Bene3

User Manual

Introduction

Please read this manual carefully before use. It is highly recommended reading everything from beginning to end unless anything negligible is explicitly stated.

For more information, please visit: http://www.nova3dprinter.com.

In order to ensure the quality and efficiency of after-sales services, it is important to follow the following steps in case of any problems:

1) Please Read this manual in detail, most of the questions can be found answers in this manual.

2) Any questions can be sent to email:

   service@nova3dp.com

3) You can get the guidance video at http://www.nova3dprinter.com.

Introduction ..... **Error! Bookmark not defined.**

1. Know the machine..... **Error! Bookmark not defined.**

1.1 Package contents ..... **Error! Bookmark not defined.**

1.2 Machine structure..... **Error! Bookmark not defined.**

1.3 Technical parameters ..... **Error! Bookmark not defined.**

1.4 Introduction of the touch screen..... **Error! Bookmark not defined.**

2. Machine checking ..... **Error! Bookmark not defined.**

3. Quick print..... 13

3.1 Platform leveling checking 13

3.2 Print preparation..... **Error! Bookmark not defined.**

3.3 Test print ..... **Error! Bookmark not defined.**

4. Post-print processing..... **Error! Bookmark not defined.**

4.1 Remove the printed model..... 15

4.2 Resin tank cleaning ..... **Error! Bookmark not defined.**

4.3 Next printing preparation..... **Error! Bookmark not defined.**

5. Customize printing..... **Error! Bookmark not defined.**

5.1 NovaMaker software installation 16

5.2 NovaMaker software introduction ..... **Error! Bookmark not defined.**

5.3 NovaMaker import models ..... **Error! Bookmark not defined.**

5.4 NovaMaker adding support ..... **Error! Bookmark not defined.**

5.5 NovaMaker slicing ..... **Error! Bookmark not defined.**

5.6 Connection to the printer ..... **Error! Bookmark not defined.**

5.7 Printing ..... **Error! Bookmark not defined.**

6. Routine maintenance and FAQ ..... **Error! Bookmark not defined.**

6.1 The printing platform..... 30

6.2 The trough..... **Error! Bookmark not defined.**

6.3 The display screen ..... **Error! Bookmark not defined.**

6.4 The release liner 31

1. Know the Machine

1.1 Package list

Bene3
X1

Printing platform
X1

Material trough
X1

Rubber gloves
X4

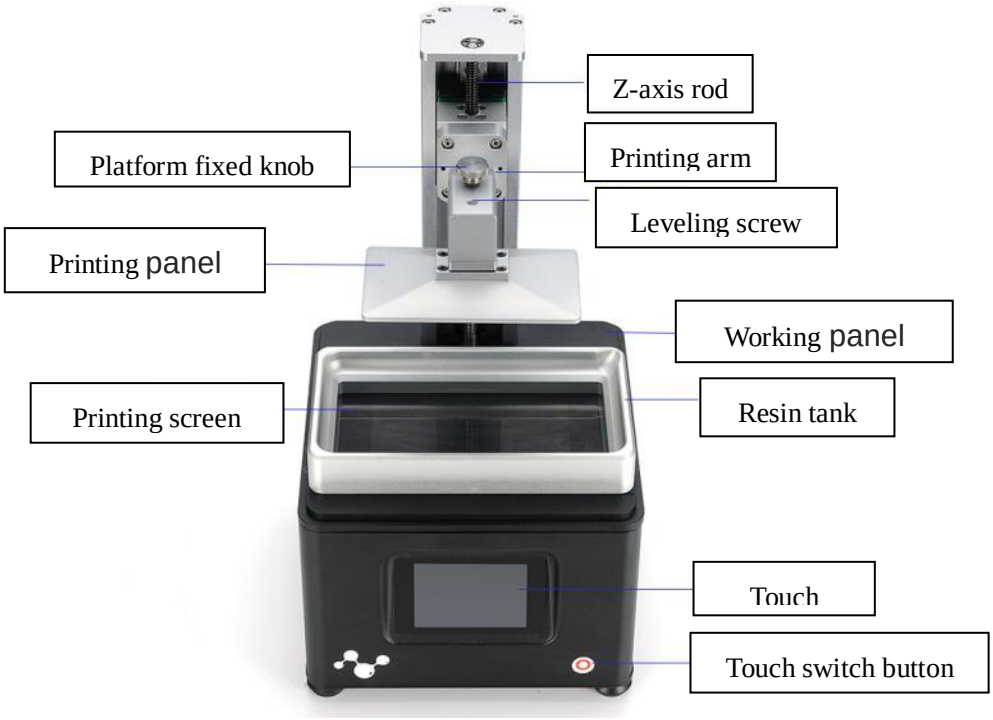
Plastic shovel
X1

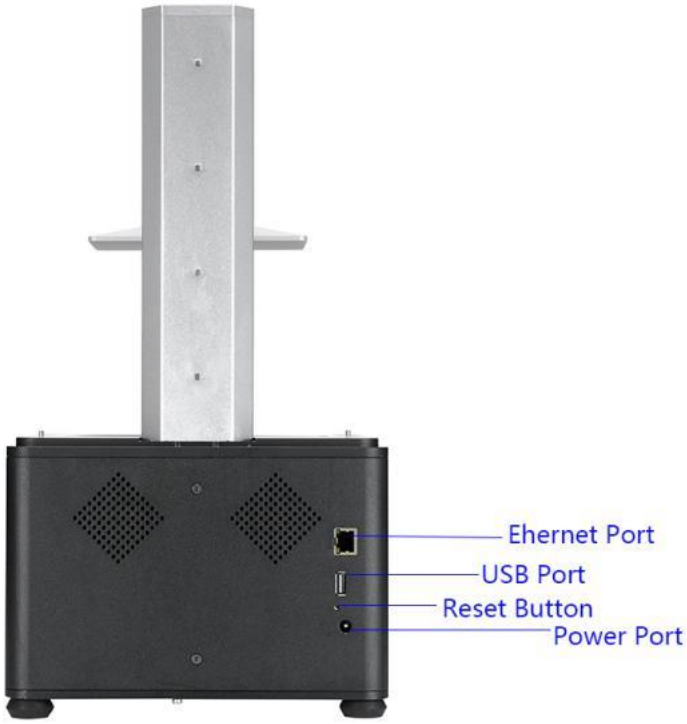
Reticle
X1

Filter screen
X2

Hexagonal screwdriver
X3

1.2 Machine structure





1.3 Technical parameters

Model	**NOVA3D-L3130**
Curing rate	**15mm/h**
X Y Exactitude	**0.05mm**
Z-axis Exactitude	**0.01mm**
Dimensions	**210mm*210mm*386mm**
Build volume	**130mm*70mm*150mm**
Forming technology	**Surface forming technology of LCD stereolithography**
Net weight	**8KG**
Control software	**NovaMaker （NOVA3D.CN）**

File format	**STL CWS 3MF**
Printed material	**The photosensitive resin (405nm)**
Connectivity	**Wired Ethernet, wireless WIFI, Mobile APP**
Resolution	**2K(1440*2560)**
Screen	**3.5 -inch capacitive touch screen**
Power	**60W**
Package	**Pearl cotton lining + special cardboard box**
Storage	**8G**

1.4 Introduction of the touch screen

There are four buttons when powering the printer on, which can access to the four pages: the printing, the system setting, the files, and the print settings.

The main page, as shown the Figure1.

The printing page: As shown the figure1, it records and shows the printing information: the printing file thickness, layers, panel raising speed, printing status, the

ongoing printing image, and speeds etc.

System settings: As shown the Figures 3 and 4. There are two pages, one is the network setting, which you can connect to the current LAN network so that the machine can be connected wirelessly. The other is machine information which indicates the machine information, such as module, serial number, and version information.

The file page: As shown the figure5. It storage the whole files in the machine, you can print, delete files here. It is the same page when using a U-disk.

The print setting: As shown the Figure6 &7. Two settings on this page, the panel setting, and the SLC parameter setting.

The power off page: As shown the figure8. Press and hold the switch button for 3 seconds, then there will be a power off confirm page, at that time, press and hold the switch for another 10 seconds will shut off the machine.

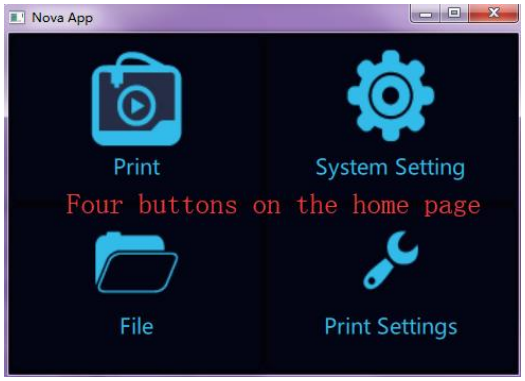


Figure1

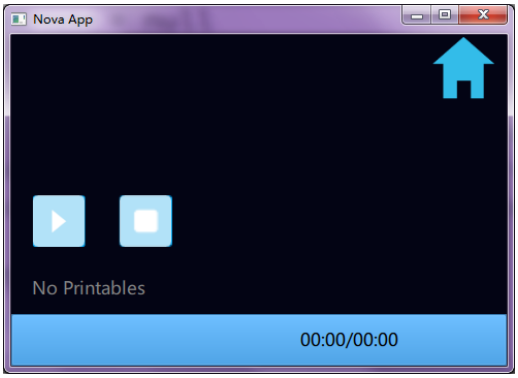


Figure2

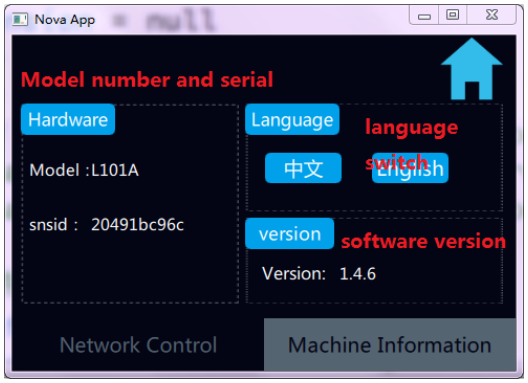


Figure3

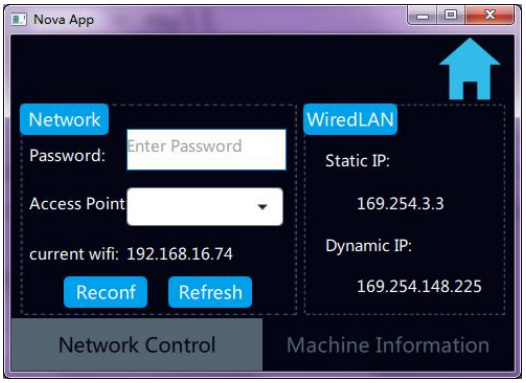


Figure4

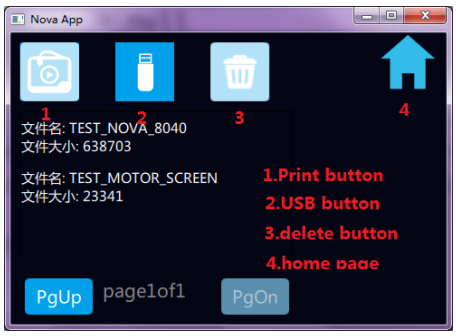


Figure5

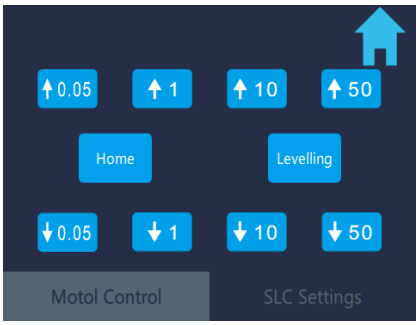


Figure 6

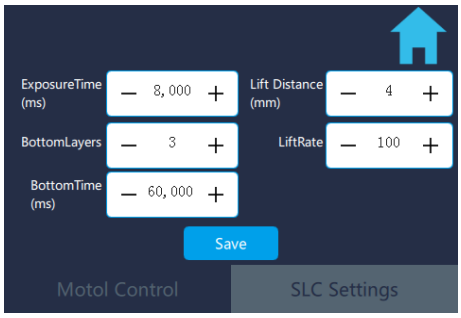


Figure 7

2. Machine Checking

As shown the Figure9, connect the power cable to the adapter first, then connect the adapter to the machine, and finally connect the power cable to the power supplier. The machine will start working automatically when electric is connected, and the screen page will jump from Figure 10 to 11.

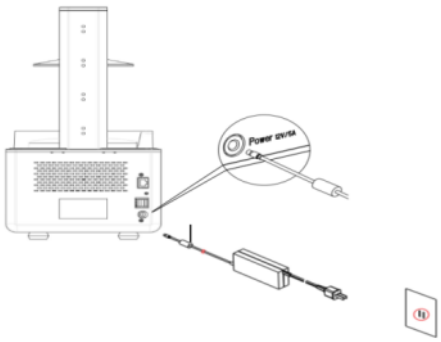


Figure 9

Figure 10

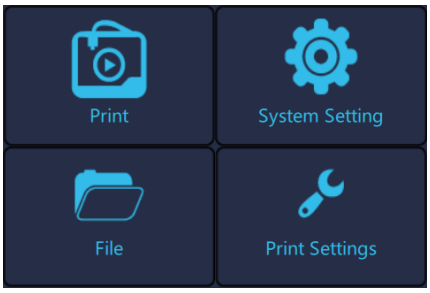


Figure 11

Figure 12

For a better observing the screen status, remove the printing panel before the printing test. To remove the panel, you have to unscrew the fixed knob first then remove the panel from the machine as shown the Figure 13. After that, press the “File” button on the screen, find and select the file “TEST_MOTOR_SCREEN” as shown the figure12, then press the “Print” button on the top left of the screen. If the panel is rested to the horizon and moves up and down, and there is an image “NovaTest” found as shown the figure14, it indicates the panel and the screen works properly. (Notice: Be careful and not to stare at the screen)

Figure 13

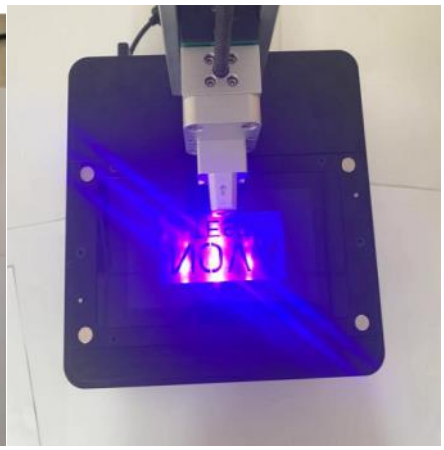


Figure 14

Figure 15

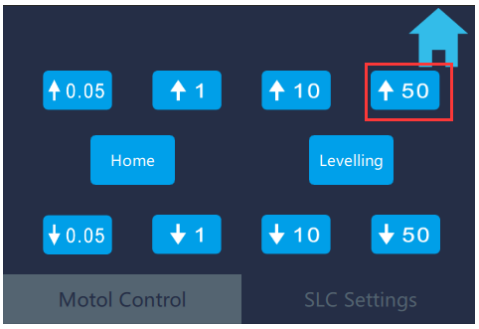


Figure 16

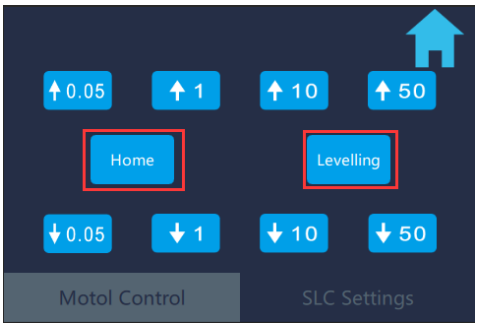


Figure 17

Figure 18

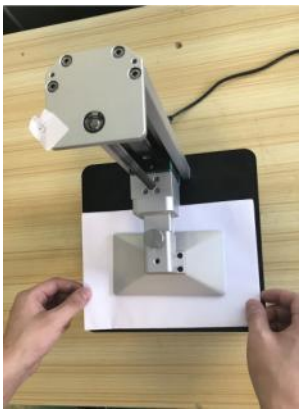


Figure 19

3. Quick Print

3.1 Pannel leveling checking

The printing panel should be mounted on the printing arm when the machine arrived. For better leveling the panel, it is best to set the printing

settings. Enter the “Print setting” page and press the “up 50mm” button (Figure16), then place the folded A4 paper that included in the toolkit on the screen (Figure15).

Press the “Home” button (Figure17), when the panel is down to the screen horizon point(figure18), remove the A4 paper (Figure19). At this time, there should be some resistance when extracting the A4 paper by hand. (The machine is already leveled when it arrived, feel the resistance force of the paper at this time for it is the same force the next time leveling. If the gap between the screen and the panel is too large, please seeking supports from the customer service.)

3.2 Printing preparation

The printing panel should be close to the screen after being level, at that time, press the “Raise 50mm” button (Figure16) to lift the panel up. Then take out the resin tank (pour the resin into the tank first or after placed on the machine are both acceptable), then match the holes at the button of the tank with the holes around the screen.

Then place the tank as Figure20 shown (handle with care), and in the end, insert the panel back into the printing arm (Figure21), screw and tighten the fixing knob to complete the printing preparation.

Figure 20

Figure 21

3.3 Test print

Return to the “File” page, find and select file “TEST_NOVA_8040.cws” (Figure22), then press the “Print” button on the top left. After about 10 minutes, a small sheet containing "NOVA TEST" as shown in Fig. 23 is printed.

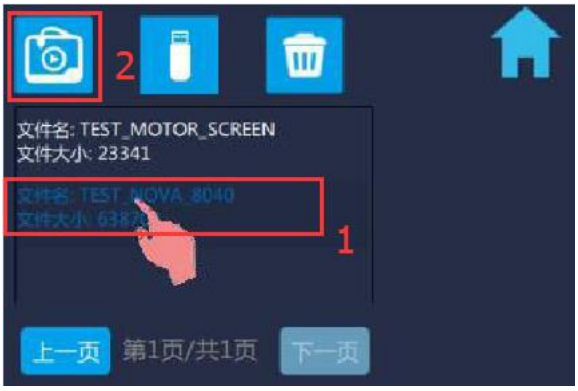


Figure 22

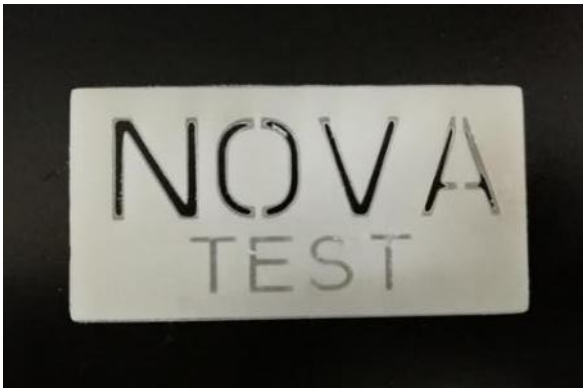


Figure 23

4. Post-print processing

4.1 Remove the printed model

After printing, the printing platform will rise automatically, yet there are still resins remain on the printing panel. Placed the tank for about half a minute to let it flows naturally.

Then remove the printing panel as shown Figure24 (the printing platform and the printing arm are fixed with magnets, pulled it out slowly with little effort). And scrape the model off carefully with a utility knife as it is fragile (Figure25).

At last, use some medical alcohol to flush the printing panel, or clean it with paper towels or cotton swabs. (Notice: Never drop the alcohol in the tank as it is made of plastic.)

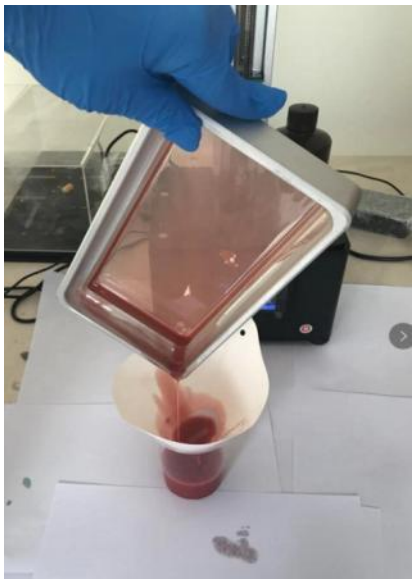


Figure 24

Figure 25

4.2 Resin tank cleaning

After printing, there is theoretically only residual resin in the tank, but there may actually be some solidified resins. Therefore, it is a must to check and ensure the tank is no solid residue in the remaining resins. If there is, be sure to clean it, otherwise it may result in a broken screen in the next printing task.

When cleaning the tank, it is recommended to let the resin flow as naturally as possible instead of washing it. It is no need to clean the tank with water due to the use of special release materials. You can place the resin tank vertically for a few minutes to the resin flow out (Figure24), and then clean the rest with a piece of clean paper towel.

4.3 Next printing preparation

After clean the resin tank and the printing panel, do as the steps 3.1 and 3.2 to prepare the next printing task.

5. Customize printing

5.1 NovaMaker software installation

Download the NovaMaker software from our official website www.nova3d.cn, click “Service Support” then “Software Download” as shown in the Figures below. Choose the corresponding installation version download and install it step by step.

5.2 NovaMaker software introduction

5.2.1 There are two parts in the NovaMaker: the 3D slice and the printer control.

3D slice: For model moving, zooming, clones, slice etc.

Printer control: Connection to the printer and print the task etc.

5.2.2 Printing task in the printer control

1) Layer thickness (The default is 0.05mm)

2) Slice status (Currently completed layer / total slice levels)

3) Printing speed (mm/min)

4) Printing status

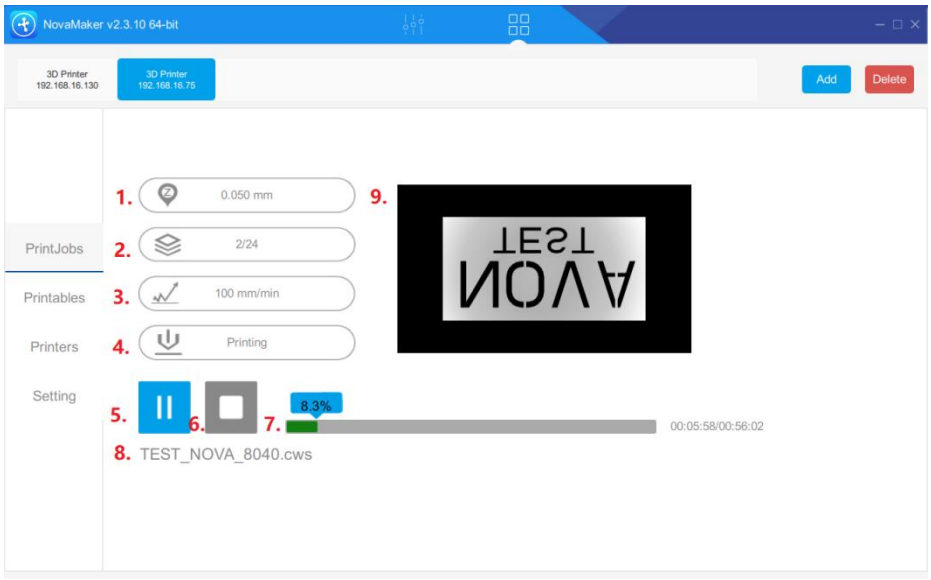
5) Pause

6) Stop button

7) Print status bar

8) Currently printing file name

9) Currently printing status



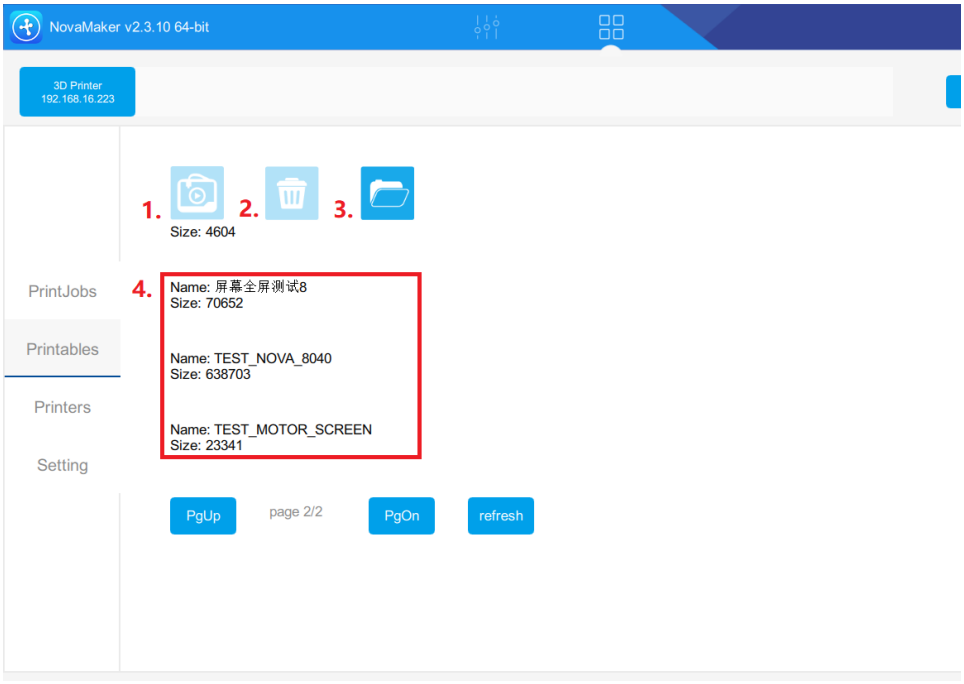
5.2.3 Printable files in the printer control

1) Print button: Print the CWS file selected

2) Delete button: Delete the printable CWS files stored

3) Import button: Open and import the file

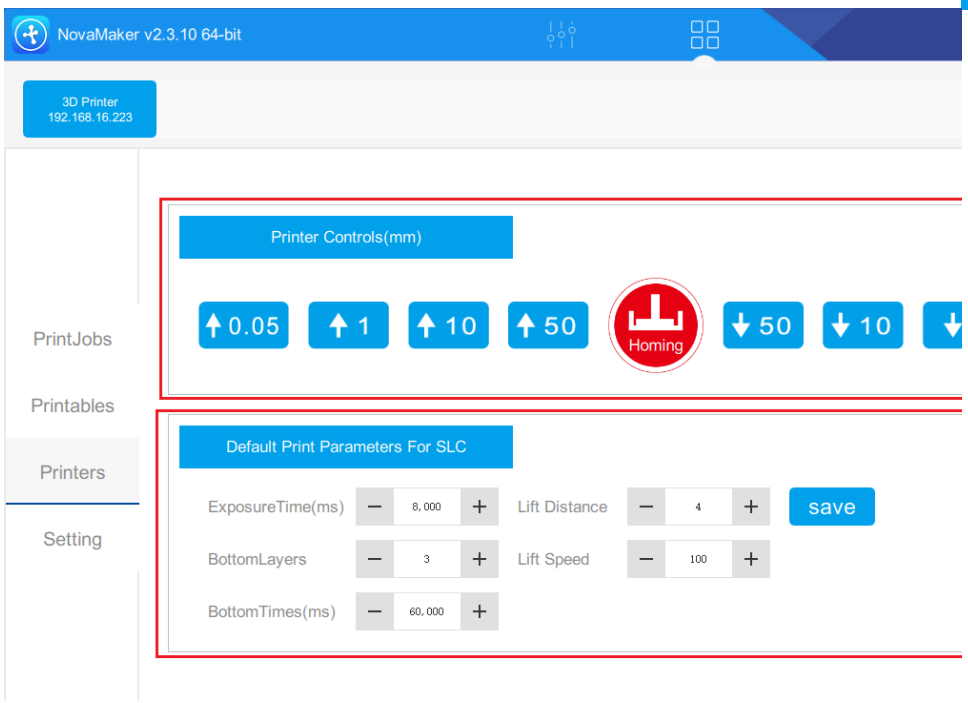
4) Files stored in the printer



Details for import and print the file:

Press the 3)Import button, and find the sliced CWS file in file management. Click to cinfirm and the “Refresh” button, find the file and click the “Print” button to start printing the imported file.

5.2.4 Printer in the printer control



5.2.4.1 Printer control: Control the printing panel up, down and reset.

The printing can be moved on the screw rod at a distance of 0.05, 1, 10, 50mm, and the user can adjust the position of the printing platform according to the actual situation.

5.2.4.2 SLC files defaulted parameter: When printing with CWS files, the following parameters are generally default and no need to be changed.

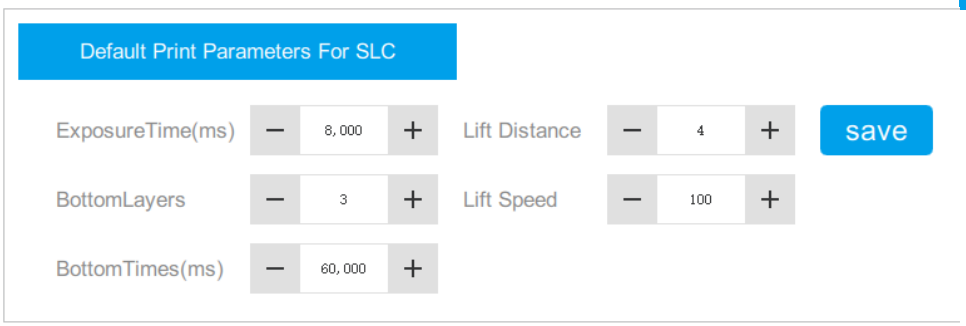
Exposure time (ms): set the exposure time of each layer

Number of bottom layers: set the number of bottom layers

Bottom exposure: set the first layer exposure time

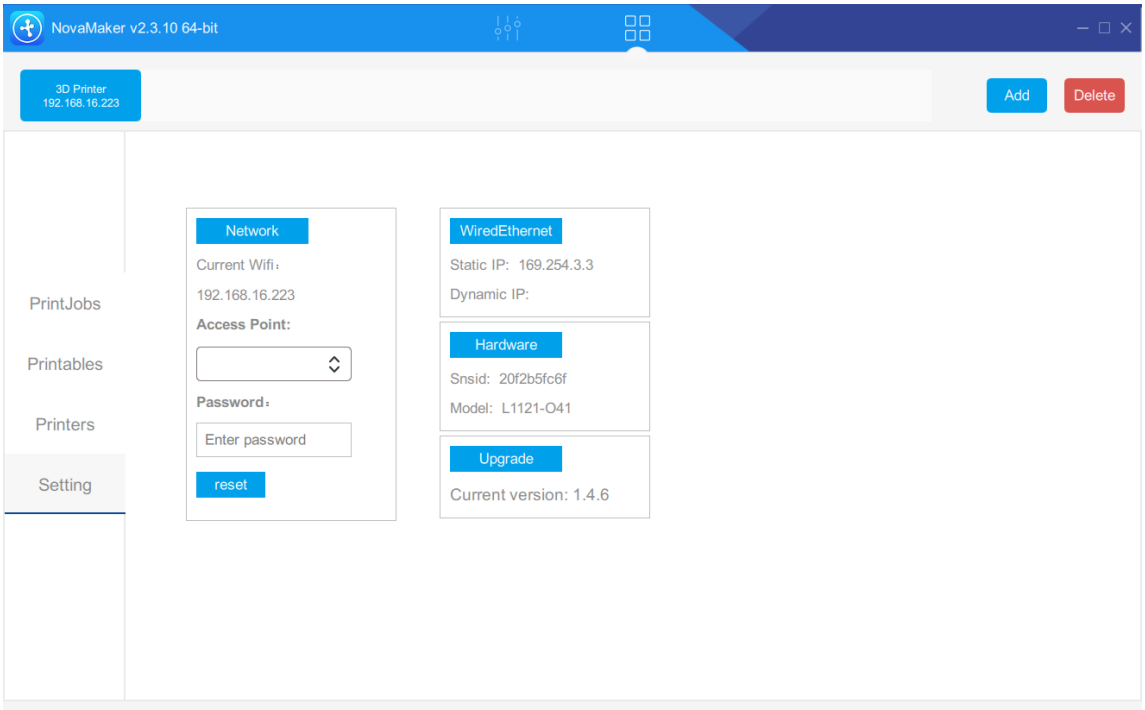
Z-axis rising distance (cm): Controls the lifting distance of the printing platform after each layer is printed.

Z-axis moving speed (mm/min): Controls the lifting speed of the printing platform



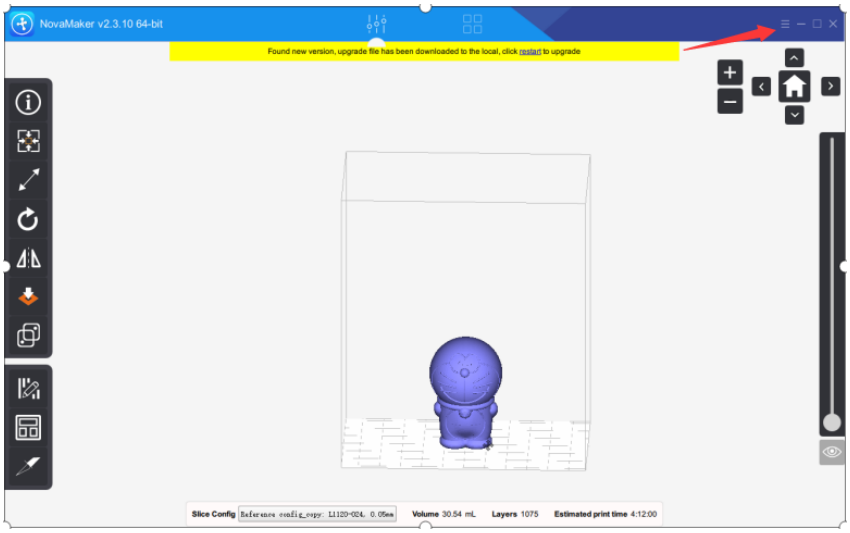
5.2.5 System setting

Users can obtain the detail information of the printer includes network configuration, wired network card IP, hardware information, upgrade info etc.



5.3 NovaMaker import models

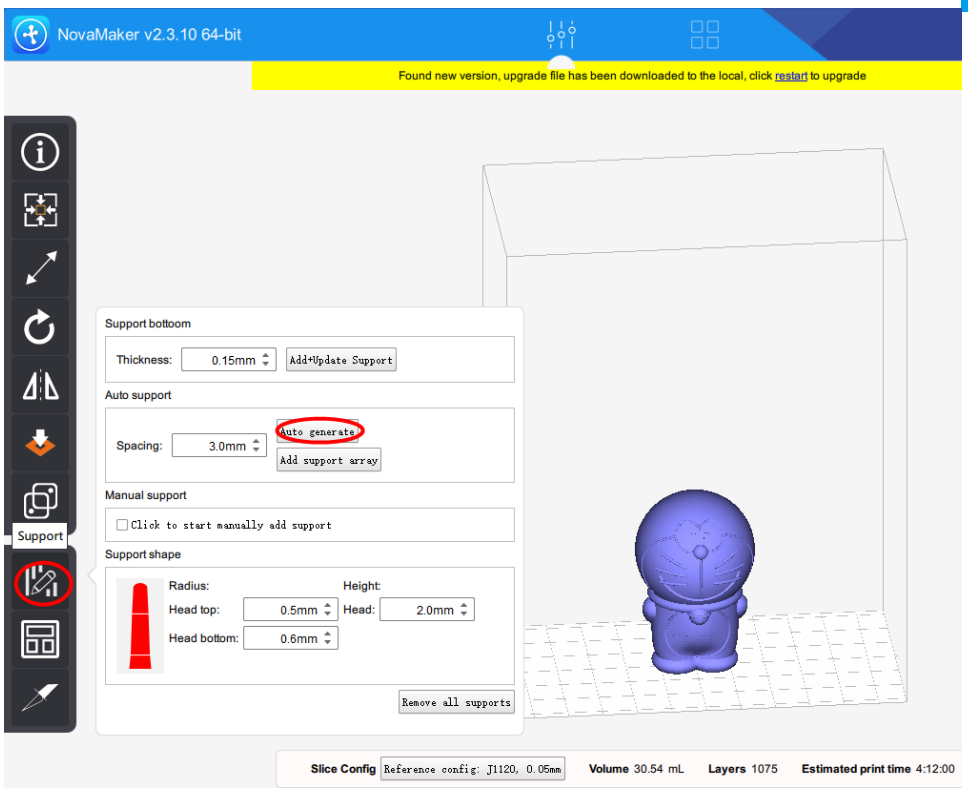
NovaMaker software will run automatically after the installation is completed. Click the “Open” button on the top right of the screen, then import the 3D model. By using the left mouse button, you can zoom, move, typeset the model.



5.4 NovaMaker adding supports

5.3.1 Automatic adding supports

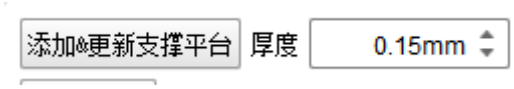
The automatic support is only for auxiliary use in re-inspection and manual modification.



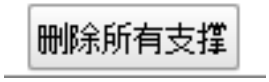
5.4.2 Manual adding supports

NovaMaker can meet with most of the support that requires.

The corresponding functions the software support:



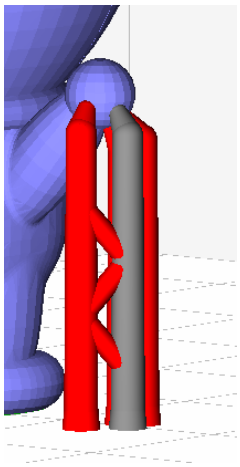
：Add bases and thickness setting



：Deleted all supports (select one support, and press DEL key to delete it)

Dendritic support: ① Self-determined adding support from the top: Press and hold the Shift key and select the points needs adding support (more than 2), and press Shift key from time to time when selecting the end of the support. ② Point-to-point support adding: Press the Shift key

when selecting the point needs adding support, and press Shift again when selecting the support point.



[redacted]：The support up/down diameter and height setting

The diameter and height of the support can be set according to the size of the models.

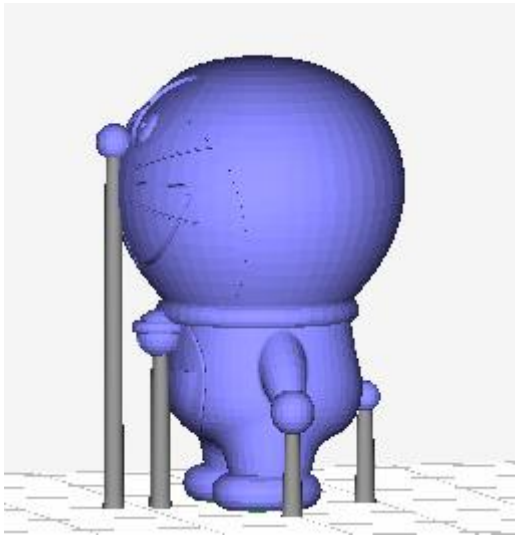
Recommended settings:

1. Top (up) 0.4-0.8mm

2. Top (down) 0.8-1.5mm

3. Top height 1-2mm

Example:



Adjust the print models position first before adding support is very helpful for success printing.

Big size down is a principle we always follow. Because it is printed from the bottom to the top, and that can provide better support and against gravity.

Notice for adding supports

（1）Prominent and very irregular places

（2）The place a drop of water will drip down.

（3）A long cantilever with a slope less than 40 degrees.

（4）The lowest point of the suspension (It is a must otherwise it will fall and result in a failure printing)

（5）The place extends horizontally too large

（6）Except the lowest point, all those that need adding support to keep the gravity balance to avoid dropping of the cured resin falls.

For more software introduction, users can visit our official website below and follow up the steps: “Service Support”, “Technical Support”, “Software”.

http://docs.nova3d.cn/?page_id=2309

5.5 NovaMaker slicing

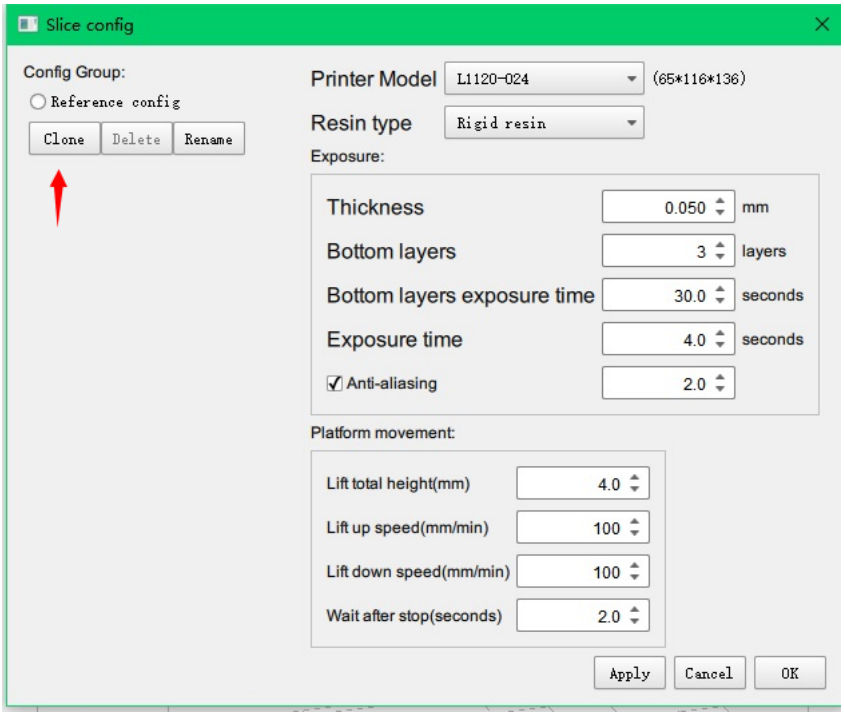
Slc files can be imported and printed directly, no slice need.

Stl files need to be sliced before prints. NovaMaker is the only slicing software for the Nova 3D printer. If you would like to slice with other software, users have to export the Stl files and then import them to

NovaMaker for slicing.

Print parameters setting

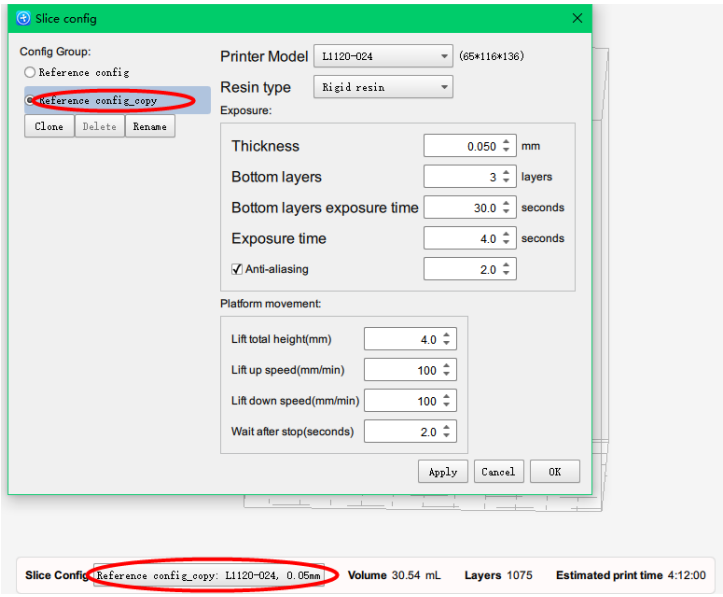
The parameter setting must be done before a slice. Even for the same printing model, it is also necessary to set different parameters when printing with different kinds of resins. The default parameters are in color grey and unmodifiable. If parameters need to be changed, click the Clone button then the cloned parameters can be modified.



Notice for parameter settings

1) When using the Bene3 Pro printer, the slicing software must be in version 2.4.2 or above, if not, please contact the customer service for the correct version.

2) In the slice setting, the machine model “L3130-K40” must be chosen.

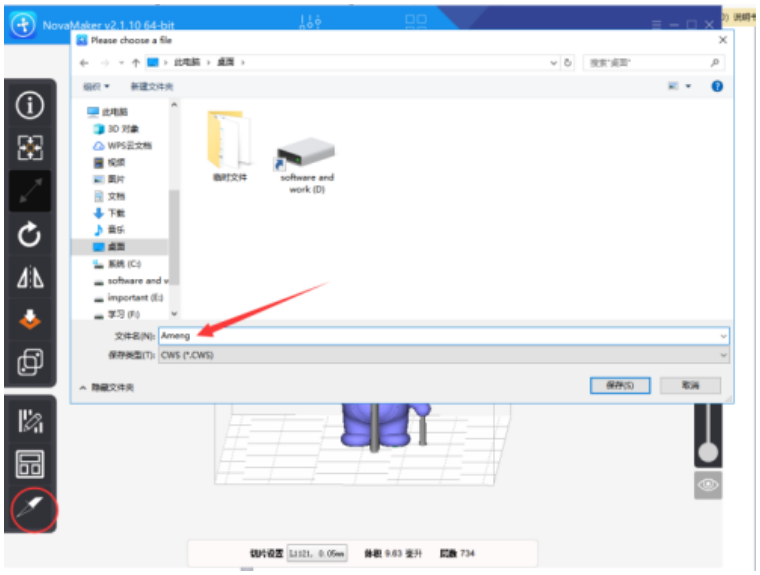


3) For the comprehensive consideration of accuracy, printing time, hardware characteristics, 0.05 mm is the best choice for layer thickness.

4) The exposure time of each layer and bottom is related to the resin used, and the default values are the most suitable parameters after the test. Users can modify it according to the actual printing effect. (Notice: The maximum exposure time is 150 seconds.)

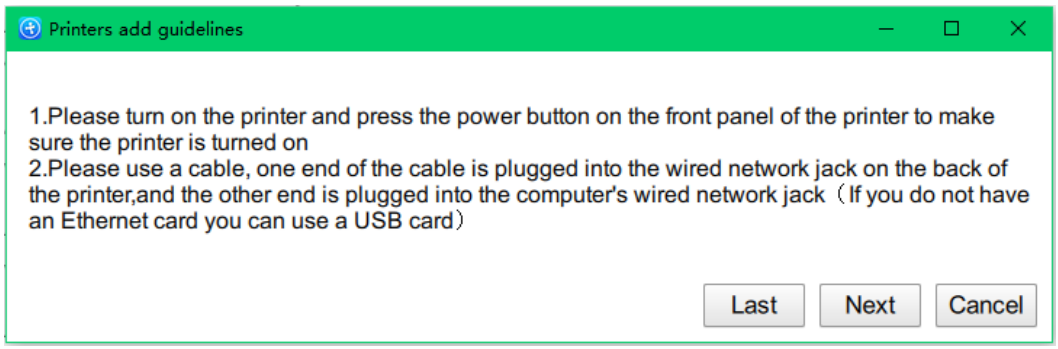
5) If users need to tone the resin or adding more color paste, then the exposure time needs to be increased, for both each layer and the bottom. (Notice: The normal ratio of color paste to resin is 1% of the resin and ensure that it is shaken or evenly stirred before use.)

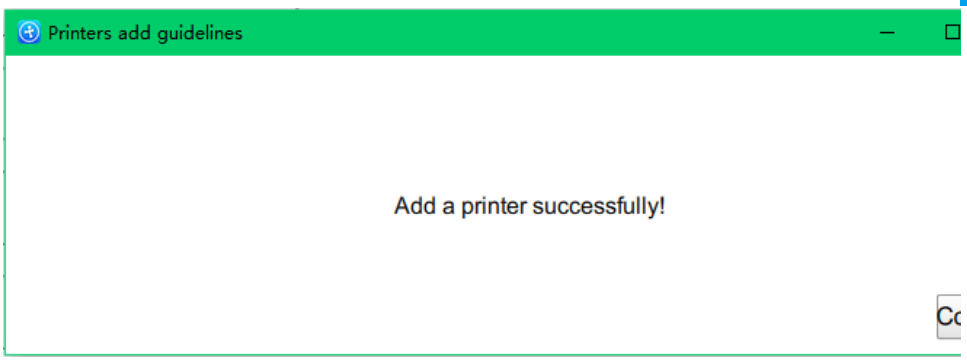
Click the Slice button, select the corresponding directory, enter the file name, click "Save" and wait for the slice to finish.



5.6 NovaMaker connect to the printer

（1）The first method is to connect the printer and computer directly with a network cable. Click the button on the right side of the NovaMaker title bar to enter the printer management interface as shown in Figure 30, and then click the "+" button on the upper right side, where there will be a "Printer Add Guide" , select the first item (the printer did not set the network configuration before), and then continue to the next steps until the final display , which means the connection is successful.

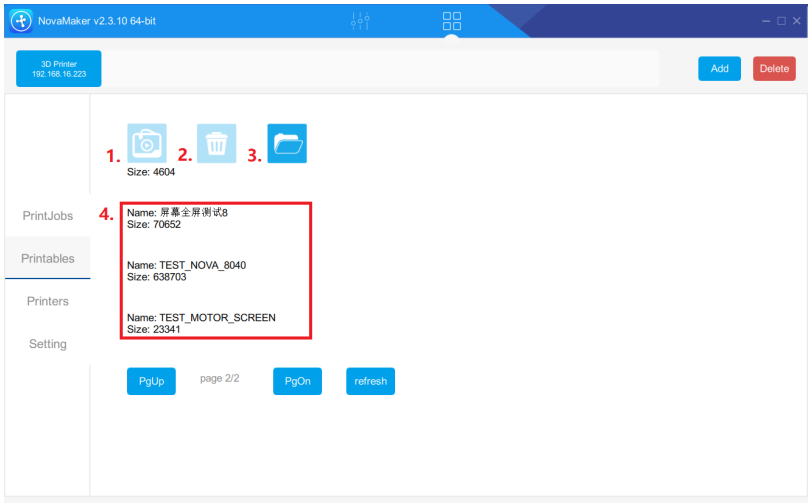




(2) Another method is: Select the WIFI name on the touch screen, fill in the corresponding password and then configure the WIFI IP , the wireless IP generated is 192.168.16.143. Then we return to the printer management interface , then click the " " button then comes "Printer Add Guide" as shown in Figure 31, select the second item (the printer has configured with WIFI) as shown in Figure 34, then enter the configured IP in the next step , and click "Next" until it appears a notice , at that time the machine wireless connection has been completed and successful. At this time, we can unplug the network cable and use the NovaMaker connection in the LAN.

5.7 NovaMaker prints

After connected to the printer via one of the two methods, click the button ”Printable files” in the left bar, then import the ready sliced CWS file, you will see the file just imported, select it and click the “Print” button to print the file.



6. Routine maintenance and FAQ

6.1 The printing panel

The printing panel is the supporting base while printing, mainly responsible for the curing adhesion of the first layer of resin, and it is the key factor to a successful printing. Thus a special explanation as bellow.

① The printing platform needs to be cleaned after each resin type change or a certain time in a printing task. When cleaning, please using medical alcohol soaked tissue paper or cotton swab, wearing gloves, and avoid dropping the resin to any places other than the print panel. If it happens, please clean it immediately with the same method.

② The printing platform needs to be leveled in the first time of use. Yet it may slant after a long time of use, the printing model may be tilted to one side or the base may be uneven. At that time, please leveled it.

③ When taking the printed model off from the panel, use a utility knife to remove it in one direction. Always be careful when using the knife. For safety, please keep the knife back side towards yourself.

④ Notice: in case of an emergency, unplug the cable to cut off the power. For example 1)Any other materials drop into the resin tank in a printing task; 2) Printing failure.

6.2 The resin tank

The resin tank is an essential part of the printer which used to hold the resin. The trough quality will determine the success and quality of printing. Thus a special explanation as bellow.

① The resin tank can be cleaned by using medical alcohol (90% concentration or above), and after that, remember to dry the tank both inside and outside with tissue paper.

② If the printing interval is over 12 hours, it is recommended to pour the remains resin to the spare container to prevent being precipitation, solidification, or attached to the inner or the gap of the trough. If a printing task continues for more than 24 hours, and when it is completed, it's recommended to use a specialized 200 mesh filter to filter the resin and clean the trough thoroughly with alcohol. Then you can pour the resin again and prepare the next printings.

The above method is to ensure that the printing resin is away from contaminated and increase the printing success rate and quality, especially for larger size printing tasks. Users should follow this method strictly when printing with different types of resins.

③ After printing, be sure to wipe the four support brackets of the tank and the bottom of the release film with a paper towel.

6.3 The display screen

The display screen is one of the core parts of the printer. This product uses a Sharp screen from Japan. As Sharp does not guarantee the screen in the use of a 3D printer, our company guarantees the screen for 1 month after purchase. The screen can last up to 1000 hours under normal use. Bellows are the special notices for the routine maintenance of the screen.

① There are UV emission sources under the display screen, so do not look directly or observe the display screen for a long time to avoid eye injury. If you want to check the display screen, it is recommended to

cover the display screen with an A4 paper, to wear an anti-ultraviolet glasses, or use a mobile camera for viewing.

② If the resin is inadvertently dropped into the gap between the trough and the casing during the adding the resin to the trough, clean it immediately to prevent the resin from penetrating into the screw hole and the display screen.

③ The display is sensitive to the resin, so NEVER drop the resin into the display or the gap between the display and the case. If you accidentally drop it, cut off the power immediately and dry it with alcohol-soaked cotton.

6.4 The release liner

The release liner is a special material. Try not to use other company's resin in printing, or it may damage off the film as it is hard to clean.

Handle with care, avoid being touched by hard things, it may be damaged.

If an object is found sticking to the release film during printing, and this problem can't be solved even extend the exposure time of the first layer, this may happen due to the performance decline of the release liner, and this is associated to the time and way of use. At that time, we recommended to replace the release liner from our Nova official Taobao store:

https://item.taobao.com/item.htm?spm=a1z10.5-c-s.w4002-170816406

41.22.35f459adqzXfMl&id=544110490076

The replacement is simple. Remove the old release liner after unscrewing the screw and then install the new one.

Guidance video：https://nova3d.cn/?page_id=495