Rail-mount

Modbus Gateway

Multi Communications

Terminal Power in

RJ45 Ethernet
(POE optional)

MQTT & JSON

Multi Host Support

Multi Features

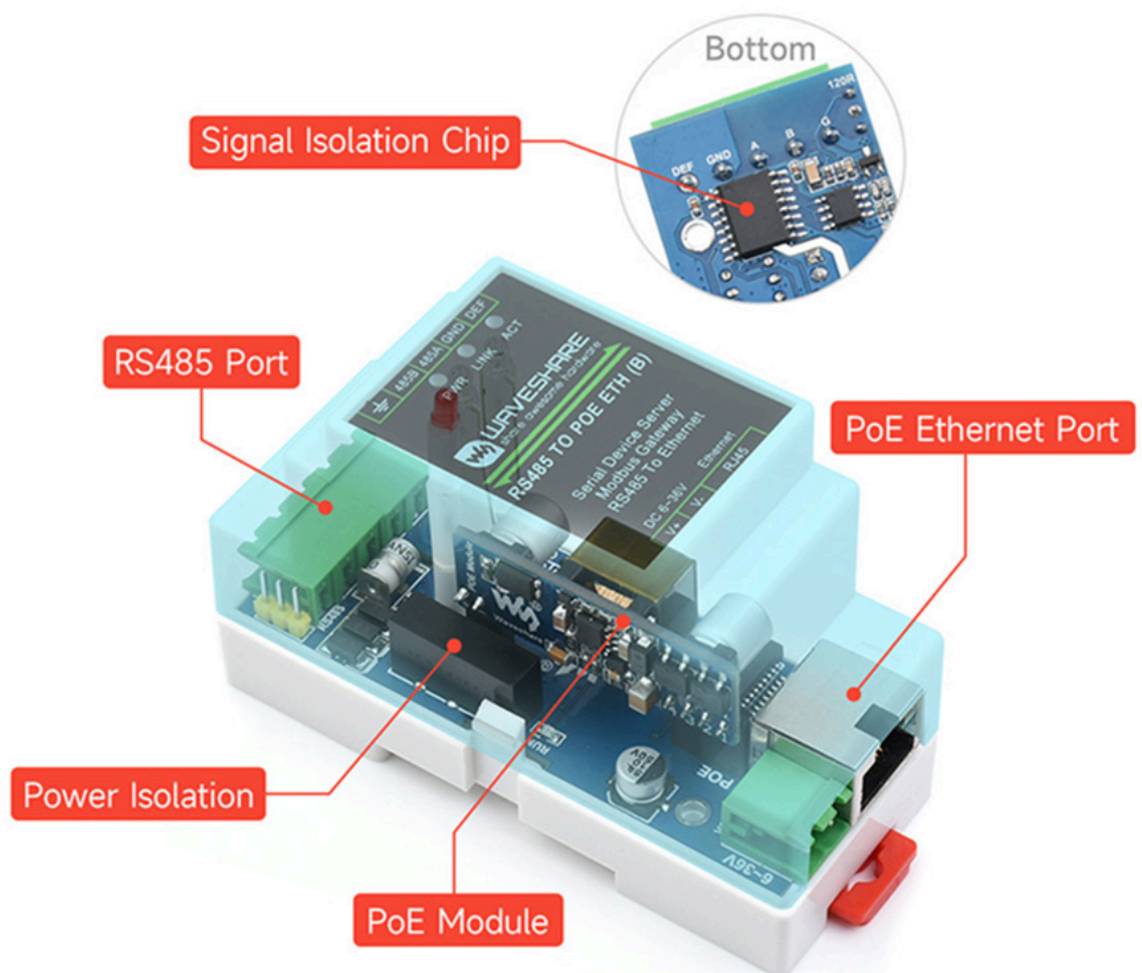Host/Webpage Config

Industrial Quality

Version Options

RS485 TO ETH (B)
Common Ethernet port

RS485 TO POE ETH (B)
PoE Ethernet port + Electrical isolation

These two versions are the same in software functions, while RS485 TO POE ETH (B) is the hardware upgrade version, support PoE Ethernet port power supply, with power and signal isolation protection, which is safer for industrial applications.

Signal Isolation Chip

Bottom

RS485 Port

PoE Ethernet Port

Power Isolation

PoE Module

Features At A Glance

This is an RS485 device data acquisitor / IoT gateway designed for the industrial environment. It combines multi functions in one, including serial server, Modbus gateway, MQTT gateway, RS485 to JSON, etc. The module features RS485 and Ethernet port(POE function is optional), uses screw terminals for power input. Rail-mount case design, small in size, easy to install. It is suitable for applications like data acquisition, IoT gateway, safety & security IoT, and intelligent instrument monitoring...

Specifications

Contact

PRODUCT	RS485 TO ETH (B)	RS485 TO POE ETH (B)
Product Type	Serial server, Modbus Gateway, MQTT Gateway	
Basic Function	Bi-directional transparent data transmission between RS485 and Ethernet	
Communication interface	RS485 port x 1, Ethernet port x 1	
Power supply	9 ~ 24V DC screw terminal	6 ~ 36V DC screw terminal, or PoE port
Isolation Protection	N/C	Power isolation, Signal isolation
COMMUNICATION		
Ethernet	common network port	PoE network port, support IEEE 802.3af standard
	10 / 100M auto-negotiation RJ45 connector, 2 KV surge protection	
Serial port	RS485	Isolated RS485
SERIAL SPECIFICATION		
Baudrate	300 ~ 115200 bps	
Parity bit	none, odd, even, mark, space	
Data bit	5 ~ 9 bits	
Flow control	N/A	
SOFTWARE		
Protocol	ETHERNET, IP, TCP, UDP, HTTP, ARP, ICMP, DHCP, DNS	
Configuration	host, web browser, device management functions library	
Communication method	TCP/IP direct communication, VCOM	
Operating mode	TCP server, TCP client (coexisting with TCP server), UDP, UDP multicast	
ENVIRONMENT REQUIREMENT		
Operating temperature	-40℃ ~ 85℃	
Storage temperature	-40℃ ~ 100℃	
Humidity range	5% ~ 95% relative humidity	
Dimensions	L × W × H: 87 × 36 × 59 mm	

Primary Function

Bi-Directional Transparent Data Transmission Between RS485 And Ethernet
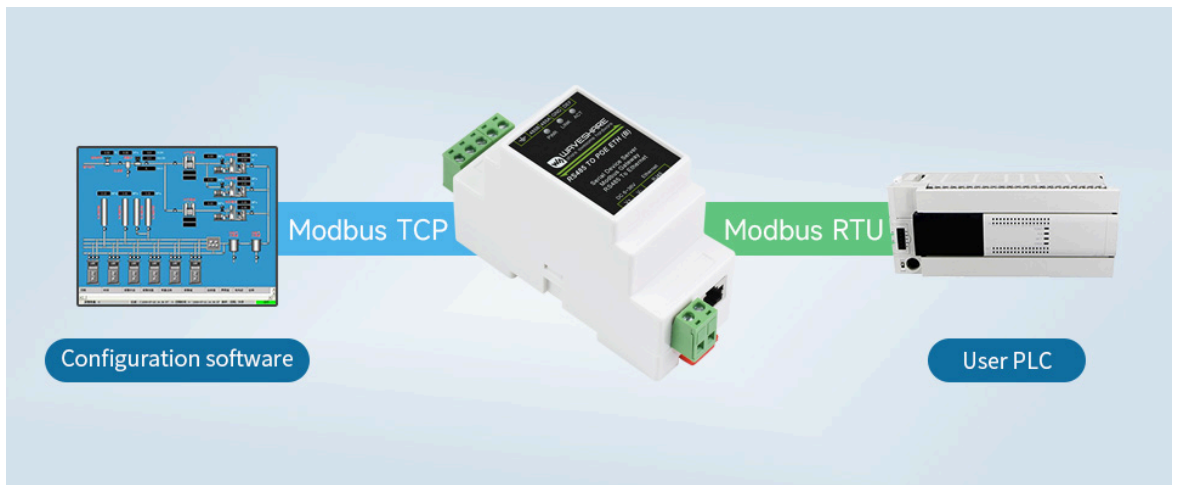
Rail-Mount Support

Easy To Combine Multi Rail-Mounted Serial Server Together, More Freely

Modbus Gateway Support

Suitable For Modbus Gridding Upgrade, Can Be Used With 3D Configuration Software

Multi Communication Modes

Supports TCP Server / TCP Client / UDP Mode / UDP Multicast

TCP Server

Supports 30 concurrent TCP connections when used as TCP Server

Network connection

Serial connection

TCP Client **TCP Server** **Serial Device**

TCP Server will be listening configured ports and waiting for TCP Client connections,
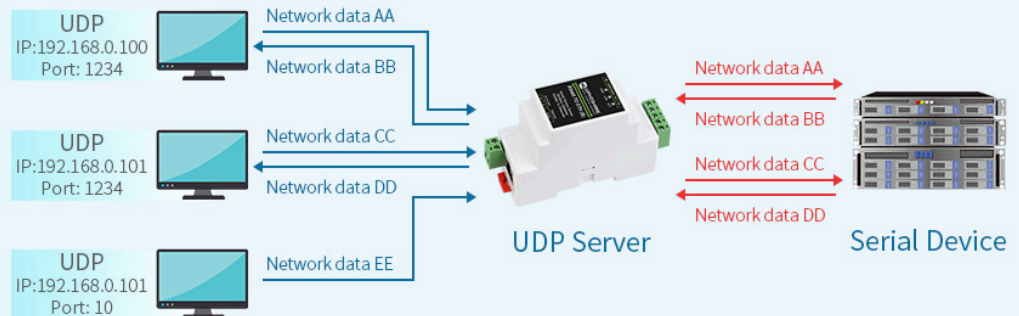data from the serial device will be transferred via TCP Server to every connected clients

TCP Client

Allows concurrently connecting to 7 target IPs when used as TCP Client

Network connection

Serial connection

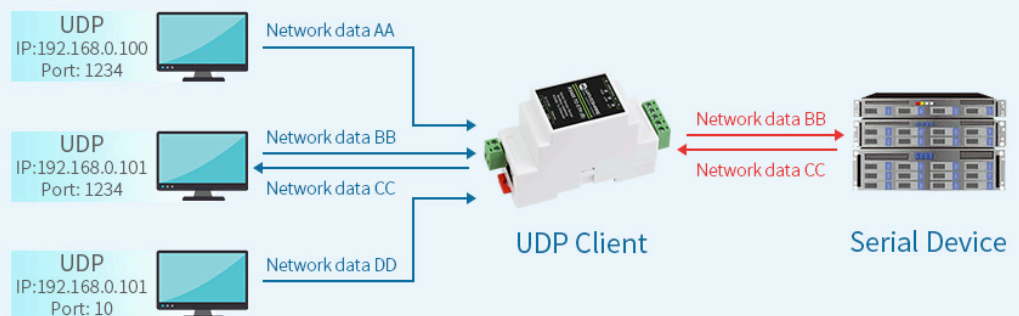**TCP Server** **TCP Client** **Serial Device**

TCP Client will try establishing TCP connection with configured IP to achieve bi-directional
transparent transfer between the server and serial device, and keeps retrying if failed

UDP Server

UDP
IP:192.168.0.100
Port: 1234

Network data AA

Network data BB

UDP
IP:192.168.0.101
Port: 1234

Network data CC

Network data DD

UDP
IP:192.168.0.101
Port: 10

Network data EE

Network data AA

Network data BB

Network data CC

Network data DD

UDP Server **Serial Device**

UDP Server will automatically send the received data to the target of previous communication,
suitable for multi network devices communicating with the UDP Server

UDP Client

UDP
IP:192.168.0.100
Port: 1234

Network data AA

UDP
IP:192.168.0.101
Port: 1234

Network data BB

Network data CC

UDP
IP:192.168.0.101
Port: 10

Network data DD

Network data BB

Network data CC

UDP Client **Serial Device**

UDP Client will communicate with specific IP and port no. only, thus improving the data transfer accuracy

Contact

MQTT/JSON To Modbus
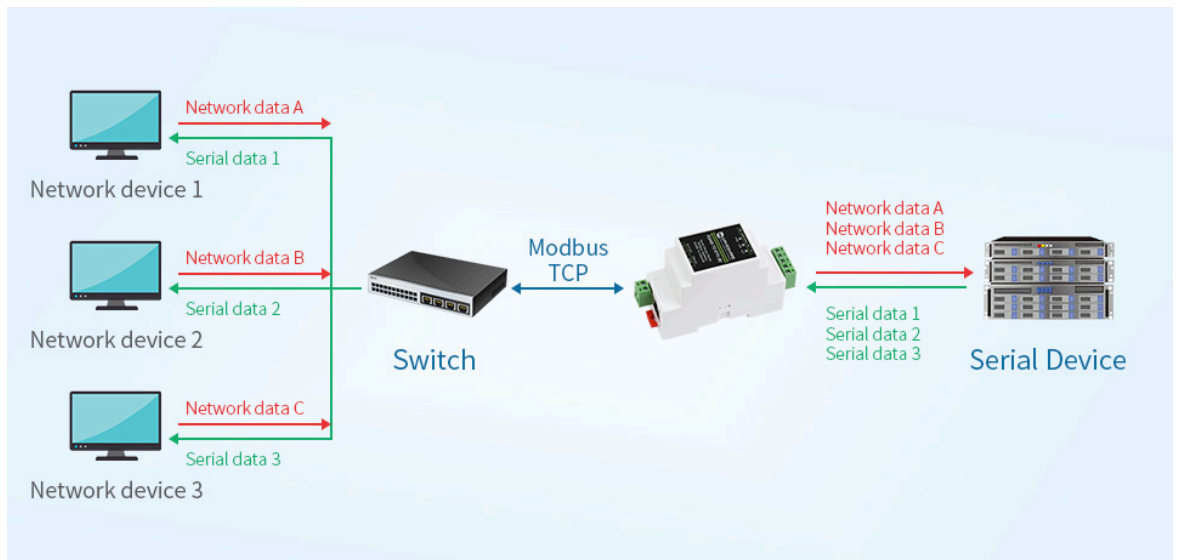
More Flexible Conversion Between Different Protocols

When used as MQTT gateway, the devices can upload serial data to MQTT server by MQTT protocol through transparent transmission, supported servers including Baidu Cloud MQTT, Alibaba Cloud MQTT, China Mobile OneNet, etc. The acquired Modbus RTU or non-standard serial data can be parsed into JSON format and packaged into MQTTdata packet for uploading.

When used as JSON data acquisition gateway, the devices can be connected to data acquisition instruments through RS485 connection, then acquire data automatically, convert the data into JSON format, and finally post it to server. The acquired data supports Modbus RTU 645 instrument 97 version, 645 instrument 07 version, as well as sorts of non-standard RS485 protocols. The uploaded data format can be configured via host, and the JSON upload protocol can be MQTT protocol, HTTP POST protocol, HTTP GET protocol, and so on.
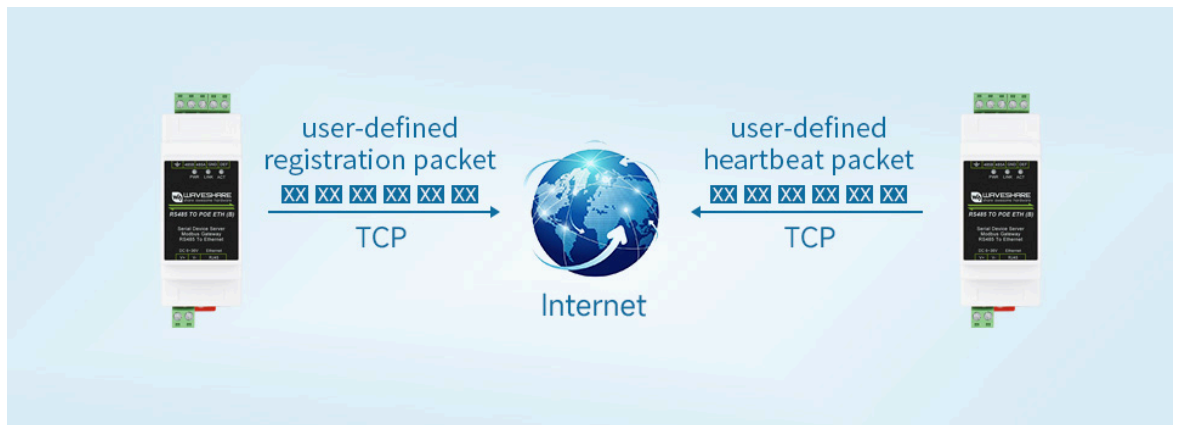
Multi Hosts Roll-Polling Support

Different Network Devices Will Be Identified And Responded Respectively,
No More Crosstalk Issue While Communicating With Multi Network Devices

User-Defined Heartbeat/Registration Packet

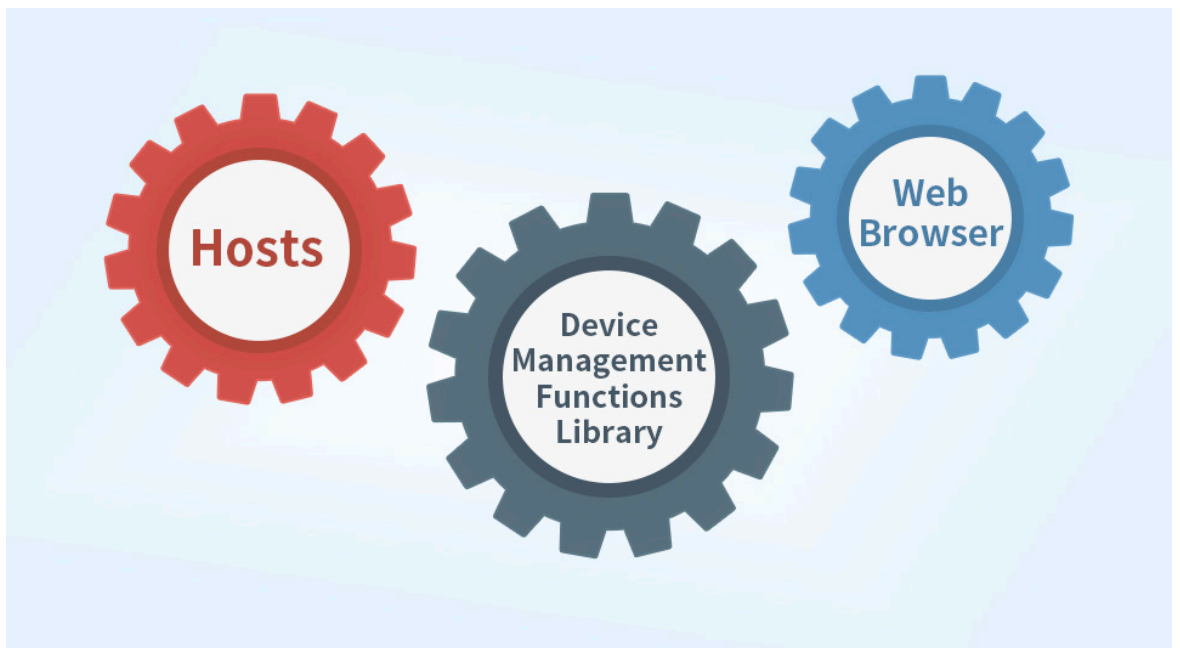Easy For Cloud Communication And Device Identification

NTP Protocol Support

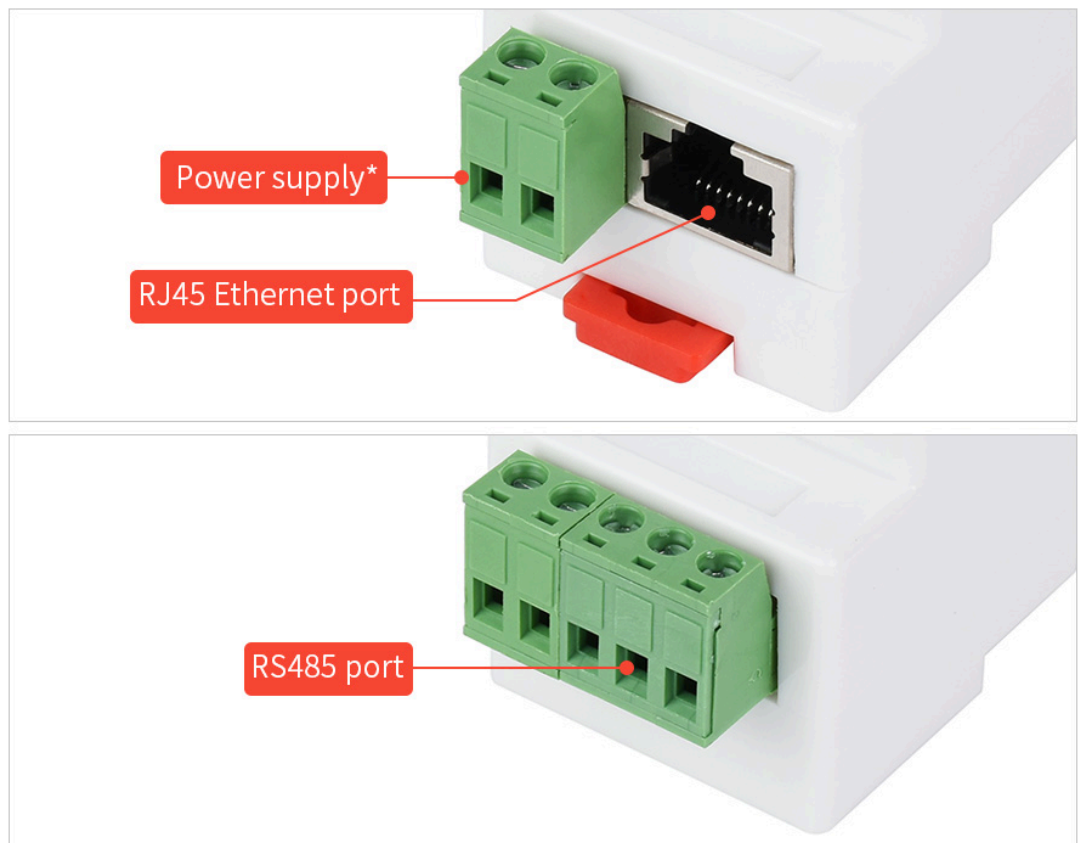Getting Network Time Info For Serial Output Or Data Upload

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Multi Configuration Methods

Supports Web Browser Configuration, Obtaining Dynamic IP Via DHCP,
DNS Protocol Connected Domain Server Address

Interface Introduction

Power supply*

RJ45 Ethernet port

RS485 port

* for the power supply range, please refer to the label of the corresponding version.

Outline Dimensions

36.00

58.60

87.40

106.00

Unit: mm

Resources & Services

WAVESHARE ORIGINAL ✓

PROFESSIONAL TECH SUPPORT

RICH RESOURCES MANUAL & DEMO

Wiki: www.waveshare.com/wiki/RS485_TO_ETH_(B)
Wiki: www.waveshare.com/wiki/RS485_TO_POE_ETH_(B)

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Selection Guide

	RS485 TO ETH (B)	RS485 TO POE ETH (B)	RS232/485/422 TO ETH (B)	RS232/485/422 TO POE ETH (B)	2-CH RS485 TO ETH (B)	2-CH RS485 TO POE ETH (B)	RS232 RS485 TO ETH (B)	RS232 RS485 TO POE ETH (B)	4-CH RS485 TO ETH (B)	4-CH RS485 TO POE ETH (B)
Description	Common network port	PoE network port + Electrical isolation	Multi interfaces + common network port + Electrical isolation	Multi interfaces + PoE network port + Electrical isolation	2-Ch RS485 + Common network port + Electrical isolation	2-Ch RS485 + PoE network port + Electrical isolation	RS232 + RS485 + Common network port + Electrical isolation	RS232 + RS485 + PoE network port + Electrical isolation	4-Ch RS485 + Common network port + Electrical isolation	4-Ch RS485 + PoE network port + Electrical isolation
Product Type	Serial server, Modbus Gateway, MQTT Gateway									
Serial Port Type	Single serial port server		RS232/485/422 choose one, single serial port server		Dual serial ports server				4 serial ports server	
Power Supply methods	Screw terminal									
	-	PoE port	-	PoE port	-	PoE port	-	PoE port	-	PoE port
	-	DC 5.5 power port							-	
Voltage Range	DC 9~24V	DC 6~36V			DC 6~45V					
Isolation Protection	Without isolation	Power isolation, Signal isolation								

COMMUNICATION

Ethernet	RJ45 network port	RJ45 with PoE support, IEEE 802.3af compliant	RJ45 network port	RJ45 with PoE support, IEEE 802.3af compliant	2-ch RJ45 network port	2-ch RJ45 with PoE support, IEEE 802.3af compliant	2-ch RJ45 network port	2-ch RJ45 with PoE support, IEEE 802.3af compliant	RJ45 network port	RJ45 with PoE support, IEEE 802.3af compliant
	10 / 100M auto-negotiation RJ45 connector, 2 KV surge protection									
Serial port	RS485	Isolated RS485	Isolated RS232/485/422 (choose one, only one interface can be used for communication at the same time)		2-ch Isolated RS485 (the 2 channels can receive and transmit independently at the same time)		Isolated RS232 + Isolated RS485 (the 2 channels can receive and transmit independently at the same time)		4-ch isolated RS485 (the 4 channels can receive and transmit independently at the same time)	

SERIAL SPECIFICATION

Baudrate	300 ~ 115200 bps
Parity bit	none, odd, even, mark, space
Data bit	5 ~ 9 bits
Flow control	N/A

SOFTWARE

Protocol	ETHERNET, IP, TCP, UDP, HTTP, ARP, ICMP, DHCP, DNS
Configuration	host, web browser, device management functions library
Communication method	TCP/IP direct communication, VCOM
Operating mode	TCP server, TCP client (coexisting with TCP server), UDP, UDP multicast

ENVIRONMENT REQUIREMENT

Operating temperature	-40℃ ~ 85℃			
Humidity range	5% ~ 95% relative humidity			
Dimensions (L × W × H)	87.0×36.0×59.0mm	88.7×72.5×24.2mm	78.0×72.5×24.2mm	91.0×64.5×24.2mm