MGate 5105-MB-EIP User's Manual

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MGate 5105-MB-EIP User's Manual

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Introduction

Welcome to the MGate 5105-MB-EIP line of Modbus-to-EtherNet/IP gateways. All models feature easy protocol conversion between Modbus RTU/ASCII, Modbus TCP, and EtherNet/IP protocols.

This chapter is an introduction to the MGate 5105-MB-EIP and includes the following sections:

- **Overview**
- **Package Checklist**
- **Power Input and Relay Output Pinouts**
- **LED Indicators**
- **Dimensions**
- **Pin Assignments**
- **Mounting the Unit**
- **Specifications**
- **Reset Button**
- **Pull-high, Pull-low, and Terminator for RS-485**
- **microSD**
- **Configuration Methods**

Overview

The MGate 5105-MB-EIP is a line of protocol gateways that provides users with the following features:

- Gateway function to transfer data between Modbus RTU/ASCII, Modbus TCP and EtherNet/IP
- Support for both EtherNet/IP adapter and scanner
- Effortless configuration via web or Windows utility
- Complete packet analysis and diagnosis information for maintenance
- Redundant dual DC power inputs
- Built-in Ethernet cascading for easy wiring
- Power-off warning by relay output
- microSD card supported for configuration backup
- Web-based GUI for I/O data visualization
- -40 to 75°C wide operating temperature models available

Package Checklist

All models of the MGate 5105-MB-EIP series are shipped with the following items:

Standard Accessories:

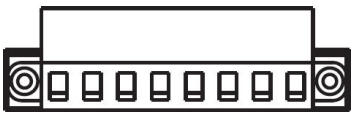
- 1 MGate 5105-MB-EIP Modbus-to-EtherNet/IP Gateway
- Documentation & Software CD
- Quick Installation Guide
- Product warranty statement

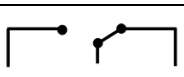
Optional Accessories:

- DR-4524: 45W/2A DIN-rail 24 VDC power supply with universal 85 to 264 VAC input
- DR-75-24: 75W/3.2A DIN-rail 24 VDC power supply with universal 85 to 264 VAC input
- DR-120-24: 120W/5A DIN-rail 24 VDC power supply with 88 to 132 VAC/176 to 264 VAC input by switch
- WK-36-01: Wall mounting kit

NOTE Notify your sales representative if any of the above items is missing or damaged.

Power Input and Relay Output Pinouts



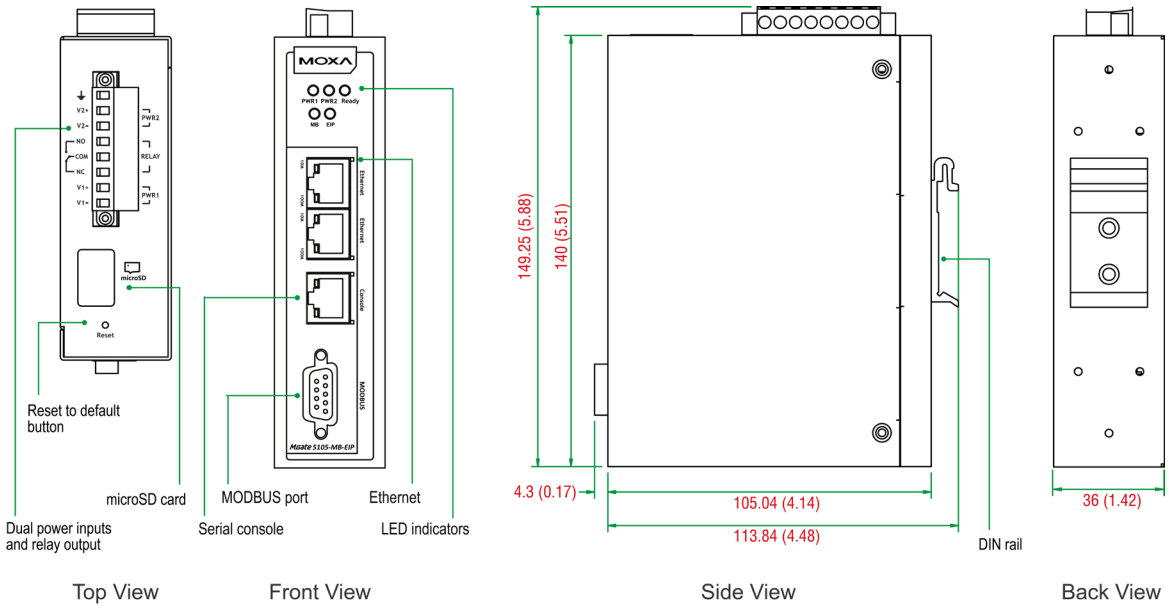
	V2+	V2-				V1+	V1-
Shielded Ground	DC Power Input 2	DC Power Input 2	N.O.	Common	N.C.	DC Power Input 1	DC Power Input 1

LED Indicators

LED	Color	Description
Ready	Off	Power is off or fault condition exists
	Green	Steady: Power is on and the MGate is functioning normally
		Blinking: The MGate has been located by MGate Manager's Location function
	Red	Steady: Power is on and the MGate is booting up
		Blinking slowly: Indicates an IP conflict, or DHCP or BOOTP server is not responding properly
		Flashing quickly: microSD card failed
EIP (Scanner)	Off	No I/O data is exchanged
	Green	Steady: I/O data is exchanged with all devices
		Blinking: I/O data is exchanged with at least one device (Not all configured devices can communicate with gateway)
EIP (Adapter)	Off	No I/O data is exchanged
	Green	I/O data is exchanged with all devices
MB	Off	No communication with Modbus device
	Green	Modbus communication progress
	Red	Communication error When MGate 5105 acts as Master: 1. Slave device returned an error (exception) 2. Received frame error (parity error, checksum error) 3. Timeout (slave device no response) When MGate 5105 acts as Slave: 1. Received invalid function code 2. Master accessed invalid register address or coil addresses 3. Received frame error (parity error, checksum error)

Dimensions

Unit: mm (inch)

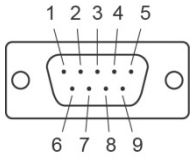


Pin Assignments

Modbus (Modbus RTU/ASCII) Pin Assignment

The MGate 5105-MB-EIP series uses a DB9 serial port to connect to Modbus RTU/ASCII devices.

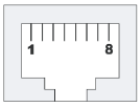
Pin	RS-232	RS-422 RS-485 (4W)	RS-485 (2W)
1	DCD	TxD-	---
2	RXD	TxD+	---
3	TXD	RxD+	Data+
4	DTR	RxD-	Data-
5	GND	GND	GND
6	DSR	---	---
7	RTS	---	---
8	CTS	---	---
9	---	---	---



Console (RS-232) Pin Assignment

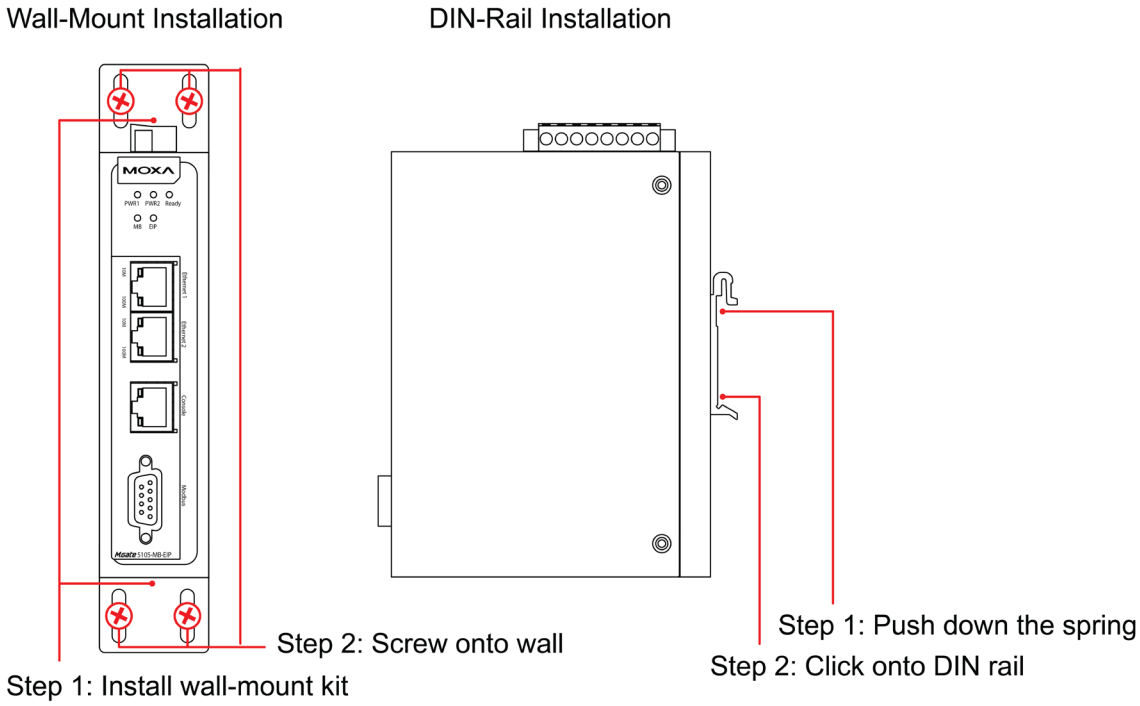
The MGate 5105-MB-EIP series uses an RJ-45 connector to connect to a PC for device configuration.

Pin	RS-232
1	DTR
2	RTS
3	GND
4	TXD
5	RXD
6	DCD
7	CTS
8	DTR



Mounting the Unit

1. Connect the power adaptor. Connect the 12–48 VDC power line or DIN-rail power supply to the MGate 5105-MB-EIP device's terminal block.
2. Use a Modbus serial cable to connect the MGate to a Modbus slave device.
3. Use an Ethernet cable to connect the MGate to the EtherNet/IP controller.
4. The MGate 5105-MB-EIP is designed to be attached to a DIN rail or mounted on a wall. For DIN rail mounting, push down the spring and properly attach it to the DIN rail until it "snaps" into place. For wall mounting, install the wall mount kit (optional) first, and then screw the device onto the wall. The following figure illustrates the two mounting options:



Specifications

Ethernet Interface

Protocol: EtherNet/IP, Modbus TCP
Number of Ports: 2 (Ethernet cascade)
Speed: 10/100 Mbps, Auto MDI/MDIX
Connector: 8-pin RJ45
Magnetic Isolation Protection: 1.5 kV (built-in)

EtherNet/IP

Class: Adapter, Scanner
CIP Objects Supported: Identity, Message Router, Assembly, Connection Manager, TCP/IP interface, Ethernet link, Port
Max. Number of Connections:
MGate as Adapter: 16 connections for read-only, 1 connection for read/write
MGate as Scanner: 100 connections
Max. Total I/O Data Size:
Input: 2048 bytes (496 bytes per connection)
Output: 2048 bytes (496 bytes per connection)

Modbus

Functions Supported: 1, 2, 3, 4, 5, 6, 15, 16, 23

Max. Number of Commands: 100
Max. Number of Connections:
MGate as Modbus TCP Master: 32 connections
MGate as Modbus TCP Slave: 16 connections
Max. Total I/O Data Size:
Input: 2048 bytes
Output: 2048 bytes

Modbus Serial Interface

Protocol: Modbus RTU/ASCII
Number of Ports: 1
Serial Standards: RS-232/422/485, software selectable
Connectors: DB9 male
Isolation: 2 kV (built-in)
RS-485 Data Direction Control: ADDC® (automatic data direction control)
Pull High/Low Resistor for RS-485: 1 KΩ, 150 KΩ
Terminator for RS-485: 120 Ω
Data Bits: 5, 6, 7, 8
Stop Bits: 1, 1.5, 2
Parity: None, Even, Odd, Space, Mark
Flow Control: RTS/CTS, RTS Toggle
Baudrate: 50 bps to 921.6 Kbps

External Storage Drive

Interface: microSD
Standard: SDHC v2.0

Serial Signals

RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
RS-422: Tx+, Tx-, Rx+, Rx-, GND
RS-485-4w: Tx+, Tx-, Rx+, Rx-, GND
RS-485-2w: Data+, Data-, GND

Software

Operation Modes: EtherNet/IP Adaptor/Scanner, Modbus RTU/ASCII/TCP Master/Slave
Configuration Options: Web console, Windows utility, serial console
Utilities: MGate Manager for Windows 2000/XP/2003/Vista/Server 2008/7/8 (x86/x64), Windows Server 2008 R2/2012 (x64)

Physical Characteristics

Housing: Metal (IP30)
Weight: 507 g
Dimensions: 36 x 105 x 140 mm (1.42 x 4.13 x 5.51 in)

Environmental Limits

Operating Temperature:
Standard Models: 0 to 60°C (32 to 140°F)
Wide Temp. Models: -40 to 75°C (-40 to 167°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)
Altitude: Up to 2000 m
Note: Please contact Moxa if you require products guaranteed to function properly at higher altitudes.

Power Requirements

Input Voltage: 12 to 48 VDC
Power Connector: Terminal block
Power Consumption:
455 mA @ 12 VDC, 125 mA @ 48 VDC

Standards and Certifications

Safety: UL 508, EN 60950-1

EMC: CE, FCC
EMI: EN 55022 Class A, FCC Part 15 Subpart B Class A
EMS:
EN 55024,
EN 61000-4-2 (ESD) Level 4,
EN 61000-4-3 (RS) Level 3,
EN 61000-4-4 (EFT) Level 4,
EN 61000-4-5 (Surge) Level 3,
EN 61000-4-6 (CS) Level 3,
EN 61000-4-8,(PFMF) Level 3
Shock: IEC 60068-2-27
Freefall: IEC 60068-2-32
Vibration: IEC 60068-2-6

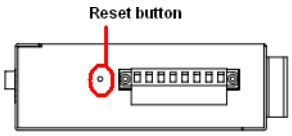
Reliability

MTBF (mean time between failures): 513,139 hrs

Warranty

Warranty Period: 5 years
Details: See www.moxa.com/warranty

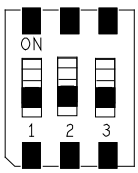
Reset Button



Restore the MGate to factory default settings by using a pointed object (such as a straightened paper clip) to hold the reset button down until the Ready LED stops blinking (approx. 5 seconds).

Pull-high, Pull-low, and Terminator for RS-485

Remove the MGate 5105-MB-EIP's top cover and you will find DIP switches to adjust each serial port's pull-high resistor, pull-low resistor, and terminator.



SW	1	2	3
	Pull-high resistor	Pull-low resistor	Terminator
ON	1 kΩ	1 kΩ	120 Ω
OFF	150 kΩ*	150 kΩ*	–*

*Default

microSD

The MGate 5105-MG-EIP provides user with an easy way to backup/copy/replacement/deployment. The MGate are equipped with a microSD card slot. User can plug in a microSD card to backup data including the system configuration setting, GSD files, and system data log.

First time using the MGate gateway with a new microSD card

1. Format the microSD card as FAT file system through a PC.
2. Power off the MGate and insert the microSD card (ensure that the microSD card is empty).
3. Power on the MGate. The default settings will be copied to the microSD card.

4. Manually configure the MGate via MGate Manager or web console, and all the stored changes will copy to the microSD card for synchronization.

First time using the MGate with a microSD card containing a configuration file

1. Power off the MGate and insert the microSD card.
2. Power on the MGate.
3. The configuration file stored in the microSD card will automatically copy to the MGate.

Duplicating current configurations to another MGate gateway

1. Power off the MGate and insert a new microSD card.
2. Power on the MGate.
3. The configuration will be copied from MGate to microSD card.
4. Power off the MGate and insert the microSD card to the other MGate.
5. Power on the second MGate.
6. The configuration file stored in the microSD card will automatically copy to the MGate.

Malfunctioning MGate replacement

1. Replace the malfunctioning MGate with a new MGate.
2. Insert the microSD card into the new MGate.
3. Power on the MGate.
4. The configuration file stored on the microSD card will automatically copy to the MGate.

microSD card writing failure

The following circumstances may cause the microSD card to experience a writing failure:
1. The microSD card has less than 20 Mbytes of free space remaining.
2. The microSD card is write-protected.
3. The file system is corrupted.
4. The microSD card is damage.

The MGate will halt for the above events, accompanied by a flashing Ready LED and beeping alarm. When you replace the MGate gateway's microSD card, the microSD card will synchronize the configurations stored on the MGate gateway. Note that the replacement microSD card should not contain any configuration files on it; otherwise, the out-of-date configuration will copy to the MGate device.

Configuration Methods

MGate 5105-MB-EIP provides three ways to configure the MGate.

1. MGate Manager (Windows utility)
   Use MGate Manager to configure the MGate through Ethernet or check the MGate status. Refer to **Chapter 3** for details.

2. Web console
   Use the web console to configure the MGate, or verify the MGate's status, by Ethernet. Use a web browser such as Microsoft Internet Explorer or Google Chrome to connect to the MGate using HTTP/HTTPS protocol. In this case, the MGate IP address must be configured correctly. Refer to **Chapter 4** for details.

3. Serial console
   Use the serial console to configure the MGate, or verify the MGate's status, through an RS-232 null modem (crossover) cable. Use a serial terminal emulation tool such as Moxa PComm Terminal Emulator or PuTTY to log in to the MGate serial console. Note that the serial console doesn't provide the interface for all parameters. Some parameters must be configured through MGate Manager or the web console. You must use a DP9-to-RJ45 cable to connect the serial console port on the MGate gateway's front panel to the serial port on the host. The serial console parameters are: 115.2 kbps; parity: none; 8 data bits; and one stop bit.

2

Quick Configuration Guide

This chapter provides a quick overview of how to configure the MGate 5105-MB-EIP by web console. For more detailed information on how to configure the MGate 5105-MB-EIP, refer to Chapters 3 and 4.

- **Cable Connection**
- **Log in to the Web Console**
- **Network Settings**
- **Serial Settings**
- **Protocol Conversion Selection**
- **EtherNet/IP Configuration**
- **Modbus RTU/ASCII Network**
- **Modbus TCP Configuration**
- **I/O Data Mapping**
- **Communication Analysis**
- **I/O Data View**

Cable Connection

The MGate gateway supports Modbus RTU/ASCII, Modbus TCP, and EtherNet/IP protocol. If the MGate gateway needs to communicate with Modbus RTU/ASCII devices, connect your Modbus device to the MGate gateway's Modbus port. Regardless, at least one of your devices should be Modbus TCP or EtherNet/IP interface. Connect your Modbus TCP or EtherNet/IP device to the MGate gateway's 10/100M Ethernet port as well. The MGate gateway will indicate a valid Ethernet connection in the following ways:

- The Ethernet LED will maintain a solid green color when connected to a 100 Mbps Ethernet network.
- The Ethernet LED will maintain a solid orange color when connected to a 10 Mbps Ethernet network.
- The Ethernet LED will flash when Ethernet packets are being transmitted or received

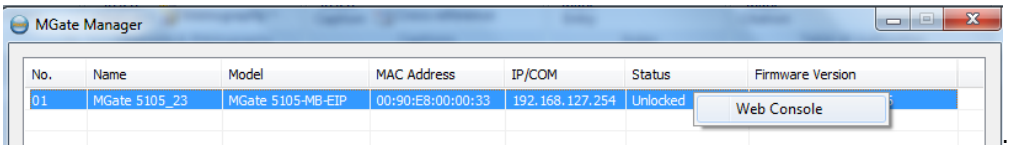
The gateway can be powered by connecting a power source to the terminal block by following the steps below:

1. Loosen or remove the screws on the terminal block.
2. Connect the 12–48 VDC power line to the terminal block. Confirm that the power source is off already.
3. Tighten the connections using the screws on the terminal block.
4. Turn on the power source.

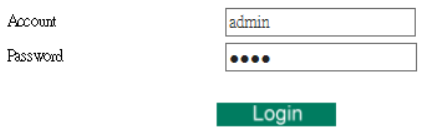
NOTE Note that the gateway does not have an on/off switch. It automatically turns on when it receives power. The PWR LED on the top panel will glow to indicate that the unit is receiving power.

Log in to the Web Console

If you do not know the MGate gateway's IP address when setting it up for the first time (default IP is *192.168.127.254*), use an Ethernet cable to connect the host PC and MGate gateway directly. If connected the gateway and host PC through the same Ethernet switch, make sure that there is no router between them. Then use MGate Manager to detect the MGate gateways on your network. When the MGate gateway appears on the MGate Manager device list, right-click on the selected MGate and configures it by web console.

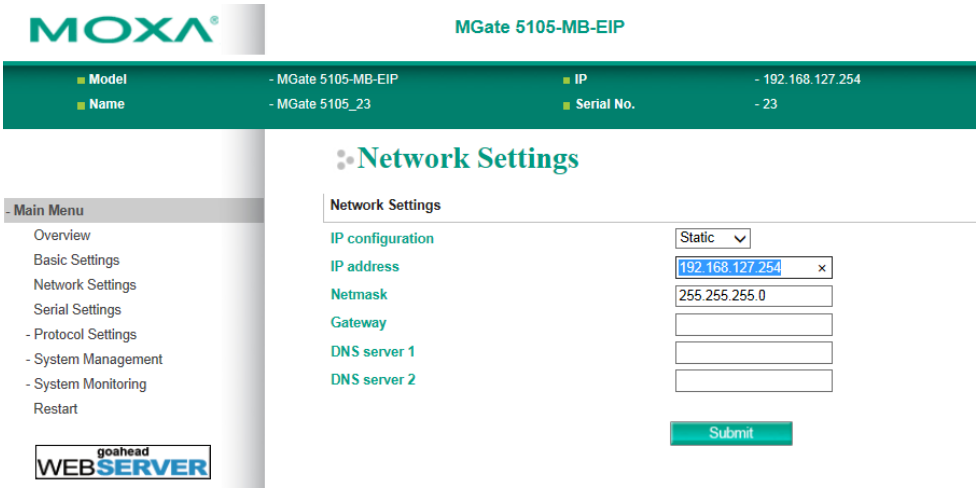


On the first page of the web console, enter the **admin** for the default Account name and **moxa** for the default Password.



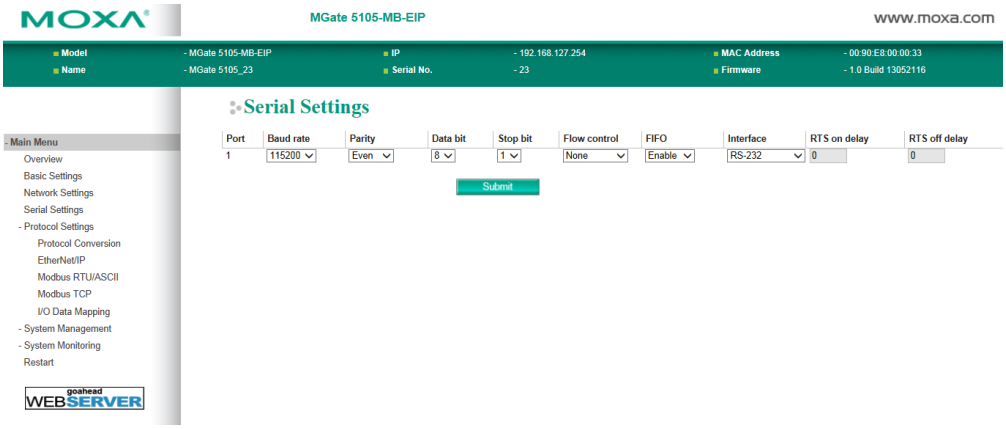
Network Settings

First, configure the **IP address** and **Netmask** first. Contact your network administrator for the appropriate IP settings information.



Serial Settings

Second, refer to the datasheet of your Modbus RTU/ASCII devices to configure Serial parameters for Modbus RTU/ASCII devices.



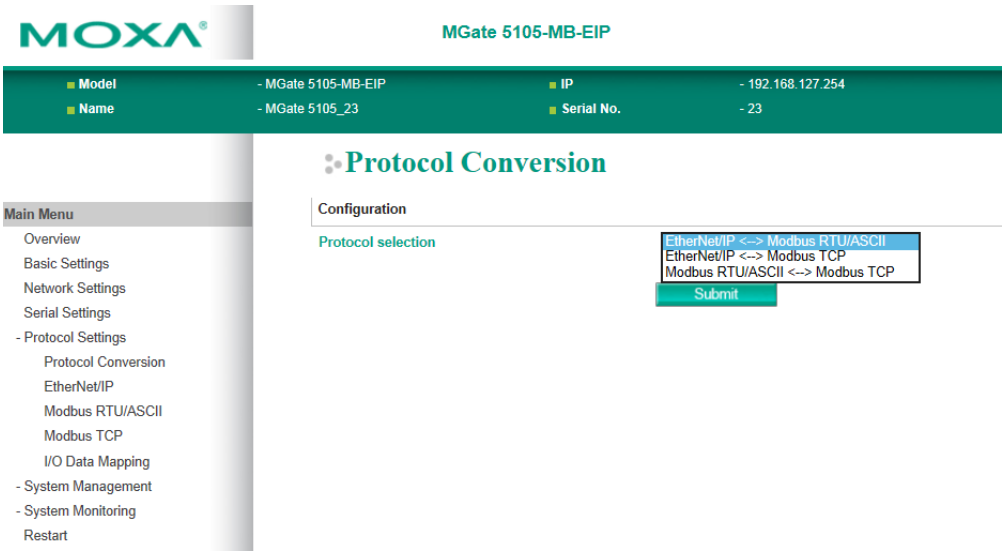
Protocol Conversion Selection

The MGate 5105-MB-EIP supports Modbus RTU/ASCII, Modbus TCP, and EtherNet/IP protocols, but only one combination of two different protocols can be selected at a time.

Option-1: EtherNet/IP <-> Modbus RTU/ASCII

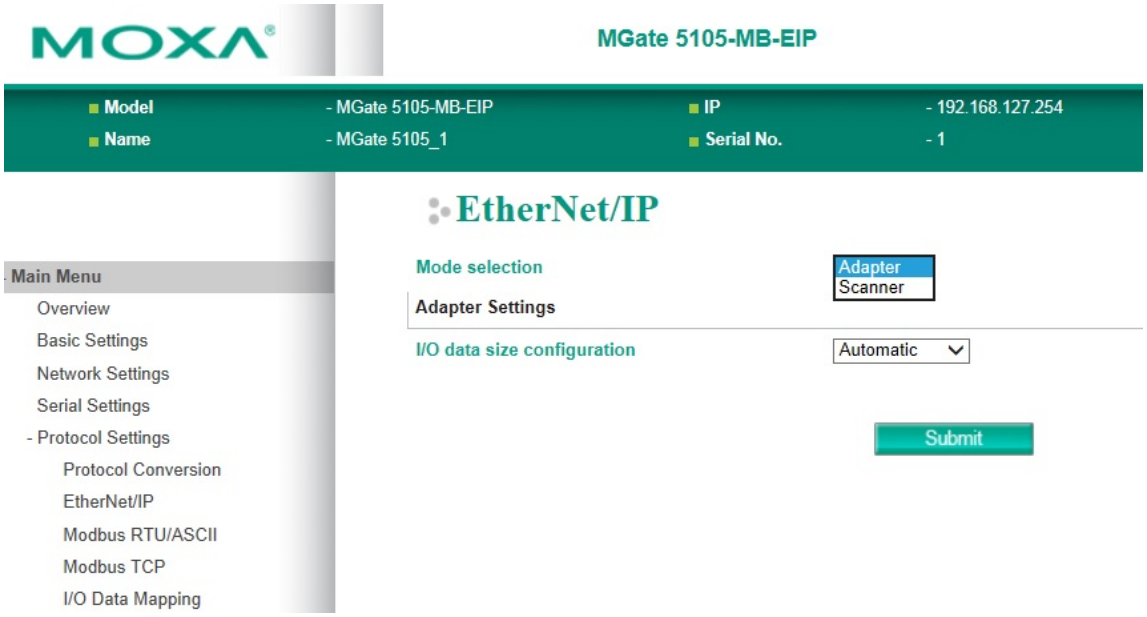
Option-2: EtherNet/IP <-> Modbus TCP

Option-3: Modbus RTU/ASCII <-> Modbus TCP



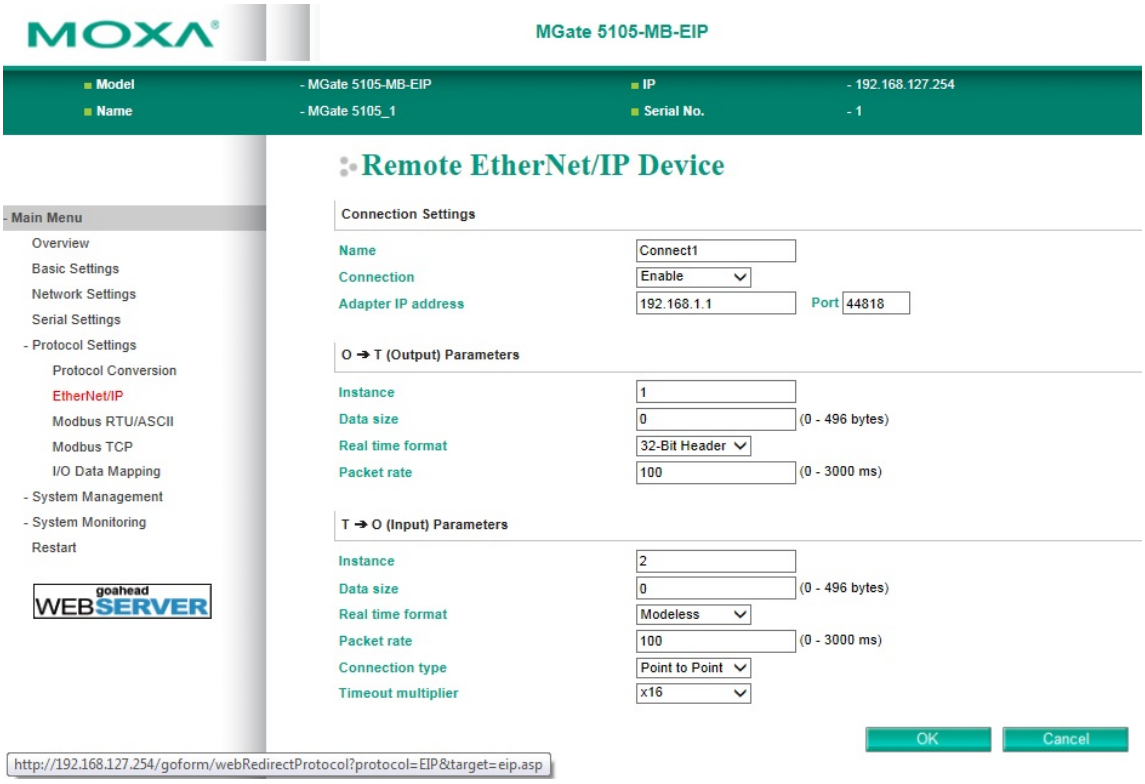
EtherNet/IP Configuration

When you select EtherNet/IP as one of your protocol conversions, you must select either Adapter mode or Scanner mode. In Adapter mode, you can choose **Automatic** configuration to automatically map O→T (Originator to Target) and T→O (Target to Originator) data sizes to Modbus data.



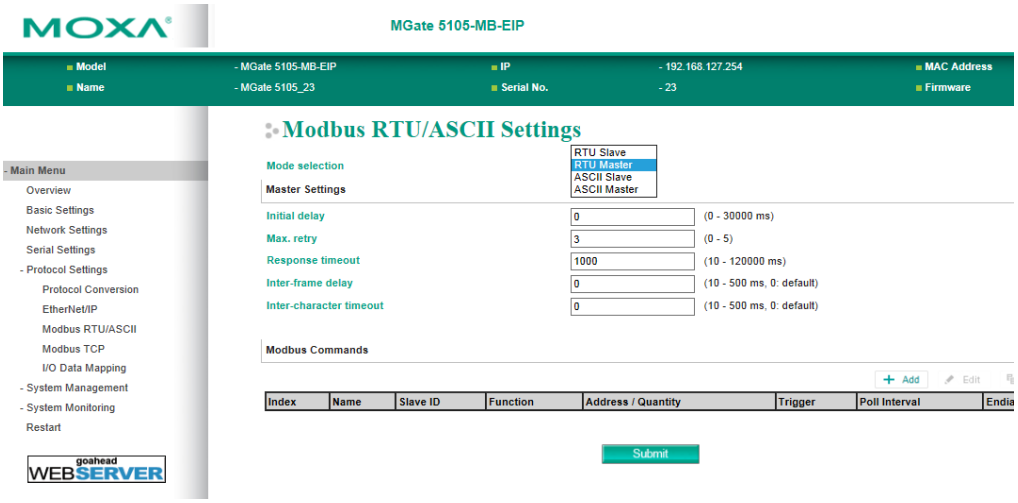
In Scanner mode, you must designate the parameters for each connection. Refer to your EtherNet/IP adapter's datasheet to fill out O→T and T→O parameters.

NOTE A PLC may use Output and Input instead of O→T and T→O.

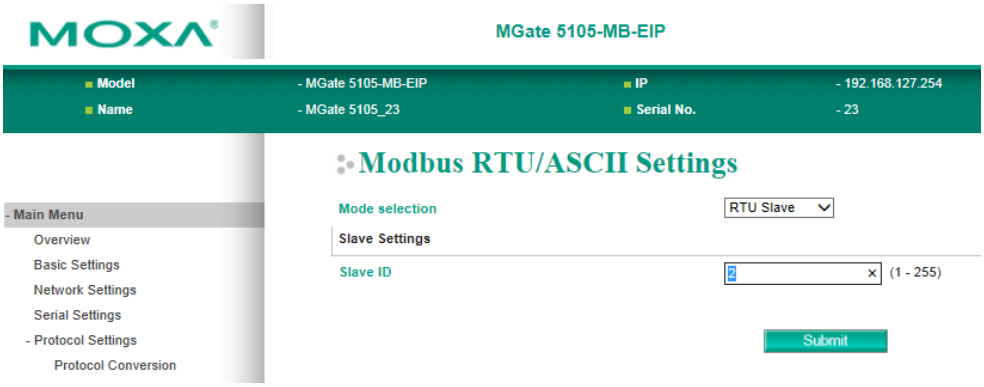


Modbus RTU/ASCII Network

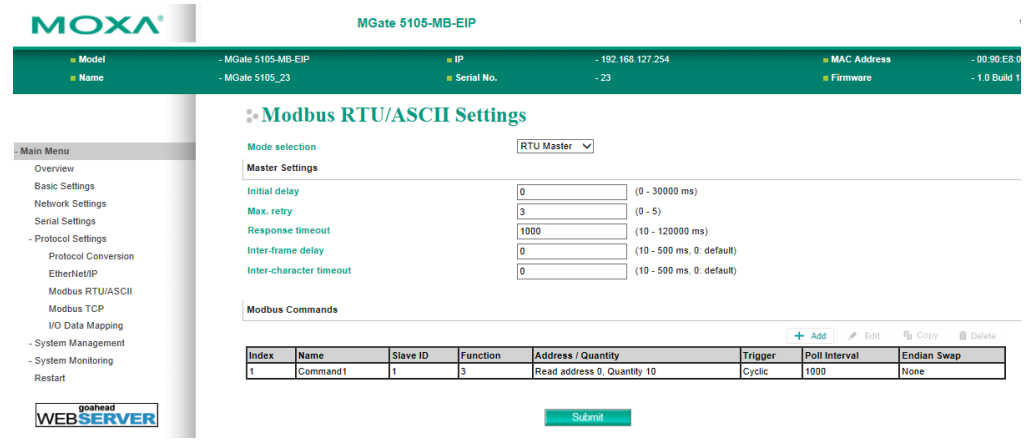
As with EtherNet/IP setup, you must select either Master or Slave mode in order to communicate with your Modbus RTU/ASCII devices. Start by checking if you already configured the serial parameters on Serial Settings page.



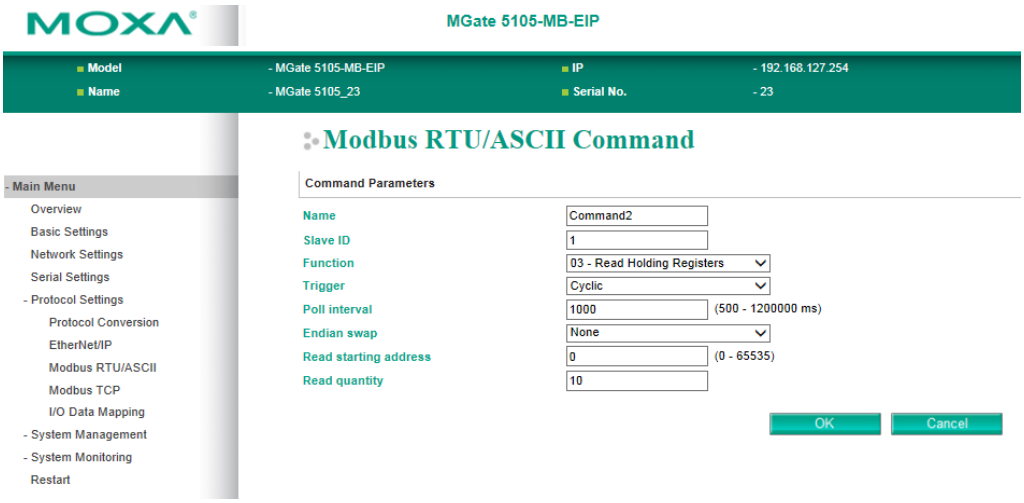
In Slave mode, the MGate gateway works as a Modbus slave device and waits for the incoming query from the Modbus master device. You only need to identify the Modbus Slave ID when in Slave mode.



In Master mode, the MGate works as a Modbus master device and will send the Modbus request to the Modbus network actively.

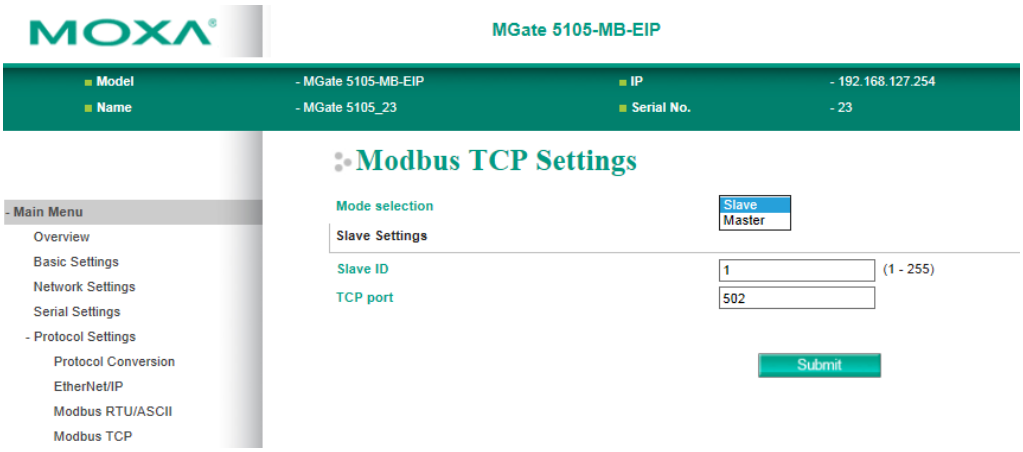


Refer to your Modbus device's datasheet to add Modbus commands.

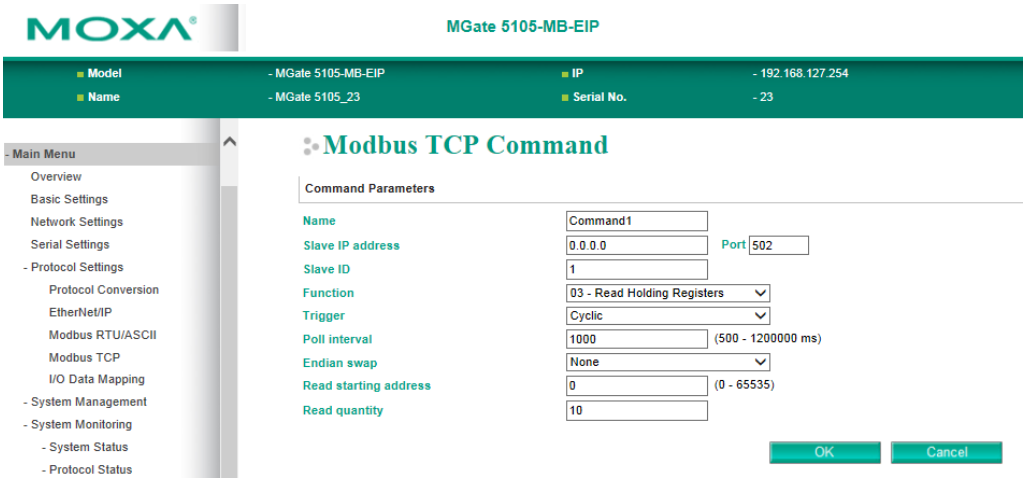


Modbus TCP Configuration

The MGate gateway also supports both Modbus TCP Master (i.e. Client) and Slave (i.e. Server) modes. In Slave mode, assign the Slave ID and confirm that the Modbus device on the remote side can send commands via the corresponding TCP port.

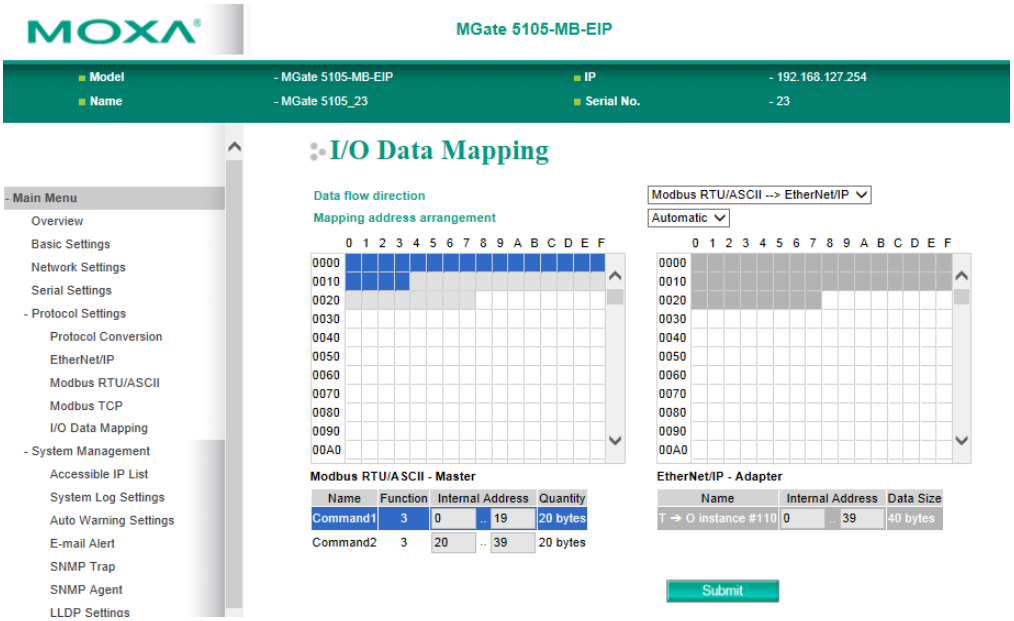


For Master mode, refer to your Modbus TCP device's datasheet to specify the command one-by-one manually.



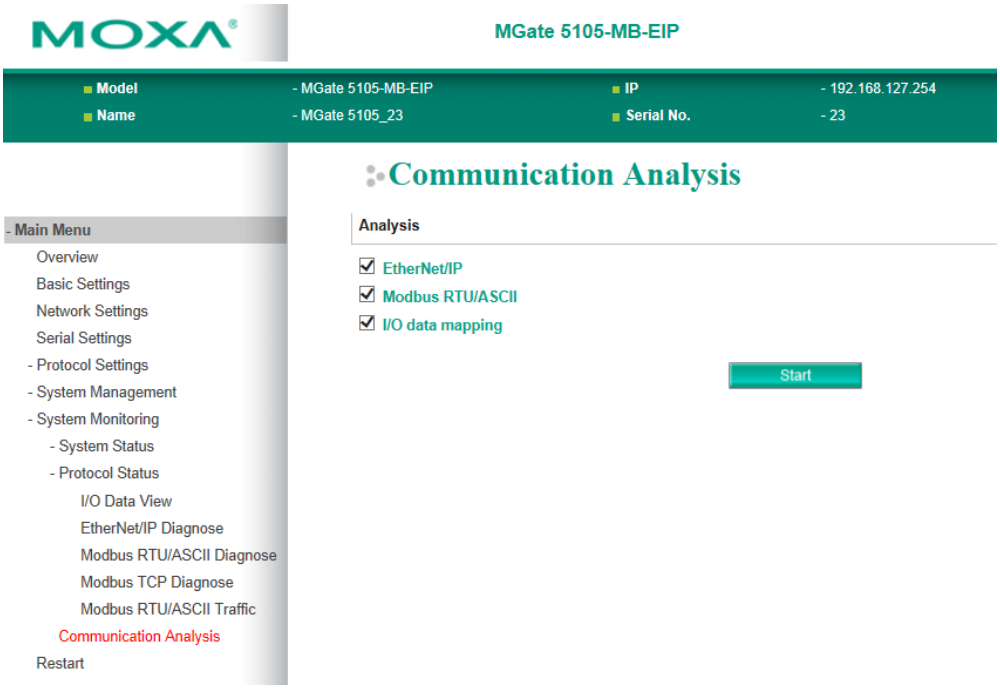
I/O Data Mapping

The MGate provides an internal memory for data exchange between Modbus and EtherNet/IP protocols. After finishing the protocol settings, go to the I/O Data Mapping page and check if the data mapping is correct. In some cases, you may need to switch to Manual arrangement to adjust the internal address for each command.

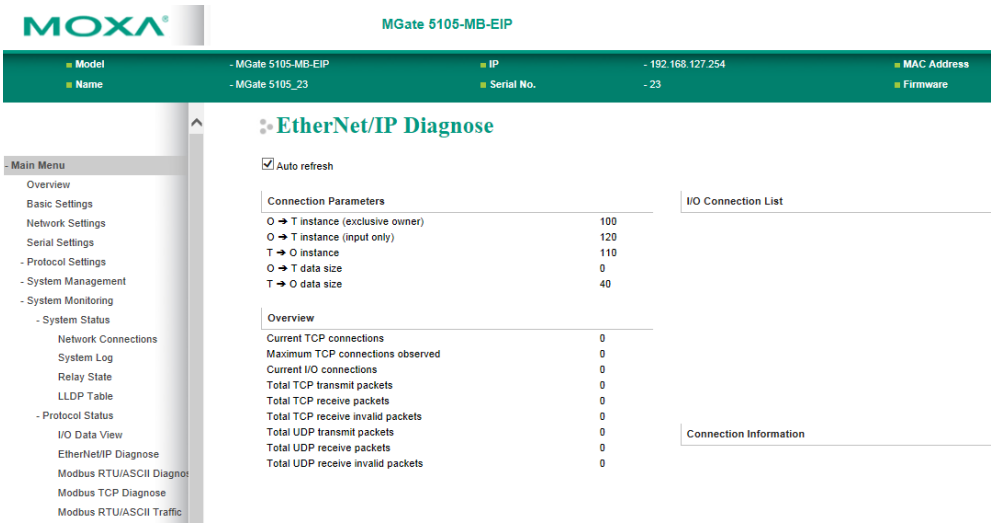


Communication Analysis

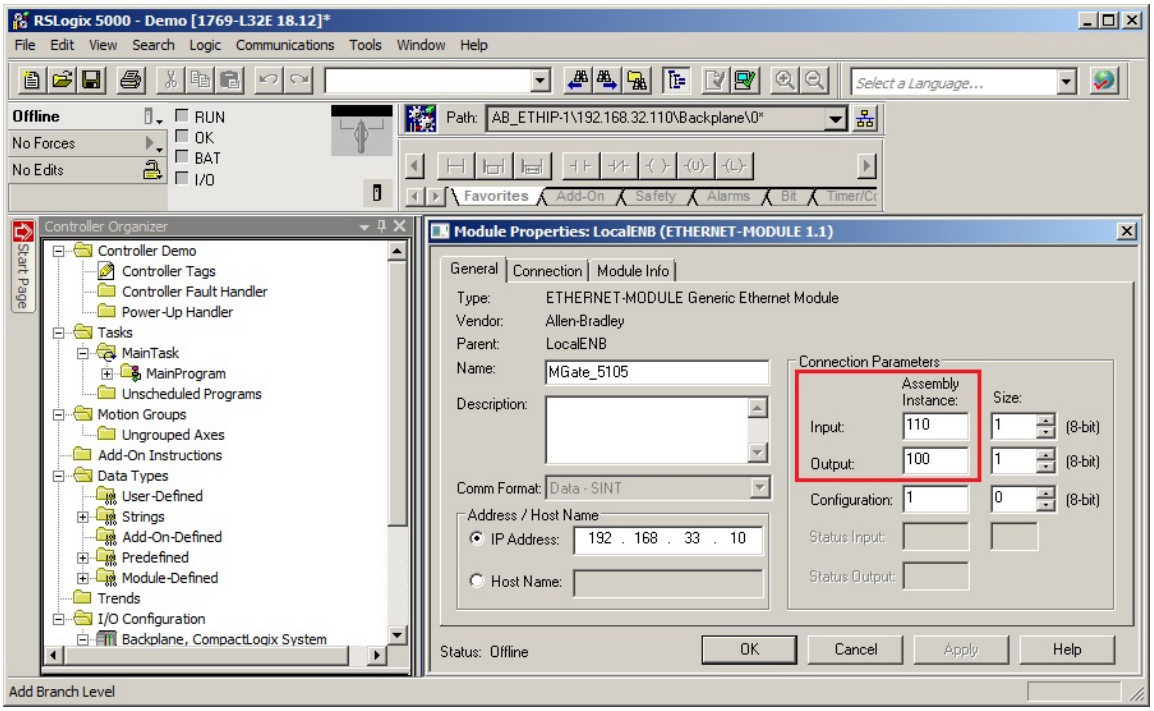
After finishing all configurations, use **Communication Analysis** to confirm that the settings are correct. Click **Start** and wait 10 seconds for the analysis report to appear and describe fail status details, warnings, and hints.



Some **Diagnose** pages are provided to help check if there is any Modbus and EtherNet/IP communication issue happened. (e.g. invalid response or timeout issue)

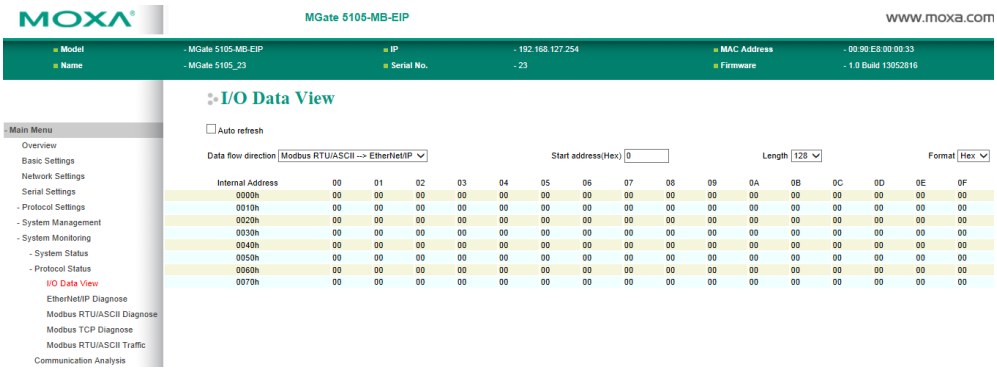


NOTE When the MGate gateway acts as an EtherNet/IP adapter, the O→T instance is 100 and T→O instance is 110. Your EtherNet/IP scanner (e.g. PLC, SCADA) needs to use these two instances to communicate with the MGate. For example, you should provide an Output (i.e., O→T) instance of 100 and an Input (i.e., T→O) instance of 110 for a Rockwell PLC, as shown below.



I/O Data View

I/O Data View is designed to check all I/O modules' exchanging data. Select data flow directions to obtain the correct data from Modbus or EtherNet/IP packets.



3

MGate Manager Configuration

The following topics are covered in this chapter:

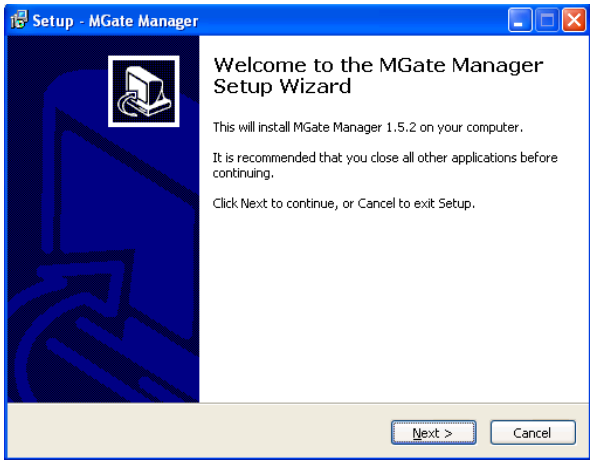
- **Installing the Software**
- **Starting MGate Manager**
- **Connecting to the Unit**
- **Modifying the Configuration**
  - Configure Device
  - Network Settings
  - Serial Settings
  - Protocol Settings
  - EtherNet/IP Settings
  - Modbus RTU/ASCII Settings
  - Modbus TCP Settings
  - I/O Data Mapping
  - System Settings
- **Load Default**
- **Upgrade Firmware**
- **Import/Export**
  - Export Function
  - Import Function
- **GSD Management**
- **Off-Line Configuration**

Installing the Software

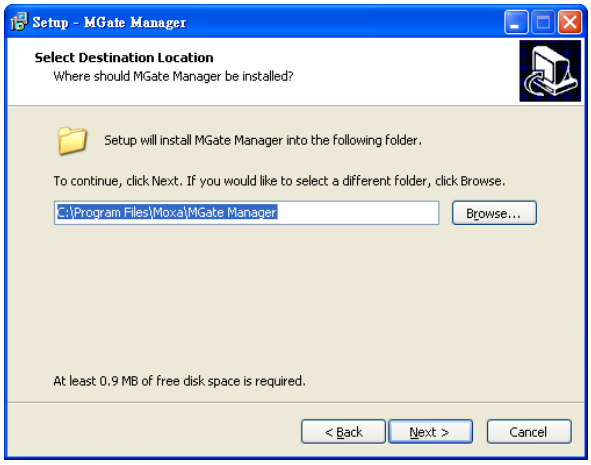
The following instructions explain how to install MGate Manager, a utility for configuring and monitoring MGate 5105-MB-EIP gateways over the network.

1. Insert the Document and Software CD into the CD-ROM drive. Locate and run the following setup program to begin the installation process:
   MGM_Setup_[Version]_Build_[DateTime].exe
   The latest version might be named MGM_Setup_Verx.x_Build_xxxxxxxx.exe.

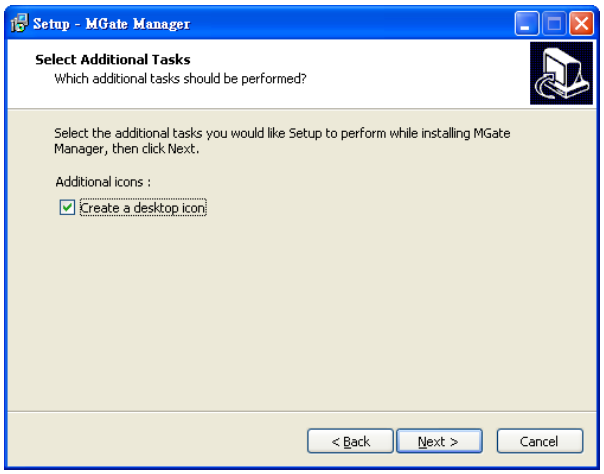
2. You will be greeted by the Welcome window. Click Next to continue.



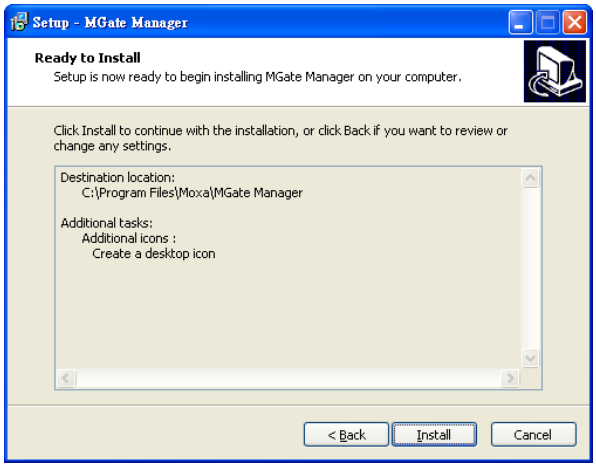
3. When the Select Destination Location window appears, click Next to continue. You may change the destination directory by first clicking on Browse.



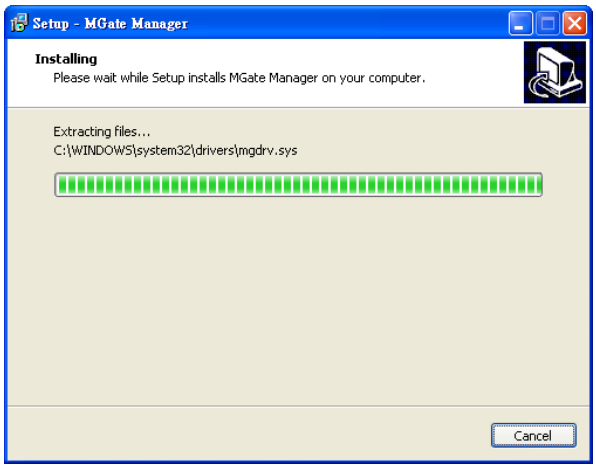
4. When the Select Additional Tasks window appears, click Next to continue. You may select Create a desktop icon if you would like a shortcut to MGate Manager on your desktop.



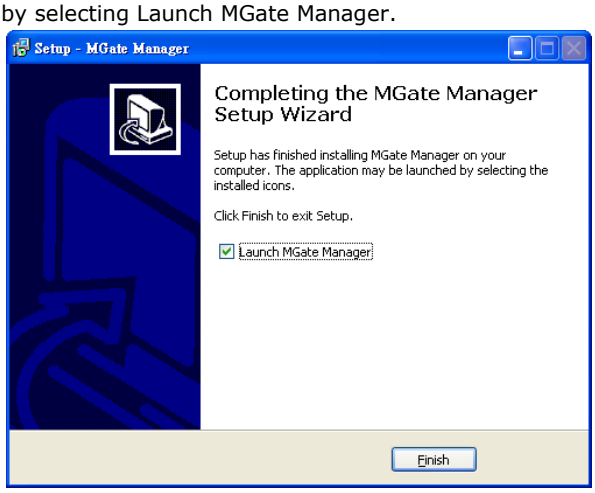
5. Click Next to start copying the software files.



6. A progress bar will appear. The procedure should take only a few seconds to complete.



7. A message will indicate that MGate Manager is successfully installed. You may choose to run it immediately by selecting Launch MGate Manager.



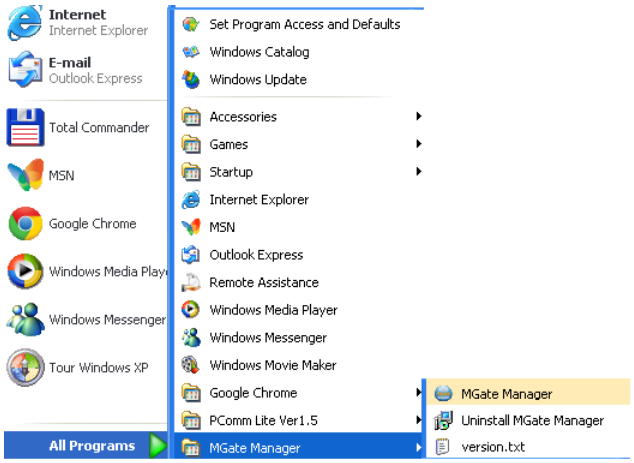
8. You may also open MGate Manager through Start → Programs → MGate Manager → MGate Manager, as shown below.

Starting MGate Manager

MGate Manager is a Windows-based utility that is used to configure the MGate 5105-MB-EIP.

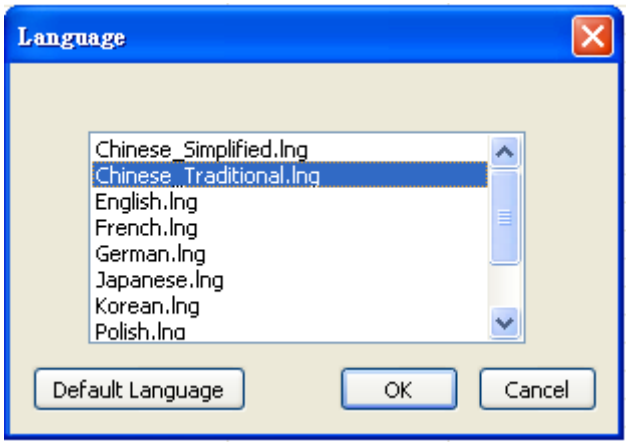
Before running MGate Manager, make sure that the MGate 5105-MB-EIP is connected to your PC.

You may open MGate Manager from the Windows Start menu by clicking **Start → Programs → MGate Manager → MGate Manager**. The MGate Manager window should appear as shown below.

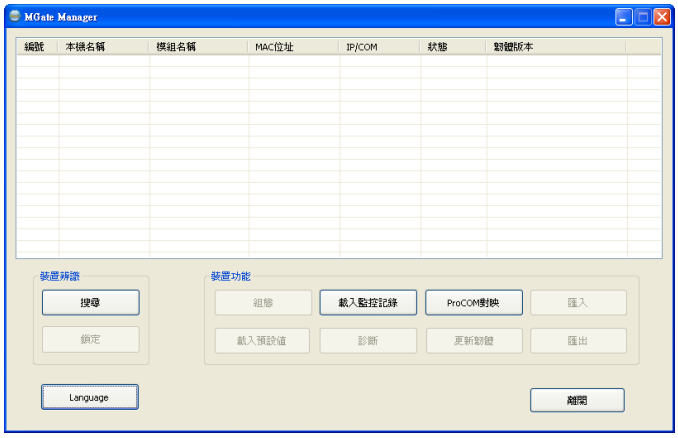


Change Language Settings

If you want to run MGate Manager in a different language, you may click **Language** to change the language setting. A dialog box showing the available languages should appear as shown below.



When you click **OK**, MGate Manager will immediately reflect your chosen language.



ATTENTION

Set your MGate Manager to "**Default Language**" before contacting Moxa Technical Support.

With support for multiple languages, MGate Manager is more user-friendly and accessible. However, if you need assistance from Moxa Technical Support, please change the language to "Default Language". This will prevent any misunderstandings or confusion about MGate Manager menu items and commands as our engineers assist you.

The default language is English and will only be active for the current MGate Manager session. When you open MGate Manager again, the language will revert to your original setting.

Connecting to the Unit

Prior to configuration, MGate Manager must be connected to its unit. There are two methods to establish connection. Broadcast Search locates the MGate series on the LAN. Search by IP attempts to connect to a specific unit by IP address, which is useful if the unit is located outside the LAN or can only be accessed by going through a router.

Broadcast Search

Broadcast Search is used for MGate Ethernet Gateways, such as the MGate 5000/MB3000/EIP3000 series, which are discovered via Ethernet by using broadcast IP.

Specify by IP Address

Specify by IP Address is used for MGate Ethernet Gateways, such as the MGate 5000/MB3000/EIP300 series, which are discovered via Ethernet by using a specific IP address. Click **Specify by IP Address** if you know the IP address of the unit and wish to connect to it directly.

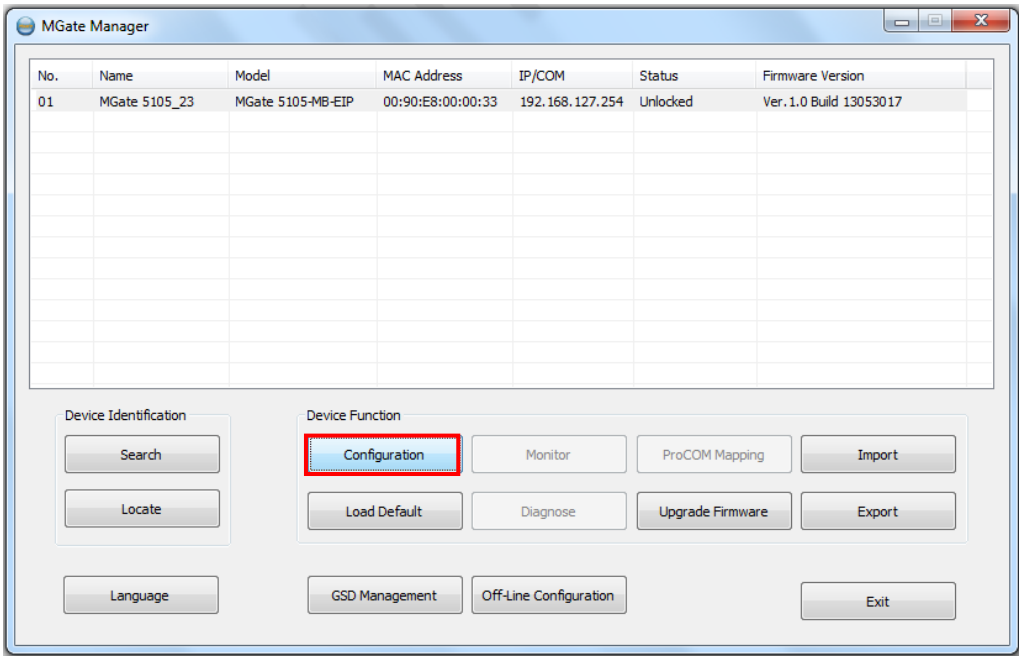
ATTENTION

If Search by IP Address fails to locate the MGate 5000/MB3000/EIP3000 series, the IP address that you entered might be incorrect. Try doing the search again and re-entering the IP address carefully.

Another possibility is that the MGate 5000/MB3000/EIP300 series is located on the same LAN as your PC, but on a different subnet. In this case, you can modify your PC's IP address and or netmask so that it is on the same subnet as the MGate 5000/MB3000/EIP300 series. After your PC and the MGate 5000/MB3000/EIP300 series are on the same subnet, MGate Manager should be able to find the unit.

Modifying the Configuration

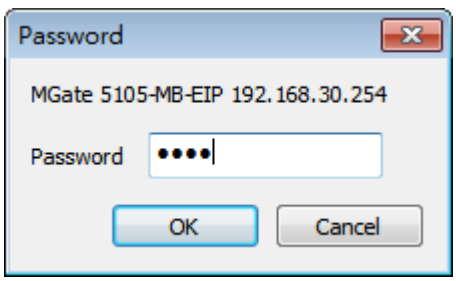
Once your unit is displayed in MGate Manager, select it by clicking on it. The Configuration button will become available. Click **Configuration** to open the configuration window.



Password Protection

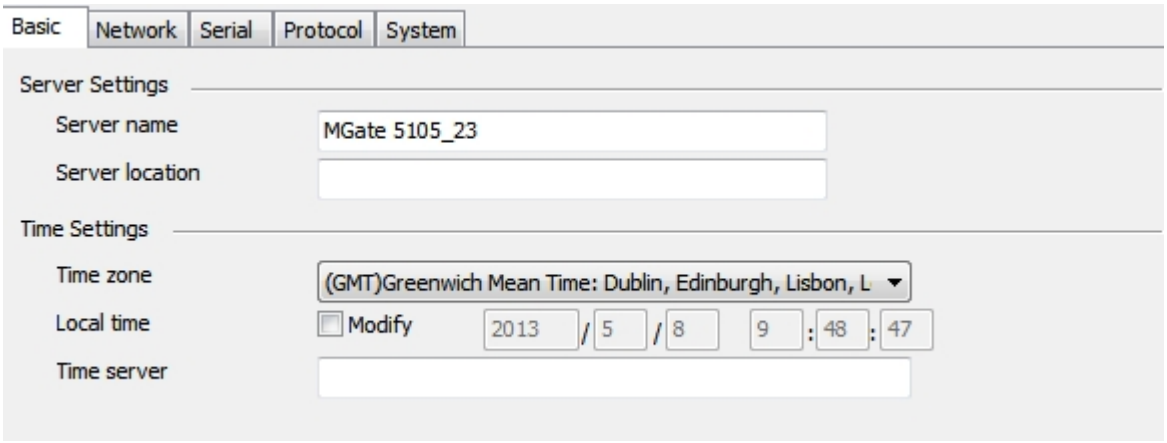
For safety reasons, account/password protection is enabled by default so you must provide the correct password to unlock the device before configuring the device.

The default password is **moxa** in all lowercase letters.



Configure Device

On the first page, you can change the device name and time zone settings.



Server Setting

Parameter	Value	Notes
Server Name	(an alphanumeric string)	You can enter a name to help you identify the unit, such as the function, etc.
Server Location	(an alphanumeric string)	You can enter a name to help you identify the unit location. Such as "Cabinet A001".

Time Settings

The MGate 5105-MB-EIP has a built-in Real-Time Clock for time calibration functions. Functions such as the log function can add real-time information to the message.

ATTENTION

First time users should select the time zone first. The Console will display the "real time" according to the time zone relative to GMT. If you would like to modify the real time clock, select "Local time." MGate's firmware will modify the GMT time according to the Time Zone.

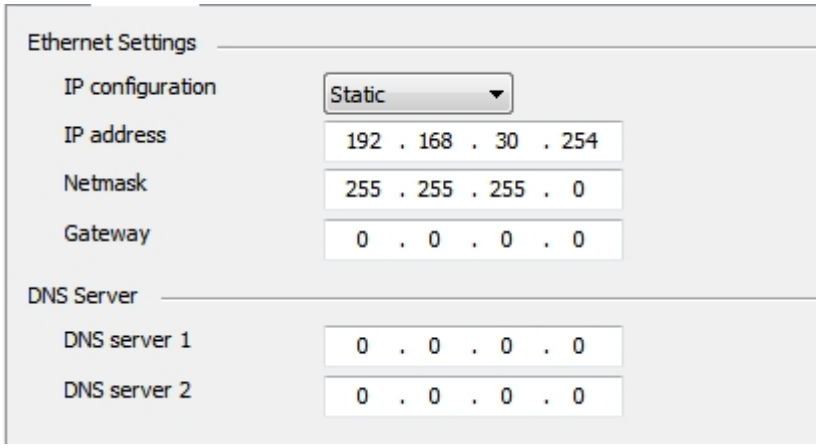
Parameter	Value	Notes
Time Zone	User selectable time zone	This field shows the currently selected time zone and allows you to select a different time zone.
Local Time	User adjustable time. (1900/1/1-2037/12/31)	
Time Server	IP or Domain address (e.g., 192.168.1.1 or time.stdtime.gov.tw)	This optional field specifies your time server's IP address or domain name, if a time server is used in your network. The module supports SNTP (RFC-1769) for automatic time calibration. The MGate will request time information from the specified time server every 10 minutes.

ATTENTION

When modifying the local time, select the time zone first. The time display will be updated to reflect the specified time zone.

Network Settings

The Network tab is where the unit's network settings are configured. You can modify the Name, Network Configuration, IP Address, Netmask, Default Gateway, and DNS.



Ethernet Settings

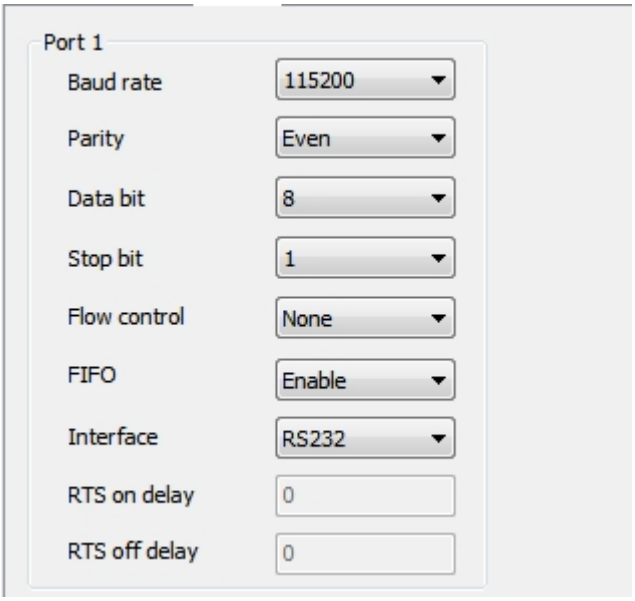
Parameter	Value	Notes
IP Configuration	Static IP, DHCP, BOOTP	Select "Static IP" if you are using a fixed IP address. Select one of the other options if the IP address is set dynamically.
IP Address	192.168.127.254 (or other 32-bit number)	The IP (Internet Protocol) address identifies the server on the TCP/IP network.
Netmask	255.255.255.0 (or other 32-bit number)	This identifies the server as belonging to a Class A, B, or C network.
Gateway	0.0.0.0 (or other 32-bit number)	This is the IP address of the router that provides network access outside the server's LAN.

DNS Server

Parameter	Value	Notes
DNS Server 1	0.0.0.0 (or other 32-bit number)	This is the IP address of the primary domain name server.
DNS Server 2	0.0.0.0 (or other 32-bit number)	This is the IP address of the secondary domain name server.

Serial Settings

MGate 5105-MB-EIP serial interface supports RS-232, RS-485 2-wire, RS-485 4-wire and RS-422 interfaces. You must configure baudrate, parity, data bits, and stop bits before using serial interface with Modbus RTS/ASCII protocol. Incorrect settings will result in communication failures.

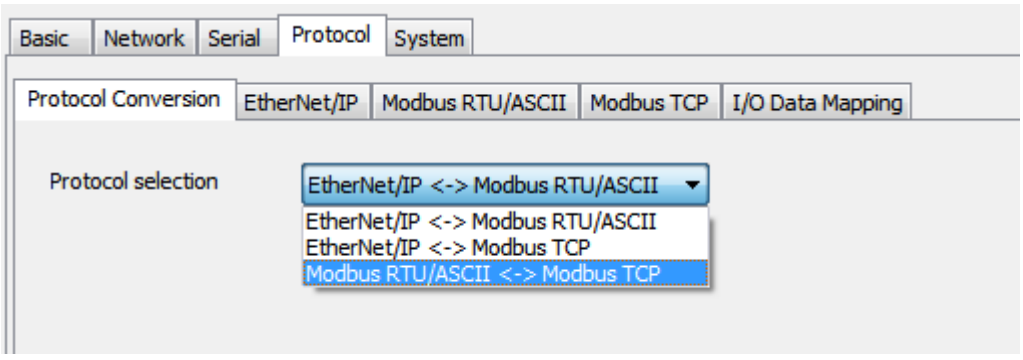


Serial settings

Parameter	Value	Notes
Baudrate	50 bps to 921600 bps	
Parity	None, Odd, Even, Mark, Space	
Data bits	8	
Stop bits	1, 2	
Flow control	None, RTS/CTS, RTS Toggle	RTS Toggle will turn off RTS signals when there is no data to be sent. If there is data to be sent, RTS will turn on before data transmission and off after the transmission completes.
FIFO	Enable, Disable	The internal buffer of UART. Disabling FIFO can reduce the latency time when receiving data from serial communications, but this will also slow down the throughput.
Interface	RS-232, RS-422, RS-485 2 wire, RS-485 4 wire	
RTS on delay	0-100 ms	Only available for RTS Toggle
RTS off delay	0-100 ms	Only available for RTS Toggle

Protocol Settings

The MGate gateway supports Modbus RTU/ASCII, Modbus TCP, and EtherNet/IP protocols. The possible combinations are listed in the following table.



Option-1: EtherNet/IP <-> Modbus RTU/ASCII

Option-2: EtherNet/IP <-> Modbus TCP

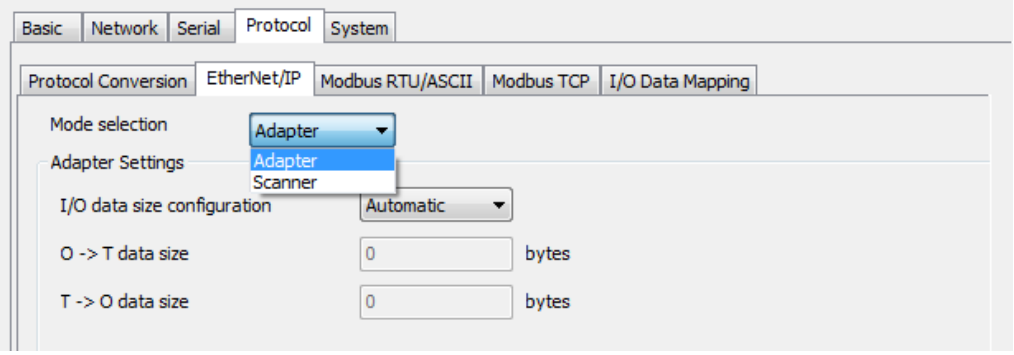
Option-3: Modbus RTU/ASCII <-> Modbus TCP

		MGate Protocol 1					
		Modbus RTU/ASCII Master	Modbus RTU/ASCII Slave	Modbus TCP Client	Modbus TCP Server	EtherNet/IP Scanner	EtherNet/IP Adapter
MGate Protocol 2	Modbus RTU/ASCII Master			Option-3	Option-3	Option-1	Option-1
	Modbus RTU/ASCII Slave			Option-3	Option-3	Option-1	Option-1
	Modbus TCP Client	Option-3	Option-3			Option-2	Option-2
	Modbus TCP Server	Option-3	Option-3			Option-2	Option-2
	EtherNet/IP Scanner	Option-1	Option-1	Option-2	Option-2		
	EtherNet/IP Adapter	Option-1	Option-1	Option-2	Option-2		

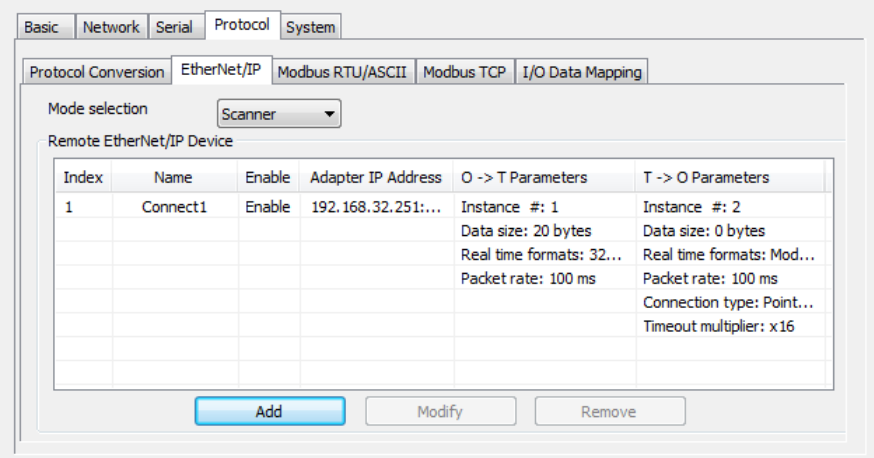
Protocol 1 and Protocol 2 refer to the two paired protocols in each combination that the MGate will transfer data between through the gateway's internal memory.

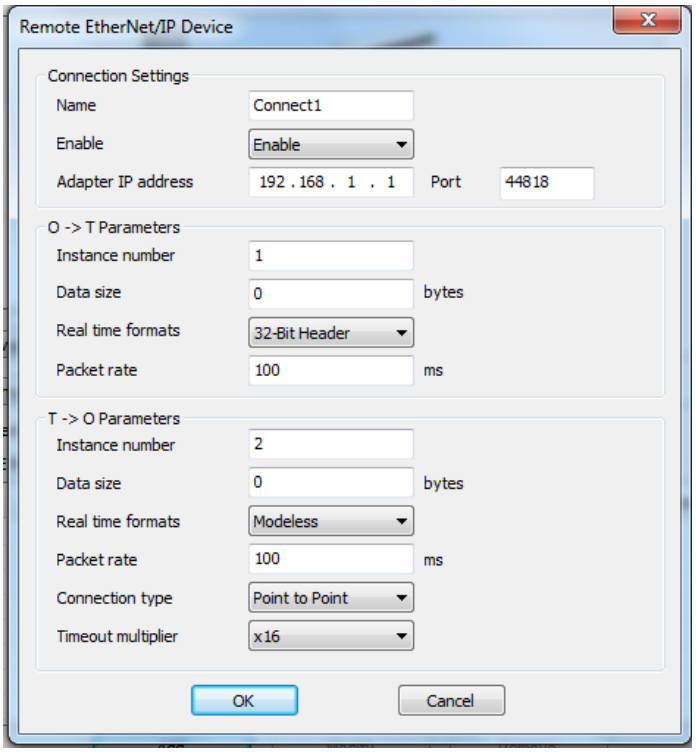
EtherNet/IP Settings

The MGate 5105-MB-EIP supports Adapter and Scanner modes for EtherNet/IP protocol. In Adapter mode, you can select Automatic for I/O data size configuration to automatically map O→T (Originator to Target) and T→O (Target to Originator) data sizes with Modbus data.



In Scanner mode, all EtherNet/IP connections will be shown in table. For initial setup, click **Add** to create a new connection.





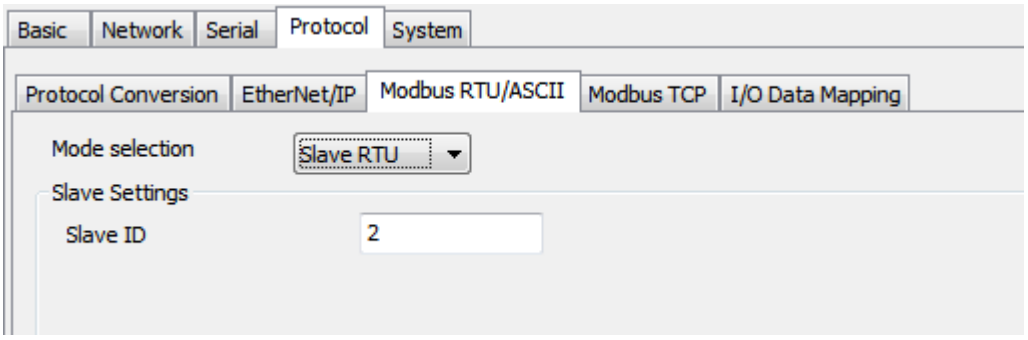
Parameter	Value	Notes
Name	50 bps to 961200 bps	
Connection	Enable, Disable	Enable or Disable this connection.
Adapter IP address and Port	IP address Port: 1 to 65535	Default EtherNet/IP port is 44818
Instance number	1 to 2147483647	
Data size	O->T: 0 to 496 T->O: 0 to 496	
Real time formats	Modeless, 32-Bit Header	Default O->T format is 32-Bit Header. Default T->O format is Modeless.
Packet rate	0 to 3000 ms	Command polling interval time.
Connection type	Point to Point, Multicast	When using a Multicast connection, Target (i.e., EtherNet/IP Adapter) must reply to the Multicast IP address for the MGate to listen.
Timeout multiplier	x4, x8, x16, x32, x64, x128, x512	Timeout value = packet rate x timeout multiplier (e.g., For packet rate = 100 ms and timeout multiplier = 16, the connection timeout = 1,600 ms).

Modbus RTU/ASCII Settings

According to the Modbus RTU/ASCII settings, the MGate 5105-MB-EIP will act as a Modbus master or Modbus slave in order to communicate with your Modbus RTU/ASCII devices. For Slave mode, the MGate acts as a slave and waits for the incoming connection from the Modbus master. In this mode, you only need to specify the slave ID for the MGate gateway. For Master mode, the MGate works as a master and will try to send Modbus commands to the Modbus slave devices, so you will need to specify the slave device IDs and the relative Modbus commands.

Slave Mode Settings

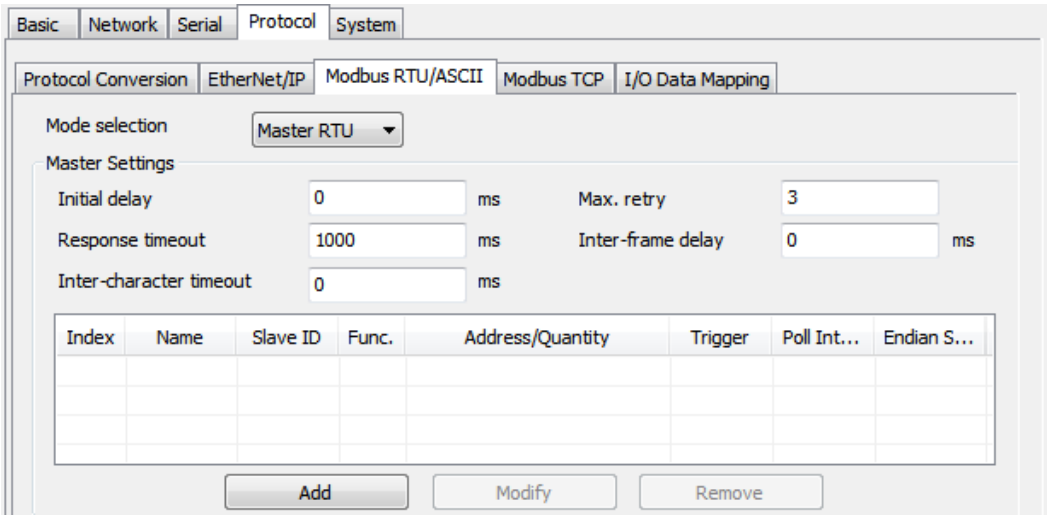
You will need to specify which Modbus protocols will run in Slave mode. The MGate 5105-MB-EIP supports Modbus RTU and Modbus ASCII protocols in Slave mode.



Parameters	Value	Description
Mode selection	Slave RTU or Slave ASCII	The Modbus protocol.
Slave ID	0 to 255	The Modbus Slave ID that this slave module will accept. 0: Broadcasting 1–255: Device specific.

Master Mode Settings

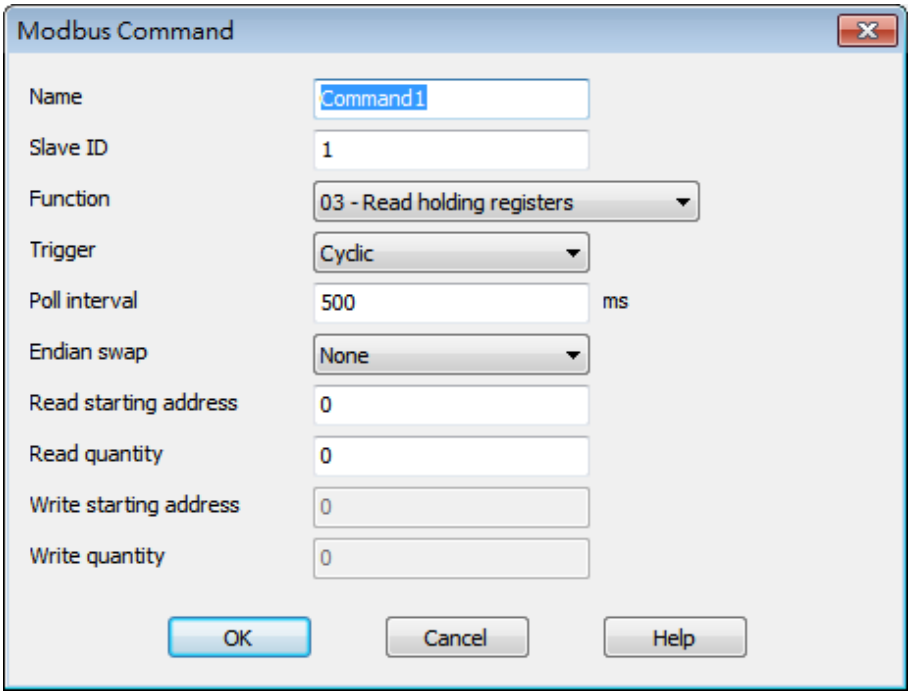
You will need to specify which Modbus protocols will run in Master mode. The MGate 5105-MB-EIP supports Modbus RTU and Modbus ASCII protocols in Master mode.



The MGate 5105-MB-EIP also provides several advanced settings for specific application requirements. The following settings are optional for most applications. It is suggested to use the default settings to test the MGate 5105-MB-EIP.

Parameters	Description
Initial delay	Some Modbus slaves may take more time to boot up than other devices. In some environments, this may cause the entire system to suffer from repeated exceptions during the initial boot-up. You can force the MGate to wait after booting up before sending the first request with the "Initial Delay" setting.
Response timeout	According to the Modbus standard, the time it takes for a slave device to respond to a request is defined by the device manufacturer. Based on this response time, a master can be configured to wait a certain amount of time for a slave's response. If no response is received within the specified time, the master will disregard the request and continue operation. This allows the Modbus system to continue operation even if a slave device is disconnected or faulty. On the MGate 5101-MB-EIP, the "Response timeout" field is used to configure how long the gateway will wait for a response from a Modbus ASCII or RTU slave. Please refer to your device manufacturer's documentation to manually set the response time.
Inter-character timeout (only for Modbus RTU)	Use this function to determine the timeout interval between characters for Modbus devices that cannot receive Rx signals within an expected time interval. If the response is timed out, all received data will be discarded. The MGate 5105-MB-EIP will automatically determine the timeout interval if the timeout value is set to 0.
Max. retry	The number of times the master will retry the same request when the response times out.
Inter-frame delay (only for Modbus RTU)	The users can determine the time-delay to transmit the data frame received from the slave device to the upstream. The MGate 5105-MB-EIP will automatically determine the time interval if it is set to 0.

For Master mode, you must identify which Modbus requests need to be sent to Modbus slave devices through serial interface. The data will be exchanged between slave devices and the MGate gateway's internal memory. To do this, manually add all Modbus commands that will handle the data exchange. The **Add**, **Modify**, and **Remove** buttons support the Modbus command arrangement. When you click on the **Add** and **Modify** buttons, the following dialog box will be displayed.



Modify the Modbus command parameters to finish the configuration. You will need to configure each Modbus command through this dialog box.

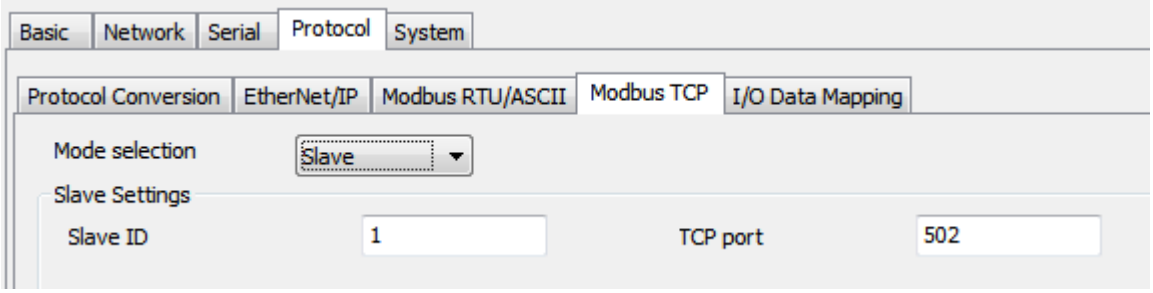
Parameters	Description
Name	Enter a name to help to identify the command, such as the location, function etc.
Slave ID	The Modbus slave ID that this slave module will accept. 0: Broadcasting 1–255: Device specific
Function code	When a message is sent from a Client to a Server device, the function code field tells the server what kind of action to perform. We support the following function codes so far: 01: Read coils 02: Read discrete inputs 03: Read holding registers 04: Read input register 05: Write single coil 06: Write single register 15: Write multiple coils 16: Write multiple registers 23: Read/Write multiple registers
Trigger	Disable: The command is never sent Cyclic: The command is sent cyclically at the interval specified in the "Poll Interval" parameter Data change: The data area is polled for changes at the time interval defined by Poll Interval. A command is issued when a change in data is detected.
Poll interval	Polling intervals are in milliseconds, since the module sends all requests in turns, the actual polling interval also depends on the number of requests in the queue and their parameters. The range is from 500 to 1,200,000 ms.
Endian swap	Data Byte Swapping **None**: Don't need to swap **Byte**: 0x0A, 0x0B, 0x0C, 0x0D becomes 0x0D, 0x0C, 0x0B, 0x0A. **Word**: 0x0A, 0x0B, 0x0C, 0x0D becomes 0x0C, 0x0D, 0x0A, 0x0B. **ByteWord**: 0x0A, 0x0B, 0x0C, 0x0D becomes 0x0D, 0x0C, 0x0B, 0x0A. There are two phases in changing ByteWord 1). 0x0A, 0x0B, 0x0C, 0x0D becomes 0x0B, 0x0A, 0x0D, 0x0C. 2). 0x0B, 0x0A, 0x0D, 0x0C becomes 0x0D, 0x0C, 0x0B, 0x0A.
Read starting address	Station Address. The range is from 0 to 65535
Read quantity	Specifying how many quantities to write. There are two kinds of quantity units, 1 bit and 16 bits, which are associated with the function field. The range is from 1 to 125.
Write starting address	Station Address. The range is from 0 to 65535
Write quantity	Specifying how many quantities to write. There are two kinds of quantity units, 1 bit and 16 bits, which are associated with the function field. The range is from 1 to 121.

Modbus TCP Settings

MGate 5105-MB-EIP support Modbus TCP function with slave and master mode. For slave mode, MGate works as a server and waits for incoming connection from Modbus TCP client. And for client mode, MGate works as a client and will try to build a TCP connection with remote Modbus TCP slave device. In this mode, users have to specify the IP address of the remote device and the relative Modbus command.

Slave Mode Settings

The MGate 5105-MB-EIP supports Modbus slave mode, which means the MGate will work as a server and wait for incoming connection requests. The default TCP listen port is 502. In this mode, the MGate will wait for incoming Modbus TCP requests and use the internal memory as the slave register to respond.

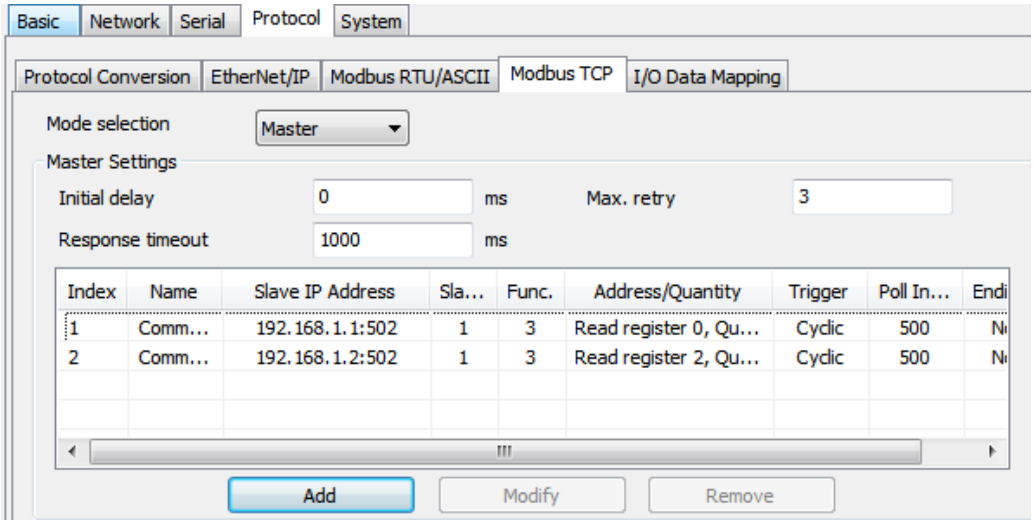


The users should modify the Slave ID settings to match the system requirements. The default TCP port for Modbus TCP is 502, so you may need to modify if there is a firewall in place.

Parameters	Value	Description
Slave ID	1 to 247	The Modbus address of the MGate.
TCP Port	1 to 65535	The local TCP port for the MGate.

Master Mode Settings

The MGate 5105-MB-EIP supports Modbus master mode, which means the MGate will work as a client and send the Modbus command request to the slave device actively. You will need to configure each Modbus command manually. On this page, users can see all the commands listed in the table.

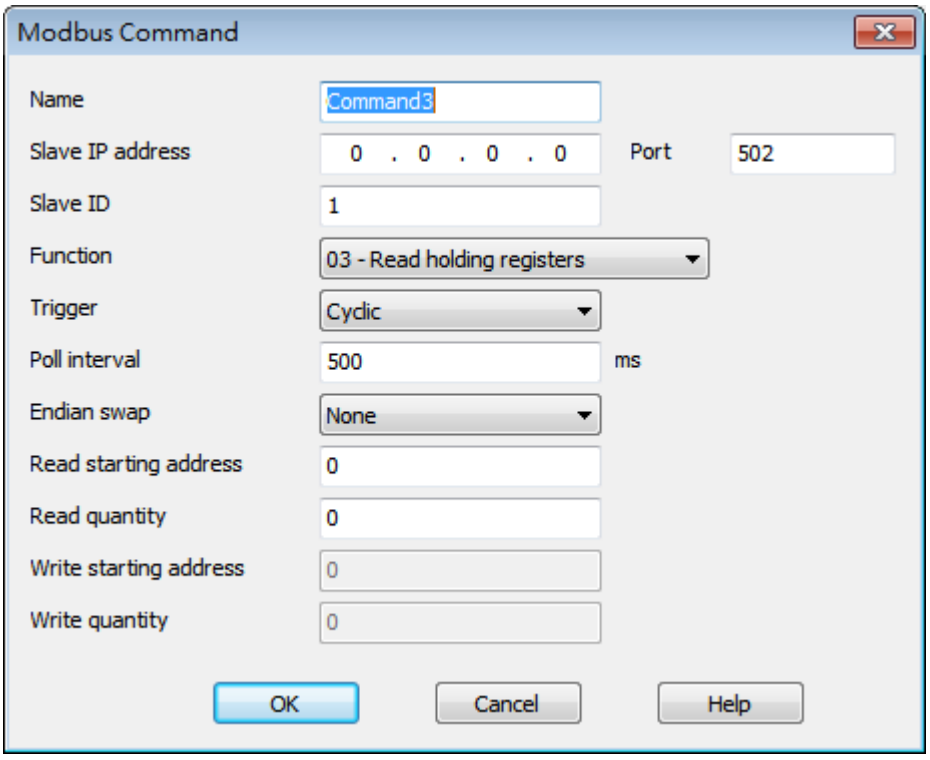


Parameters	Value	Description
Initial Delay	0 to 65535 ms	Some Modbus slaves may take more time to boot up than other devices. In some environments, this may cause the entire system to suffer from repeated exceptions during the initial boot-up. You can force the MGate to wait after booting up before sending the first request with the "Initial Delay" setting.
Response Timeout	10 to 12000 ms	This is used to configure how long the MGate will wait for a response from a Modbus slave.
Max. retry	0 to 99	This is used to configure how many times the MGate will try to communicate with the Modbus slave.

To add a new command or modify the existing one, click the **Add** button or **Modify** button and a new dialog box will appear. To remove Modbus commands, select the specific command and then click the **Remove** button.

To communicate with remote Modbus TCP slave devices, specify the Modbus command for each device. For each Modbus read/write command, specify the internal memory address for data exchange. For the read command, the information received from remote devices will be updated to the specified internal memory address. For the write command, the data in the specified internal memory address will be sent to the remote device. The data will be used to update the remote device register.

Each remote device may need more than one command for communication, so you will need to input all the commands manually.

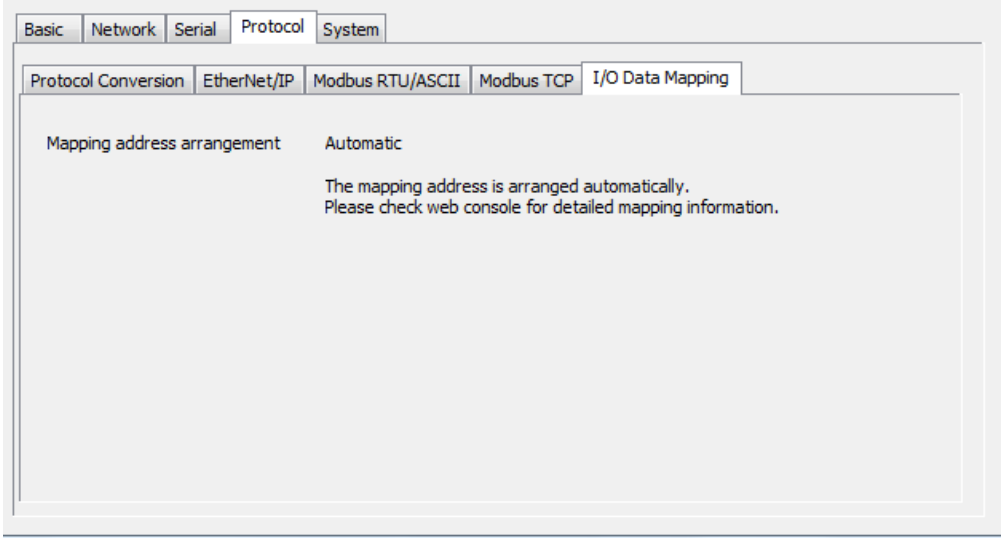


Parameters	Description
Name	Enter a name to help identify the command, such as the location, function etc.
Slave IP address	The IP address of remote slave device.
Port	The TCP port number of remote slave devices. 0 to 65535
Slave ID	The Modbus slave id that this slave module will accept. 0: Broadcasting 1–255: Device specific.
Function	When a message is sent from a Client to a Server device the function code field tells the server what kind of action to perform. We support the following function codes so far: 01: Read coils 02: Read discrete inputs 03: Read holding registers 04: Read input register 05: Write single coil 06: Write single register 15: Write multiple coils 16: Write multiple registers 23: Read/Write multiple registers
Trigger	Disable: The command is never sent

	Cyclic: The command is sent cyclically at the interval specified in the "Poll Interval" parameter. Data change: The data area is polled for changes at the time interval defined by Poll Interval. A command is issued when a change in data is detected.
Poll interval	Polling intervals are in milliseconds, since the module sends all requests in turns, the actual polling interval also depends on the number of requests in the queue and their parameters. The range is from 500 to 1,200,000 ms.
Endian swap	Data Byte Swapping **None**: Don't need to swap **Byte**: 0x0A, 0x0B, 0x0C, 0x0D becomes 0x0D, 0x0C, 0x0B, 0x0A. **Word**: 0x0A, 0x0B, 0x0C, 0x0D becomes 0x0C, 0x0D, 0x0A, 0x0B. **ByteWord**: 0x0A, 0x0B, 0x0C, 0x0D becomes 0x0D, 0x0C, 0x0B, 0x0A. There are two phases in changing ByteWord: 1) 0x0A, 0x0B, 0x0C, 0x0D becomes 0x0B, 0x0A, 0x0D, 0x0C 2) 0x0B, 0x0A, 0x0D, 0x0C becomes 0x0D, 0x0C, 0x0B, 0x0A
Read starting address	Station Address. The range is from 0 to 65535
Read quantity	Specifying how many quantities to write. There are two kinds of quantity units, bit and 16bits, which is associated with function field. The range is from 1 to 125.
Write starting address	Station Address. The range is from 0 to 65535
Write quantity	Specifying how many quantities to write. There are two kinds of quantity units, bit and 16bits, which is associated with function field. The range is from 1 to 121.

I/O Data Mapping

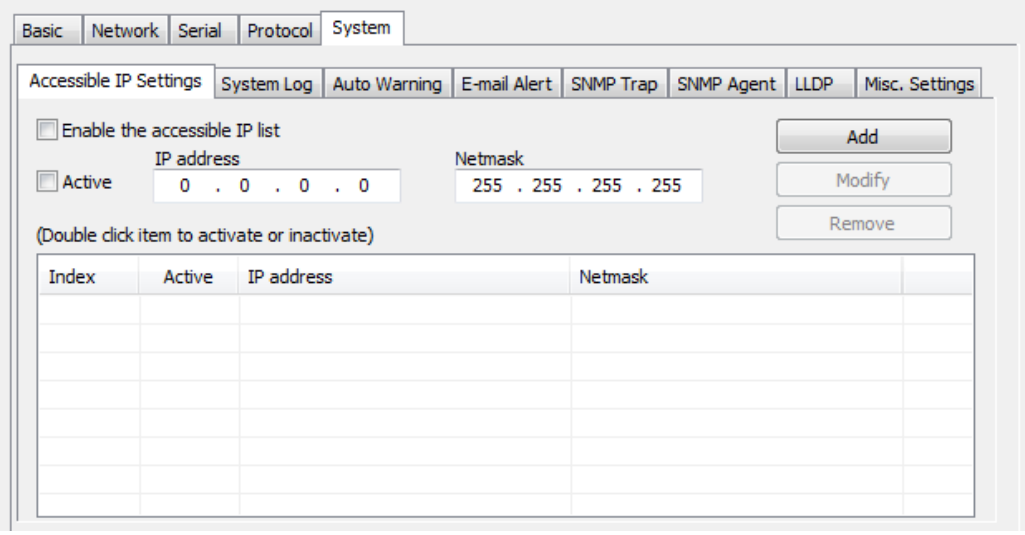
To confirm or adjust the internal memory data mapping for both sides, use the web console.



System Settings

This configuration tab includes several system level settings, such as security, alarm, and information log. Most of these settings are optional.

Accessible IP Settings



These settings are used to restrict access to the module by IP address. Only IP addresses on the list will be allowed access to the device. You may add a specific address or range of addresses by using a combination of IP address and netmask, as follows:

To allow access to a specific IP address
Enter the IP address in the corresponding field; enter 255.255.255.255 for the netmask.

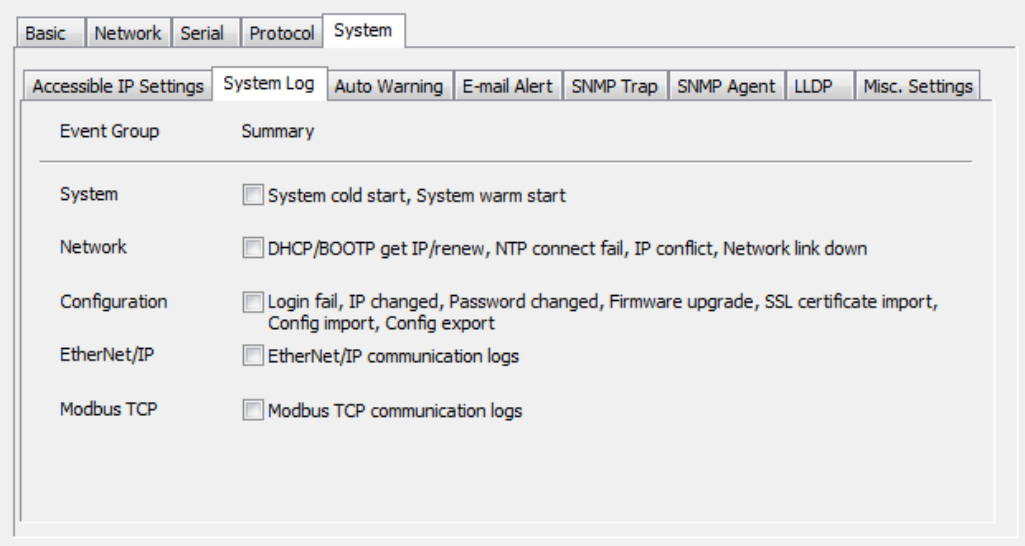
To allow access to hosts on a specific subnet
For both the IP address and netmask, use 0 for the last digit (e.g., "192.168.1.0" and "255.255.255.0").

To allow access to all IP addresses
Make sure that Enable the accessible IP list is not checked.

Additional configuration examples are shown in the following table:

Desired IP Range	IP Address Field	Netmask Field
Any host	Disable	Enable
192.168.1.120	192.168.1.120	255.255.255.255
192.168.1.1 to 192.168.1.254	192.168.1.0	255.255.255.0
192.168.1.1 to 192.168.255.254	192.168.0.0	255.255.0.0
192.168.1.1 to 192.168.1.126	192.168.1.0	255.255.255.128
192.168.1.129 to 192.168.1.254	192.168.1.128	255.255.255.128

System Log Settings



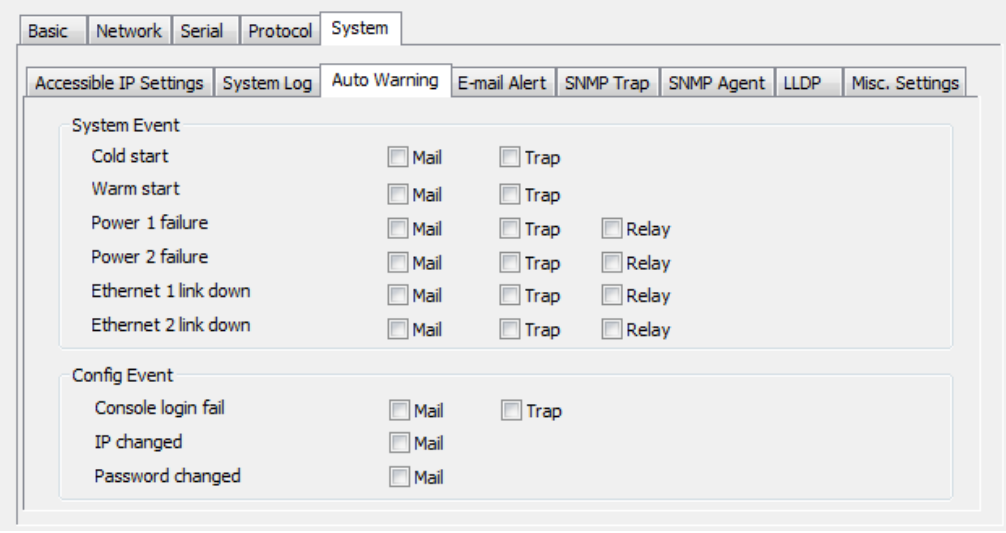
These settings enable the MGate firmware to record important events for future verification. The recorded information can only be displayed in the web console.

The available information that can be recorded includes the following events:

Parameters	Event
System	System Cold Start, System Warm Start
Network	DHCP/BOOTP Get IP/Renew, NTP Connect Fail, IP Conflict, Network Link Down
Configuration	Login Fail, IP Changed, Password Changed, Firmware Upgrade, SSL Certificate Import, Configuration Import/Export
EtherNet/IP	EtherNet/IP Communication logs
Modbus TCP	Modbus TCP Communication logs

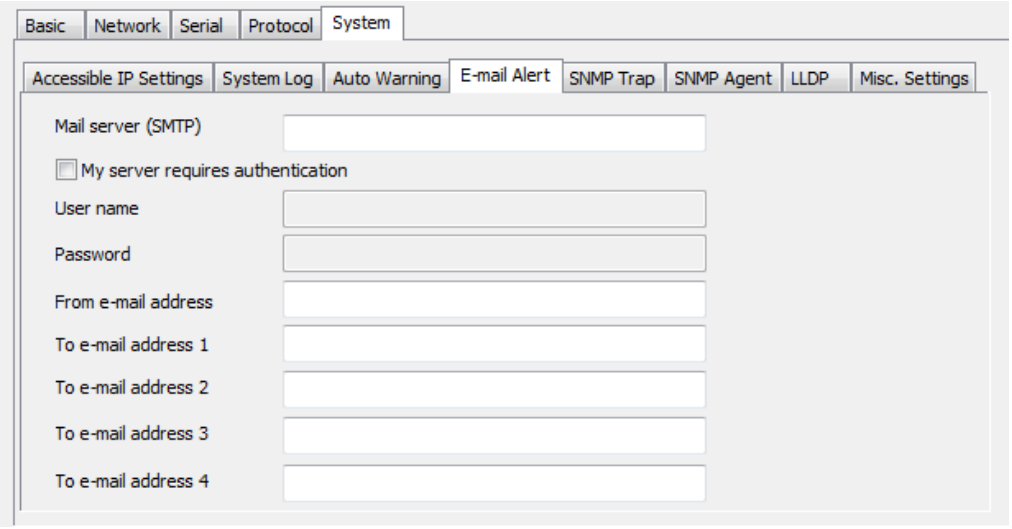
Users can view the recorded information from the web console or text mode console.

Auto Warning Settings



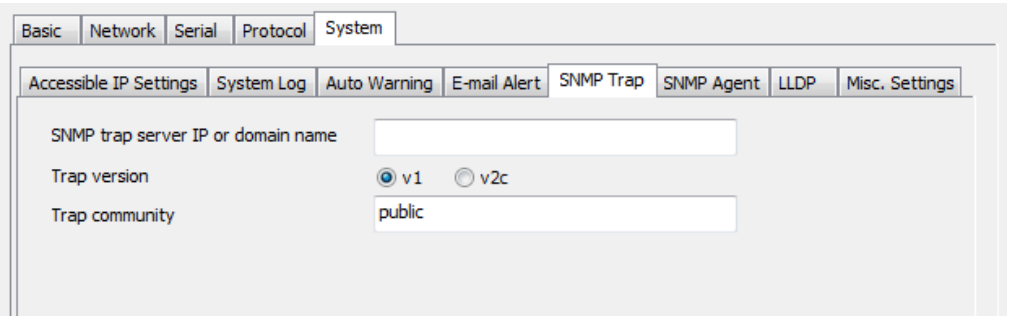
Auto Warning is triggered by different events. When a checked trigger condition occurs, the MGate can send e-mail alters, SNMP Trap messages, or open/close the circuit of the relay output and trigger the Fault LED to start blinking. To enable an e-mail alert, configure the e-mail address on the E-mail Alert page. Likewise, to enable SNMP Trap alerts, configure SNMP trap server on the SNMP Trap page.

E-mail Alert Settings



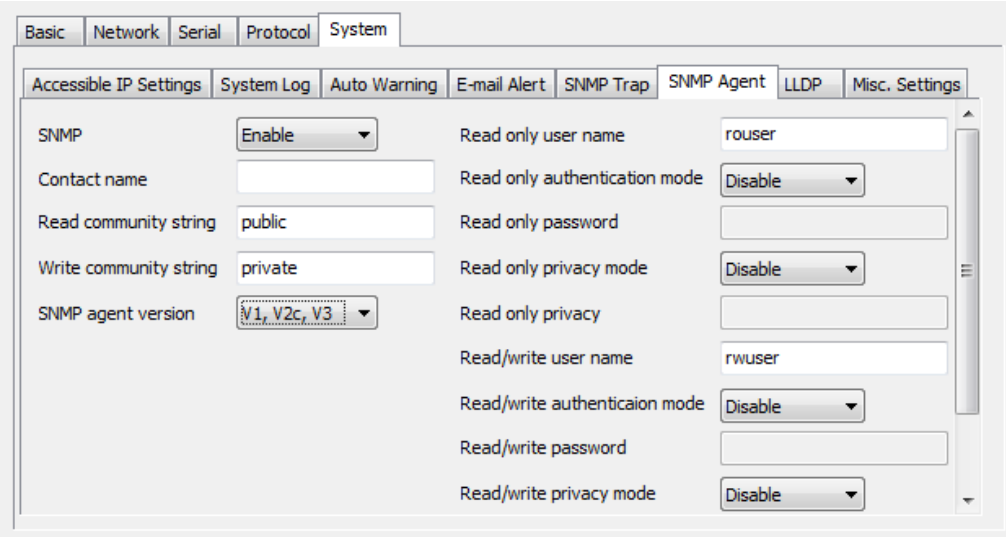
Parameters	Description
Mail server	The mail server's domain name or IP address.
User name	This field is for your mail server's user name, if required.
Password	This field is for your mail server's password, if required.
From e-mail address	This is the e-mail address from which automatic e-mail warnings will be sent.
To e-mail address 1 to 4	This is the e-mail address or addresses to which the automatic e-mail warnings will be sent.

SNMP Trap Settings



Parameters	Description
SNMP trap server IP	Use this field to indicate the IP address to use for receiving SNMP traps.
Trap version	Use this field to select the SNMP trap version.
Trap community	Use this field to designate the SNMP trap community.

SNMP Agent Settings



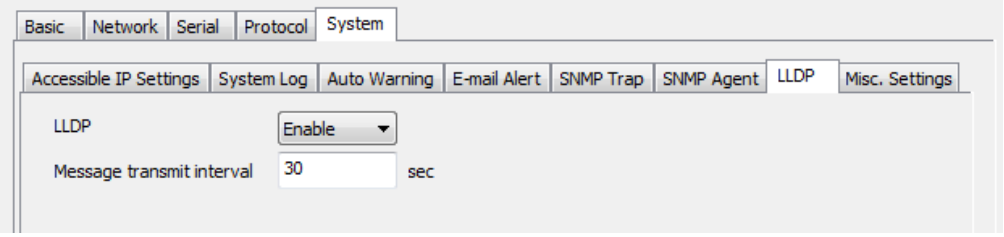
Parameters	Description
SNMP	To enable the SNMP Agent function, select the Enable option, and enter a community name (e.g., public).
Contact name	The optional SNMP contact information usually includes an emergency contact name and telephone or pager number.
Read community string	This is a text password mechanism that is used to weakly authenticate queries to agents of managed network devices.
Write community string	This is a text password mechanism that is used to weakly authenticate changes to agents of managed network devices.
SNMP agent version	The MGate 5105-MB-EIP supports SNMP V1, V2c, and V3.

Read-only and Read/write access control

The following fields allow you to define user names, passwords, and authentication parameters for two levels of access: read-only and read/write. The name of the field will indicate which level of access it refers to. For example, **Read only** authentication mode allows you to configure the authentication mode for read-only access, whereas **Read/write** authentication mode allows you to configure the authentication mode for read/write access. For each level of access, you may configure the following:

Parameters	Description
User name	Use this optional field to identify the user name for the specified level of access.
Authentication mode	Use this field to select MD5 or SHA as the method of password encryption for the specified level of access, or to disable authentication.
Privacy mode	Use this field to enable or disable DES_CBC data encryption for the specified level of access.
Password	Use this field to set the password for the specified level of access.
Privacy	Use this field to define the encryption key for the specified level of access.

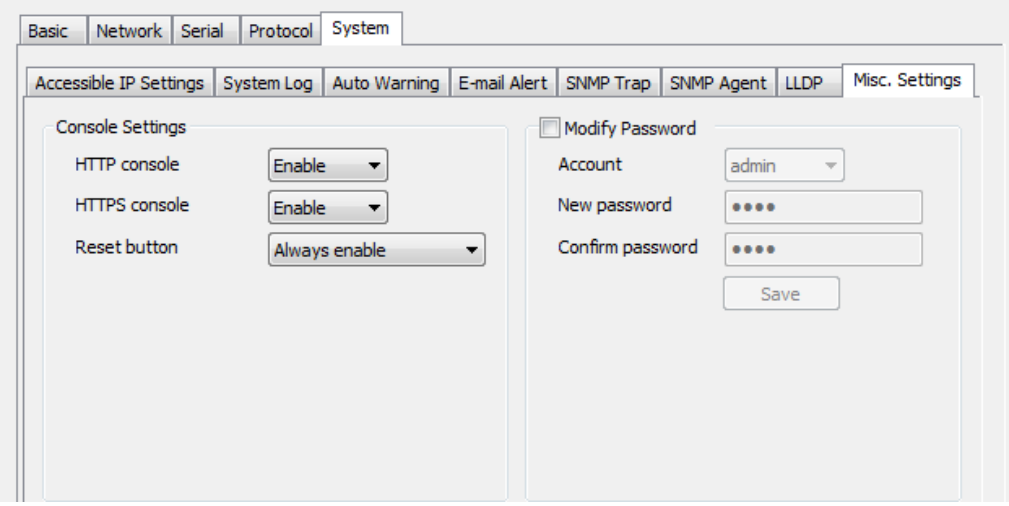
LLDP Settings



Parameters	Description
Message transmit interval	Default is 30 seconds. The allowable range is from 5 through 32,768 seconds.

Misc. Settings

This page includes console settings, password and relay output.



Console Settings

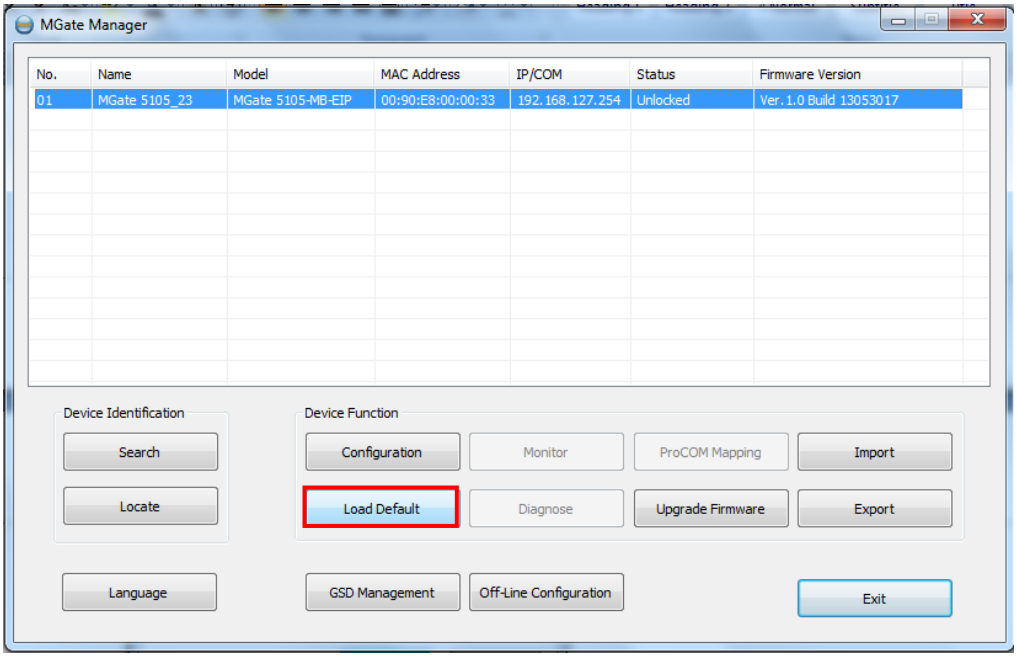
Parameters	Value	Description
HTTP/HTTPS	Enable/Disable	This setting is to enable/disable the web console. For security issue, users can only enable the HTTPS or just disable all settings.
Reset button protect	Disable after 60 sec, Always enable	MGate provide the reset button to clear password or load factory default settings. But for security issue, users can disable this function. In disabled mode, MGate will still enable this function within 60 seconds after boot-up just in case users really need to reset function.

Modify Password

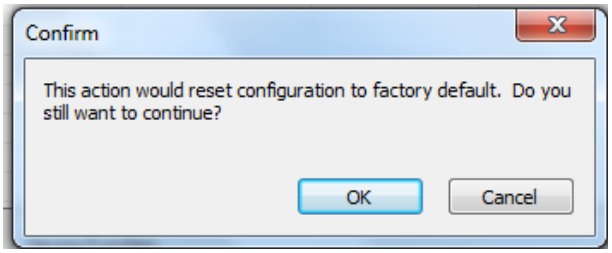
Parameters	Value	Description
Account	admin, user	Users can modify the password for different account. Now MGate provide two different level accounts. One is “admin”. Admin can access and modify all the settings through console. Another one is “user”. This account only can view the setting and can’t change anything.

Load Default

To clear all the settings on the unit, use the **Load Default** button to reset the unit to its initial factory default values.



Click **Load Default** and review the confirmation message. If you are sure you would like to reset the configuration to factory defaults, click the **OK** button. If not, click **Cancel**.



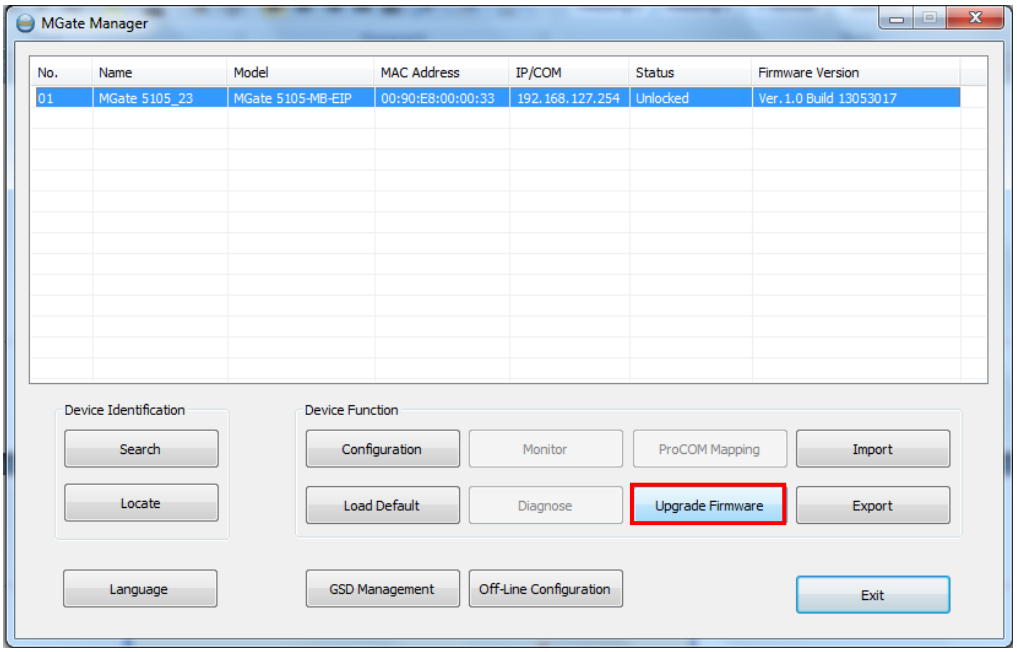
After the MGate Manager resets completely, MGate Manager will automatically execute a Broadcast Search for all MGate units on the LAN. Your MGate should reappear in the list of units.

ATTENTION

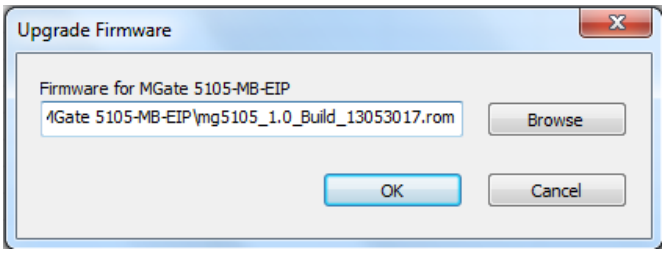
Load Default will completely reset the configuration of the unit, and all of the parameters you have saved will be discarded. Do not use this function unless you are sure you want to completely reset your unit.

Upgrade Firmware

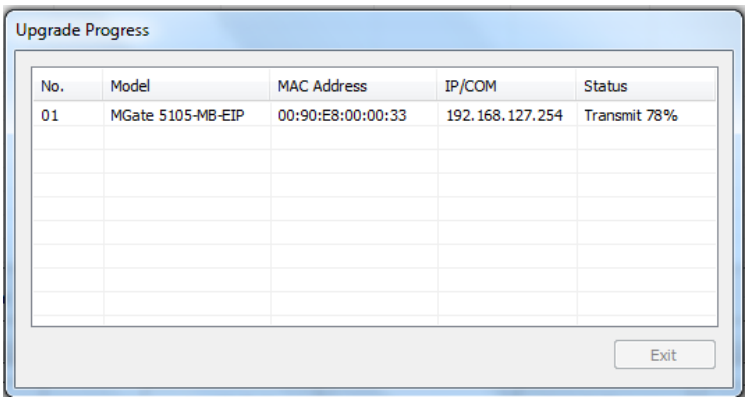
Firmware updates for the MGate 5105-MB-EIP are located at www.moxa.com. After you have downloaded the new firmware onto your PC, you can use MGate Manager to write it onto your MGate 5105-MB-EIP. Select the desired unit from the list in MGate Manager and click **Upgrade Firmware** to begin the process.



The dialog boxes will guide you through the process. You will need to browse your PC for the firmware file. Make sure it matches your model.



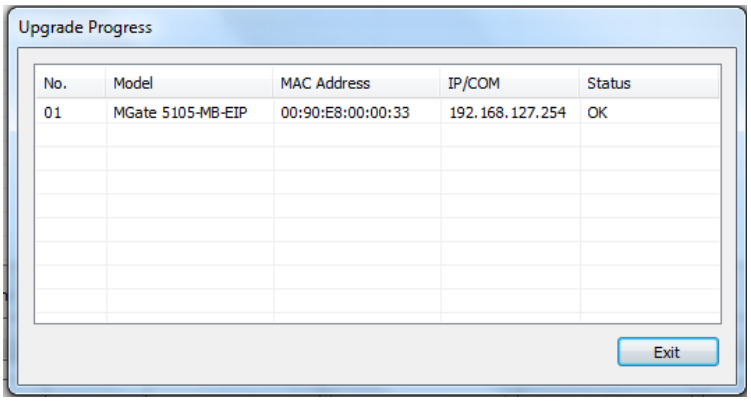
As the firmware is written to the unit, progress is displayed in the window.



ATTENTION

DO NOT turn off the MGate power before the firmware upgrade progress completes. The MGate will be erasing the old firmware to make room for the new firmware to flash memory. If you power off the MGate and terminate the progress, the flash memory will contain corrupted firmware and the MGate will fail to boot. If this happens, call Moxa RMA services.

Once the firmware has been successfully written onto the unit, click **Exit** to close the Upgrade Firmware window. MGate Manager will automatically execute a Broadcast Search for all MGate units on the LAN. Your MGate should reappear in the list of units.



Import/Export

There are three main reasons for using the Import and Export functions.

- **Applying the same configuration to multiple units**

The Import/Export configuration function is a convenient way to apply the same settings to units located in different sites. You can export the configuration as a file, and then import the configuration file onto other units at any time.

- **Backing up configurations for system recovery**

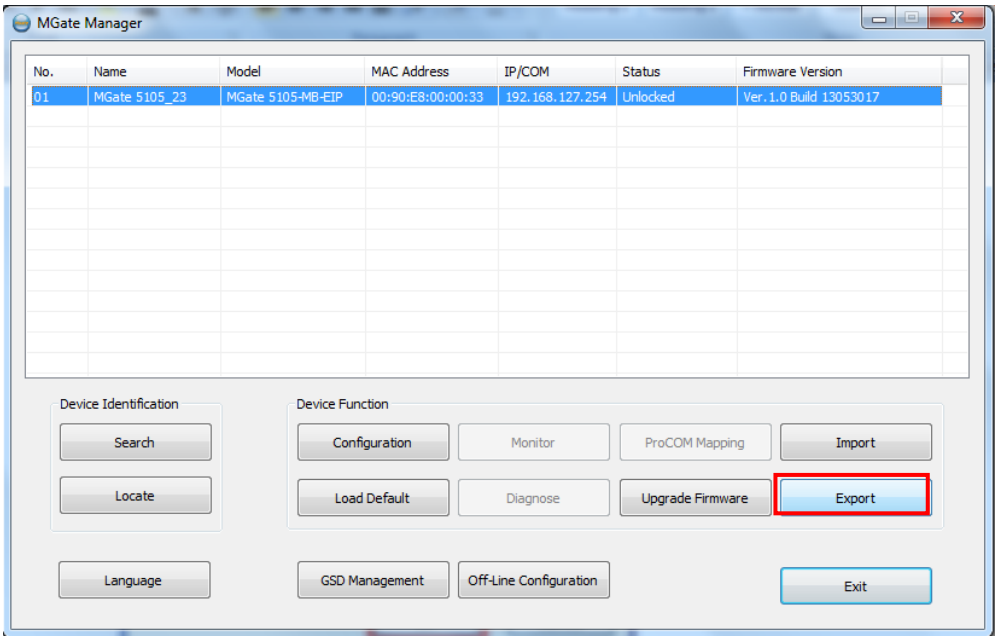
The export function allows you to export configuration files that can be imported onto other gateways to restore malfunctioning systems within minutes.

- **Troubleshooting**

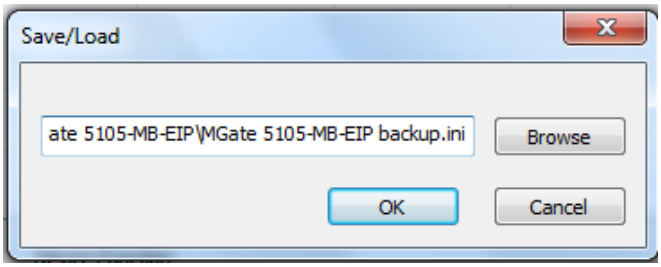
Exported configuration files can help administrators to identify system problems provide useful information for Moxa's Technical Service Team when maintenance visits are requested.

Export Function

The export function saves all the configuration settings and parameters of the MGate 5105-MB-EIP in a ***.ini** file. To begin, click the **Export** button.



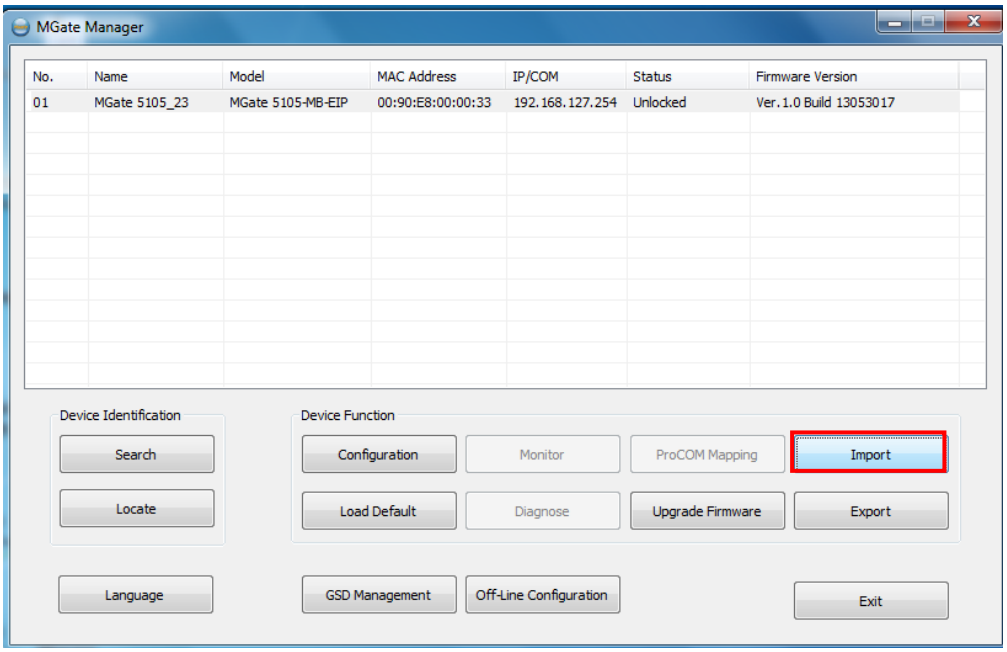
Enter a file name and use the **Browse** button to save the file to a specific path. Then, click the **OK** button.



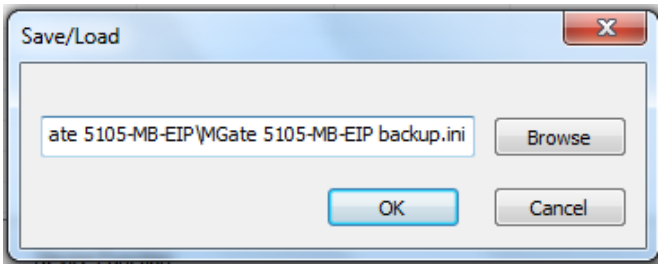
If you export the configuration file successfully, a confirmation message will pop up and the configuration file will be saved as a ***.ini** file

Import Function

Once the file is saved, it can be imported into your target unit to duplicate the same settings. Select the target unit first and click the **Import** button to import.



Select the file you want to import, and then click the **OK** button



Wait for the MGate Manager to finish configuring the target device. If you import the configuration file successfully, a confirmation message will pop up. After closing the message dialog, the MGate Manager will automatically execute a Broadcast Search for all MGate units on the LAN. Your MGate should reappear in the list of units.

ATTENTION

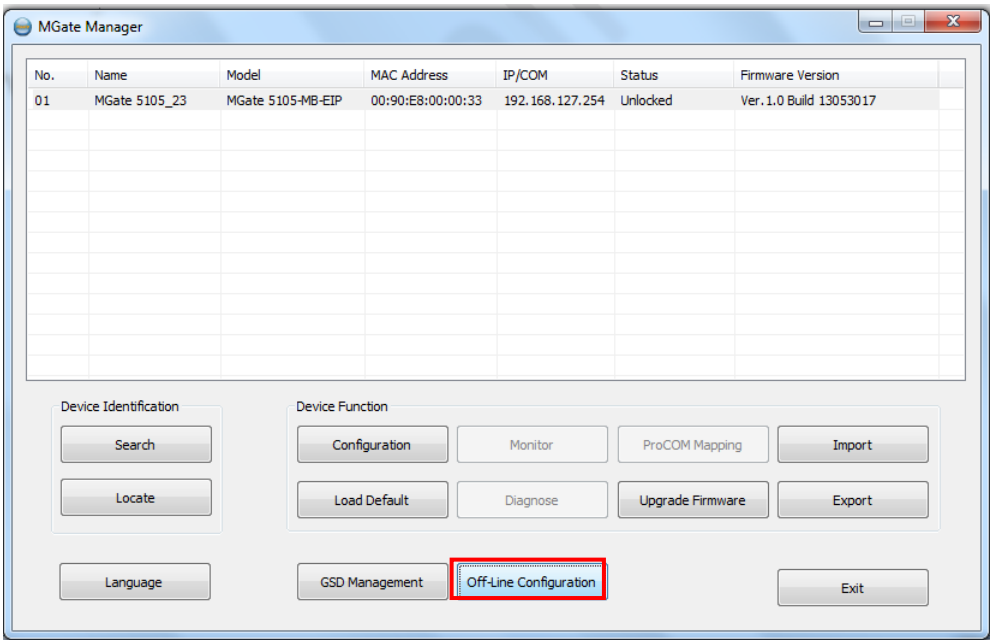
DO NOT turn off the MGate power before the firmware upgrade progress completes. The MGate will be erasing the old firmware to make room for the new firmware to flash memory. If you power off the MGate and terminate the progress, all settings will disappear and the MGate gateway will revert to factory defaults. If this happens, import the settings from the file again.

GSD Management

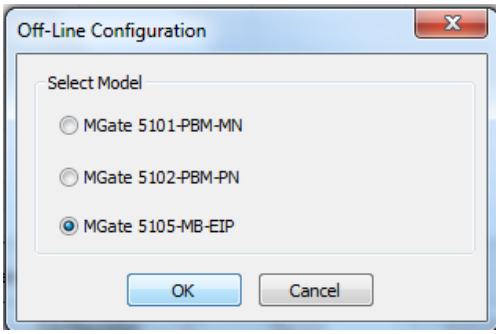
GSD Management is designed for PROFIBUS gateways (e.g., the MGate 5102-PBM-PN), so it cannot be used for the MGate 5105-MB-EIP.

Off-Line Configuration

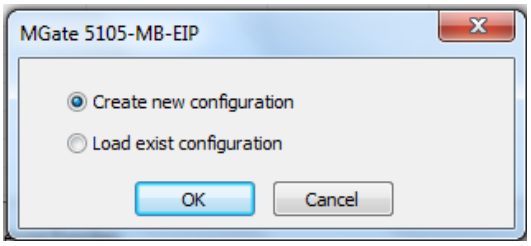
Create or modify the configuration file manually through MGate Manager by first generating the configuration file with the **Export** function. The file generated by this function can also be used for the **Import** function. To use this function, click the **Off-Line Configuration** button to load the configuration window.



Select your MGate model in the dialog box and click **OK** to proceed to the next step.



Choose either "Create new configuration" or "Load exist configuration" to edit the configuration.



For more details, refer to **Chapter 3: Modifying the Configuration** above. When all configuration settings are finished, click **OK** to save the updates to the configuration file.

4

Web Console Configuration and Troubleshooting

The following topics are covered in this chapter:

- **Overview**
- **Common Settings**
- **Protocol Settings**
- **System Management**
- **System Monitoring**

Overview

The MGate 5105-MB-EIP supports configuration and troubleshooting by web console. This chapter will focus only on the settings that can be configured by web console. These include monitoring and troubleshooting functionalities such as how to check I/O data transmission, troubleshoot configurations, run diagnostics, etc. More detailed information about other configuration settings can be found in Chapter 3.

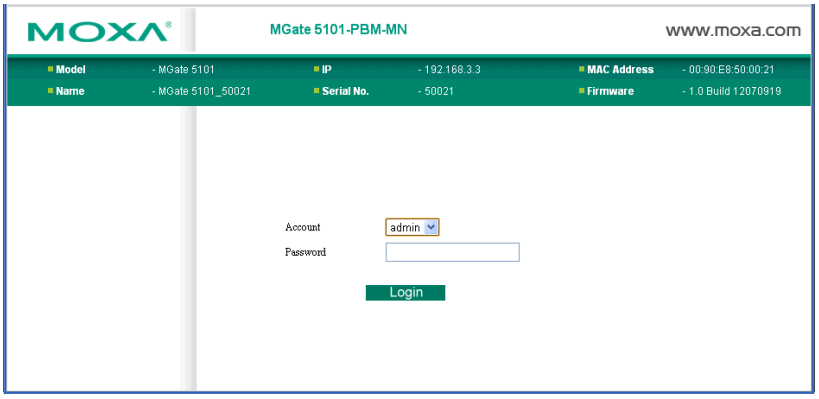
To connect to the MGate web console, open a web browser and enter the MGate gateway's IP address.

http://<MGate IP address>

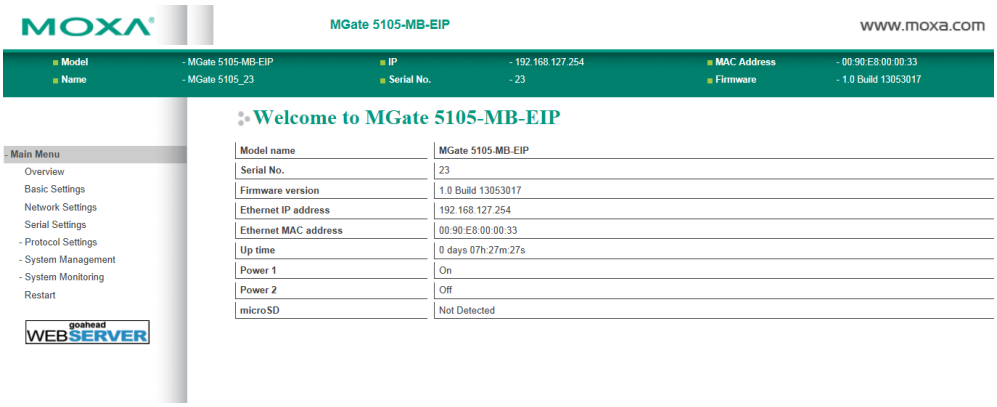
or

https://<MGate IP address>

On the first page, specify the account type and enter the password. Only two types of accounts are supported: admin and user. The **admin** account can modify all the settings, whereas the **user** account only can view settings and cannot modify any configurations. The default password is "moxa".



All available configuration items are listed in left panel tree. Click on an item to view detailed options in right panel area. To activate changes, click the **Submit** button before leaving the current page. If necessary, the MGate gateway will restart to activate the settings.



Common Settings

Refer to the appropriate reference section in **Chapter 3: MGate Manager Configuration** of this user's manual for each MGate Manager settings page.

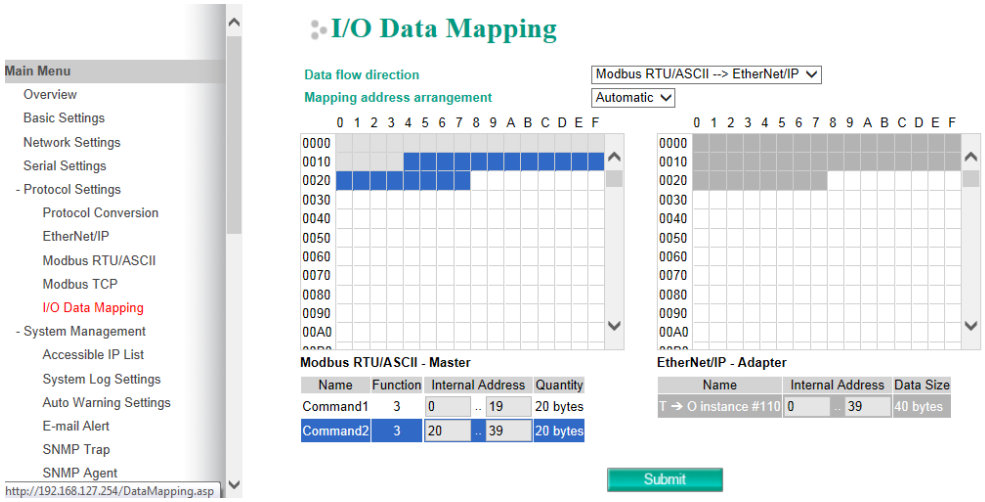
MGate Manager Settings Page	Reference Section in Chapter 3
Basic Settings	See **Configure Device** section
Network Settings	See **Network Settings** section
Serial Settings	See **Serial Settings** section
Protocol Settings - Protocol Conversion	See **Protocol Conversion** section
Protocol Settings - EtherNet/IP	See **EtherNet/IP Settings** section
Protocol Settings - Modbus RTU/ASCII	See **Modbus RTU/ASCII Settings** section
Protocol Settings - Modbus TCP	See **Modbus TCP Settings** section
System Management – Accessible IP List	See **Accessible IP Settings** section
System Management – System Log Settings	See **Log Settings** section
System Management – Auto Warning Settings	See **Auto Warning** section
System Management – E-mail Alert	See **E-mail Alert** section
System Management – SNMP Trap	See **SNMP Trap** section
System Management – SNMP Agent	See **SNMP Agent** section
System Management – LLDP Settings	See **LLDP Settings** section
System Management – Misc. Settings	See **Misc. Settings** section
System Management – Maintenance - Firmware Upgrade	See **Upgrade Firmware** section
System Management – Maintenance - Configuration Import/Export	See **Import/Export** section
System Management – Maintenance - Load Factory Default	See **Load Default** section

In addition to the common settings above, the following functions mentioned in this chapter are only available in the web console.

Protocol Settings

Protocol Settings – I/O Data Mapping

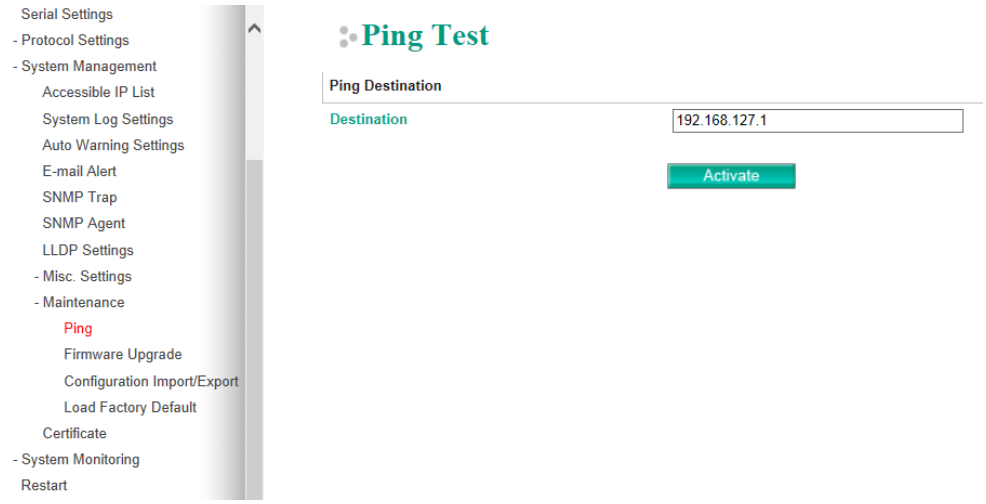
When selecting a command, the mapped internal memory will be highlighted as shown in the following figure. This function is only available in the web console.



System Management

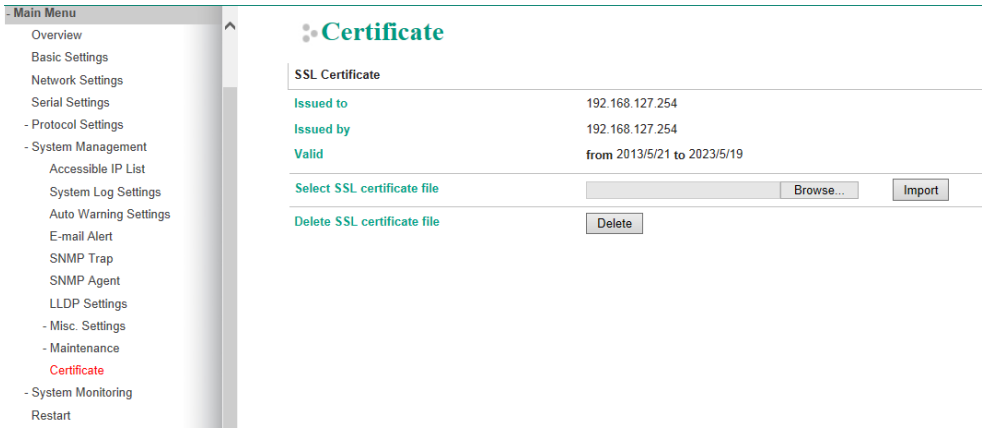
System Management – Maintenance – Ping

This network testing function is available only in the web console. The MGate gateway will send an ICMP packet through the network to a specified host and the result can be viewed in the web console immediately.



System Management – Certificate

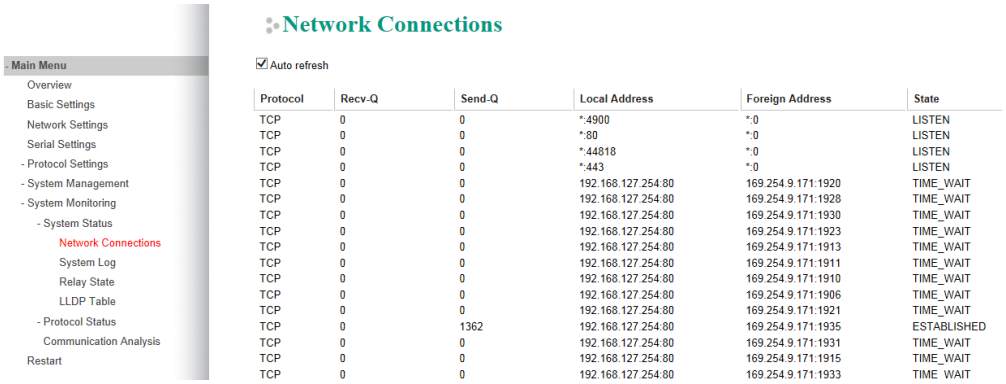
Use this function to load the Ethernet SSL certificate. Select or browse for the certificate file in the **Select SSL certificate/key file** field. This function is only available in the web console.



System Monitoring

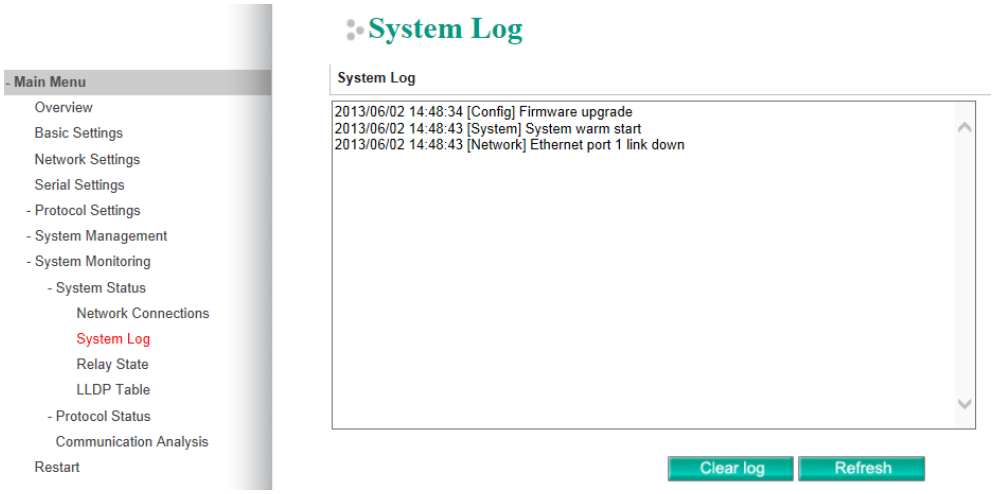
System Monitoring – System Status – Network Connections

Go to **Network Connections** under **System Status** to view network connection information.



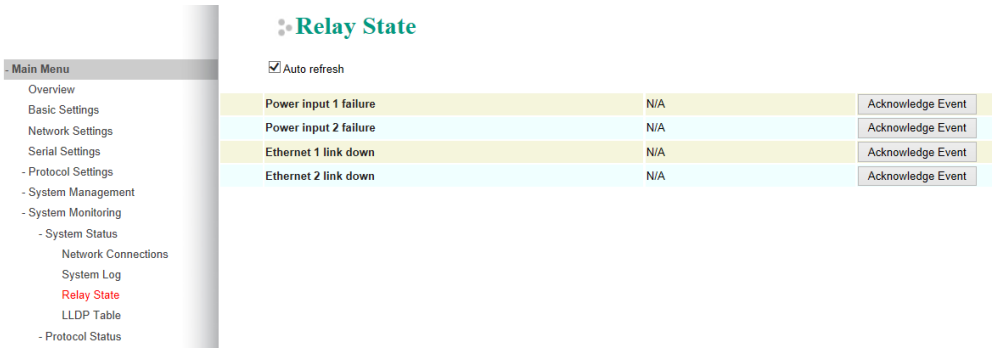
Protocol	Recv-Q	Send-Q	Local Address	Foreign Address	State
TCP	0	0	*:4900	*:0	LISTEN
TCP	0	0	*:80	*:0	LISTEN
TCP	0	0	*:44818	*:0	LISTEN
TCP	0	0	*:443	*:0	LISTEN
TCP	0	0	192.168.127.254:80	169.254.9.171:1920	TIME_WAIT
TCP	0	0	192.168.127.254:80	169.254.9.171:1928	TIME_WAIT
TCP	0	0	192.168.127.254:80	169.254.9.171:1930	TIME_WAIT
TCP	0	0	192.168.127.254:80	169.254.9.171:1923	TIME_WAIT
TCP	0	0	192.168.127.254:80	169.254.9.171:1913	TIME_WAIT
TCP	0	0	192.168.127.254:80	169.254.9.171:1911	TIME_WAIT
TCP	0	0	192.168.127.254:80	169.254.9.171:1910	TIME_WAIT
TCP	0	0	192.168.127.254:80	169.254.9.171:1906	TIME_WAIT
TCP	0	0	192.168.127.254:80	169.254.9.171:1921	TIME_WAIT
TCP	0	1362	192.168.127.254:80	169.254.9.171:1935	ESTABLISHED
TCP	0	0	192.168.127.254:80	169.254.9.171:1931	TIME_WAIT
TCP	0	0	192.168.127.254:80	169.254.9.171:1915	TIME_WAIT
TCP	0	0	192.168.127.254:80	169.254.9.171:1933	TIME_WAIT

System Monitoring – System Status – System Log



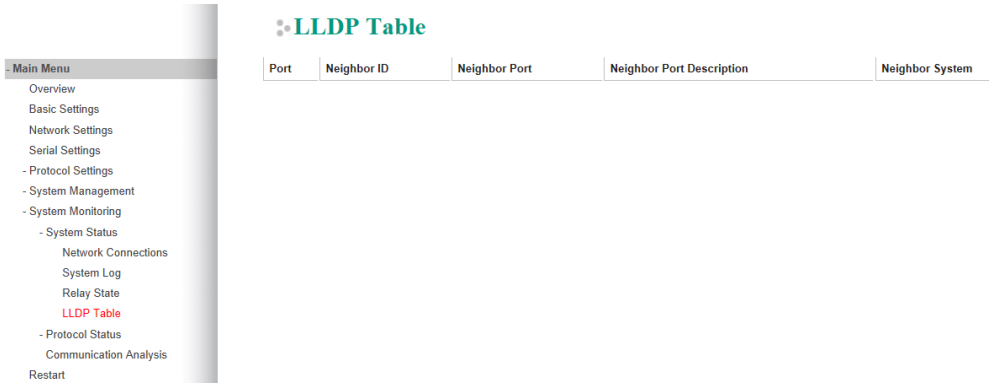
System Monitoring – System Status – Relay Status

The MGate gateway includes a built-in relay circuit that is triggered in the event of a power failure or if the Ethernet link is down. You can view the relay status on this page.



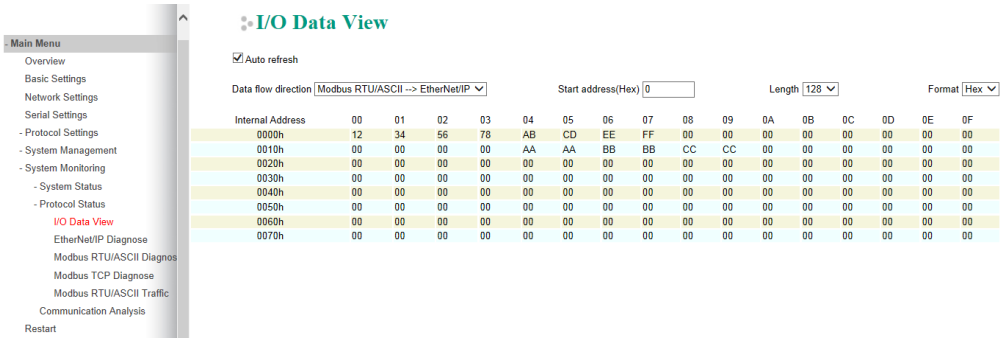
System Monitoring – System Status – LLDP Tables

You can see LLDP related information, including Port, Neighbor ID, Neighbor Port, Neighbor Port Description, and Neighbor System.



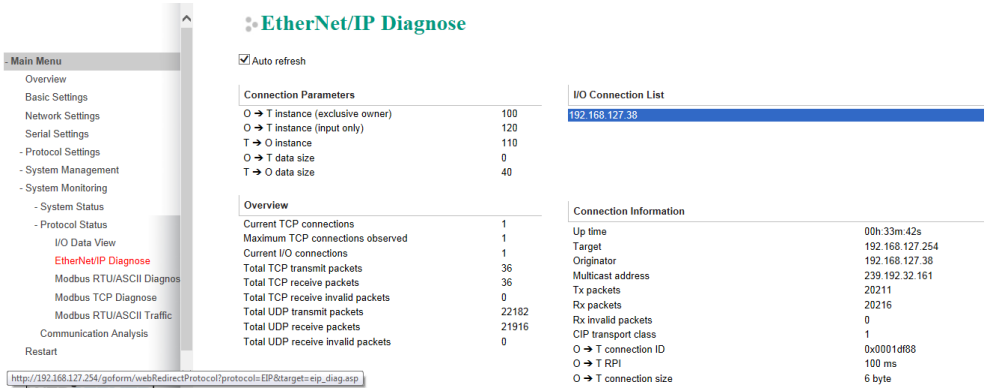
System Monitoring – Protocol Status – I/O Data View

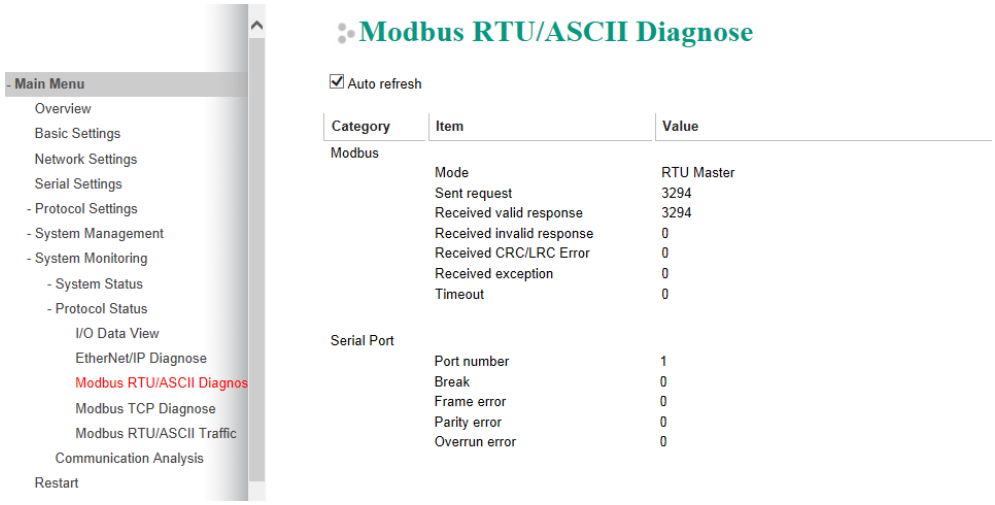
This page displays the internal memory information for input and output data transfers. View updated values for communication verification here. This function is only available in the web console and text mode console.

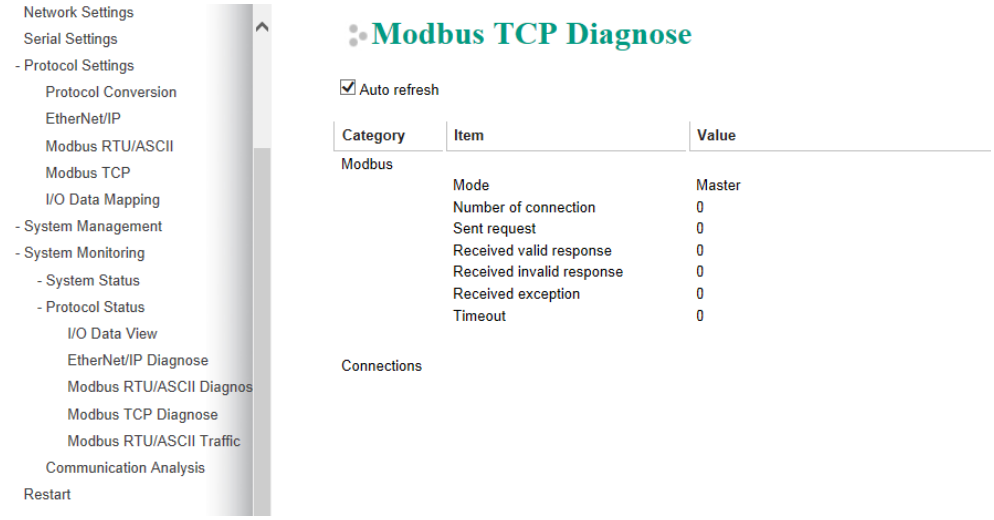


System Monitoring – Protocol Status – Diagnose

The MGate provides status information for EtherNet/IP, Modbus RUB/ASCII, and Modbus TCP troubleshooting. Verify data or packet counters to make sure the communications are running smoothly.

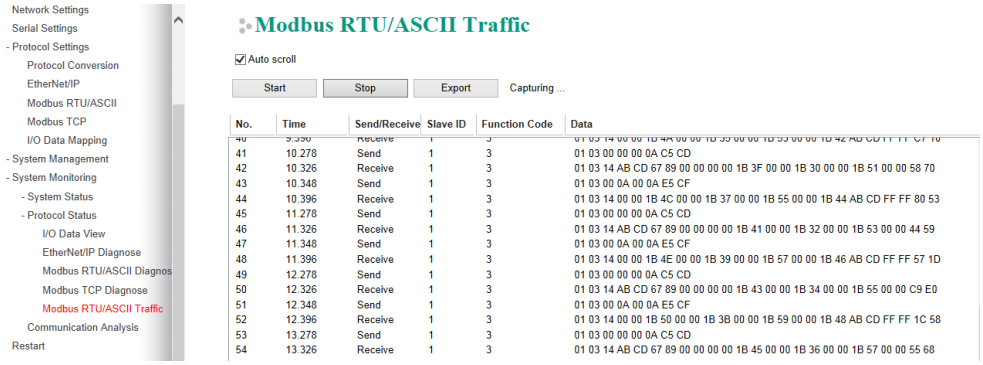






System Monitoring – Protocol Status – Modbus RTU/ASCII Traffic

For troubleshooting or management purposes, you can monitor the Modbus RTU/ASCII data passing through the MGate 5105-MB-EIP on the network. Rather than simply echoing the data, MGate Manager presents the data in an intelligent, easy-to-understand format with clearly designated fields including source, type, destination, contents, and more. Events can be filtered in different ways, and the complete log can be saved to a file for later analysis.



System Monitoring –Communication Analysis

After finishing all configurations, you can use **Communication Analysis** to confirm whether the settings are correct. Click **Start** and wait for 10 seconds, and an analysis report will appear with detailed fail statuses, warnings, and hints.