^2. of glazing and lighting load > 120W in the skylit and the sidelit daylit zone

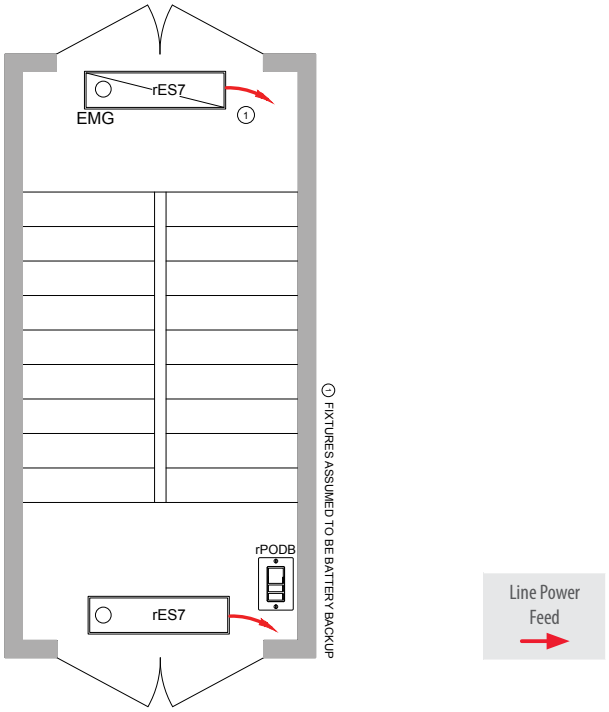
/ ADDITIONAL OPTIONS:

- Zone can be connected to nLight backbone to enable network control or ADR (see pg. 14).
- Occupancy sensors can be used to control HVAC systems via an optional relay contact "AR" or through a system-wide BACnet control interface option on the ECLYPSE controller.

Wired



Wireless



Bill of Materials

Symbol	Qty	Product #	Description
	1	See Note	nLight Enabled Fixture with integrated occupancy sensor
	1	See Note	nLight Enabled Fixture with EMG option and integrated occupancy sensor
	1	nPOD KEY	On/Off, Raise/Lower Key Switch

Bill of Materials

Symbol	Qty	Product #	Description
	1	See Note	nLight AIR Enabled Fixture
	1	See Note	nLight AIR Enabled Fixture with Battery Option
	1	rPODB DX G2	On/Off, Raise/Lower WallPod

/ OPERATION DETAILS:

Lights:
- All lights are dimmable
- Maximum level can be limited (i.e., task tuned) to 80%

Manual Control:
- Master on/off

Auto-Off Control:
- Lights automatically turn off when the space becomes vacant or can be shut off via time clock (see pg. 14 for programmable time clock)

Occupancy Control:
- Lights automatically turn on to full when occupant enters
- Lights automatically drop to 50% (or lower) when space becomes vacant

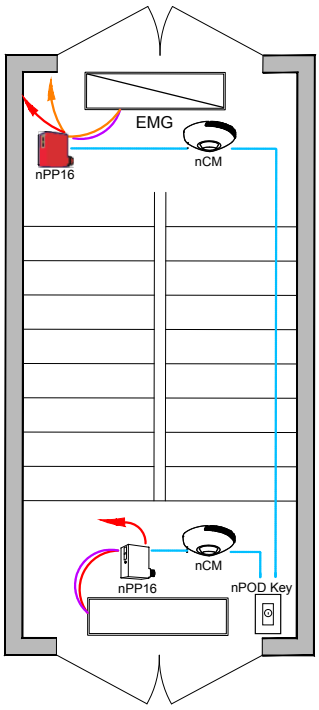
Daylight Control:
- Not required unless room has > 24 ft^2 of glazing and lighting load > 120W in the skylit and the sidelit daylit zone

/ ADDITIONAL OPTIONS:

- Zone can be connected to nLight backbone to enable network control or ADR (see pg. 14).
- Occupancy sensors can be used to control HVAC systems through a system wide BACnet control interface option on the ECLYPSE controller.

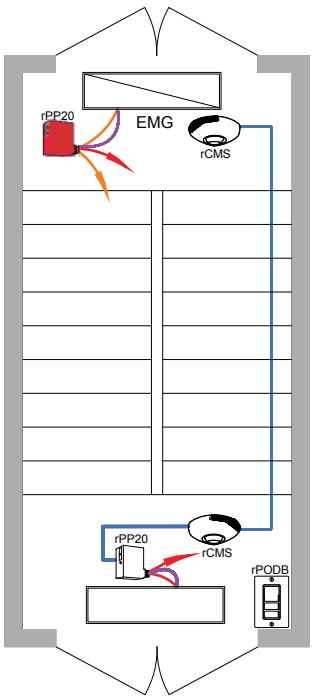
Note: *Contact your local lighting agent for more information on nLIGHT enabled fixtures.*

Wired



CAT-5e Cable
Line Voltage Wires
Line Power Feed
0-10V Wires
EMG Power Feed

Wireless



18 AWG Twisted Pair
Line Voltage Wires
Line Power Feed
0-10V Wires
EMG Power Feed

Bill of Materials

Symbol	Qty	Product #	Description
	1	nPP16 D	Relay Pack with 0-10V Dimming Output
	1	nPP16 D ER	Emergency Relay Pack with 0-10V Dimming Output
	1	nPOD KEY	On/Off, Raise/Lower Key Switch
	2	nCM 10	Occupancy and Daylight Sensor

Bill of Materials

Symbol	Qty	Product #	Description
	1	rPP20 DS 24V G2	Relay Pack with 0-10V Dimming Output
	1	rPP20 DS ER G2	Emergency Relay Pack with 0-10V Dimming Output
	1	rPODB DX G2	On/Off, Raise/Lower WallPod
	2	rCMS 10 G2	Occupancy and Daylight Sensor

/ OPERATION DETAILS:

Lights:
- All lights are dimmable
- Maximum level can be limited (i.e., task tuned) to 80%

Manual Control:
- Master on/off

Auto-Off Control:
- Lights automatically turn off when the space becomes vacant or can be shut off via time clock (see pg. 14 for programmable time clock)

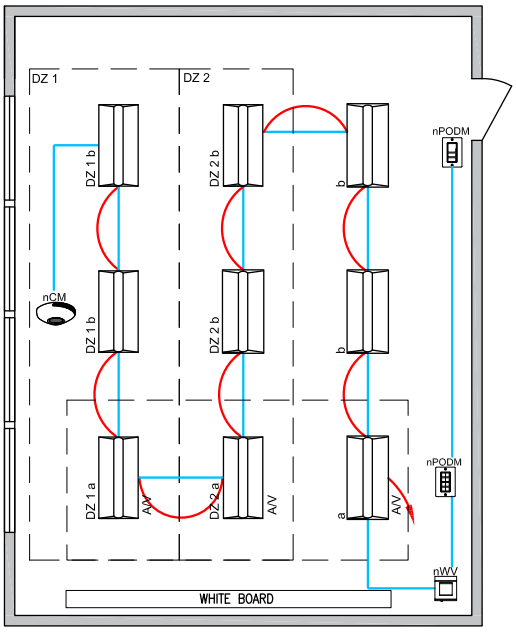
Occupancy Control:
- Lights automatically turn on to full when occupant enters
- Lights automatically drop to 50% (or lower) when space becomes vacant

Daylight Control:
- Not required unless room has > 24 ft^2 of glazing and lighting load > 120W in the skylit and the sidelit daylit zone

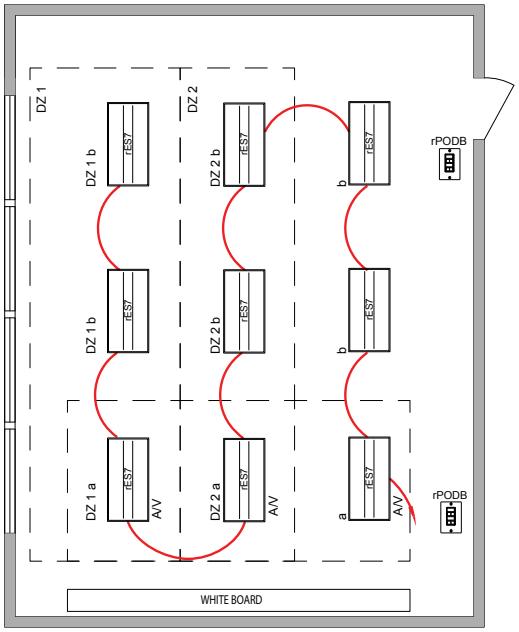
/ ADDITIONAL OPTIONS:

- Zone can be connected to nLight backbone to enable network control or ADR (see pg. 14).
- Occupancy sensors can be used to control HVAC systems via an optional relay contact "AR" or through a system-wide BACnet control interface option on the ECLYPSE controller.

Wired



Wireless



Bill of Materials

Symbol	Qty	Product #	Description
	9	See Note	nLight Enabled Fixture
	1	nPODM 2P DX	2-Pole On/Off, Raise/Lower WallPod
	1	nCM ADCX DZ	Daylight Sensor
	1	nWV PDT 16	Dual-Technology Wide-View Occupancy Sensor
Options			
	1	nPODM 4S DX	Teacher Station: 4-Scene Control & Master On/Off/Raise/Lower

Bill of Materials

Symbol	Qty	Product #	Description
	9	See Note	nLight AIR Enabled Fixture
	2	rPODB 2P DX G2	2-Pole On/Off, Raise/Lower WallPod

/ OPERATION DETAILS:

Lights:
- All lights are dimmable
- Each fixture is independently controllable
- Maximum level can be limited (i.e., task tuned) to 80%

Manual Controls:
- Control over white board and general classroom zones

Occupancy Control:
- Partial-on occupancy sensors automatically activate between 50-70% of controlled lighting power or fixtures must be turned on manually
- Lights automatically turn off when room becomes vacant

Daylight Control:
- Smooth continuous dimming
- Custom grouping of fixtures into separate daylight zones (max. number of zones = number of fixtures)

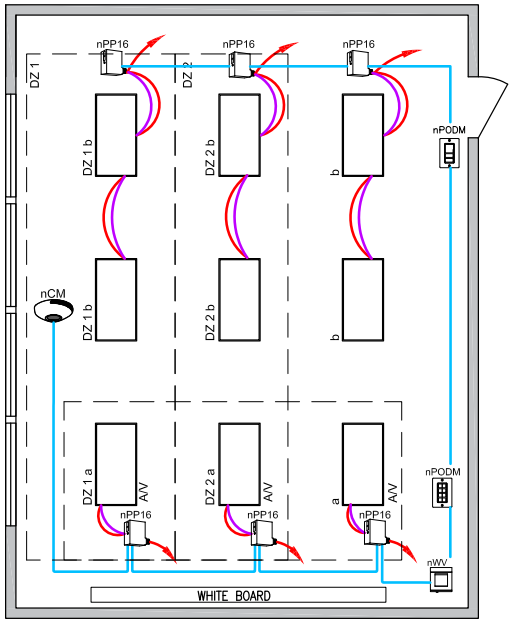
/ ADDITIONAL OPTIONS:

- Room can be connected to nLight backbone to enable network control or ADR (see pg. 14).
- Occupancy sensors can be used to control HVAC systems through a system-wide BACnet control interface option on the ECLYPSE controller.

**Apply this design to classrooms, lecture halls or training rooms.*

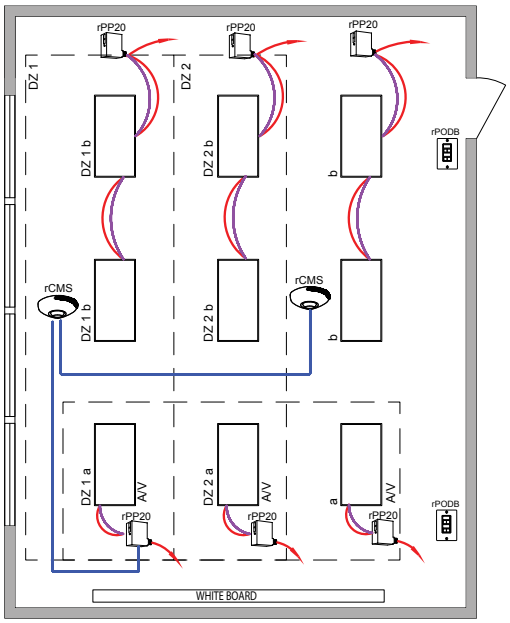
***Note:** Contact your local lighting agent for more information on nLIGHT enabled fixtures.*

Wired



CAT-5e Cable
Line Voltage Wires
Line Power Feed
0-10V Wires

Wireless



18 AWG Twisted Pair
Line Voltage Wires
Line Power Feed
0-10V Wires

Bill of Materials

Symbol	Qty	Product #	Description
	6	nPP16 D	Relay Pack with 0-10V Dimming Output
	1	nPODM 2P DX	2-Pole On/Off, Raise/Lower
	1	nCM ADCX DZ	Daylight Sensor
	1	nWV PDT 16	Dual Technology Wide View Occupancy Sensor
Options			
	1	nPODM 4S DX	Teacher Station: 4 Scene Control & Master On/Off, Raise/Lower

Bill of Materials

Symbol	Qty	Product #	Description
	6	rPP20 DS 24V G2	Relay Pack with 0-10V Dimming Output
	2	rPODB 2P DX G2	2-Pole On/Off, Raise/Lower WallPod
	2	rCMS PDT 9 G2	Occupancy and Daylight Sensor

/ OPERATION DETAILS:

Lights:
- All lights are dimmable
- Each row is controlled independently
- Maximum level can be limited (i.e., task tuned) to 80%

Manual Control:
- Control over white board and general classroom zones

Occupancy Control:
- Partial-On Occupancy Sensors automatically activate between 50-70% of controlled lighting power or fixtures must be turned on manually
- Lights automatically turn off when room becomes vacant

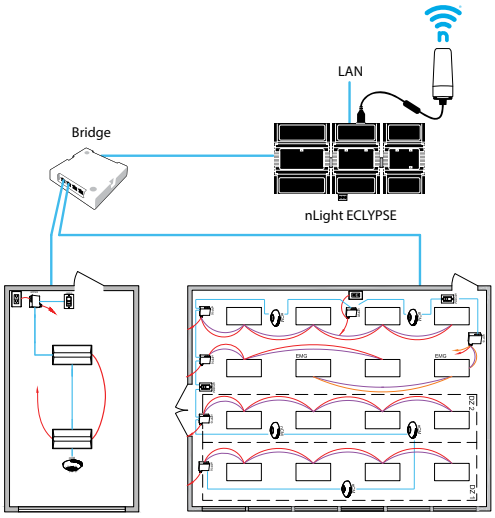
Daylight Control:
- Provides up to three daylight zones, each controlled independently

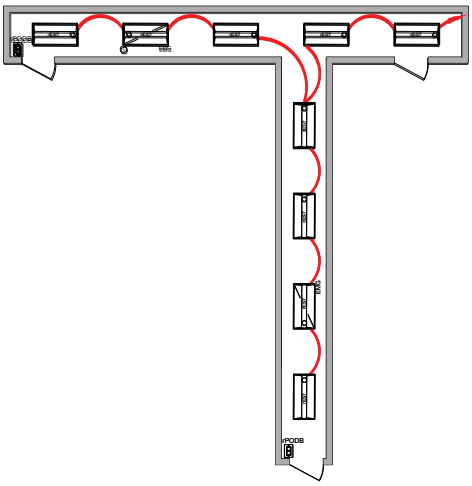
/ ADDITIONAL OPTIONS:

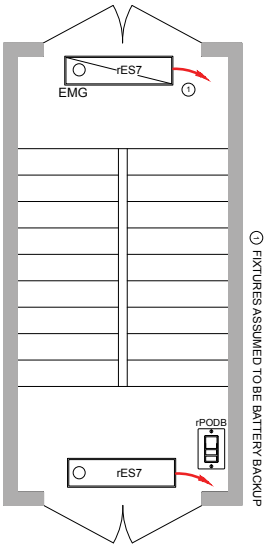
- Room can be connected to nLight backbone to enable network control or ADR (see pg.14)
- Occupancy sensors can be used to control HVAC systems via an optional relay contact "AR" or through a system-wide BACnet control interface option on the ECLYPSE controller.

**Apply this design to classrooms, lecture halls or training rooms.*

nLight Hybrid Networked Lighting Control: Programmable Time Clock and Automatic Demand Response







Bill of Materials

Symbol	Qty	Product #	Description
	1	nBRG 8 KIT	8-Port Backbone Bridge
	1	nECY	nLight ECLYPSE System Controller and Optional BMS Interface
	1	nECYD NLTAIR G2	nLight AIR Adapter

For OpenADR Options

Symbol	Qty	Product #	Description
	1	nADR	OpenADR Demand Response Client Interface for Wired Controls

Programmable Time Clock Control:

Although not pictured within each of the individual room design guides, each nLight Control Zone can be connected via an nLight backbone to create a networked nLight lighting control system capable of meeting the requirements of CA Title 24, Part 6, automatic time-switch and demand response provisions [sections 130.1(c)1 and 130.1(e), respectively]. A networked system also enables astronomical time clock control.

Automatic Demand Response (ADR):

In buildings larger than 10,000 square feet, lighting power must be capable of being automatically reduced by a minimum of 15% in response to an automatic demand response signal (ADR) to meet the requirements of CA Title 24, Part 6, demand response control [section 130.1(e)]. OpenADR is an open and standardized way for electricity providers to communicate demand response signals with their customers using a common language over any existing IP-based communications network, such as the Internet.

	Control Requirement	Code Provision	Code Summary[1]	Recommendations for Compliance	nLight Solution Details	
Shut-Off Control	Area Control[2]	130.1(a)	All lighting within an enclosed space shall be functionally controlled with manually switched or dimmed lighting controls that are readily accessible.	Include manual control device(s) in all room control system designs.	nLight WallPod devices provide a user with local control of lighting within an nLight controlled space. WallPods are available in multiple styles with varying features and user experience.	
					Push-Button WallPod	**Graphic WallPod**
						 *
					Traditional tactile buttons and LED user feedback.	Full-color touch screen provides a sophisticated look and feel.
	Programmable Time Clock	130.1(c)1	All areas not shut off by occupancy sensing must be shut off by a time-switch control when the space is typically unoccupied.	Using controls that can be networked across an entire building provides simple compliance via a single, central programmable time clock.	Individual nLight control zones (i.e., rooms) can be easily networked together across an entire building simply by connecting them to a "backbone." The ECLYPSE provides programmable time-clock functionality for an nLight network as well as interfaces to the SensorView™ suite of web-based software applications (via an Ethernet LAN / WAN connection).	
					Network System Controller	
						
					Additional benefits of installing an nLight backbone include remote status monitoring, system-wide control, and BMS interface capability.	
	Automatic Partial-Off via Occupancy Sensor[3]	130.1(c) 6 & 7	Sensors are required to automatically reduce lighting power by at least 50% after vacancy of 30 minutes or less.	Always include occupancy sensors in all control system designs. Reducing the level of dimmable fixtures to 50% is easiest method of compliance. However, turning off 50% of lighting via circuit switching is also an option.	**360° Occupancy Sensor**	**120° WideView Corner Sensor**
						 *
					Surface-mounts to ceiling tiles or sheetrock/plaster.	Directly mounts in corner or to ceiling via repositionable ceiling bracket.
	Automatic Full-Off via Occupancy Sensor[3]	130.1(c)5	Sensors are required to fully shut off lighting power after vacancy of 30 minutes or less.	Always include occupancy sensors in all control system designs regardless of lighting type.	nLight occupancy sensors use 100% digital passive infrared (PIR) detection, come in several mounting styles, and offer multiple coverage-pattern options. Additionally, nLight sensors are available with patented Microphonics™ dual-technology detection for rooms with obstructions. Configuring for full-off versus partial-off control is done with system programming.	

**For nLight wired only*

1. *Note: This summary is for general information purposes only and is provided without any warranty as to accuracy, completeness, or otherwise. The user should read the applicable code sections for more complete and detailed descriptions of code requirements and exceptions and should consult with a professional engineer or other competent advisor before making any decision or taking any action based on this summary.*
2. *Can be inaccessible to unauthorized personnel.*
3. *Not required in residential areas such as hotels, condos or dormitories.*

	Control Requirement	Code Provision	Code Summary[1]	Recommendation for Compliance	nLight Solution Details
Light Level Control	Multi-level Lighting Controls	130.1(b)	The general lighting of any enclosed space 100 ft² or larger must be controllable through a minimum number of control steps based on the type of lighting load. Not required for spaces with a lighting power density of 0.5W/sq. ft. or less.	Continuously dimmable LED (or fluorescent) fixtures and manual dimming controls are the easiest method of compliance.	nLight provides multiple options for controlling continuous dimming luminaires. This allows spaces with several lighting types and technologies to be controlled together and with a common user experience. **nLight Enabled Acuity Brands Fixtures**:  Acuity Brands offers a wide variety of LED fixtures with factory-installed integrated nLight controls that provide smooth, continuous dimming. A large number of fixtures are also offered with integrated occupancy sensor. **Dimming Relay Packs**:  nLight dimming relay packs enable control of any 0-10VDC dimmable LED (or fluorescent) luminaire. Manual task tuning control can also be used.
	Multi-level Daylight Controls	130.1(d)	Any enclosed area ≥ 100 ft², with a lighting power density > 0.5 W/ft² shall provide multi-level lighting control.	Automatic daylight harvesting photocells that continuously adjust the level of dimming fixtures according to daylight levels provide the most effective and least distracting control. Programmable photocell offsets in the dimming devices allow for multi-zone functionality.	nLight offers standalone daylight harvesting sensors as well as occupancy sensors with integrated daylight harvesting. Sensors are available in four different housings and provide continuous dimming control of any/all networked nLight enabled fixtures or dimming relay packs, each capable of being its own daylight zone. **360° Occupancy Sensor with Daylight Harvesting**:  * **Ceiling Mount Dimming Photocell**: 
Additional Controls	Demand Response	130.1(e)	Lighting power in buildings larger than 10,000 ft² shall be capable of being automatically reduced by a minimum of 15% in response to a demand response signal that uses a standards-based messaging protocol.	Using a networked control system enables simple compliance for the entire building via a single demand response signal interface that communicates using the OpenADR protocol standard.	The nLight OpenADR Demand Response Client Interface device is capable of receiving demand response signals from electricity providers and interpreting them for the rest of an nLight network to implement. No hardware is required in the nLight controlled rooms as they are inherently "ADR"-ready by default. **Automatic Demand Response Interface** 
	Receptacle (i.e., Plug Load) Control	130.5(d)	120V circuits feeding controlled receptacles shall be equipped with automatic shut-off controls when area is not occupied.	Since the same automatic shut-off requirements apply to receptacles and lighting, utilizing the same occupancy sensors for both is the simplest method of compliance.	The nLight Plug Load Relay Pack is capable of switching an entire 20A receptacle load. Simply add an occupancy sensor to an nLight Control Zone (room) and the sensor will automatically switch off when the room is vacant. **Plug Load / Receptacle Relay Pack**  Wired Plug Load Control  Wireless Plug Load Controller

nLight®

Title 24 2016 Applications Guide

In addition to being North America's leading manufacturer of indoor and outdoor luminaires, Acuity Brands offers an extensive portfolio of advanced lighting control and building technology solutions for indoor and outdoor applications, from single-room control to fully connected smart building management and space utilization. Our products, technology, expertise and support include occupancy and photosensors, centralized and distributed systems, panels, luminaire-integrated wired/wireless networked controls and IoT platform services, including space utilization solutions.

nLight Solution Typical Layout Drawings

http://www.acuitybrands.com/typicals

California Energy Commission 2016 Energy Standards

http://www.energy.ca.gov/title24/2016standards

California Lighting Technology Center

https://cltc.ucdavis.edu/publication/2016-title-24-code-changes-nonresidential

Energy Code Ace

http://energycodeace.com/

Use the Following Sections of the Title 24 Code as Reference:

Section 100.1 – Definitions and rules of construction
Section 110.9 – Mandatory requirements for lighting control devices and systems, ballasts and luminaires
Section 130.0 – Lighting controls and equipment - general
Section 130.1 – Indoor lighting controls that shall be installed
Section 130.2 – Outdoor lighting controls and equipment
Section 130.4 – Lighting control acceptance and installation certificate requirements
Section 130.5 – Electrical power distribution systems
Section 140.3 – Prescriptive requirements for building envelopes
Section 140.6 – Prescriptive requirements for indoor lighting

CAN BE USED TO COMPLY WITH 2016 TITLE 24 PART 6 [1]

1 Dimmer controls requirements (other lighting control device requirements, see list above)

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AcuityBrands.