ScuityControls... nLight。

WSEC 2015

nLight® Applications Guide

AcuityControls

nLight.

ON/OFF



/ ACUITY CONTROLS

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

Acuity Controls is advanced lighting controls technology, service and support from a single expert source. We offer one of the industry's most extensive product portfolios for indoor and outdoor applications; single rooms to campuses to municipalities. Our product solutions include occupancy and photosensors, centralized and distributed systems, panels, fixture-integrated, wired and wireless controls that simply work.



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/ ABOUT

About WSEC

The Washington State Energy Code (WSEC) 2015 is a residential and commercial building energy code based on the IECC which has been adopted by many states and municipalities. The intention of this code is to reduce energy consumption by outlining design and construction requirements which include specific constraints for lighting controls. The use of lighting controls to synchronize light levels with daylight, occupancy, and multi-level control demand response capability are required in order to be compliant.

About This Guide

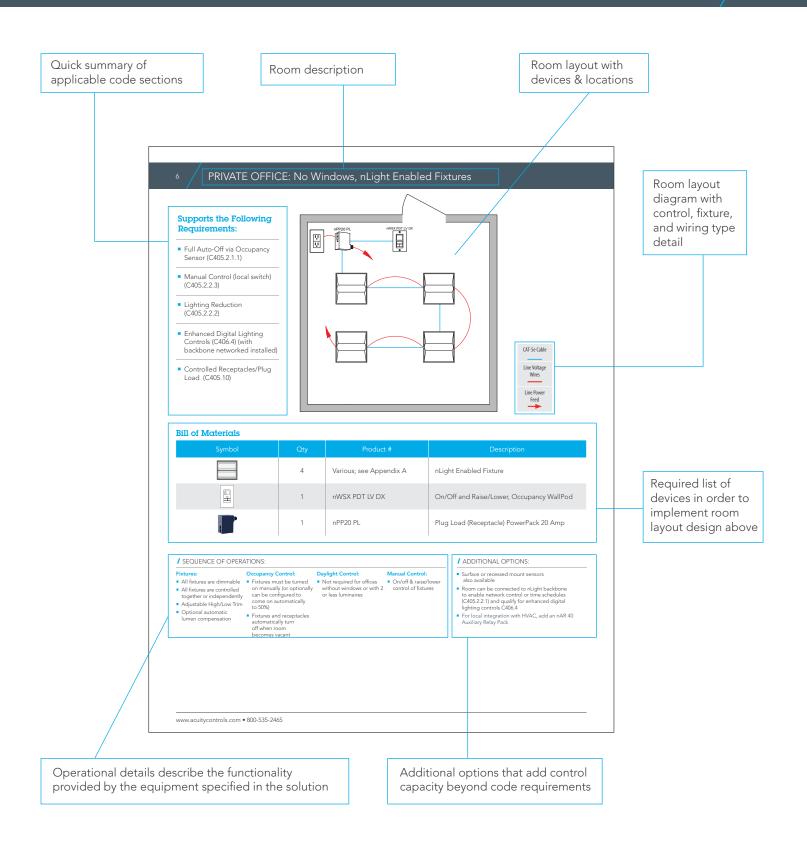
Acuity Controls offers the nLight® WSEC Applications Guide as a reference of typical nLight layouts that help make code compliance quicker and easier. The Acuity Controls Design Services Team is also available to support engineers and contractors with detailed design, submittal, and installation. For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

About nLight

The nLight networked digital lighting control system is easy-to-use, easy-to-install and saves energy. Using only standard CAT-5e cable, nLight networks together occupancy sensors, wall stations, and digital LED luminaires to create a digital lighting system with unmatched flexibility! nLight easily scales from one room to an entire campus, creating a lighting control solution that's perfect for your space and need. nLight may be used to meet the Enhanced Digital Lighting Controls option found in Section C406, when employing nLight enabled fixtures. The chart below is an overview of the Code Requirements for Common Building Spaces. Please use this information as a guide. For specific code requirements please refer to the IECC code.

					Space Туре							
	Control Requirement*	Code Provision	Code Summary*	Private Office	Open Office	Conference, Meeting, Multipurpose Room	Classroom, Lecture Hall, Training Room	Lobby	Corridor	Restroom	Stairwell	Warehouse
	Manual-On or AutoOn ≤ 50%	C405.2.1.1.2	Automatically controlled spaces must be controlled to automatically turn the lighting on to not more than 50% power.	~	•	~	~					
	Full Automatic-On	C405.2.1.1.2	Automatically controlled spaces are allowed to turn on to full.					•	~	~	•	•
	Full Auto-Off via Occupancy Sensor	C405.2.1.1.1	Fixtures must automatically turn off within 30 minutes of all occupants leaving the space.	~	(or)	~	•	(or)	(or)	~	(or)	•
On-Off Control	Time Switch Controls (with backbone networked installed)	C405.2.2.1	Each area of the building not provided with occupant sensor controls shall be provided with time switch controls. These areas must also be provided with a manual override switch.		(or)			(or)	(or)		(or)	
	Light Reduction Control	C405.2.2.2	Spaces shall have a manual control that allows the occupant to reduce the connected lighting load uniformly by at least 50%.		•							
	Manual Control (Local Switch)	C405.2.3	Areas shall incorporate a manual control to allow occupants to turn fixtures off.	~	(or)	•	•	•	~	~	•	
ontrol	Daylight- Responsive Controls	C405.2.4	Daylight-responsive controls shall be provided within each space with more than two general lighting fixtures within sidelight and toplight daylight zones.	~	~	•	•	•	~	~	~	
Daylight Control	Plug Load/ Controlled Receptacles	C405.10	50% of all receptacles shall be controlled by the occ sensor or time switch	✓	~	~	•					

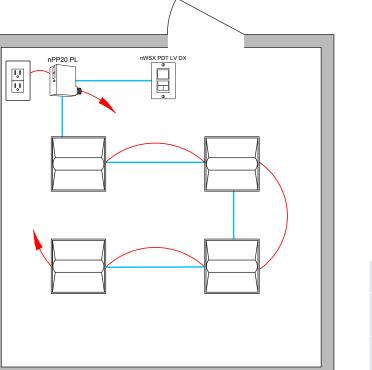
*Note: This summary is for general information purposes only and is provided without any warranty as to accuracy, completeness, or otherwise. The user should read the applicable code sections for more complete and detailed descriptions of code requirements and exceptions and should consult with a professional engineering or other competent advisor before making any decision or taking any action based on this summary.



PRIVATE OFFICE: No Windows, nLight Enabled Fixtures

Supports the Following **Requirements:**

- Full Auto-Off via Occupancy Sensor (C405.2.1.1)
- Manual Control (local switch) (C405.2.2.3)
- Lighting Reduction (C405.2.2.2)
- Enhanced Digital Lighting Controls (C406.4) (with backbone networked installed)
- Controlled Receptacles/Plug Load (C405.10)





Bill of Materials

Symbol	Qty	Product #	Description
	4	Various; see Appendix A	nLight Enabled Fixture
	1	nWSX PDT LV DX	On/Off and Raise/Lower, Occupancy WallPod
	1	nPP20 PL	Plug Load (Receptacle) PowerPack 20 Amp

SEQUENCE OF OPERATIONS:

Occupancy Control:

to 50%)

come on automatically

Fixtures and receptacles

automatically turn

off when room becomes vacant

Fixtures:

- All fixtures are dimmable All fixtures are controlled together or independently
- Adjustable High/Low Trim
- Optional automatic lumen compensation

Daylight Control:

 Fixtures must be turned Not required for offices on manually (or optionally without windows or with 2 can be configured to or less luminaires

Manual Control:

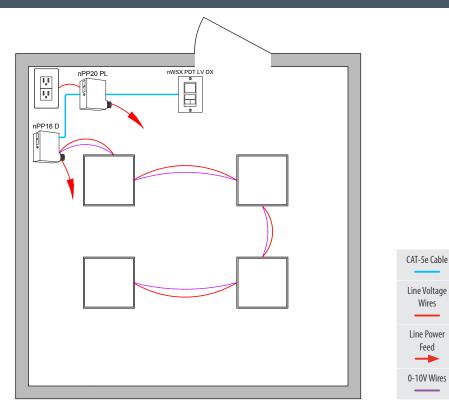
 On/off & raise/lower control of fixtures

- Surface or recessed mount sensors also available
- Room can be connected to nLight backbone to enable network control or time schedules (C405.2.2.1) and qualify for enhanced digital lighting controls C406.4
- For local integration with HVAC, add an nAR 40 Auxiliary Relay Pack

PRIVATE OFFICE: No Windows, 0-10V Dimming Fixtures

Supports the Following Requirements:

- Full Auto-Off via Occupancy Sensor (C405.2.1.1.1)
- Manual Control (Local Switch) (C405.2.3)
- Lighting Reduction (C405.2.2.2)
- Controlled Receptacles/ Plug Load (C405.10)



Bill of Materials

Symbol	Qty	Product #	Description
	1	nPP16 D	Relay Module with 0-10V Dimming Output
	1	nWSX PDT LV DX	On/Off and Raise/Lower, Occupancy WallPod
	1	nPP20 PL	Plug Load (Receptacle) PowerPack 20 Amp

SEQUENCE OF OPERATION:

Fixtures:

- All fixtures are dimmableAll fixtures are controlled together
- Adjustable High/Low Trim
- Occupancy Control: Daylight Control:
- Fixtures must be turned on manually (or optionally can be configured to come on automatically to 50%)
 Not required for offices without windows or with two or less luminaires
- Fixtures and receptacles automatically turn off when room becomes vacant

Manual Control:

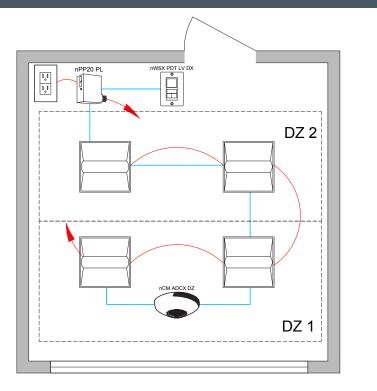
 On/off & raise/lower control of fixtures

- Surface or recessed mount sensors also available
- Room can be connected to nLight backbone to enable network control or time schedules (C405.2.2.1)
- For local integration with HVAC, add an nAR 40 Auxiliary Relay Pack

PRIVATE OFFICE: Windows, nLight Enabled Fixtures

Supports the Following Requirements:

- Full Auto-Off via Occupancy Sensor (C405.2.1.1.1)
- Manual Control (Local Switch) (C405.2.3)
- Sidelight Daylight Zones (C405.2.4.2)
- Enhanced Digital Lighting Controls (C406.4) (with backbone network installed)
- Controlled Receptacles/ Plug Load (C405.10)





Bill of Materials

Symbol	Qty	Product #	Description
	4	Various; see Appendix A	nLight Enabled Fixture
	1	nWSX PDT LV DX	On/Off & Raise/Lower WallPod
	1	ADCX DZ	Dual Zone Automatic Dimming Photocell
	1	nPP20 PL	Plug Load (Receptacle) PowerPack 20 Amp

Manual Control:

On/off & raise/lower

control of fixtures

SEQUENCE OF OPERATIONS:

Occupancy Control:

to 50%)

 Fixtures must be turned on manually (or optionally

can be configured to

come on automatically

Fixtures and Receptacles

automatically turn

off when room

becomes vacant

Fixtures:

- All fixtures are dimmableAll fixtures are controlled
- together or independentlyOptional automatic lumen compensation
- Adjustable High/Low Trim

Daylight Control:

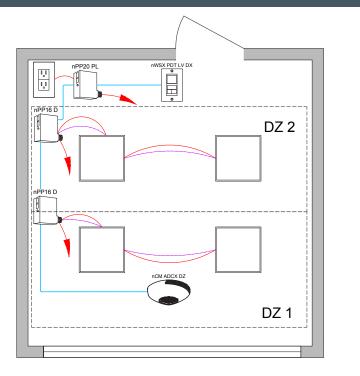
- Smooth continuous dimming
- Custom grouping of fixtures into separate daylight zones (max. number zones = number of fixtures)
- Not required for offices without windows or with two or less luminaires

- Surface or recessed mount sensors also available
- Room can be connected to nLight backbone to enable network control or time schedules (C405.2.2.1) and qualify for enhanced digital Lighting Controls (C406.4)
- For local integration with HVAC, add an nAR 40 Auxiliary Relay Pack

PRIVATE OFFICE: Windows, 0-10V Dimming Fixtures

Supports the Following **Requirements:**

- Full Auto-Off via Occupancy Sensor (C405.2.1.1)
- Manual Control (Local Switch) (C405.2.3)
- Lighting Reduction (C405.2.2.2)
- Sidelight Daylight Zones (C405.2.4.2)
- Controlled Receptacles/ Plug Load (C405.10)





Bill of Materials

Symbol	Qty	Product #	Description
	2	nPP16 D	Relay Module with 0-10V Dimming Output
	1	nWSX PDT LV DX	On/Off and Raise/Lower, occupancy WallPod
	1	ADCX DZ	Dual Zone Automatic Dimming Photocell
	1	nPP20 PL	Plug Load (Receptacle) PowerPack 20 Amp

Manual Control:

On/off & raise/lower

control of fixtures

SEQUENCE OF OPERATIONS:

Occupancy Control:

to 50%)

automatically

on manually (or optionally

can be configured to

come on automatically

Fixtures and Receptacles

turn off when room becomes vacant

Fixtures:

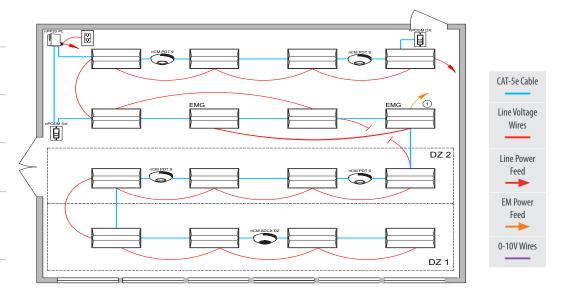
- All fixtures are dimmable Fixtures must be turned All fixtures are
- controlled together Adjustable High/Low Trim

Daylight Control:

- Smooth continuous dimming
- Not required for offices without windows or with two or less luminaires

- Surface or recessed mount sensors also available
- Room can be connected to nLight backbone to enable network control or time schedules (C405.2.2.1)
- For emergency lighting control add an nPP16 D ER pack
- For local integration with HVAC, add an nAR 40 Auxiliary Relay Pack

- Full Auto-Off via Occupancy Sensor (C405.2.1.1.1)
- Manual Control (Local Switch) (C405.2.2.3)
- Sidelight Daylight Zone (C405.2.4.2)
- Enhanced Digital Lighting Controls (C406.4) (with backbone network installed)
- Controlled Receptacles/ Plug Load (C405.10)



Note: Not all emergency nLight enabled fixtures require a normal monitoring feed. Refer to data sheet for additional information.

Symbol	Qty	Product #	Description
	14	Various; see Appendix A	nLight Enabled Fixture
	2	Various; see Appendix A	nLight Enabled Fixture with EMG Option
	2	nPODM DX	On/Off & Raise/Lower WallPod
\bigcirc	4	nCM PDT 9	Dual Technology Occupancy Sensor
	1	nCM ADCX DZ	Dual Zone Automatic Dimming Control Photocell
	1	nPP20 PL	Plug Load (Receptacle) PowerPack 20 Amp

SEQUENCE OF OPERATIONS:

Fixtures:

- All fixtures are dimmableAll fixtures are controlled together or independently
- Optional automatic lumen compensation
- Adjustable High/Low Trim
- Occupancy Control: Fixtures must be turned
- Fixtures must be turned on manually (or optionally can be configured to come on automatically
- to 50%) Fixtures and Receptacles 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 offices without windows or with two or less luminaires

Manual Control:

- Master on/off & raise/ lower control of fixtures
 Optional individual row
- Optional individual row
 control (add nPODM
 4P DX)

ADDITIONAL OPTIONS:

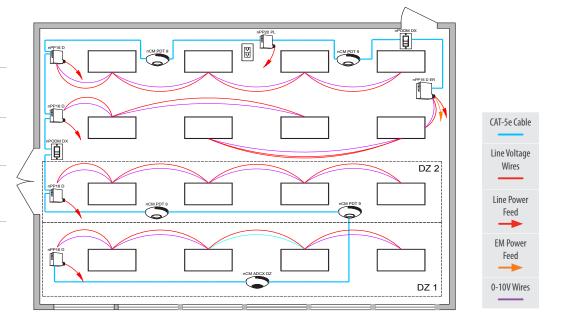
- Surface or recessed mount sensors also available
- Add Graphic WallPod (model nPOD GFX) for individual row and up to 16 scene control
- Room can be connected to nLight backbone to enable network control or time schedules (C405.2.2.1) and qualify for enhanced digital Lighting Controls (C406.4)
- For local integration with HVAC, add an nAR 40 Auxiliary Relay Pack

Bill of Materials

OPEN OFFICE with 0-10V Dimming Fixtures

Supports the Following Requirements:

- Full Auto-Off via Occupancy Sensor (C405.2.1.1.1)
- Manual Control (Local Switch) (C405.2.3)
- Sidelight Daylight Zone (C405.2.4.2)
- Controlled Receptacles/ Plug Load (C405.10)



Bill of Materials

Symbol	Qty	Product #	Description
	4	nPP16 D	Relay Module with 0-10V Dimming Output
	1	nPP16 D ER	Emergency Relay Module with 0-10V Dimming Output
	2	nPODM DX	On/Off & Raise/Lower WallPod
	4	nCM PDT 9	Dual Technology Occupancy Sensor
	1	nCM ADCX DZ	Dual Zone Automatic Dimming Control Photocell
	1	nPP20 PL	Plug Load (Receptacle) PowerPack 20 Amp

SEQUENCE OF OPERATIONS:

All fixtures are dimmable

Adjustable High/Low Trim

Each row controlled

independently

Fixtures:

Occupancy Control:

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

Daylight Control:

- Smooth continuous dimming
- Daylight zones defined by rows
- Not required for offices without windows or with two or less luminaires

Manual Control:

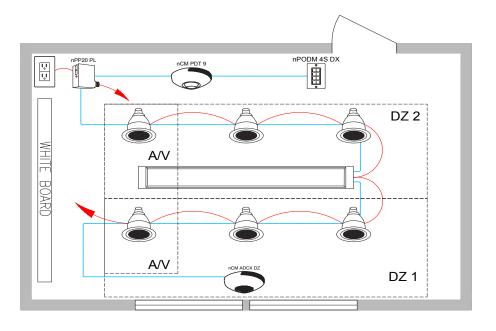
- Master on/off & raise/ lower control of fixtures
- Optional individual row control (add nPODM 4P DX)

- Surface or recessed mount sensors also available
- Add Graphic WallPod (model nPOD GFX) for individual row and up to 16 scene control
- Room can be connected to nLight backbone to enable network control or time schedules (C405.2.2.1)
- For local integration with HVAC, add an nAR 40 Auxiliary Relay Pack

CONFERENCE ROOM with nLight Enabled Fixtures

Supports the Following Requirements:

- Full Auto-Off via Occupancy Sensor (C405.2.1.1.1)
- Manual Control (Local Switch) (C405.2.2.3)
- Sidelight Daylight Zone (C405.2.4.2)
- Enhanced Digital Lighting Controls (C406.4)
- Controlled Receptacles/ Plug Load (C405.10)



CAT-5e Cable Line Voltage Wires

Wires Line Power Feed

Bill of Materials

Symbol	Qty	Product #	Description
	1	Various; see Appendix A	nLight Enabled Linear Fixture
	6	Various; see Appendix A	nLight Enabled Downlight Fixture
Ŭ.	1	nPODM 4S DX	Dual On/Off & Raise/Lower WallPod
\bigcirc	1	nCM PDT 9	Dual Technology Occupancy Sensor
	1	nCM ADCX DZ	Automatic Dimming Control Photocell
	1	nPP20 PL	Plug Load (Receptacle) PowerPack 20 Amp

SEQUENCE OF OPERATIONS:

Fixtures:

- All fixtures are dimmable
 Fixtures must be
- Each row/fixture controlled independently
- Optional automatic lumen compensation
- Adjustable High/ Low Trim

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

becomes vacant

Daylight Control: Manual Control: Smooth continuous On/off & raise/lower

control of two groups

of fixtures

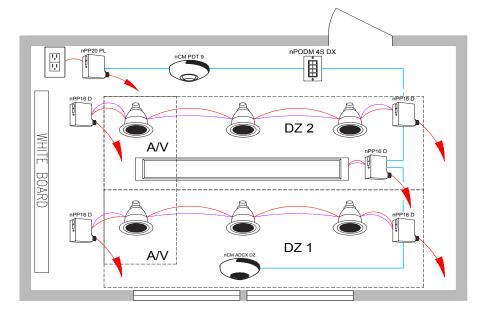
- Smooth continuous dimming
- Custom grouping of fixtures into separate daylight zones (max number zones = number of fixtures)
- Not required for areas without windows or with two or less luminaires

- Surface or recessed mount sensors also available
- Add nPOD GFX for touch screen control
- Room can be connected to nLight backbone to enable network control or time schedules (C405.2.2.1) and qualify for enhanced digital lighting controls (C406.4)
- For local integration with HVAC, add an nAR 40 Auxiliary Relay Pack

CONFERENCE ROOM with 0-10V Dimming Fixtures

Supports the Following Requirements:

- Full Auto-Off via Occupancy Sensor (C405.2.1.1)
- Manual Control (Local Switch) (C405.2.3)
- Sidelight Daylight Zone (C405.2.4.2)
- Controlled Receptacles/ Plug Load (C405.10)



0-10V Wires

CAT-5e Cable Line Voltage Wires L

Vires Line Power Feed

Bill of Materials

Symbol	Qty	Product #	Description
	5	nPP16 D	Relay Module with 0-10V Dimming Output
	1	nPODM 4S DX	Dual On/Off & Raise/Lower WallPod
	1	nCM PDT 9	Dual Technology Occupancy Sensor
	1	nCM ADCX DZ	Automatic Dimming Control Photocell Dual Zone
	1	nPP20 PL	Plug Load (Receptacle) PowerPack 20 Amp

SEQUENCE OF OPERATIONS:

Occupancy Control:

turned on manually

(or optionally can be

configured to some on

Fixtures and Receptacles

automatically to 50%)

turn off when room becomes vacant

automatically

Fixtures:

- All fixtures are dimmable
 Fixtures must be
- Each row controlled independently
- Adjustable High/ Low Trim

- Daylight Control: Smooth continuous dimming
 - Daylight zones defined by rows
 - Not required for areas without windows or with two or less luminaires

Manual Control:

- On/off & raise/lower control of each row
 - Room can be connected to nLight backbone to enable network control or time schedules (C405.2.2.1)

ADDITIONAL OPTIONS:

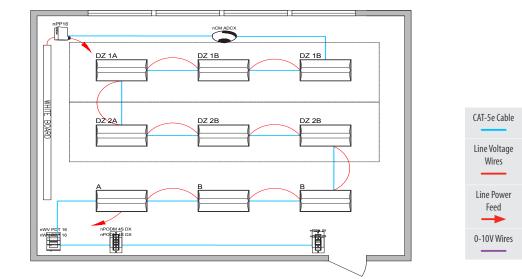
 For local integration with HVAC, add an nAR 40 Auxiliary Relay Pack

Surface or recessed mount sensors also available

Add nPOD GFX for touch screen control

- Full Auto-Off via Occupancy Sensor (C405.2.1.1)
- Manual Control (Local Switch) (C405.2.3)
- Sidelight Daylight Zone (C405.2.4.2)
- Enhanced Digital Lighting Controls (C406.4) (with backbone network installed)
- Controlled Receptacles/ Plug Load (C405.10)

Bill of Materials



Symbol	Qty	Product #	Description
	9	Various; see Appendix A	nLight Enabled Fixture
	1	nPODM DX	On/Off & Raise/Lower WallPod
	1	nPODM 4S DX	Teacher Station — 4 Scene Control Master On/Off & Raise/Lower
	1	nWV PDT 16	Dual Technology Wide View Occupancy Sensor
	1	nCM ADCX DZ	Dual Zone Automatic Dimming Control Photocell
	1	nPP20 PL	Plug Load (Receptacle) PowerPack 20 Amp

SEQUENCE OF OPERATIONS:

Fixtures:

- All fixtures are dimmable Each row/fixture controlled independently
- Optional automatic lumen compensation
- Adjustable High/ Low Trim
- a = A/V Zone
- b = General Zone

Occupancy Control:

- Fixtures must be turned on manually (or optionally can be configured to some on automatically to 50%)
- Fixtures and Receptacles automatically turn off when room becomes vacant

- Daylight Control: Smooth continuous dimming
- Custom grouping of fixtures into separate daylight zones (max
- number zones = number
- Not required for areas without windows or with two or less luminaires

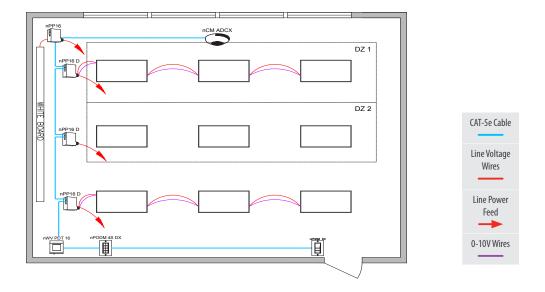
of fixtures)

Manual Control:

- Master on/off & raise/ lower control of entire room
- Master 4 scene control
- a = A/V Zone
- b = General Zone

- Surface or recessed mount sensors also available
- Add graphic wallpod (model nPOD GFX) for individual row and up to 16 scene control
- Room can be connected to nLight backbone to enable network control or time schedules (C405.2.2.1) and qualify for enhanced digital lighting controls (C406.4)
- For local integration with HVAC, add an nAR 40 Auxiliary Relay Pack

- Full Auto-Off via Occupancy Sensor (C405.2.1.1)
- Manual Control (Local Switch) (C405.2.3)
- Sidelight Daylight Zone (C405.2.4.2)
- Controlled Receptacles/ Plug Load (C405.10)



Bill of Materials

Symbol	Qty	Product #	Description
	6	nPP16 D	Relay Module with 0-10V Dimming Output
0	1	nPODM DX	On/Off & Raise/Lower WallPod
	1	nPODM 4S DX	Teacher Station — 4 Scene Control Master On/Off & Raise/Lower
	1	nWV PDT 16	Dual Technology Wide View Occupancy Sensor
	1	nCM ADCX DZ	Automatic Dimming Control Photocell
	1	nPP20 PL	Plug Load (Receptacle) PowerPack 20 Amp

SEQUENCE OF OPERATIONS:

Fixtures:

- All fixtures are dimmable Fixtures must be Each row controlled independently
- Adjustable High/ Low Trim
- a = A/V Zone
- b = General Zone

Occupancy Control:

- turned on manually (or optionally can be configured to some on automatically to 50%)
- Fixtures and Receptacles automatically turn off when room becomes vacant

Manual Control:

Daylight Control: Master on/off & raise/ Smooth continuous dimming

of fixtures)

two or less luminaries

- entire room Custom grouping of fixtures into separate Master 4 scene control daylight zones (max
 - a = A/V Zone number zones = number

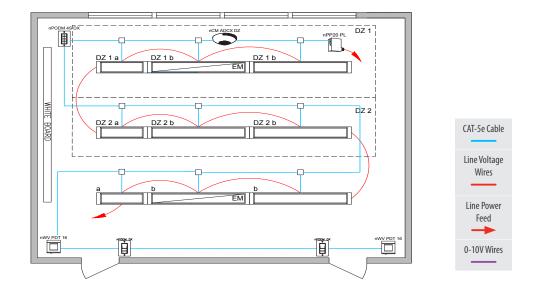
lower control of

- b = General Zone
- Not required for areas without windows or with

- Surface or recessed mount sensors also available Add graphic wallpod (model nPOD GFX) for
- individual row and up to 16 scene control
- Room can be connected to nLight backbone to enable network control or time schedules (C405.2.2.1)
- For local integration with HVAC, add an nAR 40 Auxiliary Relay Pack

- Full Auto-Off via Occupancy Sensor (C405.2.1.1)
- Manual Control (Local Switch) (C405.2.3)
- Sidelight Daylight Zone (C405.2.4.2)
- Enhanced Digital Lighting Controls (C406.4) (with backbone network installed)
- Controlled Receptacles/ Plug Load (C405.10)

Bill of Materials



Symbol	Qty	Product #	Description
	9	Various; see Appendix A	20′, 3 Circuit, nLight Enabled, Emergency
<u> </u>	2	nWV PDT 16	nLight Dual-Technology Occupancy Sensor
	1	nCM ADCX DZ	nLight Photocell Dual Zone
	1	nPODM 4S DX	nLight Preset Wallpod, Master Station
	2	nPODM	nLight Wallpod On/Off
	1	nPP20 PL	nLight Plug Load Controller, 20A

SEQUENCE OF OPERATIONS:

Fixtures:

- All fixtures are dimmable Each row/fixture
- controlled independently Optional automatic
- lumen compensation Adjustable High/ Low Trim
- a = A/V Zone
- b = General Zone

Occupancy Control:

- Fixtures must be turned on manually (or optionally can be configured to some on
- automatically to 50%) Fixtures and Receptacles automatically turn off when room becomes vacant

Manual Control:

a = A/V Zone

b = General Zone

Master 4 scene control

- Daylight Control: Master on/off & raise/ Smooth continuous lower control of entire room
- Custom grouping of fixtures into separate daylight zones (max number zones = number of fixtures)

dimming

 Not required for areas without windows or with two or less luminaires

Surface or recessed mount sensors also available

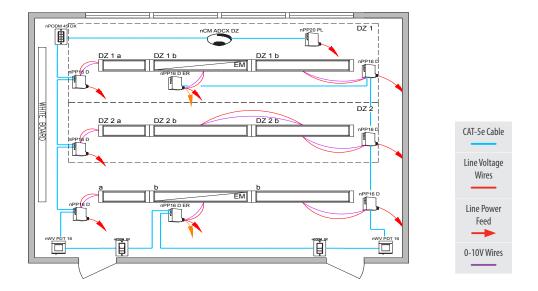
ADDITIONAL OPTIONS:

- Add graphic wallpod (model **nPOD GFX**) for individual row and up to 16 scene control
- Room can be connected to nLight backbone to enable network control or time schedules (C405.2.2.1) and qualify for enhanced digital lighting controls (C406.4)
- For local integration with HVAC, add an nAR 40 Auxiliary Relay Pack

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- Full Auto-Off via Occupancy Sensor (C405.2.1.1)
- Manual Control (Local Switch) (C405.2.3)
- Sidelight Daylight Zone (C405.2.4.2)
- Controlled Receptacles/ Plug Load (C405.10)

Bill of Materials



Symbol	Qty	Product #	Description
	9	Various; see Appendix A	20' 3 Circuit, Emergency
	1 nWV PDT 16 Dual Technology Wide View Occupancy S		Dual Technology Wide View Occupancy Sensor
	1	nCM ADCX DZ	Dual Zone Automatic Dimming Control Photocell
	6	nPP16D	nLight Power Pack with 0-10VDC Dimming
Ê.	2 nPP16 D ER nLight Power Pack with 0-1		nLight Power Pack with 0-10VDC Dimming
° <u> </u>	1	nPODM 4S DX	nLight Preset Wallpod, Master Station
°	2	nPODM	nLight Wallpod On/Off
	1	nPP20 PL	nLight Plug Load Controller, 20A

SEQUENCE OF OPERATIONS:

Fixtures:

- All fixtures are dimmable
- Each row controlled independently
- Adjustable High/ Low Trim
- a = A/V Zone
- b = General Zone
- Occupancy Control:Fixtures must be

turned on manually (or optionally can be configured to some on automatically to 50%)

 Fixtures and Receptacles automatically turn off when room becomes vacant

Daylight Control: Manual Control:

Master on/off & raise/

Master 4 scene control

lower control of

b = General Zone

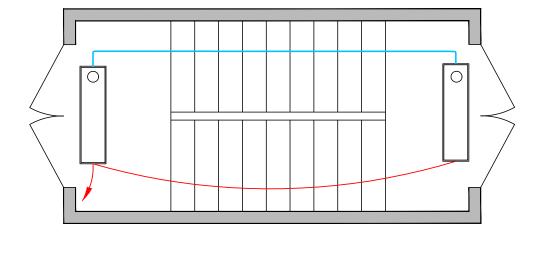
entire room

a = A/V Zone

- Smooth continuous dimming
- Custom grouping of fixtures into separate daylight zones (max number zones = number of fixtures)
- Not required for areas without windows or with two or less luminaries

- Surface or recessed mount sensors also available
- Add graphic wallpod (model nPOD GFX) for individual row and up to 16 scene control
- Room can be connected to nLight backbone to enable network control or time schedules (C405.2.2.1)
- For local integration with HVAC, add an nAR 40 Auxiliary Relay Pack

- Full Auto-Off via Occupancy Sensor (C405.2.1.1)
- Enhanced Digital Lighting Controls (C406.4) (with backbone network installed)



Line Power Feed

CAT-5e Cable

Line Voltage Wires

0-10V Wires

Bill of Materials

Symbol	Qty	Product #	Description
	2	Fixture	Various; see appendix A, nLight Enabled Fixture w/embedded occupancy sensor

SEQUENCE OF OPERATIONS:

Fixtures:

- All fixtures are dimmable
- Adjustable High/Low Trim

Occupancy Control:

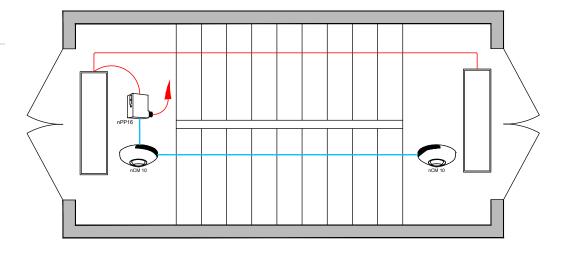
- Fixtures automatically go to full bright when occupied
- Fixtures automatically turn off or optionally can be configured to drop to low dim setting when space becomes vacant

ADDITIONAL OPTIONS:

- Surface or recessed mount sensors also available
- Stairwell can be connected to nLight backbone to enable network control or time schedules (C405.2.2.1)
- For sidelight/toplight daylight zones with three or more fixtures add ADCX option for daylight control (C405.2.4)
- For local integration with HVAC, add an nAR 40 Auxiliary Relay Pack

8

 Full Auto-Off via Occupancy Sensor (C405.2.1.1)



Line Power Feed

CAT-5e Cable

Line Voltage Wires

0-10V Wires

Bill of Materials

Symbol	Qty	Product #	Description
	1	nPP16 D	Relay Module with 0-10V Dimming Output
	2	nCM PDT 10	PIR Extended Range Occupancy Sensor

SEQUENCE OF OPERATIONS:

Fixtures:

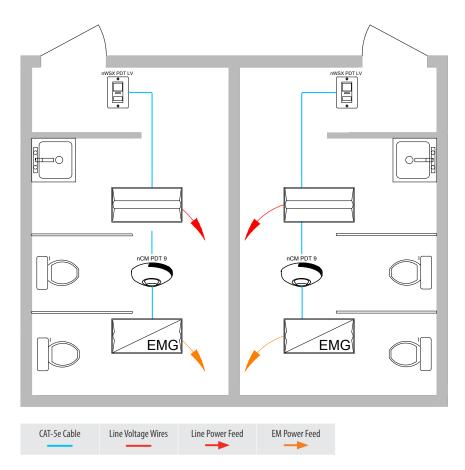
- All fixtures are dimmable
- Adjustable High/Low Trim

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

- Surface or recessed mount sensors also available
- Stairwell can be connected to nLight backbone to enable network control or time schedules (C405.2.2.1)
- For sidelight/toplight daylight zones with three or more fixtures add ADCX option for daylight control. May require additional nPP16D Relay/ Dimming modules
- For local integration with HVAC, add an nAR 40 Auxiliary Relay Pack

- Full Auto-Off via Occupancy Sensor (C405.2.1.1.1)
- Manual Control (Local Switch) (C405.2.3)
- Enhanced Digital Lighting Controls (C406.4) (with backbone network installed)



Bill of Materials (Each Restroom)

Symbol	Qty	Product #	Description
};	2	Various; see Appendix A	nLight Enabled Fixture
EMG	2	Various; see Appendix A	nLight Enabled Emergency Fixture
	1	nWSX PDT LV	On/Off, Occupancy WallPod
	1	nCM PDT 9	Dual Technology Occupancy Sensor

Manual Control:

(per room)

On/off control of fixtures

SEQUENCE OF OPERATIONS:

Fixtures:

- All fixtures are dimmable
- All fixtures are controlled together or independently (per room)
- Optional automatic lumen compensation
- Adjustable High/ Low Trim

Occupancy Control:

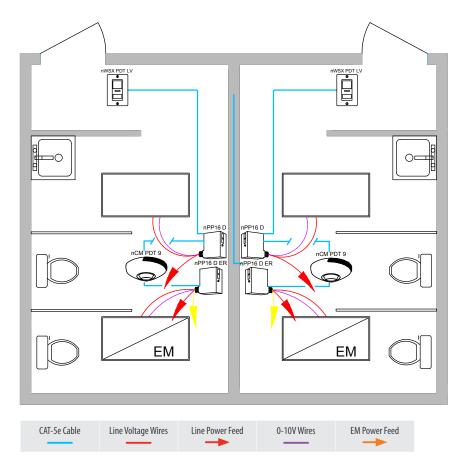
- Fixtures automatically go to full bright when occupied
- Fixtures automatically turn off when room becomes vacant

- Surface or recessed mount sensors also available
- Room can be connected to nLight backbone to enable network control or time schedules (C405.2.2.1) and qualify for enhanced digital lighting controls (C406.4).
- For emergency lighting control order fixtures with -n80EMG or -n100EMG option
- For local integration with HVAC, add an nAR 40 Auxiliary Relay Pack

PUBLIC RESTROOM with 0-10V Dimming Fixtures

Supports the Following **Requirements:**

- Full Auto-Off via Occupancy Sensor (C405.2.1.1.1)
- Manual Control (Local Switch) (C405.2.2.3)



Bill of Materials (Each Restroom)

Symbol	Qty	Product #	Description
	1	nPP16 D	Relay Module with 0-10V Dimming Output
H.	1	nPP16 D ER	Emergency Relay Module (UL924) with 0-10V Dimming Output
	1	nWSX PDT LV	On/Off & Occupancy WallPod
	1	nCM PDT 9	Dual Technology Occupancy Sensor

SEQUENCE OF OPERATIONS:

Fixtures:

- All fixtures are dimmable
- All fixtures are controlled
- together (per room) Adjustable High/ Low Trim

Occupancy Control:

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

Manual Control:

- On/off control of fixtures
- (per room)
- Surface or recessed mount sensors

ADDITIONAL OPTIONS:

also available

- Room can be connected to nLight backbone to enable network control or time schedules (C405.2.2.1)
- Emergency nPP16 D ER pack only required when using a generator or inverter. Not required when using battery packs.
- For local integration with HVAC, add an nAR 40 Auxiliary Relay Pack

- Full Auto-Off via Occupancy Sensor (C405.2.1.1.1)
- Enhanced Digital Lighting Controls (C406.4) (with network backbone installed)

\searrow	
CAT-5e Cable	EWG
Line Voltage Wires	
Line Power Feed	
EM Power Feed	

Bill of Materials

Symbol	Qty	Product #	Description
}	6	Various; see Appendix A	nLight Enabled Fixture
EMG	3 (EFM)	Various; see Appendix A	nLight Enabled Emergency Fixture
	4	nCM 10	Extended Range PIR Occupancy Sensor
Optional:			
° III o	3	nPODM	On/Off Wallpod
SEQUENCE OF OPERATIONS:			ADDITIONAL OPTIONS:

Fixtures:

- All fixtures are dimmable
- All fixtures are controlled together or independently
- Optional automatic lumen compensation
- Adjustable High/Low Trim

Occupancy Control:

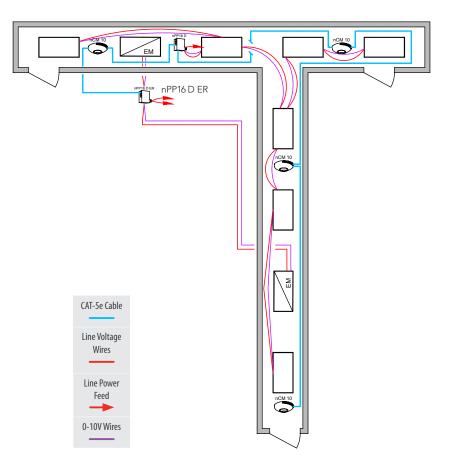
- Fixtures automatically go to full bright when occupied
- Fixtures automatically turn off or optionally can be configured to drop to low dim setting when space becomes vacant

- Surface or recessed mount sensors also available
- Space/zone can be connected to nLight backbone to enable network control or time schedules (C405.2.2.1) and qualify for enhanced digital lighting controls (C406.4)
- For emergency lighting control order fixtures with -n80EMG or -n100EMG option
- For sidelight/toplight daylight zones with more than two luminaires, add $\operatorname{nCM}\operatorname{ADCX}$ for daylight control (C405.2.4)
- For local integration with HVAC, add an nAR 40 Auxiliary Relay Pack

CORRIDOR with 0-10V Dimming Fixtures

Supports the Following Requirements:

 Full Auto-Off via Occupancy Sensor (C405.2.1.1.1)



Bill of Materials

Symbol	Qty	Product #	Description
	1	nPP16D	Relay Module with 0-10V Dimming Output
H	1	nPP16 D ER	Emergency Relay Module (UL924) with 0-10V Dimming Output
	4	nCM 10	Extended Range PIR Occupancy Sensor
Optional:			
°	3	nPODM	On/Off Wallpod

SEQUENCE OF OPERATIONS:

Fixtures:

- All fixtures are dimmable
- All fixtures are controlled together
- Adjustable High/Low Trim

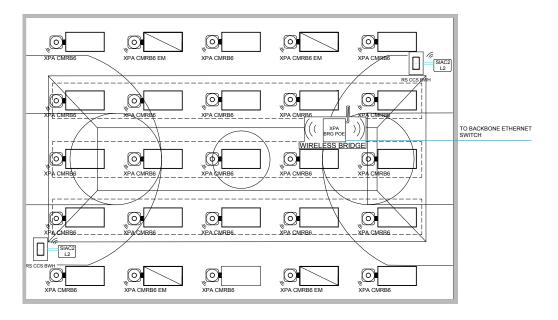
Occupancy Control:

- 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

- Surface or recessed mount sensors also available
- Space/zone can be connected to nLight backbone to enable network control or time schedules (C405.2.2.1)
- Emergency nPP16 DER only required when using a Gen/Invester. Not required when using battery packs
- For sidelight/toplight daylight zones with more than two luminaires add nCM ADCX for daylight control (C405.2.3.1/2) (may require additional nPP16 D Relay and Dimming modules)
- For local integration with HVAC, add an nAR 40 Auxiliary Relay Pack

- Full Auto-Off via Occupancy Sensor (C405.2.1.1.1)
- Full Auto-On via Occupancy Sensor (C405.2.1.1.2)
- Manual Control (Local Switch) (C405.2.3)
- Enhanced Digital Lighting Controls (C406.4) (with backbone network installed)
- Sidelight or Toplight Daylight Zones (C405.2.4)

Bill of Materials



CAT-5e Cable Line Voltage Wires

ires Line Power Feed

Generic with 0-10VDC dimming 25 Fixtures 21 XPA CMRB6 High Bay Occupancy Sensor with Photocell $\left(\circ \right)$ XPW CMRB6 EM High Bay Occupancy Sensor with Photocell w/UL924 4 ΕM XPW BRG POE ((())) 1 XPW Wireless Bridge 2 SIAC2L2 XPW Wirless Contact Closure Input Ė 2 **RS CCS BWH** Contact Closure, On/Off/Dim Wall Switch

SEQUENCE OF OPERATIONS:

Fixtures:

Occupancy Control:

- All fixtures are dimmable
 All fixtures are controlled together
- or independently Adjustable High/
- Low Trim

go to full On/off & raise/lower control

of fixtures

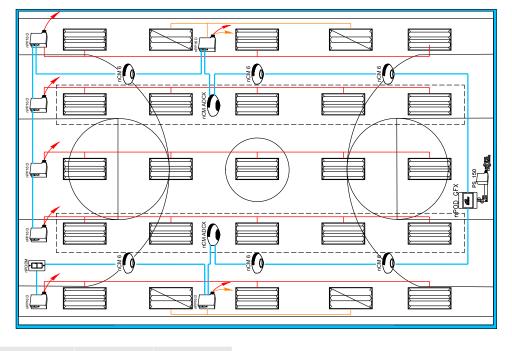
- Fixtures automatically go to full bright when occupied
 - Fixtures automatically turn off when the space becomes vacant or optionally can be configured to
 - a low dim setting

- Space can be connected to the nLight backbone to enable network control or time schedules (C405.2.2.1)
- For local integration with HVAC, add an nAR 40 Auxiliary Relay Pack

GYMNASIUM with 0-10V Dimming Fixtures

Supports the Following Requirements:

- Full Auto-Off via Occupancy Sensor (C405.2.1.1.1)
- Full Auto-On via Occupancy Sensor (C405.2.1.1.2)
- Manual Control (Local Switch) (C405.2.3)
- Sidelight or Toplight Daylight Zones (C405.2.4)



CAT-5e Cable Line Voltage Wires

Wires Line Power Feed

Bill of Materials

Symbol	Qty	Product #	Description	
	25	Fixtures	Generic with 0-10VDC dimming	
	6 nCM6 H		High Bay Occupancy Sensor	
	2	nCM ADCX	nLight Photocell	
	5	nPP16 D	nLight Power Pack w/0-10VDC	
Ë.	2	nPP16 D ER	nLight Power Pack w/0-10VDC Emergency UL924	
	1	nGFX	nLight LCD Touchscreen	
° III °	1	nPODM	nLight Wallpod On/Off operation	

Manual Control:

of fixtures

On/off & raise/lower control

Graphic Wallpod (nPOD GFX)

to 16 scene control

allows for individual row and up

SEQUENCE OF OPERATIONS:

Fixtures:

- All fixtures are dimmable
- Each row controlled independently
- Adjustable High/ Low Trim
- Occupancy Control:
- Fixtures automatically go to full bright when occupied
- Fixtures automatically turn off when the space becomes vacant or optionally can be configured to a low dim setting

- ADDITIONAL OPTIONS:
- Space can be connected to the nLight backbone to enable network control or time schedules (C405.2.2.1)
- For local integration with HVAC, add an nAR40 Auxiliary Relay Pack

- Occupancy Sensor Control Function in Warehouse (C405.2.1.2)
- Enhanced Digital Lighting Controls (C406.4) (with backbone network installed)

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		SWITCH
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		7
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CAT-5e Cable

Line Voltage Wires

Line Power Feed

Bill of Materials

Symbol	Qty	Product #	Description
	35	Fixture	Generic with 0-10VDC dimming
	20	XPA CMRB6	High Bay Occupancy Sensor with Photocell
EM	15	XPW CMRB6 EM	High Bay Occupancy Sensor with Photocell w/UL924
	1	XPW BRG POE	XPW Wireless Bridge
	3	SIAC2L2	XPW Warless Contact Closure Input
Ė	3	RS CCS BWH	Contact Closure, On/Off/Dim Wall Switch

SEQUENCE OF OPERATIONS:

Fixtures:

- All fixtures are dimmable
- Optional automatic lumen compensation
- Adjustable High/ Low Trim

low dim setting

Manual Control: **Occupancy Control:** Fixtures automatically go to

full bright when occupied or

Fixtures automatically turn off

when space becomes vacant

optionally can be configured to a

- On/off & raise/lower control of fixtures

 - - - (C405.2.2.1) • For local integration with HVAC, add an nAR 40 Auxiliary Relay Pack

also available

ADDITIONAL OPTIONS:

Surface or recessed mount sensors

Space can be connected to nLight backbone

to enable network control or time schedules

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- Occupancy Sensor Control Function in Warehouse (C405.2.1.2)
- Enhanced Digital Lighting Controls (C406.4) (with backbone network installed)

$\left\langle \right\rangle$	STORAGE RACKS	nPODM
		EM

CAT-5e Cable

Line Voltage Wires Line Power Feed

Bill of Materials

Symbol	Qty	Product #	Description	
	35	Fixture	Generic 0-10VDC Dimming	
	12	nCM6	High Bay Occupancy Sensor	
	6	nPP16 D	nLight Power Pack w/0-10VDC	
	6	nPP16 D ER	nLight Power Pack w/0-10VDC Emergency UL924	
	1	nGFX	nLight LCD Touchscreen	
° •	2	nPODM	nLight Wallpod On/Off operation	

SEQUENCE OF OPERATIONS:

Fixtures:

- All fixtures are dimmable
- Optional automatic lumen compensation
- Adjustable High/ Low Trim

N2:

Occupancy Control:Fixtures automatically go to

full bright when occupied or optionally can be configured to a low dim settingFixtures automatically turn off

when space becomes vacant

Manual Control:

- On/off & raise/lower control of fixtures
- Surface or recessed mount sensors also available

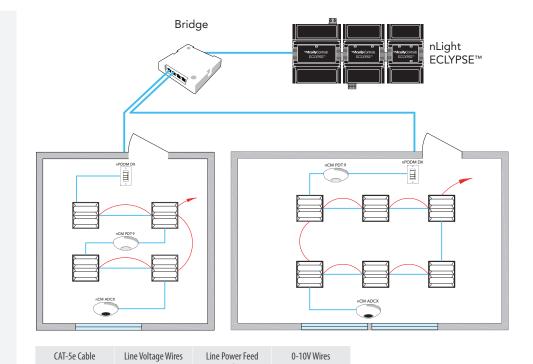
- Space can be connected to nLight backbone to enable network control or time schedules (C405.2.2.1)
- For local integration with HVAC, add an nAR 40 Auxiliary Relay Pack

Programmable Time Switch 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 the WSEC programmable timeclock provision (Section C405.2.2.1). A networked system also enables astronomical time clock control.

Additionally, the nLight network backbone is required to meet the Enhanced Digital Lighting Controls additional efficiency package option (C406.4).

For additional information regarding building management integration or demand response features, please contact your Acuity Brands Sales Representative.



Bill of Materials

Symbol	Qty	Product #	Description	
and the second s	1	nBRG 8 KIT	8-Port Backbone Bridge	
	1	nECY	Lighting and HVAC Controller	

APPENDIX A: nLight Enabled Fixtures

Product Family	Fixture Series	Notes	Product Family	Fixture Series	Notes
Lithonia Lighting	LDN	Downlight	Mark Architectural Lighting	Fin LED	Recessed
Lithonia Lighting	DOM	Downlight	Mark Architectural Lighting	Veil LED	Recessed
Gotham	EVO	LED Downlight	Mark Architectural Lighting	Whisper LED	Recessed
Gotham	Incito	LED Downlight	Mark Architectural Lighting	Nol LED	Recessed
Lithonia Lighting	IBL / IBH	LED Highbay	Peerless	Mino LED	Recessed
Lithonia Lighting	PTN	LED Highbay - Proteon	Peerless	Vellum LED	Recessed, Suspended
Mark Architectural Lighting	Slot 2 LED	Pendant, Recessed, Wall, Surface	ReLight	ACLX	AC Series Surface Mount
Mark Architectural Lighting	Slot 4 LED	Pendant, Recessed, Wall, Surface	ReLight	TLX	LED Relight Surface Mount
Mark Architectural Lighting	SPR LED	Perimeter	Lithonia Lighting	ALLS	LED Surface Mount
Lithonia Lighting	AC Series	LED Recessed	ReLight	VTLX	LED Relight Volumetric Surface Mount
Lithonia Lighting	AL Series	LED High Performance Architectural Recessed	Peerless	Lightline, Indirect	Suspended
Lithonia Lighting	AVLED	Avante® LED Recessed - Direct/Indirect	Peerless	Lightedge	Suspended
Lithonia Lighting	BLT Series	LED Recessed	Peerless	lcetray	Suspended
Lithonia Lighting	BZL Series	LED Recessed Indirect	Peerless	Cerra	Suspended
Lithonia Lighting	FSL Series	LED Recessed	Peerless	Open	Suspended
Lithonia Lighting	RT Series	LED Recessed Volumetric	Peerless	Prima	Suspended
Lithonia Lighting	T Series	LED Recessed Troffer	Peerless	Naro	Suspended
Lithonia Lighting	VT Series	LED Recessed Volumetric	Peerless	Tulip	Suspended
Lithonia Lighting	GT Series	General Recessed Troffer	Peerless	Envision	Suspended
Lithonia Lighting	SBS Series	LED Shadow Box Square	Peerless	Aero	Suspended
Lithonia Lighting	RTLX	LED Surface Volumetric	Peerless	Enzo	Suspended
Lithonia Lighting	ST LED	LED Surface Volumetric	Peerless	Round 2/4 LED	Suspended, Wall
ReLight	RTLR	LED Relight Volumetric Recessed Mount	Peerless	Square LED	Suspended, Wall
ReLight	RTLEDRT	Relight Volumetric for Lensed Troffers	Peerless	Origami LED	Suspended, Wall
ReLight	SBS LX	LED Relight Shadow Box Square	Peerless	Bruno LED	Suspended, Wall
ReLight	VTL RT LED	LED Relight Lensed Troffers	Peerless	Staple	Suspended, Wall
ReLight	VTLR LED	LED Relight Parabolic Lensed	Lithonia Lighting	WL Series	LED Wall Bracket Surface

Note: New nLight enabled fixtures are added regularly. Please reference fixture spec sheets for nLight enabled options.

APPENDIX B: Requirements Overview

	Control Code Requirement Provision Code Summary*		Recommendations for Compliance	nLight Solution Details			
				Include manual control device(s) in all room control system designs with the possible exception of public spaces where a manual switch might hinder safety or security.	nLight WallPod devices provide a user w nLight controlled space (i.e.: nLight zon styles – each with varying features and r	e). WallPods are available in multiple	
					Push-Button WallPod	Graphic WallPod	
	Manual Control (Local Switch)	C405.2.3.2	Areas shall incorporate a manual control to allow occupants to turn fixtures off.		ON OVOFF	exastyControls algoin G ²	
					Traditional tactile buttons and LED user feedback.	Full-color touch screen provides a sophisticated look and feel.	
		C405.2.2.1		Utilizing controls capable of being networked across an entire building enables simple compliance via a single central programmable time switch.	Individual nLight Control Zones (ie roon across an entire building simply by com up of one or more nLight Bridge device: provides programmable time switch fur as interfaces to the SensorView Suite of (via an Ethernet LAN / WAN connection)	necting them into a "backbone" made s and an nLight Gateway. The Gateway nctionality for an nLight network as well web-based software applications	
	Dragrammahla		Each area of the building not provided with occupant sensor		Network Gateway		
Shut-Off Control	Programmable Time Switch Controls		controls shall be provided with time switch controls. These areas must also be provided with a manual override switch.				
					Additional benefits of installing an nLig monitoring, iOS smartphone app contro	ht backbone include remote status ol, and BMS interface capability	
	Full Auto-Off via Occupancy Sensor	C405.2.1.1.1	Fixtures must automatically turn off within 30 minutes of all occupants leaving the space.	Always include occupancy sensors in all control system designs regardless of lighting type.	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. lo dimming control is done with system programming.		
	Manual-On, Auto On ≤ 50%, Full Automatic On	C405.2.1.1.2	Automatically controlled spaces must be controlled to either turn the lighting on to not more than 50%, or in certain spaces, to full on.	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	
					0		
					Surface or recessed mounts to ceiling tiles or sheetrock/plaster.	Directly mounts in corner or to ceiling via repositionable ceiling bracket.	

*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.

APPENDIX B: Requirements Overview

	Control Requirement	Code Provision	Code Summary*	Recommendation for Compliance	nLight Soluti	on Details
	Manual Lighting Reduction	C405.2.2.2	Spaces shall have a manual control that allows the occupant to reduce the connected lighting load uniformly by at least 50%.	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	Dimming Relay Packs / Panels
Light Level Control					Acuity offers a wide variety of LED fixtures with factory installed integrated nLight controls that provide smooth continuous dimming, and optional automatic lumen maintenance or manual task tuning.	nLight dimming relay packs / panels enable control of any 0-10VDC dimmable LED (or fluorescent) luminaire. Manual task tuning control can also be used.
Lig		C405.2.4	Daylight-responsive controls shall be provided within each space with sidelight and toplight daylight zones.	Automatic daylight harvesting photocells that continuously adjust the level of dimming fixtures according to daylight levels provide the most effective and least distracting control.	nLight offers standalone daylight harvesting s integrated daylight harvesting. Sensors are a provide continuous dimming control of any/a dimming relay packs, each capable of being i	vailable in four different housings and Il networked nLight enabled fixtures or
	Daylight-				Ceiling Mount Dimming Photocell	Recessed Mount Dimming Photocell
	Responsive Controls					

*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.



Additional Resources:

Acuity Controls Typical Layout Drawings

www.acuitybrands.com/typicals

Use the Following Sections of the WSEC 2015 Code as Reference:

Section C405.2.1.1.1	-	Full Auto-Off via Occupancy Sensor
Section C405.2.1.1.2	-	Manual-On or Partial-On
Section C405.2.1.1.2	-	Full Automatic On
Section C405.2.2.1	-	Time Switch Controls
Section C405.2.2.2	-	Manual Lighting Reduction
Section C405.2.4	-	Daylight-Responsive Controls
Section C406.4	-	Enhanced Digital Lighting Controls
Section C405.2.1	-	Occupancy Sensor Controls
Section C405.10	-	Controlled Receptacles

