

Treedix MG996R 360-Degree Metal Gear High-Torque Servo Motor Instruction Manual

Model: TRX2-0052

Introduction

This manual provides detailed instructions for the proper setup, operation, and maintenance of your Treedix MG996R 360-Degree Metal Gear High-Torque Servo Motor. Please read this manual thoroughly before use to ensure optimal performance and longevity of the product. This servo motor is designed for continuous rotation applications in various projects, including smart cars, robots, boats, RC helicopters, and mechanical arms.

Product Overview

The Treedix MG996R is an upgraded high-torque servo motor featuring metal gears for enhanced durability and reliability. Unlike standard servos, the MG996R offers 360-degree continuous rotation, making it suitable for applications requiring ongoing rotational movement rather than precise angular positioning. It is compatible with most standard receiver connectors, including Futaba, Hitec, Sanwa, and GWS.



Image: Treedix MG996R Servo Motor. This image displays the compact black servo motor with its metal gear visible, a three-wire connector (orange, red, brown), and a multi-point servo horn attached. The label "MG996R DIGI HI-TORQUE" is visible on the side.

Key features include:

- **360-Degree Continuous Rotation:** Allows for ongoing rotational movement in both forward and reverse directions.
- **Metal Gear:** Provides increased strength, durability, and resistance to wear compared to plastic gears.
- **High Torque:** Delivers significant rotational force for demanding applications.
- **Wide Compatibility:** Works with common receiver connectors like Futaba, Hitec, Sanwa, and GWS.
- **Versatile Applications:** Ideal for 1:10 and 1:8 scale vehicles, robots, manipulators, RC boats, and certain fixed-wing aircraft.

Specifications

Feature	Value
Working Torque	13 KG / cm
Working Voltage	3.0V - 7.2V
Operating Temperature	-30°C ~ +60°C
Plug Specification	JR FUTABA universal
Working Neutral Zone	4 microseconds
Tension (4.8V)	9.4 kg / cm
Tension (6.0V)	11 kg / cm
Reaction Speed (4.8V)	0.17 seconds / 60 degrees
Reaction Speed (6.0V)	0.13 seconds / 60 degrees
Connection Cable Length	30 cm
Gear Form	Metal Gear
Size	40.7 x 19.7 x 42.9 mm (1.68 x 0.77 x 1.6 inches)
Item Weight	3.2 ounces

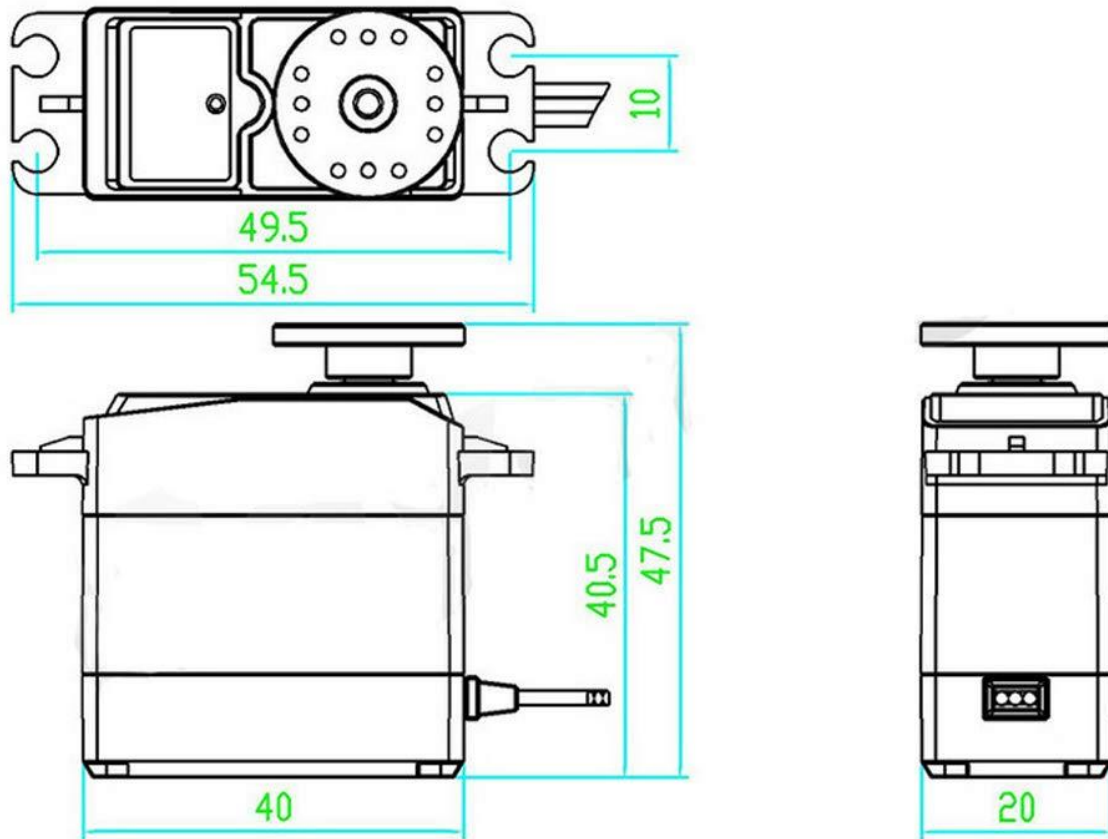


Image: Technical drawing showing the dimensions of the MG996R servo motor in millimeters, including length, width, and height from multiple perspectives.

Package Contents

Each package typically includes the following components:

- 2 x MG996R Servo Motor
- 8 x Rudder Discs (various shapes)
- 8 x Fixing Screws

- 8 x Rubber Sleeves
- 8 x Aluminum Sleeves



Image: A complete set of Treedix MG996R servo motor components. It shows one servo motor, multiple servo horns (rudder discs) of different designs, various screws, rubber sleeves, and aluminum sleeves, all laid out on a white background.

Setup

Follow these steps to set up your MG996R servo motor:

1. **Identify Wires:** The servo motor has three wires:
 - **Brown:** Ground (GND)
 - **Red:** Power (VCC, typically 3.0V-7.2V)
 - **Yellow/Orange:** Signal (PWM input)
2. **Connect to Controller:** Connect the servo's wires to your microcontroller (e.g., Arduino) or RC receiver according to its pinout. Ensure correct polarity for power and ground connections to prevent damage.
3. **Mount the Servo:** Use the provided fixing screws and rubber/aluminum sleeves to securely mount the servo motor in your application.
4. **Attach Rudder Disc/Horn:** Select the appropriate rudder disc (servo horn) for your application and attach it to the servo's output shaft using the small screw provided.



Image: An overhead view of the Treedix MG996R servo motor and its accompanying accessories. The servo motor is positioned at the top left, connected by its three-wire cable. Various black servo horns, screws, and mounting hardware are neatly arranged around it.

Operating Instructions

The MG996R 360-degree servo motor operates using Pulse Width Modulation (PWM) signals, similar to standard servos, but it controls continuous rotation speed and direction rather than a specific angle.

1. **Control Signal:** The servo expects a PWM signal on its signal wire. The pulse width determines the motor's behavior:
 - **Neutral Pulse (e.g., 1500 microseconds):** Stops the motor.
 - **Pulse Width Less Than Neutral:** Rotates the motor in one direction (e.g., counter-clockwise). A smaller pulse width results in faster rotation.
 - **Pulse Width Greater Than Neutral:** Rotates the motor in the opposite direction (e.g., clockwise). A larger pulse width results in faster rotation.
2. **Power Supply:** Ensure your power supply can provide sufficient current and voltage (3.0V-7.2V) to the servo, especially under load, to avoid inconsistent operation.
3. **Testing:** Use a servo tester or microcontroller code to send varying pulse widths to observe the motor's response.

Video: Demonstration of the Treedix MG996R servo motor's 360-degree continuous rotation. The video shows a servo motor connected to a servo tester, and as the pulse width is adjusted, the servo horn rotates continuously in both directions, demonstrating speed control.

Maintenance

Proper maintenance ensures the longevity and reliable operation of your servo motor:

- **Keep Clean:** Regularly clean the exterior of the servo to prevent dust and debris from entering the housing, especially around the output shaft.
- **Avoid Overloading:** Do not exceed the specified working torque. Excessive load can damage the motor or gears.
- **Check Connections:** Periodically inspect all wire connections for looseness or damage. Secure connections are crucial for consistent performance.
- **Lubrication:** The metal gears are pre-lubricated. Avoid disassembling the servo for lubrication unless absolutely necessary and by experienced personnel.
- **Storage:** Store the servo in a dry, cool environment away from direct sunlight and extreme temperatures.

Troubleshooting

If you encounter issues with your MG996R servo motor, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
Servo not responding	No power, incorrect wiring, faulty signal, damaged servo.	Verify power supply (voltage and current), check all wire connections (Ground, Power, Signal) for correct polarity and secure fit. Test with a known working signal source. If still unresponsive, the servo may be damaged.
Inconsistent or erratic movement	Insufficient power, noisy signal, mechanical binding, incorrect pulse width.	Ensure the power supply can deliver adequate current, especially under load. Check for interference on the signal line. Inspect for any physical obstructions preventing smooth movement. Verify the pulse width values sent to the servo are within the expected range for continuous rotation.
Excessive noise during operation	Normal for metal gears, mechanical stress, internal damage.	Some noise is normal for metal gear servos. If the noise is unusually loud or accompanied by poor performance, check for mechanical stress on the output shaft or internal damage. Avoid forcing the servo against resistance.
Servo gets hot	Overload, continuous operation at high speed, insufficient cooling.	Reduce the load on the servo. Allow for cooling periods during prolonged high-speed operation. Ensure adequate airflow around the servo if enclosed.

Warranty and Support

Treedix products are manufactured to high-quality standards. For any technical assistance, warranty claims, or support inquiries, please contact Treedix customer service through the retailer where the product was purchased or visit the official Treedix website for contact information. Please retain your proof of purchase for warranty purposes.

For more information, visit the [Treedix Store on Amazon](#).