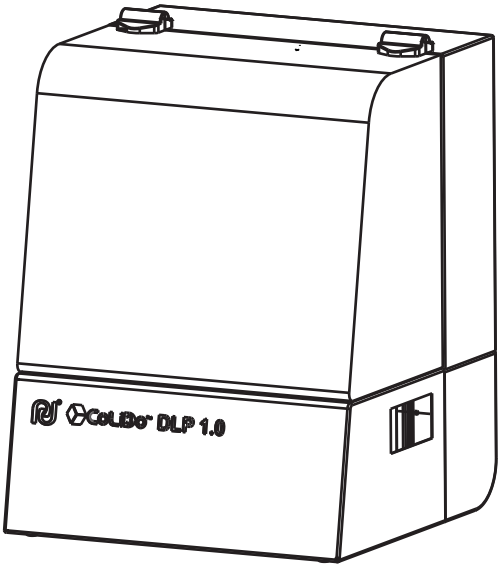
CoLiDo® DLP 1.0
3D Printer

USER MANUAL



* Carefully and thoroughly read this manual before using

View us at *www.colido.com*

Index

Chapter 1 Introduction

This User Manual is designed to start your journey with CoLiDo DLP 3D Printer in the right direction.

In Chapter 1~5, you can learn the basic knowledge of CoLiDo DLP 3D Printer, how to unbox safely, how to setup correctly.
In Chapter 6~10, you can learn how to focus the projector, how to calibrate the platform, how to slice, how to print and troubleshoot.

Welcome you to the world of CoLiDo DLP 3D Printer.

Following this manual will help you fully understand the Printer and make amazing products.

Safety

Please read and follw up the safety warnings in this manual as below.

1. CoLiDo DLP 3D Printer only use the Power Adapter provided by us, or it will cause the safety risk such as the printer damage and even fire harzard.

2. CoLiDo DLP 3D Printer has light radiation because it is using Digital Light Processing technology. Do not look direct at the light long time during printing to avoid the eyes damage because the light intensity of the printer is far more stronger than the one of the visible light. It is better to wear the opaque eye protection.

3. CoLiDo DLP 3D Printer is using liquid photo-resin (Photopolymer) which is chemical material. The material inlcudes many chemical reagent and even the heavy mental ion which has safety harzard. The waste goods or the waste water cannot be dumped or discarded at will as it will contaminant the environment. It need be dealed with by the professional chemical factory.

4. Do not use CoLiDo DLP 3D Printer near the water and expose to sunlight a long time which will damage the printer. The printer operation humidity is 20% ~ 80% and the operation temperature is 15℃~32℃, or it will impact the printing quality.

5. During using CoLiDo DLP 3D Printer and the photo-resin, please wear the latex glooves (owned) and the gas masks (owned) correctly, or even wear the opaque eyes protection and the lab coat to avoid body injury.
If touch the photo-resin , please clean using the hand sanitizer and water. Also, cannot eat food and drink water during printing.

Interference of Radio and Electromagnetism

The Printer has been tested and certified to comply with the restriction of FCC Part 15, which is related to Class B digital facility.
The restriction is designed to provide reasonable protection against harmful interference in residential area when install the Printer. The Printer will generate, apply and radiate Radio Frequency Energy. If the Printer is not installed and used in accordance with the manual, it may cause harmful interference to radio communications. However, there is no warranty to the interference if the Printer is installed in a special environment. If the Printer does cause harmful interference to the receiver of radio or television, which can be determined by turning on and turning off the Printer, the user is suggested to adopt below one or more methods to eliminate the interference:

1. Change the orientation and location of the receiving antenna.
2. Increase the distance between the Printer and the receiving device.
3. Connect the Printer and the receiving device separately with two power sockets in different power supply circuit.
4. Get help from the dealer of the Printer or an experienced radio/ TV technician.

Chapter 3 Specification

Printing

Print Technology: Stereolithography
Construction Dimension: 100*76*150mm
Resolution: 0.05mm
Photo-resin: Photopolymer

Mechanical

Frame: Steel
XYZ Bearing: Steel

Electrical

Storage Temperature: 0 ℃ ~ 32 ℃ [32 ℉~ 90 ℉]
Operating Temperature: 15 ℃ ~ 32 ℃ [60 ℉~ 90 ℉]
Input Voltage: 100V~240V 50/60HZ
Power: 700W
(Projector 600W and Printer 60W)

Dimension

Printer Size: 380*410*520MM
Package Size: 540*500*900MM
Net Weight: 28KG
Gross Weight: 40KG

Software

Software package: EZ dlp control, ezlayout
File Type: .STL, .OBJ, .EDG
Operating System: WINDOWS 7 and above
Connection: USB

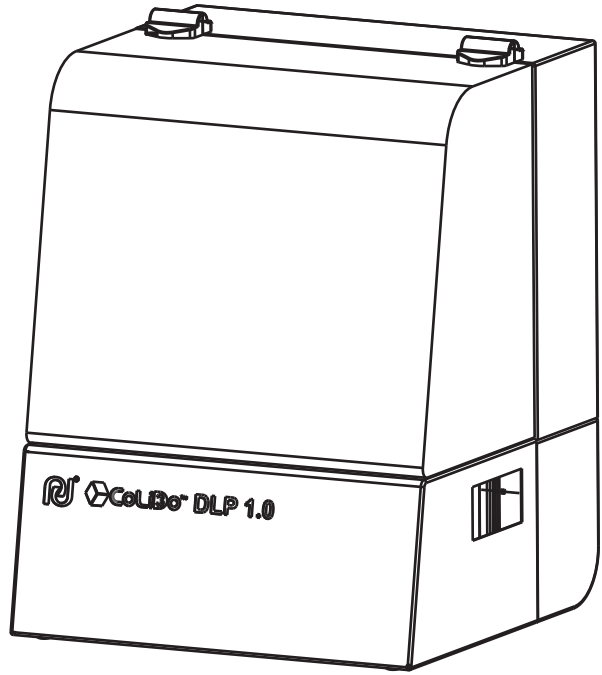
Min System Requirement

PC with 1GHz, or faster,
32-bit (x86) or 64-bit processor
4GB RAM
Screen Resolution: 1024x768

Chapter 4 Print Principle

CoLiDo DLP 3D Printer is Digital Light Processing technology, it is exposing the liquid photo-resin using the projector to creat the solid 3-dimension object layer by layer.

The designed 3D file are converted into CoLiDo printer command through the slice software and sent to CoLiDo printer via USB cable to print through the control software.



Chapter 5 Set up CoLiDo DLP Printer

Before setting up CoLiDo DLP Printer, please note that the Printer has been inspected and packed carefully at the manufacturing facility.

Hope you can take more time to unpack carefully and set it up.

5.1 Unpack CoLiDo DLP Printer

CAUTION: Place CoLiDo DLP printer in the separated room with exhaust system instead of office or home environment.

CAUTION: Heavy CoLiDo Printer, please take care when unpacking.

CAUTION: Do not forcely tear anything when unpack and setup CoLiDo Printer. It may damage the Printer.

1. Place the printer package box on a dry and flat surface when opening.

2. Take out all accessories inside the Printer box.
   Please refer to the Accessory Checklist at next page.
   NOTE: In case there are any missing accessory, kindly email the Printer serial number, name and qty of missed accessory to 3Dsupport@utec.com.mo.

3. CoLiDo Printer is unpacked. Please keep the packing material in good shape. It will be re-used in the future to avoid unnecessary damage during transportation.

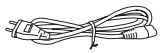
NOTE: Please keep all the packing material such as box and foam in good shape, it must be packed with original package to return the printer when manitenance or repaire to avoid the unnecessary damage during transportation.

5.2 Accessory Checklist

Photo-resin (Photopolymer) ----------

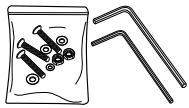
Flash Driver 1pc ----------

Power Cable 2pcs ----------

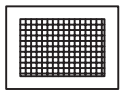


USB Cable 3pcs (with 1pc CD) ----------

Tools 1set ----------



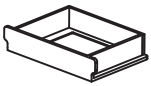
Grid Sheet 1pc ----------



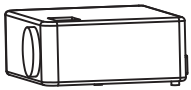
Cleaning Box ----------

Adapter ----------

Container ----------

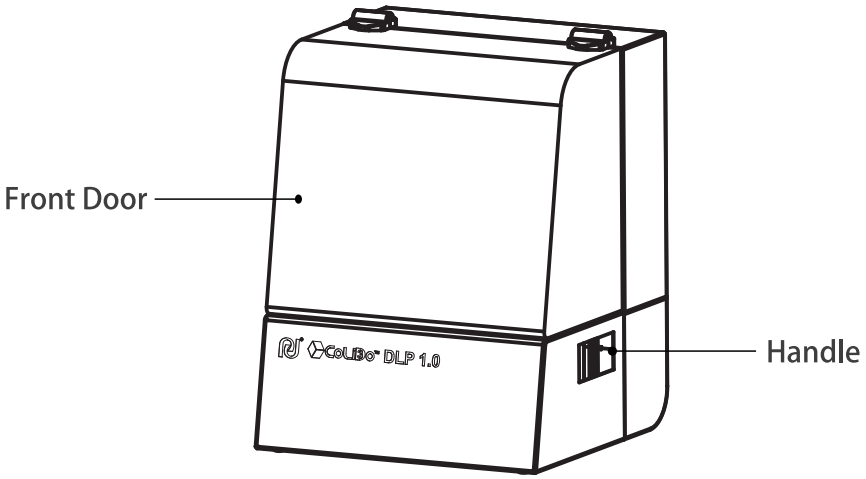


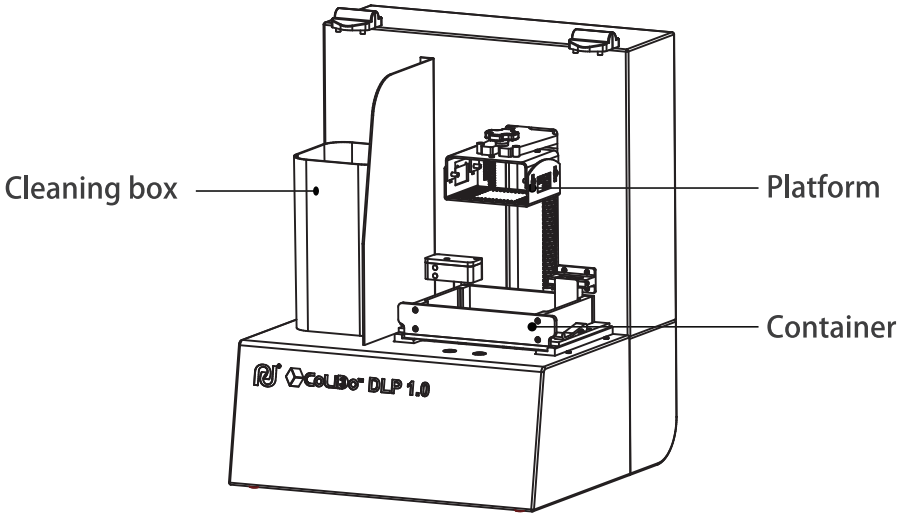
Projector ----------



Platform ----------

5.3 CoLiDo DLP 3D Printer Structure Illustration





5.4.1 Unpack the Projector.

5.4.2 Install the Projector into the drawer of the printer.

Open the drawer at the back of the printer.

Install the Projector to the drawer.

NOTE: The two location pins under the projector bottom need to be inserted into the slot of the drawer.

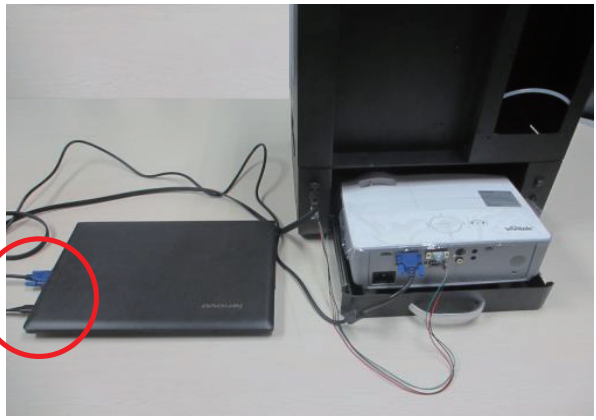
Finish installation.

5.4.3 Connect the Projector to the printer and the computer using USB Cable.

Projector USB Cable 2pcs

Printer USB Cable 1pc

Connect one Projector USB Cable to the projector and the printer “Port 2”.
Connect another Projector USB Cable to the projector and the computer.



Connect printer USB Cable to the printer “Port 1” and the computer.

5.4.4 Connect Power Cable, power on the printer and the projector.

Connect power cable to the projector.

Connect power cable to the adaptor, connect the adaptor to the printer "DC" port.

Plug in the printer and the projector.

NOTE: Make sure the printer switch is at "O" position.

Power on the printer by switching to "I" position.

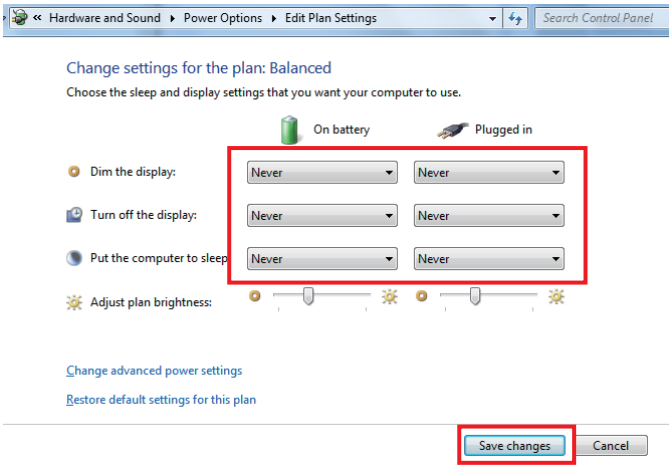
NOTE: The projector is plug in and power on.

5.5 Install Driver and Software

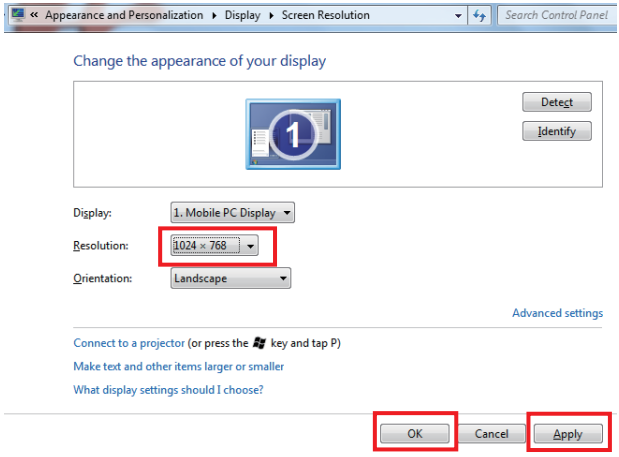
5.5.1 Preparation for computer

1. Change the sleep and display setting.
"Control Panel" - "Hardware and Sound" -" Power Options" -" Edit Plan Settings", select all settings to "Never", then click "Save changes".

NOTE: The computer cannot appear screen saver during printing, or the printing will be stop.

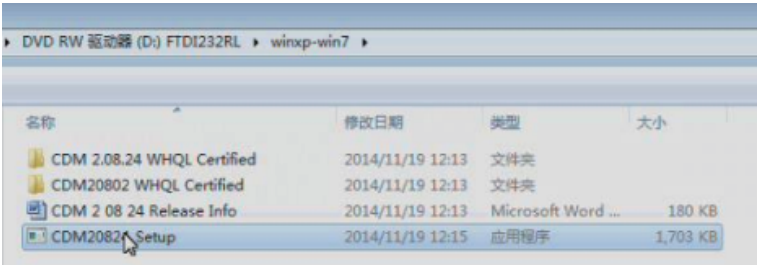


2. Revise the screen resolution. (Must be matched with the projector resolution)
"Control Panel" - "Appearance and Personalization" - "Adjust screen resolution", select the resolution to "1024 x 768", then click "Apply" and "OK".

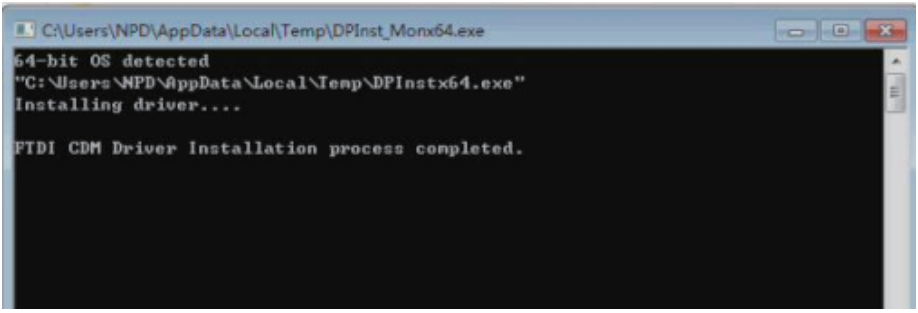


5.5.2 Install Driver

Find the Driver "CDM20824_Setup.exe" in CD, double click to start.

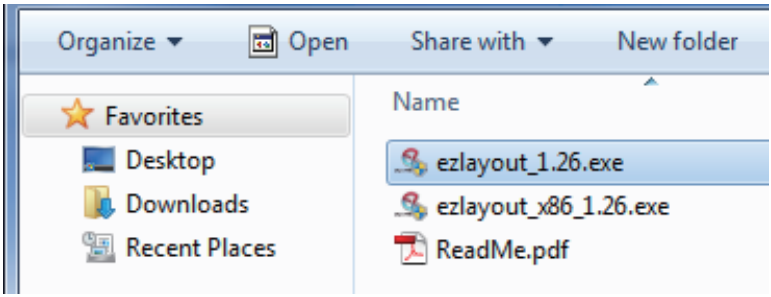


The Driver will be installed in the computer automatically.



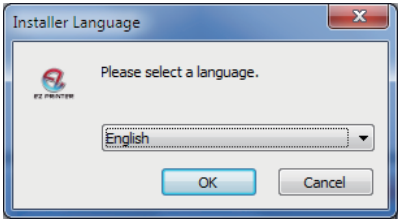
5.5.3 Install Slice Software

Find the slice software "ezlayout_1.26.exe" (use for 64bit operating system) or "ezlayout-x86-1.26.exe" (use for 32bit operating system) in Flash Driver, double click to start.



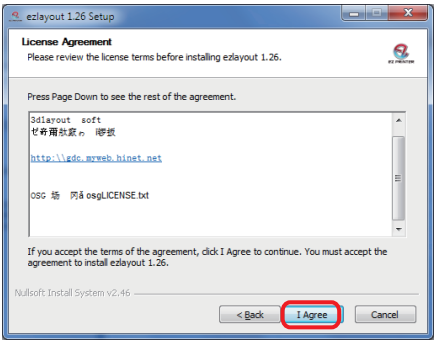
5.5 Install Driver and Software

5.5.2.1 Installing slice software. ((You will be asked “Do you want to allow the following program to make changes to this computer?”, please click “Yes” to continue installation.

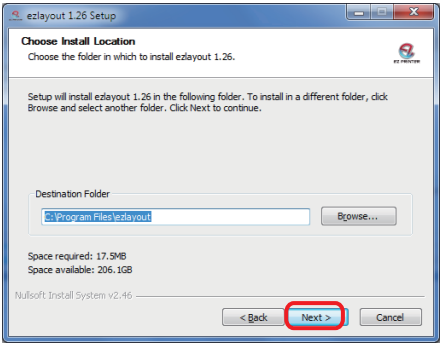


Select the installing language, Click “OK”.

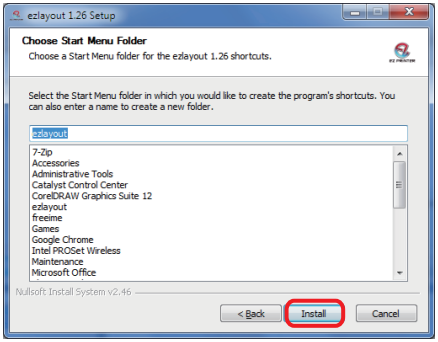
Click “Next”



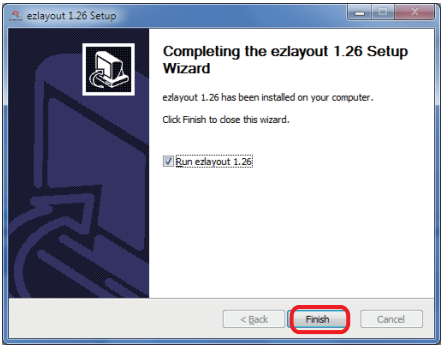
Click “I Agree”



Select a destination to save the slice software, then click “Next”

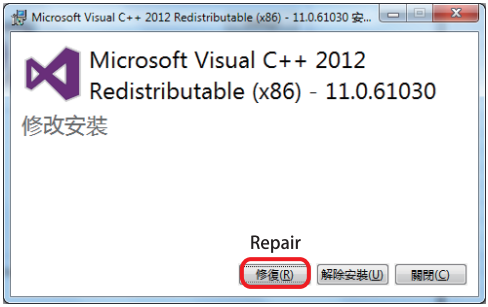


Click “Install”

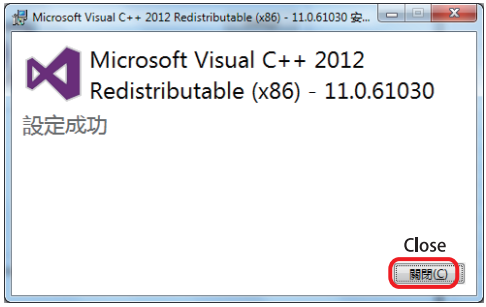


Click “Finish”

5.5 Install Driver and Software



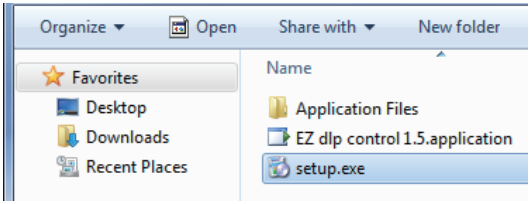
Click “Repair”

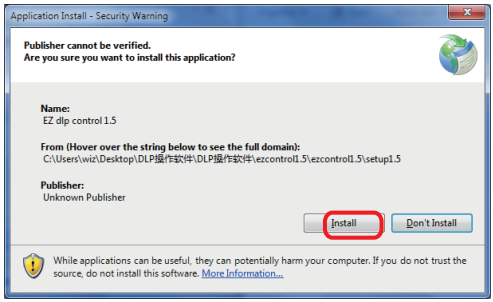


Click “Close”

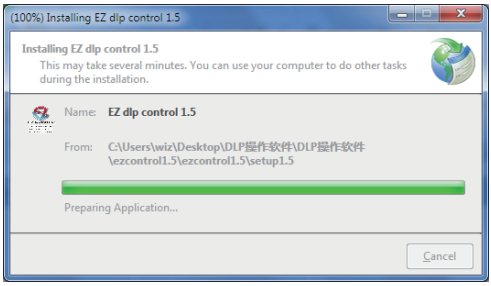
5.5.3 Install control software.

Find the operation software “setup .exe” in Flash Driver, double click to start.





Click “Install”



Installing

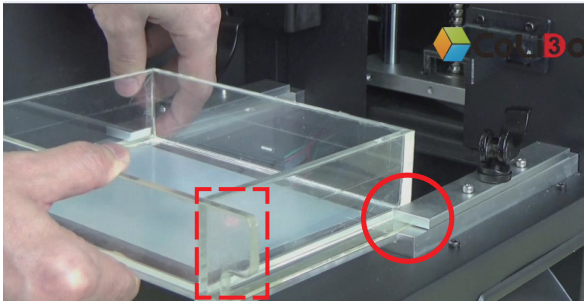
Finish Installation

6.1 Projector Focusing

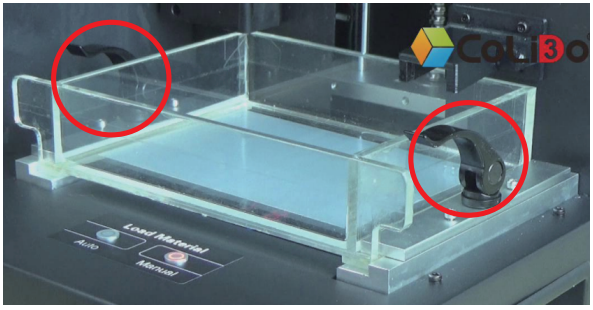
6.1.1 Assemble the cantainer to the printer.

Push the two brims at the bottom of the container to the printer.

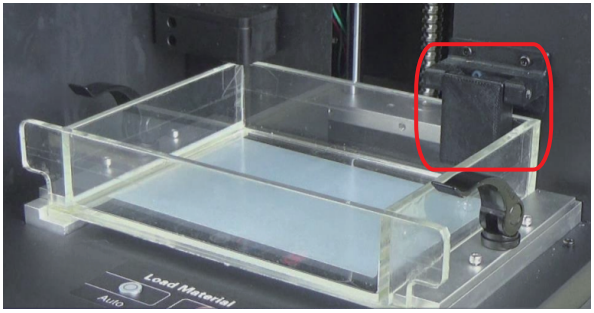
NOTE: The cantainer assembling orientation: The side of container with two longer edges need facing front.



Fix the container by the two holders.



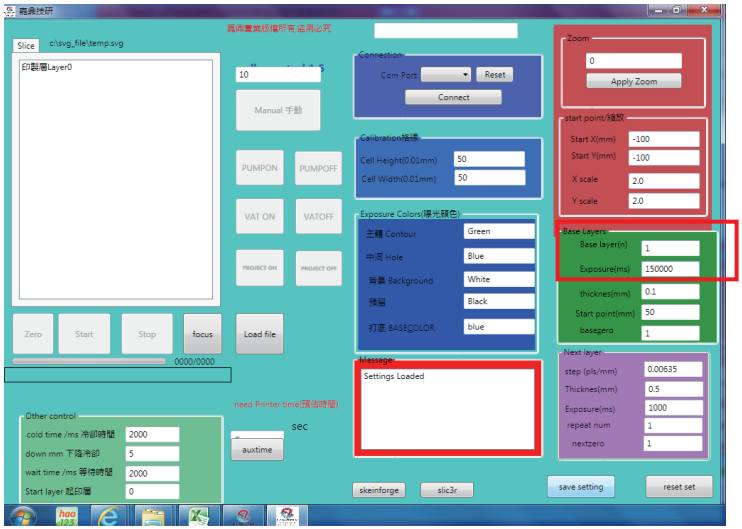
Press down the liquid detector. (IMPORTANT)



6.1 Projector Focusing

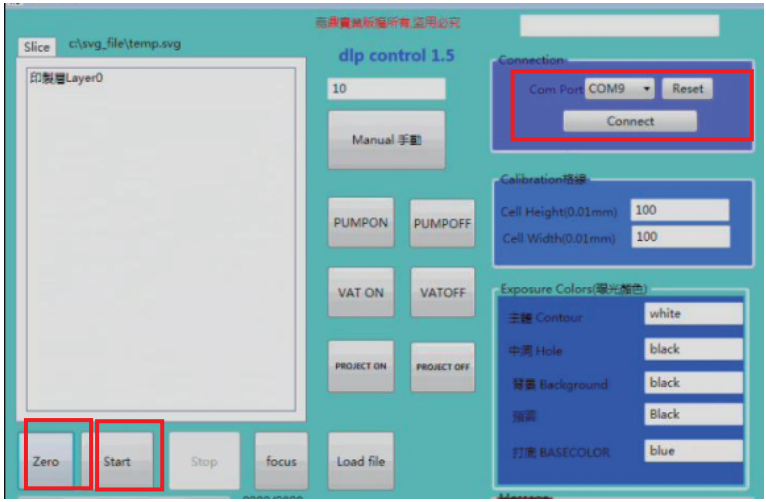
6.1.2 Double click  to open the control software.

6.1.3 Setup “Base Layers”: Base layer(n) 1, Exposure(ms) 150000, click “save setting” to save the settings.

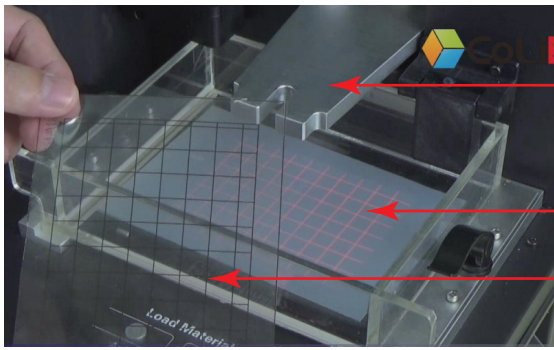


6.1.4 Setup “Connection”: select the printer “Com Port” (click “Reset” to find the correct port), click “Connect”.

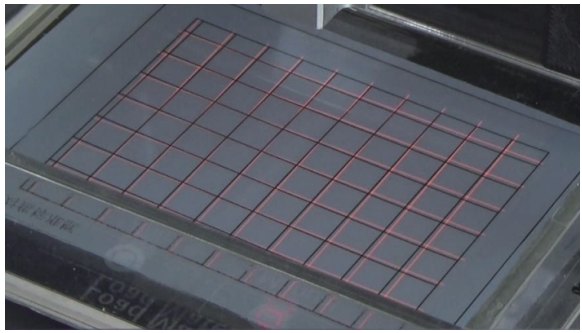
6.1.5 Click “Zero” to autohome the printer, then click “Start”. It will take a few minutes for the projector and the printer to start to work.



6.1.6 When the platform holder of the printer goes down and the projector exposes grid on the container, place the grid sheet on the container to compare with the exposed gird.

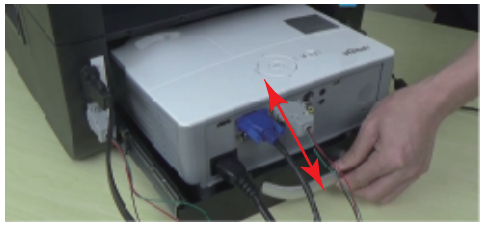


Focusing Standard Condition:
The exposed grid is clear and fully overlap with the grid sheet.

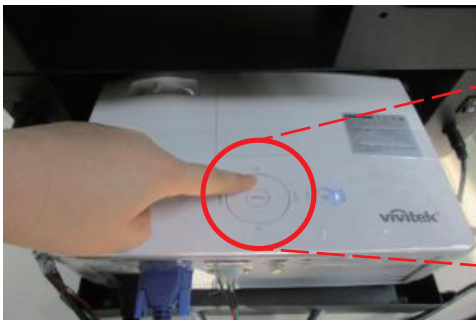


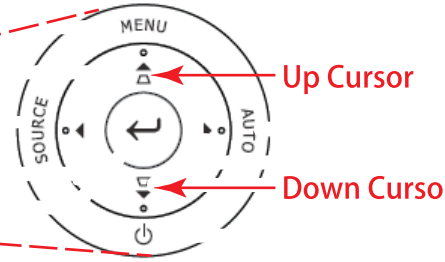
If the Focusing Standard Condition is not met, the projector must be adjusted.

Adjustment 1: Push and pull the drawer of the printer manually and slightly to move the projector frontward or backward.

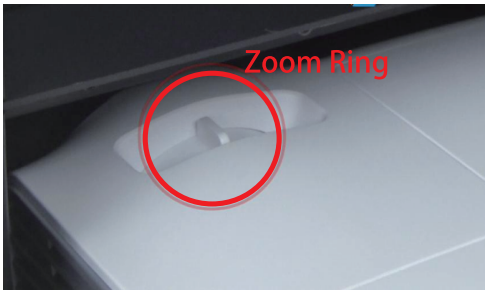


Adjustment 2: Press Up Cursor or Down Cursor, make sure the exposed grid is rectangle instead of trapezoid.





Adjustment 3: Move the "Zoom Ring" of the projector, make sure the exposed grid is clear.



NOTE:

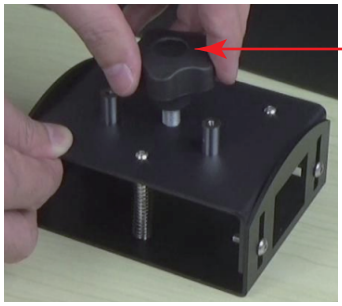
1. The projector lamp is extremely bright. To avoid damage the eyes, do not look the light long time;
2. Do not place the projector and the drawer on an unstable surface;
3. Avoid using the projector near water, in direct sunlight, or near a heating device.
4. Do not place heavy objects such as books or bags on the projector;
5. Keep the projector away from fluorescent lamp to avoid mulfunction caused by IR interference.

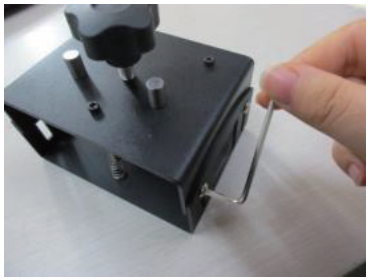
6.1.7 Once the projector focusing is ok, remove the grid sheet.

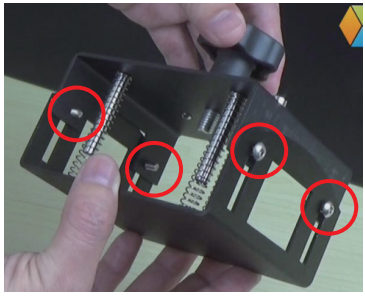
6.2 Platform Calibration

6.2.1 Assemble the Platform to the printer.

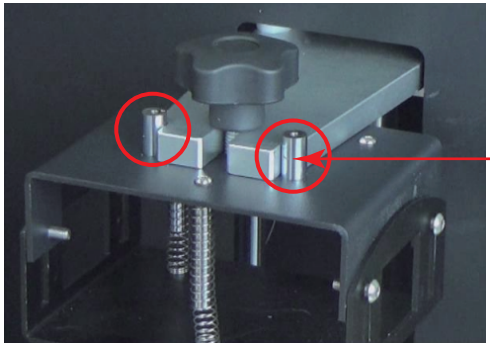
Loosening the top knob of the platform, loosening the 4 screws using the Allen Key such the bottom of the platform can move up or down.





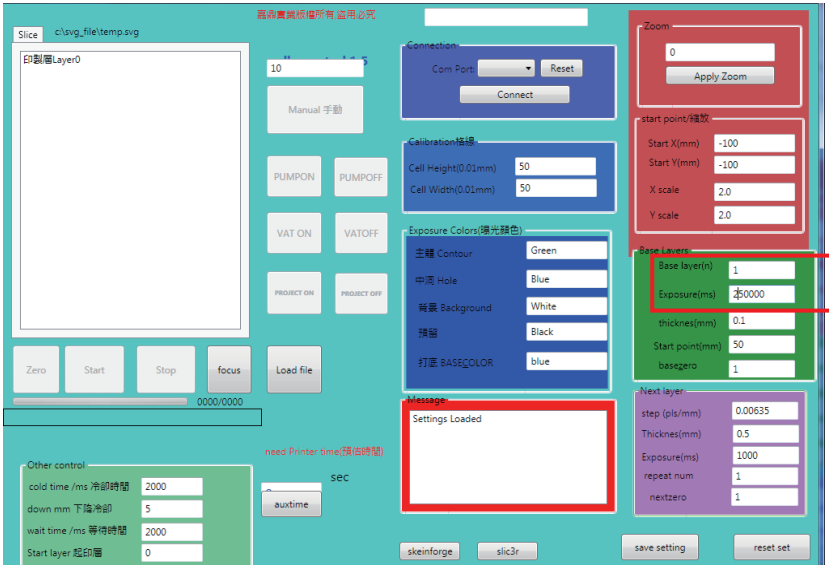


Assemble the platform to the platform holder of the printer, fix the two location pins on the top of the platform to the platform holder slot, then lock the top knob by rotating.



6.2 Platform Calibration

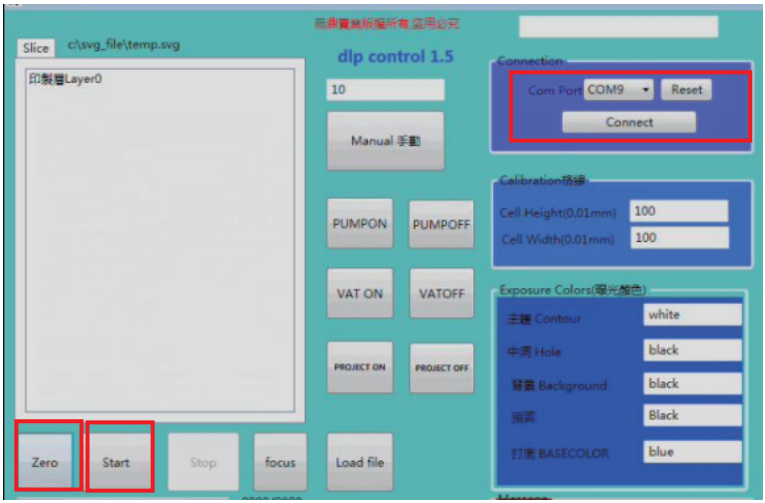
6.2.2 Open the control software, Setup “Base Layers”: Base layer(n) 1, Exposure(ms) 250000, click “save setting” to save the settings.



6.2.3 Setup “Connection”: select the printer “Com Port “, click “Connect”.

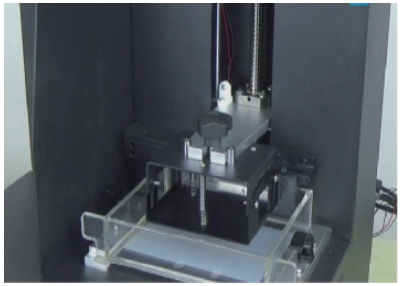
6.2.4 Place the grid sheet on the container to calibration.

Click “Zero”, then click “Start” to wait for a few minutes such the platform will move down to the container.

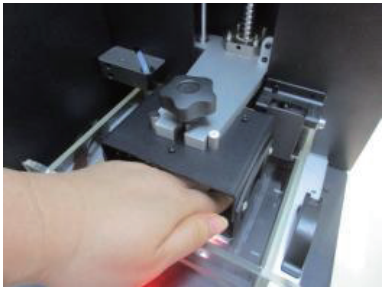


6.2 Platform Calibration

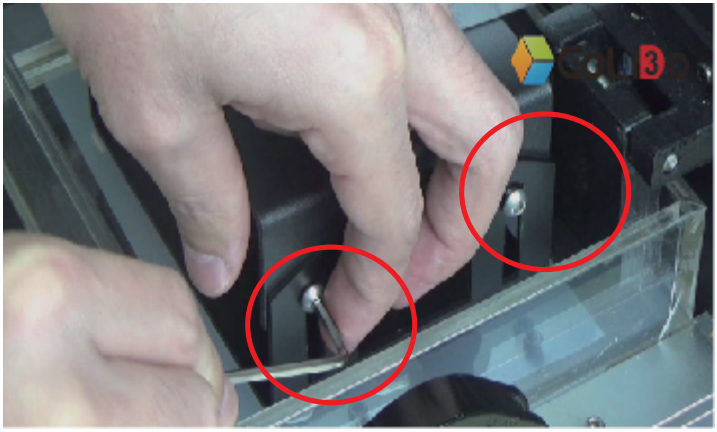
NOTE: The grid sheet must be placed on the container before the platform moving down for calibration.



6.2.5 Once the platform down to the container, press the platform to make sure the bottom surface of the platform is fitted to the grid sheet fully and tightly.



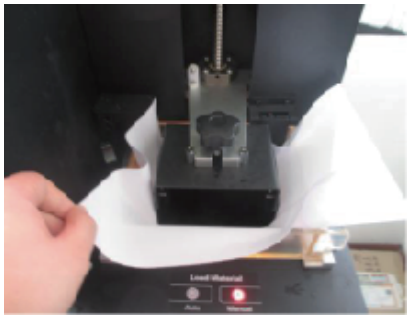
6.2.6 The distance between platform and the container is just the thickness of the grid sheet. Lock the 4 screws of the platform tightly using allen key.



6.2.7 Open the control software, click “Connect”, click “Zero”, the platform will move up. Remove the grid sheet and place a new A4 paper, then click “Start” to verify the platform calibration.

NOTE: The new A4 paper should be placed on the contanier flatly and neatly.

6.2.8 When the platform moving down and pushing down the A4 paper on the bottom of the container, pull the 4 corner of the A4 paper gently.
If the paper is not very loose when pulling and the paper cannot be pull out lightly, the platform calibration will be ok.
Then, remove the paper when the platform move up sooner automatically.



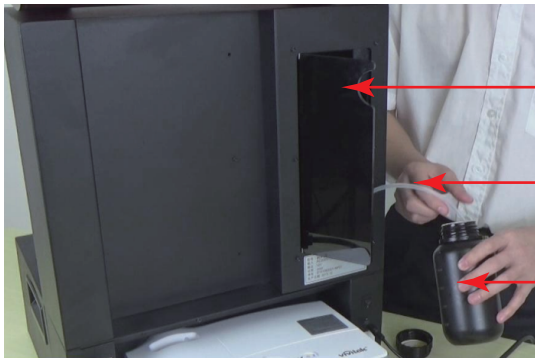
NOTE: If the paper is pulled out easily from the bottom of platform, need re-calibrate the platform by following 6.2.

6.3 Fill Photo-Resin

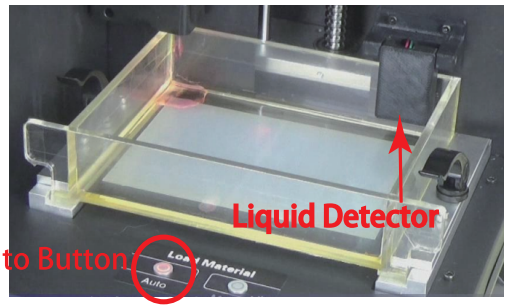
6.3.1 Turn OFF the printer by switching at "O" position.

6.3.2 Ready the photo-resin.

6.3.2 Open the door of the resin chamber at the back of the printer, get out the liquid tube and insert into the photo-resin bottle.
Then, place photo-resin with the tube in the chamber and close the door.

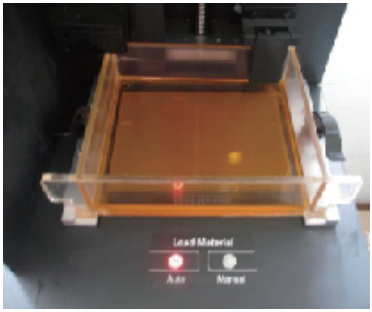


6.3.3 Confirm that the liquid detector is facing the bottom of the container.
Turn ON the printer by switching at "I" position.
The photo-resin will be automatically filled in the contanier. The "Auto" button will be flicking.



NOTE: The liquid detector must be push down to face the bottom of the container, or the photo-resin will overflow the container to damage the printer.

6.3.4 Once the filled photo-resin touch the liquid detector, the filling will be stop, the "Auto" button will stop flicking and keep light on.



NOTE: Once the photo-resin in the container lower than the dectector, the printer will auto-fill the photo-resin during printing.

6.3.5 Manual fill the photo-resin.
Press "Auto" button to light off, the "Manual" button will light on.
Press "Manual" to control filling and stop filling photo-resin by manually.

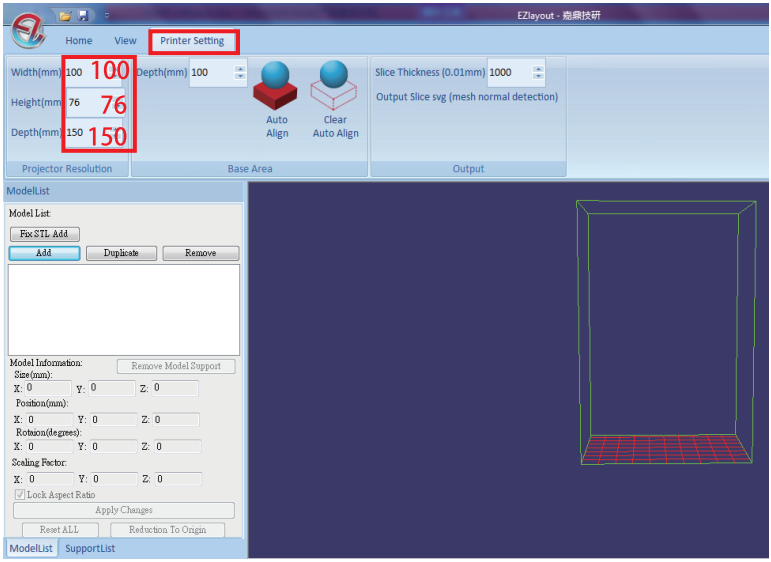
"Manual" button flicking: filling the photo-resin
"Manual" button keep light on: stop filling the photo-resin

WARNING:
Must stand by the printer during filling the photo-resin to avoid the photo-resin overflow the container and damage the printer.

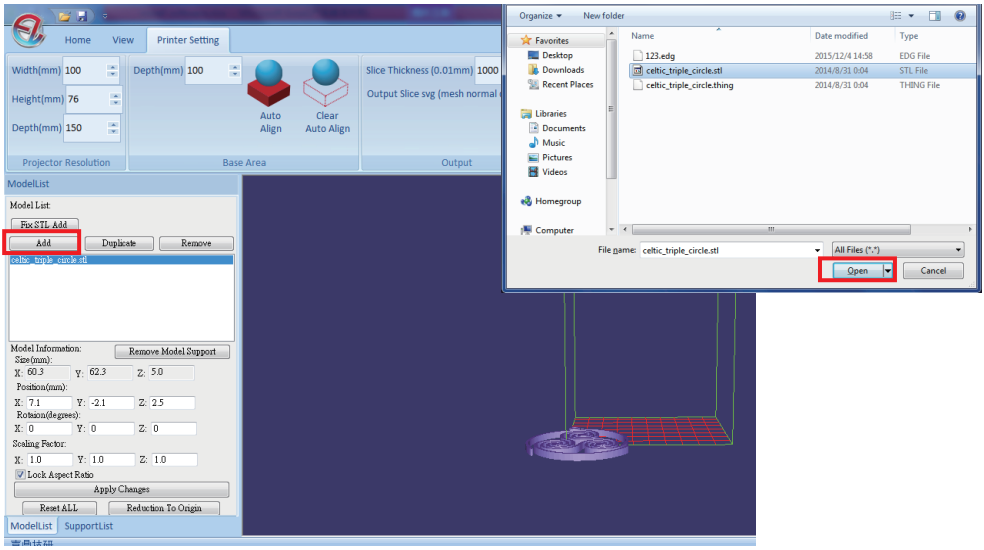
Chapter 7 Slice with EZLAYOUT Software

7.1 Double click  to open “ezlayout” slice software.

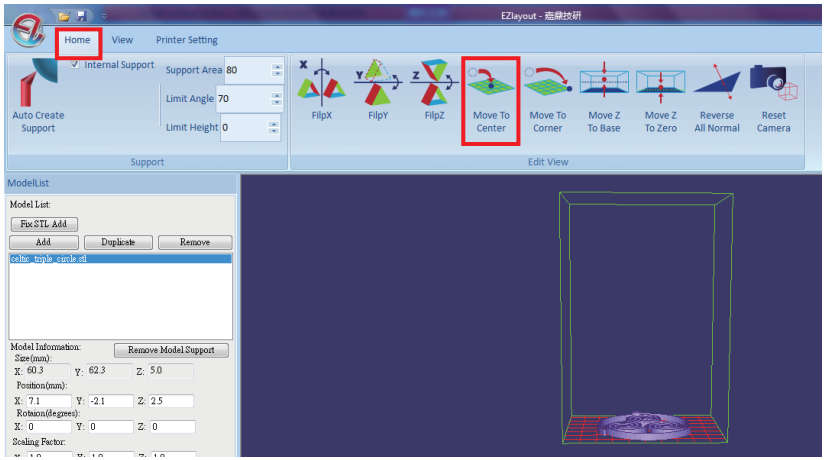
7.2 Click “Printer Setting” to setup the printer building size.



7.3 Click “Add” to load .stl or .obj file.



7.4 Click “Home”, click “Move To Center” to move the object in the center of the platform.



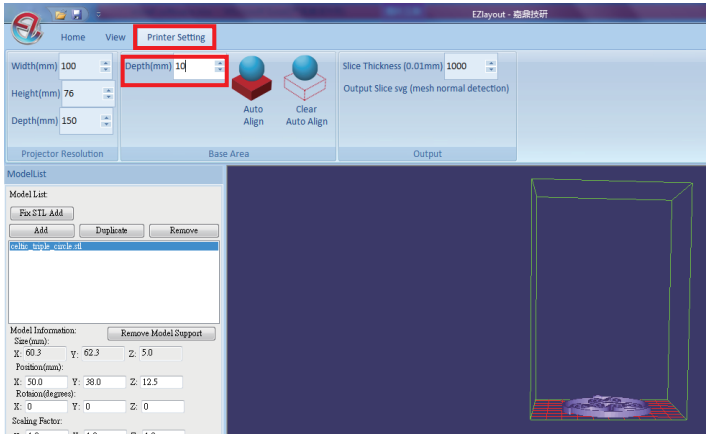
7.5 Add support material and base material on the object. It can be added or not base on different object shape.

Adding support material is to support the object overhang structure which is not contact with the platform because the printing is moving layer by layer.

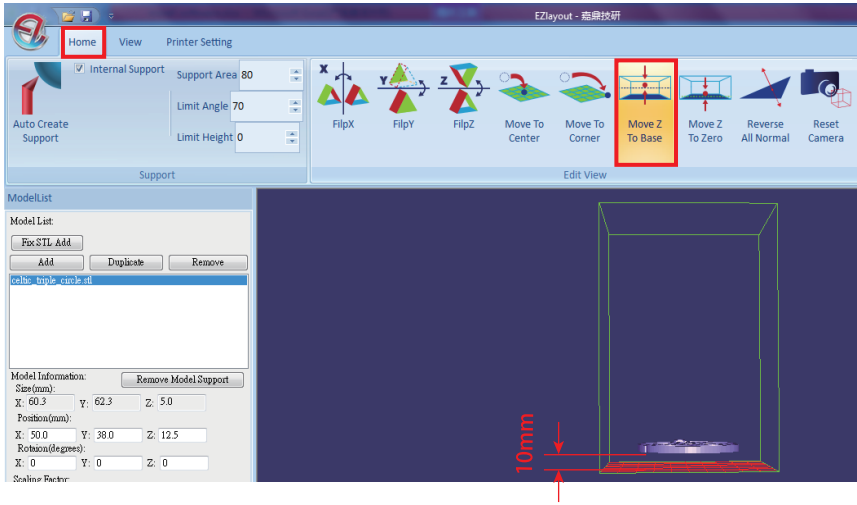
Adding base material is to enlarge the contact surface of the object to the platform such the object can stick on the platform tightly.

7.5.1 Add support material.

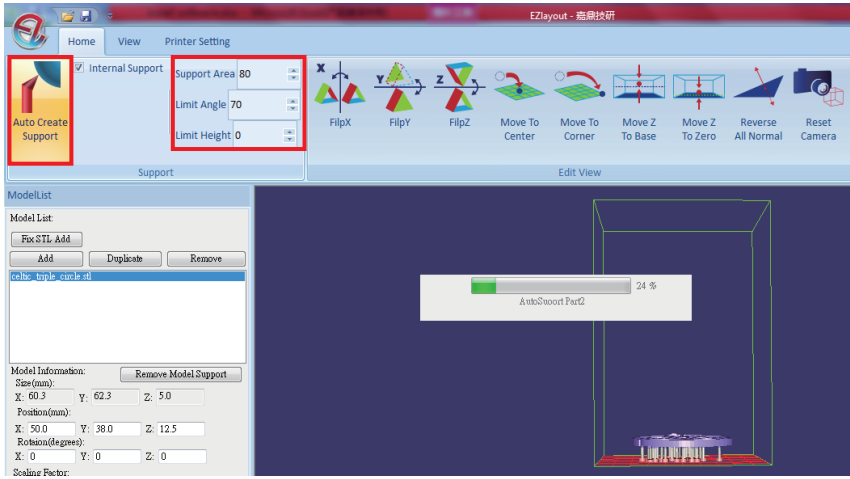
1. Click “Printer Setting”, revise the “Depth(mm)” such as “10”.



2. Click “Home”, “Move Z to Base”, the object will be moved up to the set Depth such as 10mm such the support material will be generated from the platform to the bottom of the object 10mm.



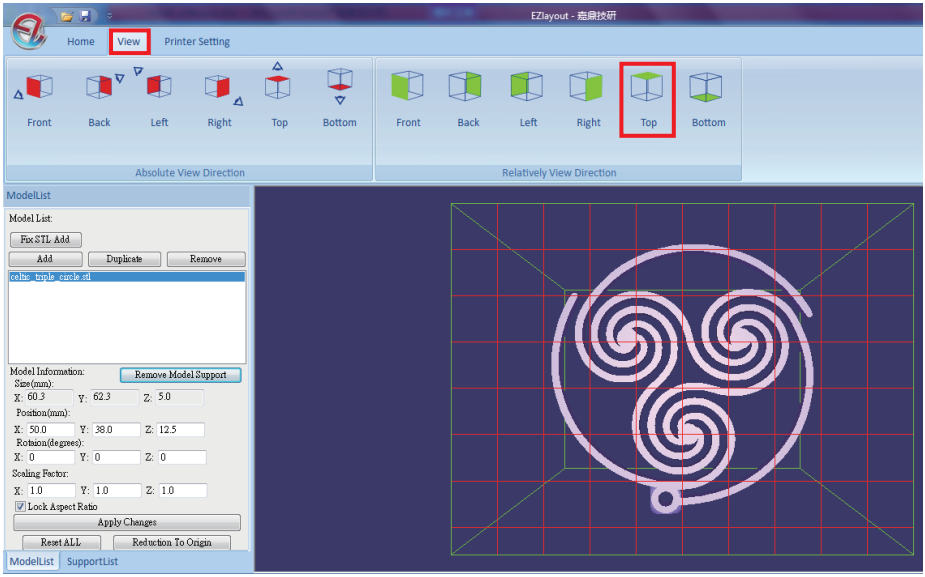
3. Auto generate support material.
setup the support material settings and click “Auto Create Support”.



Support Area: - generate 1pc support per the area.
Limit Angle: - not generate support if the overhang angle bigger than the angle.
Limit Height: - not generate support if the overhange height lower than the height.
(default setting is 0)

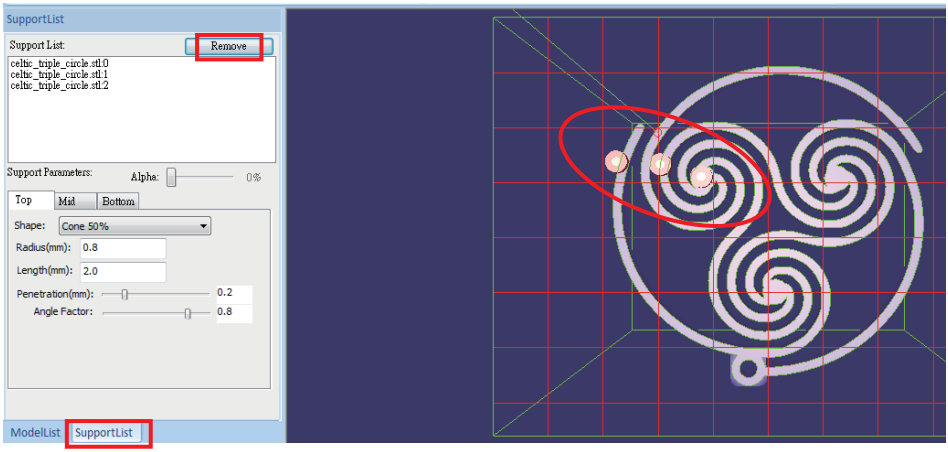
4. if want to generate support material manually instead of auto, need follow up below steps.

a. Click “View”, click “Bottom”.

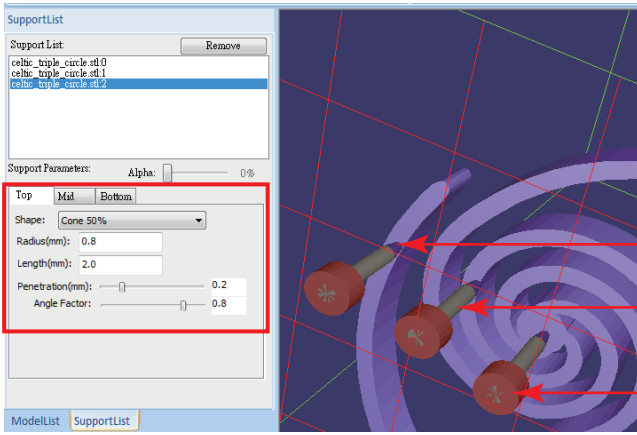


b. Click “SupportList”;

c. Right click to add the support to the object directly. Also click “Remove” to remove the support which do not like.

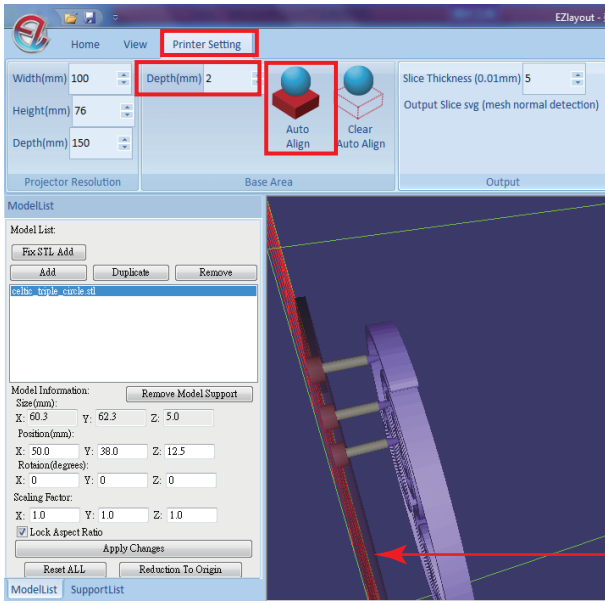


NOTE: The supports settings for “Top”,” Mid”,” Bottom” can be adjusted depend on different requirement.

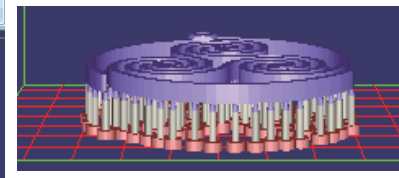


7.5.2 Add base material.

1. Click “Printer Setting”, revise the “Depth(mm)” such as “2”.
2. Click “Auto Align”, the base material will be added. If want to remove the base material, click “Clean Auto Align”.



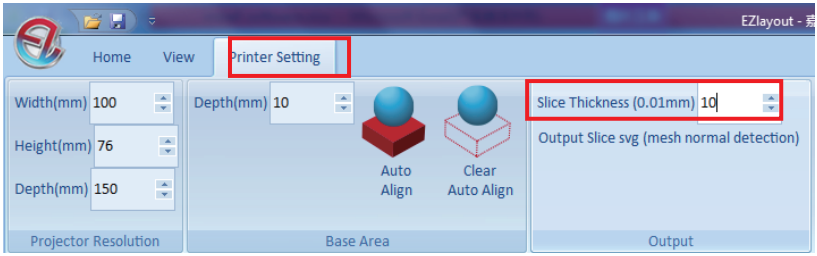
NOTE: If the support material is many and close such as below picture, the object will no need to set the base material.



7.6 Set up the printing precision.

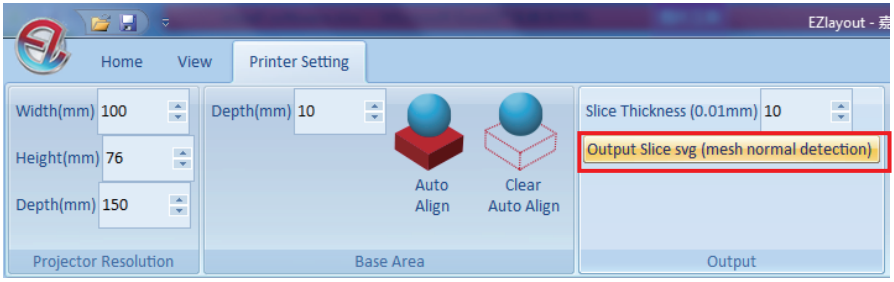
Click “Printer Setting”, set the “Slice Thickness (0.01mm)”,such as “10”(means the object printing precision /thickness is 0.1mm)

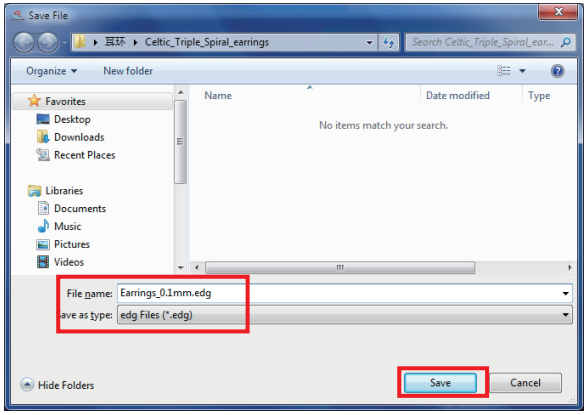
NOTE: The minimum printing precison of CoLiDo DLP printer is 0.05mm.



7.7 Output the sliced file.

Click “Output Slice svg (mesh normal detection)” to output the sliced file and save to .edg format to print.



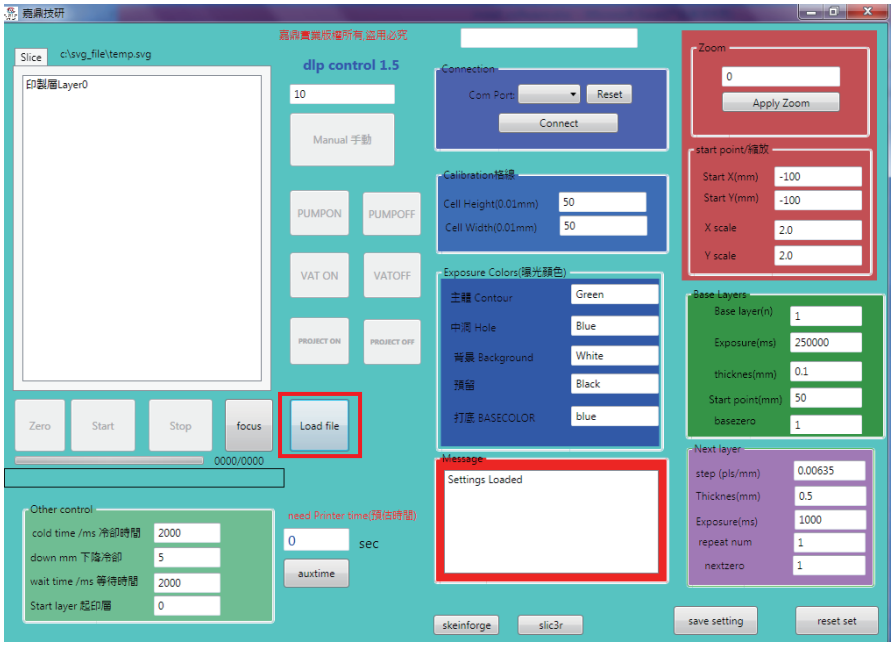


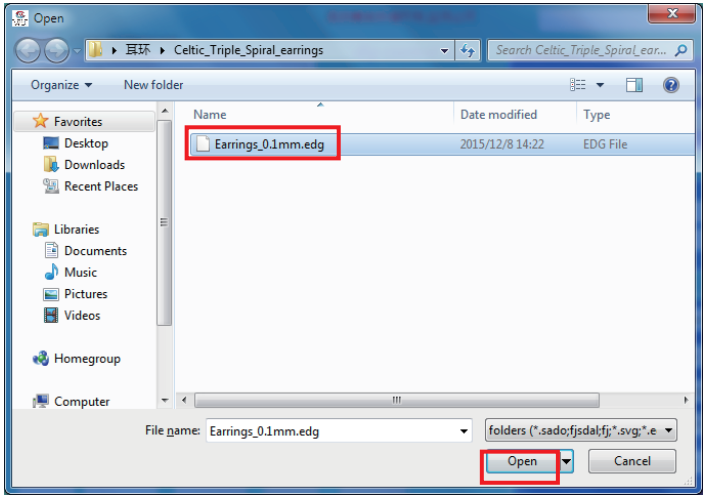
NOTE: Please record the printing precision you set because it need be matched with the settings in the following steps.

Recommend to save the file name with the printing precision.

8.1 Click  to open EZ DLP Control software;

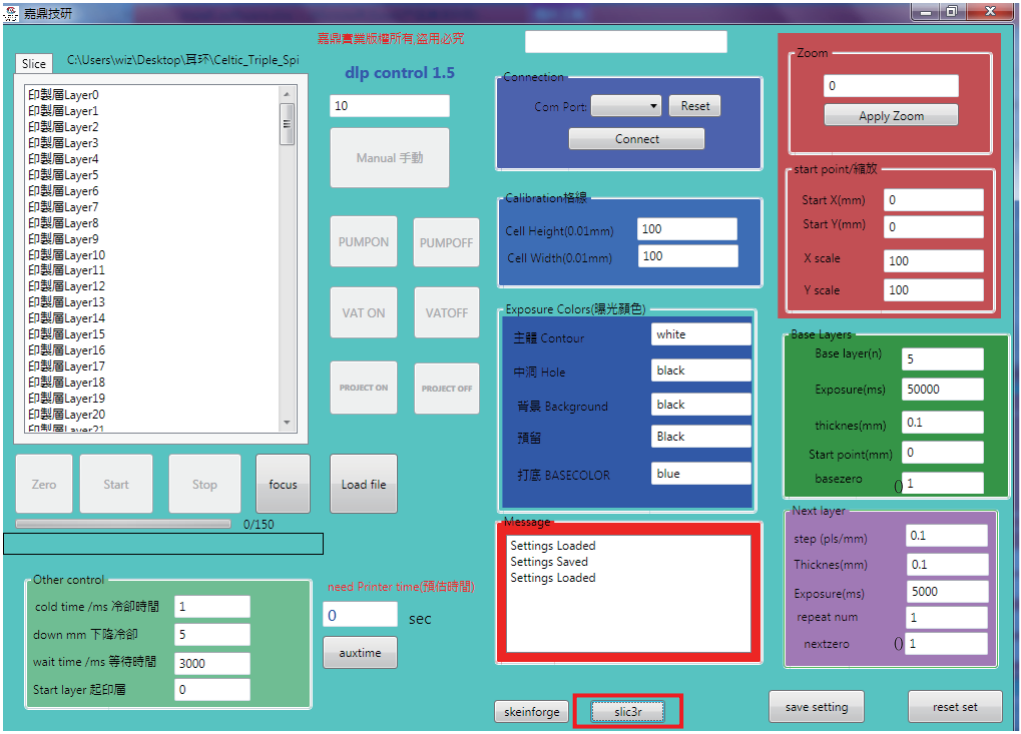
Click “Load file” to load the sliced edg file.





NOTE: The file loaded to the control software must be edg file which sliced by EZ Layout software.

8.2 Set up the printing settings.

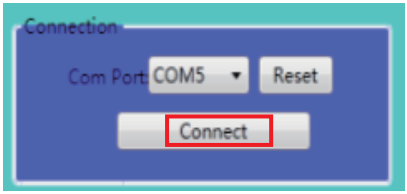


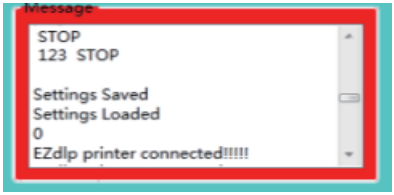
1. Other control: (settings as below, suggest not changing)
   cold time /ms - the time of the projector light stop to cold. Suggest 1;
   down mm - the height of the platform moving up after light stop.
   Suggest 5 (the max is 10);
   wait time /ms - the time of the light opening after the platform moving down. Suggest 3000, the number bigger printing time longer.
   Start layer - the printing start layer. Suggest 0.
2. Calibration: (settings as below, forbid to change)
   Cell Height(0.01mm) - 100, Cell Width(0.01mm) -100.
3. start point: (settings as below, forbid to change)
   Start X (mm) - 0, Start Y (mm) - 0
   X Scale - 100, Y Scale - 100

4. Exposure Colors: (settings as below, forbid to change)
   Click "slic3r" to refreash the setting.
5. Base Layers:
   Base layer(n) - the layer contacting with the platform to strengthen the sticking of the object to the platform.
   Suggest 1~5. The object is bigger and more heavy, the number need be bigger.
   Exposure(ms) - Suggest 30000~50000 for CoLiDo photo-resin;
   thicknes(mm) - printing thickness. It is the slice thickness /printing precision of the loaded file which set in slice software.
   Start point(mm) - 0 (forbit to change)
   basezero - 0 (forbit to change)
6. Next Layer:
   step(pls/mm) - Platform moving distance. It is the slice thickness / printing precision of the loaded file which set in slice software.
   Thicknes(mm) - printing thickness. It is the slice thickness /printing precision of the loaded file which set in slice software.
   Exposure(ms) - Suggest 30000~50000 for CoLiDo photo-resin;
   repeat num(mm) - 1 (forbit to change)
   nextzero - 0 (forbit to change)

8.3 Connect with CoLiDo DLP printer to print.

8.3.1 Select "Com Port" in "Connection" and click "Connect". After connected, the "Message" will show connetion status.



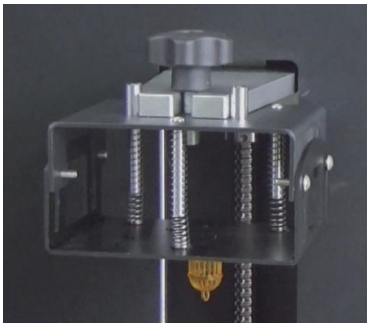


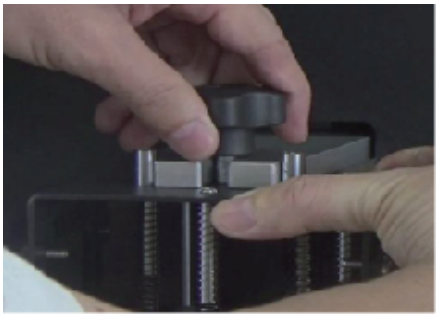
8.3.2 Click "Zero", click "Start", the printer will start to print.

NOTE: The control software will show the printing review status.

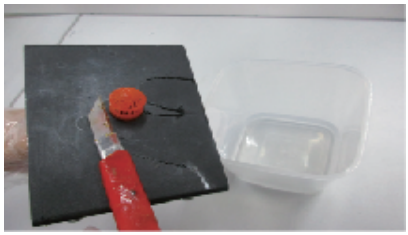
9.1 Removing the object from the platform after printing.

1. Remove the platform with the object from the printer by unlocking the top knob of the platform.





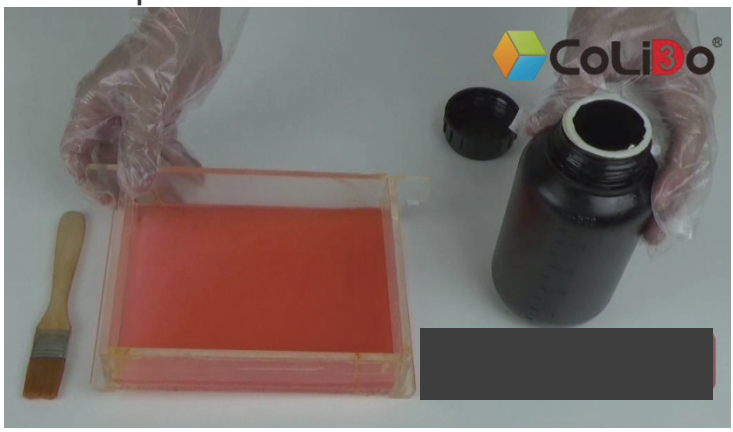
2. Remove object from the platform using the tool such as the knife.



3. Clean the object using the alcohol (owned by user) in the cleaning box.

4. After cleaning, curing the object in room temperature around 8hours. If the object has support material, it can be removed after curing.

9.2 Put the remain photo-resin inside the container to the original bottle which is light-proof, then keep tightly sealed and store in dry, shady and cool place.



NOTE: 1. Please store the photo-resin in a well-ventilated place and avoid the chilren touch;

2. Do not return the remain resin into the unused resin photo bottle;

3. Need wear the protective gloves when working on the photo resin, away the resin from skin and eyes. If touched, please clean with water immediately or go to the doctor when feel bad.

9.3. Clean the container by putting the alcohol (owned by user) and brushing, then dry the container in air or the tissue.

NOTE: The waste alcohol of cleaning the container or the waste photo resin need to be dealed with by the professional factory.

Chapter 10 Troubleshoot

? Question	Solution
How to stop printing during printing?	1. Power off the projector; 2. Press "Ctrl+Alt+Del" in the computer to show the Task Management, select the control software "EZ DLP CONTROL" to stop. NOTE: CoLiDo DLP printer cannot be paused and resumed printing. Once stop, need restart to print.
The printed object peel off from the platform during printing?	1. Stop printing immediately; 2. Increase the area or thickness of the layer contacting with the platform in slice software: a. Add more support material to the object; b. Add base material and increase its thickness; 3. Increase the "Base layers" in control software, such as 5.
The object is not printed on the platform?	1. Stop printing immediately; 2. Add the support material between the object and the platform and adjust the bottom thickness in the support settings of the slice software; 3. Reduce the slice thickness / printing precision in the slice software.
The printed object offset during printing?	1. The platform is loose on the holder of the printer: re-lock the top knob of the platform to the platform holder of the printer. 2. The STL or OBJ file is not correct and need to be repaired in website: https://netfabb.azurewebsites.net 3. Re-focusing the projector and re-calibrate the platform. 4. If still not ok, please contact with after-sales service.
The printed object has defects such as wrinkled finish, burr?	1. The photo-resin container or the lens of the projector has oil, fingerprint or dust. Please clean using the glasses cloth or lint-free cloth; 2. Some bubbles or dirty inside the container, need replace new container; 3. The photo-resin you are using is expire, or the resin is not stored in shady place which will cause that the liquid resin is solidified, need replace the new photo-resin.
The control software cannot show maximize in computer? (there is always the visible light around the printed object during printing)	1. Stop printing immediately as all around the printed object will be solidified; 2. Power off the projector, setup the screen resolution of the computer to "1024 x 768", then power on the projector. The control software dislplay in computer will be resumed to normal status.
Button on the DLP printer cannot work well?	1. Power off the DLP printer and power on; 2. Restart the computer; 3. If still not ok, please contact with after-sales service.
The bottom inside the photo resin container is unclear, crack or broken?	The photo-resin container is made up by the acrylic container, the silicon pad and the film. Need check which one is crack or broken. if the acrylic container is broken, need to replace the new photo-resin container; if the silicon pad is broken, need to replace the new silicon pad with the film; if the film is broken, need to replace a new film only.
The container cannot be removed from the DLP printer?	The container is sticked on the printer though unlock, need moving the container forward/backward and left/right, then take out it forcedly. Also clean the container and its place on the printer using the alcohol.

If you need more assistance, please contact with us:

Email: 3Dsupport@utec.com.mo