

Configuring Protocol Gateway: EKI-1242PNMS

- Apply with Siemens PLC

Calvin Lin, PAE, Advantech

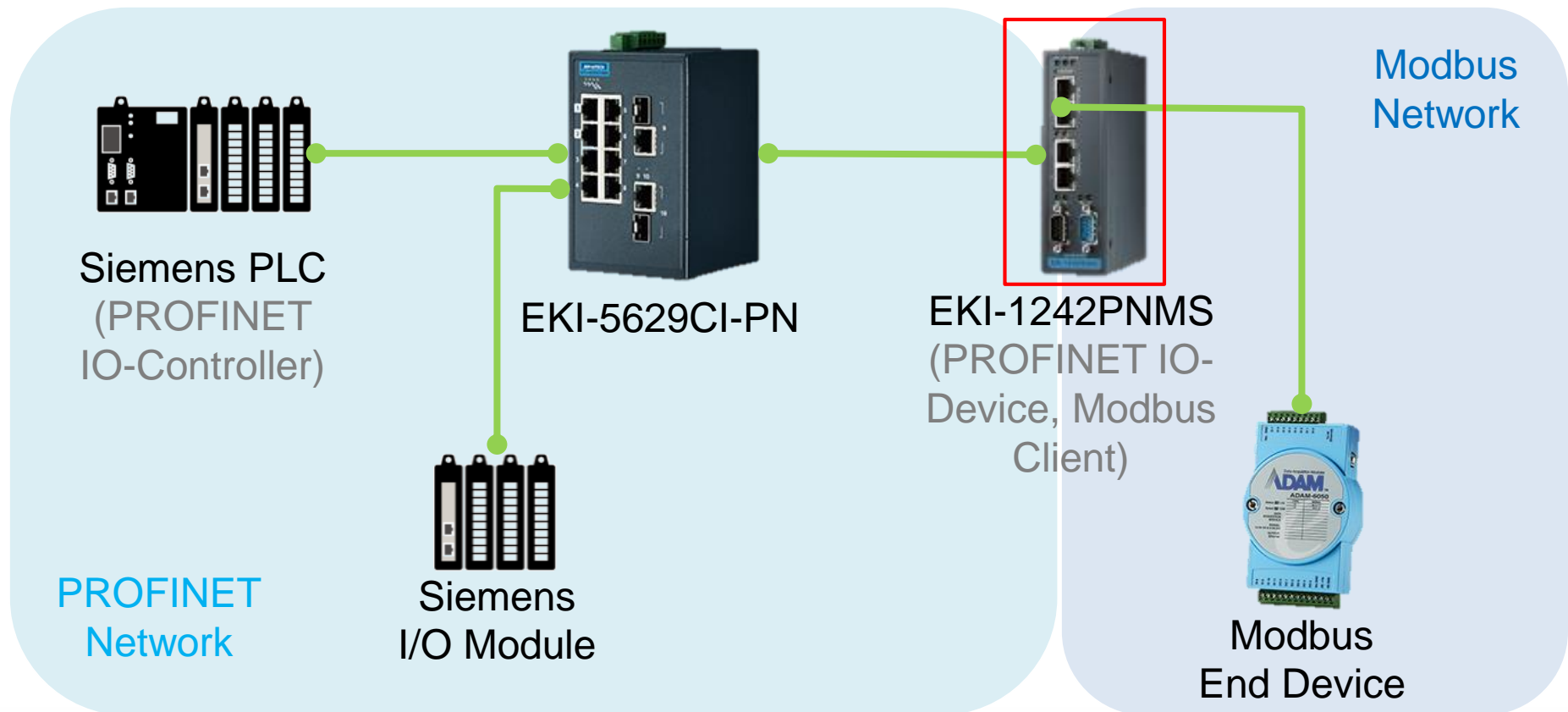


Abstract

- **Purpose :** This document explains how to configure PROFINET Protocol Gateway EKI-1242PNMS and apply with PLC.
- **Related Software:**
TIA Portal 13
- **Related products:**
EKI-1242PNMS, Siemens S-1200 PLC, Siemens I/O module and ADAM I/O module (optional)

System Overview

- EKI-1242PNMS works as a IO-Device in PROFINET network, and a Client in Modbus network regardless of TCP or RTU mode.
- Note that **reverse topology is not allowed**. EKI-1242PNMS cannot be IO-Controller in PROFINET network nor Modbus Server in Modbus network.



Topology

- In this document, the configuration of a sample system would be provide. The system consists of a Siemens PLC as PROFINET IO-Controller, a EKI-1242PNMS, and a Modbus TCP Server module. The configuration is to retrieve the reading data from Modbus Server module to PLC.



EKI-1242PNMS Setting

- Modbus/TCP, Register Reading & Writing



WebGUI Overview

ADVANTECH
EKI-1242PNMS
Fieldbus Gateway

Overview

Home / Overview / Device Information

System

Information Name	Information Value
Model	EKI-1242PNMS
Firmware Version	1.00.05
Uptime	0h 44m 4s

Modbus/TCP

Information Name	Information Value
MAC Address	74:FE:48:26:E7:F7
Mode	Static
IP Address	192.168.1.1
Subnet Mask	255.255.255.0
Gateway	192.168.1.254

PROFINET

Information Name	Information Value
MAC Address	74:FE:48:26:E7:F8
Mode	Static
IP Address	192.168.0.3
Subnet Mask	255.255.255.0
Gateway	0.0.0.0

← Firmware Version of EKI-1242PNMS

← IP of Modbus/TCP. Normally we use this for configuration.
Default value is 192.168.1.1

← IP of PROFINET; may changed according to the settings
of the controller.
Default value is 0.0.0.0

IP Setting

ADVANTECH

EKI-1242PNMS
Fieldbus Gateway

Go to [Apply](#) page to apply configuration and reboot device

Overview

Network Setting

IP Setting

Serial Setting

Protocol Setting

System Management

Tools

Home / Network Settings / IP Setting

IP Setting

Modbus/TCP IP Address Setting

Mode

Static address

IP Address

192.168.1.1

Subnet Mask

255.255.255.0

Gateway

192.168.1.254

PROFINET

Mode

Static

IP Address

0.0.0.0

Subnet Mask

0.0.0.0

Gateway

0.0.0.0

Submit

➤ Modify the IPs of Modbus TCP and PROFINET here.
Note that these 2 network need to be set on different subnets.

Serial Port Setting (If Modbus/RTU Is Used)

The screenshot displays the Advantech EKI-1242PNMS Fieldbus Gateway web interface. The left sidebar contains navigation links: Overview, Network Setting, Serial Setting (highlighted with a red box), Port 1 (highlighted with a red box), Port 2, Protocol Setting, System Management, and Tools. The main content area shows the 'Port 1' settings. The 'Type' dropdown is set to 'RS232'. A red arrow points from the 'Type' dropdown to a callout box that says 'Available interface: RS-232/422/485'. The other settings are: Baud Rate: 9600, Parity: None, Data Bits: 8, Stop Bits: 1, and Flow Control: None. A 'Submit' button is at the bottom.

Setting	Value
Type	RS232
Baud Rate	9600
Parity	None
Data Bits	8
Stop Bits	1
Flow Control	None

Submit

PROFINET Setting

ADVANTECH

EKI-1242PNMS
Fieldbus Gateway

Overview

Network Setting

Serial Setting

Protocol Setting

PROFINET Setting

Modbus Setting

Mapping Setting

Mapping Overview

System Management

Tools

Home / Protocol Setting / PROFINET Setting

PROFINET Setting

Device Status/Control Word in Slot

☒ Enabled ☐ Disabled

Exception Code in Slot

☒ Enabled ☐ Disabled

Read Only Community

public

Read / Write Community

private

Submit

➤ Status/Control information of PROFINET, and Modbus exception code. Each of them occupies 1 slot of PROFINET I/O. Note that if “Auto Mapping” is selected in Mapping Setting, these options would be changed to **Enabled** automatically.

➤ For SNMP. Normally not required to modify them.

Modbus Setting – Adding or Editing (1/2)

ADVANTECH
EKI-1242PNMS
Fieldbus Gateway

Overview
Network Setting
Serial Setting
Protocol Setting
PROFINET Setting
Modbus Setting
Mapping Setting
Mapping Overview
System Management
Tools

Home / Protocol Settings / Modbus Setting

Modbus Setting

Start-up Mode: Running
When Modbus error: Clear Data
Submit

Modbus Commands

Allocated input size: 68 bytes output size: 4 bytes

Add Edit Delete Copy

Index	Name	Mode	Slave ID	FC	Address/Quantity	Trigger	Scan Interval	Data Swap	Response Timeout	I/O Disconnect	Safe Value
1	R_DIO	TCP Slave IP Address: 192.168.1.110 Port: 502	1	3	Read Address 1, Quantity 1	Cyclic	1000	Word	1000		
2	W_DO	TCP Slave IP Address: 192.168.1.110 Port: 502	1	16	Write Address 3, Quantity 1	Cyclic	1000	Word	2000	Freeze Data	

- Click **Add** to add new read/write Modbus command.
- Select one of the existing instruction and press **Edit** to reconfigure the instruction.
- Max. 64 read/write instructions in total.

Modbus Setting – Adding or Editing (2/2)

ADVANTECHEKI-1242PNMS
Fieldbus Gateway

Overview
Network Setting
Serial Setting
Protocol Setting
PROFINET Setting
Modbus Setting
Mapping Setting
Mapping Overview
System Management
Tools

Home / Protocol Settings / Modbus Command Setting

Modbus Command Setting

1 Name

R_DIO

2 Mode

TCP

3 Slave IP Address

192.168.1.110

Port

502

Slave ID

1

4 Function Code

03 - Read holding registers

Trigger

Cyclic

5 Poll Interval

1000

6 Data Swap

Word

7 Read Starting Address

1

Read Quantity

1

8 Response Timeout

1000

Submit

Back

1. Set the name of the read/write instruction.
2. Set the mode to **TCP** or **RTU**. Here we take TCP as example.
3. Set the Server IP address of the Modbus/TCP Server. TCP port by default is 502. Set Server ID if more than 1 ID are under the same IP.
4. Set the Modbus Function Code.
5. Polling interval for EKI as Modbus Client.
6. The data collected may need to swap the upper byte and lower byte. Use if needed.
7. The read/write address is mapped to corresponding address automatically according to the Function Code, so the header like 3xxxx/4xxxx is not needed.
8. Set Response Timeout for End Devices.

Mapping Setting (1/2)

ADVANTECH

EKI-1242PNMS
Fieldbus Gateway

Overview

Network Setting

Serial Setting

Protocol Setting

PROFINET Setting

Modbus Setting

Mapping Setting

Mapping Overview

System Management

Tools

Home / Protocol Settings / Mapping Setting

Mapping Setting

Mode ☒ Auto ☐ Manual

Submit

➤ Select **Auto** to map the Modbus I/O to PROFINET register automatically, or **Manual** to set the mapping rule by user. You can also decide the corresponding address in the PLC first, and then map them here manually while mapping.

Mapping Setting (2/2)

ADVANTECH

EKI-1242PNMS
Fieldbus Gateway

Go to [Apply](#) page to apply configuration and reboot device

Overview

Network Setting

Serial Setting

Protocol Setting

PROFINET Setting

Modbus Setting

Mapping Setting

Mapping Overview

System Management

Tools

Home / Protocol Settings / Mapping Setting

Mapping Setting

Mode ☐ Auto ☒ Manual

Submit

Mapping List

Transaction Name

W_DO

Modbus Data Bit

None

PROFINET Slot

4

Slot Bit

None

Mapping

Unmap

Index	Name	Transaction Mapping (Slot)	Transaction Bit Mapping (Slot.Bit)							
			Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
<input type="radio"/> 1	R_DIO	3	—	—	—	—	—	—	—	—
<input type="radio"/> 2	W_DO		—	—	—	—	—	—	—	—

- If Manual is selected, configure the mapping rules in Mapping List.
- Choose the name set previously in Modbus Setting, and map them to PROFINET slot. Bits should be mapped only when the function code communicates by Coil.
- PROFINET Slot already been assigned will not show up in the drop down list.

Mapping Overview

ADVANTECH

EKI-1242PNMS
Fieldbus Gateway

Go to [Apply](#) page to apply configuration and reboot device

Overview

Network Setting

Serial Setting

Protocol Setting

PROFINET Setting

Modbus Setting

Mapping Setting

Mapping Overview

System Management

Tools

Home / Protocol Settings / Mapping Overview

PROFINET I/O

Slot	Transaction Name	In Slot Range(bytes)	Input Word	Output Word
1	Device Status/Control	0 - 1	1	-
2	Exception Code	0 - 63	32	-
3	R_DIO	0 - 1	1	-
4	W_DO	0 - 1	-	1

➤ After mapping, check the mapped result in this page.
Use them in the PLC for further application.

Modbus Client

Name	FC	Data Swap	Scan Time	Response Timeout	UID	Read/Write Starting Address	Quantity	When PROFINET doesn't exchange I/O
R_DIO	3	Word	1000	1000	1	1	1	
W_DO	16	Word	1000	2000	1	3	1	Clear Data

↖ UID means the Server ID set in the Modbus Setting.

Apply Configuration

ADVANTECH

EKI-1242PNMS
Fieldbus Gateway

Go to [Apply](#) page to apply configuration and reboot device

Overview

Network Setting

Serial Setting

Protocol Setting

System Management

Change Password

Backup Manager

Upgrade Manager

Reset System

Reboot Device

Apply Configuration

Tools

Home / System Management / Apply Configuration

Apply Configuration

Apply and Reboot

➤ Press Apply and Reboot to save and enable the configuration.

Connection Confirmation – Diagnose

ADVANTECH

EKI-1242PNMS
Fieldbus Gateway

Go to [Apply](#) page to apply configuration and reboot device

Overview

Device Information

Diagnose

Data View

Network Setting

Serial Setting

Protocol Setting

System Management

Tools

Home / Overview / Diagnose

PROFINET

Information Name	Information Value
Connect Status	Connected
Connect Counter	3
Connected PLC MAC Address	E0:DC:A0:7B:29:03
Connected PLC IP Address	192.168.0.1
PLC Operation Mode	Run
Device Name	eki-1242pnms
Send Clock (ms)	8

Modbus

Transaction Name	Connect Status	Read Counter	Write Counter	Connect Error Counter	Read Error Counter	Write Error Counter
R_DIO	Disconnected	323438	0	19995	1	0
W_DO	Disconnected	0	323439	19994	0	0

➤ The Modbus connection status could be checked here.

Connection Confirmation – Data View (1/2)

ADVANTECH

EKI-1242PNMS
Fieldbus Gateway

Go to [Apply](#) page to apply configuration and reboot device

Overview

Device Information

Diagnose

Data View

Network Setting

Serial Setting

Protocol Setting

System Management

Tools

Home / Overview / Data View

⚙ Data View

Modbus

Transaction Name	FC	Quantity
R_DIO	3	1
W_DO	16	1

➤ The data collected with Modbus could be checked here.

➤ Select the name to see the corresponding information in the table below.

➤ The values are shown in bytes. Users could also check the values here to determine if the Data Swap should be set.

Modbus Data

Address	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000h	00	00														
0010h																
0020h																
0030h																

Connection Confirmation – Data View (2/2)

Data View

Modbus

Transaction Name	FC	Quantity
R_DIO	3	1
W_DO	16	1
W_Multi	16	2

Data Swap – None

Modbus Data

Address	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000h	34	12	78	56												

Address: 0001
Length: 100

40001: <0000H>
40002: <0010H>
40003: <FFFFH>
40004: <0000H>
40005: <3412H>
40006: <7856H>
40007: <0000H>
40008: <0000H>
40009: <0000H>
40010: <0000H>
40011: <0000H>
40012: <0000H>
40013: <0000H>
40014: <0000H>
40015: <0000H>
40016: <0000H>
40017: <0000H>
40018: <0000H>
40019: <0000H>
40020: <0000H>
40021: <0000H>
40022: <0000H>
40023: <0000H>
40024: <0000H>
40025: <0000H>
40026: <0000H>

Data View

Modbus

Transaction Name	FC	Quantity
R_DIO	3	1
W_DO	16	1
W_Multi	16	2

Data Swap – Word

Modbus Data

Address	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000h	34	12	78	56												

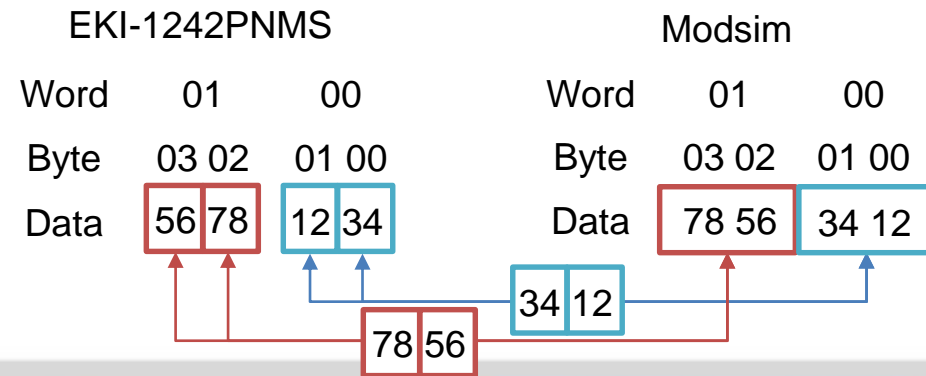
Address: 0001
Length: 100

40001: <0000H>
40002: <0010H>
40003: <FFFFH>
40004: <0000H>
40005: <1234H>
40006: <5678H>
40007: <0000H>
40008: <0000H>
40009: <0000H>
40010: <0000H>
40011: <0000H>
40012: <0000H>
40013: <0000H>
40014: <0000H>
40015: <0000H>
40016: <0000H>
40017: <0000H>
40018: <0000H>
40019: <0000H>
40020: <0000H>
40021: <0000H>
40022: <0000H>
40023: <0000H>
40024: <0000H>
40025: <0000H>
40026: <0000H>

For example, the write data from PLC is 1234H and 5678H for register 5~6 with FC16.

If the data swap (word) is not set, the Modbus data wrote to ModSim became 3412 and 7856.

This is because Modbus transmits data by byte and start from lower byte, but Modsim takes them as words. This end up cause the high and low bytes swapped. To solve this, set **Data Swap** to make the sequence correct.



PLC (TIA Portal) Setting

- Network Configuration, I/O Mapping



PLC TIA Portal Setting

Siemens TIA Portal [執行中] - Oracle VM VirtualBox

檔案 機器 檢視 輸入 裝置 說明

Siemens - C:\work\SiemensS7-1200_Calvin_IO-only\SiemensS7-1200_Calvin_IO-only

Totally Integrated Automation
PORTAL

Start

Devices & networks

PLC programming

Motion & technology

Visualization

Online & Diagnostics

Open existing project

Create new project

Migrate project

Close project

Welcome Tour

First steps

Installed software

Help

Open existing project

Project	Path	Last change
SiemensS7-1200_Calvin_IO-only	C:\work\SiemensS7-1200_Calvin_IO-only	3/5/2020 3:22:30 PM
SiemensS7-1200	C:\work\SiemensS7-1200	9/26/2019 11:48:07 AM
s1200	C:\work\s1200	9/17/2019 5:31:47 PM
Project2	C:\work\Project2	6/6/2019 12:06:31 PM
EKI-S528_PN	C:\work\EKI-S528_PN	2/8/2018 10:32:07 PM

Remove

Browse

Open

Project view

Opened project: C:\work\SiemensS7-1200_Calvin_IO-only\SiemensS7-1200_Calvin_IO-only

下午 03:33
2020/3/20

Right Ctrl

- Step1: Open TIA Portal
- Step2: Select “Start” to open an existing project, or create new project

Check the Accessible Devices

Siemens - C:\work\EKI1242PNMS_Demo\EKI1242PNMS_Demo

Totally Integrated Automation
PORTAL

Start

Devices & networks

PLC programming

Motion & technology

Visualization

Online & Diagnostics

Accessible devices

Show all devices

Online status

Flash LED

Accessible nodes of the selected interface:

Device	Device type	Type	Address	MAC address
io device_1	ET200SP	ISO	---	AC-64-17-38-45-0D
plc_1	CPU 1214C DCID...	PNIE	192.168.0.1	E0-DC-A0-7B-29-03
eki-1242pnms	EKI-1242PNMS PR...	PNIE	192.168.0.2	74-FE-48-26-E7-F8

Online status information:

Retrieving device information...

Scan and information retrieval completed.

Display only error messages

Start search

Show Cancel

Project view

Note: If it can't find the devices, it's possible that the GSD file did not installed correctly, or the network setting is wrong.

- Check if the devices are linked correctly.
- In "Online & Diagnostics", search the accessible devices.

Network Configuration

Siemens - C:\work\EKI1242PNMS_Demo\EKI1242PNMS_Demo

Project Edit View Insert Online Options Tools Window Help

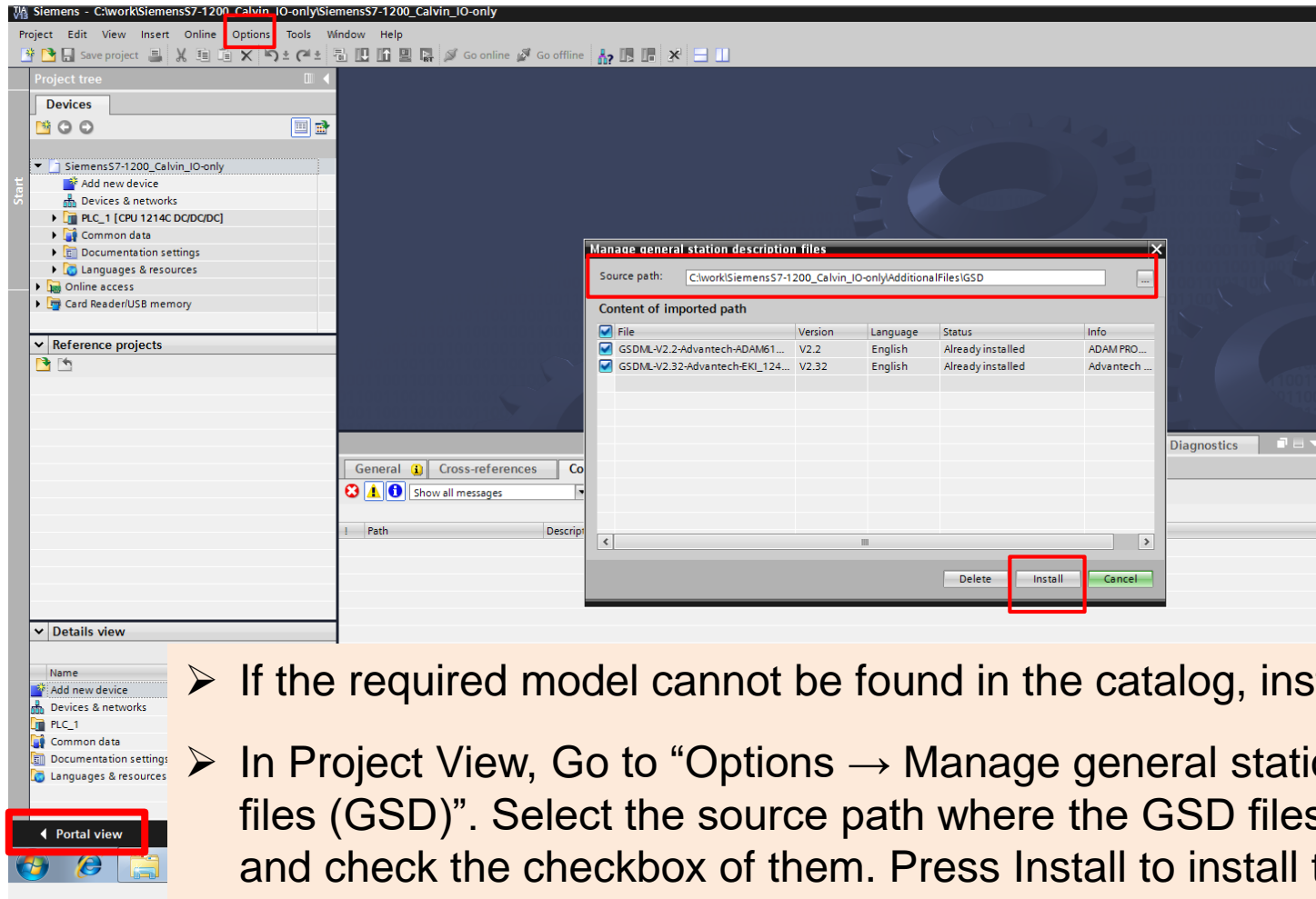
Project tree: EK1242PNMS_Demo > Devices & networks

Network view: PLC_1 CPU 1214C, eki-5629c-pn, eki-1242pnms, IO device_1, adam-6100pn

Hardware catalog: Options, Catalog, Filter, Controllers, HMI, PC systems, Drives & starters, Network components, Detecting & Monitoring, Distributed I/O, ET 200SP, Interface modules, PROFIBUS, Communications modules, ET 200MP, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200AL, ET 200eco, ET 200eco PN, ET 200L, ET 200R, Drive interfaces, Field devices, Other field devices

- Back to Project View → Go to Devices & networks page.
- Drag the needed model from the catalog to deploy them, and assign them with the PLC network.
- EKI-1242PNMS Could be found in path “Other Field Device → PROFINET IO → Gateway → Advantech Co., Ltd.”.

GSD File Installation (If Necessary)



- If the required model cannot be found in the catalog, install it manually.
- In Project View, Go to “Options → Manage general station description files (GSD)”. Select the source path where the GSD files to be installed, and check the checkbox of them. Press Install to install them.

Define the I/O Mapping

The screenshot shows the Siemens SIMATIC Manager interface for configuring an EKI-1242PNMS device. The Project tree on the left shows the device selected. The central 'Device overview' table lists the device's modules and their I/O addresses. The Hardware catalog on the right shows the available modules, with the 'Output' filter selected. A red arrow indicates the mapping of the '001 word output_1' module to the '001 word output' module in the catalog.

Module	Rack	Slot	I address	Q address	Type	Article no.
eki-1242pnms	0	0			EKI-1242PNMS PRO...	EKI-1242PNMS
PN-IO	0	0	X1		eki-1242pnms	
ControlStatus word_1	0	1	68...69	64...65	ControlStatus word	
MODBUS Exception code_1	0	2	70...133		MODBUS Exception...	
001 word input_1	0	3	134...135		001 word input	
001 word output_1	0	4		66...67	001 word output	

- Go to Devices & networks page, and double click the device to be configured. The window will switch to Device View.
- Set the input and output data the same as those already mapped in EKI-1242PNMS. Drag the matched number of word from the catalog into the corresponding slot.
- The input (I address) and output (Q address) are defined automatically when words are placed. This could be changed manually if not suitable.
- Since it only accept data format in word (16bit), please carefully arrange the reading and writing ranges for Modbus.

I/O Mapping Relationship

Slot	Transaction Name	In Slot Range(bytes)	Input Word	Output Word
1	Device Status/Control	0 - 1	1	-
2	Exception Code	0 - 63	32	-
3	R_DIO	0 - 1	1	-
4	W_DO	0 - 1	-	1

- As what we mentioned in previous slide, the I/O mapping results on the EKI-1242PNMS should be applied in the PLC.
- By default the Control/Status and the Modbus Exception Code are Enabled, and always occupy the 1st and 2nd slot when Enabled. Thus, you can see the Slot 1 & 2 are them.
- Mapping result on EKI-1242PNMS has a “1 word input” in slot 3, and a “1 word output” in slot 4. Drag the input/output item with the same length to the Slot position on the PLC.

PROFINET IO-System (100): PN/IE_1 ▶ eki-1242pnms

Device overview

Module	Rack	Slot	I address	Q address	Type	Article no.
eki-1242pnms	0	0			EKI-1242PNMS PRO...	EKI-1242PNMS
PN-IO	0	0 X1			eki-1242pnms	
Control/Status word_1	0	1	68...69	64...65	Control/Status word	
MODBUS Exception code_1	0	2	70...133		MODBUS Exception..	
001 word input_1	0	3	134...135		001 word input	
001 word output_1	0	4		66...67	001 word output	

Hardware catalog

Options

Catalog

Filter

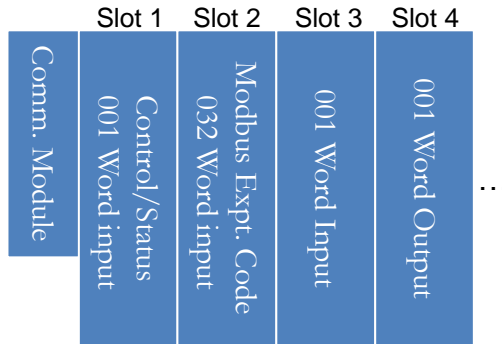
Output

- 001 word output
- 002 word output
- 003 word output
- 004 word output
- 005 word output

Drag the Input or output item with same length as the mapping result to the corresponding slot. Here use 1 word input as example.

Meaning of the I/O Mapping

Profinet IO on PLC
The format is the same as a regular Profinet I/O station.
Each Slot is an extra module attached to the main communication module.



PROFINET IO-System (100): PN/IE_1 ▶ eki-1242pnms

Topology view Network view

Device overview

Module	Rack	Slot	I address	Q address	Type
eki-1242pnms	0	0			EKI-1242PNMS PRO...
PN-IO	0	0 X1			eki-1242pnms
Control/Status word_1	0	1	68...69	64...65	Control/Status word
MODBUS Exception code_1	0	2	70...133		MODBUS Exception...
001 word input_1	0	3	134...135		001 word input
001 word output_1	0	4		66...67	001 word output



Profinet I/O Station

Profinet I/O Mapping Results on EKI-1242PNMS
Slot 1. **Device Status/Control** (If Enabled). 1 word Input.
Slot 2. **Modbus Exception Code** (If Enabled). 32 words Input.
Slot 3. **Input, 1 word.**
Slot 4. **Output, 1 word.**

- If the Status/Control and Modbus Exception Code are Disabled, the mapped result of the Modbus Commands will be moved upward.
ex. R_DIO became Slot 1, and W_DO became Slot 2.

PROFINET I/O

Slot	Transaction Name	In Slot Range(bytes)	Input Word	Output Word
1	Device Status/Control	0 - 1	1	-
2	Exception Code	0 - 63	32	-
3	R_DIO	0 - 1	1	-
4	W_DO	0 - 1	-	1

Modbus Entry

- Input, 1 word.** Read start from 1, quantity 1
- Output, 1 word.** Write start from 1, quantity 1

Index	Name	Mode	Slave ID	FC	Address/Quantity
1	R_DIO	TCP Slave IP Address: 192.168.1.110 Port: 502	1	3	Read Address 1, Quantity 1
2	W_DO	TCP Slave IP Address: 192.168.1.110 Port: 502	1	16	Write Address 3, Quantity 1



EKI-1242PNMS

Naming of the Device

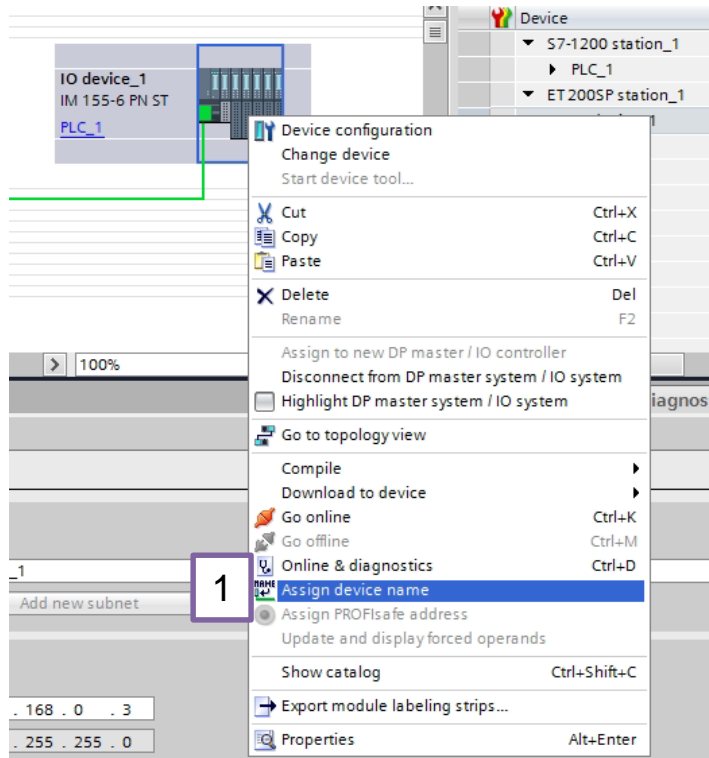
- Every device should have a unique name within the network. The PLC will look for its partner according to this name.
- To check the name: go to Device View, and double click on the device. Then, you can find the “PROFINET” part in Ethernet address option.
- By default, TIA Portal will generate a name automatically for each device.
- To manually assign a name for the device, uncheck the Auto-naming, and key-in the PROFINET device name.

The screenshot displays the Siemens TIA Portal interface for configuring an IO device. The top section shows a rack diagram with modules: Rack_0, IO device_1, DI 16x24VDC ST_1, DQ 16x24VDC/0.5A ST_1, and Server module_1. The bottom section shows the 'Properties' window for the device, with the 'PROFINET' tab selected. The 'PROFINET' section includes the following fields:

Field	Value
Router address	0 . 0 . 0 . 0
PROFINET device name	ET200SP_IM155-6
Converted name	et200spxbim155-6b881
Device number	2

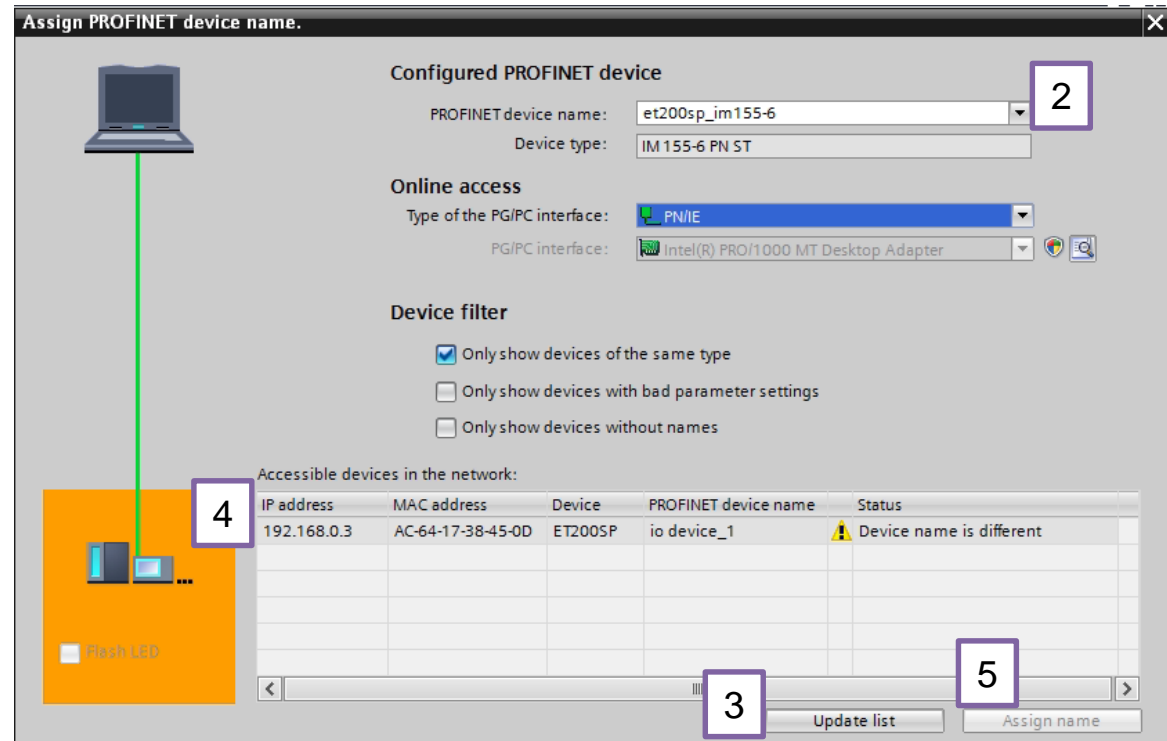
- Actual name shown in the packet if captured by Wireshark, would be the Converted Name.

Assign Name for the Device



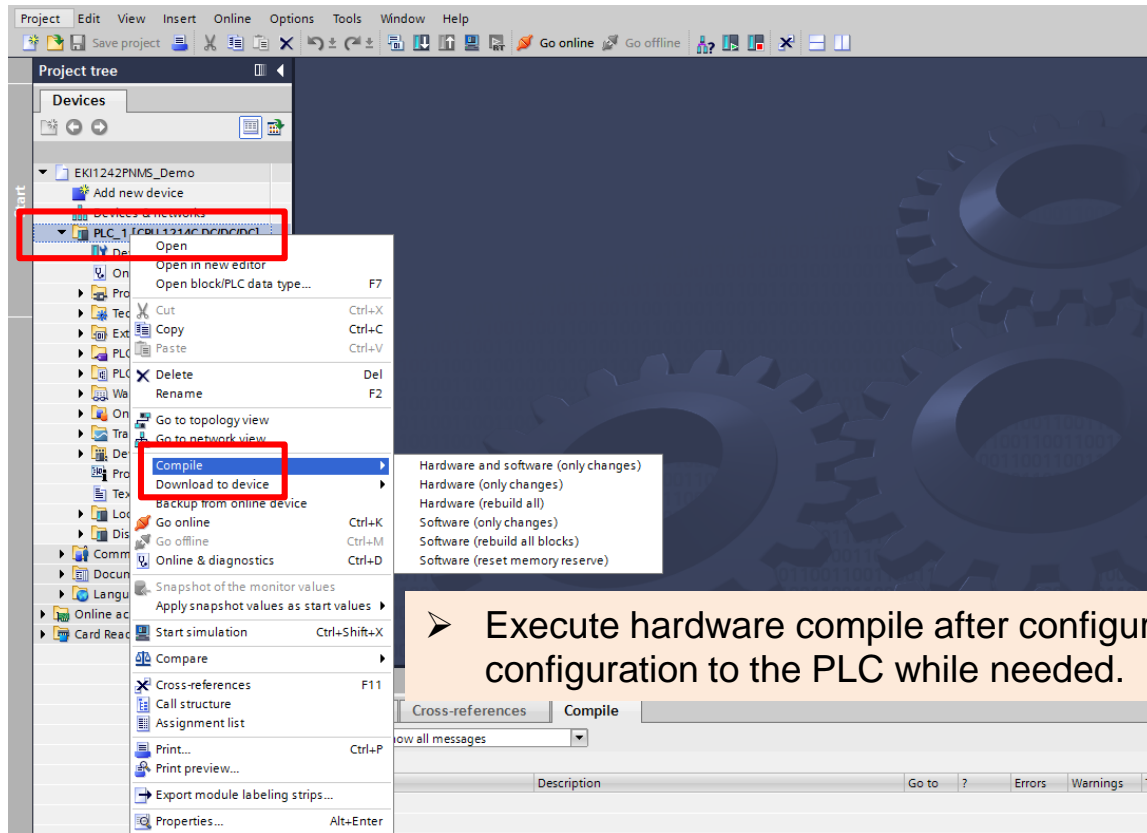
Back to Network View ◦

1. For the device to assign name, right click on its icon for Assign device name.
2. Select the name to be assigned from the drop-down list.
3. Click the Update List to search for the device with the same Device Type as selected. (Here is I/O station – only the same device type will be listed)
4. Select the target device found, and click Assign name.
5. TIA Portal will change the target device name to the selected one.



- PLC will show error, if the target device was correctly connected before but now re-assigned the name. This is because the name stored in the PLC no longer exist.

Compile After Configuration



➤ Execute hardware compile after configuration, and download the configuration to the PLC while needed.

IO Status in Watch Table

PLC programming

Devices

PLC_1 [CPU 1214C DC...]

Device configuration

Online & diagnostics

Program blocks

Technology objects

External source files

PLC tags

PLC data types

Watch and force ta...

Add new watch ...

Force table

Watch table_1

Online backups

Traces

Device proxy data

Program info

Text lists

Local modules

PLC_1 [CPU 121...

Distributed I/O

PROFINET IO-Sy...

eki-1242pn...

Device c...


Online & ...

eki-1242...

Control/S...

MODBUS

	Name	Address	Display format	Monitor value	Modify value		Comment
1		%IW134	Hex	16#8000		<input type="checkbox"/>	
2		%QW66	Hex	16#0010	16#0010	<input checked="" type="checkbox"/>	
3		<Add new>				<input type="checkbox"/>	

- The I/O status can be observed in Watch table. Make the PLC go online, or click the monitor icon  to start real-time monitoring.
- Type the corresponding Address set with the device here, and determine the Display format.
- Note that if the values shown here different from the actual one, the data format set in EKI-1242PNMS may have to be changed. For example, if the actual one should be 16#0080 but shown here 16#8000, it means the Bytes need to be swapped. Change the **Data Swap mode** on EKI-1242PNMS to make them match, as we mentioned previously.

Change the Output in Watch Table

The screenshot shows the Siemens SIMATIC Manager interface. On the left, the 'Devices' tree is expanded, and 'Watch table_1' is selected. The main window displays a table with the following columns: Name, Address, Display format, Monitor value, Modify value, and Comment. The table contains three rows. The second row is highlighted, showing the address '%QW66' with a 'Hex' display format. The 'Monitor value' column shows '16#0010', and the 'Modify value' column shows '16#0010'. A red box highlights the 'Modify value' column and the checkbox in the 'Monitor value' column. Another red box highlights the lightning bolt icon in the toolbar. The bottom right of the image contains a list of bullet points explaining how to modify the output value in the Watch table.

	Name	Address	Display format	Monitor value	Modify value		Comment
1		%IW134	Hex	16#8000		<input type="checkbox"/>	
2		%QW66	Hex	16#0010	16#0010	<input checked="" type="checkbox"/>	
3		<Add new>				<input type="checkbox"/>	

- The Output value can be also modified in Watch table, if it is not controlled by other program or device.
- Input the desired value in Modify Value column, and make sure the check box on the right is selected.
- Click on the ⚡ icon to make all selected items modified once.
- The Monitor Value should be changed to the set value right after.

Co-Creating the Future of the IoT World

