V1.0

Tiertime UP300
3DP-25-5A
User Manual

Company: Tiertime Corporation

Name / Position: Joseph GuO/Sales Manager

Tel: 888-288-6124

Mail: sales.us@tiertime.net

Address: 1765 Landess Ave. #338 Milpitas 95035 U.S.A

Beijing TierTime Technology Co., Ltd.
Tiertime Corporation
Copyright © Tiertime 2018. All rights reserved

1. SAFETY AND PRINTING ENVIRONMENT 2
1.1 SAFETY PRECAUTIONS 2
1.2 PRINTING ENVIRONMENT 3
1.3 ONE YEAR WARRANTY 3
1.4 COMPLIANCE 3
2. INTRODUCTION 4
2.1 MAIN PARTS OF UP300 4
2.2 SPECIFICATION TABLE 5
3. UNBOXING 7
3.1 UNBOXING THE UP300 7
3.2 WHAT'S IN THE BOX 8
3.3 UPGRADE THE TOUCHSCREEN PROGRAM 9
4. PRINTER INSTALLATION 10
4.1 INSTALL THE PRINT BOARD 10
4.2 EXTRUDERS 11
4.3 LOAD FILAMENT 12
4.4 CONNECT THE POWER CABLE 13
5. TOUCHSCREEN INSTRUCTION 14
5.1 TOUCHSCREEN INTRODUCTIONS 15
5.2 MATERIAL 17
5.3 PRINT 20
5.4 CALIBRATE 23
5.5 INFORMATION 24
5.7 CONFIG 25
5.8 INITIALIZE 30
6. FIRST PRINT 31
6.2 INSTALL SOFTWARE UP STUDIO 32
6.3 CONNECT UP300 33
6.5 PRINT BOARD SELECTION 40
6.6 CALIBRATION 41
7. START PRINTING 49
7.1 UP STUDIO INTERFACE 49
7.2 REMOVE THE PRINTED MODEL 50
8. MAINTENANCE 51
8.1 CLEAN THE WASTE TRAY 51
8.2 DUAL FILTRATION SYSTEM 51

1. Safety and Printing Environment

1.1 Safety Precautions

1. The UP300 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 260°C and the temperature of print platform could be over 70°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 light 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.

WARNING, HOT SURFACES!
High Temperature: Do not touch!
Moving parts: Do not touch!
Flex / Perf Glass Board: Glass boards are easy to break. Handle with care!

1.2 Printing Environment

As light odor could be generated during printing, keep the printer in a well ventilated environment. The UP300'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

Beijing Tiertime Technology Limited (Tiertime) and its authorized resellers warrants 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

FCC **RoHS** **CE**

2. Introduction

2.1 Main Parts of UP300

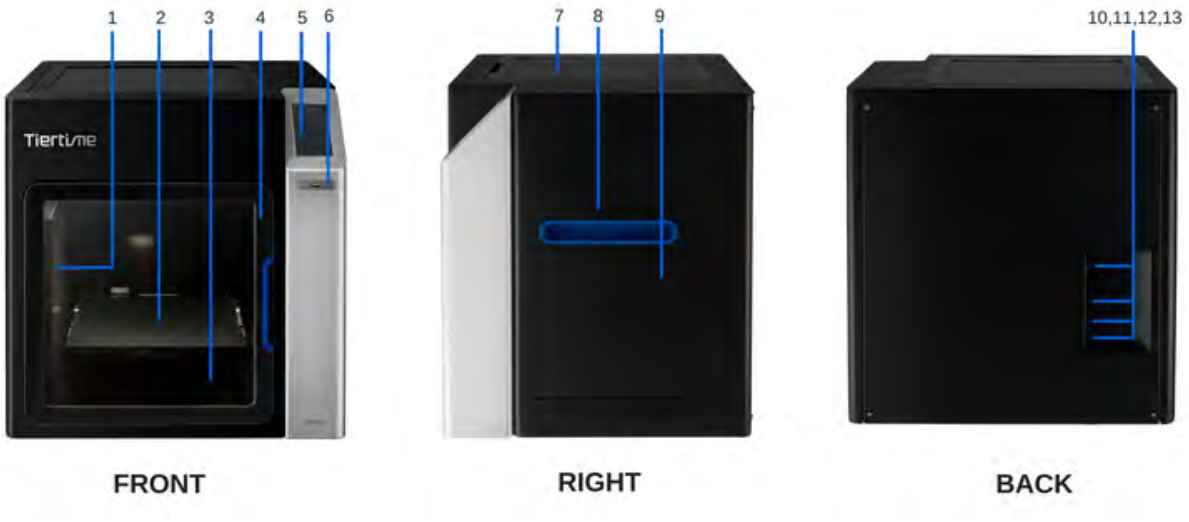


Figure 1.1 UP300 Images

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

2.2 Specification Table

Printer	
Printing technology	MEM (Melted Extrusion Modelling)
Extruder	Single
Nozzle Diameter	0.2mm, 0.4mm, 0.5mm, 0.6mm
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 (8.07″ 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, .gcode
Preview Support Structures	Yes
Editable Support Structures	Yes
Cloud Print Settings	Yes
Ambient Environment	
Operating Ambient Temperatures	15 - 30°C，20 - 70% RH non

3. Unboxing

3.1 Unboxing the UP300

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:

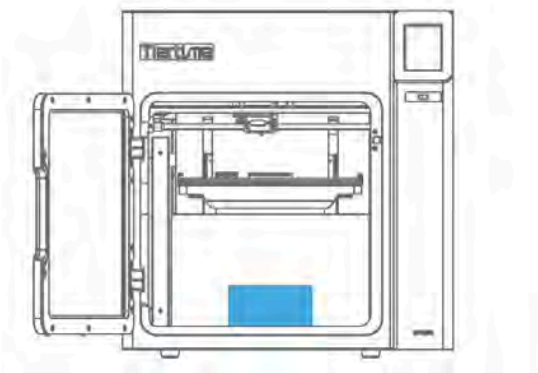


Figure 1.2 Take out the extruder.

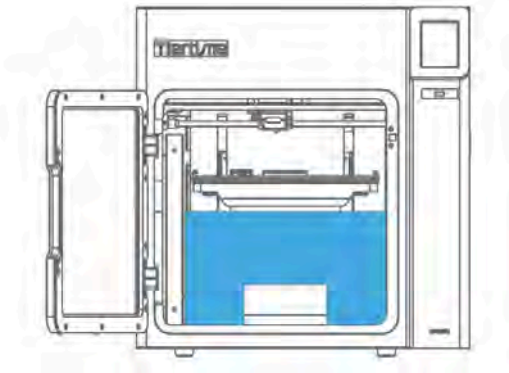


Figure 1.3
Turn the foam 90 degrees and then take it out of the machine.

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.

3.2 What's in the box

The ABS extruder is installed on the UP300.

The accessory box should have the following.
- **One** USB Cable
- **One** Pliers
- **One** Scarper
- **One** Nozzle Wrench: 8mm
- **One** pair of Gloves
- **One** SD Card Reader
- **One** SD Card
- **One** Calibration Card
- **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.

The UP300 box should have the following.
- **One** roll of 500g ABS Filament
- **One** Flex Glass Board
- **One** Perf Glass Board
- **One** Power Adapter
- **One** Power Cord
- **One** ABS Extruder with 0.4mm Nozzle
- **One** TPU Extruder with 0.5mm Nozzle

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 centre, which can be reached via at support@tiertime.com.

3.3 Upgrade the Touchscreen Program

We regularly update the Tiertime 3D printer's touchscreen program. It is important to make sure your UP300's touchscreen systems is up-to-date before the first use and pay attention to the upgrade announcement for touchscreen system in the future.

1. Download the UP300 Touchscreen Upgrade Program from https://www.tiertime.com/download.

2. Save the file to the root directory of the SD Card Reader which comes with the UP300, and make sure the file is named as "up300_x.x.x_update.tt" (Case sensitive), x.x.x being the version number.

3. Keep the SD Card Reader handy. After we switch the printer's power on, the first thing we will do is to upgrade the UP300's touch screen using this SD Card Reader.

4. Printer Installation

4.1 Install the Print Board

There are two print boards in the UP300 package.
Perf Glass Board: The one with many small holes on one side of the board.
Flex Glass Board: The one with no holes.

1. Choose the desired type of print board for the print job.

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.

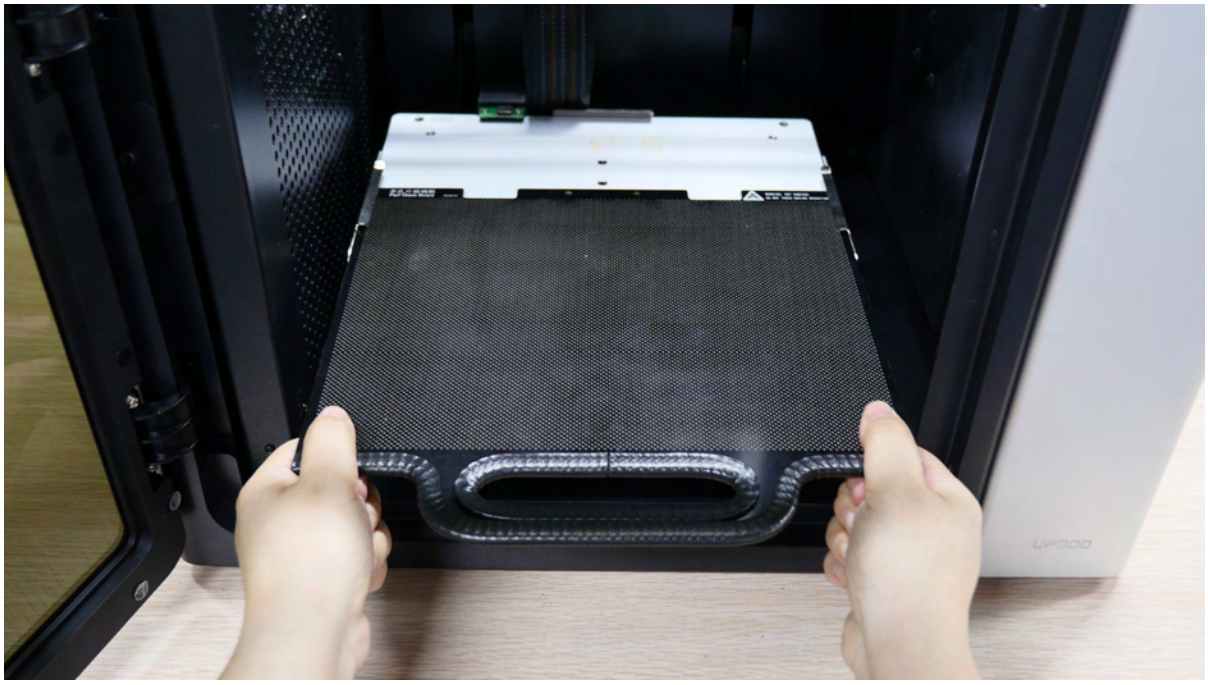


Figure 4.1 Install Print Board

4.2 Extruders

There is one ABS extruder with 0.4mm nozzle installed on UP300. If you would like to change the extruder to different type of extruders, please refer to page 35.

Figure 4.2 Pre-installed ABS Extruder

4.3 Load Filament

The UP300 comes with no filament installed. You have to manually install the filament before printing anything. In order to get a good quality print, we recommend use Tiertime's OEM filaments.

You will find a reel of 500g ABS filament that comes with the UP300 cardboard box.

To install the filament, please following the instruction below:
1. Find the filament reel that comes with the machine.

2. Remove the vacuumed bag.

3. Find the end of the filament, and use pliers to make a clean cut of the end.

4. Open the door of the filament Bay.

5. Hold the end of the filament straight up, and feed it into the guiding tube in the filament bay.

6. 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).

Figure 4.3 Load Filament

4.4 Connect the Power Cable

1. Plug in the power on the back of the UP300
2. Plug the other end of the cable into a wall outlet.

Figure 4.4 Connect the Power Cable

5. Touchscreen Instruction

Tiertime UP300 Touchscreen consists of two sections, the Printer Status Bar and the Main Menu.

Figure 5.1 UP300 Touchscreen Display

5.1 Touchscreen Introductions

Printer Status Bar
The Printer Status Bar is at the top of the UP300 Touchscreen, which is easier for you to monitor the printer's status regularly.

There are six icons in the Printer Status Bar, each of which represents different aspects as explained in the following, starting from left to right:

Left **Figure 5.2** Printer Status Bar Right

1. Temperature Icon: It has the thermometer icon, the nozzle temperature indicator, and the build plate temperature indicator.

2. Ethernet Status Icon: It indicates the Ethernet connection status.

3. Wi-Fi Status Icon: It shows the Wi-Fi network connection status. If there is a red exclamation mark on the top, it indicates that the Wi-Fi network has been detected but it is not connected to the printer. If there is no red exclamation mark on the top, it means that your printer has been connected to the Wi-Fi network successfully.

4. Private Status Icon: This lock icon indicates whether the printer has been set as private use to one particular user.

6. Material Information Icon: 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.

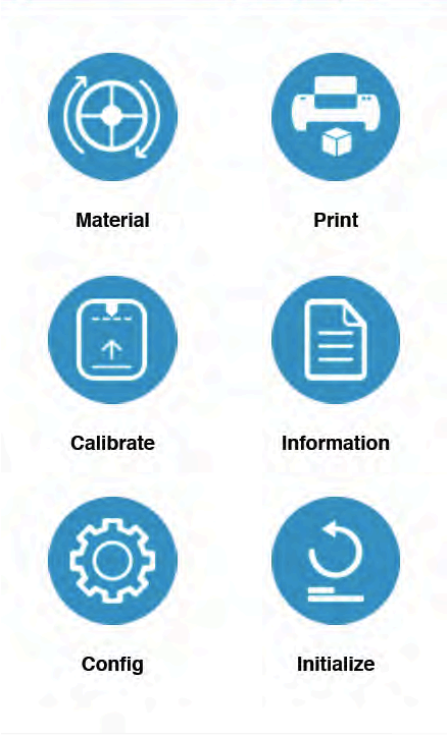


Figure 5.3 Main Menu

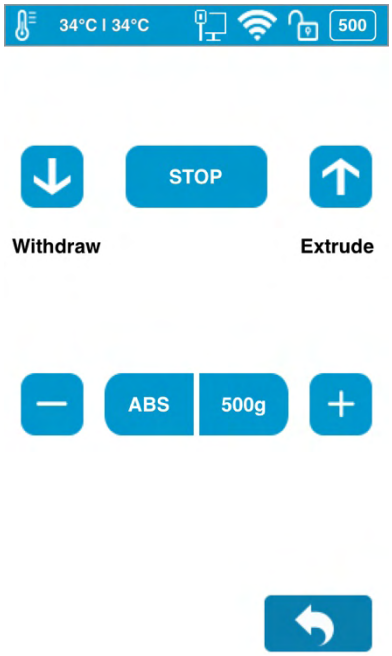
The following table lists all the information of icons in the Main Menu and summarizes the actions associated with each icon.

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.

Figure 5.4 Material

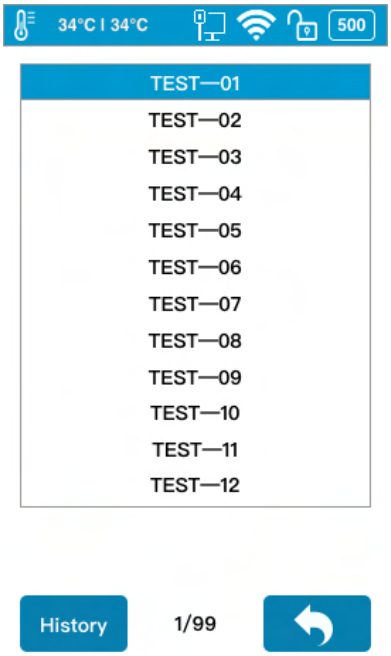
Table 5.2 Material Icon Description

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	STOP	To stop the printer in the middle of an extruding or withdrawing process. 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.

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.
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 back back to the main menu.

5.3 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.

Figure 5.5 Print

Table 5.3 Print Description

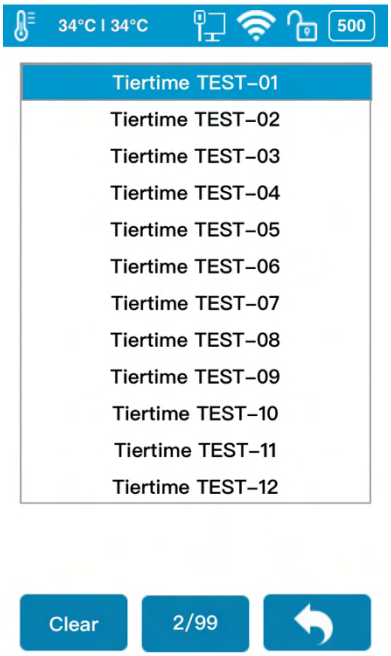
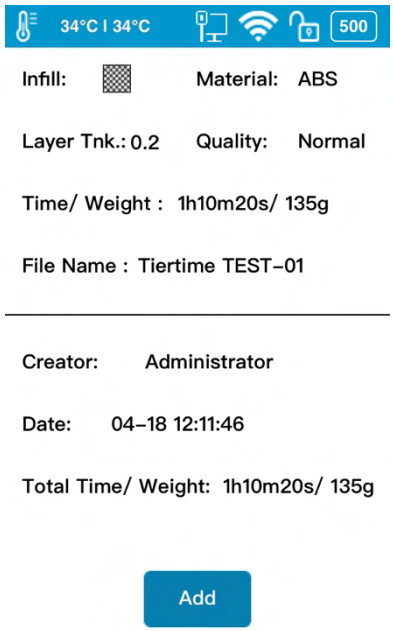
Name	Icon	Description
Current Print Job List		The print job list contains the print jobs that are assigned to the printer. The highlighted row is the current print job. Click the **Print Job Name** to view more settings and detail information for the print job. You can start the printing process by clicking 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.

Table 5.4 Print Job History List

Print Job History List	Print Job Information
	

Start a Print

Table 5.5 Printing Process

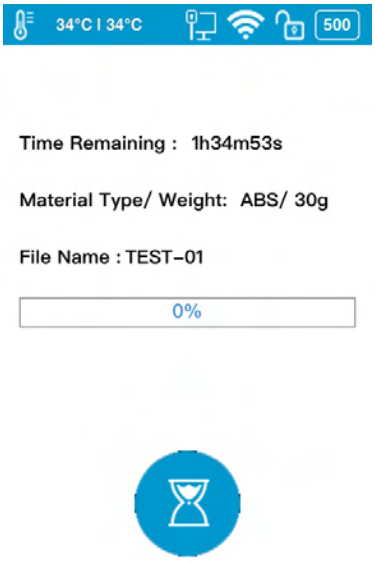
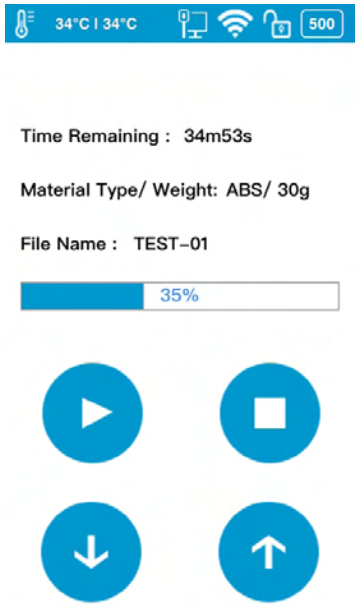
Print Job Information	Printing	Paused Printing
		

Table 5.6 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.

5.4 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.

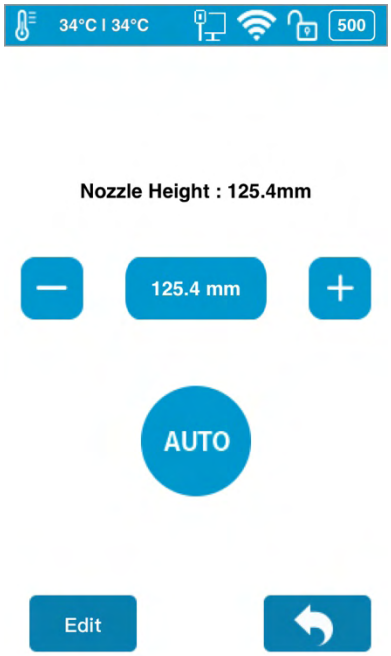


Figure 5.6 Calibrate

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 height 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 5.7 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.

5.5 Information

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

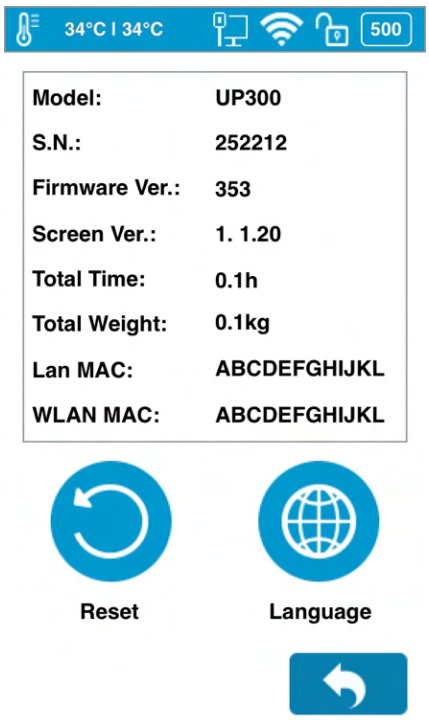


Figure 5.7 Information

•**Model:** The Model Name of your printer's model.
•**S.N.:** Your printer's ID, which will be required if you looking 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 5.8 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. Nozzle height: 0mm. Material type set to ABS, and total weight set to 500g. Name to its defaulted S.N number.
Language		There are two types of languages available for you to choose from, Simplified Chinese Simplified and English.
Exit		Exit Information section and get back to the main menu.

5.7 Config

Config section contains five parameters, and the Network Settings .

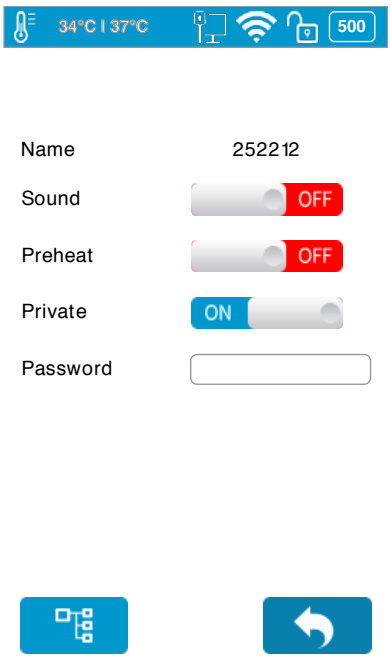


Figure 5.8 Config

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.

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 UP300.

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.

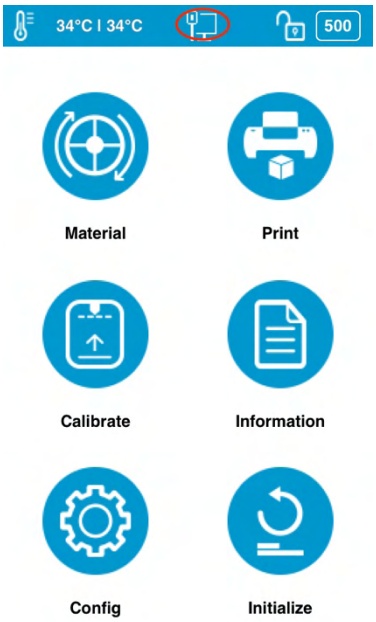


Figure 5.9
Printer Status Bar

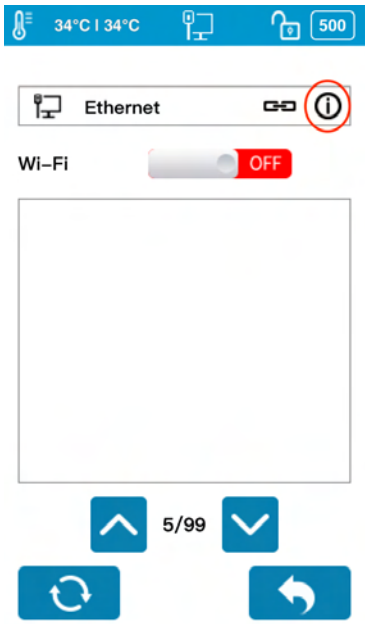


Figure 5.10
Network Settings

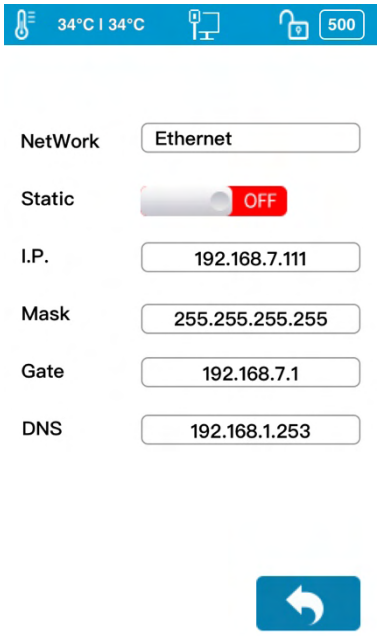


Figure 5.11
Information

Table 5.9 Network Settings Icon Description

Name	Icon	Description
Network Type/ Name	Network Ethernet	The printer is connect with Ethernet.
	Network Tiertime	The name of connected Wi-Fi network.
Static	OFF	Toggle the static IP option to edit following settings for static IP.
IP	IP 192.168.7.111	This is printer's IP address in the network. Click the text field to edit, click **Return** to save and exit editing.
Mask	Mask 255.255.255.0	This is printer's mask in the network. Click the text field to edit, click **Return** to save and exit editing.
Gateway	Gate 192.168.7.1	This is where you define the printer's gateway. Click the text field to edit, click **Return** to save and exit editing.
DNS	DNS 192.168.1.253	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	5/20	Go to the next page.
Exit		Exit and get back to the Network Section.

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

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 UP300 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.

Figure 5.12 Wi-Fi Network Connection

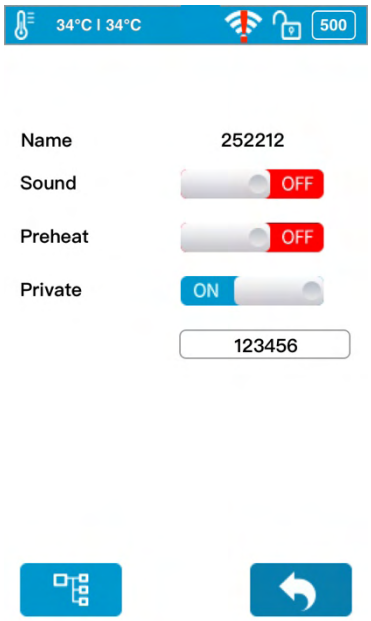


Figure 5.13
Configure Section

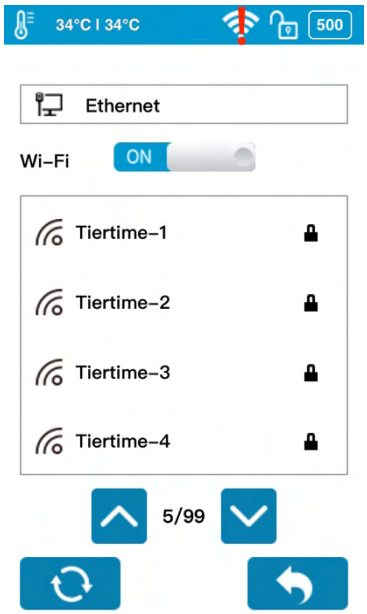


Figure 5.14
Network Settings

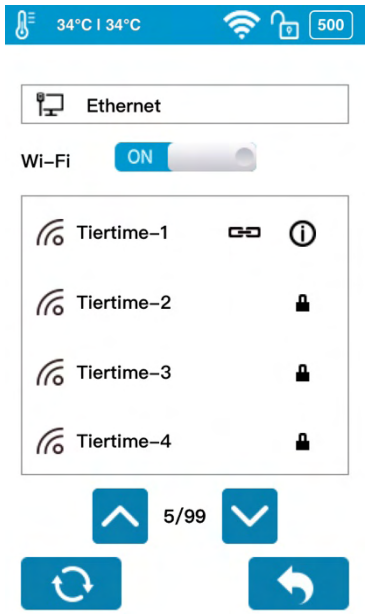


Figure 5.15
Wi-Fi Network Information

Table 5.10 Wi-Fi Network Settings Description

Name	Icon	Description
Wi-Fi Networks	OFF	Toggle the option to allow the printer connect to Wi-Fi networks.
Wi-Fi Name	Tiertime- 01	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	5/20	Click to enter the next page.
Exit		Exit and go back to the main menu.

5.8 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.

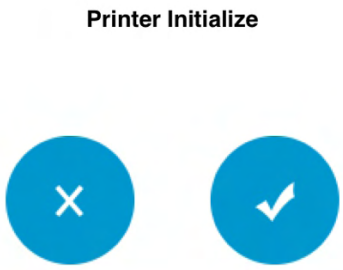


Figure 5.16 Initialize

6. First print

6.1 Touchscreen Upgrade

Once the UP300 has been unboxed and connected to the network, it will detect whether its touchscreen system needs an upgrade. If it needs upgrade, follow the instruction to finish the upgrade process.

To choose the language in the touchscreen, go to **Information**, choose **Language**. Right now, we only support English and Chinese languages and we will support more languages in new upgrades in the future.

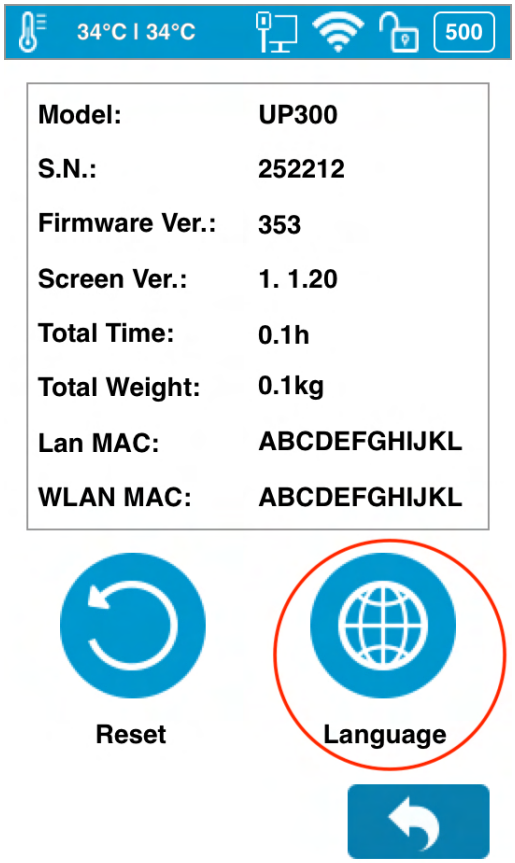


Figure 6.1 Config

Figure 6.2 Language

6.2 Install Software UP Studio

To operate the UP300 for 3d printing, you need to install the UP Studio software on your computer.

You can download the installation files of UP Studio software from the following url: www.tiertime.com/download/software or search UP Studio in the App Store.

System Requirements:

Support Operating Systems:
Windows 7 (SP1) or higher
(32 bit and 64 bit)
Mac OS 10.10 or higher

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

Installation

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

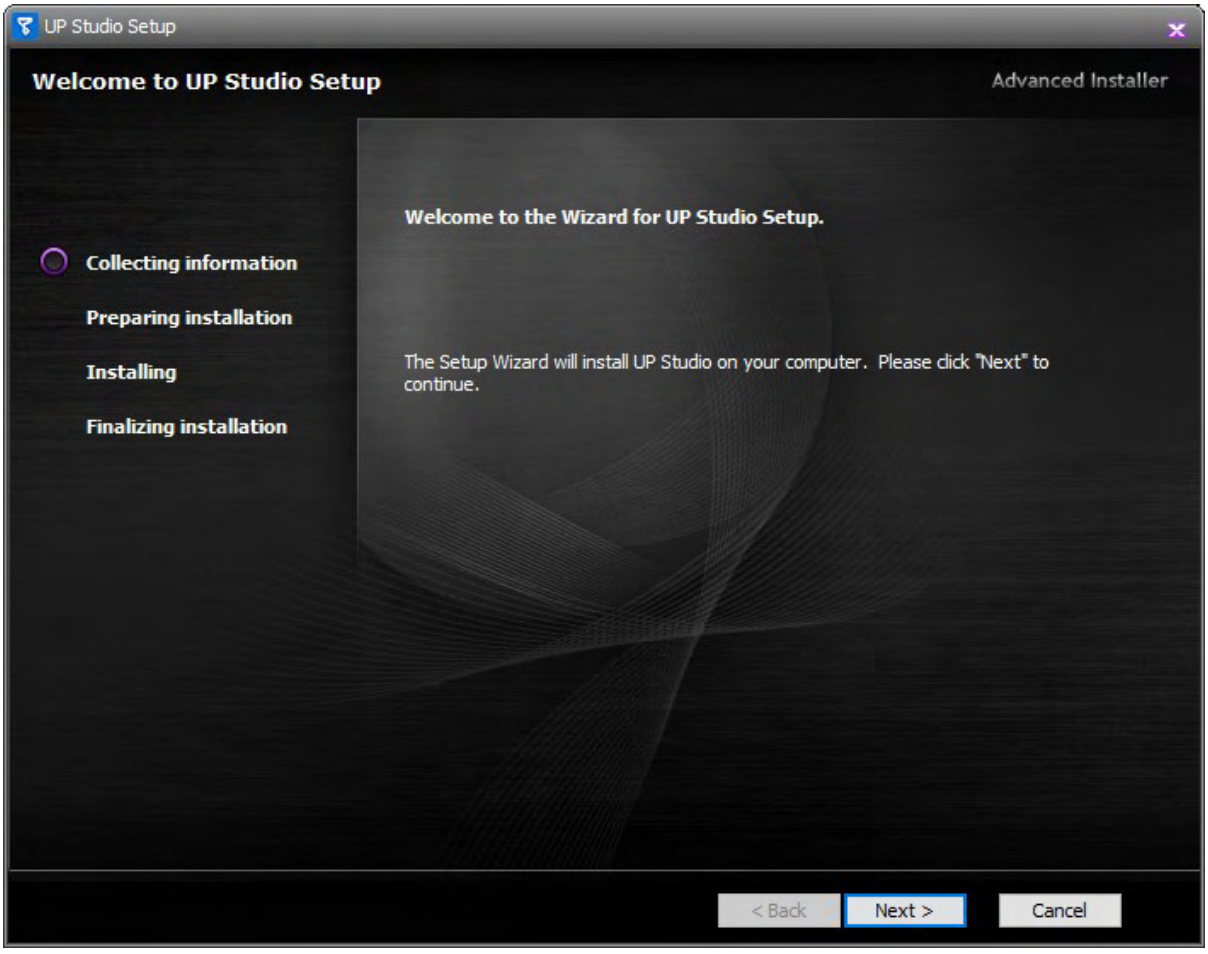


Figure 6.3 Install UP Studio

6.3 Connect UP300

UP300 support USB, and network connection.

In network connection, you can connection UP300 via Wi-Fi, and Ethernet connection. You can choose the right connection based on your needs.

1. USB Connection

Find a USB cable, connect one end to the computer and the other end to the UP300. Open the UP Studio on the computer, you will find the connected UP300 listed in the Printer section.

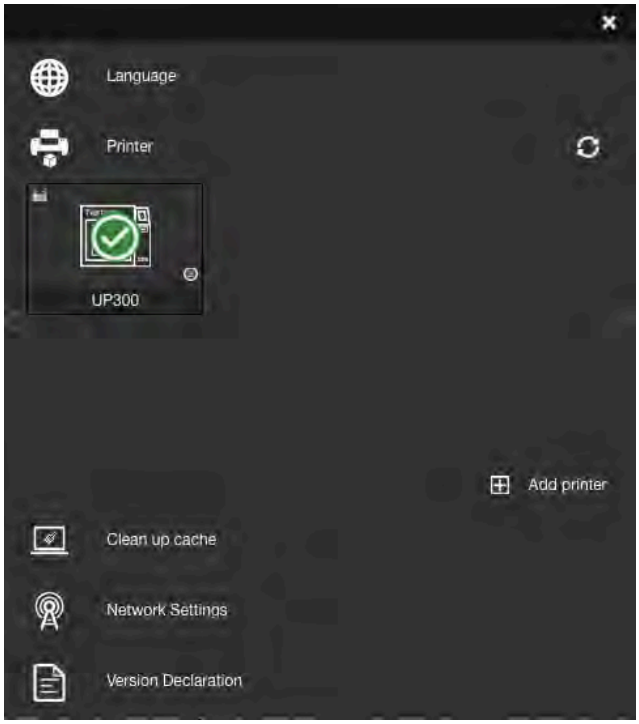


Figure 6.4 USB Connection

2. Network Connection

Ethernet Connection

Find a Ethernet cable, insert the connector into the LAN socket on the back of your UP300, and a LAN icon will appear on the touchscreen.

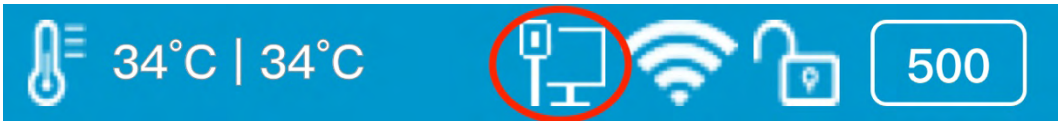


Figure 6.5 Ethernet Connection Icon in Printer Status Bar

To edit the Ethernet Network Settings in UP Studio: Open Up Studio in you computer, and go to **Settings**, fine the printer under **Printer** section, click **More (circled in the red in Figure 6.6)** and then click **Informations** button to make further changes.

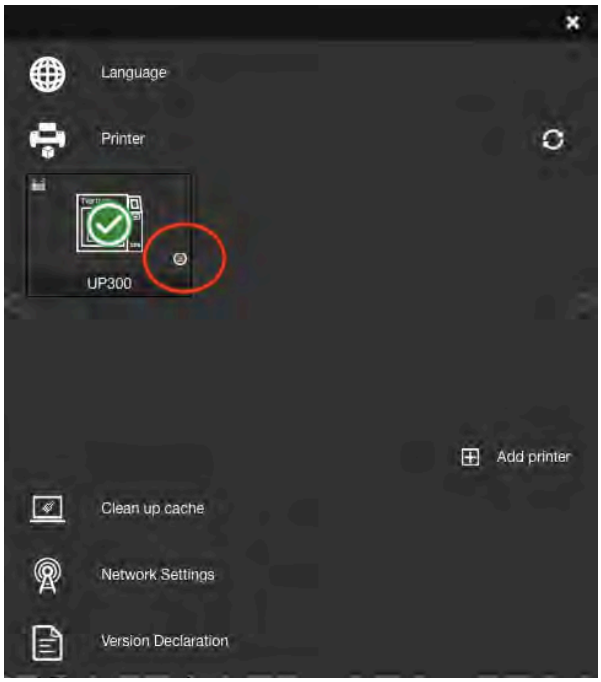


Figure 6.6 Ethernet Connection

Figure 6.7 Informations

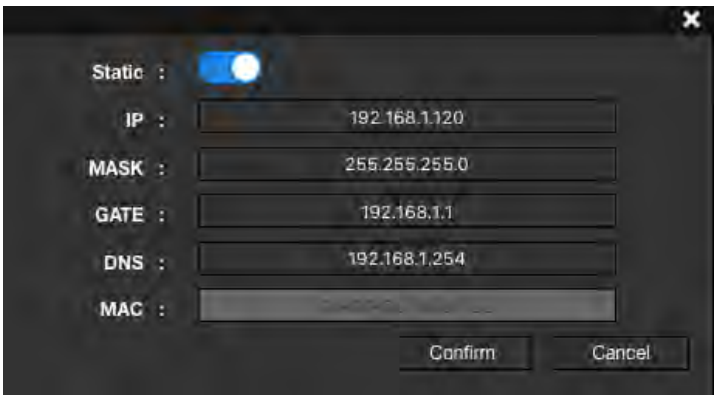


Figure 6.8 Ethernet Network Settings

Wi-Fi Connection
To connect your UP300, you can set it up though UP Studio on your computer or use the touchscreen on the UP300.

Use the UP Studio on the computer:
1. Connect your UP300 with a USB cable to your computer,

2. Open UP Studio on your computer, go to **Settings**, choose **Printer**.

3. The connected UP300 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.

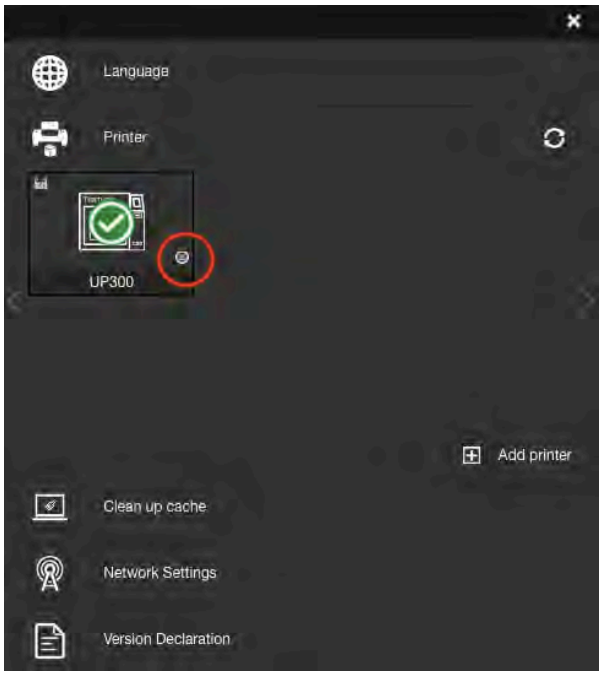


Figure 6.9 Wi-Fi Connection Settings

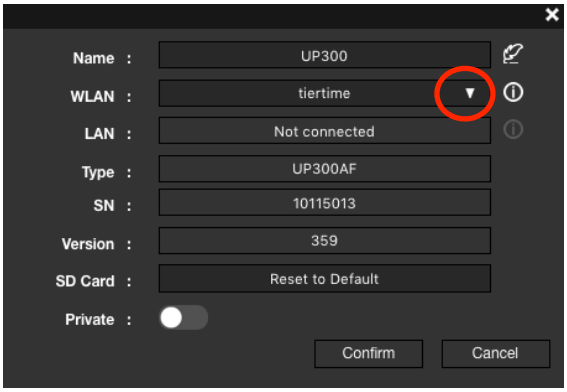


Figure 6.10 Wi-Fi Drop-down Menu

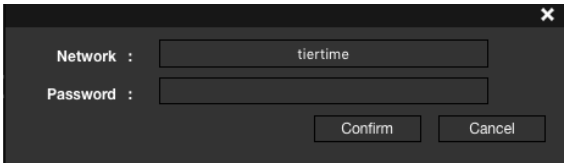


Figure 6.11 Wi-Fi Network

5. You can now unplug the USB cable, and connect your computer to the Wi-Fi network that you set for the UP300.

6. Open UP Studio, go to **Settings**, click **Printer**, click **Add Printer**, find your UP300 on the All Printer list, and click + to add your UP300.

Figure 6.12 All printers

If you cannot find your UP300 in the printer list, click **Refresh.**

7. An icon of your UP300 will appear in the **Printer** section, Click the icon a green check mark representing your UP300 is connected via Wi-Fi successfully will appear on top of the UP300 icon.

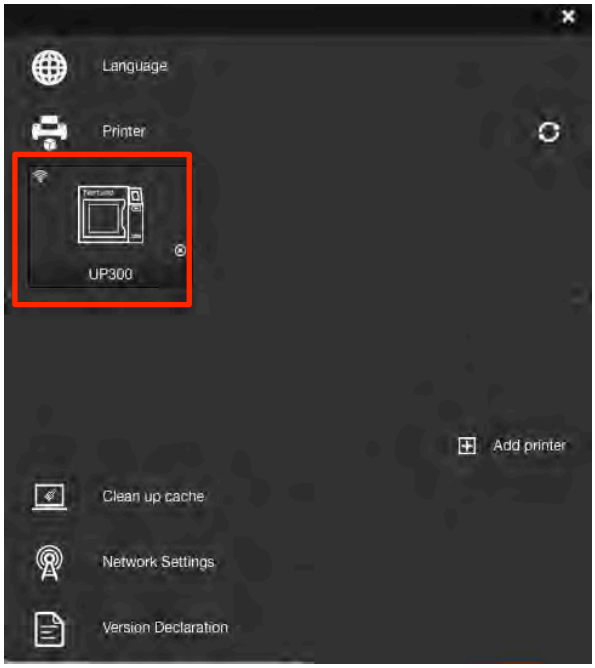


Figure 6.13 UP300 Icon

Figure 6.14 Added UP300 Icon

Using the touchscreen on the UP300 to setup the 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 UP300 is connected to the desired Wi-Fi network.

You can make further change in the configurations of the Wi-Fi network by clicking the Information icon. Please refer to page 26.

6.4 Choose Extruders

There are three types of extruders, ABS extruders, PLA extruders, and TPU extruders, and four sizes of nozzles, 0.2mm, 0.4mm, 0.5mm, and 0.6mm diameter nozzles, supported by the UP300.

The UP300 has one ABS Extruder pre-installed on the machine with 0.4mm nozzle.

1. Three Type Extruders:

- **The ABS Extruder with 0.4mm nozzle:** For ABS filaments or alike high temperature thermal-plastic materials, which requires the extruder unit heat up at high temperature to melt the filament, and cool down effectively at the nozzle for proper extrusion.

- **The PLA Extruder with 0.4mm nozzle:** For PLA filaments or alike low temperature thermal-plastic materials, which requires the extruder unit heat up at relatively low temperature to melt the filament, and cool down effectively at the nozzle for proper extrusion.

- **The TPU Extruder with 0.5mm nozzle:** For flexible or soft filaments, which requires the filament pass through the gears and feed into the nozzle for proper extrusion.

Note: TPU filament is recommended to pair with 0.5mm nozzle for proper printing.

2. Four Nozzles with different sizes:

- **0.2mm:** For printing models that require complicated structures, and more details and with time.
- **0.4mm:** For general printing jobs.
- **0.6mm:** For printing models that require less details, with less time and for the materials that are easy to clog the nozzles.

3. Change the 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.

4. 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.

5. Update the software:

Open UP Studio on your computer, click **UP** on the left menu, click **Maintenance**, find **Material Type**, and click the drop down menu to choose among the available options.

6. Change the nozzle:
Tools: A Nozzle Wrench
Preparation: Withdraw the filament, and wait, until the extruder cools down a bit before taking any further actions.

7. Replacing the nozzle:
Use the nozzle wrench to unscrew the nozzle, and then screw the replacement nozzle back to the extruder.

8. Update the software:
Connect your printer to the computer, open UP Studio on your computer, click **UP** on the left menu, click **Maintenance**, find **Nozzle Diam(eter)**, click the dropdown menu to set the matching size.

Notice: After you change the nozzle or material in the extruder, it is necessary for you to do the following steps to update the settings on the software.

a.Connect the computer to your printer, and open UP Studio software.
b.Click **UP** on the left side menu, go to **Maintenance**.
c.Choose the **Material Type**, and then select the available **Nozzle Diameter**.

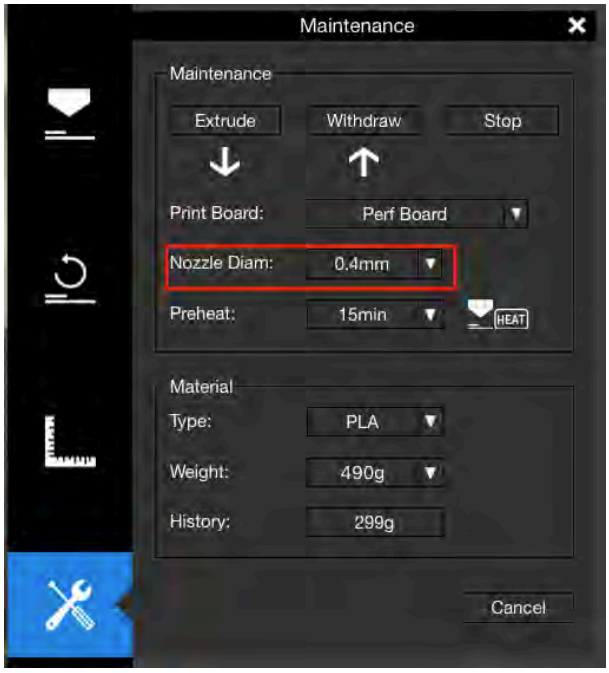


Figure 6.14 Nozzle Diam

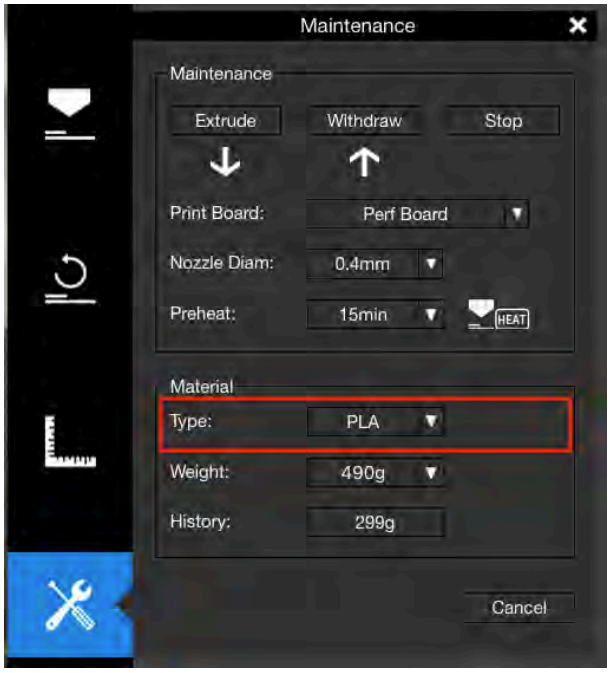


Figure 6.15 Material Type

Custom Filament Profile

To achieve better printing quality, you can create and edit the custom material profiles in the latest UP Studio software.

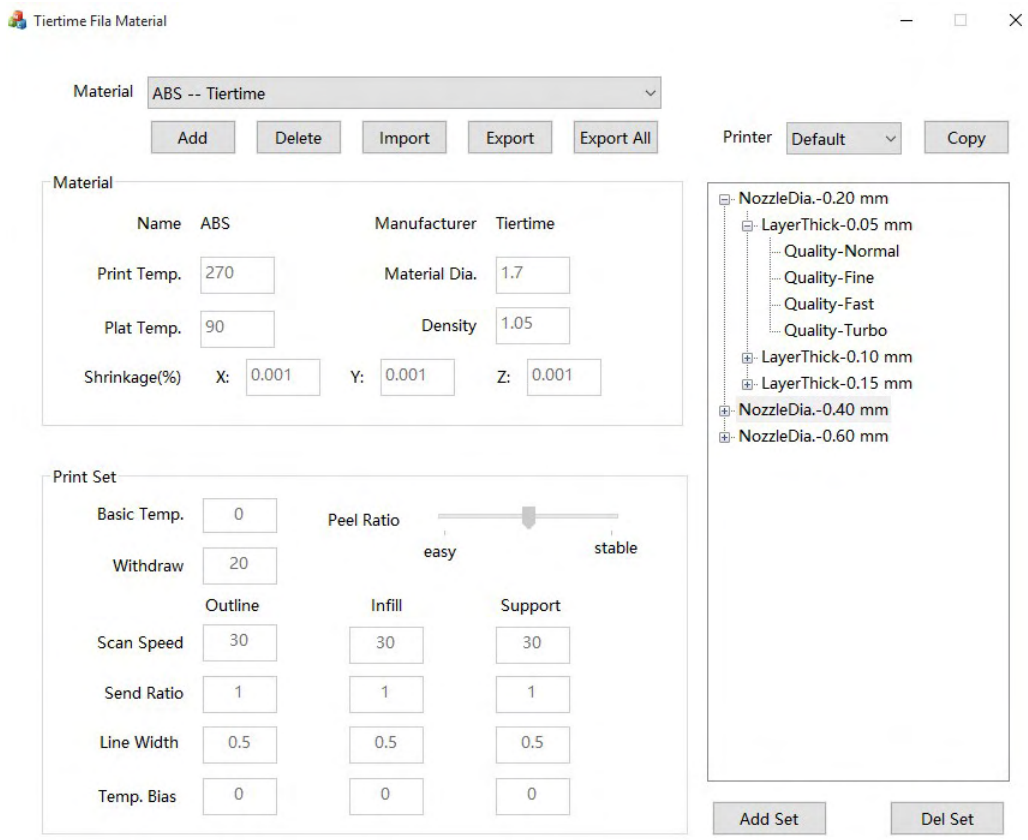


Figure 6.16 Custom filament profile

6.5 Print Board Selection

There are two types of print boards coming with the UP300, the Flex Glass Board, with the smooth surface, and the Perf Glass Board, with the perforated surface, both of which have glass board on the other side. You can always choose the glass as the print surface, which makes the third print surface supported by UP300.

Each of the print surface is made to serve for different printing purposes and provide distinguishable finishing of the bottom layer of each printed model.

1. Flex Glass Board:
- Stiff, with the smooth surface on one side and glass surface on the other.
- Medium first layer adhesion. Easy to remove raft.
- For printing models with not raft or no support settings, provide glossy and flat finish for the bottom layer.

2. Perf Glass Board:
- Stiff, with the perforated surface on one side and glass surface on the other.
- Maximum first layer adhesion. More difficult to remove raft.
- For printing models with larger base size.

3. The glass surface of the Perf and Flex Board:
- The glass surface on the both print board.
- Minimum first layer adhesion;
- Stiff, with smooth surface. May require anti-slippage measures such as a glue stick.

Notice: Flex/ Perf Glass Board: Glass boards are easy to break. Please handle with care.

6.6 Calibration

Calibration for UP300 is an important step to make sure the printer is functionally well and is able to generate good quality prints.

Calibration includes two steps: platform leveling adjustment, and nozzle height detection,

Platform Leveling Adjustment is the process of making sure the build platform is leveled, so that every layer printed is leveled, which is essential to guarantee the good quality prints.

Nozzle height refers to the perpendicular distance between the tip of the nozzle and the build platform. This value will be used to control the print head's movement, and the accuracy of this value is greatly affecting the print quality and success rate of a print job.

Before the machine is shipped out from the factory, the nozzle height was set to 0. therefore, it is mandatory to calibrate the machine to get the correct nozzle height before the first print.

It is not necessary to do the calibration every time before each print. If you see the issues like warping, support being hard to remove or model not sticking to the build plate, it is very possible that the calibration is needed.

6.6.1.Auto Calibration

Figure 6.17 Nozzle Detect

Auto Calibration is an automatic process that, once triggered, will automatically adjust the leveling of the build platform, and detect the nozzle height without any human involvement. You can start the process either from the touchscreen, or from the UP Studio software.

Auto Calibration from Touchscreen
Go to the touchscreen on the UP300, click **Calibration**, and press **AUTO**. The printer will start the process of calibration. Wait until the process finishes.

Auto Calibration from UP Studio Software
1.Open UP Studio on your computer,
2. Click **UP** from the menu on the left,
3. Click **Initialize**, and wait for the initialization process finishes
4. Click **Calibration**, and **Auto Leveling**. Wait for the calibrating process finishes.

Auto Leveling

In the Calibration section, click **Auto Level** to initiate auto leveling process. 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.

Nozzle height detection will be started automatically after auto leveling process. The print head will move toward the nozzle height detector. Eventually, the nozzle will touch and press the thin metal sheet on the device to make the measurement.

Figure 6.18 Auto Level

2. Manual calibration

Although the Auto Calibration is always the easiest way to calibrate the UP300, some experts in 3D printing always prefer manual calibration over automatic one to have full control of the whole process. UP Studio provides the manual calibration process in the software.

Figure 6.19 Manual

Figure 6.20 Manual Calibration

a. Open UP Studio on your computer,

b. Click UP, click Maintenance, and then click Manual.

c. Place the Calibration Card (Find the card in the accessories that comes with the machine) between the nozzle and the print surface, follow the instruction in the software to finish the manual calibration process.

d. The software will guide you go through 9-point calibration process, and measure the offset of each point.
e. Adjust the nozzle height using the up/down button at each point, and use the calibration card as the medium between the nozzle and the surface. The ideal distance between the nozzle and the surface is between 0.1-0.2mm, and you will feel a small drag when moving the calibration card if the distance is right. When the height is right for the point, click the arrow on the right of the up/down button, the software will save the offset for the point, and move the print head to the next point.

f. Make sure all 9 points will have the same degree of drag, so that all 9 points will have the same distance to the surface.

g. Once the 9-point measurement is finished, click the **Confirm** button to finish the whole process.

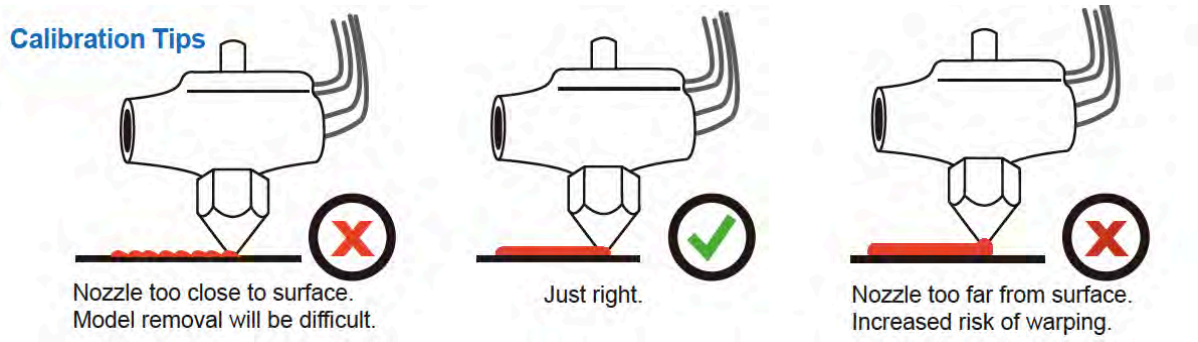


Figure 6.21 Calibration Tips

3. Model Calibration

Model Calibration – 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.

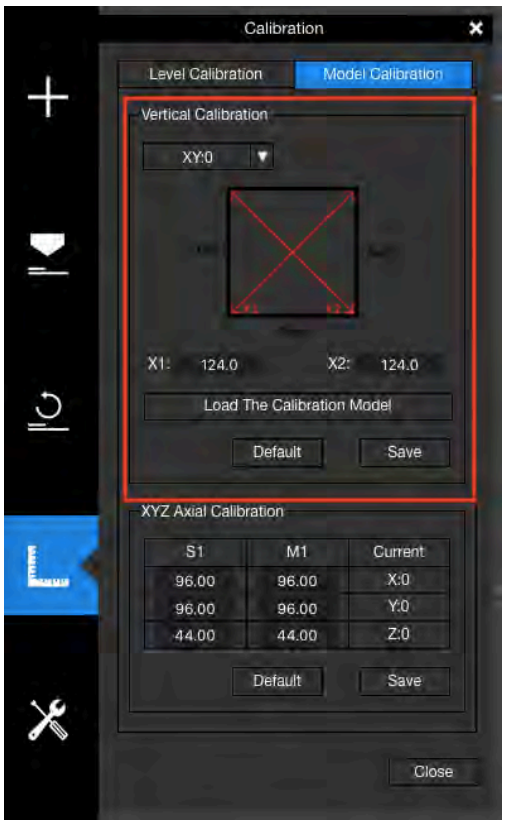


Figure 6.22 Vertical Calibration

a.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.

b. 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.

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

d. 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.

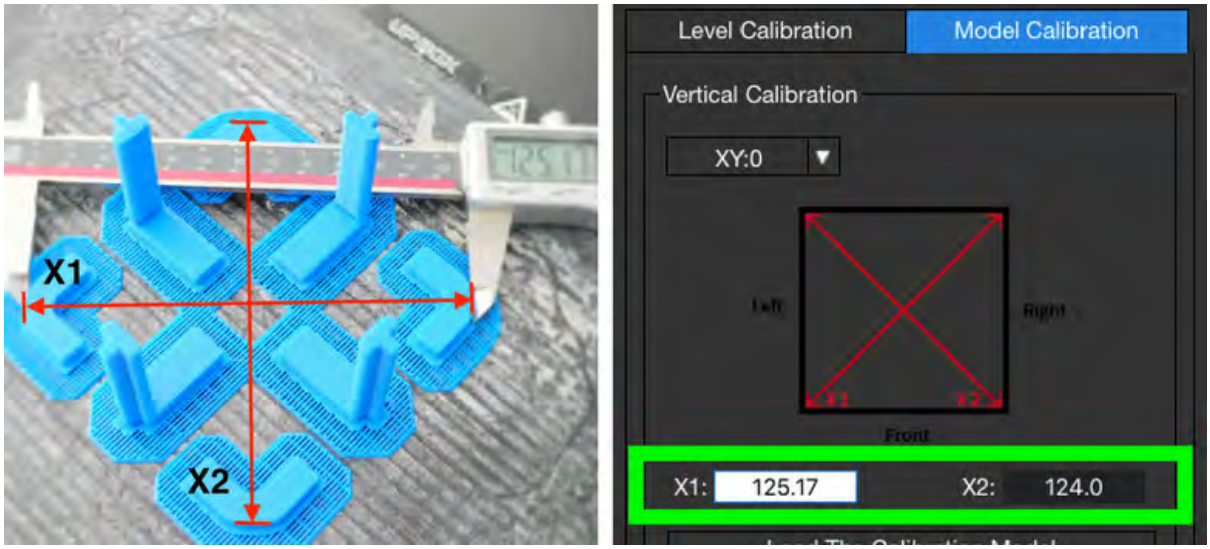


Figure 6.23 X/Y Axis Calibration

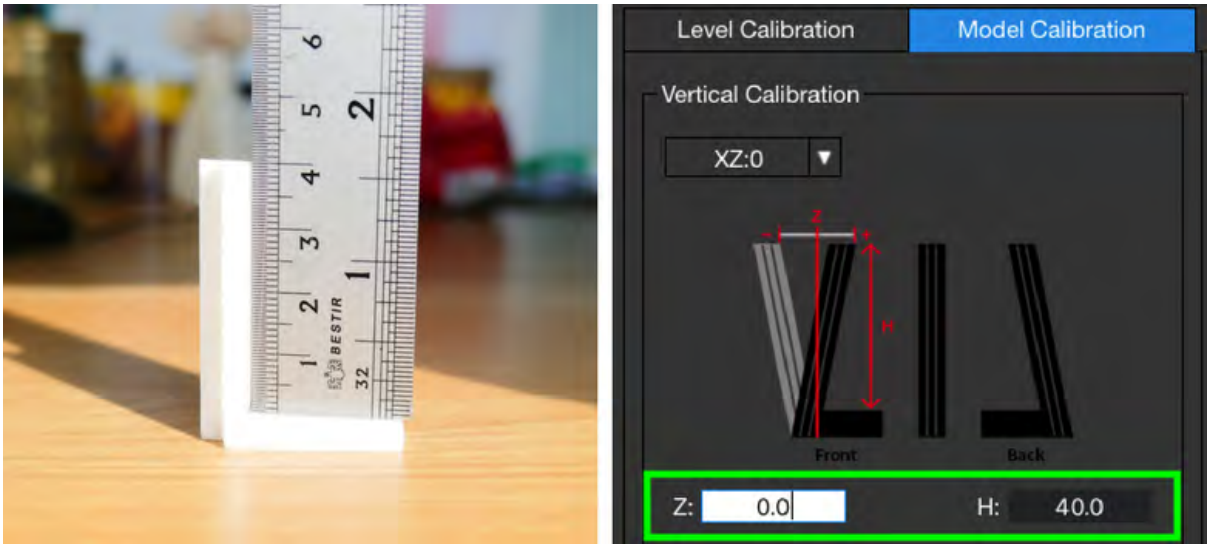


Figure 6.24 X/Y Axis Calibration

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

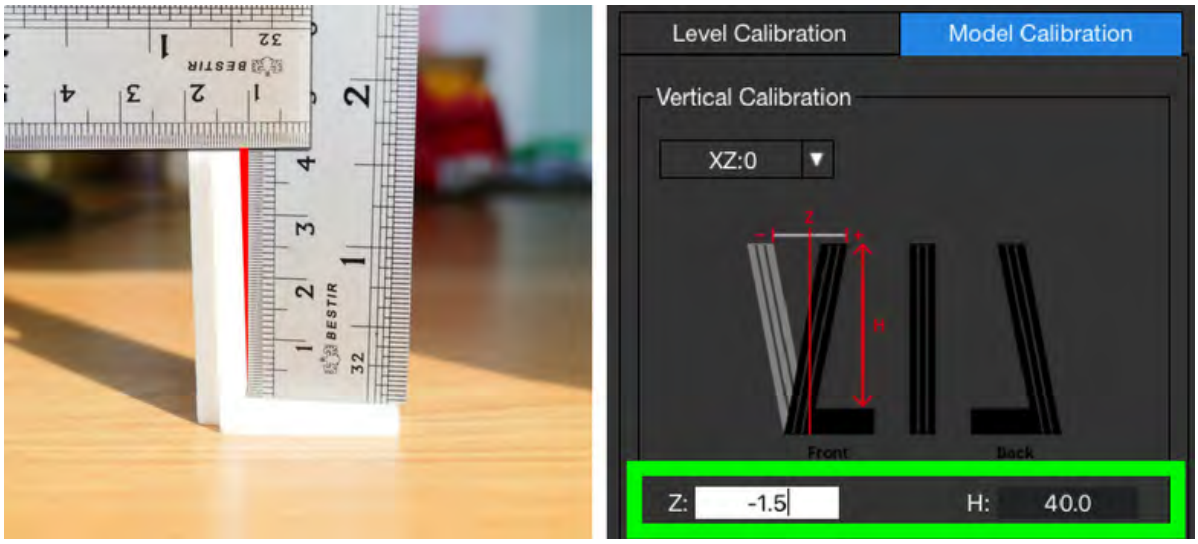


Figure 6.25 Obtuse Angle, Z value will be negative.

f. 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

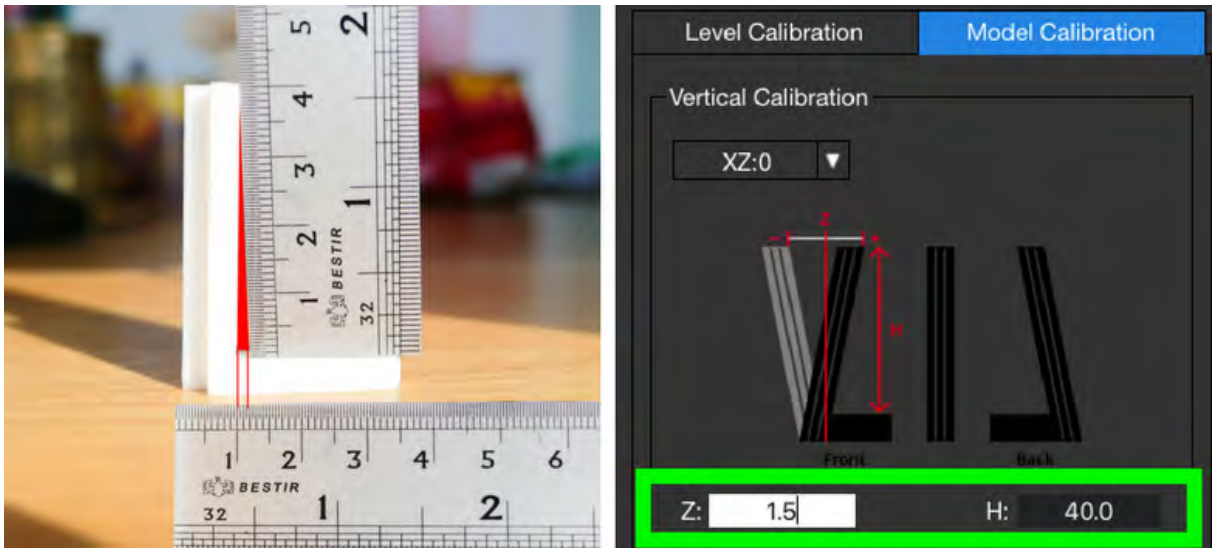


Figure 6.25 Acute Angle, Z value will be positive.

all the L-shapes are 90 degrees as shown in figure 6.23, 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.

In our case, for figure 6.24, the value of Z entered is -1.5 mm. For figure 6.25, 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.

Model Calibration – XYZ Axial

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.

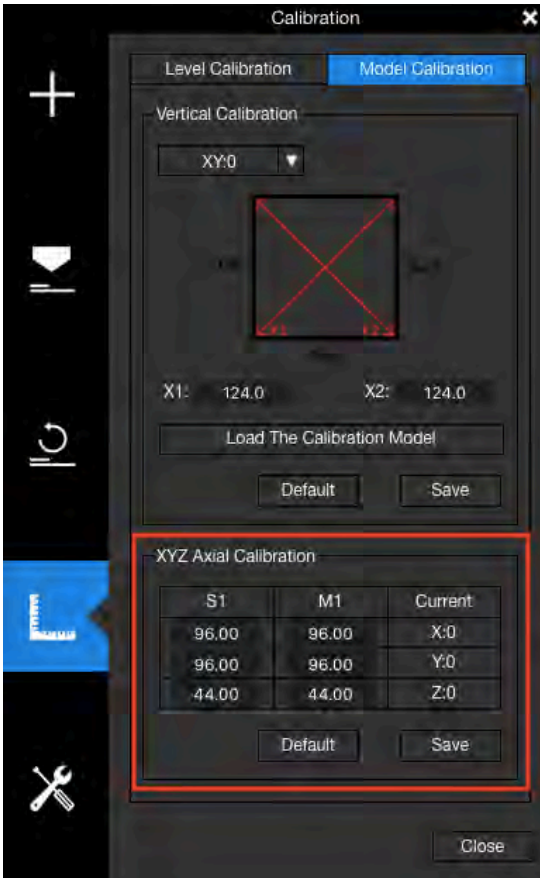


Figure 6.26 XYZ Axial Calibration

To correct the dimensional error, go to **Calibrate**, find **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.

7. Start Printing

7.1 UP Studio Interface

Connect your UP300 to the computer, open **UP Studio**, click **UP**, and then choose to add a 3D model.

You can use the wheel menu to adjust the model's profile, use Print Settings to define the parameters that are used to process the print job.

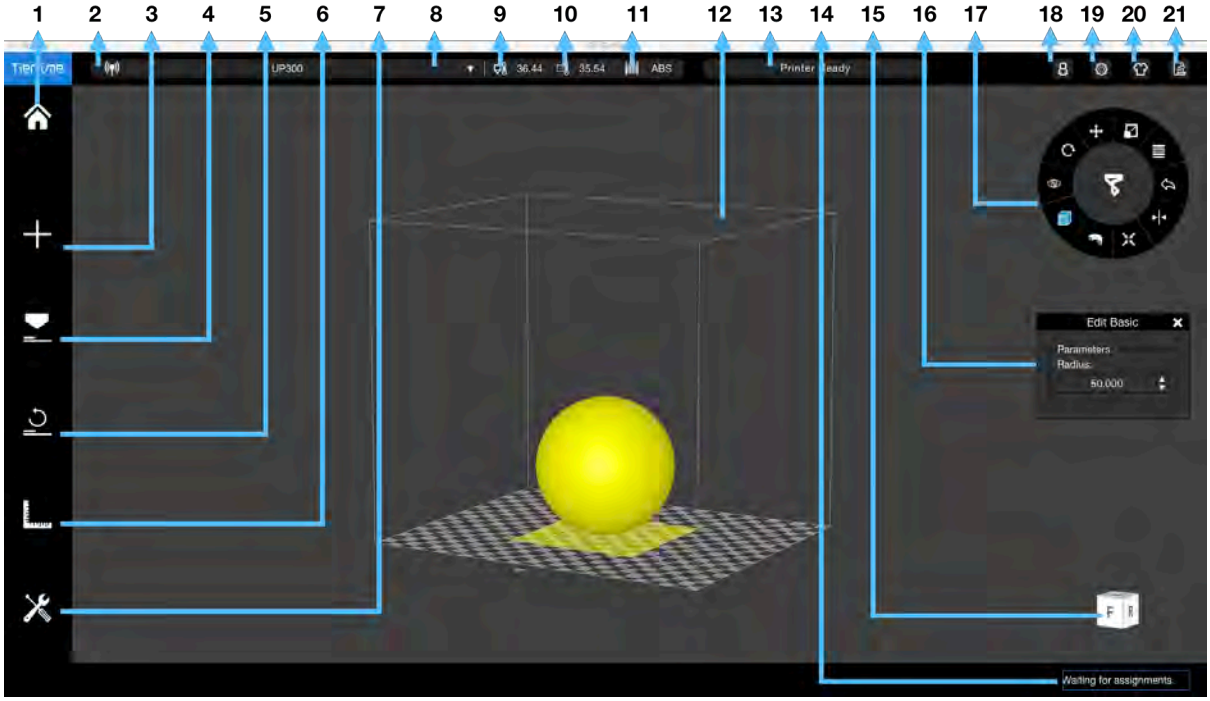


Figure 7.1 UP Studio Interface

1. Home
2. Add a Model
3. Print Settings
4. Initialize
5. Calibration
6. Maintenance
7. Printer Connection Method
8. Connected Printer Name
9. Nozzle Temperature
10. Build Plate Temperature
11. Material Type
12. Printer Status
13. My Account
14. Settings
15. Skin
16. Feedback
17. Wheel Menu
18. My Account
19. View Cube
20. Print Queue

After you finish setting up the printing parameters, click **Print**, the model file will be processed, and sent to the printer for printing.

7.2 Remove the Printed model

To remove the printed model from the print board of the UP300, it is recommended to wear gloves for protection, Take out the print board with its front handle, place the print board on a flat surface perpendicularly, and start scarping the model off the print board from one corner of the model using the scraper that comes with the machine.

Once getting the model off the print board, use the scraper to remove any plastic remains on the print board until there is nothing left on the surface. Place the print board back into the build chamber, and be ready for the next print.

8. Maintenance

8.1 Clean the Waste Tray

Located at the bottom of build chamber, a waste tray is introduced in UP300. 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

UP300 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 official Tiertime online store, www.tiertime.com/store, 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.

Global Technical Support:
support@tiertime.com

For Local Support:
Connect your local reseller.

Sales Department:
sales@tiertime.net

Tiertime Corporation
1765 Landess Ave. #338, Milpitas, CA, 95035, USA.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The device has been evaluated to meet general RF exposure requirement.

This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.