Brushless DC Motor Driver

Instruction for JKBLD2200 V2.2

Main features

◆ It has double speed closed current design with low speed torque and smooth operation;
◆ It has high speed output with the maximum speed of 10000rpm / min;
◆Speed control mode : analog quantity 0-5V
◆ It has have EN, DIR signal control side;
◆It can output tachometer pulse (optoelectronic isolation, gate output);
◆It has over-current, overvoltage, under voltage , overheating, motor stalling and other protection functions

Product Overview

JKBLD2200 brushless DC motor driver is our company's latest high-tech product for the field of high power motor drive. This product uses a large-scale integrated circuit to replace the original hardware. It has higher anti-jamming and fast response ability. It is suitable for all the three-phase brushless DC motors with low voltage DC310V and current below 10A. Even if working with large current, it is still in low temperature.

Functional Overview

Function as following: (default setting mode: Square wave, Hall, Open loop)

1.Run model: square wave, with hall sensor, open loop speed
2.Run model: square wave, with hall sensor, closed loop speed
3.Run model: square wave, without hall sensor, open loop speed
4.Run model: square wave, without hall sensor, closed loop speed
5.Run model: constant-torque device, open loop speed（Don't run for long time with overloading）
6.Run model: constant-torque device, closed loop speed(Don't run for long time with overloading)

On the basis of our upper computer software and hand debugger, all the above functions can be set by yourself

Note: It can not control the direction without Hall Sensor

Electrical Specification:

Power supply	AC100V～250V direct current (Capacity according to motor power selection)
The maximum input current	Not greater than10A (according to motor and rated load)
The maximum power	The maximum is 2200W (over power motor is strictly prohibited)
Insulation resistance	General temperature > 500MΩ
Insulation strength	General temperature and pressure 0.5KV， 1minitute

Environmental Parameter

Cooling method		Natural air cooling & forced air cooling
Environment	Condition	Avoid dust, oil mist and corrosive gases
	Temperature	0℃～+50℃
	Humidity	< 80%RH， no condensation, no frost
	Vibration	5.9m/s^2 max
Reserved temperature		-20℃～+65℃
Size		198mmX103mmX86mm
Weight		About 1Kg

Note: Due to dramatic changes in the temperature of the storage environment, it is easy to form condensation or frost. In this case, the drive should be placed for 12 hours or more. Until the drive temperature and ambient temperature is consistent, it can be on power.

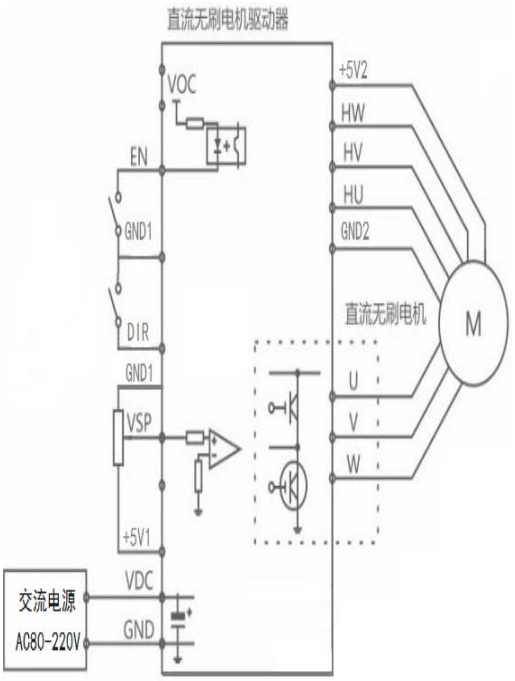
Terminal interface description

Function	Mark	Description
Indicator light	POWER	If the green power indicator is lighten, it shows that power is normal.
	ALM	If the red status indicator is slow flash, it means waiting; Quick flash means operation; It always lights meaning faults or off-line;
Control signal port	+5V1	Control signal power+(inner power output)
	VSP	External speed control signal Control way: By connecting with a potentiometer to change VSP, then it can complete 0 ~ 100% speed adjustment. The range is 0-5V
	FG	Motor speed pulse output is measuring the frequency of this signal. Then converts it into the actual motor speed.
	DIR	Rotary direction is controlled by high and low electrical level, motor forward: connected with GND1, motor reversal（anticlockwise）;without GND1 or connected with +5V, motor forward (clockwise)
	EN	Connected EN with GND1, motor can work(online status);without connected， motor can not work(offline status and the red light keep working)
Hall control port	+5V2	+ motor’s Hall power
	HU	Hall sensor signal U phase input
	HV	Hall sensor signal V phase input
	HW	Hall sensor signal W phase input
	GND2	The motor’s Hall power supply
The motor and power port	U、V、W	The motor’s three-phase output signal
	AC1，AC2	The input power is AC100V～250V

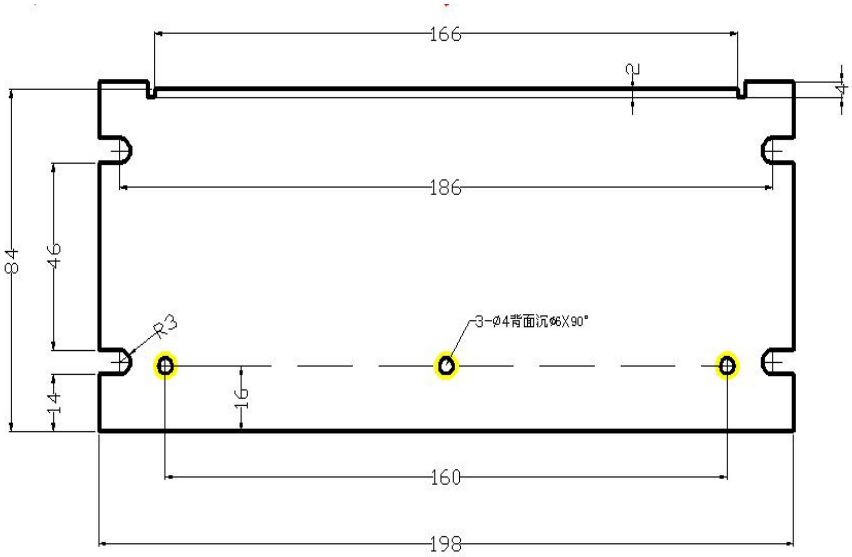
Function and method

Speed mode (VSP/PWM)	The external input speed: two external terminals of the external potentiometer respectively connected to the driver's GND1 and +5 V1 terminal. If the regulator is connected to the VSP end, you can use an external potentiometer to adjust speed. It can also be made by the other control unit's (such as PLC, microcontroller, etc.) input analog voltage to VSP side (relative to GND1). VSP port accepts the range of DC 0V ~ +5 V and the corresponding motor speed is 0 ~ rated speed;
Start/Stop signal（EN）	By controlling high low-level of EN to control the motor's stop and run. When EN is low level, motor run; when EN is high level or non-connect ,motor stop working, red light keep working. When control motor stop by EN port, it is nature stop, and the run regular is related with overloading inertia. Power Consumption is less than or equal to 20mA. Fault Value: short circuit with EN and GND1
The motor positive and negative signal（DIR）	By controlling high low-level of DIR to control the motor's positive and reverse turn. Noticed: Swerved suddenly when motor is at high speed, to avoid the damage of motor and equipment , when DIR get the transform single , we must make motor stop running for 2s, then change the motor direction ,improve speed to the set value.
Speed signal output（FG）	The drive provides the motor speed pulse signal, which is positive proportion to the motor speed, pulse output way: light lotus root isolation, 1. the motor speed (RPM) = F ÷ N× 60 F = actually measured frequency current on the FG foot by frequency table N = 2 or 4, 2-pole motor, N = 2; 4-pole motor, N = 4 For example: the user selects a 4-level motor. When the output FG signal is 200Hz, the motor speed = 200 ÷ 4× 60 = 3000 r / min. 2.optoelectronic isolation, gate output

Connection Diagram



Product Size (units : mm)



Safety attention

★ The motor and drive wiring must be connected in the power-off state. Do not connect electrical wiring under power.

★According to the illustrated method, connect the power cord, motor winding wire and Hall signal line correctly. Please pay attention to the order of UVW three-phase must be consistent.

★Do not disassemble the drive at random to prevent damage.

★Do not touch all terminals on power-on state.

★ Do not drive without shell operation

★Impact of the drive may cause damage.

General problems

1. How can get it started as soon as possible when you first use the drive?
After you correctly connect the power cord, the motor line, the Hall line, the external potentiometer slowly accelerates. After the motor is turned correctly, you can test the enable, direction and other functions. If you are unfamiliar with the product, the initial use should be done after the test. And then it can be installed to the actual use.

2. What will come about if power supply is reverse?
It will immediately burn the drive.

3. What is the maximum of the upper control signal voltage ?
The maximum voltage of the speed regulation signal is 5V. Exceeding this voltage will cause the drive to burn.

4. After the driver has been working for a long time, the shell is hot. Is it normal?
Yes, it is. At room temperature, after long working hours, it is up to 90 degrees. And it will not affect the performance.

5. The power indicator is light, but the motor does not turn and shift, what is the reason?
There may be a mistake in the phase line and the Hall line. Please re-energize the wiring according to the motor manual.

6. Can my motor speed transferred to 6000 with this drive?
The maximum speed of the brushless motor is determined by the parameters of the motor itself. The drive can control the motor speed from 0 to the highest speed.

7. I already have a motor and how to install this drive after wiring?
You must first determine the motor phase and the definition of the Hall line, and then you can connect it with wires. If you are not sure, you need to ask the motor manufacturers. Incorrect wiring can cause damage to the drive.

8. Can I add some features on this drive or do new product development?
Yes, please contact us.