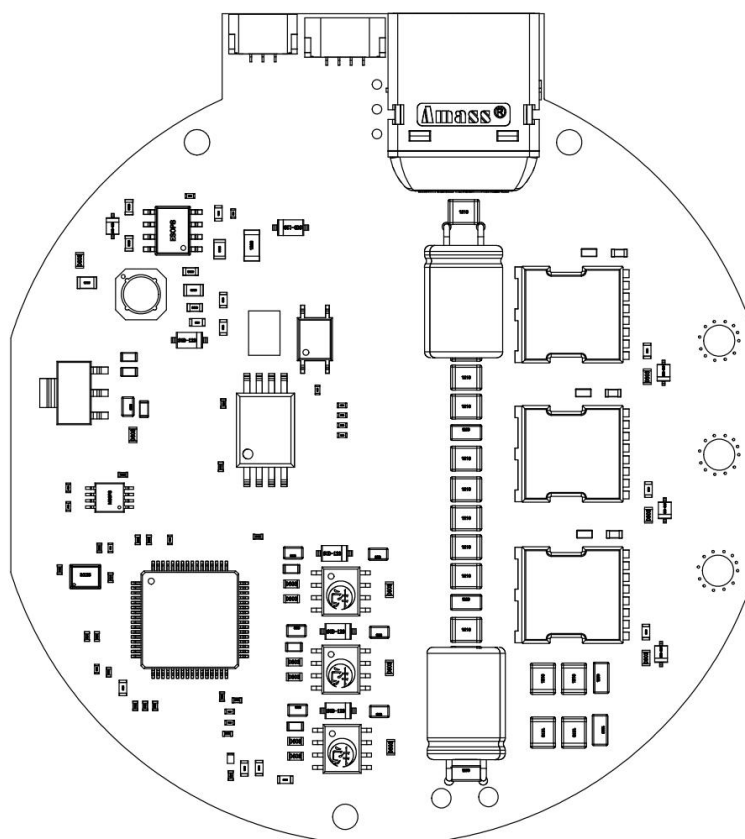


# DRV80-4830-1C-A4 Driver Installation Instructions

**V1.0.0**





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## Precautions

1.Ensure that there are no short circuits in the circuit and that interfaces are connected correctly as required.

2.  The driver board will heat up during output; please use it carefully to avoid burns.

3.  Before use, please check if all parts are intact. If any parts are missing or aged, please stop using it and contact technical support in time.

4.  Please strictly follow the working voltage, current, temperature, and other parameters specified in this document; otherwise, it will cause permanent damage to the product!

## Product Features

The AK series motor driver board adopts high-performance drive chips in the same class, uses Field Oriented Control (FOC) algorithm, and is equipped with advanced self-disturbance control technology for speed and angle control. It can be used with CubeMarsTool parameter setting software for parameter setting and firmware upgrades. In terms of hardware, the inner loop uses a 16-bit high-precision encoder, supporting up to 21 bits (custom firmware required), and the CAN communication uses a safer isolated CAN interface, along with a more reliable plug, greatly enhancing the reliability of the product's use and communication; in terms of software, the upper computer CubeMarsTool has been fully upgraded, and there is no need to switch between servo mode and force control mode, the control interface is more concise, and a large number of simplifications have been made in the operation, fully improving the customer's experience.

## Disclaimer

Thank you for purchasing the AK series driver board. Before using it, please read this statement carefully. Once used, it is considered as recognition and acceptance of all the contents of this statement. Please strictly follow the product manual and relevant laws, regulations, policies, and guidelines for the installation and use of the product. During the use of the product, the user promises to be responsible for their own actions and all consequences arising therefrom.

Any losses caused by improper use, installation, or modification of the product by the user, CubeMars will not assume legal responsibility.

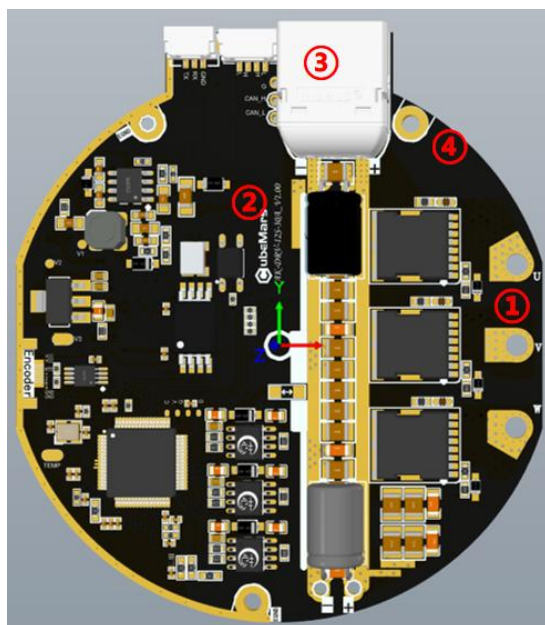
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## Version Change Record

Date	Version	Change
2025.6.18	V1.0.0	First time edit

## 1 Driver Appearance Introduction

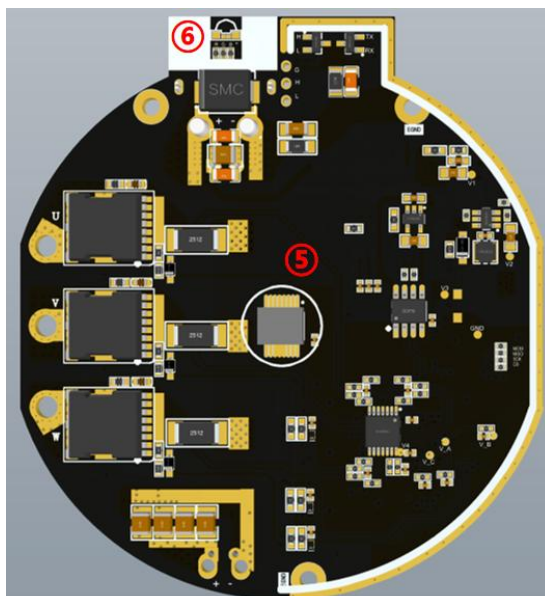


① Three-phase wires connection port

② Hardware version

③ Connection port

④ Mounting holes



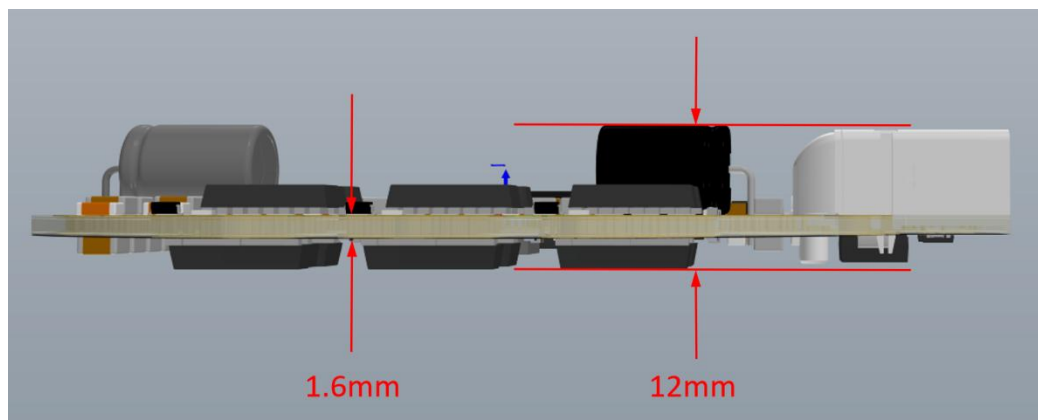
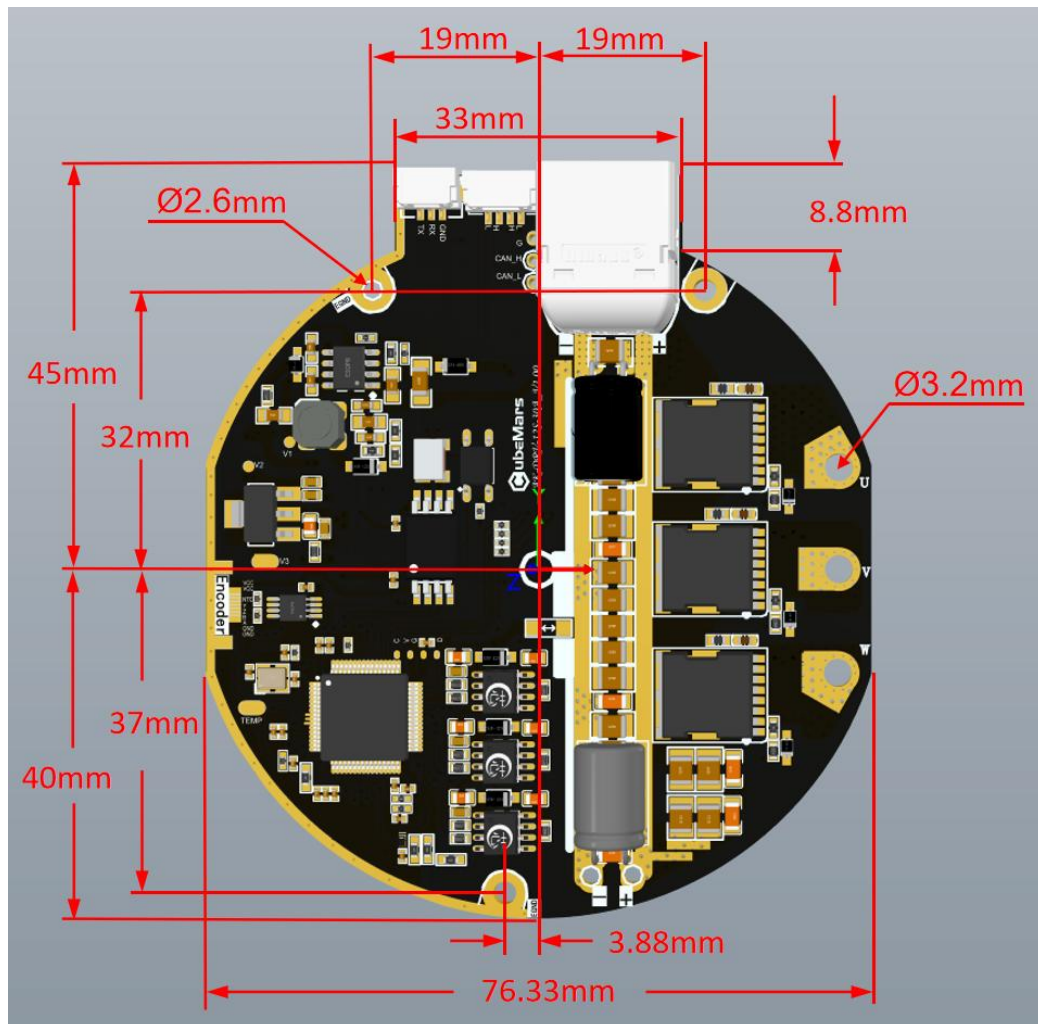
⑤ Encoder chip

⑥ LED indicator light

## 2 Product Specifications

Product Specifications	
Hardware version	AK-DRV-12S-30A_V1.00
Rated working voltage	48V
Allowable working voltage	18-52V
Rated Output Current (RMS)	30A
Maximum output current (AP)	90A
Standby power consumption	≤1W
CAN bus bit rate	1Mbps
Size	76.33mm×85mm
Working environment temperature	-20°C to 65°C
Maximum allowable temperature for driver board	100°C
Encoder bits	21bit (single turn absolute)

## 3 Product Dimensions and Installation Notes

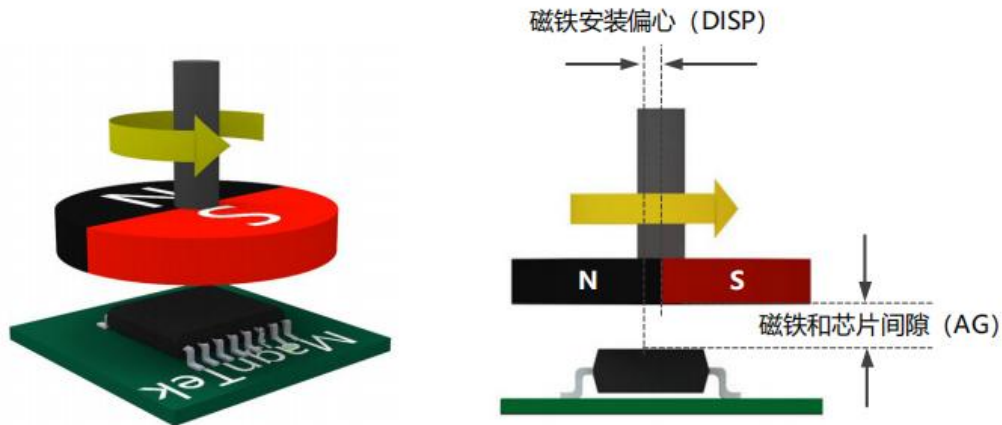


### Note:

1. Dimensional tolerance:  $\pm 0.15$  mm; mounting hole tolerance:  $+0.1$  mm /  $-0$  mm; PCB thickness tolerance:  $\pm 0.16$  mm.
2. It is recommended to use M2.5 screws for mounting.

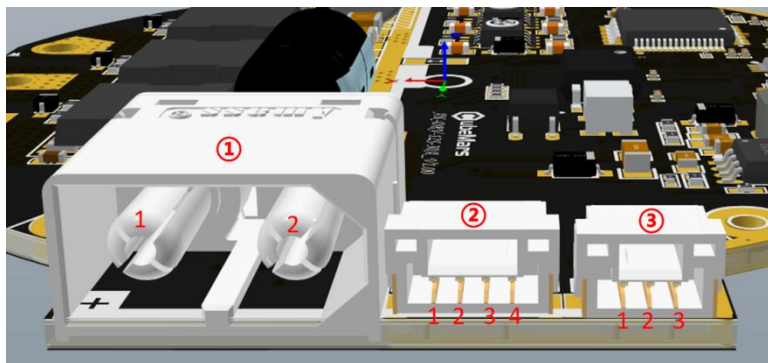
3、The suggested air gap (AG) between the encoder magnet and the chip is 1 mm, with a maximum not exceeding 3 mm.

4、The recommended maximum eccentricity (DISP: deviation between magnet center and chip center) is 0.3 mm.



## 4 Driver Interfaces and Definition

### 4.1 Driver Interface Diagram



### 4.2 Driver Interface Pin Definitions

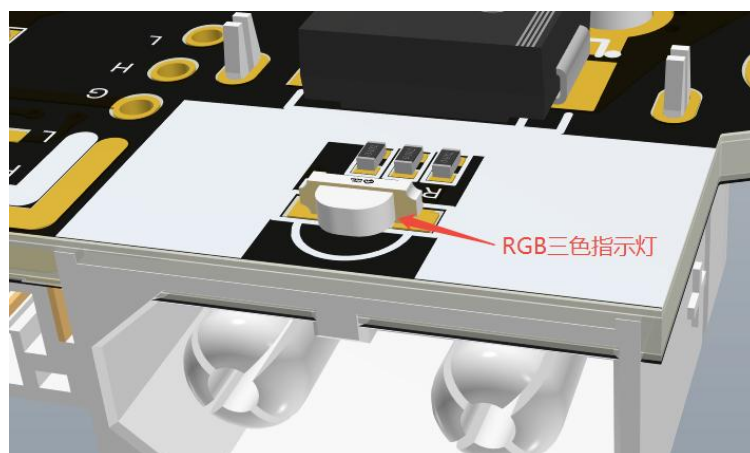
No.	Function	Pin	Clarification	Color
1	Power input	1	Positive Pole (+)	Red
		2	Negative Pole (-)	Black

2	<b>CAN communication</b>	1	CAN communication low side (CAN_L)	Blue
		2	CAN communication high side (CAN_H)	White
		3	CAN communication high side (CAN_H)	White
		4	CAN communication low side (CAN_L)	Blue
3	<b>Serial Communication</b>	1	Serial signal ground (GND)	Black
		2	Serial signal input (RX)	Yellow
		3	Serial signal output (TX)	Green

#### 4.3 Recommended Brands and Models for Driver Interface

No.	Onboard Interface model	Brand	Terminal Interface Model	Brand
1	XT60PW-M	AMASS	XT60H-F	AMASS
2	A1257WR-S-3P	CJT	A1257H-3P	CJT
3	A1257WR-S-4P	CJT	A1257H-4P	CJT

## 5 Driver Indicator Light Definitions



Indicator Light Definitions		
Power Indicator Light (Blue)	Light on	The driver board is powered
	Light off	The driver board is not powered
Operation Indicator Light	Light on	The motor is working



(Green)	Light off	The motor is not working
Drive Fault Indicator Light (Red)	Light on	Driver board fault
	Light off	Driver board function normally

⚠: After the driver board is powered, the blue light should remain on in the normal state, and the green and red lights should light up for 2 seconds before going out.

## 6 Main Accessories and Specifications

No.	Item	Specifications		Quantity	Remarks
1	Power supply pug	Power line	16AWG-Red and black-150mm-2-/-XT60H-F-one end XT60H-F, the other end stripped and tinned 3mm-AMS	1PCS	±2MM
2	Signal plug	CAN cable	Teflon 30# Wire - OD 0.64mm - Blue & White - 300mm - 4 cores GH1.25-4PIN Male Connector to Two JR-2PIN Male Connectors - NULL	1PCS	±2MM
3	Signal plug	Serial port cable	Teflon 30# Wire - OD 0.64mm - Yellow, Green, Black - 300mm - 3 cores GH1.25-3PIN Male Connector to JR-3PIN Male Connector - NULL	1PCS	±2MM
4	Thermistor	MF51B103F3950-10K-3950		2PCS	
5	Electrolytic capacitor	180uF-63V-8*20-/-150°- rubycon		2PCS	
6	Power MOS	HGT009N08A-TOLL-N-80V-Hunteck		6PCS	