How to Configure Pro-face HMI with Siemens PLC

Moxa Technical Support Team <u>support@moxa.com</u>

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Released on December 19, 2014

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How to Contact Moxa

Tel: +886-2-8919-1230 Fax: +886-2-8919-1231



1 Application Description

• Objective

This document describes how to use Pro-face GP-4501TW to control and monitor Siemens PLC.

• Goals

This document covers the following topics:

- How to use Pro-face GP-4501TW.
- How to use the Pro-face screen editor tool, **GP-Pro Ex**.
- How to use Pro-face HMI to control and monitor Siemens PLC.

2 System Topology

The following figure shows the system architecture in which the Modbus end devices, PowerFlex 4M and IAQPoint2, are connected to the serial port on MGate 4101-MB-PBS through RS-485-2W wiring. MGate 4101-MB-PBS is connected to the PROFIBUS port on Siemens PLC via a PROFIBUS cable. PC (running SIMATIC Step 7) is connected to an Ethernet switch port on Siemens PLC via an Ethernet cable. A fan is connected to PowerFlex 4M that outputs electric current to power the fan. Pro-face GP-4501TW controls and monitors Siemens PLC via Ethernet connection.



3 Hardware and Software Requirements

3.1 Hardware Requirement

- A. Pro-face GP-4501TW
 - Pro-face GP-4501TW is a 10.4-inch TFT color, touch screen with operator interface.
- B. For information on other hardware requirements, refer to the *Configuring Siemens S7-300 PLC with Moxa MGate 4101-MB-PBS*.

3.2 Software Equipment

- A. GP-Pro EX: This is the screen editor utility published by Pro-face. Rev.: V3.5
- B. For information on other software requirements, refer to the *Configuring Siemens S7-300 PLC with Moxa MGate 4101-MB-PBS*.

4 Configuration

4.1 Hardware Installation

1. Serial Wiring

For information on installing PowerFlex 4M and IAQPoint2, refer to the *Configuring Siemens S7-300 PLC with Moxa MGate 4101-MB-PBS*.

2. Ethernet Connection

- Connect CPU 315 to the PC running SIMATIC Step7 through an Ethernet connection to one of the two Ethernet connectors, either directly or through a common Ethernet switch.
- Connect the PROFIBUS cable from the PROFIBUS port on **CPU 315** to the PROFIBUS port on **MGate 4101-MB-PBS**.
- Connect the Ethernet port on the Pro-face GP-4501TW to an Ethernet port on CPU 315.



3. Pro-face GP-4501TW IP Setup

a. Touch either the top right hand corner then the bottom left hand corner OR the top left hand corner and then the bottom right hand corner within 0.5 seconds.
 Note: Do not touch both corners at the same time.



b. A menu appears on the screen as shown in the following figure. Touch Offline.



c. Touch Main Unit Settings → Ethernet Local Settings.





d. Configure the **IP address** and **Subnet Mask** fields.

4. For information on other hardware settings, refer to the *Configuring Siemens S7-300 PLC with Moxa MGate 4101-MB-PBS*.

4.2 Configuring GP-Pro EX

1. Creating a New project

- a. Start the GP-Pro EX application.
- b. The Welcome to GP-Pro EX window appears. Select New and click OK.
 Welcome to GP-Pro EX

67-7ro EX	New Create Project From Sample Active_Alam_Detail_Block.prx Alam_History_Display.prx EZ_Tower_Light_QVGA.prx EZ_Tower_Light_VGA.prx	•
	Open Existing Project	
	Open Recent Project	
	Native Test.prx ControlLogix.prx S7Demo.prx 4501test.prx	• •
		OK (O) Cancel

- c. Configure the following **Display Unit** settings and click **Next**.
 - Series: Select GP 4000 Series and GP-45** Series from the drop-down lists.
 - Model: Select GP-4501TW from the drop-down list.

🍰 Welcome to GP-Pro EX					×
	Display Unit				
G2-2co DX	Series	GP4000 Series			•
		GP-45** Series			•
	Model	GP-4501TW			•
	Orientation	Landscape 👻			
	Specifications				
	Screen Size	10.4 inch			
	Resolution	640 x 480 pixels (VGA)			
	Display Unit	TFT Color LCD			
	Display Colors	65,536 Colors			
	Touch Panel	Analog			
	Internal Memory	16 MB			
	Backup Memory	128 KB			
	COM1	RS-232C			
	COM2	RS-422(RS-485)			
	USB(A)	1 Ports			
	USB(mini-B)	1 Ports			
	LAN	1 Ports			
	SD	On			
	Video Input	None			
	Internal Board	None			
			Back (B)	Next (N)	Cancel

- d. In the Device/PLC screen, configure the following fields and click **New Screen**:
 - Manufacture: Select Siemens AG from the drop-down list.
 - Series: Select SIMATIC S7 Ethernet from the drop-down list.
 - **Port:** Select **Ethernet (TCP)** from the drop down list.

🖆 Welcome to GP-Pro EX		
67	Device/PLC	
BP-PFUE A	Number of Devi	
		Device/PLC 1
	Manufacturer	Siemens AG
	Series	SIMATIC S7 Ethernet
	Port	Ethemet (TCP)
		Refer to the manual of this Device/PLC
		Recent Device/PLC
	-	4
	Use System	Area Device Information
	Back (B)	Communication Settings New Logic New Screen Cancel

Screen List 🕂 🗙 🔚 Base 1(Untitled) 🗵 Screens of Type Al • _ Title • Search Method Refine Search Search 🞬 🗇 🖍 🗙 | 🚊 🌮 💺 Base Screens B0001 🥵 Window Screens 🎲 Keypad screen 🚱 Image Unit Window screen 🚱 Logic Screens INIT MAIN 🗱 Addre 🎑 Color 🍰 Projec 🔡 Scree

The system closes the Welcome screen and creates a Base Screen as shown in the following figure

2. PLC Connection Setup

- a. Click the **Project** tab and select **Device/PLC**.
- b. In the **Device/PLC 1** configuration area, click the icon next to **PLC1** as indicated in the following figure.



- c. In the PLC1 settings screen, configure the following fields and click **New**:
 - **Destination IP Address:** Enter the IP address.
 - **Connection Type:** Select **OP Communication** from the drop-down list.
 - **CPU Rack Number:** Enter "0".
 - **CPU Slot Number:** Enter "2".
 - **Use Tag Data:** Select this check box.

🖆 Individual Device Se	ettings 📃 🗙
PLC1	
PLC Type	S7-300/400 Series
Device Names	English
(If you change "PLC Type please reconfirm all addr	e" or "Device Names", ress settings.)
Destination IP Address	192. 168. 32. 229
Connection Type	OP Communication -
CPU Rack Number	0
CPU Slot Number	2
Tag Data	
🔽 Use Tag Data	
Ne	et it
	Default
01	K (O) Cancel

Data type <all></all>			▼ Usage <all></all>	Update
Name	Data type Add Tag Name Data type Address Comment	Address DisplayTemprature DWORD	Comment	
	Export Expand All	Collapse All	Add	Edit Delete

d. The **Add Tag** screen appears. Click **Add**.

e. In the **Tag List** screen, add the tags as shown in the following figure.

ag Data type			▼ Usage	<al><al></al></al>	Update
Name DisplayTemprature DisplaySpeed StartDrive	Data type DWORD DWORD BOOL	Address MD00010 MD00024 100000.0		Comment Display temprature (floating) Drive speed (floating) Start/stop drive	

3. Using the Edit Screen

a. In the **Base 1** screen window, use the **Text** tool to create Text Objects as shown in the following figure.



b. In the **Parts Toolbox** pane, select **Data Display** from the **Parts** drop-down list and drag a data display element to the screen next to **Temperature**.



- c. Double-click the **Data Display** element to configure its properties.
 - i. Click the icon next to the **Monitor Word Address** field and select the **DisplayTemperature** tag.
 - ii. Click Ent.
 - iii. From the Data Type drop-down list, select 32 Bit Float.



🖆 Data Display		x
Parts ID	Basic Display Color/Alarm Operation Process	
DD_0000 🚔	>>Extended	
Comment	Font Font Type Standard Font Size 8 x 16 Pixels	
	Text Attribute Normal -	
ABC		
Salast Shasa	Total Display Digits Decimal Place Value Decimal Places	
No Shape	5 Constant VIII III	
livo Snape	Display Style	
	Fixed Display Position	
	Zero Suppress	
	Zero Display Preview	
	7-segment Display -1234.5	
	Auto-size Font	
Help (H)	OK (0) Cancel	

d. Click the **Display** tab and set the **Decimal places** field to **1**; then, click **OK**.



e. Copy the **Data Display** element next to **Temperature** and paste it next to **Drive Speed**.

 f. Click the icon next to the Monitor World Address and change the tag name to DisplaySpeed.



g. In the **Parts Toolbox** pane, select **Switch** from the **Parts** drop-down list and drag a Switch element next to **Start Drive** and **Stop Drive**. Then, change the color of the Switch element for Start Drive to green.



- h. Double-click the Start Drive Switch element to configure its properties.In the Switch Feature tab, configure the following fields and click OK:
 - Bit Address: Select StartDrive from the drop-down list.
 - Bit Action: Select Bit Set from the drop-down list.

🚔 Switch/Lamp		×
Parts ID SL_0000	Switch Feature Switch Common	Lamp Feature Color Label
Comment	▼ Switch Feature Multi-function List Bit Switch	Bit Switch Word Switch Screen Change Special Switch Selector Switch Bit Address Special Switch Selector Switch Selector Switch Selector Switch Bit Address Image: Selector Switch Image: Selector Switch Selector Switch Selector Switch Bit Address Image: Selector Selector Switch Image: Selector Switch Selector Switch Copy from Lamp Copy to Lamp Image: Selector Sele
	Add Add Copy and Add	Include in Operation Log
Help (H)		OK (O) Cancel

- Double-click the Stop Drive Switch element to configure its properties.
 In the Switch Feature tab, configure the following fields and click OK:
 - Bit Address: Select StartDrive from the drop-down list.
 - Bit Action: Select Bit Reset from the drop-down list.

Switch/Lamp					
Parts ID	Switch Feature Switch Common	Lamp Feature Color L	abel		
Comment Normal Cir_0004L_17R Select Shape No Shape	Switch Feature Multi-function List Bit Switch	Bit Switch Word Switch Bit Address [PLC1]StartDrive Copy from Lamp Bit Action Bit Reset	copy to Lamp	Special Switch	Selector Switch
	Add Add Copy and Add	Include in Operation	n Log		
Help (H)				ок (0)	Cancel

4. Transferring a Project

After you edit a screen, save the project.

a. Click Transfer Project to transfer a project to Pro-face GP-4501TW.



😭 Transfer Tool	
File (F) Transfer (T) Settings (S) Help (H	H)
Send Project	Project Information Delect Project
Receive Project	Project File Name [S7 Demo.prx] (Display Unit Model : GP-4501TW) Comment
Compare Project	[] Date [2014/4/17上午 10:33]
Display Unit Information	Designer [General_Chiang]
CF/SD Card Connection	Password for send and receive [Do Not Set]
Memory Loader	
Send Web site	4 F
Transfer Enhanced Recipe	Transfer Information
Send Security Data	[LAN] Transfer Project [Automatic]
Receive Security Data	Transfer system [Automatic]
	Close

b. In the **Transfer Tool** window, click **Send Project**.

c. The Select Display Unit window displays the list of online Pro-face HMI devices. Select to enable the Pro-face GP-4501TW device and click OK to transfer the project.

ှိ Select Display Unit					×
Add E dit	Dele	te			End search
IP Address	Port	PASV	Display Unit	Node	Automatic
92.168.32.239	21	Do Not Use	GP-4501TW		Automatic
				ОК	Cancel

5 On-line Test

The Pro-face GP-4501TW panel displays **Temperature** (in degree Celsius) that is read from IAQPoint2 and **Drive Speed** from Power Flex 4M.

Drive Speed is 0.0 because PowerFlex 4M is in Stop Mode.



Click the Switch element for the Start Drive to set the StartDrive tag. PowerFlex 4M is now in Start Mode and Drive Speed is greater than 0.0 as shown in the following figure.



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