

DIYmall DS3218

DIYmall DS3218 Digital Servo Instruction Manual

High Torque Metal Gear Digital Servo for RC Applications

1. PRODUCT OVERVIEW

The DIYmall DS3218 is a high-performance digital servo designed for various remote-controlled (RC) applications, including RC cars and DIY models. It features a robust metal gear construction, high torque output, and a 270-degree rotation capability. This servo is engineered for durability and reliable operation in demanding environments.

Key Features:

- **High Torque:** Provides 20kg-cm (at 5V) to 21.5kg-cm (at 6.8V) stall torque.
- **Wide Rotation Angle:** Offers a 270-degree controllable rotation range.
- **Metal Gear:** Equipped with durable metal gears for enhanced longevity and strength.
- **Water Resistant:** Designed to be water-resistant (IP66 rated), suitable for use in damp conditions, but not for submersion underwater.
- **Digital Control:** Utilizes Pulse Width Modulation (PWM) for precise control.
- **Operating Voltage:** Compatible with 4.8V to 6.8V DC power sources.

2. WHAT'S IN THE BOX

Each package of the DS3218 Digital Servo typically includes the following components:

- DS3218MG Digital Servo
- 25T Servo Arm
- Mounting Screws and Accessories

With accessories



This servo is waterproof,
but it can not work underwater

Image: The DS3218 Digital Servo shown with its standard accessories, including various servo horns and mounting hardware.

Video: An unboxing and overview of the DIYmall DS3218 Metal Gear Digital Servo, showcasing the servo unit and its accompanying accessories.

3. SPECIFICATIONS

Detailed technical specifications for the DS3218 Digital Servo are provided below:



Image: Comprehensive table detailing environmental, mechanical, electrical, and control specifications of the DS3218 servo.

DS3218 Digital Servo Specifications

Category	Item	Specification
Environmental Condition	Storage Temperature Range	-30°C ~ 80°C
	Operating Temperature Range	-15°C ~ 70°C
	Operating Voltage Range	4.8V ~ 6.8V DC
Mechanical Characteristics	Size	40 x 20 x 40.5 mm
	Weight	60g
	Gear Ratio	275
	Bearing	Double bearing
	Connector Wire	300 ± 5mm
	Motor	3-pole
	Waterproof Performance	IP66
Electrical Characteristics	Operating Voltage	5V / 6.8V
	Idle Current (at stopped)	4mA (5V) / 5mA (6.8V)
	Operating Speed (at no load)	0.16 sec/60° (5V) / 0.14 sec/60° (6.8V)
	Stall Torque (at locked)	18 kg-cm (5V) / 21.5 kg-cm (6.8V)
Control Specification	Control System	PWM (Pulse Width Modulation)
	Pulse Width Range	500 ~ 2500 μsec
	Neutral Point	1500 μsec
	Running Degree	270° (when 500 ~ 2500 μsec)
	Dead Band Width	3 μsec
	Operating Frequency	50-330Hz

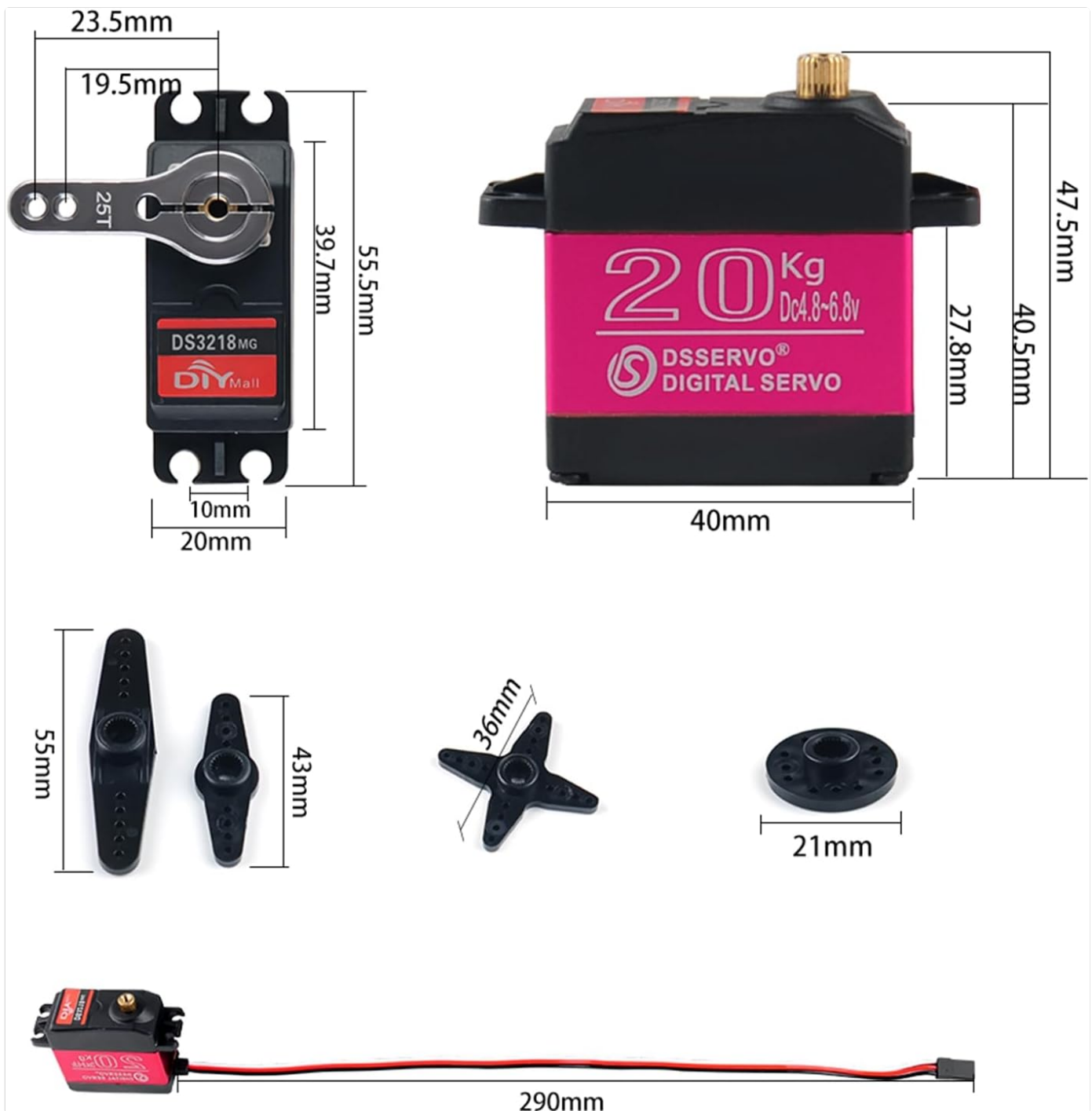


Image: Detailed diagram showing the physical dimensions of the DS3218 servo and its various servo horns.

4. SETUP AND CONNECTION

Follow these steps to properly set up and connect your DS3218 Digital Servo:

1. **Mounting:** Secure the servo in your RC model or DIY project using the provided mounting screws. Ensure it is firmly attached to prevent movement during operation.
2. **Attach Servo Arm:** Select the appropriate 25T servo arm for your application and attach it to the servo's output shaft.
3. **Wiring:** Connect the servo's three-wire cable to your receiver or microcontroller. The wire color coding is standard:
 - **White wire:** Signal (PWM input)
 - **Red wire:** Positive power supply (+)
 - **Black wire:** Ground (-)

4. **Power Supply:** Ensure your power supply provides a stable voltage within the 4.8V to 6.8V DC range. Connecting the servo to an incorrect voltage can cause damage.



Image: A typical connection diagram showing how to connect the DS3218 servo to an Arduino board, illustrating signal, power, and ground connections.

Angle Controllable, 270 Degree
Need PWM 500-2500



White wire: Signal
Red wire: +
Black wire: -

Image: The DS3218 servo highlighting the wire colors and their corresponding functions (Signal, +, -).

5. OPERATING INSTRUCTIONS

The DS3218 Digital Servo operates based on Pulse Width Modulation (PWM) signals. The pulse width determines the servo's position within its 270-degree range.

- **Control Range:** The servo responds to PWM signals typically ranging from 500 μsec to 2500 μsec .
- **Neutral Position:** A pulse width of approximately 1500 μsec will typically set the servo to its neutral (center) position.
- **Rotation:** Pulse widths below 1500 μsec will rotate the servo in one direction (e.g., counter-clockwise), while pulse widths above 1500 μsec will rotate it in the opposite direction (e.g., clockwise). The exact rotation direction for specific pulse widths is detailed in the specifications.
- **Water Resistance:** The servo is rated IP66 for water resistance, meaning it is protected against powerful water jets. However, it is **not designed to operate underwater**. Avoid submerging the servo.

Angle Controllable, 270 Degree
Need PWM 500-2500



White wire: Signal
Red wire: +
Black wire: -

Image: Illustration of the DS3218 servo's 270-degree controllable angle, indicating the PWM range required for operation.

Video: Demonstration of the DS3218 High Torque Metal Gear Digital Servo in operation, showcasing its movement and responsiveness when connected to a control board.

6. MAINTENANCE

Proper maintenance ensures the longevity and optimal performance of your DS3218 Digital Servo:

- **Keep Clean:** Regularly clean the servo's exterior to prevent dust and debris from accumulating, especially around the output shaft and mounting points.
- **Avoid Overloading:** Do not subject the servo to forces exceeding its specified stall torque. Excessive force can damage the gears or motor.
- **Check Connections:** Periodically inspect all wiring connections for looseness or damage. Secure connections are crucial for reliable operation.

- **Gear Inspection:** While the gears are metal and durable, inspect them for any signs of wear or damage if the servo's performance degrades.
- **Water Resistance:** Although water-resistant, avoid prolonged exposure to moisture and ensure the servo is dry before storage. Do not use it underwater.



Image: An exploded view of the DS3218 servo, labeling key internal components such as the output gear, solid brass gears, and waterproof gaskets, highlighting its robust construction.

7. TROUBLESHOOTING

If you encounter issues with your DS3218 Digital Servo, consider the following troubleshooting steps:

- **Servo Not Responding:**
 - Check power connections: Ensure the red and black wires are correctly connected to the power supply and ground, and that the voltage is within the specified range (4.8V-6.8V).
 - Verify signal connection: Confirm the white signal wire is securely connected to the correct output pin of your receiver or microcontroller.
 - Test with a different signal source: If possible, try connecting the servo to a known working signal source (e.g., a servo tester) to rule out issues with your control system.
- **Erratic Movement or Jitter:**
 - Power supply issues: Insufficient current or voltage fluctuations can cause erratic behavior. Ensure your power

supply can deliver adequate current for the servo, especially under load.

- Signal interference: Check for sources of electrical interference near the servo or its wiring.
- Dead band width: The servo has a 3 μ sec dead band. If your control signal is very noisy or fluctuates within this range, it might cause minor jitter.

- **Servo Overheating:**

- Excessive load: The servo may be under too much mechanical load. Reduce the load or consider a servo with higher torque capacity.
- Continuous stall: Avoid situations where the servo is continuously stalled against an obstacle, as this will cause rapid heat buildup.

- **Noise During Operation:**

- Normal operation: Digital servos can produce a slight humming sound, which is often normal.
- Gear issues: If the noise is excessive or grinding, inspect the metal gears for damage or debris.

8. WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the retailer or the official DIYmall website where you purchased the product. Keep your proof of purchase for any warranty claims.

DIYmall is committed to providing quality products and customer satisfaction. If you have further questions or require assistance beyond this manual, please contact DIYmall customer support.

Manufacturer: DIYmall

Model Number: DS3218

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ASK A QUESTION ABOUT THIS MANUAL

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

Name

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Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question