

## **Persistor CF1 and CF2 file limit**

### **Rev 1-7-10**

- 1 The maximum file size on any FAT file system is the lesser of 4GB or the limit imposed by the volume size.
- 2 The maximum volume size for any FAT16 file system is 2GB, so the maximum file size will be somewhat less.
- 3 The maximum file size for PicoDOS using a memory card formatted as FAT32 is also 2GB because PicoDOS uses signed 32-bit integers for certain file operations.
- 4 (REV 3-6-09) The maximum volume size for a CF1/CF2 4.xx FAT32 formatted volume is limited to 128GB (137,438,953,472 actual bytes (or 137GB where manufacturer uses \*1,000,000,000 = 1GB))
  - 4a PicoDOS has only been tested to 60GB.
  - 4b Note also that Windows imposes a 32GB limit on simple formatting to encourage the use of NTFS - this fact given only as information - always format memory cards for CF1/CF2 with PicoDOS.
- 5 If the card is formatted as FAT16, then the root directory is limited to 512 files but you can override the 512 limit with the /D option.
- 6 If the card is formatted as FAT32, then the root directory is treated like a subdirectory without an artificial limit on the number of files.
- 7 If the card is formatted with PicoDOS 2.x then the card will be formatted as FAT16 (and 2GB is the limit for a FAT16 volume).
- 8 If the card is formatted with PicoDOS 3.x or 4.x, and if the card is 2GB or less then the card will be formatted as FAT16.
- 9 If the card is formatted with PicoDOS 3.x or 4.x, and if the card is greater than 2GB then the card will be formatted as FAT32.
- 10 Regardless of the FAT format, there is no limit on the number of files within a directory, and a directory counts as a file when it is in the root directory.
- 10a (Rev 1-7-10) The number of files in either FAT format is limited to (bytes free / cluster size) because a file cannot be smaller than a cluster. The cluster size is found by typing `chkdsk /b` in PicoDOS.  $\text{BPB\_BytsPerSec} * \text{BPB\_SecPerClus} = \text{cluster size}$ . For instance, a 2GB card formatted as FAT16 has a cluster size of  $(64 * 512) = 32\text{KB}$  and so the 2GB card cannot have more than 64,030 files (including directories).
- 11 Beware that changing the format from FAT16 to FAT32 will increase all the file operation times because the FAT tables and directory file pages are now larger and the CF2 has to look through them to find start of file, end of file and the connecting data. See also the "FAT32Considerations" note on your PC located here;