ANTMINER

S9 Hydro Server Installation Guide

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1. Overview

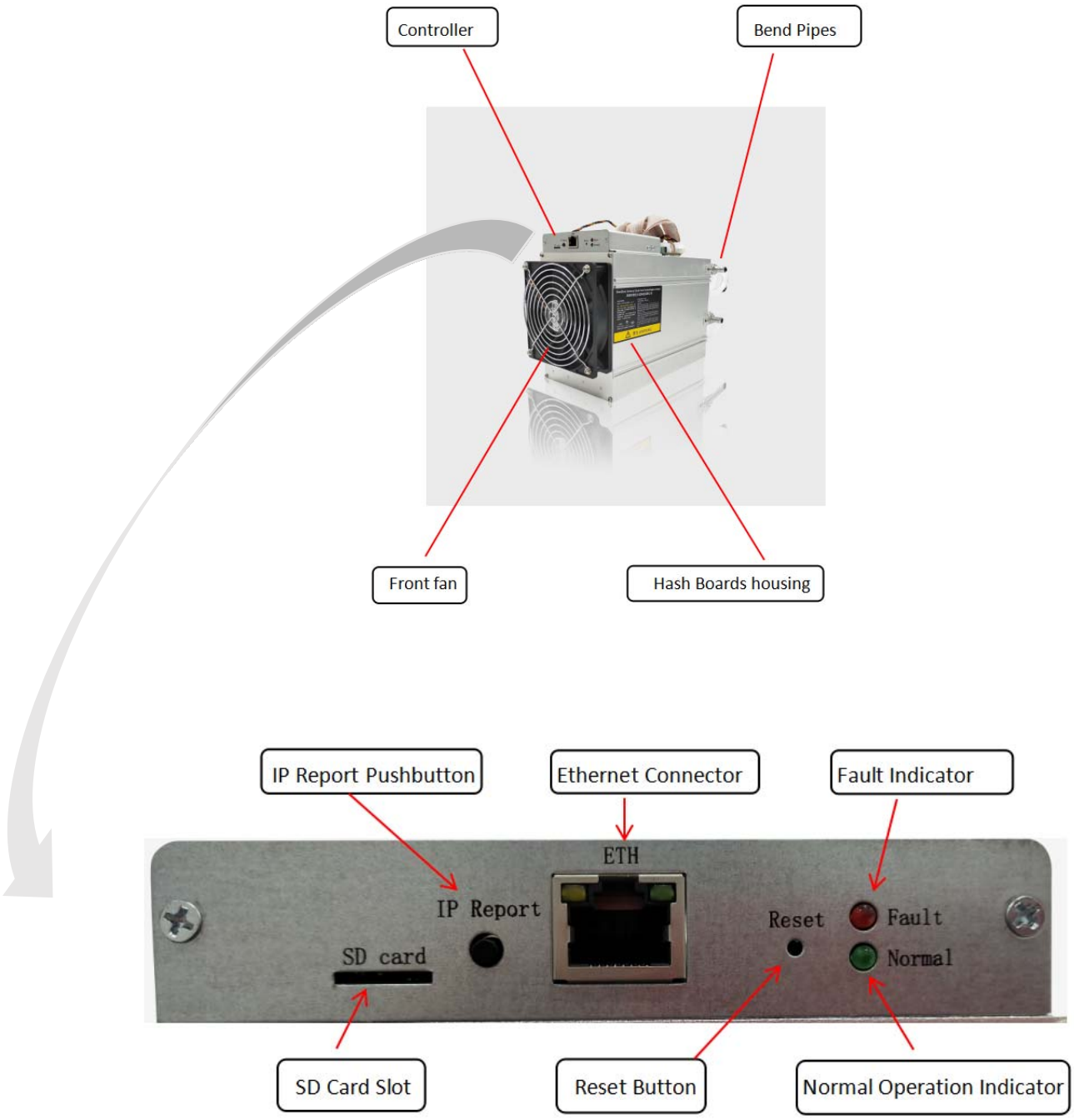
The S9 Hydro server is Bitmain's newest water-cooling product. All S9 Hydro servers are tested and configured prior to shipping to ensure easy set up. This new-style DIY product needs to be assembled，additional radiations and accessories and power supply are necessary. Warranty is not available due to the damage caused by customer's self-removal of the S9 Hydro server.

Note:

1. You must provide your own ATX power supply.
2.The images shown here are indicative only. The actual product may differ.

1.1 S9 Hydro Components

The S9 Hydro server main components and controller front panel are shown in the following figure:



1.2 Specifications

Product Glance	**Value**		
Product model	**S9 Hydro-18.0T**		
Hashrate, **TH/s**	**18.00**		
Power efficiency on wall @**25°C**, **J/TH**	**96.00**		
Adapted power supply model	**APW5**		
Adapted power supply, **Watt / Volt**	**1728W / 220V**		
Detailed Characteristics	**Value**		
	Min	**Typ**	**Max**
Hashrate & Power			
Hashrate, **TH/s**		**18.00**	**18.40**
Power efficiency on wall @**25°C**, **J/TH (1-1)**	**96.0**		**102.7**
Power efficiency on wall @**40°C**, **J/TH (1-2)**	**103.2**		**110.4**
Power on wall, **W** (1-3)	**1728**		**2031**
Power Supply Input Range			
Power supply input voltage, **V AC (2-1)**	**200**	**220**	**265**
Power Supply input Frequency Range, **Hz (2-2)**	**47**	**50**	**63**
Power supply input current, **A (2-3)**		**7.85**	**10.16**
Power Supply Safety Protection			
Output Overcurrent Protection, **A** DC **(3-1)**	**216**		**225**
Low Voltage Input Protection, **V** AC	**90**		**100**
Hardware Configuration			
Quantity of hash chips	**216**		
Quantity of hash boards	**4**		
Networking connection mode	**RJ45 ethernet 10/100M**		
Server Size (Length*Width*Height), **mm(4-1)**	**360*125*190**		
Net weight, **kg (4-2)**		**5.15**	
Noise, **dBA** @25**°C (4-3)**		**45**	**58**
Environment Requirements			
Water inlet temperature, **°C**	**15 (5-1)**		**55**
Water flow, **L/min**	**5 (5-2)**		**15**
Flow system pressure, **kPa**		**50**	**300**
Operation temperature, **°C**	**0**	**25**	**40**
Storage temperature, **°C**	**-40**	**25**	**85**
Operation humidity, **RH**	**5%**		**95%**

(1-1) Server test in 25°C temperature chamber. Heat exchanger and water pump power are included.

(1-2) Server test in 40°C temperature chamber. Heat exchanger and water pump power are included.

(1-3) Typ condition: 25°C, min J/TH, typical Hashrate

Max condition: 40°C, max J/TH, max Hashrate

(2-1) Caution: Supply lower than 200V will cause APW5 protection or damage

Due to APW output power will be reduced by 50% under 200V input, and it is not enough for server

(2-2) 220V AC Power Supply Frequency

(2-3) Typ condition: Min Power on wall, 220V AC supply

Max condition: Max Power on wall, 180V AC supply

(3-1) During 220V AC input

(4-1) Without APW5 & Heat exchanger and water pump, including the bend pipes . APW5 L*W*H(mm) = 260*125*86

(4-2) Without APW5 & Heat exchanger, pump, including the bend pipes, APW5 net weight is 2.5kg

(4-3) Typ condition: 25°C, typical J/TH, typical Hashrate

Max condition: 40°C, max J/TH, max Hashrate

(5-1) Temperature should be no less than 15°C, and at least 3°C higher than dew point

(5-2) The external water source can appropriately reduce the flow according to the actual water temperature. Under this condition, the recommendation is no less than 2L/min.

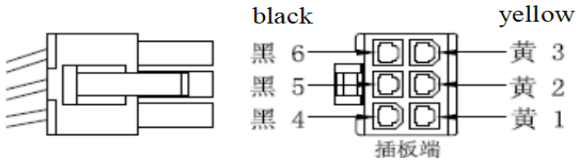
2. Connecting the Power Supply

Note:
APW5 is recommended for your S9 Hydro server which has the advantage of low noise. Please refer to the power supply parameters below when using power supplies purchased by your own to ensure a normal operation of your server.

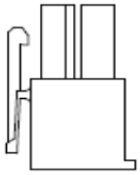
Power Supply Specifications（for reference only）

●12V fixed voltage output adopts PCIE output terminal.

The PCIE output terminal diagram is shown below：



Plugboard



The output cable consists of two colors: the 12V positive terminal is yellow; the negative terminal is black

6PIN PCIE Positive and Negative Output Terminals：

Positive： Yellow 1, Yellow 2, Yellow 3

Negative： Black 4, Black 5, Black 6

Output	DC Voltage	12V
	Minimum Rated Current (220V input)	12V/170A
	Minimum Rated Power (220V input)	12V/2040W
	Ripple & Noise	<1%
	Line Regulation	<1%
	Load Regulation	<1%
	Setup Time	<2S
	Short Circuit Protection Time	>10mS
	6PIN PCIE Terminals	≥13
Input	Voltage Range	200-240V AC
	Frequency Range	47-63Hz
	Power Factor	>0.99(full load)

	Leakage Current	<1.5mA（220V 50Hz）
Protection	Low-voltage Input	80-89V AC
	Output Short Circuit	Yes
	Output Overcurrent	180-200A
	Overheat Protection	Yes
Environment	Operating Temperature	-20-60℃
	Operating Humidity	20%-90%RH(non-condensing)
	Altitude	<2000m

Precautions for Use：

1.Before using the PSU, please ensure that your local voltage and power outlets are compatible with the requirements of the product. Output voltage from the power socket should meet the product's voltage requirement. The leading-out terminal model, polarity and quantity must also be in accordance with the product requirements stipulated in this guide.

2. Please ensure that the PSU appears to be in good shape and has not suffered any damage in transit. If the exterior of the PSU appears damaged, do not use it.

3. Make sure that the ground electrode of PSU is properly grounded to ensure the electricity safety and EMI reduction.

4. As different countries have different power outputs, we do not supply an AC input cable with our PSUs. Customers should purchase an AC input cable output that is compatible with the local power grid plug. The type number of the cable end interface to be connected with the power panel is C13, and the sectional area of copper conductor for cables should not be less than 1 square millimeter.

5.The PSU must be installed in an dust-free environment with good and unobstructed air circulation. Any items blocking the air flow of the PSU is prohibited and under no circumstances should the PSU be installed in an enclosed place. Installation also should not be done in environment where there is high condensation or high level of salt content and humidity in the air.

6. The correct way to use the PSU is to connect the output wire terminal, and then connect the input cable after the load and PSU output terminals are connected. Either connecting or disconnecting the output terminals are forbidden when the PSU is powered on. Voltaic arcs generated by excessive DC can damage DC output terminals and pose a fire hazard.

7.Maintaining a good working environment and derating can greatly prolong the lifespan of PSU. It is generally recommended that the load power not exceed 90% of the rated power of the PSU and the temperature not exceed 50 degrees Celsius. It should be used in a dust-free, non-polluted area where there is low humidity and low salt content in the air. The derating method will also allow the PSU to work at a higher efficiency point, which can help in electricity savings.

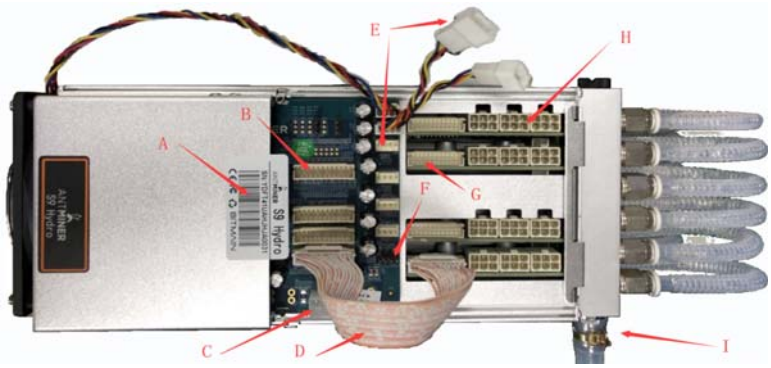
Thirteen PCI-e connectors are located at the top of the S9 Hydro server for connecting the PSU as follows:

- Twelve PCI-e connectors for the hash boards. Each hash board has three PCI-e connectors.
- One PCI-e connector located on the controller.

Each hashboard must be powered by the same PSU to prevent possible damage and instability.

To connect the power supply:

1. Connect PSU power cable connectors to each of the twelve PCI-e connectors on the top of the S9 Hydro server, ensuring that each hash board is powered by the same PSU.



A、SN Label B、Controller Ribbon cable Connector C、Controller PCI-e Power Connector

D、Ribbon cable E、Fan Connector F、Pump Connector

G、Hash Boards Ribbon cable Connector H、Hash Boards PCI-e power Connector I、Pipe Connector

2. Connect a PSU power cable connector to the S9 Hydro PCI-e connector on the controller.
3. Connect the network cable to the ETH port.
4. To power up your S9 Hydro server, connect the PSUs to the power wall outlet.

If you are using more than one PSU,power up the PSU connected to the controller AFTER you have Powered up the other PSU(s).

3.Connecting S9 Hydro Hex to Server

Note: S9 Hydro Hex is recommended for your S9 Hydro Server, the connection procedures are as blow. Please refer to the parameters of radiators and accessories in the end of this section when using radiators and accessories purchased by your own to ensure a normal operation of your server.

A、Fan connection

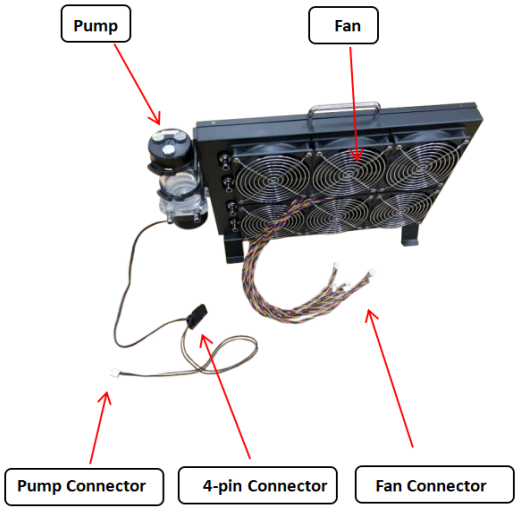
Four 4-pin connectors of the control board and two connectors separated by one line will be connected with 6 fans. The plug must be inserted in place, the fan line order does not matter as long as it is connected.

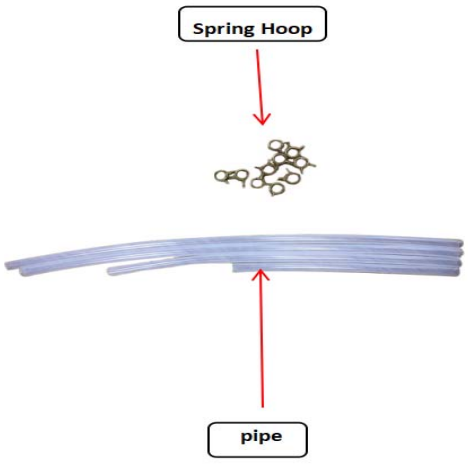
B、Pump connection

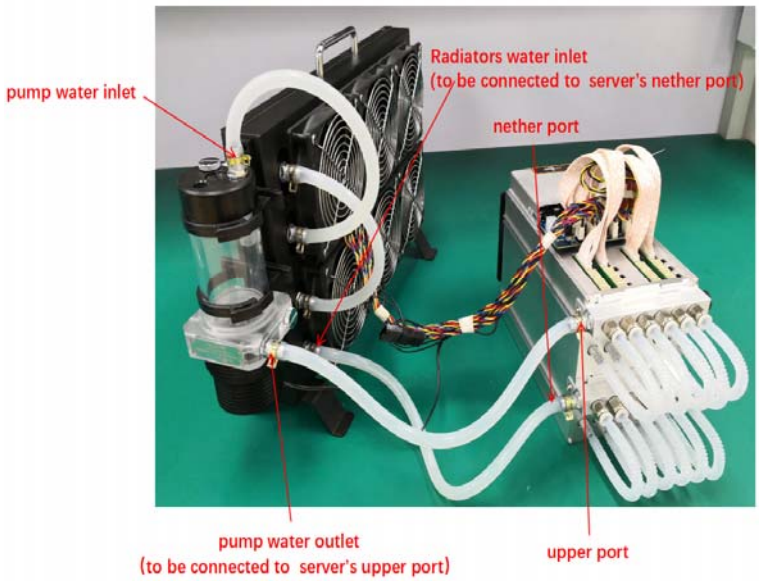
The control board has a black 4-pin connector to which the pump must be connected.

C、Connection of pipelines

The S9 Hydro pump should be connected in series with the pipe, and the joint should be clamped with a buckle. The figure below shows the recommended connection.







Attention: The position of pipes may be slightly adjusted and it won't have any effect on usage.

For better heat dissipation effect, it is recommended to connect pipes in this way.

Radiators & Accessories Specs（for reference only）	
Quantity of fans	≥6
Fan speed, RPM	≥3500
Airflow, CFM	≥124
Power of fan, W/pcs	≤10
Heat exchanger size, mm	≥360*120*25
Quantity heat exchangers	≥2
Quantity of pumps	1
Water flow, L/min	5~15
Hydrostatic pressure, KPa	50~300
Power of pumps, W	≤40
Fan connection mode	4-Pin ,DIP,pitch2.54mm. pin1:GND,pin2:12V,pin3:FAN_SPEED,pin4:FAN_PWM
Pump connection mode	4-Pin ,DIP,pitch2.54mm. pin1:GND,pin2:12V,pin3:blank,pin4:blank
Water tube(ID)	8mm
Inlet&outlet	G1/4

4.Pump Water-infusion

Note:
S9 Hydro Hex is recommended for your S9 Hydro Server. Please refer to the pump water-infusion requirements if S9 Hydro Hex is used for your server.

A.Water quality

Water Quality Requirements

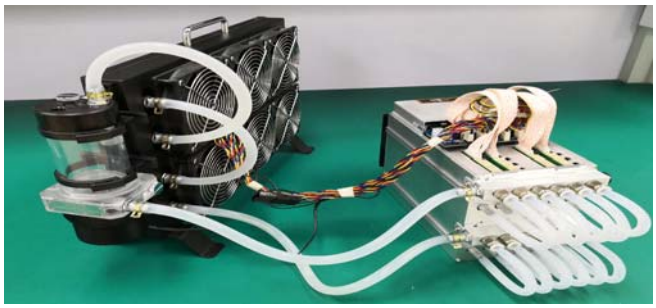
No	Project	Standard	Remark
1	Total Microbial Count	＜10^5CFU/mL	reflection of system microorganism controlling condition
2	Turbidity	＜10NTU	reflection of suspended solids condition in water system
3	PH Value	6~9	indirect reflection of microorganism condition
4	Conductivity	＜1 mS/cm	reflection of ionic concentration in water system

In order to support the long-term optimum operations of the water cooling system, we recommend that the water quality used should meet the requirements as stated in the table above.

Water-cooling plates inside the server are welded parts made of aluminum, which have been cleaned before roll-out. Water in some servers may appear to be turbid after running for a period of time. Kindly note that this will not affect on the overall cooling system and long-term operation of the system.

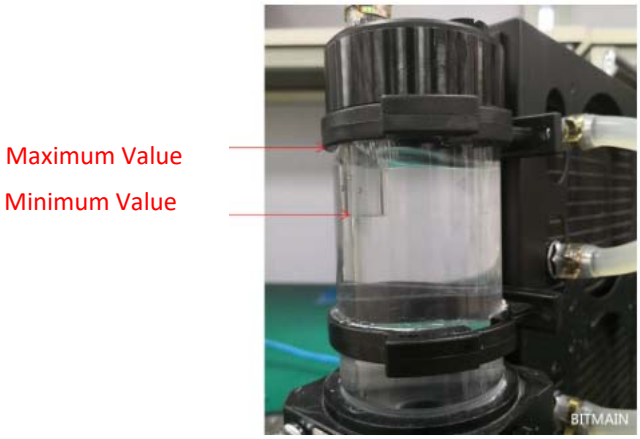
B. Keep adding water. Since water is needed in both the server and the radiators, water in the pump will be reduced when the server is mining. Always remember to add water when starting the server to ensure that the water level is sufficient for optimal heat dissipation.

C.S9 Hydro server and radiators can be tilted left and right during water infusion which helps to ventilate the air.



After water circulation is running normally, S9 Hydro server and radiators can be slowly tilted left and right to help the residual air bubbles inside those two equipment to be discharged smoothly. This action can help to increase the cooling efficiency of the system.

D.Liquid Level: the standard level is as stated in the picture below. Please replenish the liquid promptly if the liquid level falls below the minimum value marking.



5. Setting Up the Server

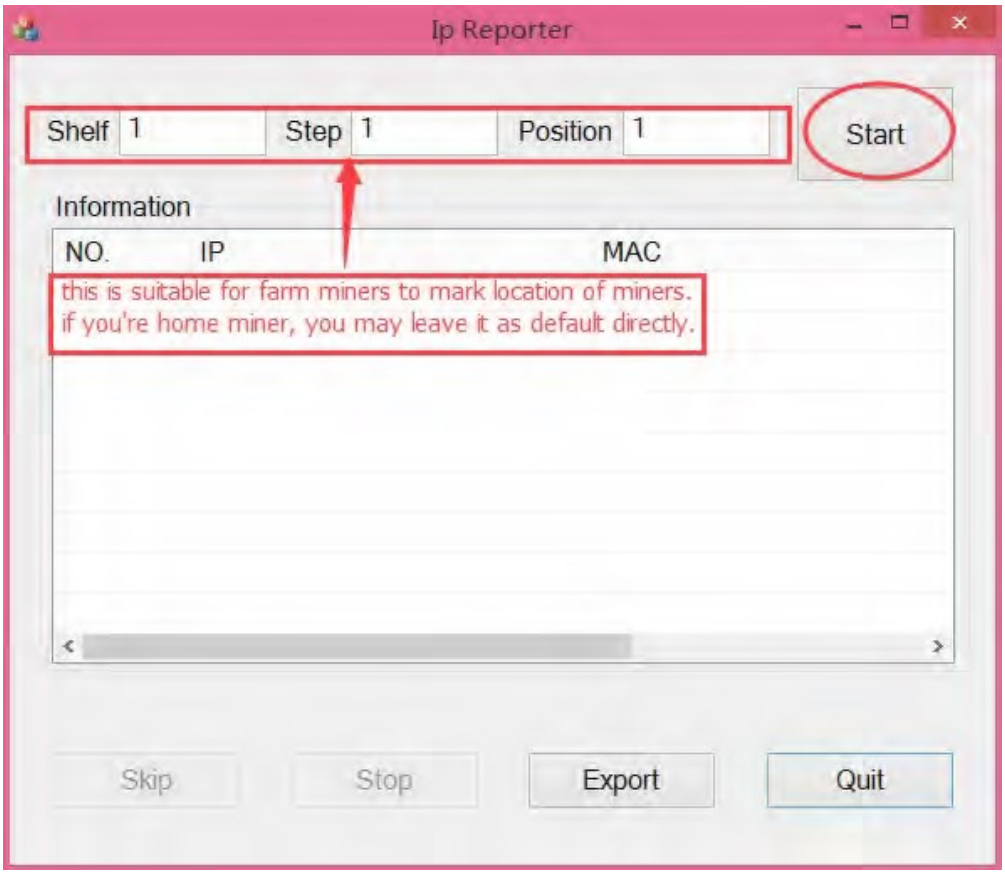
To set up the server:

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

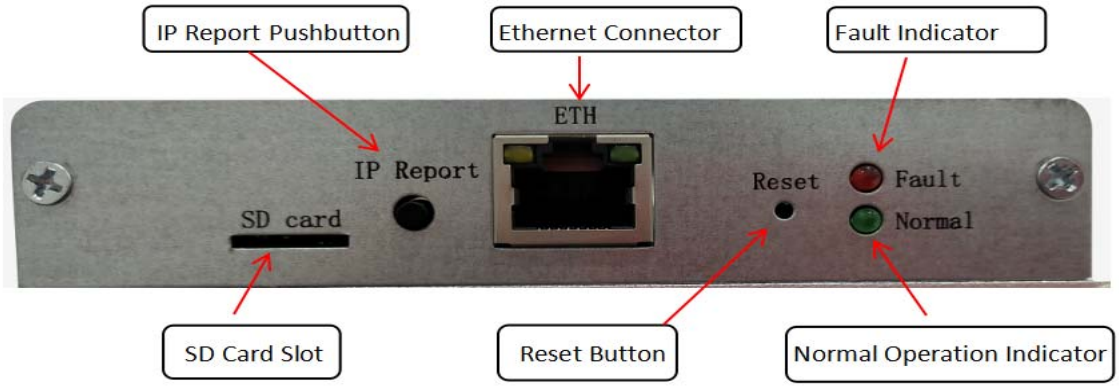
1. Go to the following site:
https://shop.bitmain.com/support.htm?pid=00720160906053730999PVD2K0vz0693
2. Download the following file: IPReporter.zip
3. Extract the file.

The default DHCP network protocol distributes IP addresses automatically.

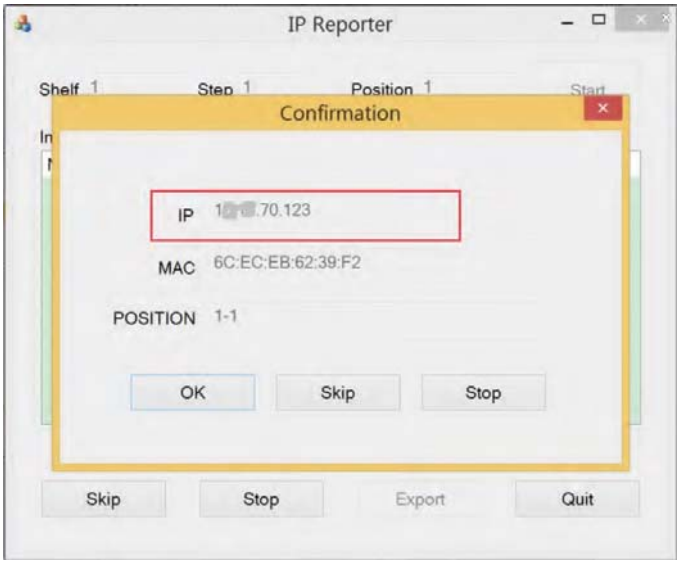
4. Right-click **IPReporter.exe** and run it as Administrator.
5. Select one of the following options:
   - Shelf, Step, Position – suitable for farm servers to mark the location of the servers.
   - Default – suitable for home servers.
6. Click **Start**.



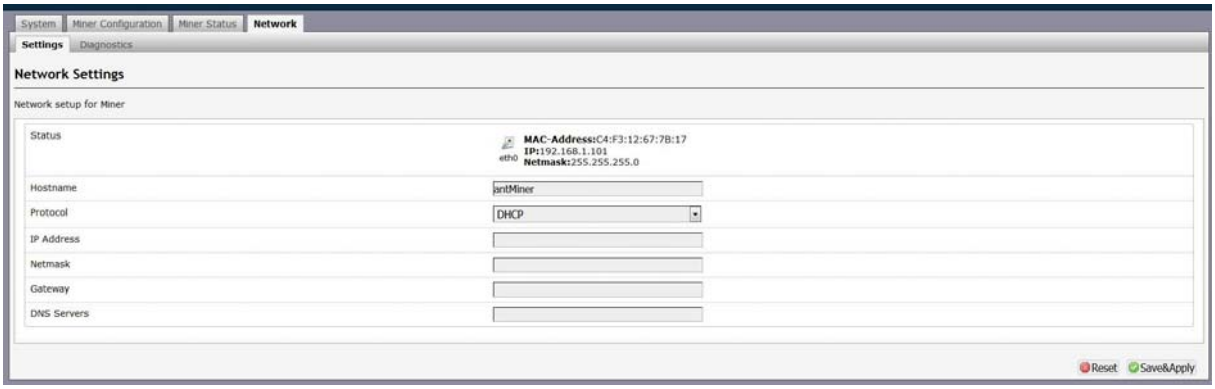
7. On the controller board, click the IP Report button. Hold it down until it beeps (about 5 seconds).



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 Network section, you can assign a DHCP IP address (optional).
11. Click **Save & Apply**.

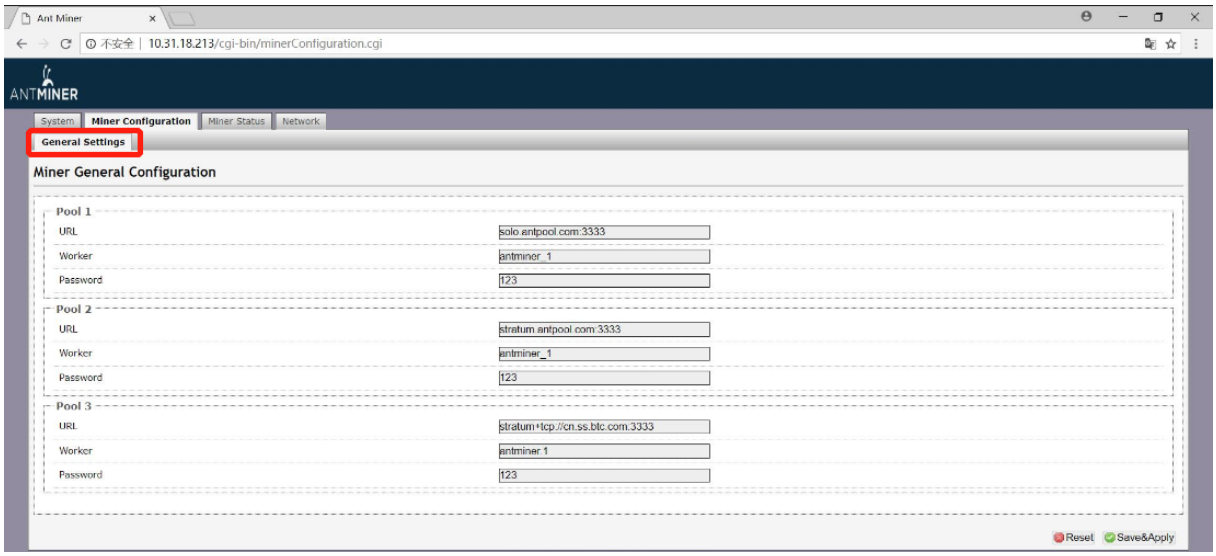


6. Configuring the Server

Setting Up the Pool

To configure the server:

1. click **General Settings**.



2. Set the options according to the following table:

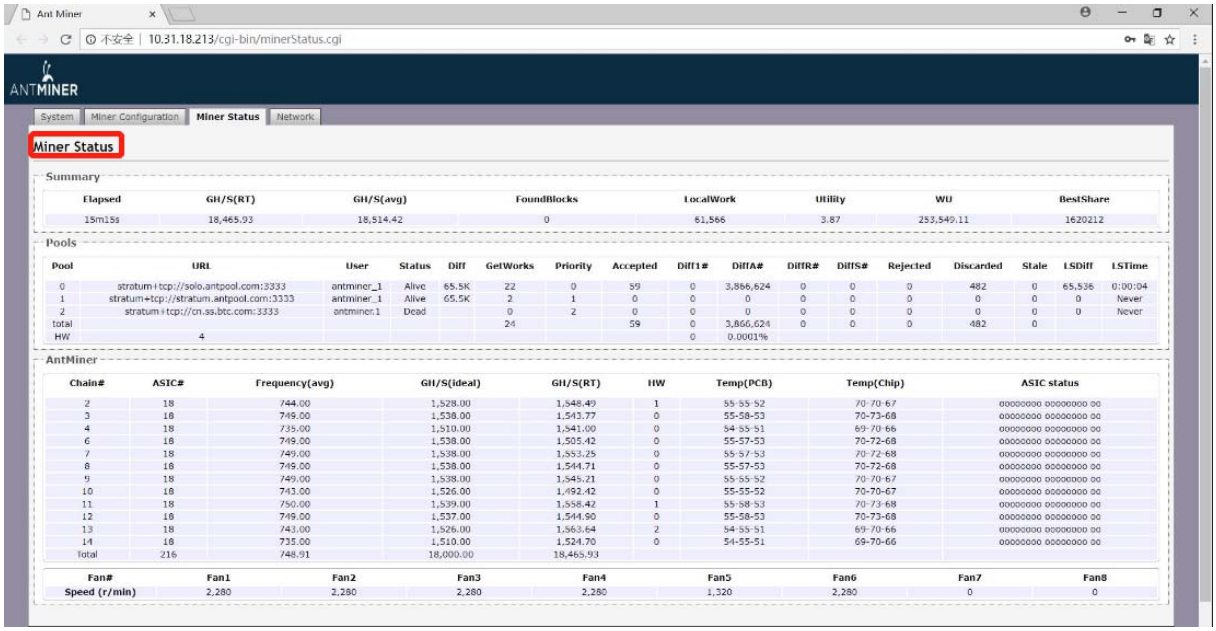
Option	Description
Pool URL	Enter the URL of your desired pool. The S9 Hydro server can be set up with three mining pools, with decreasing priority from the first pool (pool 1) to the third pool (pool 3). The pools with low priority will only be used if all higher priority pools are offline.
Worker	Your worker ID on the selected pool.
Password	The password for your selected worker.

3. Click Save & Apply to save and restart the server.

7. Monitoring Your server

To check the operating status of your server:

1. Click the status marked below.



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

Option	Description
ASIC#	Number of chips detected in the chain.
Frequency	ASIC frequency setting.
GH/S(RT)	Hash rate of each hash board (GH/s)
Temp(PCB)	Temperature of each hash board (°C).(Applied only to server with fixed frequency)
Temp(Chip)	Temperature of the chips on each hash board (°C).
ASIC status	One of the following statuses will appear: ● **O** - indicates OK ● **X** - indicates error ● **-** - indicates dead

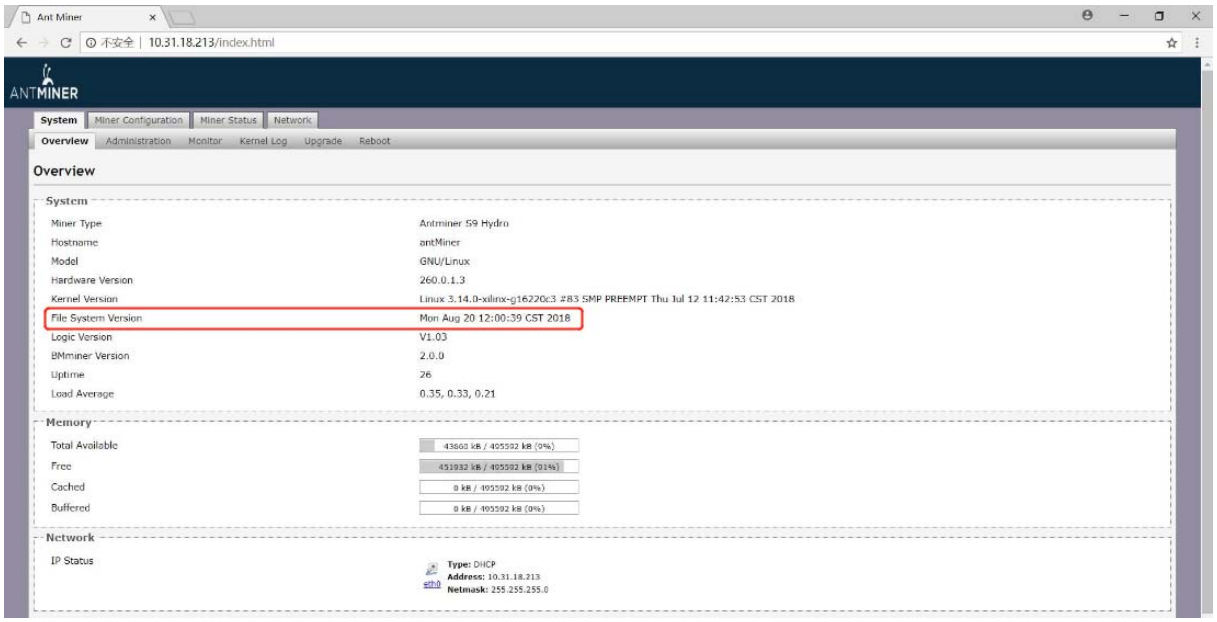
Note: The S9 Hydro server is with automatic frequency adjustment. Firmware will stop running when the Temp(PCB) reaches to 95℃, there will be an error message "Fatal Error: Temperature is too high!" shown in the bottom of kernel log page.

8. Administering Your Server

8.1 Checking Your Firmware Version

To check your firmware version:

1. In **System**, click the **Overview** tab.
2. **File System Version** displays the date of the firmware your server use. In the example below, the server is using firmware version 20180820.

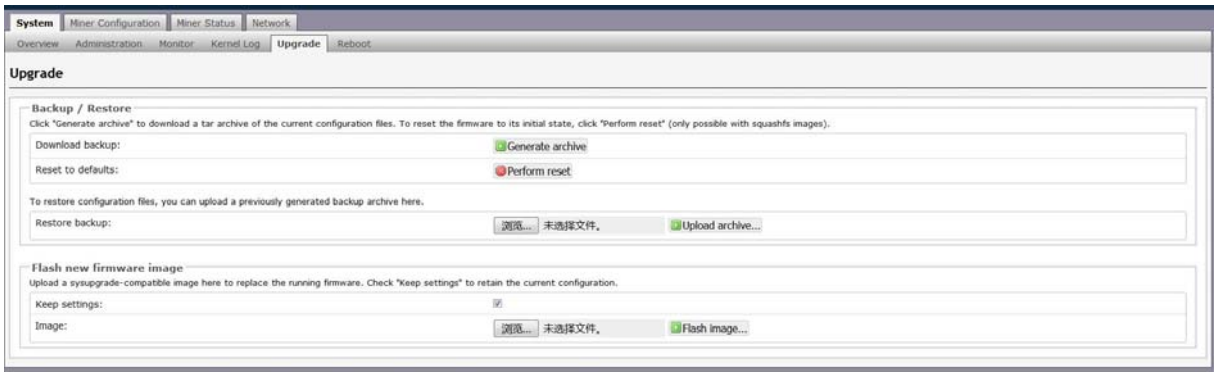


8.2 Upgrading Your System

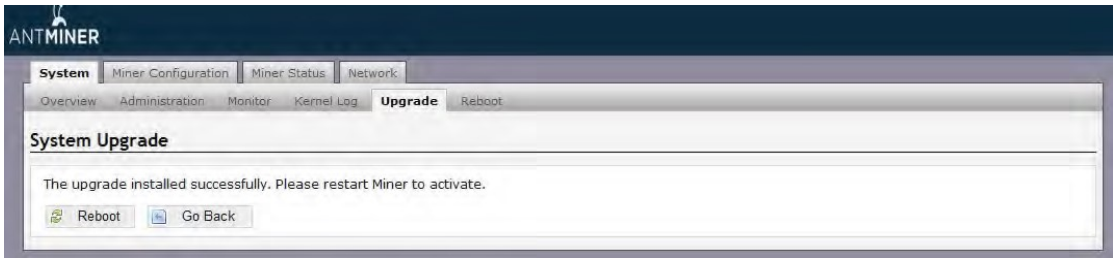
Make sure that the S9 Hydro server remains powered during the upgrade process. If power fails before the upgrade is completed, you will need to return it to Bitmain for repair.

To upgrade the server's firmware:

1. In System, click **Upgrade**.



2. For **Keep Settings**:
   - Select the check box to keep your current settings (default).
   - Clear the check box to reset the server to default settings.
3. Click the 选择文件 **(Browse)** button and navigate to the upgrade file. Select the upgrade file, then click **Flash image**. A message appears notifying you if the S9 Hydro firmware can be upgraded and if yes, will then proceed to flash the image.
4. When the upgrade is completed, the following message appears:

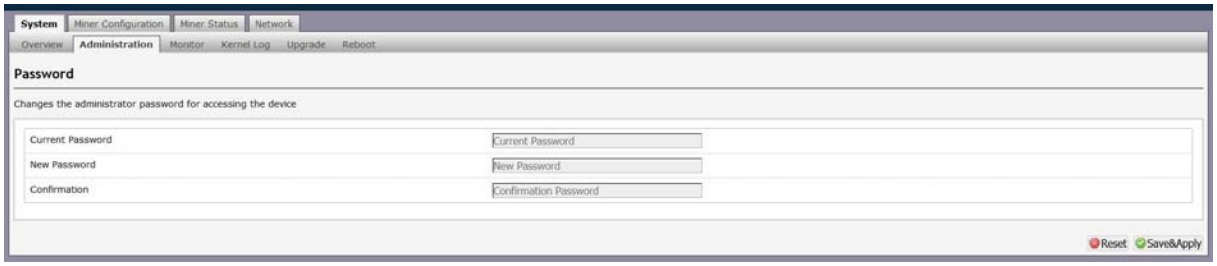


5. Click one of the following options:
   - **Reboot** - to restart the server with the new firmware.
   - **Go Back** - to continue mining with the current firmware. The server will load the new firmware next time it is restarted.

8.3 Modifying Your Password

To change your login password:

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



8.4 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.

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.

Regulation:

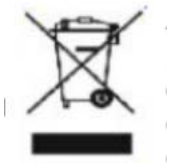
FCC Notice (FOR FCC CERTIFIED MODELS):

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.

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.

台湾 ROHS:

設備名稱：　　，型號：

單元	有害物质					
	鉛 (Pb)	汞 （Hg）	鎘 （Cd）	六價鉻 (Cr+6)	多溴聯苯 （PBB）	多溴二苯醚 （PBDE）
外殼	○	○	○	○	○	○
電路板組件	—	○	○	○	○	○
其他線材	—	○	○	○	○	○

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