

How to Buy a Digital Camera

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Digital photography keeps getting better with higher resolution, more sophisticated controls, and better technology. From resolution to storage and from exposure control to white balance, we'll explain the digital camera terms you need to know.

Introduction

Digital photography keeps getting better. Higher resolution, more sophisticated controls, and better technology all make taking great pictures easier than ever.

The Big Picture

From resolution to storage and from exposure control to white balance, we'll explain the digital camera terms you need to know.

The Specs Explained

Buying a digital camera isn't all about megapixels. We'll translate the jargon and tell you just how important each specification is to your purchase.

Digital Camera Shopping Tips

Before you head to the store, check out our advice for making a smart digital camera choice.

The Big Picture

Megapixels still matter a lot to digital camera shoppers, in part because manufacturers and retailers hype that specification above all others. If you're having a hard time figuring out which camera to buy, you may be tempted to make a decision based solely on megapixel count; that's why nearly all manufacturers print the number on the front of their cameras.

But a camera needs more than just a high pixel count to take great pictures, so pay attention to other traits as well. For example, a lethargic camera that takes too much time between shots may miss the best action, and a big, heavy camera may spend more time on the shelf than in your carry-on bag. A camera with no manual controls may take fabulous shots in bright sunlight, but lousy ones in more challenging situations.

Key Features

Resolution: If you intend to take pictures only to e-mail them to distant friends or to print at snapshot size, a camera of most any resolution will do. Even so, having more pixels gives you greater flexibility--you can print sharper pictures at larger sizes, or crop and print small sections of pictures. These days most cameras offer a resolution of at least 5 megapixels, which is enough to make a sharp 11-by-14 print.

Size, weight, and design: To some users, how much a camera weighs and whether it fits in a pocket may be more important factors than resolution. *PC World* has tested cameras that weigh as much as 2.3 pounds and as little as 4.2 ounces. Small cameras are convenient, but they frequently have tiny dials and few buttons, which make changing settings somewhat trying.

Zoom lens: Inexpensive cameras often lack a powerful optical zoom lens. If we had to choose between a camera with more optical zoom and one with higher resolution, we'd take the model with the more powerful zoom lens--it means you won't have to magnify your subject and then use software to crop the image (and discard some of the resolution as a result). A few cameras now offer zoom ratings of up to 15X. These lenses are great for nature or sports photography, but you may need a steady hand or a tripod to avoid blurry pictures at extreme telephoto lengths if the camera doesn't have image stabilization. You should try a camera's autofocus at full zoom: We've tested some models that were slow to focus at full zoom in low light.

Be wary of advertised zoom ratings--many vendors combine the optical zoom (which moves the lens to magnify the subject) with digital zoom, which merely captures fewer pixels and magnifies those. Optical zoom gives you all the benefit of the camera's maximum resolution, combined with the ability to get closer to the action.

Manual focus: For close-ups or situations in which the camera can't get a focus lock, switching to manual focusing can help you get the shot. Low-end cameras often omit manual focusing or allow only stepped focusing, which forces you to choose from a few preset distances.

Storage: At its highest resolution, a typical 5-megapixel camera can store six to eight images on a 16MB "starter" memory card. The size of the memory card that a camera ships with isn't terribly important, because you'll almost always have to buy another one (unless you're willing to transfer your images after every handful of shots). CompactFlash, SD (Secure Digital) Cards, and SmartMedia cards cost about \$6 to \$15 for 512MB, or \$25 to \$40 for 2GB.

Batteries: Cameras use one or more of several types of batteries: AAs, either nonrechargeable alkaline (\$5 for four) or rechargeable nickel metal hydride (NiMH, about \$14 for four); high-capacity disposable CRV3s (around \$10 apiece, and some cameras take two); or proprietary rechargeable batteries that can cost \$25 to \$65 to replace.

Movies and sound: Many cameras can capture video as well as still shots; this option is useful for taking short clips when you don't have a camcorder. Some models also will record an audio caption for still photos.

Exposure settings: All digital cameras let you shoot in fully automatic mode--just press the shutter release and you get a picture. Most cameras also offer aperture- and shutter-priority modes, in which you adjust the size of the lens opening or how long the shutter stays open, and the camera automatically controls the other variable to give you the proper exposure.

Typically, you'd use aperture priority to maintain control over an image's depth of field--for example, to blur the background of a shot while keeping the foreground sharp--and shutter-priority mode to capture fast-moving subjects. A camera that relies exclusively on full auto would attempt to keep both the foreground and background in focus in the former example, and it would probably blur the moving subject in the latter.

Usually, cameras that offer priority modes also provide full-manual exposure control, in which you set both variables. These modes make a camera adaptable to almost any situation.

Menus: When evaluating a camera, consider how easily you can reach common settings--resolution, macro mode, flash, and exposure adjustments--and how easily you can play back just-taken images. Too many buttons, and you waste time trying to figure out which button does what; too many menus, and you waste time digging through them.

Scene modes: Some cameras try to entice prospective buyers, particularly beginning photographers, with a large number of scene modes--presets that are designed for a variety of settings and subjects, such as the beach, fireworks, and underwater. However, selecting one of these less common modes usually requires a trip to the menus, and multiple button presses. Some cameras let you assign one of the modes--or a custom mode of your creation--to a position on the control dial, where you can more easily access it. Some single-lens reflex (SLR) cameras offer multiple positions on their control dial for storing customized settings. Some point-and-shoots allow you to store customized settings as a mode within the scene modes menu.

One potentially helpful feature offered by many point-and-shoot cameras is facial recognition. In detecting people's faces, the camera aims to optimize both focus and exposure for the subjects, presumably to better effect than the more traditional portrait mode that almost every camera offers.

White balance: Almost all digital cameras allow you to choose a white-balance setting via presets. This setting tells the camera which elements in a shot should look white, and then by inference which elements should look black and what everything in between should look like. If you're finicky about color accuracy, look for a custom white-balance mode in which you press the shutter button while aiming at a white object.

LCD and viewfinder: All digital cameras have an LCD screen; these vary in size from 1.8 to 3.5 inches. The smaller size limits your ability to review just-taken images on the camera. A good LCD is essential for knowing whether you got the shot you wanted, and can usually give you an indication of whether it was properly exposed. LCD quality varies widely: Many wash out in sunlight or become grainy in low light, or the image may change if you tilt the camera slightly. If you can, try a camera outside before you buy it. Some cameras also have a viewfinder, which is a convenient backup for framing your shots (and if you turn off the LCD when not using it, you'll save battery power). Perhaps the best way to ensure an accurate exposure is to view the photograph's histogram on the LCD (if the camera offers this feature). A histogram is a graph that will show you highlights that are overexposed to the point of being pure white, and shadows that are underexposed and show as pure black.

Antishake: Some cameras offer antishake (also called image stabilization) as a shooting mode or as a feature that can be turned on and off. This is helpful when you're shooting photos in situations where it's difficult to get a sharp image, such as in low light. One disadvantage of an antishake shooting mode is that you can't use the feature in conjunction with another scene mode. Most point-and-shoot cameras use software to sharpen the resulting images. More advanced cameras, including SLRs, tend to employ one of two methods: optical image stabilization, in which an element in the lens adjusts to compensate for movement); or sensor movement, in which the camera's sensor moves in order to compensate for the shaking.

Wireless: Using Wi-Fi to transmit images to a PC or printer may sound enticingly free of entanglements, but we'd recommend that you try this feature beforehand. In our reviewers' experience, sending Wi-Fi transmissions did not work seamlessly in some cases, and as a result was not worth the extra money this feature added to the camera's cost.

The Specs Explained

A digital camera's megapixel count is an important spec--but it is by no means the only one. Start with pixels, but make sure to check a few other important numbers when considering a purchase.

A camera's megapixel rating is another way of expressing its resolution. The higher the megapixel number, the higher the resolution.

In general, higher-resolution cameras let you produce larger, higher-quality prints. Even a 5-megapixel camera (which is rare these days) can produce images of high enough resolution to produce crisp 11-by-14 prints. The trade-off is that higher-resolution images take up more space on your camera's memory card, so you may be able to take only a small number of shots before you have to download them to your computer. The solution, of course, is to purchase a larger-capacity memory card.

So if you're interested in producing mostly small snapshots or images to send via e-mail or post on the Web, you probably don't need anything better than a 5-megapixel camera. If you want to create large copies of your masterworks, you'll want a camera that captures 6 megapixels or more.

Important: Battery Life

Some digital cameras quickly drain batteries--especially alkaline batteries--which can be expensive and annoying. Battery life and cost often aren't related; some inexpensive cameras have great battery life, and some expensive ones use up a charge quickly. Either way, it's a good idea to buy spare batteries.

Somewhat Important: Megapixels

This figure provides a measure of how much fine detail a camera can capture. With more megapixels, you can print larger photos with better image quality. But most current models offer at least 5 megapixels, which is enough to make a sharp 11-by-14-inch print.

Somewhat Important: Exposure Controls

Some models offer aperture and shutter priority modes, as well as full manual control. Aperture and shutter priority modes allow you to customize the lens opening and shutter speed, respectively. Serious photographers will value these controls, as well as full manual control. Scene modes automate exposure settings, and some point-and-shoots offer many such presets, though accessing the bulk of them is likely to require a trip to the LCD menu.

Somewhat Important: Focal Range

Cameras with greater focal range can zoom out to fit more into a shot or zoom in to fill the frame with the subject. Optical zoom produces sharper images than digital zoom. All new point-and-shoot and advanced cameras offer at least a 3X zoom, and some offer up to 15X zoom (the zoom of a single-lens reflex camera depends on the lens). However, using powerful magnification makes the camera more susceptible to slight shaking, which can result in a blurry shot. If you want a camera with a powerful optical zoom, look for one that offers optical image stabilization.

Somewhat Important: Manual Focus Override

Focusing the camera yourself can be more accurate than using automatic focus in some situations. SLRs offer a focus ring on their lenses, as do most advanced models. Point-and-shoot cameras, however, require that you use a button to adjust manual focus (if they offer manual focus at all). Some point-and-shoots provide only a stepped manual focus, meaning that you can set its focus only at a few predetermined distances.

Digital Camera Shopping Tips

Ready to buy a digital camera? Here are *PC World's* recommendations:

Match megapixels to your use: Most point-and-shoot cameras offer at least 5 megapixels, which is plenty for producing 11-by-14-inch prints. Cameras with more megapixels will yield even larger prints and allow you to blow up a part of an image with less likelihood that the print will be blurry. If you plan to make only 4-by-6-inch prints, you don't have to shoot at the camera's highest resolution--and as a result, you can fit more shots on your memory card.

Look for rechargeable batteries and a charger: The cost of disposable batteries adds up over the long run. Some cameras can use AA batteries of any type--disposable or rechargeable. That capability can be helpful if your rechargeable batteries run out of juice and you don't want to wait while they replenish.

Disregard digital zoom: Most cameras offer at least 3X optical zoom--and some boast an optical zoom as high as 15X. But sometimes vendors tout a high total zoom that includes digital zoom, which you should disregard: Digital zoom produces photos that are inferior to those produced with an optical zoom.

Look for a low-light focusing aid: Some cameras have auxiliary lights that help them focus in dim settings. That's important for many indoor shots.

Try the camera before you buy: Some cameras have commands and menus that are easier to use than others, a comparison you can make only with a hands-on trial. Also evaluate the lag time between when you press the shutter button and when the camera actually takes the picture. Try the zoom lens--does it operate quickly and smoothly? Find out how long you must wait between taking pictures. And try the LCD viewfinder--in the sun if possible--to determine how easy it is to read.

Give extra consideration to a camera with a good selection of software: Look for useful packages such as [Adobe Photoshop Elements](#), [Ulead PhotoImpact](#), and [Corel Snapfire](#) for editing images, as well as applications for organizing and sharing them.

Don't base your decision on video capability: Any still camera's ability to take moving pictures is limited. If you want to shoot video, invest in a camcorder dedicated to the job.

Consider investing in a memory card reader or a camera dock: A memory card reader acts like an external hard drive attached to your PC or laptop, allowing you to download pictures directly from your camera's storage media. Many newer laptops have one or more memory card slots built in, as do some inkjet printers. If you have a second memory card, you can keep shooting while the images download, rather than having to keep the camera hooked up to your PC. Alternatively, some cameras come with a dock or offer one as an option, and some of these docks offer a dedicated button for uploading all of your new photos on a memory card. A dock also charges the camera's battery.

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