

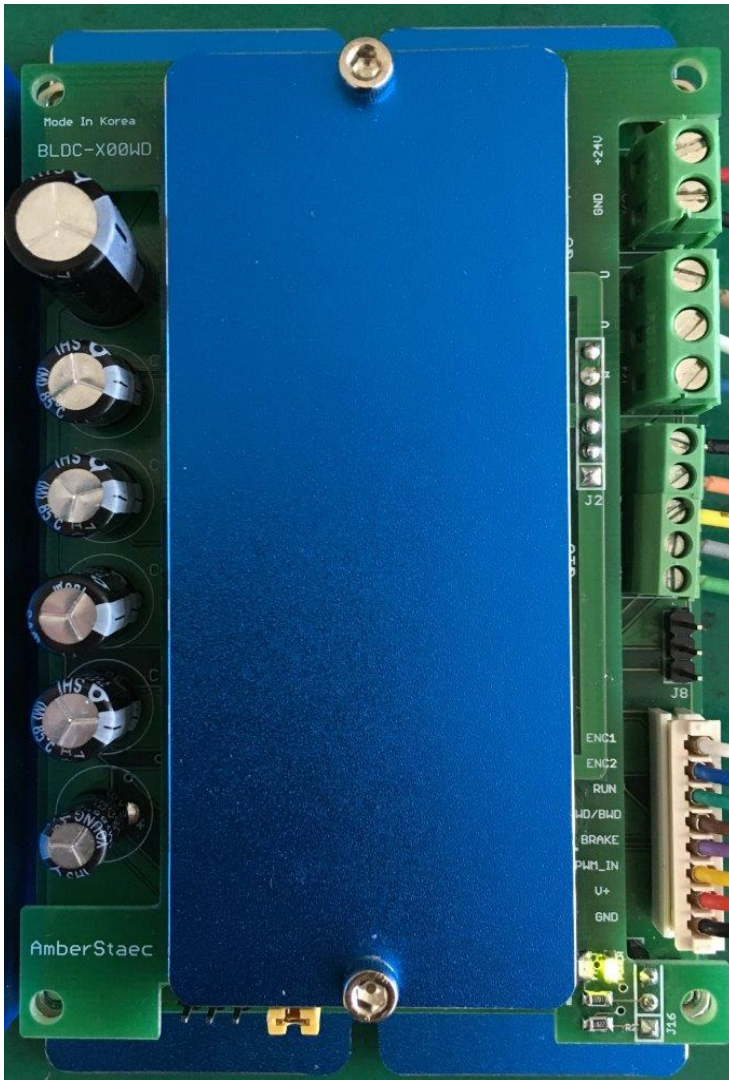
BLSD-24-031 BLDC Servo Driver Manual

1. PRODUCT SPECIFICATION AND LIMITATIONS

No.	Parameters	Max	Typical	Min	Unit
1	Input Voltage	32	24	22	V
2	Output Current (Per Phase)	10	-	-	A
3	Speed				
	Open Loop*		-		RPM
	Closed Loop	14,000	-	10% of full Speed.	RPM

* The open loop speed may vary from motor to motor.

2. BOARD LAYOUT



P.C.B Mark Function.

+24V	Power VCC
GND	Power Ground

U	Motor W Phase
V	Motor V Phase
W	Motor U Phase

GND	Hall Sensor GND
V+	Hall Sensor VCC
SC	Hall Sensor U Phase
SB	Hall Sensor V Phase
SA	Hall Sensor W Phase

JB	Encoder Signal SET_X2
	Encoder Signal SET_GND
	Encoder Signal SET_X1

ENC1	Encoder Out.
ENC2	Encoder Direction Signal out.
RUN	Motor Start
FWD/BWD	Motor Forward/Reverse Select
BRAKE	Motor Brake
PWM_IN	PWM Signal Input
V+	VCC_Signal 5V
GND	GND_Signal

J4	1. Ex. Vol. (V_Out)
	2. Ex. Vol. (Vref.)
	3. Ex. Vol. (GND)

J1	1-2 Short : 60°
	1-2 Open : 120°

3. TEMINAL BLOCK 1 - Connect to Power Source.

Pin No.	Pin Name	Wire Color	Descriptoins.
1	+24	RED	Positive Supply.
2	GND	Black	Negative Supply.

4. TEMINAL BLOCK 2 - Connect to Motor U V W.

Pin No.	Pin Name	Wire Color	Descriptoins.
1	Motor W	Brown	Connect to Motor Coil W (Coil C)
2	Motor V	White	Connect to Motor Coil V (Coil B)
3	Motor U	Blue	Connect to Motor Coil U (Coil A)

5. TEMINAL BLOCK 3 - Connect to Motor hall Sensor.

Pin No.	Pin Name	Wire Color	Descriptoins.
1	GND	Black	Negative supply to the hall Sensor.
2	+5V	Orange	Positive supply to the hall Sensor.
3	SC	Yellow	Connect to hall Sensor U (Hall_A)
4	SB	Gray	Connect to hall Sensor V (Hall_B)
5	SA	Green	Connect to hall Sensor C (Hall_C)

6. PIN HEADER JB - Encoder Signal Set (24 P/R)

Pin No.	Pin Name	Wire Color	Descriptoins. / Open x4
1	X2	N/A	Pin 1,2,3 Open = Encoder Signal X4 Pulse/rev. Setting. (6 X 4 = 24 PPR) Default Pin 1-2 Short = Encoder Signal X2 Pulse/rev. Setting. (6 X 2 = 12 PPR) Pin 2-3 Short = Encoder Signal X1 Pulse/rev. Setting. (6 X 1 = 06 PPR)
2	GND	N/A	
3	X1	N/A	

7. Connector - I/O interface

Pin No.	Pin Name	Wire Color	Descriptoins.
1	ENC1	White	Encoder Pulse Out
2	ENC2	Blue	Direction Signal Out (FWD : Low Out / BWD : High Out)
3	RUN	Green	Internally Pulled Low, Active High.
4	FWD/REV	Brown	Internally Pulled Low, Active High.
5	BRAKE	Purple	Internally Pulled Low, Active High.
6	PWM_IN	Yellow	PWM (0 % ~ 50%) input for Speed Control.
7	V+	Red	Logic VCC (+5V)
8	GND	Black	Logic Ground.

8. PIN HEADER J4 - Speed input

Pin No.	Pin Name	Wire Color	Descriptoins.
1	V_OUT	N/A	Connect to the Upper terminal of External potentiometer for speed control.
2	Vref	N/A	Connect to the Center terminal of external potentiometer fot speed control. or analog voltage (0~5V) input for speed control.
3	GND	N/A	Connect to the lower terminal of External potentiometer for speed control.

9. PIN HEADER J1 - Motor Hall_sensor angle setting

Pin No.	Pin Name	Wire Color	Descriptoins.
1	60	N/A	Pin 1-2 Short = Hall_Sensor_Angle 60° type Motor SET. Pin 1-2 Open = Hall Sensor Angle 120° type Motor SET.
2	120	N/A	

Reference Data

TEST Motor		BL4057-31W	
Driver Input Voltage		DC 24.00V	PWM Frequency
			1 KHz
Driver sample 01			
Motor Surface Temp.		38.8 °C	
PWM (%)	Speed (RPM)	Frequency (Hz)	Current (A)
1	0	0.00	0.09
2	0	0.00	0.09
3	0	0.00	0.09
4	0	0.00	0.09
5	0	0.00	0.09
6	0	0.00	0.09
7	0	0.00	0.09
8	0	0.00	0.09
9	0	0.00	0.09
10	0	0.00	0.09
11	0	0.00	0.09
12	0	0.00	0.09
13	0	0.00	0.09
14	0	0.00	0.09
15	0	0.00	0.09
16	0	0.00	0.09
17	0	0.00	0.17
18	202	6.73	0.40
19	652	21.74	0.21
20	870	28.99	0.14
21	1,039	34.62	0.13
22	1,191	39.71	0.14
23	1,340	44.67	0.15
24	1,489	49.62	0.16
25	1,637	54.55	0.17
26	1,788	59.60	0.17
27	1,937	64.58	0.18
28	2,088	69.61	0.19
29	2,249	74.96	0.19
30	2,405	80.16	0.20
31	2,570	85.68	0.21
32	2,735	91.18	0.22
33	2,918	97.26	0.23
34	3,105	103.50	0.24
35	3,300	110.00	0.25
36	3,495	116.50	0.25
37	3,642	121.40	0.25
38	3,699	123.30	0.25
39	3,699	123.30	0.25
40	3,699	123.30	0.25
50	3,699	123.30	0.25
60	3,699	123.30	0.25
70	3,699	123.30	0.25
80	3,699	123.30	0.25
90	3,699	123.30	0.25
100	3,699	123.30	0.25

* DATA description.

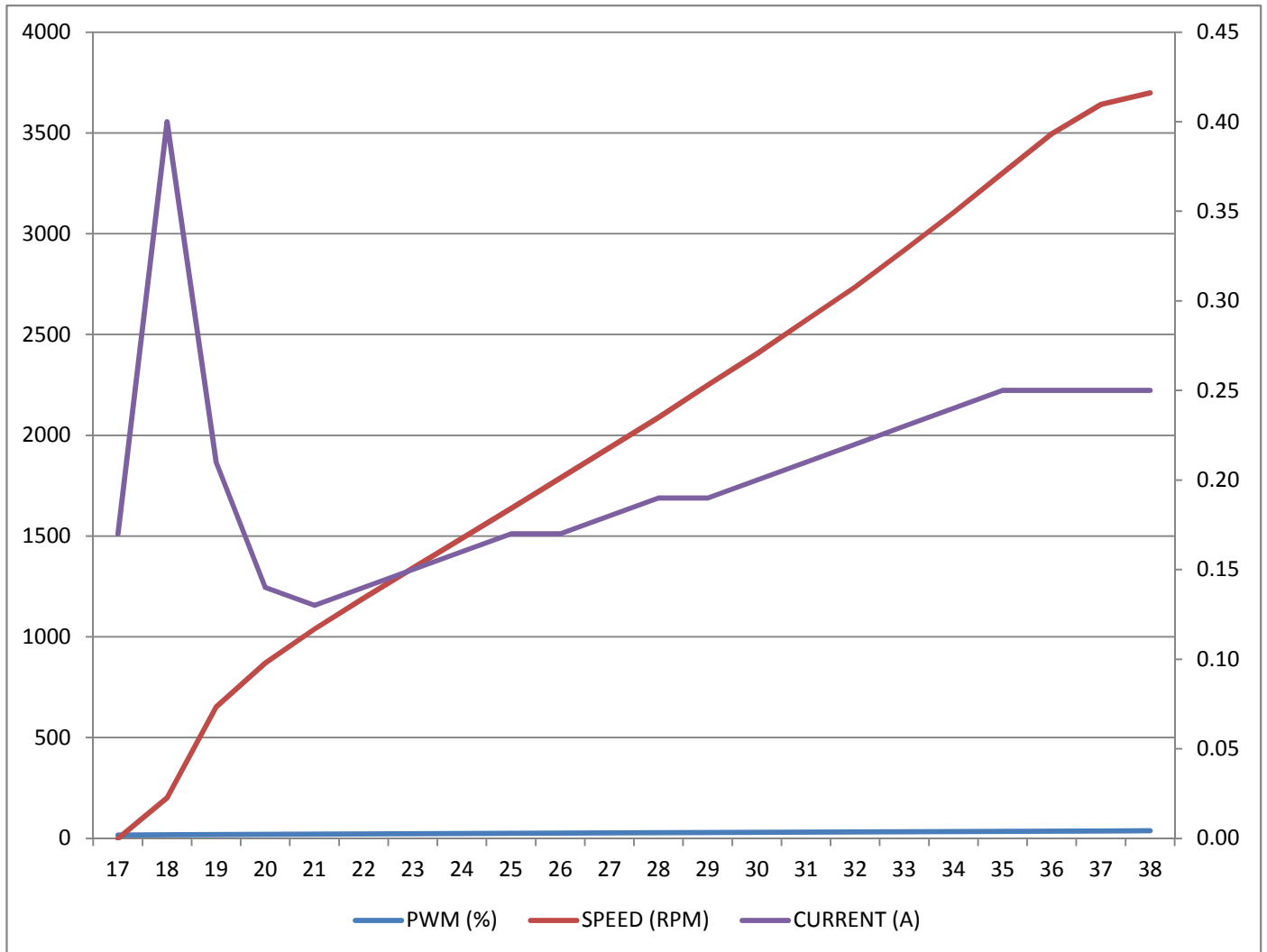
- Measure RPM and Driver Current Change as PWM input values change when no-load.
- RPM & Current changes with Load value.

* Frequency (Hz)

- Measured for the Hall_sensor signal on the Motor.
- 2Pulses per motor revolution.

RPM & Current Curves per PWM Duty Cycle

Test Motor : BL4057-31W @ No Load



- * X Axis = PWM in put (%)
- * Y Axis_L = Motor Speed (R.P.M)
- * Y Axis_R = Current (A)

Outline dimensions.

