

RAW FILES AND CAMERA MENU SETTINGS

NOTE:-

ACR stands for Adobe Camera Raw

Metadata is a record of camera settings such as shutter speed you used, the lens aperture, the type of camera and lens you used, white balance and sharpness settings, which saturation you'd specified etc.)

WHAT IS A RAW FILE?

Simplifying somewhat, everything inside a RAW file is one of two things, a measurement of the light falling on each sensor pixel or a note about camera settings. You could say that it's either data (the values for light on the sensor) or metadata (camera information). Let's say that you take a shot on a 12 megapixel DSLR. Inside the resulting RAW file will be roughly 12 million values representing the light that fell on the sensor during the exposure, one value for each sensor element, or pixel. Consider this to be data that's ultimately converted to an image file by your RAW converter. When you open a RAW image on your computer (in a RAW file converter such as ACR, Lightroom or Aperture) what you see is a JPEG interpretation of the image. However, since the actual RAW file is not yet an image you can adjust it as much as you like, none of the changes are permanent and you can always go back and modify them again at a later date. This is the beauty of RAW files – they are infinitely changeable and do not become an image until they are saved as a TIFF, JPEG or other image file format. Provided you do not delete it the RAW file can be used an infinite number of times to create many variations of the image.

WHICH CAMERA SETTINGS MATTER WHEN YOU SHOOT RAW?

Camera menu settings fall into two categories:-

KEY SETTINGS

Which pretty well permanently affect all files including RAW.

SECONDARY (MENU) SETTINGS

Almost all DSLRs come with many menu options and most of these permanently affect JPEG (or TIFF) formats. When shooting in RAW the information is simply recorded in the metadata attached to a RAW file in what could be described as an "advisory capacity" so can be modified later.

KEY SETTINGS - EXPOSURE (APERTURE, SHUTTER SPEED AND ISO)

Whether you are shooting in JPEG or RAW it is important to ensure you get the exposure as close to correct as possible at the taking stage. The RAW file converter or Lightroom will permit limited exposure adjustment using a range of controls but if the original exposure is significantly wrong it cannot be successfully changed later in editing or post processing on your computer. So ensure you have correctly set the aperture, shutter speed and ISO and learn how to use the histogram on your camera monitor to evaluate your results.

SECONDARY SETTINGS

A camera's menu system appears to offer control over other aspects of your image, whether you've told it you're shooting RAW or JPEG, for example:

- Sharpness
- Contrast
- Saturation
- Colour mode (Adobe RGB, sRGB)
- White balance

You may also come across picture controls that change many secondary settings together. For example, your camera might offer an option like "Vivid", which sets saturation higher and might also affect contrast and/or colour mode. These controls might also change the way colour appears, including small shifts in hue, sometimes emulating certain types of film but all of them are simply noted in the metadata attached to your file.

So which of these secondary settings directly affect the data in your RAW file?

The answer is: **not a single one with the exception of LONG EXPOSURE NOISE REDUCTION.**

A NOTE HERE ABOUT LONG EXPOSURE NOISE REDUCTION

*When taking long exposures one problem is that of digital noise – the longer the exposure the more noticeable will be the noise. To help with this, camera manufacturers, in the menu options, may include a feature called **Long Exposure Noise Reduction** and is designed to deal with pixels that get warm and bright during a long exposure. It takes the first exposure as normal, then closes the shutter and takes a second exposure of the same length. After both exposures are complete the camera software compares the first and second images and effectively combines them. Because the shutter is closed most of the second exposure is black but the camera sees where there are any loud, bright pixels in the second exposure and subtracts them from the first exposure. However, as the name suggests, it only relevant to long exposures and may not work at all outside parameters that vary between cameras and manufacturers. For this you will have to check your camera manual but in any case it is hardly worth using at much less than a 10 second exposure. It must be remembered that this process is permanently applied to the RAW file because it is part of the exposure itself and thus becomes an element of the RAW data being passed to the camera card.*

Most RAW converters, including ACR, Lightroom and Aperture, read the metadata note but the only thing they use to influence the interpretation of your image is the white balance setting and even that is used only for the initial rendering of your image (what appears on your computer screen). Everything else, including all the other secondary settings, is ignored.

When shooting RAW the advice is, with the exception of LONG EXPOSURE NOISE REDUCTION, to have all your camera image quality menu settings on "normal" or default values.

Unless you are confident using white balance settings it is perhaps best to leave White Balance on AUTO. Don't apply sharpening, contrast or colour adjustments, at the taking stage but deal with them later in the RAW file converter. Despite the presence of the metadata "note" inside your RAW file, none of the values recorded by your camera to represent the scene itself were directly affected by those secondary settings.

The one exception to this rule is Long Exposure Noise Reduction which, as explained above, is permanently applied to the RAW file and cannot be changed.

However it is important to note that when you shoot JPEG, things are very different as every secondary setting affects each and every pixel of the JPEG. In the case of white balance or contrast, it is almost guaranteed to affect every pixel, often in a way that might limit the changes you can make later. That doesn't mean JPEGs are bad or unusable, particularly if you're in complete control of your light and white balance, it just means that the RAW converter inside your camera is making decisions that might best be left for you to make later.

One final thing to note

Although the secondary settings have no direct effect on the RAW file, **they do affect the histograms you see on the back of the camera.**

You might use those histograms to change the exposure settings (shutter speed, aperture, ISO) that you choose, perhaps as a result of exposure compensation that you dial in.