

# Starter Crypto Currency Mining Rig Manual

version 1.2

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# 1 Introduction

This manual will go through the important things to know before buying a rig, and also how to set up and use the starter mining rigs. The rigs include everything that's required for mining except the graphics cards themselves. The users are expected to source the graphics cards themselves, and then after a short set up it would be plug and play, and it would start mining automatically when connecting power and Ethernet.

The default setup uses SMOS (Simple Mining OS), mining ETH (Ethereum) using Trex / Team Red miner and HiveOn Pool. This combination was found to be reliable, profitable, and easy to use. I do also offer the rigs set up with HiveOS as an option.

## 1.1 Specs

Currently I am building all the mining rigs with near identical specs, with a few options for power supply configurations depending on how power hungry the cards you want to use are. Here are the specs of the rigs:

- 2x or 3x PSUs depending on the configuration. More details on PSUs below.
- Colorful H81A-BTC Mining Motherboard
- 6 GPU Aluminium Mining Frame
- Intel Celeron / Pentium LGA1150 CPU - The exact model can vary depending on what I can source. The CPU does not affect the mining performance, so any LGA1150 CPU works just fine.
- 4GB DDR3 RAM
- 32GB USB Stick
- 6x VER009s Risers
- Arctic Alpine 12 or Intel Stock CPU Cooler

Here are the 3 PSU configurations that I tend to keep in stock almost at all times:

- 2x 650W PSU rig for £500. This takes up to 1x 3090 1x 3080 4x 3070 at the same time. I use 2x Seasonic 650W Gold rated PSUs. This is the most popular option.
- 1x 750w 2x 650w PSU rig for £600. This takes up to 4x 3090 2x 3080 at the same time. I use 1x Antec EAG PRo 750W Gold (Rebranded Seasonic Focus), and 2x Seasonic 650W Gold rated PSU.
- 3x 750w PSU rig for £640. This takes even 6x 3090 at the same time. I use 3x Antec EAG PRo 750W Gold (Rebranded Seasonic Focus).

I am able to do custom rigs with other PSU configurations, so if you have a custom request, send me a message.

I am currently working on designing breakout boards for IBM Server 2980W Platinum rated Power supplies which would allow me to sell rigs that can power even 6x 3090 for around £550-ish. Only drawback of server PSUs are that they are loud, so they are only recommended if you are planning to keep them in a place where you are not planning to spend too much time, such as in a shed / warehouse / loft, and they're definitely too loud to keep in a living room. I am expecting to have them ready around November, since they use some pretty obscure connectors that have to be backordered.

## 1.2 Important to know before buying

There are some limitations or things that I think are important to know before buying a rig:

### 1.2.1 Power limit

Check the previous section for what power supply configurations I offer, and what graphics cards they can use. The dual 650W psu configuration for £500 tends to be the most popular ones since it will work in most cases unless you're using a lot of 3080 or 3090s.

### 1.2.2 Fees

SMOS has a 2\$ per month per rig fee, and it comes with one month free. This is paid by sending crypto (usually LTC) to a wallet address shown on their website. HiveOS has no fees for up to 4 rigs, but afterwards it is 3\$ per month per rig for all rigs, including first 4.

The HiveOn pool has no fees, and has a payout of 0.1 ETH. This means that every time you reach 0.1 ETH, then the amount earned will be transferred to your wallet. There are other pools with lower payouts, such as Ethermine with 0.01 ETH, which means that you'll get paid out more often, but they charge transaction fees so the amount earned will be less than on HiveOn.

If you use a Binance wallet for your mining, trading and withdrawing, there is a £1.50 fee per transaction to withdraw GBP to an UK bank account.

### 1.2.3 Mixing graphics cards

The Rig is compatible with any graphics cards, as long as you stick to the Power Limits explained in chapter 1.2.1. Only limitation is that when using SimpleMiningOS you can't have Nvidia and AMD GPUs in a rig at the same time. You have to stick to just one type at a time.

HiveOS does allow using both Nvidia and AMD GPUs at the same time.

### 1.2.4 Graphics cards recommendations

Generally most modern cards that have 6GB or more VRAM are a good choice, with a few exceptions listed below. Some of my favourite cards are non LHR RTX 3060 ti and 3070, as they offer a good value for money and work perfectly straight away out of the box just with a quick overclock.

A lot of AMD cards require a modded BIOS for a higher hashrate, which is generally quite easy to do. Send me a message if you want to check if your gpu would benefit from a modified BIOS.

The RTX 3080 and RTX 3090 tend to often come with pretty low quality thermal pads, which results in memory reaching temperatures of 110°C and the hashrate reducing because of throttling. To get the full hashrate, and improve the longevity of the cards, I recommend replacing the thermal pads with higher quality ones. Around half of the RTX 3080 and 3090 i came accros needed the upgrade. If you do it yourself, you can expect to pay around £15 for pads for a card if you get them directly from China, or around £35-40 if buying from UK.

There are a few GPUs I recommend to avoid due to hashrate limiting by Nvidia. RTX 3060, 3070 Ti and 3080 Ti all have hashrate limiters built in by default, although it is possible to get 37 MH/s on the non-LHR 3060 by flashing a specific version of SMOS and using a specific miner. Also it is possible to get 70% of the non-LHR performance on LHR cards using a specific version of NBminer, although this is not very reliable yet at the time of me writing this, with it often only working for minutes or hours at a time. Also Nvidia started releasing LHR (Low Hash Rate) version of all 3000 series graphics cards, except 3090. Those are also best to be avoided, as they roughly achieve half the hashrate of the non LHR versions (70% with the latest version of NBminer, alhtough it is not very reliable yet)

### 1.2.5 Crypto volatility

Something to keep in mind is that Crypto Currencies are volatile, so it is pretty much impossible to predict what the earnings would be like in the future. They can either stay constant, go up, or down. I'd recommend doing your own research before making a decision to buy a rig, the same way you would do with any investments.

### 1.2.6 Using Wifi instead of Ethernet

By default the rig uses Ethernet to connect to the internet. It is the recommended way for the highest reliability. If you do need to connect it to Wifi, I recommend using a Wifi Range Extender as a Wifi to ethernet converter. A model that I tested and works very well is TP Link TL-WA850RE. It is usually available on Amazon for under £15.

Technically SMOS and HiveOS support USB wifi adapters, but I tried a few of the recommended models and I did get a few dropouts per day even when the rig was only a few meters away from the router, so I would not recommend them.

## 1.3 Profitability calculator

You can check the expected income and profits you would get from any graphics card using the following website:

<https://whattomine.com/>

It also shows the profitability of various crypto coins, so it can be used to see if there are any better coins to mine than Ethereum. Generally Ethereum has been the most profitable one for a long time, so you don't have to check this too often, and if anything happened that would cause another coin to be more profitable, you'd likely head about it in the news.

## 2 Initial Setup

This chapter will go through the steps of doing the initial setup of the rig. I would usually help out and do the initial setup when you would be collecting the rig, but you can keep this just as a future reference. This section is for SimpleminingOS only.

### 2.1 Setting up a Simple Mining account

To use the rig, you need a Simple Mining account on their website listed below. The system will be controlled via their website, and it can be accessed either on a phone or on a computer.

<https://simplemining.net/>

### 2.2 Setting up an Ethereum wallet

You also need an Ethereum wallet to which the rig will mine. If you have a pre-existing one, then you can use that. If not, then there are a variety of types of wallets you could use, eg hot vs cold, software vs hardware etc. I recommend looking up the options before making a decision if you are unsure.

If you are planning to convert to GBP soon after payout, and not to hold Ethereum long term, then I recommend mining directly to a Binance wallet. To make an Binance wallet, first register to your account using the following link:

<https://www.binance.com/en>

After making an account, verify your identity there, using for example your driving licence or passport. Once that's done, go to Wallet - Fiat and Spot. Then press on Deposit, Crypto and search for "ETH". Then make sure that "ERC20" is selected, and the long string of characters is your Ethereum wallet address. Other people can use it to send Ethereum to your account.

Be careful regarding mining directly to wallets from exchanges other than Binance. A lot of them advise against that, and they often change the wallet addresses. Binance is the only one that explicitly allows mining, and I did not have any issue using them for a long time.

## 2.3 Connecting the rig to the Simple Mining Account

Take the USB stick out of the rig, and plug it into a computer. It contains a few different partitions, one of which can be opened by windows and contains a config.txt. Open it, replace the email address there with the one you used for your Simple Mining account, save, close, and unmount the USB stick. Plug it into the rig, then connect the power and ethernet cables, turn both power supplies on at the same time, and the rig will turn on and will automatically connect to your account.

Now log in into the Simple Mining website on a computer or phone, go to Rig List. At the top of the page there is a button that either says "Add Rig", or "Adding rigs allowed for X Min". If it says "Add Rig", press on it, and then press on the blue Allow button in the bottom left. If instead that button says "Adding rigs allowed for X Min", then there is nothing left to do. The rig should show up in the Rig List within about 2-3 minutes at most.

## 2.4 Setting up the mining configs

### 2.4.1 Creating a new config

Next step is to actually tell the rig what it will be mining, what miner and pool to use, and what wallet it will be mining to. To do this go to the Simple Mining website, log in, press on the "Group Config", then on the Green "Add group" button. This will show a list of different miners it can use. Search for the "t-rex" if you are using Nvidia cards, or "team red miner" if you are using AMD cards, press on the plus button to the left of the name, and this will open a list of miner versions, with the most recent ones at the top. Press on the green "Use" button for the most recent one. If you are on a phone, you might have to go into landscape mode to see the button.

This will open a new menu. For Group Name, you can type in anything. I usually would type in the specific coin it is mining, since this is what this group config will be mining, so in this case it would be "ETH"

The Miner Options will contain what pool it will use and your Ethereum wallet, as well as some other thing. To generate them, go to the link below and choose the required options since it is pretty self explanatory:

<https://www.hashrate.no/options>

Then copy the long string that hashrate.no generated, and replace the original contents of Miner Options in simplemining with what you have just copied. Once that's done, press on the blue "Add group" button in the bottom right.

### 2.4.2 Applying the config

To apply the config to the rig, go to "Rig List", press on the Green "i" button for the rig, and this will open a page with details about the rig. Press on Actions, Group Config, in the drop down menu select the config created earlier, and then press on Save. Now the rig will start mining if there are graphics cards installed

## 2.5 Adding graphics cards

Installing graphics cards is easy. While the rig is off, remove the screw from the frame that would hold the gpu, then install the GPU into the PCIe slot of the riser, secure the gpu to the frame using the screw, and then connect the power cable to the graphics card. Now you are ready to turn on the rig. After about 1-2 minutes, go to simplemining website, press on Rig List, press on the green "i" button, and the GPU should show up in the list. Now you should apply the tuning / overlocks which are explained in the next part to get a higher hashrate, reduce the temperature and have the GPU use much less power.

## 2.6 Tuning the Overclocks

Typical overclocks for mining have the power limit for GPUs vastly decreased to reduce the power consumption and temperature. The memory clock is increased for better performance, and the core clock is either increased or decreased depending on the model of the graphics card. Finding what settings you should use is easy, go to:

<https://www.hashrate.no/>

Then select the graphics cards you are using. Then it will show you the settings you should use for it. To input them, you would go to Rig List, and press on the green "i" button, and then press on the Overclocking button (third from the left, has 3 sliders as its icon). There you would copy the values that you got from hashrate.no, and you would separate them with a comma. The order of the values corresponds to the order of GPUs when pressing the green "i" button. Once the values are set, select "Reboot" and then press save. Now the rig will reboot, and it will start mining with tuned cards.

## 3 Monitoring

Generally you won't have to monitor the rig too much. Maybe just keep an eye on it a couple times per day initially to make sure it is running fine, but then you can just check it every couple of days.

### 3.1 Checking rig performance in Simple Mining

You can check the temperatures of the cards, if there were any downtimes, etc in Simplemining, by going into Rig List, and pressing on the green "i" button.

### 3.2 Checking earnings in HiveON pool

To check the current earnings, you would need to go to the pool website:

<https://hiveon.net/>

In the box, paste your Ethereum address. This only works after about half an hour of mining, as it takes time for your account to get setup. Once logged in you can see your balance, average hashrate and a few other stats.

## 4 Maintenance

There is generally next to no maintenance required for the rig. If it is in a dusty environment, blow the dust off from the parts every few months using canned air. Do not use a vacuum cleaner for that. Make sure to not let the fans spin when blowing air. Ideally keep them still with a finger while blowing the dust.

## 5 Contact Details

If you have any questions regarding the rigs, or if have any suggestions, you can contact me through the same method through which you have originally contacted me. If for some reason you are unable to do that, here is my Facebook profile link through which you can send me a message:

<https://www.facebook.com/vykku/>

## 6 Changelog

Version Number	Date	Changes
1.0	26.04.21	Initial Version
1.1	10.07.21	Added information about triple PSU rigs, HiveOS and LHR cards
1.2	13.09.21	Changed information about PSU options Updated miner and pool recommendations Updated the setup instructions to be more general Fixed formatting errors.