Hubbell Lighting understands the challenge of code compliance and is here to lessen this burden on end-users. As of July 1st, 2014, California’s latest Building Energy Efficiency Standards (CA Title 24) went into effect. These revised standards improve energy efficiency in non-residential buildings by 30% more than the 2008 standards however, navigating the updated lighting code can be time consuming and confusing.

By breaking down the latest changes to the CA Title 24 by application space, Hubbell Lighting is able to simplify the complexities of code compliance. On the following pages you will find product solutions for each controls type based on application space and code requirements. These controls solutions range from the most basic solutions to the most advanced. The guidelines are focused on recent code revisions and are not intended to replace the complete CA Title 24 document.

The Hubbell Advantage

For over 125 years Hubbell Lighting has continued to make the ordinary extraordinary as one of the largest lighting fixture manufacturers in North America. Serving a multitude of markets Hubbell Lighting aims to provide innovative solutions that provide performance, quality, and ease of use regardless of the application. Supported by the most prestigious portfolio of brand names Hubbell Lighting has a full range of indoor and outdoor lighting products that supply solutions to commercial, industrial, institutional, and residential markets.
ONE COMPANY | DISTINCT BRANDS

ALERIA LIGHTING
ARCHITECTURAL AREA LIGHTING
BEACON PRODUCTS
COLUMBIA LIGHTING
COMPASS PRODUCTS
DEVINE LIGHTING
DUAL-LITE
HUBBELL BUILDING AUTOMATION
HUBBELL INDUSTRIAL LIGHTING
HUBBELL OUTDOOR LIGHTING
KIM LIGHTING
KURT VERSEN
LITECONTROL
PRESCOLITE
PROGRESS LIGHTING
SPAULDING LIGHTING
SPORTSLITER SOLUTIONS
STERNER
WHITeway
Hubbell Lighting Core Capabilities - Complete Solutions

Stay on the leading edge of technology by selecting from Hubbell Lighting’s portfolio of solid-state lighting products.

Complete Solutions
From beautiful commercial environments to complex industrial applications, Hubbell Lighting provides high performance solutions across virtually every industry application.

Hubbell Wireless Lighting Controls
Having lights on only when needed, saves money and helps our environment. Easy installation, intuitive interfaces and web-based commissioning and monitoring make Hubbell Lighting the logical choice for lighting control.

Energy Savings
By optimizing the LED, optics, drivers and controls into integrated fixture configurations, Hubbell Lighting has broken the technology barriers to create cost effective, high performance LED luminaires that can save up to 70% in applications, replacing less efficient technologies such as HID or fluorescent.

![Diagram of lighting solutions](image-url)
Reducing Maintenance
Energy savings is only part of the story. New Solid-state LED solutions from Hubbell Lighting last up to 3 times longer than Metal Halide or Fluorescent sources and up to 60 times longer than incandescent sources, dramatically reducing maintenance costs.

Control In Application
Hubbell LED solutions provide instant restrike performance, that when combined with factory integrated Hubbell controls, reduce energy usage by as much as 80% in application. It’s another innovative way we help meet fast evolving codes.

Easy Install, Easy Maintenance
Hubbell LED luminaires are designed with installation and ease of maintenance in mind. Our products offer simple access to electrical components that will reduce installation time and costs while making maintenance quick and efficient.

Electronic Tracking
In the fast evolving LED space, component performance upgrades are ongoing. To provide best-in-class field support, we’re integrating electronic tagging technology across our product lines, giving us a record of all the spec details of your luminaire. Years after installation a quick scan will reveal all of the critical specification details our teams will need to provide superior service and support.

Environmentally Friendly
With no mercury, unlike HID or fluorescent technologies, Hubbell Lighting LED luminaries require no lamp recycling and dramatically reduce CO2 emissions when replacing legacy technologies.

Rebate Program Approved
Utility rebate programs, where available, usually require products to be Design Lights Consortium or Energy Star qualified. Hubbell Lighting maintains an extensive collections of DLC and Energy Star qualified products available to reduce project costs and quicken payback. For a complete listing, visit hubbelllighting.com/solutions/retrofit/

<table>
<thead>
<tr>
<th>LAMP TYPE</th>
<th>LIFE IN HOURS</th>
<th>REQUIRED RELAMPS vs. LED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incandescent</td>
<td>1,000</td>
<td>60</td>
</tr>
<tr>
<td>Compact Fluorescent</td>
<td>10,000</td>
<td>6</td>
</tr>
<tr>
<td>Metal Halide</td>
<td>20,000</td>
<td>3</td>
</tr>
<tr>
<td>Linear Fluorescent</td>
<td>20,000</td>
<td>3</td>
</tr>
<tr>
<td>LED</td>
<td>60,000</td>
<td>0</td>
</tr>
</tbody>
</table>
# Classroom / Lecture Hall / Training Room

<table>
<thead>
<tr>
<th>Code Provision</th>
<th>Minimum Control Type</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>130.1(a)</td>
<td>Local switch</td>
<td>Readily accessible device(s) to control lighting within an enclosed space.</td>
</tr>
<tr>
<td>130.1(c)5</td>
<td>Vacancy sensor (Manual On - Auto Off): Automatic Full-Off</td>
<td>Automatically shuts off lighting power after vacancy of 30 minutes or less.</td>
</tr>
</tbody>
</table>

## ON/OFF CONTROLS

<table>
<thead>
<tr>
<th>Code Provision</th>
<th>Minimum Control Type</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>130.1(b)</td>
<td>Multi-level lighting controls</td>
<td>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.</td>
</tr>
<tr>
<td>130.1(d) and 140.6(d)</td>
<td>Multi-level daylight control</td>
<td>Sensor to reduce lighting in response to available daylight. Daylighting zones defined in Section 130.1(d). Primary daylight zones must be controlled separately from secondary zones. Refer to Table 130.1-A for lighting-level requirements.</td>
</tr>
</tbody>
</table>

## LIGHT LEVEL CONTROL

<table>
<thead>
<tr>
<th>Code Provision</th>
<th>Minimum Control Type</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>130.1(e)</td>
<td>Demand Response</td>
<td>Automatic lighting reduction by a minimum of 15% of total installed lighting power in response to a Demand Response Signal. Required for new buildings larger than 10,000 sq. ft. or luminare alterations that increase the lighting power in the enclosed space.</td>
</tr>
</tbody>
</table>

## ADDITIONAL CONTROL

<table>
<thead>
<tr>
<th>Code Provision</th>
<th>Minimum Control Type</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>130.4</td>
<td>Acceptance testing (functional testing)</td>
<td>Testing shall ensure that control hardware and software are calibrated, programmed, and functioning properly.</td>
</tr>
</tbody>
</table>

### NOTE: Areas where no change has been made:
- **Light Level Control**: N/A
- **Additional Control**: Receptacle Control
### Code Provision

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Basic (Choice of)</th>
<th>Intermediate</th>
<th>Advanced (Choice of)</th>
</tr>
</thead>
</table>
| ON/OFF CONTROLS | • wiSTAR Wireless Controls  
• OMNI Ceiling Sensor & Override Switch  
• LightHAWK2 Wall Switch Sensor | • Zone5 Daylight Harvesting Controls | • CX Panel Controls  
• wiHUBB Wireless Lighting Control System |
| 130.1(a) Local switch Readily accessible device(s) to control lighting within an enclosed space. | • wiSTAR Wireless Controls  
• OMNI Ceiling Sensor & Override Switch  
• LightHAWK2 Wall Switch Sensor | • Zone5 Daylight Harvesting Controls | • CX Panel Controls  
• wiHUBB Wireless Lighting Control System |
| 130.1(c)5 Vacancy sensor (Manual On - Auto Off): Automatic Full-Off | • wiSTAR Wireless Controls  
• OMNI Ceiling Sensor & Override Switch  
• LightHAWK2 Wall Switch Sensor | • Zone5 Daylight Harvesting Controls | • CX Panel Controls  
• wiHUBB Wireless Lighting Control System |
| LIGHT LEVEL CONTROL | • wiSTAR Wireless Controls  
• OMNI Ceiling Sensor & Override Switch  
• LightHAWK2 Wall Switch Sensor  
• DLC7 Daylighting Harvesting Sensor | • Zone5 Daylight Harvesting Controls | • CX Panel Controls  
• wiHUBB Wireless Lighting Control System |
| 130.1(d) and 140.6(d) Multi-level 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. | • wiSTAR Wireless Controls  
• OMNI Ceiling Sensor & Override Switch  
• LightHAWK2 Wall Switch Sensor  
• DLC7 Daylighting Harvesting Sensor | • Zone5 Daylight Harvesting Controls | • CX Panel Controls  
• wiHUBB Wireless Lighting Control System |
| 130.4 Acceptance testing (functional testing) | • wiSTAR Wireless Controls  
• OMNI Ceiling Sensor & Override Switch  
• LightHAWK2 Wall Switch Sensor  
• DLC7 Daylighting Harvesting Sensor | • Zone5 Daylight Harvesting Controls | • CX Panel Controls  
• wiHUBB Wireless Lighting Control System |
| 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 larger than 10,000 sq. ft. or luminare alterations that increase the lighting power in the enclosed space. | • CX Panel Controls  
• wiHUBB Wireless Lighting Control System | • Zone5 Daylight Harvesting Controls | • CX Panel Controls  
• wiHUBB Wireless Lighting Control System |
# Conference / Meeting/ Multi-Purpose Room

### ON/OFF CONTROLS

<table>
<thead>
<tr>
<th>Code Provision</th>
<th>Minimum Control Type</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>130.1(a)</td>
<td>Local switch</td>
<td>Readily accessible device(s) to control lighting within an enclosed space.</td>
</tr>
<tr>
<td>130.1(c)5</td>
<td>Vacancy sensor (Manual On - Auto Off): Automatic Full-Off</td>
<td>Automatically shuts off lighting power after vacancy of 30 minutes or less.</td>
</tr>
</tbody>
</table>

### LIGHT LEVEL CONTROL

<table>
<thead>
<tr>
<th>Code Provision</th>
<th>Minimum Control Type</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>130.1(b)</td>
<td>Multi-level lighting controls</td>
<td>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</td>
</tr>
<tr>
<td>130.1(d) and 140.6(d)</td>
<td>Multi-level daylight control</td>
<td>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.</td>
</tr>
</tbody>
</table>

### ADDITIONAL CONTROL

<table>
<thead>
<tr>
<th>Code Provision</th>
<th>Minimum Control Type</th>
<th>Requirement</th>
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</thead>
<tbody>
<tr>
<td>130.4</td>
<td>Acceptance testing (functional testing)</td>
<td>Testing shall ensure that control hardware and software are calibrated, programmed, and functioning properly.</td>
</tr>
<tr>
<td>130.1(e)</td>
<td>Demand Response</td>
<td>Automatic lighting reduction by a minimum of 15% of total installed lighting power in response to a Demand Response Signal. Required for new buildings larger than 10,000 sq. ft. or luminare alterations that increase the lighting power in the enclosed space.</td>
</tr>
<tr>
<td>130.5(d)</td>
<td>Receptacle Control</td>
<td>Automatically turn OFF at least 50% of the receptacles in the space. This can either be achieved by switching every alternate receptacle within 6 feed or each uncontrolled receptacle or 50% of the outlets in each receptacle.</td>
</tr>
</tbody>
</table>

**NOTE:** Areas where no change has been made:

- Light Level Control: N/A
- Additional Control: N/A
<table>
<thead>
<tr>
<th>Code</th>
<th>Provision</th>
<th>Minimum Control Type</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Basic</td>
<td>(Choice of)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Intermediate</td>
<td>Zone5 Daylight Harvesting Controls</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Advanced</td>
<td>CX Panel Controls, wiHUBB Wireless Lighting Control System</td>
</tr>
</tbody>
</table>

- wiSTAR Wireless Controls
- OMNI Ceiling Sensor & Override Switch
- LightHAWK2 Wall Switch Sensor
- DLC7 Daylighting Harvesting Sensor
- Zone5 Daylight Harvesting Controls

- CX Panel Controls, wiHUBB Wireless Lighting Control System

- wiSTAR Wireless Controls
- OMNI Ceiling Sensor & Override Switch
- LightHAWK2 Wall Switch Sensor
- DLC7 Daylighting Harvesting Sensor
- Zone5 Daylight Harvesting Controls

- CX Panel Controls, wiHUBB Wireless Lighting Control System

- wiSTAR Wireless Controls
- OMNI Ceiling Sensor & Override Switch
- LightHAWK2 Wall Switch Sensor
- DLC7 Daylighting Harvesting Sensor
- Zone5 Daylight Harvesting Controls

- CX Panel Controls, wiHUBB Wireless Lighting Control System

- wiSTAR Wireless Controls
- OMNI Ceiling Sensor & Override Switch
- LightHAWK2 Wall Switch Sensor
- DLC7 Daylighting Harvesting Sensor
- Zone5 Daylight Harvesting Controls

- CX Panel Controls, wiHUBB Wireless Lighting Control System

- wiSTAR Wireless Controls
- OMNI Ceiling Sensor & Override Switch
- LightHAWK2 Wall Switch Sensor
- DLC7 Daylighting Harvesting Sensor
- Zone5 Daylight Harvesting Controls

- CX Panel Controls, wiHUBB Wireless Lighting Control System

- wiSTAR Wireless Controls
- OMNI Ceiling Sensor & Override Switch
- LightHAWK2 Wall Switch Sensor
- DLC7 Daylighting Harvesting Sensor
- Zone5 Daylight Harvesting Controls

- CX Panel Controls, wiHUBB Wireless Lighting Control System
# Office ≤ 250 Sq. Ft.

<table>
<thead>
<tr>
<th>Code Provision</th>
<th>Minimum Control Type</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>130.1(a)</td>
<td>Local switch</td>
<td>Readily accessible device(s) to control lighting within an enclosed space.</td>
</tr>
<tr>
<td>130.1(c)(5)</td>
<td>Vacancy sensor (Manual On - Auto Off): Automatic Full-Off</td>
<td>Automatically shuts off lighting power after vacancy of 30 minutes or less.</td>
</tr>
<tr>
<td>130.1(b)</td>
<td>Multi-level lighting controls</td>
<td>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.</td>
</tr>
<tr>
<td>130.1(d) and 140.6(d)</td>
<td>Multi-level daylight control</td>
<td>Sensor to reduce lighting in response to available daylight. Daylighting zones defined in Section 130.1(d). Primary daylight zones must be controlled separately from secondary zones. Refer to Table 130.1-A for lighting-level requirements.</td>
</tr>
<tr>
<td>130.4</td>
<td>Acceptance testing (functional testing)</td>
<td>Testing shall ensure that control hardware and software are calibrated, programmed, and functioning properly.</td>
</tr>
<tr>
<td>130.1(e)</td>
<td>Demand Response</td>
<td>Automatic lighting reduction by a minimum of 15% of total installed lighting power in response to a Demand Response Signal. Required for new buildings larger than 10,000 sq. ft. or luminare alterations that increase the lighting power in the enclosed space.</td>
</tr>
<tr>
<td>130.5(d)</td>
<td>Receptacle Control</td>
<td>Automatically turn OFF at least 50% of the receptacles in the space. This can either be achieved by switching every alternate receptacle within 6 feet or each uncontrolled receptacle or 50% of the outlets in each receptacle.</td>
</tr>
</tbody>
</table>

**NOTE: Areas where no change has been made:**
- Light Level Control: N/A
- Additional Control: N/A
### HUBBELL LIGHTING / HUBBELL BUILDING AUTOMATIONS CONTROLS

<table>
<thead>
<tr>
<th>Basic (Choice of)</th>
<th>Intermediate</th>
<th>Advanced (Choice of)</th>
</tr>
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</table>
| • wiSTAR Wireless Controls  
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• LightHAWK2 Wall Switch Sensor  | • Zone5 Daylight Harvesting Controls | • CX Panel Controls  
• wiHUBB Wireless Lighting Control System |
| • wiSTAR Wireless Controls  
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• OMNI Ceiling Sensor & Override Switch  
• LightHAWK2 Wall Switch Sensor  
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• wiHUBB Wireless Lighting Control System |
| • wiSTAR Wireless Controls | • wiSTAR Wireless Controls | • wiHUBB Wireless Lighting Control System |

### Code Provision

#### Minimum Control Requirement

<table>
<thead>
<tr>
<th>Control Type</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>(Choice of)</td>
</tr>
<tr>
<td>Intermediate</td>
<td>Advanced</td>
</tr>
<tr>
<td>ON/OFF CONTROLS</td>
<td></td>
</tr>
</tbody>
</table>

#### Code Provision

130.1(a) Local switch

- Readily accessible device(s) to control lighting within an enclosed space.

- wiSTAR Wireless Controls
- OMNI Ceiling Sensor & Override Switch
- LightHAWK2 Wall Switch Sensor
- Zone5 Daylight Harvesting Controls
- CX Panel Controls
- wiHUBB Wireless Lighting Control System

130.1(c)5 Vacancy sensor (Manual On - Auto Off)

- Automatically shuts off lighting power after vacancy of 30 minutes or less.

- wiSTAR Wireless Controls
- OMNI Ceiling Sensor & Override Switch
- LightHAWK2 Wall Switch Sensor
- Zone5 Daylight Harvesting Controls
- CX Panel Controls
- wiHUBB Wireless Lighting Control System

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.

- wiSTAR Wireless Controls
- OMNI Ceiling Sensor & Override Switch
- LightHAWK2 Wall Switch Sensor
- Zone5 Daylight Harvesting Controls
- CX Panel Controls
- wiHUBB Wireless Lighting Control System

130.1(d) and 140.6(d) Multi-level daylight control

- Sensor to reduce lighting in response to available daylight.

- Zone5 Daylight Harvesting Controls
- CX Panel Controls
- wiHUBB Wireless Lighting Control System

130.4 Acceptance testing (functional testing)

- Testing shall ensure that control hardware and software are calibrated, programmed, and functioning properly.

- wiSTAR Wireless Controls
- OMNI Ceiling Sensor & Override Switch
- LightHAWK2 Wall Switch Sensor
- DLC7 Daylighting Harvesting Sensor
- Zone5 Daylight Harvesting Controls
- CX Panel Controls
- wiHUBB Wireless Lighting Control System

130.5(d) Receptacle Control

- Automatically turn OFF at least 50% of the receptacles in the space.

- wiSTAR Wireless Controls
- Zone5 Daylight Harvesting Controls
- CX Panel Controls
- wiHUBB Wireless Lighting Control System
**Office > 250 Sq. Ft.**

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>130.1(a)</td>
<td>Local switch</td>
<td>Readily accessible device(s) to control lighting within an enclosed space.</td>
</tr>
<tr>
<td>130.1(c)1</td>
<td>Programmable Timeclock</td>
<td>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.</td>
</tr>
<tr>
<td>130.1(c)5</td>
<td>Vacancy sensor (Manual On - Auto Off): Automatic Full-Off</td>
<td>Automatically shuts off lighting power after vacancy of 30 minutes or less.</td>
</tr>
</tbody>
</table>

**ON/OFF CONTROLS**

**LIGHT LEVEL CONTROL**

<table>
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<tr>
<th>Code Provision</th>
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<th>Requirement</th>
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</thead>
<tbody>
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</tr>
<tr>
<td>130.1(d) and 140.6(d)</td>
<td>Multi-level daylight control</td>
<td>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.</td>
</tr>
</tbody>
</table>

**ADDITIONAL CONTROL**

<table>
<thead>
<tr>
<th>Code Provision</th>
<th>Minimum Control Type</th>
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</thead>
<tbody>
<tr>
<td>130.4</td>
<td>Acceptance testing (functional testing)</td>
<td>Testing shall ensure that control hardware and software are calibrated, programmed, and functioning properly.</td>
</tr>
<tr>
<td>130.1(e)</td>
<td>Demand Response</td>
<td>Automatic lighting reduction by a minimum of 15% of total installed lighting power in response to a Demand Response Signal. Required for new buildings larger than 10,000 sq. ft. or luminare alterations that increase the lighting power in the enclosed space.</td>
</tr>
<tr>
<td>130.5(d)</td>
<td>Receptacle Control</td>
<td>Automatically turn OFF at least 50% of the receptacles in the space. This can either be achieved by switching every alternate receptacle within 6 feed or each uncontrolled receptacle or 50% of the outlets in each receptacle.</td>
</tr>
</tbody>
</table>

**NOTE:** Areas where no change has been made:

- Light Level Control: N/A
- Additional Control: N/A
<table>
<thead>
<tr>
<th><strong>Basic</strong> <em>(Choice of)</em></th>
<th><strong>Intermediate</strong></th>
<th><strong>Advanced</strong> <em>(Choice of)</em></th>
</tr>
</thead>
</table>
| • wiSTAR Wireless Controls  
  • OMNI Ceiling Sensor & Override Switch | • Zone5 Daylight Harvesting Controls | • CX Panel Controls  
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| • Zone5 Daylight Harvesting Controls | • Zone5 Daylight Harvesting Controls | • Zone5 Daylight Harvesting Controls  
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| • wiSTAR Wireless Controls  
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  • CX Panel Controls  
  • wiHUBB Wireless Lighting Control System |
| • wiSTAR Wireless Controls | • wiSTAR Wireless Controls | • wiHUBB Wireless Lighting Control System |

130.1(a) Local switch

• wiSTAR Wireless Controls  
  • OMNI Ceiling Sensor & Override Switch  
  • Zone5 Daylight Harvesting Controls  
  • CX Panel Controls  
  • wiHUBB Wireless Lighting Control System

130.1(b) Multi-level lighting controls

• wiSTAR Wireless Controls  
  • OMNI Ceiling Sensor & Override Switch  
  • Zone5 Daylight Harvesting Controls  
  • CX Panel Controls  
  • wiHUBB Wireless Lighting Control System

130.1(c) Programmable Timeclock

• Zone5 Daylight Harvesting Controls  
  • CX Panel Controls  
  • wiHUBB Wireless Lighting Control System

130.1(c)5 Vacancy sensor (Manual On - Auto Off): Automatic Full-Off

• wiSTAR Wireless Controls  
  • OMNI Ceiling Sensor & Override Switch  
  • Zone5 Daylight Harvesting Controls  
  • CX Panel Controls  
  • wiHUBB Wireless Lighting Control System

130.1(d) and 140.6(d) Multi-level 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.

• wiSTAR Wireless Controls  
  • OMNI Ceiling Sensor & Override Switch  
  • Zone5 Daylight Harvesting Controls  
  • CX Panel Controls  
  • wiHUBB Wireless Lighting Control System

130.4 Acceptance testing (functional testing)

Testing shall ensure that control hardware and software are calibrated, programmed, and functioning properly.

• wiSTAR Wireless Controls  
  • OMNI Ceiling Sensor & Override Switch  
  • Zone5 Daylight Harvesting Controls  
  • CX Panel Controls  
  • wiHUBB Wireless Lighting Control System

130.5(d) Receptacle Control

Automatically turn OFF at least 50% of the receptacles in the space. This can either be achieved by switching every alternate receptacle within 6 feed or each uncontrolled receptacle or 50% of the outlets in each receptacle.

• wiSTAR Wireless Controls  
  • wiSTAR Wireless Controls  
  • Zone5 Daylight Harvesting Controls  
  • CX Panel Controls  
  • wiHUBB Wireless Lighting Control System
### Corridor

<table>
<thead>
<tr>
<th>Code Provision</th>
<th>Minimum Control Type</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>130.1(a)</td>
<td>Local switch</td>
<td>Readily accessible device(s) to control lighting within an enclosed space.</td>
</tr>
<tr>
<td>130.1(c)1</td>
<td>Programmable Timeclock</td>
<td>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.</td>
</tr>
<tr>
<td>130.1(c)5</td>
<td>Vacancy sensor (Manual On - Auto Off): Automatic Full-Off</td>
<td>Automatically shuts off lighting power after vacancy of 30 minutes or less.</td>
</tr>
<tr>
<td>130.1(b)</td>
<td>Multi-level lighting controls</td>
<td>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</td>
</tr>
<tr>
<td>130.1(d) and 140.6(d)</td>
<td>Multi-level daylight control</td>
<td>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.</td>
</tr>
<tr>
<td>130.4</td>
<td>Acceptance testing (functional testing)</td>
<td>Testing shall ensure that control hardware and software are calibrated, programmed, and functioning properly.</td>
</tr>
<tr>
<td>130.1(e)</td>
<td>Demand Response</td>
<td>Automatic lighting reduction by a minimum of 15% of total installed lighting power in response to a Demand Response Signal. Required for new buildings larger than 10,000 sq. ft. or luminare alterations that increase the lighting power in the enclosed space.</td>
</tr>
</tbody>
</table>

**NOTE: Areas where no change has been made:**
- Light Level Control: N/A
- Additional Control: Receptacle Control
<table>
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<th>Code</th>
<th>Provision</th>
<th>Minimum Control Type</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON/OFF CONTROLS</td>
<td>130.1(a) Local switch</td>
<td>Readily accessible device(s) to control lighting within an enclosed space.</td>
<td>• OMNI Ceiling Sensor &amp; Override Switch • CX Panel Controls • wiHUBB Wireless Lighting Control System</td>
</tr>
<tr>
<td>130.1(c)1 Programmable Timeclock</td>
<td>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.</td>
<td>• TD300 Wall Switch Timer Switch • CX Panel Controls • wiHUBB Wireless Lighting Control System</td>
<td></td>
</tr>
<tr>
<td>130.1(c)5 Vacancy sensor (Manual On - Auto Off): Automatic Full-Off</td>
<td>Automatically shuts off lighting power after vacancy of 30 minutes or less.</td>
<td>• OMNI Ceiling Sensor &amp; Override Switch • CX Panel Controls • wiHUBB Wireless Lighting Control System</td>
<td></td>
</tr>
</tbody>
</table>

**LIGHT LEVEL CONTROL**

| ON/OFF CONTROLS | 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 | • OMNI Ceiling Sensor & Override Switch • CX Panel Controls • wiHUBB Wireless Lighting Control System |
| 130.1(d) and 140.6(d) Multi-level 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. | • OMNI Ceiling Sensor & Override Switch • DLC7 Daylighting Harvesting Sensor • CX Panel Controls • wiHUBB Wireless Lighting Control System |

**ADDITIONAL CONTROL**

| ON/OFF CONTROLS | 130.4 Acceptance testing (functional testing) | Testing shall ensure that control hardware and software are calibrated, programmed, and functioning properly. | • OMNI Ceiling Sensor & Override Switch • TD300 Wall Switch Timer • CX Panel Controls • wiHUBB Wireless Lighting Control System |
| 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 larger than 10,000 sq. ft. or luminare alterations that increase the lighting power in the enclosed space. | • CX Panel Controls • wiHUBB Wireless Lighting Control System |
## ON/OFF CONTROLS

<table>
<thead>
<tr>
<th>Code Provision</th>
<th>Minimum Control Type</th>
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</tr>
</thead>
<tbody>
<tr>
<td>130.1(a)</td>
<td>Local switch</td>
<td>Readily accessible device(s) to control lighting within an enclosed space.</td>
</tr>
<tr>
<td>130.1(c)1</td>
<td>Programmable Timeclock</td>
<td>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.</td>
</tr>
<tr>
<td>130.1(c)5</td>
<td>Vacancy sensor (Manual On - Auto Off): Automatic Full-Off</td>
<td>Automatically shuts off lighting power after vacancy of 30 minutes or less.</td>
</tr>
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</table>

## LIGHT LEVEL CONTROL

<table>
<thead>
<tr>
<th>Code Provision</th>
<th>Minimum Control Type</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>130.1(b)</td>
<td>Multi-level lighting controls</td>
<td>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</td>
</tr>
<tr>
<td>130.1(d) and 140.6(d)</td>
<td>Multi-level daylight control</td>
<td>Sensor to reduce lighting in response to available daylight. Daylighting zones defined in Section 130.1(d). Primary daylight zones must be controlled separately from secondary zones. Refer to Table 130.1-A for lighting-level requirements.</td>
</tr>
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</table>

## ADDITIONAL CONTROL

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<th>Minimum Control Type</th>
<th>Requirement</th>
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<tr>
<td>130.4</td>
<td>Acceptance testing (functional testing)</td>
<td>Testing shall ensure that control hardware and software are calibrated, programmed, and functioning properly.</td>
</tr>
<tr>
<td>130.1(e)</td>
<td>Demand Response</td>
<td>Automatic lighting reduction by a minimum of 15% of total installed lighting power in response to a Demand Response Signal. Required for new buildings larger than 10,000 sq. ft. or luminare alterations that increase the lighting power in the enclosed space.</td>
</tr>
</tbody>
</table>

**NOTE:** Areas where no change has been made:
- Light Level Control: N/A
- Additional Control: Receptacle Control
<table>
<thead>
<tr>
<th>Basic (Choice of)</th>
<th>Intermediate</th>
<th>Advanced (Choice of)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• OMNI Ceiling Sensor &amp; Override Switch</td>
<td>• CX Panel Controls</td>
<td>• wiHUBB Wireless Lighting Control System</td>
</tr>
<tr>
<td>• TD300 Wall Switch Timer Switch</td>
<td>• CX Panel Controls</td>
<td>• wiHUBB Wireless Lighting Control System</td>
</tr>
<tr>
<td>• OMNI Ceiling Sensor &amp; Override Switch</td>
<td>• CX Panel Controls</td>
<td>• wiHUBB Wireless Lighting Control System</td>
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<tr>
<td>• OMNI Ceiling Sensor &amp; Override Switch</td>
<td>• CX Panel Controls</td>
<td>• wiHUBB Wireless Lighting Control System</td>
</tr>
</tbody>
</table>

**Additional Controls**

- **130.4 Acceptance testing (functional testing)**
  - Testing shall ensure that control hardware and software are calibrated, programmed, and functioning properly.
  - • OMNI Ceiling Sensor & Override Switch
  - • DLC7 Daylighting Harvesting Sensor
  - • TD300 Wall Switch Timer Switch
  - • CX Panel Controls
  - • wiHUBB Wireless Lighting Control System

- **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 larger than 10,000 sq. ft. or luminare alterations that increase the lighting power in the enclosed space.
  - • CX Panel Controls
  - • wiHUBB Wireless Lighting Control System
### Stairwell

<table>
<thead>
<tr>
<th>Code Provision</th>
<th>Minimum Control Type</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ON/OFF CONTROLS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>130.1(a)</td>
<td>Local switch</td>
<td>Readily accessible device(s) to control lighting within an enclosed space.</td>
</tr>
<tr>
<td>130.1(c)1</td>
<td>Programmable Timeclock</td>
<td>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.</td>
</tr>
<tr>
<td>130.1(c)6 &amp; 7</td>
<td>Vacancy sensor (Manual On - Auto Off): Automatic Partial-Off</td>
<td>Automatically reduces lighting power in any one controlled zone by at least 50% after vacancy of 30 minutes or less.</td>
</tr>
<tr>
<td><strong>LIGHT LEVEL CONTROL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>130.1(b)</td>
<td>Multi-level lighting controls</td>
<td>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</td>
</tr>
<tr>
<td>130.1(d) and 140.6(d)</td>
<td>Multi-level daylight control</td>
<td>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.</td>
</tr>
<tr>
<td><strong>ADDITIONAL CONTROL</strong></td>
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<td></td>
</tr>
<tr>
<td>130.4</td>
<td>Acceptance testing (functional testing)</td>
<td>Testing shall ensure that control hardware and software are calibrated, programmed, and functioning properly.</td>
</tr>
<tr>
<td>130.1(e)</td>
<td>Demand Response</td>
<td>Automatic lighting reduction by a minimum of 15% of total installed lighting power in response to a Demand Response Signal. Required for new buildings larger than 10,000 sq. ft. or luminare alterations that increase the lighting power in the enclosed space.</td>
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**NOTE: Areas where no change has been made:**
- Light Level Control: N/A
- Additional Control: Receptacle Control
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<tr>
<th>Requirement</th>
<th>Basic (Choice of)</th>
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<th>Advanced (Choice of)</th>
</tr>
</thead>
<tbody>
<tr>
<td>130.1(a) Local switch Readily accessible device(s) to control lighting within an enclosed space.</td>
<td>• OMNI Ceiling Sensor &amp; Override Switch</td>
<td>• CX Panel Controls</td>
<td>• wiHUBB Wireless Lighting Control System</td>
</tr>
<tr>
<td>130.1(c)1 Programmable Timeclock</td>
<td>• OMNI Ceiling Sensor &amp; Override Switch</td>
<td>• CX Panel Controls</td>
<td>• wiHUBB Wireless Lighting Control System</td>
</tr>
<tr>
<td>130.1(c)6 &amp; 7 Vacancy sensor (Manual On - Auto Off): Automatic Partial-Off</td>
<td>• OMNI Ceiling Sensor &amp; Override Switch</td>
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<td>• wiHUBB Wireless Lighting Control System</td>
</tr>
<tr>
<td>130.1(b) Multi-level lighting controls</td>
<td>• WASP2 Sensor</td>
<td>• CX Panel Controls</td>
<td>• wiHUBB Wireless Lighting Control System</td>
</tr>
<tr>
<td>130.1(d) and 140.6(d) Multi-level 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.</td>
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Storage Room

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<tr>
<th>Code Provision</th>
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<th>Requirement</th>
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<tbody>
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<td>130.1(a)</td>
<td>Local switch</td>
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<tr>
<td>130.1(c)1</td>
<td>Programmable Timeclock</td>
<td>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.</td>
</tr>
<tr>
<td>130.1(c)5</td>
<td>Vacancy sensor (Manual On - Auto Off): Automatic Full-Off</td>
<td>Automatically shuts off lighting power after vacancy of 30 minutes or less.</td>
</tr>
<tr>
<td>130.1(b)</td>
<td>Multi-level lighting controls</td>
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<tr>
<td></td>
<td>130.1(a) Local switch</td>
<td>• wiSTAR Wireless Controls</td>
<td></td>
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<tr>
<td></td>
<td>Readily accessible device(s) to control lighting within an enclosed space.</td>
<td>• LightHAWK2 Wall Switch Sensor</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• TD300 Wall Switch Timer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>130.1(c)1 Programmable Timeclock</td>
<td>Intermediate</td>
<td>• CX Panel Controls</td>
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<tr>
<td></td>
<td>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.</td>
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</tr>
<tr>
<td></td>
<td>130.1(c)5 Vacancy sensor (Manual On - Auto Off): Automatic Full-Off</td>
<td>Advanced (Choice of)</td>
<td>• wiHUBB Wireless Lighting Control System</td>
</tr>
<tr>
<td></td>
<td>Automatically shuts off lighting power after vacancy of 30 minutes or less.</td>
<td>• wiSTAR Wireless Controls</td>
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<tr>
<td></td>
<td>130.1(d) and 140.6(d) Multi-level daylight control</td>
<td>Intermediate</td>
<td>• CX Panel Controls</td>
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<tr>
<td></td>
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<tr>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• TD300 Wall Switch Timer</td>
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</tbody>
</table>

**HUBBELL LIGHTING / HUBBELL BUILDING AUTOMATIONS CONTROLS**
HUBBELL WIRELESS LIGHTING CONTROLS

Having lights on only when needed, saves money and helps our environment. Easy installation, intuitive interfaces and web-based commissioning and monitoring make Hubbell Lighting the logical choice for lighting control.

<table>
<thead>
<tr>
<th>Indoor Applications</th>
<th>HBA wiSTAR™</th>
<th>HBA wiHUBB®</th>
<th>HBA wiSCAPE™</th>
<th>BEACON Beacon</th>
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<tbody>
<tr>
<td>Single Room or Space Control</td>
<td>✔</td>
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<tr>
<td>Networked Whole Building Control</td>
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<thead>
<tr>
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<th>HBA wiSCAPE™</th>
<th>BEACON Beacon</th>
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<tbody>
<tr>
<td>Building Lighting Control (wall packs, etc)</td>
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<tr>
<td>Building Area and Parking Lot Control</td>
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<tr>
<td>Stand Alone Parking Lot Control</td>
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<td>Street Lighting Control</td>
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<table>
<thead>
<tr>
<th>Built-In Fixture Enabled Controls</th>
<th>HBA wiSTAR™</th>
<th>HBA wiHUBB®</th>
<th>HBA wiSCAPE™</th>
<th>BEACON Beacon</th>
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</thead>
<tbody>
<tr>
<td>Built-in Fixture Enabled Controls (Beacon)</td>
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<td>Fixture Built-in Occupancy Control</td>
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<td>Fixture Built-in Dry Contact Inputs/Outputs</td>
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<table>
<thead>
<tr>
<th>Additional Control Components</th>
<th>HBA wiSTAR™</th>
<th>HBA wiHUBB®</th>
<th>HBA wiSCAPE™</th>
<th>BEACON Beacon</th>
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<tbody>
<tr>
<td>Stand-alone Relay Module</td>
<td>✔</td>
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<tr>
<td>Stand-alone Relay and Dimming Module (0-10V)</td>
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<td>Stand-alone Occupancy/Motion Sensing</td>
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<td>Stand-alone Daylighting Control</td>
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<thead>
<tr>
<th>System Features</th>
<th>HBA wiSTAR™</th>
<th>HBA wiHUBB®</th>
<th>HBA wiSCAPE™</th>
<th>BEACON Beacon</th>
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<td>Control of Individual Fixtures</td>
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<td>Control of Fixture Groups</td>
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<td>Remote Access (internet)</td>
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<td>System Reporting</td>
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<td>Real-time Monitoring</td>
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<td>Power Metering</td>
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<td>Alarms and Notifications</td>
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<td>Building Management Integration</td>
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<td>Shipped Pre-commissioned with One-step Setup</td>
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<td>On-board LED Thermal Regulation</td>
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**wiHUBB® WIRELESS LIGHTING CONTROL TECHNOLOGY**
Secure peer-to-peer, self-organizing, self-healing indoor/outdoor mesh network utilizing
- Fixture modules
- Occupancy/vacancy sensors
- Daylight harvesting sensors
- Switch stations

**wiHUBB SWITCH STATION**
Lighting control override for lighting control when space is occupied
- Multiple switch options available
- All switches mount to standard single or multi-gang wall boxes
- CAT5 plug-and-play integration with wiHUBB Smart Pack

**wiHUBB OCCUPANCY SENSOR**
Dual-technology occupancy sensing with 360° detection coverage
- 2,000 square-foot coverage area
- IntelliDAPT® self-adaptive technology—no manual adjustment required
- CAT5 plug-and-play integration with wiHUBB Smart Pack

**wiHUBB SMART PACK**
Intelligently and automatically responds to sensors and switches
- Single or dual relay versions for on/off or high/low control
- Optional 0–10V interface for full range dimming control

**wiSCAPE™ WIRELESS STREET LIGHTING CONTROLS**
Enables utilities and municipalities to manage, monitor and meter individual streetlights

**wiSCAPE GATEWAY ACCESS POINT**
wiSCAPE Gateway Access Point
- Module/gateway ratio: 1000 modules per gateway
- Gateways are in NEMA 4X (IP66) cabinets
- Fail-safe operation- defaults to photocell control
- Data storage supports up to six months of rolling data storage
- 128-bit AES encryption

**wiSCAPE FIXTURE MODULE**
Relay/0–10V Dimming with Metering Standard Radio
- Switch 3 amp loads (120, 208, 277 and 347VAC) or 6 amp loads (480VAC)
- Inputs for low-voltage switch, motion and photo sensor
- Outputs 0–10V for dimming ballasts (sink+source)
- Dry contact output for driving external contactors
- Bi-directional wireless RF mesh communications
- Individual addresses of unique serial numbers
- 480V fixture module available in NEMA4X enclosure
CX COMMERCIAL LIGHTING SYSTEM
Feature rich, cost effective lighting control system for switching and 0-10V dimming.

OMNI CEILING MOUNT OCCUPANCY SENSOR
- Dry contact connection
- Digital dual-technology (ultrasonic [US] and passive infrared [PIR]) sensor
- IntelliDAPT® self-adaptive technology
- 2,000 square-foot coverage area
- Non-volatile memory for sensor settings—no manual adjustment required

CX LIGHT SENSOR
- Indoor and outdoor versions
- Open loop operation
- Foot-candle range: 3-6,000FC
- Mounts vertically or horizontally

CX DIMMING SWITCH
- Discreet or connectorized switch
- CAT5 raise/lower dimming switch

CX 1 BUTTON SWITCH
- Dry contact switch
- Discrete toggle input

CX 8 RELAY MASTER PANEL WITH DIMMING CARD
- 8 dimming channels
- 8 - 20AMP relays with 4 relay options - 20A/1P, N/O, 20A/2P, N/O, N/C (14K SSCR) and 30A/1P latching (18K SCCR)
- Color LCD user interface with keypad
- 365 day programming with 64 schedules
- Astronomical and real time clock
- Programmable inputs accept low voltage switches, photocells, or motion sensors

BEACONNECT WIRELESS CONTROL
Plug and Play Built-in Wireless Module
- Plug-in USB drive for easy modification
- User-defined dimming schedules
- Battery back-up system for on-board luminaire clock
- Supports motion control and daylight harvesting for advanced dimming
- Install fixtures pre-commissioned from the factory
WASP2™ AND DIMMING WASP™
Indoor and outdoor occupancy and photocell sensors for on/off or preset dimmed

WASP2 Occupancy and Photocell Sensor
- Digital Passive Infrared (PIR) sensor
- Multiple (single and dual) output versions
- Unique Smart Cycling™ for improved fluorescent lamp life
- Interchangeable high/low mount detection lens options
- Low voltage and line voltage models available
- Factory Installed & Field Installed Options Available

DIMMING WASP Outdoor Motion and Photocell Sensor
- Mounting heights: high mount lens: 30 ft outdoors; 45 ft indoors:
  low mount lens: 16 ft indoors/outdoors
- Controls 0-10V, 2-wire dimmable ballasts
- User controlled dimming with high/low area detection options
- Low temperature/water-tight/indoor-outdoor
- Factory Installed & Field Installed Options Available

LIGHTHAWK2™
Wall switch vacancy & occupancy sensors

LIGHTHAWK2 PASSIVE INFRARED (PIR) Wall Switch Sensor
- Built-in photocell, 1,000 square-foot, 180° coverage
- IntelliDAPT® self-adaptive technology—no manual adjustment required
- 1 or 2 relay models for single-level, bi-level or dual-circuit control
- 24 VDC, Dual 120/277 VAC, or 347 VAC operation

LIGHTHAWK2 ULTRASONIC (US) Wall Switch Sensor
- Built-in photocell, 400 square-foot, 180° coverage
- IntelliDAPT® self-adaptive technology—no manual adjustment required
- 1 or 2 relay models for single-level, bi-level or dual-circuit control
- 24 VDC, Dual 120/277 VAC, or 347 VAC operation

LIGHTHAWK2 DUAL TECHNOLOGY (DT) Wall Switch Sensor
- Built-in photocell, 1,000 square-foot, 180° coverage
- IntelliDAPT® self-adaptive technology—no manual adjustment required
- 1 or 2 relay models for single-level, bi-level or dual-circuit control
- 24 VDC, Dual 120/277 VAC, or 347 VAC operation

LIGHTHAWK2 NIGHTLIGHT WALL SWITCH SENSOR
- Digital Passive Infrared (PIR) sensor
- Built-in nightlight, 1,000 square-foot, 180° coverage
- IntelliDAPT® self-adaptive technology—no manual adjustment required
- Dual 120/277 VAC, or 347 VAC operation

LIGHTHAWK2 DIMMING WALL SWITCH SENSOR
- Digital Passive Infrared (PIR) sensor, 1,000 square-foot, 180° coverage
- 0-10V dimming capabilities
- IntelliDAPT® self-adaptive technology—no manual adjustment required
- Dual 120/277 VAC, or 347 VAC operation
CA Title 24 Glossary (Select Terms)

These are helpful terms pulled from the CA Title 24 glossary. The full glossary can be found in the CA Title 24 Joint Appendix: JA1

ADDITION is any change to a building that increases conditioned floor area and conditioned volume. Addition is also any change that increases the floor area and volume of an unconditioned building of an occupancy group or type regulated by Part 6. Addition is also any change that increases the illuminated area of an outdoor lighting application regulated by Part 6.

ALTERATION is any change to a building’s water-heating system, space-conditioning system, lighting system, or envelope that is not an addition. Alteration is also any change that is regulated by Part 6 to an outdoor lighting system that is not an addition. Alteration is also any change that is regulated by Part 6 to signs located either indoors or outdoors.

ALTERED COMPONENT is a component that has undergone an alteration and is subject to all applicable Standards requirements.

ANSI is the American National Standards Institute.

ANSI C82.6-2005 is the American National Standards Institute document titled “Ballasts for High-Intensity Discharge Lamps – Methods of Measurement” (ANSI C82.6-2005).

ANSI/IES RP-16-10 is the document co-authored by the American National Standards Institute and the Illuminating Engineering Society of North America, Recommended Practice titled “Nomenclature and Definitions for Illuminating Engineering.”

APPLIANCE EFFICIENCY REGULATIONS are the regulations in Title 20, Section 1601 et seq. of the California Code of Regulations.

AUTOMATIC is capable of operating without human intervention.

BUILDING COMMISSIONING is a systematic quality assurance process that spans the entire design and construction process, including verifying and documenting that building systems and components are planned, designed, installed, tested, operated and maintained to meet the owner’s project requirements.

DAYLIT ZONE is the floor area under skylights or next to windows. Types of Daylit Zones include Primary Sidelit Daylit Zone, Secondary Sidelit Daylit Zone, Secondary Sidelit Daylit Zone, and Skylit Daylit Zone.

DEMAND RESPONSE is short-term changes in electricity usage by end-use customers, from their normal consumption patterns. Demand response may be in response to:

1. in response to wholesale market prices; or
2. when system reliability is jeopardized.

DOMINANT OCCUPANCY is the occupancy type in mixed occupancy buildings with the greatest percentage of total conditioned floor area.

DWELLING is a building that contains one or two dwelling units used, intended or designed to be used, rented, leased, let or hired out to be occupied for living purposes.

DWELLING UNIT A single unit providing complete, independent living facilities for one or more persons including permanent provisions for living, sleeping, eating, cooking and sanitation.

ENCLOSED SPACE is space that is substantially surrounded by solid surfaces, including walls, ceilings or roofs, doors, fenestration areas, and floors or ground.

ENERGY EFFICIENCY RATIO (EER) is the ratio of net cooling capacity (in Btu/hr.) to total rate of electrical energy input (in watts), of a cooling system under designated operating conditions, as determined using the applicable test method in the Appliance Efficiency Regulations or §110.2.

ENERGY MANAGEMENT CONTROL SYSTEM (EMCS) is a computerized control system designed to regulate the energy consumption of a building by controlling the operation of energy consuming systems, such as the heating, ventilation and air conditioning (HVAC), lighting, and water heating systems, and is capable of monitoring environmental and system loads, and adjusting HVAC operations in order to optimize energy usage and respond to demand response signals.

ENTIRE BUILDING is the ensemble of all enclosed space in a building, including the space for which a permit is sought, plus all existing conditioned and unconditioned space within the structure.

ENVELOPE See Building Envelope.

FLOOR AREA is the floor area (in square feet) of enclosed conditioned or unconditioned space on all floors of a building, as measured at the floor level of the exterior surfaces of exterior walls enclosing the conditioned or unconditioned space.

IES HB See IES Lighting Handbook.


**LIGHTING** definitions:

- **Accent Lighting** is directional lighting designed to highlight or spotlight objects. It can be recessed, surface mounted, or mounted to a pendant, stem, or track.

- **Chandelier** is a ceiling-mounted, close-to-ceiling, or suspended decorative luminaire that uses glass, crystal, ornamental metals, or other decorative material.

- **Compact Fluorescent Lamp** is a fluorescent lamp less than 9 inches maximum overall length (M.O.L.) with a T5 or smaller diameter glass tube that is folded, bent, or bridged.

- **Decorative (Lighting/Luminaire)** is lighting or luminaires installed only for aesthetic purposes and that does not serve as display lighting or general lighting.

- **Display Lighting** is lighting that provides a higher level of illuminance to a specific area than the level of surrounding ambient illuminance. Types of display lighting include:
  - **Floor:** supplementary lighting required to highlight features, such as merchandise on a clothing rack, which is not displayed against a wall.
  - **Wall:** supplementary lighting required to highlight features, such as merchandise on a shelf, which is displayed on perimeter walls.
  - **Window:** lighting of objects such as merchandise, goods, and artifacts, in a show window, to be viewed from the outside of a space through a window.

- **Case:** lighting of small art objects, artifacts, or valuable collections which involves customer inspection of very fine detail from outside of a glass enclosed display case.

- **General Lighting** is installed electric lighting that provides a uniform level of illumination throughout an area, exclusive of any provision for special visual tasks or decorative effect, exclusive of daylighting, and also known as ambient lighting.

- **GU-24** is the designation of a lamp holder and socket configuration, based on a coding system by the International Energy Consortium, where “G” indicates the broad type of two or more projecting contacts, such as pins or posts, “U” distinguishes between lamp and holder designs of similar type but that are not interchangeable due to electrical or mechanical requirements, and “24” indicates 24 millimeters center to center spacing of the electrical contact posts.

- **Illuminance** is the incident luminous flux density on a differential element of surface located at a point and oriented in a particular direction, expressed in lumens per unit area.

- **Illumination** is light incident on a surface of body, or the general condition of being illuminated.

- **Lamp** is an electrical appliance that produces optical radiation for the purpose of visual illumination, designed with a base to provide an electrical connection between the lamp and a luminaire, and designed to be installed into a luminaire by means of a lamp-holder integral to the luminaire.

- **Landscape Lighting** is a type of outdoor lighting that is recessed into or mounted on the ground, paving, or raised deck, which is mounted less than 42” above grade or mounted onto trees or trellises, and that is intended to be aimed only at landscape features.

- **Lantern** is an outdoor luminaire that uses an electric lamp to replicate the appearance of a pre-electric lantern, which used a flame to generate light.

- **Light** is the luminous equivalent of power and is properly called luminous flux.

- **Lighting**, or illumination, is the application of light to achieve some practical or aesthetic effect.

- **Light Emitting Diode (LED)** definitions used in Part 6 are in section 6.8 of ANSI/IES RP-16-10.

- **Low Voltage** is less than 90 volts.

- **Lumen Maintenance** is a strategy used to provide a precise, constant level of lighting from a lighting system regardless of the age of the lamps or the maintenance of the luminaires.

- **Luminaire** is a complete lighting unit consisting of lamp(s) and the parts that distribute the light, position and protect the lamp(s), and connect the lamp(s) to the power supply.

- **Luminance** is a measure of the light emitting power of a surface, in a particular direction, per unit apparent area.

- **Luminous flux** is visually evaluated radiant flux and defines “light” for purposes of lighting design and illuminating engineering.

- **Marquee lighting** is a permanent lighting system consisting of one or more rows of many small lamps, including light emitting diodes (LEDs), or fiber optic lighting, attached to a canopy.
• **Ornamental lighting** for compliance with Part 6 is the following:

**Luminaires** installed outdoor which are rated for 100 watts or less that are post-top luminaires, lanterns, pendant luminaires, chandeliers, and marquee lighting.

**Decorative Luminaires** installed indoor that are chandeliers, sconces, lanterns, neon and cold cathode, light emitting diodes, theatrical projectors, moving lights, and light color panels.

**Pendant** is a mounting method in which the luminaire is suspended from above.

**Permanently Installed lighting** consists of luminaires that are affixed to land, within the meaning of Civil Code section 658 and 660, except as provided below. Permanently installed luminaires may be mounted inside or outside of a building or site. Permanently installed luminaires may have either plug-in or hardwired connections for electric power. Examples include track and flexible lighting systems; lighting attached to walls, ceilings, columns, inside or outside of permanently installed cabinets, internally illuminated cabinets, mounted on poles, in trees, or in the ground; attached to ceiling fans and integral to exhaust fans. Permanently installed lighting does not include portable lighting or lighting that is installed by the manufacturer in exhaust hoods for cooking equipment, refrigerated cases, food preparation equipment, and scientific and industrial equipment.

**Portable Lighting** is lighting, with plug-in connections for electric power, that is: table and freestanding floor lamps; attached to modular furniture; workstation task luminaires; luminaires attached to workstation panels; attached to movable displays; or attached to other personal property.

**Post top luminaire** is an outdoor luminaire that is mounted directly on top of a lamp-post.

**Precision Lighting** is task lighting for commercial or industrial work that illuminates low contrast, finely detailed, or fast moving objects.

**Radiant power** is the time-rate-flow of radiant energy.

**Radiant Energy** is the electromagnetic or photonic radiant energy from a source.

**Sconce** is a wall mounted decorative accent luminaire.

**Source (light)** is the general term used to reference a source of light. It can refer variously to an electric lamp, a light emitting diode (LED), an entire luminaire with lamp and optical control, or fenestration for daylighting.

**Special Effects Lighting** is lighting installed to give off luminance instead of providing illuminance, which does not serve as general, task, or display lighting.

**Task Lighting** is lighting that is not general lighting and that specifically illuminates a location where a task is performed.

**Temporary Lighting** is a lighting installation, with plug-in connections, that does not persist beyond 60 consecutive days or more than 120 days per year.

**Track Lighting** is a system that includes luminaires and a track, rails, or cables that both mount the system, and deliver electric power.

**MANDATORY MEASURES CHECKLIST** is a form used by the building plan checker and field inspector to verify compliance of the building with the prescribed list of mandatory features, equipment efficiencies and product certification requirements. The documentation author indicates compliance by initialing, checking, or marking N/A (for features not applicable) in the boxes or spaces provided for the designer.

**LIGHTING CONTROLS** consist of the following:

• **Astronomical Time-Switch Control** is an Automatic Time-Switch Control that controls lighting based on the time of day and astronomical events such as sunset and sunrise, accounting for geographic location and calendar date.

• **Automatic Daylight Control** uses one or more photosensors to detect changes in daylight illumination and then automatically adjusts the luminous flux of the electric lighting system in response.

• **Automatic Multi-Level Daylight Control** adjusts the luminous flux of the electric lighting system in either a series of steps or by continuous dimming in response to available daylight. This kind of control uses one or more photosensors to detect changes in daylight illumination and then automatically adjusts the electric lighting levels in response.

• **Automatic Time Switch Control** controls lighting based on the time of day.

• **Captive-Key Override** is a type of lighting control in which the key that activates the override cannot be released when the lights are in the on position.

• **Countdown Timer Switch** turns lighting or other loads ON when
activated using one or more selectable count-down time periods and then automatically turns lighting or other loads OFF when the selected time period had elapsed.

- **Dimmer** varies the luminous flux of the electric lighting system by changing the power delivered to that lighting system.

- **Dimmer, Full-Range** (Also known as a Continuous Dimmer) varies the luminous flux of the electric lighting system over a continuous range from the device’s maximum light output to the device’s minimum light output without visually apparent abrupt changes in light level between the various steps.

- **Dimmer, Stepped** varies the luminous flux of the electric lighting system in one or more predetermined discrete steps between maximum light output and OFF with changes in light level between adjacent steps being visually apparent.

- **Lighting Control, Self Contained** is a unitary lighting control module that requires no additional components to be a fully functional lighting control.

- **Lighting Control System** requires two or more components to be installed in the building to provide all of the functionality required to make up a fully functional and compliant lighting control.

- **Multi-Level Astronomical Time Switch** is an Astronomical Time Switch Control that reduces lighting power in multiple steps.

- **Multi-Level Lighting Control** reduces power going to a lighting system in multiple steps.

- **Multiscene Programmable Control** allows for two or more pre-defined lighting settings, in addition to all-OFF, for two or more groups of luminaires to suit multiple activities in the space.

- **Occupant Sensing Controls** automatically control levels of illumination, allow for manual operation.

- **Motion Sensor** is used outdoors, automatically turns lights OFF after an area is vacated of occupants, and automatically turns the lighting load ON when the area is occupied.

- **Occupant Sensor** is used indoors and automatically turns lights OFF after an area is vacated of occupants and is capable of automatically turning the lighting load ON when an area is occupied.

- **Partial-ON Occupant/Motion Sensor** automatically turns lights OFF after an area is vacated of occupants and is capable of automatically or manually turning ON part of the lighting load when an area is occupied.

- **Partial-OFF Occupant/Motion Sensor** automatically turns OFF part of the lighting load after an area is vacated of occupants and is capable of automatically turning ON the lighting load when an area is occupied.

- **Vacancy Sensor** automatically turns lights OFF after an area is vacated of occupants but requires lighting loads to be turned ON manually.

- **Part-Night Outdoor Lighting Control** is a time or occupancy-based lighting control device or system that is programmed to reduce or turn off the lighting power to an outdoor luminaire for a portion of the night.

- **Photo Control** automatically turns lights ON and OFF, or automatically adjusts lighting levels, in response to the amount of daylight that is available. A Photo Control may also be one component of a field assembled lighting system, the component having the capability to provide a signal proportional to the amount of daylight to a Lighting Control System to continuously dim or brighten the electric lights in response.

- **Track Lighting Integral Current Limiter** consists of a current limiter integral to the end-feed housing of a manufactured line-voltage track lighting system.

- **Track Lighting Supplementary Overcurrent Protection Panel** is a Panelboard containing Supplementary Overcurrent Protection Devices as defined in Article 100 of the California Electric Code, and used only with line voltage track lighting.

**NONRESIDENTIAL COMPLIANCE MANUAL** is the manual developed by the Commission, under Section 25402.1(e) of the Public Resources Code, to aid designers, builders, and contractors in meeting the energy efficiency requirements for nonresidential, high-rise residential, and hotel/motel buildings.

**OUTDOOR LIGHTING ZONE** is a geographic area designated by the California Energy Commission in accordance with Part 1, Section 10-114, that determines requirements for outdoor lighting, including lighting power densities and specific control, equipment or performance requirements. Lighting zones are numbered LZ1, LZ2, LZ3, and LZ4.
Making Change Happen

Hubbell Lighting makes change easy with our comprehensive suite of createchange® tools and services available at HubbellLighting.com/solutions/retrofit/ that include audit tools, easy to use calculators and a wealth of additional information to support making your project a success.

Ready to get started? For personal assistance, contact your local Hubbell Lighting representative and we’ll help guide you through improving your lighting system and creating change or email us at hlimarketing@hubbell-ltg.com.
A Complete Collection Of Energy Saving Solutions

RETROFIT LIGHTING & CONTROLS SOLUTIONS
Easy Search Product Finders
Audit and Installation Tools
Multiple Calculators and Resources for Proposal Development
HLI-wide DLC and Energy Star Product Finders with Rebate Info
Vertical Market Tools aligned to Markets that Matter in the Retrofit Market
Financing Platforms to Support Closing Projects

Calculators
Online Proposal Generator
HVAC Impact Calculator
Maintenance Calculator
Productivity Calculator
Financing Calculator

Reference Tools
Audit Tools
DLC Qualified Product Lookup
Energy Star Lookup
Utility Rebate Finder
Watt Finder
Compare-In-The-Air Sample Program
Financing

HubbellLighting.com/solutions/retrofit/