HP85Disk Emulator Quick Start Guide - May 29, 2020

This Quick Start Guide is for the "production" build done in May and June of 2020 for the hpseries80 group. These emulators are delivered with the "rev 03b" pcb from March 15, 2020 and firmware from May 21, 2020. The units have been setup to be ready to use. Just add a power supply and connect to your HP-85 computer using the HP-IB interface.

This is just enough documentation to get you started. The disk images are configurable and documented in the project docs. As an open source project, users are encouraged to play around and try new things. Tell the group what you have learned!

Lets start with a few links:

Project root directory: https://github.com/magore/hp85disk
Documentation: https://github.com/magore/hp85disk/blob/master/README.md
Hardware files: https://github.com/magore/hp85disk/tree/master/board/V2/releases/HP85Disk_release_03

Please take some time to look at the README.md file, there is a lot of good information in there.

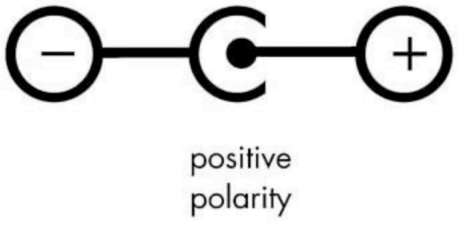
Hardware:

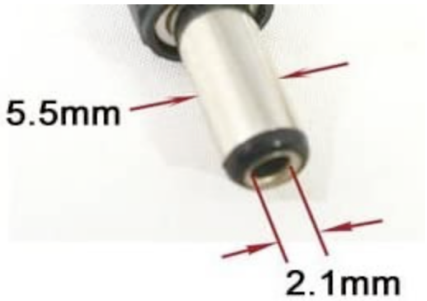
1: Power
2: USB
3: HP-IB (GB-IB)
4: Micro SD Card
5: LCD display
6: Clock (RTC) battery

1: Power. The power connector is a 5.5mm OD, 2.1mm ID barrel jack.

Minimum Voltage: 7.5 V
Maximum Voltage: 15 V
Average current: 110mA
Peak current: 275mA
Positive voltage on the center pin.

I recommend getting a 9 Volt, 500mA power supply which is very common. The HP85Disk power supply is the same as an Arduino's, any power supply for Arduino will work .





2: USB. The HP85Disk includes a mini-B USB connector with an FTDI USB serial uart interface. Use of the serial port is optional but you will need it to see debugging information, set the clock or configure the disks using the built in console commands. If you wish to use the serial port, look in the README for "hp85disk terminal commands". The uart settings are: 115200 baud,8,N,1.

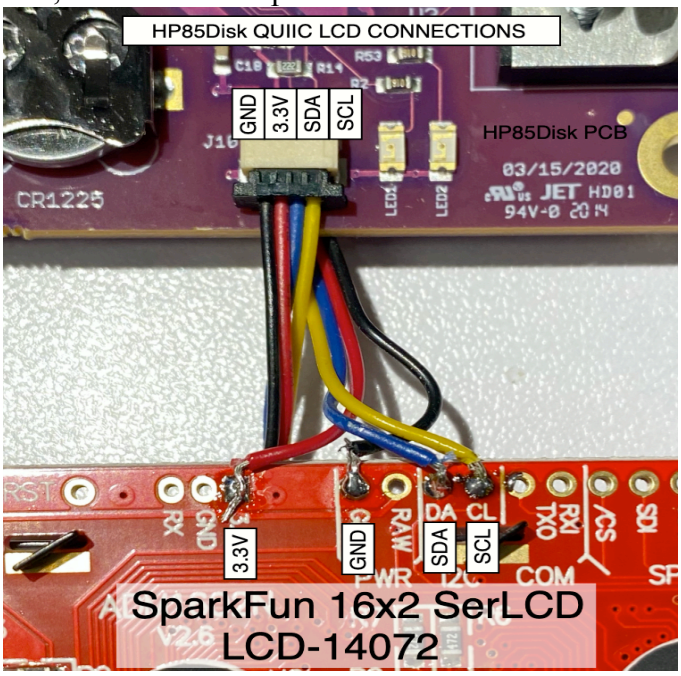
3: HP-IB. Not much to say here other than, your HP-85 computer must have the HP 82937A HP-IB interface card installed. The HP-85B ROM includes the required disk commands, if you have an HP-85A you must also have the mass storage ROM installed.

4:Micro SD Card. The micro SD Card is formatted as FAT32, can be mounted on your PC and comes pre-configured with 6 Amigo "mounted" disk images and 12 other disk images from Everett Kaser's emulator library: https://www.kaser.com/hp85.html . We included the HP games pacs, Math pac and Standard Pac in the 6 mounted images to get you started, here is the complete list of files on the sdcard:

```
85AssemblerROMdisc.lif          85TrainingPac.lif
85BasicStatPac.lif              85UsersLibraryUtilities1.lif
85GamesPac1.lif                 85UsersLibraryUtilitiesSRC.lif
85GamesPac2.lif                 85VisicalcPro.lif
85GeneralStatPac.lif            amigo0.lif
85GraphicsPresentationsPac.lif  amigo1.lif
85LinProgPac.lif                amigo2.lif
85MathPac.lif                   amigo3.lif
85RegressionPac.lif             hpdir.ini
85StandardPac.lif               hpdisk.cfg
```

You change which files are mounted by editing the file hpdisk.cfg as described in the README. Editing the config file is pretty easy and obvious, look at an entry, copy it, change the address and file name. Remember HP-IB only handles 8 addresses (from 0-7). Edit hpdisk.cfg by popping the sdcard into your PC and using any text editor. (Hint: Word is not a text editor)

5: LCD display. Connector J2 is for a Sparkfun 16x2 char QUIIC LCD display. The display is completely optional, if you want a display you can buy one here: https://www.sparkfun.com/products/14072. QUIIC is Sparkfun's standard connector for I2C so you will also need a QUIIC cable/connector such as: https://www.sparkfun.com/products/14427 . Hook it up to the display's SDA, SCL, 3.3V and GND pins.



6: Clock (RTC) battery. The HP85Disk pcb includes a DS1307 time of day clock and backup battery. The battery is a 3V CR1225 Lithium coin cell. The clock is used to time stamp files and is optional. The clock time was set to US Pacific Standard Time (California time), you will probably want to change it to your local time. Use the serial port and "setdate" command to change the clock.

Using the HP85Disk Emulator:

STEP1: Plug in the HP-IB cable from your HP-85 and apply power from a 9 Volt power supply.

- The LEDs labeled 3V3 and 5V0 should turn on.
- The LEDs labeled RX and TX for the FTDI will be on if there is not a USB connection.
- LED1 blinks a few times as the CPU is booting.
- If you have an LCD connected, the first line should be "SS80=0 AMIGO=6", the second line will have the date and time.

STEP2: Turn on your HP-85 computer.

Drives 0 and 1 are AMIGO scratch drives. Try these commands:

- CAT":D700" to see a listing of drive 0.
- CAT":D710" to see a listing of drive 1.
- Drive 2 is Games Pac 1, type CAT":D720" you should see a listing of all the games.
- LOAD"LANDER:D720" → load the lunar lander program
- RUN → Land on the moon!

You will see that hpdisk.cfg has disks at addresses 0,1,2,3,4,6. Try 'em then swap in some of the other disks by editing the hpdisk.cfg file.

Thats all. Have fun.

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