Miuzei MG90S Servo

Miuzei MG90S 9G Micro Servo Motor Instruction Manual

Model: MG90S Servo

1. Introduction

Thank you for choosing the Miuzei MG90S 9G Micro Servo Motor. This compact and lightweight servo is designed for precision and durability, featuring metal gears for enhanced performance. It is an ideal component for various projects including RC airplanes, helicopters, quadcopters, boats, cars, electronics DIY, and robotics.
This manual provides essential information for the proper setup, operation, and maintenance of your MG90S servo motor. Please read it thoroughly before use to ensure safe and optimal performance.

Image 1: Miuzei MG90S 9G Micro Servo Motor with included accessories.

2. Safety Information

Always observe the following safety precautions to prevent injury or damage to the product and connected devices:

- **Power Supply:** Ensure the power supply voltage is within the specified operating range of 4.8V to 6V. Exceeding this range can damage the servo.
- **Polarity:** Connect the servo wires correctly to avoid short circuits. Incorrect polarity can cause immediate damage.
- **Overload:** Do not apply excessive force or continuous stall conditions to the servo, as this can lead to overheating and permanent damage to the motor or gears.
- **Moving Parts:** Keep fingers and loose objects away from the moving parts of the servo during operation to prevent injury.
- **Environment:** Avoid exposing the servo to water, dust, or extreme temperatures outside its operating range (0°C to +55°C).

3. Setup and Connection

Follow these steps to set up and connect your Miuzei MG90S servo motor:

3.1 Unpacking and Inspection

Carefully unpack the servo motor and its accessories. Verify that all components, including the servo, various horns, and mounting screws, are present and undamaged. The MG90S servo comes with a set of horns and screws for different applications.

Image 2: The MG90S servo motor shown with its included accessories, including different types of servo horns and mounting screws.

3.2 Electrical Connections

The MG90S servo motor uses a standard 3-wire connection:

- **Brown/Dark Wire:** Ground (GND)
- **Red Wire:** Power (VCC, 4.8V-6V)
- **Yellow/Orange Wire:** Signal (PWM input)

Connect these wires to your microcontroller (e.g., Arduino) or RC receiver according to the pinout. Ensure the power supply can provide sufficient current for all connected servos.

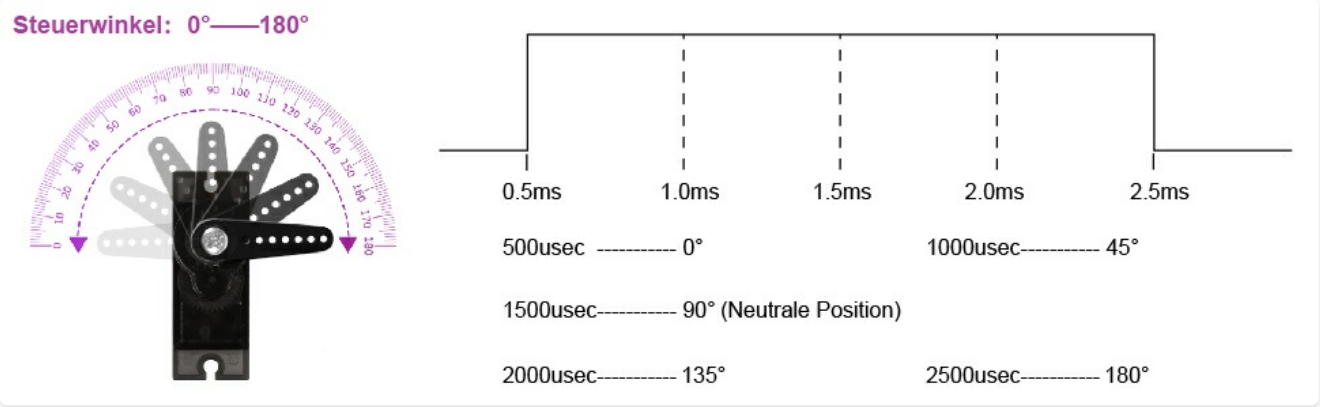

Image 3: Diagram illustrating the 3-wire connection and the relationship between pulse width and servo angle.

3.3 Mounting the Servo

Use the provided screws to securely mount the servo motor to your project chassis or frame. Attach the appropriate servo horn to the output shaft, ensuring it is centered before tightening the screw. The dimensions of the servo are approximately 22.4mm x 12.1mm x 22.8mm.

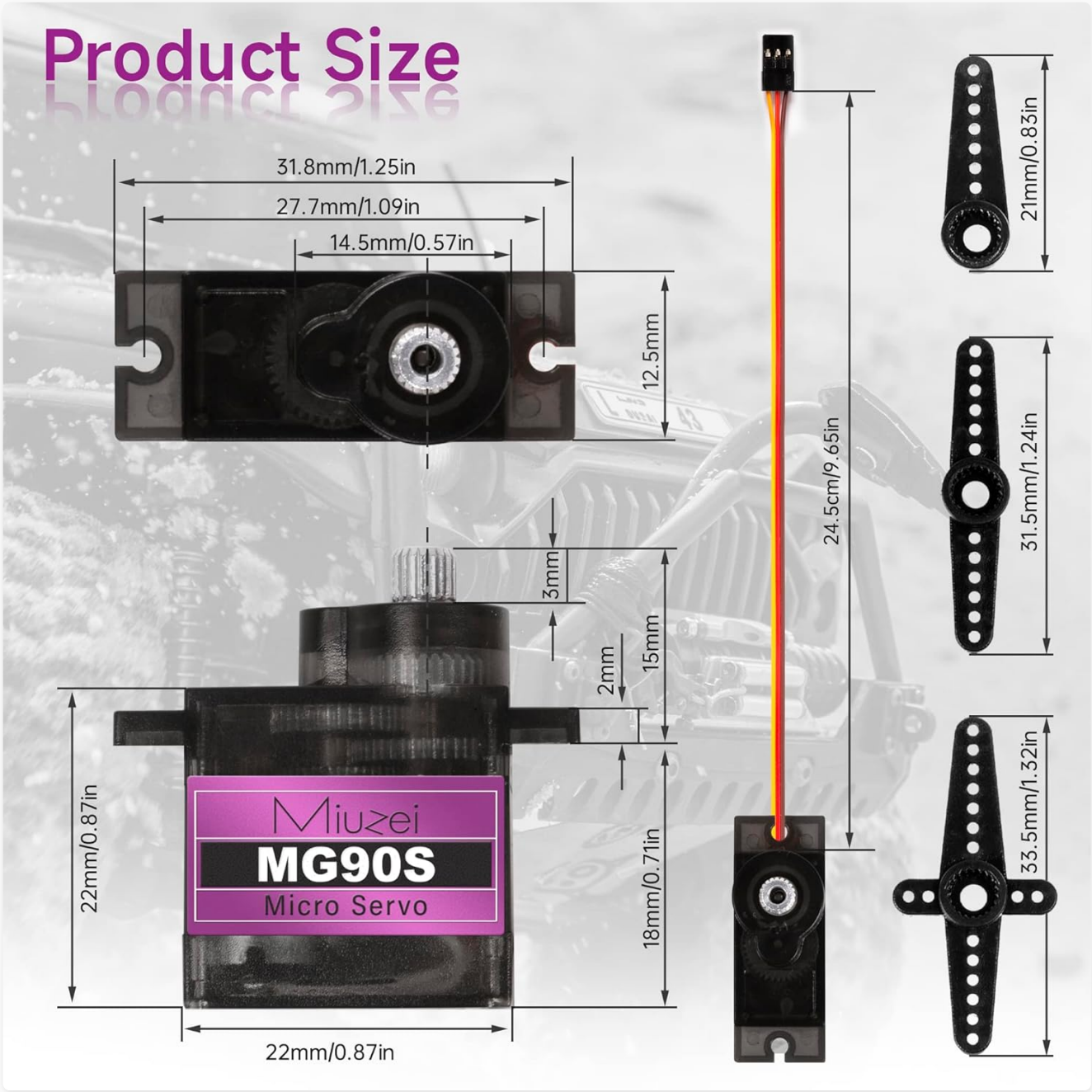

Image 4: Detailed technical drawing showing the dimensions of the MG90S servo motor and its various horns.

4. Operating Instructions

The MG90S servo motor is controlled using Pulse Width Modulation (PWM) signals. The position of the servo arm is determined by the width of the pulse sent to the signal wire.

- **Rotation Angle:** The servo supports a 180-degree rotation angle.
- **Pulse Width Range:** The typical pulse width range for 0 to 180 degrees is 500 microseconds (µs) to 2500 microseconds (µs).
- **Neutral Position:** A pulse width of approximately 1500 µs usually corresponds to the 90-degree (neutral) position.
- **Operating Speed:** The servo operates at a speed of 0.11 seconds/60 degrees at 4.8V.

When programming, ensure your PWM signal generator (e.g., Arduino servo library) is configured to output pulses within this range at a frequency of approximately 50 Hz (20ms period).

Your browser does not support the video tag.

Video 1: An official Miuzei video demonstrating the MG90S 9G Micro Servo Motor in operation, showcasing its movement and potential applications in RC cars.

5. Maintenance

Proper maintenance ensures the longevity and reliable performance of your MG90S servo motor:

- **Keep Clean:** Regularly clean the exterior of the servo to prevent dust and debris from entering the internal mechanisms.
- **Avoid Contaminants:** Protect the servo from moisture, oils, and corrosive substances.
- **Inspect Gears:** Periodically check the metal gears for any signs of wear or damage. The metal gear construction provides added strength and durability.
- **Check Connections:** Ensure all electrical connections remain secure and free from corrosion.
- **Lubrication:** The gears are pre-lubricated. Avoid applying excessive or incorrect lubricants, as this can attract dirt.

Image 5: An exploded view of the MG90S servo, highlighting its internal metal gear structure for durability and precision.

6. Troubleshooting

If you encounter issues with your MG90S servo motor, refer to the following troubleshooting tips:

- **Servo Not Moving:**
    - Check power supply: Ensure it is within 4.8V-6V and provides sufficient current.
    - Verify connections: Confirm all three wires (GND, VCC, Signal) are correctly connected and secure.
    - Inspect control signal: Ensure your microcontroller or RC receiver is outputting a valid PWM signal.
    - Test with a servo tester: Use a dedicated servo tester to rule out issues with your control circuit.
- **Jittery or Unstable Movement:**

- Power supply noise: Add a capacitor (e.g., 100µF) across the servo's power lines to smooth out voltage fluctuations.
- Signal interference: Keep signal wires away from high-current wires or noisy components.
- Loose connections: Re-check all wiring.

- **Servo Overheating:**
  - Excessive load: Reduce the mechanical load on the servo.
  - Continuous stall: Avoid situations where the servo is constantly trying to move against an obstruction.
  - Incorrect voltage: Ensure the operating voltage is not too high.
- **Noisy Operation:**
  - Normal operation: Some noise is normal for geared servos, especially under load.
  - Gear wear: If noise increases significantly over time, inspect gears for wear.

7. Specifications

Key technical specifications for the Miuzei MG90S 9G Micro Servo Motor:

Feature	Specification
Model Name	MG90S 9g Servo Motor
Stall Torque (4.8V)	2.0 kg/cm
Operating Speed (4.8V)	0.11 seconds/60 degrees
Operating Voltage	4.8V ~ 6V
Operating Temperature	0°C ~ +55°C
Dead Zone Width	5 Microseconds
Product Dimensions (L x W x H)	22.4mm x 12.1mm x 22.8mm (0.87"W x 1.3"H)
Item Weight	9 Grams (0.317 ounces)
Material	Metal (Gears)
Cable Length	250 mm / 9.84 inches
Rotation Angle	180° (when 500 ~ 2500µsec)

8. Warranty and Support

Miuzei products are designed for quality and performance. For any questions, technical assistance, or warranty inquiries, please contact Miuzei customer support through the retailer's platform or the official Miuzei website. Please retain your proof of purchase for warranty claims.