Whadda WSL8018B

Whadda 3D LED Cube Soldering and Programming Kit

Model: WSL8018B

Introduction

The Whadda 3D LED Cube Kit (Model WSL8018B) is an educational and creative project designed for enthusiasts of all ages to explore the exciting world of electronics, soldering, and programming. This kit allows you to build a functional 5x5x5 LED cube, featuring 125 bright blue LEDs, which can be programmed to display various light patterns and animations. It serves as an excellent STEM project, providing hands-on experience in assembling electronic components and understanding basic programming concepts.

This manual provides detailed instructions for the assembly, operation, and maintenance of your 3D LED Cube, along with important safety information and troubleshooting tips.

Safety Information

Please read and understand all safety instructions before beginning assembly. Failure to follow these instructions may result in injury or damage to the product.

- **Soldering Safety:** Soldering involves high temperatures. Always use appropriate personal protective equipment, including safety glasses. Work in a well-ventilated area to avoid inhaling solder fumes. Keep flammable materials away from the soldering iron.
- **Electrical Safety:** Ensure the power supply is disconnected before making any connections or performing maintenance. Do not touch exposed wires or components when the device is powered on.
- **Component Handling:** Some electronic components can be sensitive to static electricity. Handle PCBs and integrated circuits by their edges.
- **Adult Supervision:** This kit is suitable for children and adults. However, adult supervision is recommended for younger users, especially during the soldering process.
- **Proper Disposal:** Dispose of electronic waste and soldering materials according to local regulations.

Package Contents

Before starting assembly, verify that all components listed below are present in your kit. If any parts are missing or damaged, please contact Whadda customer support.

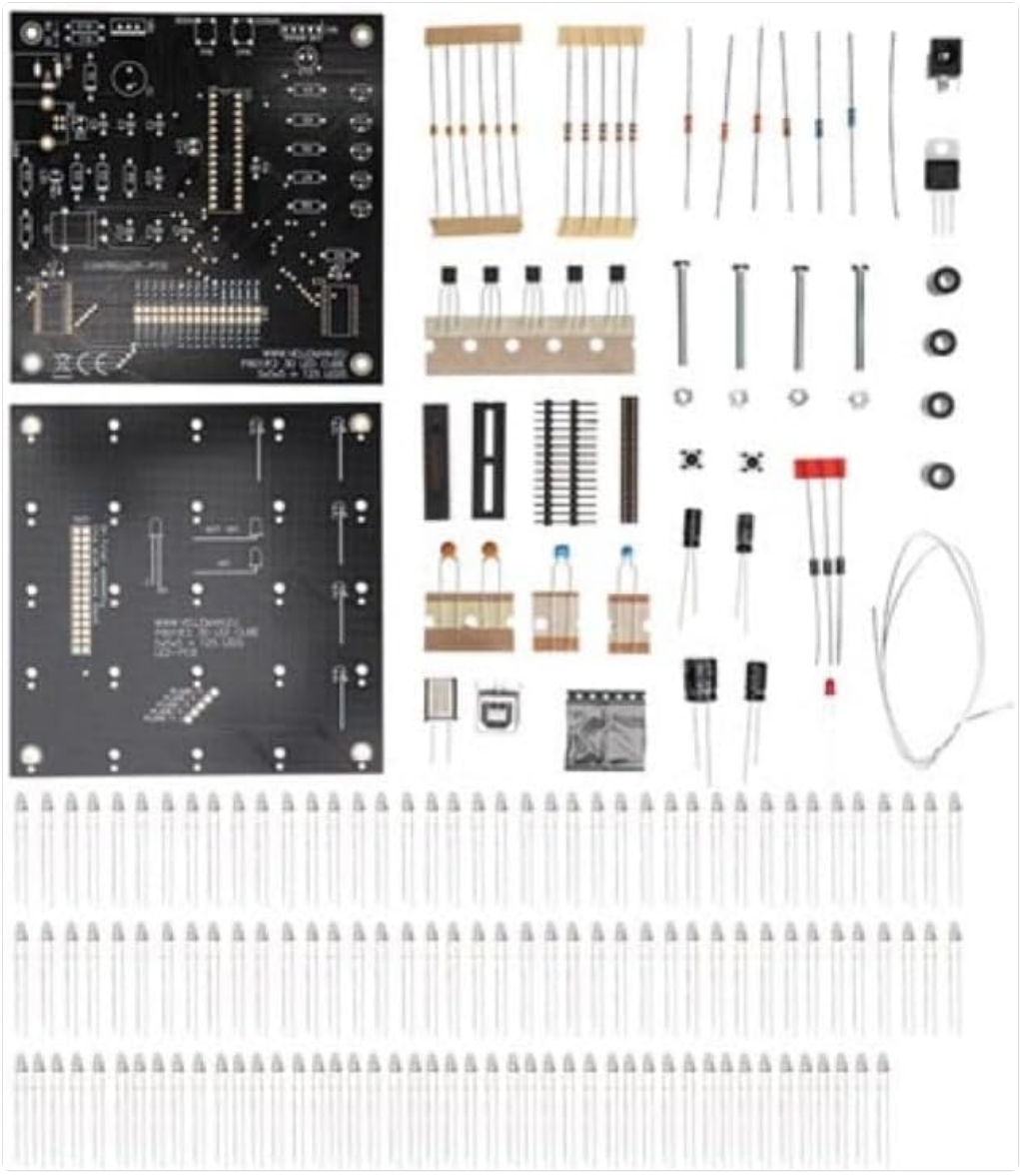

Image: All components of the Whadda 3D LED Cube Kit, including circuit boards, 125 blue LEDs, resistors, and other electronic parts, neatly arranged.

- Main PCB (Printed Circuit Board)
- LEDs (125 blue LEDs)
- Resistors
- Transistors
- Capacitors
- Microcontroller (pre-programmed or programmable)
- Connectors and Headers
- Mounting hardware (screws, standoffs)
- Power jack
- USB programming cable (if applicable)

Tools Required (Not Included): Soldering iron, solder, wire cutters, wire strippers, small pliers, safety glasses, multimeter (recommended), computer with USB port for programming.

Setup and Assembly

Follow these steps carefully to assemble your 3D LED Cube. It is recommended to watch any official assembly videos provided by Whadda for visual guidance.

1. **Prepare the LEDs:** Carefully bend the leads of each LED to form a 90-degree angle, preparing them for insertion into the cube structure. Ensure consistent lead length for uniform spacing.
2. **Build LED Layers:** Solder 25 LEDs together to form a 5x5 grid. Repeat this process five times to create five identical layers. Pay close attention to LED polarity (anode and cathode).
3. **Assemble the Cube:** Stack the five LED layers, carefully soldering the vertical connections between layers to form the 5x5x5 cube structure. Ensure the cube is straight and stable.
4. **Prepare the Main PCB:** Solder all passive components (resistors, capacitors) and active components (transistors, microcontroller socket if applicable) onto the main PCB according to the silk screen markings and component values.
5. **Connect the LED Cube to PCB:** Carefully align and solder the leads from the assembled LED cube to the designated pads on the main PCB. Double-check all connections for cold solder joints or shorts.
6. **Mount the PCB:** Secure the main PCB to the base using the provided standoffs and screws.
7. **Initial Power Test:** Before programming, connect a compatible 12V power supply (not included) to the power jack. Observe if any LEDs light up or if there are any immediate issues. Disconnect power if any problems are detected.

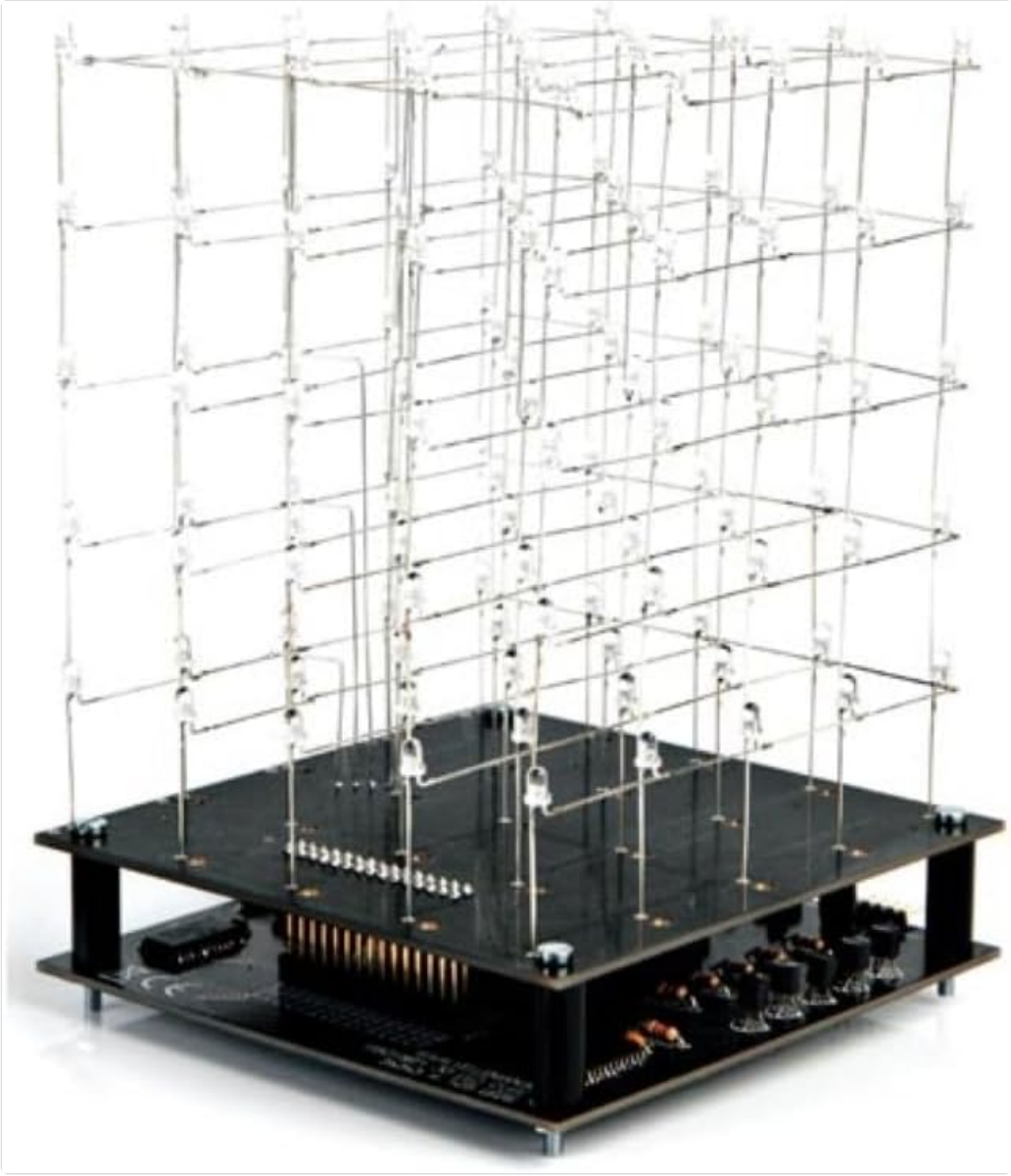

Image: A fully assembled 3D LED cube, showing the intricate wiring of the LEDs and its connection to the base circuit board, before illumination.

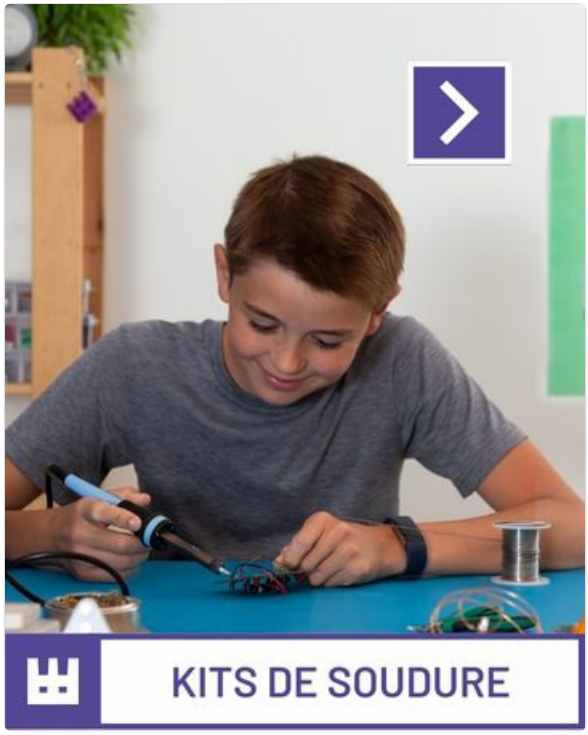

Image: A person carefully soldering components onto a circuit board, demonstrating the hands-on nature of the kit assembly.

Operating Instructions

Once assembled, your 3D LED Cube is ready for operation and programming.

1. **Power On:** Connect the 12V DC power adapter (not included) to the power jack on the main PCB. The cube should power on and begin displaying its default pre-programmed patterns.
2. **Programming:**
    - Connect the USB programming cable (if provided) from the main PCB to your computer.
    - Install the necessary drivers and programming software (e.g., Arduino IDE, specific Whadda software) as instructed in the detailed online manual or quick start guide.
    - Upload custom code or modify existing patterns to personalize your LED cube's display. Refer to the Whadda website or community forums for example code and tutorials.
3. **Pattern Selection:** If your kit includes buttons or switches on the PCB, use them to cycle through different pre-programmed patterns or modes.

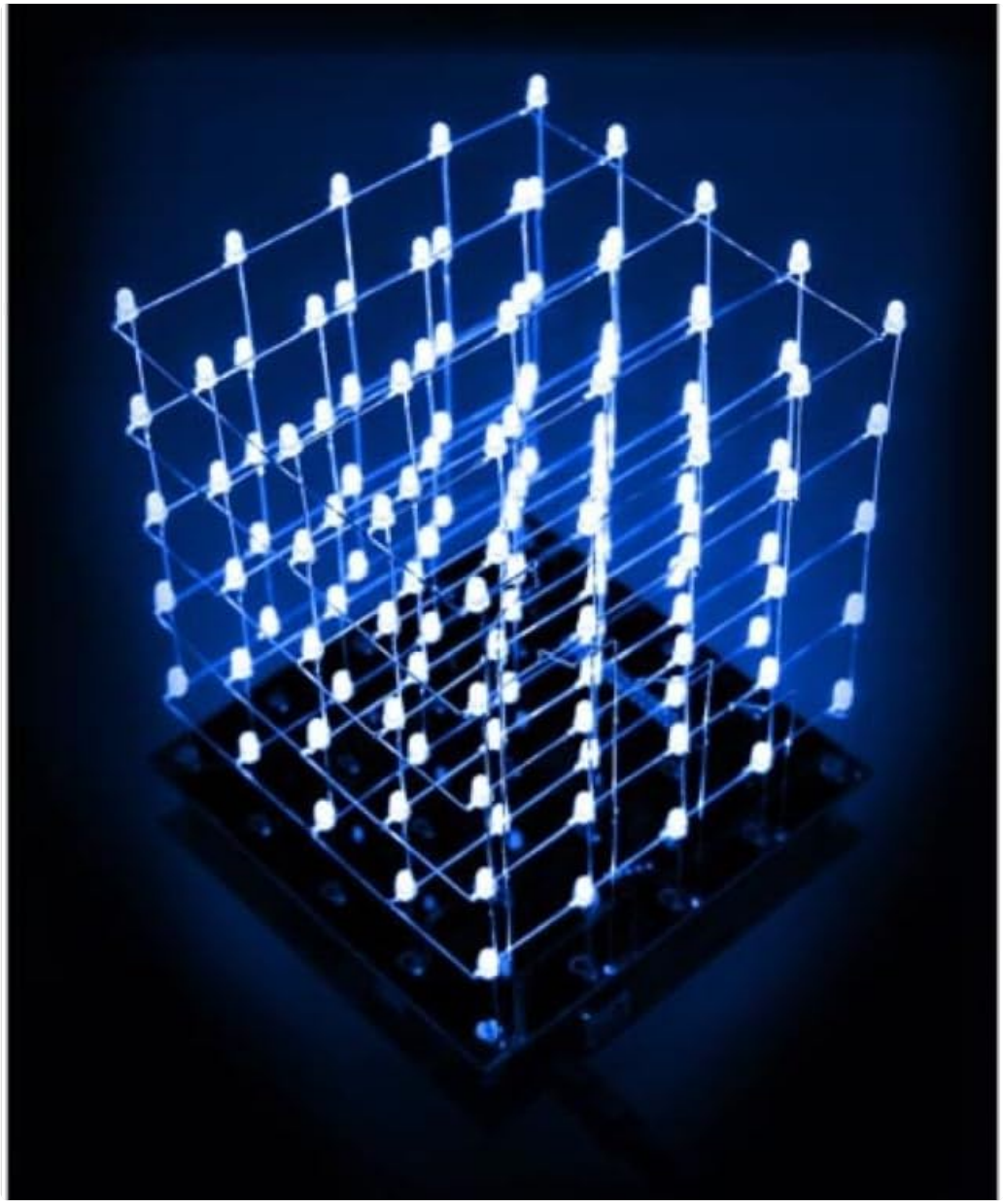

Image: The 3D LED cube fully illuminated, showcasing its vibrant blue light patterns and dynamic display capabilities.

Maintenance

Proper care will ensure the longevity of your 3D LED Cube.

- **Cleaning:** Use a soft, dry cloth to gently wipe dust from the cube and PCB. Do not use liquid cleaners or abrasive materials.
- **Storage:** Store the cube in a dry, dust-free environment away from direct sunlight and extreme temperatures.
- **Handling:** Avoid dropping or applying excessive force to the cube, as this can damage the delicate LED connections.

Troubleshooting

If you encounter issues with your 3D LED Cube, refer to the following common problems and solutions:

Problem	Possible Cause	Solution

Problem	Possible Cause	Solution
No LEDs light up.	No power, incorrect power supply, short circuit, faulty main PCB.	Check power adapter connection and voltage. Inspect PCB for shorts or incorrect component placement.
Some LEDs do not light up.	Faulty LED, cold solder joint, incorrect LED polarity, broken trace.	Check solder joints for the affected LEDs. Verify LED polarity. Test individual LEDs if possible.
Cube displays erratic patterns or no patterns.	Programming error, loose connection to microcontroller, faulty microcontroller.	Re-upload the default program. Check connections between the cube and the main PCB. Ensure microcontroller is seated correctly.
Smoke or burning smell.	Short circuit, incorrect component, reversed polarity.	**Immediately disconnect power.** Inspect for shorts, reversed components (especially electrolytic capacitors), or incorrect power input. Do not reconnect power until the issue is resolved.

Specifications

Feature	Detail
Model Number	WSL8018B
Manufacturer	Velleman Group nv
Product Dimensions	15.8 x 15.5 x 3.8 cm (6.22 x 6.10 x 1.50 inches)
Weight	186 grams (0.41 lbs)
LED Quantity	125 LEDs
LED Color	Blue
Power Type	Battery Powered (requires external 12V DC power supply, not included)
Voltage	12 Volts
Material	Plastic
Special Features	Portable

Warranty and Support

Whadda products are designed for quality and durability. For specific warranty information, please refer to the documentation included with your purchase or visit the official Whadda website. For technical support, troubleshooting assistance, or to inquire about replacement parts, please contact Whadda customer service through their official channels.

Online Resources: For additional resources, programming examples, and community support, visit the official Whadda website or relevant online electronics forums.

Related Documents - WSL8018B

	Whadda WSEDU01 Solderless Educational Starter Kit Assembly Manual Explore electronics with the Whadda WSEDU01 Solderless Educational Starter Kit. This assembly manual guides users through 11 exciting projects, teaching fundamental electronic concepts with hands-on experiments.
	Whadda WSAH194 Digitally Controlled FM Radio Soldering Kit Instructions Step-by-step assembly instructions for the Whadda WSAH194 digitally controlled FM radio soldering kit, detailing components and soldering procedures.
	Whadda WPB109 ESP32 Development Board User Manual User manual for the Whadda WPB109 ESP32 development board. This guide covers product overview, specifications, functional details, getting started with Arduino IDE, uploading sketches, and a WiFi connection example. Includes safety instructions and troubleshooting tips.
	Whadda WPM464 4-Channel Solid State Relay Module - Manual & Specifications Comprehensive guide to the Whadda WPM464 4-channel Solid State Relay module, covering its introduction, safety instructions, specifications, wiring details, and an example Arduino program. Learn how to safely switch AC loads up to 240V AC / 2A.
	Whadda WPM447 Mini Peristaltic Pump 6V User Manual User manual for the Whadda WPM447 mini peristaltic pump (6V). This document details product specifications, safety instructions, general guidelines, and step-by-step procedures for replacing the silicon tube. It also provides context on Arduino compatibility.
	Whadda WPSE323 Current Sensor ACS712 Module - 20A User Manual User manual for the Whadda WPSE323 Current Sensor ACS712 Module, a 20A AC/DC current sensing solution. Includes product overview, specifications, pin layout, and Arduino code example.