# MGate 5102-PBM-PN PROFIBUS Masterto-PROFINET Gateway User Manual

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www.moxa.com/products



### MGate 5102-PBM-PN PROFIBUS Master-to-PROFINET Gateway User Manual

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Welcome to the MOXA MGate 5102-PBM-PN series product line. The MGate 5102-PBM-PN is an industrial Ethernet gateway for PRFIBUS and PROFINET network communication. To integrate the existing PROFIBUS slave devices into a PROFINET network, the MGate 5102-PBM-PN acts as a PROFIBUS master and exchanges data with PROFIBUS slave devices; the latest exchange data will be stored in the gateway. The gateway converts stored PROFIBUS data into PROFINET packets so that the PROFINET controller can retrieve the data from PROFIBUS devices via the gateway.

This chapter provides an introduction to the MGate 5102-PBM-PN, and includes the following sections:

### **Overview**

The MGate 5102-PBM-PN series is a product line of protocol gateways that provides users with the following features:

#### **Protocol conversion between PROFIBUS and PROFINET**

MGate 5102-PBM-PN series products can be used to connect PROFINET and PROFIBUS devices to remotely maintain PROFIBUS devices.

#### Windows based utility for easy setup and Web based I/O data view

MGate Manager is a Windows-based utility that makes it easy to configure and operate the MGate 5102-PBM-PN. In addition, a browser-based I/O data viewer is provided to monitor PROFIBUS/PROFINET I/O data remotely.

### Package Checklist

All models of the MGate 5102-PBM-PN series are shipped with the following items:

#### **Standard Accessories:**

- 1 MGate 5102-PBM-PN PROFIBUS-to-PROFINET gateway
- RJ45 to DB9 cable (for serial console use)
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card

#### **Optional Accessories:**

- DR-45-24: 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 are missing or damaged.

### **Product Features**

- Protocol conversion between PROFIBUS and PROFINET protocols
- Automatic scan of PROFIBUS devices and easy configuration
- Built-in Ethernet cascading for easy wiring
- Redundant dual DC power inputs and relay output supported
- microSD card supported for configuration backup
- Web-based GUI for I/O data visualization
- -40 to 75°C wide operating temperature models available
- Supports SNMP v1, v2, v3, and private MIB

### **Power Input and Relay Output Pinouts**

# <u>©\_\_\_\_\_</u>

<u> </u>	V2+	V2-	Г	-• f*-	7	V1+	V1-
Shielded	DC Power	DC Power	Relay	Common	Relay	DC Power	DC Power
Ground	Input 2	Input 2	output		output	Input 1	Input 1

### **LED Indicators**

LED	Color	Description		
PWR1	Green	Power is on		
PWRI	Off	Power is off		
PWR2	Green	Power is on		
PWRZ	Off	Power is off		
		Steady on: Power is on and the MGate is functioning normally		
	Green	Blinking: The MGate has been located by the MGate Manager's Location		
		function		
Ready		Steady on: Power is on and the MGate is booting up		
Reduy	Red	Blinking: Indicates an IP conflict, or DHCP or BOOTP server is not responding		
	Red	properly		
		Fast blinking: microSD card failed		
	Off	Power is off or fault condition exists		
	Green	Steady on: Data exchange with all slaves		
СОММ		Blinking: Data exchange with at least one slave		
COMM	Red	Bus control error		
	Off	No data exchange		
CFG	Green	PROFIBUS configuration OK		
CIG	Off	No PROFIBUS configuration		
ток	Green	Gateway holds the PROFIBUS token		
TOR	Off	Gateway is waiting for the PROFIBUS token		
	Green	Steady on: PROFIBUS master is in OPERATE mode		
РВМ	Green	Blinking: PROFIBUS master is in CLEAR mode		
	Red	PROFIBUS master is in STOP mode		
	Off	PROFIBUS master is offline		
	Green	Steady on: PROFINET I/O is connected and controller is in RUN mode		
PN	Green	Blinking: PROFINET I/O is connected but controller is in STOP mode		
	Off	No connection with IO controller		
	Green	Steady-on: 100 Mbps, no data is transmitting		
	Green	Blinking: 100 Mbps, data is transmitting		
Ethernet	Amber	Steady-on: 10 Mbps, no data is transmitting		
	Amber	Blinking: 10 Mbps, data is transmitting		
	Off	Ethernet cable is disconnected		

### Dimensions



### **Pin Assignments**

### **PROFIBUS Pin Assignment**

The MGate 5102-PBM-PN uses a female DB9 serial port to connect to PROFIBUS devices.

Signal Name
N.C.
N.C.
PROFIBUS D+
RTS
Signal common
5V
N.C.
PROFIBUS D-
N.C.



### Console (RS-232) Pin Assignment

The MGate 5102-PBM-PN uses an RJ45 serial port to connect to PC's for device configuration.

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

### **Mounting the Unit**

The MGate 5102-PBM-PN series is designed to be attached to a DIN rail or mounted on a wall. For DIN rail mounting, push down the spring and properly attach it to the DIN rail until it "snaps" into place. For wall mounting, install the wall mount kit (optional) first, and then screw the device onto the wall. The following figure illustrates the two mounting options:



### Specifications

NOTE

The latest specifications for Moxa's products can be found at https://www.moxa.com.

### GSDML

The MGate 5102-PBM-PN supports the General Station Description Markup Language (GSDML), versions 2.2 and 2.3. Refer to <u>PROFIBUS Settings</u> in Chapter 4 for details.

This chapter provides an overall guide to configuring the MGate 5102-PBM-PN step by step.

### **Connecting the Power**

The MGate 5102-PBM-PN can be powered by connecting a power source to the terminal block, as follows:

- 1. Loosen or remove the screws on the terminal block.
- 2. Turn off the power source and then connect a 12–48 VDC power line to the terminal block.
- 3. Tighten the connections using the screws on the terminal block.
- 4. Turn on the power source.

### NOTE

The unit 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. For power terminal block pin assignments, see <u>Power Input and Relay Output Pinout</u> in Chapter 2.

### **Connecting PROFIBUS Devices**

The unit's PROFIBUS port(s) are located on the front panel. Use a PROFIBUS cable to connect the unit directly to the PROFIBUS devices or PROFIBUS network. Before connecting or removing the RROFIBUS connection, first make sure the power source is off.

For the PROFIBUS port pin assignments, see <u>Pin Assignments</u> in Chapter 2. You may use this information to make your own PROFIBUS cable.

### **Connecting PROFINET Devices**

The MGate's two Ethernet ports are located on the front panel. You may use either of the two ports to connect to the PROFINET network, and use the remaining port to cascade to another MGate unit. Use a standard Ethernet cable for both types of connection. However, before connecting or removing a RROFINET connection, make sure the power is turned off.

The MGate will indicate a valid connection to the Ethernet in the following ways:

- The Ethernet LED will glow a solid green color when connected to a 100 Mbps Ethernet network.
- The Ethernet LED will glow a solid amber color when connected to a 10 Mbps Ethernet network.

The Ethernet LED will flash when Ethernet packets are being transmitted or received.

### **First Time Use**

Four configuration options are available for the MGate 5102-PBM-PN:

#### 1. MGate Manager Utility (Windows Utility)

MGate Manager provides all the functions needed to configure the MGate and for checking the status of the MGate over an Ethernet network. See Chapter 4, <u>Configuring MGate Manager</u>, for details.

#### 2. Web Console

Use the Web Console to configure the MGate or to verify the status of the MGate from a web browser. You may use Microsoft Internet Explorer or Google Chrome to connect to the MGate. To use this method, the IP address of the MGate must be configured correctly. See Chapter 5, <u>Web Console</u> <u>Configuration</u>, for details.

#### 3. Text Mode Console

You may use a Telnet/SSH Console over an Ethernet network to configure the MGate or check its status. Use a Telnet tool such as HyperTerminal or PuTTY to log in to the MGate with the Telnet or SSH protocol. With this method, the IP address of the MGate must be configured correctly. Note that Telnet/SSH does not provide an interface for all parameters. Some parameters must be configured with MGate Manager. See Chapter 6, <u>Text Mode Console Configuration</u>, for details.

#### 4. Serial Console

Use the Serial Console to configure or verify the status of the MGate through an RS-232 null modem (cross-over) cable. The interface will be the same as the Telnet console. The Serial Console port is located on the front panel of the MGate. Use a serial terminal emulation tool such as Moxa PComm Terminal Emulator or PuTTY to log in to the MGate's Serial Console. Note that the Serial Console does not provide an interface for configuring all parameters. Some parameters must be configured with MGate Manager. See Chapter 6, Text Mode Console Configuration, for details.

For the above configuration options, the user needs to select the account types and enter the password.

The MGate supports two types of accounts: 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 for the **admin** account is "moxa".

### **MGate Manager**

In most situations, users do not know the IP address settings when setting up a new MGate gateway or configuring an existing MGate gateway. In these cases, users can use an Ethernet cable to connect a host computer and the MGate directly. If connecting the devices under the same Ethernet switch, make sure there is no router between them. The MGate Manager can detect the network settings of the connected MGate for users properly. You can configure all the options for the MGate once it appears in the MGate Manager device list. If you want to use the Web or Telnet/SSH Console directly, you must connect to the MGate through its IP address. Note that the Web Console can also be accessed by right clicking the device in the MGate Manager list.

### **Network Settings**

Since your system may be using more than one MGate device and all MGate devices are configured with the same factory default IP address, you will first need to configure the MGate's network settings. To avoid IP conflicts, each MGate must be configured with its own unique IP address. Contact your IT department for detailed configuration information, and then refer to the <u>Network Settings</u> section in Chapter 4.

### **GSD** Files

Each PROFIBUS device has its own GSD (General Station Description) file. The GSD file contains relevant parameter settings, including vendor name, model name, revision, etc. The PROFIBUS master can control the PROFIBUS device according to the GSD file. Since the MGate 5102-PBM-PN plays the role of PROFIBUS master, it should import the GSD files from all PROFIBUS slaves beforehand.

#### Adding or Deleting GSD Files

Click the **GSD Management** button to add or delete a GSD file.

lo.	Name	Model	MAC Ac	idress	IP/COM	Status	Firmware	e Version
De	vice Identification		Device Function					
	Search		Configuration		Load Monitor Log	ProCOM Ma	pping	Import
	Locate		Load Default		Diagnose	Upgrade Firm	nware	Export
	Language		GSD Managemer	at Off	F-Line Configuration	]	Γ	Exit

To add a GSD file, click the **Add** button and then input the path to the GSD file. To delete a GSD file, select the GSD file you would like to delete, and then click **Remove**.

Name	Vendor	Filename	
Moxa Profibus Slave	Moxa Inc.	MPBS0D80.gsd	Add
			Remove
			ОК
•			•

### **PROFINET Configuration**

Since the MGate handles requests from the PROFINET side sent to PROFIBUS devices, you will need to assign a PROFINET device name to the MGate, and you will also need to assign the MGate device name and IP address to the PROFINET I/O Controller. Once both sides' configurations are matched, the PROFINET I/O Controller and the MGate will negotiate with each other to establish a connection. In addition, if the PROFINET I/O Controller finishes the related settings of the PROFINET I/O devices, the MGate will allocate internal memory for data transfer between the PROFIBUS and PROFINET. Both sides will transfer and retrieve data through this internal memory. You can use I/O Data View via the Web Console to check the MGate's internal memory. Refer to the Data Exchange Between PROFINET and PROFIBUS section in Chapter 4 for details.

### **PROFIBUS Configuration**

In the PROFIBUS interface, the MGate functions as a PROFIBUS master. Therefore, you must configure the PROFIBUS network first. Before connecting the slave devices to the MGate, you must configure all slave devices properly, such as their station address and I/O modules. To configure the PROFIBUS slaves for the MGate, users can use the **AutoScan** function in the MGate Manager's PROFIBUS settings to automatically retrieve all settings for PROFIBUS devices that are attached to the PROFIBUS network. Users can also add the I/O module for each slave device, and manually configure the proper internal memory settings. See <u>PROFIBUS Settings</u> in Chapter 4.

To confirm that the PROFIBUS slave devices work properly, users can check the LED on the front panel of the MGate. If working properly, the **PBM** LED will show a steady green light. To check that the I/O module data is exchanged correctly, users can use <u>I/O Data View</u> via Web Console to check the internal memory of the MGate. The data which is used by PROFIBUS and PROFINET will be displayed for verification.

If any PROFIBUS slave device does not work properly, the "PBM" LED will flash. Users can use <u>Diagnose</u> via the MGate Manager to check which PROFIBUS slave is causing the problem. The <u>Log Settings</u> function is another way to check the communication problem. If any PROFIBUS connection is lost, the function will record the event into the system flash memory for examination.

### microSD Card

The MGate 5102-PBM-PN series gateway is equipped a microSD card slot for easy configuration. The microSD card stores the system configuration settings, GSD files, and system data log. There are 4 scenarios for using the microSD card: data backup, duplication, mass deployment, and replacement.

### Scenario 1: Data Backup

#### First Time Using a New microSD Card

- 1. Format the microSD card to support FAT file systems 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.

### **Scenario 2: Duplication**

#### First Time Using a microSD Card Containing Configuration Files

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

#### Scenario 3: Mass Deployment

#### **Mass Deployment of MGate Devices**

- 1. Power off the existing MGate and insert a new microSD card.
- 2. Power on the existing MGate.
- 3. The configurations will be copied from the existing MGate to the new microSD card.
- 4. Power off the MGate and remove the microSD card.
- 5. Insert the microSD card into the new MGate device and power on the device.
- 6. The configuration file stored on the microSD card will automatically copy to the new MGate device.
- 7. Use the microSD card to repeat steps 5 and 6 for all the new MGate devices.

#### Scenario 4: Replacement

#### **Replacing a Malfunctioning MGate Device**

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

#### microSD card Writing Failure

- There are some events that will cause the microSD card to experience writing failure.
- The microSD card has less than 20 MB of free space.
- The configuration file is read-only.
- The file system is corrupted.
- The microSD card is damaged.

The MGate device will halt for the above events, accompanied by a flashing Ready LED and beeping alarm. If you are replacing the microSD card, the microSD card will be synchronized with the configurations stored on the MGate device. Note that the microSD card should not contain any configuration files inside; otherwise, the out-of-date configuration will copy to the MGate device.

### **MXStudio**

Moxa MXStudio is a network management suite that includes MXview, MXconfig, and N-Snap. MXstudio network management software gives you a convenient graphical representation of your Ethernet network, and allows you to configure, monitor, and diagnose Moxa networking devices. MXview provides an integrated management platform that can manage Moxa's MGate 5000 series as well as Ethernet switches and wireless APs, and SNMP-enabled and ICMP-enabled devices installed on subnets. MXview includes an integrated MIB complier that supports any third-party MIB. It also allows you to monitor third-party OIDs and Traps. Network and Trap components that have been located by MXview can be managed via web browsers from both local and remote sites—anytime, anywhere. For more detailed information regarding MXview, download the MXview user's manual from Moxa's website at <a href="http://www.moxa.com">http://www.moxa.com</a>.

### **Installing the MGate Manager Software**

The following instructions show how to install MGate Manager, a utility for configuring and monitoring MGate 5102-PBM-PN units over a network.

- Insert the Documentation and software CD into the CD-ROM drive, and then locate and run the following setup program to begin the installation process: MGM\_Setup\_[Version]\_Build\_[DateTime].exe (The latest version could have the following format: MGM\_Setup\_Verx.x.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 **Browse...** to change the destination directory (if necessary), and then click **Next** to continue.

👘 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 Browse
At least 0.9 MB of free disk space is required.
< <u>B</u> ack <u>N</u> ext > Cancel

4. When the **Select Additional Tasks** window appears, check the **Create a desktop icon** checkbox if you would like to create an MGate Manager shortcut on your desktop, and then click **Next** to continue.

🔂 Setup - MGaie 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 installing the software files.

15 Setup - MGate Manager	
Ready to Install Setup is now ready to begin installing MGate Manager on your computer.	
Click Install to continue with the installation, or click Back if you want to review o change any settings.	r
Destination location: C:\Program Files\Moxa\MGate Manager Additional tasks: Additional icons : Create a desktop icon	
	>
< <u>B</u> ack Install	Cancel

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



 A message will indicate that the MGate Manager has been successfully installed. Check the Launch MGate Manager checkbox if you would like to launch MGate Manager at this time, and then click Finish.

🕞 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. I aunch MGate Manager
	Einish

### **Starting MGate Manager**

MGate Manager is a Windows Utility that is used to configure MGate 5102-PBM-PN units. Before running MGate Manager, first connect your MGate 5102-PBM-PN unit to your PC.

To start MGate Manager, from the Windows Start menu click **Start > Programs > MGate Manager > MGate Manager**.



The MGate Manager window will appear as shown below.

lo.	Name	Model	MAC Address	IP/COM	Status	Firmware Version
De	vice Identification		evice Function			
ſ	Search	n í	6 . C . Y			
L	Search		Configuration	Load Monitor Log	ProCOM Map	Import
	Locate		Load Default	Diagnose	Upgrade Firm	ware Export
			Loud Derdare			
			GSD Management	Off-Line Configuration		

### **Changing the Language Settings**

To run MGate Manager in a different language, click **Language** to change the language setting. A dialog box showing the available languages will appear as shown below.

Language	×
English.Ing Chinese_Simplified.Ing Chinese_Traditional.Ing French.Ing German.Ing Russian.Ing	
Default Language	OK Cancel

When you click **OK**, the MGate Manager interface will immediately switch to your chosen language.

After changing to a different language, all of the text in the MGate Manager interface will use the newly selected language (except for the "Language" button itself).



#### ATTENTION

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

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

### **GSD Management**

Before configuring the MGate, you first need to import a GSD file for each PROFIBUS slave device through MGate Manager. The GSD file contains relevant parameter settings, including vendor name, model name, revision, etc. The PROFIBUS master controls PROFIBUS slave devices according to the GSD file. Since the MGate 5102-PBM-PN plays the role of PROFIBUS master, it should import all GSD files of PROFIBUS slaves beforehand.

o.	Name	Model	MAC Addr	ess IP/COM	Status	Firmware Version
De	vice Identification	C	evice Function			
F	Search		Configuration	Load Monitor Log	ProCOM Mappin	ng Import
6						
	Locate		Load Default	Diagnose	Upgrade Firmwa	re Export
_						
	Language		GSD Management	Off-Line Configuration	n	Exit

The MGate Manager interface has a button named **GSD Management**.

To add or delete a GSD file, click the **GSD Management** button and a new window will appear. Click **Add** and assign the path where the GSD is. If you would like to delete a GSD file, click the GSD item and click the **Remove** icon to delete it. You will then see the GSD files you want. Press **OK** to return to the main window of the MGate Manager.

Name	Vendor	Filename		
Moxa Profibus Slave	Maxa Inc.	MPBS0080.gsd		Add Remove OK
٠			•	

### **Connecting to the Unit**

Before configuring your MGate, install MGate Manager on your PC and then connect the PC to the MGate unit. Two methods are available for establishing a connection with the MGate: <u>Broadcast Search</u> and <u>Specify</u> <u>IP Address</u>.

### **Broadcast Search**

Broadcast Search can be used to locate any MGate 5000/MB3000/EIP3000 series unit.

0.0
Cancel

### **Specify IP Address**

Use the Specify IP Address option if you know the IP address of the unit. This function is useful when the MGate unit is not located on the same subnet as the PC, such as across a router.

### ATTENTION

If Specify IP Address fails to locate the MGate unit, the IP address that you entered might be incorrect. In this case, re-enter the IP address and try searching again.

Another possibility is that the MGate unit could be 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 unit. After your PC and the MGate are on the same subnet, MGate Manager will be able to find the unit.

### Configuration

Once your MGate unit is located, an entry for the unit will be displayed in the MGate Manager user interface. Select it by clicking on it, and then click the **Configuration** button to open the configuration window. Five configuration tabs should be visible: **Basic**, **Network**, **PROFINET**, **PROFIBUS** and **System**.

1       MGate 5102_19       MGate 5102_PBM-PN       00:90:E8:00:00:13       192.168.127.254       Ver.1.0 Build 13011014         1       Image: State Sta	lo.	Name	Model	MAC Address	IP/COM	Status	Firmware Version
Search Configuration Monitor ProCOM Mapping Import	1	MGate 5102_19	MGate 5102-PBM-PN	00:90:E8:00:00:13	192.168.127.254		Ver.1.0 Build 13011014
Search Configuration Monitor ProCOM Mapping Import							
Search Configuration Monitor ProCOM Mapping Import							
Search Configuration Monitor ProCOM Mapping Import							
Search Configuration Monitor ProCOM Mapping Import							
	De		n 🔽				
Locate Load Default Diagnose Upgrade Firmware Export		Search	Cont	figuration	Monitor	ProCOM Mappir	ng Import
		Locate	Load	d Default	Diagnose	Upgrade Firmwa	are Export

#### **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		<b>X</b>
MGate 510	2-PBM-PN 192	. 168.32.242
Password	1	
	ОК	Cancel

### **Basic Configuration**

Click the **Basic** tab to update the **Server Settings** and **Time Settings**.

Configuration				×
	3		PROFINET	OK Cancel
		MGate 5102-PBM-PN	I	
0			PROFIBUS	
	Conversion PROFIN	ET PROFIBUS System		
Server Settings Server name				
Server location	MGate 5102_000	00		
Time Settings				
Time zone	· · · · · · · · · · · · · · · · · · ·	Mean Time: Dublin, Edinbur		
Local time	Modify	2000 / 1 / 1	0:0:0	
Time server				

Server Settings						
Parameter	Value	Description				
Server Name	<alphanumeric string=""></alphanumeric>	Choose a name that can help you identify the unit, such as the function or serial number of the unit.				
Server Location	<alphanumeric string=""></alphanumeric>	Choose a name that can help you identify the unit's location, such as "Cabinet A001.".				

#### Time Settings

The MGate has a built-in Real-Time Clock for time calibration functions. A log function can be used to add real-time information to messages.

Parameter	Value	Description
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)	Click <b>Modify</b> if you want to adjust the local time.
Time Server	IP or Domain address (E.g., 192.168.1.1 or time.stdtime.gov.tw)	This optional field specifies your time server's IP address or domain name, if a time server is used on 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

First time users should select the time zone first. The console will display the "real time" according to the time zone compared to GMT. If you would like to modify the real time clock, select "Local time." The MGate's firmware will modify the GMT time according to the Time Zone. 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 shows network related settings. You can modify the IP configuration, IP address, Netmask, Gateway, and DNS.

Configuration	nfiguration					
	\$		PROFINET	OK Cancel		
	MGa	e 5102-PBM-PN				
	C.		PROFIBUS			
Basic Network Protocol Con	version PROFINET PRO	FIBUS System				
Ethernet Settings IP configuration						
IP address	Static 🔻					
Netmask	192 . 168 . 127 . 254	+				
	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	Description
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 address identifies the server on the TCP/IP network.
IF AUULESS	(or other 32-bit number)	192.168.127.254 is the default IP address.
Netmask	255.255.255.0	Identifies the server as belonging to a Class A, B, or C
Neumask	(or other 32-bit number)	network.
Gateway	0.0.0.0	This is the IP address of the router that provides network
Galeway	(or other 32-bit number)	access outside the server's LAN.

#### DNS Server

Parameter	Value	Description
DNS Server 1	0.0.0.0	The IP address of the primary domain name server.
DINS Server I	(or other 32-bit number)	The IP address of the prinary domain name server.
DNS Server 2	0.0.0.0	The IP address of the secondary domain name server.
DING Server 2	(or other 32-bit number)	The IF address of the secondary domain name server.

### **Protocol Conversion**

Basic Network Protocol Conversion	PROFINET PRO	FIBUS System	
	MGate		
Device A PROFINET I/O Controller <->	PROFINET I/O Device	PROFIBUS Master	Device B
PROFINET I/O Controller			<-> PROFIBUS Slave
	Agent	•	

### **PROFINET Settings**

The MGate is responsible for handling requests from the PROFINET side to PROFIBUS devices, and for this reason, you will need to assign a PROFINET device name to the MGate. The IP address and device name of the MGate should be set in the PROFINET server. Once both sides' configurations are matched, the PROFINET server will establish a connection with the MGate.

If the PROFINET server has finished related settings of the PROFINET I/O devices, the MGate will allocate internal memory for data exchange between the PROFIBUS and PROFINET sides. Both sides will transfer and retrieve data through this internal memory. Users can use <u>I/O Data View</u> via Web Console to check the status of the MGate gateway's internal memory.

Configuration		×
	-	PROFINET
	MGate 5102-PBM-P	
Basic Network Protocol C	Conversion PROFINET PROFIBUS System	1
Device name		
Input Data Packing 🔘	Enable 🔘 Disable	
Parameter	Value	Description

Parameter	Value	Description
Device Name	<alphanumeric string=""></alphanumeric>	Enter the PROFINET server name (if you type the name
		incorrectly, the connection will fail).

Parameter	Value	Description
Input Data Packing	Enable/Disable	Selecting Enable will automatically optimize the input data memory usage. For example, two PROFIBUS DI modules set one input address as 0 to 1 (2 bytes), and another input address is 5 to 6 (2 bytes). If you enable this function, PROFINET will automatically arrange only 0 to 3 (4 bytes), but if you disable this function, PROFINET will use original setting from 0 to 6 (7 bytes).

### **PROFIBUS Settings**

The MGate PROFIBUS interface supports PROFIBUS DP version 1 master protocol and is compliant with IEC 61158. Before the MGate can communicate PROFIBUS slave devices, you will need to import the PROFIBUS GSD files, which include the parameters for the PROFIBUS devices, such as slave address and I/O module. Refer to <u>GSD Management</u> for details.

A brief summary of the PROFIBUS settings is listed below:

### Adding New PROFIBUS Slave Devices to the PROFIBUS Network

- 1. Add a new GSD file (if necessary)
- 2. Load PROFIBUS Settings window.
- 3. Add new device into PROFIBUS network.
- 4. Configure the PROFIBUS address.
- 5. Configure the I/O module
- 6. Run Step 3 to Step 5 for each PROFIBUS slave device.
- 7. Save the configurations and exit the PROFIBUS Settings function.

#### Step 1: Add a new GSD file (if necessary)

A GSD file is a standard device description file for a PROFIBUS device. It includes all important device information and is provided by the device's manufacturer. If you want to configure a PROFIBUS device for a ROFIBUS network, import the GSD file into the PROFIBUS network configuration software. If several devices use the same GSD file, users only need to import it once. This means if the GSD file is already in the GSD Management window list, users can skip this step. MGate Manager provides a function, **GSD Management**, to manage the GSD files.

To launch the GSD Management interface, click the **GSD Management** button from the MGate Manager main window.

0.	Name	Model	MAC Address	IP/COM	Status	Firmware Version
	MGate 5102_19	MGate 5102-PRM-PN	00:90:E8:00:00:13	192.168.127.254		Ver. 1.0 Build 13011014
De	evice Identification	Device Fur	nction			
	Search	Cont	figuration	Monitor	ProCOM Mappin	Import
	Locate	Loa	d Default	Diagnose	Upgrade Firmwa	Export
_			lanagement Off-	Line Configuration		

To add a GSD file, click **Add** and then assign the path where the GSD file is located. To delete a GSD file, select the GSD file and then click **Remove**.

Name	Vendor	Filename	
Moxa Profibus Slave	Moxa Inc.	MPBS0D80.gsd	Add
			Remove
			ОК
•			•

#### Step 2: Load PROFIBUS Settings window

To further configure the PROFIBUS, click the **PROFIBUS Settings** button. The new configuration window for PROFIBUS network will pop out.

		10	Contraction of the second		ОК
		<u>&gt;</u>		PROFINET	Cancel
	6	MG	ate 5102-PBM-PN	PROFIBUS	
asic Netwo	rk Protocol	Conversion PROFINET PR	OFIBUS System		
Address	Туре	Name	Vendor		
1	Master	Moxa PROFIBUS Master	Moxa Inc.		
1	Master	Moxa PROFIBUS Master	Moxa Inc.		
1	Master	Moxa PROFIBUS Master	Moxa Inc.		
1	Master	Moxa PROFIBUS Master	Moxa Inc.		

#### Step 3: Add new device to PROFIBUS network

If users have already added the GSD file of the PROFIBUS device into MGate Manager correctly, users will see the devices listed in the left panel tree. The icon in the right panel shows the current connection status of the MGate device. Initially, there will be only one device, the MGate 5102-PBM-PN PROFIBUS master.



To add the device to the PROFIBUS network shown in the right panel above, users can drag the device from the left panel and drop it into the right panel. The device will then be shown underneath the network icon depicted in the right panel.



To remove the device from the PROFIBUS network (depicted at the top of the right panel in the figure above), right-click on the device and select **Delete device** or directly press the DELETE button on the keyboard.

### **AutoScan Function**

The MGate Manager Utility also provides a PROFIBUS automatic scanning function so that the MGate device can automatically gather information about the PROFUBUS slaves that are connected to the network. When the scan is completed, you can change the detected slave devices to the bus configurations and download them to the Master.

Click the **AutoScan** button and the MGate device will display all the devices on the PROFIBUS network with configured I/O modules in a new window. You can click the top checkbox to select all, or just select the specific checkbox for each signal device. When you click the **OK** button, the selected device and related I/O modules will be added to the PROFIBUS network configuration. This function means you don't need to add the slave devices one by one manually.

File Edit PROFIBUS	Byte	• III	(1)Moxa PF	(3)Moxa Pr		
Input: 2 E Input: 3 E Input: 4 E Input: 5 E	Bytes Bytes Bytes			D		
	Addr	Iden	Model pame	Vendor	Module	GSD file
Device status	Addr	Iden	Model name	Vendor Moxa Inc	Module	GSD file
Device status Master in bus configuration	1	0x0DF3	Moxa PROFIBU	Moxa Inc.	1-1	MPBM0DF3.gsd
Device status					- Input: 64 Words	
Device status Master in bus configuration	1	0x0DF3	Moxa PROFIBU	Moxa Inc.	- Input: 64 Words Output: 64 Words	MPBM0DF3.gsd
Master in bus configuration	1	0x0DF3	Moxa PROFIBU	Moxa Inc.	- Input: 64 Words	MPBM0DF3.gsd

If you use the AutoScan function, you can skip Step 3 to Step 6, and go to Step 7 directly.

## Step 4: Configure the PROFIBUS device address and other parameters if necessary.

Selecting a device will show its parameter configuration window in the bottom panel. In the configuration window, you can select different tabs to configure the detailed parameters for each device, including the PROFIBUS master.



## Step 5: Configure the I/O module for the specific PROFIBUS slave device you want to access.

To configure the PROFIBUS I/O modules for a specific slave device, select the device from the top of the right panel and click the **I/O Data** tab in the bottom panel.



Users can drag the proper I/O module from the left panel to the right panel to complete the configuration.



The added I/O device will appear in the lower portion of the right panel.



Now, users can configure the device parameters, including the slave address and I/O modules. To configure each I/O module in detail, users can double click the I/O module and the configuration dialog will be displayed. In the dialog box, users can configure the internal memory address Offset and Fault values. To configure these parameters, please refer to the <u>Data Exchange Between PROFINET and PROFIBUS</u> and <u>Fault Value Configuration in the PROFIBUS Output Module</u> sections.

To remove the I/O modules, select the I/O module and right-click on the I/O module and select **Delete I/O** or directly press the DELETE button on the keyboard.



		I/O type	Outpu	t		
Input				utput		
	Address	Length			Address	Length
Start	0	0		Start	0	1
End	0			End	0	
Consister	ncy: no			Consister	ncy: Byte	
				Fault pro	tection K	eep latest data 🔹
				Fault valu	ue timeout (ms) 0	
				Faul	t value	

Step 6: Run steps 3 to 5 for each PROFIBUS slave device.

#### NOTE

Users must avoid PROFIBUS address conflicts.

#### Step 7: Save the configuration and exit the PROFIBUS Settings function.

To save the PROFIBUS network configurations, you must click the **Save** button on the toolbar so that all settings will be stored on the MGate device. The MGate device will save the new settings and reboot to activate the settings.



### **GSDML Export**

The MGate Manager also provides a **GSDML Export** function that exports the current settings of all the I/O devices. Users can import the GSDML file into the PLC utility so that the PLC can recognize detailed information from the PROFIBUS devices.

When all I/O devices are allocated according to the steps above, select the GSDML icon and choose a directory in which to store the GSDML file.



### Fault Value Configuration in the PROFIBUS Output Module

Common Use	r parameter				
		I/O type	Output		
Input			Output		
	Address	Length		Address	Length
Start	0	0	Start	0	1
End	0		End	0	
Consister	ncy: no		Consiste	ncy: Byte	
			Fault pro	tection Ke	ep latest data 🛛 🔻
			Fault valu	ue timeout (ms) 0	
			Faul	t value	

In some applications, users need to define how to respond to the PROFIBUS output when the PROFINET side malfunctions. This is defined as the **Fault value**. MGate Manager provides an option for each PROFIBUS I/O module to handle such situations.

Users must specify the fault value for each byte. The trigger point depends on the timeout. Each I/O module is linked to an internal memory block and should be updated by PROFINET periodically. If this block is not updated or accessed within a defined timeout period by any PROFINET command, the MGate gateway will set the PROFIBUS output with the **Fault value**, or do nothing if the timeout is set to zero.

To configure the Fault Value, double click on the I/O module. The I/O module configuration dialog will appear and the Fault Value configuration can be found under the Output module configuration.

**Fault value timeout**: 0, 100 to 60000 (ms). If the specific internal memory is not updated within this timeout period, the MGate gateway will set the PROFIBUS value with the **Fault value** settings. If the timeout value is zero, or not between 100 and 60000, the setting will be ignored and the MGate gateway will not monitor this memory block.

	0	1	2	3	4	5	6	7	8	9	A	В	C	D	E	F
0x00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x10	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x20	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x30	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x40	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x50	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x60	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0x70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
												6	ОК		٢	Cancel

### NOTE

If you want the PROFIBUS output to keep the last value when the PROFINET device encounters a problem, you can set this timeout value to zero.

### **PROFIBUS** Parameters

Several parameters for the PROFIBUS interface can be configured manually. These parameters are shown on the configuration page depicted in the figure below.

File Edit PROFIBUS		
🔀 🖪 🔍 🗎		
PROFIBUS DP	(1)Moxa PRO	
😑 🧰 Gateway	(1)Moxa PRO	
🚍 🧰 Moxa Inc.		
Input: 1 Byte		
Input: 2 Bytes	(3)Moxa Prof	
Input: 3 Bytes	(3)Moxa Prof	
Input: 4 Bytes		
Input: 5 Bytes		
Input: 6 Bytes	48	
Input: 7 Bytes		
Input: 8 Bytes	Device list Common Bus para	meter Group properties
Input: 9 Bytes		
- E Input: 10 Bytes	Bus parameter	
Input: 11 Bytes	T solt:	300
Input: 12 Bytes		
Input: 13 Bytes	Min T sdr:	11
Input: 14 Bytes		
Input: 15 Bytes	Max T sdr:	150
Input: 16 Bytes		
Input: 17 Bytes	T set:	1
Input: 18 Bytes		
Input: 19 Bytes	T qui:	0
Input: 20 Bytes		
Input: 21 Bytes	T tr:	12411
Input: 22 Bytes		
Input: 23 Bytes		
Input: 24 Bytes	GAP update factor:	10
Input: 25 Bytes		10
Input: 26 Bytes	HSA:	126
Input: 27 Bytes		120
Input: 28 Bytes	Retry limit:	1
Input: 29 Bytes		1
Input: 30 Bytes		
Input: 31 Bytes		
Input: 32 Bytes	Watchdog (ms):	250
Input: 33 Bytes	▼ []	

### **Time Settings**

Parameter	Value	Notes		
T Slot	The unit is 100 µs	The maximum time that the PROFIBUS master must wait for		
1 3100		slave response		
Min T SDR	The unit is bit time, range	The minimum delay time for the PROFIBUS slave device to		
	from 11 to 255	reply to a master request		
Max T SDR	The unit is bit time, range	The maximum delay time that the PROFIBUS slave device		
Max 1 SDR	from 11 to 255	reply the master request		
T set	(Numerical value)	Setup Time: The time between an event and reply message		
T qui	(Numerical value)	Quiet Time: The time a slave device must wait after the end		
i qui		of a frame before enabling its receiver		
		Target Rotation Time: The anticipated time for one token		
T tr	(Numerical value)	rotation on this PROFIBUS System, including allowances for		
1.0		high and low priority transactions, errors, and GAP		
		maintenance		
GAP update	(Numerical value)	The number of token rounds between GAP maintenance		
factor		(update) cycles		
HSA	(Numerical value)	Highest Station Address (FDL Address)		
Retry limit	(Numerical value)	The maximum PROFIBUS retry count		
		Watchdog Time: If the slave device does not receive any		
Watchdog (ms)	(Numerical value)	data from the master device after the expiration of this time,		
		the outputs will default to safe mode		

### SYNC and FREEZE Settings

Device list	Common	Bus parameter	Group properties	
Group	o 1:		SYNC	FREEZE
Group	2:	E	SYNC	FREEZE
Group	o 3:		SYNC	FREEZE
Group	0 4:	E	SYNC	FREEZE
Group	5:	E	SYNC	FREEZE
Group	o 6:	E	SYNC	FREEZE
Group	7:		SYNC	FREEZE
Group	8:		SYNC	FREEZE

**SYNC** transfers the previous output value in data\_exchange. The following output data will be stored but not transferred until the next SYNC command or UNSYNC command.

**FREEZE** transfers the last input value in data\_exchange. The following input data value will be stored in a special buffer and will not be transferred.

### **Data Exchange Between PROFINET and PROFIBUS**

The MGate 5102-PBM-PN gateway provides internal memory to support data exchange between PROFINET and PROFIBUS networks. This internal memory is shared between all the ports on the gateway and is used as a conduit to pass information from PROFIBUS to PROFINET networks. The data on PROFIBUS devices can be viewed and controlled by the PLCs on PROFINET network. In addition, the status and error information generated by the gateway can also be mapped into the internal memory.

The internal memory has two areas: one for output direction and the other for input direction. "Output" refers the data received from the PROFINET side and will write to PROFIBUS slave devices. "Input" refers to the data received from the PROFBUS side and will be read by PROFINET server.

The internal memory contains 2048 bytes of space. For the PROFIBUS side, you can identify the respective internal memory address for each I/O module of the slave device. The internal memory stores PROFIBUS DP cyclic input and output data. This means the PROFIBUS cyclic data will be available to a PROFINET server over TCP/IP networks, achieving data exchange between PROFINET and PROFIBUS devices.



The MGate Internal Memory

### **Internal Memory Address**

The MGate 5102-PBM-PN supports up to 1024 bytes of input and 1024 bytes of output data. Input addresses 1024 to 1025 are reserved for checking PROFIBUS Master or Slave statuses. Output addresses 1024 to 1025 are for changing the PROFIBUS Master status. Please see the table below.

#### Input Data Memory

0 to 1023	Input Data			
		bit 1:0 = Master Mode		
	Status word	00: Offline		
1024 to 1025		01: Stop		
		10: Clear		
		11: Operate		
	Communication list	1026: bit 07= Slave 07		
1026 to 1041		1027: bit 07 = Slave 815		
		1041: bit 05 = Slave 120125		
		bit SET $\rightarrow$ Slave is in data exchange		
		bit CLEAR $\rightarrow$ Slave is not in data exchange		

#### **Output Data Memory**

0 to 1023	Output Data	
		bit 1:0 = Master Mode
		00: Reserved
1024 to 1025	Control word	01: Stop
		10: Clear
		11: Operate

### Internal Memory Configuration for PROFIBUS I/O Module

For PROFIBUS, users will see the assigned internal memory address in the MGate Manager PROFIBUS Settings window. The **Input address** field refers to the offset address in internal memory for input direction. The **Output address** refers to the offset address in the internal memory for output direction. This address is assigned by the MGate Manager automatically once the I/O module is created. Note that users can modify it manually, but must confirm that the new offset does not overlap with other I/O modules.

The unit of the offset is the byte. This is different from the PROFINET configuration.

Commo	on I/O data (	Group properties User	parameter			
Slot	Module ty	Module	Input address	Output address	Timeout (	Fault value
1	0x40,0x7F	Input: 64 Words	0127			
2	0x40,0x63	Input: 36 Words	128199			
3	0x80,0x7F	Output: 64 Words		0127	0	00 00 00 00 00 00 00 00 00 0
4	0x80,0x63	Output: 36 Words		128199	0	00 00 00 00 00 00 00 00 00 0
5						
6						
7						

To explain more clearly, consider the following example. Assume there are two PROFIBUS slave devices, named (3) and (4) in the figure below, attached to the MGate gateway. The sequence of adding the input slots is 10 bytes to (3), 5 bytes to (3), 10 bytes to (4), 5 bytes to (4), 20 bytes to (3).

First select Slave ID (3) and add 10 bytes to input modules for Slot 1. Then, add 5 bytes to Slot 2. After adding 10 bytes to (3) and 5 bytes to (3), the memory will be allocated from input addresses 0–9 and 10–14.


Now select Slave ID (4) and add 10 bytes to Slot 1 in (4) and 5 bytes to Slot 2 in (4) so that the memory will be allocated for input addresses 15–24 and 25–29.

*PROFIE	BUS Settings							
File Edit	PROFIBUS							
<b>B</b>	<b>Q</b> 🕑							
ė	<pre>Input: 1 Input: 2 Input: 2 Input: 3 Input: 4 Input: 5 Input: 6 Input: 7 Input: 8 Input: 10 Input: 11 Input: 12 Input: 13 Input: 14 Input: 14 Input: 15 Input: 15 Input: 16</pre>	(1)Mox	(3)Moxa	(4)Moxa Prof				
		Commo	n I/O data	Group properties	User param	eter		
	Input: 19	Slot	Module ty	Module	In	put address	Output address	Timeou 🔺
	Input: 20	1	0x19	Input: 10 Bytes	15	24		
	Input: 21	2	0x14	Input: 5 Bytes	25	29		H
	Input: 22 Input: 23	3						
		4						
	Input: 25	5						
	- E Input: 26	6						
	📔 Input: 27	7						
		9						
	E Input: 29 E Input: 30 -	10						
< III	input: 30 +	10		11	1			•
< III	P							

Finally, reselect Slave ID (3) and add 20 bytes to (3) so that the memory will be allocated from input addresses 30–49.

*PROFIBUS Settings							
File Edit PROFIBUS							
B 🖹 🔍 🗗							
Moxa Profiba A Input: 1 Input: 2 Input: 3 Input: 4 Input: 5 Input: 6 Input: 7 Input: 7 Input: 10 Input: 11 Input: 12 Input: 12 Inp	(1)Moxa F	(3)Moxa	(4)Moxa Prof				
- Input: 18			Group properties				
— 📕 Input: 19		Aodule ty			address	Output address	Timeou 🔺
— Input: 20 — Input: 21		x19 x14	Input: 10 Bytes Input: 5 Bytes	09	14		Ξ
Input: 22		x40,0x13	Input: 20 Bytes				-
— 📕 Input: 23	4	, riojo alo	input zo bytes	5011			
— 📕 Input: 24	5						
- Input: 25	6						
Input: 26	7						
— Input: 27 — Input: 28	8						
Input: 28	9						
Input: 30 -	10						-
< Ⅲ ►	•						4

The memory is now reserved as:

Input address	0–9	10-14	15-24	25–29	30-49	50-1023
I/O devices	PROFIBUS	PROFIBUS	PROFIBUS	PROFIBUS	PROFIBUS	
1/O devices	No.3	No.3	No.4	No.4	No.3	

Since there are 50 bytes total of input data for the PROFIBUS I/O devices, the controller can retrieve these 50 bytes of data arbitrarily.

### **System Settings**

The **System** tab includes several system level settings, such as Log Settings, Auto Warning, E-mail Alarm, etc. Most of these settings are optional.

### **Accessible IP Settings**

	Settings	Syste	em Log	A	uto Warning	E-mail Alert	SNMP Trap	SNMP Agent	LLDP	Misc. Settings
Enable ti	he accessibl	e IP li	st					ſ	,	Add
	IP addre	SS				Netmask				
Active	0.	0	. 0		0	255 . 255	. 255 . 25	5	М	odify
Double click	item to act	tivate	or ina	ctiva	ate)			[	Re	move
Index	Active	IP	addre	SS			Netmask			
muex	110010									
Index	ricure									
INCEX	, and the second									
Index	, and the second									
INCX										

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 an IP address and a 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
192.168.0.1 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

#### **DoS Defence**

Basic	Networ	k Protocol C	Conversion	PROFINET	PROFIBU	IS System	n			
Acces	sible IP	DoS Defense	System L	og Auto Wa	arning E-	mail Alert	SNMP Trap	SNMP Agent	LLDP	Mis 🔹 🕨
-C	Configurat	ion			S	N-Flood				
1	Null Scan		1		E	nable				
١	NMAP-Xm	as Scan	]		Li	mit	400	00 (pkt	/s)	
5	SYN/FIN S	Gcan 🛛	]		-10	MP-Death				
F	FIN Scan		]		E	nable				
N	MAP-ID	Scan 🛛	1		Li	mit	400	00 (pkt	/s)	

### System Log Settings

Basic Network F	Protocol Con	version Modbus PROFIBUS System	
DoS Defense Sys	tem Log AL	uto Warning E-mail Alert SNMP Trap SNMP Agent LLDP Mis	sc. Settings No
Event Group	Syslog	Local Log	
System		System cold start, System warm start	
Network		DHCP/BOOTP get IP/renew, NTP connect fail, IP conflict, Ne	twork link down
Configuration		Login fail, IP changed, Password changed, Firmware upgrad certificate import, Config import, Config export	e, SSL
PROFIBUS		PROFIBUS communication logs	
Modbus TCP		Modbus TCP communication logs	
Local Log Setting	js		
Enable log ca	apacity warn	ing at 0 (%)	
Warning by:		SNMP Trap 🔽 Email	
Event log overs	ize action:	Overwrite The Oldest Event Log 🔹	
Syslog Settings			
Syslog server IF	, ,	0.0.0.0	
Syslog server p	ort	514	

This setting allows the MGate firmware to record important events for future verification. The recorded information can only be displayed in the Web Console. Please refer to <u>Web Console Configuration</u> in Chapter 5.

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

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

Description
When the log amount exceeds the warning percentage, it will trigger an event
to SNMP Trap or email.
SNMP
Email
Overwrites the oldest event log
Stops recording event log

Syslog Settings	Description
Syslog server IP	IP address of a server that will record the log data
Syslog server port	514

Users can view the record from the Web Console or Text Mode Console.

System Log			
2012/07/15 08:37:28 [Sys 2012/07/15 08:37:29 [PR 2012/07/15 08:37:29 [PR 2012/07/15 08:37:29 [PR 2012/07/15 08:37:30 [PR 2012/07/15 08:37:30 [PR 2012/07/15 08:37:31 [PR 2012/07/15 08:37:46 [Co	OFIBUS] Master state = OFIBUS] Master state = OFIBUS] Master state = OFIBUS] Slave 2 state = OFIBUS] Slave 2 state = OFIBUS] Slave 2 state =	> "Stop" > "Clear" > "Operate" :> "Set_Prm" :> "Chk_Cfg"	

### Auto Warning (Relay Output)

Basic	Networ	k Protocol Co	onversion	PROFINET	PROFIBUS	Syster	n			
Acces	sible IP	DoS Defense	System Log	g Auto Wa	rning E-n	nail Alert	SNMP Trap	SNMP Agent	LLDP	Mis 🔹 🕨
S	ystem Ev	ent								
	Cold sta	art		📃 Mail	Т	rap				
	Warm s	tart		📃 Mail	T	rap				
	Power in	nput 1 failure		Mail	Т	rap [	Relay			
	Power in	nput 2 failure		Mail	Т	rap [	Relay			
	Etherne	t 1 link down		📃 Mail	T	rap [	Relay			
	Etherne	t 2 link down		Mail	T	irap [	Relay			
C	Config Eve	ent								
	Console	e login fail		📃 Mail	T	rap				
	IP chan	iged		📃 Mail						
	Passwo	rd changed		📃 Mail						

Auto Warning will be triggered in the event of a power failure or when Ethernet links are disconnected. When a checked trigger condition occurs, the MGate gateway will open the circuit of the relay output and trigger the Fault LED to start blinking. Otherwise, the MGate will short the relay output circuit.

### **E-mail Alert**

Basic	Netwo	rk Protocol Co	onversion PR	OFINET PROF	IBUS System	n			
Acces	sible IP	DoS Defense	System Log	Auto Warning	E-mail Alert	SNMP Trap	SNMP Agent	LLDP	Mis • •
Mai	l server	(SMTP)							
	My serv	er requires aut	nentication						
Use	er name								
Pas	sword								
Fro	m e-mail	address							
То	e-mail ac	ddress 1							
То	e-mail ac	ddress 2							
То	e-mail ac	ddress 3							
То	e-mail ac	ldress 4							

The MGate gateway will send a warning message via SMTP to the E-mail addresses entered under this the **E-mail Alert** tab.

Parameters	Value	Description				
Mail server (SMTP)	IP address or server name	SMTP server's IP address or server name				
User name/	(an alphanumeric string)	If the mail server requires user authentication, select the				
Password	(an alphanumene sunig)	checkbox and enter the user name and password				
From E-mail	username@domain.name	To show the sender's e-mail address				
address	username@domain.name	To show the sender's e-mail address				
To e-mail	username@domain.name	Four e-mail recipients can be added to the list				
address 1–4	username@uomam.name					

### **SNMP** Trap

Basi	c	Networ	rk Protocol Co	onversion Pl	ROFINET	PROF	IBUS Syster	m			
Acc	essi	ible IP	DoS Defense	System Log	Auto V	/arning	E-mail Alert	SNMP Trap	SNMP Agent	LLDP	Mis 4
	SNM	IP trap s	erver IP or dor	main name				-			
1	Trap	versior	ı		🔍 v 1	© v2	c				
1	Trap	commu	inity		public						

The MGate gateway supports Simple Network Management Protocol (SNMP).

Parameters	Value	Description					
SMNP trap server IP or	IP or domain name	The MGate 5102-PBM-PN supports SNMP trap, enter the					
domain name		SNMP trap server IP or domain name					
Trap version	v1	Choose the trap version of the SNMP server, the default					
Trap version	v1	value is version 1					
Trap community		Use this field to designate the SNMP trap community					

#### **SNMP** Agent

	Basic	Netwo	rk Protoco	ol Conversion P	ROFINET	PROF	IBUS	System	n			
	Access	ible IP	DoS Defen	ise System Log	Auto W	arning	E-mai	il Alert	SNMP Trap	SNMP Agent	LLDP	Mis 4
	SNMP			Enable	•	Read	l only u	iser nan	ne	rouser		
Contact name			2			Read	only a	authenti	cation mode	Disable	-	
	Read	commur	nity string	public		Read	only p	asswor	d			
	Write	commu	nity string	private		Read	only p	orivacy i	mode	Disable	-	
	SNMP	agent \	ersion/	V1, V2c	•	Read	only p	orivacy				
						Read	/write	user na	ime	rwuser		
						Read	/write	authen	tication mode	Disable	-	
						Read	/write	passwo	ord			
						Read	/write	privacy	mode	Disable	-	
						Read	/write	privacy				

The SNMP Agent tag allows users to adjust the SNMP related setting. Users can adjust these functions according to the SNMP setting.

### **LLDP Settings**

Basic Network Protocol Conversion PROFINET PROFIBUS System
SNMP Agent LLDP Misc. Settings Notification Message Account Management Login Password Policy
LLDP Enable
Message transmit interval 30 (5 - 16383 sec)
I

The MGate gateway supports Link Layer Discovery Protocol (LLDP).

Parameters	Value	Description
LLDP	Enable/Disable	To enable/disable the LLDP function
Message transmit	5–16383	Users can modify the message transmit interval

#### **Miscellaneous Settings**

h	Basic	Netwo	rk Protocol (	Conversion M	odbus	PROFIE	SUS System			
	DoS De	efense	System Log	Auto Warning	E-ma	il Alert	SNMP Trap	SNMP Agent	LLDP	Misc. Settings N(
	Con	sole Set	tings				Session	Settings		
	н	TTP con	sole	Enable	•			um login user fo HTTPS	5	(1 ~ 10)
	HTTPS console			Enable	•]		Auto la	ogout setting	5	(1 ~ 1440 min)
	Telnet console			Enable	•					
	S	SH cons	ole	Enable	•					
	R	eset but	tton	Always enab	le	•				
	S	erial con	isole	Enable	•					
	м	OXA co	mmand	Enable	•					

#### **Console Settings** Value Description Parameters Enables or disables the Web Console. For security concerns, HTTP/HTTPS Enable/Disable users can either enable the HTTPS or disable all settings. Enable/Disable Telnet/SSH The MGate Telnet/SSH function can be enabled or disabled. The MGate serial console function can be enabled or Serial Console Enable Disable disabled. MGate provides the reset button to clear the password or load factory default settings. For security concerns, users Disable after 60 sec, Reset button protect can disable this function. When disabled, the MGate will still Always enable enable this function within 60 seconds after boot-up in case users need the reset function. The MGate can be searched with the Device Search Utility Moxa Command Enable/Disable (DSU). If you have any security concerns, you can choose Disable to deny the DSU access.

Session Settings	ession Settings									
Parameters	Value	Description								
Maximum Login User for HTTP/HTTPS	1-10									
Auto Logout Setting	1-1440 min.	Sets the auto logout time period								

### Notification Message

Basic	Netw	ork	Protoco	Conversion	Modbus	PROFIBUS	System			
E-mail	Alert	SNM	IP Trap	SNMP Agent	LLDP	Misc. Setting	s Notific	cation Message	Account Management	• •
Lo	gin me	ssage	2							*
Login authentication failure message						word you ente temporarily lo		orrect. kcessive tried.)		*
										Ŧ

### Account Management

Basic Network	Protocol Conversion Pl	ROFINET PROFIL	BUS System						
SNMP Agent LLD	P Misc. Settings No	tification Message	Account Mana	gement [	ogin Password Policy	4			
Account Name		Grou	IP						
admin		admi	n						
	Add	Edi	t		Delete				
arameters	Value	Description		issword f	or different accounts	s MGate			
			Isers can modify the password for different accounts. MGate provides two different level accounts: <b>admin</b> and <b>user</b> . Admin						
ccount	admin, user				II the settings throu				
		console. I change an		nt can or	ly view the settings	and can'			

### **Login Password Policy**

Basic	Netwo	rk Pro	tocol Conversio	on Modbus	PROFIBUS	System				
SNM	1P Agent	LLDP	Misc. Settings	Notification	n Message	Account M	anagement	Login P	Password Policy	4
6	Account P	asswor	d Policy		A	Account Log	in Failure Lo	ckout		
	Minimum	length	4	(4 - 16)	[	Enable				
	Enabl	e passw	ord complexity	strength che	ck F	Retry failure	e threshold	5	(1 - 10 time)	
	At	t least o	ne digit(0~9)		I	Lockout time	e	5	(1 - 60 min)	
	a/	√z) t least o	ne special char he special char	acter:	~Z,					
	Password lifetime 90 (90 - 180 days)									

Account Password Policy	Value	Description
Minimum length	4-16	
Enable password complexity Strength check		Select how the MGate checks the password's strength
Password lifetime	90-180 days	Set the password's lifetime period

Account Login Failure Lockout	Value	Description
Retry failure threshold	1-10 time	
Lockout time	1-60 min	

# Load Default

If you would like to clear all the settings on the MGate gateway, the **Load Default** button can help you reset the unit to the factory default values.

) <b>.</b>	Name	Model	MAC Address	IP/COM	Status	Firmware Version
	MGate 5102_19	MGate 5102-PBM-PN	00:90:E8:00:00:13	192.168.127.254		Ver.1.0 Build 13011014
De	vice Identification	Device Fur	nction		6	
	Search	Cont	figuration	Monitor	ProCOM Mappir	Import
	Locate	Load	d Default	Diagnose	Upgrade Firmwa	are Export
_						

Click **Load Default** and review the confirmation message. Note that if you reset the MGate to the factory default values, all the stored information and parameters will be erased permanently.

Confirm	×
This action would rese still want to continue?	et configuration to factory default. Do you
	OK Cancel

Users may keep the IP address settings to mitigate the burden of network parameter settings.



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

#### ATTENTION

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

### Diagnose

The MGate provides status information for troubleshooting, especially for PROFIBUS slave devices. The PROFIBUS Diagnostic Information provides the status of each slave device and the diagnostic data retrieved from each PROFIBUS slave. In most applications, the MGate gateway will connect several PROFIBUS slaves at the same time. If some devices malfunction, it is hard for users to know which one has the communication issue. With this function, you can identify the issue immediately and resolve it. To open the **Diagnose** window, click the **Diagnose** button in the main window.

0.	Name	Model	MAC Address	IP/COM	Status	Firmware Version
	MGate 5102_19	MGate 5102-PBM-PN	00:90:E8:00:00:13	192.168.127.254		Ver.1.0 Build 13011014
De	evice Identification	Device Fu	nction			
	Search	Con	figuration	Monitor	ProCOM Mapp	Import
	Locate	Loa	d Default	Diagnose	Upgrade Firmw	/are Export
_						

The **Diagnose** window displays information for the PROFINET and PROFIBUS devices.

For PROFINET devices, it will display the status of PLC, Parameters, and I/O Slot.

Category	Rem	Value
PLC Status		
	Connected PLC MAC Address	00:18:18:29:07:88
	PLC Operation Mode	RUN
Parameters		
	Device name	mgate-dev3
	Sender clock (packet interval)	4 (ms)
I/O Slot		
	Slot 1 Input 16 Byte	aa 00 00 00 00 00 00 00 00 00 00 00 00 0
	Slot 2 Output 16 Byte	aa 00 00 00 00 00 00 00 00 00 00 00 00 0

For PROFIBUS devices, it will display all configured devices. Users can double click the slave device, and it will display detailed information for the selected device.

ROFINET	PROFIBUS				
Address	Туре	Name	Vendor	Status	•
1	Master	Moxa PROFIBUS Master	Moxa Inc.		
2	Slave	Moxa Profibus Slave	Moxa Inc.	OK	E
4	Slave	Moxa Profibus Slave	Moxa Inc.	OK	
5	Slave	Moxa Profibus Slave	Moxa Inc.	ОК	
					-

Slave Diagnose			X
Diagnostic			
Slave address : 2 Slave status : OK DPV1 enable : No Diagnostic length : 6			A
Octet 1 (Station_status_1) Octet 2 (Station_status_2) Octet 3 (Station_status_3) Octet 4 (Master_Address) Octet 5-6 (Ident_Number)	= 00 = 0C : Watchdog on = 00 = 01 (1) = 0D80		
			Ŧ
		ОК	

This information shows the PROFIBUS DP information.

#### Octet 1 (Station\_status\_1):

Bit	Value	Description
Bit 7	Diag.Master_Lock	This bit is set if the slave is parameterized by a master.
Bit 6	Diag.Prm_Fault	This bit is set if the master's last request is invalid.
Bit 5	Diag.Invalid_Slave_Response	This bit is set if the master receives an invalid slave response.
Bit 4	Diag.Not Supported	This bit is set if the last master request is not supported by the
	Diag.Not_Supported	slave.
Bit 3	Diag.Ext Diag	This bit is set if the diag_data contains the vendor defined
	Diag.Ext_Diag	message.
Bit 2	Diag.Cfg Fault	This bit is set if the slave's configuration is different from the
DIL Z	Diag.Cig_Fault	master's.
Bit 1	Diag.Station_Not_Ready	This bit is set if the slave is not ready for data exchange.
Bit 0	Diag.Station_Non_Existent	This bit is set if the slave cannot be reached.

#### Octet 2 (Station\_status\_2):

Bit	Value	Description
Bit 7	Diag.Deactivated	This bit is set if the slave is marked as inactive within
DIC /	Diag.Deactivated	parameters set.
Bit 6	Reserved	
Bit 5	Diag.Sync_Mode	This bit is set if the slave receives the Sync control command.
Bit 4	Diag.Freeze_Mode	This bit is set if the slave receives the Freeze control command.
Bit 3	Diag.WD_On (Watchdog on)	This bit is set if the watchdog control is activated by the slave.
Bit 2	N/A	(Not used)
Bit 1	Diag.Stat Diag	This bit is set if the slave requests the master to send the
	Diag.Stat_Diag	diag_data request.
Bit 0	Diag.Prm_Req	This bit is set if the slave request is re-parameterized.

#### Octet 3 (Station\_status\_3):

Bit	Value	Description
Bit 7	Diag.Ext Diag Overflow	This bit is set if more diagnostic information is provided in Ext_diag_data.
Bit 0 to 6	Reserved	

#### Octet 4 (Station\_status\_4):

Bit	Value	Description
Bit 0 to 7	Diag.Master_Add	The PROFIBUS master address.

#### Octet 5-6: Ident\_number

The manufacturer's identifier number of the slave device. This also can be listed in the GSD file.

#### Octet 7–32: Exg\_Diag\_data

This is the diagnostic data specified by the slave device.

### **Off-Line Configuration**

Users can create or modify the configuration file manually through the MGate Manager. To use this function, users can click on the **Off-Line Configuration** button to load the configuration window.

о.	Name	Model	MAC Address	IP/COM	Status	Firmware Version
1	MGate 5102_19	MGate 5102-PRM-PN	00:90:E8:00:00:13	192.168.127.254		Ver. 1.0 Build 13011014
		-0				
De	vice Identification	Device Fu	nction			
	Search	Cor	figuration	Monitor	ProCOM Mappir	Import
	Locate	Loa	d Default	Diagnose	Upgrade Firmwa	Export
_	Language		1anagement Off	-Line Configuration		

A dialog box will appear. Click the **OK** button for the desired MGate device to proceed to the next step.

0	ff-Line Conf	iguration
	Select Mode	1
	Series	MGate 5000 💌
	Model	MGate 5102-PBM-PN 🔻
		OK

Users can choose "Create new configuration" or "Load existing configuration" to edit configurations. The file for "Load existing configuration" can be generated from the **Export** function.

MGate 5102-PBM-PN	x
Create new configuration	
Coad exist configuration	

For the configuration dialog, refer to the <u>Configuration</u> section for detailed information. When all configurations are finished, click **OK** to update the settings in the file.

# **Upgrade Firmware**

The firmware for updating the MGate gateway is archived at <u>www.moxa.com</u>. After downloading the new firmware onto your PC, you can use MGate Manager to upgrade your MGate gateway. Select the desired unit from the list in MGate Manager and click **Upgrade Firmware** to begin the process.

<b>D</b> .	Name	Model	MAC Address	IP/COM	Status	Firmware Version
	MGate 5102_19	MGate 5102-PBM-PN	00:90:E8:00:00:13	192.168.127.254		Ver.1.0 Build 13011014
De	vice Identification	Device Fur	nction		(	
	Search	Con	figuration	Monitor	ProCOM Mappin	Import
	Locate	Loa	d Default	Diagnose	Upgrade Firmwa	Export
	Language		lanagement Off	f-Line Configuration		

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

Jpgrade Firmware		X
Firmware for 5102-PBM-PN		
		Browse
	ОК	Cancel

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

No.	Model	MAC Address	IP/COM	Status
01	MGate 5102-PBM-PN	00:90:E8:00:00:13	192.168.127.254	Transmit 66%

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 gateway will reappear in the list.

# **Import and Export**

The Import and Export configuration functions are a convenient way to apply the same settings to units that are located at different sites. You can export the configuration as a file, and then import that configuration file into other units at any time. Note that the **Export function** can also export the GSD file of the PROFIBUS slave device.

The export function saves all the configuration settings, and parameters of the MGate device will be saved in an \*.ini file. To begin, click the **Export** button.

	Name	Model	MAC Address	IP/COM	Status	Firmware Version	
	MGate 5102_19	MGate 5102-PRM-PN	00:90:E8:00:00:13	192.168.127.254		Ver.1.0 Build 13011014	
Des	vice Identification	Device Fu	ortion				
	Search		figuration	Monitor	ProCOM Mappin	Import	
	Locate	Loa	d Default	Diagnose	Upgrade Firmwa	re Export	

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

Save/Load		×
		Browse
	ОК	Cancel

If you export the configuration file successfully, a confirmation message will pop up.



The configuration file will be saved as an \*.ini file

On the other hand, it can also import your target unit to duplicate the same settings. Select the target unit first and click the **Import** button to import.

Vo.	Name	Model	MAC Address	IP/COM	Status	Firmware Version
)1	MGate 5102_19	MGate 5102-PPM-PN	00:90:E8:00:00:13	192.168.127.254		Ver.1.0 Build 13011014
De	vice Identification	Device F	unction	Monitor	ProCOM Mappin	ng Import
	Locate		ad Default	Diagnose	Upgrade Firmwa	are Export

Select the file you want to import and then click the  $\mathbf{OK}$  button.

Save/Load		×
		Browse
	ОК	Cancel

Wait as the MGate Manager configures 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 gateway will reappear in the list.

# 5. Web Console Configuration

The MGate 5102-PBM-PN provides a Web Console for easy configuration, but it does not support all the functions in MGate Manager. However, the Web Console is a simple way to log into the MGate gateway. Users can use a Web browser such as Microsoft Internet Explorer or Google Chrome to access the Web Console.

To connect to the MGate Web Console, open a Web browser and enter the MGate IP address.

http://<MGate IP address>

or

https://<MGate IP address>

On the first page, users need to specify the account and password. Only two types of users are supported: **admin** and **user**. The **admin** account can modify all settings, but the **user** account only can review settings and cannot modify any configurations. The default password for **admin** is **moxa**.

M	OX/	<b>N</b>	MGate 51	02-PBM-PN			www.moxa.com	ĥ
-	Model Name	- MGate 5102-PBM-PN - MGate 5102_19		IP Serial No.	- 192.168.127.254 - 19	MAC Address Firmware	- 00.90:E8.00:00:13 - 1.0 Build 13020418	
			Account Password	admin	•			
				Login				
								Ļ

When you log in, you will see an <u>Overview</u> of the MGate gateway, including the status of the microSD card slot.

<ul><li>Model</li><li>Name</li></ul>	- MGate 5102-PBM-PN - MGate 5102_19	<ul><li>IP</li><li>Serial No.</li></ul>	- 192.168.127.254 - 19		MAC Address Firmware	- 00:90:E8:00:00:13 - 1.0 Build 13020418
	:-Welco	me to MGa	te 5102-PBM-	PN		
Main Menu	Model name	MG	ate 5102-PBM-PN			
Overview	Serial No.	19				
Basic Settings	Firmware ver	sion 1.0	Build 13020418			
Network Settings - Protocol Settings	Ethernet IP a	ddress 192	168.127.254			
- System Management	Ethernet MA		90:E8:00:00:13			
- System Monitoring	Up time		ays 01h:28m:33s			
- Restart	Power 1	Off	ays 0 11.2011.335			
	Power 2	On				
	Incroop	In U	se			
	PROFINET d	evice name				

All available configuration items are listed in the left panel tree. Click on an item to see detailed options in the 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 setting.

The functions of the Web Console are listed below.

Directory	Function	Note
Basic Settings		See <u>Overview</u> section.
Network Settings		See <u>Network Settings</u> section.
Protocol Settings	PROFINET	See PROFINET Settings section.
	PROFIBUS	See the section below.
	GSD Management	See <u>GSD Management</u> section.
System Management	System Log Settings	See <u>Log Settings</u> section.
	Auto Warning Settings	See Auto Warning (Relay Output) section.
	E-mail Alert	See E-mail Alert section.
	SNMP Trap	See <u>SNMP Trap</u> section.
	SNMP Agent	See <u>SNMP Agent</u> section.
	LLDP Settings	See LLDP Settings section.
System Management - Misc. Settings	Console Settings	See <u>Console Settings</u> section.
	Change Password	See <u>Console Settings</u> section.
System Management - Maintenance	PROFIBUS Control	See the section below.
	Ping	See the section below.
	Firmware Upgrade	See Upgrade Firmware section.
	Configuration Import/Export	See <u>Import and Export</u> section.
	Load Factory Default	See Load Default section.
System Management	Certification	See the section below.
System Monitoring – System Status	System Log	See <u>Log Settings</u> section.
	Relay State	See the section below.
	LLDP table	See the section below.
System Monitoring – Protocol Status	I/O Data View	See the <u>I/O Data View</u> section.
	PROFINET Diagnose	See the <u>Diagnose</u> section.
	PROFIBUS Diagnose	See the <u>Diagnose</u> section.
	PROFIBUS Live List	See the section below.
Restart	Restart System	See the section below.

## PROFIBUS

PROFIBUS settings in the Web Console are very similar to what you see in MGate Manager. You can see the device lists on the left side and the current status of the MGate gateway on the right side.

MOX/	<b>\</b> *	MGate 5102-PBM-PN			www.moxa.col			
<ul> <li>Model</li> <li>Name</li> </ul>	- MGate 5102-PBM-PN - MGate 5102_19	<ul><li>IP</li><li>Serial No.</li></ul>	- 192 - 19	168.127.		MAC Address Firmware	- 00:90:E8:00:00:13 - 1.0 Build 13020418	
	:-PF	ROFIBUS Setti	ings					
Main Menu			Q Aut	oScan	🖋 Edit 🛍 Delet	е В Сору	ña Paste	
Overview			Addr	Туре	Name	Vendor		
Basic Settings	🖻 🔂 Ga	teway Moxa Inc.	0					
Network Settings		Moxa Profibus Slave	1	Master	Moxa PROFIBUS Master	Moxa Inc.		
- Protocol Settings PROFINET			2					
PROFINET			3					
			4					
GSD Management - System Management			5			-		
- System Management				-		-		
- System monitoring			8					
- Restart			9					
goahead WEBSERVE			10					
WEBSERVE	R		11					
			12		_			
			14					
			15					
			16			-		

If you want to add a device to the MGate gateway, you can drag the slave device to the list on the right side.

MOX	∧° м	Gate 5102-PBM-PN						www	w.moxa.cor
= Model = Name	- MGate 5102-PBM-PN - MGate 5102_19	IP Serial No.	- 192 - 19	168,127	254		MAC Address Firmware		E8:00:00:13 ild 13020418
	:•PR	OFIBUS Sett	ings						
- Main Menu			Q Aut	Scan	🖋 Edit	Dei Dei	lete PB Copy	là Paste	
Overview	😑 😋 PROFIE	BUS DP	Addr	Туре	Name		Vendor		
Basic Settings	🖃 🔂 Gate		0						
Network Settings	e- 🔁 M	Moxa Profibus Slave	1	Master	Moxa PROFIBUS Ma	ctor	Moxa Inc.	— m	
- Protocol Settings		INIOXA PTOIDUS Slave	2	Master	MUXA FROFIDUS Ma	ster	MOXel Inc.		
PROFINET			3	-					
PROFIBUS			4		Moxa Profibus	Slave			
GSD Management			5						
- System Management		2							
- System Monitoring		3	· /						
- Restart			8						
			9	-					
	P		10		1				
VEDSERVE	.rx		12						
			13						
			14						
			15						
			16					*	

Once you add the device to the MGate gateway, you can further edit the related settings by clicking on the **Edit** button. See <u>PROFIBUS Settings</u> in Chapter 4 for a description of each function.

MOX/	N <sup>®</sup> MG	iate 5102-PBM-PN				www.moxa.com
<ul> <li>Model</li> <li>Name</li> </ul>	- MGate 5102-PBM-PN - MGate 5102_19	<ul><li>IP</li><li>Serial No.</li></ul>	- 192.168.12 - 19	7 254	<ul> <li>MAC Address</li> <li>Firmware</li> </ul>	- 00:90:E8:00:00:13 - 1.0 Build 13020418
	:PR	OFIBUS				
- Main Menu Overview	Model name: Slave name: Common IO dat	Moxa Profibus Slave Moxa Profibus Slave Group properties User par	ameter	PROFIBUS address: GSD file:	4 MPBS0D80.gsd	
Basic Settings Network Settings - Protocol Settings PROFINET PROFIBUS GSD Management - System Management - System Monitoring	Module Vendor: Family: Model name: GSD file: Maximum baudi	Moxa Inn Gateway Moxa Pr MPBS00 ate: 12000 ki	ofibus Slave 180.gsd	-		
- Restart	R Slave name: PROFIBUS add Active slave: Watchdog:		ofibus Slave			
			ОК	Cancel		

### **PROFIBUS Control**

Users can configure the PROFIBUS interface of MGate to different operation mode. The available options are **Operate**, **Clear**, and **Stop**. Users can click **Activate** to change the mode immediately. The PBM LED will also show the different status for this change. Please refer to LED Indicators section.

This function is only available in the Web Console and Text Mode Console.

### PROFIBUS Control

Operation Mode	
Current status	Operate
Switch operation mode	Operate 🔻
	Stop Clear
	Operate te

#### **Operation mode for PROFIBUS**

Mode	Descriptions
STOP	The parameters are loaded, but the data_exchange is not running.
CLEAR	The data_exchange is running, but the output data will be ignored and only
CLLAR	the input data will be transferred.
OPERATE	All PROFIBUS data_exchagne between master and slaves works well.

# Ping

This function is for network testing. The MGate gateway will send an ICMP packet through the network to the specified host. Users can see the result in the Web Console immediately. This function is only available in the Web Console and Text Mode Console.

Ping Test		
Ping Destination		
Destination		
	Activate	

# Certificate

This is where you can load the Ethernet SSL certificate. Select or browse for the certificate file in the Select SSL certificate/key file field.

Certification	
SSL Certificate	
Issued to	192.168.127.254
ssued by	192.168.127.254
/alid	from 2013/2/5 to 2023/2/3
Select SSL certificate file	瀏覽 Import
Delete SSL certificate file	Delete

## **Relay State**

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 see the relay status on this page.

Relay State		
Auto refresh		
Power 1 failure	N/A	Acknowledge Event
Power 2 failure	N/A	Acknowledge Event
Ethernet 1 link down	N/A	Acknowledge Event
Ethernet 2 link down	N/A	Acknowledge Event

# **LLDP** Table

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

:• LI	DP Table				
Port	Neighbor ID	Neighbor Port	Neighbor Port Description	Neighbor System	

# I/O Data View

This page displays the internal memory information for input and output data transfers, and displays the updated values for communication verification.

The I/O Data View function shows information for two data flow directions: input and output. Input refers to the data flow from the PROFIBUS device to the PROFINET controller. Output refers to the data flow from the PROFINET controller to the PROFIBUS devices. The left side of the figure shows the slot settings of the PROFINET controller (e.g., PLC). As shown in the figure below, if you click Slot 1 Input on the PROFIBUS slave (highlighted in blue on the left) shows the corresponding I/O mapping to Slot 1 Input of the PROFIBUS slave (shaded in gray on the right). This shows the basic I/O mapping relation between PROFINET and PROFIBUS. Note that if the MGate device is not connected to the controller, the figure on the left will be empty without any slot information.

If you would like to check I/O mapping in detail, the bottom area of the figure shows more information. For example, Slot 1 Input of PROFINET is 50 bytes, and it is mapping to a part of Slot 1 Input on PROFIBUS Slave 3. The blue block refers to PROFINET Slot 1, which occupies 50 bytes in the memory; the gray blocks (including the blue block) refer to PROFIBUS Slot 1, which occupies 128 bytes (64 words). Note that the data will be automatically refreshed if the **Auto refresh** checkbox is marked.

PROFINET -  Slot1 Input 050 -  Slot2 Input 050 I							6	<b>PR</b>	Sla	ve3 N Slot1	Input	: 64 V			nappi	ng
ito refresh Internal Address	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	OF
0000h	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0010h	00															
0020h	00															
0030h	00		00	00	00	00	00	00	00	00	00	00	00	00	00	00
0040h	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0050h	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0060h	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0070h	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00

I/O Data View

Similarly, if you click on PROFINET Slot 2, you will see that the Slot 2 Input of the PROFINET side is 50 bytes and it is also mapping to a section of Slot 1 Input of the PROFIBUS side. At the bottom of the figure, the blue block refers to Slot 1 of the PROFINET side, which occupies 50 bytes allocated in the memory; the gray blocks (including the blue block) refer to Slot 1 of the PROFIBUS side, which occupies 128 bytes (64 words).

The **No mapping** message following Input Slot 2 on the right side of the figure above means this input slot is superfluous. This input slot is not mapped to the controller's setting. You can confirm whether the mapping is correct by checking the **No mapping** message.

#### -I/O Data View

ROFINET Slot1 Input 050 I Slot2 Input 050							6	<b>PR</b>	- 6	ve3 N Slot1	Input	Profib : 64 V : 36 V	Vords		mappi	ng
o refresh Internal Address	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	OF
0000h	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0010h	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0020h	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
	00	00														
0030h	00															
0030h 0040h	00	00														
		00														
0040h	00															
0040h 0050h	00				00	00	00	00	00	00	00	00	00	00	00	00

You can also click on the PROFIBUS input slot (highlighted in blue in the box on the right). The corresponding PROFINET input slots will be highlighted to show the relation between the PROFIBUS and PROFINET sides.

#### I/O Data View

PROFINET	🔁 PROFIBUS
🕒 Slot1 Input 050 Bytes	Slave3 Moxa Profibus Slave
🖳 🕒 Slot2 Input 050 Bytes	🕒 Slot1 Input: 64 Words
	Slot2 Input: 36 Words - No mapping

### **PROFIBUS Live List**

This page displays the available PROFIBUS devices on the network. This function is similar to the MGate Manager's **Diagnose** function, but it cannot display any detailed information. If the device is disconnected, it will not be displayed in the list even though it is configured on the PROFIBUS network. This behavior is different from the MGate Manager's **Diagnose** function.

#### **PROFIBUS** Live List

Address	Туре	Name	Associated Master Addr.	Ident-No.	Input Bytes	Output Bytes	Status
1	Master	Moxa PROFIBUS Master		0x0DF3	0	0	
2	Slave	Moxa Profibus Slave	1	0x0D80	192	192	OK

# **System Restart**

You can restart the MGate gateway by clicking the Submit button. Note that all unsaved configurations will be discarded.

System restart

 III Warning III

 Clicking Restart will disconnect Ethernet connections and reboot the system.

 NOTE: Unsaved configuration changes will be discarded, and data currently in the middle of transmission may be lost.

 Submit

The MGate 5102-PBM-PN provides a Text Mode Console via serial interface, Telnet, and SSH protocol. The user interface is the same as those in all Text Mode Consoles. However, note that the Text Mode Console does not provide all configuration items as provided in MGate Manager. For Telnet and SSH configuration, users can use HyperTerminal or PuTTY programs to connect to the MGate device. Note that the Telnet protocol will transfer the account and password information over the Internet in plain text, so the SSH protocol is recommended. To connect to the MGate Telnet/SSH Console, load the Telnet/SSH program and connect to the MGate IP address. For serial interface devices, users must use the serial port on the host to connect to MGate Serial Console port on the front panel with a DP9-to-RJ45 cable. The Serial Console parameter is 115.2 kbps, none parity, 8 data bits and one stop bit. Users can use terminal programs, such as PComm Terminal Emulator or PuTTY, to connect to the MGate Serial Console.

On the first page, users need to specify the account and password. Currently, the MGate gateway only supports two types of accounts: **admin** and **user**. The **admin** account can modify all settings, but the **user** account can only view settings and cannot modify any configurations. The default password for **admin** is **moxa**.



The Text Mode Console will display the menu driven interface. Users can use arrow keys to navigate the menu bar. To select the option, press the **Enter** key to proceed to the next level menu. To return to the previous level menu, press the **Esc** key to quit. If necessary, restart the MGate gateway to activate the setting.

Gate 5102-PBM-PN MGate 510							
[Overview] [Network] [Exit] Examine server settings							
Enter: select ESC: previo	us menu						
Model name	EMGate 5102-PBM-PN	]					
Serial no	[3148	1					
Firmware version	[2.0 Build 17110822	1					
IP address	[192.168.127.254	]					
MAC address	L00:90:E8:55:FF:70	1					
Up time	[0 days 02h:37m:25s	1					
Power 1	LOFF	1					
Power 2	EOn	1					
microSD	[Not Detected						