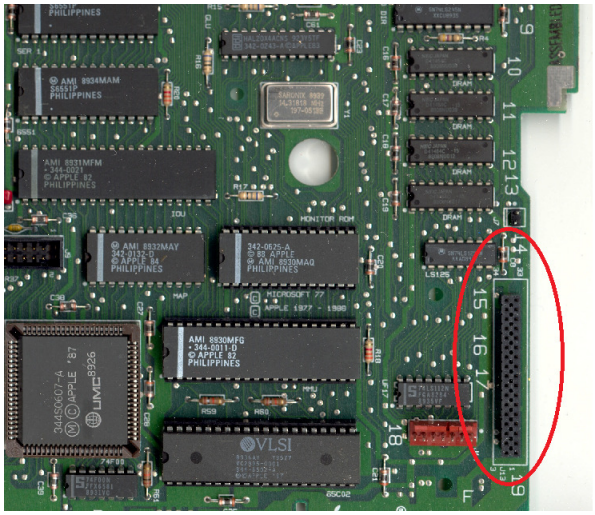
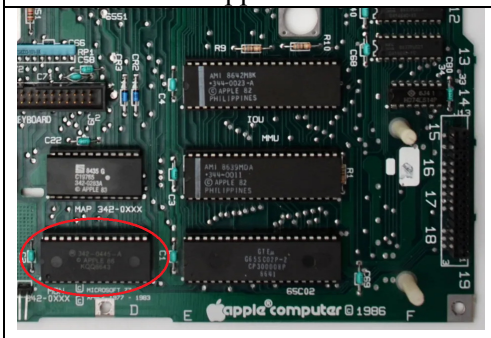
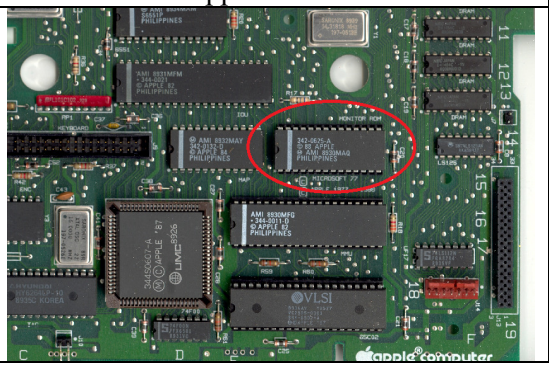
MegaFlash User Guide

Installation

1. Install MegaFlash to the Memory Expansion Connector of Apple IIc/IIc plus motherboard.



2. Replace the Monitor ROM with the supplied ROM chip.

Apple IIc	Apple IIc Plus
	

Boot Menu and Control Panel

- Ctrl-Option-Reset to enter the boot menu.
- In the boot menu, there are some shortcut keys:
  C key to enter control panel
  Space bar to toggle CPU speed on IIc+
  Esc key to reboot

Booting from drive 2

IN#4 command to boot from drive 2 of MegaFlash

Apple IIc+ Accelerator

The accelerator code has been modified:

- Pressing Esc key on Power up to switch to normal mode is removed.
- To change CPU speed, first go to Boot Menu. Press key 8 or Space bar to toggle the CPU speed. Then, reboot
- Ctrl-OA-Reset *does not* change the current CPU speed.
- The word **Normal** is shown when CPU is running at 1MHz during cold boot.
- The speed when the computer is powered up can be set in Control Panel

ROM Disk

- A ROM Disk is provided for disaster recovery. The ROM disk contains Copy II+ and ADT Pro.
- When enabled from boot menu, it will become the first unit of MegaFlash (slot 4, drive 1). Please note that the slot/drive assignments of all MegaFlash units are changed.
- Ctrl-OA-Reset cold boot to disable the ROM Disk

RAM Disk

- RAM Disk can be enabled from Control Panel. The size of RAM Disk is 400kB. RAM Disk is the last unit of SmartPort. Its volume name is /RAMDISK.
- RAM Disk can be used to transfer floppy disk image with ADT Pro. Users may transfer a floppy disk image and write it to the RAM Disk. Then, copy files from the disk image to Flash storage.

Applesoft BASIC FPU

- High bit of address $5FC is the Enable flag of Applesoft FPU.

Real Time Clock and Network Time Sync

The Raspberry Pi Pico has a real time clock (RTC). But it does not support battery backup. MegaFlash gets the time from NTP server via WIFI.

To enable network time sync,

1) Configure the **WIFI Settings** from Control Panel
2) Run **Test Wifi/NTP** from Control Panel
3) If all tests are passed, enable the **Network Time Sync** option

If MegaFlash can fetch the time from NTP server, the time is shown at the bottom right corner in Boot Menu and Control Panel.

If Network Time Sync option is enabled, a ProDOS clock driver will be installed automatically. The clock driver is in the patched system ROM. No software installation is required.

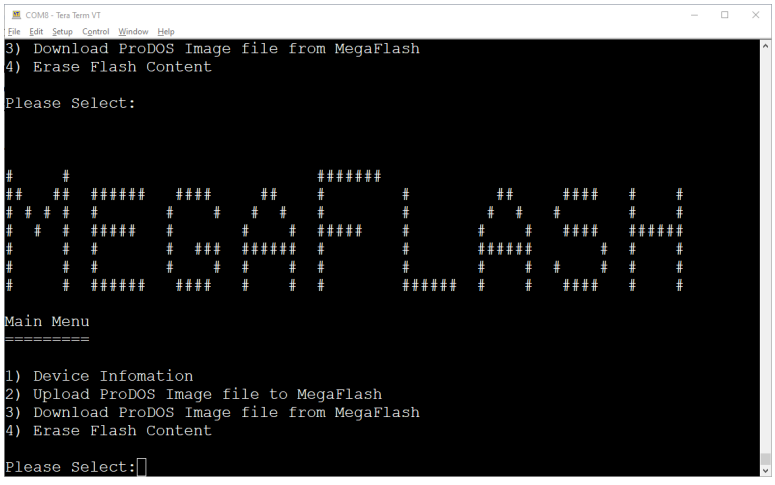
Disk Image Transfer

Disk Image File (.po or .hdv) can be transferred to MegaFlash in 3 ways.

1) ADT Pro and Serial Port
2) MegaFlash Terminal Mode
3) Via WIFI and TFTP Server

Terminal Mode

- To enter terminal mode, TURN OFF Apple IIc. Then, connect a PC to USB port of Pi Pico. Connect to MegaFlash serial port with a Terminal Program like TeraTerm (Windows).
- In the terminal mode, ProDOS-ordered disk image (.po or .hdv) can be uploaded to or downloaded from MegaFlash using XMODE-CRC or XMODEM/1K protocol.



Disk Image Transfer via WIFI

Disk Image can be transferred between MegaFlash and TFTP server via WIFI. Note that TFTP is not FTP. TFTP protocol is much simpler and without user authentication.

To transfer disk image, setup the WIFI network from Control Panel. Then, **select Disk Image Transfer via WIFI** from Control Panel and follow the instruction.

Please note that the TFTP server and MegaFlash must be on the same subnet and TFTP traffic cannot pass through firewall or NAT. In other words, MegaFlash and the server must be connected to the same WIFI router.

The block size of original TFTP protocol is 512 bytes. Later TFTP option extension allows larger block size. A larger block size increase transfer speed dramatically. Make sure blocksize option negotiation is enabled when configuring the TFTP server.

On Windows, Tfpd64 (https://pjo2.github.io/tftpd64/) server program is recommended. It has a GUI. You may need to run the app as administrator to save the setting. When sending a file to server, the file is overwritten without any warning if the file already exists on the server. Make sure **Option negotiation** is enabled.

I don't have a Mac. So, I cannot test any Mac TFTP servers. But this software looks promising.

Pumpkin
https://github.com/mterron/pumpkin