Yahboom Halo Expansion Board Model 1

Yahboom Micro:bit Halo Expansion Board Instruction Manual

Model: Halo Expansion Board Model 1

1. Introduction

The Yahboom Micro:bit Halo Expansion Board is designed to enhance your Micro:bit projects with interactive lighting and sound control capabilities. This expansion board features a circular array of LEDs and an integrated microphone, making it ideal for STEM education and creative programming. It is compatible with both Micro:bit V2 and V1.5 versions.

2. Product Overview

The Halo Expansion Board integrates a 24-LED RGB ring and a microphone for sound detection. It provides a platform for various interactive projects, from musical light displays to voice-controlled applications. The board is designed with mounting holes for compatibility with building blocks, allowing for versatile physical constructions.

Package Contents:

- Yahboom Micro:bit Halo Expansion Board
- Micro USB Cable
- AAA Battery Holder (without batteries)
- Mounting Screws and Spacers
- Acrylic Protection Plates

Figure 2.1: Included components of the Halo Expansion Board kit.

3. Setup

3.1 Micro:bit Installation

1. Align your Micro:bit board with the connector on the Halo Expansion Board.
2. Gently push the Micro:bit into the connector until it is securely seated. Ensure all pins are properly aligned to avoid damage.
3. Optionally, use the provided acrylic protection plates and screws to secure the Micro:bit to the expansion board.

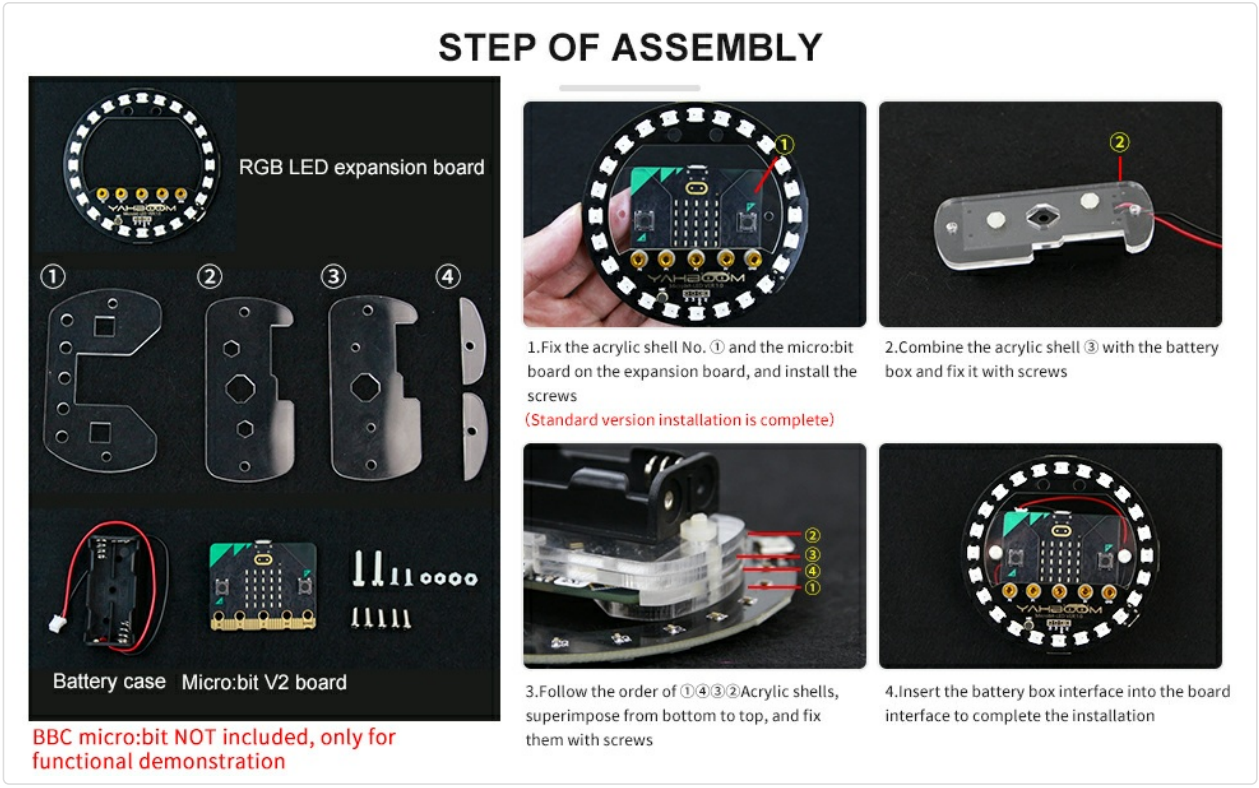

Figure 3.1: Micro:bit assembly onto the Halo Expansion Board.

3.2 Power Supply

The Halo Expansion Board supports two methods of power supply:

- **Micro USB Power:** Connect the provided Micro USB cable to the Micro USB port on the expansion board and to a 5V power source (e.g., computer USB port, USB wall adapter).
- **AAA Battery Power:** Insert 3 AAA batteries into the battery holder and connect the battery holder's JST connector to the corresponding port on the expansion board.

Figure 3.2: Micro USB cable power supply connection.

Figure 3.3: AAA battery power supply connection.

4. Operation

4.1 Sound-Controlled Lighting Effects

The integrated microphone allows the Halo Expansion Board to react to sound, enabling dynamic lighting effects. Programming is required to utilize these features with your Micro:bit.

Figure 4.1: Examples of sound-controlled lighting effects.

- **Musical Lighting:** LEDs can synchronize with music or ambient sounds, creating a visual rhythm.
- **Voice-controlled Color Switching:** The LED colors can change based on detected voice commands or sound levels.
- **Voice-controlled LED Lamps:** LEDs can illuminate or increase in intensity in response to sound input.
- **Rainbow Water Lamp:** A dynamic rainbow effect that can be influenced by sound.

Figure 4.2: Integrated microphone for sound detection.

4.2 Building Block Compatibility

The Halo Expansion Board features round holes designed to be compatible with LEGO blocks and other similar building block systems. This allows users to integrate the board into custom physical structures and robotic projects.

Figure 4.3: Halo Expansion Board integrated with building blocks.

5. Maintenance

- Keep the board clean and free from dust. Use a soft, dry cloth for cleaning.
- Avoid exposing the board to moisture or extreme temperatures.
- Handle with care to prevent damage to electronic components.
- When not in use for extended periods, disconnect the power supply (USB or batteries).

6. Troubleshooting

- **Board not powering on:**

Ensure the Micro USB cable is securely connected to a working 5V power source, or that the AAA batteries are correctly inserted and charged. Check the battery holder connection.

- **LEDs not lighting up:**
  Verify that the Micro:bit is properly seated on the expansion board. Ensure your Micro:bit program includes code to control the LEDs. Check power supply.
- **Sound control not working:**
  Confirm that your Micro:bit program is correctly configured to read input from the microphone. Ensure the microphone is not obstructed.
- **Micro:bit not recognized:**
  Ensure the Micro:bit is correctly installed on the expansion board. Try connecting the Micro:bit directly to your computer to verify its functionality.

7. Specifications

Feature	Specification
Brand	Yahboom
Model Number	1
Compatibility	Micro:bit V2, Micro:bit V1.5
LEDs	24 RGB LEDs (circular array)
Input	Integrated Microphone
Power Supply	Micro USB (5V), 3x AAA Batteries
Dimensions	Approximately 2 x 2 x 0.2 inches (5.08 x 5.08 x 0.51 cm)
Assembly Required	No (Micro:bit installation required)

8. Warranty and Support

Specific warranty information for this product is not provided in the available data. For warranty claims, technical support, or further assistance, please contact Yahboom customer service directly or refer to their official website.