



# APOLLO II

## Getting Started Guide

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### Welcome to the FutureBit Apollo!

If you are reading this you are ready to setup your Apollo, and should have already been presented with the Apollo Web Dashboard, and its initial setup screen.

First step is to connect your Apollo to your local network. You can either plug in an ethernet cable from your router to the back of this device, or connect to your local wifi network by clicking on the settings menu bar (Power button on the upper right hand section of the screen will bring up the wifi menu).

Please note our wifi controller only works reliably on 2.4GHz wifi networks. 5GHz/Mixed 2.4/5GHz network might not connect. Most routers have options to separate the networks on two separate SSIDs. Use the 2.4GHz network to connect your Apollo if using wifi.

After you have successfully connected to the internet, you can proceed to setting up your pool in the web dashboard setup screen.

### Choosing Mining Mode/Configuring a Pool

We have made the setup process as easy as possible for new users, and Apollo II units now come with a personal satscard ([satscard.com/faq](https://satscard.com/faq)) allowing you to have a bitcoin mining wallet ready to go out of the box! All you need to do is make the choice between regular Pooled Mining or Solo Mining:

#### Pooled Mining

You are contributing your hash power to a centralized pool that aggregates all mining hashrate and creates block templates for everyone on the pool. When the pool finds a block you are rewarded a share of the block rewards based on the % contribution of hash power to the pool. This allows for constant stream of earned rewards over time. You are essentially giving up some decentralization of the bitcoin network for more consistent payouts.

Due to the low relative hash-rate of the Apollo, and the high difficulty of Bitcoin network it can take a very long time to receive a minimum payout on some pools, especially if you want to avoid paying a "payout fee." Do your research on each pool and what their minimum payout is and their fees. Once you commit to a pool you will be tied there for up to several months until you get your payout, its its extremely important your committed to that pool before you start mining. While some pools can pay out smaller amounts with lightning payments you have to DYOR on whether this is right for you.

#### Solo Mining

A large innovation of our Apollo OS 2 is the ability to spin up your own stratum solo pool and solo mining directly to your node all on one system. If you select this option all you need is a bitcoin payout address to get started (or just tap the satscard that came with your device to an NFC capable smartphone to get your address). Solo Mining means you are competing with the entire Bitcoin network to find the next bitcoin block.

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This means you earn NO rewards unless you find the entire 6.25 BTC Block (as of this writing). This is the most decentralized form of mining, because you are creating your own block templates on your personal node, and if enough users solo mining the means solo blocks will be found on a daily basis. This form of mining is also called “Lottery” mining since you are giving up daily rewards in hopes of finding an entire block. While chances of finding a block are low, they are much higher than most state run lottery (chances of 1/hundreds of millions compared to 1/500,000 for a single Apollo II as of this writing).

## Pool Configuration:

If you choose Pooled mining the Apollo OS 2 already comes with two pre-selected mining pools which makes setup easy and are friendly to small miners and mining decentralization. Ocean Pool ([ocean.xyz](http://ocean.xyz)) requires no account and you can get started right away with your satscard wallet address as the username. If you select Brains pool you need to first create an account with them ([braiins.com](http://braiins.com)) and enter the account username to set it up.

Password field during pool setup can be anything and is usually not used for most pools (some pools use this field for special pool configuration options)

Please read the help guides of either pools if you have issues connecting with them, and you are also free to choose and custom third party pool as well.

## Solo Mode Configuration:

Solo Mode configuration is just a one step process, as the Apollo OS 2 takes care of everything in the background! All you need to do is enter a Bitcoin payout address, and you are ready to get started. You can also use the Satscard that came with your device to easily get a Bitcoin payout address. Simply tap it to an NFC capable phone and copy and paste the Bitcoin address from the satscard info page (its usually easier to do setup over a smartphone if you are setting up with a satscard so you dont have to manually type out the address which is error prone or transfer it over using another method).

Please note solo mining will not start until your node is fully synced. For a new device this can take several days. You can switch over to pooled mining while you wait for your node to fully sync.

**That's it! If you are still on the initial setup screen, just enter a password for your dashboard (don't forget this as we have no way to recover it for you, and you will have to reflash your SD card to regain access), and the Apollo will automatically start mining, and you will be redirected to the main home screen!**

## Mining Settings/Tuning

To customize your Apollo to your preferences, you can visit the settings page by clicking the settings section on the navigation menu in the web dashboard.

The Apollo II comes pre-tuned with three main modes, and these modes should be more than enough for most users. The Apollo-Miner firmware already has built in per chip tuning so unless you are an expert user that really wants to push the hardware on the extreme efficiency or performance side you probably don't need to touch the custom settings.

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Under the Settings side panel you will find the three different modes you can toggle. Your Apollo is shipped and starts mining in ECO mode

**ECO:** This is the most efficient, quiet, and low power mode. Your Apollo will mine at about 6TH/s in this mode and consume about 200 Watts. The fan should be barely audible in this mode.

**BALANCED:** This mode provides a good balance between power, efficiency and noise. Your Apollo will mine at about 7.5TH/s in this mode and consume about 300 Watts. The fan will be louder in this mode, but should still be quiet in a normal setting.

**TURBO:** This mode provides the highest hash rate capable and consumes the most power. Your Apollo will mine at about 9TH/s in this mode and consume about 375 Watts. The fan will be loud in this mode.

## Custom Settings

You also have the option to manually select the miners power and frequency. This is for advanced users only, and you should not change these settings unless you know what you're doing.

**It is not recommended to run custom power modes over 90% power on the Apollo II. Doing so as at your own risk and can impact the devices lifespan.**

## Bitcoin Full Node

The Apollo Full Node runs the latest stable release binaries from bitcoincore.org, and is automatically configured and setup at the system level. It will start syncing a clean chain state from block 0 on your nvme SSD on first boot, and is capable of downloading a full unpruned node on its 1-2 TB drive that will last for years. This is the core that enables solo mining, and allows you the user to verify your own transactions and chain state without needing to trust anyone else.

You can view your node status and sync progress by going to the node section on the navigation bar in the dashboard.

Few things to keep in mind:

- While our SBC is extremely powerful for its size, the initial chain state download will stress all 6 of its cores to the max for several days while your node syncs. Its not recommend to run your hashboard past the ECO setting while the node syncs, as this can overheat the CPU and cause it to shutdown.
- Do NOT hard shutdown your system while the node is running (ie press the off button on your power supply). You should always shutdown your system via the shutdown menu in the Apollo Dashboard, or via the Desktop. This will ensure your node saves the chain state properly and does not corrupt the node, or your SD card
- The node should automatically configure your router to open port 8333 via UPnP, and you should see more than 10 connections in your dashboard. If it stays on 10, this means you need to manually open the port to your Apollos IP address in your router port forwarding rules. This will help count your node as a public node, help other nodes sync, and further decentralize the Bitcoin network.

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- All blockchain data is stored on the NVME drive which is located at /media/nvme on the linux system. It is also accessible on the desktop via the file browser.
- If you want to download the Bitcoin Core wallet (which is not installed by default for obvious reasons) you need to first shutdown the node via the dashboard menu FIRST, then startup Bitcoin Core UI. The Bitcoin core wallet can not run/share the blockchain data at the same time as the node is running. If you are setting up the wallet for the first time, make sure you select /media/nvme/Bitcoin as the default folder otherwise it will start to download the blockchain on your SD card which will cause you lots of headaches (will fix this with symlinks in an update)  
**FUTUREBIT IS NOT RESPONSIBLE FOR LOST WALLETS OR DATA/BITCOIN ON YOUR APOLLO**
- As always, its recommended to store your Bitcoin on a hardware wallet/seed capable wallet where you have your seed backed up. Since the Apollo is a essentially a full desktop computer you can download any third party wallet software you wish, and use almost all USB/Bluetooth hardware wallets
- Never store wallet data/sensitive information on the SD card your system resides on. Treat the NVME drive as your permanent storage solution (ie third party wallets/apps make sure your wallet info is store in the /media/nvme directory and NOT a default location in the system. If your SD card becomes corrupted/unusable (which is very common with SD cards), you will need to reflash your SD card which means any information stored on it will be lost. The NVME drive on the other hand is a much more robust storage solution, and any information you have saved on it will be accessible even if you have to wipe your SD card

## Node Settings

In the settings section of the Apollo UI there are several options available to configure your node. One option is a toggle to enable your Bitcoin node to run over TOR. This allows your bitcoin node to not use your public IP address and instead use an anonymized tor address. When you enable this mode your node will be restarted and your Bitcoin's TOR address will be visible in the node section.

This section also allows you to directly edit your bitcoin.conf file easily through the UI with your own options. This is generally for more advanced users that want to pair their nodes with external wallets. You can enter settings like ipallow and ipbind to allow other computers/devices to access the node. The RPC passworded needed for this is also visible in this section. Please follow the guides of the wallet or service you are using that needs access to your node.

## FutureBit OS/System

The FutureBit Apollo II with its modern 6 core ARM processor and 4 GB of RAM allows it to run a full desktop environment. It runs a flavor of the latest Ubuntu 22.04 operating system with 5.15 linux kernel. You can run almost any Linux based application and use it as a full desktop/web browser system.

- Most Monitors, Keyboards/Mouse, and bluetooth accessories will work with the system, but support is limited beyond the basics. Don't expect high resolution / odd sized monitors to work, or drivers for all USB devices to be available.
- We chose the Ubuntu Desktop environment since it is a familiar and easy to use desktop even if you have never used linux. All your wifi/settings/login/shutdown items are on the upper right hand corner, and all internal apps are available on the dock at the right (OS comes pre-installed with several useful applications)

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- It is beyond the scope of FutureBit to provide support for desktop/ OS level questions. The linux/Ubuntu community is huge, so please direct questions to places dedicated for such support and only contact FutureBit regarding Bitcoin Apps, Mining support, and Full Node support
- Just like we outlined for Bitcoin wallets above, if you do install third party apps that store information or work on the system make sure you use the NVME SSD drive to do so. Anything you store on the SD card (which is where the OS, your Desktop, and Home folders reside) will be lost in the event the SD card becomes corrupted or you need to reflash it

## LED Status Lights

### Front White LED:

- Fast Blinking LED: System Boot/Hardware initialization
- Solid LED: Hardware passed all checks/inits, ready to start mining
- Slow Blinking LED: Miner successfully connected to hashboard/started mining

### Hashboard Yellow LEDs:

On the bottom of the hashboard there are four status LEDs that are not directly visible due to the controller blocking them, but once they activate they are obvious and easy to see (lots of flashing). These indicate normal mining/share activity, and will only power on if you are successfully connected to your pool, and there are no issues with your hashboard.

If these LEDs don't come on it means

1. Your not properly connected to the internet
2. Your pool information is input incorrectly
3. There is a hardware fault on the hashboard (unlikely)

### Red SSD LED:

- If you turn your Apollo over there is a red status LED that turns on when your board has successfully booted, and SSD board is successfully powered on
- Do not unplug your Apollo's power cable, or shutoff the power supply until this LED has turned off after you have shutdown your system

## System Power on/off Behavior

When you first power on the Apollo the fan will ramp to full Speed. This is completely normal and can take up to 30 seconds before it slows down. The fan will slow down once the system has booted. If that fan stays at high speed it most likely means your unit is not booting properly. This can be due to a SD card corruption issue and can easily be fixed with a reflash (see our support page at [futurebit.io](https://futurebit.io)).

It is important to fully shut down your system BEFORE powering off your unit or removing the power cord.

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Due to the sensitive nature of both the OS SD card and the SSD Node drive, they can both easily corrupt if not properly shutdown. The system should either be shutdown through the Apollo OS UI, or the system shutdown command if using the desktop.

Please wait until the system has shutdown properly before turning off the power switch in the back. You will know the system has shutdown when the fan has gone full speed, and the bottom red SSD light has gone off. It is now safe to turn off power and disconnect the AC cord.

## Troubleshooting

**Q:** Your dashboard is not showing any stats, or there is no indication your Apollo is mining to your pool

**A:** First check your internet connection and make sure your Apollo has successfully connected to your network either through your ethernet cable or local wifi. Many issues can be resolved by checking your home internet router. Also double check you input your pool information correctly. Most pools are case sensitive, so missing a capital on your username will cause your miner to be rejected by the pool and won't start mining.

**Q:** Your node is not showing stats, or node is not loading properly on the dashboard

**A:** Double check the NVMe SSD attached to the bottom of your Apollo Device, and make sure its firmly in its M.2 socket. This part could move during shipment which can cause the drive not to be recognized by the system. If you are still having trouble, you can go to the settings sections and press the "Formate Node SSD" button. This will re-format the drive and start syncing the node from scratch.

**Q:** I have a full package unit and one or more standard units. Some Standard units show 0 hashrate or don't show up at all

**A:** USB Driver is a bit finicky for the USB controller on the hashboard. It can take several minutes for the controller to establish a good connection to the Standard unit and start hashing, so please wait 10-15 minutes and it should start up on its own. If you keep pressing restart the software won't have time to properly start up the hashboards. Please also be aware each standard units NEEDS its own power supply. The supplied USB cable does NOT power a standard unit.

**Q:** My units fan is running full speed and cant access the dashboard

**A:** Most likely your OS SD card has corrupted and need to be refreshed. This can happen from time to time especially if there have been power outages. Simply go to our support page to download the image and instructions to easily flash your SD card with etcher.

**Q:** There is no image display with my Apollo connected to my HDMI Screen

**A:** Make sure the HDMI screen is powered on and connected to the right display source before powering on your Apollo. Please not not all HDMI screens are supported. Some TVs and odd sized/older monitors will not work.

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If you are still having trouble, you should reflash your SD card to the stock image so you are sure your unit has been reset back to its initial state.

For more information please visit our support thread here that has all the latest image download links:

<https://bitcointalk.org/index.php?topic=5340015.0>

Our community support thread is full of answers to many common questions/issues. You can post a question there, and many community members will be more than happy to help!

If these posts do not cover your question, or you have additional questions that has not already been answered feel free to post and someone from the community for FutureBit will respond. You can also reach support directly at [www.futurebit.io](http://www.futurebit.io).

**Thank you for supporting us!**

