JKBLD120 直流无刷驱动器 使用手册 V1.1

I. Usage characteristics

·Acc/Dec time setting
·Max output current setting
·External potentiometer speed setting
· Re-start
·Alarm signal
·Built-in RV speed setting
·External analog signal speed setting
·PWM speed setting

II.Electrical performance and environmental indicators

1. Electrical indicators

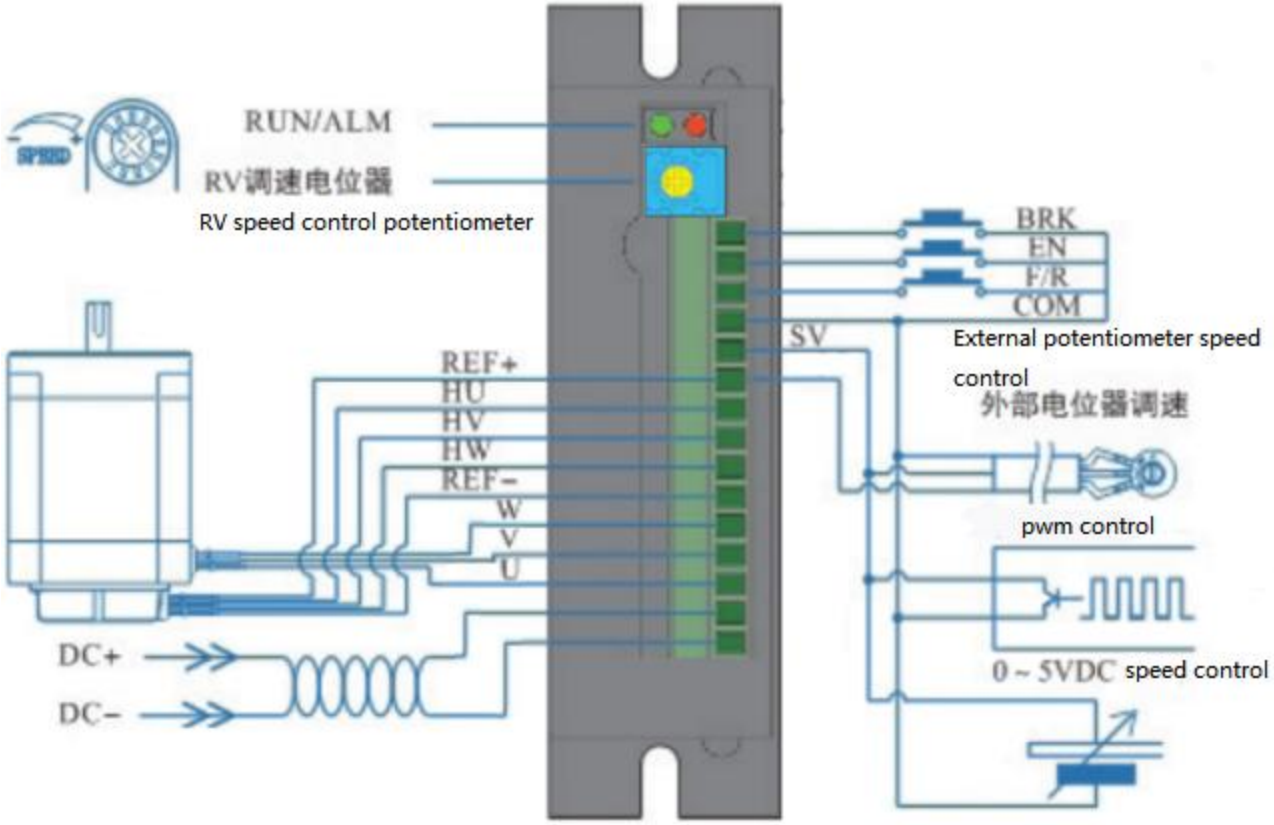
Driver Parameter	Min Value	Rated Value	Max Value
Voltage input DC（V）	12	24	30
Current output（A）			8
Motor speed range（rpm）	0		20000
Hall signal voltage（V）			5
Hall drive current（mA）		20	
External potentiometer（KΩ）		10	

2. Environmental indicators

Environmental factor	Electrical indicators
Cooling method	Natural cooling or fan-forced cooling
Atmosphere	Avoid dust, oily mist and corrosive air
Operating Temperature	0℃ ～ +40℃
Ambient Humidity	80%RH（No condensation）
Vibration Resistance	5.7m/s^2 max
Storage Temperature	0℃ ～ +50℃

III. Driver interface and wiring diagram

1. Driver interface



2. Port signal description

Signal	Terminal	Content
Input signal	BRK	When the BRK end and COM end are disconnected or high-level input is made, the motor brake stops, and when short circuited or low-level input is made, the motor runs.
	EN	When the EN terminal and COM terminal are disconnected or high-level input, the motor slowly stops, and when short circuited or low-level input, the motor runs.
	F/R	When the F/R terminal and COM terminal are disconnected or high-level input, the motor rotates forward, and when short circuited or low-level input, the motor reverses.
	COM	Common port (OV reference level).
	SV	① External potentiometer speed regulation; ② External analog signal input; ③ PWM input
Hall signal	REF+	DC brushless motor Hall signal power supply

	HU	DC brushless motor Hall signal HU
	HV	DC brushless motor Hall signal HV.
	HW	DC brushless motor Hall signal HW
	REF-	DC brushless motor Hall signal grounded.
Motor connection	W	DC brushless motor W phase
	V	DC brushless motor V phase
	U	DC brushless motor U-phase
Power connection	DC+	DC power input positive pole. (Voltage range DC12~30V)
	DC-	DC power input negative pole

IV. Function setting

1. Acc/Dec time setting

Set the acceleration and deceleration time of the motor through the side potentiometer ACC/DEC of the driver. Adjusting the ACC/DEC positioner clockwise/counterclockwise can increase/decrease the acceleration/deceleration time. Setting range: 0.2-15S. Acceleration time refers to the time required for the motor to reach the rated speed from a stationary state; The deceleration time refers to the time required for the motor to stop from the rated speed.

2. Max output current setting

Set the peak output current through the P-sv potentiometer on the side of the driver. When the load suddenly increases, the output current will be limited to the set value, reducing the motor speed and protecting the motor from damage.
Please set the peak output current according to the scale on the driver's label, and set the power range to 30-120W.
Due to the error between the set value and the actual value being approximately ± 10%, to ensure safety, please adjust the peak output current appropriately.

3. Locked rotor output current limit

When the motor is locked, the output current will be limited to the peak output current to protect the driver and motor from damage.

4. Locked rotor torque maintenance function

When the motor is locked, the driver has a simple torque holding function.

Attention: Locked rotor holding torque is a short-term behavior, please do not use it for braking locked rotor.

5. Re-start function

When situations such as motor blockage occur, the driver will stop working. After 5 seconds, the drive will automatically start. After restarting, if a malfunction occurs again, the driver will stop working and give an alarm.

6. Start and stop

① Start and slow stop

The factory setting for EN and COM ends is to connect the EN and COM ends. Connecting or disconnecting the connecting wires between the EN and COM ends can control the operation and stop of the motor.
When the EN end and COM end are connected, the motor runs; When the EN and COM terminals are disconnected, the motor slowly stops.

② Quick Stop

The factory setting for the BRK and COM ends is to connect the BRK and COM ends. Connecting or disconnecting the connecting wires between the BRK and COM ends can control the natural operation and quick stop of the motor.
When the BRK end and COM end are connected, the motor operates normally; When the BRK end and COM end are disconnected, the motor quickly stops

Note:
Differences and usage choices between EN and BRK:
·EN control naturally stops, BRK control quickly stops;
·The start status of EN and BRK control is the same;
·When selecting one of the EN or BRK methods to control the start stop, the wiring of the other method should remain in the factory state.

7. Direction control

The factory setting for the F/R and COM terminals is that they are not connected. Connecting or disconnecting the connecting wires between the F/R and COM ends can control the forward and reverse rotation of the motor.

When the F/R end and COM end are disconnected, the motor rotates forward; When the F/R end and COM end are connected, the motor reverses.

Attention: Observing from the direction of the motor shaft, clockwise represents forward rotation and counterclockwise represents reverse rotation.

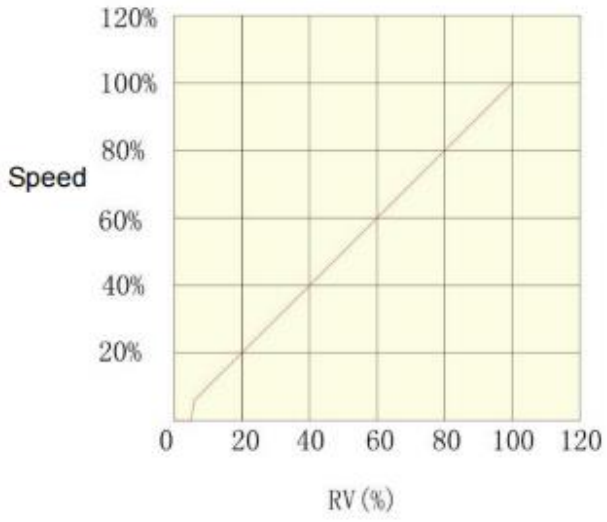
V.Speed control

1. Use the built-in potentiometer RV for speed regulation

Rotate the built-in speed control potentiometer RV clockwise, and the motor begins to run. Continuing to rotate clockwise increases the motor speed. Rotate the potentiometer RV counterclockwise to reduce the motor speed. Continue to rotate the potentiometer counterclockwise as far as it will go, and the motor will stop running.

Attention: When switching to external SV input to control the speed, the built-in speed control potentiometer RV must be in the closed state, that is, fully counterclockwise rotation.

Diagram of the relationship between built-in speed regulating potentiometer and motor speed



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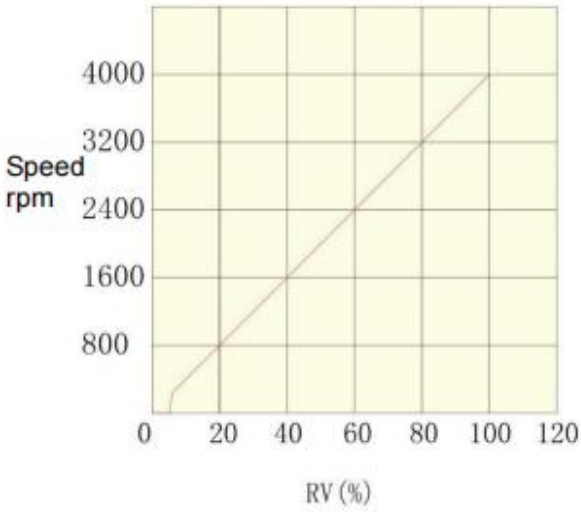

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2. Using an external potentiometer for speed regulation

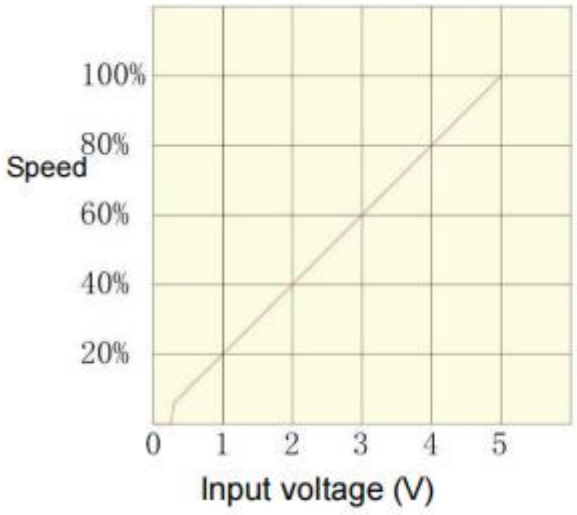
When using an external speed regulating potentiometer for speed regulation, please use a potentiometer with a resistance value of 10K Ω. The middle output end of the potentiometer is connected to the SV end, and the output ends on both sides are

connected to the REF+and COM ends respectively.

3. Using external analog signals for speed regulation DC

When using an external analog signal for speed regulation, the SV port of the driver is connected to the signal positive pole, and the COM port is connected to the signal negative pole. The external analog signal requires 0-5V and above 1mA.

The relationship between analog signal voltage and motor speed:



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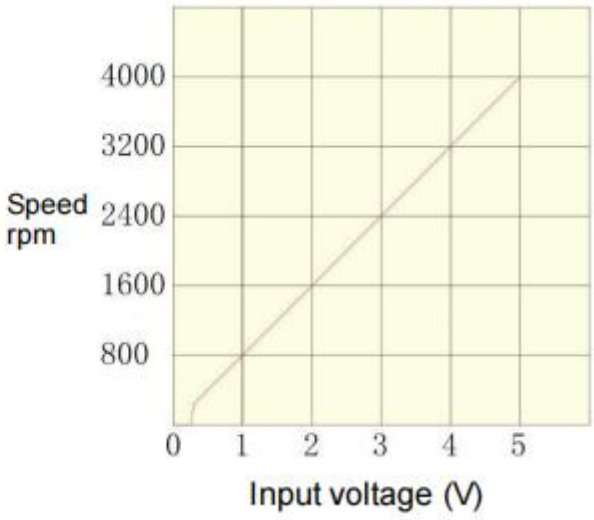

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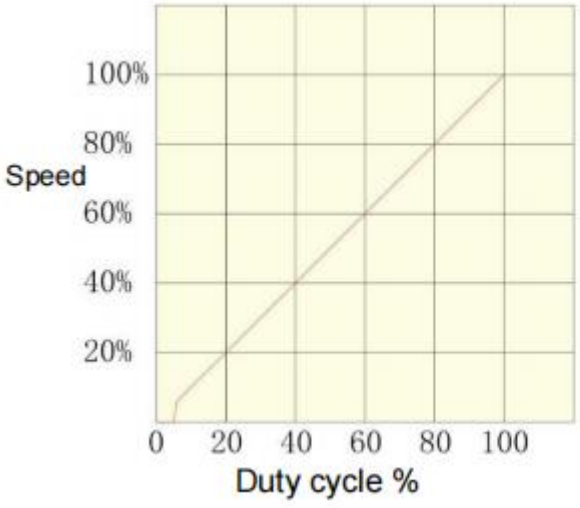
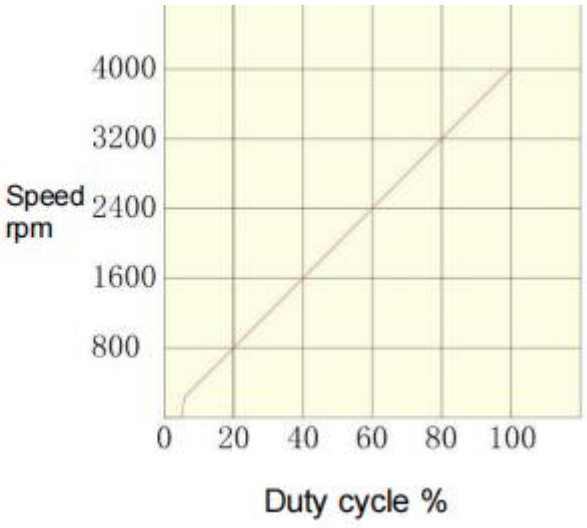
4. Use PWM to control speed

When using PWM speed regulation, the SV port of the driver is connected to the signal positive pole, and the COM port is connected to the signal negative pole. The PWM signal requires an amplitude of 5V and a frequency of 1-3KHz.

The relationship between duty cycle and motor speed





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Ⅵ. Fault indication and handling methods

When the motor experiences overcurrent, Hall signal input error, locked rotor, over temperature, overvoltage, etc., the driver will issue an alarm signal. When a fault occurs, the driver will stop working, and the fault alarm output terminal (ALM) will output a low level and the alarm light will flash.

Alarm signal	Status Description	Solution
Red Led flashes twice	Over voltage	Detect bus voltage
Red Led flashes three times	Power tube over-current alarm	Check if choose the wrong driver
Red Led flashes four times	Over+current alarm	Check P-sv settings and verify motor parameters. Or increase the acceleration time.
Red Led flashes five times	Under voltage alarm	Check the voltage power supply and also check if the power supply meets the condition of being greater than 1.5 times the motor power.
Red Led flashes six times	Hall signal loss	Check if the motor wiring is secure.
Red Led flashes seven times	Locked rotor alarm	Check if the motor load is too large.
Red Led flashes eight times	Hall wire sequence error	Check if the motor wiring sequence is correct.
Red Led Flashes nine times	Over temperature alarm	Check if the working environment temperature is too high; Check if the radiator fan is working properly.

Ⅶ. Version Revision History

Version	Description	Time	Remark
V1.0	Version 1	2022.10.30	
V1.1	Version 2	2023.6.2	Change the minimum acceleration and deceleration time from 1.5s to 0.2s