BLD-300B Brushless dc motor driver

Brief introduction

BLD-300B is designed by NIETZ and mainly for BLDC motors of 48v less 440w or 24V less 300w.

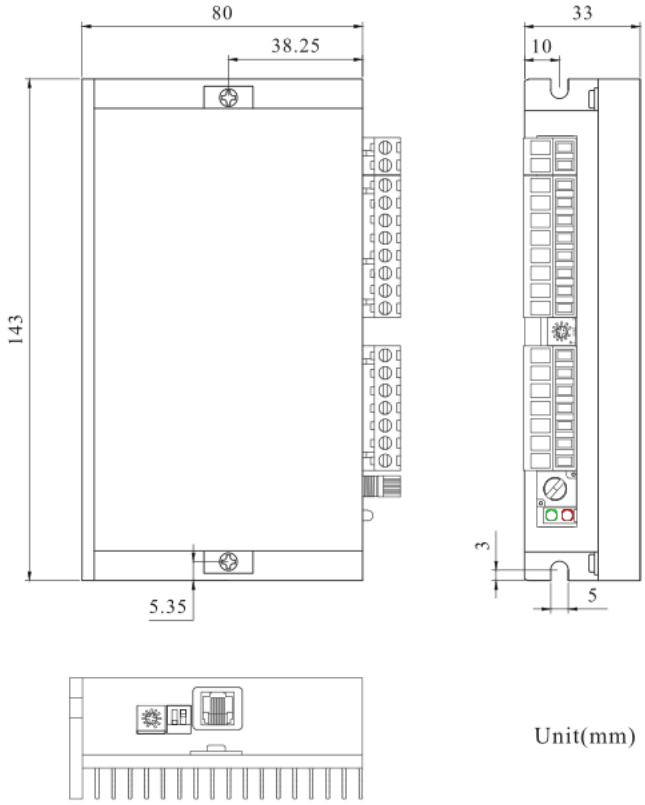
Features:

Acc/Dec time setting
Alarm indication
Peak current setting
Pole-pairs selection
Open/closed loop control
External potentiometer speed setting
Max output current P-sv setting
External analog signal speed setting
PWM speed setting

Electrical properties and environmental indicators

Driver parameter	Min Value	Typical Value	Max Value
Voltage input DC (V)	12	48	56
Current output(A)	-	-	15
Motor speed range(rpm)	0	-	20000
Hall signal voltage(V)	-	-	5
Hall drive current (mA)	12	-	-
External potentiometer(KΩ)	-	10	-

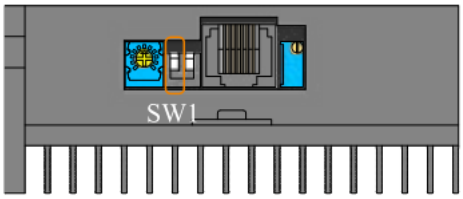
Dimension (Unit: mm)



Function setting

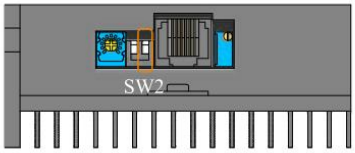
1. Motor poles pair selection

SW1 is for motor poles pair selection to match different BLDC motor. ON=2P; OFF=4P



2. Open/Closed loop setting

SW2 ON=Closed loop setting; SW2 OFF=Open loop setting



3. Peak current setting

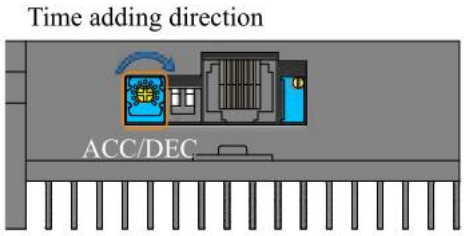
Use P-sv to set the output peak current. When load is increased suddenly, the output current will be limited by the setting value, which reduces motor speed and protects the motor. Current setting ranges: 3-15A. Please set as the right.

As the admissible error of real current and setting value is ±10%, to ensure safety, set current lower accordingly.

P-sv Current

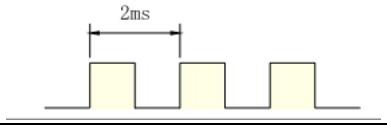
4. ACC/DEC time setting

Set acceleration time and deceleration time by ACC/DEC, range is 0.3-15s. Acceleration time is time needed from 0 to rated speed. Deceleration time is time needed from rated speed to 0.

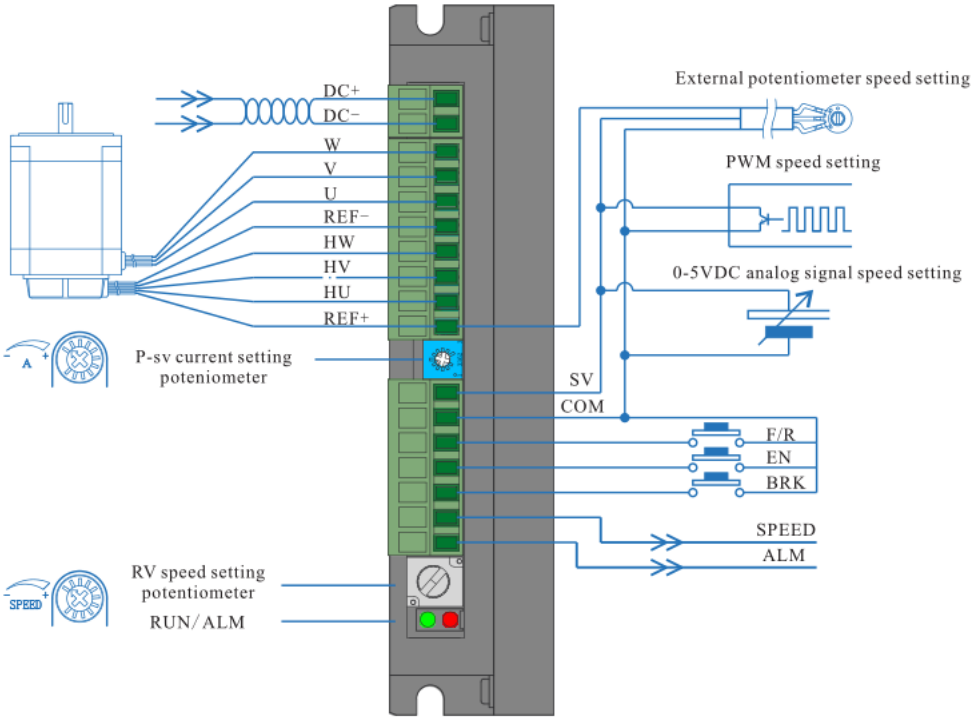


Port signal description

Signal category	Terminal	Functional Description
Control signal	BRK	Motor brake stop control signal; BRK and COM connect in default, motor brake stops when BRK and COM disconnect.
	EN	Stop signal terminal;EN connects COM, motor runs, otherwise motor stops.
	F/R	Motor direction control terminal; F/R and COM disconnect, motor will rotates clockwise, and otherwise, motor will rotate anticlockwise.
	COM	Common port(0V)
	SV	① External potentiometer speed setting input; ② External analog voltage input terminal ③ PWM speed setting input
Hall signal	REF+	Hall sensor signal power supply+
	HU	Hall sensor signal Hu
	HV	Hall sensor signal Hv
	HW	Hall sensor signal Hw
	REF-	Hall sensor signal-
Motor connection	W	Motor line W phase
	V	Motor line V phase
	V	Motor line U phase
Power connection	DC+	Power supply positive electrode (12-30VDC)
	DC-	Power supply negative electrode (Hall sensor negative electrode)
Output signal	SPEED	Output pulse frequency corresponded with running speed. Speed can be figured out

		according: N(rpm)= (F/P)×60/3 F:Output pulse frequency P: Motor pole pairs N: Motor speed For example: Motor has 4 pole pairs, F=1sec/2ms=500Hz N(rpm)=(500/4)×60/3=2500 
	ALM	Motor or driver fault signal output. It is 5v in normal situation and 0V when fault occurs.

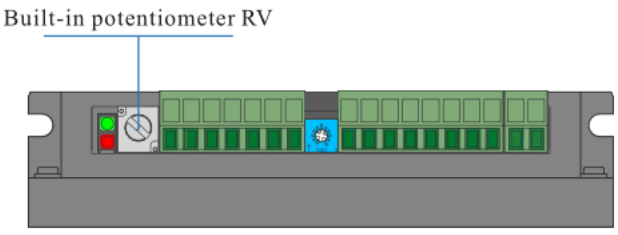
Driver interface and wiring diagram



Speed setting methods and setting

1. Speed setting via built-in potentiometer

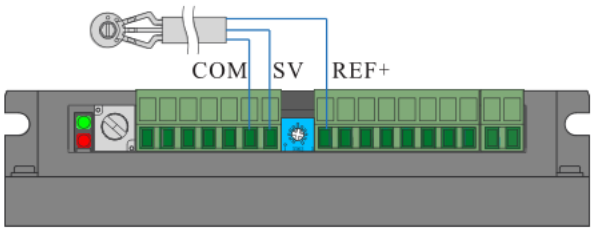
Motor speed increases when RV knobs is rotated clockwise, when anticlockwise, motor speed decreases.



2. Speed setting via external potentiometer

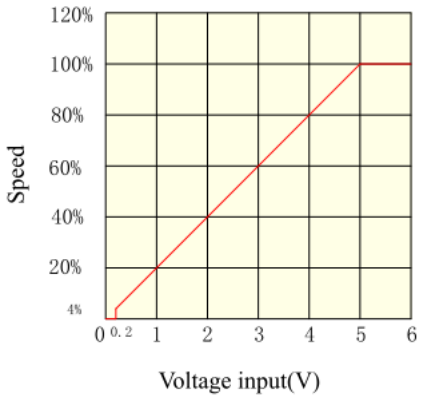
Use a suitable potentiometer with a resistance value of 10KΩ; when connect external potentiometer, the middle terminal connects to SV, the other two terminals connect to REF+ and COM.

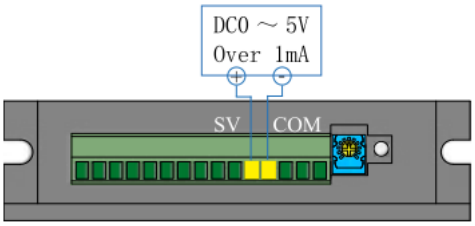
Notice: 1. RV should be rotated anticlockwise to limit position.



3. Speed setting via external analog signal 0-5V

The analog signal voltage can be 0 ～ 5VDC; when the voltage is 0.2VDC, the motor speed reaches 4% of fastest speed; when the voltage is 5 VDC, the motor speed reaches maximum value, which depends on the motor specification and power voltage.

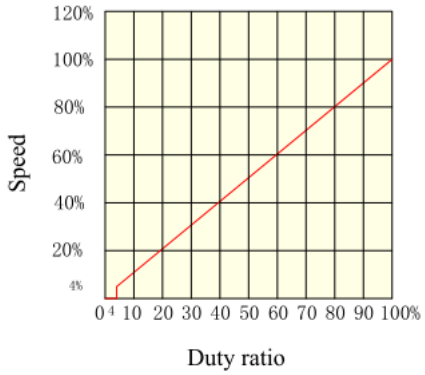


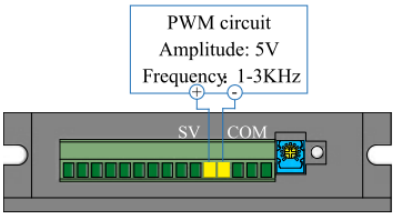


Notice RV should be rotated anticlockwise to limit position.

4. PWM Speed setting

When duty ratio of pulse is 4%, motor speed is 4% of max speed, when duty ratio is 100%, motor reaches max speed. The max speed also depends on the motor specification and power voltage.





Notice RV should be rotated anticlockwise to limit position.