



Digital cameras

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Important features *Digital cameras*

Most digital cameras are highly automated, with features such as **automatic exposure control** (which manages the shutter speed, aperture, or both according to available light) and autofocus.

Instead of film, digital cameras typically record their shots onto **flash-memory cards**. CompactFlash and SecureDigital (SD) are the most widely used. Once quite expensive, such cards have tumbled in price--a 128-megabyte card can now cost less than \$50. Other types of memory cards used by cameras include **MemoryStick**, **SmartMedia** and **xD-picture card**. A few cameras, mainly some Sony models, use **3 1/4-inch CD-R** or **CD-RW discs**.

To save images, you transfer them to a computer, typically by connecting the camera to the computer's USB or FireWire port or inserting the memory card into a special reader. Some printers can take memory cards and make prints without putting the images on a computer first. Image-handling software, such as Adobe Photoshop Elements, Jasc Paint Shop, Microsoft Picture It, and ACDSee, lets you size, touch up, and crop digital images using your computer. Most digital cameras work with both Windows and Macintosh machines.

The file format commonly used for photos is **JPEG**, which is a compressed format. Some cameras can save photos in uncompressed **TIFF format**, but this setting yields enormous files. Other high-end cameras have a **RAW file format**, which yields the image data with no processing from the camera.

Digital cameras typically have both an **optical viewfinder** and a **small color LCD viewer**. LCD viewers are very accurate in framing the actual image you get--better than most of the optical viewfinders--but they use more battery power and may be hard to see in bright sunlight. You can also view shots you've already taken on the LCD viewer. Many digital cameras provide a **video output**, so you can view your pictures on a TV set.

Certain cameras let you record an **audio clip** with a picture. But these clips use additional storage space. Some allow you to record limited video, but the frame rate is slow and the resolution poor.

A **zoom lens** provides flexibility in framing shots and closes the distance between you and your subject--ideal if you want to quickly switch to a close shot. The typical **3x zoom** on mainstream cameras goes from a moderately wide-angle view (35mm) to moderate telephoto (105mm). You can find cameras with extended zoom ranges between 8x and 12x, giving added versatility for outdoor photography. Other new cameras go down to 24 or 28 mm at the wide-angle end, making it easier to take in an entire scene in close quarters, such as a crowded party.

Optical zooms are superior to **digital zooms**, which magnify the center of



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the frame without actually increasing picture detail, resulting in a somewhat coarser view.

Sensors in digital cameras are typically about as light-sensitive as ISO 100 film, though some let you increase that setting. (At ISO 100, you'll likely need to use a flash indoors and in low outdoor light.) A camera's **flash range** tells you how far from the camera the flash will provide proper exposure: If the subject is out of range, you'll know to close the distance. But digital cameras can tolerate some underexposure before the image suffers noticeably.

Red-eye reduction shines a light toward your subject just before the main flash. (A camera whose flash unit is farther from the lens reduces the risk of red eye. Computer editing of the image may also correct red eye.) With **automatic flash mode**, the camera fires the flash whenever the light entering the camera registers as insufficient. A few new cameras have **built-in red-eye correction capability**.

Some cameras that have powerful telephoto lenses now come with **image stabilizers**. These compensate for camera shake, letting you use a slower shutter speed than you otherwise could for following movement. But an image stabilizer won't compensate for the motion of subjects.

Most new 6- to 8-megapixel cameras come with full **manual controls**, including independent controls for shutter and aperture. That gives serious shutterbugs control over depth of field, shooting action, or shooting scene with tricky lighting.

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