ELEGOO EL-CK-003

Elegoo EL-CK-003 Upgraded Electronics Fun Kit User Manual
Model: EL-CK-003

1. INTRODUCTION

This manual provides essential instructions for the Elegoo EL-CK-003 Upgraded Electronics Fun Kit. This kit is designed to introduce users to basic electronics and circuit building, compatible with platforms such as Arduino, Raspberry Pi, and STM32. It includes a variety of components necessary for learning fundamental electronic concepts and constructing simple projects.

2. KIT CONTENTS

The Elegoo EL-CK-003 kit includes a comprehensive selection of components for various electronic projects. Below is an overview of the items you will find in your kit.
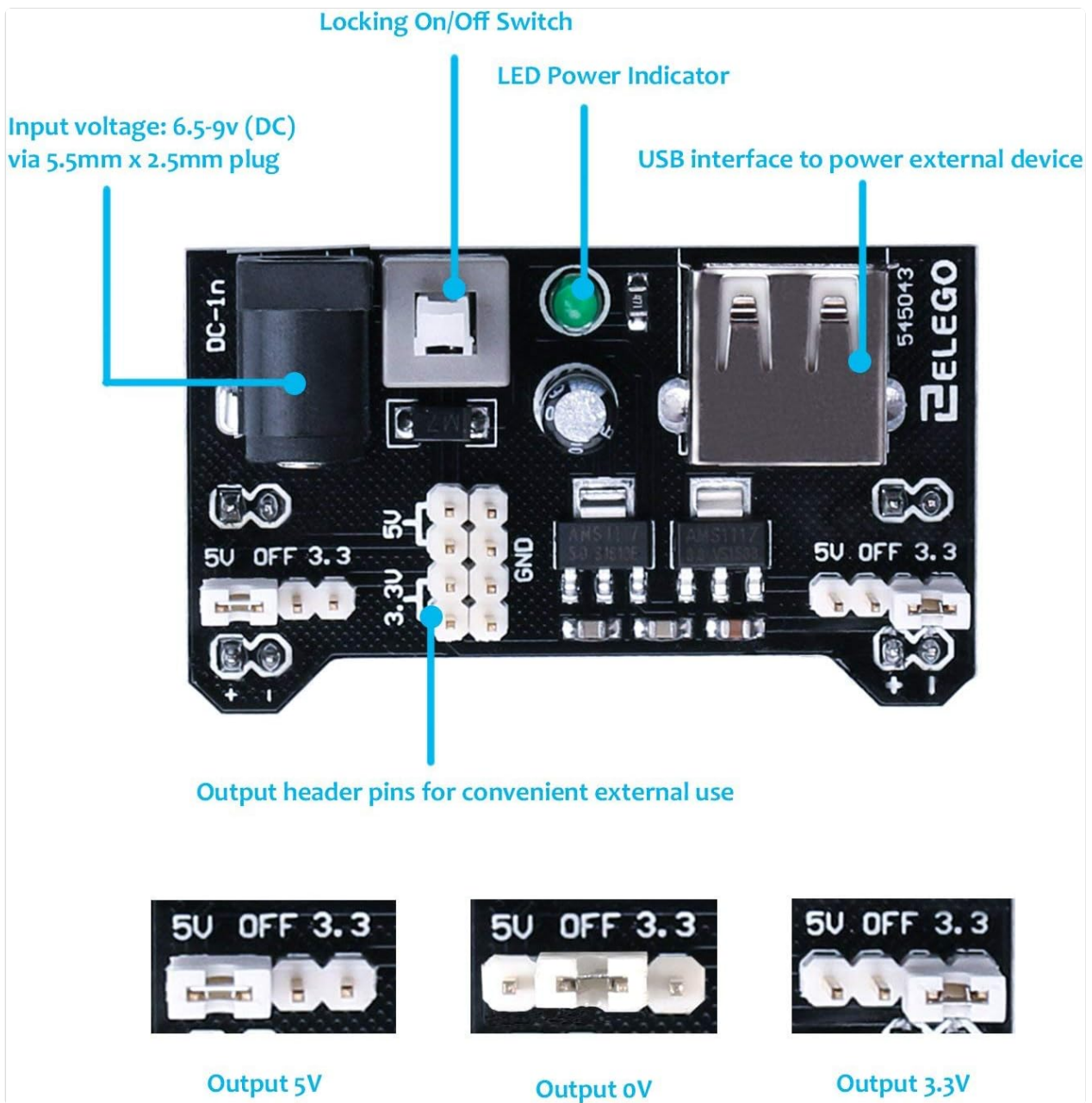
Image 2.1: A visual representation of the various components included in the Elegoo EL-CK-003 Upgraded Electronics Fun Kit, neatly arranged for identification. This includes resistors, LEDs, capacitors, a breadboard, jumper wires, and a power supply module.

Key components include:

- **Power Supply Module:** 1 piece, for providing regulated power to the breadboard.
- **Breadboard:** 1 piece, 830 tie-points for solderless circuit prototyping.
- **Jumper Wires:** Various types including solderless jumper wires (140 pieces) and F-M Dupont wires (20 pieces) for connections.
- **Resistors:** A range of values (10Ω, 100Ω, 220Ω, 330Ω, 1KΩ, 2KΩ, 5.1KΩ, 10KΩ, 100KΩ, 1MΩ), 10 pieces each.
- **LEDs:** Red, Yellow, Blue, Green, White (10 pieces each), and 1 RGB LED.
- **Capacitors:** Electrolytic (100uF 50V, 5 pieces), Ceramic (22pF, 104pF, 10 pieces each).
- **Transistors:** PN2222 (5 pieces).
- **Integrated Circuits:** 74HC595 (1 piece).
- **Sensors:** Photoresistor (2 pieces), Thermistor (1 piece).
- **Other Components:** Passive Buzzer (1 piece), Active Buzzer (1 piece), Buttons (10 pieces), Precision

Potentiometer (1 piece), 4N35 Optocoupler (1 piece), Diodes (5 pieces), 40Pin Header (2 pieces).

3. POWER SUPPLY MODULE OPERATION

The included power supply module is designed to provide stable 3.3V and 5V power to your breadboard projects. Understanding its features and requirements is crucial for safe and effective use.

Image 3.1: Detailed view of the power supply module, highlighting its input voltage port, locking on/off switch, LED power indicator, USB interface for external devices, and output header pins for 5V, 3.3V, and GND connections.

3.1. Features

- **Input Voltage:** 6.5-9V DC via a 5.5mm x 2.5mm plug.
- **Output:** Selectable 3.3V and 5V outputs for breadboard power rails.
- **On/Off Switch:** Locking switch to control power to the breadboard.
- **LED Indicator:** Illuminates when power is supplied.
- **USB Interface:** Provides 5V output for powering external devices.

3.2. Power Adapter Requirements

A power adapter is required to operate the power supply module. This adapter is **not included** in the kit.

Image 3.2: Illustration of the required power adapter specifications for the Elegoo power supply module. It details the output, plug size, and polarity for proper connection.

- **Output:** DC 9V 1A / 1000mA.
- **Plug Size:** Outer Diameter 5.5mm, Inner Diameter 2.5mm.
- **Connector Polarity:** Inside positive (+), outside negative (-).

Ensure the adapter meets these specifications to prevent damage to the module or connected components.

4. SETUP INSTRUCTIONS

Follow these steps to set up your first circuit using the Elegoo EL-CK-003 kit.

1. **Familiarize with Components:** Before starting, identify the components you plan to use. Refer to the kit contents section and the provided component list.

2. **Prepare the Breadboard:** The breadboard is your prototyping area. Understand its internal connections: the long horizontal rows (power rails) are typically connected along their length, and the shorter vertical columns are connected within each column.

3. **Connect Power Supply:** Insert the power supply module into the breadboard's power rails. Ensure the pins align correctly with the positive and negative rails. Connect a compatible DC 9V power adapter to the module's DC-in port.

4. **Select Voltage:** Use the jumpers on the power supply module to select either 3.3V or 5V for each side of

the breadboard's power rails, as required by your circuit.

5. **Build Your Circuit:** Carefully insert components into the breadboard. Use jumper wires to make connections between components. Pay close attention to component polarity (e.g., LEDs, diodes, electrolytic capacitors, integrated circuits).

6. **Double-Check Connections:** Before applying power, thoroughly review all connections to ensure they match your circuit diagram. Incorrect wiring can damage components.

7. **Apply Power:** Once confident in your wiring, switch on the power supply module. Observe your circuit's behavior.
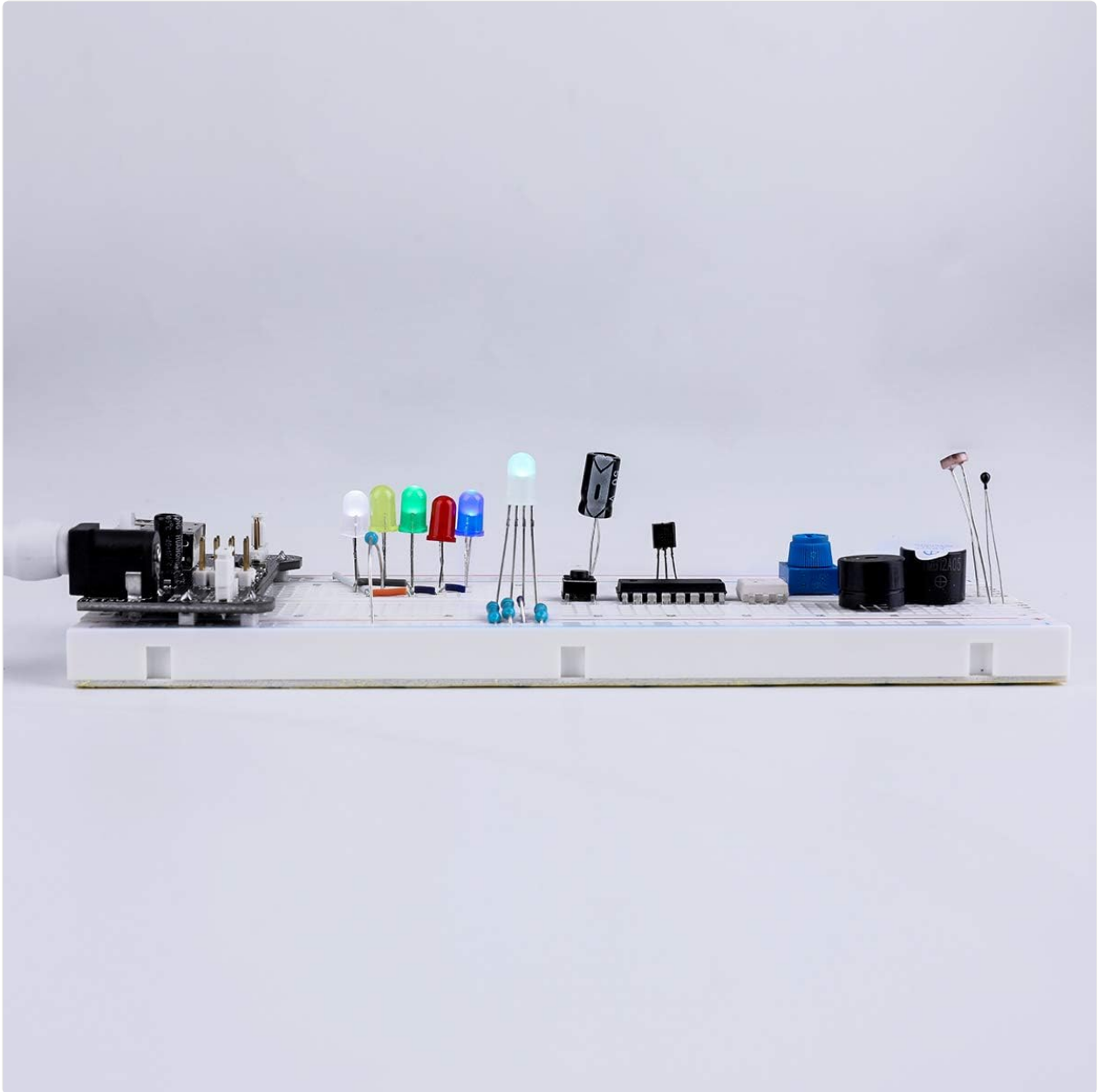
Image 4.1: A side view of an example electronic circuit assembled on a breadboard, demonstrating the placement of various components like LEDs, resistors, and the power supply module.

5. OPERATING PRINCIPLES OF KEY COMPONENTS

This section provides basic operational guidance for some common components in your kit.

5.1. Breadboard

The breadboard allows for temporary prototyping of electronic circuits without soldering. Components are inserted into holes, and internal metal clips make connections. The central area has vertical connections, while the side rails (power rails) have horizontal connections for power and ground.

5.2. Resistors

Resistors limit current flow in a circuit. Their value is indicated by color bands. Always ensure you use the correct resistance value for your circuit to protect other components, especially LEDs.

5.3. Light Emitting Diodes (LEDs)

LEDs are polarized components, meaning they must be connected in the correct orientation. The longer lead is typically the anode (+) and connects to the positive side of the circuit, while the shorter lead is the cathode (-) and connects to the negative side (ground). Always use a current-limiting resistor in series with an LED.

5.4. Potentiometer

A potentiometer is a variable resistor with three terminals. It can be used to control voltage or resistance in a circuit, often for adjusting brightness of an LED, motor speed, or sensor sensitivity.
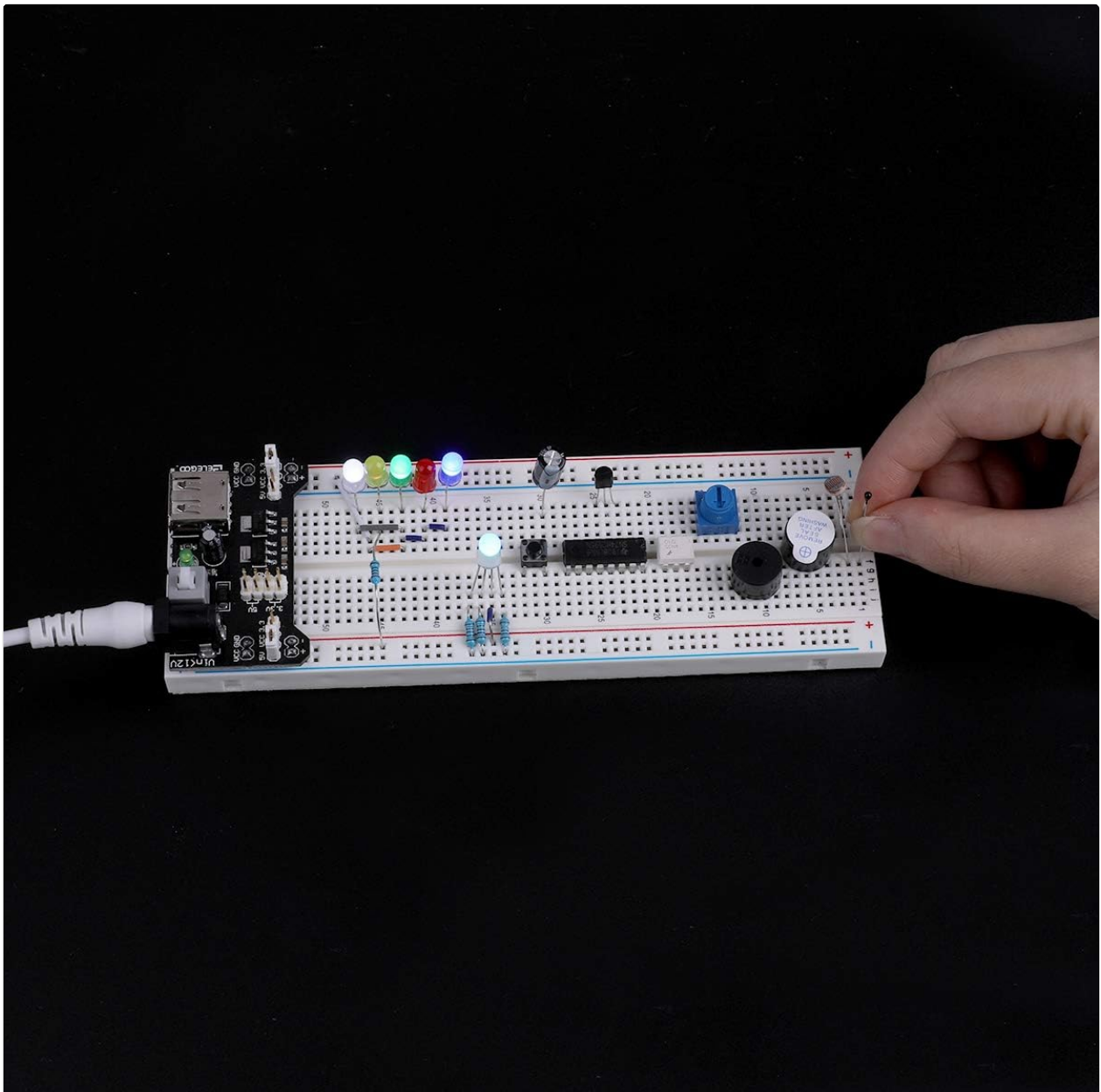
Image 5.1: A hand demonstrating the adjustment of a potentiometer on a breadboard, illustrating how variable components are interacted with in a live circuit.

6. MAINTENANCE

Proper care of your electronics kit will ensure its longevity and reliable performance.

- **Storage:** Store components in their original packaging or a dedicated organizer to prevent loss and damage. Keep them in a dry, cool environment away from direct sunlight.
- **Handling:** Handle components carefully, especially delicate ones like integrated circuits and LEDs. Avoid bending leads excessively.
- **Cleaning:** Keep the breadboard and components free from dust and debris. Use a soft, dry brush or compressed air for cleaning. Avoid liquids.
- **Power Off:** Always disconnect power from your circuits when making changes or when not in use.

7. TROUBLESHOOTING

If your circuit is not functioning as expected, consider the following common troubleshooting steps:

- **No Power:**

  - Ensure the power adapter is correctly connected to the power supply module and plugged into a working outlet.
  - Verify the power supply module's on/off switch is in the 'on' position and the LED indicator is lit.
  - Check the power supply module's jumpers for correct voltage selection (3.3V or 5V).

- **Component Not Working:**

  - Check component polarity (e.g., LEDs, diodes).
  - Verify all connections with jumper wires are secure and in the correct holes.
  - Ensure resistors are of the correct value and properly connected.
  - Test individual components if possible (e.g., test an LED with a known working power source and resistor).

- **Intermittent Connections:**

  - Breadboard holes can wear out. Try moving components or wires to different holes.
  - Ensure jumper wires are fully inserted and not loose.

- **Overheating Components:**

  - Immediately disconnect power.
  - Check for short circuits or incorrect component values (e.g., too low a resistor value for an LED).

8. SPECIFICATIONS

Detailed specifications for the Elegoo EL-CK-003 Upgraded Electronics Fun Kit.

Feature	Detail
Product Dimensions	7.3 x 3.54 x 1.77 inches

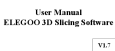| Feature	Detail
Item Weight	11.3 ounces
Model Number	EL-CK-003
Brand	ELEGOO
Manufacturer	Comchoi
Date First Available	April 25, 2016
Power Supply Module Input	DC 6.5-9V (5.5mm x 2.5mm plug)
Power Supply Module Output	3.3V, 5V (selectable)
Breadboard Tie-Points	830

9. WARRANTY AND SUPPORT
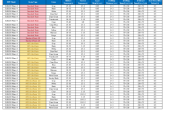
For warranty information or technical support regarding your Elegoo EL-CK-003 Upgraded Electronics Fun Kit, please refer to the official Elegoo website or contact their customer service directly. Contact details are typically provided with the product packaging or on the manufacturer's website.

You can visit the official Elegoo website for additional resources, tutorials, and support:

- Elegoo Official Website

Related Documents - EL-CK-003

User Manual ELEGOO 3D Slicing Software V1.7	**ELEGOO 3D Slicing Software User Manual V1.7** Comprehensive user manual for ELEGOO 3D Slicing Software V1.7, covering installation, initialization, software functions, preparation interface, toolbar features, print parameters, and device connection for ELEGOO 3D printers.
User Manual ELEGOO 3D Slicing Software V2.1	**ELEGOO 3D Slicing Software V2.1 User Manual	Installation & Features Guide** User manual for ELEGOO 3D Slicing Software V2.1. This guide provides comprehensive instructions on installing, initializing, and utilizing the software's features for 3D model preparation and printing. Learn about printer and filament selection, print parameter configuration, and device connection for ELEGOO 3D printers.

User Manual	**ELEGOO Centauri Carbon 3D Printer User Manual | Setup, Operation & Specifications** Comprehensive user manual for the ELEGOO Centauri Carbon FDM 3D Printer. Covers setup, operation, filament replacement, slicing software, network printing, mainboard details, warranty, and after-sales service. Includes specifications and important notes for optimal use.
	ELEGOO MERCURY PLUS 2.0 Wash & Cure Machine User Manual Official operation manual for the ELEGOO MERCURY PLUS 2.0 Wash & Cure Machine. Provides detailed information on technical specifications, product overview, wash mode, cure mode, maintenance procedures, and troubleshooting FAQs.
	ELEGOO NEPTUNE 3 3D Printer User Manual Comprehensive guide for the ELEGOO NEPTUNE 3 3D Printer, covering installation, operation, software setup, troubleshooting, and technical specifications. Learn how to set up and use your 3D printer effectively.
	ELEGOO Mars 4 Resin Printing Settings Guide A comprehensive guide to optimal printing environment temperatures and resin settings for the ELEGOO Mars 4 3D printer, covering various resin types including Standard, ABS-Like, Water Washable, Plant-based, 8K, Thermochromic, and Dental resins.