

Model: UT-680X-GW Series
Modbus Gateway WEB
User Manual

Version: V1.2

Conventions Used in this Manual

This manual adopts the following conventions.

GUI Conventions	Description
 Explanation	Provides additional information and explanations for the operational steps.
 Caution	Highlights important points to be observed during operations; improper actions may result in data loss or device damage.

Preface

Target Audience

This manual is intended for installation personnel and system administrators responsible for setting up, configuring, or maintaining networks. It assumes familiarity with transmission and management protocols used in networks.

The manual also assumes a solid understanding of networking equipment, protocols, interface terminology, theoretical principles, practical skills, and specialized knowledge related to networking. Additionally, experience with graphical user interfaces, Simple Network Management Protocol (SNMP), and web browsers is required.

This manual serves as a general guide for all Modbus gateways, and the specific functional modules discussed here may vary based on the purchased Modbus gateway's actual features.

1. Overview

1.1 Product Introduction

The UT-680X-GW series is a Modbus gateway that serves as a Modbus protocol converter between asynchronous serial ports (RS232/422/485) and Ethernet. It is an independent intelligent device with a CPU, embedded OS, and a complete TCP/IP protocol stack. This gateway allows immediate network connectivity for RS232/422/485 serial Modbus RTU devices.

Product Features: Supports Dynamic Host Configuration Protocol (DHCP) and Static IP, facilitates Modbus RTU to Modbus TCP conversion, and functions as a storage-type Modbus gateway. It can transmit data over the Internet, enabling communication conversion between Modbus RTU Slave, Modbus RTU Master, Modbus TCP Master, and Modbus TCP Slave. It integrates protocols like ARP, DHCP, TCP, IP, HTTP, ICMP, and Modbus. Basic computer skills are sufficient for usage.

1.2 Product Features

➤ Hardware Features

- Includes a Reset button for restoring factory default settings.
- Equipped with a 10/100M industrial-grade auto-adaptive Ethernet port.
- Serial ports provide 5 signals: RXD, TXD, RTS, CTS, GND, supporting RS232/485/422 interfaces.
- Independent indicators for Ethernet and power, providing clear operational status.
- Wide power input range (12~57.6VDC) for versatile field power supply methods.

➤ Software Features

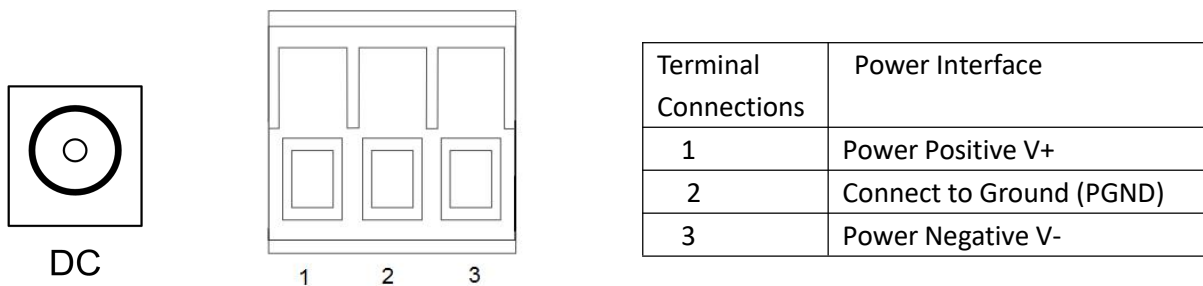
- Supports protocols such as ARP, DHCP, TCP, IP, HTTP, ICMP, and Modbus.
- Accommodates a wide baud rate range of 300-921600bps (standard baud rates) for diverse device applications.

- Two operational modes can be set on the Serial Port page: Modbus RTU Master and Modbus RTU Slave.
- Supports firmware upgrades via the web, convenient for specialized applications.
- Modbus proxy mode, storage-based, ensuring faster response and enhanced stability.

2. Hardware Description

2.1 Power Interface Terminal Definitions

The UT-680X-GW front panel provides DC and 3PIN 5.08 power terminal for power input, accepting a range of 12-57.6VDC. It's recommended to use a DC adapter with inner diameter of 2.5mm and outer diameter of 5.5mm.

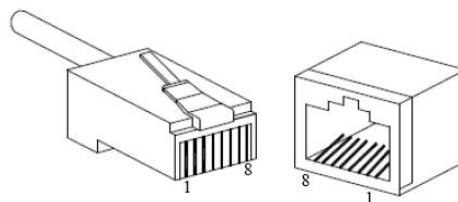


2.2 Ethernet RJ45 Interface Definitions

The UT-680X-GW supports 1 Ethernet port and multiple RS-232/485/422 serial ports.

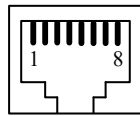
10Base-T/100Base-TX Ethernet Interface

The 10/100BaseT(X) Ethernet interface is located on the front panel and uses an RJ45 connector. The pinout for the RJ45 port is defined in the diagram, and it supports both Unshielded Twisted Pair (UTP) and Shielded Twisted Pair (STP) cables with a maximum distance of 100m. 100Mbps connection uses Category 5 cables with 100Ω impedance, while 10Mbps connection uses Category 3, 4, or 5 cables with 100Ω impedance.



The RJ45 port supports automatic MDI/MDI-X operation, allowing direct connection to a PC or server with a straight-through cable, or to other switches or hubs with a crossover cable. The pin definitions for 10Base-T/100Base-TX in MDI/MDI-X applications are provided in the table.

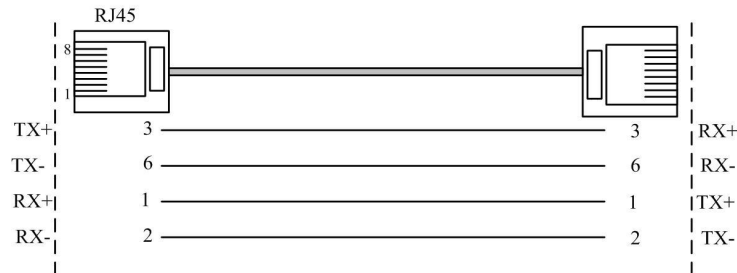
Pin No.	MDI Signal	MDI-X Signal
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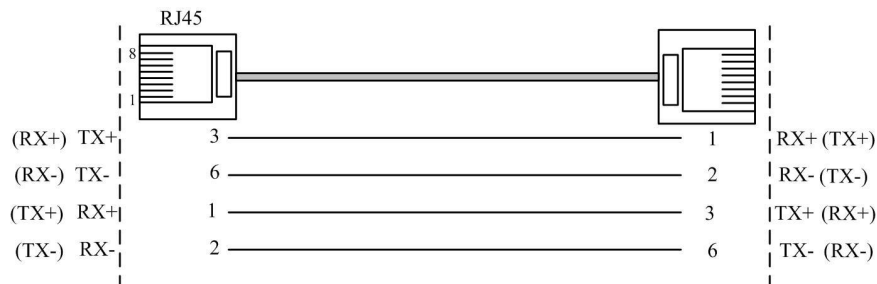
1	TX+	RX+
2	TX-	RX-
3	RX+	TX+
6	RX-	TX-
4. 5. 7. 8	—	—

Note: "TX±" stands for Transmit Data ±, "RX±" stands for Receive Data ±, "—" indicates unused.

MDI (Straight-Through):



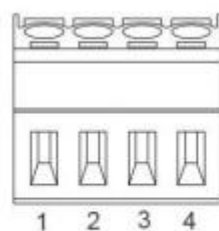
MDI-X (Crossover):



The MDI/MDI-X auto-adaptive function allows users of the UT-680X-GW series 10/100BaseT(X) Ethernet interface to connect with devices using either a crossover cable or a straight-through cable, eliminating the need to consider the type of Ethernet cable.

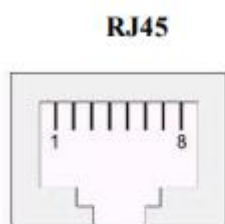
2.3 Serial Port Definitions

The UT-680XMT-GW series serial ports provide a 4-pin industrial terminal with a spacing of 3.81mm. The pin definitions are as shown in the table below:



3.81 Terminal block	RS-485	RS-422	Description
1	T/R+	TX+	Send / receive positive
2	T/R-	TX-	Send / receive negative
3		RX+	receive positive
4		RX-	receive negative

UT-680X-GW Series Serial Port Pin Definitions:



RJ45	RS-232	RS-485 HALF	RS-485 FULL	RS-422
1	TxD	DATA+	TxD+	TxD+
2	RxD	DATA-	TxD-	TxD-
3	RTS		RxD+	RxD+
4	CTS		RxD-	RxD-
5				
6	GND	GND	GND	GND
7				
8				

2.3 Indicator Lights

The UT-680X-GW offers LED indicator lights to monitor operational status, simplifying troubleshooting. The detailed status of each indicator light is shown in the table below:

Defined Name	Light Color	Function	Status
PWR	Red	Power Indicator Light	Solid On
LINK	Green	Network Indicator Light	Solid On
Serial Data Light	Green	Serial Data Transmit/Receive Indicator Light	Blinking on data transmission, Off on no data
RUN	Green	Operation Indicator Light	0.5s On, 0.5s Off alternating blink

2.4 Device Installation

Before installation, ensure the device's operating environment: power voltage, installation space, and mounting method. Please carefully review the following installation requirements:

- Check if the necessary cables and connectors for installation are available.
- Verify cable placement according to reasonable configuration requirements.
- The product does not provide installation components; users must prepare components for the selected installation type: screws, nuts, tools, etc., to ensure reliable installation.
- Power requirement: 12-57.6VAC.
- Environmental requirement: Operating temperature -40~85°C, operating humidity 5%~95% (non-condensing).
- Mounting method: Wall-mounted installation.

2.5 Cable Routing

Cable routing must adhere to the following conditions:

- Verify that cable specifications, models, and quantities match the requirements before laying cables.

- Check cables for damage and ensure they have manufacturing records and quality assurance certificates before laying.
- The specifications, quantity, routing, and placement of the required cables meet construction requirements, and the laying length should be determined based on actual positioning.
- There should be no breaks or connectors in the middle of the laid cables.
- Cables in pathways should be neatly and evenly laid out, with smooth and uniform turns.
- In cable troughs, cables should be laid straight without protruding to avoid blocking other entry and exit holes. Secure and fasten cables at the exit points or bends.
- User cables should be separated from power lines. Cables, power lines, and ground wires should not overlap or mix when laid in the same trough. If cables are too long, place them neatly in the middle of cable trays, avoiding pressure on other cables.
- Both ends of the cables should be appropriately labeled with concise and clear content for maintenance purposes.

3. Web Management

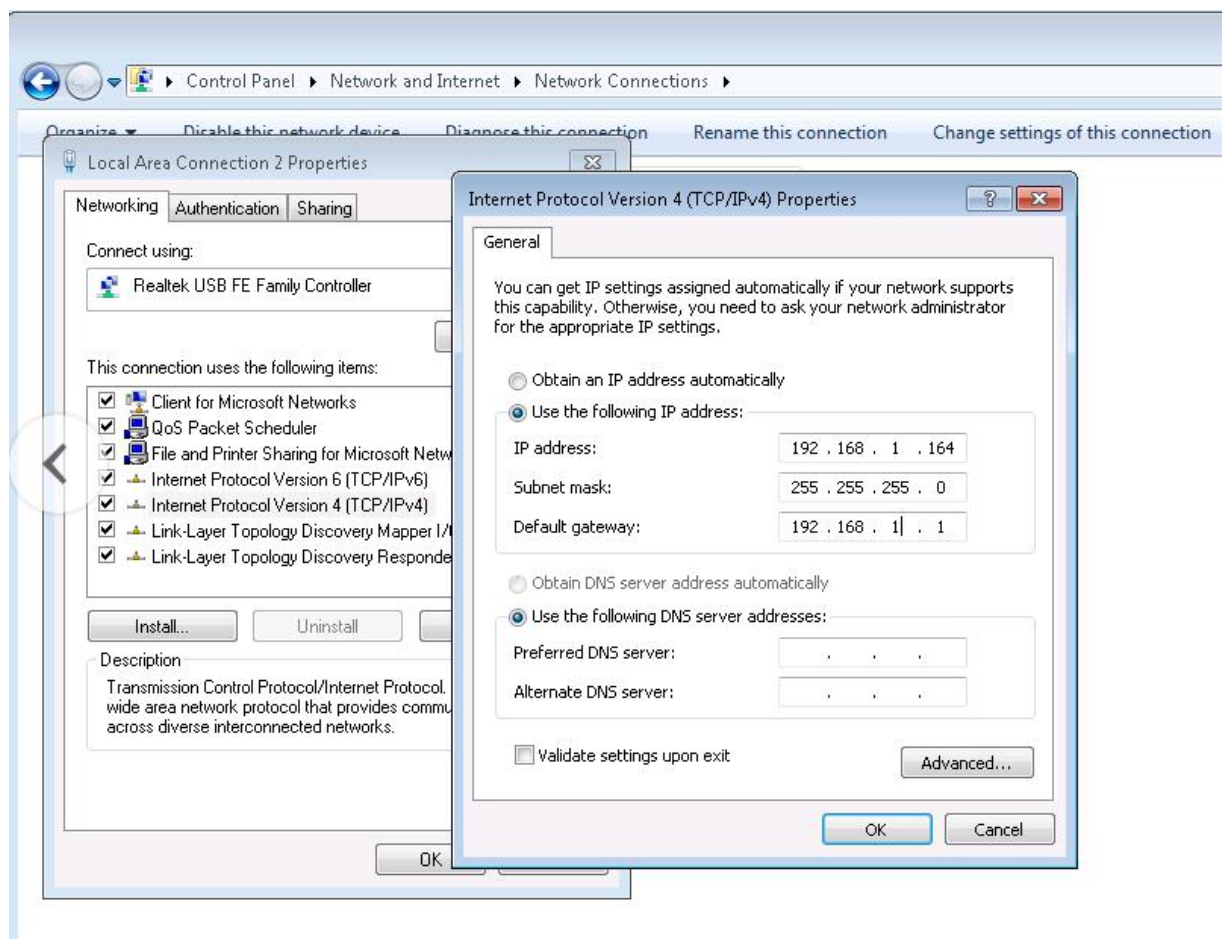
Before configuring the UT-680X-GW series Modbus gateway device, ensure you have installed necessary software on your computer and have properly configured the network.

3.1 Network Settings

The default IP address of the UT-680X-GW Modbus gateway device is: 192.168.1.125, subnet mask: 255.255.255.0. When accessing the UT-680X-GW Modbus gateway device via the web, the IP of the gateway device and the computer must be within the same local network. You can modify the computer's IP address or the Modbus gateway device's IP address to ensure they are on the same local network. Refer to the steps of Method 1 or Method 2 for specific operations.

Method 1: Modify the computer's IP address.

- Click Start -> Control Panel -> Network Connections -> Local Connection -> Properties -> Internet Protocol (TCP/IP) and set the PC's IP address to: 192.168.1.X (X is any value between 2 and 253, excluding 254).
- After clicking OK, the IP address will be successfully modified.
- The specific steps for various Windows systems are shown in Figure 3.1:



(Figure 3.1)

3.2 Function Menu

The main menu includes: Serial Port Settings, Ethernet Settings, System Management, Modbus Settings, User Settings, and these items will be introduced and configured in this chapter respectively.

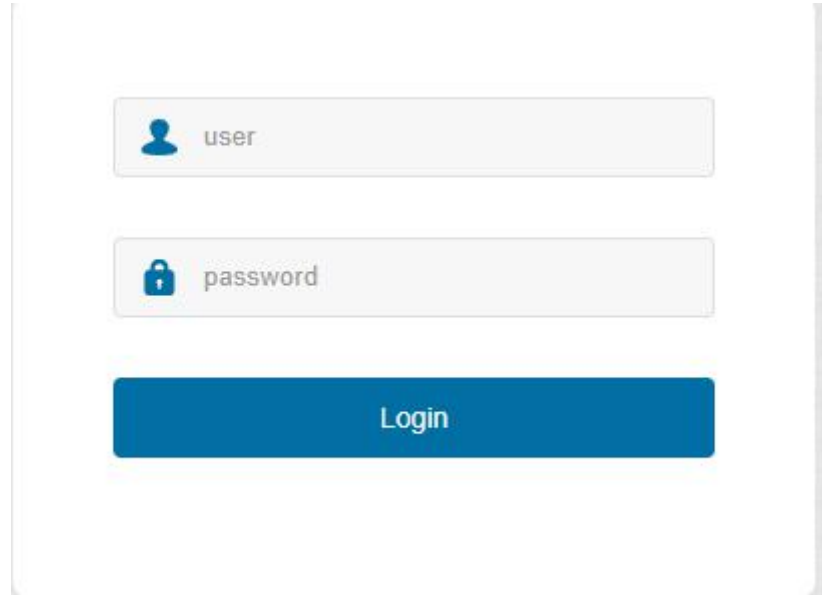
Menu Items	Page Functions
Serial Port Settings	Configure basic parameters for serial ports
Ethernet Settings	Configure basic parameters for Ethernet ports
System Management	Perform operations like factory reset and firmware upgrade
Modbus Settings	Configure basic parameters for Modbus
Modbus Routing Settings	Configure TCP port routing parameters
Connection Status	Display TCP connection status
User Settings	Support user password modification
Save Settings	Perform save operation

3.3 Logging into the Web Interface

Before accessing the Modbus gateway device via Google Chrome, ensure that the PC and the target device are on the same local network.

Steps:

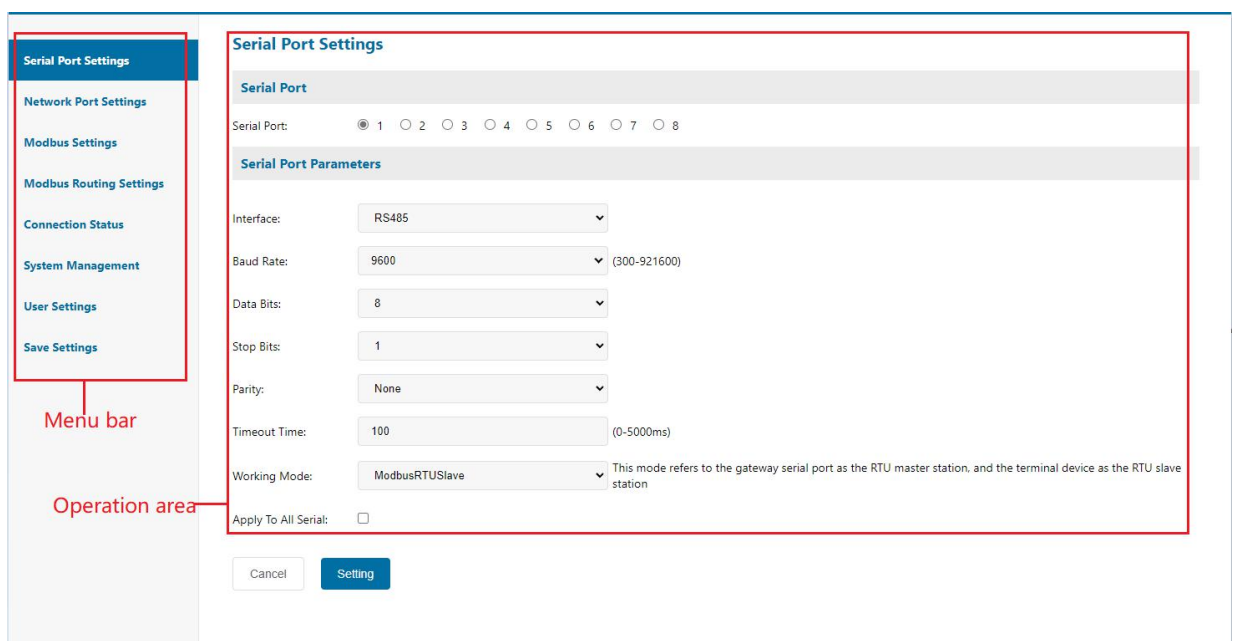
1. Right-click on Google Chrome, choose Properties, and clear temporary files and browsing history.
2. Open Google Chrome, enter the IP address of the UT-680X-GW Modbus gateway device in the address bar, press Enter, and access the username and password confirmation page as shown in Figure 3.1.



(Figure 3.1)

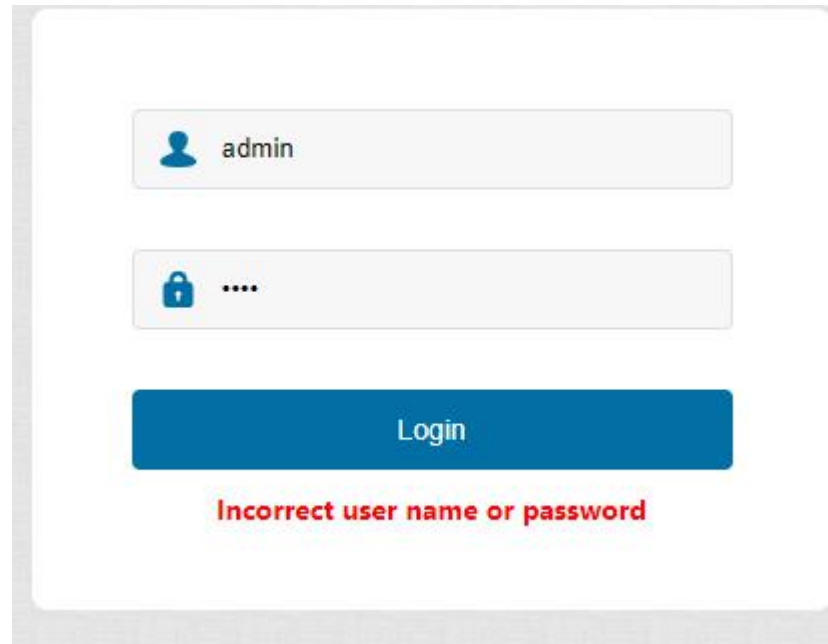
3. Enter the username and password, press Enter, and access the UT-680X-GW Modbus gateway device interface as shown in Figure 3.2.

The Web configuration page is divided into three parts: Menu Bar, Operation Area, and English/Chinese toggle. Clicking on a menu item in the menu bar takes you to the corresponding interface, and the configuration area displays device status information and allows configuration.



(Figure 3.2)

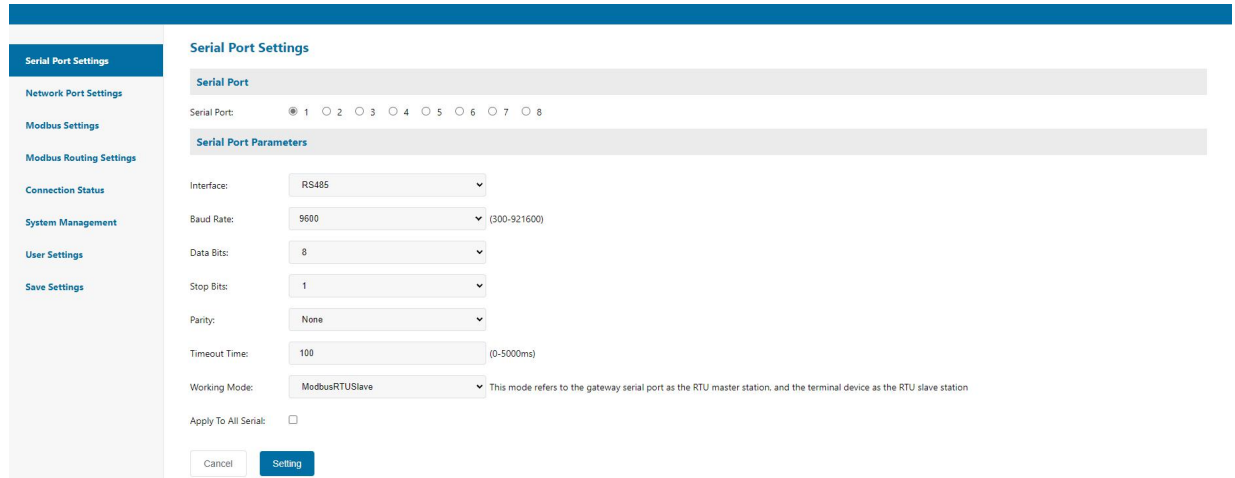
If the username or password is entered incorrectly, the interface displays "Username or Password is Incorrect" as shown in Figure 3.3, and you must re-enter the correct credentials.



(Figure 3.3)

3.3.1 Serial Port Settings

Access the Web interface of the UT-680X-GW Modbus gateway device, as shown in Figure 3.4.

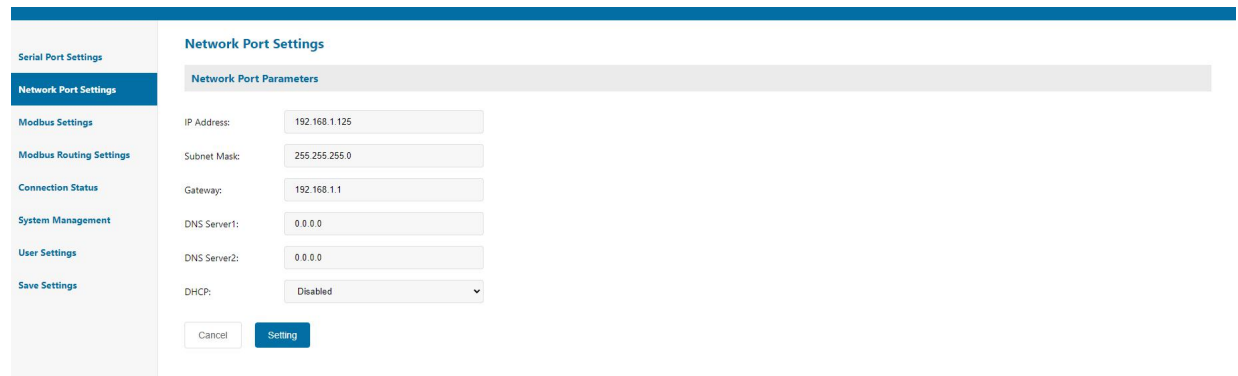


(Figure 3.4)

Select Serial Port	Default to the First Serial Port
Interface Type	RS-485/422/232, default RS485
Baud Rate	300-921600, default 9600
Data Bits	5, 6, 7, 8; default 8
Stop Bits	1, 1.5, 2; default 1
Parity	None, odd, even; default none
Timeout	Device Reply Timeout, range 0-5000ms
Operating Mode	ModbusRTU Slave (default), ModbusRTU Master
Apply to All Serial Ports	Check to apply current serial port parameters to all serial ports.

3.3.2 Ethernet Settings

Access the Web interface of the UT-680X-GW Modbus gateway device, as shown in Figure 3.5.

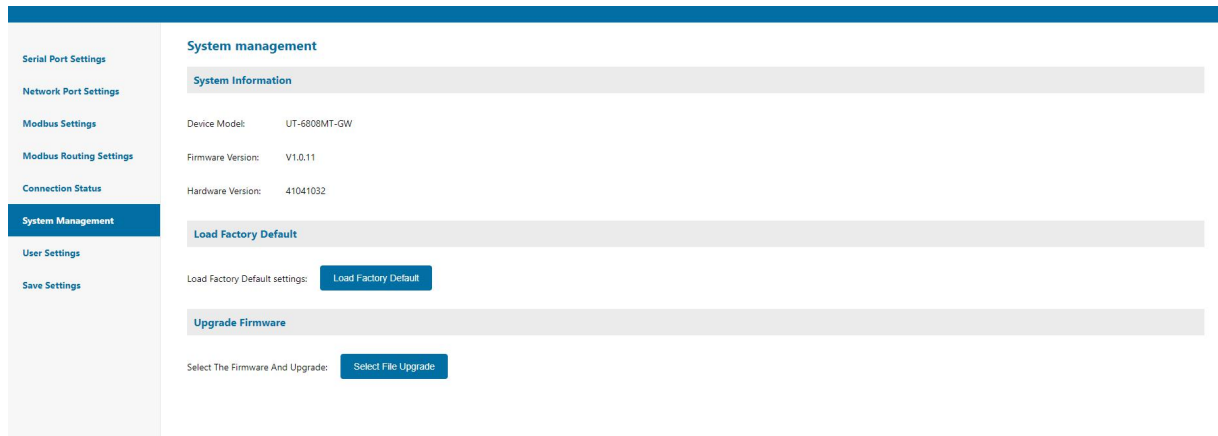


(Figure 3.5)

IP Address	An address of 32 bits in length assigned to devices connected to the Internet. An IP address consists of two fields: the network number field (net-id) and the host number field (host-id). IP address format: X.X.X.X, default display: 192.168.1.125.
Subnet Mask	A mask corresponds to a 32-bit number associated with an IP address, where some bits are set to 1 and others to 0. The mask divides the IP address into two parts: the subnet address and the host address. The parts of the IP address that correspond to the bits set to 1 in the mask are the subnet address. Mask format: X.X.X.X, default display: 255.255.255.0.
Gateway	The default gateway within a host is often referred to as the default route. The default route is the route selected by a router when no other routes for the destination address of an IP packet are found in the router's routing table. The default route is used for all packets whose destination is not in the router's routing table. Gateway format: X.X.X.X, default display: 192.168.1.1.
DNS	DNS, short for Domain Name Server, translates user-friendly domain names into IP addresses that the Internet can recognize. If a device needs to access a hostname, it requires the DNS server to resolve it into an IP address. DNS address format: X.X.X.X, default display: 0.0.0.0.
Ethernet Speed	Set the interface speed to Auto Negotiation, 10M Half Duplex, 10M Full Duplex, 100M Half Duplex, or 100M Full Duplex. Enable or disable DHCP.
DHCP	An address of 32 bits in length assigned to devices connected to the Internet. An IP address consists of two fields: the network number field (net-id) and the host number field (host-id). IP address format: X.X.X.X, default display: 192.168.1.125.

3.3.3 System Management

Access the Web interface of the UT-680X-GW Modbus gateway device, as shown in Figure 3.6.

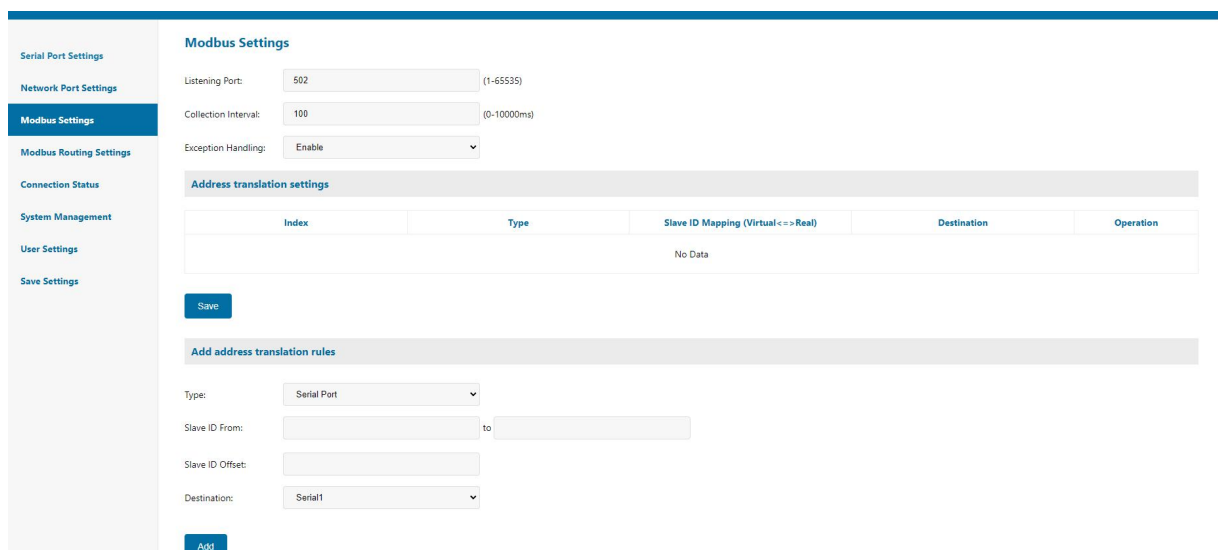


(Figure 3.6)

Device Model	Device Name Description
Firmware Version	Software Version Number
Hardware Version	Hardware Version Number
Factory Reset	Factory reset settings, parameter initialization, default IP: 192.168.1.125
Firmware Upgrade	Upgrade firmware program, reboot required after upgrade.

3.3.4 Modbus Settings

Access the Web interface of the UT-680X Modbus gateway device, as shown in Figure 3.7.



(Figure 3.7)

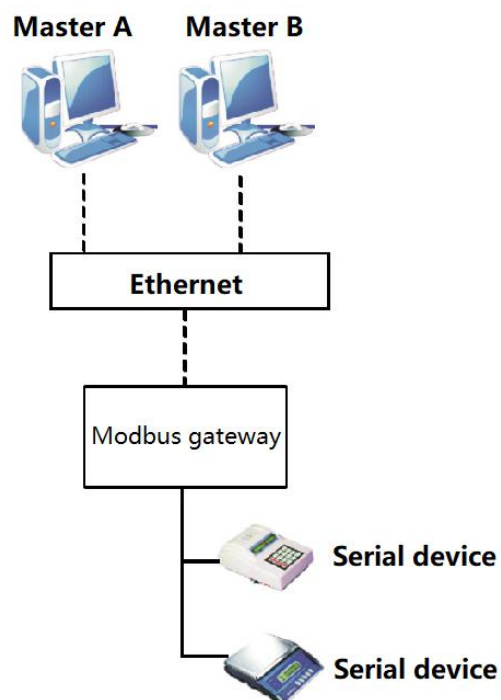
Listening Port	Default is 502, connecting to the device port on the TCP side, range 1-65535.
Polling Interval	Polling interval for each Modbus RTU command, range 0-10000ms, default 100.
Address Conversion Settings	Query address conversion table, maximum of 15 address conversion entries.
Exception Handling	Enabled by default, which reports "Gateway target device failed to respond" error code 0B on timeout. Disabled means no response.
Index	Maximum of 15 address entries.
Type	Two types available: Serial Port (Slave) and TCP Address (Master). The

	same serial port cannot use both modes simultaneously.
Slave Address Conversion	Virtual <=> Real, real address converted to virtual address.
Add	Click "Add" after setting parameters, then save and restart settings.
Slave addresses range from	ID number setting, range 1-247.
Slave Conversion Address Increment	Incremental range from -254 to 254, can be negative, added to the ID range for address calculation.
Destination	Serial1 or IP address + port, corresponding to the serial port or service IP + port of the address conversion entry.

3.3.4.1 Mode 1 (Multi-Master Multi-Slave)

UT-680X-GW supports multi-master multi-slave configuration, enabling the conversion between Modbus TCP and Modbus RTU protocols. It can accommodate up to 5 TCP master/client devices (on the same serial port) or connect to 5 TCP slave/server devices. UT-680X-GW gateway offers an easy way to integrate Modbus TCP and RTU networks, providing a simpler and customizable network integration solution.

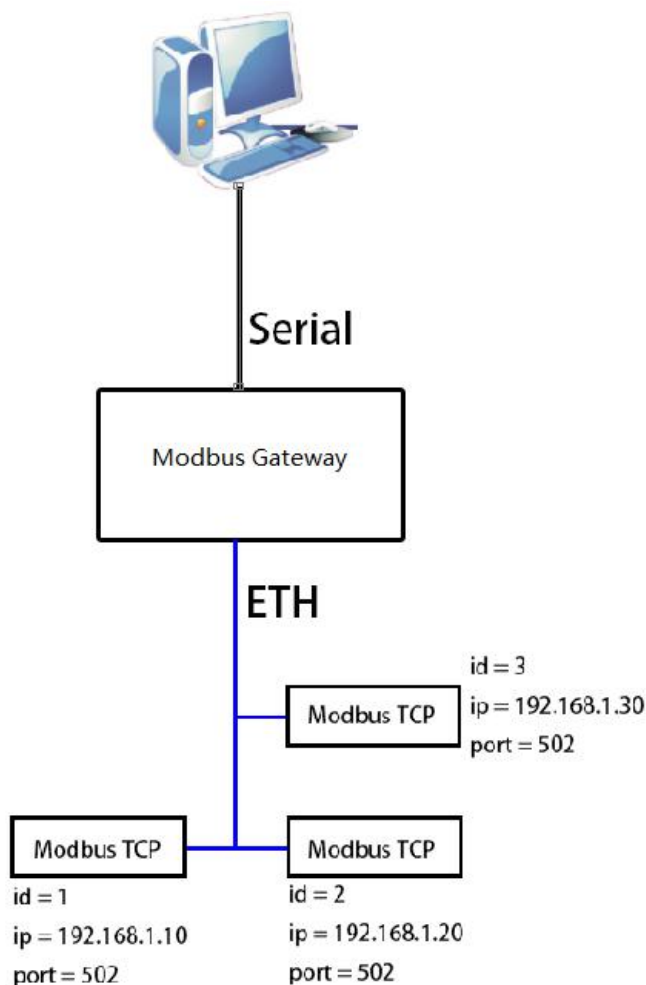
For Modbus deployment, the UT-680X-GW gateway efficiently connects a large number of Modbus nodes to the same network. It can manage up to 16 serial port slave nodes (devices), with IDs ranging from 1 to 247 (as defined in the Modbus standard). Each RS-232/422/485 serial port can be configured with different operating commands and baud rates for each Modbus RTU, allowing the integration of two types of Modbus networks into a Modbus TCP network through a single gateway.



3.3.4.2 Mode 2

The Modbus gateway connects multiple Ethernet slave servers using a Modbus serial master device with only one serial interface. To access Modbus TCP slave devices, configure the gateway's

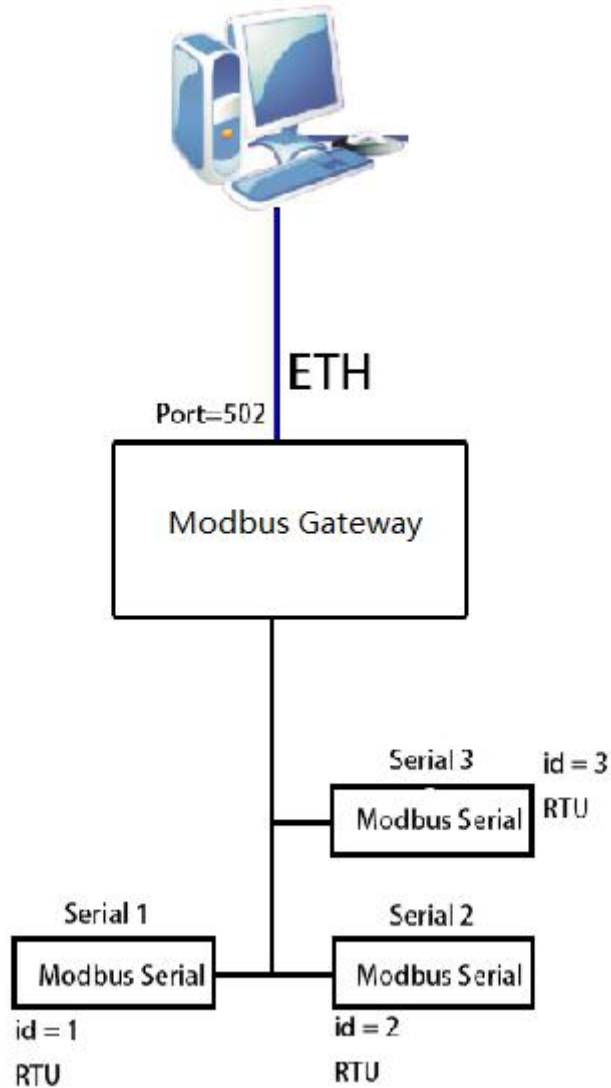
web page to work in ModbusRTU master mode, and then configure up to five Modbus TCP slave connection parameters (on the same serial port) on the page.



3.3.4.3 Mode 3

TCP master devices can establish connections with different Modbus slave devices. Each serial port of the gateway can be configured for a specific environment. After configuring the ID mapping settings, the TCP server network communication protocol accesses Modbus serial devices through the gateway.

Each serial port can manage up to 16 serial port slave nodes (devices). For example, under RS-485 connection, up to 16 slave devices can be managed, with ID range from 1 to 247 (as defined in the Modbus standard).



3.3.5 Modbus Routing Settings

Access the Web interface of the UT-680X Modbus gateway device, as shown in Figure 3.8. This routing feature is used in specific application scenarios and is not enabled by default.

Note: After enabling Modbus IP routing, the IP specified for a designated serial port is only accessible from the IP addresses set in this configuration. Other non-target IP connections will be unavailable and will not receive a response.

Index	Type	IP / Port	Destination	Operation
1	TCP Port	503	Serial1	Delete

Save

Add routing rules

Type:

Port:

Destination:

Add

(3.8)

Routing Settings	Maximum 15 address entries by index, default no data, the same serial port cannot use both modes.
Save	Save configuration, add routing rules first, then click Save, restart to take effect on the Save Settings page.
Type	Choose between TCP Port and IP Address.
Port	Default none, connect to the TCP side port, range 1-65535.
Destination	Default none, select a specific serial port.

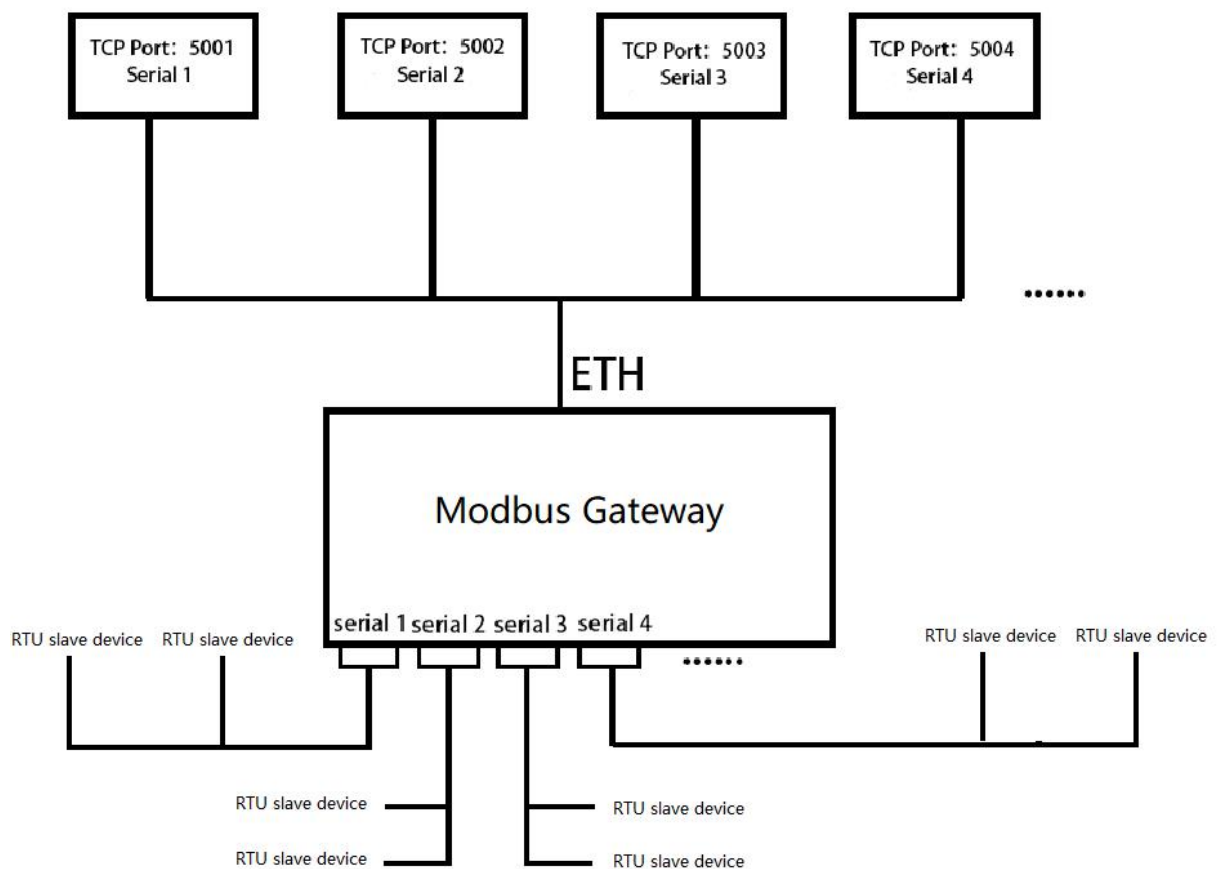
3.3.5.1 TCP Port

This type corresponds to the ModbusRTUSlave operating mode. It is not available if the current serial port operating mode is ModbusRTUMaster.

When Modbus routing port is not enabled, in ModbusRTUSlave mode, the PC acts as a client to actively connect to the UT-680X Modbus gateway device. However, only one TCP port (default 502) is available for use. Multiple serial ports on the gateway device share the same TCP port for serial port polling, resulting in lower efficiency and longer polling times.

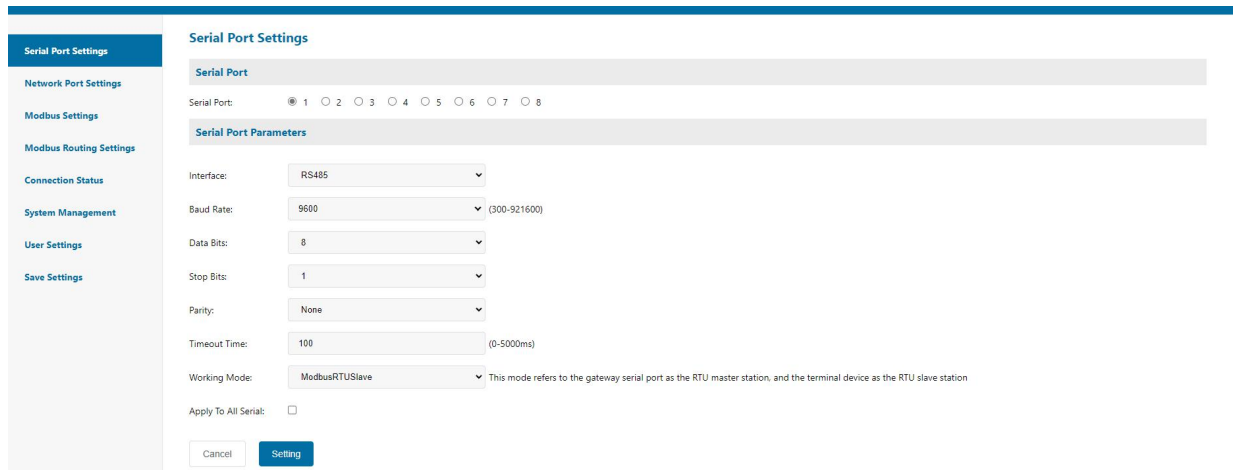
Enabling Modbus routing port will enhance the efficiency of polling for multiple serial ports. Each serial port will have a corresponding configurable TCP port.

An example of port routing scenario is shown in Figure 3.9.



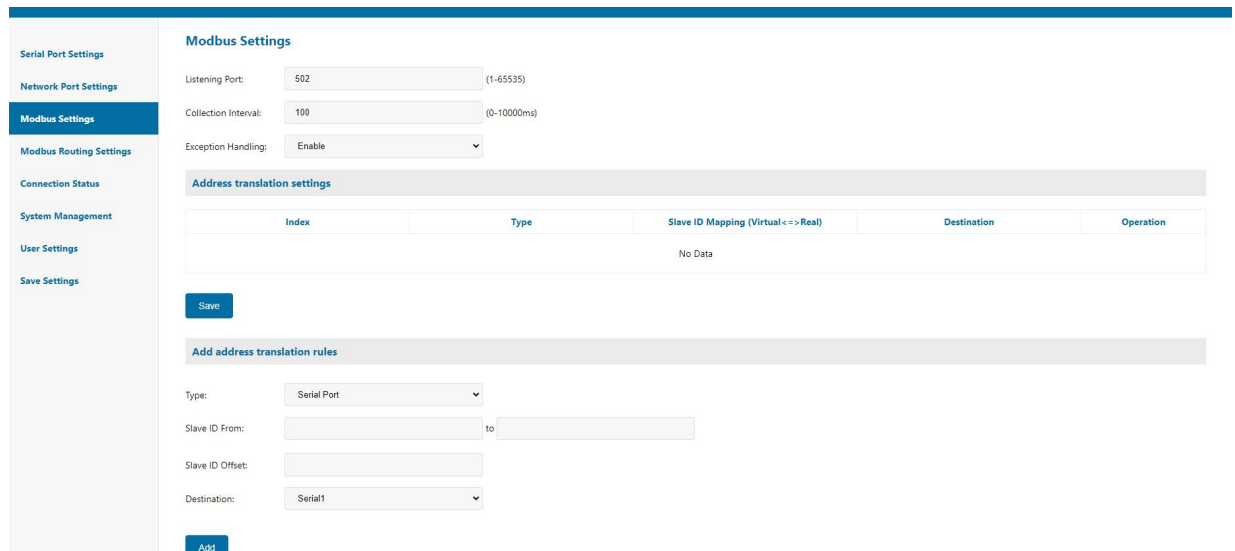
(3.9)

1. Open Serial Port Settings and set the serial port operating mode that requires the use of Modbus routing port to ModbusRTUSlave, as shown in the web page (Figure 4.0).



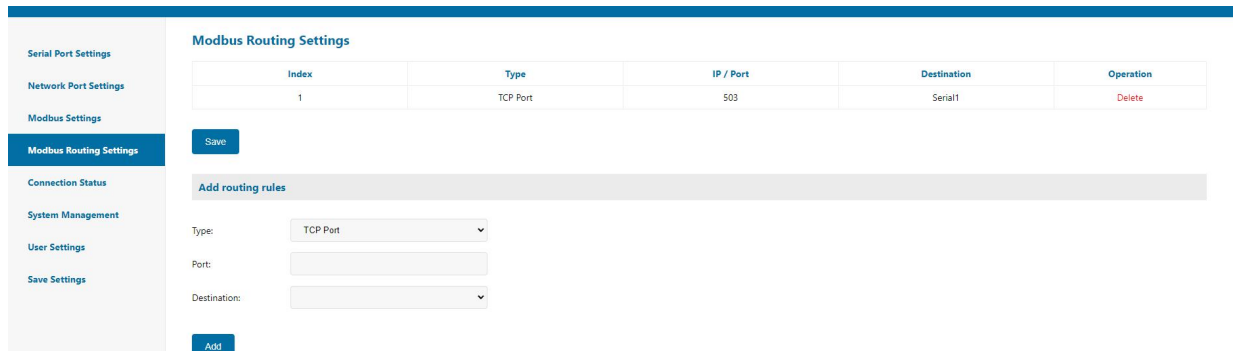
(4.0)

2. Open Modbus Settings, configure the address and relevant parameters for the serial port, as shown in the web page (Figure 4.1).



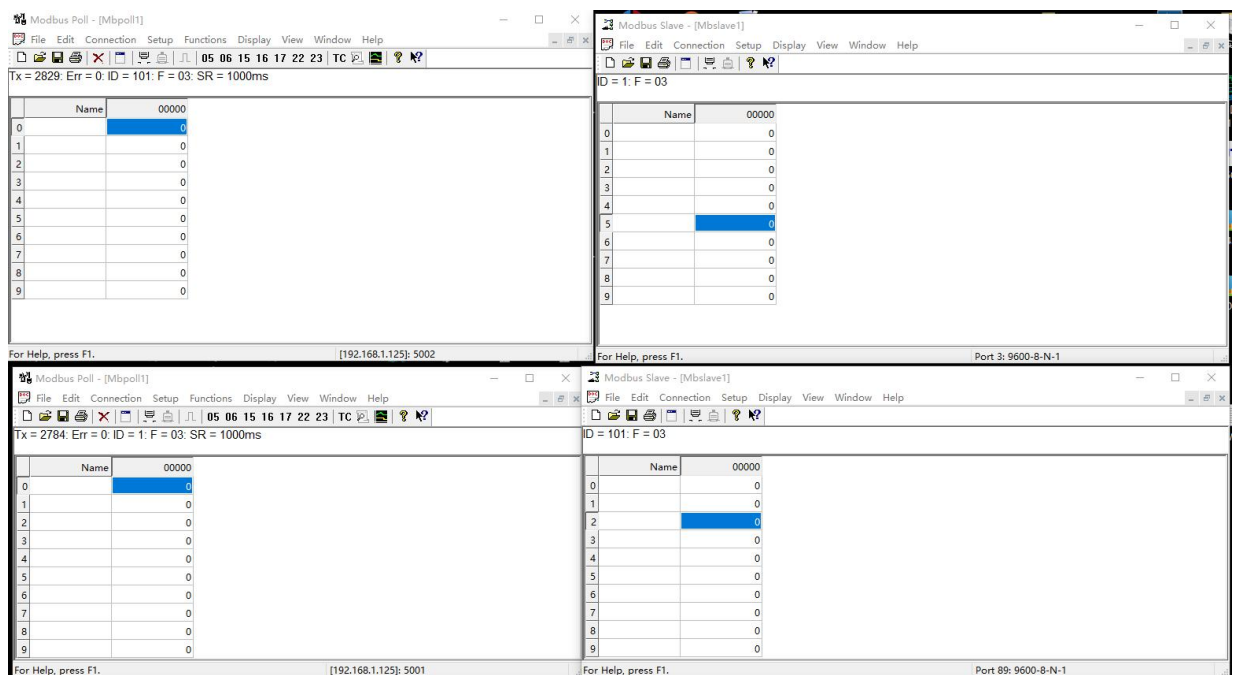
(4.1)

3. Open Modbus Routing Settings, based on the configuration from the previous step, create a TCP Port within the specified range by setting the port, as shown in the web page (Figure 4.2).



(4.2)

4. Open the Modbus debugging tool, separately configure the upper computer parameters for the two serial ports of UT-680X-GW. For ModbusRTU Slave operating mode, refer to Example A for upper computer debugging steps. Establish port communication as shown in Figure 4.3.



(4.3)

5. The above steps outline the TCP Port debugging process within Modbus Routing Settings.

3.3.5.2 IP Address

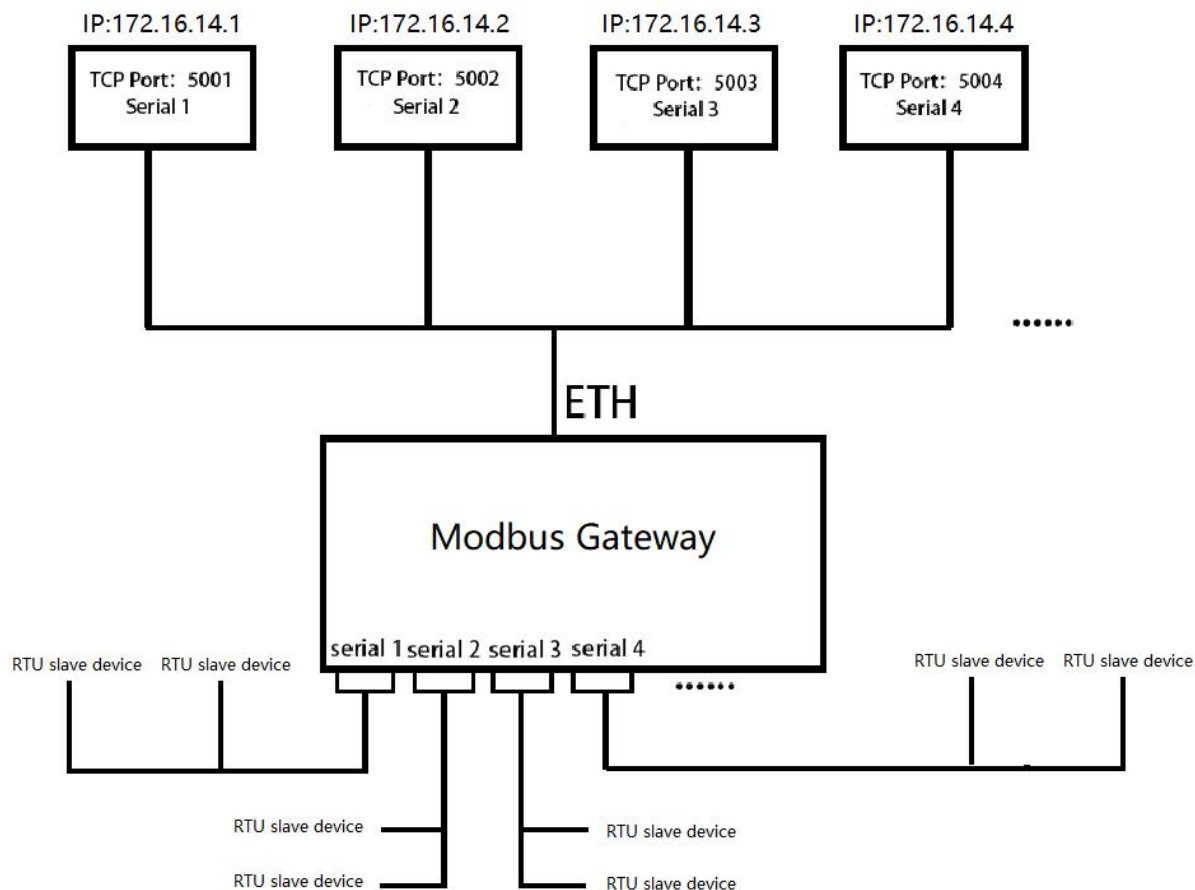
This type corresponds to the ModbusRTUSlave operating mode. It is not available if the current serial port operating mode is ModbusRTUMaster.

When Modbus IP routing is enabled, in ModbusRTUSlave mode, the PC acts as a TCP client connecting to the gateway's IP and listening port. After enabling this function, only data packets corresponding to the designated target IP will be forwarded.

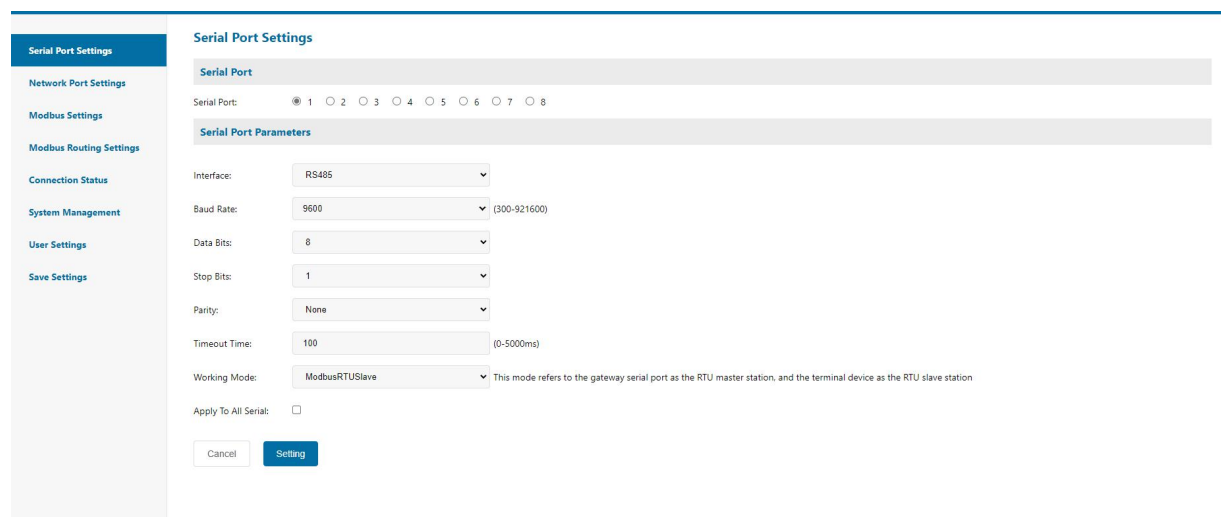
Upon configuring this parameter, for the same serial port, data packets will not be forwarded for IP addresses that are not the designated target IP. The connection status will indicate as connected, but the serial port will not forward.

This functionality is applicable in scenarios with a multi-serial port gateway, where each serial port's destination needs to correspond to a different IP for forwarding to a specific IP address. Only one corresponding address can be allocated for the same serial port.

IP routing scenario is illustrated in Figure 4.4.



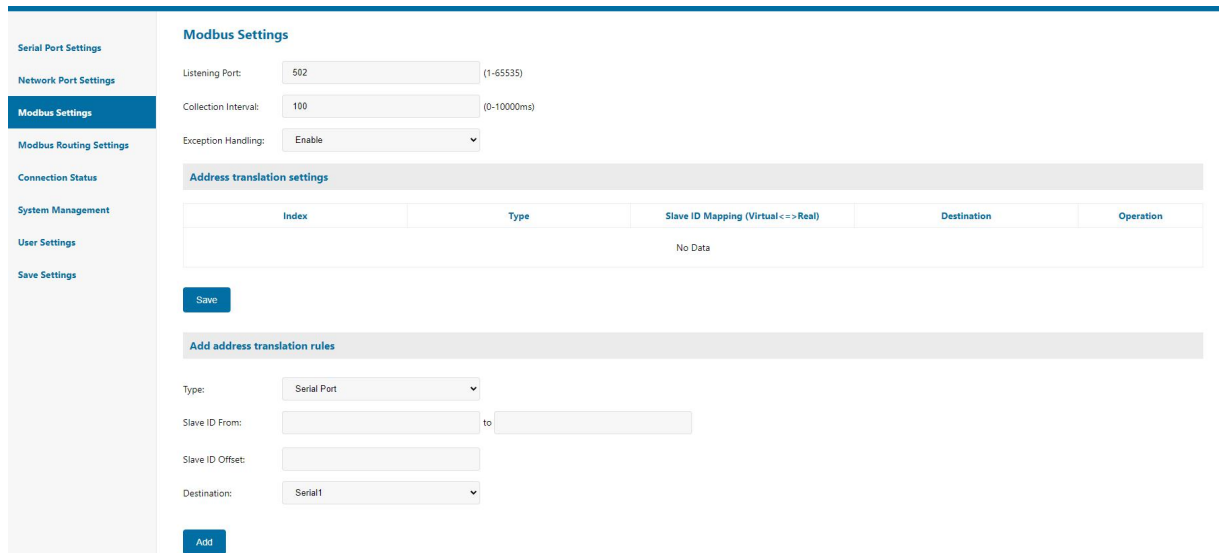
To use Modbus routing port, set the serial port operating mode that requires it to ModbusRTUSlave, as shown in the web page (Figure 4.5).



The screenshot shows the 'Serial Port Settings' web page. On the left is a navigation menu with options: Serial Port Settings, Network Port Settings, Modbus Settings, Modbus Routing Settings, Connection Status, System Management, User Settings, and Save Settings. The main content area is titled 'Serial Port Settings' and includes a 'Serial Port' section with radio buttons for ports 1 through 8 (port 1 is selected). Below this is the 'Serial Port Parameters' section with the following settings: Interface (RS485), Baud Rate (9600), Data Bits (8), Stop Bits (1), Parity (None), Timeout Time (100), and Working Mode (ModbusRTUSlave). A note explains that this mode refers to the gateway serial port as the RTU master station and the terminal device as the RTU slave station. At the bottom, there is an 'Apply To All Serial' checkbox and 'Cancel' and 'Setting' buttons.

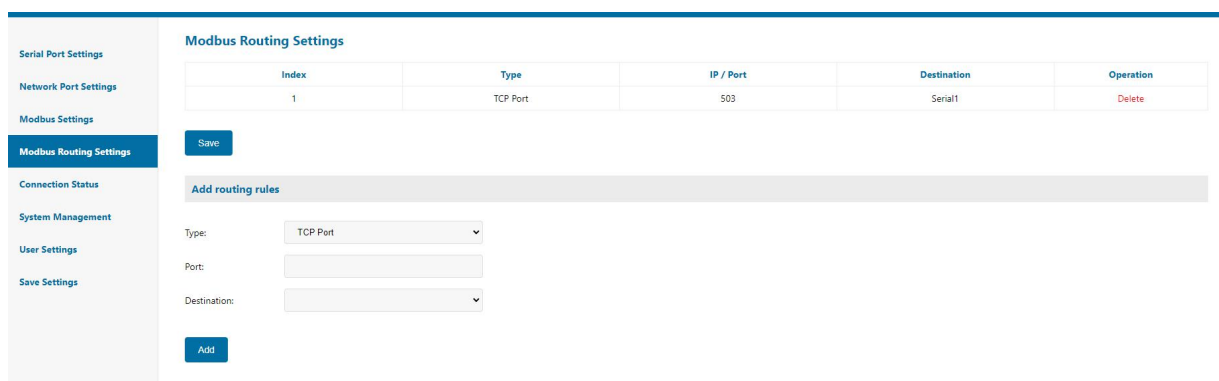
(4.5)

1. Open Modbus Settings, configure the serial port's address and relevant parameter settings, as shown in the web page (Figure 4.6).



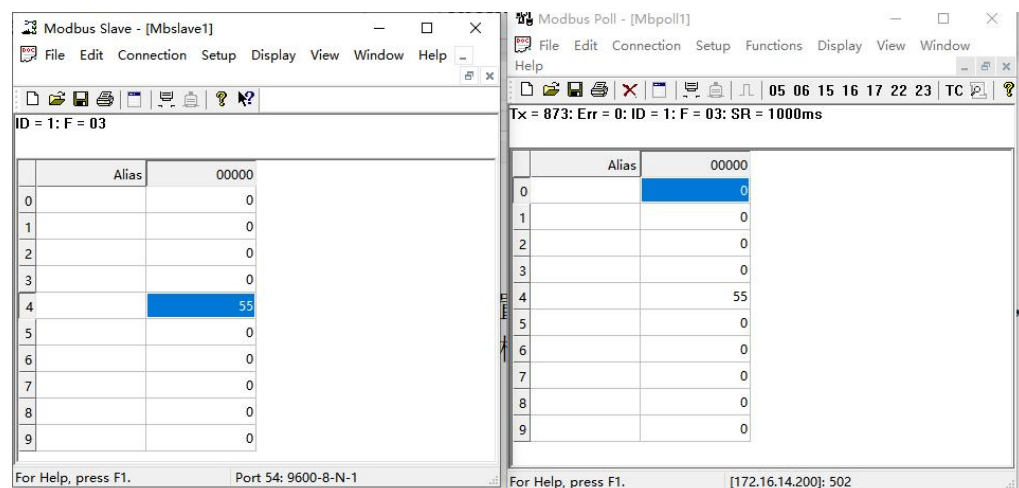
(4.6)

2. Open Modbus Routing Settings, based on the previous configuration, create an IP Address corresponding to the IP address that needs forwarding. Set the port within the specified range, as shown in the web page (Figure 4.7).



(4.7)

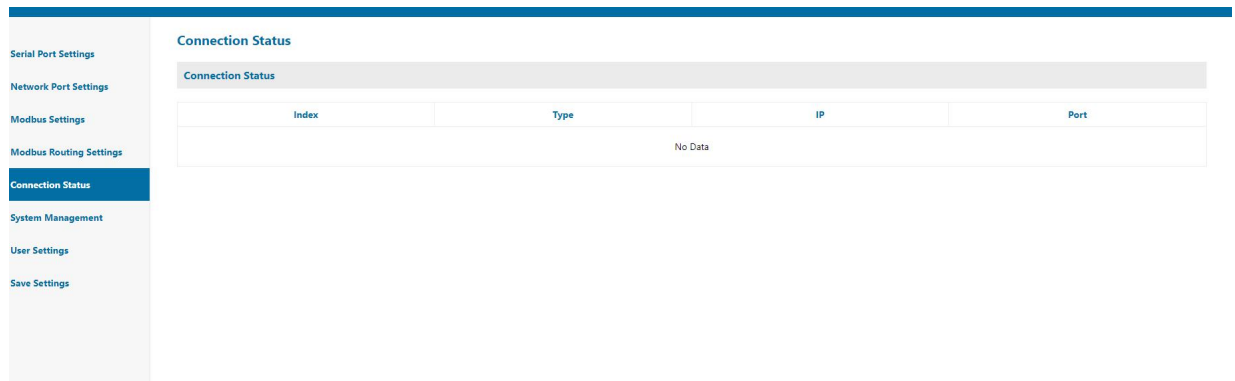
3. Open the Modbus debugging tool, separately configure the upper computer parameters for the two serial ports of UT-680X-GW. Detailed steps for upper computer debugging in ModbusRTU Slave mode can be found in Example A. Establish port communication as shown in Figure 4.8.



(4.8)

3.3.6 Connection Status

Access the Web interface of the UT-680X-GW Modbus gateway device, as shown in Figure 4.9.

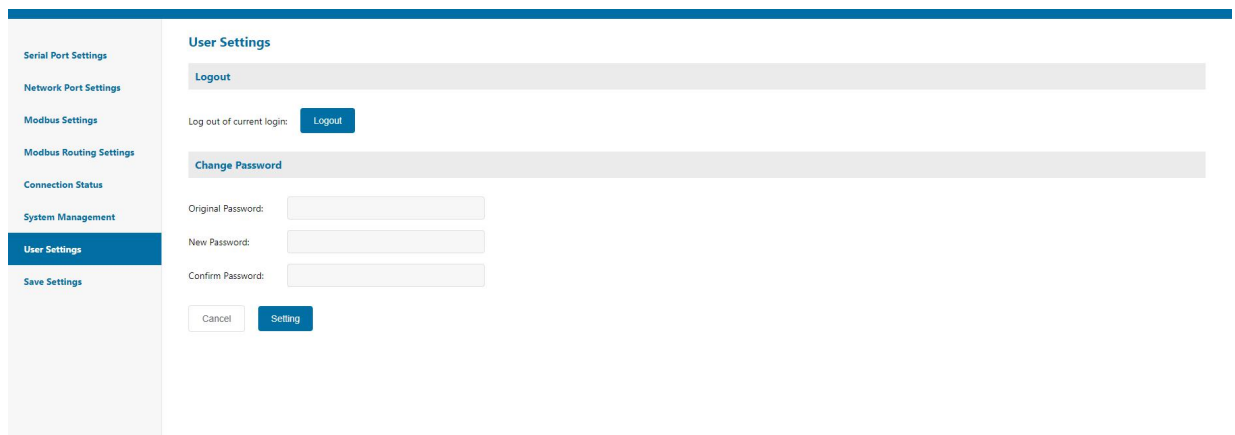


(4.9)

Index	Starts from 1, displays up to 15 address entries
Type	Divided into Server and Client, displaying the current TCP connection type
IP	Displays the connected IP address
Port	Connection port number of the peer

3.3.7 User Settings

Access the Web interface of the UT-680X-GW Modbus gateway device, as shown in Figure 5.0.

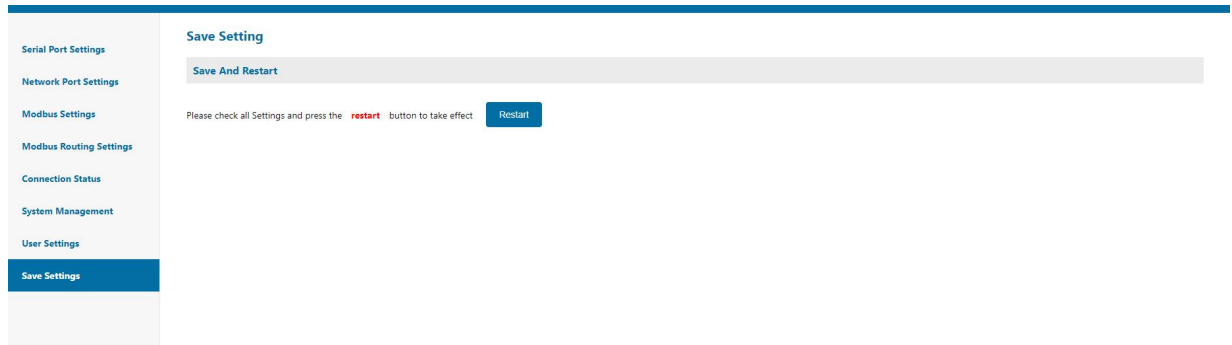


(Figure 5.0)

Log Out	Exit the current interface and return to the login page
Current Password	Enter your current original password
New Password	Change your login password to a new one
Confirm Password	Enter the password again to confirm it matches the new password
Set	Click "Set" and restart for the changes to take effect

3.3.8 Save Settings

Access the Web interface of the UT-680X-GW Modbus gateway device, as shown in Figure 5.1.



(Figure 5.1)

After clicking "Restart," a prompt box will appear, as shown in the image below:

192.168.1.125

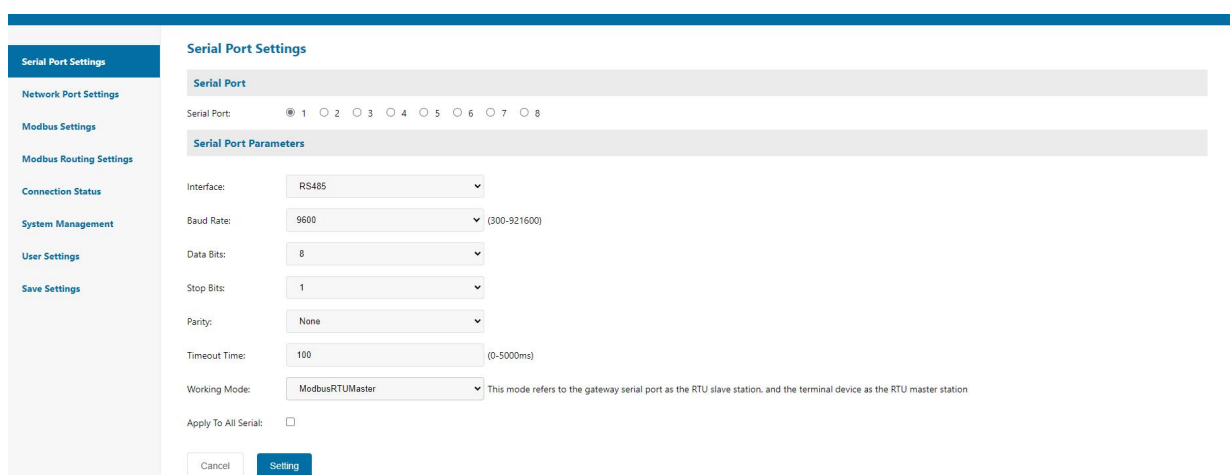
System restart successfully

确定

4. Example

a. ModbusRTU Master

1. In this mode, the gateway's serial port operates as a ModbusRTU slave, and the terminal device functions as a ModbusRTU master. Generally, devices connected to the Ethernet port can act as ModbusTCP client devices that actively poll the serial port. Upon successful connection, you can observe the TCP connection type as "Server" on the Connection Status page. Verify that the parameters in the serial port configuration correspond to the devices connected.



2. Open the Modbus settings page and configure the address conversion rules, where virtual addresses are mapped from real addresses. Configuration is as follows:

Serial Port Settings
Network Port Settings
Modbus Settings
Modbus Routing Settings
Connection Status
System Management
User Settings
Save Settings

Modbus Settings

Listening Port: (1-65535)

Collection Interval: (0-10000ms)

Exception Handling:

Address translation settings

Index	Type	Slave ID Mapping (Virtual <=> Real)	Destination	Operation
No Data				

Add address translation rules

Type:

Slave ID From: to

Slave ID Offset:

Destination:

Open two debugging tools on the upper computer (Modbus Poll and Slave).

3. Modbus Slave tool configuration page as shown below, input the PC's IP and corresponding TCP port.

Modbus Slave - [Mbslave1]
File Edit Connection Setup Display View Window Help

ID = 1: F = 03
No connection

Alias
0
1
2
3
4
5
6
7
8
9

For Help, press F1.

Connection Setup

Connection:

Serial Settings: Mode: ☒ RTU ☐ ASCII

9600 Baud 8 Data bits None Parity 1 Stop Bit

Flow Control: ☐ DSR ☐ CTS ☒ RTS Toggle [ms] RTS disable delay

TCP/IP Server: IP Address: Port:

☐ Any Address ☒ IPv4 ☐ IPv6

ID = 6: F = 03

Alias
0
1
2
3
4
5
6
7
8
9

For Help, press F1.

Slave Definition

Slave ID:

Function:

Address:

Quantity:

View: Rows ☒ 10 ☐ 20 ☐ 50 ☐ 100 ☐ Fit to Quantity

☐ Hide Alias Columns ☐ PLC Addresses (Base 1)

Error Simulation: ☐ Skip response ☐ Insert CRC/LRC error (Not when using TCP/IP)

[ms] Response Delay ☐ Return exception 06, Busy

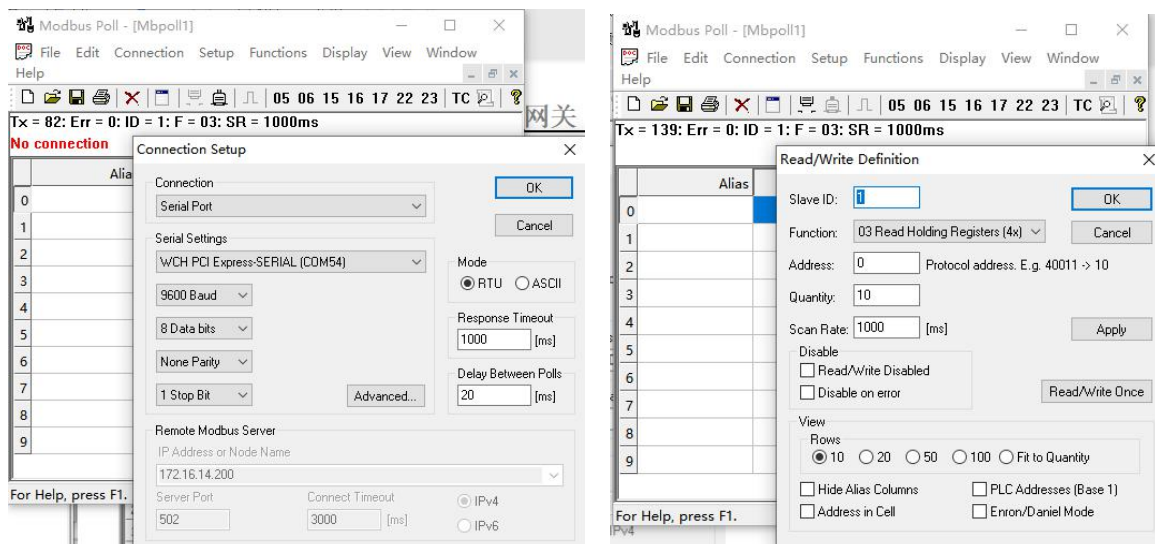
Continue configuring specific connection parameters, on this page, configure the slave ID (real address) for the master station address (e.g., ID = 6, which corresponds to the master station ID 0x06). Some common configurations are as follows:

Function: Configure the appropriate function code to correspond with the slave's configuration, e.g., F=03 for function code 03 (Holding Registers).

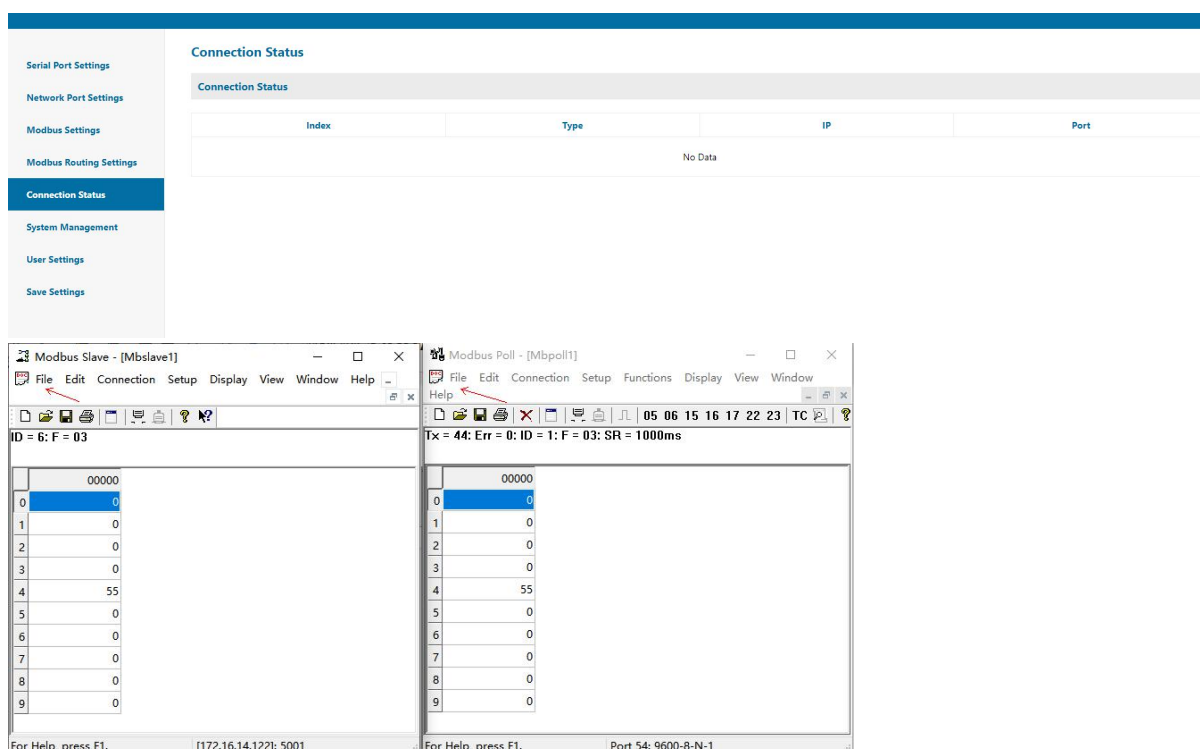
Address: Configure the starting register address.

Quantity: Configure the length for reading or writing registers, ensuring it matches the slave's configuration.

Poll settings: Configure as shown in the diagram, where the virtual address (ID=1) corresponds to the slave ID (0x06) through the gateway's mapping.



After establishing the connection between the master and slave stations, you can observe a successful TCP connection on the web page's Connection Status, as shown below.



To create multiple paired entries, click on the "New" button under "File" and configure the corresponding ID numbers, as shown below.

b. ModbusRTU Slave

1. In this mode, the gateway's serial port operates as a ModbusRTU master, and the terminal device functions as a ModbusRTU slave. Devices connected to the Ethernet port can act as ModbusTCP client devices that actively poll the serial port. Upon successful connection, you can observe the TCP connection type as "Client" on the Connection Status page. Verify that the parameters in the serial port configuration correspond to the devices connected.

Serial Port Settings
Network Port Settings
Modbus Settings
Modbus Routing Settings
Connection Status
System Management
User Settings
Save Settings

Serial Port Settings

Serial Port

Serial Port:
1
2
3
4
5
6
7
8

Serial Port Parameters

Interface: RS485

Baud Rate: 9600 (300-921600)

Data Bits: 8

Stop Bits: 1

Parity: None

Timeout Time: 100 (0-5000ms)

Working Mode: ModbusRTUSlave This mode refers to the gateway serial port as the RTU master station, and the terminal device as the RTU slave station

Apply To All Serial:

Cancel Setting

2. Open the Modbus settings page and configure the address conversion rules, where virtual addresses are mapped from real addresses. Note that the same serial port can only enable one working mode. Configure the type as "Serial Port" and set the address range and increment, with the target set to the corresponding serial port.

Serial Port Settings
Network Port Settings
Modbus Settings
Modbus Routing Settings
Connection Status
System Management
User Settings
Save Settings

Modbus Settings

Listening Port: 502 (1-65535)

Collection Interval: 100 (0-10000ms)

Exception Handling: Enable

Address translation settings

Index	Type	Slave ID Mapping (Virtual<=>Real)	Destination	Operation
No Data				

Save

Add address translation rules

Type: Serial Port

Slave ID From: to

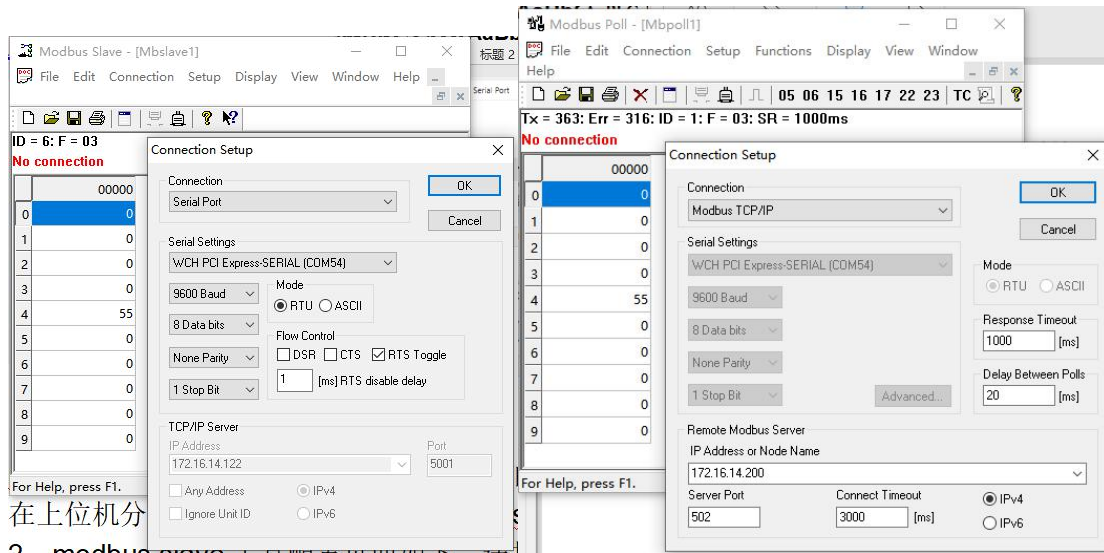
Slave ID Offset:

Destination: Serial1

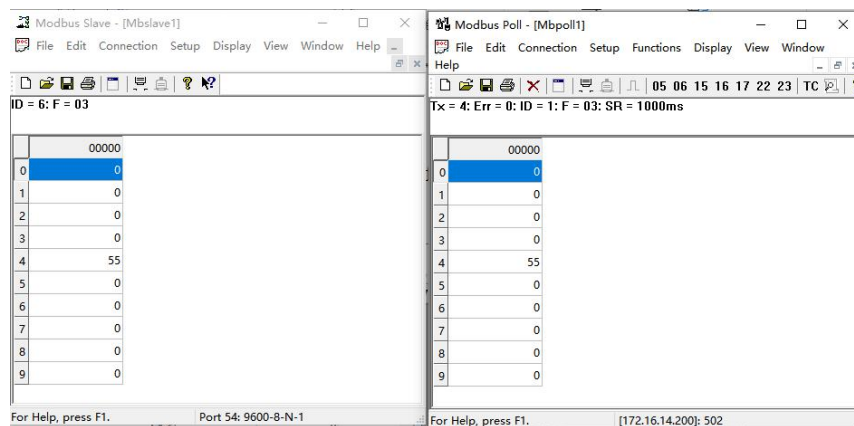
Add

Up to 15 slave address conversion entries can be set, and Modbus TCP can connect up to 5 different TCP servers.

3. Open two debugging tools on the upper computer (Modbus Poll and Slave), as shown in the images below.



4. Configure slave address, function code, and check the starting address and length of bytes for read/write operations in the Setup->Read/Write Definition page. After a successful connection, it will appear as shown in the figure below:



After connecting both tools to the RTU and TCP sides respectively, if "Err" displays as 0, it indicates normal operation. An increasing "Err" value suggests issues such as no response or response timeouts from the slave station.

c. Setting Real and Virtual IDs

1. Suppose there are 9 RTU slave devices that need to be connected to the gateway to achieve multi-master and multi-slave communication. The IDs for these RTU slave devices are 121-129. The serial port operates in ModbusRTU Slave mode. The following is a debugging example for RTU slave device ID: 121.

Note: Different environments may have some RTU slave device IDs converted based on hexadecimal values. For instance, the decimal value 121 corresponds to the hexadecimal value 79. Make sure to consider this when setting ID addresses. All parameters related to setting ID addresses in the web page are configured in decimal values. If hexadecimal conversion is required, calculate the decimal ID address first.

Serial Port Settings

Network Port Settings

Modbus Settings

Modbus Routing Settings

Connection Status

System Management

User Settings

Save Settings

Serial Port Settings

Serial Port

Serial Port: 1 2 3 4 5 6 7 8

Serial Port Parameters

Interface: RS485
Baud Rate: 9600 (300-921600)
Data Bits: 8
Stop Bits: 1
Parity: None
Timeout Time: 100 (0-5000ms)
Working Mode: ModbusRTUSlave This mode refers to the gateway serial port as the RTU master station, and the terminal device as the RTU slave station
Apply To All Serial: ☐

Cancel Setting

2. Configure the Modbus settings to correspond with the address rules. Set the slave address from 1 to 9, with an increment of 120. Configure virtual IDs from 1 to 9, and set the corresponding real IDs as 121-129. The real ID represents the RTU device ID. Due to the gateway's proxy and storage characteristics, direct communication does not occur between the RTU and TCP sides. Instead, data is communicated separately and mapped through stored polling data, facilitating communication between the RTU and TCP networks.

Modbus Settings

Listening Port: 502 (1-65535)

Collection Interval: 100 (0-10000ms)

Exception Handling: Enable

Address translation settings

Index	Type	Slave ID Mapping (Virtual<=>Real)	Destination	Operation
No Data				

Save

Add address translation rules

Type: Serial Port

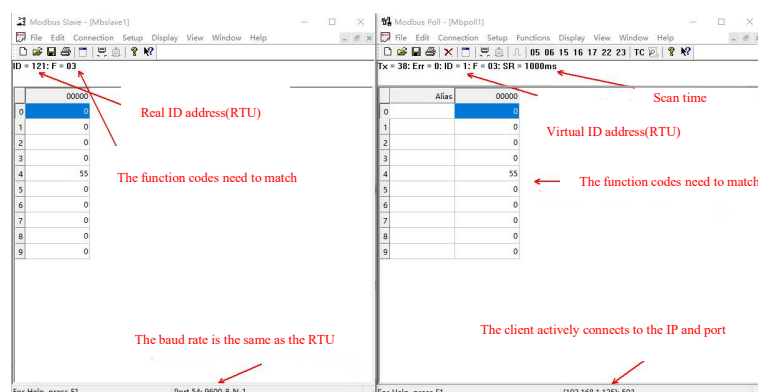
Slave ID From: 1 to 9

Slave ID Offset: 120

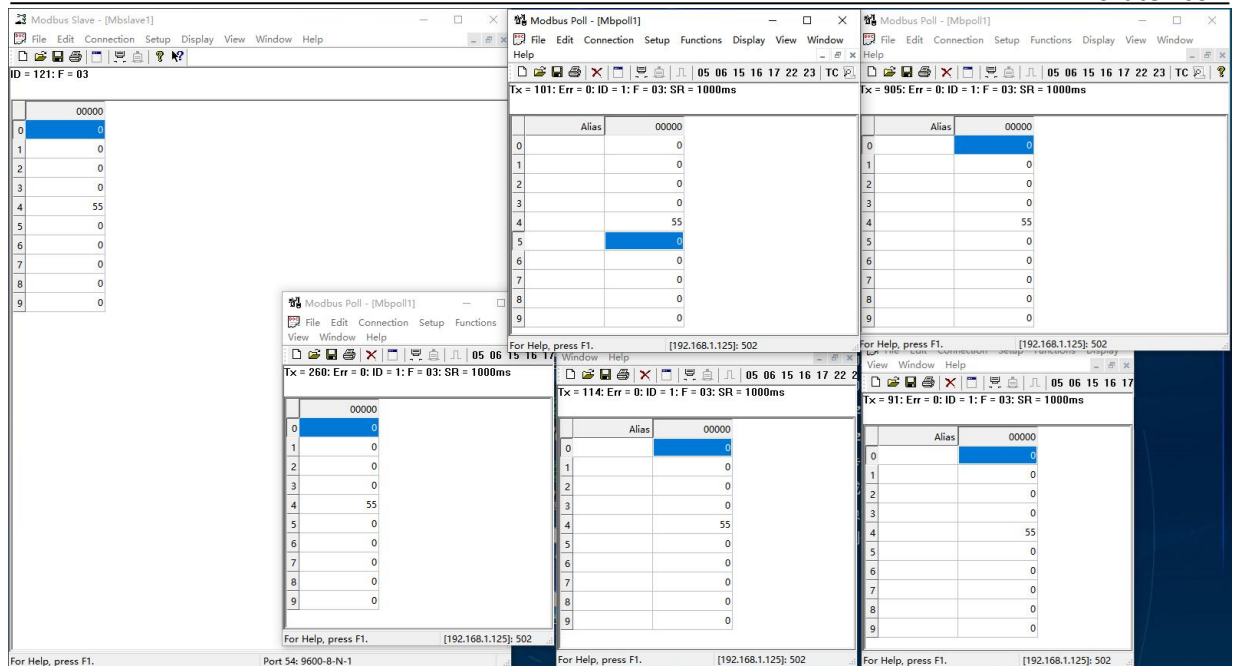
Destination: Serial1

Add

Debugging communication diagram as shown below:



Debugging communication diagram for multi-master polling as shown below:



5. Troubleshooting Guide

a. Unable to Locate Gateway IP Address or Access Web Configuration Page

1. Firstly, check if the physical connections are normal, including Ethernet cables (distinguishing between crossover and straight-through cables) and power supply. Observe power indicator lights, RUN lights, and ACT lights (ACT light only lights up for 100M network, not 10M).
2. Verify that the host network card is functional and can communicate with other local hosts. Ensure that the IP address corresponds to the device's IP and that there are no conflicting devices with the same IP on the same local network.
3. Disable any tools and software that might block broadcast packets (except for the system's built-in firewall).
4. If the network can be pinged successfully but you can't access the web interface, try using a different browser. Google Chrome is recommended.

b. Master Mode Communication Issue

1. Ensure the physical serial port connection is correct, check the wiring sequence. In this mode, the RTU side acts as a master station, and the conversion type should be set to TCP Address.
2. Make sure the target corresponds to the current serial port number. Verify whether virtual and real IDs are correct.
3. Check if the listening port is occupied.

c. Slave Mode Communication Issue

1. Ensure the physical serial port connection is correct, check the wiring sequence. In this mode, the RTU side acts as a slave station, and the conversion type should be set to Serial Port.
2. Make sure the target corresponds to the current serial port number. Verify whether virtual and real IDs are correct.
3. Check if the listening port is occupied. The default is 502; you can try changing the port number and

then reconnect.

d. Forgot Previously Set Password

1. Press and hold the "reset" button for 5 seconds, then release it. The device will be restored to the factory settings. After the reset is complete, you can log in to the system using the default admin account and password: admin/admin. The factory IP address is 192.168.1.125.

e. Data Transmission/Reception Shows Gibberish

1. Check if the wiring is correct, particularly for RS-485 devices, proper wiring is crucial.
2. Verify if the distance between wires exceeds the standard limit or if there are issues with the quality of the wires. You can use extended cables or optical isolators.
3. Ensure the serial port parameters (baud rate, data bits, stop bits, parity, etc.) match the settings of the connected devices.

f. Receiving 0B Error Code or Experiencing Timeouts

1. If you receive a response failure, check if the abnormal handling is enabled on the web page. Incorrect serial communication parameters with enabled handling will continuously result in response failures. Disabling the handling will result in no response.
2. For timeouts, if it's intermittent, adjust the polling and timeout times within a reasonable range. Persistent timeouts indicate that the RTU device has not responded or can't be connected within the specified time. Check the network connection.

6. Maintenance and Services

From the date of product shipment, our company offers a five-year product warranty. According to our company's product specifications, during the warranty period, if the product experiences any malfunctions or operational failures, our company will provide free repair or replacement of the product for the user. However, the above commitment does not cover damages caused by improper use, accidents, natural disasters, incorrect operation, or improper installation.

To ensure that consumers benefit from our company's management series serial port server products, assistance and issue resolution can be obtained through the following methods:

6.1 Internet Services

More useful information and usage tips can be accessed through our company's website:
<http://www.szutek.com>

6.2 Technical Support Services

Users of our company's products can call our technical support office, where professional technical engineers will answer your questions and help you promptly resolve any product-related or usage issues. Free service hotline: 400-1144-149

6.3 Product Repair or Replacement

For product repairs, replacements, or returns, confirmation should first be obtained from the company's technical personnel. Afterward, contact the company's sales personnel to address the issue. The above process should be followed according to the company's procedures, coordinating with the company's technical personnel and sales staff to complete the process of product repair, replacement, or return.