



GW6L-B0(L256)

PROFINET Protocol Gateway Module

User Manual



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1 Product Instruction

1.1 Product Overview

The GW6L-B0(L256) is a Slice PROFINET protocol conversion gateway module. As a slave module, the GW6L-B0(L256) can be combined with other gateway slave modules to form a gateway kit. Different combinations of gateway kits are able to bi-directionally transmit 256-byte IO data between two masters, such as EtherCAT, PROFINET, EtherNet/IP, CC-Link, PROFIBUS-DP, DeviceNet masters, etc., which has the advantages of high real-time performance, optimized system configuration, simplified on-site wiring, and improved system reliability. It realizes the communication demand of connecting different networks quickly and efficiently.

1.2 Product Characteristics

- Supports interconversion of multiple types of protocols
EtherCAT, PROFINET, EtherNet/IP, CC-Link, PROFIBUS-DP, DeviceNet in a two-by-two arrangement.
- Supports bi-directional transfer of IO data between two protocols
The data interaction length supports 256 bytes.
- small volume
Compact and small footprint.
- easy diagnosis
Innovative channel indicator design, close to the channel, channel status at a glance, easy to detect and maintain.
- easy configuration
Simple configuration and support for mainstream EtherCAT, PROFINET and EtherNet/IP masters.
- easy installation
DIN 35 mm standard rail mounting
Adopts pop-up terminals and standard RJ45 network interface, wiring is convenient and fast.

2 Designation Rules

2.1 Gateway Designation Rules

GW 6 L - B 0 (L256)
(1) (2)(3) (4)(5) (6)

Number	Meaning	Description
(1)	Gateway Abbreviations	GW: Gateway
(2)	Product Series	6: Slice
(3)	Gateway Versions	L: Limited length version U: Universal Universal version E: Extended
(4)	bus protocol	A: EtherCAT B: PROFINET C: EtherNet/IP D: CC-Link E: DeviceNet F: PROFIBUS-DP G: Modbus TCP H: CANopen I: CC-Link IE Field Basic J: MECHATROLINK
(5)	Module Type	0: Slave module 1: Master Module

(6)	comment form	L256: Data interaction length 256 bytes
-----	-----------------	---

2.2Gateway Suite Designation Rules

GW 6 L - A 0 B 0 (L256)
(1) (2)(3) (4)(5)(6)(7) (8)

Number	Meaning	Description
(1)	Gateway Abbreviations	GW: Gateway
(2)	Product Series	6: Slice
(3)	Gateway Versions	L: Limited length version U: Universal Universal version E: Extended
(4)	bus protocol	A: EtherCAT B: PROFINET C: EtherNet/IP D: CC-Link E: DeviceNet F: PROFIBUS-DP G: Modbus TCP H: CANopen I: CC-Link IE Field Basic J: MECHATROLINK
(5)	Module Type	0: Slave module 1: Master Module
(6)	bus protocol	A: EtherCAT B: PROFINET C: EtherNet/IP D: CC-Link E: DeviceNet F: PROFIBUS-DP G: Modbus TCP H: CANopen I: CC-Link IE Field Basic J: MECHATROLINK
(7)	Module Type	0: Slave module 1: Master Module

(8)	comment form	L256: Data interaction length 256 bytes
-----	--------------	---

2.3List of commonly used modules/kits

Model	Product Description
GW6L-A0(L256)	Slice Gateway EtherCAT Slave Module (fixed length 256 bytes)
GW6L-B0(L256)	Slice Gateway PROFINET Slave Module (fixed length 256 bytes)
GW6L-C0(L256)	Slice Gateway EtherNet/IP Slave Module (fixed length 256 bytes)
GW6L-D0(L256)	Slice Gateway CC-Link Slave Module (fixed length 256 bytes)
GW6-P20HM	Slice Gateway Power Modules
GW6-CVR	Slice Gateway Terminal Cover
GW6L-A0B0(L256)	Slice Gateway EtherCAT Slave to PROFINET Slave Kit (fixed length 256 bytes)
GW6L-B0B0(L256)	Slice Gateway PROFINET Slave to PROFINET Slave Kit (fixed length 256 bytes)
GW6L-B0C0(L256)	Slice Gateway PROFINET Slave to EtherNet/IP Slave Kit (fixed length 256 bytes)
GW6L-B0D0(L256)	Slice Gateway PROFINET Slave to CC-Link Slave Kit (fixed length 256 bytes)

Note: The gateway kit contains gateway power module × 1, gateway module × 2, and gateway terminal cover × 1.

3 Product Parameters

3.1 General parameter

General technical parameters		
Size	Power Module GW6-P20HM	106 x 61 x 22 mm
	Gateway Module GW6L-B0(L256)	106 x 61 x 25.7 mm
	Terminal cover GW6-CVR	106 x 61 x 7.7 mm
Weights	Power Module GW6-P20HM	110 g
	Gateway Module GW6L-B0(L256)	80 g
	Terminal cover GW6-CVR	20 g
Operating temperature	-10°C~+60°C	
Storage temperature	-20°C~+75°C	
Relative humidity	95%, non-condensing	
Protection class	IP20	
Installation	DIN 35 mm standard rail mounting	

3.2 Power supply parameters

Power supply parameters		
Power Module GW6-P20HM	Operating power	24 VDC (18V~30V)
	output voltage	5 VDC
	Output Current	2 A
Gateway Module GW6L-B0(L256)	Operating power	5 VDC

	Operating Current	400 mA
	power (output)	2 W

3.3Interface parameter

PROFINET interface parameters	
Product model	GW6L-B0(L256)
Bus protocol	PROFINET
Data transmission medium	Ethernet/PROFINET CAT5 cable
Transmission distance	≤100 m (station to station distance)
Transmission rate	100 Mbps
Bus interface	2 x RJ45
Process data volume: downlink	256 Bytes
Process data volume: Uplink	256 Bytes

4 Panel

4.1 Product structure

Name of each part of the product



4.2Application

Gateway kit (power module + gateway module 1 + gateway module 2 + terminal cover)

Take the GW6L-B0C0(L256) gateway kit as an example, the application method is shown in the following figure.



4.3Indicator light function

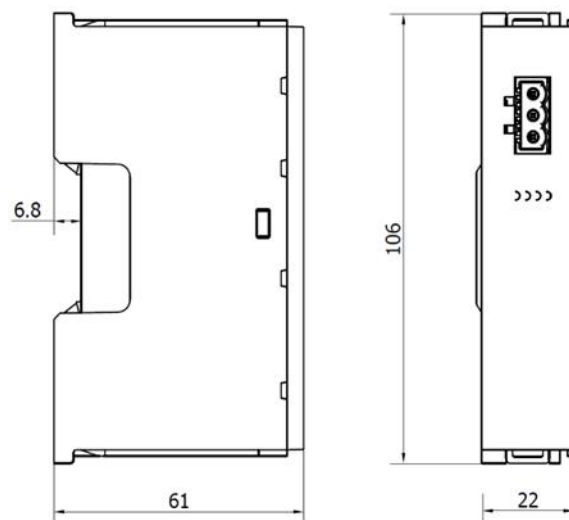
Power Module Identification and Indicator Lights				
Name	Markings	Color	State	State Description
5V power indicator	P	GREEN	ON	Working power supply is normal
			FLASHING	80% overload, cut off power to back-end loads
			OFF	The product is not powered or the power supply is abnormal
Load indicator	O	RED	OFF	Not overloaded
			ON	Load up to 90%
			FLASHING	80% overload, cut off power to back-end loads

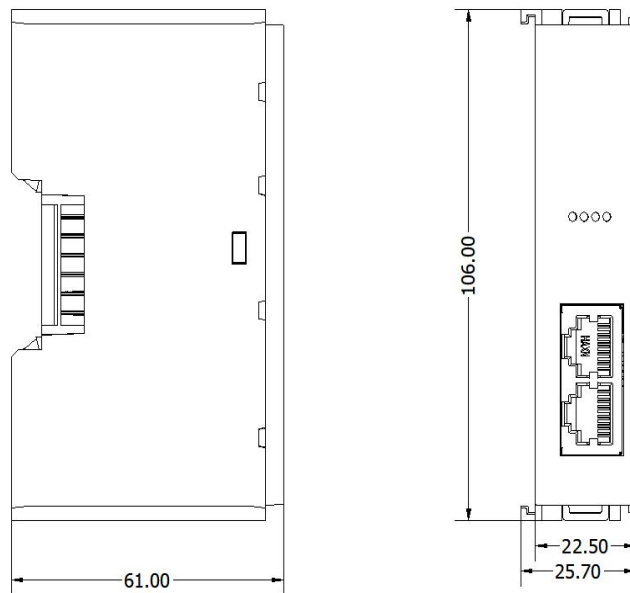
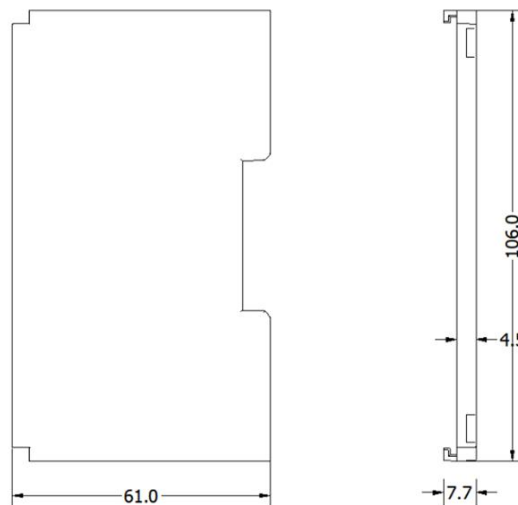
Gateway Module Logo and Indicator				
Name	Markings	Color	State	State Description
Power indicator	P	GREEN	ON	Working power supply is normal
			OFF	The product is not powered or the power supply is abnormal
System Indicator Lights	L	GREEN	ON	Data conversion interactions are normal
			OFF	Data conversion interaction exception
warning indicator	B	RED	OFF	Profinet bus parameters are set properly.
			FLASHING	Profinet bus parameters not set or abnormal
Operation status indicator	R	GREEN	ON	The system is functioning normally
			OFF	System operational anomalies
Network Port Indicator	IN	ORANGE	FLASHING	Connection established with data interaction
			OFF	No data interaction or exception
		GREEN	ON	Establish a network connection
			OFF	No network connection established or abnormal
	OUT	ORANGE	FLASHING	Connection established with data interaction
			OFF	No data interaction or exception
		GREEN	ON	Establish a network connection
			OFF	No network connection established or abnormal

5 Installation and uninstall

5.1 Overall Dimension

Power module outline specifications (unit:mm)



Gateway Module Form Factor (unit:mm)**End cap outline specifications (unit:mm)**

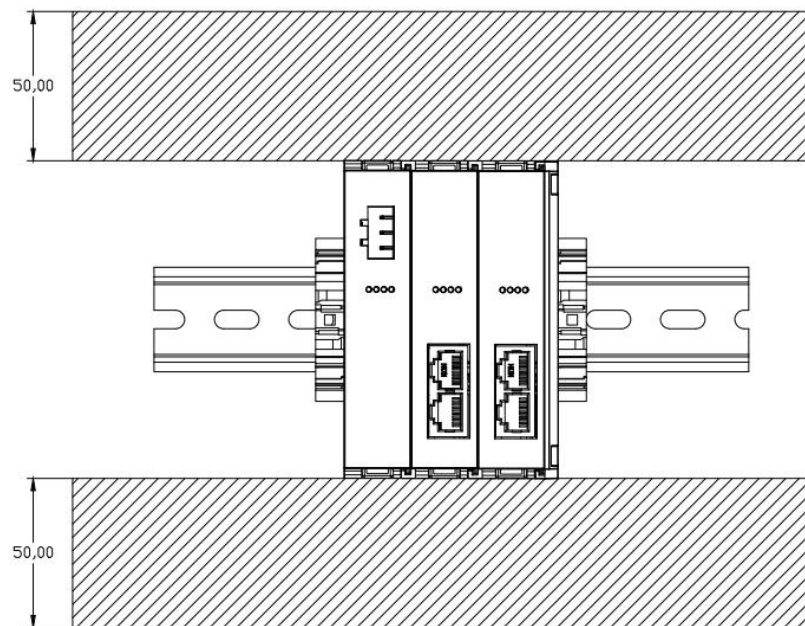
Note: All are installed with DIN 35 mm standard rail, DIN rail specification 35*7.5*1.0, 35*15*1.0 (unit mm).

5.2 Installation Guide

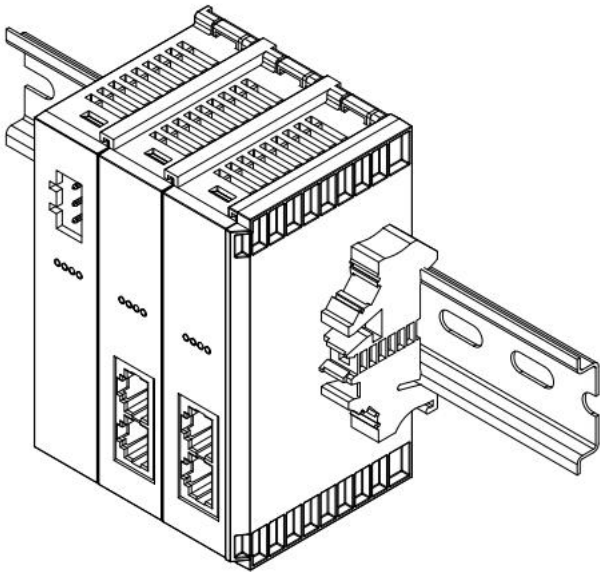
Precautions for installation\uninstall

- Ensure that the cabinet is well ventilated (e.g., the cabinet is fitted with an exhaust fan).
- Do not install this equipment next to or above equipment that may cause overheating.
- Be sure to install the module vertically and maintain air circulation around it (at least 50mm air circulation space above and below the module).
- Once the module is installed, be sure to secure the module by installing rail mounts on both ends.
- Be sure to disconnect the power supply when installing/uninstalling.

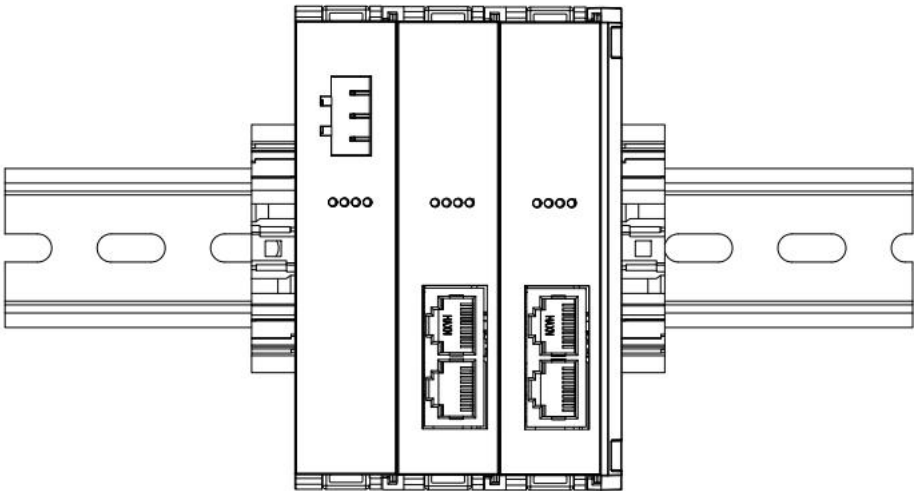
Minimum clearance for module installation ($\geq 50\text{mm}$)



Ensure that the module is installed vertically



Be sure to install the rail mounts



5.3 Installation and uninstall steps

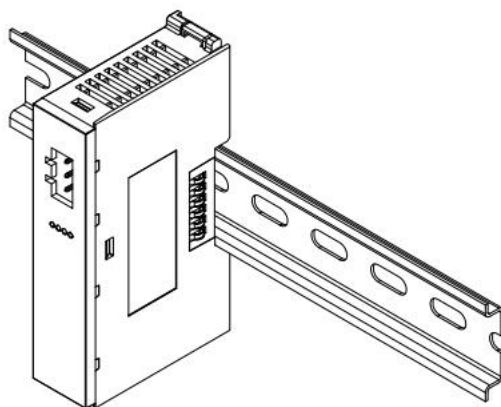
Module Installation and uninstall	
Module Installation Steps	1. Install the power supply module first on the rail that has been fixed.
	2. Install the gateway module to the right of the power module in order.
	3. After installing all gateway modules, install the end caps to complete the installation of the modules.
	4. Install the rail fixings on both ends of the power module and end cap to fix the module.
Module uninstall procedure	1. Loosen the guide rail fixings at both ends of the module.
	2. Use a one screwdriver to pry off the module snap.

3. Pull out the uninstalled module.

5.4 Installation Diagram

Power Module Installation

Step

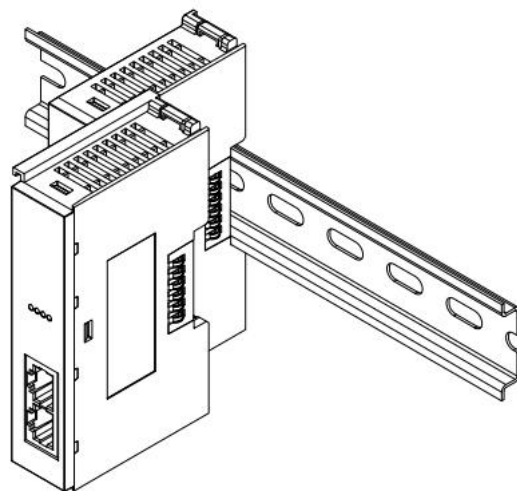


①

Align the power module guide rail slot vertically with the guide rail, press the power module, and hear the "click" sound, the module is installed in place, as shown in the left figure ①.

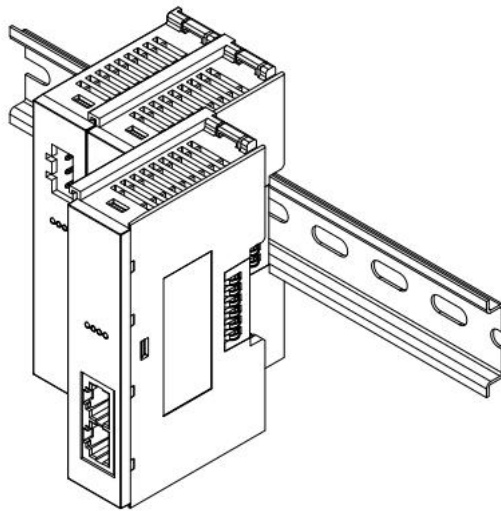
Gateway Module Installation

Step



②

Align the slot of the gateway module rail with the right side of the power supply module and push it in as shown in Figure 2 on the left. Press the gateway module firmly, and when you hear a "click" sound, the module will be installed in place.

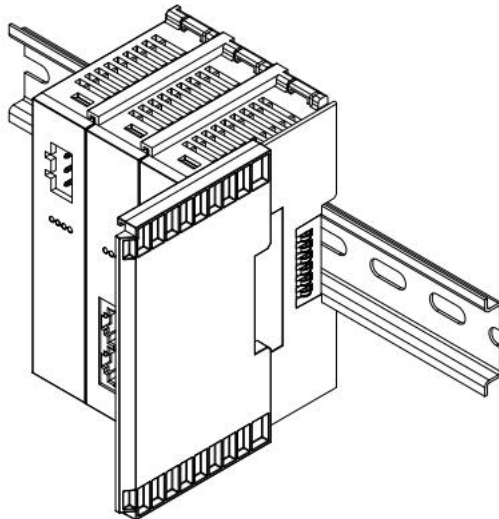


③

Follow the steps in the previous step of installing the gateway module to install the second gateway module, as shown in Figure ③ on the left.

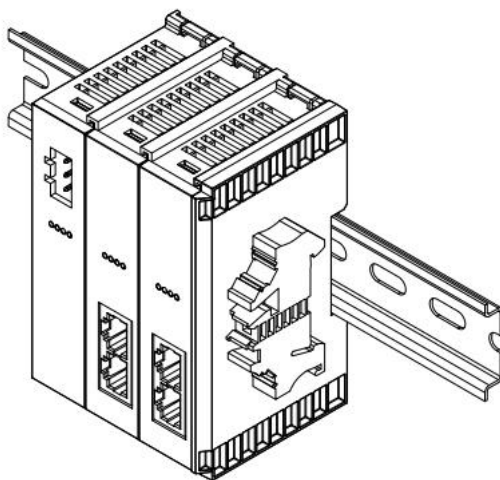
End cap retrofit

Step



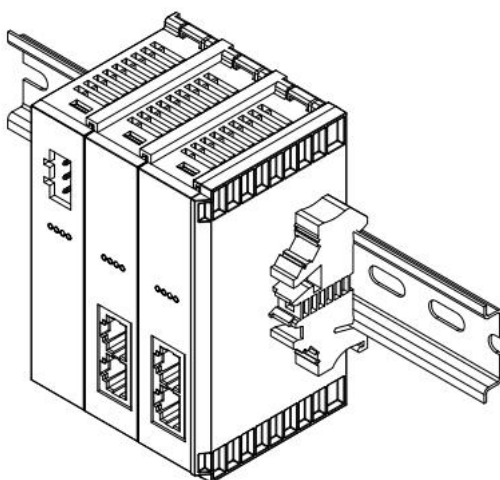
④

Install the end cap on the right side of the last module as shown in Figure ④ on the left, and refer to the installation method of the gateway module.

Retrofitting of guide rail fixings**Step**

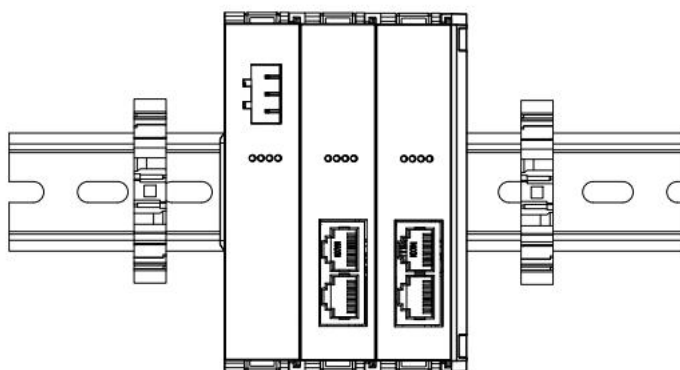
⑤

Fasten the left side of the power supply module and the right side of the end cap module, and install the rail fixings as shown in Figure ⑤ on the left.

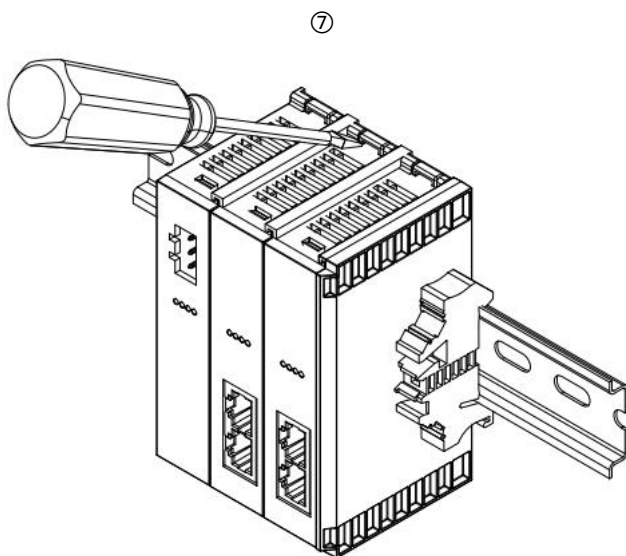


⑥

Push the rail fixture firmly in the direction of the gateway module to ensure that the module is mounted tightly, and use a screwdriver to lock the rail fixture as shown in Figure ⑥ on the left.

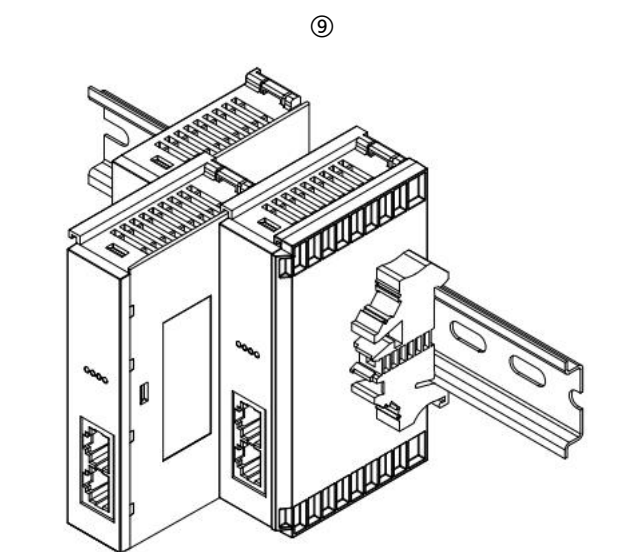
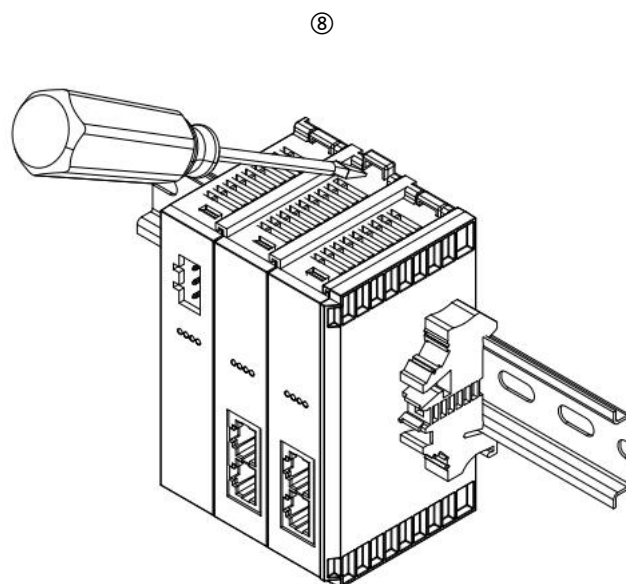
Uninstall**Step**

Loosen the rail retainer at one end of the module with a screwdriver and move it to one side, making sure there is a gap between the module and the rail retainer, as shown in Figure ⑦ on the left.



Insert a flat head up into the snap of the module to be uninstalled, and exert force in the direction of the module sideways (hear the rattling sound), as shown in Figures ⑧ and ⑨ on the left.

Note: Each module has a snap at the top and bottom, all operate in this way.



Uninstall the module by doing the opposite of installing the module, as shown in Figure ⑩ on the left.

6 Wiring

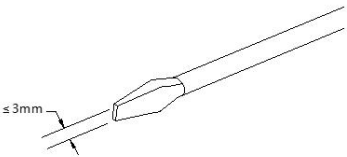
6.1 wiring terminal

wiring terminal		
power supply terminal	extremity	3P
	wire diameter	22~16 AWG 0.3~1.5 mm²
bus interface	2×RJ45	Category 5+ UTP or STP (STP recommended)

6.2Wiring instructions and requirements

Wiring Tool Requirements

The power supply terminal adopts screwless design, and the installation and removal of cables can be operated with a one-type screwdriver (specification: ≤3mm).



Stripped Wire Length Requirements

The recommended cable stripping length for the power terminals is 10 mm.



Power module wiring method

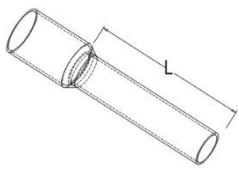
For single stranded hard wires, after stripping the corresponding length of wire, press down the button while inserting the single stranded wire.



Multi-stranded flexible wires, after stripping the corresponding length of wire, can be directly connected or supporting the use of the corresponding standard specifications of the cold compression end (tube-type insulated terminal, the reference specifications are shown in the table below), press down the button at the same time the line will be inserted.



The power supply terminal specifications are shown in the table below:

Tube Insulation End Specification Sheet		
specification	model number	Cross-sectional area of conductor mm²
 Tube insulated terminal L with a length of 10 mm	E0310	0.3
	E0510	0.5
	E7510	0.75
	E1010	1.0
	E1510	1.5

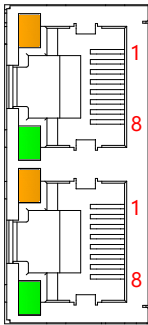
Power supply wiring precautions

- PE must be reliably grounded.

Bus Wiring Method

Standard RJ45 network interface with standard crystal connector is used, and the pin assignment is shown in the table below.

pin number	code
1	TD+
2	TD-
3	RD+
4	"one" radical in Chinese



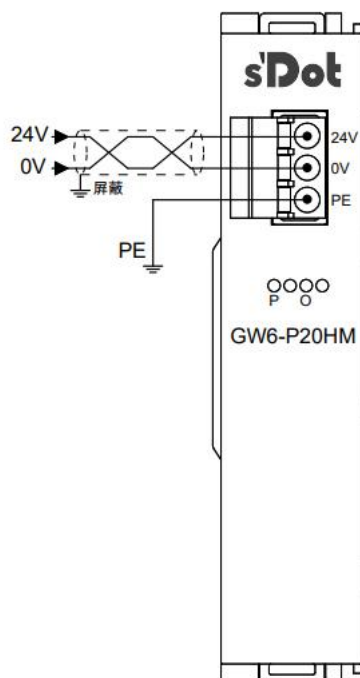
	characters (Kangxi radical 1)
5	"one" radical in Chinese characters (Kangxi radical 1)
6	RD-
7	"one" radical in Chinese characters (Kangxi radical 1)
8	"one" radical in Chinese characters (Kangxi radical 1)

 Precaution

- Double shielded (braided mesh + aluminum foil) STP cables of category 5 or higher are recommended as communication cables.
- The length of the cables between the devices must not exceed 100 m.

Power supply wiring: power module 3P terminal

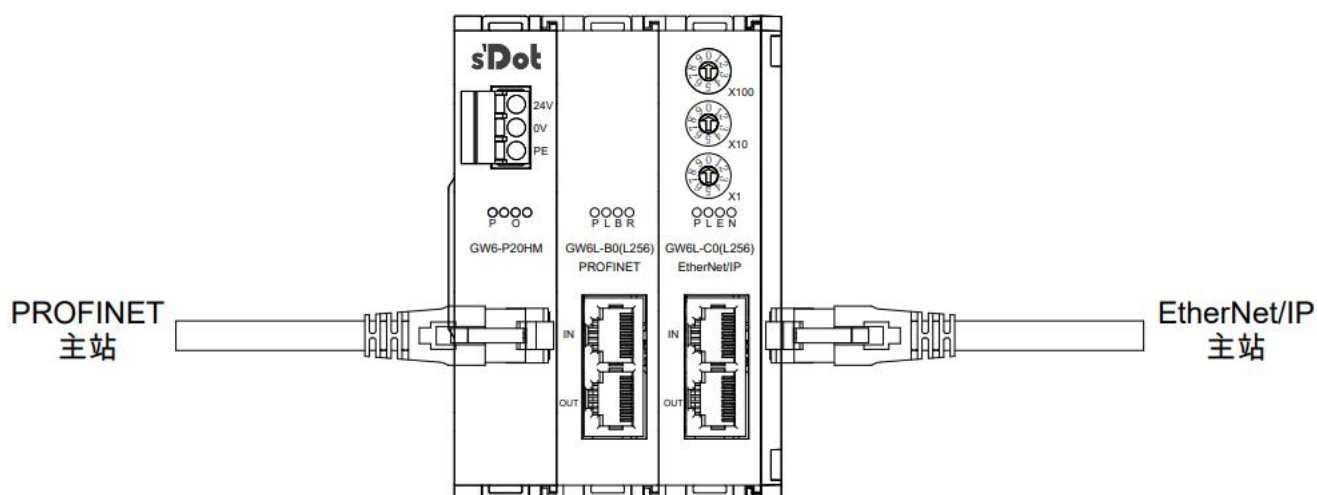
Using the DC24V power module, refer to the wiring method and connect the power supply according to the circuit shown in the following figure, and at the same time ground PE reliably (twisted-pair wire is recommended for the power supply cable).



*电源接线推荐使用两芯屏蔽双绞线，并可可靠接地

6.3 wiring diagram

Taking GW6L-B0C0(L256) as an example, the topology connection method is shown below.



7 Operation

7.1 Description of process data

Uplink data (256 bytes)		
functionality	Meaning	address range
input data	The input data of gateway module 1 in the kit corresponds to the output data of gateway module 2	First 255 bytes
	The input data of gateway module 2 in the kit corresponds to the output data of gateway module 1	
status bit	0x00 (Hex): no data interaction between gateways	Last 1 byte
	0x01 (Hex): there is data interaction between the gateways	
	0x02 (Hex): Gateway power-down state	
Downlink data (256 bytes)		
functionality	Meaning	address range
output data	Output data of the gateway module	First 255 bytes
reserve	NULL	Last 1 byte

7.2 Module Configuration Description

7.2.1 GW6L-A0B0(L256) in TwinCAT3 and TIA Portal V17 Software Environment

7.2.1.1 Preliminary

- **hardware environment**

- **Module preparation**

- This description uses the GW6L-A0B0(L256) gateway kit as an example

- **Two computers, one pre-installed with TwinCAT3 software and one pre-installed with TIA Portal V17 software**

- **Shielded cables for EtherCAT**

- **Shielded cables for PROFINET**

- **One Siemens PLC**

- This description is based on the example of Siemens S7-1200 CPU 1214C DC/DC/DC

- **Two switching power supplies**

- **Module mounting rails and rail mounts**

- **Device Configuration Files**

- Configuration file access: <https://www.solidotech.com/documents/configfile>

- **Hardware configuration and wiring**

- Follow "[5 Installation and uninstall](#)" and "[6 Wiring](#)".

7.2.1.2 Communication connection in TwinCAT3 software

1、Preset GW6L-A0(L256) Configuration File

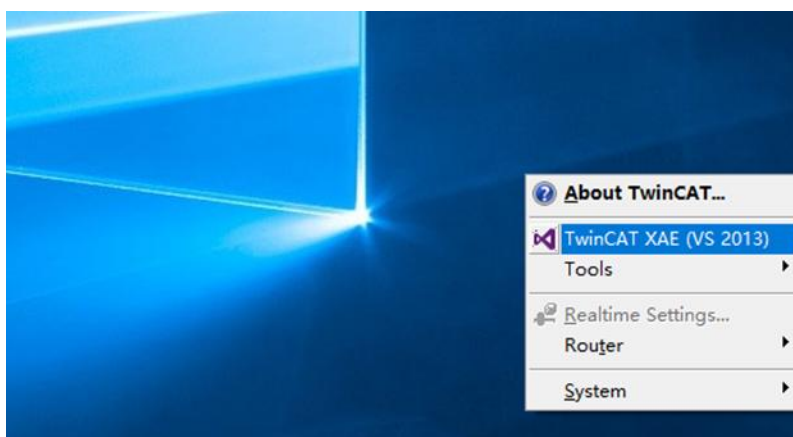
- a. Place the ESI configuration file (EcatTerminal-XB6_V3.10_ENUM.xml) in the TwinCAT installation directory under "C:\TwinCAT\3.1\Config\Io\EtherCAT" as shown below.

此电脑 > Windows (C:) > TwinCAT > 3.1 > Config > Io > EtherCAT >

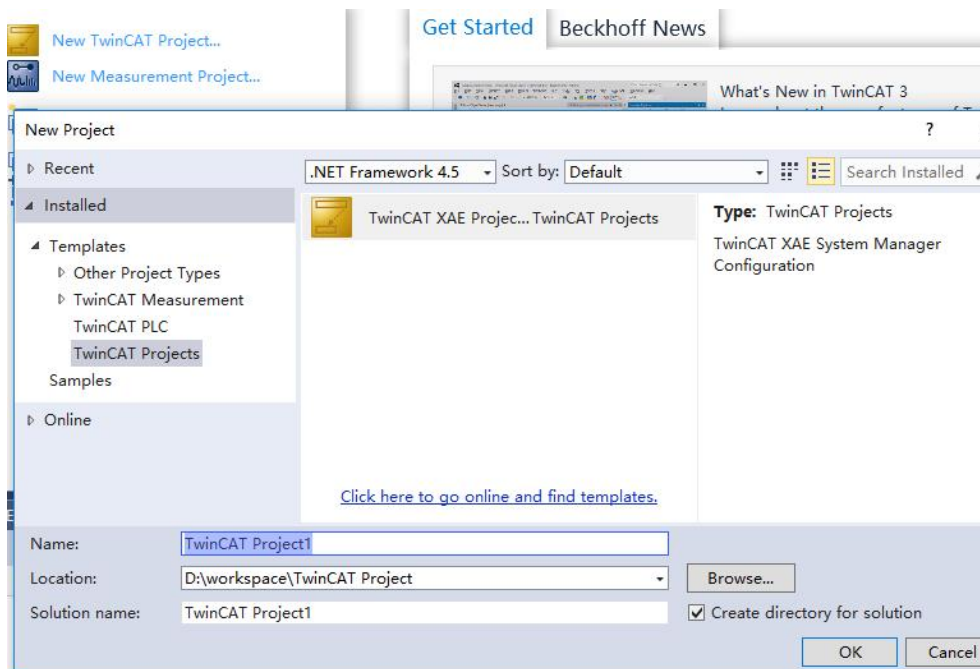
名称	修改日期	类型	大小
Beckhoff EPP1xxx.xml	2017/12/14 11:34	XML 文档	480 KB
Beckhoff EPP2xxx.xml	2017/12/28 12:22	XML 文档	1,811 KB
Beckhoff EPP3xxx.xml	2017/12/8 8:48	XML 文档	2,099 KB
Beckhoff EPP4xxx.xml	2016/12/22 10:57	XML 文档	500 KB
Beckhoff EPP5xxx.xml	2016/12/22 10:57	XML 文档	736 KB
Beckhoff EPP6xxx.xml	2017/4/5 14:46	XML 文档	1,272 KB
Beckhoff EPP7xxx.xml	2016/12/22 10:57	XML 文档	1,466 KB
Beckhoff EQ1xxx.xml	2015/11/12 14:24	XML 文档	22 KB
Beckhoff EQ2xxx.xml	2016/11/23 10:42	XML 文档	73 KB
Beckhoff EQ3xxx.xml	2016/11/22 11:22	XML 文档	1,386 KB
Beckhoff ER1xxx.XML	2016/11/21 15:46	XML 文档	165 KB
Beckhoff ER2xxx.XML	2016/11/21 14:32	XML 文档	259 KB
Beckhoff ER3xxx.XML	2017/6/9 13:35	XML 文档	1,177 KB
Beckhoff ER4xxx.xml	2016/11/22 12:58	XML 文档	318 KB
Beckhoff ER5xxx.xml	2016/3/14 11:52	XML 文档	273 KB
Beckhoff ER6xxx.xml	2016/3/14 11:52	XML 文档	494 KB
Beckhoff ER7xxx.xml	2016/11/22 12:14	XML 文档	1,503 KB
Beckhoff ER8xxx.xml	2016/3/14 11:52	XML 文档	207 KB
Beckhoff EtherCAT EvaBoard.xml	2015/2/4 12:57	XML 文档	72 KB
Beckhoff EtherCAT Terminals.xml	2015/2/4 12:57	XML 文档	53 KB
Beckhoff FB1XXX.xml	2017/5/24 12:26	XML 文档	49 KB
Beckhoff FCxxxx.xml	2015/2/4 12:57	XML 文档	21 KB
Beckhoff ILxxx-B110.xml	2015/2/4 12:57	XML 文档	8 KB
EcatTerminal-XB6_V3.10_ENUM.xml	2023/3/21 10:57	XML 文档	470 KB

2、Create Project

- a. Click the TwinCAT icon in the lower right corner of the desktop and select "TwinCAT XAE (VS xxxx)" to open the TwinCAT3 software as shown below.

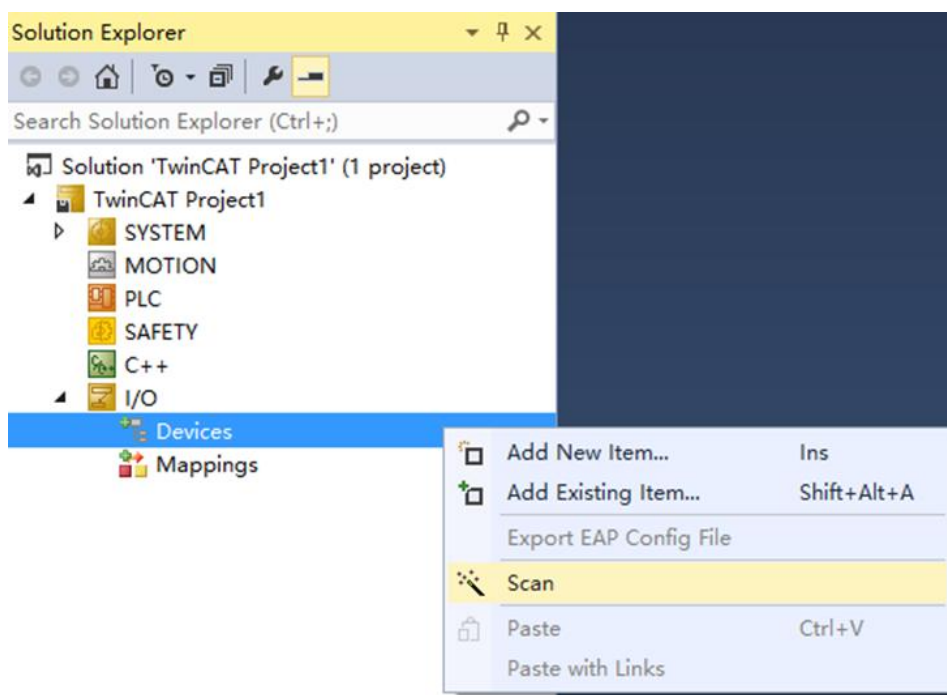


- b. Click "New TwinCAT Project", in the pop-up window, "Name" and "Solution name" correspond to the project name and solution name respectively. "Location" corresponds to the project path, these three items can be selected by default, click "OK", the project was created successfully, as shown in the following figure.

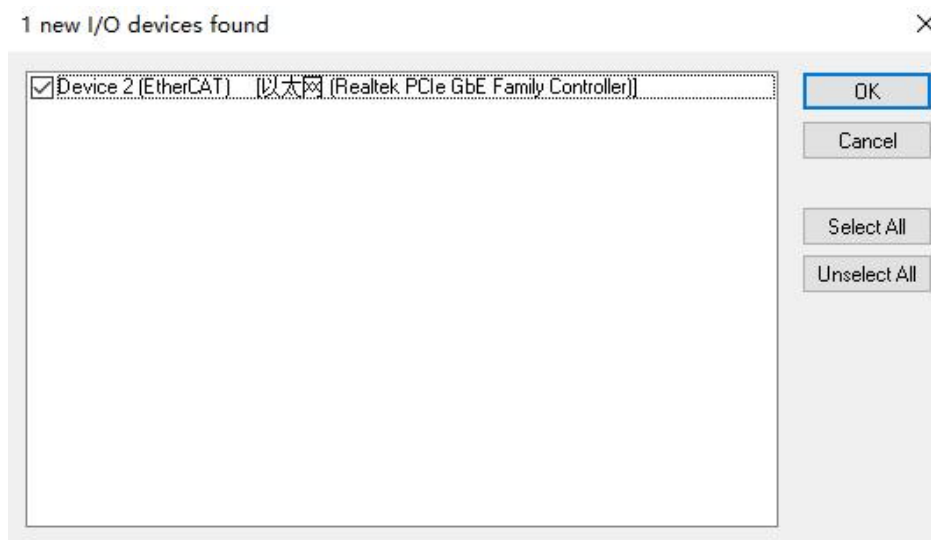


3. scanning device

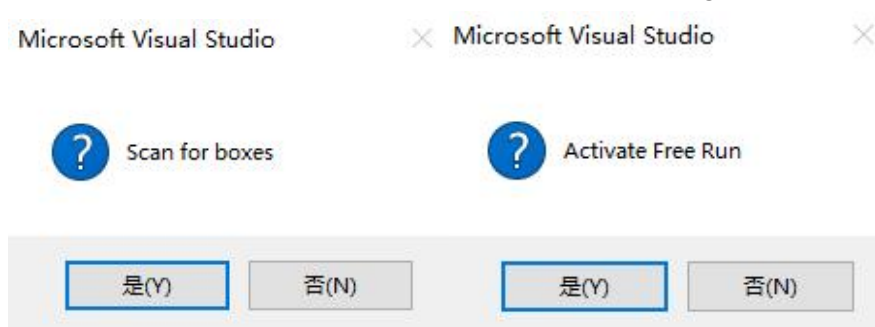
- a. After creating the project, right-click on the "Scan" option under "I/O -> Devices" to perform a slave device scan, as shown in the following figure.



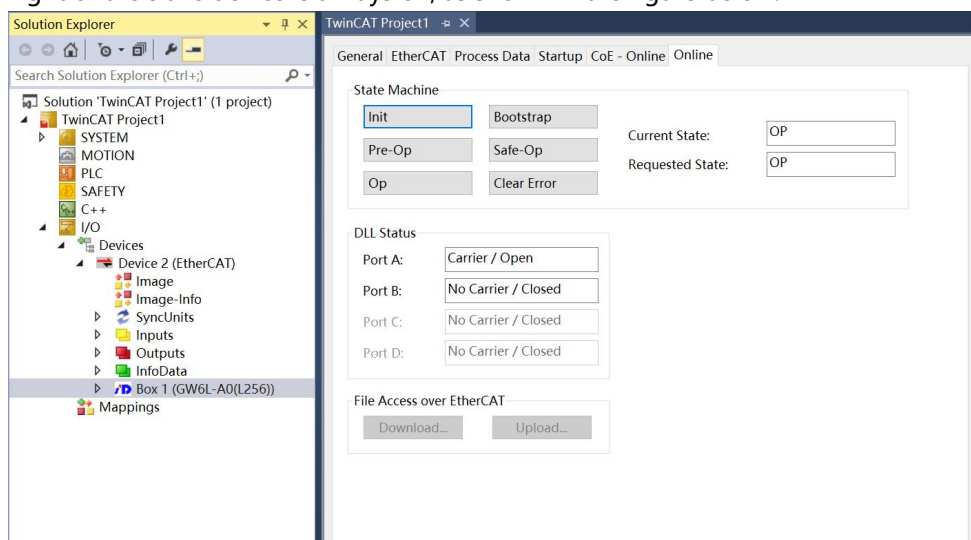
- b. Check the "Local Connection" box, as shown in the following figure.



- c. Click on the pop-up window "Scan for boxes" and select "Yes"; click on the pop-up window "Activate Free Run" and select "Yes". "Yes", as shown in the figure below.

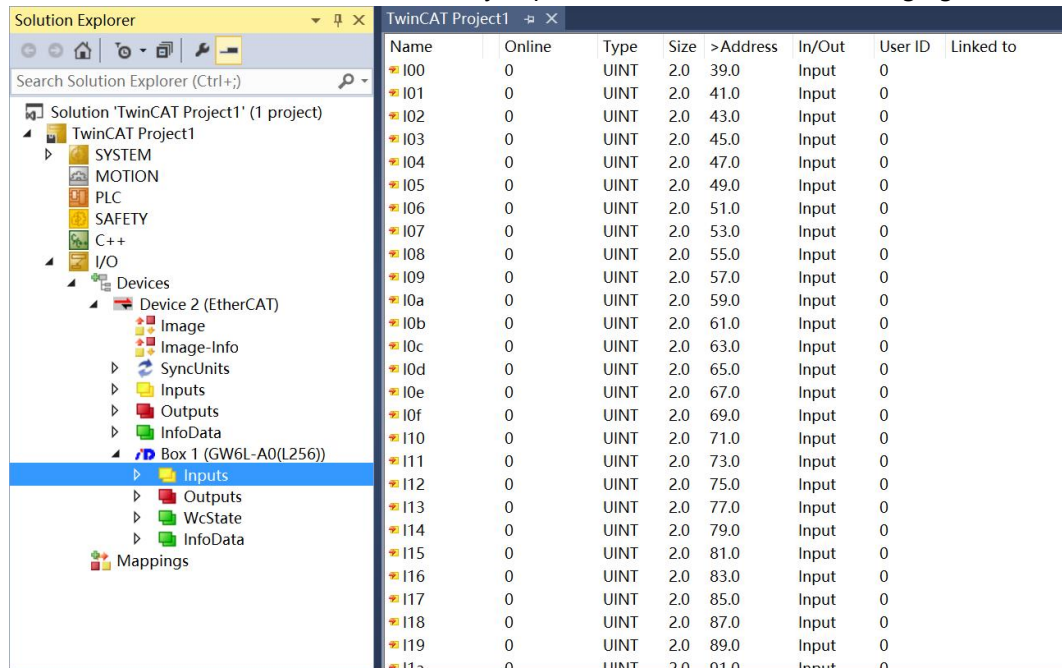


- d. After scanning to the device, you can see Box1 (GW6L-A0(L256)) in the left navigation tree, and you can see TwinCAT is in the "OP" state in the "Online" section, and you can observe that the RUN light of the slave device is always on, as shown in the figure below.



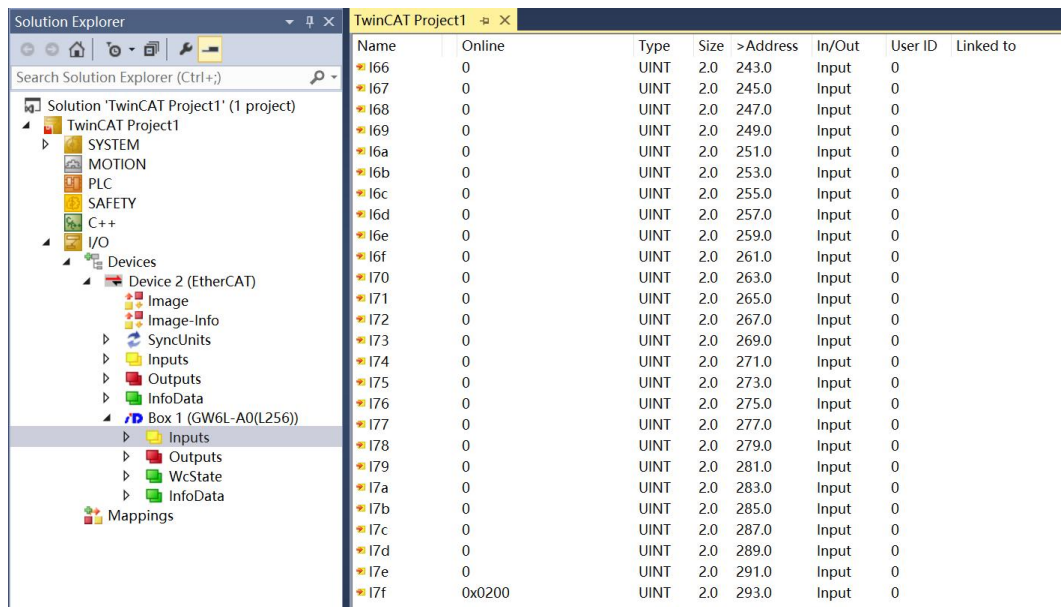
4. Viewing uplink and downlink data

- a. The left navigation tree "Box1 -> Inputs" displays the uplink data of the gateway module, which is used to check whether the data is correctly imported, as shown in the following figure.



Name	Online	Type	Size	>Address	In/Out	User ID	Linked to
I00	0	UINT	2.0	39.0	Input	0	
I01	0	UINT	2.0	41.0	Input	0	
I02	0	UINT	2.0	43.0	Input	0	
I03	0	UINT	2.0	45.0	Input	0	
I04	0	UINT	2.0	47.0	Input	0	
I05	0	UINT	2.0	49.0	Input	0	
I06	0	UINT	2.0	51.0	Input	0	
I07	0	UINT	2.0	53.0	Input	0	
I08	0	UINT	2.0	55.0	Input	0	
I09	0	UINT	2.0	57.0	Input	0	
I0a	0	UINT	2.0	59.0	Input	0	
I0b	0	UINT	2.0	61.0	Input	0	
I0c	0	UINT	2.0	63.0	Input	0	
I0d	0	UINT	2.0	65.0	Input	0	
I0e	0	UINT	2.0	67.0	Input	0	
I0f	0	UINT	2.0	69.0	Input	0	
I10	0	UINT	2.0	71.0	Input	0	
I11	0	UINT	2.0	73.0	Input	0	
I12	0	UINT	2.0	75.0	Input	0	
I13	0	UINT	2.0	77.0	Input	0	
I14	0	UINT	2.0	79.0	Input	0	
I15	0	UINT	2.0	81.0	Input	0	
I16	0	UINT	2.0	83.0	Input	0	
I17	0	UINT	2.0	85.0	Input	0	
I18	0	UINT	2.0	87.0	Input	0	
I19	0	UINT	2.0	89.0	Input	0	

- b. In this example, the range of 39~293 bytes in the uplink data is the input data, totaling 255 bytes; the 294th byte, i.e., the last byte, is the status bit, as shown in the figure below.



Name	Online	Type	Size	>Address	In/Out	User ID	Linked to
I166	0	UINT	2.0	243.0	Input	0	
I167	0	UINT	2.0	245.0	Input	0	
I168	0	UINT	2.0	247.0	Input	0	
I169	0	UINT	2.0	249.0	Input	0	
I16a	0	UINT	2.0	251.0	Input	0	
I16b	0	UINT	2.0	253.0	Input	0	
I16c	0	UINT	2.0	255.0	Input	0	
I16d	0	UINT	2.0	257.0	Input	0	
I16e	0	UINT	2.0	259.0	Input	0	
I16f	0	UINT	2.0	261.0	Input	0	
I170	0	UINT	2.0	263.0	Input	0	
I171	0	UINT	2.0	265.0	Input	0	
I172	0	UINT	2.0	267.0	Input	0	
I173	0	UINT	2.0	269.0	Input	0	
I174	0	UINT	2.0	271.0	Input	0	
I175	0	UINT	2.0	273.0	Input	0	
I176	0	UINT	2.0	275.0	Input	0	
I177	0	UINT	2.0	277.0	Input	0	
I178	0	UINT	2.0	279.0	Input	0	
I179	0	UINT	2.0	281.0	Input	0	
I17a	0	UINT	2.0	283.0	Input	0	
I17b	0	UINT	2.0	285.0	Input	0	
I17c	0	UINT	2.0	287.0	Input	0	
I17d	0	UINT	2.0	289.0	Input	0	
I17e	0	UINT	2.0	291.0	Input	0	
I17f	0x0200	UINT	2.0	293.0	Input	0	

- c. The left navigation tree "Box1 -> Outputs" displays the downlink data of the gateway module, which is used to force the output of data, as shown in the following figure.

Name	Online	Type	Size	>Address	In/Out	User ID	Linked to
O00	0	UINT	2.0	39.0	Output	0	
O01	0	UINT	2.0	41.0	Output	0	
O02	0	UINT	2.0	43.0	Output	0	
O03	0	UINT	2.0	45.0	Output	0	
O04	0	UINT	2.0	47.0	Output	0	
O05	0	UINT	2.0	49.0	Output	0	
O06	0	UINT	2.0	51.0	Output	0	
O07	0	UINT	2.0	53.0	Output	0	
O08	0	UINT	2.0	55.0	Output	0	
O09	0	UINT	2.0	57.0	Output	0	
O0a	0	UINT	2.0	59.0	Output	0	
O0b	0	UINT	2.0	61.0	Output	0	
O0c	0	UINT	2.0	63.0	Output	0	
O0d	0	UINT	2.0	65.0	Output	0	
O0e	0	UINT	2.0	67.0	Output	0	
O0f	0	UINT	2.0	69.0	Output	0	
O10	0	UINT	2.0	71.0	Output	0	
O11	0	UINT	2.0	73.0	Output	0	
O12	0	UINT	2.0	75.0	Output	0	
O13	0	UINT	2.0	77.0	Output	0	
O14	0	UINT	2.0	79.0	Output	0	
O15	0	UINT	2.0	81.0	Output	0	
O16	0	UINT	2.0	83.0	Output	0	
O17	0	UINT	2.0	85.0	Output	0	
O18	0	UINT	2.0	87.0	Output	0	
O19	0	UINT	2.0	89.0	Output	0	

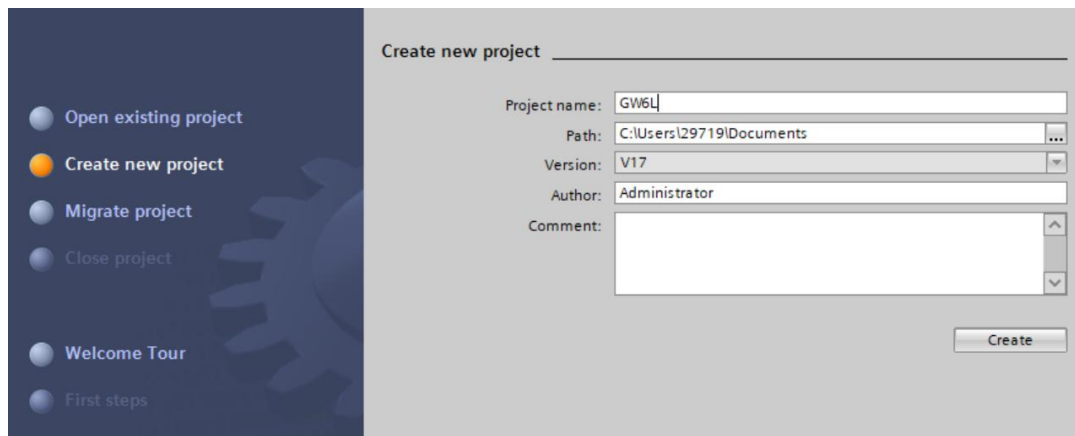
- d. Right-click on any double-byte, such as "O00", select "Display Mode" to set the data display format to hexadecimal/decimal, select "Online Write Select" "Online Write" to write the value online, as shown in the figure below.

Name	Online	Type	Size	>Address	In/Out	User ID	Linked to
O00	43981 (0xabcd)	UINT	2.0	39.0	Output	0	
O01	65535 (0xffff)	UINT	2.0	41.0	Output	0	
O02	0 (0x0000)	UINT	2.0	43.0	Output	0	
O03	0 (0x0000)	UINT	2.0	45.0	Output	0	
O04	0 (0x0000)	UINT	2.0	47.0	Output	0	
O05	0 (0x0000)	UINT	2.0	49.0	Output	0	
O06	0 (0x0000)	UINT	2.0	51.0	Output	0	
O07	0 (0x0000)	UINT	2.0	53.0	Output	0	
O08	0 (0x0000)	UINT	2.0	55.0	Output	0	
O09	0 (0x0000)	UINT	2.0	57.0	Output	0	
O0a	0 (0x0000)	UINT	2.0	59.0	Output	0	
O0b	0 (0x0000)	UINT	2.0	61.0	Output	0	
O0c	0 (0x0000)	UINT	2.0	63.0	Output	0	
O0d	0 (0x0000)	UINT	2.0	65.0	Output	0	
O0e	0 (0x0000)	UINT	2.0	67.0	Output	0	
O0f	0 (0x0000)	UINT	2.0	69.0	Output	0	
O10	0 (0x0000)	UINT	2.0	71.0	Output	0	
O11	0 (0x0000)	UINT	2.0	73.0	Output	0	
O12	0 (0x0000)	UINT	2.0	75.0	Output	0	
O13	0 (0x0000)	UINT	2.0	77.0	Output	0	
O14	0 (0x0000)	UINT	2.0	79.0	Output	0	
O15	0 (0x0000)	UINT	2.0	81.0	Output	0	
O16	0 (0x0000)	UINT	2.0	83.0	Output	0	
O17	0 (0x0000)	UINT	2.0	85.0	Output	0	
O18	0 (0x0000)	UINT	2.0	87.0	Output	0	
O19	0 (0x0000)	UINT	2.0	89.0	Output	0	

7.2.1.3 Communication connection in TIA Portal V17 software

1、 New project

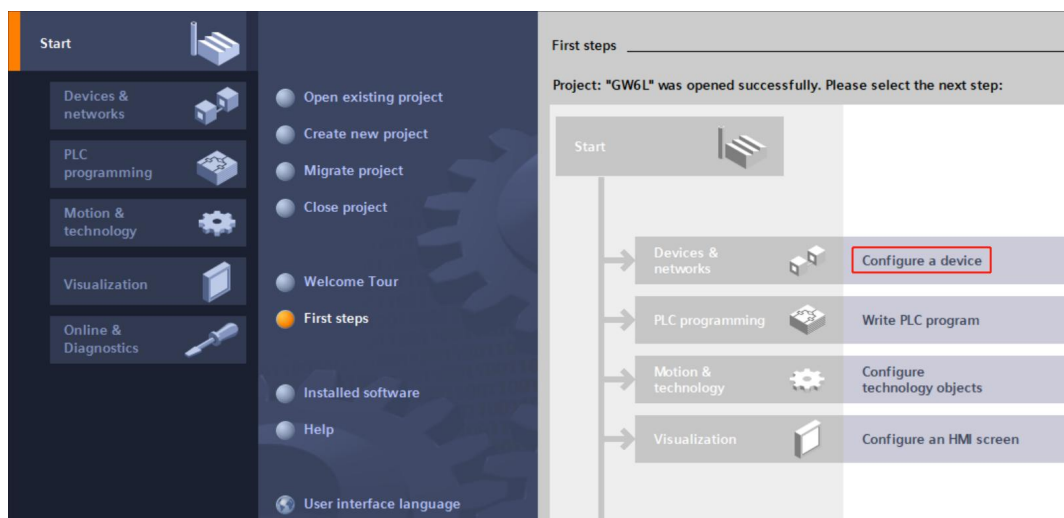
- a. Open TIA Portal V17 software and click "Create New Project" .



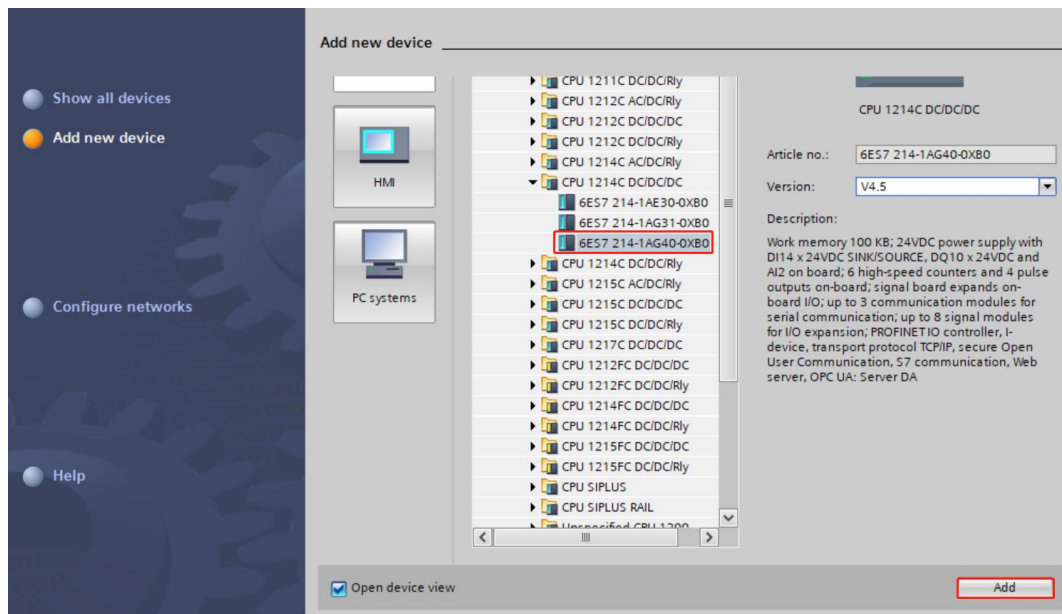
- ◆ Project name: customizable, can be left as default.
- ◆ Path: the project keeps the path, which can be left as default.
- ◆ Version: can be left as default.
- ◆ AUTHOR: The default can be maintained.
- ◆ Comment: Customizable, may not be filled in.

2、 Adding a PLC controller

- a. Click "Configure A Device" , as shown in the following figure.

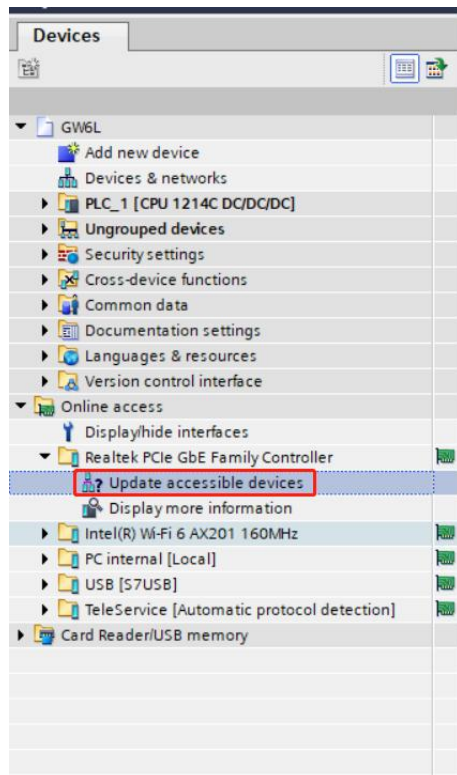


- b. Click "Add New Device", select the PLC model you are currently using, and click "Add", as shown in the following figure. After adding, you can see that the PLC has been added to the device navigation tree.

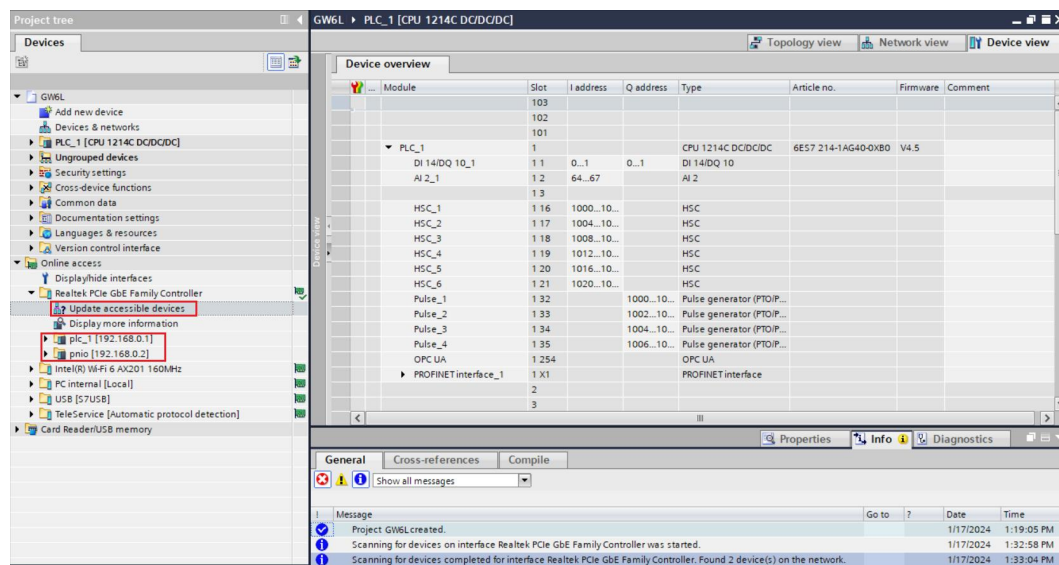


3. Scanning connected devices

- a. Click "Online Access -> Update Accessible Devices" in the left navigation tree as shown below.



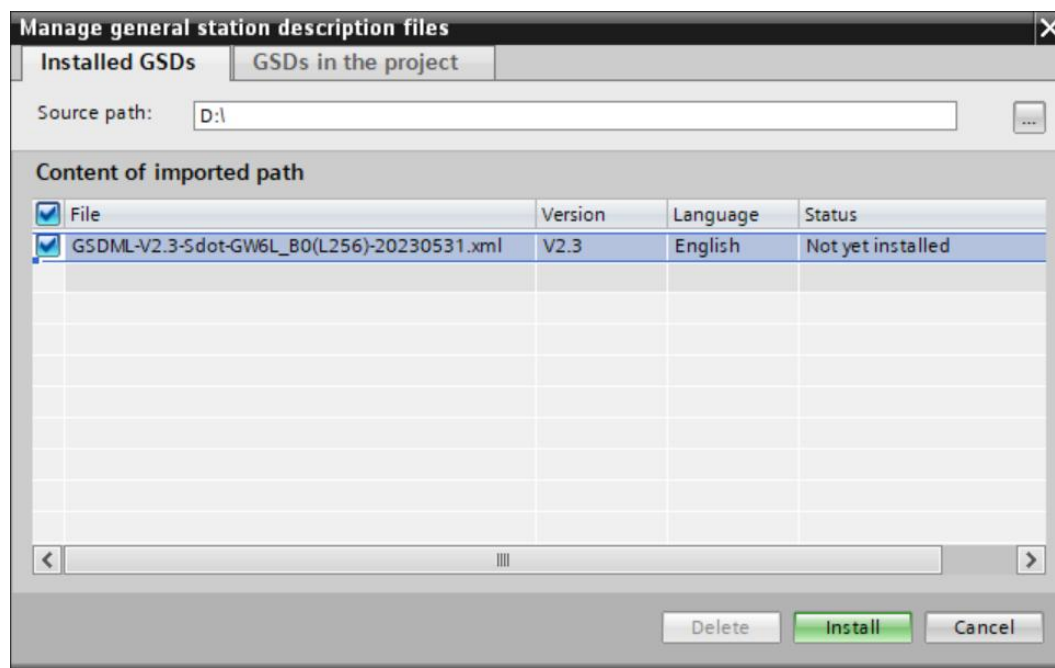
- b. When the update is complete, the connected slave devices are displayed, as shown in the following figure.



The IP address of the computer must be in the same network segment as the PLC, if not, modify the IP address of the computer and repeat the above steps.

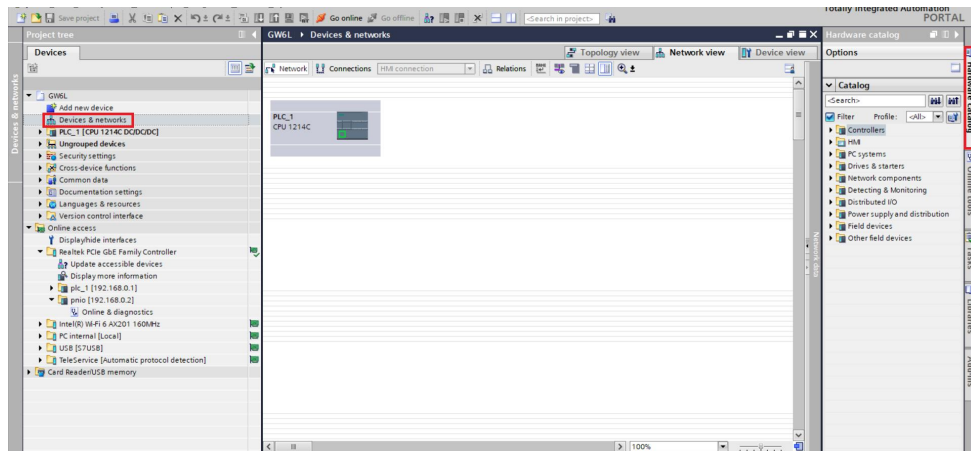
4. Adding a GSD Configuration File

- In the menu bar, select "Options -> Manage General Station Description File (GSDML) (D)".
- Click Source Path to select the file.
- Check if the status of the GSD file you want to add is "Not yet installed", click Install if it is not installed, or Cancel if it is already installed to skip the installation step.

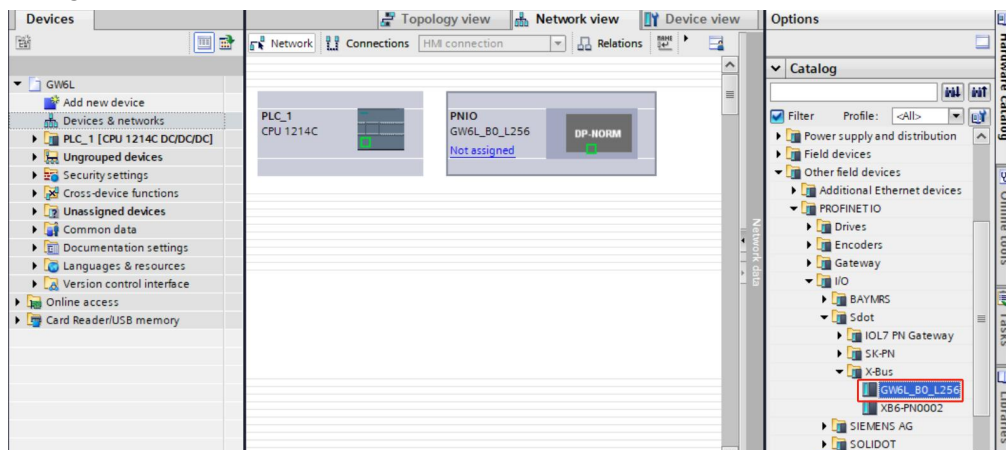


5. Adding Slave Devices

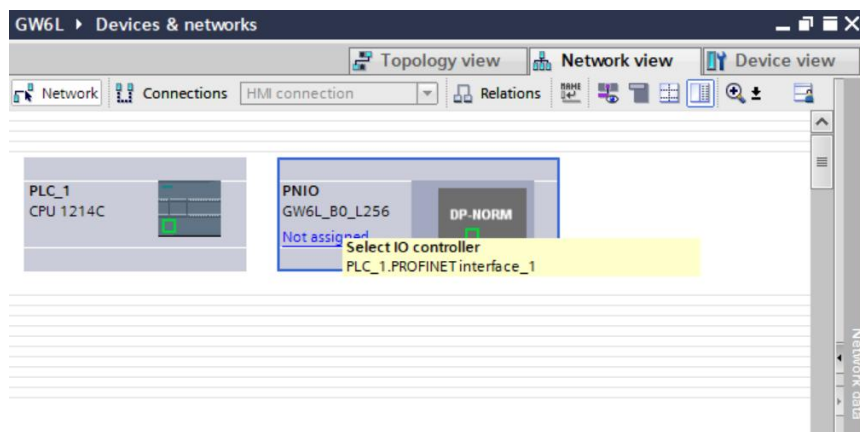
- Double-click on "Devices & Networks" in the left navigation tree.
- Click the "Hardware Catalog" vertical button on the right, the catalog is displayed as shown below.



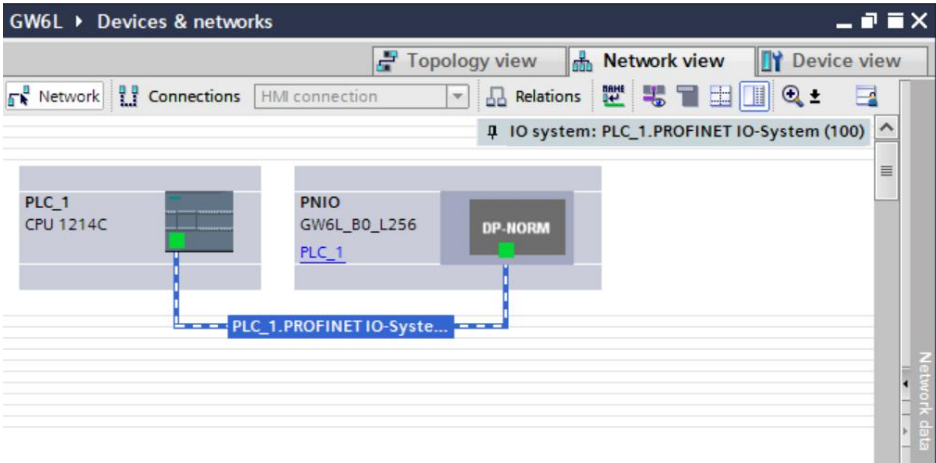
- Select "Other field devices -> PROFINET IO -> Gateway -> Sdot -> X-Bus -> GW6L-B0(L256)".
- Drag or double-click "GW6L-B0(L256)" to the "Network View" as shown below.



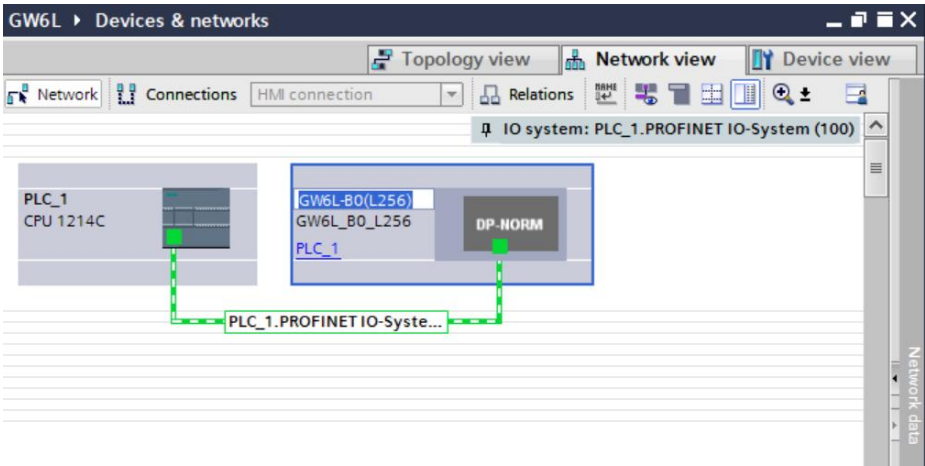
- Click "Unassigned (blue font)" on the slave device and select "PLC_1.PROFINET Interface_1" as shown below.



f. When the connection is complete, it is shown below.



g. Click on the device name to rename the device, as shown in the following figure.



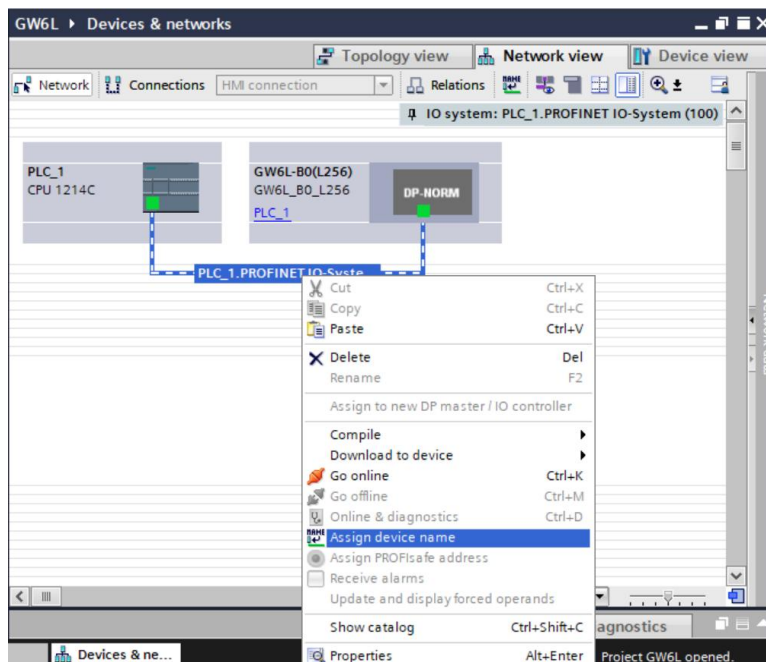
h. Click "Device overview" to enter the device overview, you can see the topology configuration information, including the I/O address automatically assigned by the system, the I/O address can be changed by yourself, as shown in the following figure.

The screenshot shows the 'Device overview' window for the 'GW6L-B0(L256) [GW6L_B0_L256]' module. The table below displays the module configuration:

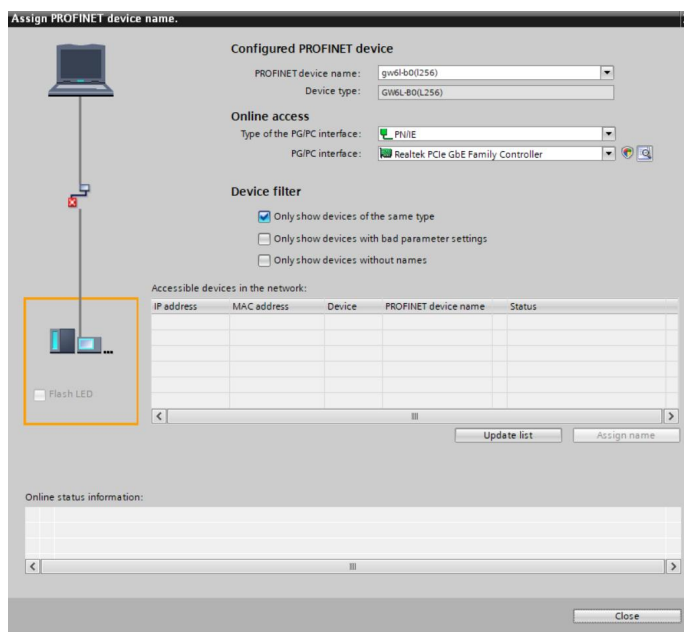
Module	Rack	Slot	I address	Q address	Type	Article number
GW6L-B0(L256)	0	0			GW6L_B0_L256	1234567
PN-IO	0	0 X1			PNIO	
IN/OUT_1	0	1	68...323	2...257	IN/OUT	

6. Assign device name

- Switch to "Network View", right-click the connection cable between PLC and GW6L-B0(L256), and select "Assign Device Name".



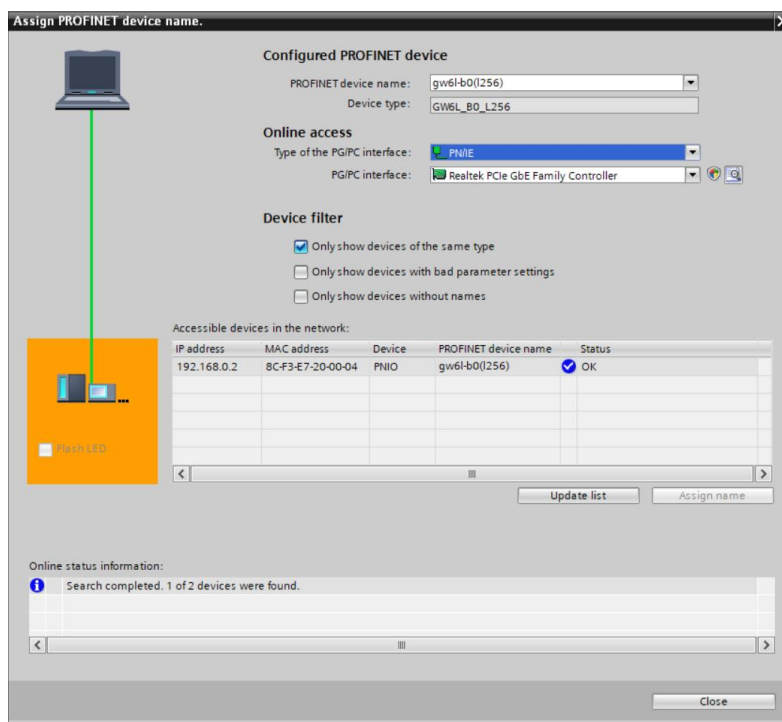
- The "Assign PROFINET Device Name" window pops up as shown below.



Check to see if the MAC address on the module silkscreen is the same as the MAC address of the assigned device name.


- ◆ PROFINET Device Name: The name set in "Assign IP address and device name to slave".
- ◆ Type of PG/PC interface: PN/IE.
- ◆ PG/PC interface: the actual network adapter used.

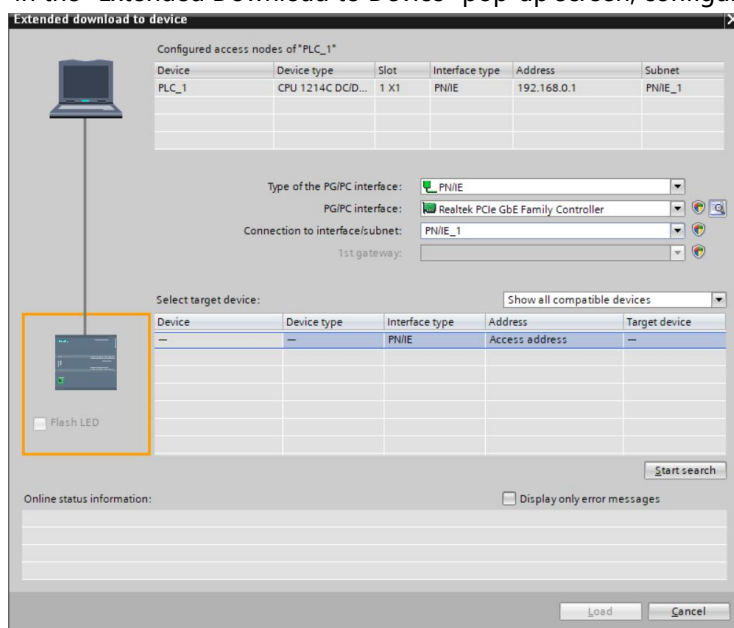
- c. Select the slave device in turn, click Update List, and click Assign Name. Check whether the status of the node is "OK" in "Accessible nodes in the network", as shown in the following figure.



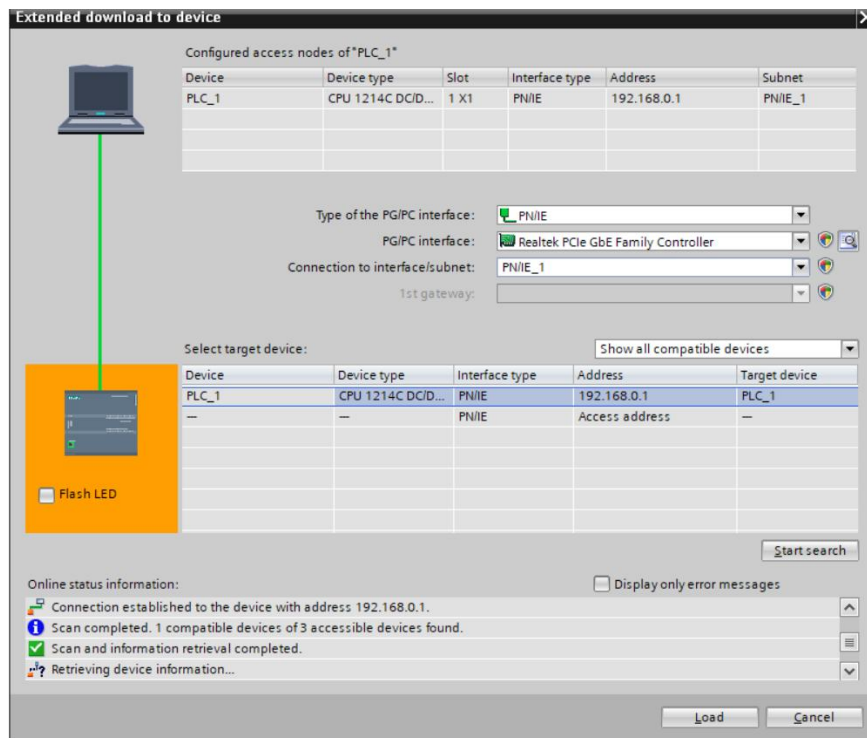
- d. Click Close.

7、Download Configuration Structure

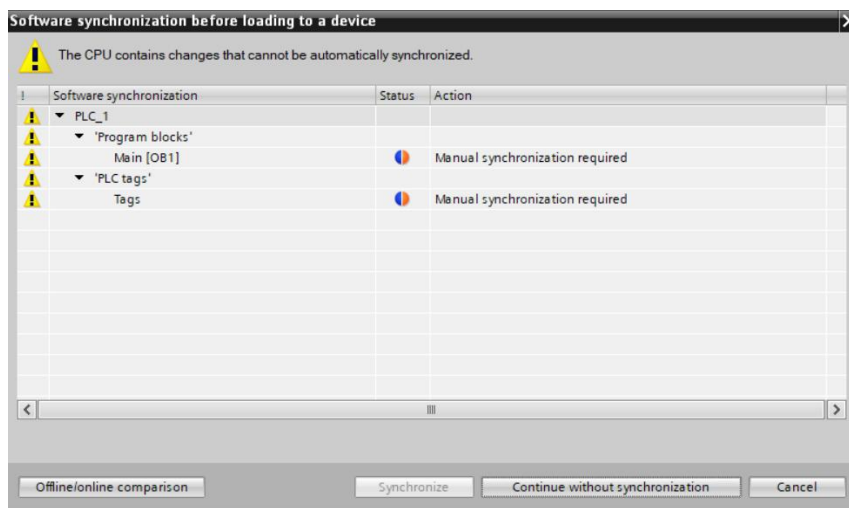
- a. In Network View, check PLC.
- b. Click the  button in the menu bar to download the current configuration to the PLC.
- c. In the "Extended Download to Device" pop-up screen, configure the following figure.



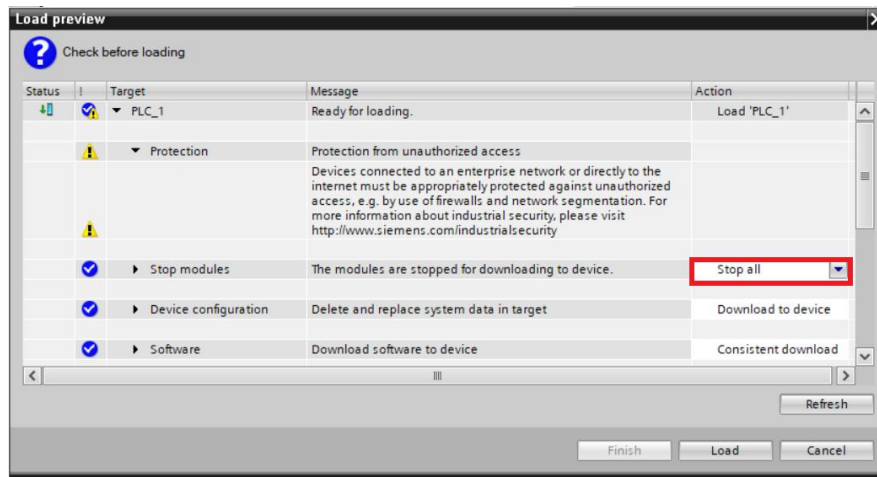
- d. Click the "Start Search" button as shown below.



- e. Click on "Download".
- f. Select "Continue without synchronization" as shown below.




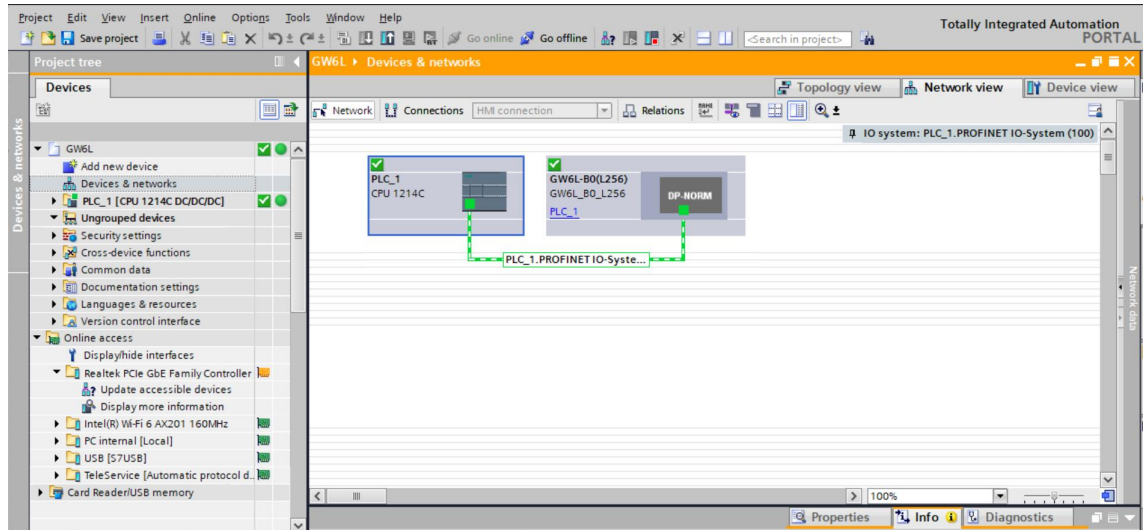
- g. Select "Stop All".



- h. Click Load.
i. Click Finish.
j. Power the unit back up.

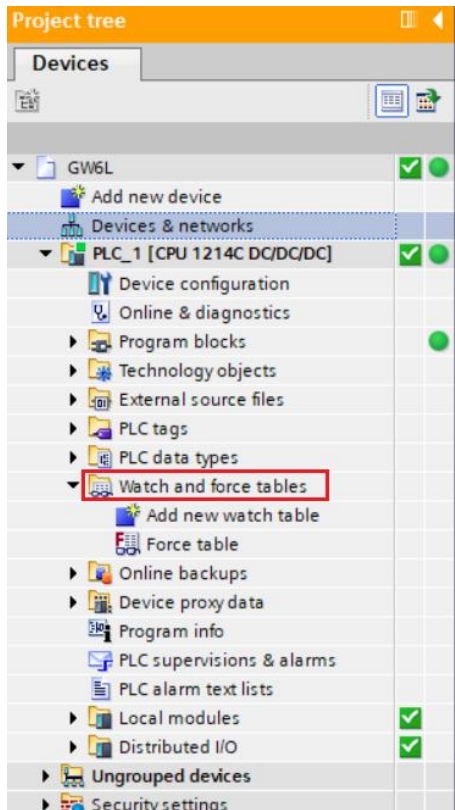
8. communication connection

- a. Click the  button, and then click the "Go Online" button, the connection is successful, as shown in the following figure.

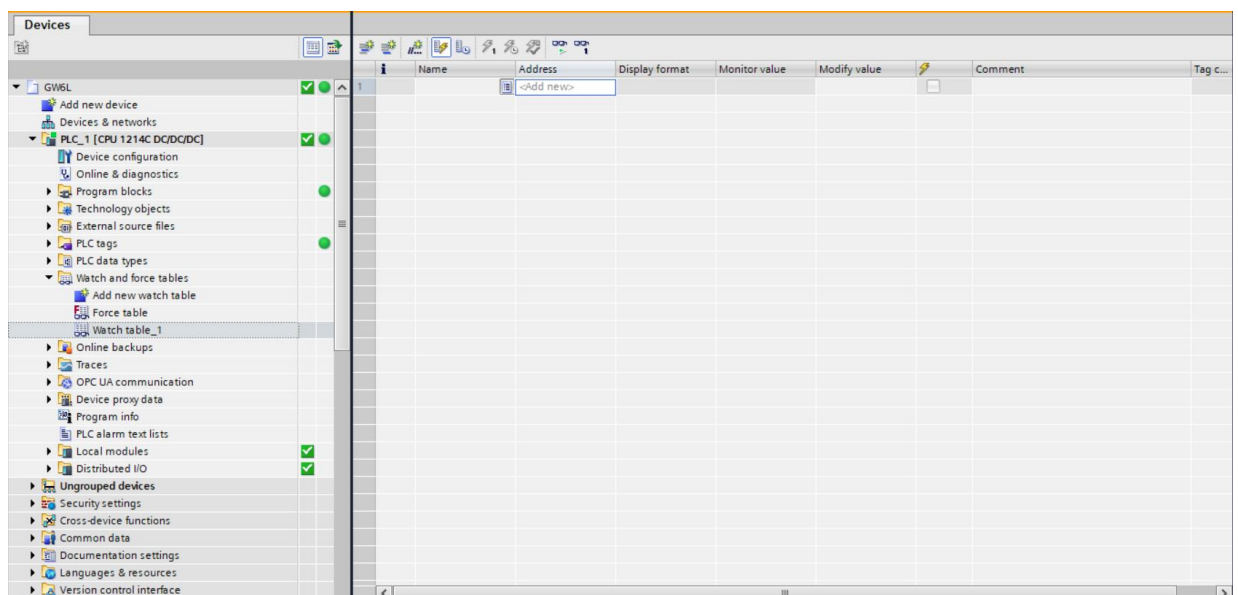


9. Viewing uplink and downlink data

- a. Expand the left side of the project navigation, select "Monitor and Force Meter", as shown in the following figure.

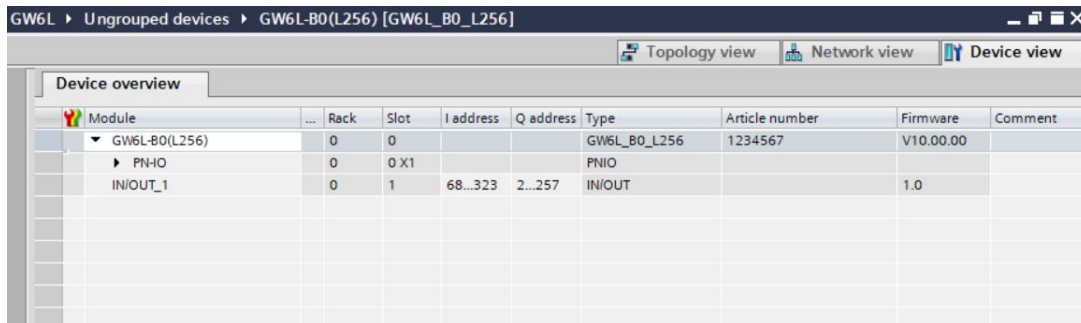


- b. Double-click "Add New Watch Table", the system adds a new monitor table, as shown in the following figure.




- c. Open the Device View and check the channel Q address (channel address of the output signal) or I address (channel address of the input signal) of the module GW6L-B0(L256) in the device overview.

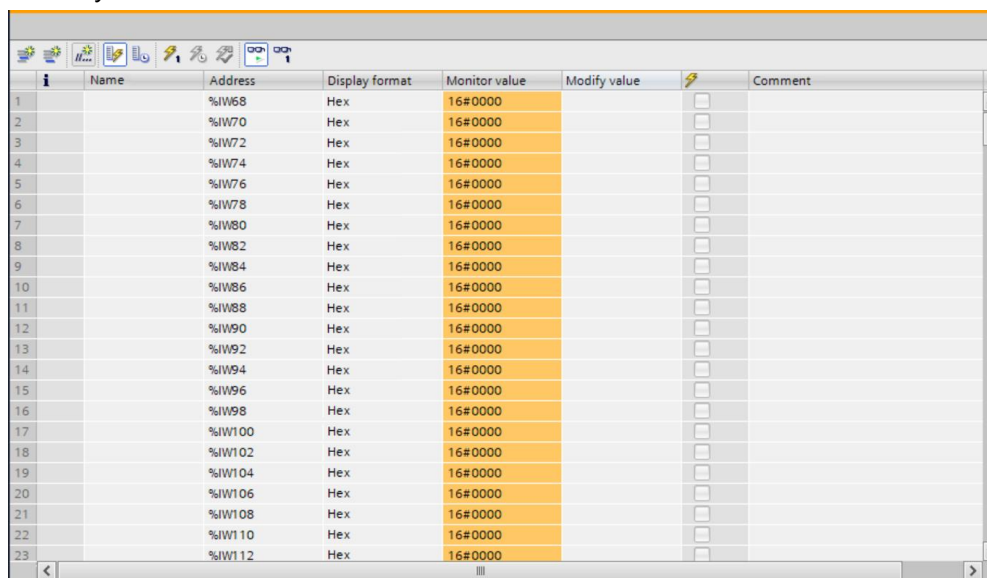
For example, the "Q address" of GW6L-B0(L256) module is 2 to 257, and the "I address" is 68 to 323, as shown in the following figure.



The screenshot shows the 'Device overview' window for the GW6L-B0(L256) module. The window has tabs for 'Topology view', 'Network view', and 'Device view'. The 'Device view' tab is active, displaying a table with the following data:

Module	Rack	Slot	I address	Q address	Type	Article number	Firmware	Comment
GW6L-B0(L256)	0	0			GW6L_B0_L256	1234567	V10.00.00	
PN-IO	0	0 X1			PNIO			
IN/OUT_1	0	1	68...323	2...257	INI/OUT		1.0	

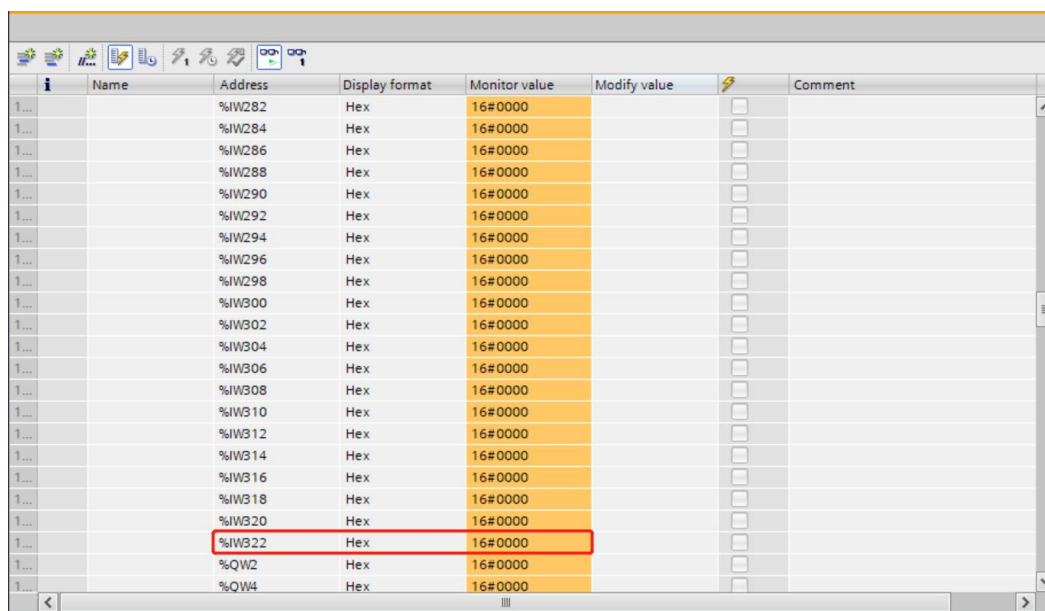
- d. Input the address, data type and comments in the Address cell of the monitoring table to facilitate monitoring. You can refer to the definition of the uplink and downlink process data, enter the data items in order, press the Enter key, and then click the  button to monitor the data after all the fields are filled in.
- e. The module's uplink data is shown below in the monitoring table to see if the data is coming in correctly.



The screenshot shows the monitoring table with the following data:

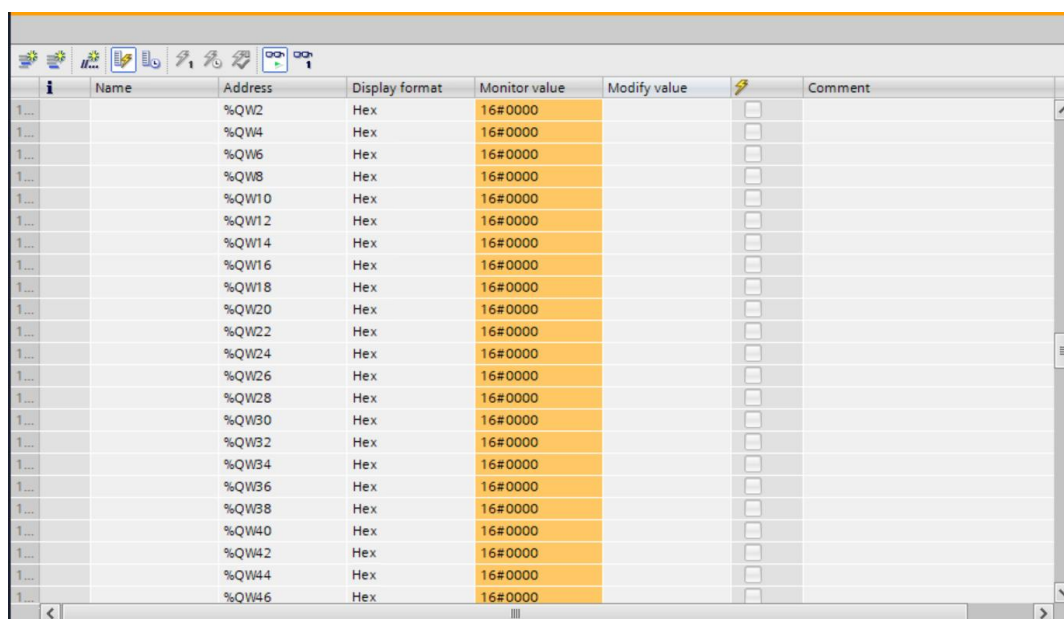
	Name	Address	Display format	Monitor value	Modify value		Comment
1		%IW68	Hex	16#0000		<input type="checkbox"/>	
2		%IW70	Hex	16#0000		<input type="checkbox"/>	
3		%IW72	Hex	16#0000		<input type="checkbox"/>	
4		%IW74	Hex	16#0000		<input type="checkbox"/>	
5		%IW76	Hex	16#0000		<input type="checkbox"/>	
6		%IW78	Hex	16#0000		<input type="checkbox"/>	
7		%IW80	Hex	16#0000		<input type="checkbox"/>	
8		%IW82	Hex	16#0000		<input type="checkbox"/>	
9		%IW84	Hex	16#0000		<input type="checkbox"/>	
10		%IW86	Hex	16#0000		<input type="checkbox"/>	
11		%IW88	Hex	16#0000		<input type="checkbox"/>	
12		%IW90	Hex	16#0000		<input type="checkbox"/>	
13		%IW92	Hex	16#0000		<input type="checkbox"/>	
14		%IW94	Hex	16#0000		<input type="checkbox"/>	
15		%IW96	Hex	16#0000		<input type="checkbox"/>	
16		%IW98	Hex	16#0000		<input type="checkbox"/>	
17		%IW100	Hex	16#0000		<input type="checkbox"/>	
18		%IW102	Hex	16#0000		<input type="checkbox"/>	
19		%IW104	Hex	16#0000		<input type="checkbox"/>	
20		%IW106	Hex	16#0000		<input type="checkbox"/>	
21		%IW108	Hex	16#0000		<input type="checkbox"/>	
22		%IW110	Hex	16#0000		<input type="checkbox"/>	
23		%IW112	Hex	16#0000		<input type="checkbox"/>	

- f. In this example, the range of 68~322 bytes in the uplink data is the input data, totaling 255 bytes; the 323rd byte, i.e., the last byte, is the status bit, as shown in the figure below.




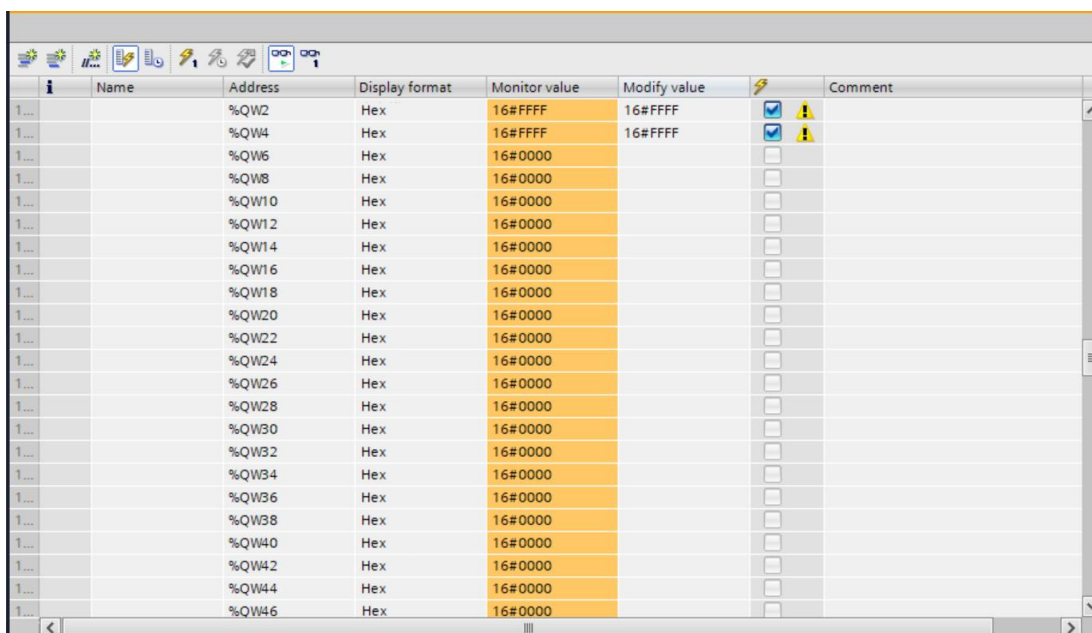
Name	Address	Display format	Monitor value	Modify value	Comment
1...	%IW282	Hex	16#0000		
1...	%IW284	Hex	16#0000		
1...	%IW286	Hex	16#0000		
1...	%IW288	Hex	16#0000		
1...	%IW290	Hex	16#0000		
1...	%IW292	Hex	16#0000		
1...	%IW294	Hex	16#0000		
1...	%IW296	Hex	16#0000		
1...	%IW298	Hex	16#0000		
1...	%IW300	Hex	16#0000		
1...	%IW302	Hex	16#0000		
1...	%IW304	Hex	16#0000		
1...	%IW306	Hex	16#0000		
1...	%IW308	Hex	16#0000		
1...	%IW310	Hex	16#0000		
1...	%IW312	Hex	16#0000		
1...	%IW314	Hex	16#0000		
1...	%IW316	Hex	16#0000		
1...	%IW318	Hex	16#0000		
1...	%IW320	Hex	16#0000		
1...	%IW322	Hex	16#0000		
1...	%QW2	Hex	16#0000		
1...	%QW4	Hex	16#0000		



























- g. The downlink data of the module is shown below in the monitoring table for forcing the output data as shown below.



Name	Address	Display format	Monitor value	Modify value	Comment
1...	%QW2	Hex	16#0000		
1...	%QW4	Hex	16#0000		
1...	%QW6	Hex	16#0000		
1...	%QW8	Hex	16#0000		
1...	%QW10	Hex	16#0000		
1...	%QW12	Hex	16#0000		
1...	%QW14	Hex	16#0000		
1...	%QW16	Hex	16#0000		
1...	%QW18	Hex	16#0000		
1...	%QW20	Hex	16#0000		
1...	%QW22	Hex	16#0000		
1...	%QW24	Hex	16#0000		
1...	%QW26	Hex	16#0000		
1...	%QW28	Hex	16#0000		
1...	%QW30	Hex	16#0000		
1...	%QW32	Hex	16#0000		
1...	%QW34	Hex	16#0000		
1...	%QW36	Hex	16#0000		
1...	%QW38	Hex	16#0000		
1...	%QW40	Hex	16#0000		
1...	%QW42	Hex	16#0000		
1...	%QW44	Hex	16#0000		
1...	%QW46	Hex	16#0000		

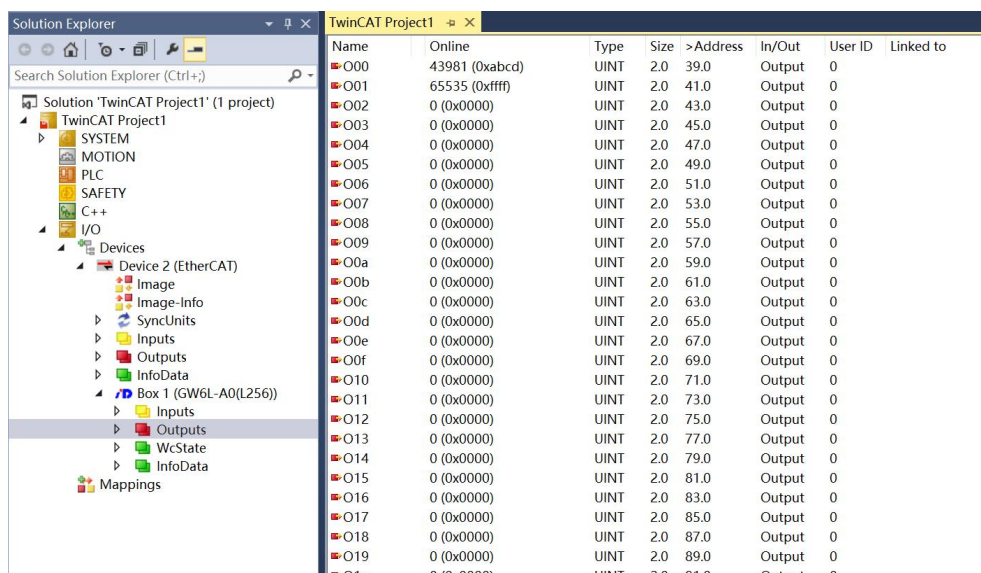
- h. In the "Modify Value" cell enter the value, click the  button to write, write the value, as shown in the figure below.



Name	Address	Display format	Monitor value	Modify value		Comment
%QW2		Hex	16#FFFF	16#FFFF		
%QW4		Hex	16#FFFF	16#FFFF		
%QW6		Hex	16#0000			
%QW8		Hex	16#0000			
%QW10		Hex	16#0000			
%QW12		Hex	16#0000			
%QW14		Hex	16#0000			
%QW16		Hex	16#0000			
%QW18		Hex	16#0000			
%QW20		Hex	16#0000			
%QW22		Hex	16#0000			
%QW24		Hex	16#0000			
%QW26		Hex	16#0000			
%QW28		Hex	16#0000			
%QW30		Hex	16#0000			
%QW32		Hex	16#0000			
%QW34		Hex	16#0000			
%QW36		Hex	16#0000			
%QW38		Hex	16#0000			
%QW40		Hex	16#0000			
%QW42		Hex	16#0000			
%QW44		Hex	16#0000			
%QW46		Hex	16#0000			

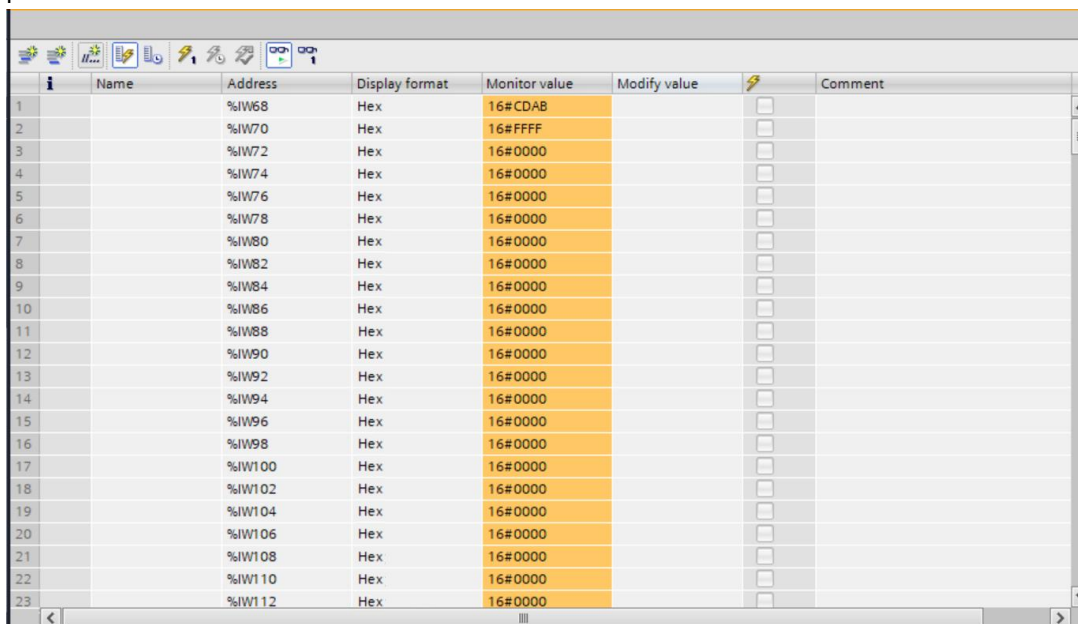
7.2.1.4 data interaction

- a. After establishing the communication connection, the value is written in the downlink data of TwinCAT3 software and the output data is shown below.



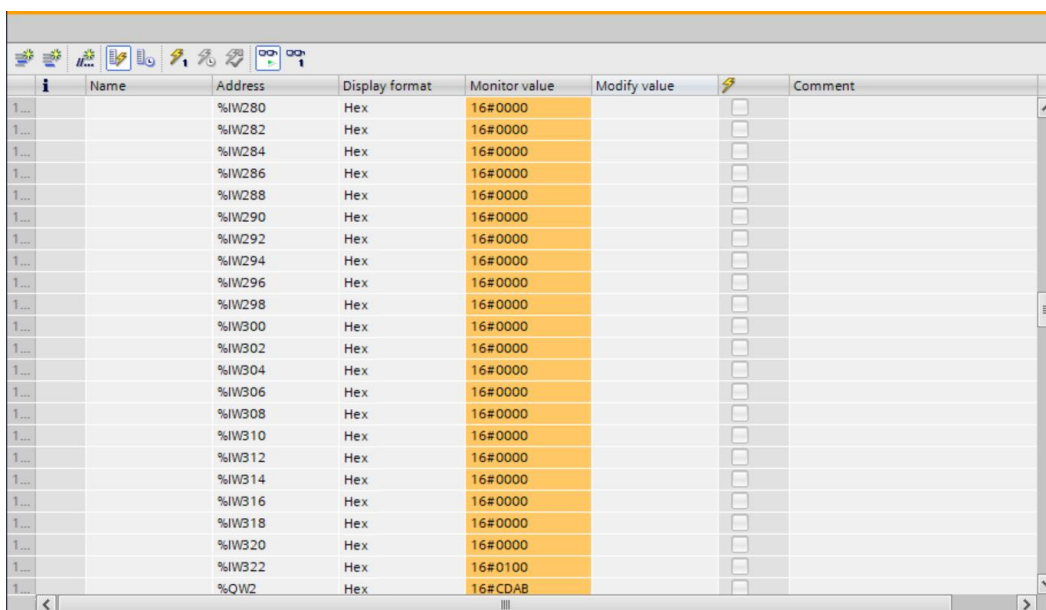
Name	Online	Type	Size	>Address	In/Out	User ID	Linked to
%O00	43981 (0xabcd)	UINT	2.0	39.0	Output	0	
%O01	65535 (0xffff)	UINT	2.0	41.0	Output	0	
%O02	0 (0x0000)	UINT	2.0	43.0	Output	0	
%O03	0 (0x0000)	UINT	2.0	45.0	Output	0	
%O04	0 (0x0000)	UINT	2.0	47.0	Output	0	
%O05	0 (0x0000)	UINT	2.0	49.0	Output	0	
%O06	0 (0x0000)	UINT	2.0	51.0	Output	0	
%O07	0 (0x0000)	UINT	2.0	53.0	Output	0	
%O08	0 (0x0000)	UINT	2.0	55.0	Output	0	
%O09	0 (0x0000)	UINT	2.0	57.0	Output	0	
%O0a	0 (0x0000)	UINT	2.0	59.0	Output	0	
%O0b	0 (0x0000)	UINT	2.0	61.0	Output	0	
%O0c	0 (0x0000)	UINT	2.0	63.0	Output	0	
%O0d	0 (0x0000)	UINT	2.0	65.0	Output	0	
%O0e	0 (0x0000)	UINT	2.0	67.0	Output	0	
%O0f	0 (0x0000)	UINT	2.0	69.0	Output	0	
%O10	0 (0x0000)	UINT	2.0	71.0	Output	0	
%O11	0 (0x0000)	UINT	2.0	73.0	Output	0	
%O12	0 (0x0000)	UINT	2.0	75.0	Output	0	
%O13	0 (0x0000)	UINT	2.0	77.0	Output	0	
%O14	0 (0x0000)	UINT	2.0	79.0	Output	0	
%O15	0 (0x0000)	UINT	2.0	81.0	Output	0	
%O16	0 (0x0000)	UINT	2.0	83.0	Output	0	
%O17	0 (0x0000)	UINT	2.0	85.0	Output	0	
%O18	0 (0x0000)	UINT	2.0	87.0	Output	0	
%O19	0 (0x0000)	UINT	2.0	89.0	Output	0	
%O1a	0 (0x0000)	UINT	2.0	91.0	Output	0	

- b. In the monitoring table of the TIA Portal V17 software, check the uplink data to confirm that the data is entered into the gateway module, as shown in the following figure, the data has been passed in.



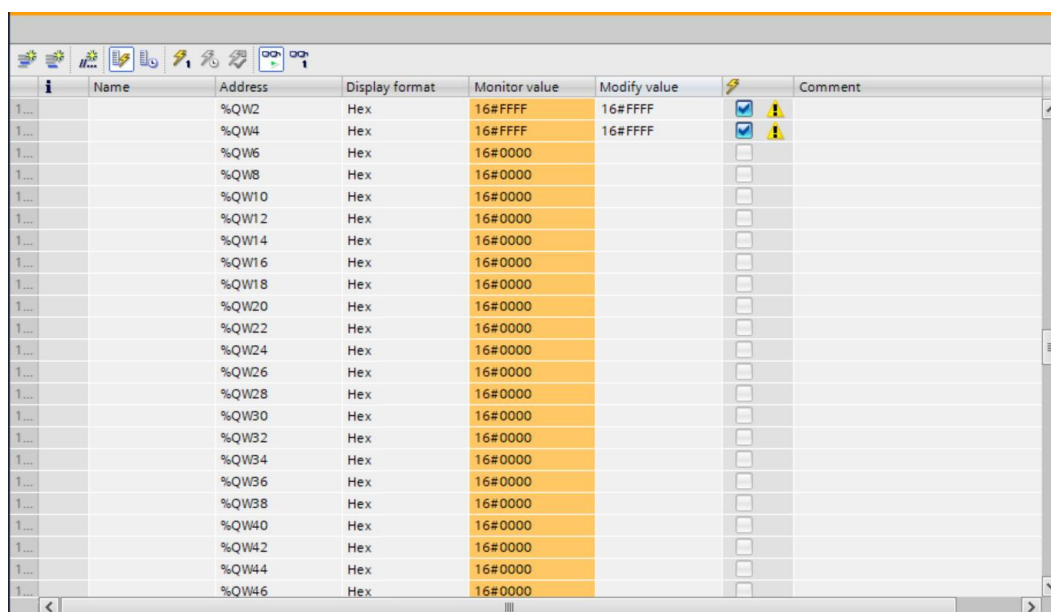
	Name	Address	Display format	Monitor value	Modify value	Comment
1		%IW68	Hex	16#CDAB		
2		%IW70	Hex	16#FFFF		
3		%IW72	Hex	16#0000		
4		%IW74	Hex	16#0000		
5		%IW76	Hex	16#0000		
6		%IW78	Hex	16#0000		
7		%IW80	Hex	16#0000		
8		%IW82	Hex	16#0000		
9		%IW84	Hex	16#0000		
10		%IW86	Hex	16#0000		
11		%IW88	Hex	16#0000		
12		%IW90	Hex	16#0000		
13		%IW92	Hex	16#0000		
14		%IW94	Hex	16#0000		
15		%IW96	Hex	16#0000		
16		%IW98	Hex	16#0000		
17		%IW100	Hex	16#0000		
18		%IW102	Hex	16#0000		
19		%IW104	Hex	16#0000		
20		%IW106	Hex	16#0000		
21		%IW108	Hex	16#0000		
22		%IW110	Hex	16#0000		
23		%IW112	Hex	16#0000		

- c. At this point, the last status bit byte of the TIA Portal V17 software uplink data is 16#01 indicating that there is data interaction between the gateways, as shown in the following figure.



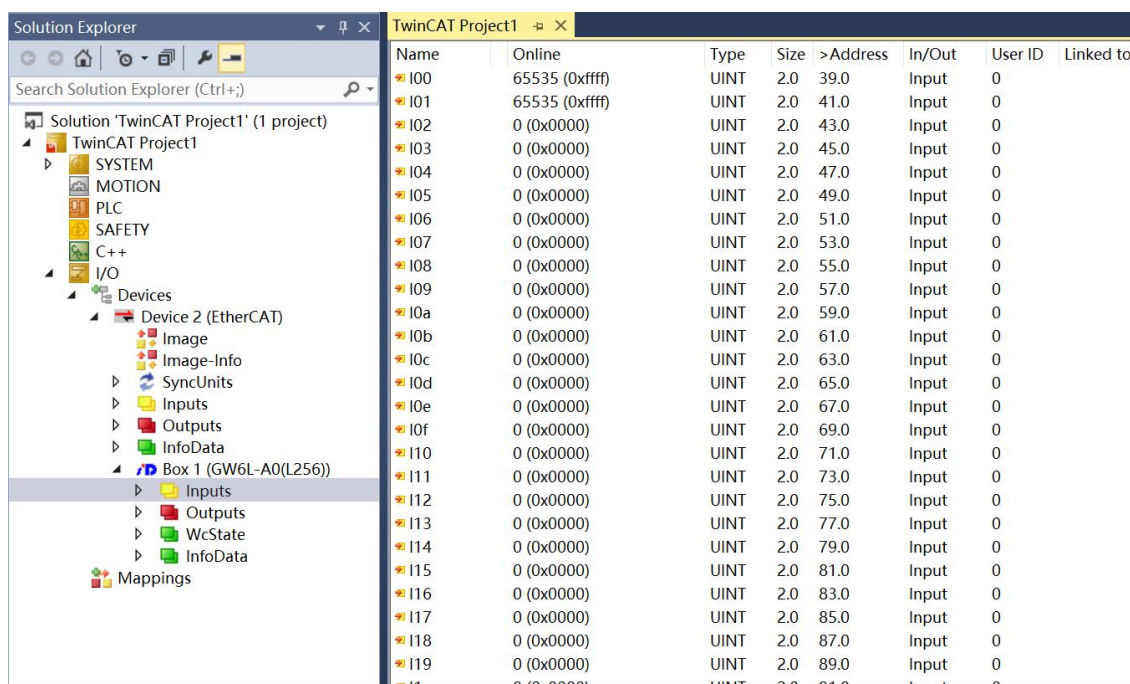
	Name	Address	Display format	Monitor value	Modify value	Comment
1...		%IW280	Hex	16#0000		
1...		%IW282	Hex	16#0000		
1...		%IW284	Hex	16#0000		
1...		%IW286	Hex	16#0000		
1...		%IW288	Hex	16#0000		
1...		%IW290	Hex	16#0000		
1...		%IW292	Hex	16#0000		
1...		%IW294	Hex	16#0000		
1...		%IW296	Hex	16#0000		
1...		%IW298	Hex	16#0000		
1...		%IW300	Hex	16#0000		
1...		%IW302	Hex	16#0000		
1...		%IW304	Hex	16#0000		
1...		%IW306	Hex	16#0000		
1...		%IW308	Hex	16#0000		
1...		%IW310	Hex	16#0000		
1...		%IW312	Hex	16#0000		
1...		%IW314	Hex	16#0000		
1...		%IW316	Hex	16#0000		
1...		%IW318	Hex	16#0000		
1...		%IW320	Hex	16#0000		
1...		%IW322	Hex	16#0100		
1...		%QW2	Hex	16#CDAB		

- d. In the monitoring table of the TIA Portal V17 software, write the downlink data as shown below.



Name	Address	Display format	Monitor value	Modify value		Comment
1...	%QW2	Hex	16#FFFF	16#FFFF	<input checked="" type="checkbox"/>	
1...	%QW4	Hex	16#FFFF	16#FFFF	<input checked="" type="checkbox"/>	
1...	%QW6	Hex	16#0000		<input type="checkbox"/>	
1...	%QW8	Hex	16#0000		<input type="checkbox"/>	
1...	%QW10	Hex	16#0000		<input type="checkbox"/>	
1...	%QW12	Hex	16#0000		<input type="checkbox"/>	
1...	%QW14	Hex	16#0000		<input type="checkbox"/>	
1...	%QW16	Hex	16#0000		<input type="checkbox"/>	
1...	%QW18	Hex	16#0000		<input type="checkbox"/>	
1...	%QW20	Hex	16#0000		<input type="checkbox"/>	
1...	%QW22	Hex	16#0000		<input type="checkbox"/>	
1...	%QW24	Hex	16#0000		<input type="checkbox"/>	
1...	%QW26	Hex	16#0000		<input type="checkbox"/>	
1...	%QW28	Hex	16#0000		<input type="checkbox"/>	
1...	%QW30	Hex	16#0000		<input type="checkbox"/>	
1...	%QW32	Hex	16#0000		<input type="checkbox"/>	
1...	%QW34	Hex	16#0000		<input type="checkbox"/>	
1...	%QW36	Hex	16#0000		<input type="checkbox"/>	
1...	%QW38	Hex	16#0000		<input type="checkbox"/>	
1...	%QW40	Hex	16#0000		<input type="checkbox"/>	
1...	%QW42	Hex	16#0000		<input type="checkbox"/>	
1...	%QW44	Hex	16#0000		<input type="checkbox"/>	
1...	%QW46	Hex	16#0000		<input type="checkbox"/>	

- e. Check the uplink data in TwinCAT3 software to confirm that the data has been entered into the gateway module, as shown in the following figure, the data has been passed in.



Name	Online	Type	Size	>Address	In/Out	User ID	Linked to
I00	65535 (0xffff)	UINT	2.0	39.0	Input	0	
I01	65535 (0xffff)	UINT	2.0	41.0	Input	0	
I02	0 (0x0000)	UINT	2.0	43.0	Input	0	
I03	0 (0x0000)	UINT	2.0	45.0	Input	0	
I04	0 (0x0000)	UINT	2.0	47.0	Input	0	
I05	0 (0x0000)	UINT	2.0	49.0	Input	0	
I06	0 (0x0000)	UINT	2.0	51.0	Input	0	
I07	0 (0x0000)	UINT	2.0	53.0	Input	0	
I08	0 (0x0000)	UINT	2.0	55.0	Input	0	
I09	0 (0x0000)	UINT	2.0	57.0	Input	0	
I0a	0 (0x0000)	UINT	2.0	59.0	Input	0	
I0b	0 (0x0000)	UINT	2.0	61.0	Input	0	
I0c	0 (0x0000)	UINT	2.0	63.0	Input	0	
I0d	0 (0x0000)	UINT	2.0	65.0	Input	0	
I0e	0 (0x0000)	UINT	2.0	67.0	Input	0	
I0f	0 (0x0000)	UINT	2.0	69.0	Input	0	
I10	0 (0x0000)	UINT	2.0	71.0	Input	0	
I11	0 (0x0000)	UINT	2.0	73.0	Input	0	
I12	0 (0x0000)	UINT	2.0	75.0	Input	0	
I13	0 (0x0000)	UINT	2.0	77.0	Input	0	
I14	0 (0x0000)	UINT	2.0	79.0	Input	0	
I15	0 (0x0000)	UINT	2.0	81.0	Input	0	
I16	0 (0x0000)	UINT	2.0	83.0	Input	0	
I17	0 (0x0000)	UINT	2.0	85.0	Input	0	
I18	0 (0x0000)	UINT	2.0	87.0	Input	0	
I19	0 (0x0000)	UINT	2.0	89.0	Input	0	
I1a	0 (0x0000)	UINT	2.0	91.0	Input	0	

- f. At this time, the last status bit byte of the TwinCAT3 software uplink data is 0x01 (Hex) indicating that there is data interaction between the gateways, as shown in the following figure.

Name	Online	Type	Size	>Address	In/Out	User ID	Linked to
I66	0 (0x0000)	UINT	2.0	243.0	Input	0	
I67	0 (0x0000)	UINT	2.0	245.0	Input	0	
I68	0 (0x0000)	UINT	2.0	247.0	Input	0	
I69	0 (0x0000)	UINT	2.0	249.0	Input	0	
I6a	0 (0x0000)	UINT	2.0	251.0	Input	0	
I6b	0 (0x0000)	UINT	2.0	253.0	Input	0	
I6c	0 (0x0000)	UINT	2.0	255.0	Input	0	
I6d	0 (0x0000)	UINT	2.0	257.0	Input	0	
I6e	0 (0x0000)	UINT	2.0	259.0	Input	0	
I6f	0 (0x0000)	UINT	2.0	261.0	Input	0	
I70	0 (0x0000)	UINT	2.0	263.0	Input	0	
I71	0 (0x0000)	UINT	2.0	265.0	Input	0	
I72	0 (0x0000)	UINT	2.0	267.0	Input	0	
I73	0 (0x0000)	UINT	2.0	269.0	Input	0	
I74	0 (0x0000)	UINT	2.0	271.0	Input	0	
I75	0 (0x0000)	UINT	2.0	273.0	Input	0	
I76	0 (0x0000)	UINT	2.0	275.0	Input	0	
I77	0 (0x0000)	UINT	2.0	277.0	Input	0	
I78	0 (0x0000)	UINT	2.0	279.0	Input	0	
I79	0 (0x0000)	UINT	2.0	281.0	Input	0	
I7a	0 (0x0000)	UINT	2.0	283.0	Input	0	
I7b	0 (0x0000)	UINT	2.0	285.0	Input	0	
I7c	0 (0x0000)	UINT	2.0	287.0	Input	0	
I7d	0 (0x0000)	UINT	2.0	289.0	Input	0	
I7e	0 (0x0000)	UINT	2.0	291.0	Input	0	
I7f	256 (0x0100)	UINT	2.0	293.0	Input	0	

7.2.2 GW6L-B0C0(L256) in TIA Portal V17 and KV STUDIO software environment

7.2.2.1 preliminary

- **hardware environment**

- **Module preparation**

This description uses the GW6L-B0C0(L256) Gateway Kit as an example

- **Two computers, one pre-installed with KV STUDIO Ver.10G software and one pre-installed with TIA Portal V17 software**

- **Shielded cables for EtherNet/IP**

- **Shielded cables for PROFINET**

- **One Siemens PLC**

This description is based on the example of Siemens S7-1200 CPU 1214C DC/DC/DC

- **One Keens PLC**

This description takes the KV-8000 as an example

- **Two switching power supplies**

- **Module mounting rails and rail mounts**

- **Device Configuration Files**

Configuration file access: <https://www.solidotech.com/documents/configfile>

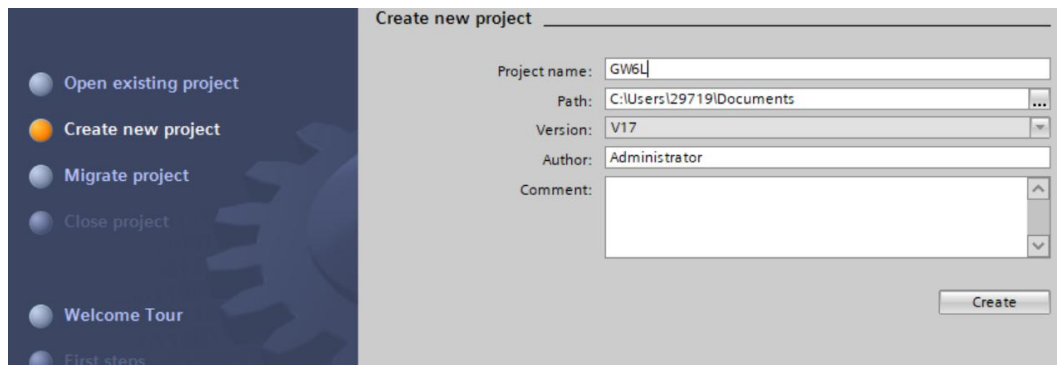
- **Hardware configuration and wiring**

Follow "[5 Installation and uninstall](#)" and "[6 Wiring](#)".

7.2.2.2 Communication connection in TIA Portal V17 software

1、New construction

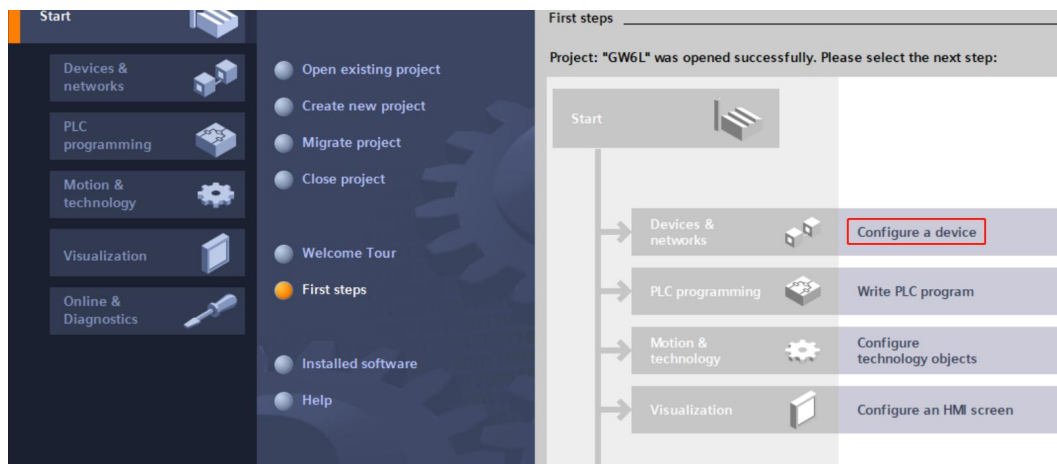
- a. Open the TIA Portal V17 software and click "Create New Project" .



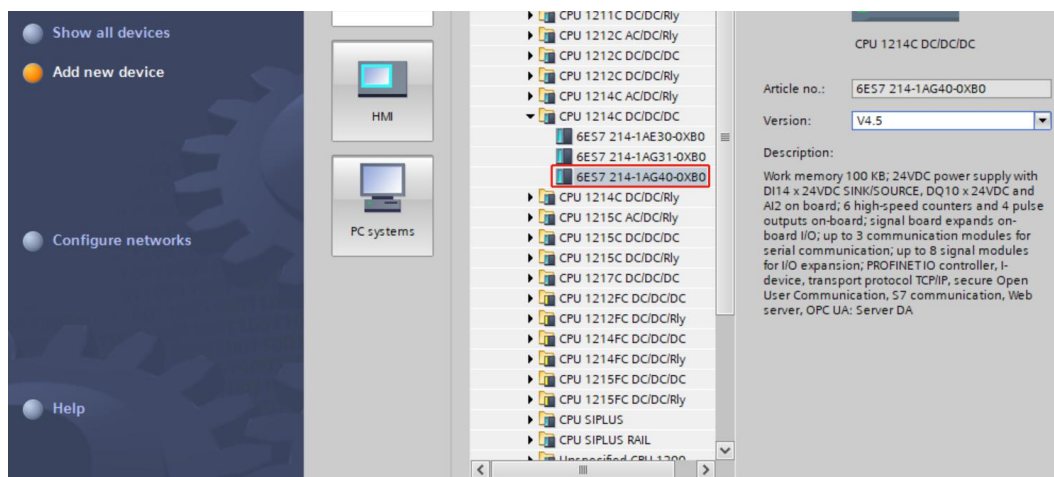
- ◆ Project name: customizable, can be left as default.
- ◆ Path: the project keeps the path, which can be left as default.
- ◆ Version: can be left as default.
- ◆ AUTHOR: The default can be maintained.
- ◆ Comment: Customizable, may not be filled in.

2、Adding a PLC controller

- a. Click "Configure A Device" , as shown in the following figure.

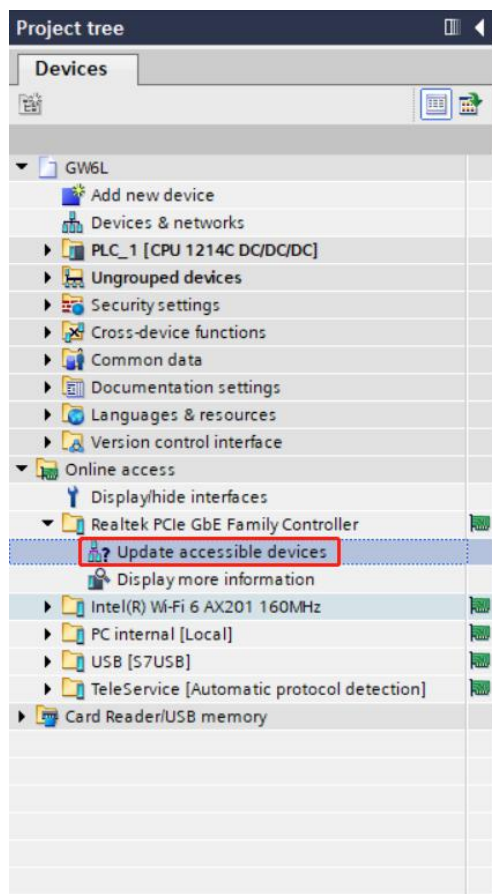


- b. Click "Add New Device", select the PLC model you are currently using, and click "Add", as shown in the following figure. After adding, you can see that the PLC has been added to the device navigation tree.

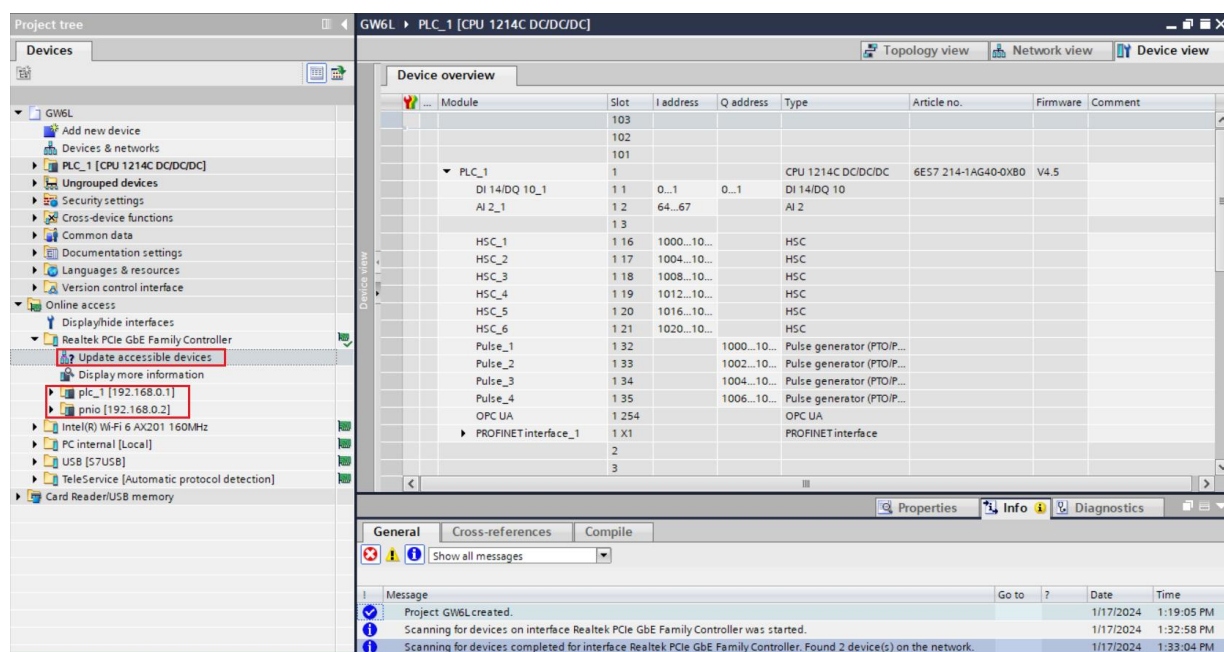


3. Scanning connected devices

- a. Click "Online Access -> Update Accessible Devices" in the left navigation tree as shown below.



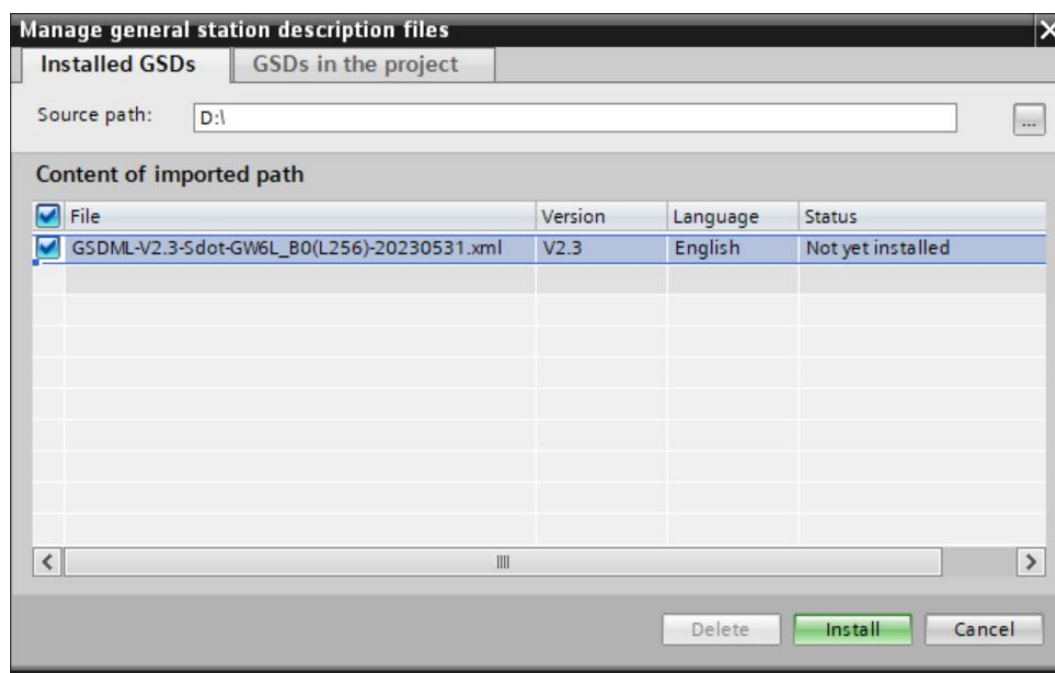
- b. When the update is complete, the connected slave devices are displayed, as shown in the following figure.



The IP address of the computer must be in the same network segment as the PLC, if not, modify the IP address of the computer and repeat the above steps.

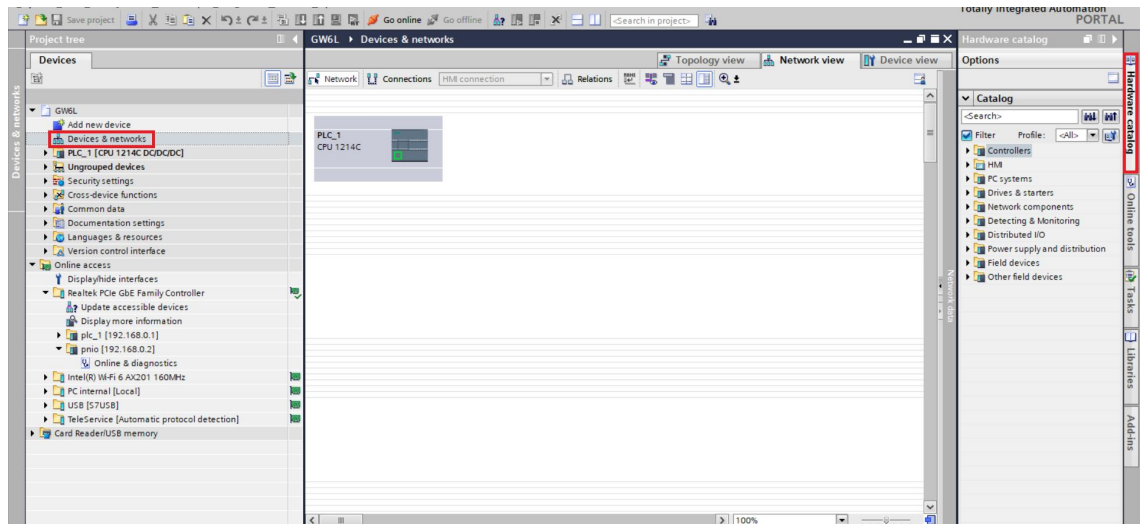
4. Adding a GSD Configuration File

- In the menu bar, select "Options -> Manage General Station Description File (GSDML) (D)".
- Click Source Path to select the file.
- Check if the status of the GSD file you want to add is "Not yet installed", click Install if it is not installed, or Cancel if it is already installed to skip the installation step.

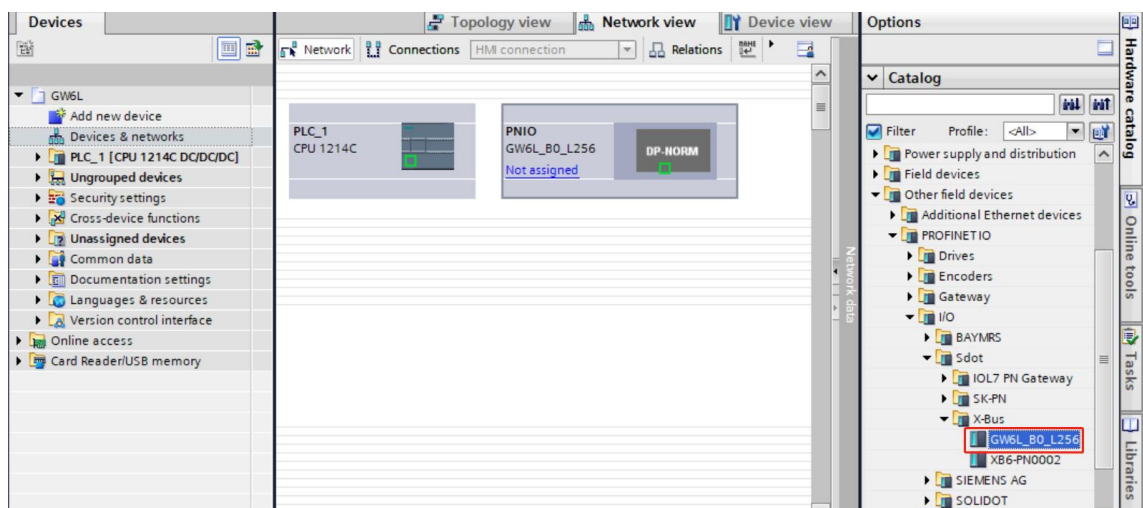


5. Adding Slave Devices

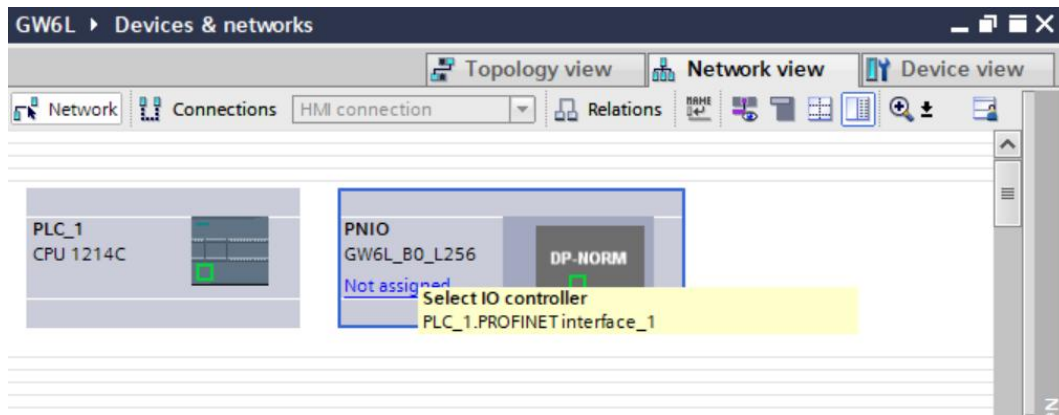
- Double-click on "Devices & Networks" in the left navigation tree.
- Click the "Hardware Catalog" vertical button on the right, the catalog is displayed as shown below.



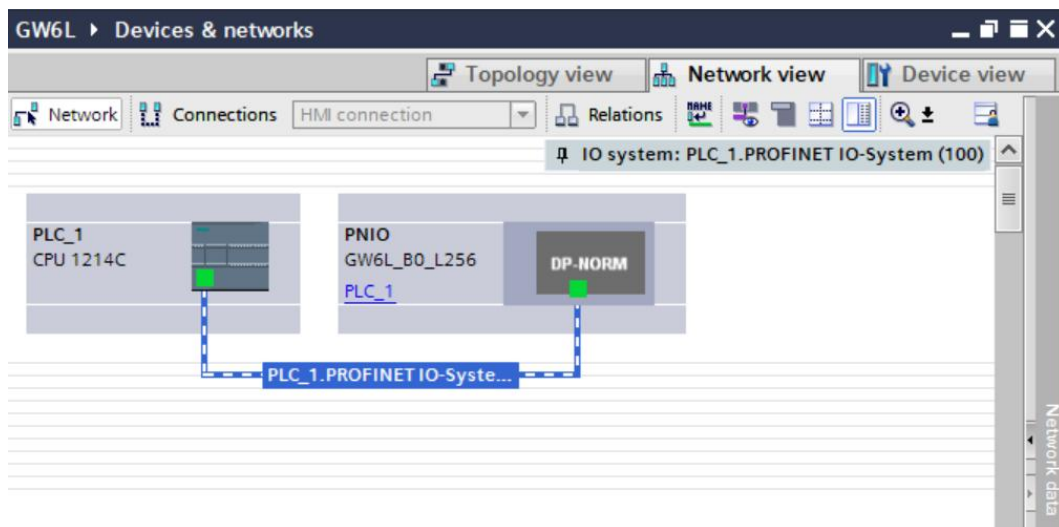
- Select "Other field devices -> PROFINET IO -> Gateway -> Sdot -> X-Bus -> GW6L-B0(L256)".
- Drag or double-click "GW6L-B0(L256)" to the "Network View" as shown below.



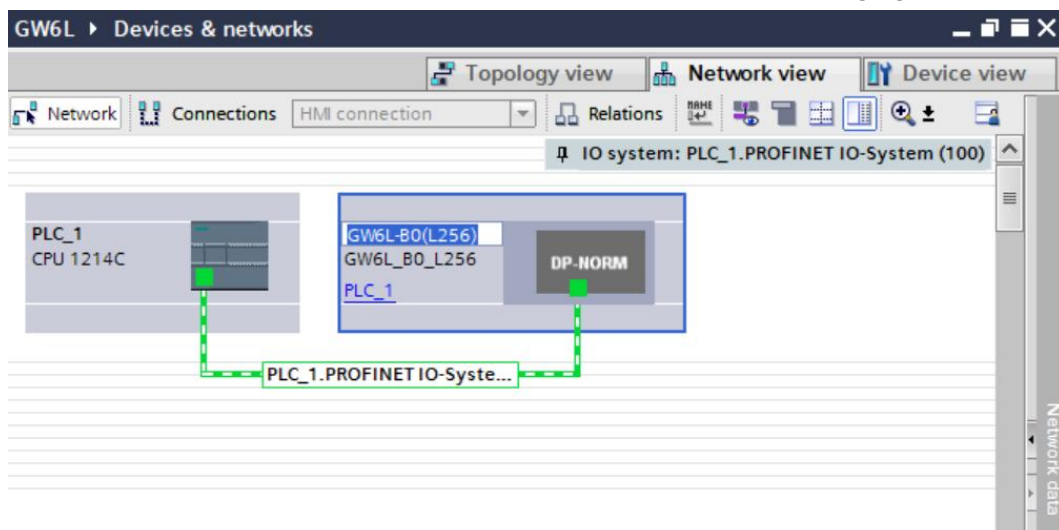
- Click "Not assigned (blue font)" on the slave device and select "PLC_1.PROFINET Interface_1" as shown below.



- f. When the connection is complete, it is shown below.



- g. Click on the device name to rename the device, as shown in the following figure.

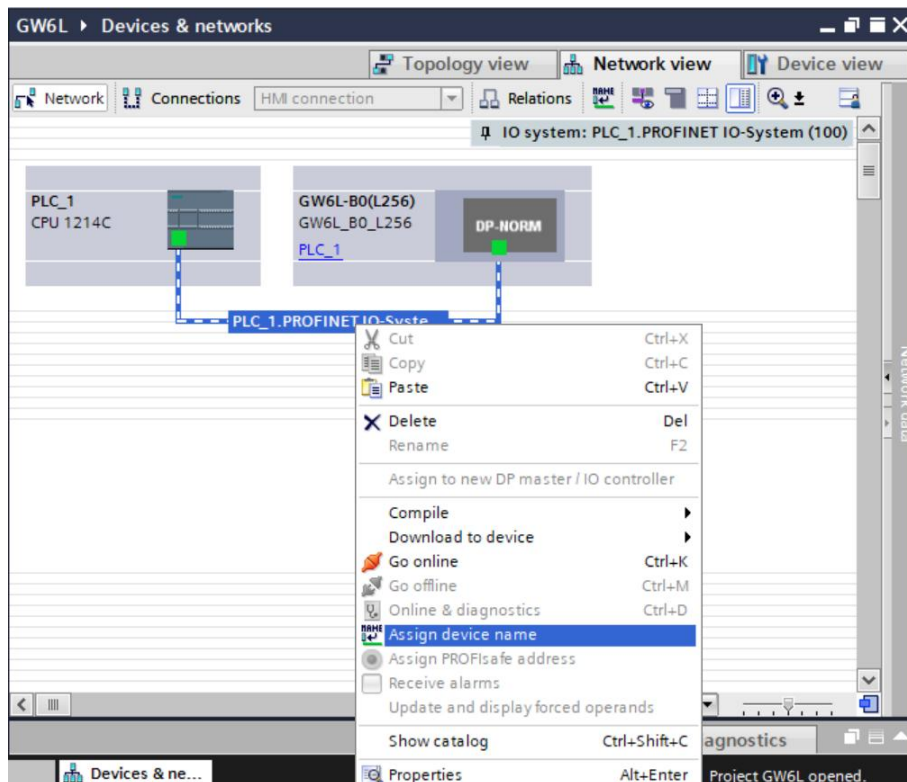


- h. Click "Device overview" to enter the device overview, you can see the topology configuration information, including the I/O address automatically assigned by the system, the I/O address can be changed by yourself, as shown in the following figure.

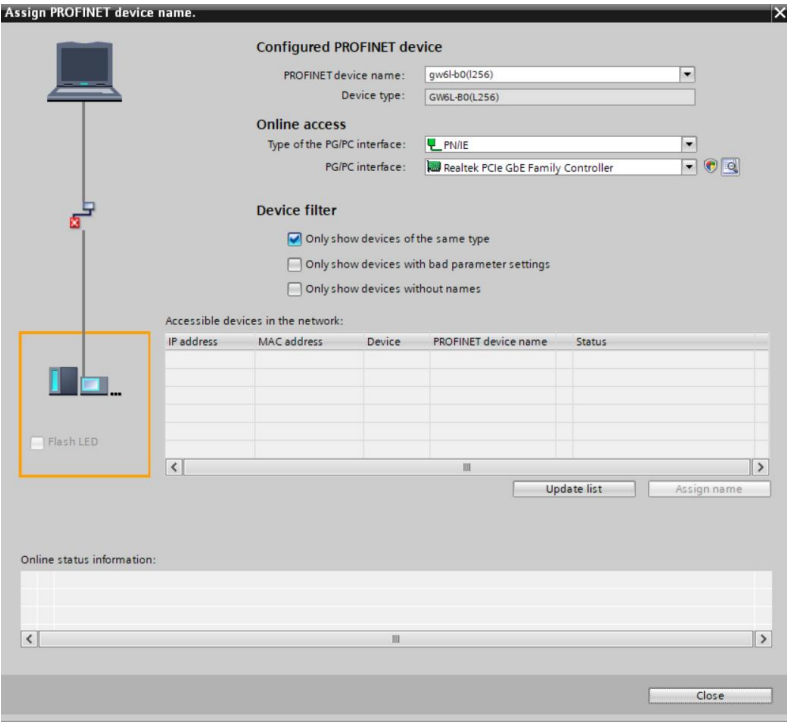
Module	Rack	Slot	I address	Q address	Type	Article number
GW6L-B0(L256)	0	0			GW6L_B0_L256	1234567
PN-IO	0	0 X1			PNIO	
IN/OUT_1	0	1	68...323	2...257	IN/OUT	

6. Assign device name

- Switch to "Network View", right-click the connection cable between PLC and GW6L-B0(L256), and select "Assign Device Name".



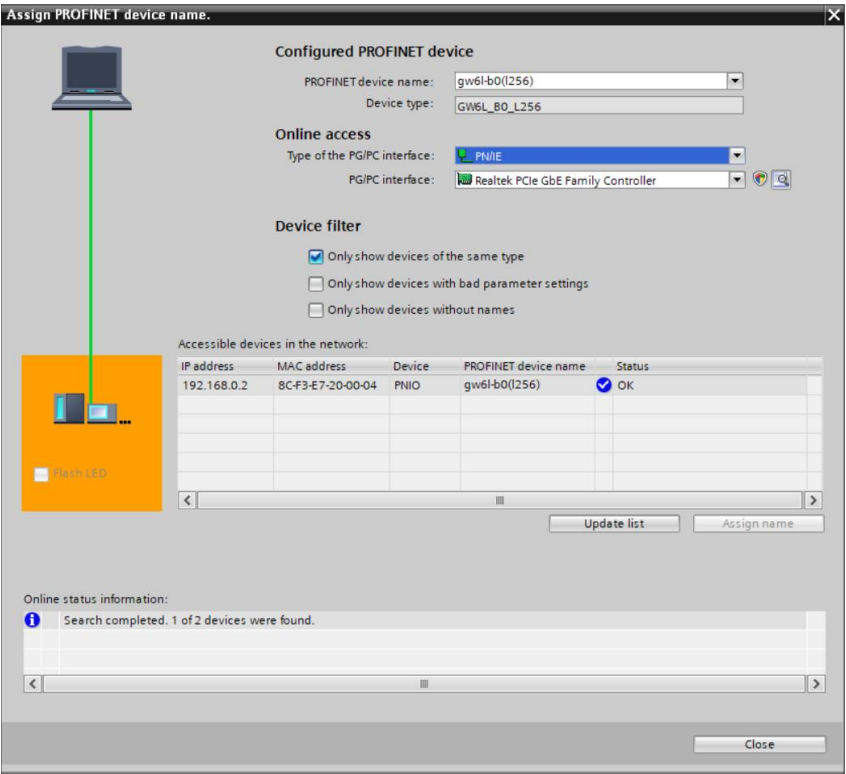
- The "Assign PROFINET Device Name" window pops up as shown below.



Check to see if the MAC address on the module silkscreen is the same as the MAC address of the assigned device name.


- ◆ PROFINET Device Name: The name set in "Assign IP address and device name to slave".
- ◆ Type of PG/PC interface: PN/IE.
- ◆ PG/PC interface: the actual network adapter used.

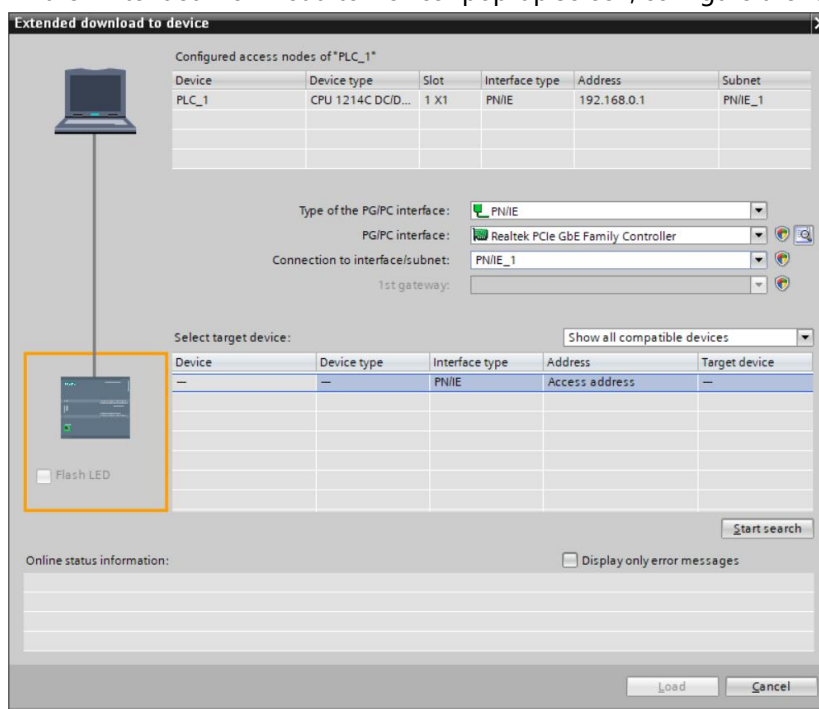
- c. Select the slave device in turn, click Update List, and click "Assign Name". Check whether the status of the node is "OK" in "Accessible nodes in the network", as shown in the following figure.



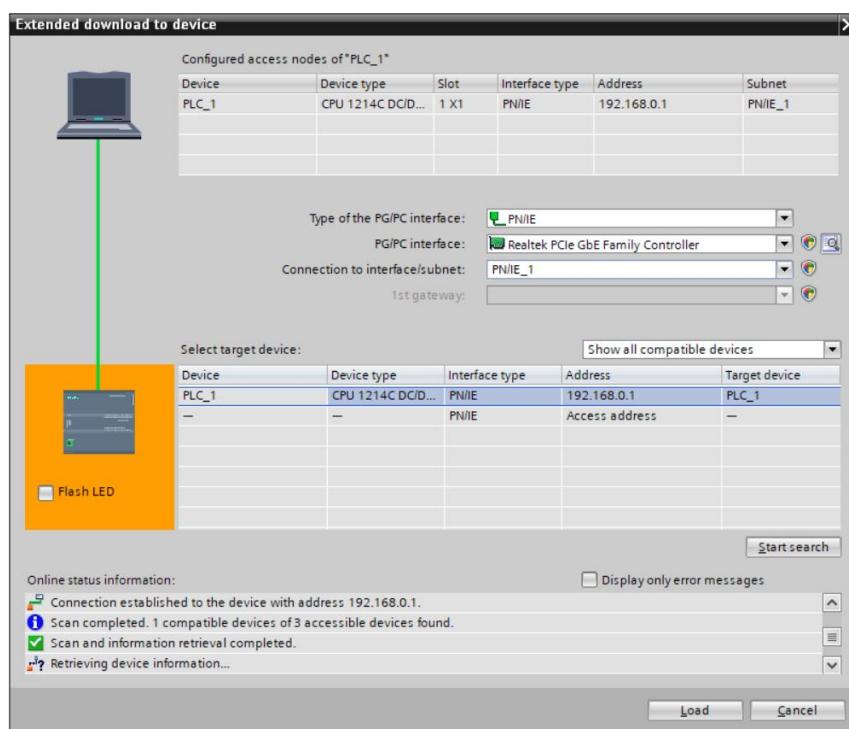
- d. Click Close.

7、Download Configuration Structure

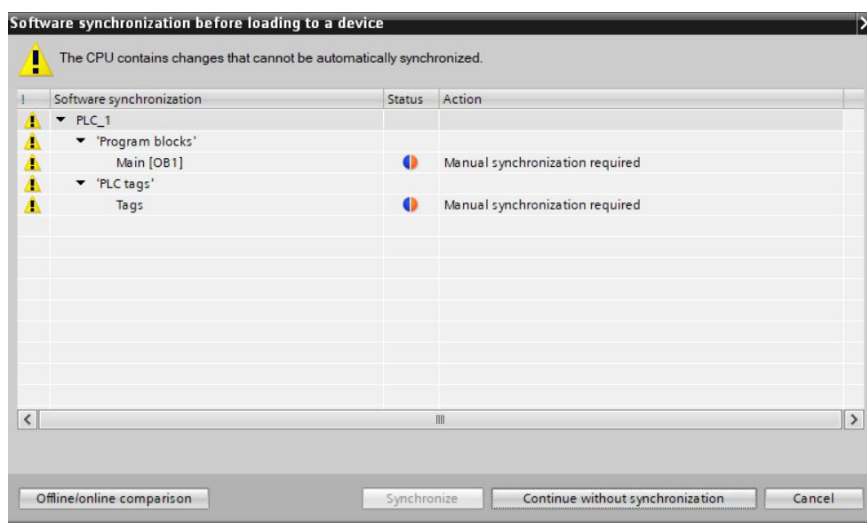
- In Network View, check PLC.
- Click the  button in the menu bar to download the current configuration to the PLC.
- In the "Extended Download to Device" pop-up screen, configure the following figure.



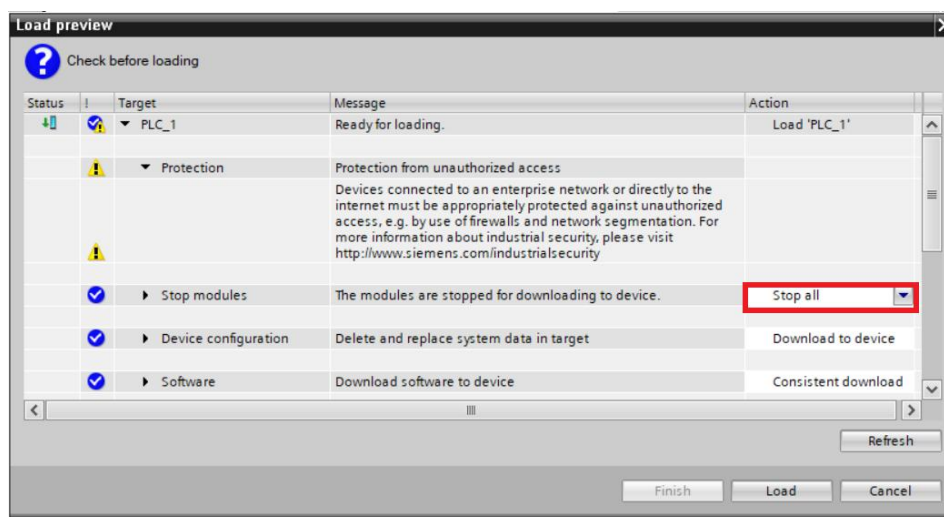
- d. Click the "Start Search" button as shown below.



- e. Click on "Download".
- f. Select "Continue without synchronization" as shown below.




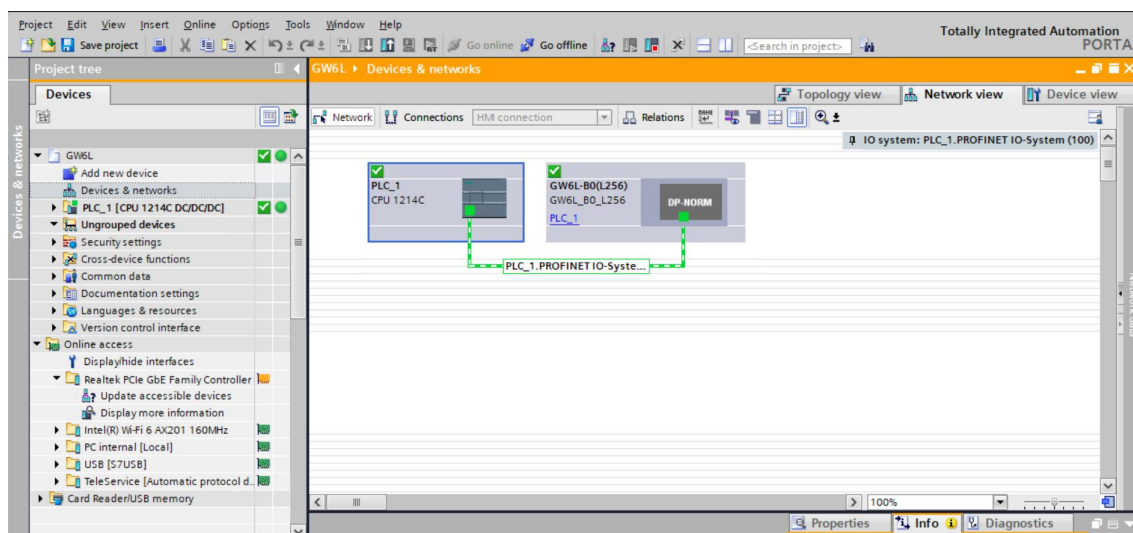
- g. Select "Stop All".



- h. Click Load.
- i. Click Finish.
- j. Power the unit back up.

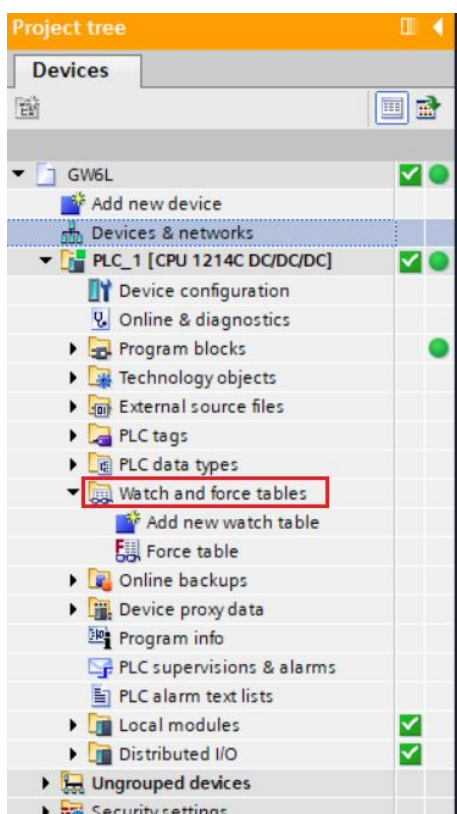
8. communication link

- a. Click the  button, and then click the "Go Online" button, the connection is successful, as shown in the following figure.

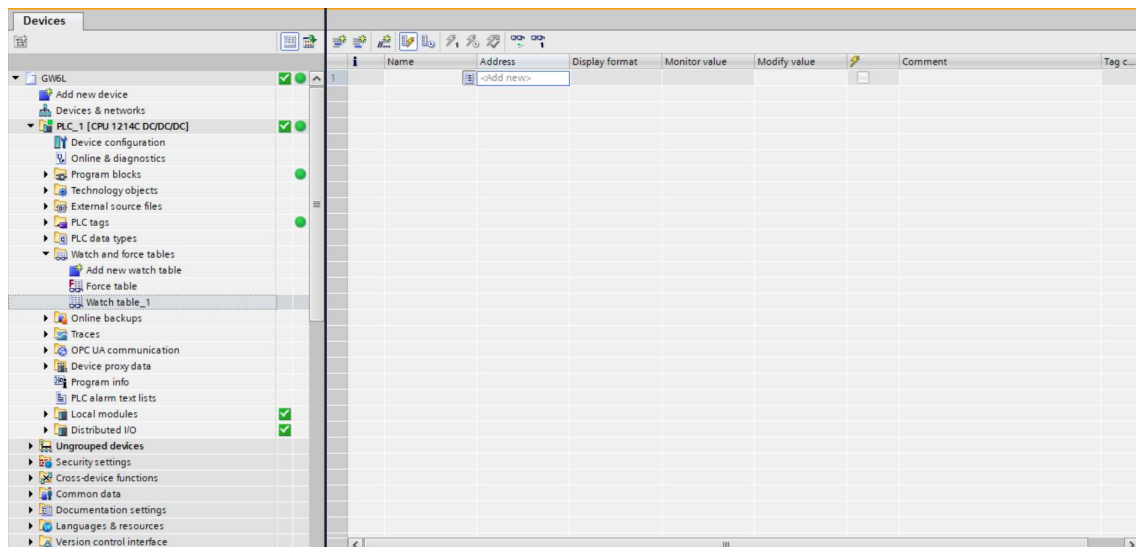


9. Viewing uplink and downlink data

- a. Expand the left side of the project navigation, select "Watch and force tables", as shown in the following figure.




- b. Double-click "Add New Watch Table", the system adds a new monitor table, as shown in the following figure.

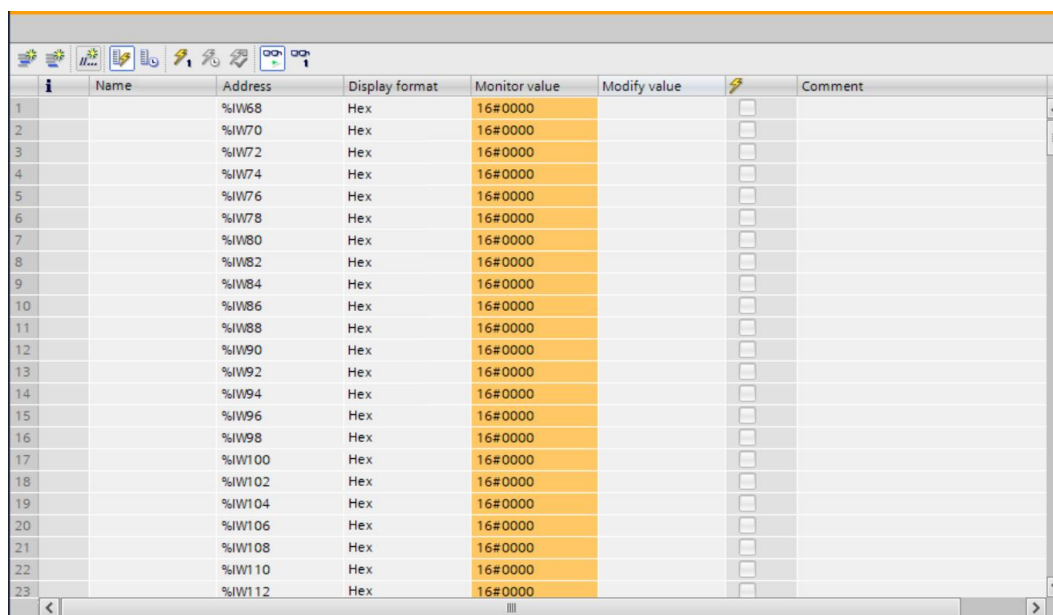


- c. Open the Device View and check the channel Q address (channel address of the output signal) or I address (channel address of the input signal) of the module GW6L-B0(L256) in the device overview.

For example, the "Q address" of GW6L-B0(L256) module is 2 to 257, and the "I address" is 68 to 323, as shown in the following figure.

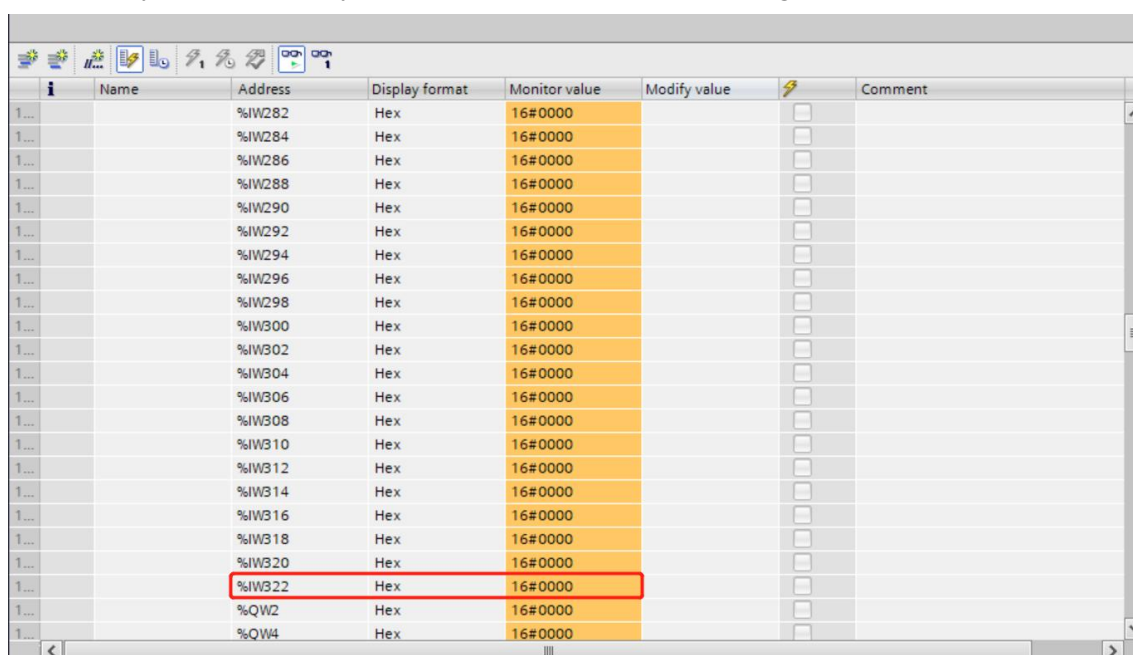
GW6L ▸ Ungrouped devices ▸ GW6L-B0(L256) [GW6L_B0_L256]									
Device overview									
Module	...	Rack	Slot	I address	Q address	Type	Article number	Firmware	Comment
GW6L-B0(L256)		0	0			GW6L_B0_L256	1234567	V10.00.00	
PNIO		0	0 X1			PNIO			
IN/OUT_1		0	1	68...323	2...257	IN/OUT		1.0	

- d. Input the address, data type and comments in the Address cell of the monitoring table to facilitate monitoring. You can refer to the definition of the uplink and downlink process data, enter the data items in order, press the Enter key, and then click the  button to monitor the data after all the fields are filled in.
- e. The module's uplink data is shown below in the watch table to see if the data is coming in correctly.



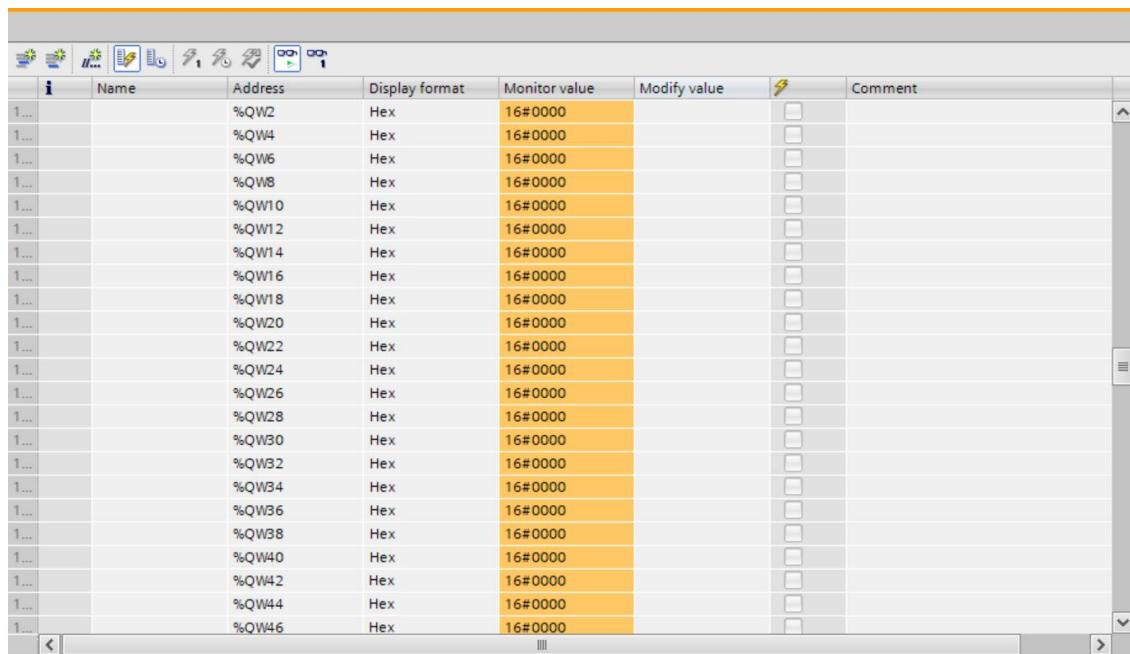
	Name	Address	Display format	Monitor value	Modify value		Comment
1		%IW68	Hex	16#0000		<input type="checkbox"/>	
2		%IW70	Hex	16#0000		<input type="checkbox"/>	
3		%IW72	Hex	16#0000		<input type="checkbox"/>	
4		%IW74	Hex	16#0000		<input type="checkbox"/>	
5		%IW76	Hex	16#0000		<input type="checkbox"/>	
6		%IW78	Hex	16#0000		<input type="checkbox"/>	
7		%IW80	Hex	16#0000		<input type="checkbox"/>	
8		%IW82	Hex	16#0000		<input type="checkbox"/>	
9		%IW84	Hex	16#0000		<input type="checkbox"/>	
10		%IW86	Hex	16#0000		<input type="checkbox"/>	
11		%IW88	Hex	16#0000		<input type="checkbox"/>	
12		%IW90	Hex	16#0000		<input type="checkbox"/>	
13		%IW92	Hex	16#0000		<input type="checkbox"/>	
14		%IW94	Hex	16#0000		<input type="checkbox"/>	
15		%IW96	Hex	16#0000		<input type="checkbox"/>	
16		%IW98	Hex	16#0000		<input type="checkbox"/>	
17		%IW100	Hex	16#0000		<input type="checkbox"/>	
18		%IW102	Hex	16#0000		<input type="checkbox"/>	
19		%IW104	Hex	16#0000		<input type="checkbox"/>	
20		%IW106	Hex	16#0000		<input type="checkbox"/>	
21		%IW108	Hex	16#0000		<input type="checkbox"/>	
22		%IW110	Hex	16#0000		<input type="checkbox"/>	
23		%IW112	Hex	16#0000		<input type="checkbox"/>	

- f. In this example, the range of 68~322 bytes in the uplink data is the input data, totaling 255 bytes; the 323rd byte, i.e., the last byte, is the status bit, as shown in the figure below.




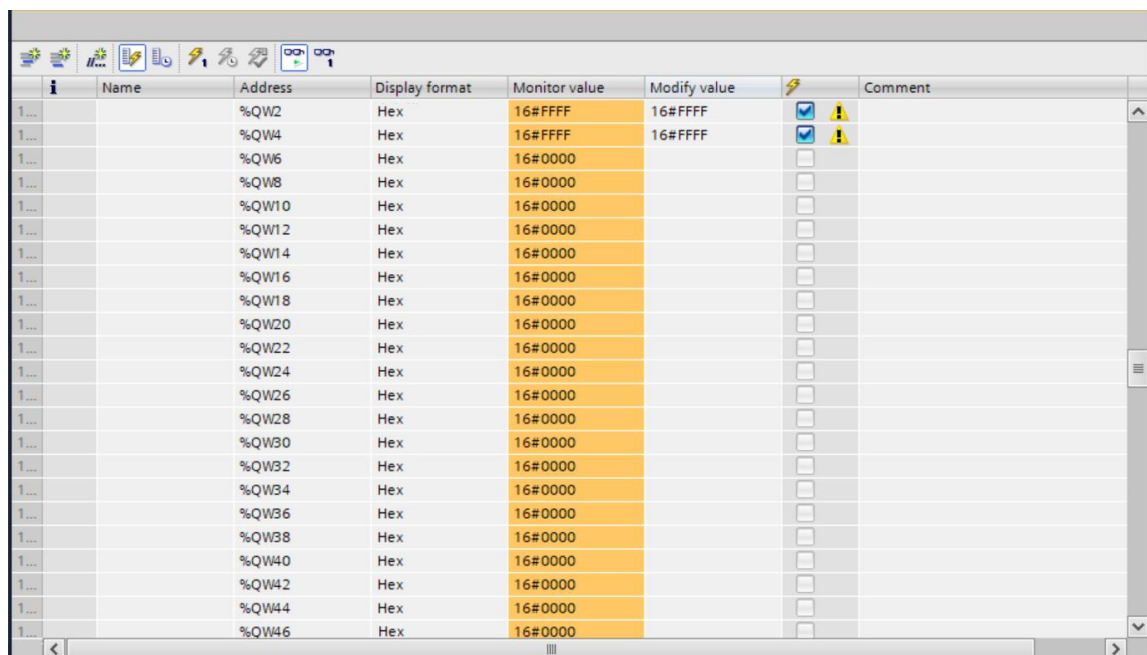
	Name	Address	Display format	Monitor value	Modify value		Comment
1...		%IW282	Hex	16#0000		<input type="checkbox"/>	
1...		%IW284	Hex	16#0000		<input type="checkbox"/>	
1...		%IW286	Hex	16#0000		<input type="checkbox"/>	
1...		%IW288	Hex	16#0000		<input type="checkbox"/>	
1...		%IW290	Hex	16#0000		<input type="checkbox"/>	
1...		%IW292	Hex	16#0000		<input type="checkbox"/>	
1...		%IW294	Hex	16#0000		<input type="checkbox"/>	
1...		%IW296	Hex	16#0000		<input type="checkbox"/>	
1...		%IW298	Hex	16#0000		<input type="checkbox"/>	
1...		%IW300	Hex	16#0000		<input type="checkbox"/>	
1...		%IW302	Hex	16#0000		<input type="checkbox"/>	
1...		%IW304	Hex	16#0000		<input type="checkbox"/>	
1...		%IW306	Hex	16#0000		<input type="checkbox"/>	
1...		%IW308	Hex	16#0000		<input type="checkbox"/>	
1...		%IW310	Hex	16#0000		<input type="checkbox"/>	
1...		%IW312	Hex	16#0000		<input type="checkbox"/>	
1...		%IW314	Hex	16#0000		<input type="checkbox"/>	
1...		%IW316	Hex	16#0000		<input type="checkbox"/>	
1...		%IW318	Hex	16#0000		<input type="checkbox"/>	
1...		%IW320	Hex	16#0000		<input type="checkbox"/>	
1...		%IW322	Hex	16#0000		<input type="checkbox"/>	
1...		%QW2	Hex	16#0000		<input type="checkbox"/>	
1...		%QW4	Hex	16#0000		<input type="checkbox"/>	



- g. The downlink data of the module is shown below in the monitoring table for forcing the output data as shown below.



	Name	Address	Display format	Monitor value	Modify value		Comment
1...		%QW2	Hex	16#0000		<input type="checkbox"/>	
1...		%QW4	Hex	16#0000		<input type="checkbox"/>	
1...		%QW6	Hex	16#0000		<input type="checkbox"/>	
1...		%QW8	Hex	16#0000		<input type="checkbox"/>	
1...		%QW10	Hex	16#0000		<input type="checkbox"/>	
1...		%QW12	Hex	16#0000		<input type="checkbox"/>	
1...		%QW14	Hex	16#0000		<input type="checkbox"/>	
1...		%QW16	Hex	16#0000		<input type="checkbox"/>	
1...		%QW18	Hex	16#0000		<input type="checkbox"/>	
1...		%QW20	Hex	16#0000		<input type="checkbox"/>	
1...		%QW22	Hex	16#0000		<input type="checkbox"/>	
1...		%QW24	Hex	16#0000		<input type="checkbox"/>	
1...		%QW26	Hex	16#0000		<input type="checkbox"/>	
1...		%QW28	Hex	16#0000		<input type="checkbox"/>	
1...		%QW30	Hex	16#0000		<input type="checkbox"/>	
1...		%QW32	Hex	16#0000		<input type="checkbox"/>	
1...		%QW34	Hex	16#0000		<input type="checkbox"/>	
1...		%QW36	Hex	16#0000		<input type="checkbox"/>	
1...		%QW38	Hex	16#0000		<input type="checkbox"/>	
1...		%QW40	Hex	16#0000		<input type="checkbox"/>	
1...		%QW42	Hex	16#0000		<input type="checkbox"/>	
1...		%QW44	Hex	16#0000		<input type="checkbox"/>	
1...		%QW46	Hex	16#0000		<input type="checkbox"/>	

- h. In the "Modify Value" cell enter the value, click the  button to write, write the value, as shown in the figure below.

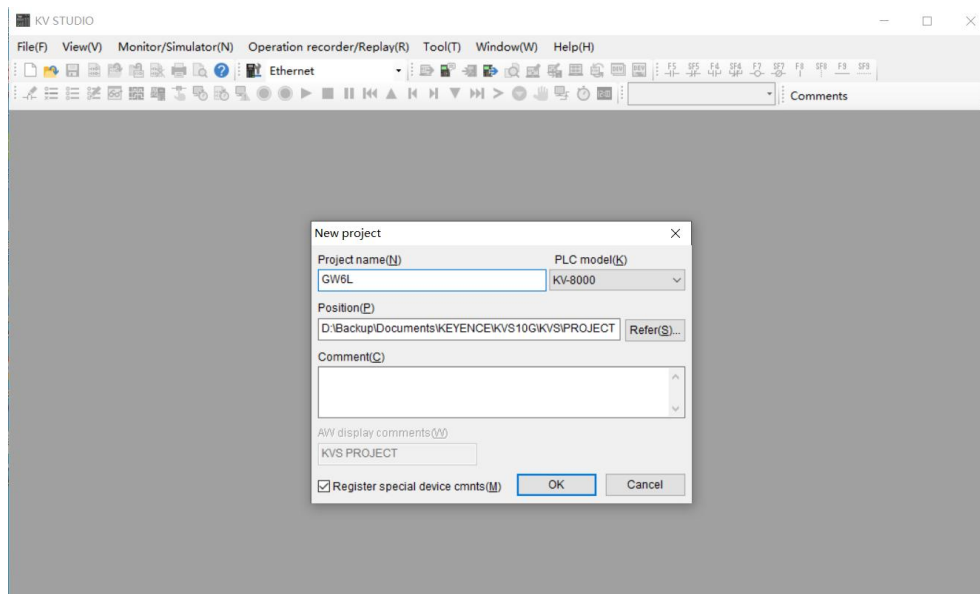


	Name	Address	Display format	Monitor value	Modify value		Comment
1...		%QW2	Hex	16#FFFF	16#FFFF	<input checked="" type="checkbox"/> 	
1...		%QW4	Hex	16#FFFF	16#FFFF	<input checked="" type="checkbox"/> 	
1...		%QW6	Hex	16#0000		<input type="checkbox"/>	
1...		%QW8	Hex	16#0000		<input type="checkbox"/>	
1...		%QW10	Hex	16#0000		<input type="checkbox"/>	
1...		%QW12	Hex	16#0000		<input type="checkbox"/>	
1...		%QW14	Hex	16#0000		<input type="checkbox"/>	
1...		%QW16	Hex	16#0000		<input type="checkbox"/>	
1...		%QW18	Hex	16#0000		<input type="checkbox"/>	
1...		%QW20	Hex	16#0000		<input type="checkbox"/>	
1...		%QW22	Hex	16#0000		<input type="checkbox"/>	
1...		%QW24	Hex	16#0000		<input type="checkbox"/>	
1...		%QW26	Hex	16#0000		<input type="checkbox"/>	
1...		%QW28	Hex	16#0000		<input type="checkbox"/>	
1...		%QW30	Hex	16#0000		<input type="checkbox"/>	
1...		%QW32	Hex	16#0000		<input type="checkbox"/>	
1...		%QW34	Hex	16#0000		<input type="checkbox"/>	
1...		%QW36	Hex	16#0000		<input type="checkbox"/>	
1...		%QW38	Hex	16#0000		<input type="checkbox"/>	
1...		%QW40	Hex	16#0000		<input type="checkbox"/>	
1...		%QW42	Hex	16#0000		<input type="checkbox"/>	
1...		%QW44	Hex	16#0000		<input type="checkbox"/>	
1...		%QW46	Hex	16#0000		<input type="checkbox"/>	

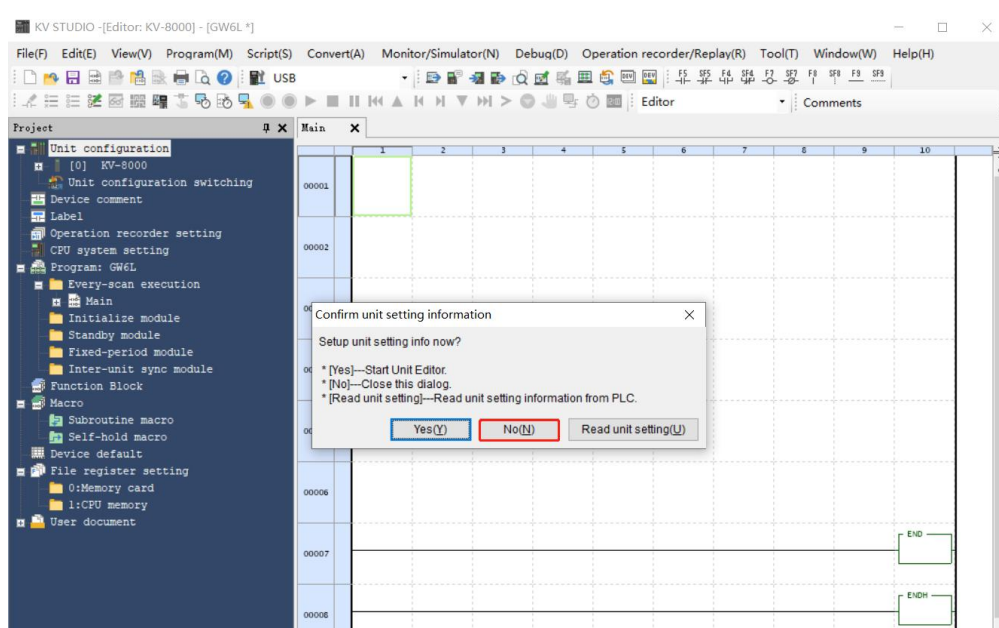
7.2.2.3 Application in KV STUDIO software environment

1. Create Project

- Open KV STUDIO software, select "File -> New Project".
- In the pop-up box, fill in the "Project Name", select "PLC Model", "Position", as shown in the figure below




- ◆ Project name: Customize.
 - ◆ PLC model: View the PLC appearance and select the corresponding model, e.g. KV-8000.
- The "Confirm Unit Setting Information" window pops up, and you can select to start the Unit Editor, close the dialog box, or read the unit configuration from the PLC as necessary. Select "No" to demonstrate the operation, as shown in the figure below.

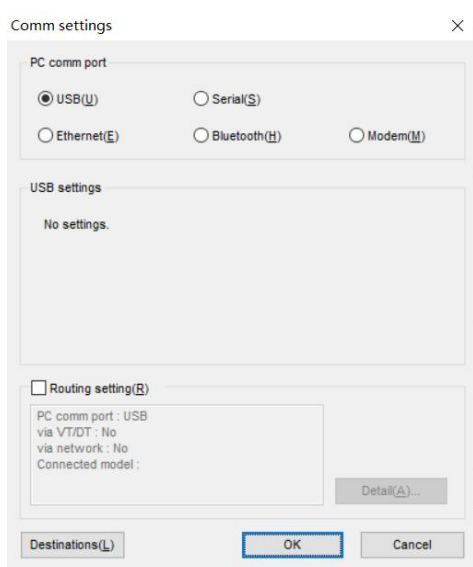


2、Communication settings

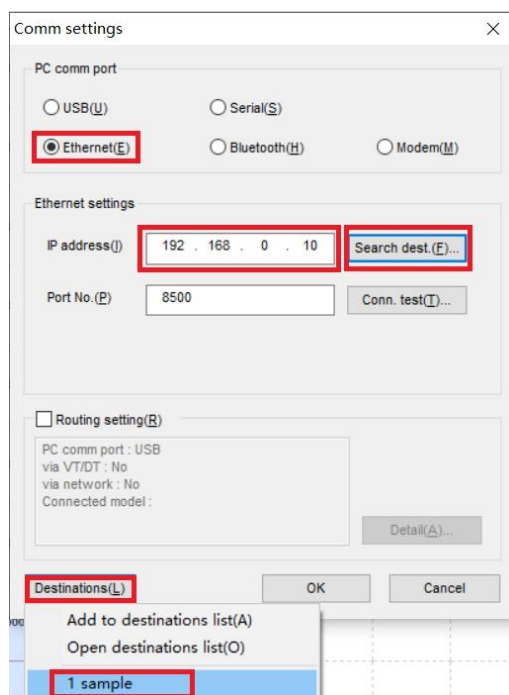
Select the communication method, if the PLC and the host computer software are connected through a network cable, select "Ethernet", if connected through USB, select "USB".

Procedure for "Ethernet" operation

- a. Click the  button on the menu bar to display the "Communication Settings" window as shown below.



- b. Select "Ethernet", click "Destinations", select "1 sample", configure the IP address, and click "Search Destination Target". Click "Find Connection Target", as shown in the following figure, the IP address is configured in the "192.168.0" network segment.



- c. In the “Search Destination” pop-up window, select the “network card” and click “Execute” , as shown in the following figure.

Search destination

Select network card

Network card (N) Realtek PCIe GbE Family Controller

IP address 192.168.0.254

Subnet mask 255.255.255.0

Port No. (P) 8500 Execute(S) Stop(B)

Find Ethernet unit where broadcast packets reach. (KV only)

*Network load may increase according to the number of connected units.

Result

MAC address	Connected Unit type	IP address	Project name
-------------	---------------------	------------	--------------

Select Cancel

- d. Select the found PLC and click "Execute" as shown in the following figure.

Search destination

Select network card

Network card (N) Realtek PCIe GbE Family Controller

IP address 192.168.0.254

Subnet mask 255.255.255.0

Port No. (P) 8500 Execute(S) Stop(B)

Find Ethernet unit where broadcast packets reach. (KV only)

*Network load may increase according to the number of connected units.

Result

MAC address	Connected Unit type	IP address	Project name
00-01-FC-ED-53-73	KV-8000	192.168.0.10	11

Select Cancel

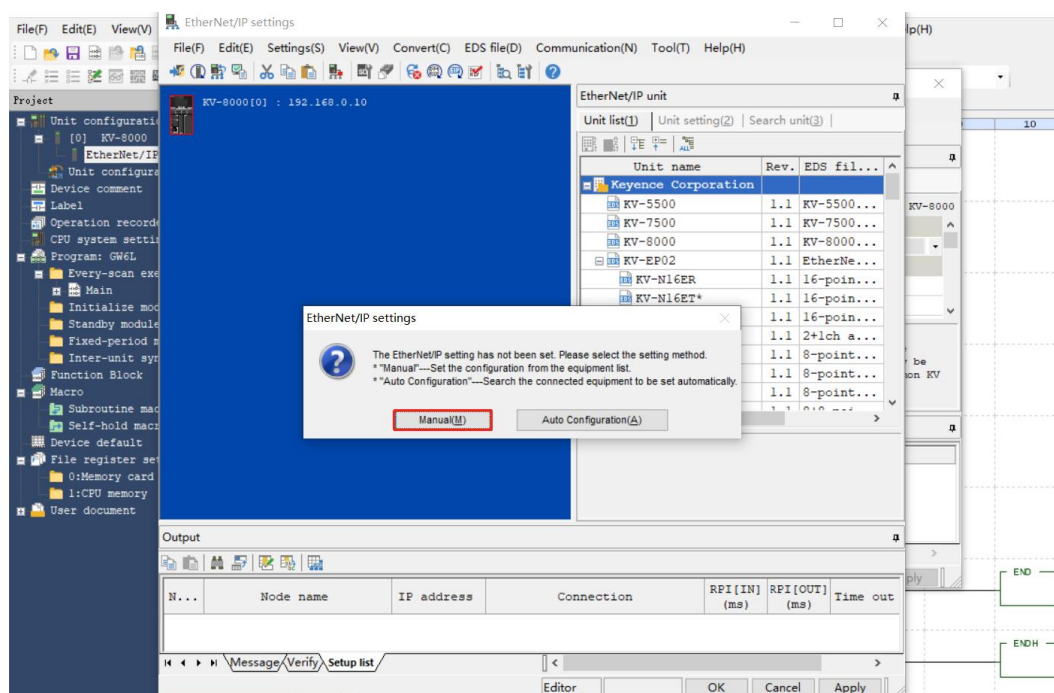
- e. Click the "OK" button on the Communication Settings window.

"USB connection" operation method

Select USB on the "Communication Settings" screen.

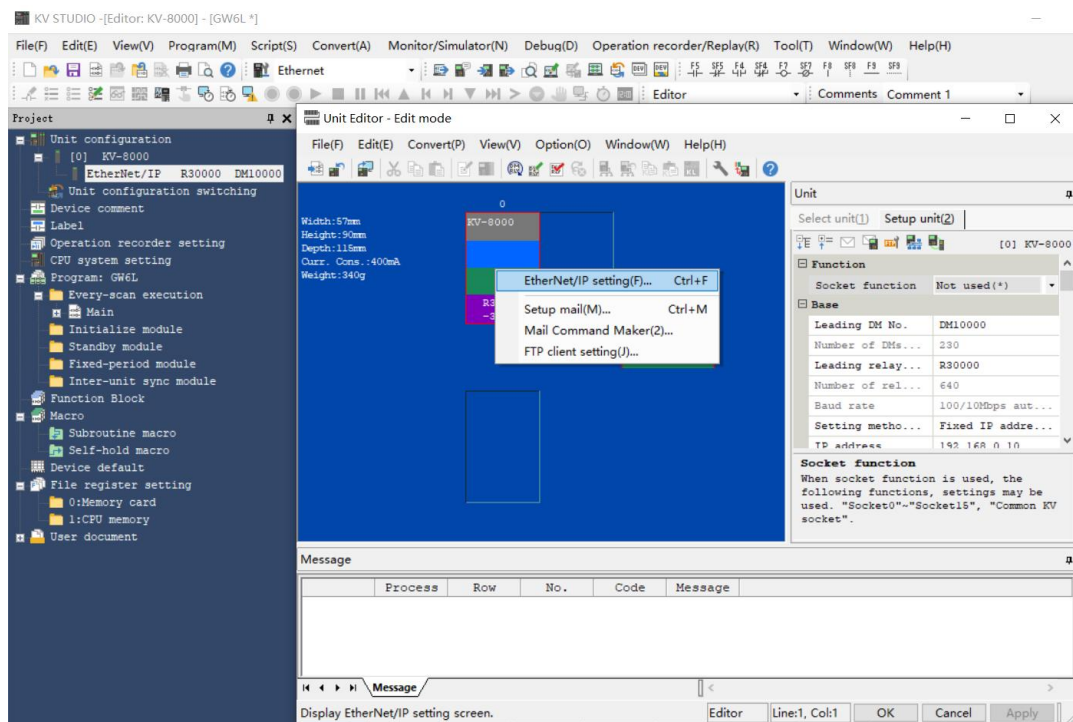
3. EtherNet/IP settings

- a. Double click "Unit Configuration -> KV-8000 -> EtherNet/IP R30000 DMI10000" in the left navigation tree to bring up the "EtherNet/IP Settings" window. Select "Manual" or "Auto Configuration" as required. Select "Manual" to demonstrate the operation as shown in the figure below. When the setting is completed, click "OK" to close the window.

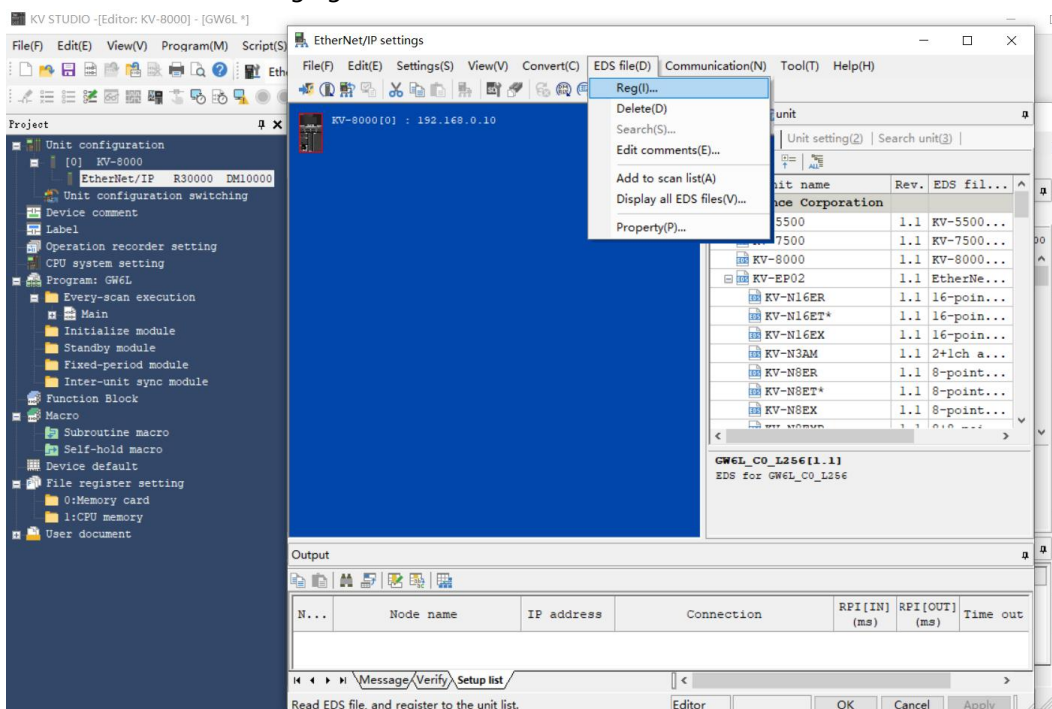


4. Installation of EDS files

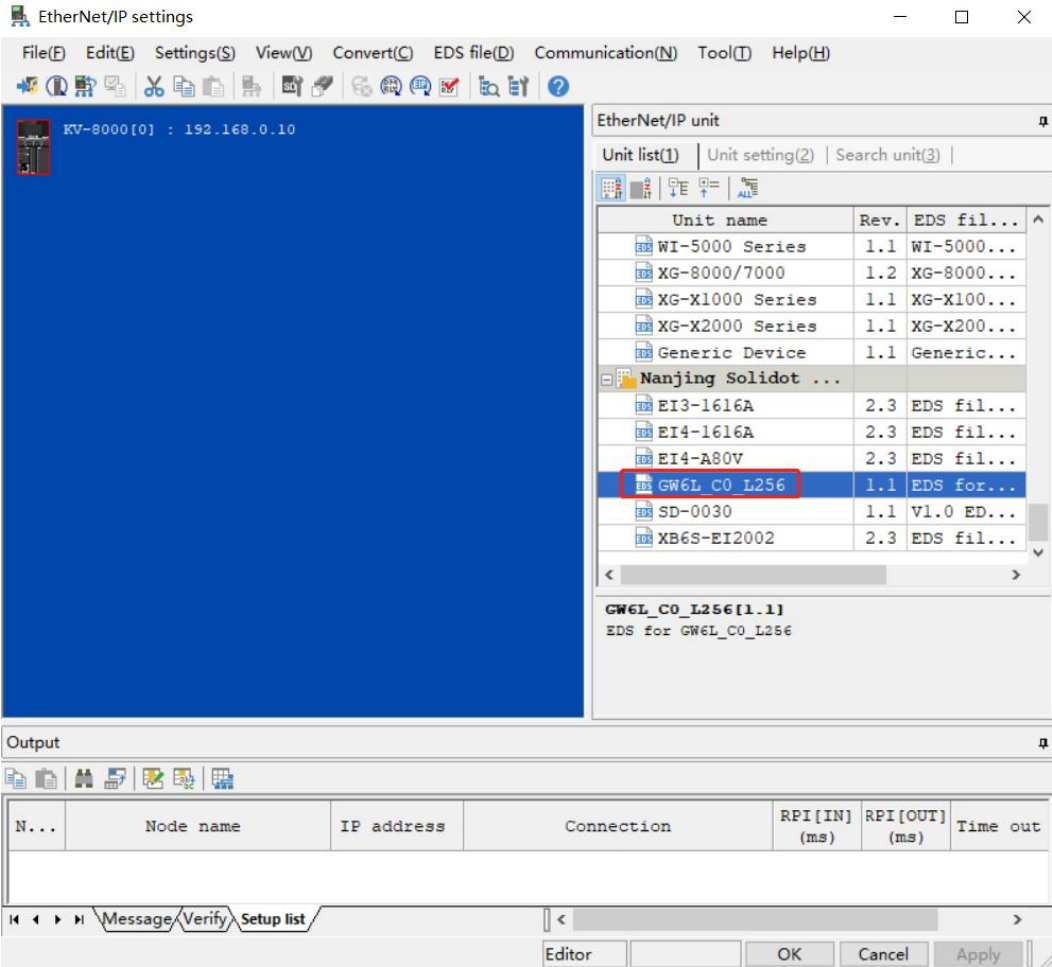
- a. Right-click the KV-8000 in the Unit Editor window and select "EtherNet/IP Settings" to enter the settings page as shown below.



- b. Click "EDS File" in the menu bar of the "EtherNet/IP Settings" screen, and then click "Registration" as shown in the following figure.



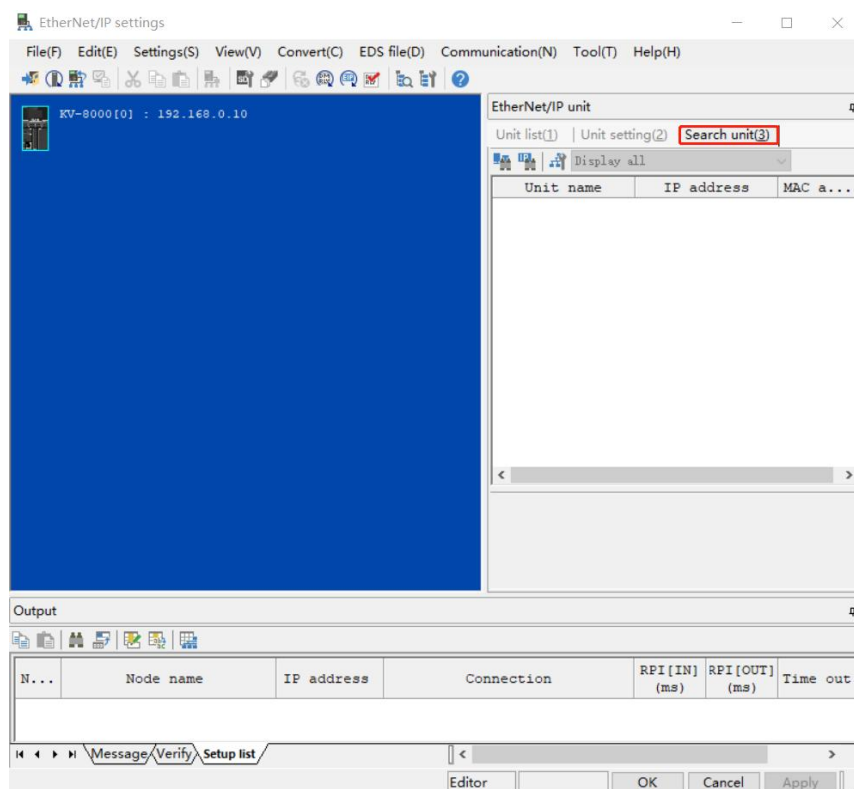
- c. In the folder where the EDS file is placed, select the EDS file of the corresponding model and click "OK", the configuration file installation is completed, as shown in the following figure.




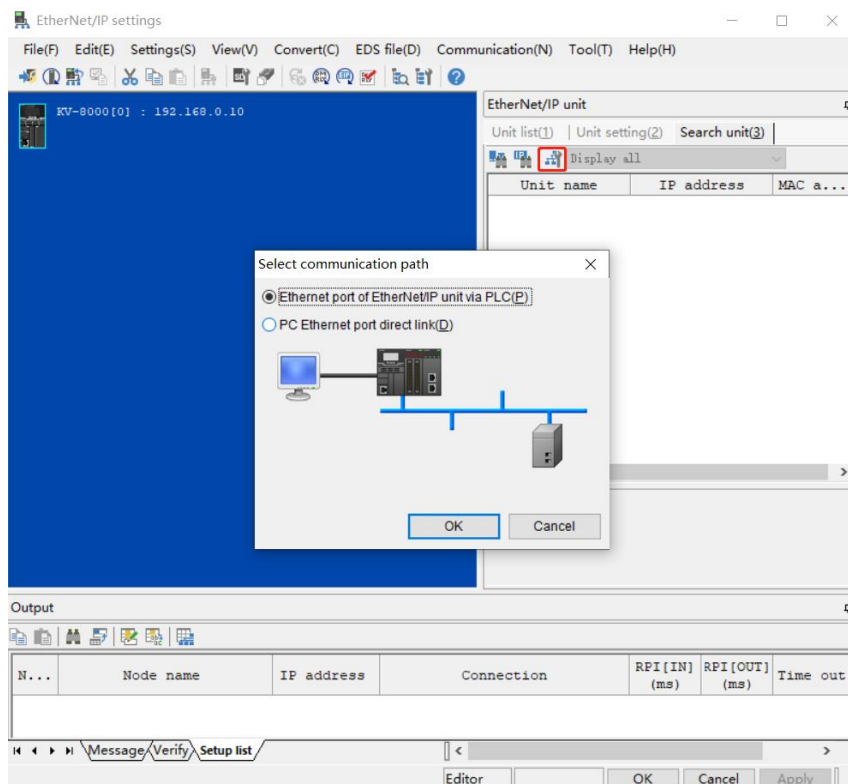
5. topological configuration

Topology configuration can be "manually added" and "auto-configuration" two ways, this configuration using manual configuration.

- a. Enter the "EtherNet/IP Settings" page and switch to the "Search Unit" tab, as shown in the following figure.

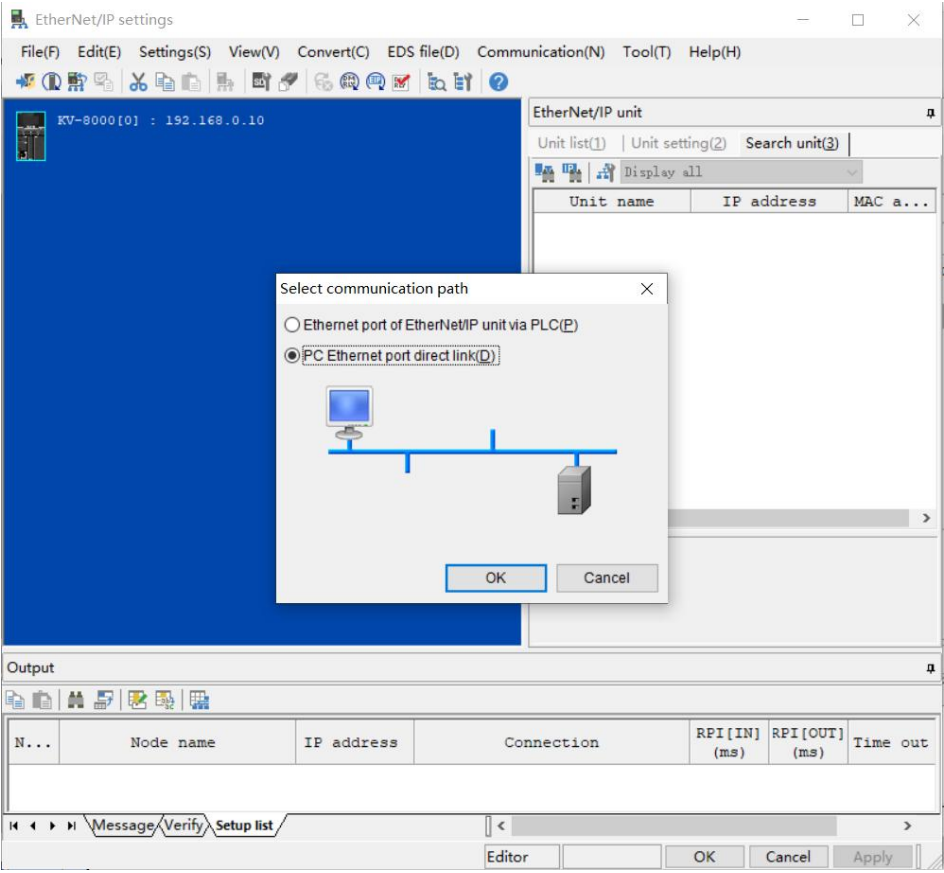


- b. Click , select the communication path, and the USB connection method is shown in the following figure.

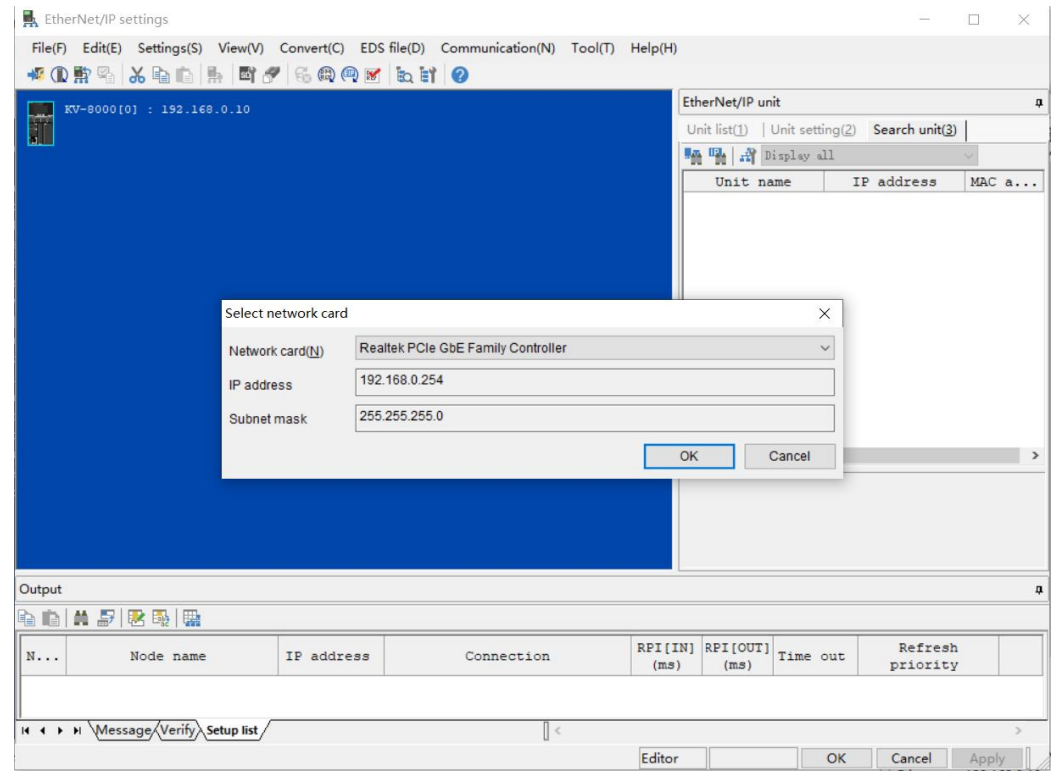



- c. "PC Ethernet Port Direct Link" is the network cable connection method, as shown in the following

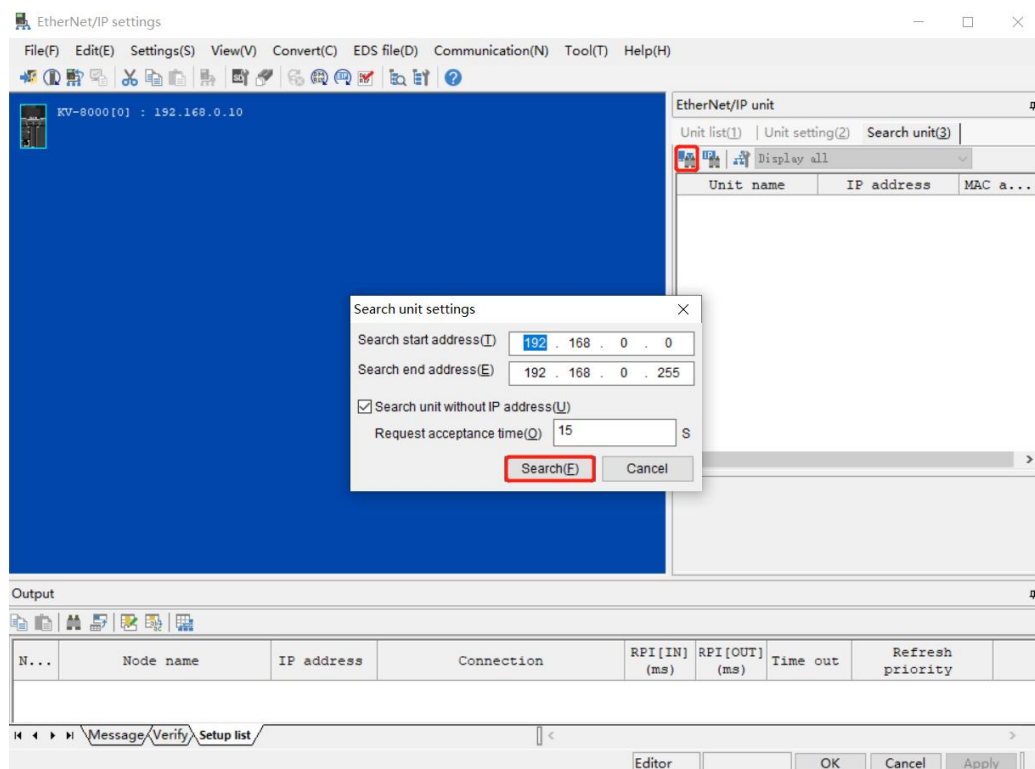
figure.



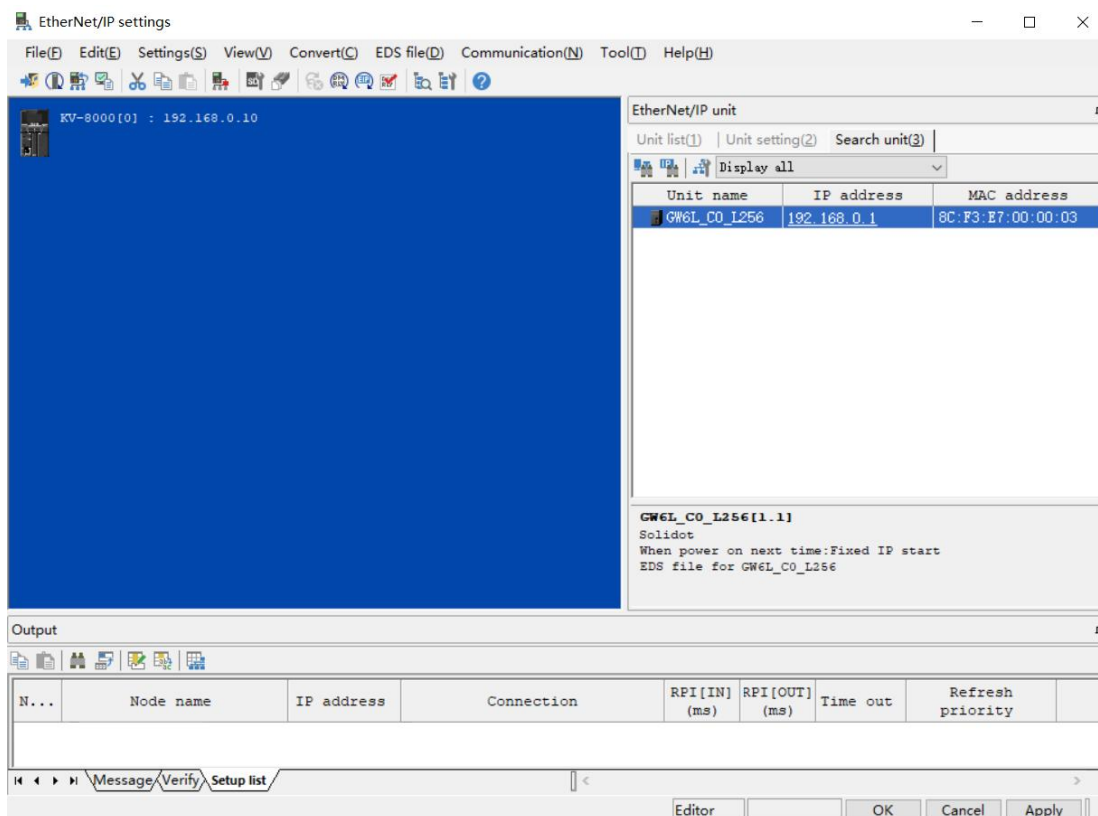
- d. Select "PC Ethernet Port Direct Link" to bring up the "Select NIC" window, and set the local NIC and IP address, as shown in the following figure.



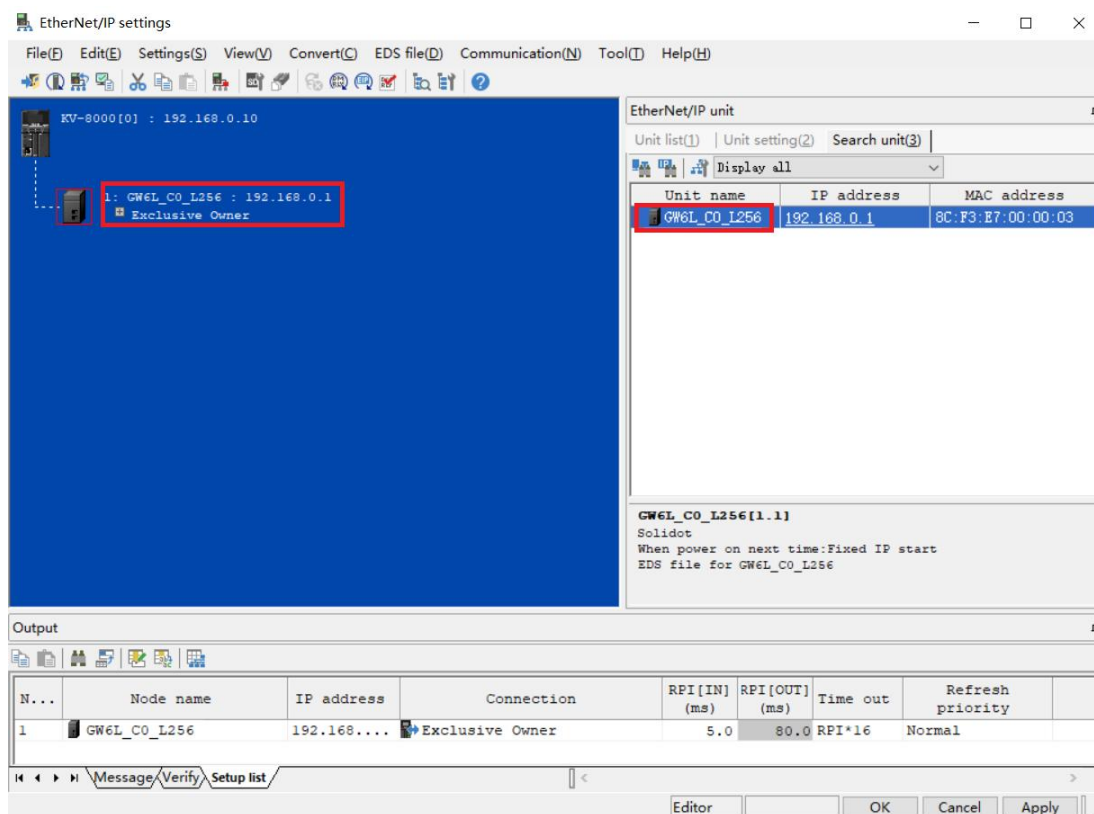
- e. Click  to search for devices connected to the network. Set the IP address segment for searching, and click "Search" as shown in the following figure.



- f. When the search is complete, the display is shown below.



- g. Double-click on the found device to add it to the configuration, as shown below.



6. Setting the IP address

In the interface of the found device, double-click the IP address column and configure the IP address in the pop-up box. The default address network segment is 192.168.0.

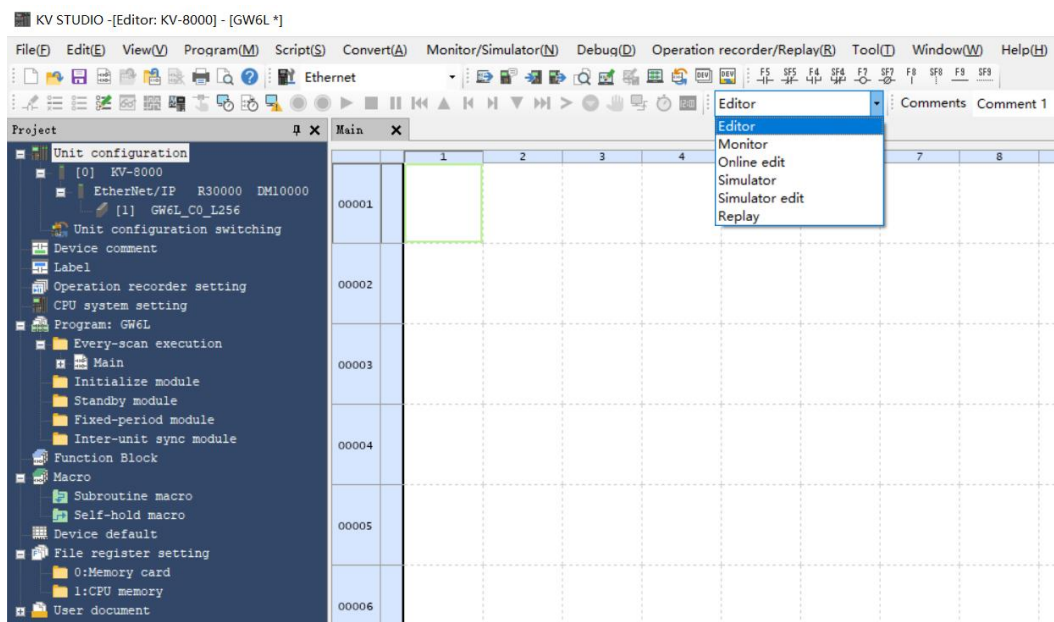
Description:

- The timeout for setting the IP address needs to be configured to 60s.
- If the dipswitch is configured with an IP address, the IP of the dipswitch prevails.

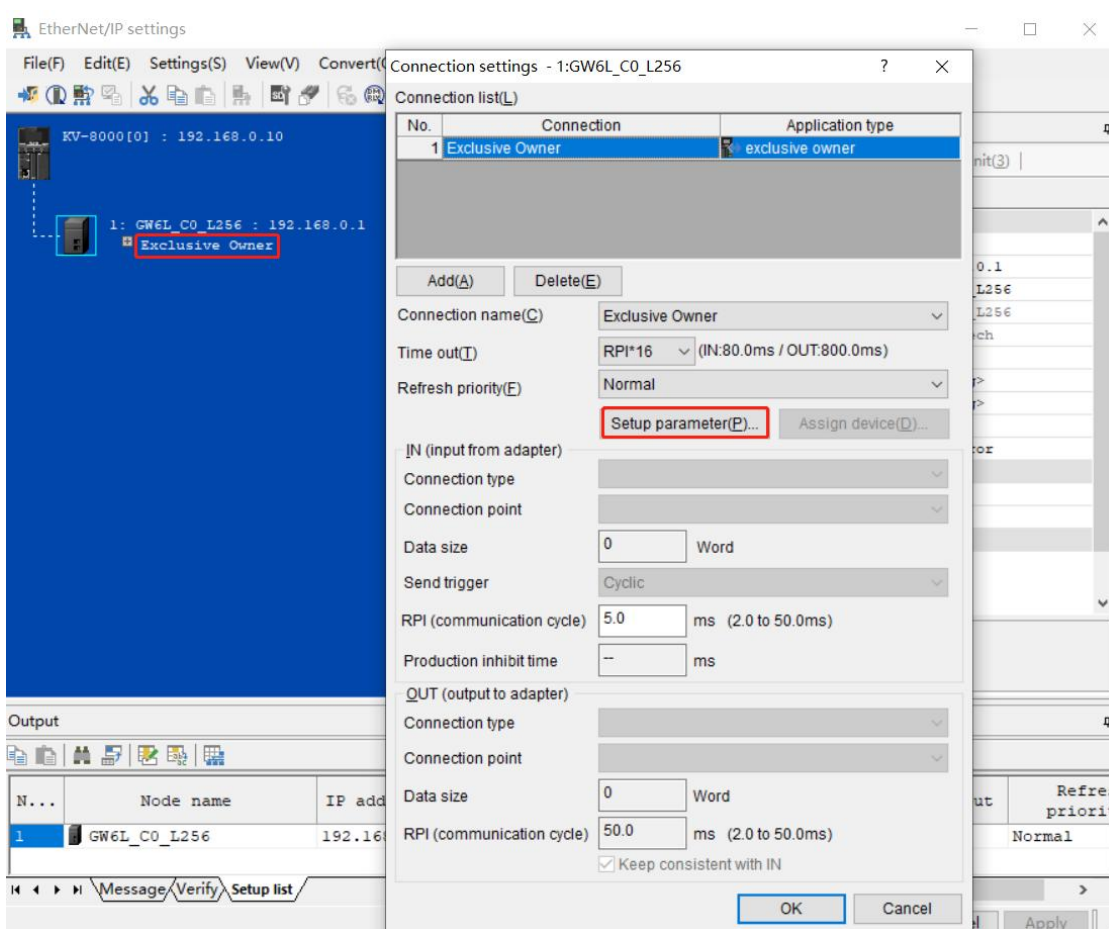
In this example, the GW6L-C0 (L256) uses a dial-up IP address of 192.168.0.1.

7. Configure the amount of uplink and downlink data

- a. Click the Switch Mode option in the menu bar to switch to Editor mode, as shown in the following figure.

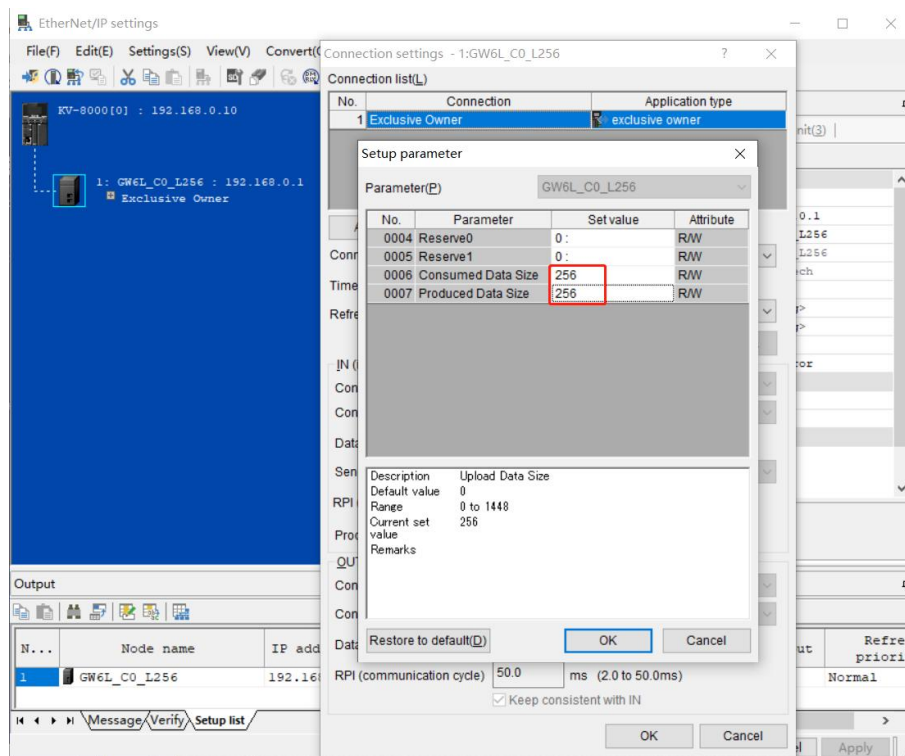


- b. Enter the "Ethernet/IP Settings" screen and click "Exclusive Owner" to bring up the "Connection Settings" window. In the "Connection Settings" window, click "Setup Parameter" as shown below.



- c. In the "Setup Parameter" window, you can configure the uplink and downlink data volume, the uplink and downlink data volume are 256 bytes, as shown in the figure below. Click "OK" to save

the settings.

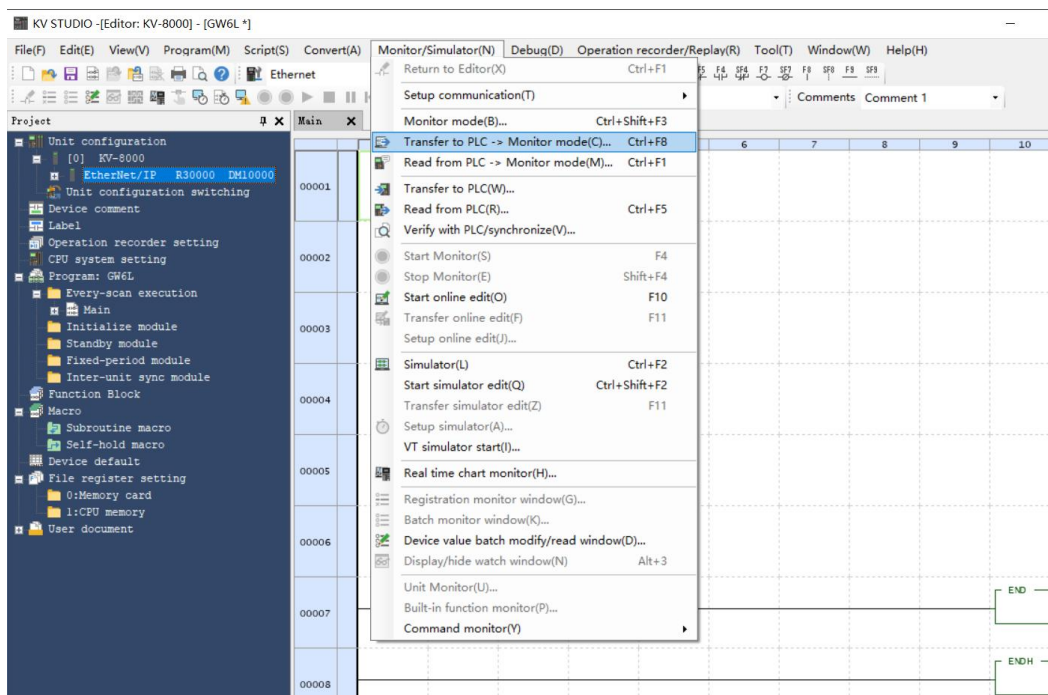


- d. In the Connection Settings window, click OK.
- e. In the EtherNet/IP Settings window, click Apply and click OK.
- f. In the Cell Editor window, click Apply and click OK.

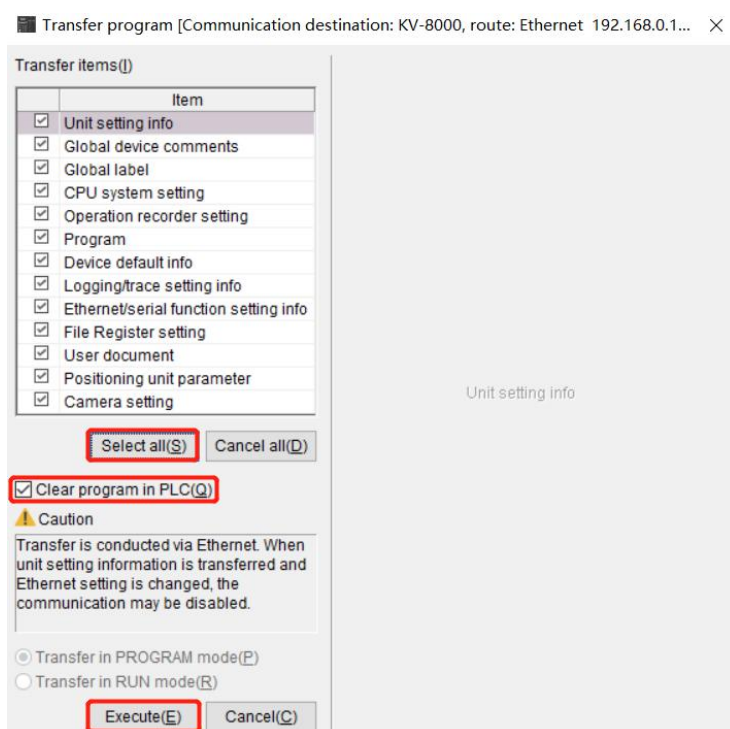
8. Configuration Download

After module configuration and parameter setting are completed, download to PLC operation is performed.

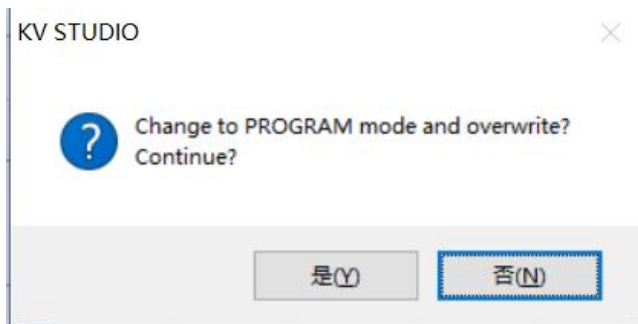
- Click "Monitor/Simulator (N) -> Transfer to PLC -> Monitor Mode (C)" in the menu bar as shown below.



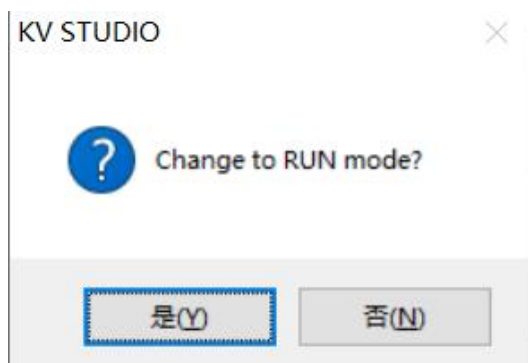
- The Transfer Program window pops up, check "Clear Program in PLC", click "Select All", click "Execute" to download the program to the PLC, as shown in the following figure.



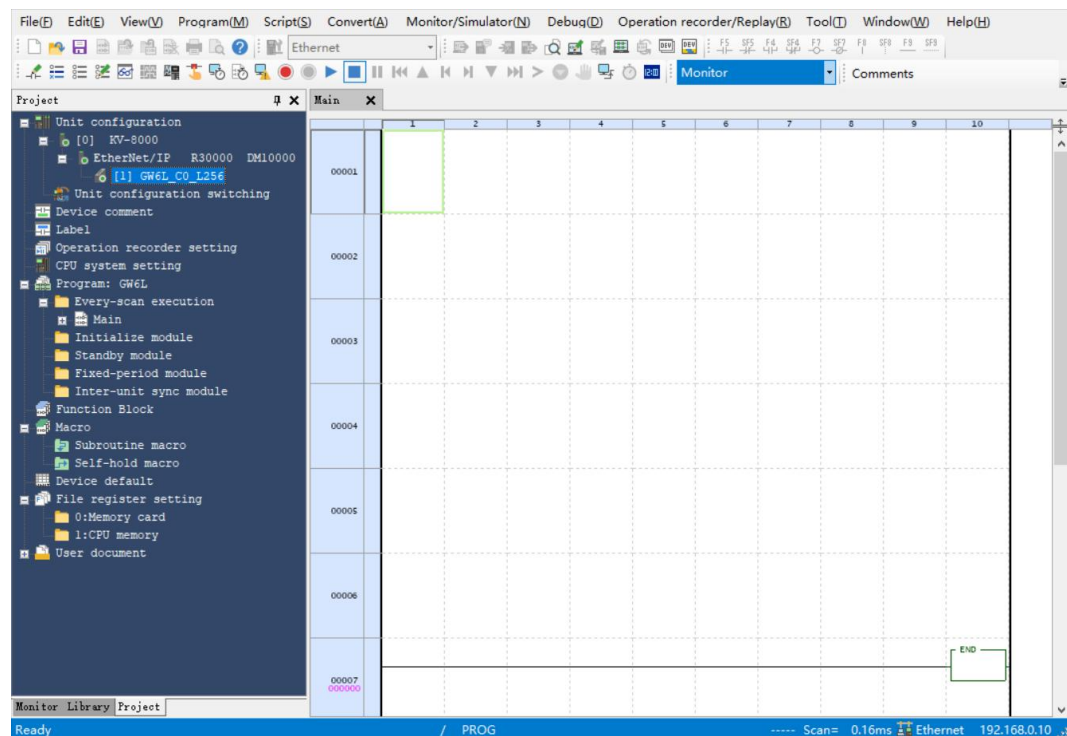
- c. A prompt box pops up "Change to PROGRAM mode and overwrite? Continue?" Click to select "Yes" as shown below.



- d. After writing to the PLC is completed, a pop-up box will appear, "Change to RUN mode", click and select "Yes", as shown in the figure below, to enter the monitoring mode.

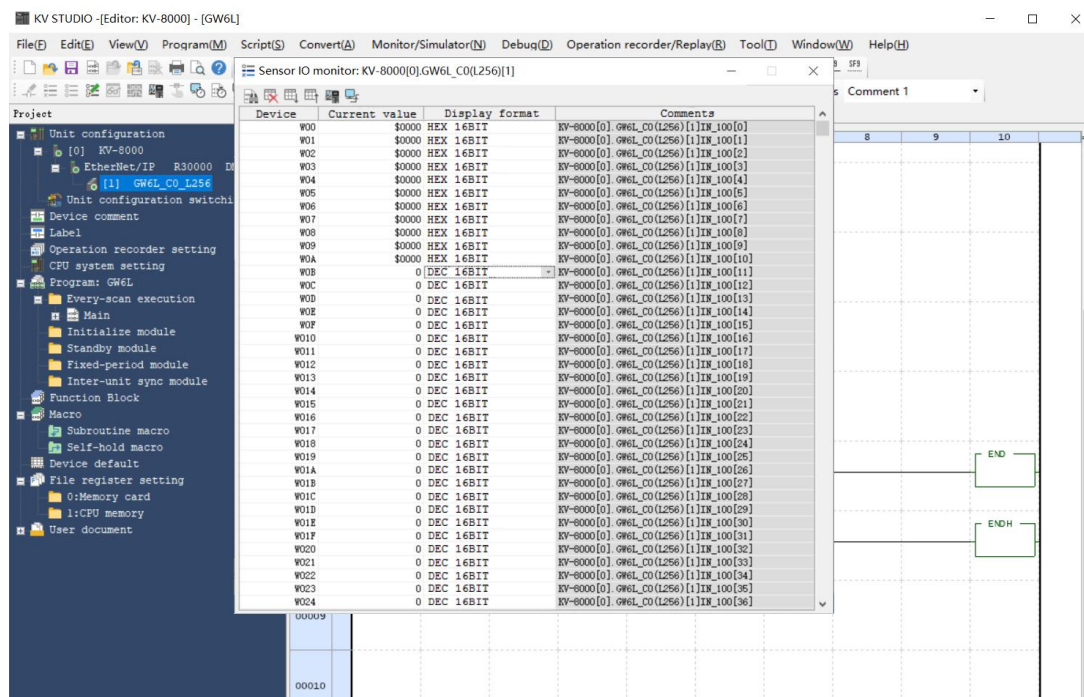


- e. After the configuration is downloaded, it is shown in the following figure.

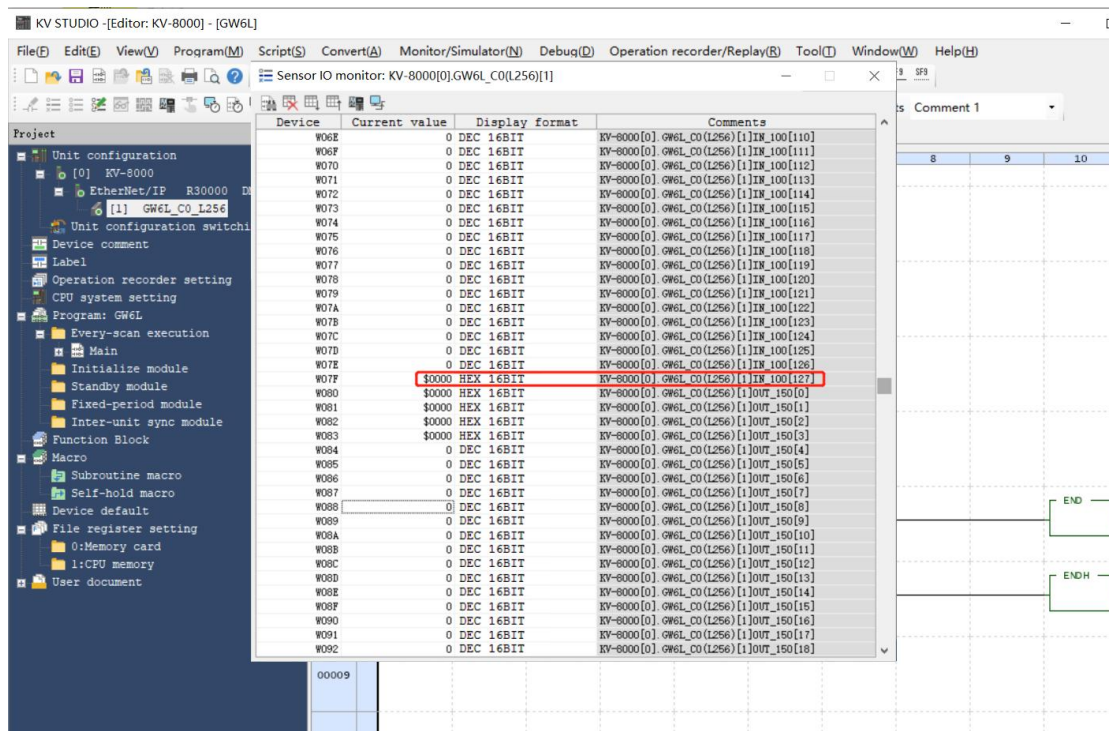


9、data monitoring

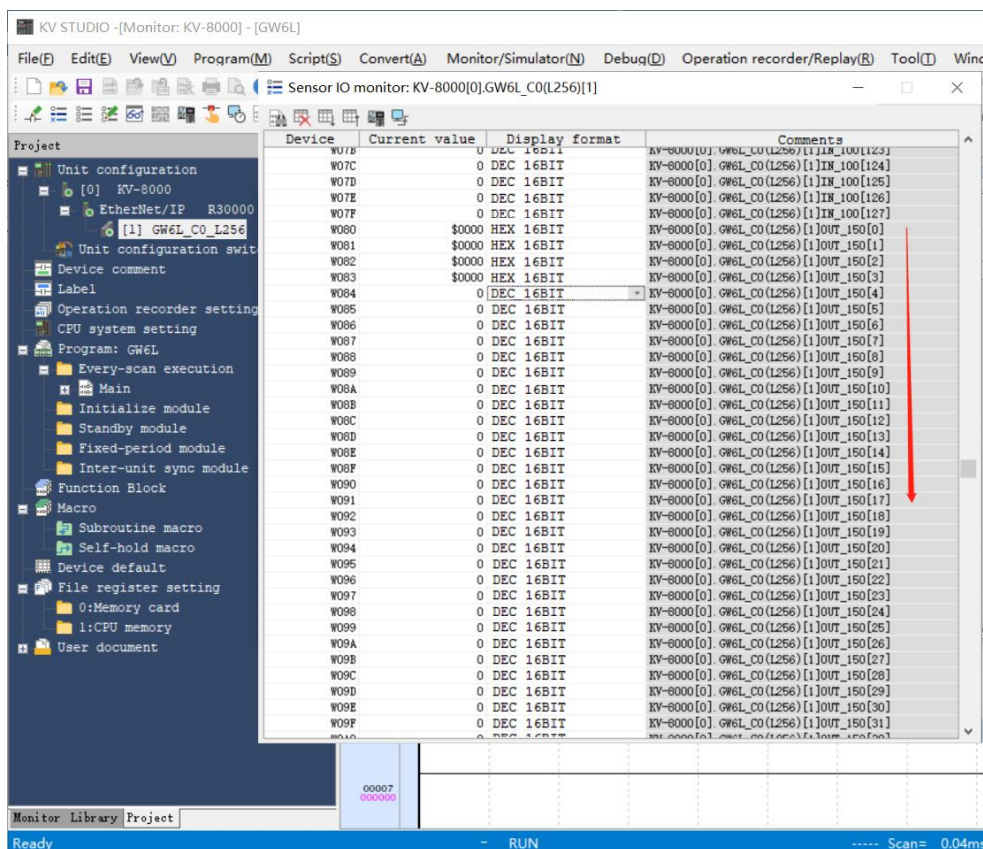
- a. In monitor mode, double-click the "GW6L-C0(L256)" icon to open the monitor table, and you can monitor the uplink and downlink data. The uplink data is shown in the monitor table as below, which is used to check whether the data is correctly transmitted.



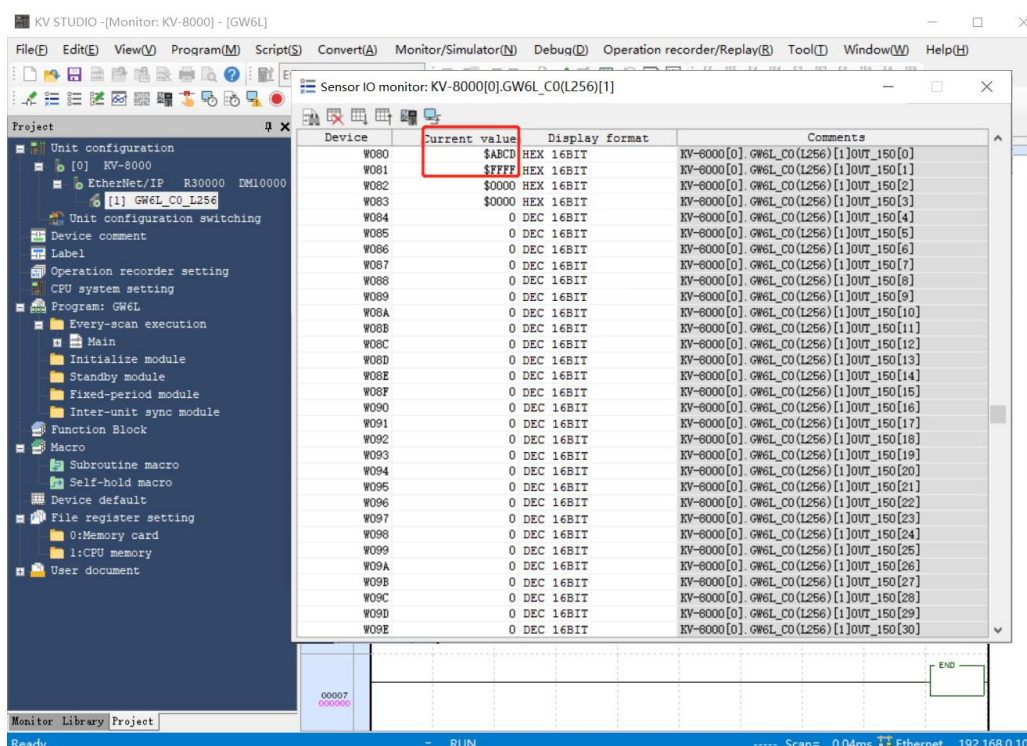
- b. The first byte range of W00~W07F in the uplink data of this example is the input data, totaling 255 bytes; the last byte of W07F is the status bit, as shown below.



- c. The downlink data of the module is shown in the monitoring table as follows, which is used to force the data to be output, and the display format can be switched as shown in the following figure.

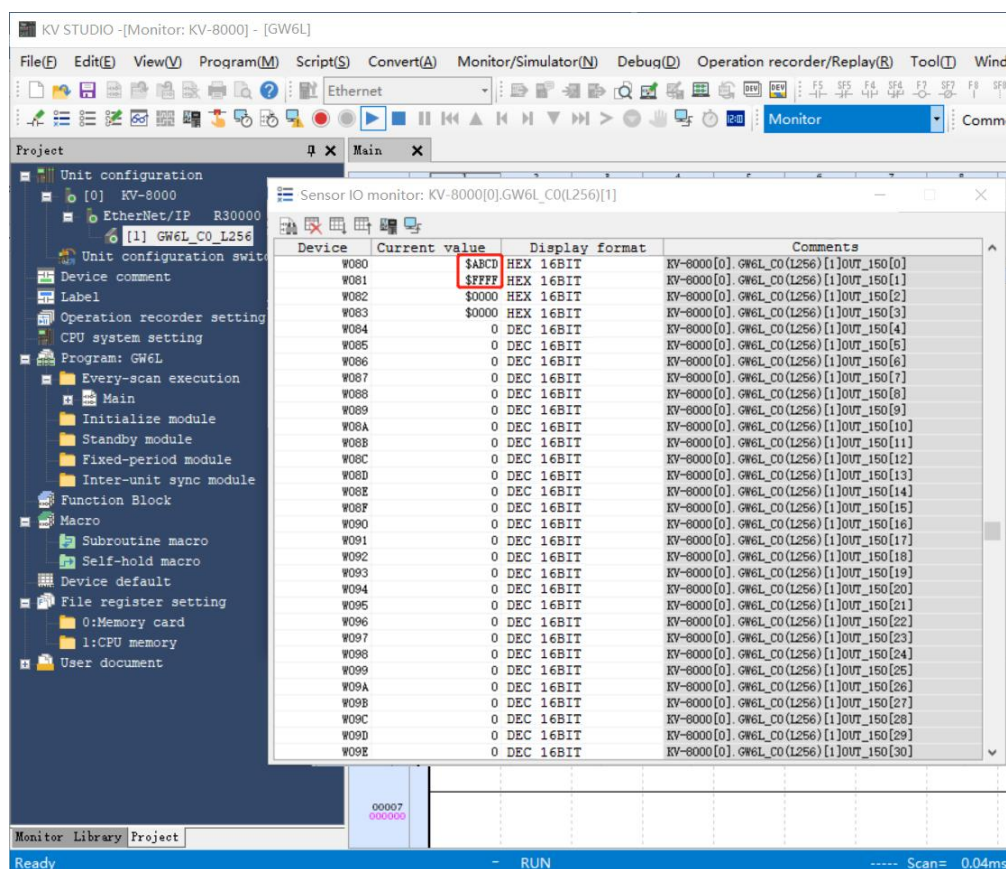


- d. In the "current value" cell enter the value, write the value, as shown below.



7.2.2.4 data interaction

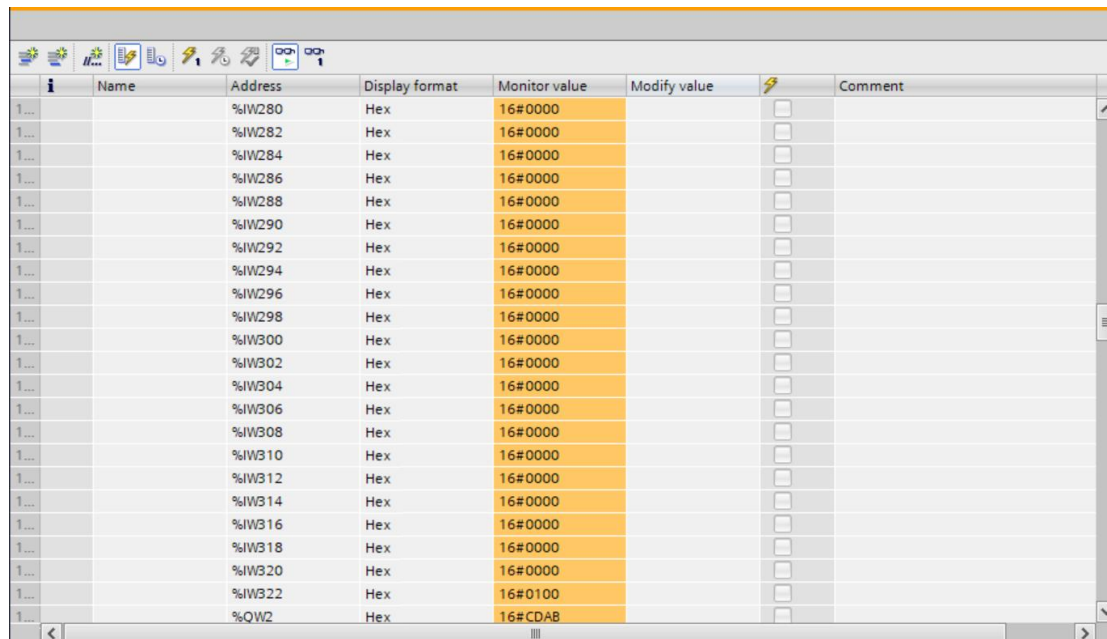
- a. After establishing the communication connection, the value is written in the downlink data of the KV STUDIO software, and the output data is shown below.



- b. In the monitoring table of the TIA Portal V17 software, check the uplink data to confirm that the data is entered into the gateway module, as shown in the following figure, the data has been passed in.

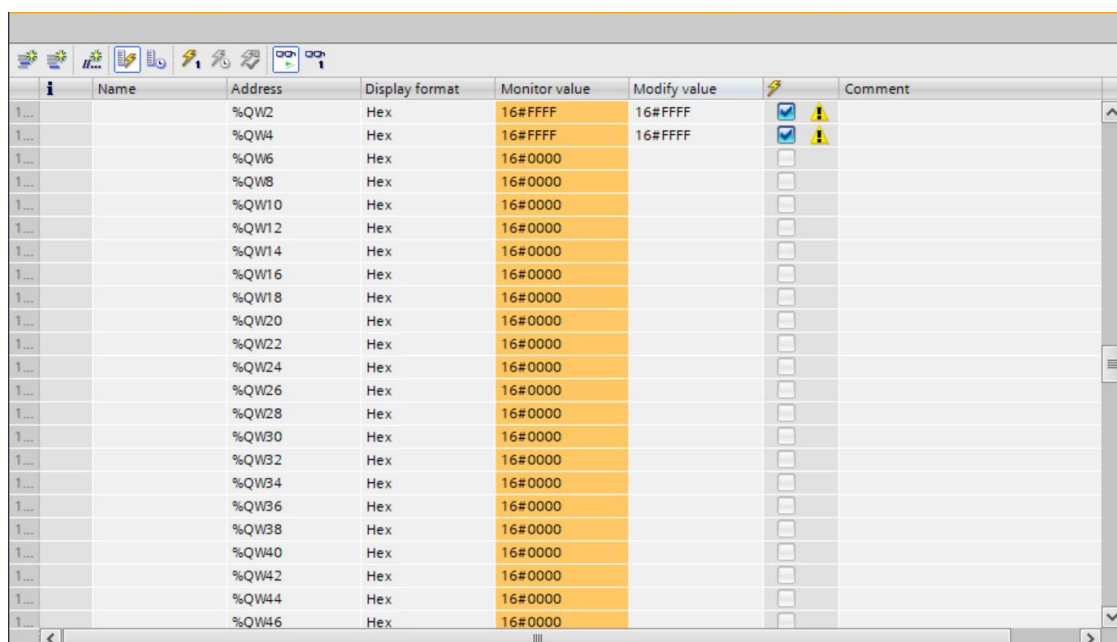
	Name	Address	Display format	Monitor value	Modify value		Comment
1		%IW68	Hex	16#CDAB			
2		%IW70	Hex	16#FFFF			
3		%IW72	Hex	16#0000			
4		%IW74	Hex	16#0000			
5		%IW76	Hex	16#0000			
6		%IW78	Hex	16#0000			
7		%IW80	Hex	16#0000			
8		%IW82	Hex	16#0000			
9		%IW84	Hex	16#0000			
10		%IW86	Hex	16#0000			
11		%IW88	Hex	16#0000			
12		%IW90	Hex	16#0000			
13		%IW92	Hex	16#0000			
14		%IW94	Hex	16#0000			
15		%IW96	Hex	16#0000			
16		%IW98	Hex	16#0000			
17		%IW100	Hex	16#0000			
18		%IW102	Hex	16#0000			
19		%IW104	Hex	16#0000			
20		%IW106	Hex	16#0000			
21		%IW108	Hex	16#0000			
22		%IW110	Hex	16#0000			
23		%IW112	Hex	16#0000			

- c. At this point, the last status bit byte of the TIA Portal V17 software uplink data is 16#01 indicating that there is data interaction between the gateways, as shown in the following figure.



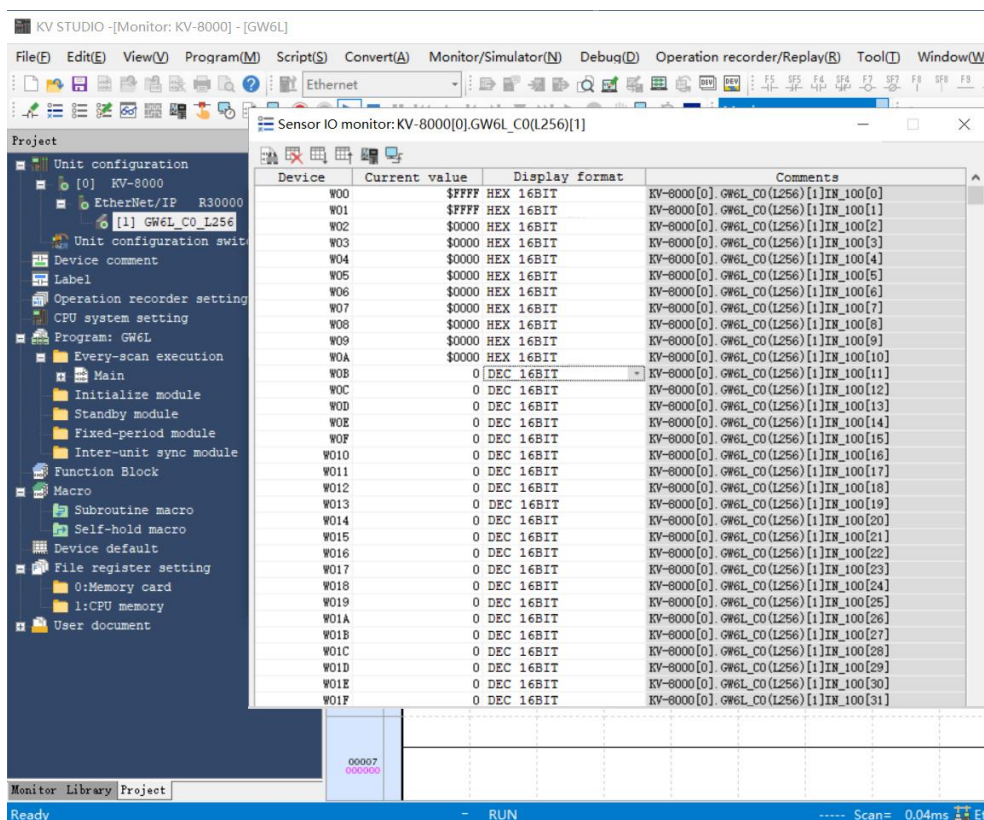
Name	Address	Display format	Monitor value	Modify value	Comment
	%IW280	Hex	16#0000		
	%IW282	Hex	16#0000		
	%IW284	Hex	16#0000		
	%IW286	Hex	16#0000		
	%IW288	Hex	16#0000		
	%IW290	Hex	16#0100		
	%IW292	Hex	16#0000		
	%IW294	Hex	16#0000		
	%IW296	Hex	16#0000		
	%IW298	Hex	16#0000		
	%IW300	Hex	16#0000		
	%IW302	Hex	16#0000		
	%IW304	Hex	16#0000		
	%IW306	Hex	16#0000		
	%IW308	Hex	16#0000		
	%IW310	Hex	16#0000		
	%IW312	Hex	16#0000		
	%IW314	Hex	16#0000		
	%IW316	Hex	16#0000		
	%IW318	Hex	16#0000		
	%IW320	Hex	16#0000		
	%IW322	Hex	16#0100		
	%QW2	Hex	16#CDAB		

- d. In the monitoring table of the TIA Portal V17 software, write the downlink data as shown below.



Name	Address	Display format	Monitor value	Modify value	Comment
	%QW2	Hex	16#FFFF	16#FFFF	
	%QW4	Hex	16#FFFF	16#FFFF	
	%QW6	Hex	16#0000		
	%QW8	Hex	16#0000		
	%QW10	Hex	16#0000		
	%QW12	Hex	16#0000		
	%QW14	Hex	16#0000		
	%QW16	Hex	16#0000		
	%QW18	Hex	16#0000		
	%QW20	Hex	16#0000		
	%QW22	Hex	16#0000		
	%QW24	Hex	16#0000		
	%QW26	Hex	16#0000		
	%QW28	Hex	16#0000		
	%QW30	Hex	16#0000		
	%QW32	Hex	16#0000		
	%QW34	Hex	16#0000		
	%QW36	Hex	16#0000		
	%QW38	Hex	16#0000		
	%QW40	Hex	16#0000		
	%QW42	Hex	16#0000		
	%QW44	Hex	16#0000		
	%QW46	Hex	16#0000		

- e. Check the uplink data in the KV STUDIO software to confirm that the data has been input to the gateway module, as shown in the following figure, the data has been transmitted.



- f. At this time, the last status bit byte of the KV STUDIO software uplink data is 16#01 indicating that there is data interaction between the gateways, as shown below.

