

User's Manual



Industrial 2-Port RS422/485 Modbus Gateway

▶ IMG-120T



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Revision

PLANET Industrial 2-port RS422/485 Modbus Gateway User's Manual

MODEL: IMG-120T

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CHAPTER 1. INTRODUCTION

Thank you for purchasing PLANET Industrial 2-port RS422/485 Modbus Gateway, IMG-120T. The term “Industrial Modbus Gateway” mentioned in this user’s manual refers to the IMG-120T.

1.1 Package Contents

Open the box of the Industrial Modbus Gateway and carefully unpack it. The box should contain the following items:

■ Industrial Modbus Gateway x 1	■ Quick Installation Guide x 1	■ User's Manual CD x 1
		

If any of these are missing or damaged, please contact your dealer immediately; if possible, retain the carton including the original packing material, and use them again to repack the product in case there is a need to return it to us for repair.

1.2 How to Use This Manual

This Industrial Modbus Gateway User Manual is structured as follows:

Section 2, HARDWARE INSTALLATION

The section explains the functions of the Industrial Modbus Gateway and how to physically install the Industrial Modbus Gateway.

Section 3, INDUSTRIAL MODBUS GATEWAY MANAGEMENT

The section contains the information about the software function of the Industrial Modbus Gateway, and also explains the PLANET Modbus Gateway utility and how to use the Industrial Modbus Gateway.

Section 4, WEB MANAGEMENT

The section explains how to manage the Industrial Modbus Gateway by Web interface.

Section 5, COMMAND LINE INTERFACE

The section describes how to use the Command Line interface (CLI).

Section 6, COMMAND LINE MODE

The section explains how to manage the Industrial Modbus Gateway by Command Line interface.

Appendix A

The section contains cable information of the Industrial Modbus Gateway.

1.3 Product Description

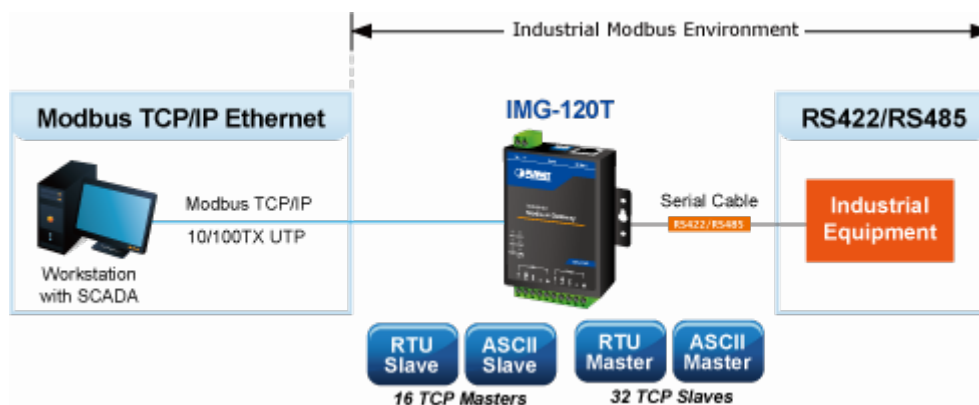
Economical Solution for Industrial Modbus TCP/RTU/ASCII Network Integration

PLANET has added the Industrial Modbus TCP/IP Protocol to its IMG-120T Industrial-level 2-port RS422/485 Modbus Gateway, an industrial management level product that comes with SCADA/HMI system and other data acquisition systems on the factory floor. Moreover, an industrial IT SNMP network can be upgraded to an Industrial automation Modbus TCP/IP network without any difficulty and extra expense. The IMG-120T offers a flexible network connectivity solution for industrial automation environment. PLANET IMG-120T is a conversion bridge between Modbus TCP/IP Protocol and Modbus RTU/ASCII Protocol. It features a wide operating temperature range from **-40 to 75 degrees C** and a compact but rugged IP40 metal housing.



The Conversion Bridge that Makes Communications Convenient

As the conversion bridge, the IMG-120T communicates well between any industrial equipment with the Modbus RTU/ASCII Protocol and the administrator workstation that runs the Modbus TCP/IP Protocol. The RS422/485 serial interface of the IMG-120T provides the Modbus RTU/ASCII operation mode and various baud rate options to meet the demand of integration between the Modbus TCP/IP Protocol, Modbus RTU Master/Slave Protocol and Modbus ASCII Master/Slave Protocol.



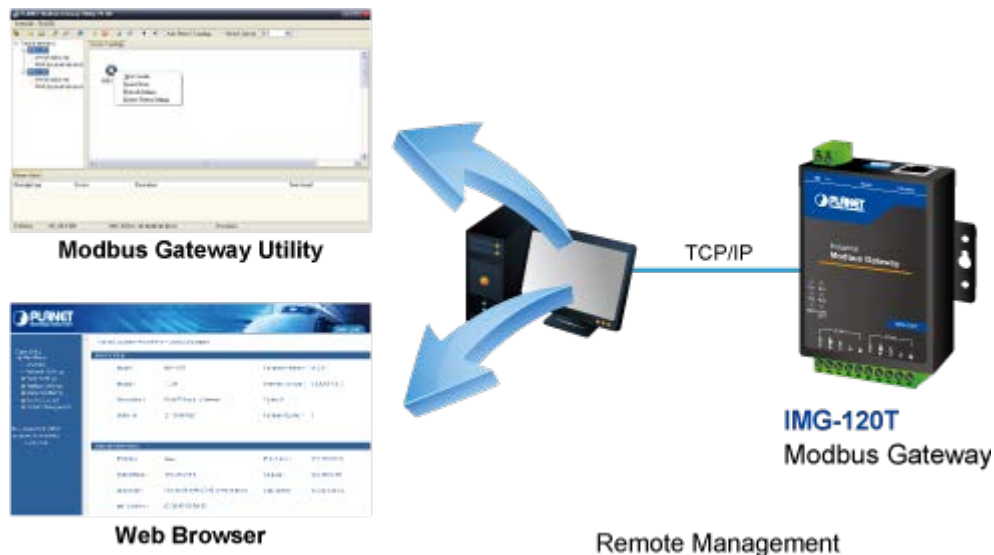
The advantage of having the IMG-120T is to assist users to build an industrial environment between the Modbus TCP/IP Protocol and the Modbus RTU/ASCII Protocol easily, thus offering an application solution to the industrial control equipment without Ethernet ports. Thus, the industrial control equipment can only control through an industrial PC workstation or industrial control panel.

In addition, the effective integration of Modbus Ethernet devices, Modbus serial equipment or multi Modbus master/slave in an industrial hybrid network brings the following:

- Master mode supports up to 32 slave TCP connection requests
- Slave mode supports up to 16 TCP master connections

Remote Management

The IMG-120T makes the connected industrial Modbus RTU/ASCII equipment become IP-based facilities and is able to connect to the Modbus TCP/IP network via its R422/485 serial interface and 10/100BASE-TX RJ45 Ethernet port. It provides a remote web management and telnet Interface for efficient remote network management. The IMG-120T also provides PLANET Modbus Gateway utility tool and supports PLANET Smart Discovery utility to help network administrator to easily get the current IP subnet address information or change the IP subnet address setting of the IMG-120T.



Modbus Serial Port State Monitoring

The IMG-120T shows the details of the total bytes transmitted and received on the RS422/485 serial interface, and the detailed total number of frames transmitted and received on the remote web/telnet management interface. This function allows network administrator to check the status and statistics of the IMG-120T via the single RS422/485 serial interface.

Stable Performance in Hardened Environment Design

The IMG-120T provides a high level of immunity against electromagnetic interference and heavy electrical surges which are usually found on plant floors or in curb-side traffic control cabinets. Its operating temperature ranging from -40 to 75 degrees C allows the IMG-120T to be placed in almost any difficult environment.

The IMG-120T is equipped with a compact IP40-rated metal case that allows wall mounting for efficient use of cabinet space. The IMG-120T also provides an integrated power supply source with wide-ranging voltages (9 to 48V DC) ideally suitable for worldwide operation with high availability applications.

1.4 Applications

RTU/ASCII Master to Multi Modbus TCP/IP Slaves

The Industrial Modbus Gateway can act as a bridge between the industrial RTU/ASCII master equipment and the multi-industrial TCP/IP slave equipment in a Modbus TCP/IP networking environment to control multi-industrial TCP/IP slave equipment via the industrial RTU/ASCII master equipment.

RTU/ASCII Master to Multi Modbus TCP/IP Slaves

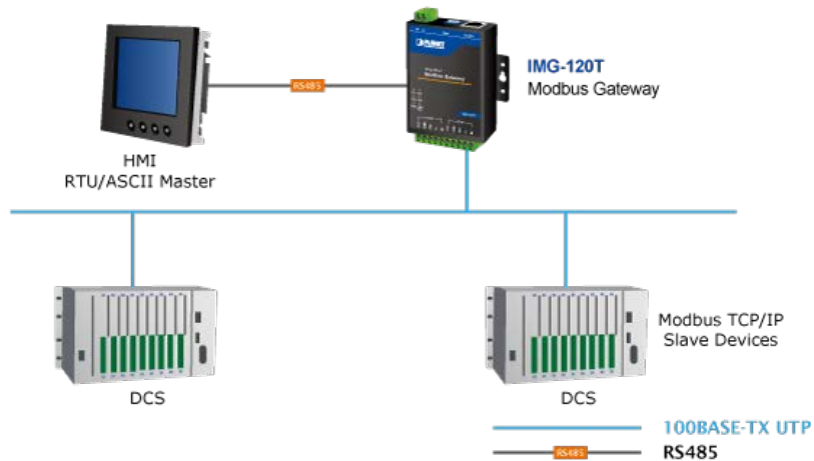


Figure 1-1: RTU/ASCII Master to Multi Modbus TCP/IP Slaves Application

Multi Modbus TCP/IP Master to RTU/ASCII Slaves

The Industrial Modbus Gateway can operate as a bridge between the multi-industrial TCP/IP master equipment and the industrial RTU/ASCII slave equipment in a Modbus TCP/IP networking environment to control the industrial RTU/ASCII slave equipment via the multi-industrial TCP/IP master equipment.

Multi Modbus TCP/IP Master to RTU/ASCII Slaves

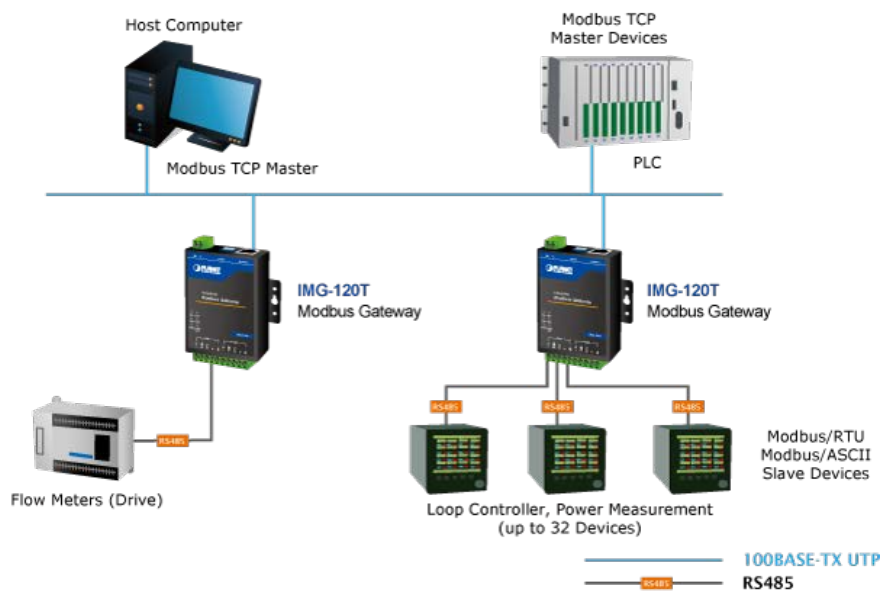


Figure 1-2: Multi Modbus TCP/IP Master to RTU/ASCII Slaves Application

1.5 Product Features

▶ **Serial Interface**

- Two **RS422/485** ports with 5-contact terminal block
- Cost effective for RS422/RS485 to Fast Ethernet 10/100BASE-TX application
- Supports 4-wire RS422 or 2-wire RS485 with 5-contact terminal block operation
- 300bps~115200bps baud rate and non-blocking communication

▶ **Ethernet Interface**

- Complies with IEEE 802.3, IEEE 802.3u 10/100BASE-TX standard
- Supports 10/100BASE-TX RJ45 port with distance up to 100m

▶ **Serial Operation Modes**

- Software Protocol supports Modbus TCP, Modbus RTU, Modbus ASCII, IP, ARP, DHCP and DNS
- Supports RTU Master, RTU Slave, ASCII Master, and ASCII Slave four serial operation modes via management interface
- Master mode supports 32 slave TCP connection requests
- Slave mode supports 16 TCP master connections

▶ **Management Function**

- Built-in IP-based **Web interface** and **telnet interface** for remote management
- Supports IP address and MAC address filtering function
- PLANET Modbus Gateway utility for finding client device on the network and related IP subnet address setting to reset to factory default function
- PLANET Smart Discovery utility automatically finds the client devices on the network
- Firmware upgrade/configuration backup and restore via HTTP protocol

▶ **Hardware**

- LED indicators for system, network and RS422/585 port diagnostics
- DIP switch on the upper panel for resetting to factory default
- Wall-mount kit

▶ **Industrial Case and Installation**

- Wall mount-type IP40 metal case
- The 2-contact terminal block connector on the top panel of Industrial Modbus Gateway is used for DC power input (**9-48V**)
- -40 to 75 degrees C operating temperature

1.6 Product Specifications

Model	IMG-120T
Serial Port	
Interface	RS422/RS485 x 2
Connector	10-contact terminal block for RS422/RS485
Surge Protection	1KV
Baud Rate (Data Rate)	300bps to 115200bps
Data Bits	7, 8
Parity Type	Odd, Even, None, Space, Mark
Stop Bit	1, 2
Flow Control	H/W, None
Signals	RS422: Tx+, Tx-, GND, Rx+, Rx- RS485: Data A (+), GND, Data B (-)
Distance	RS422/RS485 for 20m transfer distance
Operation Mode	RTU Master/RTU Slave/ASCII Master/ASCII Slave Master mode: Supports up to 32 slave TCP connection requests Slave mode: Supports up to 16 TCP master connection requests
Ethernet Port	
Standard	IEEE 802.3 10BASE-T standard IEEE 802.3u 100BASE-TX standard IEEE 802.3x full-duplex flow control
Connector	RJ45
Distance	100 meters
Hardware	
Copper Port	10/100BASE-T RJ45 TP x1, auto-MDI/MDI-X, auto-negotiation
Serial Port	RS422/RS485 x 2
DIP Switch	Reset system to factory default
LED Indicators	System: Power x 1 10/100BASE-TX Port: Link/Active x 1 RS422/RS485 Serial Port: TX (Transmit) x 2, RX (Receive) x 2
Dimensions (W x D x H)	69 x 100 x 22 mm
Weight	238g
Power Input Connector	2-contact terminal block connector DC power (9-48V) *
Power Consumption	1.6 watts (max.)
Installation	Wall-mount kit
Mechanical	Metal
Management	
Management	Remote Web Management Remote Telnet Management PLANET Modbus Gateway Utility PLANET Smart Discovery Utility
Operation Mode	RTU Master RTU Slave

	ASCII Master ASCII Slave
Standards Conformance	
Standards Compliance	IEEE 802.310BASE-T standard IEEE 802.3u 100BASE-TX standard IEEE 802.3x full-duplex flow control EIA/TIA RS422/485
Regulatory Compliance	FCC Part 15 Class B, CE
Stability Testing	IEC 60068-2-32 (free fall) IEC 60068-2-27 (shock) IEC 60068-2-6 (vibration)
Environment	
Temperature	Operating: -40~75 degrees C Storage: -40~75 degrees C
Humidity	Operating: 5~95% (non-condensing) Storage: 5~95% (non-condensing)

*: Please follow the DC power input symbol on the front panel of the Industrial Modbus Gateway -- insert positive DC power wire into **V+**, and negative DC power wire into **V-**. Otherwise, it will damage the device.

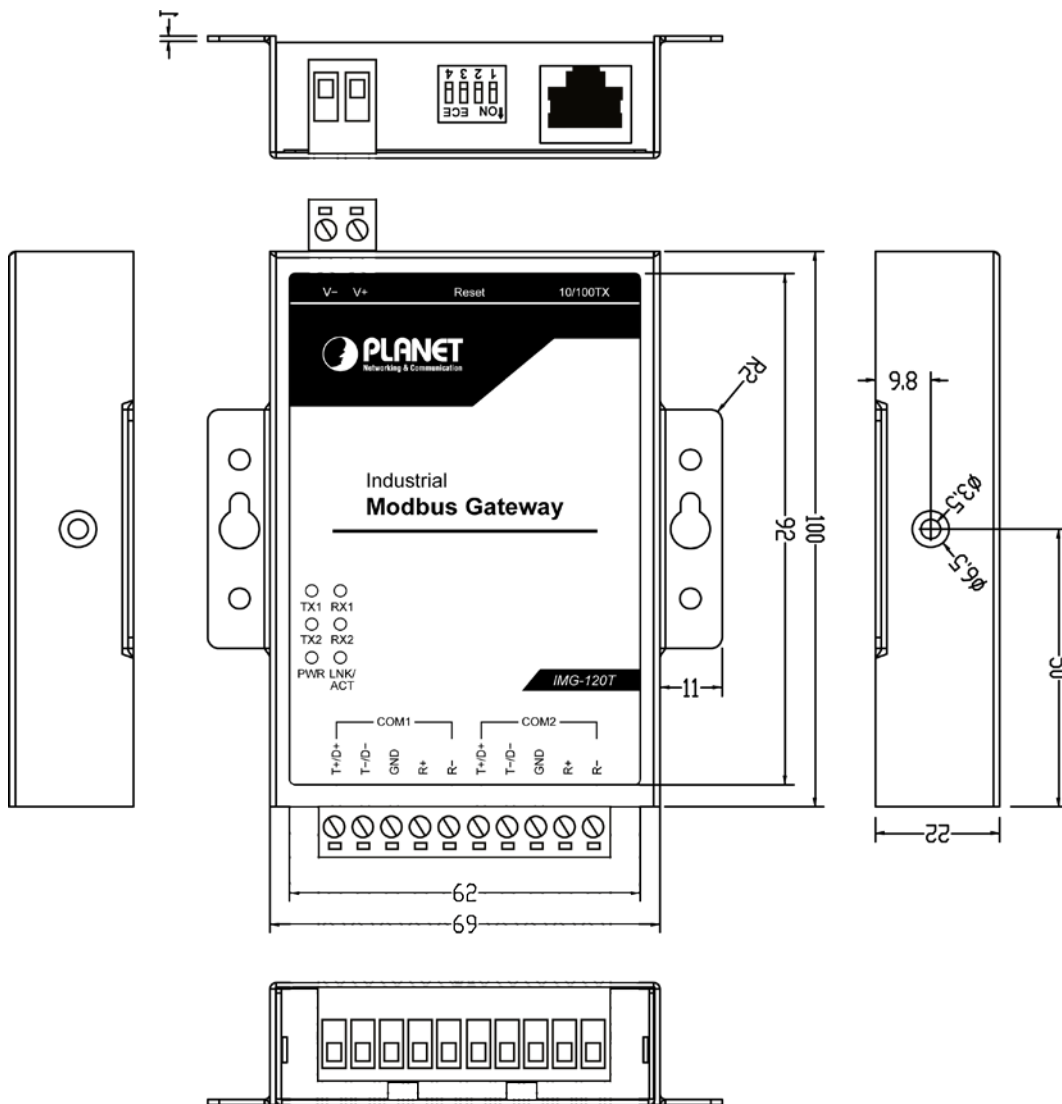
CHAPTER 2. HARDWARE INSTALLATION

This section describes the hardware features and installation of the Industrial Modbus Gateway's components on the desktop or shelf. For easier management and control of the Industrial Modbus Gateway, familiarize yourself with its display indicators, and ports. Front panel illustrations in this chapter display the unit LED indicators. Before connecting any network device to the Industrial Serial Converter, please read this chapter completely.

2.1 Hardware Description

2.1.1 Product Layout

Figure 2-1 shows the diagram of the Industrial Modbus Gateway, and the wall-mount kit for wall mounting.



Dimensions (unit = mm)

Figure 2-1: Industrial Modbus Gateway

Figure 2-2 shows the front panel of the Industrial Modbus Gateway.

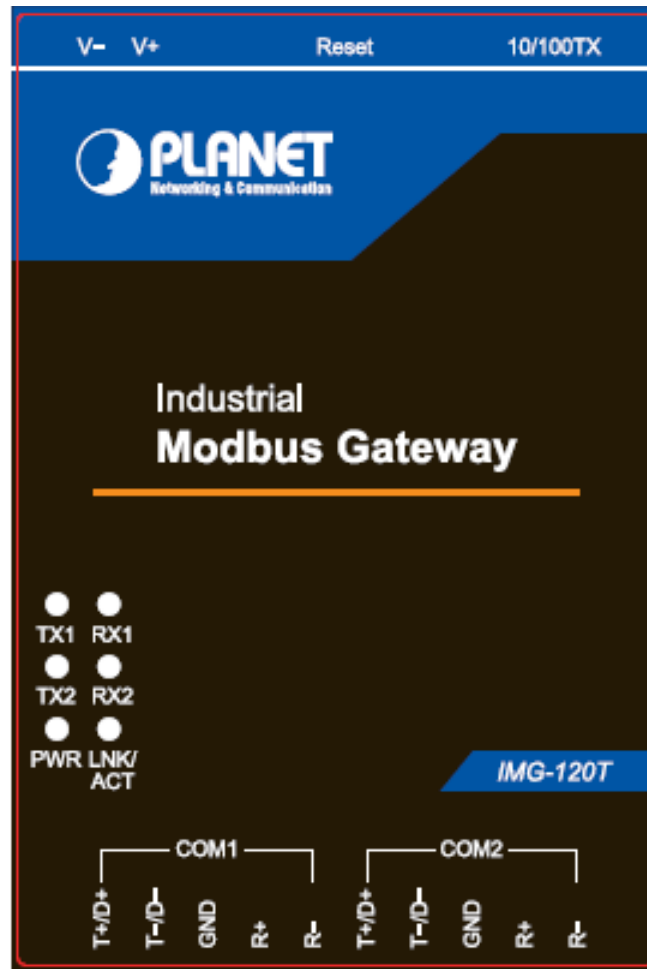


Figure 2-2: Industrial Modbus Gateway Front Panel

2.1.2 LED Indicators

■ LED Definition

■ System

LED	Color	Function
Power	Green	Lights to indicate the system has power.

■ 10/100BASE-TX Interface

LED	Color	Function
LNK/ACT	Green	Lights: To indicate the link through that port is successfully established.
		Blinks: To indicate that the IMG-120T is actively sending or receiving data over that port.

■ RS422/RS485 Serial Port

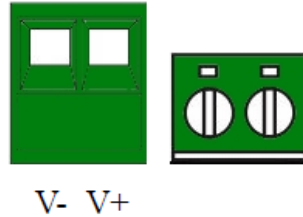
LED	Color	Function
TX1/TX2	Green	Blinks: To indicate that the IMG-120T is actively transmitting data over that port.

LED	Color	Function	
RX1/RX2	Green	Blinks:	To indicate that the IMG-120T is actively receiving data over that port.

2.1.3 2-Contact Terminal Block Pin Define

■ Wiring the Power Inputs:

The 2-contact terminal block connector on the top panel of the Industrial Modbus Gateway is used for DC power input and the DC power input range is **9-48V**.



- 1: Please follow the DC power input symbol on the front panel of the Industrial Modbus Gateway -- insert positive DC power wire into **V+**, and negative DC power wire into **V-**. Otherwise, it will damage the device.
- 2: The wire gauge for the terminal block should be in the range between 12 ~ 24 AWG.

2.1.4 5-Contact Terminal Block Pin Define

■ Serial Port Connection:

The 5-contact terminal block connector on the lower panel of the Industrial Modbus Gateway is used for RS422/485 connections.



Serial port	PIN	RS485 PIN define	RS422 PIN define
COM1	1	D+	T+
	2	D-	T-
	3	GND	GND
	4	--	R+
	5	--	R-
COM2	6	D+	T+
	7	D-	T-
	8	GND	GND
	9	--	R+
	10	--	R-

2.1.5 Hardware DIP Switch for Reset to Default

The upper panel of the Industrial Modbus Gateway consists one 4-bit DIP switch for resetting the system to the factory default mode.

■ Resetting to default through hardware DIP switch:

- 1: Find the hardware DIP switch that is near the RJ45 port of the Industrial Modbus Gateway.
- 2: Adjust DIP 2 at the “**ON**” position and DIPs 1, 3, 4 remain at the original position.



- 3: After adjusting the DIP switch, please power off and power on the Industrial Modbus Gateway to take effect.



After resetting the Industrial Modbus Gateway with the default IP address, and username and password: admin, please adjust DIP 2 to lower position. Otherwise, the Industrial Modbus Gateway will continue to reset to the factory default mode.

CHAPTER 3. INDUSTRIAL MODBUS GATEWAY MANAGEMENT

This chapter describes how to manage the Industrial Modbus Gateway. Sections include:

- Overview
- -Requirements
- Management Methods
- PLANET Smart Discovery Utility
- PLANET Modbus Gateway Utility

3.1 Overview

This chapter gives an overview of the Industrial Modbus Gateway management. The Industrial Modbus Gateway provides a remote IP-based **WEB browser/Telnet interface**. Using these interfaces, you can perform various configuration and management activities, including:

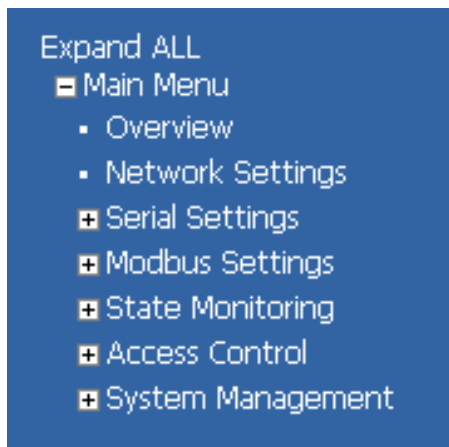


Figure 3-1: Industrial Modbus Gateway Web Menu Bar

```
List          --List commands name
Help          --List commands name and help info
Quit          --Quit from CLI
Exit          --Exit from current menu
Reboot        --Reboot device
Serial        <dir>    --Enter serial setting menu
Security      <dir>    --Enter security setting menu
Manage        <dir>    --Enter system manage menu
Information   <dir>    --Enter device information menu
Modbus        <dir>    --Enter Modbus manage menu
```

Figure 3-2: Industrial Modbus Gateway Telnet Menu

Please refer to the following Chapters 4, 5 and 6 for more details.

3.2 Requirements

- Ethernet Port Connection
- Workstations running Windows XP/2003/Vista/7/8/2008/10, MAC OS X or later, Linux, UNIX, or other platforms are compatible with TCP/IP protocols.
- Workstations are installed with Ethernet NIC (Network Interface Card)
 - Network cables -- Use standard network (UTP) cables with RJ45 connectors.
 - The above PC is installed with Web browser and JAVA runtime environment plug-in.



It is recommended to use Internet Explorer 8.0 or above to access the Industrial Modbus Gateway. If the Web interface of the Industrial Modbus Gateway is not accessible, please turn off the anti-virus software or firewall and then try it again.

3.3 Management Methods

The way to manage the Industrial Modbus Gateway:

- **Web Management** interface
- **Remote IP-based Telnet** interface

3.3.1 Web Management Interface

The Industrial Modbus Gateway offers management features that allow users to manage the Industrial Modbus Gateway from anywhere on the network through a standard browser such as Microsoft Internet Explorer. After you set up your IP address for the Industrial Modbus Gateway, you can access the Industrial Modbus Gateway's Web interface applications directly in your Web browser by entering the IP address of the Industrial Modbus Gateway.

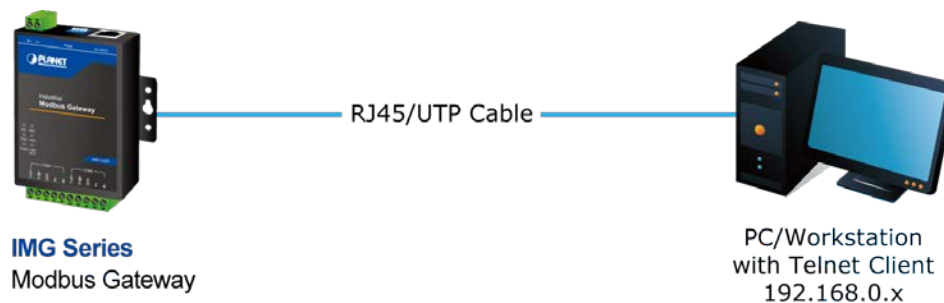


Figure 3-3: Web Management Diagram

You can then use your Web browser to list and manage the Industrial Modbus Gateway configuration parameters from one central location. Web Management requires either **Microsoft Internet Explorer 8.0** or later, **Google Chrome**, **Safari** or **Mozilla Firefox 1.5** or later.

3.3.2 Login the Industrial Modbus Gateway Web Interface

The following shows how to start up the **Web Management** of the Industrial Modbus Gateway. Note the Industrial Modbus Gateway is configured through an Ethernet connection. Please make sure the manager PC must be set to the same **IP subnet address**.

For example, the default IP address of the Industrial Modbus Gateway is 192.168.0.100, then the manager PC should be set to 192.168.0.x (where x is a number between 1 and 254, except 100) and the default subnet mask is 255.255.255.0.

Logging in to the Industrial Modbus Gateway

1. Use Internet Explorer 8.0 or above Web browser and enter IP address <http://192.168.0.100> to access the Web interface.
2. When the following dialog box appears, please enter the default user name and password "**admin**". The login screen in Figure 3-4 appears.

Default Username: **admin**

Default Password: **admin**



Figure 3-4: Web Login Screen

After entering the username and password, the main screen appears as Figure 3-5 shows.



Figure 3-5: Web Main Screen of Industrial Modbus Gateway



For security reason, please change and memorize the new password after this first setup.
1. Only accept command in lowercase letter under web interface.

3.3.3 Remote IP-based Telnet Interface

The Industrial Modbus Gateway offers management features that allow users to manage the Industrial Modbus Gateway from anywhere on the network through remote IP-based telnet interface. After you set up your IP address for the Industrial Modbus Gateway, you can access the Industrial Modbus Gateway's telnet interface applications directly in your PC by entering the IP address of the Industrial Modbus Gateway under command prompt.

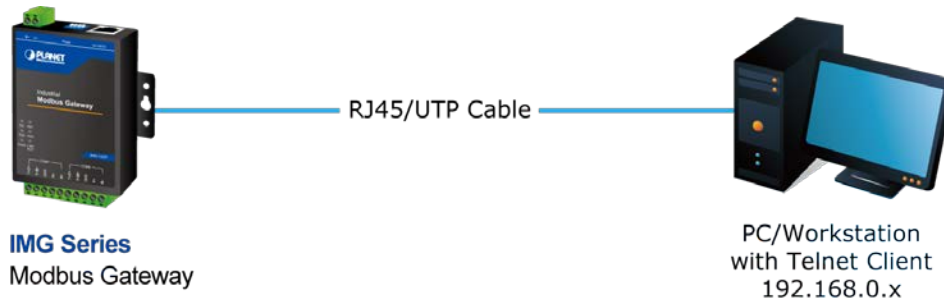


Figure 3-6: Telnet Management Diagram

3.3.4 Login the Industrial Modbus Gateway Telnet Interface

The following shows how to start up the **Telnet Management** of the Industrial Modbus Gateway. Note the Industrial Modbus Gateway is configured through an Ethernet connection. Please make sure the manager PC must be set to the same **IP subnet address**.

For example, the default IP address of the Industrial Modbus Gateway is 192.168.0.100, then the manager PC should be set to 192.168.0.x (where x is a number between 1 and 254, except 100) and the default subnet mask is 255.255.255.0.

Logging in to the Industrial Modbus Gateway

1. Access Command Prompt and enter [telnet 192.168.0.100](#) to access the Telnet interface.
2. When the following dialog box appears, please enter the default user name and password "**admin**". The login screen in Figure 3-7 appears.

Default Username: admin

Default Password: admin



Figure 3-7: Telnet Login Screen

After entering the username and password, the telnet main screen appears as Figure 3-8 shows.

```
Please input hostname and password

Username: admin
Password: *****
      Pass !
ModbusGateway(Device)# _
```

Figure 3-8: Telnet Main Screen of Industrial Modbus Gateway



For security reason, please change and memorize the new password after this first setup.
1. Only accept command in lowercase letter under web interface.

3.4 PLANET Smart Discovery Utility

For easily listing the Industrial Modbus Gateway in your Ethernet environment, the Planet Smart Discovery Utility is an ideal solution. The following installation instructions are to guide you to running the Planet Smart Discovery Utility.

1. Insert the attached user's manual CD in the CD-ROM Drive.
2. Find and deposit the Planet Smart Discovery Utility in administrator PC.
3. Run this utility as the following screen appears.

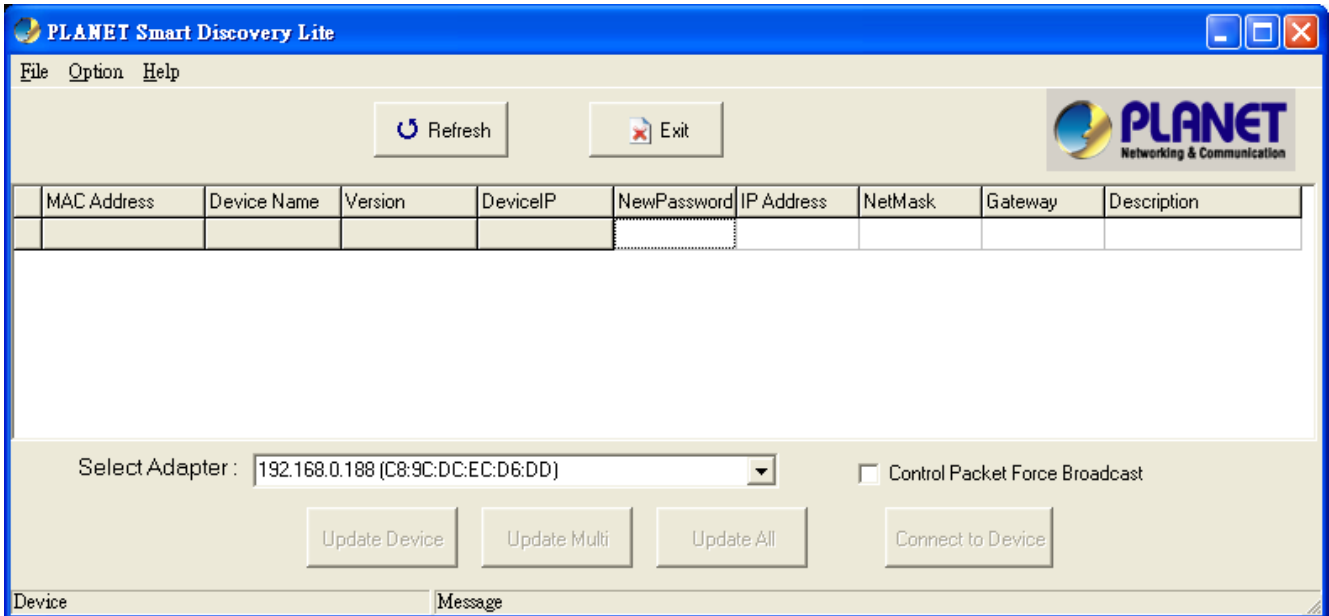


Figure 3-9: Planet Smart Discovery Utility Screen



If there are two LAN cards or above in the same administrator PC, choose a different LAN card by using the “**Select Adapter**” tool.

4. Press the “**Refresh**” button for the currently connected devices in the discovery list as the screen shows below:

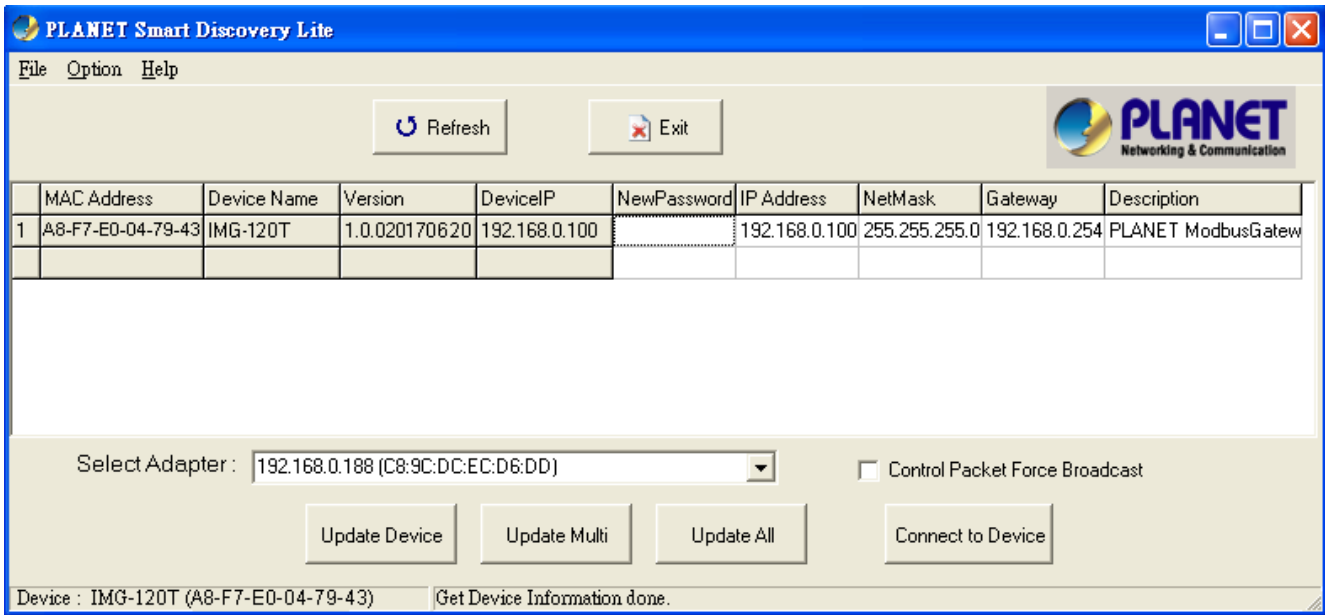


Figure 3-10: Planet Smart Discovery Utility Screen

1. This utility shows all necessary information from the devices, such as MAC address, device name, firmware version and device IP subnet address. It can also assign a new password, IP subnet address and description for the devices.
2. After the setup is completed, press the “**Update Device**”, “**Update Multi**” or “**Update All**” button to take effect. The functions of the 3 buttons above are shown below:
 - **Update Device:** Use the current setting on one single device.
 - **Update Multi:** Use the current setting on multi-devices.
 - **Update All:** Use the current setting on all the devices in the list.

The same functions mentioned above also can be found in the “**Option**” tool bar.
3. By clicking the “**Control Packet Force Broadcast**” function, it allows you to assign a new setting value to the Web Smart Switch under a different IP subnet address.
4. Press the “**Connect to Device**” button and input the username and password in the web login screen, and the web main screen appears in Figure 3-5.
5. Press the “**Exit**” button to shut down the Planet Smart Discovery Utility.

3.5 PLANET Modbus Gateway Utility

For easily listing and manage the Industrial Modbus Gateway in your Ethernet environment, the Planet Modbus Gateway Utility is an ideal solution. The following installation instructions are to guide you to installing and running the Planet Modbus Gateway Utility.

3.5.1 Installing PLANET Modbus Gateway Utility

The following install instructions guide you to the installations of the Planet Modbus Gateway Utility.

1. Insert the attached user's manual CD in the CD-ROM Drive.
2. Find the PLANET Modbus Gateway Utility_v1.0.exe from the CD-ROM as the icon is shown below:



3. Press the PLANET Modbus Gateway Utility_v1.0.exe and follow the on-screen instructions to install the utility. The install procedures in the following screens appear.

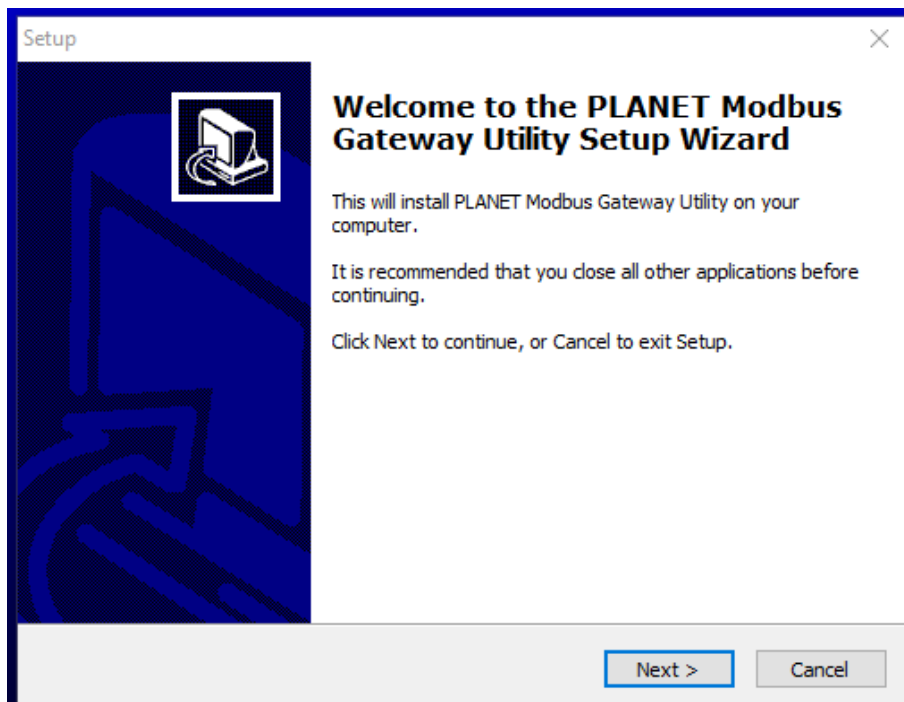


Figure 3-11: Planet Modbus Gateway Utility Install Process Screen

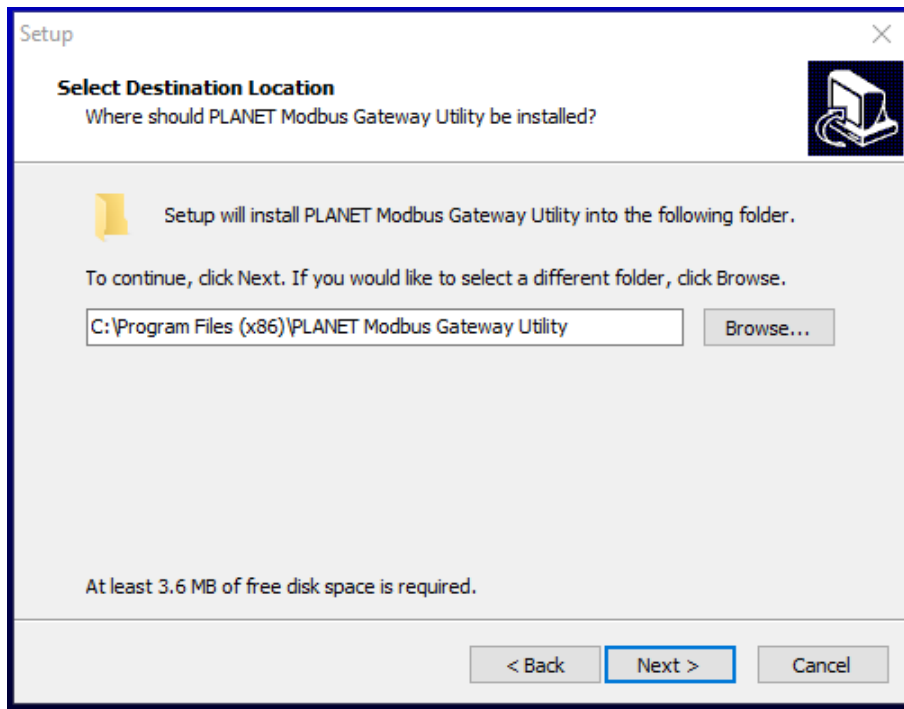


Figure 3-12: Planet Modbus Gateway Utility Install Process Screen

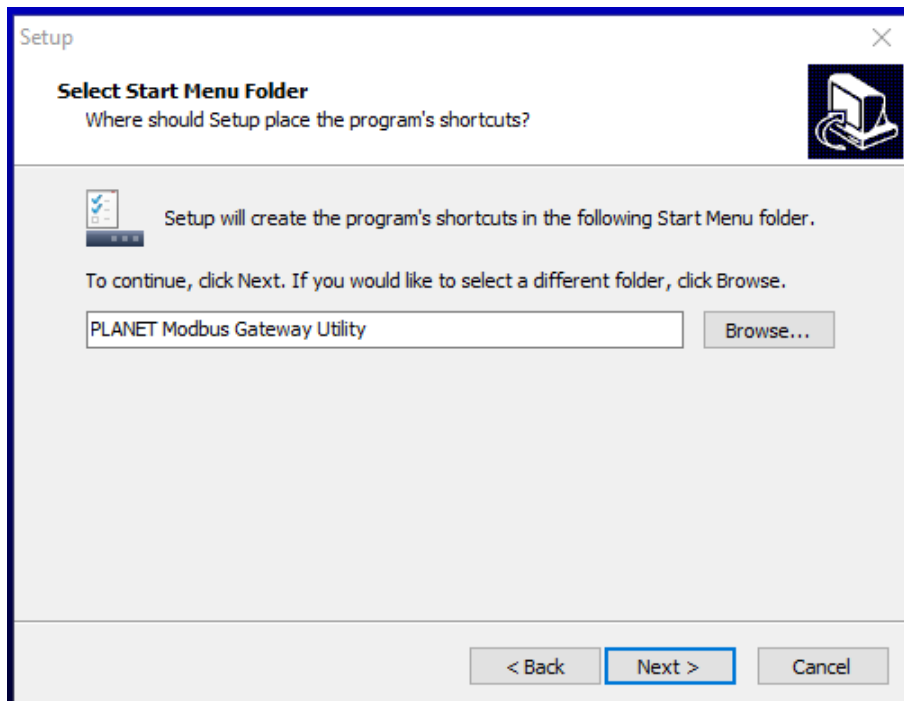


Figure 3-13: Planet Modbus Gateway Utility Install Process Screen

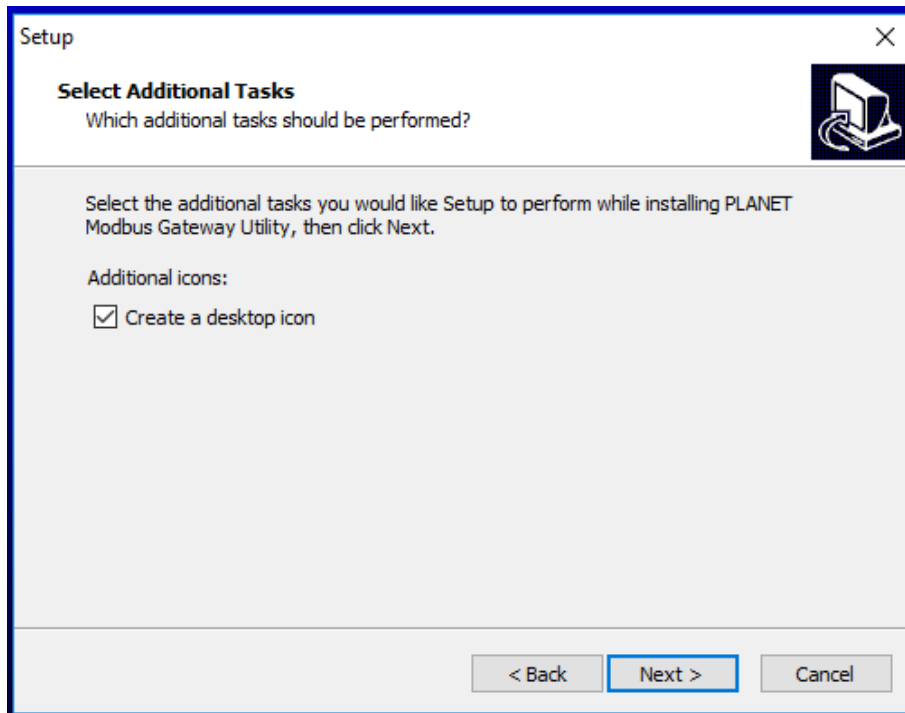


Figure 3-14: Planet Modbus Gateway Utility Install Process Screen

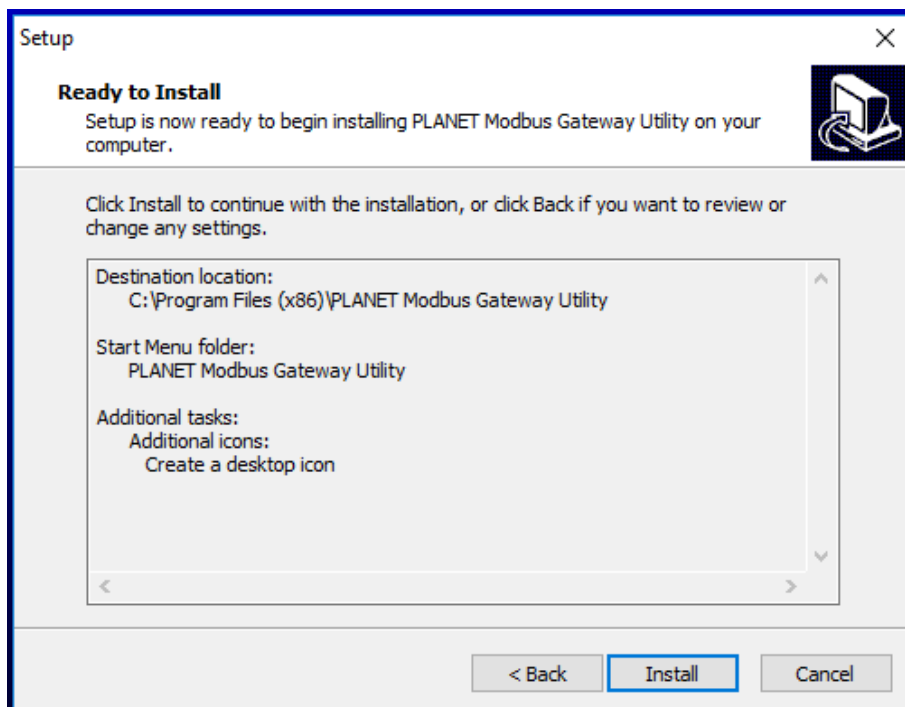


Figure 3-15: Planet Modbus Gateway Utility Install Process Screen

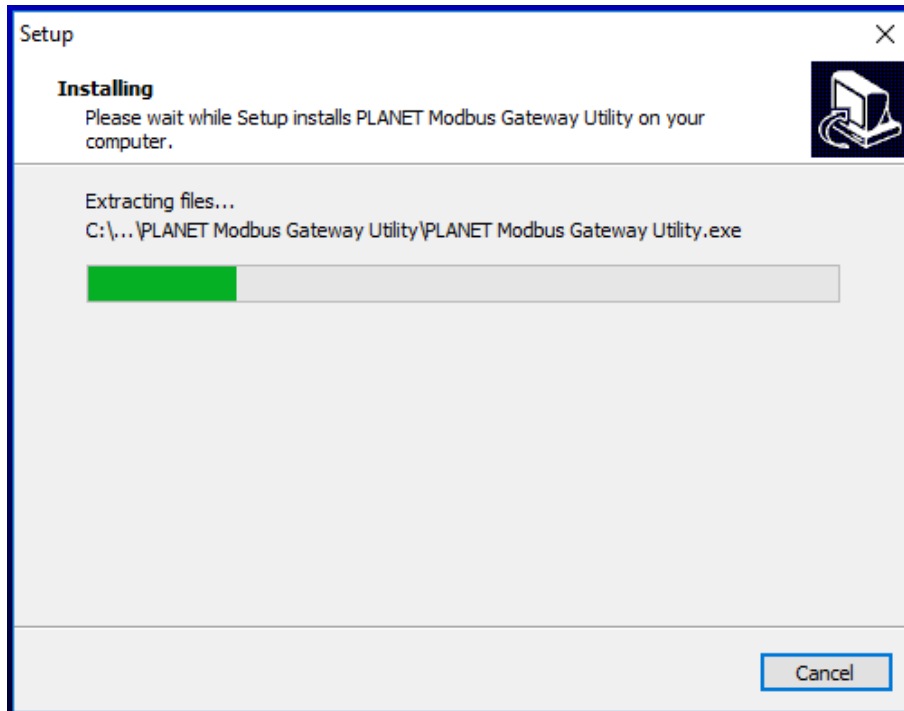


Figure 3-16: Planet Modbus Gateway Utility Install Process Screen

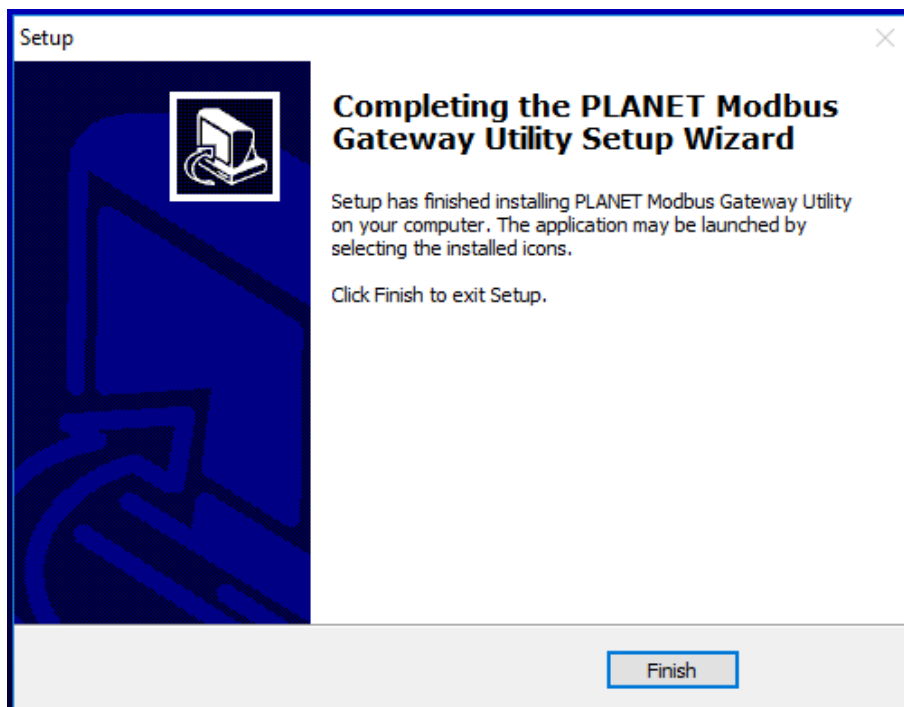


Figure 3-17: Planet Modbus Gateway Utility Install Complete Screen

4. Find the PLANET Modbus Gateway UtilityV1.0 icon on the desktop of administrator PC and double-click it as the icon is shown below:



5. After the installation is completed, execute the utility. The screen in Figure 3-18 appears.

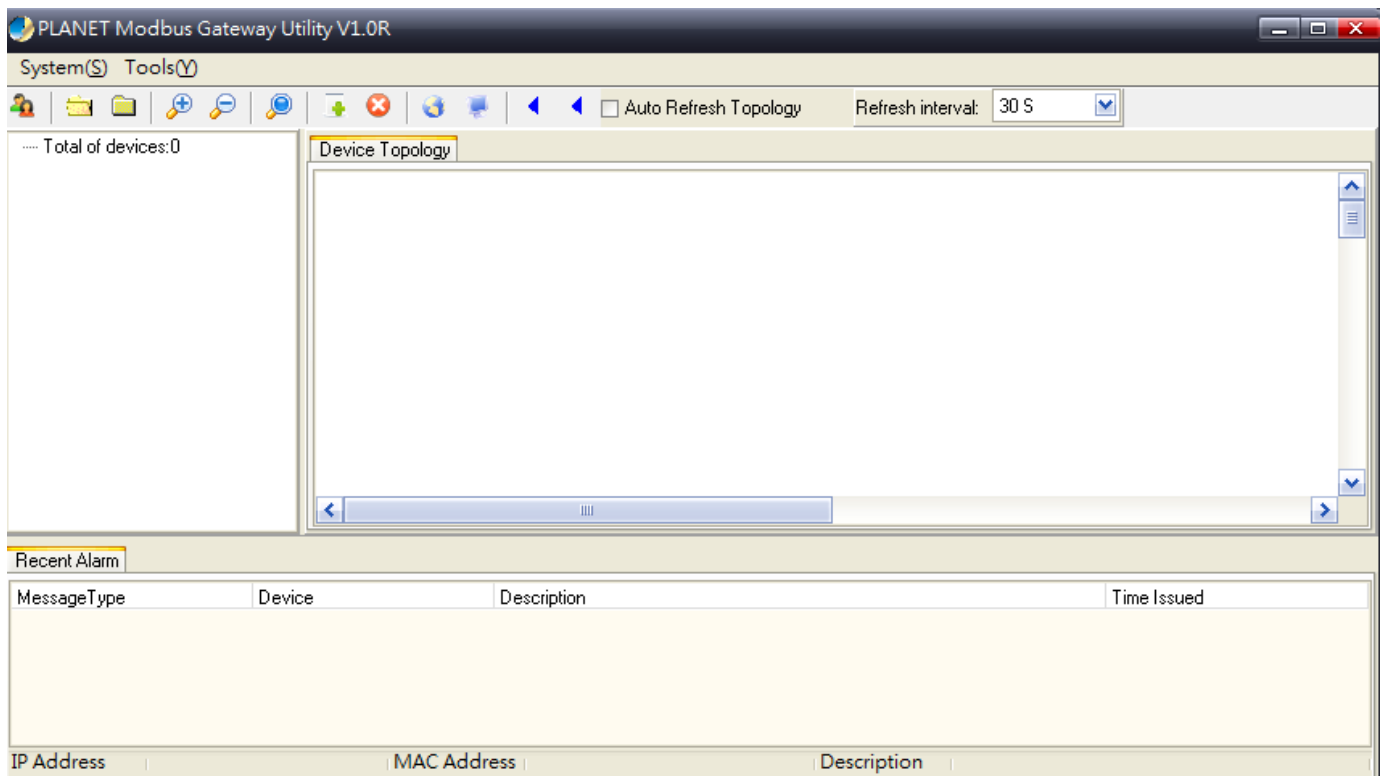


Figure 3-18: Planet Modbus Gateway Utility Main Screen

3.5.2 PLANET Modbus Gateway Utility Menu Bar

The Planet Modbus Gateway Utility menu bar has the following options:

- **System(S)**
- **Tools(Y)**

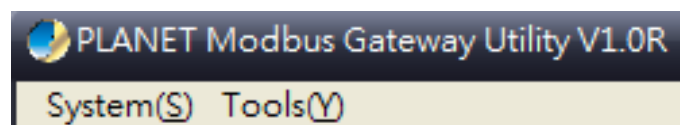


Figure 3-19: Planet Modbus Gateway Utility Tool Bar Screen

3.5.2.1 System(S)

This function provides **Select network adapter** and **Quit** for closing the PLANET Modbus Gateway Utility.

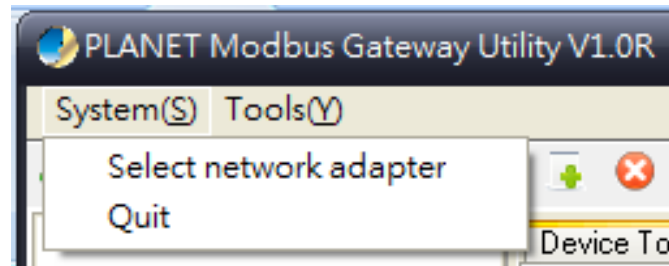


Figure 3-20: Planet Modbus Gateway Utility Tool Bar System Screen

Select network adapter

This option allows you to select the network adapter for management; press “OK” to apply the setting.

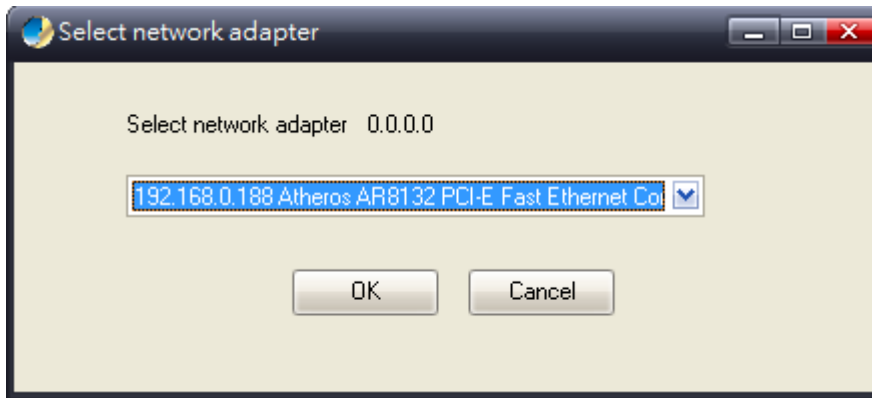


Figure 3-21: Planet Modbus Gateway Utility Tool Bar System -- Select network adapter Screen

Quit

This option allows you to press “Quit” for closing the PLANET Modbus Gateway Utility.

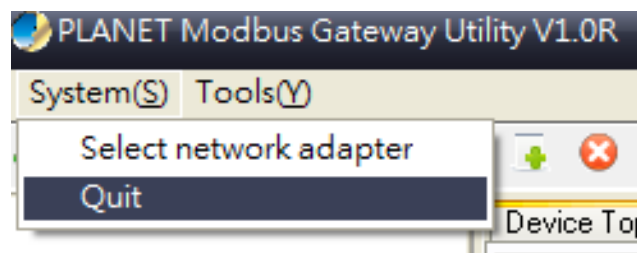


Figure 3-22: Planet Modbus Gateway Utility Tool Bar System -- Quit Screen

3.5.2.2 Tools (Y)

This function provides the following options:

- Search Device
- Set Search Type
- Set Timing Save
- Manual Add Device
- Batch IP Settings (B)

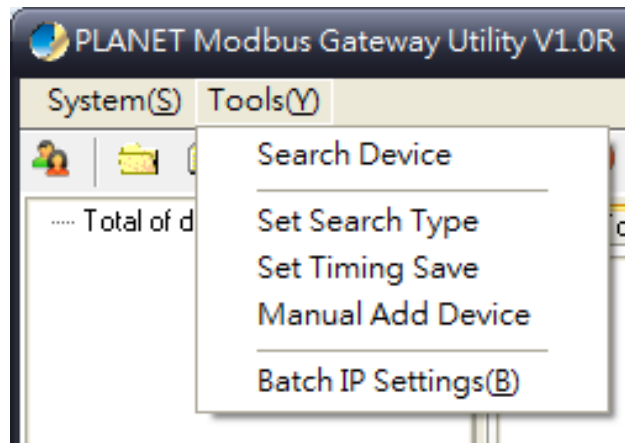


Figure 3-23: Planet Modbus Gateway Utility Tool Bar -- Tools Screen

Search Device

This option allows you to search the connected Industrial Modbus Gateway for further management .

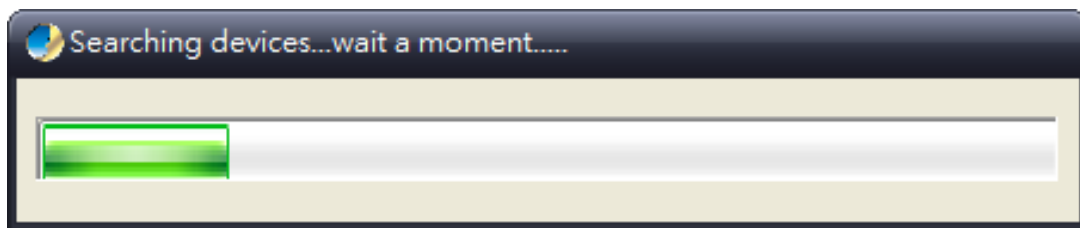


Figure 3-24: Planet Modbus Gateway Utility Bar Tool -- Search Device Screen

Set Search Type

This option allows you to specify which equipment is used for further management; the available options are shown below:

- Serial Server
- Switch
- All

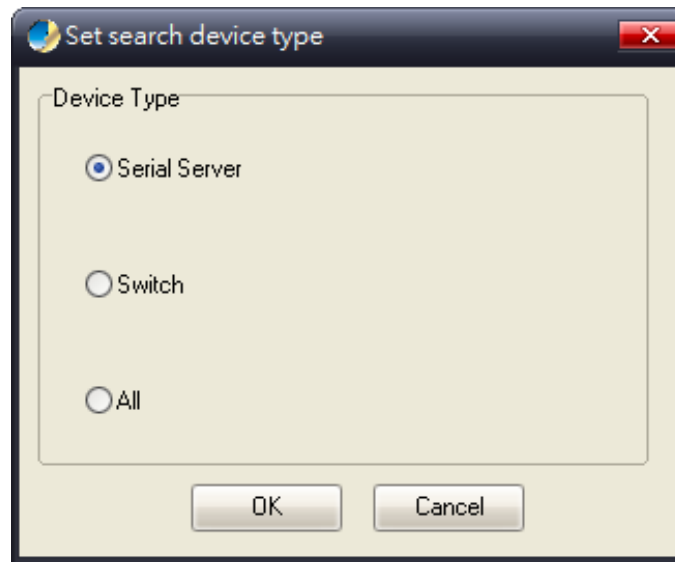


Figure 3-25: Planet Modbus Gateway Utility Tool Bar -- Set Search Type Screen



Note

The Switch option is a future feature which is not applicable at the moment.
1. Suggest choose the option of **Serial Server** or **All** for this function.

Set Timing Save

This option allows you to save timing device alert information to the database or specified file. Enable “**True**” for setting the timing save function. In the “**Activation time**”, set the cycle time of the save alarm information to “0H 30M 0S”, meaning it is saved every 30 minutes. In “**Type**”, select “**Saved to the database**” or “**Saved to the TXT file**”. When selecting “**Saved to the database**”, it is saved in “**alert log query**”. When selecting “**Saved to a text file**”, a file name has to be given and then it is saved in whatever folder you want.

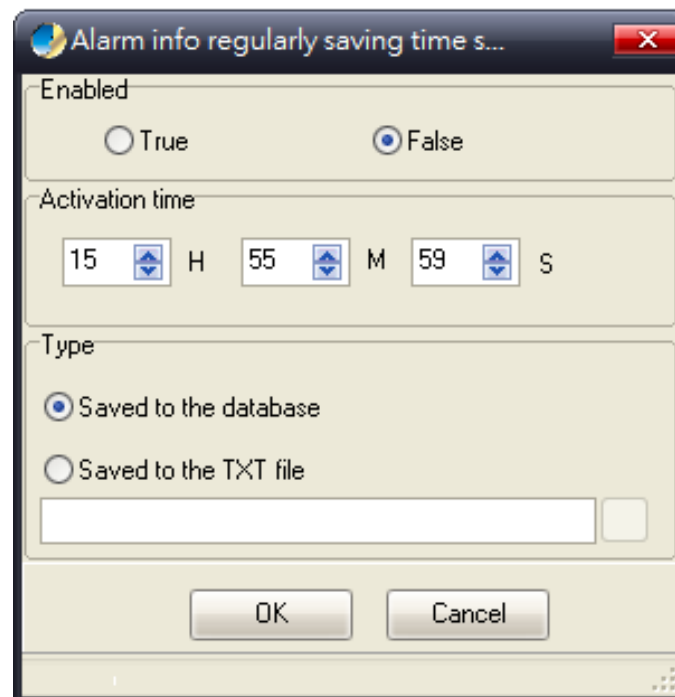


Figure 3-26: Planet Modbus Gateway Utility Tool Bar -- Set Timing Save Screen

Manual Add Device

This option allows you to manually set up IP search device and send search unicast packets; there are two ways to manually add the device as shown below:

- 1: Add **"On line Devices"** under an existing IP address, click " \surd " in front of the desired IP address and click on " $>$ " to add IP address;
- 2: A **"Device IP Address"** is filled out to manually enter the IP address and click **"Add"** to add the IP address. Click OK for adding a unicast packet to search equipment. If the router's port mapping is configured, it can implement search across route. Discovery process begins from PC Port 65533, Port 65534 sends commands to the specified device, and then Port 65533 responds to a search and send confirmation to PC Port 65534 to complete the search.

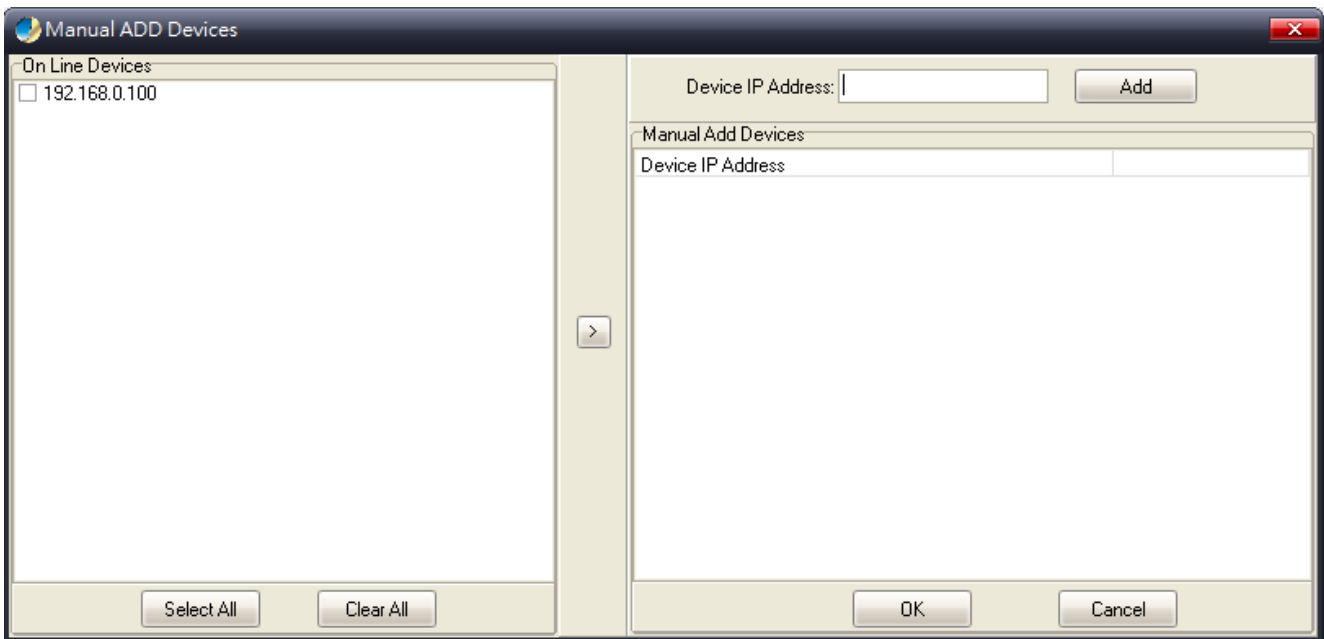


Figure 3-27: Planet Modbus Gateway Utility Tool Bar -- Manual Add Device Screen

Batch IP Settings

This option allows you to set up IP addresses for a group of devices so as to avoid one-by-one setting, which can save a lot of time.

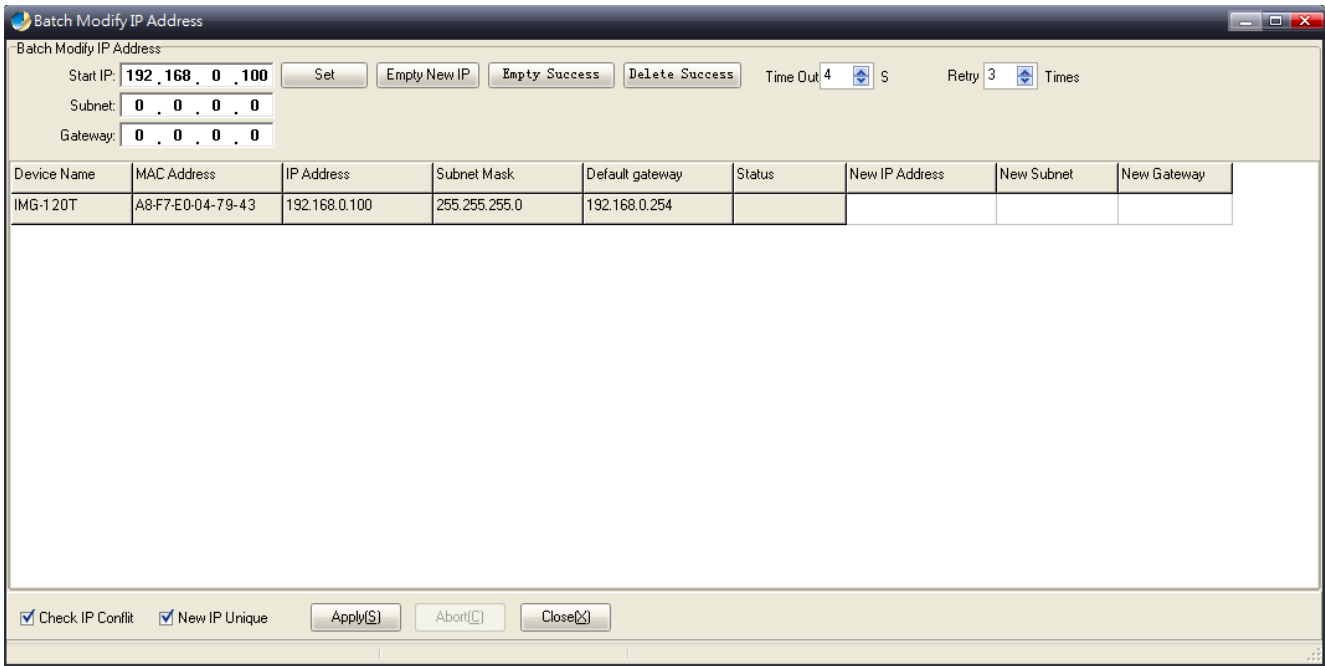


Figure 3-28: Planet Modbus Gateway Utility Tool Bar -- Batch IP Settings Screen



The IP address range is 1-254.

3.5.3 PLANET Modbus Gateway Utility Shortcut Menu Bar

The Planet Modbus Gateway Utility shortcut menu bar has the following options:

- User Manager
- Import Network Topology
- Export Network Topology
- Zoom In
- Zoom Out
- Search Device
- Save Topology
- Delete Topology
- Batch IP Settings
- Batch Monitoring IP Settings
- Hide Device Tree
- Hide Alarm List
- Auto Refresh Topology
- Refresh Interval



Figure 3-29: Planet Modbus Gateway Utility Shortcut Menu Bar Screen

3.5.3.1 User Manager



: This function provides setting up user name and password for PLANET Modbus Gateway Utility to avoid illegal modification on the Industrial Modbus Gateway.

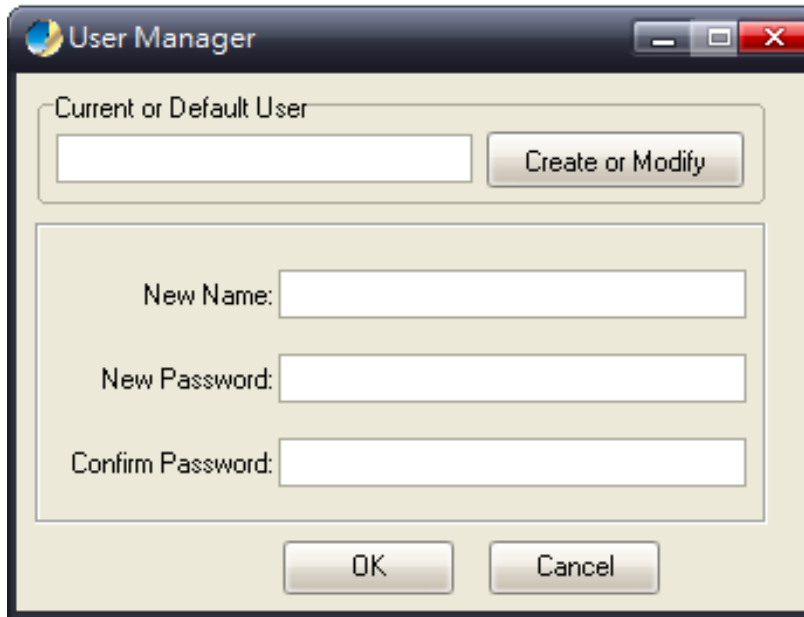


Figure 3-30: Planet Modbus Gateway Utility Shortcut Menu Bar -- User Manager Screen

The page includes the following fields:

Object	Description
• New Name	The ID of the user. Maximum length: 18 characters.
• Password	Enter the user's new password here. Maximum length: 18 characters.
• Confirm Password	Please enter the user's new password here again to confirm.

Button



: Click to apply changes.



Please remember the newly set-up “user name” and “password”; in case the user name and password are forgotten, please re-install the PLANET Modbus Gateway Utility.

3.5.3.2 Import Network Topology



: This function provides the import topology in PLANET Modbus Gateway Utility.

Step 1: Click the shortcut icon for the “**import Network Topology**” and enter search screen of administrator PC.

Step 2: Choose a “**.BEF**” document to be imported.

3.5.3.3 Export Network Topology



: This function provides the export topology in PLANET Modbus Gateway Utility and saved as “.BEF” document. For further review, please use the “**Import Network Topology**” function.

Step 1: Click the shortcut icon for the “**Export Network Topology**” and enter screen of administrator PC.

Step 2: Choose the saving route and fill in the document name, and click Save to save as “.BEF” document.

3.5.3.4 Zoom In



: This function provides the zoom in topology in PLANET Modbus Gateway Utility.

3.5.3.5 Zoom Out



: This function provides the zoom out topology in PLANET Modbus Gateway Utility.

3.5.3.6 Search Device



: This option allows you to search the connected Industrial Modbus Gateway for further management.

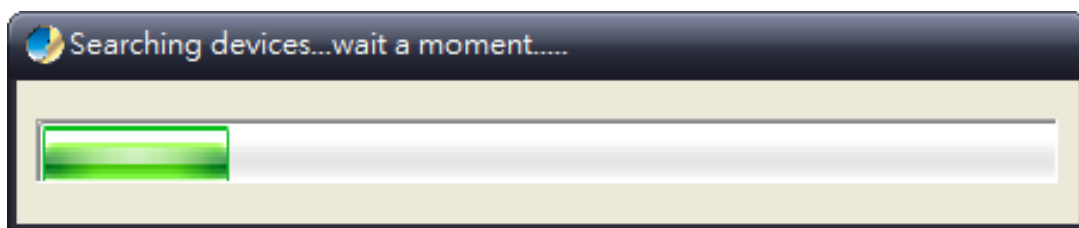


Figure 3-31: Planet Modbus Gateway Utility Shortcut Menu Bar -- Search Device Screen

3.5.3.7 Save Topology



: This option allows you to change the topology and save it in Industrial Modbus Gateway Utility.

3.5.3.8 Delete Topology



: This option allows you to delete the change of topology and save it in Industrial Modbus Gateway Utility.

3.5.3.9 Batch IP Settings



: This option allows you to set up IP addresses for a group of devices so as to avoid one-by-one setting, which can save a lot of time.

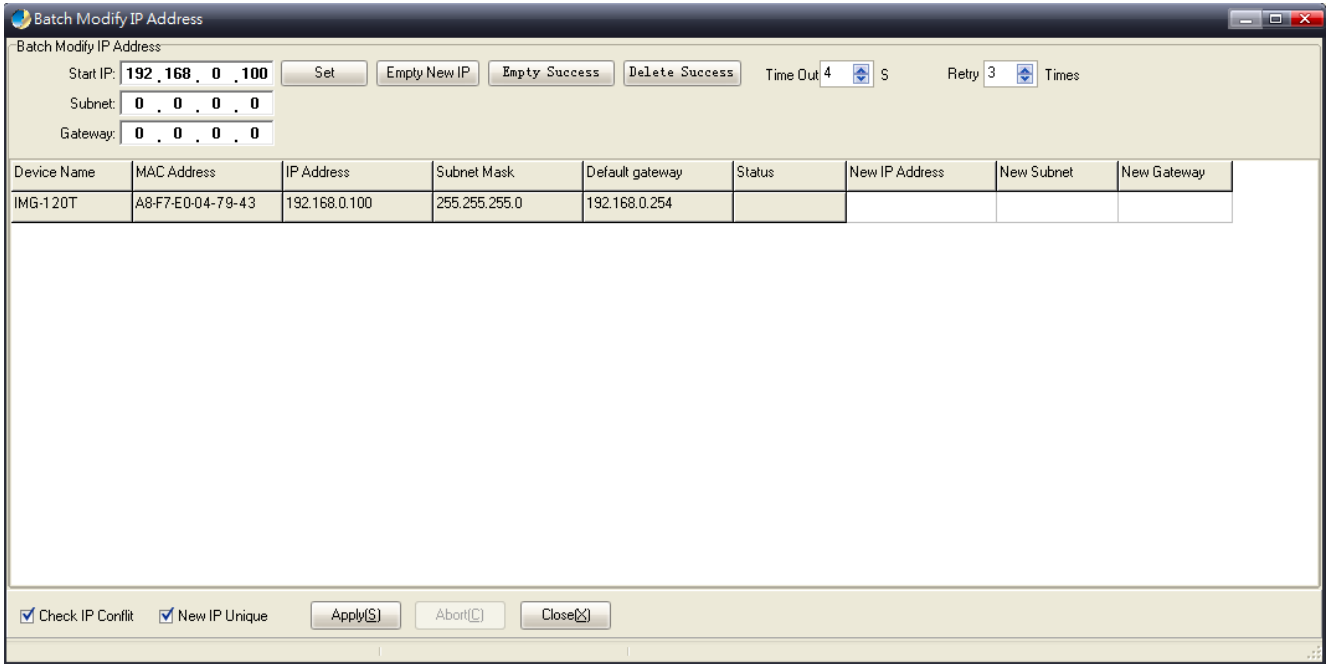


Figure 3-32: Planet Modbus Gateway Utility Shortcut Menu Bar -- Batch IP Settings Screen



The IP address range is from 1 to 254.

3.5.3.10 Batch Monitoring IP Settings



: This option allows you to set up Batch Monitoring IP addresses for a group of devices.

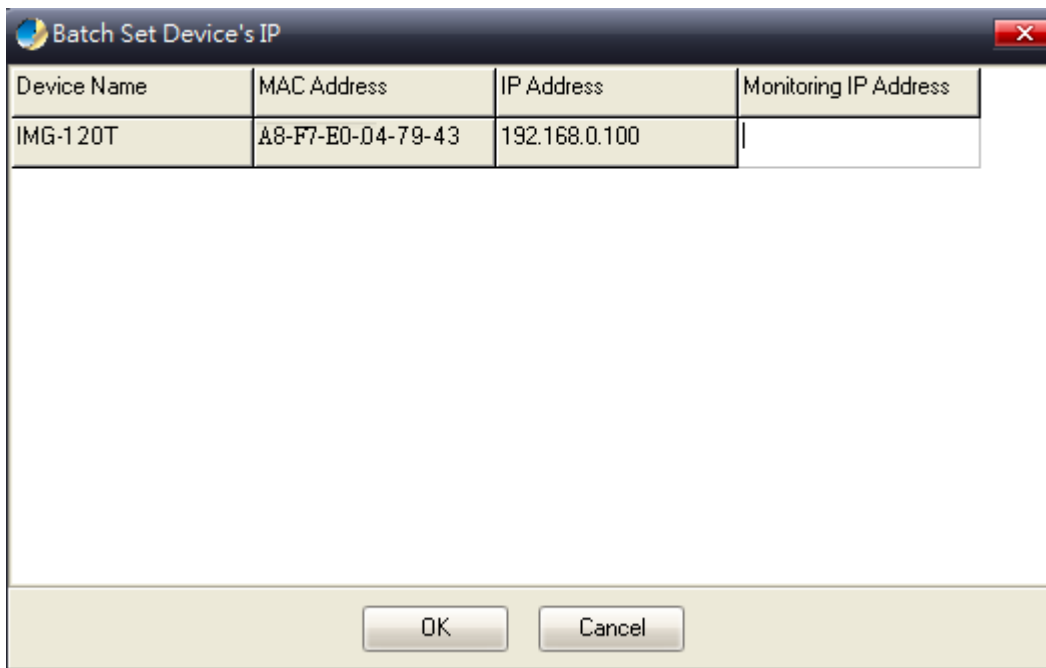


Figure 3-33: Planet Modbus Gateway Utility Shortcut Menu Bar -- Batch Monitoring IP Settings Screen

Button



: Click to apply changes.

3.5.3.11 Hide Device Tree/Show Device Tree



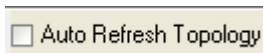
: This option allows you to hide or show the device tree in Industrial Modbus Gateway Utility.

3.5.3.12 Hide Alarm List/Show Alarm List



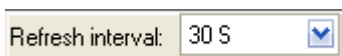
: This option allows you to hide or show the alarm list in Industrial Modbus Gateway Utility.

3.5.3.13 Auto Refresh Topology



: This option allows you to enable or disable Auto Refresh Topology in Industrial Modbus Gateway Utility.

3.5.3.14 Refresh Interval



: This option allows you to assign time for Refresh Interval in Industrial Modbus Gateway Utility; the available options are 10 S, 30 S, 1M, 10M, 30M and 60M.

3.5.4 PLANET Modbus Gateway Utility Device Function

The Planet Modbus Gateway Utility provides the following options for Industrial Modbus Gateway device management.

- **Web Console**
- **Device Name**
- **Network Settings**
- **Reset Factory Settings**
- **Recent Alarm**

3.5.4.1 Web Console

This function provides Web interface access to PLANET Modbus Gateway.

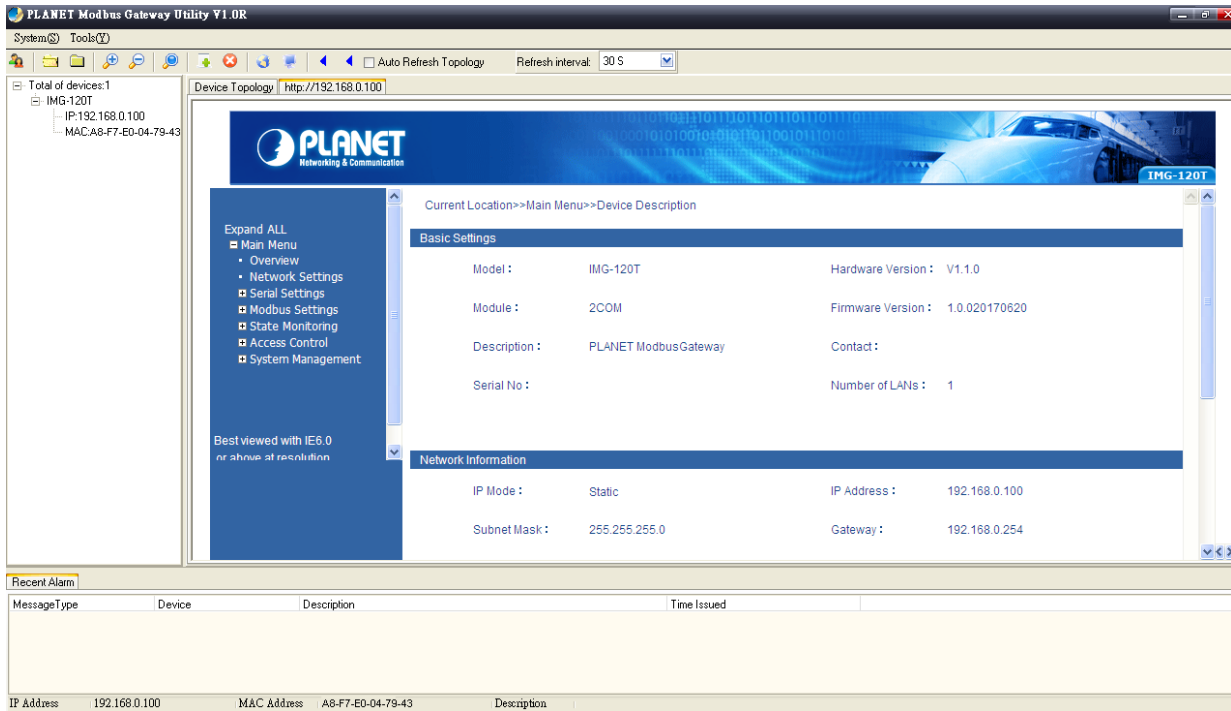


Figure 3-34: Planet Modbus Gateway Utility Device Function -- Web Console Screen

3.5.4.2 Device Name

This function is to change the Device name and Device number of PLANET Modbus Gateway.

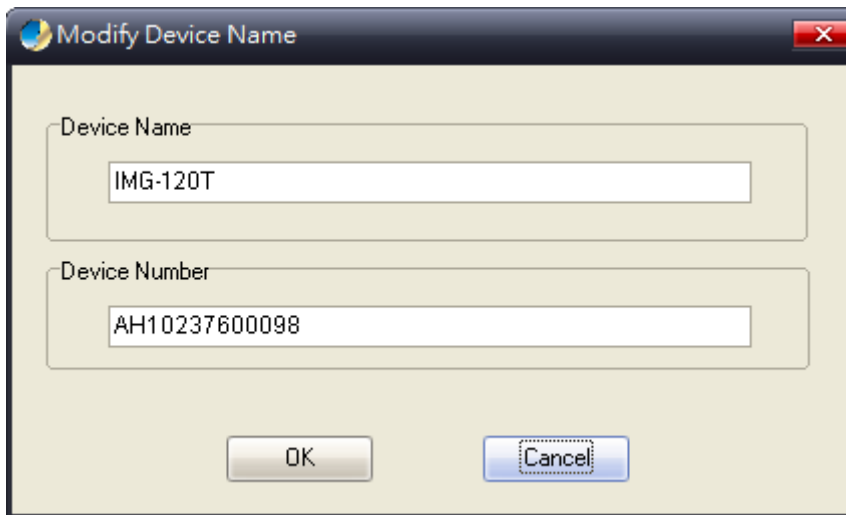


Figure 3-35: Planet Modbus Gateway Utility Device Function -- Device Name Screen

Button



: Click to apply changes.

3.5.4.3 Network Settings

This function is to change the IP subnet address of PLANET Modbus Gateway.

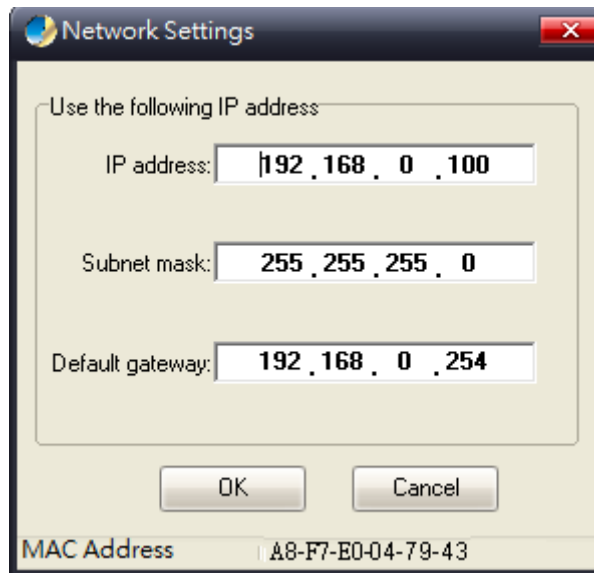


Figure 3-36: Planet Modbus Gateway Utility Device Function -- Network Settings Screen

Button



: Click to apply changes.

3.5.4.4 Reset Factory Settings

This function is to reset PLANET Modbus Gateway to default as the procedure is shown below:

Step 1: Activate PLANET Modbus Gateway Utility.

Step 2: Search the Industrial Modbus Gateway that needs to be reset to default and choose the device.

Step 3: Right-click to choose the “**Restore Factory Settings**”.

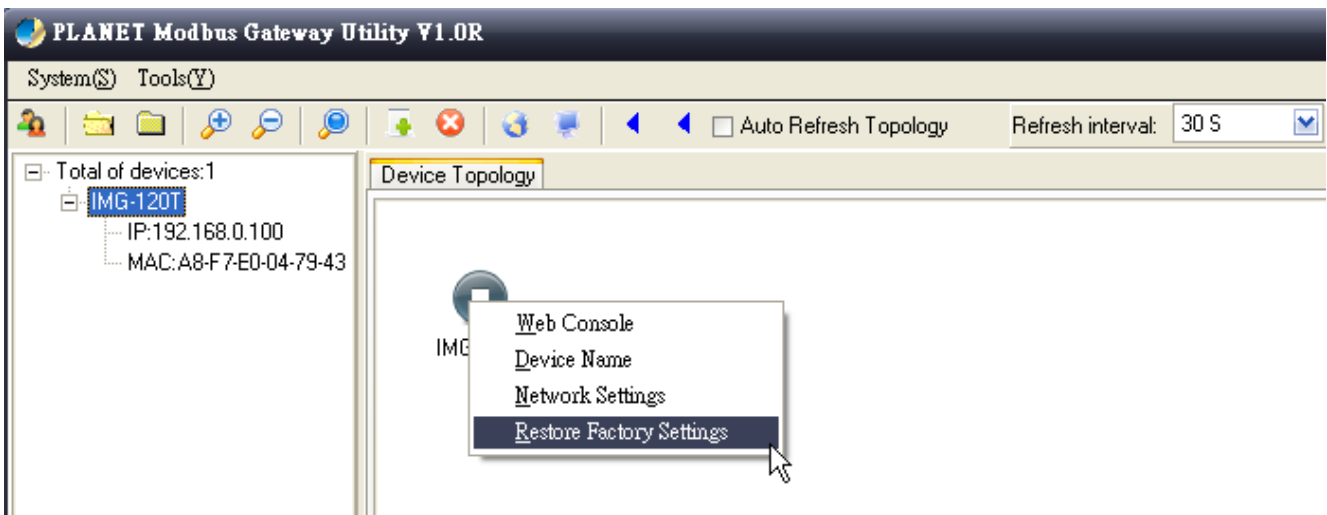


Figure 3-37: Planet Modbus Gateway Utility Device Function -- Restore Factory Settings Screen

Step 4: Click “**Yes**” when the “**Are you sure to restore factory settings**” pop window appears.



Figure 3-38: Planet Modbus Gateway Utility Device Function -- Restore Factory Settings Screen

Step 5: Press “OK” to complete the factory default procedure.

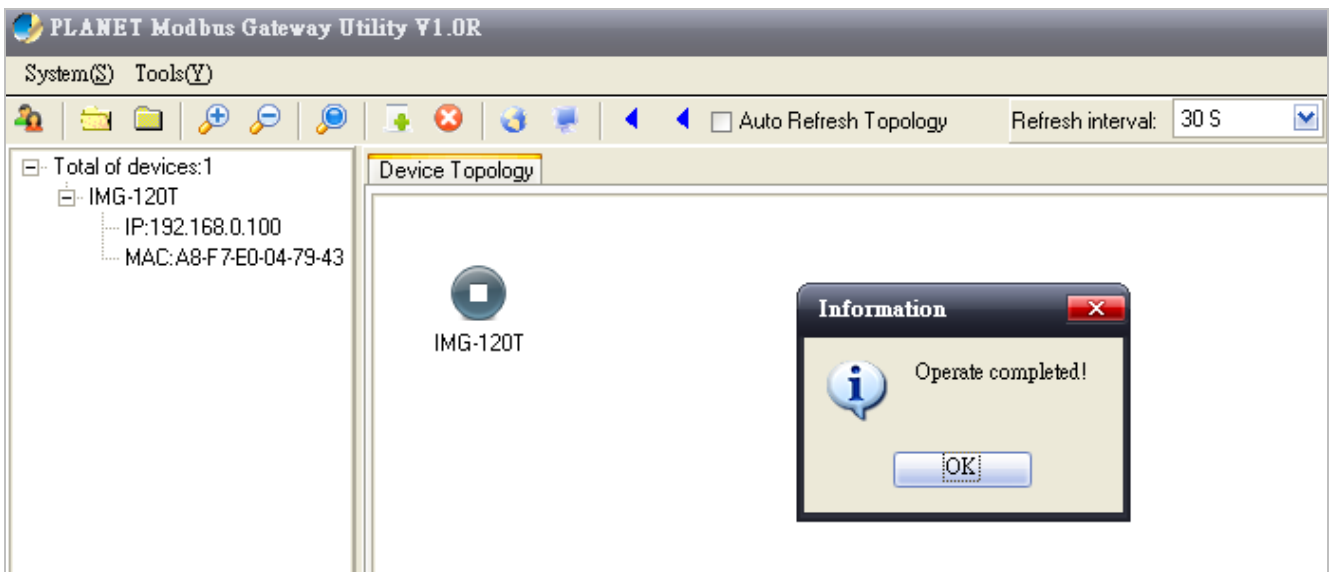



Figure 3-39: Planet Modbus Gateway Utility Device Function -- Restore Factory Settings Screen

Button

: Click to apply changes.

Step 6: Search the device again and you will see the Industrial Modbus Gateway with default IP address, and username and password: “admin”.

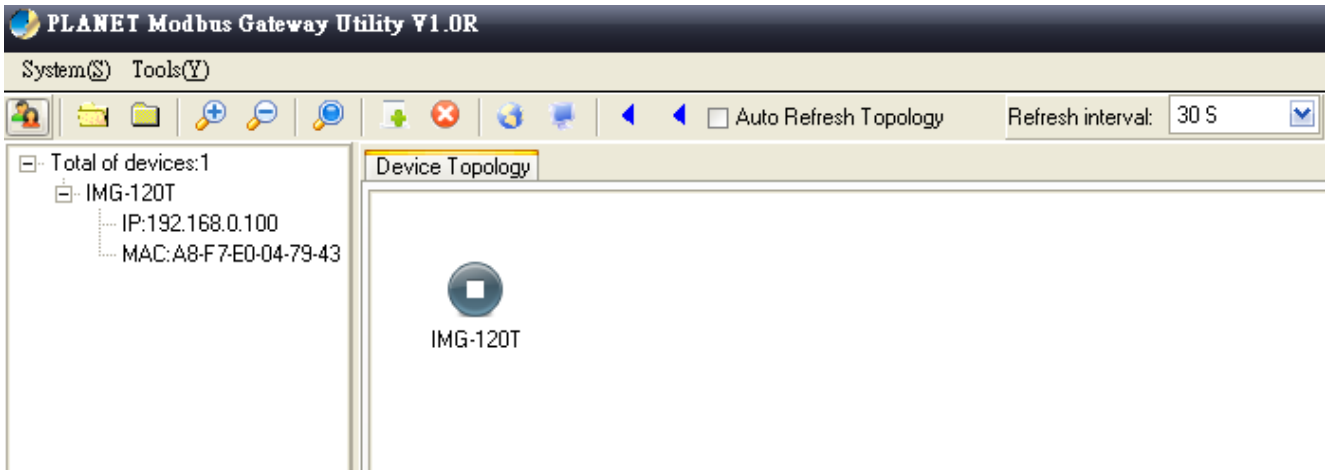


Figure 3-40: Planet Modbus Gateway Utility Device Function -- Restore Factory Settings Screen

3.5.4.5 Recent Alarm

This function is to display the alarm information of PLANET Modbus Gateway and also save the alarm messages for further review or export the alarm message as an excel file. The three options for the alarm message are shown below:

- Clear-clear alarm messages.
- Save-save alarm messages.
- Query-alarm log export.

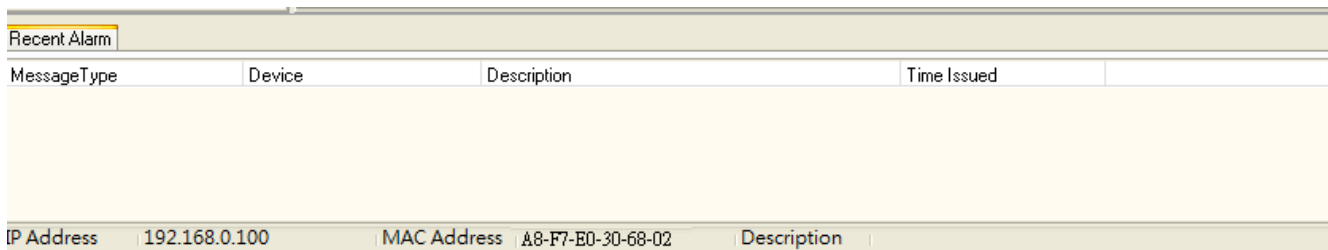


Figure 3-41: Planet Modbus Gateway Utility Device Function -- Recent Alarm Screen

CHAPTER 4. WEB MANAGEMENT

The Industrial Modbus Gateway provides Web interface for management function configuration which makes the Industrial Modbus Gateway operate more effectively. It can be configured through the various web browser tools. A network administrator can manage and monitor the Industrial Modbus Gateway from the local LAN. This section indicates how to configure the Industrial Modbus Gateway to enable its management to function.

4.1 Web Main Page

After a successful login and the web main screen appears, the web main screen displays the overview information of Industrial Modbus Gateway. The web main screen in Figure 4-1 appears.

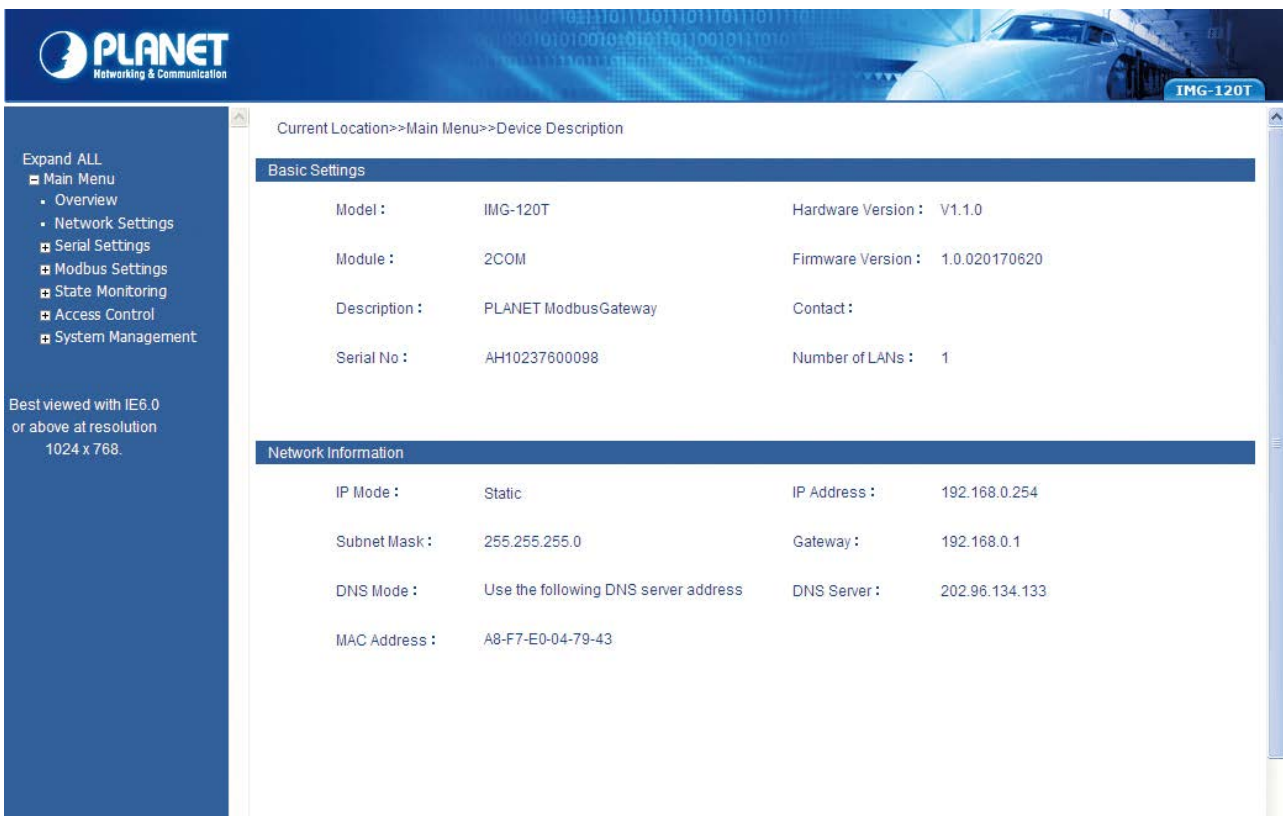


Figure 4-1: Web Main Screen

As listed on the left side of the web main screen, the configurable management functions are shown below:

■ Overview	Display the basic settings information and network information of Industrial Modbus Gateway.
■ Network Settings-	Set up the IP address of the Industrial Modbus Gateway.
■ Serial Settings	COM Settings: configure serial port parameters as shown below: Basic Settings (Alias/ Baud Rate/ Data Bits/ Stop Bits/Parity Bits/ Flow Control). Advance Settings (RTS control/DTR control). COM Information: display serial port settings related information.
■ Modbus Settings	Modbus Parameters: configure Modbus parameters as shown below: Basic Settings (Modbus Settings, Response Timeout & Interval Timeout)

	Slave ID: configure Slave ID Map Table parameters.
■ State Monitoring	Display the serial port communication traffic counters in transmit and receive.
■ Access Control	Configure access control parameters as shown below: Device Security: allow disable or enable Web Console, Telnet Console, Device Search, Firmware Upgrade function. IP Filtering: set up the IP address filtering function. MAC Filtering: set up the MAC address filtering function. User Management: allow to modify the username and password or disable authentication function. 3 sets of username and password can be configured.
■ System Management	Configure system management parameters as shown below: System Information: display the system information of Industrial Modbus Gateway. System File: provide factory default configuration; download and upload Configuration file from Local PC and Upgrade Firmware from Local PC. Logout & Reboot: provide system logout and system reboot.

4.2 Overview

The System Information page provides information for the current device. It helps a network manager to identify the versions and IP address. The screen in Figure 4-2 appears.



Figure 4-2: Overview Screen

The page includes the following fields:

Basic Settings	
• Model	The model name of Industrial Modbus Gateway.
• Hardware Version	The current hardware version of Industrial Modbus Gateway.
• Module	The module information of Industrial Modbus Gateway.
• Firmware Version	The current firmware version of Industrial Modbus Gateway.
• Description	The description of Industrial Modbus Gateway.
• Contact	The contact information of Industrial Modbus Gateway.
• Serial No.	The serial number information of Industrial Modbus Gateway.
• Number of LANs	The number of LANs information of Industrial Modbus Gateway.
Network Information	
• IP Mode	The current IP operation mode of Industrial Modbus Gateway.
• IP Address	The current IP Address of the Industrial Modbus Gateway. The IP Address could be manually assigned. The factory default value is 192.168.0.100.
• Subnet Mask	The current IP Subnet Mask setting on the Industrial Modbus Gateway. The factory default value is 255.255.255.0.
• Gateway	The default gateway for the Industrial Modbus Gateway; the factory default value is 192.168.0.254.
• DNS Mode	The DNS mode information of Industrial Modbus Gateway.
• DNS Server	The DNS server information of Industrial Modbus Gateway.
• MAC Address	The MAC address information of Industrial Modbus Gateway.

4.3 Network Settings

This function allows setting the value for network configuration. For the IP address, set the values of IP Address, Subnet Mask and Gateway. For the DNS server address, set the value of DNS Server. Press the “Submit” button to finish the settings as shown in Figure 4-3.

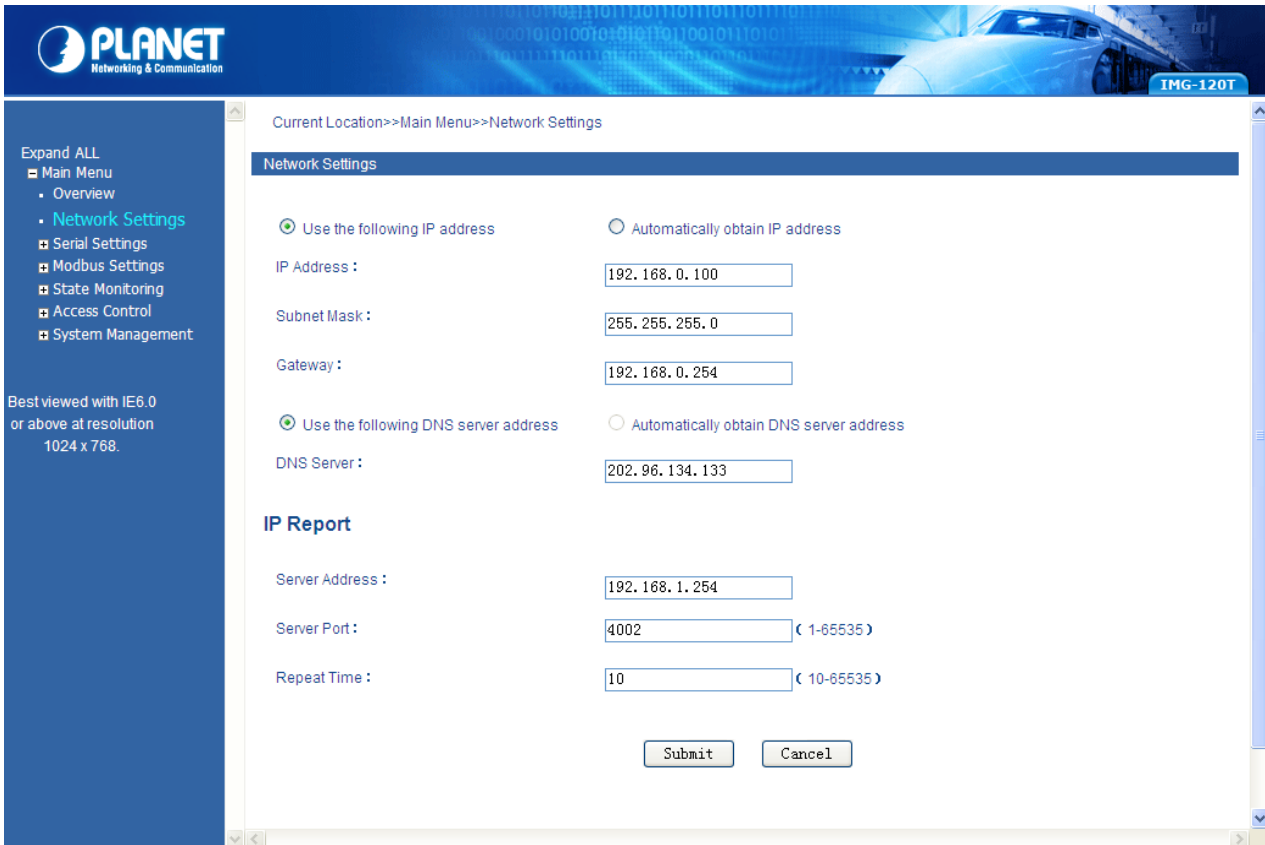


Figure 4-3: Network Settings Screen

The page includes the following configurable data:

Network Settings	
• Use the following IP Address	Choose static IP address for the Industrial Modbus Gateway.
• Automatically Obtain IP Address	Enable the DHCP function for the Industrial Modbus Gateway. When enabling this function, the Industrial Modbus Gateway will send a DHCP request to the DHCP server in the network. Once the DHCP Server gets the request, it will assign a dynamic IP address, subnet mask and gateway to the Industrial Modbus Gateway. The factory default setting is “Disable”.
• IP Address	Manually assign IP address to the Industrial Modbus Gateway. The factory default value is 192.168.0.100
• Subnet Mask	Manually assign subnet mask to the Industrial Modbus Gateway. The factory default value is 255.255.255.0
• Gateway	Manually assign Gateway to the Industrial Modbus Gateway. The factory default value is 192.168.0.254
• Use the following DNS Server Address	Choose static IP address for the DNS server of Industrial Modbus Gateway.

<ul style="list-style-type: none">• Automatically obtain DNS server address	Enable the DHCP function for the DNS server of Industrial Modbus Gateway.
<ul style="list-style-type: none">• DNS Server	DNS is the way that Internet domain names are identified and translated into IP addresses. A domain name is an alphanumeric name, such as planet.com, which is usually easier to remember. Assign the DNS server IP address.
IP Report	
<ul style="list-style-type: none">• Server Address	Need to report to the top of the host IP.
<ul style="list-style-type: none">• Server Port	When reporting or listening to the port, the default is 4002.
<ul style="list-style-type: none">• Repeat Time	Report IP interval (seconds); the default is 10.

Button

: Click to apply changes.

4.4 Serial Settings

This function provides serial port COM settings and displays the serial port COM information.

4.4.1 COM Settings

This function allows setting the value for serial port COM configuration. Press the “**Submit**” button to set the value as shown in Figure 4-4.

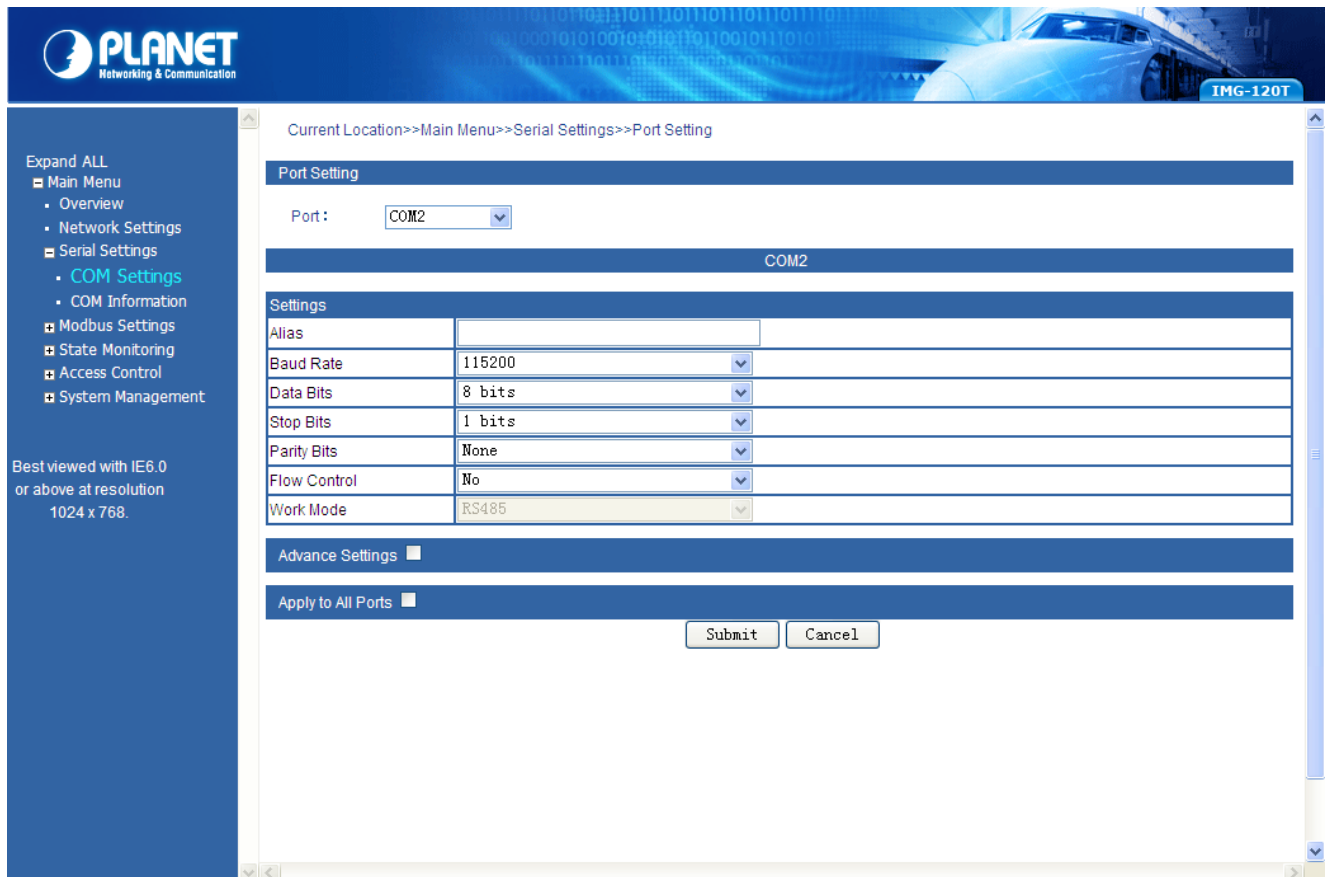


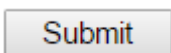
Figure 4-4: Serial Settings -- COM Settings Screen

The page includes the following configurable data:

Port Setting	
• Port	Display the COM1 information.
Settings	
• Alias	Manually input the description of serial port; the available range is 30 characters.
• Baud Rate	It is a parameter to check the communication speed. It shows to transfer how many bits in 1 second. The available options are shown below: 300/600/1200/2400/4800/9600/19200/38400/57600/115200.
• Data Bits	It is a parameter to check the actual data bits in communication; when PC sends a packet, actual data is not 8 bits; the standards are 7 bits and 8 bits .
• Stop Bits	The last bit of the single packet -- the typical values are 1 bit and 2 bits .
• Parity Bits	It is a simple method to check out fault in serial communication; it has 4 types:

	Even/Odd/Mark/Space.
• Flow Control	Flow control is determined by product hardware. For some reason, it cannot communicate. When communication is blocked, open the flow control to ease. Flow control allows the data receiving device to notify the data sending device when it is unable to receive the data, so that it can be stopped. It includes XON/XOFF, DTR/DSR, and RTS/CTS.
• Work Mode	Work mode is determined by product hardware. When the product is RS485 serial port, it will display RS-485. When the product is the RS232 interface, it will display RS-232.
• Advance Settings	According to the needs, the user can modify the output state of the DTR and RTS signals at any time
• RTS Ctrl	<p>[Force ON] RTS signal is automatically set to the ON state after every time you open the serial port, and it is forbidden to change the user to modify. (When the RTS flow control mode is turned on, it is invalid.)</p> <p>[Force OFF] RTS signal is automatically set to the OFF state after every time you open the serial port, and it is forbidden to change the user to modify. (When the RTS flow control mode is turned on, it is invalid.)</p>
• DTR Ctrl	<p>[Force ON] DTR signal is automatically set to the ON state after every time you open the serial port, and it is forbidden to change the user to modify. (When the DTR flow control mode is turned on, it is invalid.)</p> <p>[Force OFF] DTR signal is automatically set to the OFF state after every time you open the serial port, and it is forbidden to change the user to modify. (When the DTR flow control mode is turned on, it is invalid.)</p>
• Apply to All Ports	Choose this option to apply the setting to all ports.

Button



: Click to apply changes.

4.4.2 COM Information

The function displays the serial port COM information like the current communication parameters of serial port as shown below:

- Port
- Alias
- Baud Rate
- Data Bits
- Stop Bits
- Parity Bits
- Flow Control
- FIFO
- Work Mode

The screen in Figure 4-5 appears.



Figure 4-5: Serial Settings -- COM Information Screen

4.5 Modbus Settings

This function provides Modbus parameters settings and slave ID settings.

4.5.1 Modbus Parameters

This function allows setting the value for serial port COM configuration. Press the “Submit” button to set the value as shown in Figure 4-6.

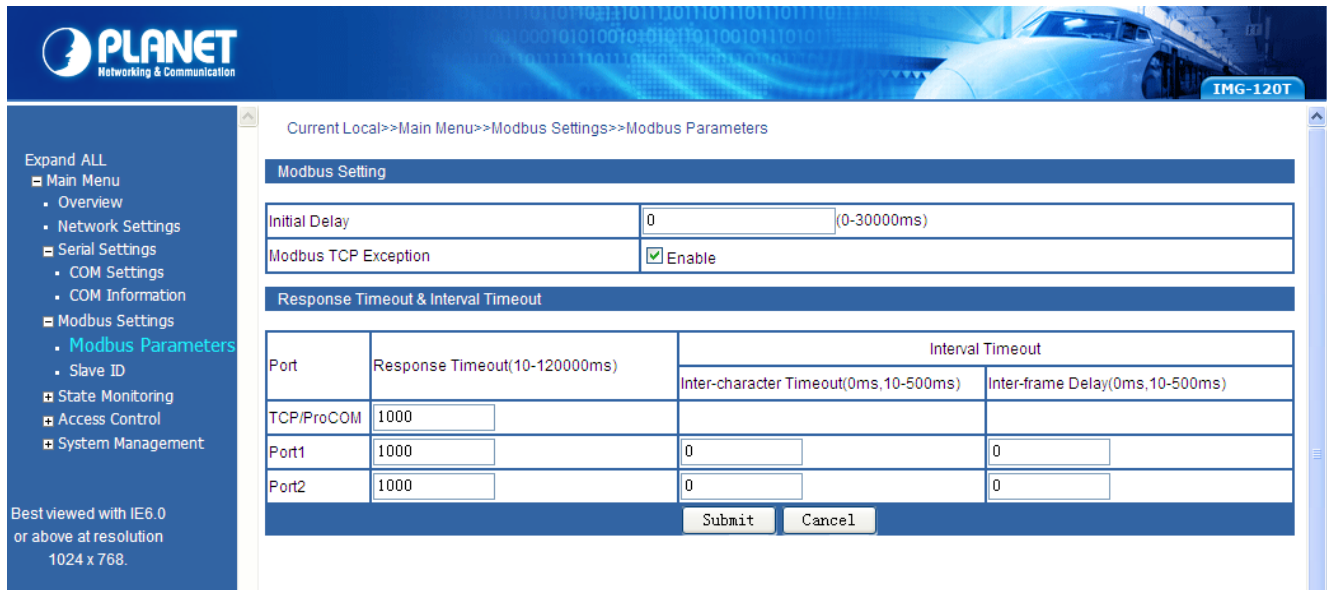


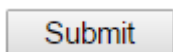
Figure 4-6: Modbus Parameters Screen

The page includes the following fields:

Modbus Setting	
• Initial Delay	This function based on the Modbus from the machine device initialization time is relatively long. Before these devices are initialized, the request should be sent to the frame access, so the Industrial Modbus Gateway sets the initialization delay time to decide the time delay of the first request that can be sent.
• Modbus Exception	TCP This parameter is used to display the Modbus TCP exception in the Modbus monitoring software. Once the parameter is enabled, the Industrial Modbus Gateway sends a Modbus TCP exception to the Modbus monitoring software.
Response Timeout & Interval Timeout	
• Port	Indicates the TCP/ProCOM and Port1.
• Response Timeout (10-120000ms)	The Modbus is a master and slave protocol; the master station equipment accesses the slave station equipment which needs a response timeout; the time is the gateway device response time. This parameter is found in the second and third steps in the diagram below. The gateway equipment forwards the request information of the master station to the slave station, and if there is no reply message from the slave station equipment in the response time, the gateway equipment sends out the timeout response information to the master station. The available range is 10-120000ms .

<ul style="list-style-type: none"> • Inter-character Timeout (0ms,10-500ms) 	<p>In a single frame, the time difference is between a single character and the next character. When the value is 0, the default is 3.5T time, which is equal to 3.5 characters. The available range is 10-500ms.</p>
<ul style="list-style-type: none"> • Inter-frame Delay (0ms,10-500ms) 	<p>The current RTU response with the next RTU request is between the time intervals. The default is 0ms. This feature is to avoid the RTU request from the station equipment. Set the time interval to facilitate the RTU from the station equipment that has adequate time to handle the request. The available range is 10-500ms.</p>

Button



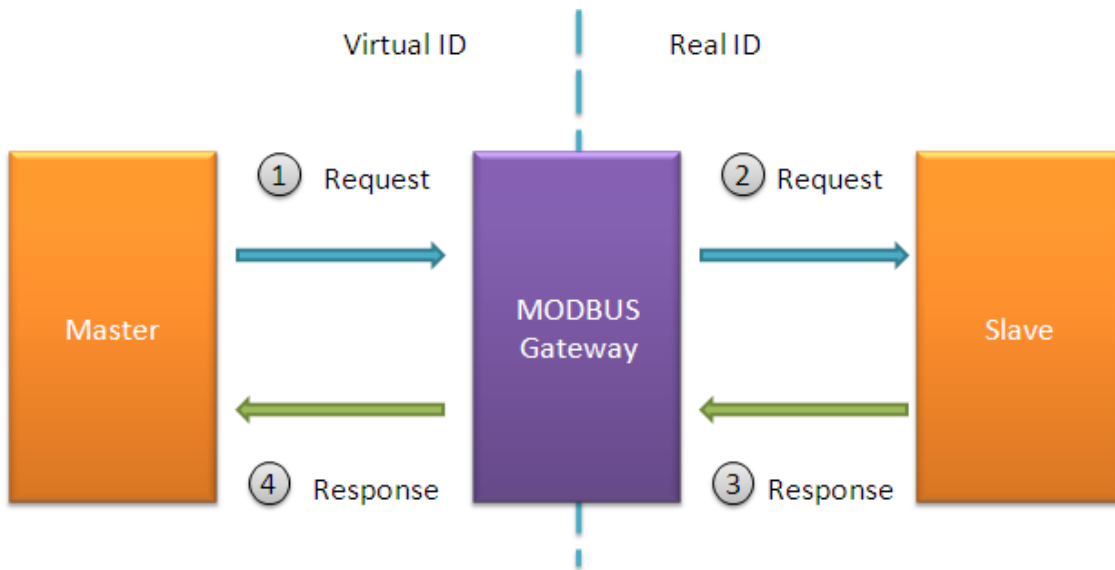
: Click to apply changes.

4.5.2 Slave ID

The Modbus protocol provides a unique ID number (1 ~ 247) to all of the slave devices. The ID number is used to identify the address of the slave device to respond to requests from the master device. The Modbus equipment ID number is set by the manufacturers. Most of them can be modified. It is an actual ID number.

Virtual ID is used to specify the ID Modbus of each connected gateway. When the Modbus master device accesses the virtual ID, the gateway device converts the virtual ID address into the actual ID address. When the Modbus slave device responds to the master device, the gateway device will convert the actual ID address to the virtual ID address. For the Modbus master, it only needs to access the "virtual" ID. The conversion between the virtual ID and the actual ID is called ID mapping. The Gateway device achieves the function of ID mapping by

setting the ID range and ID offset. Only the channel type in the slave mode of the channel can be set up, including the Slave ASCII, Slave RTU and Slave TCP. Virtual ID + ID Offset = Real ID (Actual ID).



This function allows setting the value for slave ID configuration. Press the “Add” and “Submit” buttons to set the value as shown in Figure 4-7.



Figure 4-7: Slave ID Screen

The page includes the following fields:

Slave ID Map Table	
Channel No.	Display the channel number.
Channel Type	This parameter is to choose RTU Master/RTU Slave/ASCII Master/ASCII Slave operation modes; the default mode is RTU Slave.
Channel Definition	Display the channel definition information.
Slave ID Range (Virtual~~~Real)	Display the Slave ID Range information.

Operate	Provide Delete and Modify button.
----------------	-----------------------------------

Press to access the following parameters screen.

Figure 4-8: Slave ID Parameters Screen

The page includes the following fields:

Remote IP Address	Allow input the remote IP address.
TCP Port	This parameter is to input the TCP port and available range is 1-65535.
Slave ID Start	This parameter is to input the start Slave ID and available range is 0-247.
Slave ID End	This parameter is to input the end Slave ID and available range is 0-247.
Slave ID Offset	This parameter is to input the offset Slave ID and available range is -253-253.

Buttons

: Click to apply changes.

: Click to apply changes.

: Click to delete setting.

: Click to modify setting.

RTU Master Mode

This function allows the users to use Modbus RTU master device and Modbus TCP device to achieve communication. The operation mode of the Industrial Modbus Gateway is set to RTU Master.

Step 1: Choose “**RTU Master**” in Channel Type.

Step 2: Press the “**Add**” button to input the setting parameters.

Step 3: After setup is completed, press the “**Affirm**” button to take effect.

Remote IP address	192.168.0.188
TCP Port	6000
Slave ID Start	3
Slave ID End	4
Slave ID Offset	2
<input type="button" value="Affirm"/> <input type="button" value="Cancel"/>	

Figure 4-9: Slave ID Parameters Screen

Current Local>>Main Menu>>Modbus Setting>>Slave ID Map

Slave ID Map

Slave ID Map Table				
Channel No.	Channel Type	Channel Definition	Slave ID Range (Virtual~Real)	Operate
1	RTU Master	Port1	0 - 0 ~~~ 0 - 0	Delete Modify
2	RTU Slave	Port2	2 - 2 ~~~ 2 - 2	Delete Modify
3	Modbus TCP	192.168.0.188:6000	3 - 4 ~~~ 5 - 6	Delete Modify

Best viewed with IE6.0 or above at resolution 1024 x 768.

Figure 4-10: Slave ID-RTU Master Screen

The IP address of the TCP is 192.168.0.188 (For example, the IP address of the local PC), the TCP port number is 6000, and the virtual ID is 3~4. Offset is 2.

RTU Slave Mode

This function allows the users to use Modbus TCP master device and Modbus RTU device to achieve communication. The operation mode of the Industrial Modbus Gateway is set to RTU Slave.

Step 1: Choose “RTU Slave” in Channel Type.

Step 2: Press the “Modify” button to input the setting parameters.

Step 3: After setup is completed, press the “Affirm” button to take effect.

Remote IP address	
TCP Port	
Slave ID Start	3
Slave ID End	4
Slave ID Offset	2
<input type="button" value="Affirm"/> <input type="button" value="Cancel"/>	

Figure 4-11: Slave ID Parameters Screen

Current Local>>Main Menu>>Modbus Setting>>Slave ID Map

Slave ID Map

Slave ID Map Table				
Channel No.	Channel Type	Channel Definition	Slave ID Range (Virtual~~~Real)	Operate
1	RTU Slave	Port1	3 - 4 ~~~ 5 - 6	<input type="button" value="Delete"/> <input type="button" value="Modify"/>
2	RTU Slave	Port2	7 - 8 ~~~ 9 - 10	<input type="button" value="Delete"/> <input type="button" value="Modify"/>

Figure 4-12: Slave ID-RTU Slave Screen

The virtual ID is 3~4. Offset is 2 in Channel No 1.

ASCII Master Mode

This function allows the users to use Modbus ASCII master device and Modbus TCP device to achieve communication. The operation mode of the Industrial Modbus Gateway is set to ASCII Master.

Step 1: Choose “**ASCII Master**” in Channel Type.

Step 2: Press the “**Add**” button to input the setting parameters.

Step 3: After setup is completed, press the “**Affirm**” button to take effect.

Remote IP address	192.168.0.188
TCP Port	6000
Slave ID Start	3
Slave ID End	4
Slave ID Offset	2
<input type="button" value="Affirm"/> <input type="button" value="Cancel"/>	

Figure 4-13: Slave ID Parameters Screen

Current Local>>Main Menu>>Modbus Setting>>Slave ID Map

Slave ID Map

Slave ID Map Table				
Channel No.	Channel Type	Channel Definition	Slave ID Range (Virtual~~~Real)	Operate
1	ASCII Master	Port1	0 - 0 ~~~ 0 - 0	Delete Modify
2	ASCII Master	Port2	0 - 0 ~~~ 0 - 0	Delete Modify
3	Modbus TCP	192.168.0.188:6000	3 - 4 ~~~ 5 - 6	Delete Modify

Best viewed with IE6.0 or above at resolution 1024 x 768.

Figure 4-14: Slave ID-ASCII Master Screen

The IP address of the TCP is 192.168.0.188 (For example, the IP address of the local PC), the TCP port number is 6000, and the virtual ID is 3~4. Offset is 2.

ASCII Slave Mode

This function allows the users to use Modbus TCP master device and Modbus ASCII device to achieve communication. The operation mode of the gateway is set to ASCII Slave.

Step 1: Choose “**ASCII Slave**” in Channel Type.

Step 2: Press the “**Modify**” button to input the setting parameters.

Step 3: After setup is completed, press the “**Affirm**” button to take effect.

Remote IP address	
TCP Port	
Slave ID Start	3
Slave ID End	4
Slave ID Offset	2
<input type="button" value="Affirm"/> <input type="button" value="Cancel"/>	

Figure 4-15: Slave ID Parameters Screen

Current Local>>Main Menu>>Modbus Setting>>Slave ID Map

Slave ID Map

Slave ID Map Table				
Channel No.	Channel Type	Channel Definition	Slave ID Range (Virtual~~~Real)	Operate
1	ASCII Slave	Port1	3 - 4 ~~~ 5 - 6	<input type="button" value="Delete"/> <input type="button" value="Modify"/>
2	ASCII Slave	Port2	7 - 8 ~~~ 9 - 10	<input type="button" value="Delete"/> <input type="button" value="Modify"/>

Best viewed with IE6.0 or above at resolution 1024 x 768.

Figure 4-16: Slave ID-ASCII Slave Screen

The virtual ID is 3~4. Offset is 2 in Channel No 1.

4.6 State Monitoring

This function provides Industrial Modbus Gateway serial COM port traffic counter in **Transmit (TX)** and **Receive (RX)**.

4.6.1 COM State

The function displays the serial port COM state information like the current traffic counter of serial port as the screen in Figure 4-17 appears.

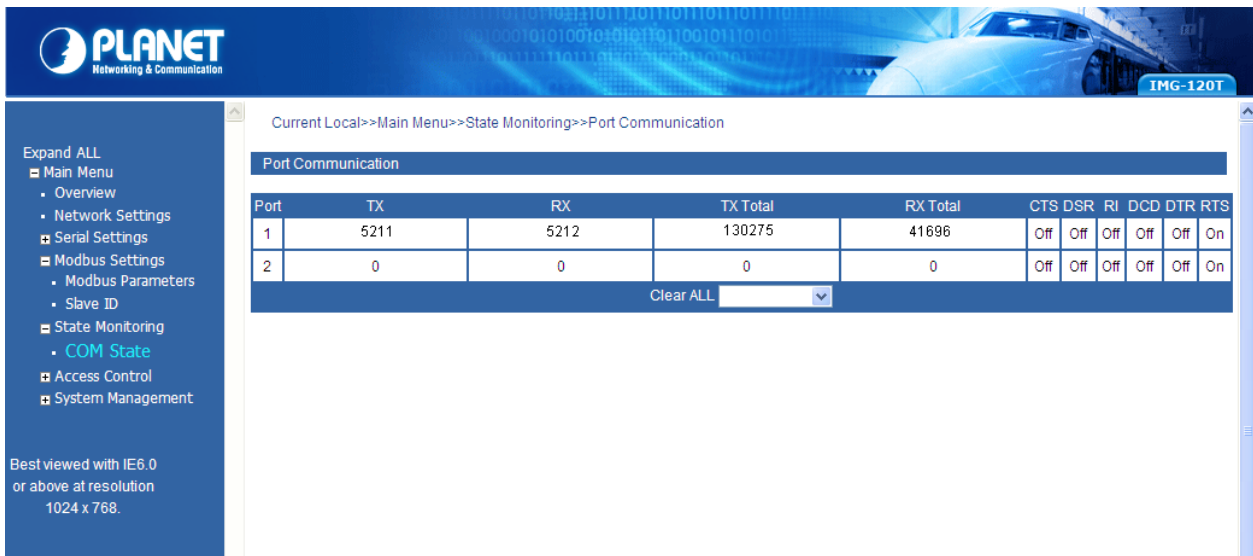


Figure 4-17: State Monitoring -- COM State Screen

The page includes the following fields:

Port	Indicate the port number.
TX	Display the serial COM port traffic counter in Transmit (TX).
RX	Display the serial COM port traffic counter in Receive (RX).
TX Total	Display the serial COM port total bytes traffic counter in Transmit (TX).
Rx Total	Display the serial COM port total bytes traffic counter in Receive (RX).
CTS	Indicate the “On” or “Off” status of CTS function.
DSR	Indicate the “On” or “Off” status of DSR function.
RI	Indicate the “On” or “Off” status of RI function.
DCD	Indicate the “On” or “Off” status of DCD function.
DTR	Indicate the “On” or “Off” status of DTR function.
RTS	Indicate the “On” or “Off” status of RTS function.
Clear ALL	This function allows to clear the current serial COM port traffic counter in Transmit (TX) and Receive (RX).

4.7 Access Control

This function provides access control parameters of Industrial Modbus Gateway, including:

- Device Security
- IP Filtering
- MAC Filtering
- User Management

4.7.1 Device Security

This function allows setting up the device security functions of Industrial Modbus Gateway. Press the “Submit” button to apply the setting as shown in Figure 4-18.

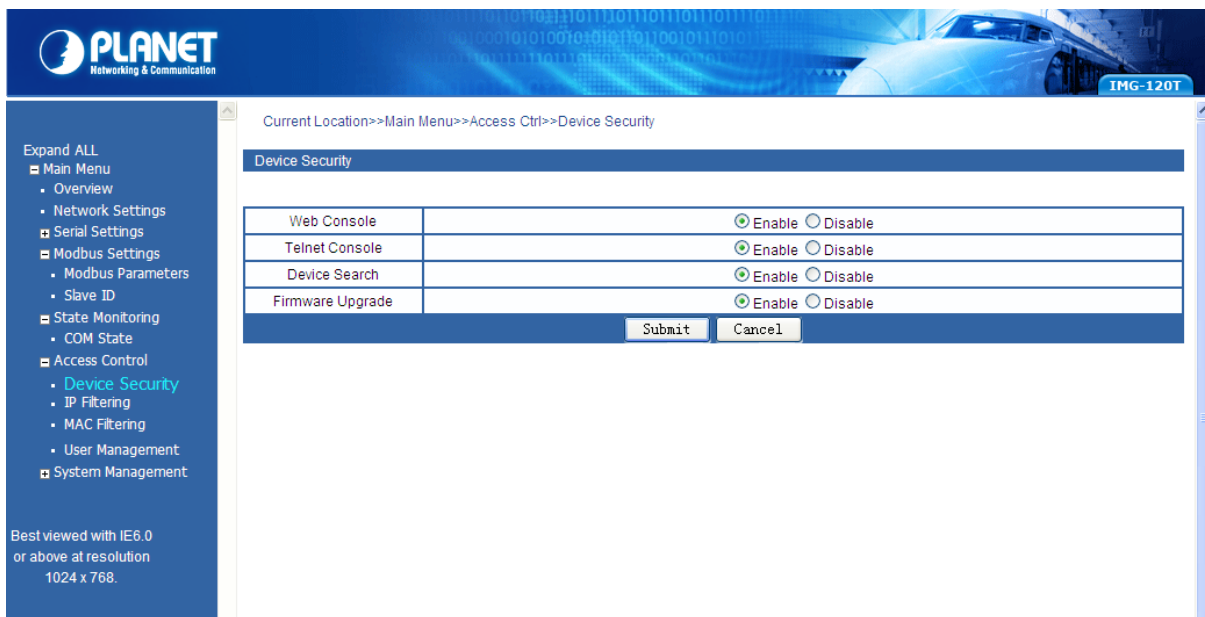


Figure 4-18: Access Control -- Device Security Screen

The page includes the following configurable data:

Web Console	This function provides “Disable” or “Enable” the Web management interface.
Telnet Console	This function provides “Disable” or “Enable” the Telnet management interface.
Device Search	This function provides “Disable” or “Enable” the device search function.
Firmware Upgrade	This function provides “Disable” or “Enable” the firmware upgrade function.

Button

: Click to apply changes.

4.7.2 IP Filtering

This function allows setting up the IP Filtering function of Industrial Modbus Gateway. Press the “**Submit**” button to apply the setting as shown in Figure 4-19.

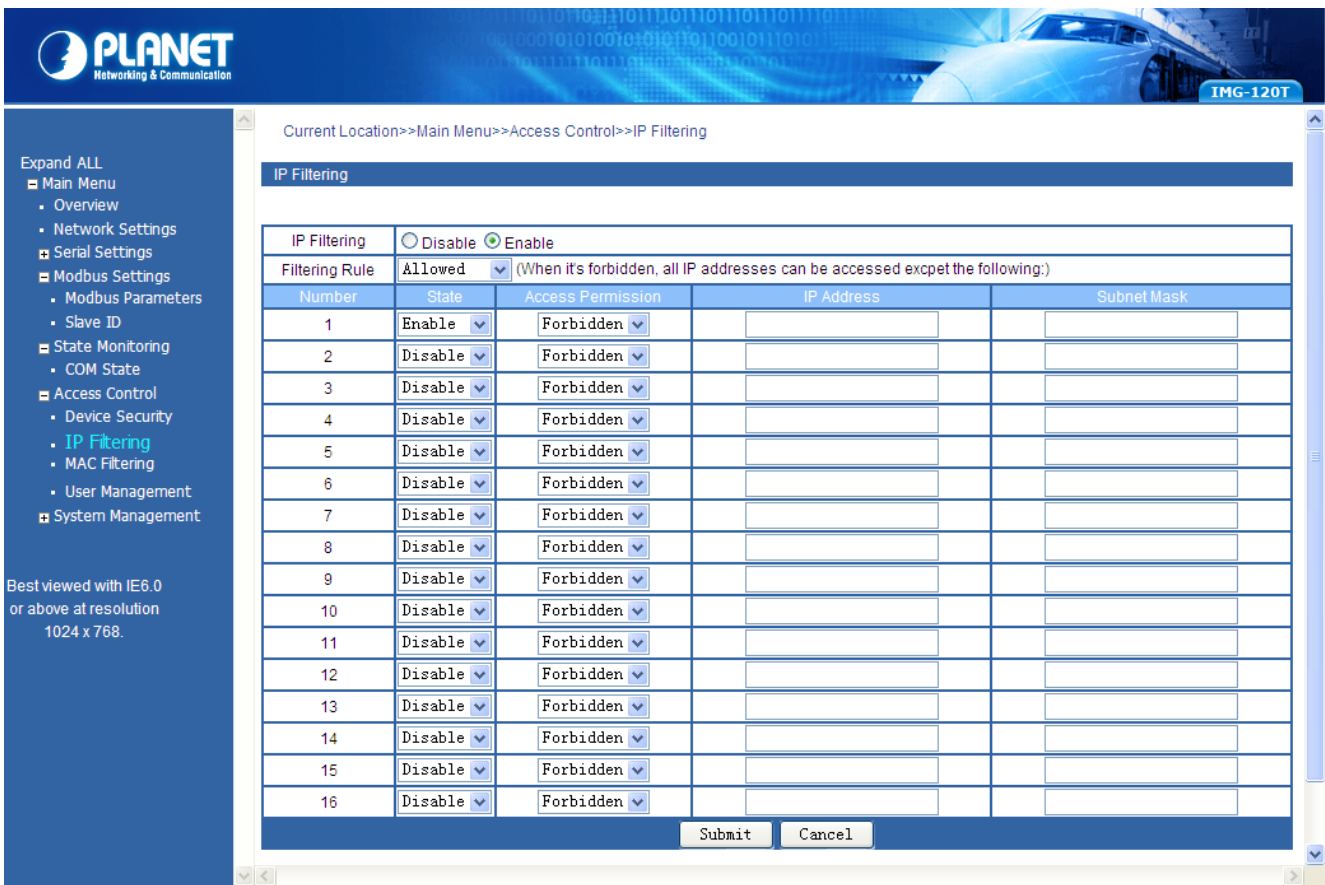


Figure 4-19: Access Control -- IP Filtering Screen

The page includes the following configurable data:

IP Filtering	This function provides “ Disable ” or “ Enable ” the IP Filtering function.
Filtering Rule	This function provides “ Allowed ” or “ Forbidden ” options for the filtering rule.
Number	Indicate the number from 1 to 16 for filtering rules.
State	This function provides “ Disable ” or “ Enable ” for per filtering rule.
Access Permission	This function provides “ Allowed ” or “ Forbidden ” for per filtering rule.
IP Address	This function allows inputting the IP address.
Subnet Mask	This function allows inputting the Subnet Mask value.

Button

: Click to apply changes.

4.7.3 MAC Filtering

This function allows setting up the MAC Filtering function of Industrial Modbus Gateway. Press the “Submit” button to apply the setting as shown in Figure 4-20.

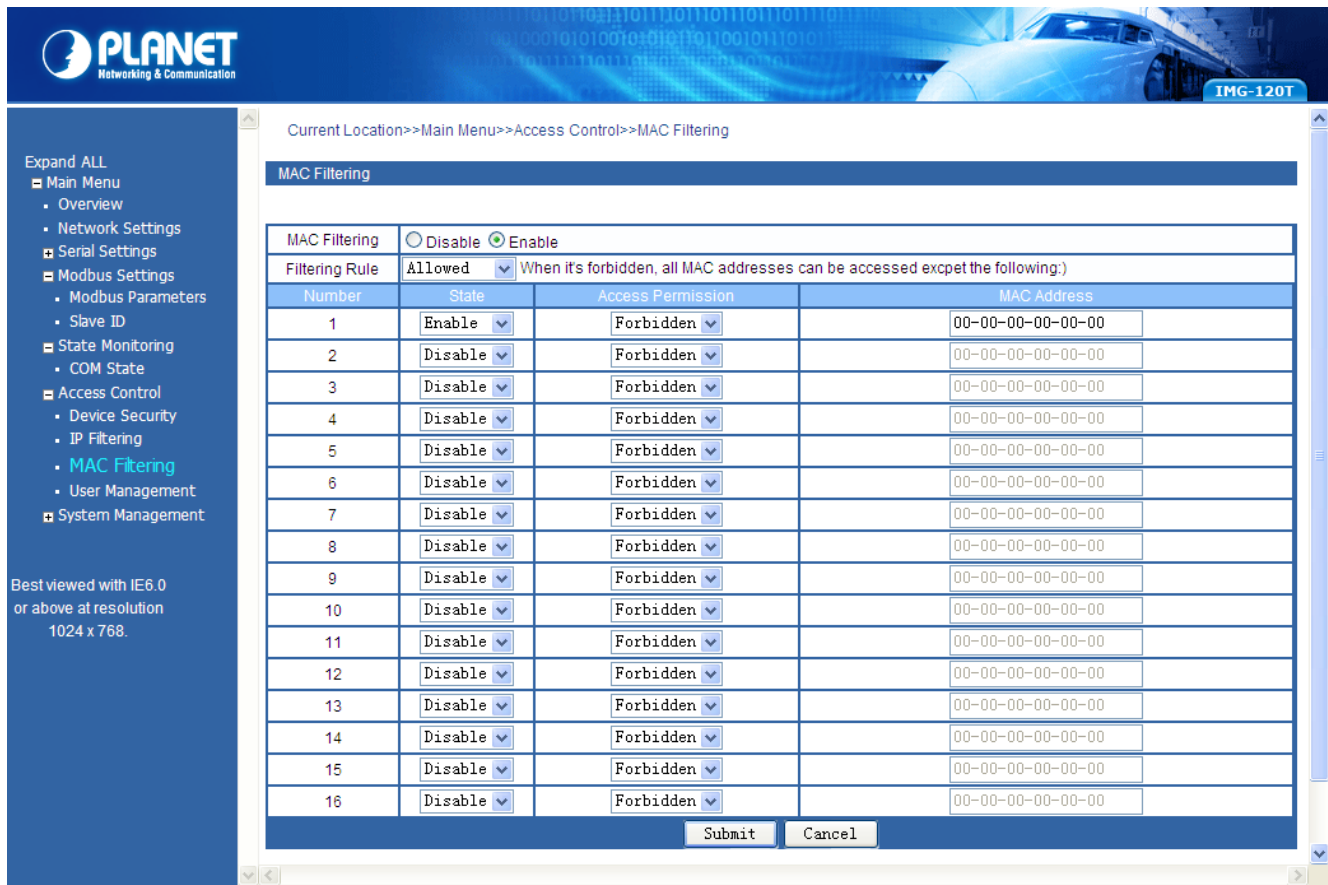
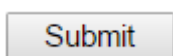


Figure 4-20: Access Control -- MAC Filtering Screen

The page includes the following configurable data:

MAC Filtering	This function provides “Disable” or “Enable” the MAC Filtering function.
Filtering Rule	This function provides “Allowed” or “Forbidden” options for the filtering rule.
Number	Indicate the number from 1 to 16 for filtering rules.
State	This function provides “Disable” or “Enable” for per filtering rule.
Access Permission	This function provides “Allowed” or “Forbidden” for per filtering rule.
MAC Address	This function allows inputting the MAC address; the format must be XX-XX-XX-XX-XX-XX.

Button



: Click to apply changes.

4.7.4 User Management

This function allows setting up the user management function of Industrial Modbus Gateway. Press the “Submit” button to apply the setting as shown in Figure 4-21.

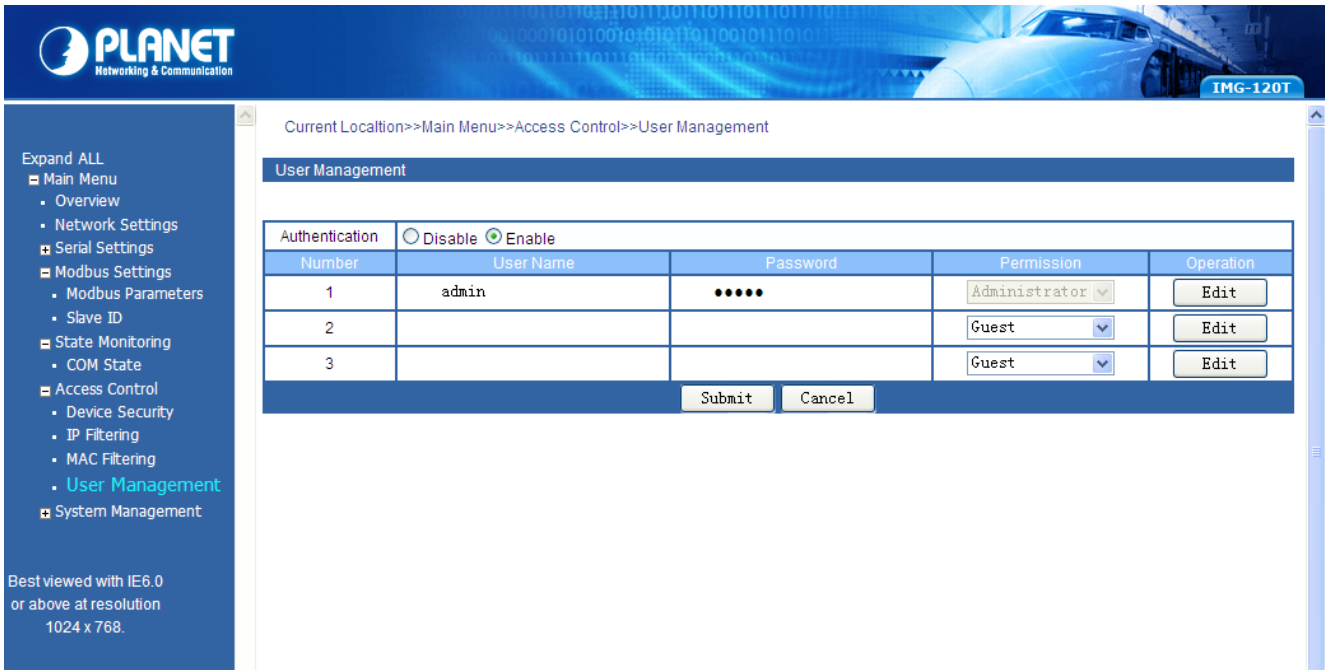
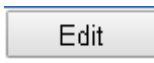



Figure 4-21: Access Control -- User Management Screen

The page includes the following configurable data:

Authentication	This function provides “ Disable ” or “ Enable ” the authentication function.
Number	Indicate the number from 1 to 3 for user management items.
User Name	Display the current user name information.
Password	Display the current password length.
Permission	This function provides “ Administrator ” or “ Guest ” for the access permission. Guest only views the Industrial Modbus gateway state and only the system administrator can configure the parameters of the Industrial Modbus Gateway.
Operation	This function provides editing the current username and password setting; the available range is 20 letters.

Buttons

: Click to edit the username and password.

: Click to apply changes.

: Click to apply changes.

4.8 System Management

This function provides access control parameters of Industrial Modbus Gateway, including:

- System Information
- System File
- Logout & Reboot

4.8.1 System Information

This function allows editing the system information of Industrial Modbus Gateway. Press the “**Submit**” button to apply the setting as shown in Figure 4-22.

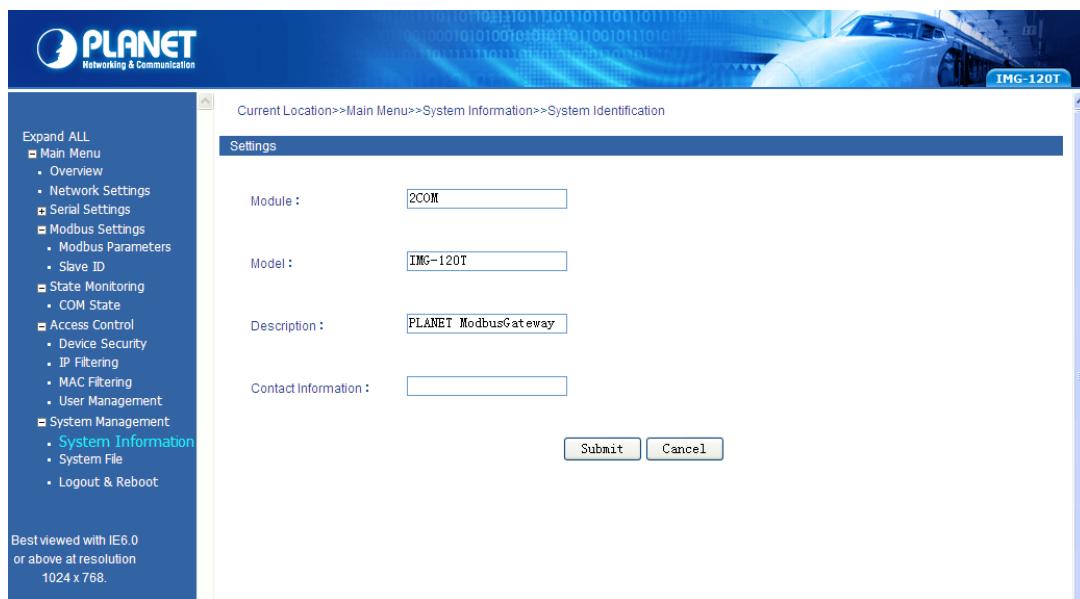


Figure 4-22: System Management -- System Information Screen

The page includes the following configurable data:

Module	This function provides inputting the module information and the available range is 18 letters.
Model	This function provides inputting the model information and the available range is 18 letters.
Description	This function provides inputting the description and the available range is 18 letters.
Serial Number	This function provides inputting the serial number information and the available range is 20 numbers.
Contact Information	This function provides inputting the contact information and the available range is 20 letters.

Button

: Click to apply changes.

4.8.2 System File

This function allows setting up the factory default/Configuration backup and restore/web firmware upgrade functions of Industrial Modbus Gateway as the screen in Figure 4-23 appears.

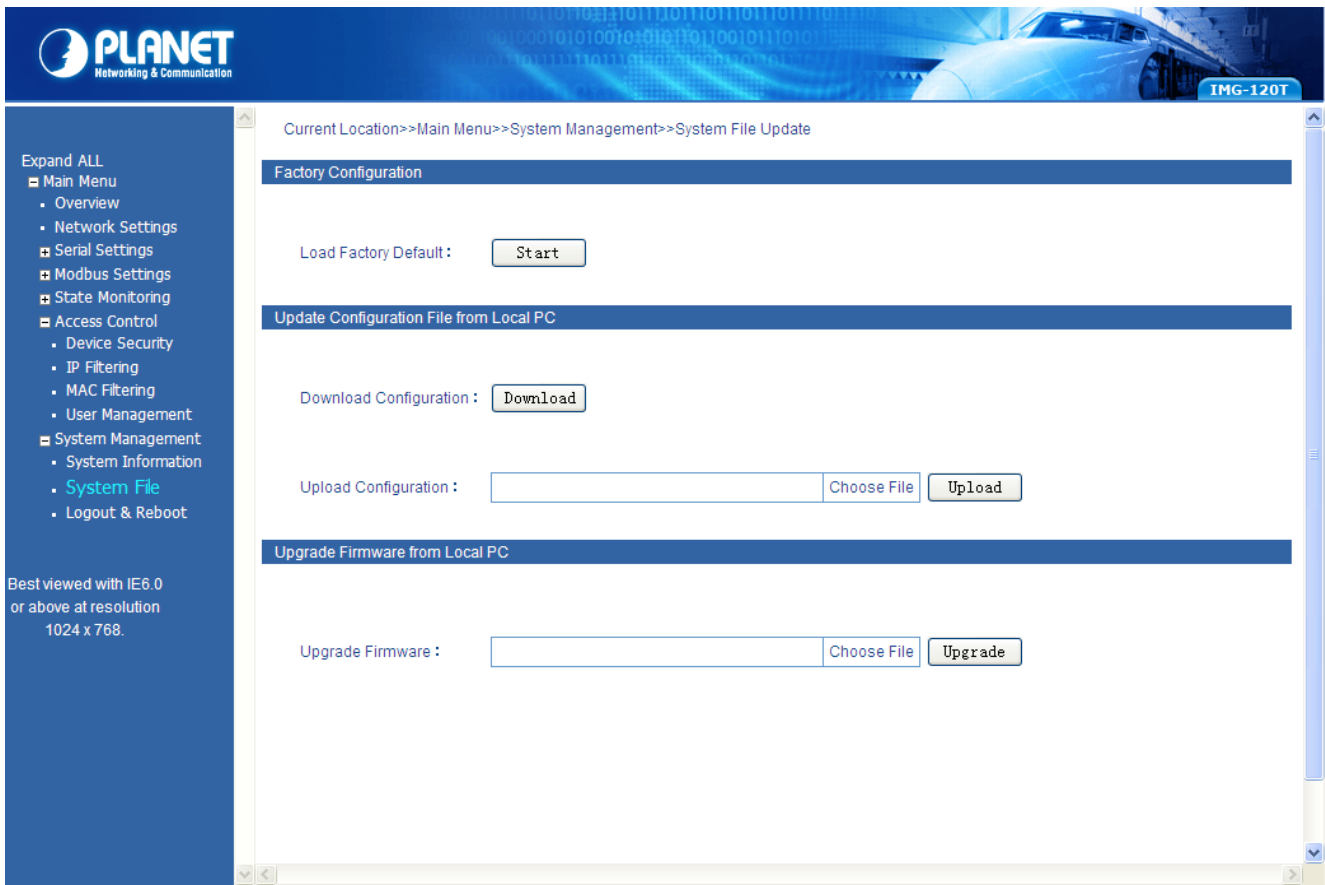


Figure 4-23: System Management-System File Screen

The page includes the following configurable data:

Factory Configuration	
Load Factory Default	Press the “ Start ” button to start factory default process.
Upload Configuration File from Local PC	
Download Configuration	Press the “ Download ” button to download the configuration file to local PC.
Upload Configuration	Press the “ Choose File ” button to find the configuration file and press the “ Upload ” button to start the configuration upload process.
Upgrade Firmware from Local PC	
Update Firmware	Press the “ Choose File ” button to find the firmware file and press the “ Upgrade ” button to start the firmware upgrade process.

4.8.3 Logout & Reboot

This function provides setting up system logout function and rebooting system function of Industrial Modbus Gateway as the screen in Figure 4-24 appears.

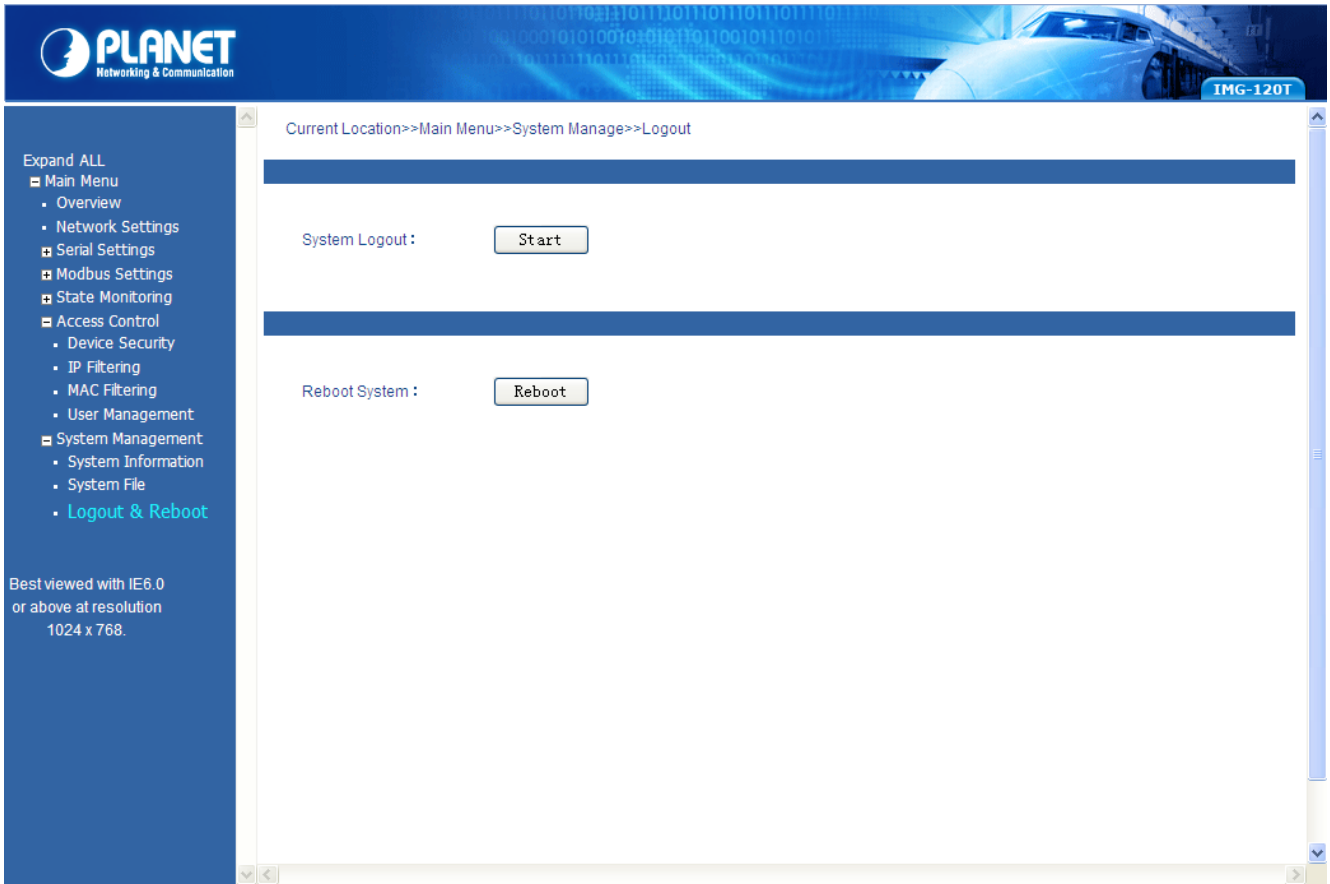


Figure 4-24: System Management -- Logout & Reboot Screen

The page includes the following configurable data:

System Logout	This function provides “ System Logout ” from web interface of Industrial Modbus Gateway. Press the “ Start ” button to log out the system.
Reboot System	This function provides “ System Reboot ” from web interface of Industrial Modbus Gateway. Press the “ Reboot ” button to reboot the system.

CHAPTER 5. COMMAND LINE INTERFACE

5.1 Accessing the CLI

When accessing the management interface for the Industrial Modbus Gateway via a remote Telnet connection, the Industrial Modbus Gateway can be managed by entering command keywords and parameters at the prompt. Using the Industrial Modbus Gateway's command line interface (CLI) is very similar to entering commands on an UNIX system.

This chapter describes how to use the Industrial Modbus Gateway Command Line Interface (CLI) via a remote Telnet connection.

5.2 Telnet Login

The following shows how to start up the **Remote Telnet Management** of the Industrial Modbus Gateway. Note the Industrial Modbus Gateway is configured through an Ethernet connection. Please make sure the manager PC must be set to the same **IP subnet address**.

For example, the default IP address of the Industrial Modbus Gateway is **192.168.0.100**, then the manager PC should be set to **192.168.0.x** (where x is a number between 1 and 254, except 100) and the default subnet mask is 255.255.255.0.

Logging in to the Industrial Modbus Gateway

1. Access **Command Prompt** and enter [telnet 192.168.0.100](telnet://192.168.0.100) to access the Telnet interface.
2. When the following dialog box appears, please enter the default user name and password "**admin**". The login screen in Figure 5-1 appears.

Default Username: **admin**

Default Password: **admin**



Figure 5-1: Telnet Login Screen

1. After entering the username and password, the telnet main screen appears as Figure 5-2 shows.

```
Please input hostname and password

Username: admin
Password: *****
      Pass !
ModbusGateway(Device)# _
```

Figure 5-2: Telnet Main Screen of Industrial Modbus Gateway



1. For security reason, please change and memorize the new password after this first setup.
2. Only accept command in lowercase letter under web interface.

CHAPTER 6. COMMAND LINE MODE

The CLI groups all the commands in appropriate modes according to the nature of the command. A sample of the CLI command modes are described below. Each of the command modes supports specific software commands. After logging in and accessing the Industrial Modbus Gateway Telnet interface, please enter “?” or “help” under Industrial Modbus Gateway Telnet interface where it displays a list of the available commands and descriptions of the commands. The telnet commands list screen appears as Figure 6-1 shows.

```

Please input hostname and password

Username: admin
Password: *****
Pass !
ModbusGateway(Device)# ?
List                --List commands name
Help                --List commands name and help info
Quit                --Quit from CLI
Exit                --Exit from current menu
Reboot              --Reboot device
Serial              <dir> --Enter serial setting menu
Security            <dir> --Enter security setting menu
Manage              <dir> --Enter system manage menu
Information         <dir> --Enter device information menu
Modbus              <dir> --Enter Modbus manage menu
ModbusGateway(Device)# help

List                --List commands name
Help                --List commands name and help info
Quit                --Quit from CLI
Exit                --Exit from current menu
Reboot              --Reboot device
Serial              <dir> --Enter serial setting menu
Security            <dir> --Enter security setting menu
Manage              <dir> --Enter system manage menu
Information         <dir> --Enter device information menu
Modbus              <dir> --Enter Modbus manage menu
ModbusGateway(Device)#

```

Figure 6-1: Telnet Help Screen of Industrial Modbus Gateway

The page includes the following configurable data:

List	List command name under Telnet interface.
Help	List command name and help information under Telnet interface.
Quit	This command will log out Telnet interface.
Exit	This command will exit the current mode and back to the initial mode.
Reboot	This command will reboot the Industrial Modbus Gateway.

Serial	This command will access serial setup menu.
Security	This command will access security setup menu.
Manage	This command will access system management menu.
Information	This command will access system information setup menu.
Modbus	This command will access Modbus setup menu.

Command lines online help

Description:

Command lines port provides the following online help

Total help

Partial help

Syntax:

Total help

Type in <?> To get all commands and their description.

Example:

ModbusGateway(Device)# ?

```
List          --List commands name
Help          --List commands name and help info
Quit         --Quit from CLI
Exit         --Exit from current menu
Reboot       --Reboot device
Serial       <dir> --Enter serial setting menu
Security     <dir> --Enter security setting menu
Manage       <dir> --Enter system manage menu
Information  <dir> --Enter device information menu
Modbus       <dir> --Enter Modbus manage menu
```

Type in a command and "?", between there is a space, if key word is in this location, then type in all keywords and descriptions.

Example:

ModbusGateway(System)# show ?

```
mac          --Device MAC address
version      --Device version
others       --Device name, type, etc
```

Partial help

Type in a character string with <?>. It can show all commands beginning with this character string.

Example:

ModbusGateway(Device)# m?

```
Manage       <dir> --Enter system manage menu
```

Modbus <dir> --Enter Modbus manage menu

Type in former letters of some key word of the command, and then press<Tab> key. If the letters are unique, it can show the complete key word.

Example:

ModbusGateway(Device)# inf + <Tab>

ModbusGateway(Device)# information

History command

Description:

Command lines port can provide the function similar to symbol key. It automatically saves command lines that users type in, and users can use these history commands.

Syntax:

Operating	Key	Result
Visit previous history command	Up <↑>	When existing earlier command, it is taken out.
Visit next history command	Down <↓>	When existing later command, it is taken out.

APPENDIX A

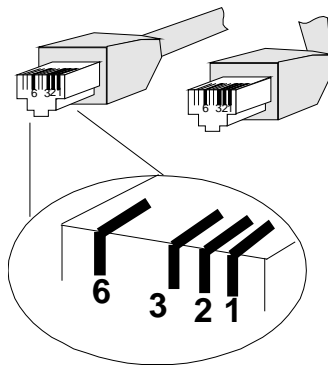
A.1 Device's RJ45 Pin Assignments

■ 10/100Mbps, 10/100BASE-TX

Contact	MDI	MDI-X
1	1 (TX +)	3
2	2 (TX -)	6
3	3 (RX +)	1
6	6 (RX -)	2
4, 5, 7, 8	Not used	Not used

Implicit implementation of the crossover function within a twisted-pair cable, or at a wiring panel, while not expressly forbidden, is beyond the scope of this standard.

A.2 RJ45 Cable Pin Assignment



There are 8 wires on a standard UTP/STP cable and each wire is color-coded. The following shows the pin allocation and color of straight cable and crossover cable connection:

Straight Cable		SIDE 1	SIDE 2
	SIDE 1	1 = White / Orange	1 = White / Orange
		2 = Orange	2 = Orange
		3 = White / Green	3 = White / Green
		4 = Blue	4 = Blue
		5 = White / Blue	5 = White / Blue
	SIDE 2	6 = Green	6 = Green
		7 = White / Brown	7 = White / Brown
		8 = Brown	8 = Brown
Straight Cable		SIDE 1	SIDE 2
	SIDE 1	1 = White / Orange	1 = White / Orange
		2 = Orange	2 = Green
		3 = White / Green	3 = White / Orange

<u>SIDE 2</u>	4 = Blue	4 = Blue
	5 = White / Blue	5 = White / Blue
	6 = Green	6 = Orange
	7 = White / Brown	7 = White / Brown
	8 = Brown	8 = Brown

Figure A-1: Straight-through and Crossover Cable

Please make sure your connected cables are with the same pin assignment and color as the above diagram before deploying the cables into your network.