

# M6-L Series Servo System

## Power Solutions

- Telecom Power
- Server Power
- Electric Power
- Medical Power
- Display Power
- LED Power
- Laser Power
- OA Power
- Flat Panel Power
- Bi-directional Inverters for Portable Power
- Solar & BESS & EV Charging Solution

## Industry Automation

- Servo System
- Control System
- Elevator Controller
- Linear Motors
- IOT Solution
- Encoder
- Variable Frequency Drive
- Internal Gear Pump

## New Energy Solutions

- Multiplexed EV Charging System(OBC & DC-DC)
- Power Electronic Unit(2-in-1, 3-in-1)
- E-Compressor
- TV EDU
- Motor Control Unit
- Construction Machinery Controller
- Intelligent Active Hydraulic Suspension (i-AHS)
- Railway A/C Controller
- Railway VFD
- Light Electric Vehicle Controller
- Thermal Mgmt. System

## Home Appliance Control Solutions

- Residential A/C Controller
- Commercial A/C Controller
- Heat Pump Controller
- Vehicle A/C Controller
- Solar A/C Controller
- Mini Compressor Controller
- Refrigerator Controller
- Washer/Dryer Controller
- Residential Microwave
- Industrial Microwave
- Smart Bidet
- RF Thawing System

## Precision Connection

- FFC
- FPC
- Coaxial Cable
- CCS
- Litz Wire
- Peek Wire

## SHENZHEN MEGMEET ELECTRICAL CO., LTD.

Add: 5th Floor, Block B, Unisplendour Information Harbor, Langshan Rd., Science & Technology Park, Nanshan District, Shenzhen, 518057, China

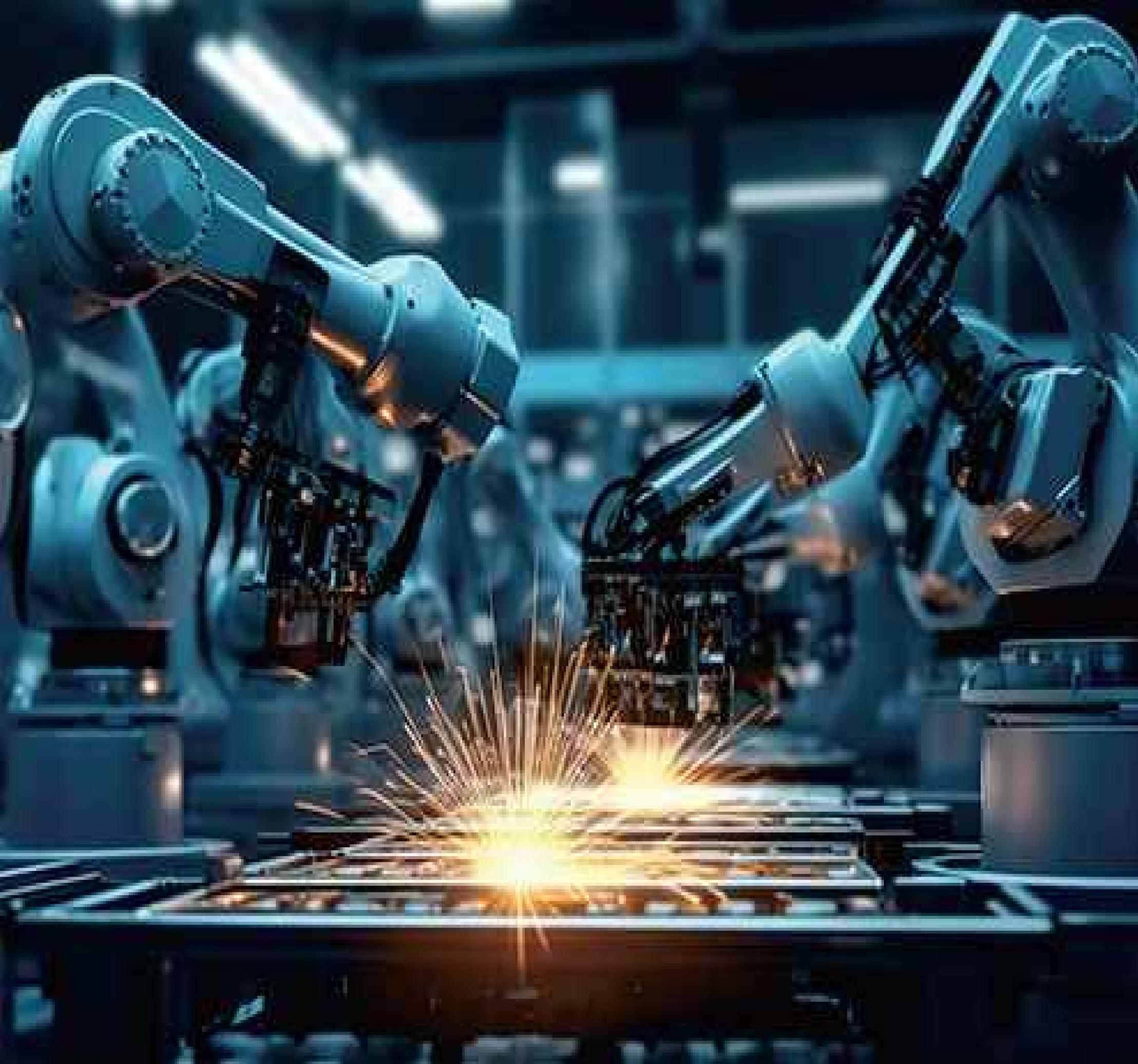
Version: 202502

Megmeet reserves the right to modify the technical parameters and appearance of the products in this catalogue without prior advice to the users.

FOLLOW US

Q Megmeet





## Content

01	About MEGMEET
03	Product Introduction
05	Key Features
06	Communication Specifications
06	Network Synchronization
07	Specifications
08	Host Computer Software
08	Servo Drive Model
09	Servo Drive Electrical Specifications
10	System Overview
11	Servo Drive Outline & Dimensions
12	Industrial Automation Solutions

# ABOUT MEGMEET

MEGMEET is a comprehensive solution provider for hardware and software R&D, production, sales, and service in the field of electrical automation. With power electronics and automation control at its core, MEGMEET's main businesses include Power Solutions, Industrial Automation, eMobility & EV Infrastructure, Intelligent Equipment, Home Appliance Control Solutions, and Precision Connection.

MEGMEET has established a robust R&D, manufacturing, marketing, and service platform, with over 7,600 employees, including more than 2,800 R&D staff worldwide. MEGMEET's global presence includes R&D Centers in China, the United States, and Germany; Manufacturing Centers in Thailand, India, the United States, and China; and Regional Offices across North America, South America, Europe, Central Asia, Northeast Asia, Southeast Asia, India, the Middle East, Oceania, and Africa.

MEGMEET is committed to creating a cleaner living environment for all human beings through more efficient energy utilization and improved manufacturing efficiency. MEGMEET aims to become the world leader in electrical automation and achieve the goal of MEGMEET EVERYWHERE.

 **2800+**  
R&D Staff

 **10**  
R&D Centers

 **9**  
R&D Manufacturing Bases

 **7600+**  
Total Employees

 **1990+**  
No. of Patents & IP Rights

# R&D CAPABILITY

## Sustainable R&D Investment

### R&D Investment

R&D Employees  
**>2800** 

Percentage of Total Employees  
**36%** 

Percentage of Total Sales  
**>11%** 

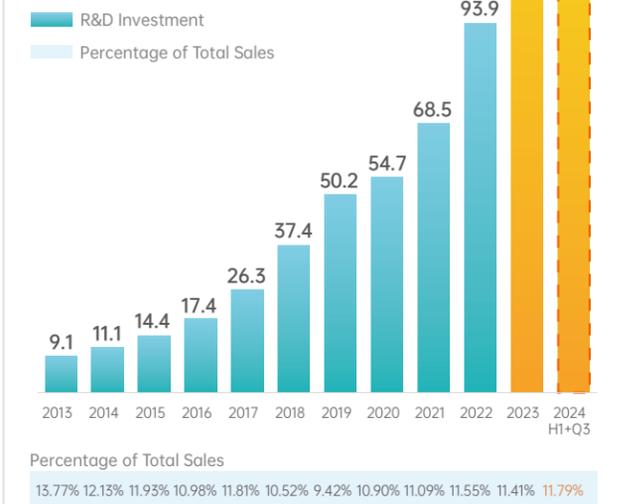
### Patents & Industry Standards

No. of Patents & IP Rights  
**1990+**  
↑ 400+ new in 2024

National & International standards  
**32**  
• 9 lead author

Industry Standards Drafted  
**38**  
• 28 lead author

### R&D Investment (in Millions of USD)



## Testing Capabilities & Management System

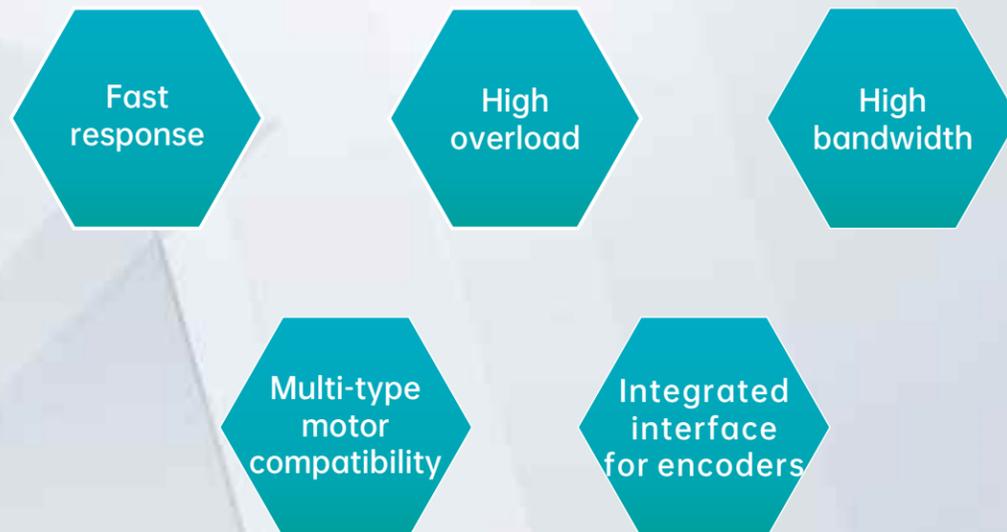


MEGMEET's testing capabilities and management system have been certified by CNAS, TÜV, UL-WTDP, and UL-CTF. MEGMEET's test results are recognized globally.



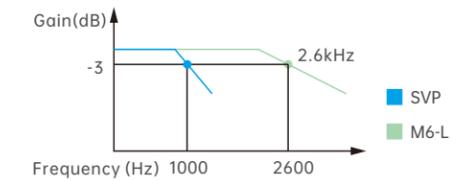
# M6-L Series Direct Drive Servo System

M6-L series servo system is specifically engineered for driving DDR/DDL motors. It features fast response, high precision, and stable operation, and delivers superior functionality, such as online inertia identification, gain auto-tuning, vibration suppression, quadrant compensation, etc. Its intelligence and convenience are further enhanced when coordinated with the Megmeet host device. This series is highly applicable for the equipment market that requires high precision, stability, efficiency, and convenience.



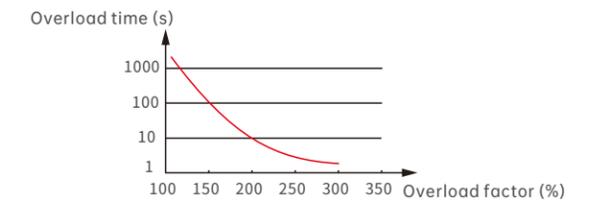
## Fast response

- Frequency boost from 1.0 kHz to 2.6 kHz
- High refresh frequency of current loop and speed loop
- Faster response to commands
- High rigidity



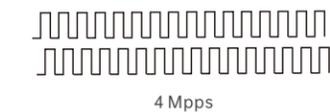
## High overload capacity

- 3 times overload capacity



## High bandwidth

- Input/Output pulse up to 4 Mpps
- Differential input available
- Three pulse modes: A/B orthogonal, Pulse + Sign, and CW/CCW



## Multi-type motor compatibility

- Direct drive rotary motor (DDR): Strong resistance against impact from external loads; highly advantageous for applications with extra demands on speed/positioning accuracy, such as semiconductor devices and machine tool spindles.
- Direct drive linear motor (DDL): Used for applications requiring fast response, such as high-speed positioning or reciprocating motion of machine tools, laser, and semiconductor devices.



## Integrated interface for encoders

### Incremental encoder

- Low cost and easy wiring
- Accurate angle identification

### Absolute encoder

- Tamagawa protocol
- BiSS protocol

### Sin/Cos encoder

- Internal 16-bit A/D subdivision
- Enhanced positioning precision and low-speed stability

### Hall-effect sensor

- Open-collector and differential input available

# Key Features

## Inertia identification

Both online and offline inertia identification are supported. Highly accurate load inertia ratio is available via inertia identification, which facilitates fast commissioning and control effect optimization.

## Gain auto-tuning

- Automatic gain adjustment: By selecting the rigidity level, matching gain parameters will be automatically generated to meet the requirements on responsiveness and stability.
- Manual gain adjustment: Manually fine-tune the gain to optimize the control effect.
- Speed feedforward: The function is used in the position control mode to reduce the position following error.
- Torque feedforward: In the position control mode, it can reduce the position deviation during acceleration and deceleration; in the speed control mode, it can reduce the speed deviation when the speed is fixed.
- Multiple gain switchover modes

## Torque disturbance observation

In a non-torque control mode, by detecting and estimating the external disturbance torque received by the system, the torque reference can be compensated to reduce the influence of external disturbance on the servo. As a result, the vibration will be minimized.

## High-frequency mechanical resonance suppression

The system automatically searches the frequency point of the high-frequency mechanical resonance, and reduces the gain at the specific frequency via four sets of trap filters. As a result, the mechanical resonance will be minimized.

## Low-frequency mechanical resonance suppression

For mechanical loads with one end excessively long, the low-frequency resonance suppression function can effectively reduce the end jitter caused by positioning completion or emergency stop.

## Friction compensation

For loads with high friction, such as drive shafts of belts, the friction compensation function can shorten the positioning time and reduce the machining errors caused by friction.

## Quadrant compensation

In the application of arc trajectory interpolation with more than two axes, quadrant compensation can reduce the arc distortion caused by friction non-linearity (the trajectory protrusion at the alternation of the four quadrants), and increase the accuracy of servo system control and the uniformity of motion.

## Safety measures

STO function is supported.

## Gantry Function

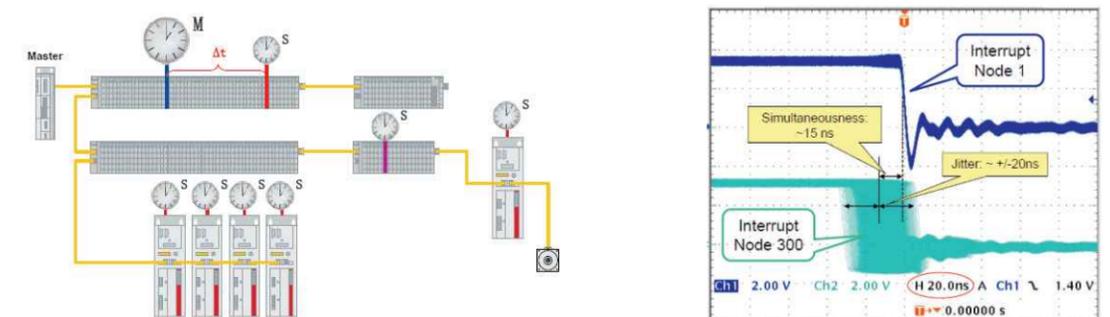
This function provides multiple gantry alignment modes, such as enable signal alignment, active homing alignment, and DI signal alignment. Mutual compensation based on two-axis coordination brings high-precision synchronization into reality.

# Communication Specifications

Communication standard		IEC 61158 Type12, IEC 61800-7 CiA402 Drive Profile (CoE)	
Physical layer	Transmission protocol	100BASE-TX (IEEE802.3)	
	Transmission distance	Less than 100 m between two nodes	
	Interface	CN1 (RJ45): EtherCAT Signal IN CN2 (RJ45): EtherCAT Signal OUT	
	Cable	Category 5 cable	
Application layer	SDO	SDO request, SDO response	
	PDO	Mutable PDO mapping	
	CiA402 Drive Profile	Profile Position Mode	
		Profile Velocity Mode	
Homing Mode			
Interpolated Position Mode			
	Cyclic Synchronous Position Mode		
	Cyclic Synchronous Velocity Mode		
Synchronization mode	Distributed clock (DC) mode		

# Network Synchronization

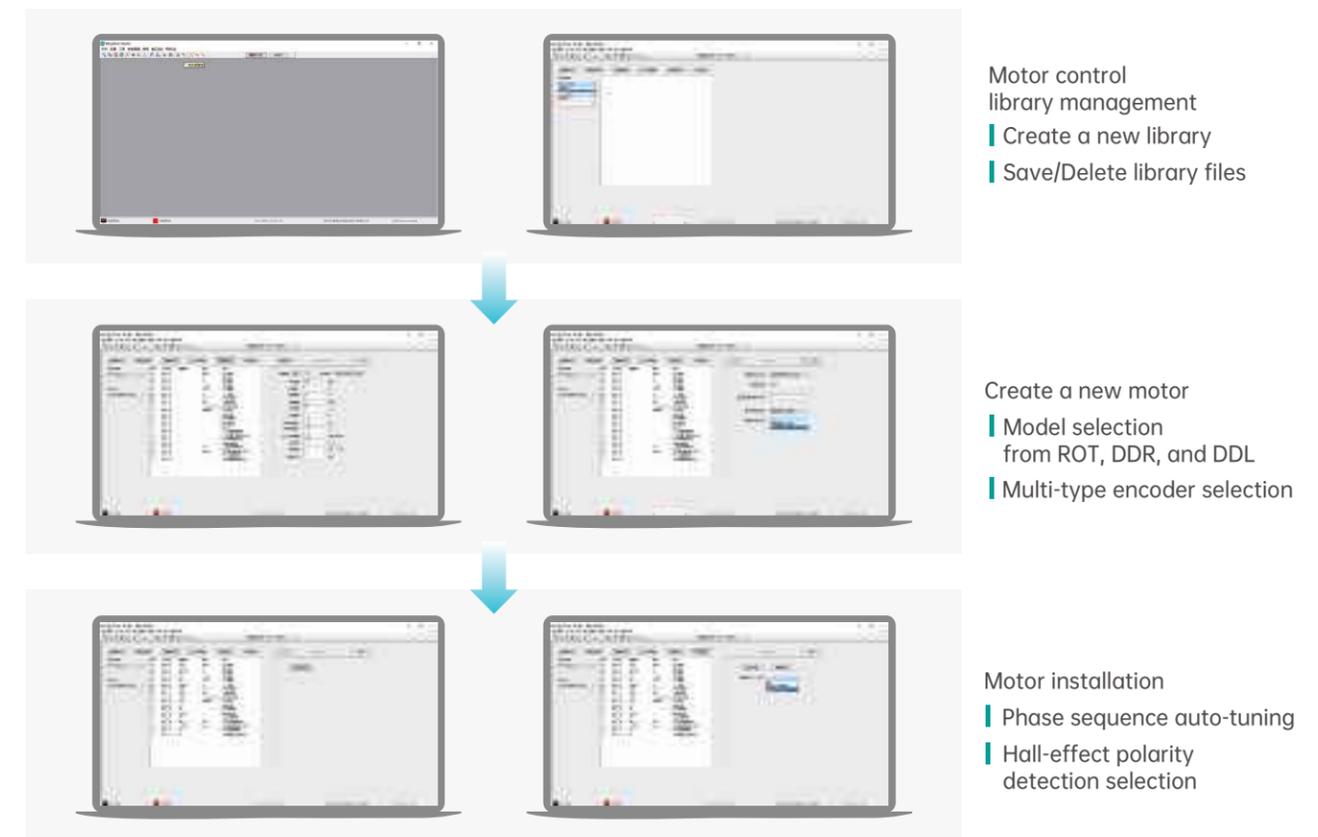
- The EtherCAT network selects the first slave clock as the reference clock, and the clocks of all other devices (including master and slave) are synchronized with this reference clock.
- All EtherCAT devices can utilize the same system clock via the synchronization signal (SYNC), which facilitates the control of synchronized task execution of each device and enables the synchronization of each device's local task with the reference clock.
- The synchronization error is contained within 15 ns and the jitter within 20 ns even when the number of nodes is between amounts to 300 and the cable length reaches 120 m.



# Specifications

Basic specifications	Main circuit power supply	200 to 240 V, -10% to +10%, 50/60 Hz, or 380 to 480 V, -15% to +10%, 50/60 Hz
	Control circuit power supply	Single-phase, 200 to 240 V, -15% to +10%, 50/60 Hz
	Control mode	IGBT, PWM control, and sine wave current drive mode
	Encoder	Rotary motor: Absolute encoder, incremental encoder, sin/cos encoder
Linear motor: Incremental encoder, absolute encoder, sin/cos encoder, Hall-effect encoder		
Secondary encoder: Incremental encoder		
IO	DI (various functions defined by parameters)	Nine channels of general input, optocoupler isolation, NPN and PNP inputs for selection, input voltage ranging from 20 to 30 V, input impedance of 3.9 K
	DO (various functions defined by parameters)	Five channels of general output, optocoupler isolation, NPN and PNP outputs for selection, operating voltage up to 30 V, current up to 100 mA
	Pulse input	Pulse mode: ① Pulse + Sign; ② A/B orthogonal; ③ CW/CCW
Input mode: Differential input, speed up to 4 Mpps, bandwidth no less than 0.125 microseconds		
Communication interface	EtherCAT	CoE communication protocol (in compliance with CiA 402 profile)
	USB	For connection between computer and servo drive to facilitate commissioning and tuning
Others	Button	Five buttons
	LED display	Five 8-segment LEDs
	Power indication	CHARGE indicator
	STO function	General STO function, standard configuration
General functions	Automatic adjustment	The host computer outputs an action command to run the motor, during which the load's moment of inertia ratio is estimated in real time and the rigidity level is automatically set.
	Switchover of multiple control modes	Position mode; speed mode; torque mode; position/speed mode switchover; speed/torque mode switchover; position/torque mode switchover; fully closed-loop control; EtherCAT mode
	Pulse frequency division	Arbitrary frequency division
	Protection function	Overvoltage, undervoltage, overcurrent, overspeed, stall, overheat, overload, encoder abnormality, input phase loss, output phase loss, excessive position deviation
	High-frequency vibration suppression	4 sets of notch filters, suppressing the vibration from 0 to 4000 Hz; 1 set of speed reference notch filter from 0 to 1000 Hz
	End vibration suppression	Two sets of filters for the suppression of low-frequency end vibration between 1 and 100 Hz
	Homing mode	Multiple homing modes
	Gantry control	Gantry synchronization
	Reverse clearance compensation	Used to minimize the response delay when the traveling direction of the machine is reversed
	Mechanical analyzer	Used to analyze the frequency features of the mechanical system via the host computer software
	Inertia identification	Offline and online identification of system inertia
	Torque observer	Load torque observation and compensation
	Friction compensation	System friction compensation

# Host Computer Software



# Servo Drive Model

M6 - L S 5R5 A - XX

① ② ③ ④ ⑤

## ① Product series

M6-L: M6-L series for direct drive motors

## ② Voltage class

S: 220 V  
T: 380 V

## ③ Rated current

1R6: 1.6 A    8R4: 8.4 A  
2R8: 2.8 A    012: 11.6 A  
3R5: 3.5 A    012: 11.9 A  
5R4: 5.4 A    017: 16.5 A  
5R5: 5.5 A    021: 21 A  
7R6: 7.6 A    026: 26 A

## ④ Size

A: Standard version  
B: Small size version

## ⑤ Software

Null: Standard version  
XX: Non-standard version

# Servo Drive Electrical Specifications

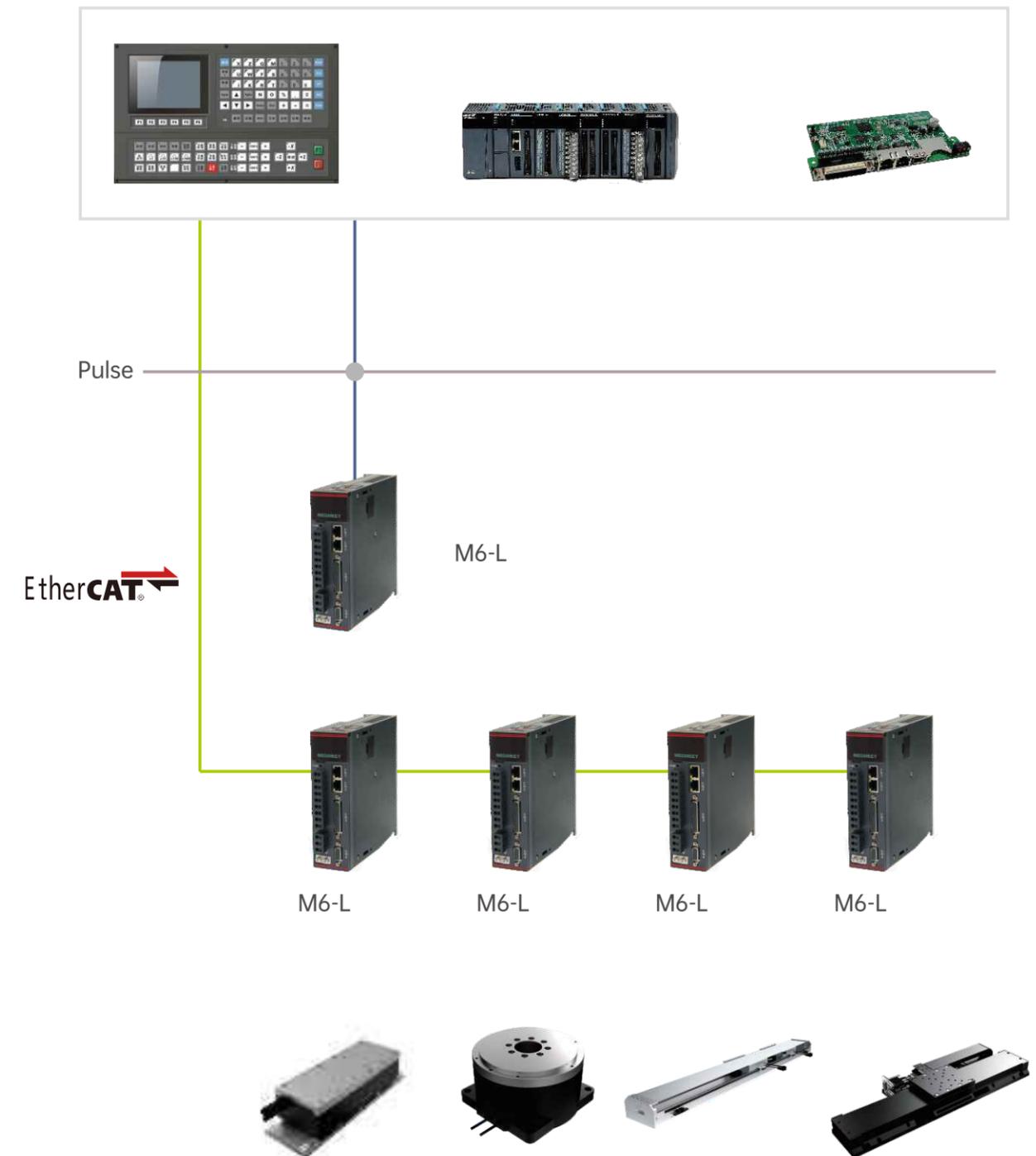
## 220 V servo drive models and electrical specifications

Voltage class	220 V					
Model	LS1R6A	LS2R8A	LS5R5A	LS7R6B	LS7R6A	LS012A
Power class	200 W	400 W	750 W	1 kW	1 kW	1.5 kW
Size	SIZE A			SIZE B		
Phase	Single-phase		Single/ three-phase	Three-phase		
Rated input current (A)	2.2	4.0	7.6/4.2	5.1	5.1	8.0
Rated output current (A)	1.6	2.8	5.5	7.6	7.6	11.6
Max. output current (A)	5.8	9.3	16.9	17.0	22.0	28.0
Main circuit power supply	200 to 240 V, -10% to +10%, 50/60 Hz			200 to 240 V, -15% to +10%, 50/60 Hz		
Control circuit power supply	Single-phase, 200 to 240 V, -15% to +10%, 50/60 Hz					
Braking resistor	No built-in braking resistor			Built-in braking resistor		

## 380 V servo drive models and electrical specifications

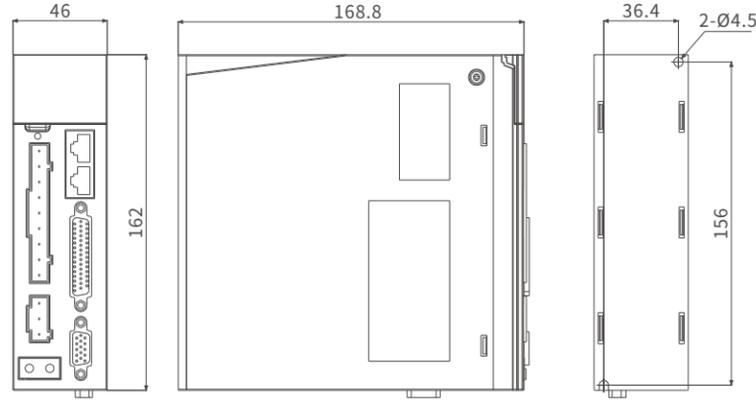
Voltage class	380 V						
Model	LT3R5A	LT5R4A	LT8R4A	LT012A	LT017A	LT021A	LT026A
Power class	0.85 kW	1.3 kW	2.0 kW	2.9 kW	4.4 kW	5.5 kW	7.5 kW
Size	SIZE B			SIZE C			
Phase	Three-phase						
Rated input current (A)	2.4	3.6	5.5	8.0	11.6	15.0	19.7
Rated output current (A)	3.5	5.4	8.4	11.9	16.5	20.8	25.7
Max. output current (A)	8.5	14.0	22.0	28.0	42.0	55.0	65.0
Main circuit power supply	Three-phase, 380 to 440 V, -15% to +10%, 50/60 Hz						
Control circuit power supply	Single-phase, 200 to 240 V, -15% to +10%, 50/60 Hz						
Braking resistor	Built-in braking resistor			No built-in braking resistor			

# System Overview

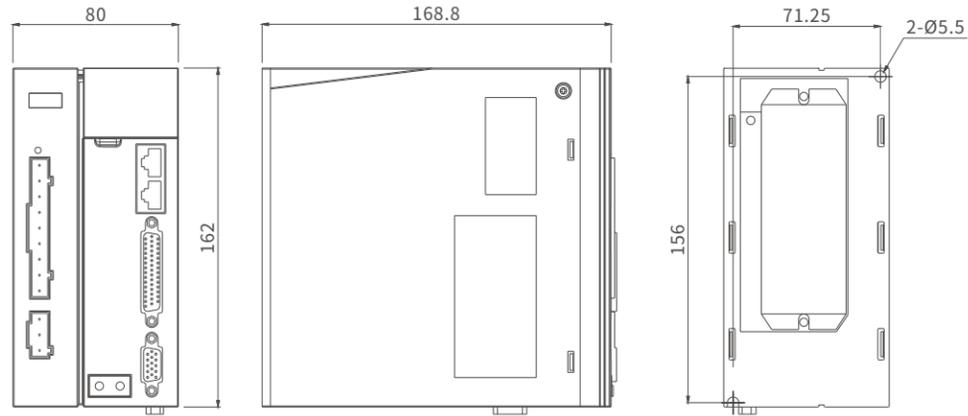


# M6-L Outline & Dimensions

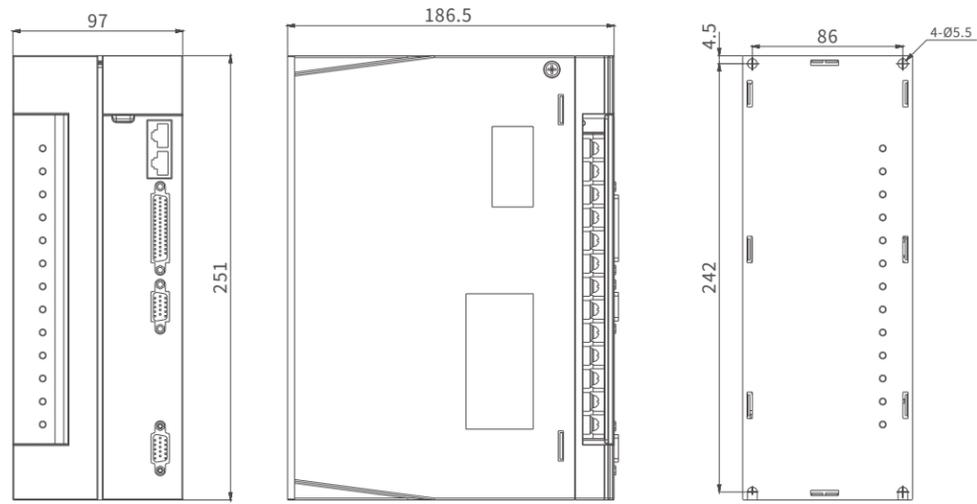
SIZE A



SIZE B



SIZE C



## Industrial Automation Solutions

