

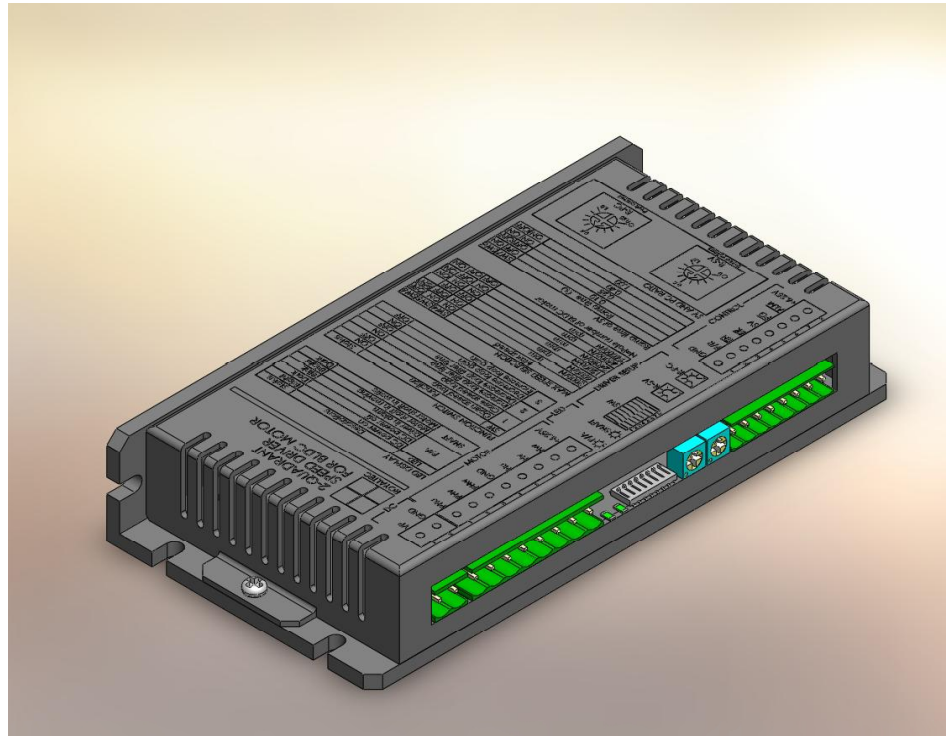
2-Quadrant BLDC Driver With Variable Parameter Settings

NO	Model	Temp range (°C)	Voltage range (VDC)	I-pk (A)	I-con (A)	60°/120° Hall sensor	PWM f(kHz)	PI Close loop of speed	SV Ramp time (S)	SV Range (V)	LV	Alm	PG	Heat sink	Parameter Settings By Switch And Pot
1	BLSD2410DC-2Q-XX	-10~+50 -40~+85	17~32	2.5~ 10	1.25~ 5	√	15	√	0.1/0.25 /0.5/1.0	0~5	√	√	24p@ 8-pole	X	√
2	BLSD24020DC-2Q-XX	-10~+50 -40~+85	17~32	5~20	2.5~ 10	√	15	√	0.1/0.25 /0.5/1.0	0~5	√	√	24p@ 8-pole	X	√
3	BLSD2430DC-2Q-XX	-10~+50 -40~+85	17~32	7.5~ 30	3.75~ 15	√	15	√	0.1/0.25 /0.5/1.0	0~5	√	√	24p@ 8-pole	√	√
4	BLSD3610DC-2Q-XX	-10~+50 -40~+85	27~45	2.5~ 10	1.25~ 5	√	15	√	0.1/0.25 /0.5/1.0	0~5	√	√	24p@ 8-pole	X	√
5	BLSD3620DC-2Q-XX	-10~+50 -40~+85	27~45	5~20	2.5~ 10	√	15	√	0.1/0.25 /0.5/1.0	0~5	√	√	24p@ 8-pole	X	√
6	BLSD3630DC-2Q-XX	-10~+50 -40~+85	27~45	7.5~ 30	3.75~ 15	√	15	√	0.1/0.25 /0.5/1.0	0~5	√	√	24p@ 8-pole	√	√
7	BLSD4810DC-2Q-XX	-10~+50 -40~+85	37~55	2.5~ 10	1.25~ 5	√	15	√	0.1/0.25 /0.5/1.0	0~5	√	√	24p@ 8-pole	X	√
8	BLSD4820DC-2Q-XX	-10~+50 -40~+85	37~55	5~20	2.5~1 0	√	15	√	0.1/0.25 /0.5/1.0	0~5	√	√	24p@ 8-pole	X	√

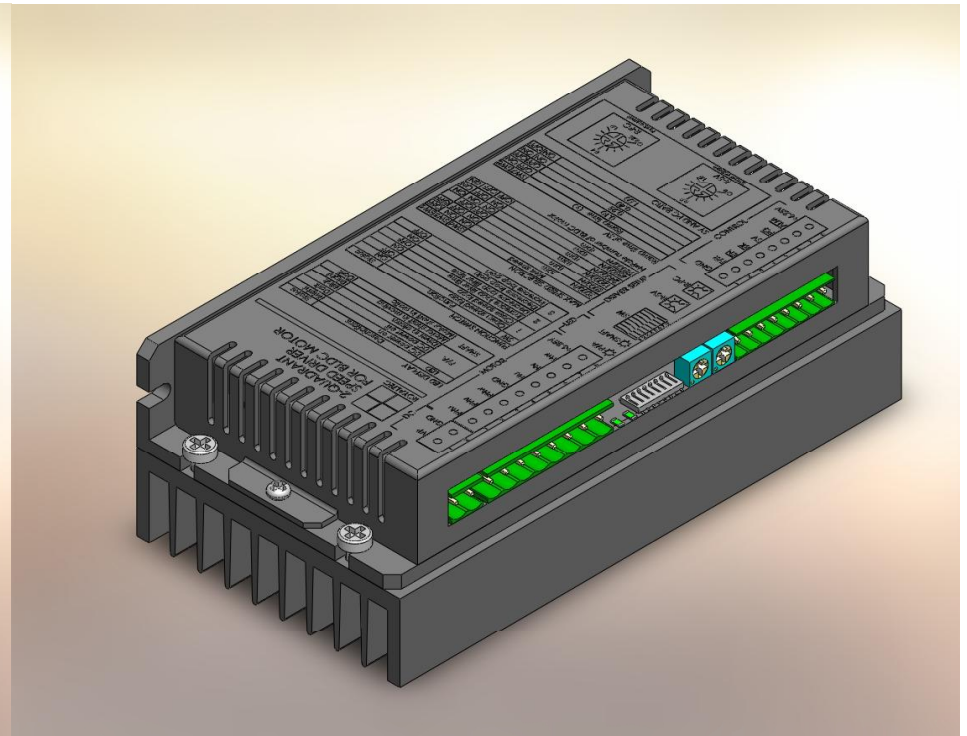
BLSD 24 10 DC – 2Q – T A

BLDC speed driver-----A=60° Hall sensors, None=120° Hall sensors
 Rated voltage (VDC)-----T=-40~+85 °C, None=-10~+50 °C
 Peak current limit (A)-----2-quadrant control mode
 DC power input-----

Without Heat Sink



With Heat Sink



Typical Connections

Note:

1. Control signals:

- F/R-----H or Open=Forward, L or Close=Reverse
- EN-----H or Open=Disable, L or Close=Enable
- BK-----H or Open=Running, L or Close=Brake
- SV-----0-5V speed reference (112K input resistance)
- PG-----Speed pulse output (OC)
- ALM---Alarm output (OC)

2. Hall sensors cable can not be tied together with windings cable.

3. Alarm conditions:

- a. Hall sensor signals are not correct.
- b. LV or OV for 2-3S.
- c. Over temperature of case.
- d. Over load for 6s continuously.
- e. It can be reset by Turn-Off-On DC Power . or Disable the driver once.

4. LED indicator:

- P/A-----Bright=Driver is OK, Blink=Driver is in alarm
- SHAFT----Bright=Motor shaft is moving, Dark=Motor shaft is in static.

5. Braking operation:

The motor speed must be less than the safe brake speed N_s when you brake the motor.

For Y windings, $N_s = \sqrt{3} \times I_p \times R_L \times N / (2 \times V_p)$

For Δ windings, $N_s = I_p \times R_L \times N / (2 \times \sqrt{3} \times V_p)$

I_p =Peak current (A), R_L =line to line resistance of windings (Ohm),

N =No-load speed (rpm), V_p =Rated voltage (V),

N_s =Safe brake speed (rpm).

6. Driver setup by pot and switch:

R-SV pot=SV voltage ratio, R-PC=Peak current ratio,

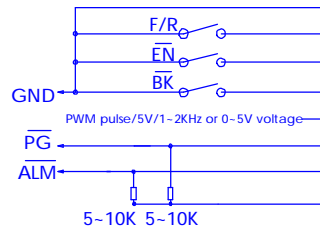
SW1=Open/Close loop, SW2=Loop filter time, SW3=Loop gain,

SW4,5,6=Speed range settings, SW7,8=SV ramp time settings.

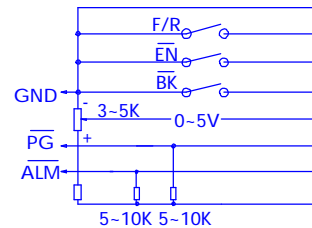
7. Peak current selection:

$I_p > 2 \times I_r$ or $I_p > 4 \times P_o / V_p$, I_p is peak current of driver (A), I_r is rated current of motor (A),

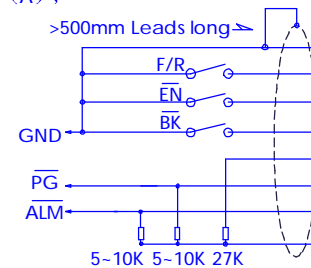
P_o is rated output power of motor (W), V_p is rated voltage of driver (V).



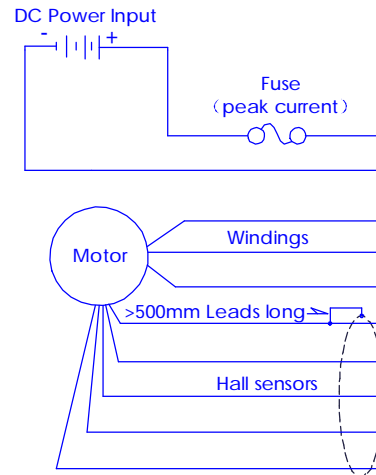
Use PWM pulse or SV voltage to control speed



Use additional pot to control speed



Use R-SV pot to control speed



2-QUADRANT SPEED DRIVER FOR BLDC MOTOR

ROYALTEC

LED	Descriptions	Status
P/A	DC power on	Bright
	DC power off	Dark
SHAFT	Driver in alarm	Blink
	Motor shaft in moving	Bright
	Motor shaft in static	Dark

SW	Function	Status
1	Open speed loop	ON
	Close speed loop	OFF
2	Increase loop filter time	ON
	Decrease loop filter time	OFF
3	Decrease loop gain	ON
	Increase loop gain	OFF

MAX SPEED SELECTION		SW4	SW5	SW6
3000/N	rpm	ON	ON	OFF
6000/N	rpm	ON	OFF	OFF
12000/N	rpm	OFF	OFF	OFF
24000/N	rpm	ON	ON	ON
48000/N	rpm	ON	OFF	ON
96000/N	rpm	OFF	OFF	ON

N=Pole number of BLDC motor

Ramp time of SV		SW7	SW8
Ramp time (s)		OFF	ON
0.10		OFF	OFF
0.25		ON	ON
1.00		ON	OFF

SV AND PC RATIO	
<p>R-SV Speed Voltage</p>	<p>R-PC Peak current</p>

