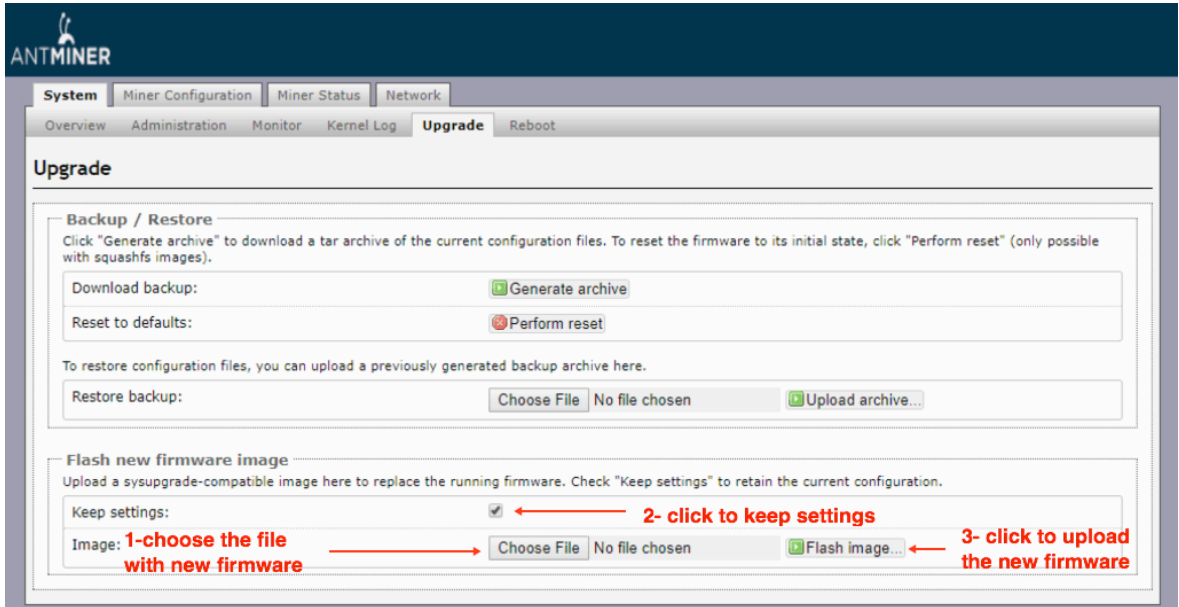


USER MANUAL

FIRMWARE FOR ANTMINER S9, S9i, S9j with AsicBoost

Firmware upload and language selection:

1) Use the web interface of the original BITMAIN firmware, System - Upgrade - Flash new firmware image and select the file with the new firmware, click - keep settings (save pool, worker, password) and click FLASH IMAGE

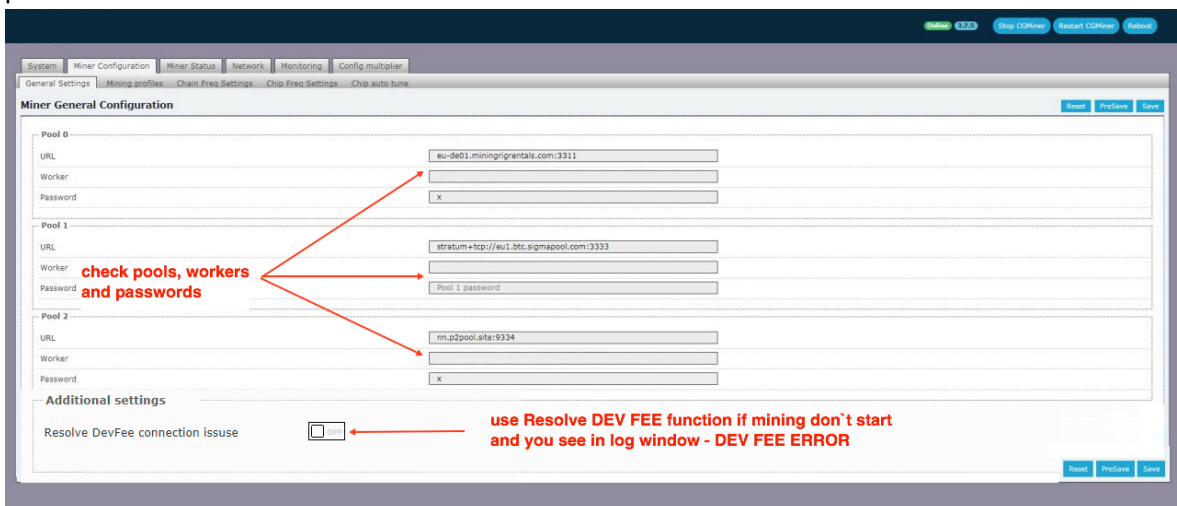


2) Next, write only the IP address of your ASIC in the browser (example 192.168.1.1) and if you see the original BITMAIN firmware, press CTRL+F5 and the cache will be updated.
3) Choose System - Regional settings -UI language and select your language RU-EN-CN-AR)



Overclocking and downvolt using the profile (auto mode for beginners)

1) Choose the Miner Configuration - General settings and check the settings of pools, workers and passwords



2) Choose the Miner Configuration - Mining Profiles - Preset

Select overlocking or downvolt option from the menu. Use the Overclocking level according to your power supply. We recommend to overlock not more than 16 Th/s with BITMAIN 1600 watt power supply and not more than 17 TH/s with 1800 watt power supply.

The screenshot shows the 'Mining Profiles Configuration' page. At the top, there are buttons for 'pre-save the settings' and 'save the settings'. The configuration is divided into several sections: Profile, Preset, Fan rpm check, Downscale, Restart if hashrate lower, Restart if chain have more X than, Disable chains at PCB temperature, Manual Fan RPM config, and ASICBoost. Each section has a dropdown menu or input field. Below the configuration are three chain status sections (Chain #5, Chain #6, Chain #7) showing hash rates and temperatures. At the bottom is a log section showing system events.

3) If you need to disable the fan control and remove the fans you must enable the Fan RPM check : fan check turn off (only for immersion cooling)

4) If you want to enable hashrate control function you need to set the value at which the firmware will reload the ASIC if the chains does not show the required hashrate, Restart if hashrate lower: 12 000 GH=12 TH/s during mining (example)

5) If you want to control the overheating of the device, set the maximum temperature at which the firmware will turn off the ASIC: Disable Chains at PCB at temperature: (0 = standard temperature-90C), you can manually set another value

6) Enable the ASIC BOOST function (to reduce consumption), Attention: your pool must support ASIC BOOST technology, otherwise mining will not start.

7) Click the Save button at the bottom or top of the firmware page.

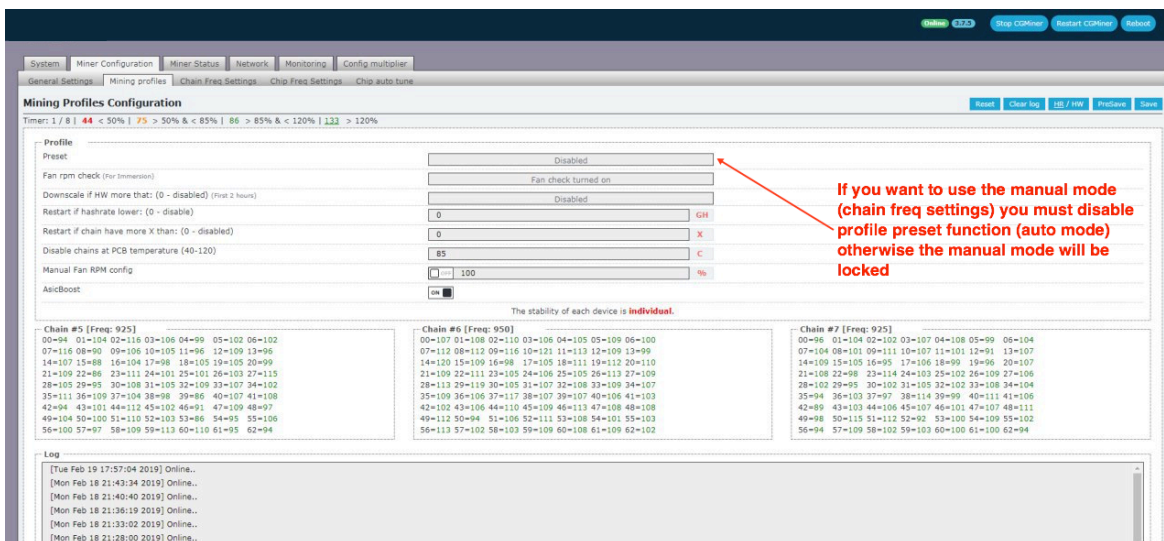
8) Overclocking Program is set, ASIC can be set up to 30 minutes and will be reloaded during the setup process (this is normal)

9) If mining does not start and the logs have the info: DEV FEE ERROR you need to go to the Miner Configuration - General settings and use function: RESOLVE DevFee connection (this option appears after restarting of the ASIC at the beginning of mining)

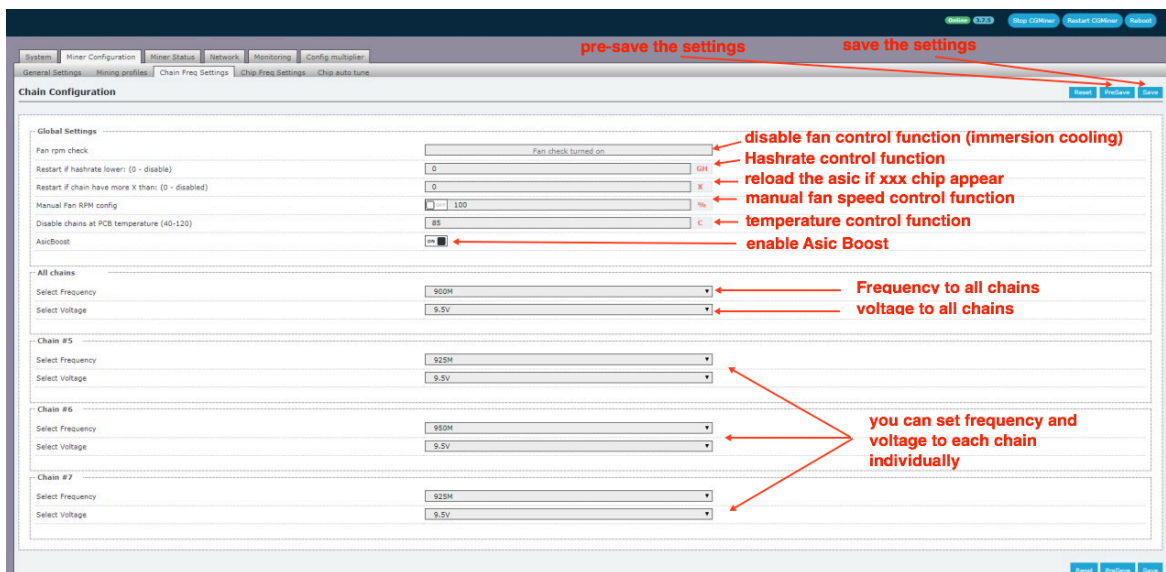
The screenshot shows the 'Miner Status' page. It has a summary section with metrics like Elapsed, GH/S(RT), GH/S(ave), FoundBlocks, LocalWork, Utility, WU, and BestShare. Below is a table of mining pools with columns for Pool, URL, User, Status, Type, Diff, GetWorks, Priority, Accepted, Diff#R, Diff#P, Diff#S, Rejected, Discarded, Stale, LSDiff, and LSTime. At the bottom is a table for ASIC status with columns for Chain#, ASIC#, Frequency(Avg), Voltage, GH/S(ideal), GH/S(RT), Status, Errors(HW), Temp(PCB), and Temp(Chip). There is also a Fan speed section at the very bottom.

Overclocking and downvolt (manual mode)

- 1) Choose the Miner Configuration - General settings and check the settings of pools, workers and passwords.
- 2) make Sure that the Miner Configuration - MININGS PROFILES - PRESET - SET DISABLE (otherwise, the manual mode will be blocked)

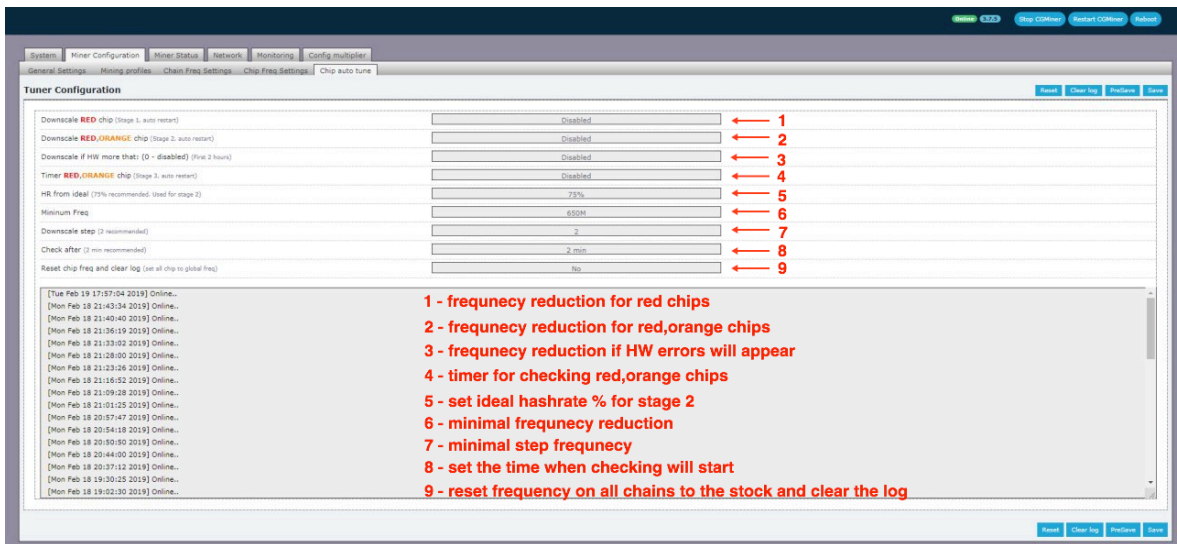


- 3) Choose the Miner Configuration-Chain Freq Settings



- activate the hashrate control function (reload the Asic in the case of falling hash rate): Restart if Hashrate Lower : 12000 GH=12 TH/s (example)
- activate the temperature control function (ASIC will shutdown in case of too high temperature Disable chains at PCB temperature: (0 = standard temperature - 90s), you can set manually different temperature for the chains
- Enable the ASIC BOOST function (reducing the consumption), Attention your pool must support ASIC BOOST technogoly, otherwise mining will not start.
- Set frequency and voltage to all chains for overclocking or downvolt Asic (ALL CHAINS), also you can set different frequency and voltage to each chain
- Press the **PRESAVE** button located at the bottom and top of the firmware page

4) Next, choose the CHIP AUTO TUNE and turn on :



- Downscale red CHIP (stage 1) - enable
- Downscale red, orange Chip (stage 2) - enable
- Timer Red, Orange-12 Hr
- Minimal frequency - 400

5) Click the **SAVE** button located at the bottom and top of the page

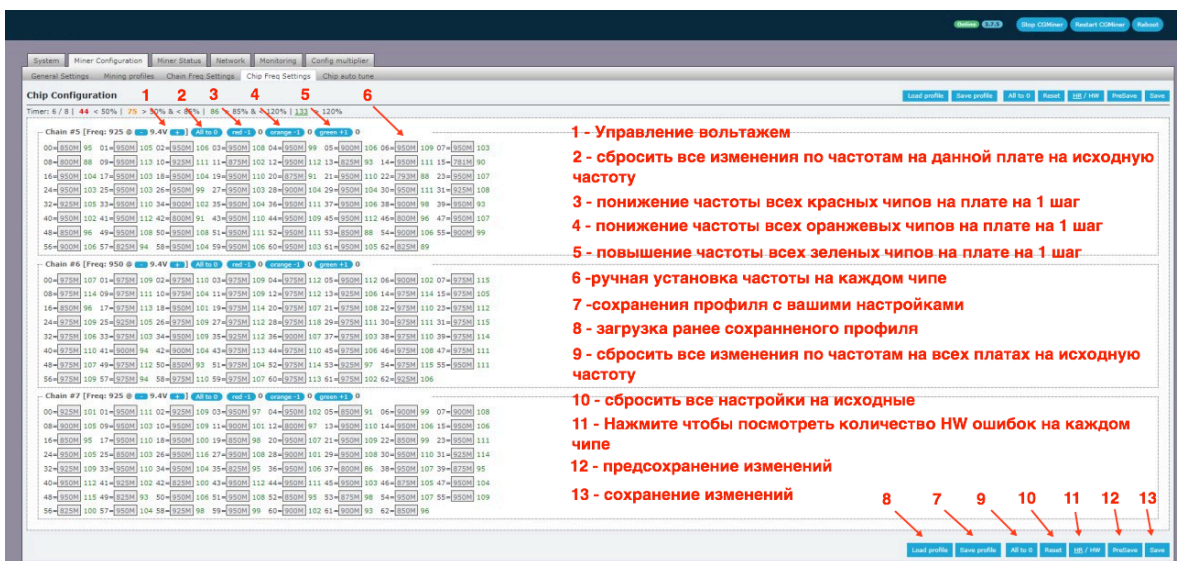
6) The overclocking Program is set, the ASIC can be set up to 30 minutes and will restart during the setup process (this is normal)

7) You can check the status of the chips in the Miner Configuration - chip Freq Settings
 If the AUTO TUNE function is enabled the firmware automatically will tune each chip in the automatic mode and will not be stoped until all the chips will be in the green zone. (the frequency of the red and orange chips will drop)

If you set up the timer (in hours) for stage 3 (AUTO TUNE option) the firmware will check for the appearance of red or orange chips and will drop the frequency until they become green.

Also, you have possibility to change the frequency of each chip manually.

Manual settings allow you to drop the frequency of all the red, orange chips or manually increase the frquency of the green chips to get maximum efficiency from each Asic.



We recommend using the following settings for 1600 watt power supply :
 Frequency: 750, Voltage: 9.0, avg speed: 16.1 Th/s

We recommend using the following settings for 1800 watt power supply :
 Frequency: 800 Volt 9.0, avg speed: 17 Th/s

NOTE: You can use lower voltage modes for better energy saving but some ASIC `s will give much lower hashrate than must be and can be not stable, if this happened you need to raise the voltage of this asics

Downvolt modes:

Frequency: 750, Voltage: 8.8, speed 16.1 Th/s-1450 watt (93 watt - Th/s)

Frequency: 700, Voltage: 8.6, speed 15 Th/s-1300 watt (86 watt - Th/s)

Frequency: 631, Voltage: 8.4, speed 13.5 Th/s-1050 watt (78 watt - Th/s)

Frequency: 550, Voltage: 8.3, speed 11.8 Th/s-880 watt (75 watt - Th/s)

The power consumption in fact may be different and depends on the quality of the Asic and power supply

Upload the firmware, create CONFIG (overclocking and downvolt settings), create workers on the unlimited quantity of ASICS in one network

1) Download the BTC TOOL program (https://url.btc.com/btc-tools-download?_ga=2.39099043.1874240382.1550499030-903294307.1550403289)

The screenshot shows the BTC TOOL v1.2.0 interface. At the top, there are buttons for 'Scan', 'Monitor', 'Config All', 'Config Selected', 'Reboot All', 'Reboot Selected', 'Firmware Upgrade', 'Export', and 'Settings'. Below these are input fields for IP ranges and pool configurations. The main area is a table with columns for IP, Status, Type, Hash Rate RT, Hash Rate avg, Temperature, Fan Speed, Elapsed, Pool 1, Worker, Pool 2, Worker, Pool 3, Worker, Firmware, and S. A 'Firmware Upgrade' dialog box is open, showing a file selection path and buttons for 'Keep Settings', 'Upgrade Selected', and 'Upgrade All'. Red arrows and text annotations point to specific elements: '1 - SET THE IP RANGE' points to the IP range input; '2 - SCAN THE IP RANGE' points to the 'Scan' button; '3 - CLICK FIRMWARE UPGRADE' points to the 'Firmware Upgrade' button; '4 - SELECT THE ASIC MODEL YOU WANT TO UPGRADE' points to the 'Antminer S9 (min: 3.7.5)' dropdown; '5 - SELECT FIRMWARE FILE' points to the file selection path; '6 - click keep settings (to save pools; workers passwords)' points to the 'Keep Settings' button; and '7 - CLICK UPGRADE ALL AND CONFIRM' points to the 'Upgrade All' button.

2) Use the BTC TOOL and set the IP range of the ASICS

3) Use the UPGRADE function and select the file with the firmware , click keep SETTINGS (to save the POOL settings , workers and passwords) , select Antminer S9, S9i , S9j confirm the upload of the firmware.

4) After the firmware is uploaded use the web interface of any ASIC with new firmware and choose CONFIG MULTIPLIER-CONFIG

The screenshot shows the 'Config Multiplier' web interface with several sections and annotations:

- Pool 0:** URL (eu-dc01.miningrentals.com:3311), Worker (eu-dc01.miningrentals.com:3311), Password (x). Annotations: '1 - click dont change if you don't want to change pools or write the new pools (pool 0, pool 1, pool 2)'. Buttons: 'Dont change', 'Add HostName', 'Add IP', 'W + HashRate', 'W + IP'.
- Pool 1:** URL (stratum+tcp://eu1.btc.sigmapool.com:3333), Worker (stratum+tcp://eu1.btc.sigmapool.com:3333), Password (Pool 1 password). Annotations: '2 - click dont change if you don't want to change the workers or use the function hostname, ip, worker+hostname, worker + ip for creating individual worker for each ASIC'. Buttons: 'Dont change', 'Add HostName', 'Add IP', 'W + HashRate', 'W + IP'.
- Pool 2:** URL (mhu2pool.site:19334), Worker (mhu2pool.site:19334), Password (x). Annotations: '3 - click dont change if you don't want to change password or write the new password'. Buttons: 'Dont change', 'Add HostName', 'Add IP', 'W + HashRate', 'W + IP'.
- Profile:** Preset (Disabled), Fan rpm check (Fan check turned on), Restart if hashrate lower (0 - disabled), Restart if chain have more X than (0 - disabled), Disable chains at PCB temperature (40-120), Manual Fan RPM config (100), ASICBoost (Enabled). Annotations: 'Set the ready profile (auto mode)', 'disable the fan control function (only immersion cooling)', 'hashrate control function', 'temperature control function (0 = 90)', 'enable Asic boost'.
- IF PRESET IS ENABLED, ALL SETTINGS BELOW ARE IGNORED!**
- All Chains:** Select Frequency (700M), Select Voltage (8.6V). Annotations: 'Frequency to all chains', 'voltage to all chains'.
- Chain #5, #6, #7:** Select Frequency (Use Global), Select Voltage (Use Global). Annotation: 'you can set frequency and voltage to each chain individually'.
- Chip auto tune:** Downscale RED chip (Enabled), Downscale RED,ORANGE chip (Enabled), Timer RED,ORANGE chip (3 Hr), HR from Ideal (75%), Minimum Freq (400M), Downscale step (2), Check after (2 min). Annotations: 'frequency reduction for red chips', 'frequency reduction for red,orange chips', 'timer for checking red,orange chips', 'set ideal hashrate % for stage 2', 'minimal frequency reduction', 'minimal step frequency reduction', 'set the time when checking will start'.
- Apply:** 'click for making the config' pointing to the 'Apply' button.

Create the config :

- if you don't want to change the current pool, worker and password click : DONT CHANGE , Skip will appear in the fields
 - if you want to change the current POOL write the new POOLS in the field-0,1,2
 - if you want to set all ASICS to different workers, you can select the ADD function (host name, IP, worker + host name, worker + IP) and all ASICS will get different workers
- 5) Set up the overlocking or downvolt settings using PROFILE (automatic mode) or in manual mode (ALL CHAINS)
 - 6)Turn on the hashrate control function (reload the Asic in the case of falling hash rate) and the overheating control function (disable chains at PCB temperature)
 - 7) turn on the ASIC BOOST function
 - 8) turn on AUTO TUNE CHIP :
 - Downscale red CHIP (stage 1) - enable
 - Downscale red, orange Chip (stage 2) - enable
 - Timer Red, Orange-set parameter in hours (for example 3 hours)
 - 9) Click APPLY and specify the name of the CONFIG and click SAVE

10) Choose CONFIG MULTIPLIER - UPLOAD

The screenshot shows the 'Config multiplier' section of the Antminer configuration interface. It includes the following elements:

- IP Range:** 192.168.1.1 to 192.168.1.255
- Password:** (empty field)
- Config:** (empty field with a 'Delete selected' button)
- Table of ASICs:**

IP	Version	Hostname	Custom FW	Config upload	Restart
192.168.1.157	Antminer S9 (vnlsh 3.7.5)	antMiner	yes	OK	OK
192.168.1.155	Antminer S9 (vnlsh 3.7.5)	antMiner	yes	OK	OK
192.168.1.154	Antminer S9 (vnlsh 3.7.5)	s46027	yes	OK	OK
192.168.1.152	Antminer S9 (vnlsh 3.7.5)	s46683	yes	OK	OK
192.168.1.151	Antminer S9 (vnlsh 3.7.5)	s45997	yes	OK	OK
192.168.1.150	Antminer S9 (vnlsh 3.7.5)	s46218	yes	OK	OK
192.168.1.149	Antminer S9 (vnlsh 3.7.5)	s45976	yes	OK	OK
192.168.1.148	Antminer S9 (vnlsh 3.7.5)	s46016	yes	OK	OK
192.168.1.147	Antminer S9 (vnlsh 3.7.5)	antMiner	yes	OK	OK

At the bottom right, there is a red arrow pointing to the 'Apply' button with the text 'Click to upload the config'.

- Set the IP RANGE range of the ASIC with new firmware
 - if the ASIC password is standard use the ROOT password, if not use other password
 - select the config you saved earlier and click APPLY at the bottom of the page.
- All Antminer S9, S9i, S9j in the selected IP range will receive the settings from the saved CONFIG.
- All other ASIC models in this IP range will not be affected