

What to Look for When Buying Shop Lights

Light Output

The light output of LED lights is commonly measured in lumens. Conventional light sources were purchased according to watts. The higher the wattage, the brighter the bulbs were. Lumens were of little concern back then, but as low-wattage light sources that produced quality light were introduced, lumens became an essential part of light bulb purchase.

And as advancements continue to be made in LED technology, LED shop lighting has become more efficient, giving quality, uniform light for very little wattage. The lights have also become more affordable. LEDs now offer superior light for less than half the wattage of conventional lights. Wattage, as a measurement for quality light, has become invalid and lumens (and luminous efficacy) have taken over.

To know how bright a light source is, there are a few things you should keep in mind:

- The brightness of the light at its source
- How much of the light illuminates objects a distance away from the light source

Luminous Efficacy

A light source's luminous efficacy describes its ability to emit light using a specific energy draw. It is calculated in lumens per watt. The higher the value is, the better the bulb is at energy efficiency.

Luminous efficacy is used to determine a light source's efficiency and helps dictate how many light fixtures are required in a particular space. HID shop lights have lower levels of luminous efficacy than LED shop lights, which means that they are less energy-efficient light sources.



Foot Candles

Foot-candles are units of illuminance used by most lighting professionals to measure the appropriate levels of light required in outdoor and indoor spaces. They are used to measure the intensity of light as it falls on a task area or an object.

While lumens are used to quantify the intensity and power of light emitted by a light source, foot-candles are used to quantify the intensity produced by the light as it hits an object.

Light tends to decrease in intensity as you move away from the source, even though the light source remains bright. An object that is illuminated by the light at a distance receives much less light than an object that's near the light source. To ensure that all objects in a location receive the same amount of light, you either have to move them closer to the light source or increase the number of light sources.

In lighting, 1 foot-candle = 1 lumen for every square foot. Foot-candles are photometry units from the English standard of measurements. The SI equivalent of a foot-candle is known as the lux.

One lux equals one lumen per square meter of space lit. If you want to convert FCs to lux, the equation used is $1 \text{ FC} = 10.76 \text{ lux}$.

Illuminance

The illuminance of any given space is affected by the location, orientation, and the size and shape of its light sources. Illuminance is the quantity of visible light that illuminates a specific point on a surface (plane) from all directions above the surface (plane). Lux is the SI unit for illuminance.

Color Temperature

In layman's terms, color temperature describes the color appearance of light. Most white light produced by light sources has a tinge of other colors in it. Warm white light colors have a yellow/red/orange glow while cool white lights have a blue tint to them. Between cool light and warm light lies daylight white, the most popular of all light colors.

Since the terms cool and warm are very imprecise measurements, there is a more accurate color measurement system used. It is known as the Kelvin scale. Kelvin is an SI unit of thermodynamic temperature.

While light colors are measured in temperature, light does not have a temperature per se. Color temperatures are derived from the color changes a piece of metal like iron goes through when being heated. The wide range of colors that the metal produces help describe the various shades of white light. When iron is heated, it glows red hot, and upon further heating, it begins to take on an orange hue. As heat increases, the iron melts and its color changes to bright white then to bluish white. At 2,700° Kelvin, the iron glow is a warm yellow color referred to as warm white.

HID shop lights usually produce warm white to daylight white colors. These colors are known as warm colors simply because artists refer to oranges, yellows, and reds as warm colors. Blue is referred to as a cool color. The CCT measurement may appear contradictory. A high color temperature denotes a cool color (blue), while a low CCT represents a warm color (yellow, red, orange).

Which CCT Is Suitable For Your Application?



- **2000K to 3000K**

This light is soft and yellow and is perfect for recreational and rest areas in the outdoors as well as guest lounges, restrooms, and dining areas.

- **3100K to 4500K**

This light is white in appearance and works well for task lighting in workspaces, offices, and food processing facilities.

- **4600K to 6500K**

This light has a daylight-white quality to it and a blue tint. It is used in work areas where complex tasks are carried out, such as garages and workshops. High color temperatures increase color acuity and color perception since there are no warm colors like yellow to introduce a bias.

- **6500K and above**

This is a bluish-white kind of light that is perfect for task lighting. Extremely bright in appearance, it is commonly used to illuminate jewelry and for display lighting. It accentuates the sparkle of precious jewels, and when used in car dealerships, it highlights the colors of cars, making them more enticing to potential buyers.

LED shop lights have a wide range of CCTs than HID shop lights, occupying 2200K to 7000K. The color temperatures of HID shop lights are usually dictated by the components used.

Color Rendering Index

To describe how competent a light source is at revealing an object's colors to the human eye, the color rendering index is used. CRI is also used to define how accurately a light source reveals subtle color shades and variations in objects to the eye. It is a scale with values ranging between 0 and 100 that describes the

color rendering accuracy of lights in comparison to a reference source of light – such as sunlight or blackbody radiation, which have a CRI of 100.



Lights with high CRIs render colors better. LED shop lighting has CRI values of 90 and above and is therefore excellent at color rendering. These lights can be used to light up tasks that require excellent color perception. HPS shop lamps have low CRI values of 25 and below while MH lamps have CRI values of 60-65. If the shop lights you're getting will be installed in areas where color discrimination is not of utmost importance, they can have CRI values of 80. However, areas that have a lot of activities whose success and efficiency is hinged on accurate color rendition require energy-efficient LEDs with CRI values of 90 and higher.

Light Control Features

According to Energy Star, at least 30% of all energy utilized in buildings is wasted or inefficiently used. Light systems can help enhance energy-saving measures through light control features. Light controls can also help increase security while enhancing the comfort of the occupants in the building.

While LED shop lights can help save up to 80% in energy costs, light controls can help cut down on energy wastage by up to 60% or more. Light controls are used to enhance energy efficiency while giving the building owner control of the lighting.

Features of Light Control Systems

- An on / off switch
- Dimmers for high and low light output adjustment
- Flexible light control that meets the visual needs of the user of the light
- Automation that cuts down on energy use, improving sustainability
- Light color adjustment
- Light monitoring, measurement, and data reporting features
- The altering of mood or atmosphere by using light to create varied types of ambiance
- The change of the appearance of a space
- Reduction of glare that causes visual discomfort at work
- Ease of maintenance and management of light fixtures through controls

Types of Light Controls



Photocells

Motion Sensors

- **Switch**

This basic light control feature is a switch, that when flipped on, completes a circuit that allows the flow of electricity. When the switch is flipped off, the circuit is broken, disrupting the flow of power, which turns the lights off.

- **Dimming**

When this basic switch is used, current is altered, raising or lowering a light fixture's light output.

- **CCT and Color Control** some LED shop lights have adjustable CCTs and their color temperatures can be adjusted according to the time of day. Through the use of tunable LED lights, CCTs can be manipulated not only to enhance the rendering of color but also the ambiance of the space.
- **Automatic Control**
This control uses signals from light or occupancy sensors depending on time, light levels, or occupancy of the space. It helps cut down energy use drastically and is ideal for management systems.
- **Intelligence Systems**
These systems depend more on microprocessors for light adjustments. The microprocessors – or light controllers – use their algorithms to make decisions on light adjustment levels.

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