

## I/O Data Mapping Configuration for Moxa MGate 5105-MB-EIP

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### 1. Introduction

This document describes how to configure I/O Data Mapping for the Moxa MGate 5105-MB-EIP gateway. Although the Moxa MGate 5105-MB-EIP can perform I/O Data Mapping automatically, there may be occasions for manual configuration.

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#### About Moxa

Moxa manufactures one of the world’s leading brands of device networking solutions. Products include serial boards, USB-to-serial hubs, media converters, device servers, embedded computers, Ethernet I/O servers, terminal servers, Modbus gateways, industrial switches, and Ethernet-to-fiber converters. Our products are key components of many networking applications, including industrial automation, manufacturing, POS, and medical treatment facilities.

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## 2. Applicable products

Product Line	Model Name
MGate 5000 series	MGate 5105-MB-EIP、MGate 5105-MB-EIP-T

## 3. System requirements

Description	Model / File Name	Version
Moxa EtherNet/IP to Modbus gateway	MGate 5105-MB-EIP	1.1
Software utility to configure Moxa device	MGate Manager	1.8
Modsim32		4.A00

## 4. System overview

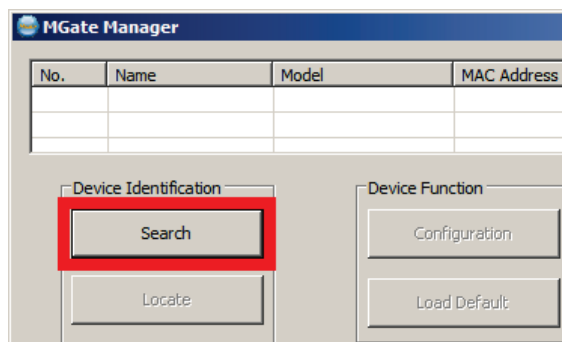
This document will use the MGate 5105-MB-EIP to demonstrate how to configure I/O Data Mapping. The system architecture is shown below.



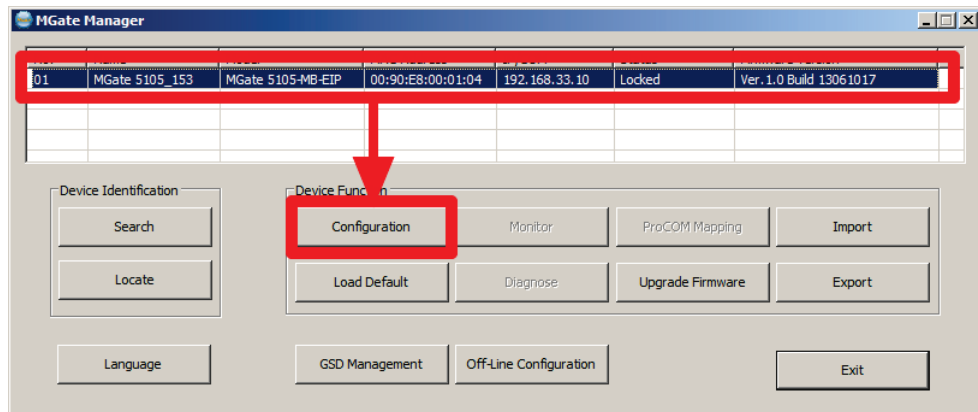
## 5. Moxa's device configuration

### 5.1. Device configuration with MGate Manager

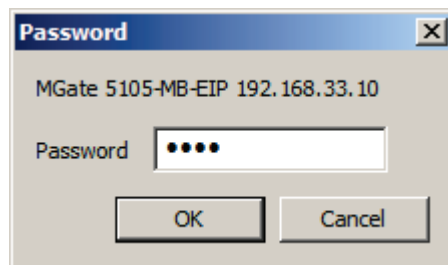
5.1.1. Start MGate Manager and **Search** for the Moxa MGate 5105-MB-EIP.



5.1.2. Select the target device and click the **Configuration** button to configure it.



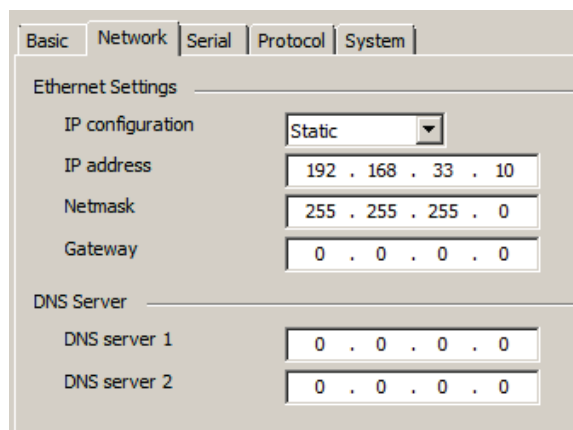
The MGate Manager may prompt you to enter a password. The default password is **moxa**.



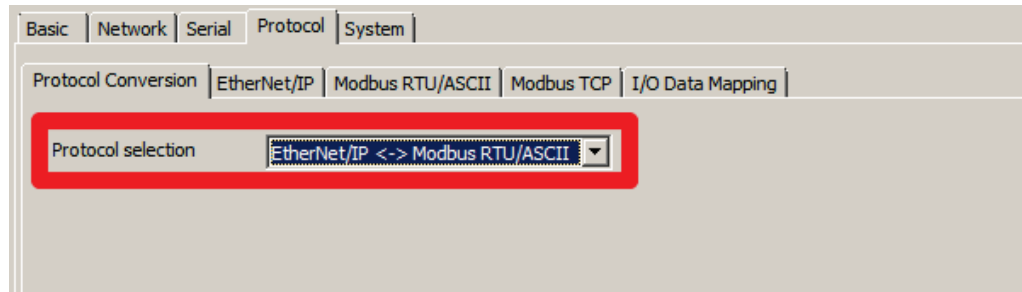
5.1.3. Select the **Network** tab to configure the IP address and netmask of the MGate 5105-MB-EIP as follows.

**IP address:** 192.168.33.10

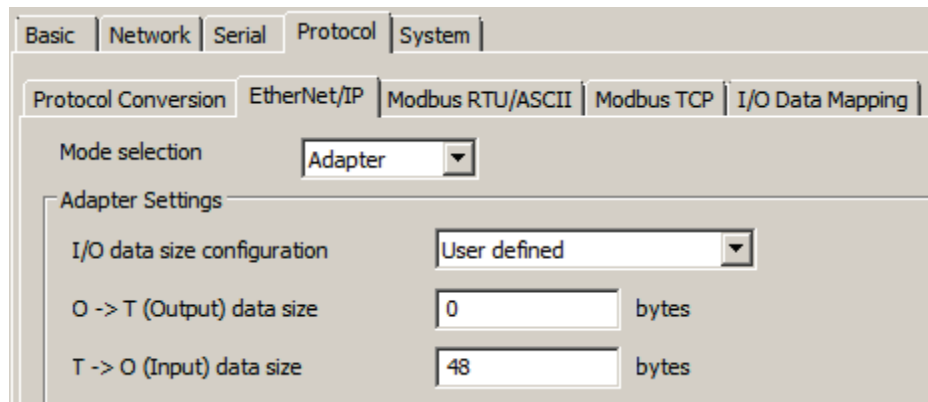
**Netmask:** 255.255.255.0



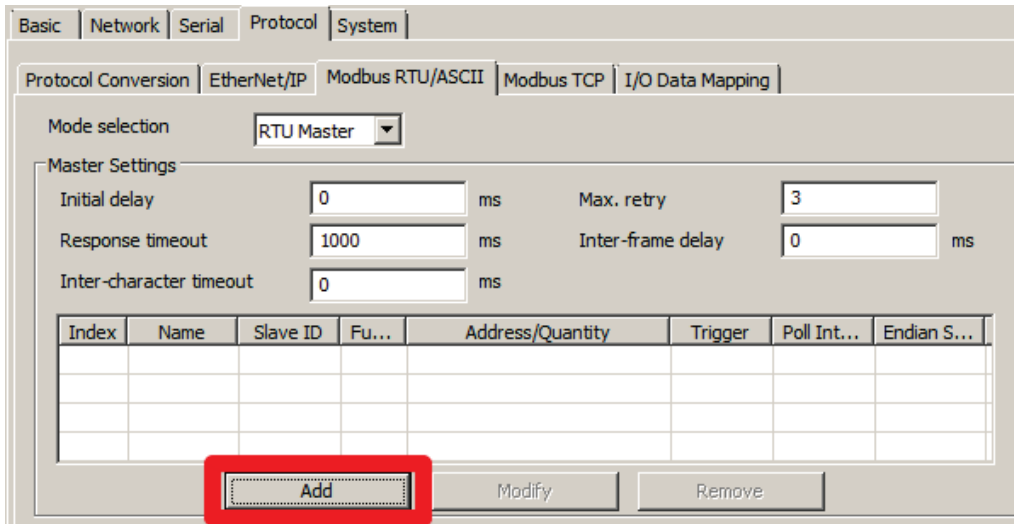
- 5.1.4. Select the **Protocol** tab to configure the protocol conversion settings. The first sub-tab, **Protocol Conversion**, shows which protocols are going to be converted. Here, choose **EtherNet/IP <-> Modbus RTU/ASCII**.



- 5.1.5. Select the **EtherNet/IP** sub-tab to configure EtherNet/IP settings. Although we generally recommend that you select **Automatic** from the **I/O data size configuration** dropdown menu, in this example, choose **Adapter** for MGate 5105-MB-EIP and **User defined** to specify the T → O (Input) data size as 48 bytes.

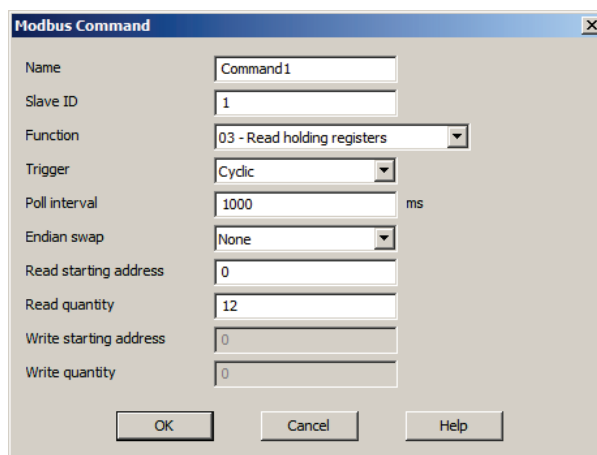


- 5.1.6. Select the **Modbus RTU/ASCII** tab to configure Modbus RTU/ASCII settings. In this example, we will create 2 Modbus commands to show the input data coming from 2 different Modbus RTU slave devices (Slave1 and Slave2). Click the **Add** button to add Command1.



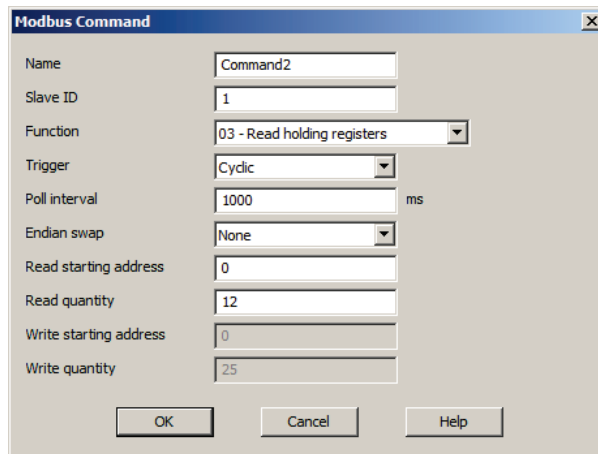
The screenshot shows the configuration window for Modbus RTU/ASCII. The 'Add' button is highlighted with a red box. The window includes tabs for Basic, Network, Serial, Protocol, and System. Under the Protocol tab, there are sub-tabs for Protocol Conversion, EtherNet/IP, Modbus RTU/ASCII, Modbus TCP, and I/O Data Mapping. The Mode selection is set to RTU Master. The Master Settings section includes fields for Initial delay (0 ms), Response timeout (1000 ms), Inter-character timeout (0 ms), Max. retry (3), and Inter-frame delay (0 ms). Below the settings is a table with columns: Index, Name, Slave ID, Fu..., Address/Quantity, Trigger, Poll Int..., and Endian S... The 'Add' button is highlighted with a red box.

Configure **Command1** to read 12 words (24 bytes of data) from Modsim32. Click **OK** to add the command.

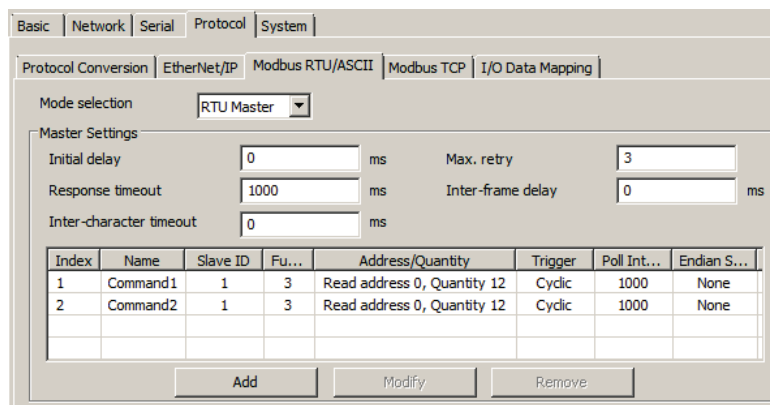


The screenshot shows the Modbus Command dialog box. The Name field is set to Command1, Slave ID is 1, Function is 03 - Read holding registers, Trigger is Cyclic, Poll interval is 1000 ms, Endian swap is None, Read starting address is 0, Read quantity is 12, Write starting address is 0, and Write quantity is 0. The OK button is highlighted.

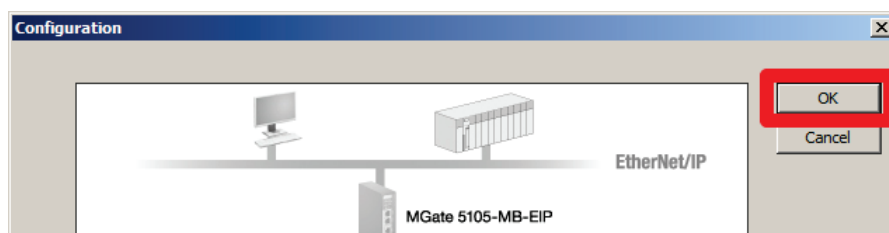
Configure **Command2** to read 12 words (24 bytes of data) from Modsim32. Click **OK** to add the command.



5.1.7. Return to the **Modbus RTU/ASCII** tab to see a summary of the commands we added.



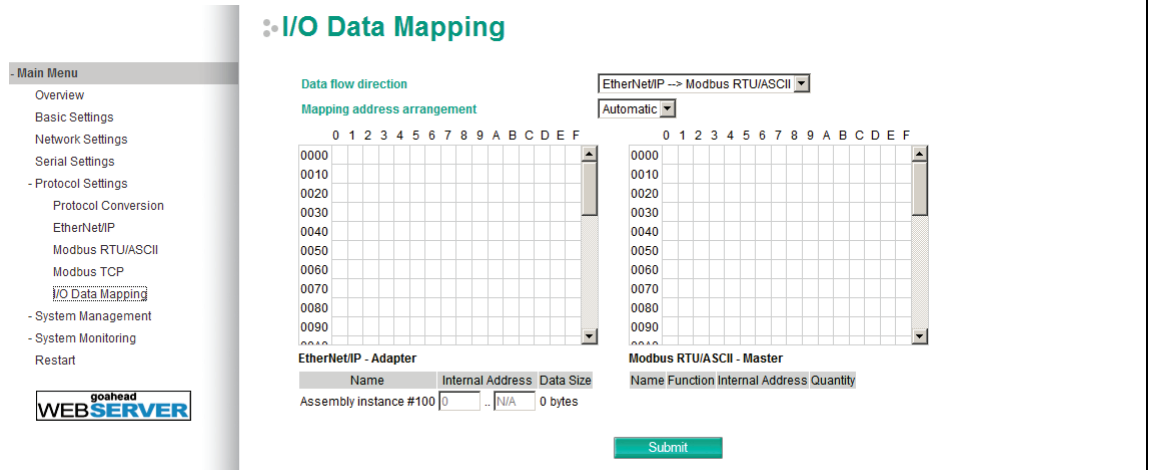
5.1.8. Click the **OK** button to save recent configurations. The MGate 5105-MB-EIP will restart automatically for the new settings to take effect.



## 6. I/O Data Mapping configuration

### 6.1. I/O Data Mapping configuration via Web Console

6.1.1. Open the Web Console of the MGate 5105-MB-EIP and go to the **I/O Data Mapping** page (**Main Menu → Protocol Settings → I/O Data Mapping**).

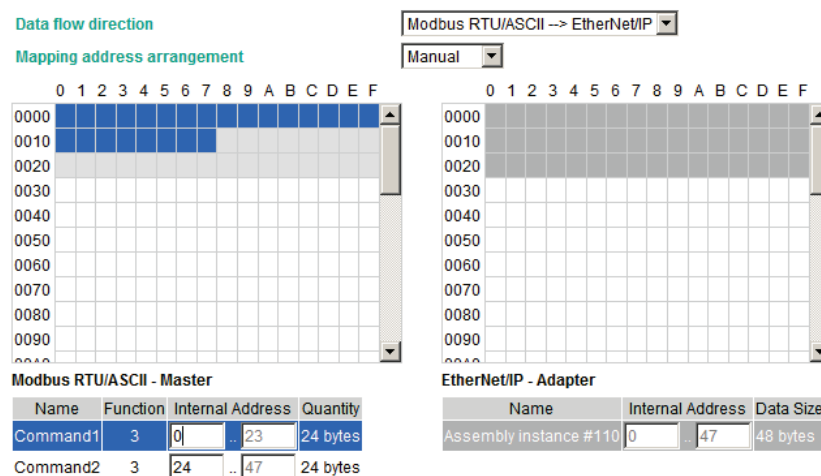


6.1.2. Since we configured the data direction to be **T → O (Input)** (Refer to Step 5.1.5), configure the **Data flow direction** to be **Modbus RTU/ASCII → EtherNet/IP**, the **Mapping address arrangement** to be **Manual**, and then click the **Submit** button.



6.1.3. By default, Command1's data will be stored first and followed by the other commands, as shown below:

### : I/O Data Mapping



6.1.4. When changing the **Mapping address arrangement** from **Automatic** to **Manual**, you can also modify the sequence. Change Command1's **Internal Address** to be **24..47**, and Command1's to be **0..23**. Then click **Submit**.

⚙️ I/O Data Mapping

Data flow direction: Modbus RTU/ASCII --> EtherNet/IP

Mapping address arrangement: Manual

**Modbus RTU/ASCII - Master**

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
0010	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
0020	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
0030																
0040																
0050																
0060																
0070																
0080																
0090																

Name	Function	Internal Address	Quantity
Command1	3	24 .. 47	24 bytes
Command2	3	0 .. 23	24 bytes

**EtherNet/IP - Adapter**

Name	Internal Address	Data Size
Assembly instance #110	0 .. 47	48 bytes

The new setting means the data read from Slave2 will be represented by the first 24 bytes of EtherNet/IP data, and the data read from Slave1 will be represented by the last 24 bytes of EtherNet/IP data.