

BLDC50/100

BRUSHLESS DC MOTOR DRIVE

USER MANUAL



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1 Introduction

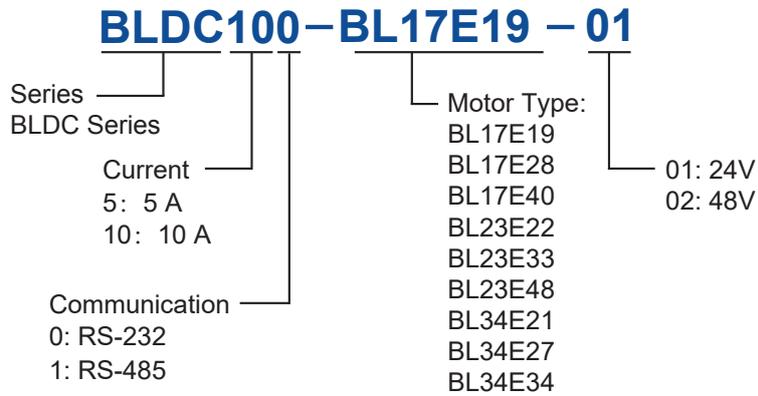
Thank you for selecting the Lin Engineering BLDC50/100 Brushless DC Motor Drive. The BLDC50/100 series DC input drives are based on advanced digital current and velocity control technology and provide high torque, stable velocity and low noise. We hope our dedication to performance, quality and economy will make your motion control project successful.

1.1 Features

- The structure is compact and the parameter is configurable.
- 12-48VDC supply voltage.
- Work in velocity mode.
- Accept analog control signal, digital control signal, RS-232/485 communication command or MMI control.
- High response of the PID velocity loop and D/Q current loop control.
- Brushless sinusoidal current control. With motor phase compensation.
- The drive can supply 5/10A (rms) maximum continuously current for each motor phase. And the twice over load 10/20A is allowed for 5 seconds.
- With eight single-ended optically isolated inputs (5-24V) which is configurable for sinking or sourcing by two swtiches, one analog input(0-5V, can be configured by software)and two darlington optically isolated outputs(maxium output current is 80mA).
- Outputs can be configured by 8 functions depending on different requirements.

1.2 Order Information

1.2.1 Numbering System



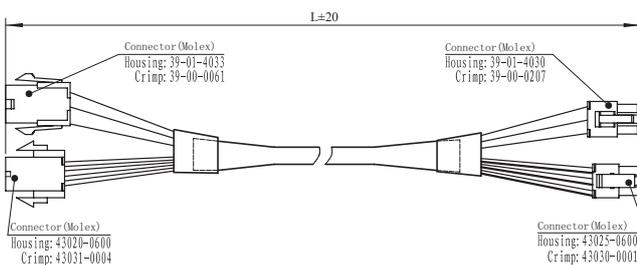
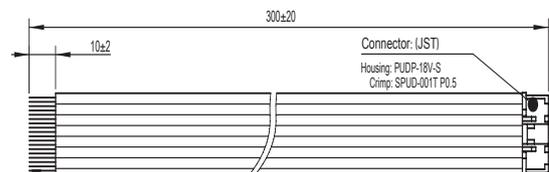
1.2.2 Compatible Motors

TYPE	Model	TYPE	Model
Single Shaft	BL17E19-01-RO	Dual Shaft	BL17E19-01D-RO
	BL17E19-02-RO		BL17E19-02D-RO
	BL17E28-01-RO		BL17E28-01D-RO
	BL17E28-02-RO		BL17E28-02D-RO
	BL17E40-01-RO		BL17E40-01D-RO
	BL17E40-02-RO		BL17E40-02D-RO
	BL23E22-01-RO		BL23E22-01D-RO
	BL23E22-02-RO		BL23E22-02D-RO
	BL23E33-01-RO		BL23E33-01D-RO
	BL23E33-02-RO		BL23E33-02D-RO
	BL23E48-02-RO		BL23E48-02D-RO
	BL34E21-01-RO		BL34E21-01D-RO
	BL34E21-02-RO		BL34E21-02D-RO
	BL34E27-02-RO		BL34E27-02D-RO
BL34E34-01-RO	BL34E34-01D-RO		

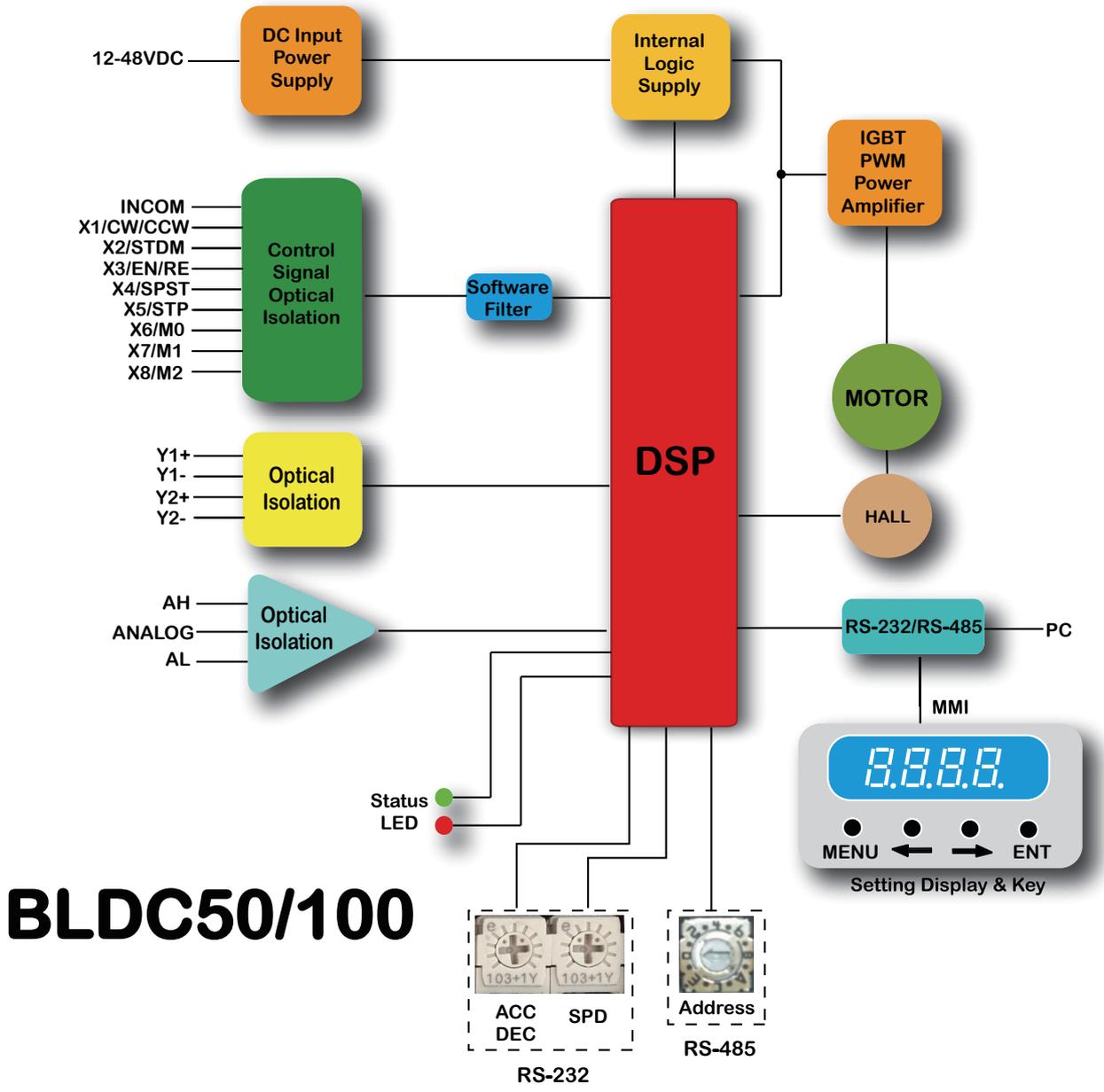
1.2.3 Brushless DC Motor Cable

P/N	Length (L)
BLDC Extension - 1m	1m
BLDC Extension - 3m	3m

I/O Cable: P/N 1201-030

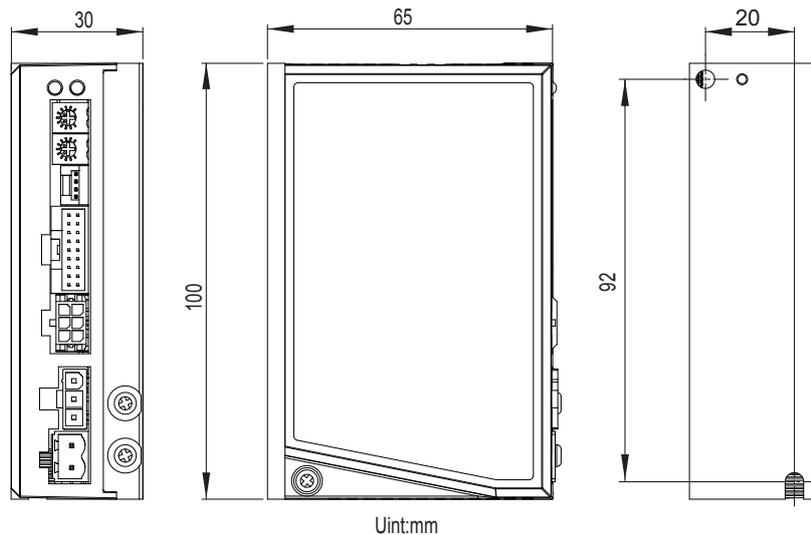


1.3 Block diagram



2 Mounting the Drive

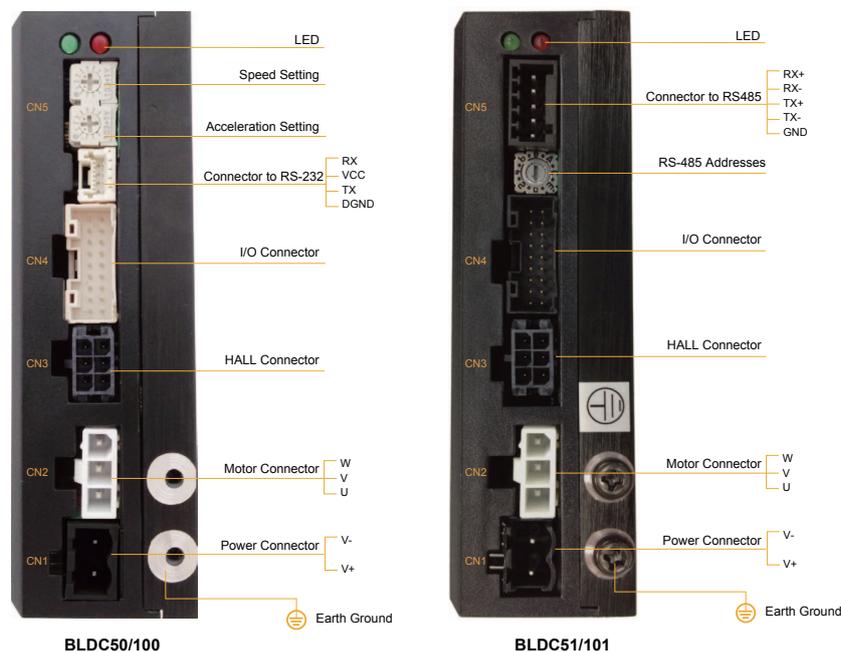
The BLDC drive can be mounted only on the narrow side of the chassis. M4 screws should be used in the two holes at the back of the drive. The amplifiers in the drive generate heat. To operate the drive continuously at maximum power forced air cooling, as from a fan, should be provided. Never use the drive in a space where there is no air flow or where other devices can cause the surrounding air to be more than 40 °C. Never put the drive where it can get wet or where metal particles can fall into it.



3 Connections

To use the BLDC50/100 Drive, the following items are needed:

- DC input of 12 to 48VDC
- Direction, Stop Mode(STMD), Enable, Speed Setting, Stop, Analog or multi-speed setting
- A compatible Brushless Motor



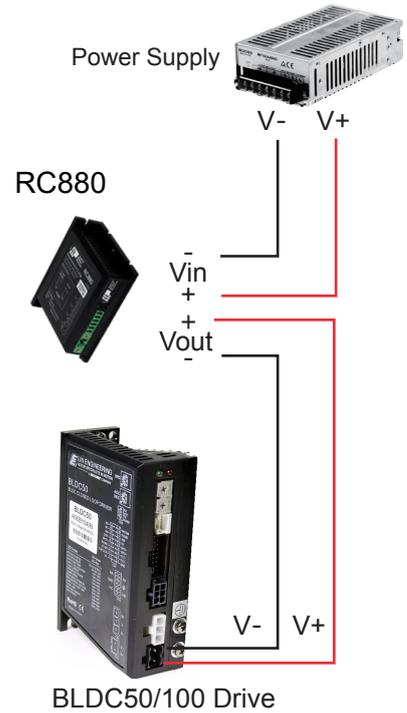
3.1 Connecting the Power(CN1)

Connecting the DC supply to power connector (CN1) according to the diagram on the right. Use 16 AWG wire for V+ and V-. Use 16 AWG for Earth Ground (G).

Care should always be taken when working with voltages. The BLDC50/100 contains an internal 15A fast acting fuse.

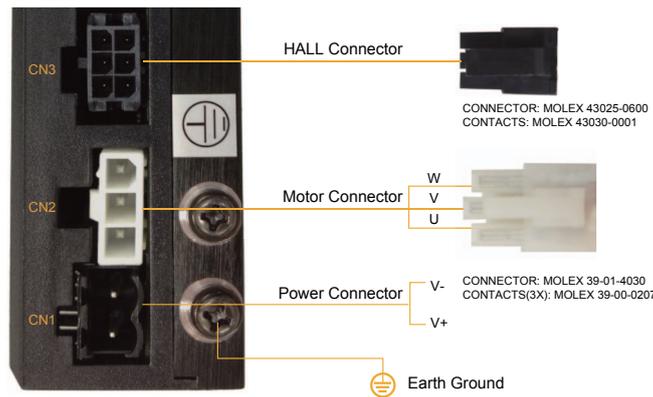
The BLDC50/100 series drives are designed to give optimum performance between 12 and 48 Volts DC. Choosing the voltage depends on the performance requirement and the Motor/Drive heating that is acceptable and/or does not cause a motor/drive over temperature. Higher Voltages will cause the Motor/Drive to operate at higher temperatures. Using power supplies with Voltage outputs that are near the drive maximum voltage may reduce the operational Duty-cycle significantly. When choosing a Power Supply that is Regulated and is near the Drive Maximum Voltage of 48 Volts, a Regeneration Clamp may be required to prevent over voltage when regeneration occurs. The RC880 used for the Servo/Step Amplifier will also work with the BLDC50/100 drive. The RC880 can be purchased from Applied Motion Products

If you choose an unregulated power supply, make sure the no load voltage of the supply does not exceed the drive's maximum input voltage specification.



3.2 Connecting the Motor(CN2 and CN3)

Motor connections should be made according to the following diagrams.



3.3 Connecting the BLDC50/100 Communications

The BLDC50/100 is available with two types of serial communications, RS-232 (BLDC50/100) or RS-485 (BLDC51/101). Each type requires a different hardware connection for interface to a PC or other Host system. The RS-232 version comes with a cable that will provide the interface to an RS-232 port through a DB9 style connector. The RS-485 version requires the user to provide both the cabling and the RS-485 interface. Below are descriptions of how to interface both of these se-rial communication types to a PC.

3.3.1 Connecting to a PC using RS-232(CN5)

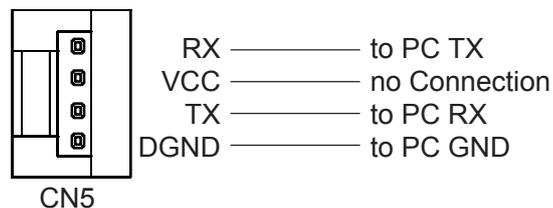
Locate the BLDC50/100 within 1.5 meters of the PC. Plug the DB9 connector of the communication cable that came with the drive into the serial port of the PC. Plug the small end into the PC/MMI jack on the BLDC50/100. Secure the cable to the PC with the screws on the DB9 connector.

Its baud rate is 9600bps which cannot be changed now.

Note: If the PC does not have an RS-232 serial port, a USB Serial Converter will be needed.

You can contact Lin Engineering to buy a USB to RS-232 converter.

The RS-232 circuitry does not have any extra electrical “hardening” and care should be taken when connecting to the RS-232 port as hot plugging could result in circuit failure. If this is a concern the RS-485 version should be used.

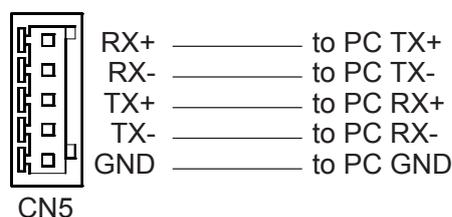


3.3.2 Connecting to a PC using RS-485(CN5)

RS-422/485 communication allows connection of more than one drive to a single host PC, PLC, HMI or other computer. Its baud rate is 9600bps which cannot be changed now. It also allows the communication cable to be long (more than 300 meters or 1000 feet). The use of Category 5 cable is recommended as it is widely used for computer networks, inexpensive, easily obtained and certified for quality and data integrity.

The BLDC50/100 can be used with either Two-Wire or Four-Wire RS-422/485 implementation. The connection can be point-to-point (i.e. one drive and one host) or a multi-drop network (one host and up to 16 drives).

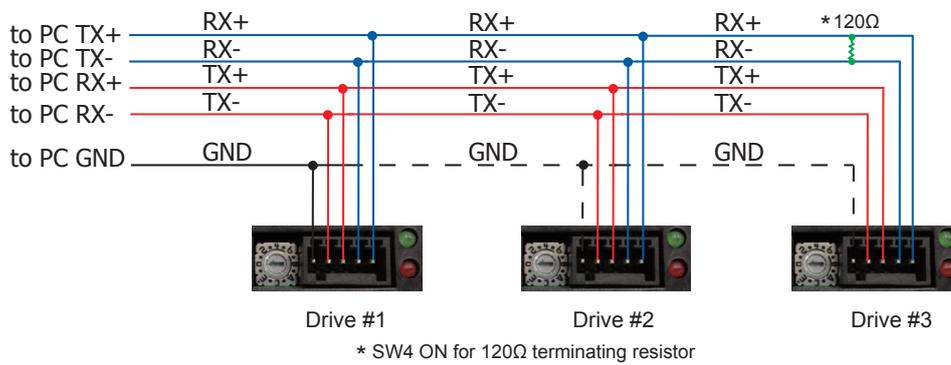
NOTE: To use the BLDC50/100 RS-422/485 version with the BLD Configurator software, it must be connected in the Four-Wire configuration (see below)



Four-Wire Configuration

Four-Wire Systems utilize separate transmit and receive wires. One pair of wires must connect the host's transmit signals to each drive's RX+ and RX- terminals. The other pair connects the drive's TX+ and TX- terminals to the host's receive signals. A logic ground terminal is provided on each drive and can be used to keep all drives at the same ground potential. This terminal connects internally to the DC power supply return (V-), so if all the drives on the RS-422/485 network are powered from the same supply it is not necessary to connect the logic grounds. One drive's GND terminal should still be connected to the host computer ground.

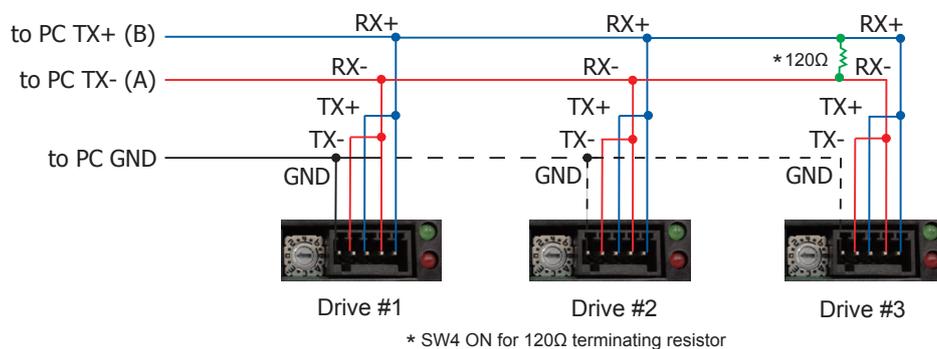
Because the host in a four-wire system never needs to disable its transmitter, software is simplified. Some converters make this process very difficult to implement and can delay communications.



NOTE: If the PC does not have an RS-485 serial port, a converter is required. You can contact Lin Engineering to buy a USB to RS-485 converter.

Two-Wire Configuration

In a 2-wire system, the host must disable its transmitter before it can receive data. This must be done quickly before a drive begins to answer a query. It is not make the transmit delay in a four wire system.



Assigning Addresses

Before the entire system is wired, each drive will need to connect individually to the host computer so that it can be assigned a unique address.

Once the drive has been connected to the PC as described above, launch the BLD Configurator software. Apply power to the drive. If a drive has already been configured, click the Upload button so that the BLD Configurator settings match those of the drive. Click on the Motion button and select the SCL operating mode. The numerals 0..9 or the special characters : ; < = > ? may be used as addresses. Make sure each drive on the network has a unique address. Once the address has been assigned, click Download to save the settings to the drive.

Address	SCL Character	Address	SCL Character
0	0	8	8
1	1	9	9
2	2	A	:
3	3	B	;
4	4	C	<
5	5	D	=
6	6	E	>
7	7	F	?

3.4 IO Control and Function Description

1	+5V USER	2	GND
3	X1	4	Y1+
5	X2	6	Y1-
7	X3	8	Y2+
9	X4	10	Y2-
11	X5	12	AH
13	X6	14	Analog In
15	X7	16	AL
17	X8	18	INCOM

PIN NUM	SIGNAL TYPE	SIGNAL NAME		FUNCTION
		BASIC	GENERAL	BASIC
1	POWER SUPPLY	+5V USER		The drive provides users with up to 100mA +5V supply
2		GND		External control signal GND
18		INCOM		External opto-coupler power input (common anode or common cathode connection can dial to select)
3	INPUT	CW/CCW	X1	Clockwise/Counter Clockwise Select
5		STMD (STOP MODE)	X2	Stop mode choice input
7		EN/RE (Enable/Reset)	X3	Motor enable/disable. It can be used for alarm reset as well.
9		SPST (SPEED-SET)	X4	Internal/external speed-set choice
11		STOP	X5	The electromagnetic brake operation is selected when the motor is stopped.
13		M0	X6	For multi-speed operation, the M0, M1, M2 signals are used in combination.
15		M1	X7	
17		M2	X8	
12	ANALOG INPUT	Analog VCC	-	Using external speed potentiometer setting speed
14		Analog In	-	
16		Analog GND	-	

4	OUTPUT	Fault+	Y1+	Fault output
6		Fault-	Y1-	
8		Speed Out+	Y2+	6 pulses are output per each rotation of the motor output shaft. It can be changed by BLD configurator.
10		Speed Out-	Y2-	
-		MOVE	-	This signal is output during motor rotation.
-		VA	-	Output a signal as speed achieved
-		Fault2	-	This signal is output when the overload warning level is exceed when the overload warning function is set to enable. In addition, also outputs if an overload alarm is generated even when the overload warning function is set to disable (normally closed).
-		Warning	-	This signal is output if a warning is generated (overload warning function is activated)While, it turns OFF if the warning is released.
-		TLC	-	This signal is output when the motor output-torque reaches the torque limiting value.
-		IDLE	-	Configuring as general output

*1 Expand output functions are set through software configuration.

*2 the control module may be used to assign the required signals out of the eight input terminals (X1 to X8) and the two output signal terminals (Y0 and Y1).

Y1-Y2 can be allocated as: Fault/Speed Out/MOVE/VA/Fault2/Warning/TLC/IDLE. (8 in total)

Input Signals Description

The signal state represents the “ON: Carrying current” or “OFF: Not carrying current” state of the internal photocoupler rather than the voltage level of the signal.

CW/CCW

Switching the CW input will cause the motor to turn clockwise as viewed from the motor shaft, while switching to the CCW input will cause the motor to turn counterclockwise. The starting acceleration is set by the acceleration potentiometer (ACC/DEC) or command.

STMD (STOP MODE)

When STOP-MODE is OFF, the motor will stop according to the deceleration set by the acc/dec potentiometer. When STOP-MODE is ON, it will stop the motor using electromagnetic brake operation.

EN/RE (Enable/Reset)

When ENABLE is ON, the motor will be energized .When ENABLE is OFF, the motor will be deenergized. Regardless any other input states, ENABLE being OFF has the highest priority, so that it can be used as emergency stop. By disabling and enabling the drive, it can be reset.

SPST(Speed-set)

OFF Internal speed setting

ON External analog signal setting

Multi-speed operation (M0,M1,M2)

8 kinds of speed is available with M0, M1, M2 input. (Speed control mode and position control mode share the same function)

Default operating data	Operating speed selection			Speed setting method
	M0	M1	M2	
0rpm	OFF	OFF	OFF	Internal speed setting
500rpm	ON	OFF	OFF	Digital setting
1000rpm	OFF	ON	OFF	Digital setting
2000rpm	ON	ON	OFF	Digital setting
3000rpm	OFF	OFF	ON	Digital setting
3500rpm	ON	OFF	ON	Digital setting
4000rpm	OFF	ON	ON	Digital setting
4500rpm	ON	ON	ON	Digital setting

STOP

When STOP is on, the motor stops in the mode set by STMD.

Output Signal Description

FAULT

FAULT output an error signal when the drive is over-heat, over-current, over-voltage, under-voltage or internal voltage bad. The output voltage of error signal can be defined by SCL command AO.

SPEED OUT

The motor output shaft output

6*(pole pairs) per revolution(default). And the pulse number can be set through the software.

MOVE

This signal is output during motor rotation.

VA

Speed reached command. If the difference between the actual motor speed and the input speed reaches specified range, the drive will output this signal. The difference range can be defined in 0~+/-400rpm (the default range is +/-200rpm).

FAULT2

In order to avoid overload, the drive can set the overload level, and use it as overload alarm signal. With this signal, user can distinguish the real cause of fault or warning.

Warning

When communication error occurs or back EMF voltage is over range, a warning will happen till the error is eliminated.

TLC

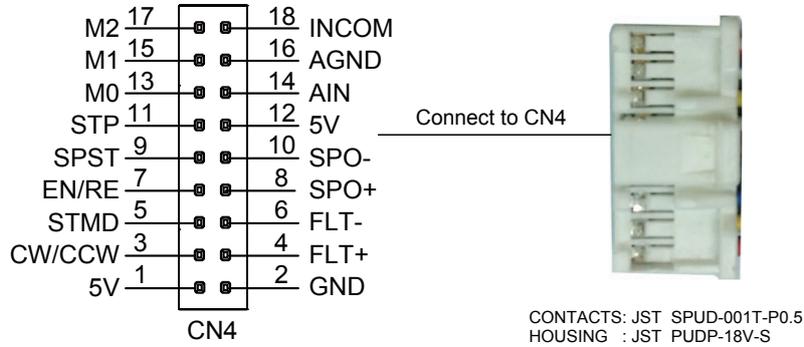
When the output torque reaches the rated limit, the output is ON.

IDLE

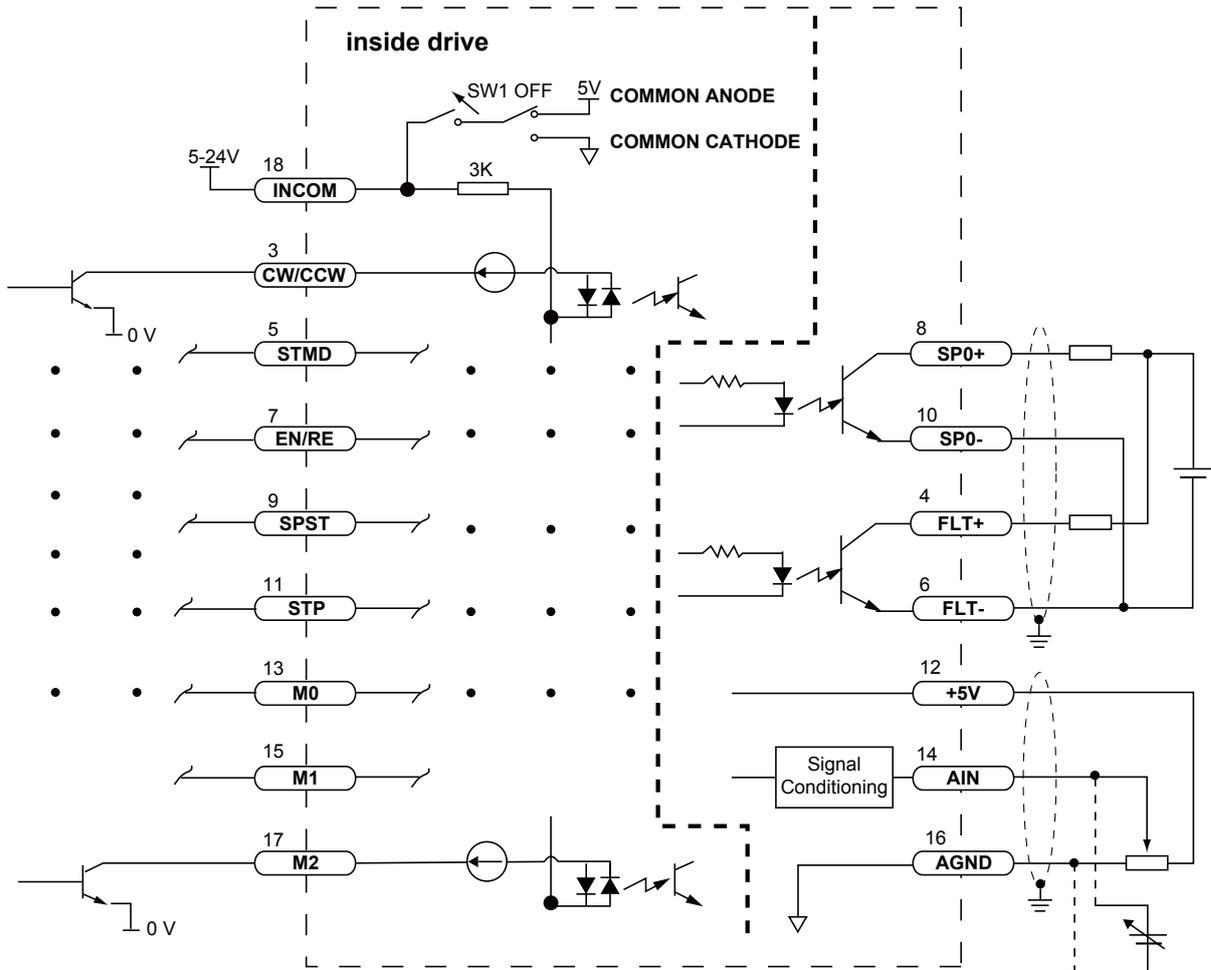
IDLE can be configured as a general output when idle.

3.5 Connecting the Inputs and Outputs(CN4)

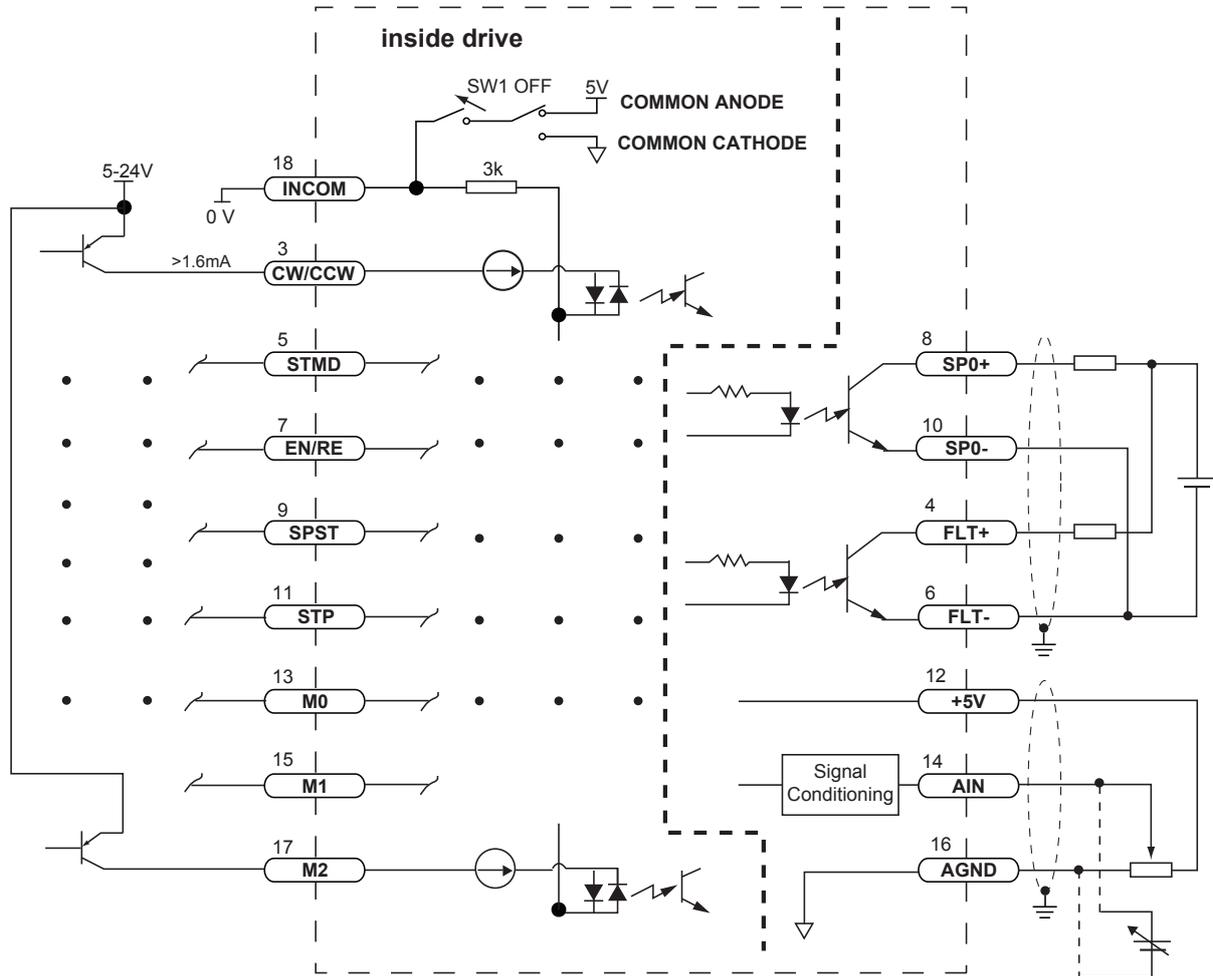
The connector is an 18-Pin board-to wire connector with secure locking device and designed to 2.0 mm pitch, crimping style and double-row. The pin-out is as follows:



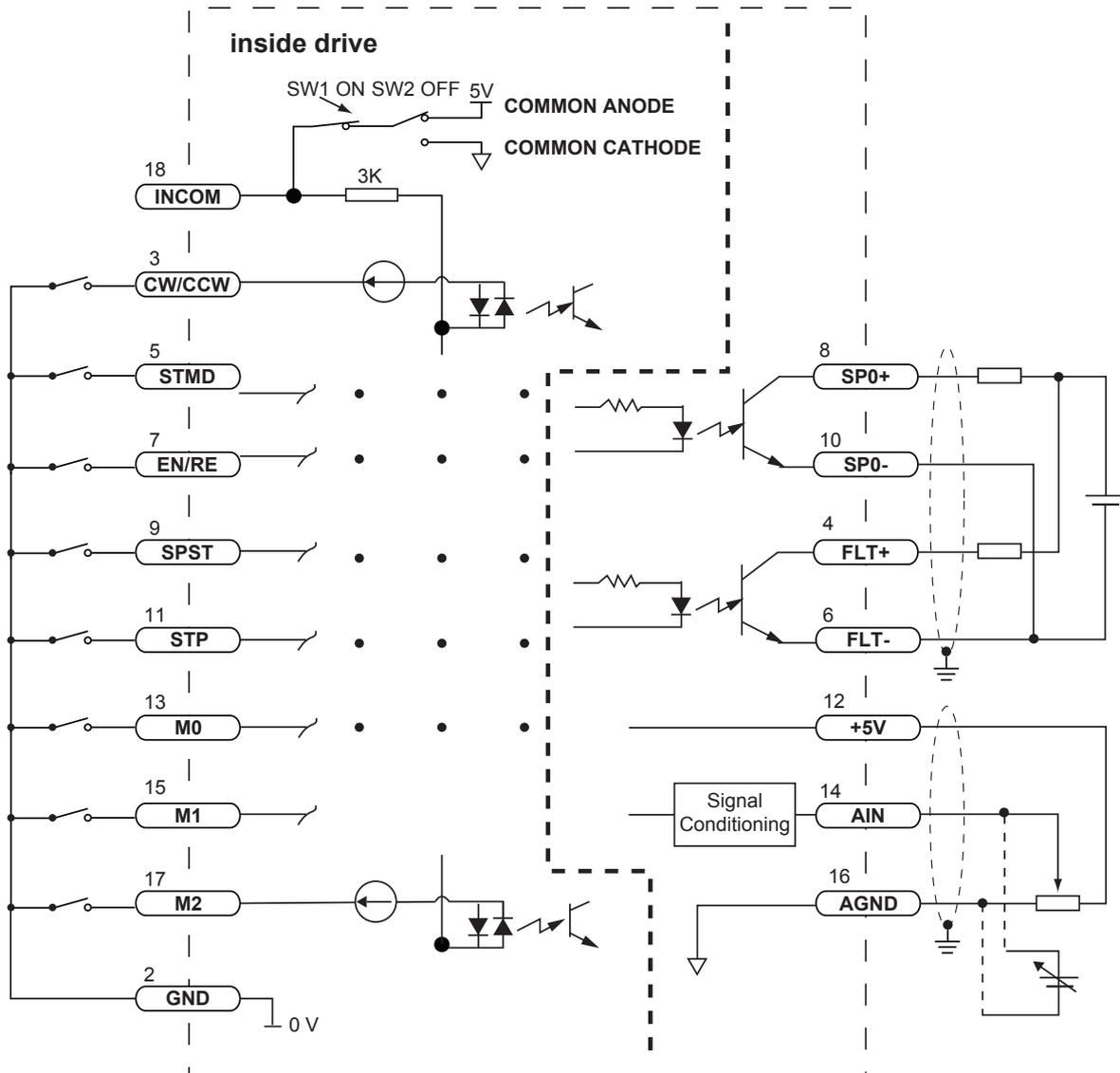
3.5.1 Input Connection



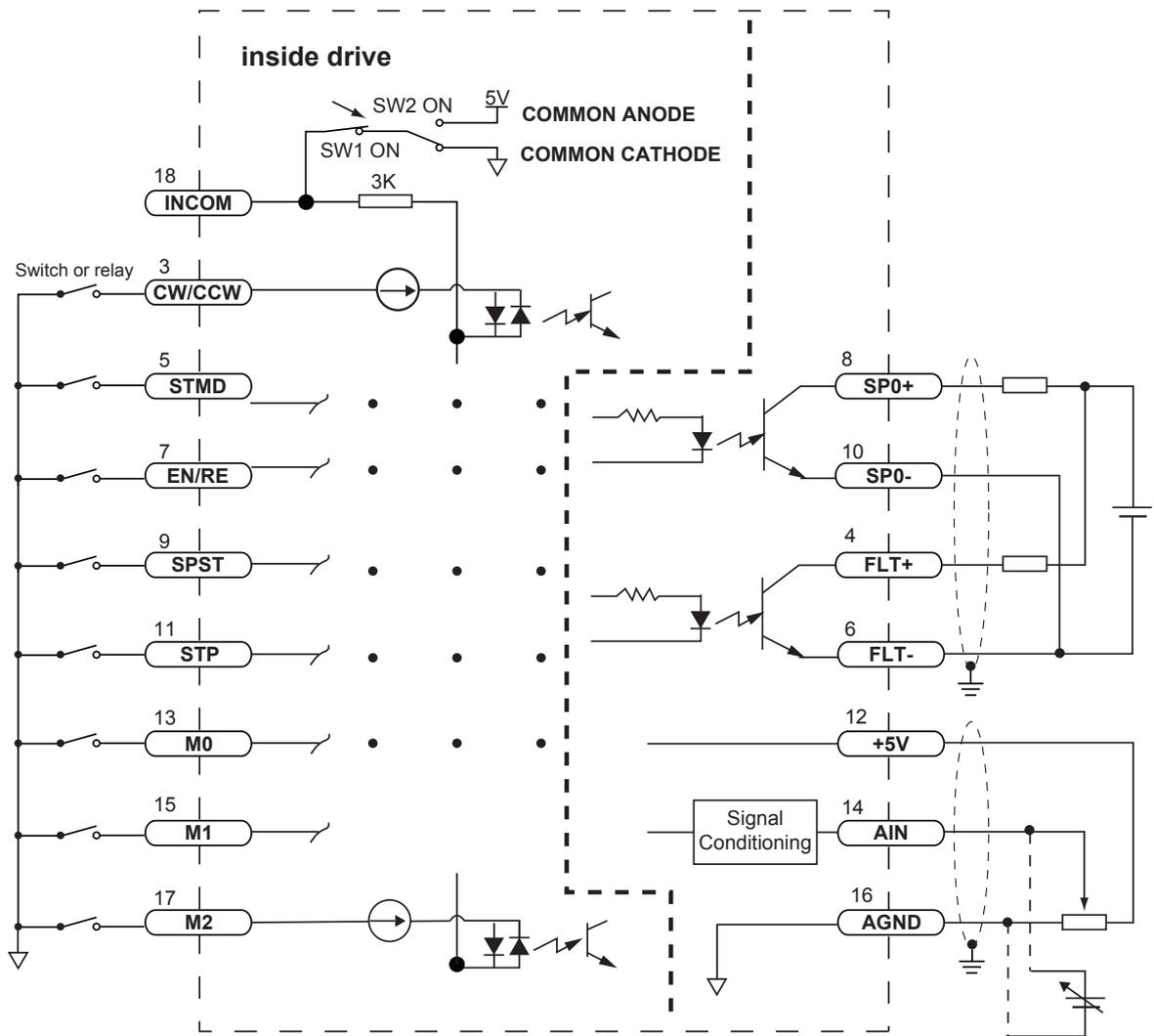
Connecting to control IO with external Sinking Outputs



Connecting to control IO with external Sourcing Outputs



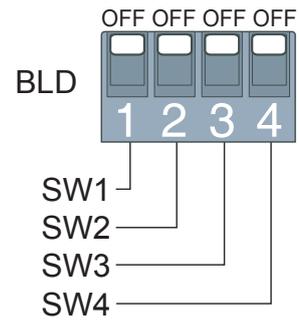
Connecting to control IO with internal Sinking Outputs



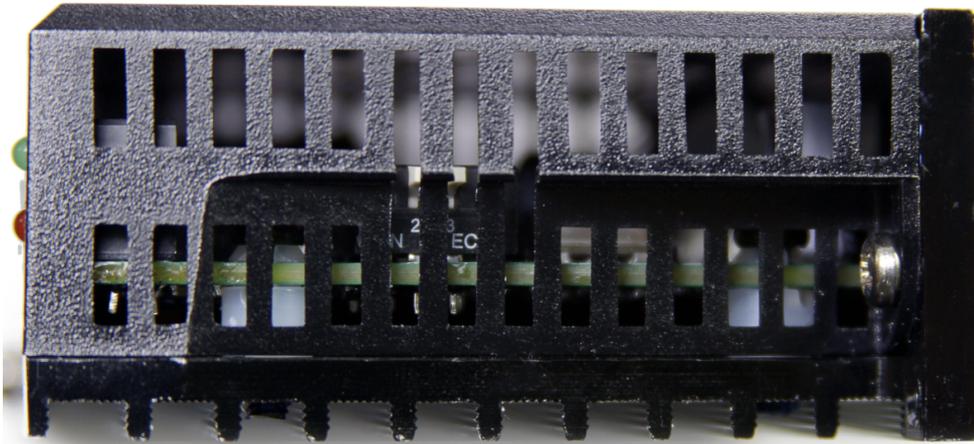
Connecting to control IO with internal Sourcing Outputs

3.5.2 Dip Switches

At the right side of BLD drive there are four switches. If users don't want use external power for the IO control, they can switch SW1 "ON" to choose the internal 5V power supply to IO control and "OFF" means external power supply. When SW1 is "ON", user should chose common anode or common cathode control by SW2. SW2 is "ON" that means user chose common anode IO control. SW2 is "OFF" that means user chose common cathode IO control.

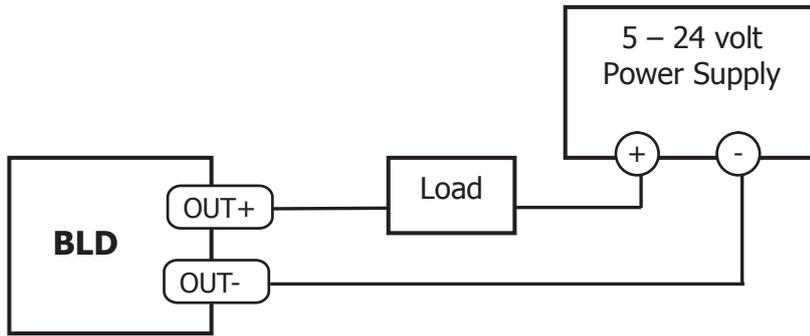


For RS485 version, SW4 is "ON" that means there is a 120 ohm termination resistor across the TX+ and TX- terminals. SW3 is reserved.

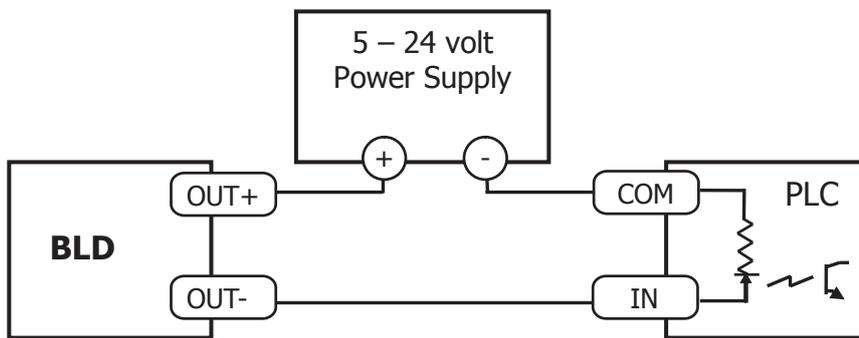


The four switches on the right side of the BLD drive can be adjusted using a device that is capable of fitting between the right side grating. Removing the outside layer is also possible but not recommended due to sensitive nature of the drive electronics.

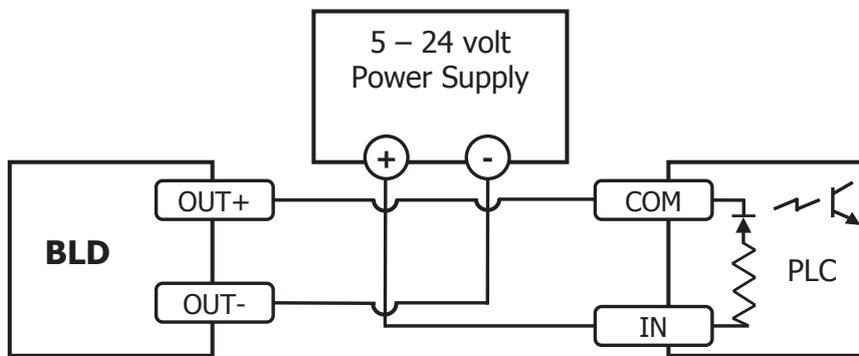
3.5.3 Output Connection



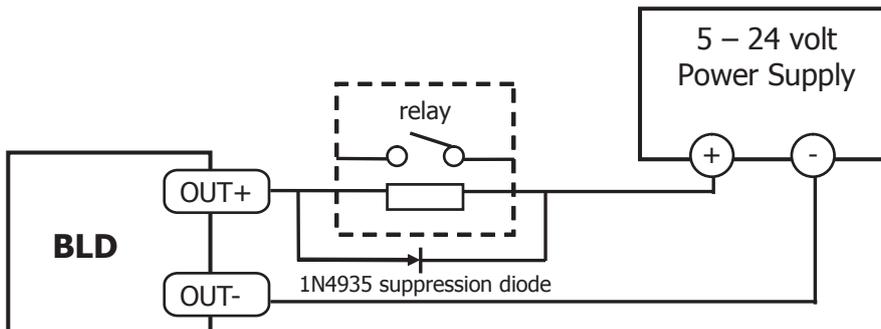
Connecting a Sinking Output



Connecting a Sourcing Output

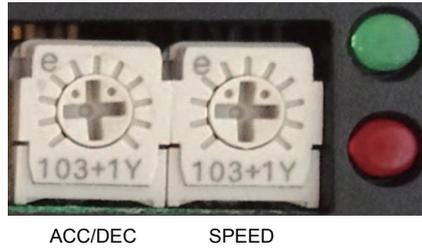


Connecting a Sourcing Output again



Driving a Relay

3.6 Two Potentiometers(RS-232 Only)



3.6.1 Speed Setting

This one potentiometer can be used for adjusting speed. The velocity range can be setting in BLD configurator. Its default range is 150 to 4500rpm.

3.6.2 Acceleration Setting

This one potentiometer can be used for adjusting acceleration and deceleration. The acceleration and deceleration range are the same and can be setting in BLD configuration. Their default range are 0 to 3000rps²

3.7 Status LED Codes

	Code	Error
●	Solid Green	Motor Disabled
● ●	Flashing Green	Motor Enabled
● ● ●	1 Red, 2 Green	Can't Move (Disabled)
● ● ● ●	3 Red, 1 Green	Drive Over Temperature
● ● ● ● ●	3 Red, 2 Green	Bad Internal Voltage
● ● ● ● ● ●	4 Red, 1 Green	Supply Voltage High
● ● ● ● ● ● ●	4 Red, 2 Green	Supply Voltage Low
● ● ● ● ● ● ● ●	5 Red, 1 Green	Over Current
● ● ● ● ● ● ● ● ●	5 Red, 2 Green	Over Load
● ● ● ● ● ● ● ● ● ●	6 Red, 1 Green	Open Motor Phase
● ● ● ● ● ● ● ● ● ● ●	6 Red, 2 Green	Bad Hall Signal
● ● ● ● ● ● ● ● ● ● ● ●	7 Red, 1 Green	Comm Error
● ● ● ● ● ● ● ● ● ● ● ● ●	7 Red, 2 Green	Save Failed

4 Operation

4.1 Basic operation

Speed setting

- **The setting range is 150 to 4500 rpm.**

Setting by internal potentiometer.

Use a precision screwdriver to turn the internal potentiometer.

Turn the potentiometer clockwise to increase the speed.

Factory setting: 0 r/min

- **Setting by the external potentiometer**

Connect the external potentiometer to the I/O signal connector (CN4) of the driver.

The recommended resistor is 5kΩ.

Connect the shield wire of the signal wire to the AGND input terminal.

Make sure the shield wire does not contact other terminals.

When the M0,M1,M2 input is turned OFF and the SPST terminal is turned ON, the external potentiometer is enabled. Turn the potentiometer clockwise to increase the speed.

- **Setting with external IO input voltage**

Setting SW1 OFF, then 5 -24 VDC for the external IO input DC voltage can be used.

Factory setting: SW1 OFF

Note Change the setting of the external voltage selector switch SW1 before turning on the power.

Running/stopping the motor

Run/stop the motor by inputting operation control signals.

- **Operation**

When the CW/CCW input is turned OFF, the motor turns in the clockwise direction according to the acc/dec potentiometer setting. When the CW/CCW input is turned ON, the motor turns in the counterclockwise direction according to the acc/dec potentiometer setting.

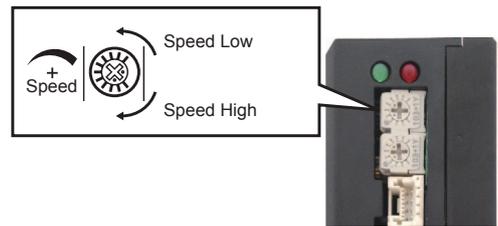
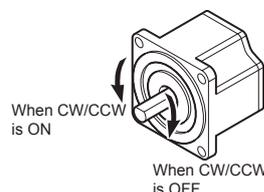
- **Stop**

When the STMD input is turned OFF and the STP input is turned ON, the motor stops according to the acc/dec potentiometer setting. It maybe produce Back-EMF and make the drive alarm “Supply voltage high”.

When the STMD input is turned ON and the STP input is turned ON, the motor stops by short all the three phase of the motor. It will stop the motor very fast without Back-EMF. This stopping method is recommended.

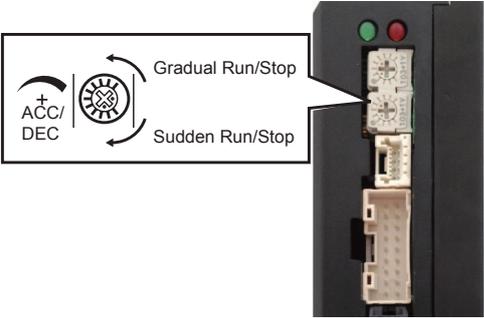
Rotating direction of the motor output shaft

The rotating direction of the motor output shaft represents the direction when viewed from the motor output shaft side.



4.2 Setting the acceleration and deceleration

You can set the acceleration and deceleration for starting and stopping. The acceleration and deceleration are effective for all speed settings.



5 Motor

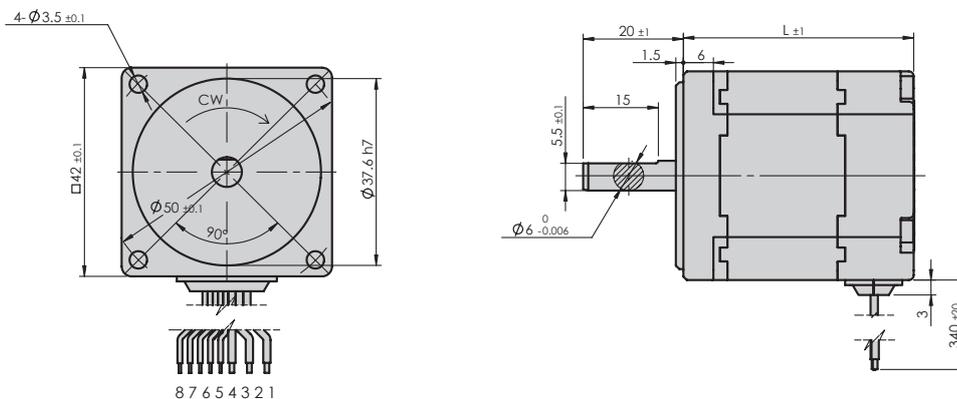
According to the rated current value to select the BLD drive. The value is above 5Arms, please select to the BLD10 drive. The value is below or equal to 5Arms, please select to the BLD5 drive. BLDC50/100 drive support all the NEMA 17, 23, 34 BLDC motor as follow.

NEMA 17 BLDC MOTOR

Technical Specification

	Symbols	Units	Type					
			BL17E19-01	BL17E19-02	BL17E28-01	BL17E28-02	BL17E40-01	BL17E40-02
		mm	42	42	42	42	42	42
Length	L	mm	46	46	70	70	100	100
Input voltage	Un	VDC	24	48	24	48	24	48
Rated power	Pn	W	30	30	60	60	90	90
Phase number	P		3					
Rated speed	Nn	RPM	4000	4000	4000	4000	4000	4000
Max. speed	Np	RPM	4500	4500	4500	4500	4500	4500
Rated torque	T	mNm	72	72	144	144	215	215
Max. torque	Tmax	mNm	144	144	288	288	430	430
Rated current	I	Arms	1.67	0.81	3.28	1.63	4.92	2.4
Max. current	I _{max}	Arms	3.34	1.62	6.56	3.26	9.84	4.8
Voltage constant ± 10%		Vrms/Krpm	2.65	5	2.7	5.2	2.65	5.5
Torque constant ± 10%		Nm/Arms	0.037	0.075	0.037	0.075	0.037	0.075
Moment of inertia		10 ⁻⁴ kgm ²	0.0388	0.0388	0.072	0.072	0.114	0.114
Resistance ± 10% (25℃)	R	Ω	1.03	3.4	0.45	1.73	0.25	0.83
Inductance	L	mH	0.90	3.15	0.44	1.65	0.25	1
Sensor	Hall							
Ins.class	E							
Protective rating	IP40							
Operating temperature	0~+50℃ (storage temperature -20~+60℃)							
Operating RH	85% RH or below (noncondensing)							
Operating environment	Outdoor (no direct sunlight), no corrosive gas, no flammable gas, no oil mist, no dust							
Altitude	1000m or below							

Dimensions

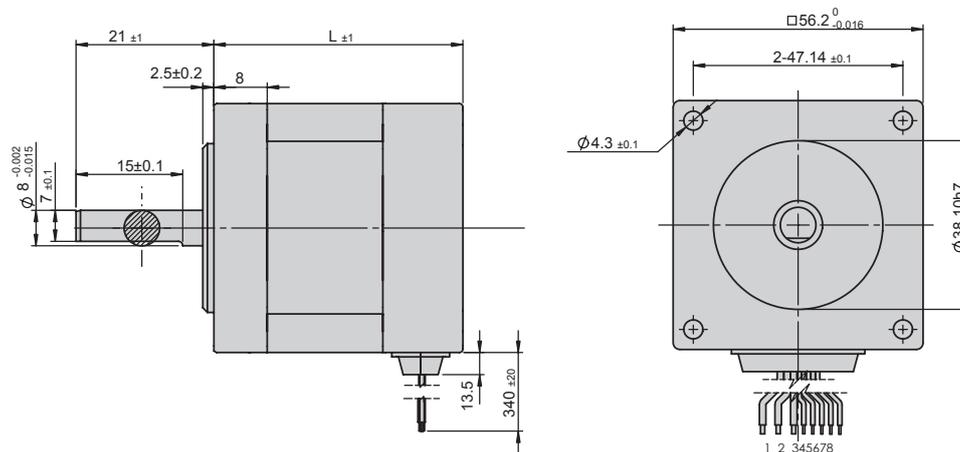


NEMA23 BLDC MOTOR

Technical Specification

	Symbols	Units	Type				
			BL23E22-01	BL23E22-02	BL23E33-01	BL23E33-02	BL23E48-02
		mm	57	57	57	57	57
Length	L	mm	54.5	54.5	82.5	82.5	120.5
Input voltage	Un	VDC	24	48	24	48	48
Rated power	Pn	W	60	60	120	120	180
Phase number	P		3				
Rated speed	Nn	RPM	4000	4000	4000	4000	4000
Max. speed	Np	RPM	5000	5000	5000	5000	5000
Rated torque	T	mNm	145	145	290	290	430
Max. torque	Tmax	mNm	290	290	580	580	860
Rated current	I	Arms	3.2	1.6	6.9	3	4.5
Max. current	Imax	Arms	6.2	3.2	13.8	6	9
Voltage constant ±5%		Vrms/Krpm	3.4	6.7	3.2	6.7	6.8
Torque constant ±5%		Nm/Arms	0.045	0.09	0.042	0.097	0.096
Moment of inertia		10 ⁻⁴ kgm ²	0.148	0.148	0.279	0.279	0.456
Resistance ±10% (25°C)	R	Ω	0.48	1.80	0.18	0.76	0.44
Inductance	L	mH	0.45	0.64	0.18	0.84	0.54
Sensor			Hall				
Ins.class			E				
Protective rating			IP40				
Operating temperature			0~+50 °C (storage temperature -20~+60 °C)				
Operating RH			85% RH or below (noncondensing)				
Operating environment			Outdoor (no direct sunlight), no corrosive gas, no flammable gas, no oil mist, no dust				
Altitude			1000m or below				

Dimensions

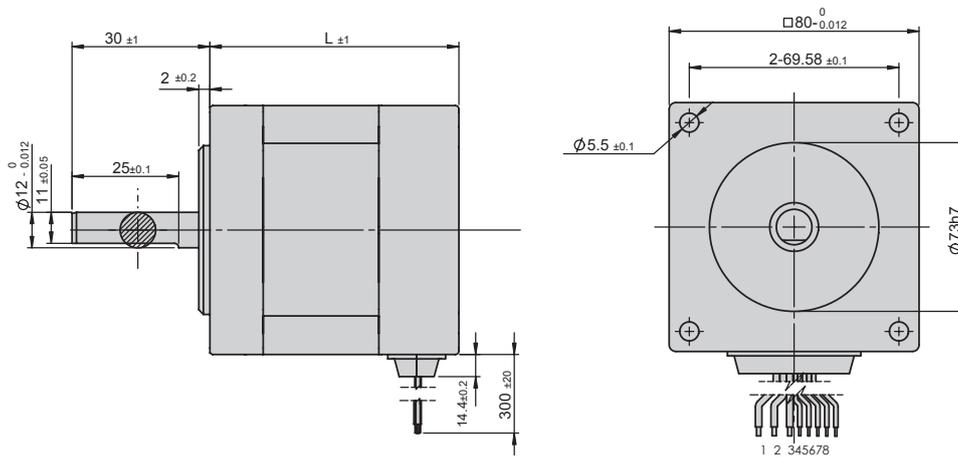


NEMA 34 BLDC MOTOR

Technical Specification

	Symbols	Units	Type			
			BL34E21-01	BL34E21-02	BL34E27-02	BL34E34-01
		mm	57	57	57	57
Length	L	mm	50	50	67	84
Input voltage	Un	VDC	24	48	48	48
Rated power	Pn	W	100	100	200	300
Phase number	P		3			
Rated speed	Nn	RPM	4000	4000	4000	4000
Max. speed	Np	RPM	4500	4500	4500	4500
Rated torque	T	mNm	240	240	480	720
Max. torque	Tmax	mNm	480	300	600	1440
Rated current	I	Arms	5	2.43	5.06	7.49
Max. current	Imax	Arms	10	4.86	10.12	14.98
Voltage constant ±5%		Vrms/Krpm	3.44	7.3	7.2	7.3
Torque constant ±5%		Nm/Arms	0.048	0.099	0.095	0.096
Moment of inertia		10 ⁻⁴ kgm ²	0.38	0.38	0.74	1.08
Resistance ±10% (25°C)	R	Ω	0.18	0.71	0.27	0.20
Inductance	L	mH	0.34	1.35	0.70	0.47
Sensor			Hall			
Ins.class			E			
Protective rating			IP40			
Operating temperature			0~+50 °C (storage temperature -20~+60°C)			
Operating RH			85% RH or below (noncondensing)			
Operating environment			Outdoor (no direct sunlight), no corrosive gas, no flammable gas, no oil mist, no dust			
Altitude			1000m or below			

Dimensions

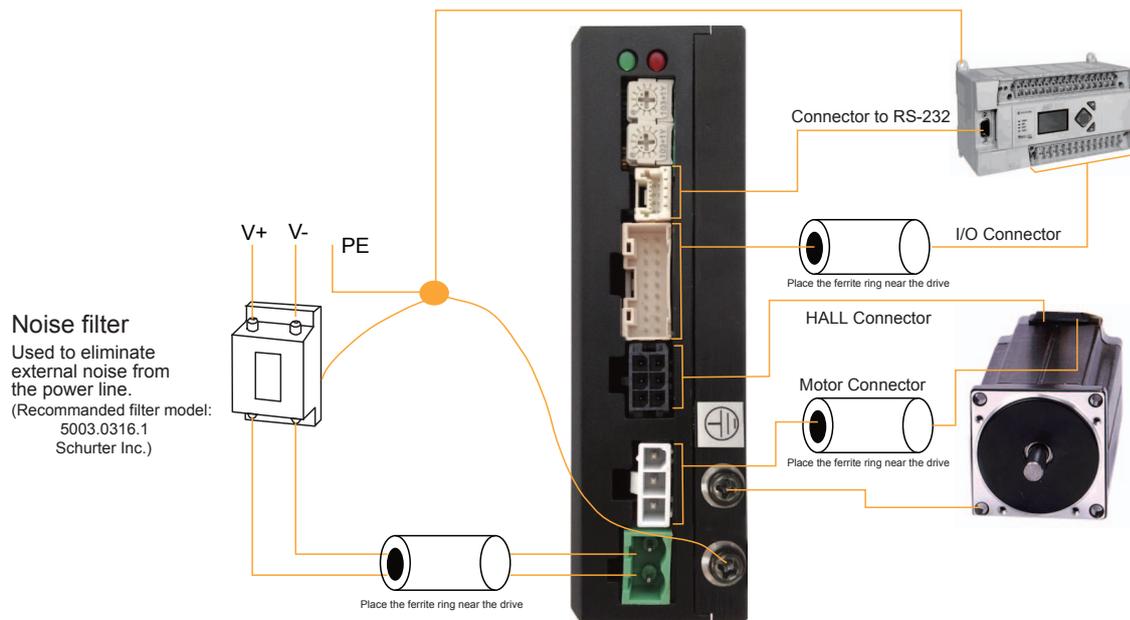


6 Setup for EMC

For the EMC/EMI requirement, ferrite ring and DC EMI filter are recommended.

The power input interface can use ferrite ring to reduce the radiation emission. The DC EMI filter can reduce the radiation emission better than ferrite ring.

The shield wires are recommended for the IO input and its shield should be connected to the earth terminal of the BLD drive.



8 Specification

Drive Type	3-phase MOSFET bridge.
Current Control	D/Q sine current control
Output Current	BLDC50: 0.1 — 5.0A/phase precision to 0.1A BLDC100: 0.1 — 10.0A/phase precision to 0.1A
Supply Voltage	12-48VDC
Supply Voltage Type	DC
Max Power Input	10-70VDC
Control Modes	Velocity Control
Feedback	Halls
Setup Method	Switch / potentiometer
Digital Inputs	8
Digital Outputs	2
Analog Inputs	1 (0 to 5 Vdc, 12 bit)
Status LEDs	1 red, 1 green
Dimensions	3.9 x 2.6 x 1.2 inches
Weight	6.0 oz
Velocity Ripple	+/-0.5% Rated Velocity Error
Protection Function	Over voltage, under voltage, over temperature, short circuit (phase to phase, phase to grand), bad Hall signal.
Under Voltage Protection	10V
Over Voltage Protection	70V
Input Signal Voltage(IO)	5-24V
OUT Maximum Output Current	100mA
OUT Maximum Voltage	30V
Ambient Temperature	0 to 40°C
Storage Temperature	-10 to 70°C
Humidity	90% non-condensing

Technical Support for Lin Engineering

Telephone: 408-919-0200 (Mon. - Fri., 8:00 a.m. - 5:00 p.m. Pacific Time)

Email: techsupport@linengineering.com

Our technical support group is glad to work with you in answering your questions. If you can not find the solution to your particular application, or, if for any reason you need additional technical assistance please contact us.