MONOPRICE

MP Mini SLA LCD High Resolution Resin 3D Printer

P/N 35435, 38116

User's Manual

CONTENTS

SAFETY WARNINGS AND GUIDELINES

Please read this entire manual before using this device, paying extra attention to these safety warnings and guidelines. Please keep this manual in a safe place for future reference.

- This device is intended for indoor use only.

- Do not expose this device to water or moisture of any kind. Do not place drinks or other containers with moisture on or near the device. If moisture does get in or on the device, immediately unplug it from the power outlet and allow it to fully dry before reapplying power.

- Do not touch the device, the power cord, or any other connected cables with wet hands.

- Do not install this device on an unstable surface where it could fall and cause either personal injury or damage to the device and/or other equipment.

- Do not expose this device to excessively high temperatures. Do not place it in, on, or near heat sources, such as a fireplace, stove, radiator, etc. Do not leave it in direct sunlight.

- Do not place or install this device in an area where it can be exposed to excessive amounts of dust, humidity, oil, smoke, or combustible vapors.

- Use only in a well-ventilated area. Do not use in close, confined spaces.

- Prior to operation, check the unit and power cord for physical damage. Do not use if physical damage has occurred.

- Before plugging the unit into a power outlet, ensure that the outlet provides the same type and level of power required by the device.

- Unplug this device from the power source when not in use.

- Take care to prevent damage to the power cord. Do not allow it to become crimped, pinched, walked on, or become tangled with other cords. Ensure that the power cord does not present a tripping hazard.

- Never unplug the unit by pulling on the power cord. Always grasp the connector head or adapter body.

- This printer has many moving parts. Do not reach inside during printing.

- For best results, the ambient/room temperature should be +59 ~ +86°F (+15 ~ +30°C) and the relative humidity should be 20 ~ 50%.

- This printer should be placed away from light and should be operated in the dark.

- If any resin or liquid gets into the printer, clean it out immediately.

- Wear gloves, such as nitrile or neoprene when working with uncured resin. Do not use latex gloves. If resin gets on your skin, immediately wash it off with soap and warm water.

- Wear safety glasses/goggles when working with uncured resin. If resin gets in your eye(s), immediately flush with cold, clean water, then consult a doctor.

- Clean the resin vat after printing.

- Keep out of reach of children.

INTRODUCTION

This printer uses an LCD screen to mask a cross section of your model, one layer at a time, using a 405nm UV light array to cure resin held in a vat. The LCD screen is positioned beneath a vat of resin, with a transparent film separating the resin and screen. Between layers, the printer will lift (or "Raise") the print and return it one layer higher than previously. This lifting action allows uncured resin to flow under the print and back into the vat. This process is repeated layer by layer to shape the object.

Because of how it this style of printing works:

- Finer levels of detail are able to be printed than with FFF or filament printers. This printer is equipped with a 2K screen to print at higher resolutions.

- The height of the object is the main determinant on how long it will take to print the object. Additional models across the build platform will not increase time, as long as the height does not increase.

- Supports should be included in any areas that would be "Islands", or areas that would not be touching the already printed parts of the model. They should also be used for heavy pieces that risk falling off of the build plate.

- Keeping the build platform, resin vat, and transparent film clean of debris and cured resin is a must for successful printing.

- Cleaning the print and final curing are necessary post processing steps. Natural sunlight produces all the UV light necessary to cure the final print. Exposure to sunlight on a well-lit window sill for half an hour or longer will be sufficient for the final curing process.

USEFUL TOOLS

There are a few tools that will make life easier when working with a resin printer. Some of these are more important than others, but this list covers what a good workstation should contain in ideal conditions.

Disposable Gloves: Always wear gloves when working with uncured resin. Nitrile gloves are what we use in our lab. Neoprene gloves are also useable. Do not use latex gloves. If resin gets on your skin, immediately wash it off with soap and warm water.

Safety Glasses/Goggles: Always wear safety glasses/goggles when working with uncured resin. If resin gets in your eye(s), immediately flush with cold, clean water, then consult a doctor.

Metal Scraper: A putty knife or similar instrument can help remove prints from the build plate when they stick a little too well.

Isopropyl Alcohol: Isopropyl alcohol is used for cleaning the finished print and any tools that have come in contact with resin.

Spare Containers: Spare containers are always useful with liquid resin. They can be used to store used resin, which you will recycle, to wash your finished print (be sure that the container can be used with isopropyl alcohol), or to hold tools after they have come in contact with the resin.

Plastic Scraper: A plastic scraper, such as an expired credit card, is used in the event that a print fails and sticks to the FEP liner at the bottom of the resin vat. Refer to the *CLEANING THE RESIN VAT* section for more information.

Paper Towels: Use paper towels to clean the workstation and prevent dripping on your workstation.

Aluminum Foil, Plastic Wrap, or Plastic Liner: Use any of these products to protect your workstation from resin drips.

Storage: You need a place to store everything to make the workflow easier.

CUSTOMER SERVICE

The Monoprice Customer Service department is dedicated to ensuring that your ordering, purchasing, and delivery experience is second to none. If you have any problem with your order, please give us an opportunity to make it right. You can contact a Monoprice Customer Service representative through the Live Chat link on our website **www.monoprice.com** or via email at **support@monoprice.com**. Check the website for support times and links.

PACKAGE CONTENTS

Please take an inventory of the package contents to ensure you have all the items listed below. If anything is missing or damaged, please contact Monoprice Customer Service for a replacement.

- 1x 3D printer
- 1x microSD™ memory card
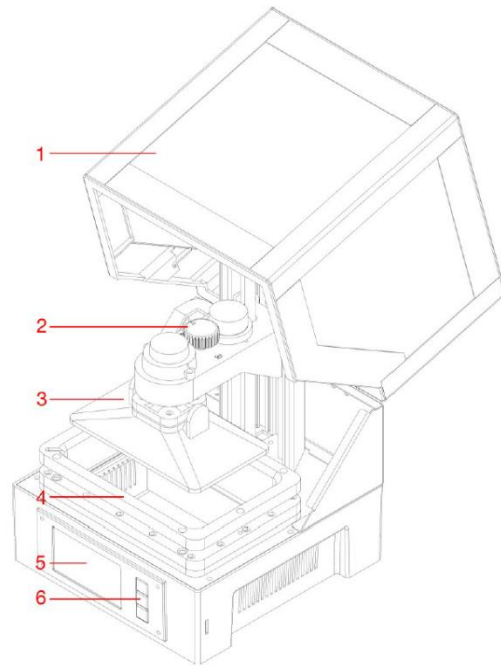- 1x Hex wrench
- 1x Bottle sample resin
- 1x AC power adapter
- 1x AC power cord

PRODUCT OVERVIEW

1. Acrylic Cover

2. Leveling Knob

3. Printing Platform

4. Resin Vat

5. LCD Display

6. Control Buttons

CONTROL BUTTONS

The control buttons on the front panel perform the following functions.

- Press the top button to move the highlight left or up.

- Press the top button while editing a value to decrease the value.

- Press the bottom button to move the highlight to the right or down.

- Press the bottom button while editing a value to increase the value.

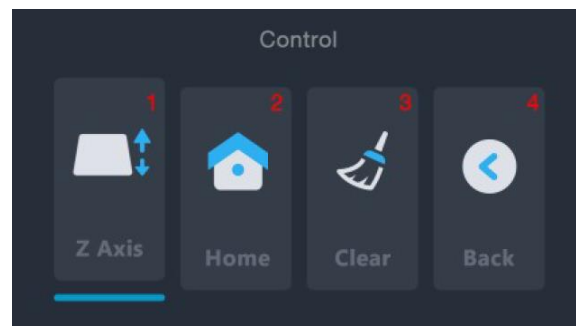- Press the center button to select the highlighted menu item or to save an edited value.

MENU FUNCTIONS

Main Menu
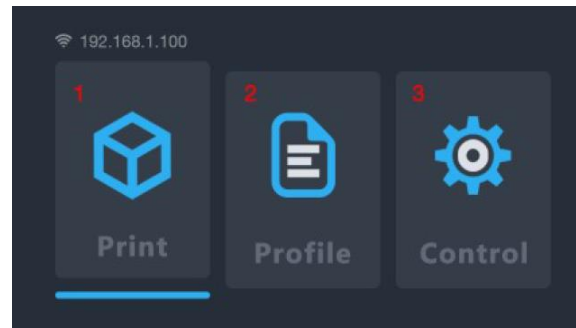
1. **Print:** Select this option to print from a microSD™ card.

2. **Profile:** Select this option to manage the profile file being used.

3. **Control:** Select this option to display the Control Menu.

Control Menu

1. **Z Axis:** Select this option to control the movement of the Z axis.

2. **Home:** Select this option to move the printer to the Home position. The Home position for this printer is when the printing platform is at its lowest point in the resin vat.

3. **Clear:** Select this option to turn the UV lamp on for 10 seconds. This can be used to clean the resin vat by curing an entire layer and peeling it from the FEP liner.

4. **Back:** Select this option to return to the Main Menu.

Print Menu
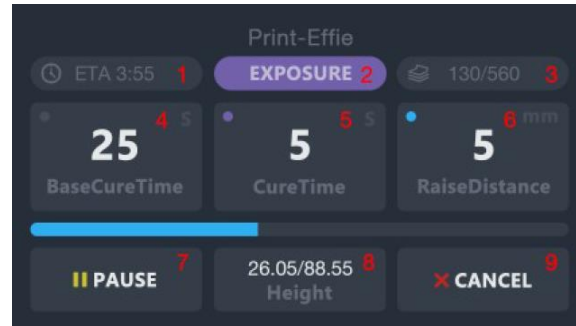
1. **ETA:** Displays the estimated remaining print time.

2. **Print Phase:** Displays either **EXPOSURE** or **LIFT,** indicating the action being currently performed.

3. **LAYERS:** Displays the number of layers printed and the total number of layers for the model.

4. **BaseCureTime:** Select this option to adjust the number of seconds to expose each of first three layers. Use the top and bottom buttons to change the value. Press the center button to save the changes.

5. **CureTime:** Select this option to adjust the number of seconds to expose each layer other than the three layers. Use the top and bottom buttons to change the value. Press the center button to save the changes.

6. **RaiseDistance:** Select this option to adjust the number of millimeters to raise the platform between each layer. Use the top and bottom buttons to change the value. Press the center button to save the changes.

7. **Pause:** Select this option to pause printing. Select it again to resume printing. Note that the printer will finish exposing the current layer before pausing.

8. **Height:** Displays the printed height and total height of the model in millimeters.

9. **Cancel:** Select this option to cancel the current print.

Finish Screen
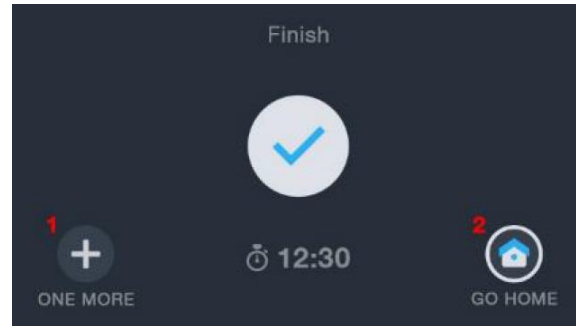
1. **ONE MORE:** Select this option to print the model again.

2. **GO HOME:** Select this option to return to the Main Menu.

PREPARING THE PRINTER

Before you run your first test print, there are a few steps that you should take to begin printing.

1. Check the printer for issues:

   - Verify that the Z axis can move freely and that there is no debris or packaging material on the Z axis lead screw. Use the **Z Axis** option on the Control Menu to raise the build plate to near the top of the printer.

   - Verify that the FEP liner in the Resin Vat is clean and clear of any packaging material or cured resin.

   - Verify that the LCD Display and UV Lamp are functional by selecting the **Clear** option on the Control Menu, while observing the bottom of the empty Resin Vat.

   - If any issues arise while checking the printer, please contact Technical Support for assistance.

2. Add resin to the Resin Vat.

   a. Move the print bed up to near the top of the Z axis.

   b. Twist to remove the magnetic Printing Platform.

c. Shake the resin prior to filling the Resin Vat. Pigments can settle to the bottom of the bottle, so make sure they are mixed properly prior to pouring.

d. Pour resin to fill the vat about half way. If recycling used resin, be sure to filter it to prevent cured resin from entering the vat and causing complications with the auto leveling system.

QUICK START GUIDE

To get started quickly, follow these steps to make a test print:

1. Remove the packaging materials from the box. Check the printer's Z axis for debris from the packaging material.

2. Insert the microSD™ card into the card slot on the printer, then power the printer on.

3. Select the **Control** option on the Main Menu to open the Control Menu.

4. Verify that the printing LCD Display turns on by selecting the **Clear** option on the Control Menu. The display will turn on for about 10 seconds.

5. Ensure that the Resin Vat and build plate are clean and free of packaging material and debris. Refer to the *CLEANING THE RESIN VAT* section for details.

6. Shake the resin bottle to ensure it is properly mixed.

7. Fill the Resin Vat about half way using the included sample resin.

8. Select the **Back** option on the Control Menu to return to the Main Menu.

9. Select the **Print** option on the Main Menu.

10. Select a model file from the list. You will be prompted to select a profile to use. Select **Okay** to print using the default print profile. The printer will go to its Home position, perform its leveling process, then start printing.

11. Once the print is finished, twist the build plate to remove it. We recommend twisting to release the magnets, as they have a relatively strong force and pulling directly may drive the Printing Platform and the print into the Resin Vat.

12. Scrape the print from the build plate into a small container. Fill the container with Isopropyl Alcohol (91% or greater can be found at your local drugstore).

13. Cover the container, then shake vigorously for about 30-60 seconds. Refer to the *MODEL CLEANING* section for more detail.

14. Place the finished print in sunlight to perform the final cure.

WI-FI® SETUP

Perform the following steps to configure the printer to connect with your home's Wi-Fi® network. Use of Wi-Fi is not required, you can print from the microSD™ card if you do not wish to use a Wi-Fi connection. Note that the printer can only connect to a 2.4GHz Wi-Fi network. The Web UI can only be accessed using a Wi-Fi connection.

1. Plug in and power on the printer. The first time it is powered on, the following screen will be displayed.
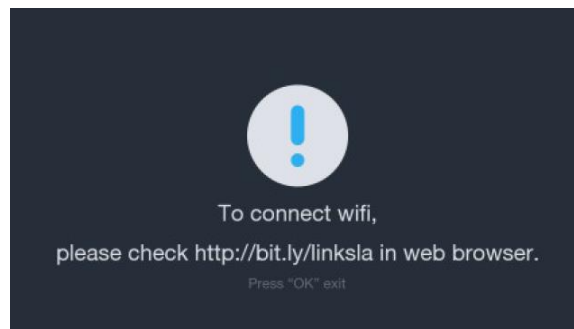
2. Open your web browser on your computer, then navigate to **http://bit.ly/linksla**

3. Enter your Wi-Fi® SSID and password into the fields in your web browser, then click the **Generate** button. The website will generate and download a file to the Downloads directory on your PC that contains your Wi-Fi login information.

4. Locate the **wifi.conf** file in the Download directory, then copy it to the included microSD™ card.

5. Ensure the printer is powered off.

6. Insert the microSD card into the card slot, then turn the printer on. The printer will automatically read the generated file and will connect to your Wi-Fi network. After it connects, the printer will automatically delete the file from the microSD card.

If you need to change the Wi-Fi login information, repeat steps 2-6 above.

ACCESSING THE WEB UI

Once you have established a Wi-Fi® connection, you can access and control the printer using your web browser. Perform the following steps to access the Web UI.

1. If you have not already, perform the steps in the *WI-FI SETUP* section above.

2. Power the printer on. The Wi-Fi IP is displayed in the upper left corner of the Main Menu.
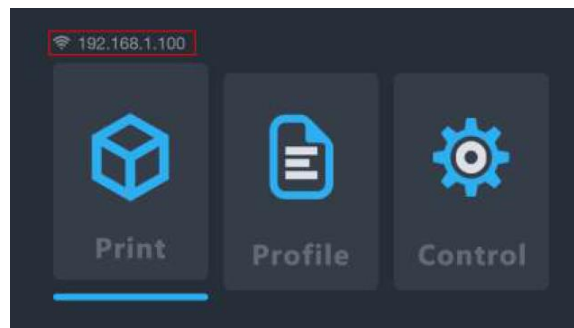
3. Type the IP address into your browser's address window, then press the ENTER key.

4. The first time you access the Web UI, the printer will display an Access Code.
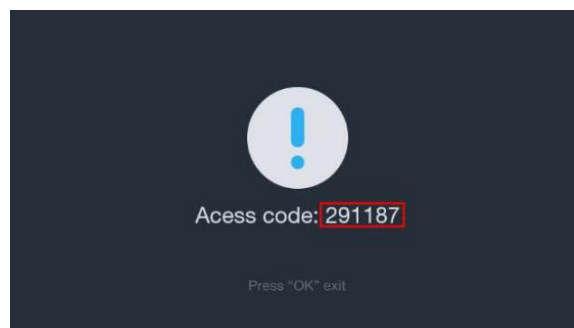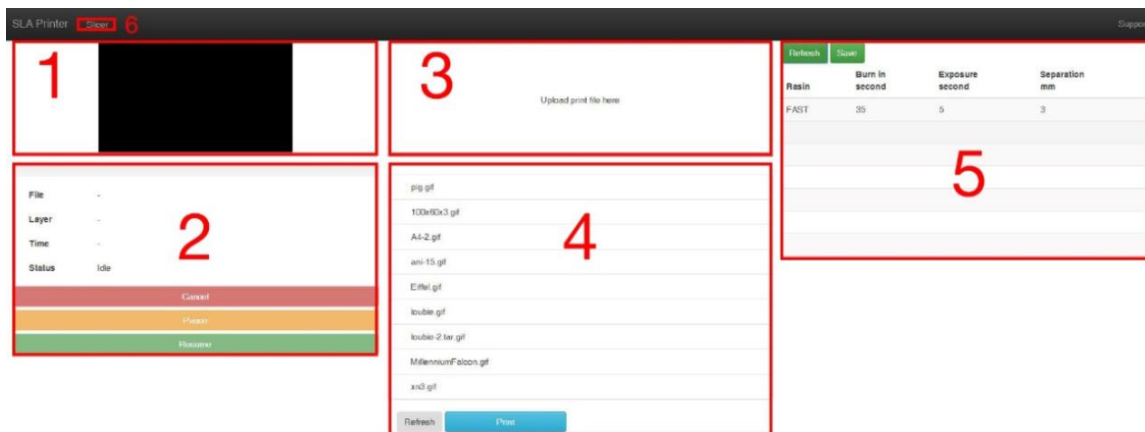
5. Enter the Access Code into the field on your web browser, then click the **Submit** button.
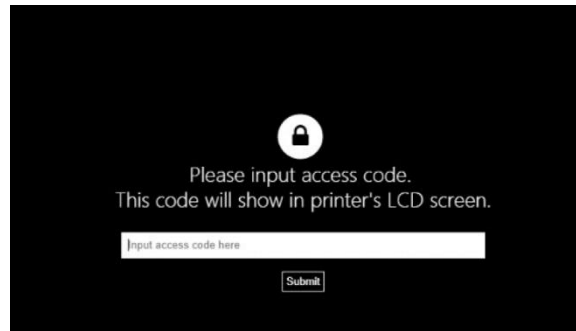
WEB UI DETAILS

Main UI

1. Displays an image of the current layer being printed.

2. The printer management window allows you to Start, Pause, or Cancel prints. You can also review the status of the current print.

3. Upload the print files by dragging and dropping sliced print files from your PC into this window. The file will be copied to the microSD™ card using the Wi-Fi® connection. Sliced files are generated using the Web Slicer, Creation Workshop, or Print Studio.

4. This window displays a list of print files on the microSD card. Select a print file, click **Print**, then select a profile to begin printing. If files have been added or removed, click **Refresh** to refresh the print file list.

5. You can create and review profiles in this window by selecting the value, then typing in the new parameters.

- **Resin:** Displays or changes the name of the profile file.

- **Burn in second:** Displays or changes the cure time for the base three layers. Different manufacturers have different cure times for their resins. Monoprice resin has a nominal cure time of 60 seconds for the three base layers.

- **Exposure second:** Displays or changes the cure time for the layers other than the base three layers. Different manufacturers have different cure times for their resins. Monoprice resin has a nominal cure time of 8 seconds for layers other than the first three layers.

- **Separation:** Displays or changes the raise distance, which is the number of millimeters that the printing platform lifts between layers to allow the uncured resin to flow back into the Resin Vat. Different manufacturers have different viscosities for their resin. For more viscous resins, a higher lift height may be necessary.

6. Web slicer: Click the button to display the Web Slicer.

Web Slicer UI

1. Upload an STL 3D model file by dragging and dropping the file onto the Web Slicer screen.

2. Adjust the Layer Height, Exposure Time, Lift Height, and Lift Speed parameters.

    a. **Layer Height:** The vertical size in millimeters of each printed layer. Smaller values will result in a smoother surface on the finished print model, but will take longer to print. On the other hand, larger values will result in a coarser surface, but will take less time to print.

    b. **Exposure Time:** The amount of time that the UV light will expose each layer during printing. Different manufacturers have different cure times for their resins. Monoprice resin has a cure time of 8 seconds for layers other than the base three layers.

    c. **Lift Height:** The number of millimeters that the Printing Platform is lifted out of the Resin Vat between layers. Different manufacturers have different viscosities for their resin. For more viscous resins, a higher lift height may be necessary.

    d. **Lift Speed:** The speed at which the Printing Platform is lifted from the Resin Vat between layers.

USING THE WEB SLICER

1. Turn the printer on. Type the IP address in the upper left corner of the Main Menu into your web browser's address bar, then press the Enter key.

2. Click the **Slicer** entry in the upper left corner of the Main UI.
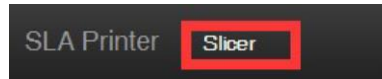

3. Load an STL model file using the file browser. Alternatively, you can drag and drop an STL file directly onto the interface.

4. Use the controls in the **Build Volum**e section to change the size of the build area. This defaults to the maximum print size for the printer and should rarely need to be changed.

5. Use the controls in the **Transformations** section to rotate, mirror, or scale the model.

6. Click the **Slice** button to begin slicing the model
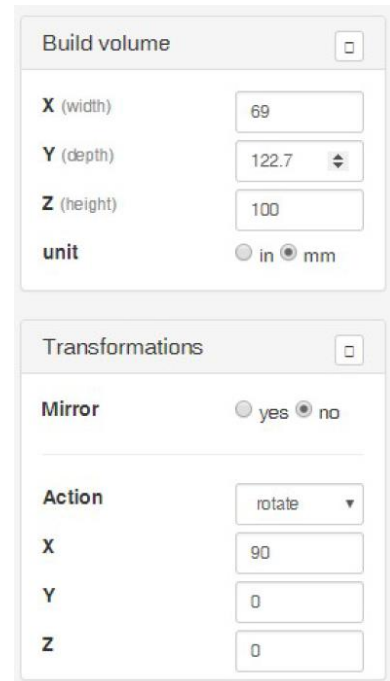
7. After slicing is finished, click the **Download** button to download the finished GIF file to your computer. Alternatively, click the **Print** button to send the file directly to the printer.

8. Copy the downloaded GIF file to the included microSD™ card. Alternatively, you can upload the print file using the Web UI to save it to the microSD card inserted in the printer using Wi-Fi®.
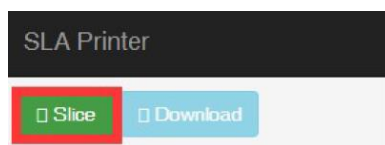
9. With the printer powered off, insert the microSD™ card into the card slot.

AUTO CALIBRATION

Whenever the printer is sent to the Home position or whenever a print is started, the printer will automatically calibrate the Printing Platform. This requires the Resin Vat to be free of cured resin particles or print failures can occur.

ABOUT RESINS

Resin Storage

Resins should be kept in a dark and ventilated place. The storage location should be kept in the +68 ~ +86°F (+20 ~ +30°C) temperature range. Lower temperatures can extend the shelf life. The official shelf life is one year.

Resin Operation

Wear gloves when working with resin to prevent direct skin exposure. If resin does get on your skin, wash the exposed area immediately with soap and warm water.

Cured resin is safe to handle without gloves. Printed models should not be used for food applications.

Safety and Resin

There are many types of resins and resin manufacturers. This section contains general safety guidelines for handling resin.

- Wear gloves when working with uncured resin.
- Wear safety glass/goggles when working with resin.
- Do not eat or drink resin.
- Refer to the Material Safety Data Sheet (MSDS).

Transferring Resin to Storage

When you use resin, small portions can be unintentionally cured. For this reason, it is recommended to not mix used resin and unused resin. The used resin can be filtered using a fine mesh to remove any cured bits. For best results, store the resin in a black container with a lid. The container should be stored in a dark, ventilated place to prevent curing during storage.

Discarding Resin

Before discarding resin, it should be fully cured. The easiest way to cure the resin is to pour it into a clear, disposable cup, then placing the cup in direct sunlight until the resin is fully cured.
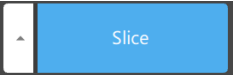
PRINTING TIPS

- Check the Resin Vat and Printing Platform before printing to ensure they are clean.

- After removing the model, cover the lid to prevent the remaining resin curing.

- After printing is finished, store the remaining resin in another container or leave it in the Resin Vat. The shelf life will be significantly shorter for used resin. Adding fresh resin can increase the shelf life.
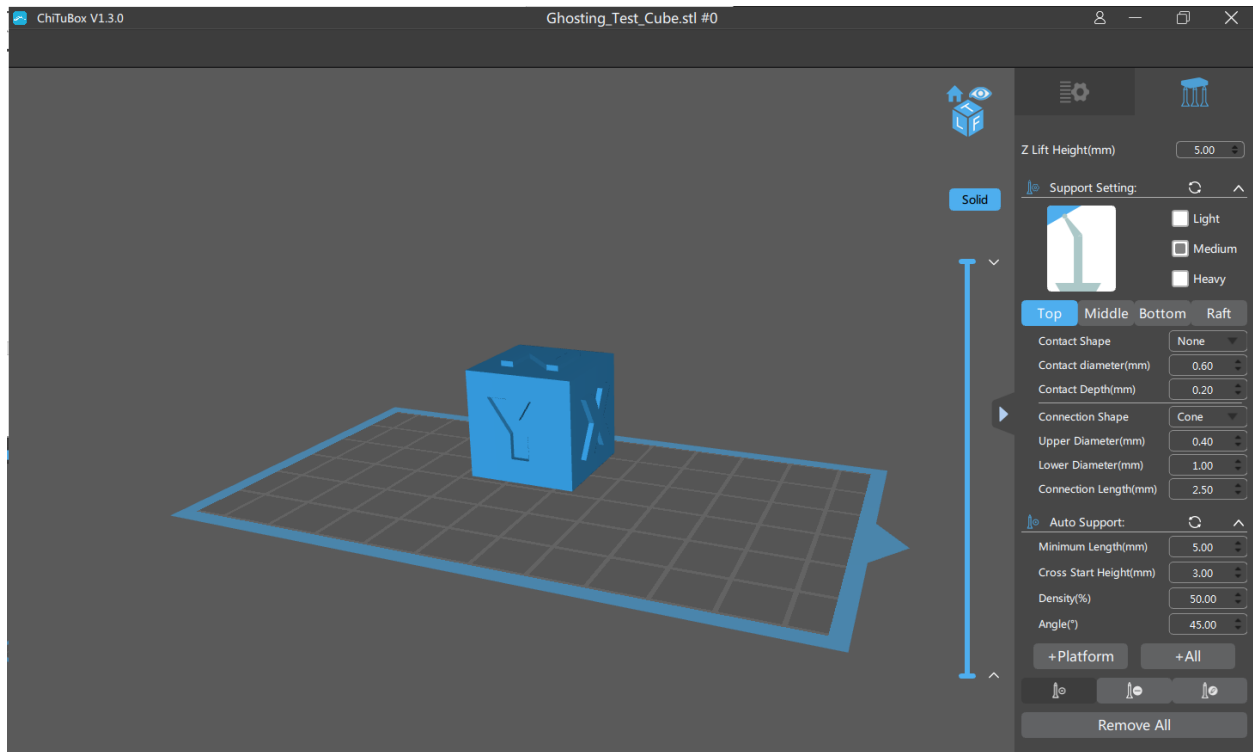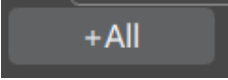
CHITUBOX SLICING SOFTWARE

The following screen is displayed when the ChiTuBox program is executed.
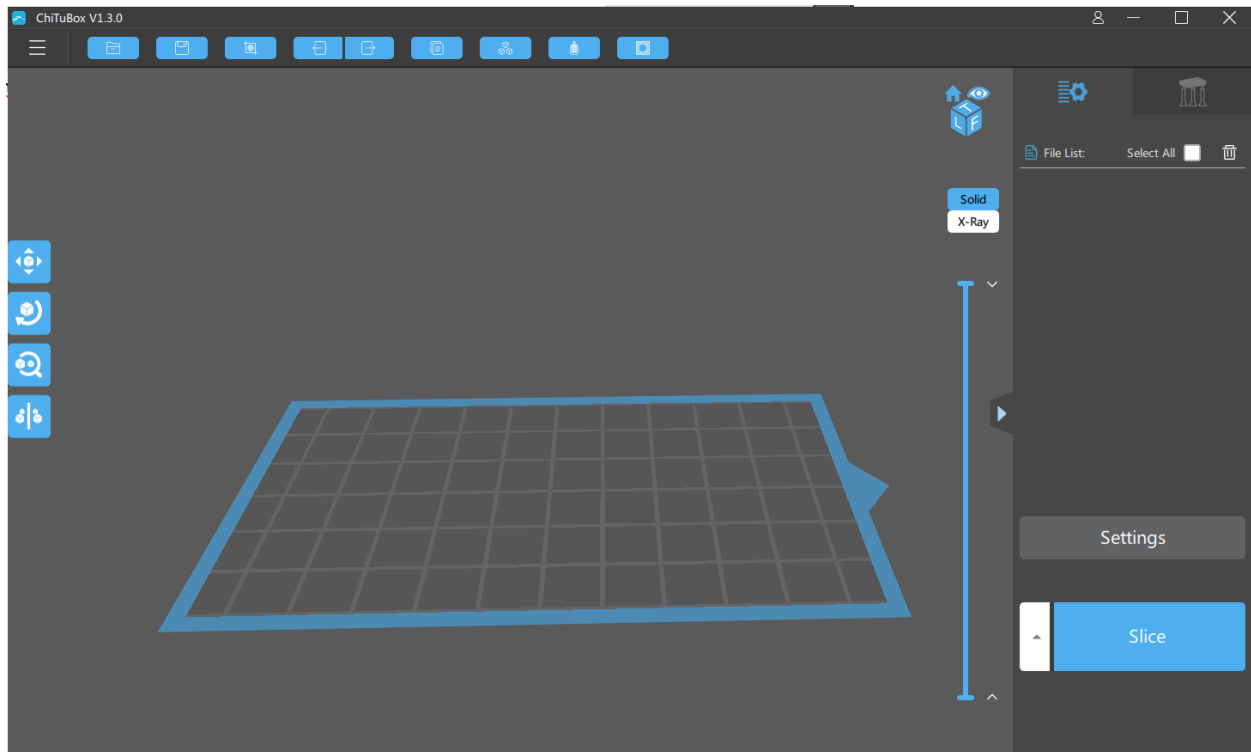
- Click the button to load an STL or OBJ model file.

- Click the button to save the loaded model file in Creation Workshop format.

- Click the button to slice the loaded model file.

The following is the Main screen with the Support Menu active.

- Click ![+Platform] to add platform supports.

- Click ![+All] to automatically add supports to the object.

- Click ![icon] to add individual support(s).

- Click ![icon] to delete individual support(s).

- Click ![icon] to edit existing support(s).

You can control the size and shape of supports using the Setting window portion of the screen. Not that the top of the support must not be less than 0.25mm and the base not less than 0.6mm.
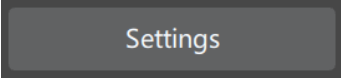
The imported model may differ in size and location from the print area. You can adjust the model using the controls on the Property Bar on the right side of the screen.

Click to move the object and center it.

Click to rotate the object on the X, Y, and Z axes.

Click to scale the size of the object.

Click to mirror the object on the X, Y, or Z axis.

Click the **Settings** button on the right side of the window to access the Machine Settings pop-up. Following are the suggested settings.

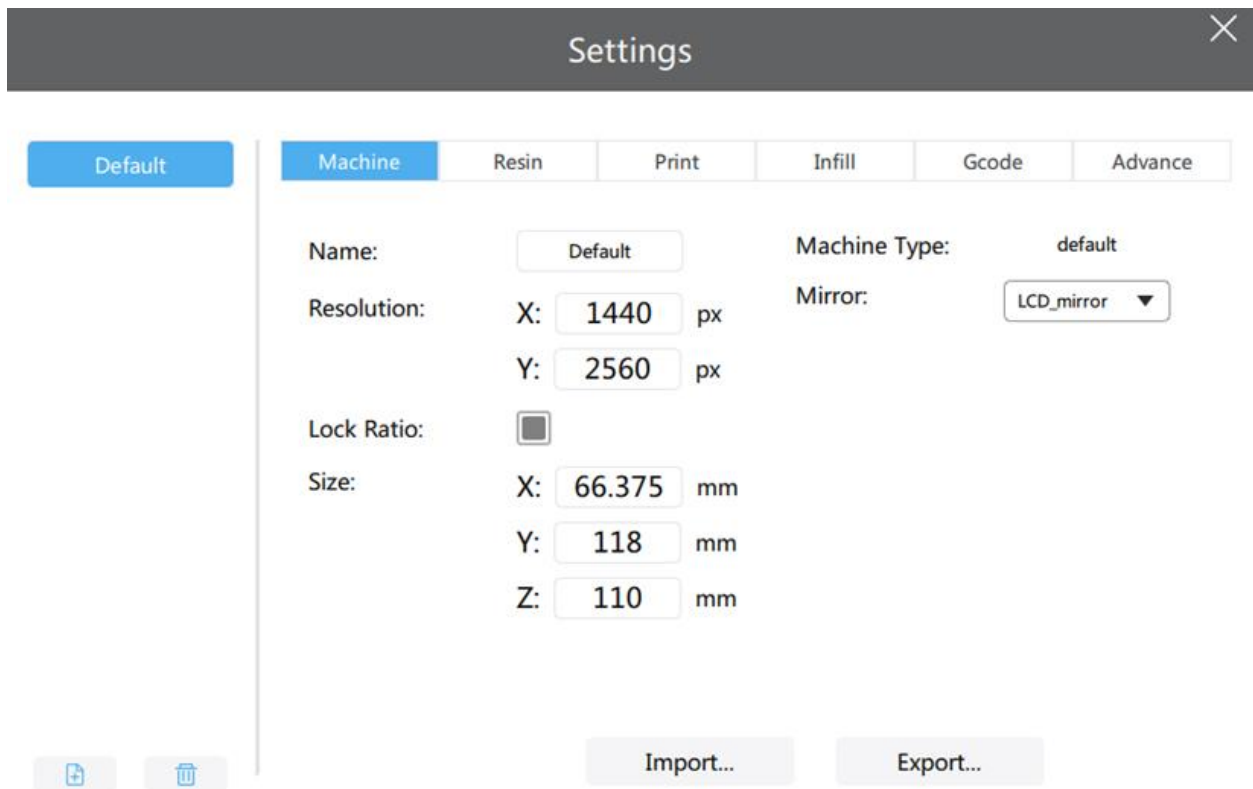Following are the suggested settings for the Print tab.
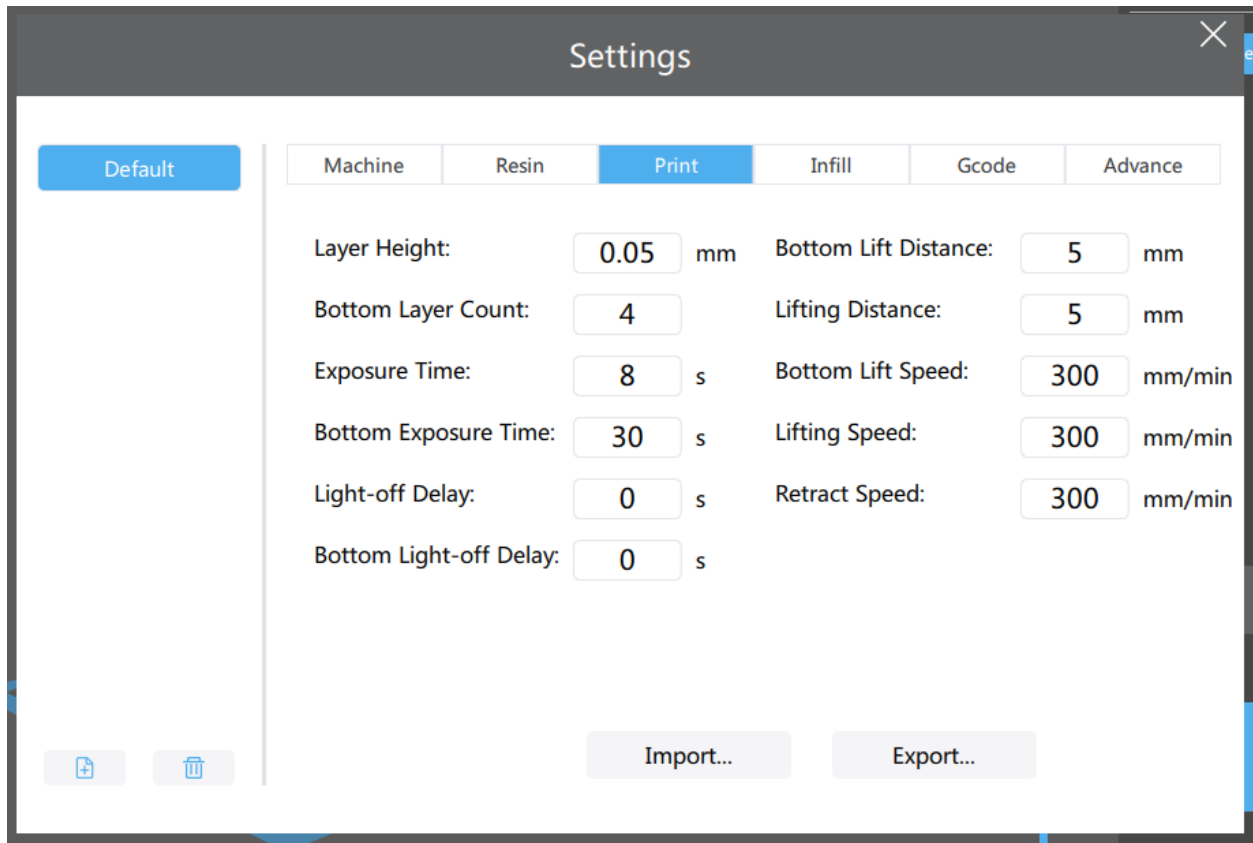
Perform the following steps to quickly create a slice file in ChiTuBox.

1. Open the **ChiTuBox** software program.

2. Click the [folder icon] button to load an OBJ or STL file.

3. Click the **+All** button on the Supports tab to quickly add supports.

4. Click the **Slice** button to slice the file to the proper file type.

5. Click the **Export** button to save the file to the included microSD™ card.

MODEL CLEANING

Perform the following steps to clean your finished print/model.

1. Once the print has completed, twist to remove the build platform, then use a metal putty knife or spatula to remove the print from the platform.

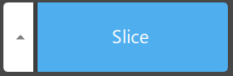2. Place the model in a container filled with isopropyl alcohol. Cover the container, then shake it vigorously for about 30-60 seconds.

Note that the cleaning time should not be more than 5 minutes. If it is cleaned for too long, the details on the model will soften and the model surface will begin to whiten. The cleaning time should be shorter if the finished print has a lot of small/fine details.

3. Once cleaning is finished, place the model in a sunny location or under a UV light. The curing time will depend on the type of resin used.

CLEANING THE RESIN VAT

It is not uncommon for cured resin to stick to the FEP lining in the bottom of the resin vat. Perform the following steps while wearing gloves to clean this type of obstruction.

1. Use the included hex wrench to remove the protruding screw on the left side and the protruding screw on the right side of the resin vat.

2. Pour the resin from the vat into a separate container. Do not pour it back into the original resin bottle. A mesh strainer can help remove small pieces of free floating, cured resin.

3. Using a plastic spatula, an expired bank/credit card, or other plastic tool that does not have sharp edges, gently peel the resin from the FEP lining. The FEP lining is extremely thin and can be torn or punctured if approached too aggressively or with a sharp tool. Remove any remaining pieces of cured resin.

4. Use isopropyl alcohol and paper towels, clean the vat of any remaining resin. The FEP liner should be as clean as possible.

5. Reinstall the vat into the printer.

TROUBLESHOOTING

1. If the print finishes and there is nothing on the build platform, there can be three potential reasons:

   - The first layers did not cure enough and the print has fallen off the Printing Platform. Increase the base cure time. For Monoprice resins, the base cure time should be 60 seconds. Other resins may require different amounts of time.

   - The Printing Platform did not level correctly. Verify that there are no small particles from previous prints in the resin vat, as this will disrupt the leveling process. Keeping the resin vat clear of small pieces of cured resin in an absolute necessity.

   - Run the "Clear" function on the Control Menu to verify that the LCD screen is turning on and off.

2. If the first layers are present, but the rest of the model is missing, there can be two reasons:

   - The cure time for the resin in not long enough. The model likely fell into the vat and it will be necessary to remove it before attempting to print again. The default exposure time for Monoprice resins is 8 seconds for layers other than the first three layers.

   - The model has insufficient supports. Add additional supports to compensate for the weight of the model during printing.

TECHNICAL SUPPORT

Monoprice is pleased to provide free, live, online technical support to assist you with any questions you may have about installation, setup, troubleshooting, or product recommendations. If you ever need assistance with your new product, please come online to talk to one of our friendly and knowledgeable Tech Support Associates. Technical support is available through the online chat button on our website **www.monoprice.com** or through email by sending a message to **tech@monoprice.com**. Check the website for support times and links.

SPECIFICATIONS

Model	35435
Maximum Print Size	4.6" x 2.6" x 4.3" (118 x 65 x 110 mm)
Resolution	0.05mm
UV Wavelength	405nm
Interface	Wi-Fi®, microSD™ card
File Format	STL, OBJ
Software	Creation Workshop, Web Slicer, Print Studio, ChiTuBox
Input Power	12 VDC, 5A
AC Adapter Input Power	100 ~ 240 VAC, 50/60 Hz
Dimensions	10.2" x 10.2" x 15.2" (260 x 260 x 385 mm)
Weight	6.6 lbs. (3.0 kg)

REGULATORY COMPLIANCE

Notice for FCC

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Modifying the equipment without Monoprice's authorization may result in the equipment no longer complying with FCC requirements for Class B digital devices. In that event, your right to use the equipment may be limited by FCC regulations, and you may be required to correct any interference to radio or television communications at your own expense.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Notice for Industry Canada

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

EU Declaration of Conformity

CE

Monoprice, Inc. declares the product described within this user guide or manual is in compliance with below applicable directives. The full text of the EU Declaration of Conformity is available at the following internet address: https://www.monoprice.com/product?p_id=35435 or the CE DoC can be found within this user manual

- EMC Directive 2004/108/EC
- Low Voltage Directive 2014/35/EU
- RoHS2 Directive 2011/65/EU
- WEEE Directive 2012/19/EC
- REACH Directive 1907/2006/EC

WEEE Information

User information for consumer products covered by EU Directive 2012/19/EU on Waste Electric and Electronic Equipment (WEEE)

This document contains important information for users with regards to the proper disposal and recycling of Monoprice products. Consumers are required to comply with this notice for all electronic products bearing the following symbol:

For Consumers in the European Union: This EU Directive requires that the product bearing this symbol and or its packaging must not be disposed of with unsorted municipal waste. The symbol indicates that this product should be disposed of separately from regular household waste streams. It is your responsibility to dispose of this and other electrical and electronics products via designated collection facilities appointed by the government or local authorities. Correct disposal and recycling will help prevent potential negative consequences to the environment and human health. For more detailed information about the disposal of your unwanted product, please contacts your local authorities, waste disposal service, or the shop where you purchased the product.

Safety Notice

WARNING: Do not use this product near water, for example, in a wet basement or near swimming pool or in an area where accidental contact with water or liquid might occurs

WARNING: Avoid using this product during an electrical storm. There may be a remote risk of electric shock from the surge caused by lightning

WARNING: The external power adapter or AC power cord is the equipment's disconnection device. The power outlet must be located near the equipment and its access must be easy

WARNING: Use this product in a well-ventilated area

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Wi-Fi® is a registered trademark of Wi-Fi Alliance.