

Memory Card Mysteries – Solved!



There are several sizes of memory cards commonly used:

- Compact Flash
- SD
- MicroSD
- XQD

CF COMPACT FLASH



SD SECURE DIGITAL

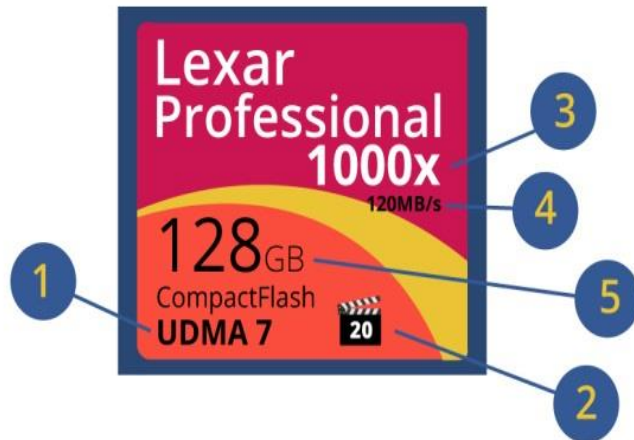


MICRO SD MICRO SECURE DIGITAL



What are all the terms and acronyms on the cards?

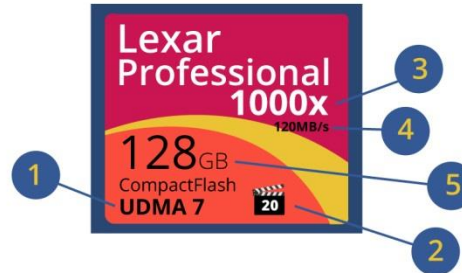
- UDMA
- UHS
- Class rating
- Speed rating



Terms

- Read speed – describes how fast photos can be retrieved from the card. This is only useful when copying photos to your computer
- Write speed – describes how fast photos can be saved to the card. Important when shooting in burst mode, taking HD video or with high resolution sensors. **Manufacturers rarely advertise their max write speed on the card**

Compact Flash



1. UDMA Rating – Max **read** speed. UDMA 7 max is 167 MB/s (megabytes per second)
2. Minimum sustained write speed – the slowest the card will write. Important for videographers (drops in write speed can cause dropped video frames). Usually indicates MB/s
3. Relative speed rating – outdated; relative to the read speed of audio CDs
4. Same as #3, expressed in better terms – Max **read** speed in MB/s (cards can rarely sustain these speeds for long periods of time)
5. Capacity in gigabytes

SD cards



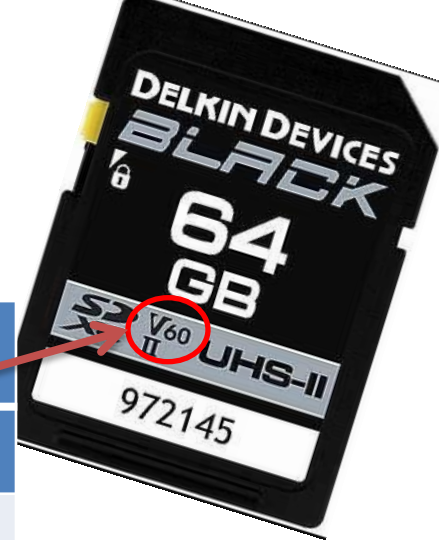
1. Max **read** speed - expressed in MB/s (megabytes per second)
2. Relative speed rating – outdated; relative to the read speed of audio CDs
3. Type of card – there are several different SD card formats that indicate max capacity, etc. See #7
4. UHS Speed Class rating - Minimum sustained write speed. UHS Speed class 3 cards will never write slower than 30 MB/s
5. Speed-Class Rating - This is an older speed-class rating. Still included because some products still recommend cards by this value. Class 10 was the fastest and it is verified never to write slower than 10 MB/s
6. UHS Rating - maximum speed at which a card can **read**. UHS-I supports up to 104 MB/s and UHS-II supports up to 312 MB/s; UHS-III up to 624 MBs
7. Capacity in gigabytes - SD cards range up to 2GB, SDHC cards range from 2GB to 32GB, and SDXC cards range from 32GB to 2TB.

UHS-I vs UHS-II

- UHS-II cards have two bands of brass contacts
- UHS-II cards can be used in cameras that only support UHS-I cards, they will just be slower than advertised
- UHS-I cards will also work in UHS-II slots
- UHS-II cards can be up to 3 times faster than UHS-I



Speed Classes



Minimum Sequential Write Speed	Speed Class	UHS Speed Class	Video Speed Class
2 MB/sec	Class 2 (C2)		
4 MB/sec	Class 4 (C4)		
6 MB/sec	Class 6 (C6)		Class 6 (V6)
10 MB/sec	Class 10 (C10)	Class 1 (U1)	Class 10 (V10)
30 MB/sec		Class 3 (U3)	Class 30 (V30)
60 MB/sec			Class 60 (V60)
90 MB/sec			Class 90 (V90)

CFast and XQD

- CFast – A faster Compact Flash format created for more write speed
 - Extremely expensive
 - Already obsolete; replaced by XQD
- XQD - SD card size but thicker
 - Max write speed – 440 MB/s
 - Max read speed - 400 MB/s



How to choose

- Verify what type of card (CF, SD, etc.) your camera accepts
- Decide on the type of photography you plan to shoot – raw or jpg; high-speed action using burst mode, 4K video need higher speeds than landscape photos
- Older cameras may not be able to make use of all the space on high capacity cards
- Check manual for speed requirements
- If traveling, will you want to only use cards once? Plan storage capacity accordingly

Cautions

- Not all cameras can support the write speed of the fast cards. Don't pay for speed your camera doesn't need
- Card readers also have reading speed limitations
- Make sure your card reader can read at the max rate your card allows
- If you plan on shooting 4K video, carefully review the memory card requirements, especially if using high frame rates (60-120fps)
- Not all cameras support UHS-II or SDXC cards