ELEGOO Mars 5 Ultra

ELEGOO Mars 5 Ultra 9K MSLA Resin 3D Printer User Manual

Model: Mars 5 Ultra

1. Introduction

The ELEGOO Mars 5 Ultra is a high-performance MSLA (Masked Stereolithography) resin 3D printer designed for detailed and rapid prototyping. It features a 9K monochrome LCD screen, intelligent mechanical sensors, an integrated AI camera, and supports WiFi cluster printing for enhanced efficiency and monitoring.



Image 1.1: The ELEGOO Mars 5 Ultra 9K MSLA Resin 3D Printer alongside a detailed 3D printed robot model.

Key Features:

- **Ultra-Fast Printing:** Achieves speeds up to 150mm/h with Tilt Release Innovation.
- **Intelligent Mechanical Sensor:** Provides one-click calibration and detects printing abnormalities.
- **Built-in AI Camera:** Offers real-time monitoring, warp detection, empty build plate detection, and time-lapse photography.
- **WiFi Cluster Printing:** Enables wireless file transfer and simultaneous control of multiple printers on a local network.
- **7-inch Monochrome 9K LCD Screen:** Features 8520x4320px resolution and 18x18µm XY resolution for high precision.
- **User-Friendly Design:** Includes features like one-touch build plate locking, dual pour spouts, and a capacitive touch screen.

2. Safety Precautions

Before operating the ELEGOO Mars 5 Ultra, please read and understand all safety instructions to prevent injury or damage to the printer. Resin 3D printing involves chemicals and UV light, requiring careful handling.

- **Ventilation:** Always operate the printer in a well-ventilated area to minimize exposure to resin fumes.

- **Personal Protective Equipment (PPE):** Wear appropriate PPE, including nitrile gloves and safety glasses, when handling liquid resin or uncured prints.
- **Skin and Eye Contact:** Avoid direct contact with liquid resin. In case of contact, wash thoroughly with soap and water. If resin gets into eyes, flush immediately with plenty of water and seek medical attention.
- **Ingestion:** Do not ingest resin. If ingested, do not induce vomiting. Seek immediate medical attention.
- **Flammability:** Keep resin away from open flames, heat sources, and direct sunlight.
- **Disposal:** Dispose of liquid resin and resin-contaminated materials according to local environmental regulations. Cured resin is generally safe to handle.
- **Children and Pets:** Keep the printer and all printing materials out of reach of children and pets.
- **Power Supply:** Use only the provided power adapter. Ensure the power supply is stable and matches the printer's requirements.

3. Package Contents

Verify that all components listed below are present in your package. If any items are missing or damaged, please contact ELEGOO support.

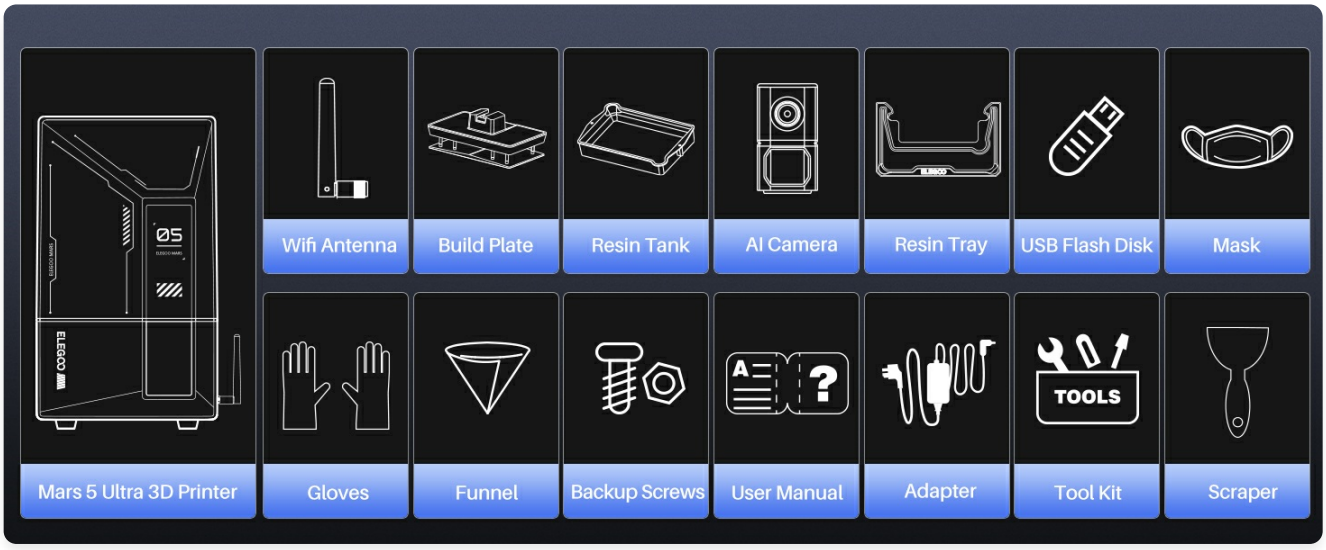


Image 3.1: Illustrated overview of the ELEGOO Mars 5 Ultra package contents.

- Mars 5 Ultra 3D Printer
- Build Plate
- Resin Tank
- AI Camera
- WiFi Antenna
- USB Flash Disk
- Mask
- Gloves
- Funnel
- Backup Screws
- User Manual (this document)
- Power Adapter
- Tool Kit
- Scraper

4. Printer Overview

The ELEGOO Mars 5 Ultra features a robust metal construction and a transparent UV-blocking cover. Key components include the build plate, resin tank, LCD screen, and control interface.



Image 4.1: General overview of the ELEGOO Mars 5 Ultra and its primary functionalities.

Main Components:

- **UV-Blocking Cover:** Protects resin from ambient UV light and contains fumes.
- **Build Plate:** The platform where prints are formed. Features a laser-engraved surface for improved adhesion.
- **Resin Tank (Vat):** Holds the liquid resin during printing. Equipped with FEP/ACF release film.
- **Monochrome LCD Screen:** Cures resin layer by layer with UV light.
- **Z-axis Rail:** Guides the build plate's vertical movement.
- **Control Panel:** Capacitive touch screen for printer operation and settings.
- **AI Camera:** Integrated for monitoring and detection.
- **WiFi Antenna Port:** For wireless connectivity.

5. Setup

5.1 Unpacking and Initial Inspection

1. Carefully remove the printer and all accessories from the packaging.
2. Inspect the printer for any visible damage during transit.
3. Remove all protective films and packaging materials from the printer components.

5.2 Component Installation

1. **Install WiFi Antenna:** Screw the provided WiFi antenna into the designated port at the rear of the printer.
2. **Install AI Camera:** Mount the AI camera into its slot, ensuring it is securely connected.
3. **Install Build Plate:** Attach the build plate to the Z-axis arm and secure it using the one-touch locking mechanism.
4. **Place Resin Tank:** Position the resin tank onto the LCD screen, ensuring it sits flush and is secured by the tank lock screws.

5.3 Automatic Leveling

The Mars 5 Ultra features an intelligent mechanical sensor for automatic leveling, simplifying the setup process.

1. Ensure the build plate is installed and the resin tank is empty.
2. Navigate to the leveling function on the printer's touch screen.
3. Initiate the automatic leveling process. The printer will use its mechanical sensor to detect the optimal distance between the build plate and the LCD screen.
4. Once complete, the printer is calibrated and ready for resin.



Image 5.1: The automatic leveling mechanism ensures precise build plate calibration.

5.4 Resin Loading

1. Shake the resin bottle well before opening.
2. Wearing gloves and safety glasses, carefully pour the liquid resin into the resin tank, ensuring it does not exceed the maximum fill line.
3. Close the UV-blocking cover.

6. Operating Instructions

6.1 Slicing Software Preparation

Before printing, 3D models must be processed using a slicing software (e.g., Chitubox). This software converts your 3D model into layers (slices) and generates the G-code instructions for the printer.

- Import your 3D model (.STL, .OBJ, etc.) into the slicing software.
- Orient, scale, and add supports to your model as needed.
- Select the ELEGOO Mars 5 Ultra as your printer profile.
- Adjust print parameters such as layer height, exposure time, and lift speed.
- Slice the model and save the output file (typically .goo or .ctb format) to the USB flash drive or prepare for WiFi transfer.

6.2 File Transfer

- **USB Transfer:** Insert the USB flash drive containing your sliced file into the USB port on the printer.
- **WiFi Transfer:** Connect the printer to your local network. Use the ELEGOO app or compatible slicing software

(e.g., Chitubox) to wirelessly transfer files to the printer. The Mars 5 Ultra supports 2.4G and 5G networks with speeds of 6-10Mbps.

6.3 Starting a Print

1. Ensure the resin tank is filled and the build plate is properly installed and leveled.
2. On the printer's touch screen, navigate to the 'Print' menu.
3. Select your desired file from the USB drive or internal memory.
4. Confirm the print job to begin printing.

6.4 Monitoring and AI Camera

The integrated AI camera provides real-time monitoring and intelligent detection features.



Image 6.1: The AI camera provides real-time monitoring and detects potential printing issues.

- **Real-Time Monitoring:** View the printing process remotely via the AI camera.
- **Warp Detection:** The camera can detect model warping during printing.
- **Empty Build Plate Detection:** Alerts if the build plate is empty, indicating a print failure or incorrect setup.
- **Time-Lapse Photography:** Record the printing process for review or sharing.

6.5 WiFi Cluster Printing

For users with multiple Mars 5 Ultra printers, the WiFi cluster printing feature allows for efficient management and simultaneous operation.

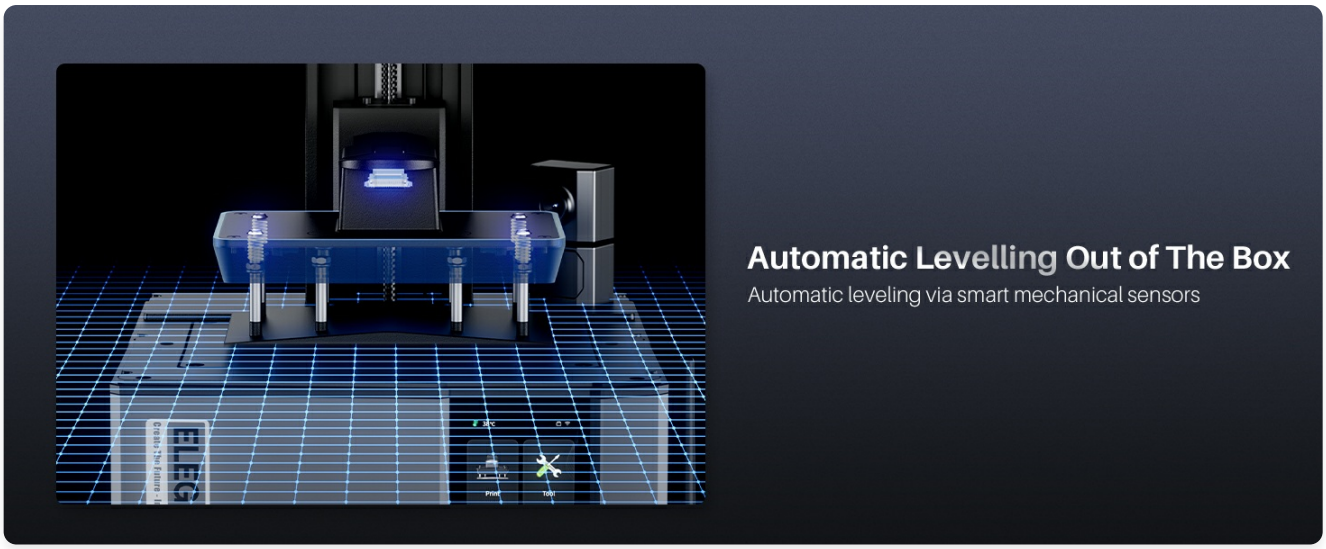


Image 6.2: WiFi Cluster Printing allows control of multiple printers from a single interface.

- Connect all printers to the same local area network (LAN).
- Use compatible software (e.g., Chitubox) to manage and initiate print jobs on multiple printers simultaneously.
- Monitor the status of all connected printers from a central interface.

6.6 Resin Calibration (Partitioned Exposure)

The printer supports partitioned exposure resin calibration to optimize printing parameters for different resin types.

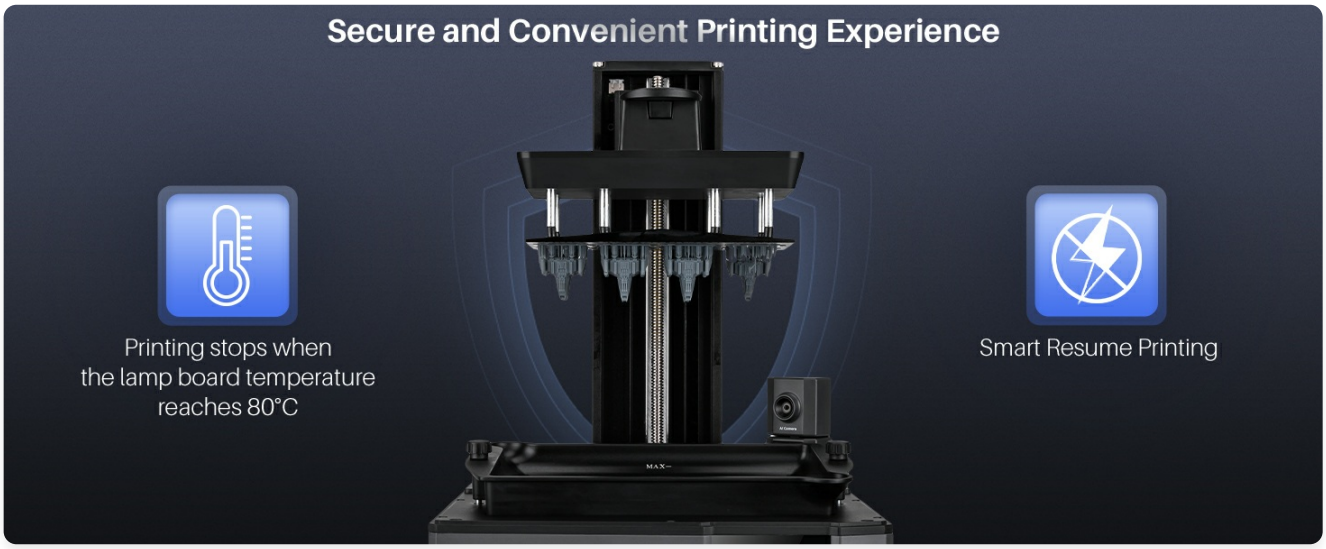


Image 6.3: Partitioned exposure resin calibration helps determine optimal settings for various resin types.

This feature allows the printer to test different exposure times across various zones of the build plate, helping users find the ideal settings for new resins.

7. Maintenance

Regular maintenance ensures optimal performance and longevity of your ELEGOO Mars 5 Ultra.



Image 7.1: User-friendly design elements like dual pour spouts and quick-release mechanisms simplify maintenance.

7.1 Cleaning

- **Resin Tank:** After each print, if not immediately reusing the resin, filter any remaining liquid resin back into its bottle using a funnel and dispose of any cured resin particles. Clean the tank with isopropyl alcohol (IPA) and a soft cloth.
- **Build Plate:** Remove the build plate after printing and clean off any excess resin with IPA. Use the provided scraper to carefully remove cured prints.
- **LCD Screen:** If resin spills onto the LCD screen, immediately clean it with IPA and a soft, lint-free cloth. Avoid scratching the screen.
- **Printer Exterior:** Wipe down the printer's exterior with a damp cloth to remove dust or resin residue.

7.2 FEP/ACF Film Replacement

The FEP/ACF release film in the resin tank is a consumable part that will degrade over time. Replace it if you notice cloudiness, scratches, or punctures, as this can affect print quality and cause failures. Refer to the detailed instructions provided with replacement films for proper installation.

7.3 Firmware Updates

The Mars 5 Ultra supports Over-The-Air (OTA) firmware upgrades. Regularly check for and install the latest firmware to ensure optimal performance, new features, and bug fixes. Instructions for OTA updates can be found in the printer's settings menu.

8. Troubleshooting

This section addresses common issues you might encounter during operation.

Image 8.1: The printer's intelligent detection system assists in identifying and alerting users to potential issues.

Common Issues and Solutions:

- **Print Fails to Adhere to Build Plate:**
  - Ensure the build plate is properly leveled.
  - Increase bottom exposure time in slicing software.

- Verify the build plate surface is clean and free of grease.
- Check ambient temperature; resin prints best in warmer environments.

- **Prints Sticking to FEP/ACF Film:**
  - Decrease normal exposure time slightly.
  - Check if the FEP/ACF film is cloudy or damaged and replace if necessary.
  - Ensure the resin tank is securely fastened.

- **Partial Prints or Missing Layers:**
  - Check for cured resin debris in the resin tank or on the LCD screen.
  - Verify the model has adequate supports in the slicing software.
  - Ensure the resin is well-mixed and not expired.
  - Check the LCD screen for dead pixels using the screen test function.

- **Printer Not Responding / Screen Frozen:**
  - Restart the printer.
  - Ensure the power cable is securely connected.

- **Intelligent Sensor Alerts:**
  - **Low Resin:** Refill the resin tank.
  - **Foreign Objects:** Inspect the resin tank and LCD screen for debris.
  - **High Light Board Temperature:** Allow the printer to cool down. Printing will resume once the temperature normalizes.

For more complex issues, refer to the official ELEGOO support resources.

9. Specifications

Technical specifications for the ELEGOO Mars 5 Ultra 9K MSLA Resin 3D Printer.



Image 9.1: Internal features and printing dimensions of the Mars 5 Ultra.



Image 9.2: Detailed specifications of the 7-inch 9K Monochrome LCD screen.

Feature	Specification
Model	Mars 5 Ultra
Printing Technology	MSLA (Masked Stereolithography)
LCD Screen	7-inch Monochrome 9K
LCD Resolution	8520 x 4320 pixels
XY Resolution	18 x 18 µm
Printing Speed	Up to 150 mm/h
Build Volume (LWH)	153.36 x 77.76 x 165 mm (6.04 x 3.06 x 6.49 inches)
Connectivity	USB, WiFi (2.4G/5G)
AI Camera	Integrated for monitoring and detection
Leveling	Automatic Mechanical Sensor
Product Dimensions	21.96 x 13.5 x 14.8 inches
Item Weight	24.6 pounds (11.17 kg)
Material	Metal

10. Warranty and Support

10.1 Warranty Information

The ELEGOO Mars 5 Ultra 9K MSLA Resin 3D Printer comes with a standard manufacturer's warranty. Please refer to the warranty card included in your package or visit the official ELEGOO website for detailed terms and conditions regarding warranty coverage, duration, and claims process.

10.2 Technical Support

For technical assistance, troubleshooting beyond this manual, or inquiries about parts and service, please contact

ELEGOO customer support through their official website. When contacting support, please have your product model (Mars 5 Ultra) and purchase information readily available.
You can find additional resources, FAQs, and community forums on the official ELEGOO website:www.elegoo.com

Ask a question about this manual

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

Name

Anonymous

Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. Privacy details.

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question