



## April, 2012 Flash Cards

Remember flash cards? Many of us learned our ABCs or multiplication tables using them when we were children. Now put them out of your mind because we're talking about electronic flash memory cards and their use in cameras and camcorders.

Back in the early days of digital photography there was no such thing as removable memory. However many bytes of storage were built into the camera was all there ever was, no more could be added. Eventually cameras improved to the point where changeable memory modules became necessary. One of the earliest was borrowed from computer technology: the PCMCIA Type 2 card. These cards were at least a finger long and 3 fingers wide (sic. digital measurements) and held a few megabytes of random data.

Manufacturers realized that smaller, lightweight memory was needed. Sony invented the MemoryStick® and SanDisk brought forth the Compact Flash (CF) card Type 1. Both cards used Flash Memory as opposed to a hard drive\*. Not long afterwards came the MultiMedia, Smart Media, Secure Digital (SD), xD Picture Card and a plethora of other types of removable memory.

While the SD form factor commands most of the market today, CF cards dominate the professional camera arena. Neither type is the same as it was back in the 1990s, but they still fit. (A newcomer has just entered the field - the Sony XQD® card. More about the XQD later.)

Throughout the development of digital photography camera sensors increased their pixel count and larger and larger memory files were needed to record their data. The earliest memory cards this  
\*A Compact Flash Type II also was developed, using a very small, spinning hard disk drive.

writer remembers were 2MB (megabytes) CF cards. That's megabytes, not gigabytes. Fortunately, as cards quickly increased in capacity, they did not increase in physical size. In the not too distant future expect to see capacities up to 2TB (terabytes)!

Not only were cameras recording larger files, but the intervals between exposures were decreasing. Earlier cameras could shoot consecutive photos with a 3-4 second wait between them. Now cameras can take 10 shots per second at full resolution and thousands per second at lower resolutions. Memory cards had to keep pace with faster access times and greater capacity. One question is - what is the right size and speed for your camera or camcorder?

Your camera determines what form factor memory card it will accept. You can't force a bigger memory card into a smaller, thinner slot and so on.



It would make too much sense and be entirely too easy if all memory card speeds were rated according to the same scale. Obviously this isn't going to happen. The following chart illustrates minimum read/write speeds and their "X" factor.



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This chart helps to explain the conversion of the primary speed ratings currently in use.

Write Speed	(MB/sec)
1x	= 150kb
6x	= 0.9MB
8x	= 1.2
10x	= 1.4
13x	= 2.0 (class2)
26x	= 4.0 (class4)
32x	= 4.5
40x	= 6.0 (class6)
55x	= 8.0
66x	= 9.0
68x	= 10.0 (class10)
100x	= 15.0
133x	= 19.0
150x	= 22.0
200x	= 29.0
266x	= 39.0
300x	= 44.0
400x	= 59.0
600x	= 88.0

Figures are based on 1024kb per MB - figures are rounded up/down)

The following generalities should govern your selection of card speed for your camera(s):

•COMPACT AND POCKET CAMERAS

MP = megapixels

(for still photos or low resolution video)

- 8 or fewer MP - 13x
- 10-12MP - 26x
- 12-14MP - 40x
- 14-16MP - 66 - 68x

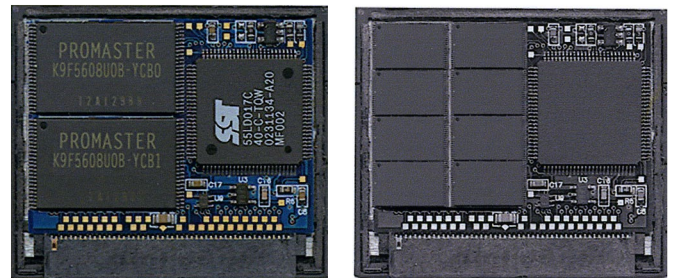
Because SLR cameras have larger sensors, they record more data per pixel and deliver superior images, and therefore require higher speed memory cards.

•SLR and most other  
INTERCHANGEABLE LENS CAMERAS

- 6 - 8 or fewer MP - 55x
- 10-14MP - 77x
- 12-14MP - 40x
- 16 - 20MP - 300x
- 20+MP - 600x
- 20+MP and full format sensor - 900X

See each camera's manual for memory speed information regarding HD video recording.

Memory card construction is also a major consideration when selecting a card. The card on the left shows a cut-away of a typical 1GB memory card. There are 3 chips: 1 smaller controller chip and 2 512MB flash memory chips. The card on the right



has the same controller chip and 8 128MB flash memory chips. Both have the same total capacity. Each flash memory chip has 20 solder connections; a total of 40 on the left, and 160 on the right. Each solder connection is a potential point of failure as it heats and cools when data crosses it.

Eight 128MB chips are much less expensive than Two 512MB chips, so the card on the right is less expensive to manufacture and sells for less at retail. This type of card - regardless of shape and style - should be avoided at all cost. It will fail.



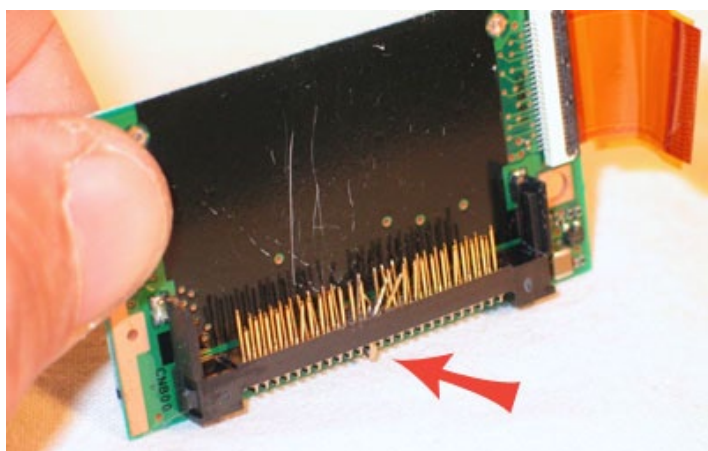
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The previous chart shows that CF cards tend to be the highest speed cards available today, but they have an inherent weakness which must be considered. This end view of a typical CF cards shows the 50 pin interface where data is sent and



received between the card and the device connected to it (camera, computer, card reader, whatever). This is known as the female connection. The male connection consists of 50 pins that plug into the 50 sockets, each of which send and/or receive data.

Since Compact flash cards were introduced, users have accidentally put them into their card slots backwards, resulting in the damage shown below.



If the slot is in the camera, it's a costly repair and lost time when you don't have your camera. All that's needed is one bent pin - everything on the card can be lost!

Other style cards use connections that don't involve pins and cannot be inserted backwards, such as the SDHC card shown below. The number of contacts influences the data transfer speed potential, but the cards are much safer and more reliable.



On the final page of this issue are excerpts taken from the sites of the Compact Flash Association and the SD Association regarding their newest memory cards.

A word or two about the "controller" chip on cards. Although we write and read in a linear fashion, digital apparatuses do not. According to a programmed sequence, bits are put into memory in a specific way with a lot of "what ifs", if a memory address is already used or is defective. The memory card is quite stupid, and needs to be told what to do.

**Although almost all digital cameras save their files as JPEGs, no two cameras send the photo files to the memory card EXACTLY THE SAME WAY. It's as if they speak different electronic dialects of the same JPEG language. Because of this individuality, the controller chip on a memory card must be formatted to be certain that the photos or other data can be retrieved. There is a format command somewhere in the setup menu of just about every camera. Very few cameras will ask to have a new card formatted; you must look for the command and perform the function! ONCE FORMATTED, DO NOT RECORD ANY DATA FROM ANY OTHER**



# MadisonPhotoPlus the Photo Summit



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Some reasons that we almost exclusively carry  
**Promaster** brand cards are:

Lifetime Over the Counter Replacement Warranty

Miniscule Defect Rate

No Small Memory Chips

Consistency of Quality  
The ONLY Brand Carrying a Lifetime  
Photo Retrieval Warranty (in case a  
card becomes corrupted)

Lack of Counterfeit Cards

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There are still some seats available for the following classes scheduled for this spring, as well as our fieldtrip. You can register online by clicking this link "[classes](#)".

## ADOBE PHOTOSHOP ELEMENTS®: THE BASICS

**Wednesday, April 18** - Every new computer comes with built in photo software, with each software company trying to become the new industry standard. Adobe Photoshop™ has been THE standard for decades, but is too much software for the average amateur. Adobe Photoshop Elements™ is the standard and this class covers the basics of enhancing and improving your photos. If you own a portable computer, bring it along with your camera.

## ADOBE PHOTOSHOP ELEMENTS®: INTERMEDIATE

**Wednesday, April 25** - Tonight's program picks up where the basic program left off. Advanced topics including RAW files, actions, advanced layers, and more. Questions and problems arising from the basic session will be addressed. Remember to bring your computer and camera.

## SCANNING SLIDES AND NEGATIVES

**Saturday, April 28** - Copying slides, negatives and prints isn't as simple as copying a document. This class teaches the proper techniques for photographic quality scans using PC or Mac. Because scanning is rather time consuming, it's important to get it right the first time. Limited to 10 people.

## CANON SLRs

**Wednesday, May 2** - Now that you've mastered the Basic SLR session, it's time to apply that general knowledge to your specific Canon SLR. The impetus tonight will be still photos, with a short discussion of video topics. Be sure to bring your camera and lenses with you.

## USING DIGITAL COMPACT DIGITAL CAMERAS

**Saturday, May 5; repeated May 12** - All those noises and symbols can be confusing when you don't know what they mean. With just a little bit of knowledge you'll be able to take better pictures than you ever thought you could. Bring your camera with you- this session is hands on.

## EXPOSURE AND COMPOSITION

**Monday, May 7** - These are the BIG 2 of photography. Understanding their principles will allow you to start seeing the photo before you look through the camera.

## NIKON SLRs

**Wednesday, May 9** - Now that you've mastered the Basic SLR session, it's time to apply that general knowledge to your specific Nikon SLR. The focus tonight will be on still photos, with a short discussion of video topics. Be sure to bring your camera and lenses with you.

## HDSLR VIDEOGRAPHY FOR BEGINNERS

**Wednesday, May 16** - Your new SLR now takes HD video, but you can't use it the same way as a still camera. Video is very different, and not very intuitive. Learn how to successfully and consistently get great HD video.

## FIELD TRIP

**Sunday, June 3** - You don't need an exotic location to take great photos. You need to know your camera, be observant, be patient and be able to recognize a good picture when it's staring you in the face. The day will be spent learning the when, why and where to shoot, more than how to shoot. Emphasis will be placed learning to "see" photographically. Members of our staff will spread through the area to work with you in small groups. This year's venue is the Morristown Green.

## UNDERSTANDING AND USING IPHOTO

**Tuesday, June 5**; - iPHOTO looks simple at the start, but knowing how it works makes your photo handling faster and easier. If you have a Mac Book, bring it with you!

## CLOSE UP AND MACRO PHOTOGRAPHY

**Thursday, June 7** - Remember your first magnifying glass when you were a kid? It was so exciting, wasn't it? The same fascination is still within you when you explore macro and close up photography. Learn how to use your camera - SLR or compact - to take great pictures of the small world we so often overlook.





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## COMPACT FLASH

(by Stephen Shankland December 7, 2011 2:24 PM PST)

Using the PCI Express interface, the new memory cards will be able to reach sustained write speeds starting at 125 megabytes per second.

The CompactFlash Association has finished its work designing a successor to today's high-end memory card format, naming its successor XQD and promising much higher data-transfer speeds.

Enter XQD, a project the CompactFlash Association announced last year. The new cards use the PCI Express data pathway technology developed first for PCs to reach 2.5 gigabits per second initially and 5Gbps later.

XQD flash card logo

The card is expected to be able to write data at a minimum 125 megabytes per second, the association said. Today's CompactFlash cards top out at about 100MBps.

It's not clear exactly when the new technology will arrive on the market, but the association said today it'll begin licensing the design in early 2012. It's got powerful backers: Nikon led its development, and Canon endorsed it.

"The XQD format will enable further evolution of hardware and imaging applications and widen the memory card options available to CompactFlash users such as professional photographers," said Canon's Shigeto Kanda, who's chairman of CFA's board.

## SD

SDXC memory cards must only be used with SDXC devices.

SDXC devices can use SD memory cards, SDHC memory cards and SDXC memory cards.

SDHC memory cards can be used with SDHC memory cards and SDXC devices.

SDHC devices can use both SD memory cards and SDHC memory cards.

SD devices can only use SD memory cards.

# MadisonPhotoPlus

40 Main St., Madison, NJ 07940

v. 973-966-2900; f. 973-377-1458

[www.madisonphoto.com](http://www.madisonphoto.com)

*Jerry, Joy, Marie, Rachelle,  
Rob & Vincent*



# the Photo Summit

383 Springfield Ave., Summit, NJ 07901

v. 908-273-7427; f. 908-277-0218

[www.photosummit.com](http://www.photosummit.com)

*Bret, Josh, Larry & Lynne*

Be back in May! Happy Shooting!