

EL7-EC Series AC Servo Drives - 220V

EL7-EC Series AC servo products 220V are high performance AC digital servo which is designed for position/velocity/torque high accurate control with power rating ranging up to 2kW which provides a perfect solution for different applications with easy tuning process.

EL7-EC series AC servo drives are using the latest Digital Signal Processing (DSP) chip and Intelligent Power Module (IPM) with compact components integration and great reliability. Using the best PID calculation for Pulse Width Modulation (PWM) control, our EL7-EC series products are the one to beat in this product category.

Highlights:

- ① Easy tuning
- ② ETG COE + EtherCAT DSP402 communication protocol
- ③ Internal regenerative resistor
- ④ Equipped with notch filter, damping filter
- ⑤ Comes with Safe Torque Off (STO) SIL3
- ⑥ Motors automatically identified
- ⑦ Motors with holding brake
- ⑧ 23-bit multturn magnetic/optical encoder



Technical Specification

EL7-EC series	EL7-EC400F	EL7-EC750F	EL7-EC1000F	EL7-EC1500F	EL7-EC2000F
Rated power (W)	400	750	100	1500	2000
Rated Current (A)	3.5	5.5	7	Coming Soon!	
Peak Current (A)	9.2	16.6	18.7		
Size (mm)	40*175*156	50*175*156			
Main Power Supply		Single phase AC 220V, -15%~+10%, 50/60Hz			
Control Circuit Power Supply					
Drive mode		IGBT PWM sinusoidal wave drive			
Control mode		Position	Profile Position Mode (PP)		
			Cyclic Synchronous Position Mode (CSP)		
			Homing Mode (HM)		
		Velocity	Profile Velocity Mode (PV)		
			Cyclic Synchronous Velocity Mode (CSV)		
		Torque	Profile Torque Mode (PT)		
			Cyclic Synchronous Torque Mode (CST)		
Encoder Feedback		RS485 protocol: 23-bit multiturn absolute magnetic/optical encoder			
I/O	Digital Input	4 Digital Inputs (Supports NPN and PNP)			
		Configurable input signals under EtherCAT mode:	1. Clear Alarm (A-CLR) 2. Positive limit switch (POT) 3. Negative limit switch (NOT) 4. Homing switch (HOME-SWITCH) 5. Emergency stop (E-Stop)		
	Digital Output	3 Digital Outputs (2 single-ended, 1 differential)			

		Configurable output signals under EtherCAT mode:	1. Alarm (ALM) 2. Servo ready (SRDY) 3. External brake off (BRK-OFF) 4. Positioning completed (INP) 5. Velocity at arrival (AT-SPEED) 6. Torque limiting command (TLC) 7. Zero speed position (ZSP) 8. Velocity coincidence (V-COIN) 9. Position command (P-CMD) 10. Velocity limit (V-LIMIT) 11. Velocity command (V-CMD) 12. Servo enabled (SRV-ST) 13. Homing done (HOME-OK)
	Analog Input	2 analog inputs (differential), -10~+10Vdc	
	Encoder Output	Encoder ABZ differential pulse output	
	Probe Input	2 high speed probe inputs: EXT1+/EXT1-, EXT2+/EXT2-	
Communication Port	USB mini	Modbus USB2.0 (No need to connect driver to power supply)	
	EtherCAT	EtherCAT, Communication up to 128 axes to a host	
Software		Driver tuning through Motion Studio Ver. 1.4.x. Parameters tuning in current loop, position loop, velocity loop; Modify I/O signal and motor parameters; Variables(velocity, position deviation, etc.) monitoring using step diagrams	
Driver Front Panel		5 push buttons and 8-segments display	
Holding brake		Built-in (Supports external brake)	
Safety Protection		Overcurrent. Overvoltage. Undervoltage. Overheat. Overload. Overtravel. Single-Phasing. Regenerative resistor error. Position deviation error. Encoder feedback error. Excessive braking rate. EEPROM error	
Safe Torque Off (STO) function		Available for all EL7EC-F series products	
Environment	Temperature	Storage: -20-80℃ (Condensation free); Installation: 0-55℃ (Not frozen)	
	Humidity	Under 90%RH (Condensation free)	
	Altitude	Up to 1000m above sea level	
	Vibration	Less than 0.5G (4.9m/s ²) 10-60Hz (non-continuous working)	
	IP ratings	IP20	

Servo Drive Features

Inertia ratio determination
Simple online and offline inertia ratio determination to simplify servo drive tuning.
Control mode switching
Position/Velocity/Torque mode can be switched easily by delivering an I/O signal.
Auto gain adjustment
Measure real time mechanical stiffness and set gain values automatically.
Gain switching
Automatically switch gain to suppress vibration, shorten positioning time and improve following behavior.
Feedforward gain
Reduce position deviation and increase system responsiveness. Including velocity and torque feedforward.
Vibration Suppression
Suppress mechanical resonance and mechanical end vibration by applying filters.
Model following control
Reference model to improve responsiveness to command and closed loop control to increase responsiveness towards interference.
Friction compensation
Compensate for changes in load to reduce the effect of friction on motion.

EL7-EC Servo Drive

EL7-EC 750 F

① ② ③ ④

No.	Description		
①	Series No.	EL7: Servo drive series	
②	Command source	P: Pulse + direction	EC: EtherCAT
③	Power rating	400: 400W 750: 750W 1000:1000W 1500: 1500W 2000: 2000W	
④	Type	F: Full functions	

 **Leadshine®**

AC Servo Drive

Model no. →

Input voltage, current, frequency →

Output voltage, current, frequency →

Serial number →

Website →

Model: EL7-EC750F

Main power input : 3PH 200VAC - 240VAC, 10.5A, 50/60Hz

Control power input : 1PH 200VAC - 240VAC, 1A, 50/60Hz

Output (UVW): 0 -240V, 10.5A, 0 - 2500Hz

China Leadshine Technology Co.Ltd

S/N: 38AA1158200001MS10

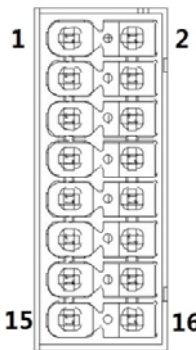
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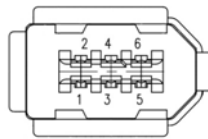
Ports and connectors

CN1 I/O Signal Port

CN1 connector is a 16-pin spring loaded connector.

Port	Pin	Signal	Description	Remarks
	1	EXT1+	Probe 1 positive terminal	2 high speed probe inputs function
	2	EXT2+	Probe 2 positive terminal	
	3	NC	Reserved	
	4	NC	Reserved	
	5	EXT1 -	Probe 1 negative terminal	
	6	EXT2 -	Probe 2 negative terminal	
	7	DICOM	Common DI	Double-ended common DI Configurable Recommended voltage: 12VDC - 24VDC
	9	DI1	Reserved	
	11	DI2	POT: Positive limit switch	
	13	DI3	NOT: Negative limit switch	
	15	DI4	HOME: Homing done	
	8	D01	ALM: Alarm	D01,D02: Single-ended D03: Double-ended Configurable Recommended voltage: 12Vdc - 24Vdc, max 30V Recommended current: 10mA, max 50mA
	10	D02	BRK-OFF: Holding brake activated	
	12	D03+	INP: Positioning completed	
	14	D03—		
	16	DOCOM	Common DO	

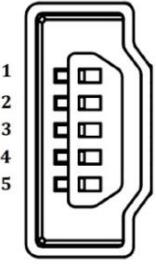
CN2 Encoder



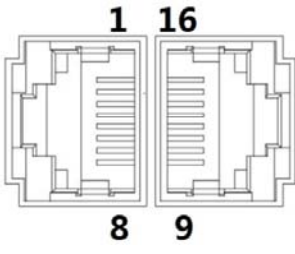
Connector	Pin	Signal	Description
CN2	1	VCC5V	Power supply 5V
	2	GND	Power supply ground
	3	BAT+	Battery positive terminal
	4	BAT-	Battery negative terminal
	5	SD+	SSI Data+
	6	SD-	SSI Data-
	Frame	PE	Shield grounding

USB mini Communication Port

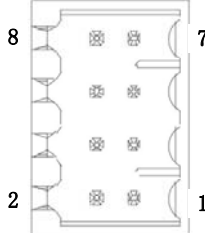
Parameters tuning on Motion Studio can be done without connecting main power supply to driver.

Connector	Port	Pin	Signal	Description
USB mini		1	VCC5V	Power supply 5V
		2	D+	USB data positive terminal
		3	D-	USB data negative terminal
		4	--	--
		5	GND	Power supply ground
		Frame	USB_GN D	Ground through capacitor

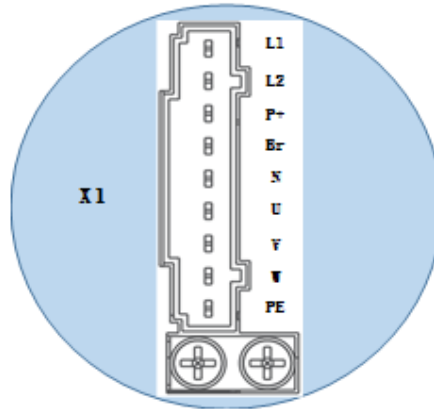
CN3/CN4 EtherCAT Communication Port

Port	Pin	Signal	Description
	1, 9	E_TX+	EtherCAT Data sending positive terminal
	2, 10	E_TX-	EtherCAT Data sending negative terminal
	3, 11	E_RX+	EtherCAT Data receiving positive terminal
	4, 12	--	--
	5, 13	--	--
	6, 14	E_RX-	EtherCAT Data receiving negative terminal
	7, 15	--	--
	8, 16	--	--
	Frame	PE	Shielded ground

CN6 Safe Torque Off (STO) Port

Port	Pin	Signal	Description	Remarks
	1	24V	24v power supply	Connect to SF1 and SF2 when not in use. Do not use to supply power.
	2	0V	Reference ground	
	3	SF1+	Control signal 1 positive input	When SF1 = OFF or SF2 = OFF,STO is enabled.
	4	SF1—	Control signal 1 negative input	
	5	SF2+	Control signal 2 positive input	
	6	SF2—	Control signal 2 negative input	
	7	EDM+	External monitoring device (EDM) with differential double ended output	When SF1 = OFF or SF2 = OFF,EDM = ON
	8	EDM—		

X1 Main Power Supply Port



Port	Pin	Functions	Remarks
X1	L1	Single phase 220VAC, +10 ~ -15%, 50/60Hz	① Optional isolation transformer ② Do not connect to 380VAC directly to prevent damage to driver. ③ In case of serious interference, it is recommended to connect a line filter to main power supply; <i>It is recommended to install a fuseless circuit breaker to cut off power supply in time when the driver fails.</i>
	L2		
	P +	① Internal DC bus positive terminal ② External regenerative resistor P terminal	Please refer to 2.4.1 Regenerative resistor selection and connections
	Br	External regenerative resistor terminal	
	N		Please do not connect
	U	Motor U terminal	Please ensure proper wire connection on motor.
	V	Motor V terminal	
	W	Motor W terminal	
	PE	Motor Protective Earth	Please ground PE of driver and motor together

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
- ◆ 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(<i>optional</i>), -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(<i>optional</i>), 1:N communication up to 31axes 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
Safety 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°C; Installation: 0-55°C
	Humidity	Under 90%RH (free from condensation)
	Altitude	Lower than 1000m
	Vibration	Less than 0.5G (4.9m/s ²) 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)			
③	Power 850W	0100:100W	0200: 200W	0400: 400W	0750: 750W 0850 : 1000: 1000W 1300:1300W 1500: 1500W 2000: 2000W
④	Encoder	Z: Serial encoder			

ELM series servo motor

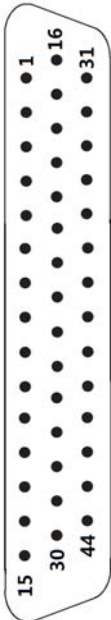
ELM 0400 E L 80 H-SS

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:	
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		
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			

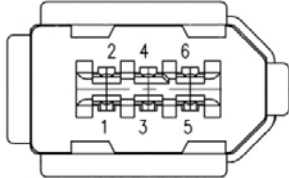
Connectors and Pin Assignment

Signal Explanation of Control Signal Port-CN1

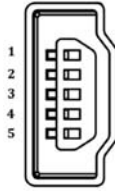
Port		Pin	Signal	I/O	Name	Explanation	
CN1		1	COM_SI	input	Digital input common terminal, Com+ / Com-, 12VDC~24VDC	Two-way digital input with common terminal, function can be configured. 12VDC ~ 24VDC	
		2	SI1	input	Digital input 1		
		7	SI2	input	Digital input 2		
		8	SI3	input	Digital input 3		
		9	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	Differential Digital output, the maximum voltage/current is no more than 30V, 50mA . Recommended voltage : 12 V-24V. Current :10mA	
		18	SO5 +	output	Differential Digital output 5		
		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 resistor 20KΩ		
		40	AI1-	input			

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

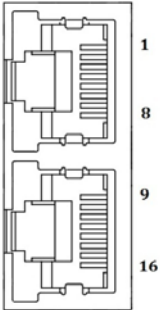
Encoder Input Port-CN2 for EL7 Series

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

EL7-EC Series AC Servo Drives - 380V

EL7-EC Series AC Servo products are high-performing servo drivers using latest digital signal processing (DSP) chip and intelligent power module (IPM). The series comes with highly compacted integration, small volume and great reliability. Also highly competitive using our best PID controls for pulse width modulation (PWM).

We worked on cutting down the complexity of wiring work but at the same time also improved the motion control capability of the servo drivers. This product series not only upgraded with better protection against communication interference, it can be connected over longer distances.

Features:

- ① Easy tuning
- ② ETG COE + EtherCAT DSP402 communication protocol
- ③ Internal regenerative resistor
- ④ Equipped with notch filter, damping filter
- ⑤ Motors automatically identified
- ⑥ Motors with holding brake
- ⑦ 23-bit multiturn magnetic/optical encoder



Technical Specifications

EL7-EC series	EL7-EC750FT	EL7-EC1000FT	EL7-EC1500FT	EL7-EC2000FT	EL7-EC3000FT	EL7-EC4400FT	EL7-EC5500FT	EL7-EC7500FT
Rated power(W)	750	1000	1500	2000	3000	4400	5500	7500
Rated Current	2.7	3.5	5.4	8.4	11.9	16.5	20.8	25.7
Peak Current	8.6	10.6	14.9	24.8	33.2	38.9	51.6	63.6
Size (mm)	55*175*179			80*175*179		89*250*230		
Main Power Supply		Three phase AC 380V~440V, -15%~+10%, 50/60Hz						
Control Circuit Power Supply		Single phase AC 380V~440V, -15%~+10%, 50/60Hz						
Drive mode		IGBT PWM sinusoidal wave drive						
Encoder Feedback		RS485 protocol: 23-bit multiturn absolute magnetic/optical encoder						
I/O	Digital Input	4 Digital Inputs (Supports NPN and PNP)						
		Configurable input signals under EtherCAT mode:	1. Clear Alarm (A-CLR) 2. Positive limit switch (POT) 3. Negative limit switch (NOT) 4. Homing switch (HOME-SWITCH) 5. Emergency stop (E-Stop)					
	Digital Output	3 Digital Outputs (2 single-ended, 1 differential)						
		Configurable output signals under EtherCAT mode:	1. Alarm (ALM) 2. Servo ready (SRDY) 3. External brake off (BRK-OFF) 4. Positioning completed (INP) 5. Velocity at arrival (AT-SPEED) 6. Torque limiting command (TLC) 7. Zero speed position (ZSP) 8. Velocity coincidence (V-COIN) 9. Position command (P-CMD) 10. Velocity limit (V-LIMIT) 11. Velocity command (V-CMD) 12. Servo enabled (SRV-ST) 13. Homing done (HOME-OK)					
		Analog Input	2 analog inputs (differential), -10~+10Vdc					
	Encoder Output	Encoder ABZ differential pulse output (Only available for EL7-EC***FT series products)						
	Probe Input	2 high speed probe inputs: EXT1+/EXT1-, EXT2+/EXT2-						

Communication	USB mini	Modbus USB2.0 (No need to connect driver to power supply)
Port	EtherCAT	EtherCAT, Communication up to 128 axes to a host
Software		Driver tuning through Motion Studio Ver. 1.4.x. Parameters tuning in current loop, position loop, velocity loop; Modify I/O signal and motor parameters; Variables(velocity, position deviation, etc.) monitoring using stepper diagrams
Driver Front Panel		5 push buttons and 7-segments display
Holding brake		Built-in (Supports external brake)
Safety Protection		Overcurrent. Overvoltage. Undervoltage. Overheat. Overload. Overtravel. Single-Phasing. Regenerative resistor error. Position deviation error. Encoder feedback error. Excessive braking rate. EEPROM error
Safe Torque Off (STO) function		Available for all EL7-EC***FT series products
Environment	Temperature	Storage: -20-80°C (Condensation free); Installation: 0-55°C (Not frozen)
	Humidity	Under 90%RH (Condensation free)
	Altitude	Up to 1000m above sea level
	Vibration	Less than 0.5G (4.9m/s ²) 10-60Hz (non-continuous working)
	IP ratings	IP20

Model Number Structure

EL7-EC 380V Series AC Servo Driver

EL7 - EC 2000 F I
 ① ② ③ ④ ⑤

No.	Details	
①	Series Number	EL7: New servo driver series
②	Command source	EC: EtherCAT
③	Rated power	750:750W 1000:1000W 1500: 1500W 2000: 2000W 3000: 3000W 4400:4400W 5500: 5500W 7500: 7500W
④	Version	F: Full functions version
⑤	Power Supply	T: 380VAC



Model no. → **Model** : EL7-EC750FT

Input voltage , current, frequency → **Main power input** : 3PH 380VAC – 440VAC, 8.4A,50/60Hz

→ **Control power input** : 1PH 380VAC – 440VAC, 1A,50/60Hz

Output voltage, current, frequency → **Output (UVW)**:0 -380V,8.4A, 0 - 2500Hz

AC Servo Drive

China Leadshine Technology Co.Ltd

Serial Number → S/N:38AA1158200001MS10

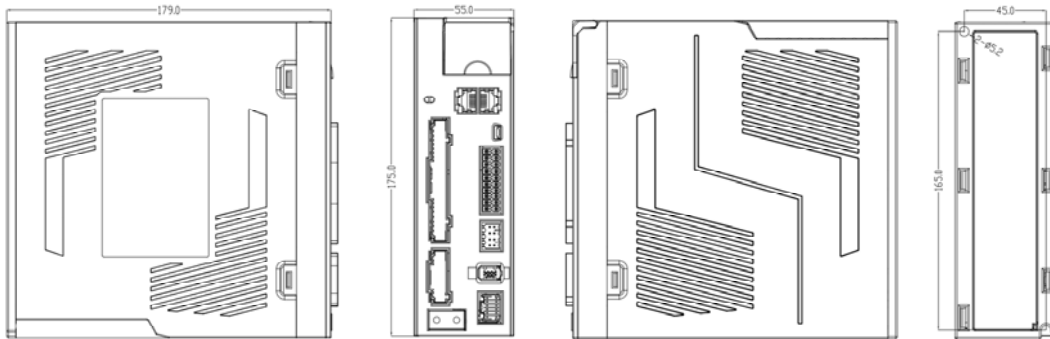


Website → www.leadshine.com

Servo Products Installation

Servo Drive Dimension

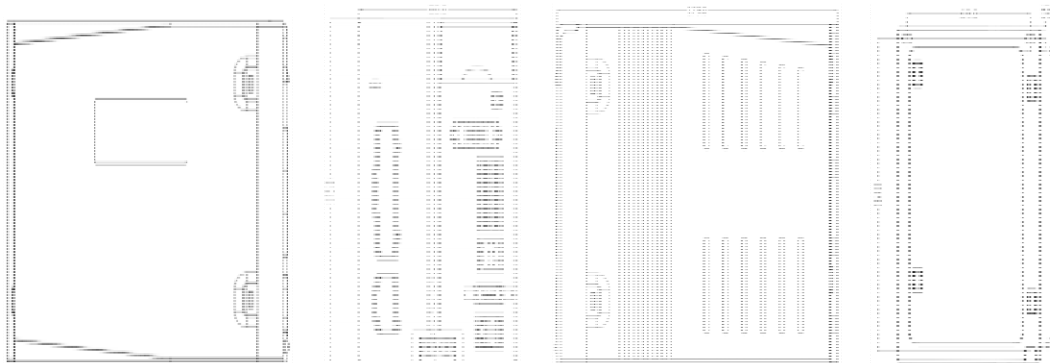
SIZE C: EL7EC-FT SERIES 0.75kW/1.0kW/1.5kW



55mm×175mm×179mm

Size C dimension

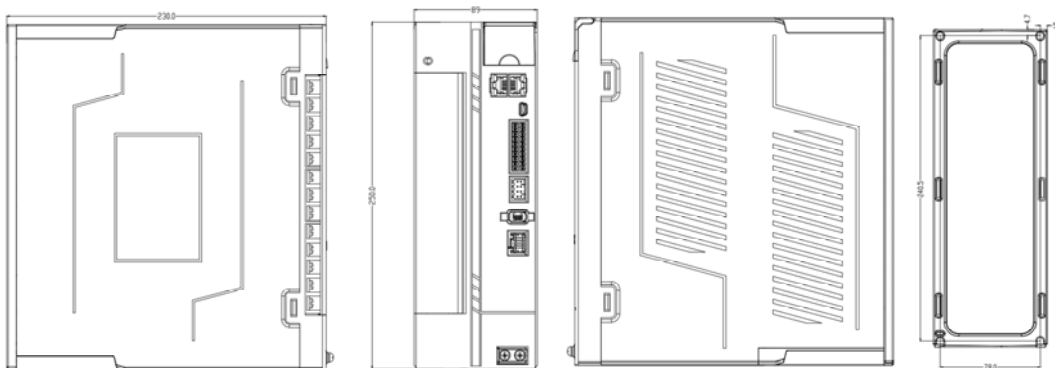
SIZE D: EL7EC-FT SERIES 2kW/3kW



80mm×175mm×179mm

Size D dimension

SIZE E: EL7EC-FT SERIES 4.4kW/5.5kW/7.5kW

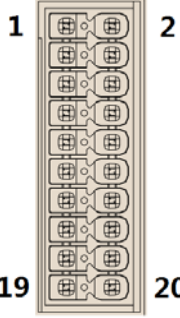


89mm×250mm×230mm

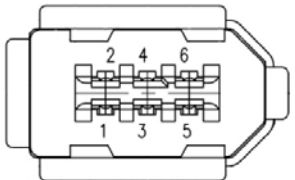
Size E dimension

Ports

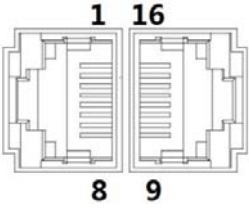
CN1 – Control signal port

Port		Pin	Signal	Explanation
CN1		1	EXT1+	Probe 1 input positive terminal
		2	EXT2+	Probe 2 input negative terminal
		3	-	-
		4	-	-
		5	EXT1-	Probe 1 input positive terminal
		6	EXT2-	Probe 2 input negative terminal
		7	DICOM	DI common terminal
		9	DI1	DI signal 1
		11	DI2	DI signal 2
		13	DI3	DI signal 3
		15	DI4	DI signal 4
		8	DO1	Single ended DO signal 1
		10	DO2	Single ended DO signal 2
		12	DO3 +	Differential double-ended DO signal 3
		14	DO3 -	
		16	DOCOM	DO common terminal
		17	AI2 +	AI 2 positive terminal
		19	AI2 -	AI 2 negative terminal
		18	AI1 +	AI 1 positive terminal
		20	AI1 -	AI 1 negative terminal

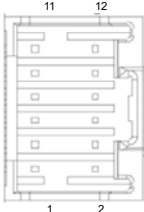
CN2 – Encoder input port

Port		Pin	Signal	Explanation
CN2		1	VCC5V	Power supply 5V
		2	GND	Power supply ground
		3	BAT+	Battery positive terminal
		4	BAT-	Battery negative terminal
		5	SD+	SSI Data+
		6	SD-	SSI Data-
		Frame	PE	Shield grounding

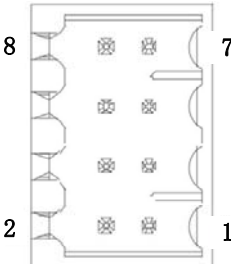
EtherCAT Communication Port – CN3 & CN4

Port		Pin	Signal	Explanation
CN3 CN4		1, 9	E_TX+	EtherCAT Transmission Data +
		2, 10	E_TX-	EtherCAT Transmission Data -
		3, 11	E_RX+	EtherCAT Receiver Data +
		4, 12	-	-
		5, 13	-	-
		6, 14	E_RX-	EtherCAT Receiver Data -
		7, 15	-	-
		8, 16	-	-
		Frame	PE	Shield grounding

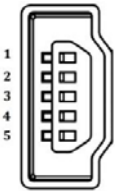
Encoder Pulse Output Port - CN5

Port		Pin	Signal	Explanation	
CN5		11	A+	Encoder channel A crossover's output	Differential High level $\geq 2.5V_{dc}$ Low level $\leq 0.5V_{dc}$ Current range $\pm 20mA$
		12	A-		
		9	B+	Encoder channel B crossover's output	
		10	B-		
		7	Z+	Encoder channel Z crossover's output	
		8	Z-		
		5	OCZ	Encoder Z signal OC output (NPN)	
		6	GND	Encoder Z signal OC reference ground	
		2	-	-	
		3	-	-	
		4	-	-	
		1	PE	Ground terminal for shielded	
		2	-	-	

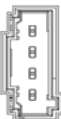
Safe Torque Off (STO) Port – CN6

Port		Pin	Signal	Label	Explanation
CN6		1	24V	24v power supply	Connect to SF1 and SF2 when not in use. Do not use to supply power.
		2	0V	Reference ground	
		3	SF1 +	Control signal 1 positive input	When SF1 = OFF or SF2 = OFF, STO is enabled.
		4	SF1 -	Control signal 1 negative input	
		5	SF2 +	Control signal 2 positive input	
		6	SF2 -	Control signal 2 negative input	
		7	EDM +	External monitoring device (EDM) with differential double ended output	When SF1 = OFF or SF2 = OFF, EDM = ON
		8	EDM -		

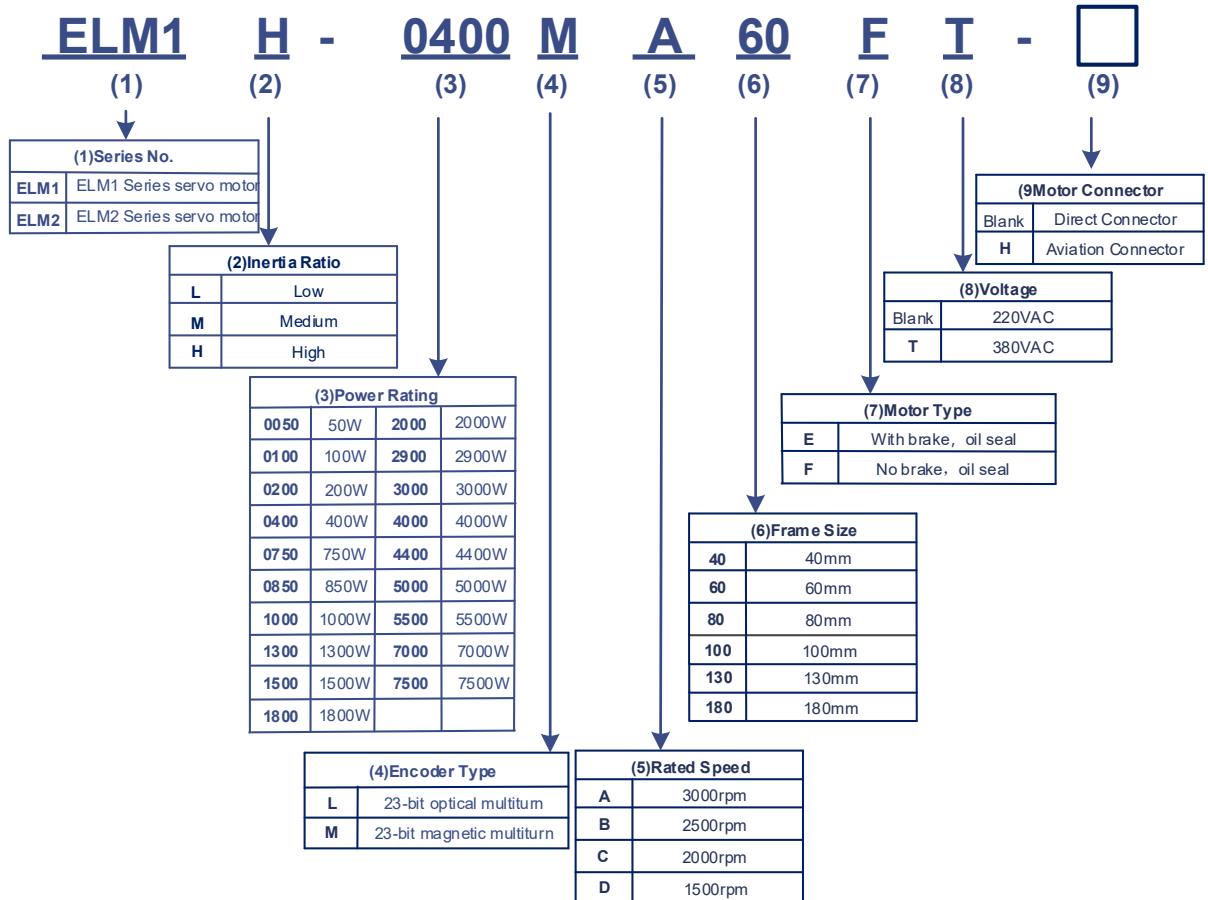
USB Mini Communication Port

Port		Pin	Signal	Explanation
USB		1	VCC5V	Power supply positive terminal 5V
		2	D+	USB data +
		3	D-	USB data -
		4	-	-
		5	GND	Power supply negative terminal
		Frame	USB_GND	Ground

Main Circuit Port

Port		Pin	Signal	Explanation	Remarks
Main Circuit Port	 Size C/D	L1C	Control circuit power supply L1	Single phase AC 380V~440V, -15%~+10%, 50/60Hz	①Isolation transformer can be used for power supply; ②In case of serious interference, it is recommended to use line filter for power supply; ③It is recommended to install a non-fusible circuit breaker to cut off external power supply in time when the drive fails.
		L2C	Control circuit power supply L2		
		R	Main power supply R terminal	Three phase AC 380V~440V, -15%~+10%, 50/60Hz	
		S	Main power supply S terminal		
		T	Main power supply T terminal		
	 Size E	P+	DC bus + terminal	drive DC bus + terminal External regenerative resistor P terminal	①Built-in regenerative resistor, connect B1 and B2; ②External regenerative resistor, disconnect B1 and B2; Connect external regenerative resistor between N1 and N2.
		B1	Built-in regenerative resistor terminal	Built-in regenerative resistor terminal	
		B2	Built-in/ External regenerative resistor terminal	Built-in/ External regenerative resistor terminal	
		N2	DC bus - terminal	Internal DC bus negative terminal	N1 is usually connected to N2. Connect to a DC reactor when suppression of higher harmonics from power supply is needed. Don't connect anything to N.
		N1			
		N			
		U	U terminal	3 phase motor power supply	①Connect driver's UVW to corresponding terminals on motor. ②Connect the drive to the ground terminal (PE) of the motor and connect it to the earth
		V	V terminal		
		W	W terminal		
		PE	PE	Frame ground	

ELM1/ELM2 Series Servo Motor



Motors availability

For EL7 220V AC Servo Drive Series

Power rating(W)		50	100	200	400	750	850	1000	1300	1500	1800	2000
Connector	Direct											
	Aviation											
Frame size (mm)	40											
	60											
	80											
	130											
Encoder 23-bit	Magnetic											
	Optical											
Rotational speed (rpm)	1500											
	2500											
	3000											

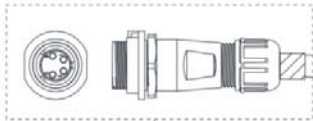
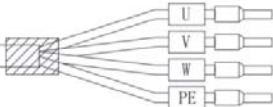
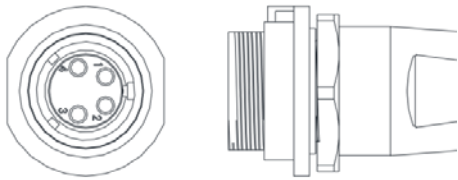
For EL7 380V AC Servo Drive Series

Power rating(W)		750	850	1000	1300	1500	1800	2000	2900	3000	4000	4400	5000	5500	7000	7500
Connector	Direct															
	Aviation															
Frame size (mm)	80															
	100															
	130															
	180															
Rotational speed (rpm)	1500															
	2500															
	3000															
Inertia	High															
	Medium															
	Low															

- Grey shaded specs are motor models coming soon!
- All motor models come with optional holding brake.
- All matching motors for EL7 220V series are with high inertia.
- All matching motors for EL7 380V series comes only with optical encoders.
- The tables will be updated from time to time as we released new and updated models.

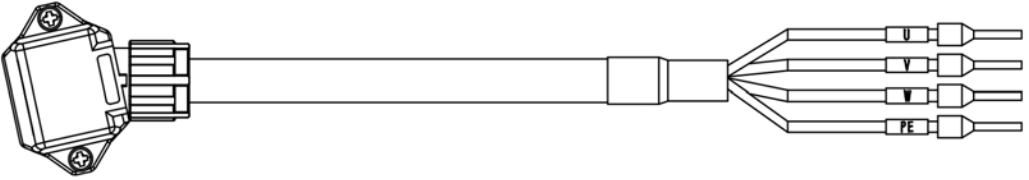
Cables

Motors without holding brake

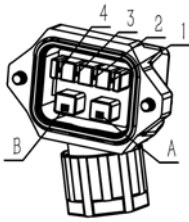
Aviation connector (Frame size 80 or below) CABLE-RZ*-HH2(V3.0)																
 CABLE-RZ1M5-HH2  Motor sideDriver side																
Motor cable pin	Pins															
 Motor side	<table><tr><th>Motor</th><th>Color</th><th>Driver</th></tr><tr><td>1</td><td>Blue</td><td>U</td></tr><tr><td>3</td><td>Black</td><td>V</td></tr><tr><td>2</td><td>Red</td><td>W</td></tr><tr><td>4</td><td>Yellow-green</td><td>PE</td></tr></table>	Motor	Color	Driver	1	Blue	U	3	Black	V	2	Red	W	4	Yellow-green	PE
Motor	Color	Driver														
1	Blue	U														
3	Black	V														
2	Red	W														
4	Yellow-green	PE														

Aviation connector (Frame size 130) CABLE-RZ*H(V1.1/V2.0)																	
Motor side	Driver side																
Motor cable pin	Pins																
	<table><tr><th>Motor</th><th>Color</th><th>Driver</th></tr><tr><td>1</td><td>Red</td><td>U</td></tr><tr><td>3</td><td>Green</td><td>V</td></tr><tr><td>2</td><td>Black</td><td>W</td></tr><tr><td>4</td><td>Yellow</td><td>PE</td></tr></table>		Motor	Color	Driver	1	Red	U	3	Green	V	2	Black	W	4	Yellow	PE
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1	Red	U															
3	Green	V															
2	Black	W															
4	Yellow	PE															
Motor side																	

Direct connector(Frame size 80 or below) CABLE-RZH*M*-114-TS without holding brake

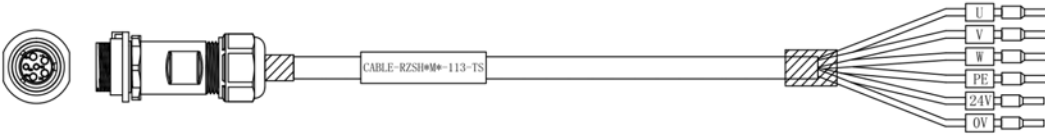


Motor side
Driver side

Driver cable pin	Pins															
	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr style="background-color: #d9e1f2;"> <th>Motor</th> <th>Color</th> <th>Driver</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Blue</td> <td>U</td> </tr> <tr> <td>2</td> <td>Black</td> <td>V</td> </tr> <tr> <td>3</td> <td>Red</td> <td>W</td> </tr> <tr> <td>4</td> <td>Yellow-green</td> <td>PE</td> </tr> </tbody> </table>	Motor	Color	Driver	1	Blue	U	2	Black	V	3	Red	W	4	Yellow-green	PE
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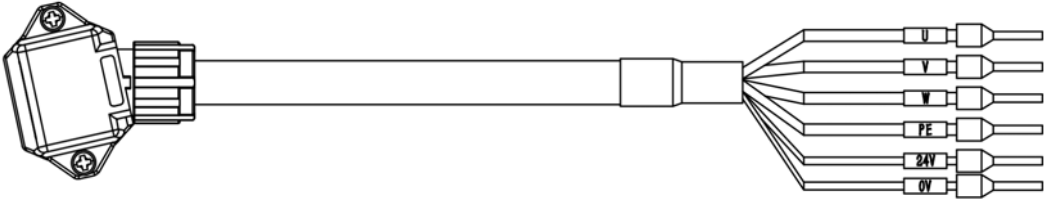
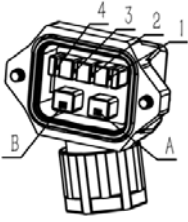
Motors with holding brake

Aviation connector (Frame size 80 or below) CABLE-RZSH*M*-113-TS Winding cable with holding brake

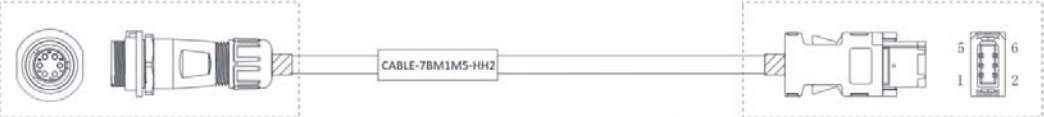
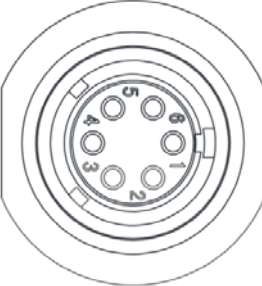


Motor side
Driver side

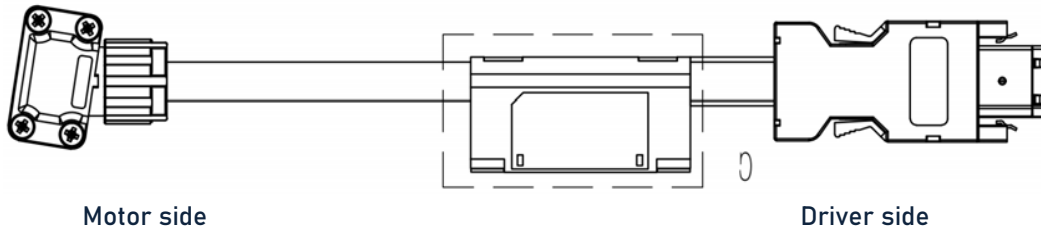
Motor cable pin	Pins																					
 Motor side	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr style="background-color: #d9e1f2;"> <th>Motor</th> <th>Color</th> <th>Driver</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Blue</td> <td>U</td> </tr> <tr> <td>2</td> <td>Red</td> <td>W</td> </tr> <tr> <td>3</td> <td>Black</td> <td>V</td> </tr> <tr> <td>4</td> <td>Yellow-green</td> <td>PE</td> </tr> <tr> <td>5</td> <td>Black</td> <td>0V</td> </tr> <tr> <td>6</td> <td>Red</td> <td>24V</td> </tr> </tbody> </table>	Motor	Color	Driver	1	Blue	U	2	Red	W	3	Black	V	4	Yellow-green	PE	5	Black	0V	6	Red	24V
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3	Black	V																				
4	Yellow-green	PE																				
5	Black	0V																				
6	Red	24V																				

Direct connector CABLE-RZH*M*-114-TS Winding cable with holding brake																							
																							
Motor side	Driver side																						
Motor cable pin	Pin																						
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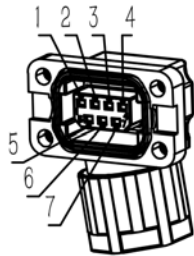
Encoder cable

Aviation connector (Frame size 80 or below) CABLE-7BM*-HH2																										
																										
Motor side	Driver side																									
Motor cable pin	Pin																									
	<table border="1"> <thead> <tr> <th>Motor</th><th>Driver</th><th>Signal</th></tr> </thead> <tbody> <tr> <td>1</td><td>Frame</td><td>Shielded</td></tr> <tr> <td>2</td><td>1</td><td>+5V</td></tr> <tr> <td>3</td><td>2</td><td>0V</td></tr> <tr> <td>4</td><td>5</td><td>SD+</td></tr> <tr> <td>5</td><td>6</td><td>SD-</td></tr> <tr> <td>6</td><td>3</td><td>BAT+</td></tr> <tr> <td>7</td><td>4</td><td>BAT-</td></tr> </tbody> </table>		Motor	Driver	Signal	1	Frame	Shielded	2	1	+5V	3	2	0V	4	5	SD+	5	6	SD-	6	3	BAT+	7	4	BAT-
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5	6	SD-																								
6	3	BAT+																								
7	4	BAT-																								
Motor side																										

Direct connector(Frame size 80 or below) CABLE-BMAH*M*-124-TS Absolute encoder



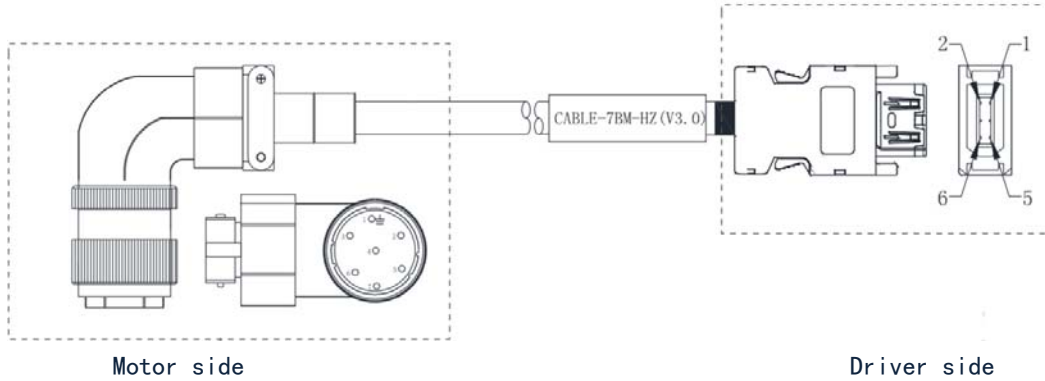
Motor cable pin



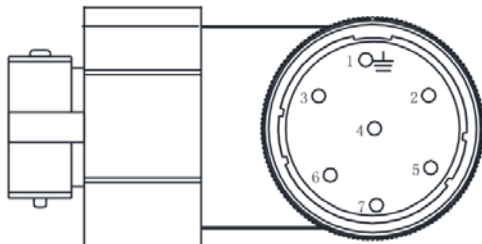
Pin

Motor	Driver	Signal
1	Frame	Shielded
2	1	+5V
3	2	0V
4	5	SD+
5	6	SD-
6	3	BAT+
7	4	BAT-

Aviation connector (Frame size 130) CABLE-7BM*HZ (V3.0)



Motor cable pin



Pin

Motor	Driver	Signal
1	Frame	Shielded
2	1	+5V
3	2	0V
4	5	SD+
5	6	SD-
6	3	BAT+
7	4	BAT-