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› ICSTATION JQR-1 Desktop Robot Car Soldering Practice Kit User Manual

IS JQR-1

ICSTATION JQR-1 Desktop Robot Car Soldering Practice Kit User Manual

Model: JQR-1

1. PRODUCT OVERVIEW

The ICSTATION JQR-1 Desktop Robot Car Soldering Practice Kit is designed for adults, teens aged 15+, and school students interested in STEM and electronics. This DIY kit provides a hands-on soldering experience to build a functional robot car with various features, including remote control, network connectivity, dynamic expressions, time display, and ultrasonic obstacle avoidance.



Figure 1.1: The assembled ICSTATION JQR-1 Desktop Robot Car showcasing its features and control options.

2. SAFETY INFORMATION

This product is a soldering practice kit and involves working with heat and small electronic components. Please observe the following safety guidelines:

- Recommended for ages 15 and up. Adult supervision is advised for younger users.
- Use appropriate personal protective equipment, such as safety glasses, during soldering.
- Ensure adequate ventilation in your workspace to avoid inhaling solder fumes.
- Handle the soldering iron with extreme care to prevent burns.
- Keep all components and tools out of reach of small children.
- Verify component polarity and placement before soldering to prevent damage.

- Do not apply power to the circuit until all soldering is complete and connections have been checked.

3. WHAT'S IN THE BOX

The kit includes all necessary components for assembling the robot car. Please verify all parts are present before beginning assembly.

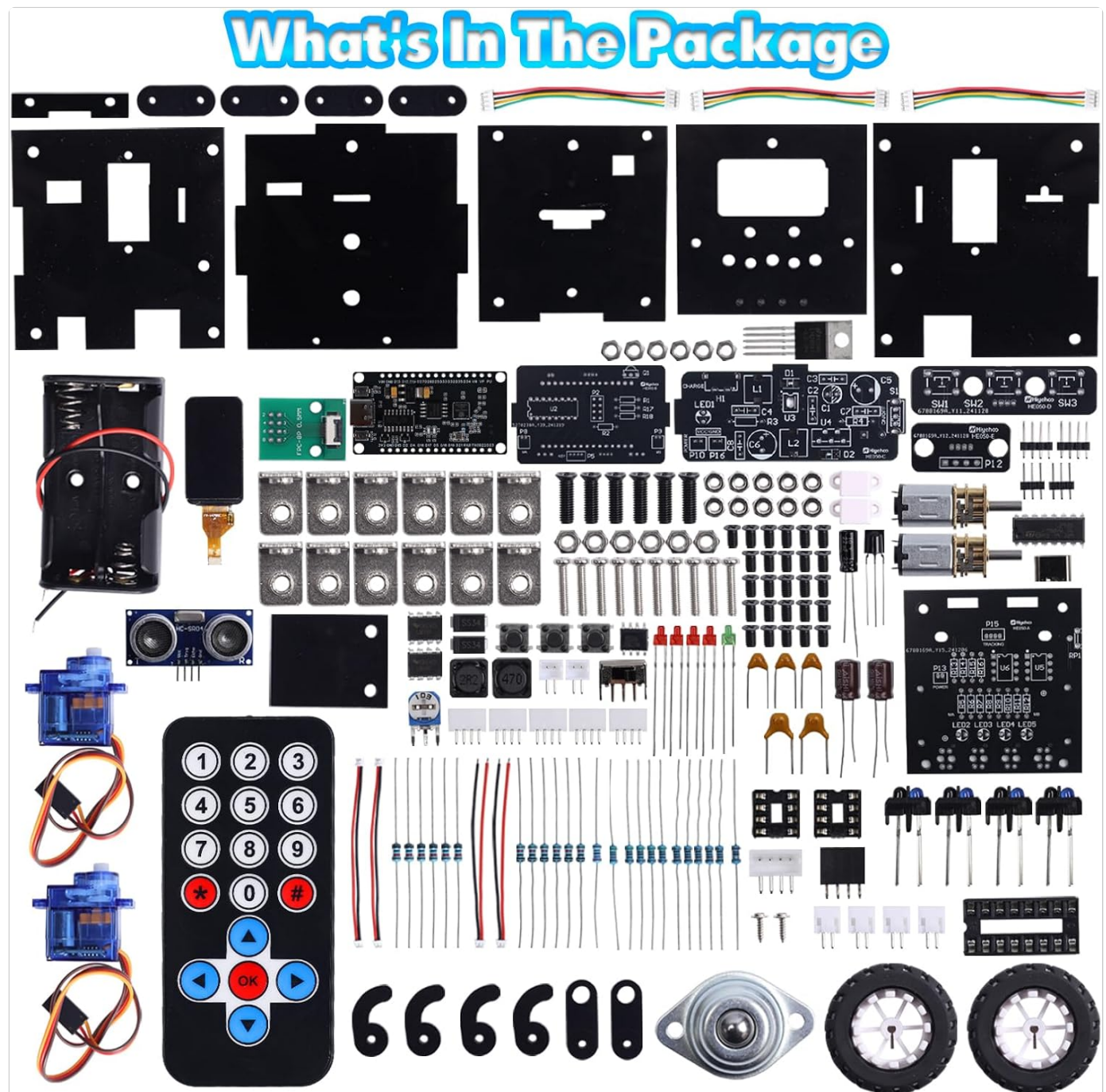


Figure 3.1: Overview of all components provided in the kit, including the PCB, motors, wheels, battery holder, ultrasonic sensor, and various electronic parts.

The kit contains:

- Robot Car Soldering Project PCB
- Motors and Wheels

- Ultrasonic Sensor
- Battery Holder
- Various Resistors, Capacitors, Diodes, and Transistors
- LEDs and Switches
- Microcontroller Chip (LM393)
- Connecting Wires
- Screws and Nuts
- Acrylic Panels for Chassis
- USB-C Charging Cable (for rechargeable batteries, not included)

Note: 2 x 14500 rechargeable lithium batteries (1000mAh recommended) **are not included** and must be purchased separately.

4. ASSEMBLY INSTRUCTIONS

This section guides you through the soldering and assembly process. Patience and attention to detail are crucial for a successful build. Refer to the provided video for visual guidance on general soldering techniques for a similar robot car kit.

4.1 General Soldering and Assembly Process (Refer to Video)

Video 4.1: Assembly tutorial for a mini cat robot car, demonstrating general soldering and component placement. While components may vary, the techniques are applicable.

1. **Prepare Components:** Identify all resistors, capacitors, LEDs, switches, and the LM393 chip.
2. **Solder Resistors:** Insert and solder resistors (e.g., 1K, 3.3, 10R, 51R) into their designated locations on the PCB. Bend the leads to secure them before soldering.
3. **Solder Capacitors:** Insert and solder capacitors. Pay attention to polarity: the longer pin is positive, the shorter is negative.
4. **Solder Potentiometers:** Insert and solder the potentiometers into their designated positions.
5. **Solder Triodes:** Insert and solder the triodes.
6. **Solder Switches:** Place and solder the switches onto the PCB.
7. **Solder LEDs:** Insert and solder the blue and white LEDs. Note polarity: longer lead is positive, shorter is negative. For the white LEDs, ensure their height is compliant with the photoresistance components for proper function.
8. **Solder LM393 Chip:** Insert the LM393 chip, ensuring the side with the small circle is installed upwards. Solder it securely.
9. **Prepare Motors:** Solder the motor wires to the motors.
10. **Attach Wheels:** Install the rubber rings onto the wheels and then fix the wheels to the motors using screws.
11. **Attach Battery Box:** Secure the battery box to the PCB using the provided 3M tape. Connect the battery wires to the designated positions on the PCB (red wire to positive, black wire to negative).
12. **Mount Motors:** Place the two assembled motors onto the 3M tape on the PCB. Insert the motor wires into the yellow pin connectors on the PCB.
13. **Install Universal Screw:** Finally, install the universal screw and fix it with a screw nut to complete the chassis assembly.

4.2 Important Correction for Step 1

Please note a correction for the initial assembly step regarding the 4-pin connector. The instruction manual may incorrectly state to solder the 4-pin connector to P4. The correct position is **P14**. Refer to the image below for clarification.

About the Manual

**We found a mistake in step 1.
Solder the 4Pin connector to P4, the
position "P4" needs to be modified to "P14".**

**The position in the picture is marked as P14,
please refer to the picture.**

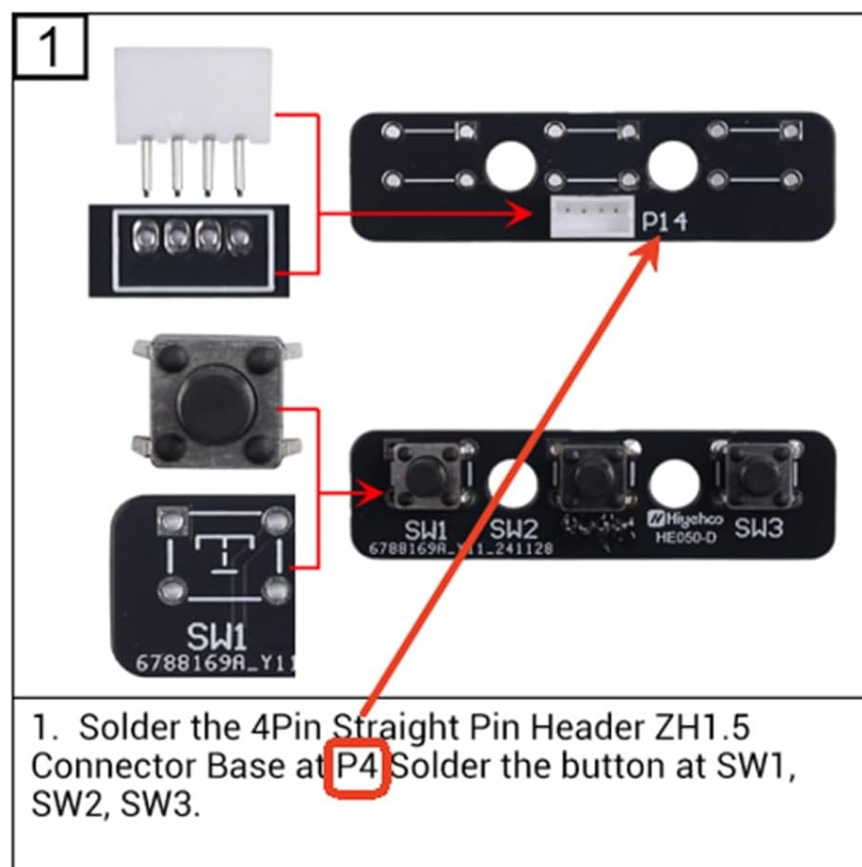


Figure 4.1: Correct placement for the 4-pin connector on the PCB, designated as P14.

5. OPERATING INSTRUCTIONS

Once assembled, the robot car offers various functionalities. Ensure batteries are installed and charged before operation.

Video 5.1: Demonstration of the ICSTATION Desktop Robot Car's features, including remote control, obstacle avoidance, line tracking, and display functions.

5.1 Basic Movements

The robot car is capable of the following movements:

- **Forward and Reverse:** Moves straight ahead or backward.
- **Left and Right Turning:** Executes turns in either direction.
- **360° Rotation:** Performs a full rotation in place.
- **Line Tracking:** Follows a designated line on the surface.



Figure 5.1: Visual representation of the robot's basic movement capabilities.

5.2 Control Modes

The robot car supports two control methods:

- **Remote Control:** Use the included traditional remote control for direct command.
- **Network Connectivity (Smartphone Control):** Connect your smartphone to the robot via a network or hotspot to control it through a dedicated application.

5.3 Dynamic Expressions and Time Display

The robot features an LCD screen that displays 5 dynamic facial expressions and real-time clock information when connected to the internet. Expressions can cycle automatically or be manually selected. The default time is Pacific Standard Time (PST), which can be adjusted to your local time zone.



Figure 5.2: The robot's LCD screen showing dynamic expressions and time display.

5.4 Ultrasonic Obstacle Avoidance

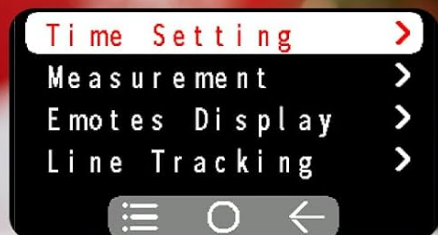
Equipped with an ultrasonic sensor, the robot can detect obstacles in its path and automatically maneuver to avoid collisions. This feature enhances operational safety in dynamic environments.

DIY Robot Car With LCD Display

Multi-function Desktop Robot Car



Time & Emotes Display



Menu



Networking Status



Figure 5.3: The robot utilizing its ultrasonic sensor for obstacle detection and avoidance.

5.5 Line Tracking

The robot can follow a black line. This function can be toggled on or off. When active, the robot moves forward along the line; when off, it operates in other movement modes.

Line-Following Robot Car

The tracking function can be turned on or off freely. When turned on, the car can only move forward along the black line. Only when the tracking function is turned off, the car will move in other directions.

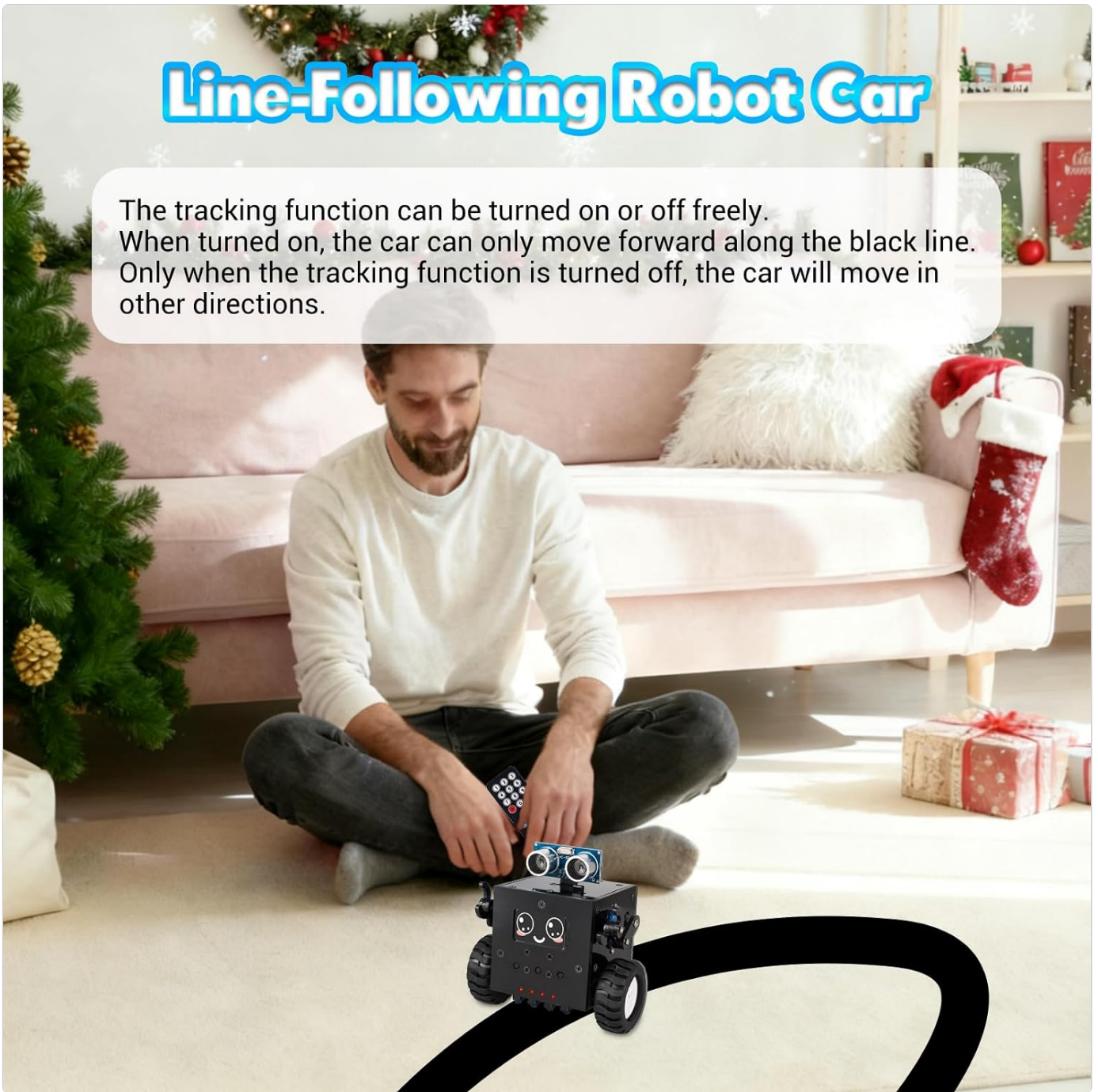


Figure 5.4: The robot demonstrating its line-following capability.

6. MAINTENANCE

To ensure the longevity and optimal performance of your robot car, follow these maintenance tips:

- **Cleaning:** Gently wipe the robot's exterior with a soft, dry cloth. Avoid using liquids or harsh chemicals.
- **Battery Care:** If using rechargeable batteries, ensure they are charged using the provided USB-C cable. The green LED indicates charging, and it turns off when fully charged. Remove batteries if the robot will not be used for an extended period.
- **Component Inspection:** Periodically check soldered joints for any signs of loosening or corrosion. Re-solder if necessary.
- **Storage:** Store the robot in a dry, cool place away from direct sunlight and extreme temperatures.

7. TROUBLESHOOTING

If you encounter issues with your robot car, refer to the following common troubleshooting steps:

- **Robot Not Powering On:**
 - Check if batteries are correctly inserted with the correct polarity.
 - Ensure batteries are fully charged.
 - Verify all power connections on the PCB are securely soldered.
- **Motors Not Functioning:**
 - Inspect motor wire connections to the yellow pin connectors on the PCB.
 - Check the soldering of the motor wires to the motors themselves.
 - Ensure the motors are securely mounted and not obstructed.
- **Incorrect Movement/Control Issues:**
 - Verify all components (resistors, capacitors, chips) are correctly placed and soldered according to the instructions, paying close attention to polarity.
 - Check for any accidental solder bridges between pins or traces on the PCB.
 - Ensure the remote control has working batteries and is properly paired (if applicable).
 - For network control, confirm the robot is connected to the correct Wi-Fi network/hotspot.
- **Obstacle Avoidance Not Working:**
 - Ensure the ultrasonic sensor is correctly installed and connected.
 - Check for any physical obstructions blocking the sensor.
- **Physical Fit Issues (e.g., Servo Motors):**
 - Some components, like servo motors, may require minor adjustments (e.g., gentle filing of acrylic panels) to fit perfectly. Exercise caution to avoid damaging parts.

8. SPECIFICATIONS

Feature	Specification
Product Dimensions	3.15 x 0.5 x 1.8 inches
Item Weight	0.8 ounces
Model Number	JQR-1
Recommended Age	15 years and up

Control Modes	Remote Control, Network (Smartphone)
Special Features	Dynamic Expressions, Time Display, Ultrasonic Obstacle Avoidance, Line Tracking

Size Information

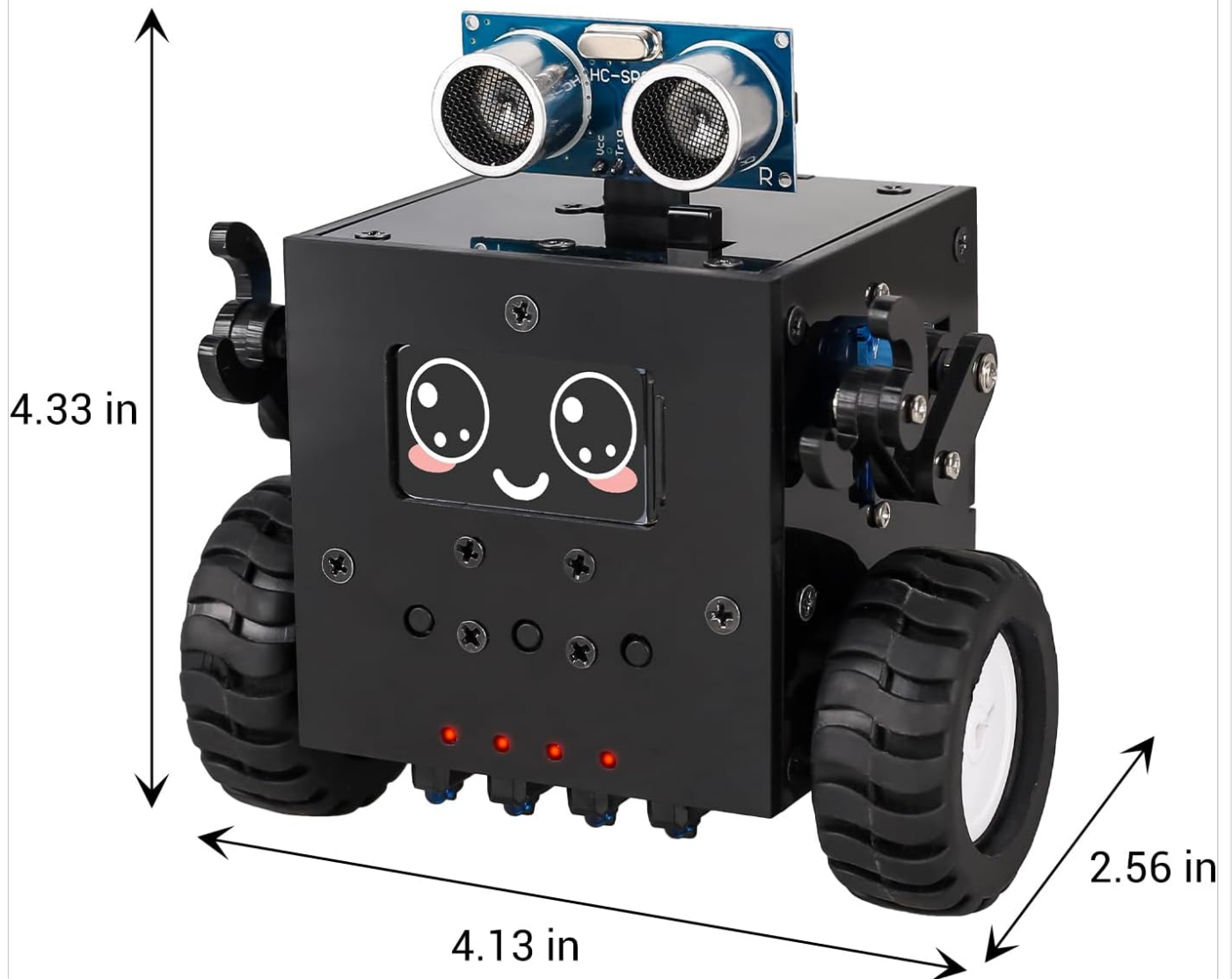


Figure 8.1: Dimensions of the ICSTATION JQR-1 Desktop Robot Car.

9. WARRANTY AND SUPPORT

For any questions, technical support, or warranty inquiries regarding your ICSTATION JQR-1 Desktop Robot Car Soldering Practice Kit, please contact the manufacturer directly through their official channels. Refer to the product packaging or the seller's information for contact details.

ASK A QUESTION ABOUT THIS MANUAL

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

Name

Anonymous

Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. [Privacy details](#).

Question

Example: How do I reset this device or fix this error?

Details

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

Submit question