INSTALLATION AND

OPERATING INSTRUCTIONS

Bitcoin Heater S9x

S9x2/S9x3/S9x4

WAIVER

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Quick Start Guide (German)

You can find a short instruction for commissioning the Bitcoin Heater S9x in the form of an explanatory video on the website https://21energy.io/bitcoin-heater-s9x-bedienungsanleitung/

If you scan the following QR code with the camera of your mobile phone, you will be taken directly to the explanatory video.

Table of contents

1   Important Notes

1.1   Notes on the operating instructions

Read this instruction manual carefully before operating the Bitcoin Heater S9x. Follow all of the following safety instructions. Keep the operating instructions handy for future reference.

1. Read this instruction manual.

2. Keep these operating instructions in a safe place.

3. Observe all warnings

4. Follow all instructions

5. Do not make any changes to the unit under any circumstances

6. Always leave repair work to qualified personnel.

Target group:

This instruction manual is intended for buyers and operators of the Bitcoin Heater S9x models S9x2/S9x3/S9x4.

Supplied documents:

- EC Declaration of Conformity

1.2 Instructions for use

- The unit is to be used in a dry environment only.

- The unit should be placed on a stable, dry and level surface.

- The unit must not be moved during operation.

- The unit is not suitable for bathrooms or similar wet rooms.

- The unit must not be placed below a power socket.

- The unit must not be used in an explosive atmosphere or an atmosphere contaminated by combustible dusts.

- This appliance may only be used in accordance with its main function for which it was designed, e.g. heating of living spaces. Any other use is considered incorrect and therefore dangerous. The manufacturer accepts no responsibility for failures / malfunctions caused by incorrect and improper use. Failure to comply with the safety instructions will invalidate the warranty.

1.3 General notes

- Please read the operating instructions for your fan heater carefully before using it, as this is the only way to ensure correct use.

- Never place the unit on carpets.

- Do not use the unit in locations where there is a risk of vibration or tipping over.

- Do not press or overstretch the mains connection cable over sharp edges. Do not pinch the cable. Do not place the cable over hot plates or in open fire.

- Never pull the mains plug out of the socket by the mains cable.

- Only connect the appliance via a residual current (FI) circuit breaker.

- Make sure that no other electrical appliance is connected to the same circuit, as this may cause an overload.

- The cable must be placed so that it does not obstruct the movement of people.

- The circuit to which the appliance is connected must be equipped with an automatic fuse. The distance between the sockets and the appliance must be at least 30 cm.

1.4 Other notes

- The permissible operating voltage is 230 V 50 Hz.

- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children must not play with the appliance. Cleaning and user maintenance must not be carried out by children without supervision.

1.5 Spare parts

Original spare parts can be obtained directly from 21ENERGY. The address of 21ENERGY can be found in the operating instructions.

Warning!

Risk of injury due to incorrect spare parts

Incorrect or faulty spare parts can lead to damage, malfunctions or total failure of the mobile electric heater and severely impair safety. Only use original spare parts.

Unauthorised accessories and spare parts

Third-party components may not be able to withstand the thermal and mechanical stresses. 21ENERGY therefore declines all responsibility for damage caused by the use of equipment, accessories or spare parts not approved by the manufacturer.

1.6 Warranty

This product is guaranteed by the manufacturer for twelve months against defects in material and workmanship if the instructions in this manual are followed during commissioning and use. The guarantee begins with the purchase of the unit. Should it become necessary to make use of the guarantee, please contact 21ENERGY GmbH directly. The following guarantee conditions apply.

Warranty conditions

1. The customer must present the original invoice when registering warranty claims.

2. It is at the discretion of 21ENERGY GmbH whether the warranty is fulfilled by repair or by replacement of the device or the defective part. Further claims are excluded. Replaced devices or parts of devices become the property of 21ENERGY GmbH. The warranty services neither cause an extension of the warranty period, nor do they initiate a new warranty.

3. Warranty repairs must be carried out by 21ENERGY. In the case of repairs carried out by other dealers, there is no entitlement to reimbursement of costs, as such repairs, as well as damage that may occur to the device as a result, are not covered by this warranty.

4. Excluded from warranty coverage are:

   - Regular inspections, maintenance and repair or replacement of parts due to normal wear and tear, e.g. hashboards.

   - Transport and travel costs as well as costs incurred in setting up and dismantling the device.

   - Misuse and improper use of the unit as well as incorrect installation.

   - Damage caused by lightning, water, fire, force majeure, war, incorrect mains voltage, insufficient ventilation or other reasons for which 21ENERGY is not responsible.

5. This warranty is product-related and can be claimed within the warranty period by any person who has legally purchased the device.
   Warranty claims must be made immediately after becoming aware of the defect within the warranty period.

1.7   Notes on storage of the instructions

Read and understand this manual and the accompanying safety instructions before using this product. Failure to do so may result in serious injury.

Follow all instructions. This will prevent fire, explosion, electric shock or other hazards that could result in property damage and/or serious or fatal injury.

Keep all safety information and instructions for future reference and pass them on to subsequent users of the product.

2 Description of the product

2.1 Purpose of the product

21ENERGY GmbH provides a new type of fan heater on the market, which is essentially operated with the waste heat of information technology devices, in particular with the waste heat of Bitcoin miners. For this purpose, used Bitcoin miners that have already been introduced into the EEA are used, which are mounted in a specially created metal housing. The supply of electrical energy and the connection of the Bitcoin miners to a local WLAN network is achieved by using commercially available components such as WLAN access points, distribution sockets and desktop routers.

2.2 Product differentiation

For all commercially available components, such as Bitcoin Miners, as well as the components mentioned in the brief description, 21ENERGY GmbH acts as a distributor. 21ENERGY GmbH acts as manufacturer and distributor for the metal housing, which essentially consists of sheet metal parts that are screwed together. The production of the sheet metal parts is carried out by an external supplier who manufactures them according to the plans of 21ENERGY GmbH. The assembly of the sheet metal parts is carried out by 21ENERGY GmbH.

The Bitcoin Miners used are delivered with the corresponding power supply unit and can only be used with this by connecting a 230 V mains supply using a C14 "cold appliance cable". The Bitcoin Miner plus power supply unit comply with the European standard EN 60950-1 with the last adaptation date 2013 to the Low Voltage Directive 2014/35/EU as well as relevant standards to the Directive on Electromagnetic Compatibility 2914/30/EU. At the time of writing, the harmonised standard EN 60590-1 is no longer valid and has been replaced by EN 23 62368-1. However, at the time of placing the Bitcoin Miner plus power supply units on the market, EN 60950-1 was still valid and the conformity of the devices concerned with the relevant EU directives is therefore still given. It should be noted here, however, that comparable products placed on the market after 1 May 2016 must comply with the EN 62368-1 standard in its currently valid version.

Peripheral devices such as WLAN repeaters, LAN-SWITCH or power distributors are purchased as new products. It can be assumed that these commercially available standard products have valid EC declarations at the time of purchase by 21ENERGY GmbH. A random sample examination of the desktop router used has shown that the standards are valid with regard to the Low Voltage Directive 2014/35/EU as well as the EMC Directive 2014/30/EU.

2.3 Modification

Bitcoin miners and their power supply units, which are distributed by 21ENERGY GmbH, are, as mentioned above, used devices. These are cleaned by 21ENERGY GmbH and fitted with new fans. The exchange of the fans is possible according to the operating instructions of the Bitcoin Miner manufacturer. The exchange of the fans on the Bitcoin Miners themselves is done by loosening four screws per fan and disconnecting the connection cable. The installation of new fans is done in reverse order. Due to the fan replacement, neither the miners nor the power supply units show an increase in performance. It can therefore be assumed that the original EC Declaration of Conformity does not need to be adjusted and that 21ENERGY GmbH does not automatically become the distributor of this device as a result of these activities.

2.4 Technical data and model specifications

Model	S9x2	S9x3	S9x4
Quantity Bitmain Antminer	2	3	4
Standard power	1000 Watt	1500 Watt	2000 Watt
Maximum permissible power	2000 Watt	2500 Watt	2500 Watt
Weight	52 kg	60 kg	68 kg
Height	106 cm		
Diameter	62 cm		
Operating frequency	50 Hz		
Rated voltage	230 V		
Power cable length	approx. 1.4 m		
Ambient temperature	max. 50°C		
Air humidity	max. 90% non-condensing		
Weather conditions	use only in drier environment		

2.5 Elements of the Bitcoin Heater

Cover

Ventilation opening
(warm exhaust air)

Air filter level

Ventilation opening
(cold supply air)

2.6 Product compliance

The fully assembled unit, metal enclosure with mounted IT equipment, cabling and multiple distributors is primarily used for heating purposes via the conversion of electrical energy. Accordingly, the following standards are assumed:

- EN 60335-1:2020-08: Safety of household and similar electrical appliances Part 1: General requirements (IEC 60335-1:2010, modified +COR1:2010 +COR2:2011+A1:2013, modified + A1:2013/COR1:2014 + A2:2016 + A2:2016/COR1:2016); German version EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A2:2019 + A14:2019;

- EN 60335-2-30:2021-05: Safety of household and similar electrical appliances - Part 2-30: Particular requirements for room heaters (IEC 60335-2-30:2009 + COR1:2014 + A1:2016, modified).

The requirements of these two standards have been analysed and mapped to the heaters.

3   Safety instructions

3.1   Safety instructions

- **Note:** The unit must not be operated in an environment heavily contaminated by combustible dusts or in an explosive atmosphere.

- **Note:** Reduced heating capacity
Covering the unit via the upper air outlets will reduce the heating capacity. Ensure unobstructed air discharge.

- **Note:** The unit must not be operated directly below a wall socket.

- **Note:** The unit may only be operated with the cover properly fitted.

- **Note:** The unit must not be put into operation if it shows visible signs of damage.

- **Note:** Malfunction due to incorrect setting
The appliance is designed for a total connected load of 2500 watts. If the power consumption is too high, malfunctions may occur.
The total power of the installed Bitcoin miners including WLAN and desktop router must not exceed a total power of 2500 watts.

- **Note:** Damage to the device
The individual miners must not be operated with more than 1,000 watts.

- **Note:** Damage to the unit
Forces that occur during transport of the unit can cause damage if the unit is not in the correct position. The unit may only be transported in an upright position.

- **Note:** Use a hoover with a furniture nozzle to vacuum the air inlet filter.

- **Note:** Damage to components
When the unit is turned over for cleaning, this should be done in a slow and deliberate movement. Avoid tipping or dropping the appliance.

- **Note:** Possible damage to the unit
If condensation is found on the unit, it may cause malfunction.
Do not operate the unit until no condensation is visible on the unit.

- **Note:** Damage to the unit
Operating the unit in a corrosive environment (e.g. sea air) can lead to corrosion of the unit. Do not operate the unit in a corrosive environment.

- **Caution:** Risk of tripping
  A person can trip over the mains connection cable and injure himself.
  The mains connection cable must be laid in such a way that it does not pose a tripping hazard.

- **Caution:** Risk of injury
  The unit can slip off while it is being turned over for cleaning purposes and injure a person. The unit must always be moved by two people.

- **Caution:** Tipping hazard
  The unit could tip over if subjected to a lateral force above the centre of gravity.
  Do not attempt to move the unit in its place of installation. The unit should always be lifted by at least two people.

- **Caution:** Risk of injury
  The unit has a mass of over 50 kg.
  The unit must be lifted by at least two people.

- **Caution:** Danger of tipping
  Placing objects on the unit may cause the total permissible weight to be exceeded and the unit to tip over.
  The total weight of objects placed on the appliance must not exceed 50 kg.

- **Caution:** The heater must not be used in small rooms occupied by persons who cannot leave the room independently, unless constant supervision is ensured.

- **Caution:** To reduce the risk of fire, keep textiles, curtains and all flammable materials at least 1 m away from the air outlet.

- **Caution:** Children younger than 3 years must be kept away from the appliance unless they are supervised at all times.

- **Caution:** Some parts of the product may become very hot and cause burns.
  Special care must be taken when children and vulnerable persons are present

- **Caution:** Damage to the appliance
  If objects fall into the appliance, they can damage the internal components.
  Only operate the appliance with the lid correctly in place.

- **Caution:** Injury due to the unit tipping over
  If the unit is not set up correctly, it may tip over and injure people.
  The unit may only be operated on a horizontal, level and sufficiently firm surface. The surface must withstand a load of 30 kg per foot.

- **Danger:** dangerous electric shock
  The unit must not be operated in damp rooms such as bathrooms, saunas or baths.

- **Danger:** dangerous electric shock
  If the protective earth conductor is interrupted, dangerous electrical voltage may occur on the housing in the event of a fault.
  Only operate the unit from a socket outlet installed in accordance with the regulations. Only use extension cables with a continuous protective earth conductor.

- **Danger:** dangerous electric shock
  If water enters the unit or the connecting cable or connector, they may have a potentially dangerous electrical voltage.
  Operate the appliance only in dry conditions and do not lead connecting cables through liquids.

- **Danger:** dangerous electric shock
  If the mains lead of this appliance is damaged, it must be replaced by the manufacturer or its after-sales service or a similarly qualified person in order to avoid hazards. Do not operate the unit if damage to the power cord is evident.

3.2   Graphic symbols as safety instructions on packaging and product

Symbol	Meaning
	Read the operating instructions and understand the associated instructions.
	Shows the correct horizontal alignment of the unit. The arrow must point upwards.
	Attention

3.3   Graphic symbols as safety instructions in the operating instructions

Symbol	Meaning
	Caution
	Danger due to electrical voltage
	Note

4 Preparing the product for use

4.1 Transport and storage of the product

The Bitcoin Heater S9x is delivered in all versions in a well-protected cardboard box on a pallet. The cardboard box is fixed to the pallet with a tightly stretched strapping band.

At least two people are needed to lift the packed heater. The total weight with pallet is up to 100 kg. The packed fan heater may only be carried on the pallet and not by the strapping band. There is a risk of injury here. As soon as the strapping band has been released and the box is no longer fixed to the pallet, it can also be carried on the underside of the box.

If the product is not to be used immediately, it must be stored in a place protected from cold, heat, moisture and other harmful influences. It must not be stored outdoors without weather protection.

4.2 Unpacking the product

1. The first step is to remove the four straps to release the box from the pallet. To do this, it is best to cut the straps with scissors. Then the carton can be carefully lifted from the pallet to the ground by at least two people.

2. In the second step, the tape on the two long sides of the box can be cut open with a sharp knife. The top of the box must not be cut open! There is a risk of damaging the painted sheet metal housing of the heater. The cardboard box can then be opened on both sides.

3. In the third step, the heater is lifted out on one of the two sides of the box where the adhesive tape has been removed. This again requires at least two people. One person carefully lifts the fan heater out of the box by the lid on one side. The other person goes into the box from the other side and helps to lift the fan heater by the feet or the lower end of the sheet. Caution: Injury on sharp edges of the sheet metal casing. It is recommended to wear gloves. Then place the fan heater on the floor in the same vertical position as it was found in the box.

4. In the fourth step, the packaging on the fan heater can be removed. Never use sharp objects such as a knife or scissors to remove the plastic foil. The end of the foil is located at the lower edge of the fan heater and can be removed starting from there. Alternatively, it is also possible to tear open the foil with your hands and remove it this way. The power cable is wrapped in a white foam film and is located on the lower half of the side panel of the unit. This wrapping must also be removed and the power cable completely unwrapped. The unit must not be put into operation until it has been completely unpacked. Before this, there is an acute risk of damage to the unit.

4.3 Contents of the packaging

- Bitcoin Heater S9x with power cable
- Instruction manual
- Delivery note

4.4   Putting the fan heater into operation

Plug the mains plug into a standard household, earthed socket outlet that is protected by a residual current circuit breaker (RCD) and is installed at a minimum distance of 30 cm from the fan heater. You will then hear a short and relatively loud rotation of the fans. You can now proceed with setting up the fan heater as described in step 5.

# 5 Setting Up, Operating and Using the Heater

5.1 Connecting the Bitcoin Heater S9x to the Internet

After you have connected the Bitcoin Heater to the power, the TP Link brand Wi-Fi repeater will take about 30 seconds to boot up. On a WLAN-capable device of your choice, search for the WLAN network "TP-Link_Extender" and connect to it.

The Wi-Fi network "TP-Link_Extender" is not password-protected.

After you have connected to the Bitcoin Heater's WLAN, go to the WLAN repeater's website at: http://tplinkrepeater.net/

Scanning this QR code will also take you to the website.
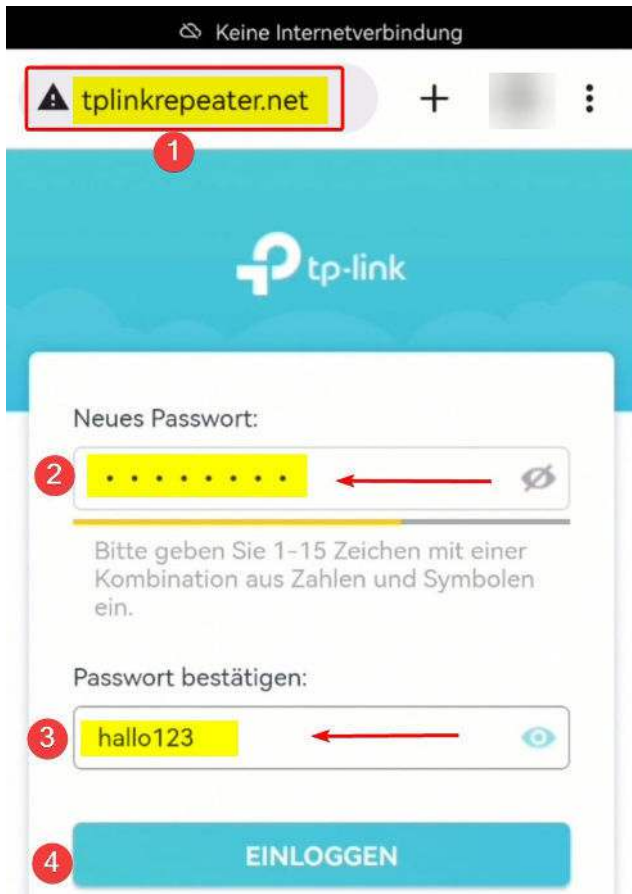
In the backend of the WLAN repeater you will be asked to enter a password for the WLAN repeater and to confirm it. You will need this password again in a subsequent step.

Make sure you make a note of this password, as the WLAN repeater is permanently installed and the "Reset" button can only be accessed by partially dismantling the repeater
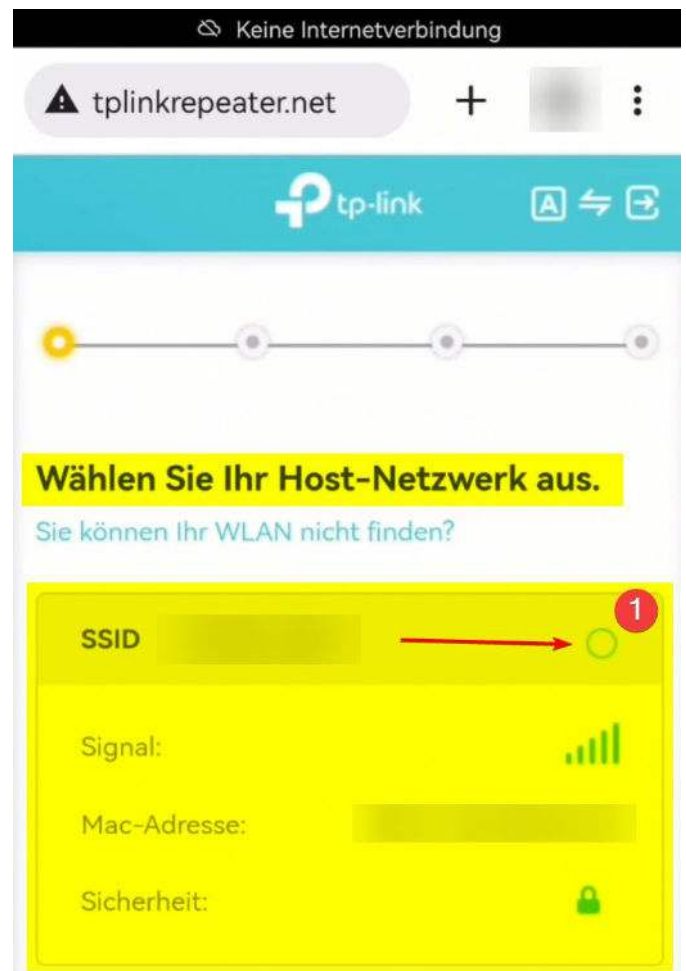
In the next step, select your host network. This is the Wi-Fi network to which you want to connect the Bitcoin Heater.

Browse the listed Wi-Fi networks and select yours. In order for your Wi-Fi network to be listed, the Wi-Fi network must be available at the Heater's location.

If this screen with "Select your host network" does not appear automatically, please click on "Quick Setup" in the top left menu.

If you want to connect the Bitcoin Heater to another Wi-Fi network in the future, please click on "Quick Setup" again.
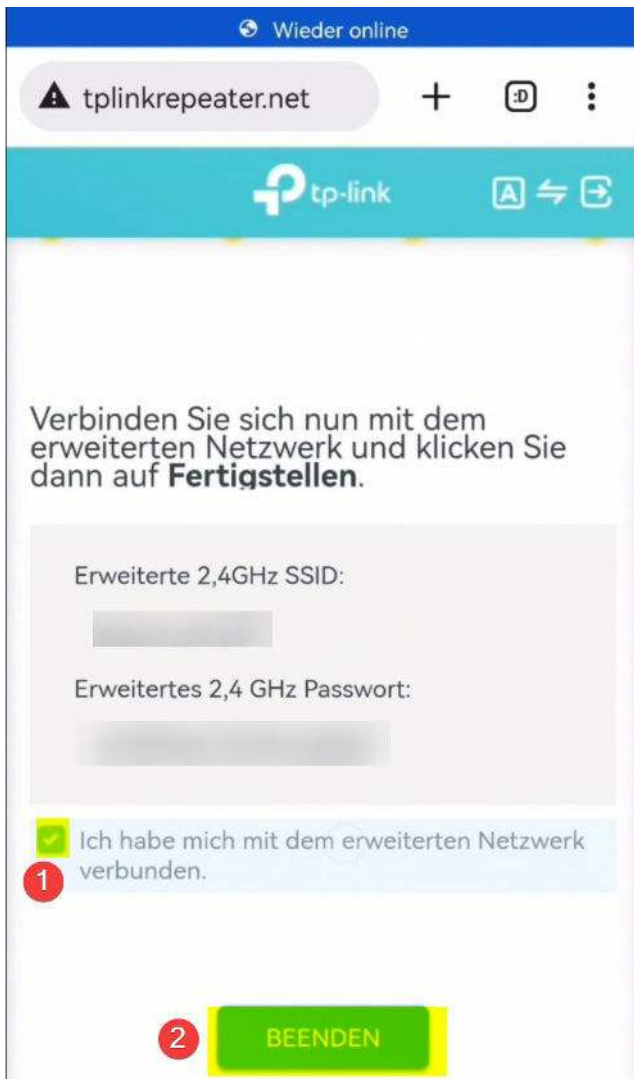
Now enter your password of your existing WLAN network to which you want to connect the Bitcoin Heater and click on "NEXT".
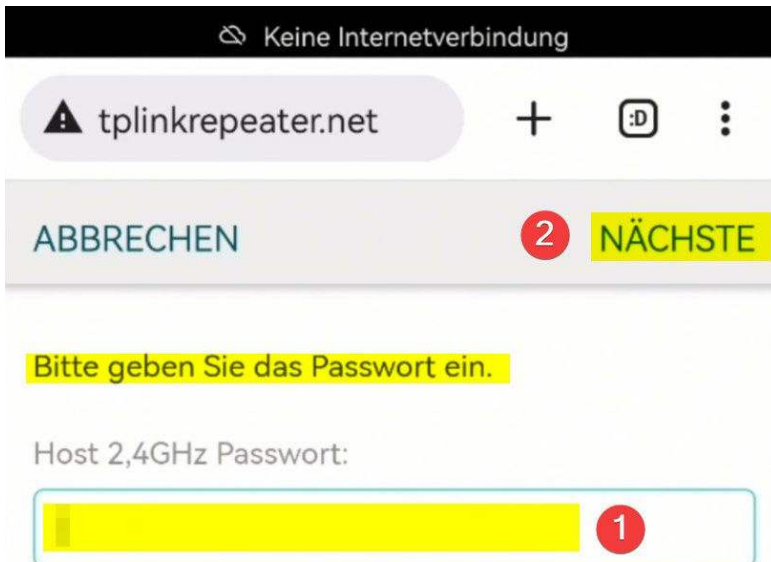
In the next step, you can assign a name for the extended network (SSID). Normally, you can simply confirm the default settings by clicking on "NEXT".

If you wish, you can also assign a different password than for your existing WLAN network.
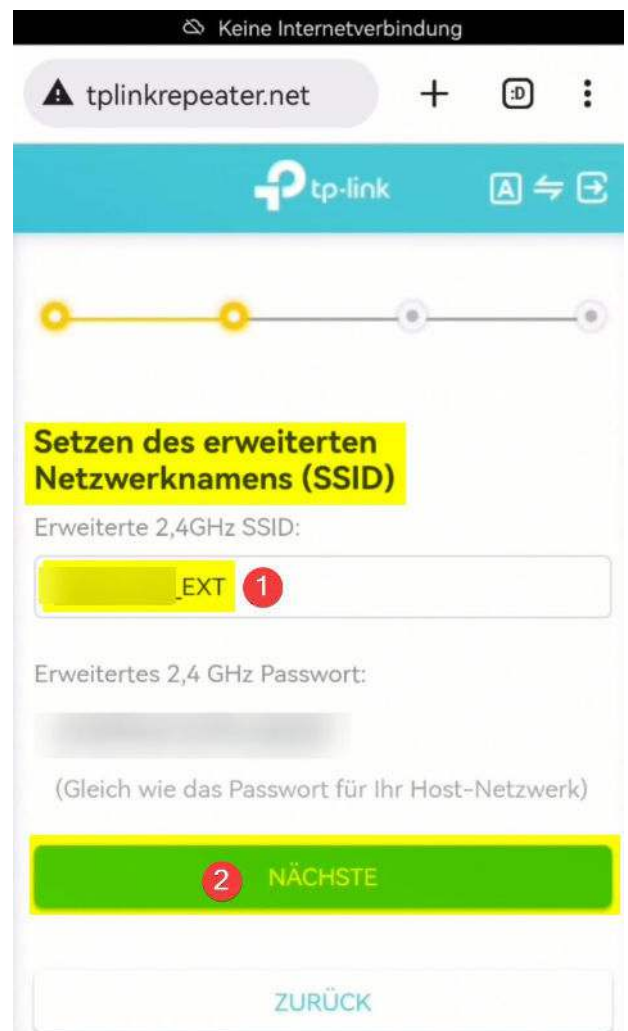
Now the built-in WLAN repeater and thus also the Bitcoin Heater with all its antminers S9 are connected to your WLAN.

You can exit the setup guide of the WLAN repeater by selecting the box "I have connected to the extended network" and clicking on "EXIT".

Your Bitcoin Heater is now connected to your Wi-Fi network.

5.2 Configuration of the installed Bitmain Antminer S9

In order to access the backend of the installed Antminer S9, we need its IP address in the local network.

5.2.1 Identifying the IP addresses of the miners

Connect to the extended network you have just created, which - if you have left everything at the default settings - is called the same as your existing WLAN, only with "_EXT" at the end of the name. The password for this network is the same as your original WLAN password, unless you have intentionally set a different one.
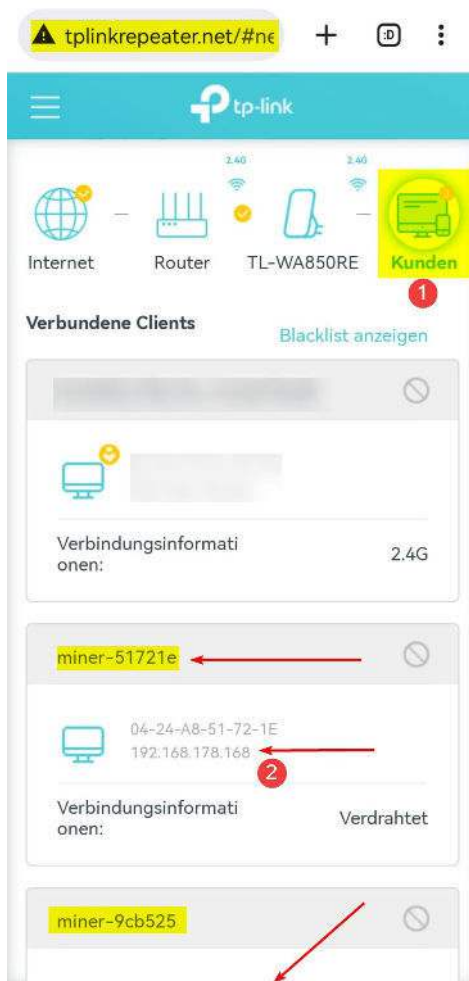
Now go back to http://tplinkrepeater.net/ with the same device that you used to set up the WLAN repeater.

Scanning this QR code will also take you to the website.

Log in with the password of the WLAN repeater that you assigned in the previous step.

Now click on "Customers" on the right. Now the devices connected to the WLAN repeater are listed.

This should be the device you are currently using, followed by the 2, 3 or 4 Bitcoin miners installed, depending on the model.

The 2 marked on the picture shows the IP address of the respective miner. You will need these two, three or four IP addresses to access the backend of the miners in the next step.

5.2.2 Calling up the backend of the miners

After the initial configuration of the WLAN repeater, it may take a few minutes until the miners are connected to the network & internet and you can call up the miner's website under the IP address.

In the browser of your choice, on a device that is in the same network (can be connected to both the WLAN repeater and the original access point), enter the IP addresses you just noted in the address line and confirm the entry.
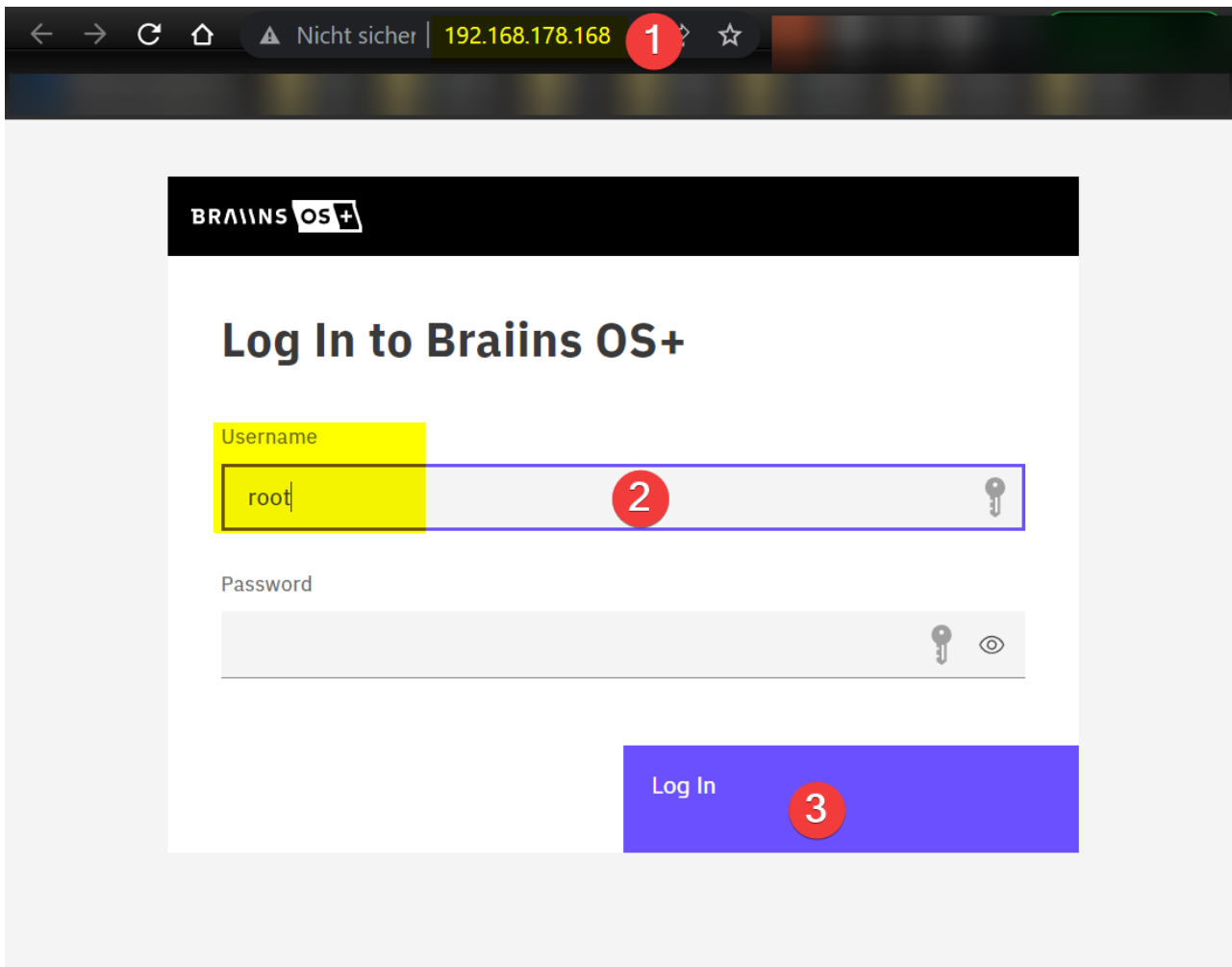
You will now see the login page of the Antminer S9 with the Braiins OS+ operating system installed.

Enter the default user name **"root"** and leave the password blank. Now click on "Log In".

5.2.3   Configuration of the Mining Pool

In order for the mined Bitcoin to be credited to your account, you must enter your mining pool account with the miners.

If the pool status says "Dead", this is because the miners do not yet have internet. If you have just configured the WLAN repeater, it may take a few minutes until the antminers also have access to the network. In any case, make sure that your WLAN network has Internet access.

5.2.3.1   Registering with a Mining Pool

If you do not yet have a mining pool account, this step will tell you how to register an account.

We recommend the mining pool "Braiins" - formerly "Slushpool" (the oldest Bitcoin mining pool ever). Since the operating system Braiins OS+ is installed on the Bitcoin miners, which makes the Antminer S9 up to 25% more efficient, and you pay 2% of the mining revenue to Braiins as a development fee, you do not pay a fee for using the mining pool "Braiins". Typically, Bitcoin mining pools charge a fee of 1 to 2%.

Of course, every mining pool can be used in combination with Braiins OS+. Mining pools can also be dispensed with completely and so-called solo mining can be carried out (lottery mining).

With solo mining, you try to find a block on your own. Statistically, this happens extremely rarely, as you only have a tiny fraction of the total hashrate and will therefore only very rarely find a block. In return, however, you get the complete block reward and don't have to share it with anyone. Since this happens so rarely, the community calls it "lottery mining".

We recommend using a mining pool to get consistent bitcoin mining returns.
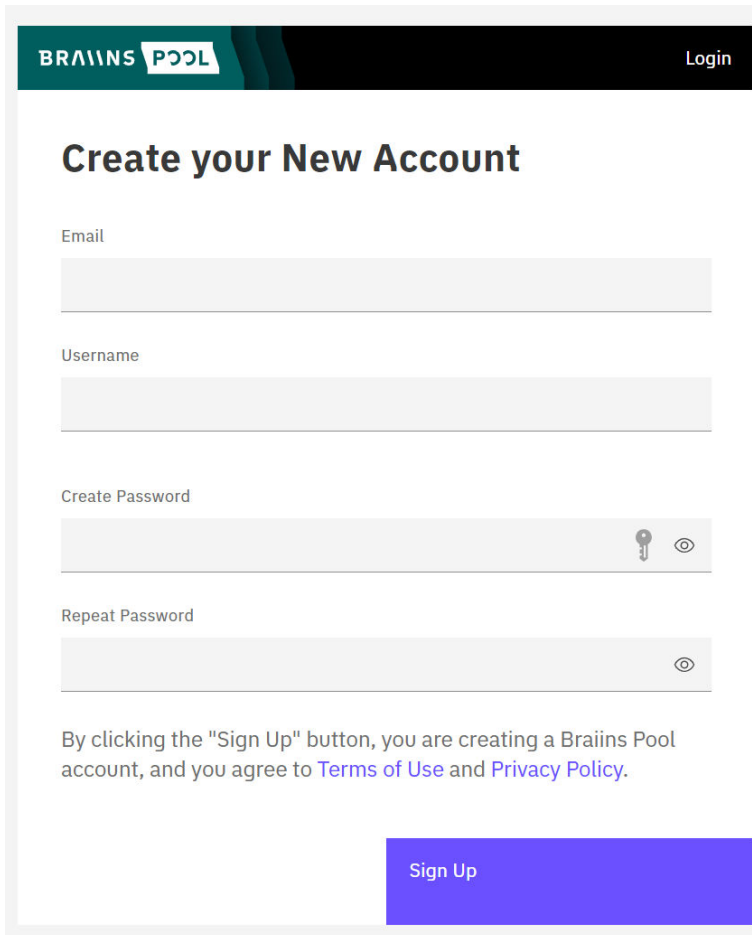
5.2.3.2 Registering with the mining pool Braiins

Go to the website https://pool.braiins.com/signup/. You can also scan this QR code to do so:

Follow the instructions and register by entering your email address, creating a username and assigning a password.

Make a note of this username/user name. You will need this when configuring the mining pool in the miner backend.

5.2.3.3 Entering your mining username in the backend of the miners

Click on "Configuration" in the menu.

Replace the stored username in the first two lines with your username. If you are using a pool other than Braiins, you also have to change the pool URL to that of your pool. Just leave the password blank.

You can also assign worker names. This allows you to assign mining power to individual miners. You do this by putting a "dot" after your username and entering the worker name. For example: "yourusername.workername". If you give all miners a different worker name, you can distinguish the mining performance accordingly.

The entry of the username is automatically saved. Click on "Dashboard" to return to the overview.

Repeat this step for all miners installed in the heater.

5.2.4   Changing the Heat Output of the Bitcoin Heater

The 21ENERGY Bitcoin Heaters are delivered with a factory setting of 500 watts per installed Antminer S9.

The maximum current consumption is

- 1000 watts per miner (x 2) for the S9x2 model
- 833 watts per miner for the S9x3 model (x 3)
- 625 watts per miner (x 4) for the S9x4 model.

To change the power consumption per miner (which also corresponds to the heating power), go back to the menu and select "Configuration".
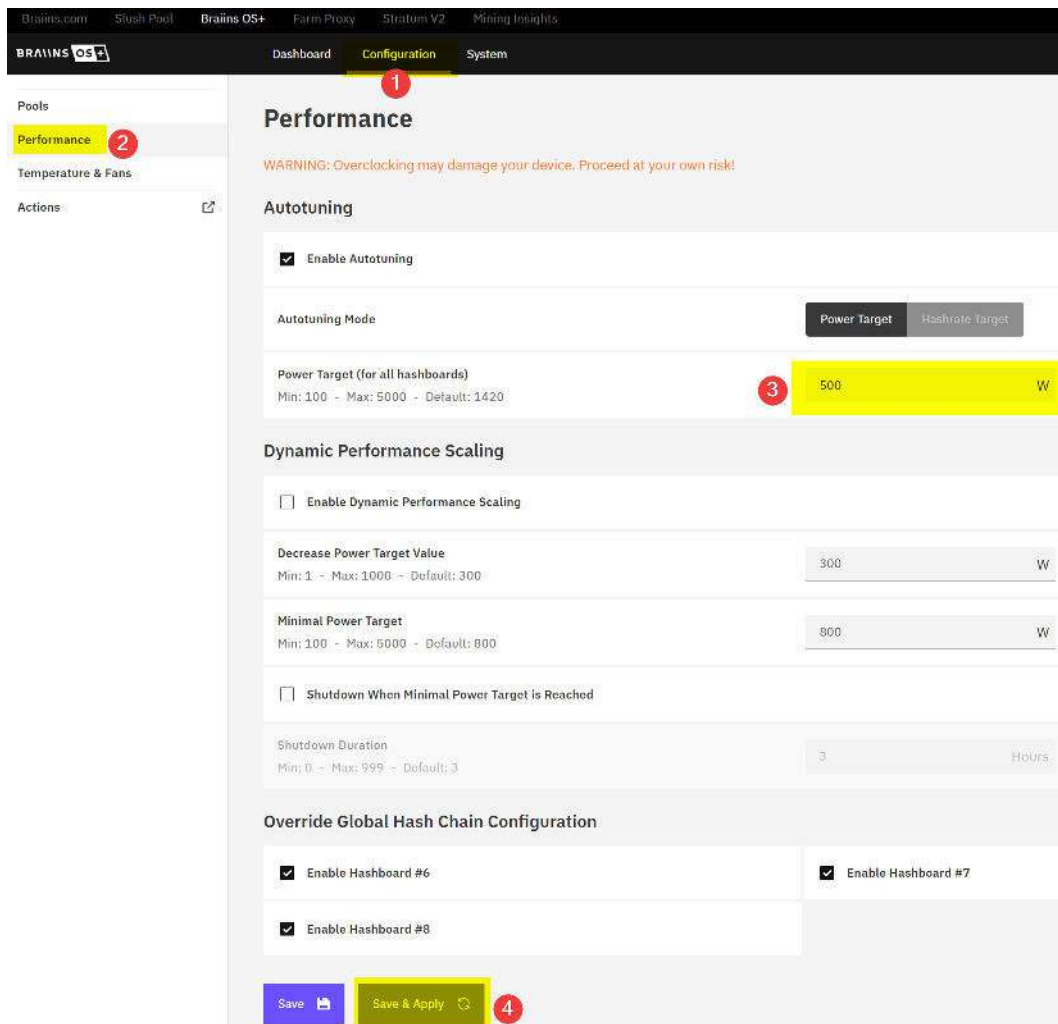
Enter the desired number of watts per miner in the "Power Target" field and confirm the entry with "Save & Apply".

The fans turn to 100% for a short time. This happens every time you change the settings under "Performance" and "Temperature & Fans". This is normal and the speeds return to a low level very quickly.

Real Hashrate	Temperature (Chip)
3.313 TH/s	84.00 °C
Est. Efficiency	Power Usage
114.1 W / Ths	**378 w / 200 w**
Pool Status	Tuner Status
✅ Alive	🕐 Running

Fan Monitor

13%	13%	13%	13%
Fan 0	Fan 1	Fan 2	Fan 3
480 RPM	480 RPM	--- RPM	--- RPM
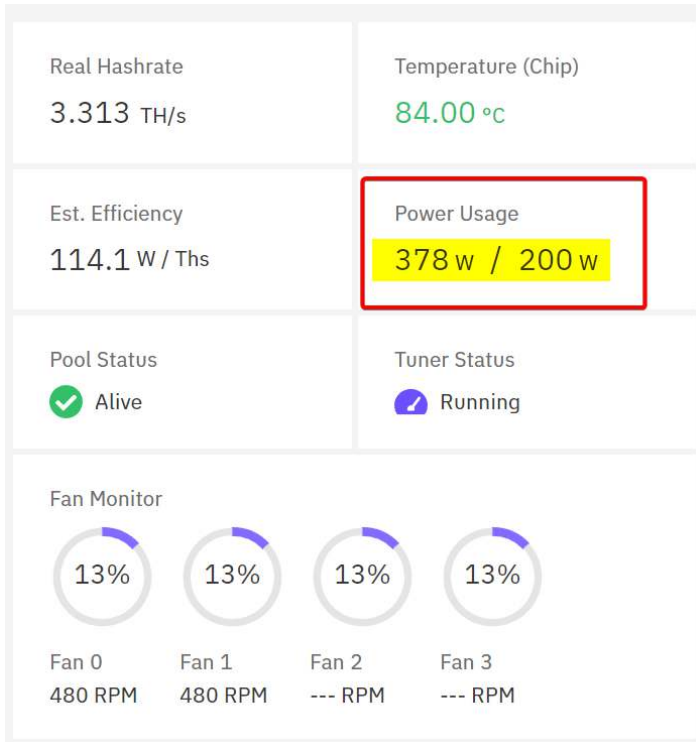
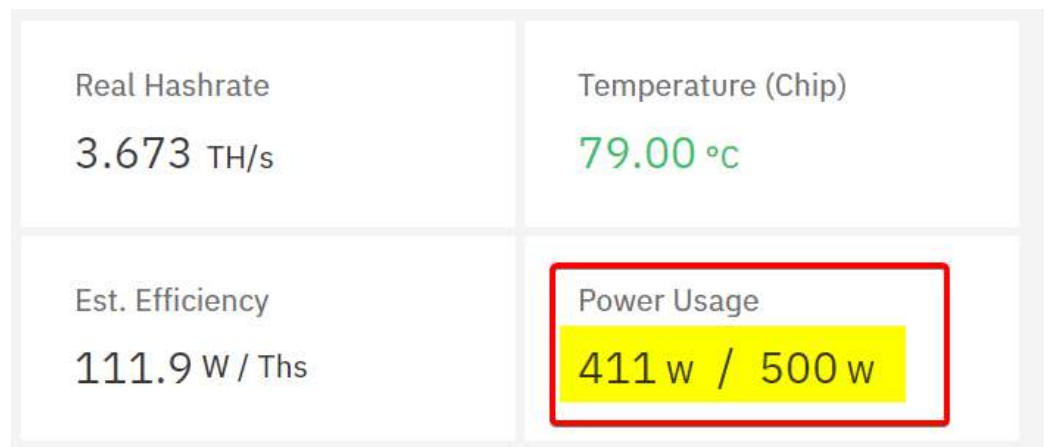The minimum "Power Target" is about 380 watts. An S9 with all three hashboards cannot be operated below this. You can enter less in the "Power Target" field than the 380 watts, but the S9 miner will convert about 380 watts into heat and hashes. If you want to reduce the heating power even more, you can set a portion of the Bitcoin Heater's miners to standby. This reduces their power consumption and heating power to almost zero (only a few watts for standby operation). Thus, the minimum heating power of all three S9x models is about 380 watts and the maximum heating power is 2000 watts for the S9x2 and 2500 watts for the S9x3 & S9x4.

After setting a new "power target", the miner starts with a new "tuning". During tuning, the Braiins OS+ operating system searches for the optimal clock speed and voltage for the chips in order to get the maximum efficiency out of the chips.

At the beginning of this process, the miner uses only about 80% of the set power target. This is normal and over time the miner will ramp up to the power target.

Real Hashrate	Temperature (Chip)
3.673 TH/s	79.00 °C
Est. Efficiency	Power Usage
111.9 W / Ths	**411 w / 500 w**

You can set the miner to standby mode via the menu item "Quick Actions" and then "Stop BOSminer". With "Start BOSminer", the miner starts hashing again.
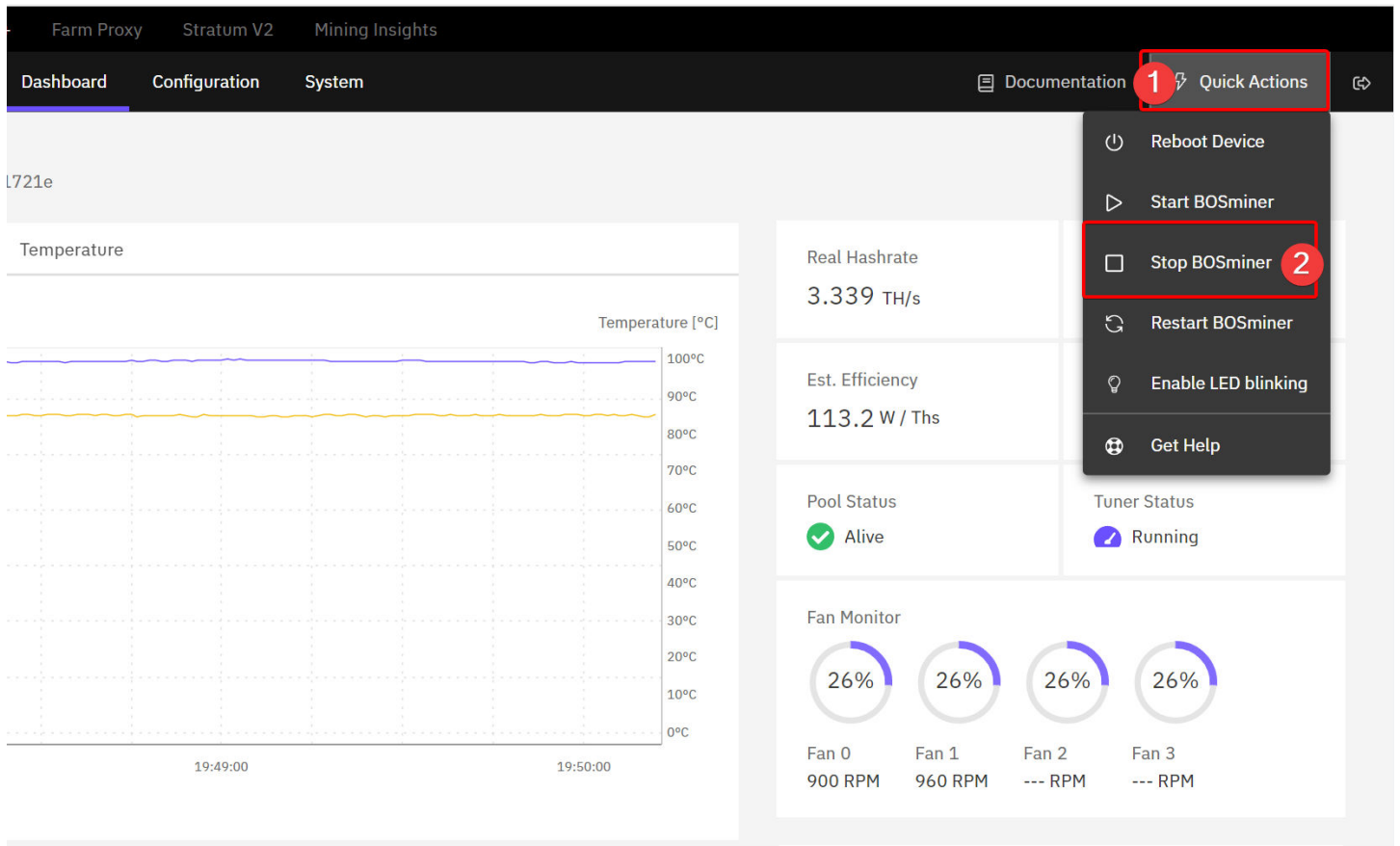
5.2.5 Levelling the fans and optimising the noise level

The 21ENERGY Heater has a high mass with its Antminer S9 and its massive housing. Shortly after the heater is switched on, all components are still cold and warm up with operation. The fans of the Antminer S9 are factory-set to cool the installed chips on the hashboards to 85°C. A temperature below 85°C is good for the service life and should not be exceeded in the long term.

The installed Noctua 140 mm fans have a maximum speed of 3000 revolutions per minute (RPM). Until the chips on the hashboard have reached the target temperature of 85°C, the fans rotate at the minimum speed of 300 RPM. As soon as the chips approach 85°C, the fans spin up and catch the temperature. For the first few cycles, the fans will spin up too late, resulting in a brief over-speed of the fans and consequent excessive cooling of the chips. After a few cycles, the over- and understeering of the fans then decreases and settles at one speed and only jumps up and down by a few percent.

The more miners are installed in the heater, the longer this process takes. In the miner dashboard, you can follow the temperature curve and fan speed in real time.
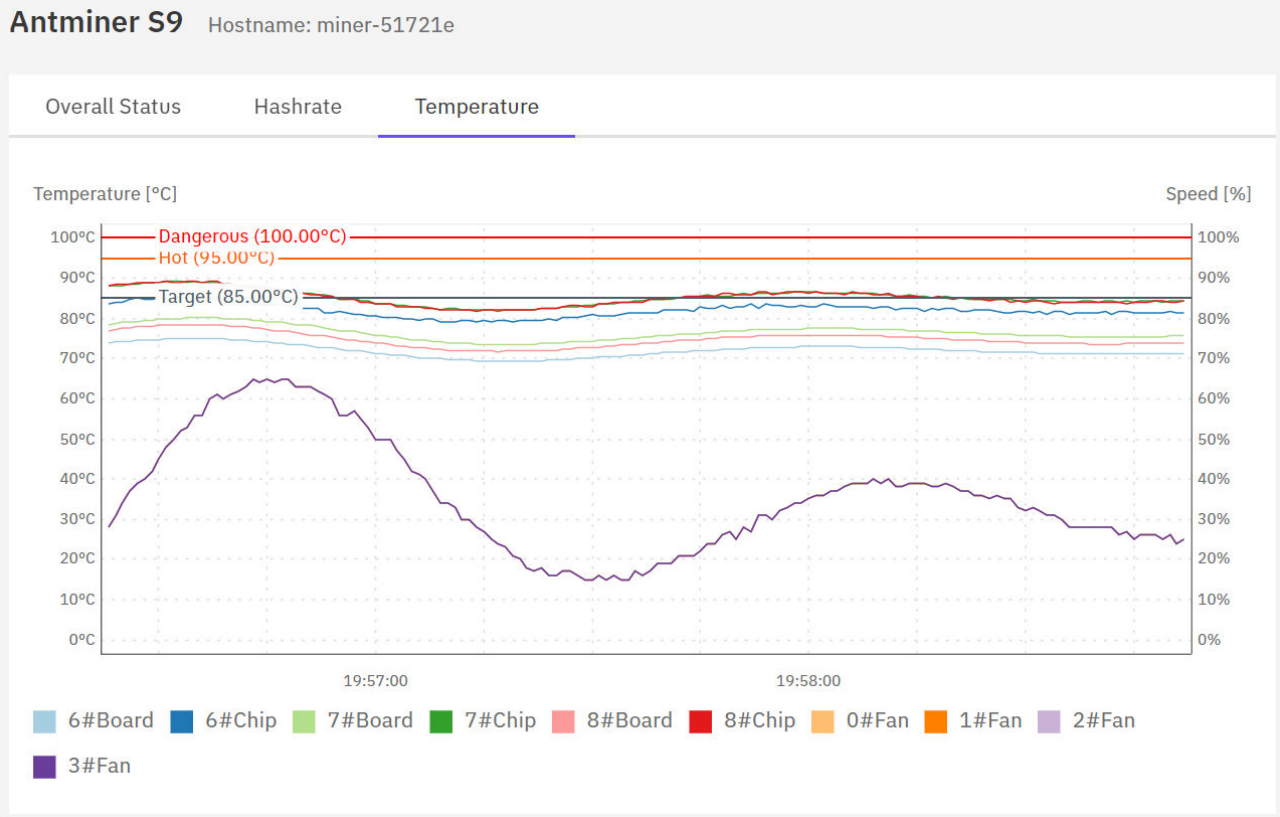
Illustration of the settling process of the fan speed and temperature.
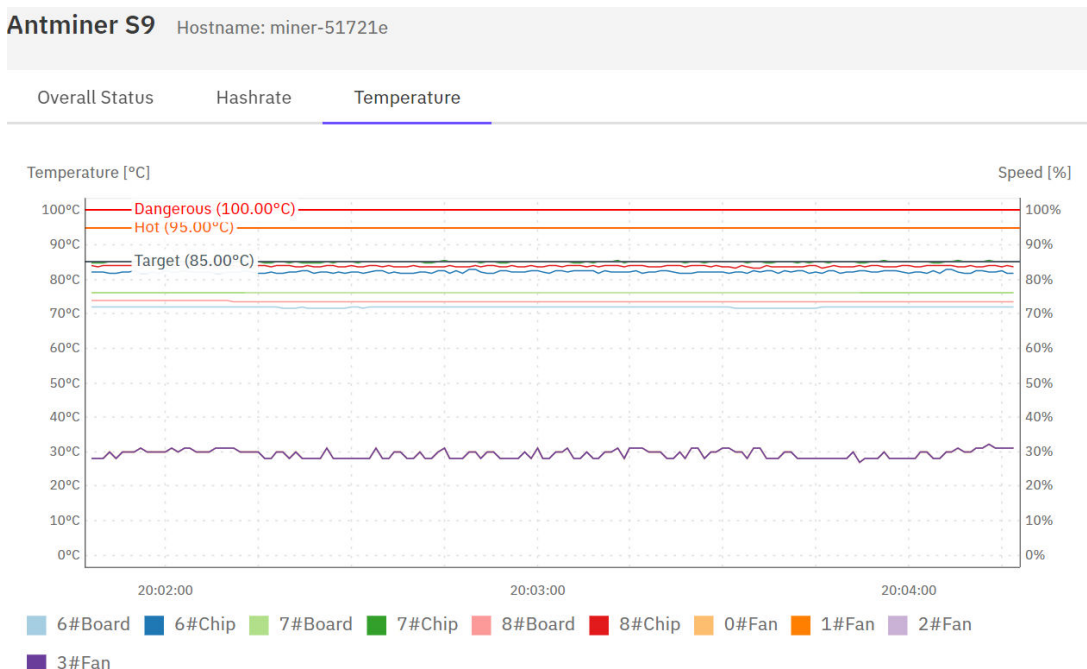
Illustration of the equilibrium found. The temperature of the chips and the fan speed are constant within a very small range.

The fan speed depends on the ambient temperature in which the heater is operated and the resistance. The resistance can increase over time if there is too much dust in the dust filter on the underside of the heater. For this reason, it should be cleaned regularly (the interval depends on the dust load of the environment in which the heater is operated).

If, for example, the fans of a heater oscillate in the range of 28 to 32%, you can also set the fans to a constant 35%. Many people will find the minimally higher but constant noise level more pleasant than oscillating between 28 and 32%.

However, setting the fans to a constant speed has risks. If, for example, the ambient temperature rises, the cooling capacity decreases at a constant fan speed and thus the temperature of the chips increases. Accordingly, one should always set at least 5% above the lower speed of the range in order to have room for ambient temperature fluctuations.

Before manually setting the fans to a fixed fan speed, make sure that >98% of the power target is already being used by the miner. Otherwise, you run the risk of setting the fans to a static speed based on 80% of the power target and the miner will quickly overheat and chips will be damaged as soon as the miner moves from the 80% to the 100% of the power target.

Under the menu item "Configuration" -> "Temperature & Fans" -> "Temperature Control Mode" -> "Manual" you can set the fans to a static speed.

After clicking "Manual", you will receive a warning that setting the fan speed manually can cause the miners to overheat and be damaged. This warning must be taken seriously. Damage caused by overheating due to a manually set fan speed that is too low is not covered by the warranty.

Click on "Understood" if you are aware of the risk and know what fan speed to set to cool the miner sufficiently.

You can then enter the fan speed in % under "Fan Control" in "Speed" and confirm by clicking on "Save & Apply".

Important note: It is imperative that the check mark for "Enable Immersion Cooling" <u>remains set.</u> The warning "All fans will be disabled" below is **wrong** and the Braiins OS+ development team has already been informed about the wrong description. We have been assured that the wrong description will be fixed with a future update. Without the check mark for "Enable Immersion Mode", the miner can no longer read the fan speed, which results in the fans running at 100% all the time.

After clicking on "Save & Apply", the fans turn to 100% again for a short time and then go to the fan speed that was just statically fixed.

Then go back to the start page via the menu item "Dashboard" and observe the temperature development for a while. Due to the statically fixed speed, the temperature curve in yellow should now rise much more slowly and constantly. Wait until the temperature stops rising and remains constant within a very small fluctuation range for several minutes. What is the current room temperature where the Bitcoin Heater is operating? What is the maximum expected temperature in the room where the Bitcoin Heater is operated? What is the difference between the current room temperature and the maximum expected room temperature? Subtract this difference from 80°C. This is the maximum temperature that the Bitcoin Heater is currently allowed to reach.

Example: You set up the 21ENERGY Bitcoin Heater S9x at your home and put the heater into operation at 19°C. The maximum temperature to be expected at your home is 25°C, for example. This means that it is currently 6°C colder than the maximum expected ambient temperature. This means that the maximum temperature that can be reached with the static fan speed is

85°C - 6°C - 5°C = 74°C.

5.2.6   Mining Performance

With the factory settings of 500 watts per miner, the mining performance of the

- 10 to 12 TH on average for the Model S9x2
- 15 to 18 TH on average for the model S9x3
- 20 to 24 TH on average for the Model S9x4.

During the autotuning process of the individual chips on the hashboards, strong fluctuations and crashes of individual hashboards or even the entire miner may occur. This is normal and part of the autotuning process. The miner restarts by itself and continues to search for the optimal voltage and clock rate. Once the autotuning process is complete, the voltages and clock speeds are stored in a profile and the autotuning process no longer needs to be run. In most cases, the autotuning process is completed after the first 48 hours of operation.

If the power target or the heating power is changed, the autotuning process starts again from the beginning.

5.2.7   Mining Efficiency

The original Bitmain Antminer S9 has an efficiency of about 100 to 110 J/TH (Joule/Terahash). Through the autotuning process with Braiins OS+, up to 25% more efficiency can be achieved. Thus, one can reach up to 75 J/TH. In our experience, the Bitmain Antminer S9 achieves the highest efficiency in the range of 700 to 800 watts per miner.

5.2.8   How do I get my "heated" Bitcoin?

The mined Bitcoin are credited to the mining pool account. From there, you can set manual or even automatic withdrawals to the wallet of your choice. Of course, you can also send the mined Bitcoin directly to an exchange of your choice.

If you use the mining pool Braiins recommended by us, log in to your account at https://pool.braiins.com/login. Alternatively, you can scan this QR code:
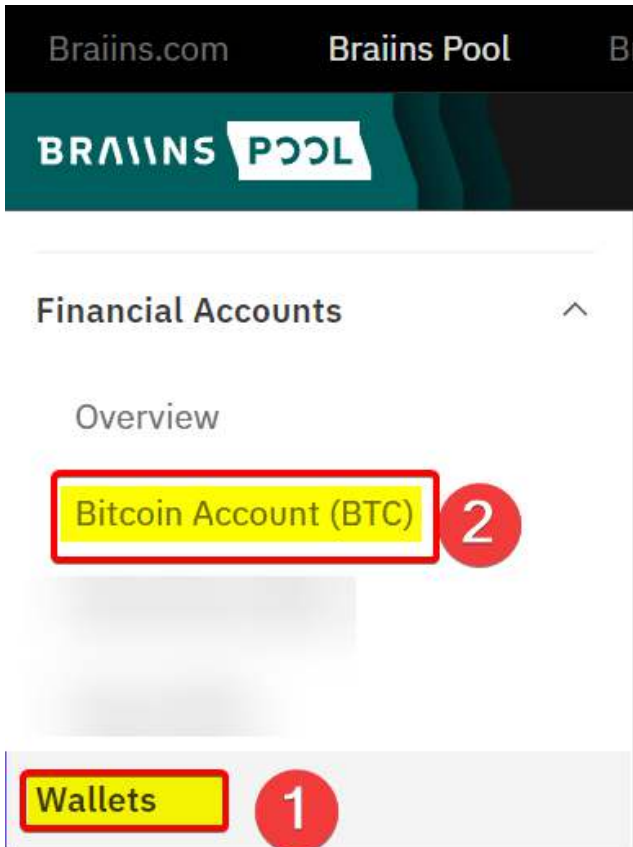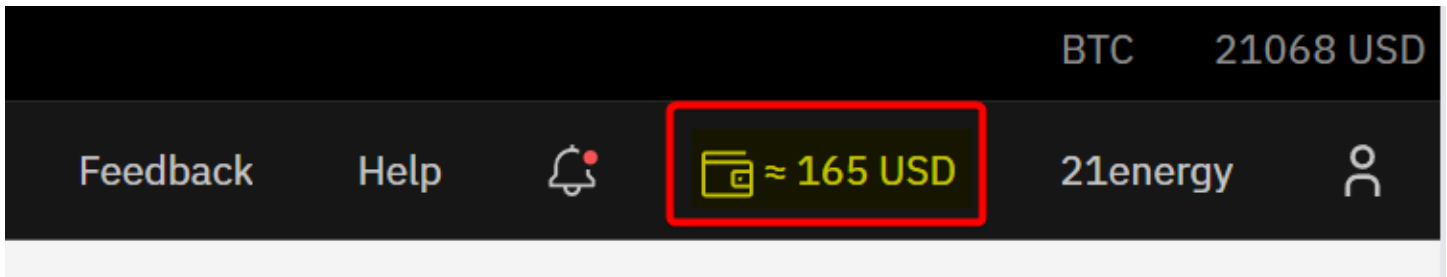
After you have logged in, click on the wallet symbol at the top right:

Now click on "Wallets" and then on the purple button "Add New Wallet" at the top right.

After you have created your external wallet, click on "Bitcoin Account (BTC)" in the menu on the left.

Now click on the purple button "Set Up Payout Rule". Here you can select the external wallet you just created and a payout trigger "Trigger Type". You can set the automatic payout either at a certain time interval or as soon as certain amounts are reached.

Since the Braiins Pool charges a small transaction fee for small payouts, we recommend paying out the Bitcoin in partial amounts that are not too small in order to save unnecessary fees. From 0.01 BTC there is no transaction fee.

5.2.9   Mining reward frequency

On average, a Bitcoin block is found by miners every 10 minutes. The Braiins Pool currently has a hashrate of approx. 3-5%. At 5%, this means that the Braiins pool statistically finds every 20th block - so on average every 200 minutes. Thus, on average, every 200 minutes one is rewarded for operating the 21ENERGY Bitcoin Heater with the use of the Braiins Pool.

Occasionally, no block from this pool is found for much longer and sometimes much more frequently. This evens out over time and has a vanishingly small effect on the overall reward over a longer period of time.

If you use a mining pool that has a significantly higher share of the total hashrate, you will be paid out more often. On the other hand, you receive less per payout because you contribute a smaller share of the pool's mining power.

You can get a good overview of the mining pools and their share of the hashrate on the website: https://btc.com/stats/pool?pool_mode=month. The QR code will take you to this website:

6 Maintenance, cleaning and disposal

6.1 Maintenance

It is strongly recommended that the unit be maintained on a regular basis using the following points in order to operate the unit as efficiently and for as long as possible. The unit must not be opened by unauthorised persons. If something does not work, please contact 21ENERGY GmbH.

- Once a month, a check should be made to see whether any possible contamination of the dust filter is visible on the underside of the fan heater. To do this, carefully tilt the fan heater to the side and place it on one of the side panels. The surface should be straight and not dirty. It is best to place a protective sheet or thin blanket on the floor to prevent damage to the fan heater's paintwork.
- If the dust filter is dirty, it should be cleaned carefully. See point 6.2 Cleaning.
- When tipping the fan heater over, also check that the felt on the feet still sticks and holds well. If a felt foot is missing, there is an increased risk of tipping over and a potential risk of scratch marks on the floor. The fan heater must therefore only be used with felt on the feet.
- The above checks always depend on how much dirt and dust are present at the particular location of the appliance.
- The mains cable and plug must also be checked at regular intervals. Should the mains cable or the plug show any damage or deformation, please contact 21ENERGY GmbH.

6.2 Cleaning

Regular and thorough cleaning ensures longevity and optimum performance. The following cleaning steps are recommended.

- The unit must be switched off and the power cord disconnected from the circuit. It should also cool down sufficiently before cleaning.
- Clean the sheet metal housing and the lid with a soft cotton cloth or a microfibre cloth.
- Do not use corrosive cleaning agents or solvents to clean the fan heater. These can damage the surface and components.
- After cleaning, the appliance should be left to dry in the air before it is put back into operation.
- The dust filter can be vacuumed and cleaned with a hoover with a furniture nozzle on a weak setting. If the setting is too strong, the filter may become uneven and bulge. Likewise, too much pressure on the filter can result in holes in the felt and thus leakage.

6.3 Disposal

The European Directive 2002/96/EC (Waste Electrical and Electronic Equipment, WEEE) prohibits disposal with normal household waste. In case of disposal, please take the unit to your local recycling centre.

CAUTION
Environmental damage if disposed of incorrectly

Electrical waste and electronic components are subject to hazardous waste treatment. If these substances get into the environment, they cause serious environmental damage. These materials may only be disposed of by an authorised specialist company.

7   Troubleshooting

7.1   The unit does not work

- Check if the plug is connected correctly.

- Check if there is a problem with the electrical power supply in the household.

- Make sure that the WLAN repeater is connected to the WLAN network.

- Make sure that your Wi-Fi network allows you to connect to the Internet.

- Make sure that you have followed the instructions in the user manual correctly.

- If the problems still occur, please contact the manufacturer.

7.2   The miner's fans suddenly become loud

There are several possible causes for the fans to start spinning:

- Cause 1: The miners are delivered with the factory setting that the fans immediately rotate at 100% as soon as a chip of a miner reaches a temperature of 95°C.
- Cause 2: A faulty temperature readout for the hashboards and chips.
- Cause 3: Internet connection failure.

To find out which cause applies to your miner, log into the miner's backend. Check the "Pool Status" on the start page. Is it set to "Dead" or "Alive"? If it is "Dead", the Bitcoin Heater has no connection to the internet. In this case, make sure that the WLAN repeater is connected to your WLAN network (have you changed the WLAN password?) If the WLAN repeater is no longer connected to your WLAN network, please follow the steps in point 5 to connect to your network.
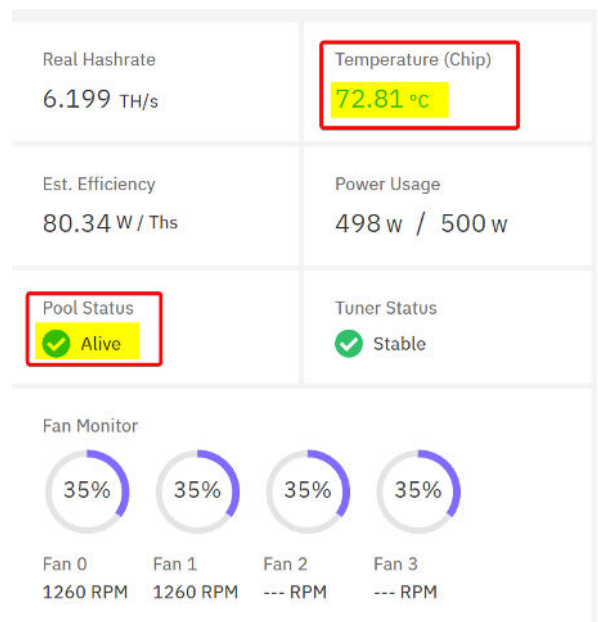
If the "Pool Status" shows "Alive", please check the hottest chip temperature in the dashboard on the top right.

If this temperature is above 86°C and you have fixed the fans to a static fan speed, please immediately set the fan speed to a higher speed as described in point 5.2.5 (levelling the fans and noise level optimisation).

If both the "Pool Status" with "Alive" and the chip temperature with below 85°C are OK, please observe the yellow temperature curve line in the dashboard. Is this a continuous line or does it have interruptions? Does this line jump wildly up and down? If so, one of the many temperature sensors is probably defective. In this case, please set the fans to a static fan speed as described under point 5.2.5 (levelling of the fans and noise level optimisation).

7.3   No warm air comes out of the housing

- Check whether the WLAN repeater is connected to your WLAN network. For instructions, see point 5.

- Check whether your WLAN network is connected to the Internet. See point 5 for instructions.

- Check the pool status in the Miner Backend.

- Have you just switched on the device? Please wait up to 30 minutes. In rare cases, it can take this long for the WLAN repeater to establish the Internet connection to the miners. Normally, this only takes a few minutes.

7.4   The volume has increased significantly compared to the beginning.

- If a lot of dust has collected in the dust filter, the resistance is increased and the fans have to turn higher to compensate for this. Clean the dust filter on the underside according to the procedure described in point 6.2.
- Make sure that the gap between the enclosure and the cover on the top side is free. This gap must never be covered with cloths, blankets or similar objects.

7.5   Burnt smell coming from inside the enclosure

During the development of the 21ENERGY Bitcoin Heater, the highest priority was given to safety and fire protection. The fire load has been reduced to an absolute minimum and the miners have very many temperature sensors that regulate the fans with the factory settings supplied to prevent overheating.

Nevertheless, if there is ever a release of burnt odour from the device, disconnect the Bitcoin Heater from the power supply immediately. Make sure that the Heater does not burn and cools down after disconnecting the power supply. If this is not the case, alert the fire brigade immediately.

If the unit cools down after disconnecting the power supply, please contact 21ENERGY GmbH.

EU Declaration of Conformity

We, the

21ENERGY GmbH
Pembaurstraße 14
6020 Innsbruck
Austria

declare in sole responsibility that the product

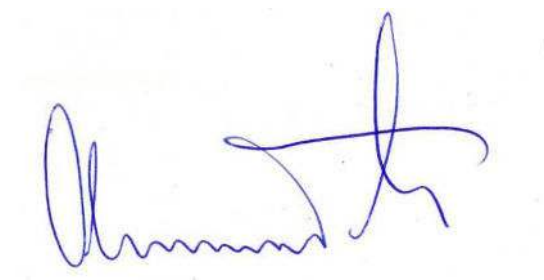Fan heater housing for the installation of Bitcoin Miners for space heating - Type: S9x2/S9x3/S9x4

complies with the essential protection requirements laid down in the European Directive

2014/35/EU - Low Voltage Directive

The following harmonised standards were used for the conformity assessment:

- **EN60335-1:2020-08:** Safety of household and similar electrical appliances - Part 1: General requirements (IEC 60335-1:2010, modified +COR1:2010 +COR2:2011 + A1:2013, modified + A1:2013/COR1:2014 + A2:2016 + A2:2016/COR1:2016); German version EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A2:2019 + A14:2019;

- **EN 60335-2-30:2021-05:** Safety of household and similar electrical appliances-Part 2-30: Particular requirements for room heaters (IEC 60335-2-30:2009 +COR1:2014 + A1:2016, Modified)

Signed:

21ENERGY GmbH
Ing. Maximilian Obwexer, Management Board
Innsbruck, 16.01.2023