Leadshine

Modbus

General Purpose AC Servo Drives

EL7-RS Series

EL7-RS Series AC Servo Product is a whole new midrange AC servo drivers and motors product range that we have proudly developed at Leadshine Technology Co.,Ltd. This product series provides more in demanded functionalities and control. While designing this AC servo drive series with cost concerns in mind, this product series doesn't compromise in term of performance and functions.

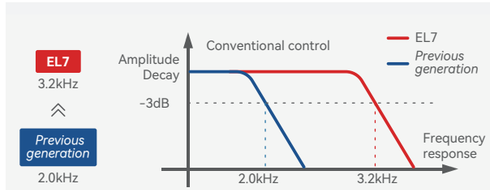
EL7-RS Series AC Servo Drive comes with power rating from 400W up to 7500W which supports Modbus communication protocol in addition to analogue and pulse + direction input control. Using RS485 protocol, multi axis network of EL7-RS series servo drive can be realized and controlled from 1 single master device.

CNC router | Fiber laser | Electronics | Semiconductor | Renewable energy

Overview

Frequency response

Quicker system response of 3.2kHz for higher precision control.

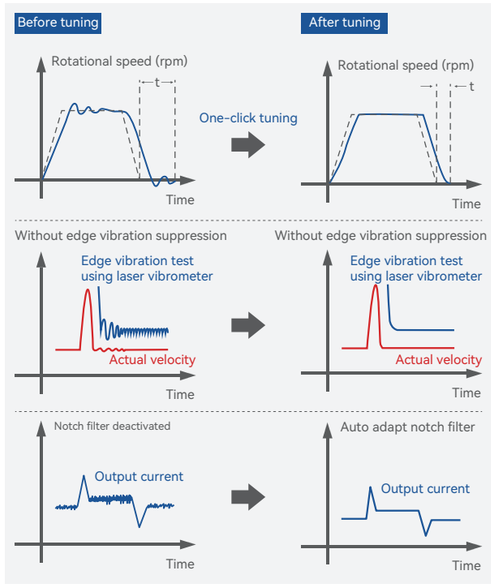


Advanced servo computing

One-Click Tuning - Follow a few easy steps to get servo tuning done. Gain adjustments will be automatically set, shortening tuning time.

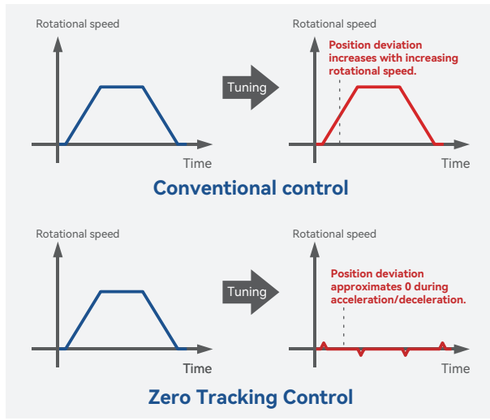
End vibration suppression for flexible structure – suppress low frequency vibration under 200Hz for a quicker and more precise position settling.

Adaptive notch filters – 3 sets of notch filters up to 4kHz for better suppression of structural vibration.



Zero tracking control

Able to realize a zero position deviation during acceleration/ deceleration by improving multi-axis precision and following.



Part Numbers

EL7 - RS 750 P T

Series Num	
EL7	EL7 series

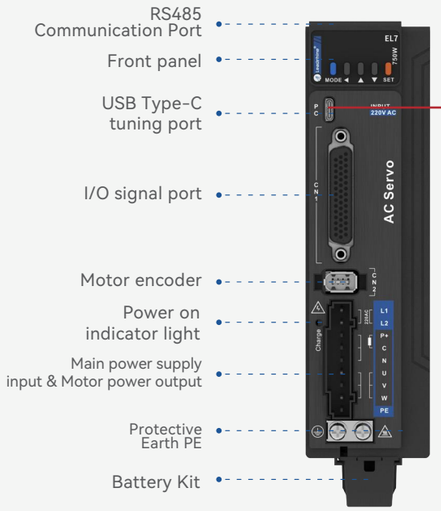
Command Source	
EC	EtherCAT
RS	Modbus RTU/ Analog Input/ Pulse+Direction

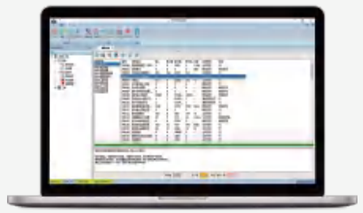
Voltage	
Blank	220VAC
T	400VAC

Version	
P	Full functions without STO

Rated Power			
400	400W	750	750W
1000	1000W	1500	1500W
2000	2000W	3000	3000W
4400	4400W	5500	5500W
7500	7500W		

Ports & Connectors



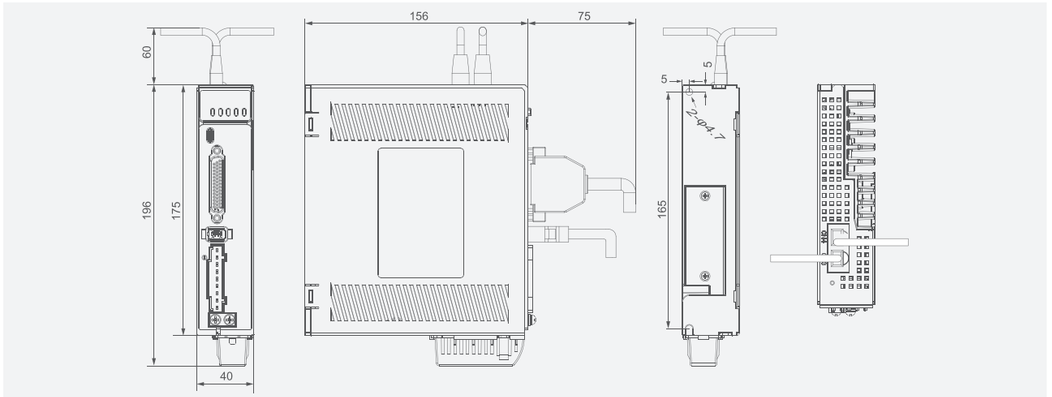


Tuning via USB Type-C

- Tuning can be done via USB Type-C tuning port.
- Main power supply is not needed for parameter reading and writing.

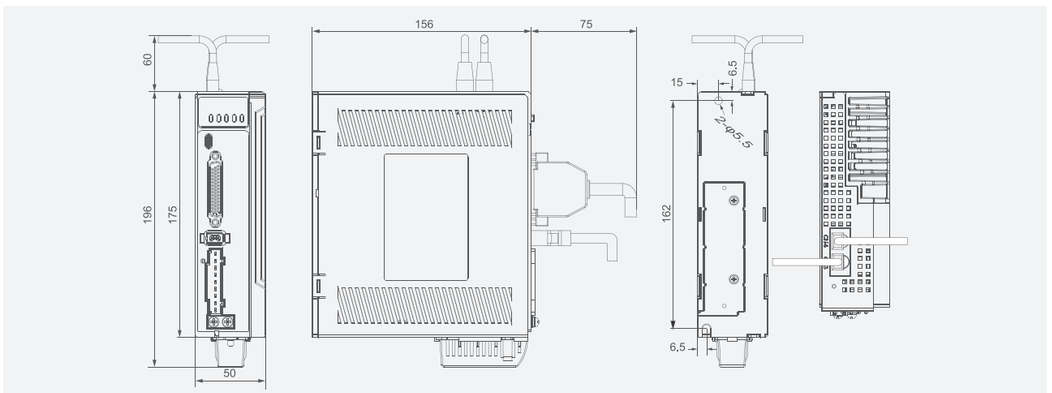
400W（AC 220V）

Unit: mm



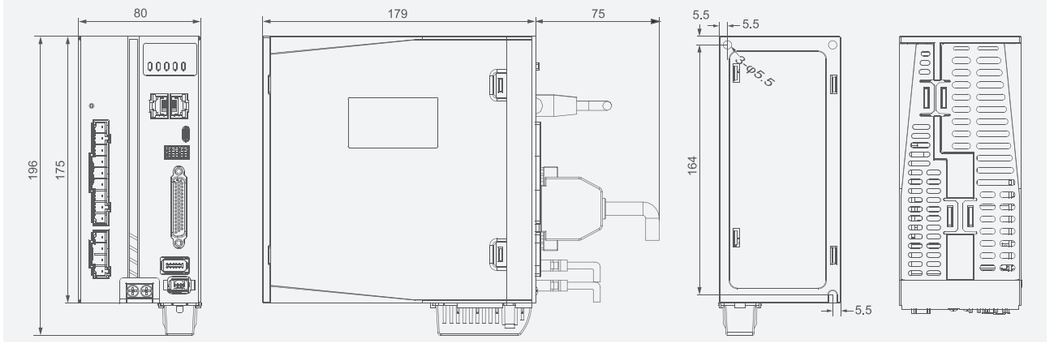
750W/1000W（AC 220V）

Unit: mm



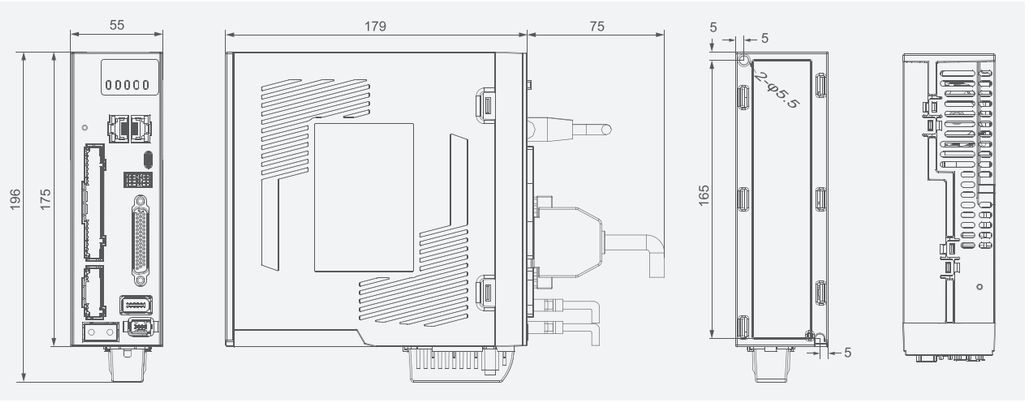
1500W/2000W（AC 220V）

Unit: mm



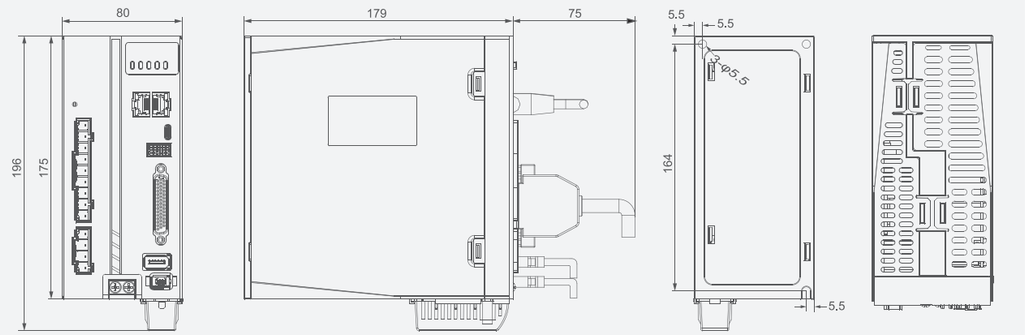
750W/1000W/1.5kW（AC 400V）

Unit: mm



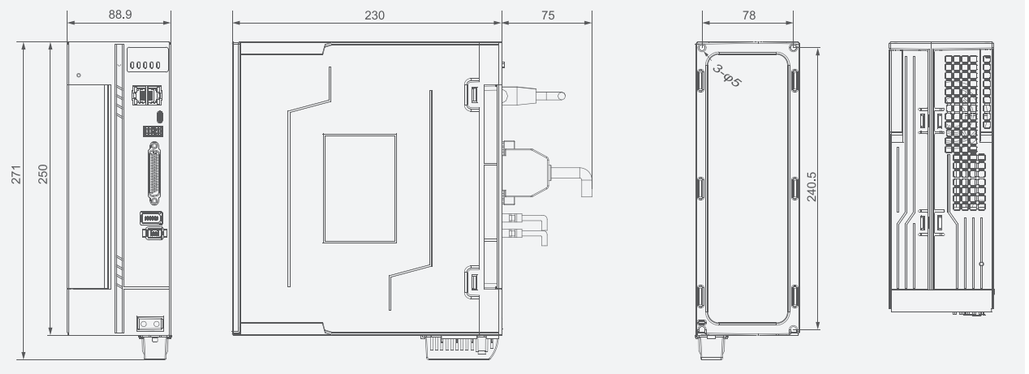
2kW/3kW（AC 400V）

Unit: mm

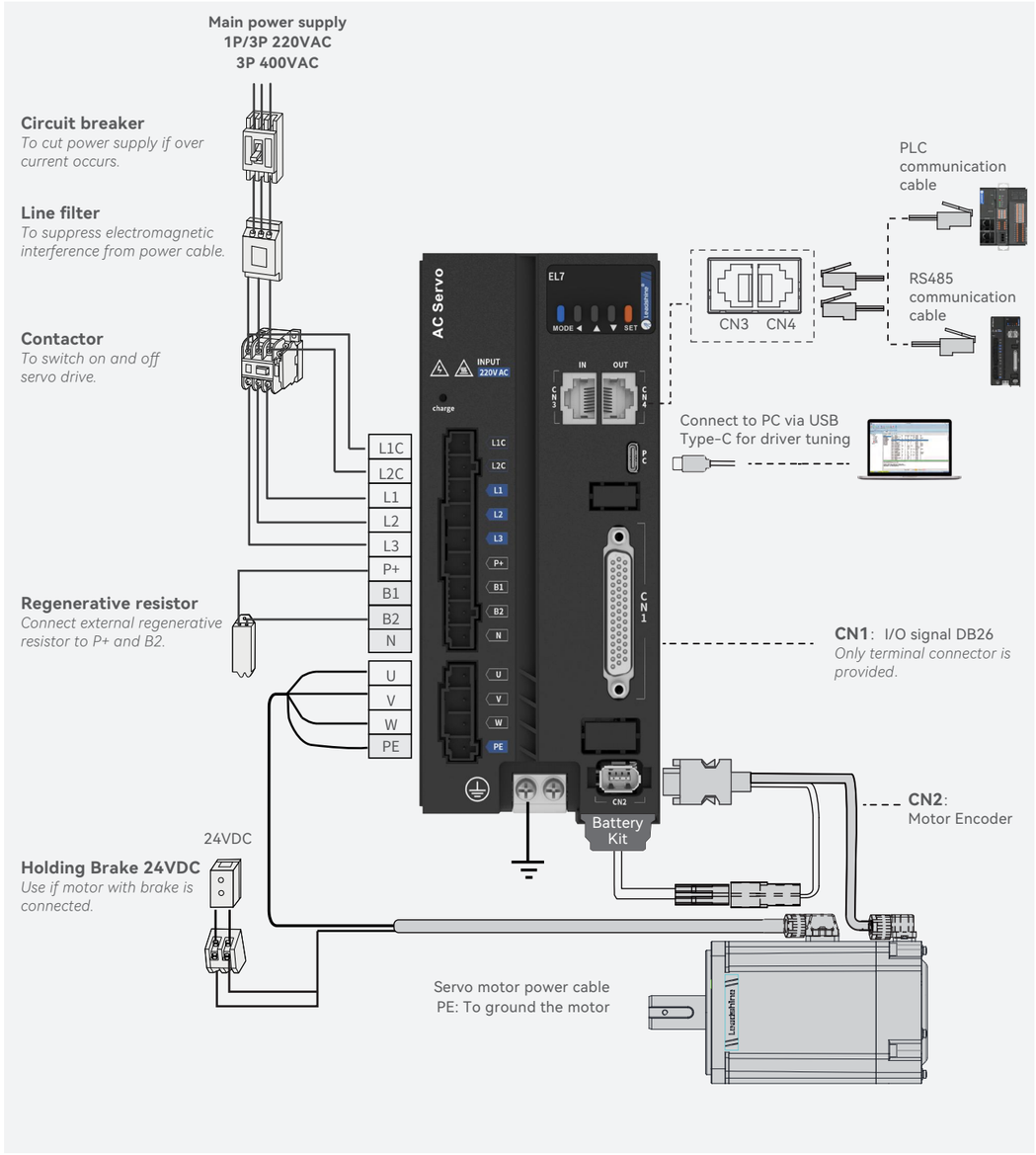


4.4kW/5.5kW/7.5kW（AC 400V）

Unit: mm



EL7-RS & Peripheral Wiring Diagram



Specifications

EL7-RS 220V Models

EL7-RSP Series Driver	EL7-RS400P	EL7-RS750P	EL7-RS1000P	EL7-RS1500P	EL7-RS2000P
Power Rating	400W	750W	1000W	1500W	2000W
Rated Current (Arms)	3.5	5.5	7.0	9.5	12
Peak Current (Arms)	9.5	16.6	18.7	31.1	36
Control circuit power supply	1-Ph AC 200V-240V, -10% ~ +10%, 50/60Hz				
Main power supply					
Dimension H*L*W(mm)	175*156*40	175*156*50		175*156*80	

EL7-RS 400V Models

EL7-RSPT series	EL7-RS750PT	EL7-RS1000PT	EL7-RS1500PT	EL7-RS2000PT	EL7-RS3000PT	EL7-RS4400PT	EL7-RS5500PT	EL7-RS7500PT
Rated Power(W)	750	1000	1500	2000	3000	4400	5500	7500
Rated Current (Arms)	2.7	3.5	5.4	8.4	11.9	16.5	20.8	25.7
Peak Current (Arms)	8.6	10.6	14.9	24.8	33.2	38.9	51.6	33.6
Control circuit power supply	Three phase AC 380V~440V, -15%~+10%, 50/60Hz							
Main power supply	Single phase AC 380V~440V, -15%~+10%, 50/60Hz							
Dimension L*H*W(mm)	175*179*55			175*179*80		250*230*89		

Ports	Descriptions
USB Type-C Tuning	Modify or read driver parameters without connecting to main power supply
Low-speed pulse input	5V differential signal, 0-500kHz 24V single ended signal, 0-200kHz
High-speed pulse input	5V differential signal, 0-4MHz
High-speed pulse input	5V differential signal, 0-4MHz
	3 analog inputs（AI1/AI2/AI3）,-10V~+10V, Max. voltage: ±12V
Crossover Frequency Output	Supports phase A/B/Z differential crossover frequency output Supports phase Z open collector crossover frequency output
Analog I/O	2 analog inputs（AI1/AI2）,-10V~+10V, Max. voltage: ±12V
	1 analog output（AO1）, -10V~+10V
Digital I/O	8 Digital Inputs (Supports common anode or cathode connection) DI1~DI8
	5 digital outputs (double-ended) DO1~DO5
Communication Port	RS485 communication, Modbus RTU protocol (RJ45 port)

Control Mode	
Control	1. External pulse train position control 2. JOG control 3. Velocity control 4. Torque control 5. Hybrid control: Position-Torque/Position-Velocity/Velocity-Torque
Control Features	
Drive Mode	IGBT SVPWM sinusoidal wave drive
Encoder feedback	Encoder: RS485 Protocol
Easy-to-use	One-click tuning, Single parameter tuning, Black box, Zero tracking control
Notch Filter	Mechanical resonance suppression. Supports up to 3 filters,50Hz~4000Hz
Vibration suppression	End vibration suppression
Alarm	Overcurrent. Overvoltage. Undervoltage. Overheat. Overload. Overtravel. Single-Phasing. Regenerative resistor error. Position deviation error. Encoder feedback error. Excessive braking rate. EEPROM error
Front Panel	5 push buttons, 8-segments display
Software	Driver tuning through Motion Studio Ver. 2.x.
Dynamic Brake	Internal dynamic brake
Black Box	Set triggering conditions and analyze the data from black box. Used for error solving
Environmental requirements	
Temperature	Storage: -20-80℃ (Condensation free); Not < 72 hours if stored in over 65℃ Installation: 0-55℃ (Not frozen); Lower performance at over 45℃
Humidity	Under 90%RH (Condensation free)
Altitude	Max. altitude of 2000m; 100% performance at 1000m or below. Performance decreases by 1% with every increase of 100m from 1000m.
Vibration	Less than 0.5G (4.9m/s2) 10-60Hz (non-continuous working)
IP ratings	IP20

Leadshine

● Headquarters in Shenzhen

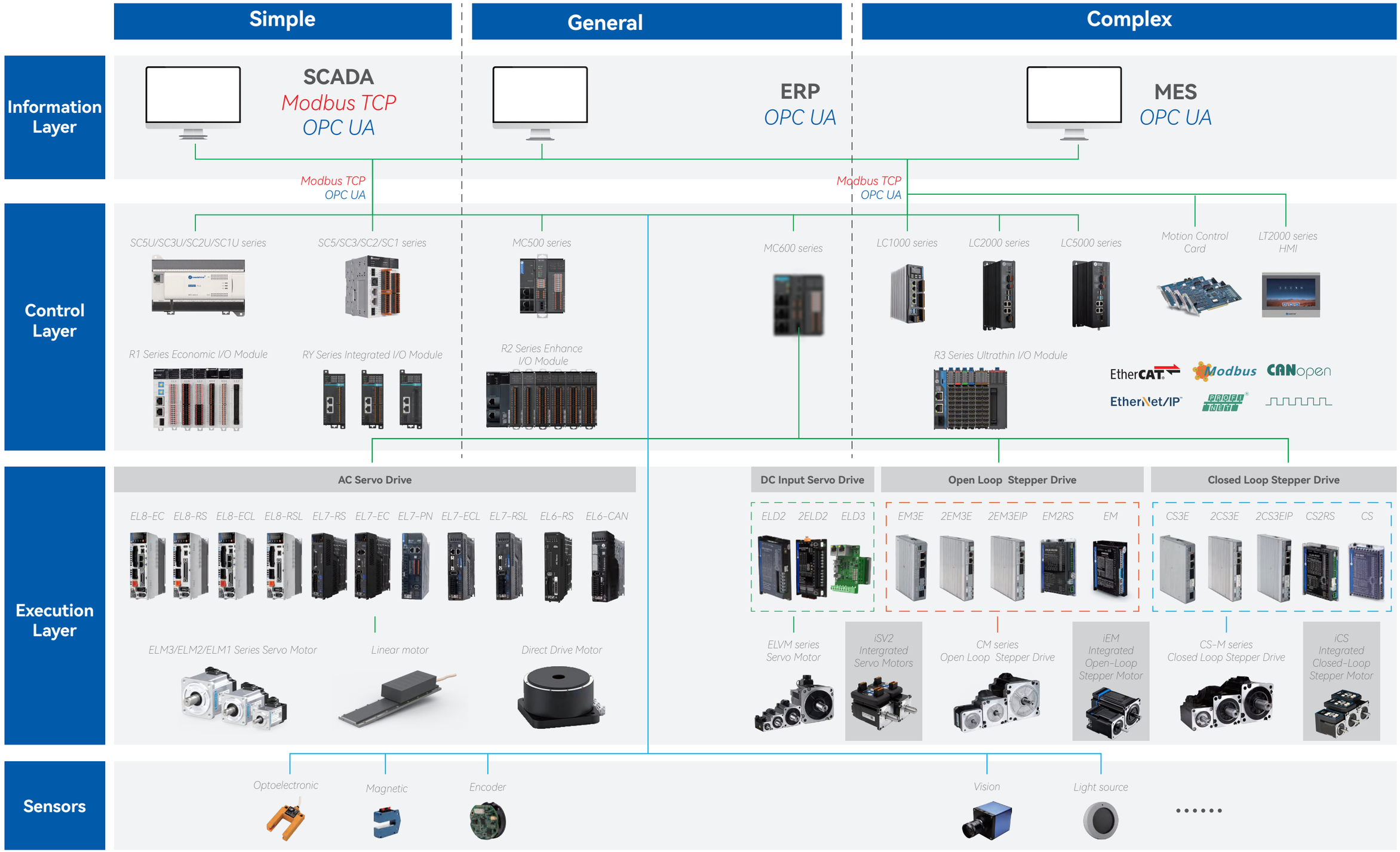
● Shanghai Intelligent Industry Park

● Production base in Shenzhen

- **Founded in 1997**
- **Public Listed Company in China (002979.SZ)**
- **Dedication in Motion Control**
  Stepper/Servo systems, Motion Controllers, PLC
  Control systems, I/O Modules, Encoders
- **A leading supplier of motion control products and solutions in the world**
- **Customer Oriented, Technology Oriented, Forever Improving, Sharing of Success**

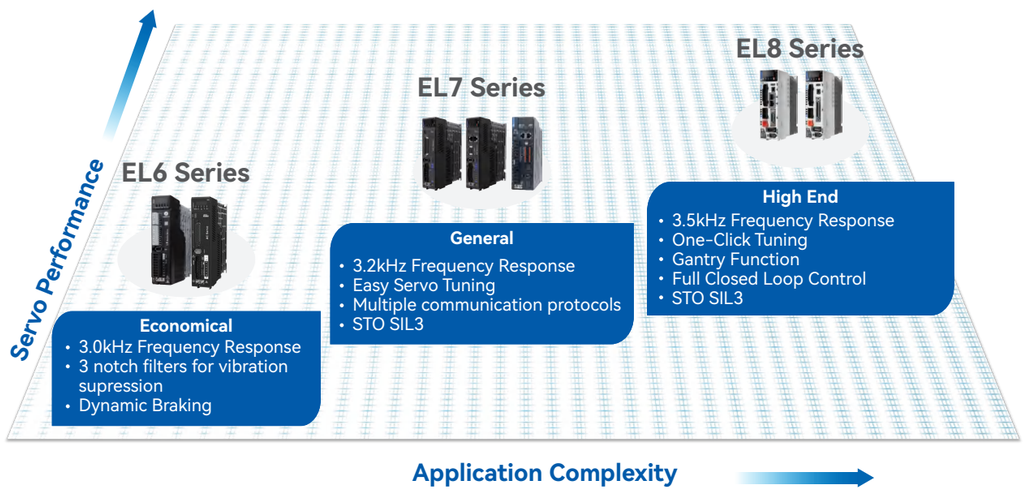
25+ Experience
400+ R&D Engineers
5 Subsidiaries
60+ Countries Clients
10000+ Global Partners
30 million+ Installed Axes

Leadshine Motion Control Total Product System

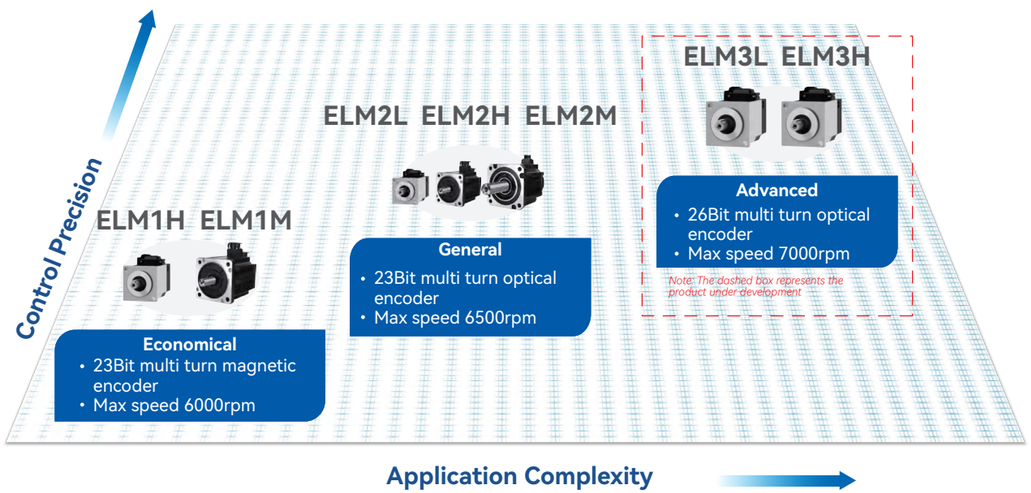


Leadshine Servo Product

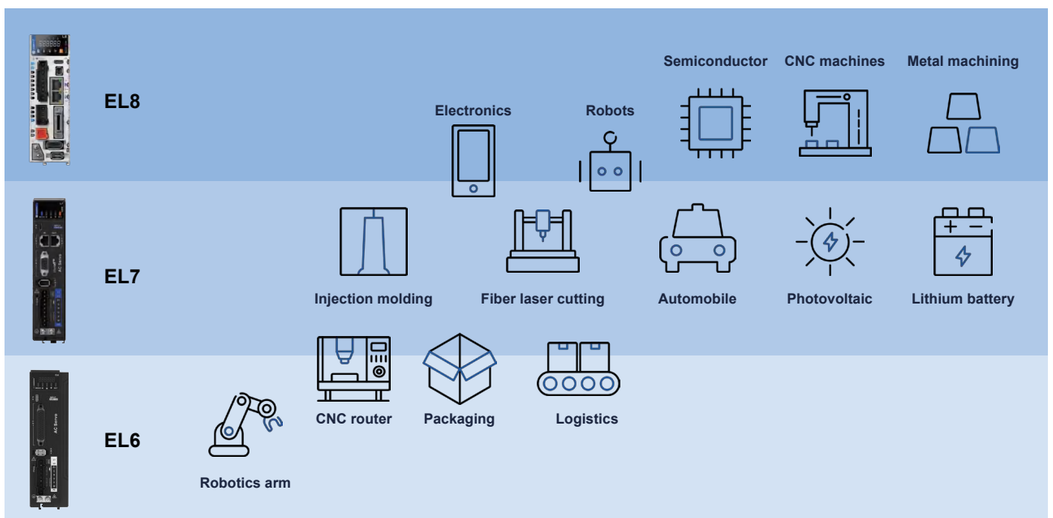
Servo Drive Series



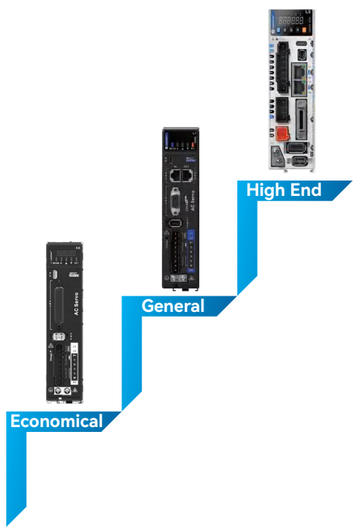
Servo Motor Series



Typical Applications



Simple Introduction



EL8 Series

High end double PCB boards, high performance with frequency response matching of global competitors, easier to tune with One-Click Tuning. Covering the range of 50W-2kW.

EL7 Series

Diverse models offered in this series with multiple protocols including Pulse&Direction, Analog, Modbus RTU, EtherCAT, PROFINET, Linear drives. Covering the range of 50W-7.5kW (11kW-22kW under development).

EL6 Series

Economical and cost effective models for not so demanding applications. Covering basic models from 50W – 1000W.

Leadshine Servo Products Quick Selection

Servo Drive	Model	Power (W)	Voltage (VAC)	Dimensions (mm)	Weight (kg)	Command Source			Command Source			STO	Encoder Output	Brake Output	Digital Inputs (Points)	Digital Outputs (Points)	Analogue Input	Analogue Output	Matched Servo Motors
						Pulse+Dir	Analog Input		RS485	EtherCAT	CANopen								
AC Servo Drive EL8 Series	EL8-EC400F	400	1 Phase/ 3 Phase 220	150*150*43	1							√	√		8	3	2	2	ELM1 and ELM2 Servo Motors Please refer to page 84 to 87 for more information on matching servo motors
	EL8-RS400F									√		√	√	√	10	6	3	2	
	EL8-EC750F	750		150*160*55	1.2	√	√		√					√	8	3	2	2	
	EL8-RS750F					√	√		√	√		√	√	√	10	6	3	2	
	EL8-EC1000F	1000										√	√	√	8	3	2	2	
	EL8-RS1000F					√	√		√	√		√	√	√	10	6	3	2	
	EL8-EC1500F	1500		183*160*80	2							√	√		8	3	2	2	
	EL8-RS1500F					√	√		√	√		√	√	√	10	6	3	2	
	EL8-EC2000F	2000										√	√	√	8	3	2	2	
	EL8-RS2000F					√	√		√	√		√	√	√	10	6	3	2	
AC Servo Drive EL7 Series - 220VAC	EL7-RS400P	400	1 Phase 220	175*156*40	0.9	√	√		√				√		8	5	2	1	
	EL7-RS750P	750		175*156*50	1.1	√	√		√				√		8	5	2	1	
	EL7-RS1000P	1000			1.2	√	√		√				√		8	5	2	1	
	EL7-RS1500P	1500	1 Phase/ 3 Phase 220	175*156*80	2.3	√	√		√				√		8	5	2	1	
	EL7-RS2000P	2000			2.3	√	√		√				√		8	5	2	1	
AC Servo Drive EL7 Series - 400VAC	EL7-RS750PT	750	3 Phase 400	179*175*55	1.3	√	√		√				√		8	5	2	1	
	EL7-RS1000PT	1000				√	√		√				√		8	5	2	1	
	EL7-RS1500PT	1500				√	√		√				√		8	5	2	1	
	EL7-RS2000PT	2000		179*175*80	1.9	√	√		√				√		8	5	2	1	
	EL7-RS3000PT	3000				√	√		√				√		8	5	2	1	
	EL7-RS4400PT	4400		230*250*90	3.3	√	√		√				√		8	5	2	1	
	EL7-RS5500PT	5500				√	√		√				√		8	5	2	1	
	EL7-RS7500PT	7500				√	√		√				√		8	5	2	1	
AC Servo Drive EL7 Series - 220VAC	EL7-EC400N	400	1 Phase 220	175*156*40	0.9					√		√	√		4	3			
	EL7-EC750N	750		175*156*50	1.2					√		√	√		4	3			
	EL7-EC1000N	1000								√		√	√		4	3			
	EL7-EC1500N	1500	1 Phase/ 3 Phase 220	179*175*55	2.3					√		√	√		4	3			
	EL7-EC2000N	2000								√		√	√		4	3			
AC Servo Drive EL7 Series - 400VAC	EL7-EC750NT	750	3 Phase 400	179*175*55	1.3					√		√	√		4	3			
	EL7-EC1000NT	1000								√		√	√		4	3			
	EL7-EC1500NT	1500								√		√	√		4	3			
	EL7-EC2000NT	2000		179*175*80	1.9					√		√	√		4	3			
	EL7-EC3000NT	3000								√		√	√		4	3			
	EL7-EC4400NT	4400		230*250*90	3.3					√		√	√		4	3			
	EL7-EC5500NT	5500								√		√	√		4	3			
	EL7-EC7500NT	7500								√		√	√		4	3			
AC Servo Drive EL6 Series	EL6-RS400P	400	1 Phase 220	175*156*40	0.9	√			√			√	√		8	5			
	EL6-CAN400Z										√				4	3			
	EL6-RS750P	750		175*156*50	1.1	√			√			√	√		8	5			
	EL6-CAN750Z										√				4	3			
	EL6-RS1000P	1000		175*156*50	1.2	√			√			√	√		8	5			
	EL6-CAN1000Z										√				4	3			

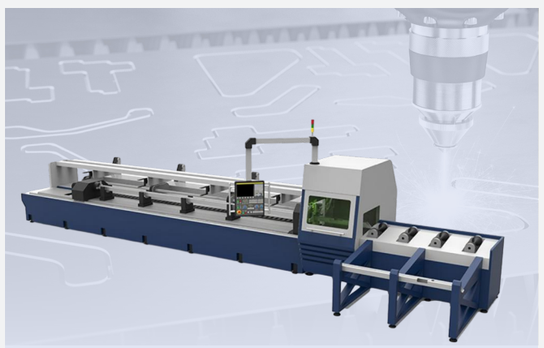
Applications

CNC Router

Product Advantages:

- High torque servo motor with 3 times overloading capability
- 23-bit encoders with great impact resistant and harsh environment resistance
- Servo drive optimized for CNC router applications
- Comes with safety features such as Safe Torque Off and Dynamic Braking
- Servo Motors maximum torque ranging from 0.105Nm up to 119Nm

Fiber Laser Cutting



Product Advantages:

- Great Compatibility with renowned laser cutting controller from FScut, Weihong, Beckhoff, Empower, etc.
- Available with most mainstream communication protocols (EtherCAT, Modbus RTU, PROFINET)
- Accurate positioning of 0.02mm and precision up to 0.01mm
- Easy servo tuning features to assist users in setting up the servo systems
- Robust and compact servo motors with high dust- and waterproof ratings

Wafer Cutting

- Full Closed Loop Control function to realize high accuracy control and real time compensation for lead screw wear.
- Real time control using EtherCAT/PROFINET servo drives.
- Easy-to-use, low maintenance and high reliability.

Automated Battery Lamination

- Linear Motors, Direct Drive Motors and Rotary Servo Motors are available.
- Production cycle time per part as low as 0.55s.
- High accuracy and precision motion control with servo drive frequency response of 3.5kHz

Semiconductor Wafer Cleaning

- High following capability with servo frequency response up to 3.5kHz
- Easy servo tuning features for notch filter settings and anti-vibration tunings
- Industrial Ethernet Standard with communication rate up to 100Mbps and compatible with any mainstream PLCs.