Phrozen Shuffle & Shuffle XL User Manuals

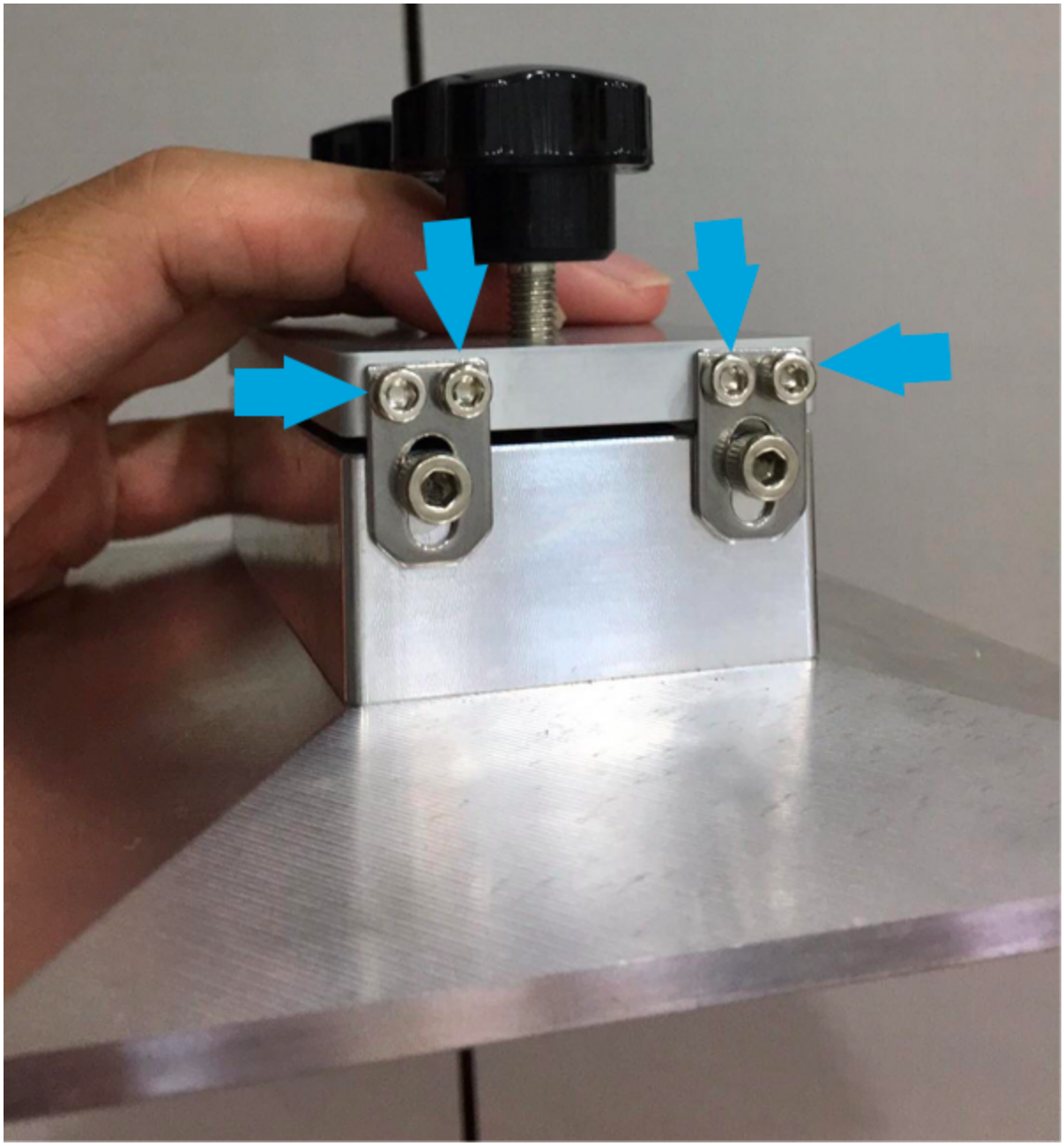
Welcome to join Phrozen. When you receive your Phrozen Shuffle / Shuffle XL, first thing you need to do is check carefully if everything is packed good in your parcel. Generally you will see:

- Phrozen Shuffle / Shuffle XL: LCD 3D Printer * 1 pc
- Build platform & Resin vat (with air-tight lid) * 1 set
- Tool set
  - Plastic scraper * 1 pc
  - Stainless scraper * 1 pc
  - Funnel * 1 pc
  - Rubber gloves * 1 set
  - Hex wrench * 1 set
- Ethernet cable (Gray) * 1 pc
- USB cable (Blue) * 1 pc

- Power cord (Black) * 1 pc

Feel free to contact Phrozen Shuffle Team directly if there are anything missed.

Note 1: Shuffle XL users should check whether the screws of build platform are tight or not. Sometimes they will get loose during shipping.



Note 2: There is a protective film right attached on LCD. DO NOT take it off since it can protect LCD from aging and therefore increase LCD's life time.

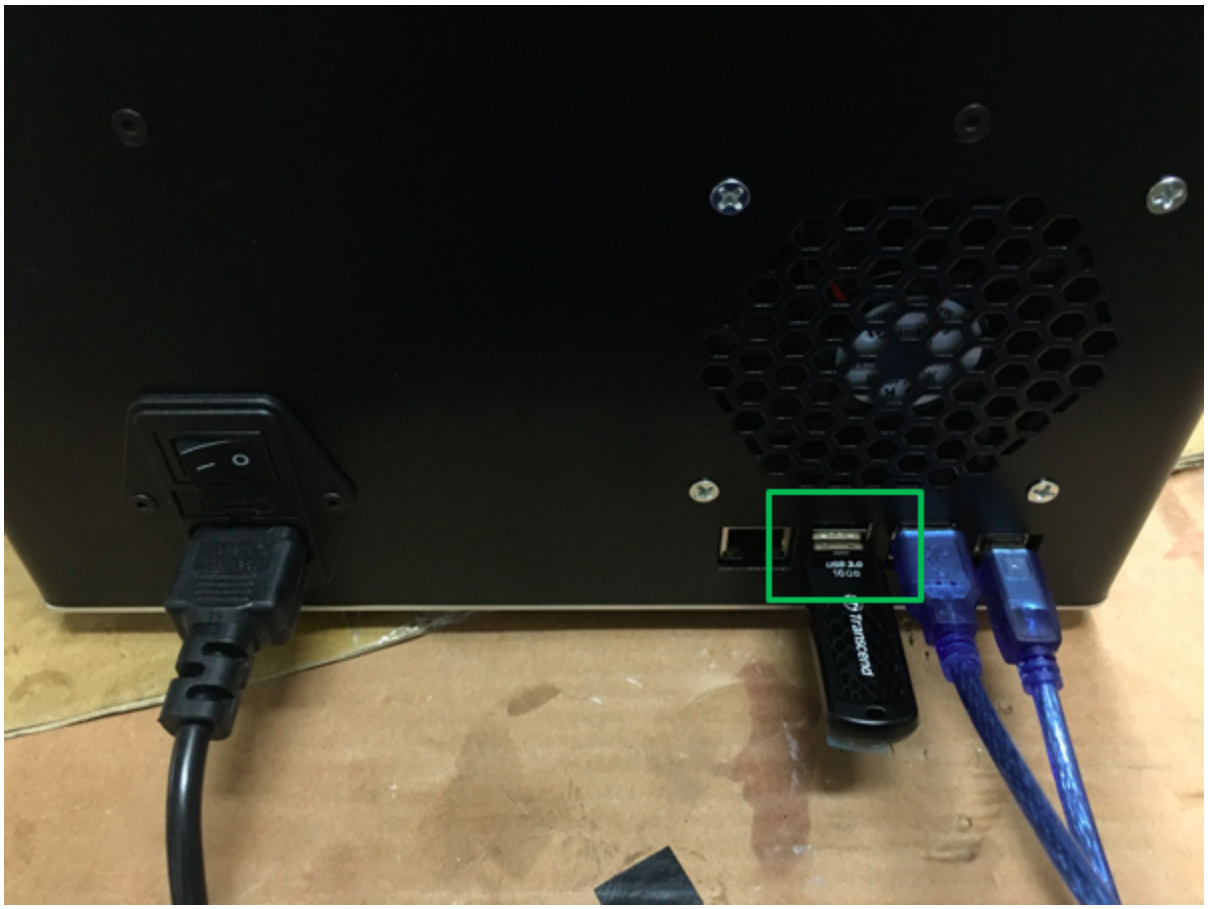
First Start

- Boot System:

Plug in black power cord & blue USB cables as shown in photo. Turn on the power.

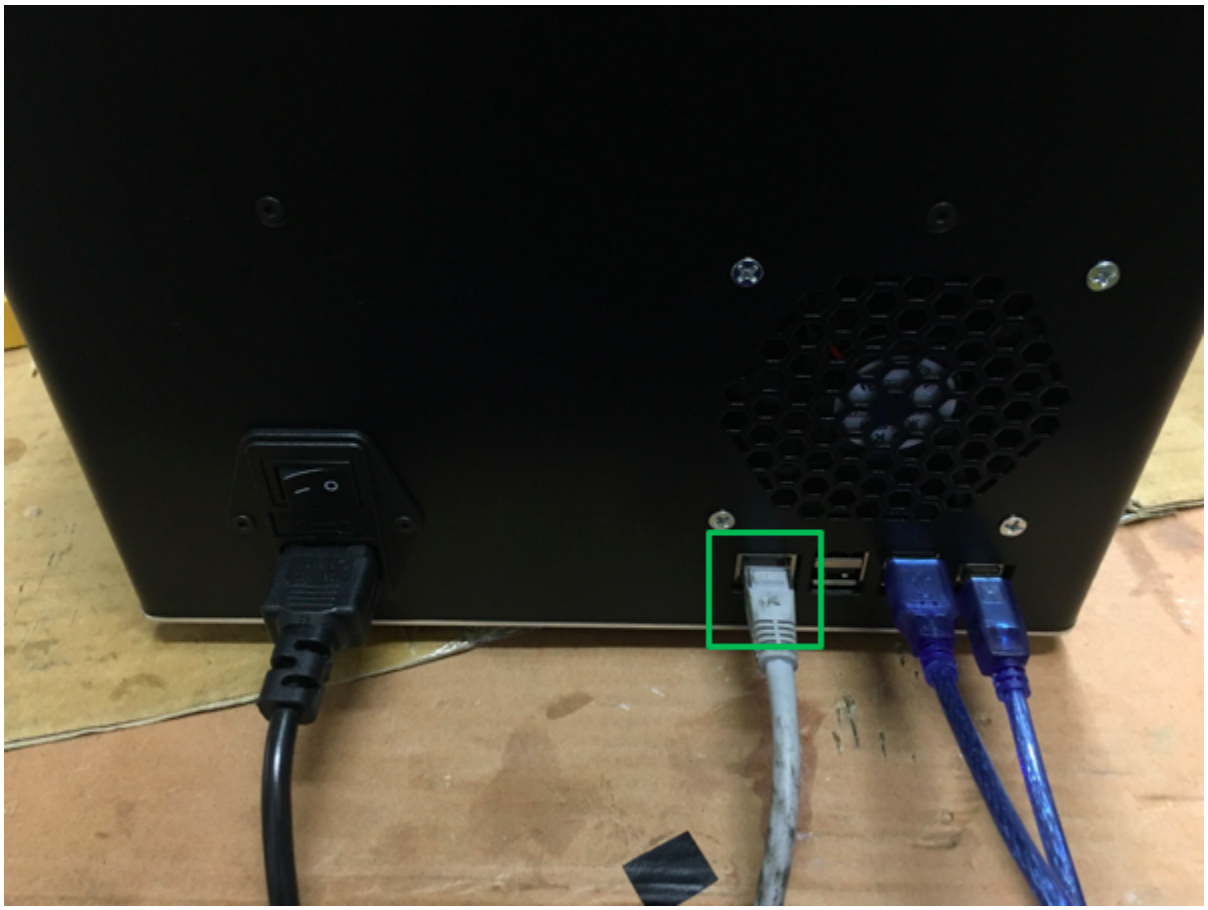
The system will automatically boot the system at the first time. It will take about 2 minutes. If you skip this step, your Z-axis will never move.

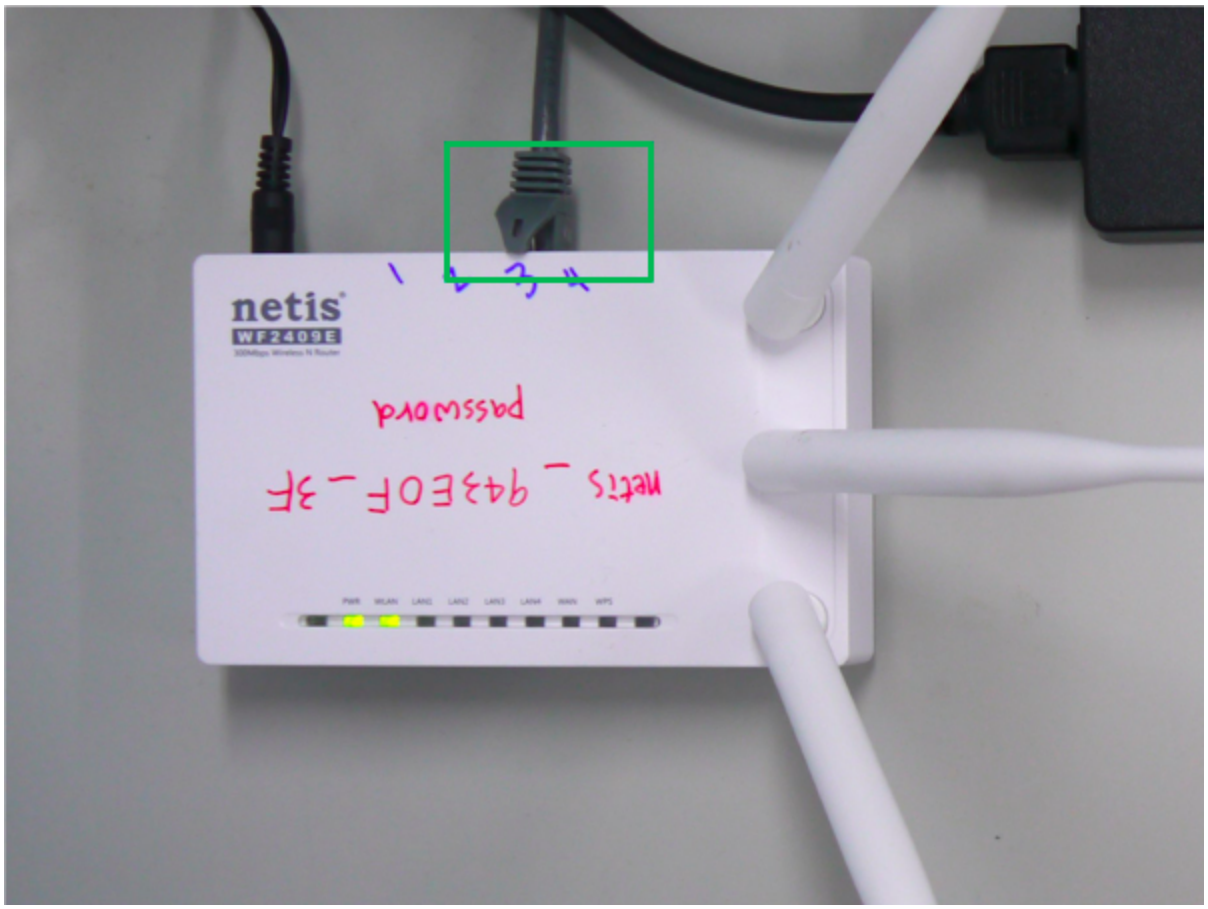
- 3 ways to connect to printer: USB Connection, LAN Connection, WIFI Connection
  - USB Connection：Load 3D file directly from USB and operate the system by touch panel.



USB port is at the back of printer. Load processed 3D file in USB and plug USB directly into printer. Then follow step-by-step tutorial to start printing via touch panel.)

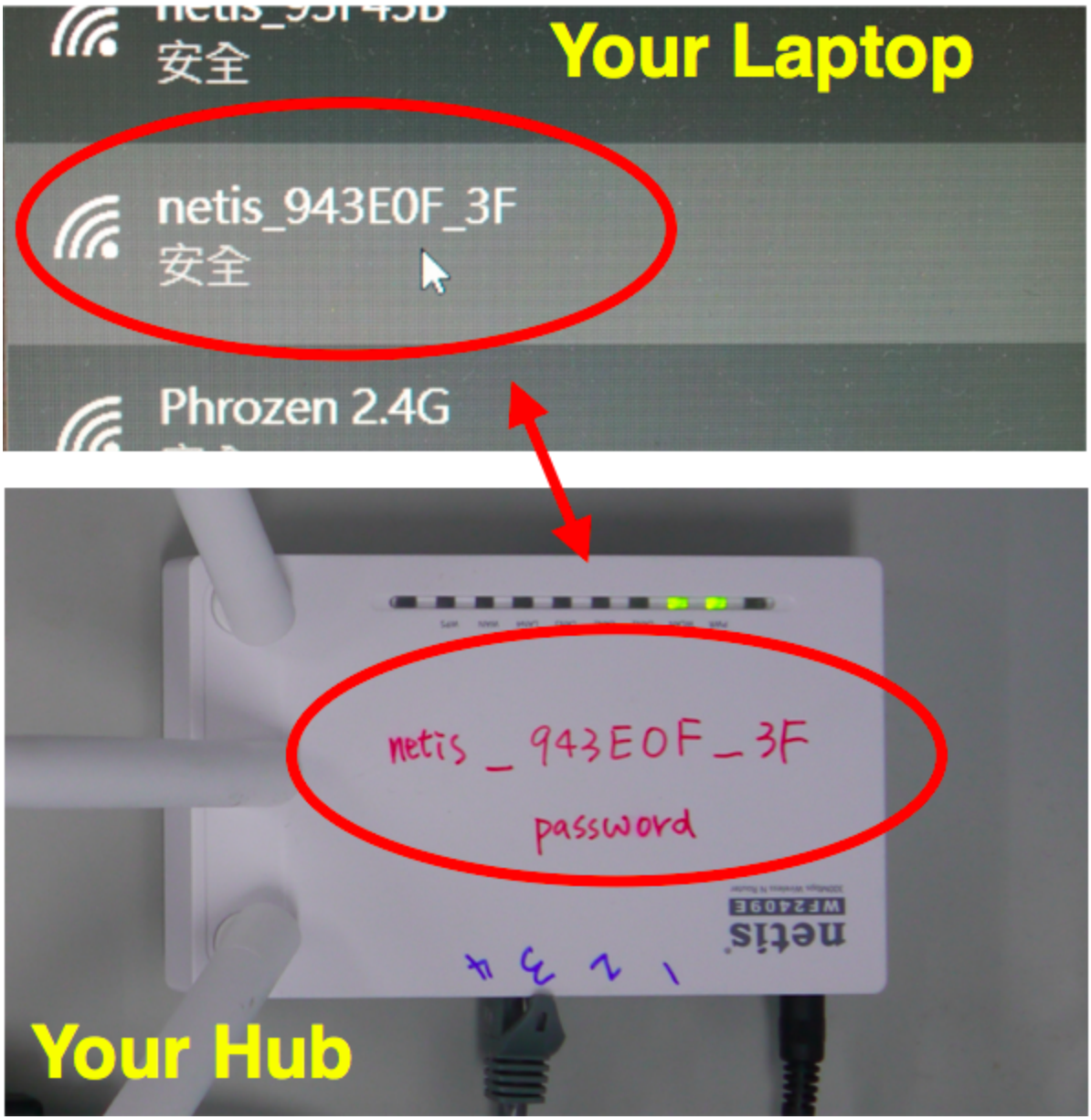
LAN Connection：Buy a router and connect its LAN to printer by gray internet cable. Then the printer will show IP address, type it on web browser (better to use Google Chrome) and your can connect to printer.



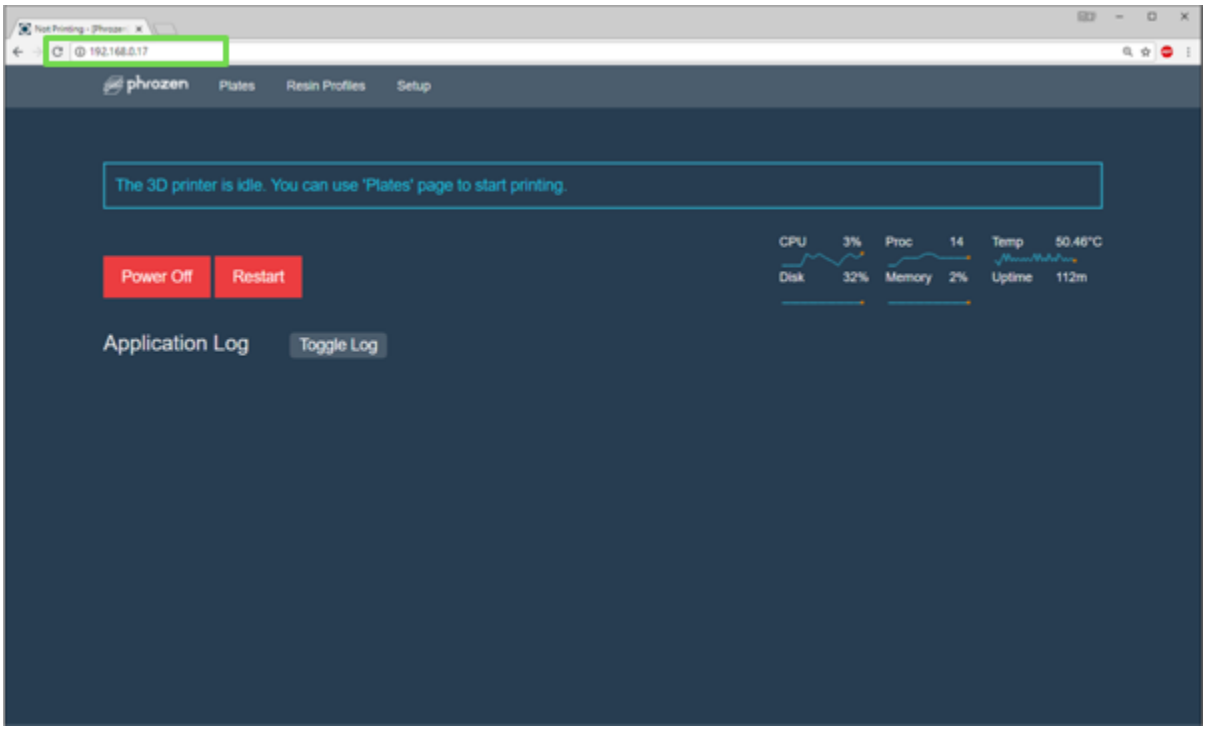


Connect your printer with router by internet cables. Recommended Router: Match IEEE802.1 1b/g/n standard.

Restart your printer. In homepage it will show an IP address. General example will look like this, 192.168.x.xxx.

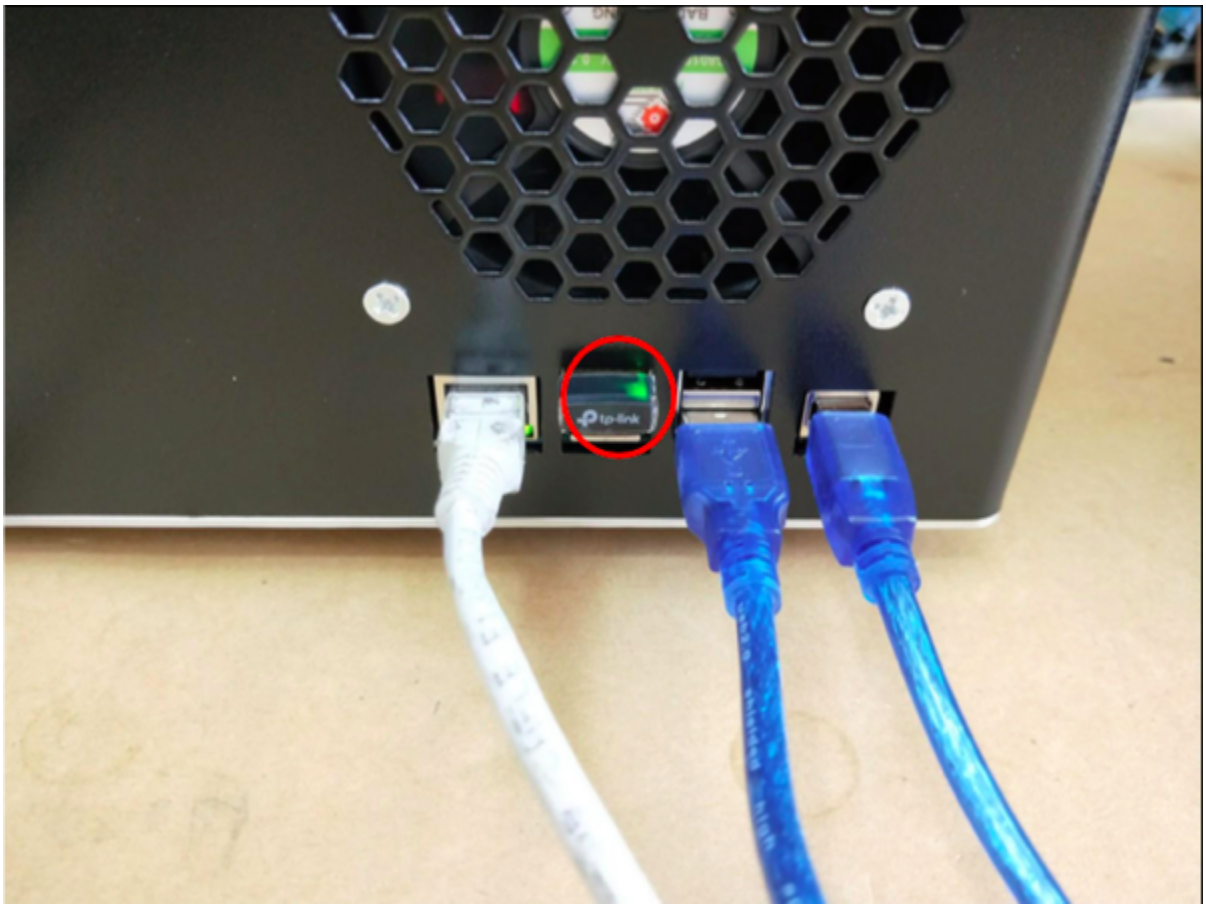


Open your device (could be laptop or mobile phone) & connect to your router

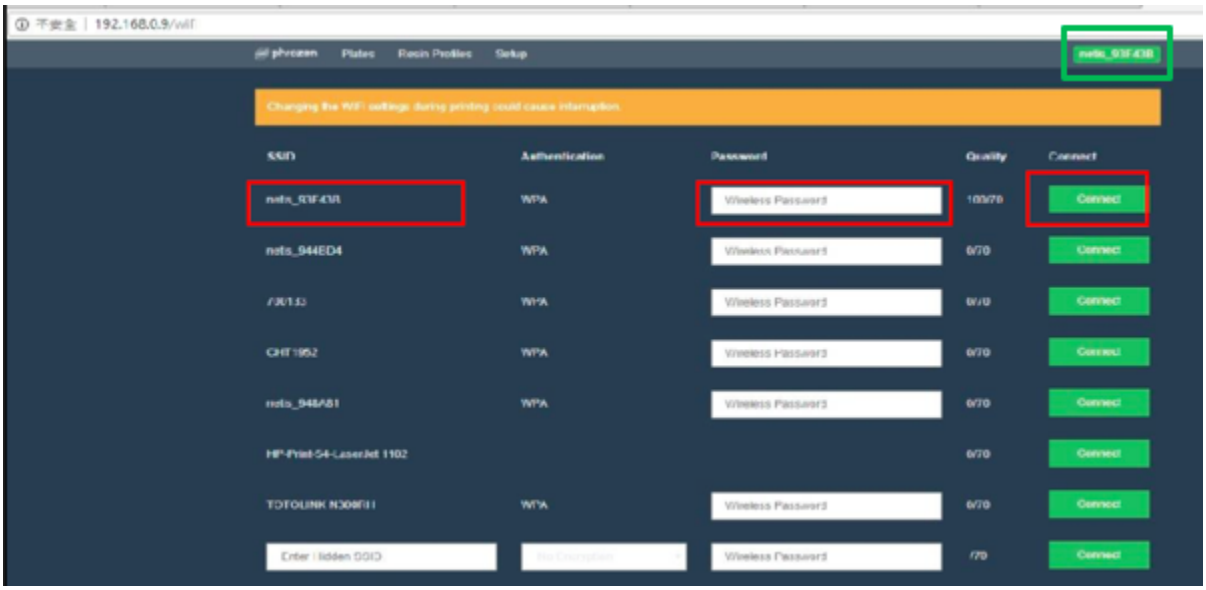


Open your internet browser (Highly recommend to use Google Chrome), type IP address into your browser. Then you will connect to the printer.

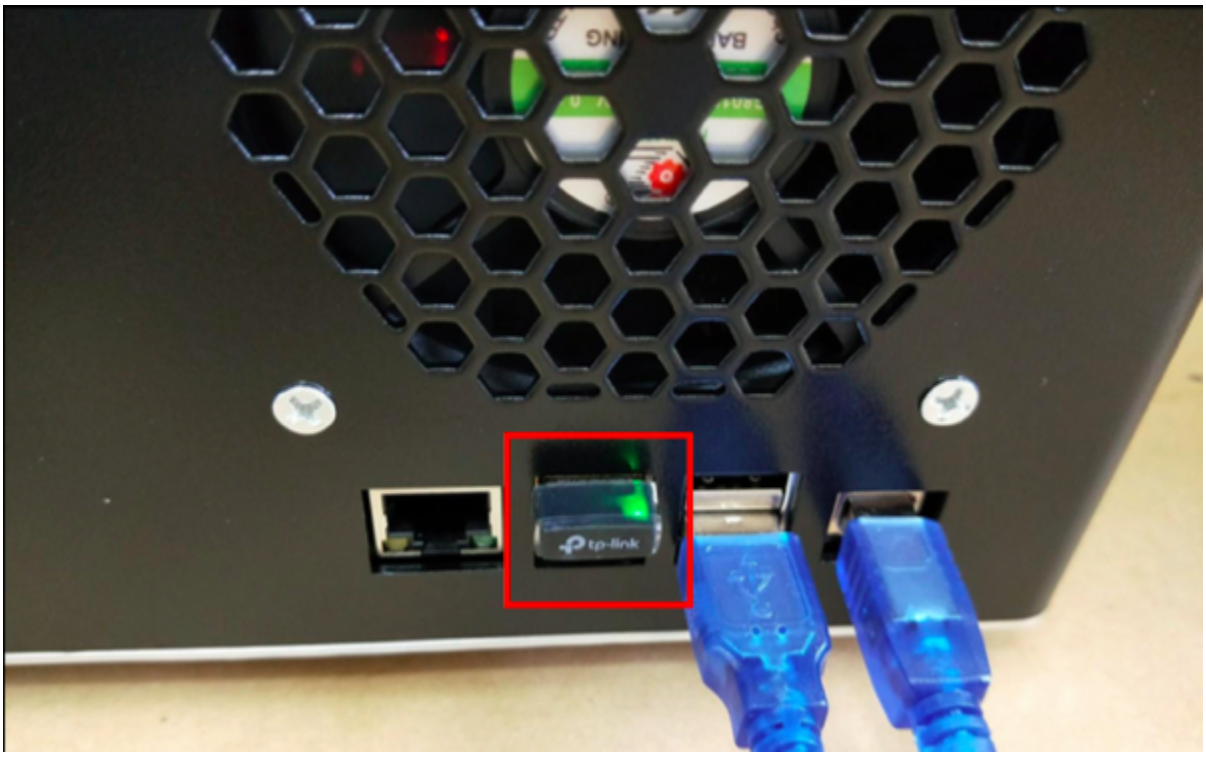
- WIFI Connection: Use USB WIFI to connect your printer into current WIFI environment. Then you can use any devices(laptop / smartphone) in the same WIFI environment to connect to the printer.



Following LAN connection tutorial, plug USB WIFI into the printer. For general cases, you will see 2 conditions: (1) the light in the socket of internet cable will be turned on. (2) Green signal light on USB WIFI will be turned on for 3 seconds and then turned off. Your USB WIFI might not be applicable if these 2 conditions do not happened. Recommended USB WIFI: TL-WN725N.



Use LAN connection first. Go to WIFI page (click green button in photo), find your router SSID, key in password, and press connect.



Turn off the printer, un-plug internet cable, and turn on the printer. If green signal light on USB WIFI is turned on for 3 seconds and then turned off, it means your connection is settled.

After WIFI connected, printer would show another set of IP. You can connect to this printer on internet browser by your smart devices if your are in same WIFI connection.

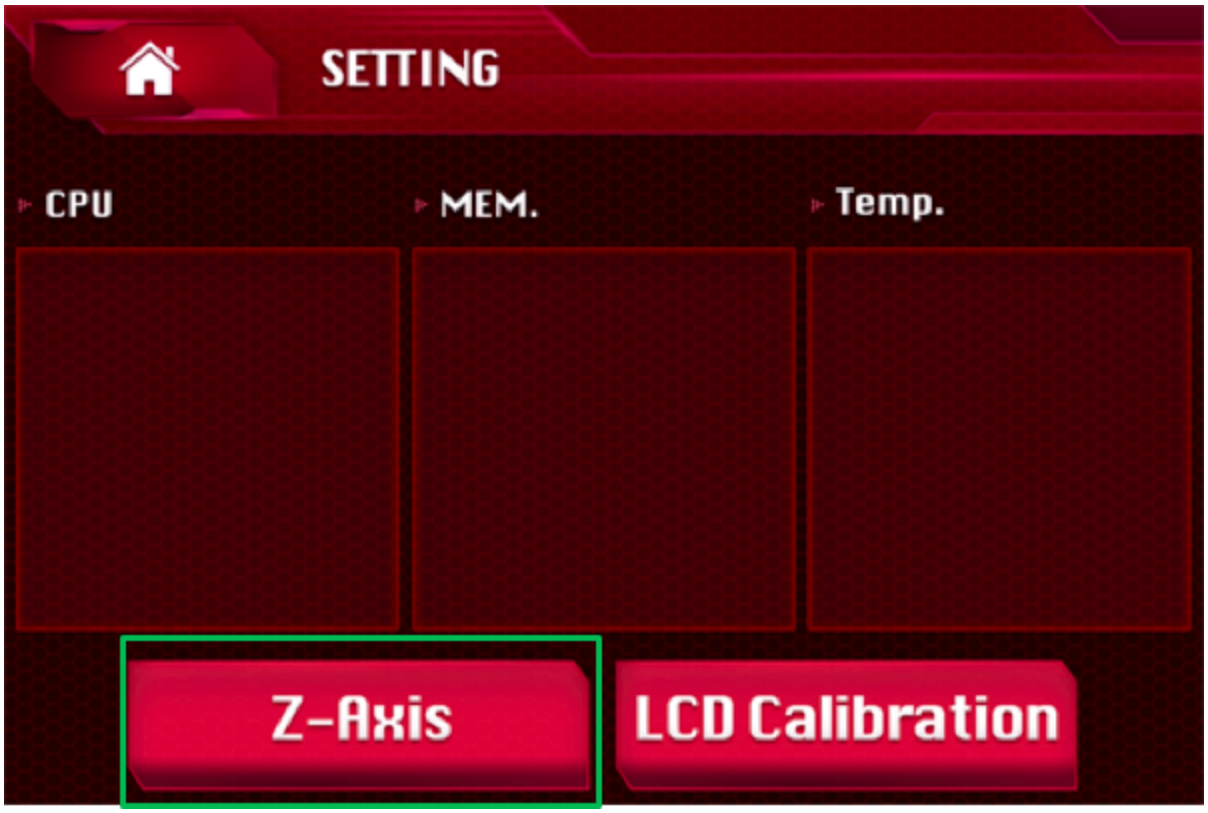
- Printer Operation & Safety Recommendations
  - About Printer:
    - Operating your printer at 20 - 30^{O}C condition in open area.
  - About Resin:
    - Avoid exposure resin directly to sun light or lamps.
    - After printing, please filter resin and put the resin into sealed & opaque bottle.
    - DO NOT mix fresh resin and used resin. Shake before you use every resin.
    - Do not dump resin. Cured the resin and treat it as general plastics garbage.
    - Store the resin in room temperature(15 - 35 ^{O}C) & dry condition.
  - Safety Recommendation
    - If possible, please wear gloves, goggles, and long sleeve shirt during printing. Wash your hand by hand soap.
    - DO NOT east or swallow resin. Go to hospital if you do it.
    - Avoid eye contact to resin. Rinse with water & go to hospital ASAP if the resin touches eyes.

- Some resins might cause allergy on skin. Stop using the resin if allergy is induced.
- Resin has its own smell. Use resin in open area instead of closed area.
- Keep resin away for kids.

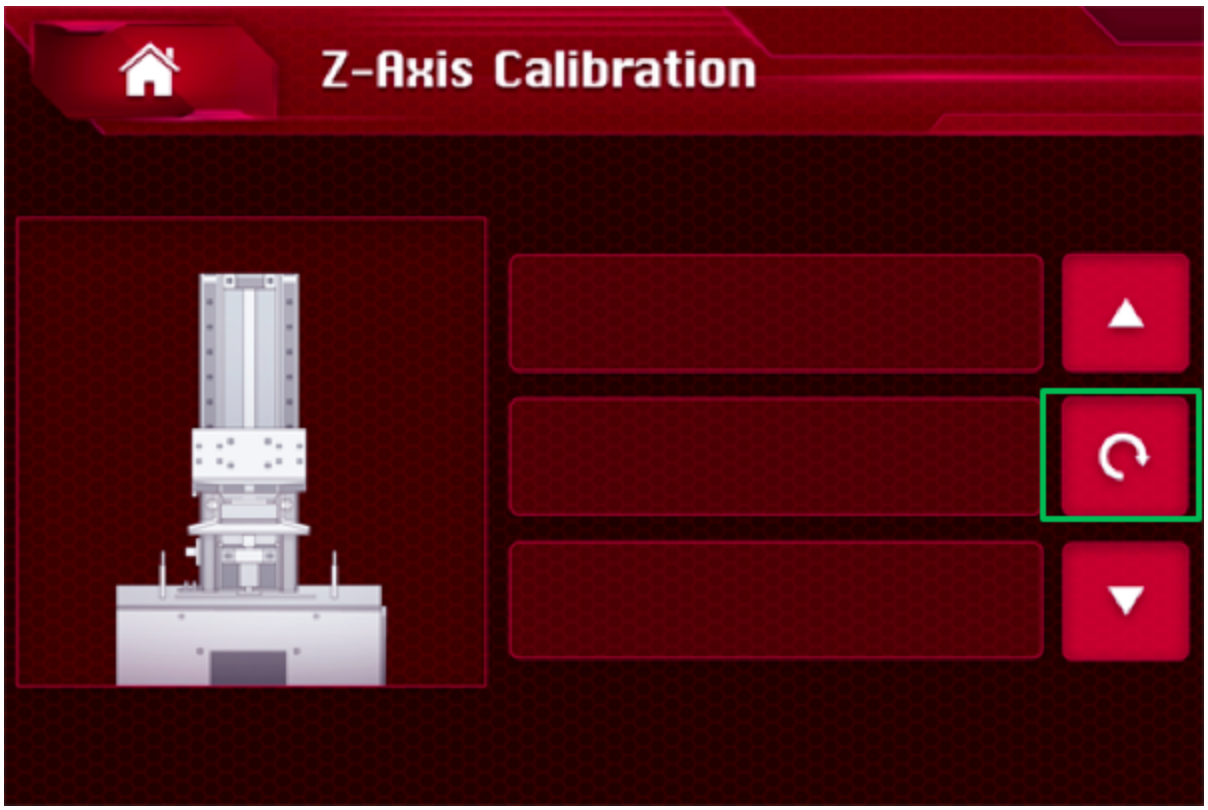
Printer Calibration

- Z-axis Calibration: It is the only thing we need to do to calibrate Phrozen Shuffle. You can do it directly by touch panel. Step-by-step procedure is listed below:

Click Menu Icon



Click Z-Axis Button



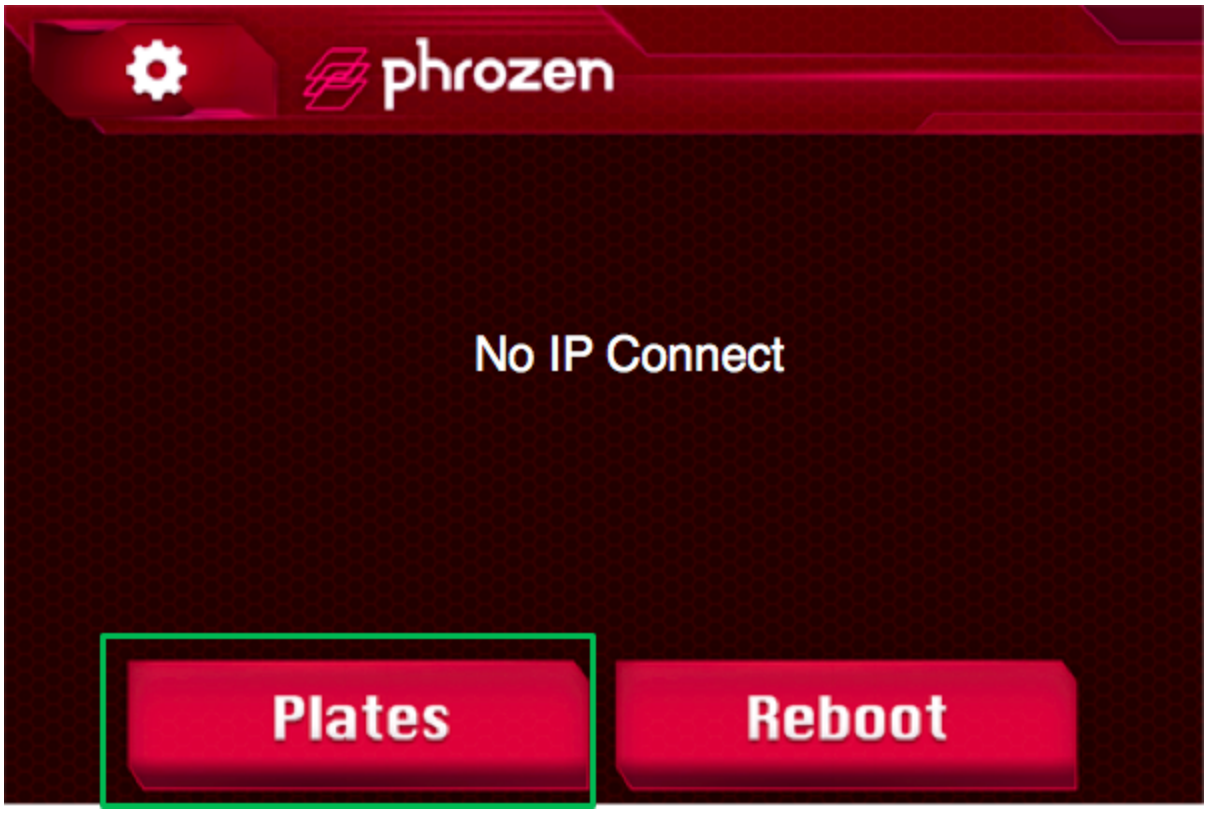
Click Calibration Icon

(1) Make sure it is clear in build platform and resin vat, (2) use hex wrench to loosen 4 screws on the side, and (3) click Next.

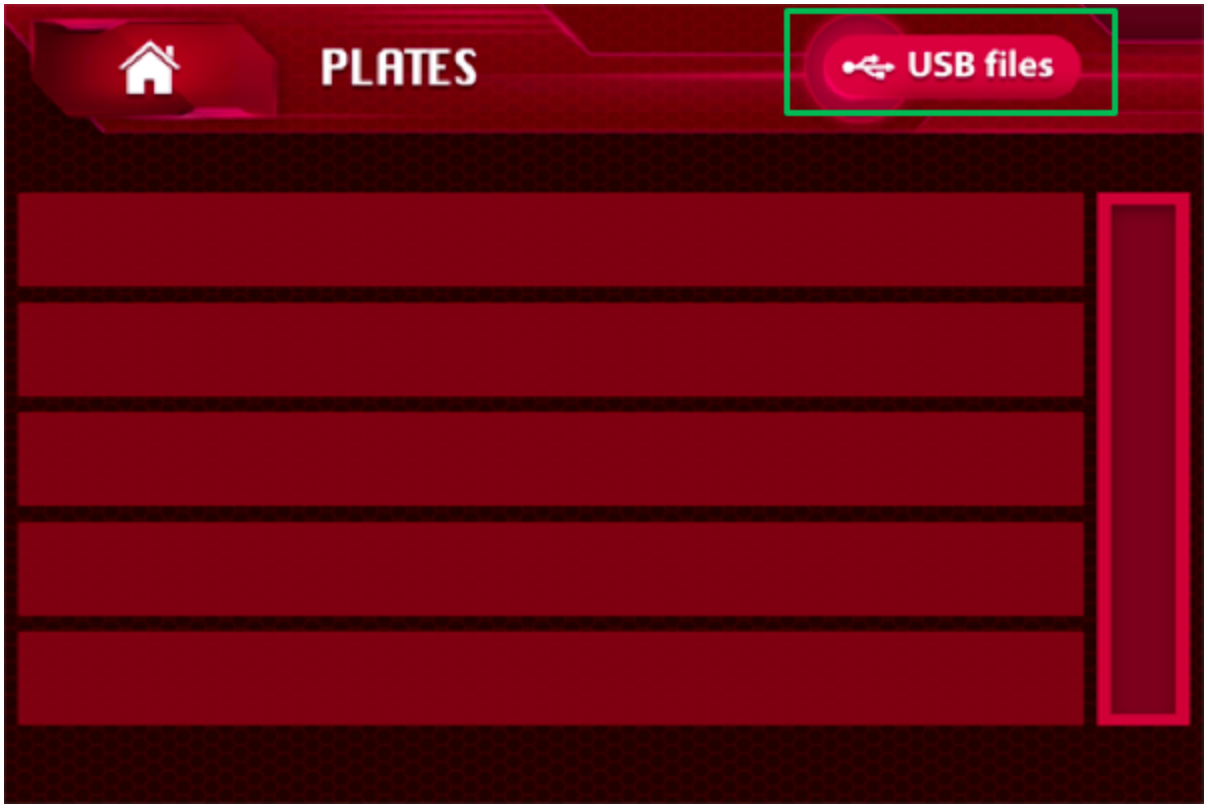
(4) Build platform will move downward and touch the vat, (5) fix build platform and lock 4 screws on build platform, and (6) Press OK to finish Z-axis calibration.

Start Printing

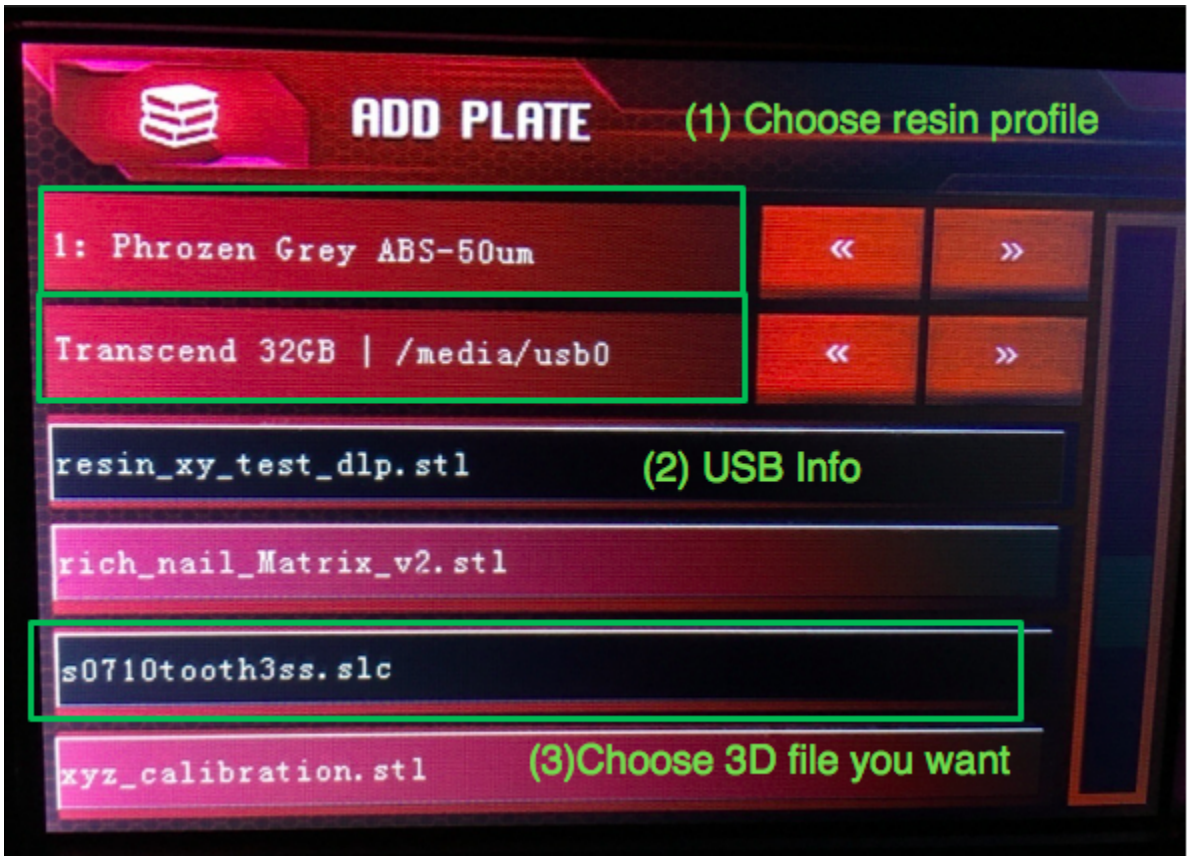
- Upload files & Select parameters.



Click Plates

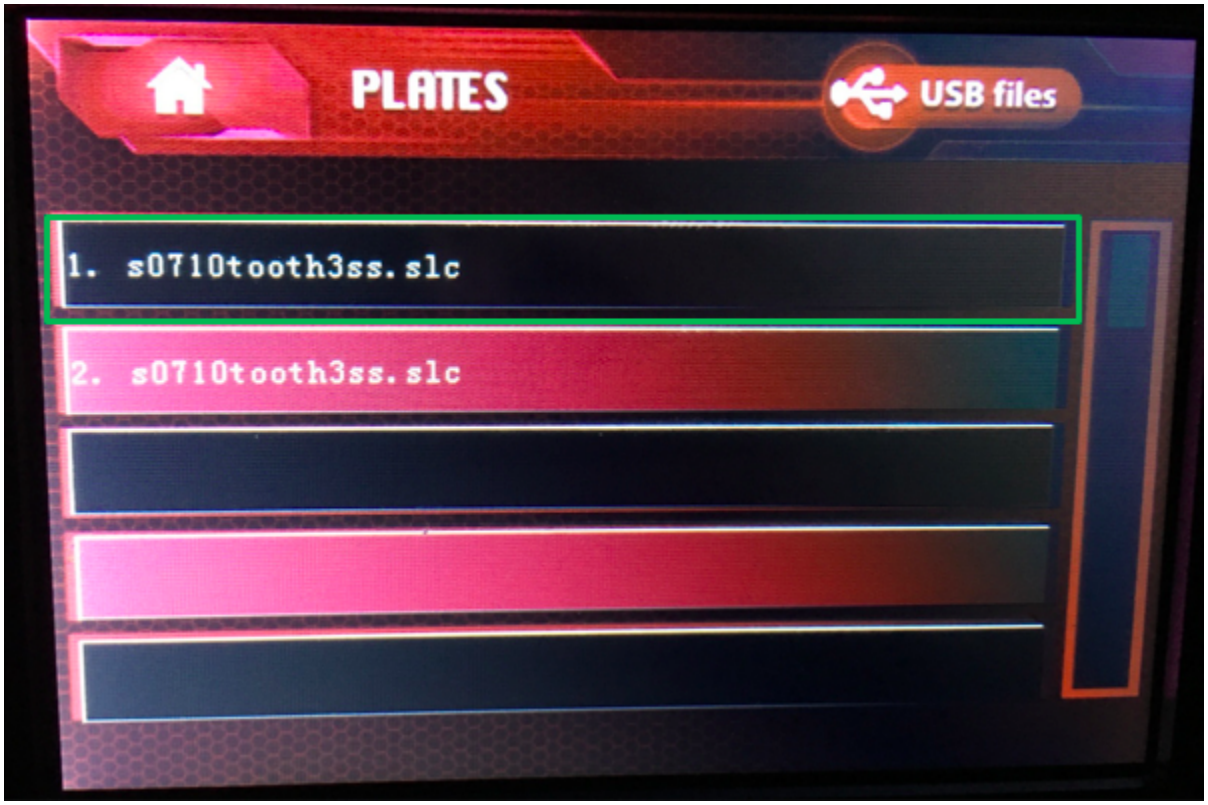


Click USB Files



Select your resin profile, make sure your USB is loaded, and select 3D file you want to print. If you want to add / modify resin profile, please go to "How to Setup & Add Resin Profile" section.

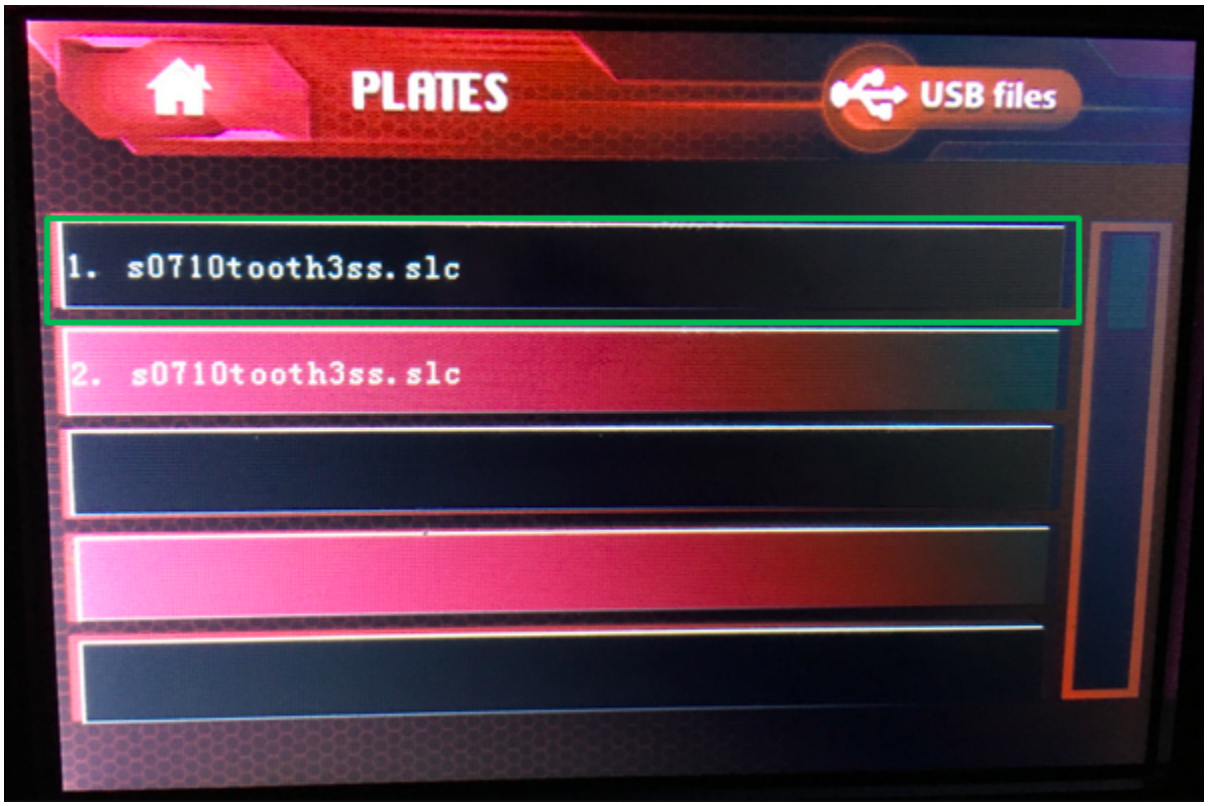
Will start to load file once you confirm the file.



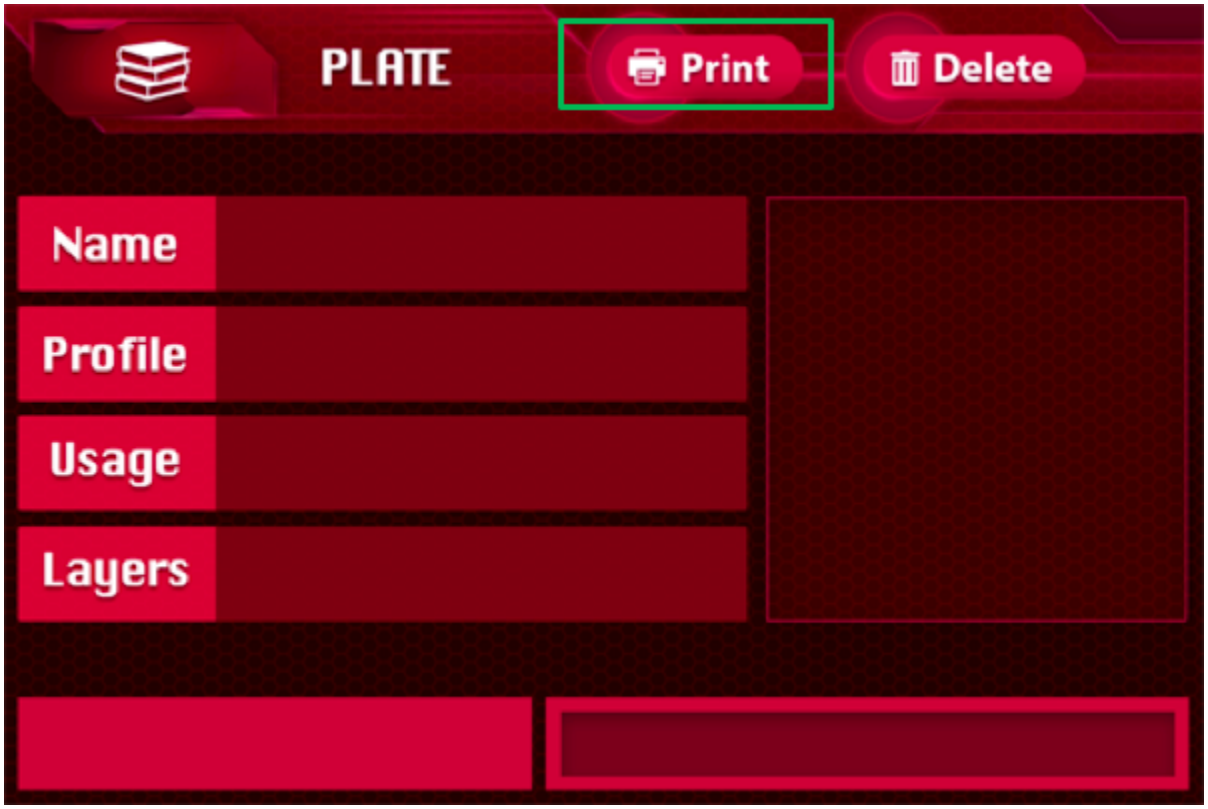
Now in PLATE Page, you can browse current files you have in your printer.

- Pour the Resin into Vat

    - You can start to pour the resin into vat during file upload. Before that, shake the resin to make it mixed uniformly.
    - If the resin is already in the vat, please stir it to make it mixed well.
    - Generally, fill half of the vat is enough for printing.
- Start Printing

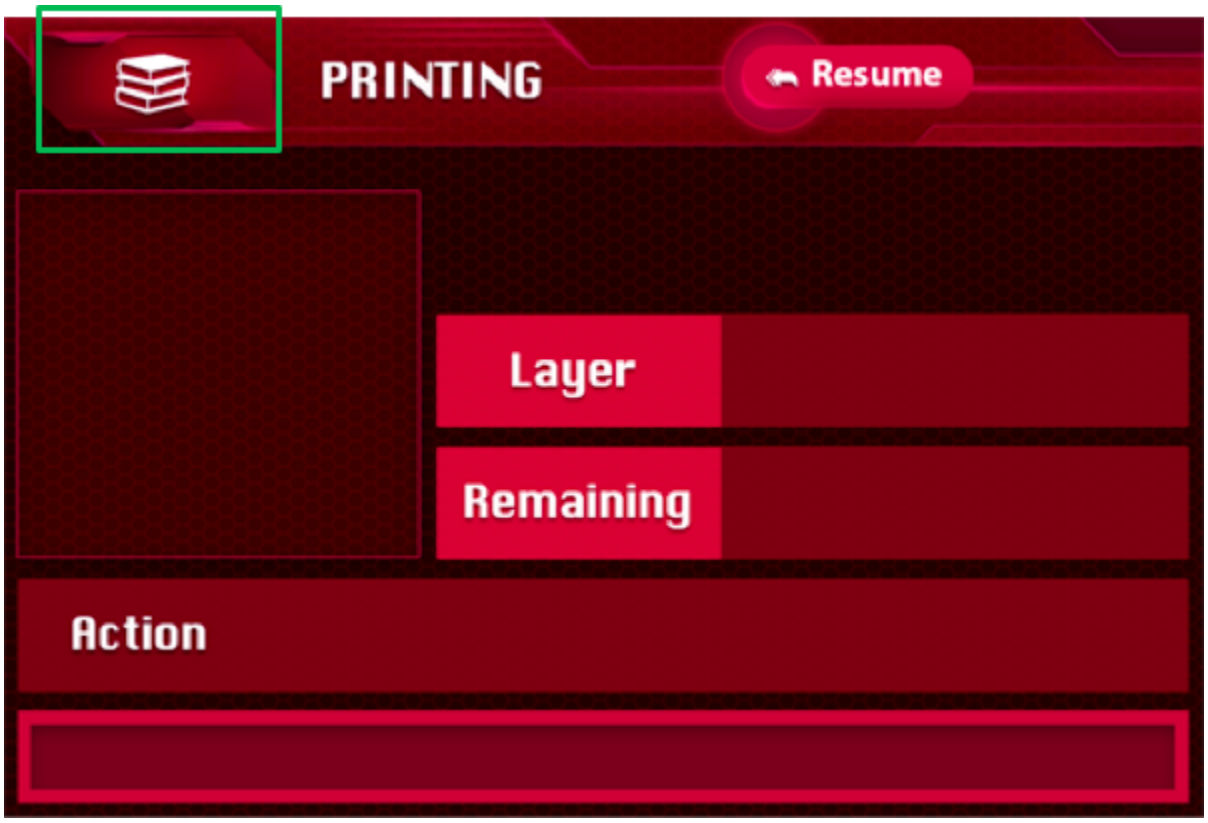


Click 3D files you want to print

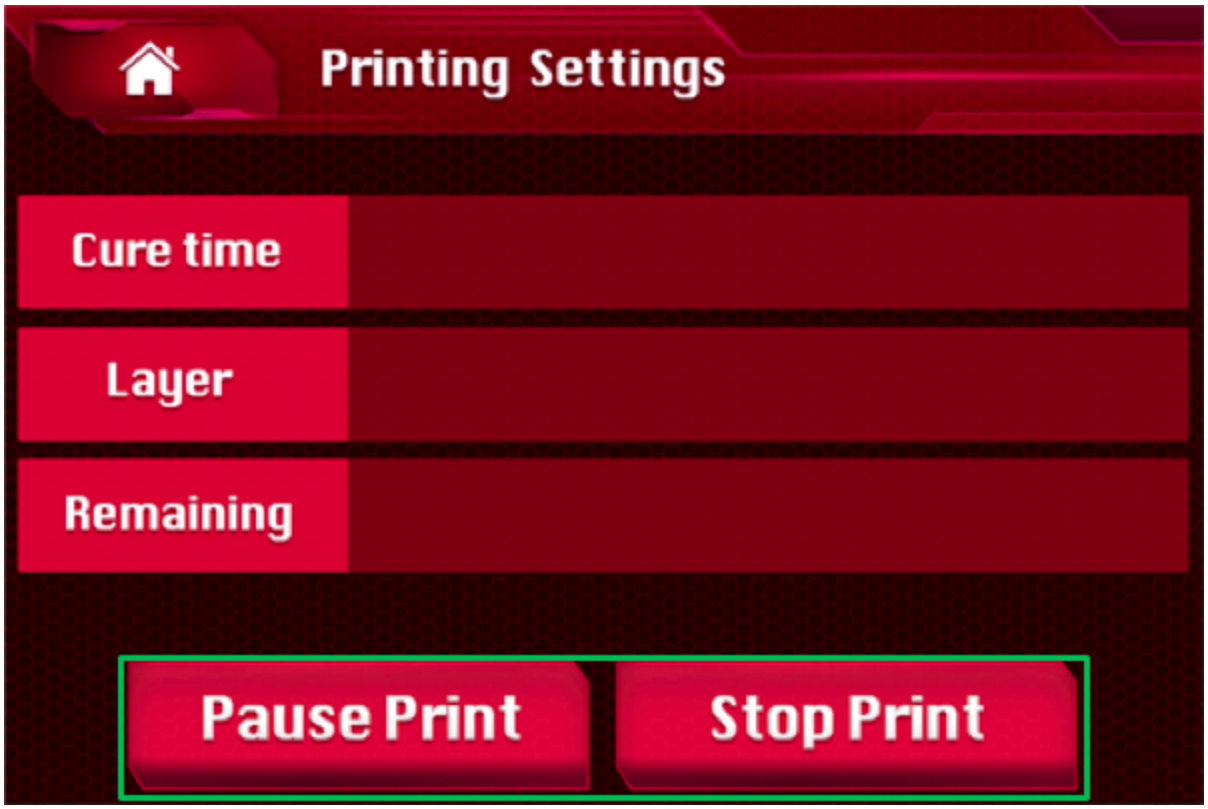


Click Print button & start printing. It will automatically go to dashboard page.

- Pause / Stop Printing



Printing page is the dashboard of the printing status. Please click Setup button. (green mark)



In Printing Setting page, you can pause and stop print. Pause Print: Z-axis will not move and pause everything (can be resumed.) Stop Print: Z-axis will move up to zero point and stop everything

- After printing,
  - Get Your Printed Part
    - Take off the build platform. Use stainless scraper carefully to take off the printed part.
    - Be patient. DO NOT thrust it hard. Watch out for your both hands when using scraper.
  - Turn Off
    - If you connect via webpage, click Power Off in dashboard & directly switch off the printer.
    - If you use touch panel only, make sure printer is fully stopped & directly switch off the printer.
  - Clean the Resin Vat
    - Unlock the screws on vat & take off the resin vat.
    - Prepare an opaque bottle with cap.
    - Pour the resin carefully into the opaque bottle by using funnel, better with filter papaer.

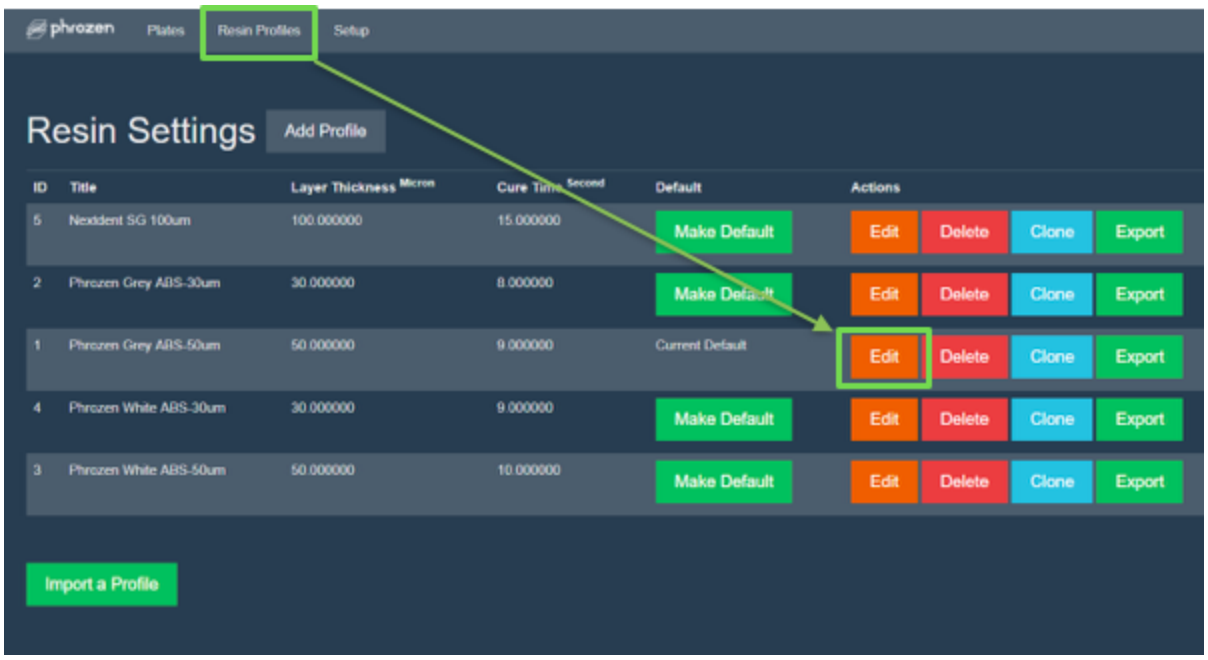
    - Use plastic scraper to collect resin on the vat & clean it by insoluble napkin. If there are residue adhering on the film, immerse it with alcohol for 10 min to make it easier to be scrapped.
    - Remember to keep the opaque & closed bottle in room temperature and indoor area without sun light exposure.
- Note:
    - Please re-fill the resin into the vat If you found you are running out of resin during printing. Better timing is the one between layers when LCD is off.
    - Please wipe the resin immediately if resin is spilled out on the printer.
    - If you plan to keep resin in the vat, please put the air-tight lid on the vat to avoid exposure to air. Next time do remember to stir & mix it when you plan to use it.
    - If you want to take off the resin vat, we STRONGLY recommend you to turn off the printer before doing so.

Post-Processing Procedure

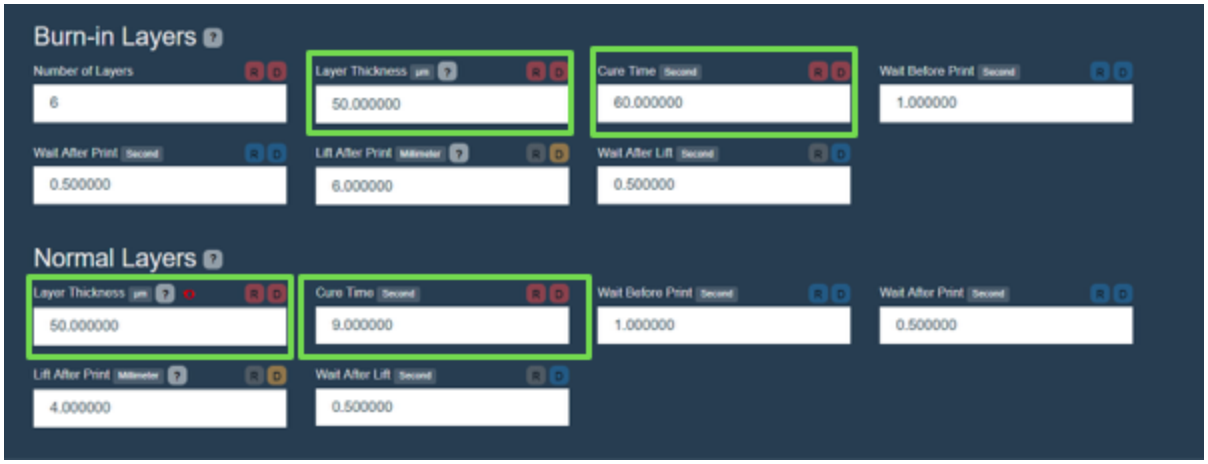
- Rinsing: Immerse your print into 95% alcohol and clean it by ultra-sonic. Take the prints out every 30 secs and do it 2 - 3 cycles. DO NOT immerse your prints too long in alcohol, which will cause it crack.
- Drying: dry the prints in dark area without light-exposure for 30 min.
- Post-Curing: Use Sun-light or 405nm UV-lamp to do post-curing. Generally it takes from 30 minutes to 3 hours, highly depending on lamp intensity, lamp wavelength, and your design. Phrozen Cure generally can finish post-curing within 30 mins.
- See Video Tutorial Here: https://youtu.be/0gker8J-9FM

How to Setup & Add Resin Profile

- Edit Profile: It can only be done by browser mode in " LAN cable connection" or "WIFI wireless connection".

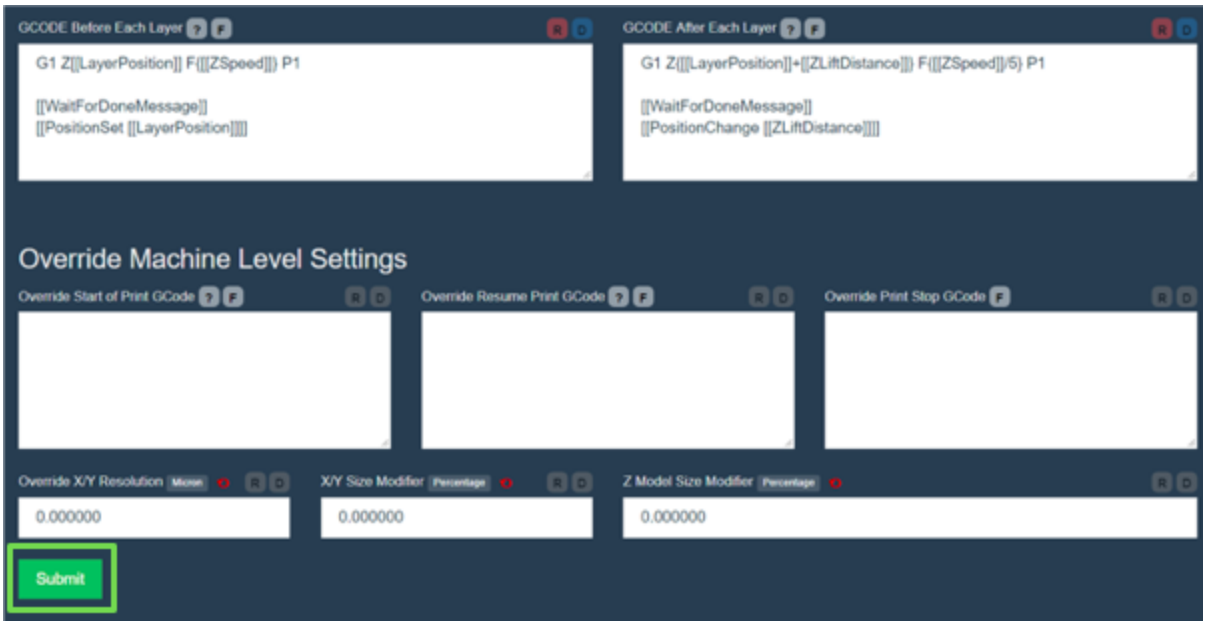


Go to Resin Profile Page. Choose a profile and click Edit



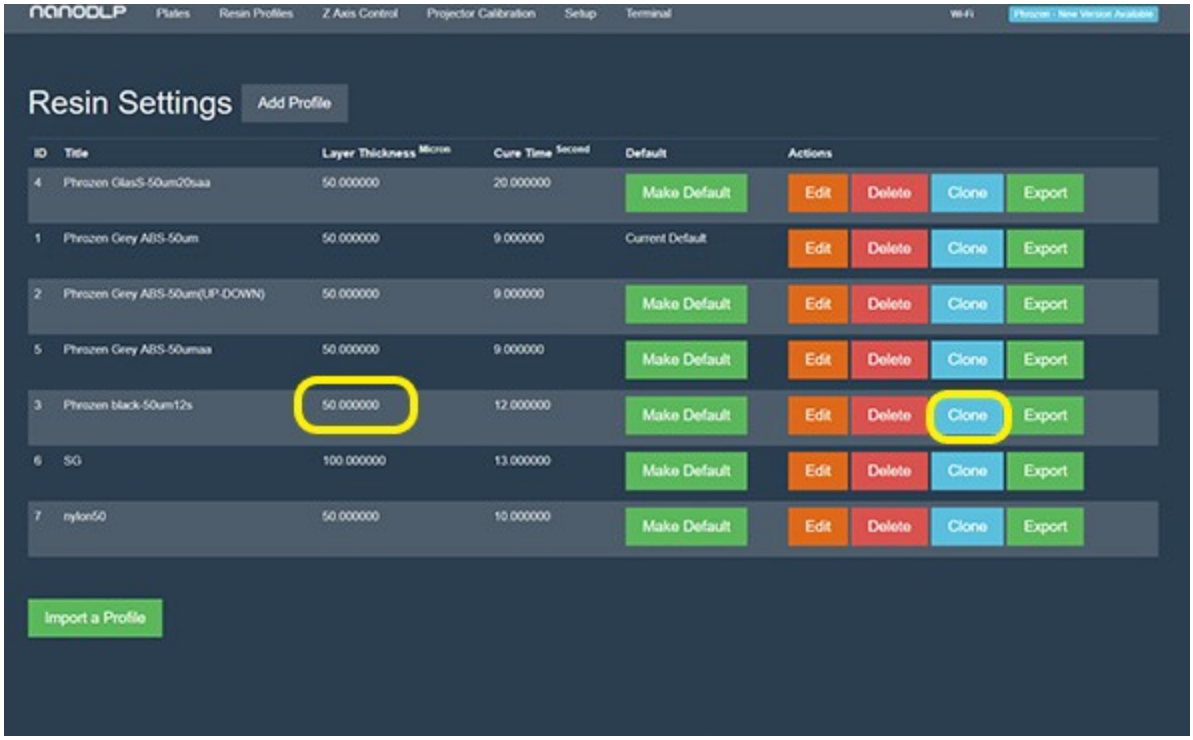
Burn-in Layer is setup for bottom layer. Normal Layer is setup for general layers. In most cases, we only tune "Layer Thickness" & "Cure Time"

Change Motor Speed can change your Z-axis moving speed. Normal Layer we recommend 400 while Burn-in Layer we recommend 200. Depends on actual status.

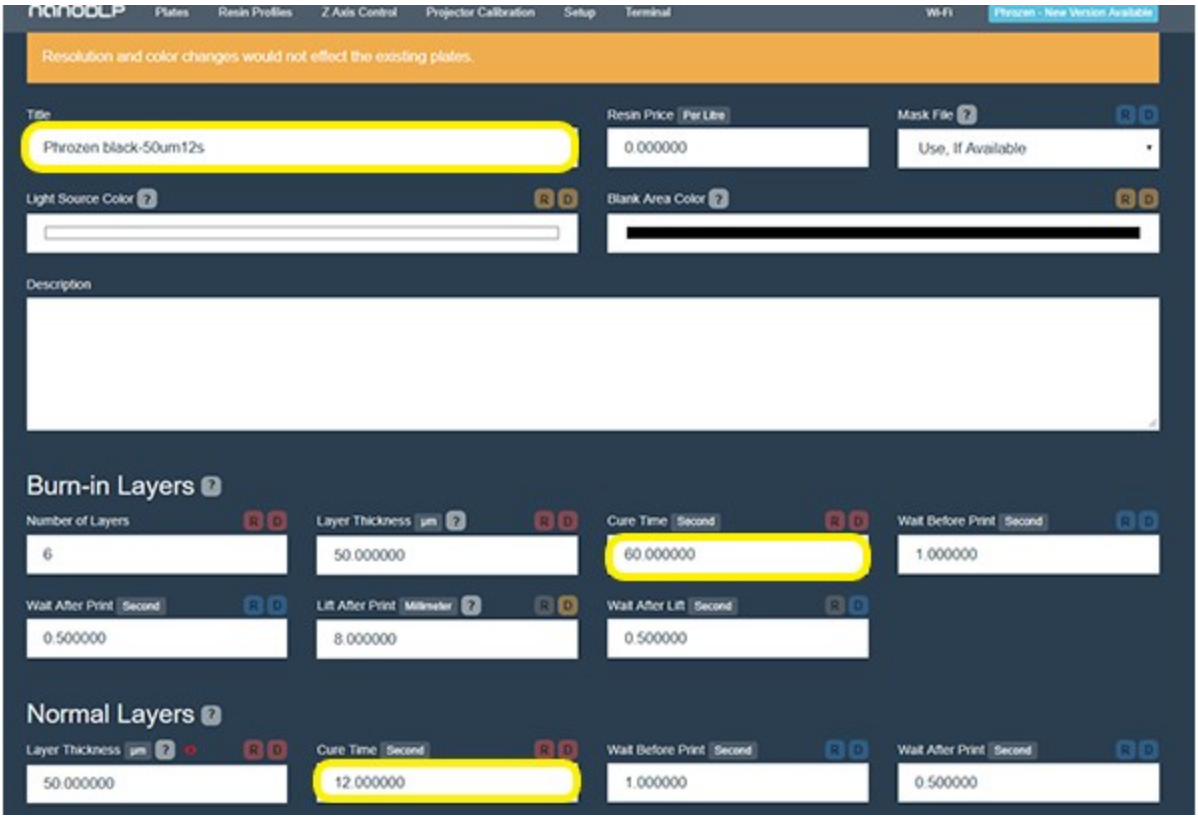


If no further modification, click Submit to finish edit.

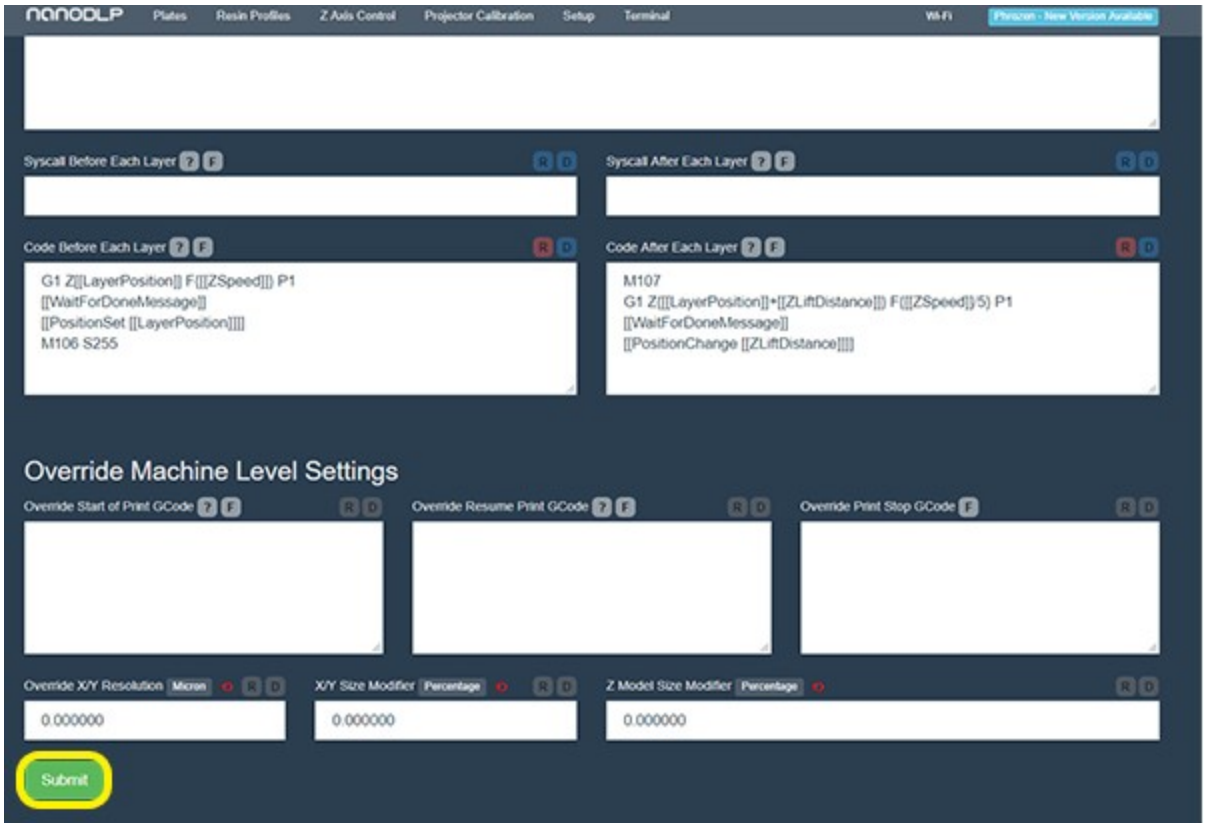
- Setup New Profile



Clone an existing profile. Note: Choose same Layer Thickness sometimes save your time.

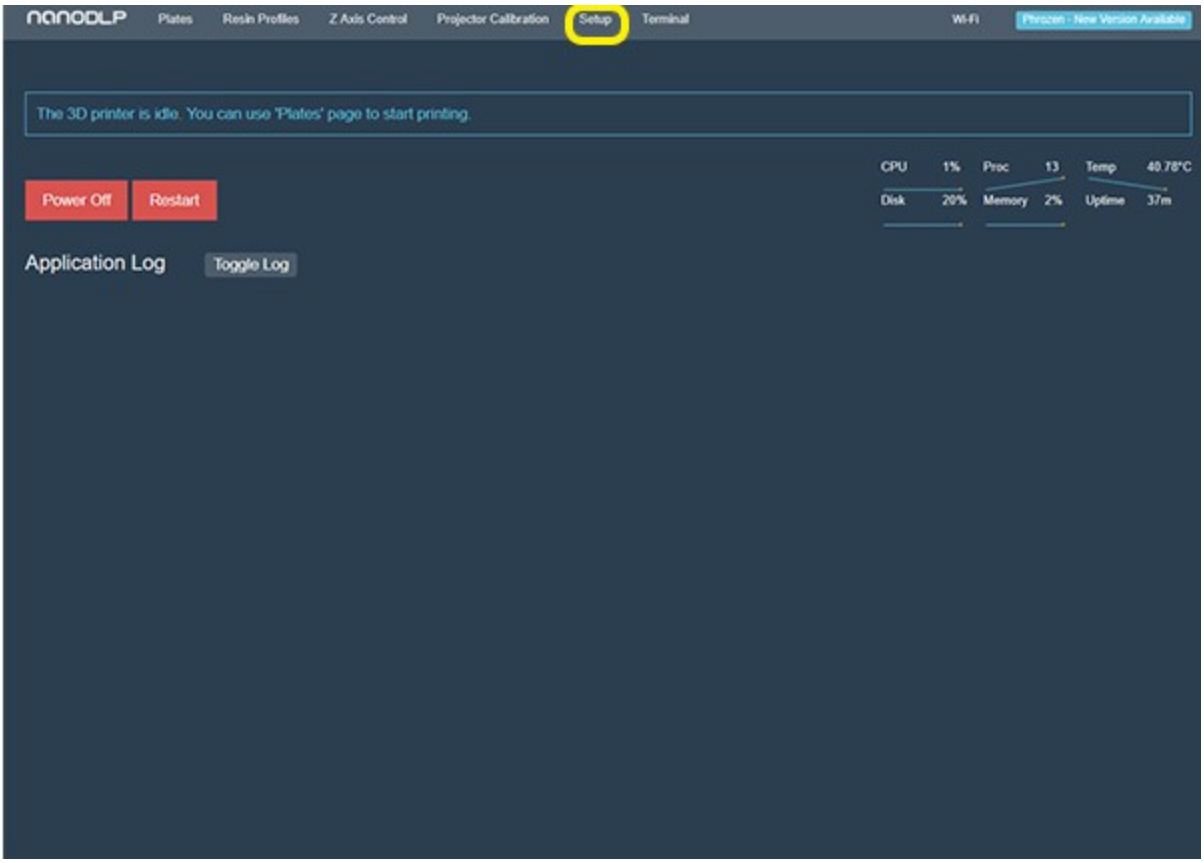


Edit the cloned profile. Change its name and parameters. Key factors are Cure Time & Layer Thickness.

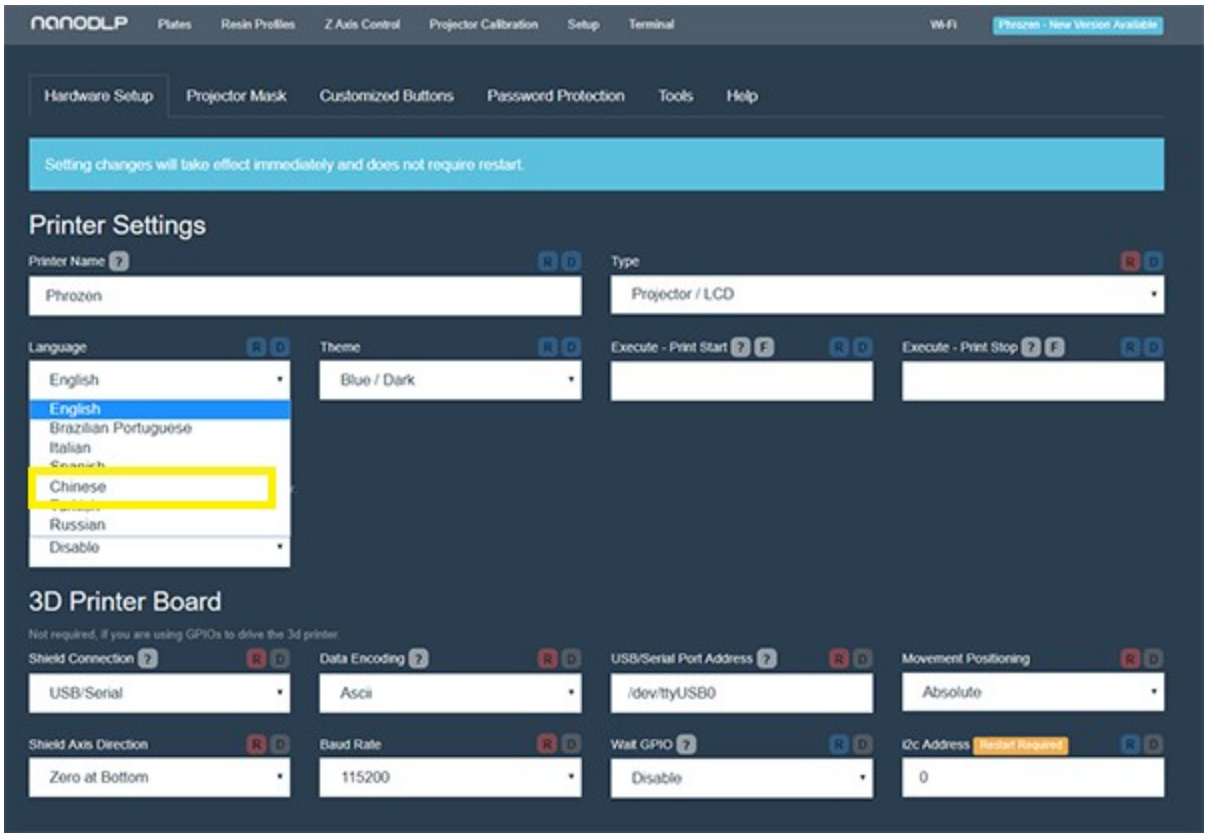


If no further modification, click Submit to add new profile.

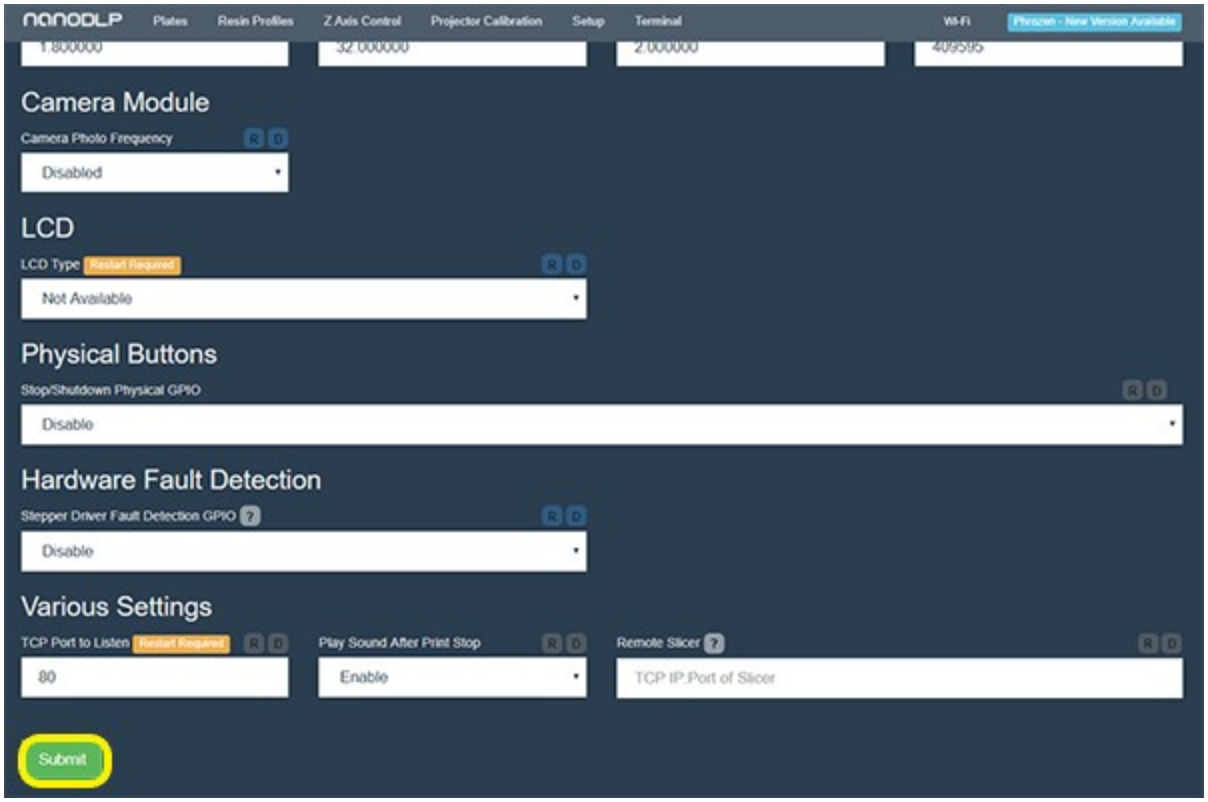
- Change Language



Use “LAN Connection” or “WIFI Connection” and goes into “Setup” page



In language, you can select your language, but Phrozen Shuffle only support Chinese & English.



Click submit to finish setting.

- Meaning of Parameters

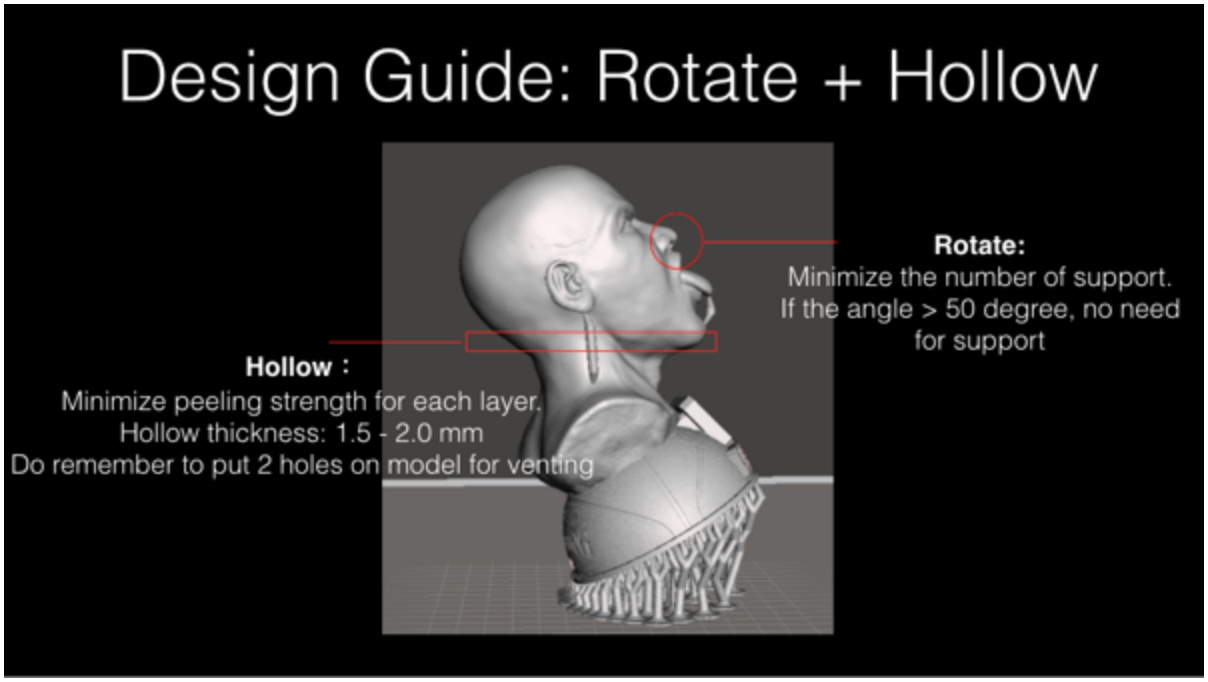
English	Effect / Meaning	If the value too high...	If the value too low...
Number of Layers	Adhesion to building plateform	Tight in adhesion	Loose in adhesion
Layer Thickness	Z slice resolution	Rough model, but reduce printing time	Fine model (depends on resin), but increase printing time.
Cure Time	Extent of resin curing	Over-cure, prints get fatty	Not fully cure, might lose print features
Wait Before Print	Time for resin to flow before print	May sacrifice printing time but let resin flow to static states, good for high viscosity resin	May shorten printing time but limited to low viscosity resin
Wait After Print	Time after curing but before lift	Longer printing time, but good for printing stability	Shorter printing time, but not good for printing stability
Lift After Print	Peeling height	Fully peel the model but sacrifice printing time	May not peel completely
Wait After Lift	Refresh & start of next cycle	Longer printing time, but good for printing stability	Shorter printing time, but not good for printing stability
Axis Speed	Mechanical moving speed, influencing overall printing time	Peel might fail, but shorten	Peel might be good, but

		overall printing time	sacrifice overall printing time

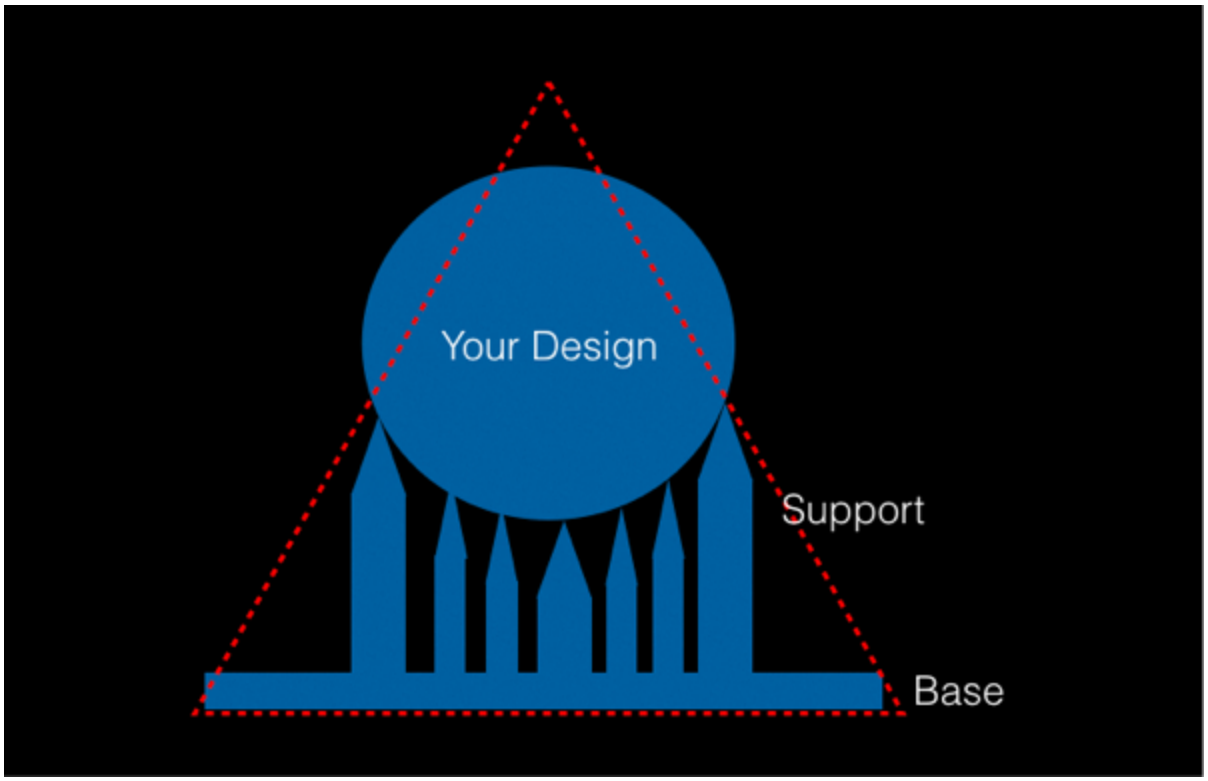
- Resin Profile Data Base (Under construction, not complete yet) :
  - Welcome to share your profile by clicking following link: https://docs.google.com/forms/u/2/d/e/1FAIpQLScPkCh_2wP8eS9FDvlj7sk8CGOPCqOPwPHKMLM9jRordoTEFw/viewform?usp=send_form
  - Check overall profile in following link: https://docs.google.com/spreadsheets/d/1Ts_q6HJcws8VOXQg2CRsKRuPQm-uZkQrrfxMF8n0xTQ/edit

How To Handle & Optimize Your 3D Files

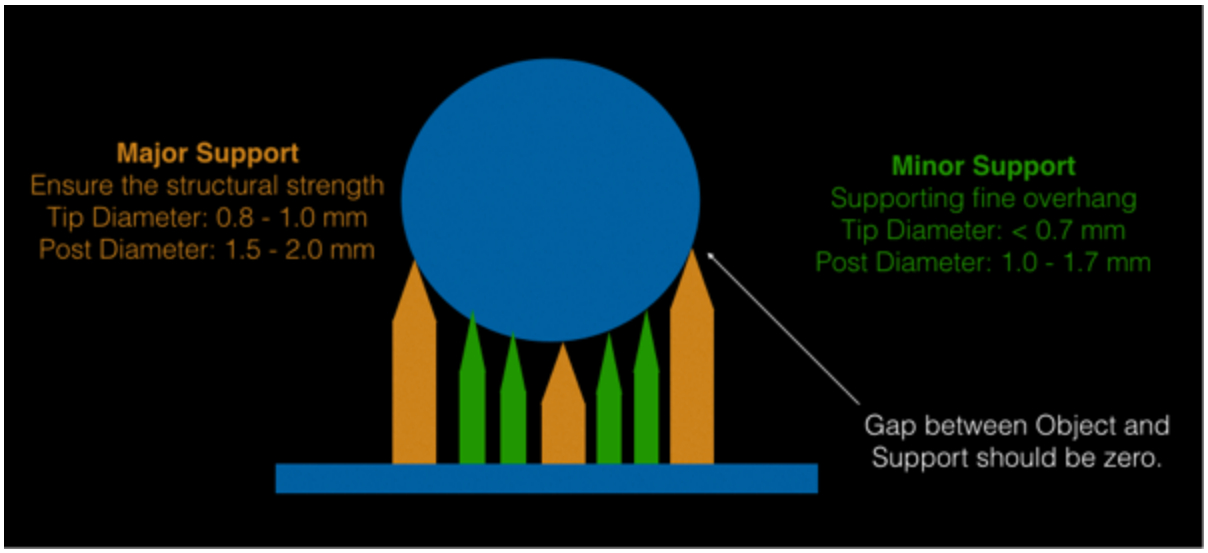
- Principle: Rotate to minimze number of supports + Hollow to reduce impact of peeling



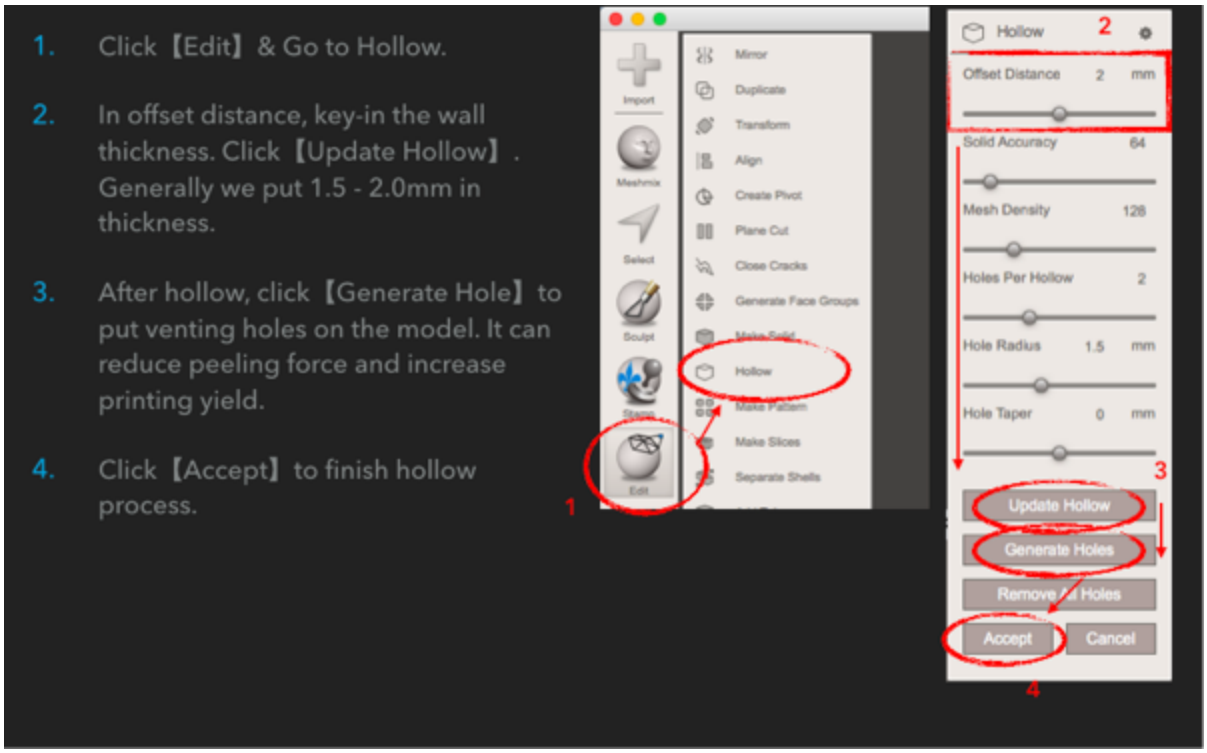
- Building Support



After building support, it would be better if overall design looks like triangle. That way we can reduce peeling impact the yield.



    - Recommended Software for building support: ChiTu Slicer
    - Tutorial for ChiTu: Under Construction...
- Hollow the print:
    - We recommend to use MeshMixer



  - Purpose: (1) Reduce peeling force between layers and therefore increase printing yield; (2) Save materials.
  - Recommend wall thickness 1.5 - 2.0mm. Thick wall might cause crack in post cure.
  - Note: DO put > 2 venting holes after hollow.
- You can find some files for test printing here (Not English): http://download.phrozen3d.com/

Contact Phrozen！

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- Email: sales@phrozen3d.com
- Contact Customer Service (Facebook)
- Facebook English User Group
- Phrozen Instagram for Printing Demonstration:
- Phrozen Youtube Channel for Instruction

Appendix 1: Hardware Specification

	Phrozen Shuffle	Phrozen Shuffle XL
Technology	LCD	LCD
LCD spec	5.5″ 2K LCD Panel	8.9″ 2K LCD Panel
Printer Size	28 x 28 x 42 cm	39 x 29 x 47 cm
Backlight System	ParaLED - Parallel LED Light System	ParaLED - Parallel LED Light System
Z-axis Moving System	Dual Bearing to fix Z-axis Dual Linear Guide Ball Screw	Dual Bearing to fix Z-axis Dual Linear Guide Ball Screw
Z-axis Sensor	Optical Switch	Optical Switch
Front Display	3.5″ Touch Panel	3.5″ Touch Panel
Others	LCD Side Cooling Fan Air-tight lid for resin vat	LCD Side Cooling Fan Air-tight lid for resin vat
XY Resolution	47 μm	75 μm
Z-axis Resolution	10 μm	10 μm
Moving Accuracy	1.25 μm	1.25 μm
Printing Speed	30mm / hr	30mm / hr
Build Volume	12 x 6.8 x 20 cm	19 x 12 x 20 cm
Support Software	ChiTu Slicer	ChiTu Slicer
Slicing Software	nanoDLP / Phrozen Version	nanoDLP / Phrozen Version
File Upload	WIFI Connection USB upload LAN Connection	WIFI Connection USB upload LAN Connection

phrozen

THE NEW GENERATION

phrozen shuffle