

CNLIGHT LED LIGHTING

PORTFOLIOS

Chapter Four : LED Downlight



www.cnlight-lighting.com

● LED Downlight Introduction

PART ONE: LED Downlight Brief Introduction

The LED downlight cover adopts the flame-resistant ABS, and the dispersing agent is applied into the PC material of panel, so it solves the disadvantage of LED glaring light, emitting the soft and warm ray of light, which is preferable using in indoor area. The hidden style lighting fixture mounted inside the ceiling, which is a kind of directional fixture, only the opposite surface can receive lights. The ray of light concentrates as a spotlight, all lights shooting downwards, can create an obvious comparison effect between brightness and darkness. The wide range size of our downlight can increase the soft atmosphere, building a comfortable ambience and alleviate the room tight feeling.

1. Advantages

- (1) Decorate your home to be more artistic. Keep the indoor decoration as integrated and perfect; never confound the setting of other lamp. The light source is no exposure, no glaring light, which gives people a soft and balance visual effect.
- (2) High color rendering. The light is more approaching to the natural light compare to the traditional lighting fixture. Under the lighting of downlight, the object color appears to be much closer to its natural one.
- (3) LED downlight uses a movable fixing bayonet, which is convenient for installment or dismantle. It can be mounted inside the different thickness of the ceiling from 3mm to 25mm, and easily dismantle if repair acquired.

2. Regular Size

Refer to the size of downlight usually consider two factors, one is outer diameter of downlight, the other is hole size of drilling on the ceiling.

(1) Downlight Size

Type	Hole size (mm)	Outer diameter (mm)
2 inch	Φ70	Φ90
2.5 inch	Φ80	Φ102
3 inch	Φ90	Φ115
3.5 inch	Φ100	Φ130
4 inch	Φ125	Φ145
5 inch	Φ140	Φ165
6 inch	Φ170	Φ195
8 inch	Φ210	Φ235
10 inch	Φ260	Φ285

(2) Downlight size corresponding to Power

Size	Light source Power
2.5 inch	2W/ 3W/ 4W
3 inch	3W/ 4W/ 6W/ 7W/ 8W
3.5 inch	3W/ 5W/ 6W/ 8W/ 9W
4 inch	3W/ 4W/ 5W/ 6W/ 9W/ 10W
5 inch	5W/ 7W/ 8W/ 9W/ 10W/ 13W/ 15W
6 inch	7W/ 8W/ 9W/ 10W/ 12W/ 13W/ 15W/ 21W
8 inch	10W/ 15W/ 18W/ 21W/ 24W/ 30W

● LED Downlight Introduction

❖ Related Product: Cnlight LED downlight



A. Working voltage: AC 220V

B. Specification: 2.5 inch (4W) , 3 inch (4W), 3 inch (6W) , 3.5 inch (8W) , 4 inch (10W) , 5 inch (12W)

C. Materials: Macromolecule plastic cover + Aluminum pillar body heat sink

D. Color temperature: 3000K / 5000K

Through thousands of color temperature comparison in the national level laboratory, we select the healthiest color temperature with the help of Health Light optimal technique, which will be protective and caring for your family.

TIPS:

Compare to low color temperature as warm light, high color temperature as cold white will make people feel brighter subconsciously by mistake. Actually, if the luminous flux is the same, the lighting intensity will also be the same. Working under the pale lighting for a long time, people will feel irritable or boring in negative emotions. Scientist research shows that high color temperature as cold white light will affect children's personality, and even turns them into unsocial or irascible which is bad for their health.

E. Application area: Hotel, office, household, emporium etc. indoor lighting areas.

F. Advantages:

Ultra thin design can still be installed in extremely small space.

High quality of bright enhancement film, it can prevent glaring light, but of super high brightness.

Adequate power LED chips, never cut corners, longer lifespan.

● LED Downlight Introduction

PART TWO: LED Downlight Application Areas



Light source color temperature application

Light source type	Application
Warm white	Hotel: Reception, Lobby, Stairs, Lift, Canteen, Guest room, Internal corridor, Toilet. Mall: Cashier desk, Internal/External corridor, Shops, Lifts, Stairs.
Neutral white	Mall lobby, Corridor, Shops, Stairs
Cool white	Hotel: entrance, outer pavement Mall: Lobby, Lifts, shops, outer pavement

Application size

Size	Usage range	Application areas
2.5 inch	Normal	Hotel: Stairs, Lifts Mall: Shops(jewelry and skin care)
3 inch	Few	Hotel: Lobby, passage Mall: entrance of lift, passage
4 inch	Broad	Hotel: Entrance, reception, stairs, canteen, passage, toilet Mall: Shops (food, jewelry, skin care, shoes, brand store),outer passage, counter, bank
6 inch	Broad	Hotel: Entrance, lobby, main passage Mall: Entrance, lift , shops (food, wedding dress, glasses, brand store), Cinema
8 inch	Broad	Hotel: Lobby, entrance. Mall: passage, hall, lift corner, shops (jewelry, clothes, shoes)

● LED Downlight Introduction

Installation Spacing

Installation Spacing	Application area	Remarks
0.8-1.0 Meter	Hotel reception, Hotel lift, Skin care shops ,Jewelry shops	Infrequent
1.2-1.5 Meter	Hotel entrance, lobby, passage, toilet, shops (food, jewelry, shoes, brand store, glasses) supermarket, bank	Frequent
1.8-2.0 meter	Hotel passage, lobby ,entrance, stairs, Mall passage, hall, entrance, outside the shops	Frequent
2.2-2.5 meter	Hotel entrance, passage ,outer passage, stairs; Mall entrance, outer passage, food store, printing store, bank	Infrequent
Above 3 meter	Hotel outer passage	Rare

Installation Height

Installation Spacing	Application area
2.5-3.0 M	Hotel stairs, canteen, reception , passage, shops(skin care, jewelry)
3.3-3.5 M	Hotel reception, passage, lobby , mall stairs, shops ,entrance.(mostly)
3.5-4.0 M	Big mall. Mall entrance, corridor, lobby, bank outer passage
7.0- 10M	Hotel lobby, Mall entrance passage

Conclusion: 4 and 6 inch downlight are frequently used in commercial lighting decoration project; installation height in front gate normally up to 8-10 meters, indoor corridor, shop ceiling normally up to 3-4 meters, counters up to 2-2.5 meters. It does not have regularity of the installation interval which usually between 1-2 meters. Outside Shop areas normally use cool white light, while inside the shop prefers warm white light. Because of the ceiling are mostly in white color, the lighting fixture will be frequently in white color as well.

PART THREE: LED downlight structure

LED downlight is consist of LED chips, light source, lamp body.

1. LED chips

LED chips determine the lifespan of the downlight, currently, American CREE, Japan Nichia are the representative of imported high quality LED chips. High cost effective representative manufacturers as Taiwan Epistar, Everlight. China Mainland as SANAN, Enraytek etc. High quality chips enable the downlight have high natural brightness, long lifespan, but also high cost as well. Low cost LEC chips shorten the lifespan, large light decay, but the prices are very competitive which has become small manufacturers' first option.

The LED chips for downlight can classify to large power chips, small power chips, and integrated chips.

A. High power LED chips have 1W, 2W, 3W single chip.

● LED Downlight Introduction

- B. Small power LED chips can classify into 3014, 3528, 5050 chips by encapsulation methods.
- C. Integrated LED chips, as COB. Very few light spot, good in heat dissipation.

As for LED chips, it's better to use high power one like single 1W chip, but not small one like 5050,5630 etc. Because even small LED chips are of brightness but still cannot obtain strong light intensity, while high power chips like COB light source become the best option as higher light intensity.

2. Light Source

LED light source is the heart of LED downlight, it has a very large influence to the downlight lifespan. Because the LED luminous efficacy will be dropped down accompany the increasing temperature, therefore, the heat dissipation takes a very important part in performance. The higher luminous efficacy is, the fewer lose of power will be, and also the fewer heat created inside the lighting fixture, means reduce the temperature of the fixture.



Many factories use over-current driver, unilaterally pursue transient brightness, the overload working condition will sharply dropdown the lifespan, when exceed the rated current which cause shorten the lifetime or even burn the LED chips.

Cnlight uses the constant current drive technology, effectively increasing the negative feedback of the LED temperature in the constant current output, avoiding over temperature of the LED and depreciation.

3. Lamp body

The downlight is mainly consist of spring brackets, outer cover, optical lens, heat-sink.

(1) Outer cover

The cover mainly includes metal alloy or plastic.

- A. Metal alloy cover

● LED Downlight Introduction

Materials normally are iron, die-casting aluminum, aluminum, stainless steel. Iron one seldom used in household decoration, but they price is much lower, so this type will use in project decoration more as the frequent renovation required in project decoration. Since the household decoration will use at least for 5 years, we recommend using die-casting aluminum, aluminum profile or stainless steel style cover for household decoration.

Surface treatment: Specular oxidation, frosted oxidation, brush oxidation, oil painting, power coating etc.

B. Plastic cover

Advantages:

Plastic cover can largely reduce the cost of materials.

Lamp cup integrated with cover, diffusion plate is glued on the panel ring, and it will be more convenient for assembling, which also largely save producing time and more suitable for mass production.

(2) Optical lens

It also name light diffuser. Usually it's made of PC or glass. Most manufacturers are using PC cover.

A. Advantages of PC optical lens.

- Transparency: good (> 88%). It will not have discoloring, atomization, bad transmitting.
- Impact resistance: PC is the best one to resist impact among heat conductive materials, even under high temperature condition; it will not change the performance with small stress relaxation. Optical lens made up of PC have superior performance of impact resistance, maintaining for a long time even in a wide temperature range (-40°C~+120°C)
- Fire resistance: Leveling in B1 according to GB8624-97 standard, no fire drop, no poison gas.
- Temperature endurance: brittle temperature is -100°C in low and 146°C in high. Allowable temperature ranges from -40°C~+120°C in long-term load bearing, from -100°C~+135°C in short-term load bearing.
- Sounds insulation: Excellent sound insulation. First-choice material for international highway noise barrier.

B. Advantages of Glass optical lens

Frosted glass can adjust the beam, preventing the uncomfortable beam reflecting from the internal reflector shell. Its outlook is of taste and class. But glass is easily broken and damaged during the transportation and assembling.

❖ Related product: Cnlight LED downlight

A. Excellent Anti-dazzle performance

Applying high-quality bright enhancement film LGP, focusing the scattering beam from the light source to the front, anti-dazzle and high luminous output.

● LED Downlight Introduction

Cnlight VS Other manufacturer



B. Genuine Anti-blue light overflow technology

Our Anti-blue light macromolecule coating is for reducing the radiation of blue light of LED, together with high-end low blue light LED beads, forming a system to control the blue light, precluding the largest harm from LED lighting.

TIPS:

Blue light is not the light in blue color, but the high power visible light in 400-500nm wavelength. It will optically harm our retina through the crystalline lens, speeding the oxidation of the cells in macular region, and even consist of carcinogenic risk. Therefore, blue light is proved to be the most harmful visible light.



(3) Heat-sink

LED downlight heat-sink normally use heat conductive aluminum profile, it can be classify as sunflower radiator, die-casting radiator, fan combination radiator. Good radiator will minimum the luminous decay rate, ensure the long lifespan of the LED chips.