

502.04 Lighting Power Density - Interior

Table (1) 502.04 - Interior Lighting Power Density

Building Type	Maximum average Watts per square metre (W/m²) across total building area
Commercial/Public: Offices, Hotels, Resorts, Restaurants	10
Educational Facilities	12
Manufacturing Facilities	13
Retail Outlets, Shopping Malls, Workshops	14
Warehouses	8

For new buildings, the average Lighting Power Density for the interior connected lighting load must not exceed the values given in Table 502.04 (1).

Lighting Power Density values for the building types not listed in Table 502.04 (1), shall not exceed the values indicated in the latest edition of ASHRAE Standards 90.1 and 90.2 or equivalent as approved by DEWA.

502.05 Lighting Power Density - Exterior

For all new buildings, the average Lighting Power Density for the exterior connected lighting load for specific building types must not exceed the values given in Table 502.05 (1).

Table (1) 502.05 - Building Exterior Lighting Power Density

Building Area	Maximum Watts per square metre (W/m²) or linear metre
Uncovered parking lots and drives	1.6 W/m²
Walkways less than 3 m wide	3.3 W/linear metre
Walkways 3 m wide or greater	2.2 W/m²
Outdoor Stairways	10.8 W/m²
Main entries	98 W/linear metre of door width
Other doors	66 W/linear meter of door width
Open sales areas (including vehicle sales lots)	5.4 W/m²
Building Facades	2.2 W/m² for each illuminated wall or surface or 16.4 W/linear metre for each illuminated wall or surface length
Entrances and gatehouse inspection stations at guarded facilities	13.5 W/m²
Drive-up windows at fast food restaurants	400 W / drive-through

Lighting Power Density values for exterior areas for building types not listed in Table 502.05 (1), shall not exceed the values indicated in the latest edition of ASHRAE standard 90.1 or equivalent as approved by DEWA.

If the light power density values for external lighting exceeds the values specified in Table 502.05 (1), the additional lighting load must be powered entirely, through renewable energy sources such as photovoltaic systems or similar.

502.06 Lighting Controls

For all new buildings:

- A. Occupant lighting controls must be provided so that it allows the lighting to be switched off when daylight levels are adequate or when spaces are unoccupied. It also allows the occupant to control the lighting levels.
- B. Common areas such as corridors and lobbies which are not regularly occupied, the lighting levels should be reduced to a maximum level of 25% of normal condition, when unoccupied.
- C. In offices and education facilities, all lighting zones must be fitted with occupant sensor controls capable of switching the electrical lights on and off based on occupancy level. Lighting required for safety purposes is excluded.
- D. In offices, if the average design lighting power density value is less than 6 W/m² of gross floor area (GFA), then the control requirements of part C of this regulation need not apply.
- E. It is recommended (optional) that in offices, the artificial lighting in spaces within 6m in depth from the exterior windows must be fitted with lighting controls. The lighting controls to incorporate photocell sensors capable of adjusting electric lighting levels and shall supplement the natural daylight, when required. The use of both artificial light and daylight must provide an illumination level at the working plane between 400 and 500 lux. When 100% of daylight is available, the lux levels may exceed 500 lux.

502.07 Electronic Ballasts

For all new buildings, high frequency electronic ballasts must be used with fluorescent lights and metal halide lights, of 150 W and less.

High frequency electronic ballasts must be labelled and must be compliant with international standards as approved by the DEWA and Dubai Municipality.

502.08 Control Systems for Heating, Ventilation and Air Conditioning (HVAC) Systems

For all new buildings other than villas, HVAC systems shall be equipped with efficient controls to reduce energy consumption. This shall be in accordance with latest edition of ASHRAE standard 90.1 or equivalent.

The following control specification must be included within the HVAC systems:

- 1. Divide control systems into sub-zones with independent controls for each area of the building zones. Controls for each zone can vary based on the zone’s exposure to sun or cooling load levels or by nature of usage.
- 2. All independent control areas shall be able to:
 - Independently control temperature.
 - Turn off the system when the building or the controlled part of the building is not occupied.
- 3. Central systems shall operate only when required by zonal control systems.

502.09 Control Systems for Hotel Rooms

For all new hotels, each guest room must incorporate control systems that can turn off the lighting, air conditioning and power, when the room is not occupied.

In addition, it is also recommended (optional) that each guest room incorporates control system that can turn off the air-conditioning when the balcony door / window is kept open.