



**WhatMiner Immersion Cooling Server
Operation Guide
V1.0**

content

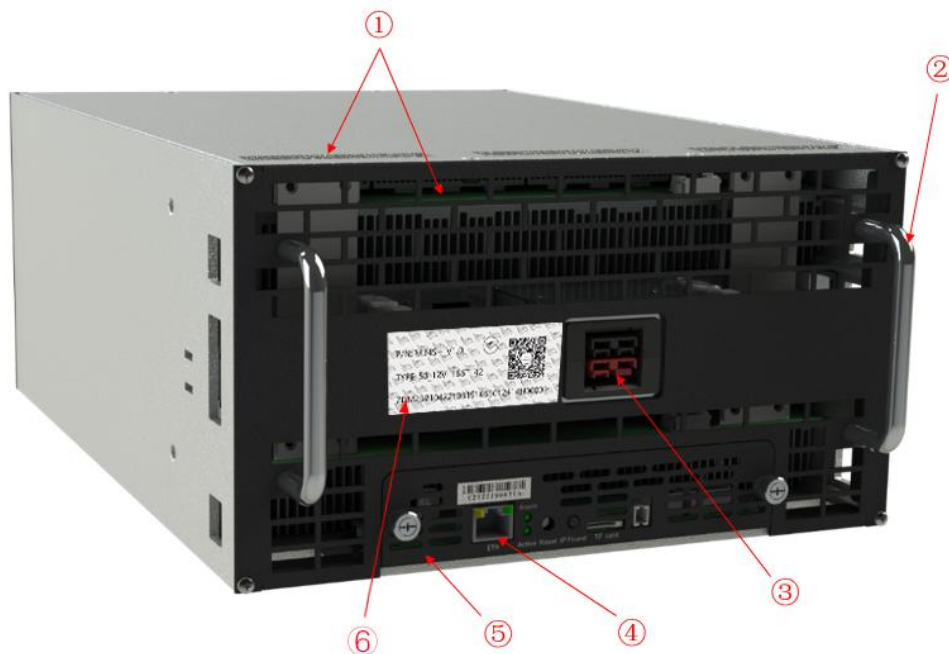
1.Product Description	2
2.Product parameters	3
3.Installation location and installation precautions	4
4.Properties and safety requirements of insulating liquid	5
5.Network Configuration	5
6.Data Configuration (Configuration on the web page)	6
6.1 Query the dynamic IP address obtained by the miner	6
6.2 Configuration Pool & Worker	8
6.3 Modify the NTP Synchronization Server Address (optional)	9
6.4 Configuration the Static IP Address (optional)	10
7.Miner Operation Status Check	11
8.Batch configuration	12
9.Removal and installation	12
9.1Control board removal and installation	12
9.2 PSU removal and installation	13

1.Product Description



Whatsminer Immersion Cooling Server host model: M36S+, M36S++, M56, M56S, M56S+, M56S++...

This guide takes M56S++ as an example to introduce various operations in detail, and the operations of other models are similar



Upper panel



Bottom panel

- ①liquid outlet ②Handle ③Power interface ④Network cable port ⑤Control board ⑥SN
⑦liquid inlet

The single-phase liquid-cooled miner adopts the liquid circulation flow method of bottom-in and top-out for heat dissipation. Its control panel, network cable interface, and power line interface are all on the upper panel of the miner, which is convenient for maintenance.

2.Product parameters

Category	Item	Specifications
Parameter	Dimensions (Height X Width X Depth)	267.5mmX147mmX401mm
	Color	Top panel: black Shell: gray
	Weight	Net weight: : 16kg Weight with packaging materials:17kg
Environmental parameters	Liquid temperature	Working temperature (water intake): 20°C~45°C @normal mode; 20°C~40°C @high performance mode; Inlet temperature control accuracy ±2°C Storage and transportation temperature: -40~70°C;
	Liquid flow	Rated flow: ≥25L/min Flow control accuracy ±10% Remarks: 24L/min corresponds to a temperature difference between the inlet and outlet liquids close to 7°C @normal mode, 10°C @high performance mode;
	Liquid medium	insulating liquid (Shell S3X) Remarks: See Part 4 for liquid performance and safety requirements.
	humidity	Storage humidity: 5%RH~95%RH (non-condensing) Long-term storage humidity: 30%RH~69%RH (no condensation)

Remarks: The above liquid flow parameters are based on Shell S3X as the liquid medium. If

the liquid medium uses other types of coolant, the liquid flow parameters need to be calculated separately. Calculation method: In the case of the same calorific value of the miner, the product of liquid specific heat, density, and flow is a fixed value, that is, the flow is inversely proportional to the product of density and specific heat.

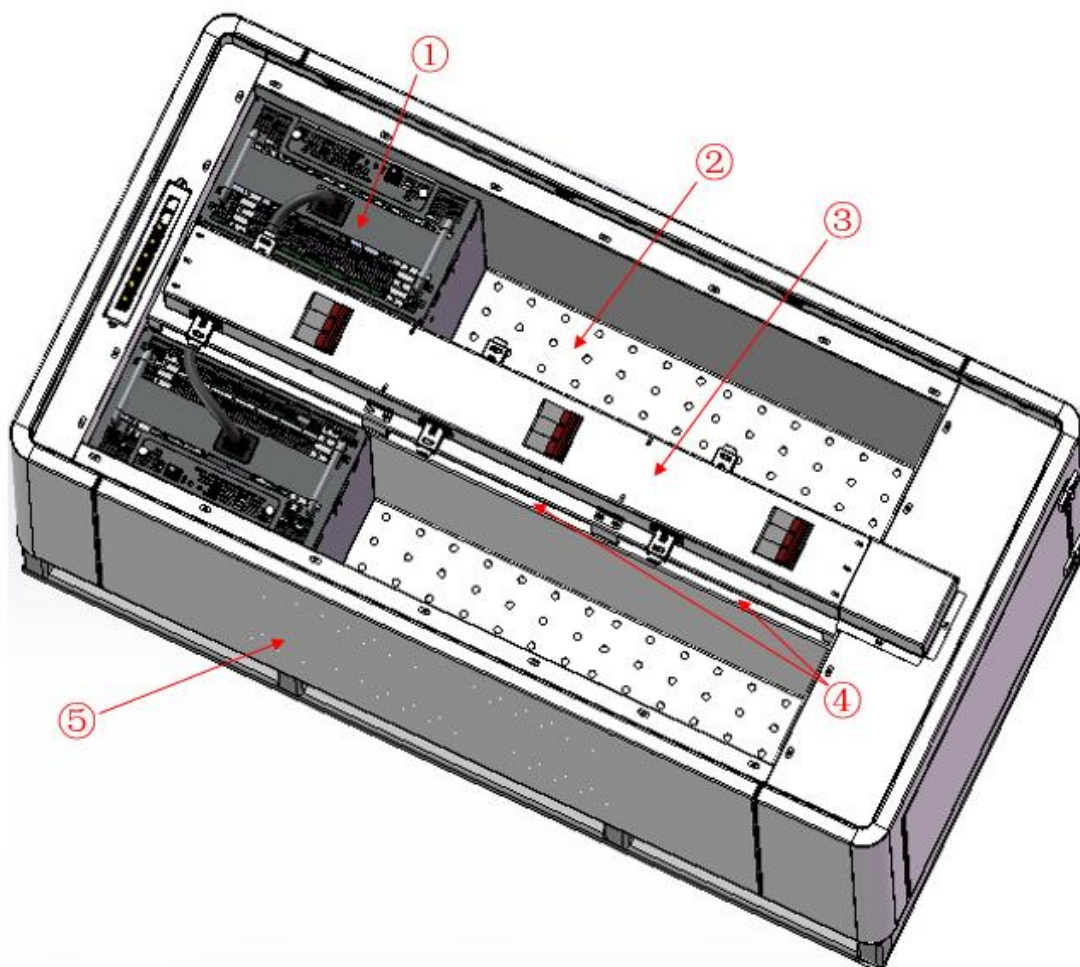
Coolant EC110 flow parameter calculation example

Type of coolant	specific heat capacity (J/kg·°C)	density (kg/m ³)	flow (L/min)
Shell S3X	2274	806	24
EC110	2231	778	$= (2274 * 806 * 24) / (2231 * 778) = 25.35$

3. Installation location and installation precautions

The Immersion Cooling Miner adopts the liquid circulation flow method of bottom-in and top-out to dissipate heat. Therefore, the miner needs to be placed in a liquid-cooled cabinet that can realize the liquid from the inside of the miner. The plate needs to support the miner, and the cooling liquid directly enters the miner through the equalizer plate and the lower panel of the miner, and flows out of the miner from the top side or the upper panel of the miner. The miner can be operated by a single person on and off the shelf.

Note: The miner must be powered on after the liquid circulation in the miner is normal.



Schematic diagram of Immersion Cooling Server Miner and cabinet assembly

- ① Immersion Cooling Miner
- ② Flow equalizing plate
- ③ PDU
- ④ Liquid-cooled cabinet overflow
- ⑤ Liquid-cooled cabinet

4. Properties and safety requirements of insulating liquid

- 1) It has good thermodynamic properties (relatively high thermal conductivity, high liquid specific heat value, and low viscosity among similar substances);
- 2) It should have good chemical and thermal stability relative to the life cycle of the electronic system and the specified working temperature;
- 3) Appearance and smell: transparent and no odor;
- 4) Boiling point ($^{\circ}\text{C}$), $>120^{\circ}\text{C}$;
- 5) Flash point $>150^{\circ}\text{C}$ or no flash point;
- 6) pour point ($^{\circ}\text{C}$), <-40 ;
- 7) Purity (Wt%) $\geq 99.5\%$;
- 8) Non-volatile residues (Wt ppm) $\leq 10\text{ppm}$
- 9) Water content (Wt ppm) $\leq 50\text{ppm}$
- 10) Acidity (mg KOH/g) ≤ 0.03
- 11) Withstand voltage breakdown (KV/2.5mm), initial ≥ 20 , saturated water state > 10 ;
- 12) Volume resistivity ($\Omega\cdot\text{cm}$) $\geq 1\times 10^9$; dielectric constant (100Hz-10MHz) < 8 , dielectric loss factor $< 0.7\%$;
- 13) The particle size limit in oil, after hot oil circulation, the number of particles larger than 5um in 100ml of oil is ≤ 2000 , and there are no particles larger than 50um.
- 14) Material compatibility, it should be compatible with most metals and hard inorganic substances, including stainless steel, copper, aluminum, silica, alumina, etc. commonly used in electronic systems, to ensure the appearance, volume and physical properties (mechanical properties). electrical) impact $<1\%$. For organic substances and elastomers, it should be confirmed by the Soxhlet extraction test, and it should be ensured that after extraction with organic substances in the system, the volume and weight change of organic substances is less than 3%, and the extracted products have no effect on liquid media and other devices that can reach the site through liquid transfer. The liquid itself should not react chemically with any material it may come into contact with, resulting in the modification or decomposition of the liquid.
- 15) The physical reaction of the liquid with the contact materials, including dissolution, extraction, etc., should not affect the corresponding functions of the liquid and system materials. For example, the liquid extracts the plasticizer of the cable insulation layer, causing the cable to harden and crack. Or the substances in the system are dissolved in the contact liquid, resulting in an increase in the viscosity of the liquid or deterioration in performance.
- 16) Dissolved substances caused by liquid convection or driving flow should not affect other materials or devices in contact with the liquid. For example, the plasticizer precipitated from the cable will reduce the heat exchange efficiency on the surface of the heating device through accumulation.
- 17) The liquid chemical decomposition temperature should be much higher than the system working temperature and potential local overheating temperature.
- 18) It belongs to the non-toxic category. It is non-irritating to the eyes, non-irritating to the skin, and does not have mutagenic cell mutations or heart diseases..

5. Network Configuration

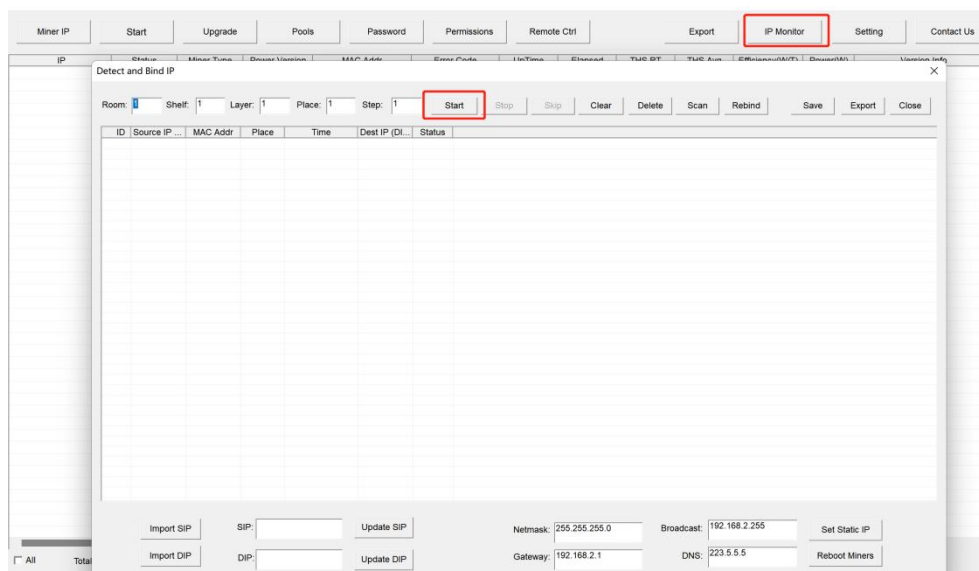
Tool	Numb	Use	Remark
PC	1	Miner configuration	
Switch	1	Configuring miner and configuration computer	The switch can connect to the Internet.
DHCP/NTP Server/Router	1	1、 Provide a dynamic IP address for the initial power up of the miner 2、 Provide NTP network time for miner	It defaults to DHCP to obtain a dynamic IP address, when the miner leaves the factory.

The miner defaults to DHCP to obtain dynamic IP. Therefore, the mine network must be configured with a DHCP server, or the router can enable DHCP to dynamically allocate the IP address service. The running time of the miner, the correctness of the calculation statistics, etc. depend on the network NTP time. The mining miner itself is configured with multiple NTP server addresses of the public network by default. In order to speed up the acquisition of network time and improve the time precision, it is recommended to mine the network. Configure a local NTP server.

6.Data Configuration (Configuration on the web page)

6.1 Query the dynamic IP address obtained by the miner

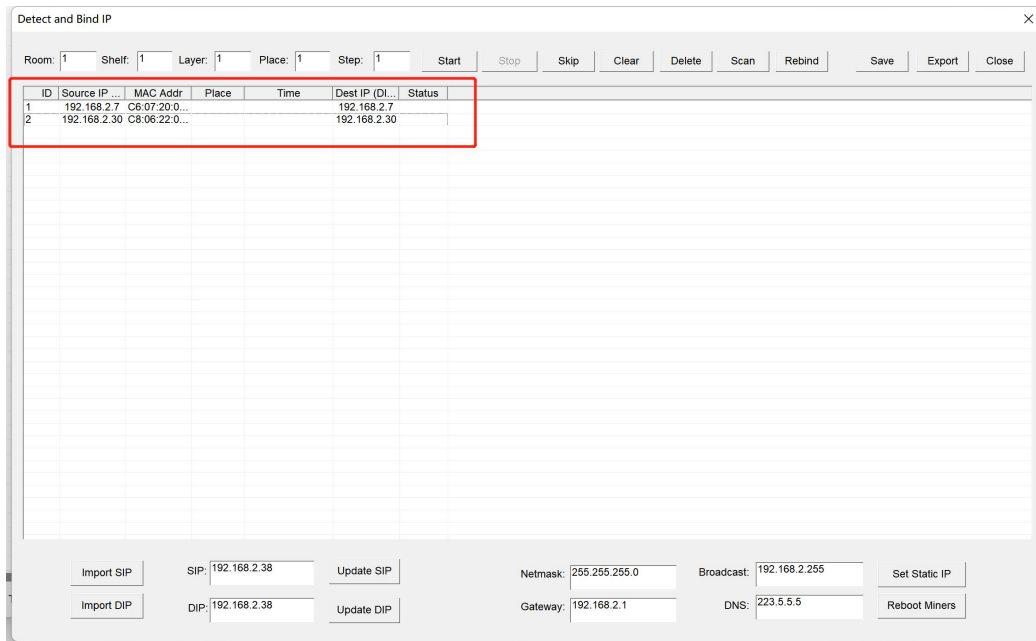
Miner Data Configuration: Connect PC to the same network the miner is located, run WhatsMinerTools software on the PC, select the "IP Monitor" tab, set the room number, rack number and layer number of the rack where the mining miner is located, the location number of the layer, click "Start".



After the miner is powered on for about 30s, under normal circumstances, the yellow light of the network port is always on and the green light is blinking. Press the IPFOUND button (long button highlighted) on the miner control panel for more than 5s, the two LEDs on the right will flash a few times, indicating that the miner has broadcast the IP and MAC address of the unit to the network.



View the dynamically obtained IP, MAC address, and miner position reported by the miner in

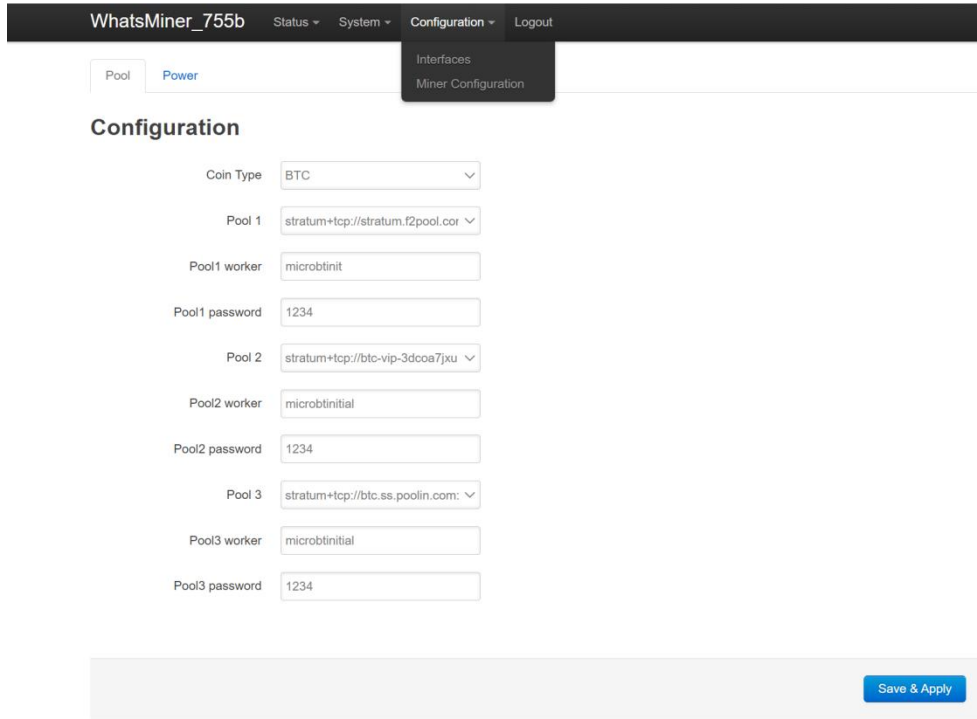


Notes:

- (1) If all the lights on the panel of the control board are not lit after power-on, please check whether the PSU of the 220V power cable and the 16A power cable are reliable and the connection is correct.**
- (2) If the indicator on the right side of the panel of the control board is on, but the network port is not lit, or the green light is not flashing, check whether the switch is normal, the whether network cable connection is reliable.**
- (3) The computer and miner running the WhatsMinerTools software must be on the same network segment. Otherwise, the software may not receive the broadcast message from the miner, so the IP Address and MAC Address information reported by the miner IPFOUND button cannot be queried.**
- (4) If the computer and the miner miner are on the same network segment, and the DHCP service is enabled in the network, after the mining miner IPFOUND button is pressed, and WhatsMinerTools software does not query the IP of the miner, long press the reset button on the miner panel for more than 5s to recover Factory default configuration, then power off the miner miner. Power on to restart, power on for 30s and then press the IPFOUND button to detect the miner IP address.**
- (5) If the computer is running WhatsMinerTools software, and after clicking "Start", without manually pressing the IPFOUND button, the software automatically finds the IP Address and MAC address of the miner, the IPFOUND button of the miner may be stuck by the panel. Find the software. Display the miner corresponding to the MAC address (the MAC address bar code is attached to the miner panel), power off the corresponding miner, and then re-install the control board to ensure that the control panel buttons and indicators are exposed to the mounting holes, and are not stuck.**

6.2 Configuration Pool & Worker

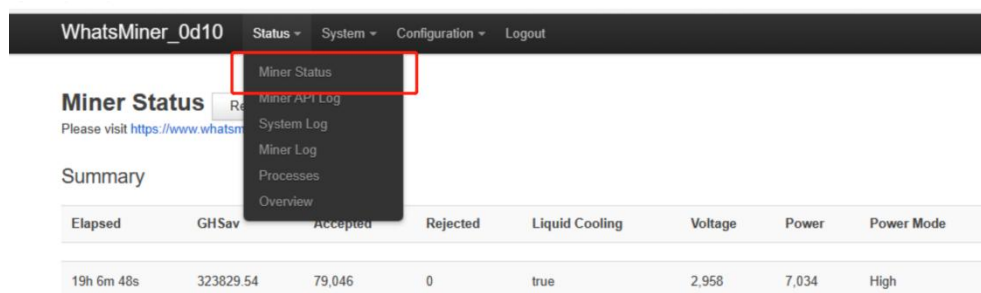
- (1) After logging in, go to the Configuration - BTMiner Configuration page.
- (2) In the Configuration - BTMiner Configuration page, modify the mine pool address, mine worker name, and after modifying click "Save & Apply" in the lower right corner to save the modified configuration.



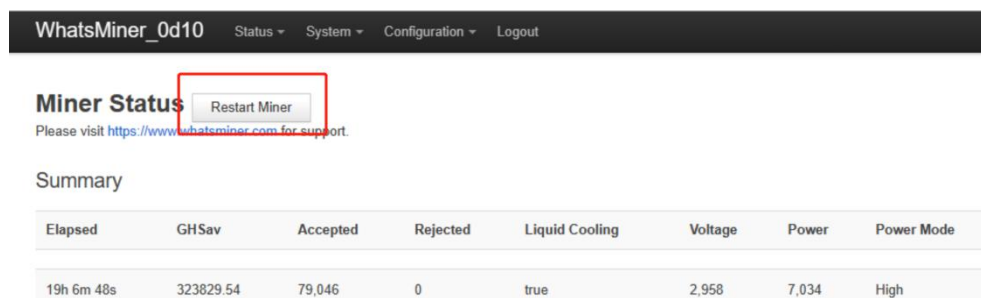
After the configuration of the mining pool is modified, the modified configuration must be restarted after the BTMiner program is restarted or the control panel is restarted.

- (3) Restart BTMiner to check whether the configuration modification takes effect

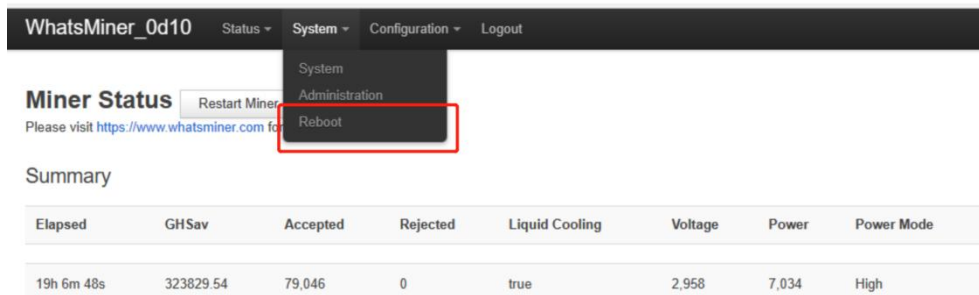
In the miner interface, select: Status - "BTMinerStatus" to enter the BTMiner running status interface.



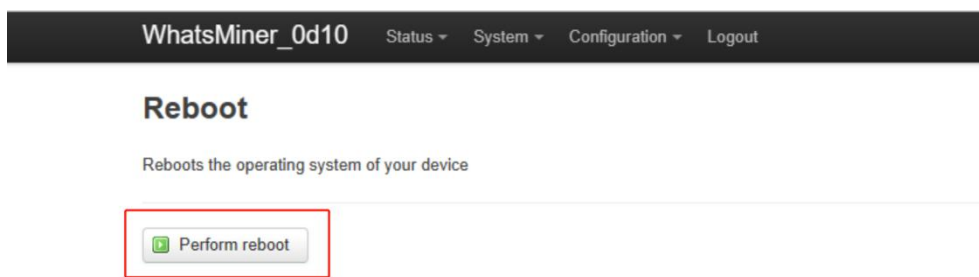
In the BTMiner Status interface, click "Restart BTMiner" to restart the BTMiner process.



(4) Restart the control board and check whether the configuration modification takes effect. (If you do not choose to restart BTMiner, after the configuration is modified and saved, you can also restart the control board to make the configuration take effect.)



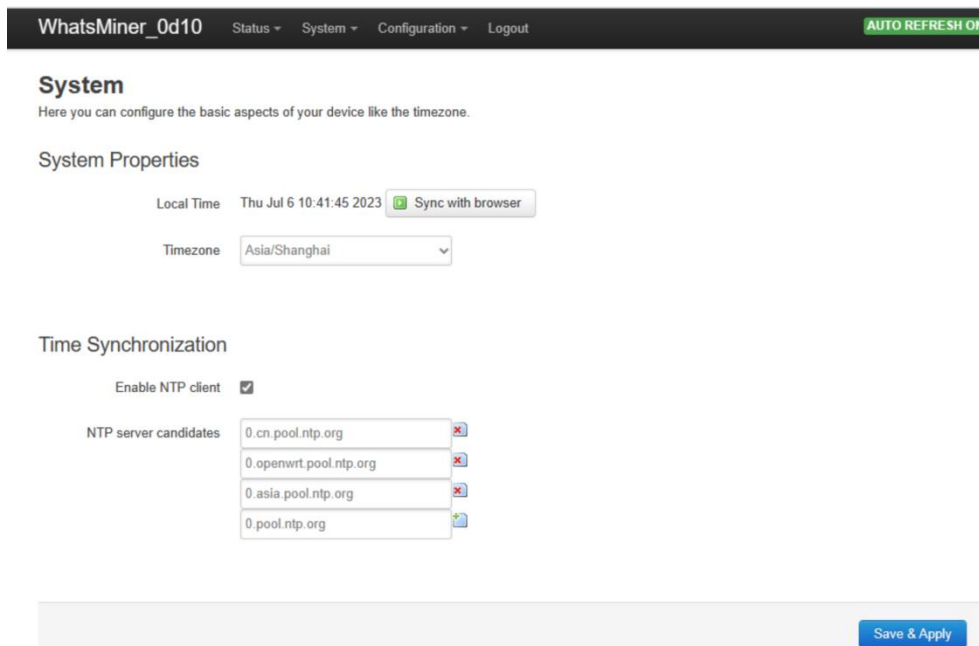
In the System interface, click "Reboot".



In the Restart interface, click "Perform reboot" to confirm the restart.

6.3 Modify the NTP Synchronization Server Address (optional)

(1) After logging in, select System - System Configuration in the interface to enter the BTMiner configuration page.



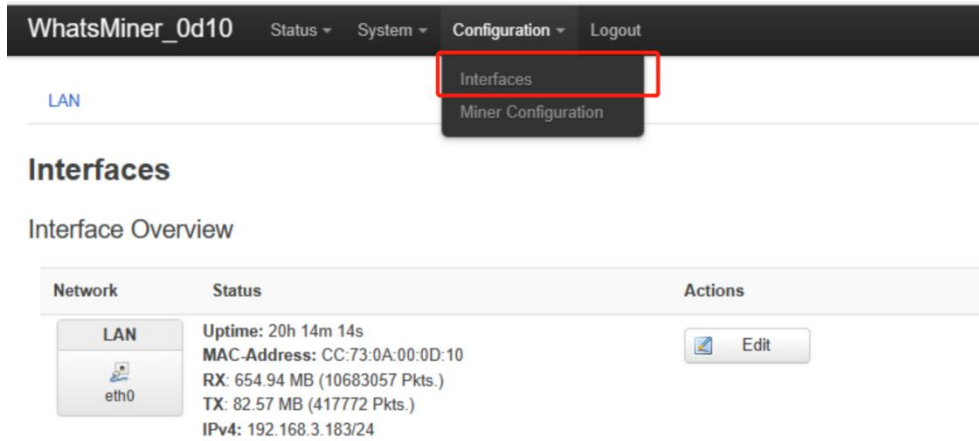
(2) In the BTMiner configuration interface, add or modify the NTP server address. The miner has been configured with four NTP server addresses by default. You can modify or add the NTP server address to the local NTP server address according to the mine situation. Miner.

(3) After modifying the NTP server address, click "Save & Apply" in the lower right corner.

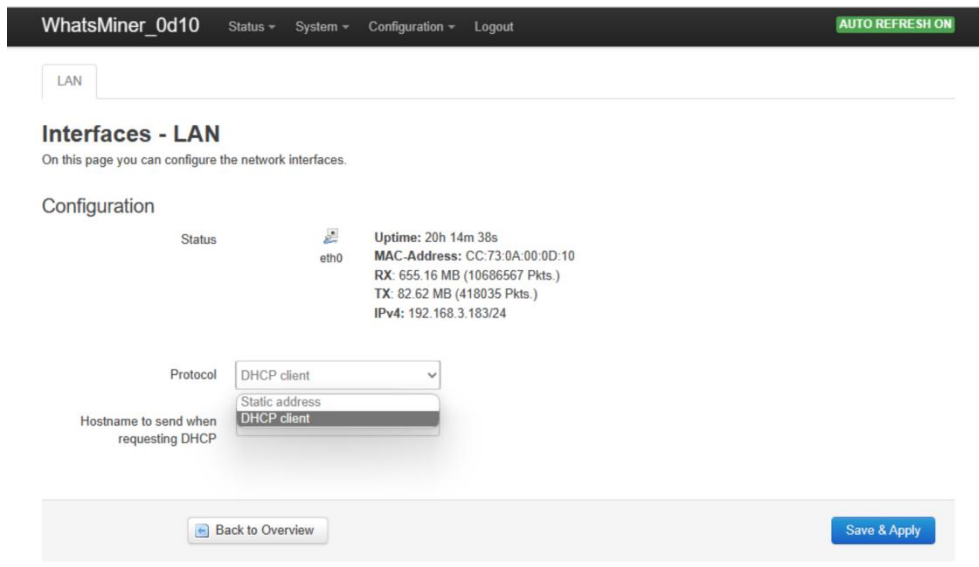
6.4 Configuration the Static IP Address (optional)

(1) After logging in to the miner, in the miner interface, select: Configuration->Interfaces to enter the network interface configuration interface.

(3) In the "Configuration" interface, click "Edit".



(4) In the interface modification page, select "Static address" for the protocol and click "Switch protocol".



(5) In the static address configuration interface, change the IP address, mask, gateway, broadcast address, and DNS address to the actual planned address of the mine. After editing, click "Save & Apply" in the lower right corner.

LAN

Interfaces - LAN

On this page you can configure the network interfaces.

Configuration

Status		Uptime: 20h 15m 54s MAC-Address: CC:73:0A:00:0D:10 RX: 655.79 MB (10696525 Pkts.) TX: 82.76 MB (418765 Pkts.) IPv4: 192.168.3.183/24
Protocol	<input type="text" value="Static address"/>	
IPv4 address	<input type="text" value="192.168.3.183"/>	
IPv4 netmask	<input type="text" value="255.255.255.0"/>	
IPv4 gateway	<input type="text" value="192.168.3.1"/>	
IPv4 broadcast	<input type="text" value="192.168.3.255"/>	
Use custom DNS servers	<input type="text" value="8.8.8.8"/>	

After saving the application, you need to re-use the newly set static IP address to log in to the mining miner (otherwise the page will display as loading until the loading fails).

7. Miner Operation Status Check

After the mine is connected to the operation network, log in to the miner and check the running status of the miner.

Miner Status

Summary

Elapsed	GHSav	Accepted	Rejected	Liquid Cooling	Voltage	Power	Power Mode
19h 11m 47s	323830.18	79,409	0	true	2.952	7,011	High

Devices

Device	Frequency	GHSav	GHS5s	GHS1m	GHS5m	GHS15m
SM0	574	80464.35	80386.25	80322.83	80462.03	80428.95
SM1	575	80667.72	80373.62	80725.18	80636.11	80703.58
SM2	579	81273.69	80563.95	81325.88	81346.16	81214.21
SM3	580	81420.69	81281.32	81566.07	81528.72	81436.16
Total	577	323826.45	322805.15	323939.76	323973.01	323782.90

Device	Status	UpfreqCompleted	EffectiveChips	Temperature
SM0	Alive	1	192	69.31
SM1	Alive	1	192	69.31
SM2	Alive	1	192	69.88
SM3	Alive	1	192	69.88

Pools

Pool	URL	Active	User	Status	Difficulty	GetWorks	Accepted	Rejected	Stale	LST
1	stratum+tcp://192.168.31.65:3334	true	microbtinitial	Alive	65536	3455	79409	0	2	Thu Jul 6 10:44:03 2023

The server is connected correctly and the network is normal. After the server is powered on,

it will automatically perform a frequency search test. The frequency search test phase takes about 40 minutes. After the frequency search is completed, it enters the formal working stage. Computing power for normal operation. If the frequency search is not over, the computing power seen will be lower than the normal operating computing power

8.Batch configuration

You can use the WhatsMinerTool software to carry out batch data configuration, status check and firmware upgrade of the mining miner. For details, please refer to the "Whats Miner WhatsMinerTool Operation Guide".

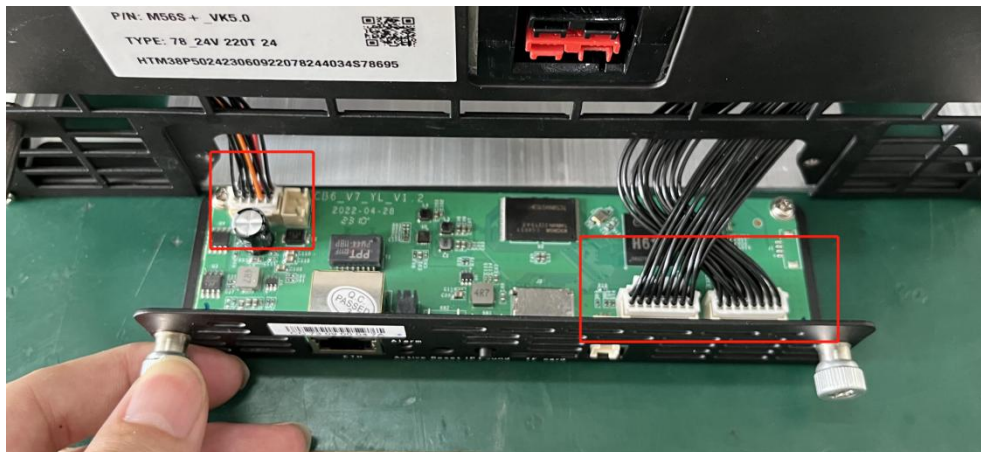
9.Removal and installation

9.1Control board removal and installation

(1) Power off the device first, then unscrew the two screws in the figure below, and pull the control board out.



(2) After pulling out the 3 cables, you can pull out the entire control board



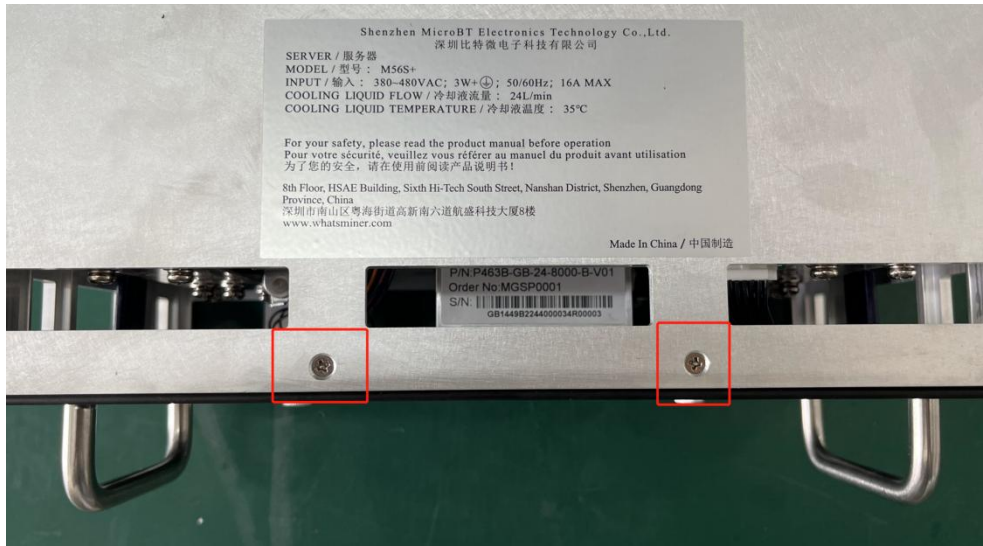
(3) Unscrew 4 more screws to remove the control board from the board.



(4) The installation of the control board can be reversed according to the removal steps

9.2 PSU removal and installation

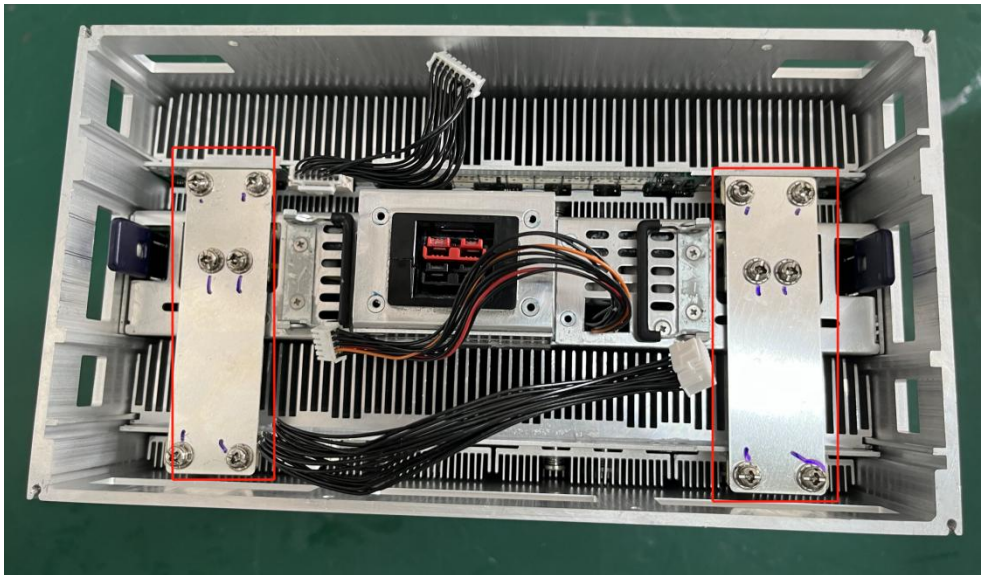
(1) Power off the device first, Unscrew the four screws on the panel, and then unscrew the four screws on the side;



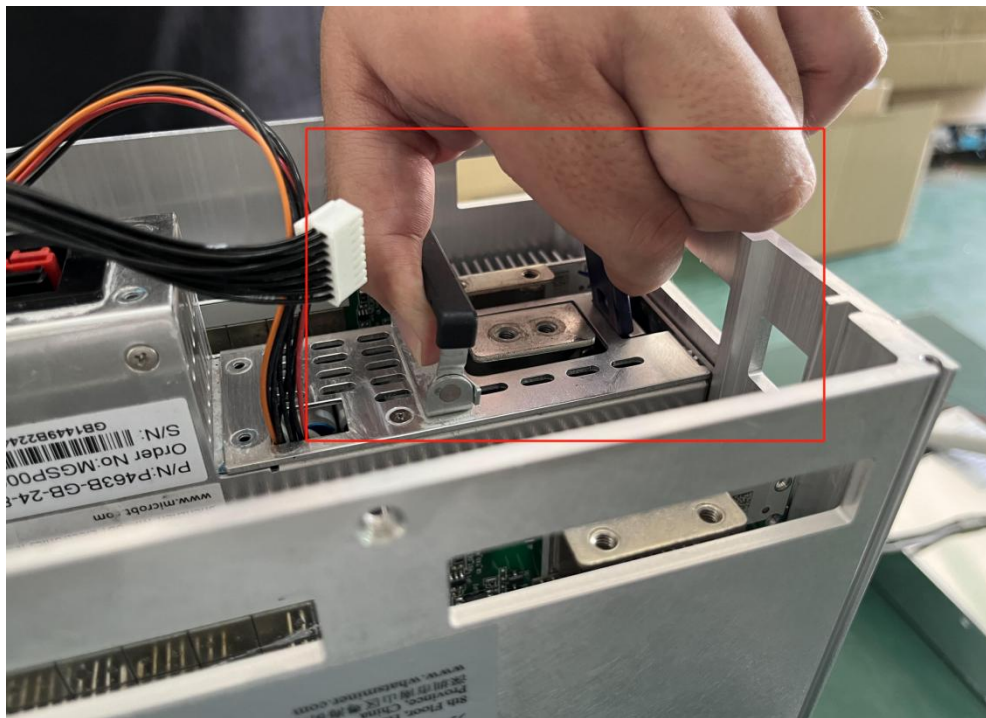
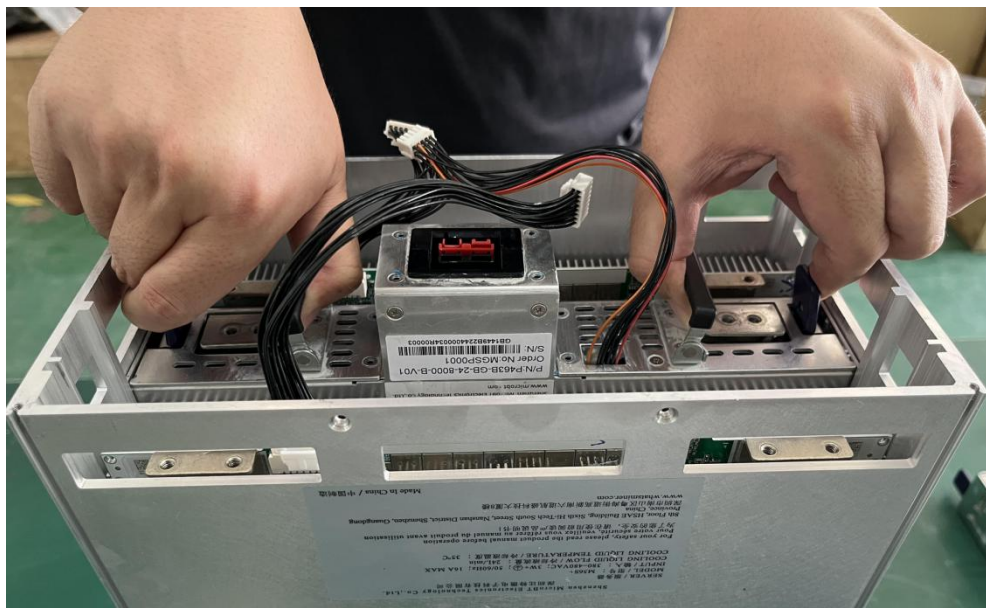
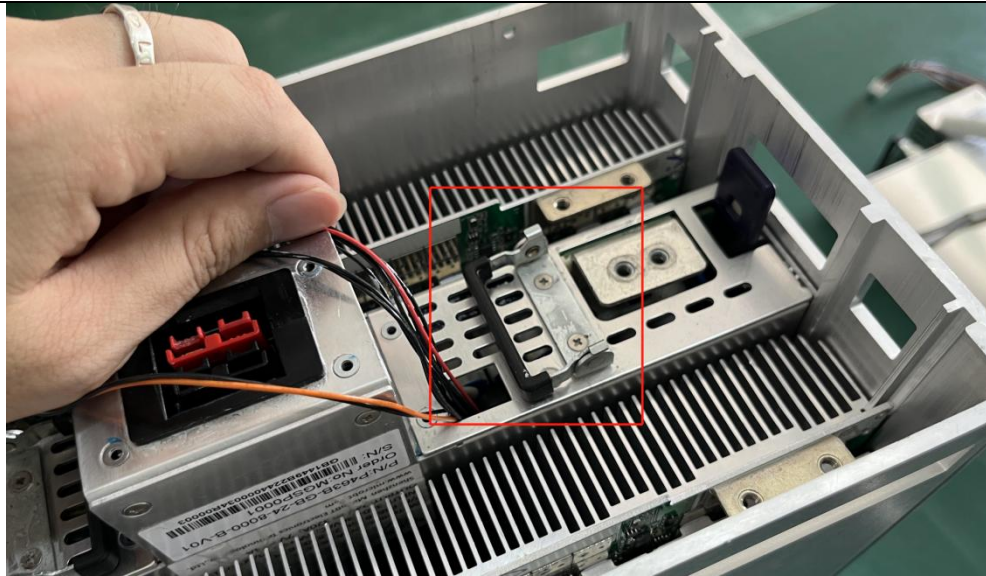
- (2) Open the panel, unplug the power cable and the black ribbons

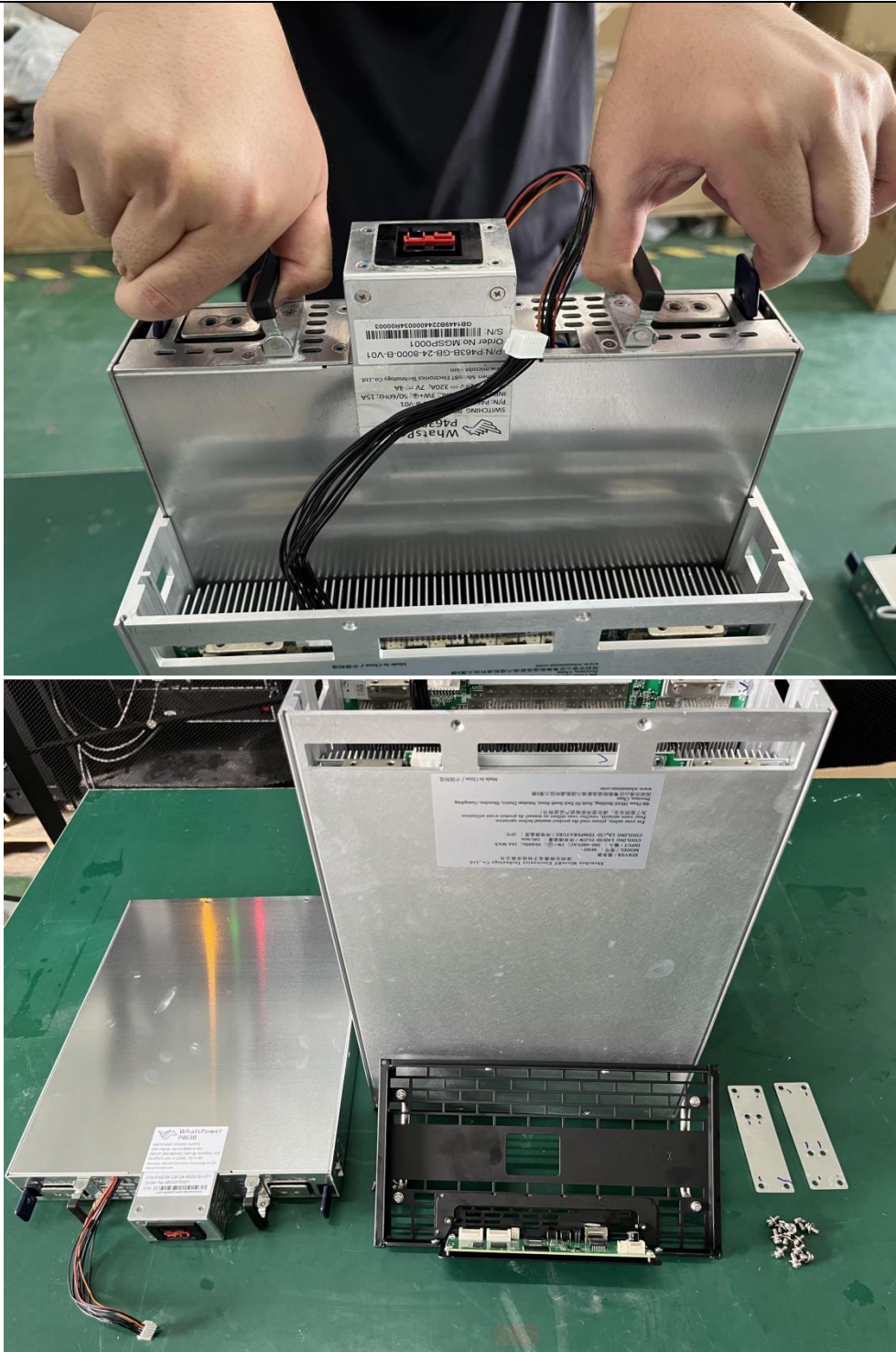


- (3) Unscrew the screw on the copper plate of the PSU



Pull up the handle of the PSU, buckle the buckle of the PSU, lift up with both hands, and the PSU can be disassembled





(5) The installation of the psu can be reversed according to the removal steps