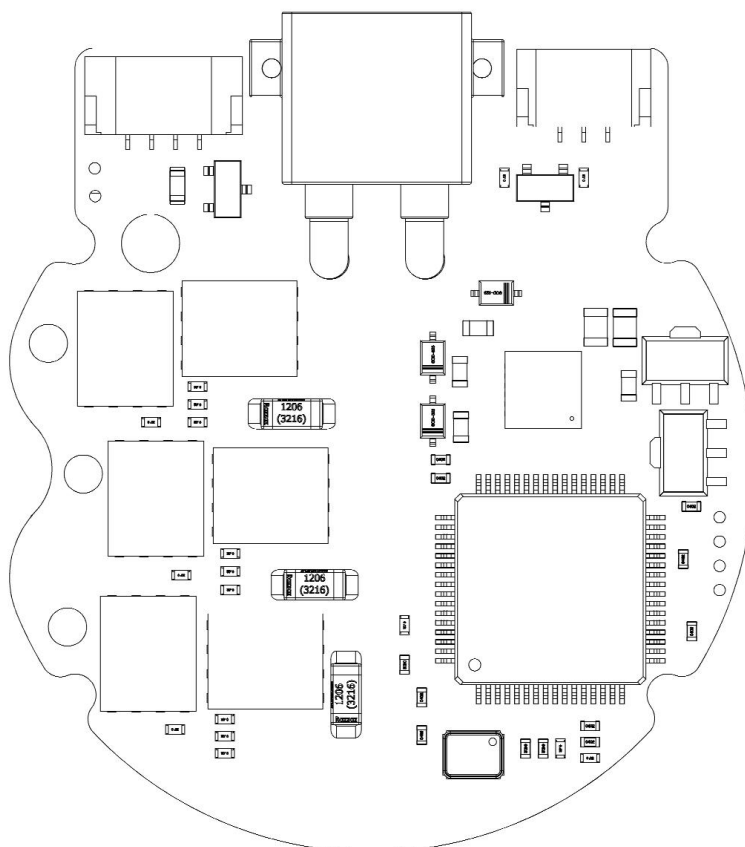


AK40-2410-1A-A1 Drive Installation Instructions

V1.0.2





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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 a mid-to-high performance driver chip of its class and uses the Field Oriented Control (FOC) algorithm, combined with advanced Active Disturbance Rejection Control (ADRC) technology to control speed and position.

It works with the CubeMars Tool tuning software for parameter configuration and firmware upgrades.

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.

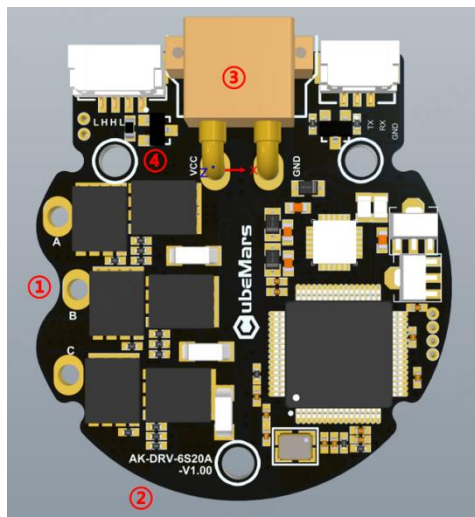
Any losses caused by improper use, installation, or modification of the product by the user, CubeMars will not assume legal responsibility.

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Version Change Record

Date	Version	Content
2025.7.17	V1.0.0	First time edit
2025.12.9	V1.0.1	Section 3: The mounting hole diameter has been revised to 2.1 mm, and M2 screws are used for installation.
2026.2.5	V1.0.2	Modify Product Features

1. Driver Appearance Introduction

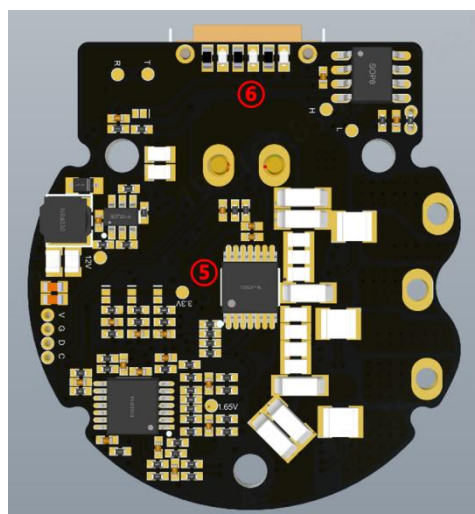


① Three-phase wire connection port

② Hardware version

③ Connection port

④ Mounting hole



⑤ Encoder chip

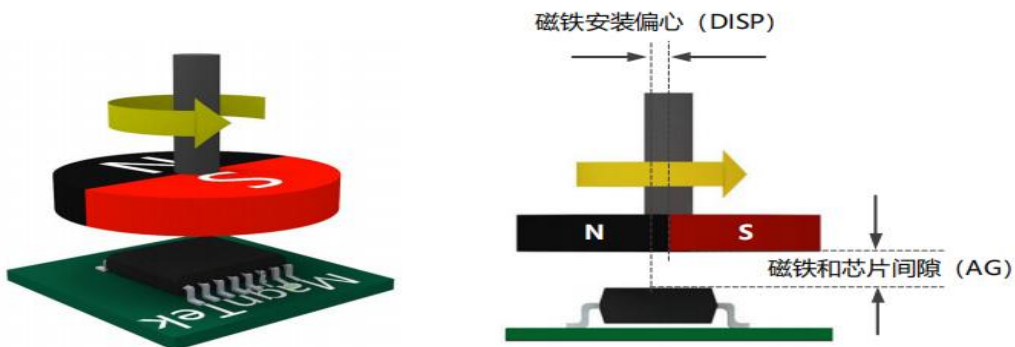
⑥ LED indicator light

2. Product Specifications

Specifications	
Hardware version	AK-DRV-6S20A_V1.00
Rated working voltage	24V
Allowable working voltage	16-28V
Rated Output Current (rms)	10A
Maximum output current (AP)	20A
Standby power consumption	≤1W
CAN bus bit rate	1Mbps
Size	39mm×42mm
Working environment temperature	-20°C to 65°C
Maximum allowable temperature for driver board	100°C
Encoder bits	14bit (single turn absolute)

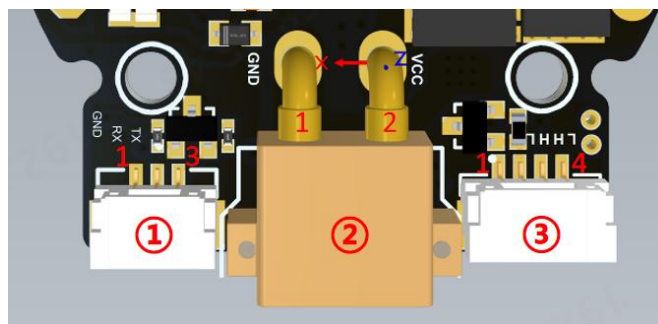
Remark:

- 1、Dimensional tolerance: ± 0.15 mm; mounting hole tolerance: $+0.1$ mm / -0 mm; PCB thickness tolerance: ± 0.16 mm.
- 2、It is recommended to use M2 mm 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

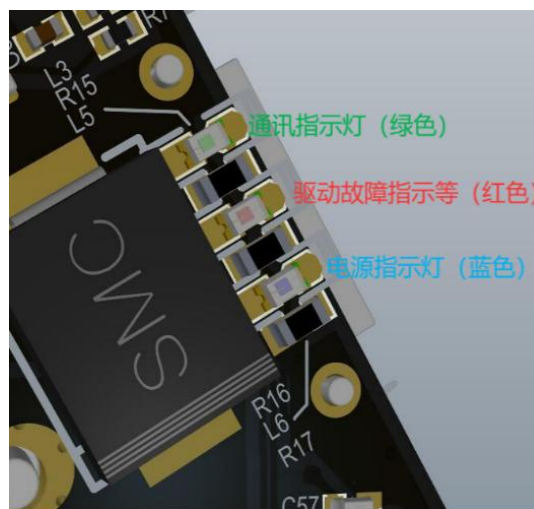
No.	Function	Pin	Clarification	Color
1	Serial Communication	1	Serial signal ground (GND)	Black
		2	Serial signal input (RX)	Yellow
		3	Serial signal output (TX)	Green

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

4.3 Recommended Brands and Models for Driver Interface

No	Onboard Interface model	Brand	Terminal Interface Model	Brand
1	XT30PW-M	AMASS	XT30U-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 on	The motor is working

Light(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	Remark
1	Power plug	Power cable	16AWG Silicone Wire – Red & Black – 200mm – One End XT30U-M, Other End XT30U-F	1PCS	±2MM
2	Signal cables plug	CAN	Teflon #30 Wire – OD 0.64mm – Blue & White – 300mm – 4 cores – GH1.25 4-pin Male to 2 × JR 2-pin Male – NULL	1PCS	±2MM
3	Signal cables plug	Serial	Teflon #30 Wire – OD 0.64mm – Yellow, Green & Black – 300mm – 3 cores – GH1.25 3-pin Male to JR 3-pin Male – NULL	1PCS	±2MM