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› Zerodis 6DOF Robot Mechanical Arm Instruction Manual

Zerodis Zerodiszsag43iuxv

Zerodis 6DOF Robot Mechanical Arm Instruction Manual

Model: Zerodiszsag43iuxv

1. INTRODUCTION

The Zerodis 6DOF Robot Mechanical Arm is designed for educational and DIY projects, offering a versatile platform for exploring robotics and automation. This manipulator features 6 servo motors, enabling precise movements for gripping objects in various directions (front, rear, up, down, left, right).

Constructed with 2mm thick aluminum plate fittings, the arm ensures enhanced stability during operation. Its steering joints incorporate imported cup bearings for flexible and centered movement, while a disc-shaped chassis allows for flexible left and right rotation.

2. PACKAGE CONTENTS

Please verify that all the following components are included in your package:

- 6 x Analog Steering Gear (Servo Motors)
- 1 x Cable Tie
- 5 Packs Screw Nut Fittings
- 3 x Extension Cord
- 1 x Flange Rod
- 3 x Flange Bearing
- 6 x Metal Steering Wheel
- 1 x Mechanical Arm (Gripper Assembly)
- 1 x Beam
- 1 x Different U-Shaped Bracket
- 2 x L-Shaped Bracket
- 2 x Long U Bracket
- 4 x Multi-Function Bracket



This image displays all the individual components included in the Zerodis 6DOF Robot Mechanical Arm kit, including various metal brackets, servo motors, screws, nuts, and cables.

3. SPECIFICATIONS

Item Type	Mechanical Arm
Color	Black
Servo Model	Analog Steering Gear
Working Voltage	4.8V-7.2V
No Load Current	100mA
Machine Torsion	10kg.cm
Limit Angle	180°

Wire Length	30cm
Gear Material	Metal gear
Dead Time	5uS
Product Dimensions	11.81 x 7.87 x 2.75 inches
Item Weight	1.69 pounds
Manufacturer	Zerodis
ASIN	B0DQLKKQGW

4. SETUP AND ASSEMBLY

The Zerodis 6DOF Robot Mechanical Arm is provided as a kit requiring assembly. Follow these general steps for setup:

- 1. Identify Components:** Lay out all parts and identify them using the 'Package Contents' section.
- 2. Assemble Brackets:** Connect the various U-shaped, L-shaped, and multi-function brackets using the provided screws and nuts to form the arm's structure.
- 3. Install Servo Motors:** Mount the 6 analog steering gears into their designated positions within the arm's structure. Ensure they are securely fastened.
- 4. Attach Steering Wheels and Bearings:** Connect the metal steering wheels to the servo motor shafts and integrate the flange bearings and rod at the appropriate joints for smooth movement.
- 5. Connect Gripper:** Assemble and attach the mechanical arm (gripper assembly) to the end of the robotic arm structure.
- 6. Wiring:** Connect the servo motors to your chosen control board (not included) using the extension cords. Ensure correct polarity and pin assignments as per your control board's documentation.

Note: Detailed assembly instructions may vary based on specific project requirements. Refer to external resources or community guides for advanced assembly techniques.



This image illustrates a partially assembled robot arm, highlighting how servo motors connect to the metal brackets, forming the joints of the mechanical arm.

5. OPERATING INSTRUCTIONS

The Zerodis 6DOF Robot Mechanical Arm requires an external control system (e.g., Arduino, Raspberry Pi, or dedicated servo controller) and programming to operate. This manual provides general guidance on its capabilities.

5.1 Power Supply

Ensure your control system provides a stable power supply within the specified working voltage range of 4.8V-7.2V for the servo motors. Insufficient power can lead to erratic movement or damage.

5.2 Control and Movement

Each of the 6 servo motors controls a specific degree of freedom, allowing for complex movements. You will need to program your control board to send appropriate Pulse Width Modulation (PWM) signals to each servo to achieve desired positions and movements. The 180° limit angle for each servo should be respected in your programming to prevent damage.

- **Base Rotation:** Controls left and right turning of the entire arm.

- **Shoulder Joint:** Controls up and down movement of the arm's main segment.
- **Elbow Joint:** Controls the bending of the arm.
- **Wrist Joints (2):** Provide additional flexibility for orientation.
- **Gripper:** Opens and closes to grasp objects.



The fully assembled Zerodis 6DOF Robot Mechanical Arm is shown with its gripper in an open position, ready to perform a gripping action.

6. MAINTENANCE

Proper maintenance ensures the longevity and optimal performance of your robot mechanical arm:

- **Keep Clean:** Regularly wipe down the arm with a dry, soft cloth to remove dust and debris. Avoid using harsh chemicals or solvents.
- **Check Connections:** Periodically inspect all screw and nut fittings to ensure they are tight. Loose connections can affect stability and precision.
- **Servo Care:** Avoid applying excessive force to the arm joints, as this can strip the servo gears. Ensure servos are not continuously stalled.
- **Lubrication:** While not typically required for these types of servos, if any joint feels stiff, a small amount of plastic-safe lubricant can be applied to moving parts, avoiding direct contact with electrical components.
- **Storage:** When not in use, store the arm in a clean, dry environment away from extreme temperatures and direct sunlight.

7. TROUBLESHOOTING

If you encounter issues with your Zerodis 6DOF Robot Mechanical Arm, consider the following troubleshooting steps:

- **Arm Not Moving:**

- Check power supply to the control board and servos.
- Verify all wiring connections between servos and the control board.
- Ensure your control code is correctly sending signals to the servos.
- Test individual servos if possible to identify a faulty unit.

- **Erratic or Weak Movement:**

- Confirm the power supply can provide sufficient current for all 6 servos, especially under load.
- Check for any mechanical obstructions or binding in the joints.
- Inspect servo gears for damage (e.g., stripped gears).

- **Inaccurate Positioning:**

- Recalibrate servo positions in your control code.
- Ensure mechanical linkages are tight and free of play.
- Verify that the servo horns are securely attached to the servo shafts.

8. WARRANTY AND SUPPORT

For warranty information or technical support regarding your Zerodis 6DOF Robot Mechanical Arm, please refer to the retailer's return policy or contact Zerodis customer service directly through their official channels. Keep your purchase receipt as proof of purchase.

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