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> iCubeSmart 3D8RGB LED Cube Kit Instruction Manual

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Model: 3D8RGB-KIT

1. INTRODUCTION

The iCubeSmart 3D8RGB LED Cube Kit is a DIY electronics project designed for enthusiasts with soldering experience. This kit allows you to construct an 8x8x8 LED cube composed of 512 full-color RGB LED lamp beads. Each LED is capable of displaying a wide spectrum of colors, offering more dynamic visual effects compared to monochrome LED cubes. The main control board is pre-welded and tested, featuring a 32F103RET6 microcontroller and an MBI5024 constant current chip for LED driving. Upon completion, the cube measures approximately 18x18.5x19cm.

2. SAFETY INFORMATION

Please read and understand all safety instructions before beginning assembly. This kit involves soldering, which requires careful handling of tools and components.

- **Eye Protection:** Always wear safety glasses to protect your eyes from solder splatter and fumes.
- **Ventilation:** Work in a well-ventilated area or use a fume extractor to avoid inhaling solder fumes.
- **Hot Surfaces:** Soldering irons become extremely hot. Avoid touching the tip and allow components to cool before handling.
- **Electrical Safety:** Ensure the power supply is disconnected before making any adjustments or repairs to the assembled cube.
- **Component Handling:** Some components are small and delicate. Handle them with care to prevent damage.
- **Age Recommendation:** This kit is recommended for individuals 15 years and older due to the complexity and soldering requirements.

3. PACKAGE CONTENTS

Verify that all components listed below are present in your kit before starting assembly.

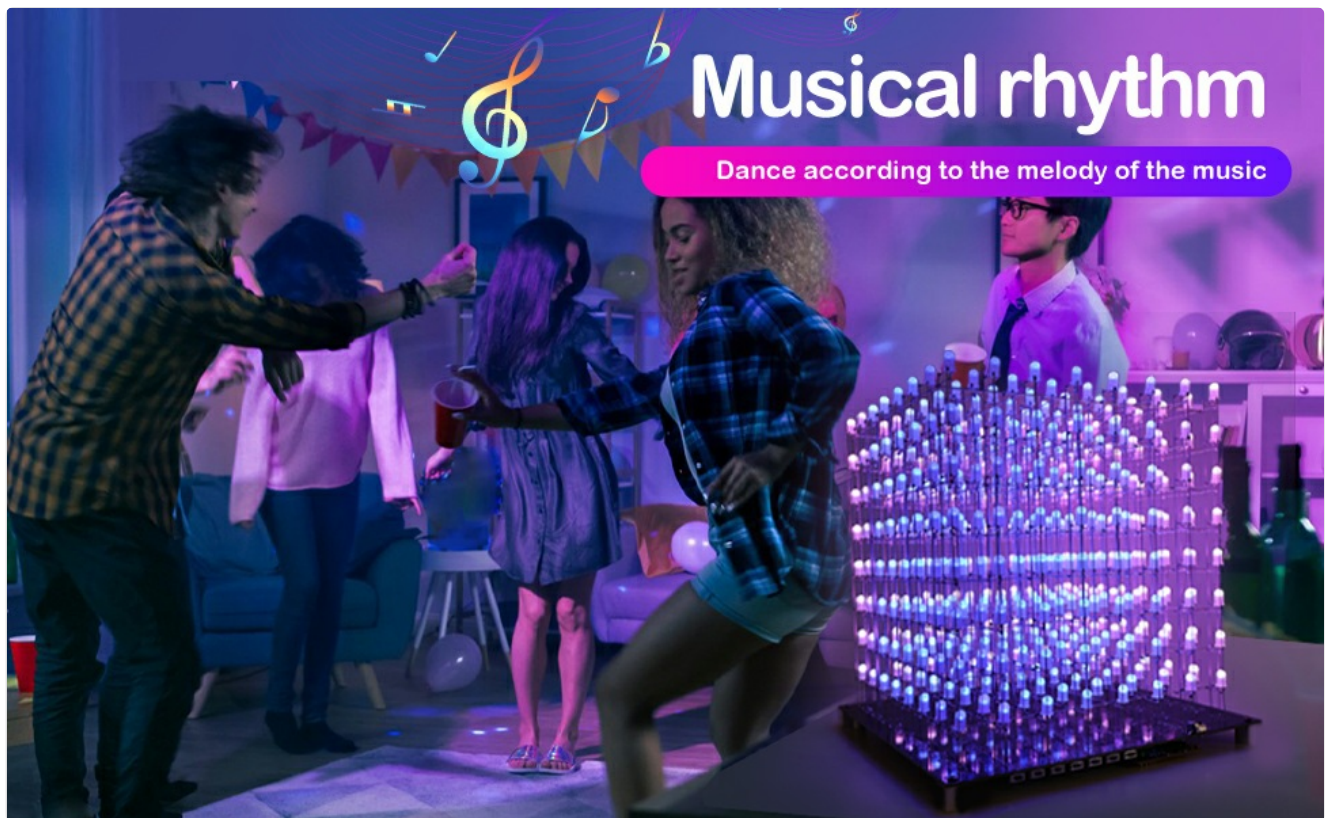


Image: Overview of all components included in the iCubeSmart 3D8RGB LED Cube Kit.

- 512 x 3mm RGB LED lamp beads (plus spares)
- Welded and tested main control board
- Fixed LED welding support frames
- Tinned iron wire
- Red and black wires (for testing LEDs)
- TYPE-C power cord
- Remote control (battery not included)
- Copper posts and screws
- USB programmer/downloader

4. ASSEMBLY INSTRUCTIONS

This section provides step-by-step instructions for assembling your 3D8RGB LED Cube. Patience and precision are key for a successful build.

4.1. Preparing the LEDs



Image: Individual RGB LED beads, showing their four pins.

1. Identify the four pins on each RGB LED. These typically correspond to Red, Green, Blue, and Common Anode/Cathode. Refer to the included printed instructions for specific pin identification.
2. Carefully bend the pins of each LED according to the provided template or instructions. This step is crucial for creating uniform layers.
3. Test each LED using a multimeter in diode mode to ensure it functions correctly before soldering.

4.2. Constructing LED Layers (Grids)



Image: Visual guide for installing LED welding supports and soldering LED pins to form layers.

4. Install the LED welding support frames. These frames are designed to hold the LEDs in place during soldering, ensuring proper alignment.
5. Solder 8 LED light pins together using tinned wire to form a horizontal row. Repeat this process to create 8 rows for a single layer.
6. Connect the 8 rows vertically to form an 8x8 LED grid. Ensure all connections are solid and that the LEDs are uniformly spaced and aligned.
7. Repeat steps 4-6 to create a total of 8 identical LED grids.

4.3. Assembling the Cube Structure



Image: An assembled LED grid being carefully positioned onto the main control board.

7. Carefully solder the first LED grid onto the main control board. Pay close attention to the orientation and ensure all pins make good contact with their respective pads.

8. Connect the remaining 7 LED grids one by one, stacking them vertically. Solder the corresponding pins of each layer together to form the 3D cube structure.
9. Connect the dedicated power wires (white wires) from each layer to the mainboard. These wires ensure proper power distribution to each level of the cube. Ensure wire 1 connects to the lowest level and wire 8 to the highest.
10. Secure the mainboard and cube structure using the provided copper posts and screws.

5. OPERATING INSTRUCTIONS

Once assembled, your 3D8RGB LED Cube is ready to display a variety of dynamic effects.

5.1. Powering On and Built-in Effects

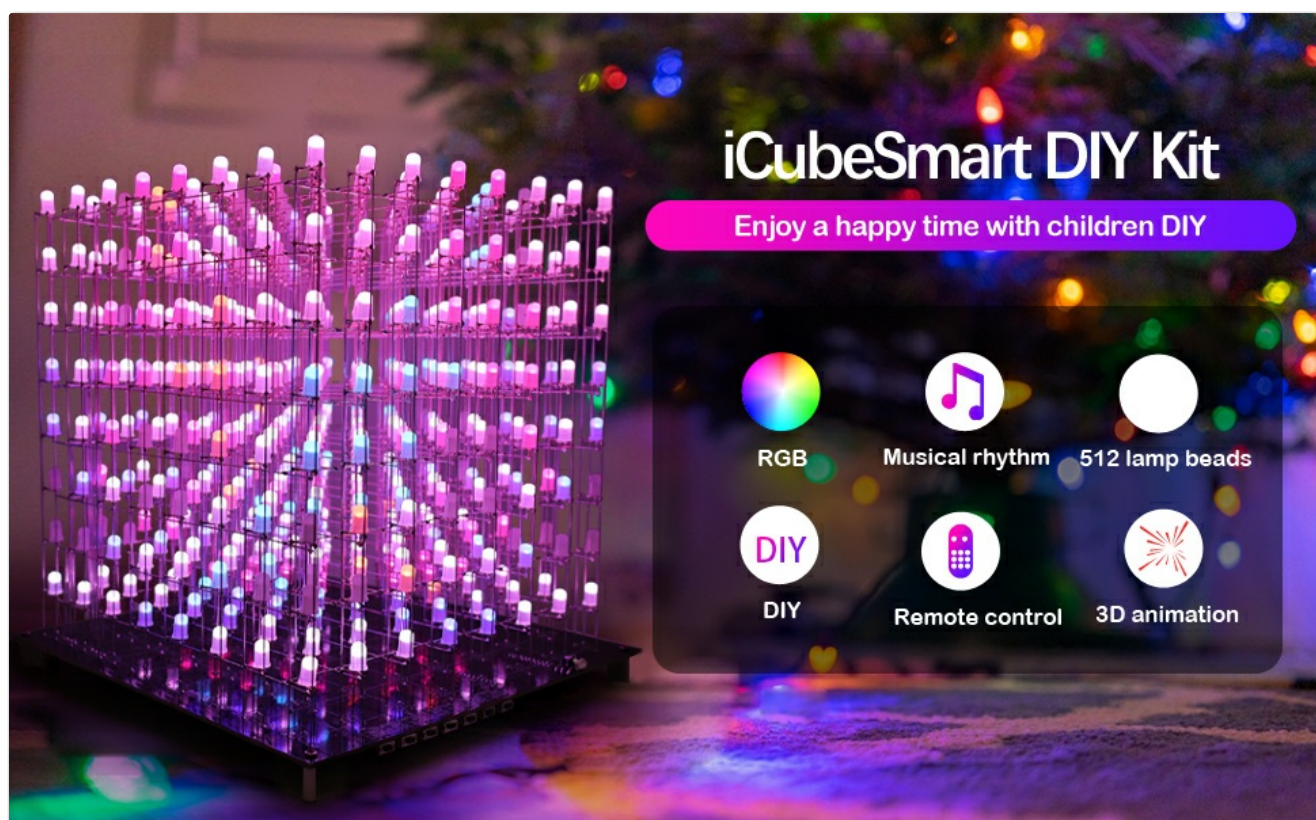


Image: The fully assembled 3D8RGB LED Cube displaying vibrant, dynamic lighting patterns.

- Connect the TYPE-C power cord to the mainboard and a suitable power source.
- The cube will automatically begin displaying one of its more than 30 built-in dynamic effects. No programming is required for initial operation.

5.2. Using the Remote Control



Image: The remote control for the LED cube, detailing button functions for effect selection and speed adjustment.

The included remote control allows you to easily switch between different animation effects and adjust settings.

- **Power Button (1):** Turns the LED cube on or off.
- **Menu Button (2):** Accesses menu options (if applicable).
- **Next Effect (3):** Advances to the next animation effect.
- **Pause/Start (4):** Pauses or resumes the current animation.
- **Speed Reset (5):** Resets animation speed to default.
- **Previous Effect (6):** Returns to the previous animation effect.
- **ON/OFF LED (7):** Toggles LED display.
- **Speed + (8):** Increases animation speed.
- **Speed - (9):** Decreases animation speed.
- **Digital Area (0-9):** Directly select an animation effect by entering its corresponding number.

5.3. Custom 3D Animation Editing Software

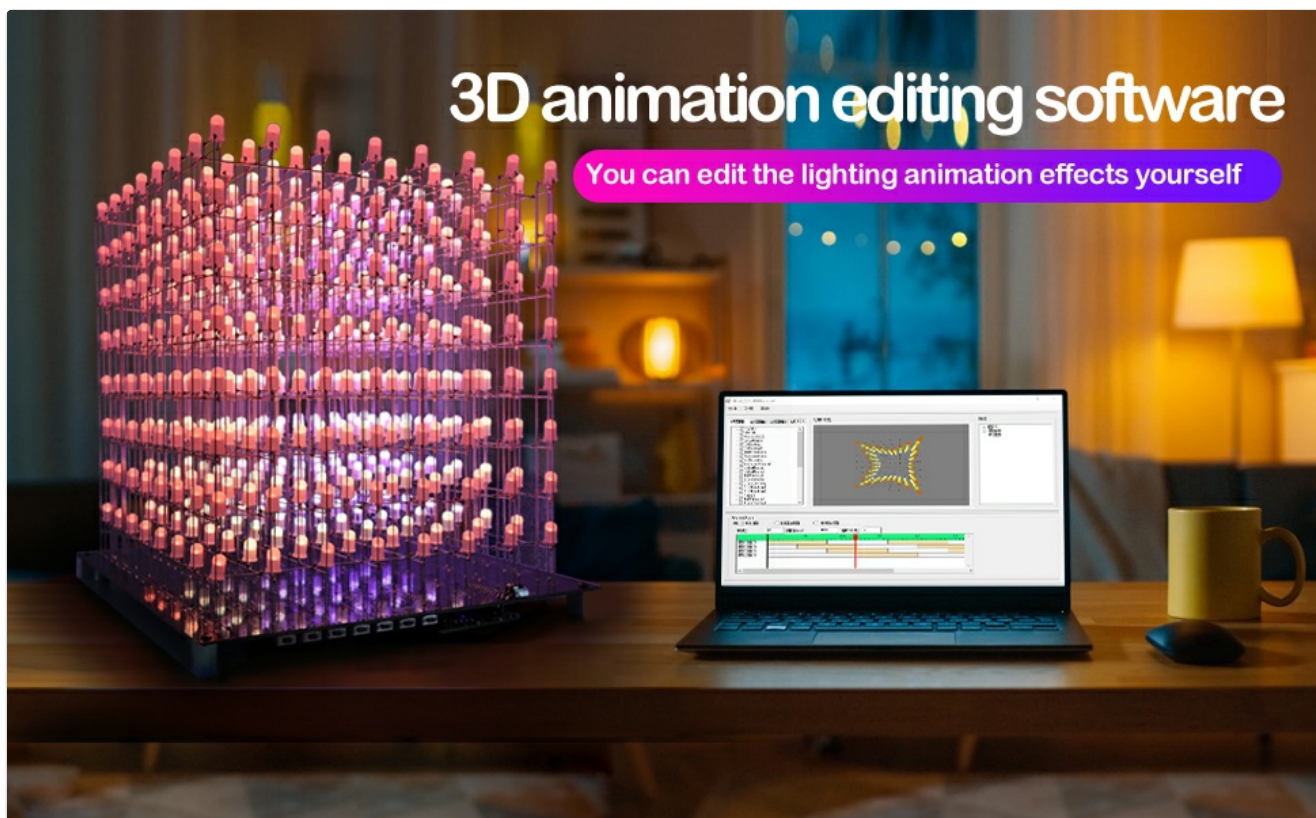


Image: A laptop displaying the custom 3D animation editing software interface, allowing users to create personalized lighting effects.

For advanced users, custom 3D animation editing software is available. This software allows you to design and upload your own unique lighting patterns and effects to the cube. Refer to the iCubeSmart website for software download and detailed instructions on its usage.

6. MAINTENANCE

Proper care will ensure the longevity and optimal performance of your LED cube.

- **Cleaning:** Use a soft, dry cloth to gently wipe the cube and remove dust. Avoid using liquid cleaners directly on the electronics.
- **Handling:** Handle the assembled cube with care, especially the LED structure, as it can be delicate.
- **Storage:** When not in use, store the cube in a dry, dust-free environment.

7. TROUBLESHOOTING

If you encounter issues with your LED cube, refer to the following common problems and solutions.

- **Cube Does Not Power On:**
 - Ensure the TYPE-C power cord is securely connected to both the cube and the power source.
 - Verify the power source is functional.
- **Some LEDs Are Not Lighting Up:**
 - Check for cold solder joints or bridges on the affected LEDs. Re-solder if necessary.
 - Inspect the LED for physical damage. Replace faulty LEDs if identified.
 - Ensure the power wires connecting each layer are correctly installed and making good contact.
- **Animations Are Incorrect or Upside Down:**

- Verify that the power wires for each layer are connected in the correct sequence (e.g., wire 1 to the lowest layer, wire 8 to the highest).
- **Remote Control Not Responding:**
 - Ensure batteries are correctly inserted and not depleted.
 - Point the remote directly at the cube's receiver.

8. SPECIFICATIONS

Feature	Detail
Model	3D8RGB-KIT
LED Type	3mm RGB (Full-color)
Number of LEDs	512 (8x8x8 cube)
Controller	32F103RET6 Single Chip Microcomputer (SCM)
LED Driver	MBI5024 Constant Current Chip
Main Board Dimensions	18 x 18.5 cm (7.08 x 7.28 inches)
Finished Product Dimensions	18 x 18.5 x 19 cm (approx. 7.08 x 7.28 x 7.48 inches)
Power Source	Corded Electric (TYPE-C)
Item Weight	480 Grams (1.06 pounds)
Recommended Age	15 years and up

9. WARRANTY AND SUPPORT

iCubeSmart is committed to providing excellent technical support for its DIY products.

- **Technical Assistance:** Professional engineers are available to assist with any problems encountered during installation or operation.
- **Contact:** If you have any questions or require assistance, please contact iCubeSmart customer support. Refer to the product packaging or the iCubeSmart official website for contact details.
- **Lifetime Technical Support:** iCubeSmart offers lifetime technical support services for its DIY products.

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