Wishiot RDS51150

Wishiot RDS51150 150KG 270° High Torque Digital Servo Instruction Manual

Brand: Wishiot | **Model:** RDS51150

1. Introduction

The Wishiot RDS51150 is a high-performance 150KG digital servo designed for demanding applications such as robotic arms, industrial automation, and 1/5 scale RC vehicles. It features a robust full metal gear construction, IP66 waterproof rating, and offers a 270-degree rotation range for precise control. This manual provides essential information for the proper setup, operation, and maintenance of your servo.

Key Features:

- **High Torque Output:** Up to 173kg·cm at 12.6V, suitable for heavy-duty applications.
- **Wide Operating Voltage:** Compatible with 9-12.6V power sources.
- **Durable Construction:** Full metal gears and CNC aluminum mid-case ensure longevity and reliability.
- **Waterproof & Dustproof:** IP66 rated for protection against water and dust ingress.
- **Precise Control:** Digital servo with PWM control system for accurate positioning.
- **Adjustable Rotation:** Supports 180° or 270° running degrees based on pulse width.

2. Package Contents

Verify that all items listed below are included in your package:

- 1 x RDS51150 Digital Metal Robotic Servo
- 1 x Long U-shaped metal bracket
- 1 x Short U-shaped metal bracket
- 2 x Metal circle disks
- Assorted mounting screws and accessories



Image: The RDS51150 servo and its included accessories, including U-shaped brackets, metal disks, and various screws.

3. Setup and Assembly

Follow these steps to properly install and connect your servo.

3.1 Mounting the Servo

The servo can be mounted using the provided U-shaped metal brackets. Ensure the servo is securely fastened to your application's frame or structure to prevent movement during operation.



3. 电气特性 Electrical Specification

No.	工作电压 Operating Voltage	10V	12V	12.6V
3-1	待机电流 Idle current(at stopped)	4mA	5mA	6mA
3-2	空载转速 Operating speed (at no load)	0.24 sec/60°	0.21 sec/60°	0.19 sec/60°
3-3	堵转扭矩 Stall torque (at locked)	150 kg-cm	165 kg-cm	173 kg-cm
3-4	堵转电流 Stall current (at locked)	7.4A	8.0A	8.3A

4. 控制特性 Control Specification

No.	Item	Specification
4-1	驱动方式 Control System	PWM(Pulse width modification)
4-2	脉宽范围 Pulse width range	500～2500μsec
4-3	中点位置 Neutral position	1500μsec
4-4	控制角度 Running degree	180° or 270° (when 500～2500 μ sec)
4-5	控制精度 Dead band width	3 μsec
4-6	控制频率 Operating frequency	50-330Hz
4-7	旋转方向 Rotating direction	Counterclockwise (when 500～2500 μsec)

Image: The RDS51150 servo shown with a U-shaped metal bracket attached, demonstrating a typical mounting configuration.

For detailed assembly of the U-shaped bracket to a similar servo, refer to the following video:

[redacted]

Video: This video demonstrates the assembly of a U-type servo bracket arm with a Wishiot RDS3235 servo. The process is similar for the RDS51150 model.

3.2 Wiring Connection

Connect the servo's 3-pin connector to your control board or receiver. The standard wiring color code is:

- **Brown/Black:** Ground (GND)
- **Red:** Power (VCC)
- **Orange/White:** Signal (PWM)

Ensure the power supply is within the recommended operating voltage range of 9-12.6V.

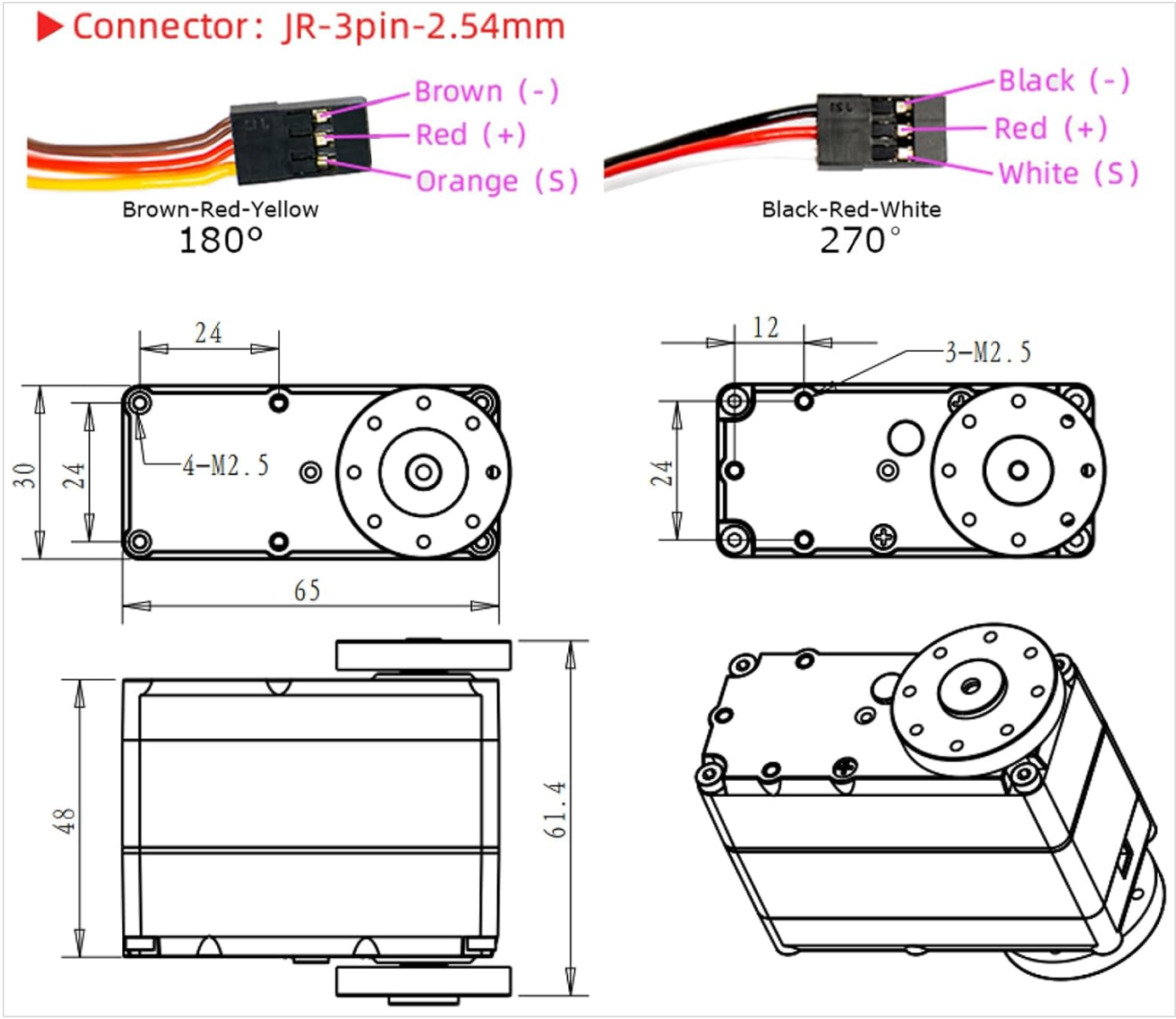


Image: Detailed diagram showing the servo's wiring connections (Brown/Black for Ground, Red for Power, Orange/White for Signal) and mechanical dimensions.

4. Operating Instructions

The RDS51150 servo operates using a Pulse Width Modulation (PWM) control system. The pulse width determines the servo's position.

4.1 PWM Control

- **Pulse Width Range:** 500µsec to 2500µsec
- **Neutral Position:** 1500µsec
- **Running Degree:** 180° or 270° (when 500~2500µsec)
- **Dead Band Width:** 3µsec
- **Operating Frequency:** 50-330Hz
- **Rotating Direction:** Counter-clockwise (when 500~2500µsec)

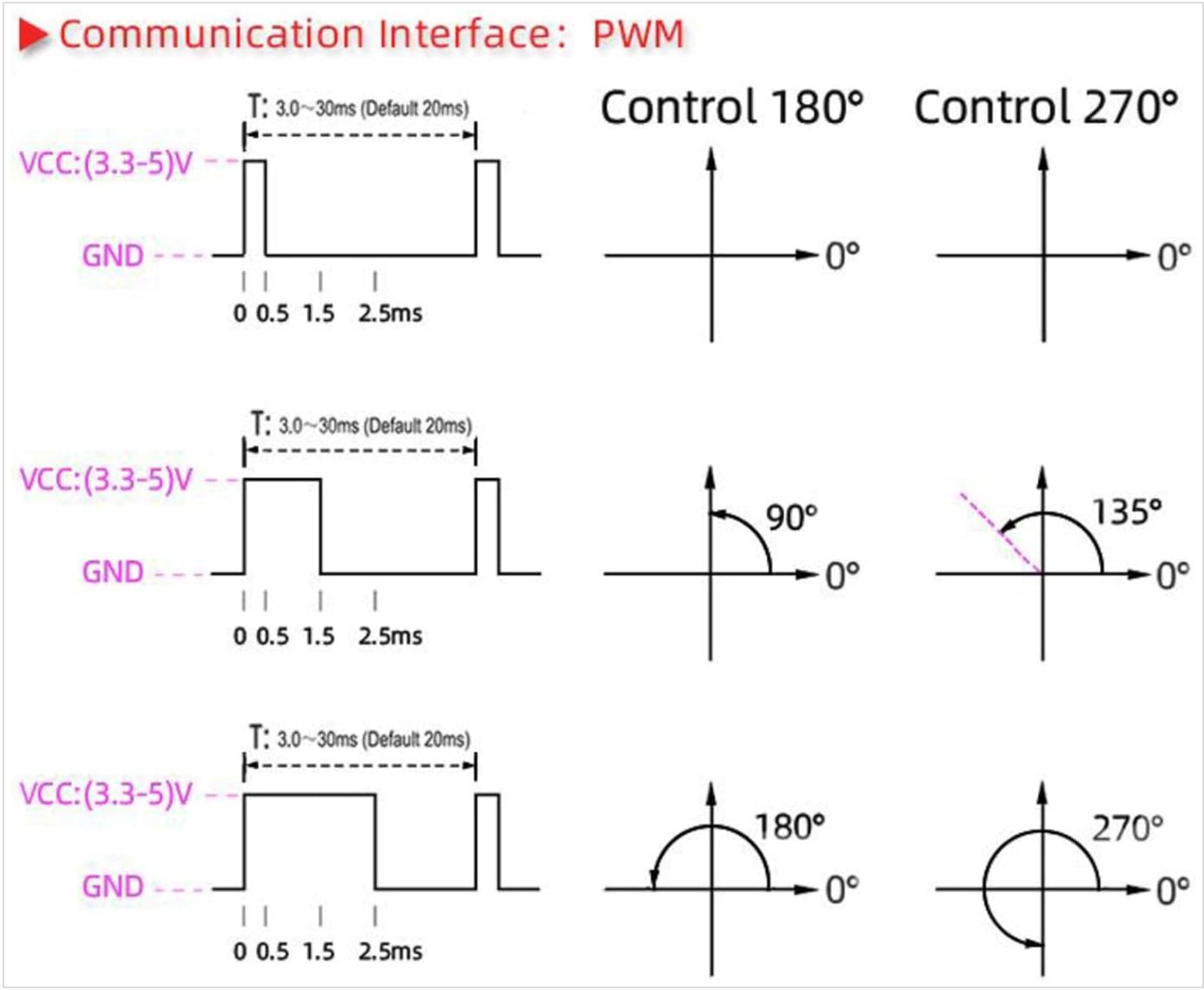


Image: Illustration of PWM control signals and their corresponding servo angles for both 180° and 270° operation modes.

4.2 Operational Testing

Observe the servo's movement and responsiveness during testing. Ensure it operates smoothly across its full range of motion without binding or excessive noise.

[redacted]

Video: A demonstration of the 150KG DS51150 digital servo undergoing 180-degree angle testing, showcasing its movement and precision.

[redacted]

Video: Another view of the 150KG DS51150 digital servo demonstrating its 180-degree range of motion.

[redacted]

Video: A demonstration of a 150KG digital RC servo with a U-mount, showing its 270-degree rotation using a 500-2500μsec pulse width.

5. Maintenance

Proper maintenance ensures the longevity and optimal performance of your servo.

- **Cleaning:** Regularly clean the exterior of the servo to remove dust and debris.
- **Waterproof Rating:** The servo is IP66 rated, meaning it is protected against powerful water jets and dust. While it can withstand splashes and rain, prolonged submersion is not recommended unless specifically designed for it.
- **Gear Inspection:** Periodically inspect the metal gears for any signs of wear or damage. Apply compatible grease if necessary.
- **Connection Check:** Ensure all wiring connections are secure and free from corrosion.

6. Troubleshooting

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

- **Servo Not Responding:**
  - Check power supply connections and ensure voltage is within 9-12.6V.
  - Verify signal wire connection to the control board/receiver.
  - Ensure the control signal (PWM) is being sent correctly.
  - Inspect for any physical obstructions preventing movement.
- **Inconsistent Movement or Jitter:**
  - Check for loose connections or damaged wiring.
  - Ensure the power supply can provide sufficient current under load.
  - Verify the control signal is stable and within the specified pulse width range.
  - Inspect gears for wear or debris.
- **Servo Fails Under Load:**
  - Ensure the applied load does not exceed the servo's stall torque rating (150kg·cm at 10V, 165kg·cm at 12V, 173kg·cm at 12.6V).
  - Verify the power supply can deliver the required stall current (up to 8.3A at 12.6V). Insufficient power can lead to failure under heavy loads.
  - Check for mechanical binding in the system that might increase the effective load on the servo.

7. Specifications

Detailed technical specifications for the Wishiot RDS51150 servo:

Category	Item	Specification
Environmental Conditions	Storage Temperature Range	-30℃ 80℃
	Operating Temperature Range	-15℃ 70℃
	Operating Voltage Range	9-12.6V
Mechanical	Size	65 x 30 x 48 mm
	Weight	163g
	Gear Ratio	357
	Bearing Type	Double bearing
Electrical (at 10V / 12V / 12.6V)	Idle Current (at stopped)	4mA / 5mA / 6mA
	Operating Speed (at no load)	0.24sec/60° / 0.21sec/60° / 0.19sec/60°
	Stall Torque (at locked)	150kg·cm / 165kg·cm / 173kg·cm
	Stall Current (at locked)	7.4A / 8.0A / 8.3A
Control	Control System	PWM (Pulse Width Modification)
	Pulse Width Range	500~2500μsec
	Neutral Position	1500μsec
	Running Degree	180° or 270° (when 500~2500μsec)

Category	Item	Specification
	Operating Frequency	50-330Hz

8. Warranty and Support

Wishiot products are manufactured to high-quality standards. For warranty information or technical support, please contact Wishiot customer service through the retailer where the product was purchased or visit the official Wishiot website. Please retain your proof of purchase for warranty claims.
For any questions, you can typically find a "Contact Seller" or "Ask a question" option on the product page of your retailer.

© 2026 Wishiot. All rights reserved.