ELD5-400/ ELD5-750 Servo Motor Driver

ELD5 series Brushless Servo Motor Drives

Models ELD5-400 and ELD5-750

Digital Technology, max. 55 V DC / 7.0 A, 50 - 400 W / 750 W

1. Product Description:

ELD5 low-voltage AC servo is a special motion control product designed for machines and applications that request a best balance between outstanding performance and reasonable cost. Combined with abundant features like MFC, vibration suppression, multi-mode filter function etc. it provides machines a compact size, low tuning works, but high resolution encoder up to 23 bits, a unique servo system.

2. Features:

- Easy Tuning
- 3 different modes:
  - Position Mode: To control by pulse and direction signal.
  - Velocity Mode: Speed control by an analog voltage input signal -10 V to +10 V, for example for applications that need constant or variable speed.
  - Torque Mode: Torque control by an analog voltage input signal -10 V to +10 V for a constant torque, for example for a winding application. In case no torque inquired the max. speed to be configured by software.
- Automatic identification for motor with 17 bit or 23 bit encoder
- Simple and flexible to control
- RS485/ Modbus/ Canopen
- Notch filter, damping filter
- Optional Feedback

3. Technical Specification:

Power & Environment			
Driver model		ELD5-400/ ELD5-400Z	ELD5-750/ ELD5-750Z
Size (mm)		125 x 99 x 44	
Rated Power (kw)		0.4	0.75
Rated output current (A)		10	20
Max. output current (A)		30	60
Main Power	Voltage (V)	V DC 24 - 55 (recommended 24 - 48 V DC)	
	Current (A)	10	20
		24 - 55 V DC: 7 A	24 - 55 V DC: 14 A
Control Power	Voltage (V)	DC 12 - 24	
	Current (mA)	≥ 12	
Control method		IGBT PWM sinusoidal Wave Drive	
Overload		300 %	
Brake resistor		External Connection	
Communication Interface		Modbus (RS232 or RS485), CANopen	
Protection Rank		IP20	

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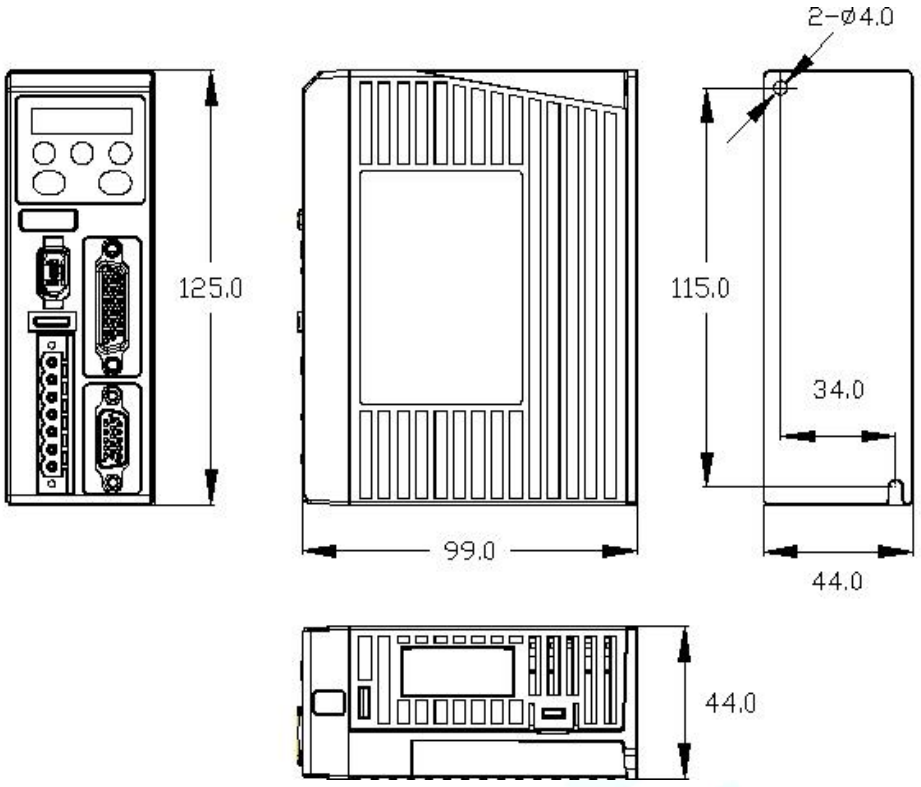
Communication & Connection	
Communication with PC	1394a (like FireWire400) 6 pin for RS232 or RJ45 for RS485
Pulse input	2 fast pulse input, 5 V - 24 V all compatible
Pulse encoder output	5 V differential output, A/ B/ Z phase (optional frequency divider)
Digital input/ output	4 programmable OC outputs, 5 programmable OC inputs
Analog input	1 analog input: -10 V to +10 V
Feedback Supported	1000 line or 2500 line incremental encoder (ELD5-400/ ELD5-750)
	Serial encoder (ELD5-400Z/ ELD5-750Z)

4. Mechanical Specification:



5. Operating Environment and Parameters:

Servo Driver, Storage ambient condition Requirement	
Item	ELD5 series driver
Temperature	-20 - 80 ℃
Humidity	Under 90 %RH (free from condensation)
Atmospheric environment	Indoor (no exposure) no corrosive gas or flammable gas, no oil or dust
Altitude	Lower than 1000 m
Protection level	IP00 (no protection)

Servo Driver, Installation ambient condition Requirement	
Item	ELD5 series driver
Temperature	0 - 55 ℃
Humidity	Under 90 %RH (free from condensation)
Atmospheric environment	Indoor (no exposure) no corrosive gas or flammable gas, no oil or dust
Altitude	Lower than 1000 m
Protection level	IP00 (no protection)

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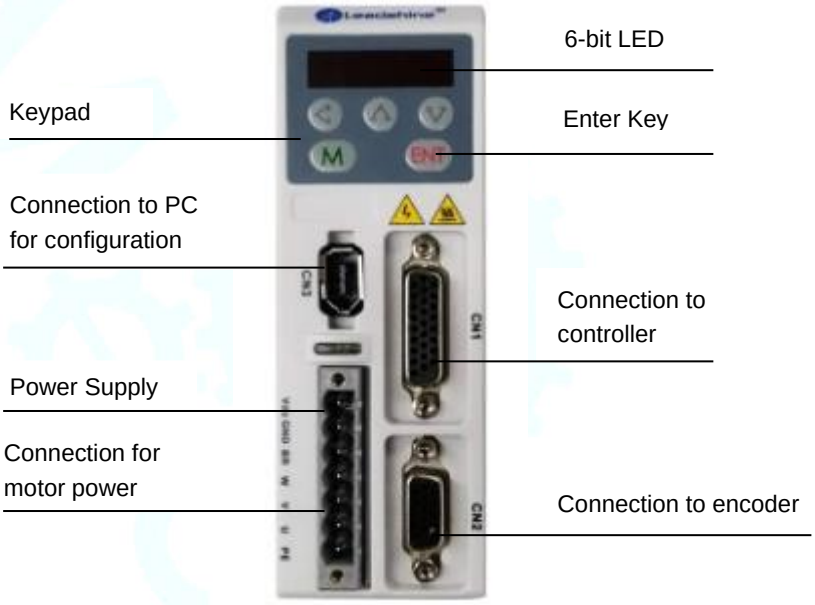
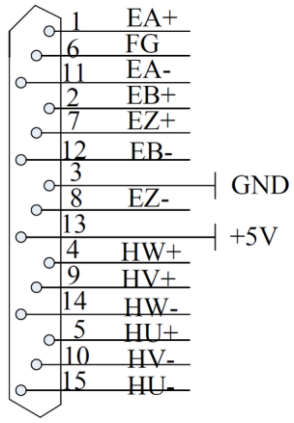
6. Appearance:



7. Connectors and Pin Assignment:

Encoder Input Port-CN2 Terminal Signal for ELD5-400/ ELD5-750			
Pin	**Schema**	**Signal**	**Name**
1		EA+	Encoder channel A+ input
2		EB+	Encoder channel B+ input
3		EGND	Signal ground
4		Hall W+	Hall sensor W+ input
5		Hall U+	Hall sensor U+ input
6		FG	Ground terminal for shielded
7		EZ+	Encoder channel Z+ input
8		EZ-	Encoder channel Z- input
9		Hall V+	Hall sensor V+ input
10		Hall V-	Hall sensor V- input
11		EA-	Encoder channel A- input
12		EB-	Encoder channel B- input
13		VCC	+5 V for encoder power supply
14		Hall W-	Hall sensor W- input
15		Hall U-	Hall sensor U- input

Encoder Input Port-CN2 Terminal Signal for ELD5-400Z/ ELD5-750Z		
Pin	**Signal**	**Name**
3	EGND	Signal ground
9	SD+	Encoder signal
10	SD-	
13	VCC	+5 V for encoder power supply
	BAT+	Only available for multi-turn absolute encoder
	BAT-	

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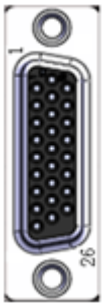
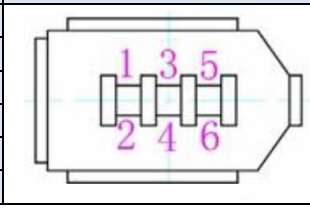
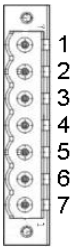
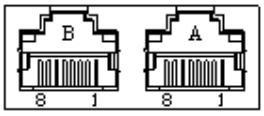
Control Signal Port CN1					
Pin	**Schema**	**Signal**	**E/A**	**Detail**	
1		COM+	Input	Power supply positive terminal of the external input control signal, 12 V ~ 24 V	
2		SI1-Svon	Input	Digital input signal 1, default value is servo on signal in position mode, low level available in default , the maximum voltage is 24 V input	
3		PUL+	Input	Positive and negative pulse input, respectively. TTL level (5 V), the rising edge available in default	
4		PUL-	Input		
5		DIR+	Input	Positive and negative direction input, respectively. TTL level (5 V), the rising edge available in default	
6		DIR-	Input		
7		SI2-FL	Input	Digital input signal 2, default value is forward run prohibited (POT) signal in position mode, low level available in default, max voltage is 24 V input	
8		SI3-RL	Input	Digital input signal 3, default value is reverse run prohibited (NOT) signal in position mode, low level available in default, max voltage is 24 V input	
9		SI4-ZS	Input	Digital input signal 4, default value is zero-speed clamp (ZEROSPD) signal in position mode, low level available in default, max voltage is 24 V input	
10		SI5-CLR	Input	Digital input signal 5, default value is deviation counter clear input in position mode, low level available in default, max voltage is 24V input	
12		Vin+	Input	Analog input, voltage input range: -10 - +10 V, input resistor 20 KΩ	
13		SO1-RDY	Input	Digital output signal 1, default value is servo ready output (S-RDY) in position mode	OC, the maximum voltage / current is no more than 30 V, 50 mA. Recommend voltage: 12 V – 24 V. Current :10 mA
14		SO2-ALM	Output	Digital output signal 2, default value is alarm output (ALM) in position mode	
15		SO3-INP	Output	Digital output signal 3, default value is positioning complete (INP) in position mode	
16		SO4-BRK	Output	Digital output signal 4, default value is external brake release output (BRK-OFF) in position mode	
17		NC			
18		COM-	Output	Digital output signal commonality ground	
19		+5 V	Output	Encoder signal output +5 V, 50 mA	
20		A+	Output	Positive/ negative differential output terminal of motor encoder A phase	
21		A-	Output		
22		B+	Output	Positive/ negative differential output terminal of motor encoder B phase	
23		B-	Output		
24		Z+	Output	Positive/ negative differential output terminal of motor encoder Z phase	
25		Z-	Output		
26		GND	Output	Ground	

Communication Port CN3			
RS232	To connect a PC or an STU, use a special serial cable what is prohibited to be connected when the device is power on. It is recommended to use a twisted pair or a shielded cable less than 2 meters in length.		
RS485	Recommend shielded twisted-pair.		
Pin	**Schema**	**Signal**	**Name**
1		GND	Ground
2		TxD	sending terminal of RS232
3		5 V	Reserved, the current is less than 50mA
4		RxD	received terminal of RS232
5		RS485+	Ground
6		RS485-	sending terminal of RS232

Main Power Input Port CN4			
Pin	**Schema**	**Signal**	**Name**
1		V DC	+24 V ~ +55 V
2		GND	Power Ground
3		RBr	Brake Input
4		W	Motor W
5		V	Motor V
6		U	Motor U
7		PE	Shield

Bus Connector CN5			
Pin	**Schema**	**Signal**	**Detail**
A-1		RS485+	485 data+
A-2		RS485-	485 data-
A-3		GND	Ground
A-7		GND	Ground
B-1		RS485+	485 data+
B-2		RS485-	485 data-
B-3		GND	Ground
B-7		GND	Ground
Others		NC	16 Pin Totally

8. Quick-Guide for Motor Settings

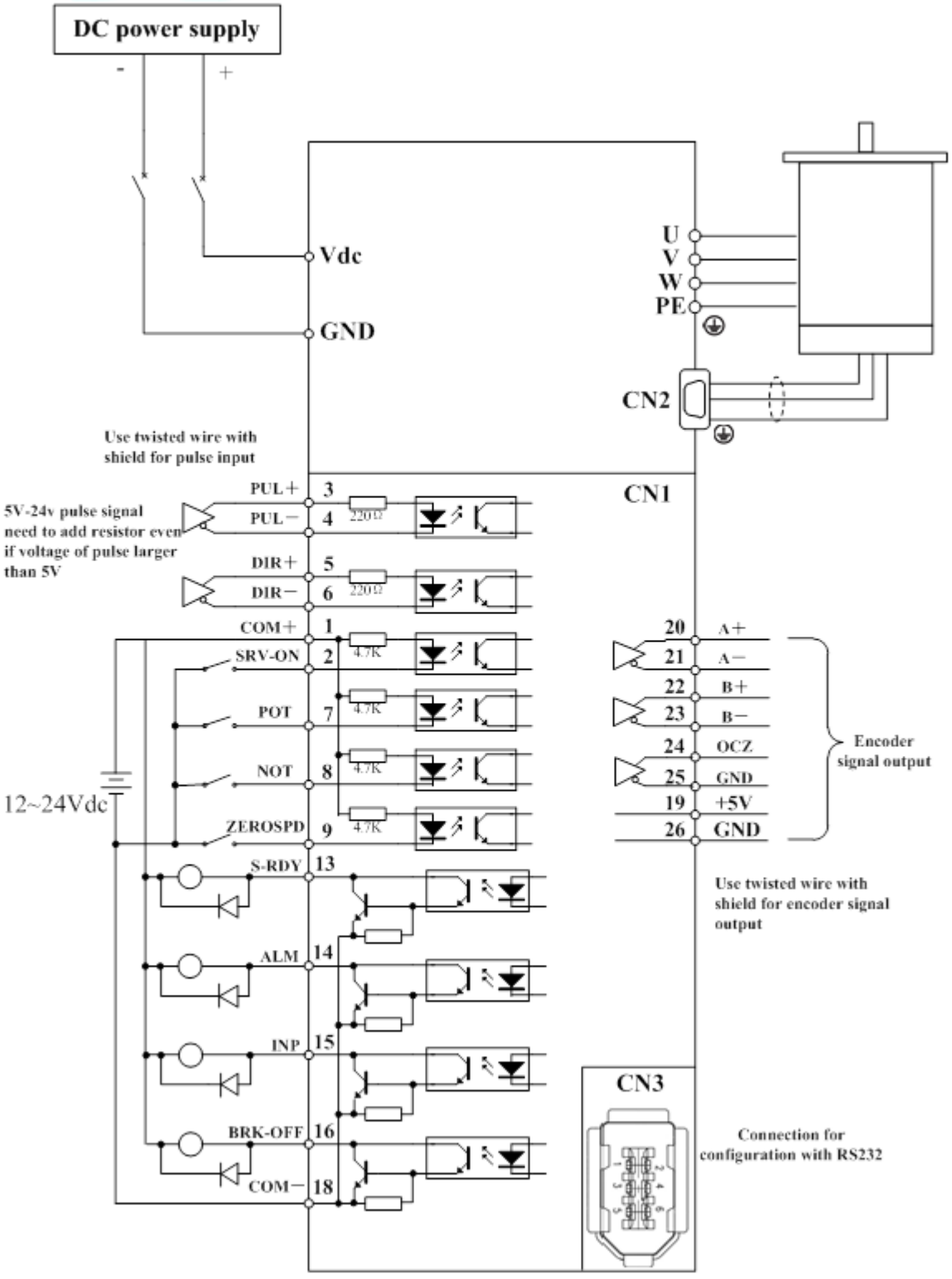
For motors with 1000 line or 2500 line incremental encoders, the values Pr715 and Pr716 must be changed in the software or the keypad as shown in the table below. Motors with a 5000 line, 17 bit or 23 bit absolute encoders are detected automatically.

Motor Type	Pr715	Pr716	Motor Type	Pr715	Pr716
ACM602V36-01-1000	1	33	ACM4010V24-T-2500	9	4
ACM604V36-01-1000	2	33	ACM602V36-T-2500	6	36
57BL180D-1000	3	33	ACM602V24-T-2500	7	36
BLM57180-1000			ACM604V48-T-2500		
ACM4005V24-T-2500	8	4	ACM604V60-T-2500	0	36

The number of pulses per revolution can be set with the software or keypad using parameters PA_009 and PA_010 according to the manual.

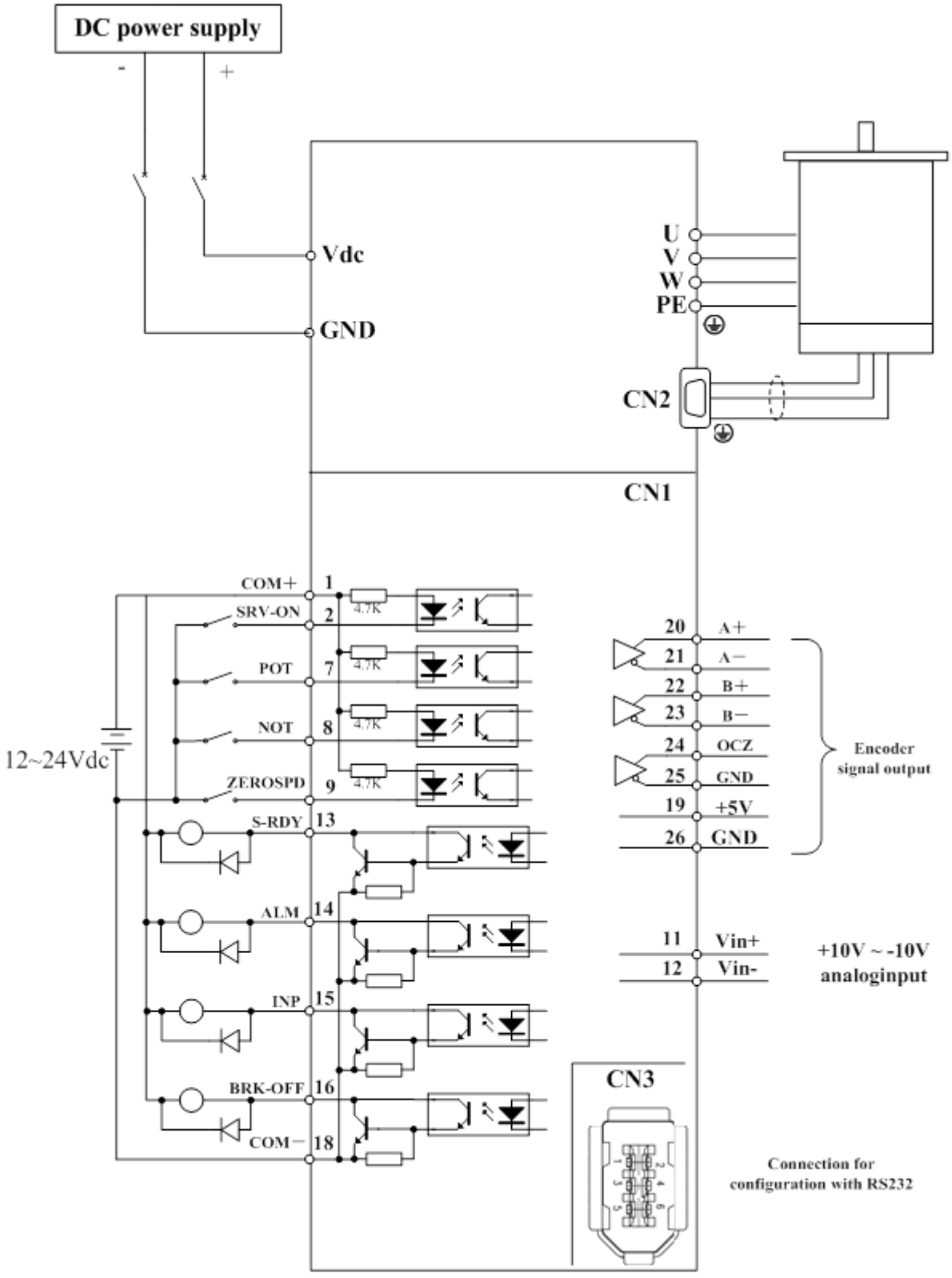
9. Wiring:

Position Mode



Position Mode Wiring

Torque / Velocity Mode



Torque / Velocity Mode Wiring