

## Digital Film

Digital storage cards, or memory cards, are the digital equivalent of film. They store the images taken with a digital camera until they can be downloaded into a computer, or other external storage device. Like all things digital there have been numerous technologies over the last few years, with systems coming and going, and the range is constantly evolving. Although still somewhat complicated, the market is now starting to settle down, with increasing capacity of cards, and the rates at which images can be transferred from them are increasing all the time, and costs falling dramatically. Today, there are basically 6 main systems on the market for digital stills cameras:

**Compact Flash**

**Smart Media**

**Sony Memory Stick**

**IBM Micro Drive**

**xD card**

**SD/MMC card**

### **Compact Flash (CF)**

These were first introduced in 1994, and are available in two thicknesses, type I (3.3mm) and type II (5mm). Cameras using Compact Flash will have either a Type I or II slot. The type II slot is usually reserved for the IBM MicroDrive card, discussed later. Capacities of Compact Flash card have risen steadily over the last couple of years - a 4Gb version is currently the largest available. CF cards are rated in different speeds, according to the time taken to transfer images from the card:

1X = 150 Kb per second

4X = 600 Kb per second

12X = 1.8Mb per second

24X = 3.6Mb per second \*

\*These figures will vary according to other factors such as the camera model, and size of the buffer memory

Different ranges of card are available from various manufacturers, aimed at different user groups - the 24X speed cards will be aimed at professional users, whilst the slower 4X range will be targeted at the budget user for example.

### **IBM MicroDrive**

This is a different device from all others discussed as it actually contains a rotating hard disc and other electronic components. It fits into the type II Compact Flash socket on cameras, and is currently available in various sizes up to 1Gb. Because of their fragility they are gradually being replaced by other types of card.

### **Smart Media**

SmartMedia cards are even smaller than CompactFlash. Also called Solid State Floppy Disc Cards (SSFDC) they were developed in 1995 by Toshiba and are today used in cameras by companies such as Olympus and Fuji. Their internal electronics is not as sophisticated as Compact Flash, and some older card readers are incapable of reading the data on newer higher capacity cards. A "FlashPath" adaptor is available to enable Smart Media cards to be read in a standard 3.5" floppy disc drive. They are gradually being replaced by newer types of card.

### **Memory Stick**

This was developed by Sony in 1998, and is a card about the size and shape of a stick of chewing gum. Memory Stick Pro cards have capacities up to 4 Gb. The electronics are held in a thin rigid plastic shell, and the card has self cleaning contacts rather than pin-socket connectors.

### **Secure Digital (SD) Card**

An increasingly popular card for digital cameras, these cards have capacities currently up to 1Gb. A new version is an SD card with a hinged portion which converts the card into a USB 2.0 flash drive.

### **xD-Picture (Extreme Digital) Card**

A very small card with capacities currently up to 1 Gb, though with the potential of 8Gb.

### **Card readers**

A wide range of inexpensive card readers are available, which contain slots for the various types of card. Some of these readers will take just SmartMedia and CompactFlash, whilst newer models coming on to the market will also take IBM MicroDrive and Memory Stick. These are usually USB devices, making it much more convenient to download images rather than attaching the camera to the PC.

### **External Storage Devices**

For photographers shooting large quantities of images, or working away on location, unless you have a large quantity of cards, it will be necessary to download the images onto a large hard disc, either in a laptop computer, or one of the external storage devices available. These come in a variety of types, from plain external hard discs, to units with screens to preview images, CD writers, and combination MP3 music players and image storage. They range in size from 20 – 80 Gb, and as with all devices relating to digital imaging it is worthwhile getting the largest you can afford.

### **Digital Film Compliant**

Although the CompactFlash Association provides certification providing assurance of compatibility with cards, some manufacturers implement the

standards differently for use in still cameras, which may cause some compatibility problems. Digital Film Compliance provides the consumer with a guarantee that cards with this logo are compatible with all cameras using this type of storage.

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