

COME-STAR

Serial to Ethernet Server

User Manual



Cport3101
Cport3101R
Cport3101-I
Cport3102
Cport3102R
Cport3102-I
Cport3104
Cport3104-I

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Explain

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Note: Essential explanatory information during the use of this device.



Caution: Matters that require special attention during the use of this device.

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Chapter 1. Product Description

1.1. Product Introduction

The Cport3101/3102/3104 series industrial-grade serial servers and Cport3101/3102/3104-I industrial-grade isolated serial servers feature lightning protection, electromagnetic interference resistance, high reliability, and high performance, making them suitable for harsh industrial environments. The Cport3101R/3102R industrial-grade rail-type serial servers are compact and easy to install.

These serial servers primarily enable data transmission between Ethernet and serial ports (RS232/RS485/RS422). They integrate a TCP/IP protocol stack, and the serial ports can be flexibly configured in RS232, RS485, or RS422 modes, allowing devices without native Internet access to connect to Ethernet quickly, flexibly, and reliably.

Interface support details:

- Cport3102-I / Cport3104 / Cport3104-I: Only support RS485/RS422; RS232 is not supported.
- Cport3101R / Cport3102R: Support RS485/RS232; RS422 mode is not supported.

The specific models of this series of industrial serial server are as follows:

Cport3101	1 RS232/485/422 to Ethernet Desktop type Serial server(DC9~36V)
Cport3101-I	1 RS232/485/422 to Ethernet Isolated Desktop type serial server(DC9~36V)
Cport3102	1 RS232 + 1 RS485/422 to Ethernet desktop type serial server(DC9~36V)
Cport3102-I	2 RS485/422 to Ethernet Isolated Desktop type serial server(DC9~36V)
Cport3104	4 RS485/232 to Ethernet desktop type serial server(DC9~36V)
Cport3104-I	4 RS485/422 to Ethernet Isolated desktop type serial server(DC9~36V)
Cport3101R	1 RS232/485 to Ethernet Rail type serial server(DC9~36V)
Cport3102R	2 RS232/485 to Ethernet Rail type serial server(DC9~36V)

1.2. Features

- High-performance industrial-grade serial-to-Ethernet solution suitable for harsh environments.
- 32-bit ARM Cortex-M4 CPU up to 288 MHz (Cport3101, 3101-I, 3101R, 3104, 3104-I) and 32-bit ARM Cortex-M7 CPU up to 400 MHz (Cport3102, 3102-I, 3102R).
- Serial ports support baud rates from 600 bps to 460800 bps.
- Flexible serial interface configuration: RS232, RS485, or RS422 depending on model.

- Cport3102-I, 3104, and 3104-I support RS485/RS422 only; Cport3101R and 3102R support RS232/RS485 only.
- Supports UDP Client/Server/Multicast modes for fast point-to-point, point-to-multipoint, and multipoint-to-multipoint communication.
- Supports TCP Client/Server modes, with up to 4–8 concurrent sessions depending on the model.
- RFC2217 support for dynamic modification of serial communication parameters over TCP.
- Pair Connection Master/Slave mode for simple device-to-device operation.
- Modbus RTU/ASCII Master/Slave support for conversion between Modbus TCP and Modbus RTU/ASCII protocols.
- Modbus slave pre-read for automatic learning of up to 32 RTU or 16 ASCII commands per port, enabling rapid response.
- Modbus virtual ID mapping to avoid conflicts by mapping real slave IDs to virtual IDs.
- RealCOM MCP/CCP/MW modes map network devices as local COM ports for seamless integration.
- HTTPD Client support for GET and POST operations with HTTP servers.
- WebSocket Client support for full-duplex communication with WebSocket servers.
- Standard MQTT protocol support for Alibaba Cloud, OneNet, Tencent Cloud, Huawei Cloud, or other IoT platforms.
- Multiple packet segmentation mechanisms based on data length or time to ensure real-time network performance.
- Frame header and footer filtering for serial data based on start and end bytes.
- Registration and heartbeat packets for connection validation and status monitoring.
- Monitoring of serial communication parameters, operating modes, and transmitted and received frame statistics.

1.3. Product Display



Cport3101R



Cport3101



Cport3101-I



Cport3102R



Cport3102



Cport3102-I



Cport3104



Cport3104-I

1.4. Product Specifications

1.4.1. Cport3101 Series Specifications

Parameter	Cport3101	Cport3101-I	Cport3101R
Software			
Network Protocol	IP, TCP, UDP, ARP, ICMP, DHCP Client, DNS, HTTP, RFC2217		
IP Acquisition	Static IP / DHCP		
DNS	Support		
User Configuration	Web-based configuration		
Simple Transparent Transmission	UDP Client / UDP Server / UDP Multicast / TCP Client / TCP Server / RealCOM / Pair Connection		
Modbus	Modbus RTU/ASCII to Modbus TCP		

Serial Packet Mechanism	Time/length configurable; max 1460 bytes	
TCP Server Connections	Max 8 TCP Client connections per serial port	
Network Buffer	Send: 16Kbyte; Receive: 16Kbyte	
Serial Buffer	Send: 1.5Kbyte; Receive: 1.5Kbyte	
Heartbeat Packet	TCP Keepalive supported, customizable	
Registration Packet	Customizable	
RFC2217	Support	
HTTPD Client	Support	
WebSocket Client	Support	
RealCOM Mode	Moxa, KangHai modes	
MQTT Client	Alibaba Cloud, OneNet, Huawei Cloud, Tencent Cloud, and other platforms	
Average Transmission Delay	<10ms	
Supporting Software	Network management tool, virtual COM software, MixView, MaxView	
Interface		
Ethernet Port	1×10/100Base-T(X) RJ45, half/full duplex, auto MDI/MDIX	
Serial Port	1×RS232/485/422	1×RS232/485
Connection	RS485/422: 5-pin 3.81mm terminal; RS232: DB9M	RS485: 5-pin 3.81mm terminal; RS232: DB9M
Baud Rate	600bps~460800bps	
Data Bits	7 / 8	
Stop Bits	1 / 2	
Parity	None / Odd / Even	

Terminal Resistor	RS485/422 built-in termination resistor		RS485 built-in 120Ω termination resistor, switchable via internal jumper
Isolation Voltage	\	2kVDC	\
Button	One-click restart / factory reset		
LED Indicators	Power, RUN, Ethernet status, Serial TX/RX		
Power			
Power Input	DC9~36V		
Full Load Power	≤1.5W@DC12V		≤1.5W@DC24V
Connection	2-pin 5.08 mm pitch terminal block or Φ2.5 mm DC jack		2-pin 5.08 mm pitch terminal block
Physical Characteristics			
Dimensions (L×W×H)	96×90×26 mm	96×90×26 mm	90×28×65 mm
Mounting	Wall-mounted	Wall-mounted	35mm DIN rail
Enclosure Protection	IP40	IP40	Plastic case
Weight	Approx. 0.25kg	Approx. 0.25kg	Approx. 90g
Operating Temperature	-40℃~+85℃		
Storage Temperature			
Relative Humidity	5%~95% (non-condensing)		
EMC Standard			
ESD	Level 4: ±8 kV (contact), ±15 kV (air)		Level 3: ±8 kV (contact), ±8 kV (air)

Surge	Level 4: Power: CM ± 4 kV, DM ± 2 kV; RS485/422: CM ± 4 kV, DM ± 4 kV; Ethernet: CM ± 6 kV, DM ± 2 kV	Level 4: Power: DM ± 2 kV; Ethernet: CM ± 4 kV, DM ± 2 kV; Serial: CM ± 4 kV, DM ± 2 kV
EFT	Level 4: Power ± 4 kV; Ports ± 2 kV	Level 4: Power ± 4 kV; Ethernet & Serial ± 2 kV

1.4.2. Cport3102 Series Specifications

Parameter	Cport3102	Cport3102-I	Cport3102R
Interface			
Ethernet Port	1 × 10/100Base-T(X) adaptive RJ45, half/full duplex, auto MDI/MDI-X		
Serial Type	1 × RS485/422 + 1 × RS232	2 × RS485/422	2 × RS232/485
Connection	RS485/422: 5-pin 5.08 mm terminal block; RS232: DB9M	5-pin 5.08 mm terminal block	14-pin 3.5 mm terminal block
Isolation Voltage	/	3 kVDC	/
Baud Rate	600 bps to 460800 bps		
Data Bits	7 bit, 8 bit		
Stop Bits	1 bit, 2 bit		
Parity	None, Odd, Even		
Button	One-click restart or factory reset		
LED Indicators	Power, RUN, Ethernet link/activity, Serial TX/RX		
Power			
Power Input	DC 9–36 V		
Full Load Power	< 0.5 W @ DC12V	< 1 W @ DC12V	< 0.6 W @ DC12V

Connection	2-pin 5.08 mm terminal block or DC jack	14-pin 3.5 mm terminal block	
Mechanical			
Dimensions (L × W × H)	96 × 90 × 26 mm (with mounting brackets, without connectors)	162 × 95 × 29 mm (with mounting brackets, without connectors)	103 × 72.2 × 33.85 mm (without clip and connectors)
Mounting	Wall-mounted	35 mm DIN rail	
Enclosure Protection	Metal enclosure, IP40	Adam enclosure, IP40	
Environment			
Operating Temperature	-40 °C to +85 °C	-40 °C to +70 °C	
Storage Temperature	-40 °C to +85 °C		
Relative Humidity	5% to 95% (non-condensing)		
EMC			
ESD	IEC 61000-4-2, Level 3	IEC 61000-4-2, Level 4	IEC 61000-4-2, Level 3
Surge	IEC 61000-4-5, Level 3	IEC 61000-4-5, Level 4	IEC 61000-4-5, Level 3
EFT	IEC 61000-4-4, Level 2	IEC 61000-4-4, Level 2	IEC 61000-4-4, Level 4
Software			
Network Protocols	IPv4, TCP/UDP, ARP, ICMP, DHCP, DNS, HTTP, RFC2217		
IP Acquisition	Static IP/ DHCP		
DNS	Support		
User Configuration	Web-based configuration		
Transparent Transmission	UDP / UDP Multicast / TCP Client / TCP Server / RealCOM / Pair Connection		
Modbus	Modbus RTU/ASCII to Modbus TCP		

Serial Packet Mechanism	Time and length configurable; max 1460 bytes
TCP Server Connections	Up to 8 TCP client connections per serial port
Network Buffer	Send: 16 Kbyte; Receive: 16 Kbyte
Serial Buffer	Send: 1.5 Kbyte; Receive: 1.5 Kbyte
Heartbeat Packet	TCP Keepalive supported, customizable
Registration Packet	Customizable
RFC2217	Support
HTTPD Client	Support
WebSocket Client	Support
RealCOM Mode	Moxa / KangHai compatible
Average Transmission Delay	< 10 ms
Supporting Software	Network management tool, virtual COM software, MixView, MaxView

1.4.3. Cport3104 Series Specifications

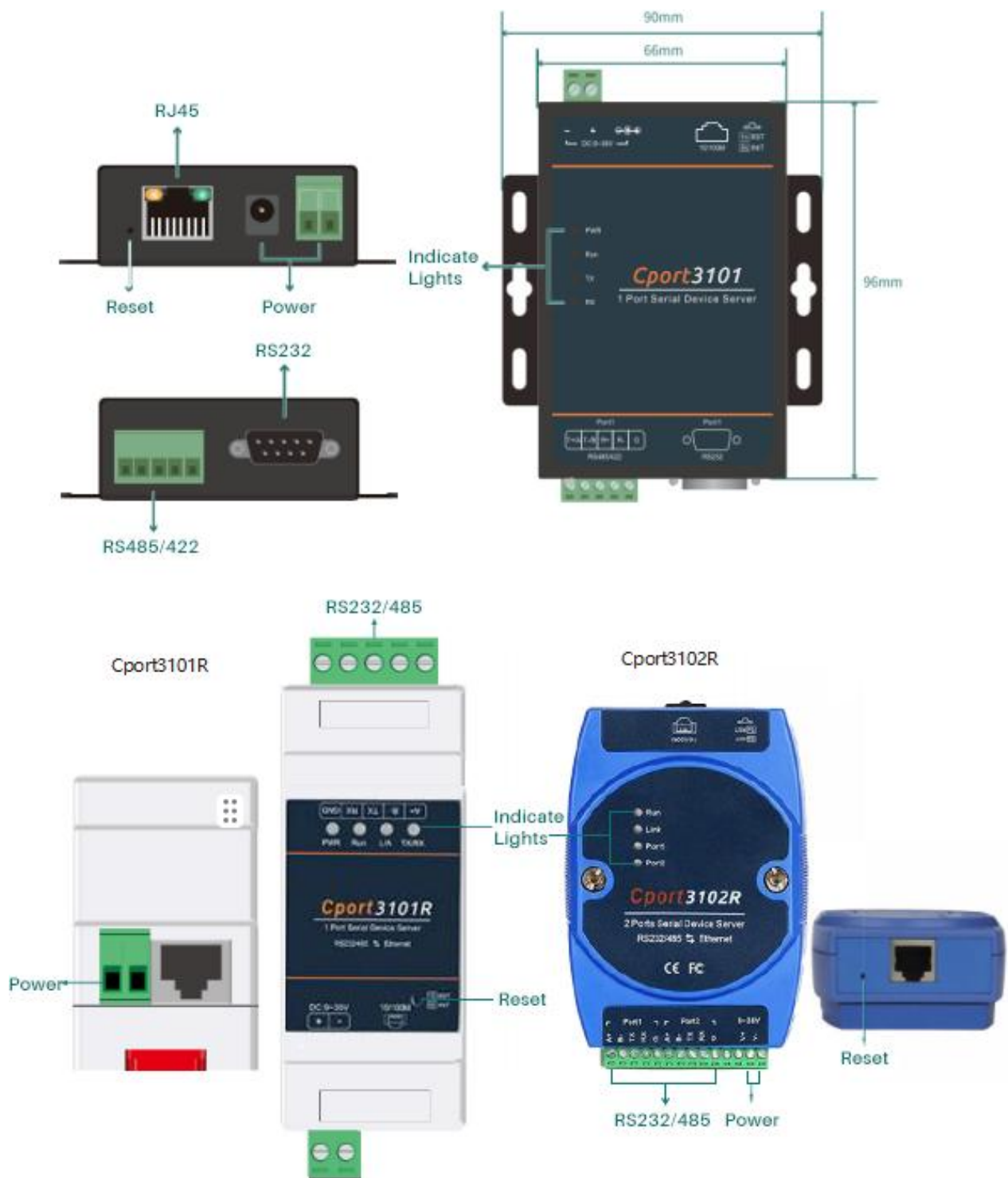
Parameter	Cport3104	Cport3104-I
Software		
Network Protocols	IP, TCP, UDP, ARP, ICMP, DHCP Client, DNS, HTTP, RFC2217	
IP Acquisition	Static IP / DHCP	
DNS	Supported	
User Configuration	Web-based configuration	
Transparent Transmission	UDP Client / UDP Server / UDP Multicast / TCP Client / TCP Server / RealCOM / Pair Connection	

Modbus	Modbus RTU / ASCII to Modbus TCP	
Serial Packet Mechanism	Time and length configurable; max 1460 bytes	
TCP Server Connections	Up to 8 TCP client connections per serial port	
Network Buffer	Send: 16 Kbyte; Receive: 16 Kbyte	
Serial Buffer	Send: 1.5 Kbyte; Receive: 1.5 Kbyte	
Heartbeat Packet	TCP Keepalive supported, customizable	
Registration Packet	Customizable	
RFC2217	Supported	
HTTPD Client	Supported	
WebSocket Client	Supported	
RealCOM Mode	COME-STAR / Moxa / KangHai compatible	
MQTT Client	Alibaba Cloud, OneNet, Huawei Cloud, COME-STAR Cloud, Tencent Cloud, other platforms	
Average Transmission Delay	< 10 ms	
Supporting Software	Network management tool, virtual COM software, MixView, MaxView	
Interface		
Ethernet Port	1 × 10/100Base-T(X) adaptive RJ45, half/full duplex, auto MDI/MDI-X	
Serial Type	4 × RS232/485	4 × RS485/422
Connection	5-pin 5.08 mm terminal block	
Baud Rate	600 bps to 460800 bps	
Data Bits	7 bit, 8 bit	
Stop Bits	1 bit, 2 bit	
Parity	None, Odd, Even	

Terminal Resistor	RS485 built-in 120Ω termination resistor, switchable via internal jumper	
Isolation Voltage	\	3 kVDC
Button	One-click restart or factory reset	
LED Indicators	Power, RUN, Ethernet link/activity, Serial TX/RX	
Power		
Power Input	DC 9–36 V	
Full Load Power	≤ 2.1 W @ DC12V	≤ 1.9 W @ DC12V
Connection	2-pin 5.08 mm terminal block or Φ2.5 mm DC jack	
Mechanical		
Dimensions (L × W × H)	207 × 112 × 34.2 mm (with mounting brackets, without connectors)	
Mounting	Wall-mounted	
Enclosure Protection	Metal enclosure, IP40	
Weight	Approx. 0.75 kg	
Environment		
Operating Temperature	-40 °C to +85 °C	
Storage Temperature	-40 °C to +85 °C	
Relative Humidity	5% to 95% (non-condensing)	
EMC		
ESD	IEC 61000-4-2, Level 3	IEC 61000-4-2, Level 4
Surge	IEC 61000-4-5, Level 3	
EFT	IEC 61000-4-4, Level 4	

1.5. Interface and Indicator Lights

Desktop serial server takes Cport3101 as an example.



1.5.1. Restart/Restore Factory Settings Button

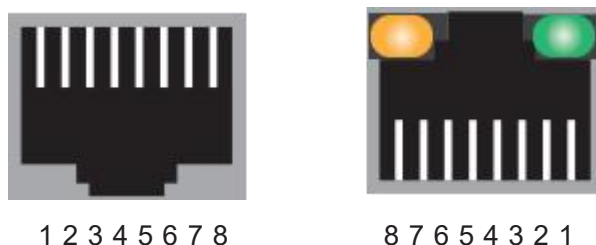
Press and release the button within 1 second, the system resets, the Run light goes out, and the system returns to normal after startup;

Press for more than 5 seconds, the Run light flashes stroboscopically (flashing once for 0.2s), release the button at this time, the parameters will be restored to the factory settings, and the system will be reset.

1.5.2. Ethernet RJ45 interface

The Ethernet RJ45 interface supports 10/100Base-T(X) with auto MDI/MDI-X. The pin assignments for the RJ45 interface are shown in the figure below.

Cport3101R features an RJ45 interface without LED indicators (left figure), while other serial servers use an RJ45 interface with LED indicators (right figure).



Pin number	Signal name
1	Send data+ (TD+)
2	Send data -(TD-)
3	Receive data+ (RD+)
6	Receive data- (RD-)
4, 5, 7, 8	Unused

1.5.3. Power connector

Cport3102R supports only a 14-pin terminal block with a voltage input range of DC 9–36V.

Other products support two connection options: a DC jack ($\phi 2.5$ mm) or a 2-pin terminal block (5.08 mm pitch), with a voltage input range of DC 9–36V.



DC($\phi 2.5$ mm)



2-pin Terminal blocks(5.08mm)

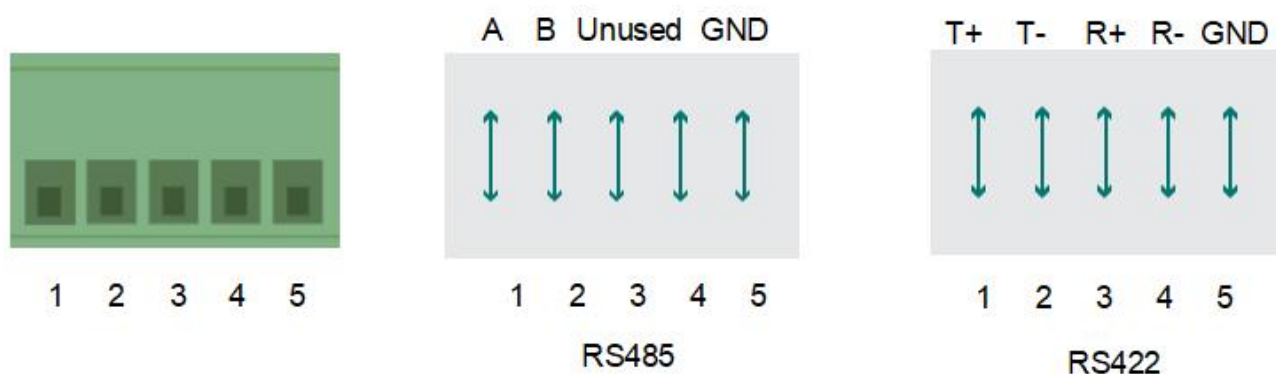


14-pin Terminal blocks

1.5.4. Serial Interfaces

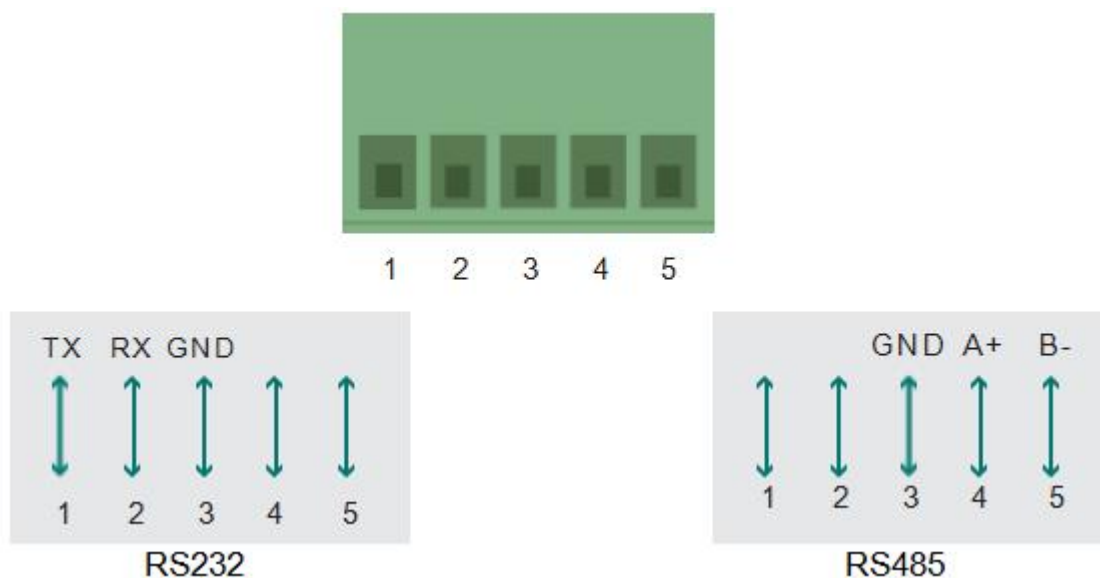
RS485/RS422 serial interface (Cport3101R uses RS232/RS485 interface).

The RS485/RS422 ports use 5-pin terminal blocks with a 5.08 mm pitch. Refer to the figure below for the pin assignments of each interface.

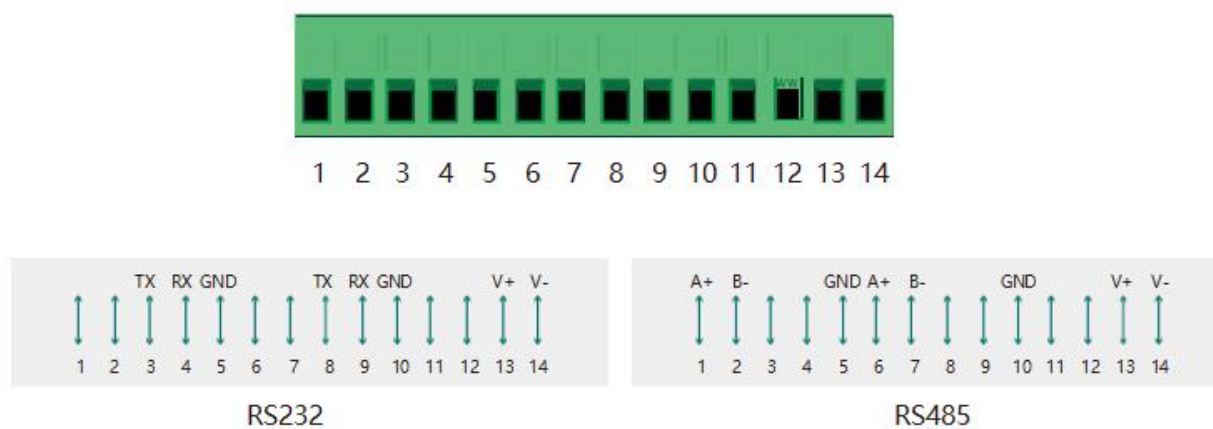


RS232/RS485 serial interface (only Cport3101R/3102R with this kind of interface)

The RS232/RS485 interface adopts 5-bit 5.08mm pitch terminal blocks, please refer to the figure below for the pin assignment of various interfaces.

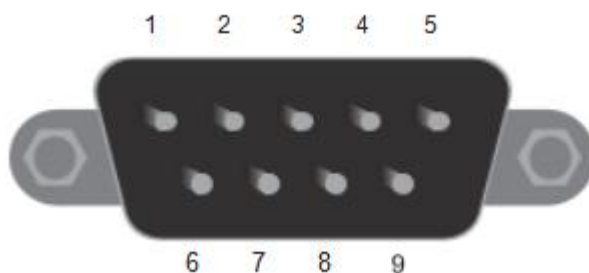


Cport3102R is equipped with an RS232/RS485 interface using a 14-pin, 3.5 mm pitch terminal block. Refer to the figure below for the pin assignments of each interface.



RS232 Serial interface

RS232 interface adopts DB9 male header (except Cport3101R); refer to the following figure for interface pin assignment:



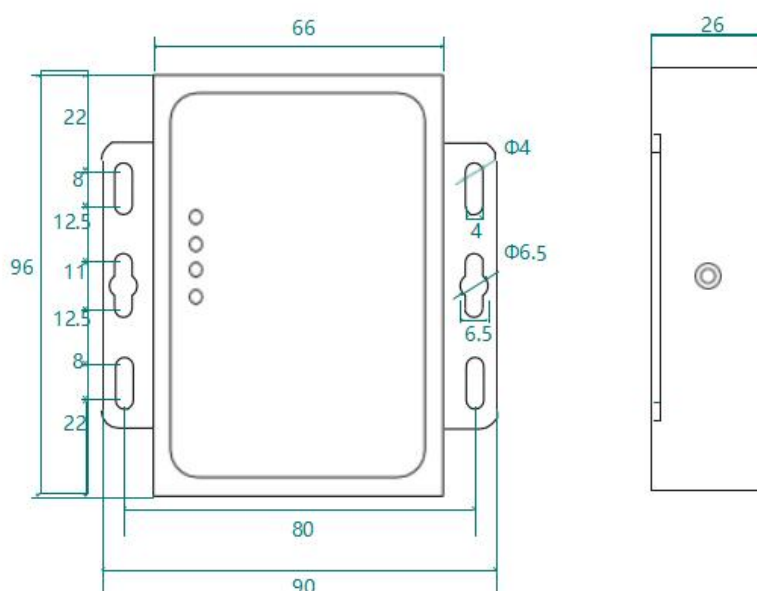
Pin number	Pin name	Pin description	Signal level	direction
1	None			
2	RXD	Receive Data	RS232	Input
3	TXD	Transmit Data	RS232	Output
4	None			
5	GND	Ground	Ground	Ground
6	None			
7	None			
8	None			

1.5.5. Indicator Lights

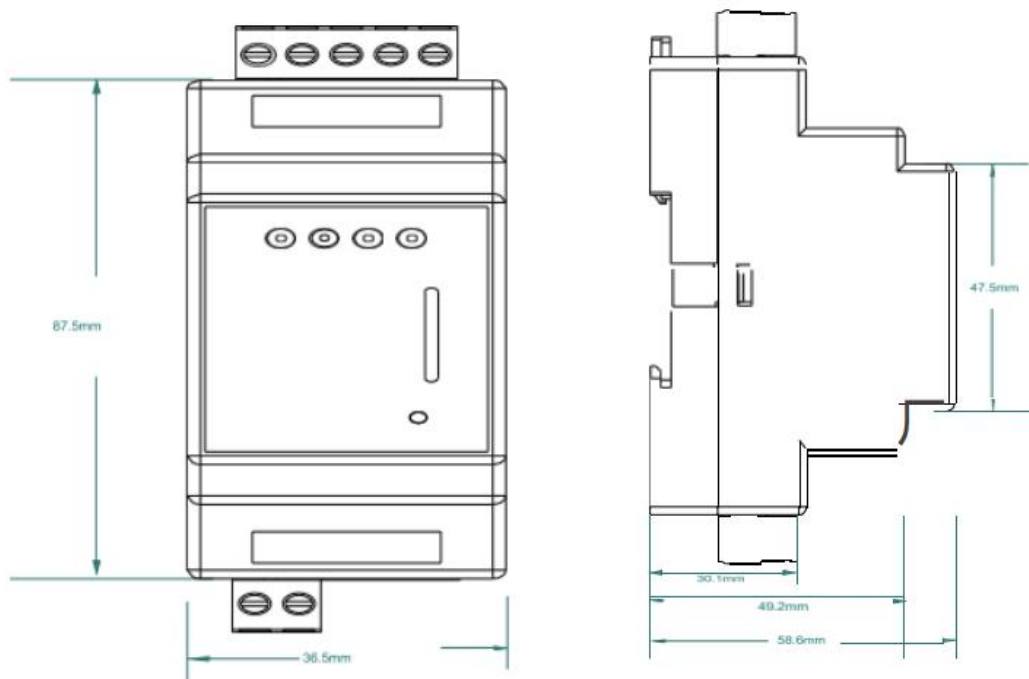
Indicator light	Status	Definition
PWR	On	Power supply is normal
	Off	No power supply or abnormal power supply
Run	Flash	Equipment in normal operation
	On, Off	The equipment is operating abnormally
TX	Flash	The RS232/RS485/RS422 interface is sending data
	Off	no data

RX	Flash	The RS232/RS485/RS422 interface is receiving data
	Off	no data
TX/RX (Cport3102/Cport3101R)	Flash	The RS232/RS485/RS422 interface is sending and receiving data
	Off	no data
Yellow light on the left side of the network port	On	Connect to a 100M network at this time
	Off	Connect to a 10M network at this time
	Flash	The network port is connected normally and there is data transmission
Green light on the right side of Link&Network port	On	The connection is normal and there is no data transmission
	Off	Abnormal connection
Port1/Port2 (Cport3101R/3102R)	Flash	The RS232/485 interface is receiving and sending data
	Off	no data

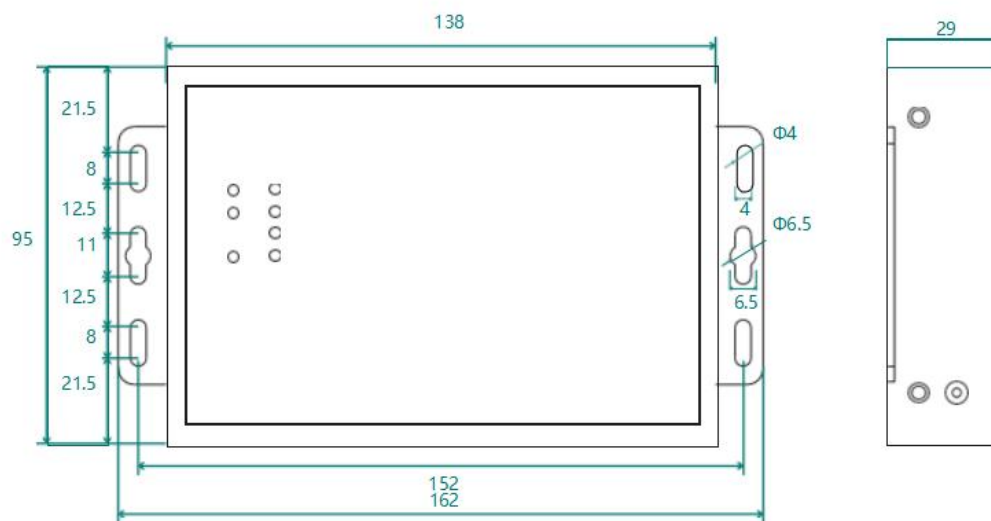
1.6. Product Size



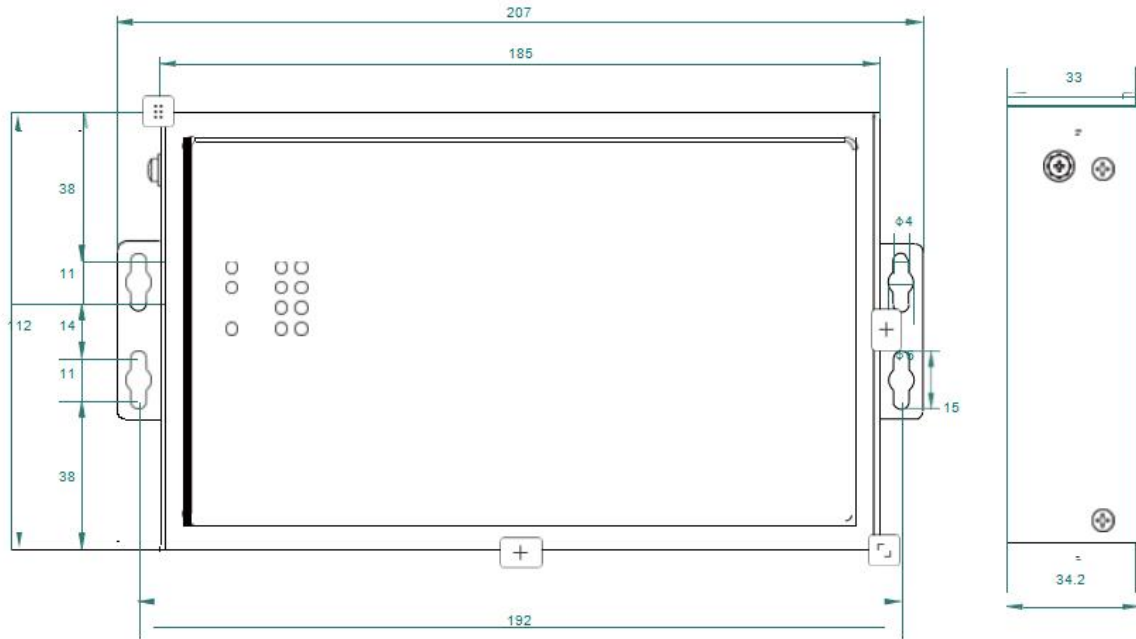
Cport3101/3101-I/3102 size (mm)



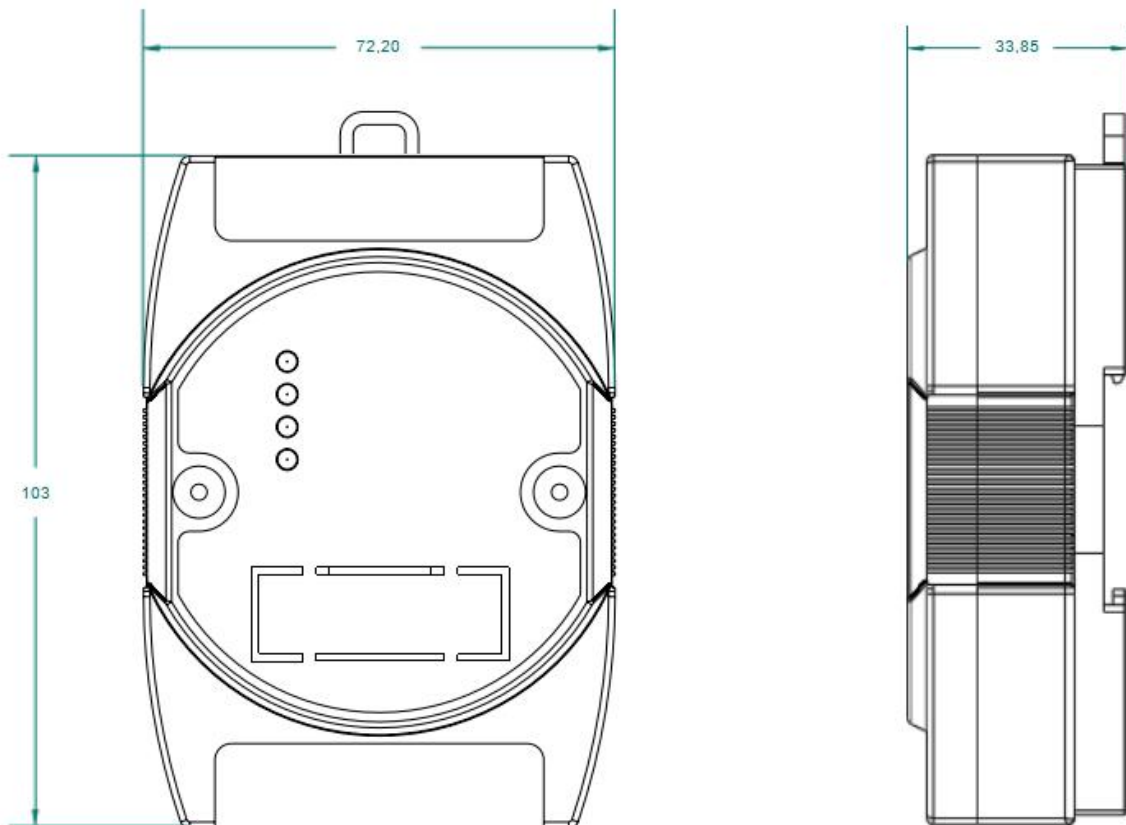
Cport3101R size (mm)



Cport3102-I size (mm)



Cport3104/3104-I size (mm)



Cport3102R size (mm)

Chapter 2. Software Quick Configuration

The Come-Star Cport series serial servers feature a built-in web server, providing a convenient and intuitive interface for device access and configuration. Users can access the web management interface using standard web browsers such as Internet Explorer, Firefox, or Google Chrome.

This chapter provides a brief introduction to the Cport series serial server products. Users are advised to read this chapter and follow the instructions to complete the initial system setup, which will help establish a basic understanding of the product. For detailed descriptions of specific functions and configuration procedures, please refer to the subsequent chapters.

2.1. Environmental Preparation

For fast networking of Cport series serial server, you need to prepare a PC, a serial server, a network cable, a serial cable, and a DC12V/1A power supply. The hardware connection is shown in Figure 2.



Figure 1 Hardware Connection

2.2. Log in Web

2.2.1. Revise IP address

When accessing the Cport serial server via a web browser, the IP address of the serial server and the PC must be within the same network segment. Therefore, the PC's IP address must be configured to ensure it is in the same local area network as the serial server.

For Windows users, configure the network settings as follows:

Start → Control Panel → Network and Internet → Network Connections → Local Area Connection → Properties → Internet Protocol (TCP/IP)

The default IP address of this serial server model is 192.168.16.253. Set the PC's IP address to 192.168.16.X, where X is any valid value from 2 to 252 (excluding 253).

The corresponding Windows configuration interface is shown in Figure 3.

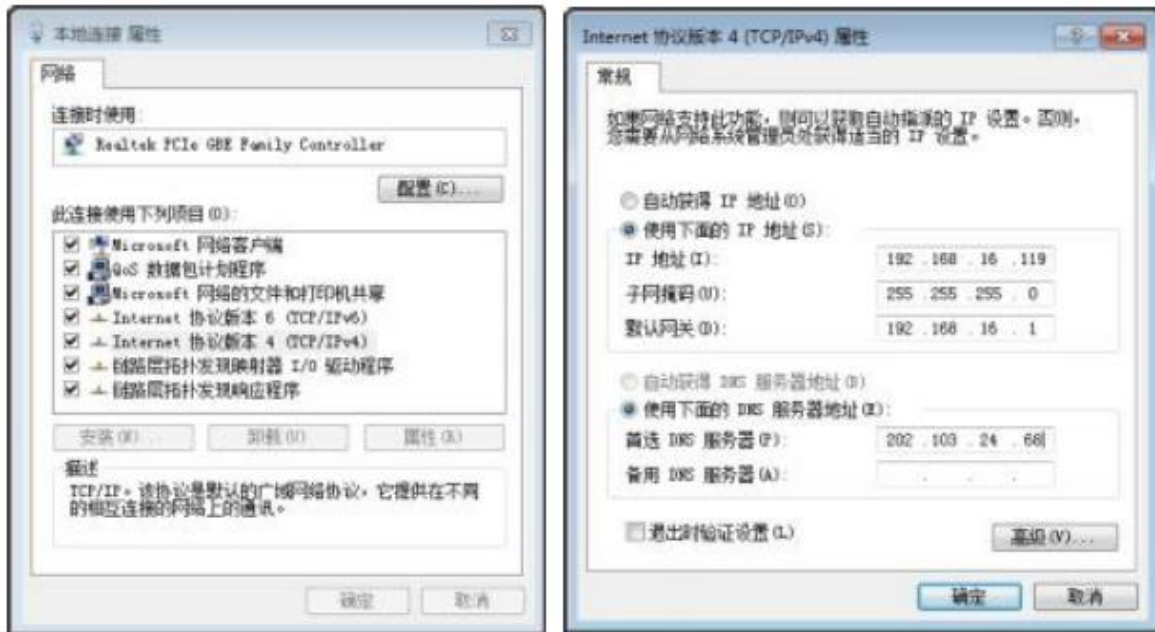


Figure 2 IP setting interface under Windows environment

After changing the IP address of the PC, you can access the Web page of the Cport series serial server through the default IP address 192.168.16.253, and perform related configuration operations on it.

2.2.2. Login in Web

Open the browser and enter the default IP address of the serial server in the address bar, as shown in Figure 4.

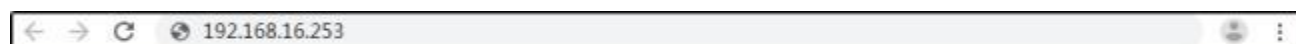


Figure 3 Enter the IP address interface in the address bar

After hitting the Enter key, the window shown in Figure 5 pops up, prompting the user to enter the user name and password.



Figure 4 Input user name and password interface

The login users of this Cport series serial server are divided into three types. The first is a normal user, the user name and initial password are both "admin", it is used when accessing the Web normally; the second is a guest, the user name and password are both "none", after logging in, only the configuration of the current serial server can be viewed, And can't be configured; the third type is the administrator, the user name is "admin", and the password is the last six digits of the serial server's MAC address. When we forget the password of an ordinary user, we can log in with the administrator account and modify this Machine password.

After entering the user name and password, click "OK" and the server will authenticate. After success, you will enter the main page of the Web server, as shown in Figure 6.

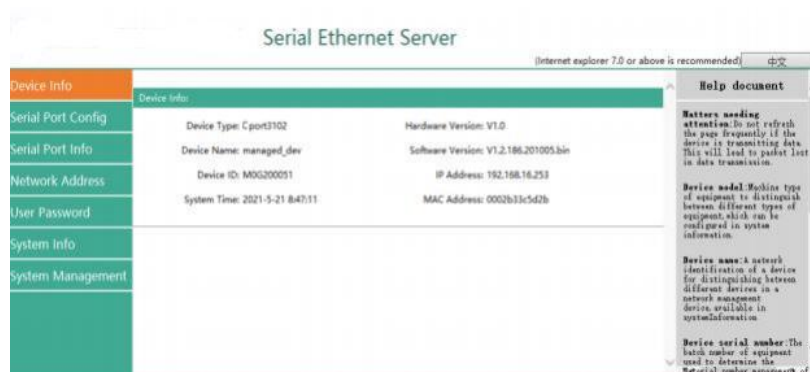


Figure 5 The main interface of the Web server



This Cport series serial server has been tested extensively with IE7.0 or higher, Firefox, and Google's mainstream browsers, and it can be used normally, but it is recommended to use Google browser when upgrading the device.

Chapter 3. Network Management Function

3.1. Main Page Introduction

After entering the correct user name and password and the authentication is successful, you will enter the main page of the Web, as shown in Figure 7. The main page can be roughly divided into three areas. The upper area displays the logo, the lower left area is the function menu area, the middle area is the main function display area, and the lower right area is the help document area.



Figure 6 The main interface of the Web server

3.1.1. Function Menu

The left side of the webpage is the function menu area, which displays all the configurable software functions of this Cport series serial server. The function menus are basic information, serial port, serial port information, network address, user password, system information and system management. Each function menu contains several sub-functions. Its function is shown in Table 1.

Table 1 Menu function description table

Basic information	Device Information	Display device information, including the name, device number, software version, IP address, and other relevant details.
Serial port configuration	Serial server configuration	Set the basic parameters for each port, including the serial port number and other relevant settings.
	Serial port parameters	Configure the working mode, baud rate, packet length, and other parameters for each port.

	Network parameters	Configure the local port range and heartbeat interval for each port.
	Number of network connections	Configure the destination IP address and remote port for each port.
Serial port information	Serial port information	Display the serial port number along with the total number of bytes sent and received.
	Network connection mode	Display the working mode of each serial port, local port, and other related information.
Website address	Website address	Configure the IP address, subnet mask, and default gateway for serial communication.
User password	User password	Configure username and password.
System info	System info	Configure the device model, device name, and other related information.
System management	Device restart	Configure the restart function of the device.
	Factory reset of the device	Configure the device to restore factory values.
	Equipment upgrade	Configure the upgrade file of the device.
	No data device restart	Automatically restart the device if there is no data transmission on the network or serial ports for a certain period.

3.1.2. Help Document

The function area at the bottom right is the help document. Click any main function page in the lower left, and the help document will be displayed in the lower right function area corresponding to the main page, as shown in Figure 8.

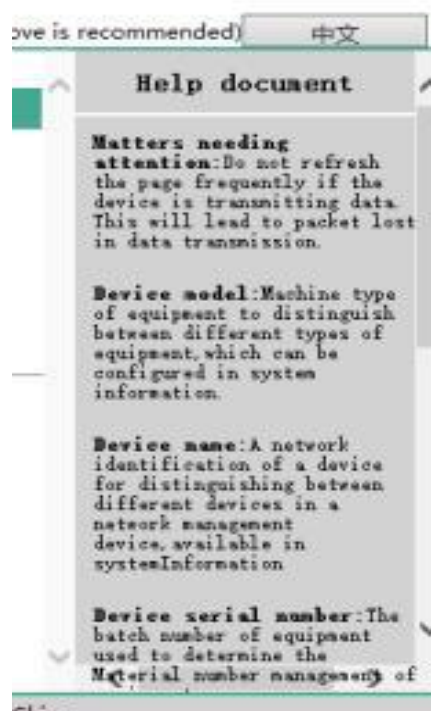


Figure 7 Help Page

3.1.3. Basic Information

The basic information module includes: device information. The function of the device information part is to display some specific information of the current device, including device model, device name, device number, system time, hardware version, software version, IP address and MAC address. As shown in Figure 9.

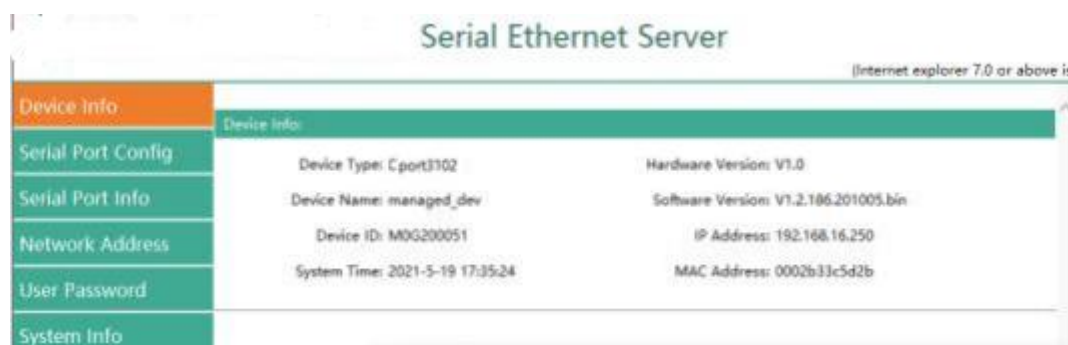


Figure 8 Device information

- Device model: The model of the serial server, which can be customized by the user on the "System Information" page.
- Device name: The name of the serial server, which can be customized by the user on the "System Information" page.
- Device number: the serial port server number.
- System time: The current time of the serial server is synchronized with the time of the PC accessing the serial server.

- Hardware version: the current hardware version of the serial server.
- Software version: the current software version of the serial server.
- IP address: the IP address of the serial server.
- MAC address: the MAC address of the serial server.

3.2. Serial Port Configuration

The serial port module includes: serial server configuration, serial port parameter configuration, network parameter configuration, network connection number configuration.

3.2.1. Serial Port Configuration

The main function of the serial Ethernet server is to carry out two-way transparent transmission of standard serial bus data (RS232, RS485, RS422) and standard Ethernet data supporting TCP/IP protocol to solve common serial equipment Networking problems on the Internet. The serial server configuration page can configure the parameters of the serial Ethernet server, as shown in Figure 10.

The screenshot displays the 'Serial port configuration' page of a web interface. On the left is a vertical menu with options: Device Info, Serial Port Config (highlighted), Serial Port Info, Network Address, User Password, System Info, and System Management. The main area is divided into two sections: 'Serial port parameters' and 'Network parameter'. The 'Serial port parameters' section includes fields for SerialPortOperationMode (RS232), BaudRate (9600), DataBits (8), StopBit (1), ParityBit (none), PackingLength (300), PackingInterval (30), Frame head frame tail mode (disabled), Start byte (0x0), End byte (0x0), Heartbeat Function (Disable), Heartbeat Content (7777772e5d6169776552e636), Heartbeat Interval (30), and RFC2217 Function (disabled). The 'Network parameter' section includes Working mode (TCP Server), Local port (52001), KeepaliveInterval (30), and KeepaliveTimeout (30). At the bottom right are 'configuration' and 'cancel' buttons.

Figure 9 Serial port configuration page

The detailed description of the configuration parameters on this interface is shown in Table 2.

Table 2 Description of serial port server configuration parameters

Item	Instruction
Serial port number	Select the serial port currently to be configured, enable or disable it. Cport3101/3101-I/Cport3101R supports 1 serial port; Cport3102/3102-I supports 2 serial ports; Cport3104/3104-I supports 4 serial ports.
Turn on large data transmission	According to the amount of data transferred and the connection mode, choose to enable or disable it
Serial port parameters	
Serial port working mode	Select the serial mode of the current device: ● Cport3101: Select RS232, RS485, or RS422 as required. ● Cport3101-I: Supports RS232/RS485/RS422 three-in-one. No mode selection is required; use directly as needed. ● Cport3102: Port 1 supports RS485/RS422, and Port 2 supports RS232. ● Cport3102-I: Both serial ports support RS485/RS422. ● Cport3104 / Cport3104-I: All four serial ports support RS485/RS422. ● Cport3101R / Cport3102R: Support RS485 or RS232 mode; only one mode can be selected at a time.
Baud rate	The baud rate of serial communication, the unit is bps; the options are: 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400 and 460800. The factory default value is 9600. The baud rate of each serial port is independent of each other, set separately, and does not affect each other. (Cport3101 supports up to 19200bps in Modbus ASCII mode)
Check Digit	Select the check mode, there are three modes to choose from: none, odd check, and even check. The factory default setting is none. The verification mode of each serial port is also independent of each other, set separately, and does not affect each other.
Data bit	Set the effective number of data bits during serial communication. This machine supports 7-bit and 8-bit data bits.
Stop bit	Set the stop bit length in serial communication, you can choose: 1, 2. The factory default setting is 1.
Packet length	When the serial port continuously receives data whose length exceeds the value set by the packet length, a transmission operation will be triggered, and the data will be forwarded to the network port. The value

	ranges from 1 to 1460 bytes.
Packet interval	When the intermittent time of serial port receiving data exceeds this value, no matter how much data has been received, a transmission operation will be triggered, and these data will be forwarded to the network port, the range is 1~65535ms.
Frame header and footer mode	After enabling this mode, the serial port will be packetized according to the frame start byte and end byte, and the data not between the head and tail will be discarded.
Start byte	Set the range of the starting byte of the serial port to be between 0x00~0xff in hexadecimal.
End byte	Set the range of the end byte of the serial port to be between 0x00 and 0xff in hexadecimal.
Registration package function	Choose the sending mode of the registration package Disable: Disables the function ● LINK: The registration packet is sent only once when the network connection is established ● DATA: The registration package is filled in front of the serial port DATA each time the serial port sends DATA to the network This function can be used only when the network working mode is UDP or TCP Client
Registration Package Contents	The content of the registration package, Hex string, the longest supported is 128 bytes (hexadecimal is 64 bytes).
Heartbeat Packet Function	Choose how to send heartbeat packets Disable: Disable this feature to COM: Heartbeat packets are sent to the serial port to Network: Heartbeat packets are sent to the network port This function is only allowed when the network working mode is UDP, TCP Server and TCP Client.
Heartbeat package content	The content of the heartbeat packet, Hex string, the longest supported is 128 bytes (hexadecimal is 64 bytes).
Heartbeat interval	The time interval for sending heartbeat packets, in seconds, the range is 1~65535 seconds, the default is 30 seconds.
RFC2217	Enabling this function allows users to dynamically modify parameters such as baud rate, data bits, stop bits and parity bits of the serial port using standard RFC2217 commands on the network.
Network parameters	

Working mode	A total of 17 communication modes are available, including UDP Client, UDP Server, UDP Multicast, TCP Client, TCP Server, Modbus RTU Master, Modbus RTU Slave, Modbus ASCII Master, Modbus ASCII Slave, RealCOM_MCP, RealCOM_CCP, RealCOM_MW, Pair Connection Master, Pair Connection Slave, HTTPD Client, WebSocket Client, and MQTT Client. The factory default mode is UDP Client. UDP Client When the device operates in UDP Client mode, the remote device must also operate in UDP mode. The device can establish UDP communication with up to 8 remote devices. The IP address and port number of the remote devices can be configured via the web interface. UDP Server When the device operates in UDP Server mode, the remote device must operate in UDP Client mode. The device supports communication with up to 8 remote devices. The UDP client must first send data to the device, after which the device records the client's IP address and port information. UDP Multicast When the device operates in UDP Multicast mode, the remote devices must also operate in UDP Multicast mode. The device can join up to 8 UDP multicast groups. Multicast IP addresses and port numbers can be configured via the web interface. TCP Client When the device operates in TCP Client mode, the remote device must operate in TCP Server mode. The remote device's IP address and port number must be configured in the corresponding network connection settings. TCP Server When the device operates in TCP Server mode, the remote devices must operate in TCP Client mode. In this mode, the device supports up to 8 simultaneous TCP client connections. Modbus RTU Master When the device operates in Modbus RTU Master mode: If Modbus Over TCP is not enabled, the remote device must operate in Modbus TCP Slave mode. If Modbus Over TCP is enabled, the remote device must operate in Modbus RTU Slave mode. This mode supports up to 8 connections. Modbus RTU Slave When the device operates in Modbus RTU Slave mode: If Modbus Over TCP is not enabled, the remote device must operate
--------------	--

in Modbus TCP Master mode.

If Modbus Over TCP is enabled, the remote device must operate in Modbus RTU Master mode.

This mode supports up to 8 connections.

Modbus ASCII Master

When the device operates in Modbus ASCII Master mode:

If Modbus Over TCP is not enabled, the remote device must operate in Modbus TCP Slave mode.

If Modbus Over TCP is enabled, the remote device must operate in Modbus ASCII Slave mode.

This mode supports up to 8 connections.

Modbus ASCII Slave

When the device operates in Modbus ASCII Slave mode:

If Modbus Over TCP is not enabled, the remote device must operate in Modbus TCP Master mode.

If Modbus Over TCP is enabled, the remote device must operate in Modbus ASCII Master mode.

This mode supports up to 8 connections.

RealCOM_MCP / RealCOM_CCP / RealCOM_MW

When the device operates in RealCOM_MCP, RealCOM_CCP, or RealCOM_MW mode, the PC must install the corresponding virtual serial port software. The software maps the device's serial port to a local serial port on the PC, allowing existing serial applications to communicate with serial devices. Each serial port supports up to 4 virtual serial connections.

Pair Connection Master

When the device operates in Pair Connection Master mode, the remote device must operate in Pair Connection Slave (TCP Server) mode. The remote device's IP address and port number must be configured in the corresponding network connection settings.

Pair Connection Slave

When the device operates in Pair Connection Slave mode, the remote device must operate in Pair Connection Master (TCP Client) mode. In this mode, the device supports up to 8 remote Pair Connection Master connections.

HTTPD Client

When the device operates in HTTPD Client mode, users must specify parameters such as the remote HTTP server address, port, and method. The device submits serial data to the HTTP server using GET or POST methods. Data sent from the HTTP server can also be transparently forwarded to the serial port.

	WebSocket Client When the device operates in WebSocket Client mode, users must configure parameters such as the WebSocket server address, port, and method. The Ping interval can also be set to maintain the connection between the device and the server. Serial data is uploaded to the WebSocket server in hexadecimal format, and data sent from the server can be transparently forwarded to the serial port. MQTT When the device operates in MQTT mode, users must select the server platform type. Supported platforms include Alibaba Cloud, OneNet, Huawei Cloud, COME-STAR Cloud, Tencent Cloud, and other standard MQTT cloud platforms. Users must then configure the MQTT server address, port, subscription and publication topics, device key, and other parameters. Serial data is sent to the cloud platform, and data issued by the cloud platform can be transparently forwarded to the serial port.
Local port	Local port on the network connection side
Heartbeat interval	When the network working mode is in TCP mode, send TCP heartbeat detection packets at the specified interval to test whether the connection exists, if not, it will automatically disconnect, the range is 0~6000 seconds
Overtime time	When the network working mode is in TCP mode, it will detect the idle time of the current connection and the corresponding serial port. When it exceeds the set value, the TCP connection will be disconnected.
Modbus Over TCP	Enable transparent transmission for Modbus RTU/ASCII protocol.
Modbus receive timeout	Modbus serial port receive timeout time
Modbus ID filtering	Modbus slave ID range filtering
Modbus Slave Pre-read	The serial device server automatically performs pre-reading according to the Modbus pre-read instruction table configuration and supports up to 8 pre-read entries.
Modbus Slave Polling Interval	The time interval at which the serial device server reads each entry according to the Modbus pre-read instruction table.
Number of network connections	
Destination address	IP address of the peer end of the network connection
Destination port	The port number of the peer end of the network connection
Number of network connections in Modbus_RTU/ASCII_Master mode	

Destination address	IP address of the peer end of the network connection
Destination port	The port number of the peer end of the network connection
Modbus ID range	The data with the Modbus slave ID in this range will be forwarded to the corresponding destination network address
Modbus_RTU/ASCII_Slave mode Modbus pre-read command table	
Device address	Modbus slave ID
Instruction	Modbus function code for reading data
Register address	The starting address of the slave register to be read
Number of registers	Number of slave registers to read

3.2.2. Modbus

Take Cport3101-I as an example below, other models are similar. Simulate the master with software such as Modbus Poll, and simulate the slave with software such as Modbus Slave.

3.2.2.1. Modbus Master

Configure the serial server with the following settings: set the serial port parameters to 9600-8-N-1, select Modbus RTU Master as the working mode under "Network Parameters," and set the network address in "Network Connections" to the IP and port of the Modbus slave device. The physical connection is illustrated as follows:

- Serial port: connect to the host
- Network port: connect to the slave

Figure 10 Modbus Web parameter configuration

Modbus Poll software configuration:

Open the Modbus Poll software, go to "Connect" → "Connect", and the connection parameters are configured as follows:

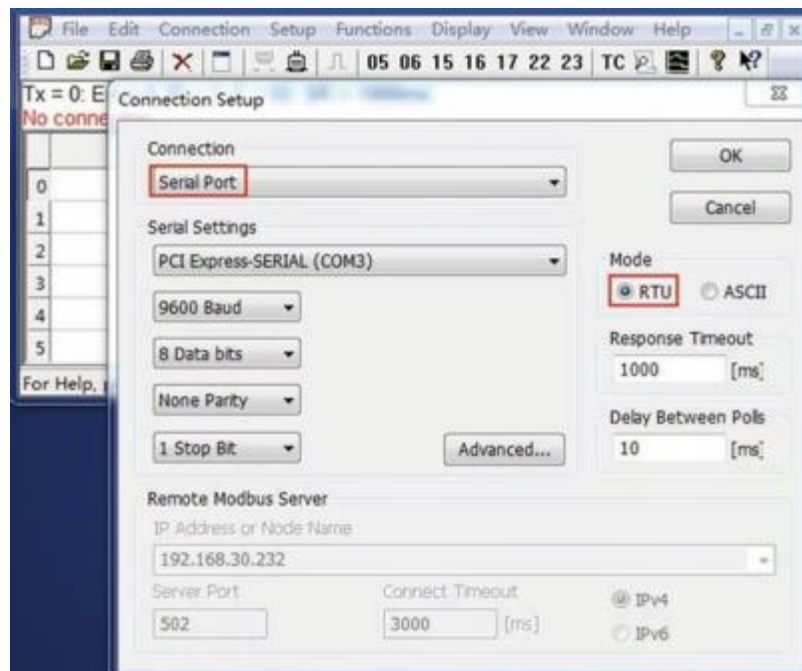


Figure 11 Modbus host serial port parameter configuration

Read parameter configuration: the slave ID is 1, the function code is 03, the starting address of the register to be read is 0, the number of registers to be read is 10, and the cycle reading interval is 1000 ms.

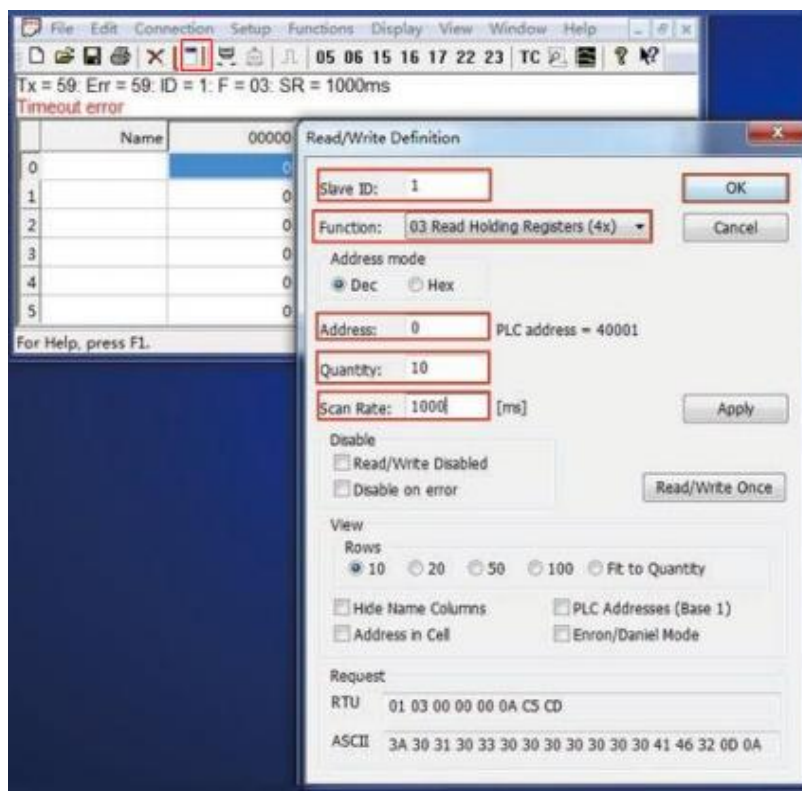


Figure 12 Modbus host device attribute definition

Open Modbus Slave software: Go to "Connect" -> "Connect", and the connection parameters are configured as follows:

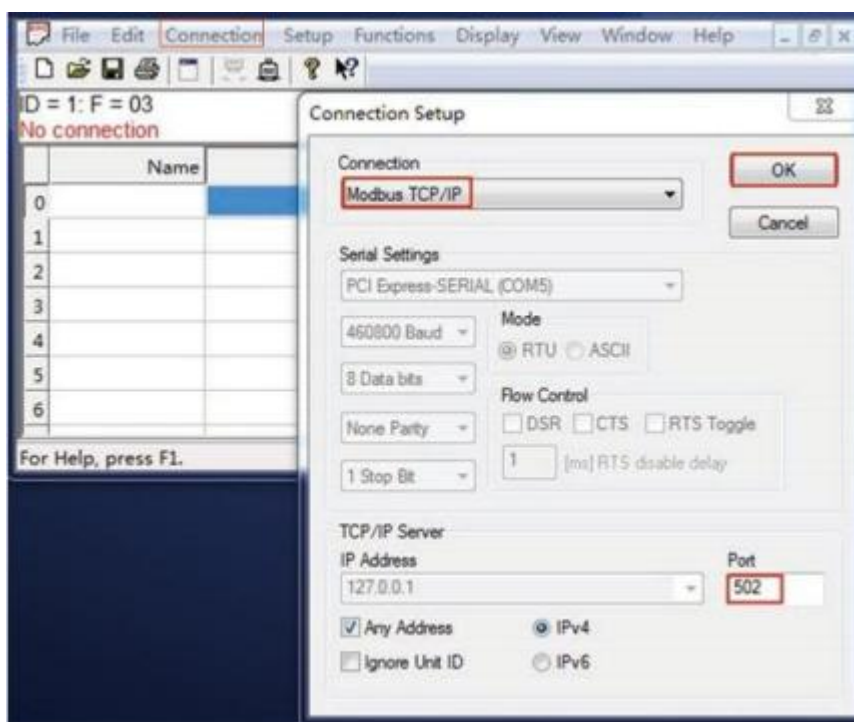


Figure 13 Mosbus slave network connection configuration

Slave device definition configuration: the slave ID is 1, the function code is 03, the register start address is 0, and the total number of registers is 200.

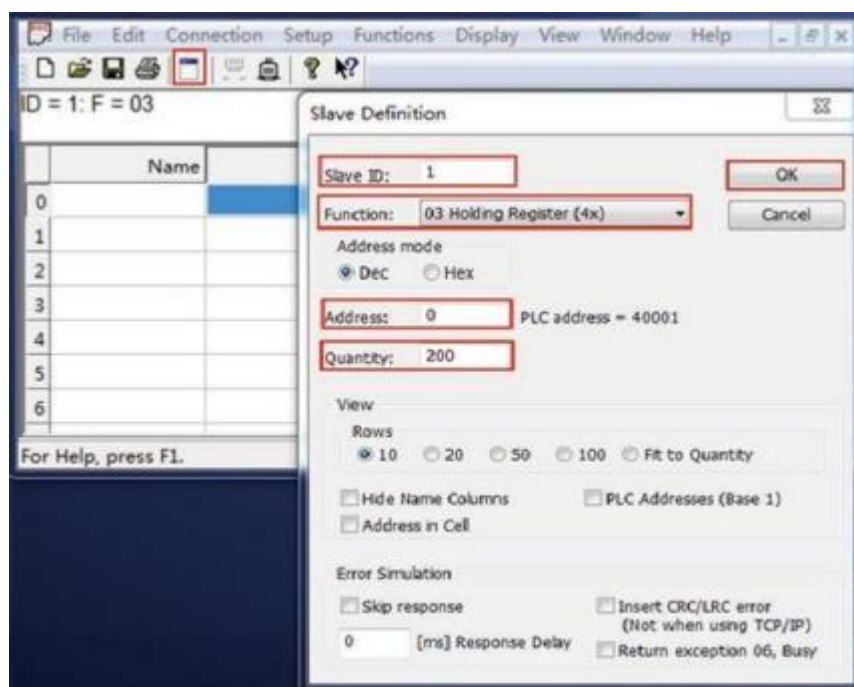


Figure 14 Mosbus slave device attribute definition

Double-click the cell of Modbus Slave software and modify it to auto-increment mode, you can see that the register cell of Modbus Poll software also changes value automatically. Indicates that the device communication is normal.



Figure 15 The value of Modbus slave register is automatically incremented

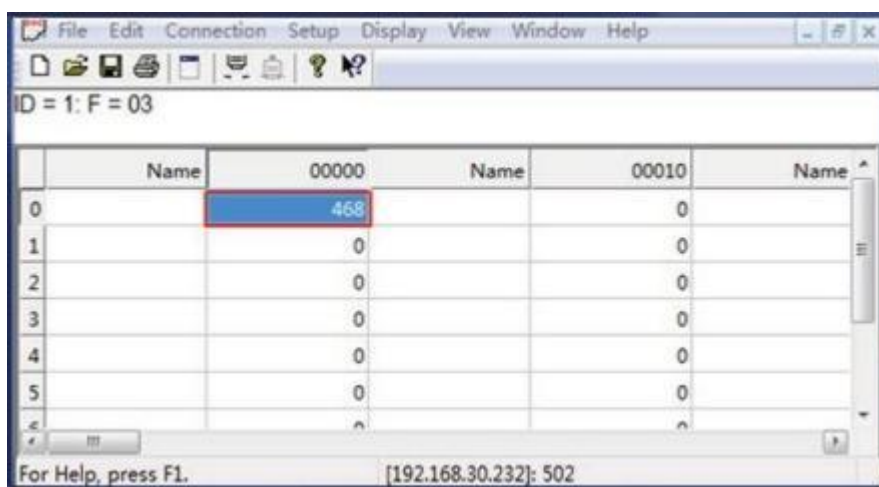
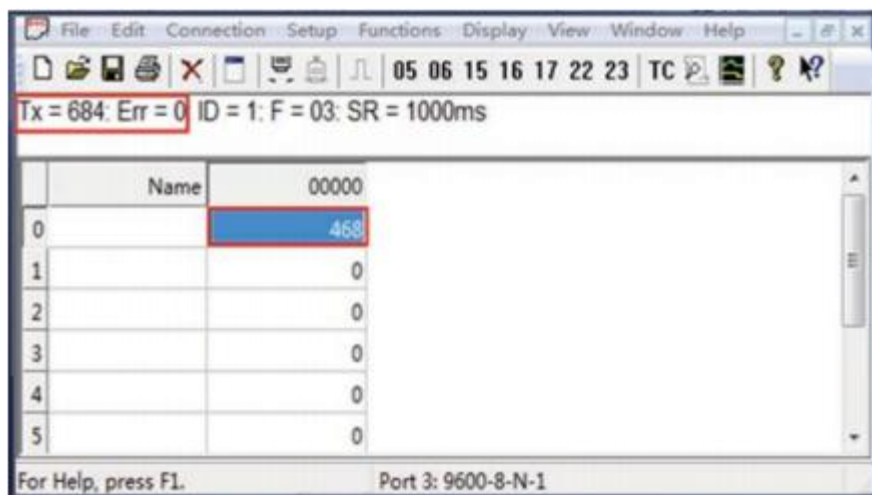


Figure 16 Communication is normal, the host can read the register data of the slave through the serial server device

3.2.2.2. Modbus Slave

Take Modbus_RTU_Slave as an example (the same applies to Modbus ASCII Slave):

Configure the "serial port parameter" of the serial server to be 9600-8-N-1, the working mode in the "network parameter" is Modbus RTU Slave, and the local port is 502. The physical connection is described as follows:

- Network port: connect to the host
- Serial port: connect to the slave

Figure 17 Modbus Web parameter configuration

Open Modbus Poll software: Go to "Connect" -> "Connect", and the connection parameters are configured as follows:

Figure 18 Modbus host network connection parameter configuration

Read parameter configuration: the slave ID is 1, the function code is 03, the starting address of the register to be read is 0, the number of registers to be read is 10, and the cycle reading interval is 1000ms.



Figure 19 Modbus host device attribute definition

Open Modbus Slave software: Go to "Connect" -> "Connect", and the connection parameters are configured as follows:

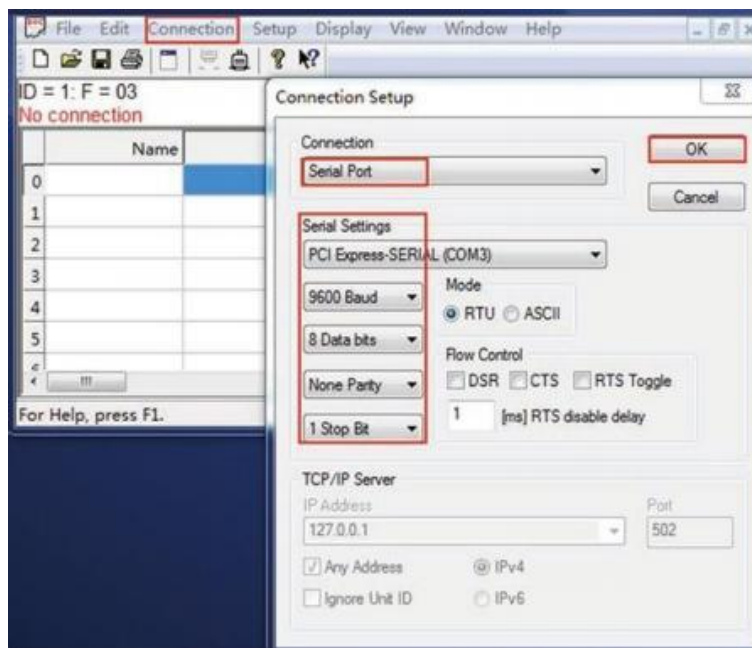


Figure 20 Modbus slave serial port parameter configuration

Slave device definition configuration: the slave ID is 1, the function code is 03, the register start address is 0, and the total number of registers is 200.

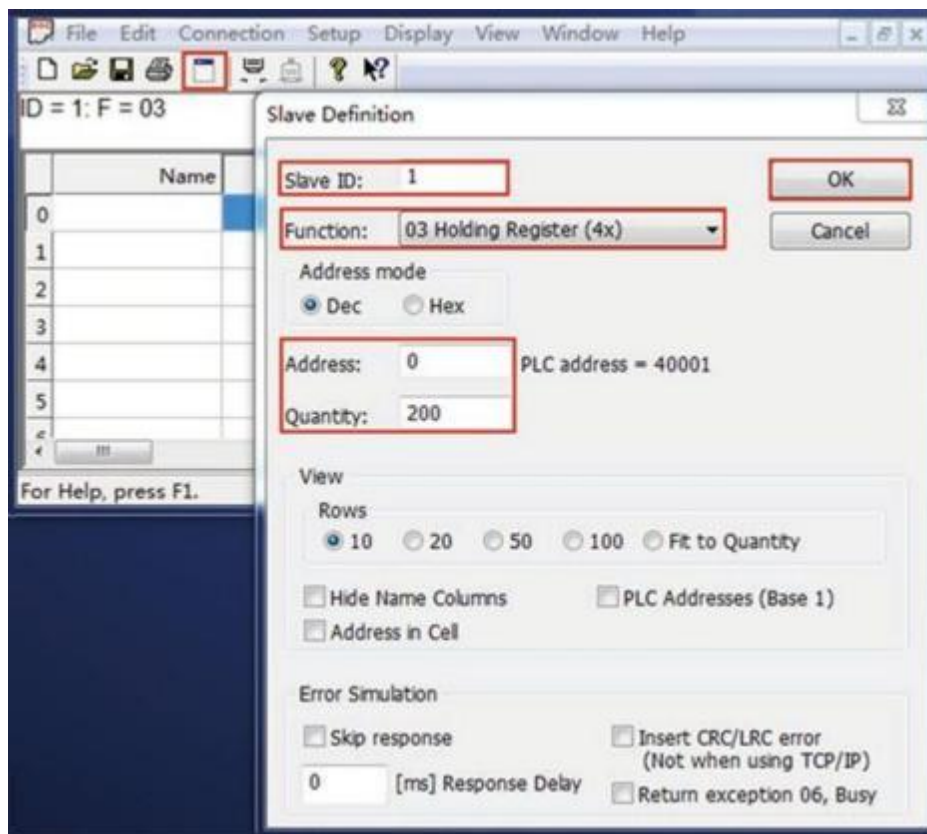


Figure 21 Modbus slave device attribute definition

Double-click the cell of Modbus Slave software and modify it to auto-increment mode, you can see that the register cell of Modbus Poll software also changes value automatically. Indicates that the device communication is normal.

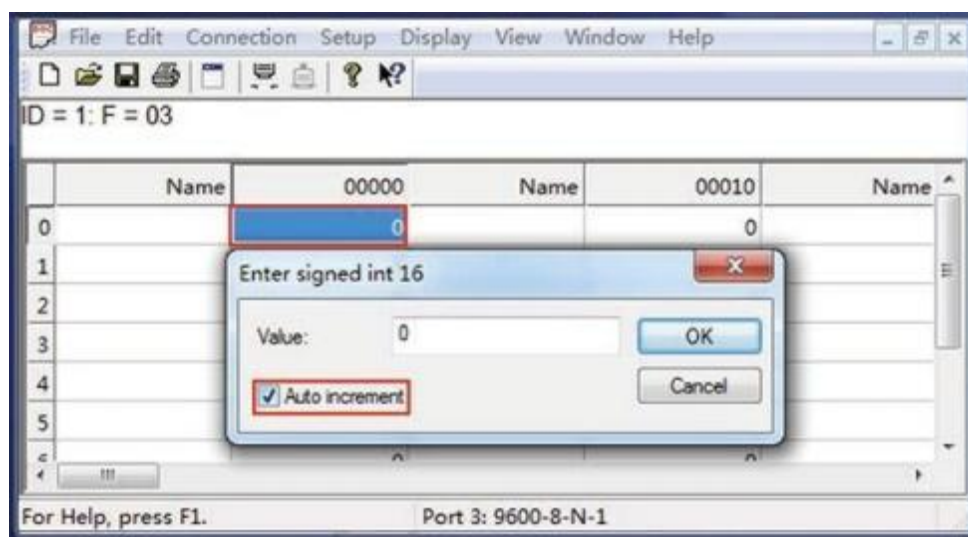


Figure 22 Modbus slave register value auto increment

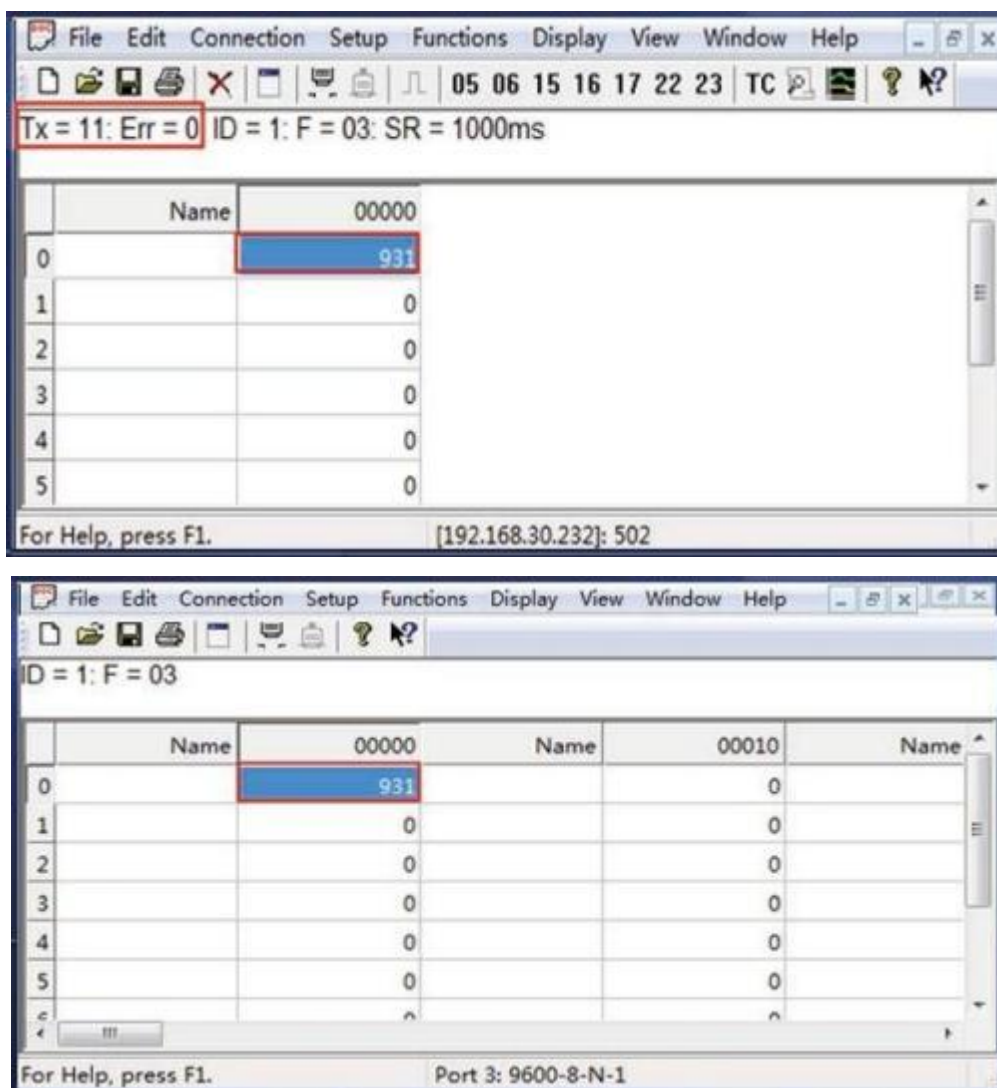


Figure 23 The communication is normal, the host can read the register data of the slave through the serial server device



1. The port numbers 57050 and 57051 have been used by the system. When configuring the port numbers, please do not reuse them.

2. The device and the remote device must have the same baud rate, parity bit, data bit and stop bit.

3. If the working mode of the device is UDP, the remote device must also work in UDP mode; if the working mode of the device is TCP_Client, the remote device must work in TCP_Server mode; if the working mode of the device is TCP_Server, the remote device must work in In TCP_Client mode.

4. When you need to use long frame data frequently or have high data transmission requirements, please adjust the baud rate and lengthen the sending interval appropriately to prevent the slow serial port from causing messy codes or packet loss.

5. When configuring the device, the user should ensure that the external RS232/RS485/RS422 device stops sending data to the serial server to avoid garbled characters.

6. When Modbus_ASCII_Master turns on the transparent transmission mode, it only supports reading of up to 60 registers. 7. Cport3101 is affected by the hardware configuration, Modbus ASCII protocol transmission only supports use below 19200 baud rate.

3.2.3. RealCOM

In RealCOM mode, the serial server works in conjunction with a host operating system installed with RealCOM driver software, which maps the serial ports of the serial server to local COM ports on the host, allowing existing serial device software or communication modules to operate directly without any modification. Data received from the host's virtual COM port is transparently transmitted to the serial server over TCP/IP, while data received from the physical serial port of the serial server is transparently forwarded back to the host's virtual COM port using the same TCP/IP mechanism.

The serial server supports three RealCOM protocols: RealCOM_MCP, which is compatible with Moxa driver management software; RealCOM_CCP, which is compatible with Kang Hai serial management tools; and RealCOM_MW, which supports Come-Star MWVirtualCOM software.

How to use Come-Star RealCOM:

- Configure the serial server Web interface to RealCOM_MW mode.
- Install and launch the Come-Star MWVirtualCOM software on the host.
- Click [Add Device] to open the serial mapping configuration interface.
- Click [Scan] to search for serial server devices within the local network.
- Select the target serial server based on its MAC address and IP address.
- Click [Serial Mapping] and wait for the local virtual COM port to be created.
- Connect the serial server port to the corresponding host-side serial application.
- Use a serial debugging tool to open both the virtual COM port and the physical serial port, then perform bidirectional data transmission tests.

3.2.4. Httpd Client

This function is that the serial server submits the data received by the serial to the HTTP server in the form of HTTP. If the HTTP server has data to be sent, the string server will transparently transmit the data of the HTTP body to the string.

Specific usage method:

- Select "HTTPD Client" as the work mode.
- Fill in the HTTPD address, which is the address of the HTTP server and can be an IP address or a domain name (ensure the server is accessible externally if needed).
- Fill in the HTTPD port number.
- Enter the correct URL path for the HTTPD method and select GET or POST as required.
- Fill in the HTTPD request header if needed.
- Finally, click the Configure button to save the parameters.

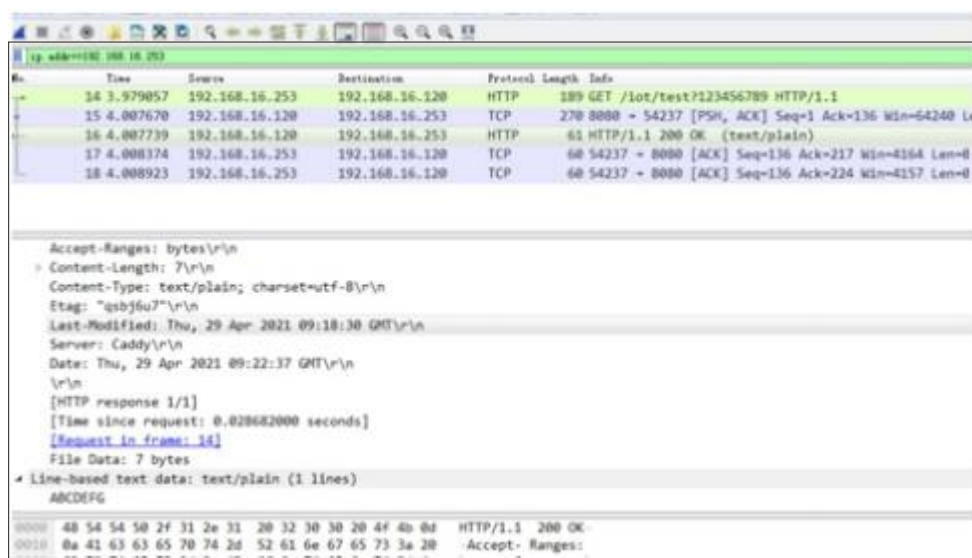


Figure 24 Httpd Client communication Wireshark packet capture example

3.2.5. WebSocket Client

This function is that the serial server acts as a WebSocket Client, and transparently transmits the data received by the serial to the WebSocket server in hexadecimal format. The WebSocket server can also send data to the serial device at any time.

Specific usage method:

- Select "WebSocket Client" as the work mode;
- Fill in the WebSocket server address, which can be an IP address or a domain name (you need to have the ability to connect to the outside world);
- Fill in the WebSocket server port number;
- WebSocket method needs to fill in the correct URL path;
- You can select the WebSocket Ping time interval according to your needs, fill in 0 to indicate not to use the Ping function;
- Finally click Configure button to save parameters.

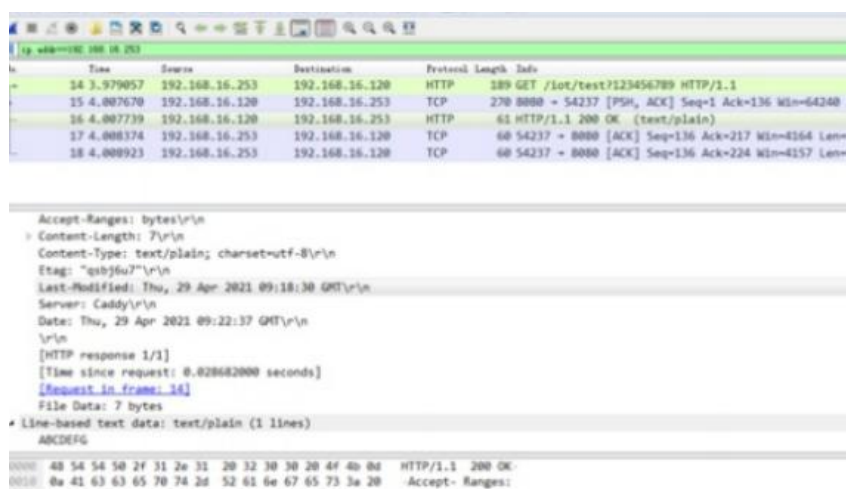


Figure 25 WebSocletClient communication Wireshark packet capture example



1. The following port numbers—80, 4500, 4800, 57050, 57850, 57851—are already used by the system. When configuring port numbers, do not reuse them.
2. The device and the remote device must have the same baud rate, parity, data bits, and stop bits.
3. Communication mode requirements:
 - If this device operates in UDP mode, the remote device must also operate in UDP mode.
 - If this device operates in TCP Client mode, the remote device must operate in TCP Server mode.
 - If this device operates in TCP Server mode, the remote device must operate in TCP Client mode.
4. In UDP Multicast mode, the same multicast address can only be used once; it must not be reused in different serial configurations.
5. For frequent frame transmissions or high data throughput, adjust the baud rate and sending interval appropriately. Slow speeds may cause garbled characters or packet loss.
6. When configuring the device, ensure that external RS232/485/422 devices stop sending data to the serial server to prevent garbled characters.
7. When Modbus ASCII Master is in transparent transmission mode, it supports reading a maximum of 60 registers.
8. For Cport3101, due to hardware limitations, Modbus ASCII protocol transmission is supported only below 19200 baud.
9. When Modbus data timeout occurs, configure the web interface with an appropriate Modbus receiving timeout, and adjust the host computer's read timeout according to the serial baud rate.
10. To use the RealCOM function, ensure the serial server firmware is version V1.x.9.210512 or later, and the virtual serial tool software is version V1.0.300.05 or later.

3.3. Serial Port Information

The serial port information module includes two parts: serial port information and network connection information.

3.3.1. Serial port information

The serial port information page is used to display the current connection information of the serial port as shown in Figure 27:

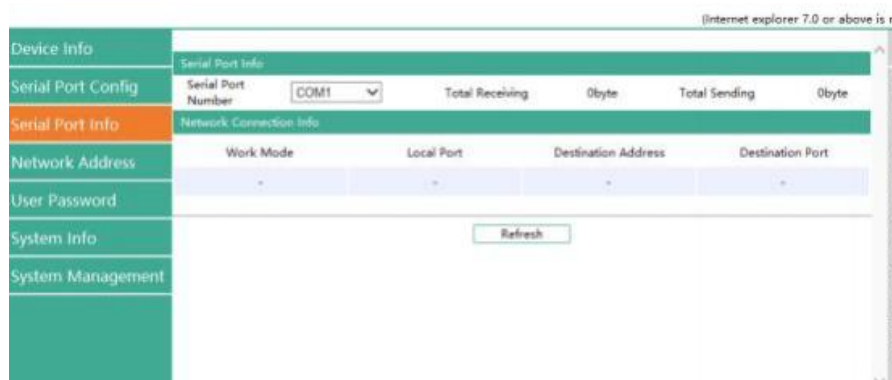


Figure 26 Serial port information page

3.4. Network Address

The network address module includes: the IP address of the network, the subnet mask, and the default gateway.

3.4.1. Network address

The function of this function is to assign a designated IP address to the Cport series serial server.

The default IP address of the serial server when it leaves the factory is 192.168.16.253. The network address configuration page is shown in Figure 28.



Figure 27 Network address interface

- Network protocol: Select Static IP or DHCP.
- IP address: A 32-bit address assigned to devices connected to the Internet, consisting of the network number field (Net-id) and host number field (Host-id). IP addresses are assigned by the Network Information Center (NIC) of the US National Defense Data Network. To facilitate management, IP addresses are divided into five classes: Class A, B, C (unicast addresses), Class D (multicast addresses), and Class E (reserved for future special purposes). Most commonly used addresses today belong to Classes A, B, and C.
- Subnet mask: A 32-bit number corresponding to the IP address. Bits set to 1 represent the subnet address, and bits set to 0 represent the host address. Common masks are 255.0.0.0 for Class A, 255.255.0.0 for Class B, and 255.255.255.0 for Class C.
- Default gateway: Also called the default route, it is used by the router when no other route exists for the destination address. Packets with unknown destinations are forwarded through this default route, usually connecting to another router for further handling. If the route to the destination is known, packets follow it; otherwise, they follow the default route.
- DNS: The IP address of the DNS server. When using a static IP, users must fill in this field. If no specific DNS server is required, the default gateway IP address is generally sufficient. After modifying the address settings, click the Submit button on the Cport serial server to apply the changes and switch to the waiting page, as shown in Figure 29.

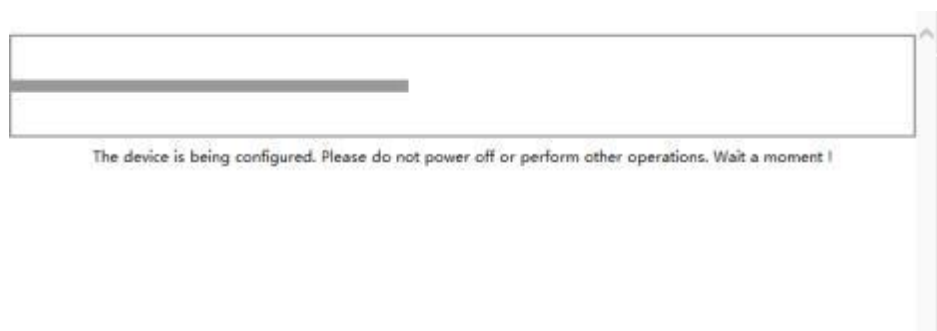


Figure 28 The waiting interface diagram after the user modifies the address

When the progress bar in the screen is finished, the Cport series serial server restarts the Web server, and the user needs to log in again.



1. When entering the waiting page after configuring the IP, do not power off or perform any other operations, as this may cause the IP modification to fail.
2. The configured IP address and the default gateway must be in the same network segment.
3. If the device uses DHCP to obtain an IP address, after the device restarts, the user needs to use the company's network management assistant to search for the device in order to determine its new IP address accurately.

3.5. User Password

The user password module is mainly used to modify the password.

3.5.1. User password

The Web server of this Cport series serial server provides users with three different permissions. The first type is for visitors, who can only view the current configurations of the serial server but cannot modify them. The user name and password are both "none" and cannot be changed. The second type is for ordinary users, who can configure various functional parameters of the serial server. The user name is "admin" and cannot be modified. The initial password is "admin", which can be changed on this page. The third type is the administrator, which has the highest authority. When the password of an ordinary user is forgotten, the administrator can log in and modify the machine's password. The user name is fixed as "admin", and the password is the last six digits of the machine's MAC address (if the MAC address is unknown, it can be viewed by logging in as a guest first).

The login password must consist of 4–12 characters, including English letters (case-sensitive) and numbers. When changing the password, it must be entered twice, and the two entries must match.

The page is shown in Figure 30.

Figure 29 User password interface

- User name: The user name of this machine is fixed as "admin" and cannot be modified.
- New password: Set the user password of this group, consisting of 4-12 English letters (case sensitive) and numbers.
- New password confirmation: Repeat the password to prevent entering the password incorrectly.



1. The passwords of ordinary users are modified on this page.
2. For security, it is recommended to change the default password after logging in for the first time.

3.6. System Information

The model, name, and number of the device can be configured on the system information page, as shown in Figure 31.

Figure 30 System Information Interface

- Device model: Users can customize the model of the Cport series serial server.
- Device name: The user can customize the name of the Cport series serial server.
- Device platform: the name of the manufacturer's platform, which cannot be configured by the user.
- Device Number: The serial number of the serial server is not configurable by the user.

3.7. System Management

This page can perform some system operations on the Cport series serial server, including restarting, restoring factory configuration, and upgrading. It is recommended that users use it with caution. Improper operation may damage the serial server. The page is shown in Figure 32.



Figure 31 System Management Interface

- **Device Restart:** This function is used to restart the Cport series serial server via software. Before the serial server is completely restarted, the device does not operate and cannot forward any data packets. This restart differs from a hardware power-on reset; only the serial server system software is reset, similar to a "warm restart" in the Windows operating system. The main advantage of this function is that it allows the serial server to be restarted remotely. As long as the user has remote access to the serial server, it can be restarted from any location. Click the "Start" button, and a prompt box will appear, as shown in Figure 33. Click "OK" to go to the waiting page. After the progress bar completes, the serial server will finish restarting.

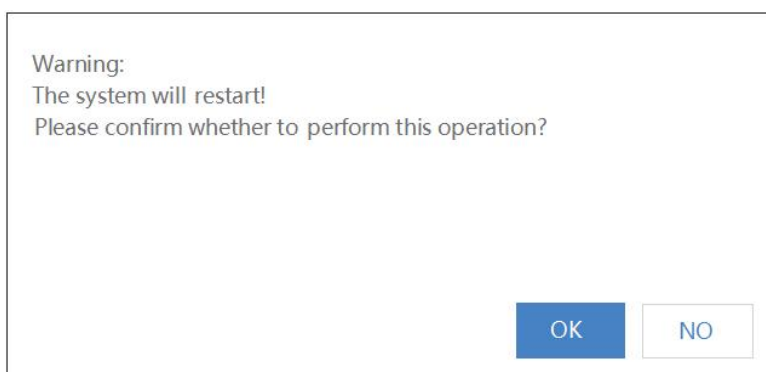


Figure 32 Warning message of device restart

- **Restore the factory settings of the device:** This function is used to restore the Cport serial server to the factory settings and automatically restart the serial server at the same time. Before the serial server restarts successfully, the serial server does not work and cannot forward any data packets. This function is to restore the factory default configuration value once the user sets the wrong parameter and causes the serial port server to work abnormally. There is the option of "Keep the current IP address" on the right.

When checked, the current IP address will be retained. If not checked, the IP address will also be restored to the factory default address: 192.168.16.253. Click the "Start" button, and a prompt box will pop up on the page, as shown in Figure 34. Click "OK" to jump to the waiting page. After the progress bar in the page is read, the serial port server is restored to its factory configuration.

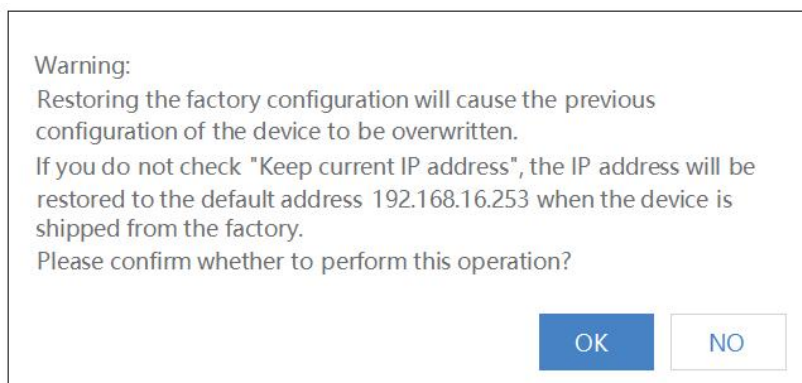


Figure 33 The warning message when the device is restored to factory configuration

- **Device Upgrade:** This function is used to upgrade the software of the Cport series serial server. Users can obtain the upgrade program via email or from our company's website. Please ensure that the device model and version match the upgrade program; using an incompatible program will cause the upgrade to fail. After obtaining the upgrade program, click "Browse" to select the file. Then click the "Start" button. A prompt box will appear, as shown in Figure 35. Click "OK" to go to the waiting page. After the progress bar completes, the serial server software upgrade is finished.

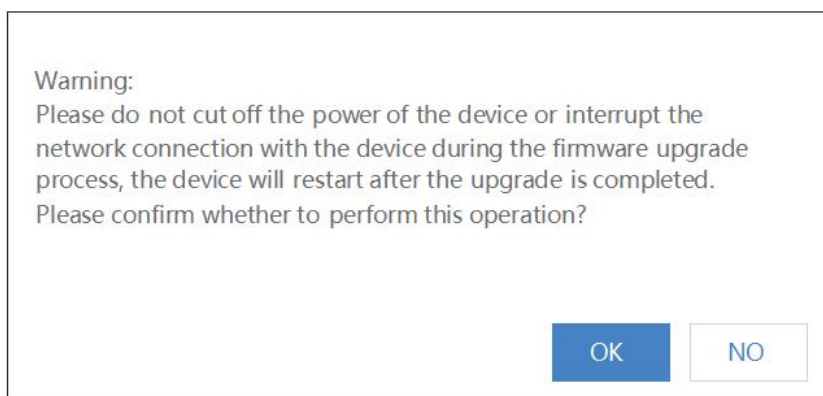


Figure 34 Warning message of equipment system upgrade

- **Device restart without data:** This function is used for the serial port server of the Cport serial server without any data transmission or reception for a long time, and the serial server automatically restarts. If the restart time is set between 0 and 59 seconds, this function does not take effect. Only when the time is set to be greater than or equal to 60 seconds, the restart function of the device without data will take effect. The default value is 3600s, which is one hour.

Chapter 4. Maintenance and Service

From the date of product shipment, Come-Star Communication (Wuhan) Co., Ltd. provides a five-year product warranty. According to the product specifications, during the warranty period, if the product experiences any malfunction or failure in its functional operation, Come-Star will repair or replace the product free of charge.

However, this warranty does not cover damage caused by improper use, accidents, natural disasters, incorrect operation, or incorrect installation.

To ensure that consumers can receive assistance and problem-solving support for COME-STAR products, the following channels are available:

- Internet Service
- Call the Technical Support Office
- Product Repair or Replacement

4.1. Internet service

Through the technical support section of Come-Star website, you can get more useful information and usage skills.

4.2. Call the technical support office

Users who use the products of COME-STAR COMMUNICATION(WUHAN) CO., LTD.. can call the technical support office .Come-Star has professional technical engineers to answer your questions and help you in the first time solve the product or usage problems you encountered.

4.3. Product repair or replacement

For product maintenance, replacement or return, in accordance with the processing procedures of Come-Star , you should first contact Come-Star .The technical staff of the company will confirm, and then negotiate with the sales staff of Come-Star to complete the repair, replacement or return of the product.