



# *MB52XX Series Modbus Gateway*

## User Manual

V1.1

August 7<sup>th</sup>, 2026

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For example, click on any item listed in the [Table of Contents](#) to go to that page.

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# 1 Preface

---

## 1.1 *Purpose of the Manual*

---

This manual supports the user during the installation and configuring of the MB52XX Series Modbus Gateway. It explains the technical features available with the mentioned product. As such, it contains some advanced network management knowledge, instructions, examples, guidelines and general theories designed to help users manage this device and its corresponding software. A background in general theory is necessary when reading it. Please refer to the Glossary for technical terms and abbreviations (if any).

## 1.2 *Who Should Use This User Manual*

---

This manual is to be used by qualified network personnel or support technicians who are familiar with network operations. It might be useful for system programmers or network planners as well. This manual also provides helpful and handy information for first time users. For any related problems, please contact your local distributor. If they are unable to assist you, please redirect your inquiries to [www.atoponline.com](http://www.atoponline.com).

## 1.3 *Supported Platform*

---

This manual is designed for **MB52XX Series Modbus Gateway** and that series only.

## 1.4 *Manufacturers' FCC Declaration of Conformity Statement*

---

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause an undesired operation.

---

**Note:** all the figures herein are intended for illustration purposes only. This software and certain features work only on certain Atop's devices.

---

## 2 Introduction

### 2.1 Overview

The MB52XX Modbus Gateway is an industrial network device in between Modbus over Serial Line devices and computer hosts running Modbus/TCP on Ethernet network. Figure 2.1 illustrates a possible network configuration of the MB52XX Series Modbus Gateway. Fully compliant with Modbus/TCP protocol, the Modbus gateway offers a convenient solution to connect existing devices or controllers running Modbus serial protocol (Modbus/ASCII or Modbus/RTU) to an Ethernet network. The MB52XX Series are standard Modbus gateways that convert packets between Modbus TCP and Modbus RTU/ASCII protocols.

The MB52XX Series supports 64 simultaneous TCP masters. Overall, 247 Servers are supported (TCP, COM and VCOM). Each RS-232/422/485 serial port can be individually configured for Modbus/RTU or Modbus/ASCII operation with different baud rate, allowing both types of networks to be fully integrated with Modbus/TCP within one package.

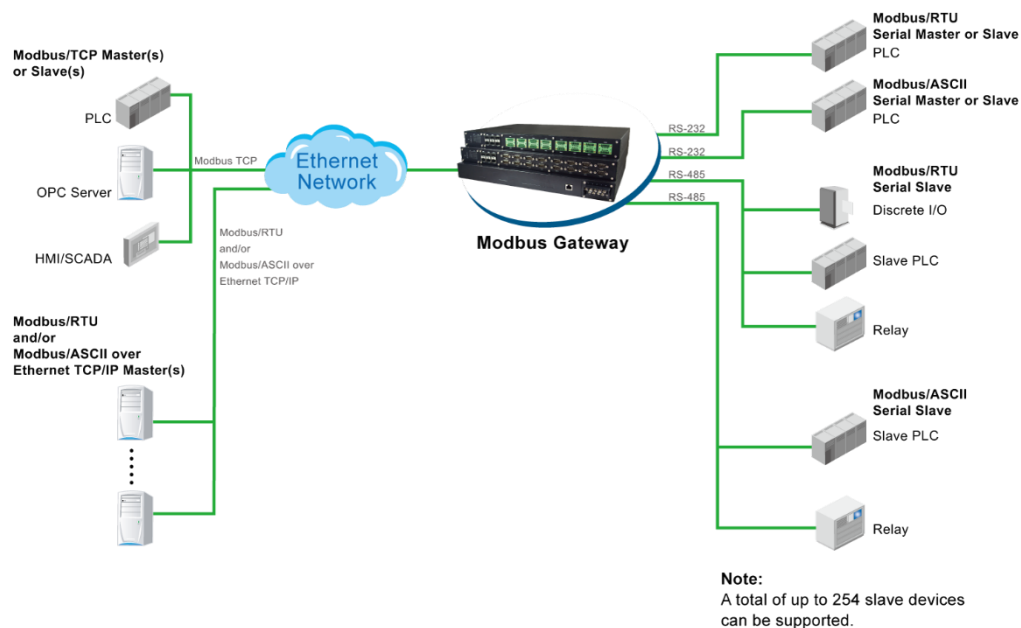


Figure 2.1 Possible Network Configuration of MB52XX Series Modbus Gateway

Figure 2.2 shows three different use cases of the MB52XX Series Modbus Gateway:

- 1) the interface between Modbus RTU/ASCII serial host to Modbus RTU/ASCII serial devices
- 2) the interface between Modbus/TCP over Ethernet network to Modbus RTU/ASCII serial devices
- 3) the interface between Modbus RTU/ASCII host connected through Serial IP over Ethernet (virtual communication port (VCOM)) to Modbus RTU/ASCII serial devices.

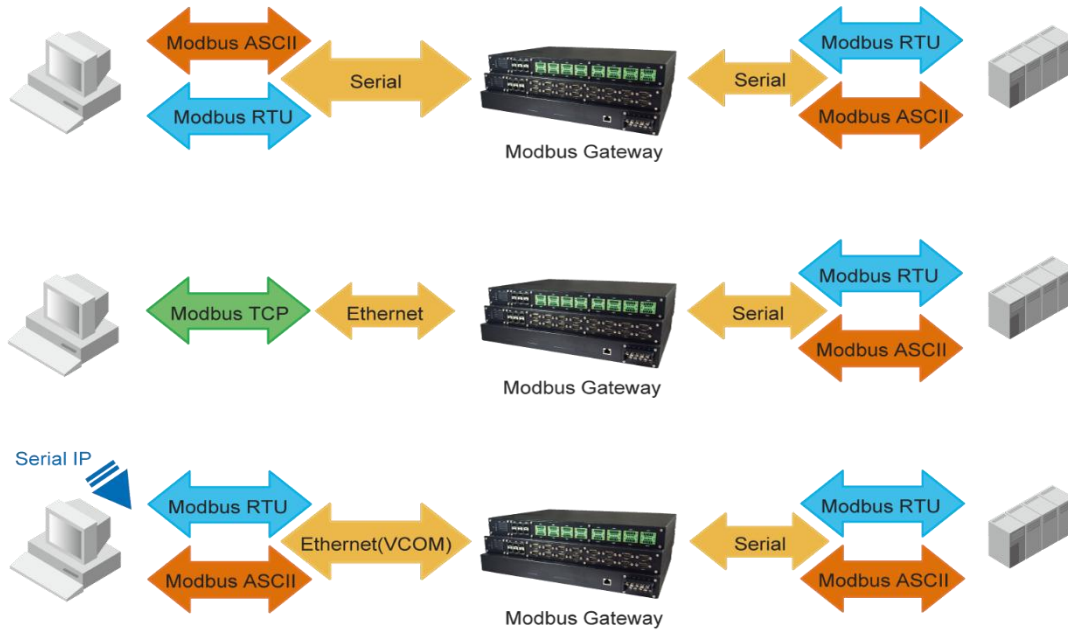


Figure 2.2 Use Cases of the MB52XX Series Modbus Gateway

## Caution

Beginning from here, extreme caution must be exercised.



Never install or work with electricity or cabling during periods of lightning activity. Never connect or disconnect power when hazardous gases are present.



Warning: HOT!

**WARNING:** Disconnect the power and allow unit to cool for 5 minutes before touching.

## 3 Getting Started

### 3.1 Packing List

Inside the purchased package, you will find the following items.

Table 3.1 Packing List

| Item           | Quantity | Description                                                                                                                                                                                                                                                                                                                                       |
|----------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MB52XX         | 1        | Industrial Serial Device Server                                                                                                                                                                                                                                                                                                                   |
| Mounting Kit   | 1        | Wall-mounting screws (DIN-rail kit is optional)                                                                                                                                                                                                                                                                                                   |
| Terminal Block |          | Power Supply: <ul style="list-style-type: none"> <li>TB3 x 1: 3-pin 5.08mm Terminal Block</li> </ul> Serial ports: Terminal block is included only on –TB or –SiS models <ul style="list-style-type: none"> <li>TB5 x 1: 5-pin 5.08mm lockable Terminal Block (MB5201)</li> <li>TB5 x 2: 5-pin 5.08mm lockable Terminal Block (MB5202)</li> </ul> |
| Documentation  | 1        | Hardware Installation Guide (Warranty card is included)                                                                                                                                                                                                                                                                                           |

Note:

- Notify your sales representative immediately if any of the above items is missing or damaged upon delivery.
- Atop's utility software Device View© and Serial Manager© are obsolete and replaced by Device Management Utility®.

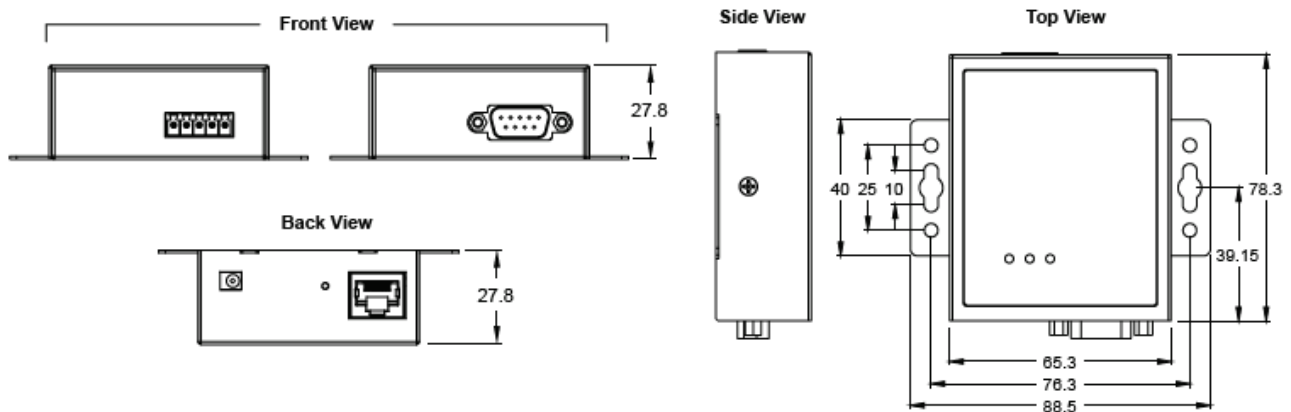
Table 3.2 Description of Optional Accessories

| Optional Accessories |                 |                                                                                            |
|----------------------|-----------------|--------------------------------------------------------------------------------------------|
| Model Name           | Part Number     | Description                                                                                |
| DK-25                | 30200000000022G | Plastic DIN Rail Kit                                                                       |
| ADP-DB9(F)-TB5       | 59906231G       | Female DB9 to Female 3.81mm, a TB5 Converter                                               |
| UN315-1212(US-Y)     | 50500151120003G | Y-Type power adaptor, 100~240VAC input, 1.25A @ 12VDC output, US plug, LV6                 |
| UNE315-1212(EU-Y)    | 50500151120013G | Y-Type power adaptor, 100~240VAC input, 1.25A @ 12VDC output, EU plug, LV6                 |
| UV305-0510(US-DC)    | 50500051500003G | DC jack (3.5/1.35/7.5 mm) power adapter, 100~240VAC input, 1.0A@ 5VDC output, US plug, LV6 |
| UVE305-0510(EU-DC)   | 50500051500013G | DC jack (3.5/1.35/7.5 mm) power adapter, 100~240VAC input, 1.0A@ 5VDC output, EU plug, LV6 |
| UVE305-0510(UK-DC)   | 50500051500023G | DC jack (3.5/1.35/7.5 mm) power adapter, 100~240VAC input, 1.0A@ 5VDC output, UK plug, LV6 |

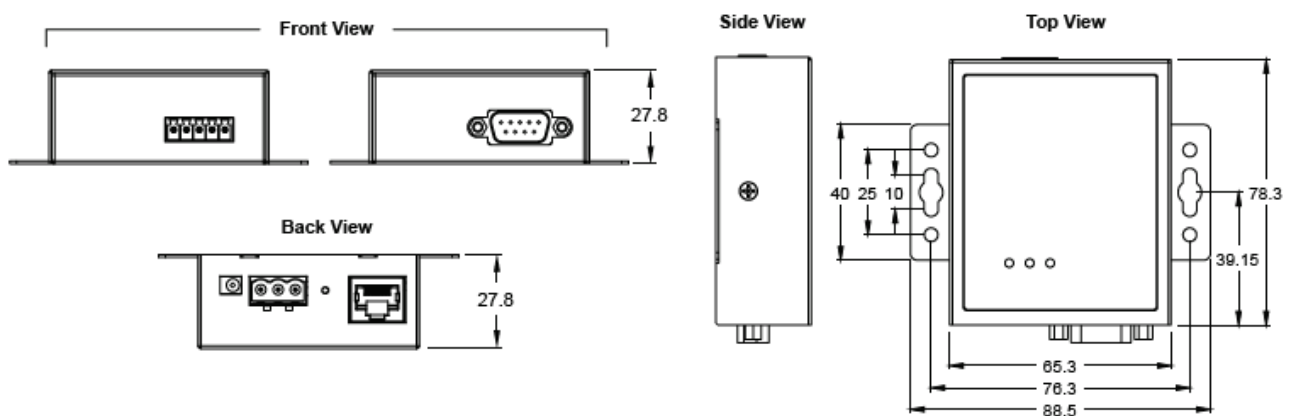
### 3.2 Appearance, Front and Rear Panels

The following figures show particular MB520X series device's front, back, side and top panels.

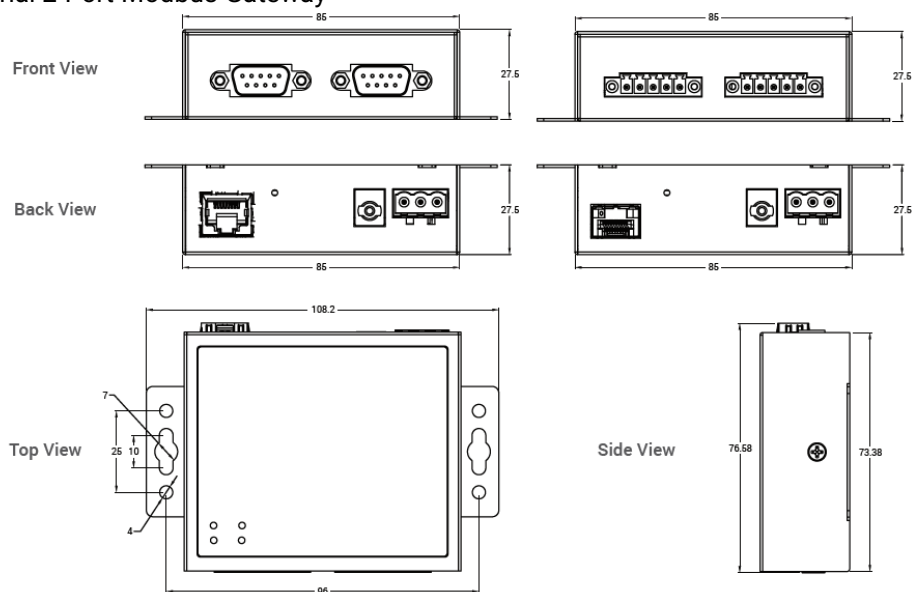
MB5201C – Entry-Level Semi-Industrial Modbus Gateway



MB5201 – Industrial 1-Port Modbus Gateway



MB5202 – Industrial 2-Port Modbus Gateway



---

### **3.3     *First Time Installation***

---

Before installing the device, please follow strictly all safety procedures described in the Hardware installation guide supplied inside the product. Atop will not be liable for any damages to property or personal injuries resulting from the installation or overall use of the device. Do not attempt to manipulate the product in any way if unsure of the steps described there. In such cases, please contact your dealer immediately.

Specific installation instructions are not provided in this manual since they may differ considerably based on the hardware purchased.

## 3.4 Factory Default Settings

### 3.4.1 Network Default Settings

The MB520X Industrial Modbus Gateway is equipped with one LAN interface with one default IP address. Its default network parameters are listed in Table 3.3.

Table 3.3 Network Default Setting

| Interface | Device IP   | Subnet Mask | Gateway IP | DNS     |
|-----------|-------------|-------------|------------|---------|
| LAN1      | 10.0.50.100 | 255.255.0.0 | 10.0.0.254 | 0.0.0.0 |

### 3.4.2 Modbus Default Settings

The MB52XX Modbus Gateway comes with the following default Modbus settings.

Table 3.4 Modbus Default Settings

| Parameter                                                             | Default Values                                                                                                                     |
|-----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>Modbus Master</b>                                                  |                                                                                                                                    |
| TCP Settings                                                          | TCP Master Mode: TCP Master<br>Port: 502                                                                                           |
| <b>Modbus Slave</b>                                                   |                                                                                                                                    |
| <ul style="list-style-type: none"><li>MB5201</li><li>MB5202</li></ul> | Mode: RTU Slave<br>Serial Configuration: RS-232, 9600 bps, 8 data bits, No parity bit, 1 stop bit, No Flow Control, Buffer Disable |

Other default settings are shown in the following table.

Table 3.5 Other Default Settings

| Parameter           | Default Values      |
|---------------------|---------------------|
| <b>Security</b>     |                     |
| User Name           | admin               |
| Password            | default             |
| <b>SNMP</b>         |                     |
| SysName of SNMP     | atop                |
| SysLocation of SNMP | Location            |
| SysContact of SNMP  | Contact             |
| SNMP                | Disable (Unchecked) |
| Read Community      | Public              |
| Write Community     | Private             |
| SNMP Trap Server    | 0.0.0.0             |

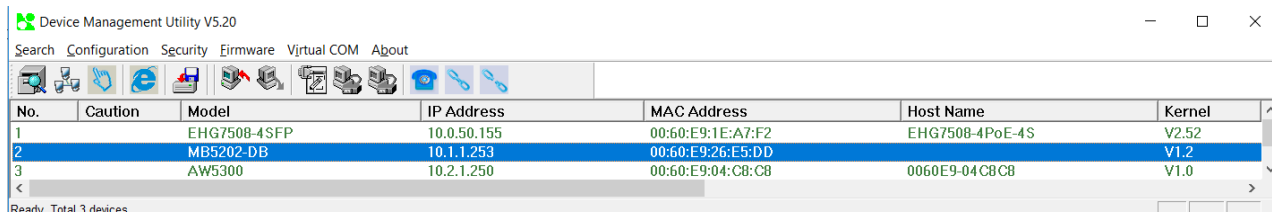
Note: Press the “Reset” button on the front panel for 5 seconds (see Section 4.9.8 and Section 4.10), to restore the MB52XX Series Modbus Gateway to the factory default settings.

## 4 Configuration and Setup

It is strongly recommended for the user to set the Network Parameters through **Device Management Utility**® first. Other device-specific configurations can later be carried out via Atop's user-friendly Web-Interface.

### 4.1 Configuration of Network Parameters through Device Management Utility

First, please install Atop's configuration utility program called **Device Management Utility**® that comes with the Product CD or can be downloaded from our website [www.atoponline.com](http://www.atoponline.com). For more information on how to install **Device Management Utility**®, please refer to the manual that comes in the Product CD. After you start **Device Management Utility**®, if the Modbus Gateway is already connected to the same subnet as your PC, the device can be accessed via broadcast packets. **Device Management Utility**® will automatically detect your Modbus Gateway and list it on **Device Management Utility**®'s window. Alternatively, if you did not see your Modbus Gateway on your network, press "Rescan" icon, a list of devices, including your Modbus Gateway device currently connected to the network will be shown in the window of **Device Management Utility**® as shown in Figure 4.1.



| No. | Caution | Model        | IP Address  | MAC Address       | Host Name       | Kernel |
|-----|---------|--------------|-------------|-------------------|-----------------|--------|
| 1   |         | EHG7508-4SFP | 10.0.50.155 | 00:60:E9:1E:A7:F2 | EHG7508-4PoE-4S | V2.52  |
| 2   |         | MB5202-DB    | 10.1.1.253  | 00:60:E9:26:E5:DD |                 | V1.2   |
| 3   |         | AW5300       | 10.2.1.250  | 00:60:E9:04:C8:C8 | 0060E9-04C8C8   | V1.0   |

Figure 4.1 List of Device in Device Management Utility

**Note:** This figure is for illustration purpose only. Actual values/settings may vary between devices. Sometime the Modbus Gateway device might not be in the same subnet as your PC; therefore, you will have to use Atop's utility to locate it in your virtual environment. To configure each device, first click to select the desired Modbus Gateway device (default IP: 10.0.50.100) in the list of **Device Management Utility**®, and then click "**Configuration** → **Network...**" (or Ctrl+N) menu on **Device Management Utility**® as shown in Figure 4.2 or click on the second icon called **Network** on the menu icon bar, and a pop-up window will appear as shown in Figure 4.3.

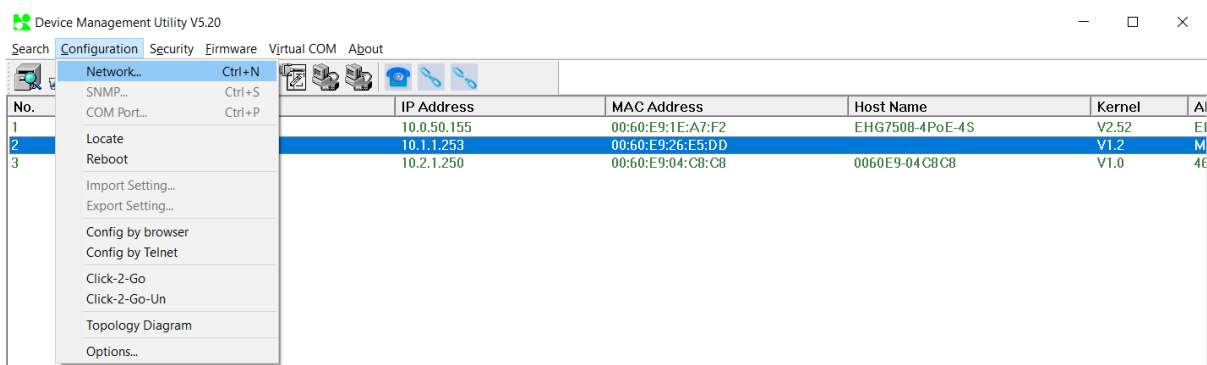
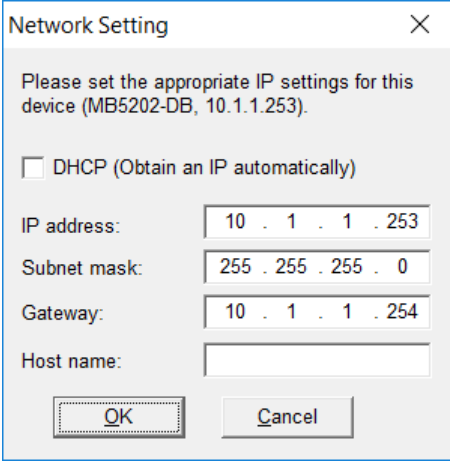


Figure 4.2 Pull-down Menu of Configuration and Network...

A dialog box titled "Network Setting" with a close button (X) in the top right corner. The text inside says "Please set the appropriate IP settings for this device (MB5202-DB, 10.1.1.253)." Below this is a checkbox labeled "DHCP (Obtain an IP automatically)" which is currently unchecked. There are four input fields: "IP address:" with the value "10 . 1 . 1 . 253", "Subnet mask:" with the value "255 . 255 . 255 . 0", "Gateway:" with the value "10 . 1 . 1 . 254", and "Host name:" which is empty. At the bottom are "OK" and "Cancel" buttons.

Network Setting

Please set the appropriate IP settings for this device (MB5202-DB, 10.1.1.253).

☐ DHCP (Obtain an IP automatically)

IP address: 10 . 1 . 1 . 253

Subnet mask: 255 . 255 . 255 . 0

Gateway: 10 . 1 . 1 . 254

Host name:

OK Cancel

Figure 4.3 Pop-up Window of Network Setting

You may proceed then to change the IP address to avoid any IP address conflict with other hosts on your LAN or to connect the device to your existing LAN as shown in Figure 4.3. The system will prompt you for a credential to authorize the changes. It will ask you for the **Username** and the **Password**. The default username is "**admin**", while the default password "**default**". After clicking on the **Authorize** button, a notification window will pop-up as shown in Figure 4.4 and some device may be restarted. After the device is restarted (for some model), it will beep twice to indicate that the unit is running normally. Then, the Modbus Gateway can be found on a new IP address. It may be listed automatically by the **Device Management Utility**® or it can be found by clicking on the "**Rescan**" icon.

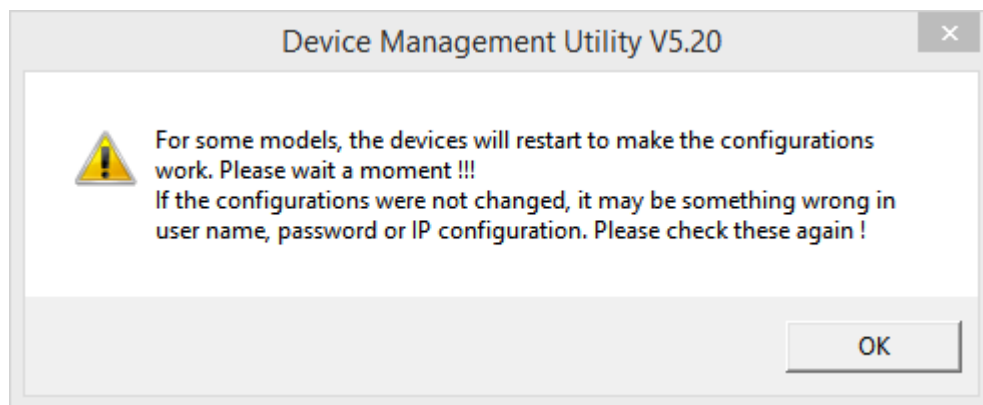


Figure 4.4 Pop-up Notification Window after Authorization

Please consult your system administrator if you do not know your network's subnet mask and gateway address.

## 4.2 Configuring through Web Interface

Every MB52XX Modbus Gateway device is equipped with a built-in web server in the firmware. Therefore, the device can be accessed by using a web browser for configuring by entering the device's IP address (default IP address is 10.0.50.100) in the URL field of your web browser. Figure 4.5 illustrates the overview page of the web interface. Please see Section 0 for default values.


[Overview](#)
[Network](#)

- [Basic Settings](#)
- [Advanced Settings](#)
- [Alert](#)
- [System](#)
- [Restart](#)

### OverView

The general device information of Modbus Gateway.

|                     |           |      |                   |
|---------------------|-----------|------|-------------------|
| Model Name          | MB5202-DB |      |                   |
| Device Information  | Kernel    | 1.02 |                   |
|                     | AP        | 1.02 |                   |
| Network Information | LAN 1     | MAC  | 00:60:E9:28:E5:DD |
|                     |           | IP   | 10.1.1.253        |

Figure 4.5 Overview Web Page of Modbus Gateway

[Overview](#)
[Network](#)

- [Basic Settings](#)
  - [COM Settings](#)
  - [VCOM Settings](#)
  - [TCP Settings](#)
  - [Slave ID Map](#)
- [Advanced Settings](#)
  - [SNMP Settings](#)
  - [Modbus](#)
- [Alert](#)
  - [SMTP Settings](#)
  - [Alert Events](#)
- [System](#)
  - [Log Settings](#)
  - [System Log](#)
  - [Data Log](#)
  - [Modbus Statistic](#)
  - [Time](#)
  - [Security](#)
  - [Import/Export](#)
  - [Factory Default](#)
- [Restart](#)

Figure 4.6 Map of Configuring Web Page on Modbus Gateway

This approach for configuring your device is the most user-friendly. It is the most recommended and the most common method used for MB52XX Series Modbus Gateway. Please go to its corresponding section for a detailed explanation.

---

### 4.3 Configuring Automatic IP Assignment with DHCP

---

A DHCP server can automatically assign IP addresses, Subnet Mask and Network Gateway interface. You can simply check the “**DHCP (Obtain an IP Automatically)**” checkbox in the Network Setting dialog as shown in Figure 4.3 using Atop’s **Device Management Utility**© and then restart the device. Once restarted, the IP address will be configured automatically.

---

### 4.4 Web Overview

---

In this section, current information on the device’s status and settings will be displayed. An example of MB5202-TB overview page is shown in Figure 4.7.

The general device information of Modbus Gateway.

|                     |           |      |                   |
|---------------------|-----------|------|-------------------|
| Model Name          | MB5202-DB |      |                   |
| Device Information  | Kernel    | 1.02 |                   |
|                     | AP        | 1.02 |                   |
| Network Information | LAN 1     | MAC  | 00:60:E9:26:E5:DD |
|                     |           | IP   | 10.1.1.253        |

Figure 4.7 Overview Web Page

In detail, the following information is given:

- **Model Name**, as its name implies, shows the device’s model
- **Device Information** displays information on the Kernel version as well as the AP version of your Modbus Gateway device.
- **Network Information** shows MAC and IP addresses for the LAN port.

## 4.5 Network Configuration

In this section, **IP address**, **Subnet Mask**, **Default (Network) Gateway**, **Domain Name System (DNS)** and overall connectivity settings of Modbus Gateway device can be accessed as shown in Figure 4.8. For the LAN Interface Settings, you can check the corresponding **DHCP** box to obtain an **IP address**, **Subnet Mask**, and **Default (Network) Gateway** automatically.

### Network

To configure network settings of Modbus Gateway. After saving configuration you have to restart the device to make the settings effective.

| LAN 1 Settings  |                                                     |     |     |     |
|-----------------|-----------------------------------------------------|-----|-----|-----|
| DHCP            | <input type="checkbox"/> Obtain an IP automatically |     |     |     |
| IP Address      | 10                                                  | 1   | 1   | 253 |
| Subnet Mask     | 255                                                 | 255 | 255 | 0   |
| Default Gateway | 10                                                  | 1   | 1   | 254 |

| DNS Settings |   |   |   |   |
|--------------|---|---|---|---|
| DNS 1        | 0 | 0 | 0 | 0 |
| DNS 2        | 0 | 0 | 0 | 0 |

Save Configuration

Figure 4.8 Network Web Page

At the lowest box in Figure 4.8, you will have the **DNS Settings** box which allows you to set the **IP addresses** of Domain Name Server 1 (**DNS 1**) and Domain Name Server 2 (**DNS 2**) for redundancy. If the device is connected to the Internet and should connect to other servers over the Internet to get some services such as Network Time Protocol (NTP) server, the user will need to configure the DNS server in order to be able to resolve the host name of the NTP server. Please consult your network administrator or internet service provider (ISP) to obtain local DNS's IP addresses.

## 4.6 Basic Settings

In this section, the term “**Modbus Gateway device**” will be used to refer to the **MB52XX series** and the term “**serial device**” to refer to any Modbus device that connect to Modbus Gateway via COM, VCOM, or TCP connections. In any Modbus network, there are two types of Modbus devices: Modbus Master and Modbus Slave. The Modbus Master will send a request message to a Modbus Slave. Then, the Modbus Slave will respond to the Modbus Master’s request. A Modbus device (serial device) that is connected to the MB52XX series Modbus Gateway device will either assume a role of Modbus Master or Modbus Slave. The basic settings in this section will address how to configure the role of the serial device in your Modbus Gateway device and its serial communication parameters. The term “**Operation Mode**” will be used to refer to the combination of role (Master or Slave) and the message or data transfer types (RTU/ASCII/TCP) of the Modbus protocol used by the serial device.

### 4.6.1 COM Settings

This section shows how to set up the physical ports of the Modbus Gateway device (COM ports or serial ports that serial devices are connected to). The available number of COM ports may vary according to the chosen Modbus Gateway model. Figure 4.9 shows the COM Settings web page in which COM1 port is shown with its **Operation Mode** under **Modbus Setting** and **Serial Configuration** settings. These settings will configure the role of the serial device through the **Operation Mode** and the serial communication parameters of that serial device through the **Serial Configuration** settings.

To configure COM 1 port parameters.

| Modbus Setting                                     |                                                                                                                                                   |
|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation Mode                                     | RTU Slave <span style="font-size: 0.8em;">▼</span>                                                                                                |
| Serial Configuration                               |                                                                                                                                                   |
| Interface                                          | <input checked="" type="radio"/> RS232 <input type="radio"/> RS422 <input type="radio"/> RS485(2-Wire)                                            |
| Baud Rate                                          | <div style="border: 1px solid black; padding: 2px; display: inline-block;">9600</div> <span style="font-size: 0.8em;"> bps</span>                 |
| Parity                                             | <input checked="" type="radio"/> None <input type="radio"/> Odd <input type="radio"/> Even <input type="radio"/> Mark <input type="radio"/> Space |
| Data Bits                                          | <input type="radio"/> 7 bits <input checked="" type="radio"/> 8 bits                                                                              |
| Stop Bits                                          | <input checked="" type="radio"/> 1 bit <input type="radio"/> 2 bits                                                                               |
| Flow Control                                       | <input checked="" type="radio"/> None <input type="radio"/> Xon/Xoff <input type="radio"/> RTS/CTS                                                |
| <input type="checkbox"/> Apply To All Serial Ports |                                                                                                                                                   |

Save Configuration

| COM Number | Operation Mode | Interface | Baud Rate | Parity | Data Bits | Stop Bits | Flow Control |
|------------|----------------|-----------|-----------|--------|-----------|-----------|--------------|
| 01         | RTU Slave      | RS232     | 9600      | None   | 8         | 1         | None         |
| 02         | RTU Slave      | RS232     | 9600      | None   | 8         | 1         | None         |

Figure 4.9 COM Settings Web Page

#### 4.6.2 Operation Mode

To set the **Operation Mode** of the serial device that is connected to the Modbus Gateway through a COM port, use the pull-down menu to select among the following modes under **Modbus Setting**.

- **RTU Slave:** The serial device is working as a Modbus Slave node: the serial device will wait, accept request from, and response to its Modbus Master node. Data transfer is done in RTU format.
- **RTU Master:** The serial device is working as a Modbus Master node: the serial device will issue commands to or query Modbus slave nodes. Data transfer is done in RTU format.
- **ASCII Slave:** The serial device is working as a Modbus Slave node: the serial device will wait, accept request from, and response to its Modbus Master node. Data transfer is done in ASCII format.
- **ASCII Master:** The serial device is working as a Modbus Master node: the serial device will issue commands to or query Modbus Slave nodes. Data transfer is done in ASCII format.

#### 4.6.3 Serial Settings

This section summarizes the options of serial communication parameters used between the serial device and the Modbus Gateway device over the selected COM port.

- RS-232/RS-422/RS-485 (2-wire) Software Selectable
- Baud-rate: 1200 bps ~ 921600 bps Software Selectable
- Parity: None, Odd, Even, Mark, or Space
- Data Bits: 7 or 8
- Stop Bits: 1 or 2
- Flow Control: None, Software Xon/Xoff, Hardware RTS/CTS
- Receiver Resistor: On or Off

**Apply to all Serial Ports** (check box): The settings can be chosen to apply to all serial ports if needed by checking the last checkbox on the options.

After finish the **COM Settings** configuration, click the **Save Configuration** button to save all changes that have been made. A **Save Successfully** message will show up as shown in Figure 4.10 and after a short period of time the web browser will be redirected back to **COM Settings** page (Figure 4.9).



Figure 4.10 Save Successfully Message

#### 4.6.4 VCOM Settings

These settings will generate a virtual Serial (VCOM) port within the Modbus Gateway device based on a TCP network connection. VCOM is a **TCP connection** which is encoded in an Atop Technologies' exclusive private protocol. MB52XX series Modbus Gateway can only run as a TCP server which will be waiting for a connection request from a TCP client (a serial device).

Figure 4.11 shows the page of VCOM Settings in which the VCOM number 1 is set as an RTU Slave. This means that a device that is connected to this VCOM port on the Modbus Gateway will be a Modbus Slave node and communicate with a Modbus Master node using Modbus/RTU protocol. It is an interface concept that allows Modbus Slave devices to be connected via TCP connection by using VCOM from a PC (for example). If a VCOM setting is needed, proceed to select **Basic Settings** → **VCOM Settings** and check the VCOM's **"Enable"** box to allow configuration on the selected TCP's port of the Modbus Gateway device.

- **VCOM Port:** Using a TCP connection, the Modbus Gateway device (TCP server) listens to any TCP Clients (VCOM Clients) connecting (using Serial-IP) to its ports. The VCOM Port or the port of the TCP connection can be configured as a number between 1 and 65535. The default VCOM Port number is 4660.

**Note:** For Windows operating system, a Serial/IP software is required to use this feature. A restrictive **Serial/IP Redirector** software is installed along with Atop's **Device Management Utility**®. The user can access the Serial/IP software through **Virtual COM → Serial/IP Tools** menu.

### Basic Settings > VCOM Settings

To configure VCOM 1 parameters.

|                                             |                                                           |
|---------------------------------------------|-----------------------------------------------------------|
| VCOM                                        | <input type="checkbox"/> Enable                           |
| VCOM Port                                   | <input type="text" value="4660"/> (1~65535, default=4660) |
| VCOM Mode                                   | <span>RTU Slave</span> ▼                                  |
| VCOM Inactivity Time Out                    | <input type="text" value="0"/> (0~36000 seconds)          |
| <input type="checkbox"/> Apply to All VCOMs |                                                           |

Save Configuration

Figure 4.11 VCOM Settings Web Page

- **VCOM Mode:** This setting is a pull-down menu in which the user can select the **Operation Mode** of the devices connected through this VCOM port as shown in Figure 4.12. Its definition is the same to the one given in Section 4.6.2. Here the user can choose whether device conforms to a RTU or an ASCII message format and can select whether the device is either Modbus Slave node or Modbus Master Node. Figure 4.11 depicts the **RTU Slave** mode. So, the devices connected through VCOM 1 port will assume Modbus Slave role and communicate using Modbus/RTU protocol. If a Master mode (either RTU or ASCII) is selected, the options for the Master mode will be the same as the Slave mode. The only difference is the device's function.

|                                             |                                                           |
|---------------------------------------------|-----------------------------------------------------------|
| VCOM                                        | <input type="checkbox"/> Enable                           |
| VCOM Port                                   | <input type="text" value="4660"/> (1~65535, default=4660) |
| VCOM Mode                                   | <span>RTU Slave</span> ▼                                  |
| VCOM Inactivity Time Out                    | <input type="text" value="0"/> (0~36000 seconds)          |
| <input type="checkbox"/> Apply to All VCOMs |                                                           |

Save Configuration

Figure 4.12 Pull-down Menu of VCOM Mode

- **VCOM inactivity Time Out:** This is a period of time allowed between actions. This setting can be set with a maximum of 600 minutes (36000 seconds) or 10 hours. If there is no activity within this period, the VCOM connection (TCP connection) will be automatically closed by the Modbus Gateway.

These settings can be applied to All VCOMs if needed by checking the last checkbox on the options. Figure 4.13 highlights the checkbox for applying the settings to all VCOMs.

### Basic Settings > VCOM Settings

To configure VCOM  parameters.

|                                                        |                                                           |
|--------------------------------------------------------|-----------------------------------------------------------|
| VCOM                                                   | <input checked="" type="checkbox"/> Enable                |
| VCOM Port                                              | <input type="text" value="4660"/> (1~65535, default=4660) |
| VCOM Mode                                              | <input type="text" value="RTU Slave"/>                    |
| VCOM Inactivity Time Out                               | <input type="text" value="0"/> (0~36000 seconds)          |
| <input checked="" type="checkbox"/> Apply to All VComs |                                                           |

Save Configuration

Figure 4.13 Check Box for Applying the Settings to All VCOMSs

After finishing configuring the **VCOM Settings**, click on **Save Configuration** button to save all changes that have been made. A **Save Successfully** message will show up, then the web browser will be redirected back to the **VCOM Settings** page.

#### 4.6.5 TCP Settings

A device using Modbus/TCP connection, which communicates over the internet, can be set in this section. If a Modbus/TCP connection is needed, navigate to **Basic Settings** → **TCP Settings**, then choose whether or not to enable TCP by checking on the “**Enable**” check box. Figure 4.14 shows the Modbus TCP Settings page in which a device connected to this Modbus Gateway device is chosen to be run in **TCP Slave Operation Mode**. The device will take the Modbus Slave role and communicate using Modbus/TCP protocol.

##### Basic Settings > TCP Settings

To configure TCP 1 parameters.

| Add New Modbus TCP                                                                                      |                                                                                                                                                                                                                                                                       |  |  |  |  |
|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| TCP                                                                                                     | <input checked="" type="checkbox"/> Enable                                                                                                                                                                                                                            |  |  |  |  |
| Operation Mode                                                                                          | <input checked="" type="radio"/> TCP Slave <input type="radio"/> TCP Master                                                                                                                                                                                           |  |  |  |  |
| Remote IP Address                                                                                       | <div style="display: flex; justify-content: space-between; width: 100%;"> <span><input type="text" value="192"/></span> <span><input type="text" value="168"/></span> <span><input type="text" value="4"/></span> <span><input type="text" value="60"/></span> </div> |  |  |  |  |
| TCP Port                                                                                                | <input type="text" value="504"/> (1~65535, default=502)                                                                                                                                                                                                               |  |  |  |  |
| TCP Inactivity Time Out                                                                                 | <input type="text" value="0"/> (0~36000 seconds)                                                                                                                                                                                                                      |  |  |  |  |
| <div style="border: 1px solid #ccc; padding: 5px 15px; display: inline-block;">Save Configuration</div> |                                                                                                                                                                                                                                                                       |  |  |  |  |

|                          | TCP No. | Operation Mode | Remote IP Address | TCP Port | Inactivity Time Out |
|--------------------------|---------|----------------|-------------------|----------|---------------------|
| <input type="checkbox"/> | 01      | TCP Slave      | 192.168.4.60      | 504      | 0 seconds           |
| <input type="checkbox"/> | 16      | TCP Master     |                   | 502      | 0 seconds           |

Remove

Figure 4.14 Modbus TCP Settings Web Page with TCP Slave Mode

- **Operation Mode:** There are two radio buttons in this setting: TCP Slave and TCP Master. When running on TCP Slave mode (the TCP Slave radio button is checked) as shown in Figure 4.14, the device will wait to receive Modbus requests from a Modbus Master. The data transmission is done under a Modbus/TCP protocol format. This means that the device will operate as a TCP Server that opens its TCP port to accept connections. The TCP Master option will be described at the end of this section.
- **Remote IP Address:** This setting shows the IP address of the device which is a Modbus slave node. This address refers to the IP address that belongs to the device that is going to be controlled from the MB52XX Series Modbus Gateway device. This device can also be considered as a TCP server of whom it is needed to know its IP address. This option will disappear when the operation mode as TCP Master is selected, because in that mode the device will be running as a TCP Client which does not require to publish its IP address.
- **TCP Port:** This setting shows the TCP port number of the device (or Modbus Slave node in Figure 4.14) which can be a number in between 1 and 65535. The default port number is 502.
- **TCP inactivity Time Out:** A time out period, which is the maximum period of time allowed between actions, can be set as well. This setting has a maximum duration of 600 minutes (36000 seconds) or 10 hours. If no activity has occurred within this period, the Modbus/TCP connection will be automatically terminated by the Modbus Gateway.

At the end of the **TCP Settings** page shown in Figure 4.14, a list of all configured Modbus/TCP connections with TCP No., Operation Mode, Remote IP Address, TCP Port and TCP Inactivity Time Out information will appear. The user will have the ability to remove any Modbus/TCP connection settings by checking on box in front of the record

of the desired TCP settings and clicking on the **Remove** button. To remove all TCP connections, simply check the box on the header row of the list to select all items and click remove.

Alternatively, the Modbus/TCP connection can be configured to run in **TCP Master Operation Mode**. This means that the device will be a Modbus Master node and communicate using Modbus/TCP protocol. Figure 4.15 shows the TCP Master Settings. When **TCP Master Operation Mode** is selected, the **Remote IP address** setting will disappear because the device will be running as a TCP Client. Next, the **TCP Port** is the port through which the signal is going to be relayed upon by the Modbus Gateway. Once again, there is a **TCP Inactivity Time Out** with the same maximum value of 10 hours as stated in the previous mode.

Basic Settings > TCP Settings

To configure TCP 

16

 parameters.

| Add New Modbus TCP      |                                                                             |
|-------------------------|-----------------------------------------------------------------------------|
| TCP                     | <input checked="" type="checkbox"/> Enable                                  |
| Operation Mode          | <input type="radio"/> TCP Slave <input checked="" type="radio"/> TCP Master |
| TCP Port                | <div>502</div> (1~65535, default=502)                                       |
| TCP Inactivity Time Out | <div>0</div> (0~36000 seconds)                                              |

Save Configuration

☐

TCP No.

Operation Mode

Remote IP Address

TCP Port

Inactivity Time Out

☐

16

TCP Master

502

0 seconds

Remove

Figure 4.15 Modbus TCP Setting Page with TCP Master Operation Mode Selection

After **TCP Settings** configuration is finished, click on **Save Configuration** button to save all changes that have been made. A **Save Successfully** message will show up, and the web browser will be redirected back to the **TCP Settings** page.

#### 4.6.6 Slave ID Map

The system uses the Modbus ID to route Modbus' request commands from a Modbus master node to the related Modbus Slave node. It is important to define ID mapping for each Modbus Slave node. For every Modbus Slave node, there should be a correct Virtual ID (Alias ID) and Real ID defined in the mapping. Figure 4.16 shows the Slave ID Map settings. To configure Slave 2's parameters, check the **Enable** box to enable Slave. Then, select the corresponding Slave interface.

- **Slave Interface:** When a port is set to Modbus slave mode, a slave interface will be created. Select a radio button of a port number behind the **Slave Interface**, which can be any one of the listed **COM/VCOM/TCP ports**.
- **Slave ID Setting Mode:** Next, select the mapping between real slave ID and Virtual ID to modify the slave ID setting as needed.
  - **Slave ID Virtual** maps a virtual ID to a real ID by the **Slave ID Count**. Figure 4.16 depicts Slave ID settings of COM02 to have real slave ID from 1 to 16 mapped from virtual ID 17 to 32.
    - **Slave ID Virtual** refers to a Virtual ID for the reading Master node.
    - **Slave ID Real** is the starting real ID within this interface (COM02 in Figure 4.16).
    - **Slave ID Count** is the number of slave devices in this interface that are mapped.

##### Basic Settings > Slave ID Map

To configure Slave  parameters.

| Slave ID Settings                                 |                                                                        |            |        |                                 |
|---------------------------------------------------|------------------------------------------------------------------------|------------|--------|---------------------------------|
| Slave                                             | <input checked="" type="checkbox"/> Enable                             |            |        |                                 |
| Slave Interface                                   | COM <input type="radio"/> COM01 <input checked="" type="radio"/> COM02 |            |        |                                 |
|                                                   | Slave ID Virtual: <input type="text" value="17"/>                      |            |        |                                 |
| Slave ID Setting                                  | Slave ID Real: <input type="text" value="1"/>                          |            |        |                                 |
|                                                   | Slave ID Count: <input type="text" value="16"/>                        |            |        |                                 |
| <input type="button" value="Save Configuration"/> |                                                                        |            |        |                                 |
| <input type="checkbox"/>                          | Entry No.                                                              | Protocol   | Source | Slave ID Range (Virtual<->Real) |
| <input type="checkbox"/>                          | 01                                                                     | Modbus/RTU | COM1   | 001 - 016 <-> 001 - 016         |
| <input type="checkbox"/>                          | 02                                                                     | Modbus/RTU | COM2   | 017 - 032 <-> 001 - 016         |
| <input type="button" value="Remove"/>             |                                                                        |            |        |                                 |

Figure 4.16 Slave ID Map Page with Slave ID Setting in Alias Mode

**Note:** Master and Slave IDs can be set on COM, VCOM, and TCP. However, COM works only with serial ports while TCP and VCOM operate via Ethernet ports.

After finishing configuring the **Slave ID Settings**, click the **Save Configuration** button to save all changes that have been made. A **Save Successfully** message will show up, then the web browser will be redirected back to the **Slave ID Settings** page.

Below the **Slave ID Settings** box, there is a list of mapping entries as shown in Figure 4.17 in which each line will summarize an **Entry No.**, a Modbus **Protocol**, a **Source**, a Slave ID Setting **Mode**, and the **Slave ID Range (Virtual <-> Real)**. Check the box in front of each entry to select that entry. Then, click **Remove** button to remove that particular entry from the **Slave ID Map**. To remove all entries, check on the box in front of the header line and click **Remove** button.

|                          |           |            |        |                                 |
|--------------------------|-----------|------------|--------|---------------------------------|
| <input type="checkbox"/> | Entry No. | Protocol   | Source | Slave ID Range (Virtual<->Real) |
| <input type="checkbox"/> | 01        | Modbus/RTU | COM1   | 001 - 016 <-> 001 - 016         |
| <hr/>                    |           |            |        |                                 |
| <input type="checkbox"/> | 02        | Modbus/RTU | COM2   | 017 - 032 <-> 001 - 016         |

Figure 4.17 Slave ID Map Web Page with Slave ID Setting in in Offset Mode

## 4.7 Advanced Settings

### 4.7.1 SNMP Settings

SNMP (Simple Network Management Protocol) Settings determine whether the device settings can be viewed with a standard SNMP software. By default, it is disabled.

Figure 4.19 shows the **SNMP Settings** page with SNMP disabled. The first group of options on this web page is called **Basic Data Objects**:

- **System Contact** is the device administrator's contact information. The default value is "contact".
- **System Name**, which is by default, is the MAC address of the Modbus Gateway. The default value is "atop".
- **System Location** is the device's physical location. The default value is "location".

#### Advanced Settings > SNMP Settings

The SNMP is used in network management systems to monitor network-attached devices for conditions that warrant administrative attention.

| Basic Data Objects |                                           |
|--------------------|-------------------------------------------|
| System Contact     | <input type="text" value="contact"/>      |
| System Name        | <input type="text" value="atop"/>         |
| System Location    | <input type="text" value="location"/>     |
| SNMP               |                                           |
| SNMP               | <input type="checkbox"/> Enable           |
| SNMP Trap Server   |                                           |
| SNMP Trap Server   | <input type="text" value="10.0.159.109"/> |

Figure 4.18 SNMP Settings Web Page with SNMP disabled

The second group of options is called **SNMP**:

- **SNMP** is followed by a "**Enable**" check box in which to enable the SNMP feature on the Modbus Gateway. If this box is not checked, it means that SNMP is disabled. Then, the rest of the options will be disappeared as shown in Figure 4.18. If the SNMP option is enabled, there can be three different views for SNMP options as shown in Figure 4.19, Figure 4.20, and Figure 4.21.
- **SNMP Version** is a drop-down box which allows the user to choose version of supported SNMP protocol. This can be **v1/v2c** or **v1/v2c/v3** or **Only v3**. Note that if this option is set as v1/v2c/v3, the SNMP options will be shown as in Figure 4.19.
- SNMP v1 and v2c support simple community string based authentication protocol for their security mechanism. If this option is selected as v1/v2c, the SNMP options will be shown as in Figure 4.20.
- SNMP v3 is improved with additional authentication and cryptography security. If this option is selected as Only v3, the SNMP options will be shown as in Figure 4.21.
- **Read Community** is the field that you can specify the **SNMP Read Community String** which is a user ID or plaintext password string for simple authentication in SNMP v1 and v2c. In order to make the SNMP information available for public viewing, simply flag the "**Enable SNMP**" checkbox and fill in your desired password string (the default string is "**public**") in the **Read Community** field.
- **Write Community** is the field that you can specify the **SNMP Write Community String** which is a user ID or plaintext password string for simple authentication in SNMP v1 and v2c. In order to allow a group of people to

change the SNMP information, enter your desired password string (the default string is “**private**”) in the **Write Community** field.

- **User Name** is the user name for SNMP account for SNMP v3.
- **Password** is the password for SNMP account for SNMP v3.
- **Encrypt** is a drop-down box which allows the user to choose the encryption scheme for SNMP v3. The available options are None, DES, or AES. The default is “None”.
- **Encrypt Key** is where you can specify the encryption key for the SNMP v3 access.

The last group of option is **SNMP Trap Server**. In order to allow a trap server to collect device information, fill in **SNMP Trap Server** with its corresponding IP address (a trap server is designed to collect all alarm information from the Modbus Gateway). An example in Figure 4.19 is 10.0.159.109.

After **SNMP Settings** configuration is finished, click the **Save Configuration** button to save all changes that have been made or click **Cancel** button to discard your changes.

### Advanced Settings > SNMP Settings

The SNMP is used in network management systems to monitor network-attached devices for conditions that warrant administrative attention.

| Basic Data Objects |                                            |
|--------------------|--------------------------------------------|
| System Contact     | <input type="text" value="contact"/>       |
| System Name        | <input type="text" value="atop"/>          |
| System Location    | <input type="text" value="location"/>      |
| SNMP               |                                            |
| SNMP               | <input checked="" type="checkbox"/> Enable |
| SNMP Version       | <input type="text" value="v1 / v2c / v3"/> |
| Read Community     | <input type="text" value="public"/>        |
| Write Community    | <input type="text" value="private"/>       |
| User Name          | <input type="text" value="atopatop"/>      |
| Password           | <input type="text" value="12345678"/>      |
| Encrypt            | <input type="text" value="DES"/>           |
| Encrypt Key        | <input type="text" value="87654321"/>      |
| SNMP Trap Server   |                                            |
| SNMP Trap Server   | <input type="text" value="10.0.159.109"/>  |

Figure 4.19 SNMP Settings Web Page with SNMP Enabled and Version v1/v2c/v3

Advanced Settings > SNMP Settings

The SNMP is used in network management systems to monitor network-attached devices for conditions that warrant administrative attention.

| Basic Data Objects |                                            |
|--------------------|--------------------------------------------|
| System Contact     | <input type="text" value="contact"/>       |
| System Name        | <input type="text" value="atop"/>          |
| System Location    | <input type="text" value="location"/>      |
| SNMP               |                                            |
| SNMP               | <input checked="" type="checkbox"/> Enable |
| SNMP Version       | <input type="text" value="v1 / v2c"/>      |
| Read Community     | <input type="text" value="public"/>        |
| Write Community    | <input type="text" value="private"/>       |
| SNMP Trap Server   |                                            |
| SNMP Trap Server   | <input type="text" value="10.0.159.109"/>  |

Figure 4.20 SNMP Settings Web Page with SNMP Enabled and Version v1/v2c

Advanced Settings > SNMP Settings

The SNMP is used in network management systems to monitor network-attached devices for conditions that warrant administrative attention.

| Basic Data Objects |                                            |
|--------------------|--------------------------------------------|
| System Contact     | <input type="text" value="contact"/>       |
| System Name        | <input type="text" value="atop"/>          |
| System Location    | <input type="text" value="location"/>      |
| SNMP               |                                            |
| SNMP               | <input checked="" type="checkbox"/> Enable |
| SNMP Version       | <input type="text" value="Only v3"/>       |
| User Name          | <input type="text" value="atopatop"/>      |
| Password           | <input type="text" value="12345678"/>      |
| Encrypt            | <input type="text" value="DES"/>           |
| Encrypt Key        | <input type="text" value="87654321"/>      |
| SNMP Trap Server   |                                            |
| SNMP Trap Server   | <input type="text" value="10.0.159.109"/>  |

Figure 4.21 SNMP Settings Web Page with SNMP Enabled and Version Only v3

### 4.7.2 Modbus

In **Modbus** settings, it is possible to select whether to enable **Modbus Exception** by flagging the **Enable** checkbox as shown in

Figure 4.22. If the Modbus slave returns no response and timeout occurs, it may then be necessary for the gateway to return an exception. To set **Response Timeout** for COM and TCP/VCOM, fill in the timeout periods in the fields as shown in

Figure 4.22. Note that the timeout setting can be applied to all COM ports by checking the **Apply to All Coms** box.

- Configure timeout for each COM port between 10ms to 120000ms with a default value of 1000ms.
- Configure timeout for TCP/VCOM port between 10ms to 120000ms with a default value of 1000ms.

After finishing the Advanced Modbus Settings configuration, click on the **Save Configuration** button to save all changes that have been made. A **Save Successfully** message will show up, and the web browser will be redirected back to the **Modbus** page.

#### Advanced Settings > Modbus

| Modbus Settings  |                                 |
|------------------|---------------------------------|
| Modbus Exception | <input type="checkbox"/> Enable |

| Response Timeout                           |                                                                |
|--------------------------------------------|----------------------------------------------------------------|
| COM 1 ▾                                    | <input type="text" value="1000"/> (10-120000ms Default:1000ms) |
| <input type="checkbox"/> Apply to All Coms |                                                                |
| TCP/VCOM                                   | <input type="text" value="1000"/> (10-120000ms Default:1000ms) |

Save Configuration

Figure 4.22 Advanced Modbus Settings of Response Timeout for Modbus Exception

## 4.8 Alert

### 4.8.1 Settings

When enabled, an E-mail alert will be sent to the designated E-mail addresses in the **SMTP** (Simple Mail Transfer Protocol) **Settings**. To setup an email alert function, the user needs to configure the **sender's E-mail address**, the **receiver's E-mail addresses** (up to three receivers), and the mail server configuration as shown in Figure 4.23. Under **Mail Server** settings, fill in the IP address or host name of a **Mail Server**. Make sure that the Modbus Gateway device is able to resolve the host name properly. This requires the DNS server to be configured first as explained in Section 0. If a mail server authentication is required, check on the **Mail Server Authentication Required** box and fill in the **User Name** and the **Password** fields.

After configuration of the SMTP Settings is complete, click **Save Configuration** to save all changes that have been made. A **Save Successfully** message will show up, and the web browser will be redirected back to the **SMTP Settings** page. The user can also send a test E-mail from the Modbus Gateway by clicking on the **Send Test Mail** button. A pop-up window will notify the user of the result of test mail. If there is a problem, please re-check the information of **Mail Server**, **User Name** and **Password** or check the network connection to the **Mail Server**.

## Alert > SMTP Settings

To configure the SMTP server where the E-mail notification will be sent.

| E-mail Setting              |                      |
|-----------------------------|----------------------|
| Sender's E-mail Address     | <input type="text"/> |
| Receiver's E-mail Address 1 | <input type="text"/> |
| Receiver's E-mail Address 2 | <input type="text"/> |
| Receiver's E-mail Address 3 | <input type="text"/> |

| Mail Server                                                                                                       |                                               |
|-------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| Mail Server                                                                                                       | <input type="text"/>                          |
| <input type="checkbox"/> Mail Server Authentication Required. <input checked="" type="checkbox"/> Enable TLS/SSL. |                                               |
| User Name                                                                                                         | <input type="text" value="atop@atop.com.tw"/> |
| Password                                                                                                          | <input type="password"/>                      |

Figure 4.23 SMTP Settings Web Page

### 4.8.2 Alert Events

In **Alert Events** settings, the user can configure options to have the Modbus Gateway sending out device information to alert users, administrators, or responsible personnel as shown in Figure 4.24. They can be sent out automatically. There are seven anomalies defined on this page that can trigger alert functions (by checking the corresponding **E-mail** boxes), which are:

- **Cold Start** is an event when power supply is interrupted,
- **Warm Start** is an event when the device Restart function is used either by pressing a button or by its interface,
- **Authentication Fail** is an event when incorrect username and password are entered,
- **IP address change** is an event when the device's IP address is changed,
- **Password Changed** is an event when the authentication password is changed,
- **Watchdog Reset** is an event when the system reboots because of a hardware failure or a software crash,

## Alert > Alert Events

---

To configure the Modbus Gateway to send alert by E-mail or trap.

| Alert Event            |                                 |                               |
|------------------------|---------------------------------|-------------------------------|
| Cold Start             | <input type="checkbox"/> E-mail | <input type="checkbox"/> Trap |
| Warm Start             | <input type="checkbox"/> E-mail | <input type="checkbox"/> Trap |
| Authentication Failure | <input type="checkbox"/> E-mail | <input type="checkbox"/> Trap |
| IP Address Changed     | <input type="checkbox"/> E-mail |                               |
| Password Changed       | <input type="checkbox"/> E-mail |                               |
| Watchdog Reset         | <input type="checkbox"/> E-mail |                               |

Figure 4.24 Alert Events Web Page

The user can also set an SNMP trap by checking the **Trap** checkbox for each of the first three anomalies above. This will send out alerts to an SNMP Trap Server. Note that to configure **SNMP Trap Server** please see Section 4.7.

After the **Alert Events** setting is complete, click on **Save Configuration** button to save all changes that have been made. A **Save Successfully** message will show up, and the web browser will be redirected back to the **Alert Events** page.

---

## 4.9 System

---

### 4.9.1 Log Settings

This section allows the user to change the way to report the Log. The user can save his Log Event to the flash memory of the Modbus Gateway by checking the **Enable Log Event to Flash** box. To specify the contents of the Log, select different **Log Level** by changing the pull-down menu of the **Log Level**. There are two log levels available on the menu: **Level 3: (LOG\_ERR)** and **Level 4: (LOG\_WARNING)**. Figure 4.25 shows a selection of **Log Level 4** which will keep **LOG\_WARNING**.

#### System > Log Settings

---

|                           |                          |
|---------------------------|--------------------------|
| Enable Log Event To Flash | <input type="checkbox"/> |
| Log Level                 | 4: (LOG_WARNING) ▾       |

Figure 4.25 Log Settings Web Page

### 4.9.2 System Log

This section lists current system events aside its properties (**Date, Time, Startup Time, Level, and Event**). Figure 4.26 shows an empty **System Log** page. The user can navigate through the system log by using **Last Page** or **Next Page** buttons. The user will have the option to show all events by clicking the **Show All Event** button and the option to clear them all by clicking on **Clear All Event** button.

#### System > System Log

---

| Index | Date | Time | Startup Time | Level | Event |
|-------|------|------|--------------|-------|-------|
|-------|------|------|--------------|-------|-------|

Figure 4.26 System Log Web Page

### 4.9.3 Data Log

The log of Modbus's exchanged messages will be shown in the **Data Log** section and listed in Figure 4.27. This can be very useful for debugging and testing. The user can filter the data based on the **Interface** by using the drop-down box. All available interface will be listed in the box such as COM1, COM2 and TCP\_LinkXX. Then click on the **Query** button to list the data log based on the chosen interface. Traffic analysis in the system can be done here as well. Click the **Start** button to enable continuous data log collection or click **Stop** to end it. All data log can be cleared by clicking the **Clear** button. The user will be able to browse through the list of message by clicking on the **Last Page** or the **Next Page** buttons at the bottom of the log table. Finally, if the user would like to save the data log to a file on the local PC, please click on the **Export** button.

## System > Data Log

Interface

| Time | Type | Interface | Slave ID | Function Code | Event |
|------|------|-----------|----------|---------------|-------|
|------|------|-----------|----------|---------------|-------|

Figure 4.27 Data Log Web Page

### 4.9.4 Modbus Statistic

Modbus's interface statistics are reported in this section as shown in Figure 4.28. For each interface, there is a **Net\_Connection** or socket which is an IP address bundled with its port number (only for TCP and VCOM interfaces), a **Data Type** of the interface (**ASCII**, **RTU**, or **TCP**), a **Mode** of the Interface (either **MASTER** or **SLAVE**), the count of received messages (**RxCnt**), the received bytes (**RxByte**), the count of transmitted message (**TxCnt**), and the transmitted bytes (**TxByte**). Click on the **Refresh** button to obtain the latest statistics of the Modbus's interfaces.

## System > Modbus Statistic

| Interface | Net_Connection | Data Type | Mode   | RxCnt  | RxByte     | TxCnt  | TxByte     |
|-----------|----------------|-----------|--------|--------|------------|--------|------------|
| COM01     |                | RTU       | SLAVE  | 000000 | 0000000000 | 000000 | 0000000000 |
| COM02     |                | RTU       | SLAVE  | 000000 | 0000000000 | 000000 | 0000000000 |
| COM03     |                | RTU       | SLAVE  | 000000 | 0000000000 | 000000 | 0000000000 |
| COM04     |                | RTU       | SLAVE  | 000000 | 0000000000 | 000000 | 0000000000 |
| TCP(502)  | 0.0.0.0:502    | TCP       | MASTER | 000000 | 0000000000 | 000000 | 0000000000 |

Figure 4.28 Modbus Statistics Web Page

### 4.9.5 Time

**Date and time** can be set manually or through **Network Time Protocol (NTP)** to automatically synchronize date and time of the Modbus Gateway with a **Time Server**. Figure 4.29 shows the **Time** setting page. The user can obtain the **Current System Time** by clicking on the **Refresh** button. Under the **System Time Setting** box, the user can set the **Time Zone** by selecting the proper time zone from the pull-down menu. Then, in order to choose the options of time setting, select either **NTP** or **Manual**. For auto-synchronization, check the radio button in front of **NTP** option. Then, proceed to fill in the IP address or hostname of the preferred time server such as time.nist.gov which is the default setting. If a hostname is entered, the DNS server should be configured properly following the procedure explained in Section 0. Other options will be disabled if the **NTP** option is selected.

If the **Manual** option is selected, select the current **Date (Year, Month, Day)** and **Time (Hour, Minute, and Second)** from their corresponding pull-down menus under the **Manual Setting** box. In certain region, the daylight time saving is practiced. In order to enable it, check the **Enable Daylight Saving Time** checkbox and specify the **Start Date**, **End Date**, and **Offset** in the fields under **Daylight Save Setting** box as shown in the greyed out area of Figure 4.29.

After Time Setting is complete, click **Save Configuration** to save all changes that have been done. A **Save Successful** message will show up with a hyperlink to **restart** the device as shown in 錯誤! 找不到參照來源。 Click the **restart** hyperlink to apply the changes. Then, a message indicating **System Restarting** status with a counting down number will show up as shown in Figure 4.34. After a successful device's restart, the web browser will be redirected to the Overview page as shown in Figure 4.7.

## System > Time

By enabling NTP you allow to adjust and set the device internal time, relative to Greenwich Mean Time.

| Current System Time    |                          |
|------------------------|--------------------------|
| 2017/3/19 Sun 20:56:25 | <button>Refresh</button> |

| System Time Setting                                  |                                                                   |
|------------------------------------------------------|-------------------------------------------------------------------|
| Time Zone                                            | (GMT+08:00) Taipei ▼                                              |
| Time Setting                                         | <input type="radio"/> NTP <input checked="" type="radio"/> Manual |
| NTP Setting                                          |                                                                   |
| NTP Server                                           | time.nist.gov                                                     |
| Manual Setting                                       |                                                                   |
| Date                                                 | Year: 2017 ▼ / Month: Mar ▼ / Day: 19 ▼                           |
| Time                                                 | Hour:(0~23): 20 ▼ Minute:(0~59): 56 ▼ Second:(0~59): 25 ▼         |
| Daylight Saving Setting                              |                                                                   |
| <input type="checkbox"/> Enable Daylight Saving Time |                                                                   |
| Start Date                                           | Month: Jan ▼ / Week: 1st ▼ / Day: Sun ▼ / Hour: 0 ▼               |
| End Date                                             | Month: Jan ▼ / Week: 1st ▼ / Day: Sun ▼ / Hour: 0 ▼               |
| Offset                                               | 1 ▼ hour(s)                                                       |

Save Configuration

Figure 4.29 Time Web Page

### 4.9.6 Security

The default security setting for the password is a standard password (default). To change security, enter the Security web page as shown in Figure 4.30, enter a password in the **Change Password** box. The user should enter the **Old Password** (enter nothing in case of a null password), the **New Password**, and the **Verified Password** (same as the New Password). The password is case sensitive and limited to a maximum of 8 characters. After entering all required fields, click **Save Password** button to save the change. After the **Save Successfully** message showed up, the user will be prompted with a pop-up window to enter the **User name** and the **New Password** again for verification.

## System > Security

The default password is null, you can change the password by filling in the new password to New Password and Verified Password fields, be aware that password is case sensitive.

| Change Password   |                      |
|-------------------|----------------------|
| Old Password      | <input type="text"/> |
| New Password      | <input type="text"/> |
| Verified Password | <input type="text"/> |

allow one to change the access methods to protect it against intrusion. All password protect function will use same password of above 'Change Password' setting data.

| Security             |                                                                       |
|----------------------|-----------------------------------------------------------------------|
| Web Console          | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| Reset Button Protect | <input checked="" type="radio"/> No <input type="radio"/> Yes         |

Figure 4.30 Security Web Page

The user can limit how the Modbus Gateway is accessed and controlled by changing the settings under the **Security** box in Figure 4.30. All password-protected features will use the same password whose setting is described in the previous paragraph. The user can enable or disable **Web Console** by clicking on the corresponding radio button. Additionally, the user can protect how the user accesses the device with a **Reset Button Protect** option by checking on either **No** or **Yes** radio buttons.

After Security Settings are set, click **Save Configuration** to save all changes that have been made. A **Save Successful** message will appear with a hyperlink asking to **restart** the device as shown in Figure 4.10. Please click the **restart** hyperlink to apply the changes. Then, a message indicating **System Restarting** status with a countdown will show up. After a successful restart, the web browser will be redirected to the Overview page as shown in Figure 4.5.

### 4.9.7 Import/Export

Once all configurations are set and the device is working properly, the user may want to backup (**Export**) the configuration to a file. A backup configuration file can be used when a new firmware is uploaded and the device is reset to a factory default setting, or simply to prevent accidental loading of incompatible old settings. The backup file could also be used to efficiently deploy multiple Modbus Gateways of similar settings by restoring the settings to the devices by **importing** the corresponding file. Figure 4.31 depicts the Import/Export web page.

## System > Import/Export

**Import** a configuration file to the device.

Configuration File:

Browse...

No file selected.

Import Configuration

**Export** a configuration data from device and save to file.

Export Configuration

Figure 4.31 Import/Export Web Page

To import a configuration file from the computer, click on the **Browse...** button. Then, a pop-up window will ask the user to choose a configuration file (with .DAT extension). After selection, click **Open button**. Then, click on the **Import Configuration** button to start the importing process.

After importing is complete, the system will show a **Save Successful** message with a hyperlink to **restart** the device. Click the **restart** hyperlink to apply the changes. Then, a message indicating **System Restarting** status with a countdown will show up. After a successful device's restart, the web browser will be redirected to the Overview page as shown in Figure 4.7.

In order to export the current configuration of the Modbus Gateway to a file for backup purposes, click the **Export Configuration** button as shown in Figure 4.31. Then, a pop-up window will ask to either **Open** the configuration file for viewing with a default application such as Notepad or to simply **Save** the configuration file to the preferred name and destination path as shown in Figure 4.32.

## System > Import/Export

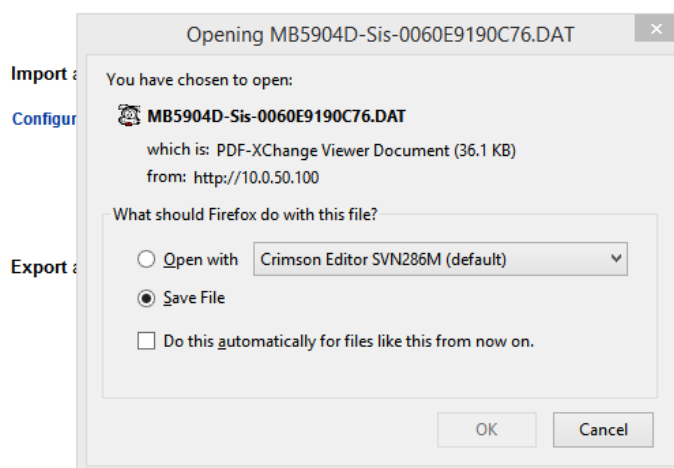


Figure 4.32 Export Configuration File from Modbus Gateway

#### 4.9.8 Factory Default

A return to **Factory Default** function is available in Atop's MB52XX Series. To restore all parameters of the Modbus Gateway to the original factory default setting, click **Set to Default and Restart** button as shown in Figure 4.33. After a short moment, a message indicating **System Restarting** status with a countdown number will show up. After a successful device's restart, the web browser will be redirected to the Overview page as shown in Figure 4.7.

### System > Factory Default

---

Restore all parameters to default.

Set to Default and Restart

Figure 4.33 Factory Default Web Page

---

#### 4.10 Restart

---

For some unexpected circumstances, the Modbus Gateway system may stop responding correctly. The user has the option to restart the device by clicking the **Restart** button as shown in Figure 4.34. The device's RUN LED will start blinking when the restart process is completed. Then, a message indicating **System Restarting** status with a countdown will show up. After a successful device's restart, the web browser will be redirected to the Overview page as shown in Figure 4.7.

### ReStart

---

When the system stops responding correctly, you can perform this. The restart will be complete when the RUN LED starts blinking.

Restart

Figure 4.34 Restart Web Page

## 5 Specifications

### 5.1 Hardware

Table 5.1 Hardware Specification

| System                    |                                                                                                                                                                                                                                                           |                                       |                                         |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------|
| CPU                       | 32-bit ARM Based                                                                                                                                                                                                                                          |                                       |                                         |
| Flash Memory              | 16MB                                                                                                                                                                                                                                                      |                                       |                                         |
| RAM                       | Integrated DDR2 128MB                                                                                                                                                                                                                                     |                                       |                                         |
| EEPROM                    | 8 KB                                                                                                                                                                                                                                                      |                                       |                                         |
| Reset                     | Built-in Recessed Key (Restore to Factory Defaults)                                                                                                                                                                                                       |                                       |                                         |
| Watchdog                  | Hardware built-in                                                                                                                                                                                                                                         |                                       |                                         |
| Network                   |                                                                                                                                                                                                                                                           |                                       |                                         |
| Ethernet Interface        | IEEE 802.3 10BaseT<br>IEEE 802.3u 100BaseT(X)<br>Auto-negotiation<br>Auto MDI/MDI-X<br>Connection: RJ45 x 1                                                                                                                                               |                                       |                                         |
| Protocol                  | ICMP<br>TCP<br>UDP<br>IPv4<br>HTTP<br>Syslog                                                                                                                                                                                                              | DNS<br>DHCP Client<br>SNMPv1, v2c, v3 | SMTP<br>NTP<br>ARP<br>Telnet<br>RFC2217 |
| Serial                    |                                                                                                                                                                                                                                                           |                                       |                                         |
| Serial Interface          | RS-232/RS-422/RS-485 Software Selectable (Default: RS-232)                                                                                                                                                                                                |                                       |                                         |
| Serial Connector          | MB5201: 1 Serial Port (TB-5 or DB-9)<br>MB5202: 2 Serial Ports (TB-5 or DB-9)                                                                                                                                                                             |                                       |                                         |
| Serial Port Communication | Baud-rate: 1200 bps ~ 230,400 bps ( <del>RS-485 4-wire allows up to 921,600 bps</del> )<br>Parity: None, Even, Odd, Mark, or Space<br>Data Bits: 5, 6, 7, 8<br>Stop Bits: 1, 2 Software Selectable<br>Flow Control: RTS/CTS (RS-232 only), XON/XOFF, None |                                       |                                         |
| LED Indicator             |                                                                                                                                                                                                                                                           |                                       |                                         |
| LED indication            | RUN x 1<br>LAN x 1<br>COM x 1                                                                                                                                                                                                                             |                                       |                                         |
| Power Requirement & EMC   |                                                                                                                                                                                                                                                           |                                       |                                         |
| Input                     | 3-Pin 5.08mm Lockable Terminal Block: 9-30VDC<br>DC Jack 5VDC                                                                                                                                                                                             |                                       |                                         |
| Consumption               | Max. 1.5W                                                                                                                                                                                                                                                 |                                       |                                         |
| EMI/EMC                   | FCC Part 15, Subpart B, Class A,<br>EN 55032, EN 61000-3-2, EN 61000-3-3, EN 55024,<br>EN61000-6-4, EN61000-6-2                                                                                                                                           |                                       |                                         |
| Mechanical                |                                                                                                                                                                                                                                                           |                                       |                                         |

|                            |                                                                                                                                                                                                                                                                                                         |                              |  |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|--|
| Dimensions (W x H x D, mm) | MB5201: 65mm x 78mm x 28mm (without wall-mount part)<br>MB5201-TB: 88.5 x 78.3 x 27.8mm (with wall-mount part)<br>MB5201-DB: 88.5 x 84 x 27.8mm (with wall-mount part and DB9 connector)<br>MB5202: 85 mm x 77mm x 28 mm (without wall-mount part)<br>MB5202: 108 x 77mm x 28 mm (with wall-mount part) |                              |  |
| Enclosure                  | IEC/EN60529 - IP30 protection, metal housing                                                                                                                                                                                                                                                            |                              |  |
| Environmental              |                                                                                                                                                                                                                                                                                                         |                              |  |
| Temperature                | Operations                                                                                                                                                                                                                                                                                              | -40°C ~ 70°C (-40°F ~ 158°F) |  |
|                            | Storage                                                                                                                                                                                                                                                                                                 | -40°C ~ 85°C (-40°F ~ 185°F) |  |
| Relative Humidity          | 5% ~ 95%, 55°C Non-condensing                                                                                                                                                                                                                                                                           |                              |  |

## 5.2 Serial port Pin Assignments

### 5.2.1 Pin Assignments for Serial Interfaces

DB9 to RS-232/RS-422/RS-485 connectors

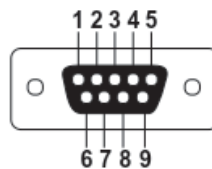


Figure 5.1 DB9 Pin Number

Table 5.2 MB5201/MB5202 Pin Assignment for DB9 to RS-232/RS-422/RS-485 Connector

| Pin# | RS-232<br>Full Duplex | RS-422/4-Wire RS-485<br>Full Duplex | 2-Wire RS-485<br>Half Duplex |
|------|-----------------------|-------------------------------------|------------------------------|
| 1    | DCD                   | N/A                                 | N/A                          |
| 2    | RxD                   | TXD+                                | Data+                        |
| 3    | TxD                   | RXD+                                | N/A                          |
| 4    | DTR                   | N/A                                 | N/A                          |
| 5    | SG (Signal Ground)    | SG (Signal Ground)                  | SG (Signal Ground)           |
| 6    | DSR                   | N/A                                 | N/A                          |
| 7    | RTS                   | RXD-                                | N/A                          |
| 8    | CTS                   | TXD-                                | Data-                        |
| 9    | RI                    | N/A                                 | N/A                          |

### 1 x 5-pin (Male Terminal Block) for RS-232/RS-422/RS485 Connector

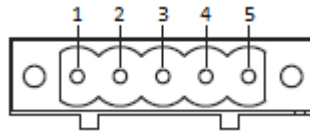


Figure 5.2 TB5 Pin Number

Table 5.3 MB5201/MB5202 Pin Assignment for TB5 to RS-232/RS-422/RS-485 Connector

| Pin# | RS-232 Full Duplex | RS-422/4-Wire RS-485 Full Duplex | 2-Wire RS-485 Half Duplex |
|------|--------------------|----------------------------------|---------------------------|
| 1    | RxD                | TxD+                             | Data+                     |
| 2    | CTS                | TxD-                             | Data-                     |
| 3    | TxD                | RxD+                             | NC                        |
| 4    | RTS                | RxD-                             | NC                        |
| 5    | SG (Signal Ground) | SG (Signal Ground)               | SG (Signal Ground)        |

## 5.3 LED Indicators

Table 5.4 Color Interpretation of LED Indicators

| Name | Colour           | Status   | Message                                                 |
|------|------------------|----------|---------------------------------------------------------|
| RUN  | ● Green          | Blinking | System is booted up and AP Firmware is running normally |
|      |                  | On       | System is booted up and not running AP Firmware         |
|      |                  | Off      | System is still booting up or powered off               |
| LAN  | ● Orange (Speed) | Blinking | Ethernet is transmitting at 10 Mbps                     |
|      |                  | Off      | No Transmission                                         |
|      | ● Green (Data)   | Blinking | Ethernet data is transmitting at 100 Mbps               |
|      |                  | Off      | No Transmission                                         |
| COM  | ● Green          | Blinking | COM is transmitting/receiving                           |
|      |                  | Off      | COM is not transmitting/receiving                       |

## 5.4 Software

Table 5.5 Software Tools and Utilities

| Software           |                                                                                                                                                                                  |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Utility            | Windows Virtual COM Driver and Linux TTY Driver: Linux 2.4.x, Linux 2.6.x, 3.x                                                                                                   |
| Configuration Tool | <ul style="list-style-type: none"> <li>■ Web console</li> <li>■ Serial console</li> <li>■ SSH console</li> <li>■ Telnet console</li> <li>■ Device Management Utility©</li> </ul> |

## 6 Warranty

### Limited Warranty Conditions

Products supplied by Atop Technologies Inc. are covered in this warranty for undesired performance or defects resulting from shipping, or any other event deemed to be the result of Atop Technologies Inc. mishandling. The warranty doesn't cover; however, equipment which has been damaged due to accident, misuse, abuse, such as:

- Use of incorrect power supply, connectors, or maintenance procedures
- Use of accessories not sanctioned by us
- Improper or insufficient ventilation
- Improper or unauthorized repair
- Replacement with unauthorized parts
- Failure to follow our operating Instructions
- Fire, flood, "Act of God", or any other contingencies beyond our control.

### RMA and Shipping Reimbursement

- Customers must always obtain an authorized **"RMA" number** from us before shipping the goods to be repaired.
- When in normal use, a sold product shall be replaced with a new one within 3 months upon purchase. The shipping cost from the customer to us will be reimbursed.
- After 3 months and still within the warranty period, it is up to us whether to replace the unit with a new one; normally, as long as a product is under warranty, all parts and labor are free-of-charge to the customers.
- After the warranty period, the customer shall cover the cost for parts and labor.
- Three months after purchase, the shipping cost from the customer to us will not be reimbursed, but the shipping costs from us to the customer will be paid by us.

### Limited Liability

Atop Technologies Inc. shall not be held responsible for any consequential losses from using our products.

### Warranty

Atop Technologies Inc. provides a 5-year maximum warranty for Modbus Gateway products.



*Atop Technologies, Inc.*

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