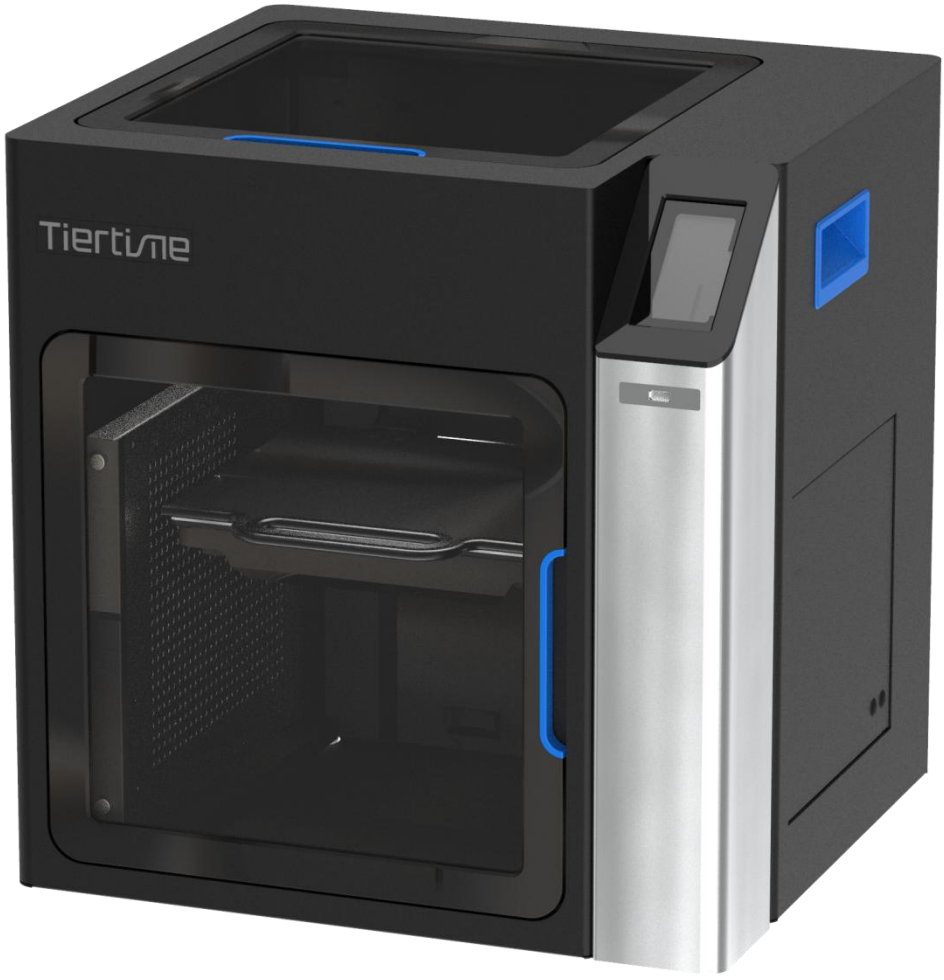
Tiertime UP300D

User Manual



www.tiertime.com

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☼ Marked topics are essential contents that highly recommended for **first time users**.

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1. Safety and Printing Environment

1.1 Safety Precautions

1. The UP300D 3D printer requires the power adapter provided by the original manufacturer, otherwise the machine could be damaged or even cause fire. Keep the power adapter away from water and out of high temperature environments.

2.During printing, the temperature of the nozzle of the printer could reach 300°C and the temperature of the print platform could be over 100°C. Do not touch these parts with your bare hands when the printer is in the operation mode, not even with the heat resistant gloves included in the accessories, as the temperature could damage the gloves and injure your hands.

3. During printing, the print head and other mechanical parts move at high speed. Touching these parts while they are moving could cause injuries.

4. Wear goggles when removing the supporting material from models or detaching models from the build plates.

5. When printing with plastic filaments, the process could generate slight and, for some people, annoying odor. It is recommended to run the printer in a well ventilated environment. We also suggest to keep the printer in an environment with a stable temperature as unwanted cooling could cause adverse effects to the print quality.

6. When using the “Extrude” function, make sure there is enough space between the print head nozzle and the build platform. 50mm is recommended, otherwise the nozzle could be blocked.

7. Fasten moving parts. Tie back loose hair, secure loose clothing and keep all printer doors closed during operation.

8. Do not leave the printer unattended during operation. Watch to make sure the first a few layers adhere correctly.

9. Adult Supervision: Adult supervision is required in the presence of children. Small printed parts are a choking hazard, and always keep sharp tools away from children.

1.2 Printing Environment

As the slight odor could be generated during printing, keep the printer in a well ventilated environment. The UP300D's ideal working temperature is between 15°C and 30°C with a relative humidity between 20–50%. Printing at temperatures out of this range could cause adverse effects to the printing process and print quality.

1.3 One Year Warranty

Tiertime and its authorized resellers warrant to the original purchaser that this product is free from defects in material and workmanship. Tiertime or its resellers will for one year, at its option, repair or replace at no charge for parts and labor from the date you purchased the product from Tiertime or a reseller. Print heads, Nozzles and Print Boards are warranted for ninety (90) days.

• Tiertime reserves the right to determine the validity of all warranty claims.
• Warranty is voided if the product serial number has been altered or removed.
• Warranty is voided if the product has been misused or damaged or if evidence is present that the product was altered, modified, or serviced by unauthorized service people.
For the detailed Warranty and Service Level Agreement, please visit our website https://www.tiertime.com.

1.4 Compliance

2. Unboxing

2.1 Unboxing the UP300D

1. Cut open the tape on the top of the cardboard box, and open the box from the top.

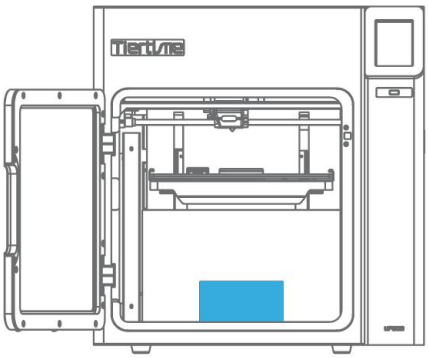
2. Take out the two boards on the top foam, and remove the top foam.

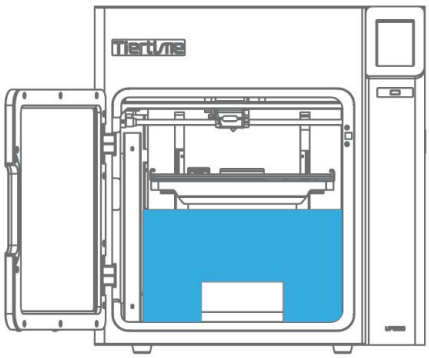
3. Remove the plastic cover and the square shaped foam wrapping around the machine.

4. Lift the printer out of the cardboard box using two handles on both sides of the printer, and place it on a flat surface.

5. Open the Top Lid and remove all the tights and foams inside the printer. There are six tights in the machine.

6. Open the Front Door, and take out the two foams and two extruders beneath the build platform. As figures show below:





7. Take out the roll of filament, the accessory box and the power cord at the bottom of the cardboard box.

8. Put all the foams back to the box, and keep the box for the future use.

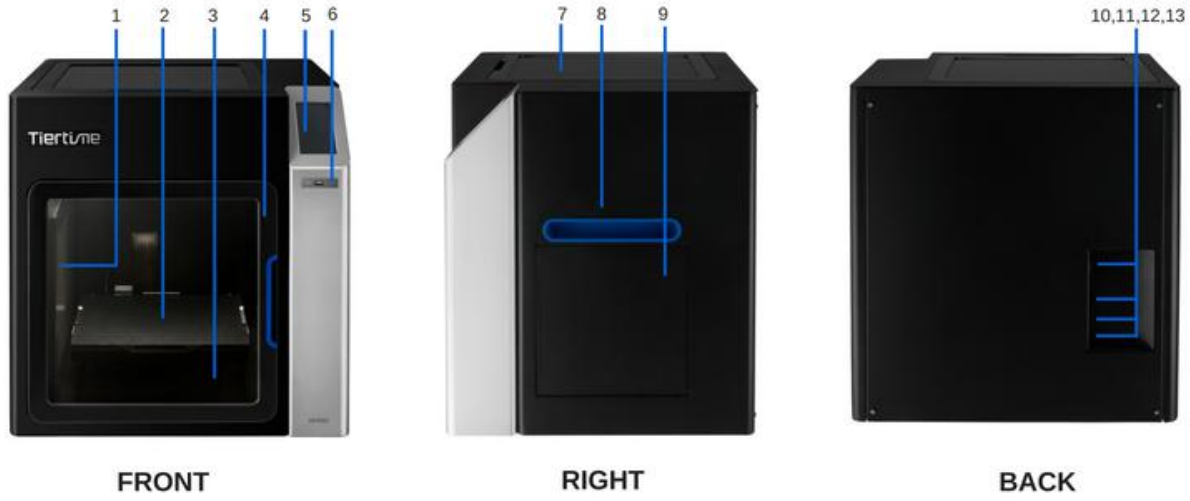
2.2 What's in the box

The Convergence dual extruder is installed on the UP300D.
1. Accessory box
One ABS Type single extruder
One USB Cable
One Pliers
One Scarper
One Nozzle Wrench: 8mm
One Nozzle Wrench: 10mm
One Pair of Gloves
One SD Card Reader
One SD Card
One Calibration Card
One Nozzle Height Detector
Two PTFE Tube: Shorter one for PLA Extruder; Longer one for TPU Extruder
Three Allen Keys: 2mm, 2.5mm, 3mm
Three Nozzles: 0.2mm, 0.4mm, 0.6mm

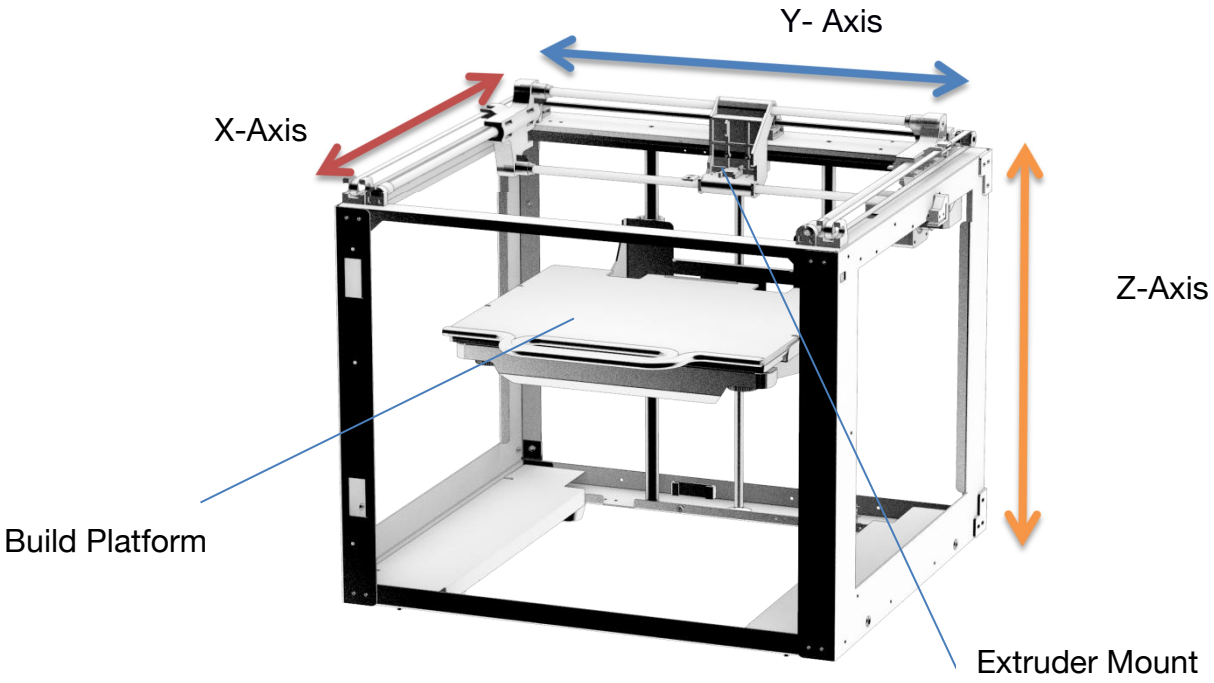
2. In the UP300DD box
One roll of 500g PLA Filament
One roll of 500g Water Soluble Support Filament
One Flex Glass Board
One Perf Glass Board
One Power Adapter
One Power Cord

Notice: All accessories may subject to change without prior notice. If anything is missing, please contact your local distributor, or Tiertime's global technical support center, which can be reached via support@tiertime.com.Introduction

3.1 Main Parts of UP300D



1. Dual Filter 2. Build Platform 3. Waste Tray 4. Front Door 5. Touchscreen 6. Front USB Port	7. Top Lid 8. Right Side Handle 9. Filament Bay 10. Power Switch 11. Ethernet Socket 12. USB Port 13. Power Socket



4. Printer Installation

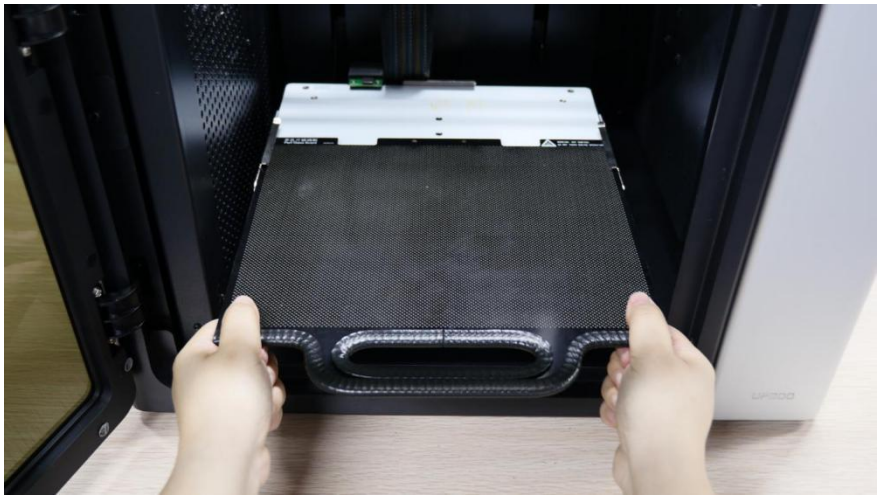
4.1 Install the Print Board

1. Find the “perforated print board”.

2. Open the front door.

3. Slide the board onto the build platform and make sure to push the board all the way to the back.

4. Close the front door.



4.4 Connect the Power Cable
1. Plug in the power on the back of the UP300D
2. Plug the other end of the cable into a wall outlet.

4.2. Install Software UP Studio 3.0

To operate the UP300D, you need to install the UP Studio 3.0 software on your computer. Although UP Studio 2.X can also work with UP300D, it does not support dual extrusion function and is obsoleted.
You can download the installation files of UP studio software from the following url: https://www.tiertime.com/downloads/software

System Requirements:

Supported Operating Systems:

Windows 7 (SP1) or higher (64 bit only)
Mac OS 10.10 or higher

Hardware requirements:
Open GL 2.0
At least 4GB of RAM

Installation

Make sure you download the correct version of software based on your computer's configuration.

4.3 Update the Touchscreen Firmware

We regularly update the Tiertime 3D printer's touchscreen program. It is important to make sure your UP300D's touchscreen system is up-to-date before the first use and pay attention to the upgrade announcement for touchscreen system in the future.

1. Download the UP300D Touchscreen Upgrade Program from https://www.tiertime.com/touchscreen-upgrade-program/

2. Save the file to the root directory of the USB drive which comes with the UP300D, and make sure the file is named as "UP300D_x.x.x_update.tt" (Case sensitive), x.x.x being the version number.

3. Insert the USB drive to the USB socket under the touch screen, and turn on the printer. Wait until the printer is fully ready, go to Information Page, and press the "Upgrade" button. Follow the instructions on the touchscreen afterwards.

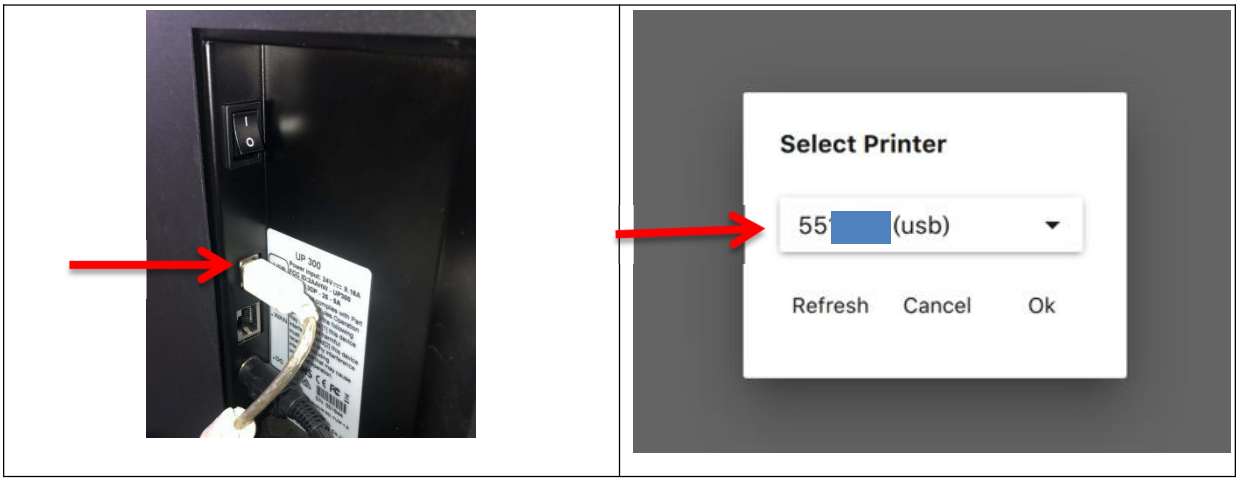
4. Keep the USB drive handy for the future use.

5. Prepare UP300D for Printing

UP300D supports USB and other networking communications. For Wi-Fi, and Ethernet connection please refer to page xxxxx.

5.1 USB Connection

Find a USB cable, and connect one end to the computer and the other end to the UP300D back USB port (type-B). Open the UP Studio on the computer, you will find the connected UP300D listed in the available printer list of Wand.



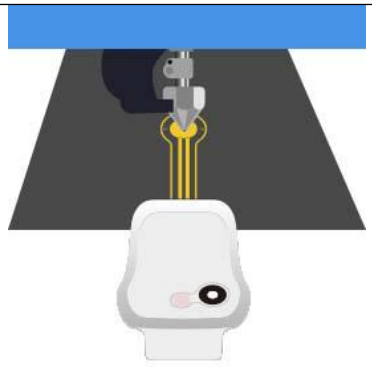
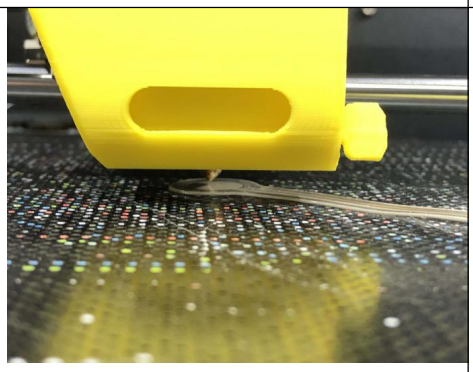
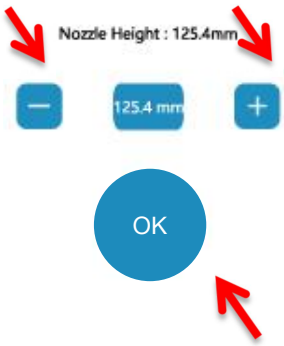
5.2 Auto Calibration

Auto Calibration can be triggered from the touchscreen, or from Wand software when connected to a computer (refer to page xxx). It consist of leveling of the build plate and measurement of nozzle height. For more info please refer to page xxx.

Auto Calibration from Touchscreen

1. When the machine is switched on, user need to first run initialization in order to operate the printer. Go to touchscreen press initialize button.
2. Click Calibration.
3. AUTO. The printer will start the process of calibration.

1. Initialize Printer	2. Press “Calibrate”	3. Press “Auto”

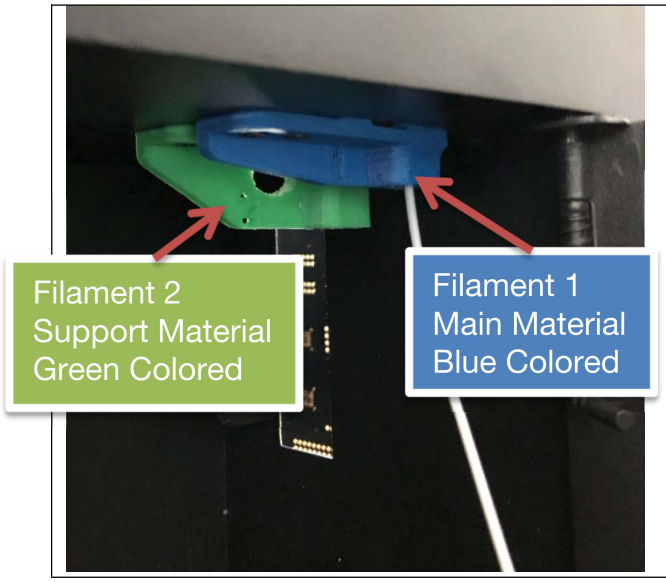
4.When Leveling procedure finishes, the touchscreen will ask the user to confirm nozzle height value.	5. Put the nozzle height detector under the nozzle.Adjust the + and - button to make the nozzle just touching the sensor pad	6. When the nozzle touch the sensor it will emit a buzz sound, press OK button to save the value
		

Make sure the nozzle is clean, plastic debris will add error to Nozzle Height.

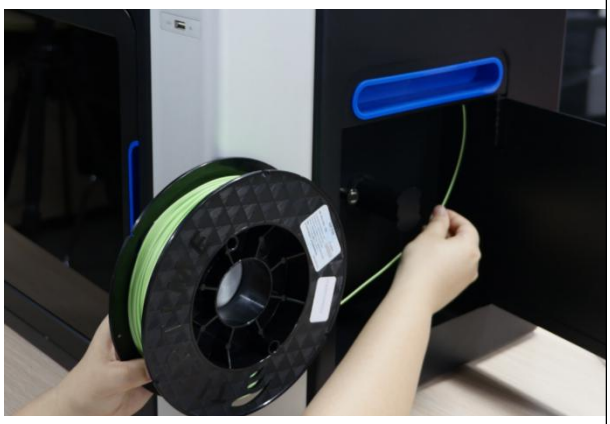
5.3 Load Filament

You will find two spools of filaments in the package.
1. 500g Tiertime PLA
2. 500g Tiertime PVA
In order to archive good consistency and print quality, we recommend use Tiertime filaments. The default print settings of UP Studio are optimized using Tiertime materials, so you can start printing confidently without adjusting any parameters.

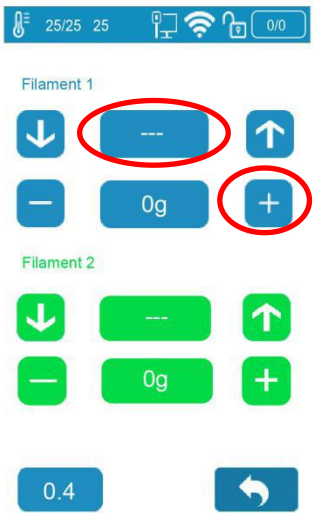
Load Main Material (1)
To install the filament, please following the instruction below:
1. Remove the vacuumed bag.
2. Find the end of the filament, and use pliers to make a clean cut of the end.
3. Open the door of the filament bay, feed it into the guiding tube, you should able to feel the filament triggered mechanical switch (filament sensor) at the opening.
4. Keep feeding the filament until the end of the filament sticks out from the other end of the guiding tube (You can open the top lid, and make sure the filament sticks out).

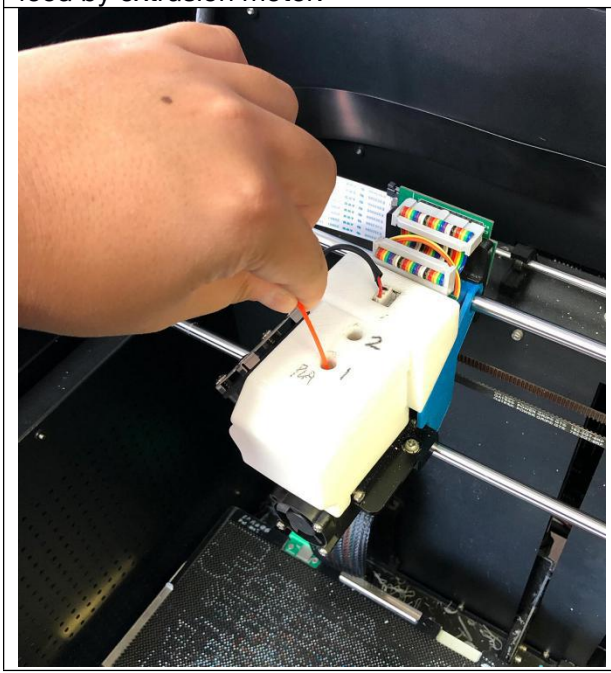
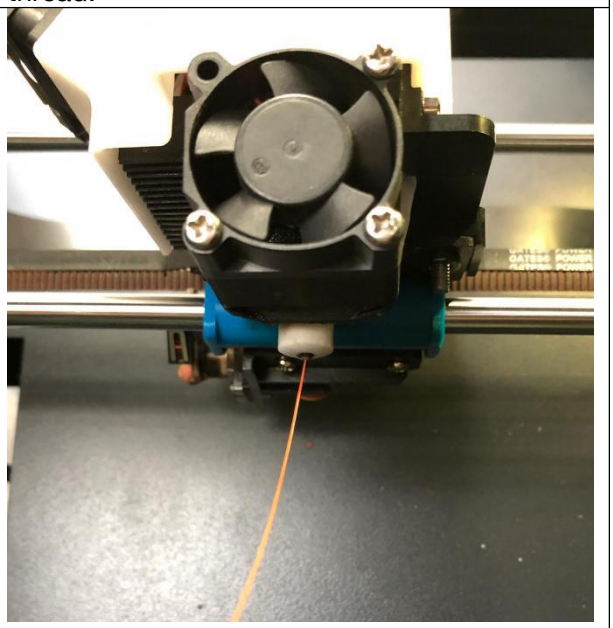


Insert filament into guiding tube, must go through the filament sensor.

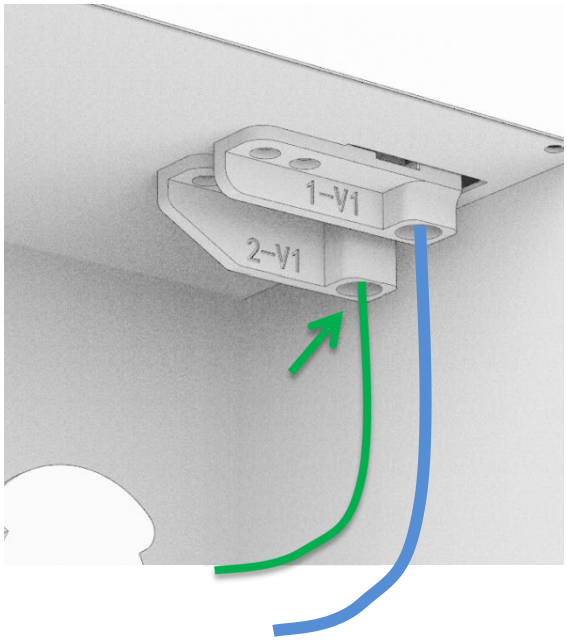


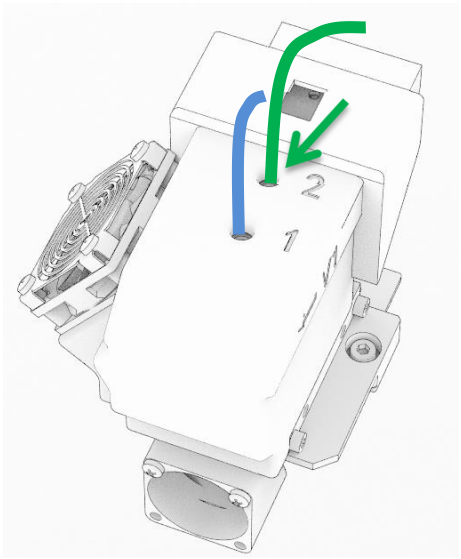
5. Go to touchscreen

1. Press Material	2. Press “Filament 1”Material Button until it shows “PLA”, then press “+” button to increase material weight to 500g.	3. Press “ ” to extrude material. The machine will heat up and buzz when start to extrude. It will stop automatically
		

4. When the extruder start to extrude, push the filament into entry 1 on extruder until it can be feed by extrusion motor.	5. The filament should able to be extruded from nozzle and form a clean straight thin thread.
	

Load Support Material (2)
Loading of support material is same the main material but use the Filament 2 entry from the filament bay and extruder head. On touchscreen user should choose the correct support material that match the main material. For PLA, the matching support could be Tiertime PVA or breakaway. For more info refer to page xxx.





---Important!!!---

For Convergence Dual Extruder, both main and support materials must be loaded into the extruder. Leaving one side of the hotend empty will inevitably results in hotend clogging.

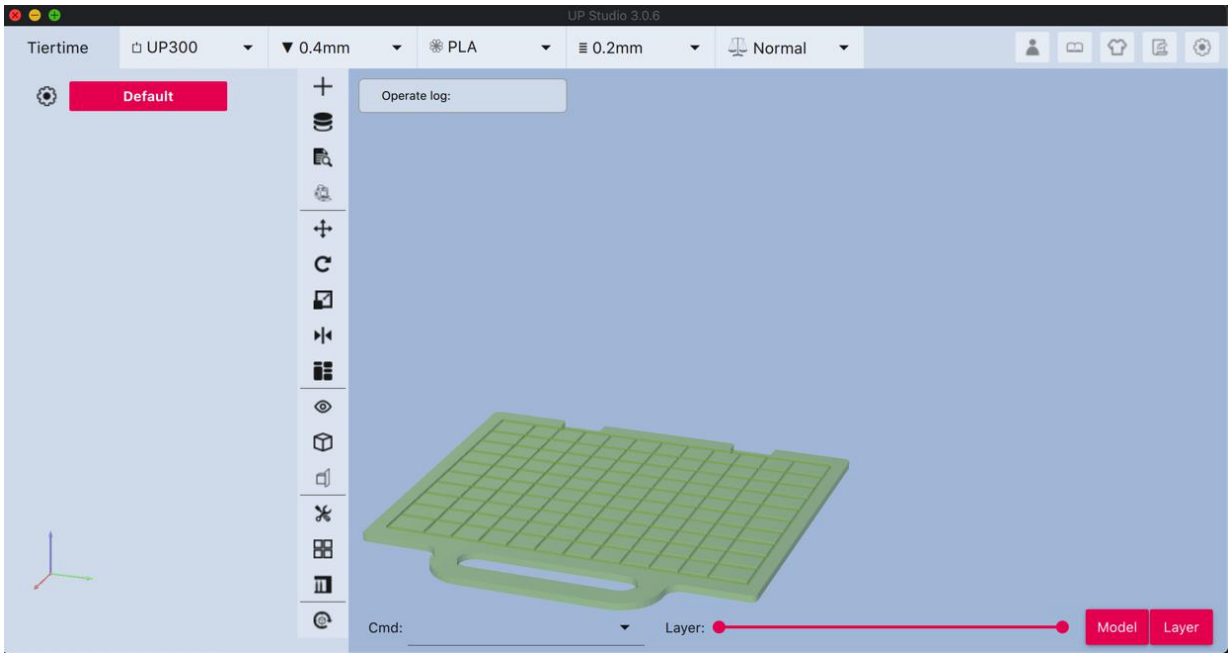
6. First Print

This chapter intends to guide new users to print a object with the Covergence Dual extruder. Therefore as mentioned in the previous chapter the printer should be loaded with PLA and Tiertime PVA support for dual material printing.

-For more info on the convergence dual please refer to page xxx
-UP300D can also use LT/HT Single Extruder for single material printing, for more info on printing with single material, please refer to page xxx.

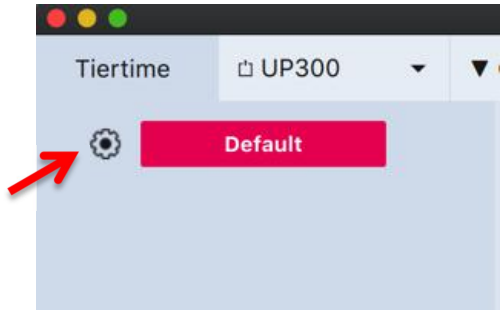
6.1. Slicing

1. Open UP Studio 3.

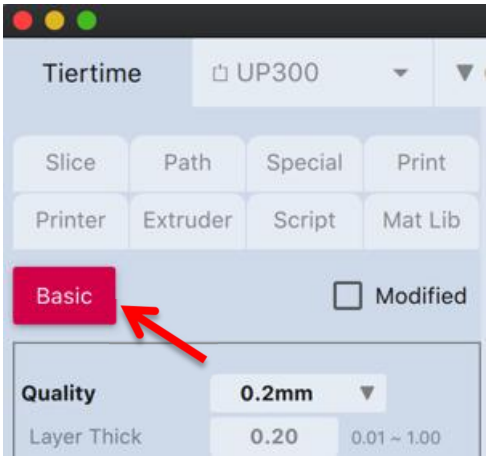


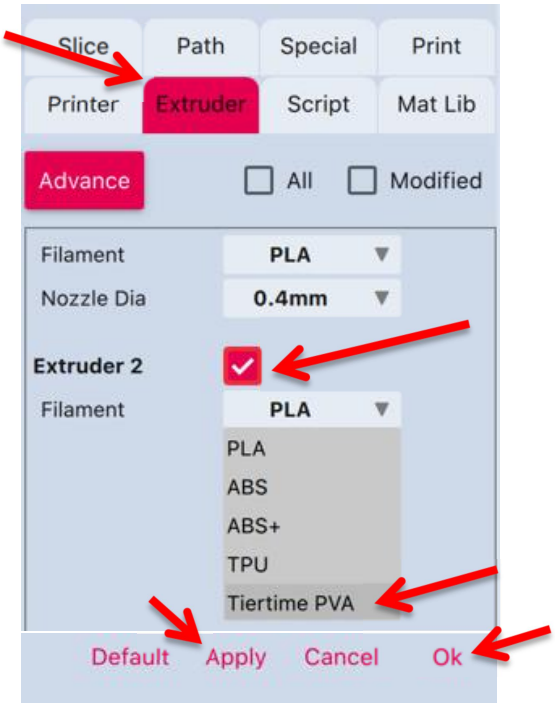
2. Turn on Extruder 2.

1. At Left column click the "gear" icon to open the print setting menu.



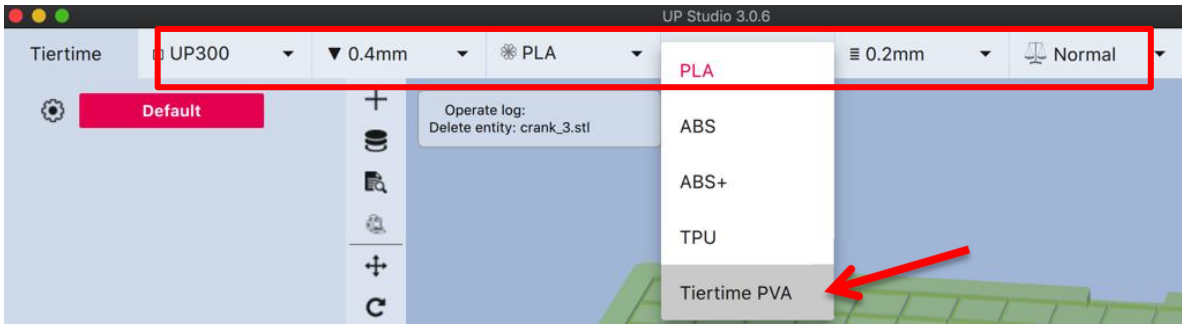
2. Then click "Basic" button to switch to "Advanced" mode.



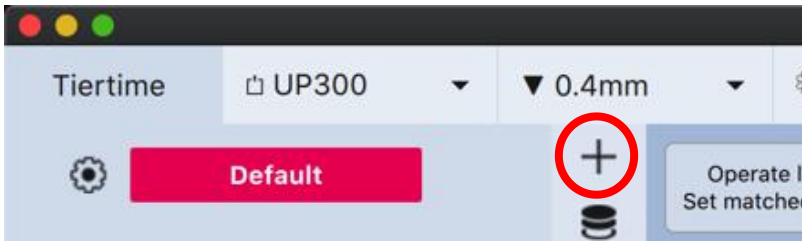


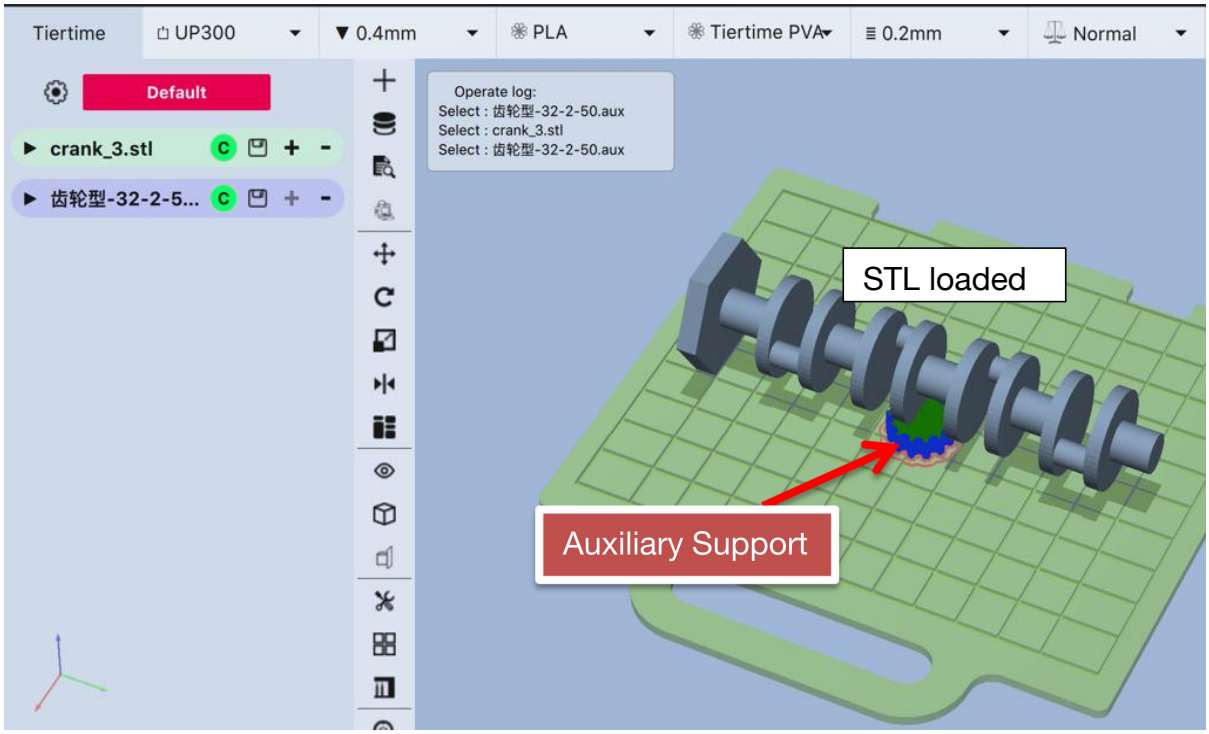
3. Select “Extruder” Tab, Check the “Extruder 2” Option, then select filament “Tiertime PVA” for its filament option. Then click “Apply” => “OK”

4. Go to top menu print settings, select the correct machine type and print settings, eg Layer thick and nozzle diameter, the filament type for both extruders. The left side material is filament 1(main material) select PLA, the right side material (support) select Tiertime PVA.



3. Load a STL file by click the “+” button on the vertical menu.





Please note an Auxiliary support pillar is auto loaded with the file. This is due to the activation of second extruder. On the left object list, two new entries appear, one is the STL model loaded and the other is the Auxiliary support.

6.2 Auxiliary Support (A.S.)

It is a special preset object for material switching during a print. The A.S. is printed as a column and material will be switched within the path of A.S region of the current layer. User should able to observe a gradient of material change in A.S.. It is important to have A.S. for printing dual material, as all the mixture of the two materials during shifting main(1) and support (2) material will be dumped into the A.S. and the support and main objects will retain high purity of its own corresponding material. This is important as mixing the two material not only affect the color of print, but also affect the strength of the main object and the solubility of the support.

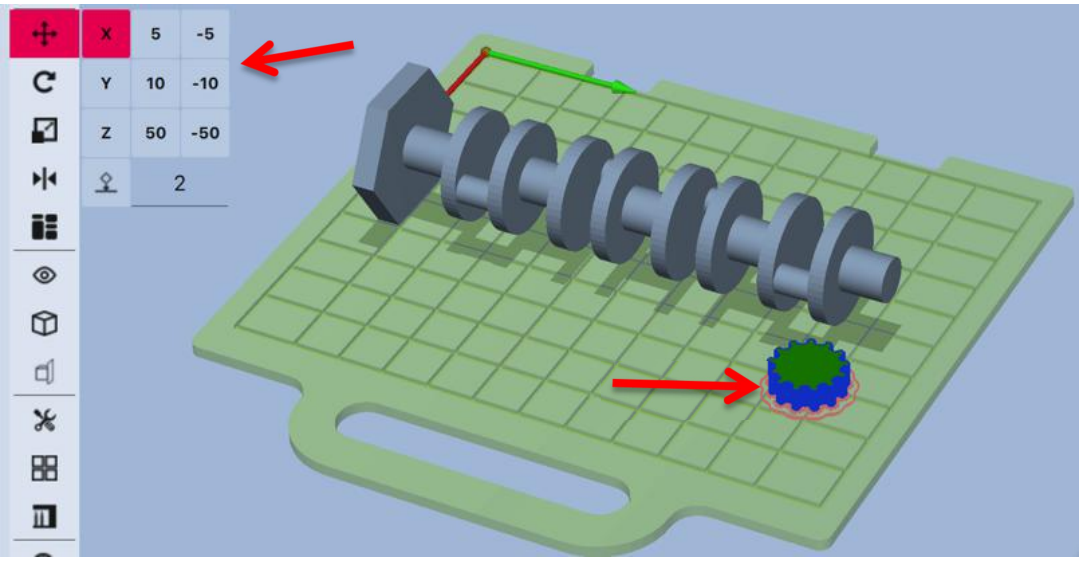
Auxiliary Support print setting is partially depend on the print parameter of the current print job but its shape and path are not adjustable by users.

Due to the structure of Covergence Dual Extruder, prolonged stagnent material flow in the hotend will casue degradation and backflow material which eventually result in clogging of hotend.
1. Even user is printing an object that does not need any support, the Auxiliary support(A.S) is still required for periodic material purge to prevent clogging.

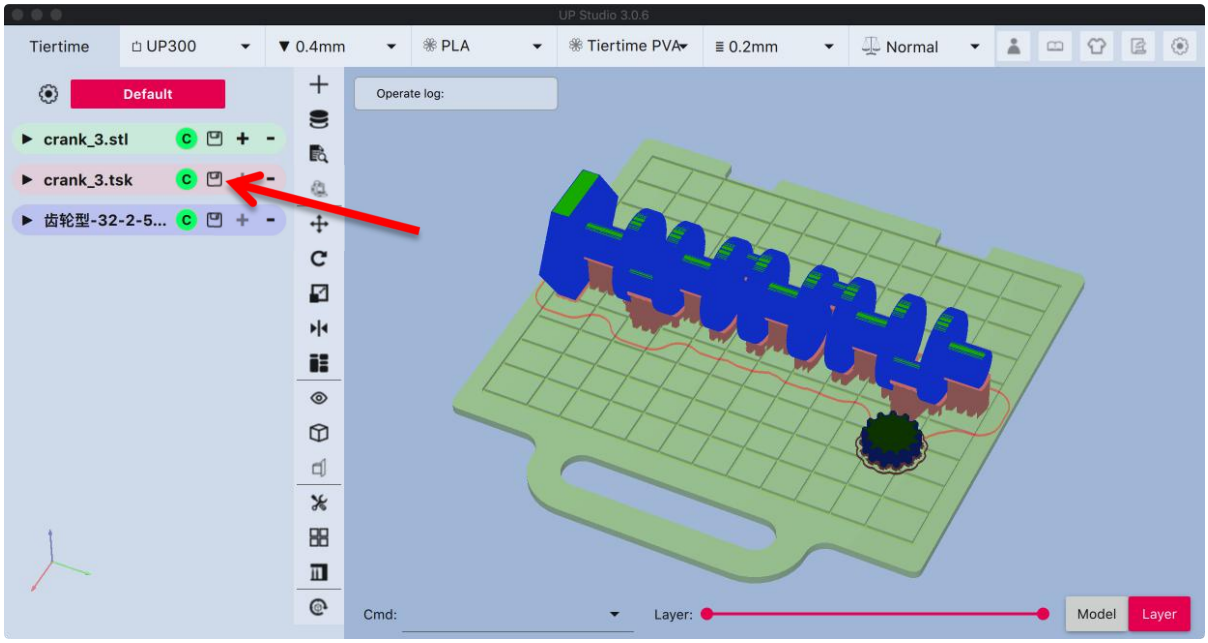
2. When using the same material for both main (1) and support (2), the A.S. is still required.

4. Move the Auxiliary support pillar to a suitable location.

1. First left click on the Auxiliary support to select it, then click the “ ” move button.
2. Right-click-drag the Axuiliary support to an area not overlapping with the STL model.
3. Alternatively user can adjust the location by using the key pad. For more info on model layout please go page xxxx.



5. Print preview. After adjustment of the model layout, click the “ ” preview button to slice the model for preview (not saved).



Click “ ” (save) button of the task file to save it to hard drive or USB drive.

6.2 Connect and Send Print Job to Printer

U300D supports USB, Wi-Fi, and Ethernet connection. For Connecting with WiFi or Ethernet, please refer to page xxx.

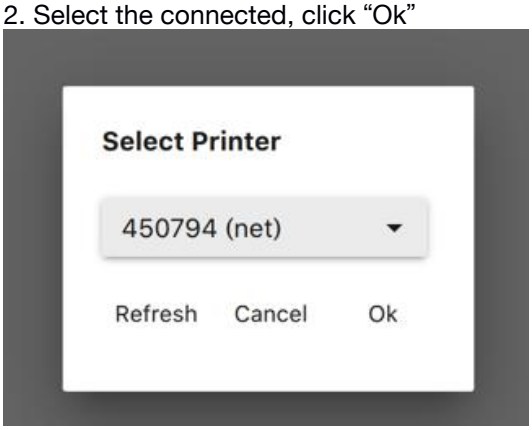
USB Connection

Use the USB cable included, connect to one of your computers USB port and UP300D's back side USB port (Type-B).

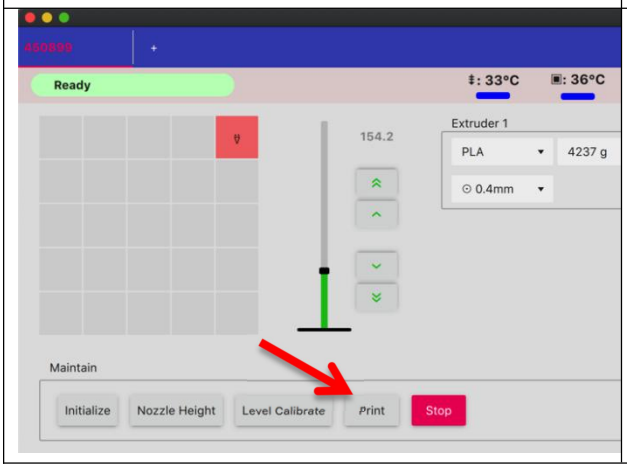
Open UP Studio 3 on the computer, click the " " button (Print) to bring up the "Wand" printer hosting module.

1. Click connect printer

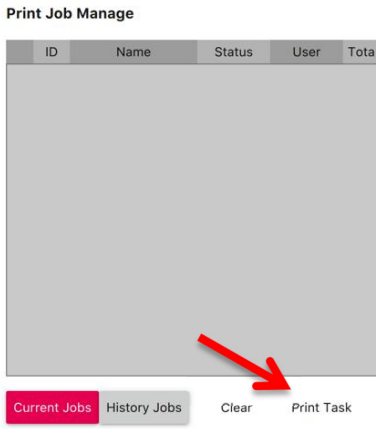
2. Select the connected, click "Ok"



3. Click "Print" to bring up task list.



4. Click "Print Task" to load the .TSK file that just saved.



Once selected, the task file will be transferred to the printer. When data transfer is finished, it will start to heat up and start printing after reaching adequate temperature. As long as the data transfer is finished, user can disconnect the printer from computer and printer will able to carry out the print job on its own.

6.3 Remove the Printed model

To remove the printed model from the print board of the UP300D, it is recommended to wear gloves for protection. Take out the print board with its front handle, using the scraper that comes with the machine, scraping the model off the print board from one corner of the model.
Clean the print board from plastic residues, put back into the build chamber for the next print.

7. Printer Calibration

Printer calibration in Tiertime system involve of followings:

1. Nozzle Height Measurement

2. Platform Matrix Leveling (9-Point Compensation)

3. Vertical Calibration

4. Dimensional Calibration

All the above calibration are made in terms of **SOFTWARE**. For Nozzle Height and Leveling Compensation are routine procedures that are done by users.

For Dimensional calibration and Vertical calibration were done through hardware in factory and only need to be re-calibrated in software when user found the corresponding measurements are not satisfactory.

Since all the calibration data are stored in the on-board SD card of the touchscreen mainboard. If user replaced/formatted SD card or replaced touchscreen entirely, the calibration data previously made will be lost and the calibration may need to be redone.

7.1 Nozzle Height Measurement

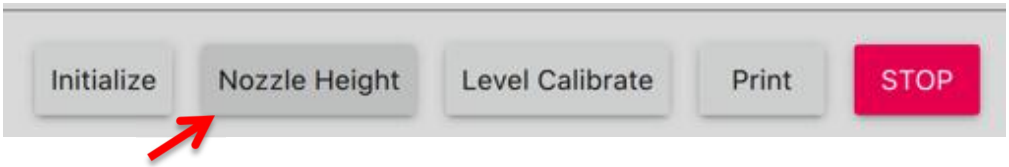
Nozzle Height Value is the most important measurement of the printer as it determines how close the nozzle to the build platform when printing starts. The optimal distance between nozzle and build surface depends on depends on different situation.

If use raft, the optimal distance is about 0.2mm.
If print without raft the distance should be less than 1x layer height, eg 0.2mm layer the distance should be about 0.1-0.15mm.
The reason for this is, in order to achieve good first layer adhesion, the first layer should be pressed against the build surface, become slightly overspread to obtain a adequate contact with the print surface.

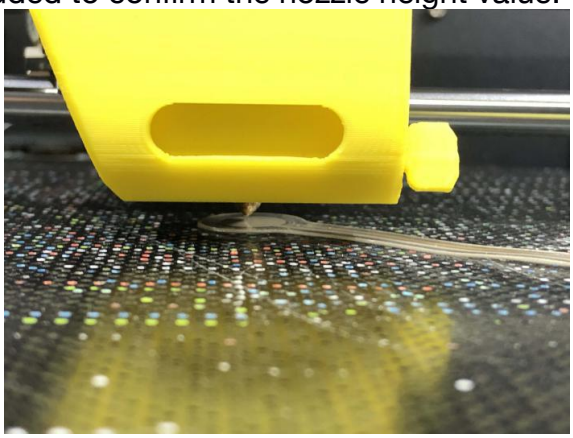
7.1 Set Nozzle Height through Touchscreen, please refer to page xxx.

7.2 Setup Nozzle Height Value through Wand (computer hosted)

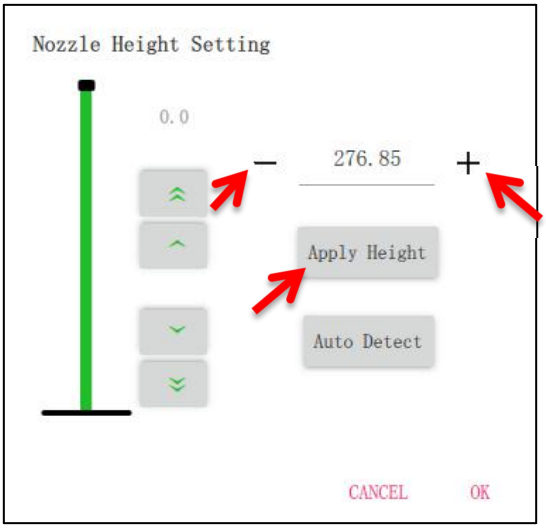
7.2.1 Connect printer to computer, open UP Studio 3.0 and click the “Print” button to open “Wand”.
7.2.2 Click “Nozzle Height” button, the print head will move the position that is near the platform.



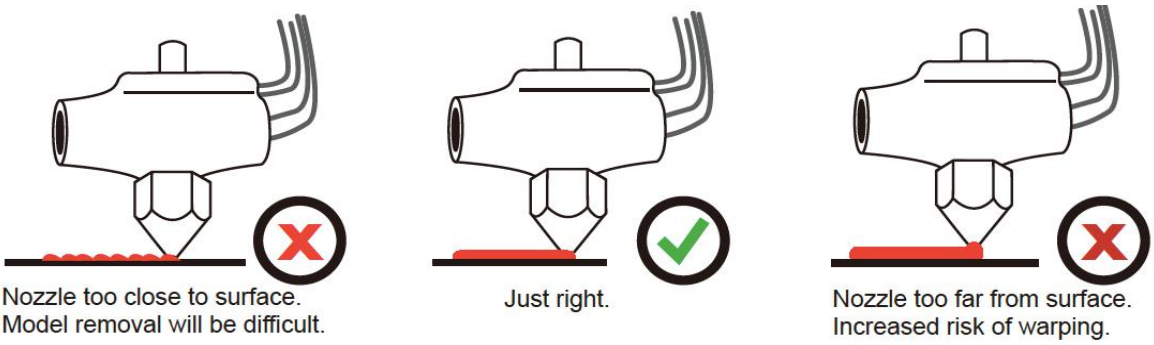
7.2.3 Use the height detector included to confirm the nozzle height value.



User need to put the sensor pad of the detector under the nozzle and then use + / - buttons to adjust the nozzle to touch the sensor until the sensor give a buzz sound. When the nozzle height is determined by the sensor, click “Apply Height” to update the nozzle height value.



It is recommend to print a small test object after the measurement, check the following for recommended first layer adhesion.



Nozzle too close to surface.
Model removal will be difficult.

Just right.

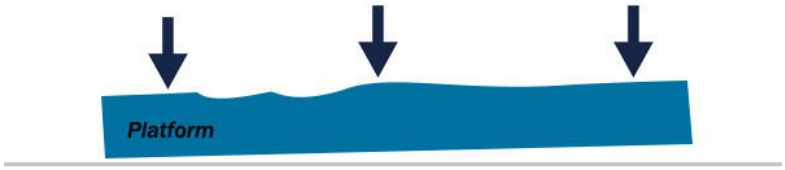
Nozzle too far from surface.
Increased risk of warping.

7.3 Matrix Leveling (9-Point Compensation)

Tiertime Matrix Leveling can effectively reduce the adverse effects of tilt and uneven surface of build platform. The leveling will not affect the print's dimensional accuracy in contrary to other leveling methods. Its leveling mechanism is to first measure the platform heights at 9 different points and then use the values to generate a compensating raft that provides a flat and leveled build surface. Then the object is print onto the raft for best print quality and platform adhesion.

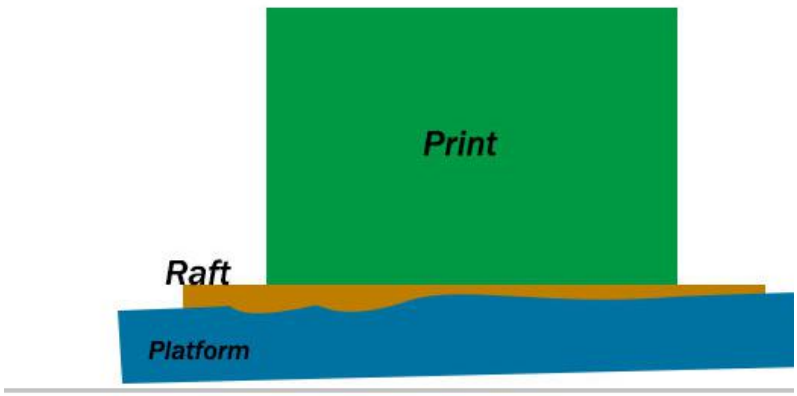
The Leveling process could done automatically or manually on UP300D.

1. Platform may be tilted and print surface may be uneven (may not be visible in real situation). Platform height at 9 different points are measured (arrows) by automatic probe or manually with paper.



2. A compensating raft is laid onto the platform to build a flat and leveled surface. The amount of compensation depends on the result of the previous measurement.

3. Object is printed on the raft. Note object's bottom is flat and horizontal in contrary to the platform's tilted and uneven surface.

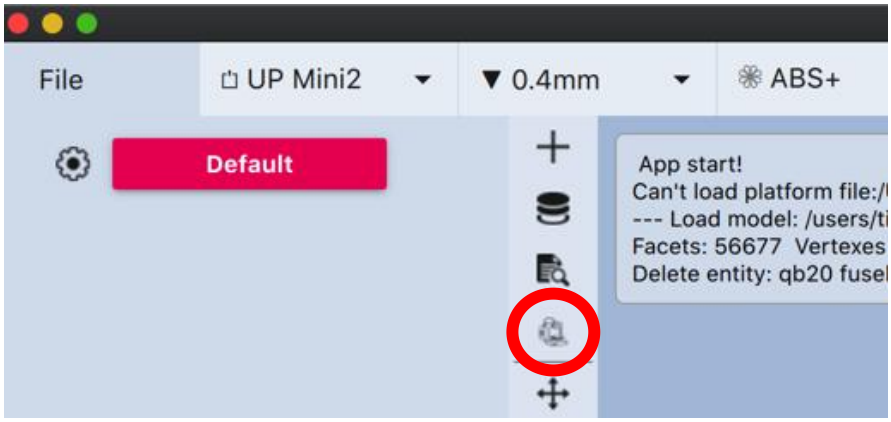


7.3.1 Auto Matrix Leveling through touchscreen, refer to page xxxx.

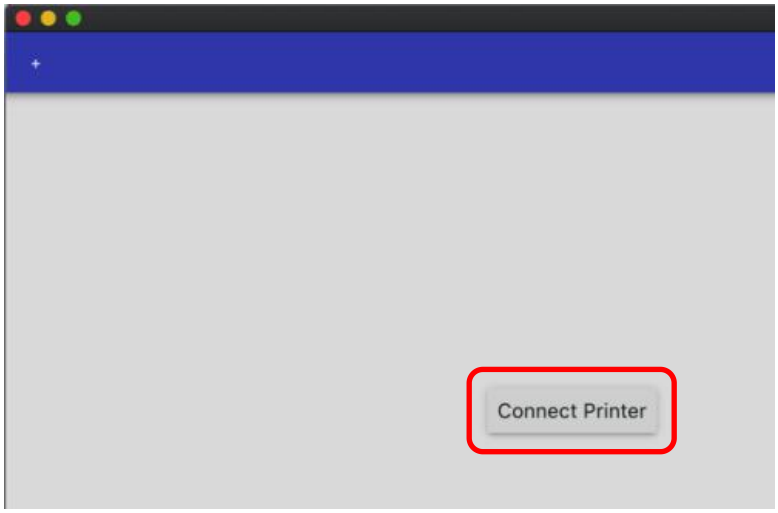
7.3.2 Auto Matrix Leveling through Wand (computer hosted).

1. Connect printer to computer using USB/Wi-Fi cable.

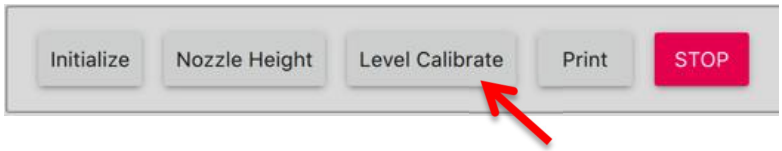
2. In UP Studio click “Print” button to open “Wand”.



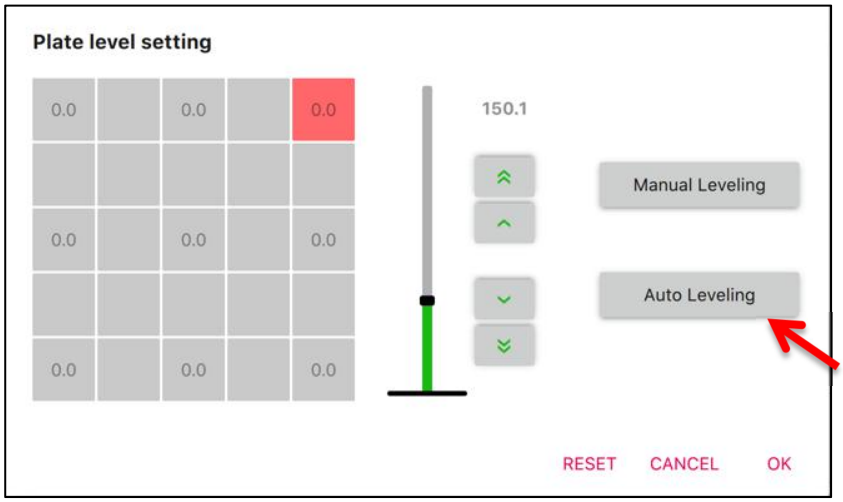
3. Click “Connect Printer”, the USB connected printer should in the available printer list, click it to connect.



3. Click **Initialize**, and wait for the initialization process finishes
4. Click Level Calibrate.



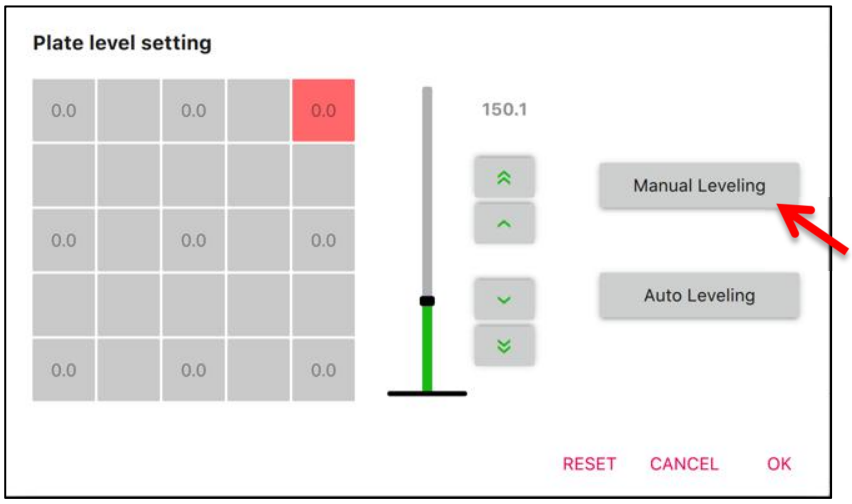
5. Click Auto Leveling, the print head will then probe the platform in 9 positions. The leveling probe will be lowered and start to probe nine positions on the platform. After probing the platform, the leveling data will be updated and stored in the machine. The leveling probe retracts automatically when the process is done.



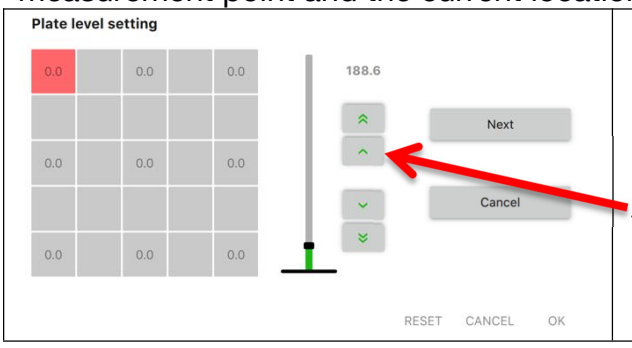
7.4 Manual calibration

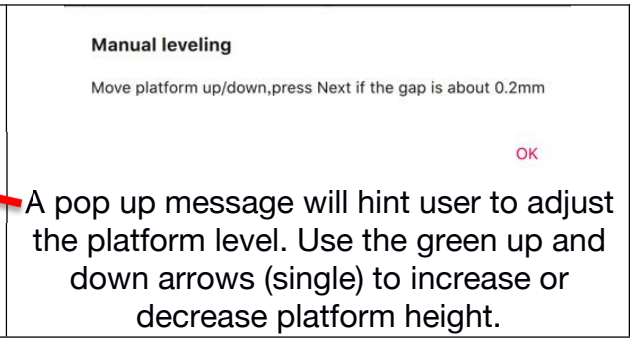
Although the Auto Calibration is always the easiest way to calibrate the UP300D, some advanced users may prefer to level manually to have full control of result.

1. At plate leveling interface, click the Manual Leveling button

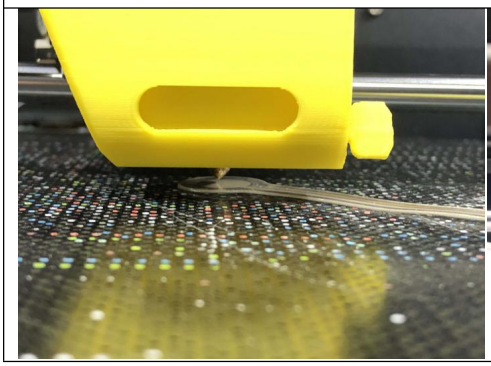
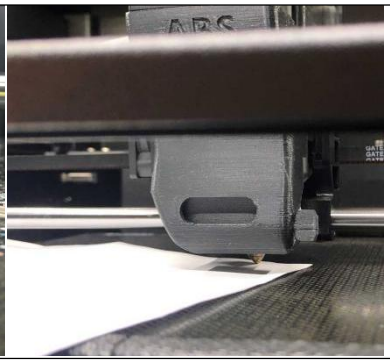


2. Red square now move the box on upper left corner representing the measurement point and the current location of nozzle.





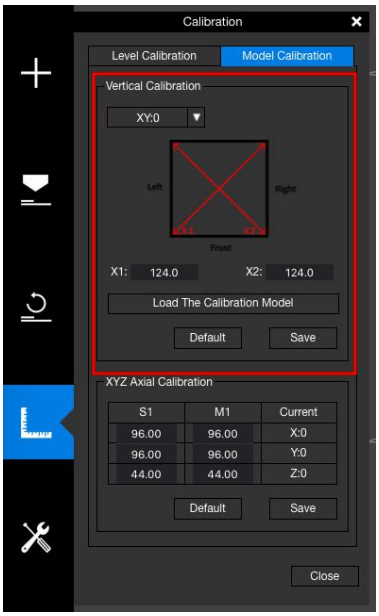
A pop up message will hint user to adjust the platform level. Use the green up and down arrows (single) to increase or decrease platform height.

Use the nozzle height detector (or a piece paper as feel gauge) to determine the platform height at the measurement point.	Click “Next” button to save the current height reading and move to the next measurement point.
 	

Repeat the measurement for all 9 points then the software will calculate the compensation values for all the 9 points as well as the ~~nozzle height value?~~

7.5 Vertical Calibration

Vertical Calibration. The main purpose of Vertical Calibration is to ensure all three axes are perpendicular to each other in order to guarantee consistent, high-quality prints.

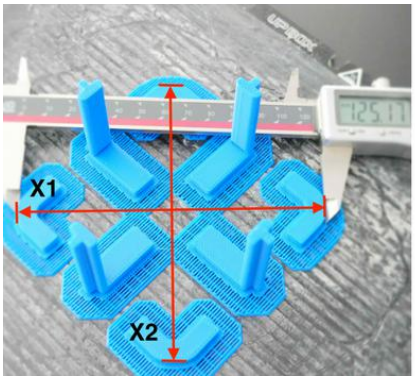


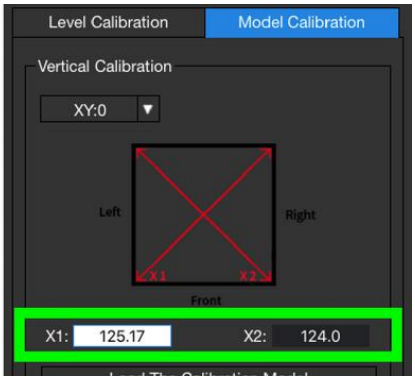
1. Find the VC.stl in the installation directory of UP Studio. Load it in UP Studio software, and follow the normal process to print it.

2. After the model printing is done, take out the build surface with the printed model on it. Don't remove the object from the surface. The printed model includes 4 corners, and 4 L-shapes.

3. In the UP Studio Software, find Model Calibration. Click **Default** before entering any new values into the edit fields.

4. Perform X/Y measurements. Use a thin ruler or a Vernier scale to measure the diagonal length of the printed model from one corner to the opposite corner, as shown in the figure below for X1. Then, do the same for X2. Enter the values for X1 and X2 into the software.





5. Click the Confirm button to complete the X/Y axis calibration. The software will round those values to the nearest tenth.

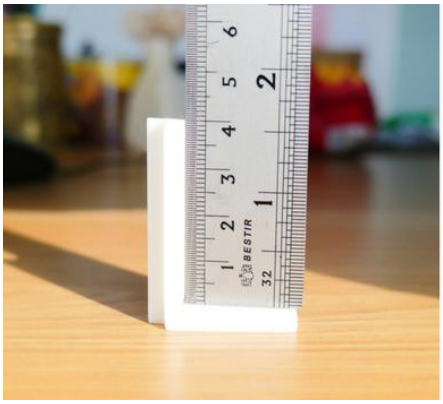
6. Click the dropdown menu in the upper left to shift to X/Z mode. X/Z calibration requires measurement of the L-shapes.

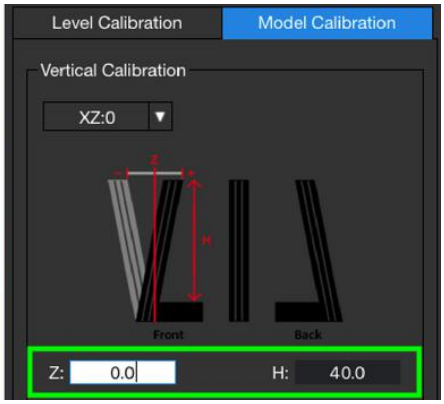
Only one L-shape is needed to do the measurement, but all the L-shapes are needed to check in order to find the right one.

First, remove all the L-shapes from the build plate and peel them off the raft. Rememer the position of each L-shape on the build plate when peel them off the build plate.

Place them in a position on a table that matches their original position on the print surface – right for right, front for front, etc.

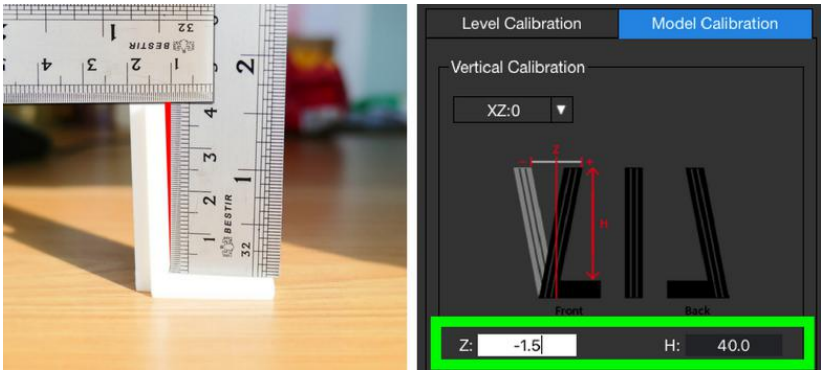
Use a right angle ruler as shown in the following Figure and push the ruler against the corner of each one of the L-shapes. If the angle of the corner of the L-shape is 90 degrees, move to the next L-shape. Continue this process with each L-Shape. If all the L-shapes are 90 degrees as shown in figures 3 and 4, enter '0.0' for the Z value and X/Z calibration is done.



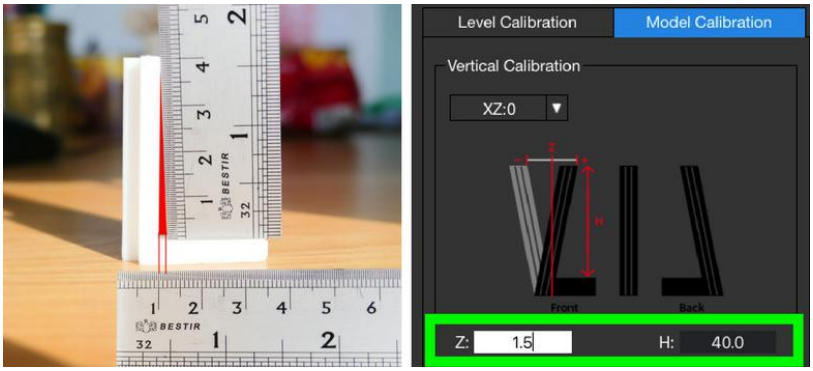


If you find one L-shape that is not 90 degrees, it means the X and Z axis are not perpencular, and it needs to be adjusted. To clarify, you need to look for a gap between the ruler and the L-shaped object. If you find a gap, you have found the L-shape that will provide your Z value and so you need to measure the gap.

The gap will either be at the top of the L-Shape (an obtuse angle) or at the bottom corner(an acute angle), between the ruler and L-Shape. Use another ruler to measure the gap, as shown below. Enter the Z value as a negative number if the angle is obtuse. Enter the Z value as a positive number if the angle is acute.



Obtuse Angle, Z value will be negative.



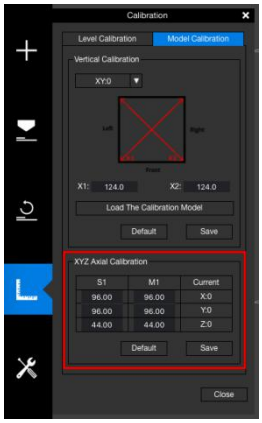
Acute Angle, Z value will be positive.

In our case, for figure 4, the value of Z entered is -1.5 mm. For figure 5, it is 1.5 mm. The H value is the measurement of the L-shape's height between the bottom of the ruler sitting on the L-shape's base and top of the L-shape. Thoeratically, it is 40.0 mm, and the deviation on the height makes the value otherwise. Enter the height measurement into the H value field.

In the end, do not forget to click the Confirm button to finish the process.

7.6 Dimensional Calibration

XYZ Axial Calibration is used to improve dimensional accuracy for **a specific model**. When a printed object is found to be deviating from its theoretical dimensions, we can use this method to correct it and achieve better precision.



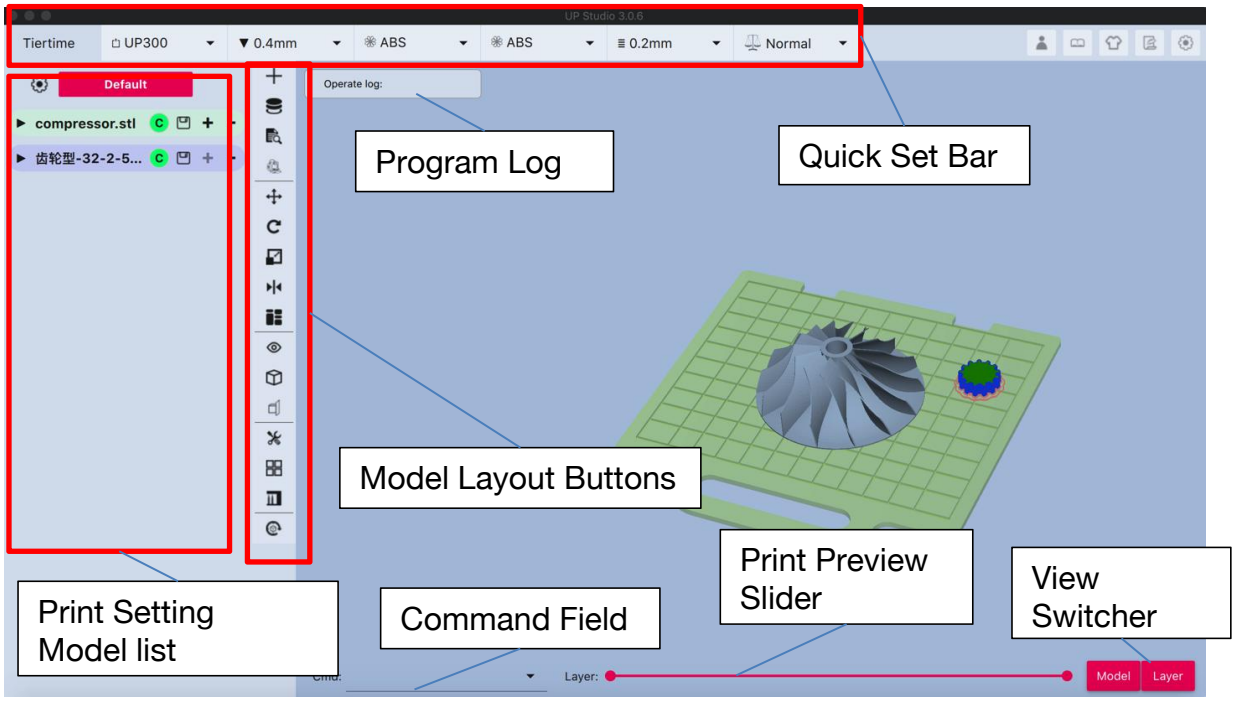
To correct the dimensional error, go to Calibrate -> Model Calibration. Fill in the M1 column with the printed object's actual values and enter the model's correct values into the S1 column.

Click Confirm. The software will save the values and adjust printing parameters to correct for deviation.

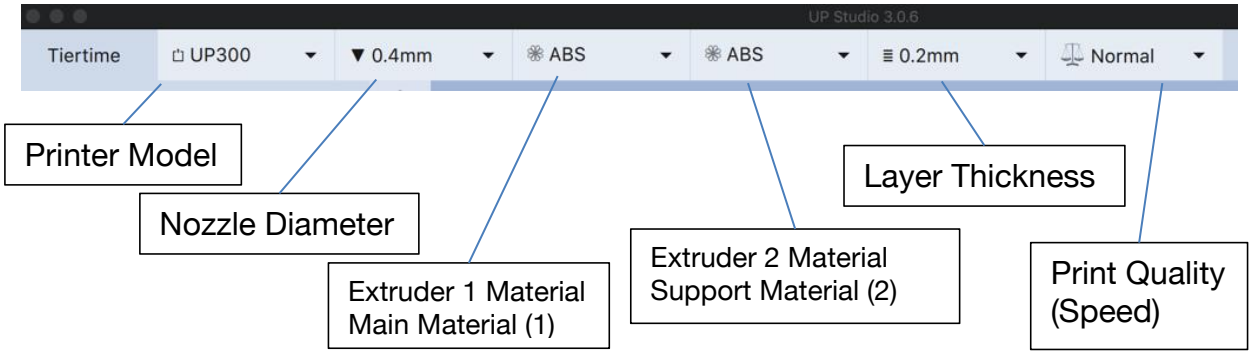
Keep in mind, a calibration is only valid for the model used during the calibration process. You may need to redo XYZ axial calibration for a different model in order to achieve maximum dimensional accuracy.

8. Introduction to UP Studio 3

8.1 Interface



8.2 Quick Setting Bar



Quick Setting Bar provides a quick way to change essential print settings, also give overview of current print settings.

8.3 Print Layout Tools

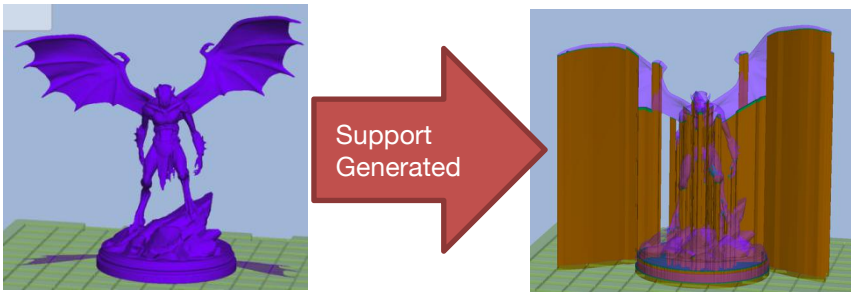
Button	Description
	Add 3D file to build space.
	Slice model and save the data (.tsk) to the directory of the original 3D file.

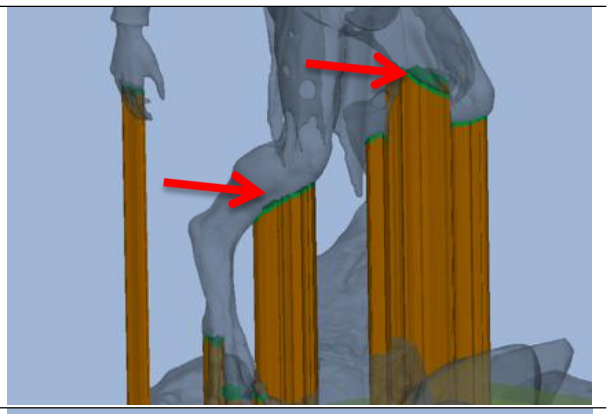
	Preview Slice Result. The 3D file will be sliced but not saved, the sliced result will appear on file list of right column.
	The “Print” button. clicking this button will call out the “Wand” hosting module. This button does not initiate printing.
	Move. Select a 3D model and then click this button. Mouse Right-Click-drag the model to move it along X-Y Plane. Alternatively use the keypad to move move model along selected axis.
	Select a 3D model and the click this button to rotate. Select the axis and rotation degree on the keypad. Select surface to be bottom. Click the bottom and select target surface, it will rotate to become the object bottom.
	Scale object. Use keypad to select preset ratio or input a target scale ratio. Link all axis when scale, this keep all 3 axis to keep the original proportion of the model.
	Mirror object along selected axis.
	Autoplace。 Click this button all the objects in print space will be automatically arranged to become evenly distributed and “onto” the build surface.
	Views. Quickly switch between preset view perspectives.
	Display modes. Choose to display Solid, Surface, Wire or make model transparent. Apply to all models in print space.
	Cross-section view. Choose to a section along specified axis for inspection only. This function cannot be used to cut/modify object.
	Fix Error. Choose a model and click this button to fix simple simple mesh defects. Cannot handle more severe issue.
	Merge. Merge selected models into a single model. The raft of the object will be merged as well.
	Support Editor. Select model and click this button to open support editor for detailed support editing.
	Reset Model. Remove all previous modification of the model and model return to the state it is just loaded into the software.

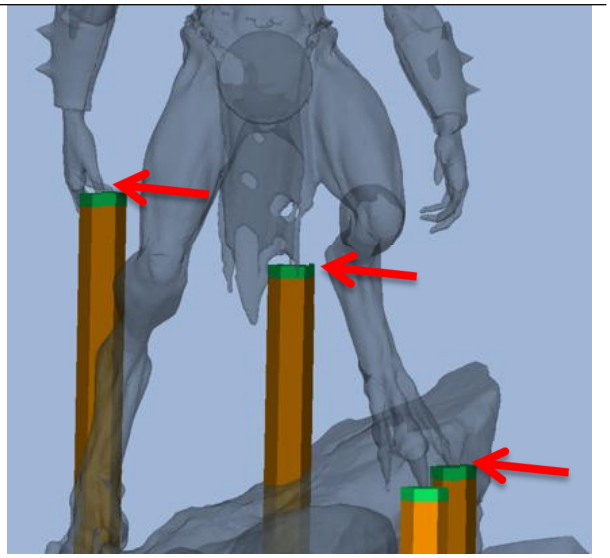
8.4 Support Editor

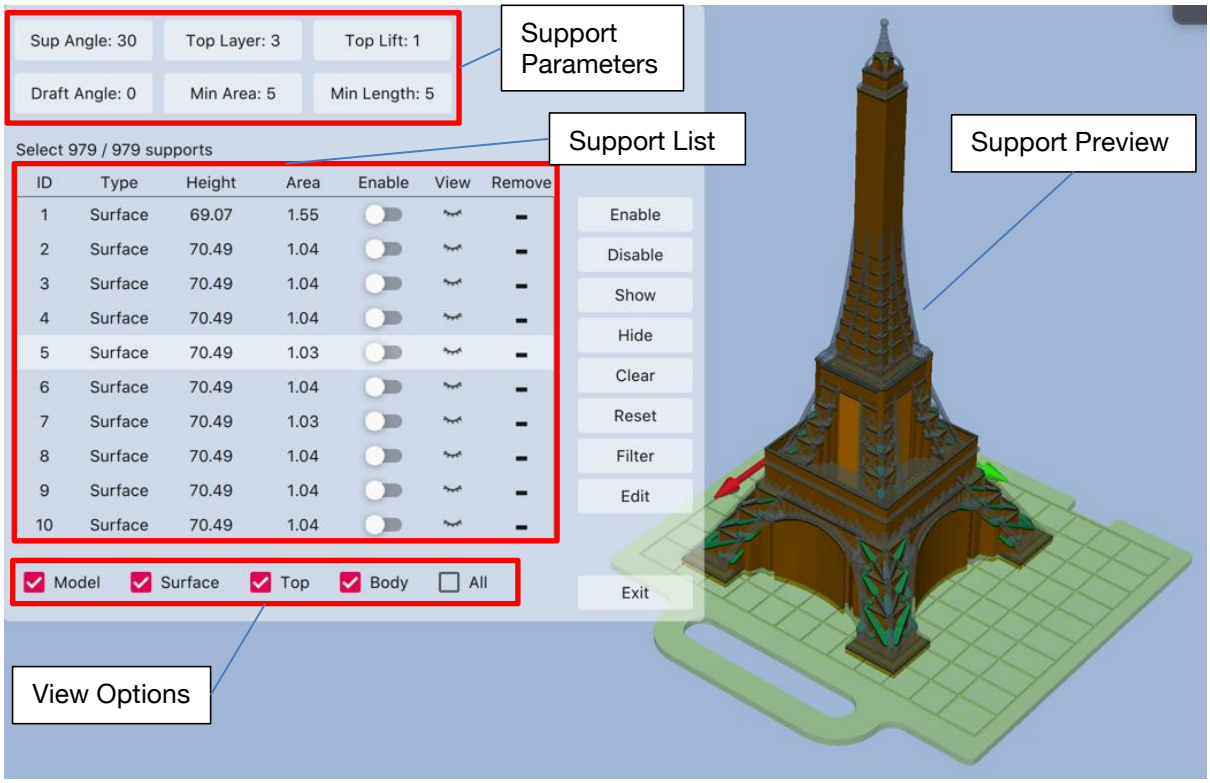
The support editor will first calculate all the possible support structure of the model. Then user could enable or disable specific supports base on their preference. The support editing result will be shown on the model at real time.

Support Types:
There are three types of supports in Tiertime's support generating algorithm. They treated differently and can be edited separately.

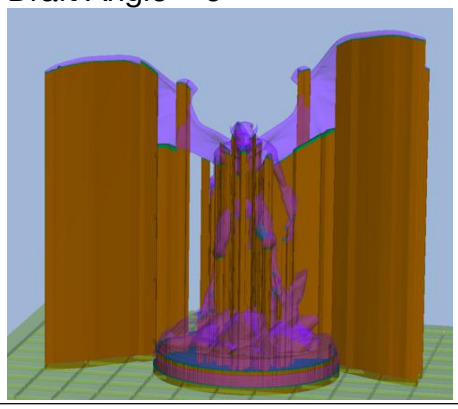
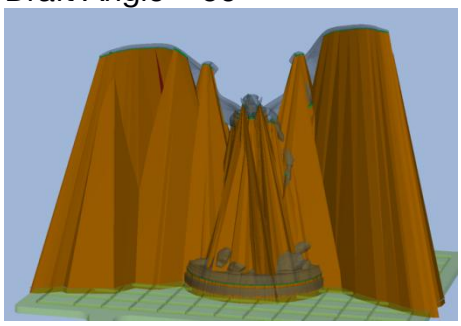


1. Surface Support	The most common support, support of the overhang surface.	
2. Edge support	Support the "Edge" of a shape	

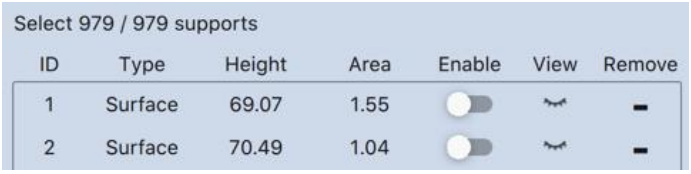
3. Point support	Support the “Tip” features	



Support Angle	The overhang angle threshold for support, overhangs less than this angle will not have support generated.
Top Layer	This determine number of interface layers between the support structure and the surface being supported. Increase the layer may make the support easier to remove but increase print time.
Top Lift	Determine how many layers the support will lift above the layer of the point feature. This setting cannot be 0 as the “point” cannot be supported if the supporting structure is within the same layer as the tip.

<table>
<tr><td rowspan="2">Draft Angle</td><td colspan="2">Adding draft angle will make the base of the support to be wider than the top, this increase the stability of the support column.</td></tr>
<tr><td>Draft Angle = 0
  </td><td>Draft Angle = 50
  </td></tr>
<tr><td>Min. Area</td><td colspan="2">Area threshold of the support structure, overhang surface with area less then the threshold will not be supported.</td></tr>
<tr><td>Min. Length</td><td colspan="2">Length threshold for the edge support. Edges shorter than the threshold will not be supported.</td></tr>
</table>

Support List

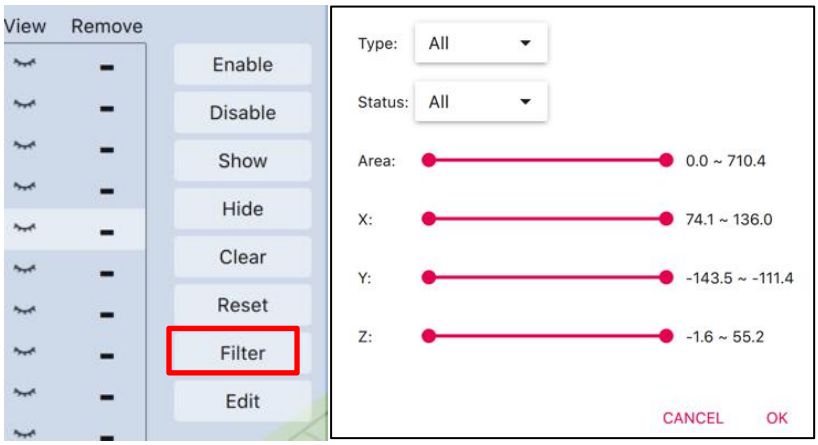


Enable： turn support on or off.

View: hide/show support, not affecting its status.

Remove: remove support from list, not affecting its status.

Support Filter

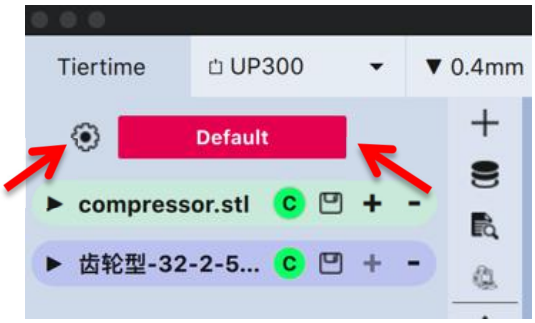


Filter allow user to setup conditions to only show a subset of supports in the support list. This conditions could be:

1. Support Type
2. Support Status
3. Supported Surface Area
4. Location on the XYZ plane.

The support filter is a quick way to find and selectively edit specific supports.

Print Settings



- Click Gear button to edit current print setting.

- Click the “Profile Name” Default to switch to profile management.
The default profile cannot be deleted. User can created new profiles by copying existing profiles and edit upon the copy.

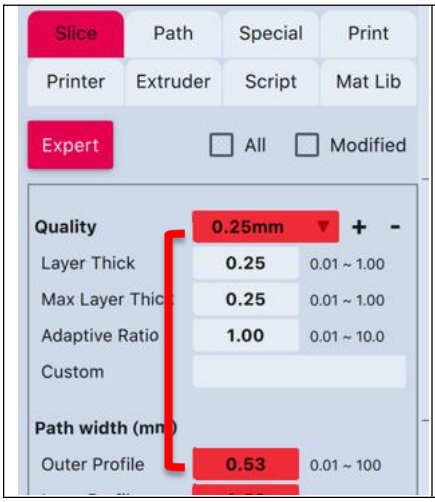
Print Settings

Print Setting Mode:
Click the button to switch between Basic, Advanced,Expert mode.

For Basic Mode, the print setting is similar to UP Studio 2. The basic mode although limited but the print settings are highly optimized, with quick selection of basic print parameters, users will able to get excellent print quality. If user is looking for a simple and easy printing experience Basic mode is the best choice.

For Advanced and Expert Mode, a lot more print setting are opened up, users have much more freedom on setting up print parameters but also has bigger risk of adding errors that result in print failure or defects.

After finish setting up the profile, click Apply to save and click “OK” to leave current interface.



Parameters that highlighted in red are modified, once click the apply button, the highlight will be removed.

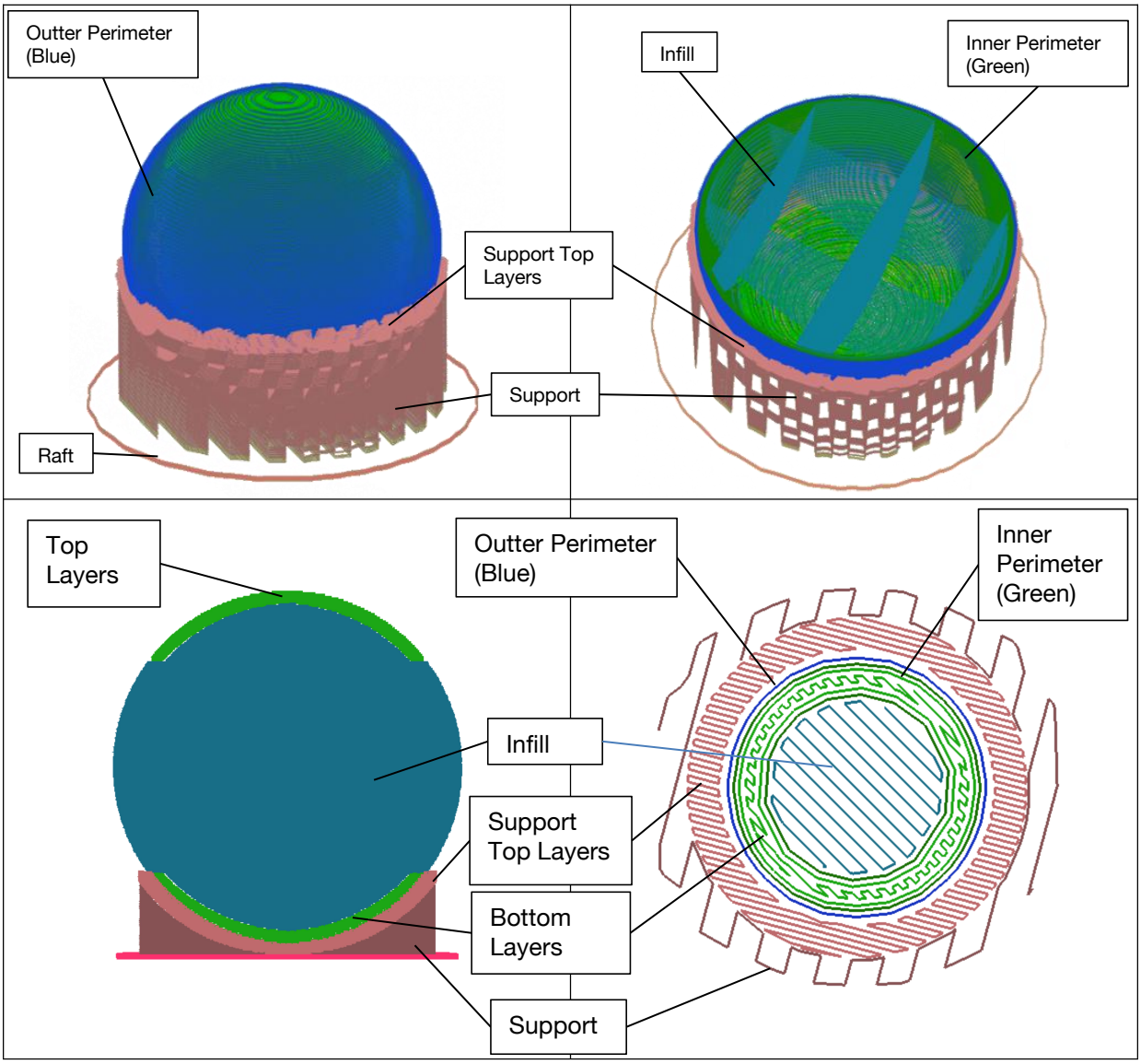
Some parameters such as “Quality”(layer thickness) are key settings that, when selected, will also pull values to other parameters, such as path width. The “pulled” parameters are recommend values, that give users a foundation for modification.

Introduction to print parameters:

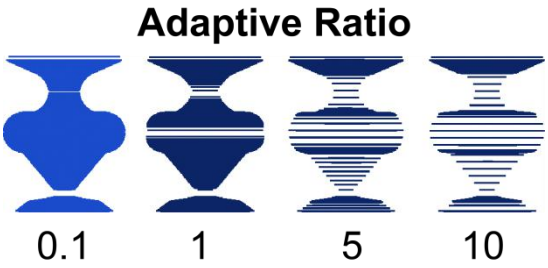
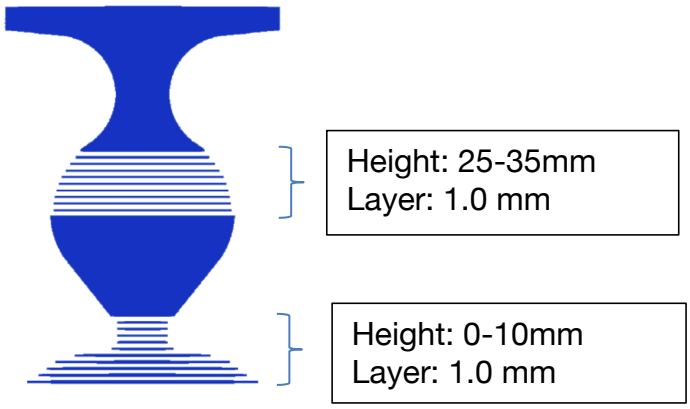
Entities of a Part: The model when sliced is divided into different regions or Entities, and each these entities' print setting can be adjusted individually.

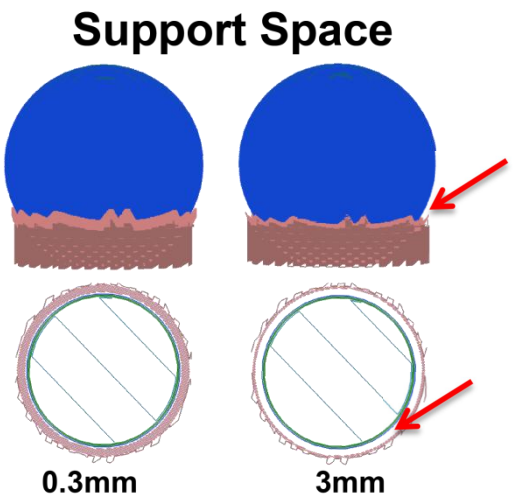
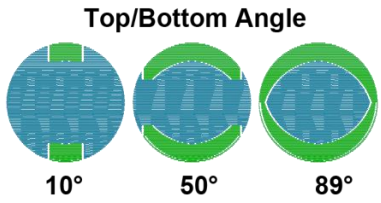
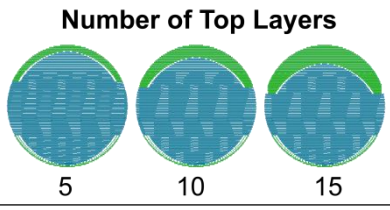
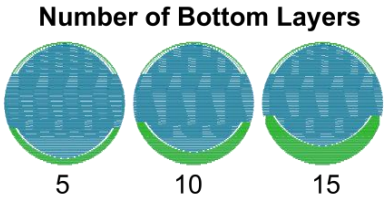
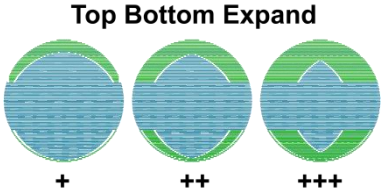
Perimeter: The wall/shell of the model. The outter most layer is the "Outter Perimeter", all the perimeter inside the Outter perimeter are "Inner Perimeters"
Infill: the region inside the perimeter, can be filled with certain patterns and density
Top/Bottom: The roof and bottom layers of the print
Support: Automatically generated structure that support the overhang structures
Raft: Thick layers that are under the print to improve adhesion and also compensate for unevenness of platform surface.

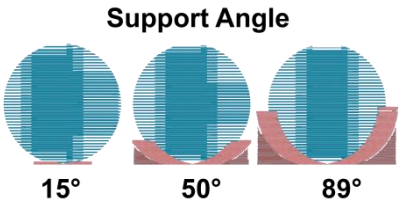
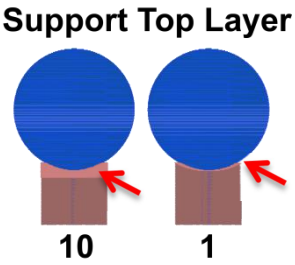
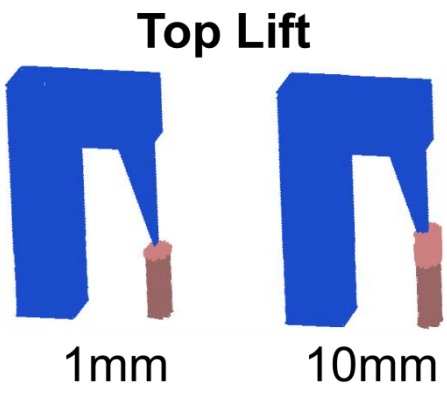
For most up-to-date details of print settings, please go to Tiertime knowledge base: https://support.tiertime.com/xxxxxxxxx

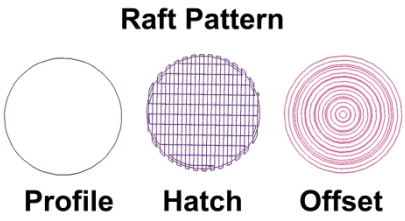


1.Slice

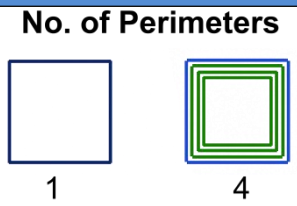
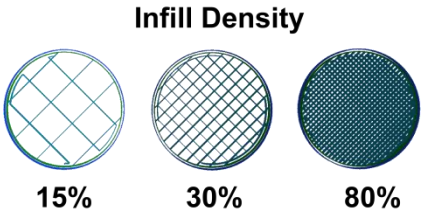
Term	Unit	Description
Quality		
Layer Thickness	mm	Layer thickness of print, the bigger the thickness the faster the print speed and lower the print quality.
Max. Layer Thickness	mm	Adaptive layers is to automatically adjust layer thickness base on the overhang angle. Set the largest layer thickness for adaptive layers.
Adaptive ratio	N/A	The bigger the adaptive ratio, the more discrete shift from thin to thick layers through overhangs. Overall the algorithm will more inclined to use thicker layers when the ratio increases.  Layer thick = Max (normal thick, min(thick, normal thick*tan(angle)))*ratio
Custom	N/A	Custom layer thickness. Allow user to define specific layer thickness for define height range: **Syntax: [start height, end height]layer thickness** **Eg. [0,10]1.0[25,35]1.0**  ❖ For regions that are not defined by custom layer thickness, default layer thickness setting will be used. ❖ Custom layer thickness will override the adaptive layer function.
Path Width		
Outer Profile	mm	Line width of the outter most Perimeter
Inner Profile	mm	Line width of the inner perimeter
Top	mm	Line width of top layers
Bottom	mm	Line width of bottom layers
Infill	mm	Line width of inner infills
Support	mm	Line width of supports

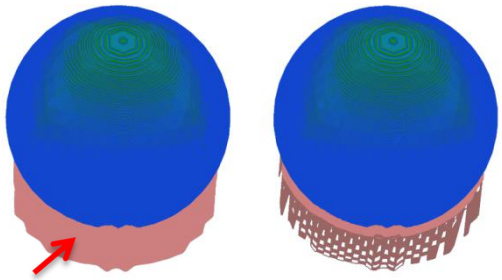
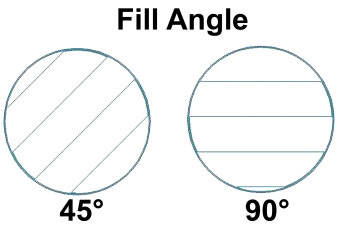
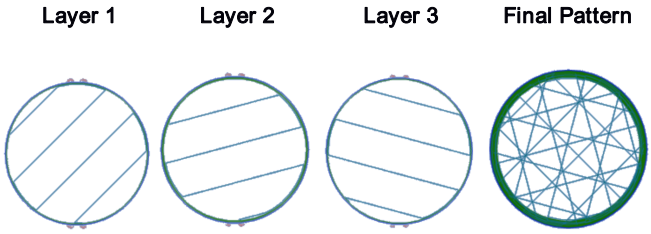
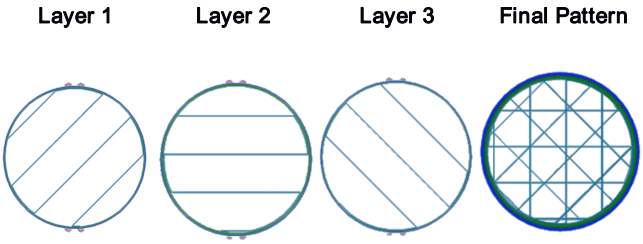
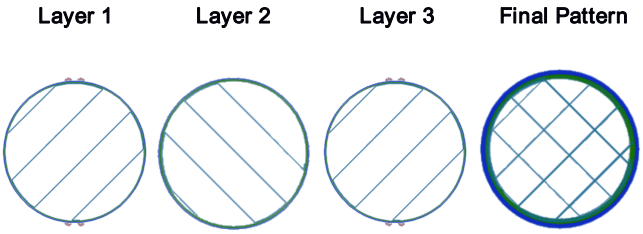
Support Space	mm	Horizontal distance between path of support and part. 
Top and Bottom		
Angle	°	Angle for determining top/bottom layers. 
Top Layers	Layer	Set the number of top layers 
Bottom Layers	Layer	Set the number of bottom layers 
Min. Area	mm^2	Threshold area for top and bottom
Expand	mm	Expand the area of top and bottom. 
Support		
Angle	°	Angle Threshold for support, the larger this angle the more support

		will be generated 
Layer	Layer	Number of interface layer (Support Top Layer) between object and support column. Support top layer also added between raft and part bottom surface, so this option will also increase apparent thickness of raft stucture. 
Min. Area	mm	Area Threshold of overhang surface, overhang area smaller than this will not be supported.
Min. Length	mm	Length Threshold of overhang edge. Overhang edge shorter than this will not be supported.
Stretch Angle	°	The angle to expand the base of support column. Refer to xxx page.
Suspend Lift Top Lift	mm	Only applied to point or edge features.Top lift represent the height which the support will “wrap” above the actual supporting point or edge. If the part contain pointy features that is facing down, it is recommend to increase top lift options. 
Raft		
Layer	Layer	How many layer the raft will consist
Thick	mm	Layer thickness of raft
Base Width	mm	Path width of the first 2 layers of raft
Expand	mm	How much to expand from the perimeter of the bottom layer for the raft layer
Mode	N/A	Raft infill mode, Profile is for Tiertime printer only, the raft is generated by printer. The pattern is not visible at this stage. The hatch and offset are for non-Tiertime printer, Tiertime machines cannot use these 2 types.

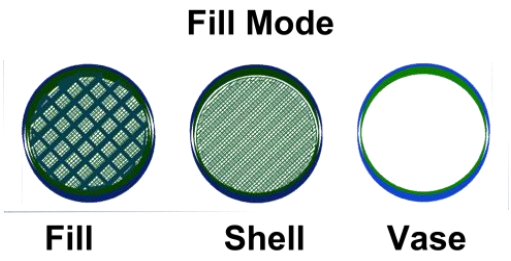
		

2. Path

Term	Unit	Description
Path Mode		
Profile/Perimeter	N/A	
Infill Density	%	Density of the infill pattern, 100%=solid infill, 0%=no infill 
Support Density	mm	
Full Fill Area	mm^2	Area threshold that override density to full/solid Infill. Area smaller than this value will be printed 100% infill.
Infill Path		
Top/Bottom Fill	N/A	Infill pattern for Top/Bottom Offset/Zigzag/Line
Inner Fill	N/A	Infill pattern for Inner Fill Offset/Zigzag/Line
Support Fill	N/A	Infill pattern for Support Fill Offset/Zigzag/Line
Infill Profile	N/A	Extra inner perimeter for infill None: no infill perimeter Always: Always print infill perimeter Alternate: print infill perimeter alternately, this option may increase the contact surface area between perimeter and infill thus increase the bond strength
Support Profile	N/A	Add a single perimeter to support column to increase stability of support but may make support more difficult to remove.

		 ON OFF
Fill Angle	°	The starting angle of infill pattern 
Angle Increase	°	Fill Angle increase after each layer
		Angle Increase = 30° 
		Angle Increase = 45° 
		Angle Increase = 90° 
Support Angle 1	°	Angle of support infill
Support Angle 2	°	Angle of sparse support infill
Profile/Fill Overlap	N/A	Overlap ratio between Perimeter and Infill
Bottom Overlap	N/A	Overlap ratio between Perimeter and infill for the bottom layer

3.Special

Special Options		
Fill Mode	N/A	Fill = Perimeter+infill+top/bottom Shell = Perimeter+top/bottom (no infill) Vase = Perimeter only (no infill, no top/bottom) 
Tolerance	mm	+0.1 = X and Y plane both increase 0.1mm in size
Fuse Gap	mm	Radius for small gap to be fused.
Hole Shrink (only applied to **vertical holes** on a part, expand small holes to counter the hole shrink effect)		
Max. Radius	mm	Threshold for applying shrink compensation, holes larger than this diameter value will be ignored.
Ratio	N/A	The bigger this value the more compensation for small holes
Max Shrink	N/A	Set max. Shrink ratio for compensation
Entity ID		
Profile Inner Profile Top Bottom Infill Support Support Hatch Raft		different regions of a print, are marked with an entity ID, so that they can be assign to different extruders to print. The entity IDs are used in the Extruder Settings.

Speed

Profile	mm/s	Print speed of Perimeters
Inner Profiles	mm/s	Print speed of Inner Perimeters
Bottom and Top	mm/s	Print speed of Bottom and Top
Fill	mm/s	Print speed of Fill
Support	mm/s	Print speed of Support
Support Hatch	mm/s	Print speed of Support Fill
Jerk	?	Print speed of Short path
Jerk Length	mm	Define Max. Length of short path

Raft	mm/s	Print speed of raft layers
Raft Base	mm/s	Print speed of first layer of raft
Jump	mm/s	Speed of jumps (non- printing movements of extruder)

Temperature

Temperature Tune		
Profile Tune	℃	Set increase/decrease of nozzle temperature when printing Perimeters
Infill Tune	℃	Set increase/decrease of nozzle temperature when printing Infill
Support Tune	℃	Set increase/decrease of nozzle temperature when printing Support
Raft Tune	℃	Set increase/decrease of nozzle temperature when printing Raft
Support Peel		
Bond Strength	%	Define the bond strength between part and support.
Extrude Scale		
Profile	N/A	Extrusion scale of perimeter, value larger than 1 means increasing extrusion amount, value smaller than 1 means reducing extrusion.
Inner Profile	N/A	Set extrusion scale of inner profile
Top	N/A	Set extrusion scale of top layer
Bottom	N/A	Set extrusion scale of bottom layers
Support	N/A	Set extrusion scale of support
Jerk	N/A	Set extrusion scale of short paths
Raft	N/A	Set extrusion scale of raft
Raft Base	N/A	Set extrusion scale of first layer of raft

Start Optimize		
Layer Start		Preference for layer start point
Fixed Start X		Define start point on X coordinate.
Fixed Start Y		Define start point on Y coordinate.
Profile Start		Preference of Start base perimeter features
Join Size	%	Size of join
Join Extend	mm	How much the join extend and reach into infill area.
Join Cross		Whether make the join to cross-path
Speed Down		
Slowest Speed	mm/s	Define slowest speed for short perimeter
Short Profile	mm/s	Define length of short perimeter for applying speed down
Min. Layer Time	s	Define the minimum duration a layer must spend. Ensure enough cooling time for part.
Firsts Layer Speed	%	Speed down percentage for the 1st layer. Slow down for first layer could improve layer adhesion to platform, increase print success rate.
Other Options		

Platform Preheat		Preheat platform for max.15 minutes before printing starts. Within 15 minutes, printing will start as soon as target temp reach.
Sleep		De-initialize the printer when current print job finishs. When De-initialized, the printer consume less power and produce lower noise.

Printer

Printer Configuration		
Manufacturer		Brand/Producer of printer
Model ID		Printer Model
Origin		
X	N/A	X-coordinate for origin
Y	N/A	Y-coordinate for origin
Z	N/A	Z-coordinate for origin
Build Size		
X	mm	X-axis range
Y	mm	Y-axis range
Z	mm	Z-axis range
Acceleration		
Profile	mm/s^2	Acceleration for Perimeters
Infill	mm/s^2	Acceleration for Infill
Support	mm/s^2	Acceleration for Support
Jump	mm/s^2	Acceleration for non-printing movements

Extruder

Extruder 1	
Filament	Choose material profiles, from Mat Lib
Nozzle Diameter	Select the nozzle diameter
Scale Factor	Extrusion Scale for the extruder (Result similar to E steps)
Entity ID	Input the entites assigned for this extruder
X Offset	Offset value for X axis, use for nozzle alignment for multiple extruders
Y Offset	Offset value for Y axis, use for nozzle alignment for multiple extruders
Z Offset	Offset value for Z axis, use for nozzle alignment for multiple extruders
Switch Code	Gcode used for switching extruder
Extruder 2	Switch on/off extruder 2

Script

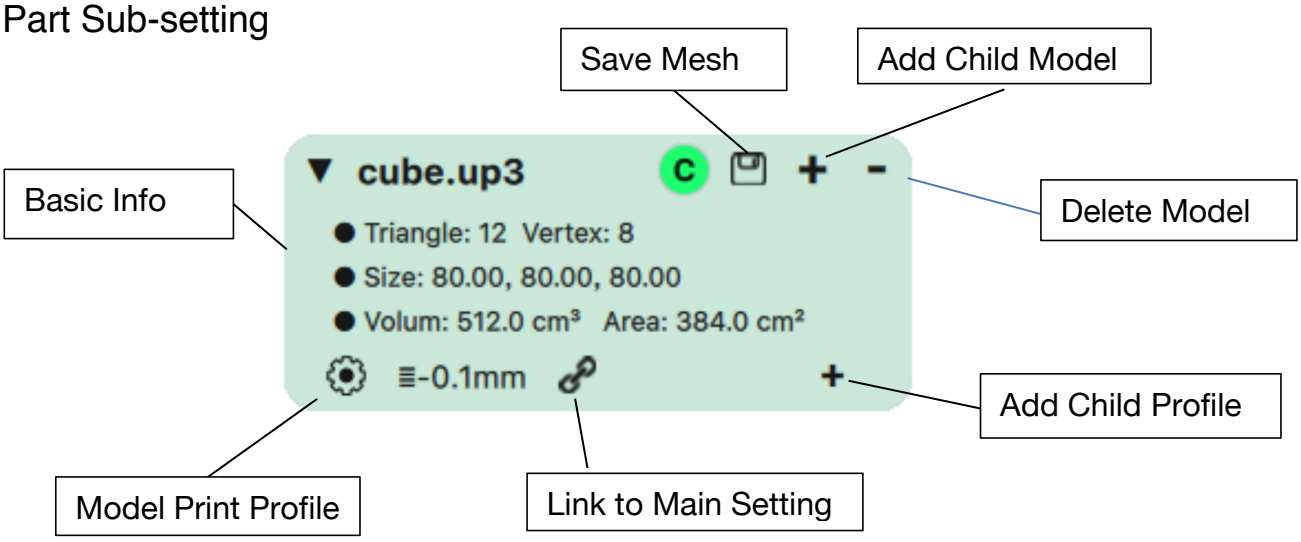
Print Start	Script insertion locations. User could insert Gcodes at these

Print End	location for customized functions. Accepted Gcodes:
Layer Start	
Layer End	
Profile Start	
Profile End	
Infill Start	
Infill End	
Support Start	
Support End	
Path Start	
Path End	

Mat Lib (Material Library)

Filament		Select material profile
Type		Material Type: can only choose from preset types
Material ID		A unique number for matching materials. E.g..Tsk file's material ID must match printer's material ID in order to print.
Manufacturer		Name of Material manufacturer
Fila. Dia.	mm	Filament Diameter, this value will affect the extrusion scale
Density	g/cm^3	Density of material, use for estimate
Cost/Kg	$/kg	User defined for their own reference
Print		
Speed Ratio	N/A	A ratio to adjust the all the speed settings at the same time.
Max Raft Speed	mm/s	Max first layer speed of raft. If faster than this value, will be override by this value.
Retract		
Speed	mm/s	Speed for retraction, the faster the retraction the less likely to have stringing effect during jumping. But it will also put stress on extrusion mechanism and the optimal speed depends on hardware.
Max Length	mm	Max possible length for a single retraction
Min Travel	mm	The distance threshold for retraction, if movement is smaller than this value, retraction will not be applied.
Ratio	N/A	Actual retraction length = Ratio* Travel.
Temperature		
Print	℃	Base temperature for printing
Standby	℃	Temperature when standby (during dual extrusion)
Platform	℃	Platform temperature
Shrink		
X	%	X-axis compensation for material shrinkage after cooling
Y	%	Y-axis compensation for material shrinkage after cooling
Z	%	Z-axis compensation for material shrinkage after cooling

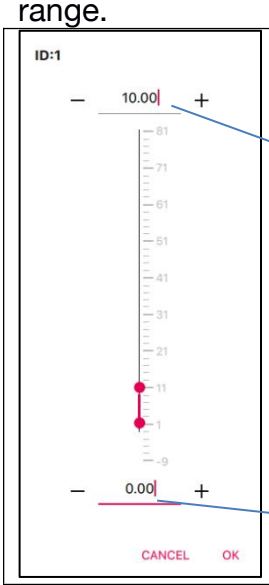
Part Sub-setting



Save Mesh	Save the model to .UP3 format
Delete Model	Delete the model from the part list
Add Child Model	Add a child model, please refer to “Part Optimization”
Model Print Profile	Click to edit the print profile for the model, settings changed only apply to this model and will not be affecting other models on the list.
Add Child Profile	Set height range and specify the print profile for the section, please refer to “Part Optimization”.
Link to Main Setting	Chain icon means, main setting will affect the value of the print profile of this model. Broken chain means

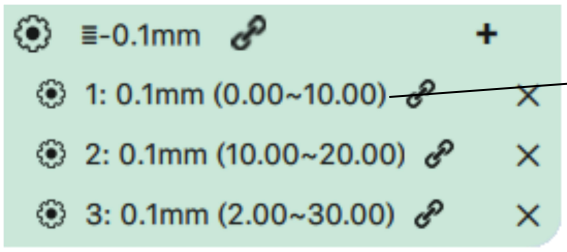
Part Optimization

1. Optimize along Z axis
User could add child print profile to customize settings just for a particular height range.



End point

Start point



Height range

Click the gear button to modify print profile for the height range.

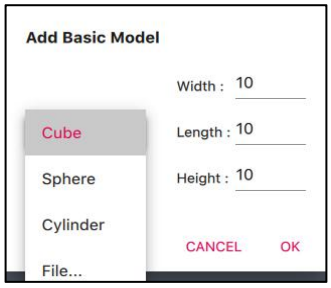
Use chain button to link or unlink from the part profile.
Use cross button to delete the child profile.

Setting child profile is same setting of main profile. However some settings are not available in child profiles, eg. Layer thickenss. Child profile allow user to adjust print speed, temperature, extrusion scale, infill density, and etc for a particular vertical section of the part

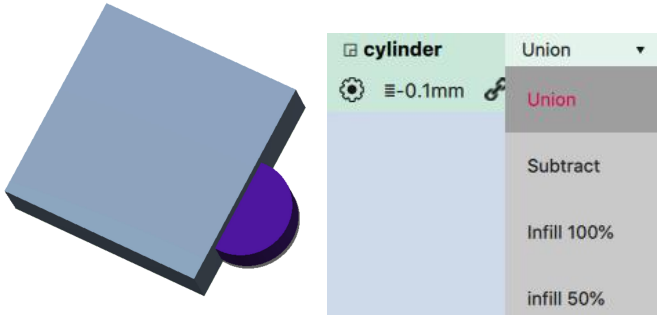
2. Optimize on X-Y plane
Use child model could allow user to optimize the part on another dimension.

1. Click “+” button add child model.

2. Select the type of child model and define the dimensions.

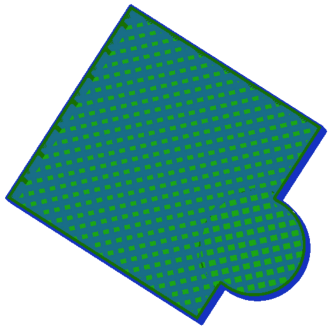


a cylinder is added as a child model for the cube.

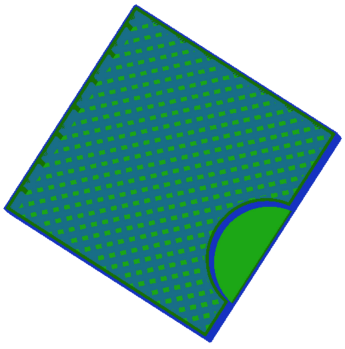


For the child model, user could define the property as union, subtract or select a infill density.

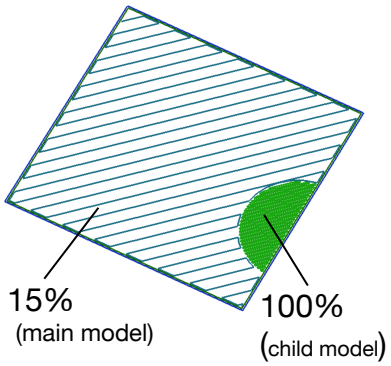
Union: fuse child model into the main model.



Subtract: child model is subtracted from the main model.



Infill: modify the infill percentage of at the overlapped region.



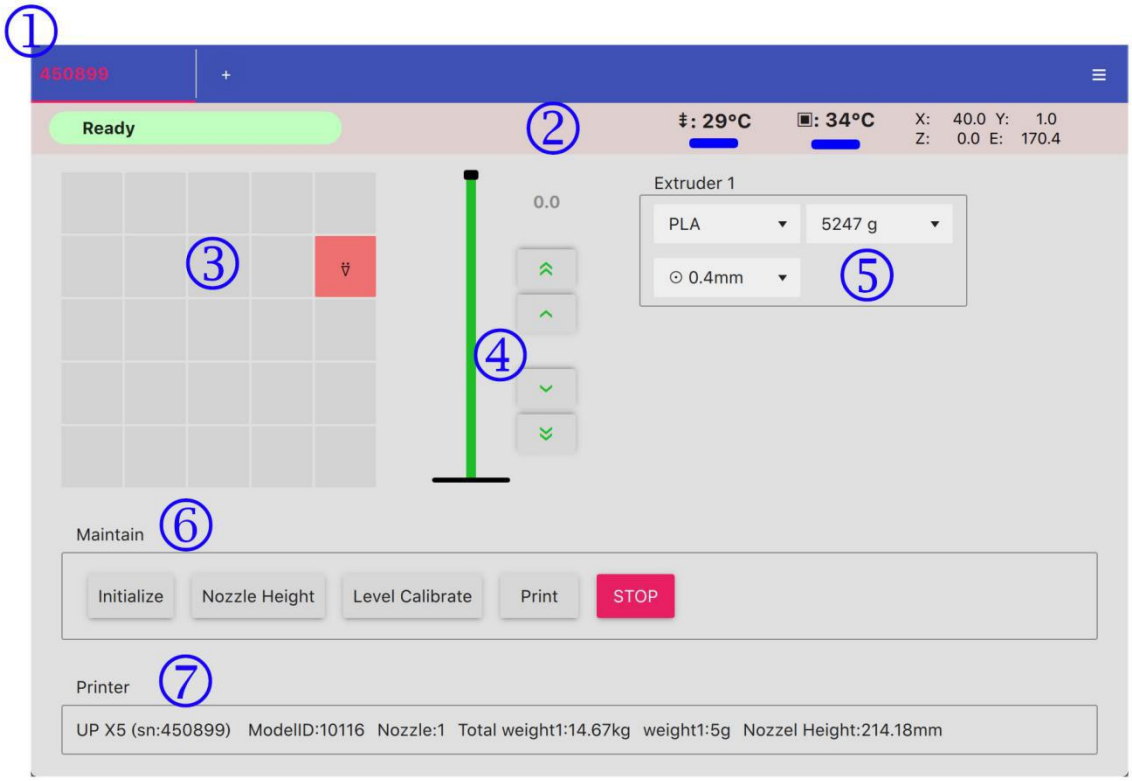
Support and Raft generation do not apply to child models.

7. Wand - the Printer Hosting Software

UP Studio 3.0 is a package that includes two softwares; UP Studio now become an independent slicer and the printer hosting functions were spin off into a new software called “Wand”

UP Studio 3.0 only handle modeling slicing and all printer communication, operation and maintenance functions are moved to Wand. Therefore when after slicing, user need to save the sliced data (.tsk) to hard drive and then use Wand to send the .tsk file to the printer.

7.1 Wand Interface



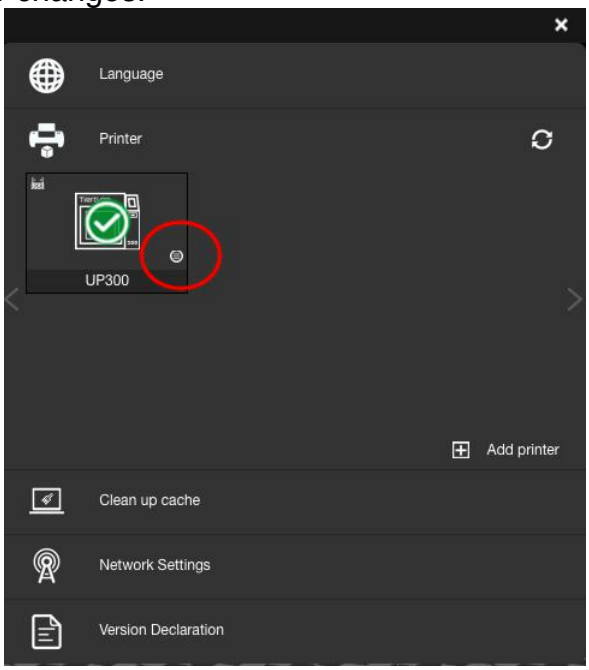
1. Printer connection	Machine Connection, show serial number (default)/printer name of connected machines. User could select auto connect with the top right button. Click + to connect or click X to disconnect printer
2. Printer Status	Ready :Printer Status :nozzle temperature :platform temperature

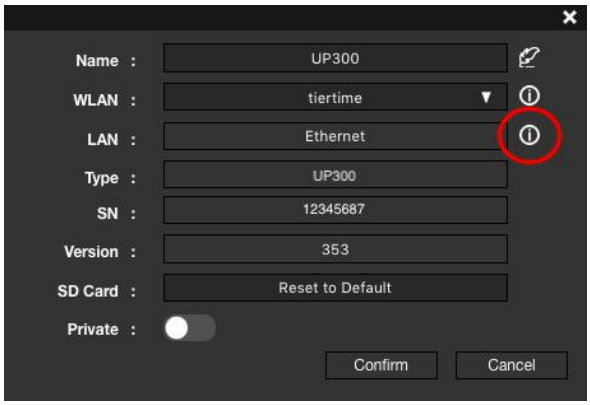
	X: 40.0 Y: 1.0 Z: 0.0 E: 170.4 :current axial coordinates.
3. X-Y axes Control	Platform Map, click the squares to move the print head to corresponding X-Y location on the platform. Red square( ) indicate current location
4. Z-axis Control	Z axis indicator: black dot indicate current Z location of print head. click to move print head long Z axis for a small distance click to move the print head long Z axis continuous until reach the end
5. Extruder Settings	PLA : current material setting use for the extruder 5247 g : current material weight left in spool that loaded to the extruder ⊙ 0.4mm : current nozzle setting for the extruder
6. Maintenance	Initialize : click to initialize printer Nozzle Height : Setup nozzle height value Level Calibrate : Setup leveling of printer platform Print : load a file to print STOP :Stop printer action immediately.
7. Printer Info	

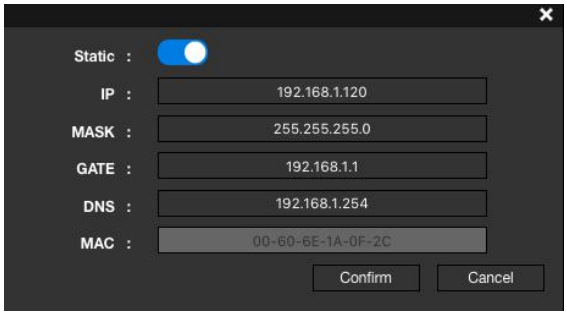
7.4 Ethernet Connection

Find a Ethernet cable. Insert the connector into the LAN socket on the back of your UP300D, and a LAN icon will appear on the touchscreen.

To edit the Ethernet Network Settings in UP Studio: Open Up Studio in you computer, and go to Settings, find the printer under Printer section, then click Information button to make further changes.





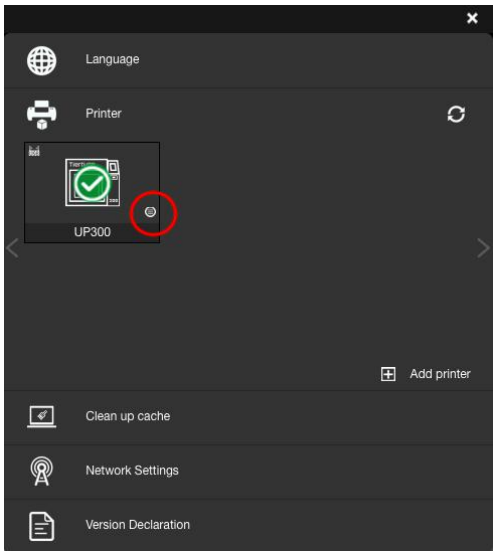


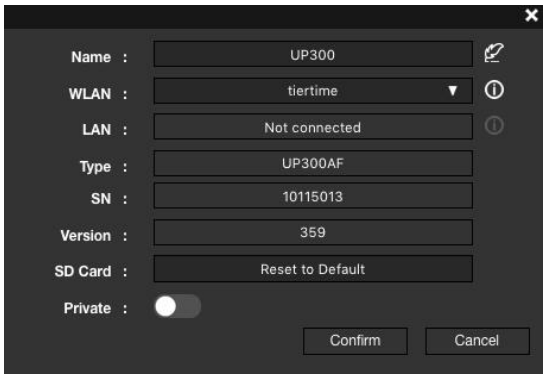
7.6 Wi-Fi Connection

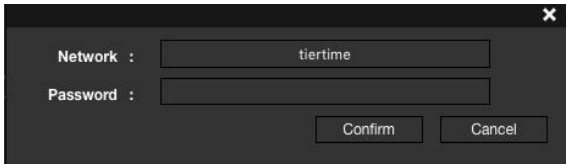
To connect your UP300D, you can set it up through UP Studio on your computer or use the touchscreen on the UP300D.

Use the UP Studio on the computer:
1, Connect your UP300D with a USB cable to your computer,
2. Open UP Studio on your computer, go to **Settings**, choose **Printer**.
3. The connected UP300D will appeared with a green tick on top, click **More (circled in the red).**
4, Click the down drop down menu, and then select the desired Wi-Fi network to connect. You may be asked to enter the password of the Wi-Fi network.

You can make further changes for the Wi-Fi network by clicking Information icon.



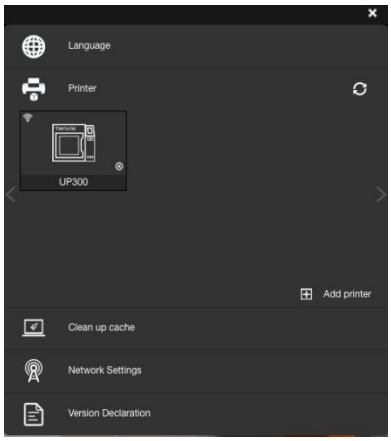


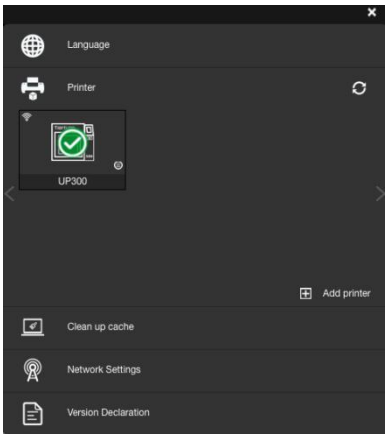


5. You can now unplug the USB cable, and connect your computer to the Wi-Fi network that you set for the UP300D.
6. Open UP Studio, go to **Settings**, click **Printer**, click Add Printer, find your UP300D on the All Printer list, and click + to add your UP300D.

If you cannot find your UP300D in the printer list, click **Refresh.**

7, An icon of your UP300D will appear in the **Printer** section, Click the icon, a green check mark representing your UP300D is connected via Wi-Fi successfully will appear on top of the UP300D icon.





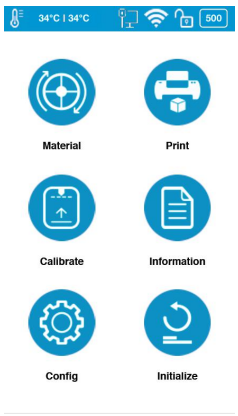
Using the touchscreen on the UP300D to setup the Wifi connection:

Go to **Config**, click **Network Settings.** Select network name on the list, type in password if required, and press return. A lock icon appears which means your UP300D is connected to the desired Wi-Fi network.

You can make further changes in the configurations of the Wi-Fi network by clicking the Information icon.

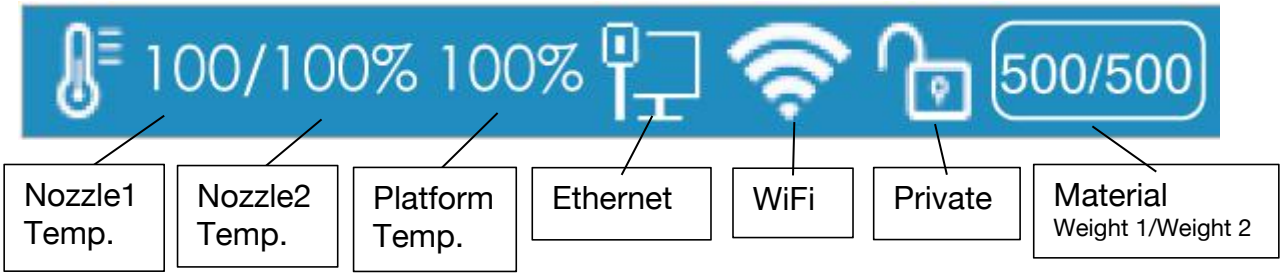
8. Touchscreen Introduction

Tiertime UP300D Touchscreen consists of two sections, the Printer Status Bar and the Main Menu.



8.1 Printer Status Bar

The Printer Status Bar is at the top of the UP300D Touchscreen, which is easy for you to monitor the printer's status regularly.



1. Temperature: during printing, nozzle temperature will be displayed in percentage. When print idle the temperature display is in degree Celsius.

2. Ethernet: If It appears, indicates the Ethernet is connected..

3. Wi-Fi: It shows the Wi-Fi network is connected。

: means network detected but cannot connect to printer.

4. Private: This lock icon indicates whether the printer has been set as private. Private printers connections are password protected. It only works for WiFi, USB connection will override the protection.

5. Material Weight: This icon represents the material's type name and the remaining weight of the current material roll. (It may appear alternatively as Name/ Weight)

Main Menu

There are six buttons in the Main Menu: Material, Print, Calibrate, Information, Config, and Initialize.

The following table lists all the information of icons in the Main Menu and summarizes the actions associated with each icon.

Table 5.1 Main Menu Icon Description

Name	Icon	Description
Material		1. Change Material Type 2. Withdraw Material 3. Extrude Material 4. Set Material Weight
Print		1. Print Job Current List 2. Print Job History List (Print Task Management) 3. Print Job's Details 3. Pause the ongoing print job, and change the material.
Calibrate		1. Auto Nozzle Height Detection 2. Set Nozzle Height Manually
Information		1. Basic Printer Information: Model Name, Serial Number, Firmware Version, Screen Version, Total Print Time, Total Weight of the Material Consumed, LAN M.A.C., WLAN M.A.C.. 2. Reset Printer Profile. 3. System Language Settings.

5.2 Material

In the material section, there are Extrude, Withdraw, Change Material Type and Set Total Weight buttons functions.

	To change the material type, click the **Material Type** button, and then input your filament's weight. Make sure the material settings properly reflect your situations, because the default setting may not fit yours.

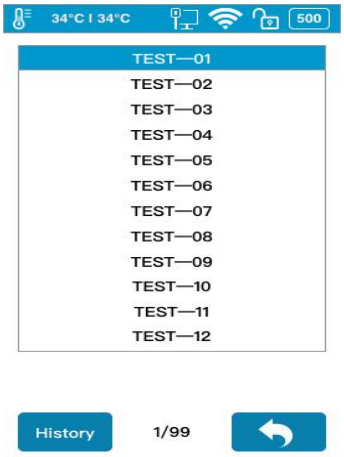
Table 5.2 Material Icon Description

Name	Icon	Description
Withdraw		To take out the filament inserted in the extruder unit with the preset temperature. Click the **Withdraw** icon. The up arrow on the button will start moving upwards, indicating the extruder is heating up. The extruder will start pushing the filament out once the temperature reaches the melting temperature with a beep. You now can remove the filament from the tip of the extruder.
Extrude		To load the filament into the extruder unit with the preset temperature. Click the **Extrude** icon. The down arrow on the button will start moving downwards, indicating the extruder is heating up. Once the extruder temperature reaches the filament's melting point, the machine will give off a beep, and you can push the filament into the extruder and the extruder will heat up the filament, and extrude through the nozzle. If the machine works properly, you will find an evenly extruded string of filament coming out of the nozzle, without bubbles or tangling as the extrusion goes on.
Stop		To stop the printer in the middle of an extruding or withdrawing process.

Name	Icon	Description
Withdraw		To take out the filament inserted in the extruder unit with the preset temperature. Click the **Withdraw** icon. The up arrow on the button will start moving upwards, indicating the extruder is heating up. The extruder will start pushing the filament out once the temperature reaches the melting temperature with a beep. You now can remove the filament from the tip of the extruder.
		Click the **STOP** icon, the up/down arrow on the buttons will stop moving. The printer should stop fully from extruding or withdrawing the filament.
Material Type		To change the material type. Click the **Material Type** icon button to change the material type. Also, you can add customized types of material under **Maintenance** in the software first, and then the new type will be available on the touchscreen for you to select. Default Settings: The default material type is ABS. The default material selection includes ABS, ABS+, PLA, and TPU. The button will show the current selected material type.
Material Weight	 	To change the total weight the material remaining manually. Click **Plus** icon to increase the value or **Subtract** icon to decrease the value. The value ranges from 0g- 9999g. The material weight will be adjusted automatically based on how much the material is consumed by print jobs. Default Setting: The default value of material weight is 500g.
Exit		Exit the Material section and go back to the main menu.

8.2 Print

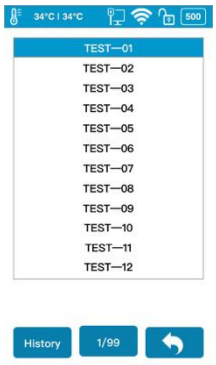
In the Print section, you can start a print job or manage the print jobs that currently in the print queue or have finished.



There are two sections:
The Print Job Current List lists the print jobs that have been assigned to the printer.
The Print Job History List contains all the print jobs that have finished.

It is the same content that shows in the software Wait Assignment Section.

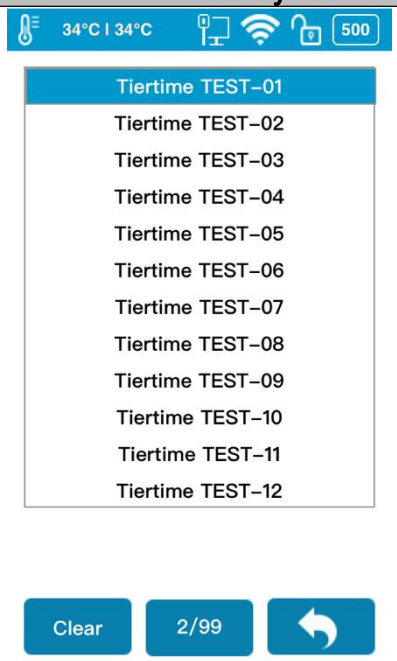
Table 5.3 Print Description

Name	Icon	Description
Current Print job list		The print job list contains the print jobs that are assigned to the printer. The highlighted row is the current print job. Click the **Print Job Name** to view more settings and detail information for the print job. You can start the printing process by clicking Print, or delete the print job by clicking Delete.
History	History	Entering the history list of the print jobs which has previously been printed on the printer, or ended with errors.
Page	5/20	Click to go to the next page.
Exit		Exit and go back to the main menu.

Print Job History List

The Print Job History List contains all the print jobs that have finished.

Tap the **Print Job Name** in the list to view the detail print settings. You can add the print job back to the Current Print Job List. The **Clear** button will erase the entire history print list.

Print Job History List	Print Job Information
	

Start a Print

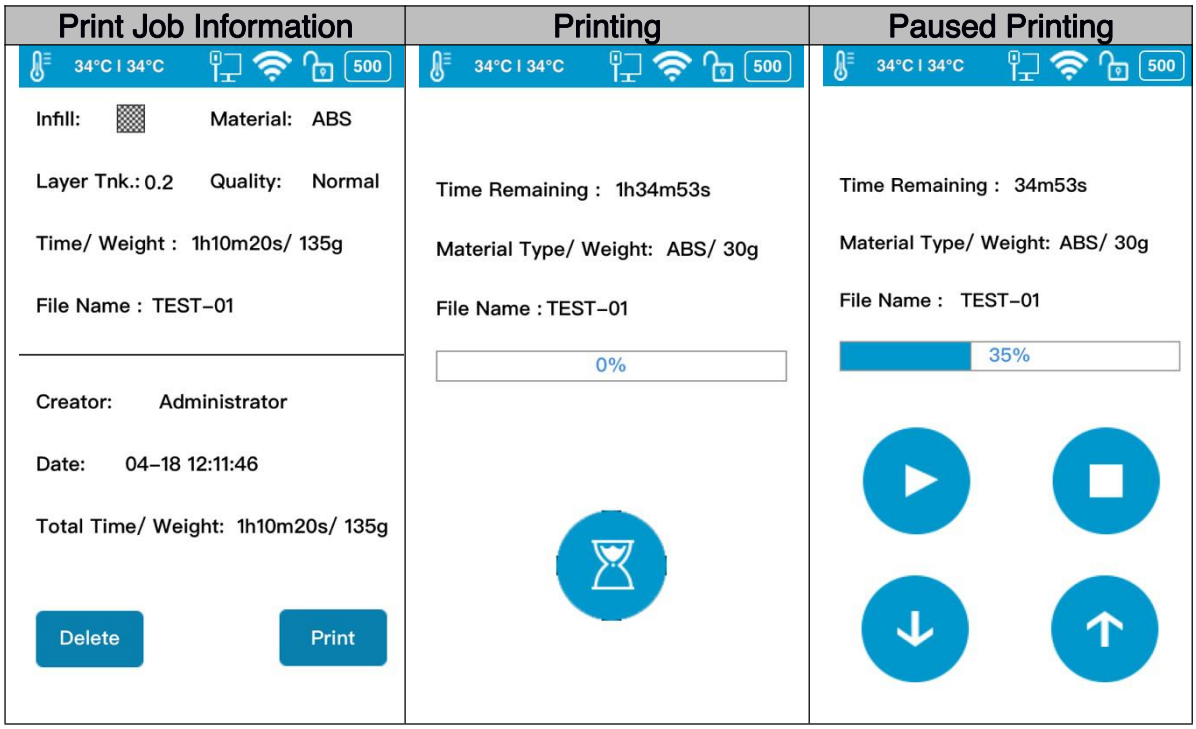


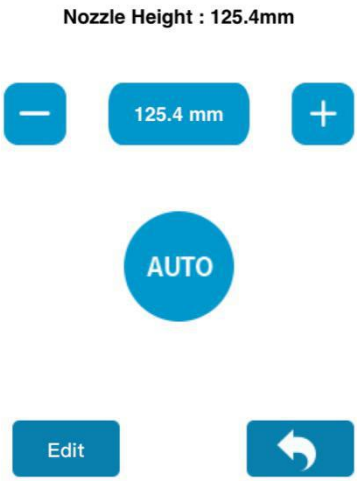
Table 5.4 Print Description

Name	Icon	Description
Pause		Pause the on-going print job.
Resume		Resume the paused print job.
Stop		The printer will stop the print job completely.
Extrude		To extrude the inserted filament.
Withdraw		To withdraw the inserted filament.

8.3 Calibrate

The nozzle height of a printer is a key parameter that needs properly set before any print jobs. It can be calibrated manually or set automatically.

Click **Auto** on the touchscreen, the printer will go through a mechanical process to detect the nozzle height. The final nozzle height will appear on the screen after the whole process finishes:



Click **Edit** on the touchscreen, and enter the suitable value for your printer.

You can also use either +/- button to adjust the value in the Value Box, and then tap the Value Box to move the nozzle to the value you set in the Value Box.

Nozzle Height is the current printer's nozzle height.

The default value for the nozzle height for each Tiertime printer has been set as 0mm before leaving factory floor for safety reasons. Therefore, calibration is the mandatory step prior to your first print.

Table 5.5 Calibration Icon Description

Name	Icon	Description
Nozzle Height	Nozzle Height : 125.4mm	The actual nozzle height.
Live nozzle Height	20.0 mm	Indicating the present nozzle height.
	+ −	Using +/- to adjust the nozzle height manually.
Auto	AUTO	The printer will start detecting the nozzle height automatically. Same as Nozzle Detection in software.
Edit	Edit	To edit the nozzle height by inputing numbers manually.
Exit		Exit Calibration section and back to main menu.

8.4 Information

In this section, it displays all the information of your printer, which is not editable.

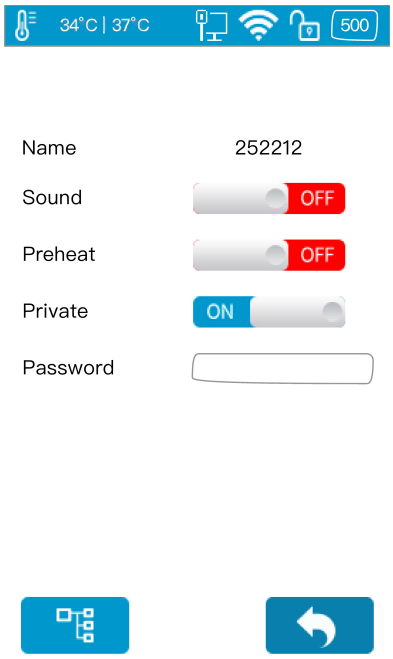
- Model: The Model Name of your printer's model.
- S.N.: Your printer's ID, which will be required if you look for customer service.
- Firmware Ver.: Stands for firmware version of your printer.
- Screen Vers.: Stands for the touchscreen version. You can check whether your touchscreen is operating using the latest touchscreen system.
- Total Time: This represents the total printing time of your printer from the beginning.
- Total Weight: This indicates the total material weight which accumulated from the first print.
- LAN M.A.C: The unique LAN M.A.C address of your printer in Ethernet .
- WLAN M.A.C: It's the unique printer's M.A.C address in your Wi-Fi network.

Table 5.6 Information Icon Description

Name	Icon	Description
Reset		This reset button will erase the following three sets of values which has been stored in your printer. Calibration -> Nozzle height, to 0mm. Material -> Material type set to ABS, and total weight set to 500g. Config -> Name to its defaulted S.N number.
Language		There are two types of languages available for you to choose, Simplified Chinese and English.
Exit		Exit Information section and get back to the main menu.

8.5 Config

Config section contains five parameters, and the Network Settings .



Name: it's the printer's name, you can change it on the UP Studio software.
The default name is the printer's S.N number.

Sound: Toggle the click sound while using touchscreen.

Preheat: Toggle the build plate preheating option. If it is on, the machine will start pre-heating 15 minutes ahead of the start of the print job.
You can read the introduction of Preheating in Maintenance -> Preheat in the Software User Manual.

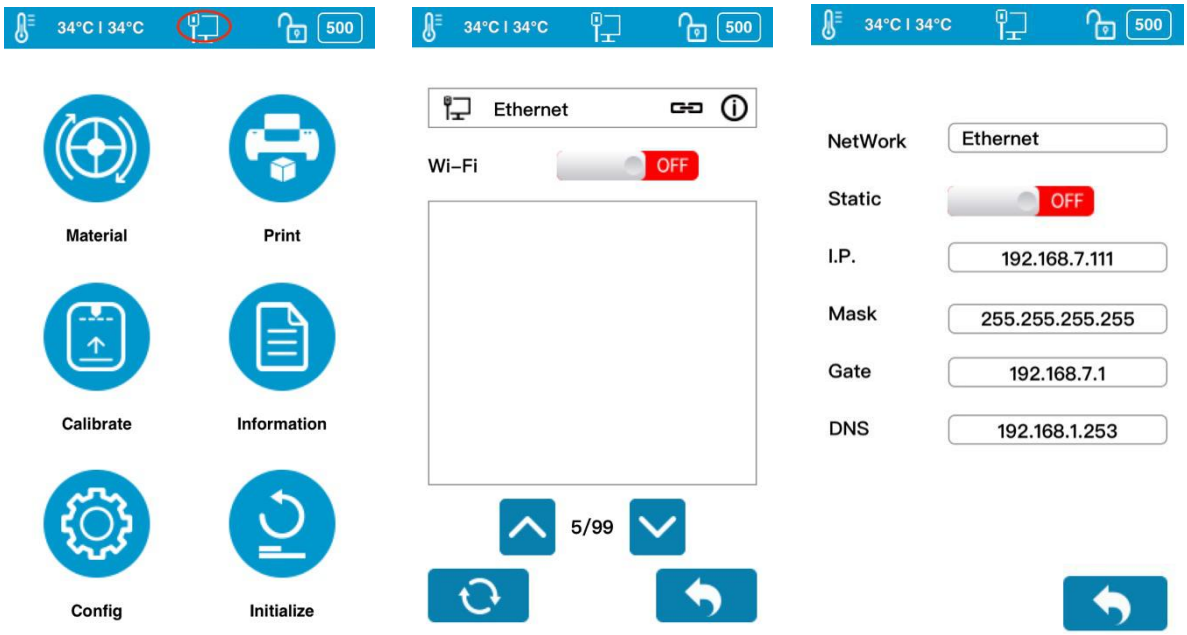
Private: Toggle the printer to set a password for private use. Once this option is on, you can set a password for your printer and your printer will not be accessible by other users on the same network without obtaining the password.

Password: The password for the printer to protect your printer from other people's access. Click the text field to enter your password.

8.5 Network Connection

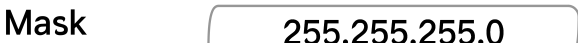
This section includes Ethernet Network Settings and Wi-Fi Network Settings.

Ethernet Network Settings:
1. Plug an Ethernet cable to the LAN socket at the back of UP300D.
2. The Ethernet connection Status icon should be appear in the **Printer Status Bar**.
3. You now can go to **Config** to enter Network Settings section.
4. Click Information button to edit the printer's Ethernet Network Settings.



Network Settings Icon Description

The following descriptions also applies for Wi-Fi network settings.

Name	Icon	Description
Network Type/ Name		The printer is connect with Ethernet.
		The name of connected Wi-Fi network.
Static		Toggle the static IP option to edit following settings for static IP.
IP		This is printer's IP address in the network. Click the text field to edit, click **Return** to save and exit editing.
Mask		This is printer's mask in the network. Click the text field to edit, click **Return** to save and exit editing.
Gateway		This is where you define the printer's gateway. Click the text field to edit, click **Return** to save and exit editing.
DNS		This is where you define the printer's domain name system. Click the text field to edit, click **Return** to save and exit editing.
Page		Go to the next page.
Exit		Exit and get back to the Network Section.

8.6 Wi-Fi Network Connection and Settings:

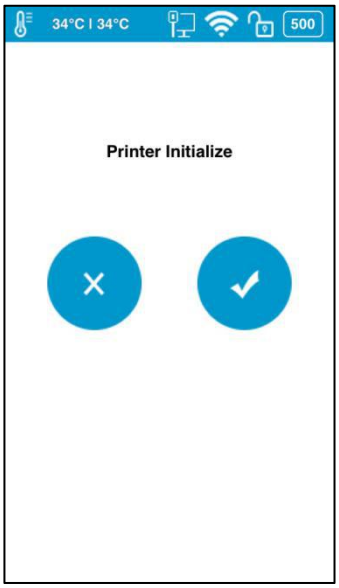
1. Go to **Config**, enter Network Settings Section.
2. Toggle on Wi-Fi Network Connection.
3. Find the desired Wi-Fi Network's name in the list below.
4. Tap the name to connect the Wi-Fi Network.
5. The UP300D is connect to the Wi-Fi Network successfully, when the red exclamation mark disappeared, a interlock and Information icon appears.
6. Tap the Information icon to edit the printer's Wi-Fi Network Settings.

Wi-Fi Network Settings Description

Name	Icon	Description
Wi-Fi Networks		Toggle the option to allow the printer connect to Wi-Fi networks.
Wi-Fi Name		Choose the name of the network to connect to
Connection Status		Once this icon appears next to the Wi-Fi network name, it indicates the printer has been connected to this Wi-Fi network.
Network Information		Click the Network Information icon to enter network information editing page.
Password Required		The network requires the password to connect.
Refresh		Refresh the Wi-Fi network list.
Page		Click to enter the next page.
Exit		Exit and go back to the main menu.

9. Initialize

The printer requires initialization before printing.
The Material, Calibration and Print buttons on the Main menu of the touchscreen will be greyed out before the printer is properly initialized.



Click **Initialize** and confirm the printer will start initializing by clicking "√". After the printer is initialized, you can start sending print jobs to the printer.

10. Print Boards

There are two print boards in the UP300D package.

10.1 Perf Glass Board

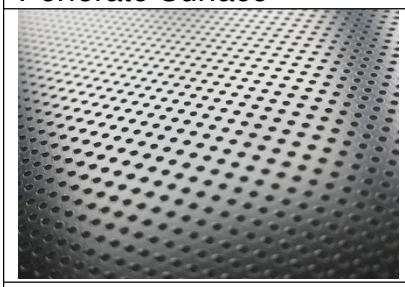
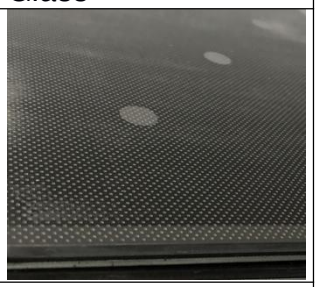
The one with many small holes on one side of the board. Perforated surface has the strongest surface adhesion when used with raft setting. It is made for printing material with high shrinkage ratio that tend to warp during printing and frequently used in conjunction with the HT extruder. Use this print board for: ABS, PC, Nylon, PP and etc.

10.2 Flex Glass Board

The Flex board is made by adding a layer of plastic sheet onto the Perforated surface. (Although extra layer of material is added the total thickness of Flex Galss is same as Perf Glass). It is made for materials that has low shrinkage ratio, so that they do not warp as much as material mention above.
Use this print board for: PLA, PETG, PET, TPU and etc.

10.3 Glass Surface

Both build plate have glass side that can be used for printing. It is similar to Flex board in terms of suitable material. User can use the Glass side and print with raft turned off to obtain a flat smooth surface. However the machine need to leveled mechanically and the nozzle the height value may need to be adjusted (offset) for optimal result.

Perforate Surface	“Flex” Surface	Glass
		
Suitable Material： ABS, PC, Nylon, PP and etc.	Suitable Materials： PLA, PETG, PET, TPU and etc.	

***Flex/ Perf Glass Board: Glass boards could break if dropped. Please handle with care.**

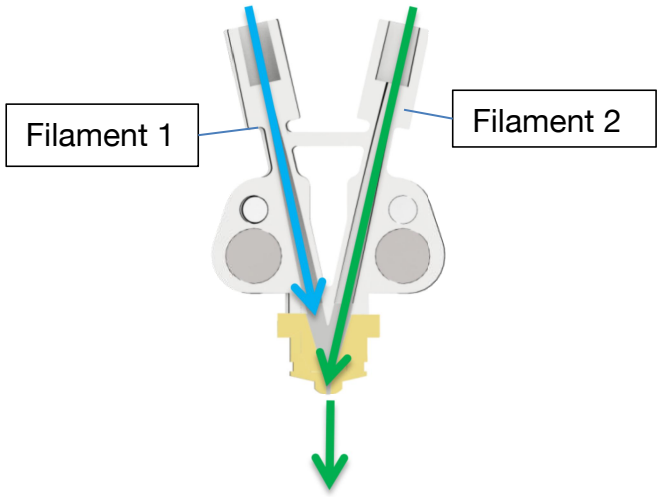
11. Extruders

UP300D has following extruder options:
1. Convergence Dual Extruder (Included)
2. HT* Single Extruder (Included)
3. LT* Single Extruder (Optional)
*HT=high temperture, LT=low temperature

11.1 Convergence Dual Extruder

The extruder although has similar size of a single extrusion extruder but essentially it is two extruders made into one. The Convergence dual uses a direct extrusion design and has 2 gearbox-stepper motors build into it. It has two cooling fans, one for cooling the hotend and the other is a toolpath coupled fan for cooling printed models.

Convergence Dual Extrusion



Convergence Dual is a patented technology by Tiertime.
The Convergence hotend has two channels “converge” at one nozzle opening, the two channels can extrude different materials alternately. Since the two extrusions share a single nozzle, there is no need for nozzle alignment calibration. The two material will always be aligned perfectly.

11.2 Single Extrusion Print Heads

HT Single Extruder

There are 2 types of single extruders available: HT type and LT type.
Following is table summarizing the properties of different extruders.
For Convergence Dual, only listed material pair are recommend to use on the extruder, unverified material pairs may not be printable using the extruder.

Extruder Type	Filament Diameter	Maximum Temperature	Main Material	Support Material
Convergence Dual Extruder	1.75mm	300C	ABS	Tiertime Breakaway
			PLA	Tiertime PVA (water soluble)
			PLA	Tiertime Breakaway
ABS Type		300C	ABS, PC, PP, PA, HIPS, ASA, etc	
TPU Type		280C	PLA, PETG, TPU, TPE, PET, etc	

12. Maintenance

12.1 Replacing Nozzle:

1. Wear heat resistance gloves.
2. The nozzle must be removed while the extruder is heated up to near printing temperature. When the nozzle is cooled, it will be too tight to be removed and unscrew the nozzle with force will destroy the hotend.
3. When extruder heated up, use the nozzle wrench to unscrew the nozzle.
4. Put on the new nozzle
5. Heat up the extruder again and tighten the nozzle with wrench.

12.2 Change Extruder:

Tools: An Allen Key and the Extruder you would like to install.

Preparation: Withdraw the filament, switch off the printer, unplug the extruder cable, and WAIT, until the extruder cools down before taking any further actions.

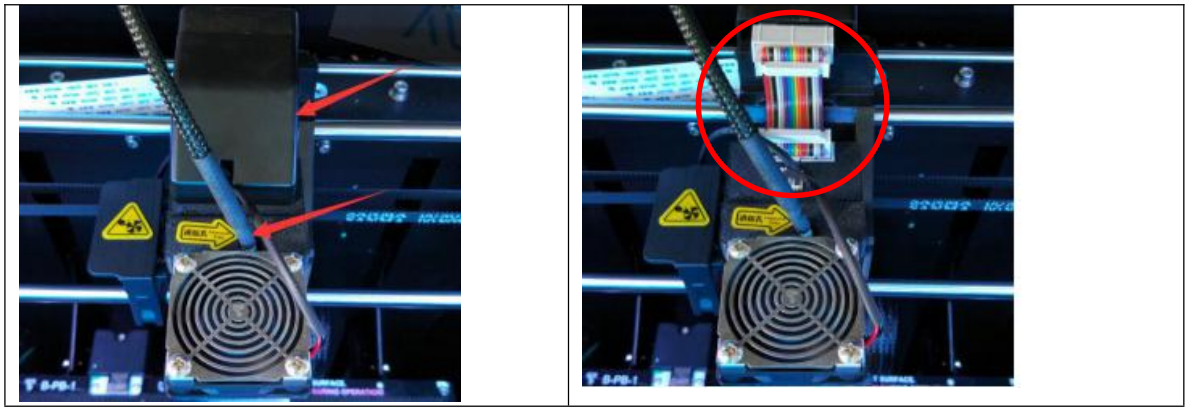
12.3 Extruder Maintenace

Replace the extruder:

Use the Allen key to unscrew the screw on the left side of the extruder, remove the extruder, and then position the replacement extruder in the right place, tighten the screw, and plug in the extruder cable.

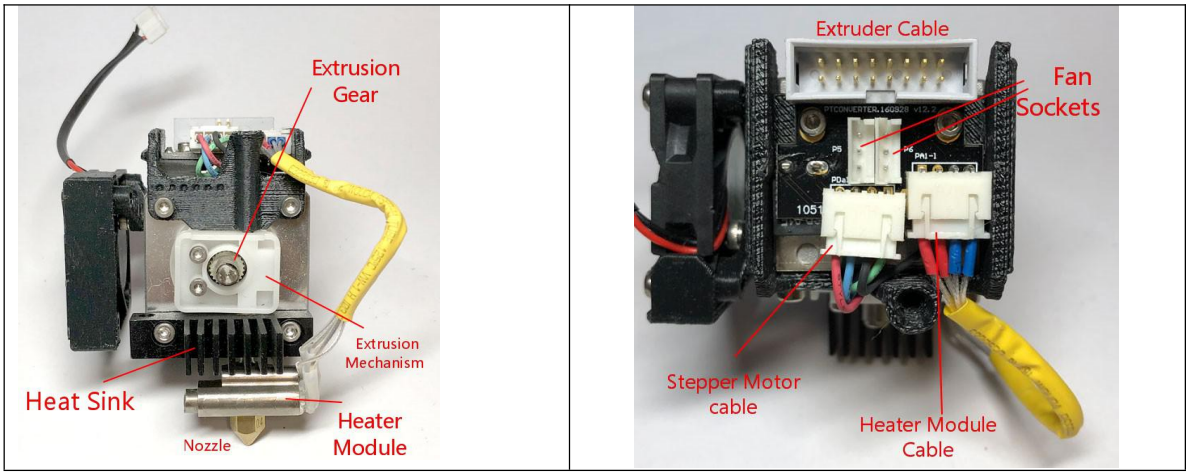
12.3.1 Single Extruder

1. Withdraw any filament currently load into the extruder.
2. Remove the cover for CFC cable (rainbow colored).
3. Unplug the extruder CFC cable

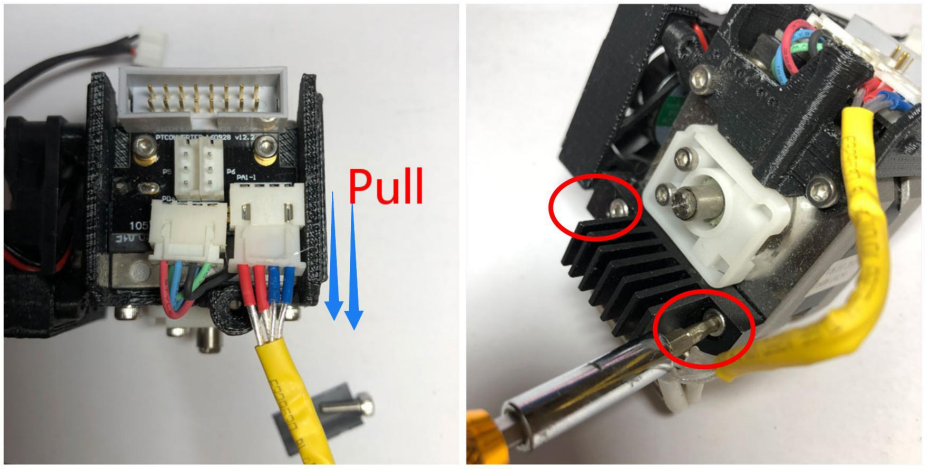


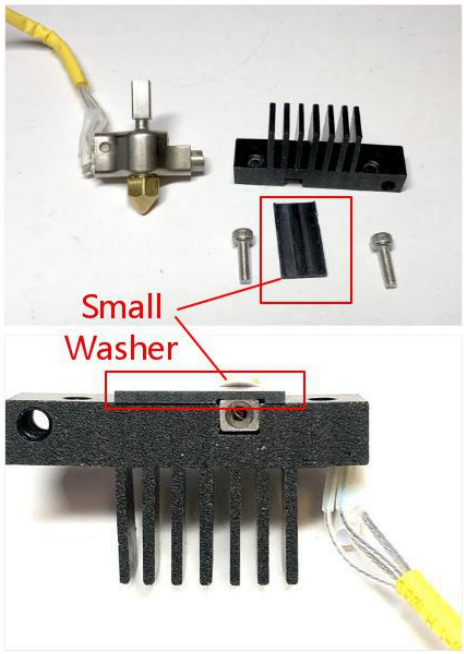
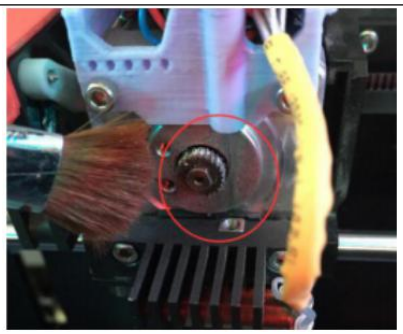
3. Unplug the fans. Pull out the extruder casing (gently).

4. Extruder Internal Structures.



5. Remove heater module and heat sink.



	Please note for some verisons of extruder, there is a small washer piece between the heat sink and the extruder motor. It is required for normal extruder assembly, ensure the the heater module to be installed securely. Do not lose this piece!
	6. Clean the gear with a brush.

8.1 Clean the Waste Tray

Located at the bottom of build chamber, a waste tray is introduced in UP300D. 3D printing with plastic extrusion technology is a messy business. Normally lots of unwanted plastic scraps are generated here and there during printing and the post processing stage. It is a nightmare to clean it up especially for the machine with full enclosure.

The waste tray makes the cleaning work fast and easy. You can take the whole tray out and dump the scraps inside the tray to a dumpster, and put it back to the bottom of the machine.

8.2 Dual Filtration System

UP300D has the upgraded air filtration system inherited from UP BOX+ with bigger and better Dual Filtration System - the HEPA Filter and the Activated Carbon Filter. Both of the filters are located inside the build chamber, circulating the air internally to reduce the toxic particles generated during the 3D printing process.

We suggest you change the filter every 3 months, or every 300 hours active printing time.

You can purchase the new filters from the official Tiertime online store, https://shop.tiertime.com, or popular ecommerce web sites like Amazon, or eBay.

To change the Filters

The filter system is located at the left side of the build chamber.
1, Use a screwdriver to unscrew the two screws in the front, remove the cover, and take out the two used filters separately.
2, Take two new filters, place them into the slot, and push the slot back to the end.
3, Tighten the screws using screwdriver.

12. Specification

Printing technology	MEM（Melted Extrusion Modelling)
Extruder	Single/Dual
Nozzle Diameter	0.2mm, 0.4mm, 0.5mm, 0.6mm （Only 0.4mm for Dual Extrusion)
Extruder Maximum Temperature	299°C
Extruder Maximum Travel Speed	200 mm/sec
XYZ Accuracy	2, 2, 0.5 micron
Connectivity	USB cable, Wi-Fi, LAN and USB Stick
Display	4.3″ Full Colored LCD Touchscreen
Build Volume	205 × 255 × 225mm (8.7″ x 10″ x 8.8″)(XYZ)
Printed Object Accuracy	±0.1mm/100mm
Layer Resolution	0.05/0.1/0.15/0.2/0.25/0.3/0.35/0.4mm
Calibration and Leveling	Automatic
Build Plate Maximum Temperature	100°C
Print Board	Perf Glass Board or Flex Glass Board, Heated
Enclosure	Full
Dual Filtration System	HEPA and Activated carbon filters V2
Supported Materials	UP Fila ABS, ABS+, PLA , TPU and more
Filament Diameter	1.75mm
Filament Spool Compatibility	500 - 1000g
Tiertime Print Queue	Yes
Pause to Change Filament Type	Yes
Out of Filament Detection	Yes
Compatible with 3rd party Materials	Yes
Physical dimensions	
Machine Dimensions	500x523x460 mm (19.6″ x 20.5″ x 18.1″)
Net Weight	30kg
Power requirements	
Input	110-240VAC，50-60Hz，220W
Extra USB Input for Add-on	5V, 1A
Software	
Software	UP Studio
Supported OS	Windows 7 SP1 or later, Mac OS X, iOS 8.x/9.x
Hardware Requirements	OpenGL 2.0, At least 4GB of RAM
Supported File Formats	up3, .ups, .tsk .stl, .obj, .3mf, .ply, .off, .3ds, .g code
Preview Support Structures	Yes
Editable Support Structures	Yes
Cloud Print Settings	Yes
Ambient Environment	
Operating Ambient Temperatures	15 - 30°C，20 - 70% RH non

13. Customer Service and Community

Support Ticket	Email to support@tiertime.com	
Knowledge Base:	https://support.tiertime.com	
User forum:	https://forum.tiertime.com	
Facebook Group	https://www.facebook.com/groups/205337203341609/	
Facebook Page	facebook.com/tiertime	

Youtube Channel	youtube.com/tiertime	
Twitter	twitter.com/tiertimecorp	
Instagram	instagram.com/tiertime	