Installing PINS

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

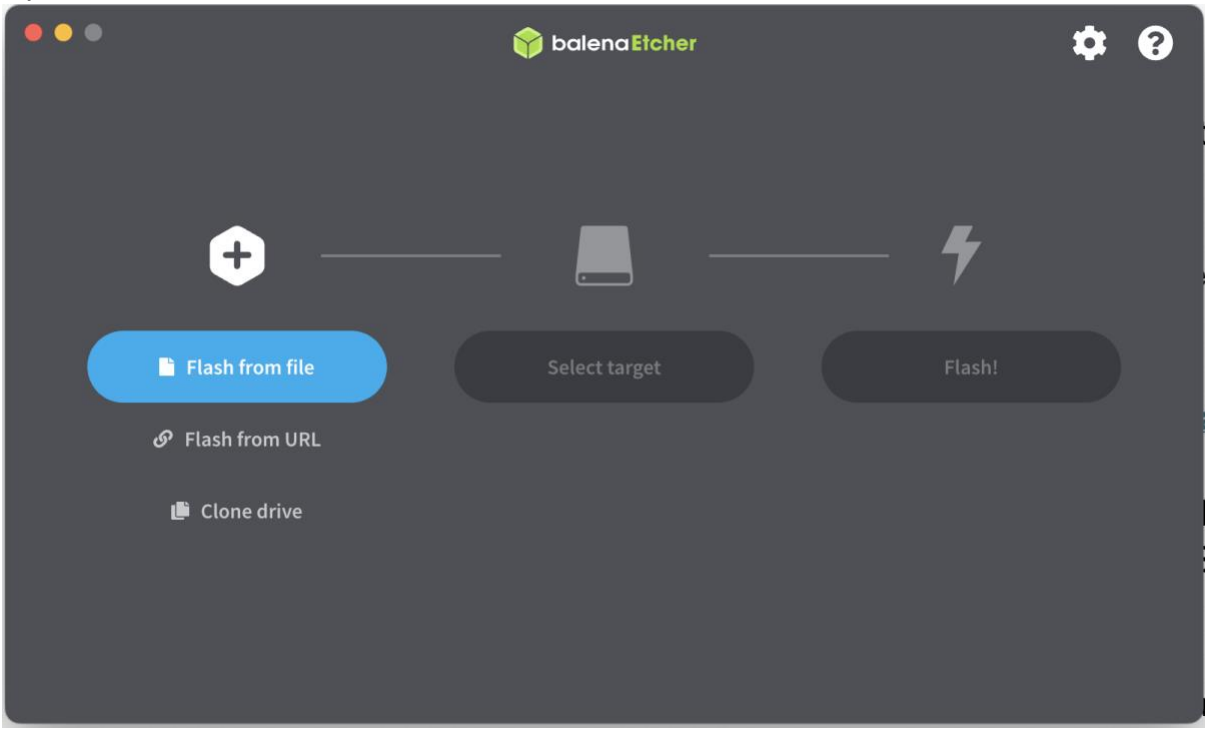
Installing the PINS is simple. You will need to download the latest image, then flash it to a microSD card. Instructions for downloading PINS can be found here:

https://touch-n-stars.eu

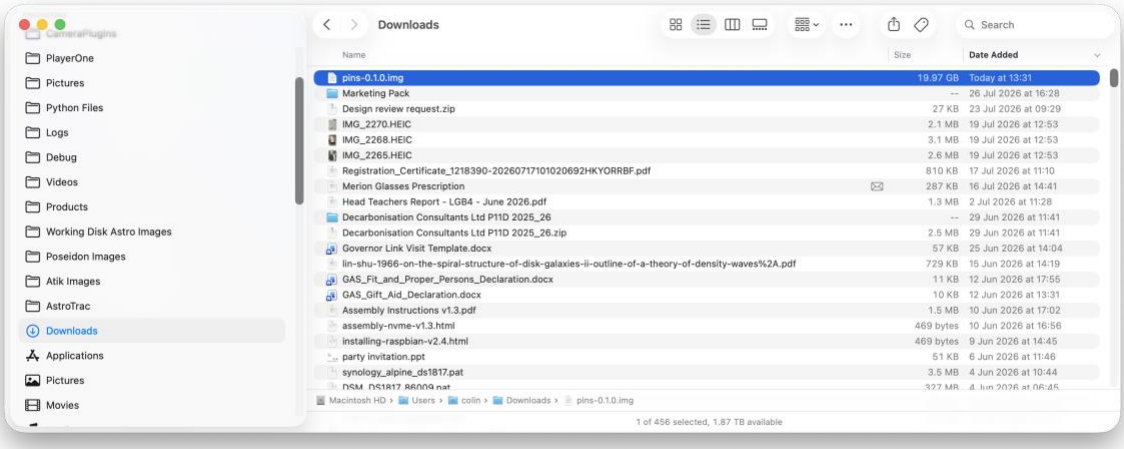
There is link for downloading PINS about halfway down the screen.

The PINS image will then need to be flashed to a microSD card or NVME drive (see the assembly instructions for details of how to use an NVME with your AStarBox). There are several ways of doing this, but Balena Etcher works well and is described below. There are USB card readers and USB to NVME enclosures available if you don't have the facility to attach these directly to your computer. If you don't have an NVME enclosure or you are retrofitting an NVME disk, you can copy the SD card directly to the installed NVME – see the Appendix.

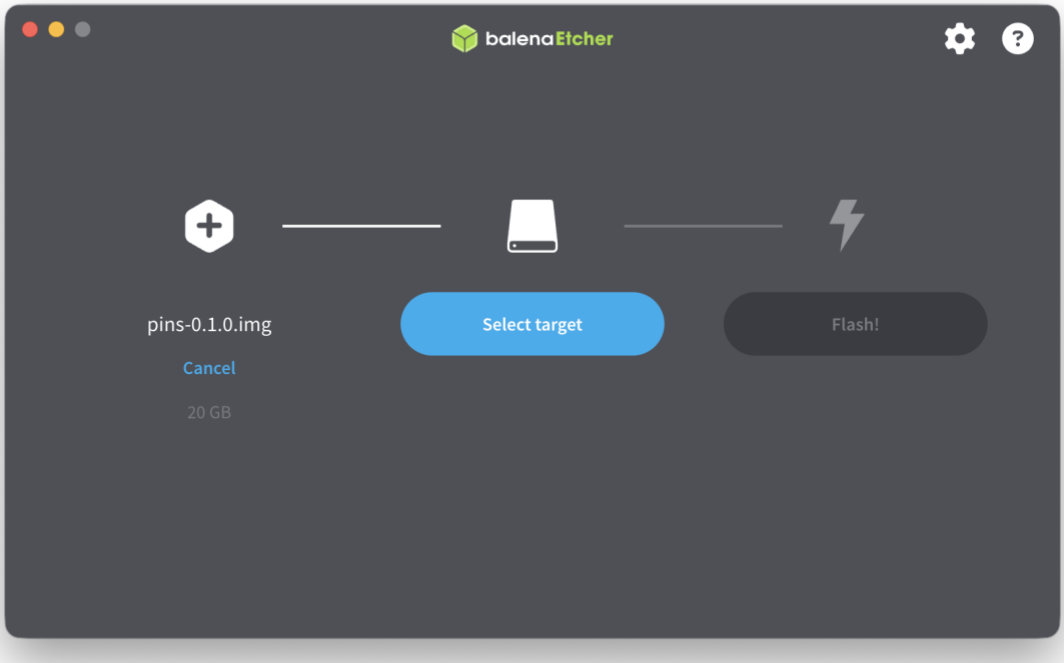
Open Balena Etcher:



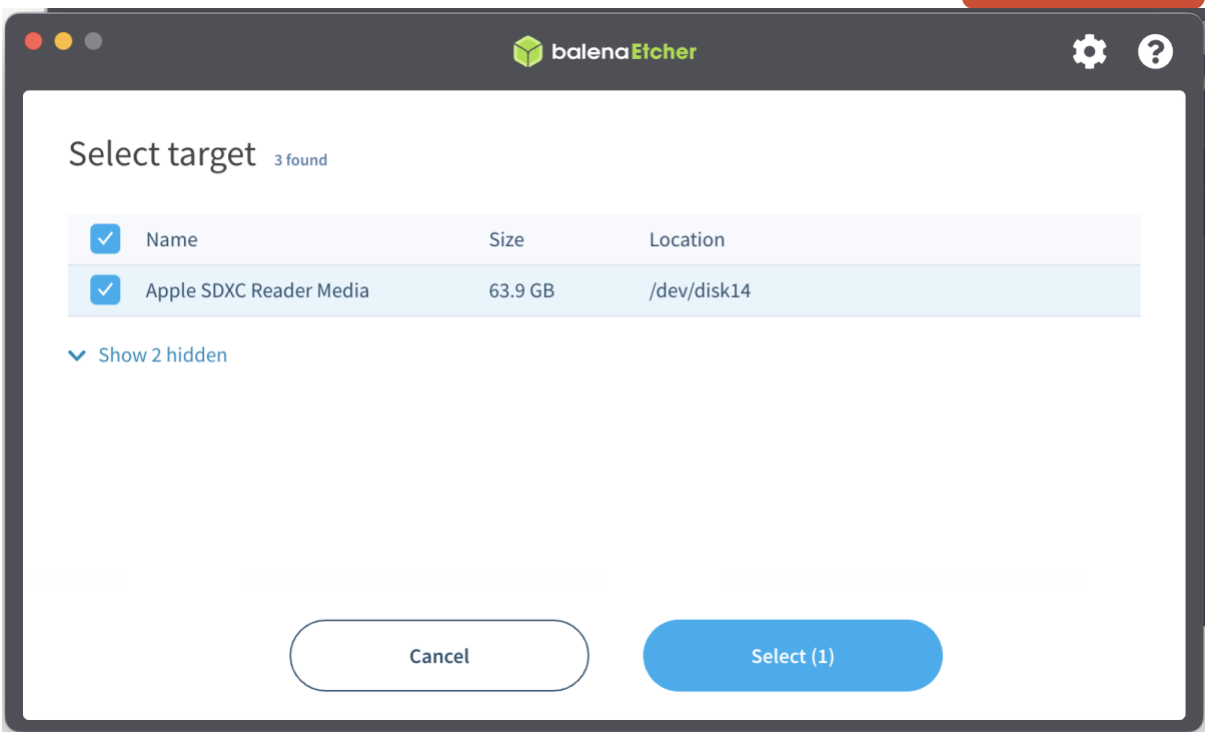
Click on **Flash from file** and select the PINS distribution you just downloaded.



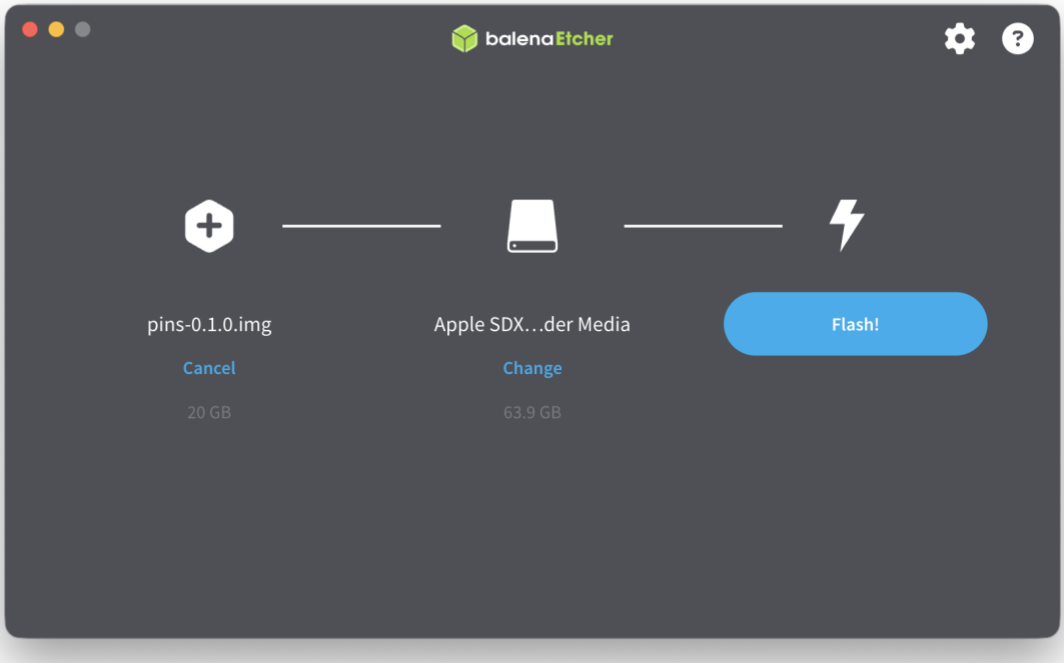
Click on **Select target**.



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.

If using an SD card, once 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.

If using an NVME, insert this into the Waveshare adapter as described in the assembly instructions before completing assembly. There are instructions for increasing the speed of the NVME later in the guide.

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.

Once powered up, download Touch-N-Stars app for your tablet. You can find links to it here or find it directly in your tablet's app store.

Next connect your AStarBox via an ethernet cable. Currently, you need to upgrade the PINS software before you can easily connect to your home wifi, so its much easier to do this whilst connected via ethernet – after that, you can configure it to work with WiFi.[1]

On launch, Touch-N-Stars will ask a series of questions such as language and ask for the NINA connection details. I found the auto-detection did not work reliably. If it does work, select the PINS device it finds. If not, type pins.local into the IP Address/FQDN field and whatever name you like for the instance – you can edit it later if needed.

Once through the intitial configuration, you will need to upgrade PINS to progress any further. Click the PINS icon and select the "Upgrade" tab – see Figure 3. Click on "Start Upgrade". This may take some time. I found that it would not always complete cleanly – I waited for several minutes when I could see no activity, then used the "System Controls" on the bottom of the Settings menu to restart the device. Updating again then worked properly.

[1] By default, PINS will create a wifi hotspot pins-XXXXX where XXXXX is a combination of numbers and letters. The default password is touchnstars.

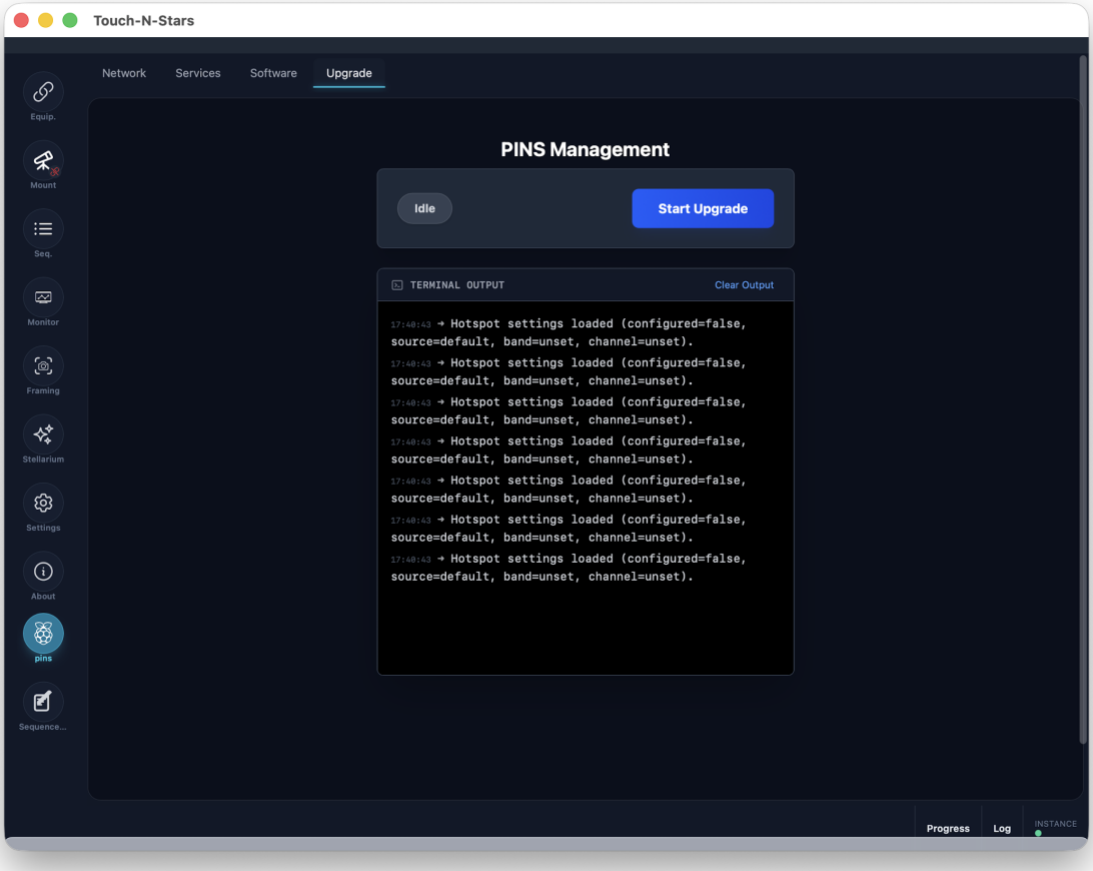


Figure 3. Pins Upgrade tab. Click on Start Upgrade.

Once the system is upgraded, click on the pins icon and select the the “Software” tab – see Figure 4. This allows you to install the AStarBox INDI driver. Type “astarbox” into the search field and press search – this will bring up the right driver. Press “install driver”. You will be asked where to install it (what sort of equipment). It is a switch so the default is fine. It then takes a few seconds to install the device.

You can check whether this has been installed properly by searching again – this time, it won’t be shown since the search only shows drivers that are not installed.

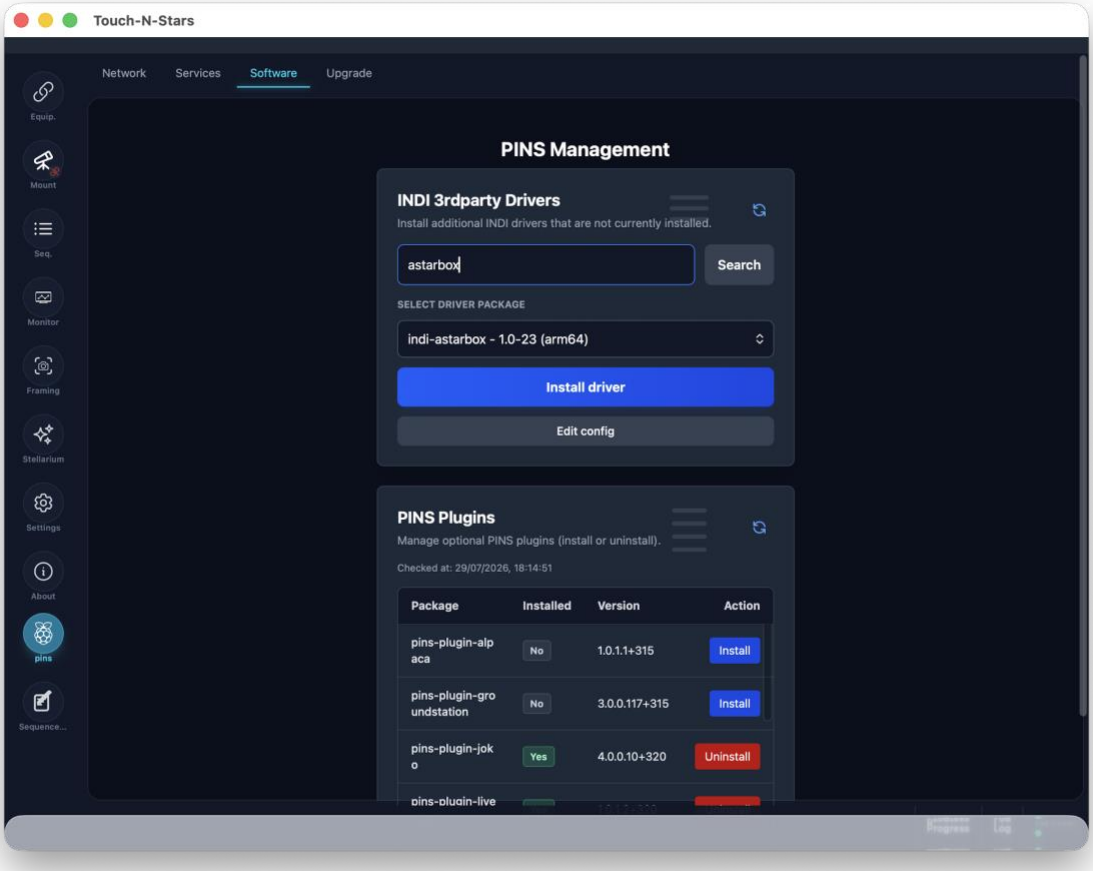


Figure 4. PINS software tab – this allows you to install the astarbox indi driver.

Before you can run control the AStarBox power settings, you will need to download and install our software. You can find installation details here:

https://www.astarbox.co.uk/software

You can use any VNC viewer to connect to PINS. The local address is pins.local – or use the IP address Touch-N-Stars reported when connecting.

You will need to reboot the Pi before continuing – the simplest way is to type “sudo reboot” in the terminal window you used to install the AStarBox software.

Once you have installed our software, you can connect to the AStarBox power controller in Touch-N-Stars. Click on the Equipment icon and press “Indi Setup” at the top – see Figure 5.

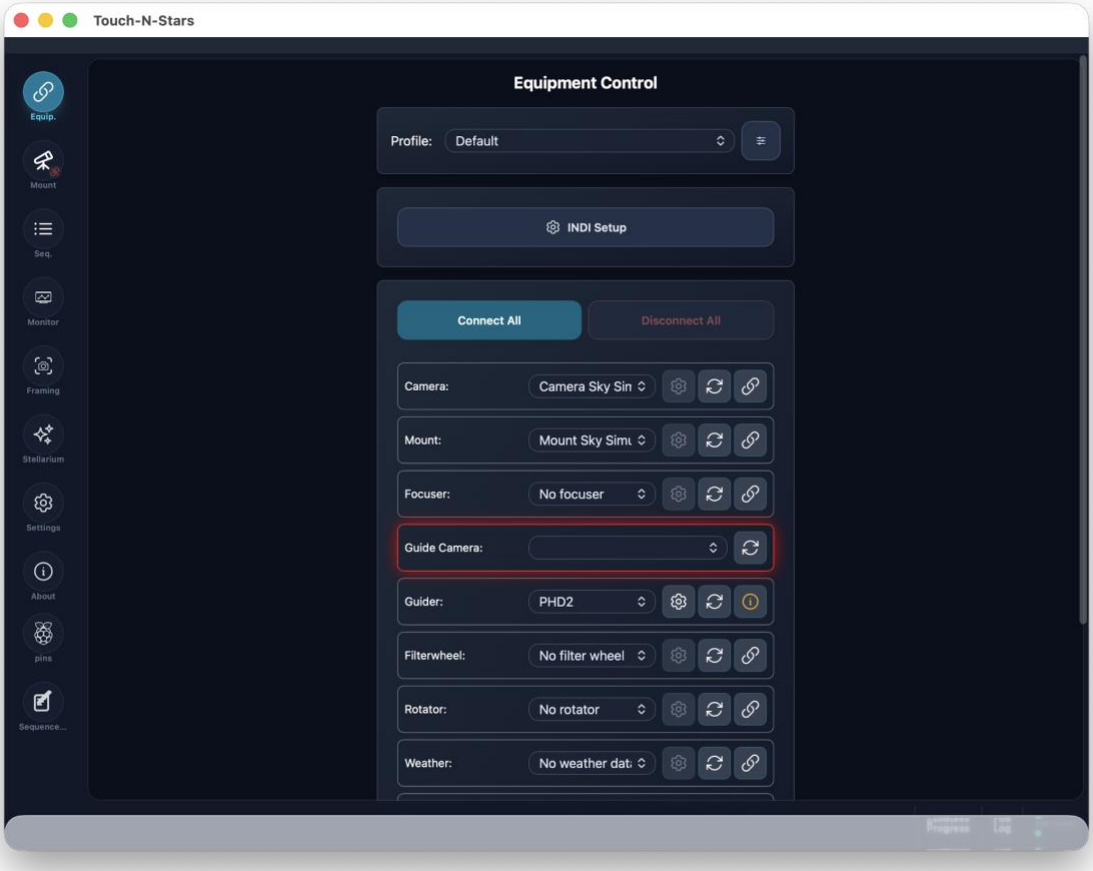


Figure 5. Equipment control dialog. Press "Indi Setup".

In the Indi Setup dialog, choose “indi-astarbox” as the Switch.

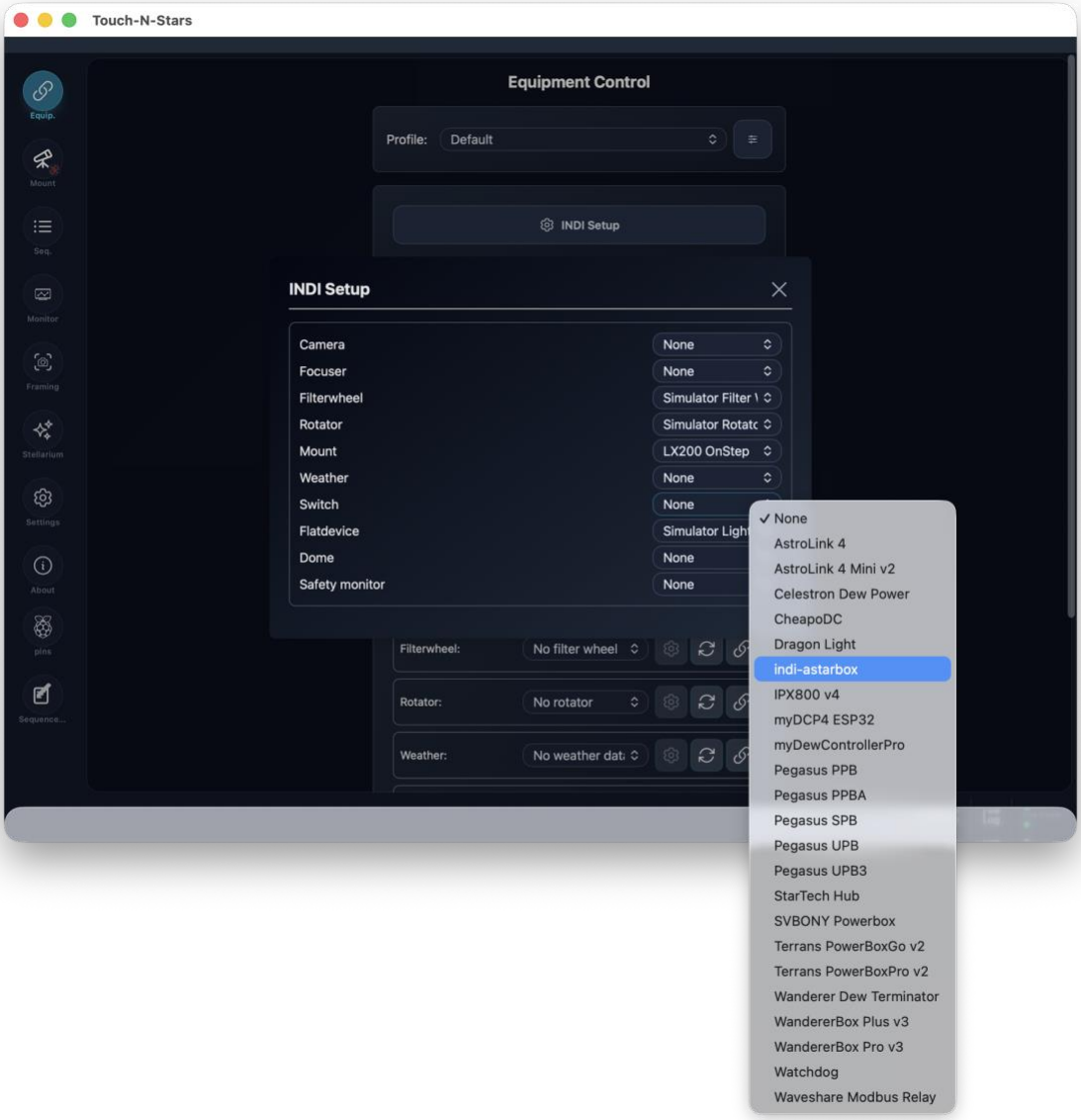


Figure 6. Choose indi-astarbox as the switch in the Indi Setup dialog.

Now go to the bottom of the Equipment tab and select AStarBox (INDI) as the switch – see Figure 7.

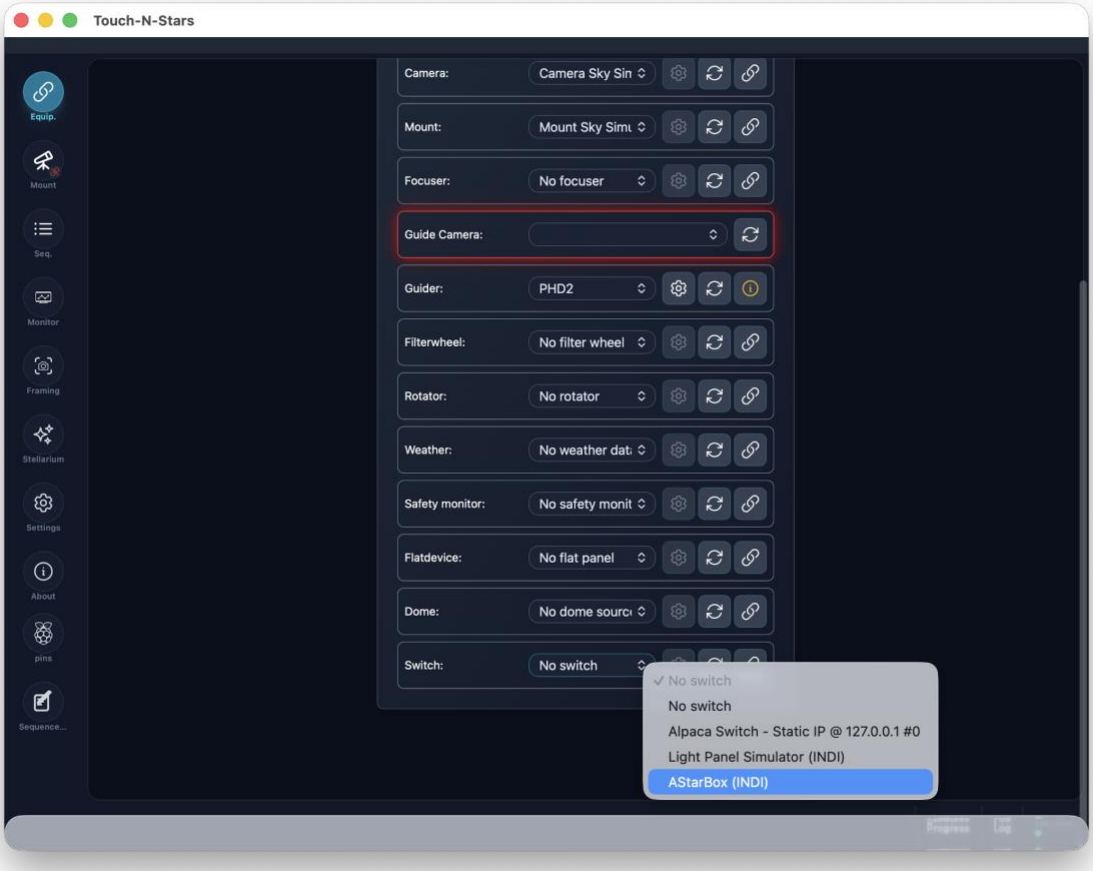


Figure 7. Select AStarBox (INDI) as the switch and press the link icon.

Press the link icon next to the Switch – this will connect the AStarBox power controllers. The switch line should be outlined in green and the link icon will turn red. A switch icon will also appear in Touch-N-Stars. Click on this to bring up the AStarBox control panel – see Figure 8.

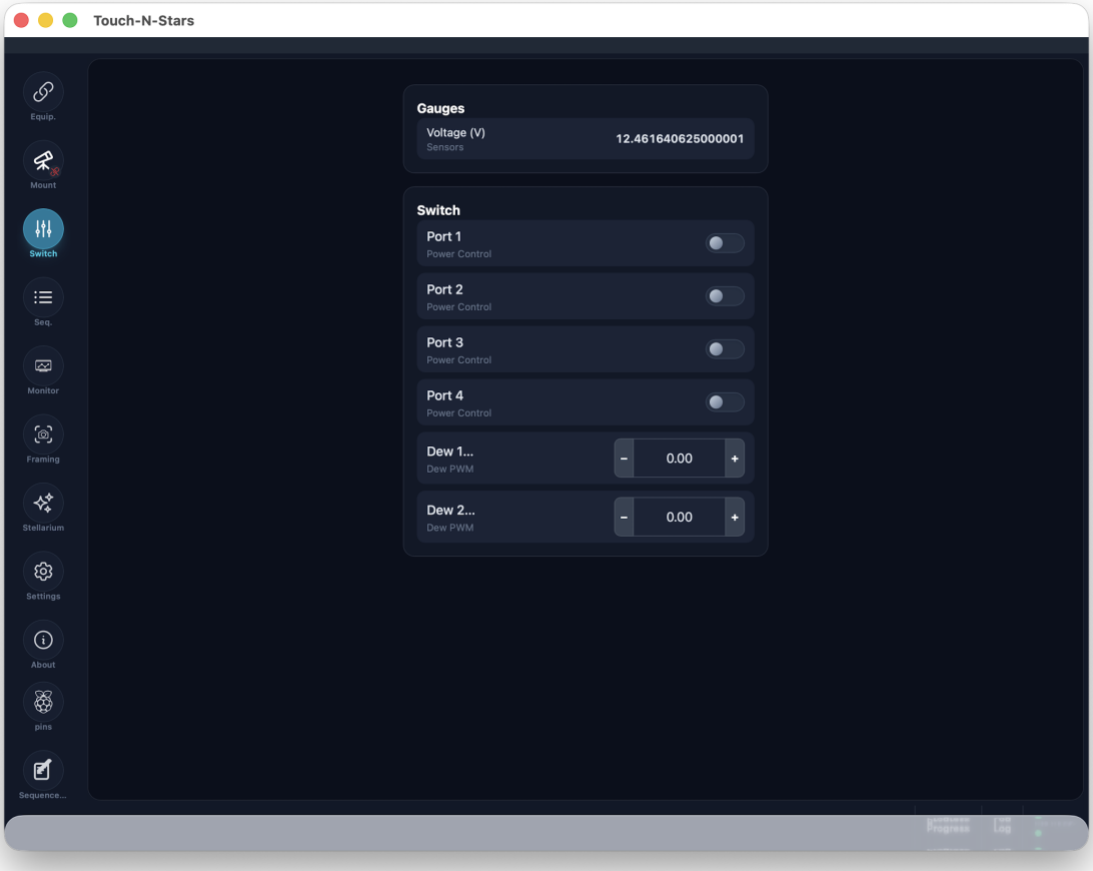


Figure 8. Switch control panel for the AStarBox.

Use the toggles for Ports 1 to 4 to turn power for your devices on or off. Use the two lower controls to set the power level for the two dew heater ports.

Your AStarBox is now fully integrated into Touch-N-Stars.

Support for PINS and Touch-N-Stars

The best place for support is the Touch-N-Stars Discord server:

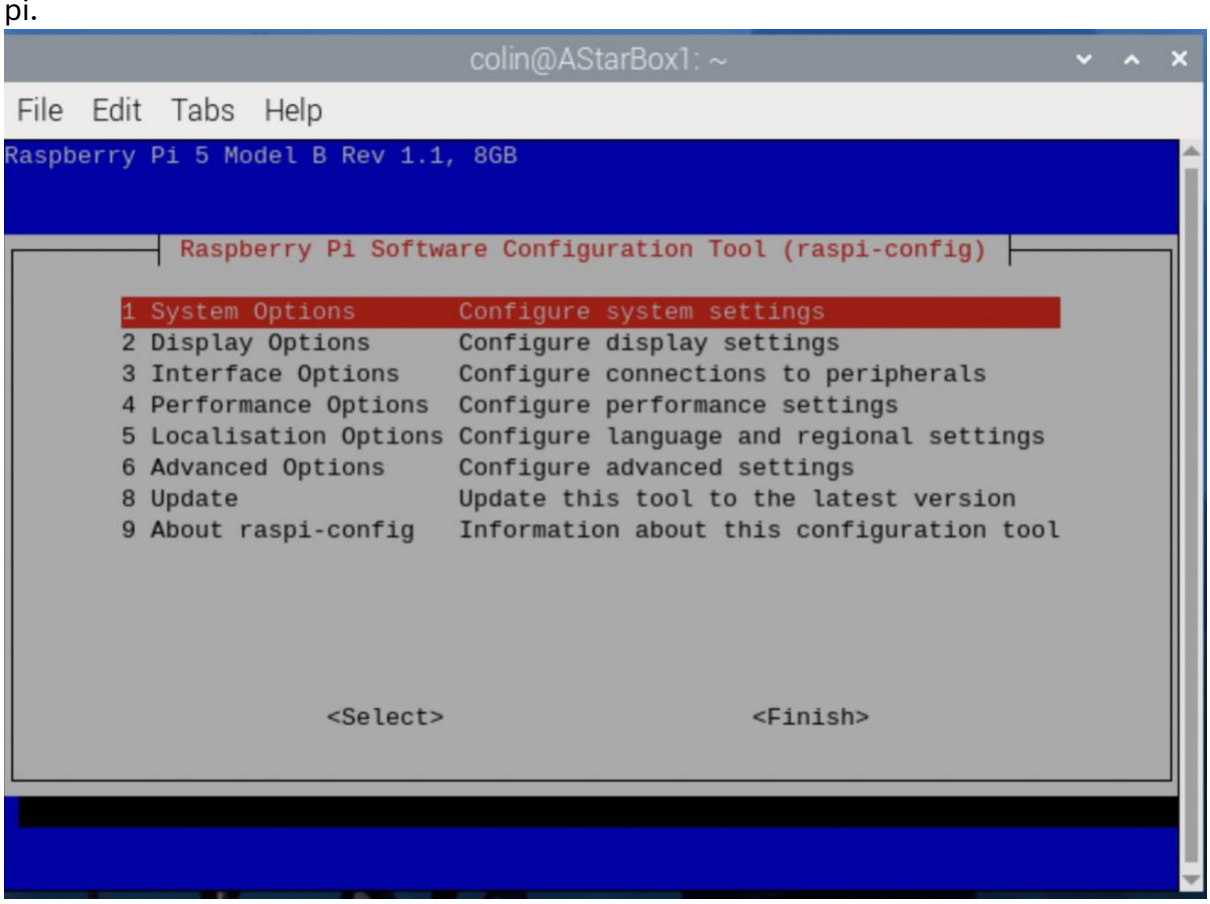
https://discord.com/invite/4gZJEMWFcN

Increasing the Speed of the NVME

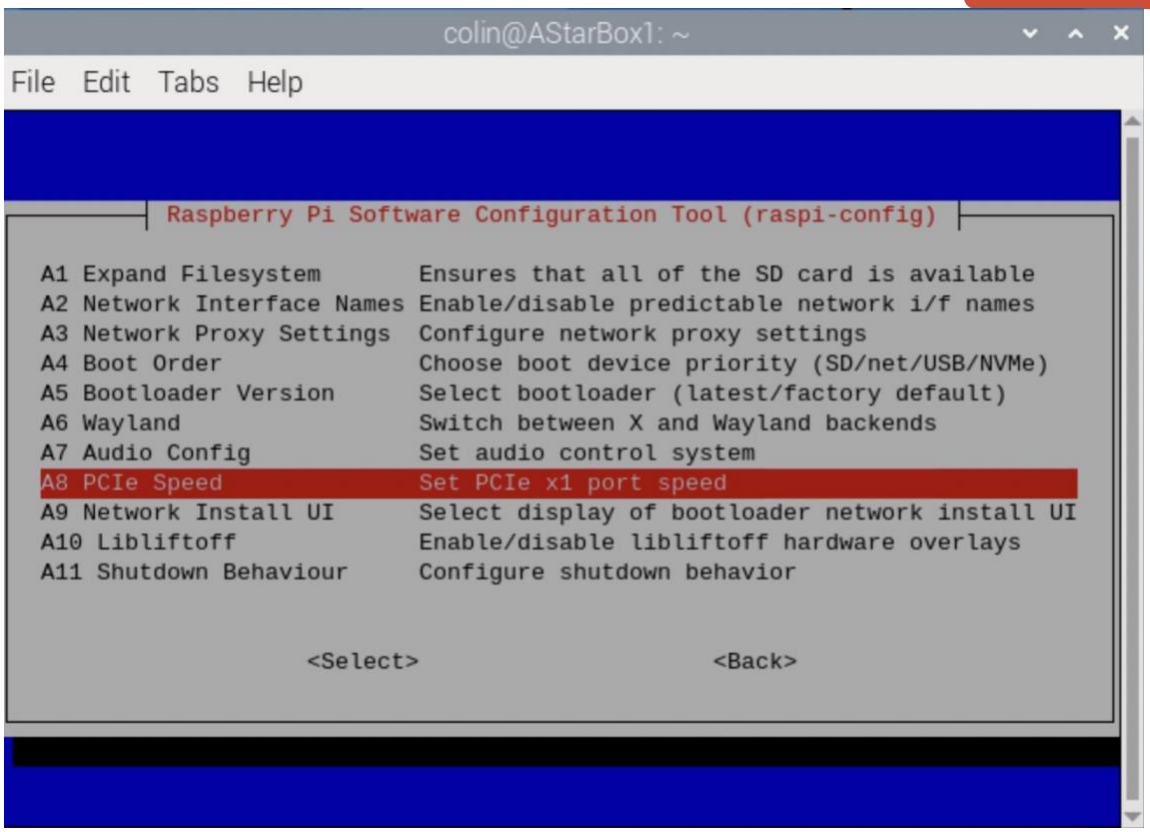
If you have installed an NVME drive, by default this will run at PCIE gen 2 speed (up to 500MB/s). The Pi 5 has an experimental option to work at gen 3 speeds (up to 1000MB/s). This will work for the drive recommended in the assembly instructions, and likely many others. To do this, VNC into PINS and open a terminal window (click the terminal icon on the top row) and type:

```
sudo raspi-config
```

This will bring up the screen shown below for altering the configuration of the raspberry pi.



Use the arrow keys to select option 6 (Advanced Options), which will bring up the screen below:



Use the arrow keys to select option A8 PCIe Speed and use the Tab button to select <Yes>.

Navigate back to the start screen and exit. It will ask if you want to reboot. Select yes. Once rebooted, the NVME will operate at up to 1000MB/s speeds.

Appendix: Copying Existing OS from an SD card

This may be particularly useful if you have configured the OS to your desire on an SD card and are now retrofitting the Waveshare NVME card. The NVME must be larger than the SD card for this to work reliably.

Click on the Raspberry at the top left, then select the “SD Card Copier” from the “Accessories” menu – see Figure 9 below.

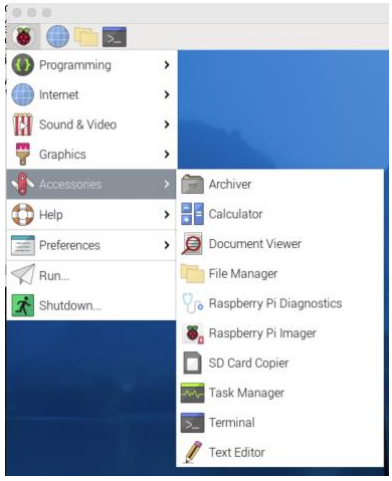


Figure 9. Select the SD Card Copier from the Accessories Menu.

Select the SD card as the “Copy From” device – this is likely called /dev/mmcblk0, and the NVME as the “Copy To” device.

Figure 10. Select the SD as the copy from and the NVME as the Copy To device.

Once the devices have been selected, press Start. This will warn you that the contents of the NVME will be erased. Select Yes and let the process complete. This may take a while depending on the size of the SD card. Once done, shut down the Pi, remove the SD card and it will reboot from the NVME card. You may wish to increase the PCIe speed – see optional configuration above.