

Digital Cameras: Where to Start

“A primer on digital camera basics.”

by Pete Choppin

Digital cameras can be confusing to those new to digital photography, and even for some of the more experienced photographers from the days of film. In this article, I will give digital beginners the basics to use in deciding which digital camera is appropriate for them, as well as an understanding of the common features of digital cameras.

When shopping for a digital camera, it's good to know what the basic terms—such as "white balance," "pixel," "ppi" and "dpi"—mean and how they affect image and print quality. It's also important to know the difference between features such as optical zoom and digital zoom, as well as the advantages and disadvantages of storage formats such as Compact Flash (CF), Microdrives, Sony Memory Stick, Secure Digital (SD) and multimedia.

Choosing a Camera

There are countless digital compact cameras out there, many of which look much the same and offer similar functionality. So which one is right for you, and how do you sift through the myriad features and functions? That depends greatly on two main factors: what you plan to use it for, and your budget.

Expectations

Before you rush out to the stores and spend a lot of money, you must decide what you want to get out of a digital camera. Buying a digital camera and expecting your photos to come out like they do in the magazine advertisements is like taking a roll of film to your local one-hour photo lab and believing your pictures will be as good as the ones on display—taken by professionals on professional equipment and certainly not developed at the photo service in your local drugstore.

My first camera I spent real money on was not digital at all. It was a Minolta 35mm film camera. I never intended to "go digital," and for a while I held onto the belief that film had its own unique image properties that digital could never achieve or replace. Since then, I have changed my mind about digital photography.

Digital has come of age and can certainly compete with 35mm film, especially in the compact camera market. But without knowledge of how to use a camera, or how to manipulate digital images with software like Photoshop, you will not achieve better or more consistent results. One major plus is the LCD screen on the back of the camera, letting you see the image you have taken and giving you an opportunity to try again if you wish, all without the costs of extra film and development. To get that extra quality, you will need to know and understand about resolution, white balance, levels/curves, cropping, and many other concepts. They are not hard concepts to grasp, thus making your digital photos look much better, but you will need to invest the time to learn the techniques.

That said, if you are happy with the quality of your 35mm film camera developing and printing at the local mini-lab, but want a digital because you won't have to worry about the expense of film anymore, be able to share your pictures with others across the globe, and only print those

photos you really want prints of, an inexpensive digital camera may be all you need. There's a lot to be said about digital cameras, but nobody can say that they are not a lot of fun—being able to snap away without worrying about costs of film and seeing instant results is the greatest thing since the invention of photography. But please do all your friends and family a favor—just because you shoot more pictures doesn't mean they want to see all of them. Pick out the best and only show those!

A Word about the SLR

Single Lens Reflex (SLR) cameras, with interchangeable lenses used by professionals and discerning consumers alike, have been available in digital variants for a couple of years now, and with their prices coming down fast, many consumers are tempted to buy them. It is beyond the scope of this article to explain all their details, but you should know what you are getting into before shelling out \$3,000 on a camera, memory cards and lenses. Many people have been disappointed by their first digital SLR because of the complexities of these cameras. They are designed as professional tools, and more than likely, if you use it as a point-and-shoot automatic, your results will be less than those of a camera designed for that purpose. In general, unless you have been using an SLR for years as an advanced amateur or professional, you may find the learning curve of these cameras daunting to say the least. If you are just learning about digital photography or have not been exposed to photography techniques using the aperture, shutter speed, depth of field, etc., you are probably not ready for a digital SLR. You have been warned.

Camera Features

Now that we've spent some time discussing the pros and cons of different camera types and covered the preliminary consideration before going shopping, let's talk about the digital camera and what it can and cannot do.

Megapixels

On most Web sites that sell cameras, as well as store shelves, digital cameras are lined up by their "megapixel" count. Megapixel simply means "million picture elements," or dots that make up the image. The number of megapixels is simply the number of horizontal pixels multiplied by the vertical pixels. For example, $1,600 \times 1,200 = 1,920,000$ pixels, which any marketing department will happily round off to 2 megapixels. How many do you need, then? That depends on your use. If you only plan to put your pictures on a Web page, a 1.3-megapixel image is about five times bigger than you need. However, if you want a decent quality 11x8-inch print, a 4-megapixel camera is your friend.

Below is a table showing the megapixels you need for which print size and which screen resolution this gives.

Megapixels vs. Resolution and Print Sizes

But this isn't all there is to it. Manufacturers do not put their best quality CCD or CMOS sensors (the light-sensitive component behind the lens that records the image) and best

lenses in their lower-resolution cameras. So it is quite possible, even when your picture is scaled down to only 600x450 for Web page use, to tell the difference between a 4- and a 1.3-megapixel camera. In most cases, however, if you buy a 2-MP camera and make 6x4 prints from it, you will generally have a quality similar to, if not surpassing, a 35mm point and shoot. And you can e-mail these images or post them to a Web site.

Lens

It used to be, in the old 35mm film days, that you put your money in your lens and not in the camera. What this meant was that we relied heavily on the quality of the lens to provide a good image. In film photography, the lens plays a crucial part in light, focus and clarity. Because digital cameras have a much smaller image area than a big 35mm negative, they only need a very short focal length (distance from the lens to the CMOS sensor) lens to achieve the same magnification. Quite often you will see lenses in the single digits on the wide end, but usually, the 35mm equivalent focal length is given, so a 35-70mm zoom lens will act the same as it did on your 35mm point and shoot.

Shutter Lag

Before taking the actual picture, a camera needs to focus, work out exposure and do many other things to be ready to record the image. The time it takes from pressing the shutter release to taking the picture is called shutter lag. It is a problem in many compact cameras and even more so in digitals. This delay is different in all cameras, and you should check it in-store before you buy, as a long shutter lag may result in missing the "decisive moment." An object may already have moved out of frame by the time the picture is taken. One way to minimize this is with a feature called pre-focusing. When you press the shutter release halfway, the camera will focus, set exposure and, if needed, charge the flash, indicating in the display or viewfinder when it is ready. Keep the shutter depressed halfway until the best moment, and then press it fully. Your camera should now take the picture almost instantly. If it doesn't, move on to the next model.

Flash

The short answer is deal with whatever is on your camera. For me, this is simply not a show-stopping feature that would make the difference in whether I purchased a camera or not. If you do buy a better camera, you may want one that has a connection for an external flash, which will be vastly superior to whatever you find built into any camera.

Memory Cards

There is an ever-increasing number of memory card formats available and, in all honesty, for general use they don't differ all that much. You may want to keep in mind that more than one person in your household has a camera or memory card equipped MP3 player and settle on one format, but other than that you should be more interested in the price of the cards. And at that, the price is decreasing fast.

File Formats

Every camera offers a JPEG option, and in general I recommend using the highest JPEG

quality setting at the camera's highest resolution. This will result in reasonable file sizes and quality. More expensive cameras also offer TIFF or RAW files. TIFF is an industry standard non-compressed (or light-lossless compression using the LZH protocol) file format. It produces giant files, though. RAW is implemented differently by different manufacturers and really is the raw data from the CCD, which also tends to be quite big but nowhere near the size of a TIFF. You will need the camera's software/drivers to create a TIFF or JPEG image from it.

Power

Some cameras work with AA size batteries; others come with a rechargeable lithium-ion battery and adapter to charge it. Both systems have their merits. You can buy pretty powerful rechargeable AA batteries, but still a lithium-ion battery specifically designed for your camera is likely to give better performance. If you choose a camera that uses a special battery with its own charger, getting a second one is probably the smart thing to do; you will one day forget to charge it. Personally, except for the most casual of shooter, I recommend a camera that comes with rechargeable lithium-ions, but be sure to buy a spare (or two) if you do heavy shooting.

Computer Connectivity

After you have taken the shots, you will probably want to transfer them to your computer for editing, e-mailing, printing and archiving. Most, if not all, cameras connect to your PC or Mac via USB. Some cameras only connect with special drivers, which you have to install (and may contain bugs), and need to be kept up to date with newer versions of your operating system in a few years time, and are therefore generally a pain. The better way is if your camera acts as a "USB Mass Storage Device." All you need to do is plug the USB cable into the camera and into the computer, and it appears in Windows or Mac as a removable drive from which you can simply copy the image files.

Other Considerations

Many cameras offer special effects and other tricks, most notably movies, sometimes even with sound. Movies are an added little extra, but don't expect too much from them. As for special effects, those are nothing you couldn't do in photo-editing software like Photoshop after you transfer the images to a computer with better quality and more control.

On the zoom side, most cameras offer only the usual "zoom in" and "zoom out" buttons for motorized zoom, which is usually too fast to get your composition exactly right. Again, on the higher end of the spectrum you will find SLR cameras that offer a zoom ring on the lens for accurate zooming.

Very important is how easy it is to use all these functions, and if the camera can remember all of them or if it goes back to factory default every time you turn it off or change the battery. When you go into a shop, play with some cameras and see which ones you like. Take some pictures. Is the menu system easy to navigate? Is the image quality what you expect? Does it respond the way you would like?

Avoiding Rip-Offs

It's sad to say, but there are more dishonest discount camera stores than you'll find in almost any other business. Some of the popular photography magazines are cram full of ads advertising very low prices. What they don't tell you is that you won't ever actually get the camera for that price. Either they will add on \$75 in shipping charges or they will be "out of stock" on that model, but they will have a more expensive model available, of course. Sometimes they'll tell you that the advertised plastic camera is made in Taiwan, but for another \$50 you can get the model made in Japan. Sometimes they'll ship you the wrong item in the hopes that it will be too much trouble to send it back.

The key to avoiding being ripped off is to do a little homework. Find out what the features really are and how the camera actually works. Then, armed with knowledge, shop around. Compare the online prices of specific models and then try them at the store.

Remember the old adage—*you get what you pay for*—often applies to photography equipment.

Resources

- [Excellent camera reviews and comparisons](#)
- [Adobe Photoshop learning and photo storage](#)