EL6 AC Servo Drive

EL6 Series AC servo products are a cost-effective AC digital servo drive which is designed mainly for position high accurate control, power range up to 1kw, which can provide intelligent performance with efficient configuration methods.

Combined with abundant features such as MFC, vibration suppression, Multi-mode filter function etc., it provides machines a compact size, low tuning works, high resolution encoder up to 23 bits ,which can be used for high accuracy applications

Features:

- ◆ Space Vector Modulation (SVM) Technology
- ◆ Efficient configuration methods：2 parameters related, robust Control
- ◆ Automatic identification for motor type with 17bit/23bit encoder
- ◆ Variety of external command signal: Pulse&Direction
- ◆ Build-in motion engine, internal motion controller used
- ◆ P-N Junction: Exchange power of entire servo drives
- ◆ Encoder output selectable

Technical Specification

Model			**EL6-**400Z**	**EL6-**750Z**	**EL6-**1000Z**
Rated Power (W)			400	750	1000
Cont current(Arms)			3	5.2	7
Peak Current(A)			13	18.4	26.5
Dimension(mm)			175*168*40	175*168*50	
Power Supply			Single phase or three phase 220V -15%~+10% 50/60HZ		
Control Method			IGBT SVPWM sinusoidal wave drive		
Encoder Feedback			• 17bit incremental encoder/absolute encoder • 23bit multi-turn absolute encoder		
IO	Digital IO	Inputs	• 4 programmable digital inputs • allows sink input/source input • within the range from 12 VDC to 24 VDC, 30mA		
		Outputs	• 3 programmable digital outputs（2 single-ended, 1 differential） • within the range from 12 VDC to 24 VDC, 30mA		
	Pulse	Pulse Input	• Max. input frequency: • 500 kHz (differential input); • 200kHz (open collector input)		
	Encoder Output	Pulse Output	Encoder ABZ output（A/B/Z single-ended, Z differential）		
Communication Port	RS232		For configuration connection		
	RS-485		Modbus/RTU*(optional)*，1:N communication up to 31axes to a host		
	CANopen		CANopen *(optional)*，1:N communication up to 127 axes to a host		
Control Mode			• Profile Modes/Position/Build-in Position/Build-in Velocity/Jog		
Operation Interface			Five LED tubes and five keys		
Electronic gear ratio			1~8388608		
Input Function Configuration			Servo-ON. Alarm clear. Positive/Negative Limit. Control mode switching. Gain switching. Deviation counter clear. Command pulse inhibition. Electronic gear switching. Torque limit switching. Speed zero clamp. Speed command sign input. Torque command sign input. E-STOP. Inertia ratio switching. Internal speed selection		

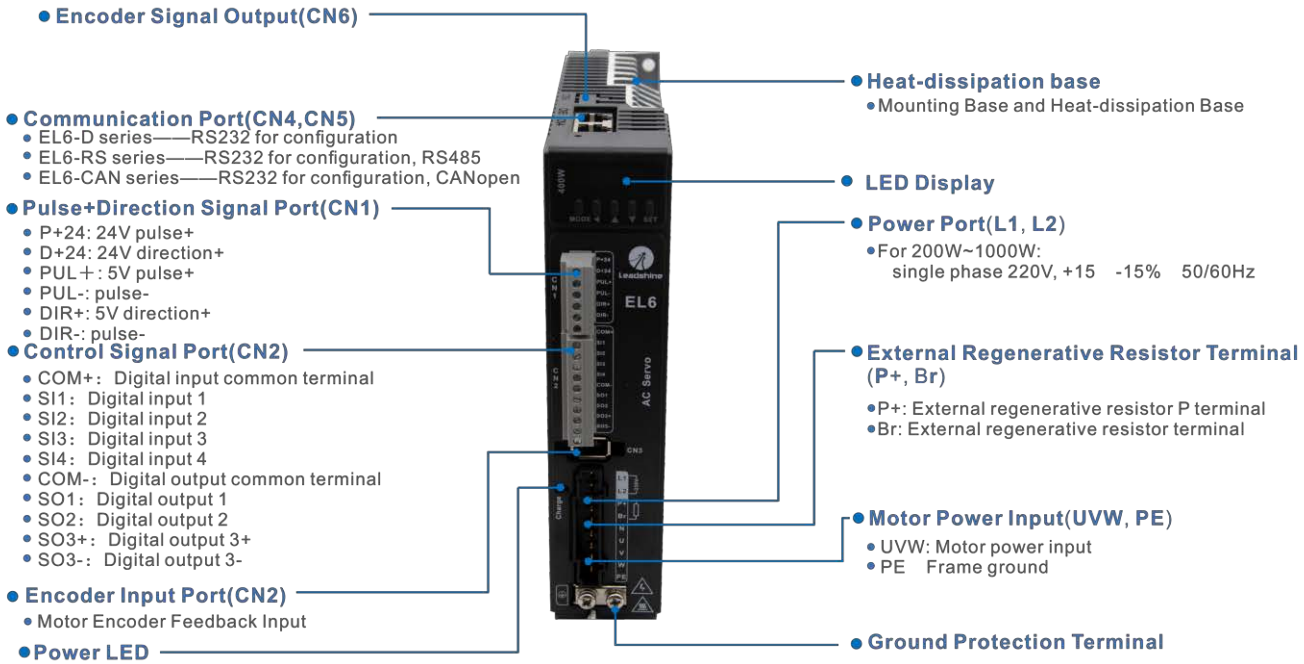
Output Function Configuration		Alarm output. Servo-Ready. Positioning complete. At-speed. Zero-speed. Velocity coincidence. Positional command ON/OFF. Servo-ON. Home-OK
Safty Protection		Over-Current. Over-Voltage. Under-Voltage. Over-Heat. Over-Load. Encoder error. Over-Speed. Running-away. Positive/Negative Limit. Communication error. Position deviation error. Power-line out of phase etc.
Environment	Temperature	Storage: -20-80℃; Installation: 0-55℃
	Humidity	Under 90%RH (free from condensation)
	Altitude	Lower than 1000m
	Vibration	Less than 0.5G (4.9m/s2) 10-60Hz (non-continuous working)

Talent Functions

Inertia ratio identification
Off-line inertia ratio identification, better performance, easy tuning
Position mode/Velocity mode
Supported Position mode/Velocity mode/Torque mode • Position mode: Profile position/Pulse & direction/Build-in position/RS232/RS485 • Velocity mode: Profile velocity/Built-in velocity/RS232/RS485
Control mode switching
IO signal for mode switching, select Position mode/Velocity mode
Gain switching
Automatically switch gain under special conditions/ IO signal for gain switching
16 path build-in position mode/velocity mode
No analog control required. Execute by digital IO signal or RS485
Command pulse inhibition
Invalid the pulse input, stop with deceleration
Limit switch
Protective equipment operation
Programmable Inputs and Outputs
• 4 programmable digital inputs • 3 programmable digital outputs（2 single-ended, 1 differential）
Encoder signal output
Output encoder signal: Single-ended /Differential
Speed zero clamp
If the actual analog input is less than the setting value, the motor will stop rotating in servo-on condition
Vibration Suppression
Specific resonance frequency can be obtained from PC upper computer software according to waveform monitoring, and filter frequency can be set to effectively suppress the oscillation ripple of a certain frequency in the current instruction.
Command filter
To make the positional command divided or multiplied by the electronic gear smooth, set the command filter
Friction torque compensation
Apply feed forward torque superposition directly to torque command

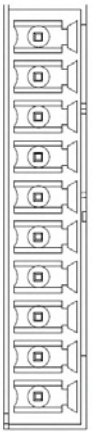
Connectors and Pin Assignment

Port	Function
CN1	Pulse + Direction Signal Port
CN2	Digital input/output Port
CN3	Encoder Input Port
CN4	RS232; RS485 (Only for EL6-RS***Z version); CANopen (Only for EL6-CAN***Z version).
CN5	RS232(only for tuning) RS485 (Only for EL6-RS***Z version); CANopen (Only for EL6-CAN***Z version).
CN6	Encoder output Port(Only for EL6-RS***Z version)
X1	Power Port

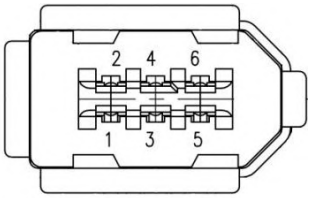


Signal Explanation of Control Signal Port-CN1 and CN2

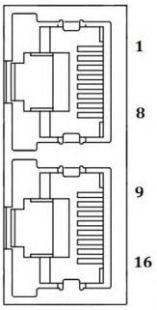
Port		Pin	Signal	Name	Explanation
CN1		1	PUL + _24	24V pulse+	Max. input frequency: • 500 kHz (differential input); • 200kHz (open collector input)
		2	DIR + _24	24V direction+	
		3	PUL +	5V pulse+	
		4	PUL -	Pulse-	
		5	DIR +	5V direction+	
		6	DIR -	Direction-	

Port		Pin	Signal	Name	Explanation
CN2		1	COM+	Digital input common terminal	4 programmable digital inputs • allows sink input/source input • within the range from 12 VDC to 24 VDC, 30mA
		2	SI1	Digital input 1	
		3	SI2	Digital input 2	
		4	SI3	Digital input 3	
		5	SI4	Digital input 4	
		6	COM -	Digital output common- terminal	• 2 programmable digital single-ended outputs • within the range from 12 VDC to 24 VDC, 30mA
		7	SO1	Digital output 1	
		8	SO2	Digital output 2	
		9	SO3 +	Differential Digital output 3	• 1 programmable digital differential output • within the range from 12 VDC to 24 VDC, 30mA
		10	SO3 -		

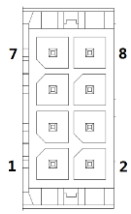
Encoder Input Port-CN3

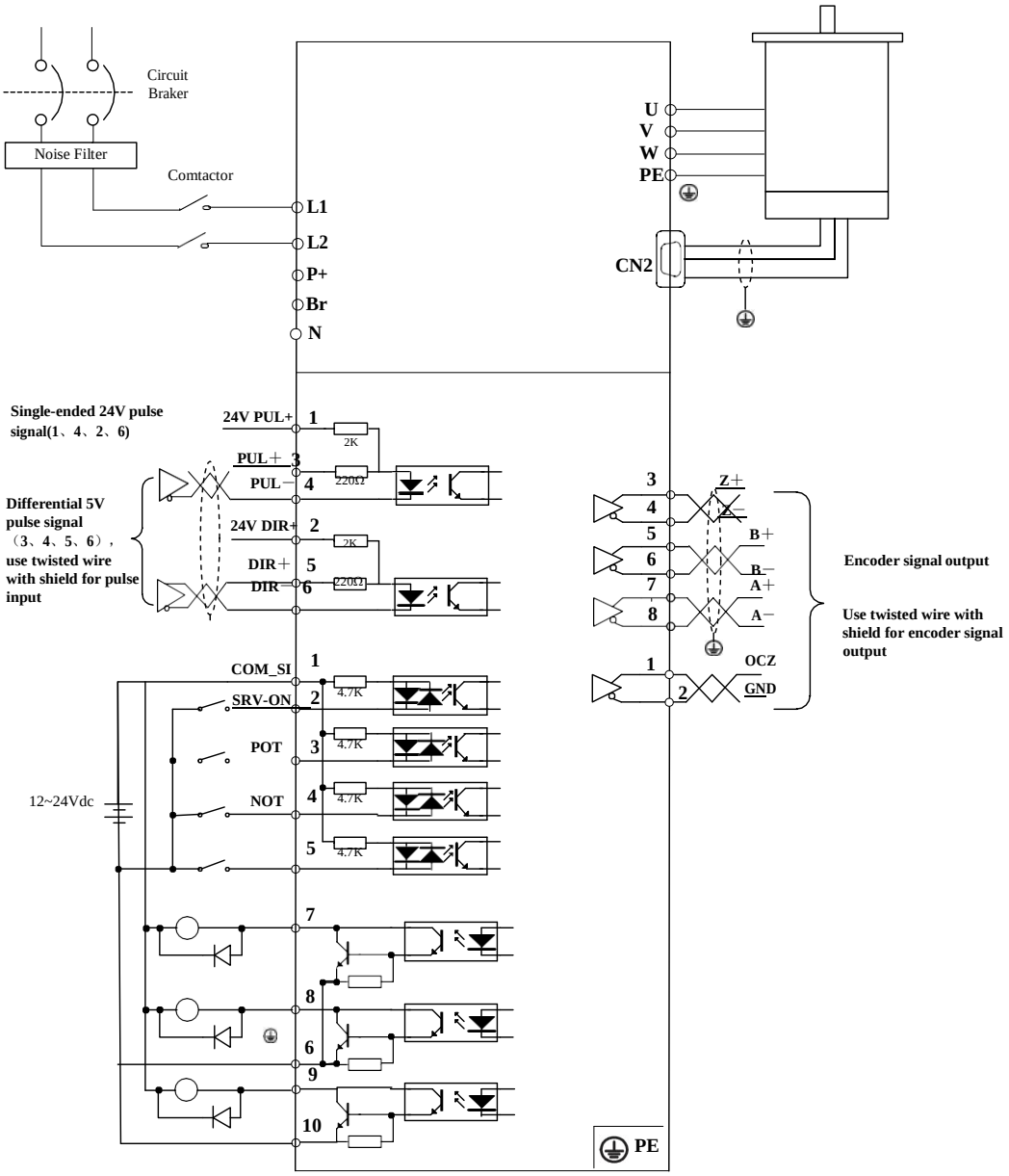
Port		Pin	Signal
CN3		1	VCC5V
		2	GND
		3	BAT+
		4	BAT-
		5	SD+
		6	SD-
			PE

Bus connector- CN4 and CN5

Port		Pin	Signal
CN4 CN5		1 , 9	RDO+(RS485
		2 , 10	RDO-(RS485-
		3 , 11	/
		4 , 12	/
		5 , 13	/
		6 , 14	TXD(RS232)
		7 , 15	RXD(RS232)
		8 , 16	GND(RS232
			PE

Encoder output Port-CN6

Port		Pin	Signal	Name	Explanation
CN6		1	OCZ	OC output terminal of motor encoder Z phase	Differential output, High >= 2.5vdc, low <= 0.5vdc, maximum current ±20mA
		2	GND	OC output GND terminal of motor encoder	
		3	Z +	Differential output terminal of motor encoder Z phase	
		4	Z -		
		5	B +	Differential output terminal of motor encoder B phase	
		6	B -		
		7	A +	Differential output terminal of motor encoder A phase	
		8	A -		

Wiring

Position Control Mode