Bitcoin merch

READ ME!

The Mars Lander is a refined and well tuned design, allowing exceptional hash rate for its size and power draw.

The most important factor to ensure a long life for the Mars Lander is cooling. If the fan fails, the mining hardware (USB Miner stick within the case) will overheat and fail.

DO NOT USE THE MARS LANDER IF THE FAN ISN'T WORKING!

The fan is a high efficiency, long life fan with an expected life of around 70,000 hours. If the fan slows down, stutters, makes weird noises, etc. get in touch with us. Obviously switch it off and deal with the impending doom first.

Cooling is important. Be Cool.

Jokes aside, please ensure the fan is working. We don't expect anything to blow up or burst into flames. It's just a 5v fan after all!

Need help? Email us at sales@bitcoinmerch.com, or call us at (877) 5000-BTC. Website: www.bitcoinmerch.com. Version 2.0
Note: We are in no way responsible if you do not enter your BTC address correctly and you mine a block. If you mine a block, the BTC will be deposited to the BTC wallet YOU input as per the instructions given. If you have no access to that wallet, your BTC WILL BE LOST. BE WARNED!

1

Bitcoin merch

About the Mars Lander

Hardware: At the heart of the Solo is a Raspberry Pi Zero W Linux computer.

Operating System: The Raspberry Pi is running the Raspbian 10 OS (Buster)

Mining Software: The mining software for the Mars Lander is CGMiner that is running the Kanoi of CGMiner which has been compiled for the Compac F Bitcoin ASIC USB miner.
(https://github.com/kanoi/cgminer)

CGminer will automatically run on boot after the power is connected. settings can be found in the cgminer.conf file.

Mining Hardware: The USB mining stick is a GekkoScience Compac F USB ASIC Miner.

Screen Code: The code running the screen can be found in /home/pi/screen/cgminer.py. We do not recommend editing this script as it is very easy to stop the screen from working properly.

CGMiner config file can be found here: /home/pi/cgminer/cgminer.conf

Username / Password: The default username is "pi" and the password is "raspberry"

Default Mining Pool: The Mars Lander is setup to mine to https://solo.ckpool.org/ (renowned, no-frills solo mining pool that just works). Do your own research if this pool is right for you. We use it because it's easy and for no other reason. We are not affiliated with https://solo.ckpool.org/ whatsoever.

Fan: 40x40x8mm 5V

Power Supply: You must use a 5V DC power supply with at least 3 Amp of power.

Overclocking: The Compac F USB Miner spec's say it can be overclocked higher than it currently is. However, doing this poses a real risk of destroying the USB Miner. If the fan fails it will overheat and burn the Chip inside the miner. Overclocking will not be covered under any warranty.

Need help? Email us at sales@bitcoinmerch.com, or call us at (877) 5000-BTC. Website: www.bitcoinmerch.com. Version 2.0
Note: We are in no way responsible if you do not enter your BTC address correctly and you mine a block. If you mine a block, the BTC will be deposited to the BTC wallet YOU input as per the instructions given. If you have no access to that wallet, your BTC WILL BE LOST. BE WARNED!

2

Bitcoin merch

1. Connecting to your Wifi network (2.4GHZ only, 5.8GHZ not supported).

1. Unplug the miner from the power and remove the SD card (small memory card found on the side of the miner) from the miner.

2. connect the SD to your computer (might require an adapter depending on your computer ports). (***Note***: *Don't be alarmed if your PC asks to format the card, Windows can't handle the supremacy of a linux file system as found on the SD card. **Just ignore the warning and do not format the SD card!**).*

3. Locate the file called "**wpa_supplicant_backup.conf**" which is located in the root folder of the sd card.

4. Edit this file with notepad or equivalent and change the ssid & psk sections with your wifi name and wifi password. It is important you keep the " " quotation marks. Also set the country code for the country you are in (see below).

5. Save this file with the name "**wpa_supplicant.conf**" and ensure it is in the same directory as **wpa_supplicant_backup.conf**

Note: File Name MUST be wpa_supplicant.conf, not wpa_supplicant.conf.txt which windows may try to do.

When the Mars Lander boots, it will read the details of the wpa_supplicant.conf file and update the system wifi based on the SSID and Password you provided in the file. The system will then remove the wpa_supplicant.conf file from the root directory when it is finished with them.

The IP address of the miner will then be displayed on the screen. This may take a few minutes after first boot.
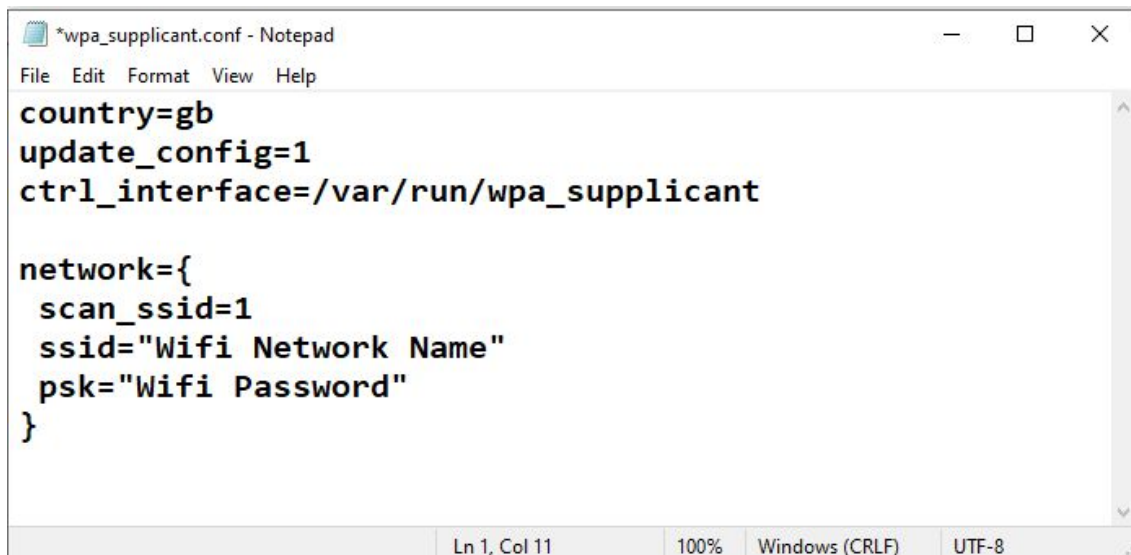
Need help? Email us at sales@bitcoinmerch.com, or call us at (877) 5000-BTC. Website: www.bitcoinmerch.com. Version 2.0
Note: We are in no way responsible if you do not enter your BTC address correctly and you mine a block.
If you mine a block, the BTC will be deposited to the BTC wallet YOU input as per the instructions given.
If you have no access to that wallet, your BTC WILL BE LOST. BE WARNED!

3

An Example of the wpa_supplicant.conf file (Showing the UK / GB country Code)

Below is an example of a wpa_supplicant.conf file. Please alter the SSID and PSK to suit your personal Wifi credentials.

The "country code" is specific to your country. This ensures the operating hardware (Raspberry Pi) uses the allowable wifi frequencies for your particular country.

The Country Code should be set the ISO/IEC alpha 2 code for the country in which you are using your miner. Common codes include :

- us (United States)
- gb (United Kingdom)
- fr (France)
- de (Germany)
- se (Sweden)
- mn (Moon) (ok, don't use this one - but maybe one day…..)

Copy and paste this - if you are reading this on a computer, obviously!

```
country=gb
update_config=1
ctrl_interface=/var/run/wpa_supplicant

network={
 scan_ssid=1
 ssid="Wifi Network Name"
 psk="Wifi Password"
}
```

Need help? Email us at sales@bitcoinmerch.com, or call us at (877) 5000-BTC. Website: www.bitcoinmerch.com. Version 2.0
Note: We are in no way responsible if you do not enter your BTC address correctly and you mine a block. If you mine a block, the BTC will be deposited to the BTC wallet YOU input as per the instructions given. If you have no access to that wallet, your BTC WILL BE LOST. BE WARNED!

4

BITCOIN merch

Setup: Step 2 of 3

2. Configuring the Mars Lander to mine to your bitcoin wallet address

1. With the SD card still in your computer, locate the file called cgminer.conf (also found in the root folder of the SD card)

2. Edit this file with notepad.exe or equivalent and change the "user" field to have your own BTC wallet address. This is where your bitcoin will be paid if you successfully solo mine a bitcoin block.

3. Save this file as cgminer.conf in the same folder you found the file.
Note: You are welcome to change the "url" field to a pool of your choice if you wish to pool mine / solo mine elsewhere.

Note: File Name MUST be cgminer.conf, not cgminer.conf.txt which windows may try to do.

Need help? Email us at sales@bitcoinmerch.com, or call us at (877) 5000-BTC. Website: www.bitcoinmerch.com. Version 2.0
Note: We are in no way responsible if you do not enter your BTC address correctly and you mine a block.
If you mine a block, the BTC will be deposited to the BTC wallet YOU input as per the instructions given.
If you have no access to that wallet, your BTC WILL BE LOST. BE WARNED!

5

Setup: Step 3 of 3

3: First boot of Solo Beast

1. Remove the SD card from your computer and put it back in the Mars Lander.

2. Plug in the 5v power supply unit.

3. The First boot takes approx' 30 seconds.
   If you have setup everything correctly, you will see the IP address on the screen.

Note: If you do not see the IP address it means you have not configured your WIFI setup properly. Please revert back to step 1 of the setup and ensure you have done everything as instructed.

Incorrect network settings
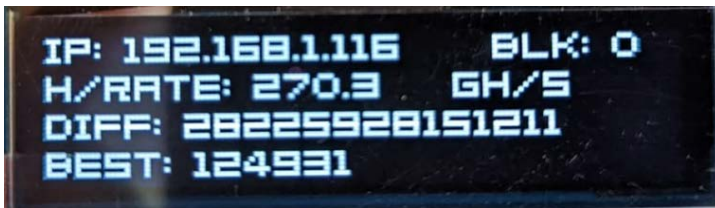
Correct network settings

At this point, providing you have an IP address on the screen and a confirmed hash rate, your unit is now up and running.
The following pages show advanced user interaction options for information only.

Need help? Email us at sales@bitcoinmerch.com, or call us at (877) 5000-BTC. Website: www.bitcoinmerch.com. Version 2.0
Note: We are in no way responsible if you do not enter your BTC address correctly and you mine a block.
If you mine a block, the BTC will be deposited to the BTC wallet YOU input as per the instructions given.
If you have no access to that wallet, your BTC WILL BE LOST. BE WARNED!

6

Configure the Mars Lander with your Bitcoin pool and address settings

Once you have an IP address on the LED screen of your Mars Lander, you can connect to it via SSH to see the CGMiner software running on the system. Note: This is for infomation only.

1. Open up "CMD" on windows or "Terminal" on Mac/Linux

2. Type (without quotes) "ssh pi@###.###.###.###"   (The ###.###... is your IP address shown on your Mars Lander screen)

3. You will be asked for a password, type "**raspberry**".
   You may get asked about SSH permissions, hit *return* for "**yes**".

4. Once logged in, you will be presented with a similar screen as shown below.


```
pi@raspberrypi: ~

Microsoft Windows [Version 10.0.19043.1288]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Duncan>ssh pi@192.168.1.174
pi@192.168.1.174's password:
Linux raspberrypi 5.10.52+ #1441 Tue Aug 3 18:08:18 BST 2021 armv6l

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Sat Oct 30 10:47:33 2021 from 192.168.1.127

SSH is enabled and the default password for the 'pi' user has not been changed.
This is a security risk - please login as the 'pi' user and type 'passwd' to set a new password.

pi@raspberrypi:~ $
```

Need help? Email us at sales@bitcoinmerch.com, or call us at (877) 5000-BTC. Website: www.bitcoinmerch.com. Version 2.0
Note: We are in no way responsible if you do not enter your BTC address correctly and you mine a block.
If you mine a block, the BTC will be deposited to the BTC wallet YOU input as per the instructions given.
If you have no access to that wallet, your BTC WILL BE LOST. BE WARNED!

7

To see the instance of CGMiner running on the Solo

1. From the command line on the Mars Lander, type "**screen -list**".
This will show a list of closed screens - which are essentially like minimised programs on your desktop.

2: You will be presented with something like this:

```
There are screens on:
        558..raspberrypi           (30/10/21 11:12:53)      (Detached)
        539..raspberrypi           (30/10/21 11:12:52)      (Detached)
2 Sockets in /run/screen/S-pi.
pi@raspberrypi:~ $
```

3: To restore a screen instance, type "**screen -r ####**" (### being the screen number. 558 & 539 are my examples here).

4: **To exit from the screen instance, hold CTRL and press A and the D. Screen will carry on running in the background.**

5: CGMiner Instance looks like this:

```
cgminer version 4.11.1 - Started: [2021-10-30 11:06:40.510]
--------------------------------------------------------------------------------
(5s):44.05G (1m):38.76G (5m):23.07G (15m):10.05G (avg):38.80Gh/s
A:20000  R:0  HW:0  WU:541.8/m
Connected to solo.ckpool.org diff 10K with stratum as user 1PsTPK2pMRnfi7wnfXY1VXdUtGgkFid6ma
Block: 82f688e5...  Diff:20.1T  Started: [11:06:40.523]  Best share: 27.7K
--------------------------------------------------------------------------------
[U]SB management [P]ool management [S]ettings [D]isplay options [Q]uit
0: GSH 10038462: BM1387:2 175.00MHz (53/62/107) | 42.58G / 38.78Gh/s WU:541.8/m
--------------------------------------------------------------------------------
[2021-10-30 11:17:23.522] GSH 0: Share above target
[2021-10-30 11:17:23.698] GSH 0: RX: 4B:62:31:67:00:6F:82
[2021-10-30 11:17:23.698] GSH 0: Device reported nonce: 4b623167 @ 6f
[2021-10-30 11:17:23.698] GSH 0: Share above target
[2021-10-30 11:17:23.800] (5s):44.05G (1m):38.76G (5m):23.07G (15m):10.05G (avg):38.80Gh/s
[2021-10-30 11:17:23.976] GSH 0: TX: 54:05:00:0C:00
[2021-10-30 11:17:23.987] GSH 0: RX: 80:38:02:41:00:00:09
[2021-10-30 11:17:23.987] GSH 0: chip reported frequency of 175.00MHz
[2021-10-30 11:17:23.987] GSH 0: RX: 80:38:02:41:00:00:09
[2021-10-30 11:17:23.987] GSH 0: chip reported frequency of 175.00MHz
[2021-10-30 11:17:23.988] GSH 0: RX: 84:E7:89:8F:01:74:89
[2021-10-30 11:17:23.988] GSH 0: Device reported nonce: 84e7898f @ 74
[2021-10-30 11:17:23.988] GSH 0: Share above target
[2021-10-30 11:17:24.114] GSH 0: RX: 51:CA:D4:52:00:75:81
[2021-10-30 11:17:24.114] GSH 0: Device reported nonce: 51cad452 @ 75
[2021-10-30 11:17:24.115] GSH 0: Share above target
[2021-10-30 11:17:24.194] GSH 0: RX: 87:3B:8E:B2:00:77:97
[2021-10-30 11:17:24.194] GSH 0: Device reported nonce: 873b8eb2 @ 77
[2021-10-30 11:17:24.194] GSH 0: Share above target
```

6: The OLED instance looks like this and is of no use. The warning messages are normal.

```
PHP Warning:  socket_connect(): unable to connect [111]: Connection refused in /var/www/html/api-example.php on line 17
PHP Warning:  socket_connect(): unable to connect [111]: Connection refused in /var/www/html/alldata.php on line 17
PHP Warning:  socket_connect(): unable to connect [111]: Connection refused in /var/www/html/api-example.php on line 17
PHP Warning:  socket_connect(): unable to connect [111]: Connection refused in /var/www/html/alldata.php on line 17
```

Need help? Email us at sales@bitcoinmerch.com, or call us at (877) 5000-BTC. Website:
www.bitcoinmerch.com. Version 2.0
Note: We are in no way responsible if you do not enter your BTC address correctly and you mine a block.
If you mine a block, the BTC will be deposited to the BTC wallet YOU input as per the instructions given.
If you have no access to that wallet, your BTC WILL BE LOST. BE WARNED!

8

The OLED Screen…

The OLED screen is pulling real-time information from the CGminer API.

1. Top Line: IP Address of the Miner.
2. BLK: How many blocks you have found (even 1 would be nice!)
3. H/Rate: Your Realtime Mining speed (5 minute average)
3. Diff: Network Difficulty
4. Best: Your Best Share during the miner's latest uptime.

What is Best Share: A simple analogy:

You have a series of tunnels with 24.2 trillion (or more) rooms (this is the network difficulty currently). In one of the rooms is the bitcoin block worth 6.25 bitcoin. Every miner in the world is making a guess on which tunnel to go down (because there is no map) - millions of times a second (the faster the miner, the more guesses per second). They run down to the end, notise there is no block, come back, look down a different tunnel and so on. The miners keeps doing this until someone finds a block which on average should take 10 minutes (the block time). Whoever finds it gets to keep it. The tunnel system is then reset and a block is hidden somewhere else. The Best Share data shows how close you were to the block before it was found. The higher your "Best Share" the closer you were to it. The Best Share data always shows the closest guess you have ever done since the miner was last powered up. When your miner gets shut down, that stat' resets.

If all of the world's miners keep finding blocks in 8 minutes, the network automatically adjusts the difficulty every 10 days, trying to ensure each puzzle takes 10 mins. If the average to find a block is 20 mins, the network makes it easier, and so on. That's why the difficulty fluctuates.

Need help? Email us at sales@bitcoinmerch.com, or call us at (877) 5000-BTC. Website: www.bitcoinmerch.com. Version 2.0
Note: We are in no way responsible if you do not enter your BTC address correctly and you mine a block. If you mine a block, the BTC will be deposited to the BTC wallet YOU input as per the instructions given. If you have no access to that wallet, your BTC WILL BE LOST. BE WARNED!

9

You've setup your wifi, seen CGMiner running and the OLED display is giving you information. Now what?!

Web Interface

If you open your web browser on any device on the same network as your Mars Lander

and type its IP address in the bar at the top as follows:

http://YOUR_IP_ADDRESS/miner.php you will get a web page showing a few more stats

Mining Pool Stats

If you open your web browser on any internet connected device anywhere in the world and navigate to http://solo.ckpool.org and then enter your wallet address half way down the page, you will get rudimentary stats of your miner in realtime. This is read-only info that the Solo pool provides which allows you to check real world status.

Note, the stats take about 10 mins or so to settle down when you first switch on.

Now what?

Well… That's it! Now you set up the Mars Lander on your desk / bookshelf / command station and let it do its thing. It will sit there and just carry on mining until your wifi goes down or it loses power. Restore wifi and/or power and it will automatically boot and carry on. One day you may get lucky and find a block. If you do, two thing will happen.

1: You will have a really underwhelming "Blocks Found: 1" on your screen.
2: You will have an overwhelming amount of Bitcoin credited to your BTC wallet.

Good luck!

Need help? Email us at sales@bitcoinmerch.com, or call us at (877) 5000-BTC. Website: www.bitcoinmerch.com. Version 2.0
Note: We are in no way responsible if you do not enter your BTC address correctly and you mine a block. If you mine a block, the BTC will be deposited to the BTC wallet YOU input as per the instructions given. If you have no access to that wallet, your BTC WILL BE LOST. BE WARNED!

10

A few frequently asked questions FYI:

Can I mine other coins like Ethereum, Doge, etc? Yes and no. You can only mine SHA-256 algorithm based coins such as Bitcoin, Bitcoin Cash, Digibyte, etc. You cannot mine coins with different algorithms as the GekkoScience Compac F USB miner can only mine SHA-256 based coins. Ethereum is ETHash, Litecoin is Scrypt, etc. Look here for mineable SHA-256 coins https://cryptodelver.com/algorithm/sha256.

If I mine a block and my Mars Lander gets broken, do I lose my bitcoin? No, the Mars Lander is purely hardware trying to mine a block. The pool you are mining to (be it a solo pool or a PPLNS pool) is responsible for managing your bitcoin payout. No bitcoins can be stored on the Solo Uno. See your pool details for info. **Note:** If you use solo.ckpool.org which the unit is preconfigured to, if you solo mine a block, ckpool.org will automatically pay you your bitcoin (minus their small pool fees) to your wallet address you enter on the miner setup. You are responsible for your own bitcoin wallet! Ensure you know how to set this up!

Can I upgrade the Miner? Not exactly; you cannot add any more USB mining sticks as the USB power supply cannot handle the additional power requirements, it gets too hot, and that isn't great. However, you can plug another 15 or so Compac F USB miners into a few externally powered USB hubs and plug the hubs into the spare USB ports on the Mars Lander.. CGMiner running on the embedded computer will automatically see them and take care of the mining. You will also see the combined mining speed on the screen.

Can I mine to a pool rather than solo mining? Yes! You are free to mine to any pool you like. Enter your pool settings in the cgminer.conf file as previously mentioned. Remember, this is a SHA-256 based miner and will only work with coins that run on that algorithm.

What is the difference between solo mining and pool mining? Solo Mining: You have a small shovel and you are trying to find a big lump of gold in the hills all by yourself. You find it, it's yours. **Pool mining - aka PPLNS:** You and 10000 other people have lots of shovels of different sizes, all looking for the same lump of gold. When one person finds it, that gold is divided proportionally by the amount of people there are working together on that team (pool) and how big their shovels are (speed of miners). The bigger the shovel the bigger your payout. The shovel analogy implies a big shovel is a really powerful but really expensive miner, a small shovel is a Solo Uno and so on.

What are the odds of solo mining a bitcoin block? Go to http://www.solochance.com, enter your speed and you will see the real time odds of solo mining a block. The solo sits at around 250gh/s.

Need help? Email us at sales@bitcoinmerch.com, or call us at (877) 5000-BTC. Website: www.bitcoinmerch.com. Version 2.0
Note: We are in no way responsible if you do not enter your BTC address correctly and you mine a block. If you mine a block, the BTC will be deposited to the BTC wallet YOU input as per the instructions given. If you have no access to that wallet, your BTC WILL BE LOST. BE WARNED!

11

More FAQ

What is the point of the Mars Lander? Not everyone has $100,000 to invest in serious mining hardware that will probably never make a return. These monster machines cost thousands a month in electricity to run and is a massive gamble. If you own a power station or get free power, use it to your advantage - legally of course.
The Mars Lander is an accessible (and presentable) way of any enthusiast getting into bitcoin mining The piece has been designed as a talking / conversation piece as well as a fun desktop trinket that has a genuine chance of getting you a huge life changing amount of money.

Did someone actually mine a bitcoin block using a USB Miner? Yes - block number 706369 on solo.ckpool.org (https://btc.com/btc/block/706369. It really is possible! Sadly, it wasn't us (Sad noises)!

Need help? Email us at sales@bitcoinmerch.com, or call us at (877) 5000-BTC. Website: www.bitcoinmerch.com. Version 2.0
Note: We are in no way responsible if you do not enter your BTC address correctly and you mine a block.
If you mine a block, the BTC will be deposited to the BTC wallet YOU input as per the instructions given.
If you have no access to that wallet, your BTC WILL BE LOST. BE WARNED!

12