BLDC SERVO DRIVERS

Low voltage brushless DC speed adjustable driver

Manual1.3

DBLS-03

Read the operating instructions carefully before putting the driver into operation with power

Summary

This closed-loop speed controller is designed with the latest type IGBT and MOS power devices. It takes advantage of DC brushless motor's Hall signal to double frequency for closed-loop speed control. PID control links with the speed controller. The control system is stable and reliable, especially at low speed, it always can reach the maximum torque, The speed control range is from 150 to 10000rpm.

Electrical Data

characteristics	symbol	Value	Unit
Rated Voltage	U	24/48	VDC
Under Voltage	U	11/30	VDC
Over Voltage	U	42/70	VDC
Continuous Current	Idauer	10	A
Peak Current	Imax	20	A
Variable Speed Range		0~40000	RPM
Efficiency		90	%
Power for hall sensor	VCC	5.0	VDC
Alarm		I-Alarm Hall-Alarm Vmax-Alarm Vmin-Alarm Stall-Alarm	
Run/stop(EN)	Logic level	Low -10~0.5V High 3~30V	V
DIR	Logic level	Low -10~0.5V High 3~30V	V
BAK	Logic level	Low -10~0.5V High 3~30V	V
PG	Logic level	Low -10~0.5V High 3~30V	V
Hall sensor input	Logic level	0~5	V
Temperature protection	Common style	<-10 or >70	□
	Industry style	<-40~>85	□
Operating temperature	Common style	-10~+70	□
	Industry style	-40~+85	□
Dimensions		133*78*34	MM
Weight		0.25	kg

Terminal connection

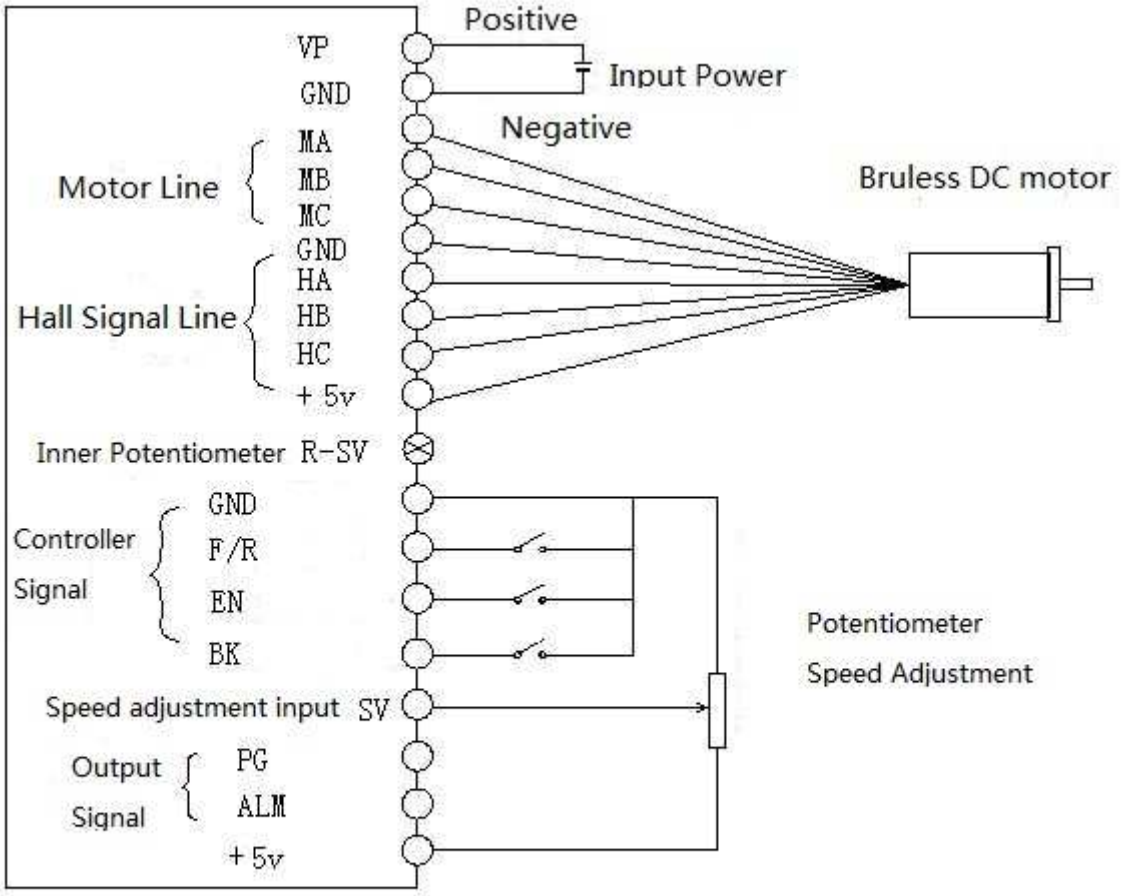
1、Power Input

1	V+	24VDC~48VDC input
2	GND	GND input

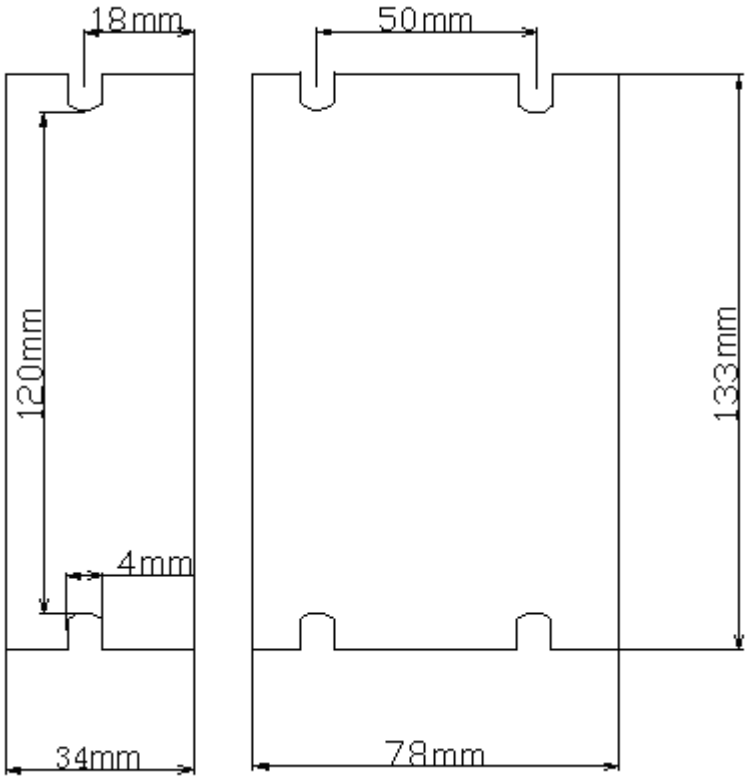
2、Motor Input

1	MA	A phase
2	MB	B phase
3	MC	C phase
4	GND	GND
5	HA	Hall single A input
6	HB	Hall single B input
7	HC	Hall single C input
8	+5V	Hall single power line

Connection Diagram of motor and driver



Dimension：



Specification and Description

1、PID speed and current double loop regulator

2、High performance, low price

3、20KHZ Chopper frequency

4、Electrical stop to ensure the quickly action of motor

5、Over load radio larger then 2, torque always can achieve the max in low speed

6、Provide OVP, LVP, OCP, OTP, illegal horal signal and other fault alarm.

Function

1. Speed adjust method

This drive provide below two adjust methods for the user to choose:

Inner potentiometer speed adjust: rotate the potentiometer on the driver panel counterclockwise, the rotate speed of the motor become low, rotate the potentiometer on the driver panel clockwise, The

rotate speed become high. If you use external input to adjust speed, make sure the potentiometer is set in the min state.

External input adjust: the terminal of external potentiometer connect to the GND and +5v terminal, connect the regulator terminal to SV, not only make it possible to adjust speed by external potentiometer, but also can achieve speed adjust through other control unit(Such as PLC, Microcontroller, etc) input analog voltage to SV. The acceptance of SV is DC 0V~+5V, and the corresponding motor rotate speed is 0 to rated speed. You also can use external digital signal to adjust speed: apply PWM with 5V amplitude and 1KHz~2KHz Frequency between SV and GND to adjust the speed. the motor rotate speed is adjust by the duty radio liner adjustment.

2. Motor operate/stop control (EN)

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You can control the brushless motor to run or stop by controlling the terminal “EN” and “GND” connecting. The motor will running when we connect the terminal “EN” to “GND”; when shut down, the motor will stop naturally, and the stopping time will decided by the motor inertia and load add on the motor.

3. Motor rotation direction control (F/R)

You can control the motor rotation direction by controlling the terminal “F/R” and “GND” connecting. When connect terminal “F/R” to terminal “GND”, the motor will run at CCW (view from motor output side), and when shut down, the motor will run at another direction.

Attention: If you need to change the motor rotation direction, please stop the motor at first, otherwise the controller shall be caused to damage.

4. Break the motor to stop (BK)

You can break the motor to stop if need. Motor can be running when the terminal “BK” not connect to “GND”, but if you connect these two terminal together, motor will stop quickly. And the motor stopping time will decided by the motor inertia and load add on the motor.

Attention: If you are not necessary to stop the motor quickly, please don’t use with this function since it has some electrical and mechanical impact on the motor and controller.

Speed signal output(PG)

The speed pulse output is 0C, output 30V/10mA max. You can connect with a resistance (3K ohm ~10K ohm) between the signal and the input power to get the speed pulse signal. 3xN Output Pulse per revolution, N is pole of motor, Example: 2 pairs of pole motor,6 pulses per revolution, when the motor speed is of 500 rev/min, terminal PG output pulse are 3000

5. Alarm output (ALM)

The alarm output port is 0C, output 30V/10mA max. You can connect with a resistance (3K ohm ~10K ohm) between the signal and the input power to get the alarm signal. When alarm, this port and the GND connecting (Low voltage), and the controller will stop working and keep in alarm status.

6. **Drive failure**

Overvoltage or over current can lead the controller to a protected status, the drive will automatically stop working, the motor stop and blue light is flashing. As long as you enable terminal re-reset (EN and GND disconnected) or power Off, the driver will disarm the alarm. When this failure occurs, Please check the motor wiring.

Using

1、Insure that motor line, hall line and power line connect correct, Motor and driver will be damaged if lines connected wrong

2、When using inner potentiometer speed adjust, connect “EN” with “GND” terminal, connect SV terminal with 5V terminal, adjust speed by inner potentiometer

3、When using external potentiometer to adjust speed: adjust R-SV to 1.0 position, meanwhile connect EN to GND terminal, connect external potentiometer(middle connection) to SV terminal, the other two connect GND and +5V terminal

4、Motor will running with highest speed under closed loop, adjust attenuation potentiometer to get speed commanded