Changzhou ACT Motor Co., Ltd

BLDC Stepper Motor Driver

BLDC8015A

DC : 24~80V

Picture

Electrical Parameters

Power	24~80VDC
Current output	Rated 15A , Peak 45A (≤3s)
Driving mode	SPWM
Insulation Res	>500MΩ
Dielectric Strength	500V/min
Weight	About 300g

Environmental Requirements

cooling method	Self cool
Environment	Avoid dust, oil mist and corrosive gases
Temperature	0~+50℃
Humidity	<80% RH, no condensation, no frosting
Shock	5.7m/s2 Max.
Storage temp	-20~+125℃

Overview

BLDC series brushless DC motors and drives are high-tech products for the field of low-power motor drag.With the rapid development of electronic technology, the process and performance of electronic products are constantly updated and improved. This product uses ultra-large-scale hardware integrated circuits, with high anti-interference and fast responsiveness, and control performance from traditional DC motors. Compared with the advantages of maintenance-free, long life and constant torque.

Features

- SPWM , Speed/Current alike close loop technology, smooth rotation
- Speed output、Alarm output (O.C.)
- Over current、over voltage、stall、missing speed Alarm
- 60°/300°/120°/240°Electrical angle adjustable
- Speed regulation : potentiometer adjust / Analog input
- Run/Step、Quick Brake、CW/CCW rotation shift

Usage Scenario

This product is suitable for driving any low-voltage three-phase brushless DC motor with peak current below 15A and power supply voltage within 80V. It is widely used in a series of electrical automation control such as knitting equipment, medical equipment, food machinery, power tools, garden machinery, etc. field.

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Dial setting	
SW1	Motor pole position
ON	120°or 240°hall signal , they are in opposite rotation direction
OFF	60°or 300°hall signal, they are in opposite rotation direction

SW2	Command to	Speed adjust	Comman	Current
ON	RV	CW—speed up , CCW—speed down	\	\
OFF	AVI	0～5V analog input	0～5V volage	≤5mA
OFF	AVI	PWM	1KHz duty cycle	\

Control signal given mode
This drive is designed in two different ways for the user to choose:
1. Set by the potentiometer (RV) on the drive panel. This setting is suitable for machines operating at a fixed speed. When this function is selected, the second bit of the DIP switch SW on the drive panel must be turned ON. The user can adjust the motor to the required speed according to his own needs. When the potentiometer is turned clockwise, the motor speed gradually increases, otherwise it decreases.
2. Set by the driver terminal (AVI), this setting is suitable for machines with variable speed operation. When this function is selected, the second bit of the DIP switch SW on the drive panel must be turned OFF. The AVI port can accept 0~5V analog voltage command or PWM pulse width modulation signal from the upper controller, which is the same as the general-purpose inverter. The input impedance of the AVI terminal is 100K, and the current consumption is ≤5mA.
note:
Only one of the two control methods can be selected. When the panel command potentiometer is not used, it should be rotated to the counterclockwise direction to be the smallest. In addition, the PWM pulse width modulation signal has a amplitude of 5V TTL signal.

Motor forward/reverse signal (F/R)
The user can control the forward and reverse rotation of the motor by controlling the F/R terminal of the driver. The same signal is also the optocoupler isolation signal, and the common male terminal is the +5V terminal. The effective meaning of the F/R signal is that the internal optocoupler of the driver is turned on or off. When the optocoupler is turned on, the motor runs counterclockwise. When the optocoupler is turned off, the motor runs clockwise.
Note: Brushless DC motors are different from AC asynchronous motors or DC motors. They are electronically commutated by the internal Hall signal of the motor. Therefore, the direction of motor rotation cannot be changed by changing the phase sequence of the motor winding wiring.

Motor start/stop signal (ENBL)
The user can control the start or stop of the motor by controlling the ENBL terminal of the driver. This signal is an optocoupler isolation signal with a +5V terminal at the common terminal. The effective meaning of the ENBL signal is that the internal optocoupler of the driver is turned on or off. When the optocoupler is turned on, the motor starts running. When the optocoupler is turned off, the motor stops running.

Motor speed output signal (SPEED)
The driver provides a motor speed pulse signal, which is proportional to the motor speed. The pulse output mode is an optocoupler isolated OC gate output, which can be pulled up to any level according to demand. In order to improve the speed measurement accuracy, the inside of the drive is processed by 6 times frequency.
For example, if the user selects 2 pairs of motors,
the number of pulses per motor = 2 × 6 = 12,
when the output SPEED signal is 600 Hz,
Speed = 60 × 600 / 12 = 3000 rpm.

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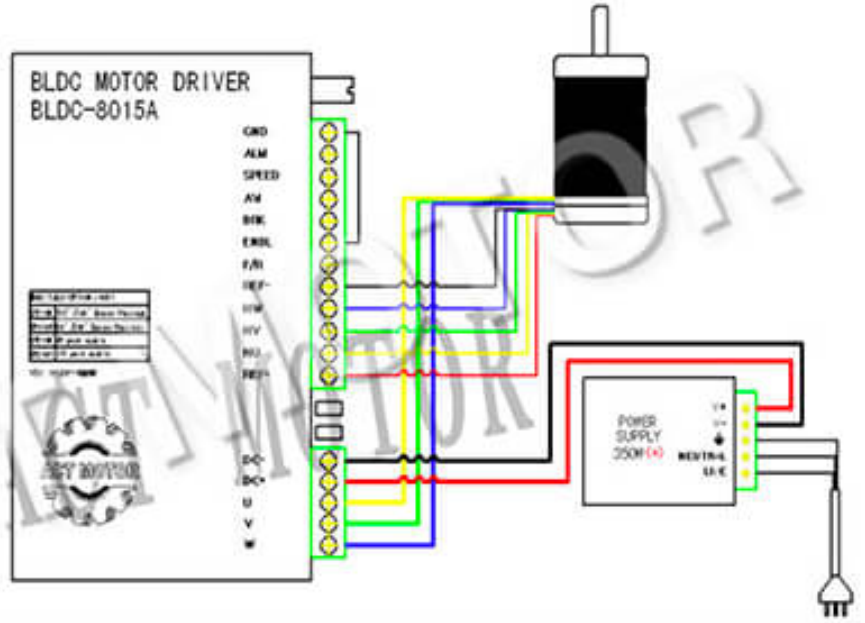
Motor brake stop signal (BRK)
The user can control the motor to brake quickly by controlling the BRK terminal. This stop mode is different from the ENBL signal. The ENBL signal controls the motor to stop when it is stopped, the load inertia affects the stop time, and the BRK signal controls the motor to stop quickly. The motor load inertia is independent. The motor brake stop time is generally 50ms. When the load inertia exceeds the motor rotor inertia by 2 times, the fast brake brake may cause the drive to alarm. Therefore, when selecting the motor and the drive, the user should reasonably calculate the load inertia to ensure the load inertia is in the motor rotor. Within 2 times the inertia. However, when the user's load inertia cannot be reduced, and there is no matching motor, the controller should do the acceleration/deceleration time control, which is called the acceleration/deceleration curve design. Avoid using the brake stop signal BRK. The receiving mode of the signal is also an optocoupler isolated input. When the optocoupler is turned on, the motor brakes; when the optocoupler is turned off, the motor resumes operation.

Drive alarm output signal (ALM)
The user can control the forward and reverse rotation of the motor by controlling the F/R terminal of the driver. The same signal is also the optocoupler isolation signal, and the common male terminal is the +5V terminal. The effective meaning of the F/R signal is that the internal optocoupler of the driver is turned on or off. When the optocoupler is turned on, the motor runs counterclockwise. When the optocoupler is turned off, the motor runs clockwise. Note: Brushless DC motors are different from AC asynchronous motors or DC motors. They are electronically commutated by the internal Hall signal of the motor. Therefore, the direction of motor rotation cannot be changed by changing the phase sequence of the motor winding wiring.

Terminal mark	Terminal description
DC+;DC-	Driver DC power input, typical value: DC36V
U;V;W	Motor power output, pay attention to the motor phase sequence strictly corresponds to the connection, the wrong wiring can cause the motor to stall or run out of control.
REF+;REF-; HU;HV;HW	Motor Hall signal input, REF+; REF- is the Hall power supply, not used for it, the Hall signal connection also needs strict correspondence. Incorrect wiring can cause the motor to stall or get out of control.
AVI;ENBL;F/R; BRK ; Vcc	Control signal input, where Vcc is the optocoupler isolation common terminal, the user can connect different power sources according to the actual situation, see the standard wiring diagram for details.
SPEED;ALM	Signal output, open collector output (OC)

Regular wiring diagram



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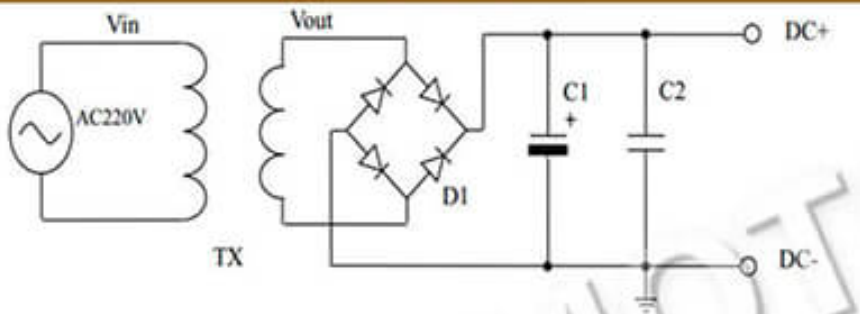
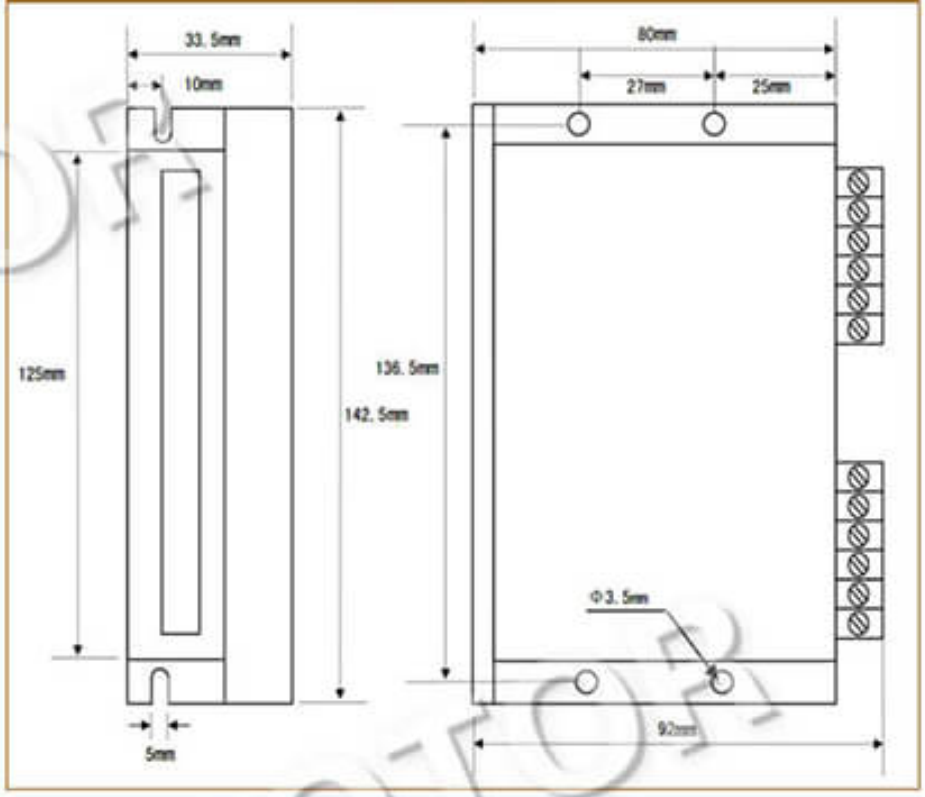
With linear power schematic



TX is an isolation transformer that determines its parameters based on the power supply load. Generally, the output voltage of the transformer is determined according to the output DC voltage requirement, and the DC voltage VDC+≈1.414×Vout after rectification and filtering. When used in the BLDC-8015A driver, the recommended voltage output is AC21 ~ 28V. Among them: the transformer capacity is determined according to the load current; C1 is the electrolytic capacitor, the recommended parameters are: 100V/2200uF; C2 is the non-inductive surge absorbing capacitor, the recommended parameters are: 400V/0.22 uF; D1 rectifier bridge parameters are based on load current and output voltage And set.

Drive size chart



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