Stemedu GX3270BLS

Instruction Manual

Stemedu 70KG Brushless Motor Servo

Model: GX3270BLS

Introduction

This manual provides essential information for the proper installation, operation, and maintenance of your Stemedu 70KG Brushless Motor Servo. Designed for high-performance applications, this servo offers exceptional torque, speed, and durability, making it suitable for various RC models including cars, trucks, and boats.

What's in the Box

- 70 kg.cm Servo Unit
- Mounting Hardware (screws, rubber grommets, brass eyelets)
- Servo Arms (various types)
- Connection Cables

Image: The 70KG Brushless Motor Servo unit along with its mounting hardware, various servo arms, and connection cables.

Key Features

- **High Torque & Speed:** Delivers up to 70 Kg-cm torque at 8.4V with speeds as fast as 0.09 sec/60°.
- **IP68 Waterproof Rating:** Ensures reliable performance in wet or submerged conditions.
- **Brushless Motor Design:** Provides enhanced efficiency, extended lifespan, and smoother operation.
- **Durable Construction:** Features a metal gear and semi-metal case for superior impact resistance and longevity.
- **High-precision Stainless Steel Helical Gears:** For accurate and reliable movement.
- **CNC Aluminum Middle Shell:** Contributes to cooling and extends service life.

Specifications

Attribute	Value

Signal Type	Digital
Motor Type	Brushless
Dead band	≤2 uSec
Operating Voltage	6.0V-8.4V
Control System	PWM (1520us/333hz)
Mechanical Angle	360°
Bearing	Four Ball Bearings
Operating Travel	270±10° (500~2500uSec)
Operating Speed (sec/60°)	0.12 (6V) / 0.10 (7.4V) / 0.09 (8.4V)
Max. Operating Travel Angle	358±10° (500~2500uSec)
Reduction Ratio	1:299
Gear Material	Stainless steel
Shell Material	AL6061 + Nylon additive
Horn Gear	25T
Dimensions (L x W x H)	40 x 20 x 41.5 mm (1.57 x 0.79 x 1.63 inches)
Weight	90g (3.17oz)

Torque Performance:

- **6.0V:** 55.0 kg-cm (1,587 oz-in)
- **7.4V:** 63.0 kg-cm (1,763 oz-in)
- **8.0V:** 70.0 kg-cm (1,940 oz-in)

70KG WATERPROOF
Brushless Motor Steering Servo

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TORQUE

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7.4V - 63.0 kg-cm (1,763 oz-in)
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Image: Detailed specifications and torque values at different voltages for the servo.

Image: Technical drawing illustrating the precise dimensions of the servo unit.

Setup

1. **Mounting the Servo:** Secure the servo unit to your RC model's chassis using the provided mounting hardware. Ensure it is firmly attached to prevent movement during operation.
2. **Connecting the Servo Arm:** Select the appropriate servo arm for your application and attach it to the servo's output shaft. Use the small screw provided to secure the arm.
3. **Electrical Connection:** Connect the servo's three-wire cable to the corresponding channel on your RC receiver or flight controller. The standard color coding is typically: Brown/Black (Ground), Red (Positive Voltage), Orange/Yellow/White (Signal). Ensure correct polarity.
4. **Power Supply:** Connect your receiver/flight controller to a suitable power source (e.g., battery eliminator circuit (BEC) or dedicated servo power supply) that provides the recommended operating voltage (6.0V-8.4V).

Image: A view of the servo showing its mounting tabs, ready for installation.

Operating Instructions

The Stemedu 70KG Brushless Motor Servo operates based on Pulse Width Modulation (PWM) signals. The pulse width determines the position of the servo arm.

- **Pulse Width Range:** 500µs to 2500µs.
- **Neutral Position:** 1500µs (typically corresponds to 0°).
- **Operating Travel:** 270° ± 10° (from 500µs to 2500µs).
- **Maximum Operating Travel Angle:** 358° ± 10° (from 500µs to 2500µs).
- **Rotating Direction:** Counter-clockwise (CCW) when pulse width increases from 500µs to 2500µs.

Image: A visual representation of the servo's 270-degree rotation range and how it corresponds to PWM signals.

Your browser does not support the video tag.

Video: This video demonstrates the operational range and responsiveness of the 70KG Brushless Servo, showing its movement across different pulse width settings.

Maintenance

- **Regular Cleaning:** Keep the servo free from dirt, dust, and debris, especially around the output shaft and mounting points.
- **Check Connections:** Periodically inspect all electrical connections to ensure they are secure and free from corrosion.
- **Inspect Gears:** While the gears are durable, occasional inspection for wear or damage is recommended, especially after heavy use or impacts.
- **Avoid Overloading:** Do not exceed the servo's specified torque limits, as this can lead to premature wear or damage.
- **Waterproof Care:** Although IP68 rated, avoid prolonged submersion in corrosive liquids. After use in wet conditions, wipe the servo dry.

Troubleshooting

- **Servo Not Responding:**
  - Check power supply voltage and current capacity. Ensure it meets the servo's requirements.
  - Verify signal cable connection to the receiver/controller.
  - Confirm the receiver/controller is powered on and transmitting signals.
  - Inspect for physical obstructions preventing servo movement.
- **Erratic Movement or Jittering:**
  - Check for loose connections or damaged wiring.
  - Ensure the power supply is stable and free from voltage drops.
  - Verify the PWM signal is clean and within the specified range.
  - Check for excessive mechanical load on the servo.
- **Overheating:**
  - Reduce the load on the servo if it's consistently running hot.
  - Ensure adequate airflow around the servo, especially in enclosed spaces.
  - Verify the operating voltage is not exceeding the maximum 8.4V.
- **Loss of Torque:**
  - Check for worn or damaged gears. Replace if necessary.
  - Ensure the power supply is providing sufficient current.
  - Verify the servo is not being continuously stalled against an obstacle.

Warranty and Support

For warranty information and technical support, please contact Stemedu directly through their official website or the platform where you purchased the product. Keep your proof of purchase for any warranty claims.
For additional resources and product information, you may visit theStemedu Store on Amazon.