ASHRAE 90.1–2013

nLight® Applications Guide

/ nLight Lighting Controls Platform

It's not just smarter. It's easier.

nLight is a sensor-based digital lighting controls solution that offers wired and wireless lighting controls that easily connect luminaires, sensors, and other control devices to create a digital network. The nLight platform of products enables ease in specification, installation, and ownership, making it the go-to digital lighting controls platform for specifiers, contractors, and building owners.

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/ ABOUT

About ASHRAE 90.1

ASHRAE 90.1 is an energy code designed to reduce energy consumption. The ASHRAE 90.1–2013 energy code has specific requirements for lighting controls. The use of advanced lighting controls to synchronize light levels with daylight, occupancy, and multi-level control capability are required in order to be compliant.

About This Guide

Acuity Brands® offers the nLight® ASHRAE 90.1–2013 Applications Guide as a reference of typical nLight layouts that help make code compliance quicker and easier. The Acuity Brands Design Services Team is also available to support engineers and contractors with detailed design, submittal, and installation. For additional information, please contact your Acuity Brands Sales Representative.

About nLight

nLight® is a sensor-based digital lighting controls solution that offers wired and wireless lighting controls that easily connect luminaires, sensors, and other control devices to create one digital lighting controls platform to aid in code compliance, reduce energy, and enable advanced networked capabilities. Ideal for practically any application, small to large, indoor to outdoor, nLight offers lighting controls that scale from one room to an entire floor, from one floor to an entire building, from one building to an entire campus.

The chart below is an overview of the Code Requirements for Common Building Spaces. Please use this information as a guide. For specific ASHRAE code requirements please refer to the ASHRAE 90.1–2013 code.

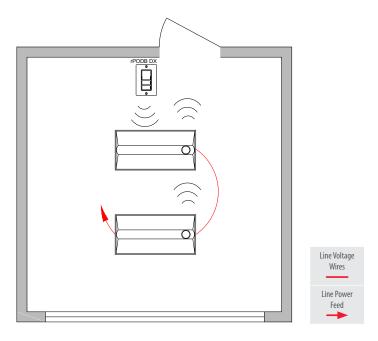|	Control Requirement*	Code Provision	Code Summary*	Enclosed Office	Open Plan Office	Conference, Meeting, Multipurpose Room	Classroom, Lecture Hall, Training Room	Lobby	Corridor	Restroom	Stairwell	Gymnasium/ Fitness Center
On-Off Control	Local (i.e., Switch) Control	9.4.1.1[a]	There shall be one or more readily accessible manual lighting controls in the space that controls all lighting in the space. Note: Remote locations permitted for reasons of safety or security.	✔	✔	✔	✔	✔	✔	✔	✔	✔
On-Off Control	Manual ON	9.4.1.1[b]	None of the lighting in the space shall be automatically turned on.	✔	✔	✔	✔					✔
On-Off Control				(or)	(or)	(or)	(or)					(or)
On-Off Control	Partial Automatic ON	9.4.1.1[c]	The general lighting shall be allowed to be turned on automatically to 50% of the lighting power.	✔	✔	✔	✔					✔
On-Off Control	Full Automatic ON	9.4.1.1	Automatically controlled spaces are allowed to turn on to full.					✔	✔	✔	✔	
On-Off Control	Automatic Partial OFF Via Occupancy Sensor	9.4.1.1[g]	The general lighting power shall be automatically reduced by at least 50% within 20 minutes of all occupants leaving the space. Note: Full Off also complies.					✔	✔		✔	
On-Off Control	Automatic Full OFF Via Occupancy Sensor	9.4.1.1[h]	All lighting shall be automatically shut off within 20 minutes of all occupants leaving the space.	✔	✔	✔	✔	✔	✔	✔	✔	✔
On-Off Control					(or)			(or)	(or)		(or)	(or)
On-Off Control	Scheduled Shutoff (i.e. Timeclock)	9.4.1.1[i]	All lighting shall be automatically shut off during periods when the space is scheduled to be unoccupied using a time-of-day operated control. Note: A signal from another automatic control device or alarm/security system complies.		✔			✔	✔		✔	✔
Light Level Control	Bi-Level Lighting Control	9.4.1.1[d]	Controlled lighting shall have at least one control step between 30% and 70%, or continuous dimming, in additional to full on and full off.	✔	✔	✔	✔				✔	✔
Light Level Control	Automatic Daylight Responsive Controls for Sidelighting/ Toplighting	9.4.1.1[e] 9.4.1.1[f]	If the general lighting load is 150W or greater in the primary sidelighted or toplighted areas, or 300W or greater in the primary & secondary sidelighted areas, the general lighting in these areas shall be controlled by multi-step or continuous dimming photocontrols.	✔	✔	✔	✔	✔	✔	✔	✔	✔
Additional Controls	Parking Garage Lighting Power Setback	9.4.1.2[b]	Lighting power of each luminaire shall be automatically reduced by a minimum of 30% when there is no activity detected within a lighting zone for 20 minutes.									
Additional Controls	Automatic Receptacle (i.e. Plug Load Control)	8.4.2	50% of all receptacles, and 25% of branch circuit feeders installed for modular furniture, shall be automatically turned off by an occupant sensor within 20 minutes of all occupants leaving the space. Note: A time-of-day schedule or a signal from another automatic control device or alarm/security system complies.	✔		✔	✔					
Exterior Control	Exterior Lighting Controls	9.4.1.4	9.4.1.4[a] Daylight shutoff 9.4.1.4[b] Facade and Landscape lighting shutoff 9.4.1.4[c] Lighting setback									

*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 engineering or other competent advisor before making any decision or taking any action based on this summary.

Warehouse/ Storage Area	Parking Area (Garage), Interior	Exterior Lighting
✔		
✔		
(or)		
✔		
✔		
✔		
(or)		
✔	✔	
✔		
✔		
	✔	
		✔

For each space type there will be a wired solution on the left and wireless solution on the right.

Room description

Room layout with devices & locations

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

Required list of devices in order to implement room layout design above

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

Additional options that add control capacity beyond code requirements

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6 ENCLOSED OFFICE: < 250 sq. ft., Windows, Luminaires with Networked Embedded Controls from nLight

Wired   **Wireless**

CAT-5e Cable
Line Voltage Wires
Line Power Feed

Line Voltage Wires
Line Power Feed

Bill of Materials

Symbol	Qty	Product #	Description
	2	See Note	Troffer with Wired Networked Embedded Controls from nLight
	1	nWSXA PDT LV DX	Wall Switch Occupancy Sensor with On/Off, Raise/Lower
	1	nPP20 PL	Plug Load Relay Pack

Bill of Materials

Symbol	Qty	Product #	Description
	2	See Note	Troffer with Wireless Networked Embedded Controls from nLight with Sensor Option
	1	rPODBA DX G2	Battery Powered, On/Off, Raise/Lower WallPod
	1	rPP20 24V EFP G2	Plug Load Relay Pack

/ OPERATIONAL DETAILS:

Light Fixtures:
- All fixtures are dimmable
- All fixtures can be controlled together or independently
- Maximum level can be task tuned to any percentage via programming

Occupancy Control:
- Fixtures must be turned on manually (or optionally can be configured to come on automatically to 50%)
- Plug-load turns on automatically
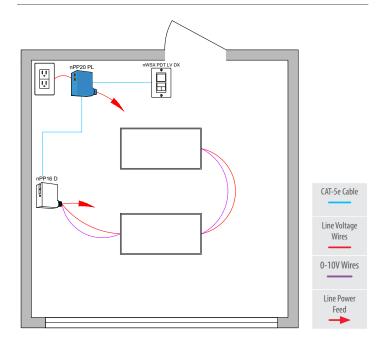- Fixtures and plug-load turn off automatically when room becomes vacant

Daylight Control:
- Not required for offices without windows or that have loads <150W in sidelit zones

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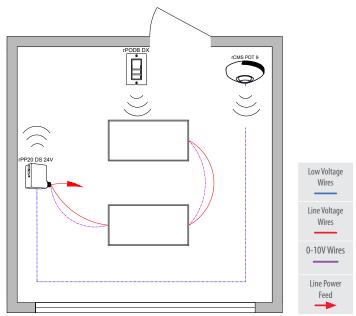- On/off & raise/lower control of fixtures

Note: Contact your local lighting agent luminaires with networked embedded controls from nLight.

/ ADDITIONAL OPTIONS:
- Room can be connected to nLight backbone to enable network control or time schedules
- HVAC control available through system-wide BACnet interface option on the nLight ECLPYSE™ controller
- Luminaires with wireless networked embedded controls from nLight and occupancy/daylighting sensor options available, please see the fixture specification sheet
- For emergency lighting control use a power pack with ER/EM option or luminaires with networked embedded controls from nLight with emergency option

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Wired

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

Bill of Materials

Symbol	Qty	Product #	Description
	2	See Note	Luminaire with Wired Networked Embedded Controls from nLight
	1	nWSX PDT LV DX	Wall Switch Occupancy Sensor with On/Off, Raise/Lower
	1	nPP20 PL	Plug Load Relay Pack

Wireless

		Legend
	Line Voltage Wires	
	Line Power Feed	

Bill of Materials

Symbol	Qty	Product #	Description
	2	See Note	Luminaire with Wireless Networked Embedded Controls from nLight
	1	rPODB DX G2	On/Off, Raise/Lower WallPod®

/ OPERATIONAL DETAILS:

Light Fixtures:
- All fixtures are dimmable
- All fixtures can be controlled together or independently
- Maximum level can be task tuned to any percentage via programming

Occupancy Control:
- Fixtures must be turned on manually (or optionally can be configured to come on automatically to 50%)
- Plug-load turns on automatically
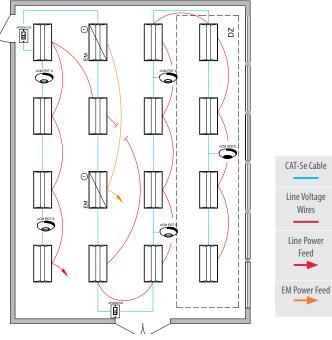- Fixtures and plug-load turn off automatically when room becomes vacant

Daylight Control:
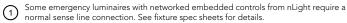- Not required for offices without windows or that have loads <150W in sidelit zones

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

/ ADDITIONAL OPTIONS:

- Room can be connected to nLight backbone to enable network control or time schedules
- HVAC control available through system-wide BACnet® interface option on the ECLYPSE® controller
- Luminaires with wireless networked embedded controls from nLight and occupancy/daylighting sensor options available, please see the fixture specification sheet
- For emergency lighting control use a power pack with ER/EM option or luminaire with networked embedded controls from nLight with emergency option
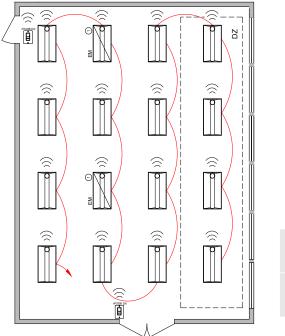
Note: Contact your local lighting agent for more information on luminaires with networked embedded controls from nLight.

Wired

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

Wireless

Low Voltage Wires	
Line Voltage Wires	
0-10V Wires	
Line Power Feed	

Bill of Materials

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

Bill of Materials

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

/ OPERATIONAL DETAILS:

Light Fixtures:
- All fixtures are dimmable
- All fixtures are controlled together
- Maximum level can be task tuned to any percentage via programming

Occupancy Control:
- Fixtures must be turned on manually (or optionally can be configured to come on automatically to 50%)
- Plug-load turns on automatically
- Fixtures and plug-load turn off automatically when room becomes vacant

Daylight Control:
- Not required for offices without windows or that have loads <150W in sidelit zone

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

/ ADDITIONAL OPTIONS:

- Room can be connected to nLight backbone to enable network control or time schedules
- HVAC control available through system-wide BACnet® interface option on the ECLYPSE controller or through occupancy sensor auxiliary relay (AR) contact option
- For emergency lighting control use a power pack with ER/EM option or luminaire with networked embedded controls from nLight with emergency option

Wired

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

(1) Some emergency luminaires with networked embedded controls from nLight require a normal sense line connection. See fixture spec sheets for details.

Bill of Materials

Symbol	Qty	Product #	Description
	14	See Note	Luminaire with Wired Networked Embedded Controls from nLight
	2	See Note	Luminaire with Wired Networked Embedded Controls from nLight with Emergency Option
	2	nPODM DX	On/Off, Raise/Lower WallPod
	4	nCM PDT 9 RJB	Occupancy Sensor
	1	nCM ADCX RJB	Daylight Sensor

Wireless

Line Voltage Wires		
Line Power Feed		

(1) Fixtures assumed to be battery backup

Bill of Materials

Symbol	Qty	Product #	Description
	14	See Note	Luminaire with Wireless Networked Embedded Controls from nLight
	2	See Note	Luminaire with Wireless Networked Embedded Controls from nLight with Battery Option
	2	rPODB DX G2	On/Off, Raise/Lower WallPod

/ OPERATIONAL DETAILS:

Light Fixtures:
- All fixtures are dimmable
- All fixtures are controlled together or independently
- Maximum level can be task tuned to any percentage via programming

Occupancy Control:
- Fixtures must be turned on manually (or optionally can be configured to come on automatically to 50%)
- Fixtures turn off automatically when room becomes vacant

Daylight Control:
- Smooth continuous dimming
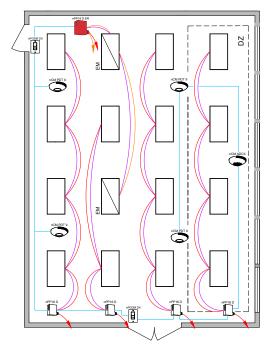- Custom grouping of fixtures into separate daylight zones (max. number zones = number of fixtures)
- Not required for offices without windows or that have loads <150W in sidelit zones

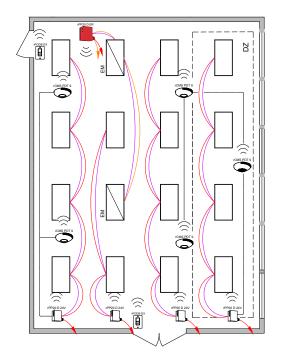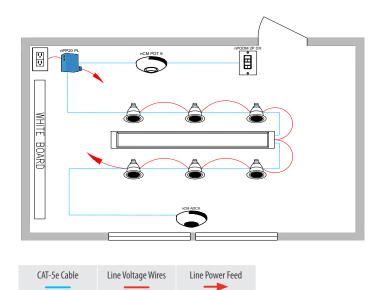**Manual Control:**
- On/off & raise/lower control of fixtures

/ ADDITIONAL OPTIONS:

- Room can be connected to nLight backbone to enable network control or time schedules
- HVAC control available through system-wide BACnet® interface option on the ECLYPSE controller or through occupancy sensor auxiliary relay (AR) contact option
- Luminaires with wireless networked embedded controls from nLight and occupancy/daylighting sensor options available, please see the fixture specification sheet
- For emergency lighting control use a power pack with ER/EM option or luminaire with networked embedded controls from nLight with emergency option

Note: Contact your local lighting agent for more information on luminaires with networked embedded controls from nLight.

Wired

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

Wireless

	Low Voltage Wires
	Line Voltage Wires
	Line Power Feed
	0-10V Wires
	EM Power Feed

Bill of Materials

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

Bill of Materials

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

/ OPERATIONAL DETAILS:

Light Fixtures:
- All fixtures are dimmable
- Each row controlled independently
- Maximum level can be task tuned to any percentage via programming

Occupancy Control:
- Fixtures must be turned on manually (or optionally can be configured to come on automatically to 50%)
- Fixtures turn off automatically when room becomes vacant

Daylight Control:
- Smooth continuous dimming
- Daylight zones defined by rows
- Not required for offices without windows or that have loads <150W in sidelit zones

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

/ ADDITIONAL OPTIONS:

- Room can be connected to nLight backbone to enable network control or time schedules
- HVAC control available through system-wide BACnet® interface option on the ECLYPSE controller or through occupancy sensor auxiliary relay (AR) contact option
- For emergency lighting control use a power pack with ER/EM option or luminaire with networked embedded controls from nLight with emergency option

Wired

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

Wireless

| | Line Voltage Wires | Line Power Feed |

Bill of Materials

Symbol	Qty	Product #	Description
	1	See Note	Linear Luminaire with Wired Networked Embedded Controls from nLight
	6	See Note	Downlight with Wired Networked Embedded Controls from nLight
	1	nPODM 2P DX	2-Pole On/Off, Raise/Lower WallPod
	1	nCM PDT 9 RJB	Occupancy Sensor
	1	nCM ADCX RJB	Daylight Sensor
	1	nPP20 PL	Plug Load Relay Pack

Bill of Materials

Symbol	Qty	Product #	Description
	1	See Note	Luminaire with Wireless Networked Embedded Controls from nLight
	6	See Note	Downlight with Wireless Networked Embedded Controls from nLight
	1	rPODB 2P DX G2	2-Pole On/Off, Raise/Lower WallPod
	1	rPP20 24V EFP G2	Plug Load Relay Pack

/ OPERATIONAL DETAILS:

Light Fixtures:
- All fixtures are dimmable
- Maximum level can be task tuned to any percentage via programming
- A/V zone can be programmed to control two fixtures in front of the whiteboard

Occupancy Control:
- Fixtures must be turned on manually (or optionally can be configured to come on automatically to 50%)
- Plug-load turns on automatically
- Fixtures and plug-load turn off automatically when room becomes vacant

Daylight Control:
- Smooth continuous dimming
- Custom grouping of fixtures into separate daylight zones (max number zones = number of fixtures)
- Not required for areas without windows or that have loads <150w in sidelit zones
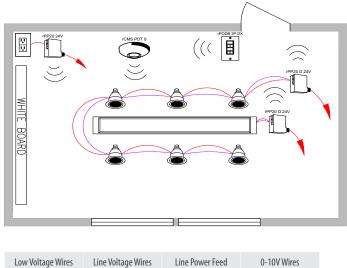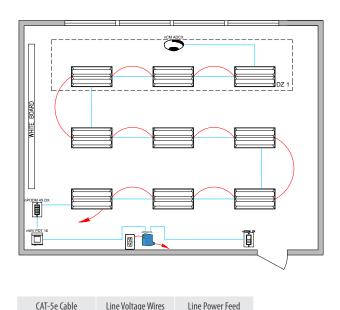
Manual Control:
- On/off & raise lower control of two zones of fixtures

/ ADDITIONAL OPTIONS:

- Room can be connected to nLight backbone to enable network control or time schedules
- HVAC control available through system-wide BACnet® interface option on the ECLYPSE controller or through occupancy sensor auxiliary relay (AR) contact option
- Luminaires with wireless networked embedded controls from nLight and occupancy/daylighting sensor options available, please see the fixture specification sheet
- For emergency lighting control use a power pack with ER/EM option or luminaire with networked embedded controls from nLight with emergency option

Note: Contact your local lighting agent for more information on luminaires with networked embedded controls from nLight.

Wired

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

Wireless

| Low Voltage Wires | Line Voltage Wires | Line Power Feed | 0-10V Wires |

Bill of Materials

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

Bill of Materials

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

/ OPERATIONAL DETAILS:

Light Fixtures:
- All fixtures are dimmable
- Maximum level can be task tuned to any percentage via programming

Occupancy Control:
- Fixtures must be turned on manually (or optionally can be configured to come on automatically to 50%)
- Plug-load turns on automatically
- Fixtures and plug-load turn off automatically when room becomes vacant

Daylight Control:
- Smooth continuous dimming
- Daylight zones defined by rows
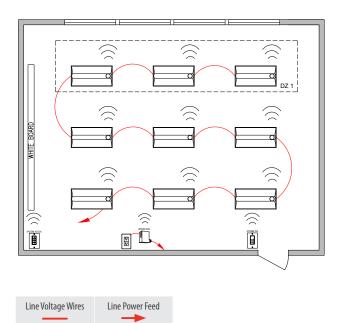- Not required for areas without windows or that have loads <150W in sidelit zones

Manual Control:
- On/off & raise lower control of two zones of fixtures

/ ADDITIONAL OPTIONS:

- Room can be connected to nLight backbone to enable network control or time schedules
- HVAC control available through system-wide BACnet® interface option on the ECLYPSE controller or through occupancy sensor auxiliary relay (AR) contact option
- For emergency lighting control use a power pack with ER/EM option or luminaire with networked embedded controls from nLight with emergency option

Wired

CAT-5e Cable	Line Voltage Wires	Line Power Feed

Wireless

Line Voltage Wires	Line Power Feed

Bill of Materials

Symbol	Qty	Product #	Description
	9	See Note	Luminaire with Wired Networked Embedded Controls from nLight
	1	nPODM DX	On/Off, Raise/Lower WallPod
	1	nWV PDT 16	Dual Technology Wide View Occupancy Sensor
	1	nPODM 4S DX	Teacher Station — 4 Scene Control with Master On/Off & Raise/Lower
	1	nCM ADCX RJB	Daylight Sensor
	1	nPP20 PL	Plug Load Relay Pack

Bill of Materials

Symbol	Qty	Product #	Description
	9	See Note	Luminaires with Wireless Networked Embedded Controls from nLight
	1	rPODB DX G2	On/Off, Raise/Lower WallPod
	1	rPODB 4S DX G2	Teacher Station — 4 Scene Control with Master On/Off & Raise/Lower
	1	rPP20 24V EFP G2	Plug Load Relay Pack

/ OPERATIONAL DETAILS:

Light Fixtures:
- All fixtures are dimmable
- All fixtures are controlled together or independently
- Maximum level can be task tuned to any percentage via programming

Occupancy Control:
- Fixtures must be turned on manually (or optionally can be configured to some on automatically to 50%)
- Plug-load turns on automatically
- Fixtures and plug-load turn off automatically when room becomes vacant
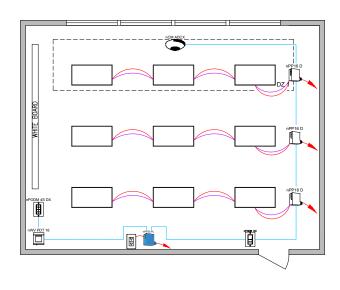
Daylight Control:
- Smooth continuous dimming
- Custom grouping of fixtures into separate daylight zones (max number zones = number of fixtures)
- Not required for areas without windows or that have loads <150W in sidelit zones

Manual Control:
- On/off & raise/lower control of entire room
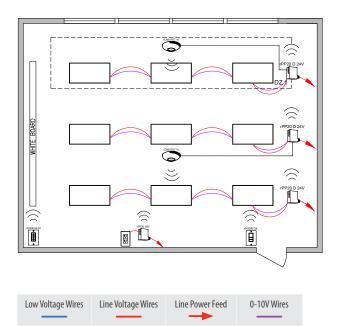- Teacher station with 4 preset scenes

/ ADDITIONAL OPTIONS:

- Room can be connected to nLight backbone to enable network control or time schedules
- HVAC control available through system-wide BACnet® interface option on the ECLYPSE controller
- Luminaires with wireless networked embedded controls from nLight and occupancy/daylighting sensor options available, please see the fixture specification sheet
- For emergency lighting control use a power pack with ER/EM option or luminaire with networked embedded controls from nLight with emergency option

Note: Contact your local lighting agent for more information on luminaires with networked embedded controls from nLight.

Wired

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

Bill of Materials

Symbol	Qty	Product #	Description
	3	nPP16 D EFP	Relay Module with 0-10V Dimming Output
	1	nPODM DX	On/Off, Raise/Lower WallPod
	1	nWV PDT 16	Dual Technology Wide View Occupancy Sensor
	1	nPODM 4S DX	Teacher Station — 4 Scene Control with Master On/Off & Raise/Lower
	1	nCM ADCX RJB	Daylight Sensor
	1	nPP20 PL	Plug Load Relay Pack

Wireless

| Low Voltage Wires | Line Voltage Wires | Line Power Feed | 0-10V Wires |

Bill of Materials

Symbol	Qty	Product #	Description
	3	rPP20 D 24V EFP G2	Relay Pack with 0-10V Dimming Output
	1	rPODB DX G2	On/Off, Raise/Lower WallPod
	2	rCMS PDT 10 G2	Occupancy and Daylight Sensor
	1	rPODB 4S DX G2	Teacher Station — 4 Scene Control with Master On/Off & Raise/Lower
	1	rPP20 24V EFP G2	Plug Load Relay Pack

/ OPERATIONAL DETAILS:

Light Fixtures:
- All fixtures are dimmable
- Each row can be controlled independently
- Maximum level can be task tuned to any percentage via programming

Occupancy Control:
- Fixtures must be turned on manually (or optionally can be configured to come on automatically to 50%)
- Plug-load turns on automatically
- Fixtures and plug-load turn off automatically when room becomes vacant
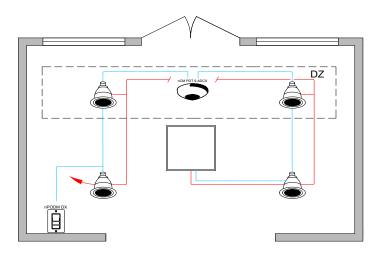
Daylight Control:
- Smooth continuous dimming
- Daylight zones defined by rows
- Not required for areas without windows or that have loads <150W in sidelit zones
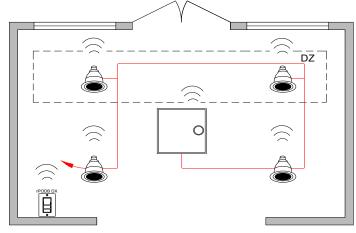
Manual Control:
- Master on/off & raise/lower control of entire room
- Teacher station with 4 preset scenes

/ ADDITIONAL OPTIONS:

- Room can be connected to nLight backbone to enable network control or time schedules
- HVAC control available through system-wide BACnet® interface option on the ECLYPSE controller or through occupancy sensor auxiliary relay (AR) contact option
- For emergency lighting control use a power pack with ER/EM option or luminaire with networked embedded controls from nLight with emergency option

Wired

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

Bill of Materials

Symbol	Qty	Product #	Description
	4	See Notes	Downlight with Wired Networked Embedded Controls from nLight
	1	See Notes	Troffer (recessed) with Wired Networked Embedded Controls from nLight
	1	nPODM DX	On/Off, Raise/Lower WallPod
	1	nCM PDT 9 ADCX	Occupancy and Daylight Sensor

Wireless

| Line Voltage Wires | Line Power Feed |

Bill of Materials

Symbol	Qty	Product #	Description
	4	See Notes	Downlight with Wireless Networked Embedded Controls from nLight
	1	See Notes	Troffer (recessed) with Wireless Networked Embedded Controls from nLight
	1	rPODB DX G2	On/Off, Raise/Lower WallPod

/ OPERATIONAL DETAILS:

Light Fixtures:
- All fixtures are dimmable
- All fixtures are controlled together or independently
- Maximum level can be task tuned to any percentage via programming

Occupancy Control:
- Fixtures automatically go to full bright when occupied
- Fixtures automatically turn off when room becomes vacant
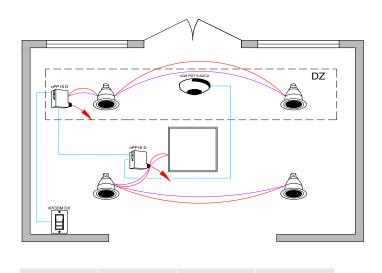
Daylight Control:
- Smooth continuous dimming
- Custom grouping of fixtures into separate daylight zones (max number zones = number of fixtures)
- Not required for areas without windows or that have loads <150W in sidelit zones
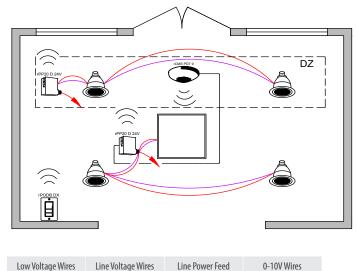
Manual Control:
- On/off & raise/lower control of fixtures

/ ADDITIONAL OPTIONS:

- Room can be connected to nLight backbone to enable network control or time schedules
- HVAC control available through system-wide BACnet® interface option on the ECLYPSE controller
- Luminaires with wireless networked embedded controls from nLight and occupancy/daylighting sensor options available, please see the fixture specification sheet
- For emergency lighting control use a power pack with ER/EM option or luminaire with networked embedded controls from nLight with emergency option

Note: Contact your local lighting agent for more information on luminaires with networked embedded controls from nLight.

Wired

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

Bill of Materials

Symbol	Qty	Product #	Description
	2	nPP16 D EFP	Relay Pack with 0-10V Dimming Output
	1	nPODM DX	On/Off, Raise/Lower WallPod
	1	nCM PDT 9 ADCX	Occupancy and Daylight Sensor

Wireless

Low Voltage Wires	Line Voltage Wires	Line Power Feed	0-10V Wires

Bill of Materials

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

/ OPERATIONAL DETAILS:

Light Fixtures:
- All fixtures are dimmable
- Maximum level can be task tuned to any percentage via programming

Occupancy Control:
- Fixtures automatically go to full bright when occupied
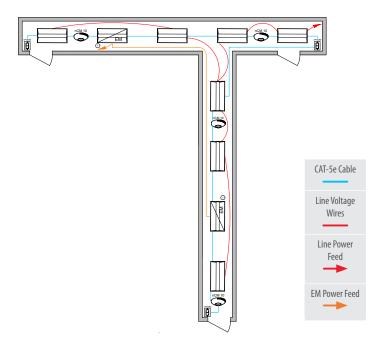- Fixtures automatically turn off when room becomes vacant

Daylight Control:
- Smooth continuous dimming
- Daylight zones defined by relay module wiring
- Not required for areas without windows or that have loads <150W in sidelit zones
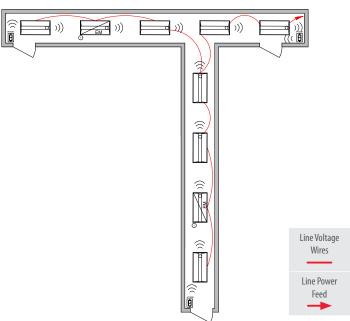
Manual Control:
- On/off & raise/lower control of fixtures

/ ADDITIONAL OPTIONS:

- Room can be connected to nLight backbone to enable network control or time schedules
- HVAC control available through system-wide BACnet® interface option on the ECLYPSE controller or through occupancy sensor auxiliary relay (AR) contact option
- For emergency lighting control use a power pack with ER/EM option or luminaire with networked embedded controls from nLight with emergency option

Wired

CAT-5e Cable	
Line Voltage Wires	
Line Power Feed	→
EM Power Feed	→

Wireless

Line Voltage Wires	
Line Power Feed	→

Bill of Materials

Symbol	Qty	Product #	Description
	7	See Note	Luminaire with Wired Networked Embedded Controls from nLight
	2	See Note	Luminaire with Wired Networked Embedded Controls from nLight with Emergency Option
	3	nPODM	On/Off WallPod
	4	nCM 10 RJB	Occupancy Sensor

Bill of Materials

Symbol	Qty	Product #	Description
	7	See Note	Luminaire with Wireless Networked Embedded Controls from nLight
	2	See Note	Luminaire with Wireless Networked Embedded Controls from nLight with Battery Option
	3	rPODB G2	On/Off WallPod

/ OPERATIONAL DETAILS:

Light Fixtures:
- All fixtures are dimmable
- All fixtures are controlled together or independently
- Maximum level can be task tuned to any percentage via programming

Occupancy Control:
- Fixtures automatically go to full bright when occupied
- Fixtures automatically turn off or optionally can be configured to drop to low dim setting when space becomes vacant
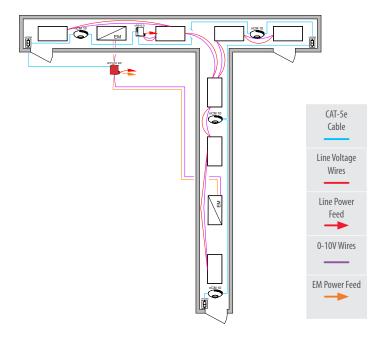
Daylight Control:
- Not required for areas without windows or that have loads <150W in sidelit zones
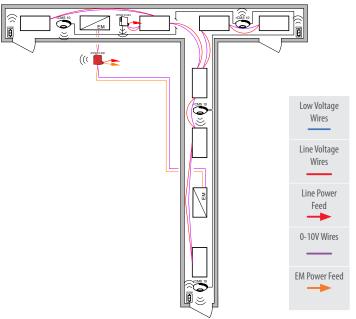
Manual Control:
- On/off control of fixtures

/ ADDITIONAL OPTIONS:

- Room can be connected to nLight backbone to enable network control or time schedules
- HVAC control available through system-wide BACnet® interface option on the ECLYPSE controller
- Luminaires with wireless networked embedded controls from nLight and occupancy/daylighting sensor options available, please see the fixture specification sheet
- For emergency lighting control use a power pack with ER/EM option or luminaire with networked embedded controls from nLight with emergency option

Note: Contact your local lighting agent for more information on luminaires with networked embedded controls from nLight.

Wired

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

Wireless

Low Voltage Wires	———
Line Voltage Wires	———
Line Power Feed	——▶
0-10V Wires	———
EM Power Feed	——▶

Bill of Materials

Symbol	Qty	Product #	Description
	1	nPP16 D EFP	Relay Pack with 0-10V Dimming Output
	1	nPP16 D ER EFP	Emergency Relay Pack with 0-10V Dimming Output
	4	nCM 10 RJB	Occupancy Sensor
	3	nPODM	On/Off WallPod

Bill of Materials

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

/ OPERATIONAL DETAILS:

Light Fixtures:
- All fixtures are dimmable
- Maximum level can be task tuned to any percentage via programming

Occupancy Control:
- Fixtures automatically go to full bright when occupied
- Fixtures automatically turn off or optionally can be configured to drop to low dim setting when space becomes vacant
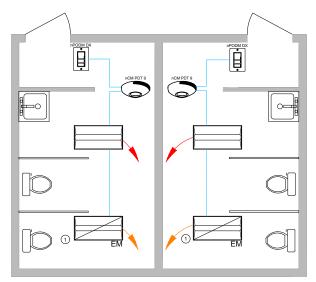
Daylight Control:
- Not required for areas without windows or that have loads <150W in sidelit zones

Manual Control:
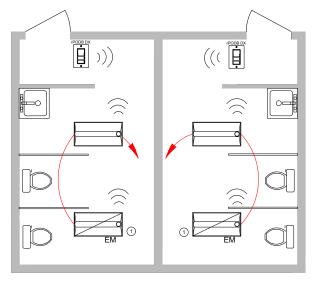- On/off control of fixtures

/ ADDITIONAL OPTIONS:

- Room can be connected to nLight backbone to enable network control or time schedules
- HVAC control available through system-wide BACnet® interface option on the ECLYPSE controller
- For emergency lighting control use a power pack with ER/EM option or luminaire with networked embedded controls from nLight with emergency option

Wired

① Some emergency luminaires with networked embedded controls from nLight require a normal sense line connection. See fixture spec sheet for details.

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

Bill of Materials

Symbol	Qty	Product #	Description
	2	See Note	Luminaire with Wired Networked Embedded Controls from nLight
	2	See Note	Luminaire with Wired Networked Embedded Controls from nLight with the Emergency Option
	2	nPODM DX	On/Off, Raise/Lower WallPod

Wireless

① Fixtures assumed to be battery backup

Line Voltage Wires	Line Power Feed

Bill of Materials

Symbol	Qty	Product #	Description
	2	See Note	Luminaire with Wireless Networked Embedded Controls from nLight
	2	See Note	Luminaire with Wireless Networked Embedded Controls from nLight with the Battery Option
	2	rPODB DX G2	On/Off, Raise/Lower WallPod

/ OPERATIONAL DETAILS:

Light Fixtures:
- All fixtures are dimmable
- All fixtures are controlled together or independently (per room)
- Maximum level can be task tuned to any percentage via programming
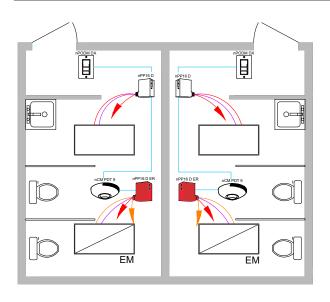
Occupancy Control:
- Fixtures automatically go to full bright when occupied (or optionally can be configured to come on automatically to 50%)
- Fixtures automatically turn off or optionally can be configured to drop to low dim setting when space becomes vacant

Manual Control:
- On/off & raise/lower control of fixtures
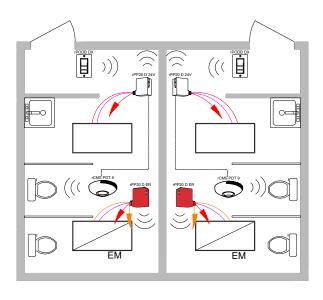- If switch poses safety concerns, optionally can be programmed for "on only"

/ ADDITIONAL OPTIONS:

- Room can be connected to nLight backbone to enable network control or time schedules
- HVAC control available through system-wide BACnet® interface option on the ECLYPSE controller or through occupancy sensor auxiliary relay (AR) contact option
- Luminaires with wireless networked embedded controls from nLight and occupancy/daylighting sensor options available, please see the fixture specification sheet
- For emergency lighting control use a power pack with ER/EM option or luminaire with networked embedded controls from nLight with emergency option

Note: Contact your local lighting agent for more information on luminaires with networked embedded controls from nLight.

Wired

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

Wireless

Low Voltage Wires	0-10V Wires	Line Voltage Wires	Line Power Feed	EM Power Feed

Bill of Materials

Symbol	Qty	Product #	Description
	2	nPP16 D EFP	Relay Pack with 0-10V Dimming Output
	2	nPP16 D ER EFP	Emergency Module with 0-10V Dimming Output
	2	nPODM DX	On/Off & Raise/Lower WallPod
	2	nCM PDT 9 RJB	Occupancy Sensor

Bill of Materials

Symbol	Qty	Product #	Description
	2	rPP20 D 24V EFP G2	Relay Pack with 0-10V Dimming Output
	2	rPP20 D ER EFP G2	Emergency Relay Pack with 0-10V Dimming Output
	2	rPODB DX G2	On/Off & Raise/Lower WallPod
	2	rCMS PDT 9 G2	Occupancy Sensor

/ OPERATIONAL DETAILS:

Light Fixtures:
- All fixtures are dimmable
- Maximum level can be task tuned to any percentage via programming
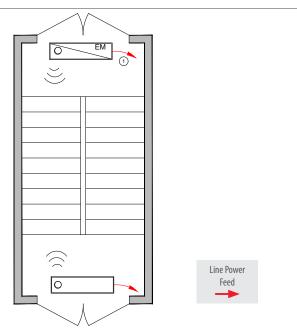
Occupancy Control:
- Fixtures automatically go to full bright when occupied (or optionally can be configured to come on automatically to 50%)
- Fixtures automatically turn off or optionally can be configured to drop to low dim setting when space becomes vacant

Manual Control:
- On/off & raise/lower control of fixtures
- If switch poses safety concerns, optionally can be programmed for "on only"
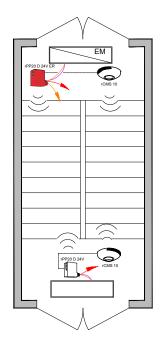
/ ADDITIONAL OPTIONS:

- Room can be connected to nLight backbone to enable network control or time schedules
- HVAC control available through system-wide BACnet® interface option on the ECLYPSE controller or through occupancy sensor auxiliary relay (AR) contact option
- Luminaires with wireless networked embedded controls from nLight and occupancy/daylighting sensor options available, please see the fixture specification sheet
- For emergency lighting control use a power pack with ER/EM option or luminaire with networked embedded controls from nLight with emergency option

Luminaires with Wireless Networked Embedded Controls from nLight

① Fixtures assumed to be battery backup

Wireless with 0-10V Dimming Fixtures

Low Voltage Wires	───
Line Voltage Wires	───
Line Power Feed	➡
0-10V Wires	───
EM Power Feed	➡

Bill of Materials

Symbol	Qty	Product #	Description
▭─○	1	See Note	Luminaire with Wireless Networked Embedded Controls from nLight
▭─○	1	See Note	Luminaire with Wireless Networked Embedded Controls from nLight with Battery Option

Bill of Materials

Symbol	Qty	Product #	Description
▯	1	rPP20 D 24V EFP G2	Relay Pack with 0-10V Dimming Output
▮	1	rPP20 D 24V ER EFP G2	Emergency Relay Pack with 0-10V Dimming Output
◯	2	rCMS 10 G2	Occupancy and Daylight Sensor

/ OPERATIONAL DETAILS:

Light Fixtures:
- All fixtures are dimmable
- Maximum level can be task tuned to any percentage via programming

Occupancy Control:
- Fixtures automatically go to full bright when occupied
- Fixtures automatically turn off or optionally can be configured to drop to low dim setting when space becomes vacant
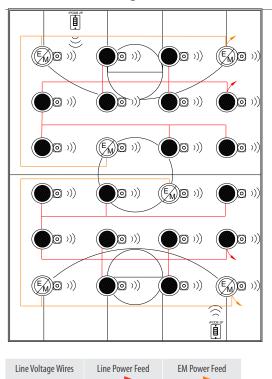
Manual Control:
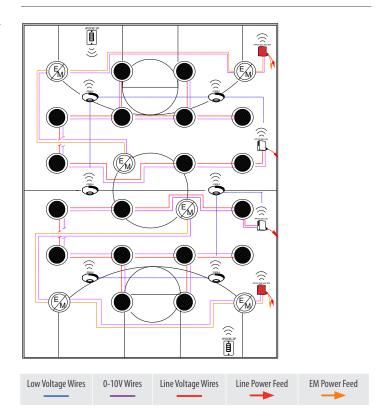- Safety may preclude the use of a manual control in these areas

Note: Contact your local lighting agent for more information on luminaires with networked embedded controls from nLight.

/ ADDITIONAL OPTIONS:

- Room can be connected to nLight backbone to enable network control or time schedules
- HVAC control available through system-wide BACnet® interface option on the ECLYPSE controller or through occupancy sensor auxiliary relay (AR) contact option
- Luminaires with wireless networked embedded controls from nLight and occupancy/daylighting sensor options available, please see the fixture specification sheet
- For emergency lighting control use a power pack with ER/EM option or luminaire with networked embedded controls from nLight with emergency option

Luminaires with Wireless Networked Embedded Controls from nLight

Line Voltage Wires	Line Power Feed	EM Power Feed

Wireless with 0-10V Dimming Fixtures

Low Voltage Wires	0-10V Wires	Line Voltage Wires	Line Power Feed	EM Power Feed

Bill of Materials

Symbol	Qty	Product #	Description
	18	See Notes	Luminaire with Wireless Networked Embedded Controls from nLight
	6	See Notes	Luminaire with Wireless Networked Embedded Controls from nLight with Emergency Option
	2	rPODB 2P G2	2-Pole On/Off WallPod

Bill of Materials

Symbol	Qty	Product #	Description
	2	rPP20 D 24V EFP G2	Relay Pack with 0-10V Dimming Output
	2	rPP20 D 24V ER EFP G2	Emergency Relay Pack with 0-10V Dimming Output
	2	rPODB 2P G2	2-Pole On/Off WallPod
	6	rCMS 6 G2	High Bay Occupancy Sensor

/ OPERATIONAL DETAILS:

Light Fixtures:
- All fixtures are dimmable
- Maximum level can be task tuned to any percentage via programming

Occupancy Control:
- Fixtures automatically go to full bright when occupied
- Fixtures automatically turn off or optionally can be configured to drop to low dim setting when space becomes vacant
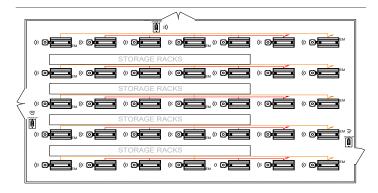
Daylight Control:
- Daylight responsive controls lights to full off when adequate daylight present
- Not required for spaces without skylights or that have loads <150W in toplit zones

Note: Contact your local lighting agent for more information on luminaires with networked embedded controls from nLight.
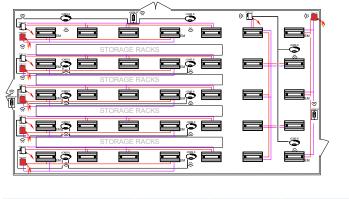
/ ADDITIONAL OPTIONS:

- Room can be connected to nLight backbone to enable network control or time schedules
- HVAC control available through system-wide BACnet® interface option on the ECLYPSE controller or through occupancy sensor auxiliary relay (AR) contact option
- Luminaires with wireless networked embedded controls from nLight and occupancy/daylighting sensor options available, please see the fixture specification sheet
- For emergency lighting control use a power pack with ER/EM option or luminaire with networked embedded controls from nLight with emergency option

Luminaires with Wireless Networked Embedded Controls from nLight

Line Voltage Wires	Line Power Feed	EM Power Feed

Wireless with 0-10V Dimming Fixtures

Low Voltage Wires	0-10V Wires	Line Voltage Wires	Line Power Feed	EM Power Feed

Bill of Materials

Symbol	Qty	Product #	Description
	20	IBG Series	Luminaire with Wireless Networked Embedded Controls from nLight
	15	IBG Series	Luminaire with Wireless Networked Embedded Controls from nLight with Emergency Option
	3	rPODB 2P G2	2-Pole On/Off WallPod

Bill of Materials

Symbol	Qty	Product #	Description
	6	rPP20 D 24V EFP G2	Relay Pack with 0-10V Dimming Output
	6	rPP20 D ER EFP G2	Emergency Relay Pack with 0-10V Dimming Output
	3	rPODB 2P G2	2-Pole On/Off WallPod
	12	rCMS 6 G2	Occupancy Sensor

/ OPERATIONAL DETAILS:

Light Fixtures:
- All fixtures are dimmable
- Maximum level can be task tuned to any percentage via programming

Occupancy Control:
- Fixtures automatically go to full bright when occupied
- Fixtures automatically turn off or optionally can be configured to drop to low dim setting when space becomes vacant
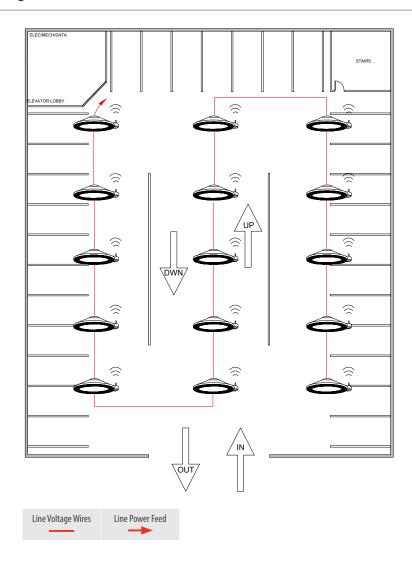
Daylight Control:
- Daylight responsive controls lights to full off when adequate daylight present
- Not required for spaces without skylights or that have loads <150W in toplit zones

Note: Contact your local lighting agent for more information on luminaires with networked embedded controls from nLight.

/ ADDITIONAL OPTIONS:

- Room can be connected to nLight backbone to enable network control or time schedules
- HVAC control available through system-wide BACnet® interface option on the ECLYPSE controller or through occupancy sensor auxiliary relay (AR) contact option
- Luminaires with wireless networked embedded controls from nLight and occupancy/daylighting sensor options available, please see the fixture specification sheet
- For emergency lighting control use a power pack with ER/EM option or luminaire with networked embedded controls from nLight with emergency option

Wireless Parking Garage

| | ELEC/MECH/DATA | | | STAIRS |

| Line Voltage Wires | Line Power Feed |

Bill of Materials

Symbol	Qty	Product #	Description
	15	See Notes	Luminaire with Wireless Networked Embedded Controls from nLight

/ OPERATIONAL DETAILS:

Light Fixtures:
- All fixtures are dimmable
- All fixtures can be controlled together or independently
- Maximum level can be task tuned to any percentage via programming

Occupancy Control:
- Fixtures automatically go to full bright when occupied
- Fixtures automatically turn off or optionally can be configured to drop to low dim setting when space becomes vacant
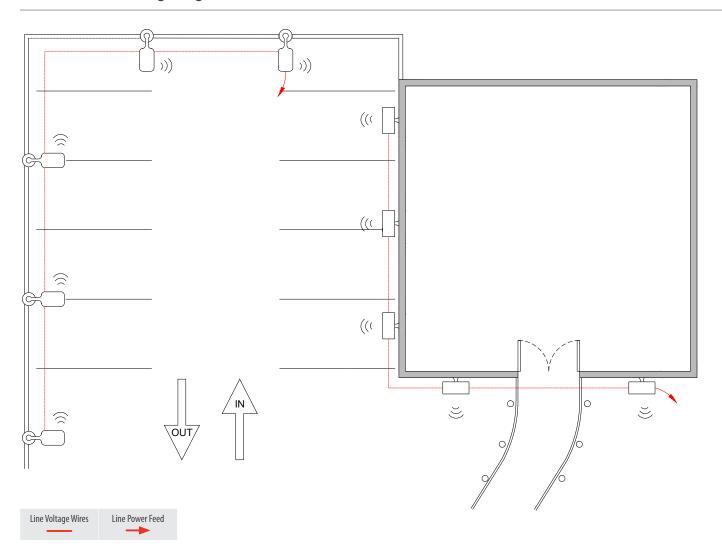
Daylight Control:
- Daylight responsive controls lights to full off when adequate daylight present

Note: Contact your local lighting agent for more information on luminaires with networked embedded controls from nLight.

/ ADDITIONAL OPTIONS:

- Devices can be connected to nLight backbone to embedded network control or time schedules, including astronomical time schedules for shutoff
- Luminaires with wireless networked embedded controls from nLight and occupancy/daylighting sensor options available, please see the fixture specification sheet
- For emergency lighting control use a power pack with ER/EM option or luminaire with networked embedded controls from nLight with emergency option

Wireless Exterior Lighting

Line Voltage Wires	Line Power Feed

Bill of Materials

Symbol	Qty	Product #	Description
	5	See Notes	Area Luminaire with Wireless Networked Embedded Controls from nLight
	5	See Notes	Wall Mount with Wireless Networked Embedded Controls from nLight

/ OPERATIONAL DETAILS:

Light Fixtures:
- All fixtures are dimmable
- All fixtures can be controlled together or independently
- Maximum level can be task tuned to any percentage via programming
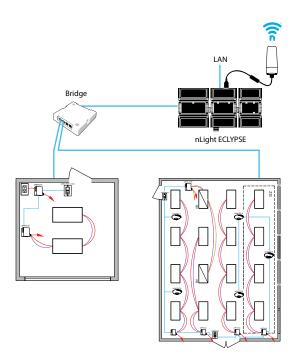
Occupancy Control:
- Fixtures automatically go to full bright when occupied
- Fixtures automatically turn off or optionally can be configured to drop to low dim setting when space becomes vacant

Daylight Control:
- Daylight responsive controls lights to full off when adequate daylight present

Note: Contact your local lighting agent for more information on luminaires with networked embedded controls from nLight.
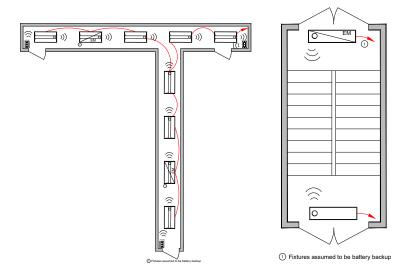
/ ADDITIONAL OPTIONS:

- Devices can be connected to nLight backbone to embedded network control or time schedules, including astronomical time schedules for lighting shutoff (9.4.1.4[b]) and lighting setback (9.4.1.4[c])
- Luminaires with wireless networked embedded controls from nLight and occupancy/daylighting sensor options available, please see the fixture specification sheet
- For emergency lighting control use a power pack with ER/EM option or luminaire with networked embedded controls from nLight with emergency option

Some emergency luminaires with networked embedded controls from nLight require a normal sense line connection. See fixture spec sheet for details.

○ Fixtures assumed to be battery backup

① Fixtures assumed to be battery backup

Bill of Materials

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

Programmable Time Clock Control:

Although not pictured within each of the individual room design guides, each nLight controlled space can be connected via an nLight backbone to create a networked nLight lighting control system capable of meeting the requirements of ASHRAE 90.1 scheduled shutoff, provision 9.4.1.4[i]. A networked system also enables astronomical time clock control.

Control Requirement	Code Provision	nLight Solution Details	

Shut-Off Control

Local (i.e. Switch) Control	9.4.1.1[a]	nLight WallPod devices provide a user with local control of lighting within an nLight controlled space. WallPods are available in multiple styles – each with varying features and user experiences.	
		Push-Button WallPod	**Graphic WallPod***
		nPODM Series rPODB Series	Graphic WallPod®
		Traditional tactile buttons and LED user feedback.	Full-color touch screen provides a sophisticated look and feel.

Scheduled Shutoff (i.e. Timeclock)	9.4.1.1[i] 9.4.1.4	Individual nLight control groups (i.e.: rooms) can be easily networked together across an entire building simply by connecting them into a "backbone" made up of one or more nLight bridge devices and/or nLight AIR adapters and an nLight ECLYPSE system controller. The system controller 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	
		Network System Controller	
		Additional benefits of installing an nLight backbone include remote status monitoring, system-wide configuration changes, and BMS interface capability, and ADR interface capability.	

Automatic Full OFF Via Occupancy Sensor	9.4.1.1[h]	nLight occupancy sensors utilize 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 vs. partial off control is done with system programming.	

Automatic Partial OFF Via Occupancy Sensor	9.4.1.1[g]	**360° Occupancy Sensor**	**120° WideView Corner Sensor***
		nCM Series rCMS Series	nWV Series
		Surface mounts to ceiling tiles or sheetrock/plaster.	Directly mounts in corner or to ceiling via repositionable ceiling bracket.

*Available with nLight Wired products only.

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 engineering or other competent advisor before making any decision or taking any action based on this summary.

	Control Requirement	Code Provision	nLight Solution Details	
Light Level Control	Bi-Level Lighting Control	9.4.1.1[d]	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.	
			Acuity Brands Luminaires with Networked Embedded Controls from nLight	**Dimming Relay Packs**
				nPP16 Series rPP20 Series
			Acuity Brands offers a wide variety of LED fixtures with factory installed integrated nLight controls that provide smooth continuous dimming.	nLight dimming relay enable control of any 0-10VDC dimmable LED luminaire.
	Automatic Daylight Responsive Controls for Sidelighting/ Toplighting	9.4.1.1[e] 9.4.1.1[f]	nLight offers standalone daylight harvesting sensors as well as occupancy sensors with integrated daylight harvesting. Sensors are available in various housings and provide continuous dimming control of any/all luminaires with networked embedded controls from nLight or dimming relay packs, each capable of being its own daylight zone.	
			Ceiling Mount Dimming Photocell	**Recessed Mount Dimming Photocell***
			nCM Series rCMS Series	nRM Series
Additional Controls	Automatic Receptacle (i.e. Plug Load) Control	8.4.2	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	
			nPP20 PL Series	rPP20 Series

Luminaires with Networked Embedded Controls from nLight

Acuity Brands offers the industry's broadest portfolio of luminaires with networked embedded controls from nLight. Please scan the QR code to see the current luminaires with networked embedded controls from nLight.

Mobile Apps

Quick and Easy Lighting Configuration and Control In the Palm of Your Hand

nLight Wired

nLight AIR

nLight BLE Radio Module

nLight wired uses the nIO BT (Bluetooth® Low Energy radio module) to communicate with the nConfig app to modify the settings and operation of the devices in an nLight zone.

The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by Acuity Brands Lighting is under license.

nConfig™

The nConfig mobile app is for nLight wired controls startups. It's a quick and easy alternative to SensorView software for smaller projects and simple programming.

CLAIRITY™ Pro

The CLAIRITY Pro mobile app allows you to start up, configure and troubleshoot nLight AIR wireless controls from a compatible smartphone or tablet.

nLight®

ASHRAE 90.1–2013 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 Typical Layout Drawings

http://www.acuitybrands.com/typicals

ASHRAE

https://www.ashrae.org/

Use the Following Sections of the ASHRAE 90.1–2013 Code as Reference:

Section 8.4.2   — Automatic Receptacle Control
Section 9.4.1.1[a]   — Local Control
Section 9.4.1.1[b]   — Manual On
Section 9.4.1.1[c]   — Partial Automatic On
Section 9.4.1.1[d]   — Bi-Level Lighting Control
Section 9.4.1.1[e]   — Automatic Daylight Responsive Control for Sidelighting
Section 9.4.1.1[f]   — Automatic Daylight Responsive Controls for Toplighting
Section 9.4.1.1[g]   — Automatic Partial Off
Section 9.4.1.1[h]   — Automatic Full Off
Section 9.4.1.1[i]   — Scheduled Shutoff
Section 9.4.1.2   — Parking Garage Lighting Control
Section 9.4.1.4   — Exterior Lighting Control

A+ Certified solutions from Acuity Brands help you quickly and confidently select and implement lighting systems that are both compatible and consistent.

For lighting applications, A+ means verified consistent performance, visual appearance and system interoperability of all luminaires and controls within the certified solutions. For lighting professionals it means confidence that all parts of the lighting system will work together and meet common Acuity Brands specifications.

Go to www.acuitybrands.com/solutions/a-certified or contact your local Acuity Brands representative for more information.

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