Siemens AG

Ethernet Gateway for SIMATIC MPI/ PROFIBUS Driver

Introduction

This manual describes how to connect the Display and the External Device (target PLC).

In this manual, the connection procedure is described in the sections identified below:
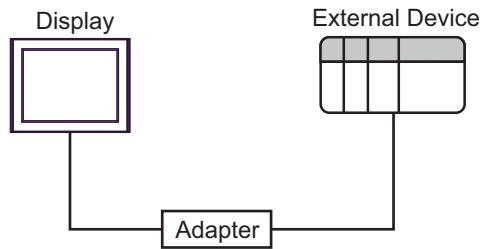
| 1 | System Configuration
This section lists the types of External Devices and SIO that you can connect. | ☞ "1 System Configuration" (page 3) |

| 2 | External Device Selection
Select the model (series) of the External Device and its connection method. | ☞ "2 External Device Selection" (page 6) |

| 3 | Communication Settings
This section shows setting examples for communicating between the Display and the External Device. | ☞ "3 Communication Settings" (page 7) |

| 4 | Setup Items
This section describes communication setup items on the Display.
Set the Display's communication settings in GP Pro-EX or in off-line mode. | ☞ "4 Setup Items" (page 9) |

Operation

1 System Configuration

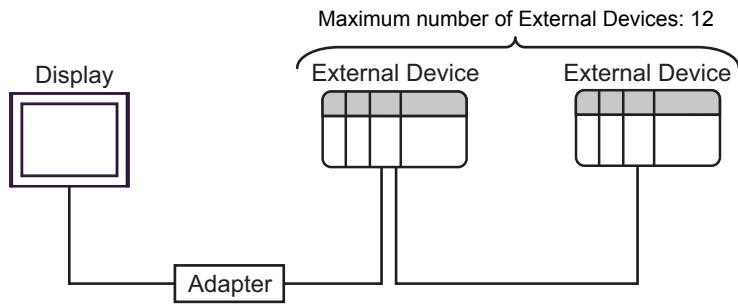The system configuration in the case when the External Device of Siemens AG and the Display are connected is shown.

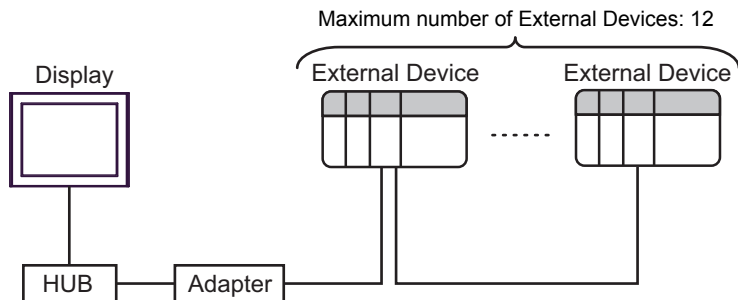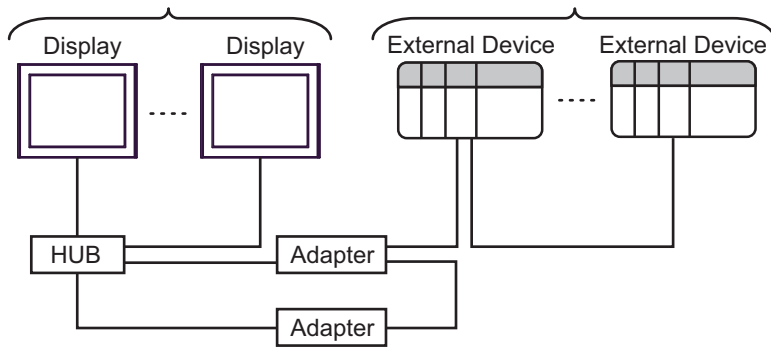| Series	CPU	Link I/F	Communication Method	Setting Example
SIMATIC S7-200 Series	CPU214 CPU215 CPU216 CPU221 CPU222 CPU224 CPU226	Port 0/1 on the CPU unit	Ethernet (TCP)	"Setting Example 1" (page 7)
SIMATIC S7-300 Series	CPU312IFM CPU313 CPU314 CPU314IFM CPU315 CPU315-2 DP CPU316 CPU316-2 DP CPU318-2	MPI port on the CPU unit	Ethernet (TCP)	"Setting Example 1" (page 7)
SIMATIC S7-400 Series	CPU412-1 CPU412-2 DP CPU413-1 CPU413-2 DP CPU414-1 CPU414-2 DP CPU414-3 DP CPU416-1 CPU416-2 DP CPU416-3 DP CPU417-4	MPI port on the CPU unit	Ethernet (TCP)	"Setting Example 1" (page 7)

■ Connection Configuration

◆ 1:1 Connection

Display

External Device

Adapter

◆ 1:n Connection

Maximum number of External Devices: 12

Display

External Device

External Device

Adapter

or

Maximum number of External Devices: 12

Display

External Device

External Device

HUB

Adapter

◆ n:m Connection

Maximum Display Units depends
on the External Device CPU

Maximum number of Display: 12

| Display | Display | External Device | External Device |

- - - -

HUB — Adapter

Adapter

| NOTE | • It is able to connect only one adapter to one Display. |

or

Maximum number of Display: 7

Maximum number of Display: 12

| Display | Display | External Device | External Device |

- - - -

HUB — Adapter
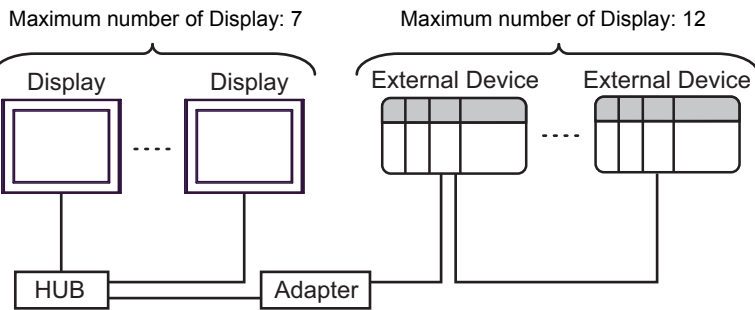
2   External Device Selection

Select the External Device to be connected to the Display.

Setup Items	Setup Description
Number of Devices/PLCs	Use an integer from 1 to 4 to enter the number of Devices/PLCs to connect to the display.
Manufacturer	Select the manufacturer of the External Device to be connected. Select "Siemens AG".
Series	Select a model (series) of the External Device to be connected and connection method. Select "Ethernet Gateway for SIMATIC MPI/PROFIBUS". Check the External Device which can be connected in "Ethernet Gateway for SIMATIC MPI/PROFIBUS" in system configuration. ☞ "1 System Configuration" (page 3)
Port	Select the Display port to be connected to the External Device. Select "Ethernet (TCP)".
Use System Area	Check this option to synchronize the system data area of the Display and the device (memory) of the External Device. When synchronized, you can use the External Device's ladder program to switch the display or display the window on the Display. Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)" This feature can also be set in GP-Pro EX or in the Display's offline mode. Cf. GP-Pro EX Reference Manual "System Settings [Display Unit] - [System Area] Settings Guide" Cf. Maintenance/Troubleshooting Guide "Main Unit - System Area Settings"

3 Communication Settings

This section provides examples of communication settings recommended by Pro-face for the Display and the External Device.

3.1 Setting Example 1

■ GP-Pro EX Settings

◆ Communication Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].

◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings].

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.

■ External Device Settings

Use the Web Browser to access the Adapter for communication setting. Please refer to the manual of the Adapter for more details.

1 The home page, which is located at 'http://<ip-address>', is a basic address and navigation starting point for the user.

| NOTE | • At delivery state the Adapter has the IP address 192.168.4.49 |

2 The configuration page, accessible via a link on the home page, is a configuration interface for the user. Before this page opens, it is necessary to enter the device name as Username (NETLink PRO) and the password (admin if no user specified password is stored). The default password is 'admin'.

3 Enter the following settings and click [OK].

Setup Items	Setting
Device name	Name assigned to the adapter consisting of max. 20 alphanumeric characters.
Static IP address	IP address that is used if DHCP is deactivated or the DHCP timeout elapses
Static subnet mask	Subnet mask that is used if DHCP is deactivated or the DHCP timeout elapses
DHCP ON/OFF	activate DHCP
DHCP Timeout (seconds)	30 to 65500 seconds
Web interface ON/OFF	Web interface is ON or OFF
RFC1006 parameters	not needed for communication with GP-Pro EX applications
New passwords	password with up to eight characters

If you click the [OK] button, the inputs are checked for plausibility. You may then be shown which inputs are incorrect and what correct input would look like at this point.

4 If all entries are consistent, the changes are displayed again as they will now be stored in the adapter when you click the 'OK' button again.

After the new parameters have been stored, the adapter is restarted to activate the new configuration.

4   Setup Items

Set up the Display's communication settings in GP Pro-EX or in the Display's off-line mode.

The setting of each parameter must match that of the External Device.

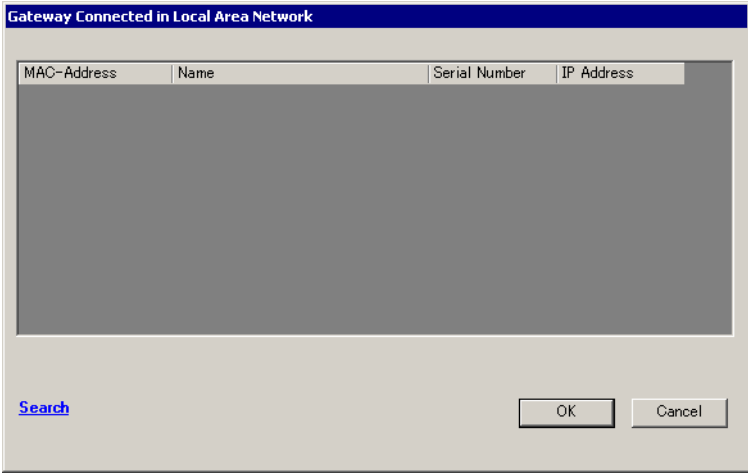)"3 Communication Settings" (page 7)

4.1   GP-Pro EX Setup Items

■ Communication Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].

Setup Items	Setup Description
Port No.	Enter a port number of the Display, using 1024 to 65535. Check into [Auto], and a port number is set automatically.
Timeout	Use an integer from 1 to 127 to enter the time (s) for which Display waits for the response from External Device.
Retry	In case of no response from the External Device, use an integer from 0 to 255 to enter how many times the Display retransmits the command.
Wait To Send	Use an integer from 0 to 255 to enter standby time (ms) for the Display from receiving packets to transmitting next commands.

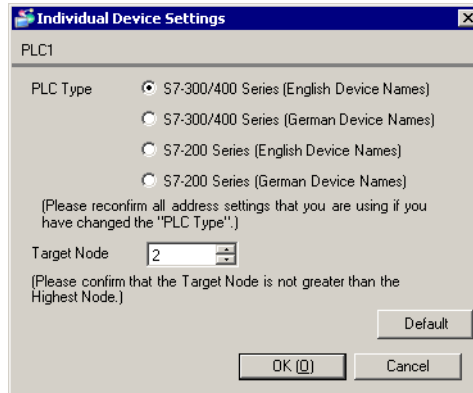| Setup Items	Setup Description
IP Address	Input the IP address of Gateway/Module. Search the adapter in the network and click the [Search]. **Gateway Connected in Local Area Network** MAC-Address | Name | Serial Number | IP Address Search OK Cancel
Port No.	Display the port number of Gateway/Module.
Speed	Set the communication speed of MPI/PROFIBUS network.
Local Node	Set the node number of Display in MPI/PROFIBUS network.
Highest Node Number	Set the maximum node number of MPI/PROFIBUS network.

NOTE
• Refer to the GP-Pro EX Reference Manual for Indirect Device.
  Cf. GP-Pro EX Reference Manual "Changing the Device/PLC at Runtime (Indirect Device)"

■ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings] 🔢 .

To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.

◆ [Equipment Configuration] tab

Setup Items	Setup Description
PLC Type	For the type of External Device to communicate, select any of [S-7-300/400 Series [English Device Names]], [S-7-300/400 Series [German Device Names]], [S-7-200 Series [English Device Names]] and [S-7-200 Series [German Device Names]]. Select [English Device Name] or [German Device Name] depending on whether the device name is described in English or German.
Target Node	Use an integer from 0 to 126 to enter the node No. of the External Device. Be sure to set the node No. within the range which does not exceed the value set in [Highest Node Number] of [Communication Settings].

4.2 Setup Items in Offline Mode

NOTE

• Refer to the Maintenance/Troubleshooting manual for information on how to enter offline mode or about the operation.

Cf. Maintenance/Troubleshooting Manual "Offline Mode"

◆ Communication Settings

To display the setting screen, touch [Device/PLC Settings] from [Peripheral Equipment Settings] in off-line mode. Touch the External Device you want to set from the list that appears.

(Page 1/2)

| Comm. | Device | | | |

Ethernet Gateway MPI/PROFIBUS   [TCP]   Page 1/2

Port No.   ○ Fixed   ● Auto
                        1024 ▼ ▲
Timeout(s)   3 ▼ ▲
Retry   0 ▼ ▲
Wait To Send(ms)   0 ▼ ▲

➡

| | Exit | | Back | 2014/06/27 00:16:26 |

Setup Items	Setup Description
Port No.	Enter a port number of the Display, using 1024 to 65535. Check into [Auto], and a port number is set automatically.
Timeout	Use an integer from 1 to 127 to enter the time (s) for which Display waits for the response from External Device.
Retry	In case of no response from the External Device, use an integer from 0 to 255 to enter how many times the Display retransmits the command.
Wait To Send	Use an integer from 0 to 255 to enter standby time (ms) for the Display from receiving packets to transmitting next commands.

(Page 2/2)

Comm.	Device			

Ethernet Gateway MPI/PROFIBUS　　　　　　　　　　　　　　　[TCP]　　　　Page 2/2

```
        IP Address          192 168  0   1
        Gateway Port No.    7777
        Speed               187500        ▼
        Local Node                     1  ▼  ▲
        Highest Node        31            ▼

        (Please confirm that the Local Node
        is not greater than the Highest Node.)



                                              ←
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	Exit		Back	2014/06/27 00:16:29

Setup Items	Setup Description
IP Address	Input the IP address of Gateway/Module.
Port No.	Display the port number of Gateway/Module.
Speed	Set the communication speed of MPI/PROFIBUS network.
Local Node	Set the node number of Display in MPI/PROFIBUS network.
Highest Node Number	Set the maximum node number of MPI/PROFIBUS network.

◆ Device Setting

To display the setting screen, touch [Device/PLC Settings] from [Peripheral Equipment Settings]. Touch the
External Device you want to set from the displayed list, and touch [Device].

Comm.	Device			

Ethernet Gateway MPI/PROFIBUS   [TCP]   Page 1/1

Device/PLC Name   PLC1   ▼

Series   S7-300/400 English Device Names
Target Node   2   ▼ ▲

(Please confirm that the Target Node
is not greater than the Highest Node.)

| | Exit | | Back | 2014/06/27 00:16:35 |

Setup Items	Setup Description
Device/PLC Name	Select the External Device to set. The device name is the title of the External Device set with GP-Pro EX.(Initial value [PLC1])
Series	Display the series name of External Device.
Target Node	Use an integer from 0 to 126 to enter the node No. of the External Device. Be sure to set the node No. within the range which does not exceed the value set in [Highest Node Number] of [Communication Settings].

5 Supported Device Addresses

The following table shows the range of supported device addresses. Please note that the actual supported range of the devices varies depending on the External Device to be used. Please check the actual range in the manual of your External Device.

5.1 S7-200 Series

☐ : This address can be specified as system data area.

Device	Bit Address		Word Address		32 bits	Remarks
	English	German	English	German		
Variables	-		VW00000 - VW05118			÷ 2)
Input	I00000.0 - I00015.7	E00000.0 - E00015.7	IW00000 - IW00014	EW00000 - EW00014	H / L	÷ 2) *1
Output	Q00000.0 - Q00015.7	A00000.0 - A00015.7	QW00000 - QW00014	AW00000 - AW00014		÷ 2) *2
Internal Marker	M00000.0 - M00031.7		MW00000 - MW00030			÷ 2)
Timer	-		T00000 - T00255			*3
Counter	-		C00000 - C00255	Z00000 - Z00255		*3

*1 You cannot write to IW0 to IW2 depending on the CPU type. These addresses are reserved for onboard I/O. Please refer to the manual of your External Device for checking.

*2 You can write in the QW and Q devices only when the External Device is in RUN mode. When the External Device moves to the STOP mode, the output will be reset.

*3 Write disable

> NOTE
> • Please refer to the GP-Pro EX Reference Manual for system data area.
>   Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
> • Please refer to the precautions on manual notation for icons in the table.
>   ☞ "Manual Symbols and Terminology"

5.2   S7-300/400 Series

▭▭▭ : This address can be specified as system data area.

Device	Bit Address		Word Address		32 bits	Remarks
	English	German	English	German		
Data Block	DB00001.DBX00000.0 - DB65535.DBX65533.7		DB00001.DBW00000 - DB65535.DBW65532			÷ 2 ᐟ *1
Input	I00000.0 - I00127.7	E00000.0 - E00127.7	IW00000 - IW00126	EW00000 - EW00126		÷ 2 ᐟ
Output	Q00000.0 - Q00127.7	A00000.0 - A00127.7	QW00000 - QW00126	AW00000 - AW00126	H / L	÷ 2 ᐟ
Internal Marker	M00000.0 - M00511.7		MW00000 - MW00510			÷ 2 ᐟ
Timer	-		T00000 - T00255			*2
Counter	-		C00000 - C00255	Z00000 - Z00255		*2

*1   When you write the bit address, the Display reads the word address corresponding to that of the External Device first. Change only the target bit address among the word data once read, and write the word data to the External Device.
Note that the correct data may not be written if you change the word address value in the ladder program while the Display reads the data of the External Device and writes it to the External Device.

*2   Write disable

NOTE

• Please refer to the GP-Pro EX Reference Manual for system data area.

   Cf.   GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
• Please refer to the precautions on manual notation for icons in the table.

   ☞ "Manual Symbols and Terminology"

6 Device Code and Address Code

Use device code and address code when you set "Device Type & Address" for the address type of the data display or other devices.

6.1 S7-200 Series

Device	Device Name		Device Code	Address Code
	English	German	(HEX)	
Variables	V	V	0001	Value of word address divided by 2
Input	I	E	0080	Value of word address divided by 2
Output	Q	A	0081	Value of word address divided by 2
Internal Marker	M	M	0082	Value of word address divided by 2
Timer	T	T	0060	Word Address
Counter	C	Z	0061	Word Address

6.2 S7-300/400 Series

Device	Device Name		Device Code	Address Code
	English	German	(HEX)	
Data Block	DB	DB	0000	(Data Block No. x 0x10000) + Value of (word address divided by 2)
Input	I	E	0080	Value of word address divided by 2
Output	Q	A	0081	Value of word address divided by 2
Internal Marker	M	M	0082	Value of word address divided by 2
Timer	T	T	0060	Word Address
Counter	C	Z	0061	Word Address

7   Error Messages

Error messages are displayed on the screen of Display as follows: "No. : Device Name: Error Message (Error Occurrence Area)". Each description is shown below.

Item	Description
No.	Error No.
Device Name	Name of External Device where error occurs. Device name is a title of External Device set with GP-Pro EX.((Initial value [PLC1])
Error Message	Displays messages related to the error which occurs.
Error Occurrence Area	Displays IP address or device address of External Device where error occurs, or error codes received from External Device. **NOTE** • IP address is displayed such as "IP address (Decimal): MAC address (Hex)". • Device address is displayed such as "Address: Device address". • Received error codes are displayed such as "Decimal [Hex]".

Display Examples of Error Messages

"RHAA035: PLC1: Error has been responded for device write command (Error Code: 2 [02H])"

NOTE
• Please refer to the manual of External Device for more detail of received error codes.
• Please refer to "Display-related errors" of "Maintenance/Troubleshooting Guide" for a common error message to the driver.