

# 3D Dental Printer Support by MEGA GEN



## Manual

# Safety Instructions

**Always follow the safety instructions during assembly and usage, to avoid unnecessary damage to the 3D printer or individual injury**

	If you encounter any problems, please contact customer support. The QR code and URL are included in this manual.
	Be cautious when using the scraper. Always scrap away from the body and hands.
	In case of emergency, please immediately shut off the power to the printer.
	There are moving parts inside the printer, please do not touch any part of the internal machine while in use.
	Safety glasses and gloves should be worn as PPE.
	Keep the printer and its accessories out of the reach of children. Keep uncured resin out of the reach of children.
	Vapors or fumes may be irritating. Always use the printer in an open and well ventilated area or wear a ventilator.
	Never expose the printer to the elements such as rain and

wind

The optimal working temperature is 0 - 40 °c, relative humidity is 30%-60%, use outside this range, may bring bad printing effect.

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# 1 Technical Specification

## 1.1 Printing

Model	GKtwo
User Interface Operation	5" capacitive touch screen
Slicer Software	UniFormation Slicer
Connectivity	USB memory stick

## 1.2 Specifications

Technique	LCD Shadow Masking
Light source	UV-LED (wavelength 405nm)
XY Resolution	29.7μm 7680*4320 (8K 10.3")
Z-axis Accuracy	0.01mm
Suggested Layer Thickness	0.03mm/0.05mm/ 0.1mm
Suggested Print Speed Rated	MAX 35mm/h
Exposure speed	2-3S/layer (0.05mm)
Rated Power	120W
Heating Power	200W

## 1.3 Physical Dimensions

Machine size	350mm*315mm*455mm
Build volume	228.1(L)*128.3(W)*245(H)mm
Resin type	405nm UV-resin
Operating temperature	25°C,30°C,35°C
Weight	19KG (Package included)

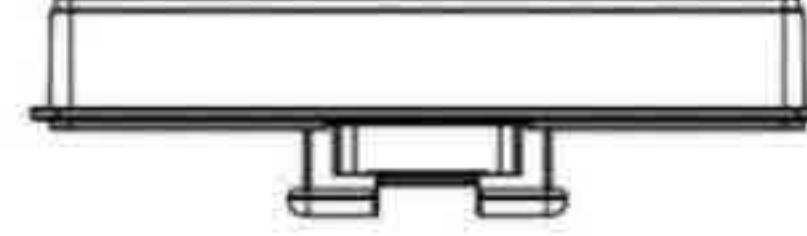
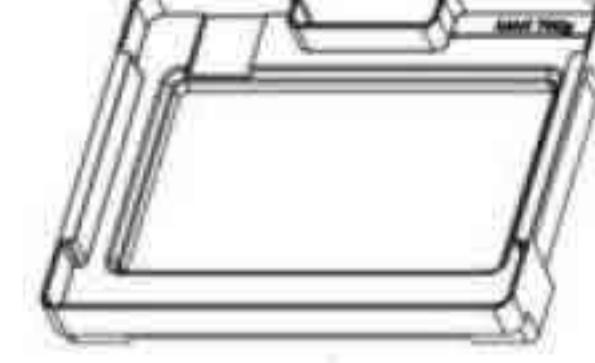
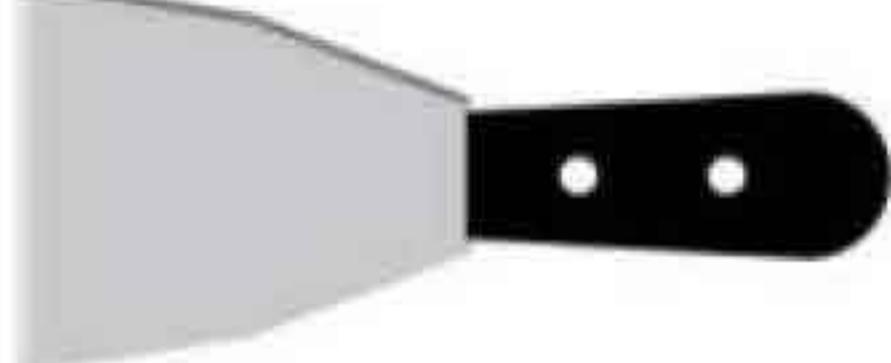
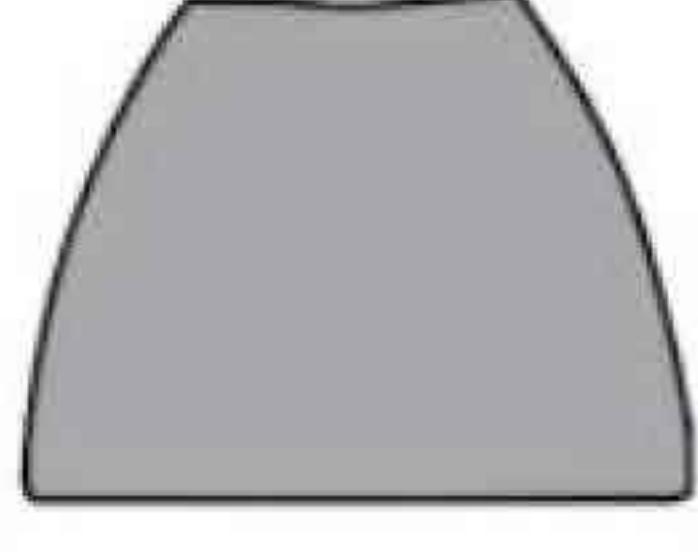
## 1.4 Recommended Printing Parameters

Layer Thickness	0.05mm
Normal Exposure Time	3s
Bottom Exposure Time	30s
Bottom Layers	20
Z Lift Distance	4mm
Z Lift Speed	50mm/min
Z Retract Speed	150mm/min

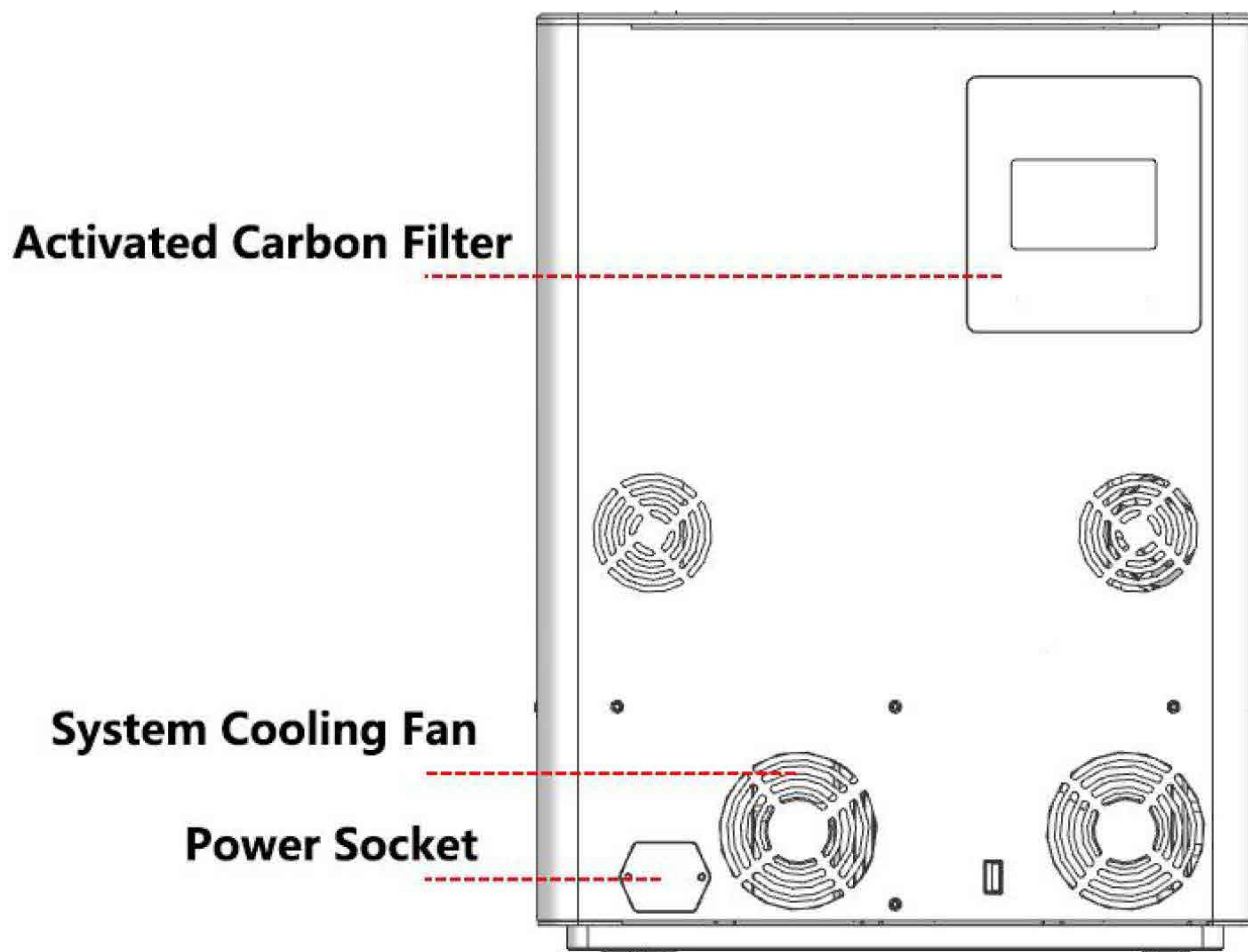
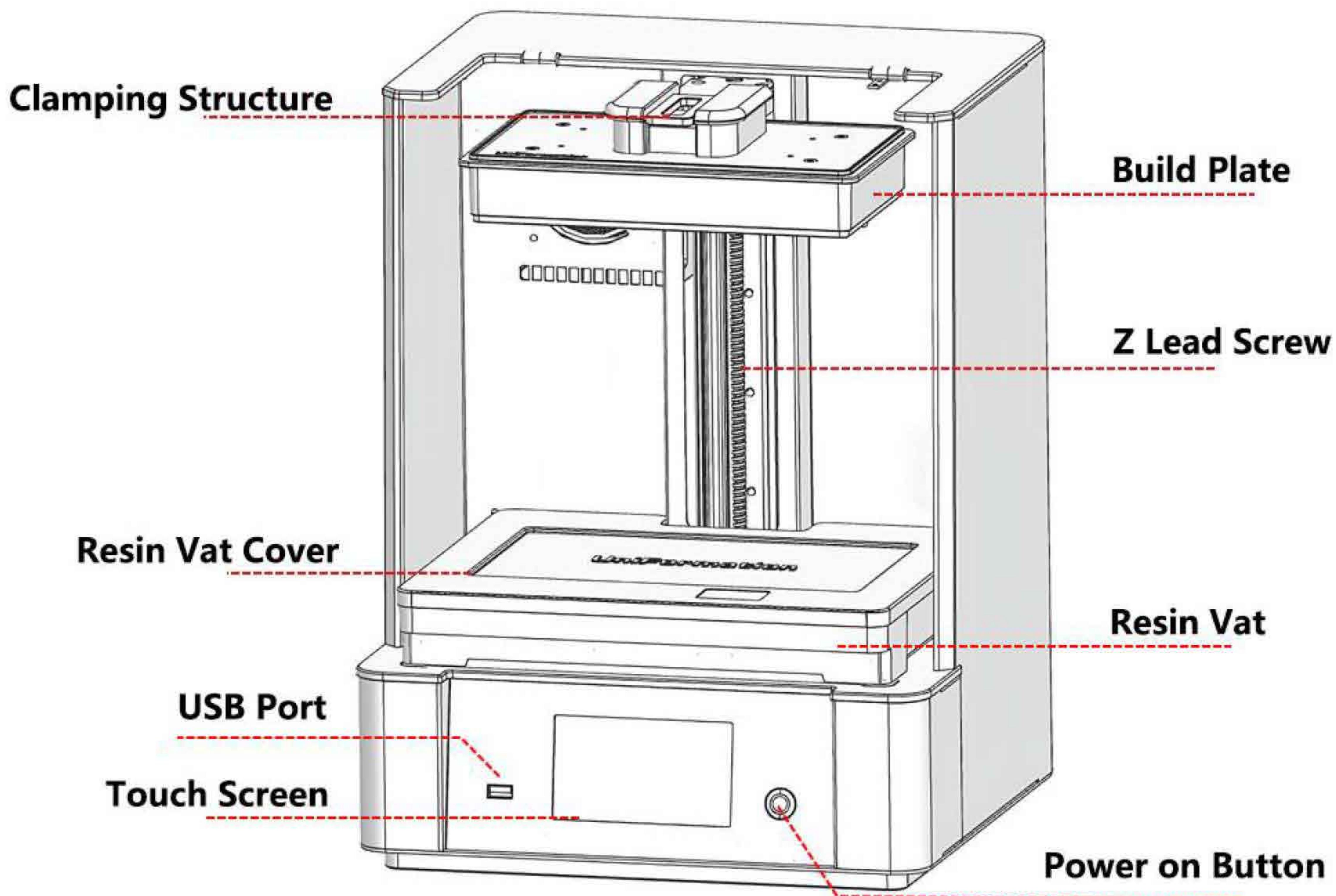
## Note:

The recommended printing parameters above are for reference only, which are calibrated for UniFormation resins. Please consult the resin manufacturer for settings of a specific resin.

## 2 Packing List

			
3D Printer	Build Plate	Resin Vat	
			
Metal Scraper	Gloves	nFEP Film	Plier
			
Tools	Funnel	Rubber Scraper	Screen Protector

### 3 Product Overview



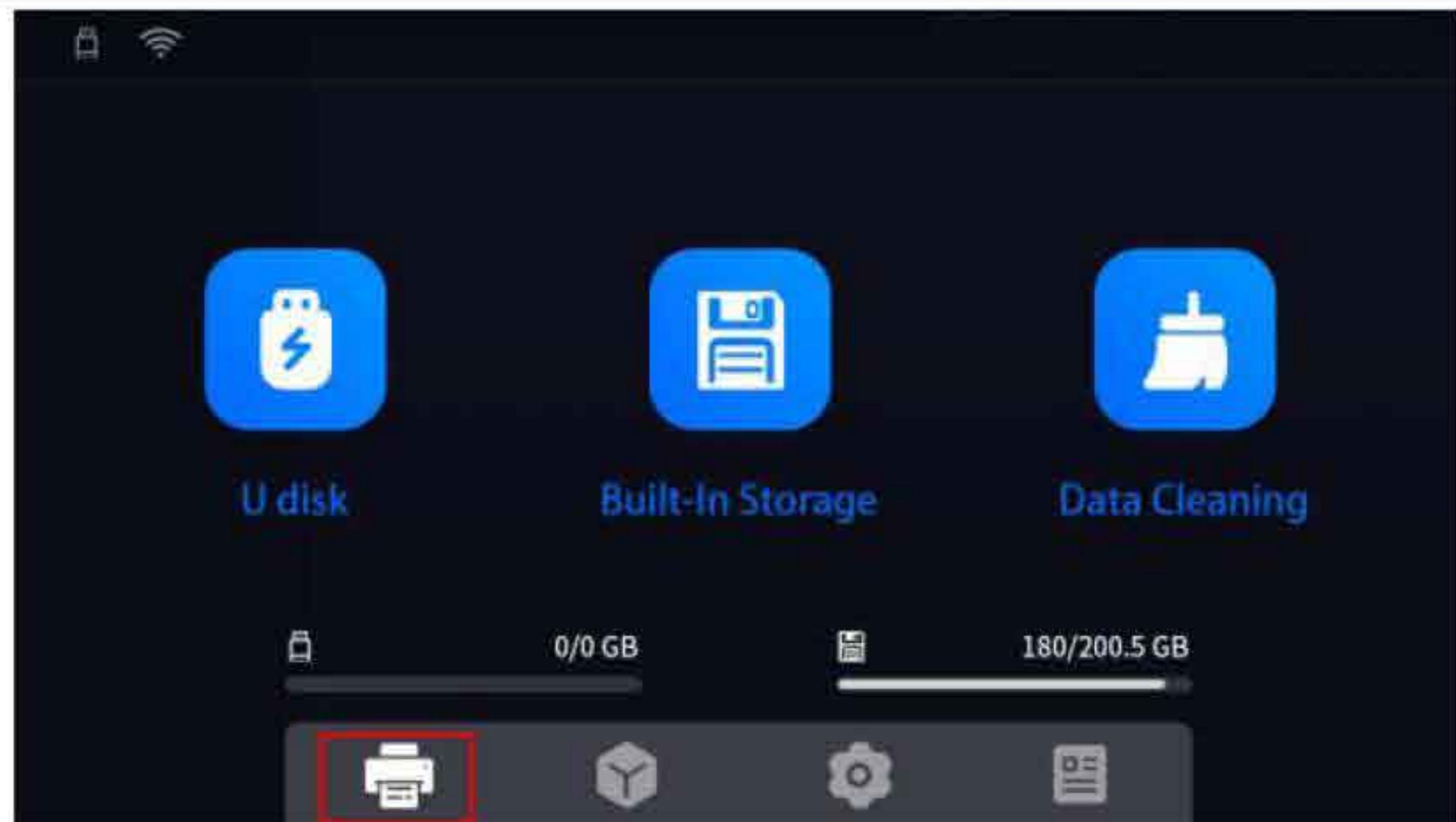
## 4 Menu Directory

# 3D Dental Printer Support by MEGA GEN

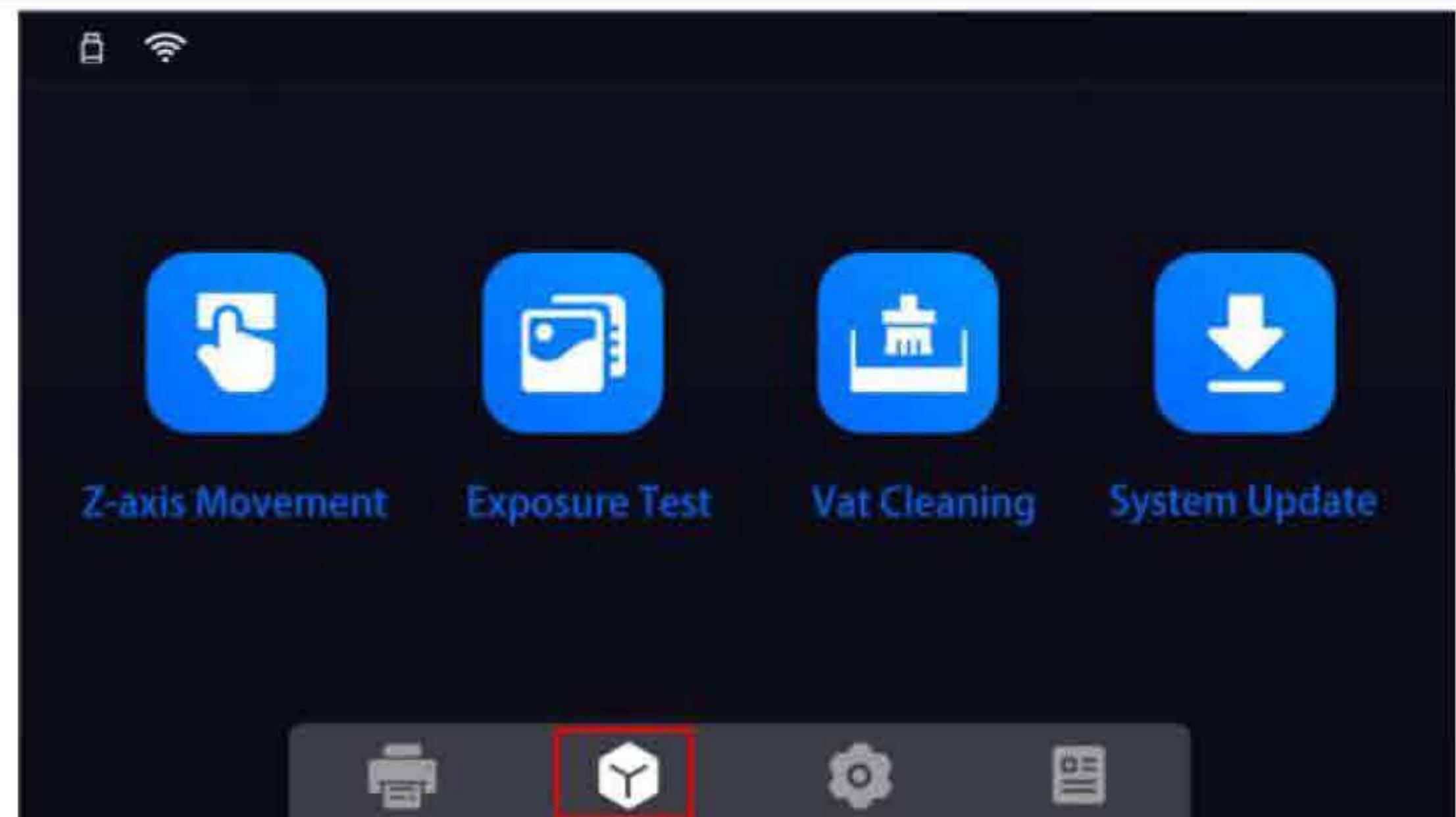
simple, so different



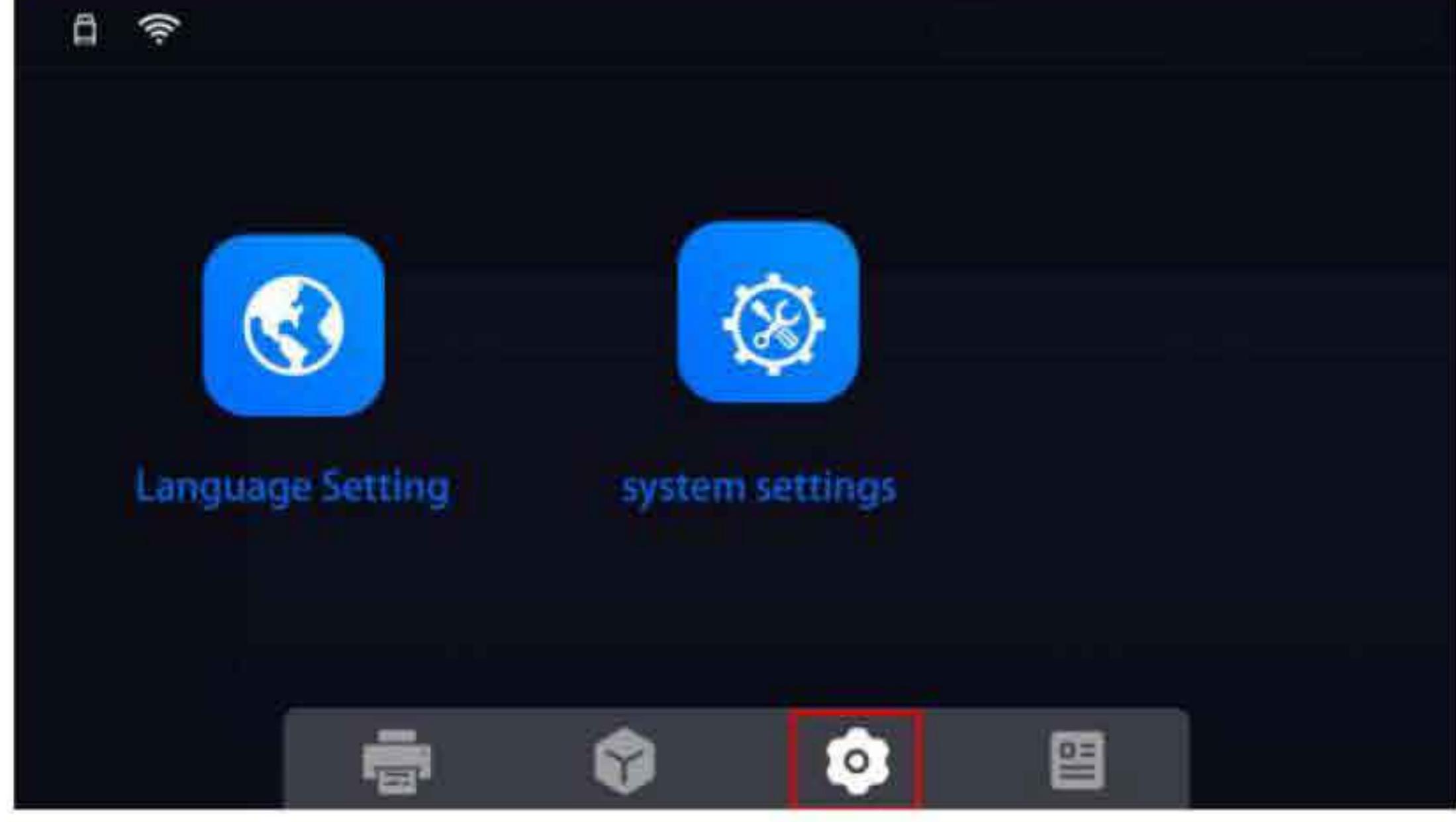
### Print



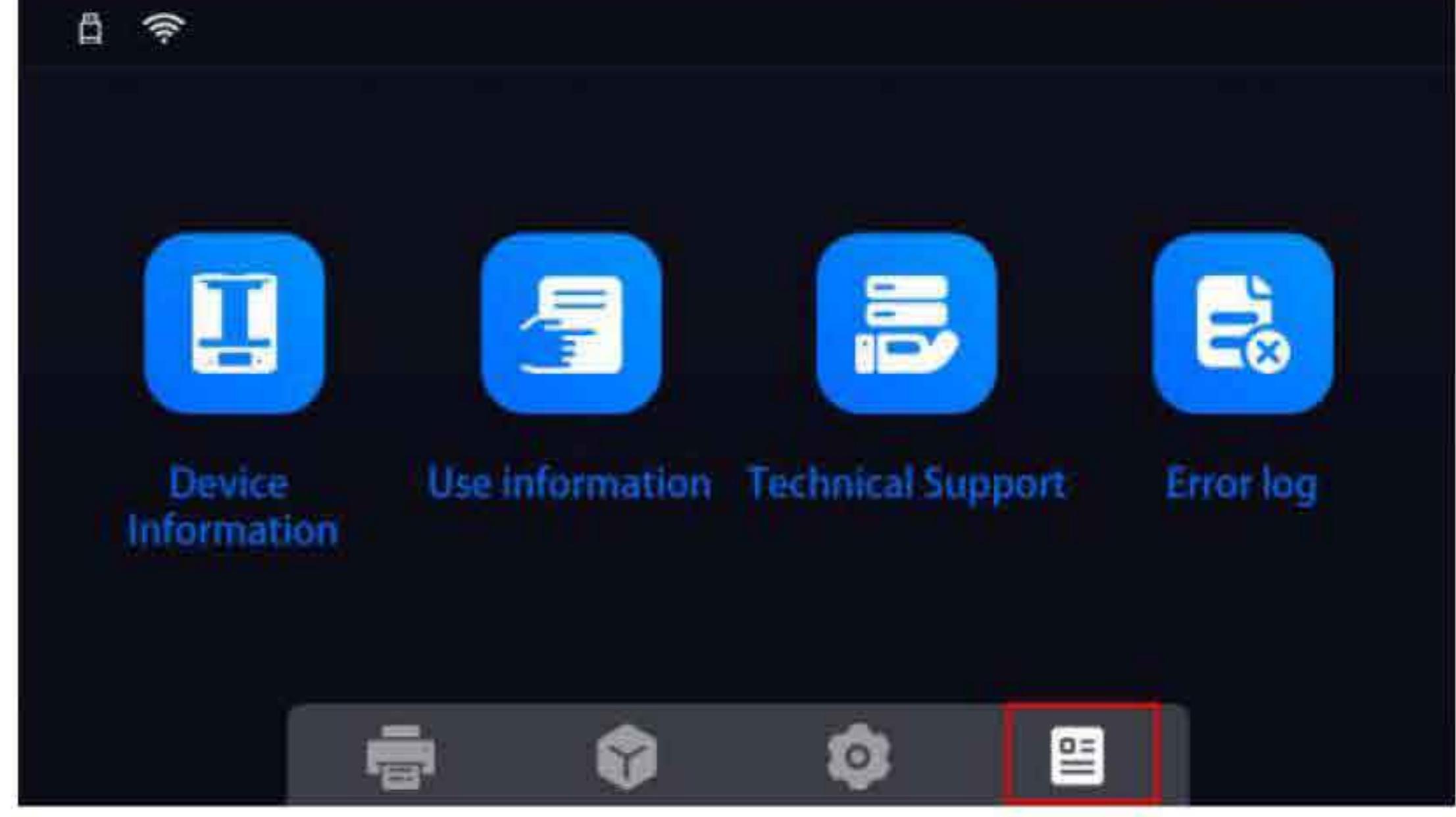
### Function



### Settings



### Info



# Print

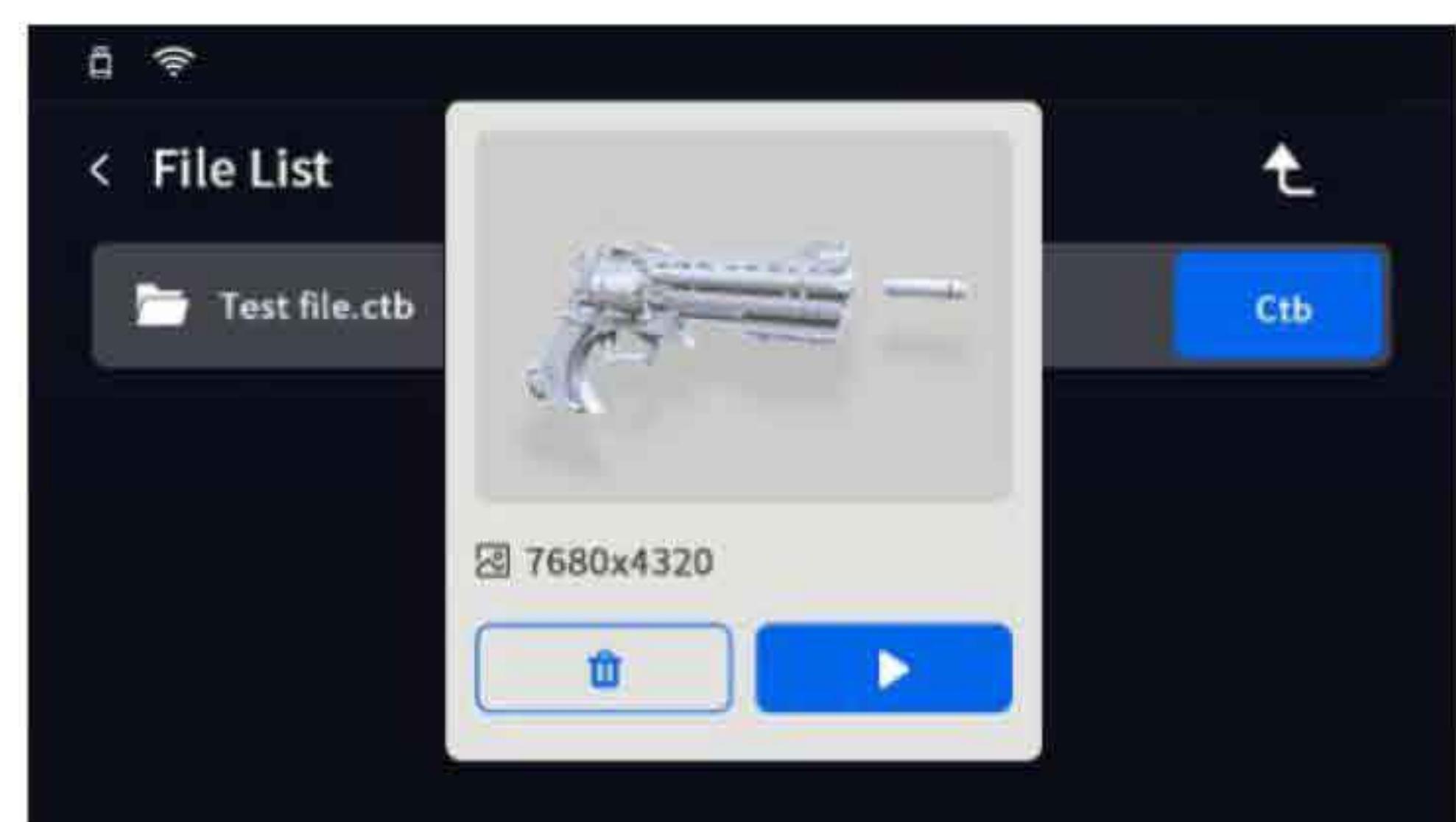
## File List

This screen displays the files loaded onto the printer.



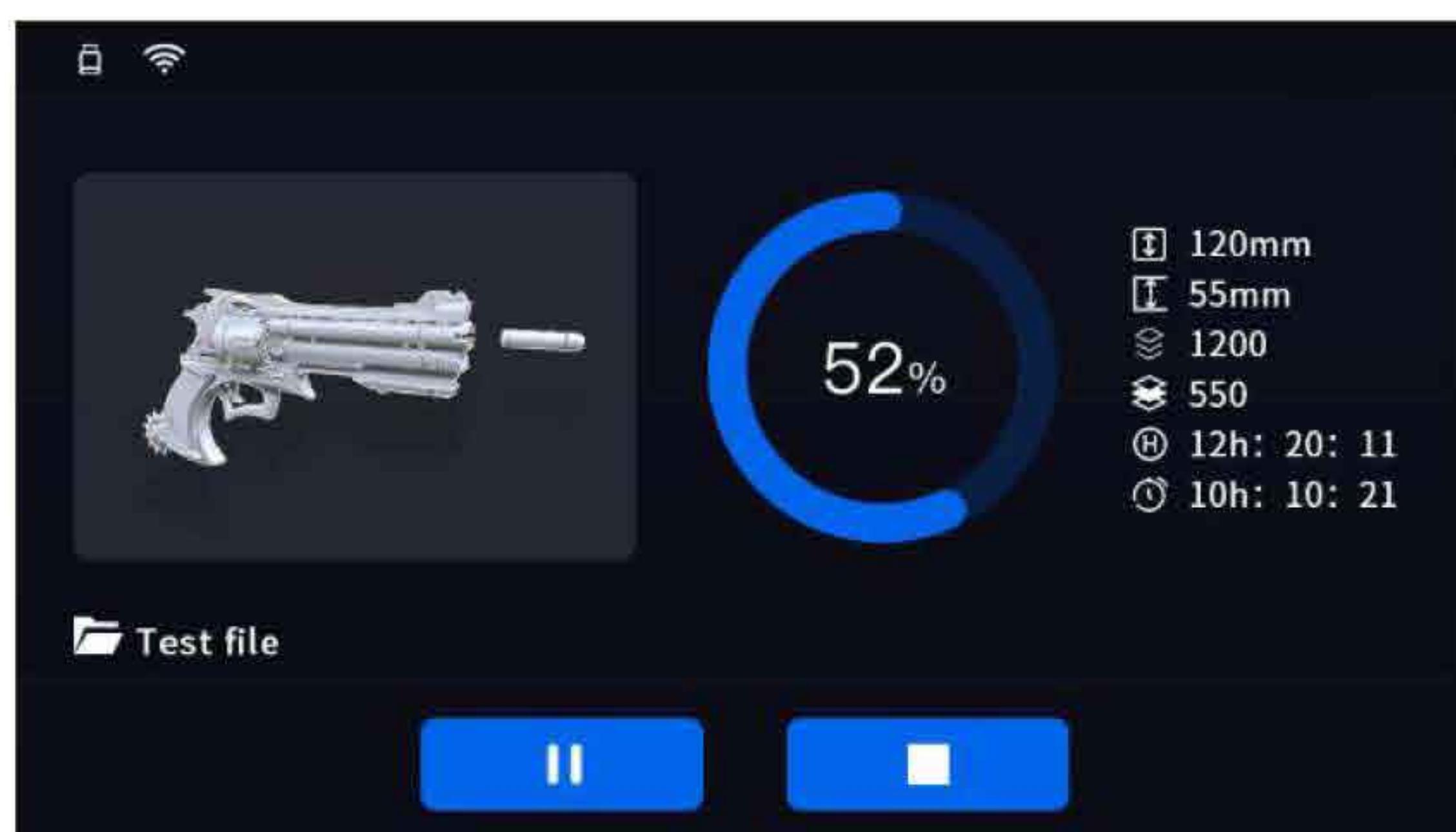
## Preview and print

This screen is used to view the model before starting the print.



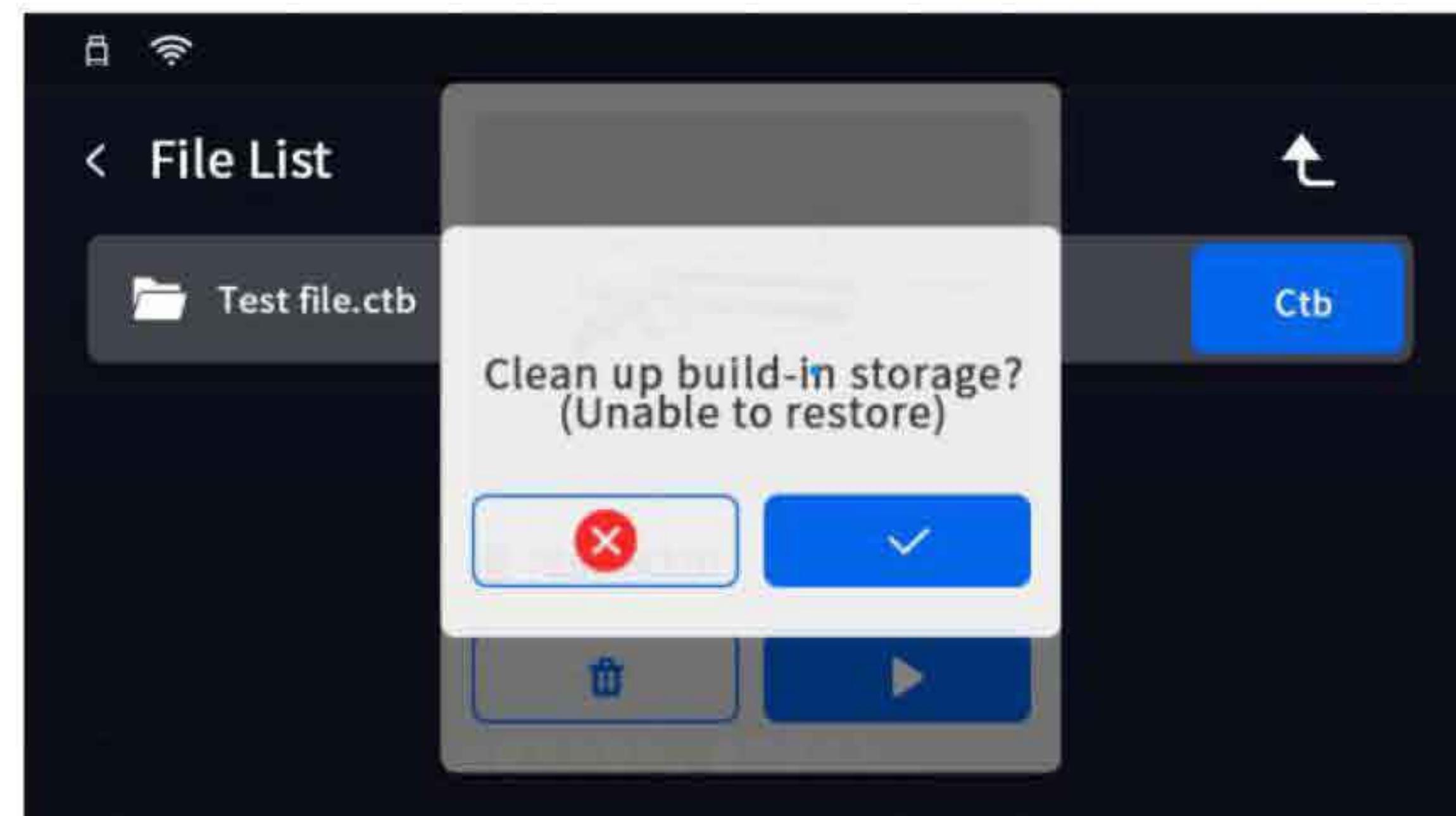
## Print process information

This screen displays the current status of the print in progress. Percent complete and print settings are shown



## Data cleaning

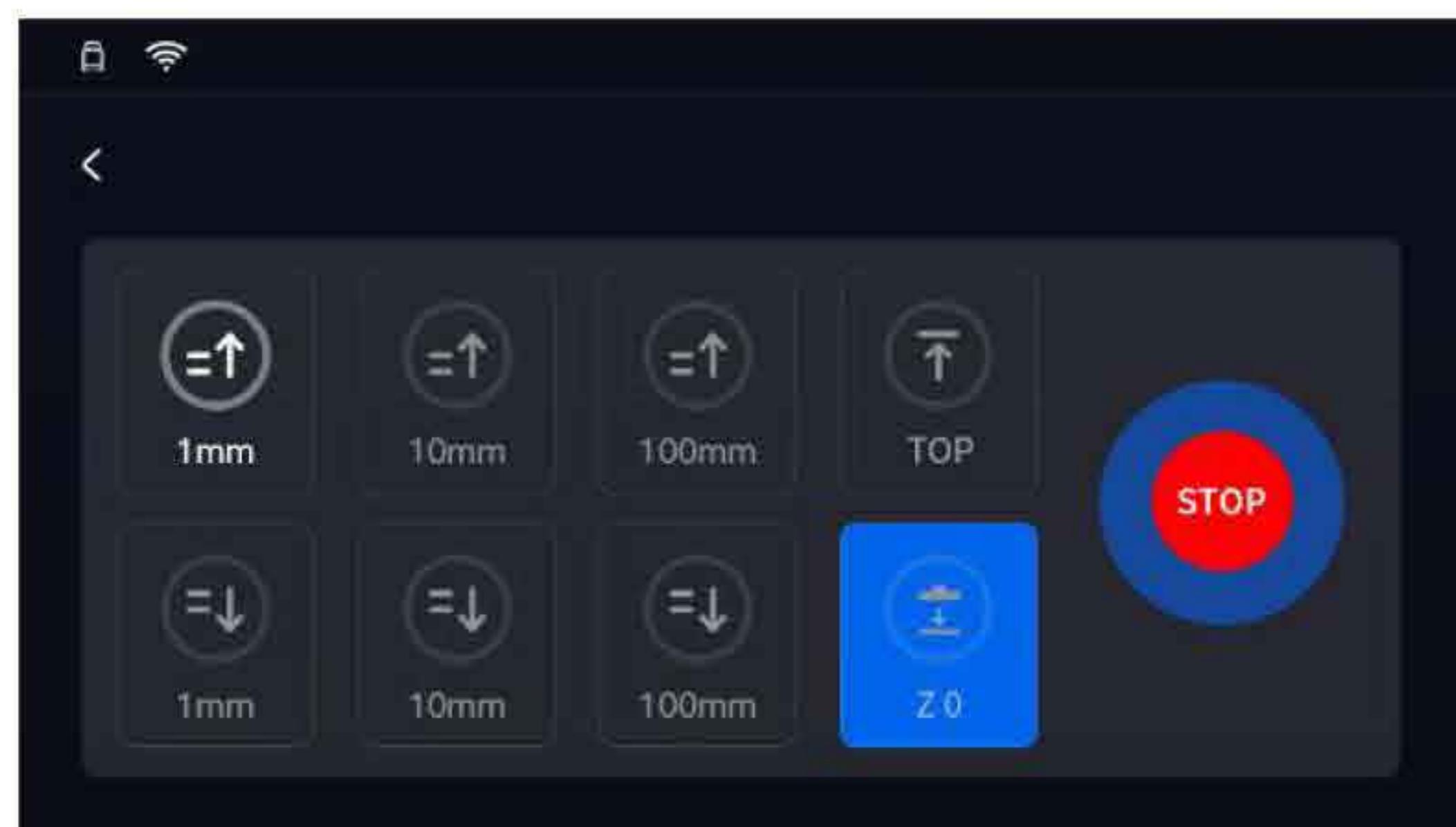
This screen is used to manage and remove files no longer needed. Please clean up the built-in storage regularly to avoid too many files



# Function

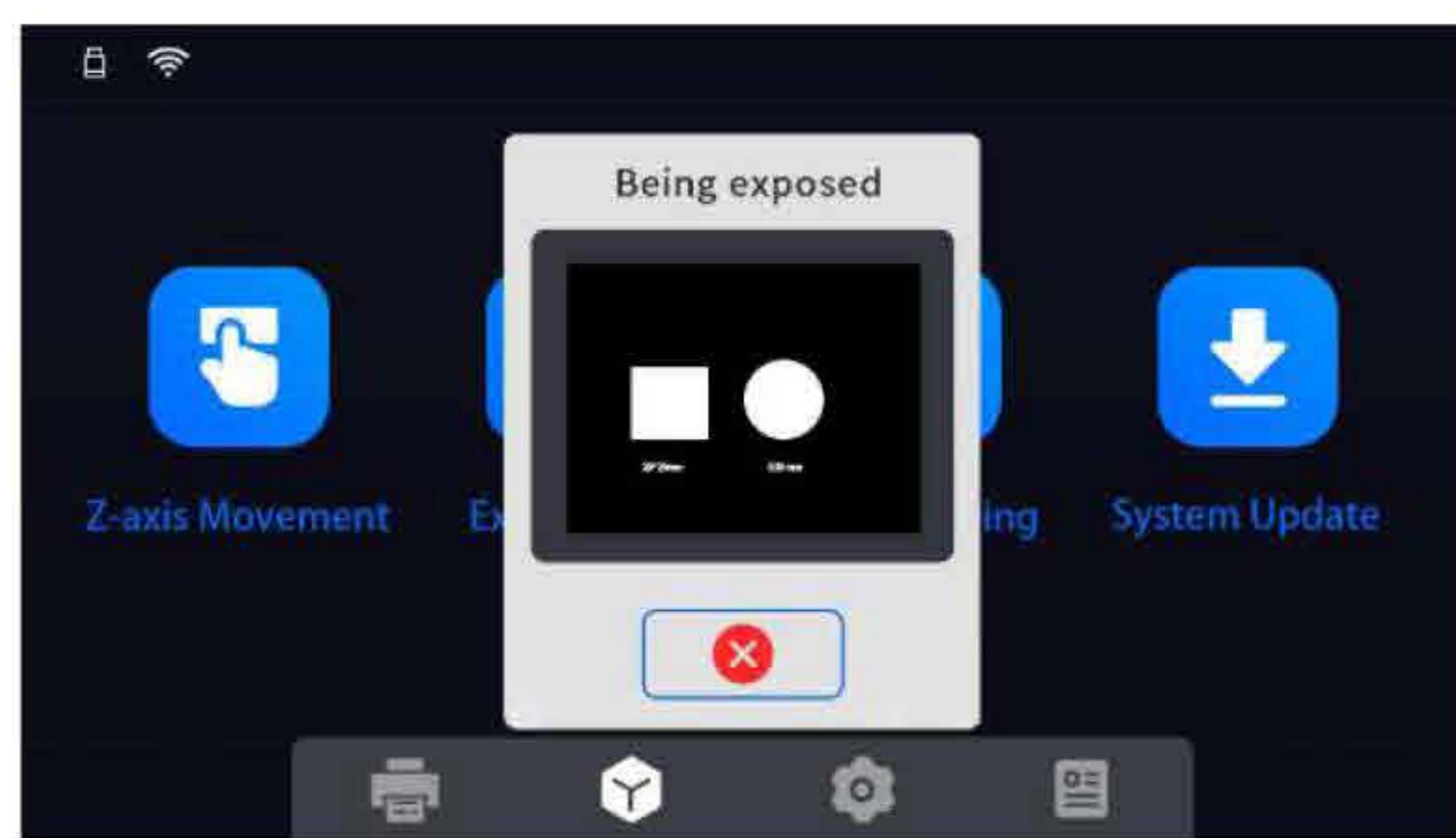
## Z-axis Movement

This screen is used to control the build plate movement.



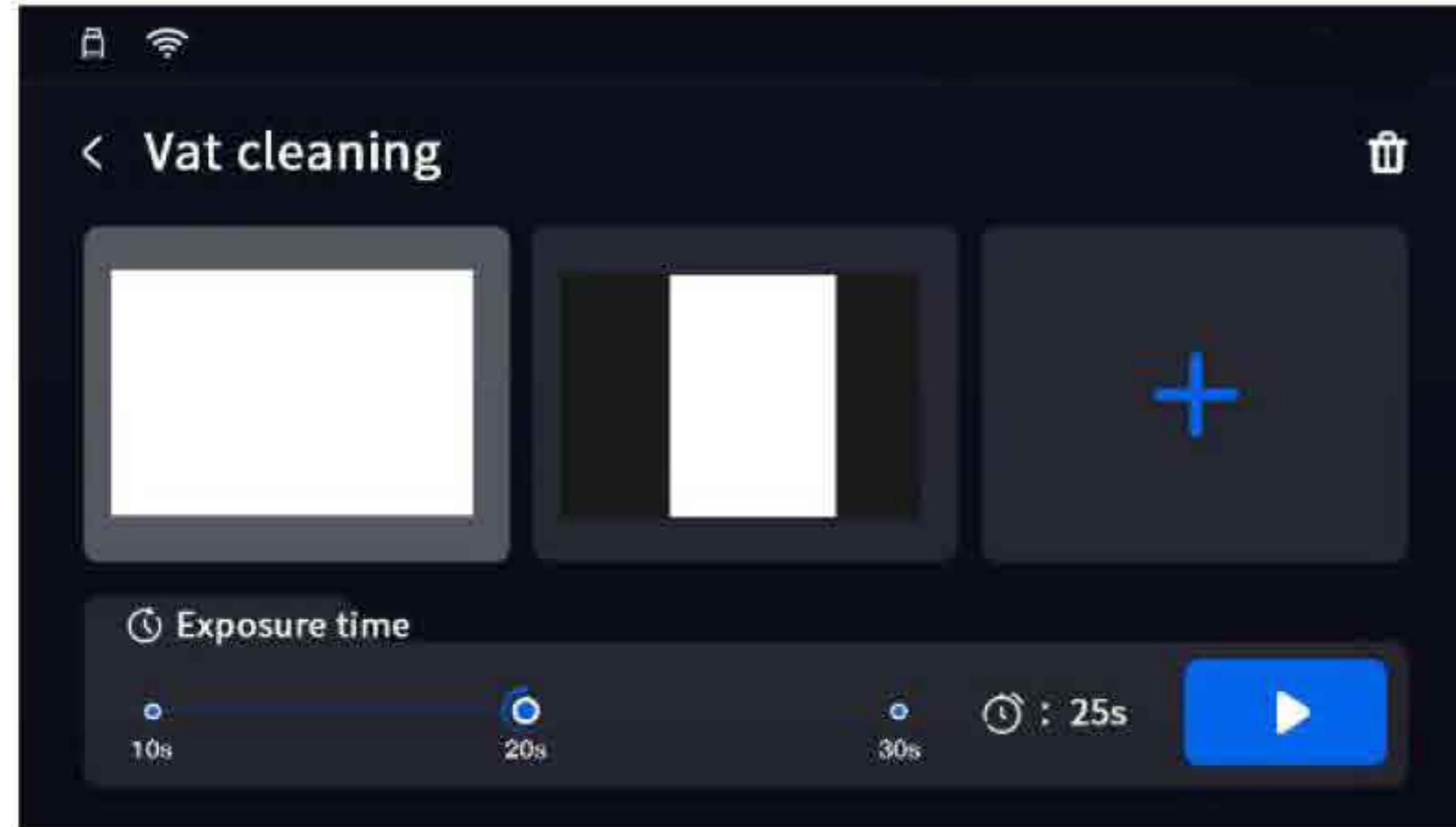
## Exposure Testing

This screen is used to verify the UV and screen function properly an image will display on the LCD screen. Please do not look directly at it (see 5.2).



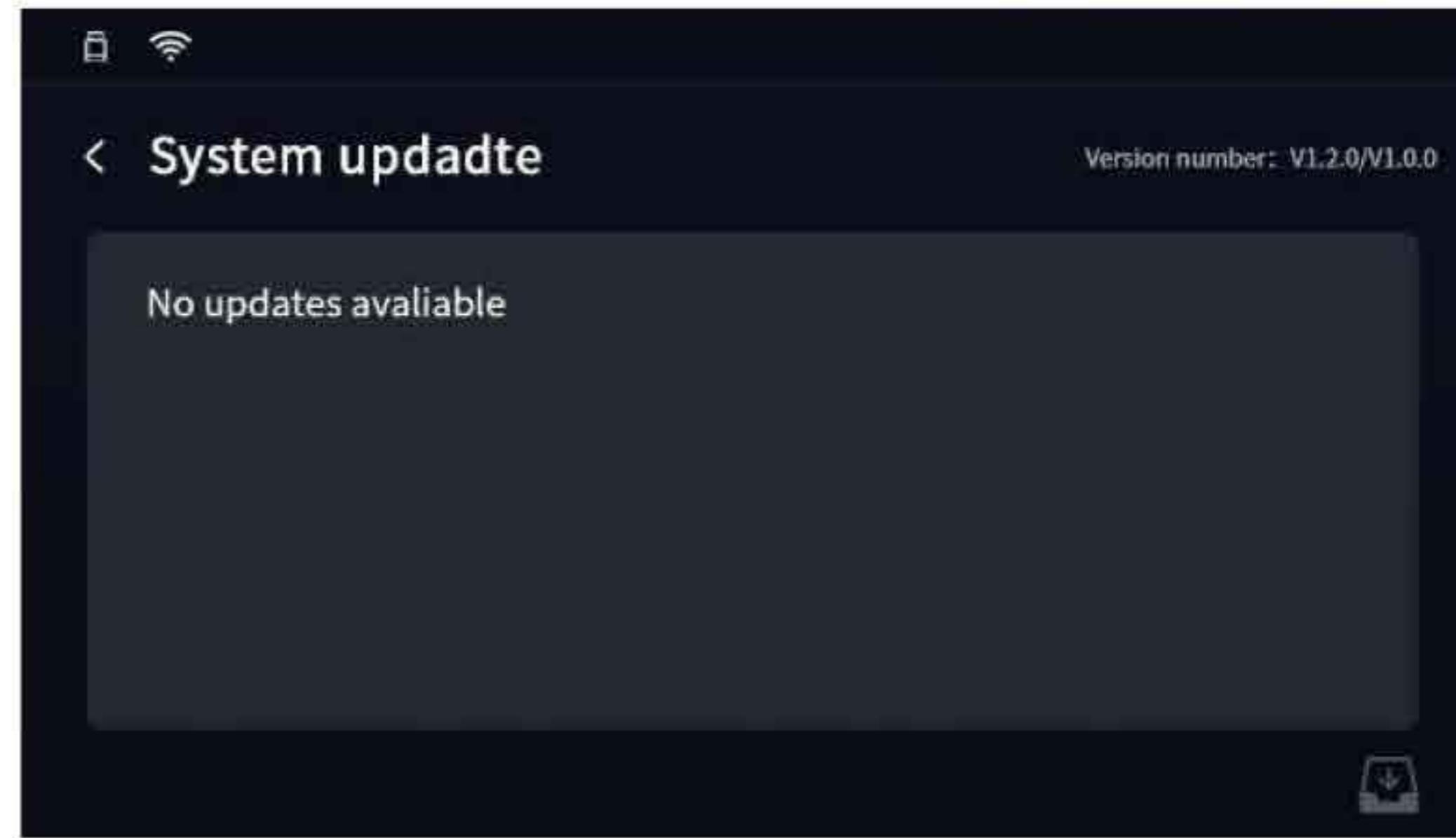
## Vat cleaning

This screen exposes the entire screen for a short time, this creates a thin layer of resin that can be peeled off to clean the vat.



## System Updates

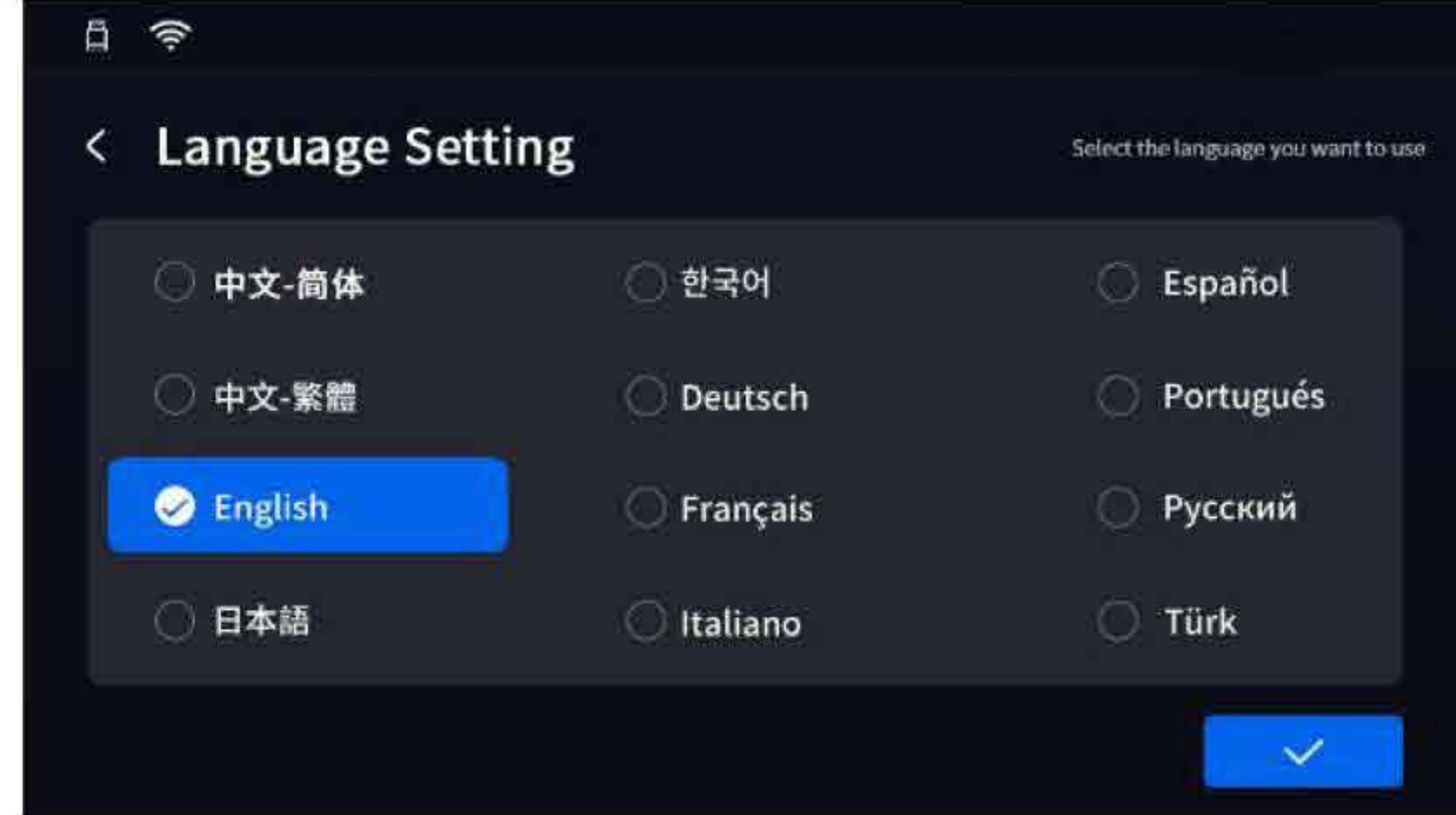
This screen is used to perform firmware and system updates.



# Settings

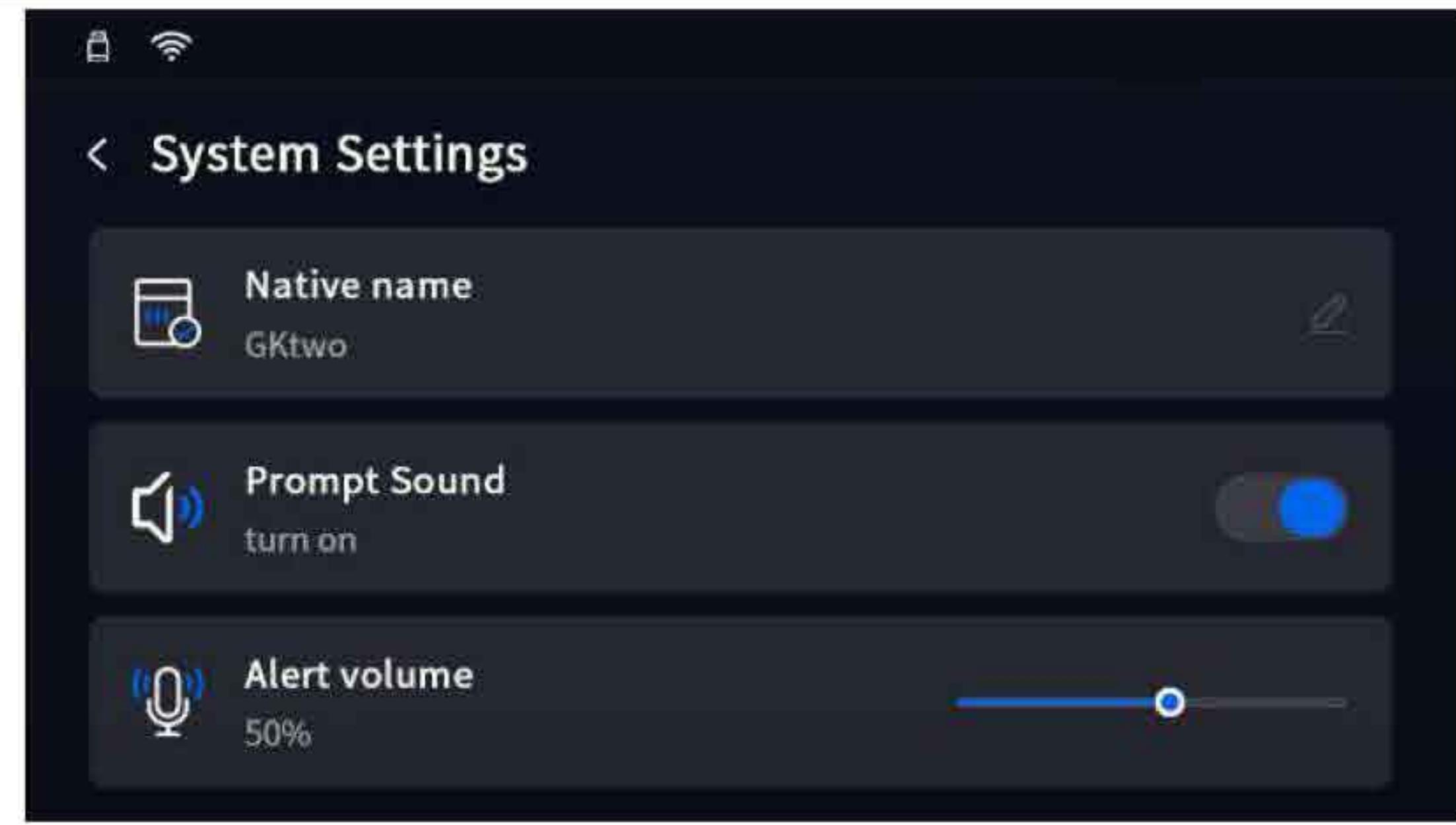
## Language Setting

This screen is to set the desired language.



## System Settings

This screen is to set the heating or sound options



## Information

### Device Information

This screen displays the current firmware and other system information that can be used for diagnostics.



### Usage Information

This screen helps you track printer usage for maintenance. It will help prevent leaks from worn parts.

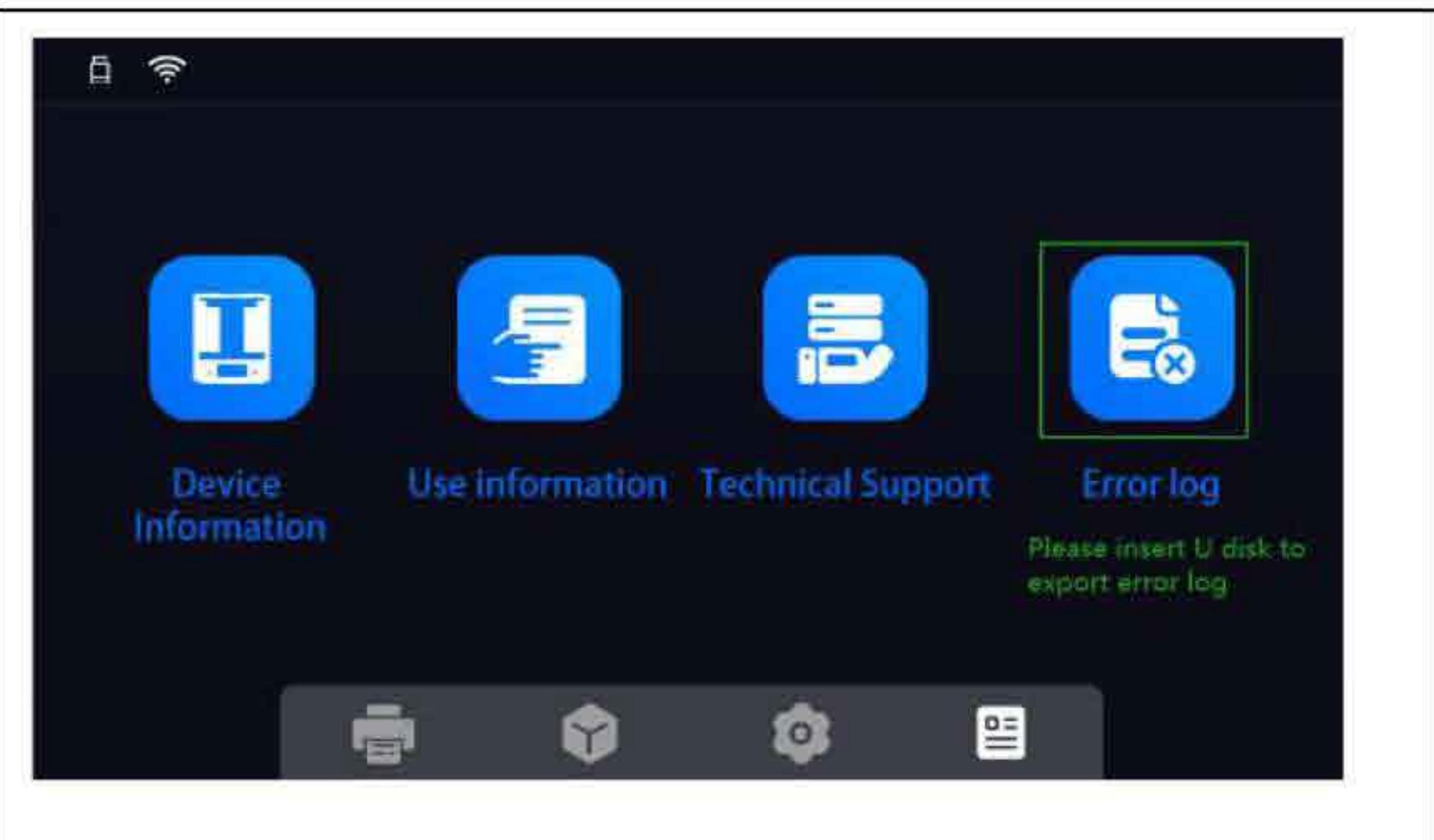


## Technical Support

This screen shows the ways to contact support.

## Error log

This screen displays any errors that the machine has reported.



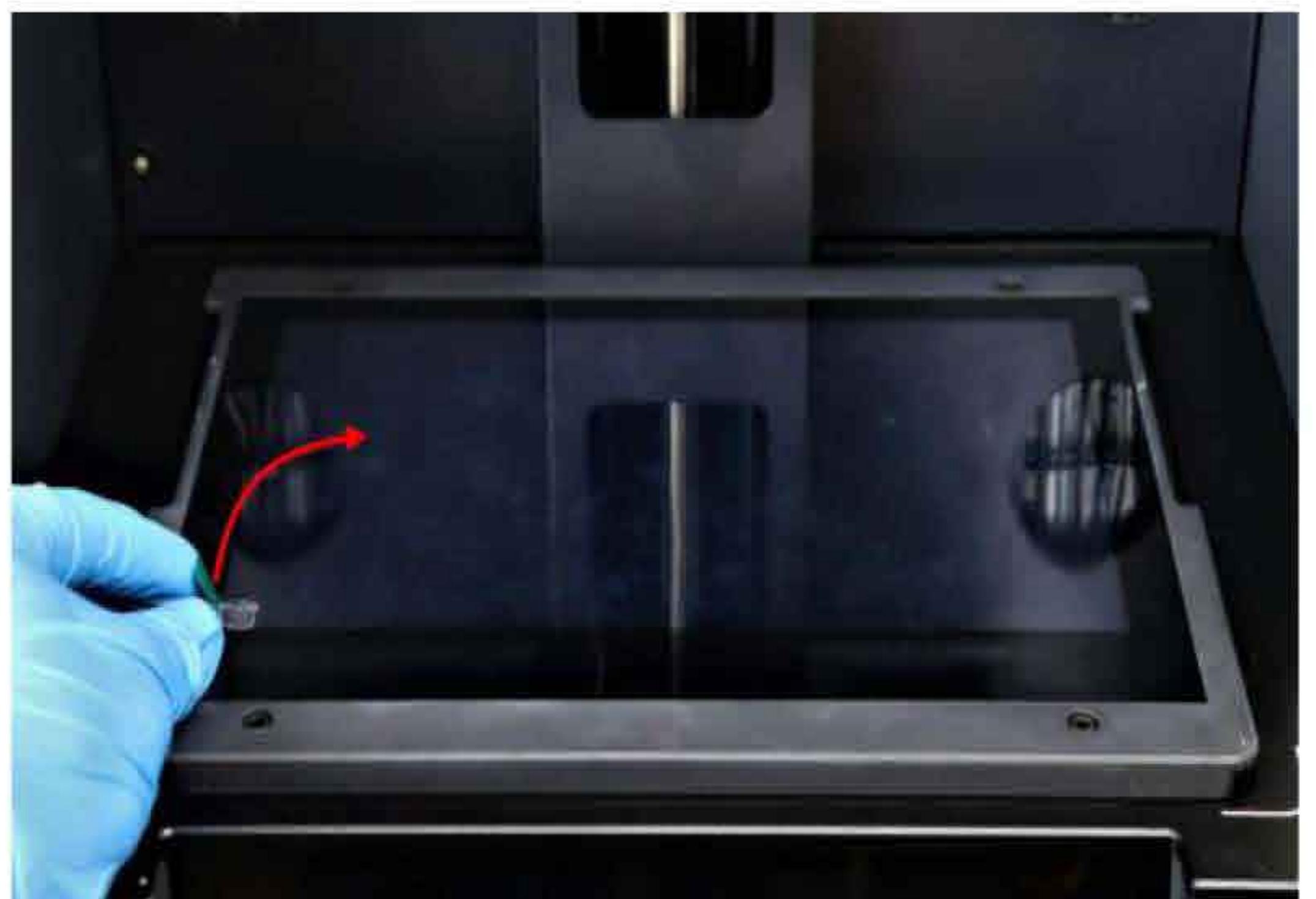
## 5 Assembly

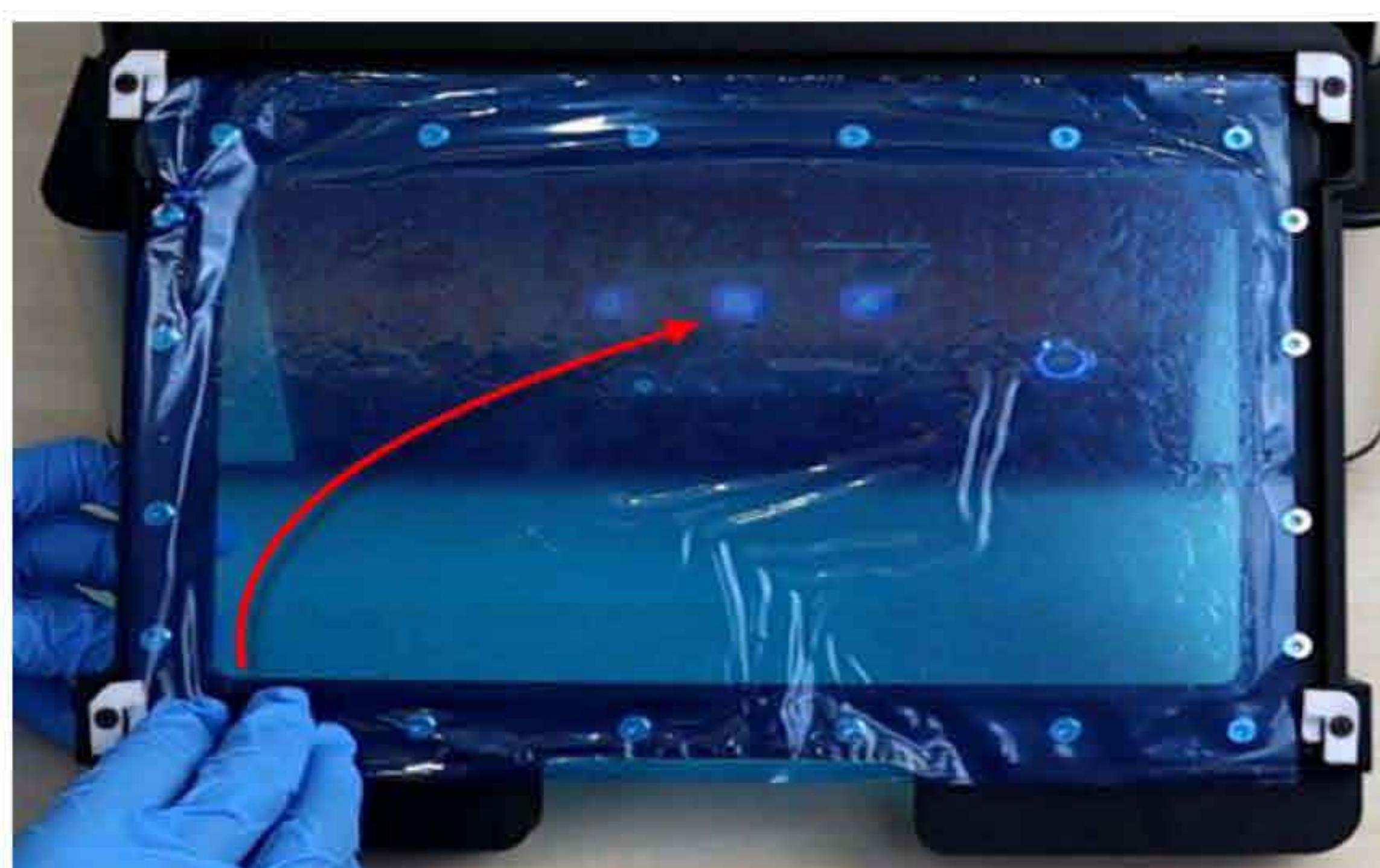
### 5.1 Printer set up

- Unpack the machine and take out the accessories.
- Remove the foam from between the build plate and the resin vat
- Take out the activated carbon filter from the foam packing , and install the activated carbon filter to the back of the printer. **(After installing the activated carbon filter for the first time, please note if there is any activated carbon debris, please clean it up first to avoid falling into the resin vat.)**



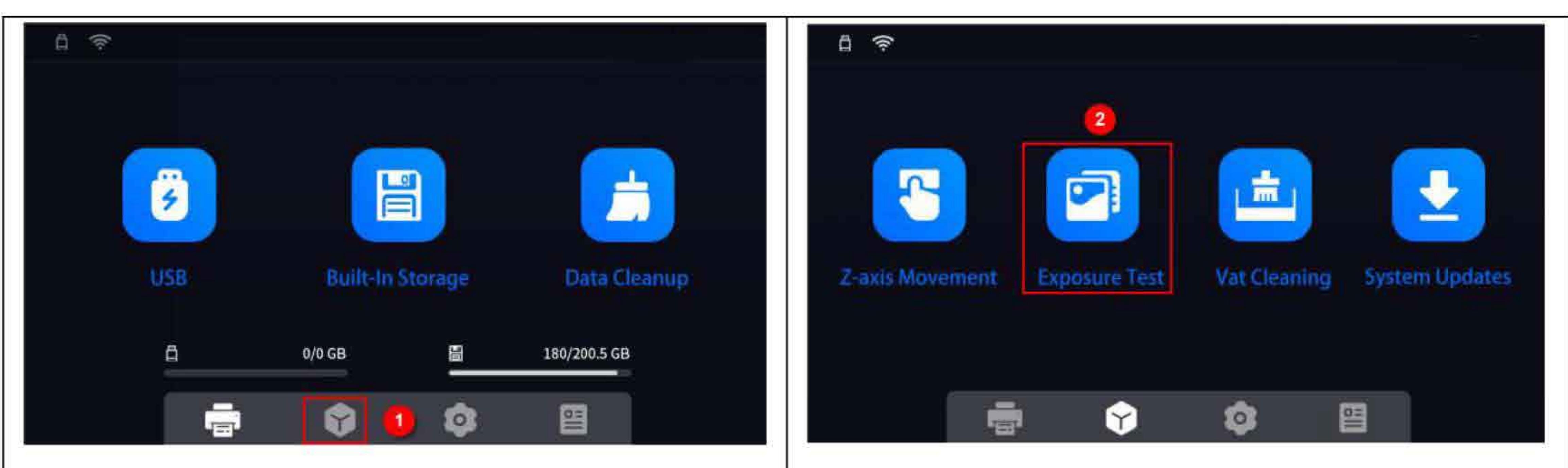
- Carefully pull the resin vat outward, and remove it by lifting upward.
- Remove the protective film on the screen and the protective film under the resin vat.
- Connect the power cable to the power outlet and back of the printer, then power on the printer by pressing the power button located on the front.



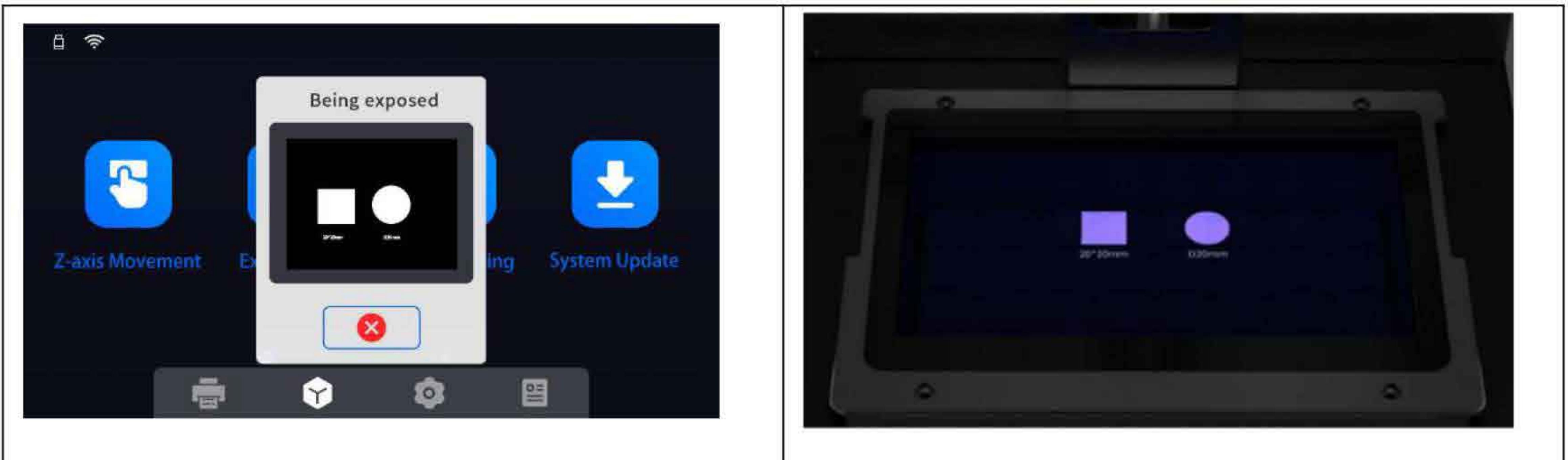


## 5.2 Testing UV light

Please select the icons shown below to perform a screen exposure test.



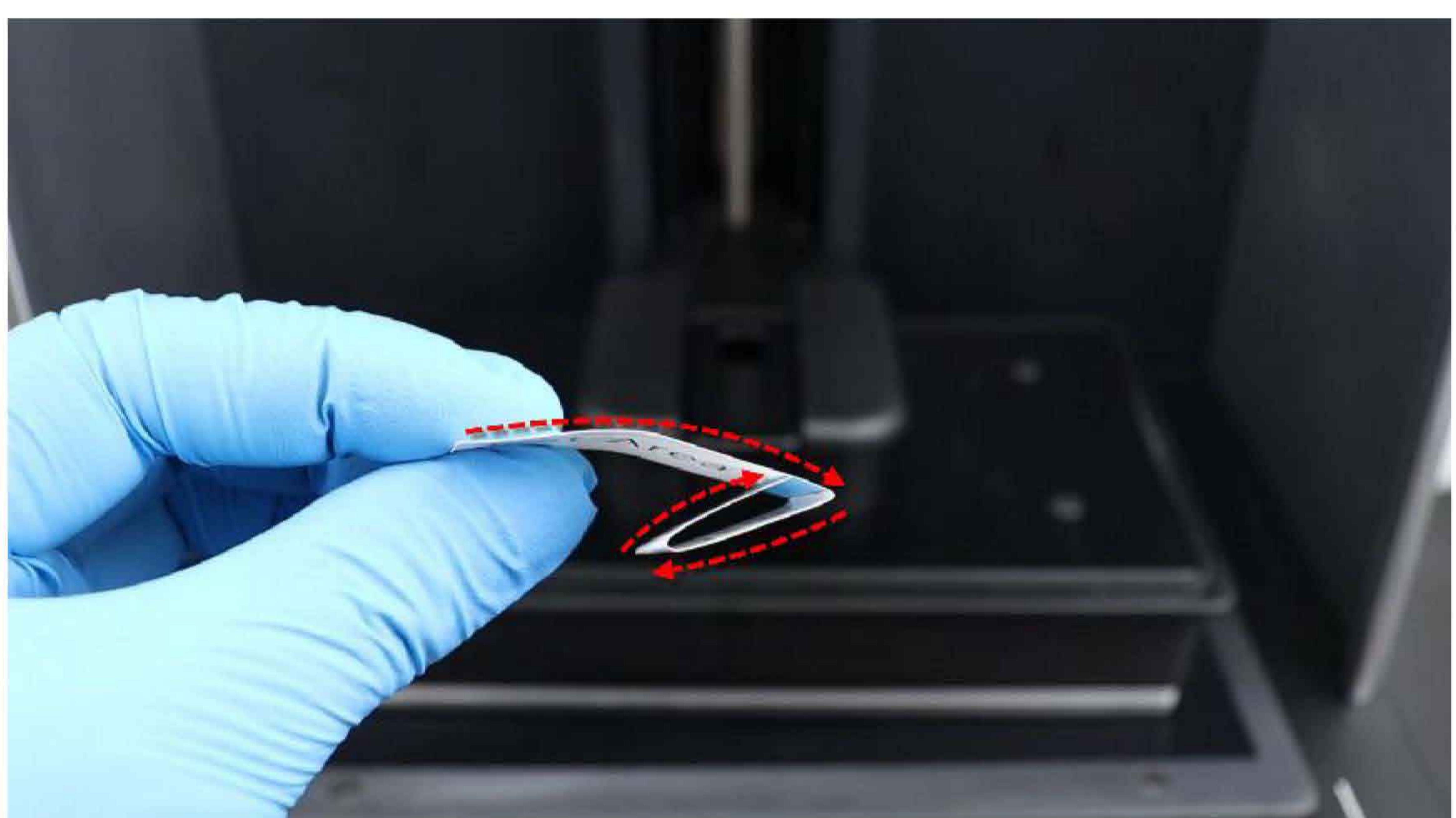
The LCD screen should display the sample image below (triangle and square). If the screen shows anything else (or nothing at all) please contact support for assistance.



## 5.3 Leveling Test Instructions

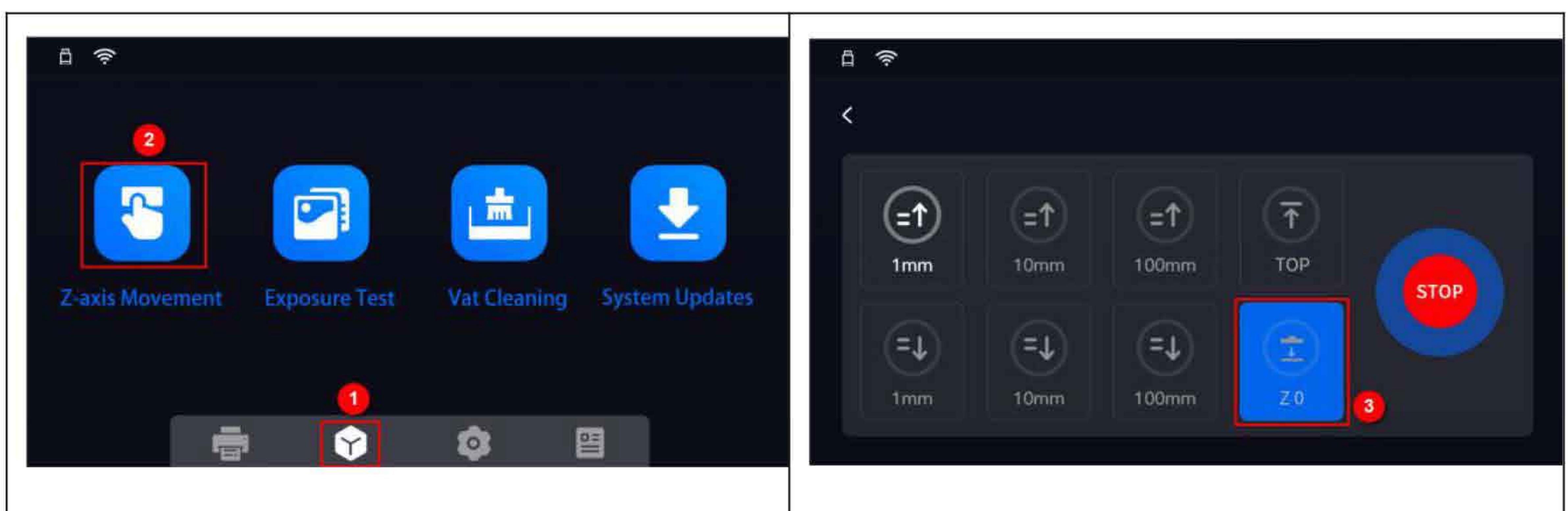
Even though the machine is leveled before leaving the factory, the long shipping journey may have caused a shift, and verifying the printer is level is critical. You could damage the printer if this is not performed.

Fold the test strip twice which is equal to the thickness of 3 sheets of paper, as shown below.



5.3.1 Using the menu on the printer touch screen, select the “Function” icon, “Z-axis Movement”, then select the “Z 0” icon. The build plate will descend to the button and press down on the paper strips and leveling paper.

**Note: The build plate can only be manually moved to the top after the “Z 0” operation**



5.3.2 Try to pull out the 4 strips, it should be tight to pull each corner. If you can move them it is too loose. Please watch the video on the USB drive if you are unsure.

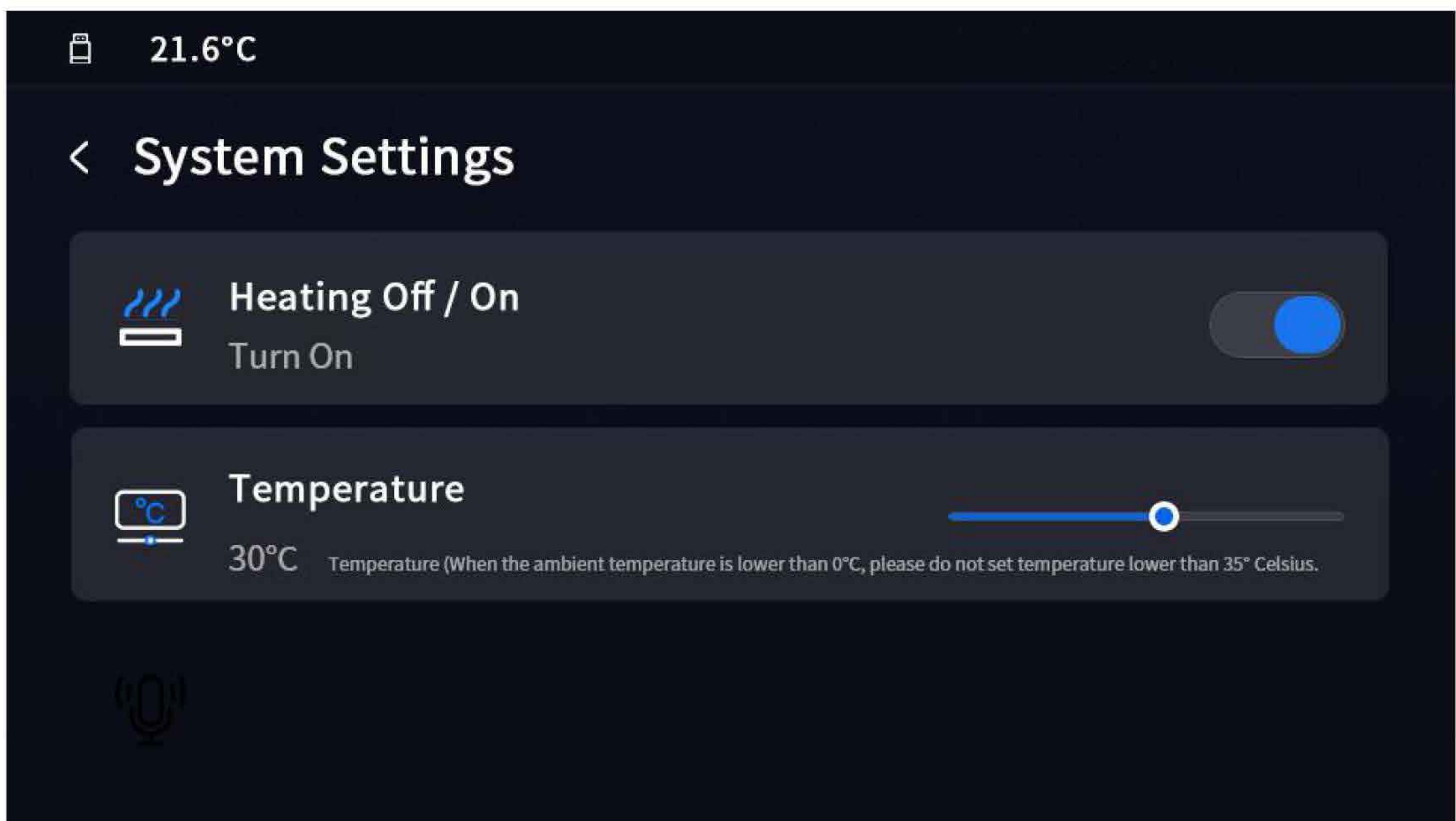


#### 5.4 Heating Function

The heating function can be turned on in the system settings. When the heating function is on, the printer will heat to the preset temperature before starting to print. When the heating function is off, the printer will start printing directly.

**Note: Please try to set the heating temperature to 25° C when the ambient temperature is very low to avoid the heater not being able to**

reach the preset heating temperature due to the low ambient temperature.



There are 3 heating temperature settings to choose, 25°C, 30°C and 35°C.

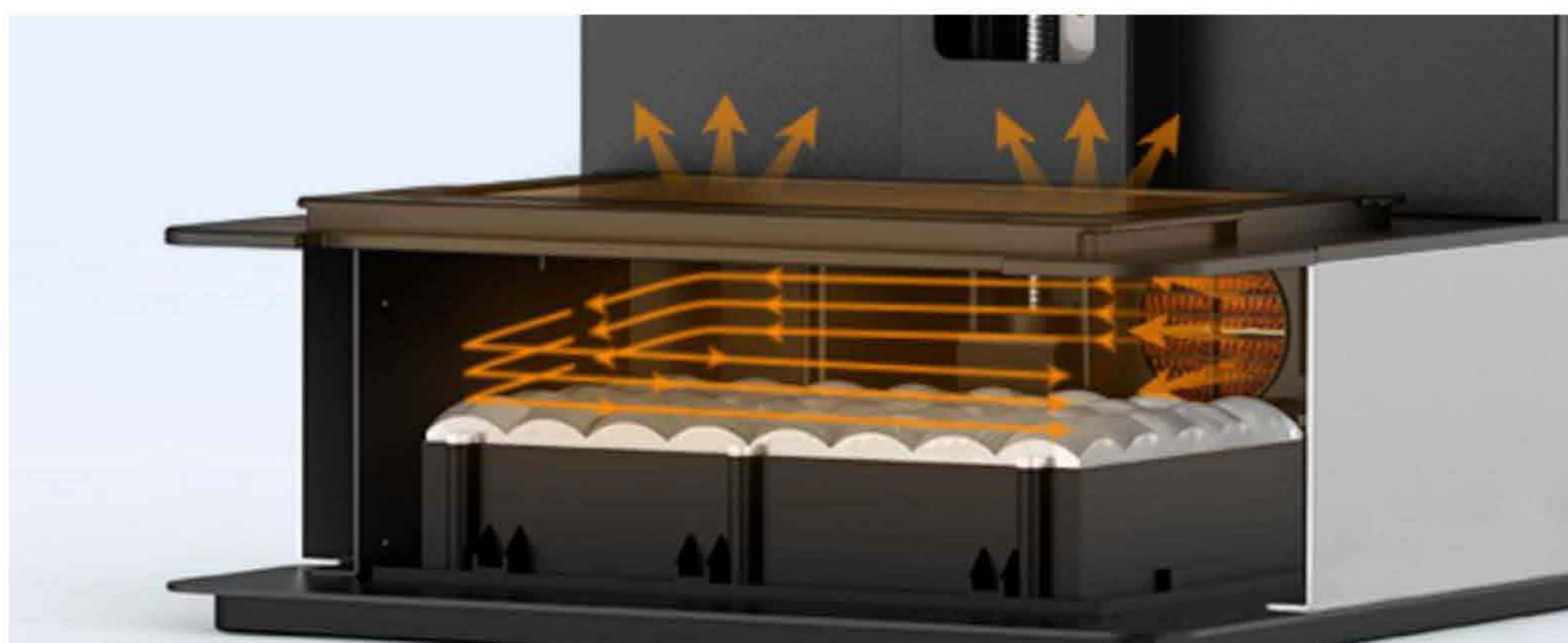
Usually 25°C heating options is the recommended printing temperature.

When the ambient temperature is lower than 10°C, please do not set temperature higher than 25°C.

30°C



### Heating schematic:



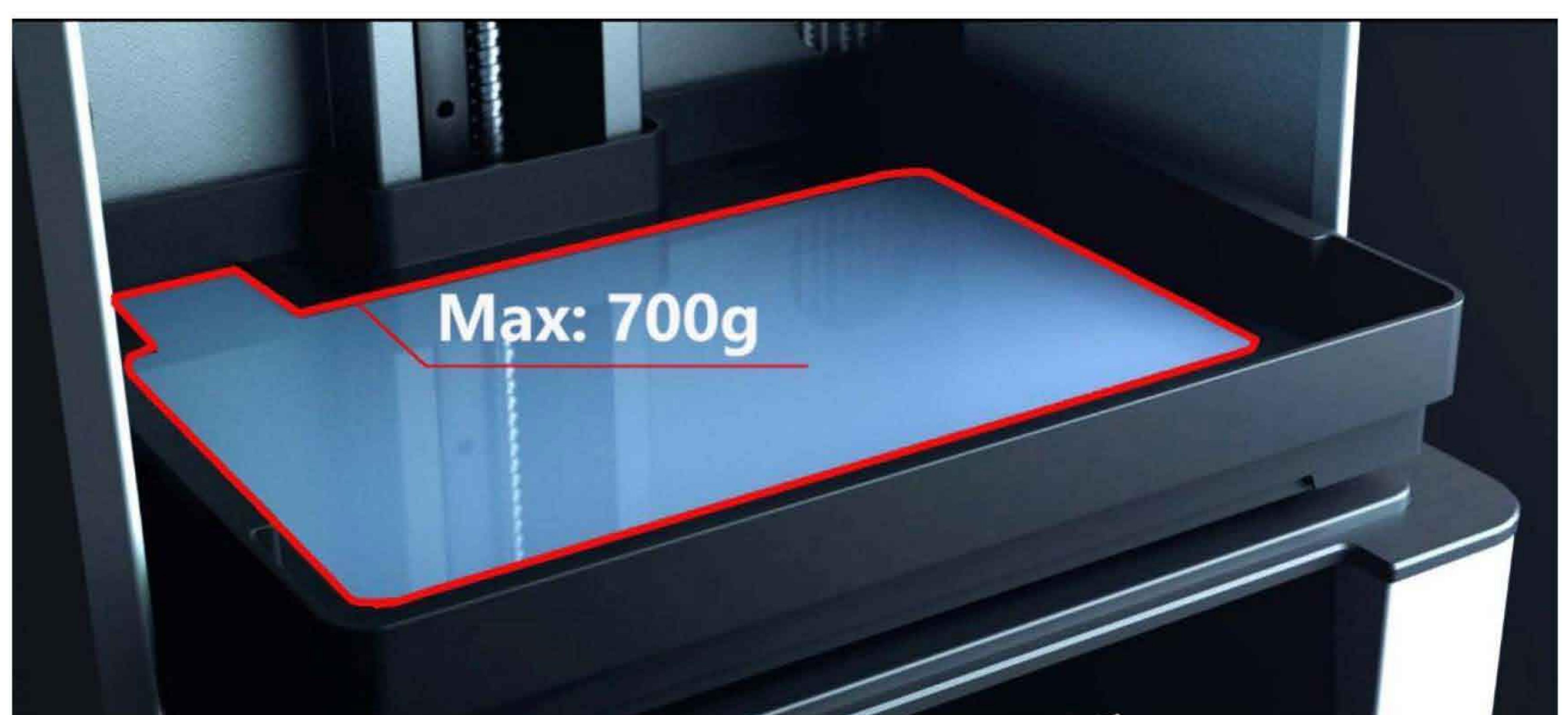
Note: Since the heating temperature will not exceed the normal operating temperature of the LCD panel, the life span of the screen won't be affected.

## 6 First Print Instructions

Before and after each printing, examine the nFEP to ensure there are no holes, tears, rips, obvious dents, or other imperfections. If you see anything, please replace the FEP film with a new one to ensure no leaking occurs.

### 6.1 Preparing the Resin

Always wear a mask and gloves to avoid direct skin contact with resin. Shake the resin bottle for 1 minute, then slowly pour the resin into the vat. DO NOT exceed the max line of 700g or you risk the possibility of overflow and splashing.

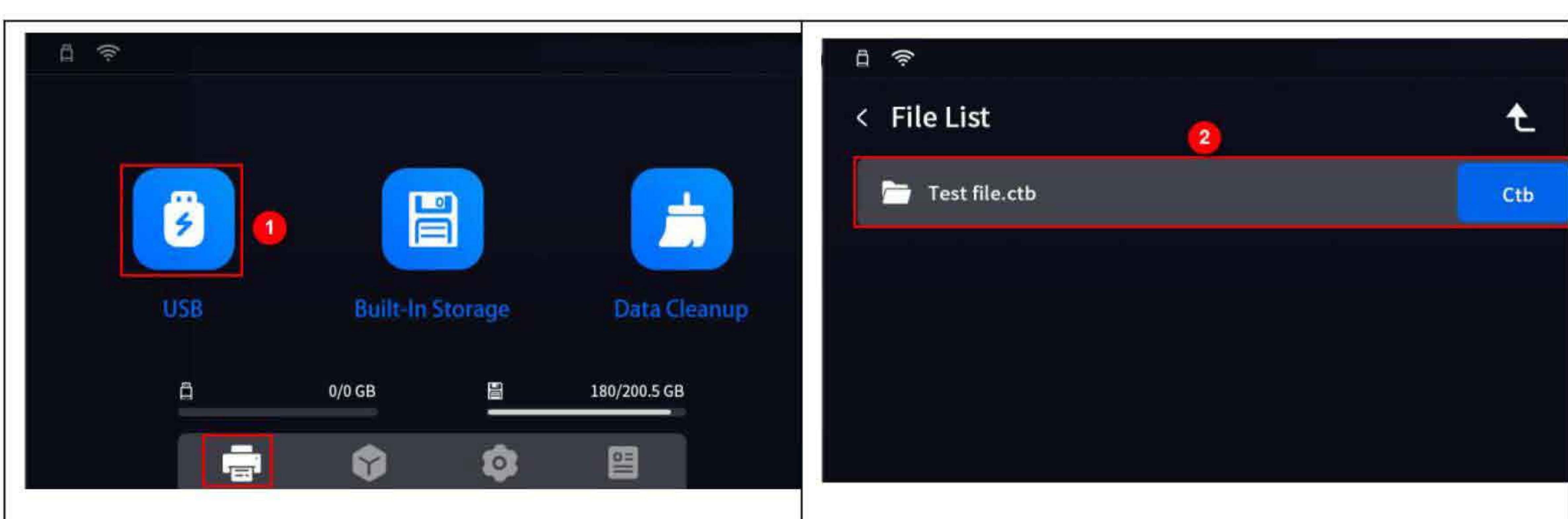


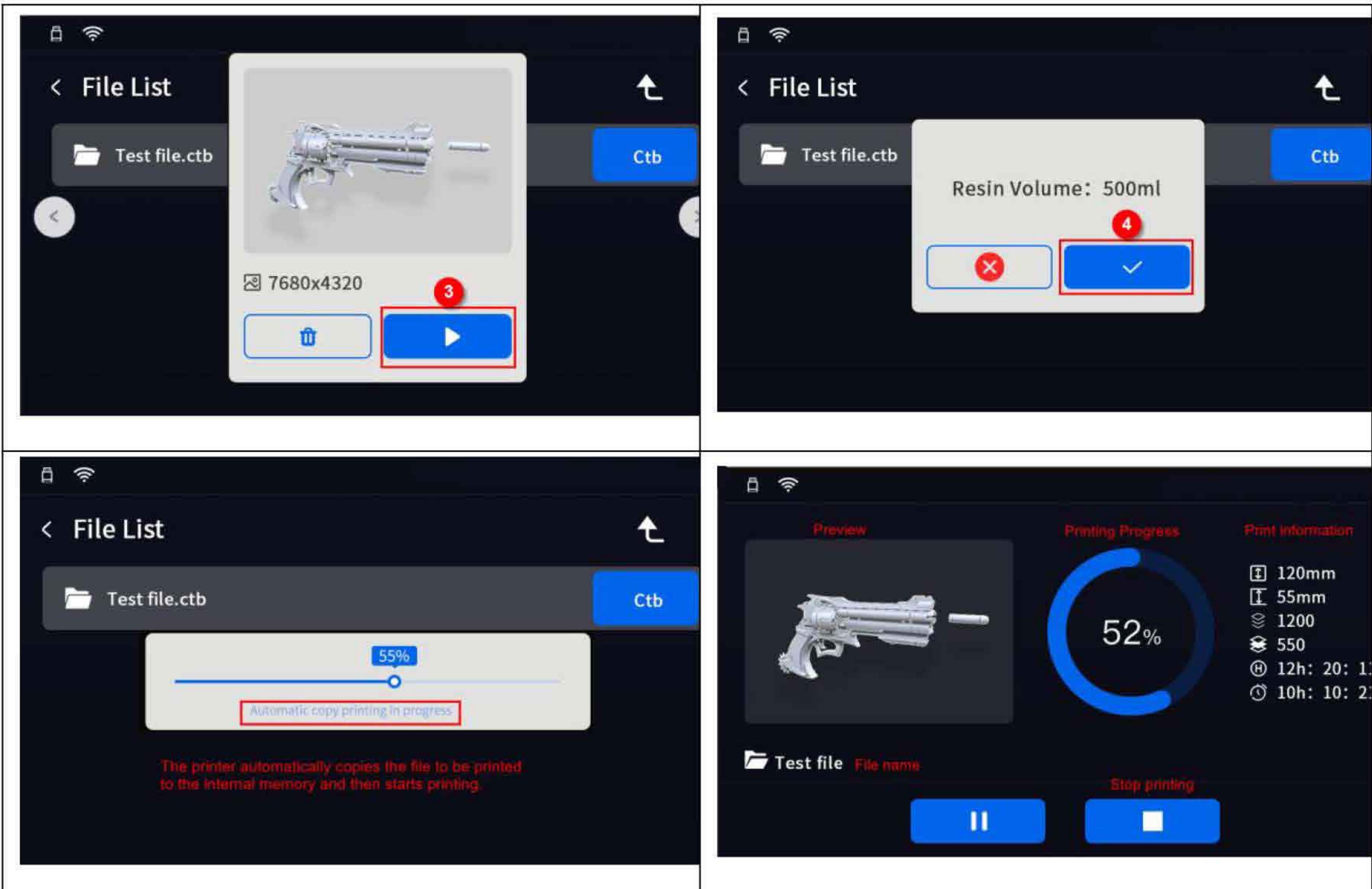
## 6.2 Print Model

Close the lid, and insert the USB flash drive.

- In the UI , select the Print icon. The USB should be listed, please select it then select the sliced file you created in the slicer.
- A preview of the sliced file will be displayed. Please make sure you add enough resin (an estimated volume will be shown).
- Click the Print button inside the preview window. You are supposed to confirm the printing, please select yes (CHECK), the printer will automatically copy the file to the built-in storage and then start printing.

Please note the print time and resin consumption are estimates. No guarantee of their accuracy is given.





## 6.3 Handling Models and Residues (post-processing)

After a print is completed, wait about 30 mins for the resin to stop dripping from the model and build plate. Remove the model by carefully placing the scraper on the build plate and sliding the edge between the model and the plate. (see illustration)



After removal, the model should be cleaned in minimum of 95% alcohol for several minutes, time depends on the model's complexity and size.

Next, carefully remove any supports your model may have. The printed model may need post-curing to fully solidify by UV-curing box or direct sunlight. Please refer to your specific resin instructions for the recommended post-processing

Eventually, there will be a situation where bits of cured/hardened resin remains in the vat after a print. Failed supports, poor model geometry, and many other factors can cause this. Therefore, it is critical to filter the resin in your vat if you have any suspicion that there may be cured pieces. Failure to do this can lead to major leaks, cracked or damaged screen, and ripped FEP.

Any residual resin on the build plate or in the vat can be wiped off with a microfiber.



## 7 Slicing Software Overview

For your printer to convert a digital model into a physical object, a process known as slicing needs to be performed. A model is printed layer-by-layer, and stacked on top of the previous layer until the final layers are printed. Slicing is the process of breaking (slicing) a model into these layers that the printer can use to create the actual model. The software will create image files and machine instructions for each layer and creates a file the printer can then use. You load a .stl or .obj file, adjust the settings in the slicer, and export a sliced file in .jxs or .ctb. The printer will use the .jxs or .ctb to print. Transfer the sliced file from the computer to the printer with a USB drive.

Detailed Slicer instructions are on the USB and should be read thoroughly to understand the slicing process.

**Note:**

In order to avoid the situation that the slicing file is corrupted and causes the printing to stop automatically halfway through.

Please copy the slicing file to the USB drive after the slicing software finishes slicing and prompts success.

Please export the slice file to the computer disk first, and then copy it

from the computer to the USB drive for printing.

## 8 FAQ and Machine Maintenance

### 8.1 FAQ

#### Models do not stick to the platform

1. Bottom exposure time is insufficient, increase the exposure time.
2. Contact area between the model and platform is small, add raft.
3. Bad leveling

#### Layer separation or splitting

1. There is resin residue in the tank, filter the resin and print again.
2. The lift speed is too fast
3. FEP film is not tight enough or it needs to change to a new one.
4. The printing object is hollowed without holes created. This causes suction issues
5. The machine is not stable during printing.

#### Layer shift

1. Add or increase supports.

2. Reduce the lift speed.

3. The printing object is hollowed without creating holes.

## **Particles Left in resin vat**

The exposure time is too long. Reduce the normal exposure time and bottom exposure time.

Check if the screen has light leakage

## **8.2 Machine maintenance**

1. Regular lubrication is needed on the z-axis, please use a light oil

2. Always remove any residue or cured pieces from the vat, use the cleaning function to expose the full screen then remove the cured resin sheet which will remove the residue. Do not use sharp objects to scrape off the residues on the FEP film. An old support makes a great handle to pull the sheet of resin

3. Do not leave resin in the vat for more than 2 days. Please filter and store the resin properly. If the resin leaves in the vat for over 2 days, please stir up the resin before the next print.

4. After printing, please clean the build plate. Wipe thoroughly with paper towels or wash with alcohol.

5. Use alcohol to wipe away any resin which may be on the case.
6. Please clean the resin vat when changing to new resin to avoid contamination.