UNIZ

SLASH

USER MANUAL

TABLE OF CONTENTS

A WELCOME

SPECIFICATIONS OF SLASH

Printing		
	Printing Technology	LCD Stereolithography RI matched cooling
	Separation Mechanism	Natural peel with engineered polymer film 10x more durable than PDMS
	Build Volume	192 × 122 × 200 mm
	XY Resolution	75 µm, WQXGA [2560 × 1600]
	Layer Thickness (Z resolution)	10, 25, 50, 100, 200 µm Variable and customizable
	Supporting	Automatically generated Manual add, modify and remove
	Printing Speed	1000 cc/hr (50% infill solid build volume speed) 200 mm/hr (hollow and thin-wall structures)
	Resin Level Control	Automatic level control on bottle and resin tank Unattended printing possible Auto pause when resin runs out
	One-Click Printing	Yes
Hardware		
	Dimension	350 × 400 × 530 mm [W×H×D]
	Weight	12 KG / 26 LB
	Operating Temperature	Suggested 18-28°C
	Power Requirement	100-240VAC 50/60Hz 2A
	Optical System	5000 Lux blue LED array Refractive index matched liquid cooling Ultra high resolution LCD
	Connectivity	USB, Ethernet, Wifi
Materials		
	zABS Resin	ABS like, varies colors available
	zFlex Resin	Silicone like, flexible and pinch resistant
	zWax Resin	Wax like, used for lost wax casting
Software		
	System Requirement	Windows 7 and up Mac OS X 10.7 and up OpenGL 4 2GB RAM
	Features	Simple print setup, easy multi-printer management Z resolution profile customization from 10 to 300µm Auto-generation of supports Manual add, modify, and removal of supports Rotation, scaling and duplication
	Compatible Format	.STL, .UNIZ

B SETTING UP YOUR PRINTER

THE SLASH 3D PRINTING SYSTEM
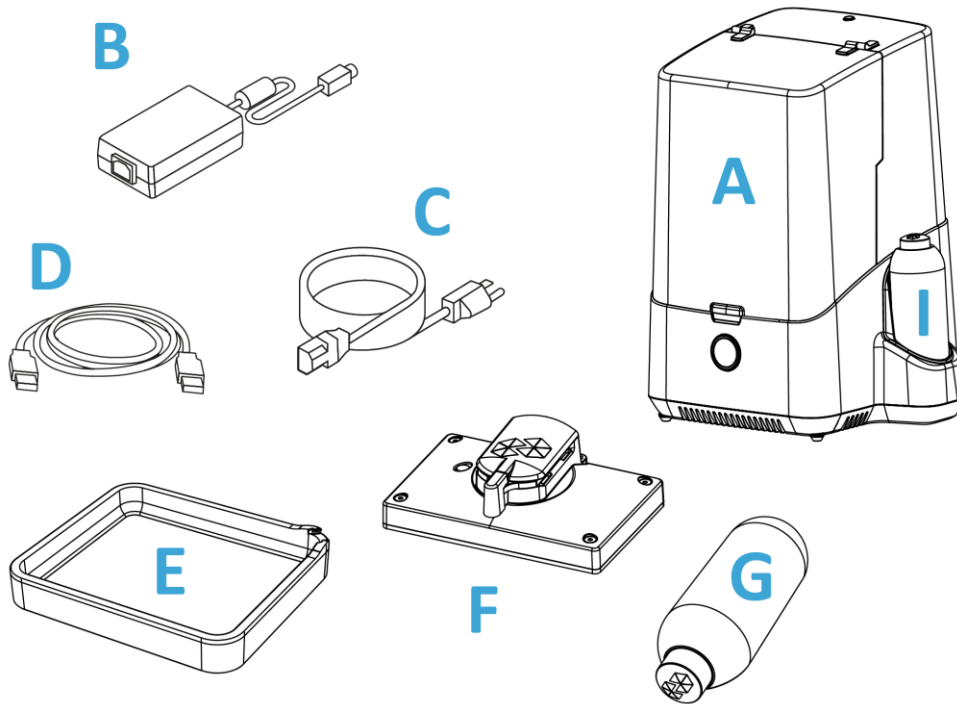
A **SLASH desktop printer**

B **Power brick**

C **Power cable**

D **USB cable**

E **Resin tray**

F **Building platform**

G **Resin bottle**

I **Cleaning bottle**

ACTION BUTTON COLOR GUIDE

Breathing red
Printer busy (starting up/paused/z axis moving)

Half circle red
No device connected

Progressing blue
Data transfer in progress

Green
STANDBY- The printer is connected and waits for a command.

Breathing green
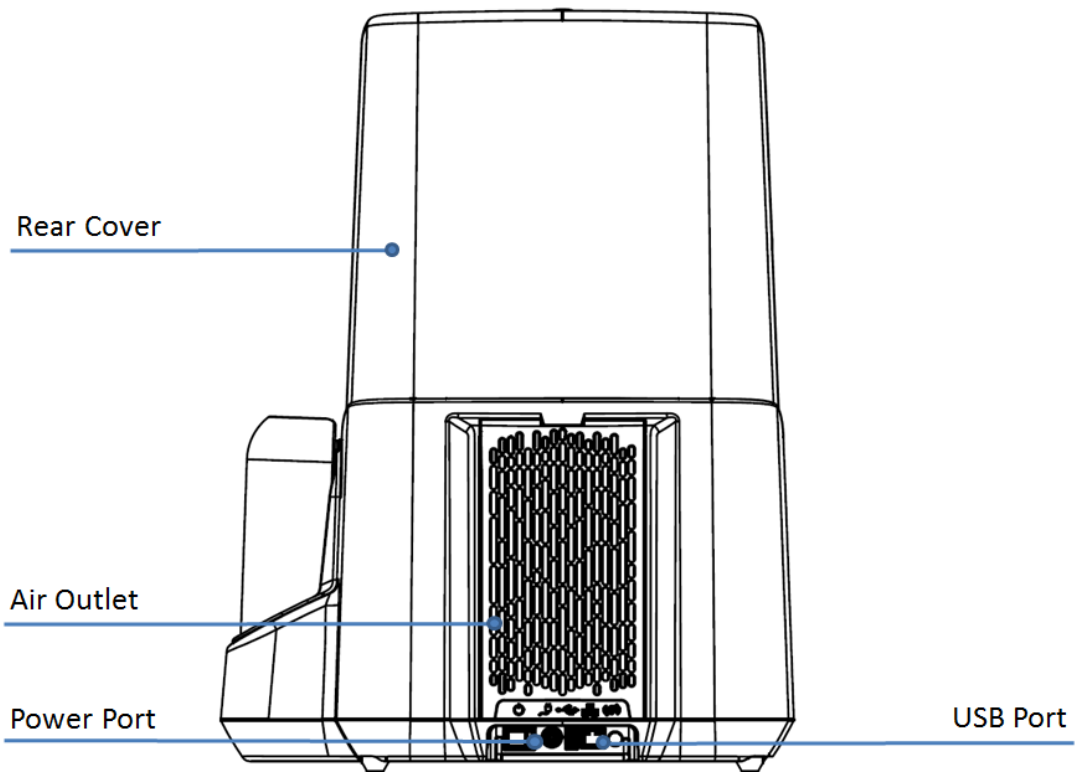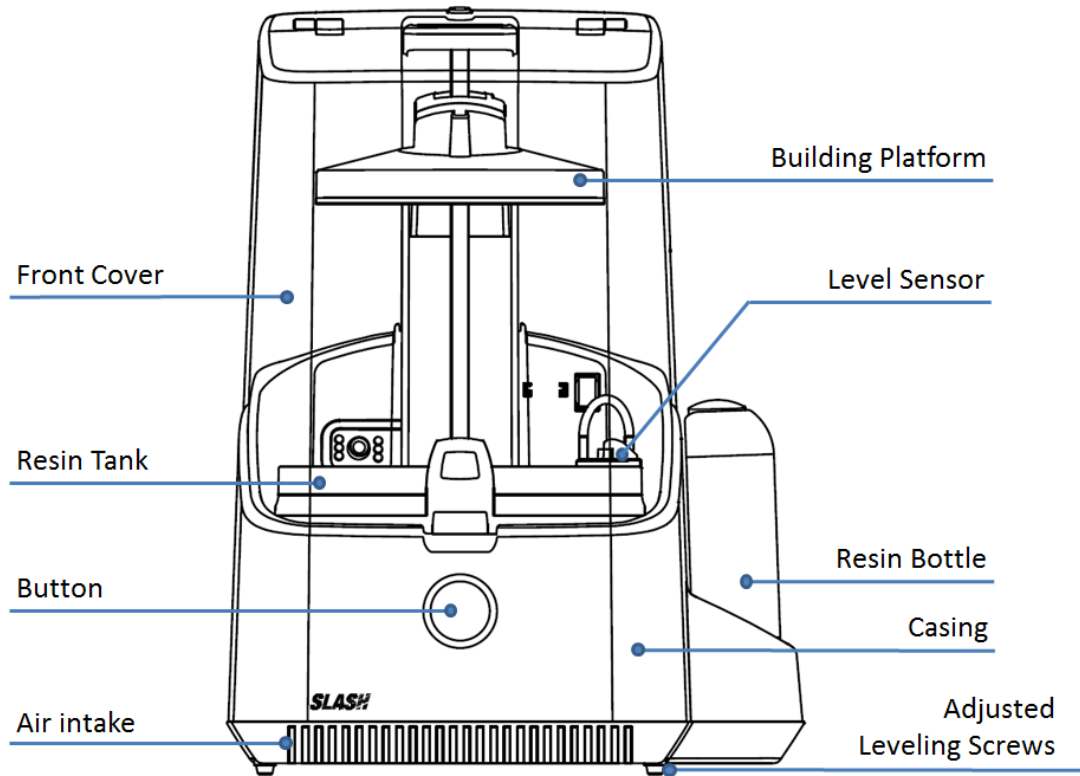Data transfered, waiting for touch confirmation

Progressing green
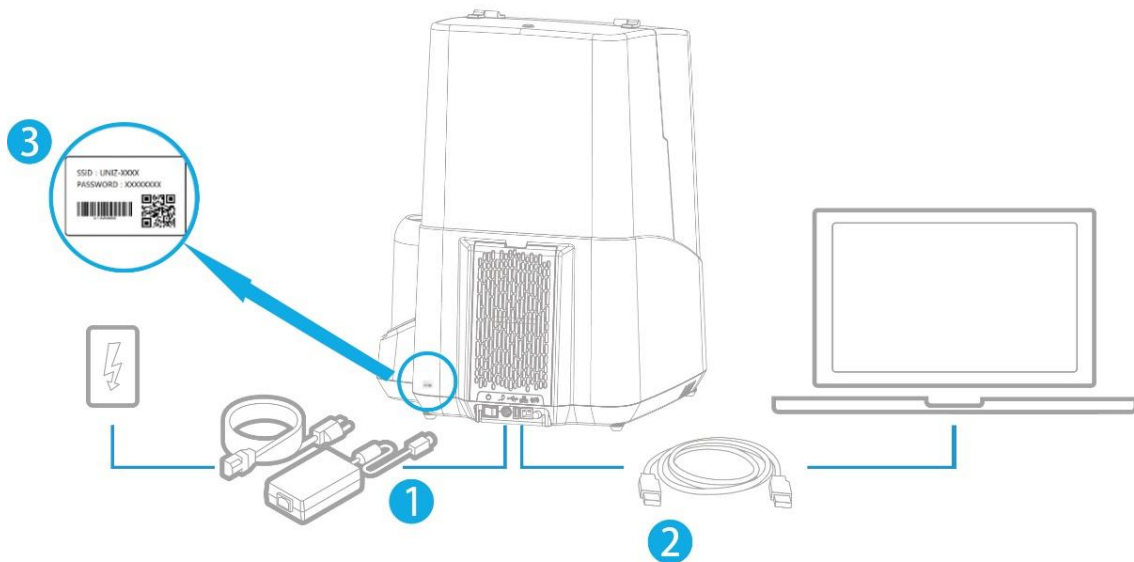Printing in progress- The lights indicates completed progress.

Red
The lid is open. The printer is waiting for you to close the lid.

PRODUCT DESCRIPTION

Building Platform

Front Cover

Level Sensor

Resin Tank

Resin Bottle

Button

Casing

Air intake

SLASH

Adjusted
Leveling Screws

Rear Cover

Air Outlet

Power Port

USB Port

Quick Start Guide

1. Active Your Printer

1) Plug into a power supply and switch on the printer.

2) Connect PC with the printer by USB cable, connect to the printer's WI-FI.

   i. Find the SSID and password for this printer on the side label of the printer.

   ii. Open the Wi-Fi Setting on your PC or mobile phone, select the corresponding Wi-Fi name and type in password to connect.

3) Connect to Wi-Fi

   i.   Find IP address on the side label of the printer.

   ii.   To access activation page on the browser of your PC or mobile phone.

   iii.   Click on "Check Network Button" to check if the printer is connected with internet, skip this step if already connected, otherwise continue step IV

   iv.   Choose Wi-Fi from the SSID dropdown menu, type in password and click on "connect button" to connect internet.

4) Printer activation

Log in your Uniz account, enter your email address and password (to sign up and activate on Uniz official website if you do not have an account), finish the activation by clicking on "Activate" button.

Tips: 1. Connect Wi-Fi, it's suggested to restart the printer if there is no reaction for a long time, reconnect Wi-Fi

2, Wi-Fi connection indicates success, but the activation shows network connection error, it's suggested to restart the printer and try to activate again.

3, after restarting the printer, start to operate when the printer's initialization is finished (front light turns to green)

2. Put the printer

1) Place the printer on platform.

2) Adjust the four adjusting screws under the printer to make it level if the printer is slightly tilted. The printer is leveled if leveling bubble is in the center on build platform.
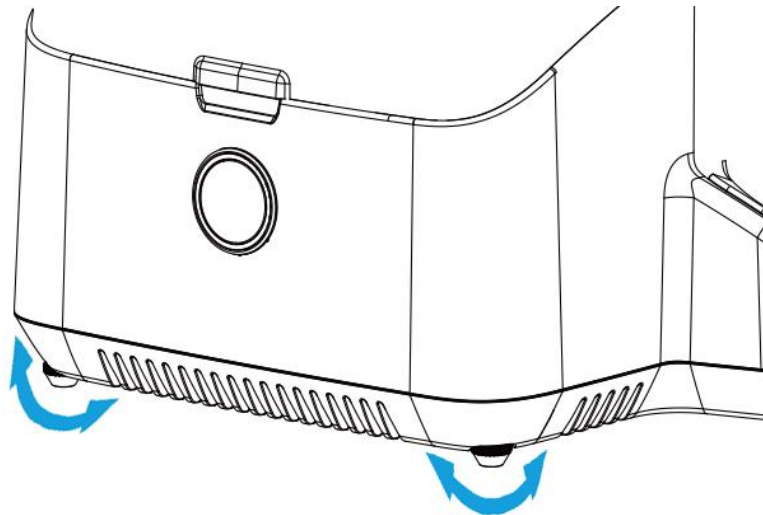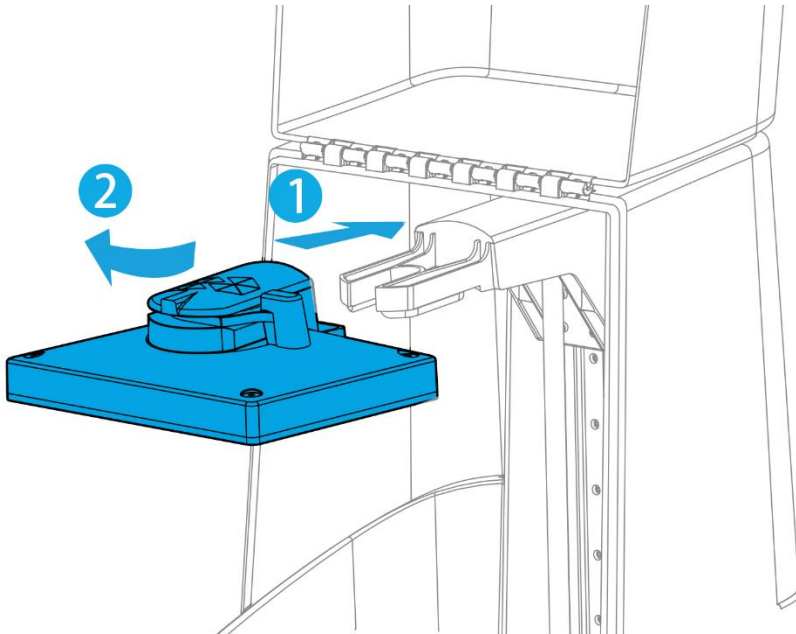
3. Insert Resin Tank

1) Tilt the resin tank to 30 degrees, insert the fixed bolt into the holes inside of LED panel.

2) Put the resin tank back on LCD panel.

3) Turn the lock catch to fasten the resin tank.
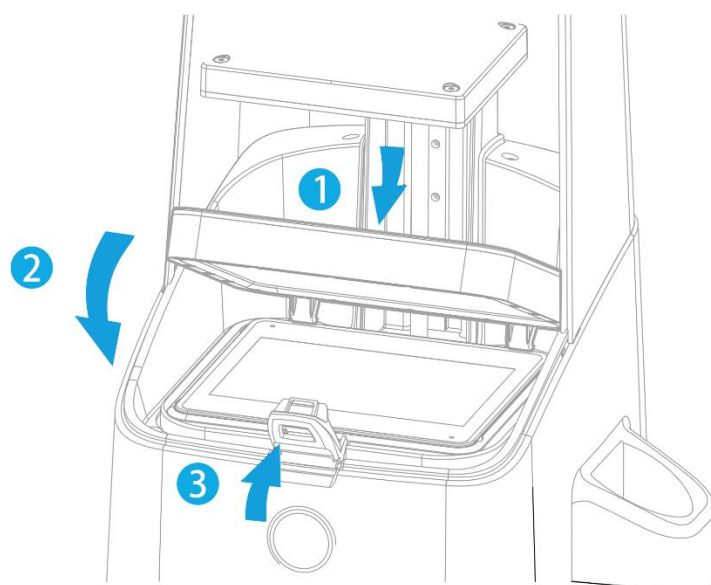
4. Insert Build Platform

1) Keep the metal surface of build platform downward, make sure the locking arm is opened, put the build platform on the arm.

2) Turn the locking arm clockwise to lock the build platform.


5. Insert Resin Cartridge

1)   Remove the cleaning bottle

2)   Remove rigid cap of resin bottle

3)   Inert the resin bottle into the opening, and make sure the needle punctures the rubber cap for appropriate pumping

4)   Pick open one of the vent holes with the provided pricker

5)   Put rigid cap on the opposite side of bottle
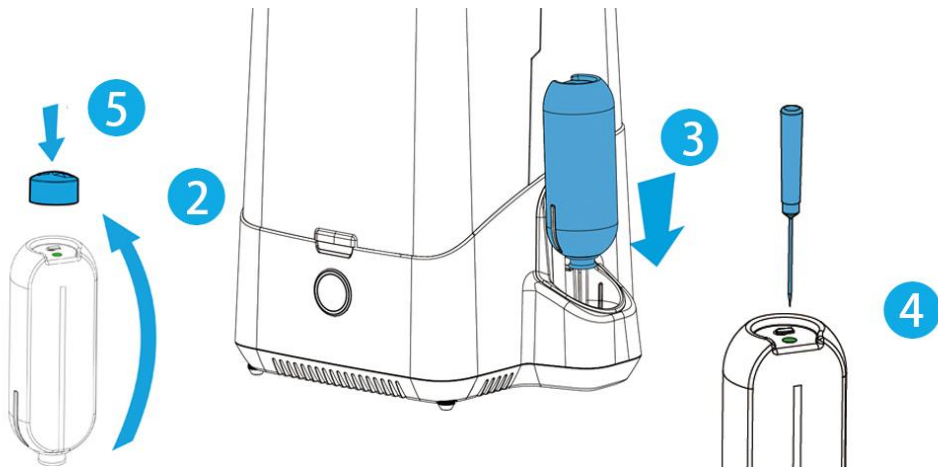
WARNING.Be aware of the needle in the opening, do not touch. Keep the vent hole open when pumping resin, otherwise the resin pumping system may burst inside the printer. Use the provided small rubber stopper to close the vent hole when stocking or changing resin bottle.

6. Install Liquid Level Sensor
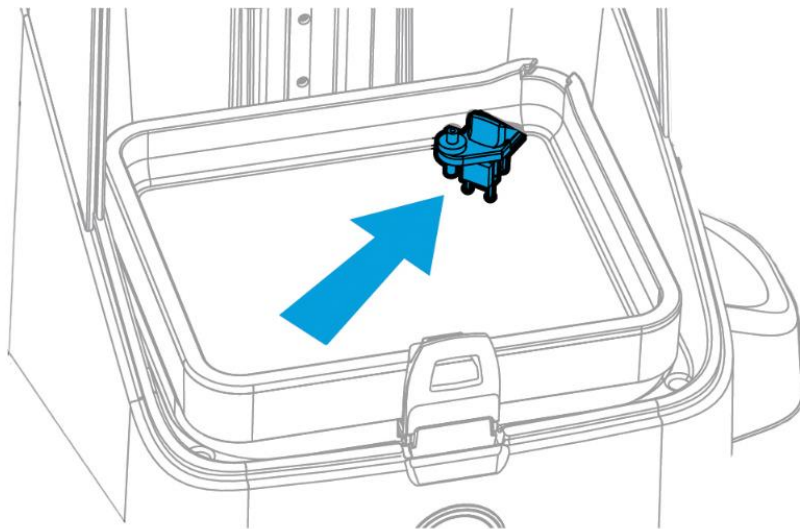
Start a Print

1. Download Uniz

Open the web browser, visiting uniz3d.com/software, download and install the latest version of Uniz software.


uniz3d.com/software

2. Prepare Slice for Print

1) Upload 3D model.

2) Adjust the position of the model.

3) Adjust the angle of the model properly.

4) Add supports.

5) Set up the slicing parameters and start to slice.

6) Select printer to upload slices and start to print
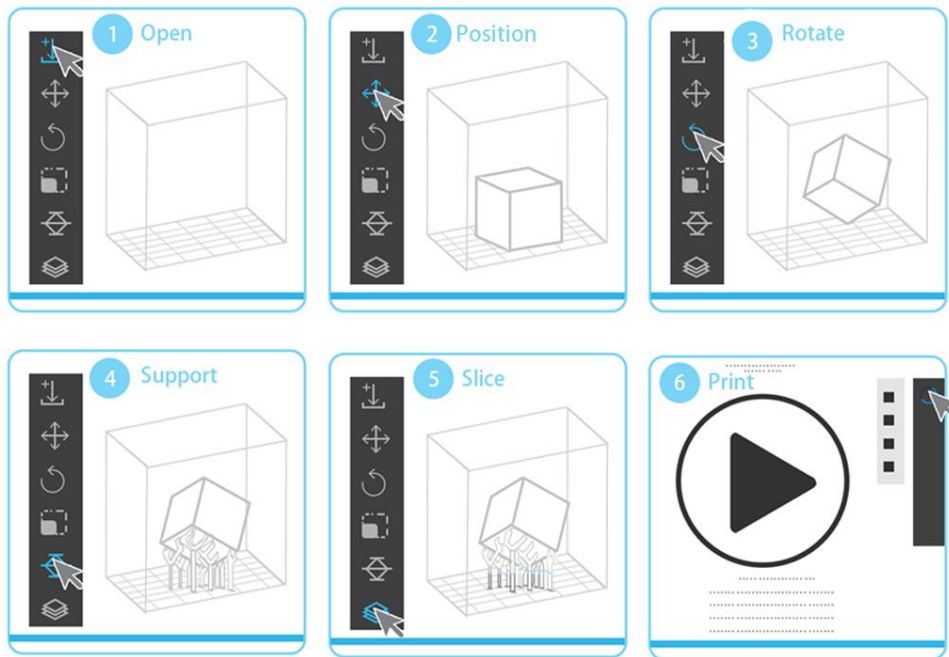
3. Printing Confirmation

The LED ring indicates transmission progress in blue light in the front of the printer when uploading the slices. Once the transmission is completed, the LED ring becomes blinking green and waiting for user confirmation. Touch the main button to start the printing job.
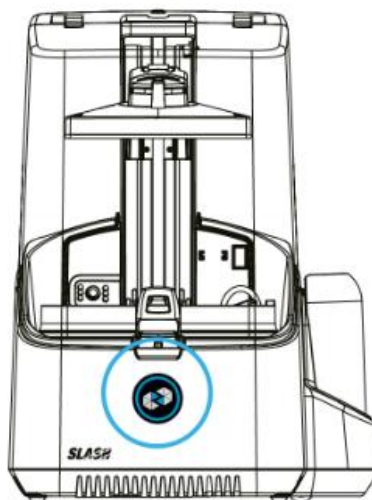

Tips: To check if the resin tank and build platform are installed correctly; to check if the resin tank and build platform has foreign matter; to check if the resin bottle or resin tank has enough resin before printing.

After processing

1. Remove the Build Platform

After printing, take on rubber protective gloves, rotate the locking arm counterclockwise to unlock the build platform, pull out and remove it.
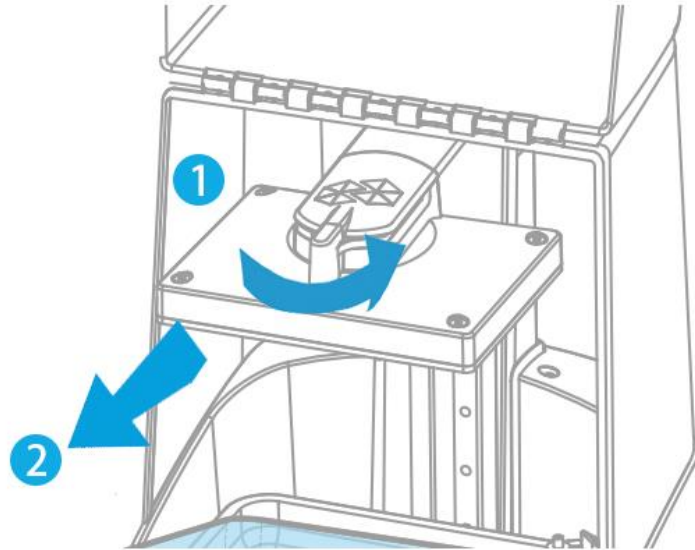
Tips: After removing the build platform, remember to close the top cover to prevent the remaining resin being cured by external light.

2. Wash Your Print

Use tissue to wipe off the remaining resin, rinse the model on the build platform by alcohol, the gap and hole should be cleaned particularly. If possible, use supersonic washing machine to clean.

3. Finish Your Print

1) Remove the models.

   Use a shovel to remove the models

2) Cut off supports.

   Use clip or scissors to cut off the supports.
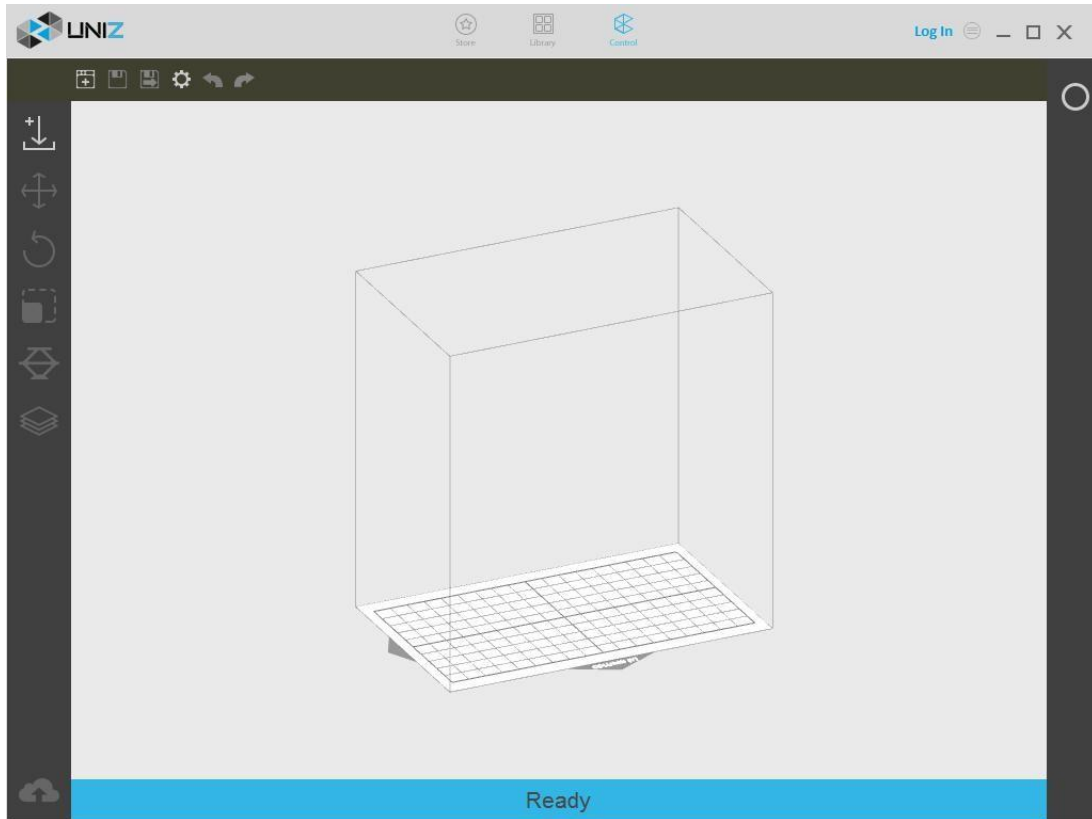
3) Post-processing

   Use sandpaper to polish the supports' contacting points; smooth the tough surface; leave the model under UV light or sunlight to make it fully cured.

C UNIZ SOFTWARE USER MANUAL

1. Software Interface

Open Uniz Desktop and click Control button to show the 3D model viewer.

1.1 3D Viewer
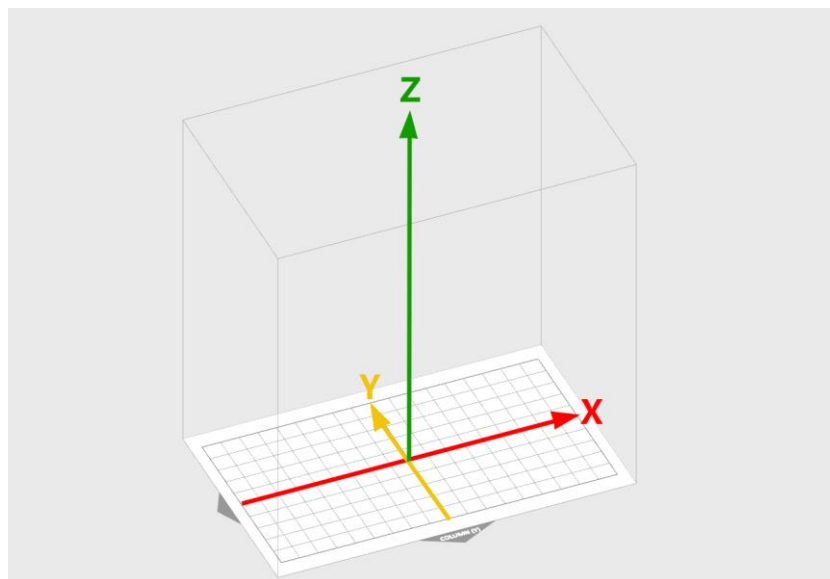
1.2 Main Tools
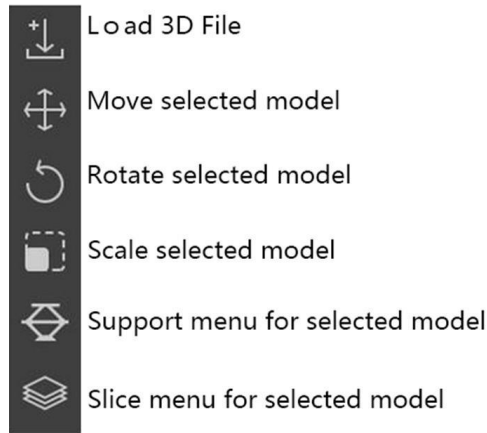
1.3 Additional Tools

1.4 Printer Control

The Printer Control icon will not be present until your printer is connected to your computer. Once connected, click on the Printer Control button to control the printer. When multiple printers are connected, multiple icons will show up to control the corresponding printers.

1.5 Status Bar

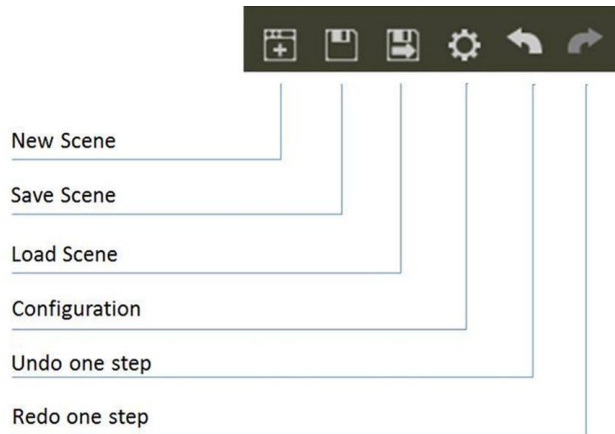The status bar appears along the lower edge of the window and shows software progress, such as the loading, generating support, and slicing progresses.

Loading: 58%

2. Start Your First Printing Job

Once the printer hardware is set up, make sure the power is plugged in and printer is turned on, and connected to your computer via USB.

2.1 Load 3D Model

To load one or more 3D models, you may either drag-and-drop into the 3D viewer, click Load File Button from the Main Tools, or double click on the file directly (if Uniz Desktop is set as default software to open such file format). File format supported: STL, OBJ, AMF, 3MF and UNIZ.

Tips: If the model happens to be defective, it is recommended to repair it with Microsoft/Netfabb or Materialize/Magics, or other third party tools before further processing. You may also choose to ignore the error warning, however, the slices may be erroneous.

UNIZ file does not support multiple load in parallel.

The model file limit with this application is 180MB.

2.2 Select Object(s)

Clicking left mouse button on an object to activate it for further operations. Drag the pointer across objects to select multiple objects. The activated objects will turn blue once selected.

2.3 Change View

Viewing your model from preferred angle will benefit model positioning. To rotate the view, right click and drag around the activated object. To pan, hold the shift key and click-drag with right mouse or holding scroll wheel and move mouse around. To zoom in or out, use the scroll wheel.

2.4 Change Position

Pressing the Move Button will open following sub menu
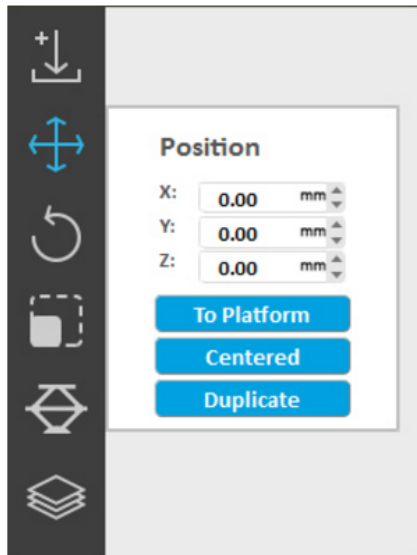
- By holding the left mouse button on the object and moving the mouse you are able to move the object free in the X-Y plane.If the Shift key is holding down the object will be moved up and down along the Z-axis.
- The activated object can be moved by putting in the X/Y/Z values in the field.Press Enter make the changes active.

- Bring active part in contact with platform.
- Center active part on platform.
- Duplicate active part.

- Once the Position tab is open, hold the left mouse button on the object and move the mouse to move the object freely in the X-Y plane. If the Shift key is held down, the object will be moved up and down along the Z-axis instead.

- The activated object can also be moved by inputting X/Y/Z values in the field, press Enter to apply changes.

- Bring active part in contact with platform.

- Center active part on platform.

- Duplicate active part.
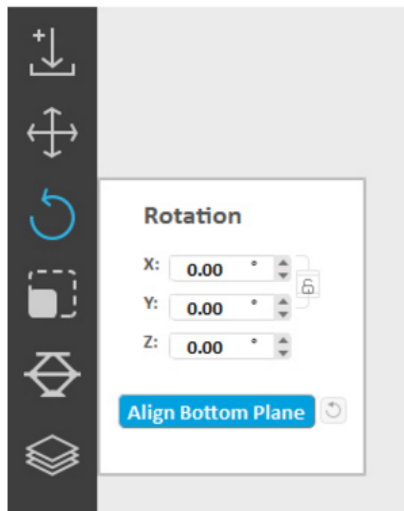
Tips: Make sure the models are distributed evenly on build platform.

Un-balanced forces on the build platform may result in inferior precision or cracking.

Once supports are attached to a model, its Z-position cannot be modified anymore.

2.5 Change Orientation

Press the Rotate Button on the main tools will open following sub menu.

- By holding the left mouse button on the object and moving the mouse you are able to free rotate the object around the X- or Y-axis in Unlock XY, and around the Z-axis in Lock XY.

- The activated object can be rotated by putting in the X/Y/Z values in the field.Press Enter make the changes active.

- Press"Align Bottom Plane"button to align the activated object to bottom plane

- Click the Reset button ⟳ to restore the activated object to the original direction.

- Once the Rotation tab is open, hold the left mouse button on the object and move the mouse to freely rotate the object around the X- or Y-axis in Unlock XY, and around the Z-axis in Lock XY.

- The activated object can also be rotated by inputting X/Y/Z values in the field. Press Enter to apply changes.

- Press 'To Align Bottom Plane' button to align the selected plane to the bottom of build platform.

- Click the Reset button to restore the activated object to the original status.

Tips: Large Flat surfaces or Long Straight line with supports may be printed at oblique angle of at least 10º to the build platform for higher success rate.

The forces during peeling may distort the extremely thin layer of a flat surface or a line mounted on the support structures if printed horizontally.
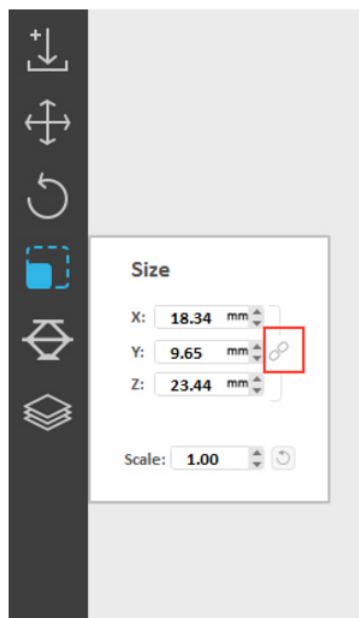
If a planar surface or thin line is oriented at an oblique angle, there is only little overhang for each new layer.

Thin-walled parts occupy significant less area in a slice when printed at an oblique angle.
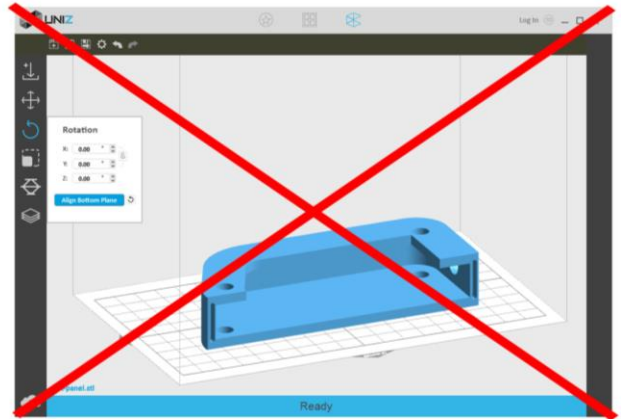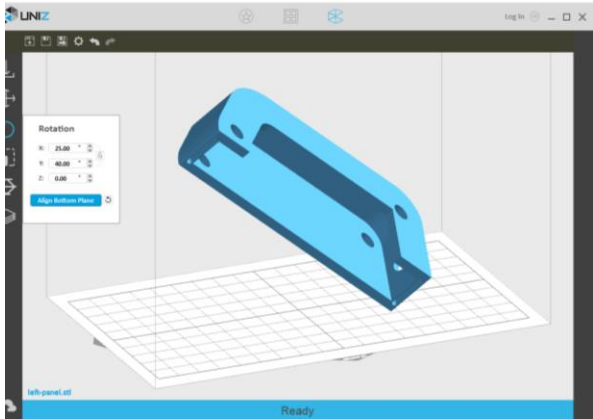
2.6 Change Size

Press the Size Button on the main tools will open following sub menu.

- The activated object can be scaled free by holding the left mouse button on the object and moving the mouse.

- The activated object can be scaled by putting in the X/Y/Z values in the field.Press Enter make the changes active. The object will scale uniform in Uniform Scaling mode.And in Non-uniform Scaling mode it will scale for every axis without effecting the other axis.

- If you prefer to scale to a fixed ratio put value in the Scale.
- Click the Reset button to restore the activated object to the original size.

Once the Size tab is open, the activated object can be scaled freely by holding the left mouse button on the object and moving the mouse.

The activated object can also be scaled by inputting X/Y/Z values in the field. Press Enter to apply changes. The object will scale uniform in Uniform Scaling mode. And in Non-uniform Scaling mode it will scale for each axis without affecting the other axes.

If you prefer to scale to a fixed ratio put value in the Scale.

Click the Reset button to restore the activated object to the original size.

Tips: Change object's size will break generated supports.

Note that Change size by modify scale value do not support multi-select.

2.7 Generate Supports

Most models need additional support structures to print successfully, especially those with overhangs. Press the Supports Button on the main tools to open the Supports sub menu.
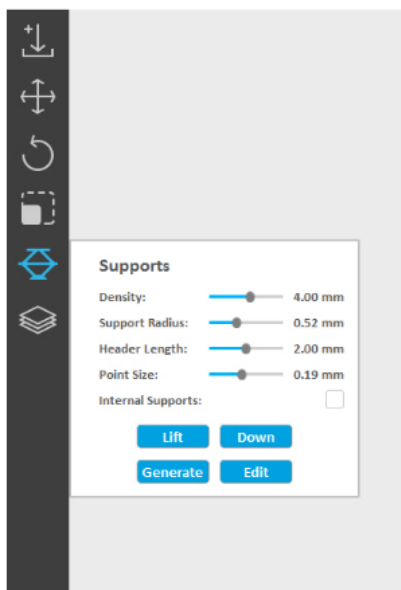
- Density defines a radius within this radius no other support structures will build
- Support Radius is setting the radius of the pillar of the support
- Head length defines the length between straight support pillar and angled pillar to the object(point)
- Point Size defines the diameter of the touching support material with the object
- Internal Supports, checking this box will generate supports inside your model, to shore up overhangs. Without internal supports, the overhangs of the model may fail in print.

Once the Supports tab is open, supports can be added to the active object by pressing the Generate button. Support parameters can be adjusted using Density, Support Radius, Head Length, and Point Size sliders.

Spacing defines the closest distance between two adjacent supports.

Support Radius defines the radius of the support pillar.

Head Length defines the length between the straight support pillar and angled pillar to the object (point)

Point Size defines the diameter of the touching point on the object.

Internal Supports, checking this box will generate supports inside the model to shore up overhangs. Without internal supports, the overhangs may fail during print.
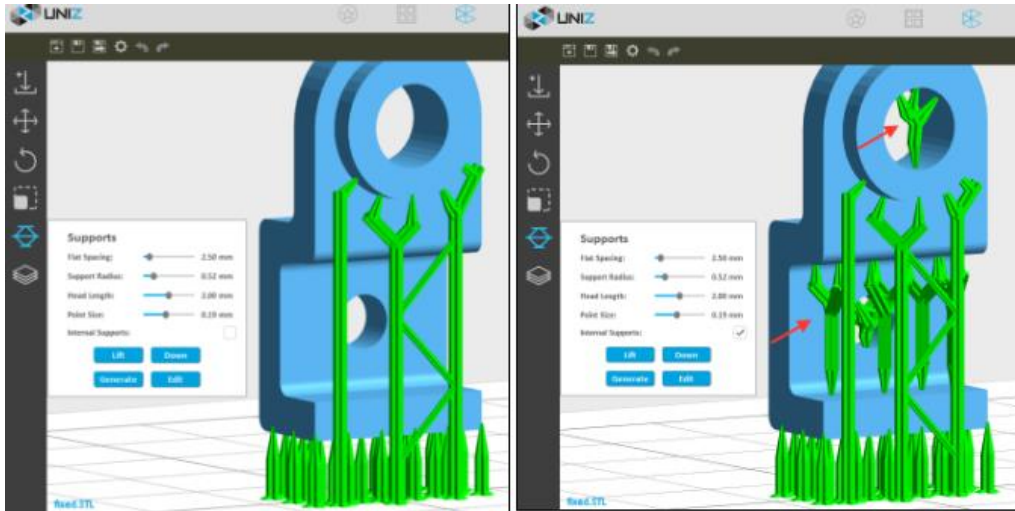
- Lift, lifts the activated object form the build platform up 5mm.

- Down, pushes the activated object down to the build platform.

- Generate, generates the support structure using the current settings for all selected models.

- Edit, allow manually add, modify, or delete support structures.

  ·**Entry/Exit Manual Edit**

  Press the Edit button, the system entry manual edit support mode. Whether the model is selected or not, you can edit supports manually. Click the Edit button again, the system will return to automatic support mode.

  ·**Add Support**

  Trace mouse cursor over the model, when your cursor appears as a green line, clicking on the surface of the model to add a support. If the cursor appears as a red line, it means there is no need to add a support.

  ·**Modify Support**

  Click on the surface of the support, it will be highlighted to indicate that it is being selected.

  Once selected, you can drag and drop it to target location. If the support turn red while moving, the current location is not recommended.

You can also change the Support Radius, Header Length, or Point Size sliders to modify support properties.

· Delete Support

Once a support is selected, press "DELETE" key to remove it.

Tips: The Lift, Down, Generate buttons are only enable when a model is being selected and activated.
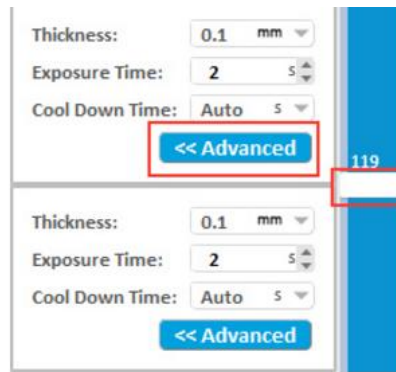
2.8 Slice

Press the Slice Button on the main tools will open two sub menus, the left menu is to start Slice and Show Slices, and the right drag bar and menu is for customization of slice profile.
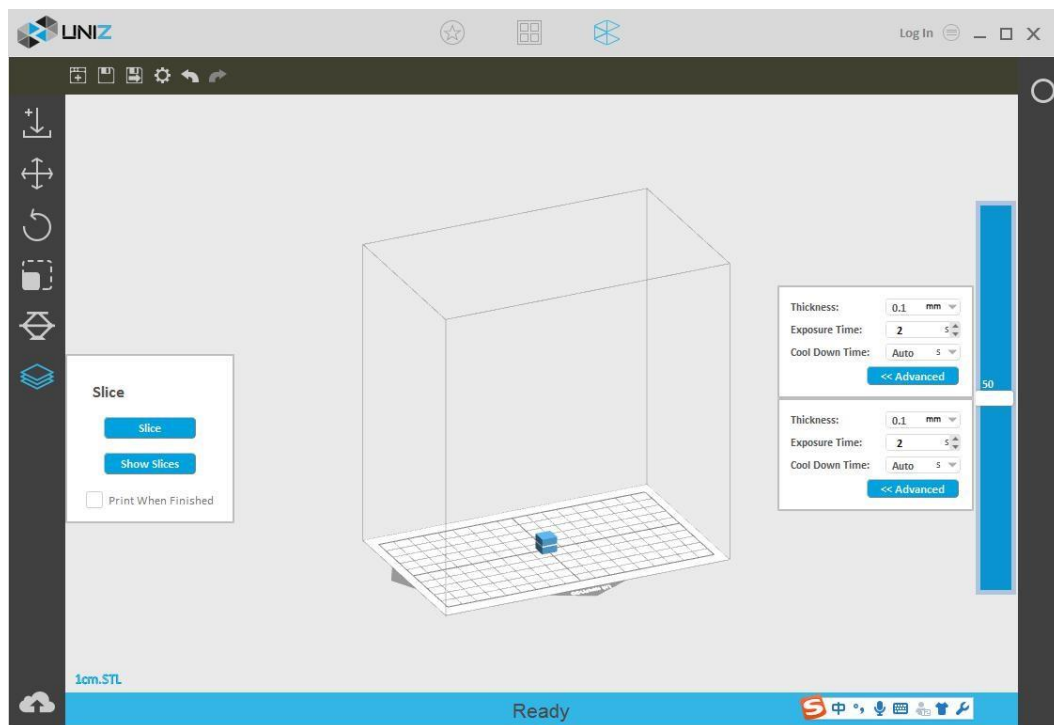

a. Slice Parameters
This is customize the slice parameters of each segment of a model.

- Thickness is the layer thickness, which is related to Z resolution.

- Exposure Time is the exposure time of a layer in this segment, it may vary due to different layer thickness setting or different resin types, i.e. zWax resin takes about 2x exposure time per layer compare to zABS.

- Cool Down Time is the time to cool down the exposed layer to protect the polymer film from overheating. For sustained low peel force and prolonged film life, it is recommended to keep the film temperature below 50deg C. Overheating will cause the film to warp, delaminate, or even break.

Tips: Avoid exposing the same spot or area over and over, try to orient the model's walls or pillars in oblique angle so the exposure area changes every next layer.

Pressing the "Advanced" Button will open following sub menu
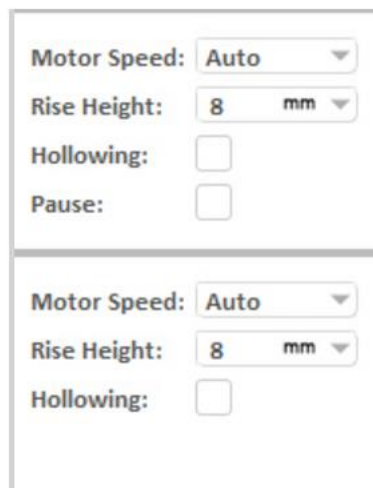
- Motor Speed defines the speed of electric motor that controls the peel motion of the platform.

- Rise Height defines the travel height of the peel motion.

- Hollowing hollows segment of the object. The Wall Thickness can be changed at Wall Thickness of Hollowing in Advanced Setting. This works only with simple slice geometries, and the object must be thicker than twice the Wall Thickness.

- Pause sets a pre-set pause at the layer of choice during printing, the pause can be resumed after pressing the Resume button in the printing control tab.

b. Customize Your Own Z Resolution

Dividing the model into multiple segments and define different slice parameters, Z resolution customization can be used to balance print speed and surface quality.

Click the block on the slider bar to start customizing print parameters. The white line shows the division layer of the two adjacent segments. The upper menu sets the segment above the division, and the lower menu sets the segment below. You may drag the slider block to change the division location or double click on blank space on the slider bar to add another division layer. Press Delete key when dragging the slider block to erase the division layer. The last division layer cannot be deleted.

c. Slice Tools

Click Slice Button to slice all models on the build platform with the defined parameters. The estimated print information will show in the status bar.

Estimated Time 00:12:40   Volume 17.20mL   Layers 57

Click Show Slices Button to check slice of any sliced layer.

If Print When Finished is checked, the sliced data will be sent to the selected printer in the right bar automatically, you still need to touch the front button on the printer to confirm the print job to start printing.
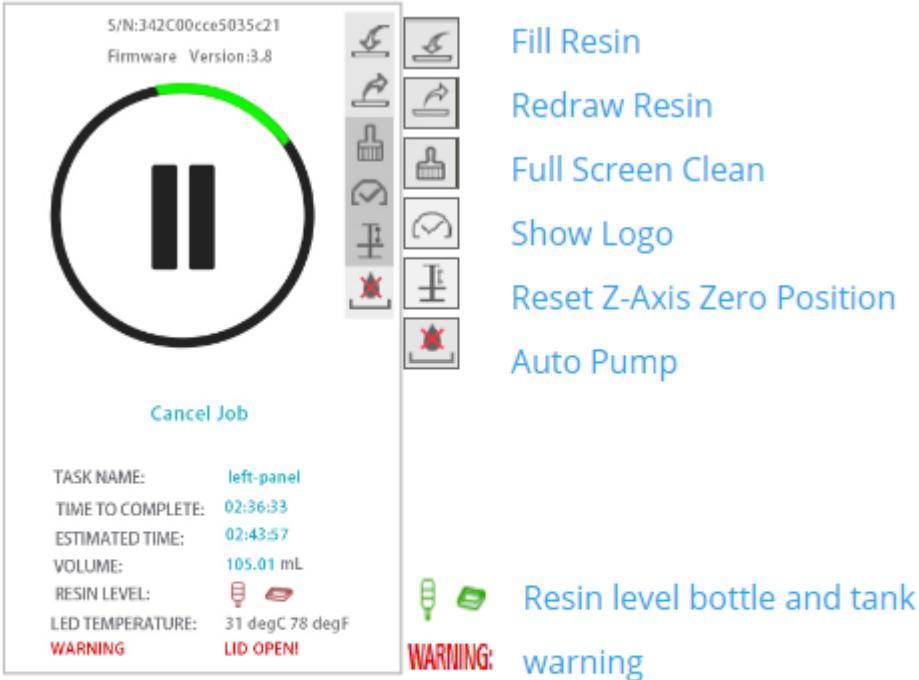
Tips: 'Print When Finished' will only be enabled when a printer is connected, the corresponding Printer Control Panel is open, and the printer is in ready status.

2.9 PRINT

Once a printer is connected to your computer, a circle button will show up on the right toolbar.

a. Print Tools

Press the printer icon ⭕ to open the Printer Control Panel 🔵.The Printer Control Panel is used to control the printer for printing and regular maintenance. Click the circle again to close the Panel.

Fill Resin

Redraw Resin

Full Screen Clean

Show Logo

Reset Z-Axis Zero Position

Auto Pump

Resin level bottle and tank

WARNING: warning

Print process control button

Cancel job button

Start Job: Click Start Button ▶, the system will send the current slice data to printer and start printing.

Pause Job: Click Pause ⏸ to suspend a printing job.

Resume Job: Click Resume to resume a paused printing job.

Cancel Job: Click Cancel Job to cancel the current printing job.

Fill Resin: Click Fill ⛏ to start pumping resin from the bottle into the tank. Click again to stop.

Redraw Resin: Click Redraw ✐ to start redrawing resin from the tank back into the bottle. Click again to stop.

Full Screen Clean: Click Clean 🖌 to expose the entire screen in order to fully cure and clean the resin at the bottom of the tank. Debris from previous jobs may damage the LCD screen in the next job. The Clean function will form an entire resin film entrapping the debris from previous jobs. Once the resin film is removed, the resin tank is clean and ready for the next print job.

TIPS: It is recommended to check the bottom of resin tank before every print job. When there are debris either floating in the resin or sticking on the bottom of vat, they may damage the LCD. DO NOT remove the resin tank during cleaning exposure. After exposure, however, you may lift the resin tank to remove the cured resin film.

Show Logo: Show Logo is used to verify if the LCD screen is functional. Before using this function, please remove the build platform and resin tank, then click Show Logo Button to show UNIZ logo on the LCD screen to test communication and LCD screen.

Reset Z-Axis Zero Position: Reset Z-axis Zero Position ⊥ is used to reset the zero of Z axis. Please remove the resin tank and wipe clean the build platform before using this function. On the popup box, click Yes Button, then push the build platform down manually to touch the LCD screen, then click Yes Button again, the platform will rise back to the upper position and finishes the process.

Auto Pump: Click Auto Pump Button to turn on 🔵/off 🔴 automatic pumping. If resin level is too low in the tank and 'Auto Pump' is on, the printer will pump resin from the bottle into the tank automatically.

b. Print Process

Send Data to Printer: Click Start Button ▶ to send current slice to this printer.

Complete File Transfer: Once you click Start, Uniz Desktop's progress bar and the printer's front LED circle button will indicate the file transfer progress.
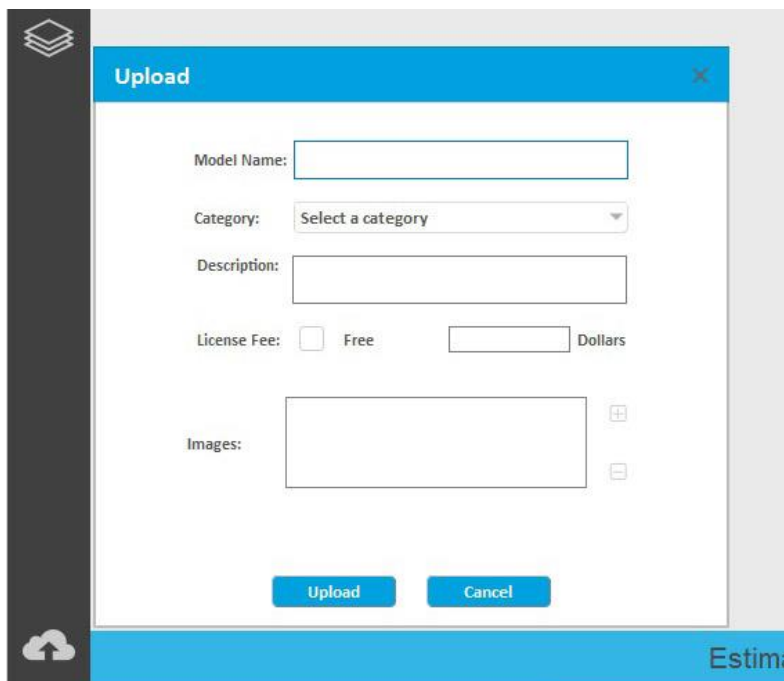
Confirm Print Job: Make sure that your printer is ready to print and then touch the printer's front LED circle button to confirm print job.

WARNING Before final confirmation, please make sure the build platform, resin tank, and resin bottle are installed. Make sure the build platform and resin tank are clear of debris. Make sure the resin level sensor is properly installed.

After confirmation, you may disconnect your computer from the printer.

3.0 Upload Slice (Optional)

If you want to share your print in Uniz Cloud, press the Upload Button on the main tools to open following sub menu.

3. Additional Tools

New Scene The current scene will be discarded, and a new scene will be created.
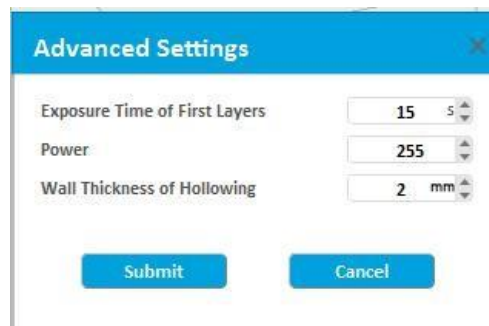
Save Scene Save the current scene in UNIZ file format which include 3D model data, support structures, operation history (translation, orientation, scaling), and slice profile. You can load any saved scene and resume editing at a later time.

Save Scene as Save current scene to another .UNIZ file.

Undo Operation Repeal one previous operation.

Redo Operation Remake one previous operation repealed by "Undo".

Advanced Setting

Exposure Time of First Layers sets exposure time of first 3 layers, which is usually longer than other layers to ensure good adhesion between the platform and the first few layers, 15 seconds is suggested.

LED Power sets the power of the LEDS and will affect curing time of each layer. This may be adjusted according to the current print A value between 150 to 250 is suggested. A light meter and the Show Logo function may be used together to calibrate the light intensity. Typical light output intensity on the screen is 5000 to 6000 lux on 'white' area.

Wall thickness of Hollowing sets the shell thickness of parts being hollowed.

D TROUBLESHOOTING

Problems	Reason	Solutions
1. The first layer does not stick	The calibration for platform initial point is not in place	Calibrate again
	Build platform surface is not rough	Use provided sandpaper to roughen the surface of the build platform and clean up
2. Printed model fault / layered	The suction force between the resin tank film and models is too strong	Replace a new resin tank if you have， Remove the resin tank, clean the LCD panel and the resin tank film toward the panel, firstly wipe them with alcohol, and then wipe them with a dry paper towel. (Please note only touch the glass part of the screen, to avoid touching the black tape area) Increase cooling time properly
	Insufficient adhesion between printed layers	Increase exposure time properly

3. Abnormal LCD panel, It does not display or flash the logo, display differently on the left and right side of the panel under the show logo function	The LCD cable is not inserted properly	Follow the guidance to re-insert the LCD cable
	The screen is damaged	Follow the guidance to replace the LCD panel
4. Printed model has the problem of bad strip modeling	A row of lights is damaged on the LED light board	Return to the factory to repair
5. Printed model has thin strip or a defect that is granular and unformed	Black spot or black bar appears on the screen	Follow the guidance to replace the LCD panel
	The tension of the resin tank film is not strong	Replace a new resin tank
6. There are wavy lines on the XY plane	Resin tank film has rippled effect	Replace a new resin tank，and increase the cooling time properly for next printing

7. The surface of the screen has liquid or solid resin residue	At the beginning of the printing, there is solid resin residue on the build platform surface that causes damage to the resin tank film	Replace a new resin tank and clean the residual resin on the screen
8. The resin leaks on the right side of the printer	Used resin bottle with old seal solution	Clean up the residual resin follow the guidance, and replace a new resin bottle with new seal solution
	The air-bleed hole has not been pierced on the top of the resin bottle	To pierce any of the holes on the top of the resin bottle by the provided cone
9. There is excess printed part molding, It appears light leakage outside the screen display area when you remove the resin tank and click on show logo	Shading tape is damaged and leads to light leakage	Buy a shading tape, cut the tape and then cover it

| 10. Printed model has ripples on the side	Z axis shaking	Return to the factory to repair
11. Oily liquid exuded at the seams area in the front of the label at the bottom of the machine, and the level of the liquid in the coolant tank is significantly reduced	The cooling system is broken	Return to the factory to repair
12. In the first few layers of the printing, there is a strange noise when the build platform lift up, and the build platform is not able to lift up normally	The motor out-of-step	Slow down the motor speed when setting the parameters
13. There is a big difference in size around the printed model for the first few layers, exceed 1mm	The bottom of the build platform and the LCD panel are not parallel	For SLASH, adjust the build platform according to the tutorial video For SLASH+, adjust the build platform according to the guide book

E MAINTENANCE MANUAL

1. Before using the printer, please be aware to adjust the 4 adjusting screws at the bottom of the printer to ensure that the build platform is leveled.

2. Please be aware to check if the LCD panel stick together with the resin tank film when you use the printer. The area stick closely together, as circled below, is darker than the area without sticking.
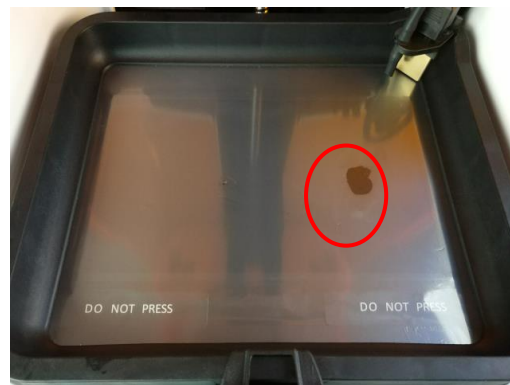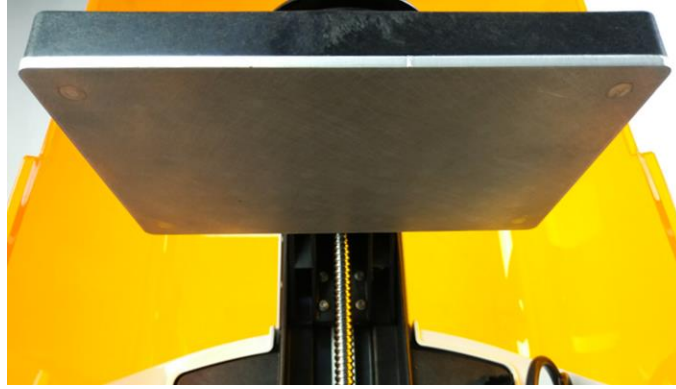

Normal	Abnormal

3. Please make sure the build platform surface and the inside of resin tank are clean and free of residue before printing in order to prevent LCD panel damage;

4. Please keep the build platform surface clean and wipe off the residual resin timely;

5. Please keep the casing of the printer clean and wipe off the residual resin timely;

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6. Do not scratch the "DO NOT PRESS" area on the LCD panel when scraping the resin tank to prevent LCD panel damage.

7. Clean the residual resin after removing the resin level sensor from the resin tank;

8. Do not touch the main button by your hand with residual resin;

9. It is suggested to use the resin tank cover to store resin in the tank.

10. If the machine is not used for a long time after using the resin level control system, please clean the resin injection conduit by ethyl alcohol from the CLEAN bottle;

1. Plug the cap in air-bleed hole on the top of resin bottle;
2. Pull up the resin bottle and put it flat on table;
3. Take down the cap of CLEAN bottle;
4. Insert the CLEAN bottle downward in the resin bottle holder;
5. Use the awl to pierce an air-bleed hole on the top of resin bottle;
6. Change a new resin tank and click on "FILL" button in the software control interface, cleaning the resin level control system conduit by ethyl alcohol from the CLEAN bottle, click on "FILL" again to stop washing;
7. Plug the cap in air-bleed hole after cleaning ;
8. Pull up the CLEAN bottle and put it flat on table;
9. Click on "FILL" to clean out the residual ethyl alcohol in the conduit, click on "FILL" again to stop working.