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Technical Notes

Application of LUC-PN series module and Siemens S7-1200 series PLC connection

keyword：PROFINET，LUC-PN ，S7-1200,ES-02MB-232

Revision record

Changes:

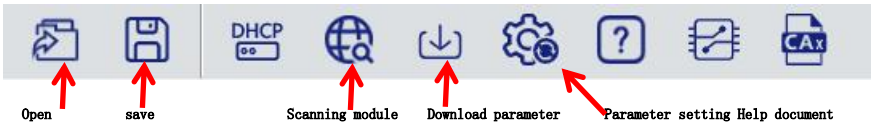
2024-11-12 Create this document。
Establishment：刘小锋 Examine：
2024 - 11 - 12 | 2024 - 11- 12

contents

1. Module parameters and IP address configuration

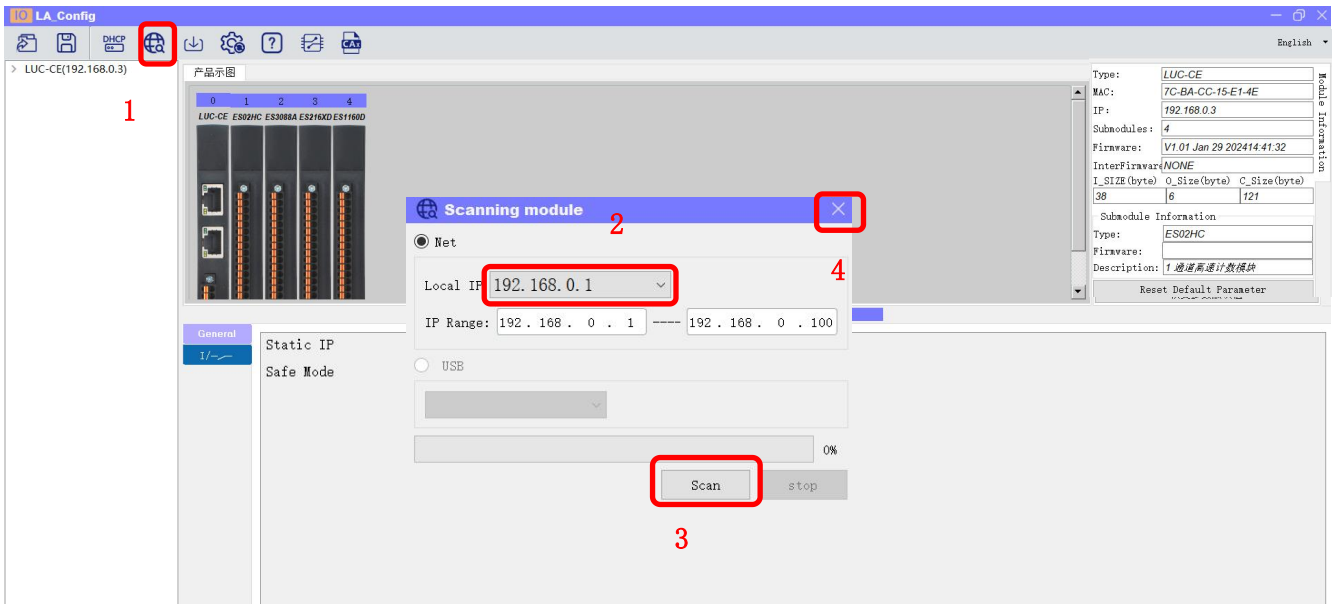
1.1 LAEConfigSoftware interface introduction

This software interface includes: toolbar, module information tree directory, parameter setting area, module information display area, etc.



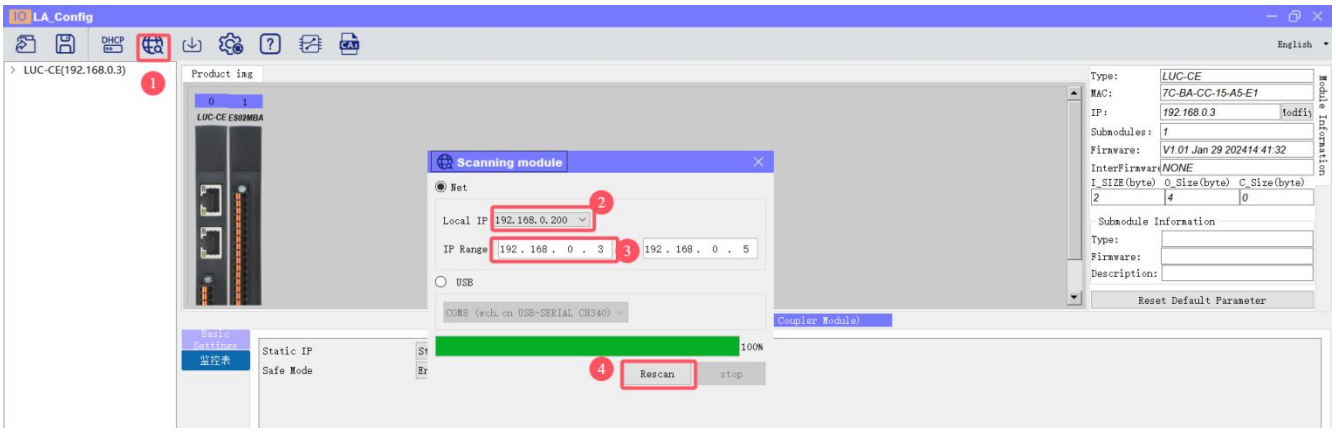
1.2 Scan hardware in the network

click  ,Set the IP address range to be scanned (in the display area), and ensure that the computer's network IP parameters are in the same network segment as the set one. Click 'Start' to enter the scanning phase. The scanned modules will be displayed within the set IP range.



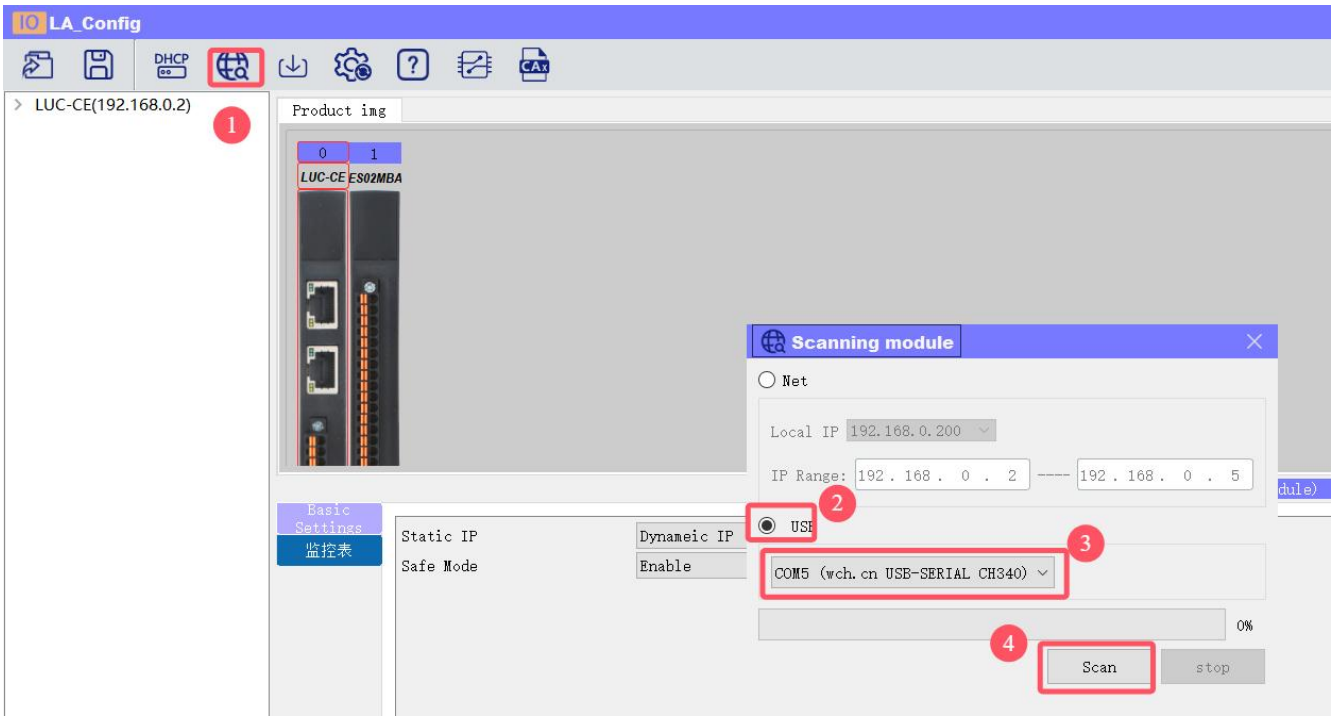
1.3 Modify the IP address of the module

click  , Click on Global Scan, select the IP address for modification, and click on Modify IP Address. Entering the process of assigning IP addresses, whether the assignment was successful can be displayed in the status column at the end.



1.4 Modify the parameters of the module

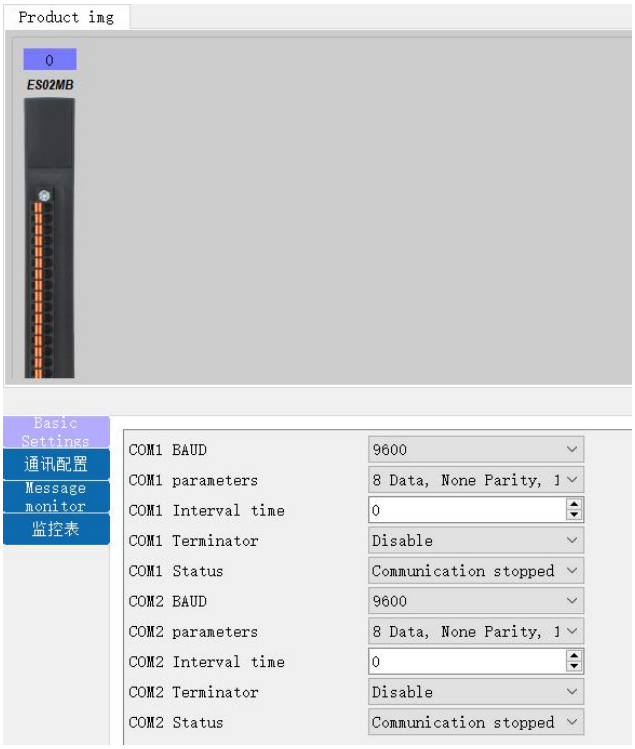
Modify ES-02MB parameters: Click the Scan Module button, select USB, choose the corresponding USB to TYPEC serial port, and click Scan Start.。



According to the following communication parameter settings, the key is to be

consistent with the slave station parameter settings

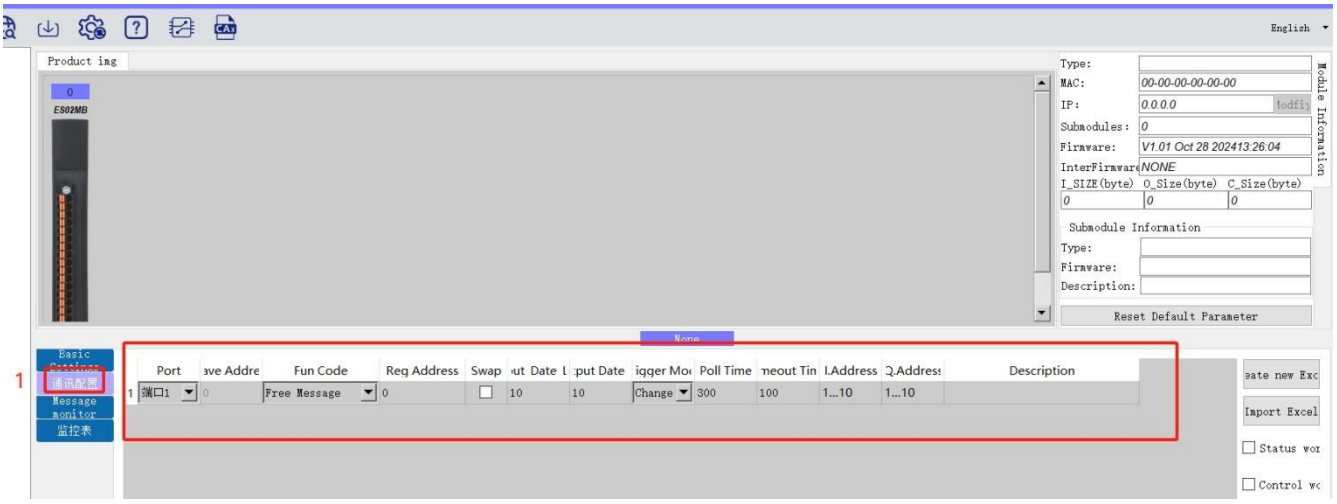
Set the communication speed to 9600bps; Set 8 data bits, no checksum, and 1 stop bit;



The specific communication is as follows:

Function code 1, set port 1, free protocol, input data length of 10 bytes, output data length of 10 bytes.

Set module parameters in the parameter setting area. After the setup is completed, click  , Download module parameters.



2. 2ES-02MB Overview

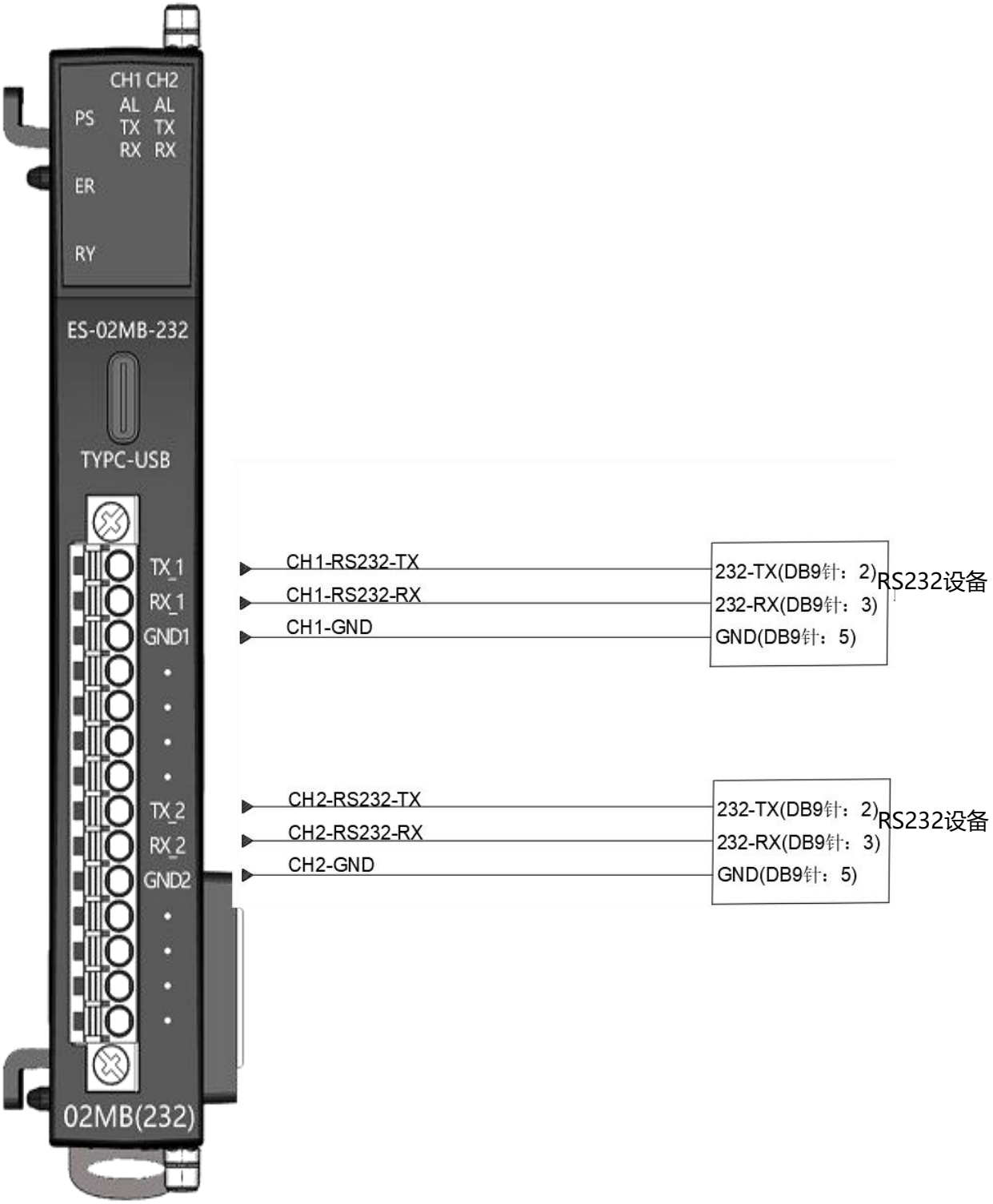
The Mitsubishi FX5U series PLC can be connected to remote IO modules through cc link iefb communication. By adding LUC-CEB couplers and ES-02MB expansion modules, remote IO control can be achieved through simple connections.

The module supports 2-channel Modbus RTU 232 slave communication.
The module supports TYPC-USB parameter download.

2.1 Definition of wiring terminals

Terminal number	**ES-02MB-232**	
	symbol	**describe**
1	TX_1	RS232-A
2	TX_2	RS232-B
3	GND1	grounding
4	Y_1	reserve
5	Z_1	reserve
6	GND1	grounding
7	TX_1	RS232-A
8	TX_2	RS232-B
9	GND2	grounding
10	Y_2	reserve
11	Z_2	reserve
12	GND2	grounding

2.2 Wiring diagram



3. Debugging environment

- TIA Portal V14 and above versions

-Remote IO module device description file: GSDML-V2.35-LATCOS-LUC_PN-20240118

-LAE-config

4. technical realization

4.1 Hardware connection

1. Connect the 1200 series PLC and remote IO module power supply correctly.

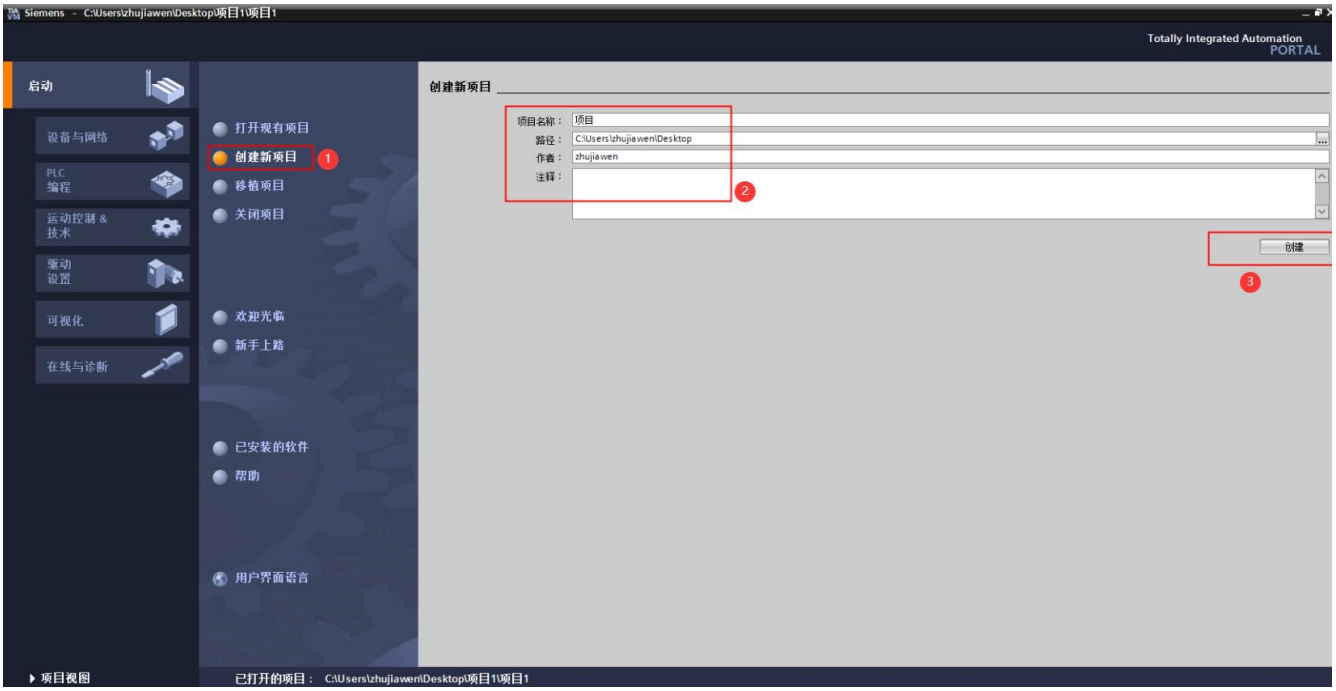
2. Connect the RJ45 interface of the test object PLC to the Ethernet port of the remote IO module through a dedicated Ethernet cable.

3. Use LAE config software to scan and download parameters through the type-c interface.

4. Connect the A_1 of ES-02MB-232 to the A+of the slave station, connect the B_1 of ES-02MB-485 to the B - of the slave station, and connect the GND of ES-02MB-232 to the GND of the slave station

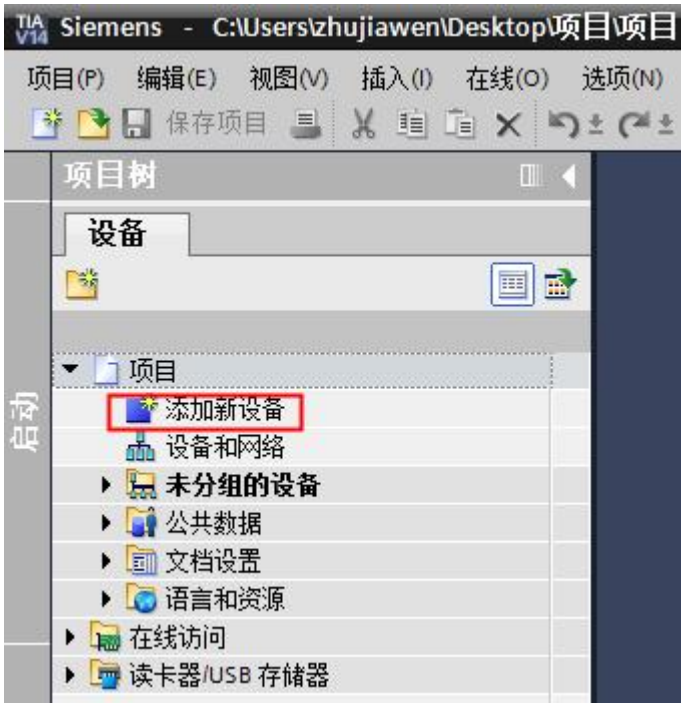
4.2 Example Project Establishment

4.2.1 New Project Open TIA Portal software, select "Create New Project" and fill in the project name, path, version, author and other relevant information. Click "Create" to.

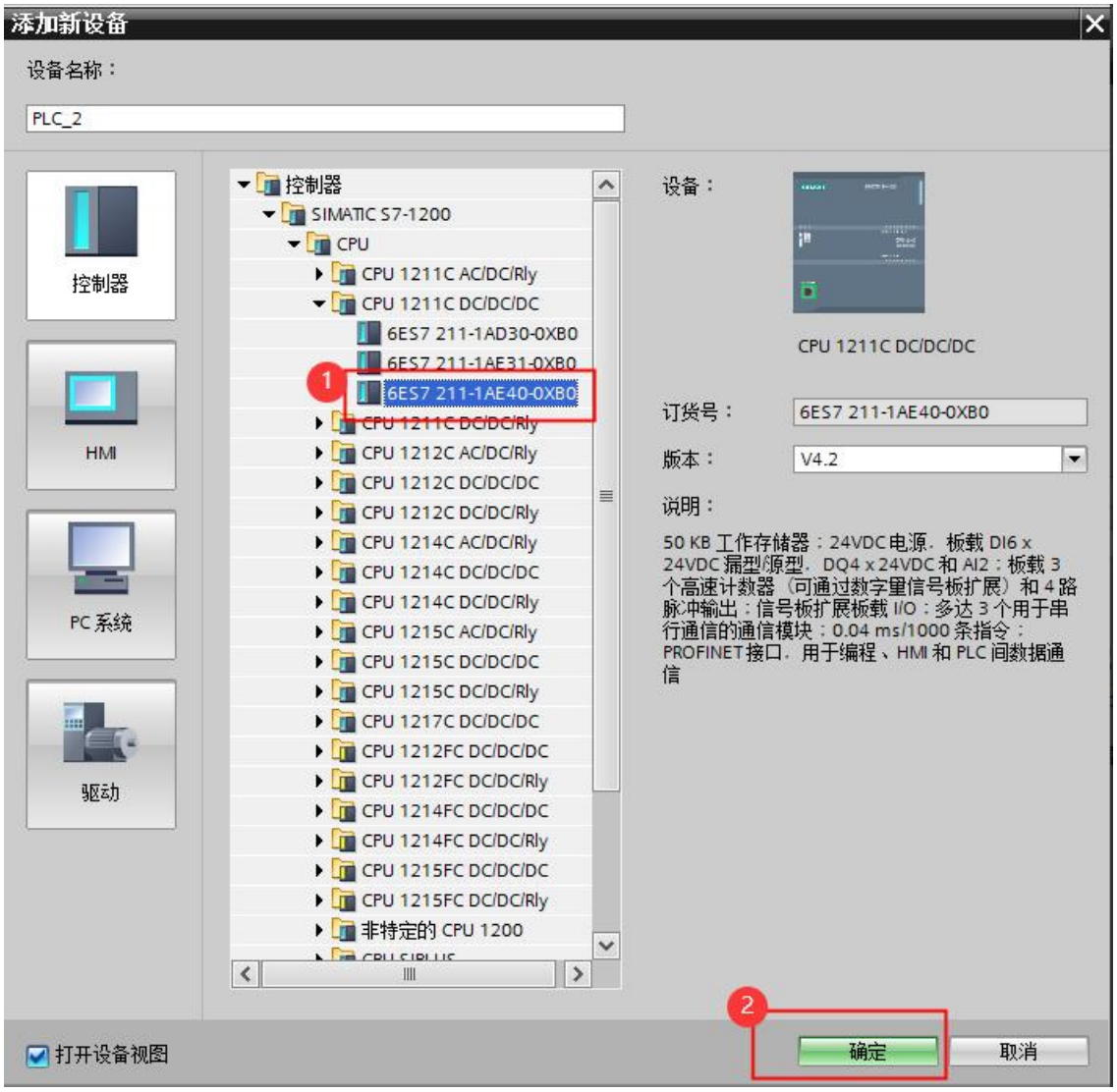


4.2.2 CPU addition and connection.

1. Click on the "Project" on the left side of the interface, a sub directory will appear, and double-click on "Add New Device".



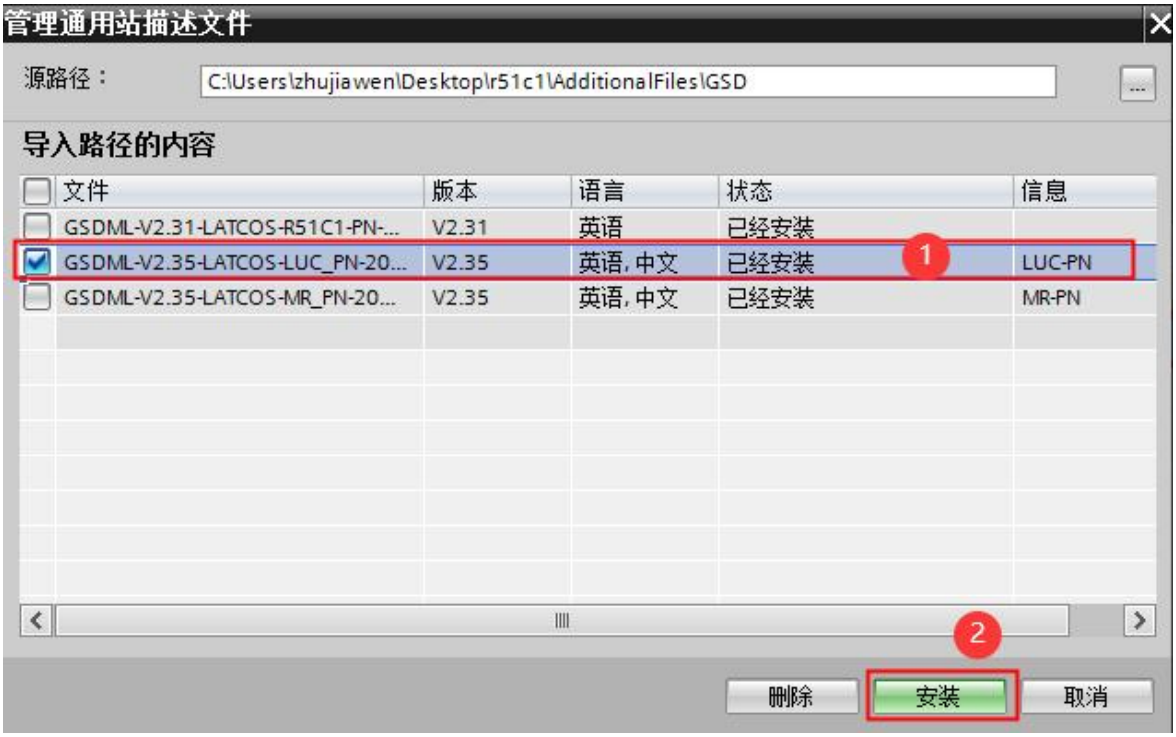
2. Pop up the "Add New Device" window and perform the "Controller → SIMATIC S7-1200 → CPU → CPU 1211C DC/DC → 6ES7 211-1AE40-0XB0" operation. Click OK.



4.2.3 Add the Management General Station Description File for Lingke LUC-PN

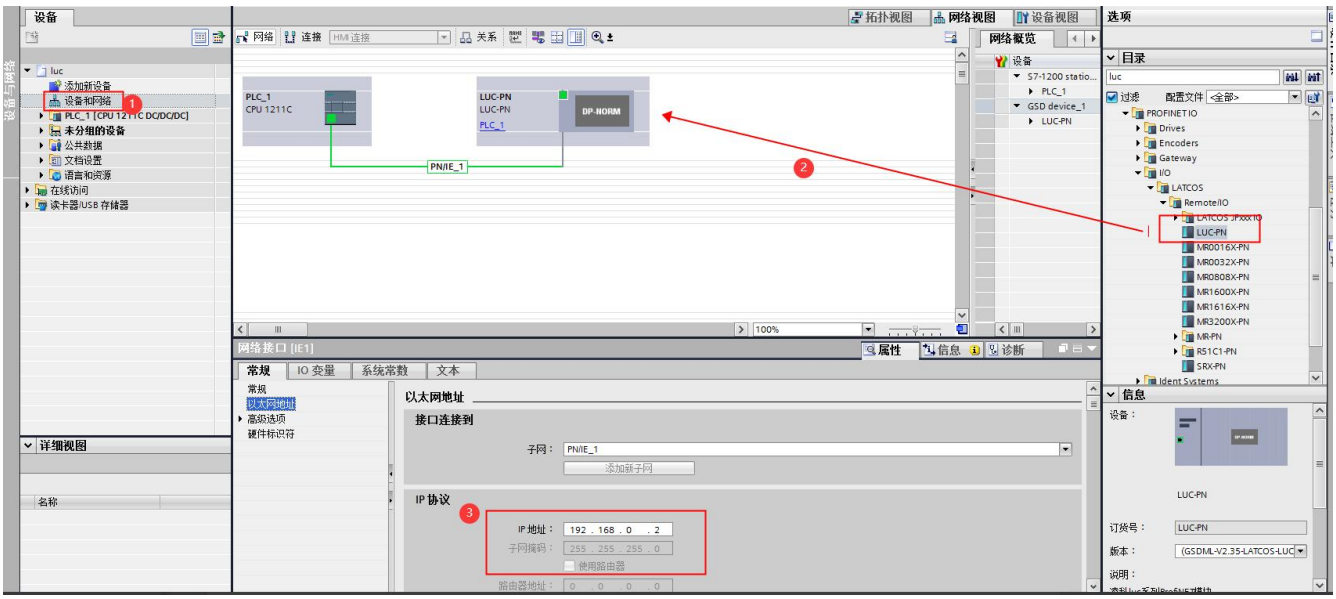
1. Click on the "Options" button in the menu bar and select "Manage General Station Description Files (GSD)".

2. Then, select the source path (the location where the preparation phase is stored), check the folder, and click "Install".



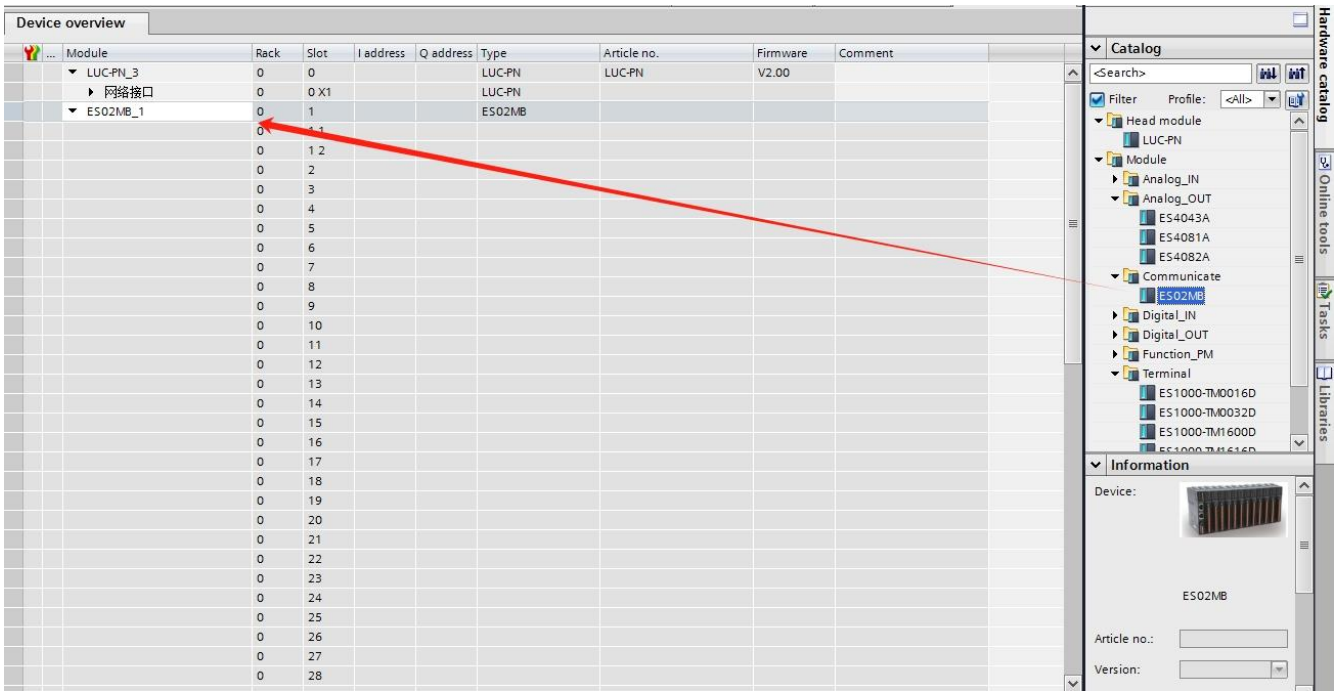
4.2.4 Adding LUC-PN module

1. Select "Network View" in the middle interface, find "LUC-PN" in the hardware directory on the right, drag it to the network view on the left, and set the IP address.



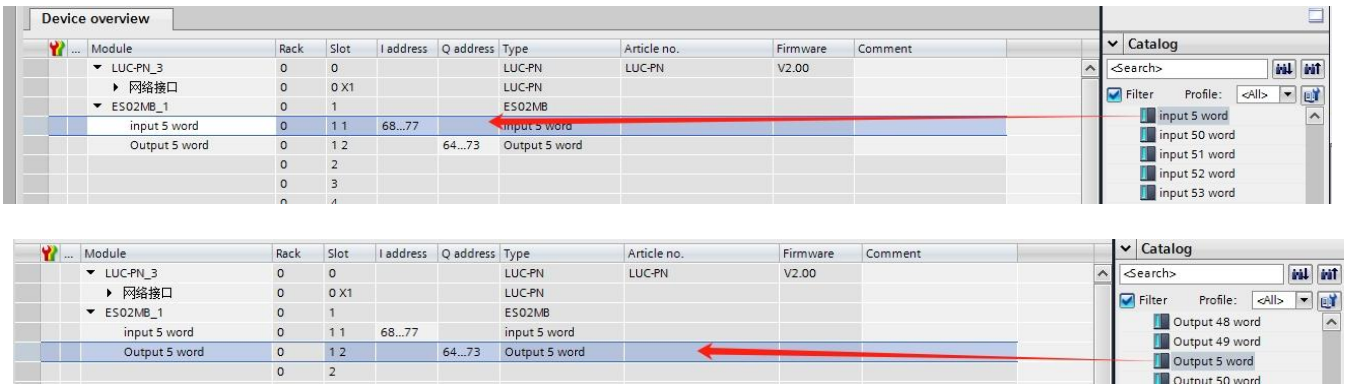
4.2.5 Add ES-02MB module

After double clicking, the LUC-PN extension module information will appear in the upper right corner of the TIA Portal software. First select slot 1, then select the function module - Pulse, and double-click ES02MB.



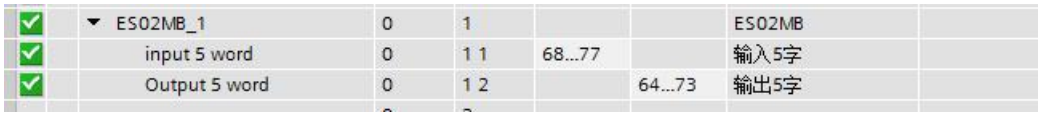
4.2.6 Add ES-02MB Input/Output

1. Select slot 11 of ES02MB, input 5 words in the submodule, and output 5 words.



2. Introduction to I/O addresses.

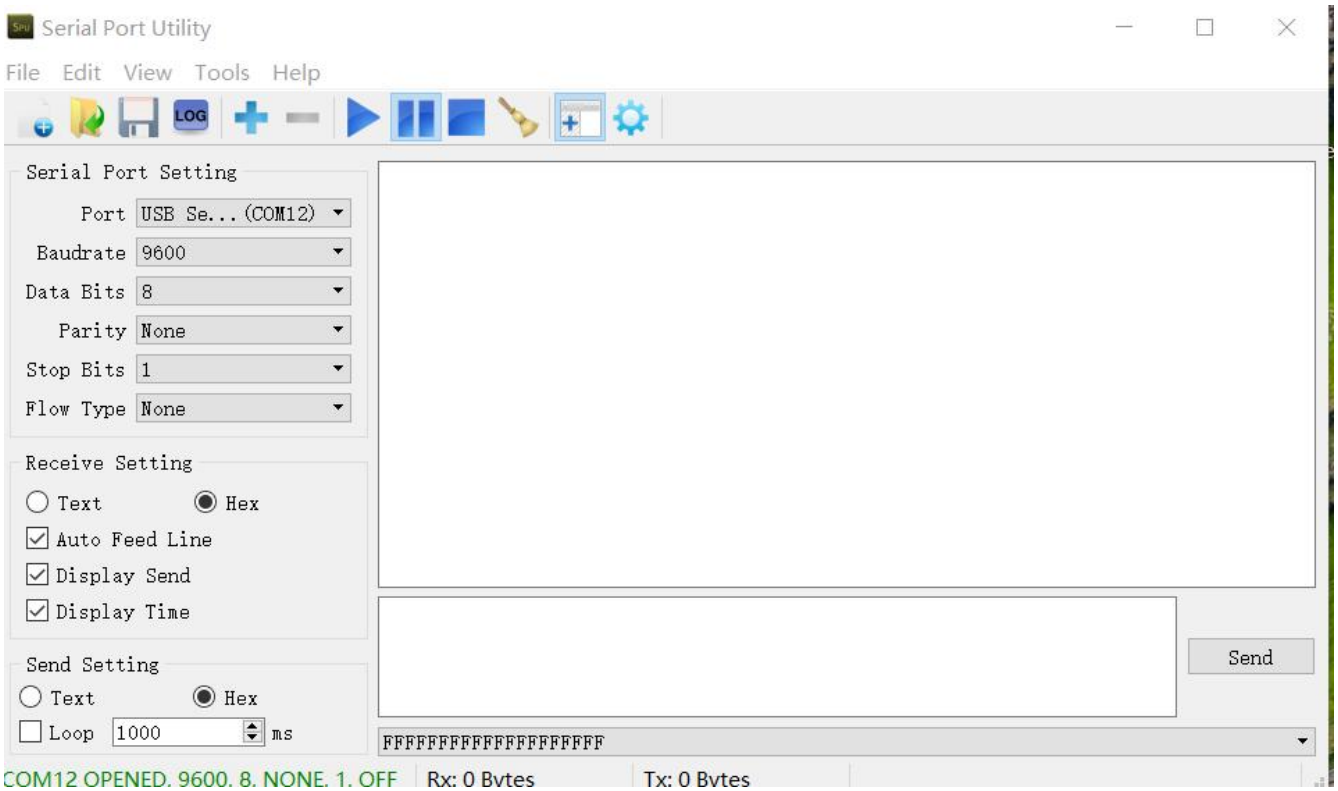
Select the I/O address in the regular menu. The figure shows the starting address of the input address as 68 and the ending address as 77, indicating that the input address ranges from I68.0 to I77.7; Starting address of output address: 64, ending address 73; Indicates that the output address ranges from Q64.0 to Q73.7. This address is the default address for the module, and we will not make any modifications here.



✓	ES02MB_1	0	1			ES02MB
✓	input 5 word	0	1 1	68...77		输入5字
✓	Output 5 word	0	1 2		64...73	输出5字

5. Open the debugging assistant software

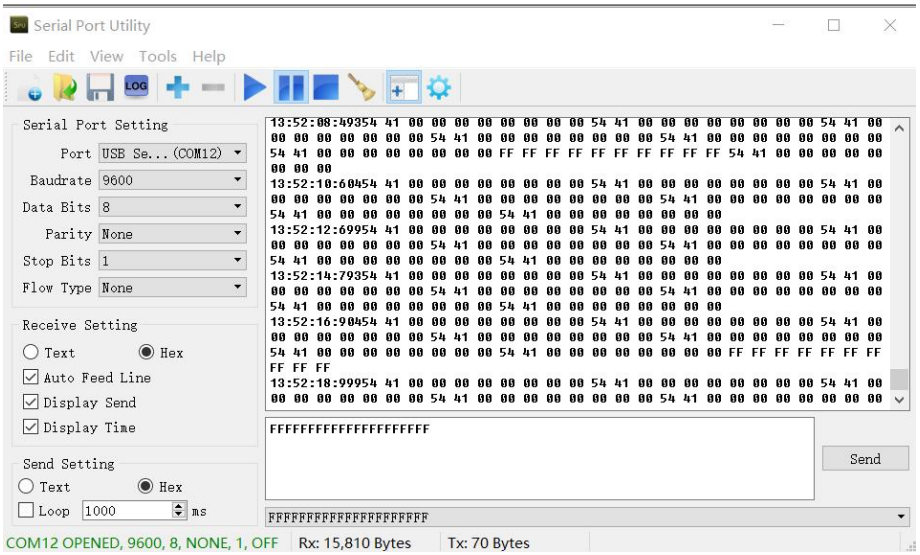
Select a suitable serial port and set the communication speed to 9600bps; Set 8 data bits, no checksum, and 1 stop bit;



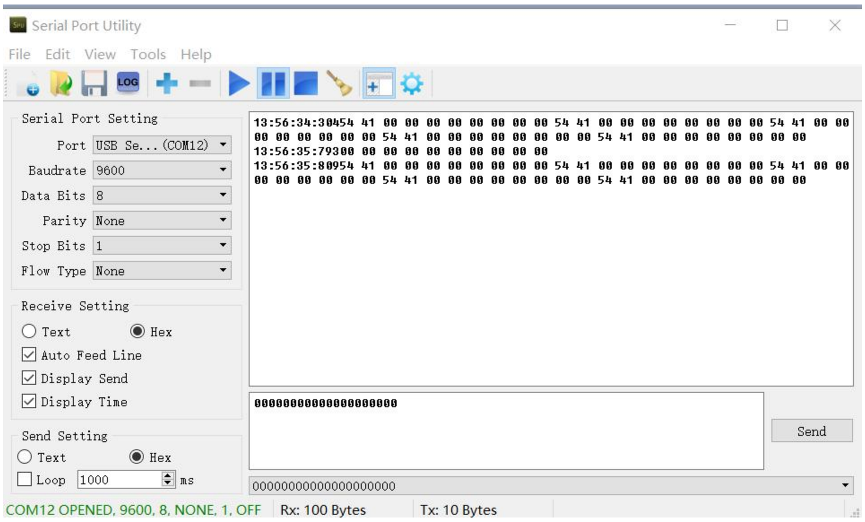
6. Monitoring table

IW68-IW76 indicates that the master station receives data sent from the slave station and sends FFFFFFFFFFFFFFFFFFFF in the debugging tool. The value of IW68-IW76 becomes -1 (65535)

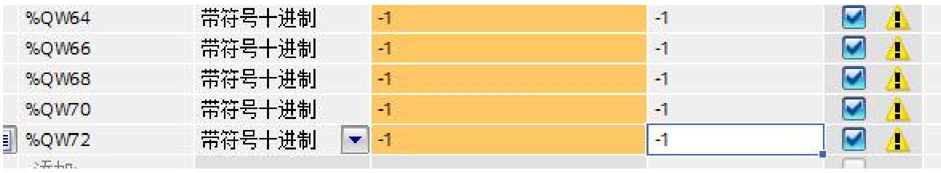
%IW68	带符号十进制	-1
%IW70	带符号十进制	-1
%IW72	带符号十进制	-1
%IW74	带符号十进制	-1
%IW76	带符号十进制	-1

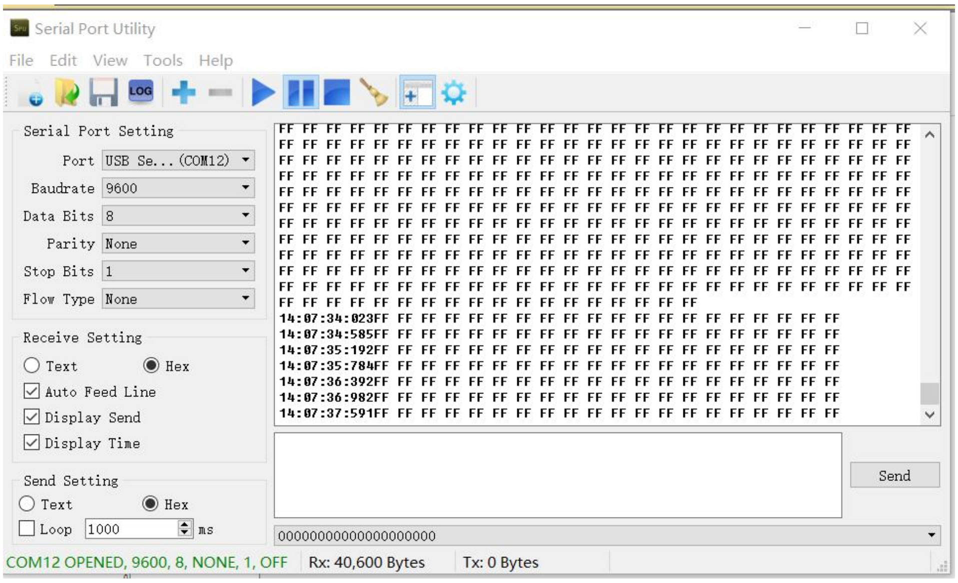


Send 00000000000000000000 in the debugging tool, and reset all IW68 to IW76 to 0.

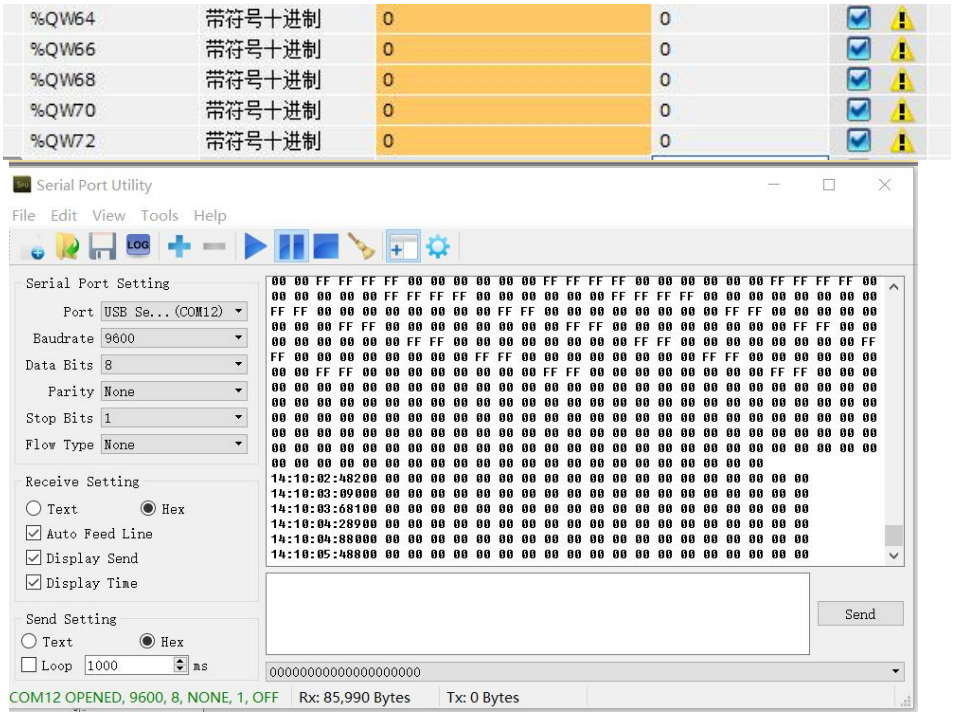


QW64 to QW72 indicate that the slave station receives data sent by the master station, and sends FFFFFFFFFFFFFFFFFFFF in the monitoring table. In the debugging assistant, it can be seen that the received data is FFFFFFFFFFFFFFFF.





Reset QW64 to QW72 to 0 in the monitoring table, and in the debugging assistant, you can see that the received data is 0000000000000.



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无锡凌科自动化技术有限公司 www.latcos.cn 公司电话：**0510-85888030**
公司地址：**江苏省无锡市惠山区清研路 3 号华清创智园 7 号楼 701 室**