

## Internal ADAM FujiNet

Thank you for your purchase of the Internal ADAM FujiNet. I designed this hardware-modified ADAM computer variant based on the official FujiNet project found at [www.fujinet.online](http://www.fujinet.online). The great developers of the FujiNet project and their willingness to allow anyone to build units without restriction made this build possible. All hardware questions and concerns should be addressed to me on the ADAM Facebook group at <https://www.facebook.com/groups/115531017844>. More specifics, wiki documentation, and information on future code updates can also be found on the official FujiNet website at <https://fujinet.online>.

I designed the Internal ADAM FujiNet for fellow ADAM hobbyist who might not have the skillset to create their own unit or would like a professionally built unit.

*I made every effort to ensure the best quality build as possible through many hours of design and testing with the current ADAM FujiNet hardware design and firmware available at the time. Use this device at your own risk. Neither the FujiNet team nor I can be held responsible for any damage to the device or your ADAM or any loss of data that may occur from improper installation or operation. FujiNet currently is evolving and for that reason, I'm not responsible for any future hardware changes that might occur.*

Thank you.

John Lundy

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### **What is in the box**

- Internal ADAM FujiNet board set and front panel
- ADAMnet pass-thru cable set to allow ADAMnet to route from the internally mounted FujiNet out to the outside ADAMnet connection
- Standard ADAMnet cable for modified consoles with internal ADAMnet port. This can also be used on other standard ADAMnet peripherals.
- ADAMnet splitter if a physical drive is also going to be used alongside FujiNet at the same time to share the same side ADAMnet port (optional purchase)
- Dummy Data Drive replacement 3D-printed bracket and hardware kit for non-metal version  
Dummy Data Drive bracket (optional purchase)
- Instruction sheet

### **What else is required**

The Internal ADAM FujiNet board set and panel requires users to supply their own Coleco Dummy Data Drive to act as the housing required for mounting the device into one of the console's DDP drive bays. Two versions of Dummy Data Drive mounting brackets exist, one with metal and one with black plastic. The metal bracket version is the best choice when possible for ease of installation. The black plastic version requires the original bracket to be replaced with a 3D-printed bracket for mounting the Internal ADAM FujiNet.

## Device specifics

The Internal ADAM FujiNet is a single, multi-function ADAMnet powered peripheral that uses modern technology to upgrade your existing Coleco ADAM computer. It currently provides emulation for up to four disk drives in any combination, Digital Data Drive (DDP) cassette emulation<sup>1</sup>, printer emulation to PDF<sup>2</sup>, network device, cartridge ROM support<sup>3</sup>, and future Bluetooth support<sup>4</sup>.

FujiNet uses a built-in configuration image that boots automatically on ADAM reset. This configuration allows you to set up a WiFi network, enable/disable selected disk drives, select disk images to mount in selected disk slots, and enable/disable printer emulation. Disk and DDP images can be loaded from host slots which consist of an on-board, full-sized SD card socket or from TNFS servers over the Internet or your own personal server. A local browser can also be used to configure FujiNet which offers even more configuration options.

Multiplayer cross-platform games with other retro computers is possible with FujiNet. There are currently a few titles that already support this network feature: ADAMcala (Mancala), Connect 4 for both the ADAM and ATARI, and ADAMfarkle (soon to be released).

The Internal ADAM FujiNet hardware is based on the Espressif ESP32-DEVKITC-VE development module with 8MB of PSRAM and 8MB of internal flash storage. Firmware updates for ADAM FujiNet can be installed with the FujiNet-Flasher on Mac, Windows, and Linux selecting the appropriate 8M image (e.g., v0.5.f9c131b9-8M) using the built-in micro-USB connector on the ESP32-DEVKITC-VE development module.

1. There are some Digital Data Drive (DDP) cassette images that are hard-coded for direct tape drive number access and will not work using FujiNet. An SD DDP emulator is an alternative for 100% Digital Data Drive (DDP) cassette emulation.
2. Printer emulation requires a factory printer to be modified by disconnecting the ADAMnet data line internally or using a replacement ADAM power supply to remove the original printer all together. This modification is solely up to the end user to perform if printer emulation is to be used.
3. Cartridge ROM image support is limited to a maximum of 32K in size. This is a limitation of the workaround required to allow ROM images to run from memory and not a limitation of FujiNet.
4. Bluetooth is not currently supported, and there is no guarantee that it will be. The hardware is present in this device just in case future capabilities are added such as Bluetooth keyboard support.

More specifics, as well as a quick user guide, can be found at <https://github.com/FujiNetWIFI/fujinet-platformio/wiki>.

## Modification of the ADAM Dummy Data Drive

### Tools required

- Phillips screw driver
- Small flathead screw driver
- Flat needle nose pliers
- Dremel or similar device to grind the melted bracket tabs in the Dummy Data Drive (*ONLY* for drives that have a black plastic bracket)
- Two #4 3/8" machine screws and washers (*ONLY* if a 3D-printed bracket is installed)



Figure 1



Figure 2



Figure 3

### Removal of mounting bracket and front panel

#### *Metal version*

Remove the two screws and washers securing the Dummy Data Drive from inside the ADAM console and remove it. Place it face down on a flat work surface and use a small, flathead screwdriver to carefully pry two locking teeth up and away from the plastic tube post on one side of each black tinnerman clip. It is important to pry the teeth up just enough for each clip to become adequately loose for removal from the plastic tube post but no more to prevent stress breakage. *See Figure 1*. With both clips loose, pull the aluminum bracket up and out. This action will pull the clips out along with the bracket and also make it possible to remove the clear plastic cover. The tinnerman clips can now be bent back to their original shape using needle nose pliers for reuse later. *See Figure 2*. Safely store the clear plastic cover since it is no longer needed.

#### *Black plastic version*

Remove the two screws and washers securing the Dummy Data Drive from inside the ADAM console and remove it. Place it face down on a flat work surface for rework to allow a replacement 3D-printed bracket to be fitted later. The two melted plastic tabs need to be ground down just enough to free the bracket while allowing as much of the tube posts to remain intact as possible. Tube posts may need to be carefully cleaned out to remove any melted plastic remnants. Be careful to keep the inside diameter of the tube posts intact to allow screws to be inserted later. *See Figure 3*. Safely store the clear plastic cover and black plastic bracket which are no longer needed.

## Installation of Internal ADAM FujiNet board set

With the front Dummy Data Drive bezel now empty, the Internal ADAM FujiNet board set is ready to be fitted into the bezel. Note the three alignment holes in the Internal ADAM FujiNet front panel of the board set. These holes will align with the tabs inside the Dummy Data Drive bezel for correct orientation/placement. While carefully holding the bezel in your hand, place the Internal ADAM FujiNet panel into the bezel and the aluminum or 3D-printed bracket in the original position around the plastic tube posts. The metal version requires the original tinnerman clips to be pushed back into place around the plastic tube posts as far as possible. Using both thumbs is usually all it takes to push them all the way down. *See Figure 4.* A 3D-printed bracket requires two #4 3/8" machine screws and washers to fasten down into each tube post and secure the bracket to the front bezel. You can also add hot glue to ensure the screws and bracket can't work loose. *See Figure 5.*

A freely downloadable STL file of the 3D-printable bracket can be found at the following link to print your own if it was not originally purchased along with the Internal ADAM FujiNet.

<https://www.facebook.com/groups/115531017844/permalink/10159250447377845/>

## Installation of the Internal ADAM FujiNet in the ADAM

Attach the ADAMnet connection. Modified consoles with internal ADAMnet connections will connect to connector X1 of the Internal ADAM FujiNet. The ADAMnet Pass-through Cable Kit will connect to J1 of the Internal ADAM FujiNet and out through the top case vent to the left outside ADAMnet connector of the console. *See Figure 6.*

With the Internal ADAM FujiNet assembly connected to the ADAM and loosely placed in the drive bay, double check all connections one last time before you mount the Internal ADAM FujiNet securely using the original screws and star washers.

**Congratulations. You successfully installed your Internal ADAM FujiNet!**



Figure 4



Figure 5



Figure 6



Figure 7