



PRODUCT SPECIFICATION

EM300



Chengdu Zongheng Intelligence
Control Technology Co., Ltd.

前言 PREFACE

Intended Use

This product (EM Series FlowPLC® Edge Computing Gateway) is only for use as specified in relevant technical documents. Proper transport, storage, assembly, installation, commissioning, operation, and maintenance are required for safe, reliable operation. Ensure permissible environmental conditions (e.g., temperature, humidity, supply voltage). Observe all notices in this specification and related documents.

Qualified Personnel

Only qualified personnel may operate the products/systems described. Operators must strictly follow the accompanying documents, especially safety and warning notices. With relevant training and experience, qualified personnel can identify potential risks and avoid hazards.

Reliable Grounding and Connection

During operation, the protective earth terminal (PE/M) must be reliably grounded. Improper grounding or connection may cause malfunction, data loss, or injury. Always follow the wiring requirements in this specification and periodically check connection reliability.

Disclaimer

We assume no liability for loss or error arising from use of this document. Consistency with actual hardware and software has been checked, but deviations may exist; complete consistency is not guaranteed. All data tested per regulations. We reserve the right to improve and correct function and performance descriptions in later versions. Watch for document updates.

Revision History

Revision	Date	Description
V1.0	April 2026	First release

Scope of Document

This document applies to Zongheng Intelligent Control EM Series products, mainly including:

- Communication Coupler: EM300

Specific configuration subject to product model and order number.

Recycling and Disposal

To ensure environmentally compliant recycling, do not dispose of waste equipment with household waste. Contact a certified e-waste disposal service or follow local regulations. Recycle modules containing batteries (e.g., RTC batteries) separately.

产品介绍 PRODUCT INTRODUCTION



- [Snap-on Modular Expansion](#)
- [Extensive Protocol Support](#)
- [Remote O&M](#)
- [Power-loss Protection](#)
- [Store-and-Forward](#)
- [Visual Programming](#)
- [JavaScript Custom Development](#)

The EM Series is Zongheng Intelligent Control's **new generation of expandable edge computing gateways** (FlowPLC[®]). Built on a **distributed I/O architecture**, it deeply integrates **communication, acquisition, control, and O&M**, breaking traditional hardware boundaries. The EM300 features an **RK3506J** triple-core processor, dual 4G SIM, Ethernet, Wi-Fi 6, and multiple industrial interfaces, with **extensive PLC and industrial protocols**, easily meeting multi-source data acquisition and reliable connectivity needs in power, environmental protection, manufacturing, building automation, and more.

With **modular I/O expansion**, digital, analog, and relay functions are flexibly combined for **plug-and-play ease, second-level assembly, and millisecond response**. Together with visual programming, remote management/upgrade, intranet penetration, and store-and-forward, it enables efficient "**acquisition-transmission-control-operations**" integration. From **edge acquisition and control, protocol conversion**, to **remote O&M and cloud connectivity**, the EM Series delivers high integration and adaptability, accelerating IIoT deployment and continuous scaling.

产品规格 PRODUCT SPECIFICATION

Model		EM300
Core Configuration	Processor	RK3506J
		3 × Cortex-A7 @ 1.2 GHz
	RAM	512 MB
	Storage	4 G
	Storage Card	Micro SD slot, up to 32 GB
	RTC	√ (Replaceable Battery)
4G	Module	Quectel Cat.1 (4G)
	Frequency Bands	LTE-FDD: B1/B3/B5/B8 LTE-TDD: B34/B38/B39/B40/B41
	Transmit Power	LTE-FDD: Class 3 (23 dBm ±2 dB) LTE-TDD: Class 3 (23 dBm ±2 dB)
	Bandwidth (theoretical max.)	LTE-FDD: DL ≤10 Mbps, UL ≤5 Mbps LTE-TDD: DL ≤8.96 Mbps, UL ≤3.1 Mbps
	SIM	SIM0: Embedded SIM, SIM1: Nano SIM
Wi-Fi	Standard	802.11a/b/g/n/ac/ax (Wi-Fi 6)
	Band	Dual-band (2.4 GHz + 5 GHz)
	Mode	STA + AP
	Theoretical Speed	433 Mbps
	Optimal Range	10 m
	Max. AP Clients	20
Ethernet	WAN	1 × 10/100 Mbps auto-negotiation
	LAN	2 × 10/100 Mbps auto-negotiation
USB	Type-C	USB 2.0
RS485	Ports	4
	Terminal	A, B
	Baud Rate	2400 – 921600 bps
	Data Bits	7, 8
	Stop Bits	1, 2
	Parity	NONE, EVEN, ODD
	Protection	Full isolation, ESD, surge protection
DI	Ports	2
	Terminal	DI × 2, COM × 2
	Input Type	NPN/PNP
	Detection Range	12 V / 24 V
	Protection	Full isolation, ESD, surge protection
DO	Ports	2
	Terminal	NO × 2, COM × 2
	Output Type	Relay output
	Load Capacity	0.6 A @ 125 VAC, 2 A @ 30 VDC
	Mechanical Endurance	10 ⁶ operations
	Electrical Endurance	10 ⁵ operations
	Protection	Full isolation, ESD, surge protection

产品规格 PRODUCT SPECIFICATION

Electrical	Certification	CE
	UPS	Power-loss protection time: 10 s
	Adapter	12 V / 1 A
	Operating Voltage	9 – 36 V
	Operating Current	200 mA @ 12 V
Environmental	Operating Temperature	–40 to 85 °C
	Storage Temperature	–40 to 85 °C
	Operating Humidity	0 – 95% RH (non-condensing)
	Storage Humidity	0 – 95% RH (non-condensing)
Mechanical	Dimensions	53 × 100 × 80 mm
	Enclosure Material	PC
	Mounting	DIN rail
	Cooling	Passive
	Reset Button	Press 10 s to reset
EMC	ESD	Air: Level 3 ±8 kV Contact: Level 2 ±4 kV
	Surge	Level 2 ±1 kV
	EFT	Level 2 ±1 kV
Supported Protocols	PLC protocol	√
	CNC protocol	√
	IEC 104	√
	IEC 61850	√*
	Modbus TCP	√
	Modbus RTU	√
	DLT645	√
	HJ212	√
	CJ188	√
	MQTT	√
	HTTP	√
	TCP	√
		
Software Features	Remote O&M	√
	Remote Management	√
	Remote Upgrade	√
	Multi-site Networking	√
	VPN	√
	Firewall	√
	Store-and-Forward	√
	Virtual Network Port	√
	Virtual Serial Port	√
	Local Database	√
	Visual Programming	√

附录 APPENDIX

EM Series Supported PLC Protocol Table

This gateway is categorized by Brand → Protocol → Model hierarchy. Representative PLC models have been selected for testing in each category. Additional supported models are based on official documentation.

Note: The gateway supports standard Modbus RTU/TCP protocols, which are supported by mainstream PLCs and are not listed individually (e.g., Hollysys, Haiwell, Yokogawa, Lan Pufeng, etc.).

Brand	Protocol	Interface	PLC Model
SIEMENS	<i>Tips:</i>		<i>All current Siemens series support S7 protocol communication. Using S7 protocol is recommended.</i>
	S7	Ethernet	S7-200 SMART, S7-200 series, S7-300 series, S7-400 series, S7-1200 series, S7-1500 series
	PPI	Serial	S7-200 series
Mitsubishi (MELSEC)	<i>Tips:</i>		<i>Mitsubishi primarily uses MC protocol for communication. FX5, FX3, Q series etc. have been tested.</i>
	EtherNet/IP	Ethernet	FX5-ENET/IP series, RJ71EIP91 series, QJ71EIP71 series
	MC-1E / MC-3E	Ethernet	FX5 series, RJ71EN71 series, RnENCPU series, LJ71E71 series, QJ71E71 series, QnUCPU series, FX3 series
	Modbus TCP	Ethernet	FX5 series, RJ71EN71 series, RnENCPU series, LJ71E71 series, QJ71E71 series
	MC-3C	Serial	FX5 series, RJ71C24 series, LJ71C24 series, QJ71C24 series
	Modbus RTU	Serial	FX5 series, RJ71C24 series, LJ71C24 series, QJ71C24 series, FX3 series
	FxLinks (Computer Link)	Serial	FX3 series, FX2 series, FX1 series, FX0 series
	FxSerial (Programming Communication)	Serial	FX3 series, FX2 series, FX1 series, FX0 series
OMRON	<i>Tips:</i>		<i>OMRON primarily uses Fins protocol for communication.</i>
	EtherNet/IP	Ethernet	NX7 series, NX1 series, NX1P series, NJ series, CJ1W-EIP21
	Fins	Ethernet	CP series, CS series, CJ series, CV series
	HostLink	Serial	CP series, CS series, CJ series, CV series, C series
LSis (LS Electric)	<i>Tips:</i>		<i>LS mainly uses FEnet/Cnet protocols for communication.</i>
	XGB FEnet	Ethernet	XGB series (XBC/XEC U, XBL-EMTA)
	XGK FEnet	Ethernet	XGT series (XGL-EFMT, XGL-EFMF, XGL-EH5T)
	XGB Cnet	Serial	XGB series (XBC/XEC U, XBL-C21A, XBL-C41A)
Allen-Bradley (Rockwell Automation)	<i>Tips:</i>		<i>Rockwell Automation primarily uses CIP and DF1 protocols for communication.</i>
	EtherNet/IP	Ethernet	EtherNet/IP (Ethernet): ControlLogix series, CompactLogix series, Micro800 series (820, 850, 870)
	DF1	Serial	ControlLogix series, CompactLogix series (5069-SERIAL module), Micro800 series (820, 830, 850, 870), SLC series (500, 5/03, 5/04, 5/05), MicroLogix series (1000, 1100, 1200, 1500)

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Brand	Protocol	Interface	PLC Model
Beckhoff	<i>Tips:</i>		<i>Beckhoff primarily uses ADS protocol for communication.</i>
	ADS	Ethernet	CX series, TwinCAT2, TwinCAT3
Inovance	<i>Tips:</i>		<i>Inovance mainly uses Modbus protocol.</i>
	Modbus TCP	Ethernet	AC series, AM series, H5U series, H3U series
	Modbus RTU	Serial	AC series, AM series, H5U series, H3U series, H1U series
Keyence	<i>Tips:</i>		<i>Keyence primarily uses KV protocol.</i>
	MC-3E	Ethernet	KV-8000 series, KV-7000 series, KV-5500 series, KV-5000 series, KV-EP21V, KV-LE21V, KV-LE20V, KV-LE20A Ethernet units
	KV (Upper Link Protocol)	Ethernet	
	KV (Upper Link Protocol)	Serial	KV-7300, KV-3000, KV-1000, KV-700, KV Nano, KV-L21V, KV-L20V
Panasonic	<i>Tips:</i>		<i>Panasonic primarily uses Mewtocol protocol.</i>
	MC-3E	Ethernet	FP7 series, FP0H series, FP-XH series
	Mewtocol	Ethernet	FP7 series, FP0H series, FP-XH series
	Mewtocol	Serial	FP7 series, FP0H series, FP-XH series, FP-X0 series, FP0R series
Delta	<i>Tips:</i>		<i>Delta mainly uses Modbus protocol.</i>
	Modbus TCP	Ethernet	AH series, AS series, AX-3 series, DVP series (built-in Ethernet)
	Modbus RTU	Serial	AH series, AS series, AX-3 series, DVP series
XinJE	<i>Tips:</i>		<i>XinJE mainly uses Modbus protocol.</i>
	Modbus TCP	Ethernet	CCSD series, XA series, XS series, XG series, XL series
	Modbus RTU	Serial	CCSD series, XA series, XS series, XG series, XL series, XC series, XD series
MegMeet	<i>Tips:</i>		<i>MegMeet mainly uses Modbus protocol.</i>
	Modbus TCP	Ethernet	MC5100 series, MC280 series, MC200 series, MC100 series, MC80 series
	Modbus RTU	Serial	MC5100 series, MC280 series, MC200 series, MC100 series, MC80 series
Yaskawa	<i>Tips:</i>		<i>Yaskawa primarily uses Memobus protocol (supports S7).</i>
	Memobus	Ethernet	GL120/130 series, GL60 series, MP3000 series, MP2300 series, Z1000 series
Fatek	<i>Tips:</i>		<i>Fatek primarily uses Fatek protocol.</i>
	Fatek	Serial	FBs series
Vigor	<i>Tips:</i>		<i>Vigor primarily uses VS private protocol.</i>
	VS	Serial	VS series
Fuji	<i>Tips:</i>		<i>Fuji primarily uses SPH/SPB protocols.</i>
	SPH	Ethernet	SPH series
	SPB	Serial	SPB series

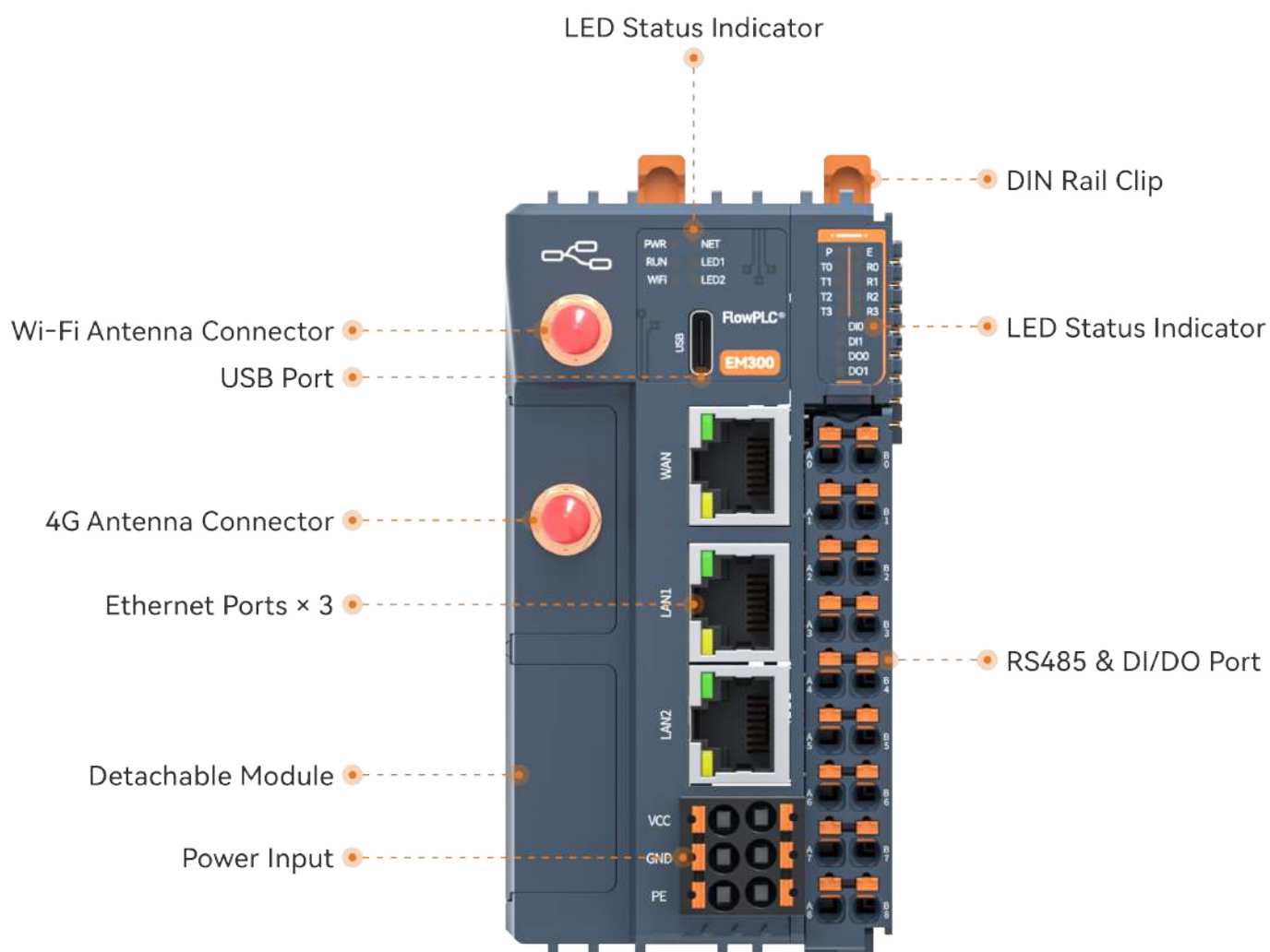
附录 APPENDIX

EM Series Supported CNC Protocol Table

Note: Representative models from each CNC brand have been tested. Additional supported models are based on official documentation.

Brand	Interface	CNC Model
SIEMENS	Ethernet	All series supported
Mitsubishi (MELSEC)	Ethernet	All series supported
Fanuc	Ethernet	All series supported (excluding 18i and 21i series)
Haas	Ethernet	All series supported
	Serial	All series supported
Brother	Ethernet	All series supported
GSK (Guangzhou CNC)	Ethernet	GSK988 / 980TDI series
	Serial	980T / MDC series
Heidenhain	Ethernet	530 / 520 series
Citizen	Ethernet	All series supported (contact support for custom versions)
KND	Ethernet	Version V4.3 and above
Mazak	Ethernet	All series supported
SYNTEC	Ethernet	Version V10.118
LNC	Ethernet	All series supported

产品总览 PRODUCT OVERVIEW

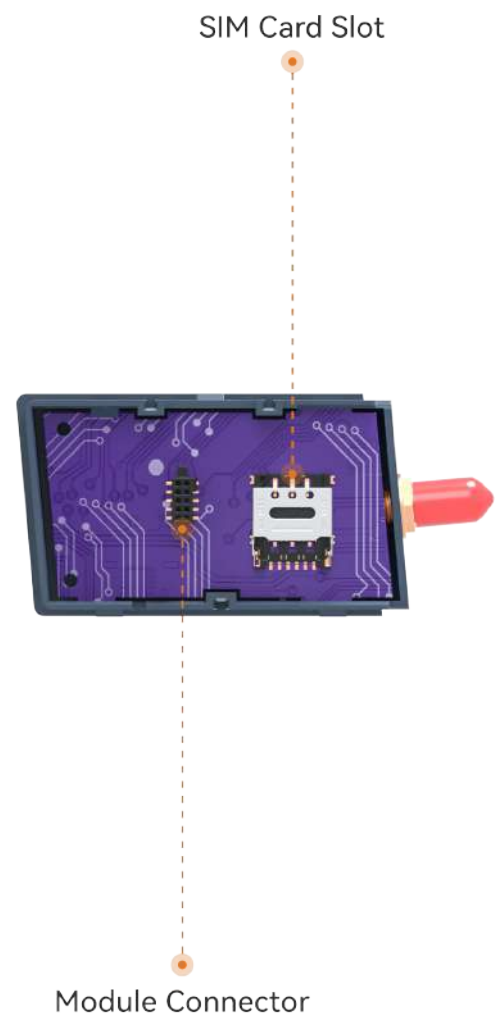


EM300 Front View

产品总览 PRODUCT OVERVIEW

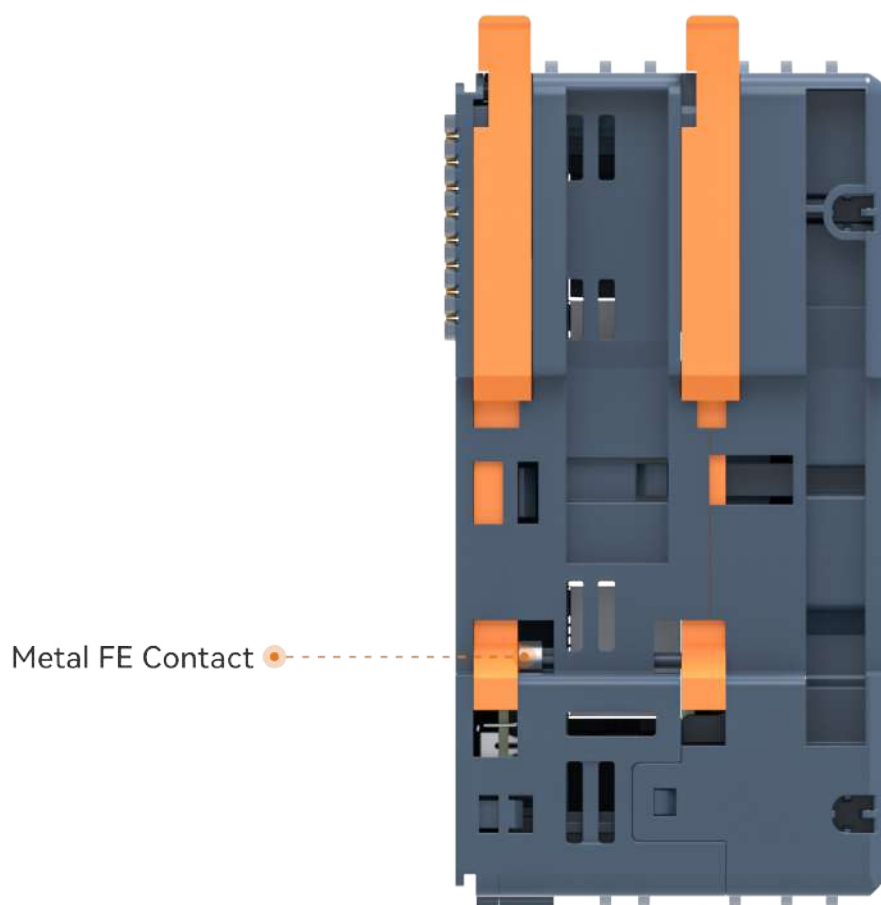


EM300 Left View



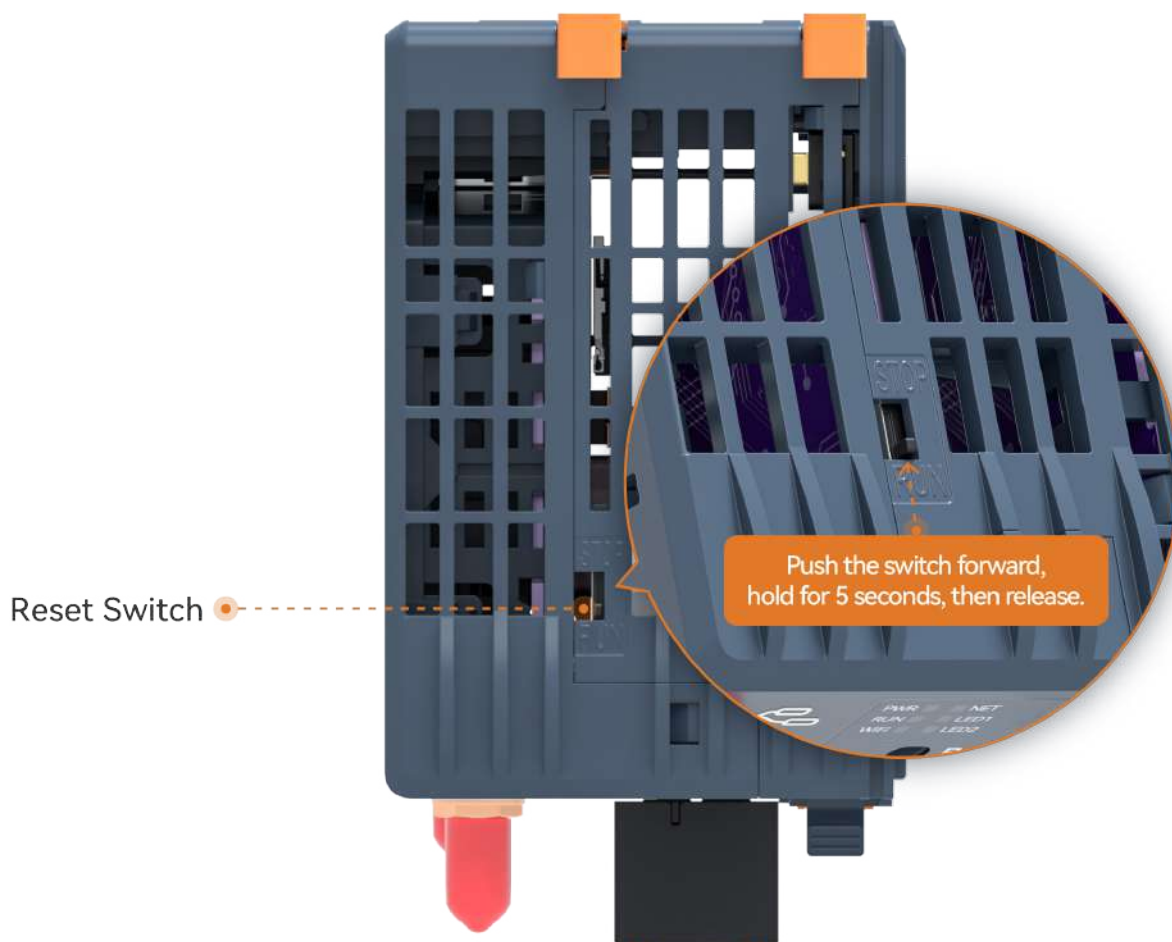
Detachable Module

产品总览 PRODUCT OVERVIEW



EM300 Rear View

产品总览 PRODUCT OVERVIEW

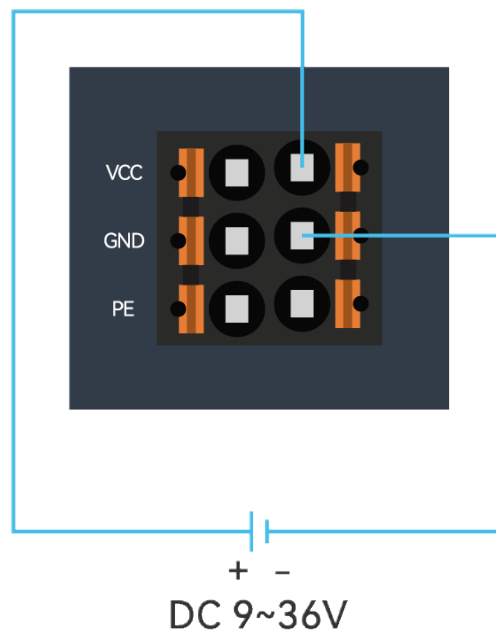


EM300 Top View

接线说明 WIRING INSTRUCTION

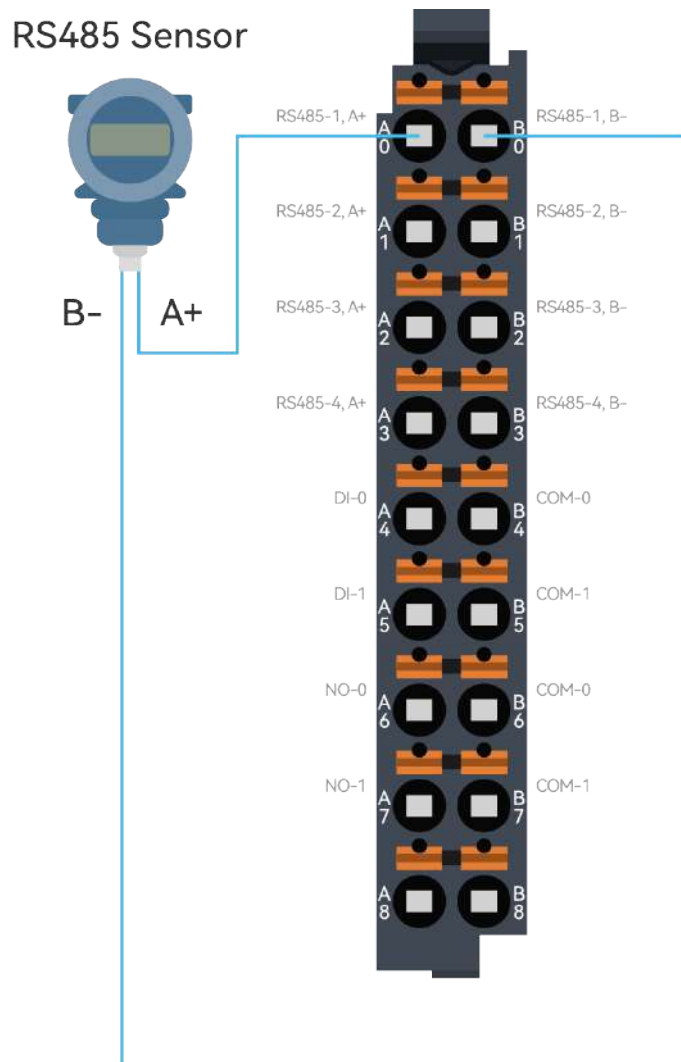
VCC	Power (+)
GND	Ground Wire
PE	Ground Wire

*Note: Dual-row spring-type pluggable terminals. Same-row terminals share identical function.



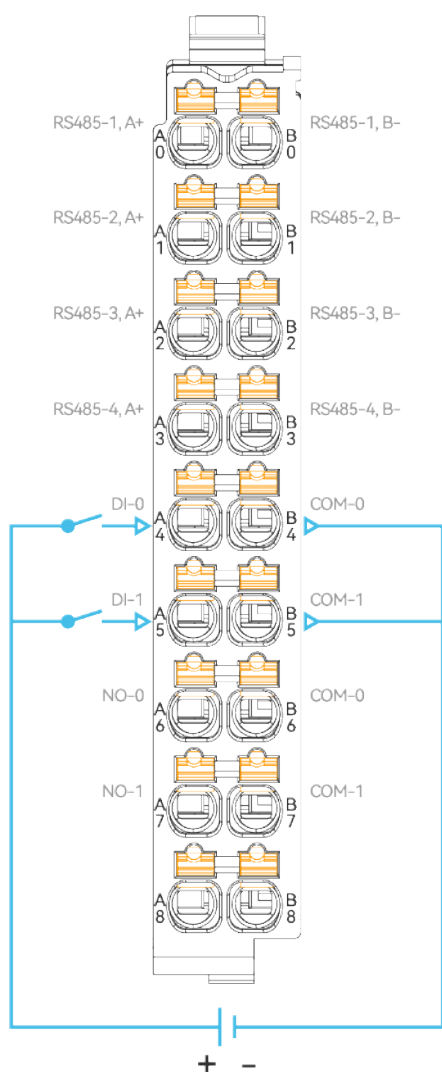
Power Wiring Diagram

接线说明 WIRING INSTRUCTION

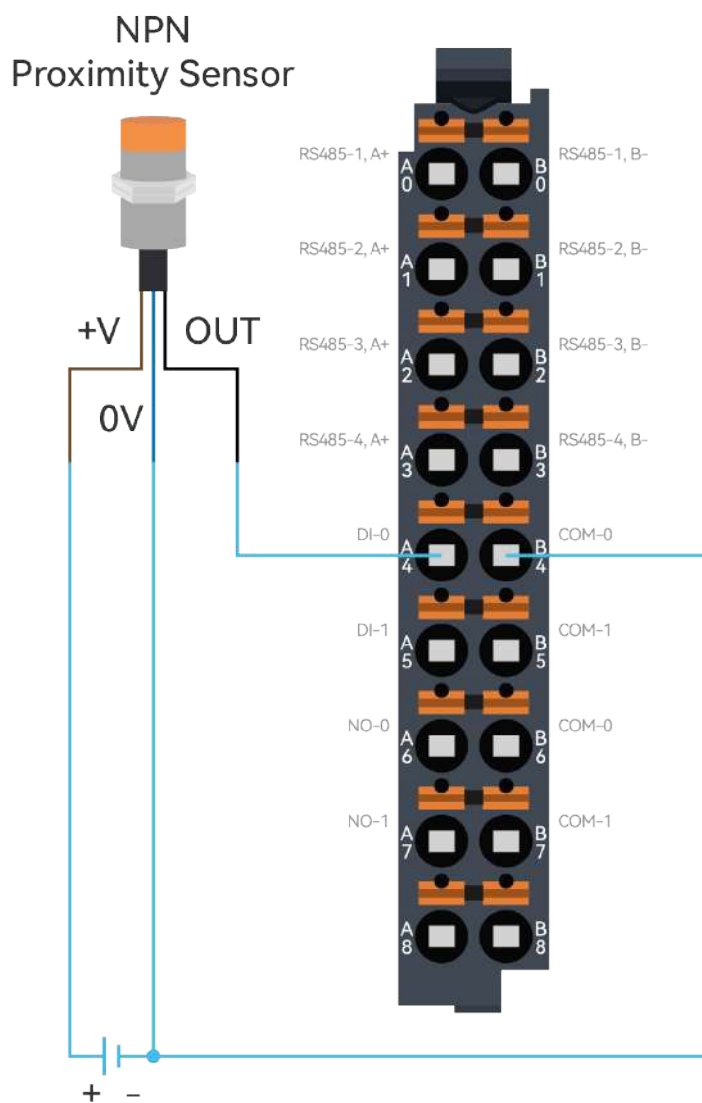


RS485 Wiring Diagram

接线说明 WIRING INSTRUCTION

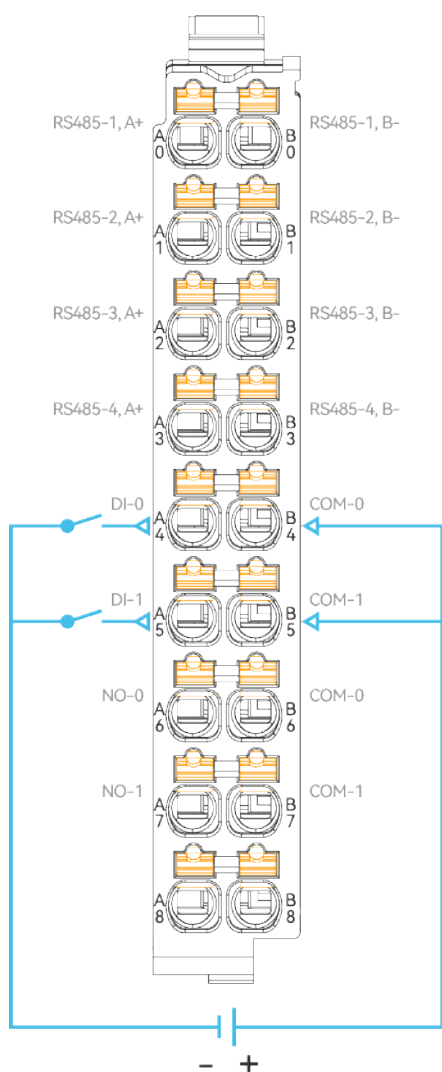


DI (NPN) Wiring Schematic

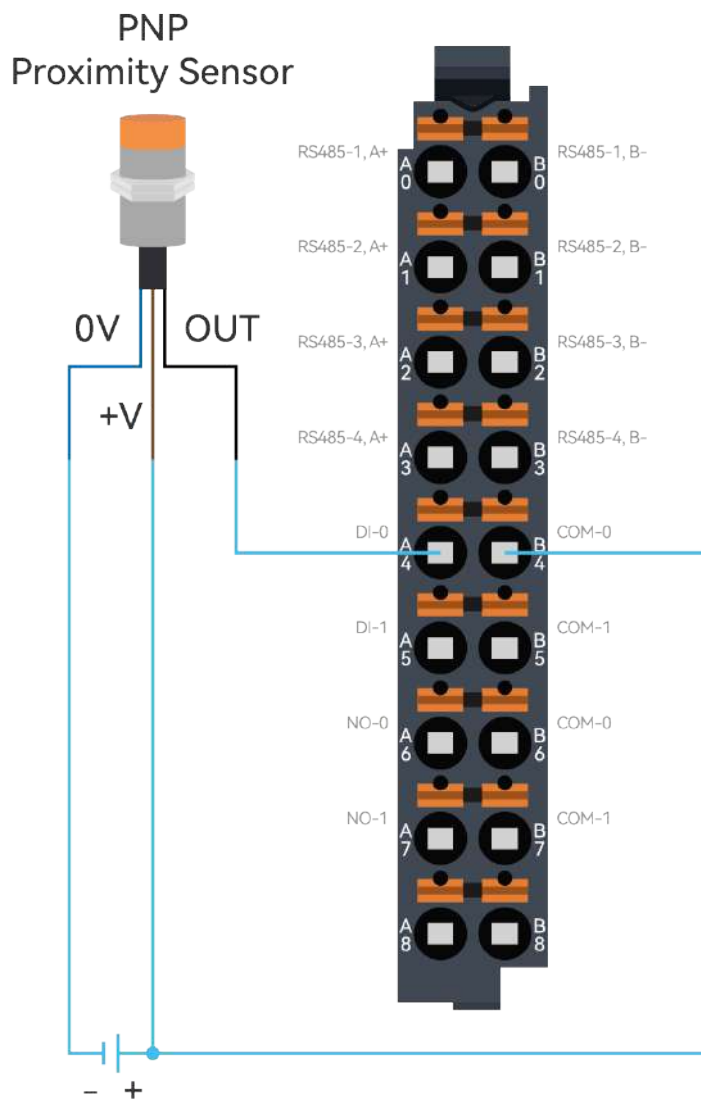


DI (NPN) Wiring Diagram

接线说明 WIRING INSTRUCTION

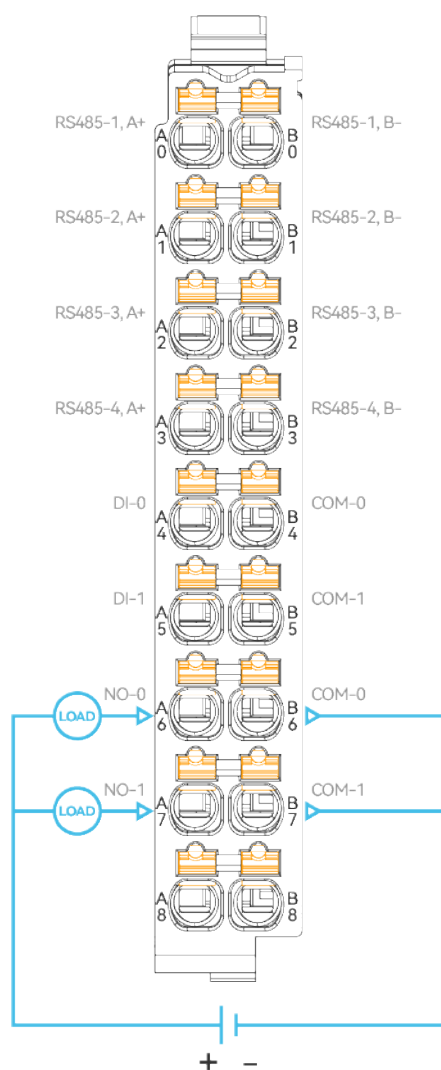


DI (PNP) Wiring Schematic

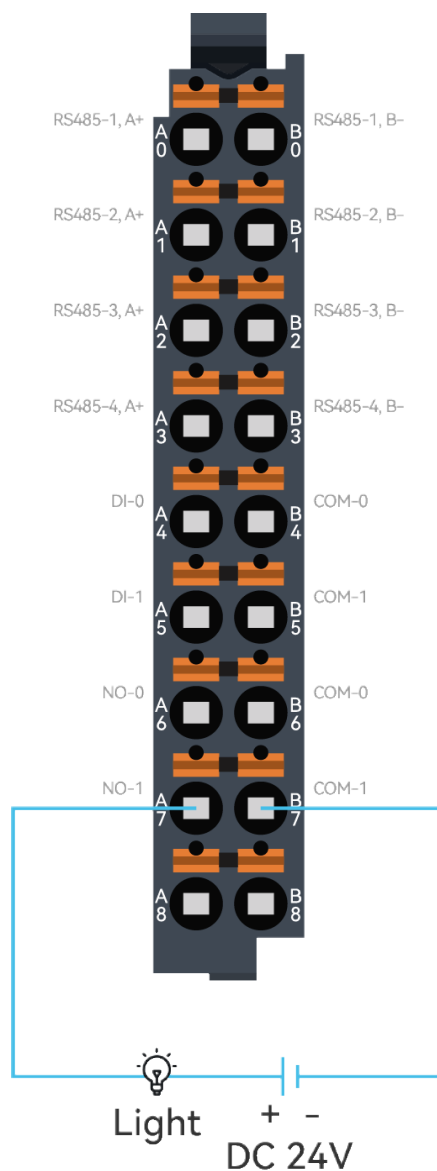


DI (PNP) Wiring Diagram

接线说明 WIRING INSTRUCTION



DO Wiring Schematic



DO Wiring Diagram

安装说明 INSTALLATION INSTRUCTION



Product Dimensions

A LEADING PROVIDER OF INTEGRATED IT AND OT PRODUCTS

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