

Topic 6 – White Balance

Learning Outcomes

In this topic, you will learn about the role of white balance in your photography and what this means for you when working with colour on your DSLR.

Light

Light has different colour temperatures and it changes throughout the day, especially among artificial light sources. Understanding white balance and how you can work with it on a DSLR camera is crucial to removing the colour casts and creating great colour photography. Of course, the camera can do this automatically for you, like a lot of the features on a DSLR. However, you've heard me talk about the limitations of these pre-sets. Most of the time, they work perfectly fine, but once you master this next feature on a DSLR camera its releasing you from another set of stabilisers and gives you more confidence in fully manual mode.

Leaving aside the camera, we usually don't notice the change in colour temperature on a day-to-day basis. The human eye is generally better at processing colour and our brain can adjust to realize what should be white in a scene. A camera, on the other hand, like most machines or tools that we use, needs our help.

Colour Temperature

Different times of day and light sources create different colour temperatures. Some of you have probably heard the measurement "Kelvin" before. Well, light is measured in kelvins and neutral light is produced at 5000K (kelvins), which is the equivalent to a bright, sunny day for us.

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The following list is a guide for the colour temperatures produced by different sources of light.

- **1000-2000K:** Candlelight
- **2500-3500K:** Tungsten Light (normal incandescent household bulb)
- **3000-4000K:** Sunrise / Sunset (clear skies)
- **4000-5000K:** Fluorescent Light
- **5000-5500K:** Electronic Flash
- **5000-6500K:** Daylight (clear skies with the sun overhead)
- **6500-8000K:** Overcast Skies (moderate)
- **9000-10000K:** Heavily Overcast Skies or Shade



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Why is Colour Temperature Important?

One of the best examples of colour balance and its effect on photographs can be seen in any home that uses the older incandescent light bulbs. These bulbs give a warm, yellow to orange light that is pleasing to the eye but did not work well with a colour film.



Look at old family snapshots from the days of film and you will notice that most of those that did not use a flash have a yellow hue overlaying the entire image. This is



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because most colour films were balanced for daylight and, without special filters or special printing, the images could not be adjusted to remove that yellow cast.



As we have seen, the age of digital photography came along and these things have changed. Most digital cameras, even our phones, have a built-in auto colour balance mode. This feature attempts to adjust and compensate for the various colour temperatures in a given image to bring the entire tone back to a neutral setting that is similar to what the human eye sees. It's pretty impressive and it really emphasises the advancement of technology.

So, how does the camera do this? Well, the camera corrects colour temperature by measuring the white areas, which we know as the neutral tones, of the image. For example, if a white object has a yellow tone from tungsten light, the camera will adjust the colour temperature to make it a truer white by adding more to the blue channels. As great as the technology is, the camera still has problems sometimes adjusting white balance properly. Therefore, it's important to understand how to use the various white balance modes available on a DSLR, or better yet, to do it yourself.



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White Balance Modes

It is standard for DSLR cameras to include a variety of white balance modes that will allow you to adjust the colour balance as needed. The symbols used for each of these are relatively standard and universal among all DSLRs but you can always check your camera manual to familiarize yourself with the symbols if you need to do so.

Some of these modes are a little more advanced than others. The modes are the pre-sets for common lighting conditions that will adjust the colour balance based on the average temperatures given in the list above. The goal of each of these is to neutralize the colour temperature back to 'daylight' balance.

Let's take a look at these preset white balance modes:

Preset White Balance Modes:

- Auto White Balance (symbol - AWB) has advanced greatly in reliability, and it should set the colour temperature correctly in all but the most complicated lighting situations. This is where you lose a small percentage of the control that I often mention.
- Daylight/Sunny (symbol - a sun with light rays) is used in 'normal' lighting conditions and is equivalent to what most colour films have used. This is generally the pre-set for afternoon exterior shooting.
- Cloudy (symbol - clouds) can be used on an overcast day to warm up the colour tone.
- Shade (symbol - house with diagonal lines stretching to the ground) is similar to the 'cloudy' pre-set and can either be used to fine-tune the colour balance if you happen to find that the balance isn't just right.
- Flash (symbol - jagged arrow pointing down) is also designed to add warmth to the colours when using a flash.



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- Tungsten (symbol - household lightbulb with light rays) can be used indoors under incandescent light when the auto white balance has not removed the yellow or orange cast completely.
- Fluorescent (symbol - horizontal line resembling a fluorescent tube with light rays) is useful in businesses that use fluorescent light when the auto white balance does not remove the blue or green cast completely.



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Advanced White Balance Modes:

There are generally two methods of slightly advanced white balance and they are the following:

Custom White Balance and Kelvin.

- **Custom White Balance** (symbol - two triangles on their side with a square in the middle) allows users to set their own white balance using a grey card (which has a reading of 18% grey, the midpoint between true black and true white) or white card. This is often used by professional photographers in a studio environment.
- **Kelvin** (symbol - K in a rectangle) allows you to set the colour temperature at your own discretion, giving you a very precise result. It is most useful when you know the colour temperature of the light source and allows for fine-tuned incremental changes.

How to Set a Custom White Balance?

Setting the custom white balance is actually very easy and it's a practice that serious photographers should be in the habit of doing. After a while the process becomes second nature and the control over colour is worth the effort involved.

You will need a white or grey card, which can be purchased at most camera stores. These are designed to be perfectly neutral and give you the most accurate colour balance reading. In the absence of a white card, choose the brightest piece of white paper you can find and make any fine-tuned adjustments with the Kelvin setting.



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To set custom white balance:

1. Set the camera to AWB.
2. Place the white or grey card in front of the subject so it has the exact light falling on it as the subject does.
3. Switch to manual focus (correct focus is not necessary) and get really close so the card fills the entire image area (anything else will throw off the reading).
4. Take a photograph. Make sure the exposure is good and that the card fills the whole image. If it is not correct, take your time and reshoot it. It's important to get it right, especially in the beginning.
5. Navigate to Custom White Balance in the camera's menu and choose the correct card picture. The camera will ask if this is the image it should use to set custom white balance: select 'yes' or 'ok.'
6. Back on top of the camera; change the white balance mode to Custom White Balance.
7. Take another photograph of your subject (remember to turn the autofocus back on, if you need it!) and notice the change in colour. If you notice that something isn't right, repeat all of these steps again.



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Conclusion

You can rely on AWB most of the time. This is particularly true when using an external light source (such as a flashgun), as the neutral light emitted by it will usually cancel out any colour casts.

Some subjects can cause a problem for AWB, in particular, photos that have a natural abundance of warm or cool tones. The camera can misinterpret these subjects as casting a colour over an image and the AWB will try to adjust accordingly.

Mixed lighting (a combination of artificial and natural light, for instance) can also be confusing for AWB in cameras. It's best to manually set the white balance for the ambient lighting, which will give everything lit by the ambient light, a nice warm tone. Warm tones tend to be more attractive to the eye than the very cold and sterile cool tones.



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What have we learned today? A Summary

We've learned all about how to use the white balance modes on your DSLR.

We've also looked at how we can manually set the white balance on our cameras.

