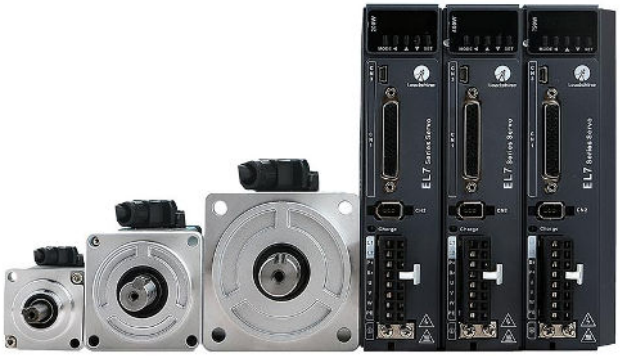
EL7 Series AC Servo Drive

EL7 Series AC servo products are high performance AC digital servo which is designed for position/velocity/torque high accurate control , power range up to 2kw ,which can provide intelligent performance with easy tuning process .

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 ,which can be used for high accuracy applications

Feature:

- Easy tuning, flexible to control
- Automatic identification for motor type
- RS485/Modbus/EtherCAT
- Notch filter, Damping filter
- Dynamic brake
- 17bit /23bit absolute encoder
- Internal resistor



Technical Specification

Type	EL7-*400Z	EL7-*750Z	EL7-*1000Z	EL7-*1500Z	EL7-*2000Z
Cont current	3.5	5.5	7	10	12
Peak Current	10.5	16.5	21	30	36
Power Supply	100W~2KW	Main Power	Single phase or three phase 220V -15%~+10% 50/60HZ		
		Control Power	Single 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	Input	9 inputs（Support common+ and common- two wiring modes）, functions can be configured, 12~24Vdc,30mA		
		Output	6 outputs（4 single-ended, 2 differential）, functions can be configured, 12~24Vdc,30mA		
	Analog	Input	2 analog input*(optional)*, -10~+10Vdc, input resistance 20KΩ, no isolation		
	Pulse	Input Pulse	0-500kHZ, 5V differential input/24V Single-ended		
		Output Pulse	Encoder ABZ output （3 single-ended, 3 differential）		
Communication Port	USB		PC debug		
	RS-485		Modbus/RTU*(optional)*，1:N communication up to 31axes to a host		
	EtherCAT		EtherCAT *(optional)*，1:N communication up to 128 axes to a host		
Control Mode			◆ Position mode: pulse+direction、internal register position setup、RS232/485 ◆ Velocity mode: analog、internal register velocity setup. RS232/485 ◆ Torque mode: analog		
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.
Dynamic braking		Built-in
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)

Features

Inertia ratio identification
Off-line inertia ratio identification, better performance, easy tuning
Position mode/Velocity mode/Torque mode
Supported Position mode/Velocity mode/Torque mode ● Position mode: pulse+direction. internal register position setup. RS232/485 ● Velocity mode: analog. internal register velocity setup. RS232/485 ● Torque mode: analog
Control mode switching
IO signal for mode switching, select Position mode/Velocity mode/Torque mode
Gain switching
Automatically switch gain under special conditions/ IO signal for gain switching
Internal 16 path velocity mode
No analog control required. 16 path speed and IO trigger
Command pulse inhibition
Invalid the pulse input, stop with deceleration
Position limit
Protective equipment operation
Input and output signal allocation function
● Set SI input function allocation ● Set SO output function allocation
Encoder signal output
Output encoder signal: Single-ended /Differential
Analog Input
2 analog input for velocity / torque mode control
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

EL7 series servo driver

EL7-D 2000 Z
① ② ③ ④

NO	Details	
①	Series Num	EL7：New series servo driver
②	Command source	D： Stand version (Pulse+direction) RS：RS485 (Pulse+direction/Analog Input/Modbus) EC：EtherCAT
③	Power	0100:100W 0200: 200W 0400: 400W 0750: 750W 0850 : 850W 1000: 1000W 1300:1300W 1500: 1500W 2000: 2000W
④	Encoder	Z: Serial encoder

ELM series servo motor

ELM 0400 F L 80 H –SS
① ② ③ ④ ⑤ ⑥ ⑦

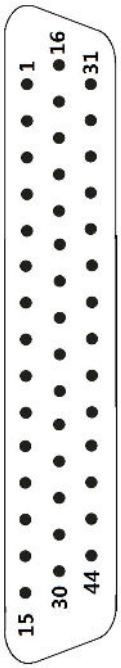
NO	Details	
①	Series Num	ELM：ELM series motor
②	Power	0100:100W 0200: 200W 0400: 400W 0600:600w 0750: 750W 0850 : 850W 1000: 1000W 1300:1300W 1500: 1500W 2000: 2000W
③	Encoder Type	D:17bit single-turn E: 17bit multi-turn F:17bit magnetic L:23bit absolute
④	Inertia Ratio	L: Low M:Medium H:High
⑤	Frame Size	40:40mm 60:60mm 80:80mm 110:110mm 130:130mm
⑥	Motor Form	

NO	Shaft Form		Brake		Oil Seal	
	Circular shaft	Keyhole	Install	None	Install	None
A	●		●		●	
B	●			●	●	
C	●		●			●
D	●			●		●
E		●	●		●	
F		●		●	●	
G		●	●			●
H		●		●		●

⑦	Plug Type	SS:Plastic plug HS:Small size H:Big size aviation plug HH:Injection plug

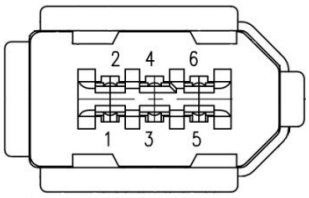
Connectors and Pin Assignment

Signal Explanation of Control Signal Port-CN1

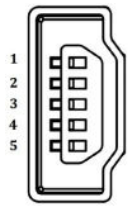
Port		Pin	Signal	I/O	Name	Explanation
CN1		1	COM_SI	input	Digital input common terminal, Com+/Com-，12VDC~24VDC	Two-way digital input with common terminal, function can be configured. 12VDC ~ 24VDC
		2	SI1	input	Digital input 1	
		7	SI2	input	Digital input 2	
		8	SI3	input	Digital input 3	
		9	SI4	input	Digital input 4	
		10	SI5	input	Digital input 5	
		11	SI6	input	Digital input 6	
		12	SI7	input	Digital input 7	
		13	SI8	input	Digital input 8	
		14	SI9	input	Digital input 9	
		31	COM_SO	output	Digital output common-	Low resistor output in default . OC, the maximum voltage/current is no more than 30V, 50mA . Recommended voltage : 12 V-24V. Current :10mA
		33	SO1 +	output	Digital output 1	
		32	SO2 +	output	Digital output 2	
		34	SO3 +	output	Digital output 3	
		35	SO4 +	output	Digital output 4	
		18	SO5 +	output	Differential Digital output 5	Differential Digital output , the maximum voltage/current is no more than 30V, 50mA . Recommended voltage : 12 V-24V. Current :10mA
		19	SO5-	output		
		20	SO6-	output	Differential Digital output 6	
		21	SO6 +	output		
		23	A +	output	Differential output terminal of motor encoder A phase	Differential output, High >= 2.5vdc, low <= 0.5vdc, maximum current ±20mA
		24	A -	output		
		25	B +	output	Differential output terminal of motor encoder B phase	
		26	B -	output		
		27	Z +	output	Differential output terminal of motor encoder Z phase	
		28	Z -	output		
		36	OCA	output	OC output terminal of motor encoder A phase	
		37	OCB	output	OC output terminal of motor encoder B phase	
		29	OCZ	output	OC output terminal of motor encoder Z phase	
		30	GND	output	OC output GND terminal of motor encoder	
		3	PUL +	input	Pulse input， PUL+ and PUL-：5V differential input PUL+_24 and PUL-：24V differential input	
		4	PUL -	input		
		16	PUL + _24	input		
		5	DIR +	input	Direction input， DIR+ and DIR-：5V differential input DIR+_24 and DIR-：24V differential input	
		6	DIR -	input		
		17	DIR + _24	input		
		39	AI1+	input	Analog input 1, voltage input range : 10VDC~10VDC , input	

		40	AI1-	input	
		41	AGND	input	
		43	AI3 +	input	Analog input 3, voltage input range : 10VDC~10VDC , input resistor 20KΩ
		44	AI3 -	input	
		15/22/38/40/42	NC	/	Not connection
		Shell	FG		Shield ground

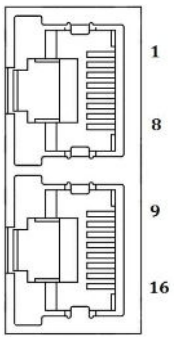
Encoder Input Port-CN2 for EL7 Series

Port		Pin	Signal
CN2		1	VCC5V
		2	GND
		3	BAT+
		4	BAT-
		5	SD+
		6	SD-
			PE

Communication Port-CN6 for EL7 Series

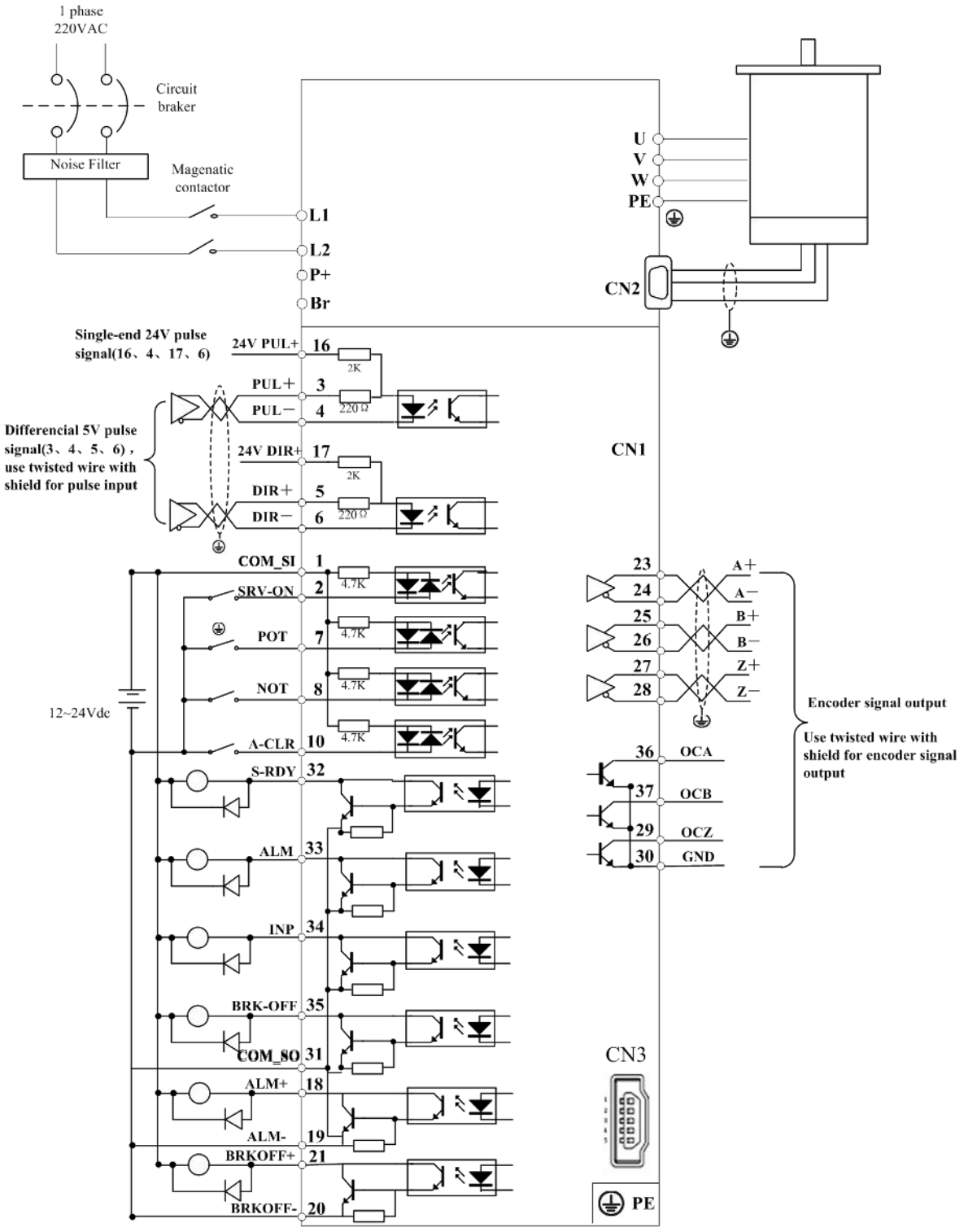
Port		Pin	Signal
CN3		1	VCC5V
		2	D+
		3	D-
		4	
		5	GND
		FG	USB_GND

Bus connector- CN3 for EL7 Series

Port		Pin	Signal
CN4 CN5		1 , 9	RDO+
		2 , 10	RDO-
		3 , 11	/
		4 , 12	TXD
		5 , 13	RXD
		6 , 14	VCC5V
		7 , 15	GND
		8 , 16	/
			PE

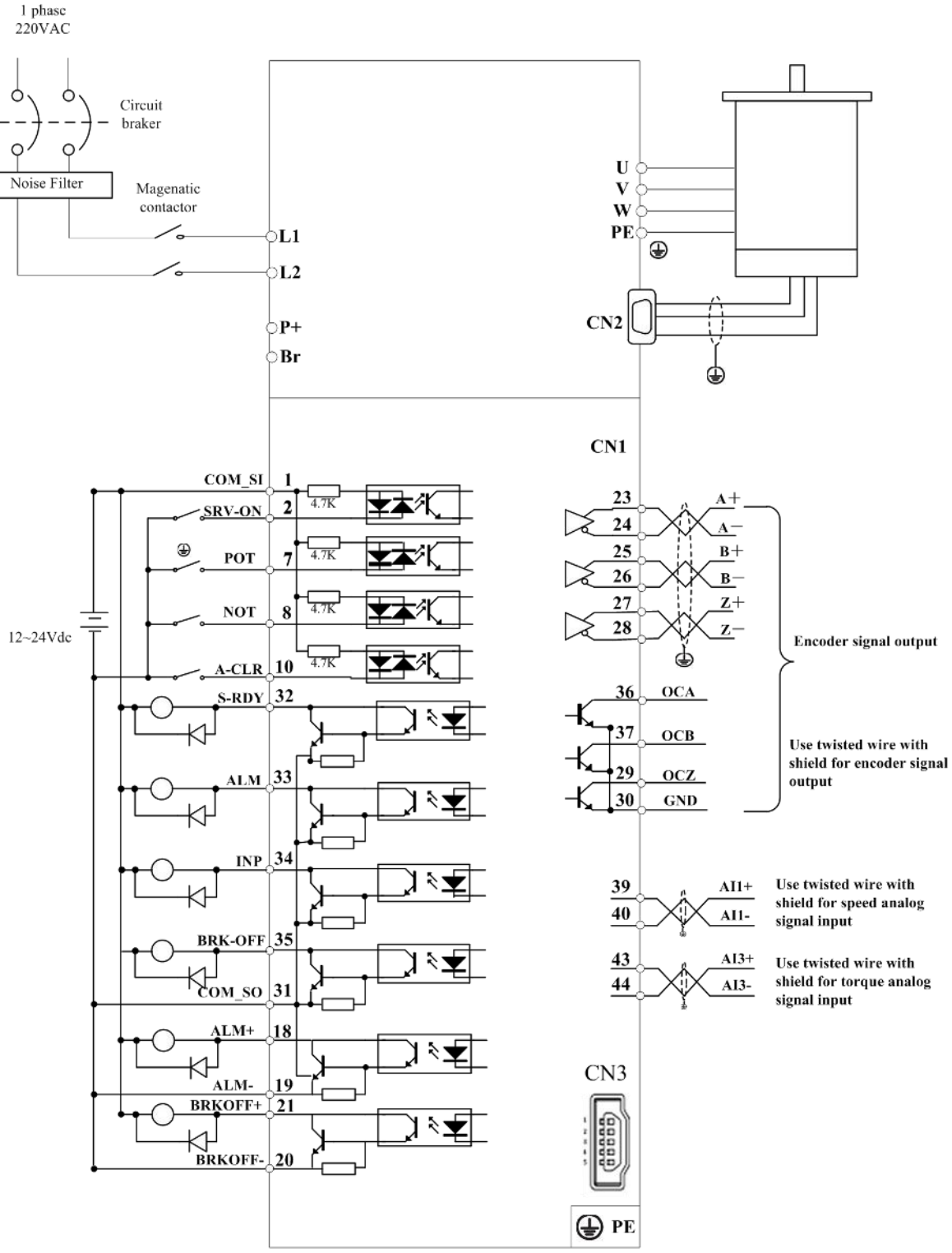
Wiring

Position Control Mode



Positional Control Mode Wiring

Torque /Velocity Control Mode



Torque/Velocity Control Mode Wiring