Serial to Ethernet Server

User Manual

- Mport3101
- Mport3102
- Mport3104
- Mport3101-I
- Mport3102-I
- Mport3104-I
- Mport3101R
- Mport3102R

Version：V5.0

Please read this user manual carefully before using this product

Trademark

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Clarification

The user manual is applicable to Mport3101/3101-I/3102/3102-I/3104/3104-I/3101R/3102R Serial Server.

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Version	Date	Reason
V1.0	2019.06	Create File
V2.0	2020.06	Revise File
V3.0	2020.09	Revise File
V4.0	2021.01	Revise File
V5.0	2021.05	Revise File

Safe Use Instructions

This product performance is excellent and reliable in the designed range of use, but it's necessary to avoid man-made damage or destroy for the equipment.

- Read the manual carefully and keep this manual for reference if need afterwards.
- Do not put the device close to the water sources or damp places.
- Do not put anything on the power cable, it should be placed out of reach.
- To avoid causing fire, do not knot or wrap the cable.
- Power connector and other device connectors should be firmly connected with each other, frequently inspection is needed.
- Please keep the fiber socket and plug clean. Do not look directly at the fiber section when the equipment is working.
- Please keep the equipment clean and wipe it with a soft cotton cloth if necessary.
- Please do not repair the equipment by yourself, unless there is clear instructions in the manual.

Under the following circumstances, please cut off power immediately and contact us.

- Equipment water damage.
- The equipment is broken or the casing is broken.
- The equipment works abnormally or the performance has completely changed.
- The equipment produces odor, smoke or noise.

Statement ：**Information requiring explanation in use of the managed software.**

Attention ：**Matters requiring specific attention in the use of the managed software.**

Content

Chapter 1 Product Description

1.1 Product Introduction

Mport3101/2/4 series industrial-grade serial server and Mport3101/2/4-I industrial-grade isolated serial server have the characteristics of anti-lightning, anti-electromagnetic interference, high reliability and high performance, and are suitable for use in harsh environments; Mport3101R/3102R industrial-grade rail-type serial server has the characteristics of small size and easy installation. The above-mentioned serial server mainly realizes data transmission between Ethernet and serial port (RS-232/RS-485/RS-422). The TCP/IP protocol stack is integrated inside, and the device serial port can be flexibly configured as RS- 232 or RS-485 and RS-422 modes, so that RS-232/RS-485/RS-422 devices that cannot access the Internet can also be connected to the Ethernet easily, flexibly and quickly.

Mport3102-I/Mport3104/Mport3104-I only supports RS-485/RS-422 interface, not support RS-232.

Mport3101R/3102R only supports RS-485/RS-232, not RS-422 mode.

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

Mport3101	1 RS232/485/422 to Ethernet Desktop type Serial server(DC9~36V)
Mport3101-I	1 RS232/485/422 to Ethernet Isolated Desktop type serial server(DC9~36V)
Mport3102	1 RS232 + 1 RS485/422 to Ethernet desktop type serial server(DC9~36V)
Mport3102-I	2 RS485/422 to Ethernet Isolated Desktop type serial server(DC9~36V)
Mport3104	4 RS485/422 to Ethernet desktop type serial server(DC9~36V)
Mport3104-I	4 RS485/422 to Ethernet Isolated desktop type serial server(DC9~36V)
Mport3101R	1 RS232/485 to Ethernet Rail type serial server(DC5~36V)
Mport3102R	2 RS232/485 to Ethernet Rail type serial server(DC9~36V)

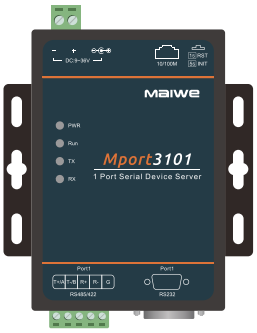
1.2 Features

- High-performance CPU processing ability
  - Adopt 32-bit Arm Cortex-M7 core CPU
  - Up to nearly 400MHz frequency
- Industrial-grade surge protection
  - Up to 6kV lightning protection on Ethernet interface
  - Mport3101/2/4 Series serial interface up to 2kV surge protection
  - Mport3101/2/4-I/Mport3101R/3102R Series serial interface up to 4kV surge protection
- Industrial grade wide voltage power supply design
  - Provide industrial-grade DC power supply DC9~36V input（Mport3101R supports DC5~36V input）
  - With anti-reverse connection protection
  - Mport3101/2/4/2R Series up to 2kV surge protection
  - Mport3101/2/4-I Series up to 4kV surge protection

- Isolated design(Only Mport3101/2/4-I isolated type support）
  - Mport3101-I Isolation voltage 2KVDC, Mport3102/4-I Isolation voltage 3KVDC
- High reliability
  - External independent hardware watchdog design prevents crashes
- Industrial temperature design
  - Meet the industrial temperature range of -40℃~+85℃

1.3 Product Display

Mport3101R

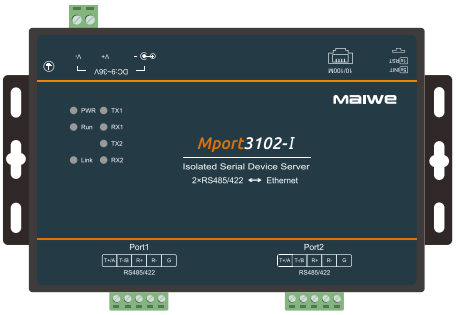


Mport3101

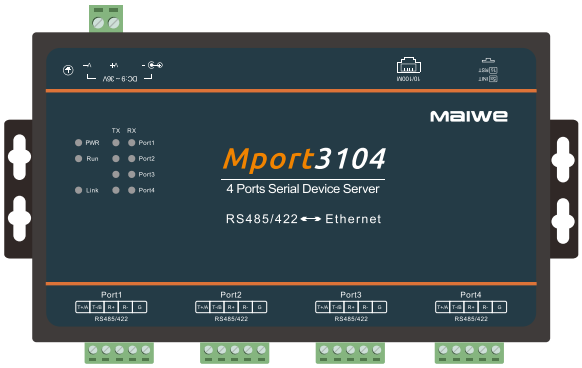
Mport3101-I

Mport3102R

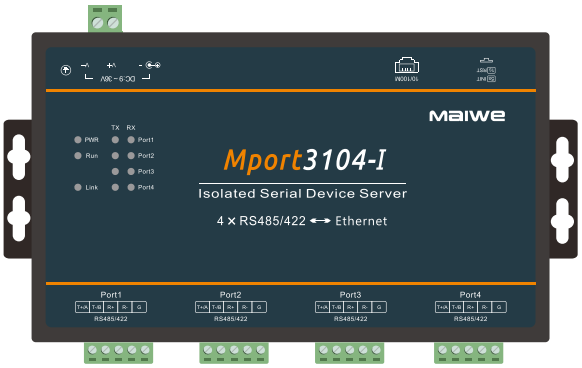
Mport3102



Mport3102-I



Mport3104



Mport3104-I

1.4 Specifications

Mport3101/2/4 Series

Model		Mport3101	Mport3102	Mport3104
Power Supply	Operating Voltage	9~36V		
	Working Current	37mA@12V	39mA@12V	66mA@12V
Network Port	Network Port	10/100Mbps;RJ45 interface; adaptive MDI/MDIX cross-connect and auto-flip		
	Isolation Protection	1.5KV		
Serial Port	Serial Ports	1*RS-232/RS-485/422	1*RS-232+1*RS-485/422	4*RS-485/422
	Baud rate	600~460800（bps）		
	Data bit	7, 8		
	Stop bit	1, 2		
	validation modes	none, odd parity, even parity		
Reliability	ESD	±6kV(contact); ±8kV(air)	±6kV(contact); ±15kV(air)	±8kV(contact); ±15kV(air)
	Surge	Power Supply: ±2kV/common mode, ±2kV/differential mode		
		RS-485/422: ±2kV/common mode, ±2kV/differential mode		
		Network port:±6kV/ common mode, ±2kV/ differential mode		
	EFT	Power supply: ±2kV; Communication port: ± 2kV		
Other	Size(L*W*H)	96×90×26（mm）		207×112×34.2（mm）
	Working Environment	-40℃～+85℃, 5%～95% RH (no condensation)		
	Storage Temperature	-40℃～+85℃, 5%～95% RH (no condensation)		
Software Parameters	Network protocol	IPv4, IP, TCP/UDP, ARP, ICMP, DHCP, DNS, HTTP, RFC2217		
	IP	Static IP / DHCP		
	DNS	Support		
	User Configuration	Web configuration		
	Simple Transparent Transmission Method	TCP Server/TCP Client/UDP Client/UDP Multicast/RealCOM/PairConnection		
	Modbus	Modbus RTU/ASCII to Modbus TCP		
	Serial port packaging mechanism	Time and length can be set; the default value changes according to the bit rate; the maximum packing length is 1460bytes.		
	TCP Server Connection	Support up to 8 TCP connections		
	Network Cache	Send: 16Kbyte; Receive: 16Kbyte;		
	Serial Buffer	Send: 1.5Kbyte; Receive: 1.5Kbyte;		
	Flow Control	Auto Flow Control		
	Heartbeat Package	TCP Keepalive		
	Registration package	Custom registration package		
	RFC2217	Support		
	Average Transmission Delay	<10ms		
	Supporting Software	Network Configuration Tool, VirtualCOM, MWView, MaxView		

Mport3101/2/4-I Isolation Series

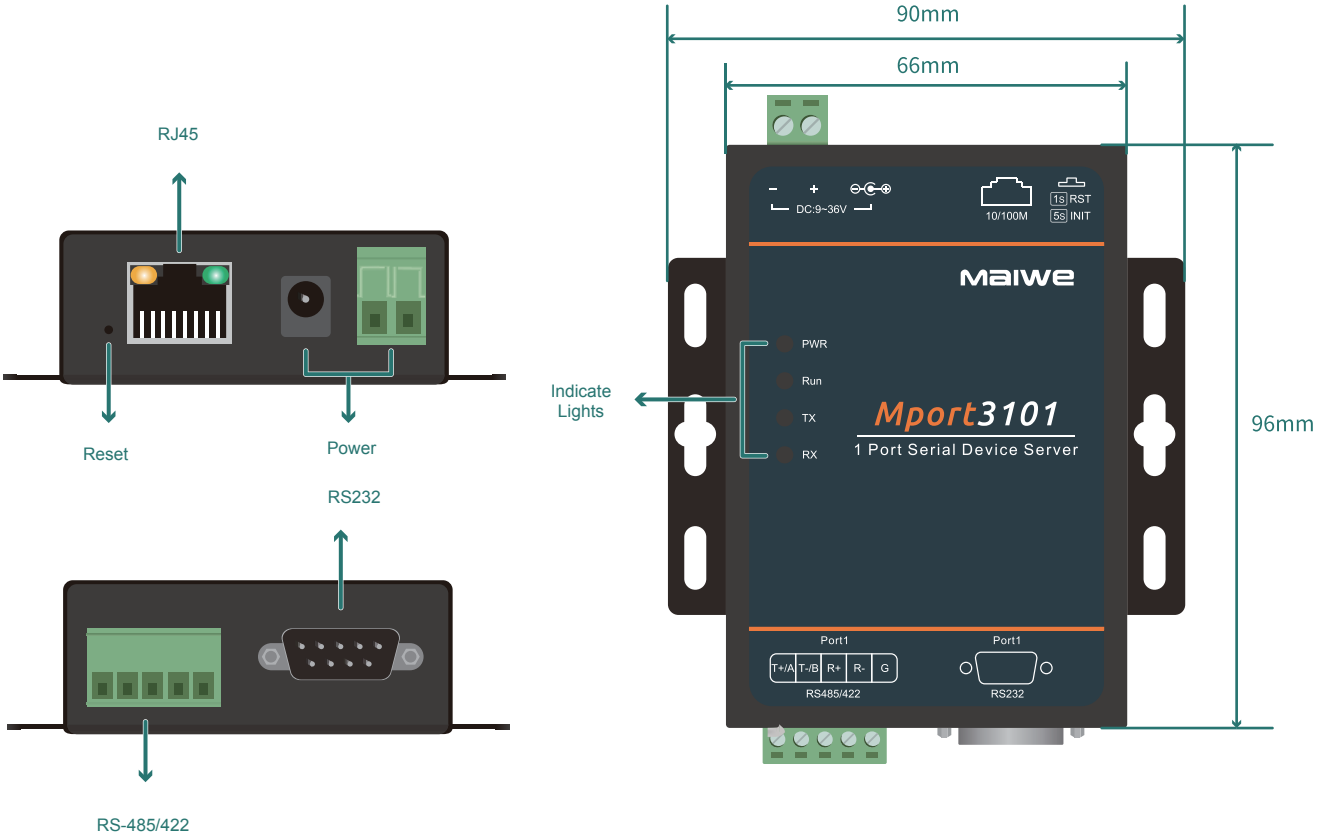
Model		Mport3101-I	Mport3102-I	Mport3104-I
Power Supply	Operating Voltage	9~36V		
	Working Current	83mA@12V	78mA@12V	104mA@12V
Network Port	Network Port	10/100Mbps;RJ45 interface; adaptive MDI/MDIX cross-connect and auto-flip		
	Isolation Protection	1.5KV		
Serial Port	Serial Ports	1*RS-232/RS-485/422	2*RS-485/422	4*RS-485/422
	Baud rate	600~460800（bps）		
	Data bit	7, 8		
	Stop bit	1, 2		
	validation modes	none, odd parity, even parity		
	Isolate Power Supply	2KVDC	3KVDC	
Reliability	ESD	±8kV(contact); ±15kV(air)		
	Surge	Power Supply: ±4kV/common mode, ±4kV/differential mode		
		RS-485/422: ±4kV/common mode, ±4kV/differential mode		
		Network port:±6kV/ common mode, ±4kV/ differential mode		
	EFT	Power supply: ±4kV; Communication port: ± 2kV		
Other	Size(L*W*H)	96×90×26（mm）	162×95×29（mm）	207×112×34.2（mm）
	Working Environment	-40℃～+85℃, 5%～95% RH (no condensation)		
	Storage Temperature	-40℃～+85℃, 5%～95% RH (no condensation)		
Software Parameters	Network protocol	IPv4, IP, TCP/UDP, ARP, ICMP, DHCP, DNS, HTTP, RFC2217		
	IP	Static IP / DHCP		
	DNS	Support		
	User Configuration	Web configuration		
	Simple Transparent Transmission Method	TCP Server/TCP Client/UDP Client/UDP Multicast/RealCOM/PairConnection		
	Modbus	Modbus RTU/ASCII to Modbus TCP		
	Serial port packaging mechanism	Time and length can be set; the default value changes according to the bit rate; the maximum packing length is 1460bytes.		
	TCP Server Connection	Support up to 8 TCP connections		
	Network Cache	Send: 16Kbyte; Receive: 16Kbyte;		
	Serial Buffer	Send: 1.5Kbyte; Receive: 1.5Kbyte;		
	Flow Control	Auto Flow Control		
	Heartbeat Package	TCP Keepalive		
	Registration package	Custom registration package		
	RFC2217	Support		
	Average Transmission Delay	<10ms		
	Supporting Software	Network Configuration Tool, VirtualCOM, MWView, MaxView		

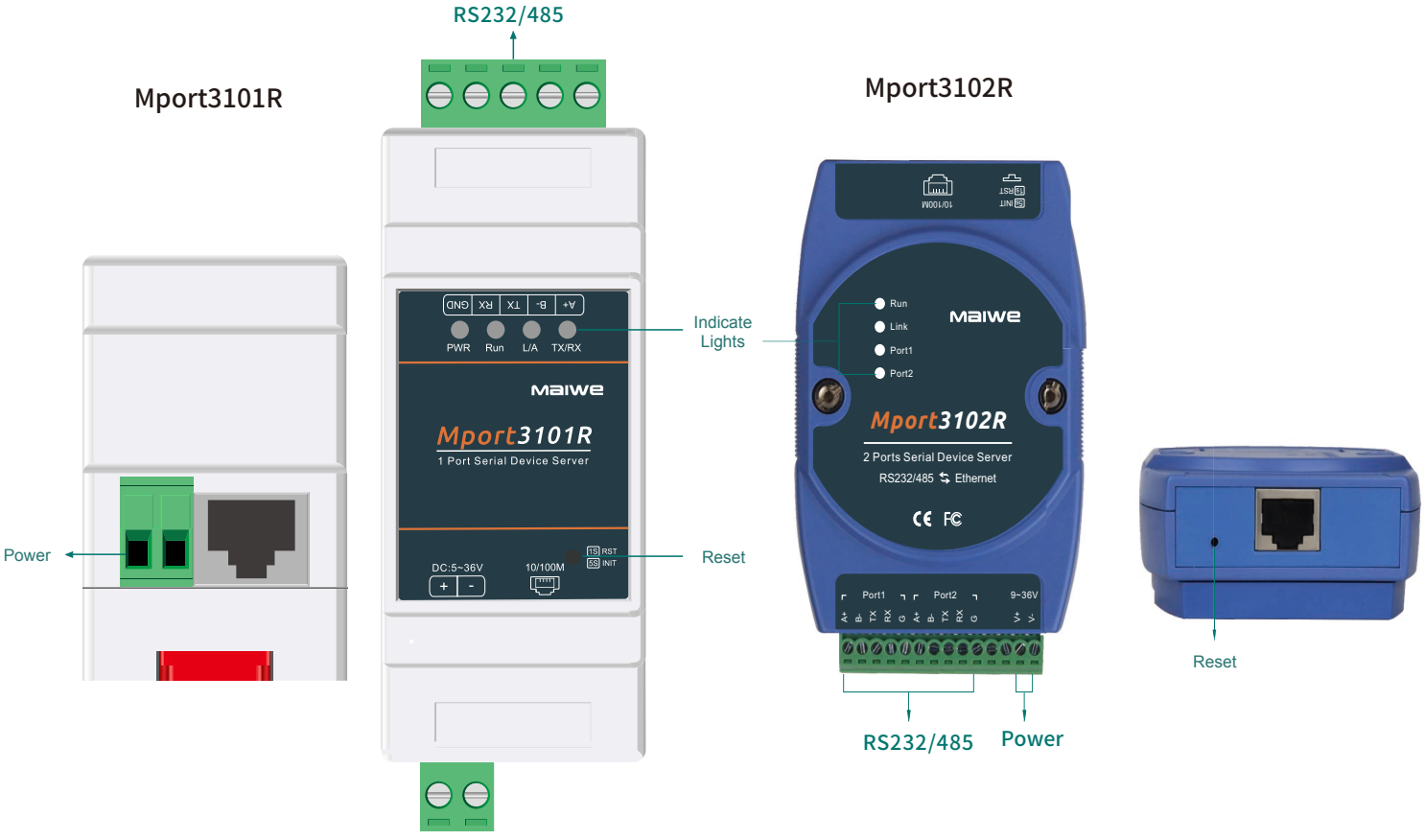
Mport3101-R/3102-R Series

Model		Mport3101-R	Mport3102-R
Power Supply	Operating Voltage	5~36V	9~36V
Network Port	Network Port	10/100Mbps; RJ45 interface; adaptive MDI/MDIX cross-connect and auto-flip	
	Isolation Protection	1.5KV	
Serial Port	Serial Ports	1*RS-232/RS-485	2*RS-232/RS-485
	Baud rate	600~460800（bps）	
	Data bit	7, 8	
	Stop bit	1, 2	
	validation modes	none, odd parity, even parity	
EMC	Power Supply	Anti-static, Surge protection	
	Network/Serial port	Anti-static, Surge protection	
Other	Size(L*W*H)	87.5x36.5x58.6(mm）	103x72.2x33.85(mm）
	Working Environment	-40℃～+85℃, 5%～95% RH (no condensation)	-40℃～+70℃, 5%～95% RH (no condensation)
	Storage Temperature	-40℃～+85℃, 5%～95% RH (no condensation)	-40℃～+70℃, 5%～95% RH (no condensation)
Software Parameters	Network protocol	IPv4, IP, TCP/UDP, ARP, ICMP, DHCP, DNS, HTTP, RFC2217	
	IP	Static IP / DHCP	
	DNS	Support	
	User Configuration	Web configuration	
	Simple Transparent Transmission Method	TCP Server/TCP Client/UDP Client/UDP Multicast/RealCOM/Pair Connection	
	Modbus	Modbus RTU/ASCII to Modbus TCP	
	Serial port packaging mechanism	Time and length can be set; the default value changes according to the bit rate; the maximum packing length is 1460bytes.	
	TCP Server Connection	Support up to 8 TCP connections	
	Network Cache	Send: 16Kbyte; Receive: 16Kbyte;	
	Serial Buffer	Send: 1.5Kbyte; Receive: 1.5Kbyte;	
	Flow Control	Auto Flow Control	
	Heartbeat Package	TCP Keepalive	
	Registration package	Custom registration package	
	RFC2217	Support	
	Httpd Client	Support	
	RealCOM	Supports working modes such as Maiwe, Moxa, Kanghai, etc.	
	Average Transmission Delay	<10ms	
	Supporting Software	Network Configuration Tool, VirtualCOM,MWView, MaxView	

1.5 Interface and Indicator lights

Desktop serial server takes Mport3101 as an example.





Restart/restore factory settings button

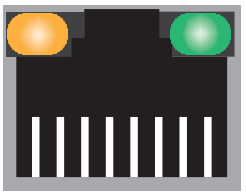
Press and release the button within 1 second, the system resets, the Run light goes out, and the system returns to normal after startup;

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.

Ethernet RJ45 interface

The 10Base-T/100Base-TX adaptive Ethernet RJ45 interface supports automatic MDI/MDI-X connection; refer to the figure below for the pin distribution of the RJ45 interface. Mport3101R adopts RJ45 interface without light, as shown in the left picture below; other serial server adopts RJ45 interface with light, as shown in the right picture below.

1 2 3 4 5 6 7 8



8 7 6 5 4 3 2 1

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

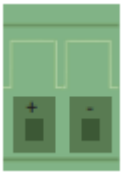
Power connector

Mport3101R only supports 2P terminal sub, voltage input range: DC 5~36V;

Mport3102R only supports 14P terminal sub-power supply, voltage input range: DC 9~36V;

Other products support two connection modes: DC connector (φ2.5mm) and 2P terminal sub (5.08mm pitch), with voltage input range: DC 9~36V.

DC(φ2.5mm)

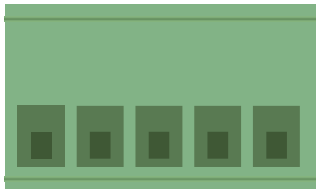


Terminal blocks(5.08mm)

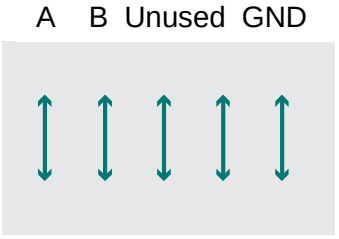
14PTerminal blocks

RS-485/RS-422Serial interface（Except Mport3101R, Mport3101R is RS-232/RS-485 interface）

The RS-485/RS-422 interface uses 5-bit 5.08mm pitch terminal blocks; refer to the following figure for pin assignments of various interfaces:

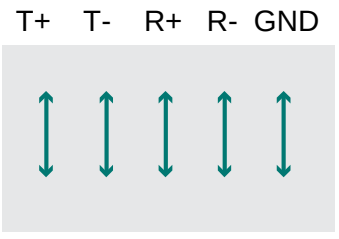


1 2 3 4 5



1 2 3 4 5

RS485

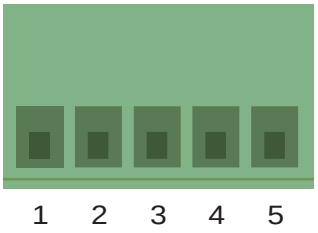


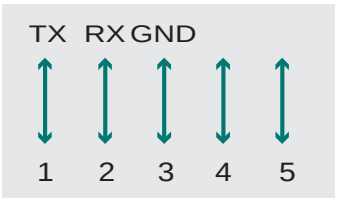
1 2 3 4 5

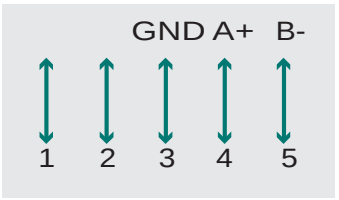
RS232

RS-232/RS-485 serial interface (only Mport3101R/3102R with this kind of interface)

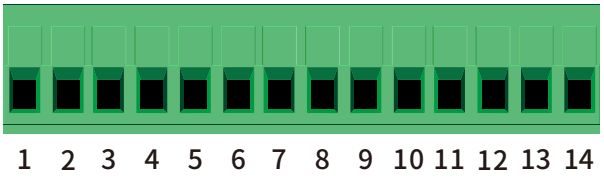
The RS-232/RS-485 interface adopts 5-bit 5.08mm pitch terminal blocks, please refer to the figure below for the pin assignment of various interfaces)

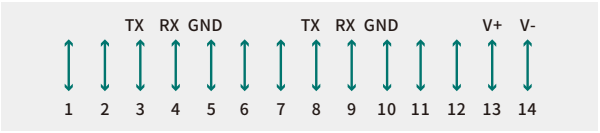




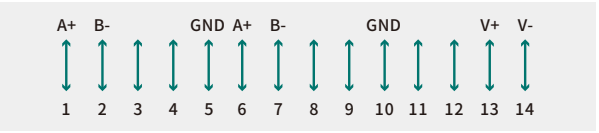


Mport3102R is equipped with RS232/485 interface (using 14-bit 3.5mm pitch terminal sub); refer to the following figure for the pin assignment of various interfaces:





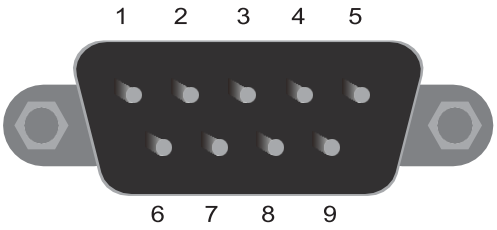
RS232



RS485

RS-232 Serial interface

RS-232 interface adopts DB9 male header (except Mport3101R); refer to the following figure for interface pin assignment:

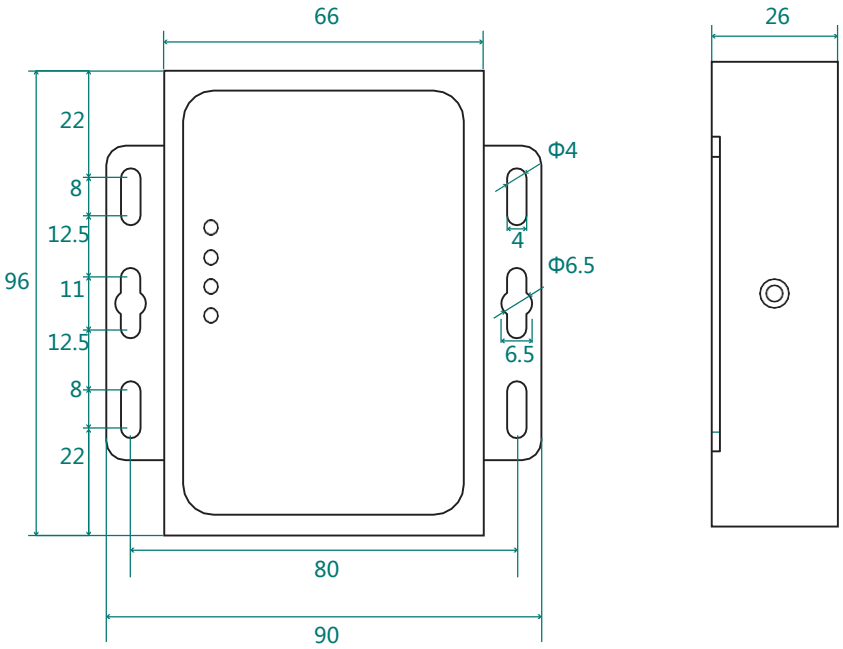


Pin number	Pin name	Pin description	Signal level	direction
1	None			
2	RXD	Receive Data	RS-232	Input
3	TXD	Transmit Data	RS-232	Output
4	None			
5	GND	Ground	Ground	Ground
6	None			
7	None			
8	None			

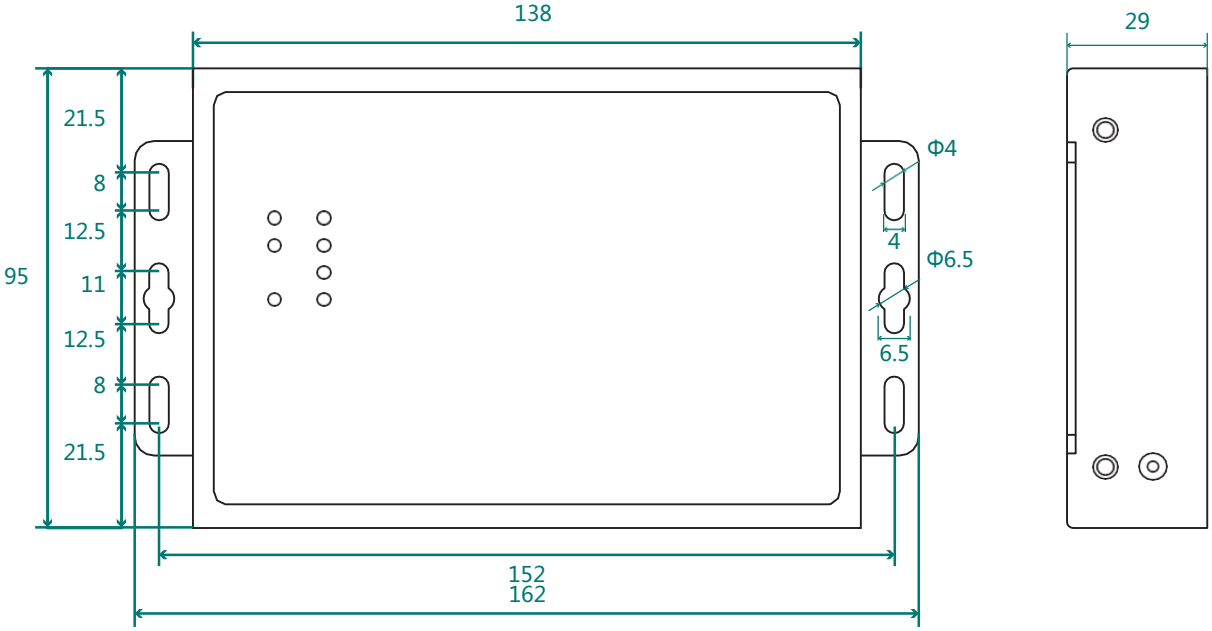
Indicator lights

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 RS-232/RS-485/RS-422 interface is sending data
	Off	no data
RX	Flash	The RS-232/RS-485/RS-422 interface is receiving data
	Off	no data
TX/RX (Mport3102/Mport3101R）	Flash	The RS-232/RS-485/RS-422 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 (Mport3101R/3102R)	Flash	The RS232/485 interface is receiving and sending data
	Off	no data

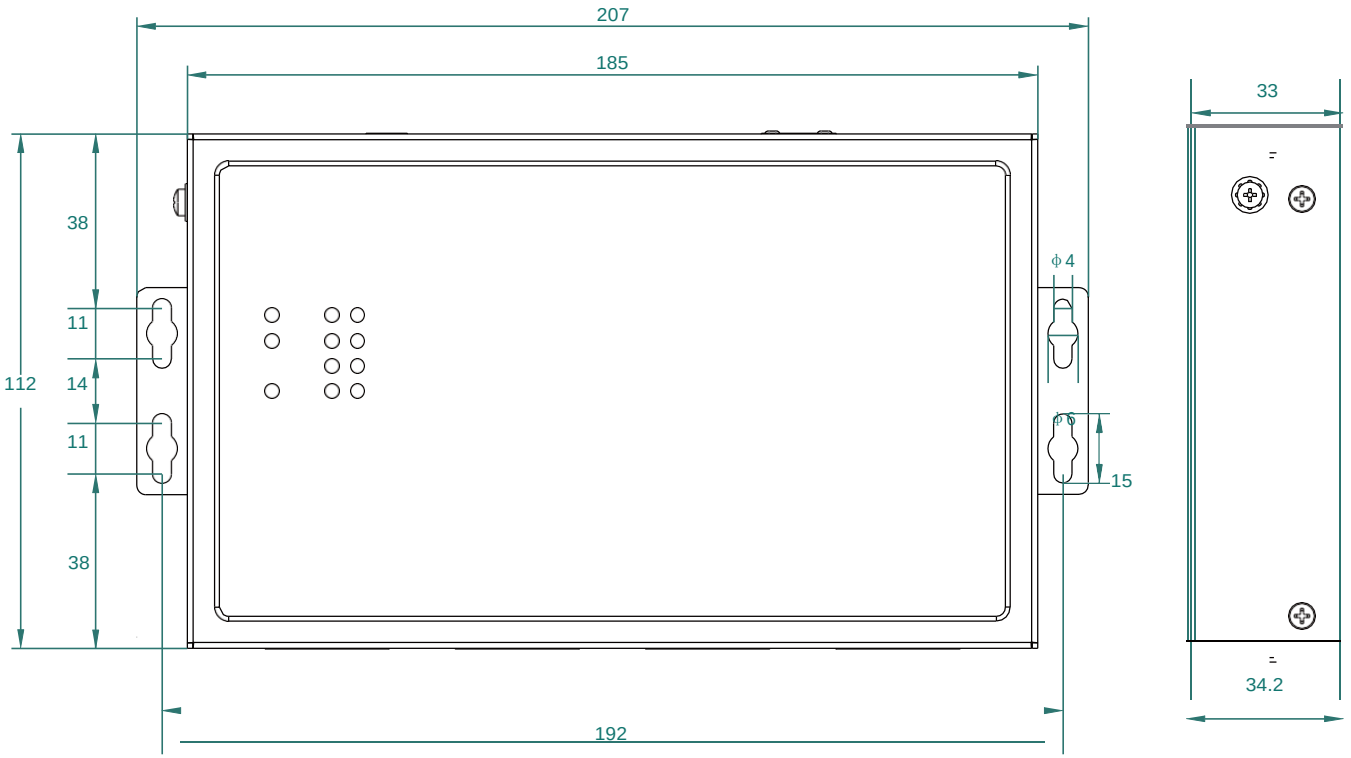
1.6 Product Size



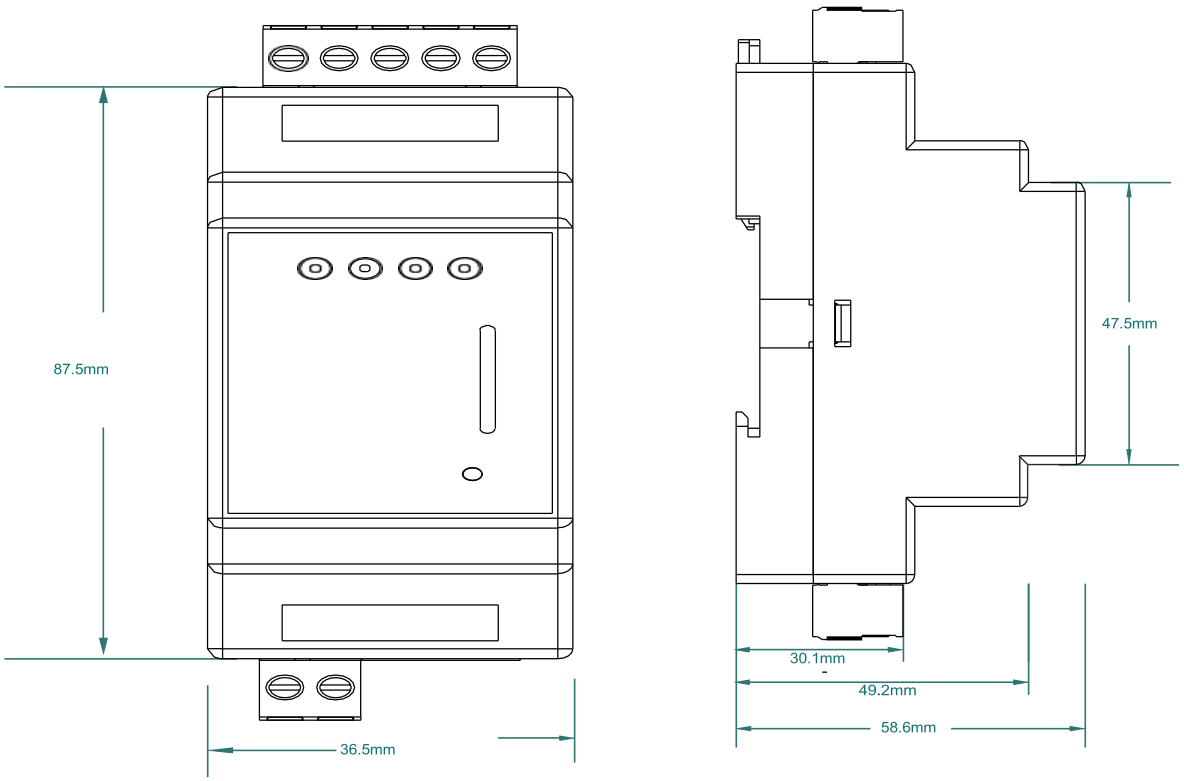
Mport3101/3101-I/3102 size (mm)



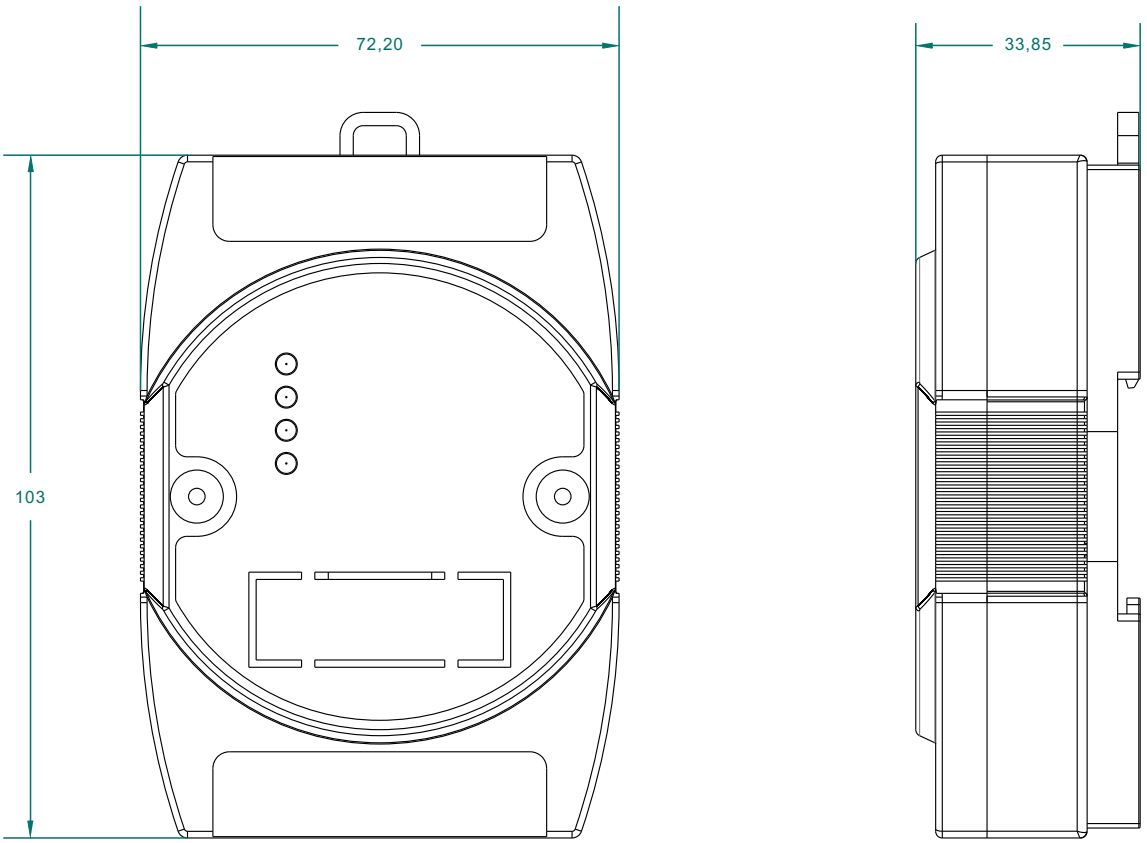
Mport3102-I size (mm)



Mport3104/3104-I size (mm)



Mport3101R size (mm)



Mport3102R size (mm)

Chapter 2 Software Quick Configuration

MAIWE MPort series serial server has a built-in Web server, which provides a convenient way to access and configure the serial server. Users can use IE, Firefox or Google browser to access it.

This chapter is a quick introduction to the MPort series of serial server products. It is recommended that users read this chapter and follow the instructions once for the system, and they will have a basic understanding of the product. For specific function details and instructions, please refer to the subsequent chapters.

If you need product-related information, you can download the corresponding product manual from the official website link: http://www.maiwe.com.

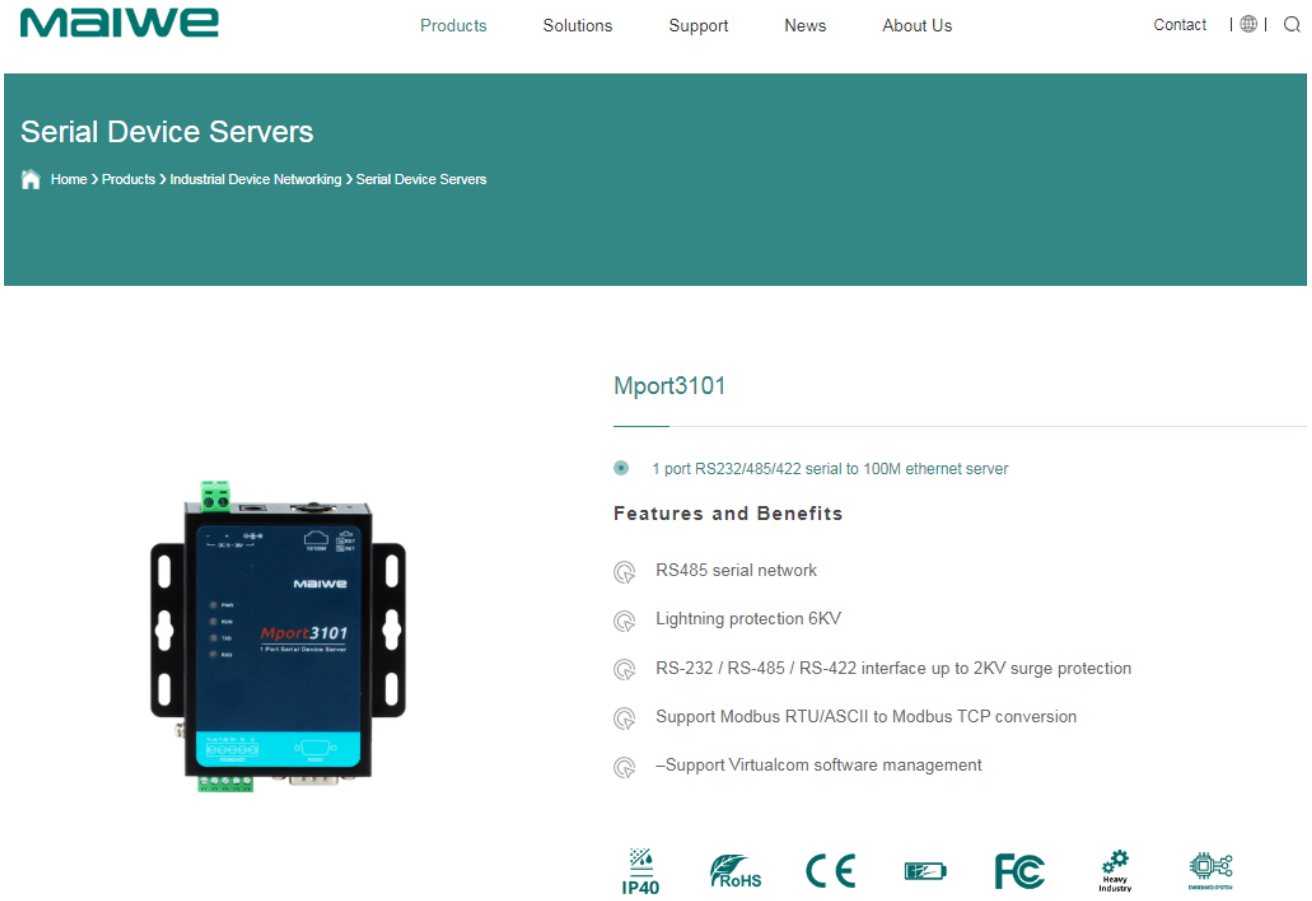


Figure1 MAIWE Global Site Page

2.1 Environmental Preparation

For fast networking of MPort 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.

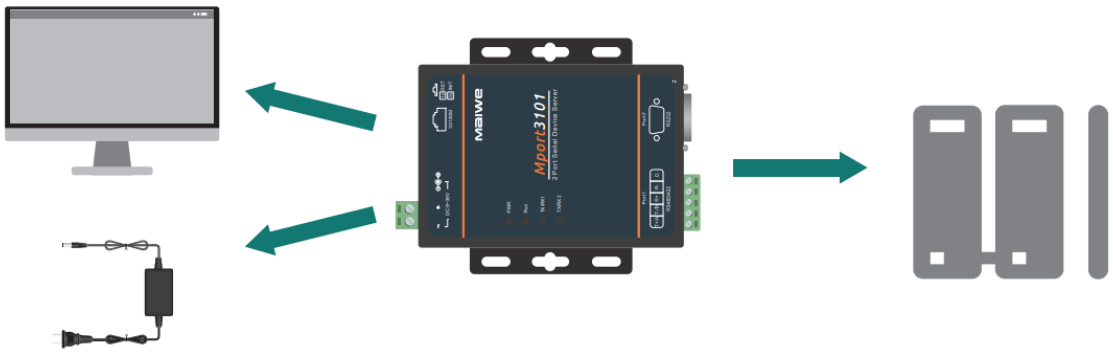


Figure 2 Hardware Connection

2.2 Log in Web

2.1.1 Revise IP adress

When accessing the Mport serial server through the Web, the IP address of the serial server and the PC must be in the same network segment, so the IP address of the PC must be modified to ensure that it is in the same local area network as the IP of the serial server. For Windows users, please refer to the following operations:

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

The default IP address of this model of serial server is: 192.168.16.253. Set the PC's IP address as: 192.168.16.X (X is any valid value from 2 to 253 except 253). The specific Windows system operation page is shown in Figure 3.

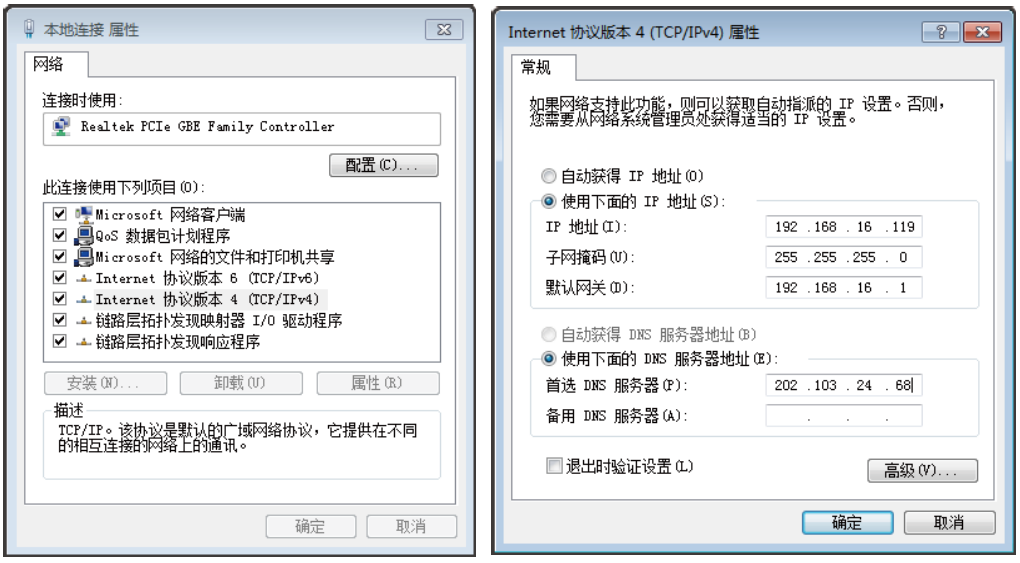


Figure 3 IP setting interface under Windows environment

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

2.1.2 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 4 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.

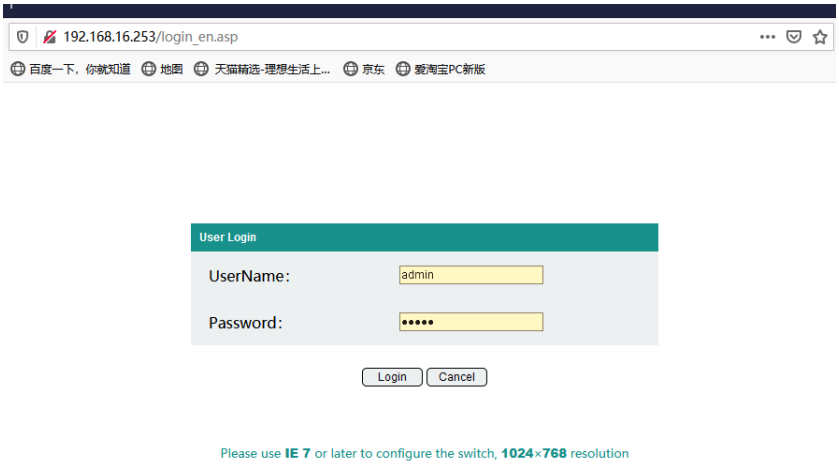


Figure 5 Input user name and password interface

The login users of this MPort 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.

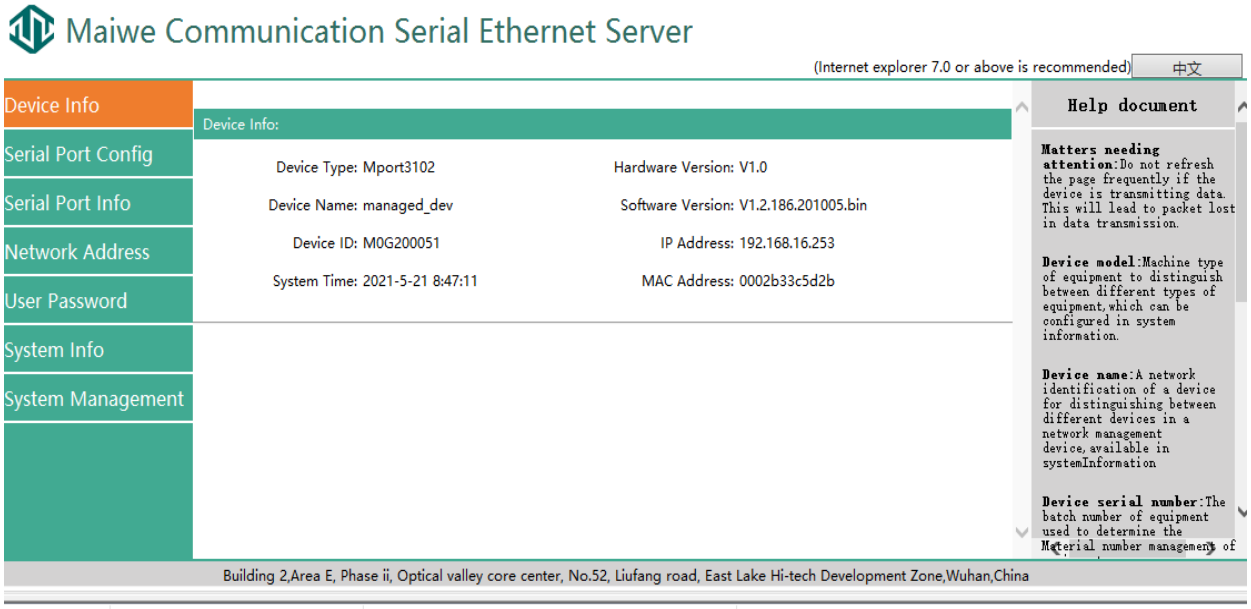


Figure 6 The main interface of the Web server

This MPort 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.

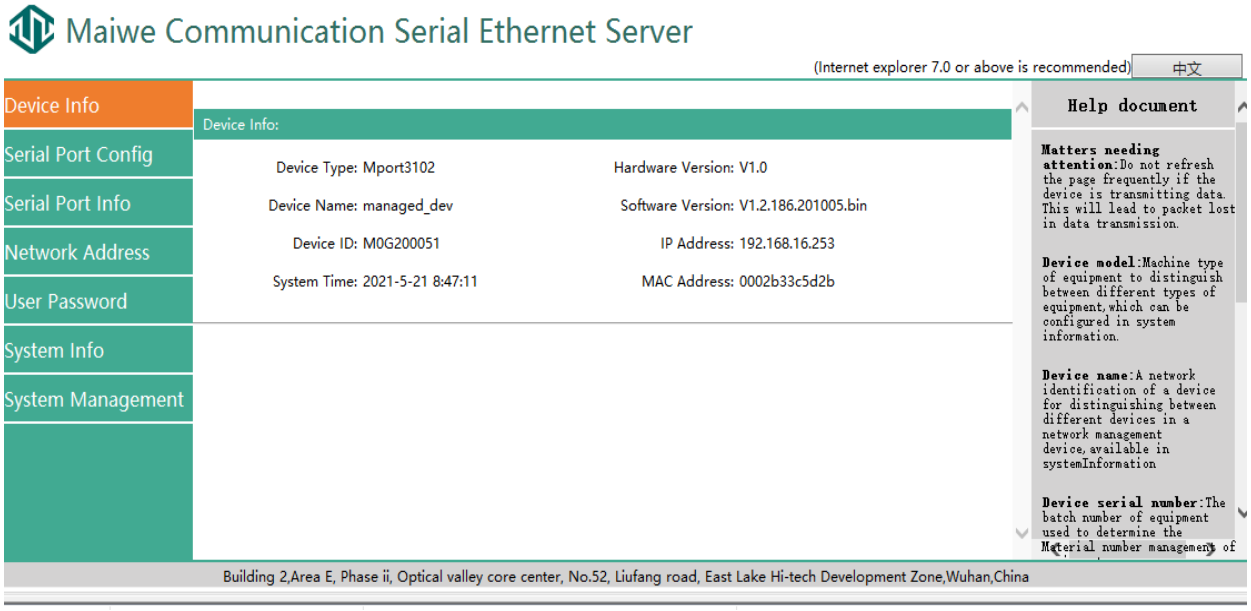


Figure 7 The main interface of the Web server

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 Mport 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, such as: name, number, software version, IP address, etc.
Serial port configuration	Serial server configuration	Configure the basic information of each port, such as: serial port number.
	Serial port parameters	Configure the working mode, baud rate, packet length, etc. of each port.
	Network parameters	Configure the local port range and heartbeat interval of each port.
	Number of network connections	Configure the destination address and remote port of each port.
Serial port information	Serial port information	Display the serial port number and the total number of serial ports received and sent.
	Network connection mode	Display the working mode of the serial port/local port and other 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, etc. of the device.
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	The network and serial port of the configuration device have no data transmission for a certain period of time, and the device restarts.

3.1.1 Help documentation

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.

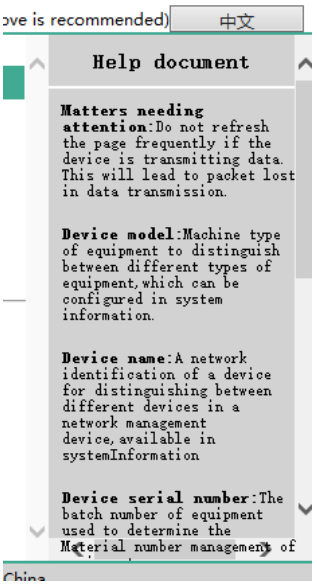


Figure 8 Help Page

3.1.2 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.

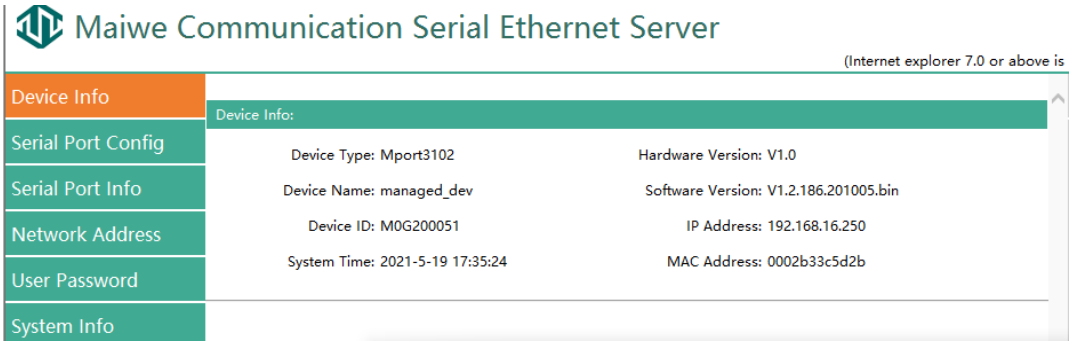


Figure 9 Device information

■ 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 (RS-232, RS-485, RS-422) 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.

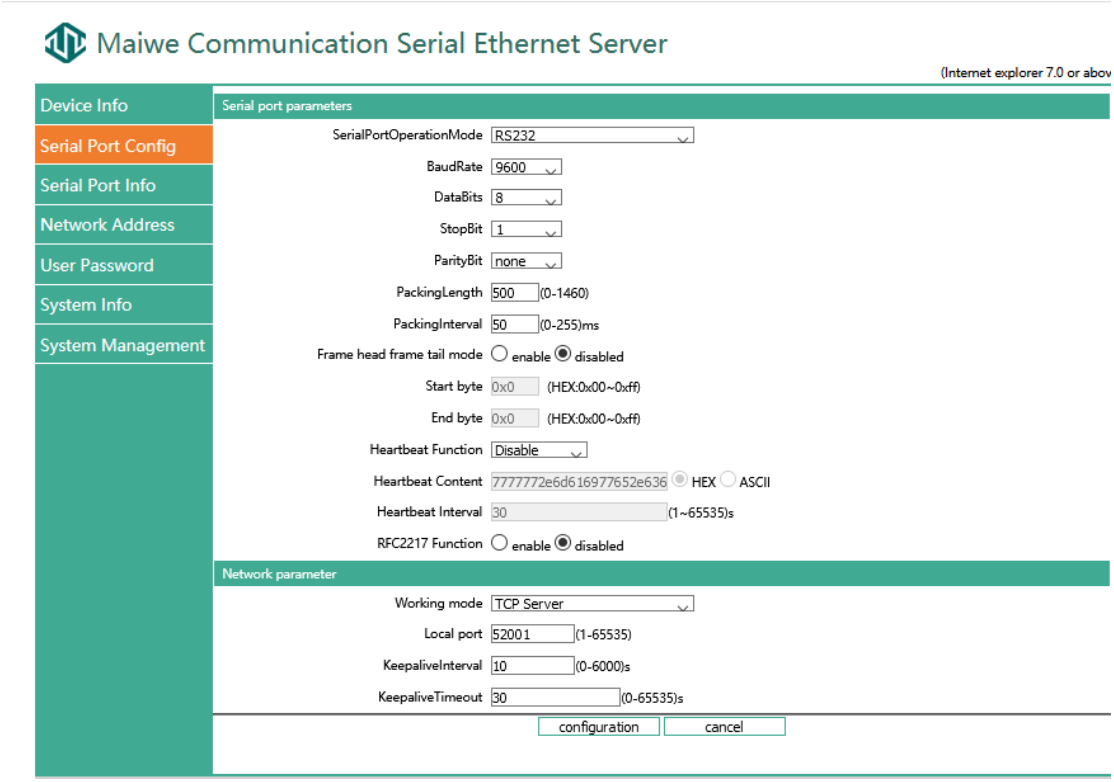


Figure 10 Serial port configuration page

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. Mport3101/3101-I/Mport3101R supports 1 serial port; Mport3102/3102-I supports 2 serial ports; Mport3104/3104-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 mode of the current serialization; Mport3101 chooses RS232/485/422 functions separately according to needs; Mport3101-I is a RS232/485/422 three-in-one device, you don't need to choose it when you use it, just use it directly according to your needs; Mport3102 Port 1 supports RS485/422, Port 2 supports RS232; The two serial modes of Mport3102-I are both RS485/422; Mport3104/3104-I 4-channel serial mode is RS485/422; Mport3101R/Mport3102R supports RS485/232 mode, only one can be selected.
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. (Mport3101 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	UDP, UDP Multicast, TCP_Client, TCP_Server Modbus_RTU_Master, Modbus_RTU_Slave, Modbus_ASCII_Master, Modbus_ASCII_Slave, RealCOM MCP, RealCOM CCP ten ways to choose from. Factory default setting is UDP mode When the working mode of the device is UDP, it is required that the remote device must also work in the UDP mode. The device can establish UDP connections with up to 4 remote devices, and the IP address and port number of the remote devices can be configured on the page When the working mode of the device is UDP Multicast, it is required that the remote device must work in the UDP Multicast mode. The device can join up to 4 UDP multicast groups, and the multicast IP address and port number can be configured on the page When the working mode of the device is TCP_Client, it is required that the remote device must work in TCP_Server mode, and its IP address and port number must be configured, which can be configured in the options corresponding to the network connection. The local port number can be ignored without configuration When the working mode of this device is TCP_Server, it is required that the remote device must work in TCP_Client mode. In this mode, up to 8 remote TCP_Client connections are accepted When the working mode of the device is Modbus_RTU_Master, if the Modbus Over TCP function is not enabled, the remote device must work in the Modbus_TCP_Slave mode; otherwise, if the Modbus Over TCP function is enabled, the remote device must work in the Modbus_RTU_Slave mode. This mode supports up to 4 connections When the working mode of the device is Modbus_RTU_Slave, if the Modbus Over TCP function is not enabled, the remote device must work in the Modbus_TCP_Master mode; otherwise, if the Modbus Over TCP function is enabled, the remote device must work in the Modbus_RTU_Master mode. This mode supports up to 8 connections When the working mode of the device is Modbus_ASCII_Master, if the Modbus Over
	TCP function is not enabled, the remote device must work in the Modbus_TCP_Slave mode; otherwise, if the Modbus Over TCP function is enabled, the remote device must work in the Modbus_ASCII_Slave mode. This mode supports up to 4 connections When the working mode of the device is Modbus_ASCII_Slave, if the Modbus Over TCP function is not enabled, the remote device must work in the Modbus_TCP_Master mode; otherwise, if the Modbus Over TCP function is enabled, the remote device must work in the Modbus_ASCII_Master mode. This mode supports up to 8 connections When the working mode of the device is RealCOM MCP or RealCOM CCP, the PC needs to install the corresponding virtual serial port software for use. The virtual serial port software maps the serial port of the remote serial port server to the local serial port, so as to realize the transparent communication between the original serial port software and the serial port of the serial port server. One serial port of the serial server supports up to 8 virtual serial ports for access

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	Modbus (s RTU/ASCII) protocol transparent transmission enable
Modbus receive timeout	Modbus serial port receive timeout time
Modbus ID filtering	Modbus slave ID range filtering
Mo pre-db read us from slave	The serial port server automatically performs pre-reading according to the configuration in the Modbus pre-reading instruction table, and supports up to 8 items
When M polls od to poll bu, s slave machine	The interval time when the serial server reads each item according to the pre-reading 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 function usage

Take MPort3101-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

Take Modbus_RTU_Master as an example (Modbus ASCII Master is the same):

Configure the "serial port parameter" of the serial server to 9600-8-N-1, the working mode in"network parameters" is Modbus RTU Master, and the network address in "Network Connections" is configured as the IP and port of the slave. The physical connection is described as follows:

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

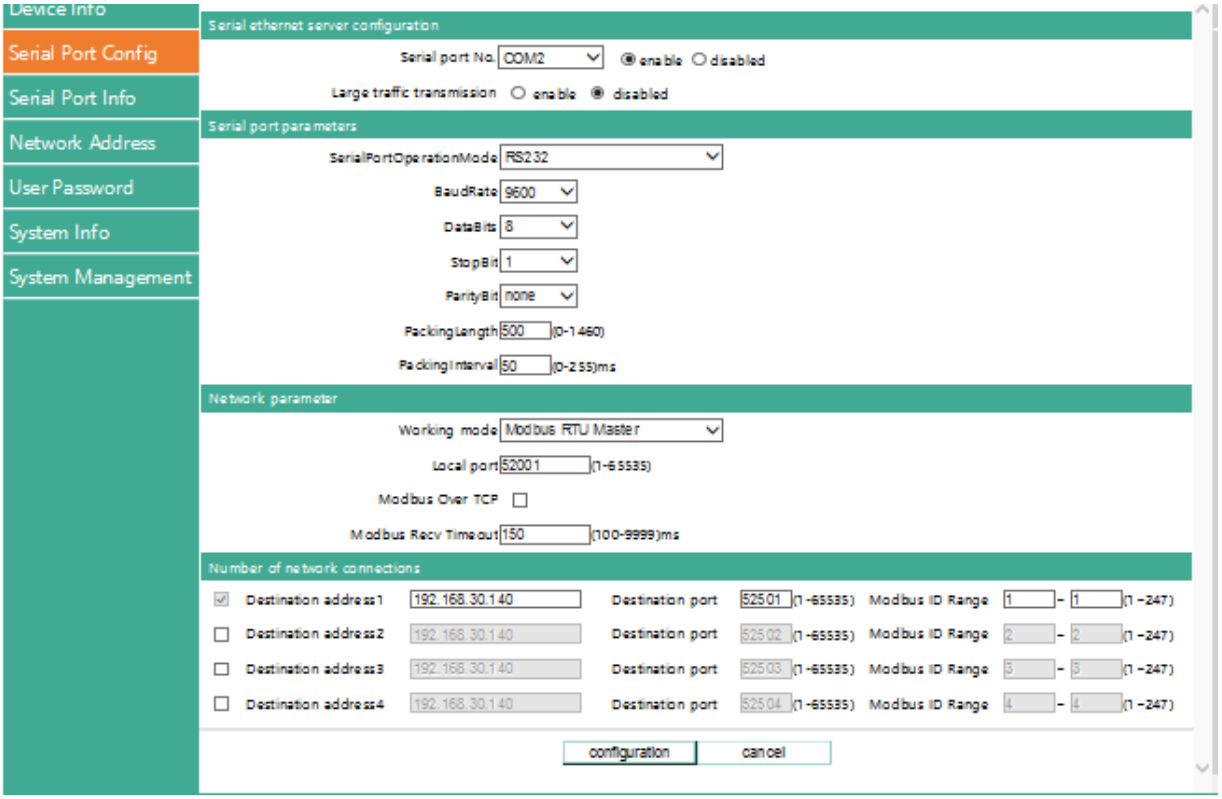


Figure 11 Modbus Web parameter configuration

Modbus Poll software configuration:

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

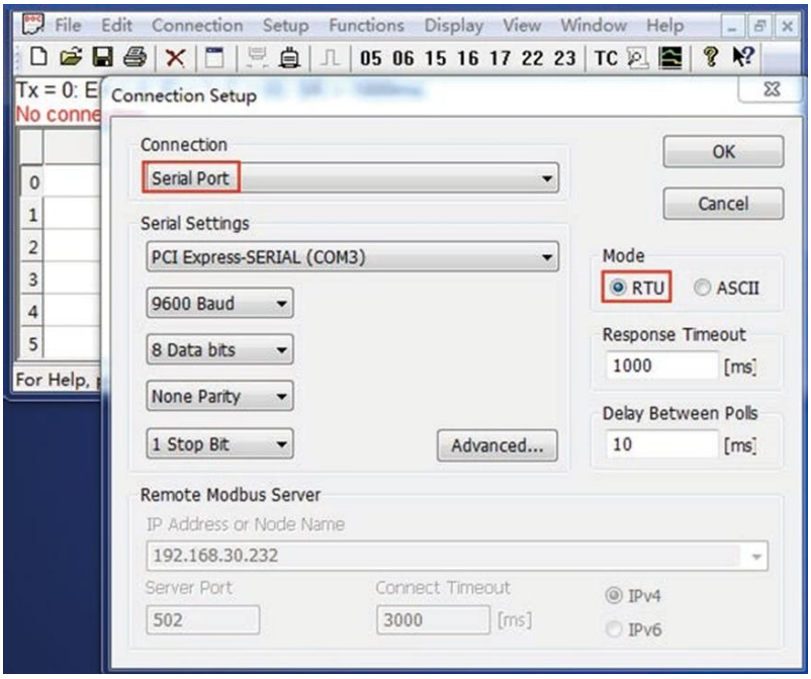


Figure 12 Modbus host serial port parameter configuration

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 1000ms.

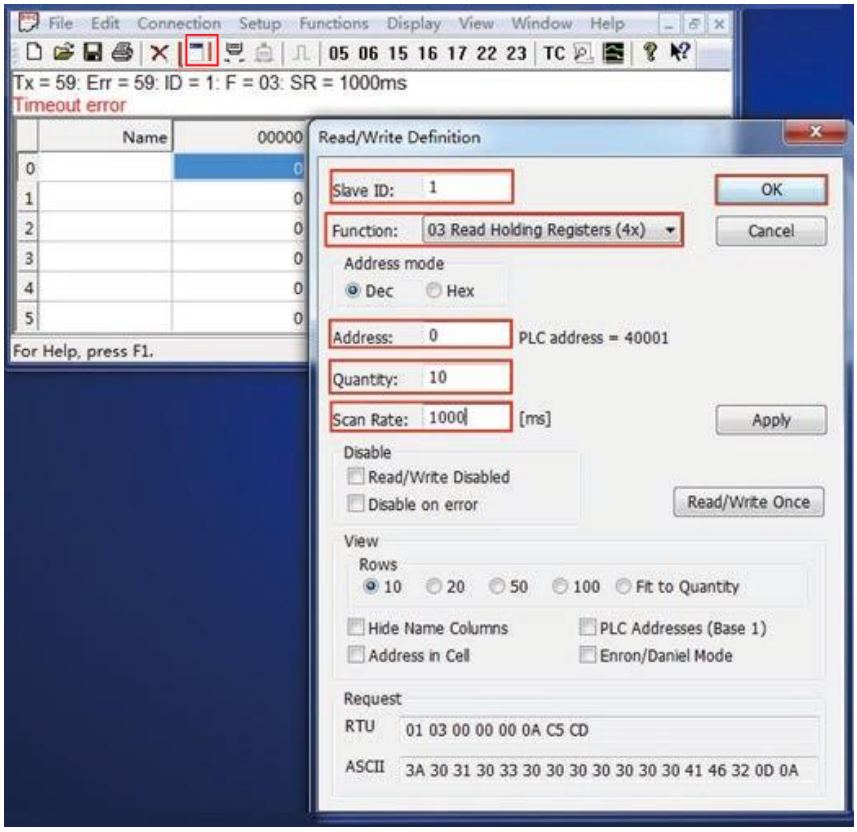


Figure 13 Modbus host device attribute definition

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

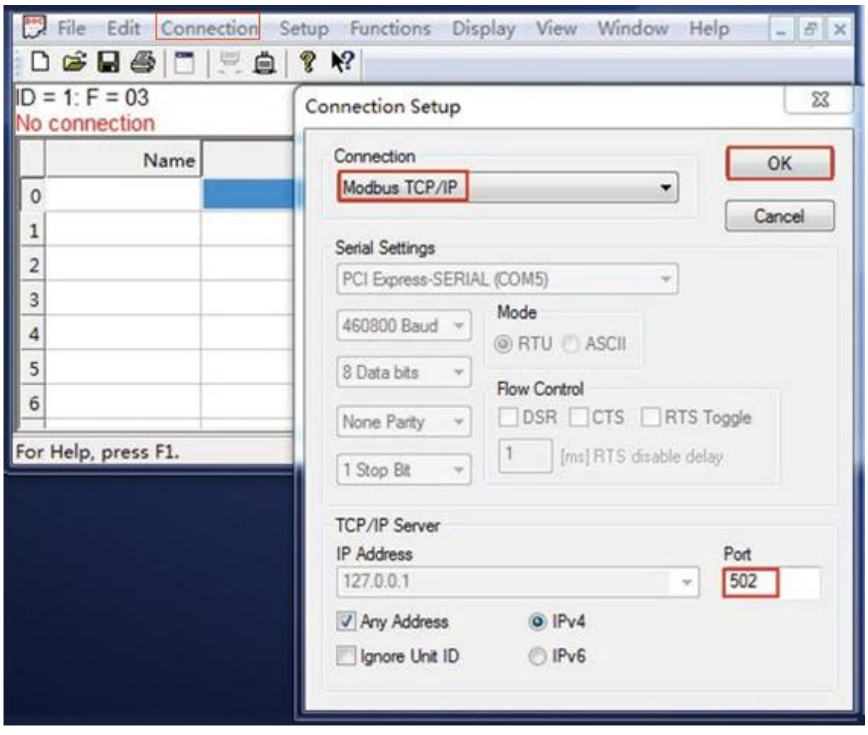


Figure 14 Mosbus slave network connection configuration

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.

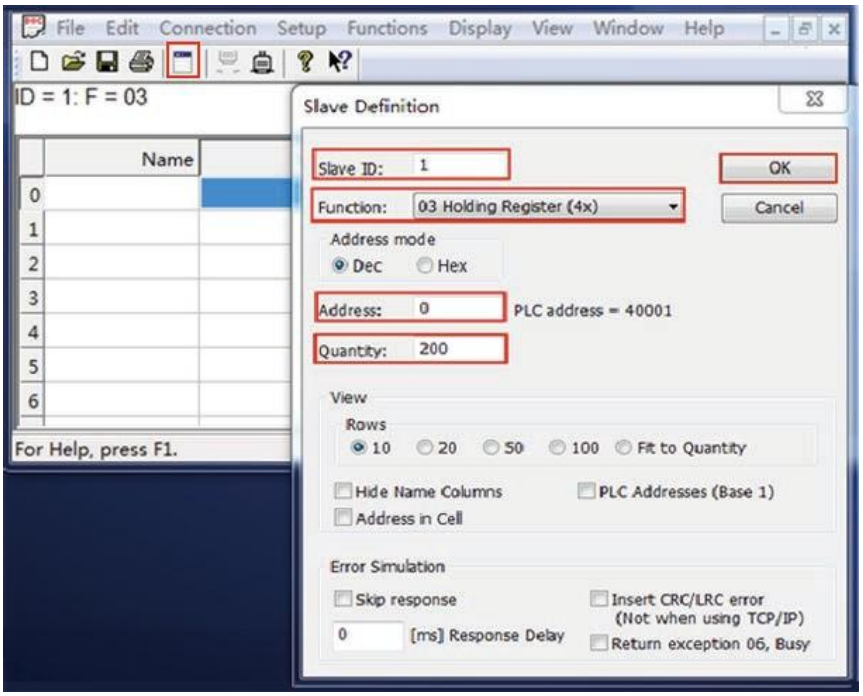


Figure 15 Mosbus slave device attribute definition

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 16 The value of Modbus slave register is automatically incremented

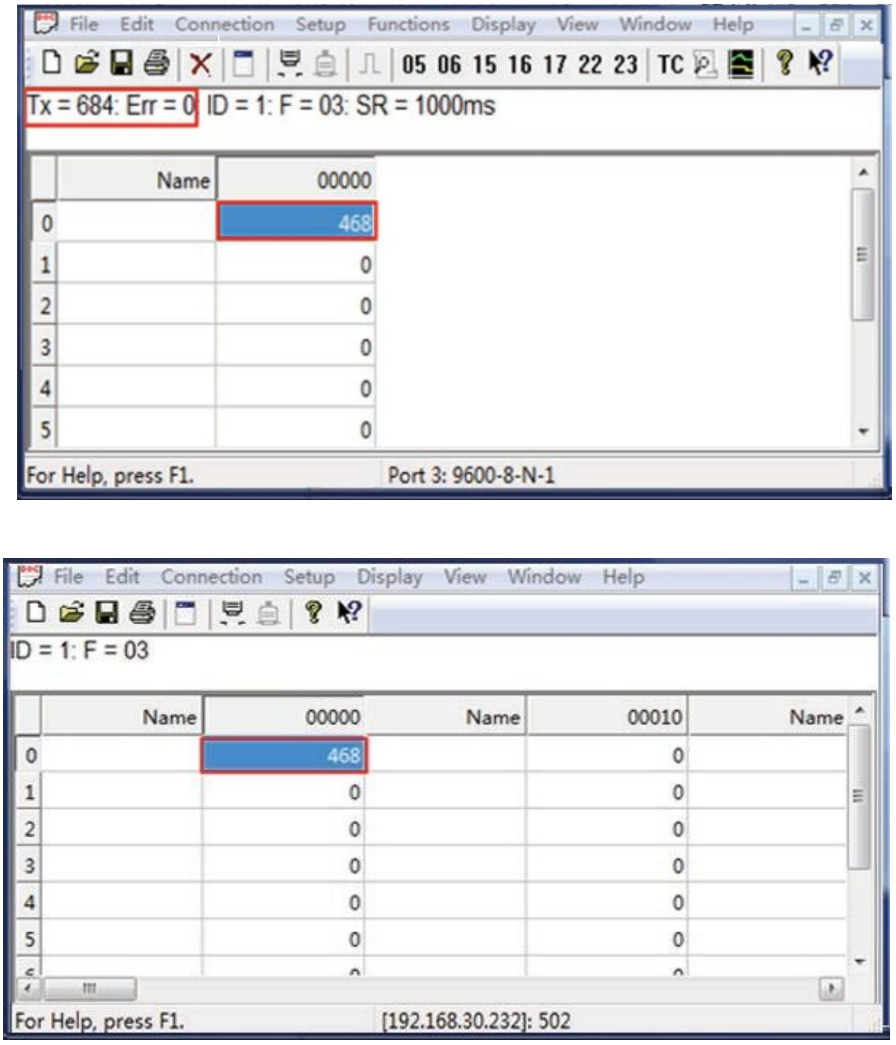


Figure 17 Communication is normal, the host can read the register data of the slave through the serial server device

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

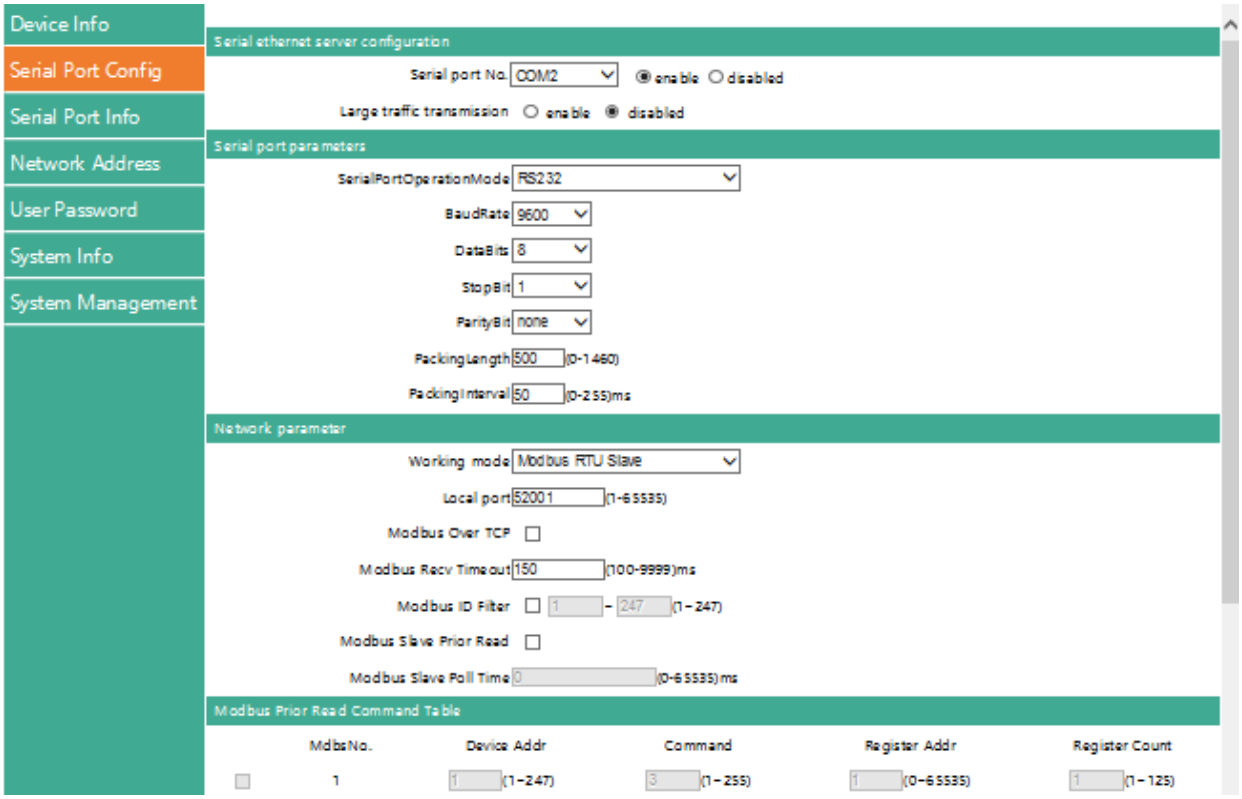


Figure 18 Modbus Web parameter configuration

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

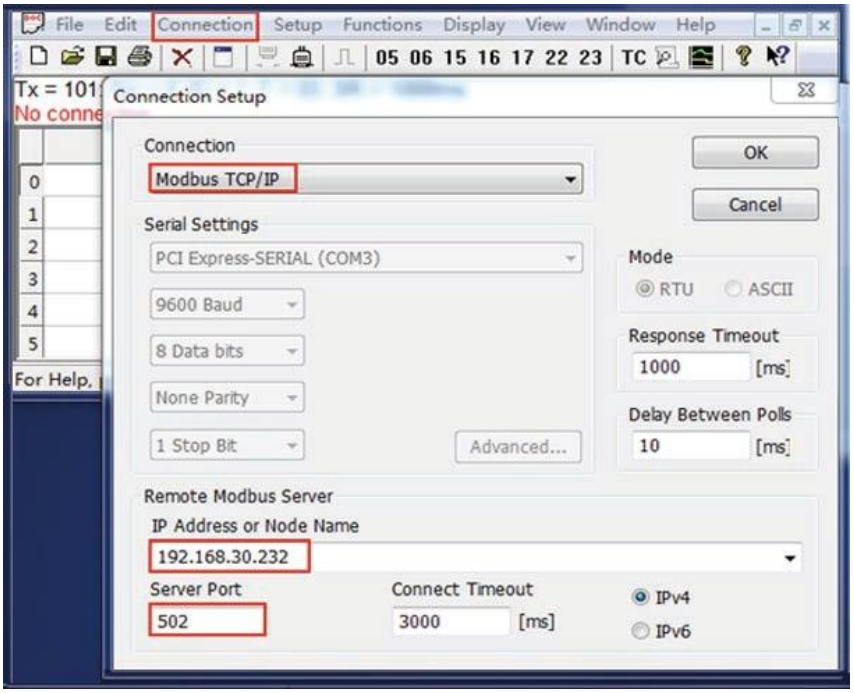


Figure 19 Modbus host network connection parameter configuration

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.

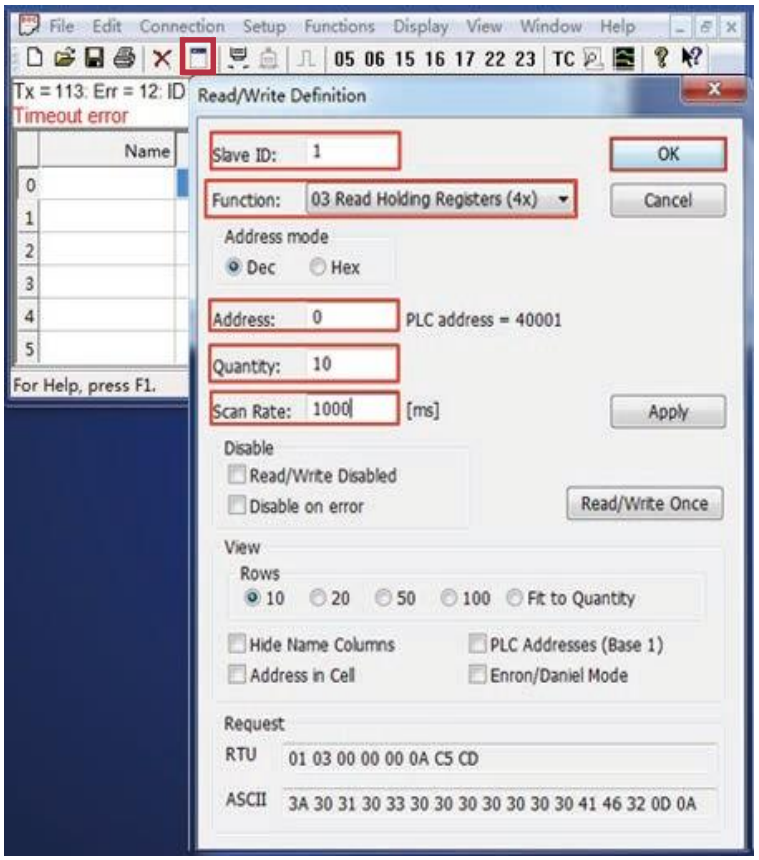


Figure 20 Modbus host device attribute definition

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

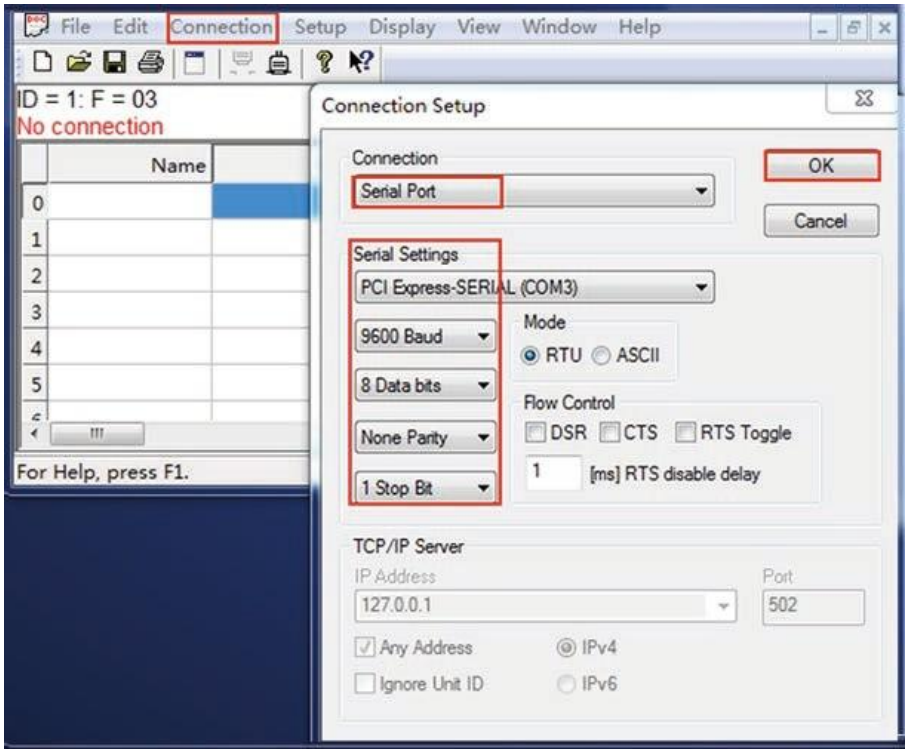


Figure 21 Modbus slave serial port parameter configuration

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.

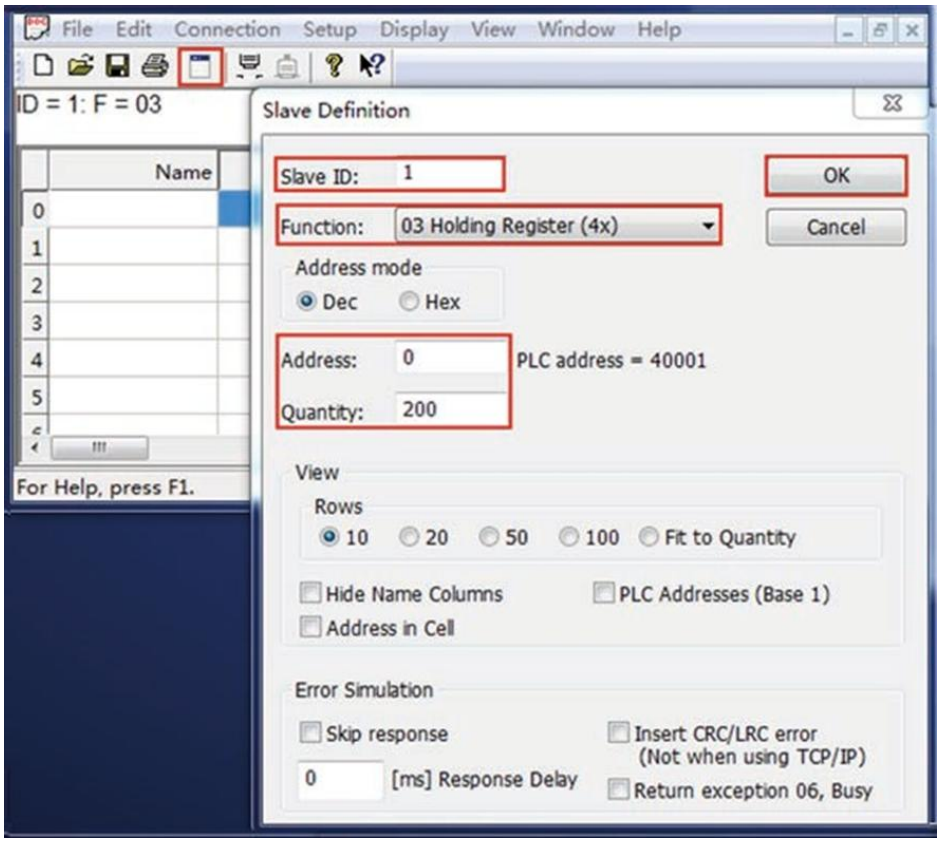


Figure 22 Modbus slave device attribute definition

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.

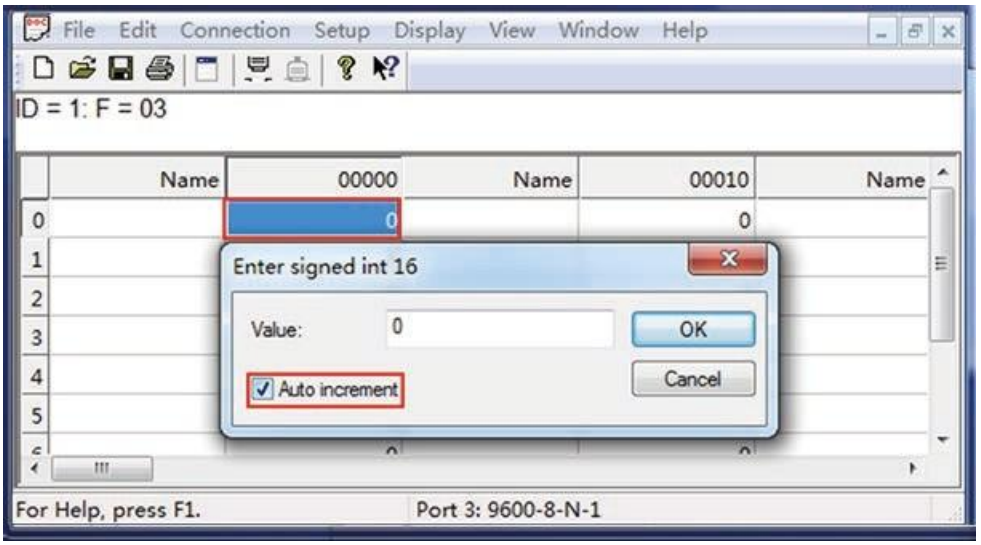
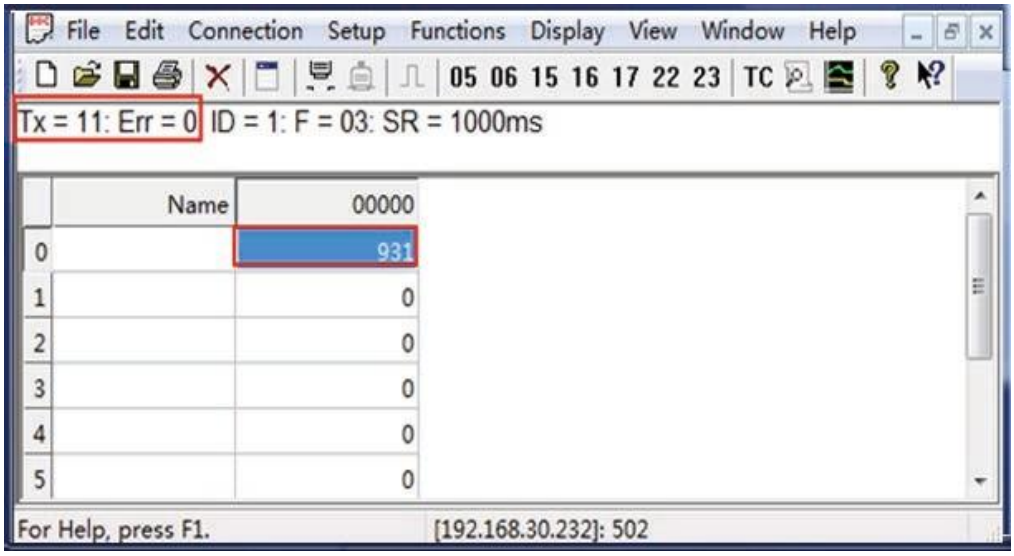


Figure 23 Modbus slave register value auto increment



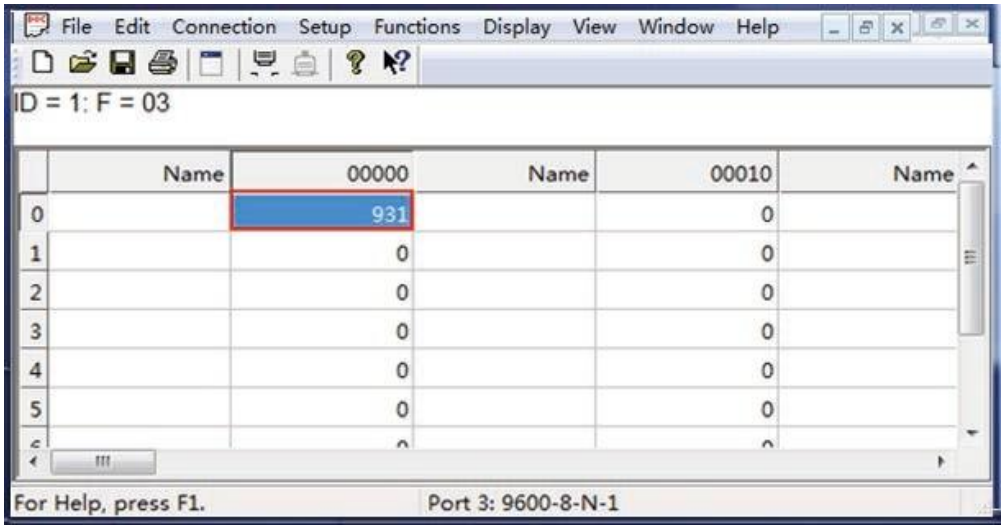


Figure 24 The communication is normal, the host can read the register data of the slave through the serial server device

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 RS-232/RS-485/RS-422 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. Mport3101 is affected by the hardware configuration, Modbus ASCII protocol transmission only supports use below 19200 baud rate.

3.3.3 RealCOM function usage

In RealCOM mode, the serial server cooperates with the operating system installed with RealCOM driver software. The RealCOM driver software maps the serial server's serial port to the host's local COM interface, so that the original serial device software or communication module on the host can be used directly without modification. The RealCOM driver software transparently transmits the data received by the virtual COM interface on the host to the serial server in the form of TCP/IP. The serial server transparently transmits the data received from the serial port to the virtual COM interface of the host computer in the form of TCP/IP.

The serial server supports three RealCOM protocols: RealCOM_MCP mode is compatible with Moxa's drive management software; RealCOM_CCP mode is compatible with Kang Hai's serial management tool; RealCOM_MW mode supports Maiwe's MWVirtualCOM software.

How to use Maiwe RealCOM:

1. The WEB of the serial server is configured as RealCOM_MW mode;
2. Install and open Maiwei virtual string management software;
3. Click [Add Device], and the add serial mapping interface will pop up;
4. Click [Scan], the software will scan the serial server devices in the local area;
5. According to the MAC address and IP address, select the corresponding serial server device;
6. Click [String Mapping] and wait for the creation of a local virtual string;
7. Connect the string of the serial server with the real string on the host, and use the string debugging tool to open the string created by the virtual string management software and the real string on the host, one of the two Send data to each other for testing.

3.3.3 Httpd Client function usage

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:

1. Select "Httpd Client" as the work mode;

2. Fill in the HTTPD address, that is, the address of the HTTP server, which can be an IP address or a domain name (the ability to connect to foreign countries is required);

3. Fill in the HTTPD port number;

4. The HTTPD method needs to fill in the correct URL path, and select the GET or POST method as needed;

5. Fill in the HTTPD request header as needed;

6. Finally, click the Configure button to save the parameters.

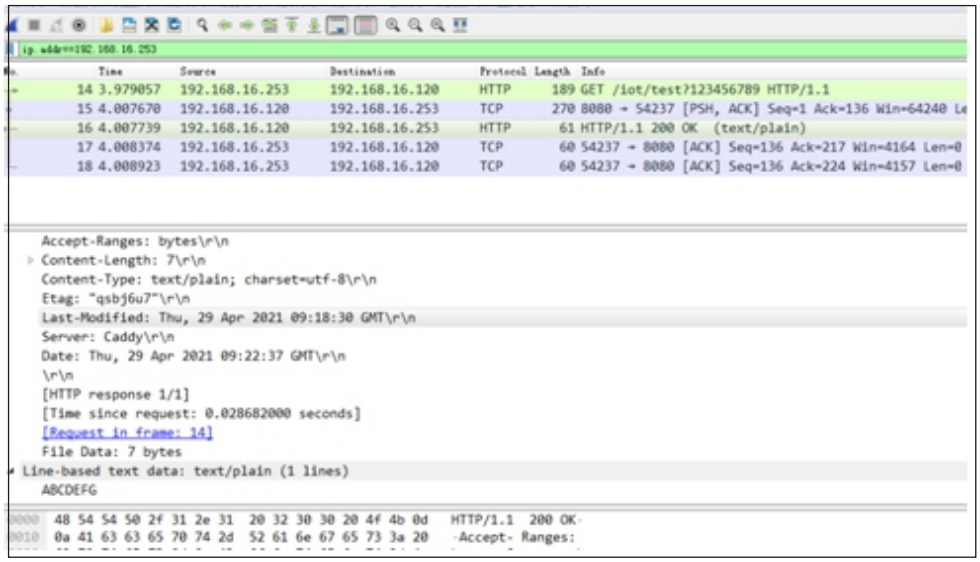


Figure 25 Httpd Client communication Wireshark packet capture example

3.3.3 WebSocketClient function usage

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:

1. Select "WebSocket Client" as the work mode;

2. 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); 3. Fill in the WebSocket server port number;

4. WebSocket method needs to fill in the correct URL path;

5. You can select the WebSocket Ping time interval according to your needs, fill in 0 to indicate not to use the Ping function; 6. Finally click Configure button to save parameters.

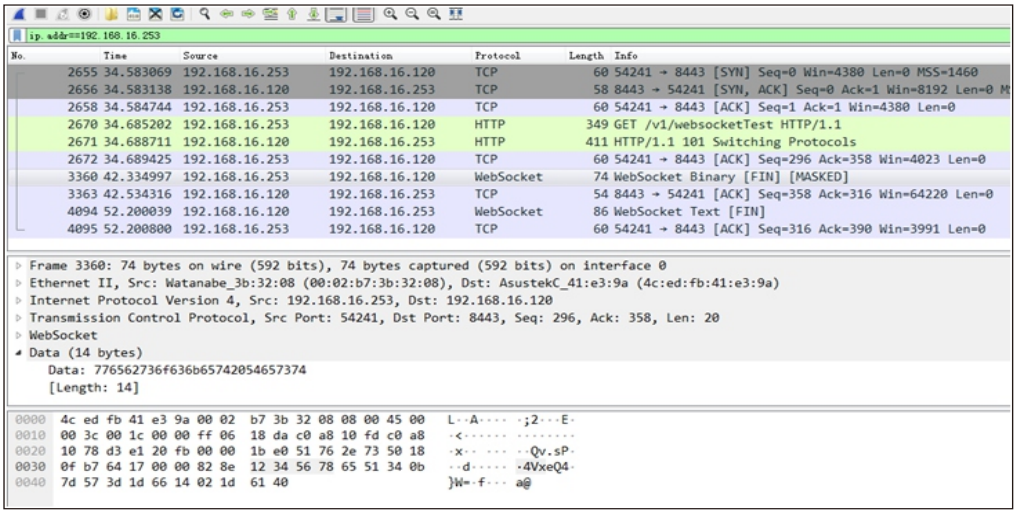


Figure 26 WebSocletClient communication Wireshark packet capture example

1. The port number 80, 4500, 4800, 57050, 57851, 57850, 57851 has been used by the system. When configuring the port number, please
Do not use repeatedly.
2. The device and the remote device must have the same baud rate, parity bit, data bit and stop bit;
3. If the operation mode of this device is UDP, the remote device must also operate in UDP mode; if the operation mode of this device is TCP_Client, the
remote device must operate in TCP_Server mode; if the device operates The mode is TCP_Server, and the remote device must work in TCP_Client
mode.
4. If the operation mode of this device is UDP multicast mode, the same multicast address can only be used once, and no multicast address is allowed.
The address is used in different serial configurations.
5. When you need to use frame data frequently or have high requirements for data transmission, please adjust the baud rate and the sending interval appropriately.
The slower anti-crossover speed causes garbled characters or packet loss.
6. When configuring the device, make sure that the external RS232/485/422 device stops sending data to the serial server to avoid garbled characters.
7. When Modbus_ASCII_Master turns on the transparent transmission mode, it only supports reading of 60 registers at most.
8. Mport3101 is affected by the hardware configuration, Modbus ASCII protocol transmission only supports the use below 19200 baud rate.
9. Affected by the serial rate, when Modbus data timeout occurs, the web should be configured with appropriate modbus receiving timeout
At the same time, the read timeout time of the host computer should be appropriately extended according to the baud rate.
10. To use the RealCOM function, the firmware version of the serial server must be V1.x.9.210512 and above, and the software version of the virtual serial tool must be V1.0.300.05 and above.

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:

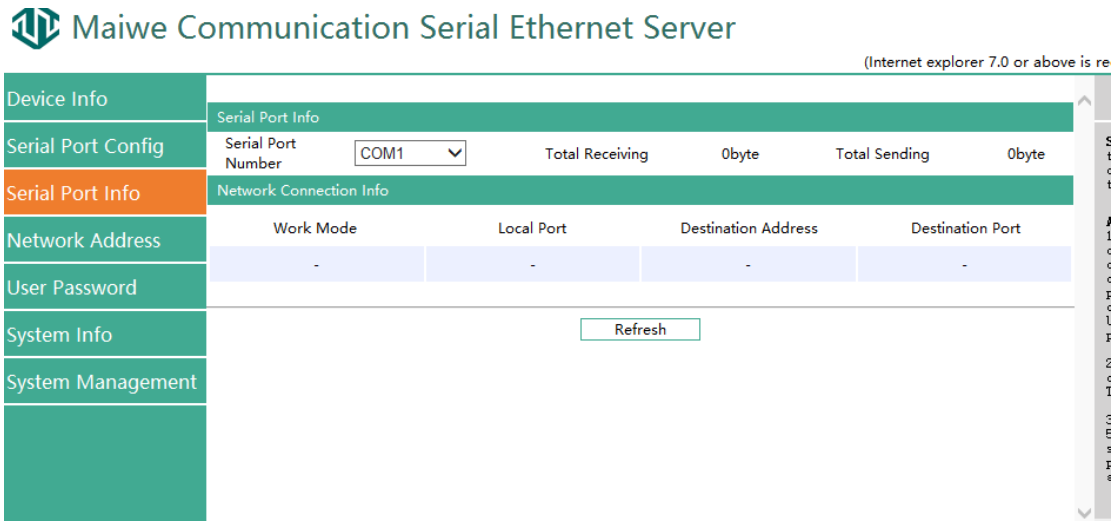


Figure 27 Serial port information page

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 Mport 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.

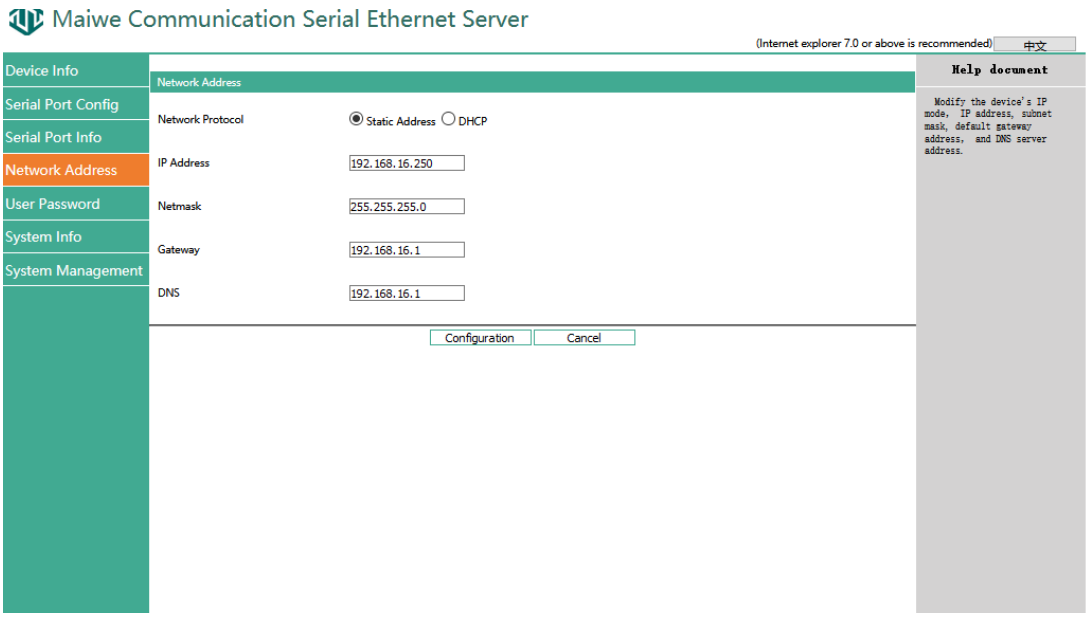


Figure 28 Network address interface

■ Network protocol: select static address or DHCP.

■ IP address: IP address is a 32-bit address assigned to devices connected to the Internet. The IP address consists of two fields: the network number field (Net-id) and host number field (host-id). The IP address is assigned by the Network Information Center (NIC) of the US National Defense Data Network. In order to facilitate the management of IP addresses,IP addresses are divided into five categories: Class A, B, and C addresses are unicast addresses; Class D addresses are multicast addresses; Class E addresses are reserved addresses for future special purposes. The IP addresses currently in large numbers belong to three types of addresses: A, B, and C.

■ Subnet mask: The mask is a 32-bit number corresponding to an IP address. Some of these numbers are 1, and the others are 0. The mask can divide the IP address into two parts: the subnet address and the host address. The part of the IP address corresponding to the 1 bit in the mask is the subnet address, and the other bits are the host address. The mask for class A addresses is 255.0.0.0; the mask for class B addresses is 255.255.0.0; the mask for class C addresses is 255.255.255.0.

■ Default gateway: The default gateway in the host is usually called the default route. The default route (Default route) is the route chosen by the router when no other route exists for the destination address in the IP packet. All packets whose destination is not in the router's routing table will use the default route. This route usually connects to another router, and this router also processes data packets. If you know how to route this data packet, the data packet will be forwarded to a known route; otherwise, the data packet will be forwarded to the default Routing to reach another router.

■ DNS: The IP address of the DNS server. When the device uses a static IP address, the user is required to fill in this item. If a specific DNS server is not used, the default gateway IP address is generally sufficient. Whenever users modify the address settings, they need to click the button to submit to the Mport series serial server and switch to a waiting page as shown in Figure 29.

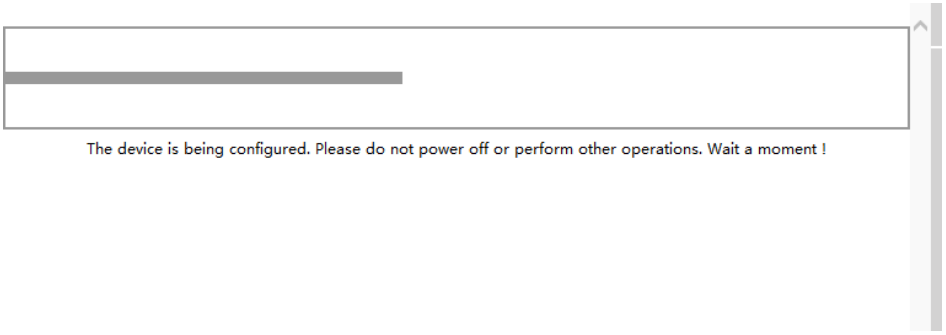


Figure 29 The waiting interface diagram after the user modifies the address

When the progress bar in the screen is finished, the Mport 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 other operations to avoid failure of the IP address modification.
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 to accurately know the new IP address of the device.

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 Mport series serial server provides users with three different permissions. The first type is for visitors, which can only view the current various configurations of the serial server, but cannot modify the configuration. The user name and password are both "none" and cannot be modified; the second is for ordinary users, which 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 modified on this page; the third is the administrator, the account has the highest authority, and when the password of a common user is forgotten, the administrator can log in and modify it The password of this machine, the user name is fixed as "admin", and the password is the last six digits of the machine's MAC address. (If you don't know the MAC address of the machine, you can log in as a guest to view it first).

The login password must be legal characters, consisting of 4-12 English letters (case sensitive) and numbers. When changing the password, you need to enter it twice, and you must ensure that the passwords entered twice are consistent. The page is shown in Figure 30.

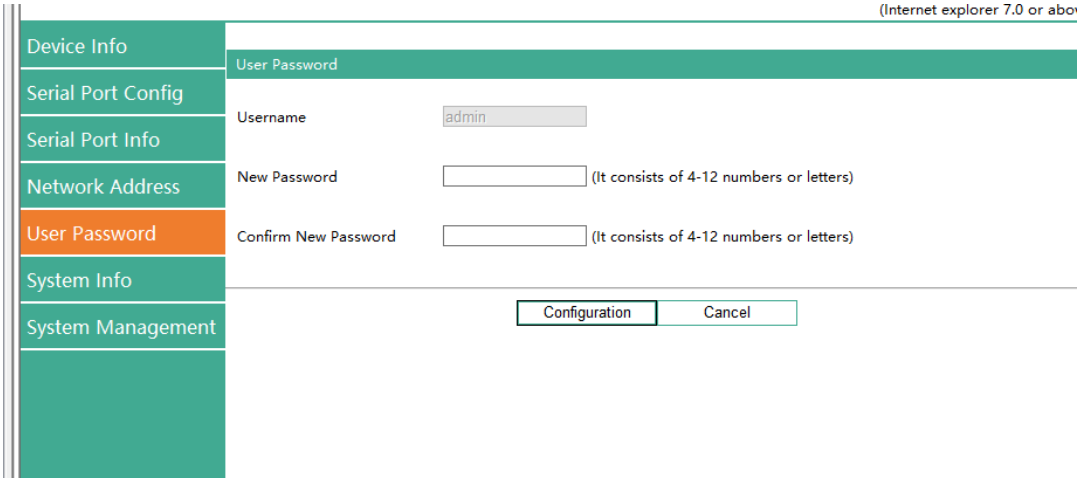


Figure 30 User password interface

- 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.

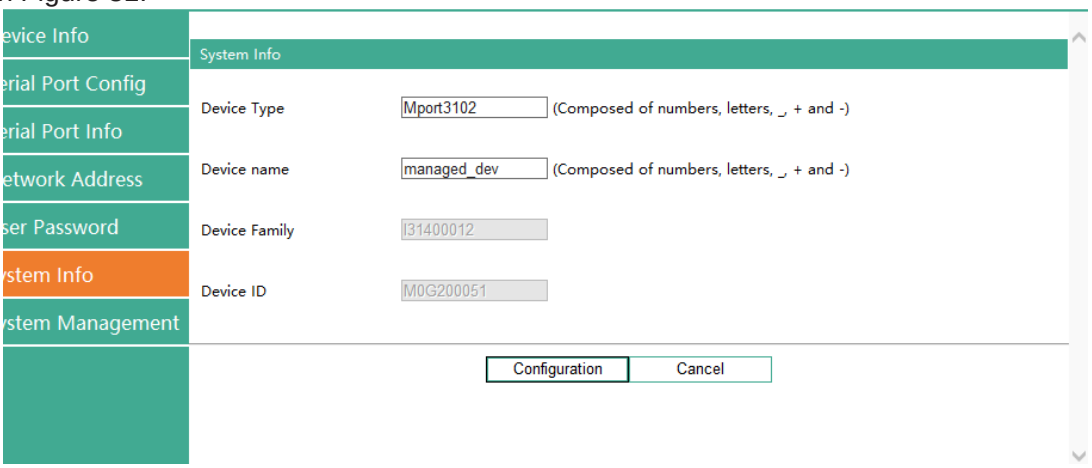


Figure 31 System Information Interface

- Device model: Users can customize the model of the Mport series serial server.
- Device name: The user can customize the name of the Mport 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 Mport 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.

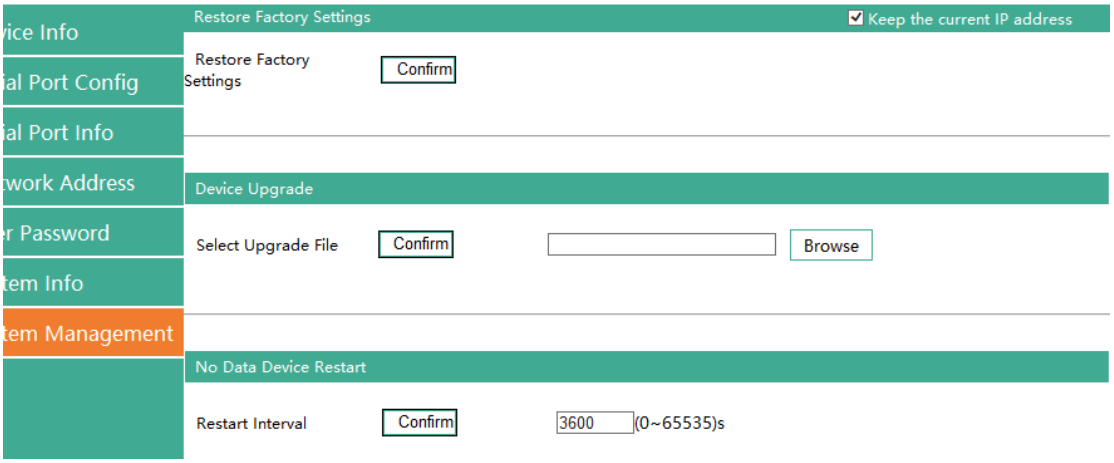


Figure 32 System Management Interface

- Device restart: This function is used to restart the Mport series serial server by software. Before the serial server is completely restarted, the device does not work and cannot forward any data packets. This restart is different from the hardware reset of power-on restart, but the serial server system software is reset, just like the "warm restart" of the windows operating system. The biggest advantage of this function is to

provide a function of remotely restarting the serial server. As long as the user can access the serial server remotely, it can be restarted remotely. Click on "Start" Button, the page pops up a prompt box, as shown in Figure 33, click "OK" to jump to the waiting page, after the progress bar in the page is read, the serial server restarts to complete.

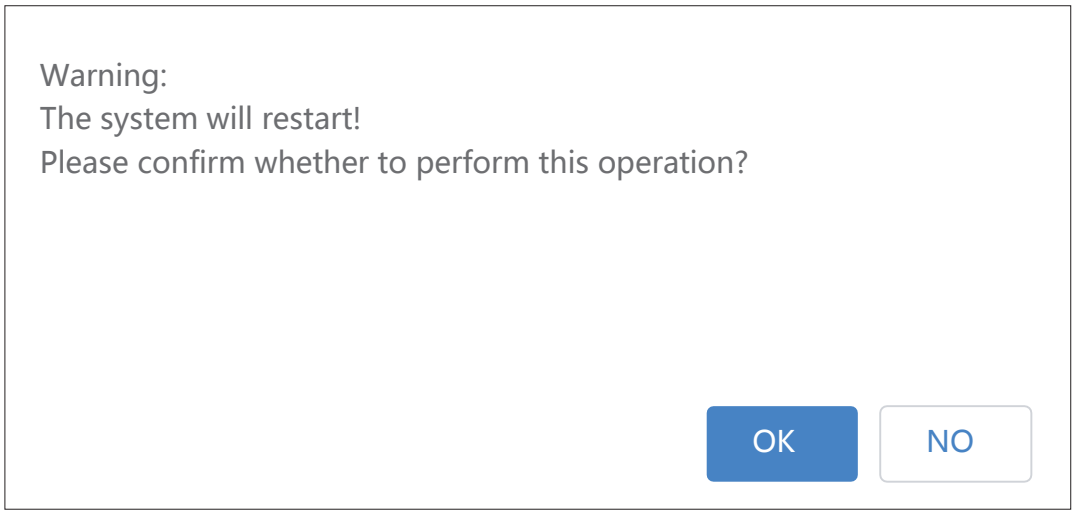


Figure 33 Warning message of device restart

- Restore the factory settings of the device: This function is used to restore the Mport 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.

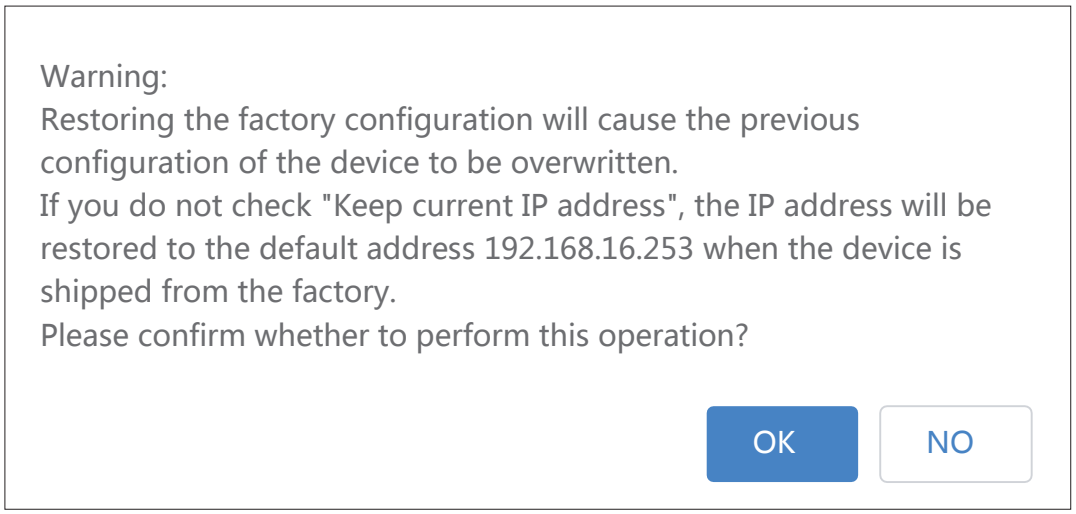


Figure 34 The warning message when the device is restored to factory configuration

- Device upgrade: This function is used to upgrade the software of the Mport series serial server. Users can get the upgrade program of the serial server through email or our company's website. Please pay attention to the matching of the device model and version, and use the unmatched upgrade program Will cause the upgrade to fail. After the user gets the upgrade program, click ‘’Browser”.

  Click the “Start” button to select the upgrade program, and then click the button, the page pops up a prompt box, as shown in Figure 35, click "OK" to jump to the waiting page, after the progress bar in the page is read, the serial server software upgrade is completed.

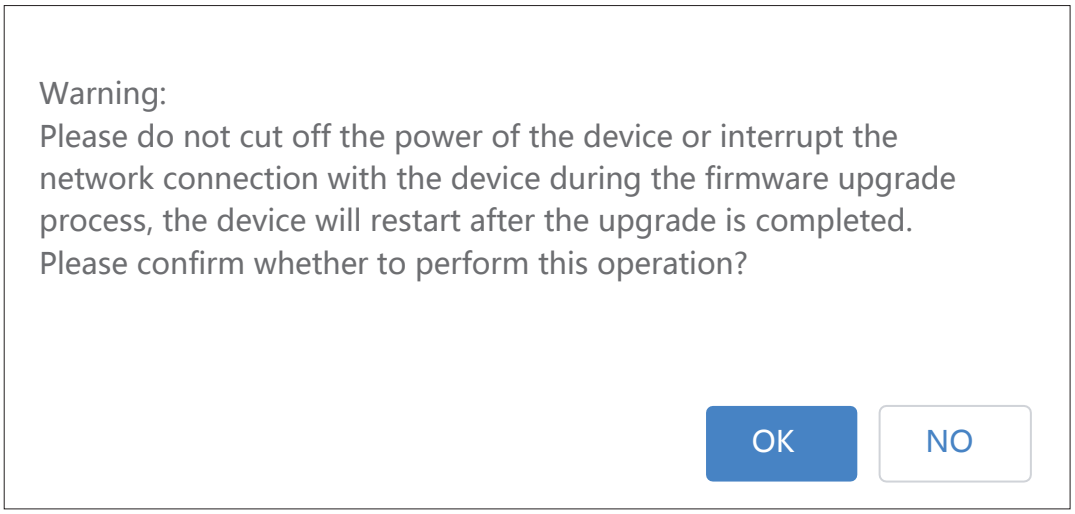


Figure 35 Warning message of equipment system upgrade

- Device restart without data: This function is used for the serial port server of the Mport 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.

1. Restoring the factory settings will cause all the settings to be restored to the state just left. If you want to keep the IP, please check the "Retain the current IP address" on the right, otherwise the IP address will also be restored to the default configuration 192.168.16.253.
2. Do not upgrade the device casually. When the device needs to be upgraded, you must make sure that the upgrade file is correct, otherwise it is easy to damage the software of the device and cause the Mport series serial server to malfunction.
3. Please do not operate the Mport serial server during the upgrade process, and it is forbidden to click on the serial server web page. If the upgrade is interrupted due to misoperation, please restart the serial server and try again.
4. Power failure is not allowed during the entire upgrade process. Power failure may cause permanent damage to the Mport series serial server. If the power is interrupted during the upgrade, please mail the product to our company immediately for possible solutions.
5. To set restart parameters for devices with no data, avoid using the Chrome 68 version of Google Chrome, otherwise there will be a problem that the configuration page cannot respond.

Chapter 4 Maintenance and Service

From the date of product shipment, Wuhan Maiwe Communication Co., Ltd. provides a five-year product warranty. According to the product specifications of Wuhan Maiwe Communication Co., Ltd., during the warranty period, if the product has any malfunction or functional operation failure, Wuhan Maiwe Communication Co., Ltd. will repair or replace the product for the user free of charge. However, the above commitment does not cover damage caused by improper use, accidents, natural disasters, incorrect operation or incorrect installation. In order to ensure that consumers benefit from the series of products of Wuhan Maiwe Communication Co., Ltd., help and problem solving can be obtained through the following methods:

Internet service

Call the technical support office

Product repair or replacement

4.1 Internet service

Through the technical support section of Wuhan Maiwe Communication Co., Ltd. website, you can get more useful information and usage skills.

4.2 Call the technical support office

Users who use the products of Wuhan Maiwe Communication Co., Ltd. can call the technical support office of Wuhan Maiwe Communication Co., Ltd. Wuhan Maiwe Communication Co., Ltd. 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 Wuhan Maiwei Communication Co., Ltd., you should first contact Wuhan Maiwe Communication Co., Ltd.

The technical staff of the company will confirm, and then negotiate with the sales staff of Wuhan Maiwe Communication Co., Ltd. to complete the repair, replacement or return of the product.