



Colour Calibration

What is colour calibration?

Colour calibration is an important step in your photography workflow to ensure that the colours you see on your own screen are accurate and can be accurately represented on other calibrated screens, on the club's projector and when printing your images.

All devices, including your camera sensor, computer or laptop monitors, phone screens, projectors and printers, can represent a slightly different set of colours (known as a colour gamut). If you do your editing on a calibrated screen and then display your images on a calibrated screen or projector, or via a calibrated printer, then you have the best chance of your images looking consistent across devices.

Signs of poor calibration can include things like prints or projected images looking over or under-saturated, inaccurate colour representation, or with blown out whites or lost details in shadows compared to what you saw on your own screen at home.

It's important to note that this guide is only a quick introduction to colour calibration. There's a lot more information online and a couple of useful links are included at the end of the guide.

How to calibrate your monitor

You can calibrate your monitor using a couple of methods:

1. Manually, using test charts and images
2. Using a dedicated colorimeter device.

Using test charts and images will give you a reasonable calibration but its highly subjective as you're using your own eyes! The most accurate way to calibrate your monitor is with a dedicated colorimeter device, but these do come at a cost.

Whichever method you use, it's generally recommended that you repeat the calibration on a regular basis. Also note that you usually need to let your monitor "warm up" for around 30 minutes before calibrating, and the ambient lighting conditions around your monitor will affect the results of calibration (think of the difference between viewing a screen in a very bright room vs. a very dark one).

Finally, if you're editing on a laptop rather than a dedicated monitor, it's important to note that most laptop screens are also very subjective in relation to the angle of the screen. Try changing the angle of the screen on some of the manual calibration test images linked below!

Calibrating your monitor manually

Manual calibration involves viewing a series of test images on screen that are designed to help you to adjust your brightness, contrast and colour output to achieve an optimal output.

For example, they may display a series of progressively lighter grey tones and you have to adjust your monitor's brightness and contrast so that you can see all of the changes in tone. If your monitor is too dark, you'll lose the definition of the darker tones. Too bright, and you'll lose the changes in the lighter tones.



Example of a grey tone scale - don't use this one for calibration!

At the time of writing (Dec 18) the following sites had online tools for monitor calibration:

- <https://www.photofriday.com/info/calibrate> - a basic brightness/contrast checker.
- <http://www.w4zt.com/screen/> - a range of contrast, colour and gamma checkers.
- <http://www.lagom.nl/lcd-test/> - a comprehensive series of test images that you can use to check a number of aspects of your monitor's calibration.

Finally, some operating systems come with calibration tools built in:

- Windows 10 has the Windows Calibrate Display Color tool. You can get to it via Start > Control Panel > Appearance and Personalisation > Display.
- On macOS Sierra, use the Display Calibrator Assistant. You can get to it from the Apple menu > System Preferences > Displays > Color > Calibrate.

Calibrating your monitor with a colorimeter

A colorimeter is a dedicated piece of hardware that will measure the light coming from your monitor and, used correctly, should give you a much more accurate result than the manual colour calibration checks.

There are a number of commercially available colorimeters, such as the X-Rite ColorMunki or Datacolor Spyder. Note that these are just two examples and don't represent an endorsement of either. If you're considering buying a colorimeter then make sure the device you buy meets your needs and suits your hardware. Some of the club members have their own devices and will be happy to discuss their pros and cons with you.

Each device will have its own routine for calibration, usually driven by dedicated software that comes with the device. But, in general, calibration normally involves placing the colorimeter device on your screen while the software displays a range of reference colours. Once the process is complete, the software will generate a dedicated profile for your display and show you the before and after results of calibration.

Soft proofing using the club projector's profile

Assuming that you've already calibrated your monitor, you can use a process called "soft proofing" to view your image on your computer monitor in a way that represents what it should look like when projected on the club's projector. As projectors typically have a smaller gamut than computer monitors, this will help you ensure that your image is going to look as intended when projected.

The club's projector has been calibrated and will be recalibrated on a regular basis. The latest projector profile can be downloaded from the club's website from the "guides" section:

<http://www.northamptoncameraclub.org.uk/guides.php>

The process of soft proofing will vary based on the editing software that you use, but generally it involved applying the profile of the intended output device (i.e. the club's projector profile) to your images and viewing the results. A few examples from popular image editing software:

- Lightroom CC 8.0 : <https://helpx.adobe.com/uk/lightroom/help/develop-module-options.html>
- Photoshop: <https://helpx.adobe.com/uk/photoshop/using/proofing-colors.html>
- Affinity Photo: <https://affinity.help/photo/en-US.lproj/pages/Clr/ClrProfiles.html>
- ACDsee:
https://help.acdsystems.com/en/acdsee-pro-6/Content/1Topics/7_Options_configuration/Setting_options/IDDH_OPTIONS_COLORMANAGEMENT.htm

The principle of soft proofing is also used when you're planning on printing your images, using the the profile of the target printer.

Useful links

- A Simple Guide to Colour Management for Photographers:
<https://www.viewsonic.com/library/photography/color-management-guide>
- DS Colour Labs paper profiles and soft proofing:
https://dscolourlabs.co.uk/about/NEWNEW_Technical_Support