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DAVITU DMA860H

DAVITU DMA860H Microstep Driver

INSTRUCTION MANUAL

1. Introduction

This manual provides comprehensive instructions for the installation, operation, and maintenance of the DAVITU DMA860H Microstep Driver. The DMA860H is a high-performance digital stepper drive based on a DSP with advanced control algorithm. It is designed to drive 2-phase and 4-phase hybrid stepper motors, offering unique smoothness, extra-low motor noise, and lower heating.

Please read this manual thoroughly before using the product to ensure proper and safe operation. Keep this manual for future reference.



Figure 1: DAVITU DMA860H Microstep Driver and Packaging

This image displays the DAVITU DMA860H Microstep Driver alongside its brown cardboard packaging box. The driver is a black rectangular unit with a prominent label detailing its specifications and DIP switch settings. The packaging box features the 'Leadshine' logo and text indicating 'Stepper/Servo Motor Drive'.

2. Safety Information

Always observe the following safety precautions to prevent injury or damage to the product:

- **Electrical Hazard:** The driver operates with high voltage (18VAC-80VAC). Ensure power is disconnected before making any connections or adjustments. Only qualified personnel should perform installation and wiring.
- **Grounding:** Ensure the driver is properly grounded to prevent electrical shock.
- **Heat Dissipation:** The driver generates heat during operation. Ensure adequate ventilation and do not obstruct the heatsink or fan.
- **Environmental Conditions:** Do not expose the driver to moisture, dust, corrosive gases, or extreme temperatures.
- **Correct Wiring:** Verify all wiring connections are correct and secure before applying power. Incorrect wiring can cause damage to the driver and motor.

3. Product Overview

The DMA860H is a versatile microstep driver suitable for a wide range of stepper motors from NEMA 23 to NEMA 42. It features anti-resonance, multi-stepping, and automatic parameter setup for optimal performance. The driver includes various protection functions such as over-voltage, over-current, and phase error protection.



Figure 2: Side View of DMA860H Driver

This image shows a side view of the DMA860H Microstep Driver, highlighting its large black heatsink with vertical fins and an integrated cooling fan. Green terminal blocks for wiring connections are visible on the left side, along with a blue DIP switch block.



Figure 3: Top View of DMA860H Driver

This image provides a top-down view of the DMA860H Microstep Driver, clearly showing the large black heatsink and the central cooling fan. The fan is protected by a metal grille. The green terminal blocks are visible at the bottom edge of the driver.

4. Setup

4.1 Wiring Connections

Refer to the labels on the driver for correct wiring. Ensure all connections are secure and insulated.

- **Power Input (AC):** Connect 18VAC-80VAC to the AC and AC terminals.
- **Motor Connections:** Connect your 2-phase or 4-phase stepper motor to A+, A-, B+, B- terminals. Ensure correct phase matching.
- **Control Signals:** Connect your pulse (PUL), direction (DIR), and enable (ENA) signals from your controller to the corresponding terminals (PUL+, PUL-, DIR+, DIR-, ENA+, ENA-).

4.2 DIP Switch Settings

The DMA860H features DIP switches for setting output current and microstep resolution. Refer to the product label for detailed tables.



Figure 4: DMA860H Driver Label with Settings

This close-up image shows the detailed label on the DMA860H Microstep Driver. It clearly displays tables for 'Current Table' (using SW1, SW2, SW3) and 'Pulse/rev Table' (using SW5, SW6, SW7, SW8). It also indicates the function of SW4 for 'Half Current' or 'Full Current'.

4.2.1 Current Setting (SW1, SW2, SW3)

Use switches SW1, SW2, and SW3 to set the desired peak current for the motor. The label provides a table mapping switch positions (on/off) to current values (e.g., 2.00A, 2.57A, 3.14A, etc., up to 7.20A).

4.2.2 Half/Full Current (SW4)

SW4 determines the current mode:

- **SW4 'on':** Half Current (reduces current by 50% when motor is idle).
- **SW4 'off':** Full Current (maintains full current when motor is idle).

4.2.3 Microstep Resolution (SW5, SW6, SW7, SW8)

Use switches SW5, SW6, SW7, and SW8 to set the microstep resolution (pulses per revolution). The label provides a table mapping switch positions to resolutions (e.g., 400, 800, 1600, 3200, 6400, 12800, 25600, 51200, 1000, 2000, 4000, 5000, 8000, 10000, 20000, 40000 pulses/rev).

4.3 Mounting

Mount the driver in a location that allows for adequate airflow around the heatsink and fan. Avoid enclosed spaces without ventilation. Use appropriate fasteners to secure the driver firmly.

5. Operating

Once the driver is correctly wired and configured, apply power. The PWR/FAULT indicator light will illuminate. If a fault occurs, the light will indicate the error state.

- **Power On:** Apply the specified AC voltage (18VAC-80VAC) to the power terminals.
- **Control Signals:** Send pulse, direction, and enable signals from your motion controller.
- **Motor Movement:** The stepper motor will move according to the received pulse and direction signals.

- **Enable/Disable:** Use the ENA signal to enable or disable the motor driver output. When disabled, the motor will be free-spinning.

6. Maintenance

The DMA860H driver is designed for reliable operation with minimal maintenance. However, periodic checks can extend its lifespan:

- **Cleaning:** Periodically clean dust and debris from the heatsink and cooling fan to ensure efficient heat dissipation. Use compressed air or a soft brush.
- **Connection Check:** Ensure all wiring connections remain tight and free from corrosion.
- **Environmental Monitoring:** Verify that the operating environment remains within the specified temperature and humidity ranges.

7. Troubleshooting

If you encounter issues with the DMA860H driver, consider the following common problems and solutions:

Problem	Possible Cause	Solution
Motor not moving or erratic movement	Incorrect wiring (motor phases, control signals) Insufficient power supply Incorrect DIP switch settings (current, microstep) Faulty motor or driver	Verify all wiring connections. Check power supply voltage and current capacity. Review DIP switch settings against the label. Test motor with another driver or driver with another motor if possible.
Driver overheating	Inadequate ventilation Excessive motor current Ambient temperature too high	Ensure proper airflow around the heatsink and fan. Reduce the output current setting via DIP switches. Operate in a cooler environment.
PWR/FAULT indicator light off	No power supply Internal fault	Check power connections and voltage. If power is present, the driver may be faulty; contact support.
Motor vibrates but does not rotate	One or more motor phases incorrectly wired or disconnected	Check motor phase connections (A+, A-, B+, B-).

8. Specifications

- **Model:** DMA860H
- **Brand:** DAVITU
- **Input Voltage:** 18VAC - 80VAC
- **Output Current:** 2.4A - 7.2A (Peak)
- **Microstep Resolution:** 400 to 51200 steps/revolution (configurable via DIP switches)
- **Control Mode:** Pulse/Direction
- **Protection:** Over-voltage, Over-current, Phase error
- **Operating Temperature:** 0°C to 50°C (32°F to 122°F)
- **Storage Temperature:** -20°C to 65°C (-4°F to 149°F)

- **Humidity:** 40-90% RH (non-condensing)

9. Warranty and Support

Specific warranty details are not provided in the product information. For warranty claims, technical support, or service, please contact your original seller or the manufacturer, DAVITU, directly. Ensure you have your purchase details and product model number (DMA860H) available when contacting support.

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