Delight Through Connections
町洋企業股份有限公司
DINKLE ENTERPRISE CO., LTD.
因联结而喜悦!!
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Industrial Modbus Gateway

Modbus Gateway Series Products User's Manual

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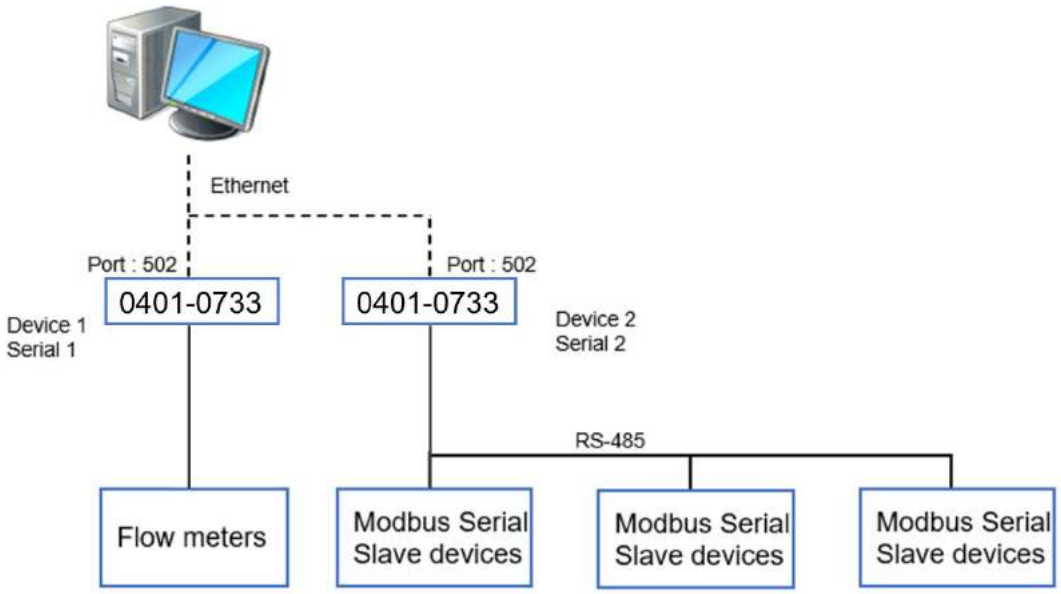
1. REPRESENTATIVE APPLICATIONS

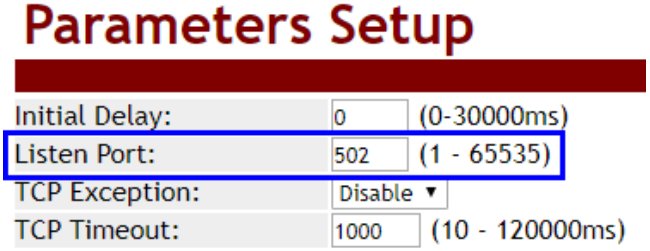
1.1 Multiple Serial Slaves connected from Ethernet Masters

In order to get data collection and control from discrete Modbus serial devices. Most host computer over Ethernet can rely on the Modbus gateway. The products supports serial interface RS-232, RS-422 and RS-485 and supports Modbus TCP 32 connections.



Master side

Parameters (both of device 1 & 2):



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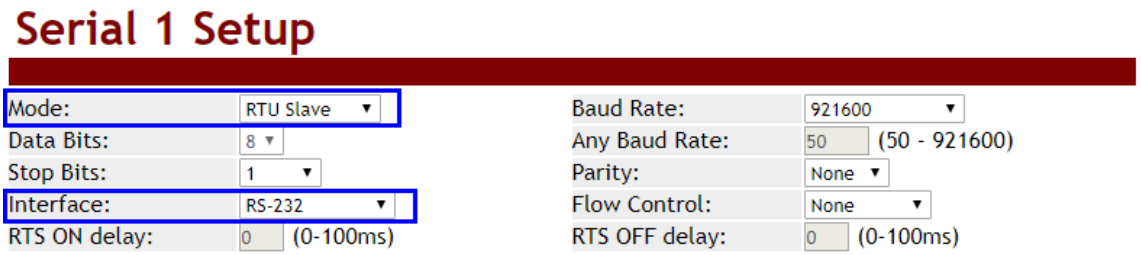
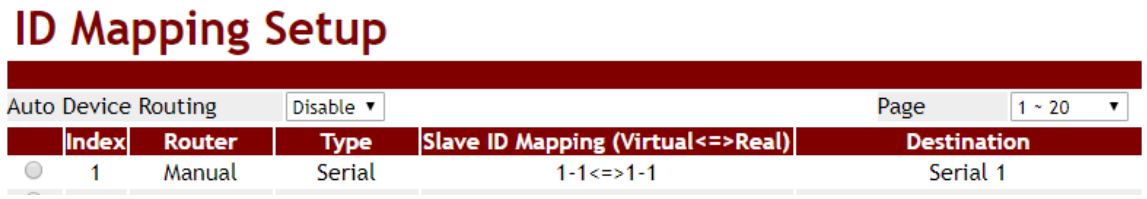
Device 1

Slave side

Serial:

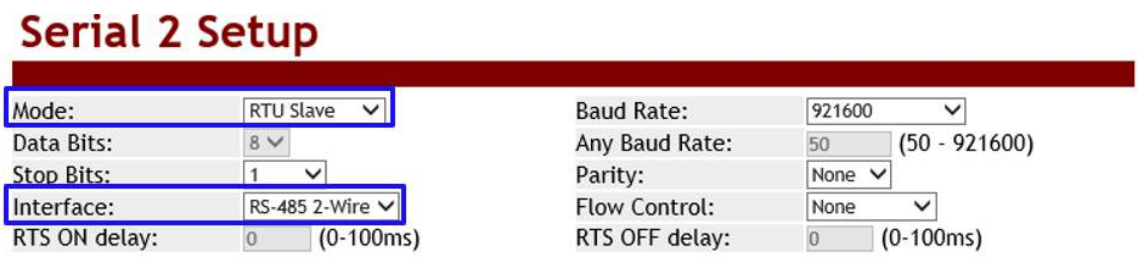


ID Mapping:

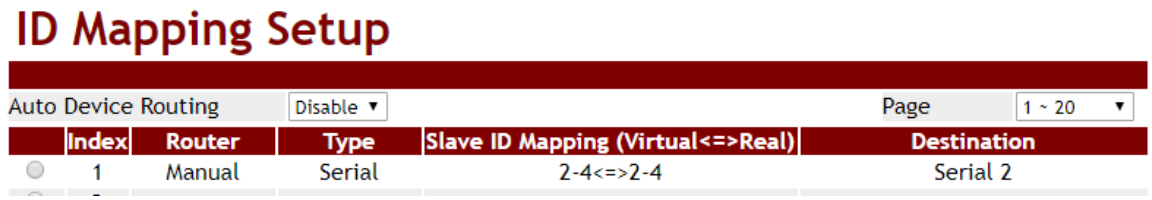


Device 2

Serial:



ID Mapping:



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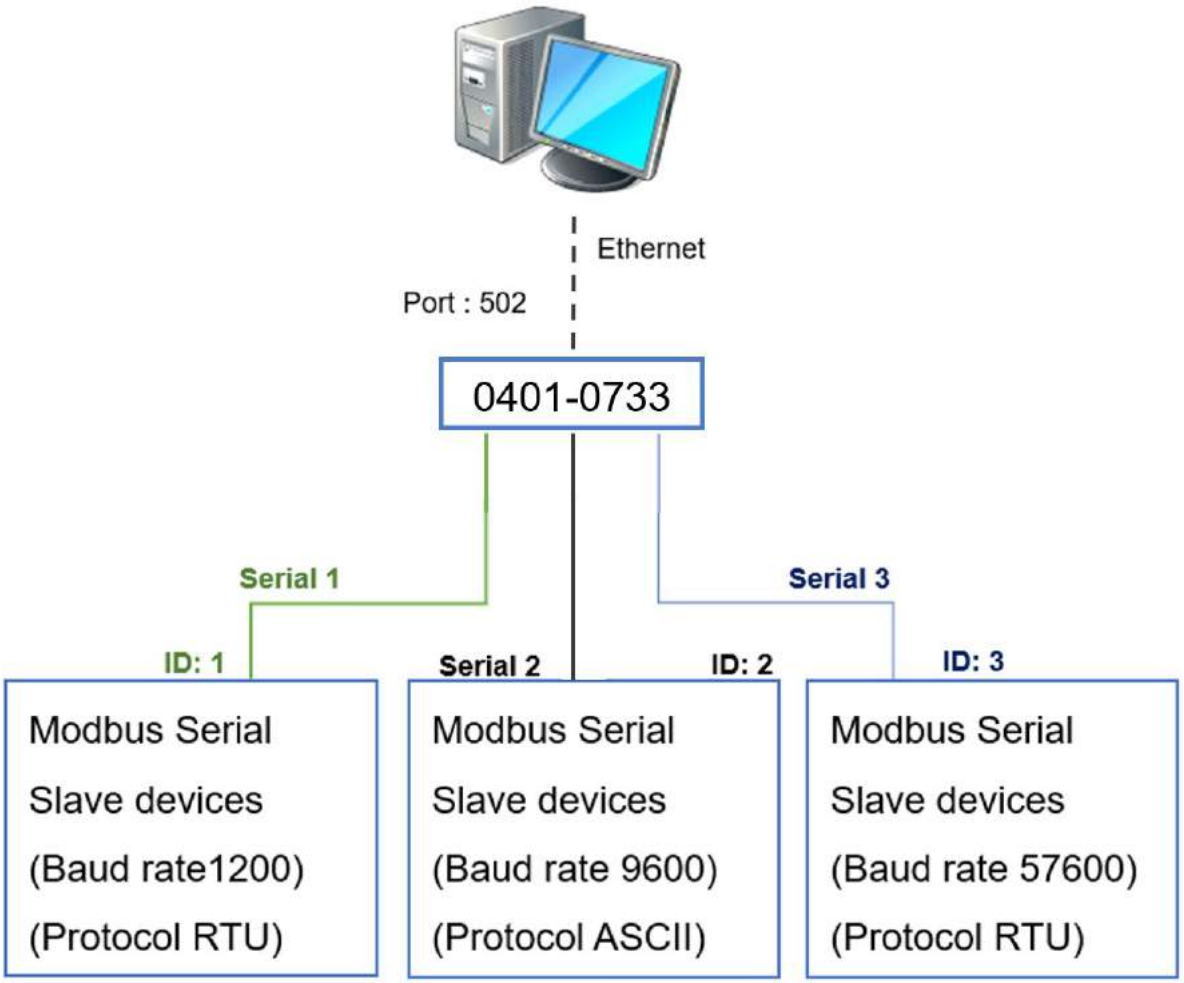
1.2 Serial Slaves with ASCII and RTU connected from Ethernet Masters

TCP master devices can get connection with Modbus slave devices of different parameters. For example, access data both ASCII and RTU at the same time.

You can configure Modbus series products each serial port to be an environment for particular Modbus serial slave parameters. After you configure the ID mapping setup, Modbus TCP master can access Modbus serial devices passed through Modbus series products.



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Master side

Parameters :

Parameters Setup

Initial Delay:	0	(0-30000ms)
Listen Port:	502	(1 - 65535)
TCP Exception:	Disable	
TCP Timeout:	1000	(10 - 120000ms)

Slave side

Serial : (RTU slave or ASCii slave)

Serial 1 Setup

Mode:	RTU Slave	Baud Rate:	1200
Data Bits:	8	Any Baud Rate:	50 (50 - 921600)
Stop Bits:	1	Parity:	None
Interface:	RS-232	Flow Control:	None
RTS ON delay:	0 (0-100ms)	RTS OFF delay:	0 (0-100ms)

ID Mapping :

ID Mapping Setup

Auto Device Routing: Disable Page: 1 ~ 20

	Index	Router	Type	Slave ID Mapping (Virtual<=>Real)	Destination
○	1	Manual	Serial	1-1<=>1-1	Serial 1
○	2	Manual	Serial	2-2<=>2-2	Serial 2
○	3	Manual	Serial	3-3<=>3-3	Serial 3

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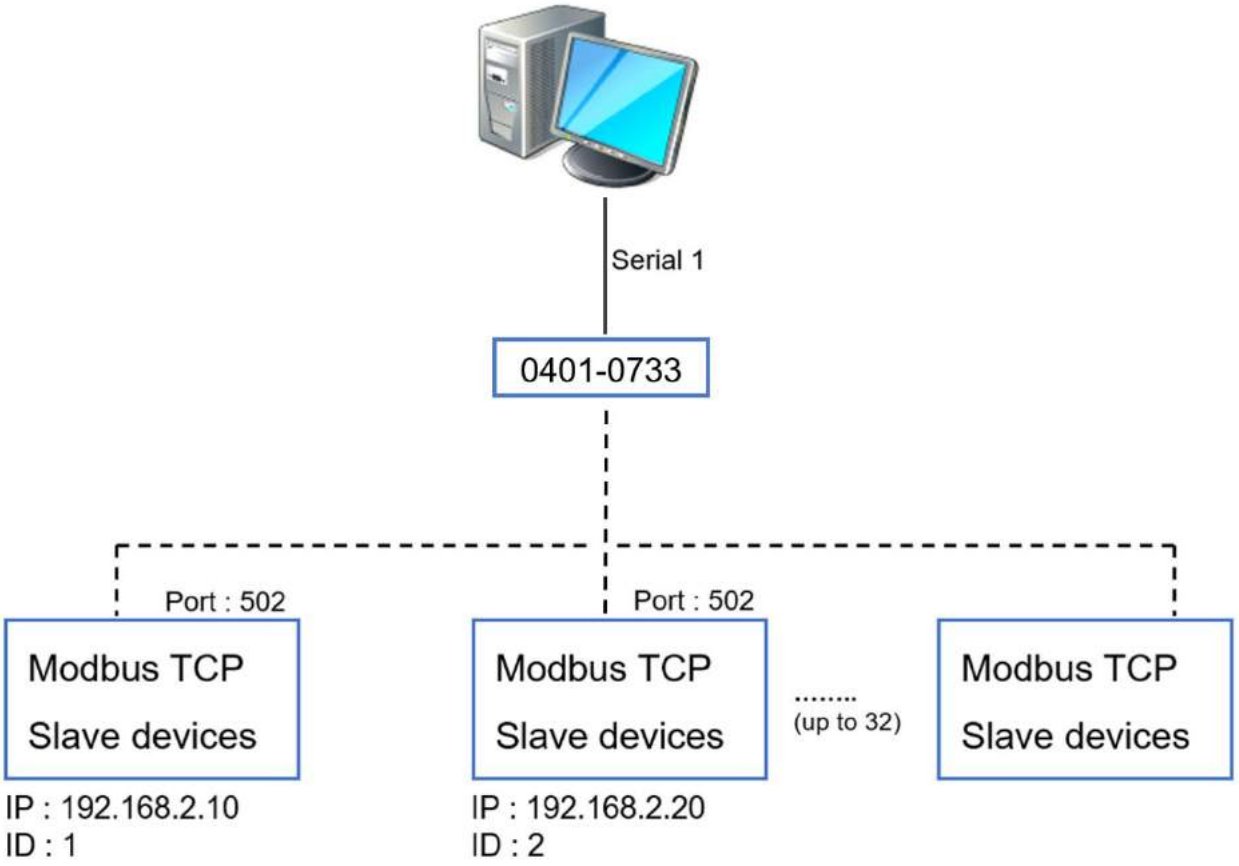
1.3 Serial Masters connect Multiple Ethernet Slaves

If you use a Modbus serial master with only serial interface and need to access Modbus TCP slave devices. The Modbus series product can set parameters for connection with serial-based PC and slave device over an Ethernet. It supports up to 32 Modbus TCP slave connection.



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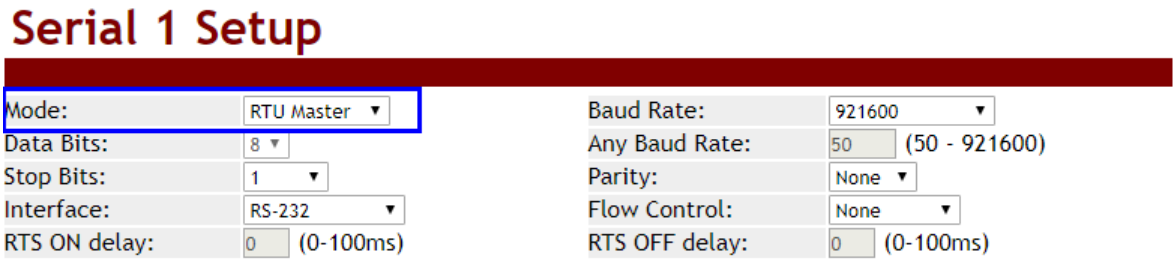
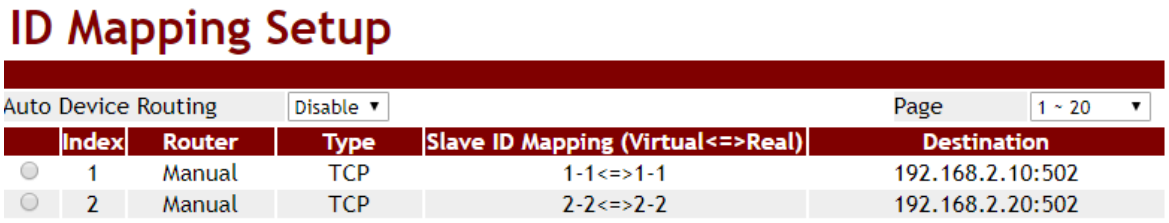
Master side

Serial : (RTU master or ASCii mster)



Slave side

ID Mapping :



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2. FUNCTIONAL PROPERTIES

2.1 Overview

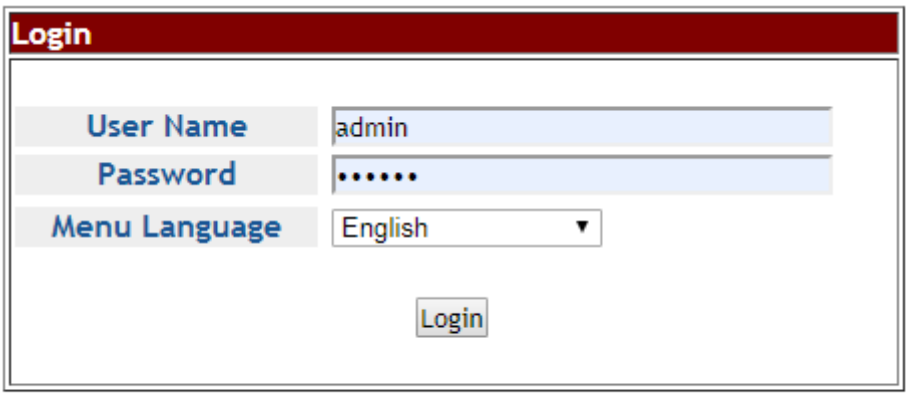
This section describes the functions of each item in main menu. Each item lists point out the details of the parameters and the defaults set by the Modbus series products device.

In addition, users can easily configure Modbus series devices through Web, Remote console.

2.2 Login

To open the web console, enter your device IP address in browser. Modbus device default IP is address, **192.168.2.1**.

If you are configuring at first time, you will use default username and password to login, default username, password and language is "**admin** / **system** / **English**". In addition, the switch of menu language is saved and takes effect after login.



Suggested that uses IE7, 8, Firefox, Google the Chrome browser.

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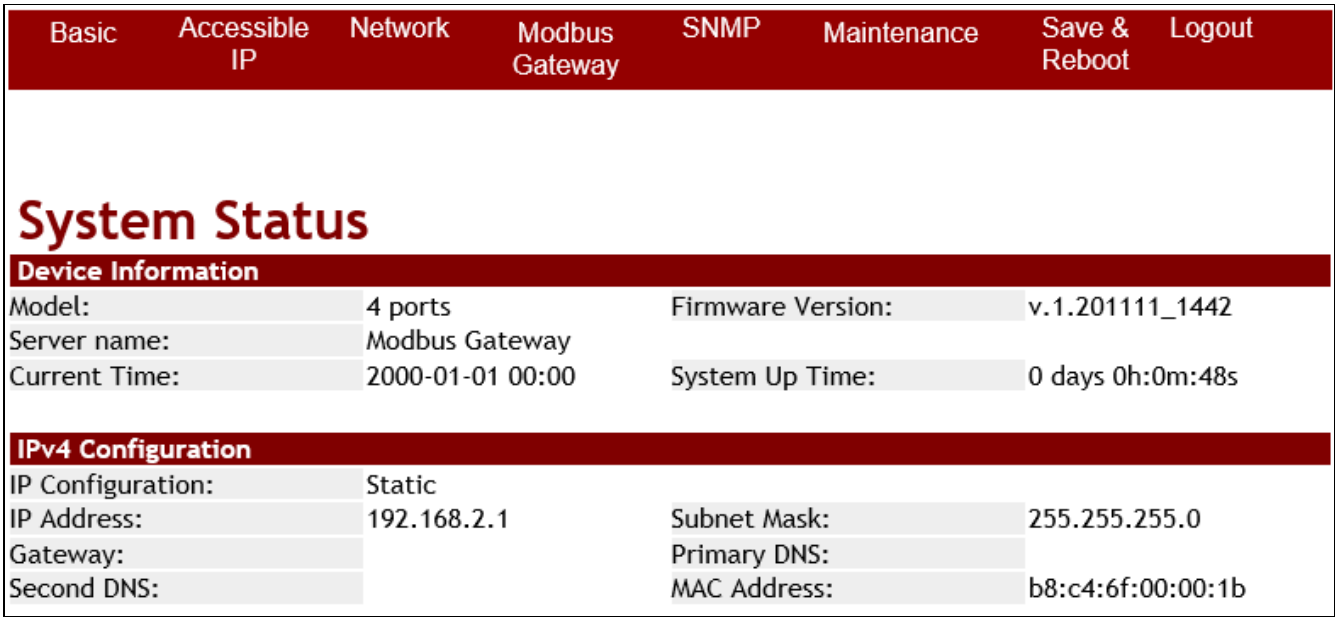
2.3 Basic

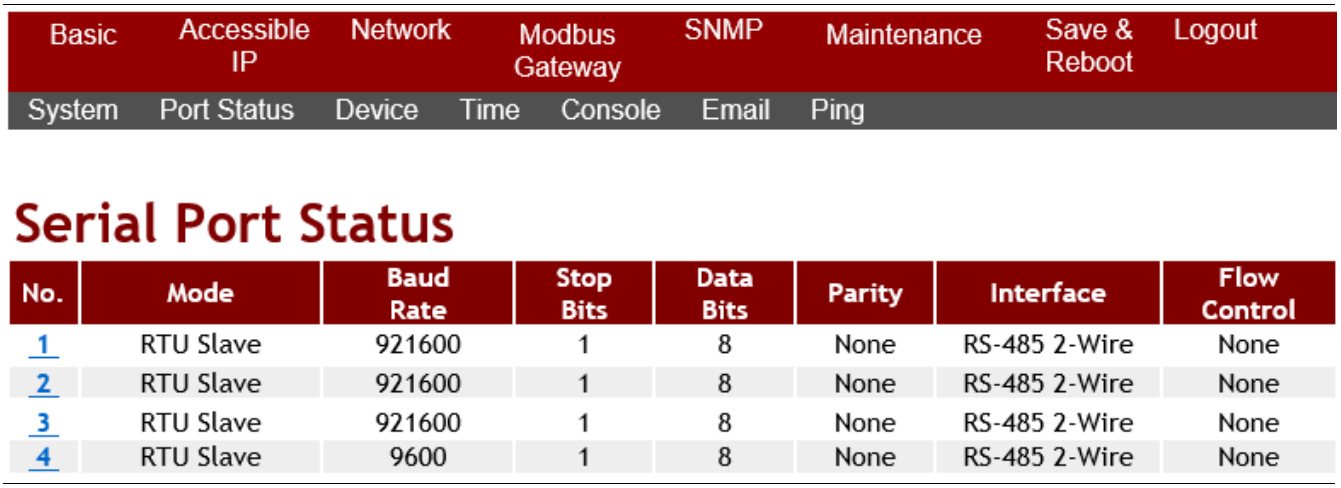
2.3.1 System

This page provides basic information for the current product the page provides basic information for the current device. Can helps an administrator to identify software version, system uptime and IP address.



2.3.2 Port

This page shows the status of each port, including operating mode and serial settings, the serial number (No.) can be directly linked to the corresponding page settings.



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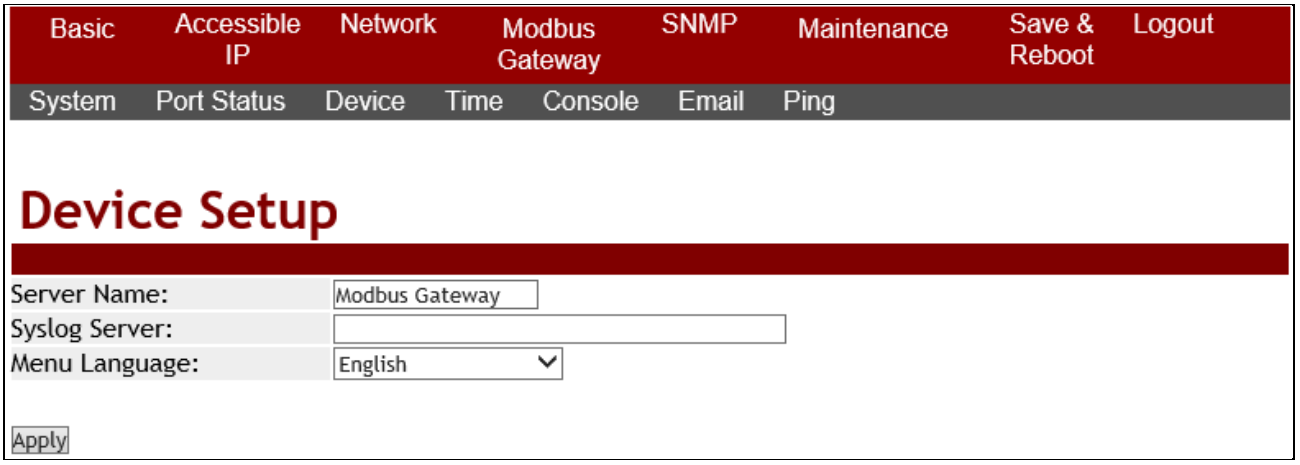
2.3.3 Device

Server name (default = Modbus Gateway) : User can named for the server, which helps distinguish the names of multiple devices.

Syslog server (default = empty) : This option is for your syslog server's IP address.

Menu Language (default = English) : This option supports three languages: English, Traditional Chinese, and Simplified Chinese.

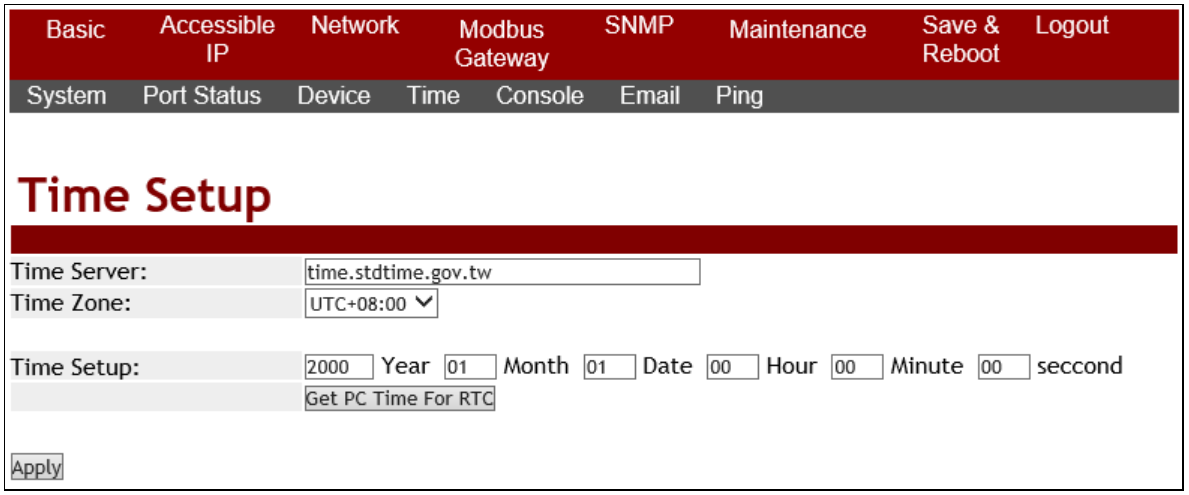


2.3.4 Time

Time server (default = time.stdtime.gov.tw) : To configure time server for time sync.

Time zone (default = UTC+08:00) : Modbus series products devices uses the UTC. User can be selected as well from the drop-down list.

Time Setup : To set the Year / Month / Date / Hour / Minute / Second in this page, or you can get time from PC.



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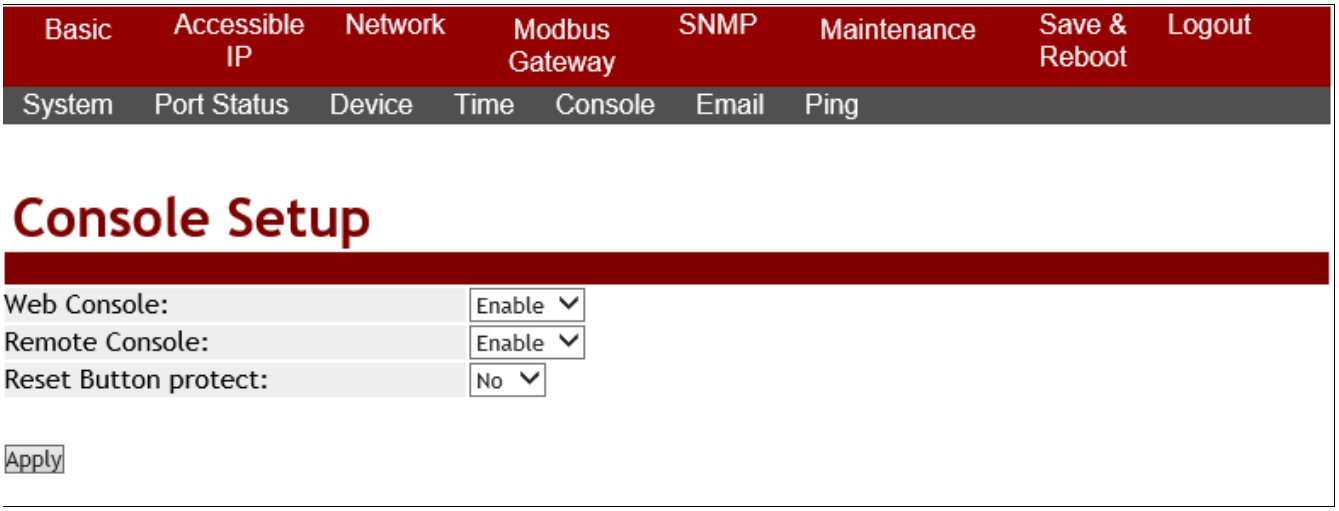
2.3.5 Console

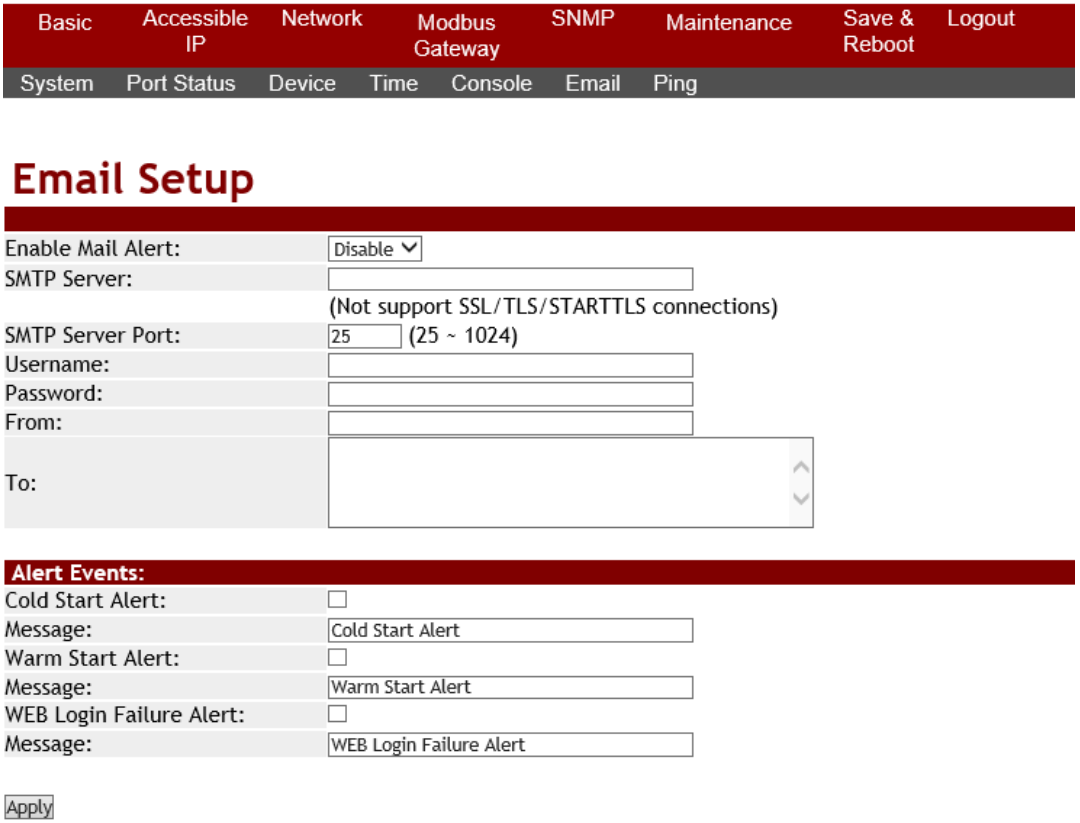
Web console (default = Enable) : This option enables or disables access to the web console.

Remote console (default = Enable) : This option enables or disables access to the remote console.

Reset button protect (default =NO) : This option can enable or disable to reboot the system.



2.3.6 Email



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This page shows how to Setup SMTP mail parameters for further operation and alert operation.

Enable Mail Alert (Default = Disable) : To Enable SMTP function.

SMTP Server: Set the IP address of SMTP server address.

SMTP Server Port (Default = number 25): Set port number of SMTP service.

Username : Enter Your login name for the SMTP server.

Password : Enter Your login password of SMTP server.

From : Enter the sender's email address.

TO : Enter the receiver's email address.

Cold start Alert / Warm start Alert (Default = Disable) : To enable the cold alert / warm alert.

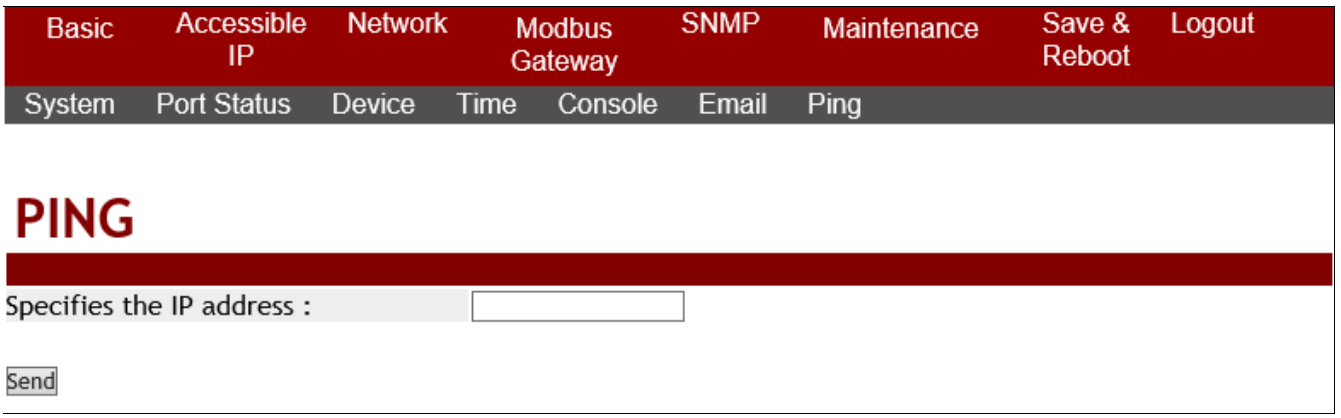
Message **:** Enter the message of the email. The default subject is cold start alert or warm alert.

WEB Login Failure (Default = Disable) : To enable the WEB login failure alert.

Message **:** Enter the message of the email. The default subject is WEB Login Flilure Alert.

2.3.7 Ping

The ICMP request is sent to the target host to echo the packet and waits to receive a response packet. The device is sending five packets.



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2.4 Accessible IP

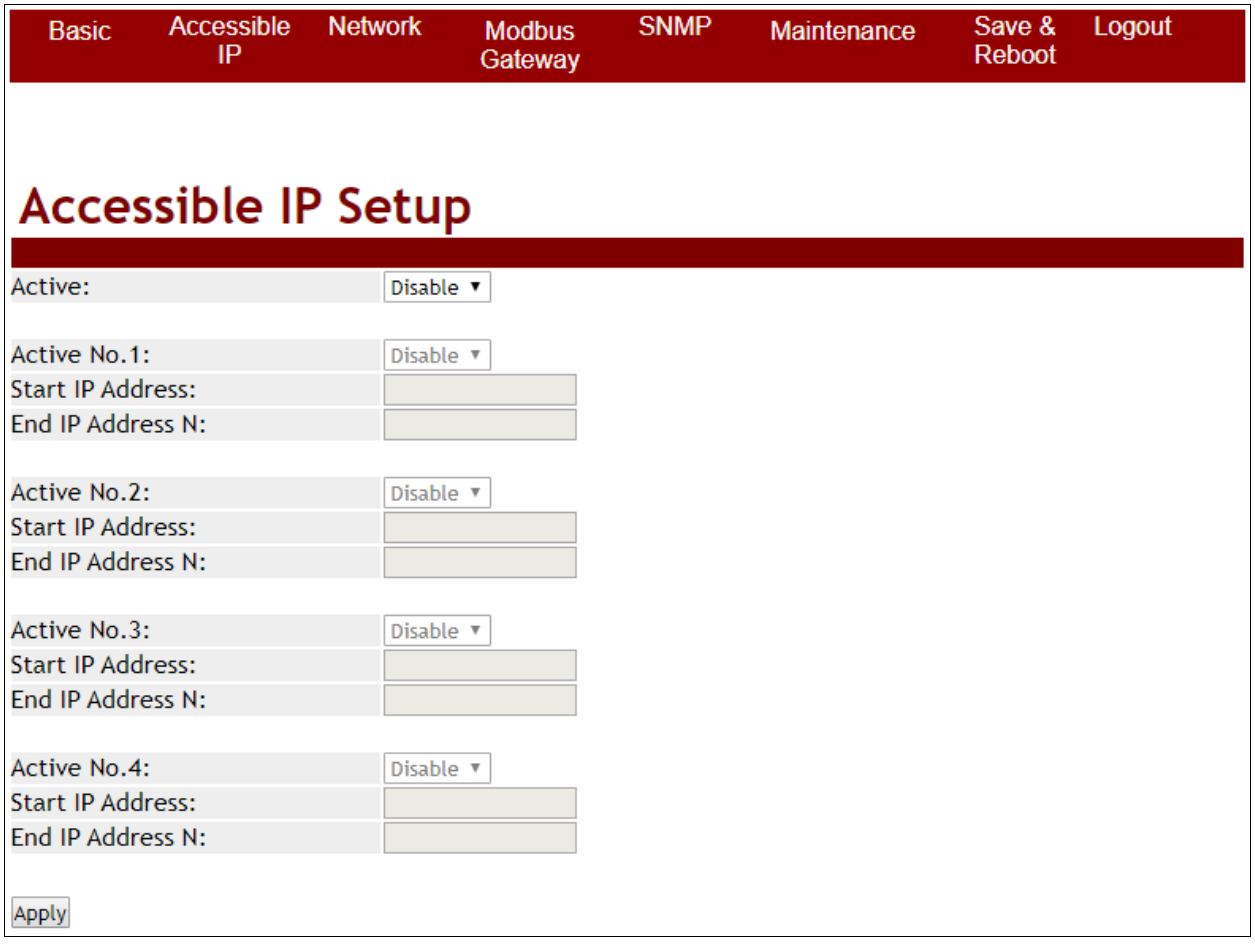
This list only provides the specified IP address to connect with the Modbus series products server. When the list of accessible IP is enabled, only IP address in the list can connect to Modbus series products. When the function is disable, there is no such restriction. List allows user to configure up to four IP groups.

Active : Configure the accessible IP list. Disable or Enable.

Activate NO : If you check NO.1, enable NO.1, and so on

Start IP Address : Enter the IP address of start.

End IP Address N: Enter the IP address of end.



As shown in the following table:

Allowed hosts	Start :IP Address setting	End :IP Address N
Any host	(disable)	(disable)
192.168.2.120	192.168.2.120	192.168.2.120
192.168.2.1 to 192.168.2.254	192.168.2.1	192.168.2.254

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2.5 Network

IP Configuration (default = Static) : Configure Static or DHCP to get IPv4 address.

Option	Description
Static	Is an IP address that was manually configured for a device.
DHCP	Set IP address automatically assigned from DHCP server.

IP Address (default = 192.168.2.1) :

Is the current IP address of the device.

Subnet mask (default = 255.255.255.0):

Is the current IP Subnet mask of the device.

Gateway (default = empty) :

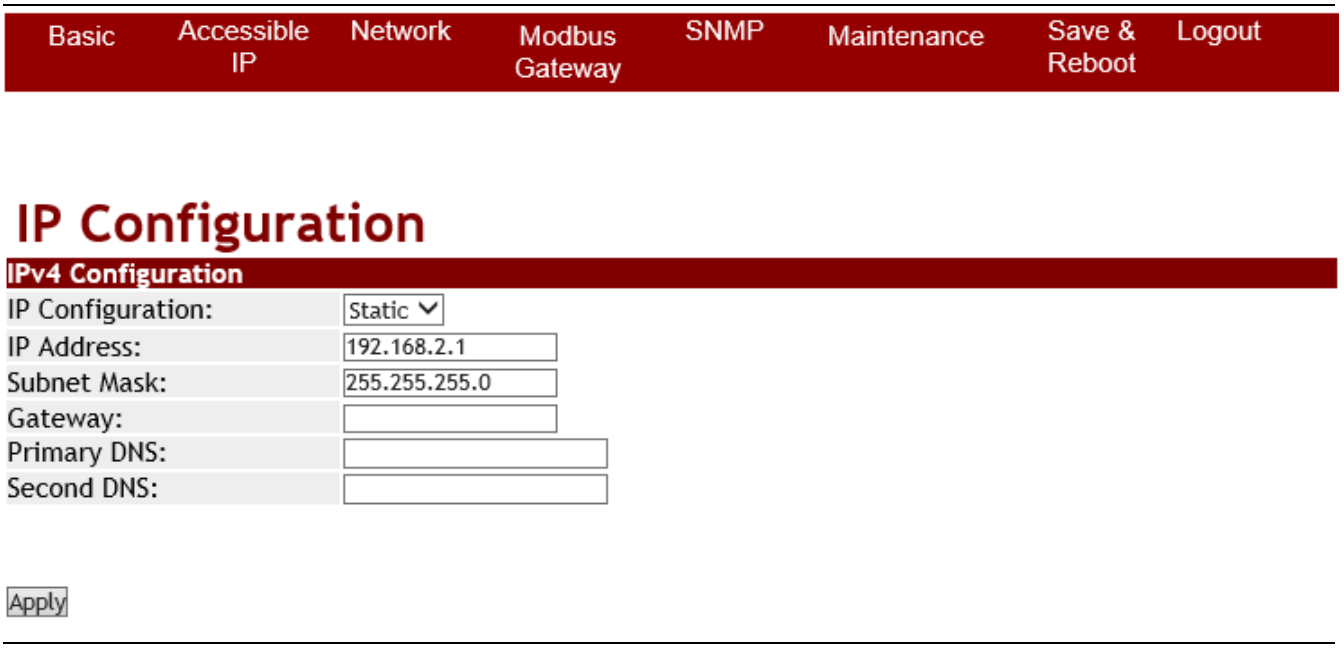
The gateway IP interface.

Primary DNS (default = empty) :

Configure the primary DNS server.

Second DNS (default = empty) :

Configure the second DNS server when Primary DNS is unavailable.



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2.6 Modbus Gateway

The following figure as shown Serial Port Configure part of port settings and Modbus gateway feature.

2.6.1 Serial Port

The following table describes the table in this screen.

Property	Options	Default	Description
Mode	RTU Slave, RTU Master, ASCII Slave ASCII Master Disable	RTU Slave	Used to set Modbus/serial on serial port
Baud rate	50 bps to 921600 bps	921600	This is the communication speed of the link between the serial server and the device connected to its serial port.
Data bits	8	8	This parameter controls the number of bits of data in each character.
Any Baud rate	Specify any number	50	User can specify any integer baudrate, the range is 50-921600bps
Stop bits	1, 1.5/2	1	This parameter controls the number of bits to indicate the end of a character.
Parity	Even. Odd, None, Space, Mark	None	This parameter controls the error checking mode.
Interface	RS-232, RS-422, RS-485-2W	RS-232	Select the appropriate serial interface mode, used to connection between the serial port and device communication.
Flow control	None, RTS/CTS, DTR/DSR, RTS Toggle	None	This parameter controls the local handshaking method for stopping serial input or output.
RTS ON delay	0 ms to 100 ms	0	This parameter controls RTS turn on before data transmission.
RTS OFF delay	0 ms to 100 ms	0	This parameter controls RTS turn off after the transmission completes
Response Timeout	10 to 120000 ms	1000	This parameter is used to configure how long the gateway will wait for a response from a Modbus ASCII or RTU slave.

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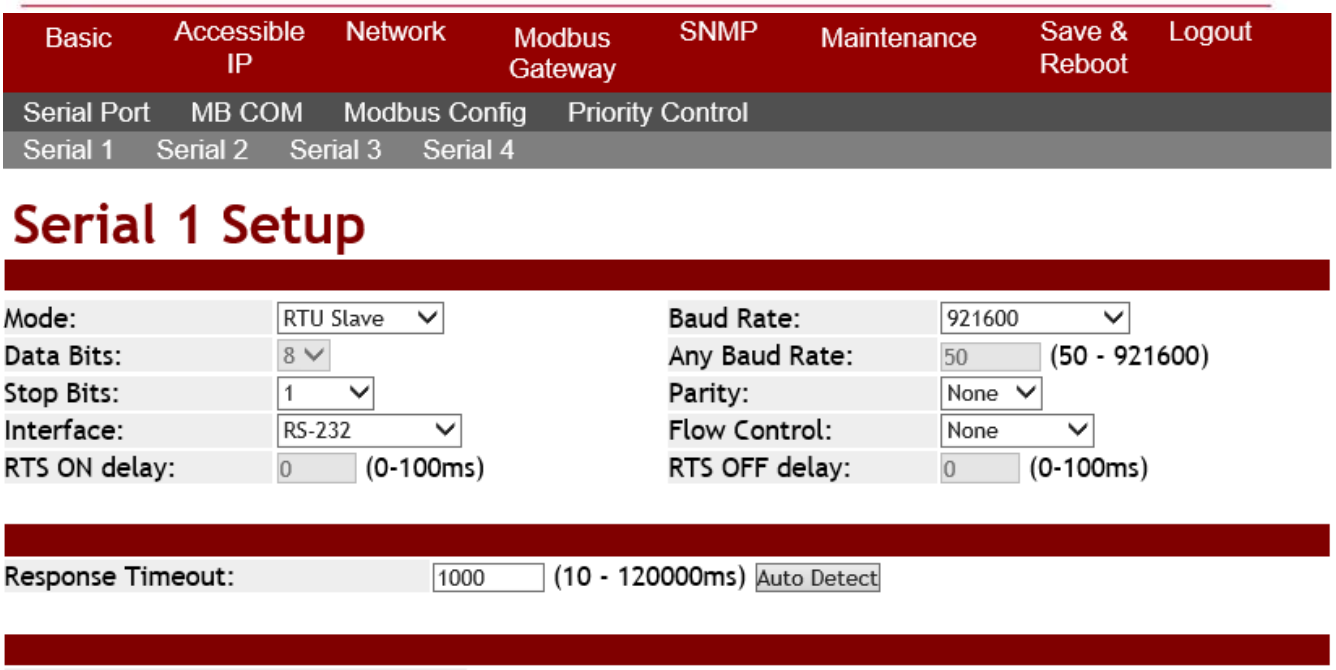
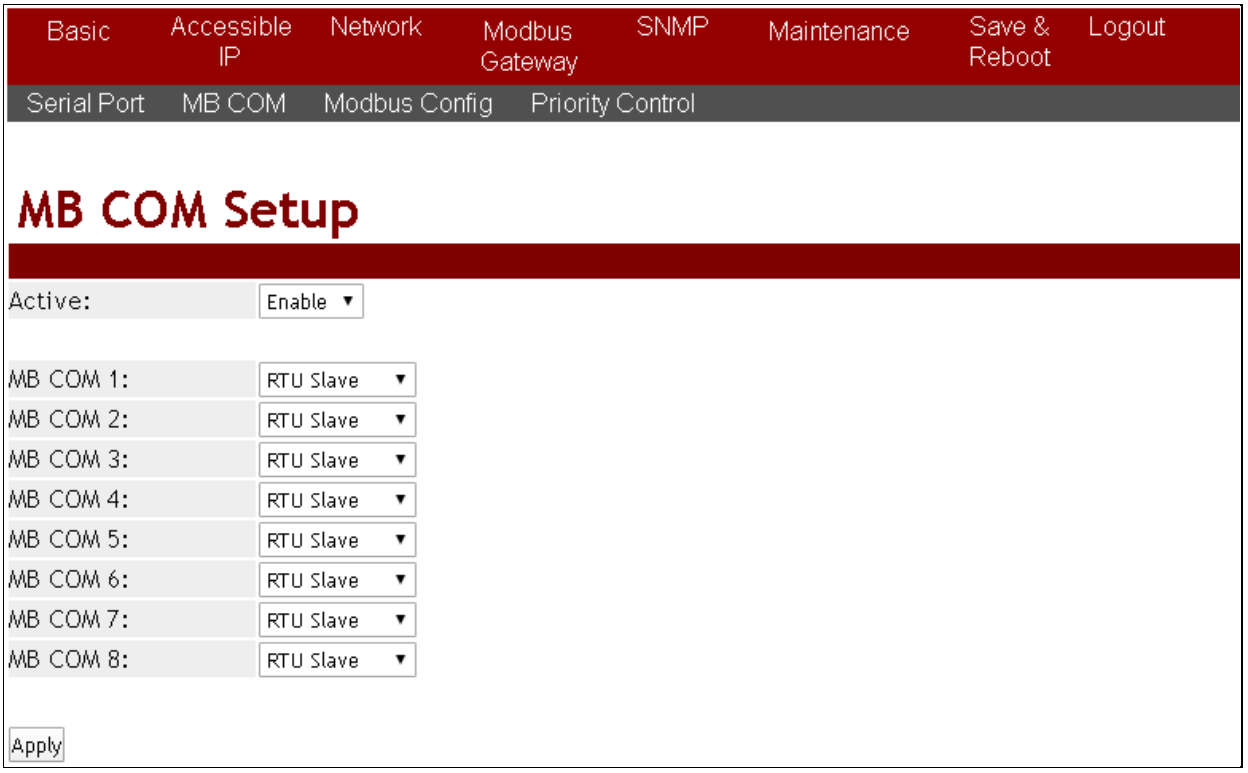


You can set up the all serial ports by choosing the " Apply to all serial ports".

2.6.2 MB COM

Using MB COM, you can communicate over the Ethernet with serial devices. It looks like they were connected to the PC's COM ports.



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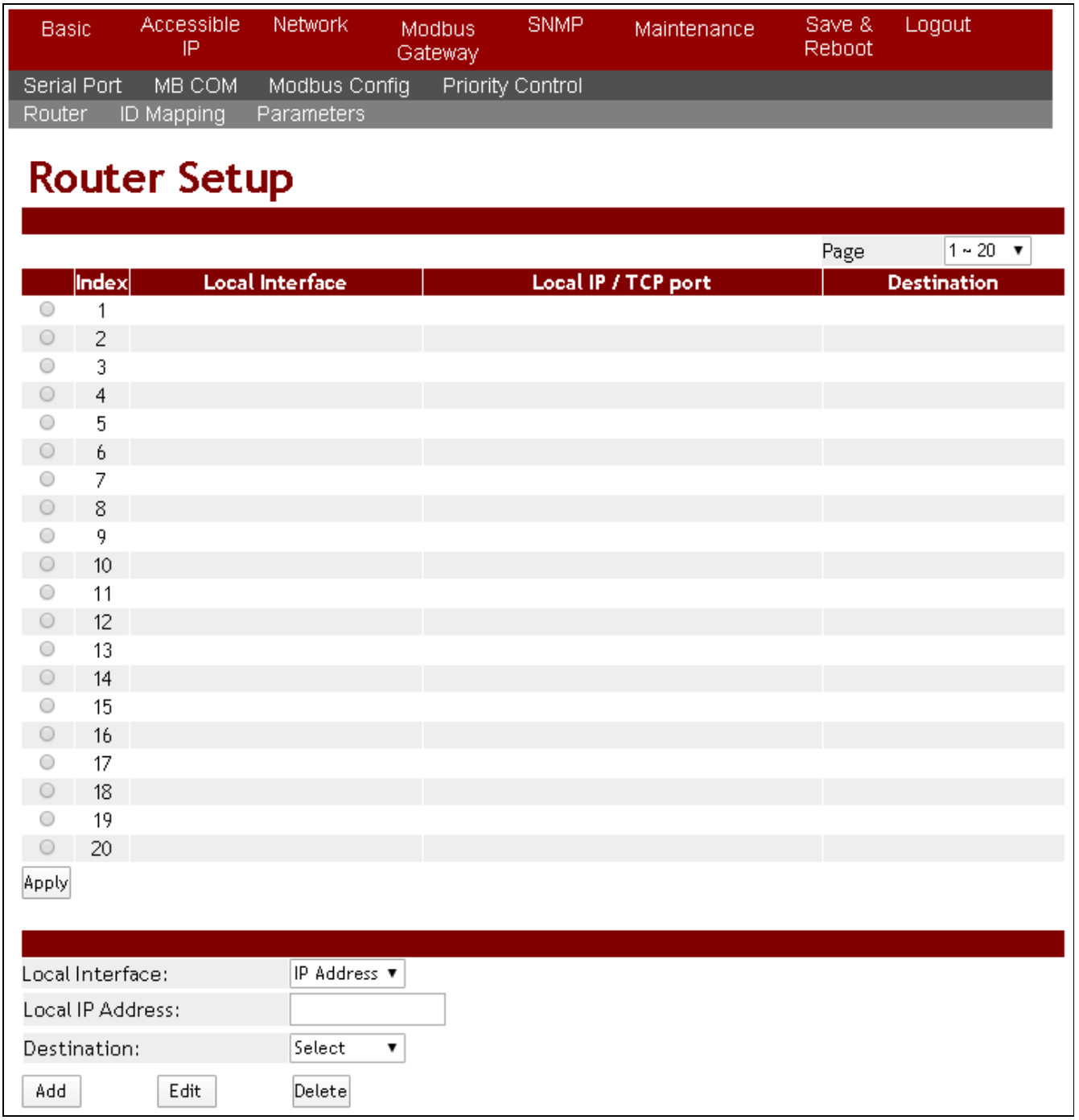
2.6.3 Modbus Config

2.6.3.1 Router



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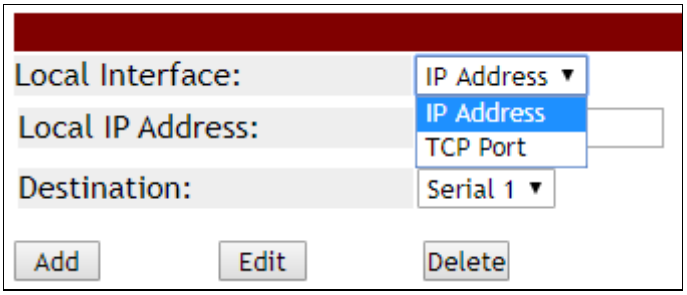
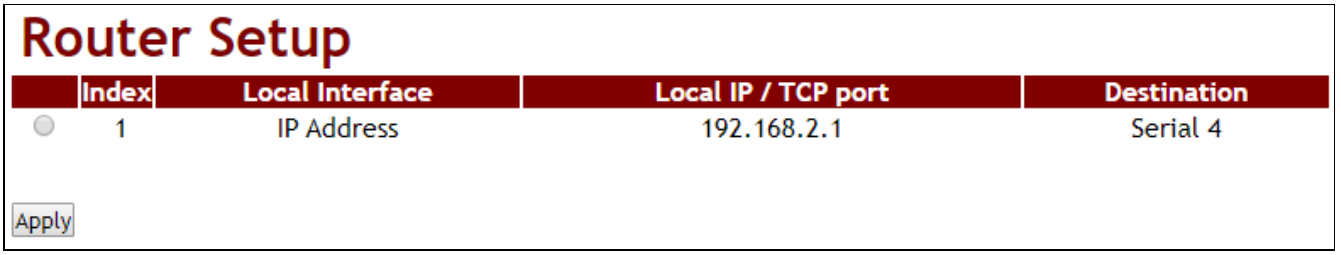
The Modbus series products support four Modbus masters in each serial port can communicate with the Modbus slave devices. It can be connected to a serial port by IP address or TCP port.



For example, if you want to set IP address 192.168.2.1 is assigned to serial port 4. As shown below, it will forward directly to serial port 4 when you get a Modbus request sent to 192.168.2.1.



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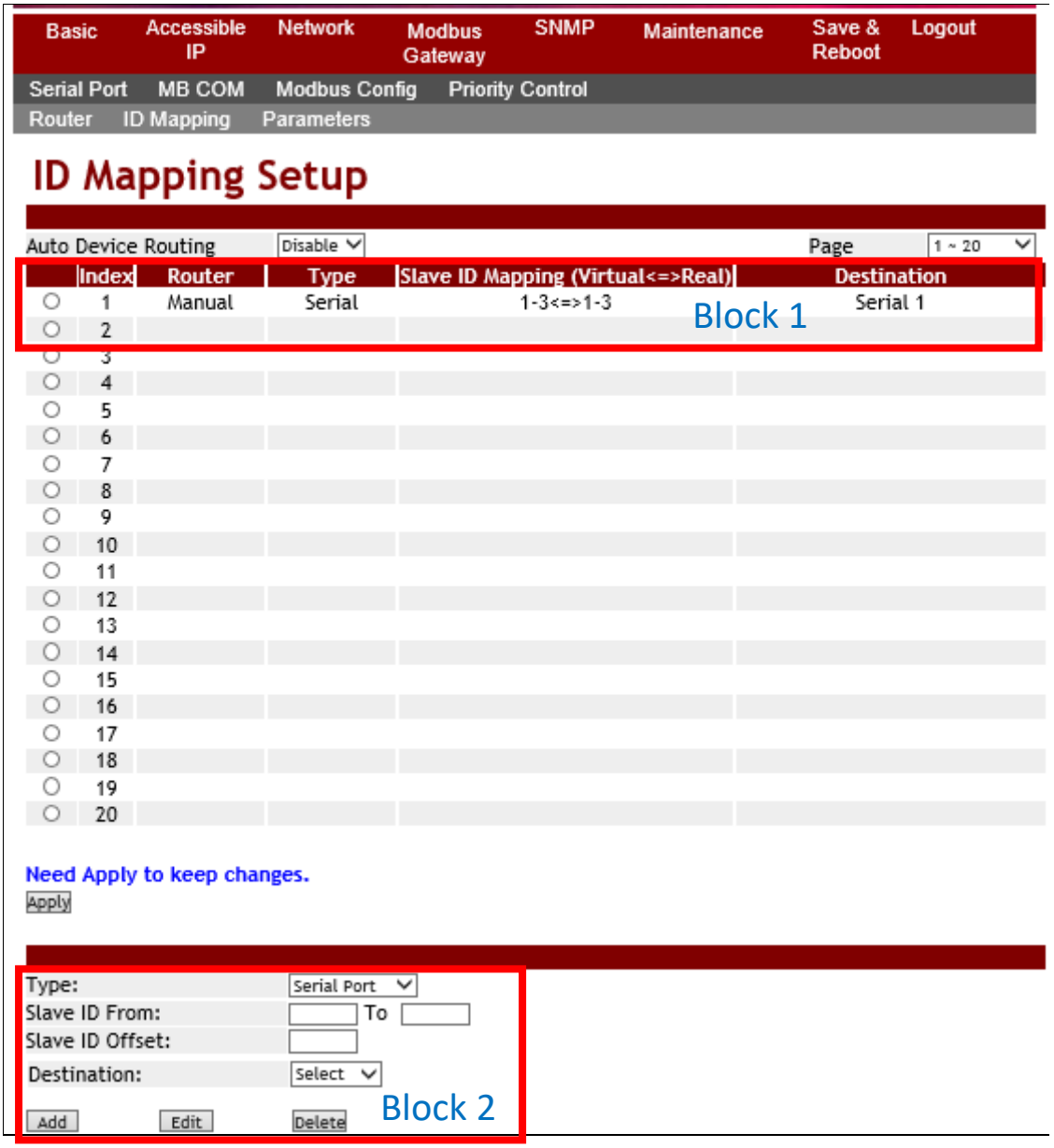
2.6.3.2 ID Mapping



The ID Mapping Setup is a routing mechanism for gateway. It can follow routing rule on this table to transfer Modbus request to the specific serial port or TCP server that connects the Modbus slave device.

In block 1, it's a setting value for slave ID 1~3 will forward to serial port1. When you get a Modbus requests with slave ID 1~3, it will follow this rule to be routed to the targeted Modbus slave device.

In block 2, you can select the one to add, edit or delete the rule on the table.

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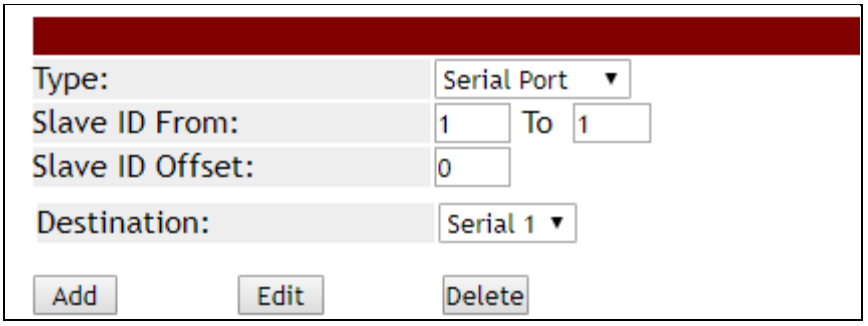
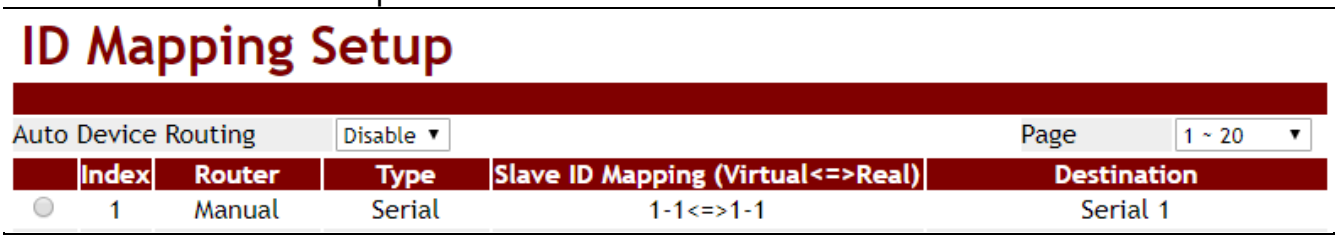
Basic setting

If you want to set a rule that there are a Modbus devices with slave ID 1 is connected to serial port 1.



It will show up as follows

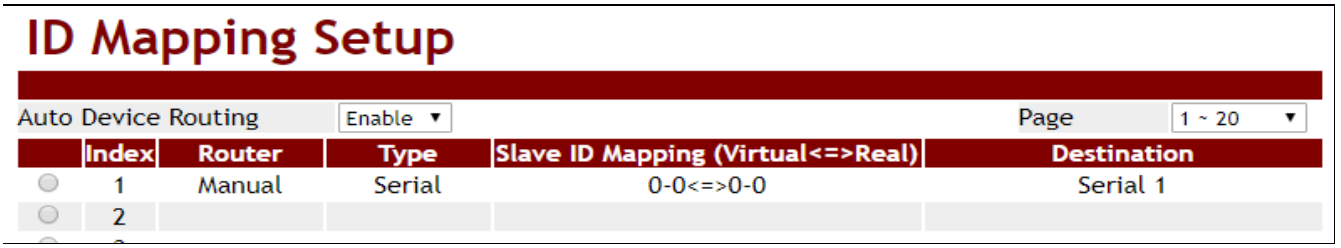


So it will transfer a request with slave id 1 to serial 1 from the Modbus master.

Auto Device Routing

It's a mechanism that will help you find where is it and be routed correctly on serial port. So users don't need to set the rule manually.

If the Auto Device Routing is enabled, it will clear Slave ID Mapping value of the rule with serial port automatically.



When you get a request with slave id didn't exist on rule table. It will detect all serial port to find the target device and add on the rule table directly.

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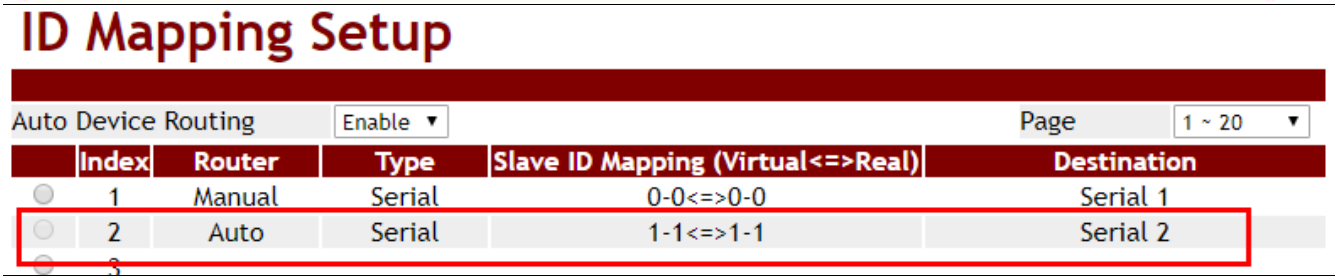
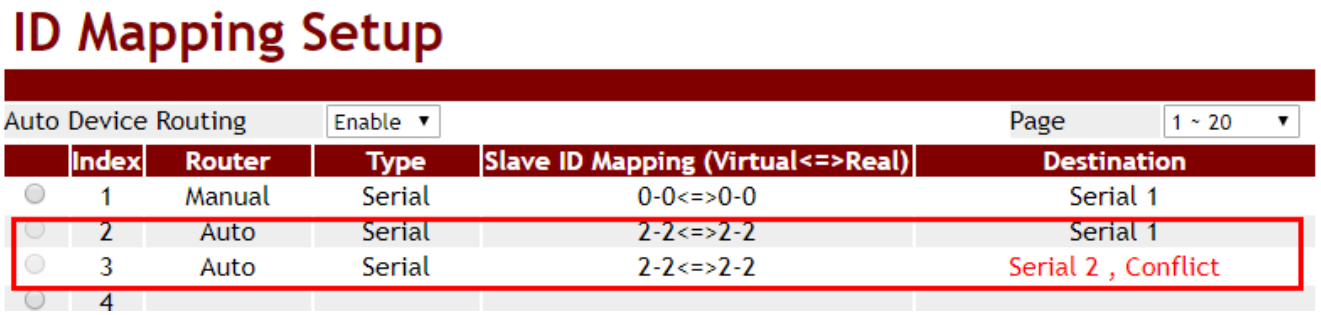


If there are two target device with same ID in two serial port, it will show conflict. Check environment please.



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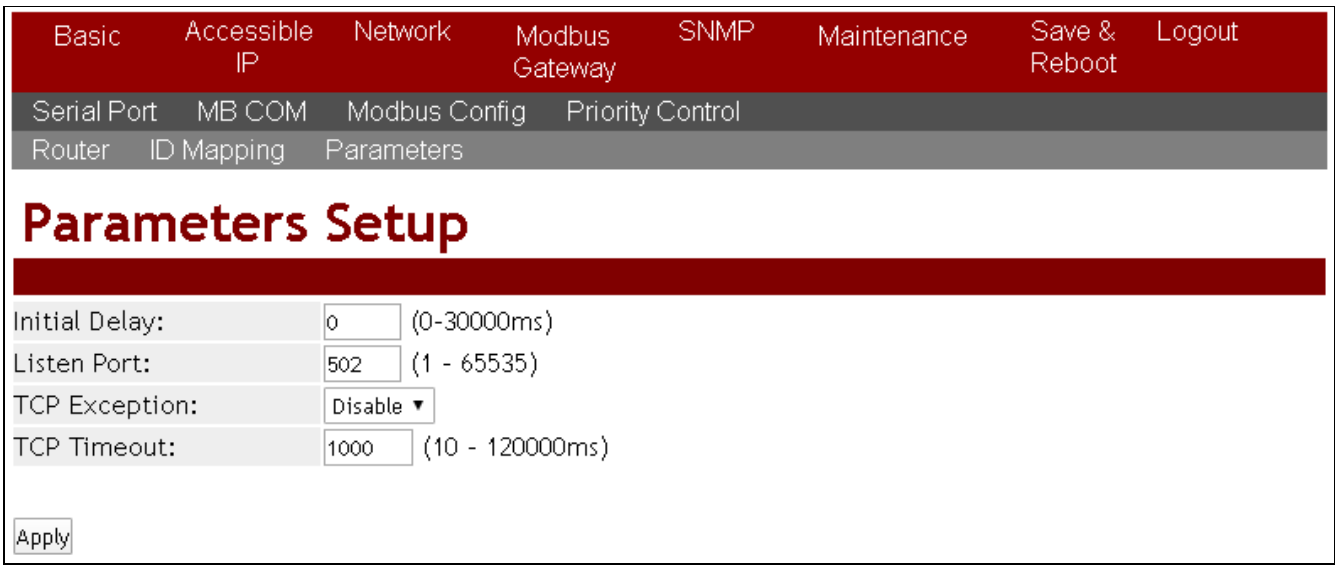
2.6.3.3 Parameters



Initial Delay

You can make the Modbus series products to wait for some Modbus slave device may take more time to boot up. It will force the Modbus series products to wait the initial delay setting before booting completed.

Listen Port

This parameter(default:502) is described the TCP port that communicates with the connected device.

TCP Exception

If this setting is enabled, Modbus series products will return an exception in response when there is no response from the slave. If it's disabled, it will do nothing when there is no response.

TCP Timeout

This parameter(default:1000) is used to configure how long Modbus series products will wait for a response from a Modbus TCP slave. If there is no response from the slave, the master will ignore and continue next step. This makes the Modbus system did work properly even if a Modbus slave device is faulty.

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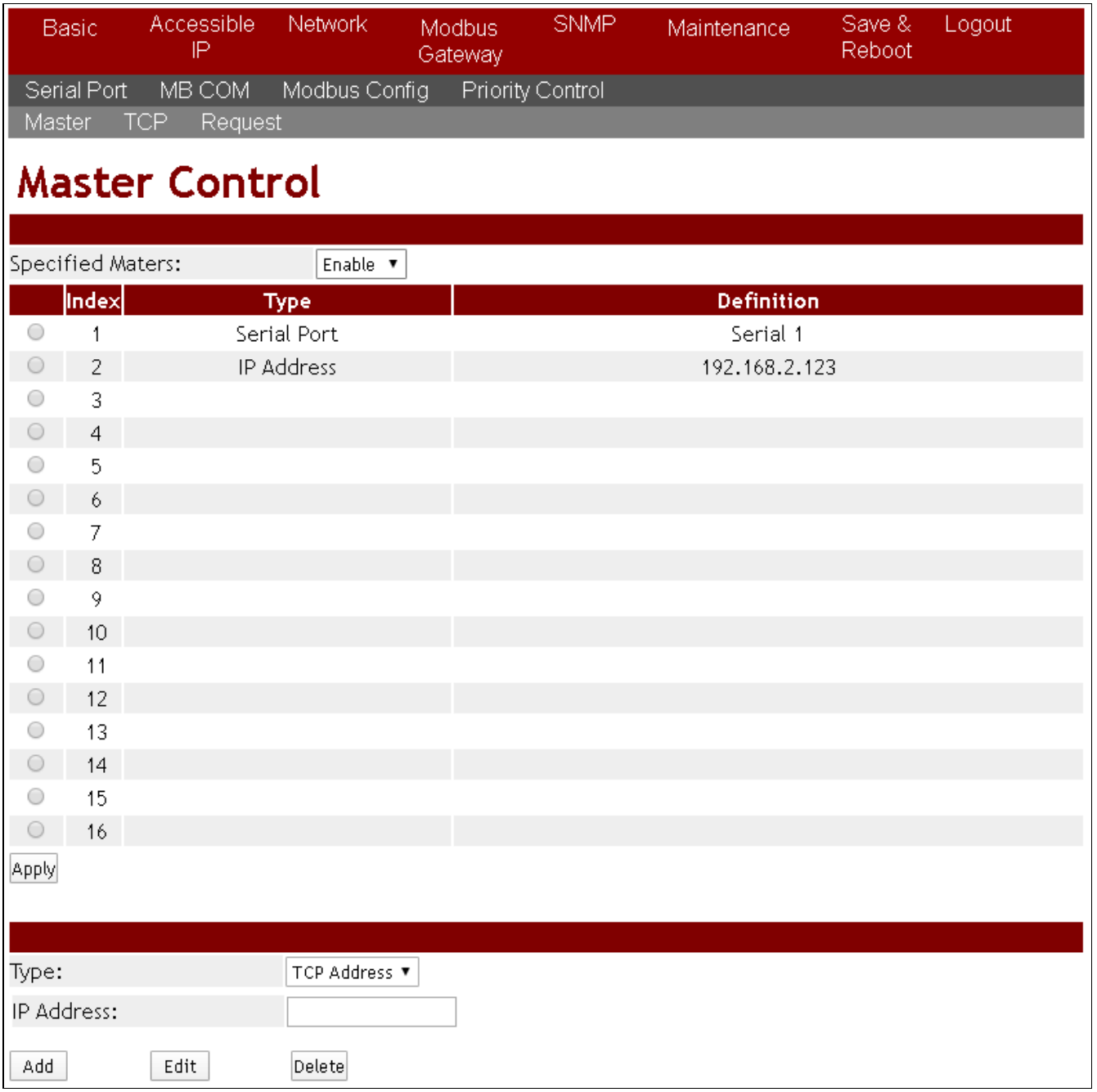
2.6.4 Priority Control

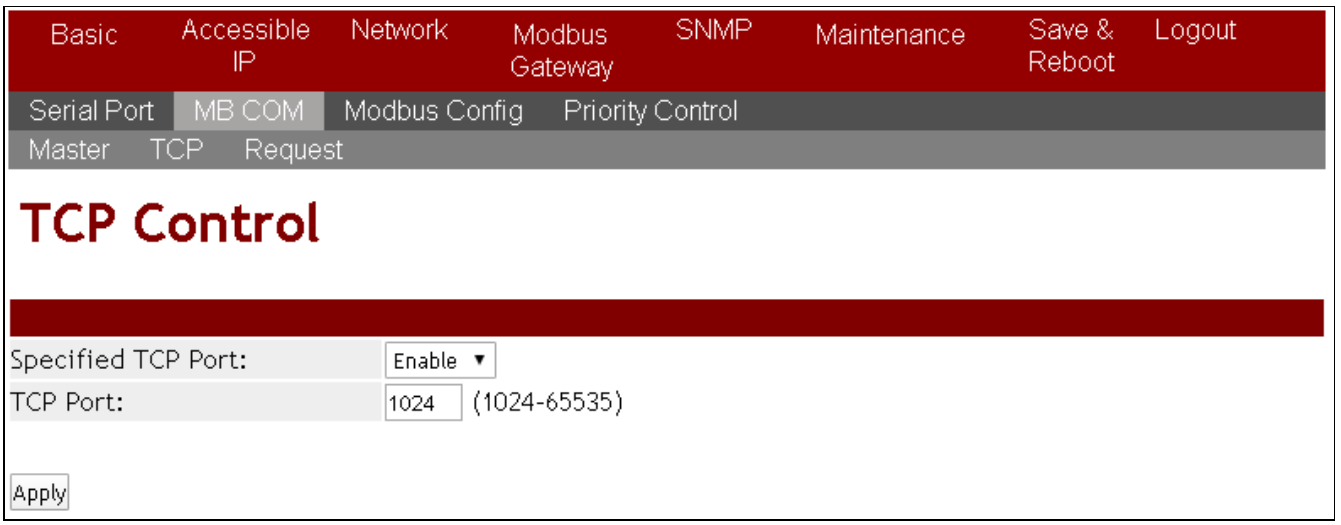
It's a mechanism that Modbus Messaging Priority Control can make a certain requests for more immediate response times. It will be arranged to the front of queue to be sent when Modbus gateway detect a priority request.

2.6.4.1 Master



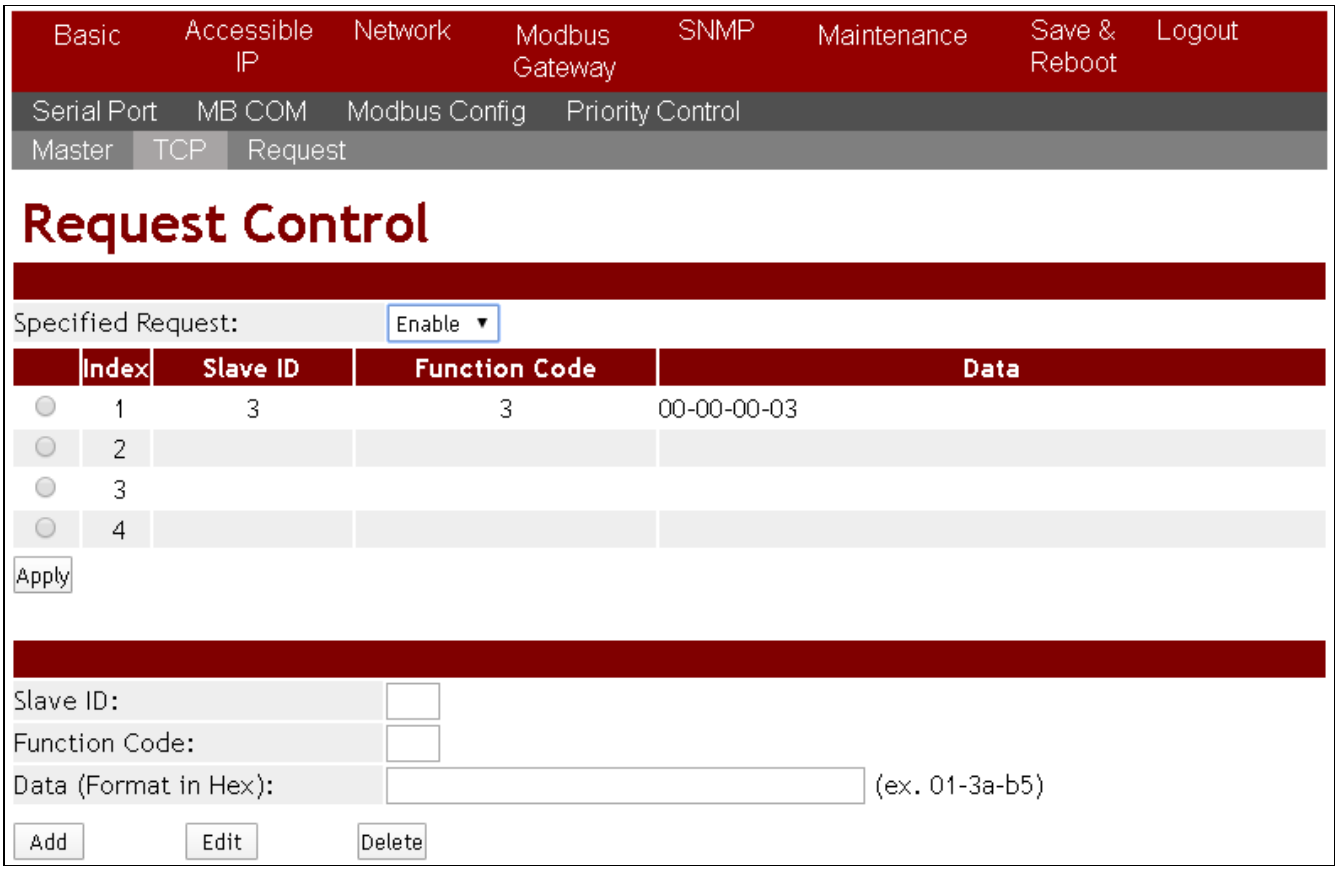
The priority rule can be assigned by master (serial port or IP address). As above, it means the request from serial port 1 or 192.168.2.123 will be considered a priority request.

2.6.4.2 TCP



Same as priority master. As above, it means the request from port 1024 will be high priority.

2.6.4.3 Request



Command type can also make to be a priority request. As above, it means that the request with slave id 3, function code 3 and data 00 00 00 03 will be high priority.

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2.7 SNMP

This function is used to retrieve network status information and device monitoring and configure the network parameters to automatically warn the administrator.

2.7.1 SNMP Settings

Community name (default = public): It is the password for SNMP. The management station and the management agent must use the same community name, otherwise the frame will be discarded.

Contact (default = empty): Contact is the primary contact showing the device being queried.

Location (default = empty): Location is the physical location of the monitored device. Its definition is described in RFC1213.

SNMP trap server (default = empty): To configure the Modbus series products to distribute trap messages from any unexpected events, you can fill in the IP address of the SNMP Trap server or domain name.

NOTICE

If the SNMP trap server IP settings are incorrect, the Modbus Gateway device's automatic warning function will not work properly and you will have to ask the Network Administrator to get the correct information.

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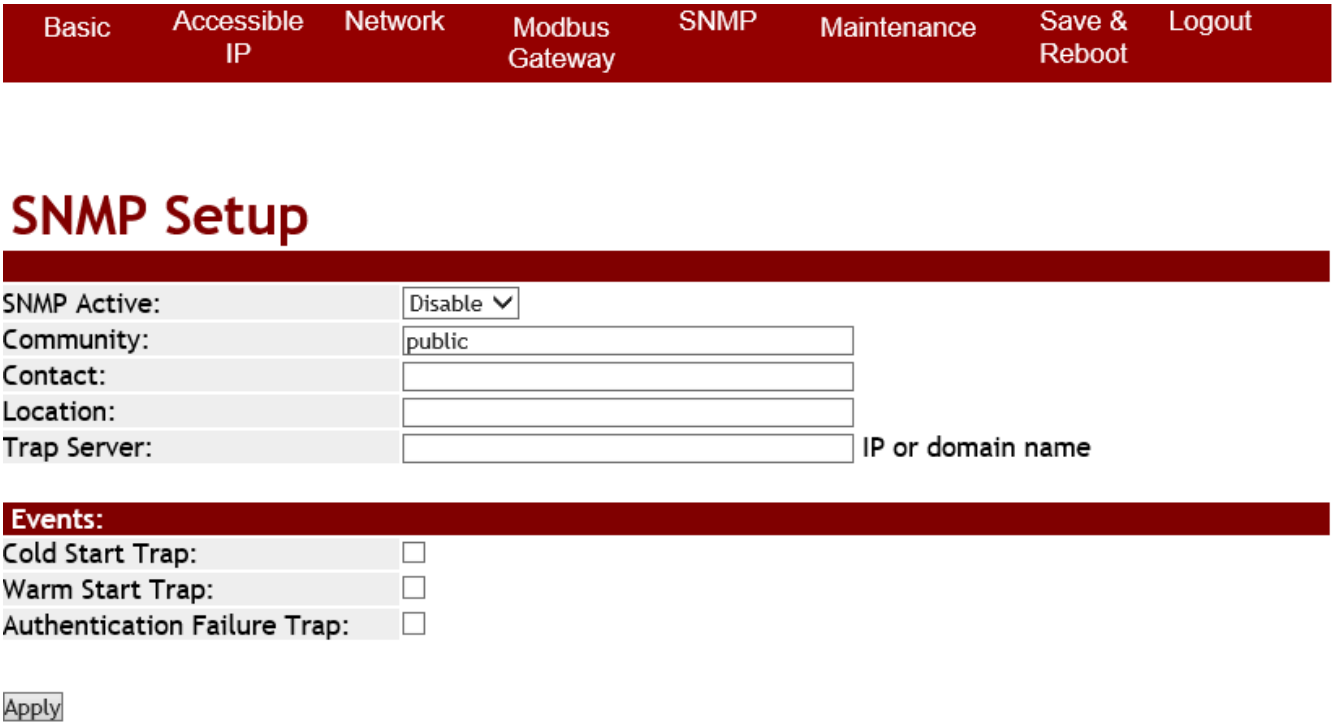
2.7.2 Event

Cold start Trap : This event is triggered when the power is interrupted and restarted.

Warm start Trap : This event occurs when the device is reset but does not turn off the power.

Authentication failure Trap : This event occurs when an incorrect or unauthorized password are entered.



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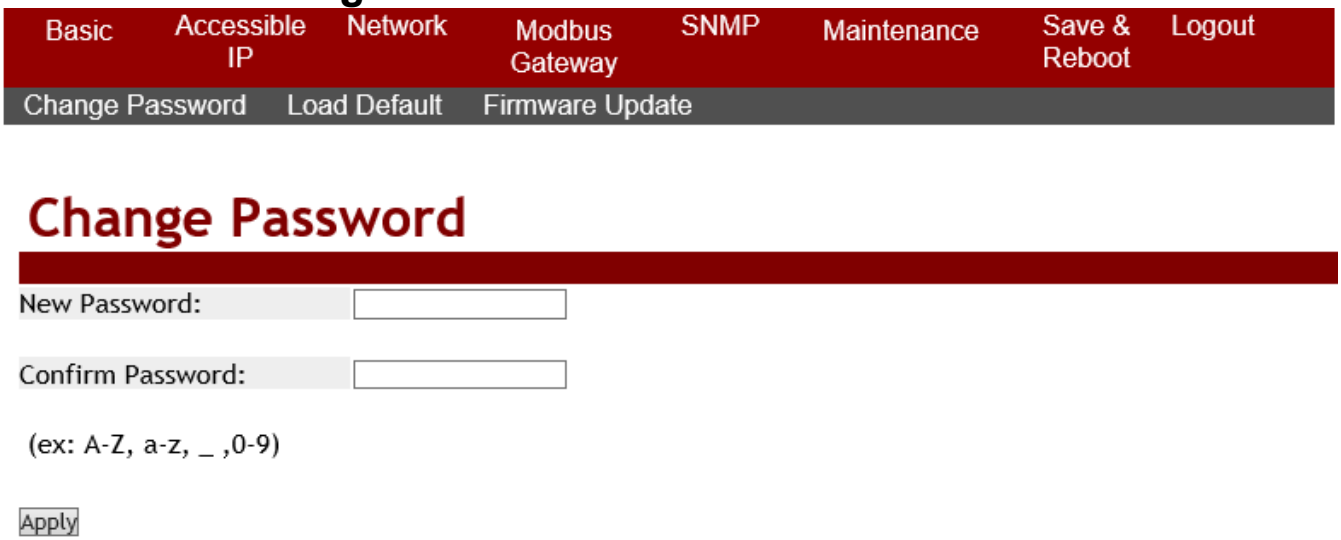
2.8 Maintenance

2.8.1 Change Password

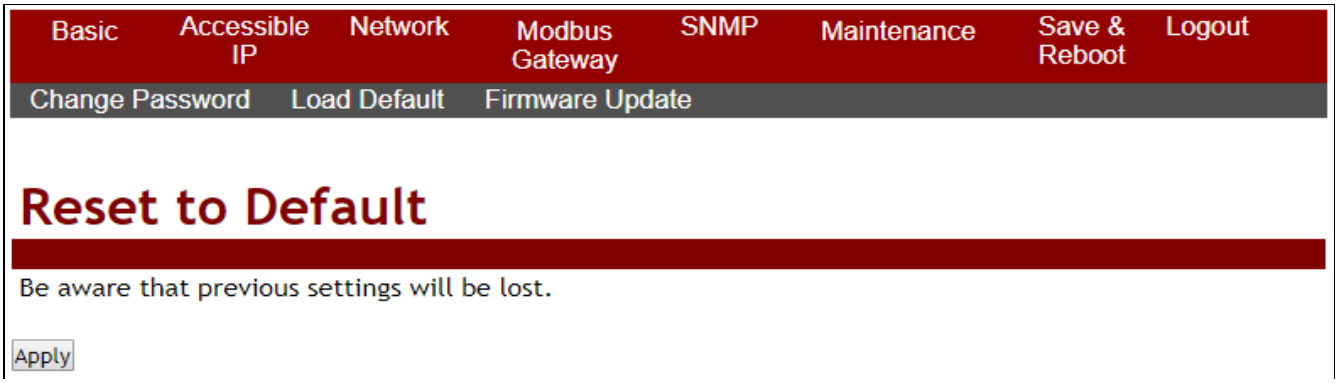


In order to ensure security of device system, each time you login to the Modbus series products device you must be key in a password. When you first receive an Modbus serial server device from the factory, the default password is "system". After logged into the Modbus series products Serial Server Manager, user can make changes from the "Change Password" page.

NOTICE

Before setting up the password for the first time, we strongly recommend exporting the complete configuration of Modbus product to the file. If you forget the password, you can easily restore the configuration. Otherwise, use the reset button to return to factory default.

2.8.2 Load Default



Once the initialization action is performed, Modbus Gateway products's will reload all factory default configuration parameters, thus current configuration settings will be lost. It is strongly recommended that you first save your configuration to a file so that it can be restored if necessary.

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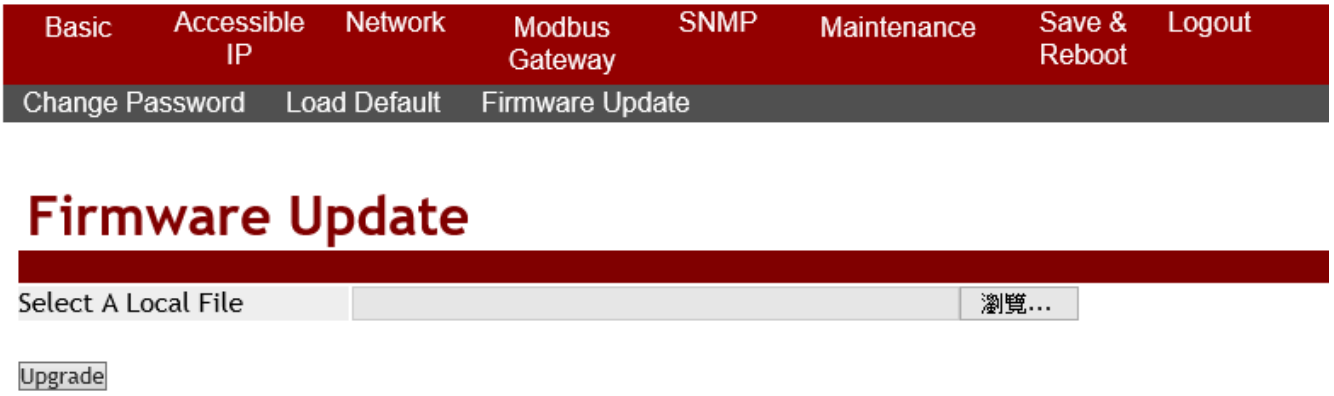
2.8.3 Firmware Update

This allows you to upload new firmware to the target Modbus Gateway products's Click "Upgrade" to execute upgrade activity.



Select a image for new firmware file and click Upgrade button.

It will take 99 seconds for Modbus Gateway products's firmware to be updated. Do not disconnect Modbus series products network and power supply during update process to avoid updating fail. Please wait for the end of the countdown.

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3. Software MBcom administration utilit

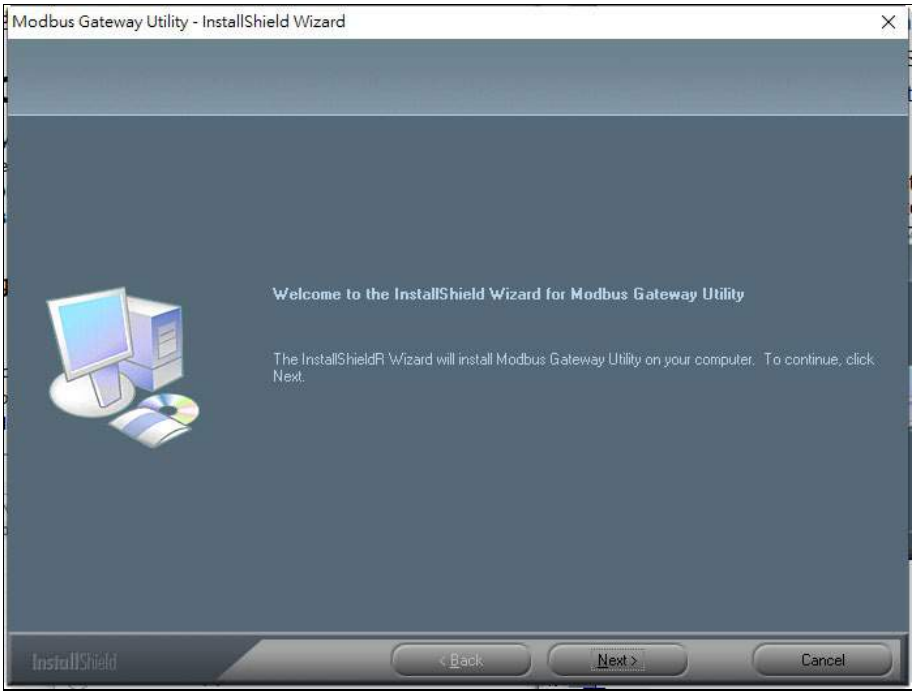
3.1 Overview

The Modbus series products Administration Suite provides you search function to your Modbus Gateway products from a remote location. With Modbus series products MBCOM Administration utility, you can easily install and search your Modbus series products device server over the network. You can also run Modbus series products MBCOM Administration utility from one location to manage multiple device servers.

3.2 Installation the MBCOM utility

Modbus series products MBCOM Administration utility can be installed from the Document and Software CD onto a Windows PC. To install Modbus series products Administration Suite, insert the Modbus series products Document & Software CD into your PC's CD-ROM drive. Locate and run the setup program and follow the on-screen instructions. The setup program will be named mbgsetup.exe.

1. When you run installer from documentation and software CD, it will show welcome window. Click Next to continue.



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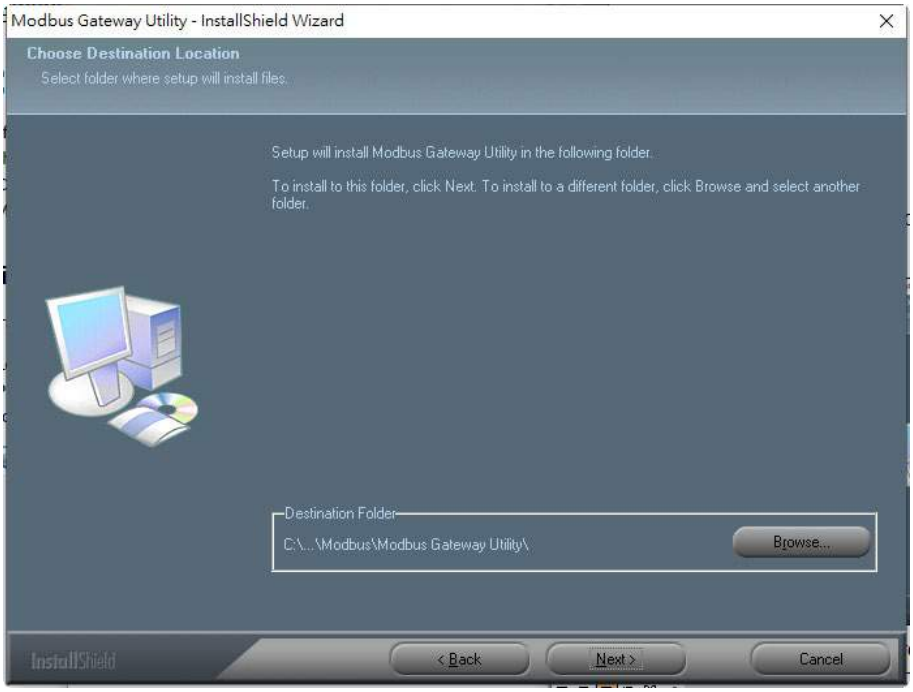
2. Click Next to accept suggested installation path or click browse to select a different location.



3. The setup wizard will show the progress of the installation and status.

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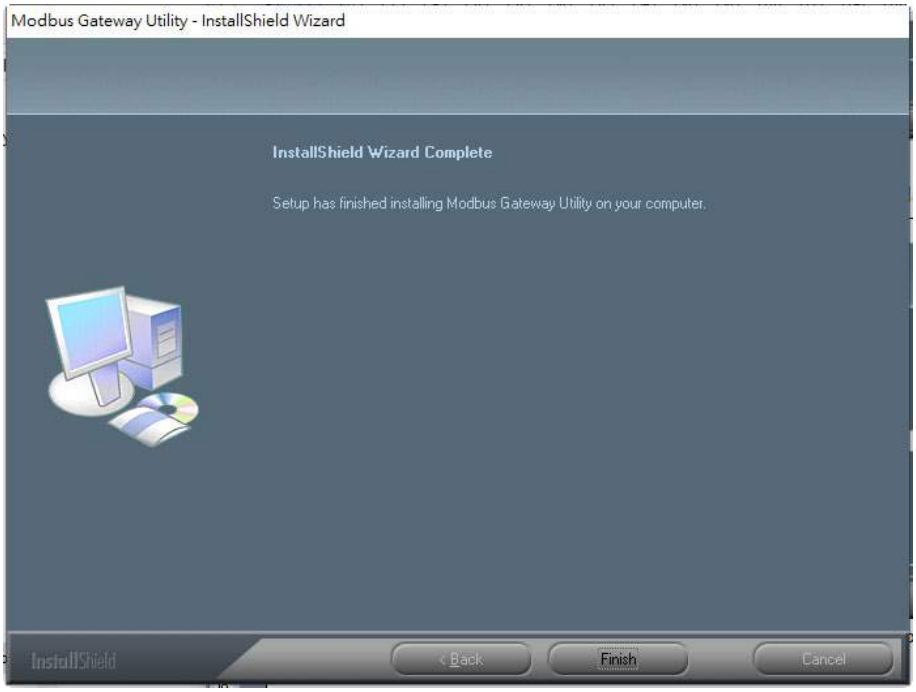
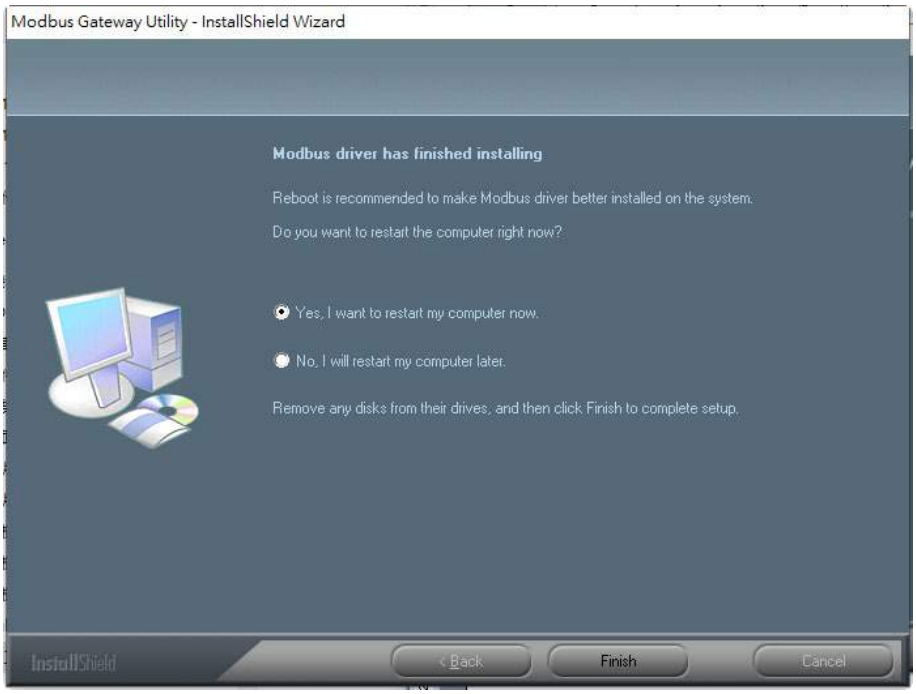
4. Click Finish to successfully complete installation of Modbus Gateway product Management Suite.



5. Restart computer



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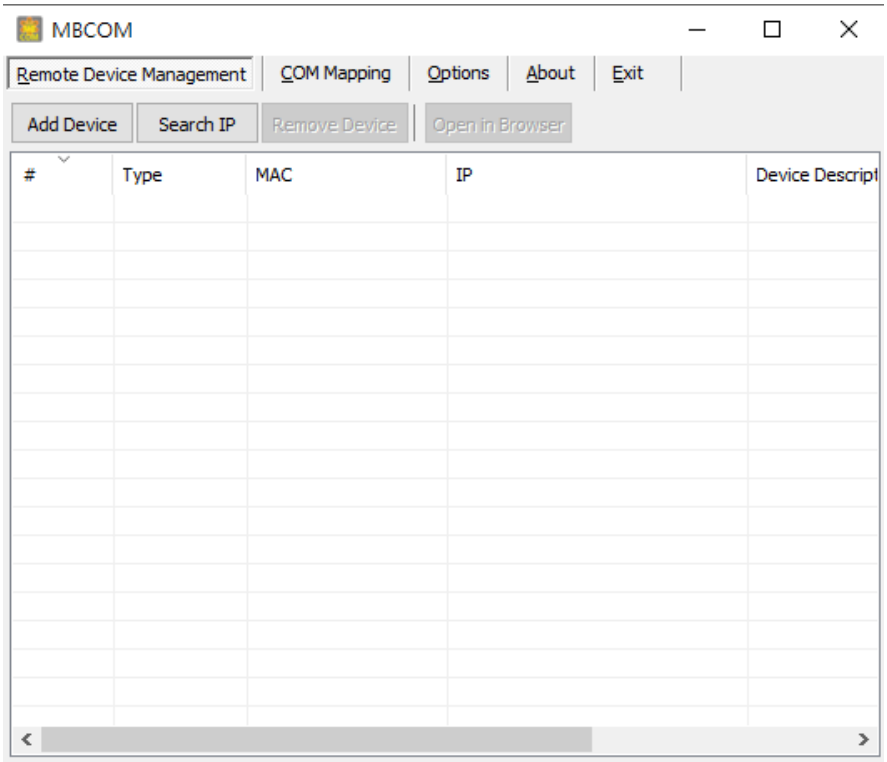
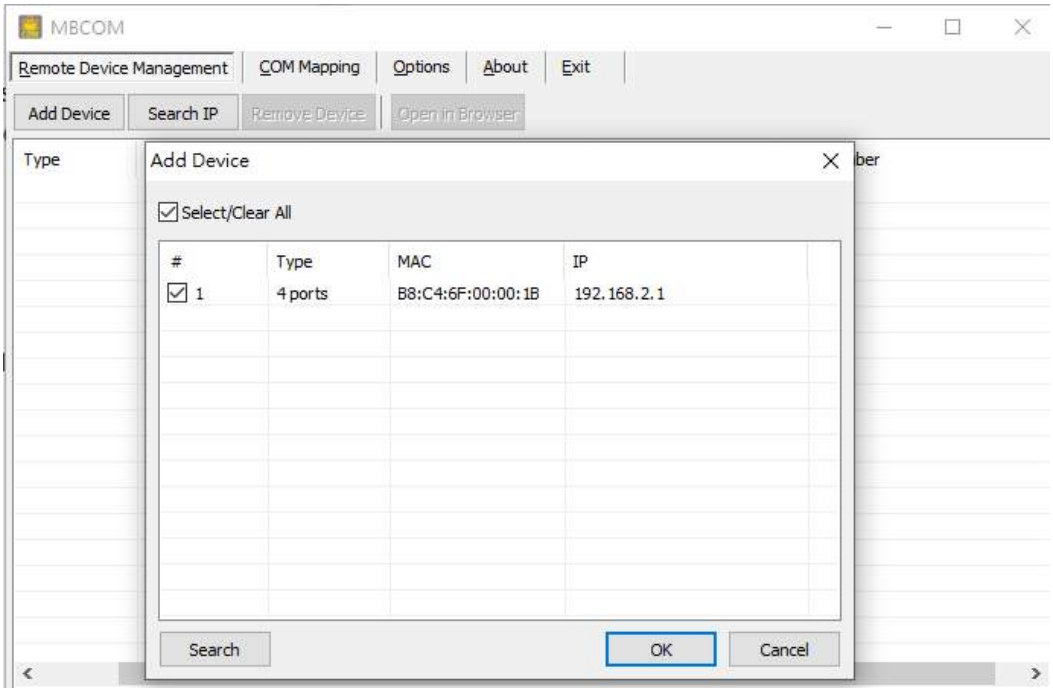
3.3 Search device

First click "**Add Device**" and click "**Search**" if device has access to network, as shown below.



Click "**Select/Clear All**" and Click "**ok**", it will add device automatically on the main window.



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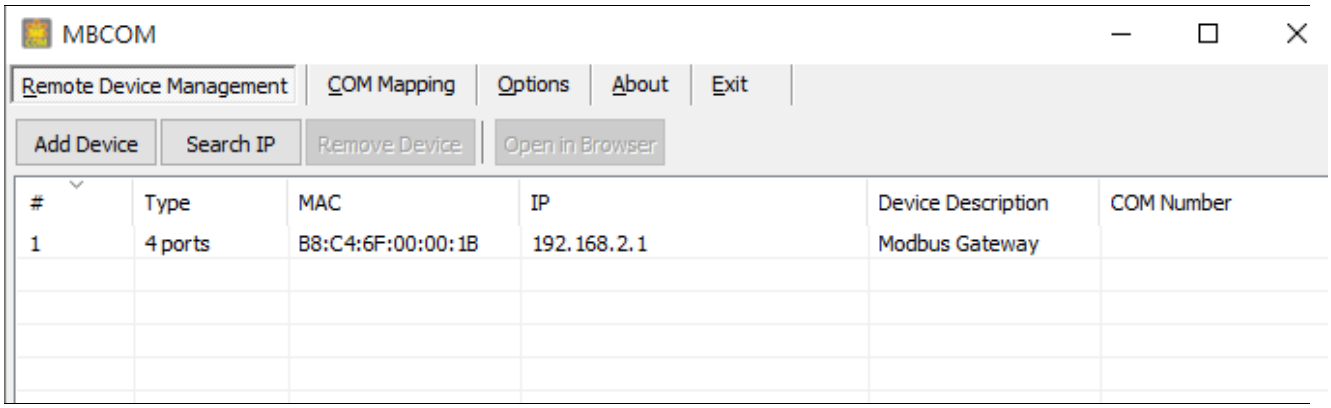
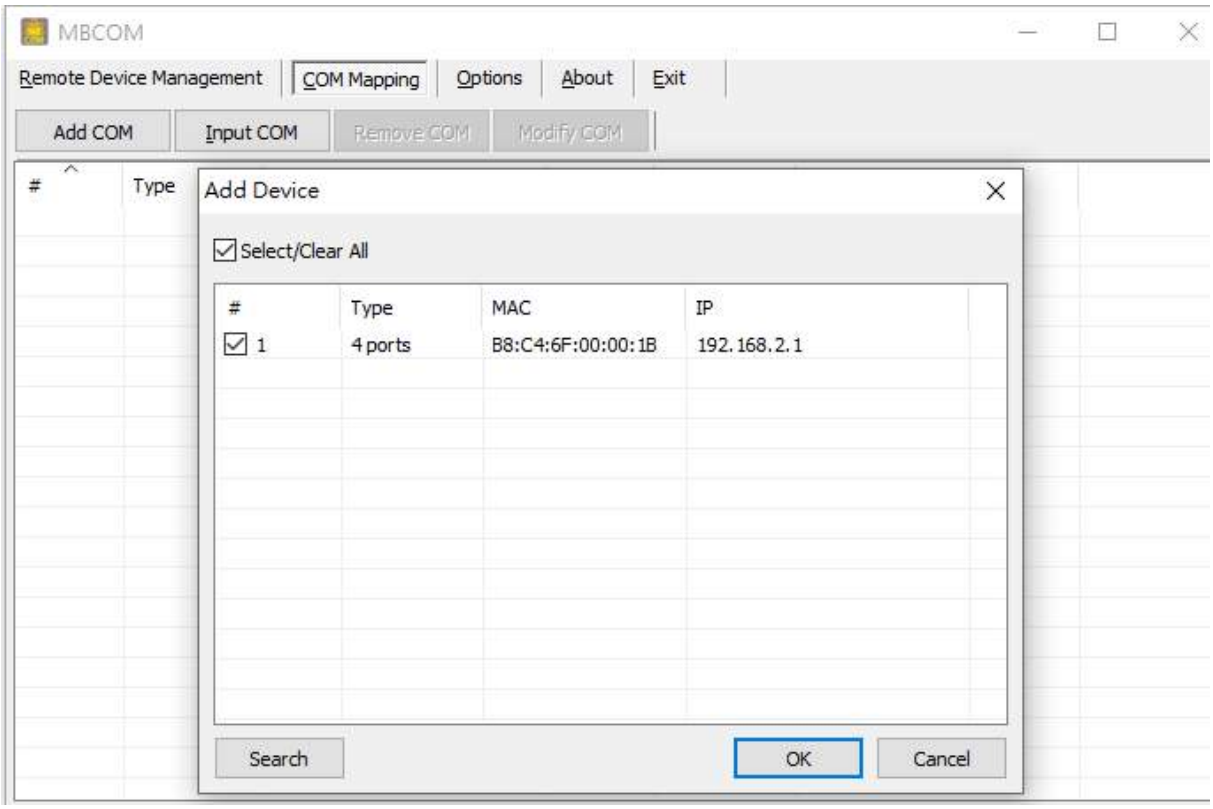


3.4 COM Mapping

This function should be set as COM mode on the Modbus Gateway. The software will create the relevant virtual COM ports for COM mapping as shown below.

Add COM port

Click "COM Mapping" button and click "Add COM" it will show the window as below.



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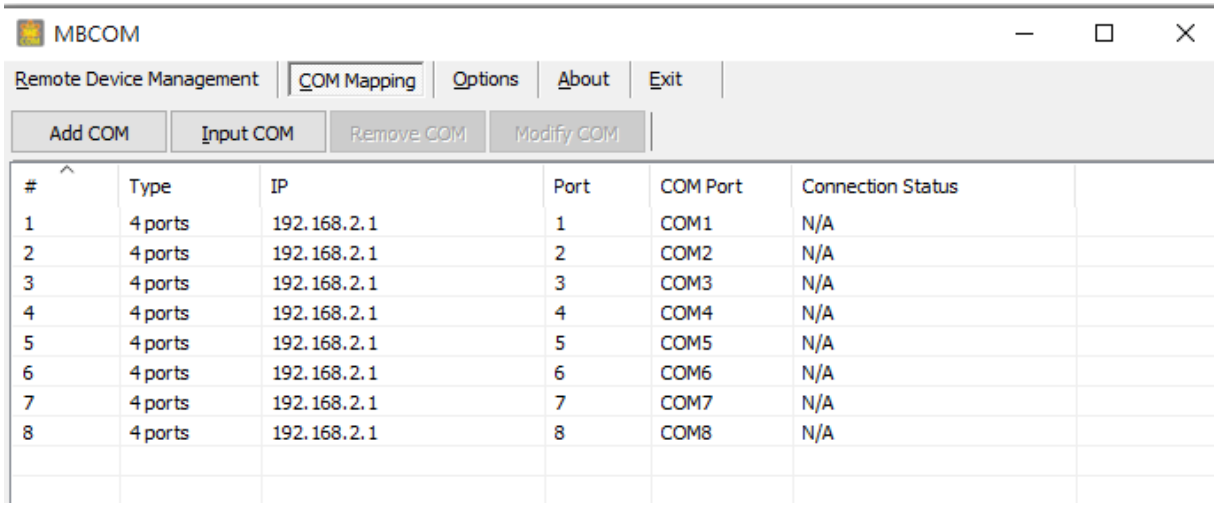
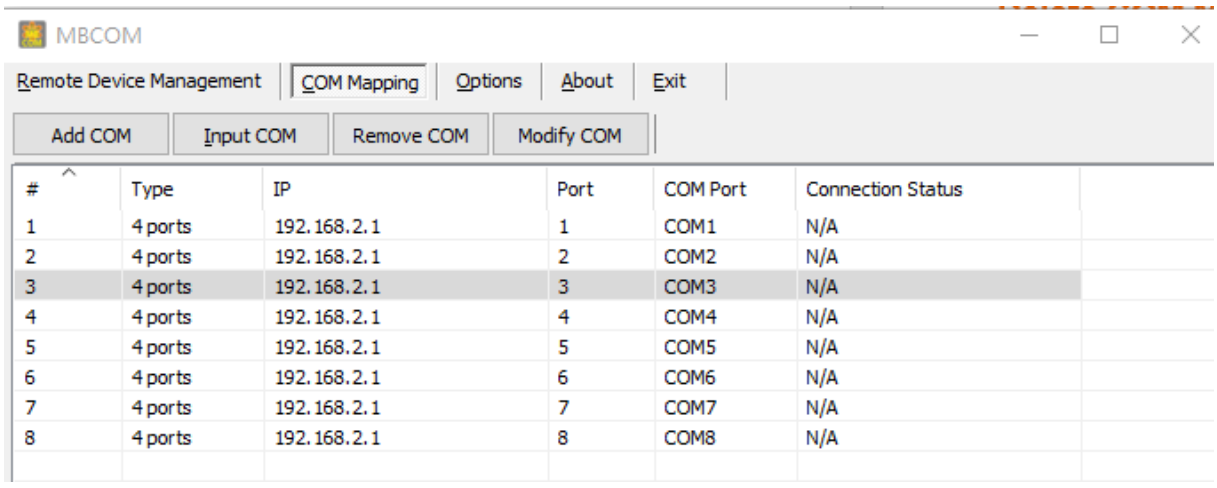
Click the "ok" button. You will see the virtual COM ports generated as shown as below.



#	Type	IP	Port	COM Port	Connection Status
1	4 ports	192.168.2.1	1	COM1	N/A
2	4 ports	192.168.2.1	2	COM2	N/A
3	4 ports	192.168.2.1	3	COM3	N/A
4	4 ports	192.168.2.1	4	COM4	N/A
5	4 ports	192.168.2.1	5	COM5	N/A
6	4 ports	192.168.2.1	6	COM6	N/A
7	4 ports	192.168.2.1	7	COM7	N/A
8	4 ports	192.168.2.1	8	COM8	N/A

Delete COM Mapping Settings

In contrast, if want to remove a device server from COM Mapping list, click "**Remove COM**" button.



#	Type	IP	Port	COM Port	Connection Status
1	4 ports	192.168.2.1	1	COM1	N/A
2	4 ports	192.168.2.1	2	COM2	N/A
3	4 ports	192.168.2.1	3	COM3	N/A
4	4 ports	192.168.2.1	4	COM4	N/A
5	4 ports	192.168.2.1	5	COM5	N/A
6	4 ports	192.168.2.1	6	COM6	N/A
7	4 ports	192.168.2.1	7	COM7	N/A
8	4 ports	192.168.2.1	8	COM8	N/A