



Shooting Essentials

Hardware

The final destination of your image will have a significant bearing on its preparation and final formatting.

Whether for photographic print, paper publication, or online use, images must be prepared carefully to fit within these different restrictions. Different print mediums such as inkjet or c-type photographic paper demand careful tonal processing to produce best results, without reducing perceived image quality.

Hardware Essentials

At the heart of all professional photographers' arsenal is the camera kit. A digital SLR is the single must-have device, allowing the user to change lenses and plug into a wide range of lighting, timing, and high-speed storage media. Despite the professional tag, the price of a good quality digital SLR starts at a few hundred pounds and continues into the thousands. Increasing your budget effectively means increasing the ability to capture higher and

higher resolution images, which in turn can be printed at a much larger scale. Better SLRs are built to be rugged enough to withstand daily use and have high-speed interfaces to allow faster transfer of large volumes of data. Regardless of camera manufacturer, most cameras share common internal hardware, especially the light sensitive image sensor that determines the resolution of the captured image file. Resolution is determined by the number of actual pixels created in the chessboard-like image file and is measured in megapixels, or millions of pixels.

Sensor Resolution and Print Size

All preparation for output is a compromise, and the skill of the software operator is to minimize this.

There's a clear link between the cost of a professional camera and its ability to create high-resolution files. At the prosumer end of the scale, most DSLRs will create a file good enough to print out at legal size. As the sensor resolution increases (and the cost of the device), so too does the maximum print size.

A simple way of working out how big an image a camera can create is to multiply the horizontal and vertical dimensions of an image to produce the megapixel value. A six-megapixel camera at best will produce a 3000 × 2000 pixel image, which in turn can be printed out as a pin sharp 15 × 10 inch inkjet print, such as this output.



10

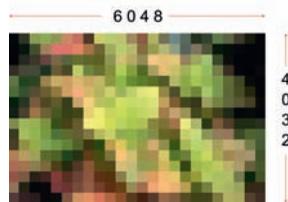
A basic DSLR creates 10 megapixels of data, which is big enough to make an 18 × 12 inch inkjet print at 200 pixels per inch.





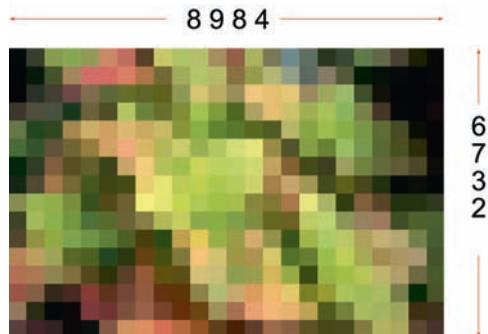
24

A top of the range professional DSLR creates 24 megapixels of data, which is big enough to make an 30 × 20 inch inkjet print at 200 pixels per inch.



60

A medium format–like camera with a digital back such as the PhaseOne SLR creates 60 megapixels of data, which is big enough to make an 45 × 34 inch inkjet print at 200 pixels per inch.



Camera Settings and Print Size

Print quality is heavily influenced by the camera settings that you choose from the outset.

Processing at the Point of Capture

When image files are first captured, they are irreversibly processed and packaged into a format by the camera's built-in software. Opting for camera settings, such as white balance, auto sharpening, and choice of file format like JPEG, determines a sequence of irreversible processing that is applied invisibly to your file. A much better option is to shoot in the RAW file format, which, although it makes greater demands on your storage media, creates an entirely unprocessed file that can be later stored in its original state and creatively interpreted in image editing software such as CS4.

Storage

The capacity of your in-camera storage media determines the number of image files that you can save on location. Storage media is available in many different formats such as Secure Digital (SD) and CompactFlash (CF), but your choice of camera will determine which one you can use. Storage media in excess of 1 Gb (gigabyte) is essential if you are shooting in the RAW file format. Like all other magnetic data media, cards are vulnerable to physical damage and valuable data is best backed up as soon as possible. There are many different options for backup storage devices for both location- and studio-based photographers. For travel, press, and public relations photographers, a handheld portable hard drive is an ideal product to dump data onto direct from your camera. This facility is also possible with a good quality MP3 player such as an iPod or a laptop. For studio shooting, image files are best stored on a large capacity external hard drive linked to your PC workstation.

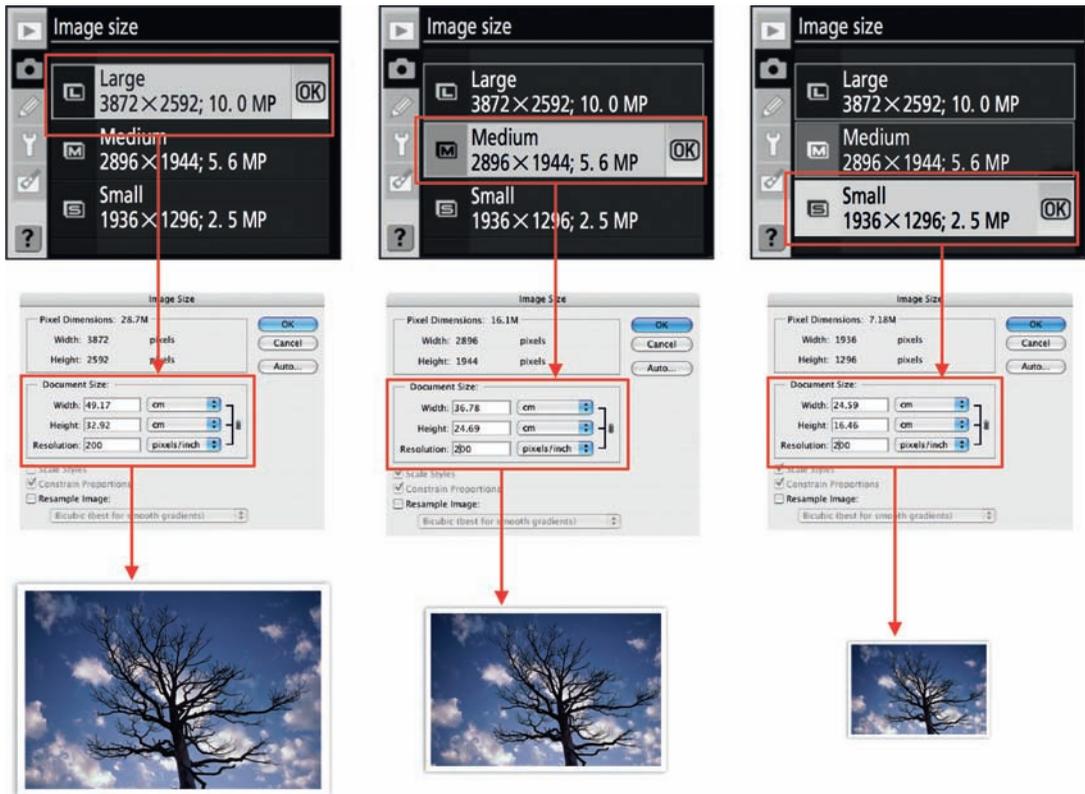
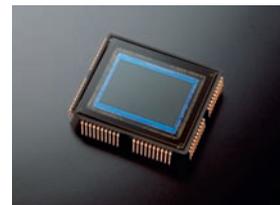


Image Size Setting

Independent from any choice of file format or presets, all digital cameras can create at least three different-sized pixel bitmaps, usually described as Large, Medium, and Small. As the above illustration shows, this choice of setting will radically alter the potential print size. Always shoot Large size, as it's easy to reduce the print size from a high-resolution original as opposed to enlarging a low-resolution file to make a bigger print than you planned.

Pixels or Photosites?

Many camera manufacturers use the term *pixels* to describe the tiny individual light sensitive cells arranged on the surface of the image sensor, when a much better term for this is *photosite*. Always visualize pixels as the square blocks of color that create a bitmap image.



File Formats

Like all good inventions, common file formats such as TIFF, JPEG, and RAW were designed and launched into the world to make workflow simpler and easier for the end user.

File Formats: What Are They?

Digital data, whether contained in a word processing document or digital image file, is packaged at the point of creation into a file type or format of your choice. Your decision which one to adopt is based entirely on forward planning, i.e., you can share the file with others, send it through a network, or to preserve all of its original source information. Different types of format are identified by a three-character code called a file extension, such as .jpg or .psd, which is attached automatically on the end of your filename to help an application recognize compatible files.

RAW File Formats

RAW is an umbrella term applied to many different kinds of file format currently in development by the major hardware and software manufacturers. At this early stage, no universal format has been adopted and both Nikon and Canon have their own version of the RAW file format. Lagging behind, but rather ominously, is Adobe, who has developed the early contender for the universal format, the Digital Negative (DNG) file format. Currently, Adobe provide a free helper application to convert most types of proprietary files into the DNG format, so you can process in applications such as Camera Raw.

What's the Difference between Raw and Other Formats?

All digital cameras are fitted with a sensor, responsible for detecting light and creating a chessboard-like grid of pixels to make an image. With JPEG, TIFF, and other common formats, camera software automatically applies a range of hidden processing sequences at the point of exposure, to improve sharpness, contrast, color, and even compress data. Once captured and stored, all of these presets become embedded in your file and can never be removed, restricting your future editing and creative interpretation of your files. With RAW file formats, no such invisible processing takes place, resulting in an unadulterated file, able to cope with more hand-processing. In addition to "virgin data," RAW files also capture images with an extended 12-bit color palette, effectively making a gigantic 4096 color scale per color channel, which increases the data size considerably. In general terms, a RAW file creates 10 times as much data as an equivalent resolution JPEG.

Five good reasons for shooting RAW

When you want to create digital prints of the highest exhibition quality and size.

When you are shooting at high ISO values in low light.

When you are shooting a subject with a high dynamic range (extreme difference between highlight and shadow).

When you are uncertain about the color temperature of your subject.

When you want to make high-quality monochrome conversions.