ELEGOO Conqueror Robot Tank Kit User Manual

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ELEGOO Conqueror Robot Tank Kit

Launch Date: November 20, 2018
Price: $99.98

Introduction

For young students and robotics fans, the ELEGOO Conqueror Robot Tank Kit is a flexible and teaching robotics set. It's great for kids and people who are just starting because it lets them learn about electronics, programming, and robots by doing. Sensors, motors, a camera, and a driver are just a few of the parts that come in the kit. With Arduino IDE and ElegooKit, users can program the robot to do many things, such as following a line, avoiding obstacles, and being controlled from afar via WIFI. The military theme makes learning more fun and gives you something to think about at the same time. It's great for people who want to learn how to code, build things, and do engineering.

Specifications

- **Brand Name**: ELEGOO
- **Age Range**: Suitable for kids
- **Educational Objective**: Enhances creative skills, programming skills, concentration, imagination development, and construction skills.
- **Battery Type**: Lithium (7.4V Lithium Battery Pack)
- **Voltage**: 7.2~8.4V
- **Battery Life**: Approximately 2 hours (in line-tracking mode)
- **Communication**: UART/WIFI (ESP32-WROVER)
- **Motor**: DC Servo Motor 1:48

- **Motor Driver**: Dual-channel DRV8835 Driver Chip
- **Controller**: UNO R3
- **Programming Software**: Arduino IDE, ElegooKit
- **Tracking Method**: Infrared Tracking
- **Distance Measuring Method**: Ultrasonic Ranging Sensor
- **Input**: Infrared photoelectric sensor, ultrasonic sensor, buttons
- **Output**: Motor, servo gimbal, LED
- **Camera**: OV2640
- **WIFI Mode**: ESP32-WROVER
- **Gimbal**: Two degrees of gimbal with two SG90 servos
- **Item Dimensions**: 8.58 x 8.78 x 7.4 inches
- **Item Weight**: 3.4 Pounds

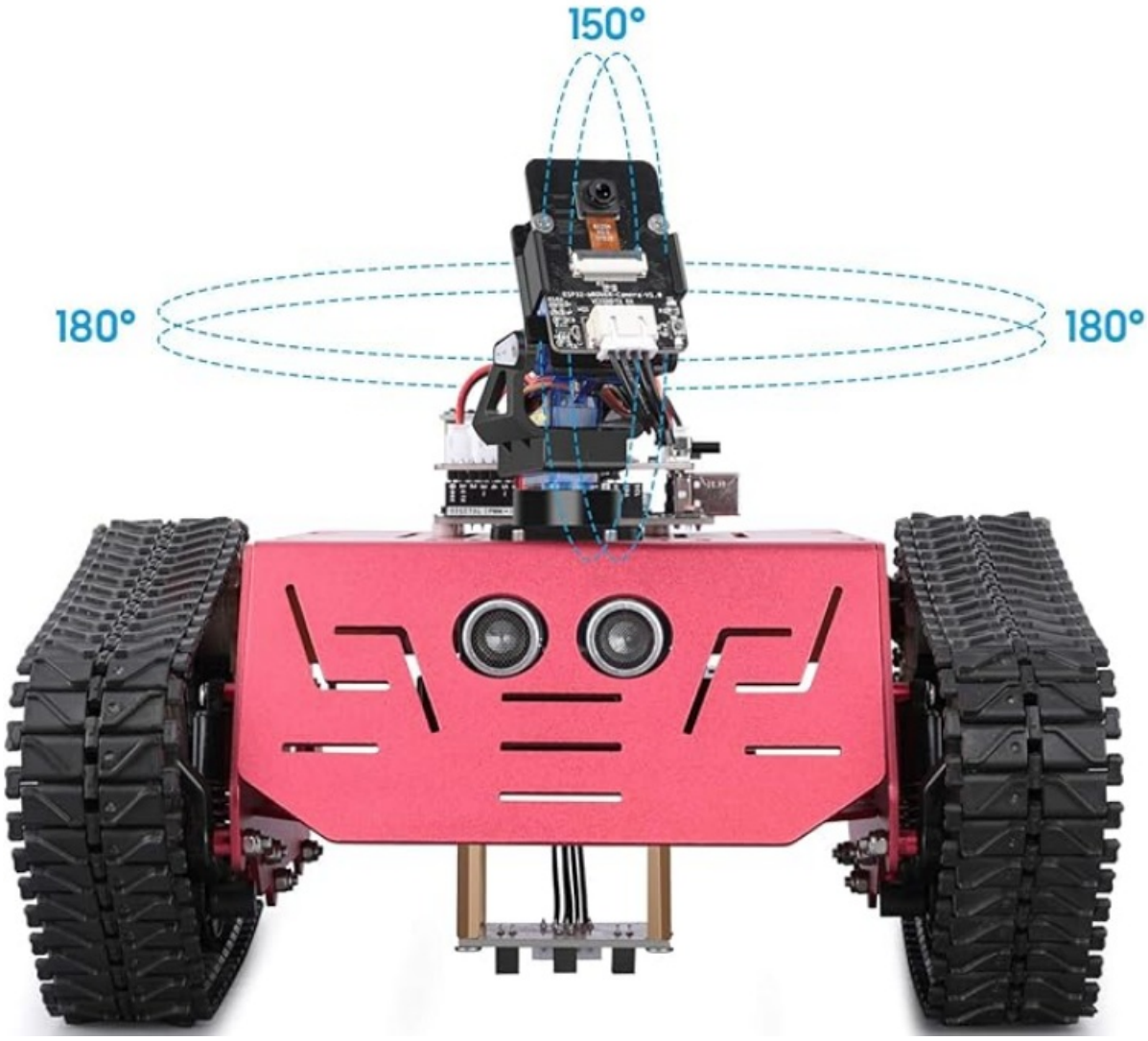
Package Includes

- ELEGOO Conqueror Robot Tank Kit (assembled components)
- UNO R3 Controller
- Lithium Battery Pack (7.4V)
- Infrared Photoelectric Sensor
- Ultrasonic Sensor
- Two DC Servo Motors
- Camera Module (OV2640)
- Motor Driver (DRV8835)
- Gimbal Assembly with SG90 Servo Motors
- Detailed Assembly Instructions
- WIFI Module (ESP32-WROVER)
- Other necessary components and cables

Features

1. **Value as an Educational Tool:** The ELEGOO Conqueror Robot Tank Kit is a great way to learn. People of all skill levels can use it to understand basic ideas in programming, robots, and electronics. By building the robot, users get hands-on experience that helps them understand how technology works better. This builds important STEM skills like imagination, problem-solving, and logical thinking.
2. **Easy to Put Together:** The ELEGOO Conqueror Robot Tank Kit is meant to be user-friendly, with clear, easy-to-follow instructions. This makes it perfect for robotics beginners and people who like to do things themselves. The kit comes with everything you need to put it together, and you don't need to know anything about robots to do it. Each part is marked and ready to be easily put together, which makes the building process go more smoothly.
3. **Remote Control**: Either a smartphone or a suitable remote control can be used to control the robot from a distance using Bluetooth. The ELEGOO Conqueror Robot Tank can easily move over different types of ground thanks to this feature. The remote control is easy to use and gives users full control over the robot's movements, so it can be used for both fun and teaching purposes.
4. **Customizable Programming:** The ELEGOO Conqueror Robot Tank Kit works with the Arduino IDE for programming, so users can change how the robot acts in any way they want. Users can try out different moves, functions, and behaviors, and while they do so, they can learn important coding skills. Because Arduino code is open source, there are a lot of ways to make it your own.

5. **Tank-Like Movement:** The ELEGOO Conqueror Robot Tank can move like a tank because it has strong tank tracks and powerful DC motors. The tracks make sure that the vehicle stays stable and has good grip on a variety of surfaces, both inside and outside. This lets it get around small problems and work well in different settings, which increases its usefulness and adaptability.
6. **Camera Module Optional:** Some versions of the kit come with a camera module that can be used to give the robot visual skills. This lets the camera feed live video to the user, which lets it do advanced tasks like surveillance and research. For people who want to learn more about FPV (First-Person View) robotics and how cameras and sensors work with robots, this is the right addition.
7. **Learn STEM:** The ELEGOO Conqueror Robot Tank Kit is a great way to learn STEM subjects like science, technology, engineering, and math. It gives kids, teens, and even adults information about many STEM careers and helps them learn useful skills in areas like coding, electronics, and robotics. Members of the public can connect with the kit and see how STEM concepts are used in real life.
8. Scratch programming and the Arduino IDE are both supported by the ELEGOO Conqueror Robot Tank Kit. You can program it using the ElegooKit app for block-based programming or the Arduino IDE for text-based programming. This lets users pick the writing style that works best for them, so the kit can be used by both new and experienced programmers. This lets users play around with the robot's sounds, lights, sensors, and moves, learning more complicated coding ideas as they go.
9. **FPV Mode (First-Person View):** This mode lets users control the robot as if they were taking the wheel. The ELEGOO Conqueror Robot Tank can send video over Wi-Fi, which makes controlling it more realistic. Keep in mind that the camera can be moved horizontally from 0° to 180°, so people can drive the tank and see what the robot sees. This is an interesting trait for people who are interested in robotics and how remote controls work.

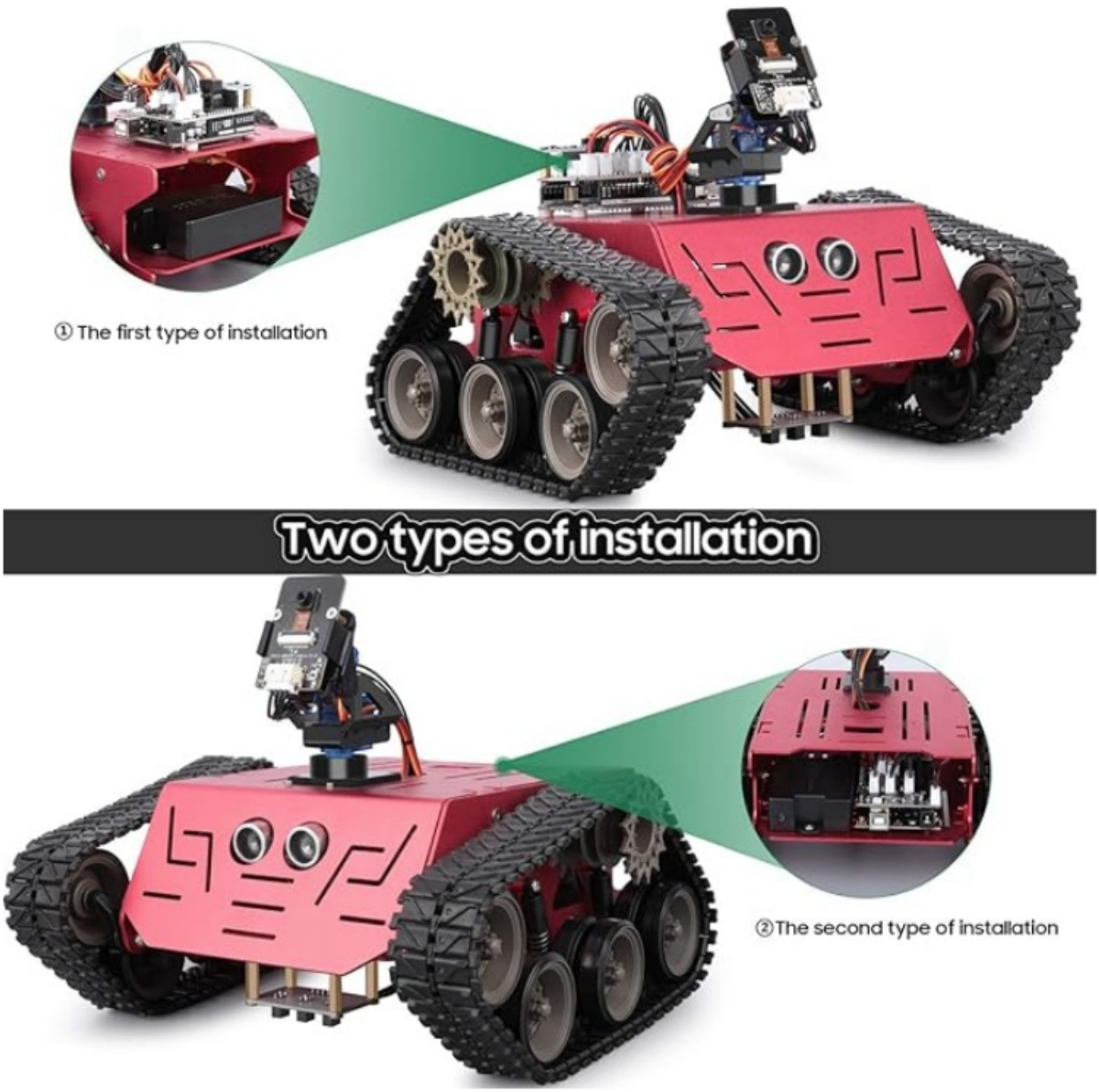


10. **Getting Around objects:** The robot has ultrasonic sensors that let it find and get around objects on its own. The ELEGOO Conqueror Robot Tank can get around objects without running into them by sending out sound waves and figuring out how far away they are. This model is a great way to start learning about sensor-based navigation and autonomous robots because it is so easy to use.
11. **Line Tracking Mode:** The ELEGOO Conqueror Robot Tank Kit has a mode called “line tracking,” which makes the robot follow a set path. The robot uses infrared sensors to find the line on the ground and changes how it moves to stay on the path that was set. This mode is ideal for introducing users to the concepts of path-following robots, commonly used in automated systems and robotics competitions.
12. **DIY Robot Car Kits:** The ELEGOO Conqueror Robot Tank Kit is a fantastic entry into the world of DIY robotics. The kit encourages users to build their robot from the ground up, teaching them how different components such as motors, sensors, and boards interact to make a fully functional robot. It’s a perfect starting point for anyone interested in electronics and robotics.
13. **Interactive STEM Projects:** The ELEGOO Conqueror Robot Tank Kit provides a great way to engage with electronics, robotics, and programming through interactive, hands-on projects. The kit supports different modes like auto-go, infrared control, obstacle avoidance, and line tracking. Each mode teaches a unique aspect of robotics, such as autonomous movement and sensor integration, keeping users engaged and motivated to learn more.
14. **Perfect Gift for Kids and Teens:** The ELEGOO Conqueror Robot Tank Kit is a great gift for children, teens, or anyone starting their journey into electronics and robotics. It’s ideal for birthdays, Christmas, or as a New Year gift, providing a fun and educational experience. The kit is designed to spark curiosity and interest in

technology, making it a perfect introduction to the exciting world of STEM.

15. **Enhances Problem-Solving and Critical Thinking:** By building and programming the ELEGOO Conqueror Robot Tank, users develop essential problem-solving and critical thinking skills. As users face challenges during assembly, programming, and mode selection, they learn to think analytically and creatively. The kit encourages experimentation, trial-and-error, and continuous learning, making it a valuable tool for developing cognitive and technical skills.

How to Install



Step 1: Prepare the Chassis

1. Open the package and carefully take out all the components.
2. Identify the main chassis, which is the red metal frame with the tracks.
3. Locate the two mounting holes on the top of the chassis.

Step 2: Install the Main Board

1. Take the main board (the one with the microcontroller) and align it with the mounting holes on the chassis.

2. Use the Phillips-head screwdriver to secure the board to the chassis using the provided screws.

Step 3: Connect the Motors

1. Identify the two motors with the gearboxes.
2. Locate the motor driver board, which is a small board with connectors for the motors.
3. Connect the motor wires to the corresponding connectors on the motor driver board.
4. Connect the motor driver board to the main board using the provided cables.

Step 4: Install the Sensors (Optional)

1. If you want to use the sensors included in the kit, follow the instructions in the manual to connect them to the main board.
2. The image you provided shows two types of installations for the sensors. Choose the one that suits your needs.

Step 5: Connect the Battery

1. Locate the battery connector on the main board.
2. Connect the battery to the connector.

Step 6: Install the Camera (Optional)

1. If you want to use the camera, follow the instructions in the manual to connect it to the main board.
2. Mount the camera to the camera mount using the screws provided.

Step 7: Power On

1. Connect the battery to the main board.
2. The robot tank should power on and the LEDs on the main board should light up.

Additional Tips:

- If you have any difficulty following the instructions, refer to the detailed manual provided with the kit.
- If you're not comfortable with soldering, you can use the provided connectors to connect the components.
- Be careful not to damage any of the components while installing them.
- Test the robot tank after each step to make sure everything is working properly.

Usage

- **Learn programming** through the Arduino IDE or ElegooKit.
- **Experiment with sensors** (ultrasonic and infrared) to understand how robots detect and avoid obstacles.
- **Explore wireless control** through WIFI and control the robot via smartphone or PC.
- **Build a custom robot** by assembling the kit and then modifying it for different tasks and challenges.

Care and Maintenance

- **Battery Care**: Always charge the lithium battery pack using the recommended charger. Avoid overcharging, and store the battery in a cool, dry place.
- **Regular Cleaning**: Gently clean the robot using a dry cloth. Avoid using water or harsh chemicals that may damage the components.
- **Sensor Maintenance**: Keep the sensors clean to ensure accurate readings. Wipe the infrared and ultrasonic sensors carefully with a soft cloth.
- **Programming Updates**: Regularly update the robot's software and firmware to ensure the latest features and bug fixes are applied.

Troubleshooting

Robot Not Turning On:

- Check the battery charge. Ensure the battery is properly connected and charged.
- Verify the power switch is in the "ON" position.

Robot Not Responding to Remote Control:

- Ensure the WIFI connection is stable.
- Check that the communication mode (UART/WIFI) is correctly set up and functioning.
- Restart the robot and the remote control interface.

Camera Not Displaying Feed:

- Ensure the camera module (OV2640) is properly connected.
- Check the camera's settings in the programming interface to ensure it's enabled.

Obstacle Avoidance Not Working:

- Clean the ultrasonic sensor to ensure it's free from debris.
- Verify the sensor's alignment and wiring.

Servo Motors Not Moving Correctly:

- Inspect the servo connections and ensure they are securely attached.
- Test the servos in the programming interface to ensure proper functionality.

Pros and Cons

Pros	Cons
Easy assembly with clear instructions	May require additional tools (e.g., tweezers)
Versatile functionalities	Limited battery life (2 hours)
Compatible with Arduino IDE	Some users may find programming challenging
Durable construction	Initial setup may take time

Contact Information

https://www.elegoo.com/

Warranty

The ELEGOO Conqueror Robot Tank Kit comes with a one-year warranty covering manufacturing defects. Ensure you retain your purchase receipt for warranty claims.

FAQs

What is the ELEGOO Conqueror Robot Tank Kit?

The ELEGOO Conqueror Robot Tank Kit is an educational robotics kit designed to teach users about robotics, programming, and electronics using hands-on experience with sensors, motors, and cameras.

What programming languages are supported by the ELEGOO Conqueror Robot Tank Kit?

The ELEGOO Conqueror Robot Tank Kit supports programming through the Arduino IDE and ElegooKit, allowing users to write code and customize the robot's behavior.

What sensors are included in the ELEGOO Conqueror Robot Tank Kit?

The ELEGOO Conqueror Robot Tank Kit includes an ultrasonic sensor for distance measuring and an infrared photoelectric sensor for line tracking and obstacle detection.

How is the ELEGOO Conqueror Robot Tank Kit powered?

The ELEGOO Conqueror Robot Tank Kit is powered by a 7.4V lithium battery pack, providing up to 2 hours of operation in line-tracking mode.

What is the battery life of the ELEGOO Conqueror Robot Tank Kit?

The ELEGOO Conqueror Robot Tank Kit offers a battery life of about 2 hours in line-tracking mode on a fully charged 7.4V lithium battery.

What are the main functions of the ELEGOO Conqueror Robot Tank Kit?

The ELEGOO Conqueror Robot Tank Kit can perform various functions, including line tracking, obstacle avoidance, and remote control through WIFI, as well as camera-driven FPV exploration.

What motors are used in the ELEGOO Conqueror Robot Tank Kit?

The ELEGOO Conqueror Robot Tank Kit uses DC servo motors with a 1:48 gear ratio, powered by a dual-channel DRV8835 motor driver chip for efficient movement.

References

- User Manual