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Image file type

With few exceptions, digital images may be recorded and stored on a memory card as JPEG or RAW files. Which option you choose will depend largely on what you plan to do with the images once you get them home. The general rule is, if you prefer to do little or no post-capture processing, have no intention of ever selling your images and have no plans to print them much larger in size than A4 (approx. 10 x 8-inches) then shoot in JPEG mode. If, however, you enjoy the post-capture processing side of photography, want to sell your work and/or print them beyond A4 size, then select RAW mode. Here are the reasons I make this assertion.

JPEG files

When a digital image is saved as a JPEG file four things happen:

1. The camera processes the RAW data, based on the Image Optimization settings, using inbuilt image processing software
2. Colour information is compressed from the original 12- or 14-bit (tens or hundreds of billions of shades) range captured by the camera into an 8-bit (approximately 16.7 million shades) range
3. The processed image data is compressed to reduce the file size, using a technique known as "lossy" compression
4. The processed, compressed file is saved to the memory device

There are two main advantages to these actions. First, because the file is processed in-camera, the image can be printed with very little or no additional external computer (e.g. Photoshop) processing. In other words, JPEGs are the digital equivalent of Polaroid instant film. Second, because the image data is compressed so that file sizes are reduced, a memory device is able to hold a greater number of images, compared to larger RAW (or TIFF) files.

However, there are disadvantages too. Most importantly, the processing software in digital cameras is relatively basic and lacks the processing finesse of much more sophisticated software solutions like Photoshop. Simply, you will get far better image quality if you process the image file using better software than the camera provides.

Secondly, if you make an error when setting any of the Image Optimization settings (or when setting White Balance), it is a long-winded and sometimes impossible task to fix the error. At the very least, it means having to spend a lot of time in front of a computer trying to unscramble the proverbial scrambled egg – which defeats the objective somewhat.

Thirdly, the means by which JPEG files are compressed results in actual data being discarded permanently. As a result, image quality will be degraded to some extent, even if it isn't immediately obvious or even apparent in a small-size print. Furthermore, every time a JPEG

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image file is processed and re-saved in the JPEG format, the same "lossy" JPEG algorithms are applied, compounding the issue.

Finally, an 8-bit file contains only 256 levels (tones), compared to the 4,096 or 65,536 in a 12-bit or 16-bit file, respectively. This may result in artefacts and banding appearing in JPEG images that are heavily processed.

RAW files

All of these disadvantages are overcome when images are recorded in RAW mode. In RAW mode the image data is saved unprocessed, in its original form. While this means that the data has to be processed in-computer, the advantage is that software with greater functionality and sophistication, such as Photoshop, can be used to do it, optimizing image quality. Further, because the data is recorded in its RAW state, Image Optimization settings applied in camera can be discarded and re-applied in-computer, making it possible to correct some user errors without degrading image quality.

Further still, a RAW file is like having an endless supply of exposed but unprocessed film, which can be processed any number of times and in any manner of different ways without losing the ability to go back to the original and start over. Not only does this enable processing of images in different ways for different effects, it also means that, when new software technology becomes available, older images can be re-processed with the latest technology. Finally, because RAW image data is stored in an uncompressed state, no data is discarded. (Some cameras provide a RAW compression option, which roughly halves file size. However, RAW compression uses loss-less algorithms, meaning that no data is discarded).

RAW file

JPEG

Printed up to size A4 (approximately 10 x 8-inches), there is little visual difference between the print quality from a RAW file and that from a JPEG file. Which file mode you choose to select has more to do with how you intend to use the image from the camera.

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RAW + JPEG mode

Many current DSLR cameras enable image files to be saved in both RAW and JPEG format simultaneously. This is primarily a commercial tool, allowing photographers in the field to transmit images wirelessly to a remote site for instant upload to the web via the Internet (the small-size JPEG), while maintaining a high quality RAW file for other uses, such as submission to a photo library.

This option can be applied, however, in non-commercial ways. For example, when starting out in digital photography and before the user has the requisite knowledge of image processing software, by selecting RAW + JPEG an immediately usable file (JPEG) can be created while the RAW file is stored until such time that the user feels comfortable with in-computer processing techniques using Photoshop (or any similar package).

A less commercial use of this function is as a back up. If either the RAW or JPEG file becomes corrupted, the other may still be useable. Of course, if it's the RAW file that is corrupted you won't be able to create a RAW copy from the JPEG file. However, something is better than nothing.