Yahboom 1

Yahboom Micro:bit Tiny:bit Robot Car Instruction Manual

Model: 1

1. INTRODUCTION

The Yahboom Tiny:bit Robot Car is a programmable robotic kit designed for educational purposes, particularly for learning coding and STEM concepts. This kit is based on the Micro:bit platform, offering a compact and portable design suitable for users aged 8-12 and above. It provides an engaging way to explore robotics, programming, and various interactive functionalities.
Note: This version of the kit does not include the Micro:bit board. A Micro:bit board is required for the robot to function.
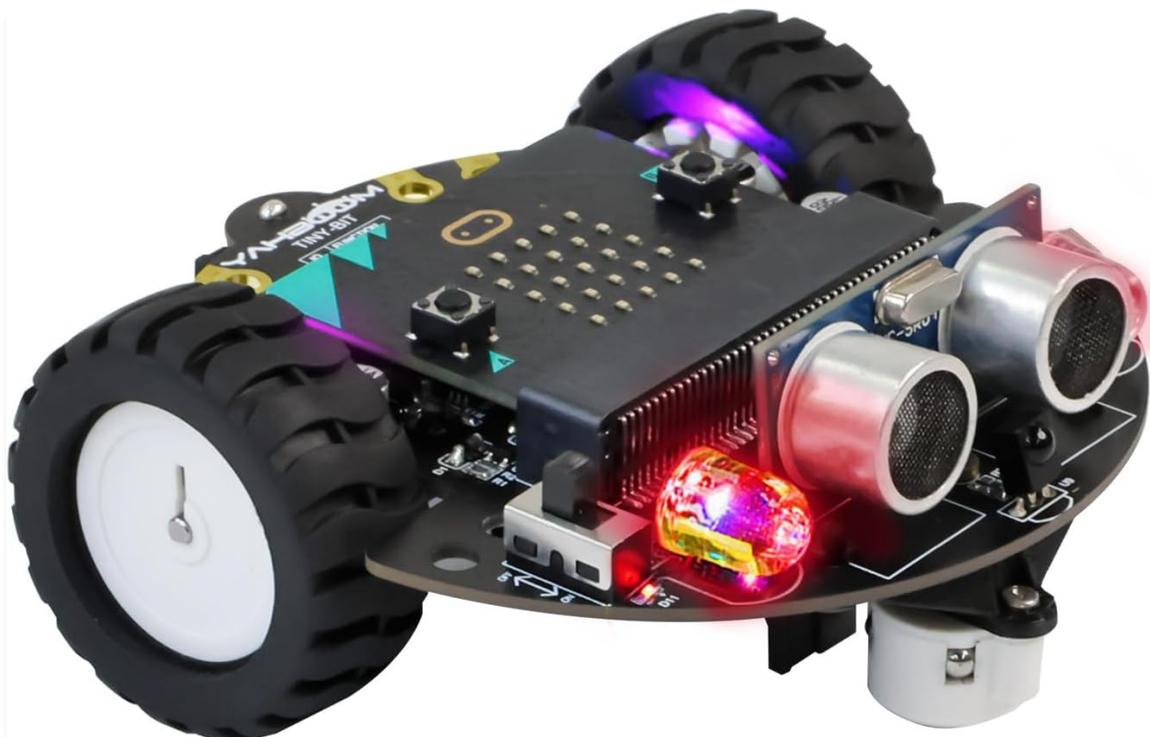

Image 1.1: The assembled Yahboom Tiny:bit Robot Car, featuring its compact design with wheels,

ultrasonic sensors, and a Micro:bit board mounted on top.

2. WHAT'S IN THE BOX

Please verify that all components listed below are present in your package:

- Robot Car Chassis (bottom plate with motor)
- Wheels (2 main wheels, 1 universal wheel)
- USB Camera (if applicable to your specific kit version)
- Track Map
- Fixed Bracket
- Micro USB Data Cable
- Remote Control
- Tires
- Lithium Battery
- Module Accessory Package
- Plastic Rivets
- Instruction Manual

Functions

Show you more about this Tiny:bit

Micro:bit Include (Full configuration)

Micro:bit NOT Include (Suitable for users with Micro:bit)

1. Power switch
2. Ultrasonic module
3. Infrared receiver
4. Car light
5. micro USB charge interface
6. light
7. Microphone
8. Alligator clip interface*4
9. micro:bit board

The back of the car

01. battery holder   02. Patrolling probe
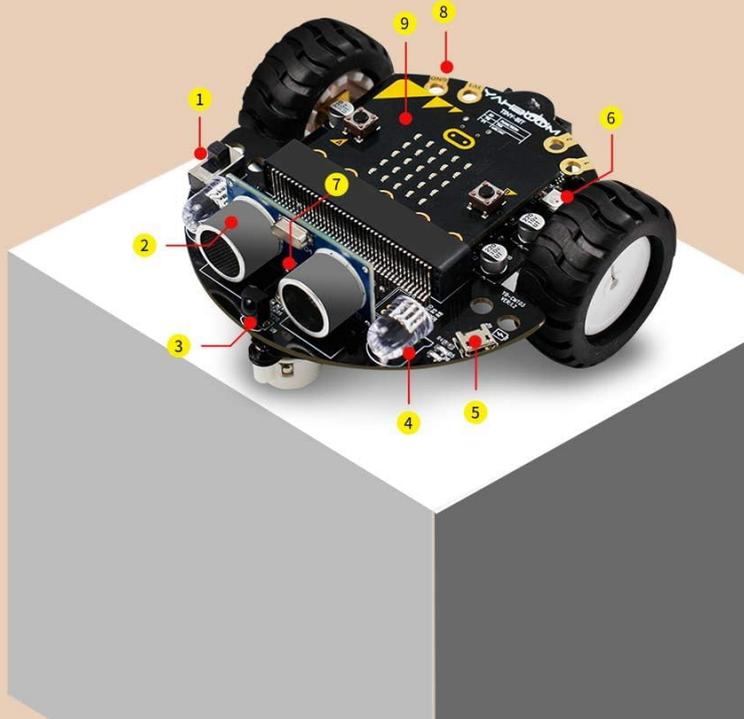03. Motor   04. Buzzer

Image 2.1: A visual representation of the various components included in the Yahboom Tiny:bit Robot Car kit, laid out for inspection.

3. SETUP AND ASSEMBLY

Assembly of the Tiny:bit Robot Car is designed to be straightforward, often requiring no screws. Follow these general steps:

1. **Prepare the Chassis:** Attach the motors to the main chassis if not pre-assembled.
2. **Install Wheels:** Securely attach the main wheels and the universal wheel to the chassis.
3. **Mount Micro:bit:** Carefully insert your Micro:bit board into the designated slot on the Tiny:bit expansion board. Ensure it is seated correctly.
4. **Connect Sensors:** Attach the ultrasonic module and any other sensors using the provided connectors.
5. **Battery Installation:** Insert the lithium battery into its holder and connect it to the Tiny:bit board.
6. **Secure Components:** Use the plastic rivets to secure any loose components or covers. Note that rivets may require firm pressure to fully engage.

For detailed, step-by-step assembly instructions, including visual guides, please refer to the official

Yahboom online tutorials. A link to these resources is typically provided in the included manual or on the product's support page.

Image 3.1: The Tiny:bit Robot Car during assembly, showing the Micro:bit board being integrated with the main chassis and sensors.

4. OPERATING THE TINY:BIT ROBOT CAR

The Tiny:bit Robot Car offers multiple methods for operation and programming, allowing for a versatile learning experience.

4.1. Programming

The Tiny:bit is primarily programmed using the Micro:bit's MakeCode Editor, an online graphical programming environment. This block-based coding interface is ideal for beginners to develop logical thinking skills. For advanced users, Python programming is also supported.

- **MakeCode Editor:** Access the online MakeCode editor, add the Tiny:bit extension, and drag-and-drop code blocks to create programs.
- **Python:** Write Python code for more complex functionalities and direct control over the

Micro:bit.

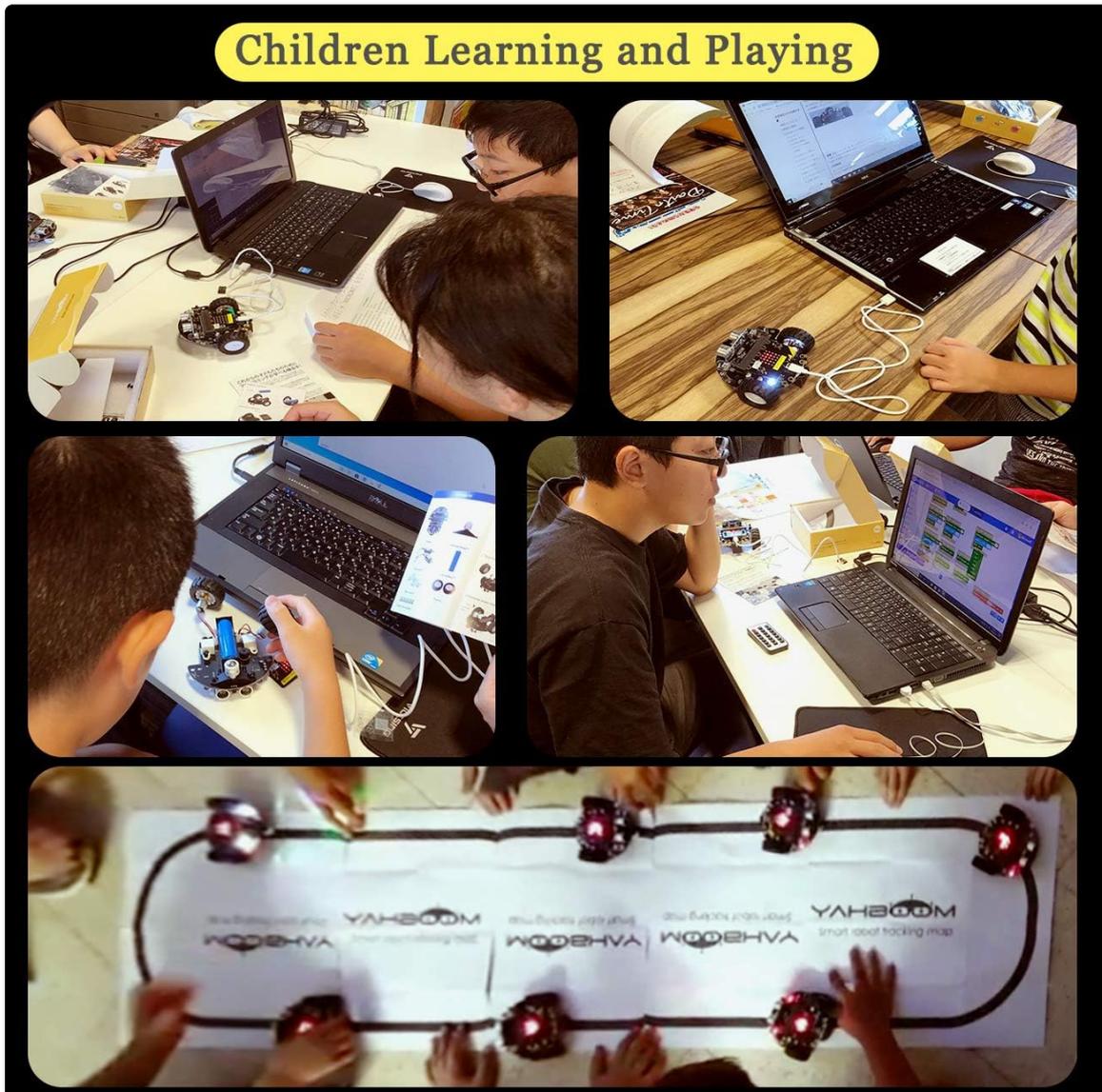Refer to the official Yahboom online tutorials for detailed programming guides and sample code.

Image 4.1: A user engaging in STEM education, programming the Tiny:bit Robot Car using a laptop and the MakeCode graphical interface.

4.2. Control Methods

Once programmed, the Tiny:bit can be controlled through various interfaces:

- **Remote Control:** Use the included infrared remote control for basic movement and function activation.
- **Smartphone App:** Download the Yahboom App (available for iOS and Android) to control the robot via Bluetooth. This app allows for intuitive control and interaction.

5. KEY FEATURES

The Tiny:bit Robot Car is equipped with several sensors and actuators, enabling a range of interactive

functionalities:

- **Obstacle Avoidance:** Utilizes ultrasonic sensors to detect objects in its path and navigate around them.
- **Line Following:** Employs infrared sensors to detect lines on the ground, allowing the robot to follow a predetermined path.
- **Sound Detection:** Integrated microphone allows the robot to react to sound inputs.
- **Programmable RGB Lights:** Features customizable LED lights for visual feedback and creative displays.
- **Music Playback:** Capable of playing simple tunes or sound effects.
- **Building Block Compatibility:** Designed with expansion holes to integrate with standard building blocks, allowing for creative extensions and modifications.
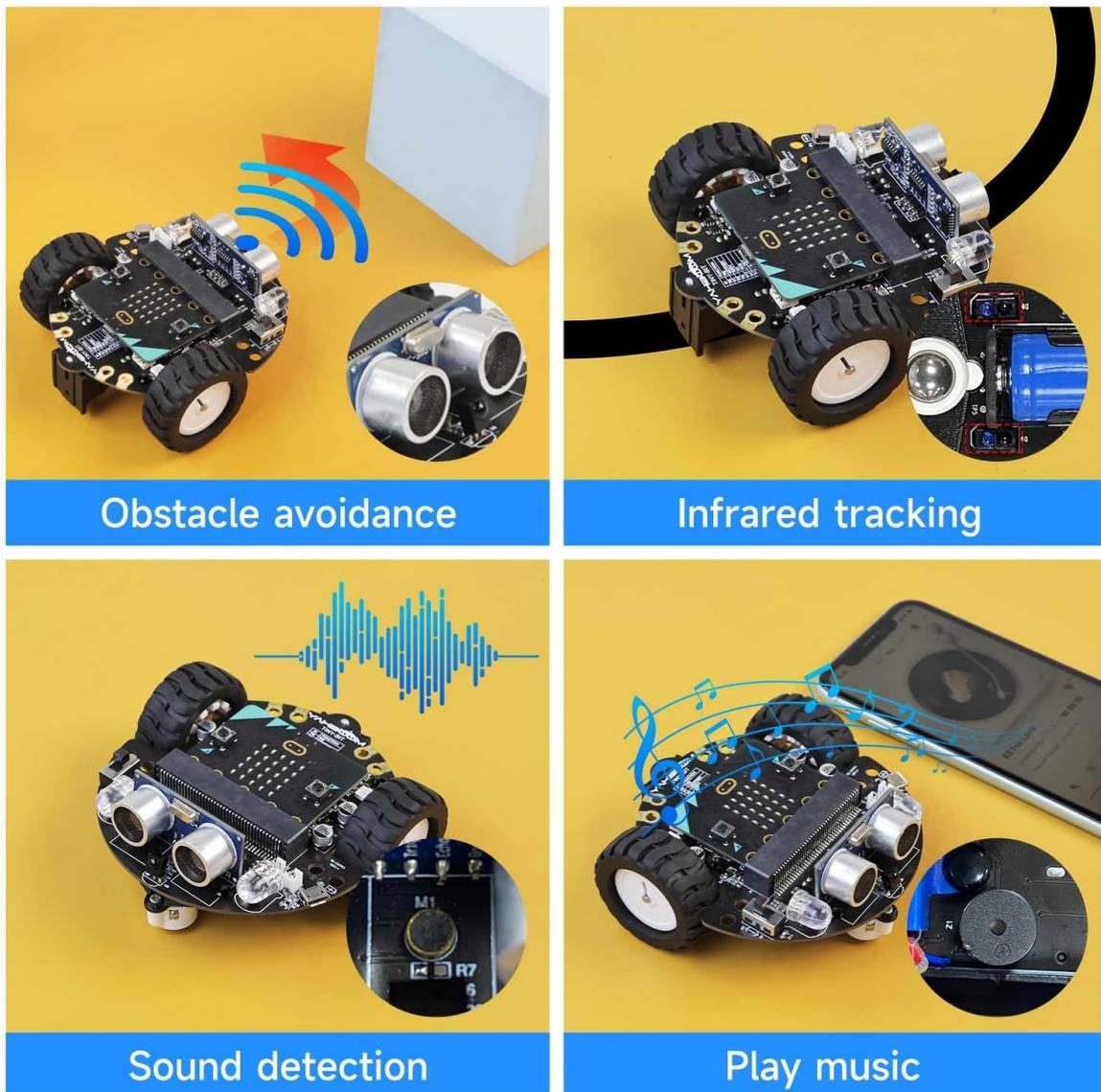

Image 5.1: A collage demonstrating the Tiny:bit Robot Car's core functions, including obstacle avoidance, infrared line tracking, sound detection, and music playback.
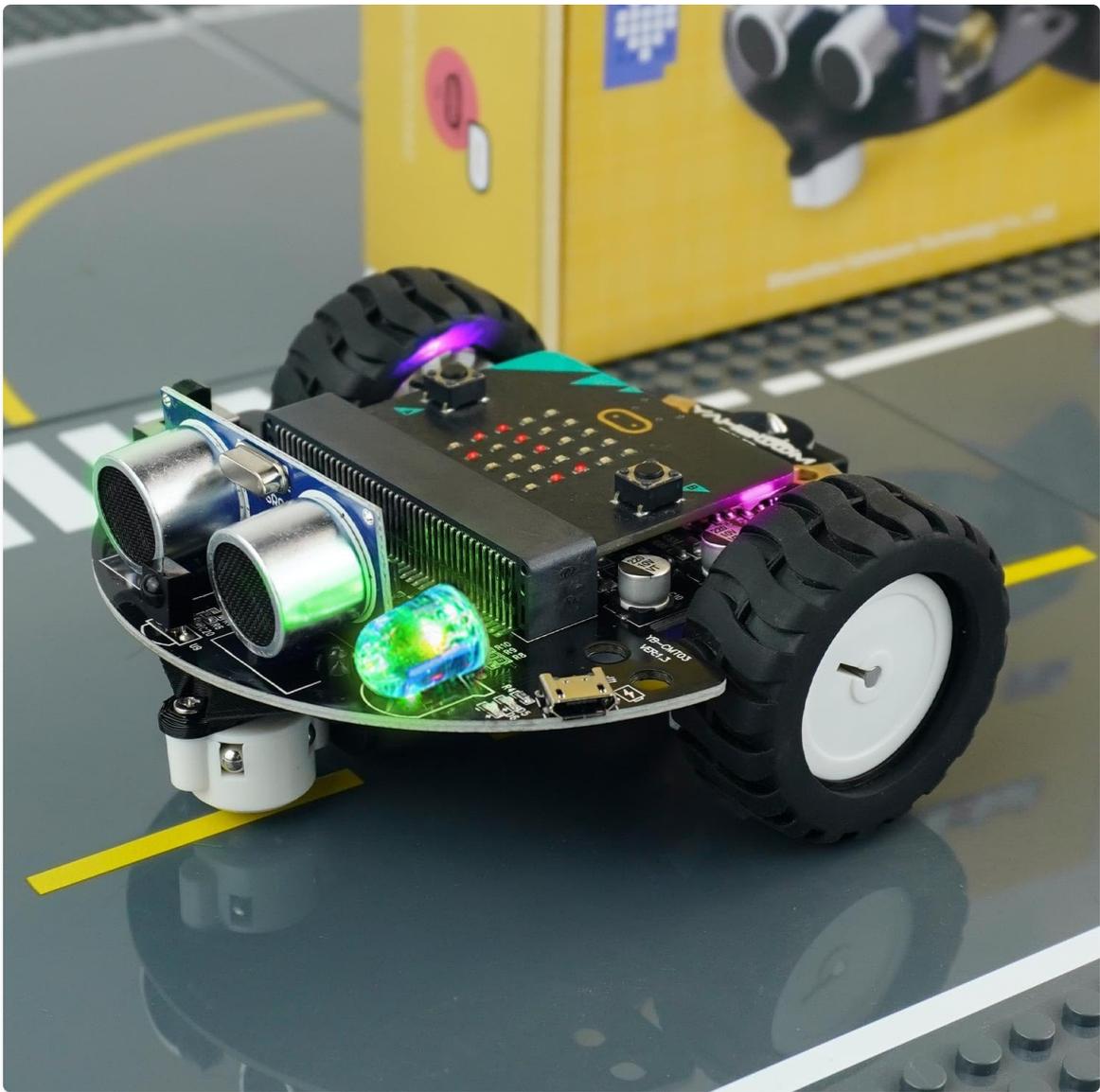
Image 5.2: The Tiny:bit Robot Car demonstrating its compatibility with building blocks, allowing for structural enhancements and custom designs.

6. SPECIFICATIONS

Feature	Detail
Product Dimensions	2 x 1.5 x 2 inches
Item Weight	12.3 ounces
Model Number	1
Recommended Age	13 years and up (Manufacturer recommended)
Batteries	1 Product Specific battery required (included)
Manufacturer	Yahboom

Image 6.1: A detailed diagram illustrating the various functional components of the Tiny:bit Robot Car, including power switch, ultrasonic module, infrared receiver, lights, micro USB charge interface, microphone, alligator clip interfaces, and the Micro:bit board.

7. TROUBLESHOOTING

This section addresses common issues you might encounter with your Tiny:bit Robot Car.

- **Robot does not power on:**
  Ensure the lithium battery is fully charged and correctly installed. Verify the power switch is in the 'ON' position. Remember, a Micro:bit board is essential for operation and must be properly inserted.

- **Difficulty with assembly (e.g., rivets):**
  Some components, particularly plastic rivets, may require firm pressure to snap into place. Apply steady, even force. If a component feels excessively fragile, refer to the online assembly videos for guidance.

- **Programming issues (code not uploading/running):**
  Double-check your code for errors in the MakeCode Editor or Python environment. Ensure the Tiny:bit extension is correctly added in MakeCode. Verify the Micro:bit is properly connected to

your computer via USB and that the correct firmware is being uploaded.

- **Robot not responding to remote/app control:**
  For remote control, ensure the remote has working batteries and is pointed towards the robot's infrared receiver. For app control, confirm Bluetooth is enabled on your smartphone and the robot, and that the Yahboom App is correctly paired with the Tiny:bit.

- **Sensors not functioning correctly (e.g., obstacle avoidance, line tracking):**
  Ensure sensors are clean and unobstructed. Verify that the sensor modules are securely connected to the Tiny:bit board. Calibration might be required for optimal performance; consult online tutorials for sensor calibration procedures.

- **Online resources (manuals, software) are difficult to access:**
  If encountering issues with file formats (e.g., .rar files) or browser compatibility, try using a different web browser or a file extraction tool. Ensure you have a stable internet connection for downloading resources.

8. MAINTENANCE

To ensure the longevity and optimal performance of your Tiny:bit Robot Car, follow these maintenance guidelines:

- **Cleaning:** Use a soft, dry cloth to gently wipe the robot's surface and sensors. Avoid using liquids or abrasive cleaners.
- **Storage:** When not in use, store the robot in a cool, dry place away from direct sunlight and extreme temperatures.
- **Battery Care:** Fully charge the lithium battery before long-term storage. If storing for extended periods, periodically recharge the battery to maintain its health.
- **Component Inspection:** Regularly check for any loose connections, damaged wires, or broken parts. Address any issues promptly to prevent further damage.
- **Handle with Care:** While designed for durability, avoid dropping or subjecting the robot to excessive force, as some electronic components can be fragile.

9. WARRANTY AND SUPPORT

Yahboom provides comprehensive online tutorials and technical support for its products. If you encounter any issues or have questions regarding your Tiny:bit Robot Car, please utilize the following resources:

- **Online Tutorials:** Detailed instructional courses and guides are available on the official Yahboom website. These resources cover assembly, programming, and various project ideas.
- **Technical Support:** For specific technical assistance, you can contact Yahboom's support team via email. They are available to respond to your inquiries.

Specific warranty details, including duration and coverage, may vary. Please refer to the product packaging or the official Yahboom website for the most current warranty information.

Related Documents - 1

	[Yahboom Transbot Robot User Manual and Installation Guide](#) Comprehensive guide to assembling, installing, and operating the Yahboom Transbot robot. Includes packing lists, step-by-step instructions, wiring diagrams, software setup, and detailed explanations of app control features.
	[Yahboom Pico Robot Car: Features, Functions, and Programming Guide](#) Explore the Yahboom Pico Robot Car, powered by Raspberry Pi Pico and MicroPython. Discover its extensive features including APP control, various sensors for line tracking, obstacle avoidance, voice control, and more. This guide details its hardware, software, and course content.
	[Yahboom Arduino Batmobile: Graphical Programming Tutorials](#) Learn to program the Yahboom Arduino Batmobile robot car with graphical tutorials. This guide covers LED control, buzzer sounds, sensors, motor control, line following, obstacle avoidance, and more.
	[Yahboom WOM Sensor Kit for BBC micro:bit - User Manual and Building Models](#) Comprehensive guide to the Yahboom WOM Sensor Kit for BBC micro:bit, covering packing list, module introductions, building models, tutorials, and safety instructions. Learn how to use various sensors and build different models.
	[Yahboom Raspblock AI Smart Robot Car for Raspberry Pi 4B	Omnidirectional AI Platform](#) Explore the Yahboom Raspblock, an AI omnidirectional mobile smart car based on the Raspberry Pi 4B. Features include advanced AI functions, 360° Mecanum wheel movement, FPV capabilities, and Python programming via Jupyter Lab.
	[WhalesBot D3 Pro STEM Robotic Kit: Assembly and Programming Guide](#) Explore the world of robotics with the WhalesBot D3 Pro STEM kit. This guide provides detailed instructions for building four unique robots – the Exploding Drummer, Mill Robot, Dynamic Bicycle, and Weightlifter – along with programming activities using the WeCode Pad.