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### XiaoR Geek XR DBit

# Microbit 2WD Robot Car Kit User Manual

Model: XR DBit

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## 1. INTRODUCTION

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The XiaoR Geek XR DBit 2WD Robot Car Kit is an educational platform designed for STEM learning, compatible with micro:bit V1.5 and V2 boards (micro:bit board not included). This kit allows users to engage in graphical programming using Makecode, fostering hands-on skills and problem-solving abilities. It integrates various sensors and features to enable a range of interactive projects.

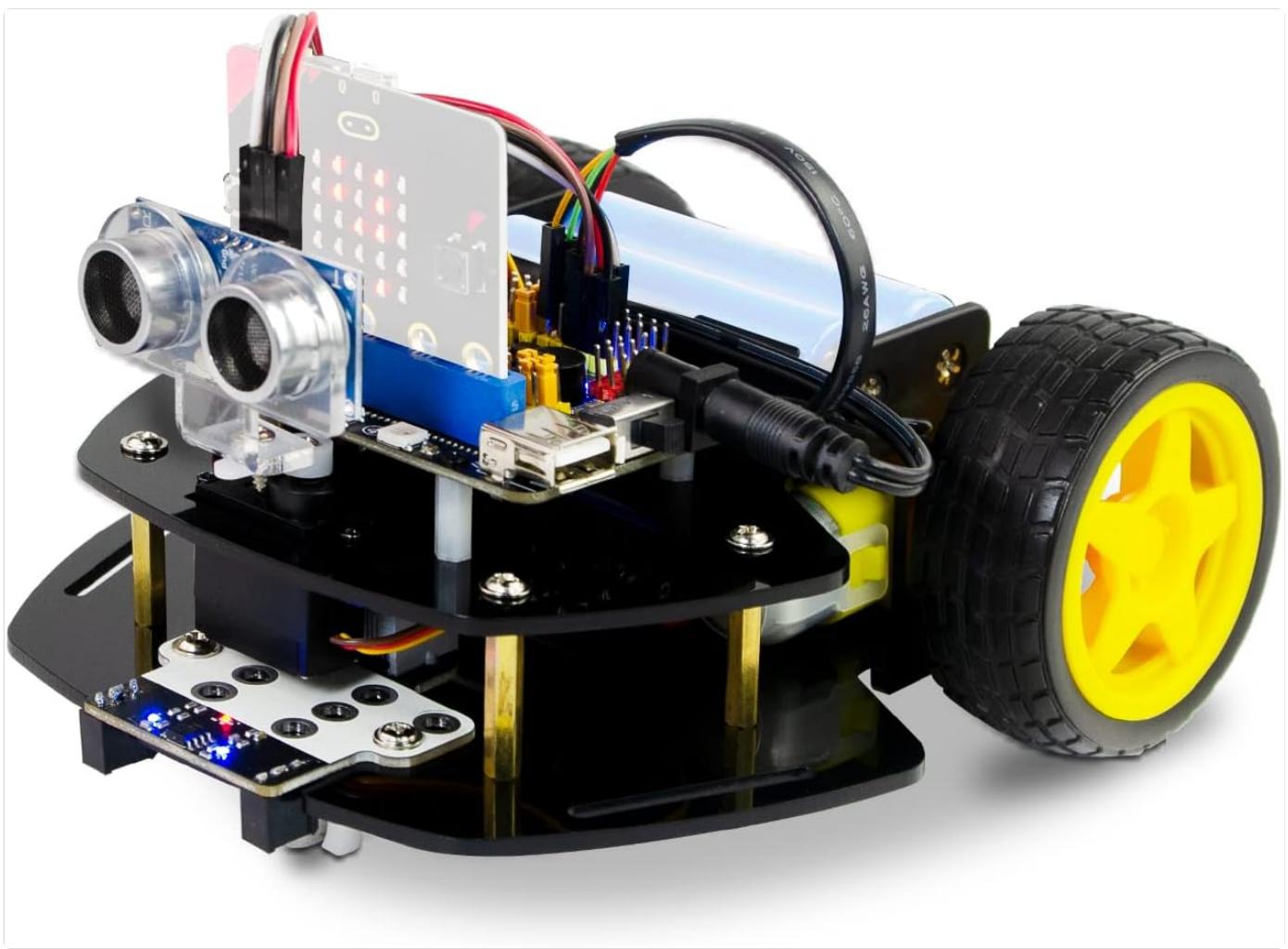


Figure 1: Fully assembled Microbit 2WD Robot Car Kit.

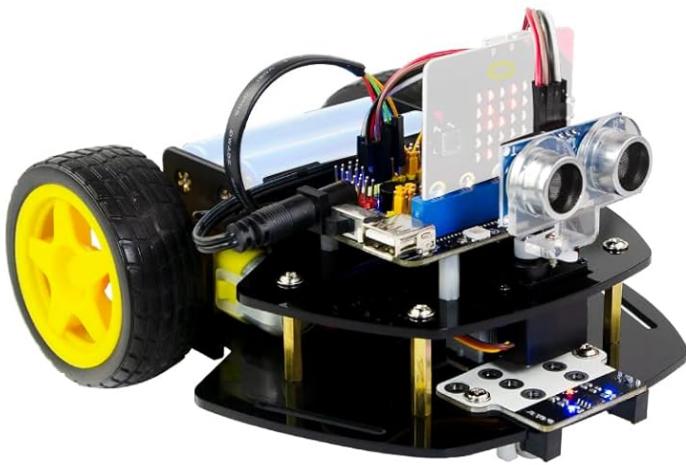
## Key Features:

- **Micro:bit Programming Kit:** Utilizes Makecode graphical programming for easy learning and development.
- **Multi-Functional:** Equipped with ultrasonic and infrared sensors, LED lights, and a buzzer for diverse applications like line patrol, obstacle avoidance, distance measurement, and music programming.
- **DIY Learning Kit:** Designed for straightforward assembly, providing an engaging experience in electronics and robotics.
- **Wireless Control:** Supports IR remote control and Bluetooth connectivity via the XiaoR GEEK exclusive APP (Android/IOS).
- **Expandable Design:** The multi-functional expansion board includes reserved IO ports and holes for additional sensor integration.

**Important Note: The micro:bit board and 18650 lithium battery (rechargeable) are not included in this kit and must be acquired separately for the car to function.**

## 2. COMPONENTS OVERVIEW

This section details the main components included in the Microbit 2WD Robot Car Kit. Familiarize yourself with each part before beginning assembly.



There is no micro:bit in the package.

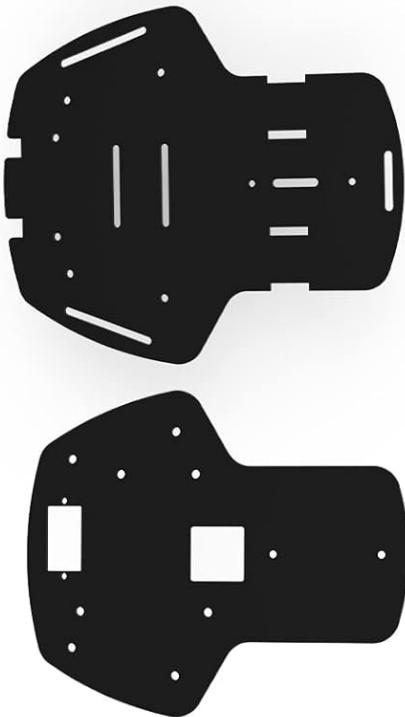


Figure 2: All components included in the kit, excluding the micro:bit board and 18650 battery.

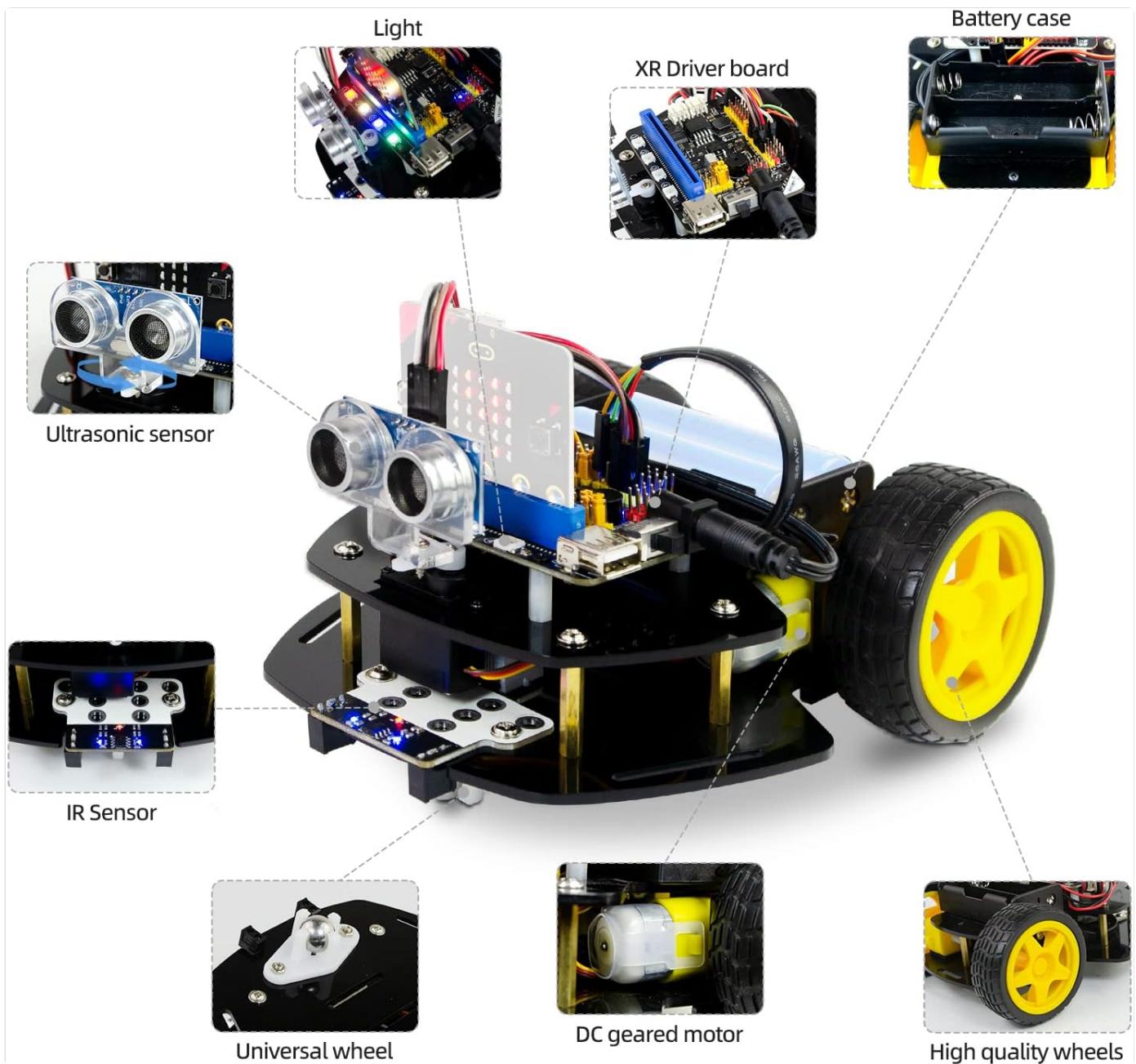
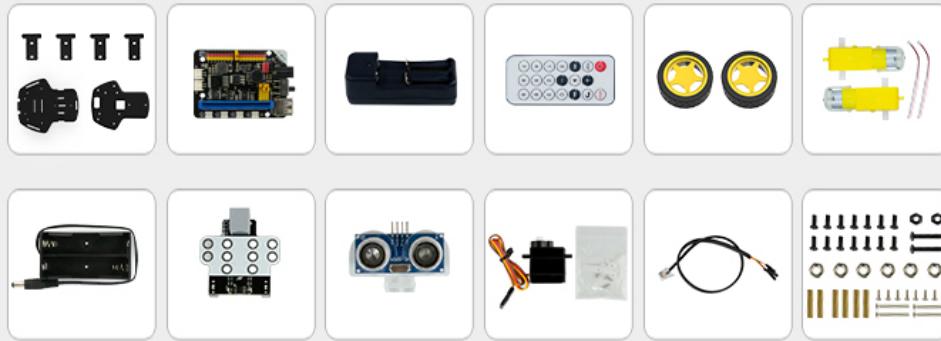


Figure 3: Detailed view of the assembled robot car with key components labeled, including Ultrasonic sensor, IR sensor, Universal wheel, DC geared motor, High quality wheels, Light, XR Driver board, and Battery case.

### Packing List:

## Packing list



Not include  
micro:bit  
and battery

## Product parameters

Weight:	438g
Remote control method:	Android/IOS APP, infrared remote control
Compilation environment:	Makecode/JavaScript
Communication interface:	Usart serial port/Bluetooth
Motor:	TT DC motor
Battery life:	2 hours

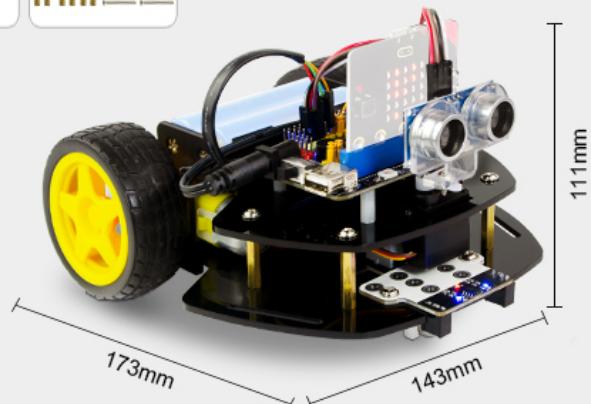


Figure 4: Visual representation of the packing list and product parameters.

- Robot Car Chassis (top and bottom plates)
- DC Geared Motors (2x)
- Wheels (2x) and Universal Wheel (1x)
- Ultrasonic Sensor Module
- IR Sensor Module
- XR Driver Board
- Battery Case (for 18650 battery, battery not included)
- IR Remote Control
- Various Screws, Nuts, and Standoffs for assembly
- Connecting Wires
- Servo Motor

## 3. ASSEMBLY INSTRUCTIONS

The assembly process for the XR DBit robot car is designed to be straightforward. Follow these steps carefully to build your robot.

1. **Prepare Components:** Unpack all components and verify against the packing list. Ensure you have a micro:bit board and an 18650 lithium battery ready.
2. **Attach Motors:** Secure the two DC geared motors to the bottom chassis plate using the provided screws.
3. **Mount Wheels:** Press the yellow wheels onto the motor shafts. Attach the universal wheel to the front underside of the bottom chassis plate.
4. **Assemble Chassis:** Connect the top and bottom chassis plates using the standoffs and screws.
5. **Install Driver Board:** Mount the XR Driver Board onto the top chassis plate.
6. **Connect Motors to Driver Board:** Wire the DC geared motors to the appropriate terminals on the XR Driver Board.

7. **Install Ultrasonic Sensor:** Attach the ultrasonic sensor module to the front of the robot, typically on the top chassis plate, and connect its wires to the driver board.
8. **Install IR Sensor:** Mount the IR sensor module to the front underside of the robot and connect its wires to the driver board.
9. **Insert Micro:bit:** Carefully insert your micro:bit board into the dedicated slot on the XR Driver Board.
10. **Install Battery:** Place the 18650 lithium battery into the battery case and connect the battery case to the XR Driver Board for power.
11. **Final Checks:** Double-check all connections to ensure they are secure and correctly oriented.

For detailed visual guides, refer to the official XiaoRGEEK tutorials available online.

## 4. OPERATION

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The XR DBit robot car offers various functionalities and control methods. This section outlines how to program and operate your robot.

### 4.1 Programming

The robot car is primarily programmed using the Makecode graphical programming environment. This platform allows for intuitive coding by dragging and dropping color-coded blocks.

# Graphical Visual Programming

Using the makecode programming software,  
you only need to drag the building  
block color module to realize graphical programming.

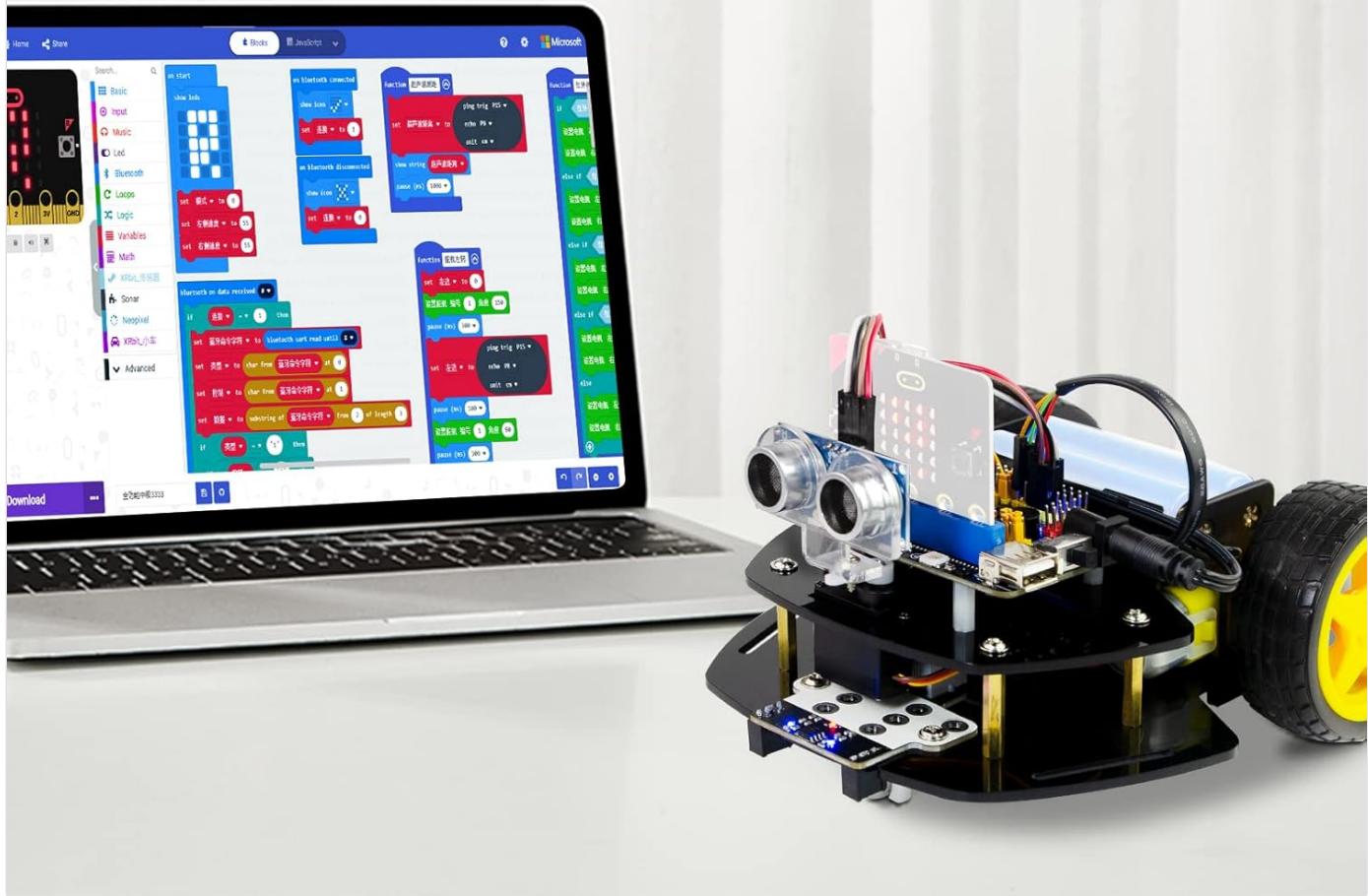


Figure 5: Example of Makecode graphical programming interface on a laptop, showing how to drag and drop blocks to create code for the robot.

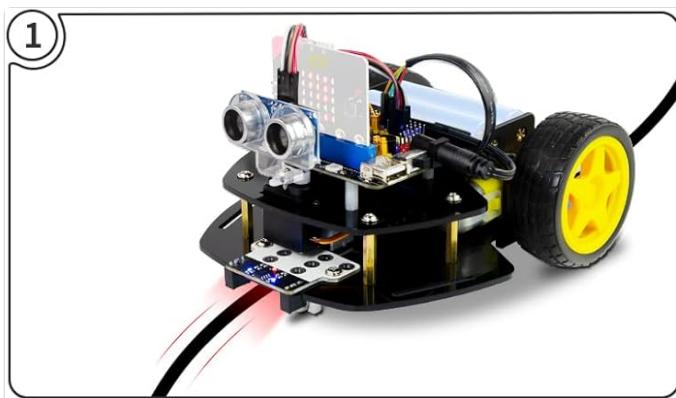


Figure 6: A user programming the robot car using Makecode (JavaScript/Graphical programming) on a computer.

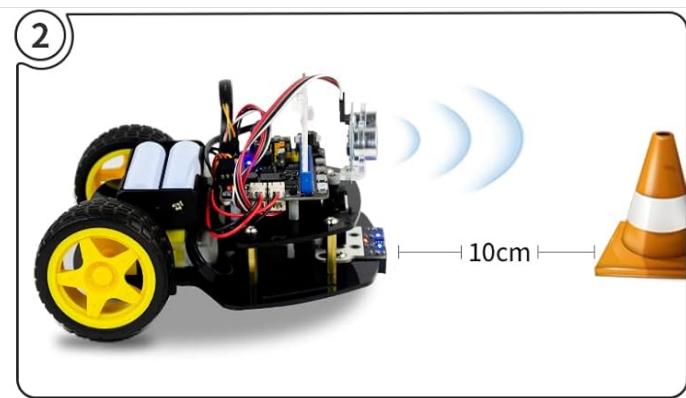
- Access the Makecode editor online or through a dedicated application.
- Drag and drop programming blocks to create sequences for movement, sensor interaction, and other functions.
- Download the compiled code to your micro:bit board.

## 4.2 Core Functions

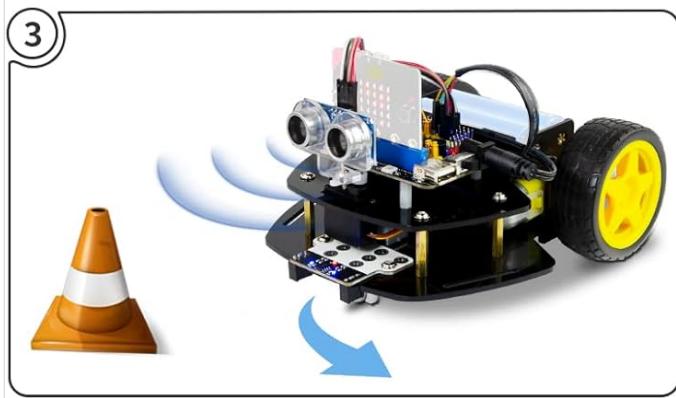
The robot car supports several interactive functions:



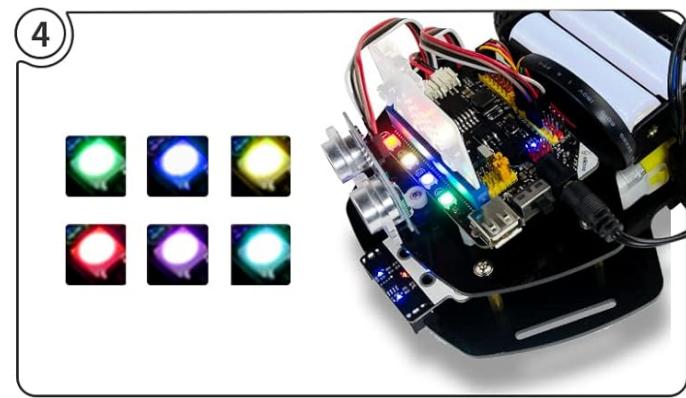
1 Ultrasonic obstacle avoidance



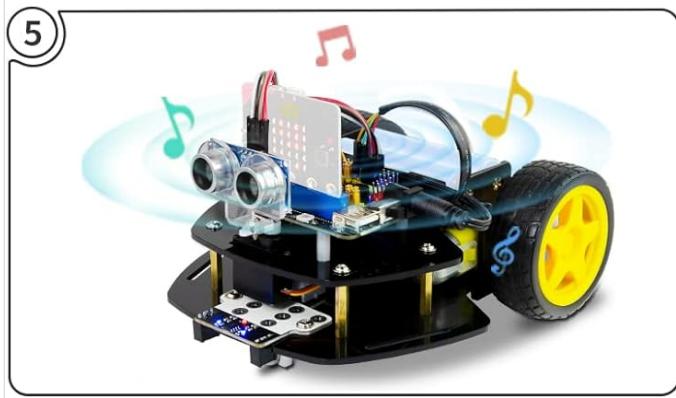
2 Ultrasonic ranging



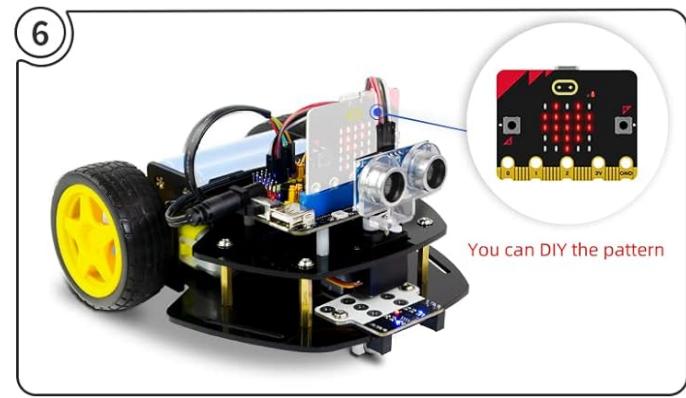
3 Line tracking



4 Light show



5 Play music



6 Dot matrix display

Figure 7: Visual representation of the robot car performing various functions: (1) Ultrasonic obstacle avoidance, (2) Ultrasonic ranging, (3) Line tracking, (4) Light show, (5) Playing music, and (6) Dot matrix display.

- **Ultrasonic Obstacle Avoidance:** The ultrasonic sensor detects objects in front of the robot, allowing it to navigate around them.
- **Ultrasonic Ranging:** Measure distances to objects using the ultrasonic sensor.
- **Line Tracking:** The infrared sensor enables the robot to follow a black line on a light surface.
- **Light Show:** Program the integrated LED lights for various visual effects.
- **Music Programming:** Utilize the buzzer to play programmed melodies or sounds.
- **Dot Matrix Display:** The micro:bit's LED matrix can be programmed to display patterns, text, or animations.

### 4.3 Control Methods

Control your robot car using either the included IR remote or a dedicated mobile application.

# Various control methods

Support mobile phone APP  
Bluetooth, infrared remote control



Figure 8: The robot car can be controlled via an IR remote control or a mobile application on a smartphone.

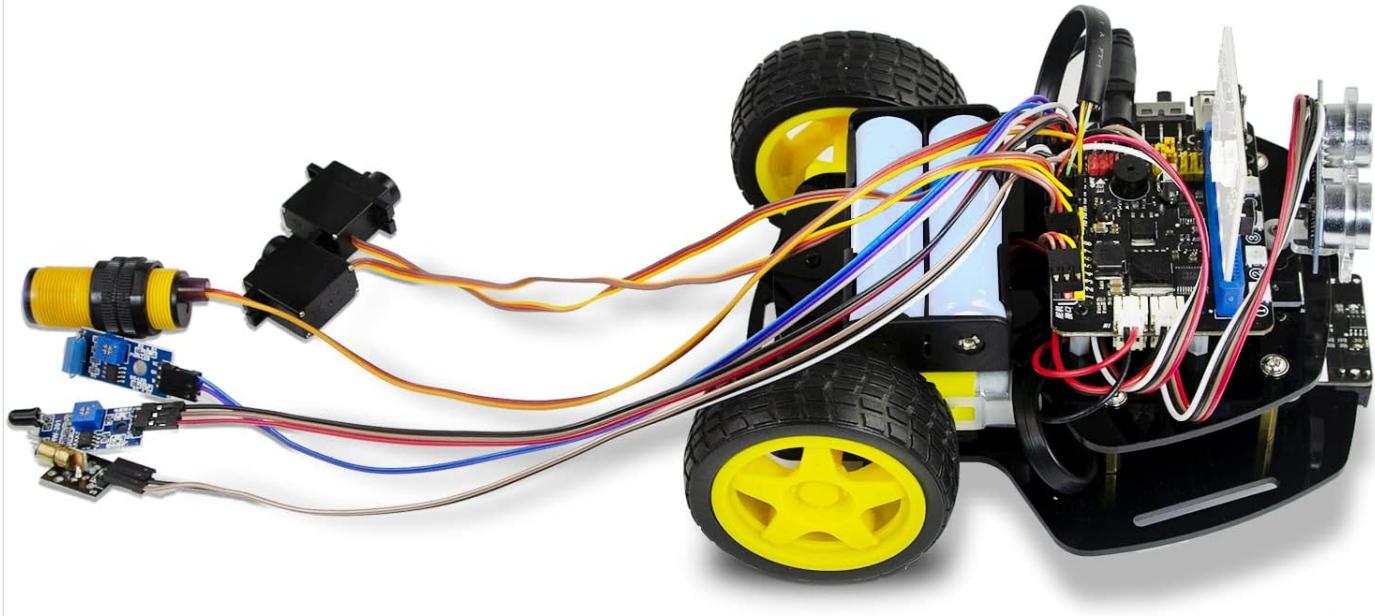
- **IR Remote Control:** Use the provided infrared remote to send commands to the robot. Ensure the IR receiver on the robot is unobstructed.
- **Bluetooth APP Control:** Download the exclusive XiaoR GEEK APP (available for Android and iOS) to control the robot via Bluetooth. Pair your mobile device with the micro:bit's built-in Bluetooth functionality.

## 4.4 Expansion Ports

The XR DBit expansion board provides numerous IO ports and reserved holes, allowing for the integration of additional sensors and modules to enhance the robot's capabilities.

# Extension Ports for Sensors

The XR Dbit expansion board can not only meet our daily development and learning needs, but also reserve a large number of IOs for sensor expansion.



## Expansion hole position

There are reserved holes on the side of the XR Dbit car, you can expand the hardware according to your creativity.

Figure 9: The robot car demonstrating external sensors connected to its expansion ports, highlighting the flexibility for customization.

## 5. MAINTENANCE

To ensure the longevity and optimal performance of your XR Dbit robot car, follow these simple maintenance guidelines:

- **Cleaning:** Regularly clean the chassis and sensors with a soft, dry cloth to remove dust and debris. Avoid using liquids directly on electronic components.
- **Battery Care:** If using a rechargeable 18650 battery, ensure it is charged according to its specifications. Do not overcharge or completely drain the battery. Store the battery in a cool, dry place when not in use.
- **Connections:** Periodically check all wire connections to ensure they are secure. Loose connections can lead to intermittent operation or component failure.
- **Storage:** Store the robot car in a dry environment, away from extreme temperatures and direct sunlight.
- **Software Updates:** Keep your micro:bit firmware and any associated programming environments (like Makecode) updated to the latest versions for best compatibility and features.

## 6. TROUBLESHOOTING

This section provides solutions to common issues you might encounter with your robot car.

Problem	Possible Cause	Solution
Robot does not power on.	<ul style="list-style-type: none"><li>No 18650 battery installed or battery is dead.</li><li>Battery case not connected to driver board.</li><li>Micro:bit not properly inserted.</li></ul>	<ul style="list-style-type: none"><li>Install a charged 18650 battery.</li><li>Ensure battery case is securely connected.</li><li>Re-insert micro:bit firmly into its slot.</li></ul>
Motors are not moving.	<ul style="list-style-type: none"><li>Incorrect wiring of motors to driver board.</li><li>No program loaded onto micro:bit.</li><li>Program error.</li></ul>	<ul style="list-style-type: none"><li>Check motor wiring against assembly instructions.</li><li>Upload a basic movement program to micro:bit.</li><li>Review your Makecode program for logical errors.</li></ul>
IR remote control not working.	<ul style="list-style-type: none"><li>Remote battery is dead.</li><li>IR receiver on robot is obstructed or not connected.</li><li>Micro:bit program does not include IR control logic.</li></ul>	<ul style="list-style-type: none"><li>Replace remote battery.</li><li>Ensure clear line of sight to IR receiver and check its connection.</li><li>Add IR remote control blocks to your Makecode program.</li></ul>
Bluetooth APP control not connecting.	<ul style="list-style-type: none"><li>Bluetooth not enabled on micro:bit or mobile device.</li><li>Incorrect APP or pairing procedure.</li><li>Micro:bit program does not include Bluetooth control logic.</li></ul>	<ul style="list-style-type: none"><li>Enable Bluetooth on both devices.</li><li>Follow the APP's pairing instructions.</li><li>Ensure your Makecode program supports Bluetooth communication.</li></ul>

## 7. SPECIFICATIONS

Detailed technical specifications for the XR DBit Robot Car Kit.

Feature	Detail
Product Dimensions	6.81 x 5.63 x 4.37 inches (173mm x 143mm x 111mm)
Item Weight	15.4 ounces (approx. 438g)
Model Number	XR DBit
Manufacturer Recommended Age	14 years and up
Compatibility	Micro:bit V1.5 / V2 (not included)
Remote Control Method	Android/iOS APP, Infrared remote control
Programming Environment	Makecode (JavaScript/Graphical)
Communication Interface	USART serial port/Bluetooth
Motor Type	TT DC motor

Feature	Detail
Estimated Battery Life	2 hours (with 18650 battery, not included)

## 8. SUPPORT AND CONTACT

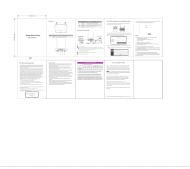
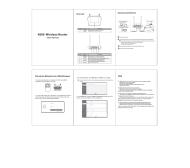
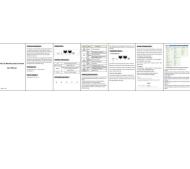
XiaoRGEEK is committed to providing comprehensive support for its products. If you encounter any issues, have questions about assembly, programming, or general operation, please refer to the following resources:

- **Online Tutorials:** Visit the official XiaoRGEEK website for detailed tutorials, programming examples, and project ideas.
- **Technical Support:** For specific technical assistance, please contact XiaoRGEEK customer support. Contact information can typically be found on the product packaging or the official website.
- **Community Forums:** Engage with other users and share knowledge on relevant online forums dedicated to micro:bit and robotics.

Your feedback is valuable and helps improve our products and support services.

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### Related Documents - XR DBit

	<p><a href="#">DBIT X30 4G LTE Router User Manual</a></p> <p>User manual for the DBIT X30 4G LTE Router, providing setup instructions, product specifications, interface descriptions, indicator details, working environment guidelines, and factory reset procedures.</p>
	<p><a href="#">300 Mbps Wireless N Router User Manual and Quick Installation Guide</a></p> <p>User manual and quick installation guide for the Dbit 300 Mbps Wireless N Router, covering setup, FAQ, FCC compliance, and security warnings.</p>
	<p><a href="#">N300 Wireless Router User Manual</a></p> <p>User manual for the N300 Wireless Router, providing setup instructions, connection guides, and troubleshooting tips.</p>
	<p><a href="#">DBIT 4G User Manual: Portable 4G LTE WiFi Hotspot Router</a></p> <p>User manual for the DBIT 4G portable 4G LTE WiFi hotspot router, featuring 150Mbps speed, SIM card slot, and a 6000mAh power bank. Includes setup, usage, and specifications.</p>
	<p><a href="#">DBIT 4G TD-LTE Wireless Data Terminal CPE User Manual</a></p> <p>Comprehensive user manual for the DBIT 4G TD-LTE Wireless Data Terminal CPE. Learn about setup, installation, interface, LED indicators, working environment, and router configuration for high-speed wireless internet access.</p>



### [Dbit AX1500 WiFi6 Mesh System Quick Installation Guide](#)

A quick installation guide for the Dbit AX1500 WiFi6 Whole Home Mesh WiFi System, detailing setup steps and app usage.