

**C405.1 General (Mandatory).**

This section covers lighting system controls, the maximum lighting power for interior and exterior applications and electrical energy consumption.

**Exception:** Dwelling units within commercial buildings shall not be required to comply with Sections C405.2 through C405.5, provided that they comply with Section R404.1.

Walk-in coolers, walk-in freezers, refrigerated warehouse coolers and refrigerated warehouse freezers shall comply with Section C403.2.15 or C403.2.16.

**C405.2 Lighting controls (Mandatory).**

Lighting systems shall be provided with controls as specified in Sections C405.2.1, C405.2.2, C405.2.3, C405.2.4 and C405.2.5.

**Exceptions:** Lighting controls are not required for the following:

1. Areas designated as security or emergency areas that are required to be continuously lighted.
2. Interior exit stairways, interior exit ramps and exit passageways.
3. Emergency egress lighting that is normally off.

**C405.2.1 Occupant sensor controls.**

Occupant sensor controls shall be installed to control lights in the following space types:

1. Classroom/lecture/training rooms.
2. Conference/meeting/multipurpose rooms.
3. Copy/print rooms.
4. Lounges.
5. Employee lunch and break rooms.
6. Private offices.
7. Restrooms.
8. Storage rooms.
9. Janitorial closets.
10. Locker rooms.
11. Other spaces 300 square feet (28 m<sup>2</sup>) or less that are enclosed by floor-to-ceiling height partitions.
12. Warehouses.

**C405.2.1.1 Occupant sensor control function.**

Occupant sensor controls in spaces other than warehouses specified in Section C405.2.1 shall comply with the following:

1. Automatically turn off lights within 30 minutes of all occupants leaving the space.
2. Be manual on or controlled to automatically turn the lighting on to not more than 50 percent power.

**Exception:** Full automatic-on controls shall be permitted to control lighting in public corridors, stairways, restrooms, primary building entrance areas and lobbies, and areas where manual operation would endanger the safety or security of the room or building occupants.

3. Shall incorporate a *manual control* to allow occupants to turn lights off.

**C405.2.1.2 Occupant sensor control function in warehouses.**

In warehouses, the lighting in aiseways and open areas shall be controlled with occupant sensors that automatically reduce lighting power by not less than 50 percent when the areas are unoccupied. The occupant sensors shall control lighting in each aisleway independently and shall not control lighting beyond the aisleway being controlled by the sensor.

**C405.2.2 Time-switch controls.**

Each area of the building that is not provided with *occupant sensor controls* complying with Section C405.2.1.1 shall be provided with *time switch controls* complying with Section C405.2.2.1.

**Exception:** Where a *manual control* provides light reduction in accordance with Section C405.2.2.2, automatic controls shall not be required for the following:

1. *Sleeping units.*
2. Spaces where patient care is directly provided.
3. Spaces where an automatic shutoff would endanger occupant safety or security.
4. Lighting intended for continuous operation.
5. Shop and laboratory classrooms.

**C405.2.2.1 Time-switch control function.**

Each space provided with *time-switch controls* shall also be provided with a *manual control* for light reduction in accordance with Section C405.2.2.2. Time-switch controls shall include an override switching device that complies with the following:

1. Have a minimum 7-day clock.
2. Be capable of being set for seven different day types per week.
3. Incorporate an automatic holiday "shutoff" feature, which turns off all controlled lighting loads for at least 24 hours and then resumes normally scheduled operations.
4. Have program backup capabilities, which prevent the loss of program and time settings for at least 10 hours, if power is interrupted.
5. Include an override switch that complies with the following:
  - 5.1. The override switch shall be a manual control.
  - 5.2. The override switch, when initiated, shall permit the controlled lighting to remain on for not more than 2 hours.
  - 5.3. Any individual override switch shall control the lighting for an area not larger than 5,000 square feet (465 m<sup>2</sup>).

**Exceptions:**

1. Within malls, arcades, auditoriums, single-tenant retail spaces, industrial facilities and arenas:
  - 1.1. The time limit shall be permitted to be greater than 2 hours, provided that the override switch is a captive key device.
  - 1.2. The area controlled by the override switch is permitted to be greater than 5,000 square feet (465 m<sup>2</sup>), but shall not be greater than 20,000 square feet (1860 m<sup>2</sup>).
2. Where provided with *manual control*, the following areas are not required to have light reduction control:
  - 2.1. Spaces that have only one luminaire with a rated power of less than 100 watts.
  - 2.2. Spaces that use less than 0.6 watts per square foot (6.5 W/m<sup>2</sup>).
  - 2.3. Corridors, equipment rooms, public lobbies, electrical or mechanical rooms.

**C405.2.2.2 Light-reduction controls.**

Spaces required to have light-reduction controls shall have a *manual control* that allows the occupant to reduce the connected lighting load in a reasonably uniform illumination pattern by at least 5 percent. Lighting reduction shall be achieved by one of the following or another *approved method*:

1. Controlling all lamps or luminaires.
2. Dual switching of alternate rows of luminaires, alternate luminaires or alternate lamps.
3. Switching the middle lamp luminaires independently of the outer lamps.
4. Switching each luminaire or each lamp.

**Exception:** Light reduction controls are not required in *daylight zones* with *daylight responsive controls* complying with Section C405.2.3.

**C405.2.2.3 Manual controls.**

*Manual controls* for lights shall comply with the following:

1. Shall be readily accessible to occupants.
2. Shall be located where the controlled lights are visible, or shall identify the area served by the lights and indicate their status.