MGate 5105-MB-EIP User's Manual

First Edition, June 2013

www.moxa.com/product



MGate 5105-MB-EIP User's Manual

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1 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
- D 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:

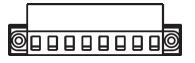
- 1 MGate 5105-MB-EIP Modbus-to-EtherNet/IP Gateway
- Documentation & Software CD
- Quick Installation Guide
- Product warranty statement

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



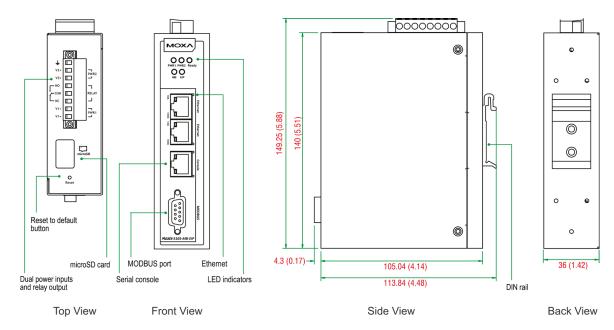
<u> </u>	V2+	V2-	Γ	- r-		V1+	V1-
Shielded Ground	DC Power Input 2	DC Power Input 2	N.O.	Common	N.C.	DC Power Input 1	DC Power Input 1

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					
МВ	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)

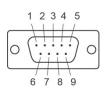


Pin Assignments

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

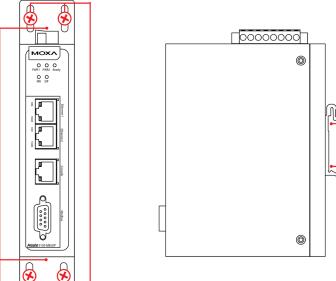
 1	T	T	T	T	T	T	8
	l	1			Г	5	

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:

Wall-Mount Installation

DIN-Rail Installation



Step 2: Screw onto wall

Step 1: Push down the spring Step 2: Click onto DIN rail

Step 1: Install wall-mount kit

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

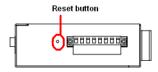
Reliability

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

Warranty

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

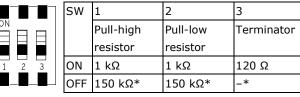
Reset Button



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.



*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.

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.

0	MGate	Manager	And a state		-				×
	No.	Name	Model	MAC Address	IP/COM	Status	Firmware	Version	
	01	MGate 5105_23	MGate 5105-MB-EIP	00:90:E8:00:00:33	192.168.127.254	Unlocked	Web Conso	le	

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

Account	admin
Password	••••
	Login

Network Settings

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

ΜΟΧΛ°	MGate 5105-MB-EIP					
– Model – Name	- MGate 5105-MB-EIP - MGate 5105_23	■ IP ■ Serial No.	- 192.168.127.254 - 23			
Main Menu	* Network	Settings				
Overview Basic Settings Network Settings Serial Settings - Protocol Settings - System Management - System Management Restart	IP configuration IP address Netmask Gateway DNS server 1 DNS server 2		Static V [192] 165.127.254 × 255.255.255.0			
goahead WEBSERVER		I	Submit			

Serial Settings

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

= Model = Name	- MGate 5105-MB - MGate 5105_23	-EIP	= IP Seria	11 No.	- 192.16 - 23	8.127.254		 MAC Address Firmware 	- 00:90:E8 - 1.0 Build	
_	-Serial Set		tings							
Aain Menu	Port	Baud rate	Parity	Data bit	Stop bit	Flow control	FIFO	Interface	RTS on delay	RTS off delay
Overview	1	115200 🗸	Even 🗸	8 🗸	1 🗸	None V	Enable 🗸	RS-232	✓ 0	0
Basic Settings				_						
Network Settings					Submit					
Serial Settings										
- Protocol Settings										
Protocol Conversion										
EtherNet/IP										
Modbus RTU/ASCII										
Modbus TCP										
I/O Data Mapping										
- System Management										
- System Monitoring										
Restart										

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

ΜΟΧΛ	м	MGate 5105-MB-EIP										
= Model = Name	- MGate 5105-MB-EIP - MGate 5105_23	■ IP ■ Serial No.	- 192.168.127.254 - 23									
	:-Protocol	Conversion										
Main Menu	Configuration											
Overview	Protocol selection		EtherNet/IP <> Modbus RTU/ASCII									
Basic Settings			EtherNet/IP <> Modbus TCP Modbus RTU/ASCII <> Modbus TCP									
Network Settings			Submit									
Serial Settings												
- Protocol Settings												
Protocol Conversion												
EtherNet/IP												
Modbus RTU/ASCII												
Modbus TCP												
I/O Data Mapping												
- System Management												
- System Monitoring												
Restart												

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 $O \rightarrow T$ (Originator to Target) and $T \rightarrow O$ (Target to Originator) data sizes to Modbus data.

ΜΟΧΛ°	MGate 5105-MB-EIP							
ModelName	- MGate 5105-MB-EIP - MGate 5105_1	■ IP ■ Serial No.	- 192.168.127.254 - 1					
	• EtherN	et/IP						
Main Menu	Mode selection		Adapter Scanner					
Overview	Adapter Settings	L	Scanner					
Basic Settings	I/O data size configu	ration	Automatic 🗸					
Network Settings	no data size connige							
Serial Settings								
- Protocol Settings			Submit					
Protocol Conversion								
EtherNet/IP								
Modbus RTU/ASCII								
Modbus TCP								
I/O Data Mapping								

In Scanner mode, you must designate the parameters for each connection. Refer to your EtherNet/IP adapter's datasheet to fill out $0 \rightarrow T$ and $T \rightarrow 0$ parameters.

NOTE A PLC may use Output and Input instead of $O \rightarrow T$ and $T \rightarrow O$.

Model	- MGate 5105-MB-EIP	= IP	- 192.168.127.254
Name	- MGate 5105_1	Serial No.	
	- Remote Ether	Net/IP Device	
Main Menu	Connection Settings		
Overview	Name	Connect1	
Basic Settings	Connection	Enable V	
Network Settings	Adapter IP address	192.168.1.1	Port 44818
Serial Settings			
- Protocol Settings	O → T (Output) Parameters		
Protocol Conversion			
EtherNet/IP	Instance	1	
Modbus RTU/ASCII	Data size	0	(0 - 496 bytes)
Modbus TCP	Real time format	32-Bit Header 🗸	
I/O Data Mapping	Packet rate	100	(0 - 3000 ms)
- System Management			
- System Monitoring	T → O (Input) Parameters		
Restart	Instance	2	
goahead	Data size	0	(0 - 496 bytes)
WEBSERVER	Real time format	Modeless V	
	Packet rate	100	(0 - 3000 ms)
	Connection type	Point to Point	
	Timeout multiplier	x16 🗸	

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.

Model	- MGate 5105-MB-EIP	= IP	- 192.1	68.127.254	= M AQ	C Address
Name	- MGate 5105_23	Serial No.			= Firm	iware
	• Modbus RTU	ASCII Settin	gs			
			RTU Slave			
Main Menu	Mode selection		RTU Master ASCII Slave			
Overview	Master Settings		ASCII Master			
Basic Settings	Initial delay		0	(0 - 30000 ms)		
Network Settings	Max. retry		3	(0 - 5)		
Serial Settings			-			
- Protocol Settings	Response timeout		1000	(10 - 120000 ms)		
Protocol Conversion	Inter-frame delay		0	(10 - 500 ms, 0: default)		
EtherNet/IP	Inter-character timeout		0	(10 - 500 ms, 0: default)		
Modbus RTU/ASCII						
Modbus TCP	Modbus Commands					
I/O Data Mapping						
- System Management						🖋 Edit
- System Monitoring	Index Name Slav	re ID Function	Address / Quantity	Trigger	Poll Interval	End
Restart						

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.

ΜΟΧΛ°	MG	ate 5105-MB-EIP	
ModelName	- MGate 5105-MB-EIP - MGate 5105_23	■ IP ■ Serial No.	- 192.168.127.254 - 23
- Main Menu	*• Modbus RT	U/ASCII Settings	Slave 🗸
Overview	Slave Settings		
Basic Settings Network Settings	Slave ID	2	x (1 - 255)
Serial Settings			
- Protocol Settings			Submit
Protocol Conversion			

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

ΜΟΧΛ		N	Gate 5105-M	B-EIP							
= Model = Name	- MGate 5105-M - MGate 5105_2			 IP Serial No. 	- 192.1 - 23	68.127.254			AC Address		- 00:90:1 - 1.0 Bu
		odbus RI	U/ASCI								
Main Menu	Mode se				RTU Master 🗸						
Overview	Master S	ettings									
Basic Settings	Initial de	lav			0	(0 - 30000 ms)					
Network Settings	Max. retr	-			3	(0 - 5)					
Serial Settings					-						
- Protocol Settings		se timeout			1000	(10 - 120000 ms)					
Protocol Conversion	Inter-fram	me delay			0	(10 - 500 ms, 0: default)				
EtherNet/IP	Inter-cha	aracter timeout			0	(10 - 500 ms, 0: default)				
Modbus RTU/ASCII											
Modbus TCP	Modbus	Commands									
I/O Data Mapping											
- System Management								+ Add	🥒 Edit	🖫 Сору	🗊 Delete
- System Monitoring	Index	Name	Slave ID	Function	Address / Quantity		Trigger	Poll Inte	rval	Endian Sv	wap
Restart	1	Command1	1	3	Read address 0, Qu	antity 10	Cyclic	1000		None	

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

ΜΟΧΛ	MGat	e 5105-MB-EIP	
Model	- MGate 5105-MB-EIP	= IP	- 192.168.127.254
Name	- MGate 5105_23	Serial No.	- 23
	:• Modbus RTU/	ASCII Command	ł
- Main Menu	Command Parameters		
Overview	Name	Command2	
Basic Settings	Slave ID	1	
Network Settings	Function	03 - Read Holding Re	gisters V
Serial Settings	Trigger	Cyclic	<u> </u>
- Protocol Settings	Poll interval	1000	(500 - 1200000 ms)
Protocol Conversion	Endian swap	None	
EtherNet/IP	Read starting address	0	(0 - 65535)
Modbus RTU/ASCII	Read quantity	10	
Modbus TCP		10	
I/O Data Mapping			OK Cancel
- System Management			
- System Monitoring			
Restart			

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.

ΜΟΧΛ°	MGate 5105-MB-EIP								
ModelName	- MGate 5105-MB-EIP - MGate 5105_23	■ IP ■ Serial No.	- 192.168.127.254 - 23						
	• Modbus TCI	P Settings							
- Main Menu	Mode selection	Slave							
Overview	Slave Settings	Waste							
Basic Settings	Slave ID	1	(1 - 255)						
Network Settings	TCP port	502							
Serial Settings	Tor port	362							
- Protocol Settings									
Protocol Conversion			Submit						
EtherNet/IP									
Modbus RTU/ASCII									
Modbus TCP									

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

ΜΟΧΛ		MGate 5105-MB-EIP									
= Model = Name	- MGate 5105-MB-EIP - MGate 5105 23	= IP = Serial No.	- 192.168.127.254 - 23								
_		CP Command	-25								
Main Menu Overview Basic Settings	Command Parameters										
Network Settings	Name	Command1									
Serial Settings	Slave IP address	0.0.0.0	Port 502								
- Protocol Settings	Slave ID	1									
Protocol Conversion	Function	03 - Read Holding Reg	isters V								
EtherNet/IP	Trigger	Cyclic	~								
Modbus RTU/ASCII	Poll interval	1000	(500 - 1200000 ms)								
Modbus TCP	Endian swap	None	~								
I/O Data Mapping	Read starting address	0	(0 - 65535)								
- System Management	Read quantity	10									
- System Monitoring											
- System Status			OK Cancel								
- Protocol Status											

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.

ΜΟΧΛ							MG	iate	e 51	05-1	ИВ-Е	IP													
Model		- MGate 5105-ME	B-EI	P							= IP							192	.168	.127	.254				
Name		- MGate 5105_23									Se Se	rial No.													
	^	• I /O	I	Da	ta	N	Ia	p	pir	ıg															
Main Menu		Data flov	v diı	recti	on								Modbu	s R	TU/	ASC	11	> Et	herN	let/I	PV	•			
Overview		Mapping	ado	dres	s ai	rrang	jeme	ent					Automa	atic	\checkmark										
Basic Settings		0	12	3	4	56	7	8 9	A	вс	DE	F		0	1 2	3	4	5 6	67	8	9 A	кВ	С	DE	F
Network Settings		0000											0000												
Serial Settings		0010											0010												1
- Protocol Settings		0020										-	0020												-1
Protocol Conversion		0030											0030												
EtherNet/IP		0050											0050												
Modbus RTU/ASCII		0060											0060												
Modbus TCP		0070											0070												
I/O Data Mapping		0080											0080												
- System Management		0050 00A0										\sim	00A0												~
Accessible IP List		Modbus F	RTU	/A S	CII -	- Ma	ster						Ether	Net	/IP -	Ada	apte	er							
System Log Settings		Name	F	unct	ion	Int	ernal	Add	dress	Qua	intity				lame				tern	al A	ddre	SS	Dat	a Siz	
Auto Warning Settings		Comman	d1	3		0		1	9	20 1	oytes		T → () in	stan	ice #	±11(0			39		40 I	bytes	
E-mail Alert		Comman	d2	3		20		3	9	20 8	oytes														
SNMP Trap																									
SNMP Agent														S	Subr	nit									
LLDP Settings																									

Communication Analysis

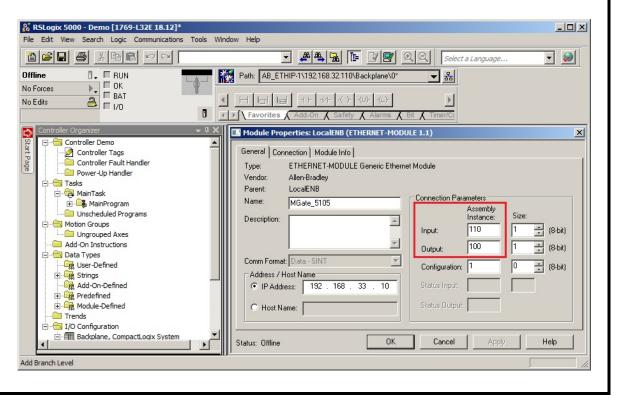
After finishing all configurations, use **Communication Analysis** to confirm that the settings are correct. Click **Start** and wait 10 seconds for the analysis report to appear and describe fail status details, warnings, and hints.

ΜΟΧΛ°	M	Gate 5105-MB-EIP	
– Model – Name	- MGate 5105-MB-EIP - MGate 5105_23	IP Serial No.	- 192.168.127.254 - 23
Main Menu	Analysis	ication Analysis	
Overview Basic Settings Network Settings Serial Settings - Protocol Settings - System Management - System Monitoring - System Status - Protocol Status I/O Data View EtherNet/IP Diagnose	 EtherNet/IP Modbus RTU/ASCI I/O data mapping 		Start
Modbus RTU/ASCII Diagnose Modbus TCP Diagnose Modbus RTU/ASCII Traffic Communication Analysis Restart			

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)

ΜΟΧΛ	MG	ate 5105-MB-EIP			
- Model	- MGate 5105-MB-EIP	= IP	-*	192.168.127.254	MAC Address
Name	- MGate 5105_23	Serial No.		13	Firmware
^	:• EtherNet/IP	Diagnose			
Main Menu	Auto refresh				
Overview					
Basic Settings	Connection Parameters			I/O Connection List	
Network Settings	O → T instance (exclusive ow	ner)	100		
Serial Settings	O → T instance (input only)		120		
- Protocol Settings	T → O instance		110		
- System Management	O → T data size T → O data size		0 40		
- System Monitoring	1 - O data size		40		
- System Status	Overview				
Network Connections	Current TCP connections		0		
System Log	Maximum TCP connections o	bserved	0		
Relay State	Current I/O connections		0		
LLDP Table	Total TCP transmit packets		0		
- Protocol Status	Total TCP receive packets Total TCP receive invalid pac	h-1-	0		
I/O Data View	Total UDP transmit packets	Keis	0	Connection Information	
	Total UDP receive packets		0	Connection Information	
EtherNet/IP Diagnose	Total UDP receive invalid pac	kets	0		
Modbus RTU/ASCII Diagnos					
Modbus TCP Diagnose					
Modbus RTU/ASCII Traffic					

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.

ΜΟΧΛ		MGate 51	05-MB-E	IP											W	ww.mo	oxa.com
= Model = Name	- MGate 5105-MB-EIP - MGate 5105_23		= IP = Se	rial No.		-1 -2	92.168.127. 3	254				C Address ware			90 E8 00 0 Build 1305		
	₽I/O Data V	iew															
- Main Menu	Auto refresh																
Overview																	
Basic Settings	Data flow direction Modb	us RTU/ASCII	> EtherNe	t/IP 🗸			Star	t address(H	lex) 0			Ler	igth 128 🗸	•		For	mat Hex 🗸
Network Settings	Internal Address	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	00	0E	0F
Serial Settings	0000h	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
- Protocol Settings	0010h	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
- System Management	0020h	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
- System Monitoring	0030h	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
- System Status	0040h	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
- Protocol Status	0050h 0060h	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
I/O Data View	0070h	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
EtherNet/IP Diagnose																	
Modbus RTU/ASCII Diagnose																	
Modbus TCP Diagnose																	
Modbus RTU/ASCII Traffic																	
Communication Analysis																	

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.

 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_xxxxxxx.exe.

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

🕞 Setup - MGate Manager	
	Welcome to the MGate Manager Setup Wizard
	This will install MGate Manager 1.5.2 on your computer.
	It is recommended that you close all other applications before continuing.
	Click Next to continue, or Cancel to exit Setup.
	Next > Cancel

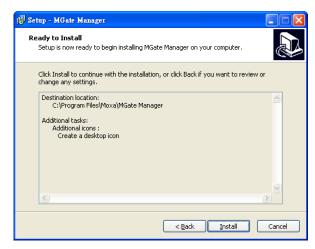
3. When the Select Destination Location window appears, click Next to continue. You may change the destination directory by first clicking on Browse.

🔂 Setup - MGate Manager	
Select Destination Location Where should MGate Manager be installed?	
Setup will install MGate Manager into the following folder.	
To continue, click Next. If you would like to select a different folder, click Browse.	
C:\Program Files\Moxa\MGate Manager Browse]
At least 0.9 MB of free disk space is required.	
< <u>Back</u> Next > Can	cel

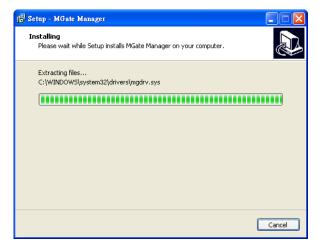
4. When the Select Additional Tasks window appears, click Next to continue. You may select Create a desktop icon if you would like a shortcut to MGate Manager on your desktop.

15 ² Setup - MGate Manager
Select Additional Tasks Which additional tasks should be performed?
Select the additional tasks you would like Setup to perform while installing MGate Manager, then click Next. Additional icons : Create a desktop icon
< Back Next > Cancel

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.

🔂 Setup - MGate Manager	
	Completing the MGate Manager Setup Wizard Setup has finished installing MGate Manager on your computer. The application may be launched by selecting the installed icons. Click Finish to exit Setup. Iw Launch MGate Manager
	Einish

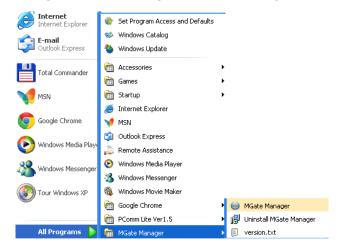
8. You may also open MGate Manager through Start → Programs → MGate Manager → MGate Manager, as shown below.

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** \rightarrow **Programs** \rightarrow **MGate Manager** \rightarrow **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.

Langu	1age 🛛 🔀
	Chinese_Simplified.Ing
	Chinese Traditional.Ing
	English.lng French.lng
	German.Ing
	Japanese.lng
	Korean.lng
	Polish.Ina 📉 🔛
Def	fault Language OK Cancel

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

翩跹	本機名稱	模組名稱	MAC位址	IP/COM	狀態	籾鎧版本	
委進	朝諭	委置	功能				
	搜尋		組態	載入監控記錄	ProCO	M對映	匯入
	鎖定		獻入預設值	目分開所	更新	初設	匯出



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.

No.	Name	Model	MAC Address	IP/COM	Status	Firmware Version
1	MGate 5105_23	MGate 5105-MB-EIP	00:90:E8:00:00:33	192.168.127.254	Unlocked	Ver. 1.0 Build 13053017
De	vice Identification Search	Device Fur	figuration	Monitor	ProCOM Map	pping Import
	Locate	Loa	d Default	Diagnose	Upgrade Firm	ware Export
	Language		lanagement Off-	Line Configuration		Exit

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.

Password		x
MGate 5105	-MB-EIP 192.168.30.25	i4
Password	••••	
	OK Cance	el 📄

Configure Device

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

Basic Network Serial Pro	tocol System
Server Settings	
Server name	MGate 5105_23
Server location	
Time Settings	
Time zone	(GMT)Greenwich Mean Time: Dublin, Edinburgh, Lisbon, L 🔻
Local time	Modify 2013 / 5 / 8 9 : 48 : 47
Time server	

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	This optional field specifies your time server's
	(e.g., 192.168.1.1 or time.stdtime.gov.tw)	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					
IP configuration	Static		•		
IP address	192	168	30		254
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

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	The IP (Internet Protocol) address
	(or other 32-bit number)	identifies the server on the TCP/IP
		network.
Netmask	255.255.255.0	This identifies the server as belonging
	(or other 32-bit number)	to a Class A, B, or C network.
Gateway	0.0.0.0	This is the IP address of the router that
	(or other 32-bit number)	provides network access outside the
		server's LAN.

DNS Server

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

Port 1	
Baud rate	115200 -
Parity	Even 💌
Data bit	8
Stop bit	1
Flow control	None
FIFO	Enable 🔻
Interface	RS232 -
RTS on delay	0
RTS off delay	0

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.

Basic Network Ser	ial Protocol System
Protocol Conversion	EtherNet/IP Modbus RTU/ASCII Modbus TCP I/O Data Mapping
Protocol selection	EtherNet/IP <-> Modbus RTU/ASCII
	EtherNet/IP <-> Modbus RTU/ASCII EtherNet/IP <-> Modbus TCP Modbus RTU/ASCII <-> Modbus TCP
	Modolas KTO/ASCIT S-2 Modolas TCP

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

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

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

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

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 $O \rightarrow T$ (Originator to Target) and $T \rightarrow O$ (Target to Originator) data sizes with Modbus data.

Basic Network Serial Protoco	System			
Protocol Conversion EtherNet/IP	Modbus RTU/ASCII	Modbus TCP	I/O Data Mapping	
Mode selection Adapter Adapter Settings Adapter Scanne I/O data size configuration	er	•		
O -> T data size	0	bytes		
T -> O data size	0	bytes		

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

	version Ether		dbus RTU/ASCII Mod	lbus TCP I/O Data Mappir	U U
lode selec	tion	Scanner	•		
emote Et	herNet/IP Devic	e			
Index	Name	Enable	Adapter IP Address	O -> T Parameters	T -> O Parameters
1	Connect1	Enable	192.168.32.251:	Instance #: 1	Instance #: 2
				Data size: 20 bytes	Data size: 0 bytes
				Real time formats: 32	Real time formats: Mod
				Packet rate: 100 ms	Packet rate: 100 ms
					Connection type: Point
					Timeout multiplier: x16

Remote EtherNet/IP Device		×
Connection Settings		
Name	Connect1	
Enable	Enable 🔻]
Adapter IP address	192.168.1.1	Port 44818
O -> T Parameters		
Instance number	1	
Data size	0	bytes
Real time formats	32-Bit Header 🔹 🔻]
Packet rate	100	ms
T -> O Parameters		
Instance number	2	
Data size	0	bytes
Real time formats	Modeless 🔻]
Packet rate	100	ms
Connection type	Point to Point 🔹]
Timeout multiplier	x16 🔻]
	ж	Cancel

Parameter	Value	Notes
Name	50 bps to 961200 bps	
Connection	Enable, Disable	Enable or Disable this connection.
Adapter IP address	IP address	Default EtherNet/IP port is 44818
and Port	Port: 1 to 65535	
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.

Basic Network Se	rial Protocol	System			
Protocol Conversion	EtherNet/IP	Modbus RTU/ASCII	Modbus TCP	I/O Data Mapping	
Mode selection	Slave R	tπu 🚽			
Slave Settings					
Slave ID		2			

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.

Mode selection		Maste	er RTU 🔹	•					
Master Settin Initial delay Response ti	-		0		is is	Max. retr Inter-fra		3 0	ms
Inter-chara	cter timeo	ut	0	m	IS				
Index	Name	Slave I	ID Func	Ad	dress/Qu	antity	Trigger	Poll Int	Endian S

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	Use this function to determine the timeout interval between characters for			
(only for Modbus RTU)	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	The users can determine the time-delay to transmit the data frame received			
(only for Modbus RTU)	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.

Modbus Command		—
Name	Command 1	
Slave ID	1	
Function	03 - Read holding registers	•
Trigger	Cyclic 🗸	
Poll interval	500	ms
Endian swap	None	
Read starting address	0	
Read quantity	0	
Write starting address	0	
Write quantity	0	
ОК	Cancel	Help

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.

Basic Network Se	rial Protocol System				
Protocol Conversion	EtherNet/IP Modbus RTU/ASCI	I Modbus TCP I	/O Data Mapping		
Mode selection	Slave 🔻				
Slave Settings Slave ID	1	TCP po	ort	502	

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.

		3	Max. retry	ms		Master	ettings	Mode sele Master Se Initial de
		3	Max. retry			0	-	
		5	Max. red y		_	Ŭ.	ciay	
				ms		1000	se timeout	
Endi	Poll In	Trigger	Address/Quantity	. Func.	Sla	Slave IP Address	Name	Index
N	500	Cyclic	Read register 0, Qu	3	1	192.168.1.1:502	Comm	1
N	500	Cyclic	Read register 2, Qu	3	1	192.168.1.2:502	Comm	2
4								•
		2	Remove	Modify		Add		•

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.

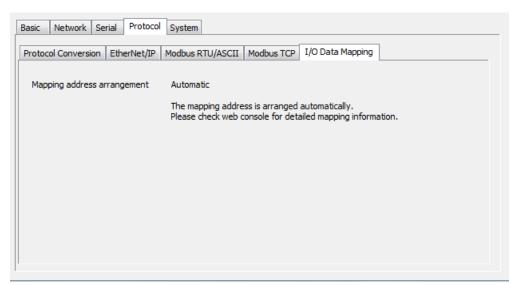
Modbus Command		×
Name	Command3	
Slave IP address	0.0.0.0	Port 502
Slave ID	1	
Function	03 - Read holding registers	•
Trigger	Cyclic 🔹	
Poll interval	500	ms
Endian swap	None	
Read starting address	0	
Read quantity	0	
Write starting address	0	
Write quantity	0	
ОК	Cancel	Help

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 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 t queue and their parameters. The range is from 500 to 1,200,000 ms.
Data change: The data area is polled for changes at the time interval defined Poll Interval. A command is issued when a change in data is detected.Poll intervalPolling intervals are in milliseconds, since the module sends all requests in turns, the actual polling interval also depends on the number of requests in t
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 t
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turns, the actual polling interval also depends on the number of requests in t
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 wi
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 wi
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

ccessible IP	Settings	System L	.og Ai	uto Warning	E-mail Alert	SNMP Trap	SNMP Agent	LLDP	Misc. Settings
Enable th	ne accessib	le IP list					ſ	4	Add
	IP addr	ess			Netmask				
Active	0	. 0.	ο.	0	255 . 255	. 255 . 25	5	Modify	
Double click	item to ac	tivate or i	inactiva	ate)			[Re	move
Index	Active	IP ad	dress			Netmask			
Index	Active	IP ad	dress			Netmask			
Index	Active	IP ad	dress			Netmask			
Index	Active	IP ad	dress			Netmask			
Index	Active	IP ad	dress			Netmask			

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

Basic Network Seria	al Protocol System
Accessible IP Settings	System Log Auto Warning E-mail Alert SNMP Trap SNMP Agent LLDP Misc. Settings
Event Group	Summary
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, Config import, Config export
EtherNet/IP	EtherNet/IP communication logs
Modbus TCP	Modbus TCP communication logs

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

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			

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

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

Auto Warning Settings

Accessible IP Settings System L	og Auto Warning	E-mail Alert	SNMP Trap	SNMP Agent	LLDP	Misc. Settings
System Event						
Cold start	Mail	📃 Trap				
Warm start	Mail	🔳 Trap				
Power 1 failure	Mail	📃 Trap	📃 Rela	у		
Power 2 failure	Mail	📃 Trap	📃 Rela	у		
Ethernet 1 link down	Mail	📃 Trap	📃 Rela	у		
Ethernet 2 link down	🔳 Mail	📃 Trap	📃 Rela	у		
Config Event						
Console login fail	📃 Mail	📃 Trap				
IP changed	🔲 Mail					
Password changed	Mail					

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

asic Network Serial Pro	tocol System					
Accessible IP Settings System	Log Auto Warning	E-mail Alert	SNMP Trap	SNMP Agent	LLDP	Misc. Settings
Mail server (SMTP)						
My server requires authe	entication					
User name						
Password						
From e-mail address						
To e-mail address 1						
To e-mail address 2						
To e-mail address 3						
To e-mail address 4						

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

Basic Network Seri	al Protocol	System					
Accessible IP Settings	System Log	Auto Warning	E-mail Alert	SNMP Trap	SNMP Agent	LLDP	Misc. Settings
SNMP trap server IF	or domain na	me					
Trap version		() v1	© v2c				
Trap community		public					

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

Basic Network Serial	Protocol System			
Accessible IP Settings St	ystem Log Auto Warning	E-mail Alert SNMP Trap SNMP	Agent LLDP Misc. Settings	
SNMP	Enable 🔻	Read only user name	rouser	
Contact name		Read only authentication mode	Disable 🔻	
Read community string	public	Read only password		
Write community string	private	Read only privacy mode	Disable 🔻	
SNMP agent version	V1, V2c, V3 🔻	Read only privacy		
		Read/write user name	rwuser	
		Read/write authenticaion mode	Disable 🔻	
		Read/write password		
		Read/write privacy mode	Disable 🔹	

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 e			
	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

Basic Network Serial Pro	tocol System					
Accessible IP Settings System	Log Auto Warning	E-mail Alert	SNMP Trap	SNMP Agent	LLDP	Misc. Settings
LLDP	Enable 🔻					
Message transmit interval	30 sec					

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

Misc. Settings

This page includes console settings, password and relay output.

Basic Network Serial F	Protocol System					
Accessible IP Settings Syst	tem Log Auto Warning	E-mail Alert	SNMP Trap	SNMP Agen	t LLDP	Misc. Settings
Console Settings			Modify Pass	word		
HTTP console	Enable 🔻		Account	adm	in 👻]
HTTPS console	Enable 🔻		New passwor	d 💿	•	
Reset button	Always enable	•	Confirm pass	word		
					Save	

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	Disable after 60 sec,	MGate provide the reset button to clear password or load
protect	Always enable	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.

D.	Name	Model	MAC Address	IP/COM	Status	Firmware Version
1	MGate 5105_23	MGate 5105-MB-EIP	00:90:E8:00:00:33	192.168.127.254	Unlocked	Ver. 1.0 Build 13053017
-De	vice Identification	Device Fur	action			
	Search		figuration	Monitor	ProCOM Mapp	ing Import
	Locate	Loa	d Default	Diagnose	Upgrade Firmw	are Export
_				Line Configuration		

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**.

ſ	Confirm
	This action would reset configuration to factory default. Do you still want to continue?
	OK 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.

lo.	Name	Model	MAC Address	IP/COM	Status	Firmware Version
)1	MGate 5105_23	MGate 5105-MB-EIP	00:90:E8:00:00:3	3 192, 168, 127, 254	Unlocked	Ver. 1.0 Build 13053017
De	vice Identification	Device F	unction			
	Search	Co	nfiguration	Monitor	ProCOM Mappi	Import
	Locate		ad Default	Diagnose	Upgrade Firmw	are Export

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.

×
Browse
Cancel

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

No.	Model	MAC Address	IP/COM	Status
01	MGate 5105-MB-EIP	00:90:E8:00:00:33	192.168.127.254	Transmit 78%



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.

No.	Model	MAC Address	IP/COM	Status
01	MGate 5105-MB-EIP	00:90:E8:00:00:33	192.168.127.254	ОК

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.

о.	Name	Model	MAC Address	IP/COM	Status	Firmware Version
1	MGate 5105_23	MGate 5105-MB-EIP	00:90:E8:00:00:33	192.168.127.254	Unlocked	Ver.1.0 Build 13053017
De	evice Identification	Device Fu				
	Search	Con	figuration	Monitor	ProCOM Mappi	Import
	Locate	Loa	d Default	Diagnose	Upgrade Firmwa	Export
	Language		lanagement Off-	Line Configuration		

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

Save/Load	×
ate 5105-MB-EIP\/MGate 5105-MB-EIP backup.ini	Browse
ОК	Cancel

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.

0.	Name	Model	MAC Address	IP/COM	Status	Firmware Version
1	MGate 5105_23	MGate 5105-MB-EIP	00:90:E8:00:00:33	192.168.127.254	Unlocked	Ver. 1.0 Build 13053017
De	vice Identification	Device Fur	nction			
	Search	Con	figuration	Monitor	ProCOM Mappir	Import
	Locate	Loa	d Default	Diagnose	Upgrade Firmwa	Export

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

Save/Load	×
ate 5105-MB-EIP\MGate 5105-MB-EIP backup.ini	Browse
ок	Cancel

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.

о.	Name	Model	MAC Address	IP/COM	Status	Firmware Version
1	MGate 5105_23	MGate 5105-MB-EIP	00:90:E8:00:00:33	192.168.127.254	Unlocked	Ver.1.0 Build 13053017
De	evice Identification	Device Fur				
	Search		figuration	Monitor	ProCOM Mapp	
	Locate	Loa	d Default	Diagnose	Upgrade Firmw	Export
	Language			Line Configuration		

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

Off-Line Configuration
Select Model
MGate 5101-PBM-MN
◎ MGate 5102-PBM-PN
MGate 5105-MB-EIP
OK Cancel

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

MGate 5105-MB-EIP	x
Create new configuration	
Cancel	

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.

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".

MO	<۸°	MGate 5101-PBM	-MN		www.moxa.com
 Model Name 	- MGate 5101 - MGate 5101_50021	IP Serial No.	- 192.168.3.3 - 50021	MAC Address Firmware	- 00:90:E8:50:00:21 - 1.0 Build 12070919
		Account	admin 💙		
		Password			
			Login		

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.

ΜΟΧΛ	MGate 5105-MB-EIP				www.moxa.c	
 Model Name 	- MGate 5105-MB-EIP - MGate 5105_23	■ IP ■ Serial No.	- 192.168.127.254 - 23	 MAC Address Firmware 	- 00:90:E8:00:00:33 - 1.0 Build 13053017	
	:-Welcom	e to MGate 510	5-MB-EIP			
ain Menu	Model name	MGate	5105-MB-EIP			
Overview	Serial No.	23				
Basic Settings	Firmware version	1.0 Bu	ild 13053017			
Network Settings	Ethernet IP address	192.10	8.127.254			
Serial Settings	Ethernet MAC addr	ess 00:90:	E8:00:00:33			
- Protocol Settings	Up time	0 days	07h:27m:27s			
- System Management	Power 1	On				
- System Monitoring	Power 2					
Restart	microSD		tected			

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	See Import/Export section
Import/Export	
System Management – Maintenance - Load Factory	See Load Default section
Default	

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.

lain Menu	Data flow	directio	n						N	Modbus	RTU/A	SCI	>	Ethe	erNe	t/IP	\checkmark						
Overview	Mapping	address	arr	ange	men	t			1	Automat	tic 🗸												
Basic Settings	0 1	234	5	67	8	9 A	вс	DE	EF			0	1	23	4	56	5 7	8	9 /	AВ	С	DΕ	F
Network Settings	0000										0000												
Serial Settings	0010									$\mathbf{\uparrow}$	0010												1
- Protocol Settings	0020										0020												
Protocol Conversion	0030										0030												
EtherNet/IP	0040										0040												
Modbus RTU/ASCII	0050										0050												
Modbus TCP	0070										0070	-											
	0080										0080	1											
I/O Data Mapping	0090										0090												
- System Management	00A0									\checkmark	00A0	· · · · ·											
Accessible IP List	Modbus F			Maste	ar						Ethe		t/IP	٨d	ante	r							
System Log Settings	Name	Functio				ddress	3 QI	uantit	v		Luio		Vam		upte		tern	al A	ddn	ess	Dat	a Size	e
Auto Warning Settings	Command					19		byte			Т →			nce i	¥110				39				
E-mail Alert	Command	12 3	Ē	20		39	20	byte:	s								_						
SNMP Trap	ooninane																						

0-----

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.

Senai Setungs				
- Protocol Settings	^	Ping Test		
- System Management				
Accessible IP List		Ping Destination		
System Log Settings		Destination	192.168.127.1	
Auto Warning Settings				
E-mail Alert			Activate	
SNMP Trap				
SNMP Agent				
LLDP Settings				
- Misc. Settings				
- Maintenance				
Ping				
Firmware Upgrade				
Configuration Import/Export				
Load Factory Default				
Certificate				
- System Monitoring				
Restart				

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.

- Main Menu			
Overview	Certificate		
Basic Settings			
Network Settings	SSL Certificate		
Serial Settings	Issued to	192.168.127.254	
- Protocol Settings	Issued by	192.168.127.254	
- System Management	Valid	from 2013/5/21 to 2023/5/19	
Accessible IP List			
System Log Settings	Select SSL certificate file	Browse	Import
Auto Warning Settings	Delete SSL certificate file	Delete	
E-mail Alert		Delete	
SNMP Trap			
SNMP Agent			
LLDP Settings			
- Misc. Settings			
- Maintenance			
Certificate			
- System Monitoring			
Restart			

System Monitoring

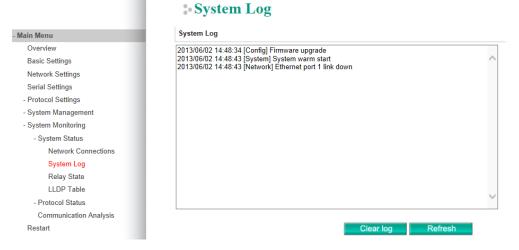
System Monitoring – System Status – Network Connections

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

• Network Connections

Main Menu	Auto refre	sh				
Overview						
Basic Settings	Protocol	Recv-Q	Send-Q	Local Address	Foreign Address	State
Network Settings	TCP	0	0	*:4900	*:0	LISTEN
Serial Settings	TCP	0	0	*:80	*:0	LISTEN
•	TCP	0	0	*:44818	*:0	LISTEN
- Protocol Settings	TCP	0	0	*:443	*:0	LISTEN
- System Management	TCP	0	0	192.168.127.254:80	169.254.9.171:1920	TIME_WAIT
- System Monitoring	TCP	0	0	192.168.127.254:80	169.254.9.171:1928	TIME_WAIT
, 5	TCP	0	0	192.168.127.254:80	169.254.9.171:1930	TIME_WAIT
- System Status	TCP	0	0	192.168.127.254:80	169.254.9.171:1923	TIME_WAIT
Network Connections	TCP	0	0	192.168.127.254:80	169.254.9.171:1913	TIME_WAIT
System Log	TCP	0	0	192.168.127.254:80	169.254.9.171:1911	TIME_WAIT
Relay State	TCP	0	0	192.168.127.254:80	169.254.9.171:1910	TIME_WAIT
LLDP Table	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
- Protocol Status	TCP	0	1362	192.168.127.254:80	169.254.9.171:1935	ESTABLISHED
Communication Analysis	TCP	0	0	192.168.127.254:80	169.254.9.171:1931	TIME WAIT
Restart	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.

	Relay State		
- Main Menu	Auto refresh		
Overview			
Basic Settings	Power input 1 failure	N/A	Acknowledge Event
Network Settings	Power input 2 failure	N/A	Acknowledge Event
Serial Settings	Ethernet 1 link down	N/A	Acknowledge Event
- Protocol Settings	Ethernet 2 link down	N/A	Acknowledge Event
- System Management			
- System Monitoring			
- System Status			
Network Connections			
System Log			
Relay State			
LLDP Table			
- Protocol Status			

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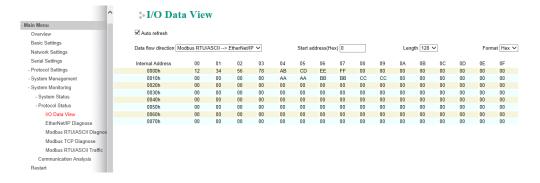
System Monitoring – System Status – LLDP Tables

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

	:∘ L	LDP Table	2		
in Menu	Port	Neighbor ID	Neighbor Port	Neighbor Port Description	Neighbor Sys
Overview					
Basic Settings					
Network Settings					
Serial Settings					
- Protocol Settings					
- System Management					
- System Monitoring					
- System Status					
Network Connections					
System Log					
Relay State					
LLDP Table					
- Protocol Status					
Communication Analysis					
Restart					

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.



- Main Menu Overview Basic Settings

Network Settings

Protocol Conversion EtherNet/IP Modbus RTU/ASCII Modbus TCP I/O Data Mapping - System Management - System Monitoring - System Status - Protocol Status I/O Data View EtherNet/IP Diagnose

Modbus RTU/ASCII Diagnos Modbus TCP Diagnose Modbus RTU/ASCII Traffic Communication Analysis

Serial Settings - Protocol Settings

Restart

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.

lain Menu	Auto refresh			
Overview				
Basic Settings	Connection Parameters		I/O Connection List	
Network Settings Serial Settings - Protocol Settings - System Management - System Monitoring	O → T instance (exclusive owner) O → T instance (input only) T → O instance O → T data size T → O data size	100 120 110 0 40	192.168.127.38	
- System Status	Overview		Connection Information	
- Protocol Status UO Data View EthenNet/IP Diagnose Modbus RTUI/ASCII Diagnos Modbus RTUI/ASCII Traffic Communication Analysis Restart	Current TCP connections Maximum TCP connections observed Current I/O connections Total TCP transmit packets Total TCP receive packets Total TCP receive invalid packets Total UCP receive packets Total UCP receive packets	1 1 36 36 22182 21916 0	Up time Target Originator Multicast address Tx packets Rx packets Rx invalid packets C/P transport class O → T connection (D	00h:33m:42s 192.168.127.254 192.168.127.38 239.192.32.161 20211 20216 0 1 0.00001d/88

^	• Mod	lbus RTU/ASCII	Diagnose	
Main Menu	Auto refres	h		
Overview				
Basic Settings	Category	Item	Value	
Network Settings	Modbus			
Serial Settings		Mode	RTU Master	
- Protocol Settings		Sent request Received valid response	3294 3294	
- System Management		Received invalid response	0	
- System Monitoring		Received CRC/LRC Error	0	
- System Status		Received exception	0	
- Protocol Status		Timeout	0	
I/O Data View	Serial Port			
EtherNet/IP Diagnose	Senal Port	Port number	1	
Modbus RTU/ASCII Diagnos		Break	0	
Modbus TCP Diagnose		Frame error	0	
Modbus RTU/ASCII Traffic		Parity error	0	
Communication Analysis		Overrun error	0	
Restart				
Restan				

Modbus TCP Diagnose

✓ Auto refresh

Category	Item	Value	
Modbus			
	Mode	Master	
	Number of connection	0	
	Sent request	0	
	Received valid response	0	
	Received invalid response	0	
	Received exception	0	
	Timeout	0	

Connections

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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.

Network Settings						
Serial Settings		Modbu	is RTU/AS	SCII 1	raffic	
- Protocol Settings						
Protocol Conversion	v	Auto scroll				
EtherNet/IP		Start	Stop	Export	Capturing .	
Modbus RTU/ASCII						
Modbus TCP	No	. Time	Send/Receive	Slave ID	Function Code	Data
I/O Data Mapping	40	9,590	Receive	-	J	01 03 14 00 00 10 48 00 00 10 33 00 00 10 33 00 00 10 42 80 CD 11 11 C/ 10
- System Management	41	10.278	Send	1	3	01 03 00 00 0A C5 CD
· · ·	42	10.326	Receive	1	3	01 03 14 AB CD 67 89 00 00 00 00 1B 3F 00 00 1B 30 00 00 1B 51 00 00 58 70
- System Monitoring	43	10.348	Send	1	3	01 03 00 0A 00 0A E5 CF
- System Status	44	10.396	Receive	1	3	01 03 14 00 00 1B 4C 00 00 1B 37 00 00 1B 55 00 00 1B 44 AB CD FF FF 80 53
- Protocol Status	45	11.278	Send	1	3	01 03 00 00 0A C5 CD
I/O Data View	46	11.326	Receive	1	3	01 03 14 AB CD 67 89 00 00 00 00 1B 41 00 00 1B 32 00 00 1B 53 00 00 44 59
	47	11.348	Send	1	3	01 03 00 0A 00 0A E5 CF
EtherNet/IP Diagnose	48	11.396	Receive	1	3	01 03 14 00 00 1B 4E 00 00 1B 39 00 00 1B 57 00 00 1B 46 AB CD FF FF 57 1D
Modbus RTU/ASCII Diagnos	49	12.278	Send	1	3	01 03 00 00 00 0A C5 CD
Modbus TCP Diagnose	50	12.326	Receive	1	3	01 03 14 AB CD 67 89 00 00 00 00 1B 43 00 00 1B 34 00 00 1B 55 00 00 C9 E0
Modbus RTU/ASCII Traffic	51	12.348	Send	1	3	01 03 00 0A 00 0A E5 CF
Communication Analysis	52	12.396	Receive	1	3	01 03 14 00 00 1B 50 00 00 1B 3B 00 00 1B 59 00 00 1B 48 AB CD FF FF 1C 58
,	53	13.278	Send	1	3	01 03 00 00 0A C5 CD
Restart	54	13.326	Receive	1	3	01 03 14 AB CD 67 89 00 00 00 00 1B 45 00 00 1B 36 00 00 1B 57 00 00 55 68

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.

System Log Settings	
Auto Warning Settings	Communication Analysis
E-mail Alert	
SNMP Trap	EtherNet/IP
SNMP Agent	1. Check adapter's connection status: Fail
LLDP Settings	- Reason: No connection request from the scanner.
- Misc. Settings	- Hint: Invalid adapter's IP setting on scanner device.
- Maintenance	
Certificate	Modbus RTU/ASCII
- System Monitoring	1. Checking modubs status: OK
- System Status	I/O data mapping
- Protocol Status	1. Check I/O data mapping: OK
I/O Data View	1. Oneck ino data mapping. OK
EtherNet/IP Diagnose	C ircle
Modbus RTU/ASCII Diagnos	Finish
Modbus TCP Diagnose	
Modbus RTU/ASCII Traffic	
Communication Analysis	
Restart	