

Bolisila GIM8108-6

Bolisila GIM8108-6 Mini Robot Servo Motor Joint Module Reducer with MIT Driver

User Manual

1. INTRODUCTION

This manual provides essential information for the proper setup, operation, and maintenance of your Bolisila GIM8108-6 Mini Robot Servo Motor Joint Module Reducer with MIT Driver. Please read this manual thoroughly before using the product to ensure safe and efficient operation.

Key Features:

- **Energy-efficient:** Designed for low power consumption and high operational efficiency.
- **Powerful performance:** Delivers high torque with fast response times.
- **Quiet operation:** Ensures low noise and smooth, silent performance.
- **Easy installation:** Features a simple design for hassle-free setup and maintenance.
- **Wide applications:** Compatible with various equipment and robotic scenarios.

2. PRODUCT OVERVIEW

The Bolisila GIM8108-6 is a compact servo motor joint module with an integrated planetary gear reducer and an MIT driver, specifically designed for applications requiring precise motion control, such as in four-legged robots. It features a MagAlpha MA702 encoder for 12-bit resolution angle feedback and communicates via CAN bus.



This image shows the top-down view of the Bolisila GIM8108-6 servo motor joint module, highlighting its compact design and mounting points.

3. SETUP

Follow these steps for initial setup of your GIM8108-6 servo motor joint module:

1. **Unpacking:** Carefully remove the servo motor module from its packaging. Inspect for any visible damage.
2. **Mounting:** Securely mount the GIM8108-6 module to your robotic structure using appropriate fasteners. Refer to the dimensional drawings in the Specifications section for mounting hole patterns and dimensions.
3. **Power Connection:** Connect the module to a stable 24V DC power supply. Ensure the voltage is within the specified range of $24V \pm 10\%$. Observe correct polarity to prevent damage.
4. **Communication Connection:** Connect the CAN bus interface of the module to your control system. Ensure proper termination resistors are used on the CAN bus network if required by your system design.
5. **Initial Check:** Before applying full power or commands, perform a basic continuity check on all connections.

4. OPERATING INSTRUCTIONS

The GIM8108-6 servo motor joint module is controlled via a CAN bus interface. Your control system will send commands and receive feedback through this communication protocol.

1. **CAN Bus Communication:** Utilize your control system's CAN bus capabilities to send motion commands (e.g., position, velocity, torque) to the GIM8108-6 module. Refer to the specific CAN communication protocol documentation for detailed command structures and data formats.
2. **Feedback Monitoring:** The integrated MagAlpha MA702 encoder provides 12-bit resolution angle feedback. Monitor this feedback via the CAN bus to verify motor position and ensure accurate control.
3. **Parameter Configuration:** Depending on your application, you may need to configure various motor parameters (e.g., PID gains, limits) through the CAN bus interface. Consult the driver's specific programming guide for details.
4. **Safety Precautions:** Always operate the motor within its specified limits (voltage, current, torque, speed) to prevent damage. Ensure no obstructions are present in the motor's path during operation.

5. MAINTENANCE

Regular maintenance helps ensure the longevity and optimal performance of your GIM8108-6 servo motor joint module.

- **Cleaning:** Keep the module clean and free from dust, dirt, and debris. Use a soft, dry cloth for cleaning. Avoid using solvents or harsh chemicals.
- **Inspection:** Periodically inspect all electrical connections for tightness and signs of wear or corrosion. Check mounting bolts for security.
- **Operating Environment:** Ensure the module operates within its specified working temperature range of -20°C to +80°C. Avoid exposure to excessive moisture or extreme temperatures. The motor has an IP54 protection grade, meaning it is protected from dust ingress and splashing water.
- **Lubrication:** The planetary gear reducer is typically sealed and pre-lubricated for its lifespan. Avoid attempting to lubricate it unless specifically instructed by the manufacturer.
- **Storage:** When not in use, store the module in a dry, clean environment within the specified temperature range.

6. TROUBLESHOOTING

If you encounter issues with your GIM8108-6 module, refer to the following common troubleshooting steps:

- **Motor Not Responding:**
 - Check power supply connections and ensure the voltage is within the 24V $\pm$ 10% range.
 - Verify CAN bus connections and ensure the communication protocol is correctly implemented by your control system.
 - Confirm the module's address on the CAN bus matches the address being commanded.
- **Erratic Movement or Inaccurate Positioning:**
 - Inspect encoder connections for looseness or damage.
 - Check for mechanical obstructions or excessive load on the motor.
 - Review control parameters (e.g., PID gains) in your software; they may require tuning for your specific

application.

- **Overheating:**
 - Ensure the motor is not continuously operating under excessive load.
 - Verify that the ambient temperature is within the specified operating range.
 - Check for proper ventilation around the module.
- **Unusual Noise:**
 - Inspect for loose mounting hardware.
 - Check for foreign objects or debris near the gear mechanism.
 - If the noise persists and is unusual, discontinue use and contact support.

If these steps do not resolve the issue, please contact Bolisila customer support for further assistance.

7. SPECIFICATIONS

The following tables and diagrams provide detailed technical specifications and dimensions for the Bolisila GIM8108-6 Mini Robot Servo Motor Joint Module Reducer.

General Specifications:

Feature	Detail
Model Number	GIM8108-6
Motor Type	Gear Motor
Gear Type	Planetary Gear
Gear Ratio	6:1
Encoder Type	MagAlpha MA702
Encoder Resolution	12-Bit Resolution Angle Encoder
Input Voltage	24V ±10%
Communication	CAN bus
Item Weight	2.2 pounds (approx. 1 kg)
Assembly Required	No
Number of Pieces	1

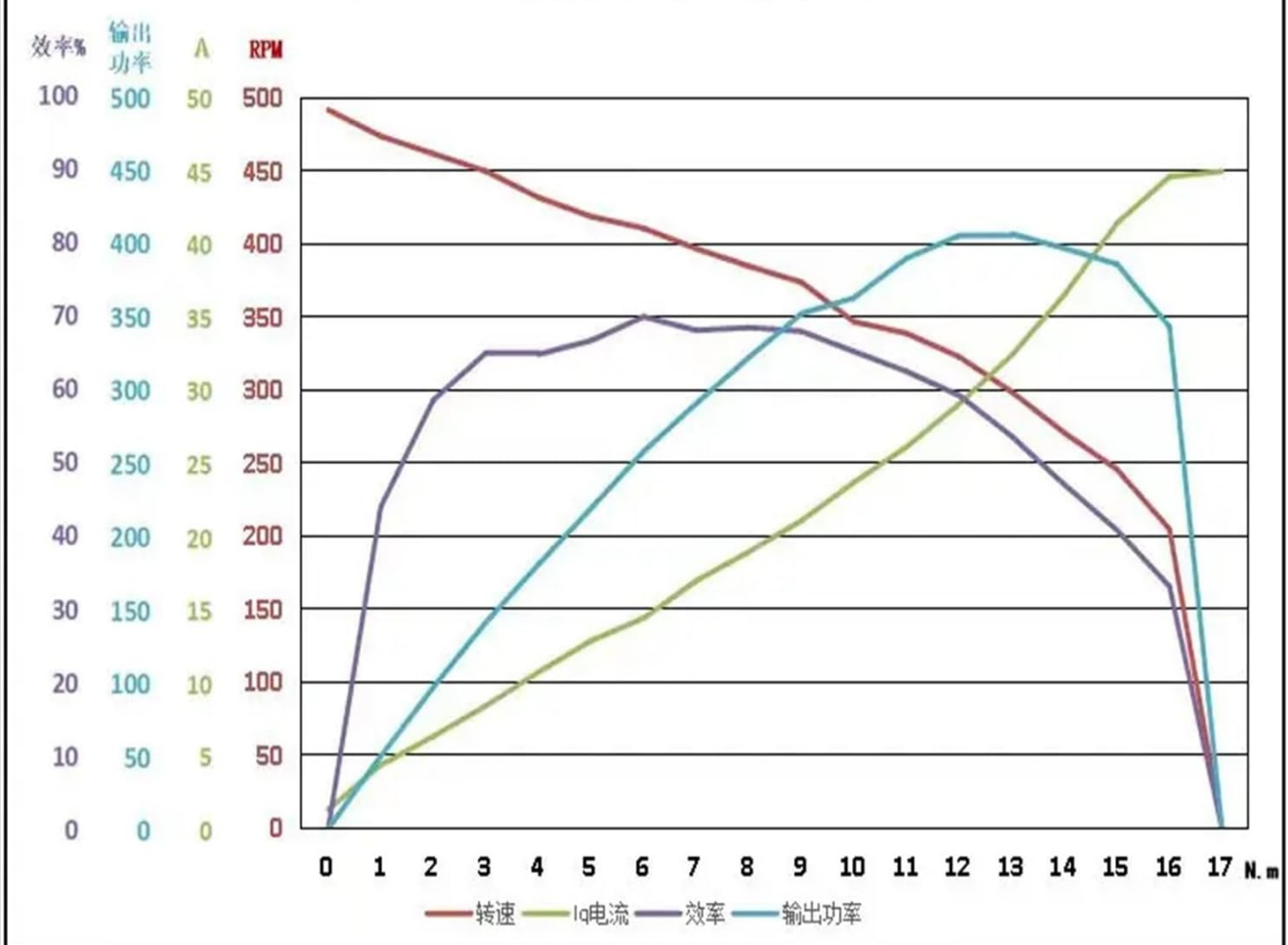
Detailed Technical Specifications (with MIT Driver):

GIM8108-6			
Specs/Driver Type	Unit	MIT driver	SHS driver
额定电压(Nominal Voltage)	V	24	36
电压范围(Voltage Range)	V	24~48	24~48
功率(Power)	W	125	170
额定扭矩(Nominal Torque)	N.M	6	6.5
堵转扭矩(Stall Torque)	N.M	15	17
减速后额定转速(Nominal Speed after Reduce)	RPM	200	250
减速后最大转速(Max Speed after Reduce)	RPM	350	650
额定电流(Nominal Current)	A	5	14.5
堵转电流(Stall Current)	A	20	45
相间电阻(Phase to Phase Resitance)	Ω	0.28	0.132
相间电感(Phase to Phase Inductance)	mH	0.17	0.062
转速常数(Speed Constant)	rpm/v	100	13.8
扭矩常数(Torque Constant)	N.M/A	0.091	0.45
转子惯量(Rotor Inertia)	gcm ²	800	42.60
极对数(Number of Pole Pairs)	Pairs	21	
减速比(Gear Rate)	/	6:1	
减速器类型(Gear Type)	/	Planetary	
减速器齿轮材料(Reducer Gear Material)	/	STEEL	
减速器齿轮背隙(Reducer Gear Backlash)	arcmin	< 6	
电机重量不带驱动(Motor Weight without Driver)	g	525	
电机重量带驱动(Motor Weight with Driver)	g	567	
电机尺寸不带驱动(Size without Driver)	mm	Ø96*34	
电机尺寸带驱动(Size with Driver)	mm	Ø96*41.5	
轴向最大负载(Max Axial Load)	N	800	
径向最大负载(Max Radial Load)	N	900	
噪音>Noise)	dB	< 60	
电机防水防尘等级(Motor Protection Grade)	/	IP54	
工作温度范围(Working Temperature)	℃	-20~+80	

This table provides comprehensive technical specifications for the GIM8108-6 module, including nominal voltage, power, torque, current, encoder resolution, gear ratio, and physical dimensions for both MIT and SHS driver configurations. Focus on the 'MIT driver' column for this product variant.

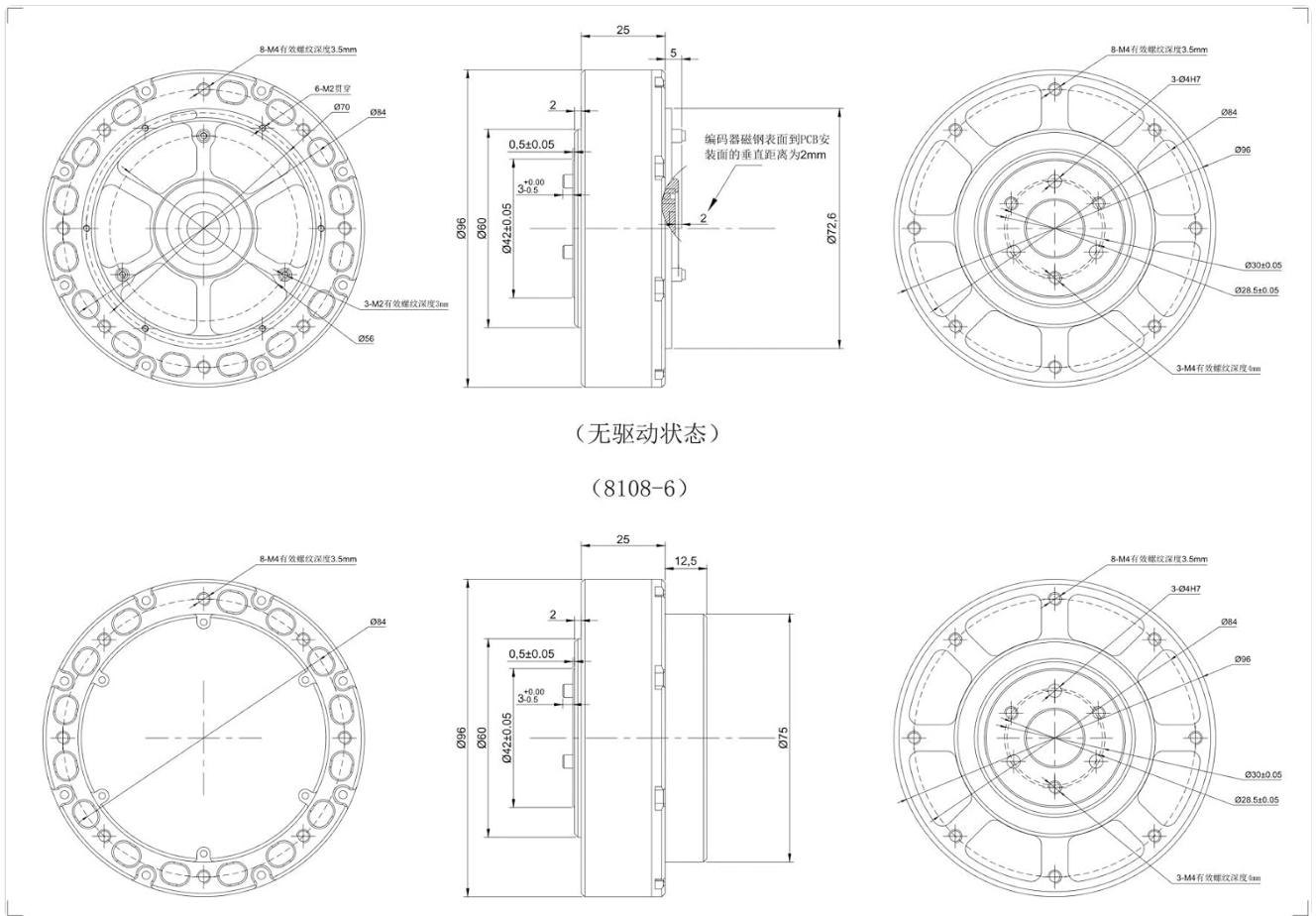
Performance Curve:

8108-6特性曲线图



This graph illustrates the performance characteristics of the GIM8108-6 servo motor, showing relationships between efficiency, output power, current, and speed.

Dimensional Drawings:



These technical drawings provide precise dimensions and mounting details for the GIM8108-6 module, showing configurations both without a driver and with a driver attached, crucial for integration into robotic systems.

8. WARRANTY AND SUPPORT

Bolisila products are manufactured to high-quality standards. For specific warranty information, please refer to the documentation provided with your purchase or contact your retailer. For technical support, troubleshooting assistance, or inquiries regarding parts and service, please contact Bolisila customer service through the official website or your point of purchase.

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ASK A QUESTION ABOUT THIS MANUAL

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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