

## OFFIGAM Smart Car Kit

# OFFIGAM Smart Car Kit Instruction Manual

DIY Remote Control Vehicle Chassis Compatible with Arduino

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## 1. INTRODUCTION

The OFFIGAM Smart Car Kit provides a robust and versatile chassis for DIY remote control vehicle projects. Designed for compatibility with micro-controllers like Arduino, this kit offers a foundation for learning robotics, programming, and electronics. Its double-layer design enhances stability and performance, making it suitable for various educational and hobbyist applications, including obstacle avoidance and speed measurement.

## 2. SAFETY INFORMATION

- This product contains small parts and is recommended for users aged 3 years and up. Adult supervision is advised for younger users during assembly and operation.
- Ensure all electrical connections are secure to prevent short circuits.
- Use appropriate power sources as specified for your chosen micro-controller and motors.
- Keep the kit away from water and extreme temperatures.
- Handle components with care to avoid damage.

## 3. PACKAGE CONTENTS

Verify that all components listed below are present in your package:

- Acrylic chassis plates (double layer)
- DC gear motors (2 units)
- Wheels with rubber tires (2 units)

- Caster wheels (2 units)
- Battery compartments (2 units)
- Fasteners (screws, nuts, standoffs)
- Tachometer encoder discs (2 units)



Image 3.1: Overview of all components included in the OFFIGAM Smart Car Kit.

## 4. SETUP & ASSEMBLY

The mechanical structure of this car kit is designed for straightforward assembly. Follow these steps to build your chassis:

1. **Prepare the Chassis Plates:** Identify the top and bottom acrylic chassis plates. Ensure any protective film is removed.
2. **Install Motors:** Attach the two DC gear motors to the designated slots on the bottom chassis plate using the provided screws and nuts. Ensure they are securely fastened.
3. **Attach Wheels:** Press the wheels onto the motor shafts. The tachometer encoder discs should be

placed between the motor and the wheel, aligning with the sensor slots if you plan to use them.

4. **Mount Caster Wheels:** Install the two caster wheels at the front and rear of the bottom chassis plate using the small screws. These provide stability and allow for smooth movement.
5. **Assemble Double Layer:** Use the provided standoffs to connect the top chassis plate to the bottom plate. This creates the double-layer structure, offering space for mounting additional electronics like an Arduino board, motor drivers, and sensors.
6. **Install Battery Compartments:** Secure the two battery compartments to the chassis. These are designed to provide convenient power distribution throughout the system.
7. **Initial Wiring (Optional):** Connect the motor wires to a motor driver (not included) and the battery compartments to your power distribution system.



Image 4.1: Fully assembled OFFIGAM Smart Car Kit chassis, showcasing the double-layer design and motor/wheel placement.



Image 4.2: Another view of the assembled chassis, highlighting the caster wheels for omnidirectional movement.

## 5. OPERATING INSTRUCTIONS

This car kit provides the mechanical base for a smart robot. Its operation depends on the micro-controller (e.g., Arduino) and sensor modules you integrate and program.

- **Powering the System:** Connect your chosen power source (batteries in the compartments) to your micro-controller and motor driver. Ensure correct polarity.
- **Micro-controller Integration:** Mount your Arduino or compatible micro-controller onto the top chassis plate. Connect the motor driver to the micro-controller and the motors.
- **Sensor Integration:** For obstacle avoidance, integrate sensor modules (e.g., ultrasonic sensors) and connect them to your micro-controller.
- **Programming:** Develop and upload code to your micro-controller to control motor movement, interpret sensor data, and implement desired functionalities like obstacle avoidance or line following.
- **Tachometer Encoder:** The integrated tachometer encoders allow for precise measurement of distance and speed, which can be utilized in your programming for advanced navigation and control.

## 6. MAINTENANCE

- **Cleaning:** Periodically clean the chassis and wheels to remove dust and debris. Use a soft, dry cloth. Avoid harsh chemicals.
- **Fastener Check:** Regularly inspect all screws and nuts to ensure they remain tight. Re-tighten if necessary to maintain structural integrity.
- **Motor Inspection:** Check motor connections for any loose wires. Ensure motors spin freely without obstruction.
- **Battery Compartments:** Ensure battery terminals are clean and free of corrosion. Replace batteries as needed.

## 7. TROUBLESHOOTING

Problem	Possible Cause	Solution
Car does not move.	No power to motors; loose wiring; incorrect motor driver connection; programming error.	Check battery connections and charge; verify all motor and driver wiring; review micro-controller code for motor control logic.
One motor not working.	Faulty motor; loose connection to motor driver; motor driver channel issue.	Inspect motor wiring; test motor directly if possible; swap motor driver channels to isolate issue.
Erratic movement.	Loose wheel; unstable power supply; interference; programming logic.	Ensure wheels are firmly attached; check battery level; review code for control algorithms.
Sensors not responding.	Incorrect wiring; faulty sensor; programming error.	Verify sensor connections to micro-controller; test sensor functionality; debug sensor reading code.

## 8. SPECIFICATIONS

- **Product Dimensions:** 5.91 x 4.72 x 1.97 inches (15 x 12 x 5 cm)
- **Item Weight:** 10.2 ounces
- **Material:** Plastic and Metal (Acrylic chassis)
- **Recommended Age:** 3 years and up
- **Compatibility:** Arduino and similar micro-controllers
- **Features:** Double-layer design, tachometer encoder support

## 9. WARRANTY & SUPPORT

For specific warranty information or technical support regarding your OFFIGAM Smart Car Kit, please refer to the retailer or manufacturer's official website where the product was purchased. Keep your proof of purchase for any warranty claims.

