Hitec RCD 36954

Hitec D954SW High Torque Steel Gear Servo User Manual

Model: D954SW (HRC36954)

1. Introduction

The Hitec D954SW is a high-performance digital servo designed for demanding applications requiring precision, high torque, and durability. Featuring steel gears and advanced digital circuitry, this servo delivers reliable and consistent performance across a wide range of operating conditions.

Key features include:

- **High Speed:** Achieves .19 sec/60° at 4.8V and .12 sec/60° at 7.4V.
- **High Torque:** Provides 251 oz/in at 4.8V and 405 oz/in at 7.4V.
- **Programmable PWM Digital Amplifier:** Allows for fine-tuning of servo parameters.
- **32-Bit MCU with 12-Bit ADC Circuitry:** Ensures precise control and responsiveness.
- **4096 Resolution:** Offers exceptional accuracy in positioning.
- **Steel Gears:** Provides enhanced durability and resistance to wear.

Figure 1: Hitec D954SW High Torque Steel Gear Servo

2. Setup

Before operating your Hitec D954SW servo, ensure proper installation and connection to your control system.

2.1 Mounting the Servo

- Securely mount the servo using appropriate screws and mounting hardware. Ensure there is no binding or excessive force on the servo case during installation.
- Verify that the servo horn or arm can move freely through its full range of motion without obstruction.

2.2 Electrical Connection

Connect the servo to your receiver or servo controller. The D954SW servo typically uses a standard 3-wire connector:

- **Brown/Black Wire:** Ground (GND)
- **Red Wire:** Positive Voltage (V+)
- **Orange/Yellow/White Wire:** Signal (SIG)

Ensure the power supply voltage is within the specified operating range of 4.8V to 7.4V DC. Incorrect voltage can damage the servo.

3. Operating Instructions

The D954SW servo is controlled via Pulse Width Modulation (PWM) signals from your receiver or microcontroller. The pulse width determines the servo's position.

3.1 Basic Operation

- Apply power to the servo and control system.
- Send PWM signals to the servo's signal wire to command its desired position.
- Observe the servo's movement. It should move smoothly and precisely to the commanded position.

3.2 Programmability

The D954SW features a programmable digital amplifier. This allows users to customize various parameters such as:

- Dead Band Width
- Direction of Rotation
- Speed (overall and start/end points)
- Fail-Safe Position
- Resolution (e.g., 2048 steps for 12-bit accuracy)

Programming requires a compatible Hitec servo programmer (e.g., HFP-30). Refer to the programmer's manual for detailed instructions on adjusting servo parameters.

Figure 2: Durable Steel Gears for enhanced performance

4. Maintenance

Proper maintenance ensures the longevity and optimal performance of your Hitec D954SW servo.

- **Keep Clean:** Regularly clean the servo exterior to prevent dust and debris from entering the casing.
- **Inspect Gears:** Periodically check the steel gears for any signs of wear or damage. While durable, extreme impacts can cause issues.
- **Cable Integrity:** Ensure all wires and connectors are free from cuts, fraying, or corrosion.
- **Avoid Overloading:** Do not subject the servo to loads exceeding its specified torque limits, as this can lead to premature wear or failure.
- **Storage:** Store the servo in a dry, cool environment away from direct sunlight and extreme temperatures.

5. Troubleshooting

If you encounter issues with your Hitec D954SW servo, refer to the following common problems and solutions:

Problem	Possible Cause	Solution

Problem	Possible Cause	Solution
Servo not responding	No power, incorrect wiring, faulty signal, damaged servo.	Check power supply and connections. Verify signal from controller. Test with another servo if possible.
Erratic movement or twitching	Interference, low voltage, worn gears, incorrect dead band setting.	Ensure stable power. Check for electrical interference. Inspect gears. Adjust dead band with servo programmer.
Servo makes noise but doesn't move	Binding, stripped gears, motor issue.	Check for mechanical binding. Inspect gears for damage. If gears are fine, the motor may be faulty.
Servo overheats	Excessive load, continuous stalling, insufficient cooling.	Reduce load. Ensure servo is not continuously stalled. Provide adequate ventilation.

If problems persist after attempting these solutions, contact Hitec RCD customer support or an authorized service center.

6. Specifications

Detailed technical specifications for the Hitec D954SW servo:

- **Speed (@4.8V):** 0.19 sec/60°
- **Speed (@7.4V):** 0.12 sec/60°
- **Torque (@4.8V):** 251 oz/in (18.07 kg/cm)
- **Torque (@7.4V):** 405 oz/in (29.16 kg/cm)
- **Operating Voltage:** 4.8V - 7.4V DC
- **Gear Type:** Steel
- **Motor Type:** Coreless
- **Circuitry:** 32-Bit MCU with 12-Bit ADC
- **Resolution:** 4096 steps
- **Dimensions (L x W x H):** Approximately 1 x 1 x 1 inches (25.4 x 25.4 x 25.4 mm) - *Note: Product dimensions are often rounded for general listing. Refer to manufacturer's precise drawings for critical fitment.*
- **Weight:** Approximately 0.16 ounces (4.5 grams) - *Note: This weight seems unusually low for a servo of this torque class. Typical weights for similar servos are around 60-70g. Please verify with manufacturer specifications.*
- **Item Model Number:** 36954
- **UPC:** 669962369541
- **Country of Origin:** China

7. Warranty

Hitec RCD Inc. provides a 1-year warranty on the D954SW servo from the date of purchase. This warranty covers defects in materials and workmanship under normal use. Please retain your proof of purchase for warranty claims.

Figure 3: Hitec 1-Year Warranty Emblem

8. Support

For further assistance, technical support, or service inquiries regarding your Hitec D954SW servo, please contact Hitec RCD directly:

- **Website:** Visit the official Hitec RCD website for product information, FAQs, and support resources.
- **Authorized Dealers:** Contact your local authorized Hitec RCD dealer for sales and service support.
