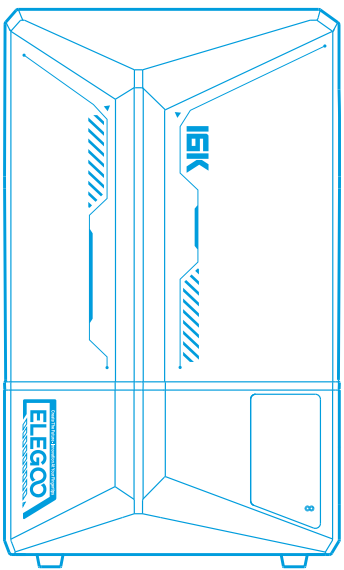
ELEGOO

Saturn 4 Ultra 16K 3D Printer



User Manual

Thank you for purchasing ELEGOO brand products.

V4

After receiving the product, please confirm whether the equipment is intact and the accessories are complete. If there is any damage or missing, please timely contact us at 3dp@elegoo.com. (To ensure the performance of each product, each product will undergo strict printing tests before leaving the factory. There may be some slight scratches when you receive the product, which is normal, please rest assured to use.)

Notice:

- Please keep the 3D printer and its accessories out of the reach of children.
- The resin tank's level should be above the MIN line but not exceed the MAX line.
- Please place the printer in a dry environment and protect it from rain and moisture.
- If you run into an emergency during use, please turn off the power supply of the 3D printerfirst.
- Please use the printer indoors and avoid direct sunlight and a dusty environment.
- Please keep the original packaging box for 30 days for return/exchange (only ELEGOO original packaging boxes are accepted).
- If the printing fails, you need to clean the excess cured resin in the resin tank and change the resin, otherwise, it may cause damage to your printer.
- When operating the 3D printer, please wear a mask and gloves to avoid direct skin contact with the photopolymer resin.
- If the release film in the resin tank is whitened, scratched, or has no elasticity, the printing failure rate is high, please replace the release film in time.
- Please use 95% (or higher) ethyl alcohol or isopropyl alcohol to wash your model unless you are using water washable resin.
- Please note that the Mylar tape surrounding the screen is not completely airtight. In case of resin drips during use, it is crucial to promptly clean them to prevent resin infiltration and potential screen damage.
- To maintain the cleanliness, durability, and protective performance of the LCD screen, it is necessary to timely replace parts under the following conditions: aged or damaged tape, corrosive damage, and damaged release film.
- If you have any problems with the printer, please contact us at 3dp@elegoo.com. Please do not disassemble or modify ELEGOO 3D printers by yourself, otherwise, the warranty will expire, and damage caused by personal operating errors need to pay for repairs.

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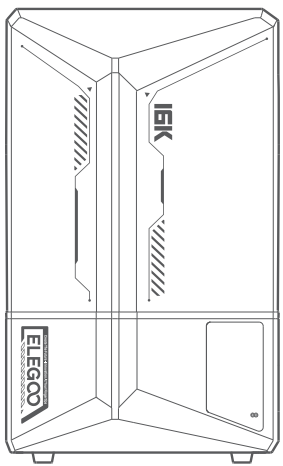
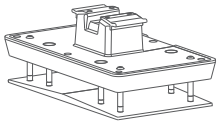
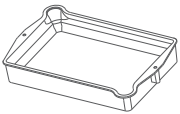


Saturn 4 Ultra 16K 3D Printer



Build Plate



Resin Tank



USB Flash Disk



Mask



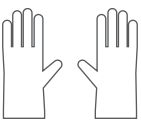
Drip Tray



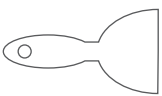
Funnel



Backup Screws



Gloves



Scraper



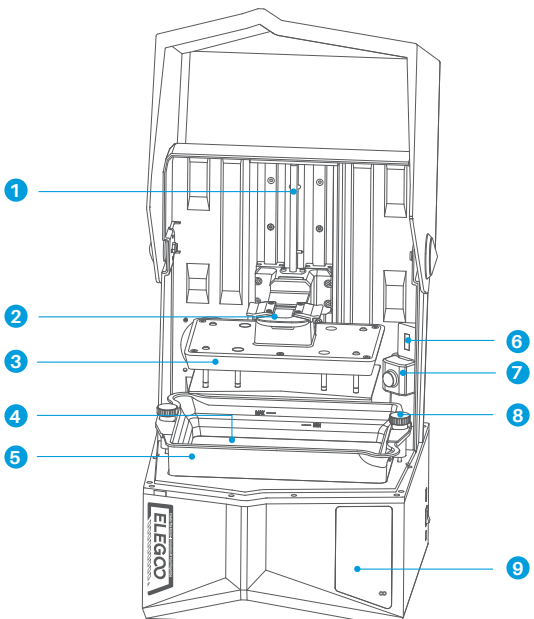
User Manual



Adapter



Tool Kit



1 Z Axis

2 Handle

3 Build Plate

4 LCD Display Screen

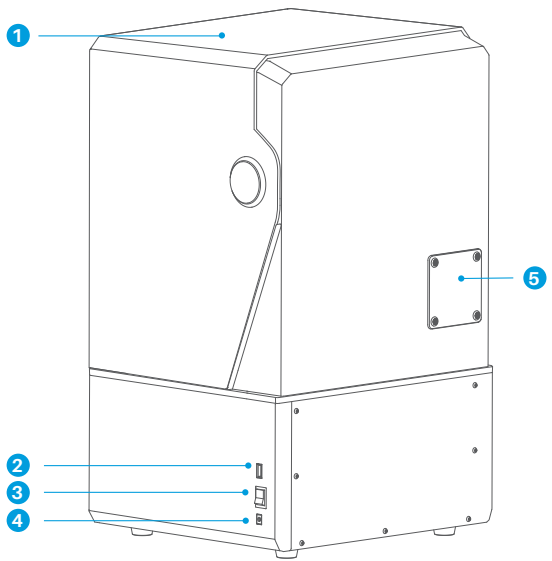
5 Resin Tank

6 Chamber Light

7 AI Camera

8 Screw Knob

9 Touch Screen



1 Anti-UV Cover

2 USB Interface

3 Switch

4 DC Socket

5 Extension Port (Connect peripherals, such as a mini heater and other compatible printer accessories)

Printing Parameter

- System: EL3D-4.0
- Operation: 4.0-inch Capacitive Touch Screen
- Slicer Software: ELEGOO SatelLite
- Connectivity: USB Interface & WiFi
- AI Camera: Built-in 1920*1080 Resolution

Hardware Specification

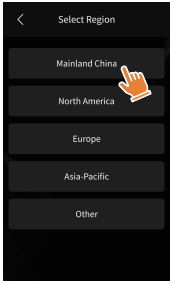
- Dimension: 327.4mm(L)*329.2mm(W)*548mm(H)
- Build Volume: 211.68mm(L)*118.37mm(W)*220mm(H)
- Package Size: 620mm(L)*400mm(W)*430mm(H)
- Gross Weight: 18.7KG
- Net Weight: 16.1KG

Printing Specification

- Technology: MSLA Stereolithography
- Light Source: COB Light Source + Fresnel Collimating Lens (wavelength 405nm)
- XY Resolution: 14*19um (15120*6230)
- Z-axis Accuracy: 0.02mm
- Layer Thickness: 0.01-0.2mm
- Printing Speed: MAX 150mm/h
- Power Requirements: 100-240V 50/60 Hz 24V6A

Note:
When you turn on the device for the first time, please select the language and region. If you want to switch the region, please restore the factory settings.The printer will check key hardware to prevent printing failures caused by hardware malfunctions. Please check the printer according to the machine's error prompts.Do not touch the printer during the device self-check. (See Figure 1)







Re-detection

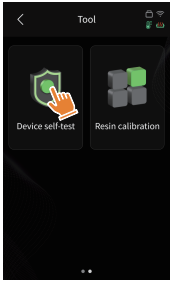
Accumulated release film usage

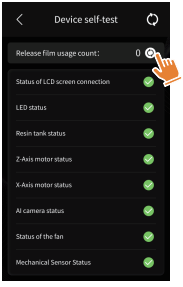
Check device prompts for printer status

(Figure 1)

When the accumulated usage of the release film is approaching 60,000 times, the device will issue a reminder to replace the release film promptly. Click the refresh button on the device self-check page to reset the counter manually. (see Figure 2)





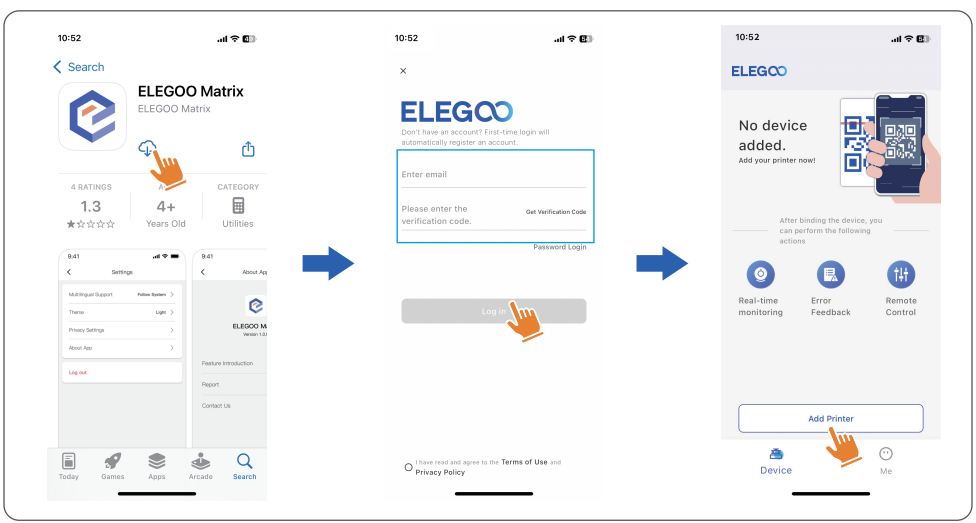


(Figure 2)

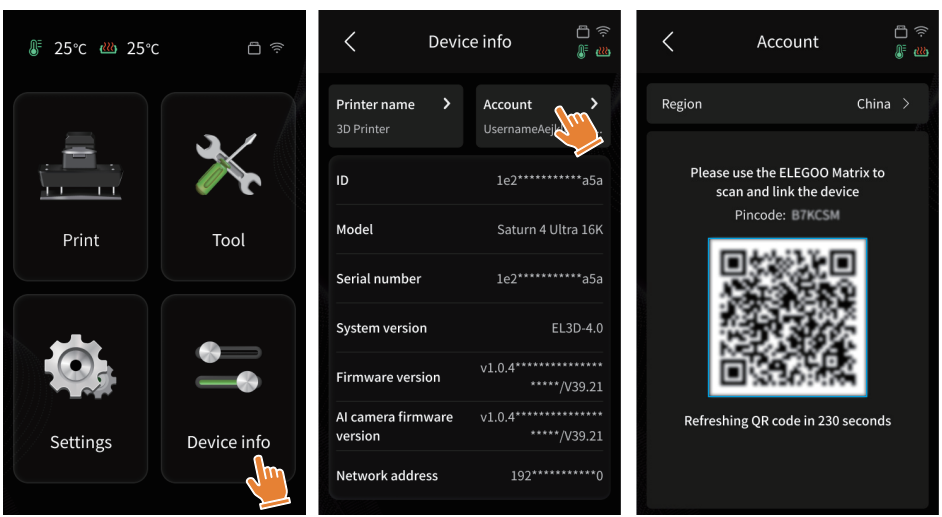
1. Download the Elegoo Matrix app, register, and log in to your account.

2. Bind Elegoo Matrix to the printer.

Scan to download Elegoo Matrix app



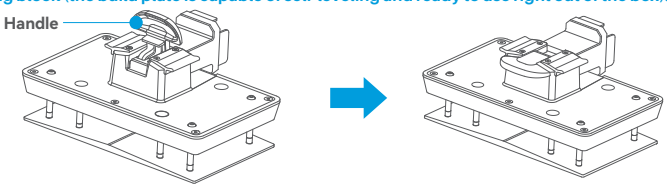
3. Tap "Device info" to bind the account. Use Elegoo Matrix to scan the QR code on the printer, or manually enter the PIN code to add the printer. After binding the device, you can remotely operate the printer through Elegoo Matrix.



1. Print Preparation

Before using, make sure to utilize the provided tool to remove the fixed screws on the resin tank. Replace them with the screw knob included in the tool kit.

After inserting the build plate into the connecting block, press down the handle to secure the build plate to the connecting block (the build plate is capable of self-leveling and ready to use right out of the box).

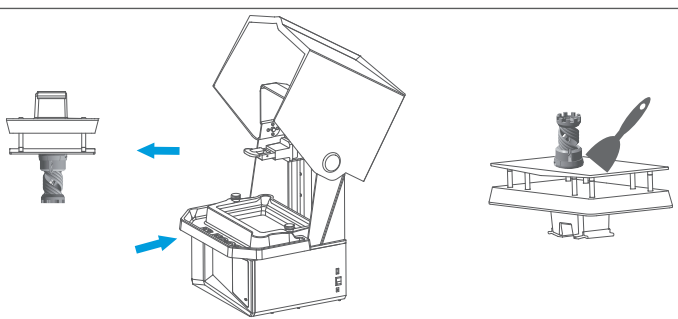


2. Model Printing

Slowly pour resin into the tank, keeping it between the MIN and MAX lines. Avoid touching the machine during the self-check process before printing. Cover the printer and select a pre-sliced test model for printing.

3. Model Processing

After printing is completed, insert the drip tray parallel to the resin tank, fasten the screw knobs on both sides, and install the drip tray onto the printer. The tray prevents resin drips onto the machine when removing the build plate. Then, lift the handle to take out the build plate, and use a scraper to remove the model. You can use ELEGOO's cleaning and curing machine to post-process the model.



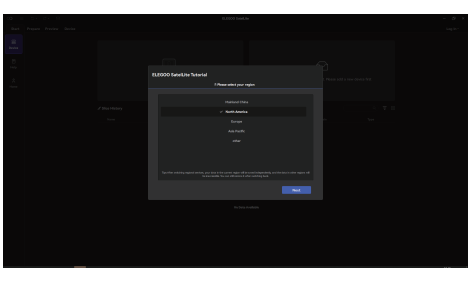
You can use the ELEGOO SatelLite installation package on the USB drive for the printer.

1. Installing ELEGOO SatelLite

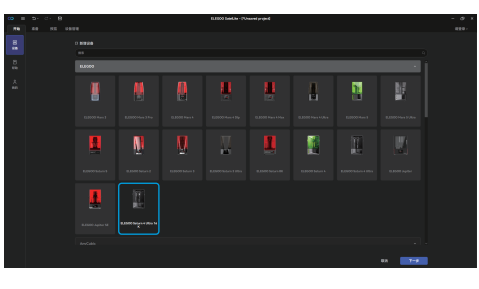
Select the appropriate slicer version from the USB drive or download it from the website (www.elegoo.com) and install it on your computer.When using the software for the first time, you need to select your language and region . If you want to switch regions, please restore the factory settings. After switching regional services, your data in the current region will be saved independently, and the data from other regions will not be accessible. You can still restore it after switching back. (See Figure 3)

2. How to use ELEGOO SatelLite

After installation is complete, run ELEGOO SatelLite. Select ELEGOO Saturn 4 Ultra 16K as your default printer, and tap "Next" to enter the printer slice settings page. (See Figure 4)



(Figure 3)



(Figure 4)

3. ELEGOO SatelLite Settings

3.1 Device Configuration Parameters

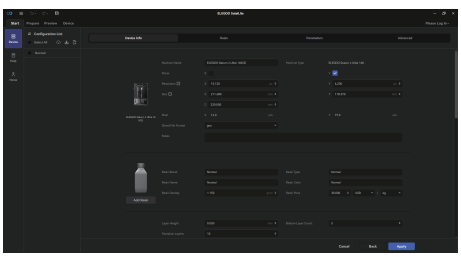
The default parameters do not need to be changed (see Figure 5). X indicates the maximum print size in the X-axis direction, and so on.

3.2 Resin Parameters

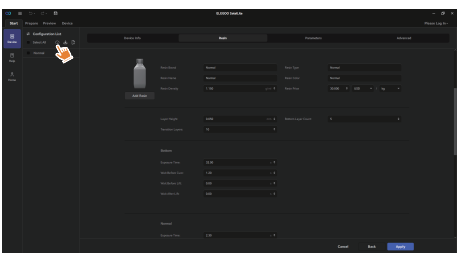
Filter Resin Parameters: In the configuration list in the upper left corner, tap " " to enter the Official Resin Library (see Figure 6). Select the resin type, and tap "Load Selected" to automatically import the preset slice parameters for this resin. (See Figure 7)

Resin Density: 1.15 g/ml

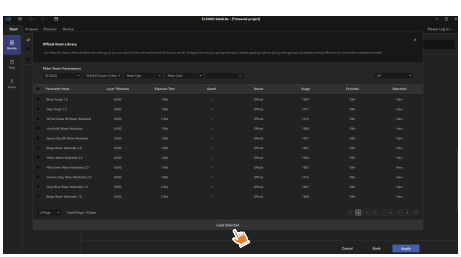
Resin Price: You can enter the actual price of the purchased resin, and the slicer can estimate the resin cost for each model you print.



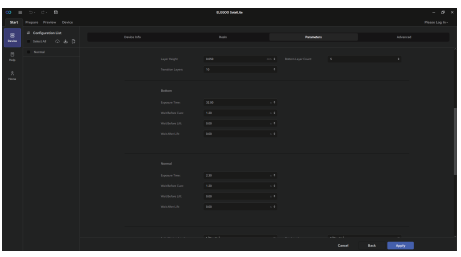
(Figure 5)



(Figure 6)



(Figure 7)



(Figure 8)

3.3 Printing Parameters (see Figure 8)

Layer Height: The recommended height for each layer is 0.05 mm. However, you can set it between 0.01 mm and 0.2 mm. The higher the layer height you set, the longer the exposure time required for each layer.

Bottom Layer Count: Set the number of initial print layers. If the bottom layer count is n, the exposure time for the first n layers is the bottom layer exposure time. The default setting is 5 layers.

Normal Layer Exposure Time: The exposure time of a normal print layer is set to 2.3s by default. The higher the print layer height is set, the longer the required time.

Bottom Layer Exposure Time: Set the bottom layer exposure time. Properly increasing the bottom layer exposure time helps to increase the bonding strength between the printed model and the build plate. The default setting is 32s.

Transition Layers: The transition layers makes the bonding between the layers tighter. Except for the exposure time, other parameters of the transition layer are consistent with those of the normal layer.

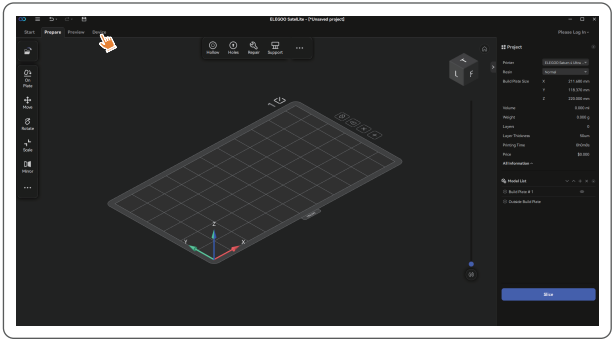
Wait Before Lift: The time interval between the end of print exposure and the start of printer release. The default value is 0s.

Wait After Lift: The time interval between the start of coming to rest by the printer after release and the start of retraction. The default value is 0s.

Wait Before Cure: The time interval between the start of coming to rest by the printer after retraction and the start of exposure. The default value is 1.2s.

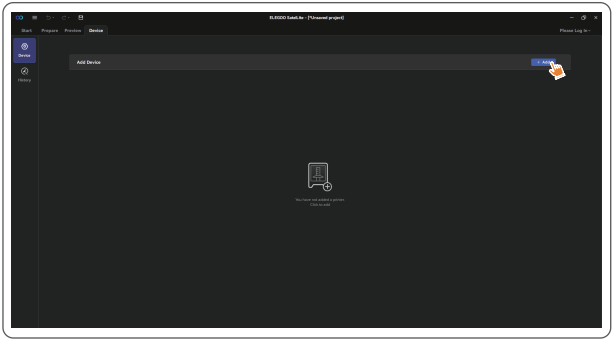
Note:
1. This device uses a tilted release method for printing. There is no need to set the Z-axis motion parameters. You can set the print mode through the internal settings of the device.
2. The printing parameter examples listed in this manual are for reference only. In actual applications, please contact official after-sales support for parameter confirmation based on factors such as the device model and resin (including type and color) used.

1. Open the slicing software and click “Device” in the top left corner to enter the device management center (see Figure 9).



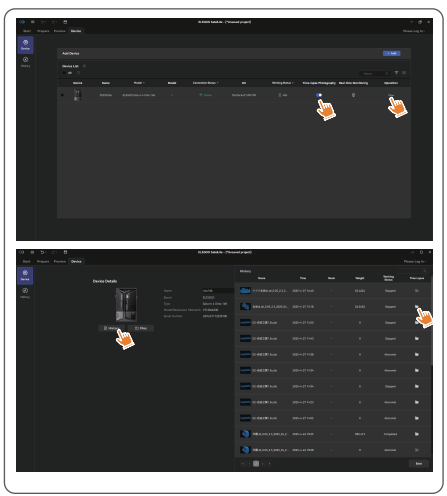
(Figure 9)

2. After entering the Network Management Center, click "Add Printer" to associate the printer (make sure the computer and printer are in the same LAN). After associating the device, you can remotely control it through the software. (see Figure 10)



(Figure 10)

1. In the printer management interface, you can turn on the AI camera to observe the printing situation in real time. You can also choose whether to activate the time-lapse photography feature before starting a print. The generated time-lapse videos can be saved in the history records. (see Figure 11)

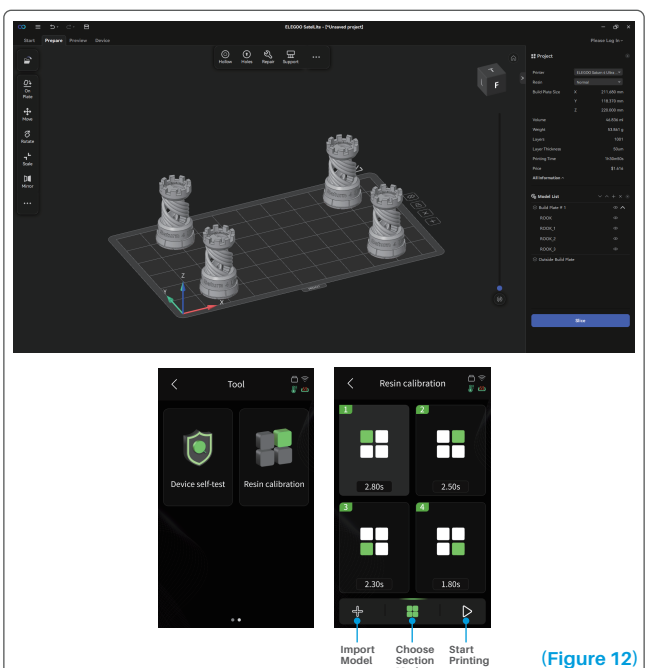


(Figure 11)

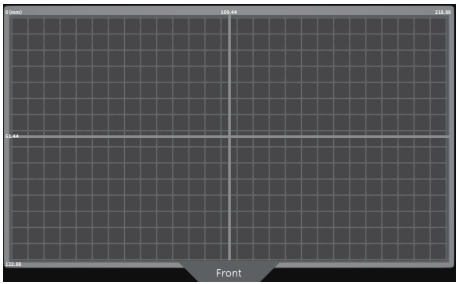
Notes:

1. Time-lapse photography can only be used when the model height exceeds 50mm. Time-lapse recording starts at 30mm height and requires additional processing time after the print is completed in order to generate the time-lapse videos. The processing time is directly proportional to the model height.
2. The device can store up to 20 time-lapse photography videos. Once the storage is full, the videos will be automatically replaced in the order they were generated. Therefore, please download your time-lapse videos promptly.
3. Only when the model height exceeds 100mm, the AI camera will detect abnormal conditions such as anomalies on the build plate or warping edges.
4. With continuous deep learning, the AI camera's detection and judgment of anomalies will become more accurate. Please pay attention to the camera's upgrade information to assist you in completing the printing tasks more effectively.

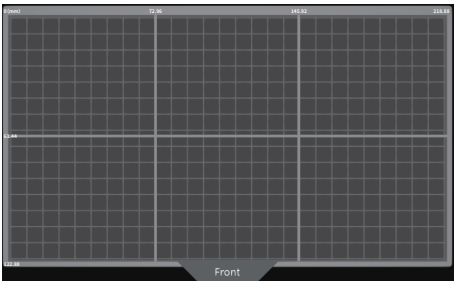
Choose the appropriate section mode for the model (the screen exposure area will be divided into 4, 6, or 8 equal sections depending on the selected mode). Click the "+" button to import the sliced model (please ensure that the model is not placed on the section boundaries, refer to see Figure13 for the section positions). Set the exposure time for each section, starting from Zone 1 (the exposure times for each section should be set in a decreasing or equal manner). Click "Start" to begin printing. You can determine the optimal resin exposure parameters based on the printing results. The following example demonstrates the use of a 4-section mode. (see Figure 12)



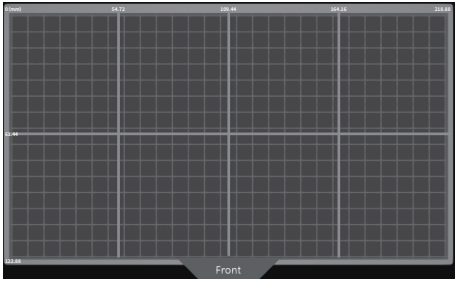
(Figure 12)



(4-Section Mode)



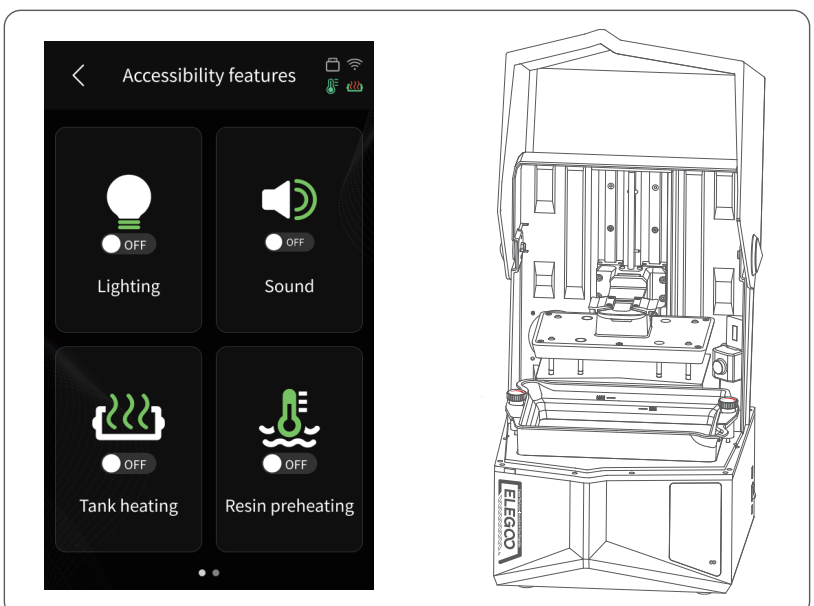
(6-Section Mode)



(8-Section Mode)

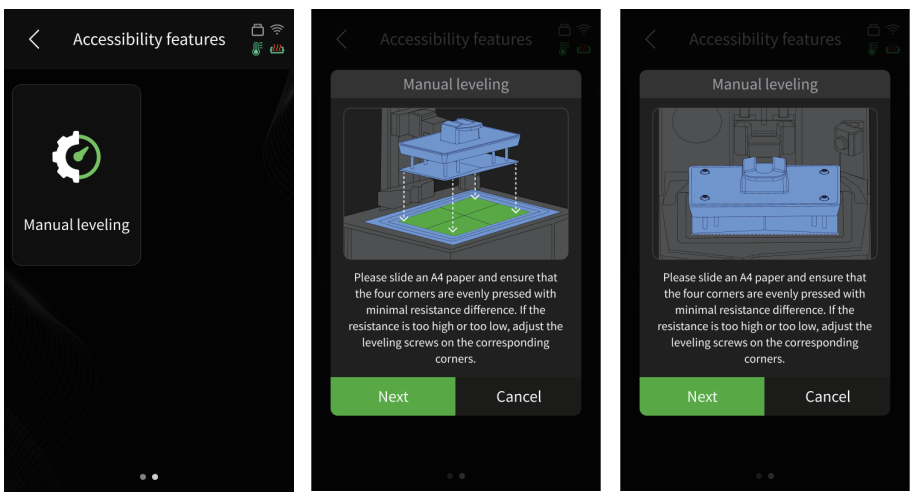
(Figure 13)

1. Activate the lighting feature in low-light conditions to assist the AI camera in capturing clear images.
2. Adjust sound preferences manually on the accessibility features page.
3. When printing in lower temperatures, use the tank heating function to preheat the resin before printing.
4. Enable the resin preheating function to promptly heat the resin in the tank, preparing it to the ideal temperature for seamless printing when needed. The resin can be kept at the desired temperature for up to 24 hours, after which the heating process will automatically stop. (see Figure 14)



(Figure 14)

5. During printing, if the build plate cannot automatically level itself, select “Manual leveling” on the accessibility features page. Follow the on-screen instructions to manually adjust the screws on the build plate to align it correctly with the screen. This prevents printing issues like warping or detachment. (see Figure 15)



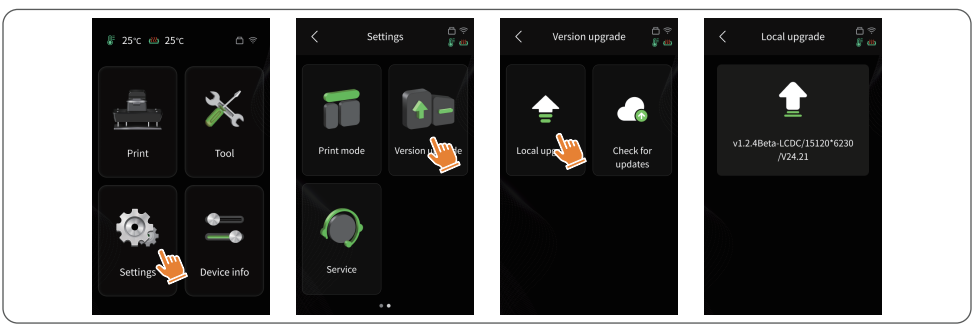
(Figure 15)

Important Notes:

1. Maintain the resin level above the MIN line and below the MAX line when heating resin in the tank.
2. During the startup self-check process, the machine will verify if the resin tank is properly installed and prompt for any anomalies.
3. Regularly clean the contact points at both the bottom of the resin tank and the corresponding machine locations to ensure smooth operation of the tank heating function and prevent damage to the machine.

1. Local Upgrade

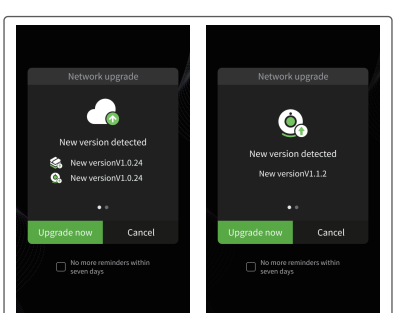
Download the local upgrade firmware package file to a USB flash drive in advance. Insert the USB flash drive into the printer, click "Settings," then click "Version Upgrade," and select "Local Upgrade." Select the version to upgrade and click "Confirm" to start the upgrade. (see Figure 16)



(Figure 16)

2. Network Upgrade

When the printer is connected to the network after startup, a pop-up prompt will appear if there are firmware updates available. You can choose to upgrade the printer firmware or the camera firmware online. (see Figure 17)



(Figure 17)

1. Model doesn't stick to the build plate

Bottom layer exposure time is too short, please add more time.
Model bottom has very small contact with the build plate and please add more bottom layers.

2. Model layer breakage

Printer is shaking during printing.
Release liner film is very loose due to long-time usage and need to be changed.
Build plate or resin tank is not fastened.

3. Abnormal Screen Exposure

If your printer doesn't work please contact us at 3dp@elegoo.com.
and as to better help and solve problems for you, please add your order ID in your email.

4. Printing failure

If the model was not completely printed or failed,there might be some residues left in the resin, which can be filtered out using a funnel when you save the rest resin back into its sealed bottle.
If you don't filter out the residues the build plate may cause damage to the LCD screen when you're printing next time.
As to the residual resin on the build plate and tank,you can clean and wipe them up using tissues.

5. Why do I receive an error message for residue detection when starting a print

First, check if the resin tank and build plate are properly secured. Then, try printing again. Avoid touching or causing vibrations to the machine during the self-check process before printing to prevent sensor calibration issues. If the error persists, clean the resin tank or filter the resin for any tiny foreign objects.

6. Why do I get resin insufficient or exceeding maximum volume error when starting a print

At the beginning of the print, the mechanical sensor detects the remaining resin in the tank. To ensure smooth printing, the resin level must be above one-third of the tank volume. Additionally, the resin level should not exceed the MAX line to prevent leakage. If the required resin amount for the model exceeds the current resin level in the tank, a pop-up message will prompt for resin refilling. If you encounter abnormal errors, recalibrate the device through the self-check process. Remember not to touch or vibrate the machine during self-check to avoid affecting sensor calibration.

7. How to adjust the printing speed

The release speed of the printer is fixed, with two modes available: fast and slow. However, regardless of the mode, the first 50 layers are always printed at a slower speed to ensure a higher success rate. The actual printing speed per layer also depends on the settings of the slicing parameters, such as layer thickness, exposure time, and wait time. Changing these parameters will alter the actual printing speed.

8. What should I do if resin leaks into the machine

Due to the nature of tilted release motion, it is not possible to achieve a completely sealed printing area. To address this, we have implemented several protective measures. When the sensor detects resin exceeding the MAX line, the print will stop, and a pop-up window will appear as a warning. There is a groove design below the build plate, where a small amount of leaked resin can flow into without affecting the machine. However, if a significant amount of resin spills occur, please disconnect the power promptly and open the front panel of the machine for cleaning.

- Please do not use sharp or pointy tools to scrape the resin tank to avoid damaging the release liner film.

- Please clean up the resin tank before changing the resin to another color.

- Before and after printing, clean the build plate with paper towels or alcohol to ensure that there are no bumps or burrs on the build plate.

- Before each printing, daily check the exterior of the machine and all mechanical parts for any obvious damage, defects, or abnormalities.

- Try to keep the printing environment at 25-30 degrees Celsius when printing, and ventilate the printing room as much as possible to facilitate heat dissipation of the machine and resin odor volatilization.

- If the Z-axis keeps making friction noise, please add some lubricant to the lead screw. Please check and apply lubricant grease at least every 2-3 months, and increase the frequency of application as the printing frequency increases.

- If you don't use the printer in the next 48 hours, please pour the remaining resin from the resin tank back into the resin bottle and seal it well. If there is any residue, please use a filter to filter it out.

- The release film is a wearing part, please replace it regularly according to the machine prompts to ensure the success rate of printing.

- Please be careful when removing the printing platform to prevent damaging the LCD screen. Do a good job of daily screen cleaning, and unplug the machine in time after printing. If there is a screen exposure problem or service life has seriously affected the print quality, please replace the screen in time.

- Regularly clean the contact points at both the bottom of the resin tank and the corresponding machine locations to ensure smooth operation of the tank heating function and prevent damage to the machine.

● ELEGOO printers are covered by a warranty starting from the date of receipt. The warranty periods for different components may vary. For detailed information, please visit our official website at https://www.elegoo.com/pages/refund-policy.

● The free warranty does NOT include problems caused by self-disassembly and improper use, and wear and tear of the machine housing, etc.

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