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TITLE 24 APPLICATION GUIDE



NX Lighting Controls' advanced systems and lighting controls offer a comprehensive portfolio of simple, scalable and seamless solutions for indoor and outdoor applications from a single partner. Our advanced lighting control technologies provide intuitive and flexible deployment options to meet code, enhance comfort, increase energy savings and improve operating efficiency for enterprises of any size. NX Lighting Controls' product suite includes distributed and centralized, wired and wireless systems, luminaire integrated sensors, color tuning controls, panels, occupancy sensors, photocell sensors, and emergency relays.



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Automated Demand Response Lighting Controls (ADR)



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Support and Education

Title 24 establishes minimum requirements for energy-efficient buildings using prescriptive and performance related provisions. For more information, visit energy.ca.gov

The recommendations in this document are based on our understanding and interpretation of the code. In order to ensure full compliance, please reference the official published code.





	DEMAND RESPONSE CONTROLS	SHUT (
Control Requirement	Demand Response	Area Control	Multi-Level Lighting controls	Timeclock	Automatic Partial-Off Via Occupancy Sensor	Automatic Full-Off Via Occupancy Sensor	Add auto on controls
Code Provision	110.12(c),(e),130.1(e)	130.1(a)	130.1(b)	130.1(c)1A	130.1(c)6&7	130.1(c)5	
Code Summary	Buildings having a total installed lighting power of ≥ 4,000W (excluding spaces not requiring multilevel control) shall be capable of bi-directional demand response communication and automatically reducing general lighting power (except in excluded spaces). For buildings that do require both DR and controlled receptacles, including all required controlled receptacles must also turn off in response to demand response signals	All luminaires be functionally controlled with manual on and off lighting controls.	Any enclosed area ≥ 100ft^2 with a lighting power density > 0.5W/ft^2, shall provide multi-level lighting control.	Areas not required to be shut off by occupancy sensor may be shut off by an automatic time-switch control.	Full or Partial-off occupancy sensing are required in these areas. Partial-off occ sensing required for specified stairwells, common area corridors, parking garages, parking areas, loading & unloading zones.	Occupant-Sensing controls must be used in specific areas to shut off lighting.	Partial-ON or Vacancy Sensing Controls Provision: Sec130.1(c)5 Summary: Occupant sensing controls shall function either as Partial-ON (50-70%) or Vacancy (Manual ON only)
Private Office	•	•	•			•	
Open Office	•	•	•	•		•	•
Conf. Meeting, Multi- Purpose	•	•	•			•	•
Classroom, Lecture Hall, Training	•	•	•		•	•	•
Lobby	•	•	•	•	•	•	
Corridor	•	•		•	•	•	•
Restroom		•		•	•	•	•
Stairwell	•	•		•	•	•	
Gym/Fitness Center	•	•	•	•		•	•
Warehouse/Storage	•	•	•	•	•		
Parking Area, Interior		•	•	•			•
Exterior Lighting							





	LIGHT LEVEL CONTROL	EXTERIOR CONTROLS			RECEPTACLE PLUG LOAD CONTROL
Control Requirement	Automatic Multi-Level Daylight Controls	Daylight Availability	Automatic Scheduling Controls	Motion Sensing Controls	Receptacle (Plug load control)
Code Provision	130.1(d)	130.2(c)1	130.2(c)2	130.2(c)3	130.5(d)
Code Summary	Areas in designated daylight zones with total power ≥ 120 watts (60 Watts for parking garages) use automatic multi-level daylight controls.	Lighting shall be controlled by a photo control, astronomical time-switch control or other control to automatically shut off when daylight is available.	Controls shall be capable of reducing the lighting power by 50-90% and capable of turning the lighting off, during scheduled unoccupied periods. Scheduling a minimum of two nighttime periods with independent lighting levels is required.	Controls shall be capable of reducing the lighting power by 50-90% and capable of turning the lighting off, during unoccupied periods. Motion sensing controls shall be capable of reducing the lighting to its dim or off state no longer than 15 minutes after the area has been vacated. Motion sensors are required for most outdoor lights mounted up to 24 ft. with the exception of luminaires with max. rated wattage of 40 watts each, which are not required to have motion sensing controls.	Both controlled and uncontrolled 120-volt receptacles shall be provided in office areas, lobbies, conference rooms, kitchen areas in office spaces and copy rooms
Private Office	•				•
Open Office	•				•
Conf. Meeting, Multi- Purpose	•				•
Classroom, Lecture Hall, Training	•				
Lobby	•				•
Corridor	•				
Restroom	•				
Stairwell	•				
Gym/Fitness Center	•				
Warehouse/Storage	•				
Parking Area, Interior	•				
Exterior Lighting		•	•	•	



CLASSROOM / LECTURE HALL / TRAINING ROOM

	Code Provision	Minimum Control Type	Requirement
	130.1(a)	Local switch	Readily accessible device(s) to control lighting within an enclosed space.
ON/OFF CONTROL	130.1(c)5	Vacancy sensor (Manual On - Auto Off): Partial On (50- 70& On-Full Off) or Occupancy Sensor for partial on	Automatically shuts off lighting power after vacancy of 20 minutes or less.
LIGHT LEVEL CONTROL	130.1(b)	Multi-level lighting controls	At least one multi-level lighting control device (manual or automatic) in enclosed areas 100ft ² . or larger, or greater than 0.5 watts per ft ² . Light level requirements are defined in Table 130.1-A. Note, the majority of lighting types require multiple control steps.
	130.1(d) and 140.6(d)	Automatic Daylighting controls	Sensor to reduce lighting in response to available daylight. Daylighting zones defined in Section 130.1(d)1. Primary daylight zones must be controlled separately from secondary zones. Refer to Table 130.1-A for lighting-level requirements.
ADDITIONAL CONTROL	110.12	Demand Response	Automatic lighting reduction by a minimum of 15% of total installed general lighting power in response to a Demand Response Signal. Required for new buildings with installed lighting power of 4,000 watts or greater.

CONFERENCE / MEETING / MULTI-PURPOSE ROOM

	Code Provision	Minimum Control Type	Requirement
OWOFF	130.1(a)	Local switch	Readily accessible device(s) to control lighting within an enclosed space.
ON/OFF CONTROL	CONTROL 130.1(c)5 On - Auto Off) Auto Full-Off Occupancy	Vacancy sensor (Manual On - Auto Off) Automatic Full-Off Occupancy Sensor with Partial On to 70%	Automatically shuts off lighting power after vacancy of 20 minutes or less.
LIGHT LEVEL	130.1(b)	Multi-level lighting controls	At least one multi-level lighting control device (manual or automatic) in enclosed areas 100 sq. ft. or larger. Light level requirements are defined in Table 130.1-A. Note, the majority of lighting types require multiple control steps.
CONTROL	130.1(d) and 140.6(d)	Automatic daylight control	Sensor to reduce lighting in response to available daylight. Daylighting zones defined in Section 130.1(d)1. Primary daylight zones must be controlled separately from secondary zones. Refer to Table 130.1-A for lighting-level requirements.
ADDITIONAL CONTROL	110.12	Demand Response	Automatic lighting reduction by a minimum of 15% of total installed lighting power in response to a Demand Response Signal. Required for new buildings with installed lighting power of 4,000 watts or greater.
CONTROL	130.5(d)	Receptacle Control	Automatically turn OFF of the receptacles in the space. Install receptacles within 6 feet of each uncontrolled receptacle of the outlets in each receptacle.





PRIVATE OFFICE ≤ 250 SQ. FT.

	Code Provision	Minimum Control Type	Requirement
	130.1(a)	Local switch	Readily accessible device(s) to control lighting within an enclosed space.
ON/OFF CONTROLS	130.1(c)5	Vacancy sensor (Manual On - Auto Off) Automatic Full-Off Occupancy Sensor with Partial On to 70%	Automatically shuts off lighting power after vacancy of 20 minutes or less.
LIGHT LEVEL	130.1(b)	Multi-level lighting controls	At least one multi-level lighting control device (manual or automatic) in enclosed areas 100 sq. ft. or larger. Light level requirements are defined in Table 130.1-A. Note, the majority of lighting types require multiple control steps.
CONTROL	130.1(d) and 140.6(d)	Automatic daylight control	Sensor to reduce lighting in response to available daylight. Daylighting zones defined in Section 130.1(d)1. Primary daylight zones must be controlled separately from secondary zones. Refer to Table 130.1-A for lighting-level requirements.
	130.4	Acceptance testing (functional testing)	Testing shall ensure that control hardware and software are calibrated, programmed, and functioning properly.
ADDITIONAL CONTROL	130.1(e)	Demand Response	Automatic lighting reduction by a minimum of 15% of total installed lighting power in response to a Demand Response Signal. Required for new buildings with installed lighting power of 4,000 watts or greater
	130.5(d)	Receptacle Control	Automatically turn OFF of the receptacles in the space. Install receptacle within 6 feed of each uncontrolled receptacle or 50% of the outlets in each receptacle.

OPEN OFFICE > 250 SQ. FT.

	Code Provision	Minimum Control Type	Requirement
	130.1(a)	Local switch	Readily accessible device(s) to control lighting within an enclosed space.
ON/OFF CONTROLS	130.1(c)1	Programmable Timeclock	Scheduled time-of-day operated control that turns lighting off at specified times when typically unoccupied. Occupancy sensors or other building system signals that turn Off lights during vacancy also comply. Maximum 2 hour manual override.
	130.1(c)5	Vacancy sensor (Manual On - Auto Off): Partial On (50- 70% On - Full Off)	Automatically shuts off lighting power after vacancy of 20 minutes or less.
LIGHT LEVEL	130.1(b)	Multi-level lighting controls	At least one multi-level lighting control device (manual or automatic) in enclosed areas 100 sq. ft. or larger. Light level requirements are defined in Table 130.1-A. Note, the majority of lighting types require multiple control steps.
CONTROL	130.1(d) and 140.6(d)	Automatic daylight control	Sensor to reduce lighting in response to available daylight. Daylighting zones defined in Section 130.1(d)1. Primary daylight zones must be controlled separately from secondary zones. Refer to Table 130.1-A for lighting-level requirements.
ADDITIONAL	130.4	Acceptance testing (functional testing)	Testing shall ensure that control hardware and software are calibrated, programmed, and functioning properly.
ADDITIONAL CONTROL	130.1(e)	Demand Response	Automatic lighting reduction by a minimum of 15% of total installed lighting power in response to a Demand Response Signal. Required for new buildings with installed lighting power of 4,000 watts or greater
	130.5(d)	Receptacle Control	Automatically turn OFF of the receptacles in the space. Install receptacle within 6 feet of each uncontrolled receptacle or 50% of the outlets in each receptacle.





CORRIDOR

	Code Provision	Minimum Control Type	Requirement
ON/OFF	130.1(a)	Local switch	May use a manual control not accessible to unauthorized personnel
CONTROLS	130.1(c)5	Automatic Partial OFF	Automatically reduces lighting power in any one controlled zone by at least 50% after vacancy of 20 minutes or less.
LIGHT LEVEL CONTROL	130.1(b)	Multi-level lighting controls	At least one multi-level lighting control device (manual or automatic) in enclosed areas 100 sq. ft. or larger. Light level requirements are defined in Table 130.1-A. Note, the majority of lighting types require multiple control steps.
	130.1(d) and 140.6(d)	Automatic daylight control	Sensor to reduce lighting in response to available daylight. Daylighting zones defined in Section 130.1(d)1. Primary daylight zones must be controlled separately from secondary zones. Refer to Table 130.1-A for lighting-level requirements.
ADDITIONAL CONTROL	130.4	Acceptance testing (functional testing)	Testing shall ensure that control hardware and software are calibrated, programmed, and functioning properly.
	130.1(e)	Demand Response	Automatic lighting reduction by a minimum of 15% of total installed lighting power in response to a Demand Response Signal. Required for new buildings with installed lighting power of 4,000 watts or greater

RESTROOM

	Code Provision	Minimum Control Type	Requirement
ON/OFF	130.1(a)	Local switch	May use a manual control not accessible to unauthorized personnel
ON/OFF CONTROLS	130.1(c)5	Automatic Partial OFF	Automatically reduces lighting power in any one controlled zone by at least 50% after vacancy of 20 minutes or less.
LIGHT LEVEL CONTROL	130.1(b)	Multi-level lighting controls	At least one multi-level lighting control device (manual or automatic) in enclosed areas 100 sq. ft. or larger. Light level requirements are defined in Table 130.1-A. Note, the majority of lighting types require multiple control steps.
	130.1(d) and 140.6(d)	Automatic daylight control	Sensor to reduce lighting in response to available daylight. Daylighting zones defined in Section 130.1(d)1. Primary daylight zones must be controlled separately from secondary zones. Refer to Table 130.1-A for lighting-level requirements.
ADDITIONAL CONTROL	130.4	Acceptance testing (functional testing)	Testing shall ensure that control hardware and software are calibrated, programmed, and functioning properly.
	130.1(e)	Demand Response	Automatic lighting reduction by a minimum of 15% of total installed lighting power in response to a Demand Response Signal. Required for new buildings with installed lighting power of 4,000 watts or greater





STAIRWELL

	Code Provision	Minimum Control Type	Requirement
ON/OFF	130.1(a)	Local switch	May use a manual control not accessible to unauthorized personnel
CONTROLS	130.1(c)6 & 7	Automatic Partial OFF	Automatically reduces lighting power in any one controlled zone by at least 50% after vacancy of 20 minutes or less.
LIGHT LEVEL CONTROL	130.1(b)	Multi-level lighting controls	At least one multi-level lighting control device (manual or automatic) in enclosed areas 100 sq. ft. or larger. Light level requirements are defined in Table 130.1-A. Note, the majority of lighting types require multiple control steps.
	130.1(d) and 140.6(d)	Automatic daylight control	Sensor to reduce lighting in response to available daylight. Daylighting zones defined in Section 130.1(d)1. Primary daylight zones must be controlled separately from secondary zones. Refer to Table 130.1-A for lighting-level requirements.
ADDITIONAL CONTROL	130.4	Acceptance testing (functional testing)	Testing shall ensure that control hardware and software are calibrated, programmed, and functioning properly.
	130.1(e)	Demand Response	Automatic lighting reduction by a minimum of 15% of total installed lighting power in response to a Demand Response Signal. Required for new buildings with installed lighting power of 4,000 watts or greater

STORAGE ROOM

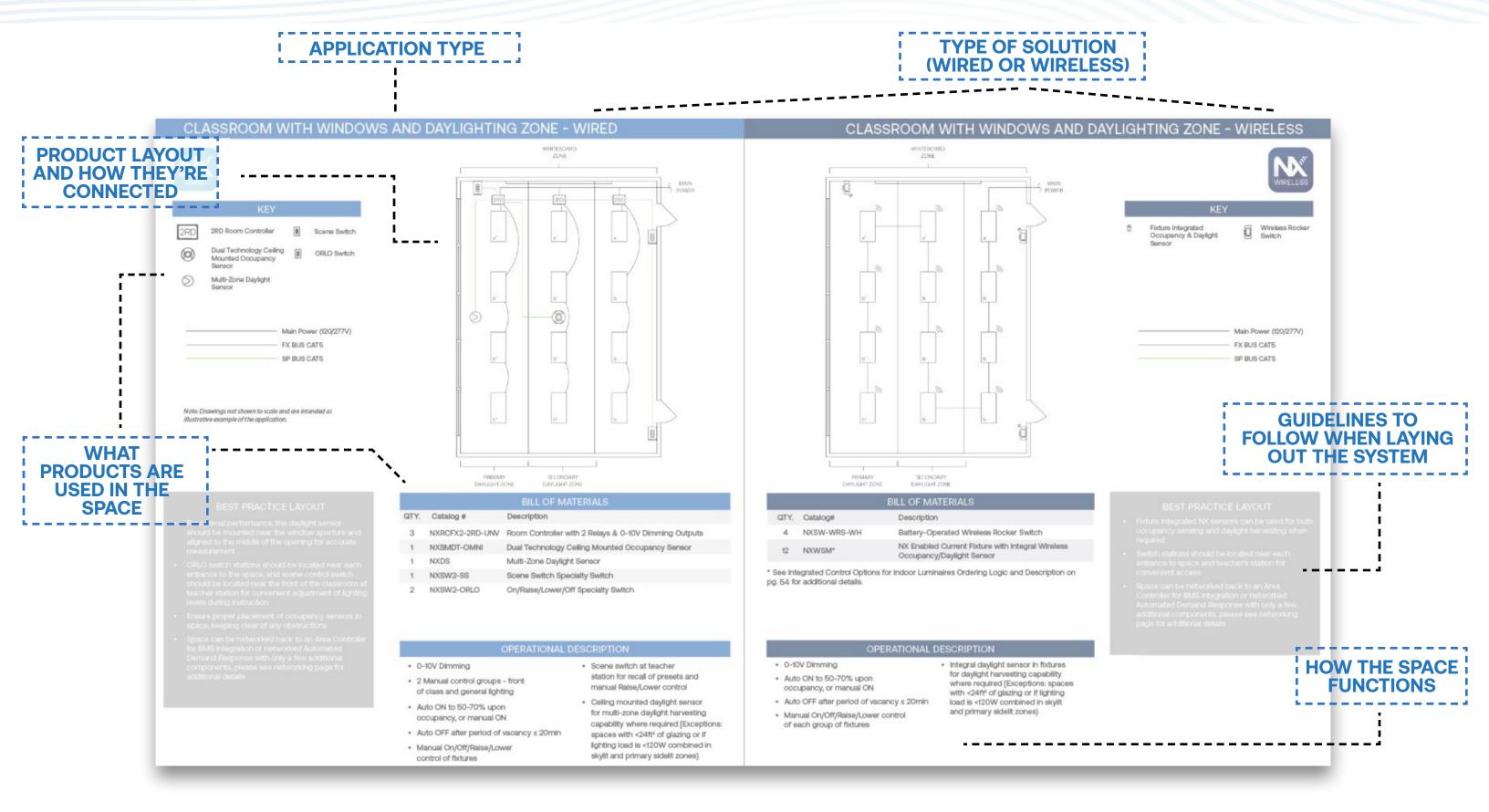
	Code Provision	Minimum Control Type	Requirement
	130.1(a)	Local switch	Readily accessible device(s) to control lighting within an enclosed space.
ON/OFF CONTROLS	130.1(c)1	Programmable Timeclock	Scheduled time-of-day operated control that turns lighting off at specified times when typically unoccupied. Occupancy sensors or other building system signals that turn OFF lights during vacancy also comply. Maximum 2 hour manual override.
	130.1(c)5	Vacancy sensor (Manual On - Auto Off): Partial On (50- 70% On - Full Off)	Automatically shuts off lighting power after vacancy of 20 minutes or less.
LIGHT LEVEL	130.1(b)	Multi-level lighting controls	At least one multi-level lighting control device (manual or automatic) in enclosed areas 100 sq. ft. or larger. Light level requirements are defined in Table 130.1-A. Note, the majority of lighting types require multiple control steps.
CONTROL	130.1(d) and 140.6(d)	Automatic daylight control	Sensor to reduce lighting in response to available daylight. Daylighting zones defined in Section 130.1(d)1. Primary daylight zones must be controlled separately from secondary zones. Refer to Table 130.1-A for lighting-level requirements.
ADDITIONAL CONTROL	130.4	Acceptance testing (functional testing)	Testing shall ensure that control hardware and software are calibrated, programmed, and functioning properly.
	130.1(e)	Demand Response	Automatic lighting reduction by a minimum of 15% of total installed lighting power in response to a Demand Response Signal. Required for new buildings with installed lighting power of 4,000 watts or greater



HOW TO USE THIS GUIDE

TITLE 24 APPLICATION GUIDE





TITLE 24 APPLICATION GUIDE



PRIVATE OFFICE ≤ 250FT2 WITH WINDOWS - WIRED

Switch Occupancy

PRIVATE OFFICE ≤ 250FT² WITH WINDOWS - WIRELESS



1RD Room Controller

Dual Technology Wall

KEY

Controlled Receptacle

Main Power (120/277V) FX BUS CAT5

Note: Drawings not shown to scale and are intended as illustrative example of the application.

9.9 1RD 1RD MAIN MAIN **POWER POWER**

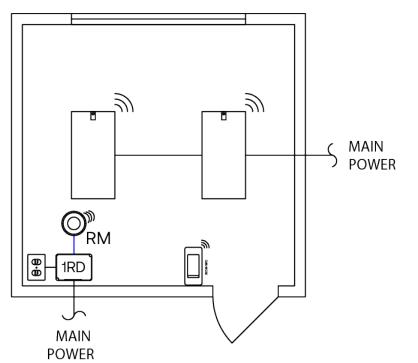
BEST PRACTICE LAYOUT

- NX LightHAWK can be used for occupancy sensing, daylight harvesting, as well as manu-on/raise/lower/off control of lighting load in

		BILL OF MATERIALS
QTY.	Catalog #	Description
1	NXSMDT-LH1	Dual Technology Wall Switch Occupancy Sensor
2	NXRCFX2-1RD-UNV	Room Controller with 1 Relay & 0-10V Dimming Output

OPERATIONAL DESCRIPTION

- 0-10V Dimmable fixtures
- Auto ON to 50-70% upon occupancy
- Auto OFF after period of vacancy ≤ 20min
- Manual On/Off/Raise/Lower control of fixtures
- Plug load auto ON based on occupancy, and auto OFF after period of vacancy ≤ 20min
- Integral daylight sensor in LightHAWK for daylight harvesting where required (Exceptions: spaces with <24ft² of glazing or if lighting load is <120W combined in skylit and primary sidelit zones)



1RD	1RD Room Controller		Wireless Rocker Switch
On RM	Radio Module Controlled Receptacle	0	Fixture Integrated Occupancy & Daylight Sensor
_			ower (120/277V) S CAT5
	:: Drawings not shown to sca trative example of the applica		intended as

KEY

BILL OF MATERIALS			
QTY.	Catalog #	Description	
1	NXSW-WRS-WH	Battery-Operated Wireless Rocker Switch	
1	NXRCFX2-1RD-UNV	Room Controller with 1 Relay & 0-10V Dimming Output	
1	NXRM2-H	Radio Module	
2	NXWSM*	NX Enabled Current Fixture with Integral Wireless Occupancy/Daylight Sensor	

* See Integrated Control Options for Indoor Luminaires Ordering Logic and Description on pg. 54 for additional details

OPERATIONAL DESCRIPTION

- 0-10V Dimmable fixtures
- Auto ON to 50-70% upon occupancy
- Auto OFF after period of vacancy ≤ 20min
- Manual On/Off/Raise/Lower control of fixtures
- · Plug load auto ON based on occupancy, and auto OFF after period of vacancy ≤ 20min
- Integral daylight sensor in fixtures for daylight harvesting where required (Exceptions: spaces with <24ft² of glazing or if lighting load is <120W combined in skylit and primary sidelit zones)



TITLE 24 APPLICATION GUIDE



OPEN OFFICE >250FT2 WITH WINDOWS AND DAYLIGHTING ZONE - WIRED



IRD 1RD Room Controller IRD Noom Controller IRD N

Main Power (120/277V)

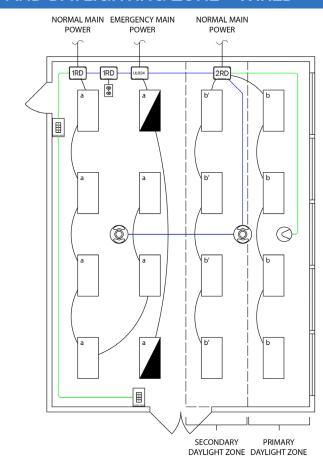
FX BUS CAT5

SP BUS CAT5

Note: Drawings not shown to scale and are intended as illustrative example of the application.

BEST PRACTICE LAYOUT

- For optimal performance, the daylight sensor should be mounted near the window aperture and aligned to the middle of the opening for accurate measurement
- Switch stations should be located near each entrance to the space
- Each occupancy control zone shall not exceed 600 ft²
- Ensure proper placement of occupancy sensors in space, keeping clear of any obstructions
- Space can be networked back to an Area Controller for BMS integration or networked Automated Demand Response with only a few additional components, please see networking page for additional details



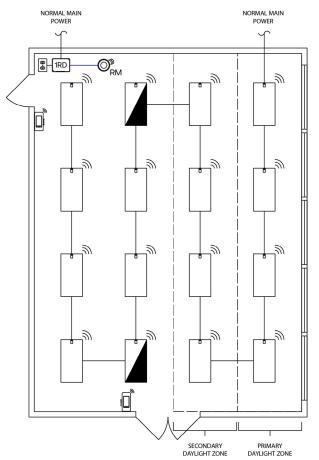
BILL OF MATERIALS			
QTY.	Catalog #	Description	
2	NXRCFX2-1RD-UNV	Room Controller with 1 Relay & 0-10V Dimming Output	
2	NXSW2-ORLO	On/Raise/Lower/Off Specialty Switch	
1	NXRCFX2-2RD-UNV	Room Controller with 2 Relays & 0-10V Dimming Outputs	
2	NXSMDT-OMNI	Dual Technology Ceiling Mounted Occupancy Sensor	
1	NXDS	Multi-Zone Daylight Sensor	
1	NXRC-UL924-UNV	Emergency Room Controller with 1 Relay & (2) 0-10V Dimming Outputs	

OPERATIONAL DESCRIPTION

- 0-10V Dimmable fixtures
- Auto ON to 50-70% upon occupancy for each occupancy control zone not exceeding 600ft²
- Auto OFF after period of vacancy ≤ 20min for each occupancy zone
- Manual On/Off/Raise/Lower control of fixtures
- Plug load auto ON based on occupancy, and auto OFF after period of vacancy ≤ 20min
- Ceiling mounted daylight sensor for multi-zone daylight harvesting capability where required (Exceptions: spaces with <24ft² of glazing or if lighting load is <120W combined in skylit and primary sidelit zones)
- Integral timeclock in room controllers can also be utilized for standalone scheduled time-of-day operation of space with manual override switch

OPEN OFFICE >250FT2 WITH WINDOWS AND DAYLIGHTING ZONE - WIRELESS

1RD



Wiring shown assumes emergency fixtures ordered with integral battery backup. Please see fixture spec sheet for details on ordering options.

BILL OF MATERIALS QTY. Catalog # Description 1 NXRCFX2-1RD-UNV Room Controller with 1 Relay & 0-10V Dimming Output 1 NXRM2-H Radio Module 2 NXSW-WRS-WH Battery-Operated Wireless Rocker Switch NX Enabled Current Fixture with Integral Wireless Occupancy/Daylight Sensor

*See Integrated Control Options for Indoor Luminaires Ordering Logic and Description on pg. 54 for additional details

OPERATIONAL DESCRIPTION

- 0-10V Dimmable fixtures
- Auto ON to 50-70% upon occupancy for each occupancy control zone not exceeding 600ft²
- Auto OFF after period of vacancy ≤ 20min for each occupancy zone
- Manual On/Off/Raise/Lower control of fixtures
- Plug load auto ON based on occupancy, auto OFF after period of vacancy ≤ 20min
- Integral daylight sensor in fixtures for daylight harvesting where required (Exceptions: spaces with <24ft² of glazing or if lighting load is <120W combined in skylit and primary sidelit zones)
- Integral timeclock in NX enabled luminaires can also be utilized for standalone scheduled time-of-day operation of space with manual override switch and occupancy sensors and occupancy sensors



	INL I		
М	1RD Room Controller Radio Module	•	Fixture Integrated Occupancy & Daylight Senso
	Wireless Rocker Switch	(B)	Controlled Receptacle

KEV

Main Power (120/277V)

FX BUS CAT5

Note: Drawings not shown to scale and are intended as illustrative example of the application.

- Fixture integrated NX sensors can be use for both occupancy sensing and daylight harvesting when required
- For indoor spaces, place radios within 100' line of sight of at least two other wireless devices
- Switch stations should be located near each entrance to the space.
- Each occupancy control zone shall not exceed
 600 #2
- Space can be networked back to an Area Controller for BMS integration or networked Automated Demand Response with only a few additional components, please see networking page for additional details.

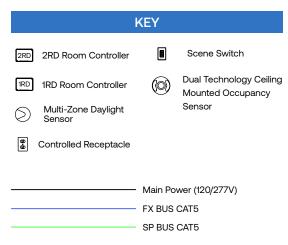


TITLE 24 APPLICATION GUIDE



CONFERENCE ROOM - WIRED CONFERENCE ROOM - WIRELESS





SECONDARY
DAYLIGHT
ZONE

MAIN
POWER

PRIMARY
DAYLIGHT
ZONE

SECONDARY DAYLIGHT ZONE

PRIMARY DAYLIGHT ZONE

NIT WIRELESS

Multi-Zone Daylight
Sensor

IRD 1RD Room Controller

Wireless Rocker
Switch

Controlled Receptacle

Main Power (120/277V)
FX BUS CAT5

SP BUS CAT5

Note: Drawings not shown to scale and are intended as illustrative example of the application.

Note: Drawings not shown to scale and are intended as illustrative example of the application.

BEST PRACTICE LAYOUT

- For optimal performance, the daylight sensor should be mounted near the window aperture and aligned to the middle of the opening for accurate measurement
- Switch stations should be located near each entrance to the space
- Ensure proper placement of occupancy sensors in space, keeping clear of any obstructions
- Space can be networked back to an Area
 Controller for BMS integration or networked
 Automated Demand Response with only a few additional components, please see networking page for additional details

BILL OF MATERIALS		
QTY.	Catalog #	Description
2	NXRCFX2-1RD-UNV	Room Controller with 1 Relay & 0-10V Dimming Output
1	NXSW2-SS	Scene Switch Specialty Switch
1	NXRCFX2-2RD-UNV	Room Controller with 2 Relays & 0-10V Dimming Outputs
1	NXSMDT-OMNI	Dual Technology Ceiling Mounted Occupancy Sensor
1	NXDS	Multi-Zone Daylight Sensor

OPERATIONAL DESCRIPTION

- 0-10V Dimmable fixtures
- Auto ON to 50-70% upon occupancy, or manual ON
- Auto OFF after period of vacancy ≤20min
- Scene switch for recalling programmed presets and manual Raise/Lower of activated scene
- Plug load auto ON based on occupancy, and auto OFF after period of vacancy ≤20min
- Ceiling mounted daylight sensor for multizone daylight harvesting where required (Exceptions: spaces with <24ft² of glazing or if lighting load is <120W combined in skylit and primary sidelit zones)

BILL OF MATERIALS			
QTY.	Catalog #	Description	
1	NXRCFX2-1RD-UNV	Room Controller with 1 Relay & 0-10V Dimming Output	
1	NXRM2-H	Radio Module	
1	NXSW-WRS-WH	Battery-Operated Wireless Rocker Switch	
1	NXDS	Multi-Zone Daylight Sensor	
2	NXWRM*	NX Enabled Current Fixture with Integral Wireless Occupancy/Daylight Sensor	

^{*} See Integrated Control Options for Indoor Luminaires Ordering Logic and Description on pg. 54 for additional details.

OPERATIONAL DESCRIPTION

- 0-10V Dimmable fixtures
- Auto ON to 50-70% upon occupancy, or manual ON
- Auto OFF after period of vacancy ≤20min
- Scene switch for recalling programmed presets and manual Raise/Lower of activated scene
- Plug load auto ON based on occupancy, and auto OFF after period of vacancy ≤20min
- Ceiling mounted daylight sensor for multi-zone daylight harvesting where required (Exceptions: spaces with <24ft² of glazing or if lighting load is <120W combined in skylit and primary sidelit zones)

- For optimal performance, the daylight sensor should be mounted near the window aperture and aligned to the middle of the opening for accurate measurement
- Switch stations should be located near each entrance to the space
- Space can be networked back to an Area Controller for BMS integration or networked Automated Demand Response with only a few additional components, please see networking
- For indoor spaces, place radios within 100' line f sight of at least two other wireless devices



TITLE 24 APPLICATION GUIDE



CLASSROOM WITH WINDOWS AND DAYLIGHTING ZONE - WIRED

LIGHTING CONTROLS



KEY

2RD Room Controller

Scene Switch

ORLO Switch

Dual Technology Ceiling Mounted Occupancy Sensor

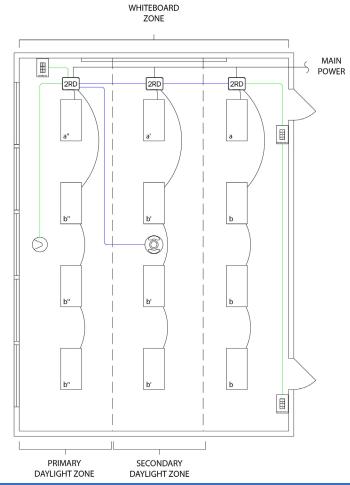
Multi-Zone Daylight

Main Power (120/277V) FX BUS CAT5 SP BUS CAT5

Note: Drawings not shown to scale and are intended as illustrative example of the application.

BEST PRACTICE LAYOUT

- should be mounted near the window apertur and aligned to the middle of the opening for



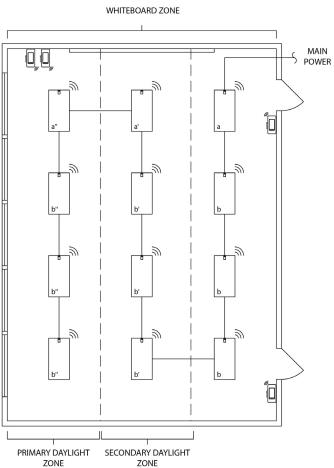
BILL OF MATERIALS			
QTY.	Catalog #	Description	
3	NXRCFX2-2RD-UNV	Room Controller with 2 Relays & 0-10V Dimming Outputs	
1	NXSMDT-OMNI	Dual Technology Ceiling Mounted Occupancy Sensor	
1	NXDS	Multi-Zone Daylight Sensor	
1	NXSW2-SS	Scene Switch Specialty Switch	
2	NXSW2-ORLO	On/Raise/Lower/Off Specialty Switch	

OPERATIONAL DESCRIPTION

- 0-10V Dimming
- 2 Manual control groups front of class and general lighting
- Auto ON to 50-70% upon occupancy, or manual ON
- Auto OFF after period of vacancy ≤ 20min
- · Manual On/Off/Raise/Lower control of fixtures

- · Scene switch at teacher station for recall of presets and manual Raise/Lower control
- Ceiling mounted daylight sensor for multi-zone daylight harvesting capability where required (Exceptions: spaces with <24ft² of glazing or if lighting load is <120W combined in skylit and primary sidelit zones)

CLASSROOM WITH WINDOWS AND DAYLIGHTING ZONE - WIRELESS



BILL OF MATERIALS		
QTY.	Catalog#	Description
4	NXSW-WRS-WH	Battery-Operated Wireless Rocker Switch
12	NXWSM*	NX Enabled Current Fixture with Integral Wireless Occupancy/Daylight Sensor

^{*} See Integrated Control Options for Indoor Luminaires Ordering Logic and Description on pg. 54 for additional details.

OPERATIONAL DESCRIPTION

- 0-10V Dimming
- Auto ON to 50-70% upon occupancy, or manual ON
- Auto OFF after period of vacancy ≤ 20min
- Manual On/Off/Raise/Lower control of each group of fixtures

• Integral daylight sensor in fixtures for daylight harvesting capability where required (Exceptions: spaces with <24ft² of glazing or if lighting load is <120W combined in skylit and primary sidelit zones)

KEY

Fixture Integrated Occupancy & Daylight



Main Power (120/277V)

Note: Drawings not shown to scale and are intended as illustrative example of the application.

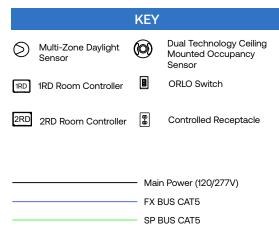


TITLE 24 APPLICATION GUIDE

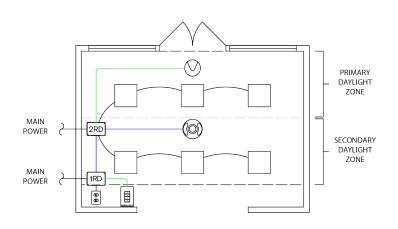


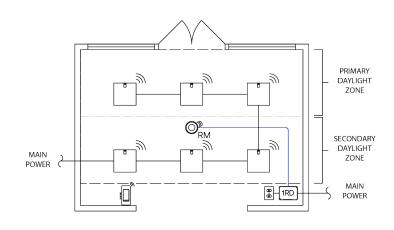
LOBBY - WIRED LOBBY - WIRELESS

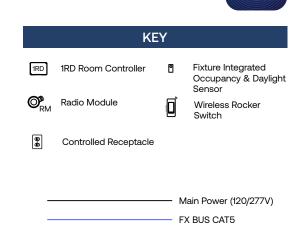




Note: Drawings not shown to scale and are intended as illustrative example of the application.







Note: Drawings not shown to scale and are intended as illustrative example of the application.

BEST PRACTICE LAYOUT

- For optimal performance, the daylight sensor should be mounted near the window aperture and aligned to the middle of the opening for accurate measurement
- Switch stations should be located near each entrance to the space.
- Ensure proper placement of occupancy sensors in space, keeping clear of any obstructions
- Space can be networked back to an Area
 Controller for BMS integration or networked
 Automated Demand Response with only a few
 additional components, please see networking
 page for additional details

BILL OF MATERIALS			
QTY.	Catalog #	Description	
1	NXRCFX2-1RD-UNV	Room Controller with 1 Relay & 0-10V Dimming Output	
1	NXRCFX2-2RD-UNV	Room Controller with 2 Relays & 0-10V Dimming Outputs	
1	NXSMDT-OMNI	Dual Technology Ceiling Mounted Occupancy Sensor	
1	NXSW2-ORLO	On/Raise/Lower/Off Specialty Switch	
1	NXDS	Multi-Zone Daylight Sensor	

OPERATIONAL DESCRIPTION

- 0-10V Dimmable fixtures
- Auto ON to 50-70% upon occupancy, or manual ON
- Auto OFF after period of vacancy ≤20min
- Manual On/Off/Raise/Lower control of fixtures
- Plug load auto ON based on occupancy, and auto OFF after period of vacancy ≤20min
- Ceiling mounted daylight sensor for multi-zone daylight harvesting capability where required (Exceptions: spaces with <24ft² of glazing or if lighting load is <120W combined in skylit and primary sidelit zones)
- Integral timeclock in room controllers can also be utilized for standalone scheduled time-of-day operation of space with manual override switch and occupancy sensors

BILL OF MATERIALS			
QTY.	Catalog #	Description	
1	NXRCFX2-1RD-UNV	Room Controller with 1 Relay & 0-10V Dimming Output	
1	NXRM2-H	Radio Module	
1	NXSW-WRS-WH	Battery-Operated Wireless Rocker Switch	
6	NXWSM*	NX Enabled Current Fixture with Integral Wireless Occupancy/Daylight Sensor	

^{*} See Integrated Control Options for Indoor Luminaires Ordering Logic and Description on pg. 54 for additional details.

OPERATIONAL DESCRIPTION

- 0-10V Dimmable fixtures
- Auto ON to 50-70% upon occupancy, or manual ON
- Auto OFF after period of vacancy ≤20min
- Manual On/Off/Raise/Lower control of fixtures
- Plug load auto ON based on occupancy, and auto OFF after period of vacancy ≤20min
- Integral daylight sensor in fixtures for daylight harvesting capability where required (Exceptions: spaces with <24ft² of glazing or if lighting load is <120W combined in skylit and primary sidelit zones)
- Integral timeclock in NX enabled luminaires can also be utilized for standalone scheduled time-of-day operation of space with manual override switch and occupancy sensors

- Fixture integrated NX sensors can be use for both occupancy sensing and daylight baryesting when required.
- For indoor spaces, place radios within 100' lin of sight of at least two other wireless devices
- Switch stations should be located near each
- Space can be networked back to an Area
 Controller for BMS integration or networked
 Automated Demand Response with only a few
 additional components, please see networking
 page for additional details



TITLE 24 APPLICATION GUIDE



CORRIDOR - WIRED CORRIDOR - WIRELESS





1RD Room Controller

KEY

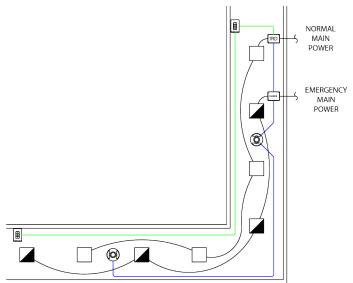
Dual Technology Ceiling Mounted Occupancy

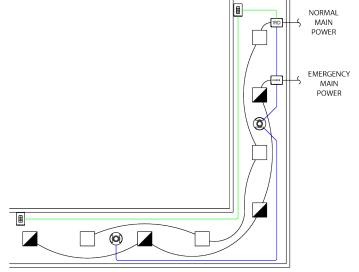
UL924 Room

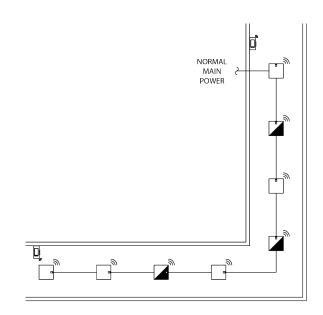
ORLO Switch

Main Power (120/277V) FX BUS CAT5 SP BUS CAT5

Note: Drawings not shown to scale and are intended as illustrative example of the application







KEY

Wireless Rocker

Fixture Integrated Occupancy & Daylight

Main Power (120/277V)

Note: Drawings not shown to scale and are intended as illustrative example of the application.

BEST PRACTICE LAYOUT

BILL OF MATERIALS		
QTY.	Catalog #	Description
1	NXRCFX2-1RD-UNV	Room Controller with 1 Relay & 0-10V Dimming Output
1	NXRC-UL924-UNV	UL924 Emergency Room Controller with 1 Relay & (2) 0-10V Dimming Outputs
2	NXSW2-ORLO	On/Raise/Lower/Off Specialty Switch
2	NXSMDT-OMNI	Dual Technology Ceiling Mounted Occupancy Sensor

OPERATIONAL DESCRIPTION

- 0-10V Dimmable fixtures
- · Auto full ON upon occupancy
- Partial OFF to ≤50% after period of vacancy ≤ 20min
- Manual On/Off/Raise/Lower control of fixtures
- Integral timeclock in room controllers can also be utilized for standalone scheduled time-of-day operation of space with manual override switch and occupancy sensors

Wiring shown assumes emergency fixtures ordered with integral battery backup. Please see fixture spec sheet for details on ordering options.

BILL OF MATERIALS		
QTY.	Catalog #	Description
2	NXSW-WRS-WH	Battery-Operated Wireless Rocker Switch
8	NXWSM*	NX Enabled Current Fixture with Integral Wireless Occupancy/Daylight Sensor

^{*} See Integrated Control Options for Indoor Luminaires Ordering Logic and Description on pg. 54 for additional details.

OPERATIONAL DESCRIPTION

- 0-10V Dimmable fixtures
- · Auto full ON upon occupancy
- Partial OFF to ≤50% after period of vacancy ≤ 20min
- · Manual On/Off/Raise/Lower control of fixtures
- Integral timeclock in NX enabled luminaires can also be utilized for standalone scheduled timeof-day operation of space with manual override switch and occupancy sensors



TITLE 24 APPLICATION GUIDE



PUBLIC RESTROOM - WIRED PRIVATE OR SINGLE RESTROOM - WIRED





UL924 Room

Key Switch

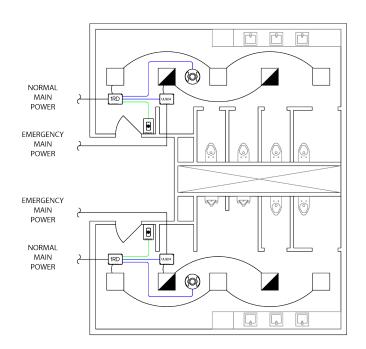
Dual Technology Ceiling

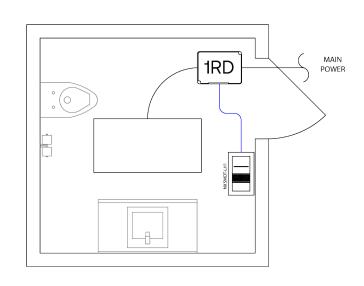
Mounted Occupancy

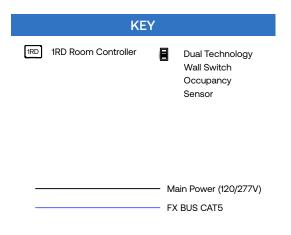
KEY

Main Power (120/277V) FX BUS CAT5 SP BUS CAT5

Note: Drawings not shown to scale and are intended as illustrative example of the application







Note: Drawings not shown to scale and are intended as illustrative example of the application.

BEST PRACTICE LAYOUT

- Switch stations should be located near each

BILL OF MATERIALS			
QTY	. Catalog #	Description	
2	NXRCFX2-1RD-UNV	Room Controller with 1 Relay & 0-10V Dimming Output	
2	NXRC-UL924-UNV	UL924 Emergency Room Controller with 1 Relay & (2) 0-10V Dimming Outputs	
2	NXSW2-KEY	Digital Key Switch	
2	NXSMDT-OMNI	Dual Technology Ceiling Mounted Occupancy Sensor	

QTY.	Catalog #
1	NXSMDT-LH1
1	NXRCFX2-1RD-UNV

BILL OF MATERIALS			
QTY.	Catalog #	Description	
1	NXSMDT-LH1	Dual Technology Wall Switch Occupancy Sensor	
1	NXRCFX2-1RD-UNV	Room Controller with 1 Relay & 0-10V Dimming Output	

- sensing, daylight harvesting, as well as manual on/raise/lower/off control of lighting

OPERATIONAL DESCRIPTION

- 0-10V Dimmable fixtures
- Auto ON to 50-70% upon occupancy, or manual ON
- Auto OFF after period of vacancy ≤20min
- Key switch for manual control of fixtures by authorized personnel
- Integral timeclock in room controllers can also be utilized for standalone scheduled time-of-day operation of space with manual override switch and occupancy sensors

- 0-10V Dimmable fixtures
- Auto ON to 50-70% upon occupancy, or manual ON
- Auto OFF after period of vacancy ≤20min
- Manual On/Off/Raise/Lower control of fixtures



TITLE 24 APPLICATION GUIDE



STAIRWELL - WIRED



STAIRWELL - WIRELESS





KEY 1RD Room Controller

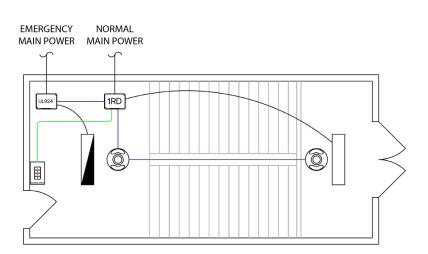
> UL924 Room Controller

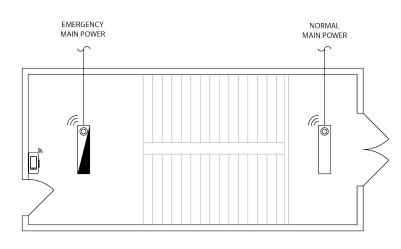
Dual Technology Ceiling Mounted Occupancy Sensor

ORLO Switch

Main Power (120/277V) FX BUS CAT5 SP BUS CAT5

Note: Drawings not shown to scale and are intended







Main Power (120/277V)

Note: Drawings not shown to scale and are intended as illustrative example of the application.

- Switch stations should be located near each
- sensors throughout the stairwell, keeping clear of any obstructions and taking into account different levels and landings

BILL OF MATERIALS			
QTY.	Catalog #	Description	
1	NXRCFX2-1RD-UNV	Room Controller with 1 Relay & 0-10V Dimming Output	
1	NXRC-UL924-UNV	UL924 Emergency Room Controller with 1 Relay & (2) 0-10V Dimming Outputs	
1	NXSW2-ORLO	On/Raise/Lower/Off Specialty Switch	
2	NXSMDT-OMNI	Dual Technology Ceiling Mounted Occupancy Sensor	

OPERATIONAL DESCRIPTION

Wiring shown assumes emergency fixtures ordered with integral UL924 dimming bypass module. Please see fixture spec sheet for details on ordering options.

	BILL OF MATERIALS		
QTY.	Catalog #	Description	
1	NXSW-WRS-WH	Battery-Operated Wireless Rocker Switch	
2	NXWOM*	NX Enabled Current Fixture with Integral Wireless Occupancy/Daylight Sensor	

OPERATIONAL DESCRIPTION

- 0-10V Dimmable fixtures
- Auto full ON upon occupancy
- Partial OFF to ≤50% after period of vacancy ≤ 20min
- Manual On/Off/Raise/Lower control of fixtures
- Integral timeclock in NX enabled luminaires can also be utilized for standalone scheduled time-of-day operation of space with manual override switch and occupancy sensors

BEST PRACTICE LAYOUT

• 0-10V Dimmable fixtures

- · Auto full ON upon occupancy
- Partial OFF to ≤50% after period of vacancy ≤ 20min
- Manual On/Off/Raise/Lower control of fixtures
- Integral timeclock in NX enabled luminaires can also be utilized for standalone scheduled time-of-day operation of space with manual override switch and occupancy sensors



^{*} See Integrated Control Options for Indoor Luminaires Ordering Logic and Description on pg. 54 for additional details.

TITLE 24 APPLICATION GUIDE



WAREHOUSE - WIRED WAREHOUSE - WIRELESS

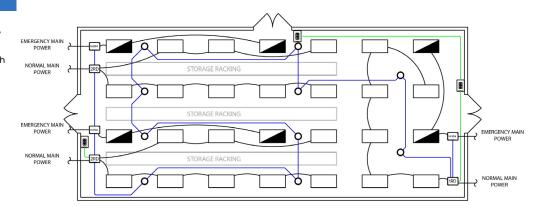


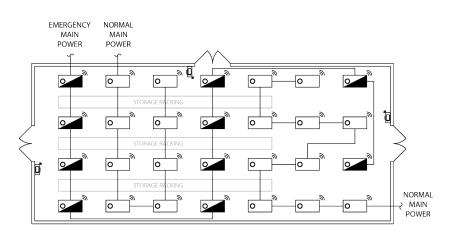


ZRD 2RD Room Controller High Mount PIR Occupancy Sensor

UL924 Room Controller 8-Button Switch

IRD 1RD Room Controller





KEY

W Sv

Wireless Rocker Switch Fixture Integrat

Integrated Occupancy & Daylight Sensor

Main Power (120/277V)

Note: Drawings not shown to scale and are intended as illustrative example of the application.

Note: Drawings not shown to scale and are intended as illustrative example of the application.

BEST PRACTICE LAYOUT

- Switch stations should be located near each entrance to the space.
- Ensure proper placement of occupancy sensors in space, keeping clear of any obstructions
- Space can be networked back to an Area Controller for BMS integration or networked Automated Demand Response with only a few additional components, please see networking page for additional details

BILL OF MATERIALS			
QTY.	Catalog #	Description	
2	NXRCFX2-2RD-UNV	Room Controller with 2 Relays & 0-10V Dimming Outputs	
5	NXRC-UL924-UNV	UL924 Emergency Room Controller with 1 Relay & (2) 0-10V Dimming Outputs	
10	NXSMP2-HMO	High Mount PIR Occupancy Sensor	
1	NXRCFX2-1RD-UNV	Room Controller with 1 Relay & 0-10V Dimming Output	
3	NXSW2-8	8-Button Smart Switch	

OPERATIONAL DESCRIPTION

- 0-10V Dimmable fixtures
- Auto full ON upon occupancy
- Partial OFF to ≤50% after period of vacancy ≤ 20min
- Manual On/Off/Raise/Lower control of fixtures

Wiring shown assumes emergency fixtures ordered with integral UL924 dimming bypass module. Please see fixture spec sheet for details on ordering options.

		BILL OF MATERIALS
QTY.	Catalog #	Description
3	NXSW-WRS-WH	Battery-Operated Wireless Rocker Switch
28	NXWHM*	NX Enabled Current Fixture with Integral Wireless Occupancy/Daylight Sensor

^{*} See Integrated Control Options for Indoor Luminaires Ordering Logic and Description on pg. 54 for additional details.

BEST PRACTICE LAYOUT

- Fixture integrated NX sensors can be used for both occupancy sensing and daylight harvesting when required
- Switch stations should be located near each entrance to the space
- Space can be networked back to an Area
 Controller for BMS integration or networked
 Automated Demand Response with only a few
 additional components, please see networking
 page for additional details

- 0-10V Dimmable fixtures
- Auto full ON upon occupancy
- Partial OFF to ≤50% after period of vacancy ≤ 20min
- Manual On/Off/Raise/Lower control of fixtures

TITLE 24 APPLICATION GUIDE

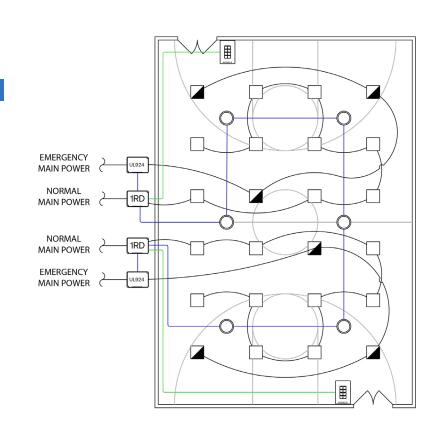


GYMNASIUM - WIRED GYMNASIUM - WIRELESS



KEY 8-Button Switch UL924 Room Controller High Mount 1RD Room Controller PIR Occupancy Sensor Main Power (120/277V) FX BUS CAT5 SP BUS CAT5

Note: Drawings not shown to scale and are intended



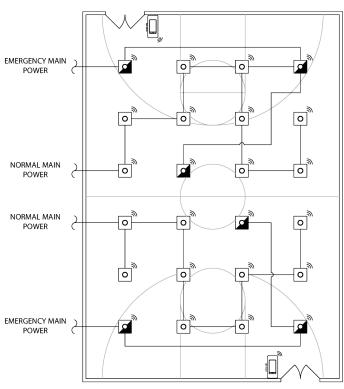
BEST PRACTICE LAYOUT

- Switch stations should be located near each

BILL OF MATERIALS			
QTY.	Catalog #	Description	
2	NXRCFX2-1RD-UNV	Room Controller with 1 Relay & 0-10V Dimming Output	
2	NXSW2-8	8-Button Smart Switch	
6	NXSMP2-HMO	High Mount PIR Occupancy & Daylight Sensor	
2	NXRC-UL924-UNV	Emergency Room Controller with 1 Relay & (2) 0-10V Dimming Outputs	

OPERATIONAL DESCRIPTION

- 0-10V Dimmable fixtures
- Auto ON to 50-70% upon occupancy, or manual ON
- Auto OFF after period of vacancy ≤20min
- Manual ON/OFF/Raise/Lower control of each group of fixtures



Wiring shown assumes emergency fixtures ordered with integral UL924 dimming bypass module. Please see fixture spec sheet for details on ordering options.

BILL OF MATERIALS			
QTY.	Catalog #	Description	
2	NXSW-WRS-WH	Battery-Operated Wireless Rocker Switch	
1	NXWHM*	NX Enabled Current Fixture with Integral Wireless Occupancy/Daylight Sensor	

^{*} See Integrated Control Options for Indoor Luminaires Ordering Logic and Description on pg. 54 for additional details.

KEY

Fixture 0 Integrated Occupancy & Daylight Sensor



Wireless Rocker Switch

Main Power (120/277V)

Note: Drawings not shown to scale and are intended as illustrative example of the application.

BEST PRACTICE LAYOUT

- Space can be networked back to an Area Controller for BMS integration or networked Automated Demand Response with only a few additional components, please see networking page for additional details

- 0-10V Dimmable fixtures
- Auto ON to 50-70% upon occupancy, or manual ON
- Auto OFF after period of vacancy ≤20min
- Manual ON/OFF/Raise/Lower control of fixtures



TITLE 24 APPLICATION GUIDE



INTERIOR LEVEL PARKING GARAGE - WIRELESS

SITE WITH PARKING LOT - WIRELESS



ORLO Switch

Fixture Integrated Occupancy & Daylight Radio Module

1RD Room Controller

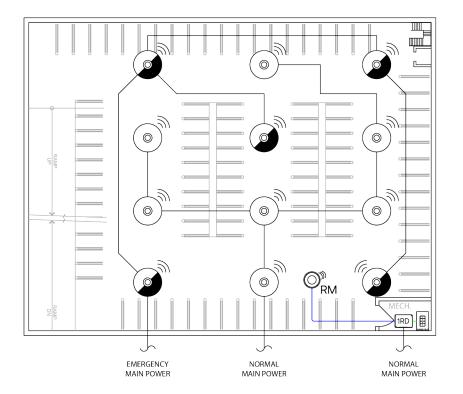
Main Power (120/277V)

FX BUS CAT5

KEY

Note: Drawings not shown to scale and are intended

BEST PRACTICE LAYOUT



module. Please see fixture spec sheet for details on ordering options.

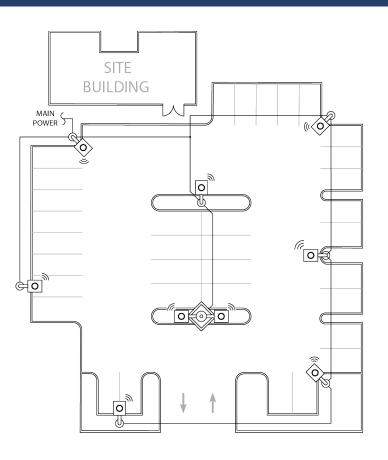
		BILL OF MATERIALS
QTY.	Catalog #	Description
1	NXRCFX2-1RD-UNV	Room Controller with 1 Relay & 0-10V Dimming Output
1	NXRM2-H	Radio Module
1	NXSW2-ORLO	On/Raise/Lower/Off Specialty Switch
12	NXWS12F	NX Enabled Current Fixture with Integral Wireless Occupancy/Daylight Sensor

^{*} See Integrated Control Options for Indoor Luminaires Ordering Logic and Description on pg. 54 for additional details

Wiring shown assumes emergency fixtures ordered with integral UL924 dimming bypass

OPERATIONAL DESCRIPTION

- 0-10V Dimmable fixtures
- Auto full ON upon occupancy
- Partial OFF to ≤50% after period of vacancy ≤ 20min
- Manual ON/OFF/Raise/Lower control of fixtures
- Control zones shall have a lighting load of <= 500W per zone





KEY

Fixture \circ Integrated Occupancy & Daylight Sensor

Main Power (120/277V)

Note: Drawings not shown to scale and are intended as illustrative example of the application.

BILL OF MATERIALS

QTY.	Catalog #	Description
9	NXWS16F*	NX Enabled Current Fixture with Integral Wireless
	INAVVSIOF	Occupancy/Daylight Sensor

^{*} See Integrated Control Options for Indoor Luminaires Ordering Logic and Description on pg. 49 for additional details

BEST PRACTICE LAYOUT

- 0-10V Dimmable fixtures
- Auto full ON upon occupancy during active sensor hours
- Partial OFF to 10-50% after period of vacancy ≤15min when sensors are active
- Integral astronomical timeclock in NX enabled luminaires utilized for dusk to dawn operation



TITLE 24 APPLICATION GUIDE



SITE LIGHTING WITH BUILDING MOUNTED LIGHTS - WIRELESS

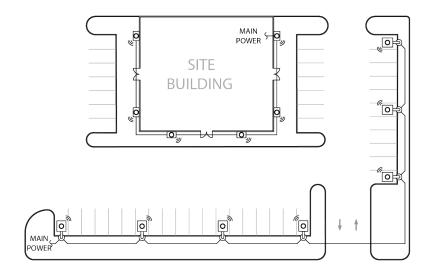


KEY

Fixture
Integrated
Occupancy &
Daylight Sensor

Main Power (120/277V)

Note: Drawings not shown to scale and are intended as illustrative example of the application.



BEST PRACTICE LAYOUT

- Fixture integrated NX sensors can be used for both occupancy sensing and daylight harvesting when required
- For outdoor spaces, wireless enabled fixtures and radios shall be within 300' line of sight of at least two other wireless devices
- Space can be networked back to an Area Controller for BMS integration or networked Automated Demand Response with only a few additional components, please see networking page for additional details

		BILL OF MATERIALS
QTY.	Catalog #	Description
6	NXWS16F*	NX Enabled Current Fixture with Integral Wireless Occupancy/Daylight Sensor
7	NXWS40F*	NX Enabled Current Fixture with Integral Wireless Occupancy/Daylight Sensor

^{*} See Integrated Control Options for Indoor Luminaires Ordering Logic and Description on pg. 56 for additional details

- 0-10V Dimmable fixtures
- Auto full ON upon occupancy
- Partial OFF to ≤50% after period of vacancy ≤ 20min
- Manual ON/OFF/Raise/Lower control of fixtures
- Control zones shall have a lighting load of ≤ 500W per zone

NOTES	



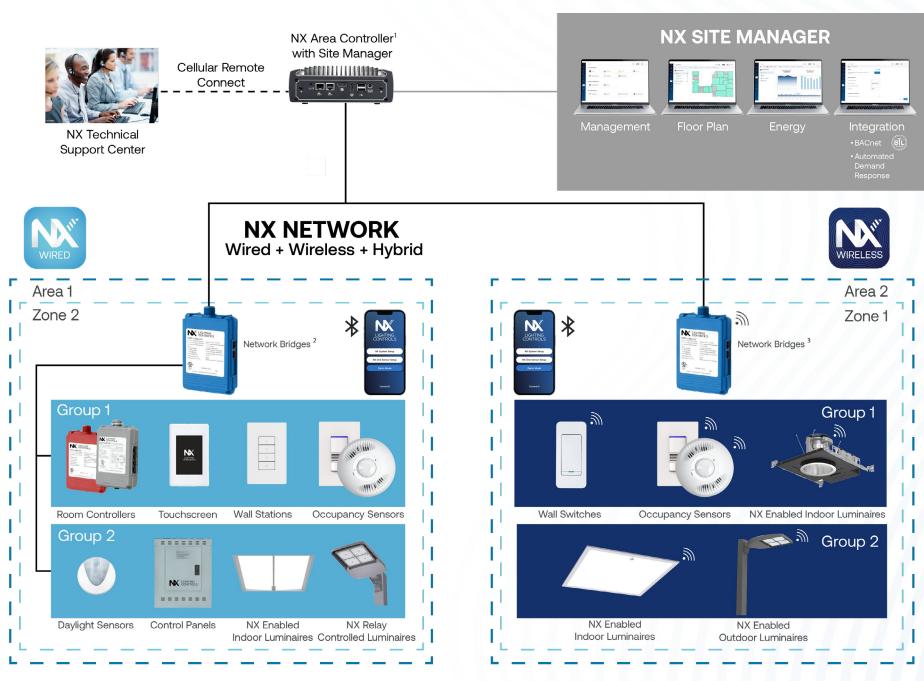


NETWORKING OVERVIEW

The NX Lighting Controls System provides all the building blocks necessary for a secure, on-premise enterprise lighting management system. The system not only controls lighting, but also provides actionable information to Building Owners and Facility Managers to create energy efficient spaces and improve occupant experience.

NX LIGHTING CONTROL SYSTEM

- Network of device and luminaires organized by Areas / Zones / Groups (AZG)
- NX wired & wireless devices and connected luminaires control lighting using relays and 0-10V dimming
- Wired devices connect using CAT5 cables and provide auto-configuration for basic code compliance
- Wireless devices are grouped together and communicate using secure AES 128-bit encrypted 2.4GHz wireless mesh technology based on the IEEE 802.15.4 standard. Network bridges manage NX Zones and connect wired and wireless zones to the NX Network
- NX Lighting Controls mobile app provides simple tool for quick device and system adjustments
- The NX Area Controller with Site Manager provides Building Owners & Facility Managers with multi-building lighting control, insights into their lighting system, and integration with Building Management Systems (BMS)



SITE MANAGER

- Intuitive web-based, comprehensive lighting management console
- Visual insights into energy usage
- Manage lighting schedules
- Quickly respond to requests for light level changes or reported issues from floor plan views
- Integrate the lighting system to any BACnet compatible Building Management System (BMS)

PLATFORM SNAPSHOT					
Space Type	Architecture	Deployment	Connectivity	Integration Options	Advance Solutions
Interior & Exterior	Distributed	Standalone & Network	Wired, Wireless, Hybrid	Contacts, BACnet™, OpenADR 2.0a/2.0b	SpectraSync™



TITLE 24 PART 3 2023 AND EMERGENCY LIGHTING

TITLE 24 APPLICATION GUIDE

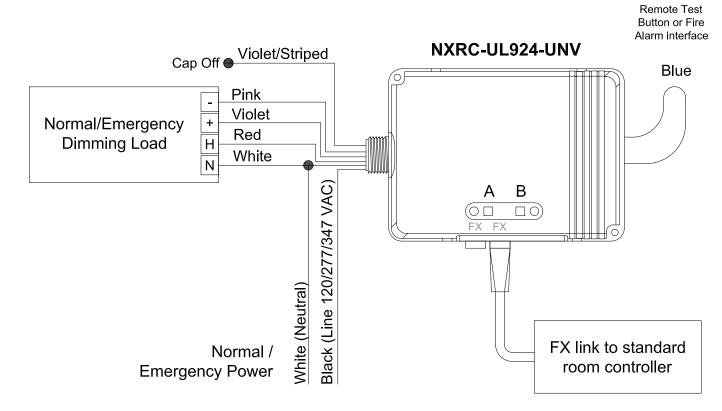


The NX Lighting Controls system offers a completely integrated UL924 solution for emergency lighting controls that is less complicated and easier to install than classic standalone ALCR and BCELTS solutions. The NX UL924 Load Controller removes the need for complicated installations and wiring normally associated with UL924 solutions. The NX UL924 Load Controller senses normal power using a standard CAT5 connection to a NX Room Controller connected to normal power. In the event there is a loss of normal power the NX UL924 Load Controller will automatically bring the lights to full brightness, regardless of their current state. When normal power is restored all lighting returns to normal operation.

- UL924 Listed emergency lighting control device
- Meets NFPA Article 700 requirements for emergency lighting
- Single relay version with dual 0-10V interface for full range dimming control
- Automatically overrides lighting to emergency state upon loss of normal power
- Utilizes CAT5 connection to standard NX room controller for normal power sensing
- Full range continuous dimming defaults to full ON in emergency mode
- FX bus enabled and compatible with NXRCFX room controllers
- Provision for remote test button or fire alarm interface
- Advanced configuration, power metering, and control through either NX Area Controller or NX Lighting Controls mobile app



NX UL924 SOLUTION





AUTOMATED DEMAND RESPONSE LIGHTING CONTROLS (ADR)

TITLE 24 APPLICATION GUIDE



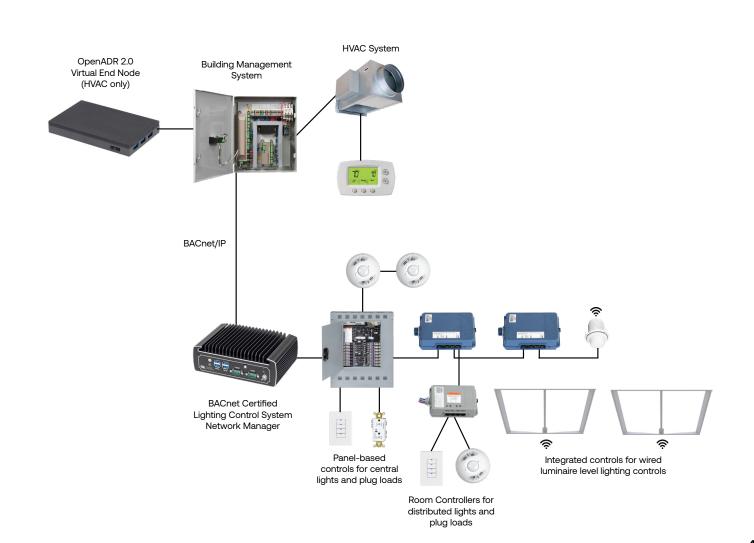
Certified to OpenADR 2.0b standard as a Virtual End Node (VEN)

- · Allows for participation in Utility provided Demand Response programs
- · Provide Bidirectional communications with Open standard for Smart Grid compatibility
- Provides an intuitive user interface for easy configuration of OpenADR settings
- Single normally open/normally closed output

OpenADR 2.0 **Lighting Controls** Virtual End Node 101 System Network (Lighting only) Manager \$ \$ Panel-based Integrated controls for wired controls for central luminaire level lighting controls lights and plug loads Room Controllers for distributed lights and plug loads

OpenADR is an open, highly secure standard for Demand Response. Current's NX OpenADR solution (p/n NXOADR2B-VEN-DC) is a certified OpenADR 2.0 compliant Virtual End Node (VEN) that allows the NX Lighting Control System to participate in a bidirectional OpenADR 2.0 connection with a Utility Demand Response Automation Server (DRAS) to provide Automatic Demand Response and acknowledgments.

The NX OpenADR solution complies with California Title 24 110.12 mandatory energy code requirements for "buildings with non-residential lighting systems having a total installed lighting power of 4,000 watts or greater shall install controls that are capable of automatically reducing lighting power in response to a Demand Response Signal". The NX OpenADR solution reduces general lighting subject to Demand Response by 15% or greater uniformly within a space.

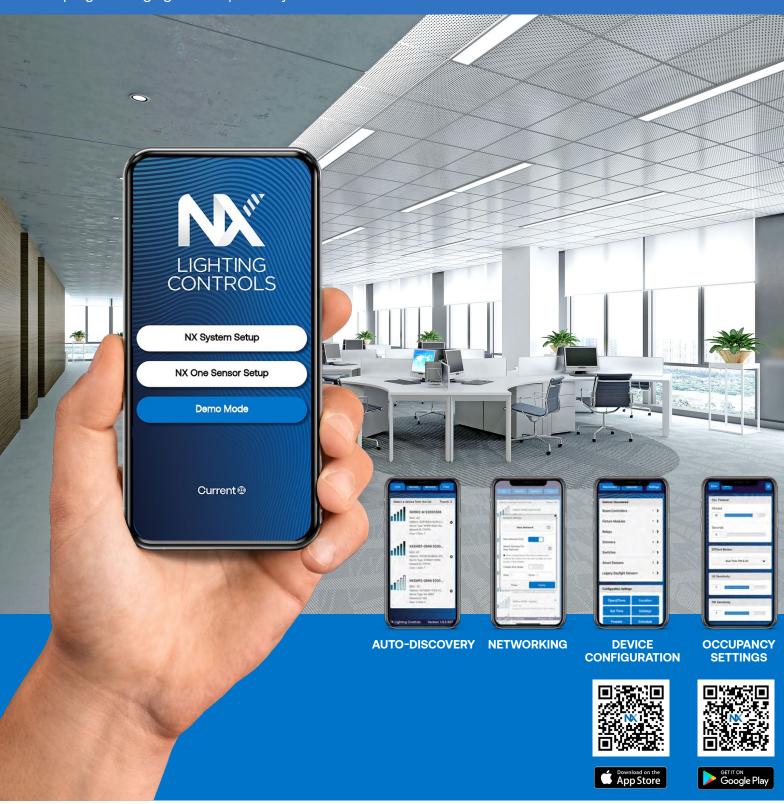




MOBILE APP

LIGHTING CONTROLS

The NX Lighting Controls mobile app helps provide quick, simple installation, and programming right in the palm of your hand.



The NX Lighting Controls mobile app is a free to use mobile application for programming both an NX Lighting Controls System or Standalone Bluetooth Sensors. The app allows you to discover and configure wired and wireless devices and setup groups and zones for both standalone and networked NX sites. The app also provides access to IntelliSCOPE™ for real time occupancy data with any digital NX or standalone Bluetooth sensor. The NX Lighting Controls mobile app is available for download on both Apple iOS and Android devices.

- Enables easy setup, configuration and diagnostics of standalone Bluetooth sensors, NX room devices and NXP2 lighting control panels via Bluetooth BLE
- Create custom holidays, schedules, and presets (lighting scenes)
- Set geographical location of site for sunrise/sunset schedules
- Simple configuration of relay and dimmer settings for selected areas and zones
- Passcode protected to prevent unauthorized access to system
- Supports OTA (Over The Air) device updates
- Features IntelliSCOPE™ diagnostic tool for real-time calibration and testing of NX digital smart sensors

All NX wireless sensors come enabled with our proprietary IntelliSCOPE™ functionality, which provides true ladder-less programming and installation all with the click of a button. IntelliSCOPE™ provides real-time occupancy data to help optimize sensor detection in any application, which helps save time and money.





LIGHTING CONTROLS

PRODUCT CATALOG

CATALOG NO.	DESCRIPTOR	COLORS
AREA CONTROLLERS		
NXAC2-120-SM	NX Area Controller V2 w/ NX Site Manager, NX Network, BACnet, 120V	Black
NXAC2-120-SMA	NX Area Controller V2 w/NX Site Manager Adapter, NX Network,	Black
NETWORK DEVICES	120V	
NXHNB2	NX Network Bridge Module, Connects Wired and Wireless Zones to NX Network, Internal Time Clock, Low Voltage	Blue
NXPOE-7-24B	NX POE Switch/Power Injector, Seven RJ45 Powered NX Network Ports, One RJ45 Powered Uplink Port, 24VDC Power Supply (Included)	Black
NX-EOF-MC-01	NX Media Converter, Ethernet Over Fiber, Copper: Single RJ45 Port (10/100BASE-T), Fiber: ST Connector (100BASE-X), 120V	Gray
ROOM CONTROLLERS		
NXRCFX2-1RD-UNV	NX Room Controller, FX Bus Compatible, 1 Relay, 0-10V Dimming, Universal Voltage	Gray
NXRCFX2-2RD-UNV	NX Room Controller, FX Bus Compatible, 2 Relay, 0-10V Dimming, Universal Voltage	Gray
NXRC-UL924-UNV	UL924 Emergency Load Controller, 1 Relay, 0-10V Dimming, Universal Voltage	Red
OCCUPANCY SENSORS		
NXSMDT-OMNI-XX	NX Digital Smart Occupancy Sensor, Ceiling Mount, PIR and Ultrasonic, with Daylight Harvesting, Integrated Bluetooth, mini SmartPORT	White, Black, Gray
NXSMDT-LH0-XX	NX Digital Smart Occupancy Sensor, Wall Switch, PIR and Ultrasonic, with Daylight Harvesting, Integrated Bluetooth, Dual RJ45 SmartPORT, 0 Button	White, Black, Gray, Ivory, Light Almond, Red
NXSMDT-LH1-XX	NX Digital Smart Occupancy Sensor, Wall Switch, PIR and Ultrasonic, with Daylight Harvesting, Integrated Bluetooth, Dual RJ45 SmartPORT, 1 Button	White, Black, Gray, Ivory, Light Almond, Red
NXSMDT-LH2-XX	NX Digital Smart Occupancy Sensor, Wall Switch, PIR and Ultrasonic, with Daylight Harvesting, Integrated Bluetooth, Dual RJ45 SmartPORT, 2 Button	White, Black, Gray, Ivory, Light Almond, Red
NXSMIR-LHO-XX	NX Digital Smart Occupancy Sensor, Wall Switch, PIR, with Daylight Harvesting, Integrated Bluetooth, Dual RJ45 SmartPORT, 0 Button	White, Black, Gray, Ivory, Light Almond, Red
NXSMIR-LH1-XX	NX Digital Smart Occupancy Sensor, Wall Switch, PIR, with Daylight Harvesting, Integrated Bluetooth, Dual RJ45 SmartPORT, 1 Button	White, Black, Gray, Ivory, Light Almond, Red
NXSMIR-LH2-XX	NX Digital Smart Occupancy Sensor, Wall Switch, PIR, with Daylight Harvesting, Integrated Bluetooth, Dual RJ45 SmartPORT, 2 Button	White, Black, Gray, Ivory, Light Almond, Red
INTEGRATED SENSORS		
NXSMP2-OMNI	NX Digital Smart PIR Occupancy Sensor with Photocell and Bluetooth Programming, 360° Lens	White, Black, Gray
NXSMP2-LMI	NX Digital Smart PIR Occupancy Sensor with Photocell and Bluetooth Programming, Low Mount/Indoor, 360° Lens	White, Black, Gray
NXSMP2-HMO	NX Digital Smart PIR Occupancy Sensor with Photocell and Bluetooth Programming, High Mount/Outdoor, 360° Lens	White, Black, Gray
NXSMP2-LMO	NX Digital Smart PIR Occupancy Sensor with Photocell and Bluetooth Programming, Low Mount/Outdoor, 360° Lens	White, Black, Gray
DAYLIGHT SENSORS		
NXDS	NX Daylight Sensor	White
NXDS-O	NX Daylight Sensor Outdoor	White

CATALOG NO.	DESCRIPTOR	COLORS
WALL SWITCHES		
NXSW2-1-XX	NX Digital Smart Switch, 1 Button, Momentary, Pilot	White, Black, Gray, Ivory, Light Almond, Red
NXSW2-2-XX	NX Digital Smart Switch, 2 Button, Momentary, Pilot	White, Black, Gray, Ivory, Light Almond, Red
NXSW2-3-XX	NX Digital Smart Switch, 3 Button, Momentary, Pilot	White, Black, Gray, Ivory, Light Almond, Red
NXSW2-4-XX	NX Digital Smart Switch, 4 Button, Momentary, Pilot	White, Black, Gray, Ivory, Light Almond, Red
NXSW2-5-XX	NX Digital Smart Switch, 5 Button, Momentary, Pilot	White, Black, Gray, Ivory, Light Almond, Red
NXSW2-6-XX	NX Digital Smart Switch, 6 Button, Momentary, Pilot	White, Black, Gray, Ivory, Light Almond, Red
NXSW2-8-XX	NX Digital Smart Switch, 8 Button, Momentary, Pilot	White, Black, Gray, Ivory, Light Almond, Red
NXSW2-ORLO-XX	NX Digital Specialty Switch, On/Raise/Lower/Off	White, Black, Gray, Ivory, Light Almond, Red
NXSW2-OO-XX	NX Digital Specialty Switch, On/Off	White, Black, Gray, Ivory, Light Almond, Red
NXSW2-SS-XX	NX Digital Specialty Switch, Scene Switch	White, Black, Gray, Ivory, Light Almond, Red
NXSW2-CCT-XX	NX Digital Specialty Switch, CCT	White, Black, Gray, Ivory, Light Almond, Red
NXSW2-KEY-MNTD1-XX	NX Digital Specialty Key Switch, Maintained 1 Pole/Single Throw	White, Black, Gray, Ivory, Light Almond, Red
NXSW2-KEY-MTRY1-XX	NX Digital Specialty Key Switch, Momentary 1 Pole/Single Throw	White, Black, Gray, Ivory, Light Almond, Red
NXSW-TH3-WH	NX SimpleTouch 3.5" full color graphic wall station	White
NXSW-WRS-WH	NX Battery Powered Digital Switch Station, 2 Button configurable	White
INTERFACES		
NXCI	NX Contact Closure Interface Module, Removable Terminal Block with 2 Switch Inputs, Dual RJ45 SmartPORTS	Silver
NXAVM	NX Audio Visual Interface Module, Single DB9 Connector for RS232 Serial Communications, ASCII Based Command Set, Single RJ45 SmartPORT	Silver
NXRO	NX Occupancy Output Interface Module, Low Voltage Form C NO/NC Relay Output, Removable Terminal Block, Dual RJ45 SmartPORTS	Silver
NXHDI	NX Network Device Interface Module, Connects NXSP and NXCIO Devices to NX Network, Dual RJ45 SmartPORTS, DIN Rail Mount	Blue
NXSP	NX SmartPORT Module, 4 SmartPORTS (8 RJ45 Connectors), DIN Rail Mount	Blue
NXDCIO	NX Dry Contact Interface Module, 6 Low Voltage Inputs, 6 Form C NO/NC Outputs, DIN Rail Mount	Blue
NXOADR2-VEN-DC	NX OpenADR 2.0a/2.0b Bidirectional Virtual End Node (VEN) Module with Two NO/NC Dry Contact Outputs, 120V	Black
RADIO MODULES		
NXOFM-1R1D-UNV	NX 7-Pin On-Fixture Module, 1 Relay, 1 Dimmer, Universal Voltage (120V-480V)	Black
NXRM2-H	NX Network Radio Module with Bluetooth Programming, 12 VDC, ISM 2.4GHz	White, Black, Gray
<u>NXBTC</u>	NX RJ45 Bluetooth Radio Module with Time Server	Blue







CATALOG NO.	DESCRIPTOR	COLORS
ACCESSORIES		
NXRJSPLITTER	NX RJ45 Splitter 2-way Female for CAT5	lvory
RJ45ADAPTER	NX RJ45 Splitter 2-way Female for CAT5	Gray
NXFRD-UNV	NX Forward & Reverse Phase Dimming Converter	Black
NXWPS	NX Wall Partition Sensor	White
LIGHTING CONTROL PANELS		
NXP2-PNL-8-8-U-S	NX Lighting Control Panel V2, 8 Relay Capacity, 8 Dimming Channels, 8-20A/Single Pole Latching Relays, 120/277VAC, Surface Mount	Gray
NXP2-PNL-8-0-U-S	NX Lighting Control Panel V2, 8 Relay Capacity, 8 Dimming Channels, Relays Not Included, 120/277VAC, Surface Mount	Gray
NXP2-PNL-16-16-U-S	NX Lighting Control Panel V2, 16 Relay Capacity, 16 Dimming Channels, 16-20A/Single Pole Latching Relays, 120/277VAC, Surface Mount	Gray
NXP2-PNL-16-0-U-S	NX Lighting Control Panel V2, 16 Relay Capacity, 16 Dimming Channels, Relays Not Included, 120/277VAC, Surface Mount	Gray
NXP2-PNL-24-24-U-S	NX Lighting Control Panel V2, 24 Relay Capacity, 24 Dimming Channels, 24-20A/Single Pole Latching Relays, 120/277VAC, Surface Mount	Gray
NXP2-PNL-24-0-U-S	NX Lighting Control Panel V2, 24 Relay Capacity, 24 Dimming Channels, Relays Not Included, 120/277VAC, Surface Mount	Gray
NXP2-PNL-32-32-U-S	NX Lighting Control Panel V2, 32 Relay Capacity, 32 Dimming Channels, 32-20A/Single Pole Latching Relays, 120/277VAC, Surface Mount	Gray
NXP2-PNL-32-0-U-S	NX Lighting Control Panel V2, 32 Relay Capacity, 32 Dimming Channels, Relays Not Included, 120/277VAC, Surface Mount	Gray
NXP2-PNL-48-48-U-S	NX Lighting Control Panel V2, 48 Relay Capacity, 48 Dimming Channels, 48-20A/Single Pole Latching Relays, 120/277VAC, Surface Mount	Gray
NXP2-PNL-48-0-U-S	NX Lighting Control Panel V2, 48 Relay Capacity, 48 Dimming Channels, Relays Not Included, 120/277VAC, Surface Mount	Gray
RELAYS		
NXP2-RL-SP	NX Lighting Control Panel V2 Relay, Single Pole, Latching, 120/227/347V, 20A- 50/60 Hz	Black
NXP2-RL-DP	NX Lighting Control Panel V2 Relay, Double Pole, Latching, 208/240/480V, 20A- 50/60 Hz	Black

CATALOG NO.	DESCRIPTOR	COLORS
NX IN-FIXTURE CABLES		
NXCBL-P-10	NX mini-Smart Port to Female RJ45 Plenum Cable, 10" length	Gray
NXCBL-P2-12	NX mini-Smart Port to Dual RJ45 Plenum Cable, 12" length	Gray
CAT5 SYSTEM CABLES		
CAT5-3IN-OR-PLENUM	CAT5 Cable, Plenum Rated, 3IN	Orange
CAT5-3F-OR-PLENUM	CAT5 Cable, Plenum Rated, 3F	Orange
CAT5-10F-OR-PLENUM	CAT5 Cable, Plenum Rated, 10F	Orange
CAT5-25F-OR-PLENUM	CAT5 Cable, Plenum Rated, 25F	Orange
CAT5-50F-OR-PLENUM	CAT5 Cable, Plenum Rated, 50F	Orange
CAT5-100F-OR-PLENUM	CAT5 Cable, Plenum Rated, 100F	Orange



PRODUCT CATALOG



		NV Integrated Control Options for Indeer Luminaires	CONTROL OPTION FUNCTIONALITY								CONTROL OPTION			
		NX Integrated Control Options for Indoor Luminaires Ordering Logic and Description	Networkable Grouping Scheduling				Occupancy/ Daylight Motion Harvesting		On/Off Control	Bluetooth® App Programming	Sensor Max Height		COMPONENTS	
1	NXW	NX Networked Wireless Radio Module NXRM2 and Bluetooth Programming, without Sensor	✓	✓	✓	-	-	✓	✓	✓	-		NXRM2-H	
1	NXWSM	NX Networked Wireless Enabled Integral NXSMP2-SMI PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth® Programming	~	~	~	~	~	~	~	~	12FT		NXSMP2-SMI	
<u>0</u>	NXWRM	NX Networked Wireless Enabled Integral NXSMP2-LMI PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth® Programming	✓	~	✓	~	✓	~	~	✓	12FT		NXSMP2-LMI	
NX WI	NXWOM	NX Networked Wireless Enabled Integral NXSMP2-OMNI PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth® Programming	~	~	~	~	✓	~	~	✓	14FT	6	NXSMP2-OMNI	
1	NXWLM	NX Networked Wireless Enabled Integral NXSMP2-LMO PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth® Programming	~	~	~	~	✓	~	~	✓	16FT		NXSMP2-LMO	
I	NXWHM	NX Networked Wireless Enabled Integral NXSMP2-HMO PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth® Programming	~	~	✓	~	✓	~	~	~	45FT	6	NXSMP2-HMO	
	NXE	NX Wired Dual RJ45 SmartPORTS, without Sensor	~	~	✓	_	-	~	~	✓	-		NXDSP	
1	NXESM	NX Wired Dual RJ45 SmartPORTS and Integral NXSMP2-SMI PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth® Programming	~	✓	~	✓	~	~	✓	~	12FT		NXDSP NXSMP2-SMI	
Wired	NXERM	NX Wired Dual RJ45 SmartPORTS and Integral NXSMP2-LMI PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth® Programming	✓	✓	~	✓	~	✓	✓	~	12FT	30	NXDSP NXSMP2-LMI	
>	NXEOM	NX Wired Dual RJ45 SmartPORTS and Integral NXSMP2-OMNI PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth® Programming	✓	~	~	✓	~	✓	✓	✓	14FT	6-	NXDSP NXSMP2-OMNI	
1	NXELM	NX Wired Dual RJ45 SmartPORTS and Integral NXSMP2-LMO PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth® Programming	✓	~	~	~	~	~	~	~	16FT	0	NXDSP NXSMP2-LMO	
	NXEHM	NX Wired Dual RJ45 SmartPORTS and Integral NXSMP2-HMO PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth® Programming	~	~	~	~	~	~	~	~	45FT	61	NXDSP NXSMP2-HMO	

*Please reference Current luminaire specification sheets for option availability.



PRODUCT CATALOG



		NV Integrated Central Options for Outdoor Luminaires			С	ONTROL C	PTION FUI	NCTIONAL	.ITY			CONTROL OPTION	
		NX Integrated Control Options for Outdoor Luminaires Ordering Logic and Description	Networkable				ancy Daylight 0 Harvesting Din		On/Off g Control	Bluetooth App Programming	Sensor Max Height	COMPONENTS	
	NXOFM-1R1D-UNV (sold separate from luminaire)	NX 7-Pin Twist-Lock® with NX Networked Wireless Radio, Integral Automatic Dimming Photocell, Integral Single Pole Relay with Dimming, and Bluetooth Programming	✓	✓	✓	-	~	✓	✓	~	-	NXOFM- 1R1D-UNV	
	NXW	NX Networked Wireless Radio Module NXRM2 and Bluetooth Programming, without Sensor	✓	✓	✓	-		✓	✓	✓	-	NXRM2-H	
NX Wireless	NXWS12F	NX Networked Wireless Enabled Integral NXSMP2-OMNI-O PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth Programming	~	~	✓	✓	~	~	~	~	14FT	NXSMP2- OMNI-O	
z	NXWS16F	NX Networked Wireless Enabled Integral NXSMP2-LMO PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth Programming	✓	✓	~	~	~	✓	~	~	16FT	NXSMP2- LMO	
	NXWS40F	NX Networked Wireless Enabled Integral NXSMP2-HMO PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth Programming	~	~	~	~	✓	~	~	~	40FT	NXSMP2- HMO	

^{*}Please reference Current luminaire specification sheets for option availability.



Comprehensive Support Options to Meet Project Needs

Contact Us

Call (800) 888-8006 and select one of the options listed below





Tech Support Hours: 7:00am - 7:00pm EST, Monday - Friday

Quotes, Applications, Layouts and Submittal Requests: controls-Design@currentlighting.com

Technical Support (troubleshooting, specifications, programming):

currentlighting.com/controls/technical-services



Phone and Remote Support

While it is our goal to provide you with intelligent, simple and scalable control solutions, customer experience level and project complexity may necessitate additional support during the design development, construction and post-occupancy stages of a project. The support team is available for consultation to evaluate multiple control scenarios to identify the ideal lighting control device or system to meet energy code requirement and customer criteria. Additionally, our team of friendly and experienced professionals is enabled to assist on-site personnel, such as installation contractors, third party integrators, certified field technicians and facilities personnel, to quickly resolve issues and provide additional support.

Warranty

Current provides a 5-year limited warranty for LED luminaires and Lighting Controls devices.







On-site Support

Current offers on-site support service to ensure your project goes smoothly. While Current products are designed with simplicity in mind, some projects may benefit from a Field Service Engineer to perform an on-site pre-installation walk-through, after-hours and remote startup assistance, occupant training, sensor tuning, preset programming and other pre/post-occupancy services.



Design Services





Our team of lighting control system design professionals are available to provide sensor layouts, networked system design services and third party integration support for new and retrofit projects. Our goal is to provide you with on-time and accurate delivery of design deliverables optimized for your specific application, compliant with local building codes and project specifications.

The Institute



Classroom Education

Current offers cutting edge educational opportunities at Institute facilities across the United States. Our headquarters, located in Greenville, SC houses one of the industries largest training facilities with over 25,000 square-feet and is engineered to present a total solutions approach to your lighting and controls challenges.

Additionally, we have dedicated Institute facilities in North Carolina and Texas as well as Current facility classrooms for in-person instruction across the United States.

Virtual Education

Current's virtual education opportunities cover many facets of the lighting and controls industry including fundamentals, trends, technology, and product solutions. In addition, we can provide accredited continuing education (CEU) modules to help you maintain your certifications.

Engage with us in a way that's best for you!

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- Live (public) instructor led training public events highlighting new technologies, continuing education, and lighting trends.

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