

# The Future of Space Heaters

Build your own Bitcoin Heater

# THE FUTURE OF SPACE HEATERS

This document is a detailed walkthrough of the data collected, and how I replaced a 1500W Space Heater with an S9 Bitcoin ASIC. The future is now. Mine Bitcoin and quit throwing fiat out the window. Oh, don't worry. It's wife and husband proof with noise.



I want to start off by saying, this whole project was some of the most fun I've had building in this space. It started with making a simple box to hold an S9 during testing, and has blossomed into something much bigger than I ever expected. I hope the data and all the information gathered can help other plebs build their own personal space heaters.

This build is one of the 1000s of combinations and ways to do it. Use this as a guide to find what works best for you. What works for others might not work with your setup.

Happy Building!

Enough of the sentimental stuff haha. The first part of this will be the setup we liked best and how we did it. The second part will be different setups we tested with a full spreadsheet of all the important data we wanted to compare.

Let's get going. The Parts list.

# THE PARTS LIST

Quantity	Item	Shop Link
1	Upgraded Silent Noctua – 60mm PSU Fan	<a href="#">BUY NOW</a>
2	Upgraded Main Fans – 140mm Noctua 3000 RPM	<a href="#">BUY NOW</a>
1	Vonets Ethernet Cable to Wifi Dongle	<a href="#">BUY NOW</a>
2	140mm to 120mm fan Adapters	<a href="#">BUY NOW</a>
1	CryptoCloaks Space Heater Case (Optional \$150)	<a href="#">BUY NOW</a>
1	CRJ 3pin Computer Fan to 2 pin PSU (Optional if you don't want to solder)	<a href="#">BUY NOW</a>
8	M4 (10mm Length) Screws for fan adapters to s9 case	<a href="#">BUY NOW</a>
1	S9 ASIC Miner (Current price \$125)	

Depending on your build. Totals will vary.

## THE TOTALS

**\$150**

*JUST THE UPGRADES*

**\$250**

*UPGRADES WITH S9 MINER*

**\$400**

*FULL SETUP WITH CASE*

Time to build!

# PART 1: 60MM PSU FAN UPGRADE

This fan upgrade is one of the biggest noise reductions you can do for the miner when running at low Watts. You'll notice a huge difference in dbs after installation.



Pictures not enough? Check out our video playlist. [Click here!](#)

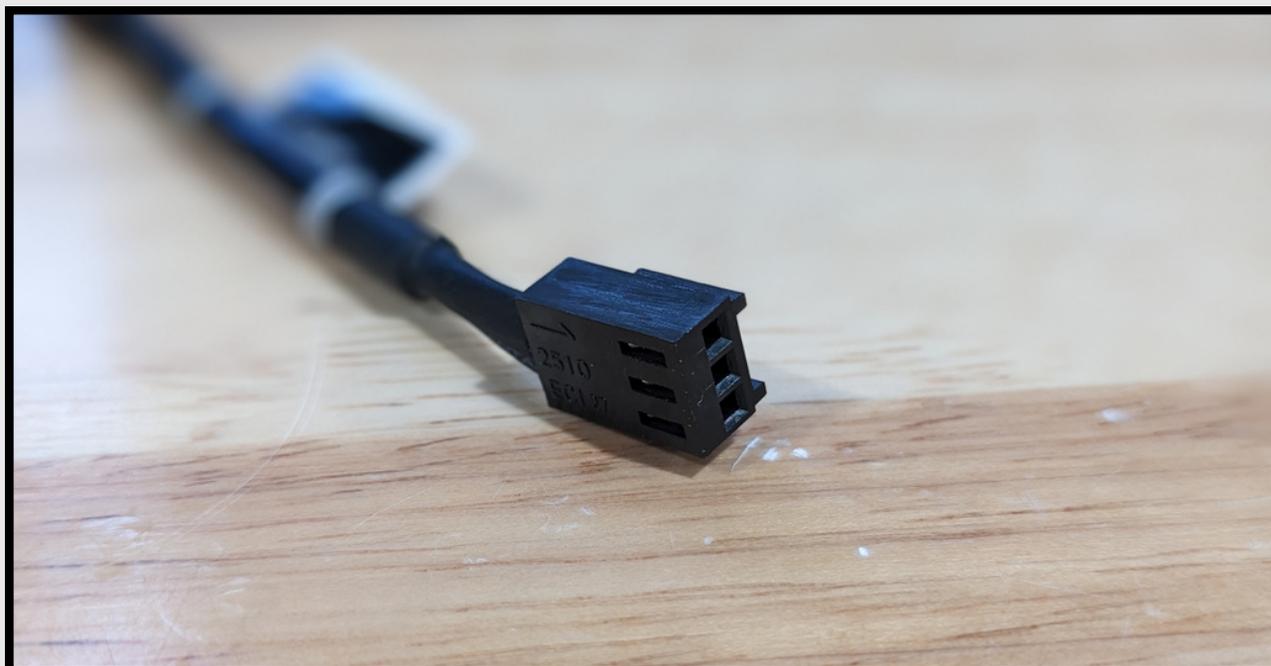


Original on the left. Noctua Upgrade on the Right.



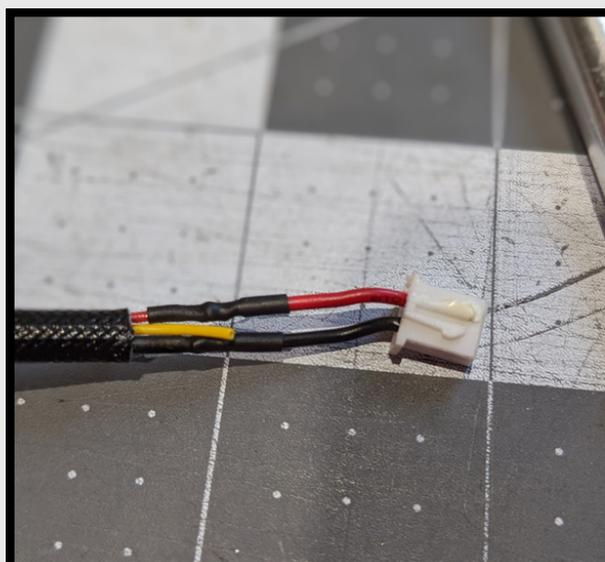
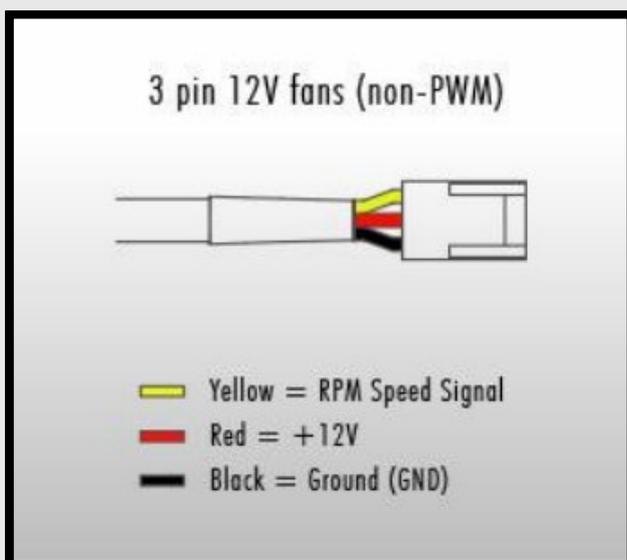
To remove the old fan, take the grill protecting the fan blades off and remove the top cover to get inside the PSU. Your fan cable might be covered in a spray type foam. Don't worry as the cable pulls out from the foam relatively easily.

# PART 1: 60MM PSU FAN UPGRADE



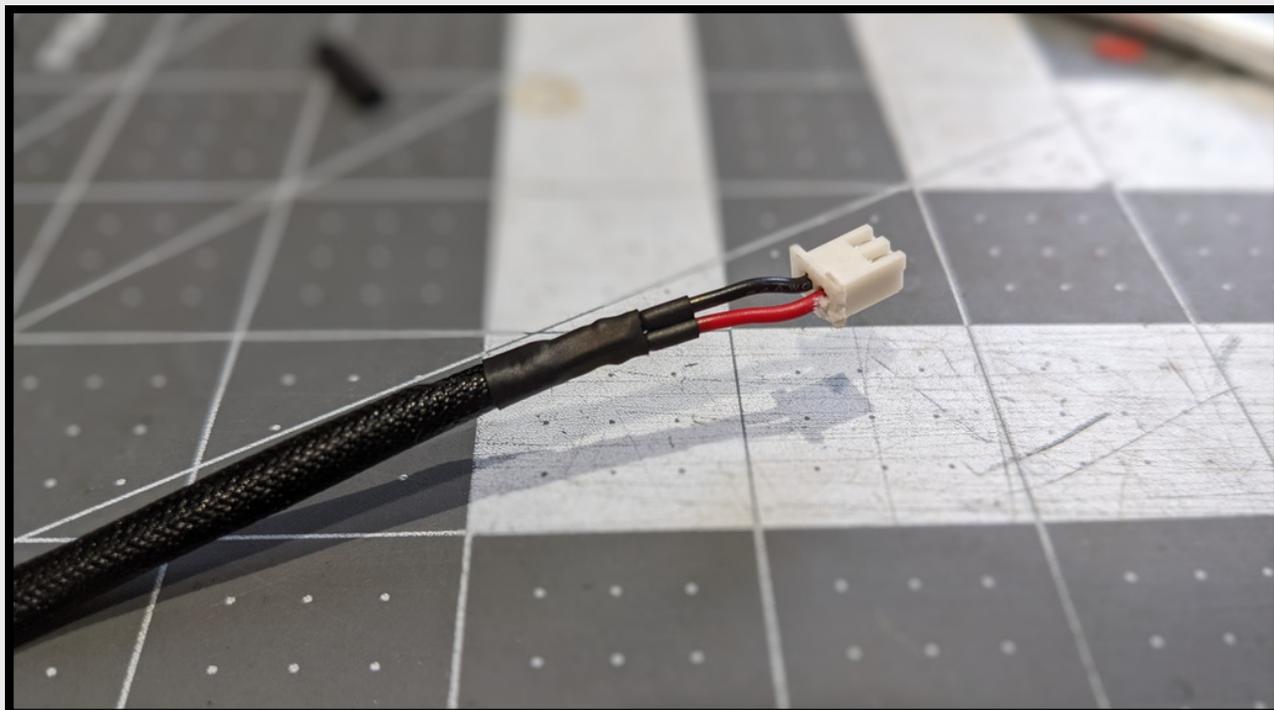
First thing you'll notice when replacing the fan in the PSU is the original is a 2 pin vs the new Noctua being a 3 pin.

There's a couple ways to handle this. We soldered the old 2 pin onto the Noctua extension cable, If you don't want to solder, you can buy a connector which you can find in the parts list.

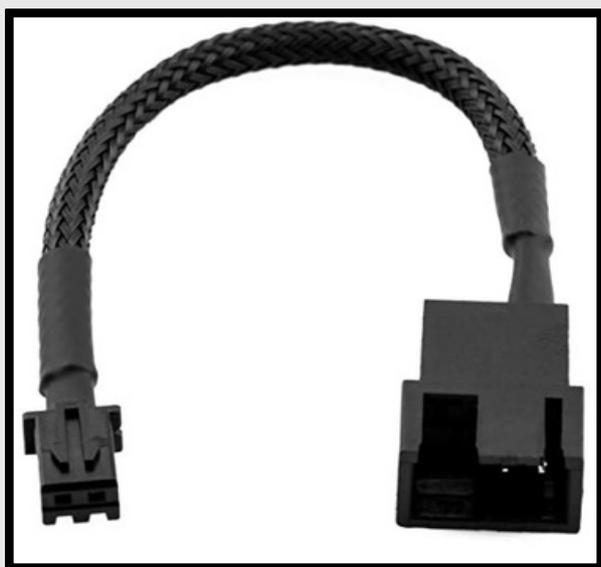


Soldering? Perfect, this is for you. You're going to use the red and black wires and tuck away the yellow as it's not needed. Computers use it to control rpms.

# PART 1: 60MM PSU FAN UPGRADE

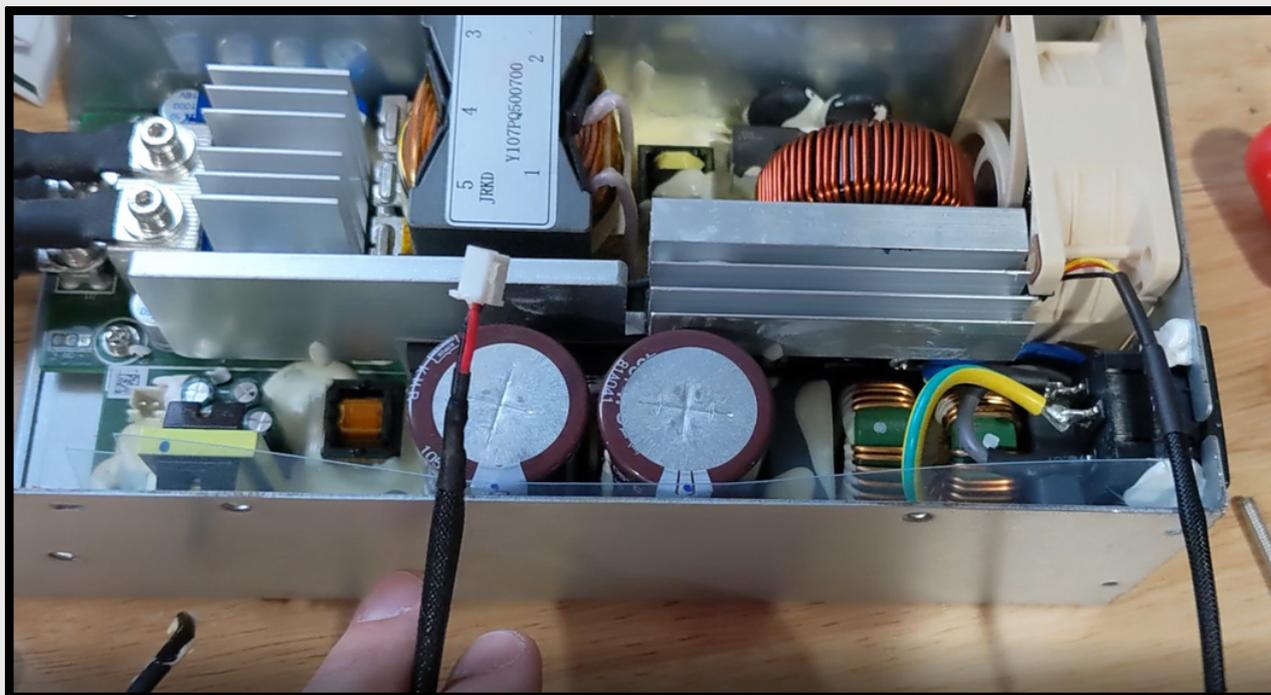


After you get the old two pin soldered to new Noctua 60mm Fan, it should look something like the above. Use heat shrink to make it look professional. Yellow wire is safely tucked under the final piece of heat shrink.



If you didn't want to solder and got the adapter your life is much easier. Plug the fan into the connector and boom, you've got a 2 pin. Let's plug it into the PSU now.

# PART 1: 60MM PSU FAN UPGRADE



Time to install your new fan. Place the new one where the old one went. Make sure you double check you have the fan blowing inside the PSU case.



The **red** circle shows where to plug the 2pin back into.

The **green** arrows show how you want the fan airflow.

Tuck any extra cabling you have right above the 2 pin connection.

If you don't want extra wiring, feel free to splice and solder to make the cable shorter.



## PART 1: 60MM PSU FAN UPGRADE



Last thing to do is install the original grill that came with the PSU to hold the fan in place inside the PSU. This will also stop you from putting your fingers in the fan...

You know who you are.

Place the top back onto the PSU and put the final screws in.

# BOOOOM!

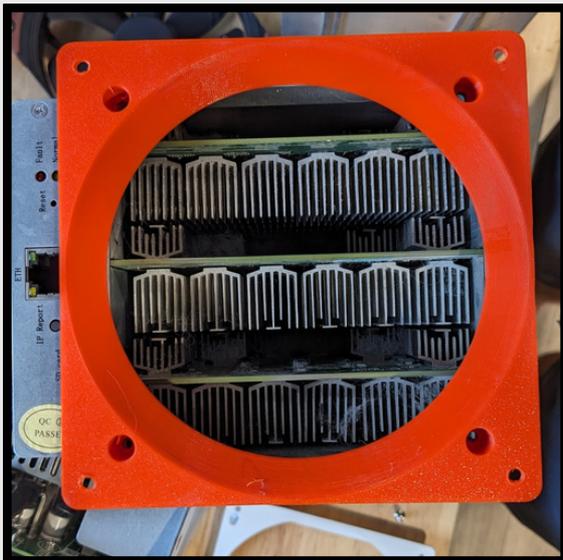
# NEW FAN!

# PART 2: 140MM FAN UPGRADE



Our favorite setup after the data collection and testing was the Noctua 140mm -3000RPM fans. You can find the link to them the Parts List!

Dead silent at 650-700W with room still to go if wanting to run higher Watts.



**Version 1**

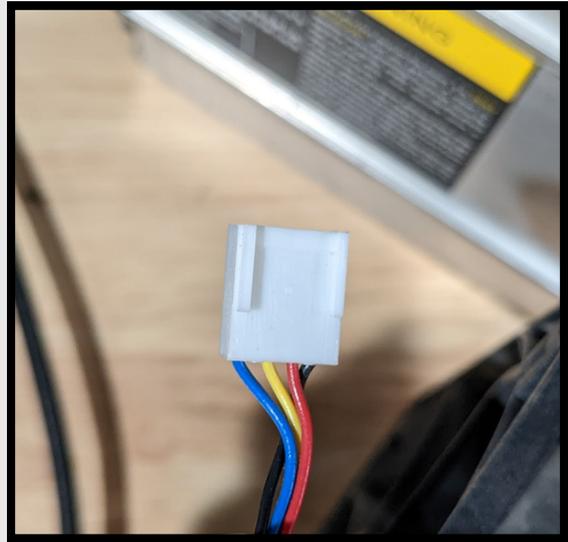


**Version 2**

This setup you'll need two 140mm to 120mm Fan Adapters. Check the Parts List!

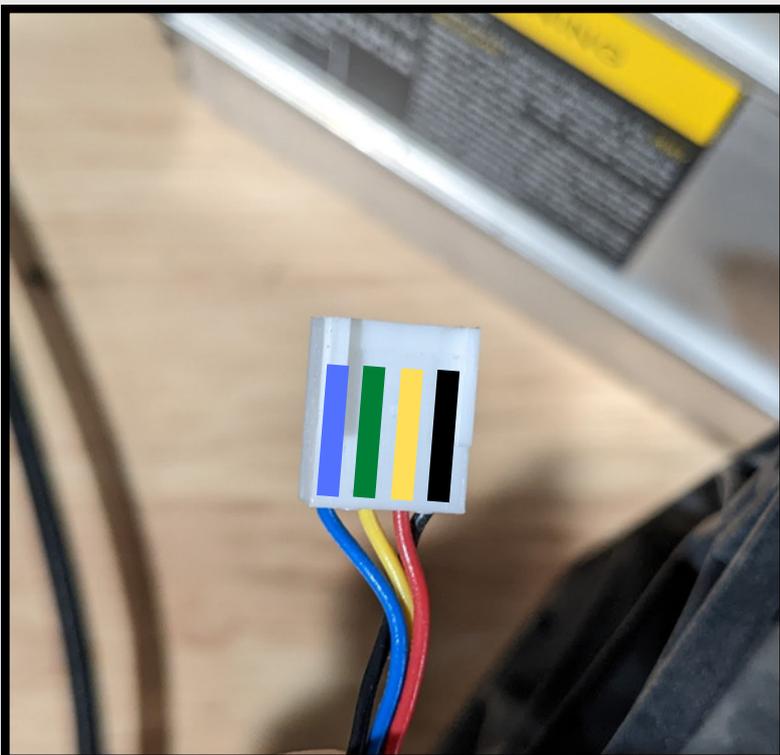
Version 2 opens up for more air flow and eliminates the possibility of you destroying a board when not watching your screw lengths.

# PART 2: 140MM FAN UPGRADE



Just like the PSU. You're going to run into an issue with the connectors with the new upgraded fans. Luckily there's an easy way to solve this. We're going to reuse the original fan connectors!

Don't worry. There will be no soldering needed as we will pop the pins out and just swap the connectors.



When moving the old connector over to the new fan. Use this image to help you put the wires in the right spot on the connector.

This image is with the tab on the connector facing you.

Make sure to pay attention to that or else you will put the wires in backwards.

# PART 2: 140MM FAN UPGRADE

VERSION 1 (OLD) - VERSION 2 ON NEXT PAGE



# STOP!

**THIS IS VERY IMPORTANT**

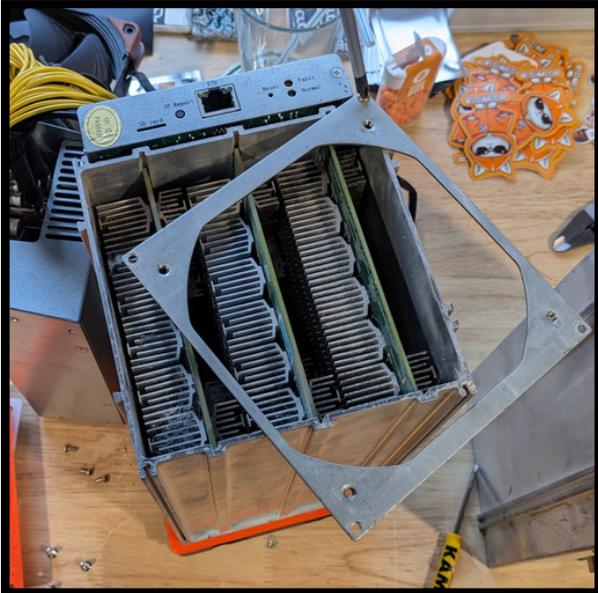
Make sure at all times when installing new fans you are checking the screw length!

If you do not see where the screws are going you might stab into a capacitor and ruin one of your S9 Boards!

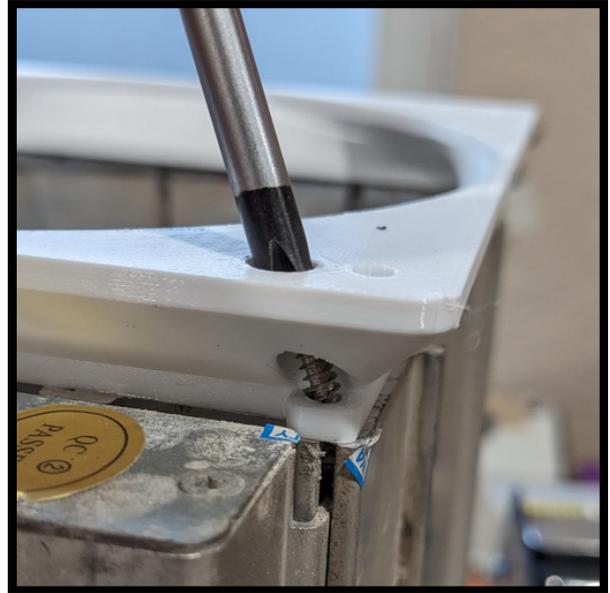


# PART 2: 140MM FAN UPGRADE

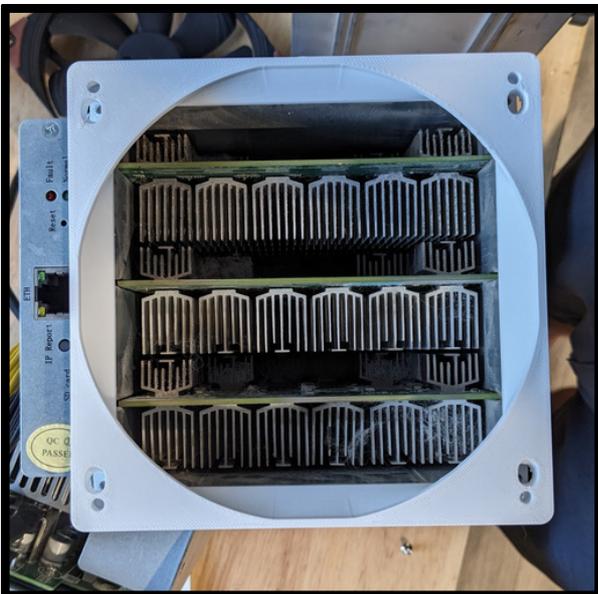
## UPDATED VERSION 2 ADAPTERS



Version 2 we will remove the front plate brackets. Keep the small screws.



Use the small screws to now attach the new adapters (Version 2) to the frame of the S9



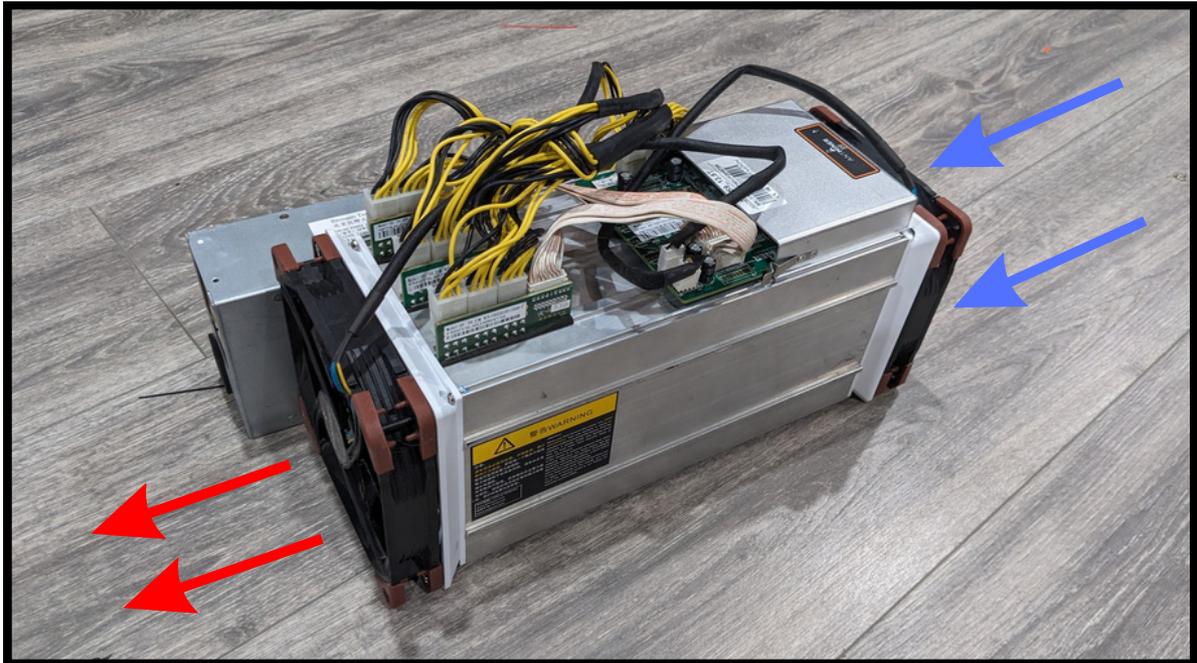
All the screws are in! Now it's time to put the new 140mm fans on the adapters!



Use the screws that came with your new fans to attach to the adapter.

**DOUBLE CHECK FAN ORIENTATION!**  
See next page for help

# PART 2: 140MM FAN UPGRADE



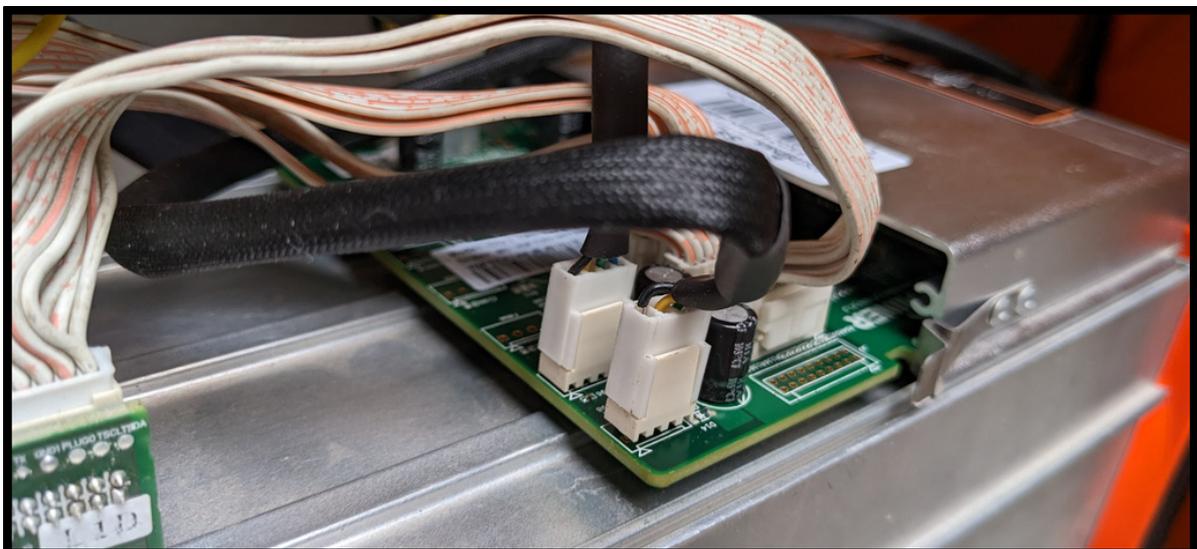
HOT AIR BEING PULLED OUT



The side of the fan with the support brackets is the way the air will be moving out of



COOL AIR BEING PUSHED IN



After both fans are installed. Plug them into the power ports on the control board.

## PART 2: 140MM FAN UPGRADE



That wasn't too bad, was it?

You're now ready to plug in an ethernet cable and test run your miner!

Make sure when starting up the miner to go into the configuration and set the Watts and Fan Speeds you want **ASAP**. We did this easily using Brains OS+.

# #BORNTOHASH

# OUR FAVORITE S9 SETTINGS



WATTS

**650W**



FAN SPEED

**55%**



CHIP TEMP

**80C**



NOISE

**45db**



TH

**8.25**

# PART 3: RUNNING ON WIFI



We wanted to put this section in here for a quick overview, and a few tips that helped us to get this working. There are several other options to go with if it does not work.



Easiest way to set this up is to follow this quick setup guide. It actually does a fairly good job.

## A Few tips:

- If you cannot get this to work on your primary connection. Try setting up a guest network. This worked for us.
- During the initial setup. Make sure to disable the repeater portion. You just want to use it as a bridge.

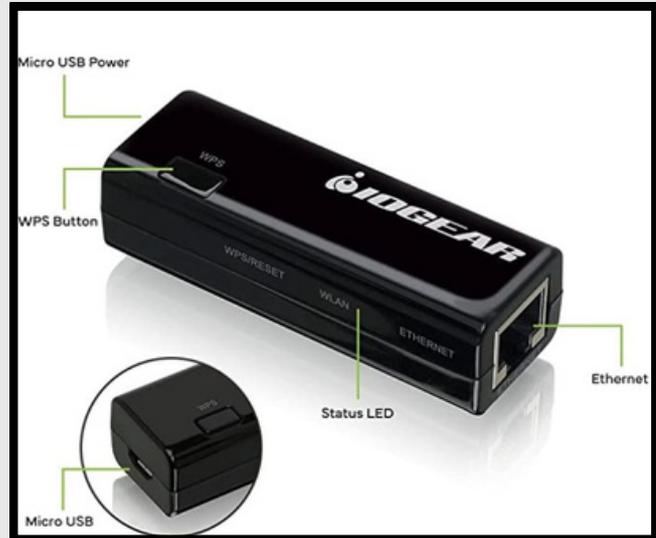
# PART 3: RUNNING ON WIFI

If you can't get the Vonets to work. Below are a few other options that work!



NETGEAR Wi-Fi Range Extender EX3700

[CHECK OUT](#)



IOGEAR Universal Ethernet to Wi-Fi N Adapter

[CHECK OUT](#)

# FREEEEEEEDOM!

## PART 4: OPTIONAL CASE



You pulled the trigger and got the wife/husband approved case?  
Let's hide that Sg ASIC!

The Case was updated to be a 3 part case instead of 2. Installation is still the same. Updated pictures will be coming soon.

# PART 4: OPTIONAL CASE



Time to prepare the Sg for inside the case.



First step is easy. We're going to slide the Sg PSU into the base of the case. It should be a perfect snug fit.

# PART 4: OPTIONAL CASE



If you have the Vonets or another Wifi Dongle. Plug that in now.

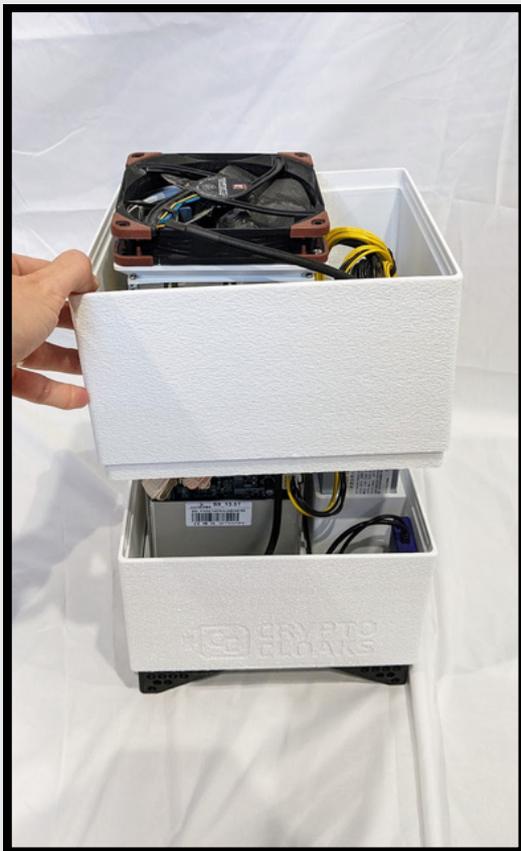


We're going to carefully slide the S9 down into the Case with the intake fan on the bottom. We want the warm air to exhaust the top.

# PART 4: OPTIONAL CASE



We'll use a piece of double sided tape to secure the Vonets or other Wifi Dongle to the interior of the case. If you want it to freely sit inside that is fine too.

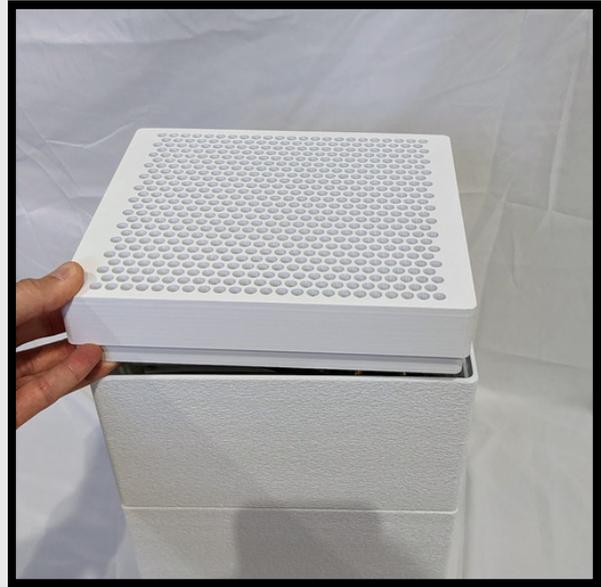


Slide the second body piece over and around the wires.



Slide the third body piece over and around the wires.

# PART 4: OPTIONAL CASE



If everything looks good and nothing is pinched. Toss on the top grill!



Optional top is solid and has two vents on the side to exhaust the air.

# PART 4: OPTIONAL CASE



If you want to secure the S9 to the bottom of the Base. You can use 4 fan screws to lock down the S9. It's not needed as everything sits tight inside, but it's there for extra security if desired.



OOOOOOOOOOOF that looks good.

## PART 4: OPTIONAL CASE



All finished. Plug it in and let it buck!

Welcome to the future of heating!

# HAPPY HEATING!

# PART 5: THE DATA

## S9 ASIC Space Heater Test Data

IT'S ALL IN THE DATA.

...

Want to run a 140mm fan? Here's an adapter to go from 120mm to 140mm! [CLICK HERE](#)

	Stock S9 with Braiins	S9 with Braiins	S9 with Braiins	S9 with Braiins	S9 with Braiins	S9 with Braiins
Watts	1300	1300	1300	1300	1300	1300
TH/s	13.68	13.72	N/A due to chip temp	N/A due to chip temp	N/A due to chip temp	N/A due to chip temp
Fan Type	Stock 120mm	Stock 120mm	<a href="#">Noctua NF-F12</a>	<a href="#">Noctua NF-A12 120mm</a>	<a href="#">Noctua NF-A14 PWM</a>	<a href="#">corpoun 200</a>
Fan Diameter	120	120	120	120	140	200
Fan RPM	6200	6200	3000	2000	3000	1000
Overall db	83	82	N/A due to chip temp	N/A due to chip temp	N/A due to chip temp	N/A due to chip temp
Outlet Air Temp (F)	102	103	N/A due to chip temp	N/A due to chip temp	N/A due to chip temp	N/A due to chip temp
Avg Chip Temp (C)	82	83	N/A due to chip temp	N/A due to chip temp	N/A due to chip temp	N/A due to chip temp
BTUs / hr	381	381	N/A due to chip temp	N/A due to chip temp	N/A due to chip temp	N/A due to chip temp
Watts / TH	95.0	94.8	N/A due to chip temp	N/A due to chip temp	N/A due to chip temp	N/A due to chip temp
PSU FAN	Stock 60mm	<a href="#">Noctua NF-A6 25mm</a>	<a href="#">Noctua NF-A6 25mm</a>	<a href="#">Noctua NF-A6 25mm</a>	<a href="#">Noctua NF-A6 25mm</a>	<a href="#">Noctua NF-A6 25mm</a>

TAKE ME TO THE DATA

There's really not a good way of showing a massive data sheet on a document like this. We're going to highlight a few setups and link the entire spreadsheet for you to dig into.

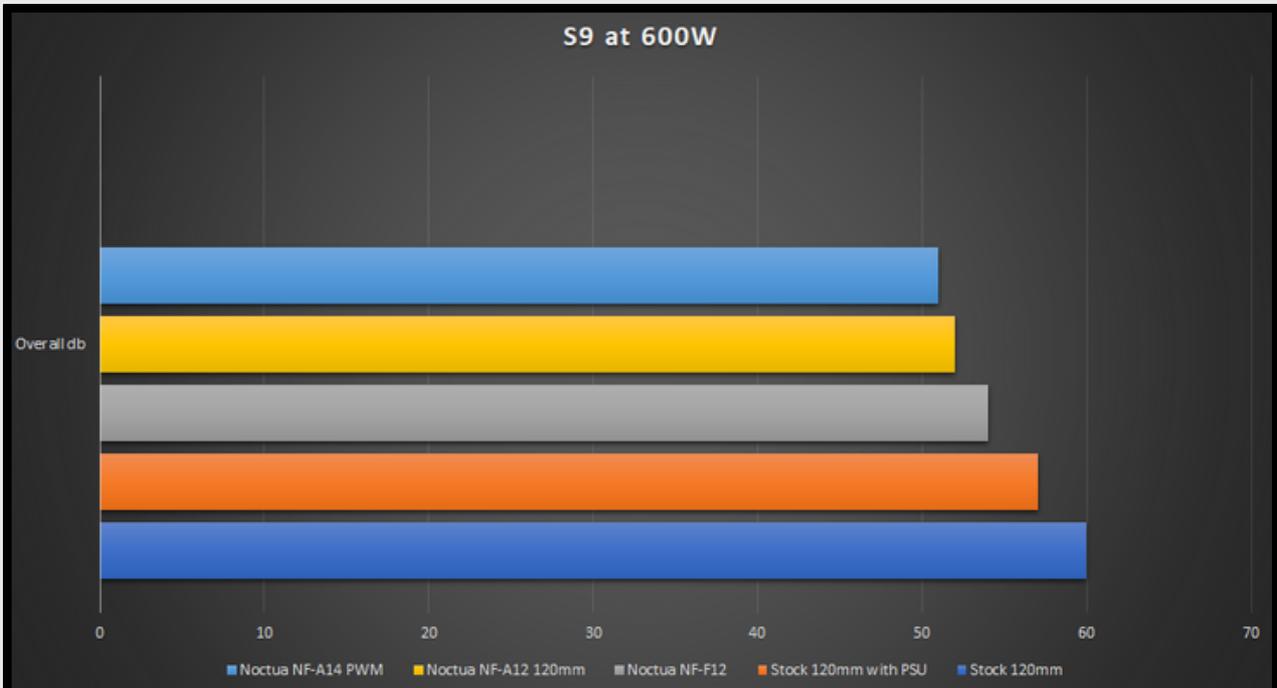
We hope you find a setup you like!

# CHARTS INCOMING!

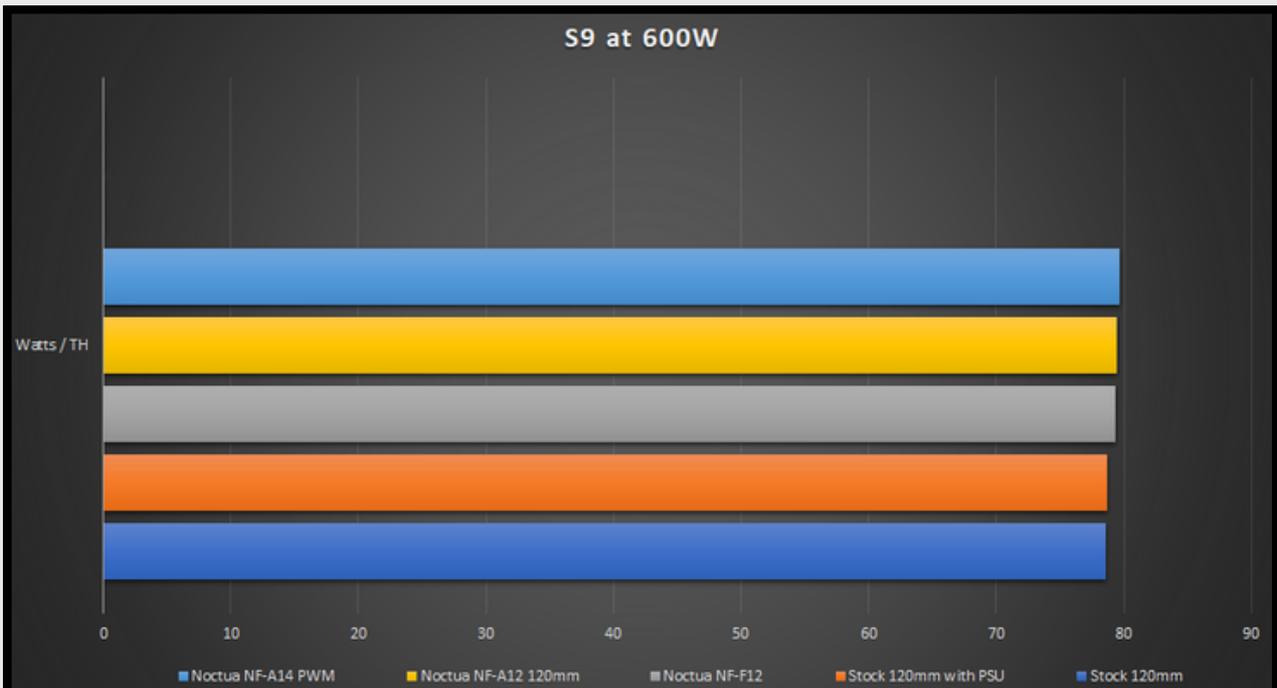
Disclaimer: Maybe what you find will differ from what we gather. This will happen. Everyone's setup will be different. We wanted to post what we collected for people to use as a base point. Never. Stop. Building.

## PART 5: THE DATA

# Overall dbs at 600W

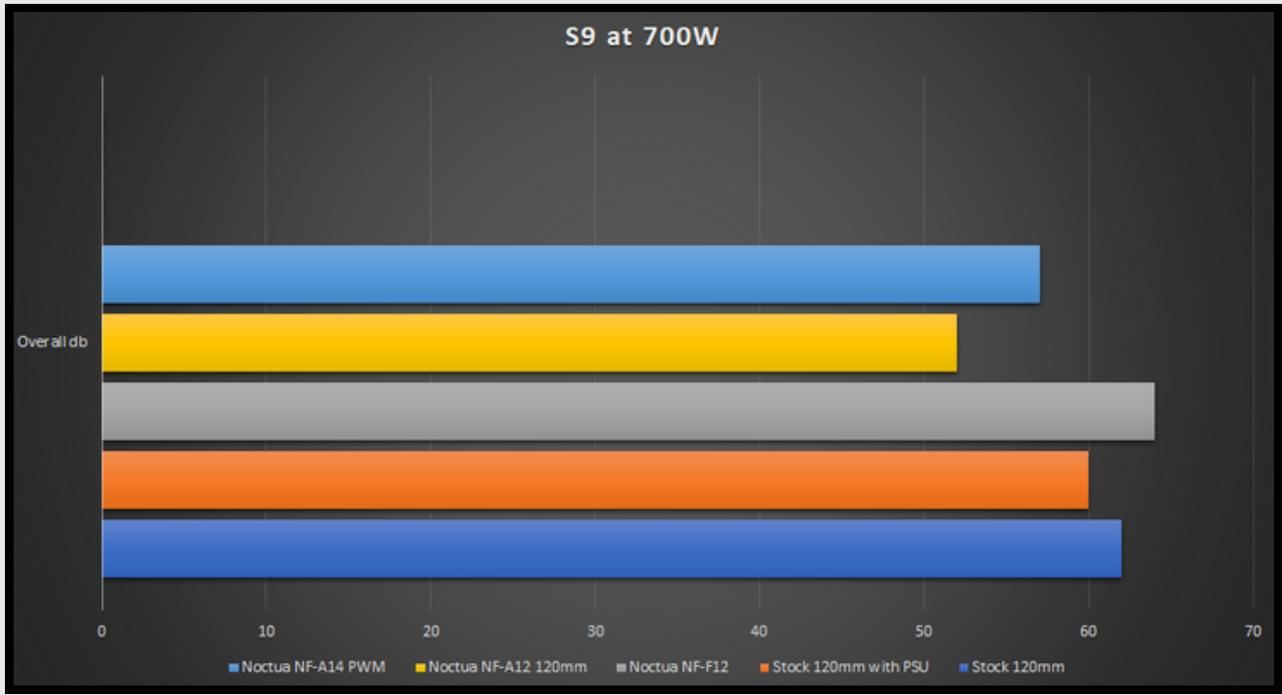


# Watts/TH at 600W

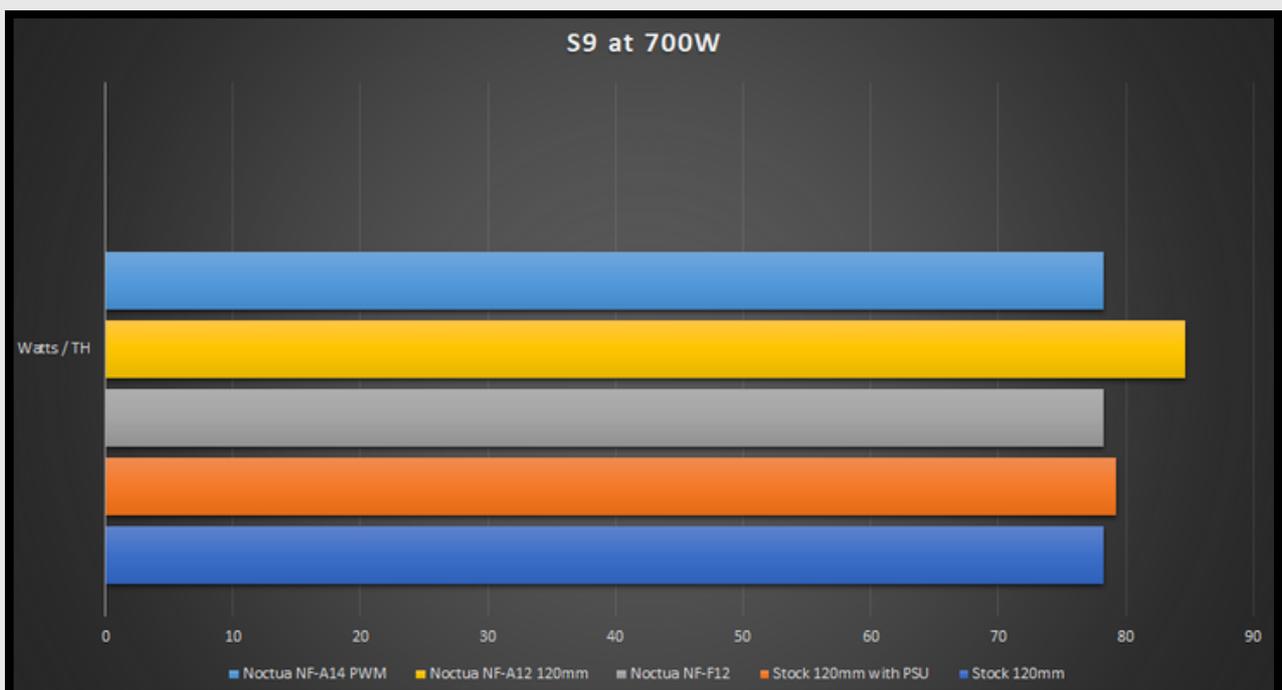


## PART 5: THE DATA

# Overall dbs at 700W

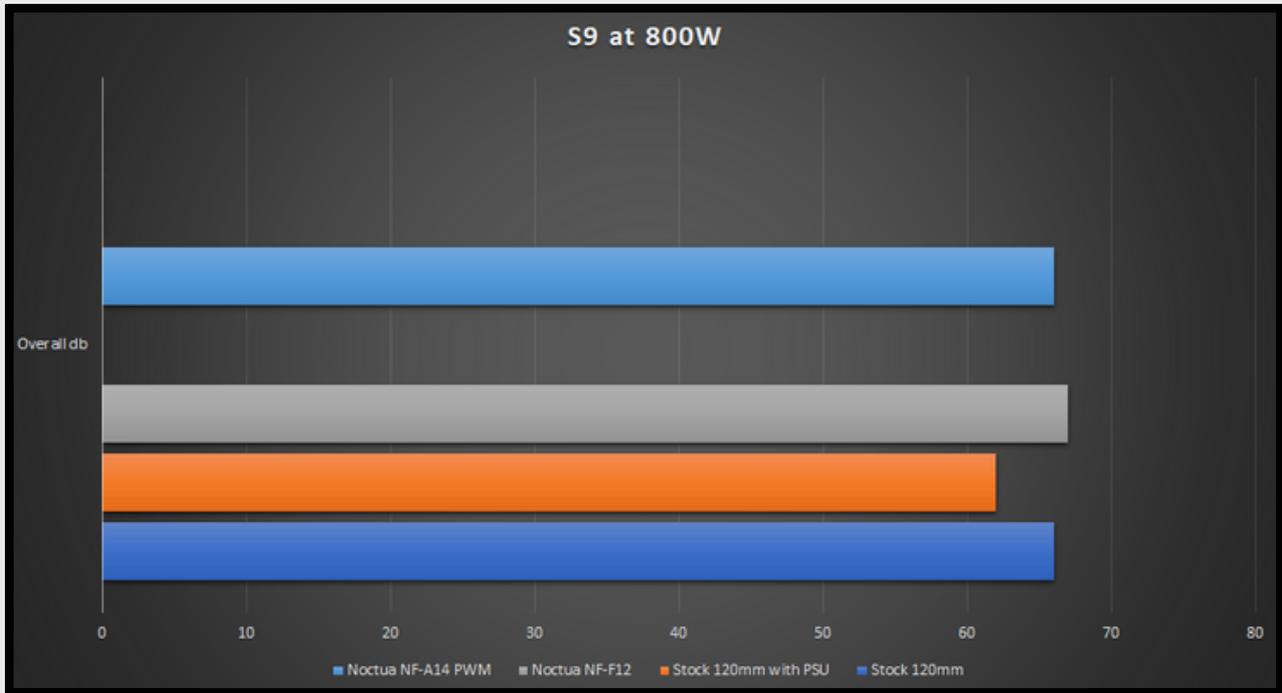


# Watts/TH at 700W

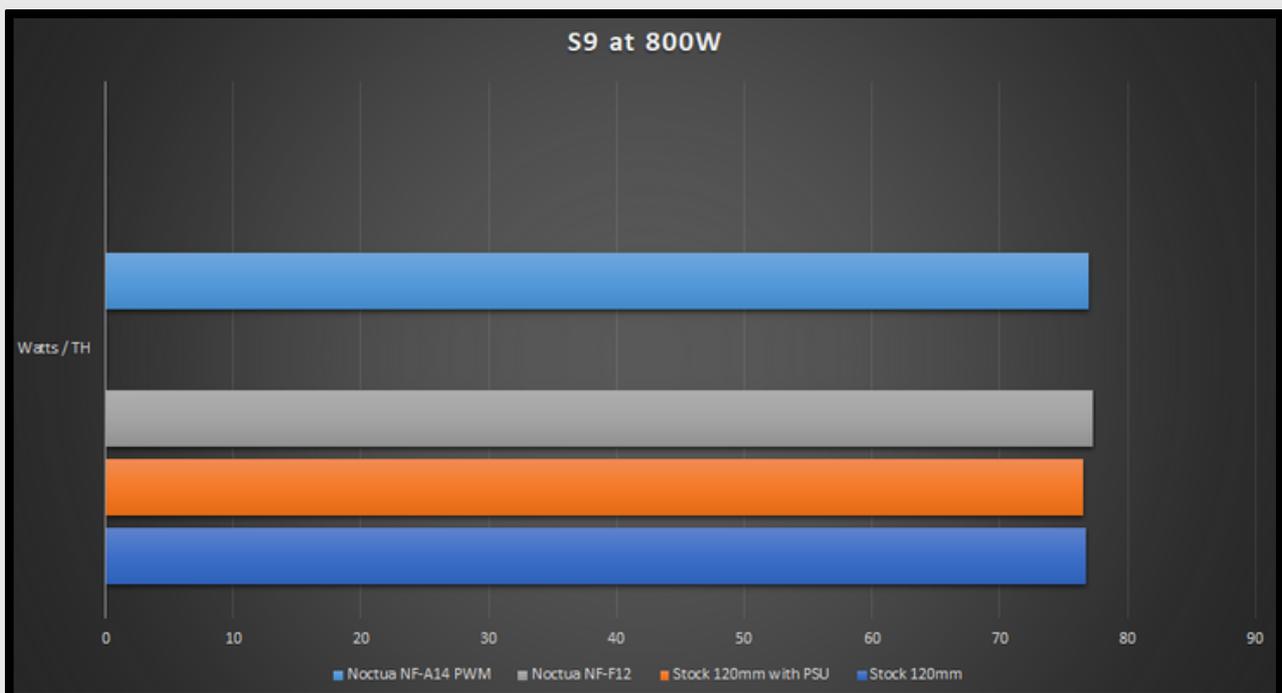


## PART 5: THE DATA

# Overall dbs at 800W

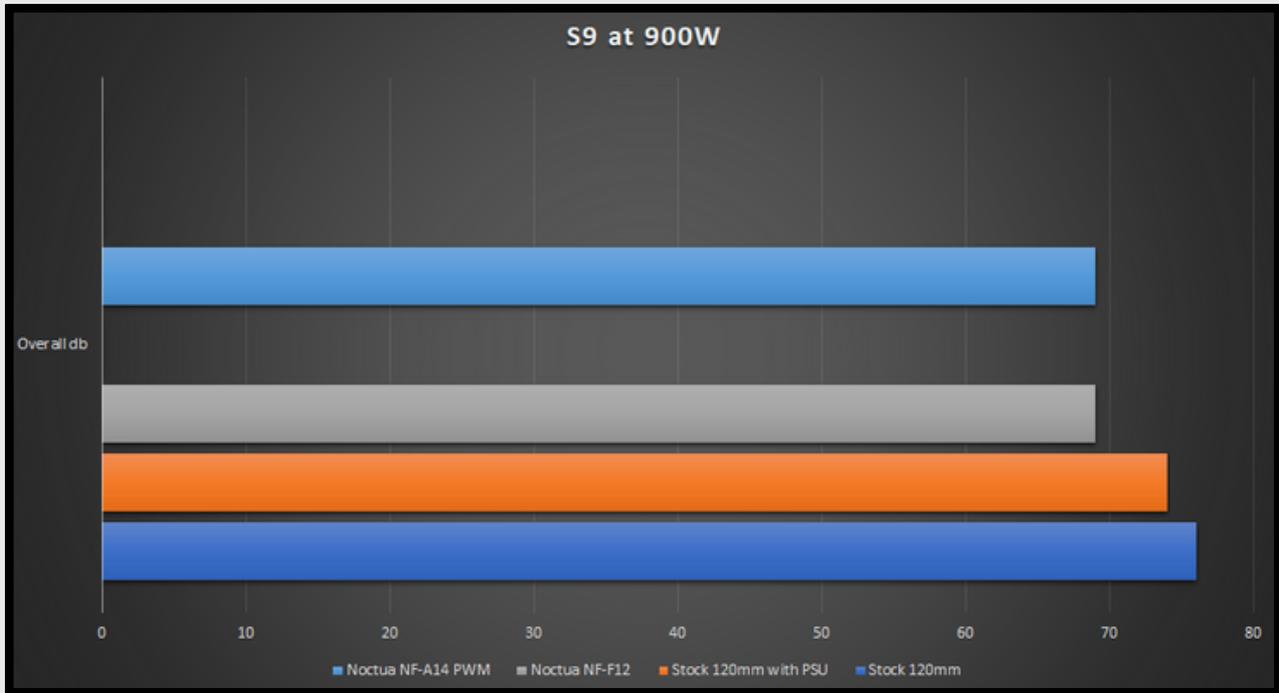


# Watts/TH at 800W

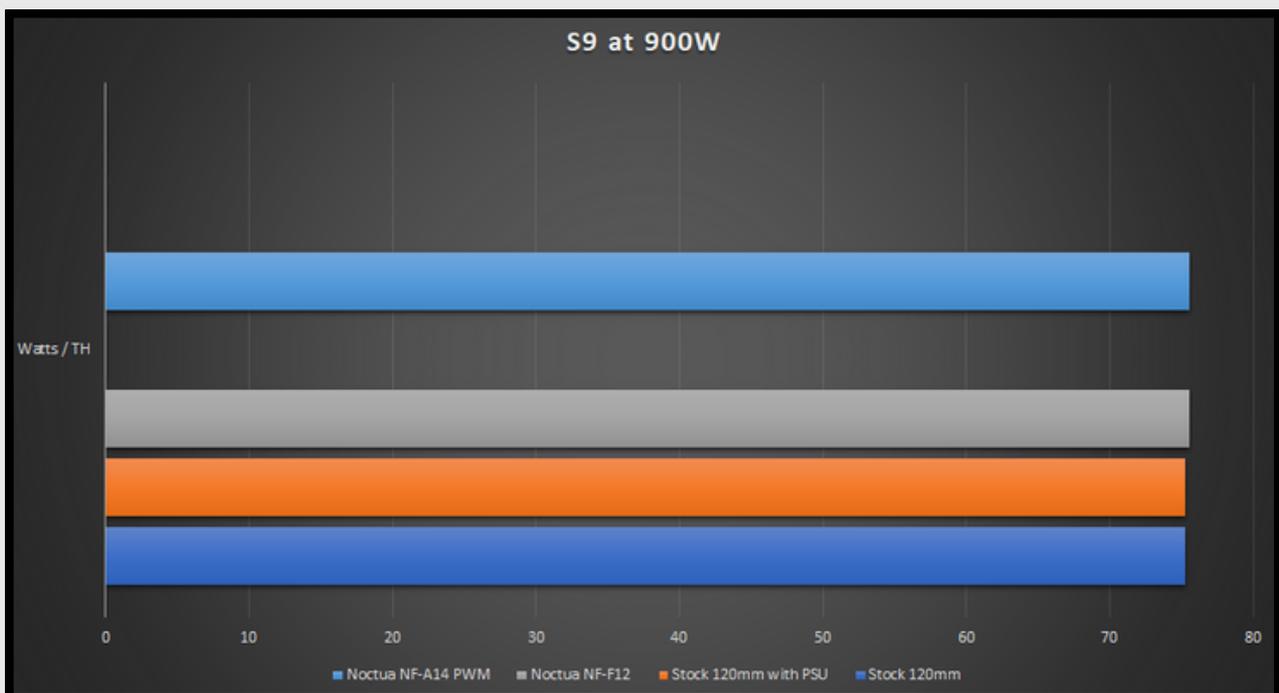


## PART 5: THE DATA

# Overall dbs at 900W



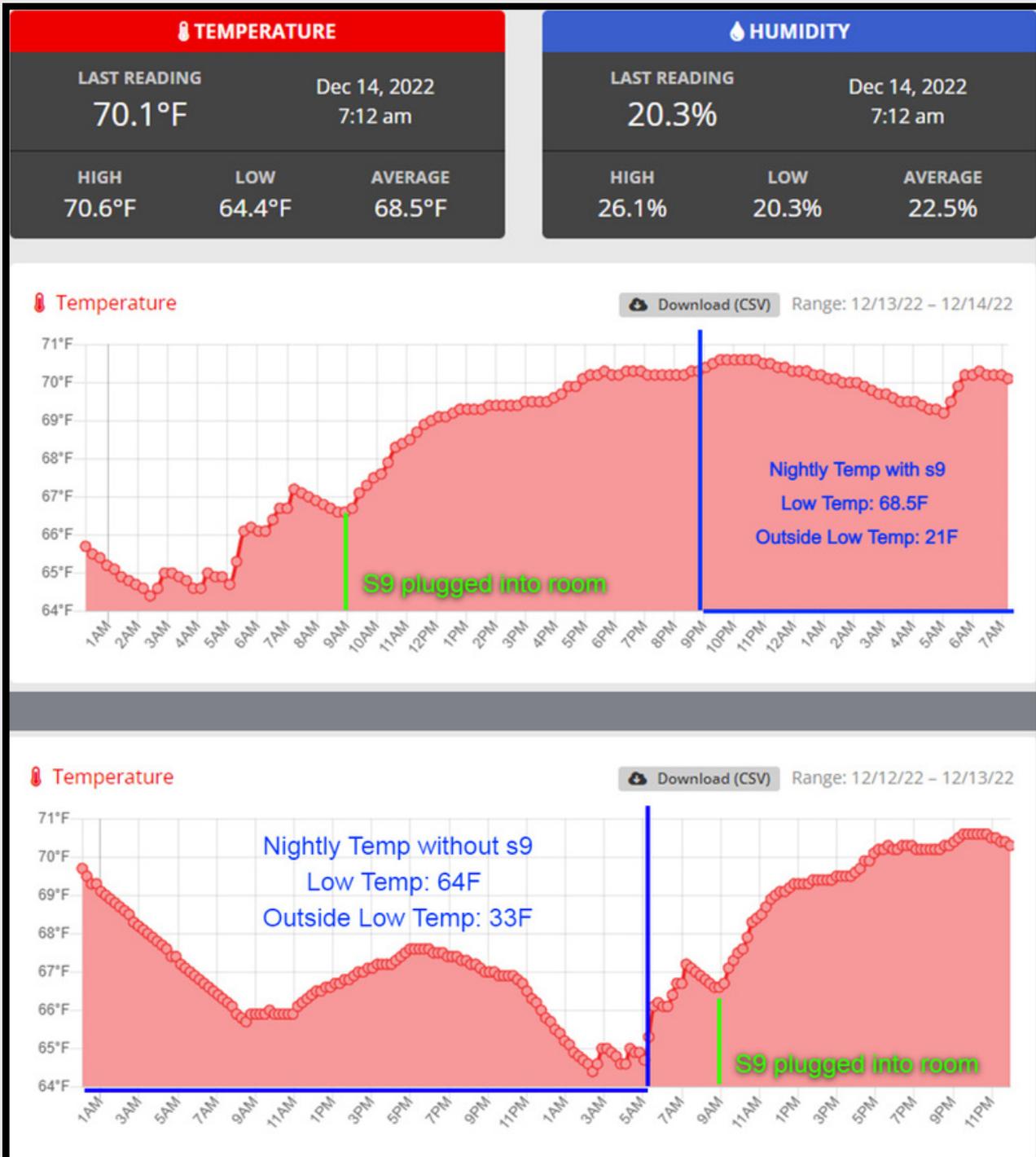
# Watts/TH at 900W



# PART 6: TEMP RESULTS

Room temperature is important, especially with a Space Heater. We collected data to monitor how the S9 can keep up with warming a 1560 ft<sup>3</sup> Room. This S9 is running our favorite settings mentioned earlier in the document.

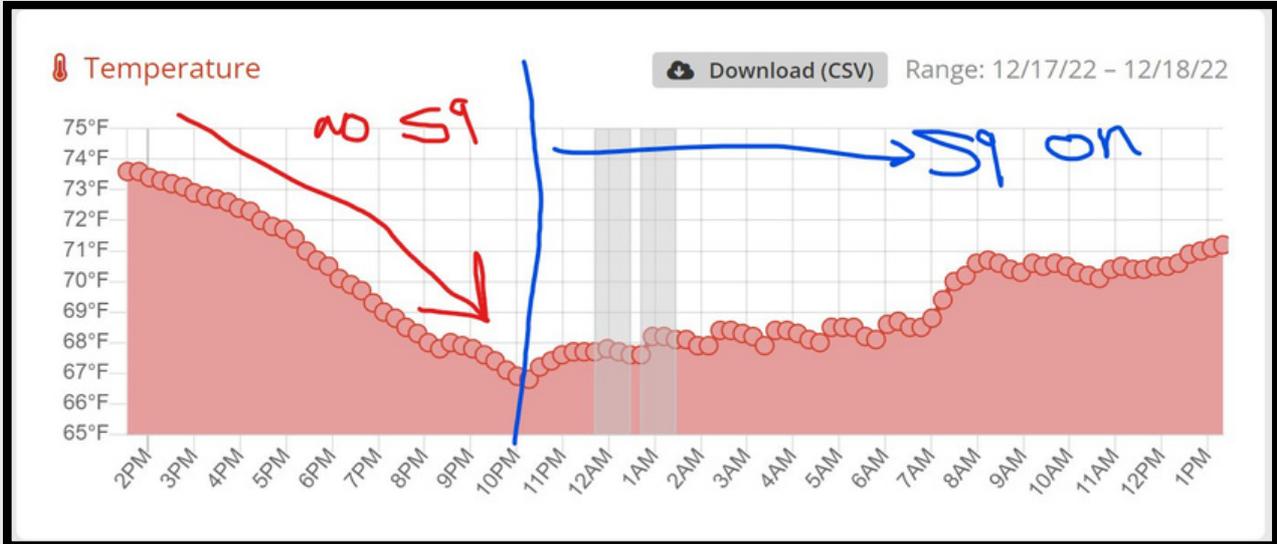
Outside temps are noted.



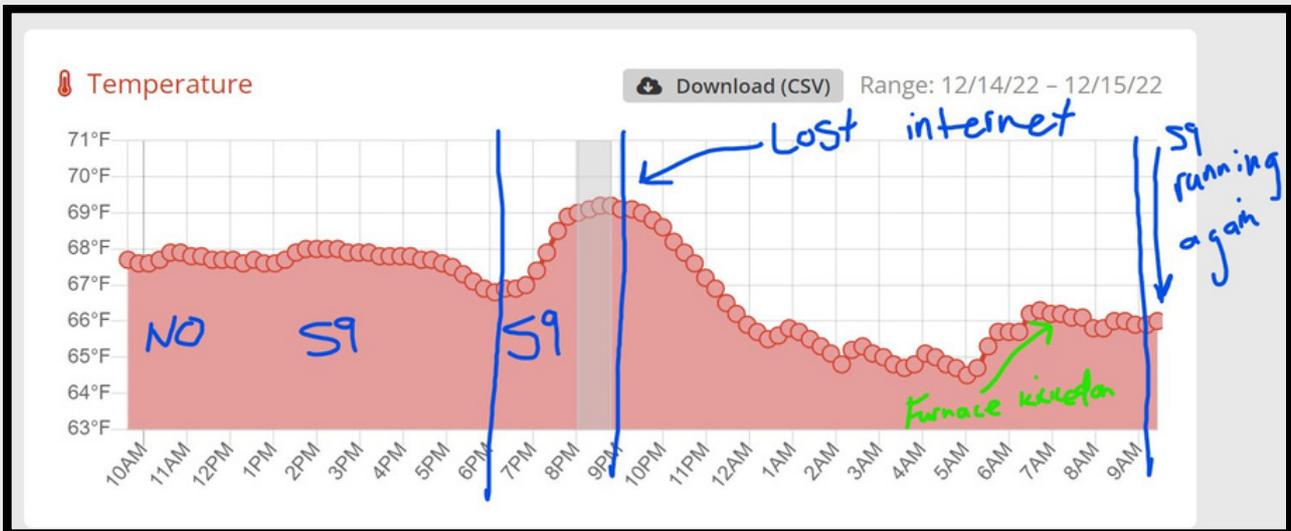
As you can see. The S9 is successfully keeping the room above 68.5F when the room would normally dip down to 64 or lower.

# PART 6: TEMP RESULTS

Below are a few more temperature graphs showing the success of the S9 heating the room and keeping a new high for min temps.



At the beginning of the graph you can see where the S9 was shutoff and the temp started to drop. The blue line shows where the S9 was plugged in and temps began to rise.



# THE END



I just want to take a second to thank the community and all the people out there building in the Bitcoin Space. There are no words for the amount of support you all bring and I'm grateful AF. You all keep me motivated and I owe you all for allowing me to live my dream of building a business in Bitcoin.

Cheers to the Plebs and the Home Miners.

We're the ones changing the world.

Sincerely,  
-Rick V

If you need any help or have any questions you know where to reach me.  
Reach out!