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THE STANDARD FOR LIGHTING MANAGEMENT QUALITY SINCE 1953

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Lighting & Controls Code Updates

NALMCO SPRING SEMINAR

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Lighting & Controls Regulatory Compliance Updates

- IECC2021
- UL924
- Emergency Lighting - Battery Backup



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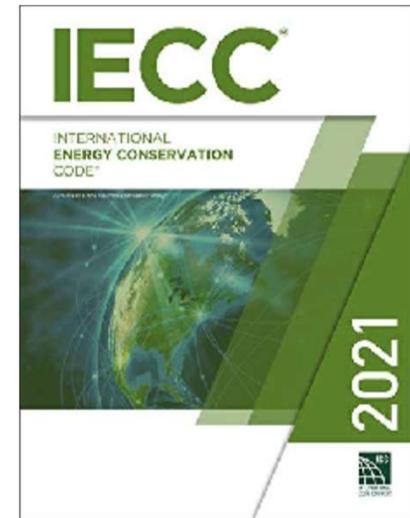


Lighting & Controls Regulatory Compliance Updates

IECC2021

- Developed and published by the International Code Council (ICC) in 2021
- Basis for laws and regulations
- The 2021 IECC® addresses energy efficiency on several levels
 - Cost
 - Energy usage
 - Use of natural resources
 - Impact of energy usage on the environment
- No National Energy Code – can vary by state, county municipality

<https://up.codes/code/international-energy-conservation-code-iecc-2021>



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Lighting & Controls Regulatory Compliance Updates

IECC2021

- **Energy Code, 2021 (IECC 2021)**
- The Energy Code, 2021 (IECC 2021) is a code produced by the International Code Council (ICC). This document provides the foundation for many state and city codes. The IECC 2021 combined with local jurisdiction amendments form the state codes.
- Adopting jurisdictions include Colorado, Denver, Connecticut, Florida, Hawaii, Illinois, Chicago, DuPage County, South Holland, Louisiana, Maine, Maryland, Massachusetts, Missouri, Kansas City, Montana, Nevada, Clark County, New Jersey, New Mexico, North Dakota, Ohio, Texas, Austin, Dallas, Houston, San Antonio, Utah, Virginia, Washington, and Department of Defense.



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Lighting & Controls Regulatory Compliance Updates

IECC2021

Intent

Minimize energy consumption by automatically reducing or turning OFF lighting when it is not being used based on...

- Occupancy
- Scheduled Events
- Ambient Light Levels



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Lighting & Controls Regulatory Compliance Updates

IECC2021

- Provides a prescriptive or performance compliance path.
 - Prescriptive - conformance with a set of restrictions.
 - Performance - building modeling using software.
- The prescriptive compliance path features mandatory lighting control provisions requiring their use in nearly all new construction projects as well as certain alterations, both interior and exterior (Section C405.2).

<https://lightingcontrolsassociation.org/2023/09/22/a-deep-dive-into-the-2021-iecc/#:~:text=With%20the%202021%20version%2C%20the,by%20the%20lighting%20control%20syst%E2%80%A6>



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Lighting & Controls Regulatory Compliance Updates

IECC2021

ICC Added in the 2021 Version...

- Daylight-responsive control to secondary sidelit daylight zones.
- New requirements for parking garage controls.
- Automatic receptacle control requirements for various spaces, producing a need that may be satisfied by the lighting control system.
- Several lighting changes, made for clarity and consistency.



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Lighting & Controls Regulatory Compliance Updates

IECC2021

- Luminaire Level Lighting Controls - A lighting system consisting of one or more luminaires with embedded lighting control logic, occupancy and ambient light sensors, wireless networking capabilities, and local override switching capability, where required.
- Capable of independently monitoring occupancy and ambient light
 - Raise and lowering light output.
 - Operate as a group or zone of luminaires.
 - Share sensor information and coordinate control strategies.
- Configurable characteristics
 - Bright and dim setpoints (max and min trim).
 - Timeouts, fade rates, sensitivity, and wireless zoning.



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Lighting & Controls Regulatory Compliance Updates

IECC2021

Compliance Paths

- Manual Control
- Light Reduction
- Interior Automatic Shutoff Controls and Automatic Time Switch
- Occupancy Sensor – warehouse, open office plan and corridors
- Parking Garages - can use occupancy sensing and automatic time switches
- Daylight Responsive Controls
- Specific Application Controls
- Controlled Receptacles
- Exterior Lighting
 - Landscape -automatically switched Off
 - Area – automatically dimmed



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Lighting & Controls Regulatory Compliance Updates

UL924

UL 924 is a set of safety standards developed by Underwriters Laboratories (UL) for emergency lighting and power equipment.

- Emergency Lighting Equipment Standards for EM lighting
- Battery Systems performance and safety requirements
- Duration of Illumination
- Testing and Maintenance
- Functional Performance - brightness, color, visibility.
- Installation and Wiring Guidelines



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Lighting & Controls Regulatory Compliance Updates

UL924

Elements of an emergency lighting solution

- When power is lost...
 - Emergency power source activates and supplies power to the lighting system.
 - IBC allows a battery-powered system, batteries in individual luminaires, and generators
 - NEC Article 700 includes these and fuel cell systems.
- Battery-powered systems include inverters that centralize emergency lighting operation for multiple luminaires. A distributed solution might include battery-powered emergency LED drivers.

<https://lightingcontrolsassociation.org/2023/05/24/egress-and-emergency-lighting-in-a-controls-world/>



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Lighting & Controls Regulatory Compliance Updates

UL924

Recent version of UL 924 refined the requirements for Emergency Lighting Control Devices (ELCD) with control functionality.

- Requirement for a means to monitor power status via a continuous wired or wireless signal monitoring feature.
- Must be independent of the emergency power feeding through the ELCD to the lighting load.



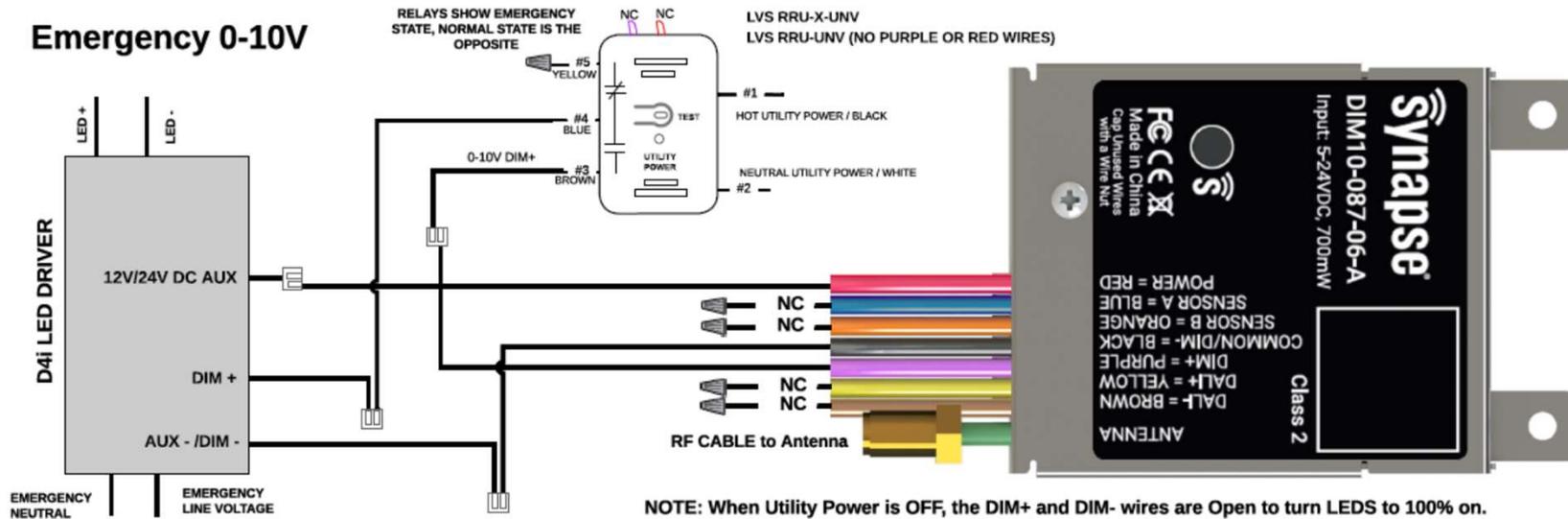
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Lighting & Controls Regulatory Compliance Updates

UL924

Wireless Example



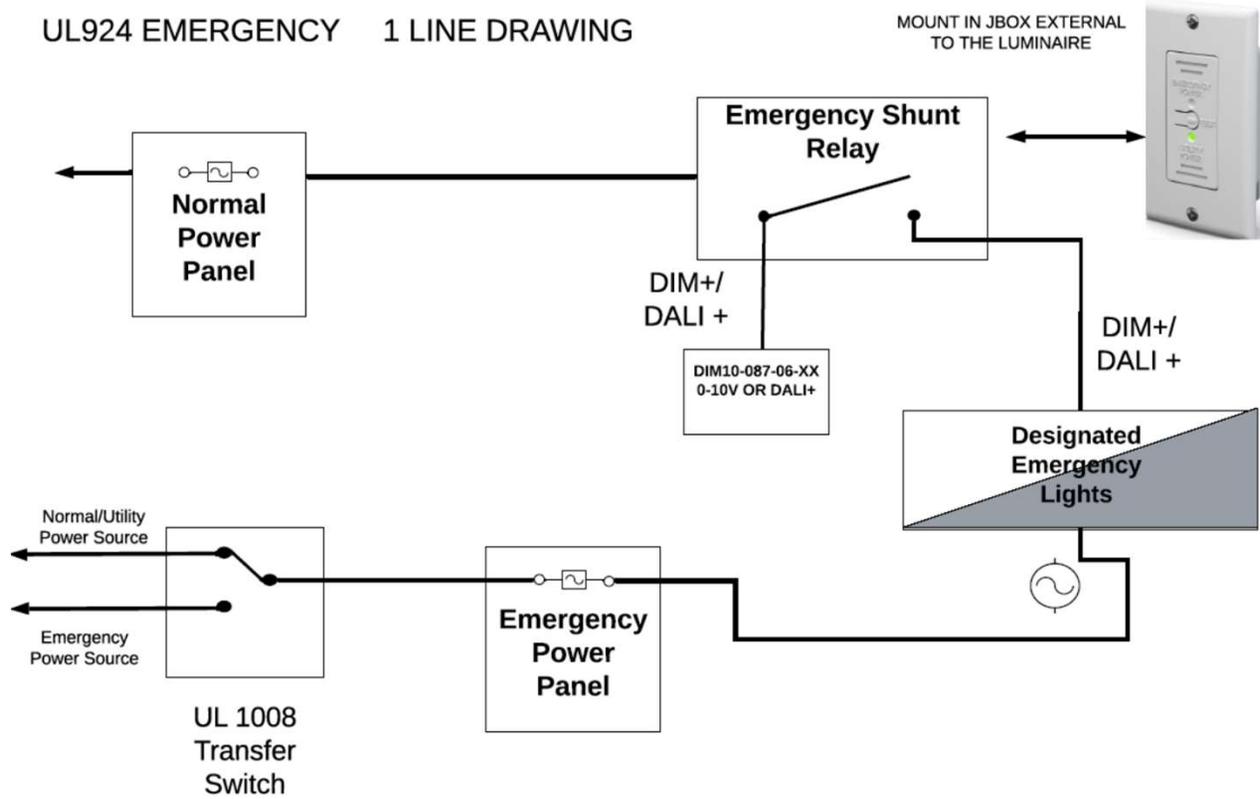
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Lighting & Controls Regulatory Compliance Updates

UL924

Wiring Example



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Lighting & Controls Regulatory Compliance Updates

UL924

Commercial Building Energy Codes

- Prevailing commercial building energy codes require all lighting automatically be turned Off when not in use. Some codes allow for exceptions, however.
- The lighting control requirements in the latest version of the International Energy Conservation Code (IECC 2021) apply to all lighting except 24-hour emergency or security lighting, emergency egress lighting that is Off during normal building operation, and lighting for interior egress stairways, ramps, and passageways. The IBC references the IECC.
- The ANSI/ASHRAE/IES 90.1-2019 energy standard allows an exception for a “lighting load not exceeding 0.02W/sq.ft. multiplied by the gross lighted area of the building” to remain On at all times. The standard does not specifically call out that this lighting power must be used for providing egress illumination, however.
- In California’s Title 24, Part 6-2022 building energy code, neither manual area controls (e.g., local switches/dimmers) nor automatic shutoff controls (e.g., occupancy sensors) are required for up to 0.1W/sq.ft. of lighting power as long as it is specifically for “means of egress illumination.”



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Lighting & Controls Regulatory Compliance Updates

Emergency Lighting - Battery Backup

Why are you seeing an increased demand?

- Increased Commercial Property Insurance Costs
 - Driving demand to reduce losses.
 - Meet higher safety standards or pay dramatically higher premiums.
- Increased Use of Architects and Engineers
 - New Formula for Egress Illumination Requirements
 - Certificates of Occupancy Required for Space Changes (including warehouse racking)
 - Illumination level requirements are the same, but paths of egress have increased.



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