ANTMINER

S21 Pro+

User Guide

Jan. 2026

BITMAIN

BITMAIN TECHNOLOGIES INC.

www.bitmain.com

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1 Overview

The S21 Pro+ server is one of BITMAIN's latest Air-Cooling server product. This guide set S21 Pro+ as an example introduce various operations in details, and other server operation are the same.

Front View

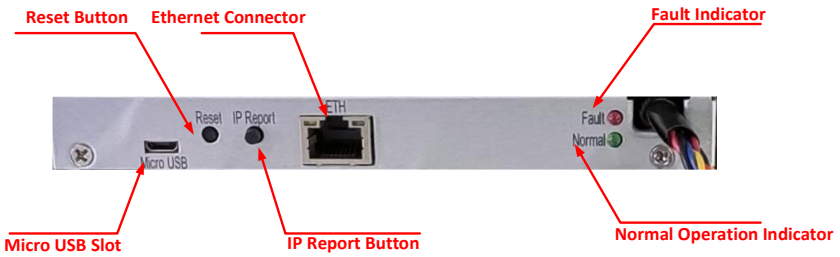
Back View

Caution:

1. **Please note that the equipment must only be placed vertically as shown in the diagram above. Placing it horizontally will increase the failure rate of the equipment!!!**
2. Please refer to the layout above to place your goods in usage in case of any damage.
3. The equipment must be connected to an earthed mains socket-outlet. The socket-outlet shall be installed near the equipment and shall be easily accessible.
4. When the equipment is power off, be sure to power off all power inputs.
5. DO NOT remove any screws and cables tied on the product.
6. DO NOT plug or remove the device when it is powered on.
7. The equipment relies on the PDU being powered down to disconnect the power.

1.1 Server components

The main components and controller front panel of S21 Pro+ servers are shown in the following figure:



Power Supply:

NOTE:

(1) Power supply APW171215 is part of S21 Pro+ server. For detailed parameters, please refer to the specifications below.

(2) One ANTWIRE-20SP power cord is needed and should be connected to PDU.

1.2 Server Specification

Table 1-1 Product Glance

Product Glance	Value		
Model	**S21 Pro+**		
Version	**(245T-10)**	**(234T-10)**	**(220T-10)**
Crypto algorithm/coins	**SHA256 | BTC/BCH/BSV**		
Typical Hashrate, **TH/s**(1-1)	**245**	**234**	**220**
Power on wall @25℃(1-2), **Watt**(1-1)	**3675**	**3510**	**3300**
Power efficiency on Wall @25℃(1-2),**J/TH**(1-1)	**15**		

Table 1-2 Detailed Characteristics of Product

Detailed Characteristics	Value		
Power supply			
Phase	**1**		
Power supply AC input voltage(2-1), **Volt**	**220~277V AC**		
Power supply AC Input Frequency Range, **Hz**	**50~60**		
Power supply AC Input current(2-2), **Amp**	**20**		
Hardware Configuration			
Network connection mode	**RJ45 Ethernet 10/100M**		
Server size (Length*Width*Height, w/o package), **mm**	**450*219*293**		
Server size (Length*Width*Height, with package), **mm**	**630*350*430**		
Net weight, **kg**	**19.78**		
Gross weight, **kg**	**22.72**		
Nosie(2-3)@30℃,**dBA**	**76**		
Airflow(2-4)， **CFM**	**515**	**533**	**550**
Environment Requirements			
Operation temperature,℃	**-20~45**		
Storage temperature, ℃	**-20~70**		
Operation humidity(no condensation), **RH**	**10%~90%**		
Operation altitude(2-5), **m**	**≤2000**		

NOTE:

(1-1) The Hashrate value, Power on wall, and Power efficiency on wall are all typical values, The actual Hashrate value fluctuates by ±3%, and the actual Power on wall and Power efficiency on wall fluctuate by ±5%.

(1-2) Inlet air temperature.

(2-1) Caution: Wrong input voltage may probably cause server damaged.

(2-2) Single-phase AC input 20A.

(2-3) Max condition: Fan is under max RPM(rotation per minute).

(2-4) When the server is dusty or the environment is poorly ventilated, the server airflow will reduce. This may lead to server overheating and potential damage.

(2-5) When the server is used at an altitude from 900m to 2000m, the highest operating temperature decreases by 1℃ for every increase of 300m.

2 Setting up the Server

NOTE:

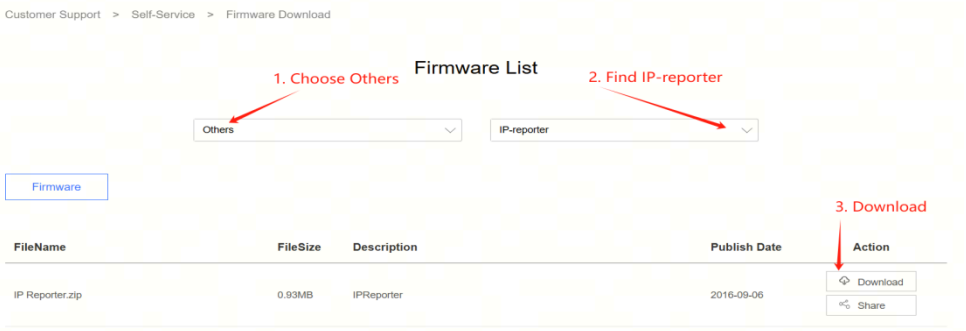
➢ The file IPReporter.zip is supported by Microsoft Windows only.

2.1 Setting up the Server

To set up the server:

1. Go to the following site:

https://file12.bitmain.com/shop-product/firmware/IP%20Reporter.zip.
If the link is invalid, please visit the official firmware download page (https://service.bitmain.com/support/download) and select as shown in the image to download IPReporter.zip.

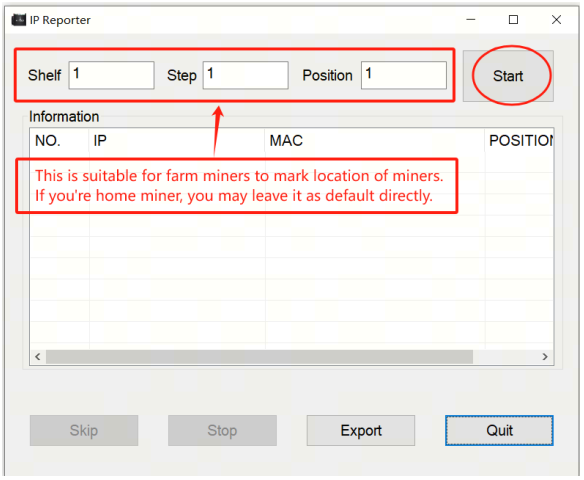


2. Download the following file: IPReporter.zip.
3. Extract the file.

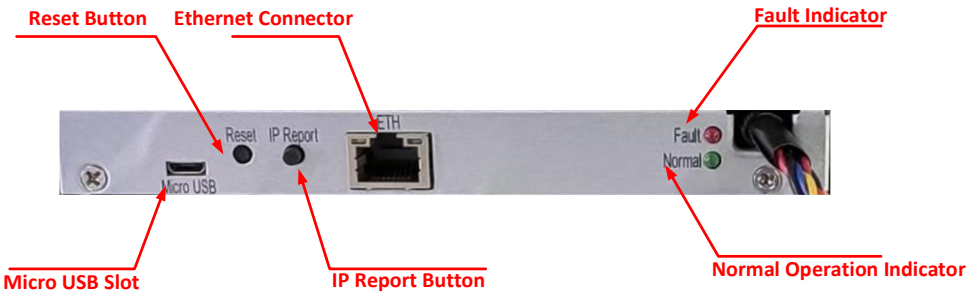
NOTE:

➢ The default DHCP network protocol distributes IP addresses automatically

4. Right-click **IPReporter.exe** and run it as Administrator.
5. Select one of the following options:
   - **Shelf, Step, Position** – suitable for farm servers to mark the location of the servers.
   - **Default** – suitable for home servers.
6. Click **Start**.

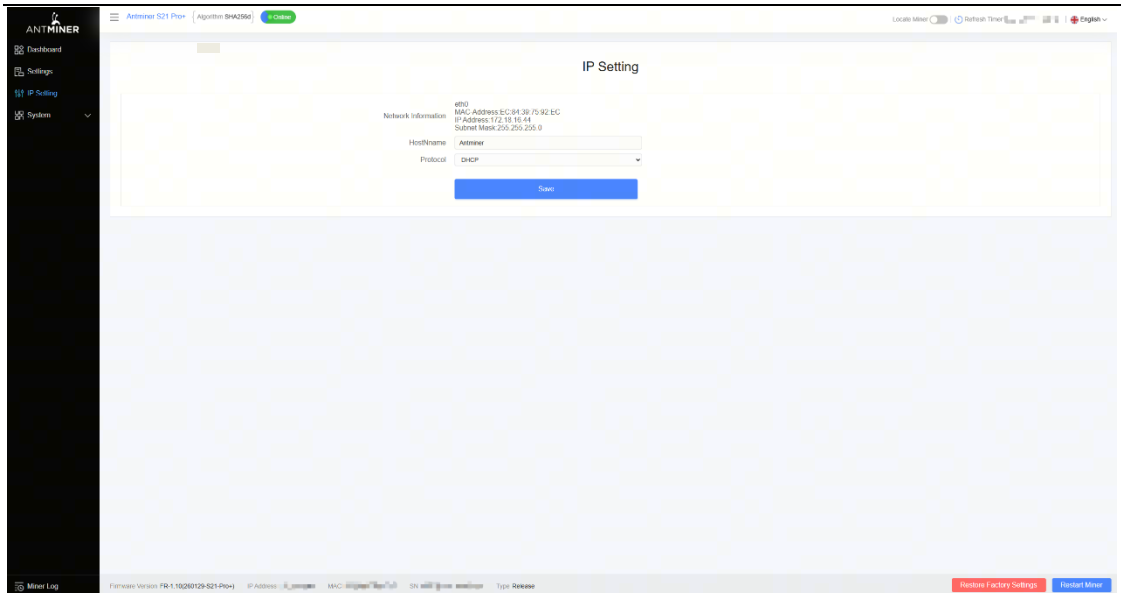


7. On the control panel, click the IP Report button. Hold it down until it beeps (about 5 seconds).



The IP address will be displayed in a window on your computer screen.

8. In your web browser, enter the IP address provided.
9. Proceed to login using **root** for both the username and password.
10. In the Protocol section, you can assign a Static IP address (optional).
11. Enter the IP address, Subnet mask, gateway and DNS Server.
12. Click "Save".
13. Click https://support.BITMAIN.com/hc/en-us/articles/360018950053 to learn more about gateway and DNS Server.

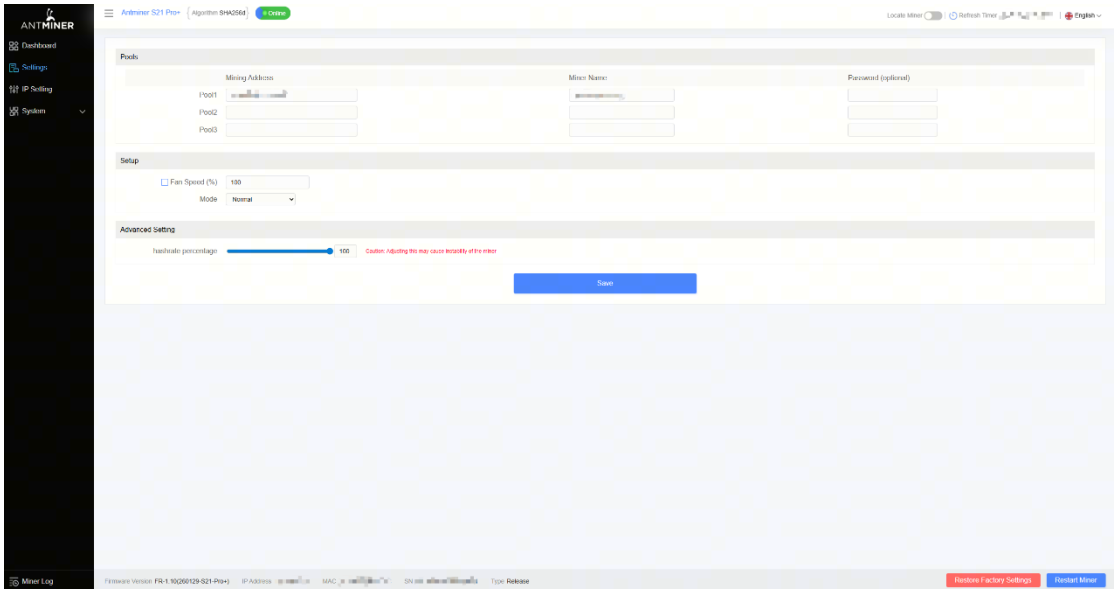


2.2 Configuring the Server

Setting up the Pool

To configure the server:

1. Click **Settings** as below.



2. Set the options according to the following table:

Note:

- Fan speed percentage can be adjusted, but we recommend to keep the default setting. The server will adjust the fan speed automatically if the fan speed percentage has yet been selected.
- There are two working modes of S21 Pro+ server: Normal mode and Sleep mode. The server enters the sleep mode under the condition that the control board is powered while hashboards are not powered.

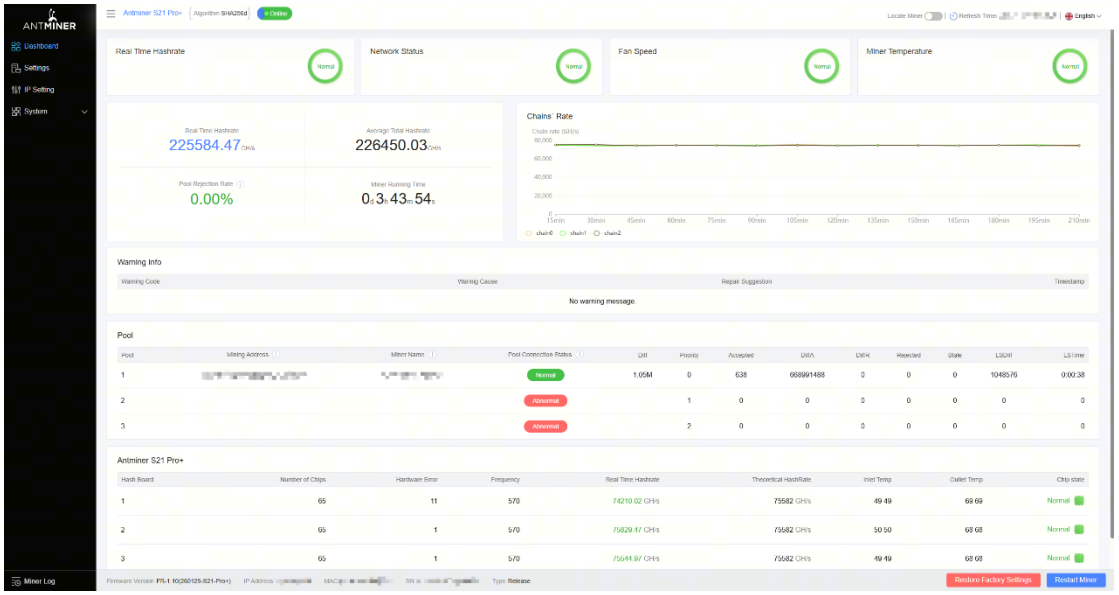
Option	Description
Mining address	Enter the address of your desired pool. The S21 Pro+ server can be set up with three mining pools, with decreasing priority from the first pool (pool 1) to the third pool (pool 3). The pools with low priority will only be used if all higher priority pools are offline.
Name	Your worker ID on the selected pool.
Password (optional)	The password for your selected worker.

3. Click **Save** after the configuration.

2.3 Monitor your Server

To check the operating status of your server:

1. Click **dashboard** marked below to check the server status (taking S21 Pro+ 220T as an example).



2. Monitor your server according to the descriptions in the following table:

Option	Description
Number of chips	Number of chips detected in the chain.
Frequency	ASIC frequency setting.
Real Hashrate	Real-time hashrate of each hash board (GH/s).
Inlet Temp	Temperature of the inlet (°C).

Outlet Temp	Temperature of the outlet (°C).
Chip state	One of the following statuses will appear: ● **The Green Icon** - indicates normal ● **The Red Icon**- indicates abnormal

3. Monitor your server according to the LED indicator light:

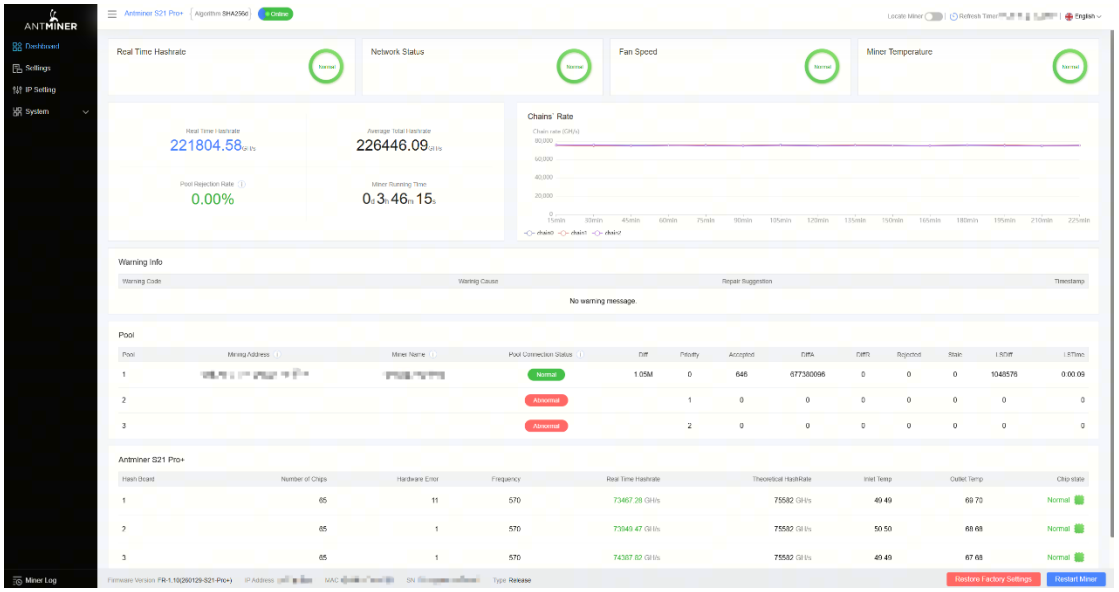
Status	Fault Indicator(RED)	Normal Indicator(GREEN)
Normal	OFF	ON
Over temperature	ON	OFF
Network disconnection	ON	OFF
Fan failure	ON	OFF

3 Administering your Server

3.1 Checking your Firmware Version

To check your firmware version:

1. Enter the backend of your server, find the firmware version at the bottom.
2. Firmware Version displays the date of the firmware your server uses. In the example below, the server is using firmware version FR-1.10(260129-S21-Pro+).

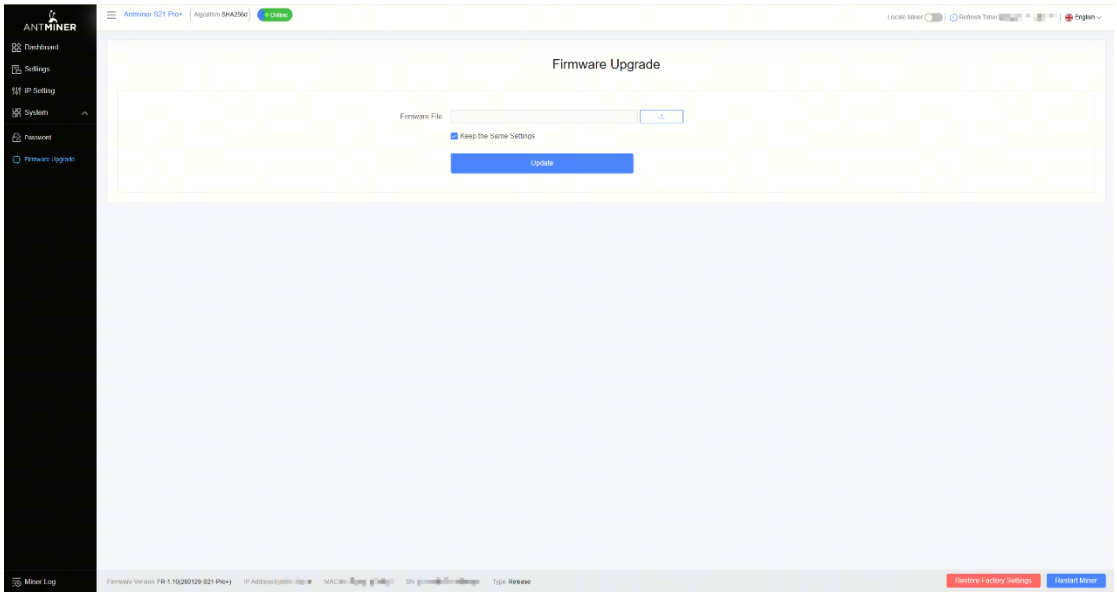


3.2 Upgrading your System

Caution: Make sure that the S21 Pro+ server remains powered during the upgrade process. If power fails before the upgrade is completed, you will need to return it to BITMAIN for repair.

To upgrade the server's firmware:

1. In System, click Firmware Upgrade.

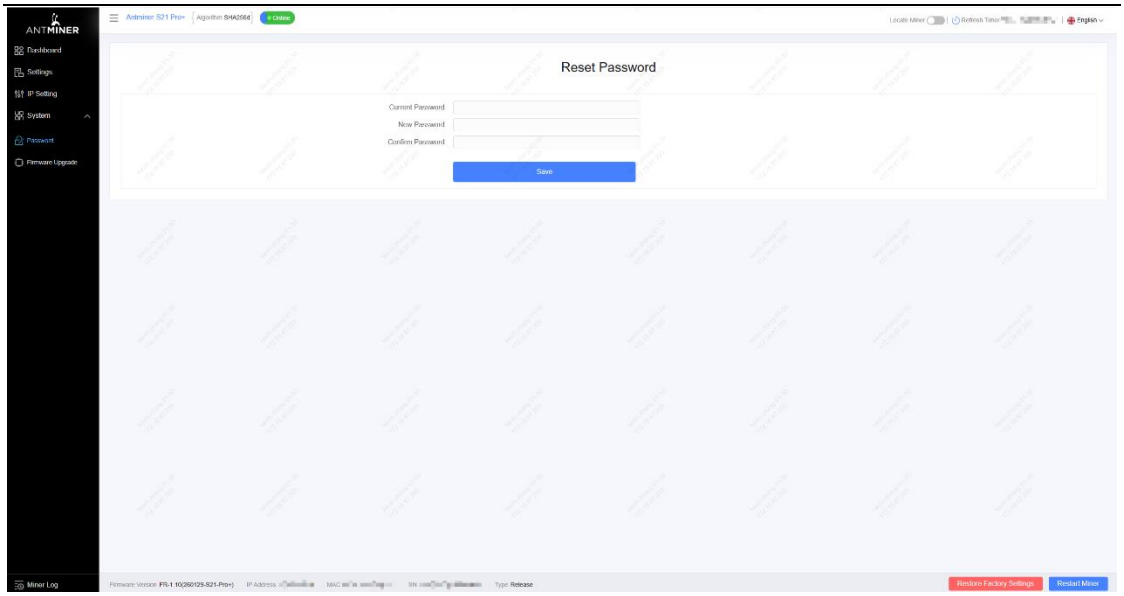


2. For Keep Settings:
   (1) Select "**keep settings**" to keep your current settings (default).
   (2) Unselect "**keep settings**" to reset the server to default settings.
3. Click the button and navigate to the upgrade file. Select the upgrade file, then click Update.
4. When the upgrade is completed, restart the server. It will return to the settings page.
5. Click one of the following options:
   - **Reboot** - to restart the server with the new firmware.
   - **Go Back** - to continue mining with the current firmware. The server will load the new firmware next time it is restarted.

3.3 Modifying your Password

To change your login password:

1. In System, click the Password tab.
2. Set your new password, then click **Save**.



3.4 Restoring Initial Settings

To restore your initial settings

1. Turn on the server and let it run for 5 minutes.
2. On the controller front panel, press and hold the **Reset** button for 10 seconds.

Caution: Resetting your server will reboot it and restore its default settings. The red LED will automatically flash once every 15 seconds if the reset is operated successfully.

3.5 Error Code

Here is the server error code and the corresponding reasons and suggestions:

Error Code	Reason	Suggestion
R:1	Average total hashrate is low	Update the firmware to the latest version, replace the power supply, or return to factory for repair
R1:1	Chain1 is broken or has low hashrate	Check if chain1 connection is normal, update the firmware to the latest version, replace the hashboard, or return to factory for repair
R2:1	Chain2 is broken or has low hashrate	Check if chain2 connection is normal, update the firmware to the latest version, replace the hashboard, or return to factory for repair
R4:1	Chain3 is broken or has low hashrate	Check if chain3 connection is normal, update the firmware to the latest version, replace the hashboard, or return to factory for repair

R8:1	Chain4 is broken or has low hashrate	Check if chain4 connection is normal, update the firmware to the latest version, replace the hashboard, or return to factory for repair
J1:1	Chain1 has bad ASIC	Update the firmware to the latest version, replace the power supply, or return to factory for repair
J2:1	Chain2 has bad ASIC	Update the firmware to the latest version, replace the power supply, or return to factory for repair
J4:1	Chain3 has bad ASIC	Update the firmware to the latest version, replace the power supply, or return to factory for repair
J8:1	Chain4 has bad ASIC	Update the firmware to the latest version, replace the power supply, or return to factory for repair
N:1	Average total hashrate exceeds the sale hashrate too much	Update the firmware to the latest version
N:2	Frequency is reduced too much	Update the firmware to the latest version
V:1	Power initialization error	Replace the power supply, or return to factory for repair
V:2	Power supply is not calibrated	Update the firmware to the latest version, replace the power supply, or return to factory for repair
V:3	Power exceeds specified value	Check the current ambient temperature,replace the power supply, or return to factory for repair

V:4	Power supply voltage error	Check power output wiring, replace the power supply, or return to factory for repair
F1:1	Fan1 is not detected or its speed is low	Check if the fan1 connection is normal, replace the power supply, or replace the fan
F2:1	Fan2 is not detected or its speed is low	Check if the fan2 connection is normal, replace the power supply, or replace the fan
F4:1	Fan3 is not detected or its speed is low	Check if the fan3 connection is normal, replace the power supply, or replace the fan
F8:1	Fan4 is not detected or its speed is low	Check if the fan4 connection is normal, replace the power supply, or replace the fan
J:8	The number of hashboards is less than the design	Check if the hashboard connection is normal, or replace the hashboard
P:1	High temperature protection	Check if the environment temperature is normal, or check if the gel on the hashboard is effective
P:2	Low temperature protection	Check if the environment temperature is normal
J1:4	Chain1 EEPROM data error	Redo the factory test for chain1
J2:4	Chain2 EEPROM data error	Redo the factory test for chain2
J4:4	Chain3 EEPROM data error	Redo the factory test for chain3

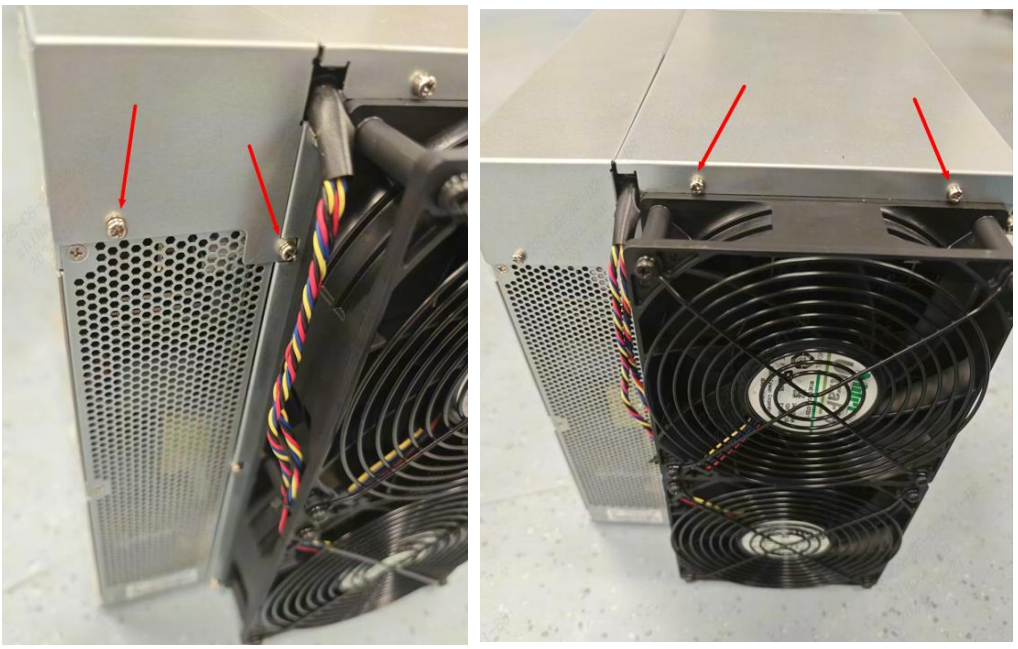
J8:4	Chain4 EEPROM data error	Redo the factory test for chain4
J:6	Temperature sensor error	Check if the hashboard connection is normal, update the firmware to the latest version, replace the hashboard, or return to factory for repair
J1:5	Chain1 PIC error	Check if chain1 connection is normal, update the firmware to the latest version, replace the hashboard, or return to factory for repair
J2:5	Chain2 PIC error	Check if chain2 connection is normal, update the firmware to the latest version, replace the hashboard, or return to factory for repair
J4:5	Chain3 PIC error	Check if chain3 connection is normal, update the firmware to the latest version, replace the hashboard, or return to factory for repair
J8:5	Chain4 PIC error	Check if chain4 connection is normal, update the firmware to the latest version, replace the hashboard, or return to factory for repair
M:1	Memory allocation error	Update the firmware to the latest version, replace the control board, or return to factory for repair
J1:2	The number of chain1 chips is less than the design	Check if chain1 connection is normal, update the firmware to the latest version, replace the hashboard, or return to factory for repair
J2:2	The number of chain2 chips is less than the design	Check if chain2 connection is normal, update the firmware to the latest version, replace the hashboard, or return to factory for repair
J4:2	The number of chain3 chips is less than the design	Check if chain3 connection is normal, update the firmware to the latest version, replace the hashboard, or return to factory for repair

J8:2	The number of chain4 chips is less than the design	Check if chain4 connection is normal, update the firmware to the latest version, replace the hashboard, or return to factory for repair
N:4	Network connection is lost	Check if the network connection is normal

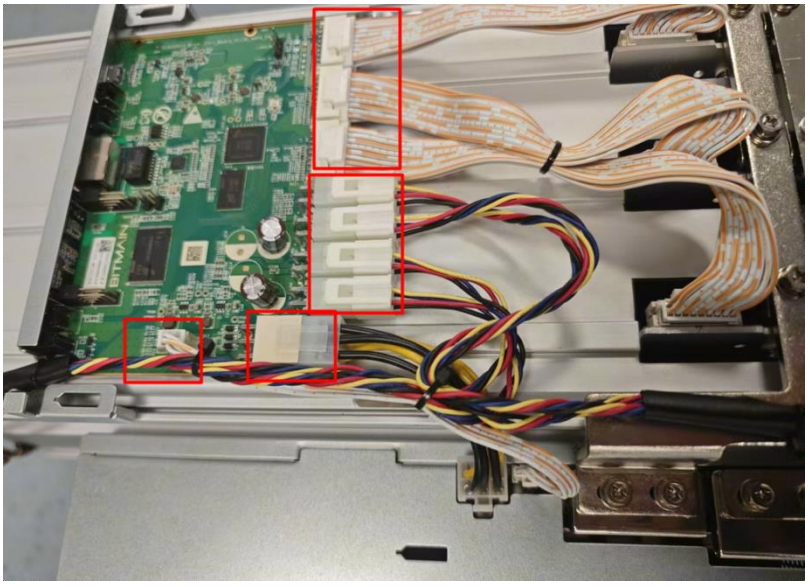
4 Server Disassembly and Installation

4.1 Control Panel Disassembly and Installation

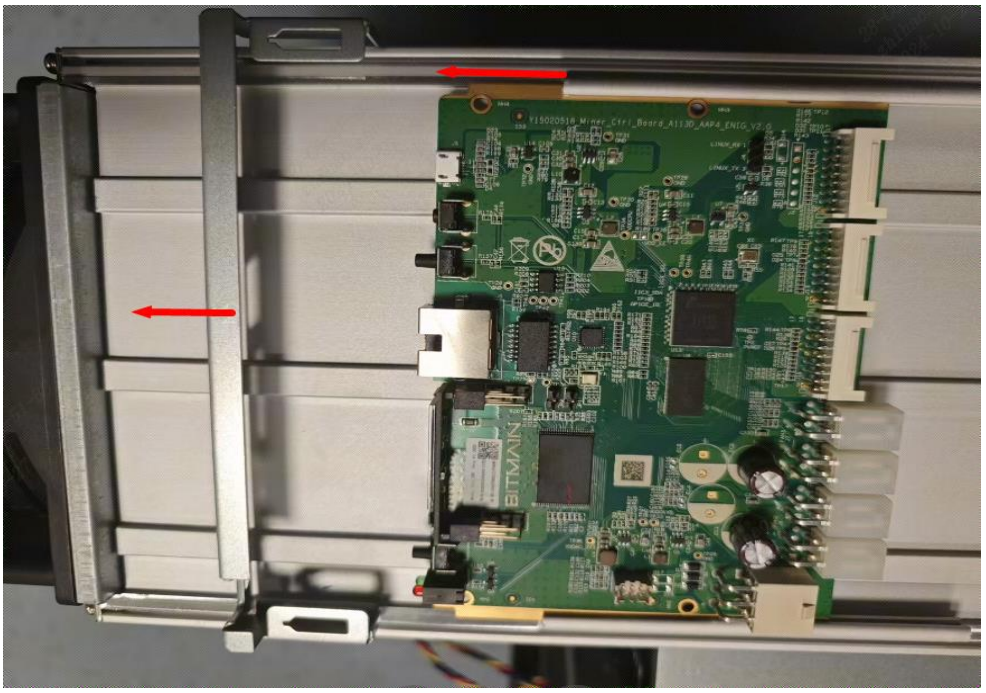
1. Remove the 4 upper cover screws of the server, as shown in the figure：.



2. Remove the two upper covers and unplug a total of 9 cables on the control board, including the operation board arrangement cables, the fan cables, the control board power supply cables and the power supply voltage regulating cables, as shown in the figure：



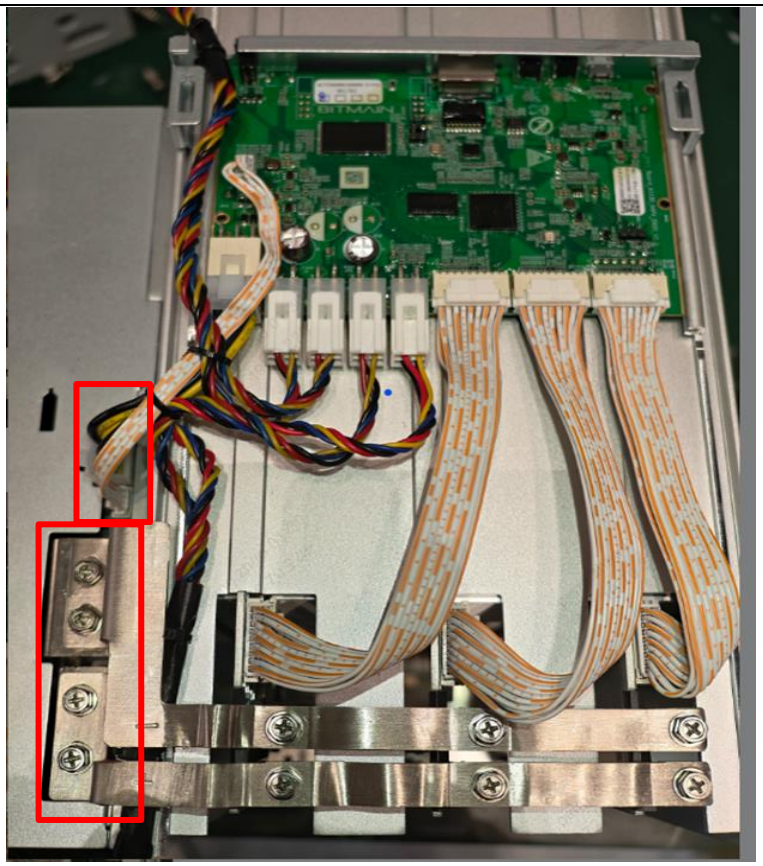
3. Remove 2 screws from the front cover of the control panel, remove the front cover, and push the control panel along the chute, as shown in the figure：



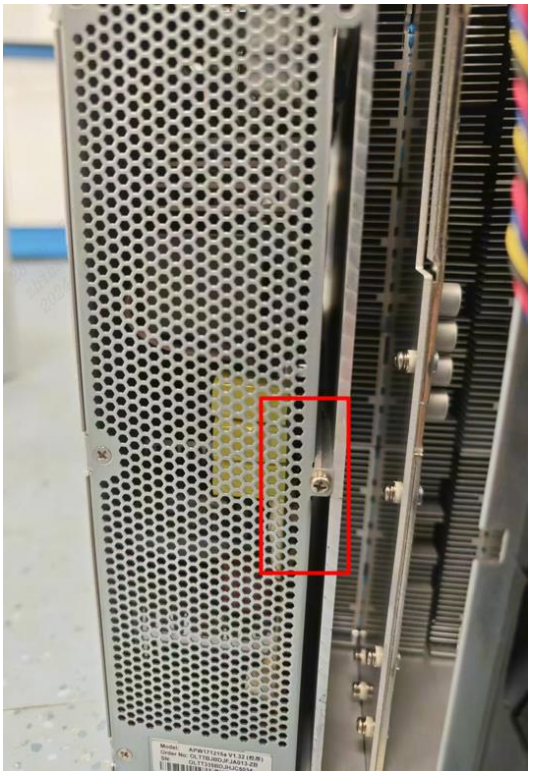
4. The installation steps are opposite to the disassembly steps, and it can be install in the steps of the opposite above order.

4.2 Power Supply Disassembly and Installation

1. Remove the 2 upper caps according to the above method.
2. Unplug the 2 cables connected to the control board and remove the 4 copper screws, as shown in the figure：



3. Remove the power supply and chassis fixing screws, as shown in the figure：

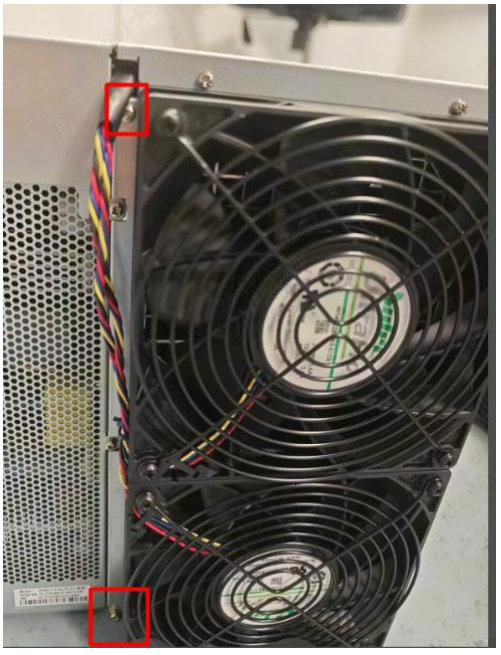


4. Take out APW power supply, as shown in the figure：

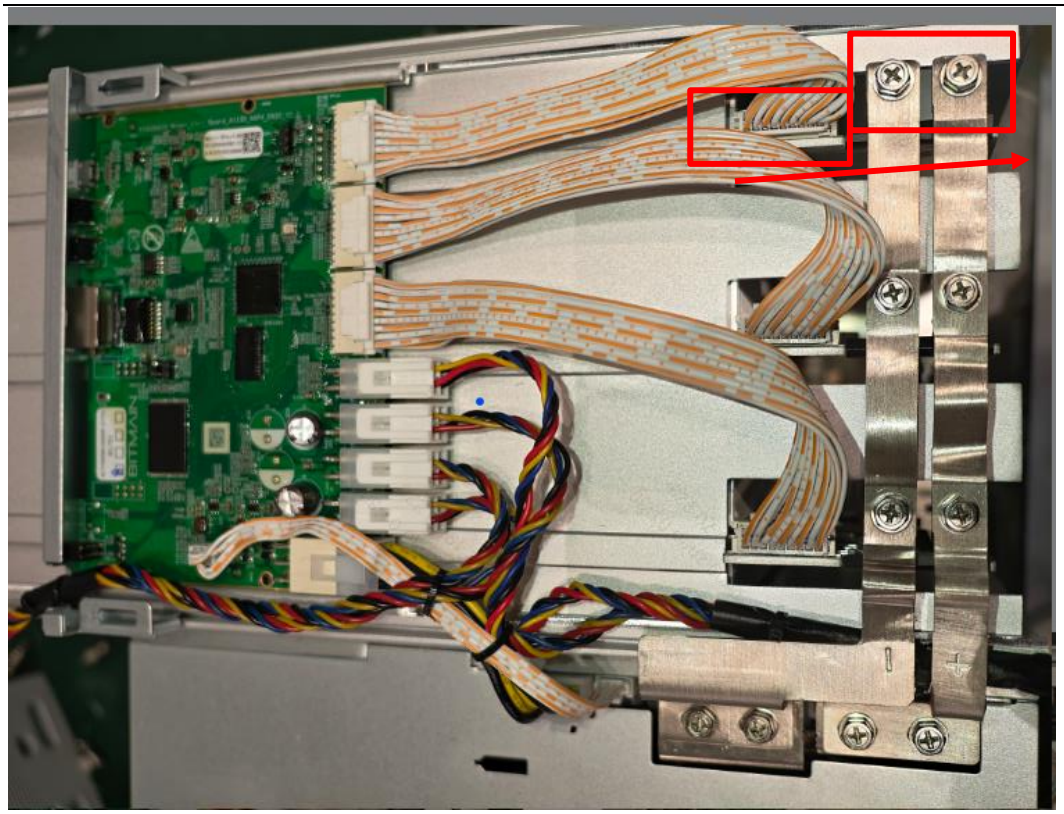
5. The installation steps are opposite to the disassembly steps, and it can be install in the steps of the opposite above order.

4.3 Hash Board Disassembly and Installation

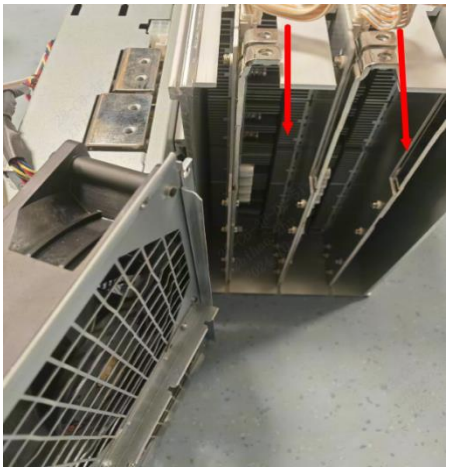
1. Remove the 2 upper caps according to the above method.
2. Remove 4 screws and remove the fan and baffle, as shown in the figure：



3. Pull out the cable of the hash board, unscrew two screws on the copper bar, and the hash board can be pulled out, as shown in the figure：



4. Remove the cables and screws, the rest of the hash board can be extracted, as shown in the figure:



5. The installation steps are opposite to the disassembly steps, and you can install in the steps of the opposite above order.

5 Environmental Requirements

Please ensure that your server operates in accordance with the following environmental requirements.

5.1 Basic Environmental Requirements

5.1.1 Climatic Conditions

Table 5-1 Requirements of climatic conditions

Descriptions	Requirements
Operating Temperature, **℃**	**-20-45**
Operating Humidity, **RH**	**10-90%(non-condensing)**
Storage Temperature, **℃**	**-20-70**
Storage Humidity, **RH**	**10-90%(non-condensing)**
Altitude, **m**	**<2000**

5.1.2 Site Requirements of the Server Running Room

Please ensure that the server operating room is kept away from industrial pollution sources:

(1) For heavy pollution sources such as smelters and coal mines, maintain a distance of more than 5 km.

(2) For moderate pollution sources such as chemical industries, rubber, and electroplating industries, maintain a distance of more than 3.7 km.

(3) For light pollution sources such as food factories and leather processing factories, maintain a distance of more than 2 km. If unavoidable, choose a site in the perennial upwind direction of the pollution source.

Please do not set up your location within 3.7 km of the seaside or a saltwater lake. If this is unavoidable, ensure that the structure is as airtight as possible and equipped with air conditioning for cooling.

5.1.3 Electromagnetic Environmental Conditions

Please keep your site away from transformers, high-voltage cables, transmission lines, and high-current equipment. For example, there should be no high-power AC transformers (>10KA) within 20 meters, and no high-voltage power lines within 50 meters. Additionally, keep your site away from high-power radio transmitters; for example, there should be no high-power radio transmitters (>1500W) within 100 meters.

5.2 Other Environmental Requirements

The server running room shall be free of explosive, conductive, magnetically conductive and corrosive dust. The requirements of mechanical active substances are shown below.

5.2.1 Mechanical Active Substances

Table 5-2 Requirements of mechanical active substances

Mechanical Active Substance	Requirement
Sand, **mg/m³**	**≤30**
Dust (suspended), **mg/m³**	**≤0.2**
Dust (deposited) , **mg/ m²h**	**≤1.5**

5.2.2 Corrosive Gas

Table 5-3 Requirements of corrosive gas

Corrosive Gas	Unit	Concentration
H_2S	**ppb**	**< 3**
SO_2	**ppb**	**< 10**
Cl_2	**ppb**	**< 1**
NO_2	**ppb**	**< 50**
HF	**ppb**	**< 1**
NH_3	**ppb**	**< 500**
O_3	**ppb**	**< 2**
Note: **ppb** (part per billion) refers to the unit of concentration, 1**ppb** stands for the volume ratio of part per billion.		

6 Regulations

6.1 Federal Communications Commission (FCC)

FCC Notice:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Caution:

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

6.2 Industry Canada

CAN ICES-003(A) / NMB-003(A)

6.3 European Community

Warning: Operation of this equipment in a residential environment could cause radio interference.

UAB Bitmain Development Lithuania

Vilnius, Bistrycios g.40-21

EU WEEE

Disposal of Waste Equipment by Users in Private Household in the European Union:

This symbol on the product or on its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your waste equipment by handling it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the shop where your purchased the product.

6.4 Taiwan ROHS

設備名稱：服務器 型號：S21 Pro+						
單元	限用物質及其化學符號					
	鉛	汞	鎘	六價鉻	多溴聯苯	多溴二苯醚
	(Pb)	(Hg)	(Cd)	(Cr6+)	(PBB)	(PBDE)
外殼	○	○	○	○	○	○
電源	—	○	○	○	○	○
風扇	—	○	○	○	○	○
控制板	○	○	○	○	○	○
算力板	—	○	○	○	○	○
線材組件	○	○	○	○	○	○
備考 1.〝超出 0.1 wt %〞及〝超出 0.01 wt %〞係指限用物質之百分比含量超出百分比含量基準值。						
備考 2.〝○〞係指該項限用物質之百分比含量未超出百分比含量基準值。						
備考 3.〝－〞係指該項限用物質為排除項目。						

6.5 FCC Supplier's Declaration of Conformity

Supplier's Declaration of Conformity

Trade Name: BITMAIN ANTMINER

Model Number: S21 Pro+

Responsible Part---U.S. Contact Information

Company: Bitmain Technologies Delaware Limited

Street Address: 100 Spectrum Center Drive, Suite 1255

City, State: City of Irvine, State of CA - California

Zip Code: CA 92618

Telephone number: +1 949-381-9884

Internet contact information: https://www.bitmain.com/

FCC Compliance Statement:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

6.6 EU Declaration of Conformity

BITMAIN

CE **EU Declaration of Conformity**

Manufacturer's Name: BITMAIN DEVELOPMENT PTE. LTD.

Manufacturer's Address: 1 Raffles Place, #36-01 One Raffles Place, Singapore 048616

For the following equipment

Trade Mark: BITMAIN ANTMINER

Product: Server

Model No.: S21 Pro+

is herewith confirmed to comply with the requirements set out in Directive 2014/35/EU, Directive 2014/30/EU, and Directive 2011/65/EU. Compliance with 2014/35/EU and 2014/30/EU are evaluated by applying the following standards:

Safety standard: EN 62368-1:2014+A11

EMC standard: EN 55032:2015+A11:2020(Class A); EN 55032: 2015;
EN 55035: 2017; EN 55035: 2017+A11:2020
EN IEC 61000-3-2: 2019; EN 61000-3-3: 2013+A1:2019

This declaration of conformity is issued under the sole responsibility of the manufacture.

Signature: Xiaoxian Luo **Date:** 2026.01.20

Position/Title: President of Product Division II

7 Warranty

1. A 365-day warranty is provided starting from the shipping date. BITMAIN will cover shipping costs when shipping a replacement unit within the warranty period.

2. The warranty only applies to the original purchaser who purchased the machine directly from BITMAIN. Once the miner is resold, warranty coverage becomes the responsibility of the re-seller.

3. If the user fails to use the product per the given instructions, specifications, and conditions provided or changes the function settings of the unit without BITMAIN's prior consent, BITMAIN will not be liable for any damage arising therefrom.

4. Click https://service.bitmain.com/support/policy for a complete list of the Terms & Conditions that apply to all orders placed on https://shop.bitmain.com.

Note:

- Only new machines are eligible for a 365-day warranty; used machines are not included.