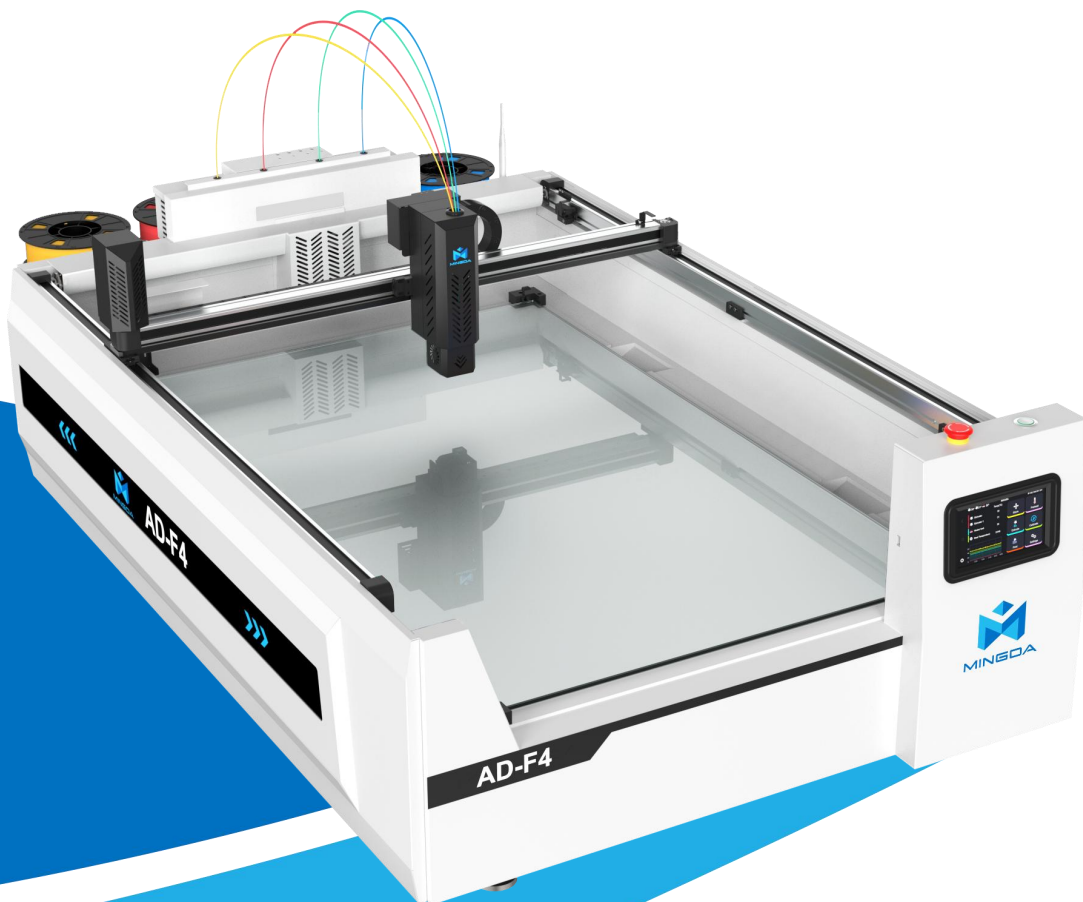




User Manual

AD-F4 3D Printer

*Please read this guide carefully before using this printer



Shenzhen MINGDA Technology Co., Ltd.

V2.1

Thank you for choosing MINGDA Technology!

To ensure the best user experience, please read this manual carefully and follow the instructions to operate your printer correctly.

If you encounter any issues related to the printer, please refer to the contact information provided at the end of this manual. Our team is always ready to provide you with professional and timely support.

To enhance your usage of our product, you can also learn how to use the printer through the following means:

1. User Manual: Relevant instructions and videos can be found on the included USB drive.
2. You can also visit our official website (www.3dmingda.com) for information on software, hardware, contact details, device instructions, device specifications, and warranty information, among other things.

Precautions

1. Do not place the printer in environments with excessive vibration or unstable surfaces, as this may affect print quality due to machine shaking.
2. Avoid touching the nozzle or heated bed while the printer is operating, to prevent burns or personal injury caused by high temperatures.
3. Do not move the printer during the printing process, as this may cause accidents or injury.
4. Do not disassemble the printer or modify its electrical circuits without authorization.
5. Avoid using the printer in high-temperature or high-humidity environments, which may affect its performance or pose safety risks.
6. In case of emergency, immediately stop using the printer and disconnect the power supply.

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1. Overview

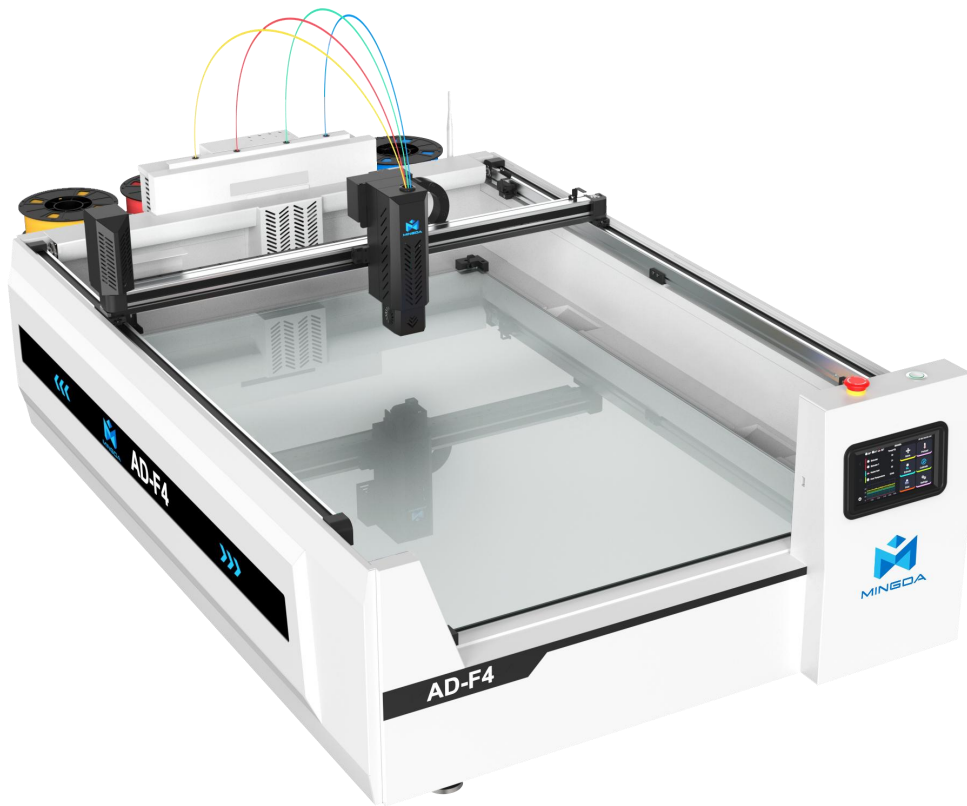
This manual provides basic instructions for operating and maintaining your 3D printer. Follow the guidelines to ensure safe use, stable performance, and high print quality. Thank you for choosing our product!

2. Device Introduction

Device Parameters

Specifications	
Product model	AD-F4
Machine dimensions	1110*1730*515mm
Max. build dimensions	1200*800*100mm
Technical principle	FDM (Fused Deposition Modeling)
Layer thickness	0.2-0.42mm
Printing nozzle	4 in 1 out
Number of trays	4 (Max 1KG/Pcs)
Filament diameter	1.75mm
Printing speed	0.4mm nozzle: Max.300mm/s (Recommended 200mm/s) 0.6mm nozzle: Max.150mm/s (Recommended 120mm/s)
Nozzle diameter	0.6mm (optional: 0.4mm, 0.8mm)
Leveling method	Gravity-sensing auto-leveling
Filament types	PLA, Ad-PETG, PDS
Nozzle temperature	Max 350 °C
Hot bed temperature	Max 60 °C
Intelligent design	Filament run-out detection, Power-off resume printing
Maximum power	220V/2700W
Firmware	Klipper
Data connection	USB
Build Plate	Tempered Glass Platform
Filament tray design	Folding filaments tray
Moving speed	Max XY 500mm/s,Max.Z 15mm/s
Safety design	Warning light, Emergency stop button

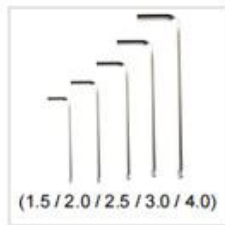
Packing list



Tool list



U disk



Allen wrench

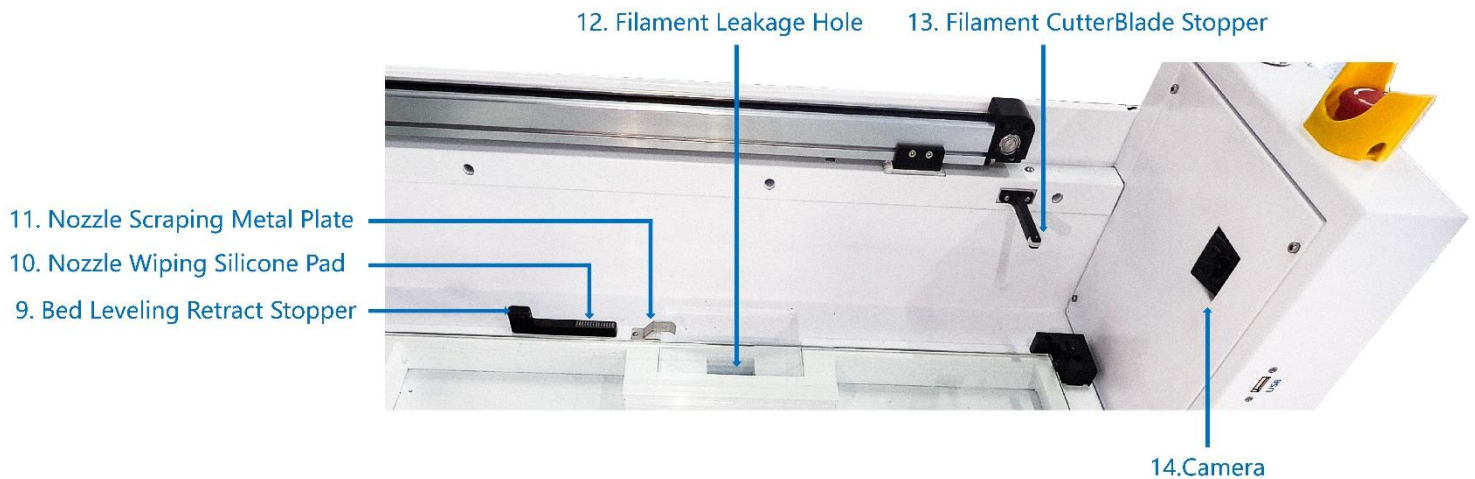
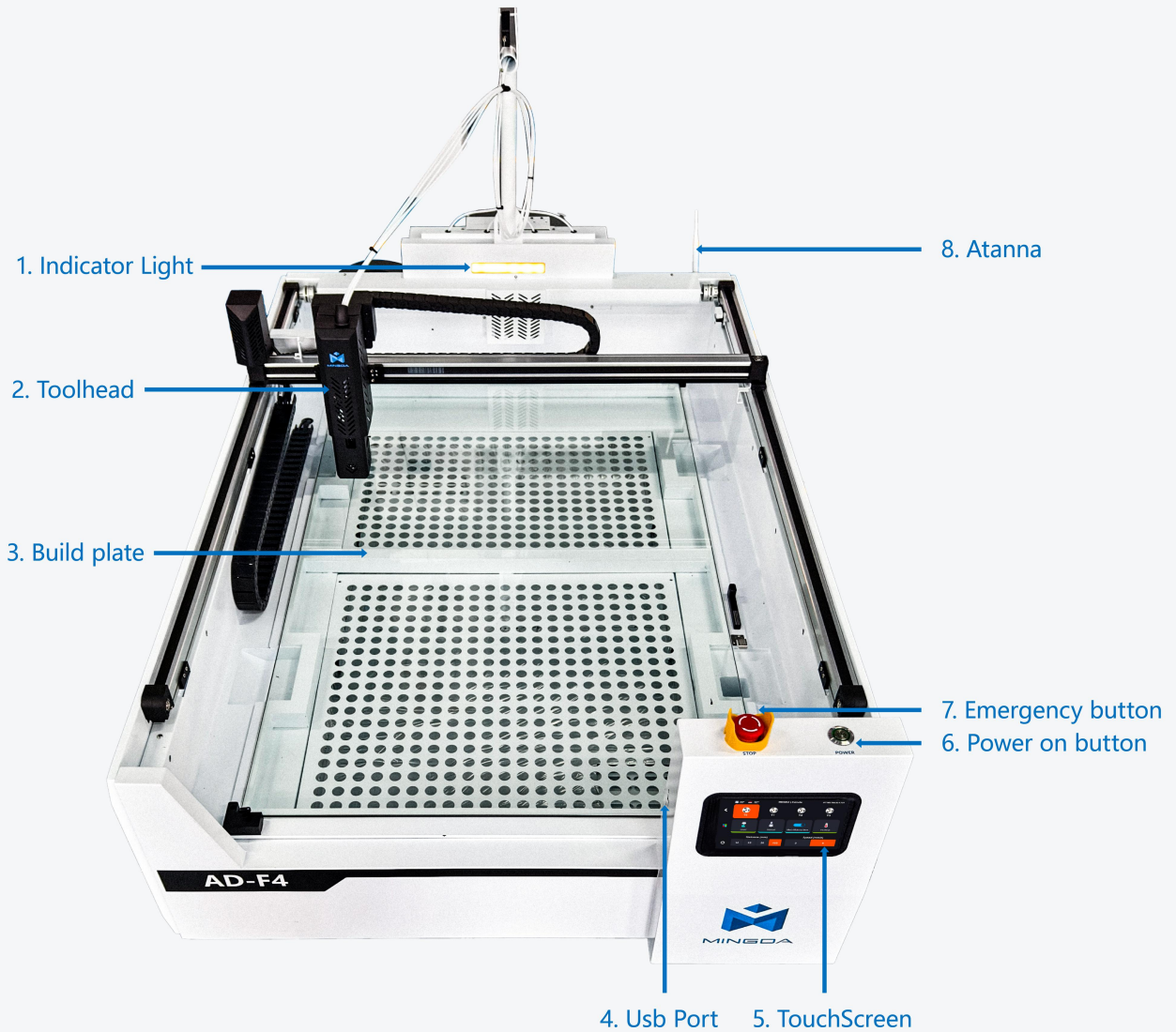


Antenna

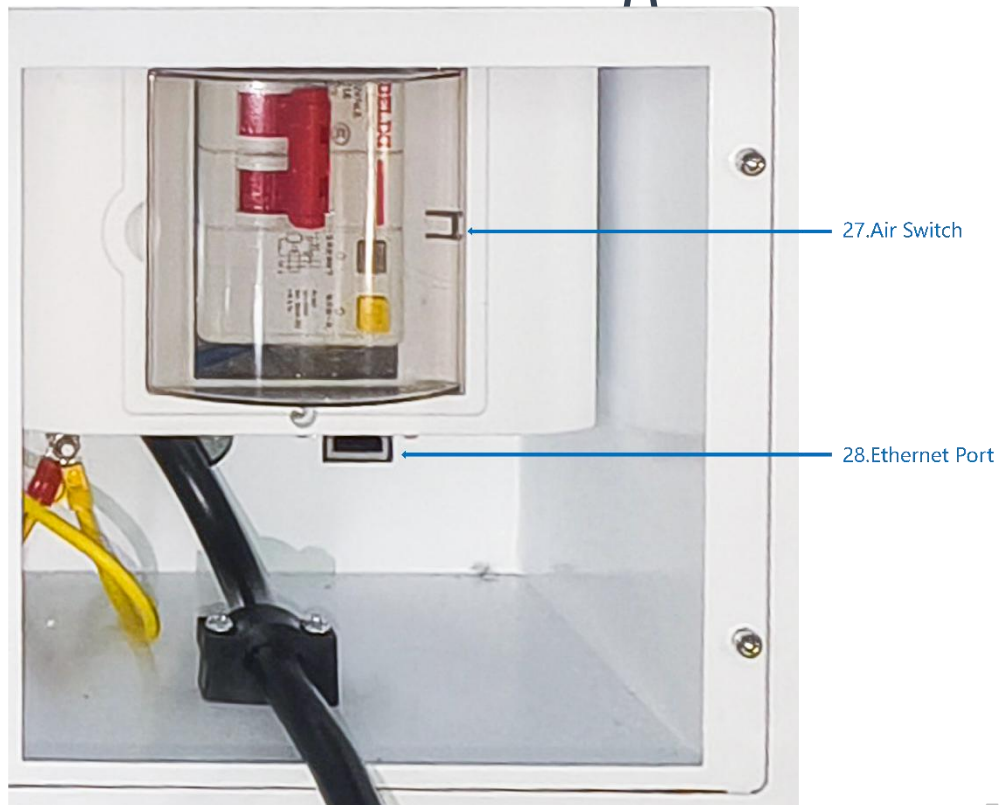
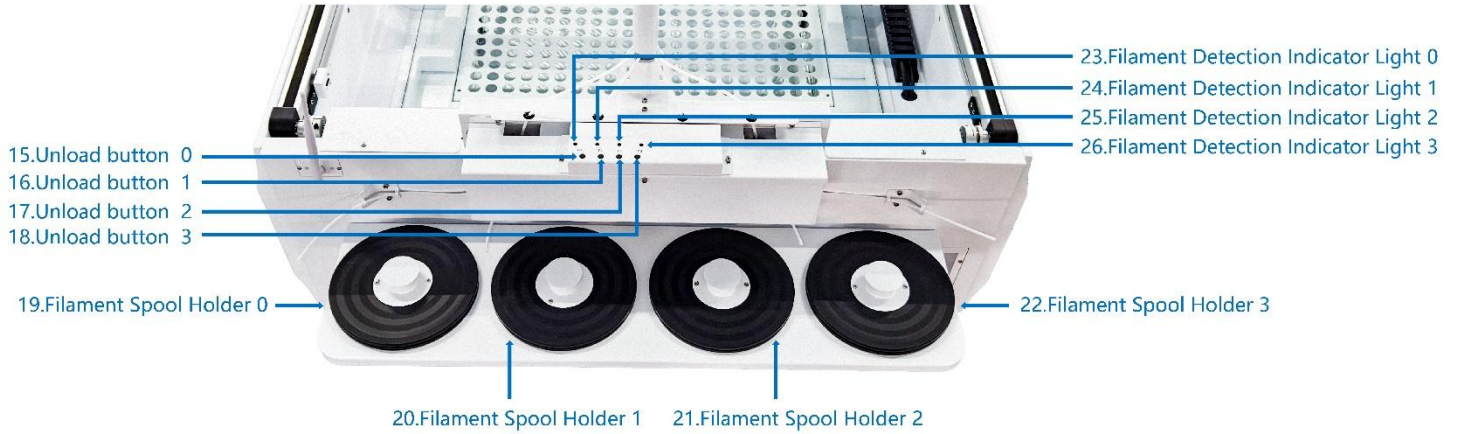


Dongle

Product Details



Product Details

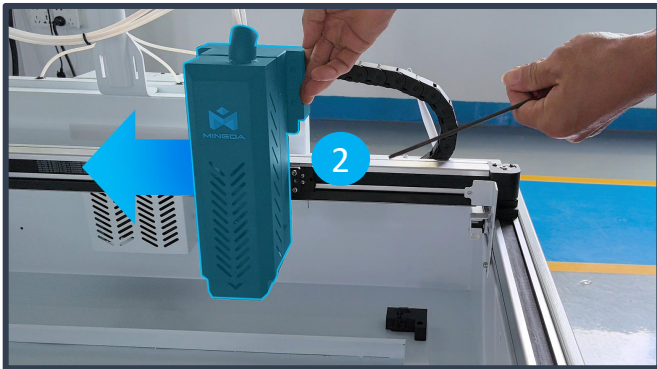
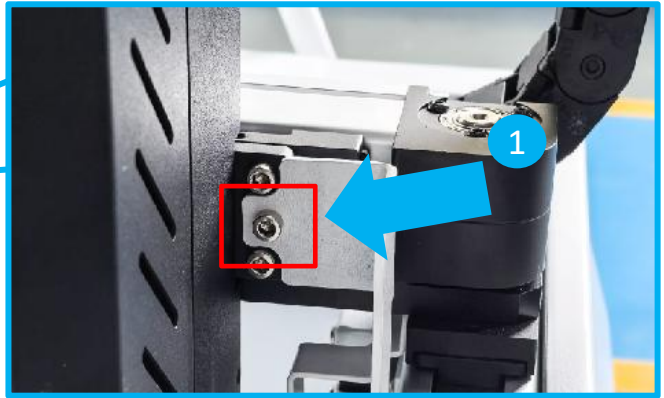


3. Operating Instructions

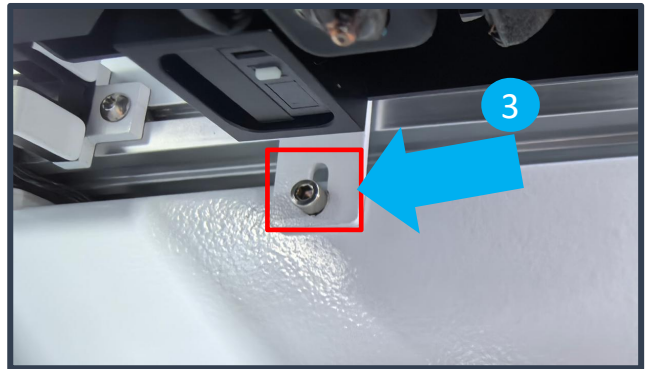
1. Removing the Fixing Device



First, unscrew the fixing screw next to the extruder



Then, push the extruder to the left.



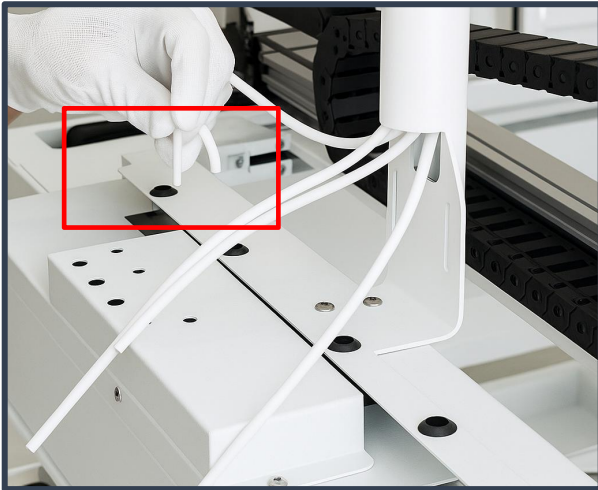
Finally, remove the last screw of the fixing device.

2. Install the Filament Holder



Make sure the filament holder is installed facing outward to ensure proper material feeding and smooth operation.

3. Install the PTFE Feeding Tube



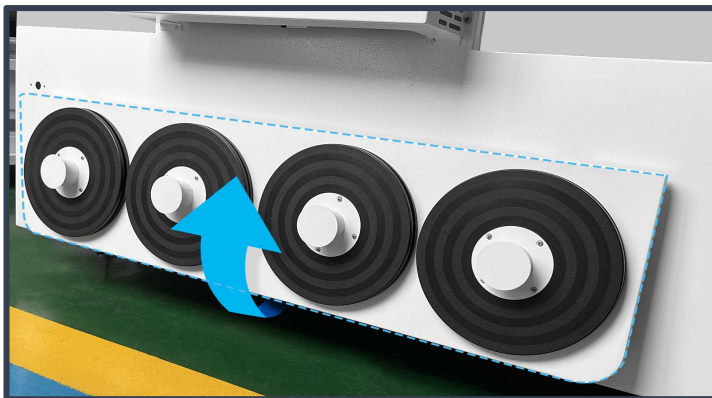
Instructions:

Insert the PTFE feeding tube one by one. Keep the tube straight during insertion to avoid bending or twisting.

Installation Confirmation:

The tube is properly installed when it cannot be pushed in further. A slight upward pull should not remove it, indicating the installation is complete.

4. Secure the Material Tray



Raise the tray from the bottom and firmly fix it in position.

5. Install the Antenna



6. Plug in the Power Socket



7. Power on

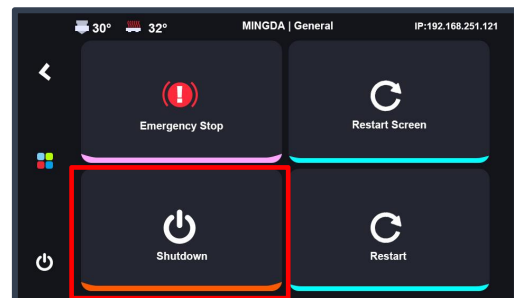
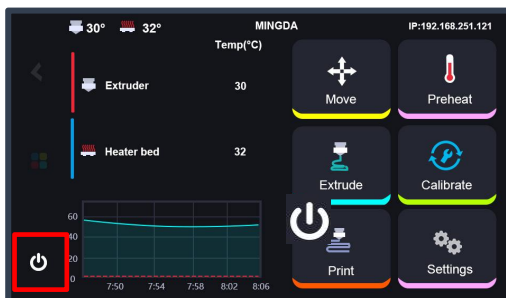


Release the emergency stop switch, then press the power button

8. Power off

When turning off the printer, do not press the power button  directly.

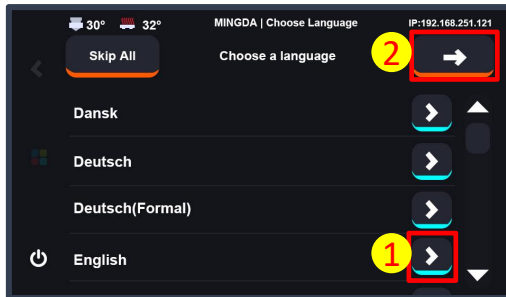
Instead, please click “Shutdown”  on the display to properly turn off the printer.



Click shut down to turn off the printer

9. Printing Startup

Select Language

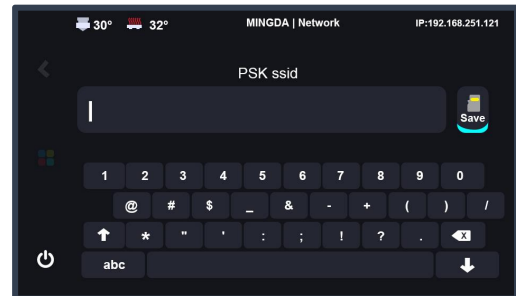


Click to select the language, then click to proceed to the next step.

Wifi

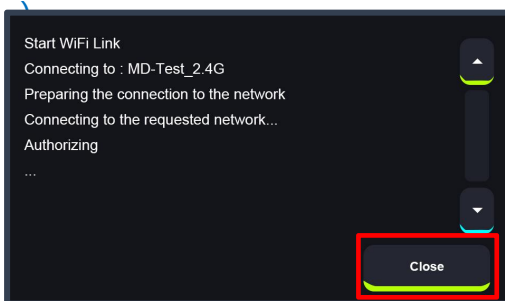


Note: If the printer cannot detect your WiFi, you can click Skip to bypass this step. After completing the startup wizard, move the router closer to the printer and reconnect.



Select and click (If the WiFi does not appear within 20 seconds, please click Refresh.

Type your Wifi password then click

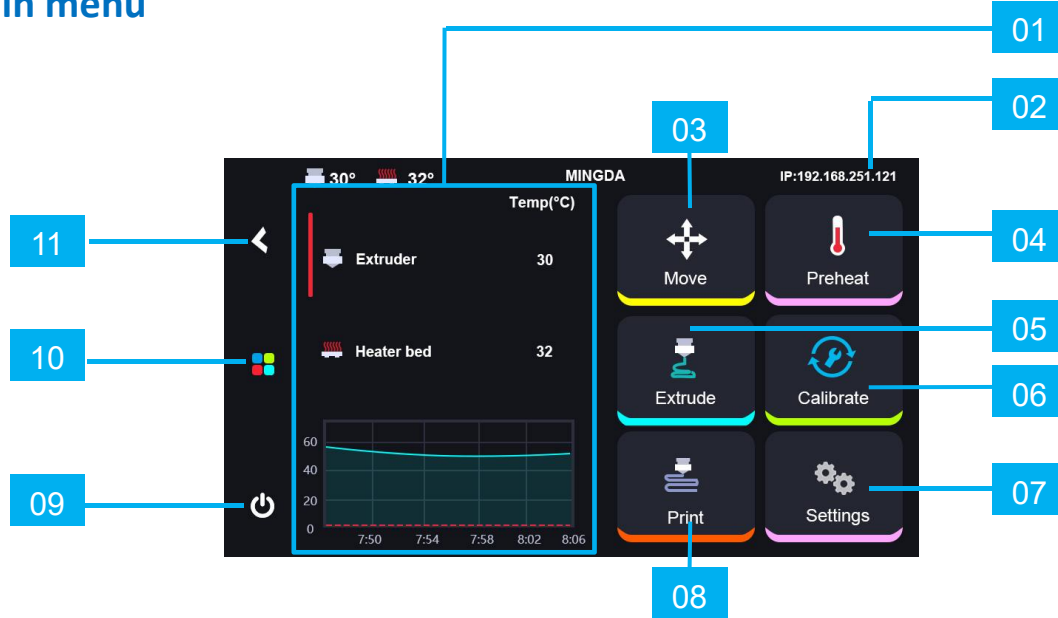


Once connected successfully, click

After connecting successfully, click Enter to go to the main interface. Or click to continue without a network connection needed.

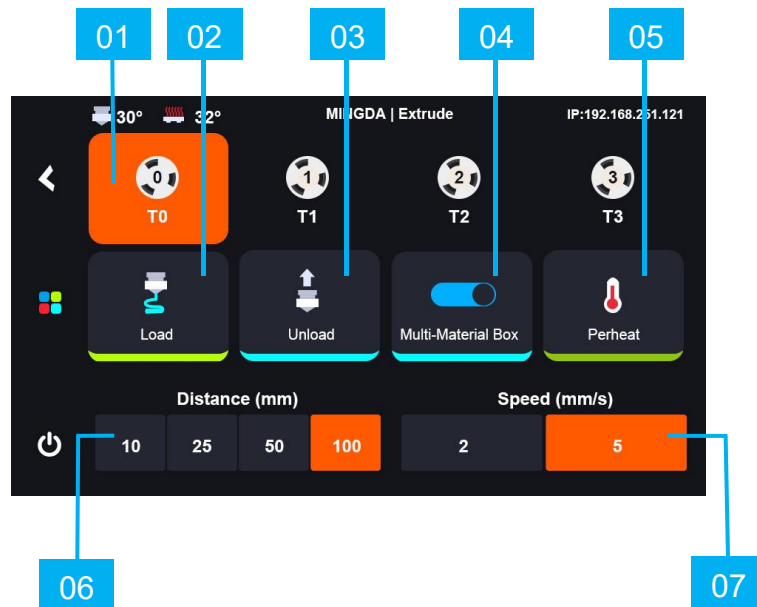
4. Operation Interface Overview

Main menu



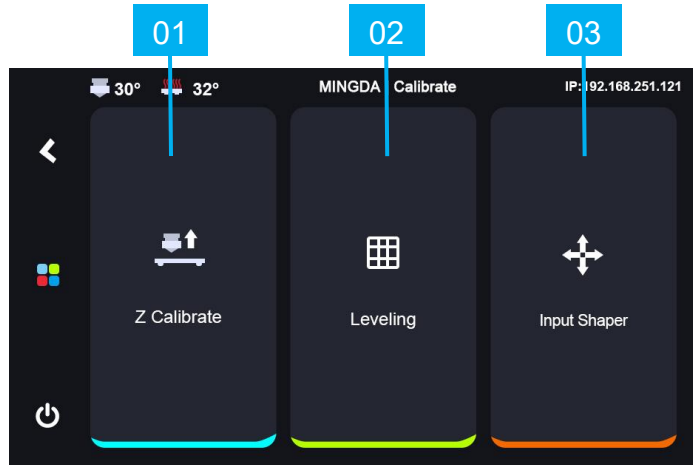
	Primary interface	Explain
01	Temperature	Temperature display area.
02	IP	Network IP address.
03	Move	Adjust or home the position of the XYZ axis.
04	Preheat	Pre-set nozzle & hotbed's temperature.
05	Extrude	To unload or load the filament.
06	Calibrate	Printer Calibration.
07	Settings	Printer's basic setting.
08	Print	Start printing.
09	Shutdown	Shutdown, Restart, Emergency stop.
10	Homepage	Return to the main menu.
11	Return	Return to the previous page.

Extrude:



	Secondary interface	Explain
01	Filament	[T0,T1,T2,T3]; Click to switch to the specified filament operation interface
02	Load	Load filament
03	Unload	Unload filament
04	Multi-Material Box	Enable multi extruder.
05	Preheat	Pre-set nozzle & hotbed's temperature
06	Distance	Configure the filament loading length for each loading operation.
07	Speed	Set up loading or unloading speed

Calibrate:



	Secondary interface	Explain
01	Z Calibrate	Calibrate the leveling sensor
02	Leveling	Glass bed Auto-leveling
03	Input Shaper	Enable vibration compensation

Note:

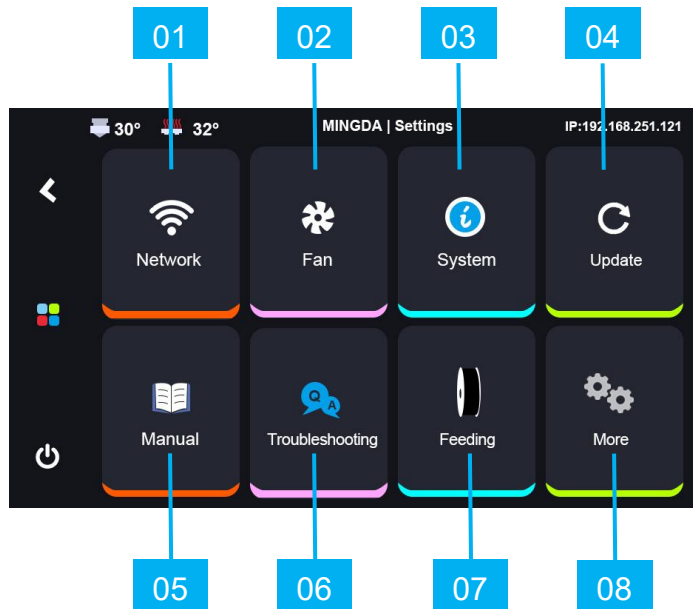
1. Z-calibrate and Auto-leveling must be performed after replacing the nozzle, hotend, or removing/reinstalling the extruder.

2. Leveling: Before starting the leveling process, heat the bed to 60°C and wait for 20 minutes. This allows for thermal expansion of the glass to stabilize, ensuring accurate leveling.

Printing Tip:

If the bed calibration temperature is set to 60°C. Before printing, keep the bed temperature at 60°C and wait for 20 minutes to ensure optimal first layer adhesion and print quality.

Settings:



	Secondary interface	Explain
01	Network	Connect Wi-Fi
02	Fan	Cooling fan adjustment
03	System	Printer's system information
04	Update	Firmware Update
05	Manual	Manual
06	Troubleshooting	Troubleshooting
07	Feeding	Perform filament parameter settings.
08	More	Includes some basic settings such as time, language, screen timeout, notification sound toggle, and automatic shutdown after printing completion.

Printing Interface:

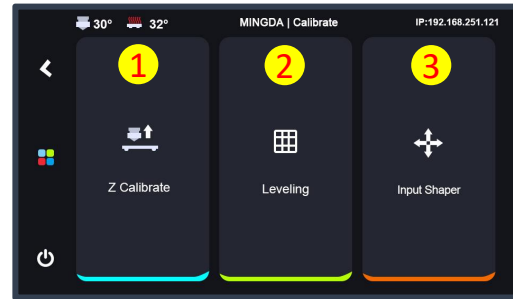
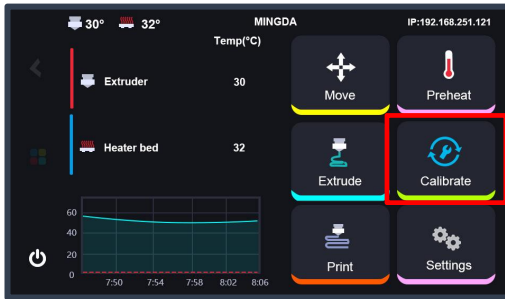


Figure 1

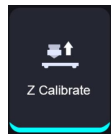
Figure 2

	Secondary interface	Explain
01	Cancel	Stop printing
02	Pause	Pause printing
03	Fine Tuning	Adjust Z-offset, Printing Speed, Printing Flow [Please refer to Figure 1.]
04	Settings	Basic setting, browse camera, adjust cooling fan, light and Exclude object. [Please refer to Figure 2.]
05	Stop	Emergency stop
06	Exclude Object	When printing multiple models, you can cancel one of the printing objects

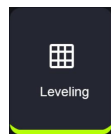
5. Printer calibration



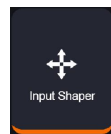
Tip: Follow the diagram step by step to perform the calibration.



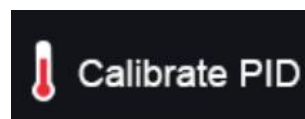
Z Calibrate



Leveling

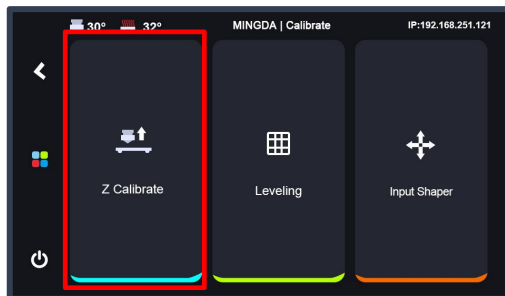


Input Shaper

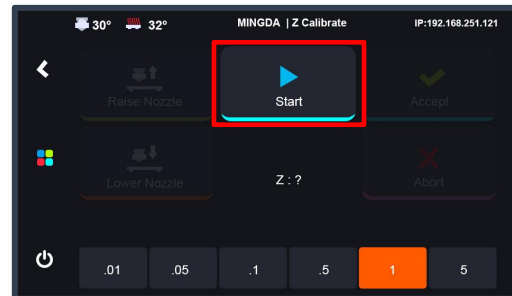


Calibrate PID

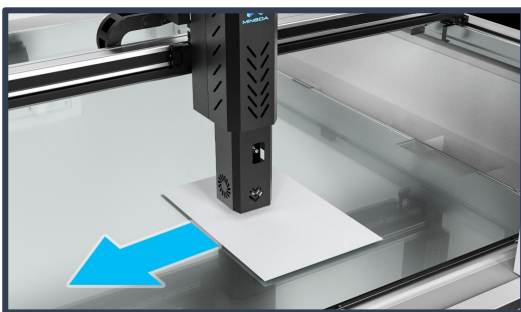
1. Z calibrate



Click "Z calibrate"



Click "Start" and the printer will move by itself until it stops at the front position



Put An A4 paper between the nozzle and the platform



Adjust and to make the paper can be slightly scratched. After moving once, slide the paper back and forth to check the tension. Then click to confirm..

Note: Recalibration must be performed after replacing the nozzle, hotend, or assembling/disassembling the extruder.

2. Leveling

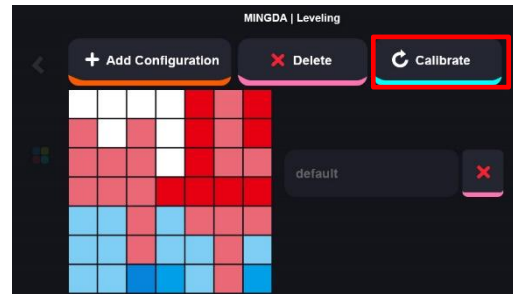
Note:

Make sure the Z calibrate is completed before starting the leveling process.

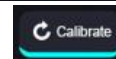
Before leveling, heat the bed to 60°C and wait for 20 minutes before proceeding.



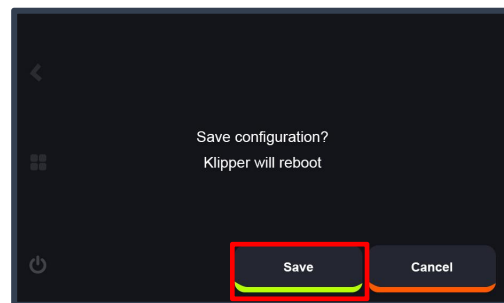
Click "Leveling"

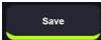


Click "Clibrate"



Waiting for leveling to complete
(About 15 minutes)



Click  to save the value, the printer will reboot automatically.

Printing Tips:

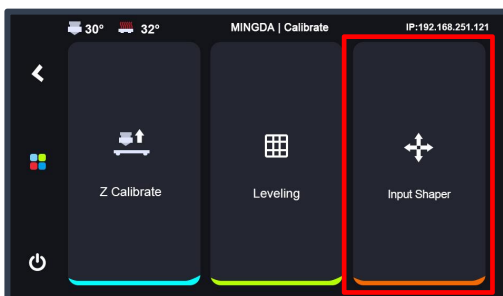
1. Bed Leveling Frequency:

It is recommended to perform bed leveling every 20–25 print jobs. The Frequent removal and repositioning of the glass bed can gradually lead to positional deviation. Timely leveling ensures consistent print quality.

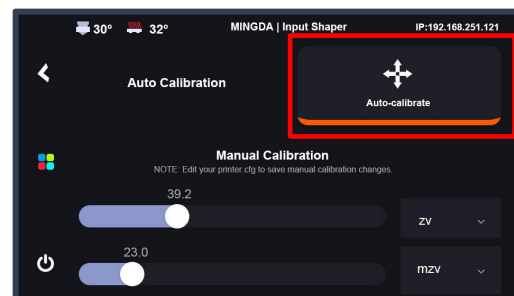
2. How to Determine if Leveling is Needed during printing:

Carefully observe the first layer when starting a new print. If there is a large gap between the filament and the heated bed, poor adhesion, warping, curling, or uneven extrusion (e.g., some areas too thick, others too thin, or broken lines), it indicates that bed leveling is required.

3. Input Shaper



Click "Input Shaper"

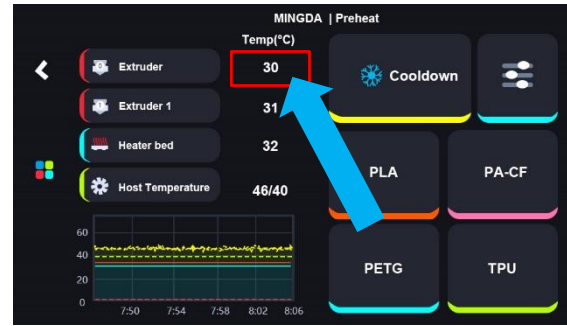


Click "Auto-calibrate" Save it after finishing

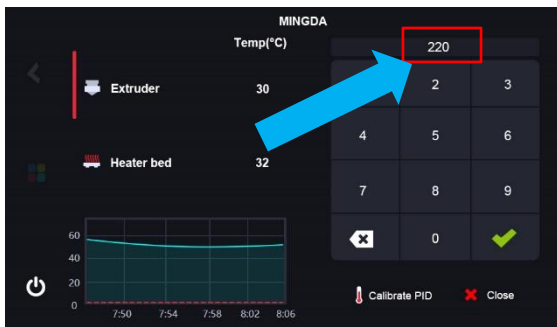
4. PID calibration



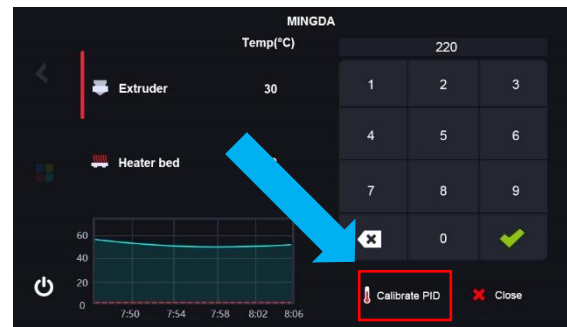
Click "Preheat"



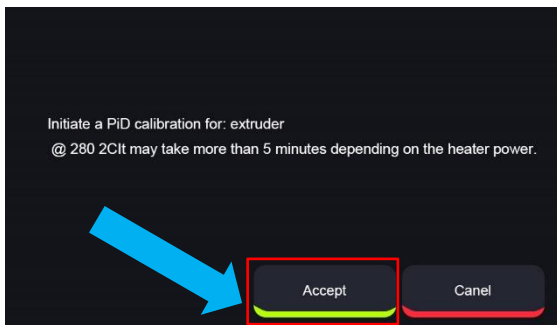
Click the temperature value



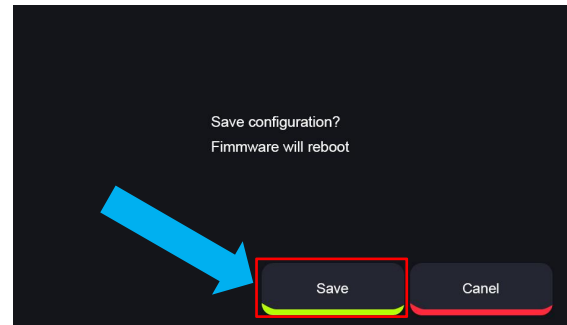
Set at "220°C"



Click "Calibrate PID"



Click "Accept"



Click "Save"

Note:

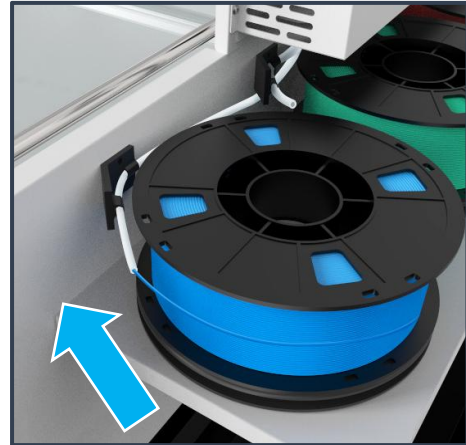
Before using the machine for the first time, it is essential to perform temperature calibration.

The nozzle's compensation values must be adjusted according to different ambient temperatures. Proper calibration ensures accurate and stable temperature control during printing, thereby improving print quality.

Technical Key Points:

Repeat the PID temperature calibration process multiple times until the nozzle temperature quickly stabilizes near the target value, with fluctuations within $\pm 2^{\circ}\text{C}$. Since different 3D printing materials require different printing temperatures, it's important to test the nozzle at typical temperatures for various materials after calibration to ensure stable temperature control under different printing conditions.

6. Load Filament

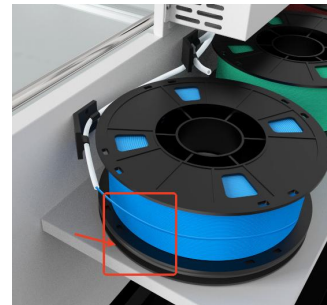


Place the filament onto the material tray.

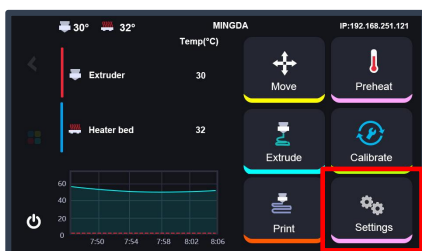
1. For T0 and T1, the feeding direction is **clockwise**; for T2 and T3, the feeding direction is **counterclockwise**.
2. Insert the filament into the PTFE tube until you feel the extruder begin to pull the filament in, then release it.

Note:

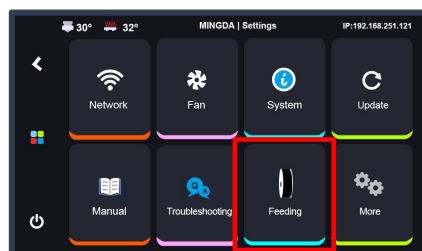
1. During filament loading, make sure the filament remains taut. Loose filament may get caught in the gaps of the base plate, causing jams or feeding issues.
2. After completing the loading process for T0, proceed with T1, and so on in sequence



3. After loading the filament, you can set the parameters for each material in the screen settings.



Click "Settings"



Click "Feeding"

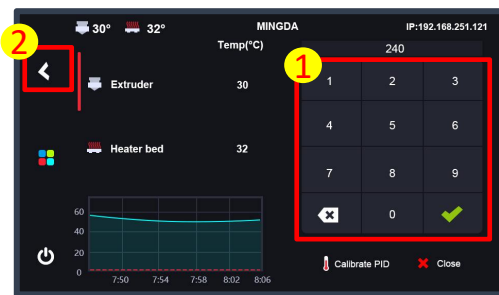


Click the filament and Edit

4. Load filament



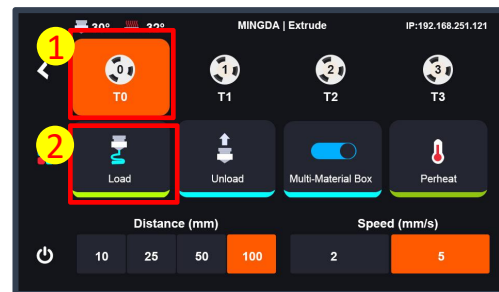
Click temperature setting



Enter the recommended temperature for the filament, then click to save and back



Click "Extrude"

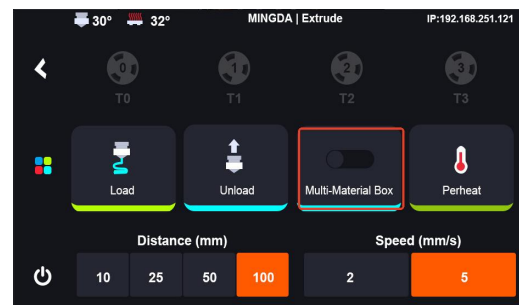


Click on extruder set the distance to 100mm and the speed to 5, then click 2-3 times until the filament extrudes from the nozzle.

5. Multi Material box



Click "Multi Material box" to print with four colors.



Turn off the "Multi Material box" the printer will use external filament.

7. Start printing

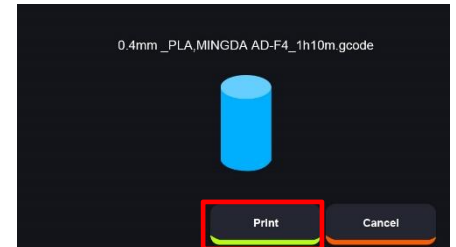
After completing the machine setup, click "Print" and select a test model to quickly start your first print.



Click "Print"



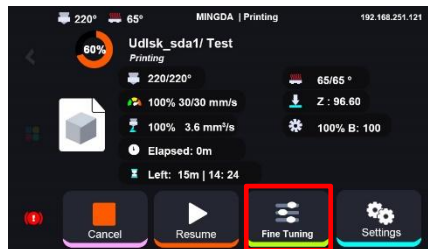
Click Print icon



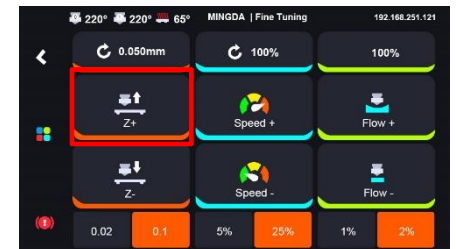
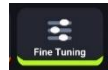
Start "Print"



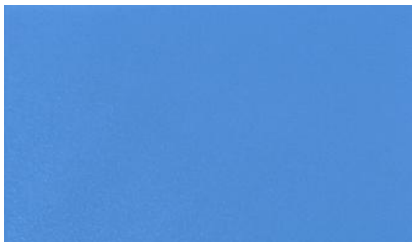
Observe the first layer during printing



Click Fine-tuning



Select the distance at 0.02 and increase the Z-offset until the line is smooth



The final result after adjusting

Tips:

The first layer very important

1. There are gaps between each lines, that means the Z-offset need to be lower.
2. There are waves on the printing surface, that means the Z-offset need to be higher

Printing Tips:

During printing, if the model is too close to or too far from the build plate, you can use the fine-tuning function to adjust the nozzle height:

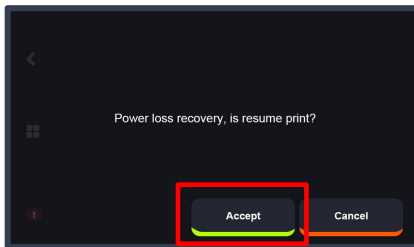
1. Tap "Fine Tune".
2. Select a tuning step of 0.02, then use Z+ (raise the nozzle) or Z- (lower the nozzle) to adjust the height until the extrusion lines are evenly laid and properly aligned.

Proper fine-tuning helps achieve optimal first-layer adhesion and print quality.

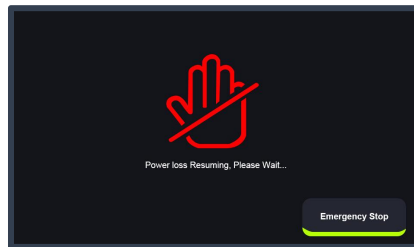
8. Resume printing

The AD-F4 features a resume printing function that allows you to effortlessly continue your print job from the point where it was interrupted.

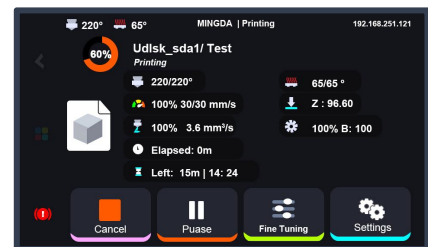
1. Resume printing after power off



The pop-up will show up after power back, click Accept to resume print.



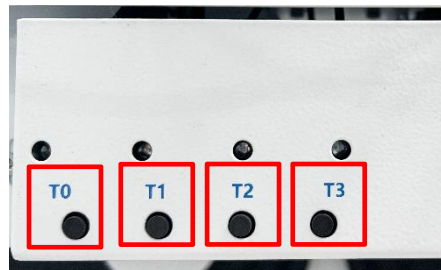
Waiting for the resume printing.



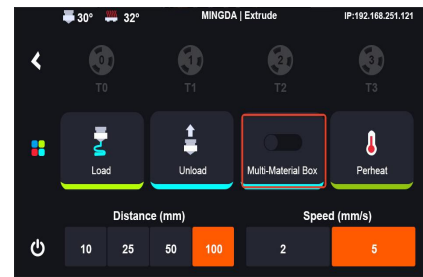
2. Resume printing after filament used off



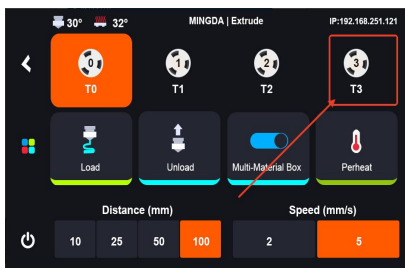
Printing paused — yellow light alarm activated



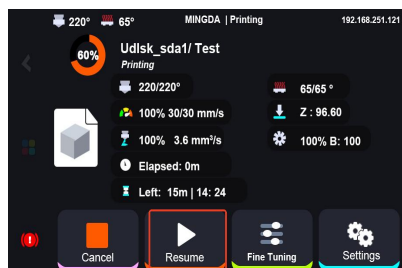
Please check which green light is off. For example T3



After insert the filament, click Multi Material Box

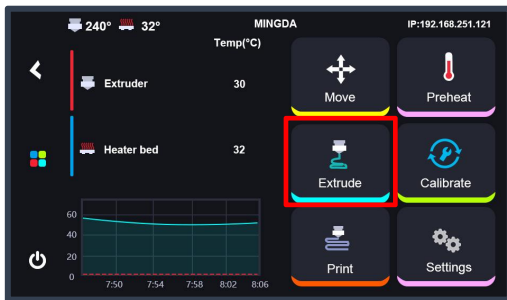


Select T3

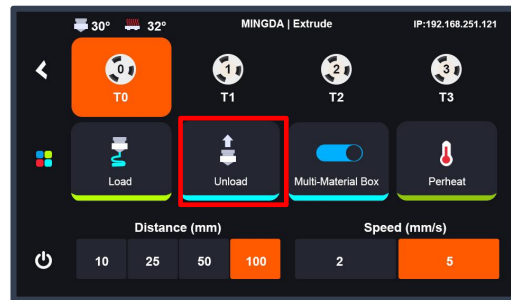


Wait for 30 seconds while the machine automatically loads the filament. Then click "Resume"  to continue printing.

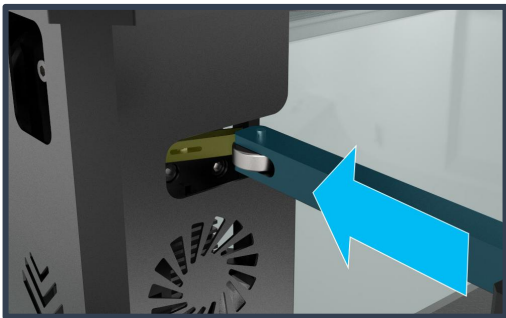
9. Unload the filament in the extruder



Click "Extrude"



Click "Unload"



The filament will be cut automatically



The filament is fully unloaded from the printhead 15 seconds after the cutter finishes.

10. Unload the filament in the tube

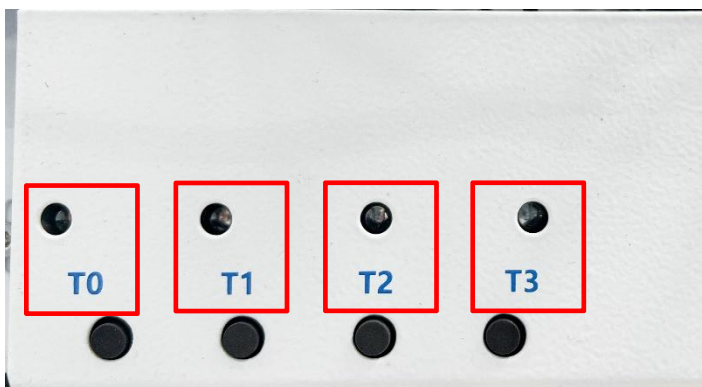
Before unloading, ensure the printhead is not using the filament.

If it is, tap "Unload" on the screen first.

-A green indicator light means the corresponding channel has filament available.

-If the light is off, the channel is empty.

-A red indicator light signals a filament error. Check the on-screen message for details, or try unloading and reloading the filament to resolve the issue.



11. Slicing Software Installation and Usage

Installation:

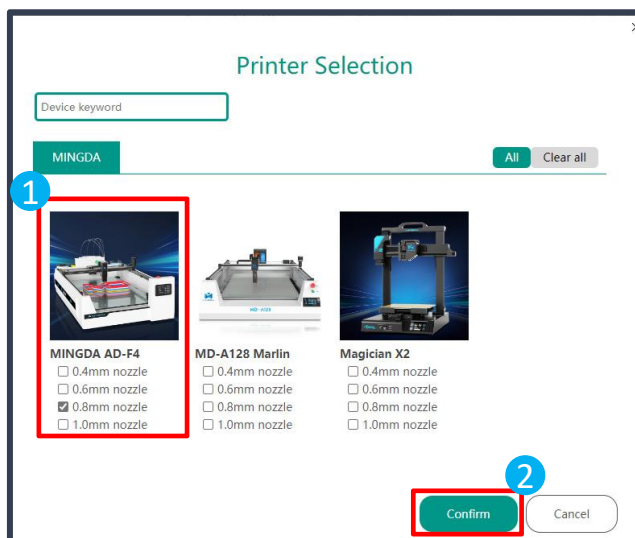
Search "www.3dmingda.com/download" in any Browser.

Download "MINGDA OrcaSlicer"

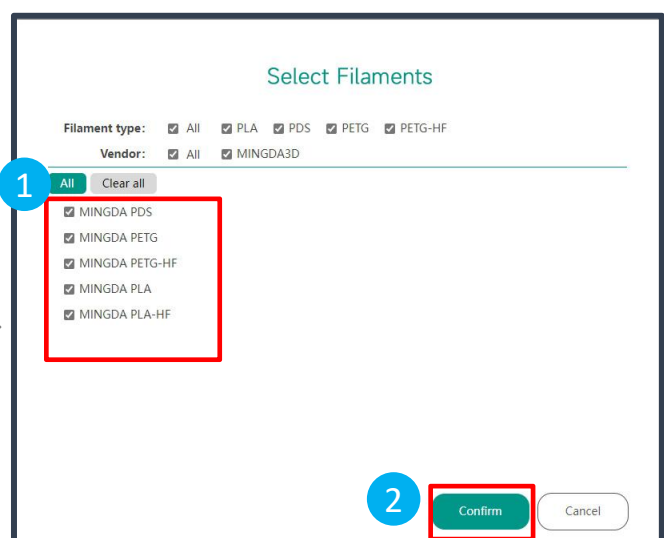
Configuration:



If you are the first time to use MingDa OrcaSlicer, you will enter the configuration wizard.



Select MingDa AD-F4 0.8mm nozzle, Click "Confirm".

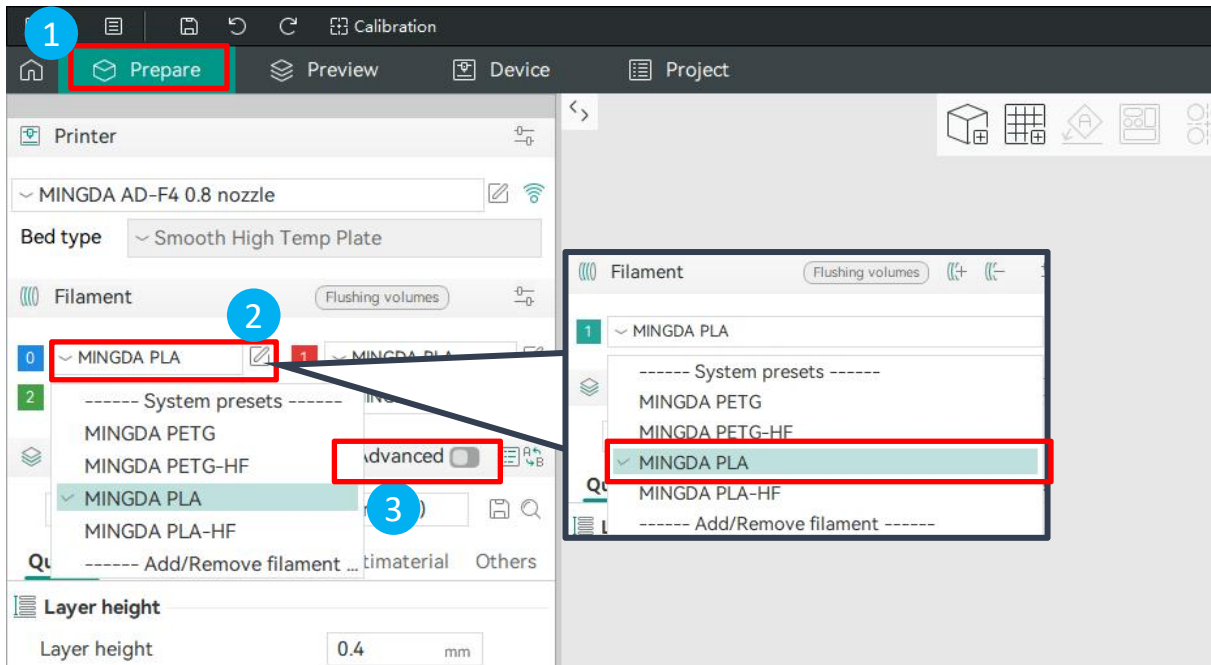


Select the filament type.

Slicing Software Installation and Usage

Click "Prepare"

Prepare

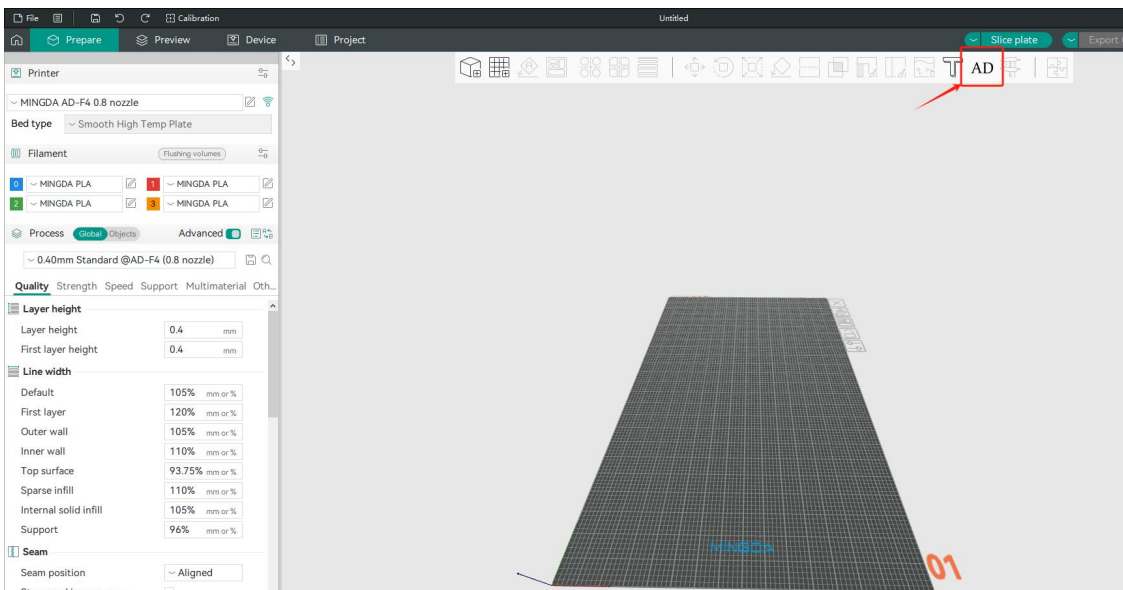


Select the filament you want to print; you can select Advanced Mode to unlock more setting parameters.

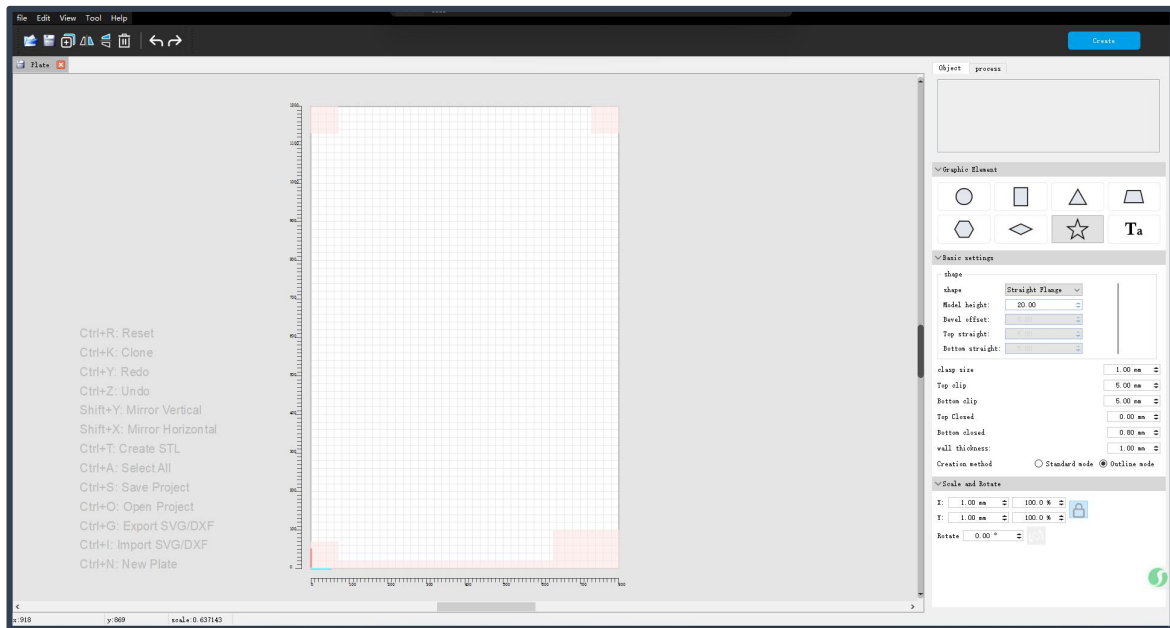
AdWordCraft

Note: Before running the Adword slicer please insert the dongle on your computer

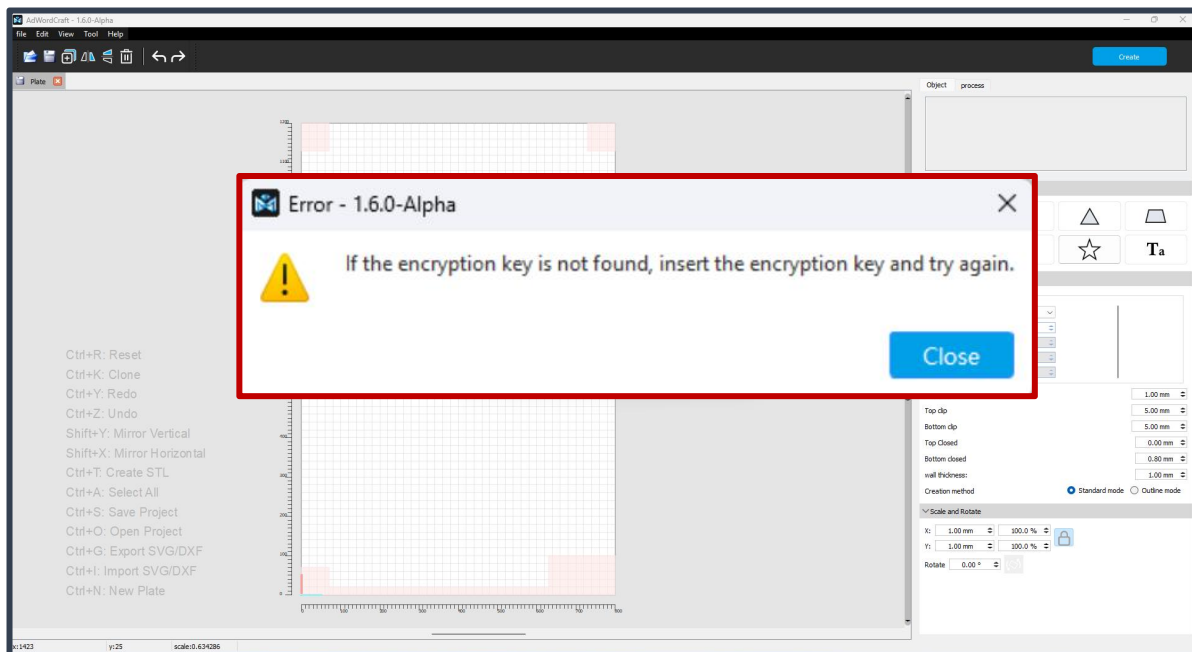
Click **AD** to run the Adword Craft slicer



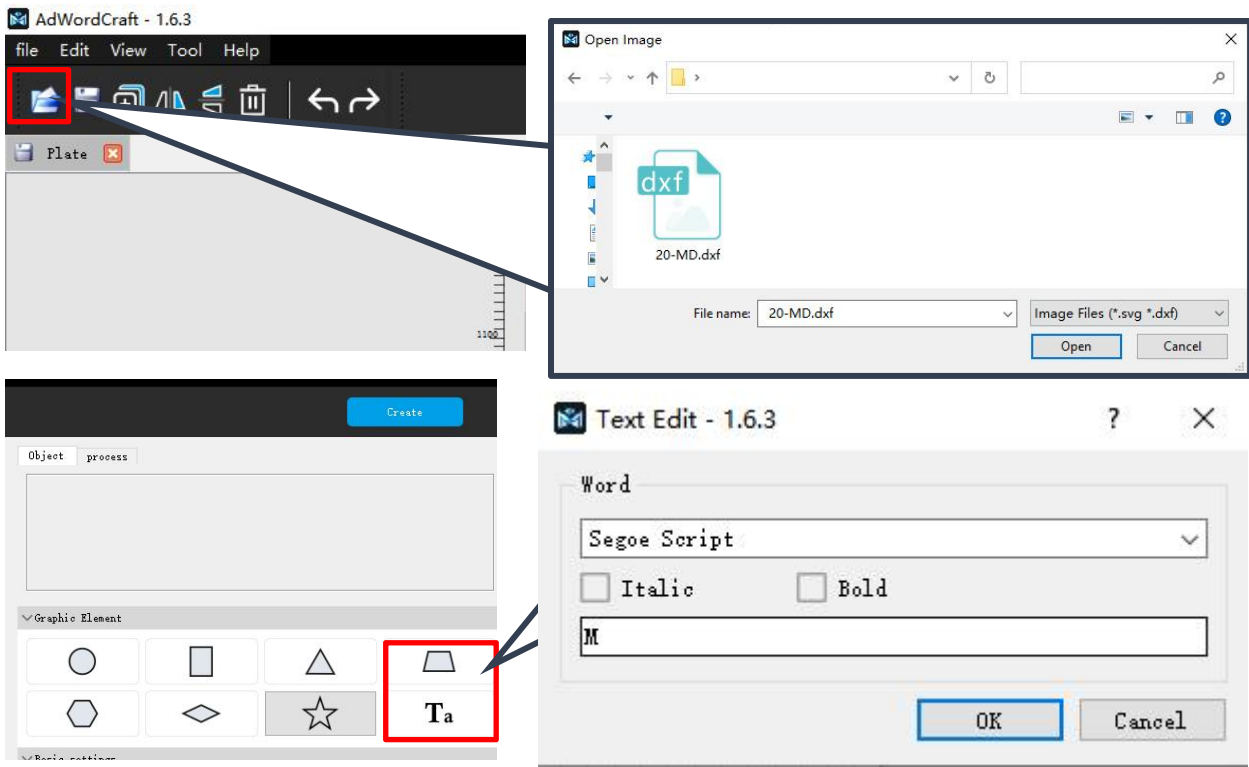
With the dongle connected, AdWordCraft will run normally.



If the dongle is removed during operation, the software will immediately stop functioning and display an error.



Create text for printing



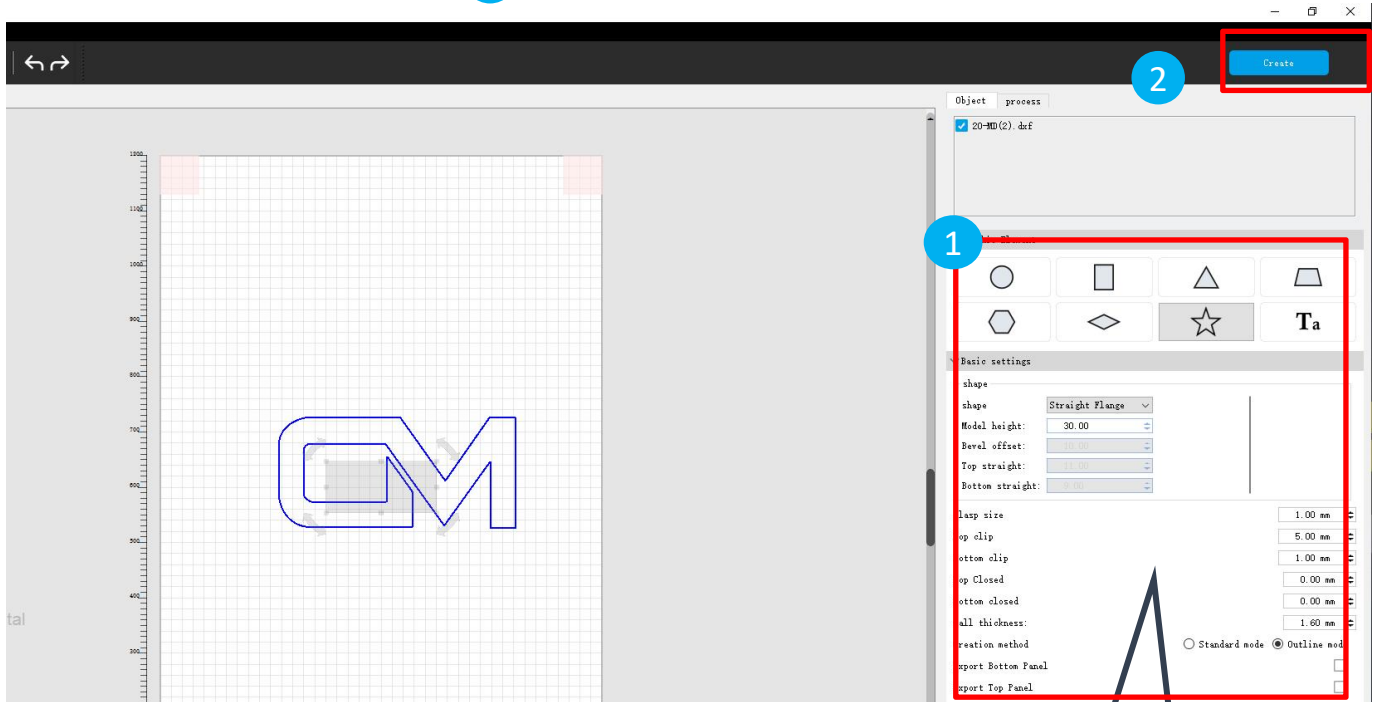
You can import pre-designed vector files [.svg or .dxf] from the File menu or create designs directly using the text tool **Ta** , as shown in the example above.

1. After creating or importing a vector file, select the model and choose the **Horizontal Mirror** option.



2. You can adjust parameters in the right panel **1**, including side border shape, height, bottom thickness, and wall thickness.

3. After configuring the parameters, Create **2** the file to your computer.

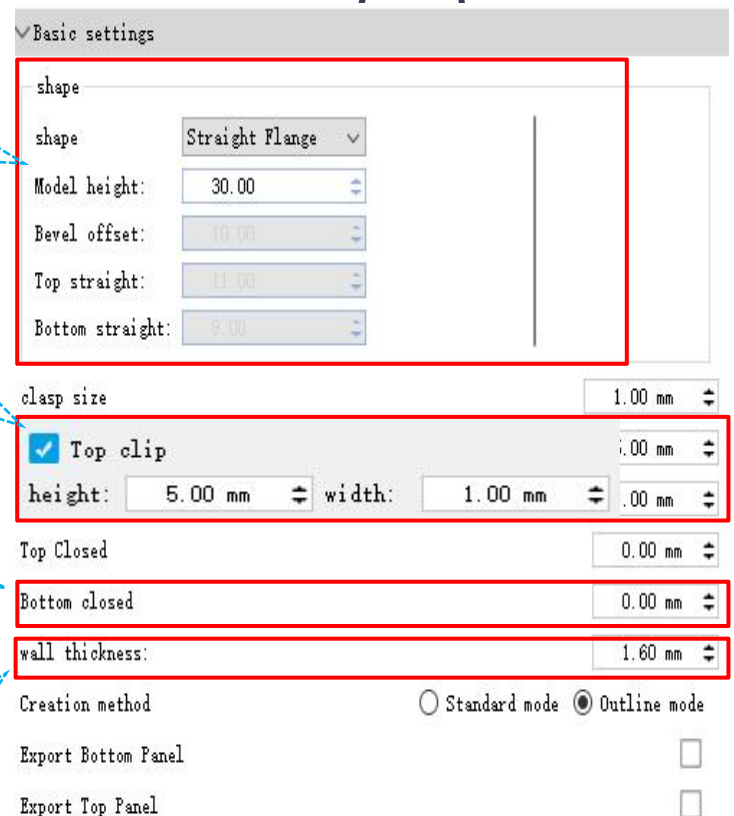


Model height; Setting of side shape and parameters;
[Select Straight Flange, Model height set to 40-60mm]

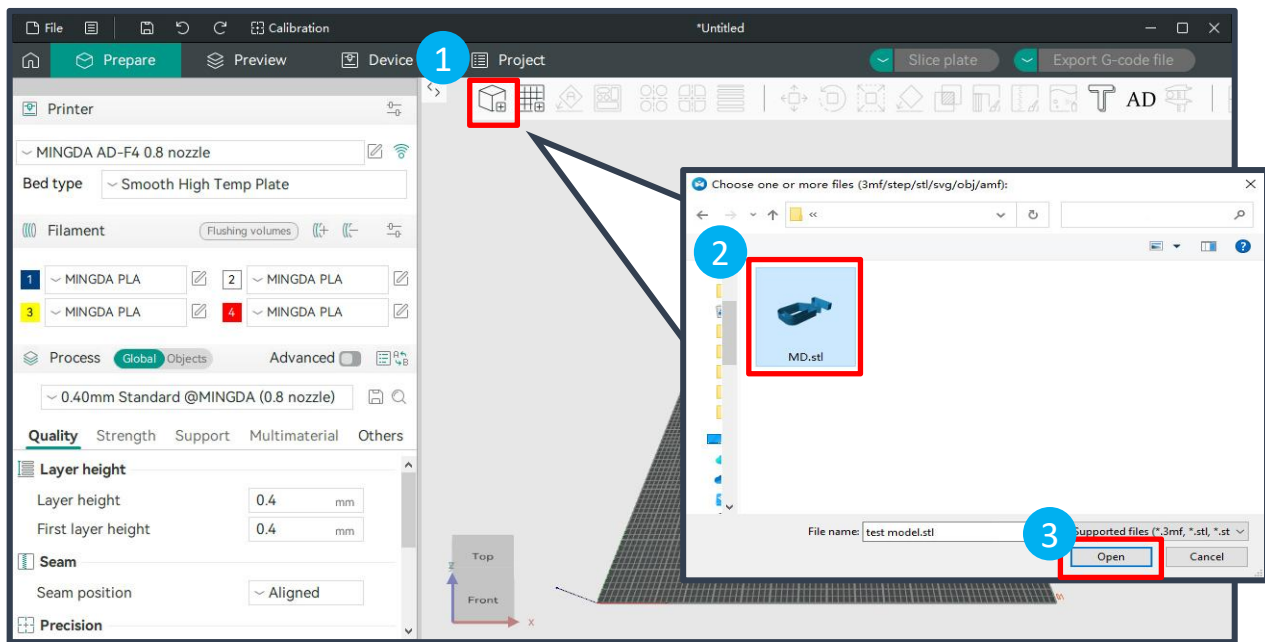
Set the top card slot: used to
secure the backing plate of
advertising text.

The bottom thickness of the model can be set to 2mm
if needed..

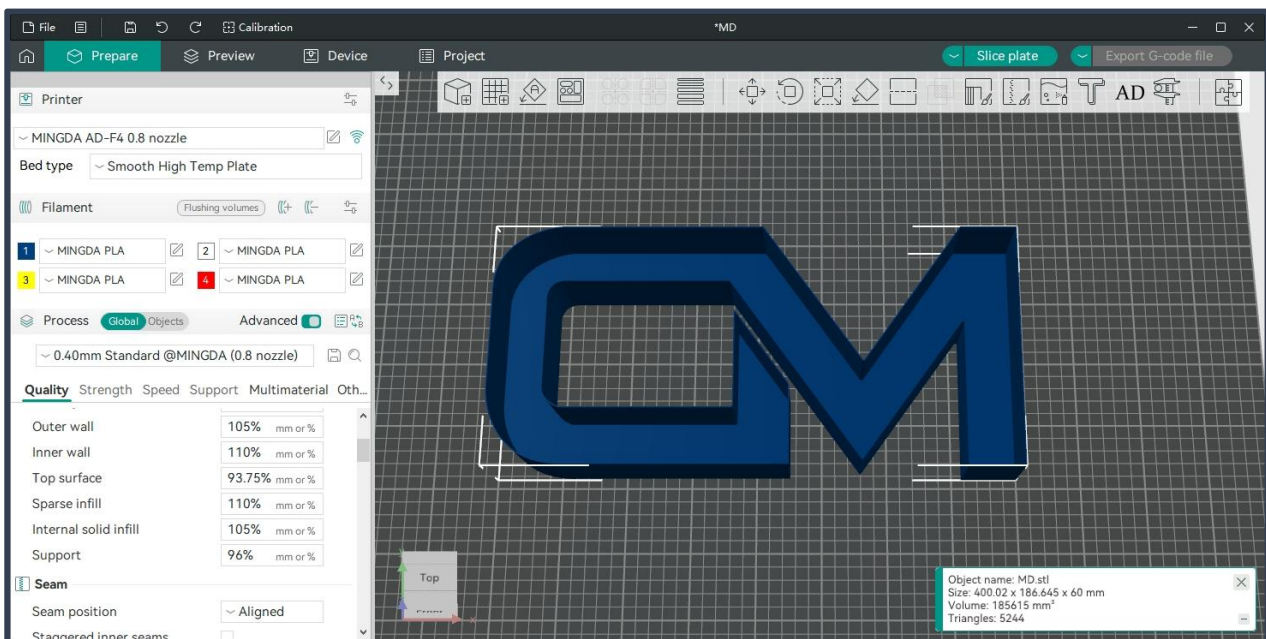
The wall thickness of the model is set as a multiple
of the nozzle size.
For example, with a 0.8mm nozzle, the wall
thickness can be set to 1.6mm.



Import print file



Click , upload your file in your slicer.

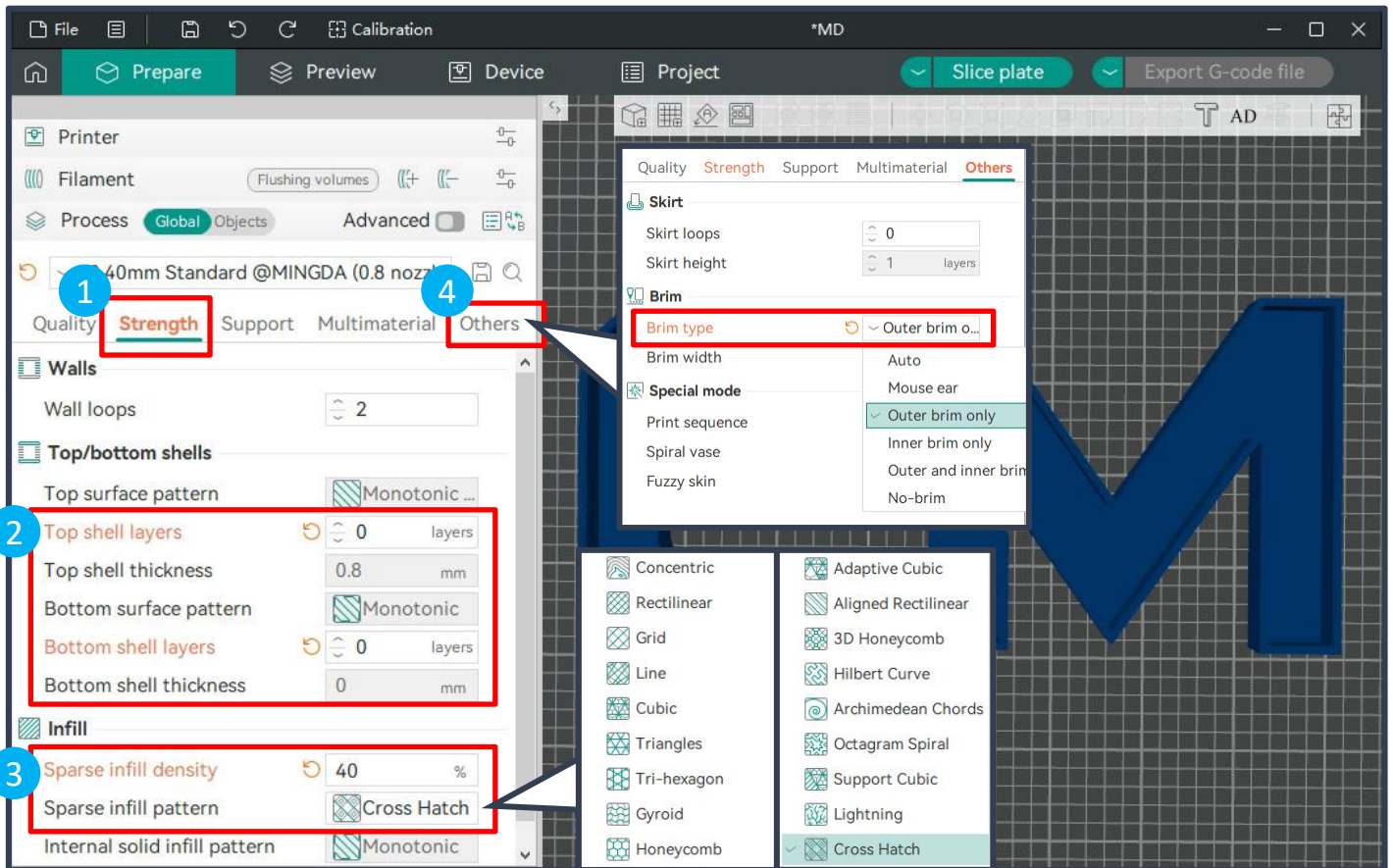


Adjust your model parameter.

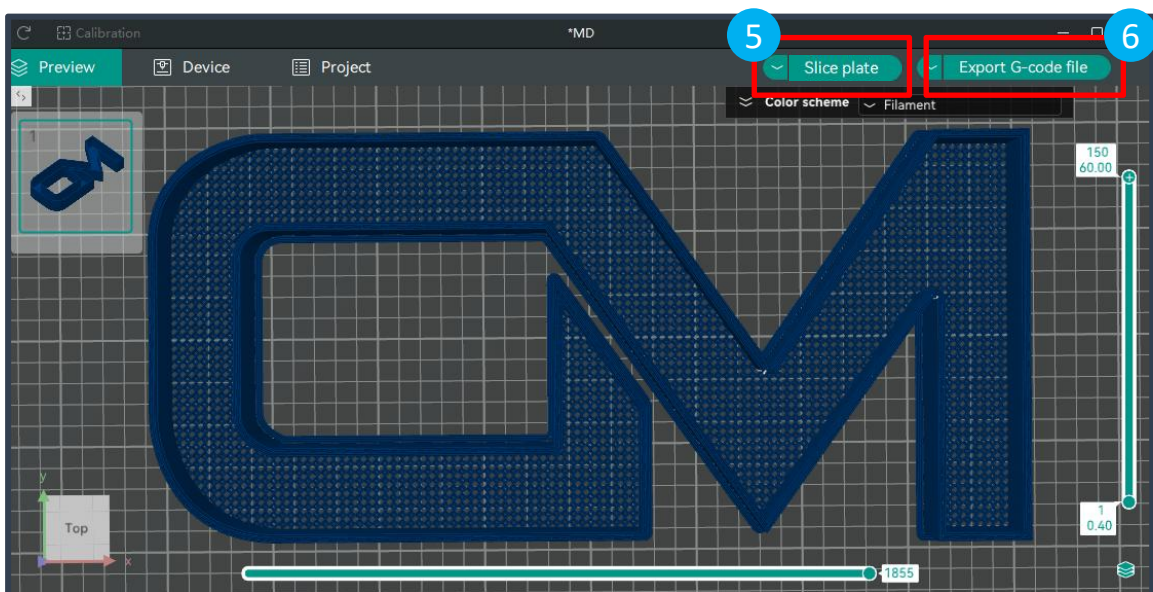
Bottom Pattern Settings



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www.3dmingda.com



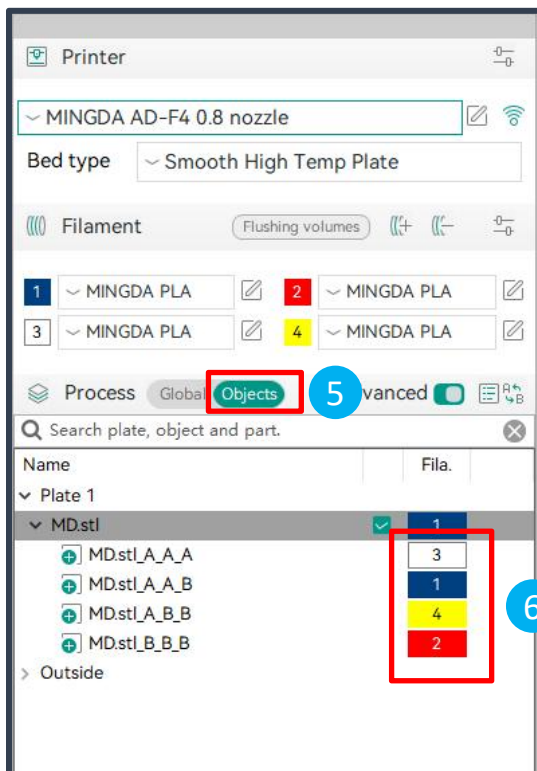
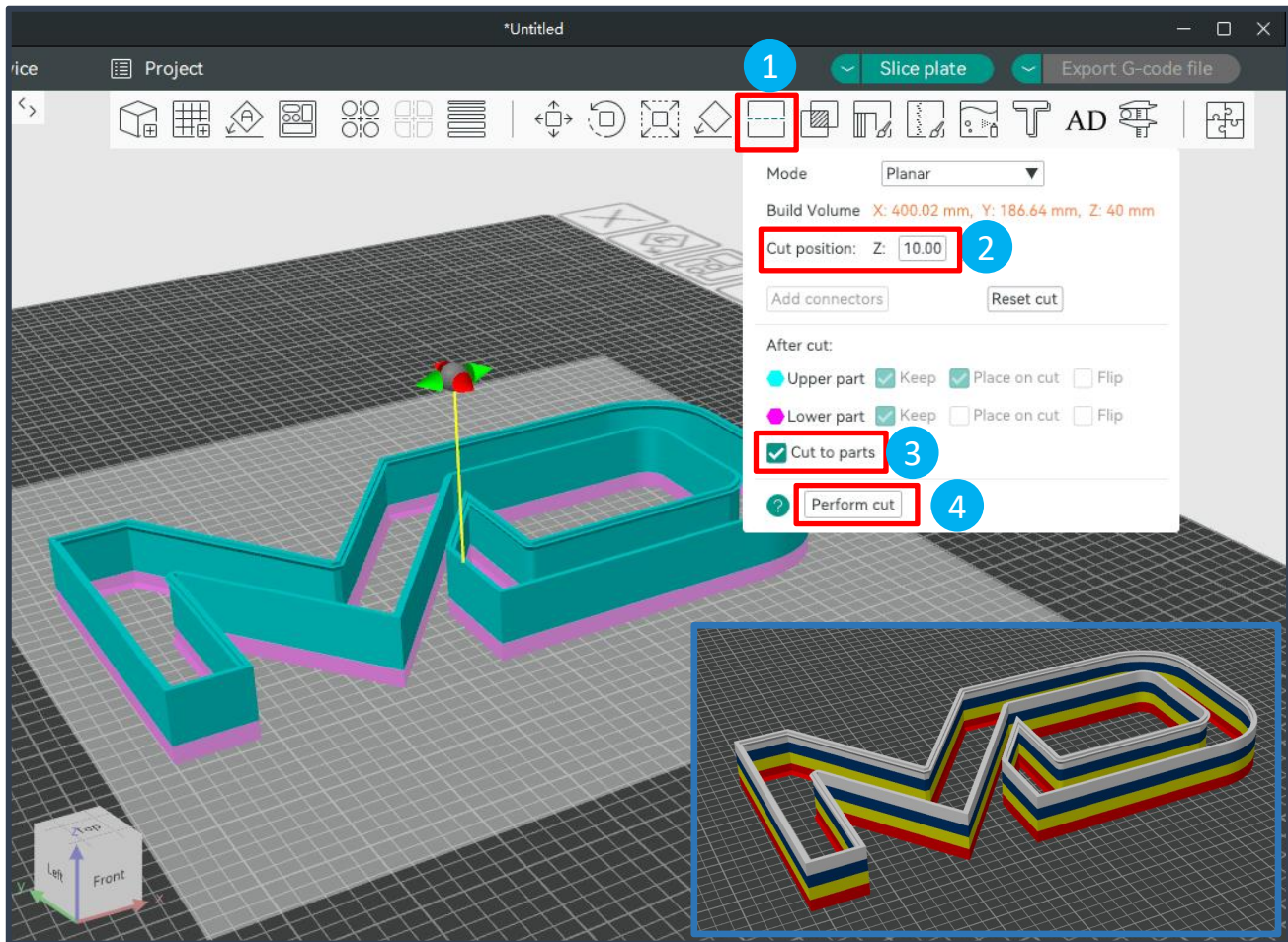
1. Click **"Strength"**;
2. Set **Top Shell Layers** and **Bottom Shell Layers** to **0** to prevent the top and bottom shells from affecting the bottom pattern.
3. In the **Infill** section, set the **Sparse Infill Density** to **40%** (the density can be adjusted as needed). Choose the desired pattern style for **Sparse Infill Pattern**.
4. Click **"Others"** and set the **Brim Type** option to **Outer Brim Only**. This generates only the outer edge of the model to enhance its adhesion to the platform.
5. After completing the model parameter settings, click **"Slice Plate"** **Slice plate** to preview the slicing.
6. **"Export G-code file"**



Side Multi-Color Settings



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1. Click **Cut [C]**



2. Select the height of the **cut position**;

For example: for a 40mm-height model requiring four colors, we may choose 10mm, 20mm, and 30mm heights for sequential cutting.

3. Check "**Cut to parts**" to maintain original positioning during model segmentation

4. Click on '**Perform cut**'

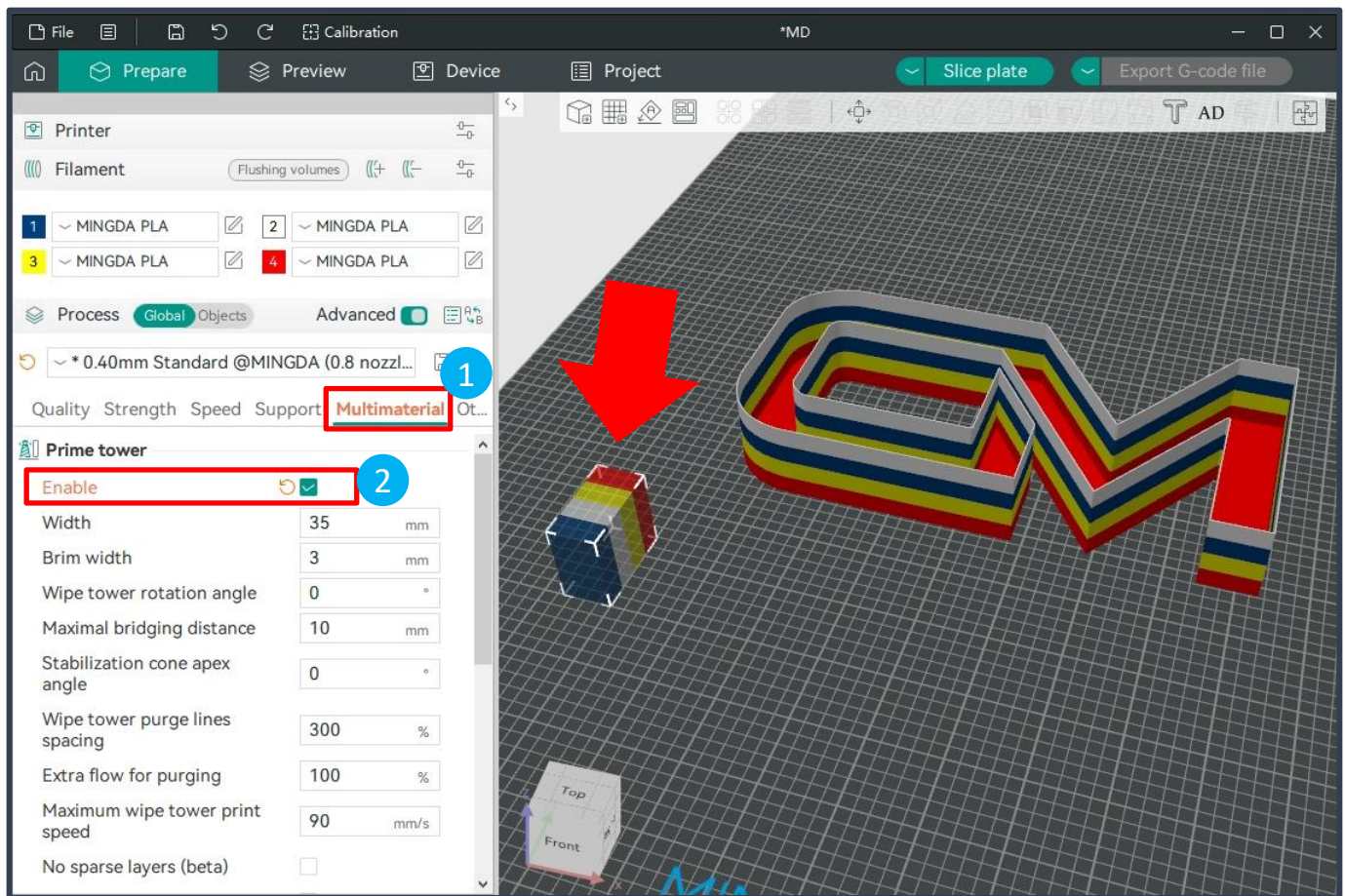
5. Click on '**Objects**'  to switch interface views

6. In the interface, double-click color blocks to assign different colors to each of the four models

Start the Prime tower

During the printing process of multi-color models, filament switching may leave residual filament from the previous color in the nozzle, causing color mixing issues on the model.

Using a Prime Tower can resolve this problem. Before switching filaments during printing, the nozzle prints a Prime Tower, where the residual filament is deposited. This effectively prevents color mixing during filament transitions.



1. Select the "**Multimaterial**" section.
2. Check the "**Enable**" option in the "**Prime tower**" settings.

Cautions:

1. Avoid setting the wipe tower size too small, as insufficient purging may lead to filament mixing.
2. Ensure the prime tower is positioned away from the model to prevent overlap.

Bottom Multi-Color Settings

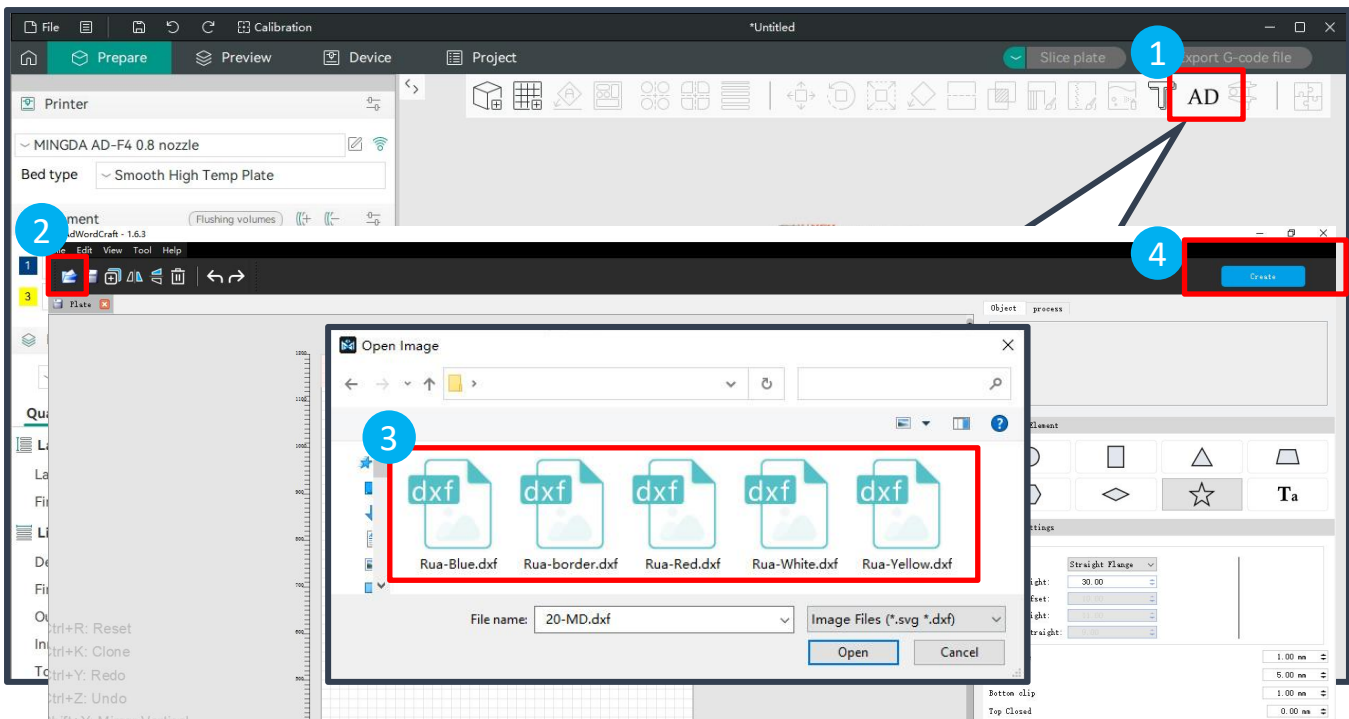
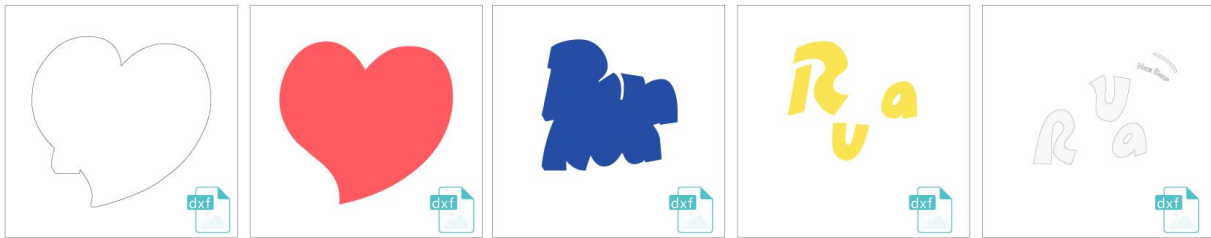
Using the example on the right (colors: red, yellow, white, blue):

When exporting the vector file, you can subdivide it into separate files.

For instance:

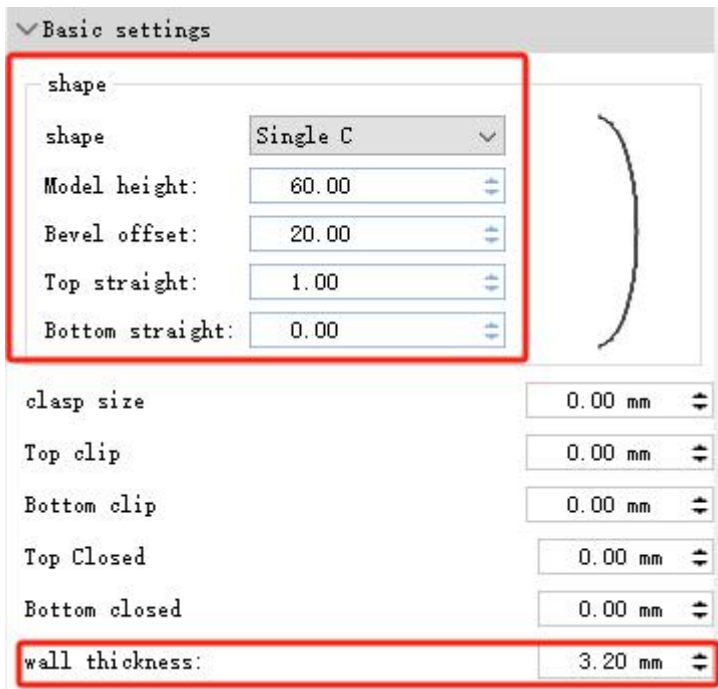
1. Export the model border as an individual **dxf** or **svg** file.
2. Export each of the four colors (red, yellow, white, blue) as separate **dxf** or **svg** files.

This approach ensures better management and precise application of each design element during further processing or printing.

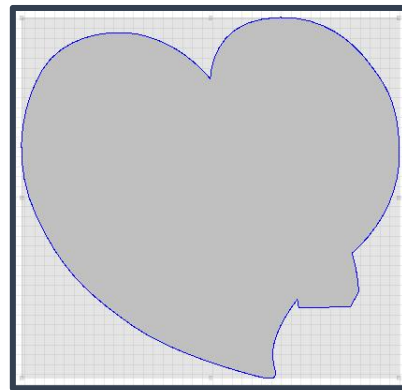


Click the AD icon **AD** , then import the created dxf or svg files individually into the AdWordCraft software. Set the parameters as needed and save your settings.

Model Border Parameter Settings

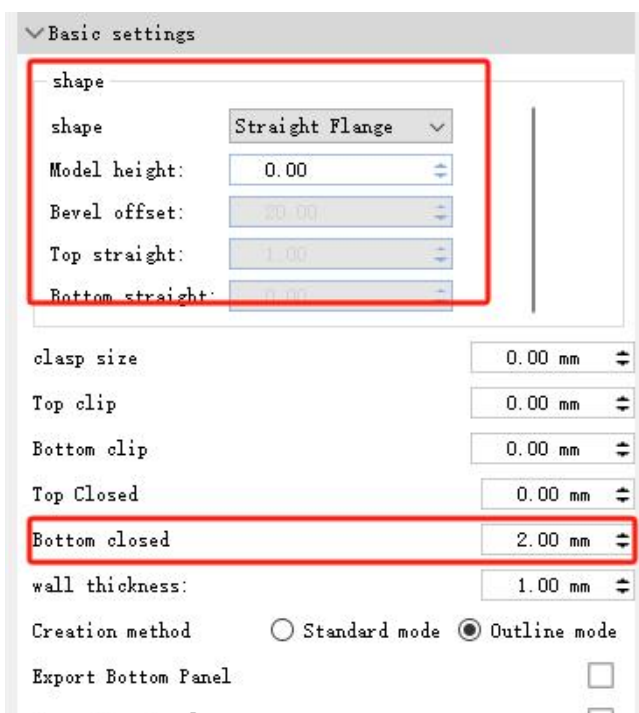


1. Select the desired side shape and adjust the corresponding parameters.
2. Set "**Bottom Closed**" at 0.
3. Set the appropriate "**Wall Thickness**".
4. Select the model and apply a "**Horizontal Mirror**". 
5. Click "**Create**" to save the file.

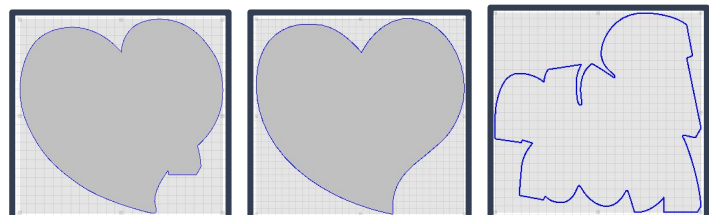


Border

Model Bottom Parameter Settings



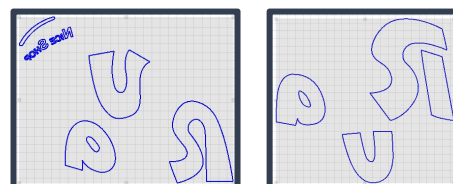
1. Set the **bottom thickness** to 2mm, and cancel or set all other parameters to zero.
2. Select the model and apply a "**Horizontal Mirror**". 
3. Click "**Create**" to save the model.



Entire bottom

Red heart

Blue side

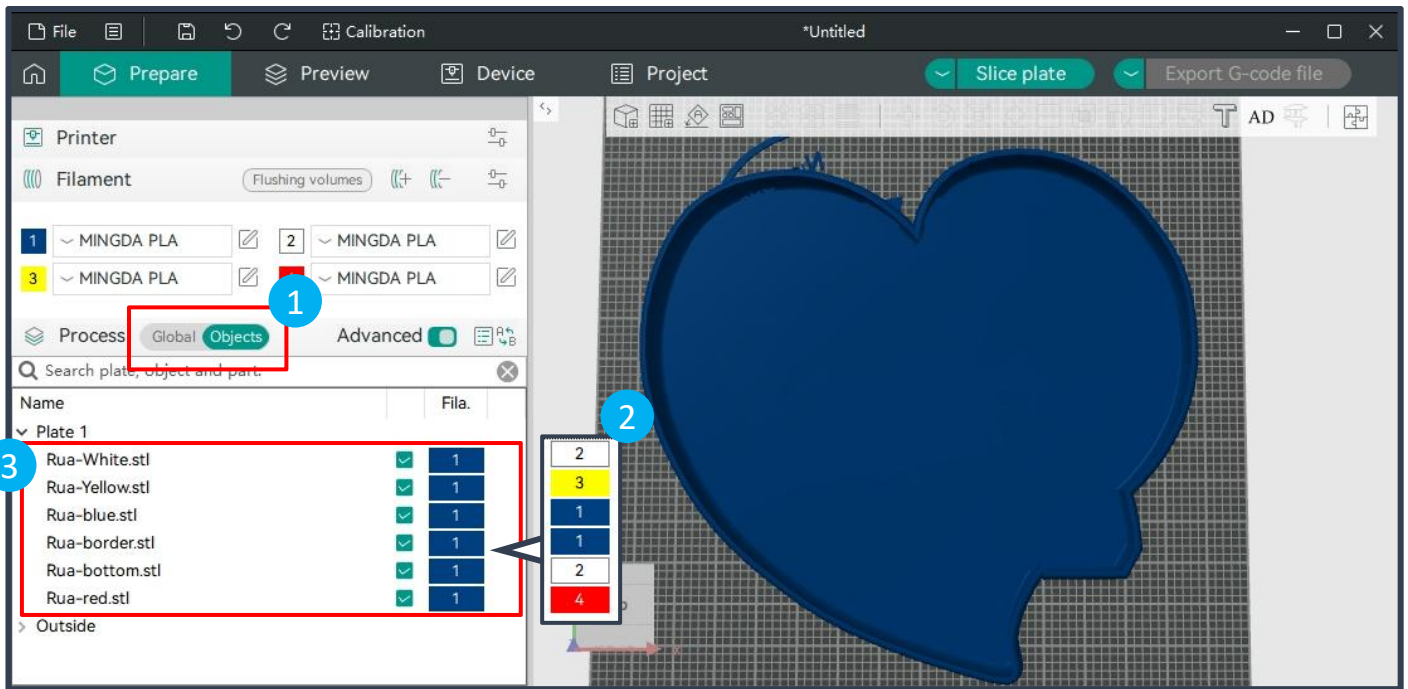


White font

Yellow font

Model File Adjustment

Import the created model files into Mingda OrcaSlicer.

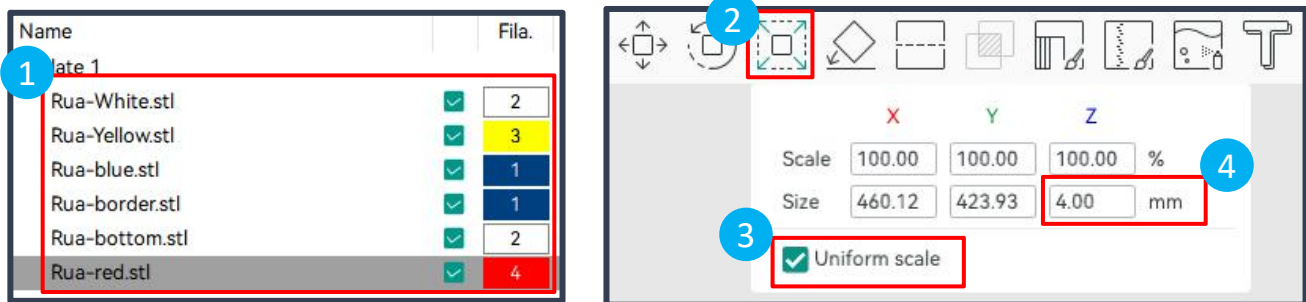


1. Click the button **Global Objects** to switch to the “Objects” interface.
2. Double-click the color block to change the model to the desired color.
3. Adjust the positions of the models as needed, moving each to its correct location.



Since the models are stacked together, making it difficult to differentiate and adjust them, we can modify the height of some models first to make it easier to adjust their positions.

Select the model from the left side; modify its Z-axis height by clicking **Scale [S]** . Uncheck **Uniform Scale** , then increase the Z height. After making the adjustments, you can now easily adjust the positions of each model.



After the adjustments are complete, you can modify the models back to their original height.

4. We need to organize these models to ensure each color is printed correctly.

You can directly drag and drop the corresponding STL files in the left panel to arrange the models in the desired order.

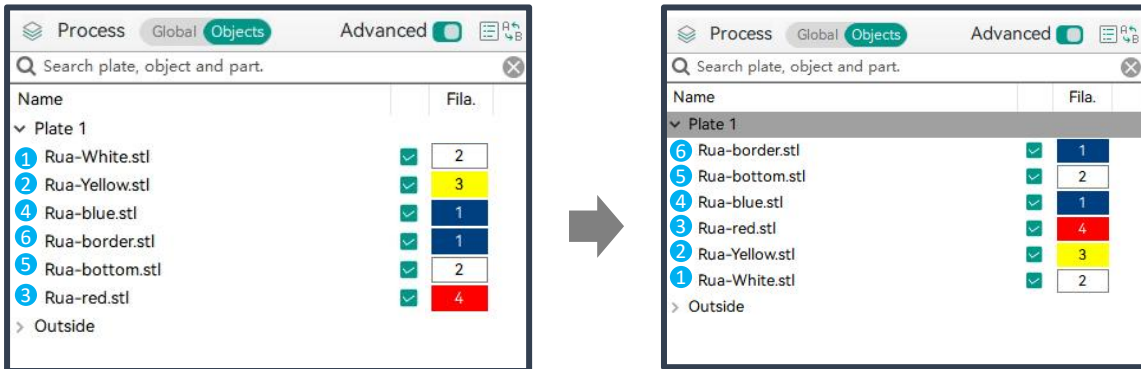


For models that overlap, the smaller model has higher priority.

In the **"Objects"** interface, the higher-priority models should be placed at the bottom, and the lower-priority models at the top.

Based on the current model, the priority order is as follows:

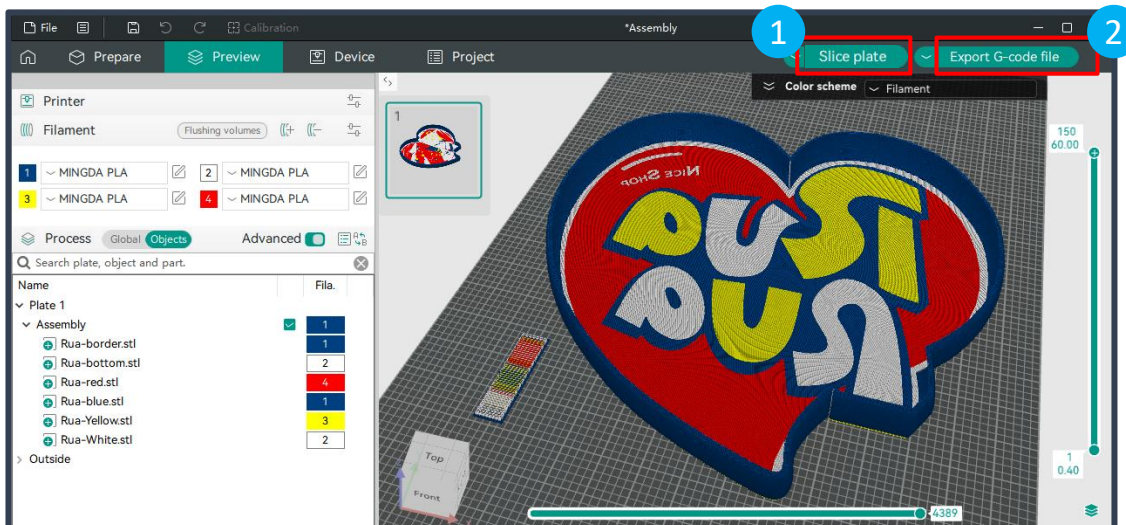
White font > Yellow font > Blue side > Red heart > Entire bottom > Border.



5. After adjusting the order, press **[Ctrl + A]** to select all the model files. Right-click and choose **"Assemble"** to group all the model files into a single Assembly.



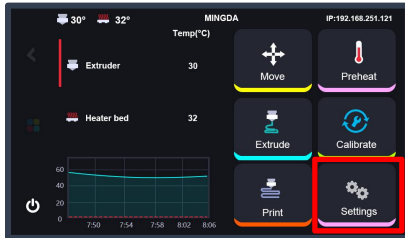
6. Click **"Slice Plate"** to preview the model. If everything is correct, proceed by clicking **"Export G-code File"**.



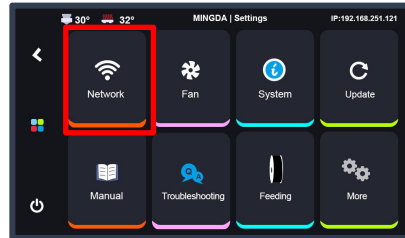
Printing

LAN Printing (Recommend)

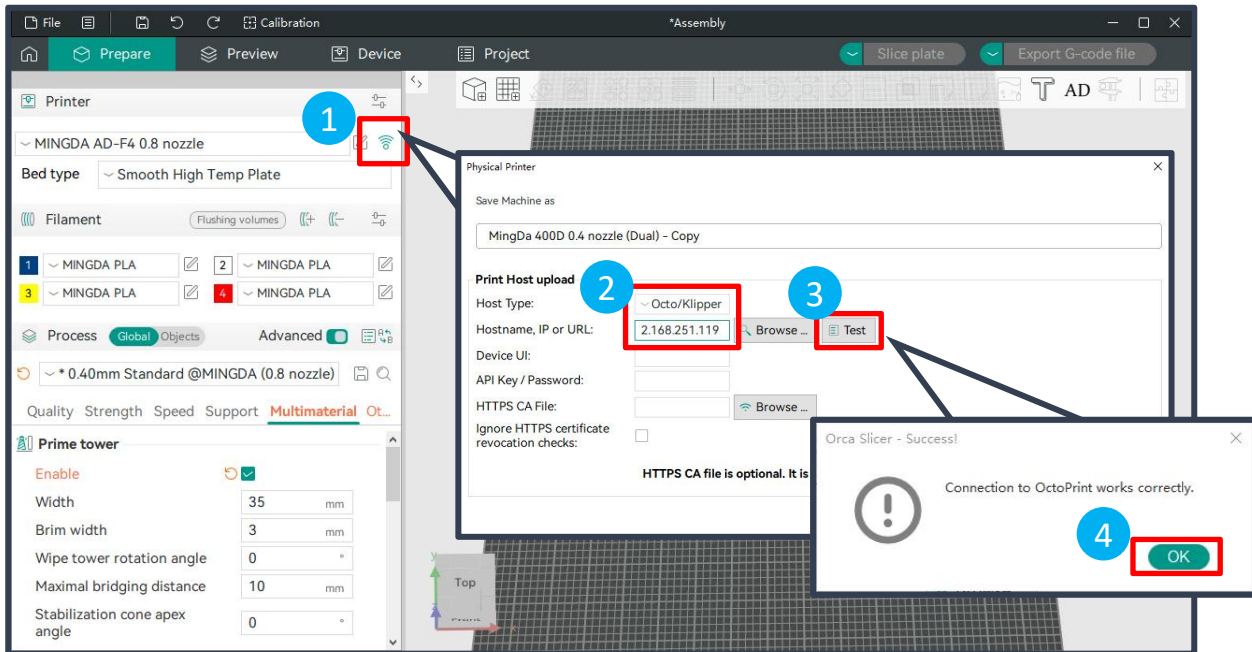
Ensure that the printer and the computer host are on the same local network.



Click "Settings" to enter the settings page.

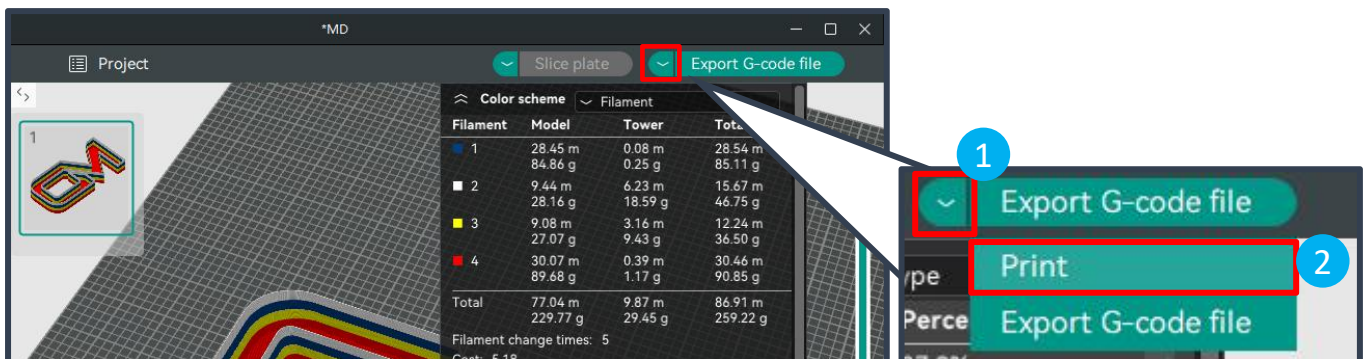


Click "Network" to enter the network page.

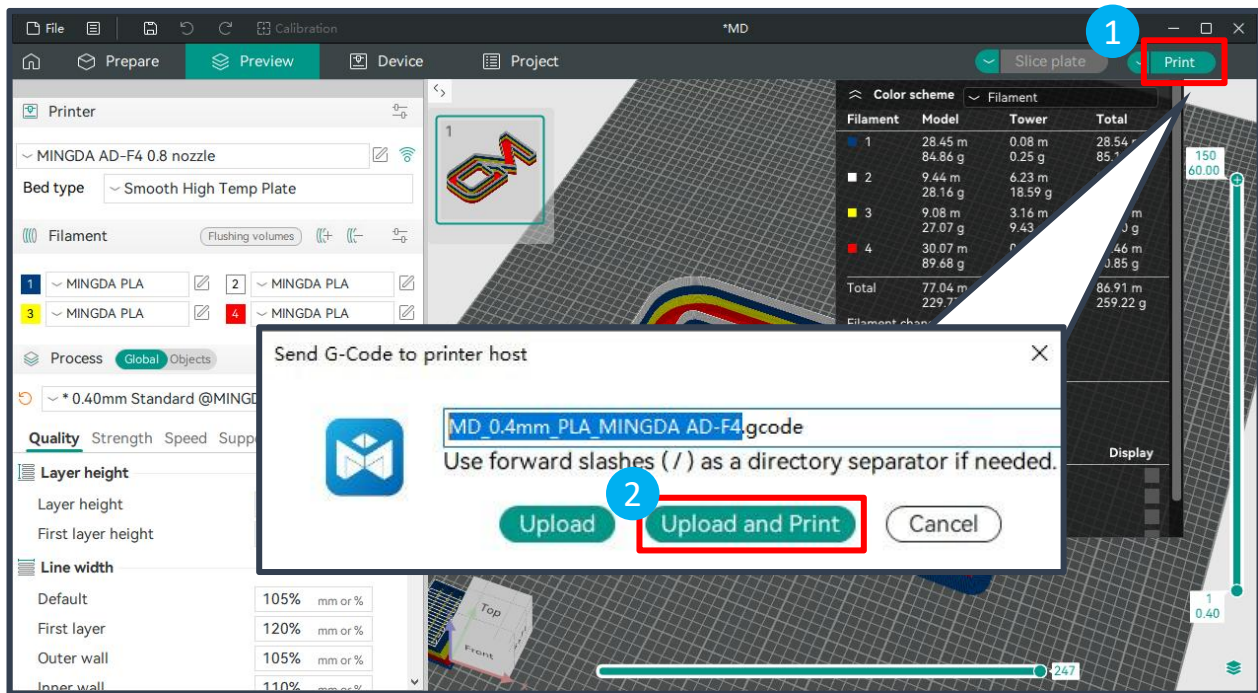


Click WIFI , select Host type as Octo/Klipper, enter the printer's IP address, and click "Test" and "OK"

File Transfer:

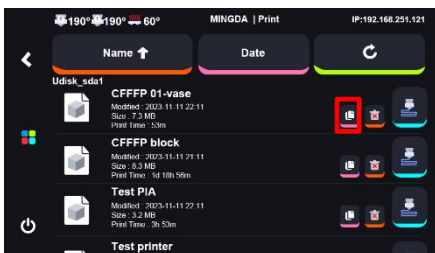


Click the dropdown icon  in the top right corner , select **"Print."**

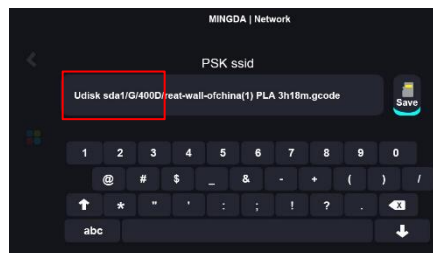


Click **"Print"** and choose **"Upload and Print."**

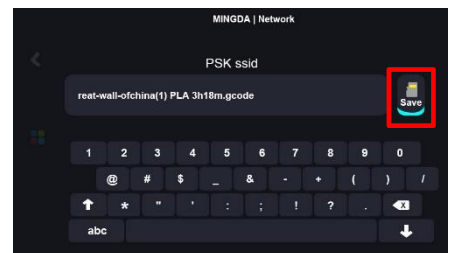
Copy gcode from USB to printer



Click **"Copy"** 



Remove the text before and including the **"/"** symbol.

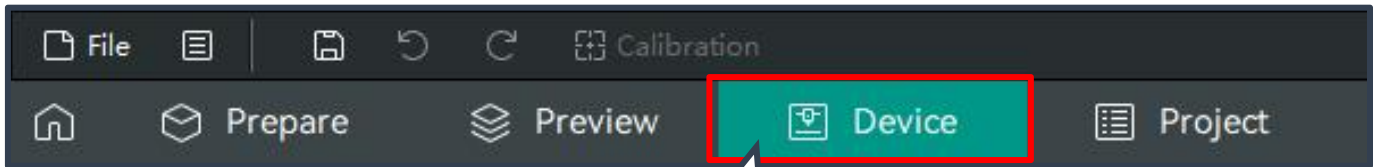


Then click **"Save"** 

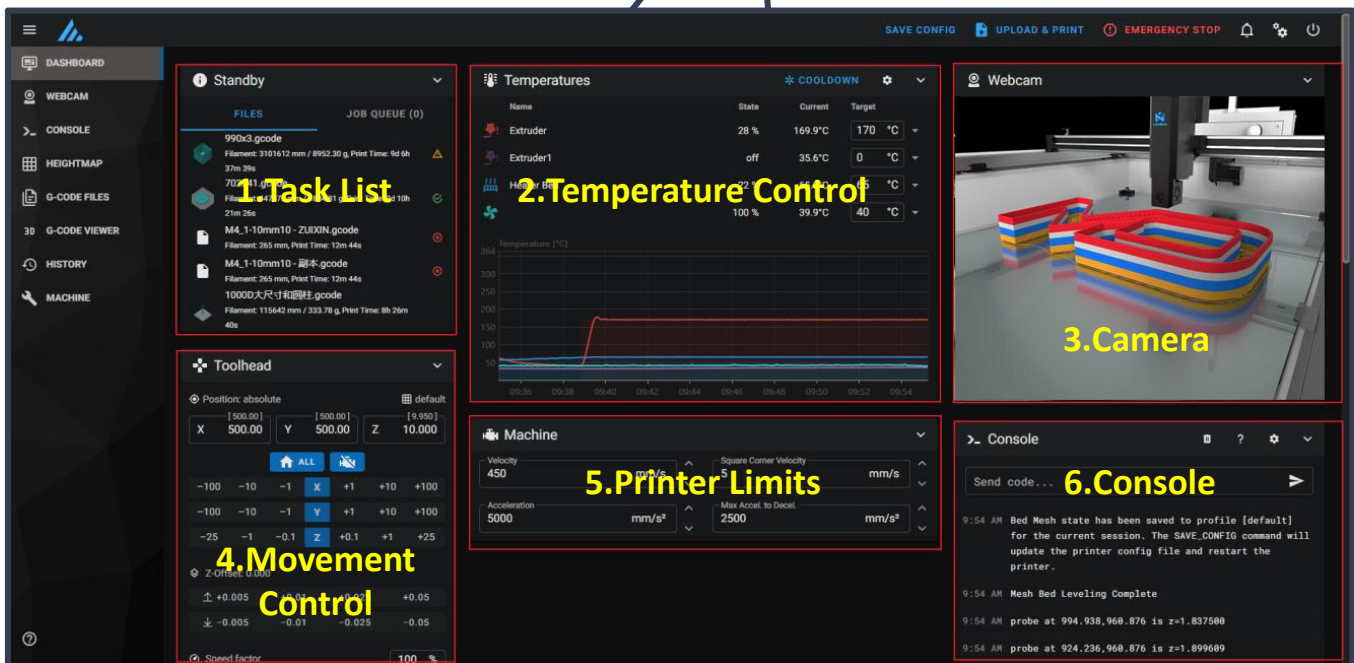
Device Connection

After successful connection, click on "Device"

Device



Enter the control interface below the diagram



- 1. Task List:** Drag G-code files to this task list for printing.
- 2. Temperature Control:** Displays machine temperature changes and allows pre-setting nozzle and bed temperatures.
- 3. Camera:** Monitors the printing status.
- 4. Movement Control:** Controls the movement of each axis and allows compensation settings after leveling.
- 5. Printer Limits:** Controls the maximum acceleration of the printer, usually doesn't need to be changed.
- 6. Console:** Sends G-code commands to run the machine and displays error output.

10. Maintenance and Care

Nozzle Cleaning: After printing, clean any remaining material from the nozzle using a lint-free cloth. Take advantage of residual heat to clean the nozzle efficiently. Do not touch the nozzle directly to avoid the risk of burns.

Filament Replacement: Replace filament as needed based on usage and material type. Use MINGDA filament for best results. Store unused filament in a sealed container to avoid moisture and brittleness.

Platform Inspection: Inspect the glass print platform for any signs of damage. If any damage is found, contact your distributor to obtain a replacement.

Regular Lubrication: Lubricate the guide rails and bearings regularly. Friction between parts during operation can cause wear and noise if not properly lubricated.

Feed Gear Cleaning: Clean the feed gear every three months to remove accumulated residue. This helps maintain feeding accuracy and system stability.

Cutter Replacement: Perform quarterly inspections to check for visible blade wear or damage. If the cutter produces uneven cuts, fails to sever the filament, or shows abnormal resistance or noise during rotation that interferes with normal printing, it should be replaced without delay.



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