How to light artwork perfectly

When lighting artwork it is so important to gain a full canvas coverage and to do this you will need to use a combination of lensed LEDs at pre-determined spaces which will be dictated by the canvas size and orientation. It is important to state that LEDs will not produce damaging UV emissions and when correctly set up will have no damaging heat present either from the LEDs or the LED driver.

This is a complex subject to understand because there are so many important factors that need to be considered and I will go through these one by one to explain why they are all so important, what the options are and how to avoid any issues in the future.

Colour temperature

When lighting art the colour temperature is so important. Most pieces of art should be lit with a 2700 Kelvin colour temperature to bring out the rich colours within the piece. Other colour temperatures can be used such as 3000 Kelvin and 4000 Kelvin to light paintings and this will be dictated by the colours and subject matter.

Colour rendering index (CRI)

When lighting art you want to use the highest colour rendering index that you can. CRI is measured from zero to 100. Many LEDs have a CRI of about 80. The higher the CRI the better it is for lighting art. 98 CRI is currently the highest LED level in the marketplace and will allow the rich reds and blues to show their true colours as well as adding depth and definition to your paintings. This will make such a difference to your viewing pleasure.

Canvas coverage

To gain a full canvas coverage you will need to use a combination of lensed LEDs. The number, angles and intensities will be determined by the canvas orientation. Some picture lights will not cover the entire canvas and give high intensity light points, particularly close to the picture light head. These are known as hotspots and will be detrimental to your painting causing a large over illuminated area which will cause irreparable & long term damage to your painting.

Correctly lighting your painting

The way the painting is lit can also be affected by the materials by which it was created, such examples of these are sketches, water colours, oils, pastels and acrylics and different intensities of light will be required for each. For example, an oil painting should never be lit at greater than 200 Lux this total is based on 8 hours of illumination each day if we compare that to paper sketch this should be much lower at under 50Lux over the same period as set out by conservation standards. These maximum levels can be achieved by reducing the light intensity and can be reached using neutral density filters or by dimming the light levels.

Picture surface

Artwork can be open to the elements or behind glass. The glass can be standard or anti-glare and your picture light will need to factor each of these options into its construction. The position and angle of the head is critical when lighting a painting with glass so that reflective points are removed when viewing your artwork.

Lightsource type

There are many types of lightsource available, but the main two sources today are halogen and LED. LED is by far the lightsource of choice due to its longevity, flexibility, adaptability, running temperature and maintainability. Through appropriate lensing full canvas coverage is possible for all canvas dimensions. It should be noted that Halogen lamps produce UV light, run at higher temperature, and are limited to light spread. All these factors will have a detrimental effect on the artwork if not set up correctly.

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LED lensing

Each LED can be spaced to work alongside other LEDs and by using various lensed outputs will give the full canvas coverage. The lenses should be chosen from a selection of say 15, 30, 45, 60 and elliptical degrees to give the ultimate cover across the canvas. The spacing and distribution from the LEDs are essential to reach all areas of the canvas. Failure to use correctly lensed LEDs will result in sub-standard lighting especially on larger paintings. A 15 degree lens will give a narrower beam but will reach much further, whereas a 60 degree lens will result in a much wider coverage but not reach as far down the canvas. There is a real art to calculating the number of LEDs, relative positioning in the head and the lenses selected to light a painting correctly.

Dimming

Picture lights can be wired into a non-dimmable supply or can be dimmed. There are many types of dimming protocols available such as dali, mains dimming, 0-10V, 1-10V, Lutron, phase dimming, etc. It is important to select the compatible dimming driver when working with an existing dimming protocol to ensure that the picture light dims successfully.

Reduced illumination without dimming

The insertion of a neutral density film can be positioned to the front of the lensed LED. It will not change the colour temperature or CRI but will reduce the light intensity. Very few companies allow for this when it is required. Over illumination can affect your artwork and it is important to protect against this.

Picture light head

To gain full canvas coverage the size of the head is essential. If the head is too small you will only be able to light the central section of the painting leaving the outer areas unlit. As a rule of thumb, the picture light head should not be less than 6 to 8 inches less than the canvas width on standard to large paintings. There are of course exceptions to this rule, and it is important to know when to vary this. To the back of the picture light should be a swivel knuckle to allow overall positioning above the painting. So, as you can see, each head needs to be individually calculated to give best coverage across the canvas. Head sizes start at 2 inches (miniature single LEDs) and should increase in 2 or 4 inch increments up to 60 inches as standard. For extremely large paintings further non-standard sizes should be available of up to 120 inches. Alternatively, multiple picture light heads can be used successfully and overcome the issue of transportation. With respect to the positioning of two heads on the same painting, there needs to be a gap between them and this needs to be calculated accurately to ensure over or under illumination is not experienced.

Picture head style

The two most popular styles of LED picture lights are the fixed and the variable position art lights and careful consideration is needed here to ensure that you select the model best suited to your specific needs.

Fixed Art Lights

This style has lensed LEDs mounted in fixed positions at pre-set points along the width of the head and can give a very good canvas coverage when set up correctly. To ensure artwork is not over lit it is important to ensure that the spacing between the LEDs is not too close (less than 5 inches could give too much illumination). As the LED positions are pre-set and fixed the head width and height can be very compact in size.

Variable Art Lights

This style is maintainable and adjustable and allows you to select and position your lensed LEDS on a rail as required to give a full and uniform canvas coverage across the painting surface. As the LEDs are positioned along the rail, they will have a secondary tilt action to give even better positioning and coverage. The head size will be larger to accommodate this added flexibility but will still be in keeping with the painting. This style of art light will give the ultimate lighting experience due to its flexibility.

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Arms

There are two standard styles of arms; the classic arm and the straight arm. The arms are sized along with the head to position it correctly. The classic arms should come in 3 standard sizes small, medium, and large offering 7 to 14" options as standard as well as in bespoke sizes where required. The straight arms would be attached to the wall using either a round wall mount or a square wall mount. The arms connect to the head via a swivel knuckle and should have a 90 degree adjustment to allow for an external tilt to the head. The standard arms should be either attached to the back of the frame or to the wall. This can be by personal preference or dictated by the environment the art is in. Picture lights can come with 1 or 2 arms and manufacturers overall offer a single arm up to a certain length and then switch over to 2 arms at a certain length. I have found that single arms are best used on heads with a width of up to and including 24"and then introducing a 2nd arm to heads with a width of 26" or larger.

LED drivers

It is important to select the correct size of the LED driver to power the picture light. the driver will need to be large enough in output to run the total number of LEDs in the head plus some extra capacity. This extra capacity is essential to ensure that the driver does not become too hot and damage either the frame or the painting. If there is too much excess capacity available, you will experience certain issues such as flickering or failure to switch on. Many drivers are available but careful selection is required. The following points need to be considered when selecting a driver; minimum & maximum wattage in relation to the total LED requirement, constant current or constant voltage output, the physical dimensions, the operating temperature & where it is to be positioned in relation to the painting.

Maintenance & Adaptability

As technology develops in the future the variable art lights will be able to respond to changes and can be upgraded quickly and easily, retaining the main parts, and keeping the costs to a minimum.

Picture Light Colours and Finishes

There are many types of finish available such as Polished Aluminium, Polished Brass, Satin Brush Steel, Satin Brushed Brass, Architectural Bronze, Antique Bronze and specific RAL colours applied to an Aluminium head and arms. The most popular by far (>95% of sales experienced) is the Classic Old Gold paint on aluminium.

Installation

This will be the subject of a separate paper. I will be developing an installation guide to allow you to carry out your own installations yourself or using a local trusted contractor to keep your costs to a minimum. Installation does not have to be complicated, and a simple guide will help to keep your costs under control. Where complex installation is required the use of a specialist team should be used.

Summary

When art is lit correctly it makes such a difference. There are many options available in the marketplace, but many do not consider all the above details. As you can see it is not that easy to light a fine painting well. You need to consider how to cover the entire canvas evenly at the right intensity, not too bright, in the right colour temperature (in most instances 2700 Kelvin but not always) and with the highest colour rendition possible. All these points together will bring out the texture and rich colours in the artwork. Only when fine art is lit correctly can you truly fully appreciate it.

So many clients have told me that although they had looked at a painting for years, had never noticed a feature in the painting such as an animal, a facial expression, or some other hidden gem until it was lit well. This happens all the time and that is why it is so important to light your art correctly. Being able to see all those finer details within your painting will make you appreciate it even more.

Other types of art lighting are available such as remote art lighting from Fibre optic Light Systems, LED Track Lighting,

and recessed or surface mounted LED Lighting. They can offer either a framed or soft focused effect across the canvas. These may be appropriate for certain applications and should be considered. If you require details on any of these other options, please let me know and I would be pleased to detail some points to consider if it would be helpful.

If you still have any questions or would like a specific price for a piece of artwork that you have, please do contact me directly, I would be pleased to look at this for you and help you light it correctly.

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