

# Photolearn

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## How to measure Colour Temperature

Two of the most important factors, when choosing a new flash system, should be consistency of **power** and consistency of **colour temperature**.

Consistency of power is important because, especially with digital, if the flash head can't be relied upon to produce the same power of flash every time then your results won't be up to scratch. This become important when more than one light is used at a time, because although inconsistencies can occur in both directions sod's law dictates that they usually happen in opposite directions!

As an example of why this matters, let's assume that you're using a key light and a fill light. If the key light produces 10% more power than it should, and the fill light produces 10% less than it should then the lighting ratio won't be what you expected and the exposure will be wrong. OK, to a limited extent you can see the effect on your LCD screen and adjust the power – but what if the very next shot is different and the key light underdelivers by 10% and the fill light overdelivers by 10%?

Sod's law will kick in again, and you'll probably find that the shot with the best expression is also the one with the worst exposure and the worst key/fill ratio!

Checking power consistency is easy; all you need is a flash meter, measure say 10 flashes at a range of different power settings and you'll know how well your flash heads perform.

But **checking colour temperature is at least as important**. Every flash head, regardless of make or price, produces different colour temperatures at different power settings. There are various reasons for this, from the quality of the capacitors to the duration of the flash.

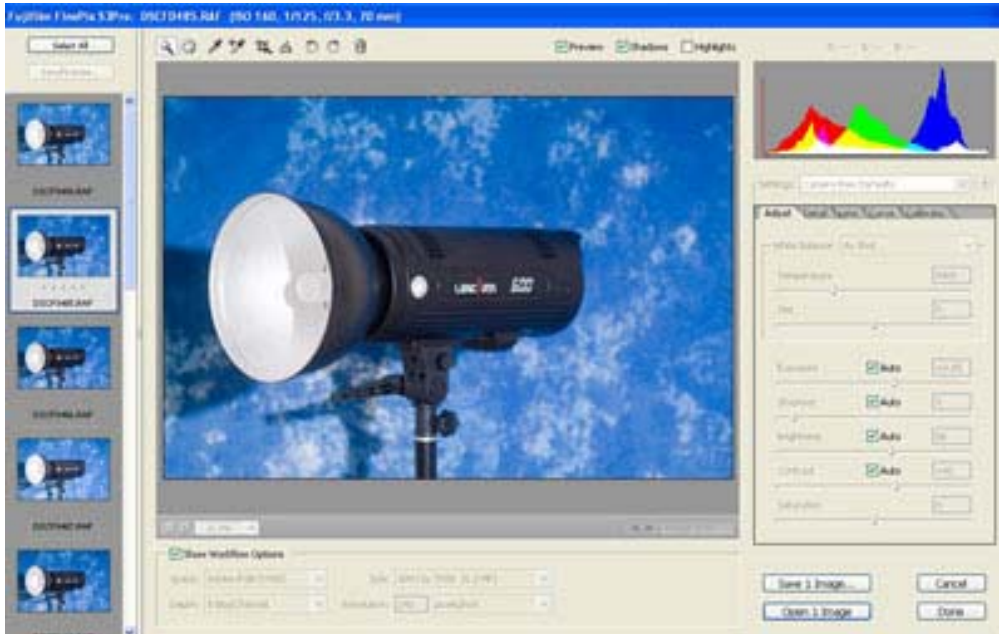
People often don't realise how much this matters, because they believe that if the colour is wrong then it can be adjusted on the computer but that simply isn't true when you're using more than one light because adjustments affect the whole image and can't be set differently for different lights.

Coming back to our example of a key light and a fill light again, if the key light at say full power produces a colour temperature of 5,500K and the fill light produces 5,200K then parts of the face will be correct and parts will look like an orange!

Unless you happen to have a very specialised, expensive colour temperature meter handy it *seems* impossible to measure colour temperature, or to understand the figures claimed by manufacturers – but it isn't, you can check very easily using Photoshop raw converter or any other image editing programme capable of reading raw files.

I ran my own tests with two flash heads that sell at very different prices – The **Lencarta ElitePro 600** and the much more expensive **Elinchrom Style 600**.

First, I photographed a blue mottled background with a flash head in front of it. The subject isn't important as long as it includes something of known, consistent colour – in this case the black body of the flash head. A grey card would work just as well, or you could include a grey card in the shot and use it to sample the colour with the eyedropper tool.

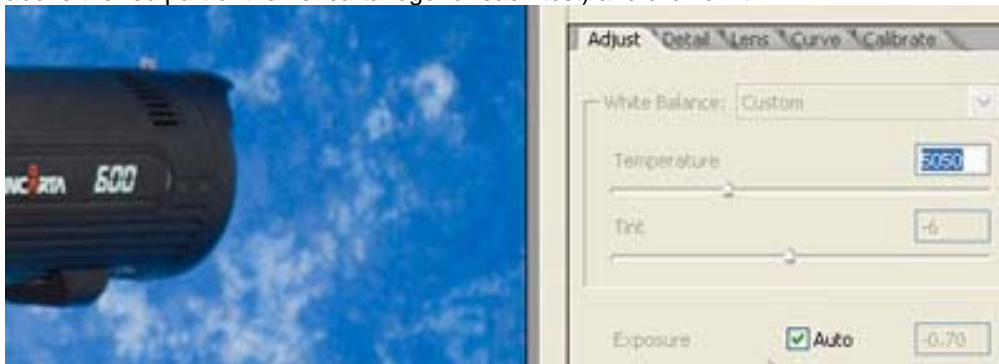


Here's our subject. As I tested two lights from different manufacturers with different accessory fittings I didn't use a softbox, because I couldn't have used the same one on both lights. Come to that I didn't even use a reflector, I shot with 'bare bulb' for consistency, which has resulted in harsh shadows. The shadows don't matter for this test.

On the left, you'll see a few of the thumbnails, with the 2<sup>nd</sup> one down selected. You'll see the icons for the various tools running along the top, we're going to use the colour sampler, 3<sup>rd</sup> from the left. Here's a better shot of it



Click on the eyedropper, place it over a known colour target (I used the area immediately above the red part of the Lencarta logo for each test) and click on it.



You'll see that the figure in the colour temperature window will change. It doesn't matter what that figure is, what matters is how much it changes between different shots at different power settings.

Write down the figure it's changed to and repeat the test with each shot, each of which was taken at a different power setting.

The closer the figures are to each other the better. In a perfect world they'd be identical but perfection is impossible. For most people and most types of photography, a difference of no more than 200K over a range of 5 stops is OK

As a matter of interest, here are the figures I got, using this method, on two very different flash heads...

**Lencarta ElitePro 600**

Full Power	5350
½ Power	5300
¼ Power	5250
1/8 <sup>th</sup> Power	5200
1/16 <sup>th</sup> Power	5150

So, a difference of 200K over 5 stops

**Elinchrom Style 600**

Full Power	5600
½ Power	5100
¼ Power	5050
1/8 <sup>th</sup> Power	5150
1/16 <sup>th</sup> Power	5100

So, a difference of 550K over 5 stops, which surprised me. The Elinchrom was more consistent at the lower settings but the colour temperature increased dramatically at full power.

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