PROFIBUS Configuration for Moxa MGate 5101-PBM-MN and Siemens S7-1200

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About Moxa

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

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1. Introduction

This tech note describes how to configure a Moxa MGate device as a PROFIBUS DP master to connect to a Siemens S7-1200 PLC as a PROFIBUS DP slave. We illustrate the procedure by configuring data for one word input and one word output.

2. Applicable Products

Product Line	Model Name
MGate 5000 series	MGate 5101-PBM-MN
	MGate 5101I-PBM-MN
	MGate 5101-PBM-MN -T
	MGate 5101I-PBM-MN -T

3. System Requirements

Description	Model/File Name	Version
Siemens S7-1200 PLC	CPU 1212C AC/DC/Rly	2.0
Siemens S7-1200 PROFIBUS module	CM 1242-5	1.0
Siemens PLC programming software	TIA Portal V11	
Moxa PROFIBUS DP master to Modbus TCP	MGate 5101-PBM-MN	1.0
gateway		
GSD file for Siemens S7-1200 DP slave	SI01818E.GSD	1.0
Software utility to configure Moxa device	MGate Manager	1.6
Modbus TCP master software	Modbus Poll	3.60a

4. System Overview

In this document, the MGate 5101-PBM-MN is used as an example. The system architecture is shown below.



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5. PLC Configuration

5.1. Create a new project

5.1.1. Start TIA Portal V11 and create a new project by selecting **Project** → **New**. and then assign a name to this project. In this example, we use "Project01" as the project name.

VA Siem	ens				
Project	Edit	View	Insert	Online	Options
🍄 New	-				
📑 Open					Ctrl+O
Migra	te proj	ect			
Close					Ctrl+W
📕 Save					Ctrl+S
Save	as			Ctrl+	⊦Shift+S
Delet	e proje	ct			Ctrl+E



5.2. Create a PROFIBUS slave device

5.2.1. Double click on Devices & networks and select the proper device in the Catalog window. In this example, we choose the S7-1200 CPU 1212C and the PROFIBUS slave module, CM 1242-5.



5.2.2. Click on the CM 1242-5 module to carry out detailed configurations. 5.2.2.1. Assign a PROFIBUS address:

PROFIBUS interface (X1)		🔍 Properties	🗓 Info 😩 🖳 Diagnostics	
General				
General PROFIBUS address	PROFIBUS address			
 Operating mode 	Interface networked with	th		
 I-slave communication 				
Input	Sub	onet: PROFIBUS_1		
Output		Add nev	w subnet	
Hardware identifier				
	Parameters			
	Add	ress: 2	-	
	Highest add	ress: 126	-	
	Transmission sp	eed: 1.5 Mbps	*	

5.2.2.2. Add I/O modules:

General								
General PROFIBUS address	I-slave o	communication						
Operating mode Islave communication	Trans	fer areas						
Hardware identifier		. Transfer area	Туре	Master address	+	Slave address	Length	Consistency
	1	Input	MS		→	112	1 Word	Total length
	2	Output	MS		÷	Q 12	1 Word	Total length
	3	<add new=""></add>				-		

- 5.2.3. Next, you can compile and download this project to the S7-1200, and then click Go Online to run above settings on the S7-1200.
 - 5.2.3.1. **Edit** \rightarrow **Compile**:





5.2.3.2. Online → Download to device:

6. Moxa's PROFIBUS device configuration

6.1. Install the GSD file

Before configuring the Moxa MGate 5101-PBM-MN, first install the relevant GSD file of the PROFIBUS slave device to allow the MGate 5101-PBM-MN to recognize the device.

6.1.1. Run MGate Manager and then click the **GSD Management** button to install the GSD file.

n	e GSL	J file.		
e	MGate	Manager		
		1		
	No.	Name	Model	MAC Address
	01	MGate 5101_229	MGate 5101-PBM-MN	00:90:E8:00:0
	_ Devi	ce Identification	Device Fun	ction
	[······			1
		Search	Conf	iguration
		Locate	Loos	Dofoult
		200000	LUau	
		Language	GSD M	anagement
		cangaage	0.00114	anagement

Click the \boldsymbol{Add} button to select the location of the GSD file.

G	5D Management			×
	Name	Vendor	Filename	
				Add
				Remove



Select the GSD file and then click the **Open** button to install it.

6.2. Device configuration with MGate Manager

6.2.1. Start MGate Manager and then **Search** for Moxa MGate 5101-PBM-MN.

MGa	te Manager			
No.	Name	Model		MAC Address
۳D	evice Identification	-	Device Fund	tion
	Search		Confi	guration
	Locate		Load	Default
		1		

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

					-	
. MGate 5101_50006	MGate 5101-PBM-MN	00:90:E8:33:FF:FF	192.168.35.116		Ver.1.0 Build 12082314	
Device Identification	Device Fur	nction				
Device Identification Search	Device Fu	nction	Monitor	ProCOM Mappin	ig Import	
Device Identification Search	Device Fu	nction	Monitor	ProCOM Mappin	ig Import	
Device Identification Search Locate	Con	nction Infiguration	Monitor Diagnose	ProCOM Mappin Upgrade Firmwa	g Import	
Device Identification Search Locate	Device Fu	nction	Monitor Diagnose	ProCOM Mappin	g Import	
Device Identification	Con	nction nfiguration nd Default	Monitor Diagnose	ProCOM Mappin	re Export	

6.2.3. Select the "PROFIBUS" tab and click the **PROFIBUS Settings** button to start PROFIBUS configuration.

figuration					
		-		Modbus/TCP	OK Cancel
		MGa	ite 5101-PBM-MN	PROFIBUS	
asic Networ	k PROFIBL	JS Modbus System	Vendor		
	Master	MOXA PROFIBUS master	Moxa Inc.		
		PROF	FIBUS Settings		

6.2.4. Select **PROFIBUS** → **AutoScan** or click the **AutoScan** button to enable the AutoScan function to scan the PROFIBUS slave device automatically.



6.2.5. Check the appropriate checkbox to add the slave device to the PROFIBUS network:

Dev	ice	connected to the network						
F	7	Device status	Addr	Ident	Model name	Vendor	Module	GSD file
Г		Master in bus configuration	1	0x0DF3	Moxa PROFIBU	Moxa Inc.	-	MPBM0DF3.gsd
E	1	Slave not in bus configuration	2	0x818E	CM 1242-5	SIEMENS AG	1 Word Output	si01818E.gsd
							1 Word Input	

Next, click the **OK** button. The MGate 5101-PBM-MN will complete the configuration for you.

6.2.6. After confirming that everything is correct, select File → Save to save the configuration and File → Exit to exit the "PROFIBUS Settings" window.

6.2.7. From the main window, click the **OK** button to save your modifications. The MGate 5101-PBM-MN will reboot, at which time the new configurations will be activated.



7. Communication Test

7.1. Execute Modbus Poll as the Modbus TCP master device

7.1.1. Execute the Modbus Poll on the PC to simulate the Modbus TCP master to exchange data with the MGate 5101-PBM-MN.



After the Modbus TCP connection is established, the application is ready.

7.2. Modifying and monitoring I/O data

- 7.2.1. After making the above settings, the MGate device should work in a Modbus TCP / PROFIBUS environment. For example, we can use Modbus Poll to write or read data from the S7-1200 via the MGate 5101-PBM-MN.
- 7.2.2. Double click on the value of address 40001, input 0x1111, and then click the Send button to write the new value to the S7-1200. The value of the Input module should change automatically.

Moo 🖞	dbus Poll -	Mbpol	11									IX	
ile C	onnection	Setup	Function	is Display	View	v W	/indo	w ł	Help				
D 🛛	ž 🛛 🖨	$ \mathbf{X} $		Цġ Л	05	06	15	16	22 3	23	101	?	
🔁 Mb	poll1 N	/rite Si	ingle Reg	jister				x	Þ×				
(x =	4122:	Slave I	ID: 1			<u>S</u> er	ıd		100				
1000 1000	1 = 2 =	Addre	ss: 1			Can	cel						
1000 1000	3 = 4 =	Value:	1	111									
r Help	5 = , press F1.	For Edi	Function – 16: Write s 6: Write n t, double (ingle regist nultiple reg dick on a v	er risters ralue.				192.10	68.3	3.41:	50 //,	
i	Name		Address	Dis	play for	mat	N	Ionito	or value	_	orce	value	F
	"Input":P		%IW1:P	DE	C_unsig	ned	0)					E
F	"Output":P		%QW1:P	DE	C_unsig	ned	- 7	ð	-	-	0		
			<add new=""></add>										E
o F,⊳ i	F. Name	ì	Address	Dis	play for	mat	N	Ionito	or value		Force	value	F
	"Input":P		%IW1:P	DE	C_unsig	ned	1	111					
E	"Output":P		%QW1:P	DE	C_unsig	ned	- (0			0		
			and the set of the set of										

7.2.3. Input 0x2222 in the **Force value** column in TIA Portal V11and click the



The above test confirms that the MGate 5101-PBM-MN will poll the PROFIBUS slave device regularly.