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> [XY-BLDC 12-30V 200W Three-Phase Brushless Motor Controller User Manual](#)

EAJORN XY-BLDC

User Manual

XY-BLDC 12-30V 200W THREE-PHASE BRUSHLESS MOTOR CONTROLLER

Brand: EAJORN | Model: XY-BLDC

1. INTRODUCTION

This manual provides detailed instructions for the installation, operation, and maintenance of the EAJORN XY-BLDC 12-30V 200W Three-Phase Brushless Motor Controller. Please read this manual thoroughly before using the product to ensure safe and efficient operation.

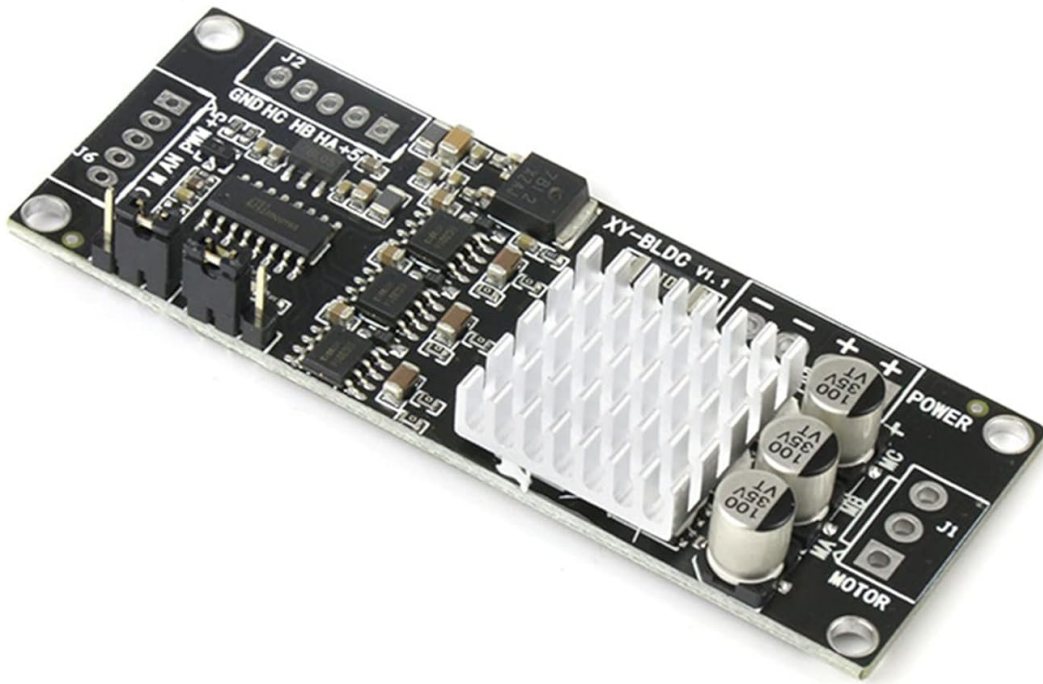


Figure 1.1: XY-BLDC 12-30V 200W Three-Phase Brushless Motor Controller

This image shows an angled top-down view of the XY-BLDC motor controller board. Key components visible include the main heat sink, various integrated circuits, capacitors, and connection terminals for power and motor output.

2. FEATURES

The XY-BLDC motor controller offers robust performance and versatile control options for three-phase brushless motors. Key features include:

- DFN packaging technology for enhanced reliability.
- Wide operating voltage range: 12V to 30V DC.
- High power output: Up to 200W.
- Integrated overcurrent protection for safe operation.
- Support for both positive and negative rotation.
- Brake function included.
- Speed control via PWM (Pulse Width Modulation) input.
- Support for 0-5V analog quantity control.
- Compatible with 120-degree electrical angle brushed motors.

3. SPECIFICATIONS

Parameter	Value
Model	XY-BLDC
Working Voltage	12-30V DC
Maximum Current	7A
Maximum Power	200W
Overcurrent Protection	Yes
Direction Control	Positive and Negative
Brake Function	Yes
Speed Control	PWM / Analog (0-5V)
Recommended PWM Frequency	1K-10KHz (for 5V amplitude)
Product Dimensions	Approx. 8cm x 3cm (3.15 inches x 1.18 inches)

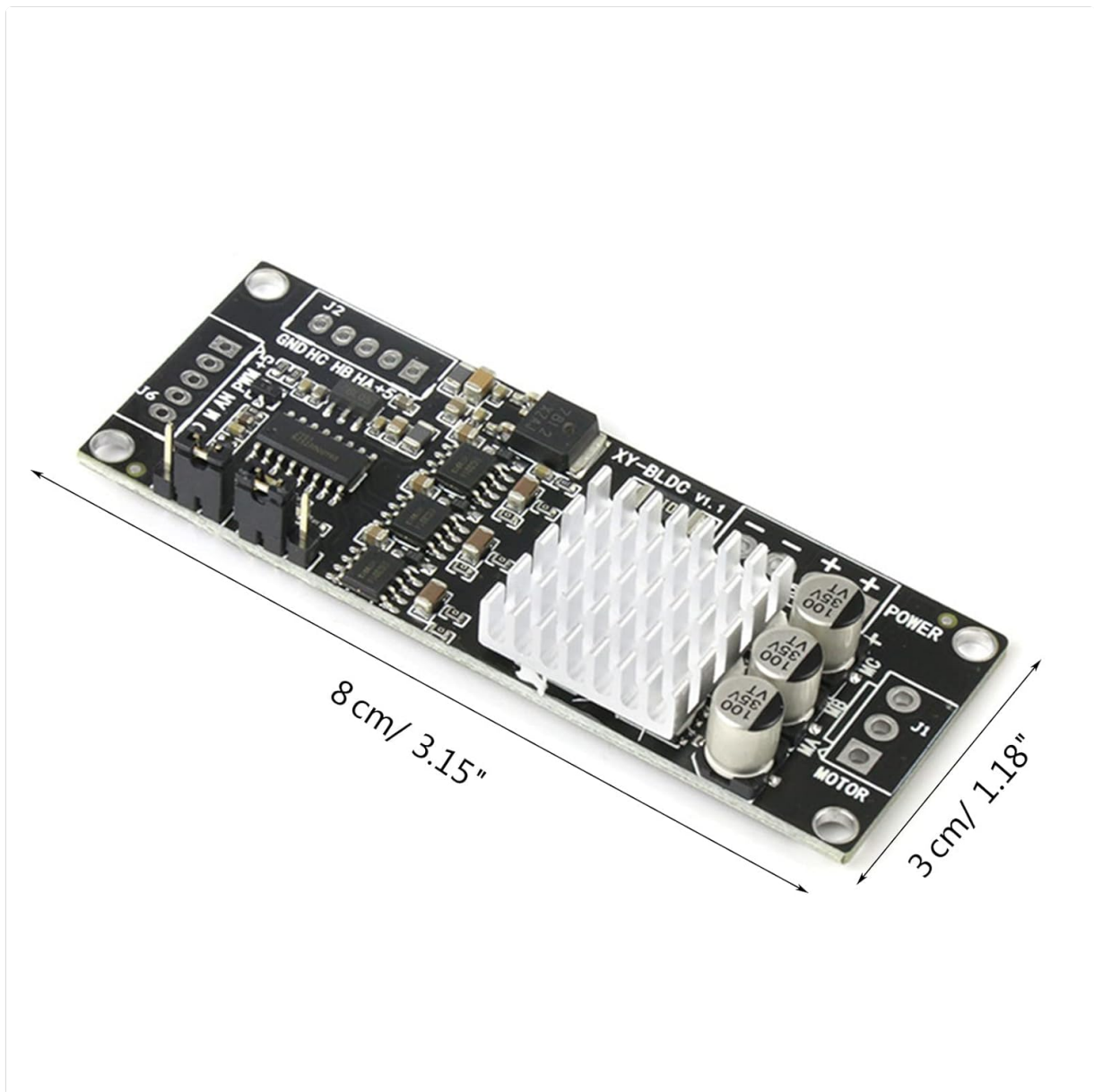


Figure 3.1: Product Dimensions

This image illustrates the physical dimensions of the XY-BLDC motor controller board, showing its length as approximately 8 cm (3.15 inches) and width as approximately 3 cm (1.18 inches).

4. SETUP AND CONNECTIONS

Proper connection of the motor controller is crucial for its functionality and safety. Refer to the diagram below for connection points.

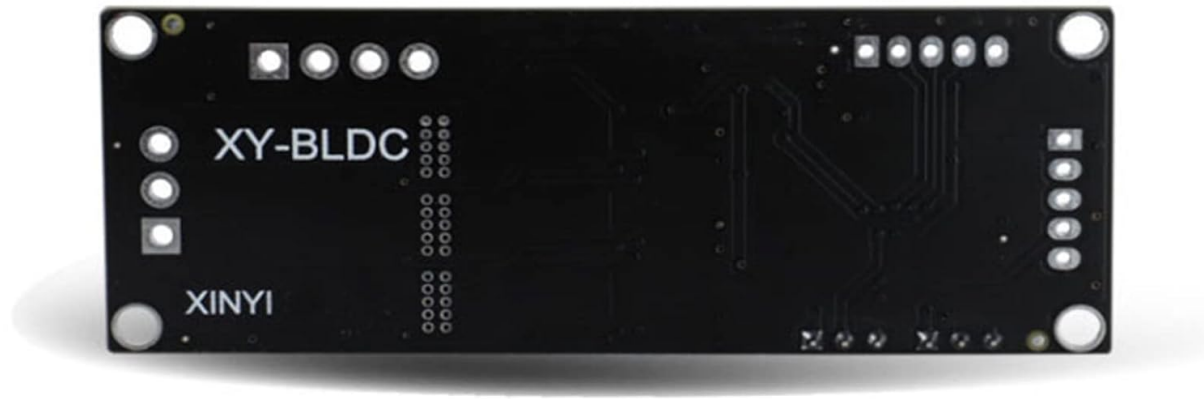


Figure 4.1: Connection Terminals

This image provides a detailed view of the connection terminals on the XY-BLDC board. On the right, the 'POWER' terminals (+ and -) are for DC input. Below them, the 'MOTOR' terminals (three pins) are for connecting the three-phase brushless motor. On the left, the 'J2' and 'J6' headers provide control inputs including GND, EN (Enable), AN (Analog input), PWM, and Hall sensor inputs (HA, HB, HC, +5V).

4.1 Power Connection

- Connect your 12-30V DC power supply to the 'POWER' terminals on the board. Ensure correct polarity: '+' for positive and '-' for negative.
- The board is designed for a maximum current of 7A. Ensure your power supply can provide sufficient current for your motor's requirements without exceeding this limit.

4.2 Motor Connection

- Connect the three phases of your brushless motor to the 'MOTOR' terminals (J1) on the board. The order of connection may affect the motor's rotation direction.
- This controller is specifically designed for three-phase brushless motors with a 120-degree electrical angle. Ensure your motor is compatible.

4.3 Control Signal Connections

The board supports various control inputs via the J2 and J6 headers:

- **GND:** Ground reference for control signals.
- **EN (Enable):** Used to enable or disable the motor output.
- **AN (Analog Input):** For 0-5V analog speed control.
- **PWM:** For PWM speed control.
- **HA, HB, HC:** Hall sensor inputs for motor commutation.
- **+5V:** On-board 5V supply, can be used for external potentiometers or sensors.

5. OPERATING INSTRUCTIONS

5.1 Speed Control via PWM

- Connect your external PWM signal source to the 'PWM' input pin.
- The recommended amplitude for the PWM signal is 5V.
- The recommended PWM frequency range is 1KHz to 10KHz.
- Varying the duty cycle of the PWM signal will adjust the motor speed.

5.2 Speed Control via Analog Input (0-5V)

- Connect an external analog voltage source (0-5V) to the 'AN' input pin.
- Alternatively, you can use an external potentiometer (resistance 10K-100K Ω) connected between the on-board 5V supply and GND, with the wiper connected to the 'AN' input, to adjust the speed.
- A higher input voltage corresponds to a higher motor speed.

5.3 Direction Control

The controller supports both positive and negative rotation. Specific pins or methods for direction control are typically indicated on the board or in advanced documentation. Refer to the pinout diagram (Figure 4.1) for relevant control pins.

5.4 Brake Function

The controller includes a brake function. Activation of this function will rapidly stop the motor. Consult the detailed pinout or advanced documentation for the specific pin responsible for activating the brake.

6. TROUBLESHOOTING

If you encounter issues with the XY-BLDC motor controller, consider the following:

- **No Motor Movement:**
 - Check power supply connections and ensure the voltage is within the 12-30V range.
 - Verify motor connections are secure and correctly phased.
 - Ensure the 'EN' (Enable) pin is activated (if applicable).
 - Confirm the motor is a 120-degree electrical angle brushless type.
- **Erratic Motor Behavior:**
 - Check Hall sensor connections (HA, HB, HC) for proper wiring.
 - Ensure control signals (PWM/Analog) are stable and within specified ranges.
- **Overcurrent Protection Triggered:**

- Reduce motor load.
- Ensure the motor's current draw does not exceed 7A.
- Check for short circuits in the motor or wiring.

7. MAINTENANCE

To ensure the longevity and optimal performance of your XY-BLDC motor controller:

- Keep the board clean and free from dust and debris. Use a soft, dry brush or compressed air for cleaning.
- Avoid exposing the board to moisture or extreme temperatures.
- Ensure adequate ventilation around the heat sink, especially during high-power operation, to prevent overheating.
- Regularly inspect connections for looseness or corrosion.

8. SAFETY INFORMATION

Please observe the following safety precautions:

- Always disconnect power before making or changing any connections to the board.
- Do not exceed the specified maximum voltage (30V) or current (7A) ratings.
- Ensure proper insulation for all wiring to prevent short circuits.
- Operate the controller in a well-ventilated area to prevent heat buildup.
- This product contains electronic components that can be sensitive to static discharge. Handle with care.
- Keep out of reach of children.

9. PACKAGE CONTENTS

The package for the XY-BLDC 12-30V 200W Three-Phase Brushless Motor Controller typically includes:

- 1x XY-BLDC Drive Board

10. WARRANTY AND SUPPORT

For warranty information, technical support, or any inquiries regarding the XY-BLDC motor controller, please contact the seller or manufacturer directly. Details can typically be found on the product packaging or the point of purchase.

IMPORTANT NOTES

- Please allow 1-2cm errors due to manual measurement; ensure this is acceptable before ordering.
- Due to differences in monitors, the actual color of the item may vary slightly from the images shown.

