Installing AstroArch

NOTE: To control the AStarBox power sockets, you must download and install the AStarBox control software, even if you are using the Indi or TheSky plugins. Do this after installing AstroArch.

Installing the AstroArch is simple. You will need to download the latest image, then flash it to a microSD card.

Instructions for downloading and using AstroArch can be found on the github site. The download instructions can be found here:

https://github.com/devDucks/astroarch?tab=readme-ov-file - download

The AstroArch image will then need to be flashed to a microSD card. There are several ways of doing this, but Balena Etcher works well and is described below. If you don't have an SD slot on your computer, there are many USB SD card readers available.
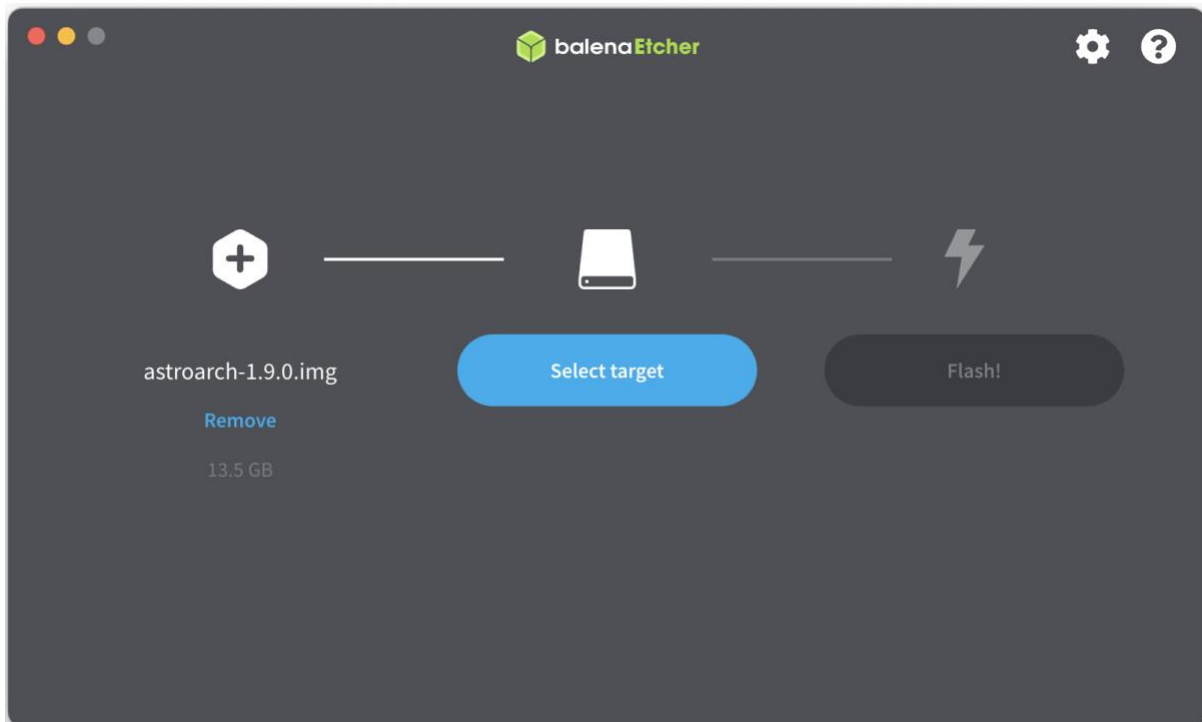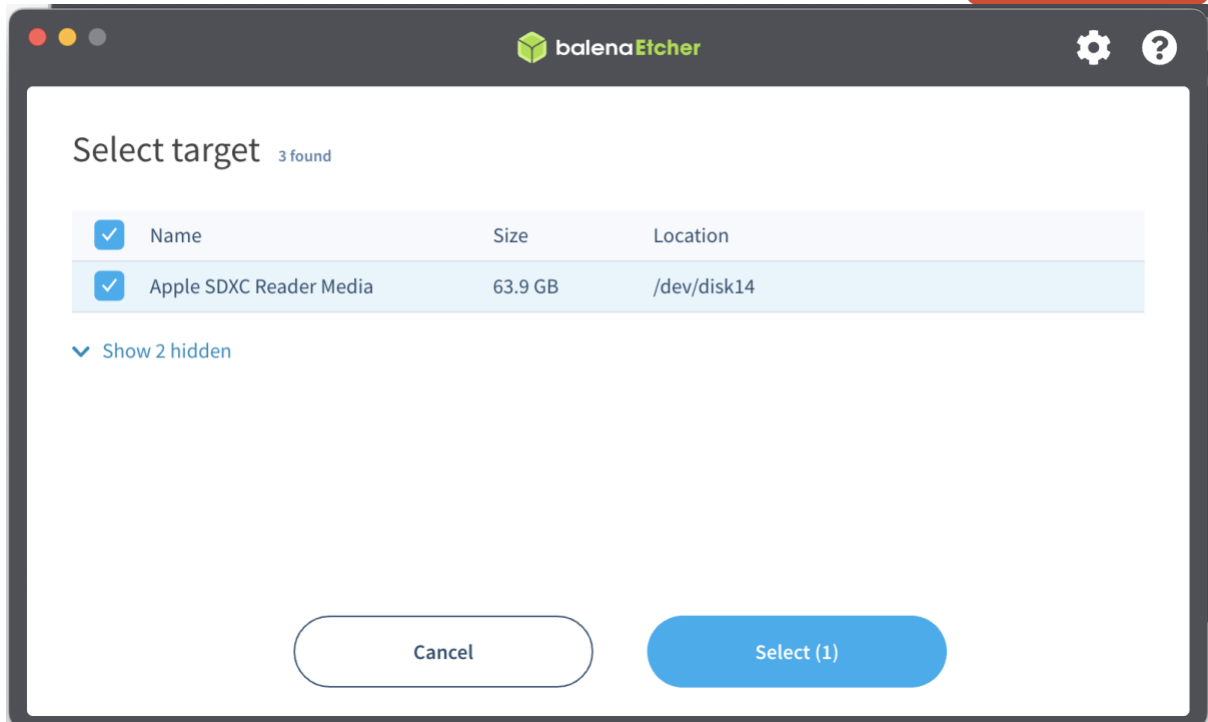
Open Balena Etcher.
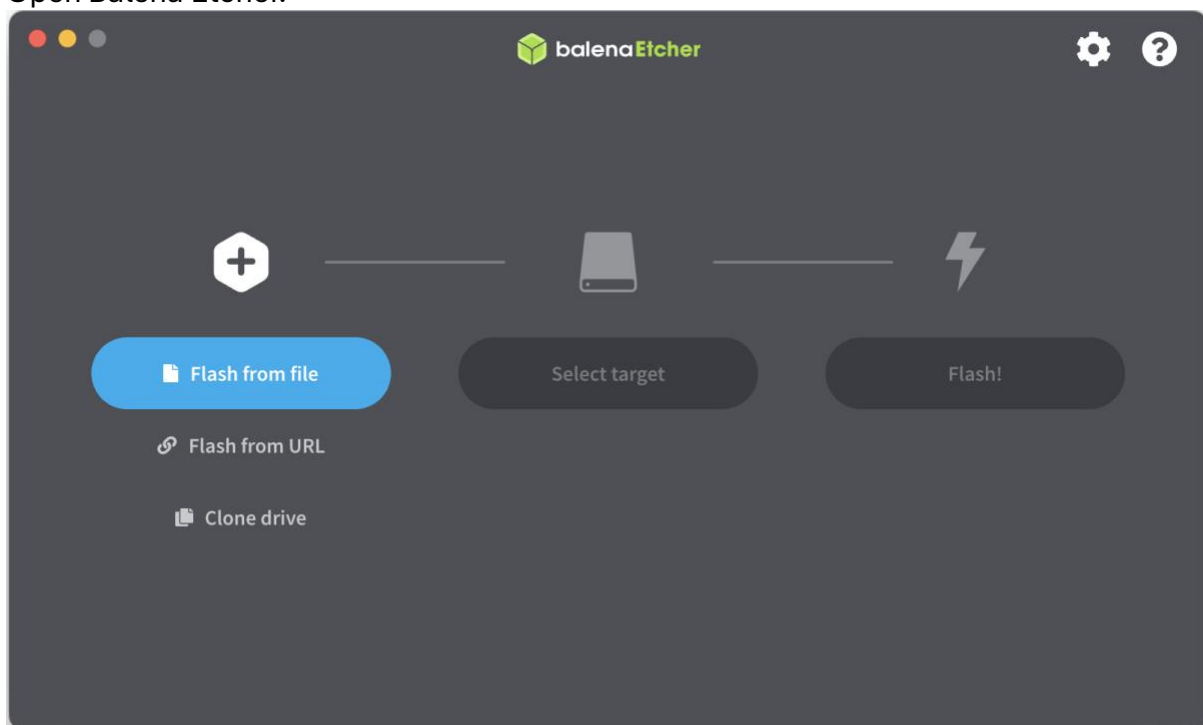
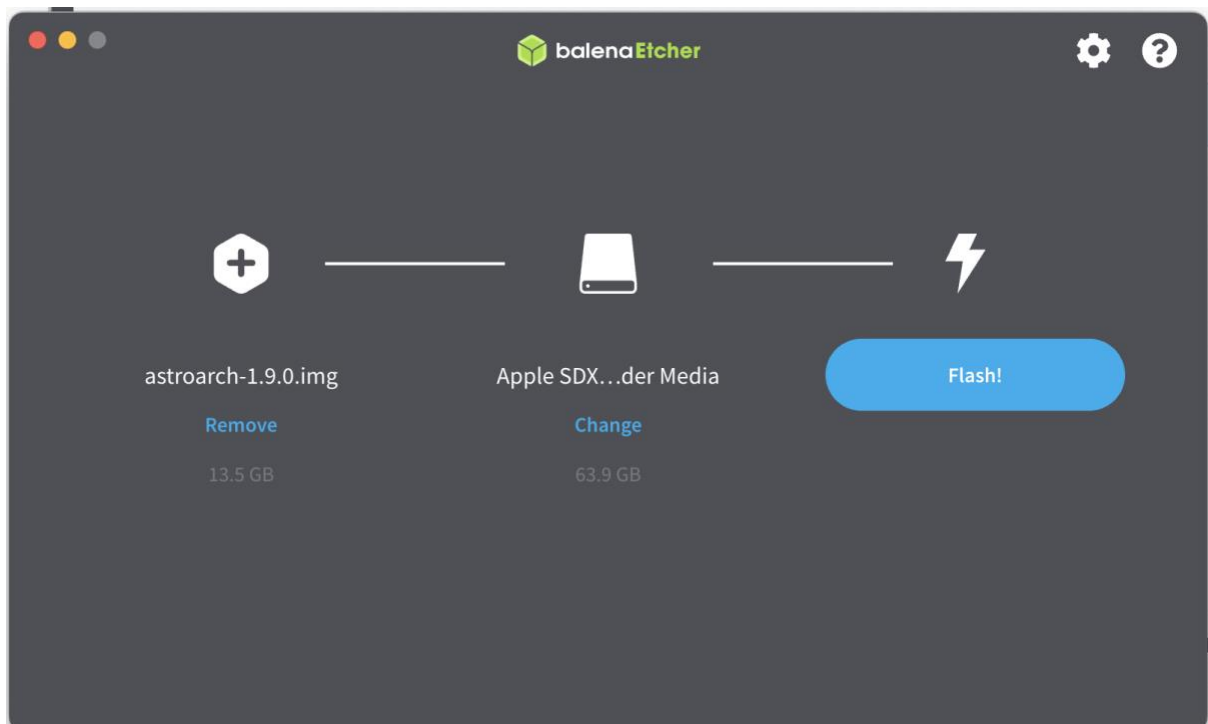Click on **Flash from file** and select the AstroArch distribution you just downloaded.
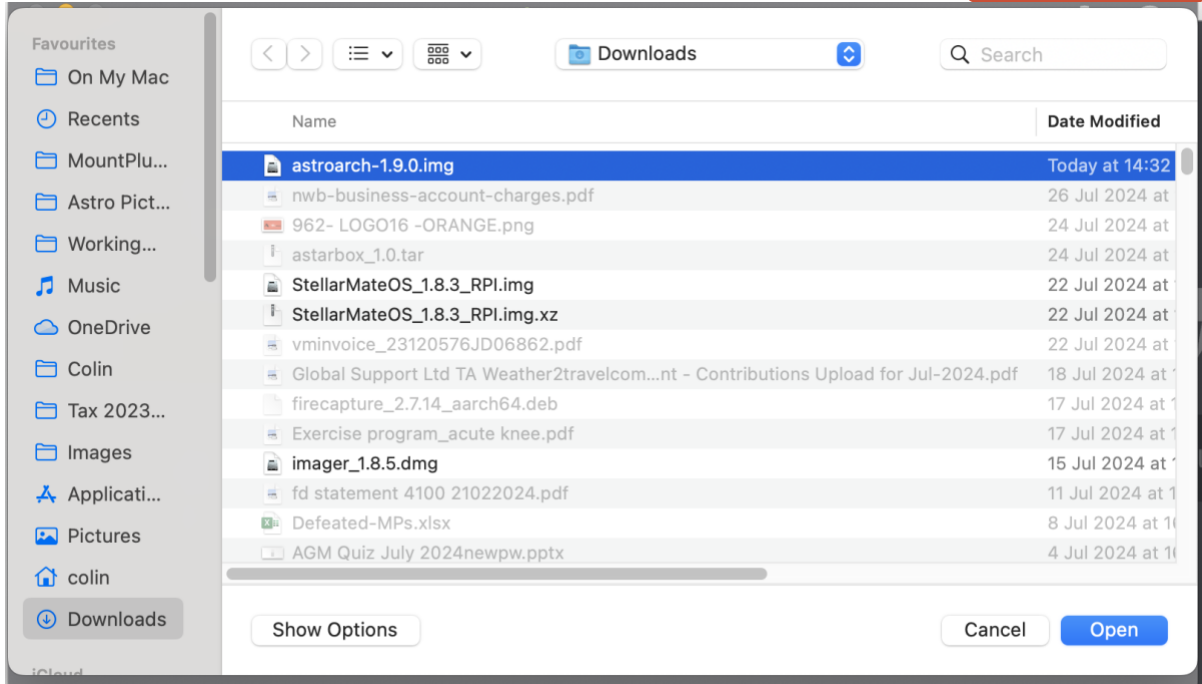
Click on **Select target**.

Choose the SD card you want to flash the image to.

Press **Select.** You can now flash the image by pressing **Flash!**

Balena Etcher will now flash and verify the image – it will take several minutes to do this. Once completed, you can remove the SD card from your computer.

Once the SD card is set up, put the card in the microSD card socket – this can be accessed by turning your AStarBox over. In this configuration, the card should be

inserted so that the contacts are face down – the little lip on the card should face up. You will be able to remove the card by using your thumbnail on the lip and pulling outward. See image below.

Figure 1. Location of the SD card slot. The electrical connectors should face downwards and be inserted into the slot. The lip on the SD card will allow you to remove the card if necessary.

WARNING: Do NOT connect your AStarBox directly to the mains. This is dangerous, will destroy your AStarBox and Raspberry Pi 5 and will invalidate your warranty.

You can now power up the Raspberry Pi. You can either do this by connecting 12v to power input XT60 connector, or 5v through the USB-C connector on the Pi. The second method will work fine to control the PI but will not power the external power ports on the AStarBox.

Figure 2. Location of input power. Provide 12 input via the male XT60 connector circled in blue, or 5v through the USB-C port circled in purple.

To connect to AstroArch you can use your favourite VNC viewer (e.g. RealVNC Viewer) using the address astroarch.local. You must first either connect both your computer and your AStarBox to ethernet, or connect your computer to the wifi hotspot created by AstroArch – it will be called AstroArch-XXXXXXX, where XXXXXXX is some combination of numbers and letters. The WiFi hotspot password is astronomy.

For more details, refer to the AstroArch first boot guide:

https://github.com/devDucks/astroarch?tab=readme-ov-file#first-boot

Optional Steps

Connect to your WiFi. If you are unable to connect via ethernet, then you will want to connect via WiFI. By default AstroArch creates a wifi hotspot – see instructions above for connecting your computer to this. Once your WiFi is connected, use VNC to connect to astroarch.local.

To connect to your home WiFi, click on the WiFi icon on the bottom right of the screen (shown below). It should be greyed out with an orange "!", indicating that there is no internet connection.
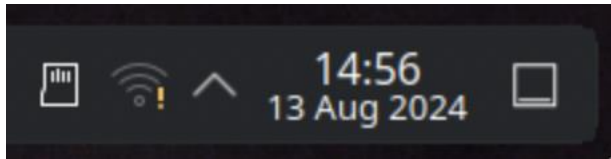
This will present a list of available WiFi networks. Click connect for the correct network and add your password – see below. Take care here, since one you press **Return** the WiFi hotspot will disconnect. Close your VNC connection, wait a minute or so, then reconnect using VNC.
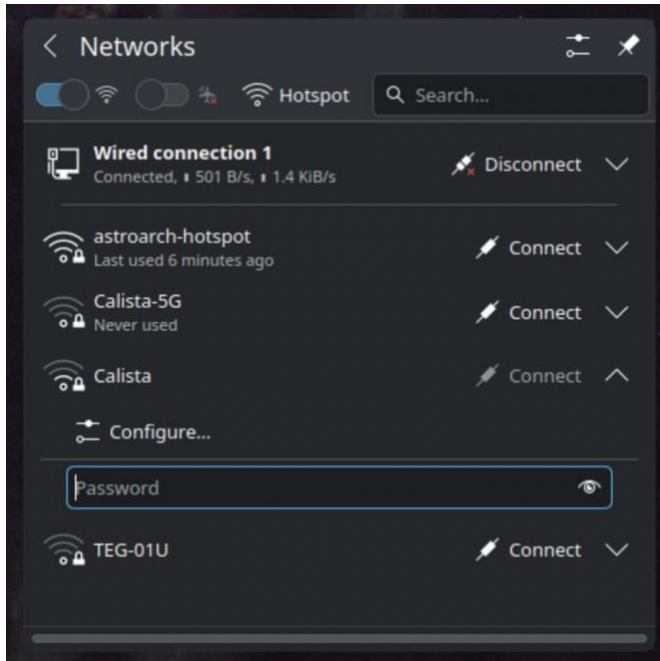
Update AstroArch. There are typically updates to several of the components used by AstroArch – there are likely to be system updates, but there are frequently updates to the astronomical software installed too. AstroArch provides a handy command to automate the process. AstroArch needs to be connected to the internet for this to happen. Either use an ethernet connector or connect to your local wifi network.

On login, there is generally a console window already open. If not, you can open one by clicking on icon at the top left of the screen with the arrow and labelled "Konsole":

In the console window, type:

```
update-astroarch
```

You will be asked for the password (astro). The command will then check what needs to be updated, the additional disk space it will require (if any) and then ask you whether you want to proceed. Type 'y'. The process will take several minutes, even with a fast internet connection. You may have to repeat the command if a download fails, but it will only download those packages that have not yet been installed.

Other facilities from AstroArch

Increasing the current available to USB devices. The AStarBox is designed to supply up to 5A of power to the Raspberry Pi. By default, only 3A will be accepted. Under other

distributions, this can be changed using `rpi-eeprom-config`, but this command is not distributed for Arch Linux. Note that this does not limit the current provided by the AStarBox power connections, just the power available through USB.

ArchAstro is configured to supply up to 1.6A to each USB socket, but if the total current required for your astro devices via USB is more than 3A, this could be a potential issue. One solution is to install Raspbian first and change the current limit. Since the limit is stored in the eeprom, the higher limit will then apply even if you later use AstroArch. Alternatively, there are scripts available on GitHub, though we have not tried to install these ourselves so cannot offer advice:

https://github.com/raspberrypi/rpi-eeprom/tree/master

Accessing files remotely. Smb is installed and enabled under AstroArch. You should be able to see the computer as ASTROARCH in your computer file manager and access files remotely.

Real Time Clock battery back up charging. If you have installed the real time clock battery backup this is rechargeable. Unlike other operating systems, the recharging is on by default. **WARNING: Ensure you are using the Raspberry Pi foundation rechargeable battery for the RTC battery back up. Do NOT use standard button cell since trying to recharge it may cause a fire.**

Providing Optional Hot Spot. By default, AstroArch provides a hot spot. You may want to also to connect to your home WiFi network. The priority of the hot spot is set to -100. Any new WiFi connection will have a default priority of 0. With these default priorities, AstroArch will connect to your home WiFi if available, and if not (e.g. at a remote location), you will be able to connect through the hot spot. Make sure you take a note of the hot spot name before you leave home – there may be others that also use AstroArch. While the hotspot names are unique, they are not user-friendly!

Further Help

The GitHub ReadMe file for AstroArch contains lots of helpful information:

https://github.com/devDucks/astroarch

For specific help on AstroArch, join the AstroArch discussion forums on indilib.org:

https://indilib.org/forum/astro-arch/