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iCubeSmart GZT-01

iCubeSmart LED Canton Tower Model DIY Electronic Kit

Model: GZT-64 (GZT-01)

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1. INTRODUCTION

The iCubeSmart LED Canton Tower Model DIY Electronic Kit is designed for enthusiasts and learners interested in electronics and soldering. This kit allows users to construct a detailed, meter-high LED light tower, capable of displaying various dynamic lighting effects and patterns. It serves as an excellent project for developing hands-on soldering skills and results in a unique, visually appealing decorative piece.

Do it yourself, it's endless fun



Figure 1: The iCubeSmart LED Canton Tower kit provides an engaging DIY experience.

2. SAFETY INFORMATION

Please read and understand all safety precautions before beginning assembly. This kit involves soldering, which requires caution.

- **Soldering Iron Safety:** Always use a soldering iron in a well-ventilated area. The tip of the soldering iron becomes extremely hot; avoid direct contact with skin. Use a heat-resistant mat and a stable stand for the soldering iron.
- **Fume Extraction:** Soldering fumes can be harmful. Use a fume extractor or ensure adequate ventilation.
- **Eye Protection:** Always wear safety glasses to protect your eyes from solder splashes or flying debris.
- **Electrical Safety:** Ensure the power supply is disconnected before handling or connecting any electrical components. Do not touch exposed wires or circuit board traces when the device is powered on.
- **Age Recommendation:** This kit is recommended for users aged 15 years and up due to the complexity and soldering requirements. Adult supervision is advised for younger users.

Verify that all components listed below are present in your kit before starting assembly. The kit contains 2112 LEDs, with additional standby LEDs provided.

Figure 2: Overview of the kit components.

Table 1: Kit Components

Component	Quantity	Description
Main Control Board	1	Pre-welded and tested, features STC32G12K128 SCM.
LEDs (Red, Green, Blue, White)	2112 + spares	Four colors, 32 LEDs per loop, over 64 loops.
Auxiliary Soldering Mold	1	Aids in forming LED rings for soldering.
Connecting Wires	Assorted	For internal connections within the tower structure.
USB Cable	1	For powering the assembled tower.
Fasteners/Standoffs	Assorted	For securing the mainboard and tower.

4. SETUP & ASSEMBLY

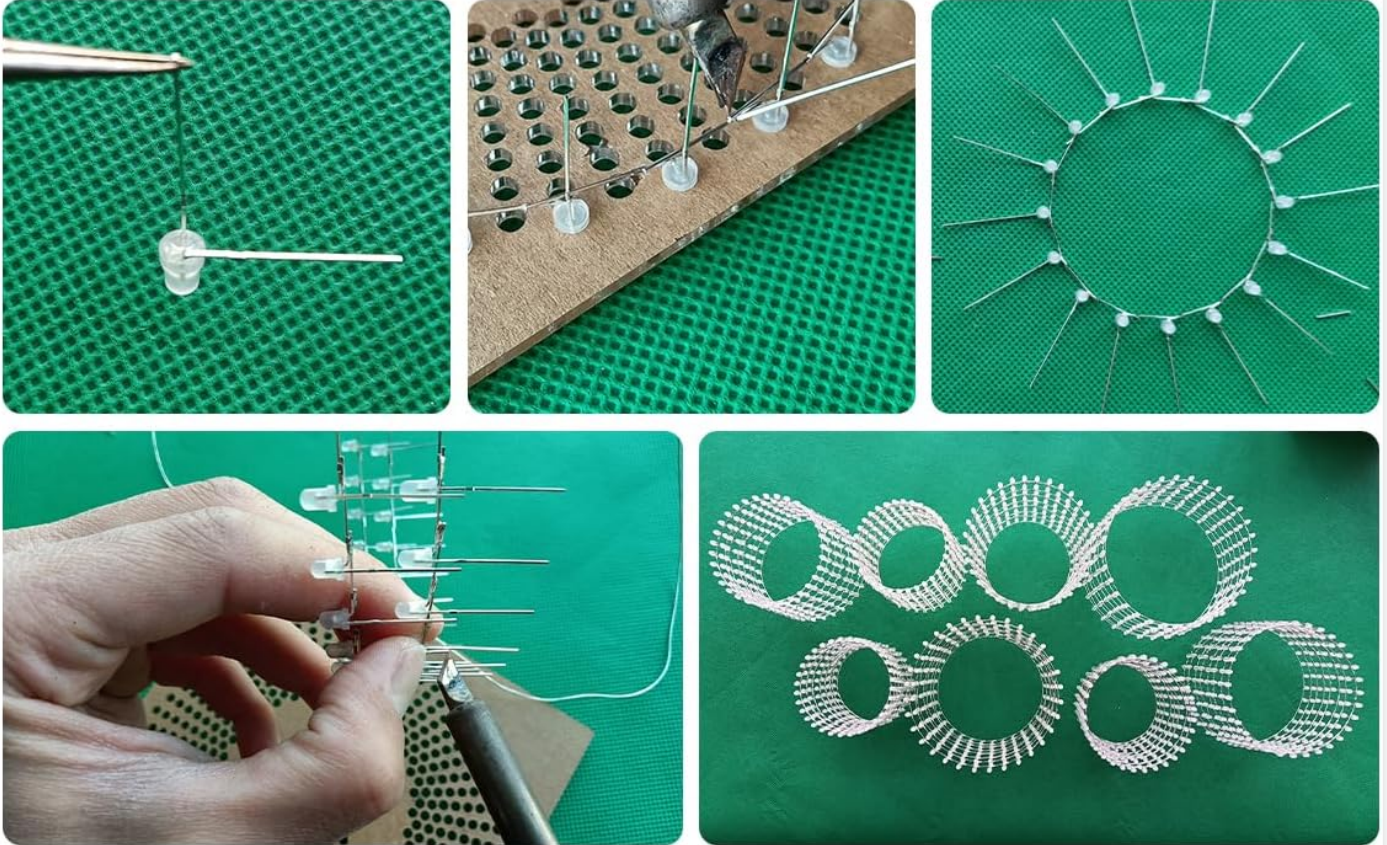
Assembly of the LED Canton Tower requires careful soldering and attention to detail. The mainboard is pre-welded and tested, simplifying the process to primarily LED assembly.

4.1. Preparing LEDs and Forming Rings

The kit includes an auxiliary mold to assist in bending and arranging the 32 LEDs for each circular layer. Ensure LEDs are oriented correctly (anode and cathode) before soldering.

Installation instructions

1 Welding LED lamp beads, testing led beads



2 Weld the LED bead onto the motherboard

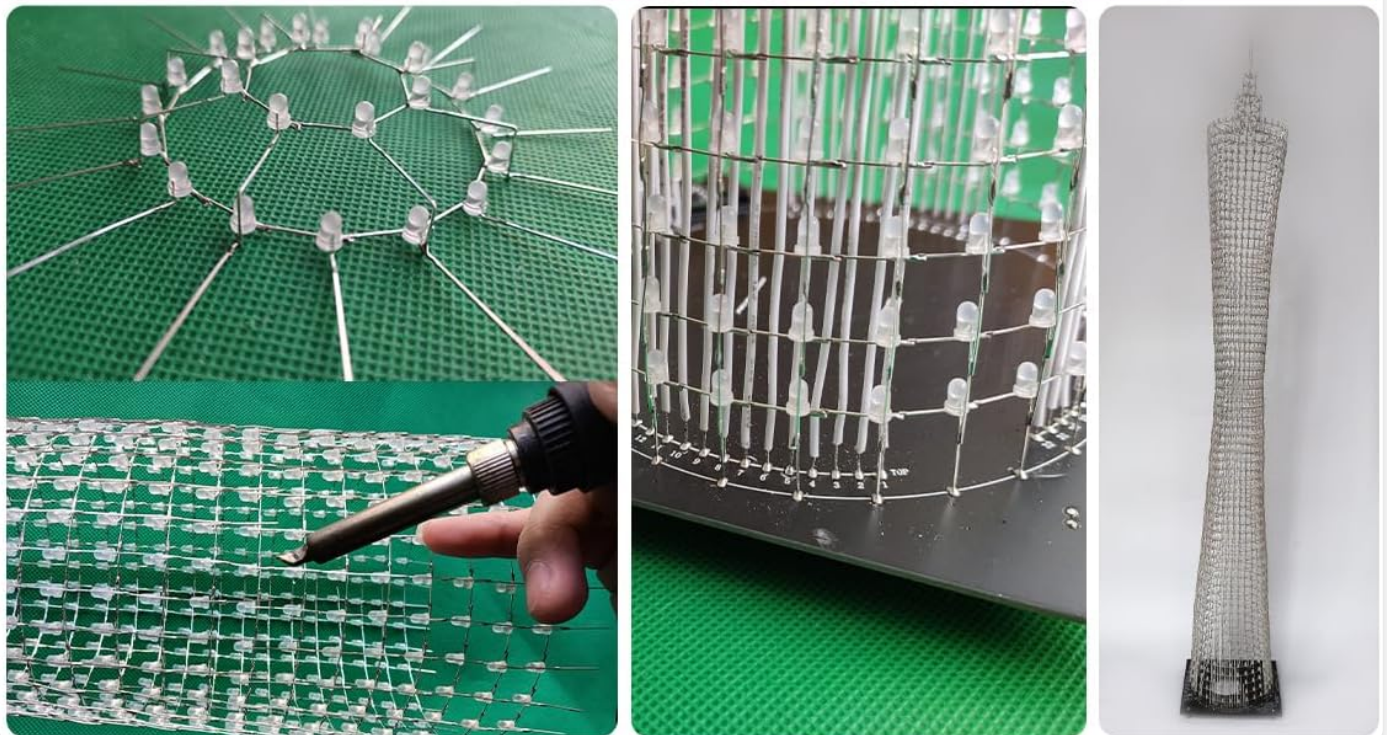


Figure 3: Detailed steps for preparing and soldering LED rings.

1. **Bend LED Leads:** Carefully bend the leads of each LED to fit into the auxiliary soldering mold.
2. **Insert into Mold:** Place 32 LEDs into the mold, ensuring consistent orientation.
3. **Solder Rings:** Solder the leads together to form a complete circular ring. Repeat this process for all 64+ layers.
4. **Test LEDs:** After soldering each ring, it is highly recommended to test the LEDs to ensure they light up correctly.

This helps identify and fix any soldering errors early.

4.2. Assembling the Tower Structure

Once all LED rings are prepared, they need to be stacked and connected to form the tower's 3D structure. This involves soldering the rings vertically using connecting wires.

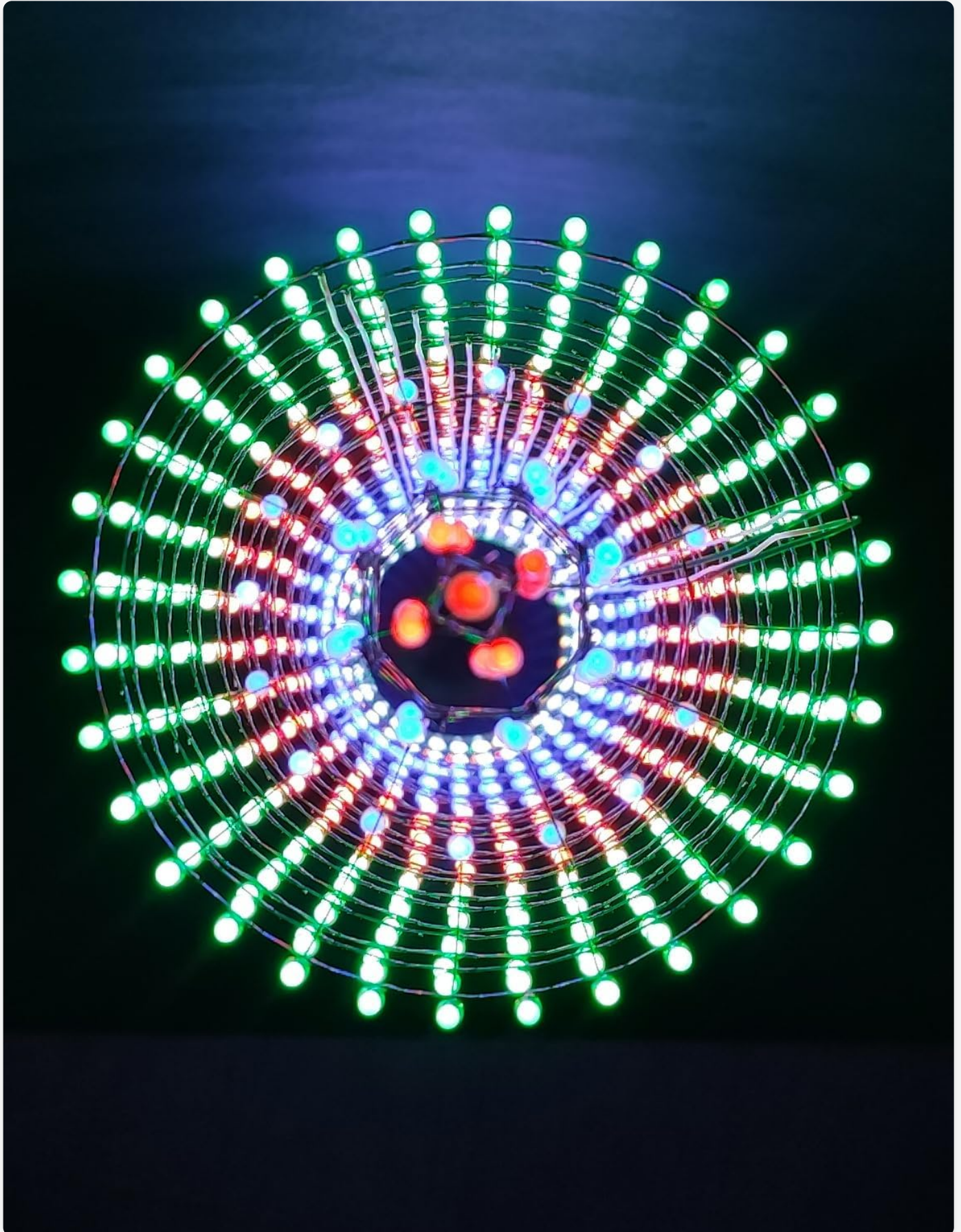


Figure 4: Intricate structure of the LED tower.

1. **Stack Rings:** Carefully stack the soldered LED rings, maintaining the tower's unique shape.
2. **Vertical Connections:** Solder vertical connecting wires between corresponding points on adjacent rings to create the full structure.
3. **Mainboard Connection:** Once the tower structure is complete, carefully attach its base to the pre-welded main control board. Ensure all connections are secure and correctly aligned.

Your browser does not support the video tag.

Video 1: A comprehensive guide to the assembly process of the iCubeSmart LED Canton Tower Model DIY Electronic Kit, from preparing LEDs to final tower construction.

5. OPERATING INSTRUCTIONS

The iCubeSmart LED Canton Tower is designed for easy operation with built-in controls and features.

5.1. Powering On

Connect the provided USB cable to the main control board and a compatible USB power source (e.g., computer USB port, USB wall adapter). The tower will automatically power on and begin displaying its default dynamic effect.

5.2. Adjusting Dynamic Effects

The mainboard features 7 control keys. These keys allow you to cycle through various pre-programmed dynamic lighting effects. Pressing a key will typically switch to the next effect or adjust parameters of the current effect.

Single Color Leds

It is composed of four single-color LEDs:
Red, Green, Blue, White.

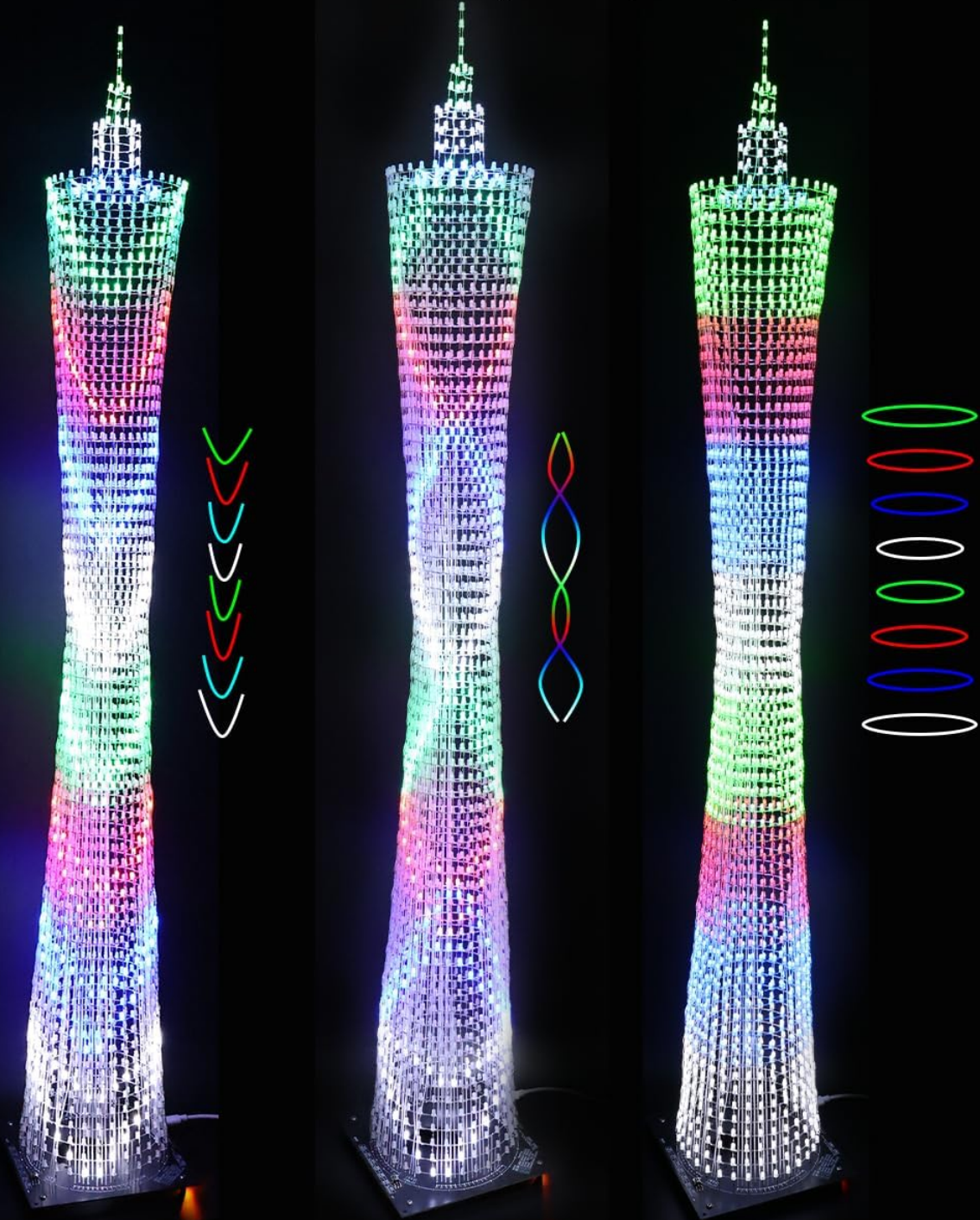


Figure 5: Examples of dynamic lighting effects.

5.3. Audio Dynamic Mode

The mainboard includes a built-in microphone. You can switch to an audio dynamic mode by pressing the appropriate control key. In this mode, the LED lighting effects will respond and synchronize with ambient sounds or music, creating an interactive visual experience.

Microphone spectrum

After the switch the audio mode,
it will jump with the audio.



Figure 6: The microphone enables audio-reactive lighting effects.

6. MAINTENANCE

The iCubeSmart LED Canton Tower is designed for durability. Minimal maintenance is required to keep it in optimal condition.

- **Cleaning:** Use a soft, dry cloth to gently wipe the tower and base. Avoid using abrasive cleaners or liquids, as they may damage the LEDs or electronic components.
- **Storage:** When not in use, store the tower in a dry, dust-free environment.
- **LED Replacement:** In the event of an LED failure, replacement may be possible if you have spare LEDs and soldering skills. Disconnect power before attempting any repairs.

7. TROUBLESHOOTING

If you encounter issues with your LED Canton Tower, refer to the following common problems and solutions:

Table 2: Troubleshooting Guide

Problem	Possible Cause	Solution
Tower does not light up.	No power, loose connection, faulty LED, or soldering error.	◦ Ensure USB cable is securely connected to both the tower and a working power source. ◦ Check all soldered connections for cold joints or bridges. ◦ Inspect individual LEDs for damage or incorrect polarity during assembly.
Some LEDs are not lighting up.	Faulty LED, poor solder joint, or incorrect polarity.	◦ Identify the non-working LED(s). ◦ Re-solder connections for affected LEDs. ◦ If an LED is faulty, carefully desolder and replace it with a spare.
Dynamic effects are not changing.	Control button issue or software glitch.	◦ Ensure control buttons are properly connected and functioning. ◦ Disconnect and reconnect power to reset the device.
Audio mode not responding.	Microphone issue or mode not activated.	◦ Ensure the audio dynamic mode is selected via the control keys. ◦ Check for any obstructions covering the microphone on the mainboard.

8. SPECIFICATIONS

- **Product Model:** GZT-64 (GZT-01)
- **LED Count:** 2112 LEDs (Red, Green, Blue, White)
- **Tower Height (Assembled):** Approximately 1 meter
- **Mainboard Dimensions:** 15cm x 15cm (approx. 5.9 x 5.9 inches)
- **Microcontroller:** STC32G12K128 high-speed SCM
- **Control Interface:** 7 physical keys for dynamic effect adjustment
- **Special Features:** Built-in microphone for audio dynamic mode

- **Recommended Age:** 15 years and up
- **Product Dimensions (Packaging):** 8.27 x 7.48 x 1.77 inches
- **Item Weight (Packaging):** 2.2 pounds

9. WARRANTY AND SUPPORT

iCubeSmart is committed to providing high-quality electronic DIY products and excellent customer service.

- **Technical Support:** We offer life-long technical support services for our DIY products. If you encounter any difficulties during assembly, have questions about functionality, or require assistance with animation modification, please do not hesitate to contact us.
- **Component Replacement:** In the rare event that a component is broken or missing during production, please reach out to our support team for assistance.
- **Contact Information:** For support inquiries, please refer to the contact details provided on the product packaging or the official iCubeSmart website.

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

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