EtherNet/IP Configuration for the Moxa MGate 5105-MB-EIP and EIPScan Test Tool

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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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EtherNet/IP Configuration for Moxa MGate 5105-MB-EIP and EIPScan Test Tool

1. Introduction

This document describes the configuration of a Moxa MGate gateway as an EtherNet/IP adapter for the EtherNet/IP side and the EIPScan Test tool as an EtherNet/IP scanner. For the Modbus TCP side, connect a simulator Modsim32 as a Modbus TCP slave with 8 digital inputs and 8 digital outputs.

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
EIPScan Test Tool		1.22
Modsim32		4.A00
Moxa EtherNet/IP to Modbus gateway	MGate 5105-MB-EIP	1.1
Software utility to configure Moxa device	MGate Manager	1.8

4. System Overview

In this document, we use the MGate 5105-MB-EIP to illustrate. The system architecture is shown below.



5. Moxa's PROFIBUS Device Configuration

5.1. Device configuration with MGate Manager

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

曼 MGat	e Manager				
No.	Name	Model		MAC Address	
_ De	Device Identification		Device Fund	tion	
	Search		Confi	guration	
	Locate		Load	Default	

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

	MGate 5105_153	MGate 5105-MB-EIP	00:90:E8:00:01:04	192.168.33.10	Locked	Ver.1.0 Build 13061017
D	evice Identification	Device Fur	figuration	Monitor	ProCOM Mapi	aing Import
	Locate		d Default	Diagnose	Upgrade Firm	ware Export

When the popup password window appears, the default password is **moxa**.

Password	×
MGate 5105-MB-EIP 192.168.33.10	
Password .	
OK Cancel	

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5.1.3. Select the "Network" tab to configure the IP address of the MGate 5105-MB-EIP. In this example we configure it as 192.168.33.10/255.255.255.0

Basic Network Serial Pro	otocol System					
Ethernet Settings						
IP configuration	Static					
IP address	192 . 168 . 33 . 10					
Netmask	255 . 255 . 255 . 0					
Gateway	0.0.0.0					
DNS Server						
DNS server 1	0.0.0.0					
DNS server 2	0.0.0.0					

5.1.4. Select the "Serial" tab and configure the serial parameters to match the Modbus device (the ioLogik R2110 in this example).

Basic Network Serial	Protocol System
Port 1	
Baud rate	115200
Parity	None
Data bit	8
Stop bit	1
Flow control	None
FIFO	Enable
Interface	RS232 💌
RTS on delay	0 ms
RTS off delay	0 ms

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5.1.5. Select the "Protocol" tab to configure the protocol conversion settings. The first sub-tab ("Protocol Conversion") indicates which protocols are going to be converted. For this demo, we chose EtherNet/IP <-> Modbus RTU/ASCII.



5.1.6. Change to the "EtherNet/IP" tab to configure EtherNet/IP settings. In this Demo, the Allen-Bradley PLC is the EtherNet/IP Scanner, so we choose Adapter for MGate 5105-MB-EIP and use Automatic for I/O data size configuration, which means that the MGate 5105-MB-EIP will do the I/O data mapping for us.

Basic Network Serial Protocol s	System
Brotocol Conversion EtherNet/IP	adhus DTI //ASCII Madhus TCD 1/0 Data Mapping
Protocol Conversion Editerrectar [M	
Mode selection Adapter	
Adapter Settings	
I/O data size configuration	Automatic 💌

5.1.7. Change to the "Modbus RTU/ASCII" tab to configure Modbus RTU/ASCII settings, since in this demo we use a Modbus RTU device. Refer to the ioLogik R2110 User's Manual, which indicates how to read the DI status from the ioLogik R2110 and write the DO status to the ioLogik R2110. Configure the two Modbus commands on this tab.

Click the **Add** button to add Command1.

asic Network Serial	Protocol System					
rotocol Conversion EtherNet/IP Modbus RTU/ASCII Modbus TCP I/O Data Mapping						
Mode selection RTU Master						
Master Settings						
Initial delay	0	ms Max. retry	1	3		
Response timeout	1000	ms Inter-fram	e delay	0	ms	
Inter-character timeou	t 0	ms				
Index Name	Slave ID Fu	Address/Quantity	Trigger	Poll Int	Endian S	
Add Modify Demoyo						
Add Modiry Remove						

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Modbus Command			×
Name	Command 1		
Slave IP address	192 . 168 . 33 . 1	Port	502
Slave ID	1		
Function	02 - Read discrete inputs	•	
Trigger	Cyclic		
Poll interval	1000	ms	
Endian swap	None		
Read starting address	0		
Read quantity	8		
Write starting address	0		
Write quantity	0		
ОК	Cancel		Help

Command1 is for reading the DI status from Modsim32. Click $\ensuremath{\textbf{OK}}$ to add the command.

Command2 is for writing the DO status to Modsim32. Click \mathbf{OK} to add the command.

Modbus Command			X
Name	Command2		
Slave IP address	192 . 168 . 33 . 1	Port	502
Slave ID	1		
Function	15 - Write multiple coils	•	
Trigger	Cyclic		
Poll interval	1000	ms	
Endian swap	None		
Read starting address	0		
Read quantity	10		
Write starting address	0		
Write quantity	8		
ОК	Cancel		Help

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5.1.8. Return to the "Modbus TCP" tab to see a summary of the commands that we added.

Mode sele	ection	Master 💌						
Master Se Initial de	ettings elay	0	n	ns	Max. retry	3		
Respons	se timeout	1000	n	ns				
Index	Name	Slave IP Address	Sla	Fu	Address/Quantity	Trigger	Poll In	End
1	Comm	192.168.33.1:502	1	2	Read register 0, Qu	Cyclic	1000	N
2	Comm	192.168.33.1:502	1	15	Write register 0, Qu	Cyclic	1000	N

5.1.9. Next click **OK** to save the new configurations. The MGate 5105-MB-EIP will restart automatically and start using the new settings.

Configuration			<u>×</u>
		EthorNot/ID	OK Cancel
	MGate 5105-MB-EIP	LUCINEVIE	

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6. EIPScan Configuration

6.1. Using the EIPScan Test Tool

6.1.1. To use the EIPScan Test Tool, click Start → All Programs → EIPScan Test
 Tool → EIPScan Test Tool. The main window should open, as shown below:

EIPScan - Untitled	_O×
Target Metwork Rath Adapter 192166 3412 Request 192 [66 3412 Request 192 [66 3412 Predefined: Nona) Service (hex) Instance (hex) Request 192.166 3412 Wetwork Bervice (hex) Instance (hex) Rember Symbol Tag Regonase Response Response Sine (letimal) Image: Sine (letimal)	
Timestamp Message 19:02:23:591 EIPScan is online	
Ready	

6.1.2. Right click on the right hand side window and choose Add Device.



6.1.3. Next, input the IP address of the MGate 5105-MB-EIP. For this example, we use 192.168.33.10. Click **OK** to proceed.

Add New Device			x
 IP Address: 	192 . 168 . 33 . 10	OK	
🔿 Host Name:		Cancel	

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6.1.4. A new EtherNet/IP device will be shown on the network. Right click on the new device and choose **Add Class1 Connection** to communicate with the MGate 5105-MB-EIP.



6.1.5. Configure the major parameters as below:

 $O \rightarrow T$: Connection Point: **100** Data size: 1 (in this example) $T \rightarrow O$: Connection Point: **110** Data size: 1 (in this example) And then click **OK**.

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Connection Point 100 Connection Tag Data Size (bytes) 1	Connection Rate O->T Packet Rate (ms): T->O Packet Rate (ms): O->T Production Inhibit T->O Production Inhibit Connection Type O->T Tranport Type: T->O Tranport Type: T->O Tranport Trigger: Timeout T->O O->T	I Timeout 0 Timeout 0 Point To Po Multicast Cyclic I Scheduled Scheduled n active during co	oonection
---	---	--	-----------

6.1.6. DI/DO buttons will be shown next to the MGate 5105-MB-EIP:

EIPScan - Unitited File View Request I/O Stack Device / IO Module License Help	
Target Network Path 192.168.33.7 Adapter 192.168.33.99 Request Type General CIP Message Predefined: (None) Service (hex) Class (hex) Instance (hex) Attribute Member Symbol Tag Request Data. Each byte is a 2 char hex value, separated by a space (i.e. 0a 26 19).	
Immessarity message 19:18:48:952 Connection opened with Instance 1, Max Recv Delay 0 msec, Max Send Delay 0 msec, Rev API 0.00 msec, Sent API 99.15 msec, Revd pkts 0, Sent pkts 41 19:18:66:223 Connection opened with Instance 1 19:19:07:559 Connection opened with Instance 1, Max Recv Delay 0 msec, Max Send Delay 0 msec, Rev API 0.00 msec, Sent API 90.00 msec, Revd pkts 0, Sent pkts 1	-
1 Class 1 connections active, Max Recv Delay 0 msec, Max Send Delay 0 msec, Max Recv API 0.00, Max Send API 9.00	11.

6.1.7. Try modifying the DO and check if the Modsim32 data changes, or modify the value of Modsim32 and check if the DI status changes in EIPScan.