Brushless DC Motor Driver

Instruction for MRX-BL4805F V2.2

Main features

◆Output with high torque and speed ,the maximum speed is 10000rpm / min(according to the motor rotational speed);

◆With pulse velocity output, motor rotational speed can be observed anytime;

◆Speed control : analog quantity(0-5V) and PWM(10Hz-300Hz);

◆EN, DIR signal input;

◆Functions: Over-current, overvoltage, and so on;

Product Overview

LK-BL4805F is the latest high-tech product of our company. It uses a large-scale integrated circuit to replace the original hardware, so it has higher performance of anti-jamming and fast response ability. It is suitable for all the low voltage three-phase brushless DC motors with peak current below 5A and low voltage DC48V-50V(boards show DC24V-48V) ,whether the motor driver with Hall or not. It is widely used in knitting equipment, medical equipment, food packaging machinery, electric tools and a series of electrical automation control area .

Functional Overview

Default Setting mode: Squarewave,Hall,Openloop,according to customer's requirement, we can do difference form to realize kinds of control models, as following:

*Run model: square wave, with hall sensor, closed loop speed

*Run model: square wave, without hall sensor

*Run model: square wave, without hall sensor, closed loop speed

Electrical Specification:

（1）Environmental Temperature:25℃

Power supply	DC18V ~ 50V (on the basis of motor power to choose)
Output current	Peak value:5.0A
The maximum power	Maximum is 240W
Insulation resistance	Greater than 500MΩ at normal temperature
Insulation strength	0.5KV,1min at normal temperature，

Cooling method		Natural air cooling (forced air cooling is recommended)
Environment	Condition	Dust, oil mist and corrosive gases must be avoided
	Temperature	0℃ ~ +50℃
	Humidity	﹤80%RH，no condensation, no frost
	Vibration	Max value:5.9/ s^2
Reserved temperature		-20℃ ~ +65℃
Size		96mm X 61.5mm X 27.5mm
Weight		About 0.15Kg

（2）Environmental Parameter

Note:Duetodramaticchangesinthetemperatureofthestorageenvironment,itiseasytoformcondensation or frost.Inthiscase,thedriveshouldbeplacedfor12hoursormore.Untilthedrivetemperatureandambient temperatureisconsistent,itcanbeonpower.

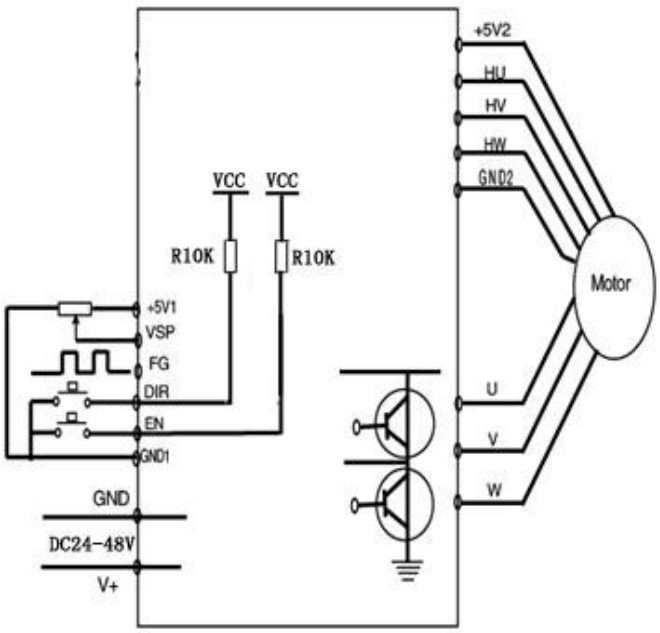
Terminal interface description

Function	Mark	Description
Indicator light	POWER	After power on , green light work, it means power supply is normal
	ALM	If the red status indicator(1) slow flashing means waiting; (2) quick flashing means running, both of them can be changed with the motor rotational speed . If the light work all the time ,it means 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 motor rotational speed in the range of 0 ~ 100%
	FG	Motor speed pulse output : 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 reverse :without GND1 or connected with +5V. if you want to change two states ,you must stop the motor first to reduce the impact
	EN	Connected EN with GND1, motor can work(online status);without connected or high electrical lever, motor can not work(offline status and the red light keep working)
	GND1	Control signal's power supply
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
Motor and Power port	U、V、W	The motor's three-phase output signal
	GND、V+	Input power is DC24V ~ 48V (boards show DC24V-48V)

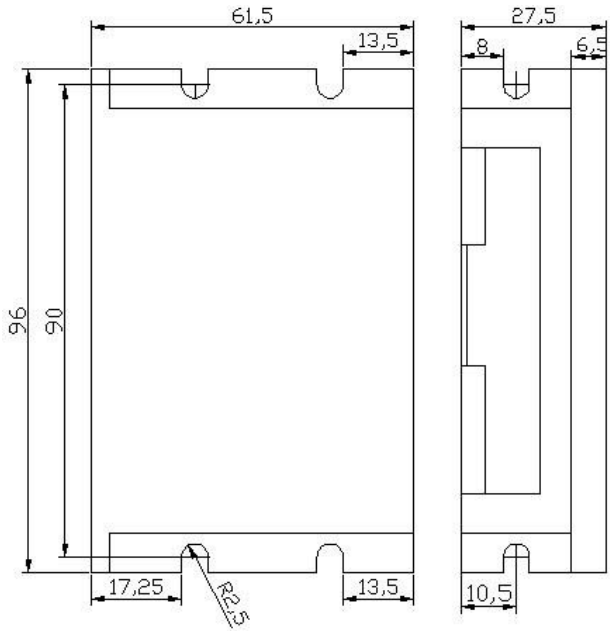
Function and Method

Speedmode (VSP/PWM)	1. External input speed: two external terminals of the external potentiometer(5K-10K) respectively connected to the driver's GND1 and +5 V1 terminal. If the regulator is connected with the VSP, 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.).Iinput 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; 2. PWM speed: the PWM's positive end is connected with VSP. The negative end connects with GND1. The frequency range is 10Hz-300KHz, changing the duty cycle speed.
Speedsignal output （FG）	The drive provides the motor speed pulse signal, which is positive proportion to the motor speed, pulse output way: RPUP 4.7k, open collector output 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.
Themotor positiveand negativesignal （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.
Start/Stopsignal （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. Power Consumption is less than or equal to 20mA. Fault Value: short circuit with EN and GND1

Connection Diagram



Product Size (units : mm)



Safety attention

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

★According to the connection diagram to connect the power cord, motor winding wire and Hall signal line correctly. It must consistent with UVW three-phase.

★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

★Do not impact driver

General problems

1.Howcangetitstartedassoonaspossiblewhenyouusethedrivefirstly?

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 EN, DIR and other functions. If you are unfamiliar with the product, th it can be installed to the actual use after test.

2. Whatistheresultofreverseconnected?

It will immediately burn the drive.

3. Whatisthemaximumoftheuppercontrolsignalvoltage?

The maximum voltage of the speed regulation signal is 5V. Exceeding this voltage will cause the drive to burn.

4. Afterthedriverhasbeenworkingforalongtime,theshellishot.Isitnormal?

Yes, it is. At room temperature, after long working hours, it is up to 90 degrees. And it will not affect the functions.

5. Thepowerindicatorislight,butthemotordoesnotturnbutshift,whatisthereason?

It may be a mistake with connecting the phase line and the Hall line. Please re-energize the wiring according to product instruction.

6.Canltransfermyrotationalspeedto6000withthisdrive?

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.Ialreadyhaveamotorandhowtoinstallthisdrive?

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.Canladdsomefeaturesonthisdriveordonewproductdevelopment?

Yes, please contact us.