

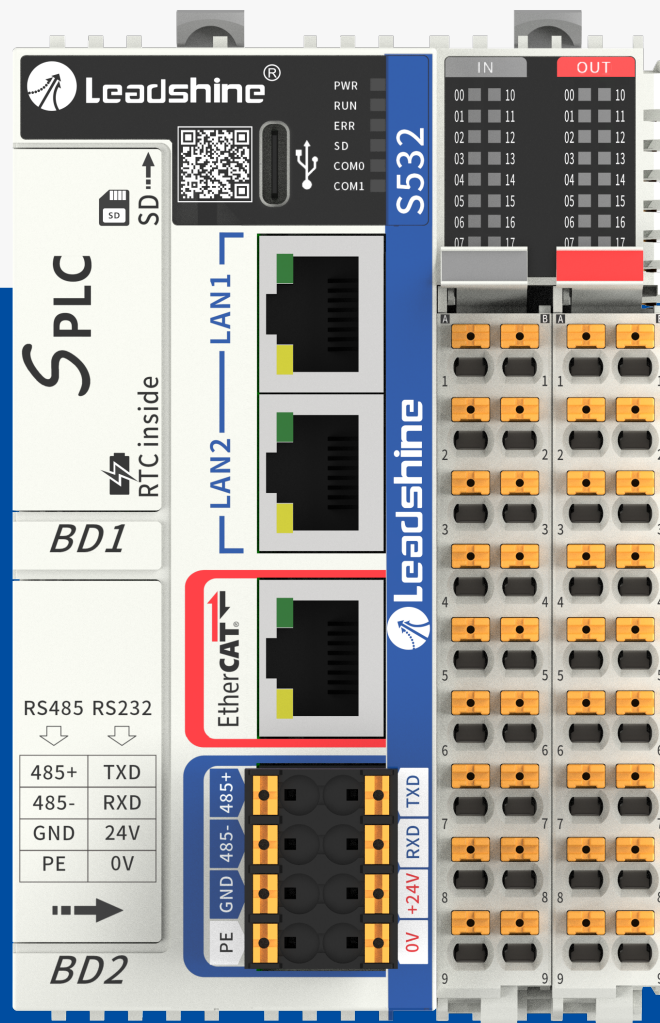


# Leadshine

Stock Code: 002979

# S-Series

## General Purpose Compact PLC





● Headquarters in Shenzhen



● Shanghai Intelligent Industry Park



● Production base in Shenzhen

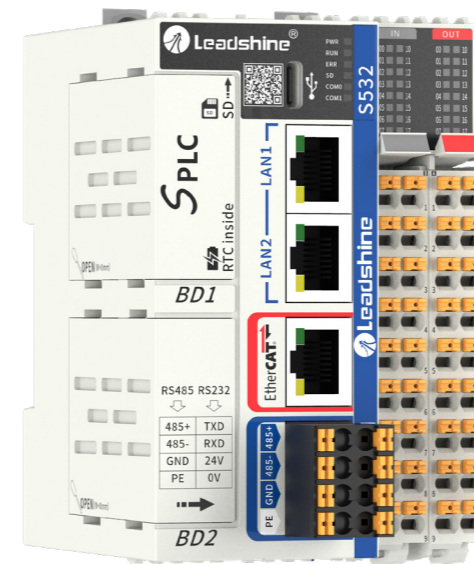


● R&D and production base in Dongguan

- 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

**29+** History  
**500+** R&D Engineers  
**1400+** Global Partners  
**200/40** AgentChannel  
**20+** GlobalSales Offices  
**30million+** Installed Axes

## Product Profile



### S Series Compact PLC

The Leadshine S Series includes the S1, S2, S3, S5, S6 series and R3S Series remote modules, specializing in motion control applications. This series is suitable for small to medium-sized automation scenarios such as temperature control, analog signal processing, and multi-functional communication.

The S Series supports 8 to 64 EtherCAT bus axes and 127 EtherCAT slaves, equipped with 2 to 6 high-speed counters/2 to 6 local pulse axes.

Compliant with IEC 61131-3 standards, it offers six programming languages and enables process encapsulation and reuse through FB/FC functions.

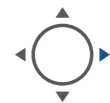
Equipped with RS485, RS232, and two Ethernet ports, it supports multi-level network communication.

## Product Orientation



## Product Features

### Motion Control



- Up to 64-axis EtherCAT bus
- 6-channel high-speed pulse axis

### Advanced Performance



- Quad-core processor, Up to 1.6Hz
- Nanosecond-level instruction speed
- 32-axis 1ms bus cycle

### Multiple Protocols



- 2-channel EtherNet, EtherCAT, RS485, RS232
- Dual BD blocks(Expandable to 32 modules)
- Type-C/SD card
- Web Visualization, MQTT, OPC UA, Modbus, EtherNet/IP

### Feature-Rich



- Point-to-point, interpolation, synchronization, Speed / position adjustment during motion
- E-Cam / Gear, G-code, DXF File, Look-ahead
- Chasing shear, Flying shear, External interrupt, Touch Probe, PWM.

## STRONG

FOR Superb Motion Control, support E-Cam / Gear, G-code, DXF File, Look-ahead, Delta and SCARA robots.

## SMALL

Compact design with support for multi-type modules, high-precision algorithms such as probing and interrupts, and multiple protocols.

## SIMPLE

Program structure optimization, algorithm optimization, integration of industry-specific process algorithm libraries, enhancing software usability.

## SLIM

Slim and compact design saves installation space, with a right-side expansion module as thin as 12mm.

## Unique advantages of S-series PLC

### Smart Storage

- Integrated SD card slot enables integrated management of programs, data, and expansion. It records status and data, ensuring safer production operations.

### Extreme Expansion

- Mini BD modules support more expansion access.

### Superior Axis Control

- Comes with 8 - 64-axis ECAT bus axis control, leading in the same industry.

### Color Partitioning

- Color-functional modular layout reduces misoperation by 30% and cuts channel costs.

### High-Recognition Terminals

- Adopts chrysanthemum yellow crimp terminal design, allowing quick identification in dim environments.

### High-End Integration

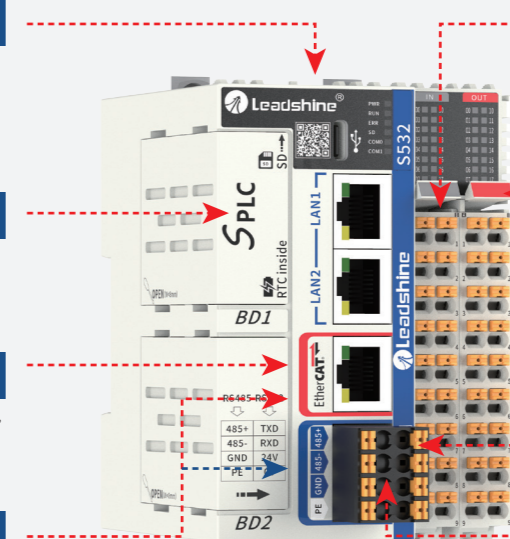
- The main unit comes with 16-in/16-out I/O interfaces. Among products of the same type, it offers the best cost-effectiveness.

### All-Purpose Interfaces

- The main unit has built-in 485 and 232 dual-communication interfaces, enabling direct connection to instruments/HMIs without communication expansion, reducing costs.

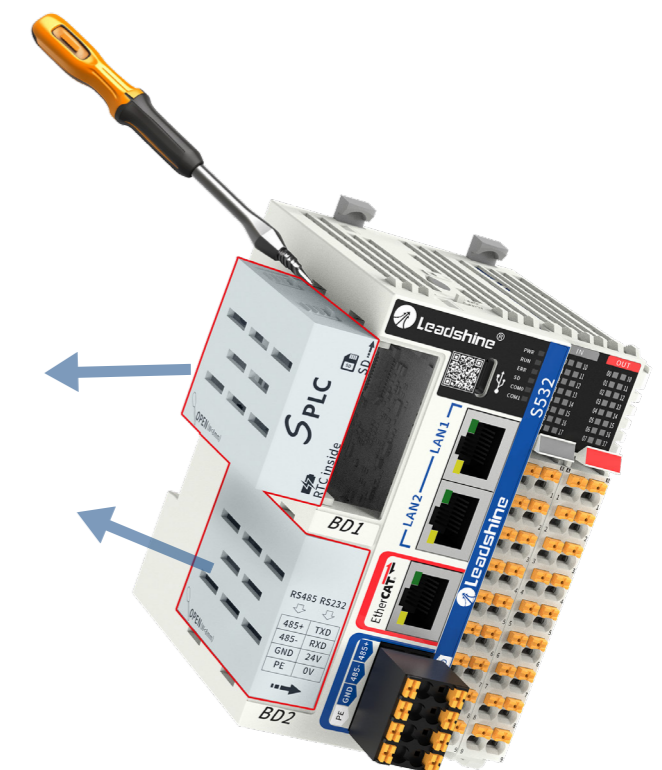
### Precision Clock

- Equipped with a built-in RTC real-time clock for accurate fault recording and timing control.



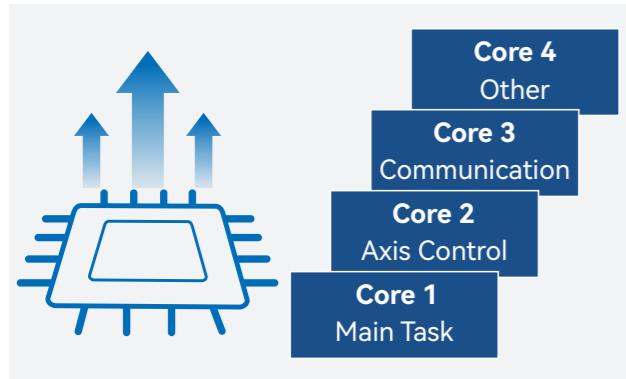
## BD Expansion

Model	Specification
S-0400-BD	4-channel input, NPN/PNP
S-0004-N-BD	4-channel output, NPN
S-2AD1DA-VI-BD	2-channel analog input (I/V); 1-channel analog output (I/V); Range: 0~5V, 0~10V, 0~20mA, 4~20mA; Accuracy: 12-bit
S-CAN-485-BD	1 channel RS485, 1 channel CAN, with isolation
S-232-485-BD	1 channel RS232, 1 channel RS485, with isolation
Blank	Non-analog Type

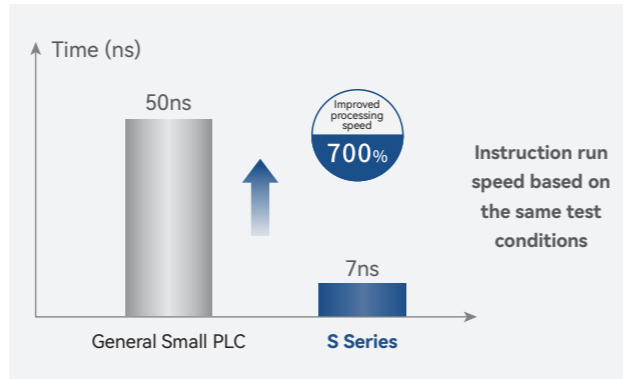


## Quad-core processor

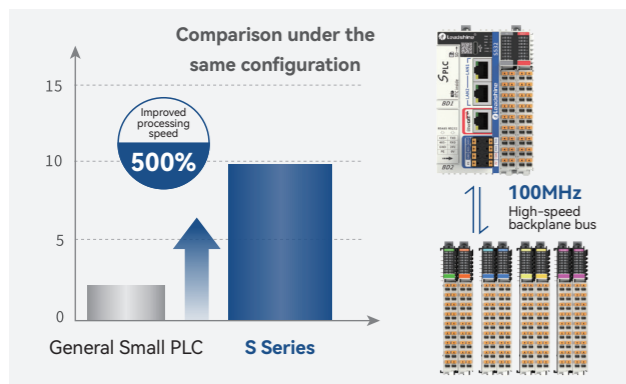
Command operation as fast as 7ns, 100 MB high-speed bus, to ensure high-speed synchronization of the module and host data, up to 64 axes bus +127 distributed slaves, suitable for high-precision, high-speed complex automation control application scenarios.



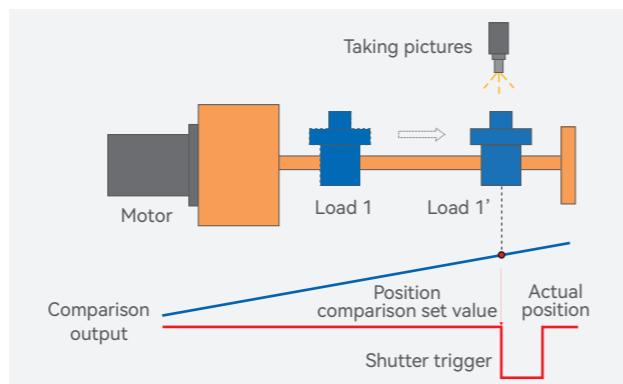
Supports Multitasking Features for Improved Performance



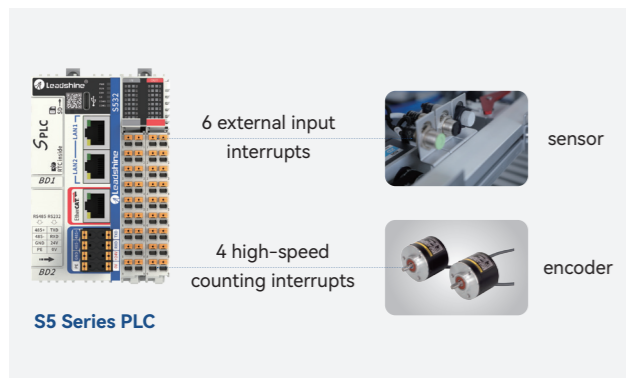
Nanosecond Command Operations



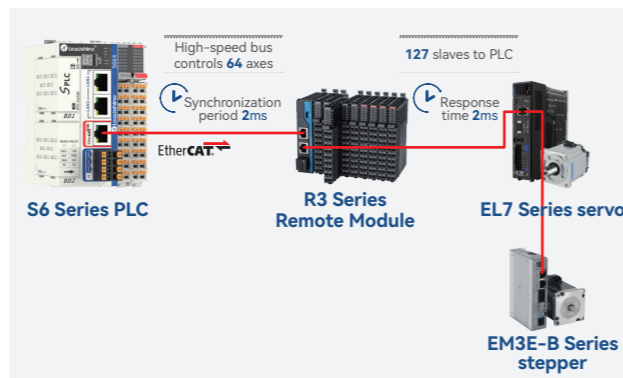
IO Module Bus Refreshes as Fast as 125us



8-channel High-speed Position Comparison Output



Interrupts: 6 Channels External Input, 4 Channels Encoder



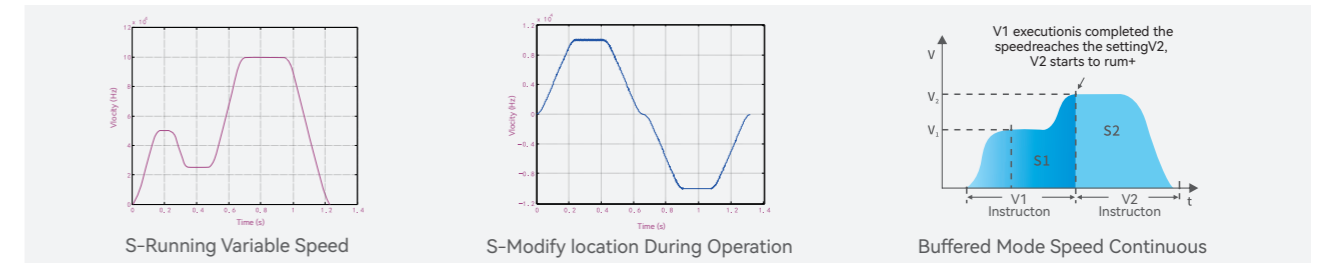
64 Axes Ethercat Bus Or 127 Slaves Minimum Synchronization Period 2ms

## Motion control

Support point-to-point, interpolation, synchronous control, online variable speed shift and other functions, also supports the probe, external interrupt, PWM, look-ahead and other functions, to realize the complex process, to make the process more efficient.

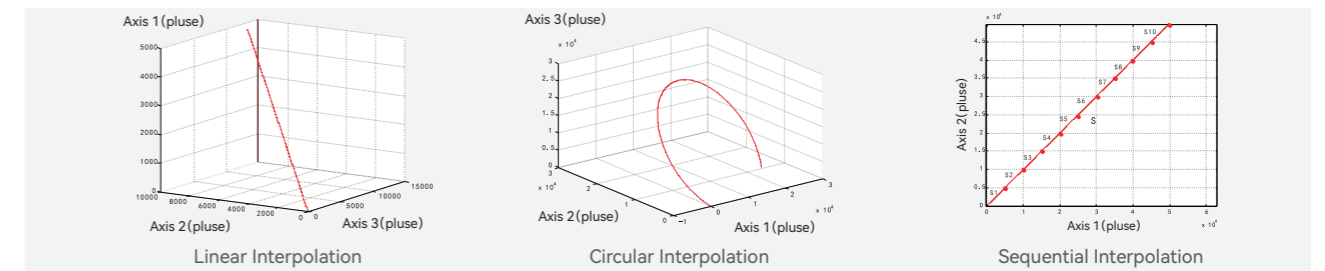
### Adjusting speed or position during operation

Suitable for application scenarios of continuous trajectory control, supporting the function of continuous transition of speed.



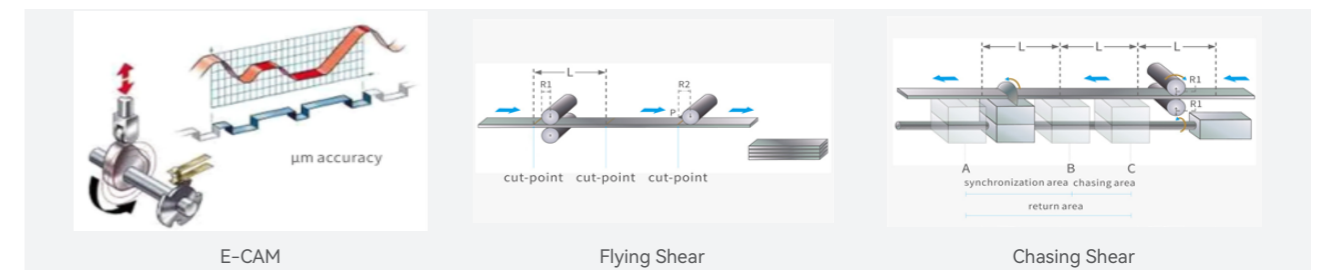
### 6-axis linear /3-axis circular/6-axis continuous interpolation

Planar and spatial multi-dimensional linear interpolation, circular interpolation and continuous interpolation functions, suitable for high-precision, high-speed positioning, multi-axis trajectory linkage application scenarios.



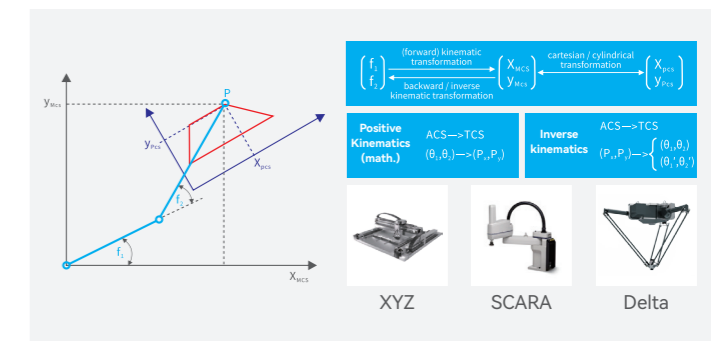
### E-CAM

Electronic cam function, widely used in filling, capping, die-cutting, pillow packaging, cutting and other industries.



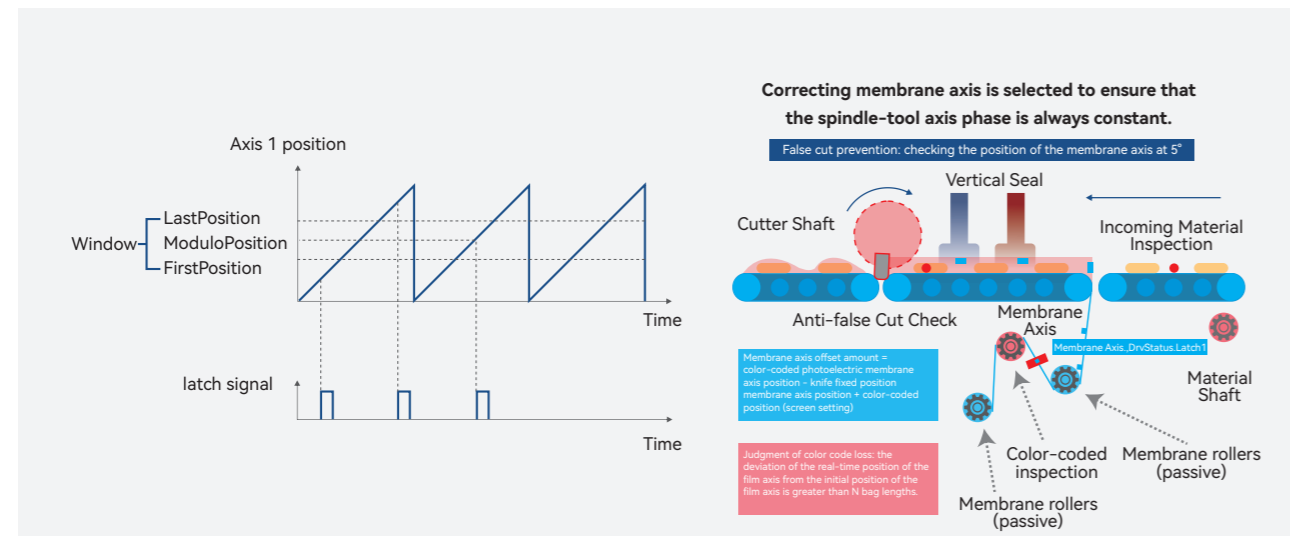
### Robot modeling algorithms

Supports PCLopen Part4 standard function blocks and integrates a variety of standard robot models, such as gantry robots (2/3/5-axis), three-legged robots and SCARA robots.



## Probe function

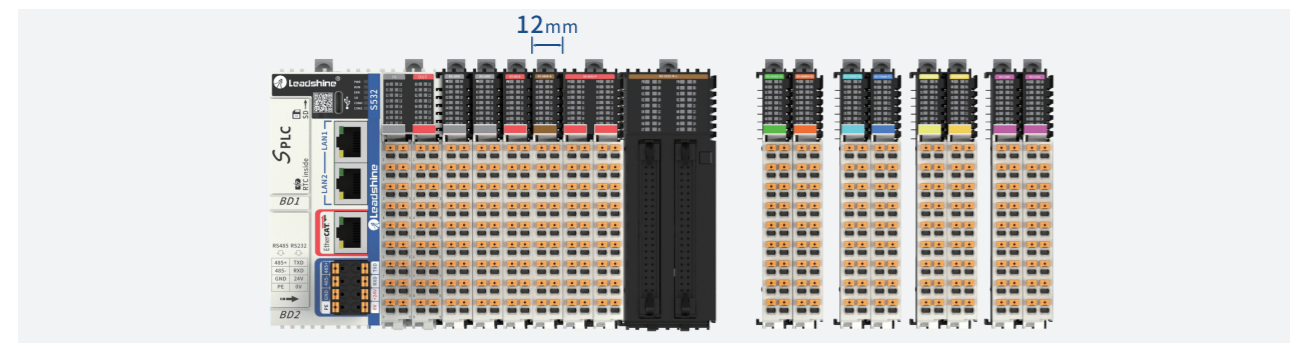
The S series PLC supports probe latching functionality, which can latch the position value of the servo axis or PLC in real time through changes in external input signals, enabling color mark tracking, correction, and anti-miscut technology to meet the complex synchronous control requirements of industries such as 3C, lithium batteries, printing and packaging, and special machine tools.



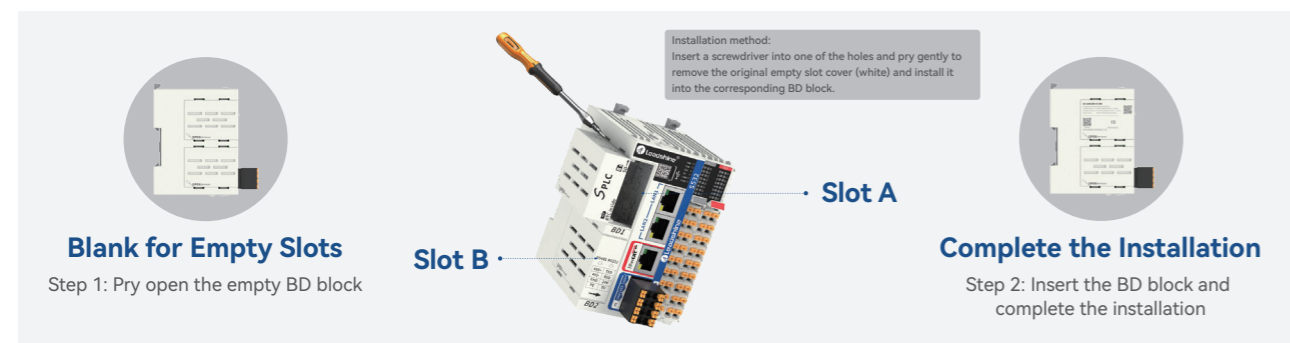
## Ultra-slim and compact

High-end appearance, rich features, standard with RJ45, RS485/RS232 serial port, Type-C, SD card slot, etc., support up to 2 BD block expansion, can be right to expand 32 modules.

## Ultra-thin design



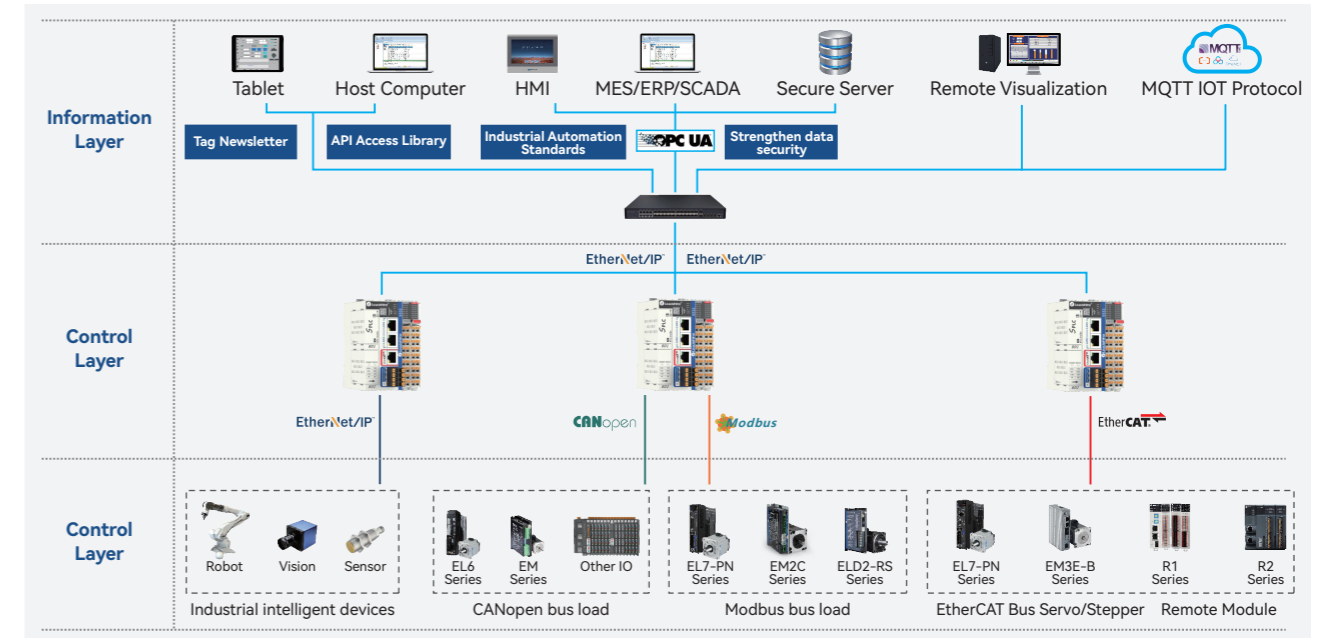
## 2 BD Board modules



## Flexible architecture supporting different communicate protocols

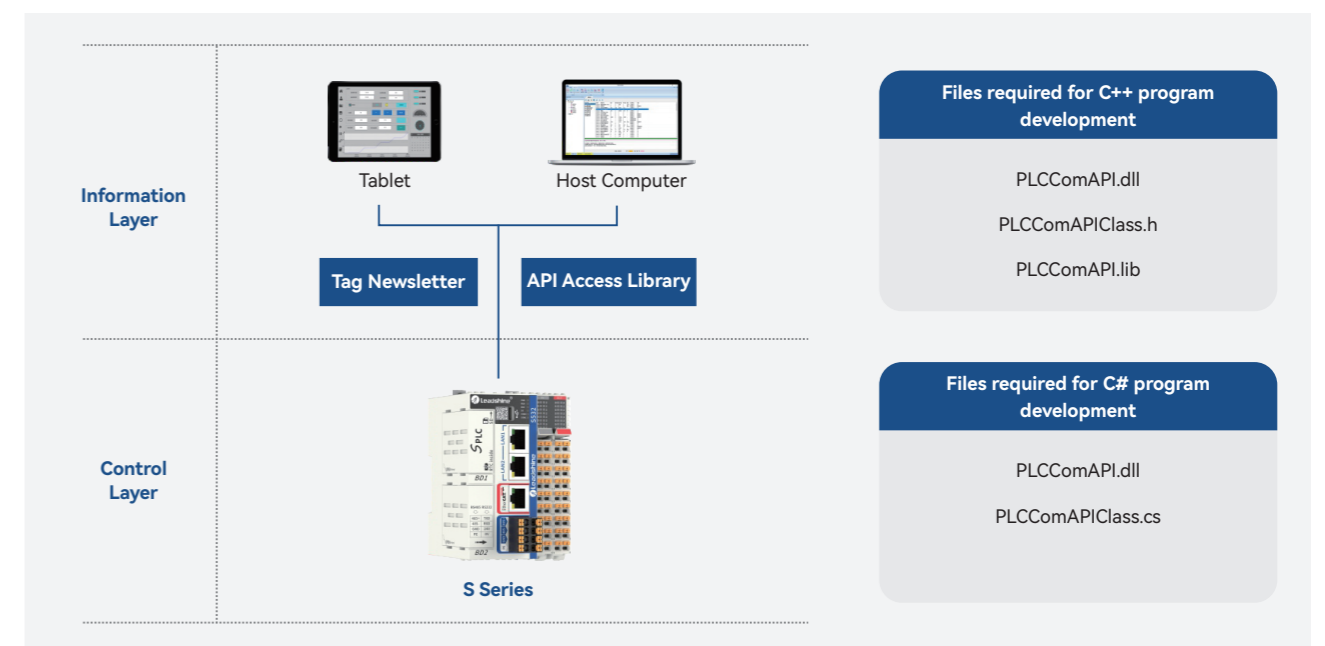
### Connection to MES systems

Support EtherNet/IP, OPC UA, EtherCAT, Modbus TCP/RTU and other main industrial communication protocols, can be quickly accessed to the MES / ERP system, to achieve the depth of the integration of IT and OT, to help the production site information management.



### API Tag communication

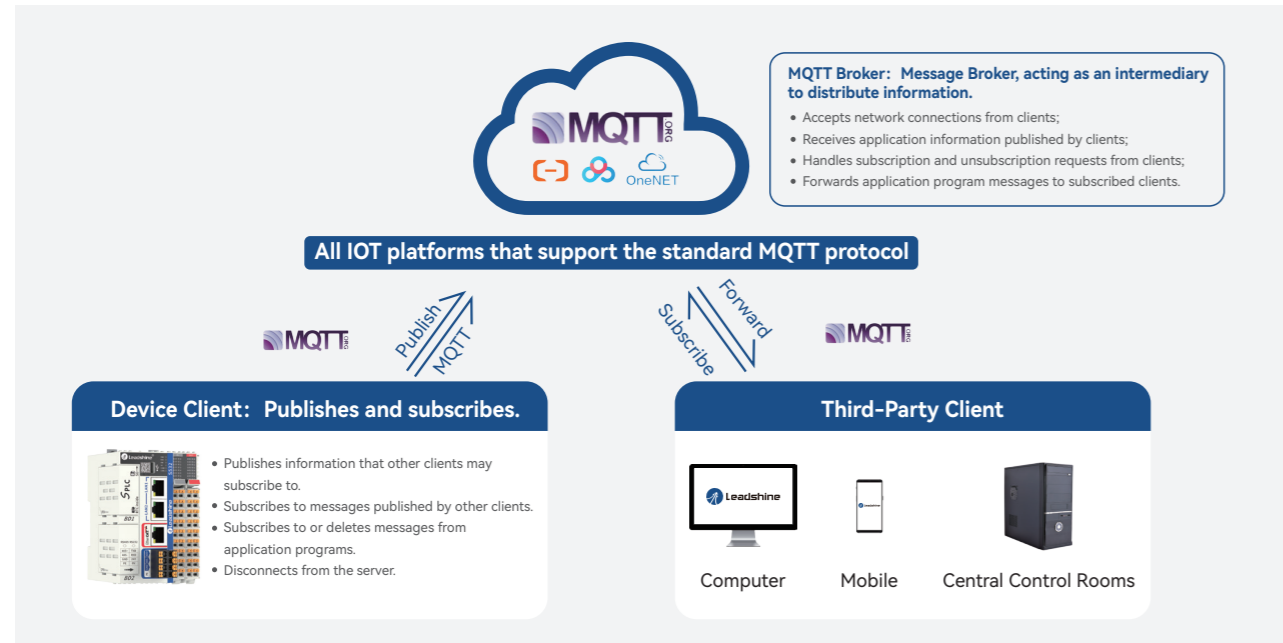
Support tag communication API access library, directly read and write variables in PLC, no need to analyze the underlying communication protocols, to achieve PLC and third-party host computer (terminal APP, etc.) communication.



## Digital information management (DIM)

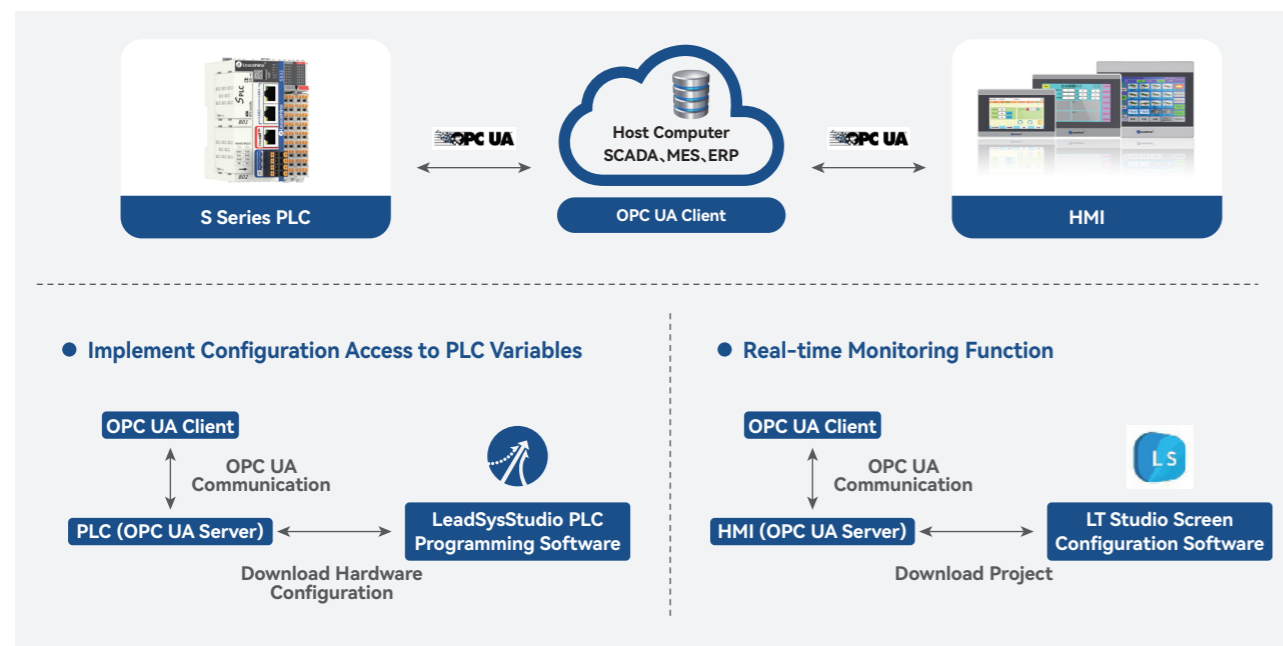
### IOT MQTT protocol

The S-series PLC supports the MQTT protocol, ensuring secure and stable data exchange between devices. Meanwhile, it can package the IoT models of devices as a whole and synchronize them to the information cloud system in a secure and stable manner, enabling digital management and maintenance.



### OPC UA Realizes production line informatization

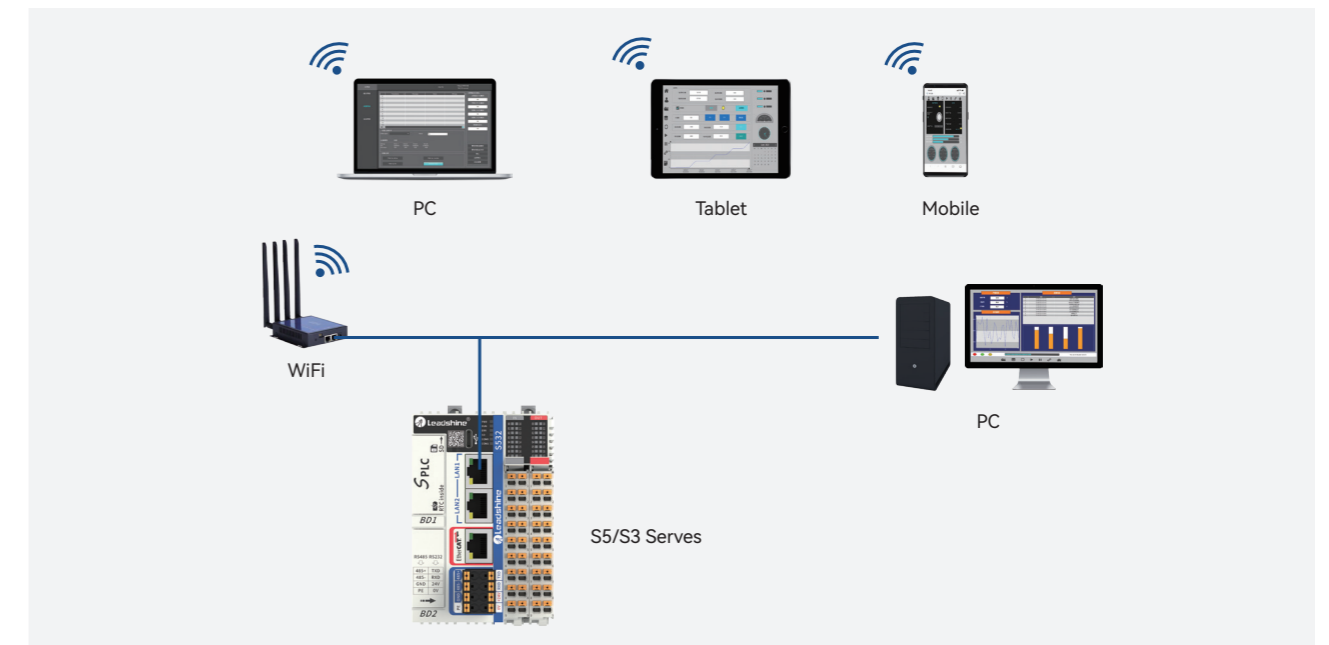
The OPC UA protocol specifies a specific operating system, supporting Windows, Linux, real-time operating systems or mobile operating systems (Android or ios), etc. It is suitable for cross-layer data exchange, using a simple client/server mechanism for communication.



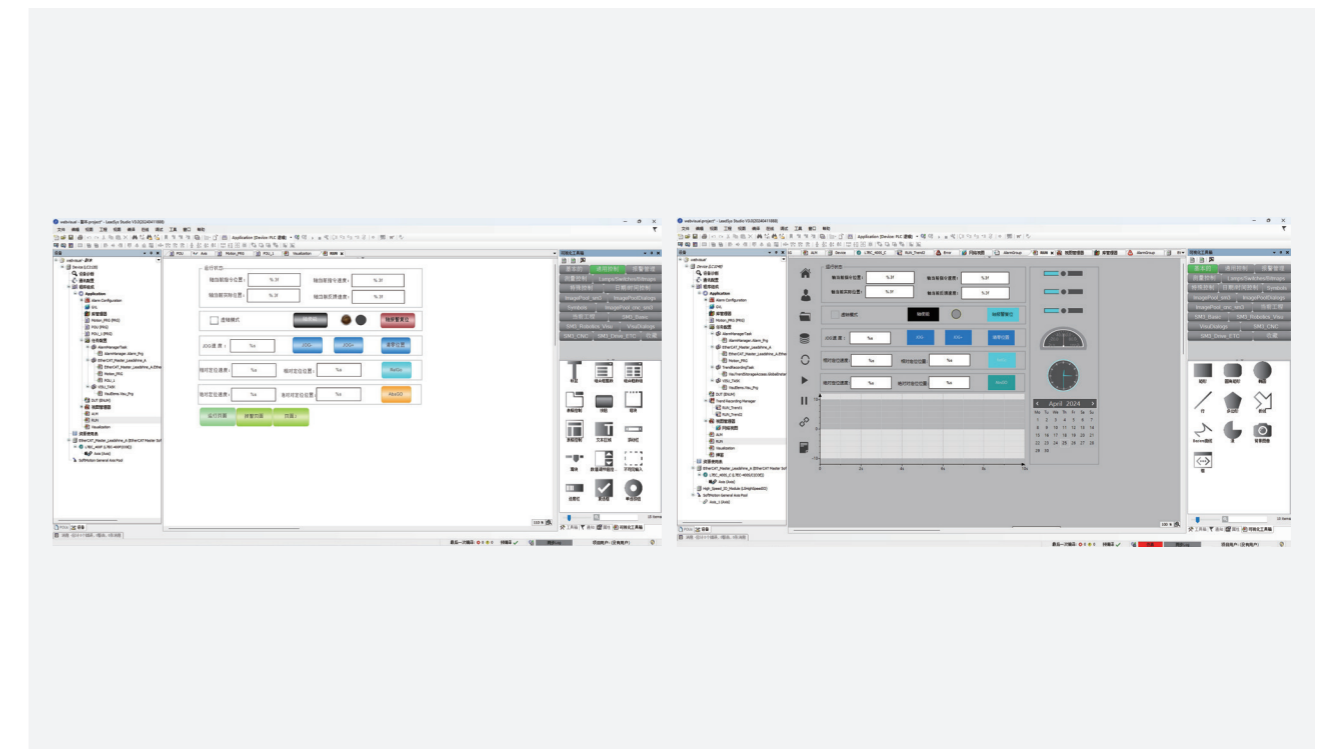
## Remote monitoring of field device information

Support PC, smart phone, pad and other terminals to access the configuration page. web visualization function is compatible with Microsoft Edge, Google Chrome, AppleSafari and other browsers, support multi-browser connection at the same time.

### Web visualization



### Configuration HMI



**4 Smart Storage**

- 32 EtherCAT axis
- 127 Bus Slaves

**5 Motion Controls**

- E-Gear, E-CAM, G-Code, Interpolation/Flying Capture External Interrupt/ Web Visualization
- Touch Probe

**6 Dual EtherNET**

- Support EIP protocol
- Modbus protocol

**7 BD Expansion**

- 2 BD expansion ports
- Support CAN bus module
- RS485\RS232\Digital\Analog

**8 Type-C Ports**

- Support USB flash drive, Program debugging

**9 Small Space**

- CPU 68mm
- IO Module 12mm

**3 Security**

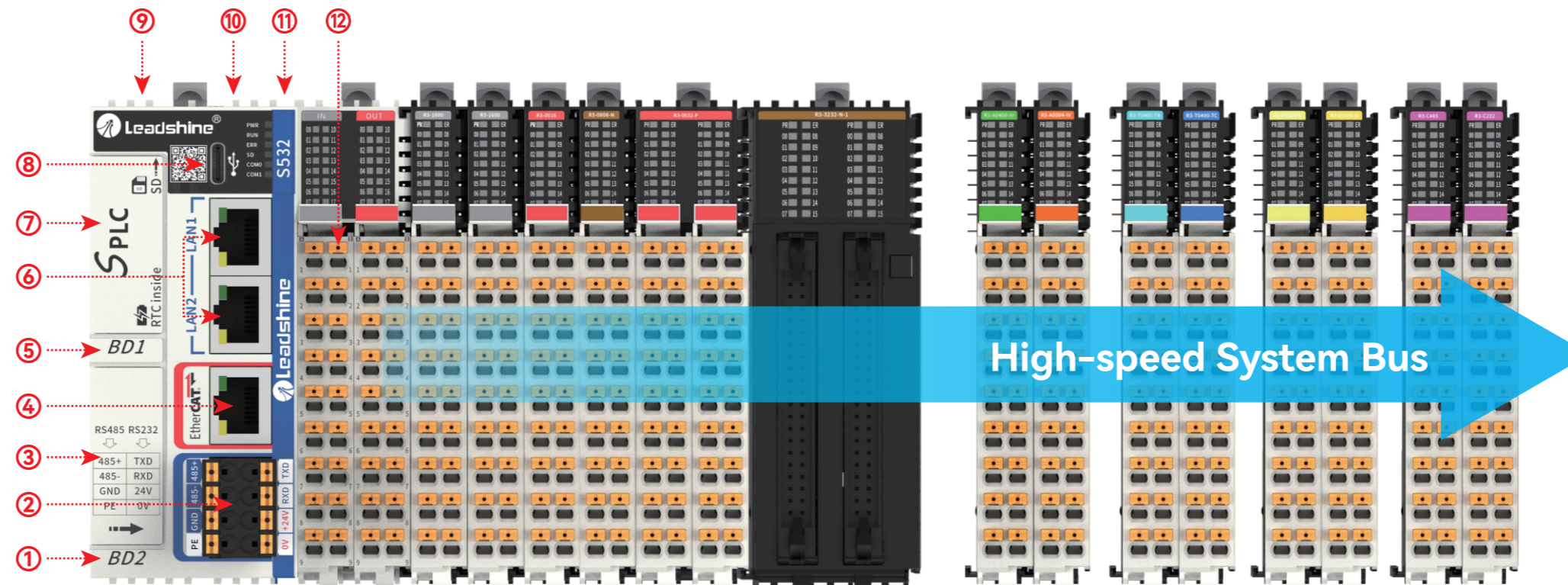
- Programmable ID authentication
- Users access rights configuration

**2 RS232/RS485**

- Modbus-RTU
- Free Protocol

**1 Data Storing**

- No batteries required, permanent data retention



**10 SD card**

- Support 32G
- File read/write, backup/ firmware upgrade

**Bus**

- 100M data exchange
- Supports 32 R3 module expansion

**11 RUN/STOP/RESET**

- RUN/STOP switch with built-in reset function
- 5-toggle IP restoration

**12 Pulse/Encoder**

- 6 pulses
- 6 encoders

**CPU**

- Quad-core processor
- Basic instruction 7ns
- Procedure 16M
- Data 32M
- Keep 512K

**Digital Modules**

- 16/32 IO
- NPN or PNP Output
- ON/OFF time: 20us/50us
- Relay: 8 channels
- supports up to 2048 I/O

**Analogue Modules**

- 4 channels I/O
- Voltage and Current
- 1ms/4 channels
- 16-bit resolution

**Temperature Modules**

- 4 channels input
- Thermocouple/RTD;
- PID support;
- 24-bit resolution;

**Encoders**

- 2 channels input
- Supports 24V ABZ and 5V differential signals; 1/2/4x AB/CW/CCW

**Com port**

- RS485/RS232;
- Modbus RTU/RS Up to 31 slaves

100M R-Link BUS communication protocol

A single coupler can carry up to 32 modules

EtherCAT / EtherNet/IP

## Product naming rules

**S 5 32 - 1616 - N - □□□**

Series	
S	Compact PLCs

Function series	
S1	Economical type
S2	Basic Type
S3	Trajectory Type
S5	EtherCAT Type
S6	Enhanced Type

Number of Motion/EtherCAT			
Blank	Non-axial output	Blank	Non-axial output
2	2 Axis	12	12 Axis
4	4 Axis	16	16 Axis
6	6 Axis	32	32 Axis
8	8 Axis	64	64 Axis
10	10 Axis		

Terminal	
Customized Models for Special Applications	

Output type	
N	NPN
P	PNP

Built-in I/Os	
0808	8DI / 8DO
1616	16DI / 16DO

**R3 - □ 16 16- □ - XXX**

Series	
SC	Economic
PM	General
R3	Ultra-thin

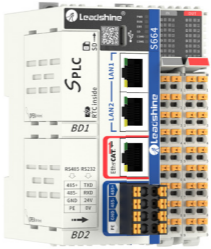

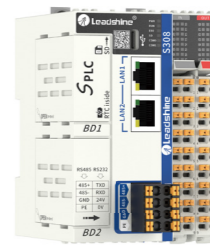
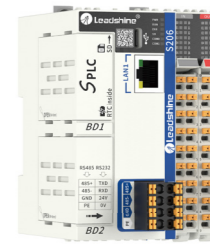
Terminal	
Blank	Spring Type Terminal
1	MIL terminal
2	Fujitsu terminal

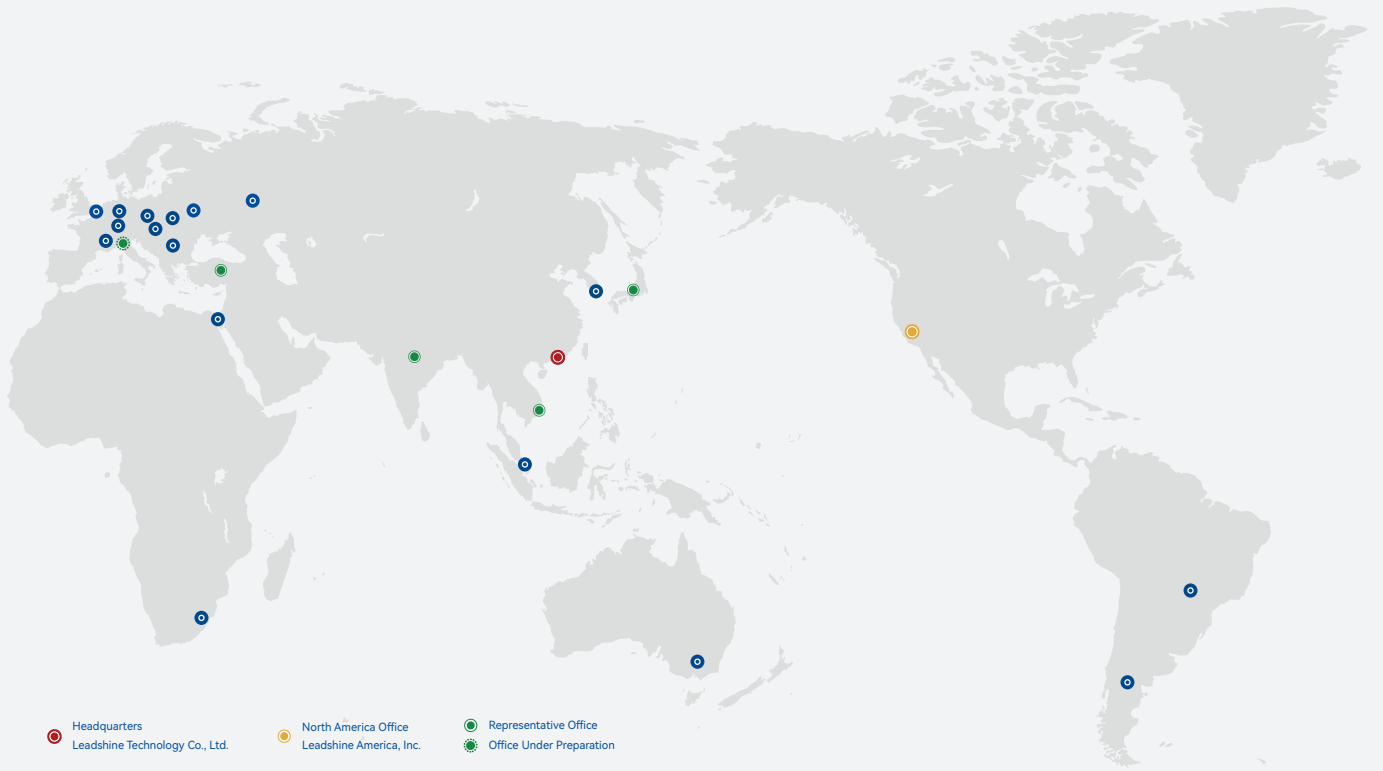
I/O Type	
Blank	Digital
A	Analog
E	Encoder
T	Temperature
RS	Serial
P	Pulse
L	Weigh

Input Channels		Output Channels	
00	No channel	00	No channel
08	08 channels	08	08 channels
16	16 channels	16	16 channels
32	32 channels	32	32 channels

I/O Feature			
N	NPN	R	Relay
P	PNP	D	Differential
I	Current	S	Single-ended
V	Voltage	485	RS485
COM	RS232/RS485/RS485		

## Selection hart

Model	Specification	S6****-1616-N	S5****-1616-N	S3****-1616-N	S2****-1616-N
Appearance					
Certification		CE	CE	CE	CE
Dimensions (W×H×D)		68×99.5×105.6	68×99.5×105.6	68×99.5×105.6	68×99.5×105.6
CPU		Quad-core processor 1.6GHz	Quad-core processor 1.2GHz		
Input power supply		DC24V, support short circuit / reverse connection protection			
Built-in I/Os & Transistor output type		16 inputs (NPN / PNP), 16 outputs (NPN)			
Motion axis		6 pulse control axis		4-8 pulse control axis	
Expansion I/O modules (R3S)		32			
Expansion slots (BD)		2, support communication / digital IO / analog IO			
EtherNet		2 ports Modbus TCP up to 32 slaves Ethernet/IP scanner / adapter			1 ports Modbus TCP up to 32 slaves Ethernet/IP scanner / adapter
EtherCAT		32-64 axes EtherCAT	8-32 axes EtherCAT	----	
Serial communication		1×RS485, 1×RS232		2×RS485	
CAN communication		Support 2×RS232/485 expansion Support free protocol, Modbus RTU/ASC 32 slaves (recommended)			
CAN communication		1 (BD expansion card), supports CANbus/CANopen master/slave (up to 62 slaves)			
Program storage		16Mbyte		10Mbyte	
Data storage		32Mbyte (of which 512kbyte support power-down hold)		20Mbyte (of which 256kbyte support power-down hold)	
Encoder axis		6 chanel encoder axis (12 × high speed inputs, up to 200kHz); Supports AB phase, pulse + direction, CW/CCW, single-phase counting mode		4 chanel encoder axis (8 × high speed inputs, up to 200kHz);	
Program language		ST,LD,CFC,SFC FBD,IL (supports encryption functionality)			
EtherCAT slaves		Up to 127 EtherCAT slaves		----	
Communication cycle		1ms cycle 16-axis synchronization		----	
Other interfaces		Type-C (supports non-powered program debugging), RUN / STOP, SD card			
Program software		Leadsys Studio, CODESYS V3.5 (SP18 / 19 / 20 / 21)			



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