Choosing a Camera Light

The LED Unit has four emitters sealed in a single lens at the end of the heat sink stem.

by Chris North M.M.Inst.V | IOV Area 06 Rep

Most of us probably film in available light most of the time - both outdoors and indoors. But there are often situations where a bit of additional light can lift the image or reduce harsh shadows. I am not a great fan of on-board camera lights but there are now several contenders that can produce a usable amount of controllable light, such as the futuristic looking Dadolight Ledzilla reviewed by Colin Riddle in the November issue. And of course you do not have to use them 'on' the camera. Choosing the right light or lights for a particular job can be difficult. There are almost too many out there to choose from. So when it comes to buying your own kit you need to think carefully about what you are going to use the light for. There is no universal light that will cover all situations!

The best light I have for indoor use, in terms of uniform light quality and wide spread with plenty of brightness, is a very simple 12v halogen light which I bought over 25 years ago along with a large lead-acid battery pack. It will take up to 100 watt halogen lamps! But it consumes a lot of power, there is no dimming facility, it gets quite hot, it can fill a room with light but it is not very useful outdoors because it cannot concentrate a beam of light on the subject and it also needs a daylight conversion filter, which reduces the light output considerably.

LED lights on the other hand are daylight balanced so you don't need a filter to use them outside, which is where you need the most light from your lamp. And of course, LED lights use only about a quarter of the power of halogens and they don't get hot. Some of the small flat panel LED array lights can produce a nice even soft light but many have to be used quite close to the subject because the dispersed light can not be concentrated into a beam easily. LED lights with up to about 10 high brightness LEDs often have a simple plastic 'multi-lens' attachment that enables the light to be concentrated into a hot spot to gain a longer throw - and some are now dimmable. But you have to be cautious. Some dimmable lights can cause strobing and cheaper ones may not be properly colour balanced. That is why you have to pay a lot more for professional lights, as well as to get a rugged build quality and a repairs service.

I have a pair of multi-led Rotolights, which are fine for close work and close fills and modelling indoors but they are not powerful enough for me to use as fills in daylight. So I needed something with more punch and control. The Dado Ledzilla was tempting but I felt I needed something with a bit more oomph as well as control.

Now comparing lights is not straight-forward. First of all they can have their relative 'brightness' expressed in different units. Candelas (foot candles), lumens or lux - or simply as a wattage or tungsten equivalent wattage. Different manufacturers may give the lux reading at different distances - some use the light levels at 2m others at 1m. At 1m a target subject will receive four times as much light as it would if placed 2m away from the lamp. And if that is not sufficient confusion, manufacturers will normally quote the light intensity of the concentrated 'spot' beam if the light can be focussed in that way. So on full flood, a focusable light may be less bright than say a lower rated flat panel LED array. That's not all. We also need to know how wide the light beam will be for each light at the same distance, on both flood and spot, so you need to look at the specified beam angles. Do you need a true 'spot light' with a crisply defined spot beam or just a hot spot with a good throw or simply a wide spread of light ? You also need to decide whether you wish the light to be self powered with an on-board battery or whether you wish to power it from your camcorder battery or a separate battery pack or belt. Not all units give you powering options.

The 12v PAGlight LED

After several days of trawling through specifications, checking beam angles and calculating light intensities with the inverse square law I finally made a choice. The 12v PAG LED ENG light. Now I am not saying that this is necessarily the 'best' light out there. It depends what you want to use the light for

Simple 50w tungsten lamp

PAG LED - Flood (max)

PAG LED - Spot (max)

Rotolight

N.B. Relative brightness and spread of lights taken with same camera settings

and how flexible you need the light to be to cover various situations. And what about size, cost, durability and how will it complement any lights and batteries you may already own? I have to say, I also have a preference to buy British if possible.

So how does the PAG LED shape up? The first thing that strikes you when opening the box is that this is certainly no toy. That should come as no surprise since PAG have been making on-board camera lights and batteries for news crews for over 30 years. It is a solid, well made piece of kit about 14cm long (including the LED unit) and about 6.5cm square, supported on a stout column which attaches to a 'power base' shoe fitted with whatever plug lead you specify. You can mount the shoe permanently on your camcorder if you wish and slip the light unit on and off as you need it. This combination lifts the lamp unit about 6cm above your camera mount. There is a strong 5cm long lever which slackens the vertical pivot so that the lamp can be angled down by 15 degrees for close shots or tilted almost vertically upwards so that you can bounce light off the ceiling. The unit with the LED back and accessory kit weighs about 490g and is made from a virtually indestructible heat-resistant engineering polymer.

The LED unit drives a 'one point' light source which is actually made up of four emitters in a single unit, behind an acrylic lens. The whole unit can easily be removed simply by pushing a catch and withdrawing it from the lamp housing. So if you wish you can quickly and easily replace the LED unit with a halogen bulb holder or even a PowerArc unit, which will deliver 100 watt equivalent daylight from a 31 watt lamp - although the latter is very expensive. The LED unit is more efficient and can produce a daylight beam equivalent to a 50 watt tungsten halogen bulb from an 11w lamp. The centre of the hot spot beam on the current LED model now has a brightness of 900 lux at 2m - which, using the inverse square law, would be equivalent to around 3600 lux at 1m !

The light beam can easily be adjusted from flood to 'hot spot' with a simple lever (there is one on each side of the lamp housing) and the brightness can be controlled by a small knob on the back of the LED unit, cleverly designed so that you can make adjustments with your thumb - no finger fiddling necessary.

I also bought the optional filter kit which consists of a daylight-to-tungsten conversion filter, a diffuser and 2 barn doors, mounted on a rotatable ring, which attaches firmly to the front of the light. The filter and diffuser are high quality glass. The barn doors are black anodised aluminium and the mount is made from a rugged compound like the lamp housing. All very well engineered and finished.

On Test

The first thing I do with any new piece of kit, no matter how simple, is to test it out and see how it performs. So I first set the PAG light up on a tripod 2m in front of a white wall in a dark room on full power. The flood setting produced a fairly even spread of light with a diameter of over 2m, since the beam angle is 62 degrees at this setting. The centre of the beam appeared to be just a tad darker, with a slightly brighter arc further out but this can be balanced with a slight tweak of the flood-spot lever. Pulling the unit to full 'spot' (22 degrees) produced a more intense central beam 45-60cm in diameter, surrounded by a dimmer beam almost as large as the flood beam. I did notice that if you knock the rear LED unit, the spot can be displaced slightly off centre, and if nudged in the flood position it can produce a slightly brighter area within the wide beam. This was not really a problem in practice and can be quickly corrected by gently pushing the LED unit up to the back of the lamp housing.

LED lights generally are difficult to flag. Their light seems to have the ability to go round corners ! This is especially true of the multi LED arrays, whereas with a single LED system the scatter is considerably reduced. The PAG uses

Left - Sunlight only : Right - Sunlight + PAG at 1m The PAGlight lifts the shadows and gives a more natural colour to the skin, even in bright sunlight.

a 'single' LED unit so barn doors on the PAG do effectively cut down the spread of light and provide a defined edge, but there is still a good deal of spillage - albeit at a much lower intensity. So you have to make your choice. I should also mention that the PAG barn doors are not quite high enough to cut off the light right to the edge of the circular beam but if they were bigger they would stick out and make the lamp less transportable. After all, this is an ENG light.

A word about colour temperature. Whilst the PAG LED is basically a daylight lamp (5600K) and, as they say in the literature, it mixes well with daylight, it is fractionally on the yellow side of white when compared with my Rotolight, for example, which is rated at 6300K. To my eyes the Rotolight is a bit on the cooler side of white. So, as always, care is needed when using a number of different lights in the same set up, particularly indoors. Outside, the PAG colour temperature helps to make skin tones look more natural on a dull overcast day - adding a bit of sunshine ! And it is fine for reducing harsh shadows on an interviewee's face on a sunny day provided that the light is fairly close (1m - 1.25m) to the subject.

Indoors, the diffuser is very effective close to the subject, softening shadows significantly. The tungsten filter at first seemed a bit strong to me, given the colour temperature of the light, but it is fine alongside low powered house lights and table lamps, so I guess PAG have got that right too. Of course using the filter and diffuser reduces the light intensity considerably but there is sufficient light to play with in most situations, depending on how close you are to your subject and the brightness of any room lighting. The great thing is that you can dim the PAG to even out shadows or concentrate the beam if you need more intense light on a smaller area - and the colour temperature does not change.

Finally I thought I would compare the PAG with my other lights. I took my basic halogen lamp as the starting point and set exposures using this. The PAG on flood was 2/3 of a stop down and the Rotolight was a whopping 2 1/3 stops down at the same distance. However, the PAG on 'spot' was 1 full stop brighter than my 50 watt halogen lamp (according to my DSLR spot exposure meter). So overall the PAG LED stands up very well to the halogen bulb - and is much more effective in daylight.

Conclusions

The PAG was designed as a robust, flexible solution for professional ENG camera operators and that is where it excels. It can provide enough light to be used to boost interview shots outdoors and enough control to mix in with interior lighting on the move. The LED version uses only 11 watts of power and you have the option to buy halogen fitments for indoor use up to 100w - and even a 100w equivalent PowerArc for use in intense daylight. It may not be the trendiest light out there but for me it provides a good combination of functionality, flexibility, power and efficiency.

N.B. PAG also produce two smaller on camera lights (a 12v mini and 6v C6 kit with battery pack). No doubt there will be LED units for these smaller versions in the near future. www.paguk.com

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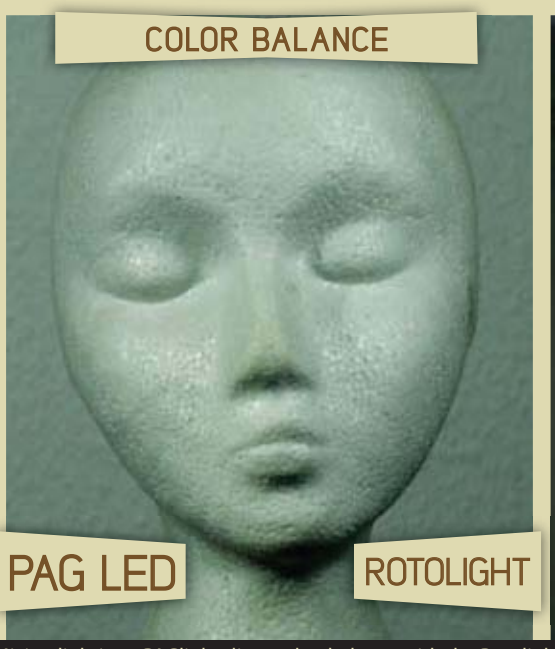

Mixing lighting - PAGlight dimmed to balance with the Rotolight shows the slight difference in colour temperatures.

The Barn Doors are effective but there is some light spillage