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## Digital and Still Cameras

By Jack and Sue Drafahl

If 10 years ago someone told you that it would be possible to take pictures without film, you probably would have just laughed. Today, thanks to technological innovations, this wishful dream is a reality. You can now take pictures at the speed of light without the aid of film and see them on a screen just seconds later. Best yet, if a picture doesn't suit your fancy, you can make it disappear just as easily.



Digital cameras offer a world of convenience and flexibility. From topside snapshots to capturing underwater images, the digital revolution is changing how divers take pictures./font>

For a while, people thought digital cameras might be a passing fad and many were hesitant to take the plunge. Digital cameras, however, are definitely here to stay. Time, millions of dollars spent in research and development and steady camera sales tell the tale. If you're reading this magazine you're probably a scuba diving enthusiast, so why would you want to buy a digital still camera? Well, wouldn't it make your dive trips more exciting if you could see your topside pictures before you even leave the resort? And, wouldn't it be nice to review your underwater images without the hassle or expense of processing? No more worrying, waiting weeks to get your pictures only to find that your photofinisher has bad news for you. In addition, you will have your photo results when you arrive home, ready to share the memories while your excitement still runs high.

### Digital 101

In a nutshell, digital cameras take a photographic image, transform it into a computer file and save it on a tiny memory card rather than on film. You can review what you

have shot and save or delete any of the pictures. When you have finished a "roll of film," the images can be downloaded to your computer via a serial connector or USB (universal serial bus). The file images can then be printed out or sent to family and friends via the Internet.

One of the most difficult parts of this digital revolution is understanding resolution. Everything is based in megapixels rather than ISO. A megapixel is 1 million pixels or 1,000 by 1,000 pixels-per-inch. The more pixels your camera can record to the CCD sensor, the higher the quality of the final image.

Purchasing decisions can be difficult because there are so many digital cameras emerging, each offering different features and high megapixel capabilities, in a number of price ranges. If all you want is great prints for a personal scrapbook, then a digital camera with 1.3 megapixels will cost you about \$500 or a little more. If you're looking to fill a more professional portfolio, the ideal digital camera should have 3.3 megapixels, which can produce great 8x10s. Costs will start at \$1,000. The consensus in the photo industry is it is going to take a camera with 6+ megapixels, which records about a 20 megabyte (MB) file, to give traditional film a run for its money. There are some cameras available now that can achieve this feat, like Kodak's DCS 660, but they sport a price tag of around \$25,000! Once that price drops to a more consumer-friendly level, things will get really interesting.



### The Pros

Digital camera advantages far outweigh their disadvantages. Here are some of the reasons digital cameras are taking the photo world by storm:

- There is no film to buy.
- There is no film to process, which means no trips to the local photofinishers.
- There are no negatives to lose, scratch or fingerprint.
- There is no more wondering if you got the shot.
- Results can be immediately shared.
- A wide exposure range holds shadow and highlights details even in high-contrast shooting situations.
- Digicams are compact and don't have to conform to any 35mm film shape standards.
- Digital images require little editing when imported into the computer. They are clean and dust-free and have a good gamma range with excellent exposure.
- Most cameras offer different resolution settings, so you have the option of storing more photos at the lower resolution.
- Some digicams even record sound or AVI movie files.
- Some can be hooked up to TV screens to playback images when a computer isn't handy.
- Most cameras have an effective ISO rating of 800, so they can respond well in low light situations.
- Photos are easily shown to friends and family worldwide via the Web.

### The Cons

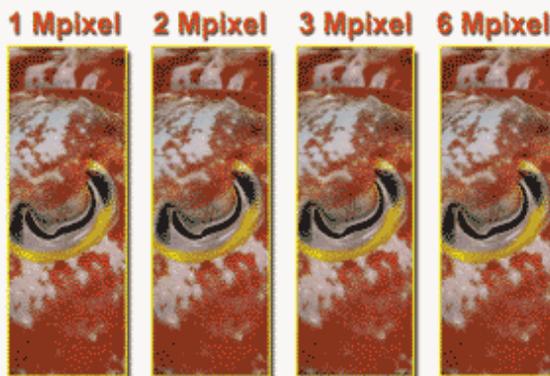
Here are a few stumbling blocks holding up the digital revolution:

- The digital image doesn't yet equal film quality except in very expensive

cameras.

- Print quality doesn't match traditional photo prints when making extreme enlargements.
- There are few digital photo labs available, so you must print images yourself with a home computer and printer.
- Digital cameras are more expensive than 35mm cameras.
- Initial investment in additional storage chips is high. A 16MB (megabyte) card is about \$50.
- You cannot store very many high resolution images on a storage card.
- Technology is changing rapidly, so camera models can become quickly outdated.

### The Lowdown on the Download



In order to take your digital cameras on dive trips, there are several options available for downloading finished images. You can take a laptop computer on your trip and download images directly from the camera. However, laptops can be weighty. Depending on where you are traveling, there might also be a problem with variations in power adapters, supplies and voltage. The better method might be to buy multiple memory cards for

image storage since they are compact and lightweight. You can preview your images in the camera or on a video system and delete those that don't make the grade. The memory cards do incur more up-front cost, but can be used time and time again.



Agfa <a href="http://www.agfahome.com">www.agfahome.com</a> (201) 440-2500
Canon <a href="http://www.usa.canon.com">www.usa.canon.com</a> (800) OK-CANON
Epson <a href="http://www.epson.com">www.epson.com</a> (800) GO-EPSON
Fuji <a href="http://www.fujifilm.com">www.fujifilm.com</a> (800) 800-FUJI
Hewlett Packard <a href="http://www.hp.com">www.hp.com</a> (888) HP4-FUNPICS
Ikelite <a href="http://www.ikelite.com">www.ikelite.com</a> (317) 923-4523
Kodak <a href="http://www.kodak.com">www.kodak.com</a> (800) 242-2424
Leica <a href="http://www.leica-camera-usa.com">www.leica-camera-usa.com</a> (800) 222-0118
Light & Motion <a href="http://www.lmionline.com">www.lmionline.com</a> (831) 645-1525
Minolta <a href="http://www.minoltausa.com">www.minoltausa.com</a> (201) 825-4000
Nikon <a href="http://www.nikonusa.com">www.nikonusa.com</a> (800) 645-6687
Olympus <a href="http://www.olympus.com">www.olympus.com</a> (800) 221-3000



Above: Ikelite is leading the way in manufacturing housings for digital cameras. However, Light & Motion offers a housing for at least one camera and several other manufacturers are developing housings for release in the near future.

Panasonic [www.panasonic.com](http://www.panasonic.com)  
(201) 348-7000

Ricoh [www.ricohcpg.com](http://www.ricohcpg.com)  
(800) 225-1899

Sanyo [www.sanyo.com](http://www.sanyo.com)

Yashica [www.yashica.com](http://www.yashica.com)  
(800) 526-0266

### But can it swim?

Ikelite offers several clear polycarbonate housings for Sony Mavica, Kodak DC, Olympus and Nikon Coolpix digital cameras. Ikelite will be introducing additional digital housings as new camera models become available. Light and Motion has a new Tetra housing for the Olympus C-3030 digital still camera, and several other manufacturers are currently in the process of gearing up to house some of the higher end digital cameras.

When digital cameras become more popular as underwater cameras, they are going to offer many of the same advantages we mentioned, but also a few more. Foremost is that digital cameras record blue better than film. This has always plagued underwater photographers, since most of our underwater world is blue. The digital camera offers a higher ISO range so it will be able to capture a greater tonal range than film, with no grain.

Film and traditional 35mm cameras are going to be around for a long time, but digital cameras are here to stay. If digital camera prices continue to drop, while quality keeps improving, they may soon find their way into a few more traveling dive bags.

Digital Camera	Image Sensor	Maximum Resolution	Memory Storage	Focal Length
Agfa ePhoto CL-50	1.9 Mpixel	1,600x1,200	SmartMedia	38-114mm
Canon Powershot S20	3.3 Mpixel	2,048x1,536	CompactFlash	32-64mm
Epson PC-800	2.1 Mpixel	1,984x1,488	CompactFlash	38mm
Epson PC-850z	2.1 Mpixel	1,984x1,488	CompactFlash	35-105mm
Fuji MX-2900	2.3 Mpixel	1,800x1,200	SmartMedia	35-105mm
Fuji FinePix 4700	4.3 Mpixel	2,400x1,800	SmartMedia	36-108mm
 Fuji Fine Pix S1-Pro	6.1 Mpixel	3,040x2,016	SmartMedia or CompactFlash	Takes Nikon Lenses
Hewlet PackardC500	2 Mpixel	1,600x1,200	CompactFlash	39-115mm
 Kodak DC-290	2 Mpixel	1,790x1,200	CompactFlash	38-115mm

 Leica Diglux Zoom	1.5 Mpixel	1,280x1,024	SmartMedia	38-114mm
<b>Minolta RD 3000</b>	2.7 Mpixel	1,981x1,360	CompactFlash	Takes Minolta Vectis Lenses
 Nikon Coolpix 990	3.34 Mpixel	2,048x1,536	CompactFlash	38-115mm
 Nikon D1	2.74 Mpixel	2,000x1,312	CompactFlash	Takes Nikon Lenses
 Olympus C-3030 Zoom	3.34 Mpixel	2,048x1,536	SmartMedia	32-96mm
 Olympus C-2500L Zoom	2.5 Mpixel	1,712x1,368	SmartMedia	36-110mm
 Panasonic PV-SD4090	1.3 Mpixel	1,280x960	Floppy/SuperDisk	34-102mm
 Ricoh ROC-5300	2.3 Mpixel	1,800x1,200	8MB on board or Smartmedia	38-114mm
Sanyo VPC-SX500	1.4 Mpixel	1,360x1,024	CompactFlash	38mm
Sony DSC-S70	3.34 Mpixel	2,048x1,536	Memory Stick	38-115mm
Sony MVC-FD90	1.3 Mpixel	1,472x1,104	Floppy Disc	37-296mm
Yashica Samurai 2100DG	2.1 Mpixel	1,632x1,232	CompactFlash	35-140mm