

## **WhatsMiner Hydro Cooling Operation Guide V1.4**

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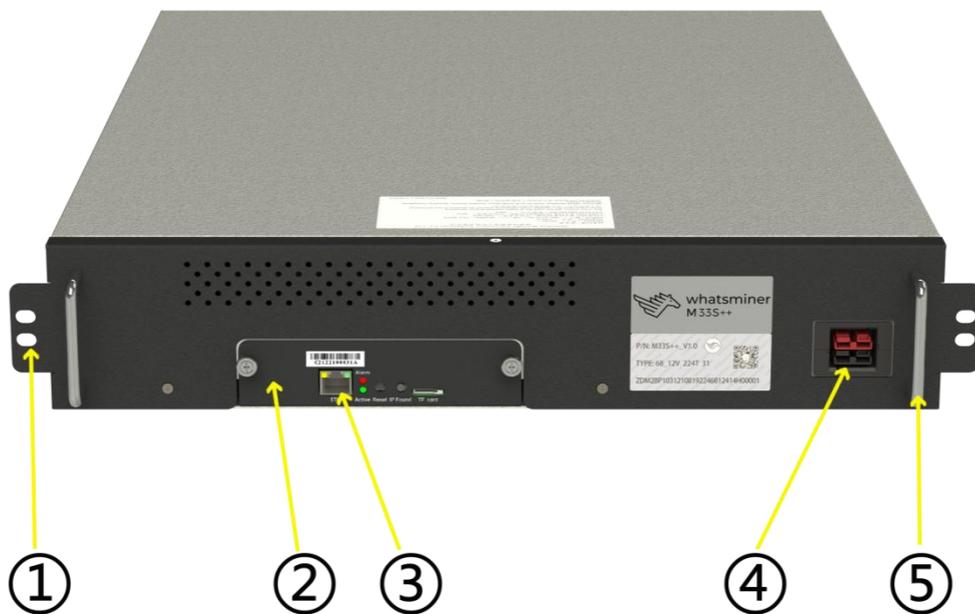
## 1. Product Description



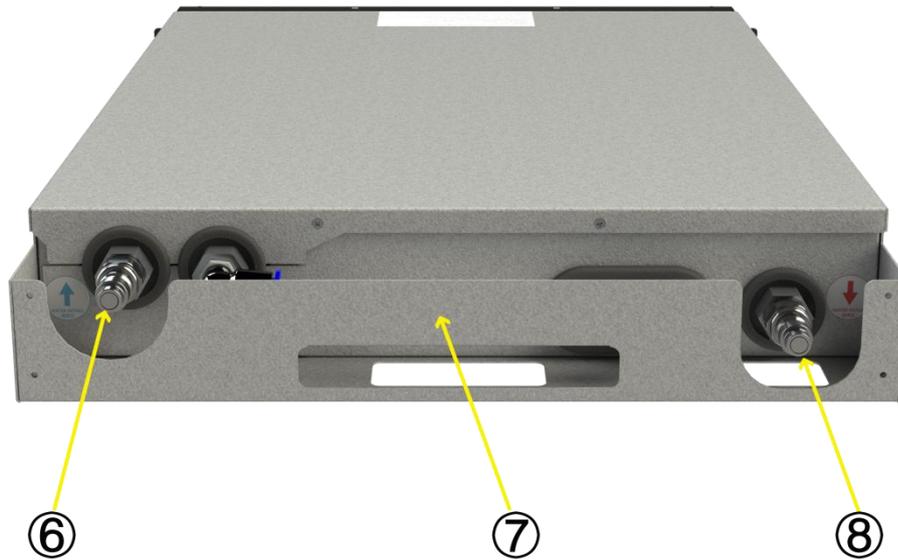
Whatsminer Hydro Cooling series host model:

M34S+,M33S,M33S+,M33S++,  
M53,M53S,M53S+,M53S++,M63,M63S

This guide takes M33S++ as an example to introduce various operations in detail, and the operations of other models are similar



The front panel



The back panel

①Fixed hole ②Control board ③Network cable port ④Power interface ⑤Handle ⑥Water inlet (quick connector male head, with blue logo) ⑦baffle ⑧Water outlet (quick connector male head, with red logo)

## 2. Product parameters and environmental parameters

Table 1 Product parameters

Category	Item	Specifications
PSU		AC380V~480V, 3W+ ground, input 10kw
Parameter	Dimensions (Height X Width X Depth)	86mmX482.6mmX665mm
	Color	<ul style="list-style-type: none"> <li>● Front panel: black</li> <li>● Shell: gray</li> </ul>
	Weight	Net weight: 27.5kg Weight with packaging materials: 30kg
	Coolant demand per miner	About 1L
Material	Parts of the server in contact with coolant	Aluminum alloy, stainless steel, PA, PE, EPDM, PTFE, hydroperoxide nitrile
Environmental parameters	Coolant temperature	<ul style="list-style-type: none"> <li>● Working temperature (water intake): 20°C~50°C@normal mode; 20°C~40°C@high performance mode;</li> <li>● Inlet liquid temperature control accuracy <math>\pm 2^{\circ}\text{C}</math>;</li> <li>● Storage and transportation temperature: -40~70°C;</li> </ul> <b>Note: Please empty the liquid in the equipment during storage and transportation. If it is not emptied, ensure that the equipment is above the freezing point of the liquid.</b>
	Coolant flow	Limited Data $\geq 10\text{L}/\text{min}$ Flow control accuracy $\pm 10\%$ <b>Remarks: 10L/min corresponds to the temperature difference between inlet and outlet water close to 10°C@normal mode, 14°C@high performance mode</b>
	Coolant pressure	$\leq 400\text{kpa}$

		<p><b>Remarks: When the pressure is more than 400kpa, the hydro cooling plate will be deformed and cause the risk of coolant leakage.</b></p>
	Coolant medium	<p>Special coolant: pure water (or distilled water) + special corrosion inhibitor + antifreeze (select the ratio according to the freezing point);</p> <p>Notice:</p> <p>(1) The coolant must meet the index requirements listed in Table 3;</p> <p>(2) The coolant needs to be tested regularly. For testing indicators and testing cycles, refer to Table 4. When the testing data exceeds or is lower than the testing indicators, its performance will not meet the requirements and the coolant must be replaced. It is recommended to replace the coolant after one year of use;</p>
	Coolant medium circulation system (Miner side)	<p>The circulation system is rust-proof and corrosion-proof. Stainless steel pipelines are recommended and copper is prohibited;</p> <p>The particle diameter of the liquid medium is <math>\leq 149</math> microns, that is, the main circuit of the circulation system should be equipped with a filter of more than 100 mesh; it is also recommended to configure a 10-micron side filter system to filter tiny suspended matter;</p> <p>Before connecting the rack to the cooling system, use deionized water (conductivity <math>\leq 5 \mu\text{S}/\text{cm}</math>) to clean and filter the system pipelines multiple times to remove dust, welding slag and other impurities. The cleaning time should not exceed 8 hours. Cleaning water must not be allowed in the system. Leave it overnight; after cleaning the system, be sure to drain all the deionized water, and then inject coolant for recycling (if the deionized water is not completely drained, it will affect various indicators and parameters of the coolant). System components can withstand temperatures above <math>85^{\circ}\text{C}</math>;</p> <p>The system is equipped with a 4bar safety pressure relief valve;</p> <p>The system is equipped with a constant pressure expansion tank.</p> <p><b>Note: When the coolant temperature rises after the server is turned on, the pressure will rise.</b></p>
	humidity	<ul style="list-style-type: none"> <li>● Working humidity: 5%RH~85%RH (non-condensing)</li> <li>● Storage humidity: 5%RH~95%RH (non-condensing)</li> <li>● Long-term storage humidity: 30%RH~69%RH (no condensation)</li> </ul>

**Note: The above coolant temperature and flow parameters are based on pure water + special corrosion inhibitor as the coolant medium. If the coolant medium uses pure water + special corrosion inhibitor + antifreeze, the coolant temperature and flow parameters are as shown in Table 2 .**

Table 2 Temperature and flow parameters of different concentrations of ethylene glycol or propylene glycol antifreeze + special corrosion inhibitor

project	20% ethylene glycol or propylene glycol solution + special corrosion inhibitor	30% ethylene glycol or propylene glycol solution + special corrosion inhibitor	40% ethylene glycol or propylene glycol solution + special corrosion inhibitor	50% ethylene glycol or propylene glycol solution + special corrosion inhibitor
coolant temperature	<ul style="list-style-type: none"> <li>Operating temperature (liquid inlet): 20°C~50°C@normal mode; 20°C~39°C@high performance mode;</li> <li>Inlet liquid temperature control accuracy <math>\pm 2^{\circ}\text{C}</math>;</li> <li>Storage and transportation temperature: -40~70°C;</li> </ul> <p><b>Note: The coolant in the equipment must be drained for more than 2 hours of storage and transportation.</b></p>	<p>Operating temperature (liquid inlet): 20°C~49°C@normal mode; 20°C~38.5°C@high performance mode;</p> <p>Inlet liquid temperature control accuracy <math>\pm 2^{\circ}\text{C}</math>;</p> <p>Storage and transportation temperature: -40~70°C;</p> <p>Note: The coolant in the equipment must be drained for more than 2 hours of storage and transportation.</p>	<p>Operating temperature (liquid inlet): 20°C~48°C@normal mode; 20°C~38°C@high performance mode;</p> <p>Inlet liquid temperature control accuracy <math>\pm 2^{\circ}\text{C}</math>;</p> <p>Storage and transportation temperature: -40~70°C;</p> <p>Note: The coolant in the equipment must be drained for more than 2 hours of storage and transportation.</p>	<p>Operating temperature (liquid inlet): 20°C~47°C@normal mode; 20°C~37.5°C@high performance mode;</p> <p>Inlet liquid temperature control accuracy <math>\pm 2^{\circ}\text{C}</math>;</p> <p>Storage and transportation temperature: -40~70°C;</p> <p>Note: The coolant in the equipment must be drained for more than 2 hours of storage and transportation.</p>
coolant flow	<p>Rated flow: <math>\geq 10.7\text{L}/\text{min}</math></p> <p>Flow control accuracy <math>\pm 10\%</math>;</p> <p>Note: Under this flow rate, the temperature difference between the inlet and outlet liquid is close to 10°C@normal mode and 14°C@high performance mode)</p>	<p>Rated flow: <math>\geq 11\text{L}/\text{min}</math></p> <p>Flow control accuracy <math>\pm 10\%</math>;</p> <p>Note: Under this flow rate, the temperature difference between the inlet and outlet liquid is close to 10°C@normal mode and 14°C@high performance mode)</p>	<p>Rated flow: <math>\geq 11.4\text{L}/\text{min}</math></p> <p>Flow control accuracy <math>\pm 10\%</math>;</p> <p>Note: Under this flow rate, the temperature difference between the inlet and outlet liquid is close to 10°C@normal mode and 14°C@high performance mode)</p>	<p>Rated flow: <math>\geq 11.6\text{L}/\text{min}</math></p> <p>Flow control accuracy <math>\pm 10\%</math>;</p> <p>Note: Under this flow rate, the temperature difference between the inlet and outlet liquid is close to 10°C@normal mode and 14°C@high performance mode)</p>

Table 3 Initial index requirements for coolant

project	Unit	initial indicator
pH(20°C)		7.0~8.7
Total number of colonies (microorganisms)	cfu/ml	<100
Sulfate	mg/L	<10
Chloride	mg/L	<20
sulfide	mg/L	< 1
Total hardness (CaCO <sub>3</sub> )	mg/L	<1
Conductivity (20°C)	$\mu\text{s}/\text{cm}$	TBD
Exterior		Clear liquid without precipitation
Copper ions	mg/L	<0.5
Iron ions	mg/L	<0.5
Aluminum ions	mg/L	<0.5
Corrosion inhibitor		Active ingredients 100%
reserve alkalinity	ml	2.9~3

Table 4 Coolant testing index requirements

project (Note: items marked with * are required inspection)	Unit	Detection Indicator	Testing cycle	Reference testing instruments/methods
pH(20°C)*		7.5~9.5	every 2 months	pH meter/ASTM E70
Total number of colonies (microorganisms)*	cfu/ml	≤1000	every 6 months	3M bacterial culture dish SN/T 1897
Sulfate	mg/L	≤10	every 6 months	Ion chromatography/HJ84
chloride	mg/L	≤20	every 6 months	Ion chromatography/HJ84
sulfide	mg/L	≤1	every 6 months	Ion chromatography/HJ84
Total hardness (CaCO <sub>3</sub> )	mg/L	≤20	every 6 months	GB/T 6909
Conductivity (20°C)*	μs/cm	Increment≤1500	every 2 months	conductivity meter/GB/T 11446.4
Appearance*		Clear liquid without turbidity	every 2 months	visual inspection
Copper ions*	mg/L	Increment≤0.1	every 6 months	Inductively coupled plasma spectroscopy/HJ 776
Iron ions*	mg/L	Increment≤0.1	every 6 months	Inductively coupled plasma spectroscopy/HJ 776
Aluminum ions*	mg/L	Increment≤0.1	every 6 months	Inductively coupled plasma spectroscopy/HJ 776
Corrosion Inhibitor*		≥Active ingredients 80%	every 6 months	UV spectrophotometer, ion chromatography, gas chromatography mass spectrometer, etc.
reserve alkalinity	ml	≥2.3	every 2 months	Automatic potentiometric titrator/ ASTM D11221

### 3. Cooling system design considerations

#### 3.1. Server inlet temperature control

(1) Control requirements: constant control of inlet liquid temperature, control accuracy  $\pm 2^{\circ}\text{C}$ ;

(2) Control range:  $20^{\circ}\text{C}\sim 50^{\circ}\text{C}$  @normal mode@pure water+special corrosion inhibitor as coolant medium;  $20^{\circ}\text{C}\sim 40^{\circ}\text{C}$  @high performance mode@pure water+special corrosion inhibitor as coolant medium;

**Note:** If the inlet liquid temperature fluctuates too much, it will easily cause the machine temperature to fluctuate too much and the machine will work unstable; if the inlet liquid temperature is too high, it will easily cause the machine to overheat and the machine will not work properly.

#### 3.2. Server inlet flow control

- (1) Control requirements: constant control of inlet liquid flow, control accuracy  $\pm 10\%$ ;
- (2) Control range: The flow rate of a single machine is  $\geq 10\text{L}/\text{min}$  @ pure water + special corrosion inhibitor as the coolant medium. 10L/min corresponds to a temperature difference between inlet and outlet liquid of  $10^\circ\text{C}$  @ normal mode and  $14^\circ\text{C}$  @ high-performance mode;

Note: If the inlet liquid flow rate fluctuates too much, the temperature of the machine may fluctuate too much and the machine may work unstable; if the liquid flow rate is low, the outlet liquid temperature may be too high and the machine may not work properly.

### 3.3. Server water inlet pressure

Control range:  $\leq 400\text{kpa}$ ;

Note: If the pressure is too high, the cold plate may be deformed, which may cause damage to the machine. The damage to the machine will not be covered by the warranty.

### 3.4. Liquid medium

(1) Coolant: Special coolant - pure water (or distilled water) + special corrosion inhibitor + antifreeze (select the ratio according to the freezing point);

Note: Corrosion inhibitors must be added to the coolant, and the coolant must meet the indicators in Table 3. If the coolant does not meet the standards, it must be replaced immediately. Otherwise, it will easily cause system components to rust and corrode, and the cold plate or joints may be corroded and blocked, which may cause damage to the machine. , **the machine damaged thereby is not covered by the warranty.**

(2) Coolant replacement: Check and replace regularly;

Note: The coolant needs to be tested regularly. Please refer to Table 4 for the testing cycle and index requirements. If it does not meet the standards, it must be replaced immediately.

### 3.5. Circulatory system

(1) Pipeline: The circulation system must consider rust and corrosion prevention. It is recommended to use stainless steel pipelines. Copper is prohibited in the system;

Note: The cold plate is made of aluminum. If the system contains copper, it will cause electrochemical corrosion. The welding joints of carbon steel pipes have a lot of welding slag, which is difficult to clean and easy to rust and corrode. There is a risk of corrosion and blockage of the cold plate or joints, which may cause If the machine is damaged, the damaged machine will not be under warranty.

(2) Filter: The main road is equipped with a filter of more than 100 mesh; it is also recommended to configure a 10-micron side filter system to filter tiny suspended matter;

Note: If the mesh number of the filter is too low, large particles of impurities in the system cannot be filtered. There is a risk of blockage of the cold plate or joints, which may cause damage to the machine. The damaged machine will not be covered by the warranty.

(3) Temperature resistance of system components:  $\geq 85^\circ\text{C}$  or above;

Note: If the temperature resistance of the cooling system components is lower than  $85^\circ\text{C}$ , it will easily cause damage to the system components or even leakage of liquid media, which may cause damage to the machine. The damaged machine will not be covered by the warranty.

(4) Circulation pump: Stainless steel pumps are recommended, with one in use and one in standby to improve system reliability;

Note: Cast iron pumps are prone to rust and corrosion, and the cold plate or joints are at risk of corrosion and blockage, which may cause damage to the machine. The damage to the machine is not covered by the warranty.

(5) Pressure test and leak detection of system pipelines: It is recommended to use an air compressor for gas inspection and use the soap bubble method to test the sealing of the welding joint;

Note: If water inspection is used in winter, the system equipment needs to be drained and frost-proofed. Equipment that is difficult to drain clean is at risk of freezing. The gas detection efficiency is high, and the tedious work of draining and anti-freezing the system equipment is eliminated when detecting leaks in winter;

(6) Exhaust and drain valves: Install automatic exhaust valves at some high positions, and install drainage valves at some low positions. In addition, it is recommended to install manual exhaust valves in multiple places in the system to improve the first injection efficiency of the system;

(7) System cleaning: The system needs to be cleaned and filtered before the machine is put on the shelf;

**Note:** Before connecting the rack to the cooling system, use deionized water (conductivity  $\leq 5 \mu\text{S}/\text{cm}$ ) to clean and filter the system pipelines multiple times to remove dust, welding slag and other impurities. The cleaning time should not exceed 8 hours, and the cleaning water must not be used in the rack. Don't leave the liquid in the system overnight; after cleaning the system, be sure to drain all the deionized water, and then inject the coolant for recycling (if the deionized water is not completely drained, it will affect various indicators and parameters of the coolant). If there are too many residual impurities in the system, it is easy to cause the risk of corrosion and blockage of the cold plate or joints, which may cause damage to the machine, and the damaged machine will not be covered by the warranty.

(8) Device cleaning: The device needs to be cleaned and filtered before it is put on the rack;

**Note:** Before the device setup in the rack, use deionized water (conductivity  $\leq 5 \mu\text{S}/\text{cm}$ ) to clean and filter the device channel multiple times to remove dust, remaining liquid and other impurities. The cleaning time should not exceed 8 hours, and the cleaning water must not be used in the rack. Don't leave the liquid stay in the device overnight; after cleaning the system, be sure to drain all the deionized water, and then inject the coolant for recycling (if the deionized water is not completely drained, it will affect various indicators and parameters of the coolant). If there are too many residual impurities in the system, it is easy to cause the risk of corrosion and blockage of the cold plate or joints, which may cause damage to the machine, and the damaged machine will not be covered by the warranty.

(9) Safety pressure relief valve: To prevent the system pressure from being too high, the system needs to be equipped with a 4bar safety pressure relief valve;

**Note:** Please ensure that the pressure relief value has been adjusted before operation. Otherwise, when the server water inlet pressure is  $>400\text{kpa}$ , the system will not be able to release the pressure, and the damaged machine will not be under warranty.

(10) Constant pressure expansion tank: To prevent system pressure fluctuations, the system is equipped with a constant pressure expansion tank;

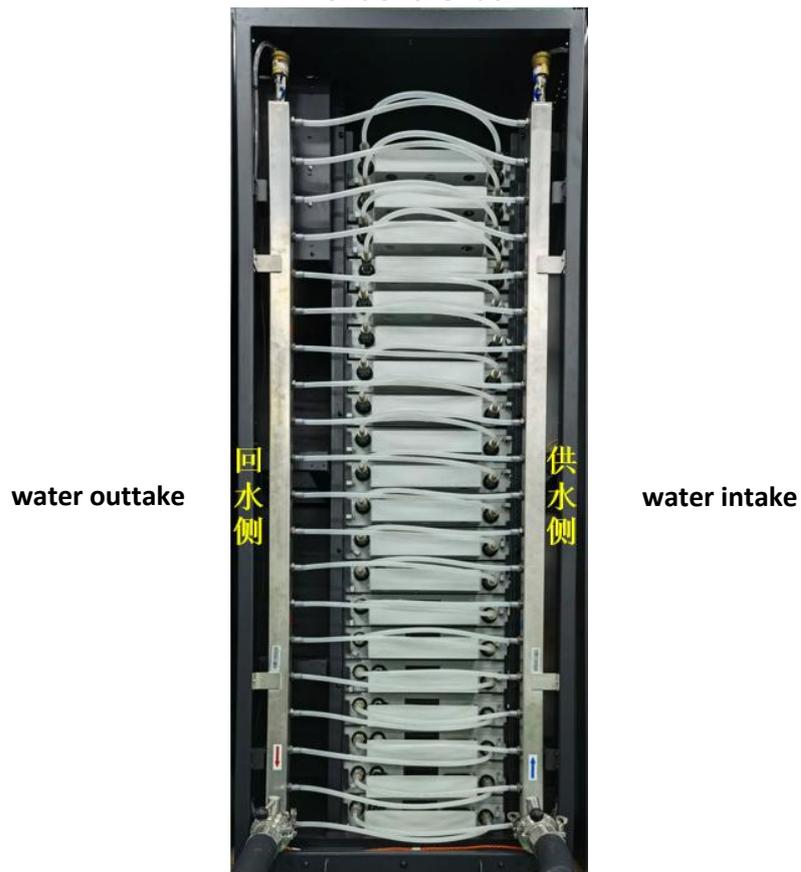
**Note:** Please ensure that the pressure value of the expansion tank has been adjusted before operation, otherwise the constant pressure expansion tank will not work, which may easily cause the water inlet pressure of the machine to be  $>400\text{kpa}$ , and the damaged machine will not be under warranty.

## 4. Installation position and operation items

### 4.1 Installation location



Front of the rack

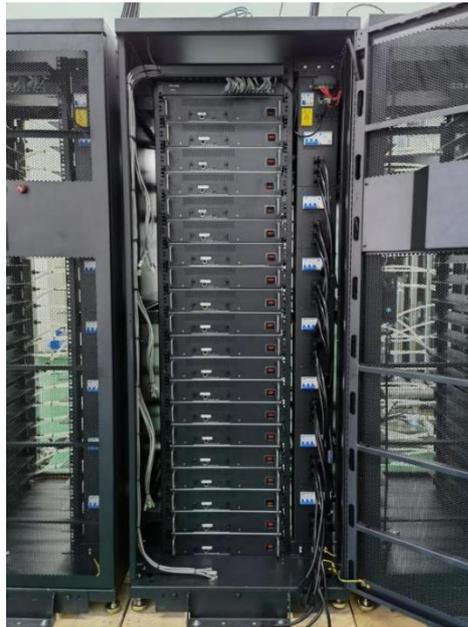


Back of the rack

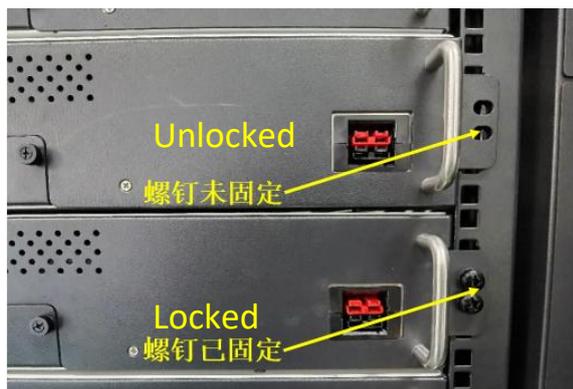
The hydro cooling mining rigs adopts a standard 2u structure design and is installed on a standard 19-inch hydro cooling rack. The front and back of the rack after the installation of the miner, respectively.

## 4.2 Steps for putting the miner on the shelf:

(1) The first step is to slowly push the mining miner into the rack along the card slot. Note that two people are required to operate. Here is an example of a full rack on 20 mining miner.



(2) The third step is to fix the front panel of the mining miner with the rack by screws (the rack has floating nuts). An example of screw fixing. Note: When the rack is transported with the mining miner, the front panel screws must be tightened and fixed;



(3) The fourth step is to plug in the water inlet and outlet pipes of the mining miner, that is, first remove the protective caps of the joints, and then connect the female quick connector on the inlet and outlet water pipes with the male quick connector on the mining miner. Pay attention to the plugging position. The left side of the figure shows after the plugging is completed, the right side of the figure shows two situations of plugging in place and plugging not in place;



(4) The fifth step is to connect the network cable and power cable. The power cable adopts the original factory configuration power cable. An example of the connection of the network cable



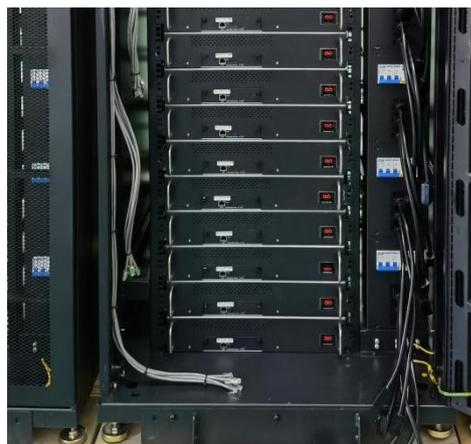
(5) When the miners are installed, turn on the water cycle first, check whether there is water leakage or other issue. If there is no abnormality, the network can be connected and the power can be turned on.

## 4.3 Removal steps:

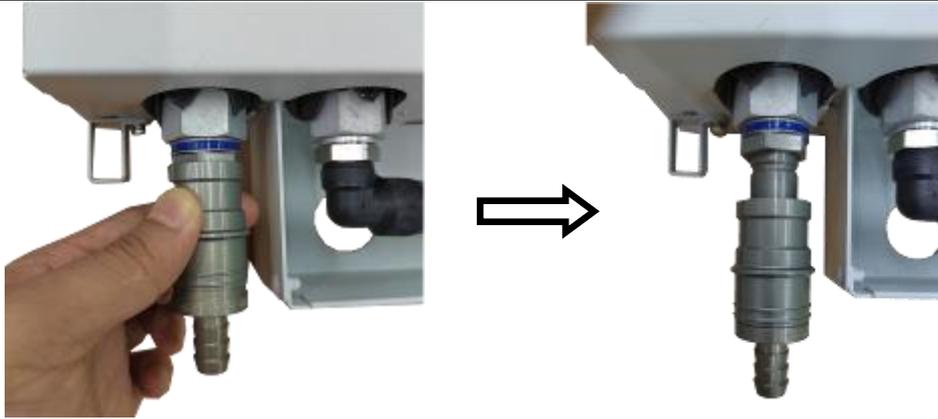
(1) Shut down the server and disconnect the corresponding circuit breaker, as shown below;



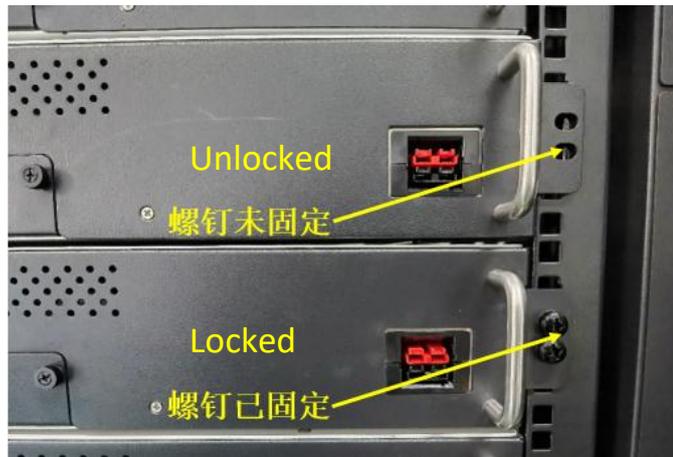
(2) Remove the network cable and power cable, as shown below;



(3) Disconnect the water inlet and outlet connector behind the server, as shown below. Hold the movable ring in the middle of the connector (female head) and pull back to disconnect.



(4) Loosen the screws on the front panel of the server and the rack (the rack has floating nuts), as shown below.



(5) Take out the server, it is recommended that two people operate, left and right one person, as shown below;



(6) Drain the server.

After the server is removed from the shelf, if it is stored and transported for more than 2 hours, the internal liquid must be drained out. To drain the liquid inside the server, two quick connector female heads can be used to connect two sections of water pipes respectively, and then respectively connected to the server inlet and outlet water, one of the interfaces into the air with a certain pressure, through the air pressure to discharge the coolant, as shown below.



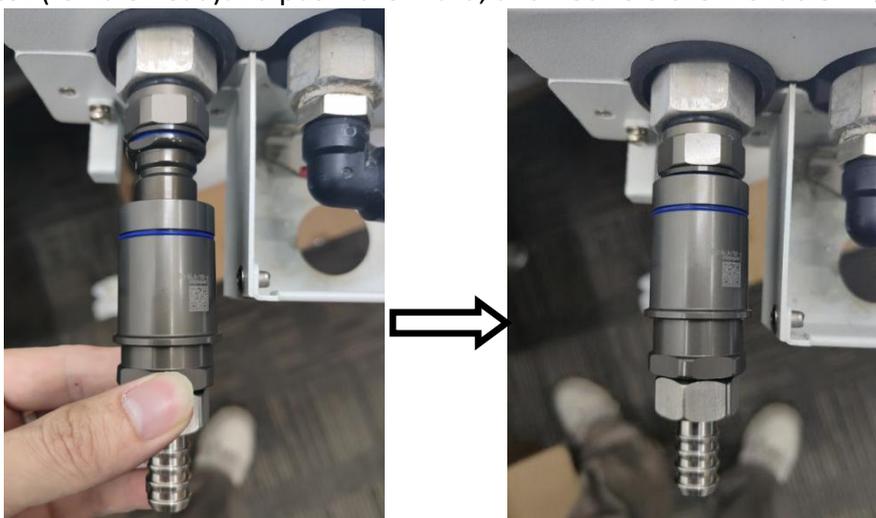
## 4.4 Attention:

(1) The female quick connector and power cord must use the original accessories. **Machines damaged as a result are not guaranteed**

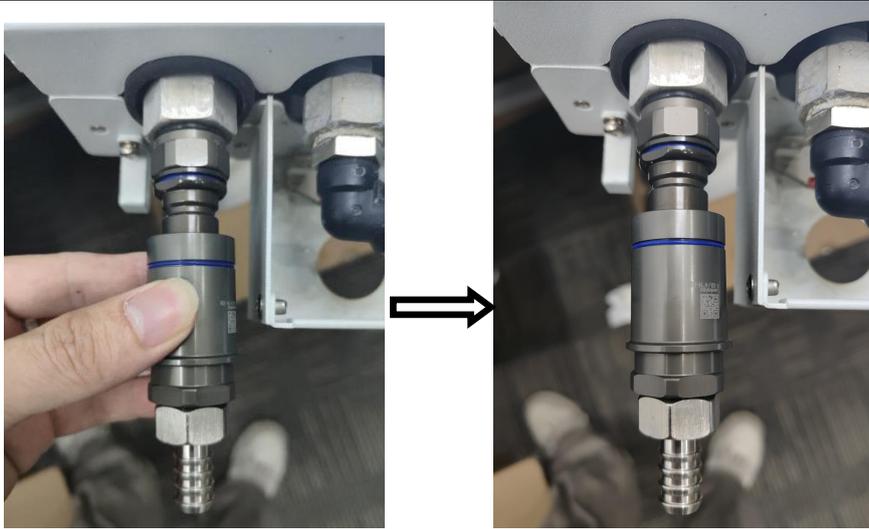
(2) The quick connector is plugged and unplugged as shown in the figure. After normal plugging, the male and female heads are connected, the liquid can flow, and the quick connector will be self-locking. After unplugging, the male and female heads will be blocked in both directions and will not leak. After the insertion is completed, check whether there is a virtual insertion of the quick connector by pulling the hose at the head of the pagoda;

**Note: If not plugged tightly, the server will not work over temperature protection or even damage the water cooling plate, the damaged machine is not guaranteed.**

Insertion indication: Hold the pagoda head end of the quick connector (female head) and push it forward, and not hold the movable ring. Insertion indication: Hold the pagoda head end of the quick connector (female head) and push it forward, and not hold the movable ring.

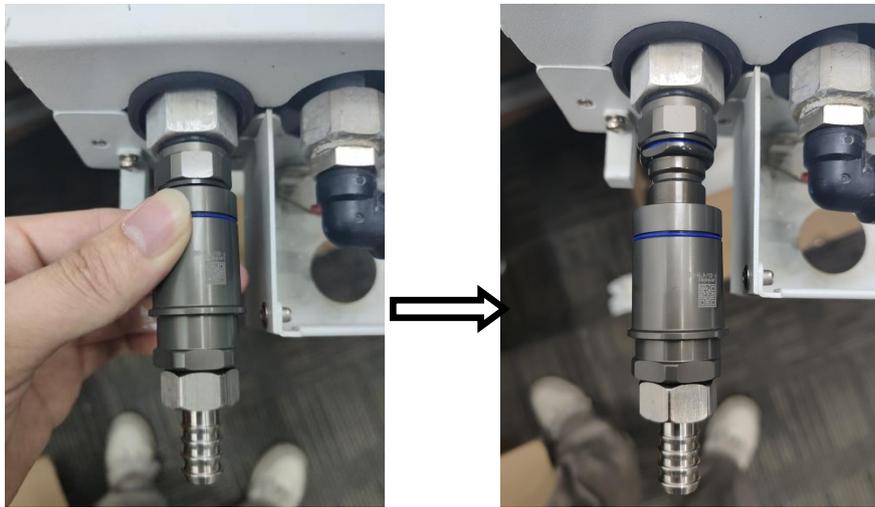


Proper demonstration (connector has been pushed in place) ✓



Error demonstration (connector is not pushed in place) ❌

Disconnection indication: Hold the movable ring in the middle of the quick connector (female head) and pull it back to disconnect.



(3) Please press the connector shrapnel when unplugging the power cord;



## 5. Precautions for powering on and off the server

(1) Before powering on the miner, confirm that the cooling system is circulating normally (the air in the pipeline has been emptied).

**Note: If there is air in the pipe, there is a risk of damage to the circulating pump. The server in and out**

of the joint and the intermediate connection pipe should be investigated. If there is slight seepage, it needs to be dealt with in time, otherwise the server around the leak point has the risk of damage, and the normal operation of the heat dissipation system will be affected for a long time. **Servers damaged as a result are not guaranteed.**

(2) When all the miner of the same heat dissipation system are turned on at the same time, in order to avoid the overheating protection of the mining miner due to the out-of-control water temperature control of the heat dissipation system, it is recommended that the heat dissipation capacity of the heat dissipation system be fully turned on before all the miner are turned on (that is, the temperature control components of the system are fully loaded. , Such as fans, circulating pumps, electric valves, etc. fully open), after the power of the miner rises close to the rated power, the heat dissipation system enters the state of automatic water temperature control and adjustment.

(3) Before the server is put on the shelf, the water circulation will empty the air in the server water cooling plate and fill the cold plate with water; Or one server at a time, and then the next server after the water supply is complete.

**Note: Under normal circumstances, there is no cooling water in the server water cooling plate. When the server is connected to the cooling system, air will enter the pipeline system and cause the water shortage in the system. Therefore, the pipeline system needs to have an exhaust device and automatic liquid replenishment device. In the operating state of the system, it is not possible to access multiple servers without cooling water in a short period of time, because at this time the system will suddenly have a large amount of water shortage, water supply is not timely, and air is mixed into the circulation system, which is easy to cause the pump to run with gas and damage, and may lead to overheating of local chips in other servers, burn the server or affect the computing power. Servers damaged as a result are not guaranteed.**

(4) Check that no condensation exists on the server.

**Note: When the server is not working, if the ambient temperature rises from a lower temperature to a higher temperature, the temperature of the server itself cannot keep up with the ambient temperature change, condensation may occur. If condensation occurs, the server can be heated and dried by other heating methods such as solar irradiation, and the damaged server is not guaranteed.**

(3) After the server is shut down, if the inlet and outlet of the server are disconnected from the heat dissipation system (that is, the server has no water circulation), drain the cooling water inside the server to prevent damage to the cold plate.

**Note: This damaged server is not guaranteed.**

## 6. Accessories Specifications

### 6.1 Accessories introduction

name	Specification	legend	Remark
hydro cooling rack	Effective space: 43U Dimensions (height x width x depth): 2000X800X1000 Water supply and return side interface size: 2" quick-loading chuck		The rack integrates a switch, water supply and return water collector and PDU, which can work for 20 2U miners at the same time.

<p>quick connector (male head)</p>	<p>Interface size: M16X1.0 screw thread; Interface sealing method: sealing ring end face sealing; Color identification: blue;</p>		<p>This connector is the original water inlet interface of the miner</p>
<p>quick connector (male head)</p>	<p>Interface size: M16X1.0 screw thread; Interface sealing method: sealing ring end face sealing; Color identification: red;</p>		<p>This connector is the original water inlet interface of the miner</p>
<p>quick connector (female head、pagoda head)</p>	<p>Interface: pagoda head length 20mm, outer diameter 12mm, matching PTFE tube with inner diameter 10mm; Color identification: blue;</p>		<p>This connector matches the original water inlet connector of the miner. The water supply side of the rack prepared by the customer needs to use this connector to match the water inlet connector of our miner.</p>
<p>quick connector (female head、pagoda head)</p>	<p>Interface: pagoda head length 20mm, outer diameter 12mm, matching PTFE tube with inner diameter 10mm; Color identification: red;</p>		<p>This connector matches the original water inlet connector of the miner. <b>Note: Customers cannot replace this connector with other specifications or other brands of connectors to match the original water inlet connector on the miner.</b></p>
<p>quick connector (female head、screw thread)</p>	<p>Interface: G1/4 screw thread; Interface sealing method: sealing ring end face sealing; Color identification: blue;</p>		<p>This connector matches the original water inlet connector of the miner. The water supply side of the rack prepared by the customer needs to use this connector to match the water inlet connector of our miner.</p>
<p>quick connector (female head、screw thread)</p>	<p>Interface: G1/4 screw thread; Interface sealing method: sealing ring end face sealing; Color identification: red;</p>		<p>This connector matches the original water inlet connector of the miner. <b>Note: Customers cannot replace this connector with other specifications or other brands of connectors to match the original water inlet connector on the miner.</b></p>

Female head pagoda adapter	Specifications: Quick connector female thread G1/4 to $\Phi 12$ pagoda head Material: 304 stainless steel		<b>This connector is matched with the quick connector (female, thread) of the server. When the connector fails, the connector can be directly disassembled and replaced.</b>
power cable	L=400mm, Double head with plug, 4*2mm <sup>2</sup> ;		This power cord is used to connect the power supply of the miner to the PDU on the miner rack, and the plugs at both ends of the power cord match the power interface (socket) of the miner. Note: The interface of the PDU on the rack needs to be a socket interface that matches the plug of the power cord. This power cord is suitable for the use scenarios of the miner rack provided by our company.
power cable	L=1000mm, Single head with socket, 4*2mm <sup>2</sup> ;		The socket interface of this power cord is of the same specification as the power socket interface on the miner
power cable	L=1000mm, single head with plug, 4*2mm <sup>2</sup> ;		The plug of this power cord matches the power interface (socket) of the miner

## 6.2 Accessories Notes

Accessories	legend	Notes
Old style quick connector (set)		The old model and the new model are not compatible with each other, so they need to be distinguished when

New quick connector (set)		purchasing and using to prevent water leakage caused by cross-use
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## 7. Network Configuration

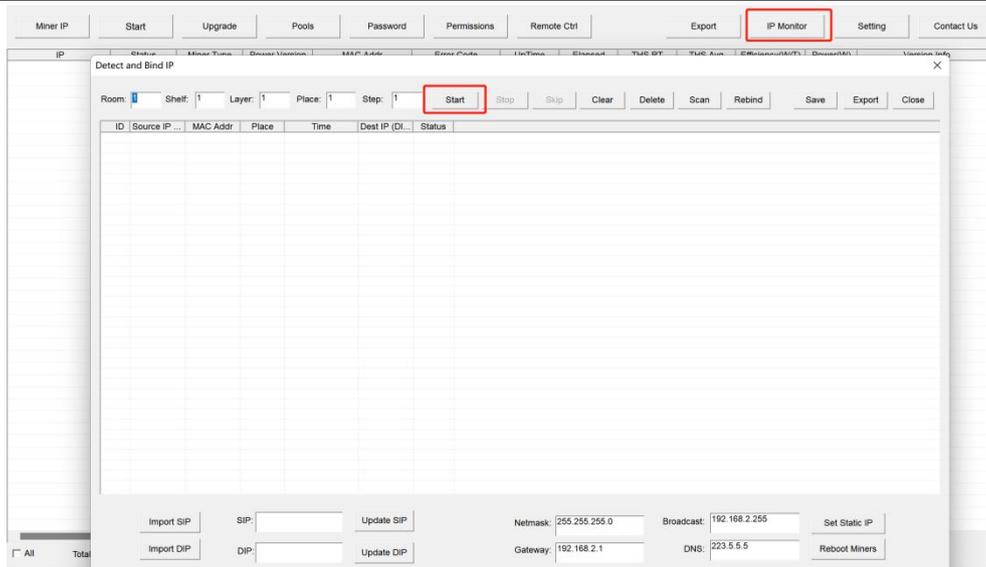
Tool	Num	Use	Remark
PC	1	Miner configuration	
Switch	1	Configuring miner and configuration computer	The switch can connect to the
DHCP/NTP Server/Router	1	1、 Provide a dynamic IP address for the initial power up of the miner 2、 Provide NTP network time for miner	It defaults to DHCP to obtain a dynamic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

## 8. Data Configuration(Configuration on the web page)

### 8.1 Query the dynamic IP address obtained by the miner

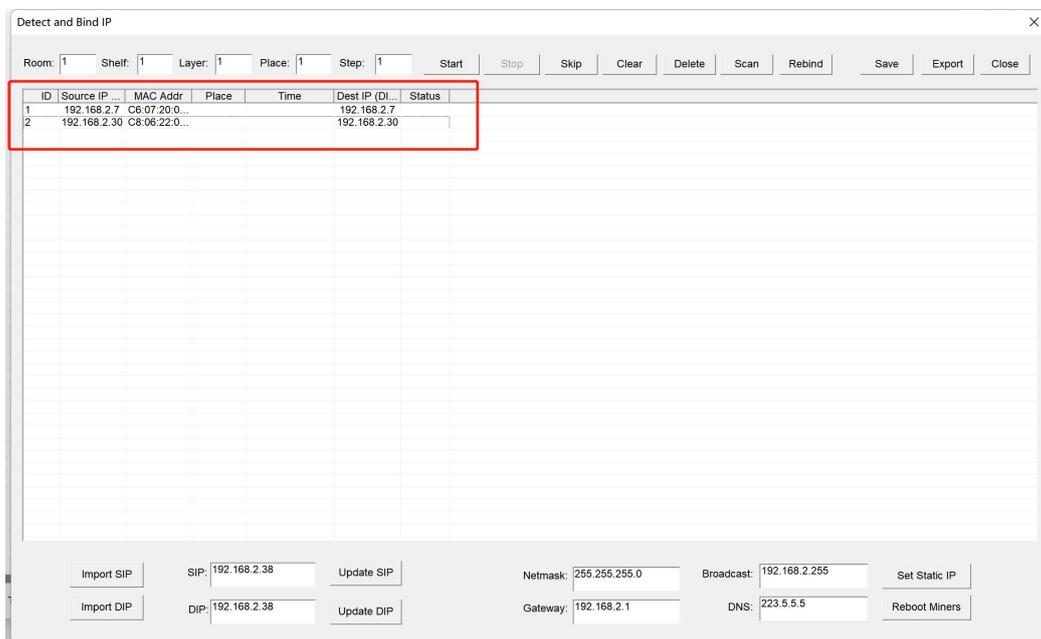
Miner Data Configuration: Connect PC to the same network the miner is located, run WhatsMinerTools software on the PC, select the "IP Monitor" tab, set the room number, rack number and layer number of the rack where the mining miner is located, the location number of the layer, click "Start".



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 function 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 WhatsMinerTools software.



## Notes:

- (1) If all the lights on the panel of the control board are not lit after power-on, please check whether the power supply 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.

## 8.2 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.

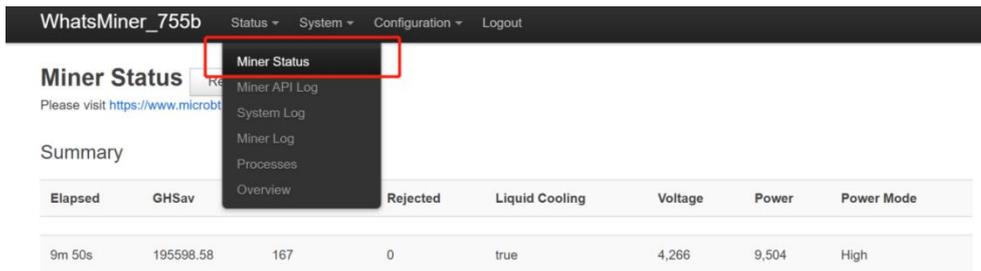
The screenshot shows the 'Configuration' page of the WhatsMiner\_755b interface. The page has a dark header with 'WhatsMiner\_755b' and navigation links for 'Status', 'System', 'Configuration', and 'Logout'. Below the header, there are tabs for 'Pool' and 'Power', and a dropdown menu for 'Interfaces' with 'Miner Configuration' selected. The main content area is titled 'Configuration' and contains three pool configuration sections. Each section includes a 'Coin Type' dropdown (set to 'BTC'), a 'Pool' dropdown, a 'Pool worker' text input, and a 'Pool password' text input. The configurations are as follows:

Pool	Coin Type	Pool	Pool worker	Pool password
Pool 1	BTC	stratum+tcp://stratum.f2pool.com	microblinit	1234
Pool 2	BTC	stratum+tcp://btc-vip-3dcoo7jxu	microblinit	1234
Pool 3	BTC	stratum+tcp://btc.ss.poolin.com	microblinit	1234

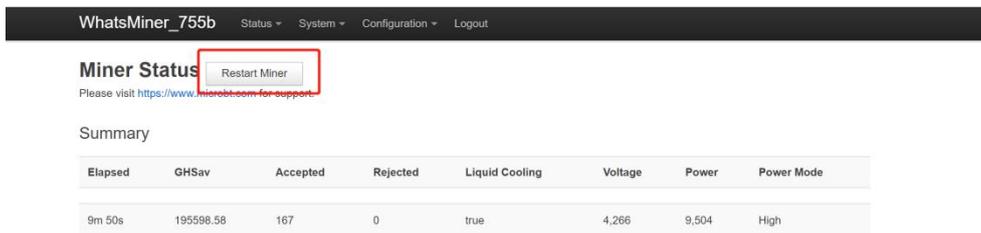
After the configuration of the mining pool is modified, the modified configuration must be restarted after the BTMiner program is restarted or the control panel is restarted.

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

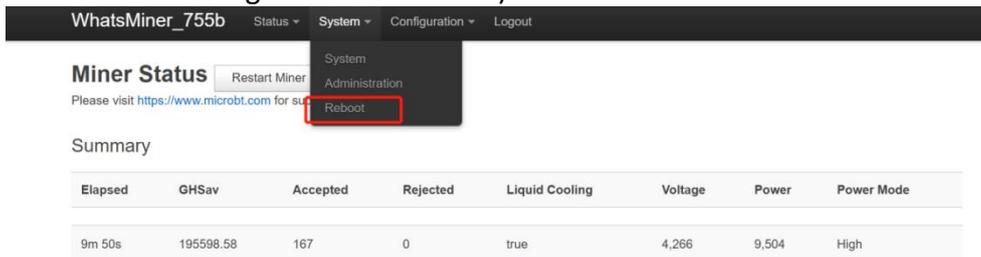
In the miner interface, select: Status - "BTMinerStatus" to enter the BTMiner running status interface.



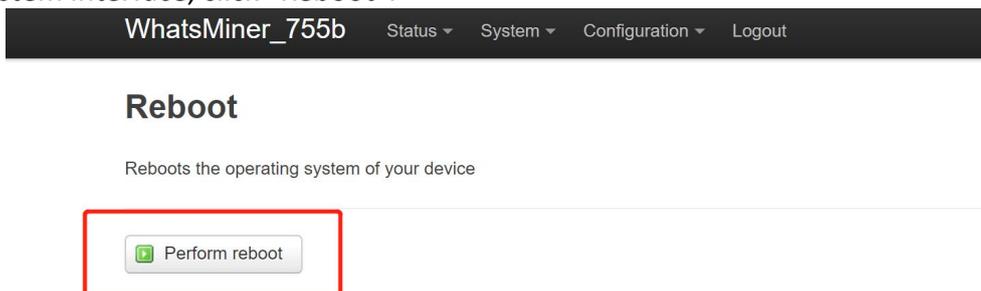
In the BTMiner Status interface, click "Restart BTMiner" to restart the BTMiner process.



(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".

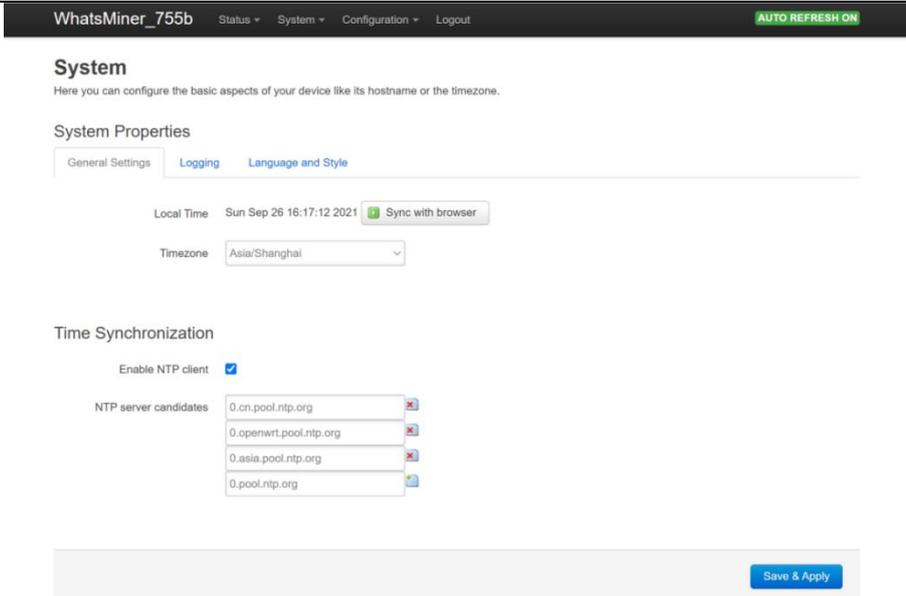


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In the Restart interface, click "Perform reboot" to confirm the restart.

### 8.3 Modify the NTP Synchronization Server Address (optional)

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



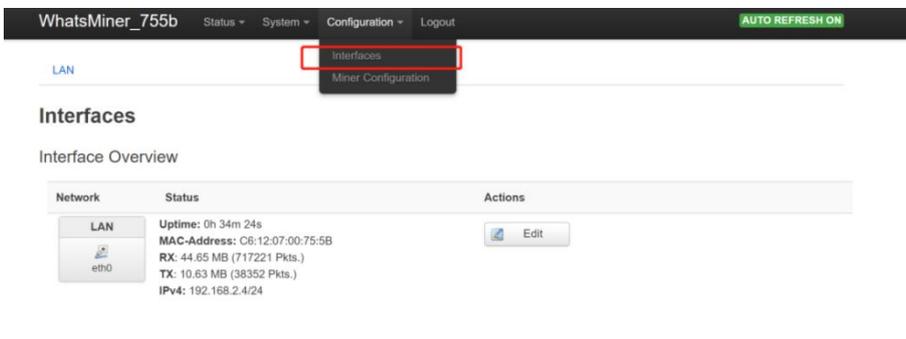
(2) In the BTMiner configuration interface, add or modify the NTP server address. The miner has been configured with four NTP server addresses by default. You can modify or add the NTP server address to the local NTP server address according to the mine situation. Miner.

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

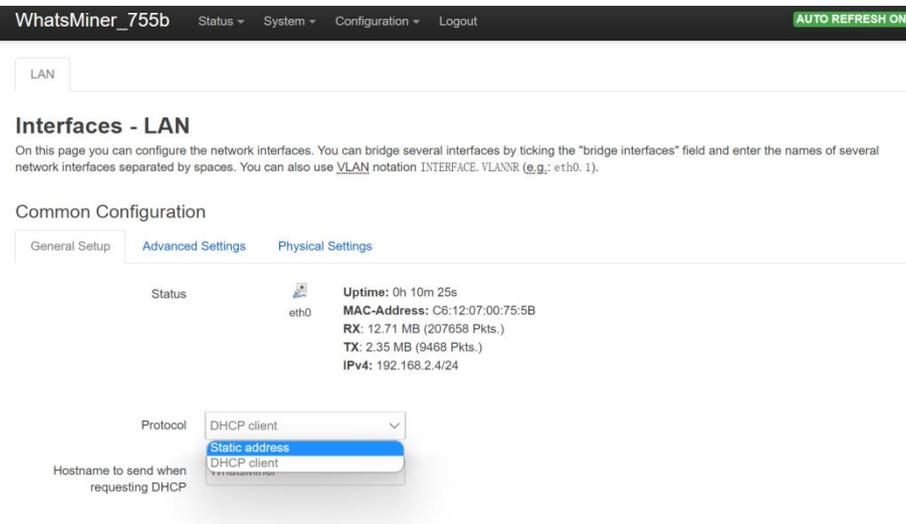
## 8.4 Configuration the Static IP Address (optional)

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

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



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



(4) 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.

WhatsMiner\_755b Status System Configuration Logout UNSAVED CHANGES! AUTO REFRESH ON

LAN

### Interfaces - LAN

On this page you can configure the network interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and enter the names of several network interfaces separated by spaces. You can also use VLAN notation INTERFACE.VLANNR (e.g.: eth0.1).

Common Configuration

General Setup **Advanced Settings** Physical Settings

Status eth0 **Uptime:** 0h 37m 31s  
**MAC-Address:** C6:12:07:00:75:5B  
**RX:** 46.54 MB (746786 Pkts.)  
**TX:** 11.24 MB (41062 Pkts.)  
**IPv4:** 192.168.2.4/24

Protocol: Static address

IPv4 address: 192.168.2.22

IPv4 netmask: 255.255.255.0

IPv4 gateway: 192.168.2.1

IPv4 broadcast: 192.168.255.255

Use custom DNS servers: 223.5.5.5

Back to Overview Save & Apply

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).

## 9. 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** [Restart Miner](#)

Please visit <https://www.whatsminer.com> for support.

### Summary

Elapsed	GHSav	Accepted	Rejected	Liquid Cooling	Voltage	Power	Power Mode
8m 17s	197473.30	355	0	true	3.075	7.378	High

### Devices

Device	Frequency	GHSav	GH5s	GH\$1m	GH\$5m	GH\$15m
SM0	1008	49173.17	49201.99	49186.67	49113.64	49211.99
SM1	1015	49487.98	49354.06	49435.06	49513.79	49507.04
SM2	1015	49262.29	49484.44	49349.20	49345.67	49301.20
SM3	1015	49414.04	49501.40	49479.07	49431.56	49453.08
Total	1013	197317.47	197601.88	197449.99	197404.66	197473.30

Device	Status	UpfreqCompleted	EffectiveChips	Temperature
SM0	Alive	1	80	59.81
SM1	Alive	1	80	59.81
SM2	Alive	1	80	59.75
SM3	Alive	1	80	59.75

### Pools

Pool	URL	Active	User	Status	Difficulty	GetWorks	Accepted	Rejected	Stale	LST
1	stratum+tcp://192.168.31.65:3334	true	microbtinitial	Alive	85536	25	355	0	0	Wed Mar 15 14:56:14 2023

## 10. 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".

## 11. Removal and installation

### 11.1 Control board removal

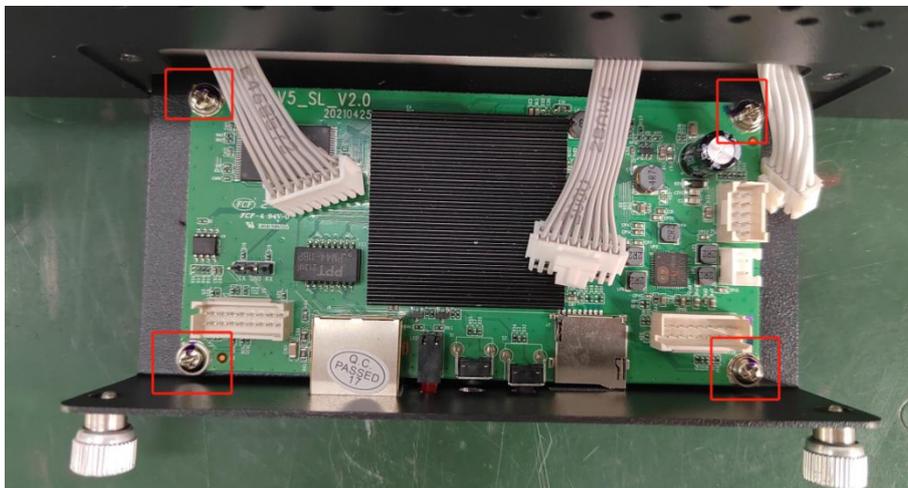
(1) Power off the device first, then unscrew the two screws in the figure below, and pull the control board out.



(2) Pull 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.



## 12. After-sales warranty policy

Integrity is our commitment to the customers. Shenzhen MicroBT Electronics Technology Co.,Ltd (MicroBT) promises customers a one-year warranty period and provides free repair service within the warranty coverage. After purchase, it is deemed as an agreement to this policy. Please note that the following products are not covered under product warranty:

1. Products that do not function properly due to improper operation, including but not limited to products damaged due to improper power supply connection;
2. Products damaged due to failure to use them in accordance with the product manual or product operating parameter requirements, including but not limited to using incorrect parameters such as voltage, current, environmental temperature and humidity, dust particles, liquid pressure, liquid pH value, etc.;
3. Products damaged due to improper use, such as failure to follow the Operation Guide or product manual, including but not limited to improper handling of the machine, haphazard pulling, scraping, lifting, or hitting leading to component missing, unstable connections, open circuit on PCB, and other damages ;
4. Products damaged due to disassembly, modification, re-assembly, or repair without official authorization;
5. Products damaged or insufficient hash rate due to the use of unofficial parts , including but not limited to PSU, control board, fan, and cables etc.;
6. Products damaged due to the use of unofficial software, leading to abnormal hash rate, excessive power consumption, or burnout;
7. Products that have been modified by the customers in terms of operational parameters (such as overclocking);
8. Products damaged due to on-site environmental issues, including but not limited to humid environments, corrosive environments, high-temperature environments, dust particles, abnormal voltage and current (surge, shock, instability, excessively low or high AC voltage), etc;
9. Products with modified, defaced, erased labels or serial numbers, etc.;
10. Products physically damaged due to deformation, oxidation, corrosion, etc., including but not limited to excessive water pressure causing deformation, extrusion deformation due to improper use leading to freezing of the cooling plate (hydro-cooling products), corrosion caused by excessively high or low pH values of liquid medium and the use of non-specified liquids (immersion-cooling products), and damage caused by excessively high liquid medium conductivity;
11. Products damaged due to force majeure, including but not limited to earthquakes, fires, heavy rain, lightning, sandstorms, and other extreme environmental factors;

**Due to specific requirements of hydro-cooling products for the system environment, medium, product voltage, temperature, flow rate, etc., , the following hydro-cooling products are also not covered under our product warranty, in addition to the aforementioned general non-warranty terms:**

1. Products damaged due to the use of cooling liquid that does not meet the requirements specified in the Operating Guide , causing corrosion, blockage, and other damages to various system components.
2. The pipeline system should be equipped with a constant pressure tank and a mechanical pressure relief valve. If the liquid inlet pressure of the product is too high or the pressure is greater than 400kpa, the cooling plate will deform and the product will be damaged.
3. The cooling plate is made of aluminum alloy. If the system components are made of copper, cast iron, carbon steel and other metals or materials that are prone to electrochemical corrosion, the cooling plate or joints will be corroded or blocked, thereby damaging the product.
4. Products damaged due to the entry of impurities caused by a low filter mesh size, resulting in blockage of the cooling plate or joints.
5. If the temperature resistance of the components in the cooling system is below 85°C, it may lead to damage to the system components or even liquid medium leakage, resulting in product damage.
6. Before connecting the cooling system to the rack, using deionized water to (conductivity  $\leq 5\mu$  S/cm) perform multiple cycles of cleaning and filtering on the system pipes to remove impurities such as dust and welding slag. If there are too many residual impurities in the system, it may cause corrosion or blockage of the cooling plate or joints, resulting in product damage.
7. Products damaged due to loose connections in the quick release couplings, resulting in water leakage or over-temperature protection of the product.
8. The pipeline system should be equipped with exhaust and automatic liquid replenishment devices. If air enters the circulating system and the pump operates with air, it may lead to damage to the product.
9. It is necessary to ensure that there is no condensation in the product. If the condensation is not disposed in time, it may result in damage to the product.
10. Within 2 hours after the product is shut down, when the inlet and outlet of product is disconnected from the cooling system (i.e., when there is no liquid circulation in the product), it is essential to drain the liquid from the product to prevent damage to the cooling plate. Failure to dispose this promptly may result in damage to the product.

**This warranty grants customers specific legal rights, and customers may also have other rights that vary by country/region. The interpretation of this warranty policy belongs to MicroBT.**

## **13. Terms of after-sales warranty fees**

During the warranty period, except for situations limited by the warranty, MicroBT promises to repair or, at our discretion to replace the defective products, parts, or components with qualified products, parts, or components. The customer is required to return the defects intact to our authorized service center and bear the associated costs of returning the products, parts, or components to the service center, including shipping and insurance. MicroBT will cover the costs of parts, components, and labor required to perform the repair and restore the products to normal operating conditions. After the repair is completed, the service center will return the products, parts, or components to the customer.

