

Profinet User Manual

V1.0

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1 Installation of Portal V 15

The installation of Portal follow the guide of official documents.

2 Camera parameter configuration

After selecting the corresponding project, register the master control in the editing interface and select Communication Setup to add profinet communication

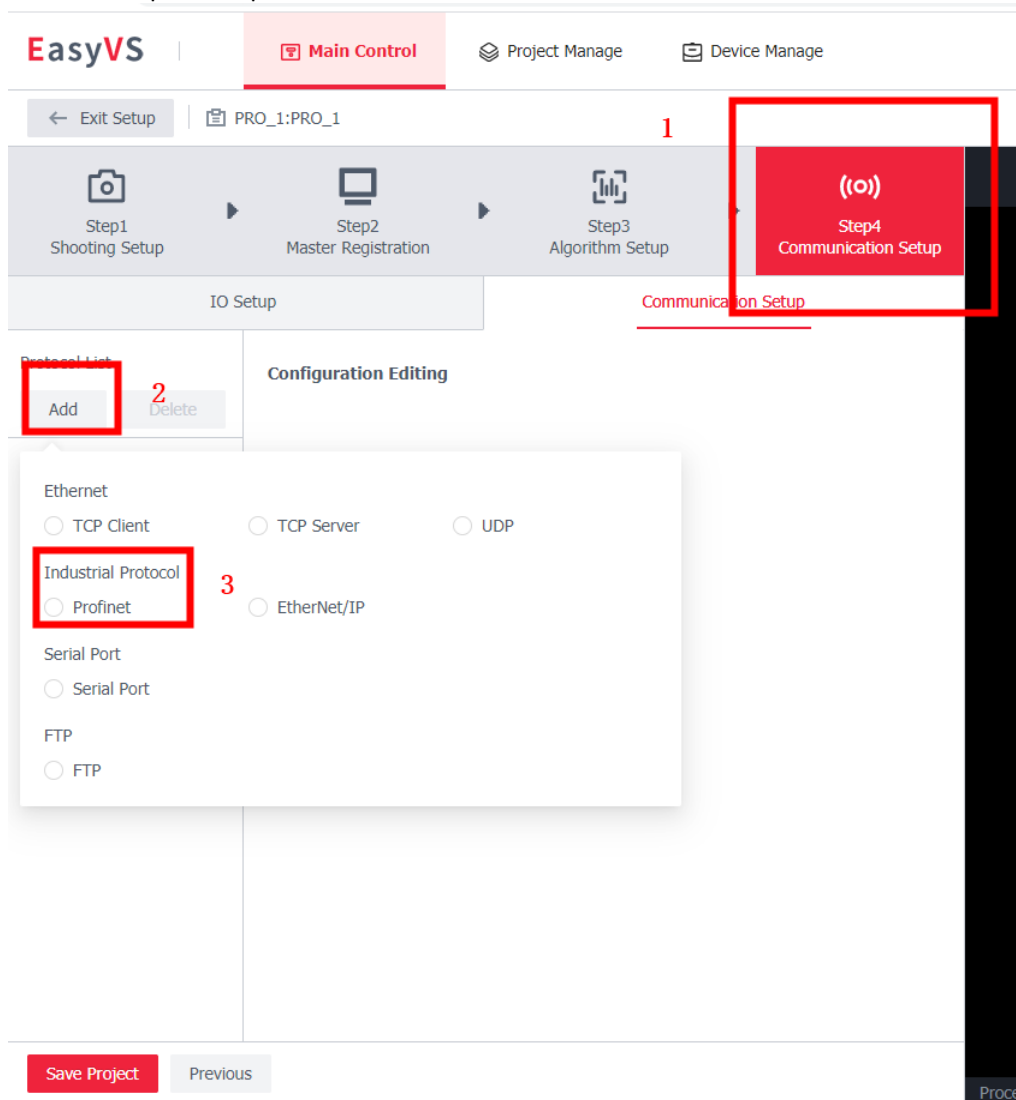


Figure 2-1 Add Profinet tool

3 Construction of communication environment

3.1 Create a new project

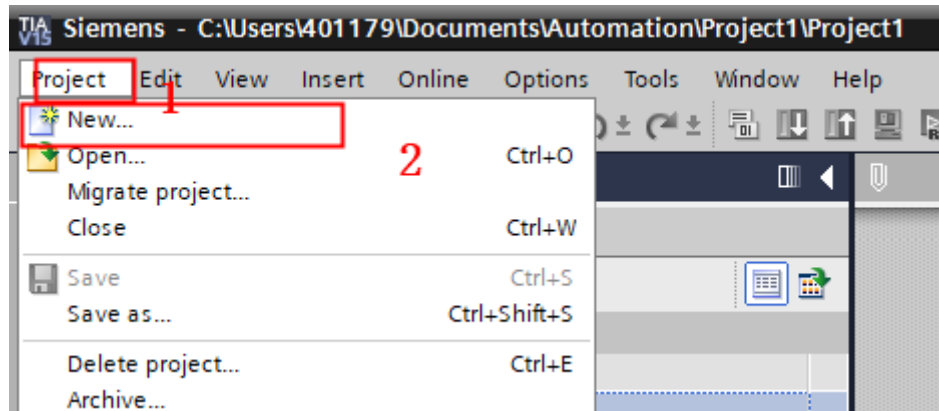


Figure 3-2 New project

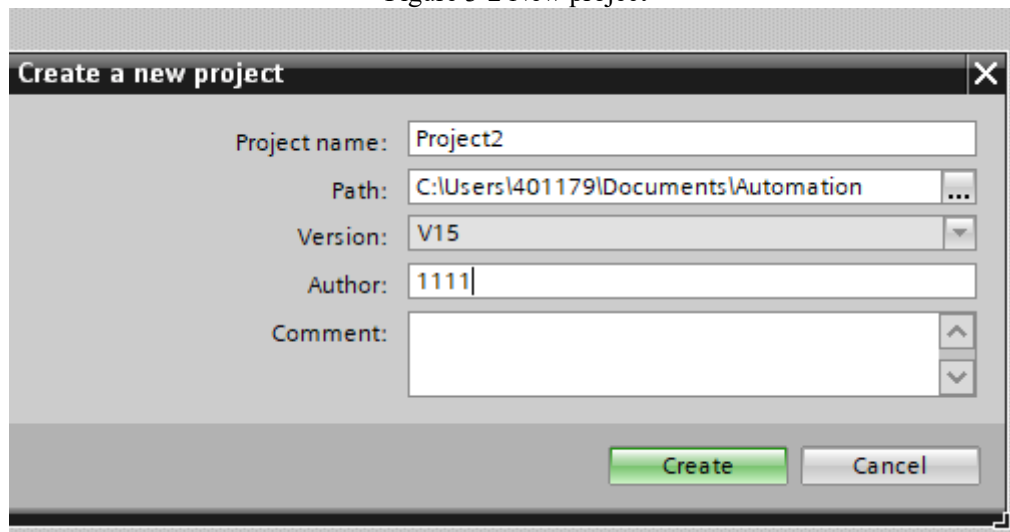


Figure 3-2 Create a new project

3.2 Open the project view

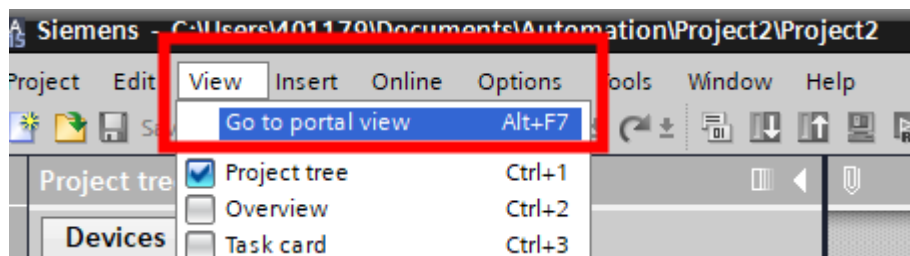


Figure 3-3 Go to portal view

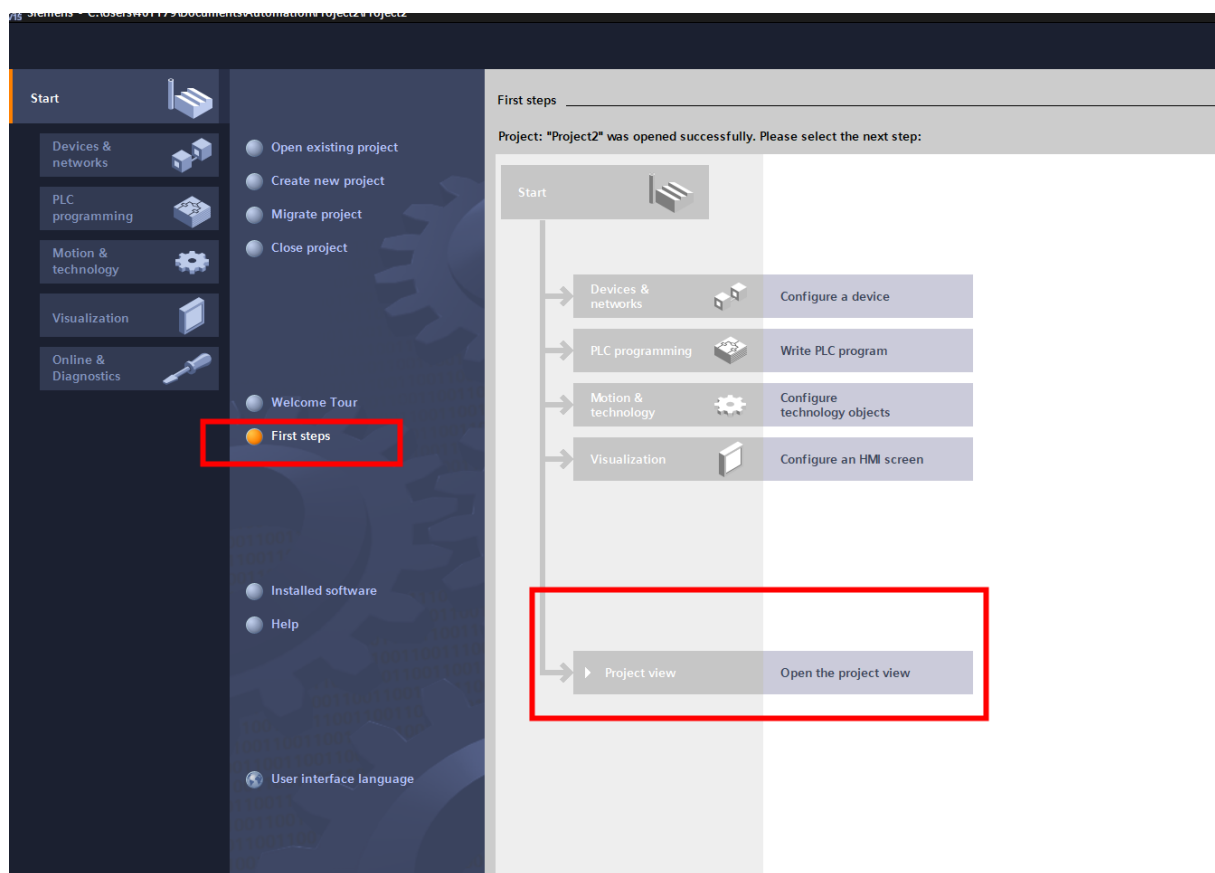


Figure 3-4 Open the project view

3.3 Import GSD file

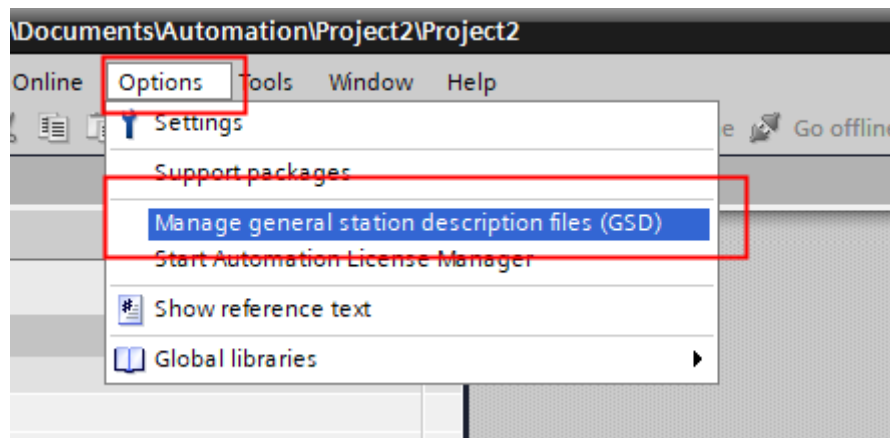


Figure 3-5 Manage general station description files(GSD)

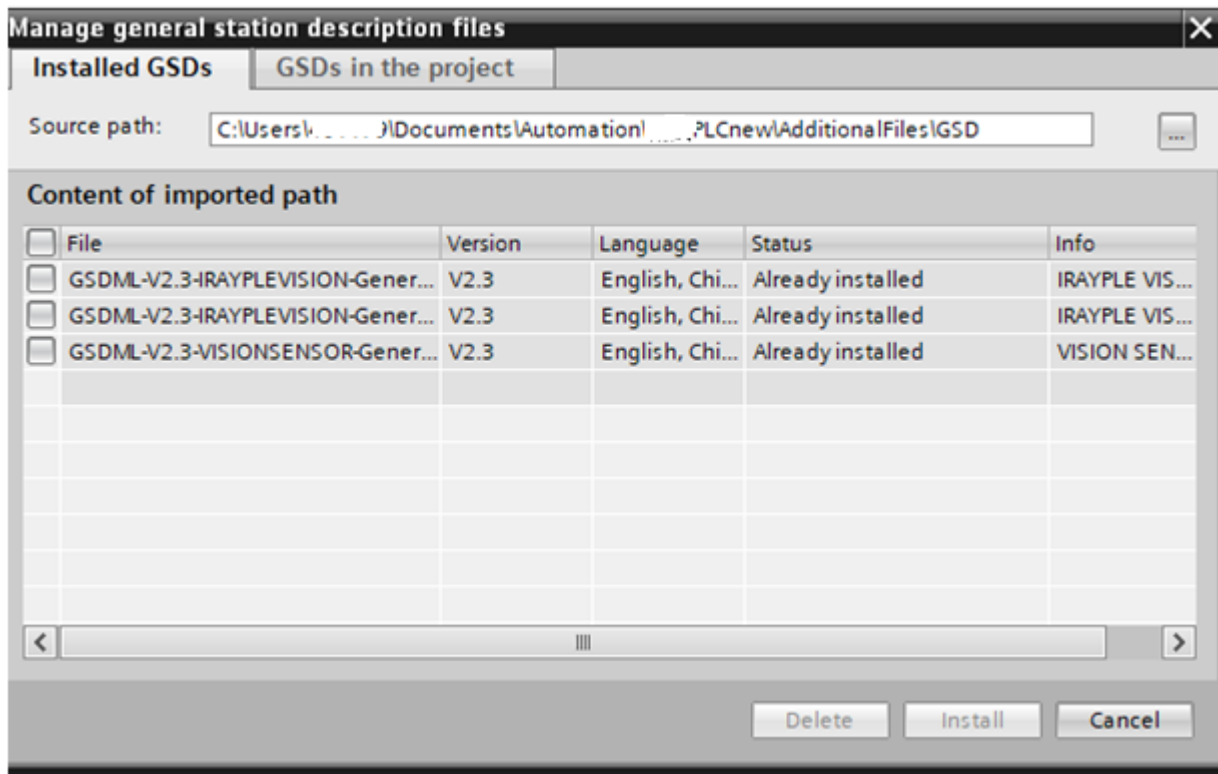


Figure 3-6 Import GSD file

3.4 Add PLC to the project

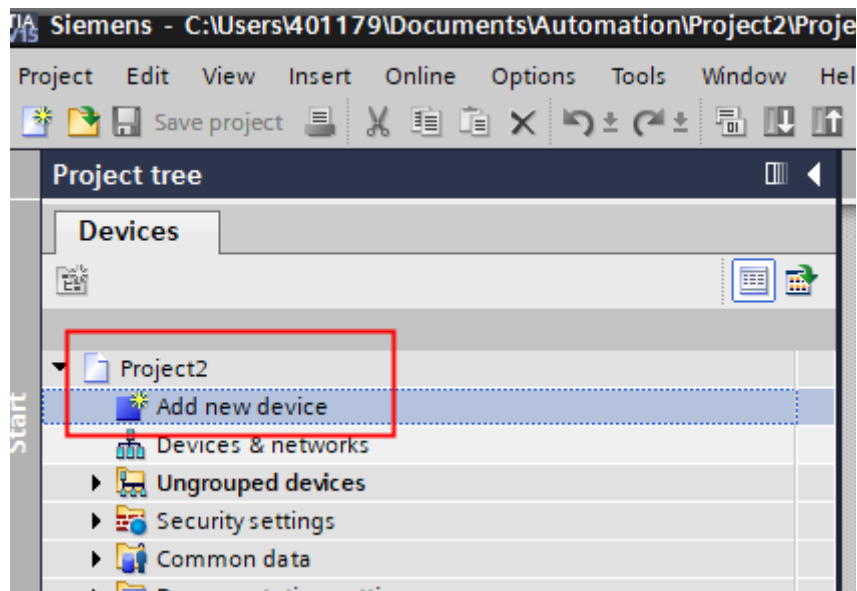


Figure 3-7 Add new device

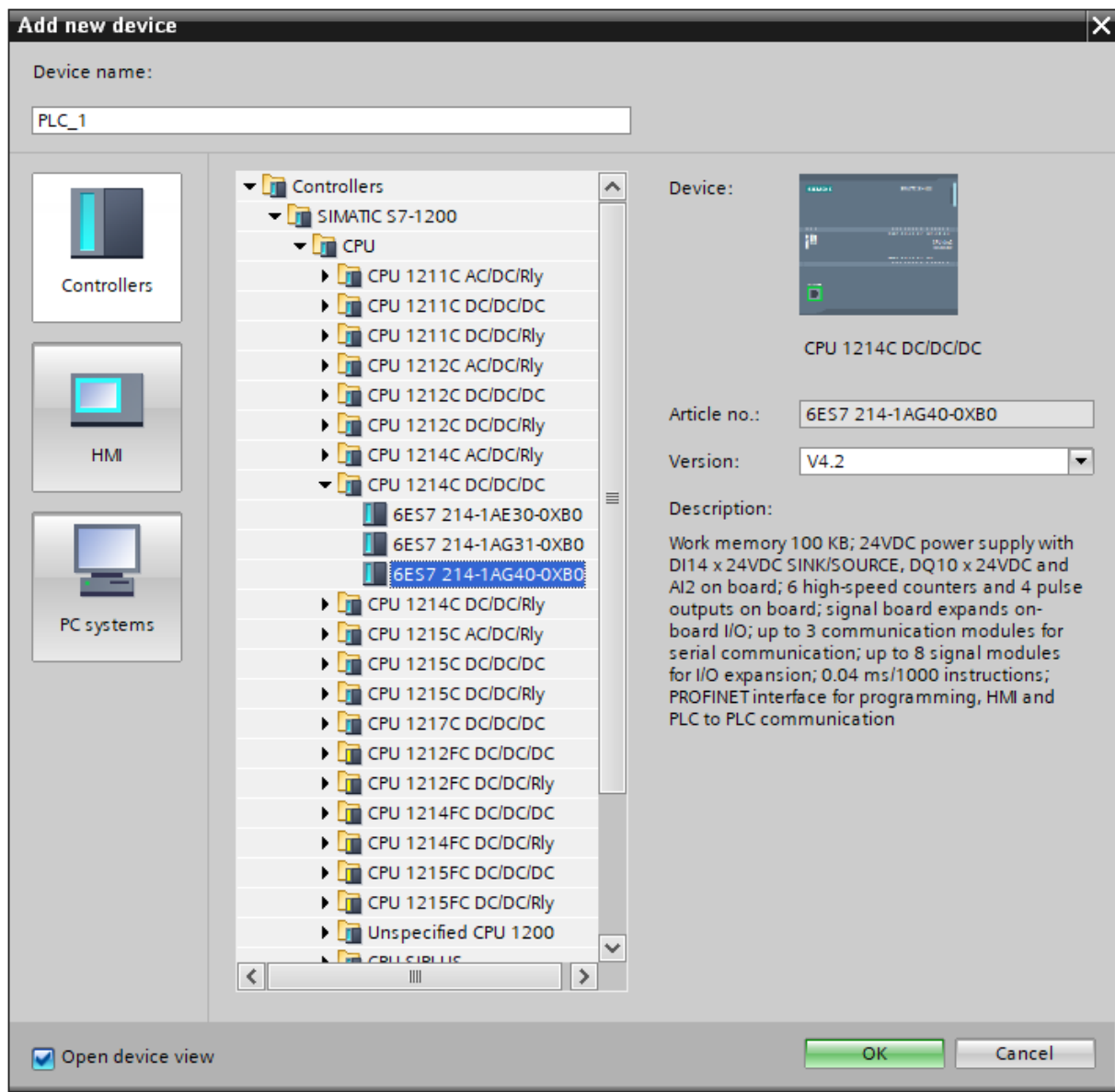


Figure 3-8 Select the corresponding PLC model

Note: correspond to the PLC actually used.

3.5 Add the camera device to the project

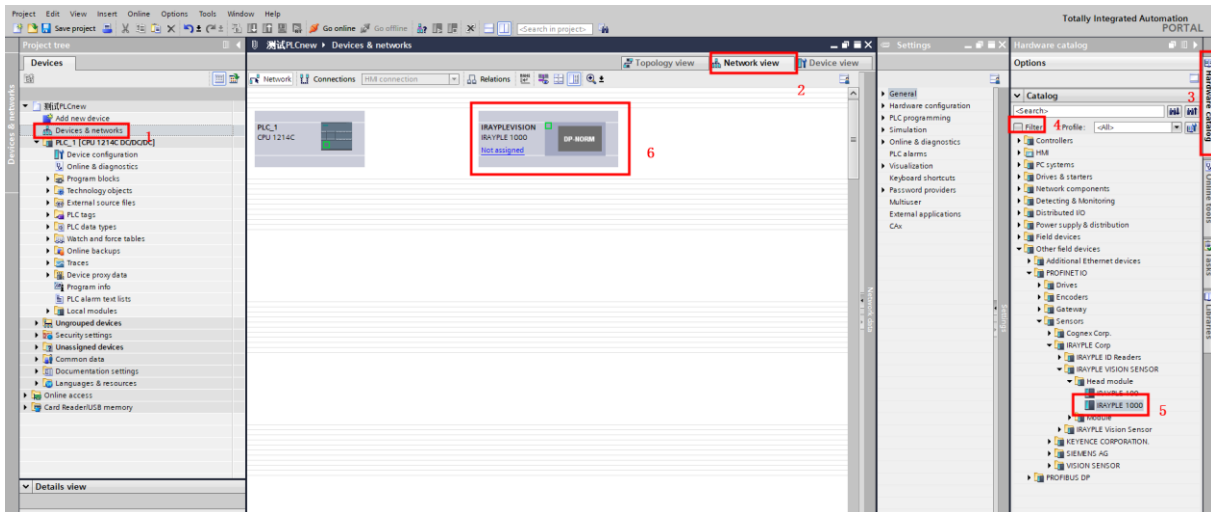


Figure 3-9 Add sensor module

① Double-click the device and network, switch the ② interface of the device and network to the network view, and cancel the filtering option at ④ in the hardware directory of ③ that pops up. Drag the front-end module into the network view in the other field device — PROFINET IO — Sensor — IRAYPLE Corp — IRAYPLEVISION SENSOR — IRAYPLE 1000 in the hardware directory, as shown in ⑥.

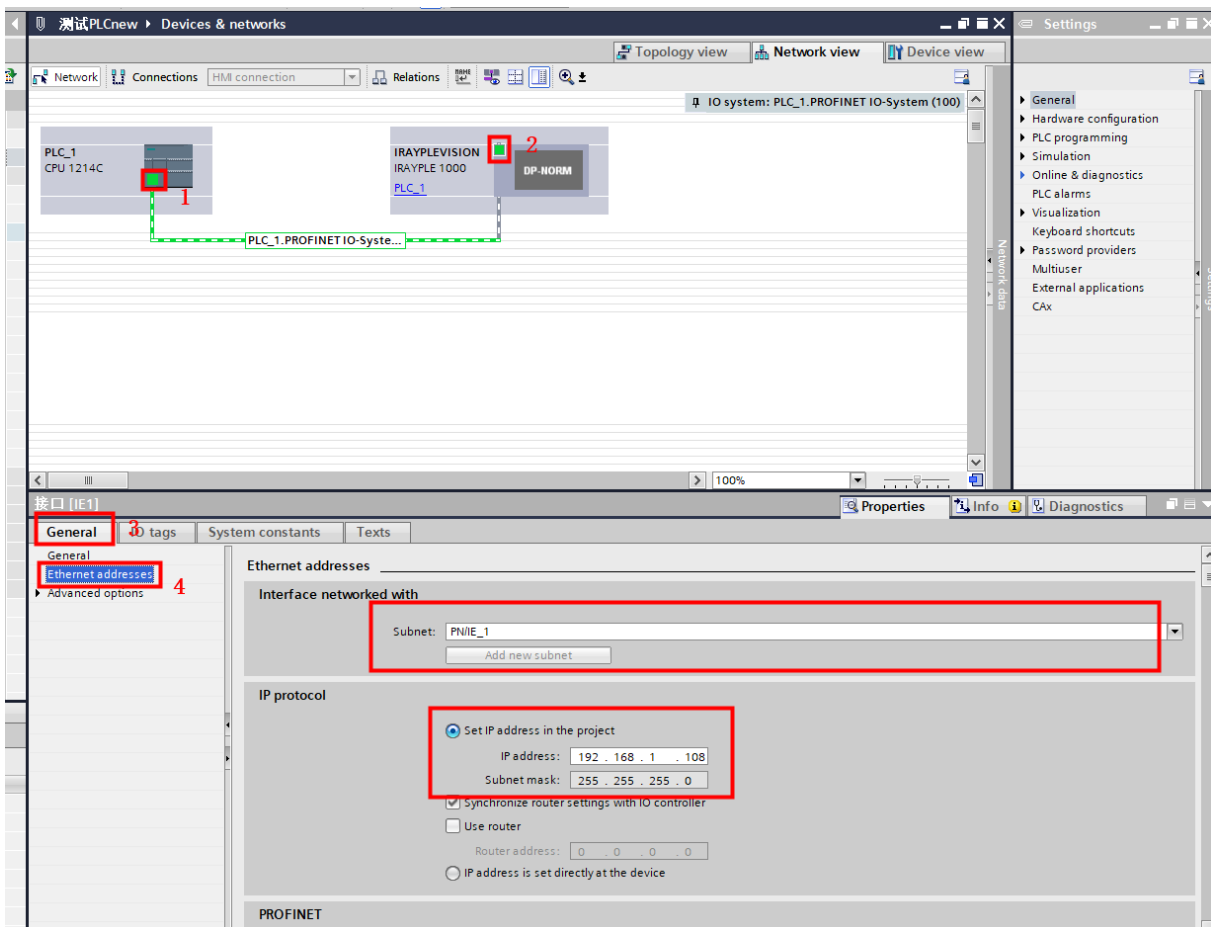


Figure 3-10 Modify the network properties of the sensor module

In the network view under device and network interface, connect ① and ② to construct the same subnet. ② Right click to select properties, and then select ③ from the interface that pops up below

interface, and then select ④ Ethernet address to modify the parameter (IP, subnet, user ID) of the visual sensor.

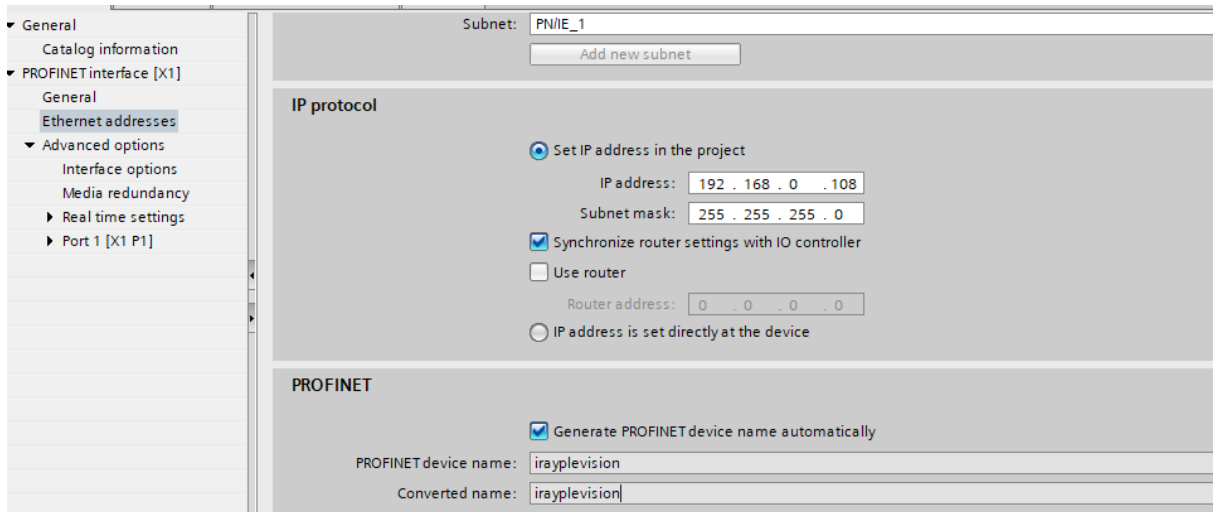


Figure 3-11 Modify the device name of the sensor module

The PROFINET device name configured on the web page or EasyVS should be consistent with the PROFINET device name in the figure above.

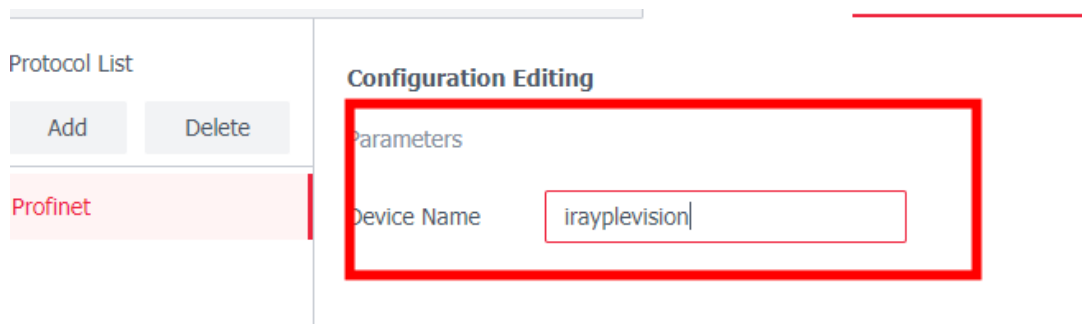


Figure 3-12 Modify the device name of the visual sensor interface for Profinet

3.6 Build device configuration and compile

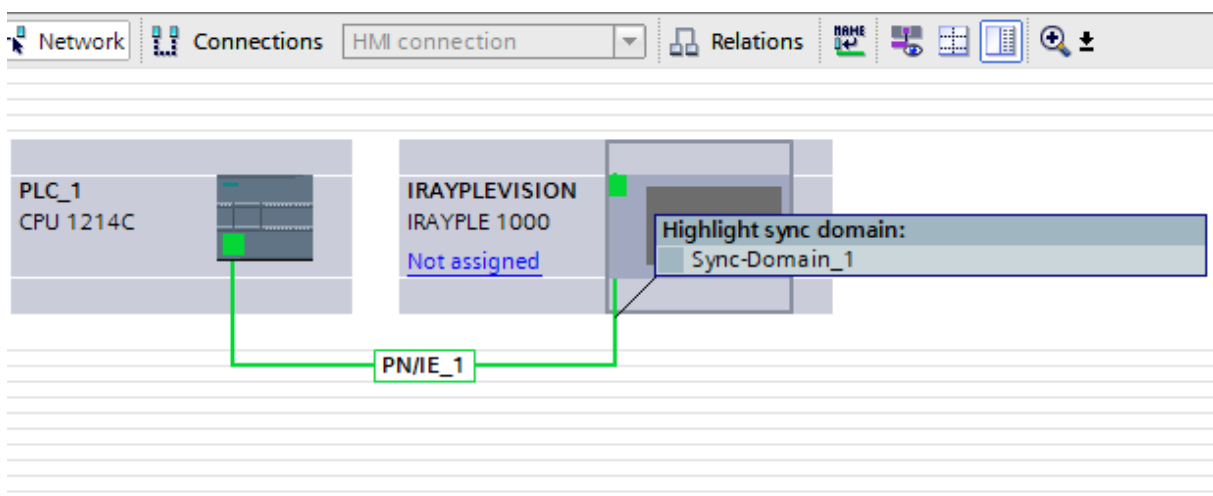


Figure 3-13 Schematic diagram of placing sensors and PLC on the same subnet
Setting up device configuration is a simple 1 to 1 relationship

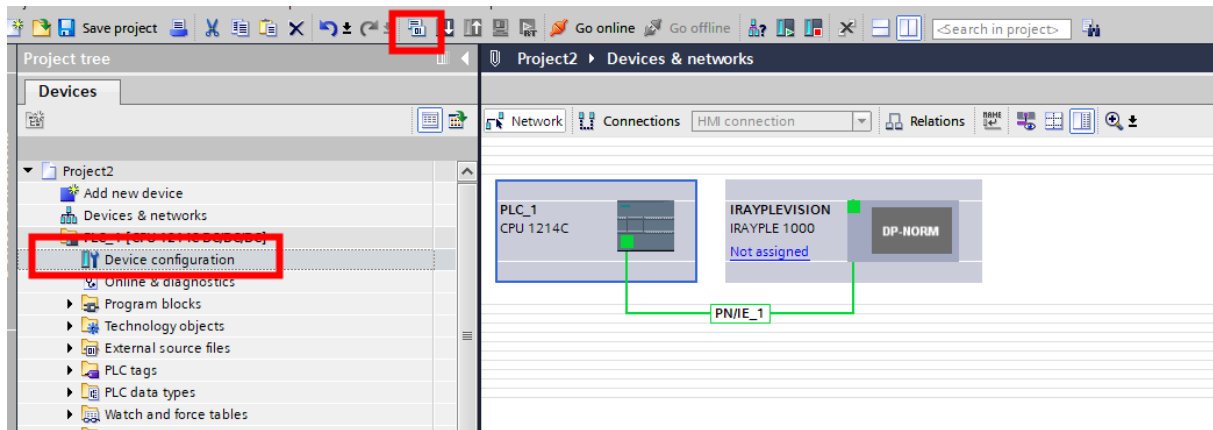


Figure 3-14 Compile device configuration

Double-click the device configuration and click the Compile button to compile the saved device configuration.

3.7 Download the device configuration to the controller and go online

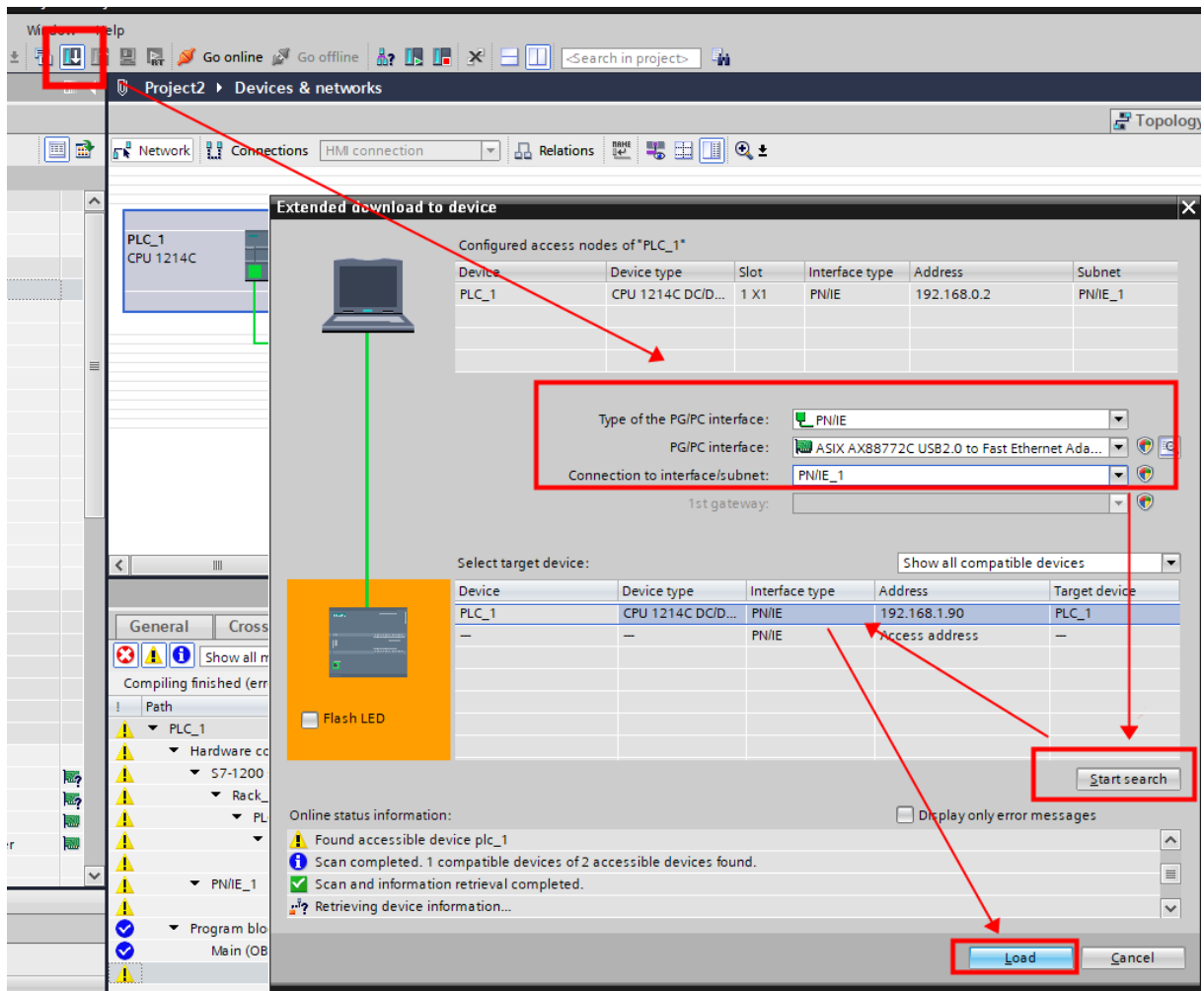


Figure 3-15 Device download process flowchart

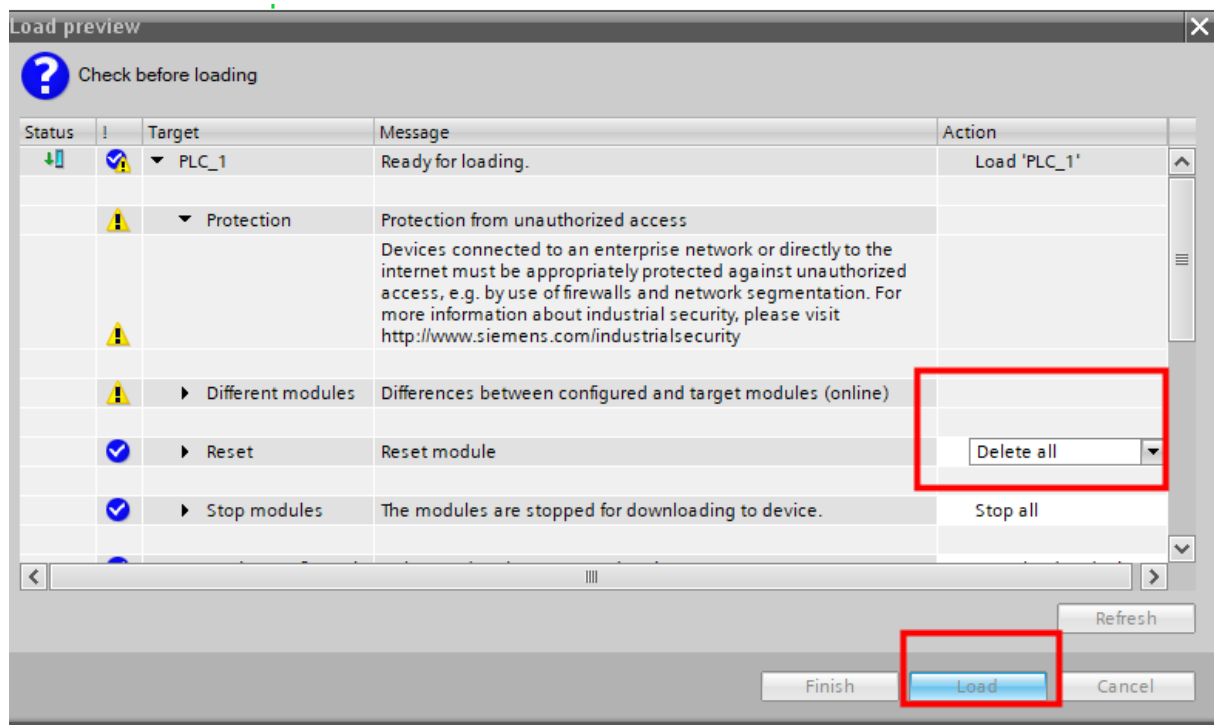


Figure 3-16 Download preview

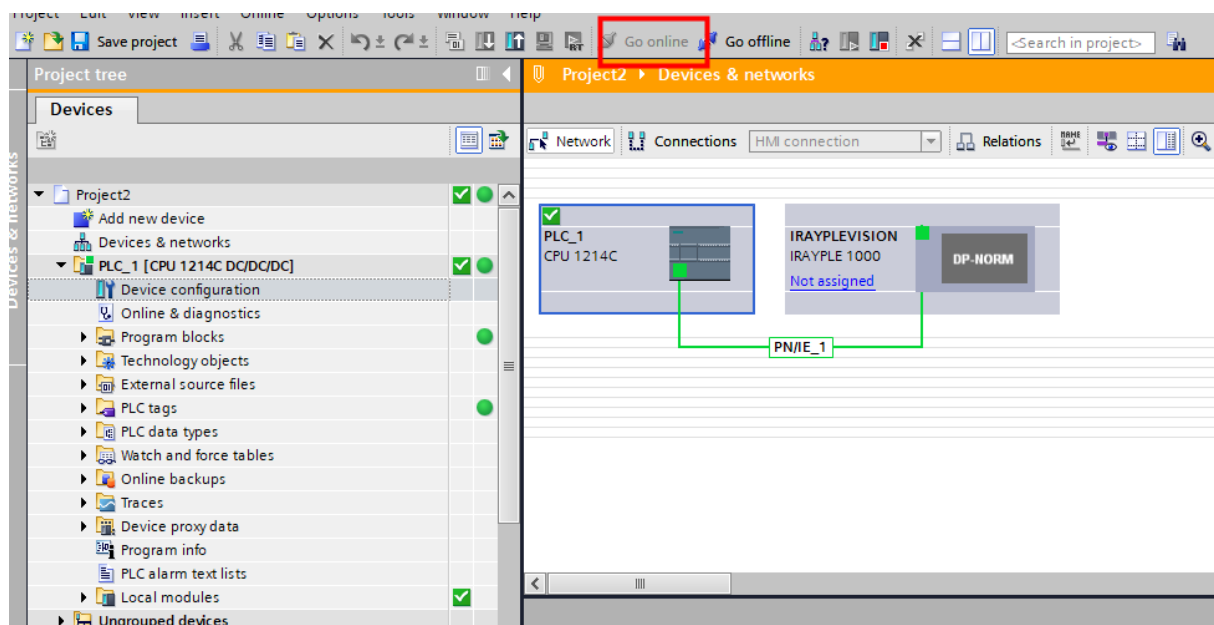


Figure 3-17 Device online

After switching to online, it means that the basic environment has been built.

3.8 Create a monitoring table

Configure the corresponding address to be monitored according to the register address assigned to the device by the PLC in the device overview

Topology view Network view Device view							
Device overview							
	...	Module	Rack	Slot	I address	Q address	Type
✓		IRAYPLEVISION	0	0			IRAYPLE 1000
✓		▶ 接口	0	0 X1			IRAYPLEVISION
✓		采集控制_1	0	1		2	Acquisition Control
			0	2			
✓		完成清除模块_1	0	3		3	CompleteClear Bits ..
			0	4			
			0	5			
✓		采集控制_2	0	6		4...11	Acquisition Control
✓		结果数据 - 150个字节_1	0	7	68...321		Result Data - 150 b...
✓		结果数据 - 64 个字节_1	0	8	322...367		Result Data - 64 byt...
			0	9			

Figure 3-18 Device view overview

(The reserved Q addresses of the acquisition control and completion clearing modules allocated in this device are not used yet, so the Q addresses are valid starting from 4.0)

The monitoring table can be used to control the triggering of the camera and obtain the results. The specific operations are described in the next section.

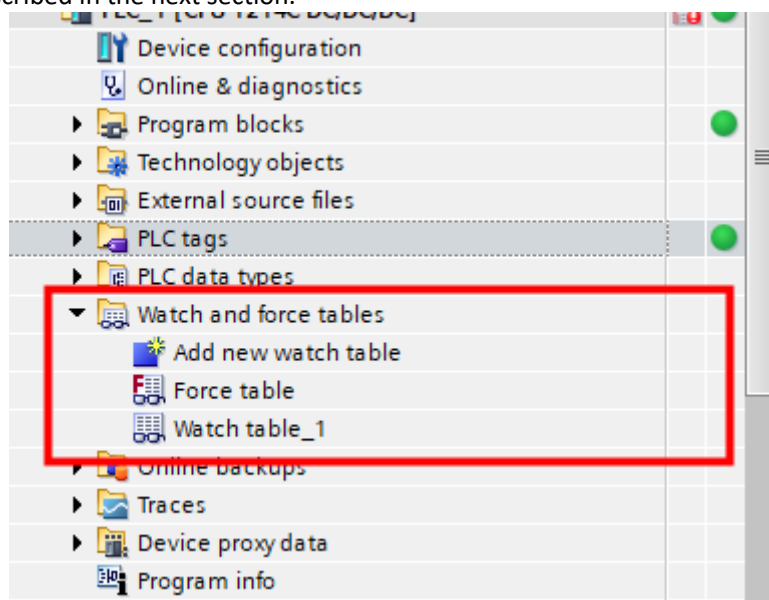


Figure 3-19 Create monitoring table

Click the picture above to add a monitoring table

4 Examples

4.1 Writing address format in monitoring table

Q: indicates the monitored Q address, i.e. the address of PLC output data

I: indicates the monitored I address, i.e. the address of PLC receive data

Prefix Abbreviation	Type of data	Data length	Example
/	Bool	1-bit	%Q4.0 indicates the first bit of the fourth byte of the Q address
B	Byte (1 byte)	8-bit	%IB76 means getting the content of the 76th byte of the I address
W	Word	16- bit	%IW76 means getting the contents of the 76th byte and two bytes after the I address
D W	DWord	32-bit	%ID76 means to get the content of the 76th byte and the next four bytes of the I address

Table 4-1 Parameter description

4.2 Example of PLC sending data to a sensor

Communication Content

Format Input String
















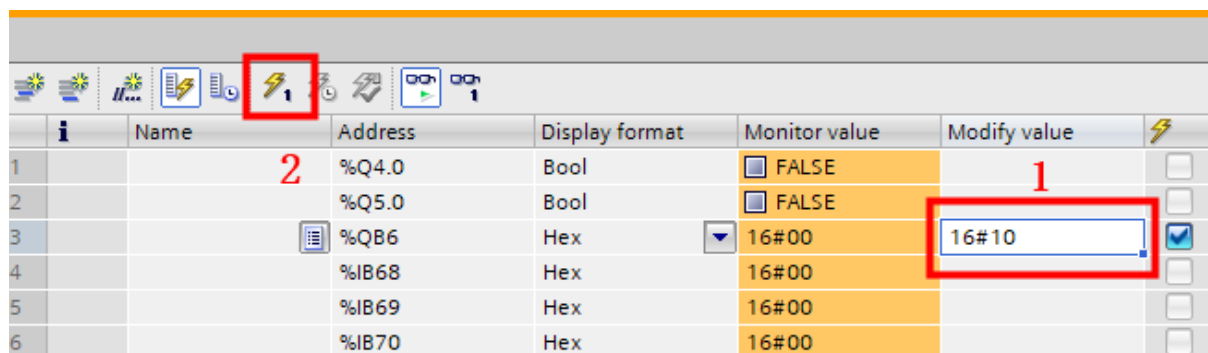
PLC Address	Name	Data Type	Value	Operation
0x0000	Trigger 	bit	0	   
0x0001	Statistics Reset 	bit	0	   
0x0002	Switch Project ID 	Byte	0	   

Figure 4-1 Examples of formatted input

PLC address at the device's formatted input string as shown in the figure (although some data types are bit. However, this device still uses a byte of space as a placeholder).

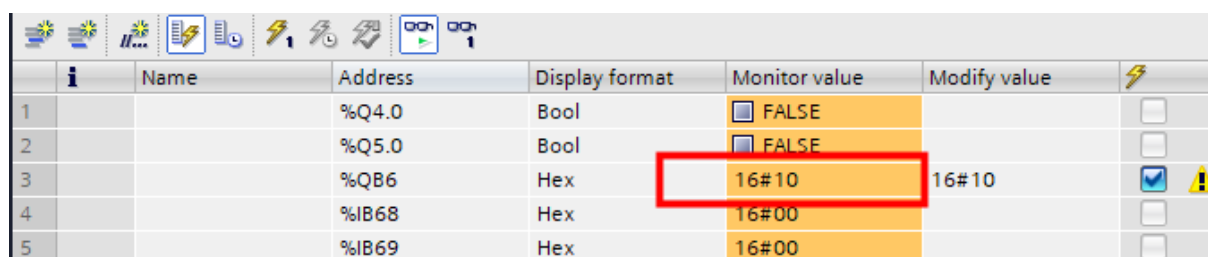
Methods for modifying values in the monitoring table:



	i	Name	Address	Display format	Monitor value	Modify value	
1			%Q4.0	Bool	<input type="checkbox"/> FALSE		
2			%Q5.0	Bool	<input type="checkbox"/> FALSE		
3			%QB6	Hex	16#00	16#10	<input checked="" type="checkbox"/>
4			%IB68	Hex	16#00		
5			%IB69	Hex	16#00		
6			%IB70	Hex	16#00		

Figure 4-2 Diagram of value modification

After pre-editing the desired value in the Modify Value column, click ② in the figure to modify all selected values immediately.



	i	Name	Address	Display format	Monitor value	Modify value	
1			%Q4.0	Bool	<input type="checkbox"/> FALSE		
2			%Q5.0	Bool	<input type="checkbox"/> FALSE		
3			%QB6	Hex	16#10	16#10	<input checked="" type="checkbox"/>
4			%IB68	Hex	16#00		
5			%IB69	Hex	16#00		

Figure 4-3 Successfully modified

Therefore, in this example, you can set %Q4.0 to true or false (if the trigger mode in the shooting configuration-trigger configuration is set to industrial Ethernet in the editing interface) to start and stop the device from pulling the stream, set %Q5.0 to true to achieve the statistical reset function (the number of ok and ng is set to 0), and modify the corresponding format value in %QB6.0 to switch to the corresponding project. In this example, the hexadecimal %QB6.0 bit is modified to 0x10 to achieve the function of switching to project 16 .

4.3 Example of sensor sending data to PLC

The data that the device needs to send can be added through interface operation. Integers and floating-point numbers occupy 4 bytes. The string type can expand or reduce the number of bytes sent through interface operation. The part with insufficient data will be filled with ASCII code "0" (that is, the interface content is hexadecimal 0x30) to reach the byte length set by the interface.

Exit Setup

PRO_1:PRO_1

Step1
Shooting Setup

Step2
Master Registration

Step3
Algorithm Setup

((O))

Step4
Communication Setup

IO Setup

Communication Setup

Protocol List

Add

Delete

Profinet

PLC Addr	Name	Data Type	Value	Size	Operation
0x0000	1-1PatternMatc... ▾	Integer	99	4	+ ↕ ↺ 🗑
0x0004	1-1PatternMatc... ▾	Float	780.496	4	+ ↕ ↺ 🗑
0x0008	2-1DataCode.Data ▾	String	8SS D51 M37 179 AVL C3B 9A2 KG0 00	26	+ ↕ ↺ 🗑

Condition Output

Unlimited ▾

Result Preview

0x0000 63 00 00 00 be 1f 43 44
 0x0008 38 53 53 44 35 31 4d 33 8 S S D 5 1 M 3
 0x0016 37 31 37 39 41 56 4c 43 7 1 7 9 A V L C
 0x0024 33 42 39 41 32 4b 47 30 3 B 9 A 2 K G 0
 0x0032 30 30 0 0

Save Project

Previous

Figure 4-4 Formatting output configuration

Here, one integer, one floating point number, and one string type are added. In the above example, the output content is 23 bytes, but the sending byte length configured in the configuration interface is 26 , so the "0" value of 3 bytes is added.

14

ION [IRAYPLE 1000]									
Topology view Network view Device									
Device overview									
	Module	Rack	Slot	I address	Q address	Type	Article no.	Firmware	
✓	IRAYPLEVISION	0	0			IRAYPLE 1000	IRAYPLE-100#-001	1.0.0	
✓	接口	0	0 X1			IRAYPLEVISION			
✓	采集控制_1	0	1		2	Acquisition Control			
		0	2						
✓	完成清除模块_1	0	3		3	CompleteClear Bits ..			
		0	4						
		0	5						
✓	采集控制_2	0	6		4...11	Acquisition Control			
✓	结果数据 - 150个字节_1	0	7	68...321		Result Data - 150 b...			
✓	结果数据 - 64 个字节_1	0	8	322...367		Result Data - 64 byt...			
		0	9						

Figure 4-5 Device overview

the address assigned by PLC in the device overview, we can see that the content sent by the device to PLC starts from %IB68, so the address of the monitoring table starts to monitor the value from %IB68 . The monitoring result is as follows:

测试PLCnew ▶ PLC_1 [CPU 1214C DC/DC/DC] ▶ 监控与强制表 ▶ 监控表_1								
	i	名称	地址	显示格式	监视值	修改值		注释
4			%IB68	十六进制	16#63		<input type="checkbox"/>	
5			%IB69	十六进制	16#00		<input type="checkbox"/>	
6			%IB70	十六进制	16#00		<input type="checkbox"/>	
7			%IB71	十六进制	16#00		<input type="checkbox"/>	
8			%IB72	十六进制	16#BE		<input type="checkbox"/>	
9			%IB73	十六进制	16#1F		<input type="checkbox"/>	
10			%IB74	十六进制	16#43		<input type="checkbox"/>	
11			%IB75	十六进制	16#44		<input type="checkbox"/>	
12			%IB76	十六进制	16#38		<input type="checkbox"/>	
13			%IB77	十六进制	16#53		<input type="checkbox"/>	
14			%IB78	十六进制	16#53		<input type="checkbox"/>	
15			%IB79	十六进制	16#44		<input type="checkbox"/>	
16			%IB80	十六进制	16#35		<input type="checkbox"/>	
17			%IB81	十六进制	16#31		<input type="checkbox"/>	
18			%IB82	十六进制	16#4D		<input type="checkbox"/>	
19			%IB83	十六进制	16#33		<input type="checkbox"/>	
20			%IB84	十六进制	16#37		<input type="checkbox"/>	
21			%IB85	十六进制	16#31		<input type="checkbox"/>	
22			%IB86	十六进制	16#37	16#01	<input checked="" type="checkbox"/>	
23			%IB87	十六进制	16#39		<input type="checkbox"/>	
24			%IB88	十六进制	16#41		<input type="checkbox"/>	
25			%IB89	十六进制	16#56		<input type="checkbox"/>	
26			%IB90	十六进制	16#4C		<input type="checkbox"/>	
27			%IB91	十六进制	16#43		<input type="checkbox"/>	
28			%IB92	十六进制	16#33		<input type="checkbox"/>	
29			%IB93	十六进制	16#42		<input type="checkbox"/>	
30			%IB94	十六进制	16#39		<input type="checkbox"/>	
31			%IB95	十六进制	16#41		<input type="checkbox"/>	
32			%IB96	十六进制	16#32		<input type="checkbox"/>	
33			%IB97	十六进制	16#48		<input type="checkbox"/>	
34			%IB98	十六进制	16#47		<input type="checkbox"/>	
35			%IB99	十六进制	16#30		<input type="checkbox"/>	
36			%IB100	十六进制	16#30		<input type="checkbox"/>	

Figure 4-6 Monitoring table monitoring real-time values of registers

According to the configured number of placeholder bytes, the first 4 bytes can be output as integer content, the following four bytes are output as floating-point type, and the rest are output as configured string type.