

CP/M 2.2b for Vector Graphic 8 inch Controller (Track Buffered CP/M 2.2)

This is a single density version of CP/M 2.2 for the Vector Graphic 8 inch floppy controller. This is NOT the original Vector Graphic version of CP/M. This version of CP/M was created to test a Vector Graphic 8 inch floppy controller before I was able to obtain a copy of the original Vector Graphic CP/M for this controller.

The BIOS uses full track buffering on both reads and writes to improve performance. Performance is often 50%-75% faster than the Vector Graphic CP/M BIOS for typical disk based operations. Disks are fully interchangeable with other SSSD 8 inch CP/M disks.

Console I/O is performed through any 4.x version of the Vector Graphic systems monitor. The punch, reader, and list device route through the serial 8251 serial port at I/O address 4/5. The list device can also be routed to the console device.

The disk image file, CPM22b14-56K-SSSD.DSK, is sized for 56K of RAM and includes a customized version of MOVCPM to generate CP/M for a different amount of RAM. Also included is a COPY utility to copy, verify, and format disks, as well as utilities to transfer CP/M files to/from a PC (PCGET and PCPUT) and to write and read disk images for the Vector Graphic 8 inch controller (PC2FLOP and FLOP2PC). To write the CPM22b14-56K-SSSD.DSK disk image to a floppy, use the PC2FLOP utility found in the "Disk Image Transfer" folder.

In order to fit in the boot tracks of a standard SSSD IBM format soft sectored 8" disk, the code and initialized data portion of this BIOS can only be 380h bytes long. This restriction substantially reduces the features that can be provided by this BIOS and required a few tricks in the code to save space. The source file has a conditional assembly statement to detect when this size limit is exceeded. Look for "BIOS IS TO BIG *****" as an error statement when assembling.

IOBYTE Implementation

CP/M's IOBYTE feature is partially implemented to allow routing the LST device to the serial port or to the console. The possible device assignments are shown below:

CON device (bits 1,0): 00 - TTY through VG monitor* 01 - CRT through VG monitor 10 - BAT through VG monitor 11 - UC1 through VG monitor	PUN device (bits 5,4): 00 - TTY on serial port at 4/5* 01 - PTP on serial port at 4/5 10 - UP1 on serial port at 4/5 11 - UP2 on serial port at 4/5
RDR device (bits 3,2): 00 - TTY on serial port at 4/5* 01 - PTR on serial port at 4/5 10 - UR1 on serial port at 4/5 11 - UR2 on serial port at 4/5	LST device (bits 7,6): 00 - TTY through VG monitor 01 - CRT through VG monitor 10 - LPT on serial port at 4/5* 11 - UL1 on serial port at 4/5

* = Default IOBYTE

Patching the IOBYTE and MODE Byte

The STAT utility in CP/M is typically used to make IOBYTE device assignments as required. These assignments are temporary and the defaults shown above are restored whenever CP/M is cold started. To permanently modify the IOBYTE, the default IOBYTE in the CP/M boot image must be patched.

To change the default IOBYTE that CP/M loads on cold start, the MOVCPM file can be patched or memory can be modified after running MOVCPM, but prior to writing the image to disk using SYSGEN. The IOBYTE is at location 1FB4h in memory after running MOVCPM or loading MOVCPM.COM into memory using DDT. Each of the four logical devices occupies a two bit field in the IOBYTE. Each two bit field, in turn, selects one of four physical devices for the logical device. The bit field locations and values are shown in the device mapping table above.

The default IOBYTE in binary is 10000000 (80h). To change the listing device to the console, change the IOBYTE to 00h.

The MODE byte is at location 1FB3h in memory after running MOVCPM and uses the two LSBits to determine whether or not a command line is automatically run at cold start (set bit 0) and/or warm start (set bit 1).