

BLDC-8015A

DC BRUSHLESS DRIVER

DCBL8015A user manual rev. A

Features

- SPWM, Speed/Current alike close loop technology, smooth rotation
- Smooth torque output within speed range (8000 rpm Max.)
- 1: 75 Max. speed regulation ratio
- 60°/300°/120°/240°Electrical angle adjustable
- Speed regulation: potentiometer adjust / Analog input
- Run/Step、Quick Brake、CW/CCW rotation shift
- Speed output、Alarm output (O.C.)
- Over current、over voltage、stall、missing speed Alarm

Parameters

Electrical Parameters (T_j=25°C)

Power	24~80VDC, Capacity: up to motors
Current output	Rated 15A, Peak 45A (≤3s)
Driving mode	SPWM
Insulation Res.	>500MΩ

Dielectric Strength	500V/Minute
Weight	About 300g

Ambient requirement

Cooling	Self cool
Environment	Keep away from oil, dust, and acid gas
Temperature	0°C~+50°C
Humidity	<80%RH
Vibration	5.7m/s ² Max.
Storage temp.	-20°C~+125°C

Function description

● Power Supply: DC+ ; DC-

Voltage: 24~80DC, normally Linear Power Supply applied (appendix), ripple voltage higher than 50V may damage driver. The output current of LPS shall be 60% more than that of driver. In case of switching power supply(strongly recommended)applied, please pay attention to the current shall meet motor's current.

Attention: incorrect connection may cause driver damaged.

● Speed regulation choice(RV ; AVI)

1. Setup speed by potentiometer (RV).The dipswitch SW2 must be ON status to enable this function. CW rotate the potentiometer will increase speed. CCW- speed down.
2. Setup speed by analog input (AVI). The dipswitch SW2 must be OFF status to enable this function. AVI terminal accept 0~5V voltage or PWM signal from controller. AVI terminal with input resistance of 100K, current consumption≤5mA.

Reference table

SW 2	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	—

Only one of above two modes can be used to adjust speed (another mode shall be enabled). Once AVI terminal applied, (RV) potentiometer shall be CCW turned to Min. position. PWM signal

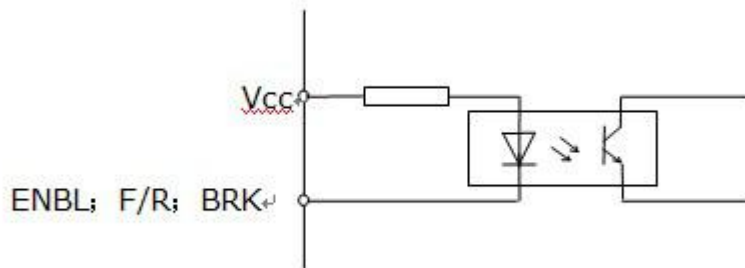
are 5V TTL level.

- **Run/Stop (ENBL)**

ENBL terminal is applied to control motor Run/Stop, Common positive terminal is +5V.

Optical coupler short circuit make motor run, it open circuit make motor stop.

See below circuit



- **CW/CCW Rotation (F/R)**

F/R terminal is applied to shift motor rotate direction, common positive terminal is +5V.

Motor run in CCW when optical coupler is short circuit, motor run in CW when optical coupler is open circuit.

Attention: don't change the connection sequence of phase wires of motor to shift rotate direction.

- **Motor Brake Command (BRK)**

BRK terminal applied to stop rotation quickly. Motor will stop normally within 50ms. But inertia of load can't exceed 2 times of motor inertia, otherwise brake will cause driver alarm.

Time of acceleration and deceleration must be put into controller in case of too big load inertia,

And please don't use brake function in such condition.

The optical coupler short circuit will brake motor, optical coupler open circuit release motor to run.

- **Setup different electrical angle**

Dipswitch SW1 can be setup to fit motors with different electrical angel

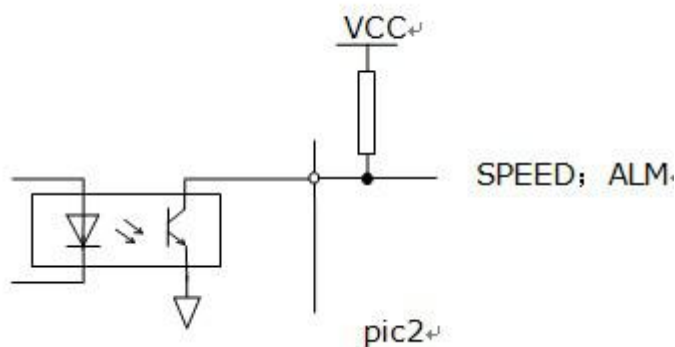
SW 1	
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ON	120° or 240° hall signal, they are in opposite rotation direction
OFF	60° or 300° hall signal, they are in opposite rotation direction

- **Motor rotation speed output (SPEED)**

Pulse generated by driver are proportioned with motor speed, (isolated O.C. output) it can be increased to be a random level. 6 multiple frequency processed output.

Motor speed = $60 \times \text{SPEED}(\text{pulse freq.}) / \text{pulses per rev. of motor}$; p.p.r = motor pole pairs $\times 6$



- **Alarm output(ALM)**

Driver will enter protection mode and stop motor running in case of OVER CURRENT, OVER VOLTAGE, SHORT CIUCUIT, MOTOR STALL arise. LED on driver will be light, and ALM signal will be available. Please cut off

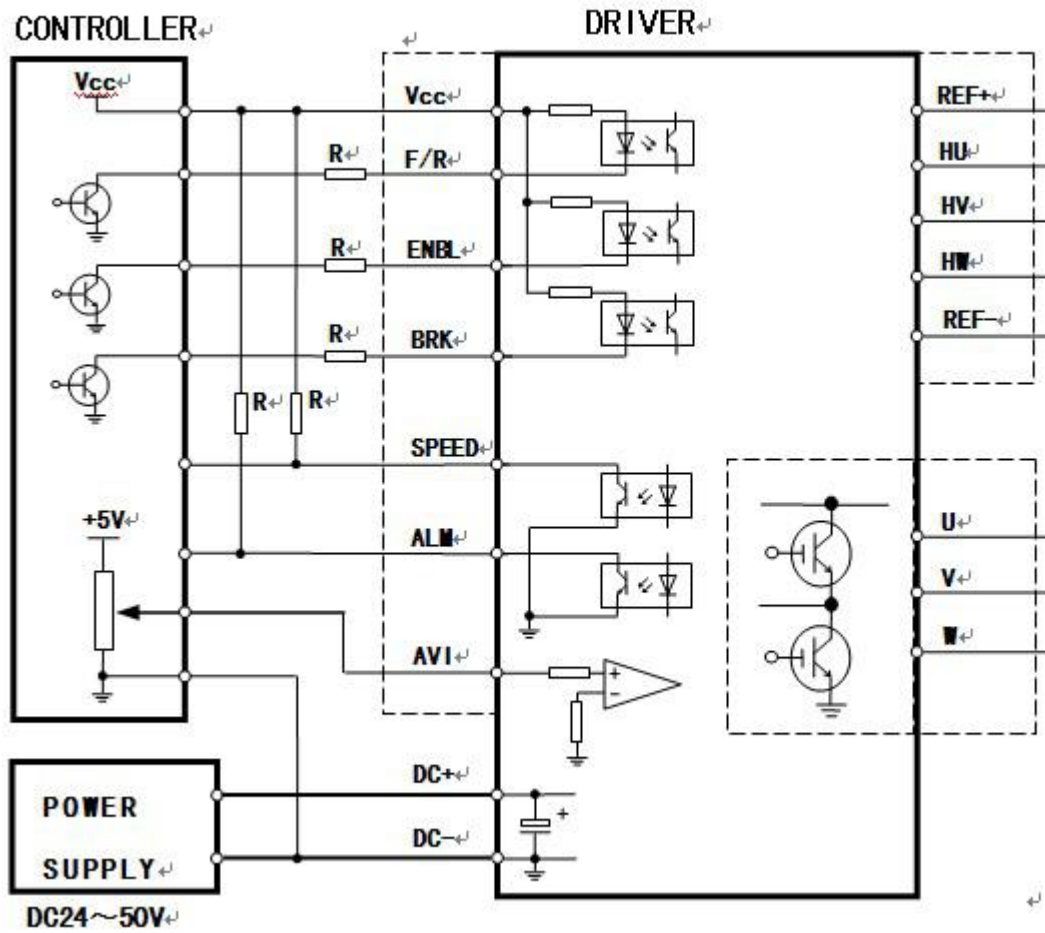
driver's power supply, check wiring and voltage. High voltage is not permitted for big inertia motor, as it may cause run/stop frequently and over voltage alarm. Circuit of this function refer to pic. 2.

- **Terminals description**

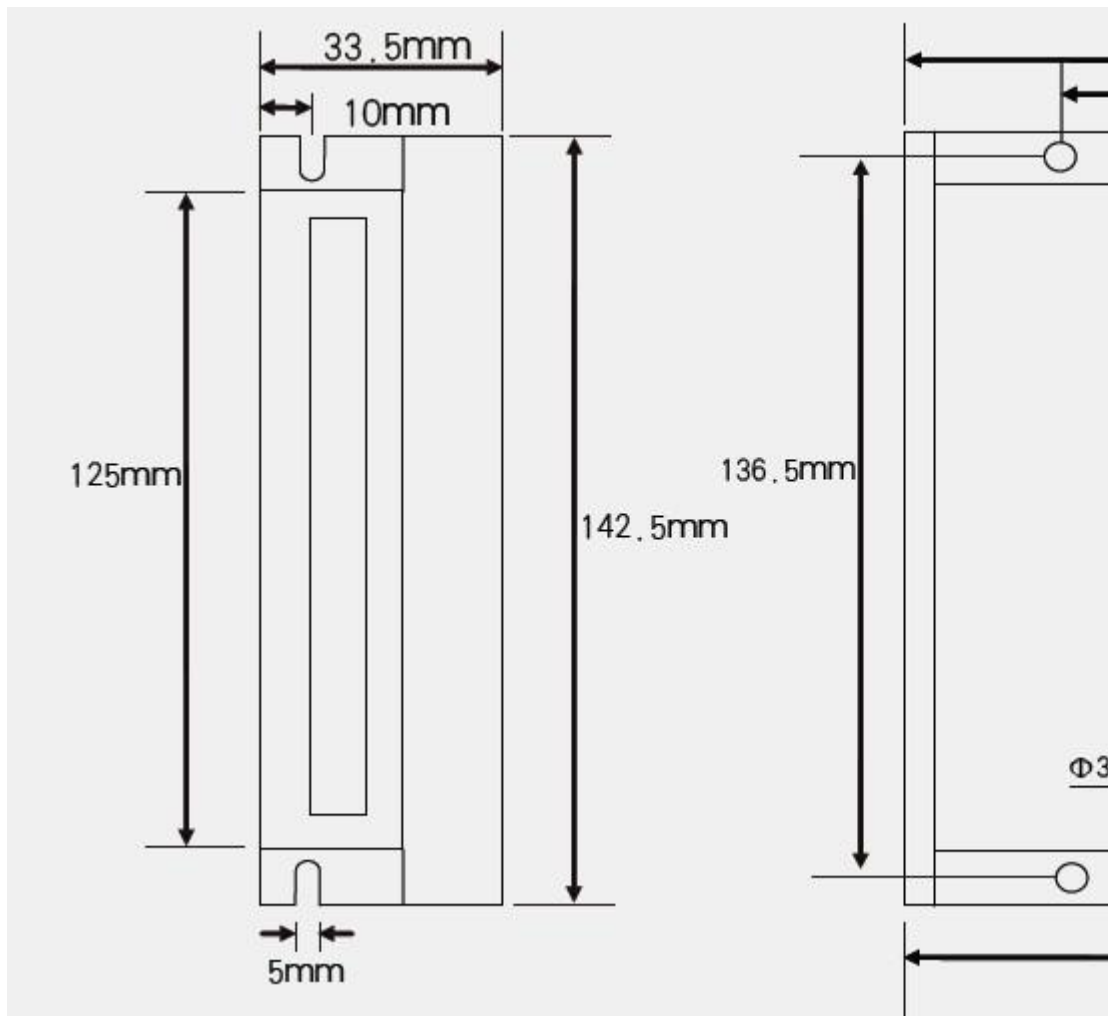
Terminal mark	Description
DC+; DC-	Voltage supply to driver
U; V; W	To motor leads. Make sure correct connection to motor lead
REF+; REF-; HU; HV; HW	Hall sensor connection, REF+; REF- are for hall power su sure correct connection to halls.
AVI; ENBL; F/R; BRK; Vcc	Controls input, see below picture

SPEED; ALM	Signal output, (O.C.)
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● Wiring Diagram

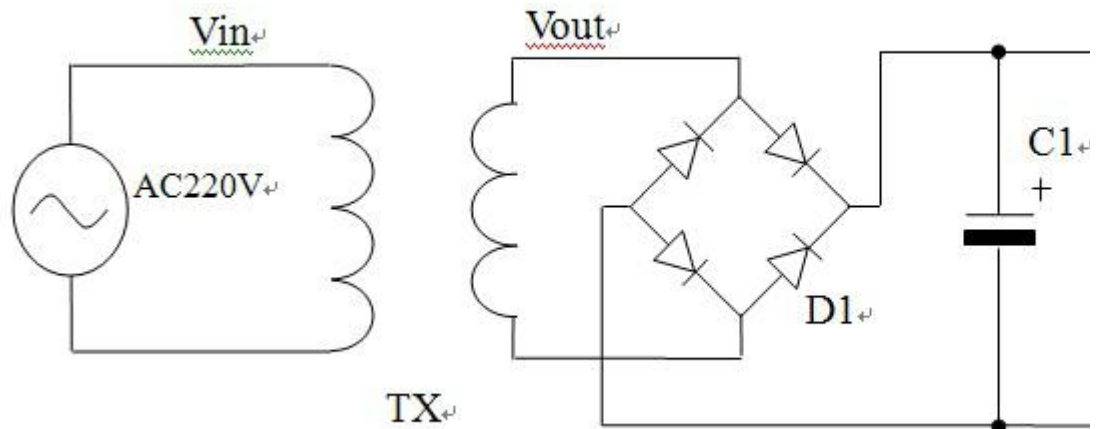


Dimension



Appendix: linear power supply circuit





TX: Isolating transformers

$V_{DC} \approx 1.414 \times V_{out}$, V_{out} suggested to be AC21~28V for this driver

Capacity of transformer shall be decided by motor's current

$C1=100V/2200\mu F$; $C2=400V/0.22\ \mu F$;