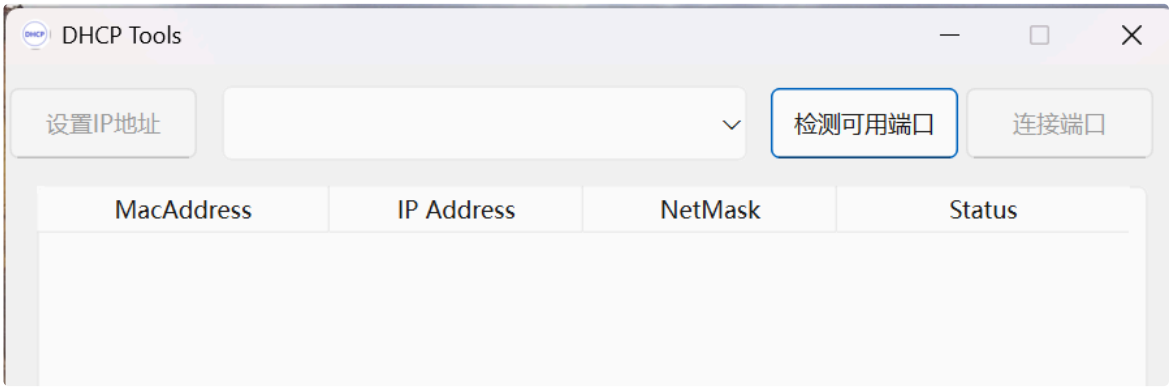
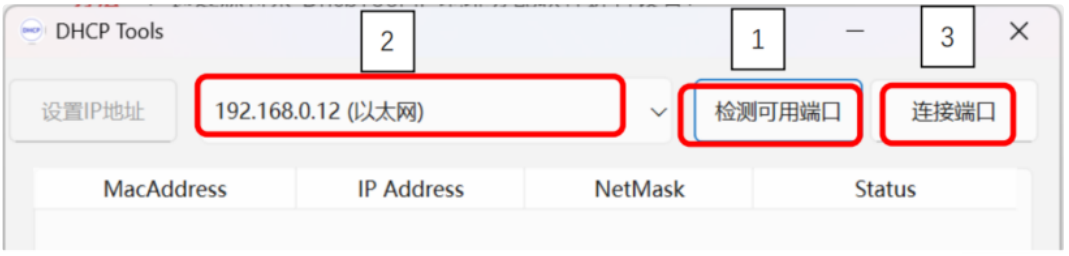
1. Set the IP Address of the Sentinel Modbus/TCP IO-LINK Master Module

Method 1: Set the IP Address via Sentinel "DhcpTool" IP Address Assignment Software

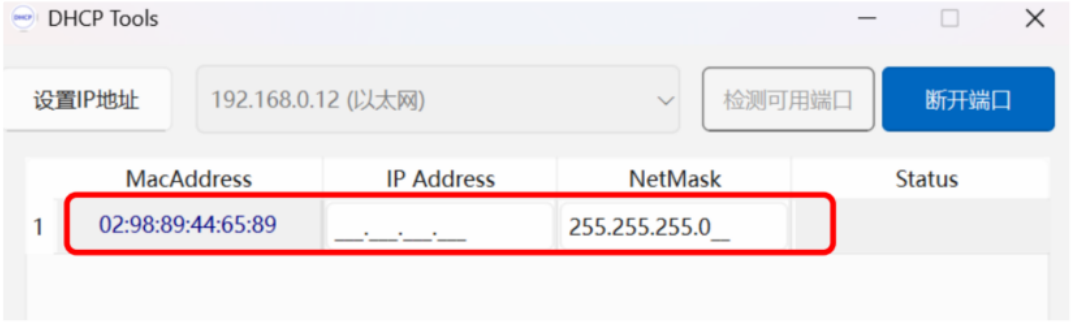
1. First, download "DhcpTool V1.2" from the Sentinel official website and install it (Windows 10 or above only). Open the software.



2. Connect the Sentinel Modbus/TCP IO-LINK master module to the PC. Then set the module IP DIP switches to "0xFF" (on the right-side window: set ADDR_H = F and ADDR_L = F, refer to the manual). This means "DHCP mode: waiting for IP assignment after power-on."
After switching, power-cycle the module. At this time, the BUS red LED will flash. Then click "Detect available ports" in the software, select the local port, and click "Connect Port."



3. The lower area will display the scanned Sentinel Modbus/TCP IO-LINK master module(s), and the front field corresponds to the MAC address.

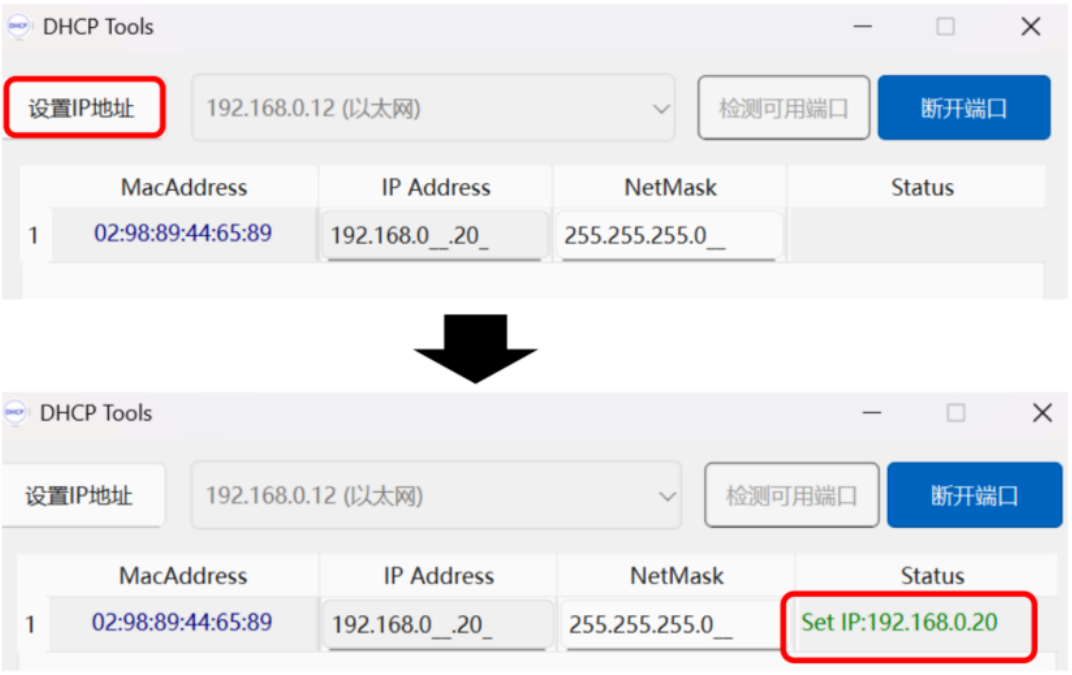


4. Enter the IP address under "IP Address", for example 192.168.0.20, then click "Set IP Address" in the upper-left corner. After that, a green IP address will appear under "Status" behind the module, indicating the IP configuration is complete. You may close the software. After the IP is set, the module BUS red LED will stop flashing.

   After configuration:

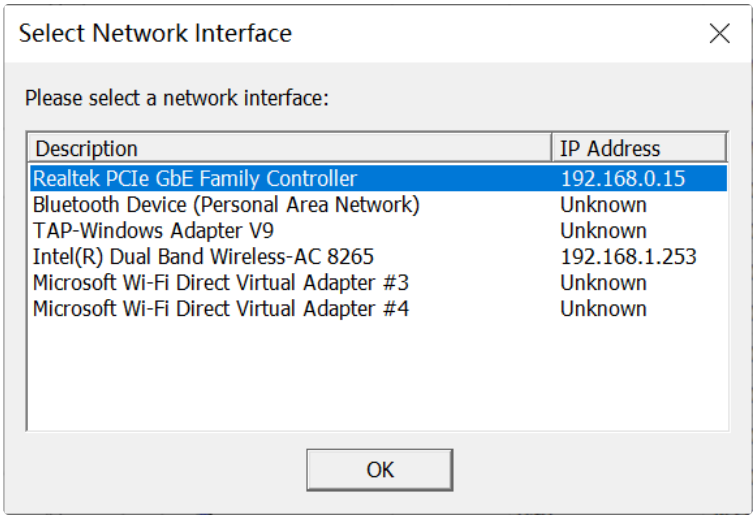
   - You can set the DIP switches to 0x00, meaning "run with the last DHCP-assigned IP address." Then after each power cycle, the module will use the previously assigned address (i.e., 192.168.0.20).

- Alternatively, the DIP switches can be set to 0x01–0xFE. In this case, the first three octets (network segment) follow the DHCP assignment, and the fourth octet follows the DIP switch value.
  Example: set ADDR_H = 1 and ADDR_L = 4; then the module IP address will be 192.168.0.20.



Method 2: Set the IP Address via Third-Party Software

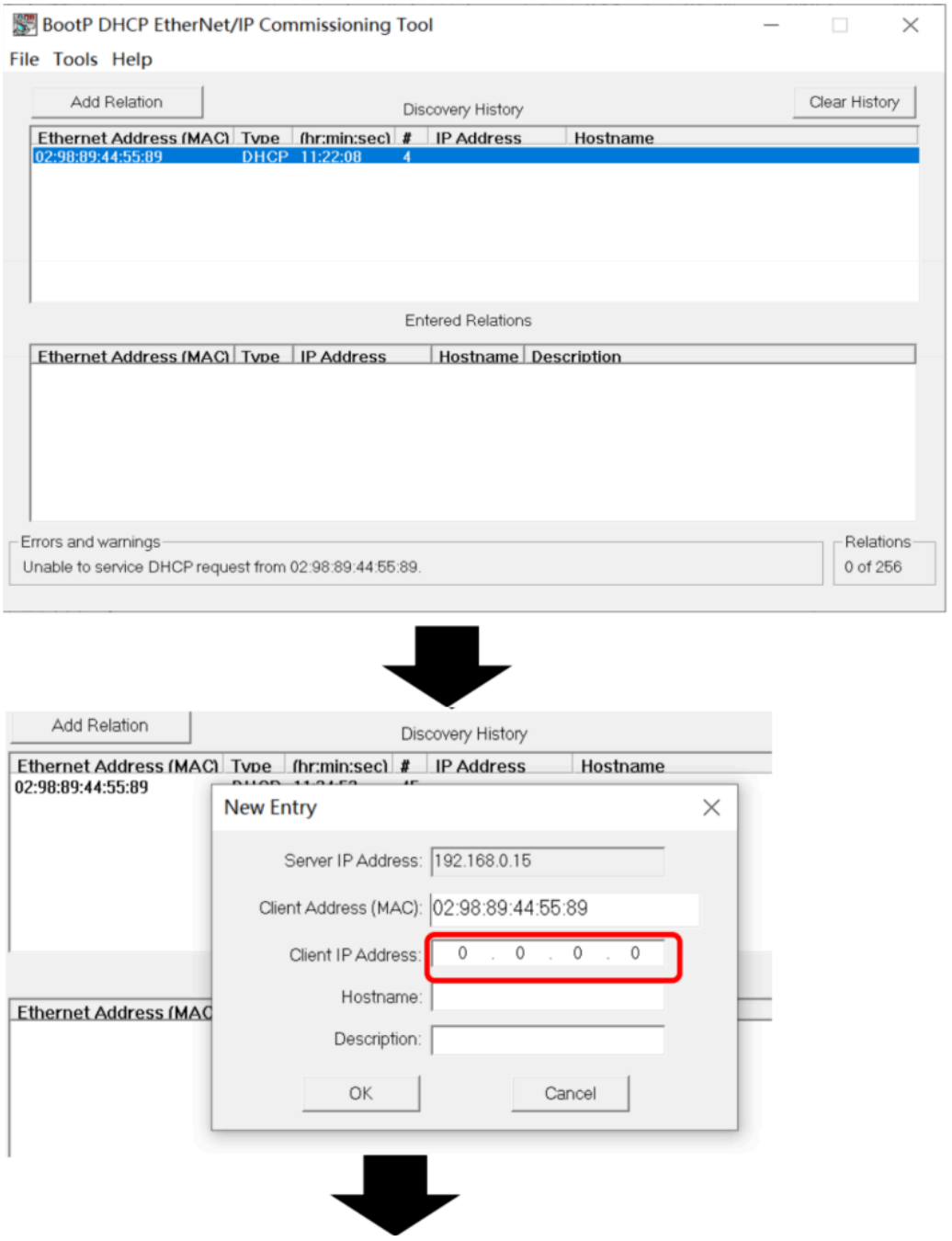
1. In this example, AB's "Bootp-DHCP Tool" is used. Before setting, first set the module IP DIP switches (ADDR_H, ADDR_L on the right-side window; refer to the manual) to 0xFF, meaning "DHCP mode: waiting for IP assignment after power-on."
   After switching, power-cycle the module. The BUS red LED will flash. Open the software, select the appropriate NIC on the PC, and click "OK."

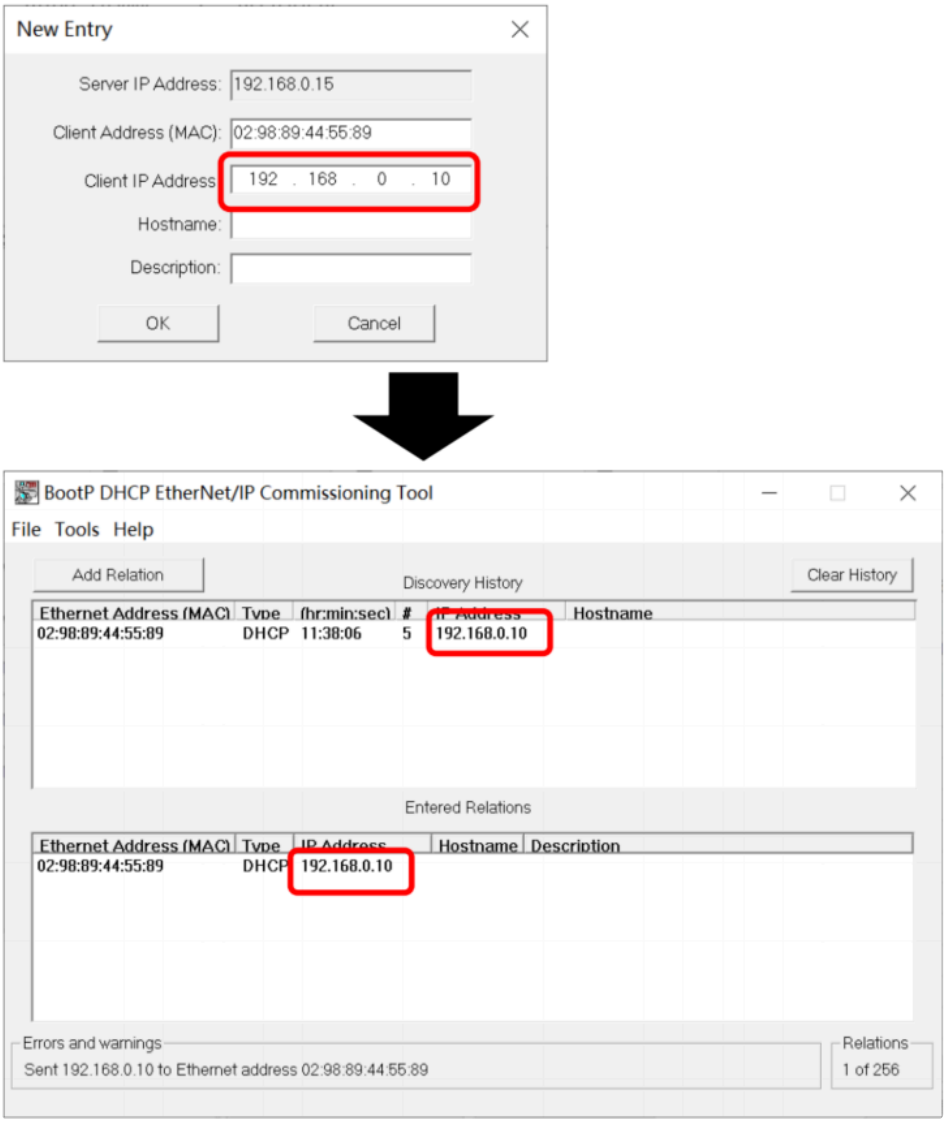


2. Double-click the detected module, enter the IP address to be set (the module IP and the PC IP must be in the same subnet), and click "OK." After the setting is completed, the module BUS red LED will stop flashing.

   After configuration:

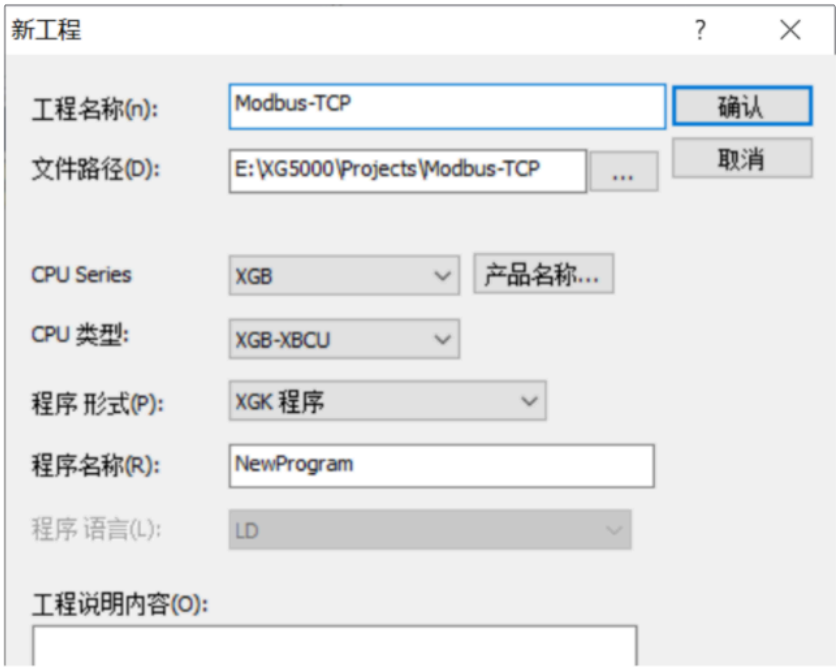
- Set the DIP switches to 0x00 to run with the last DHCP–assigned IP after each power cycle.
- Or set to 0x01—0xFE: the first three octets follow DHCP assignment; the fourth octet follows the DIP switch value.

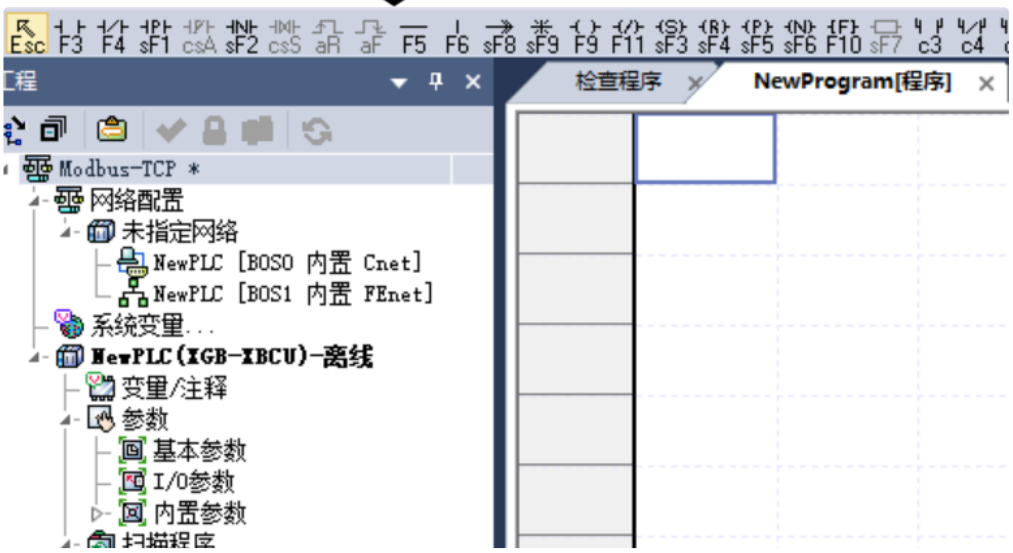




2. Open XG5000 and Create a New Project

Open XG5000, create a new project, select the corresponding PLC (this example uses XGB series: XBC-DN32U), and customize a Project Name. Click “Confirm.”





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3. Configure PLC Ethernet (FEnet) Parameters

Double-click “NewPLC [B0S1 Built-in FEnet]”. (Cnet = Modbus RTU, FEnet = Modbus TCP.) Set the IP address and Subnet mask.

In this example, the PLC IP address is 192.168.1.2.

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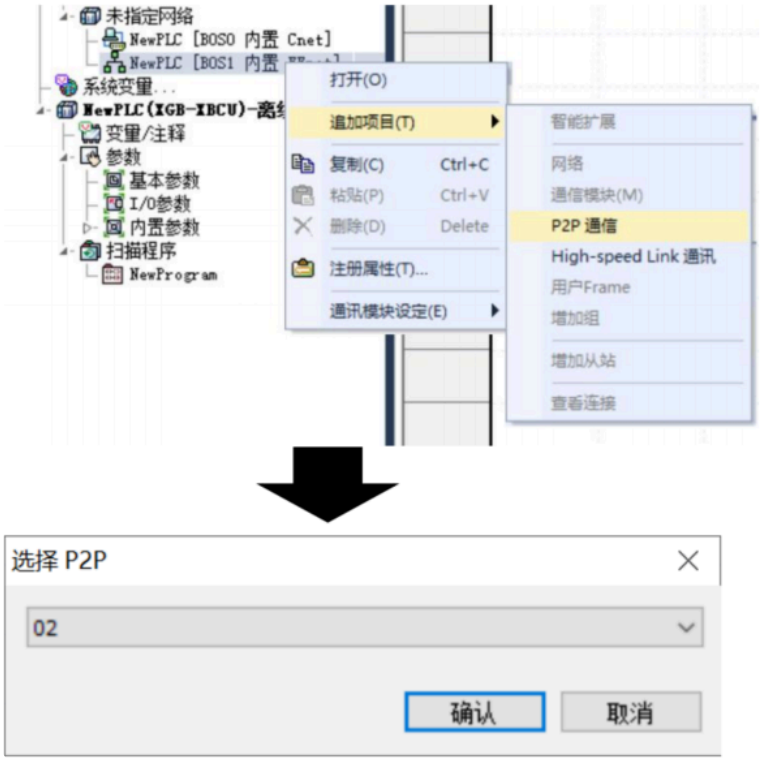
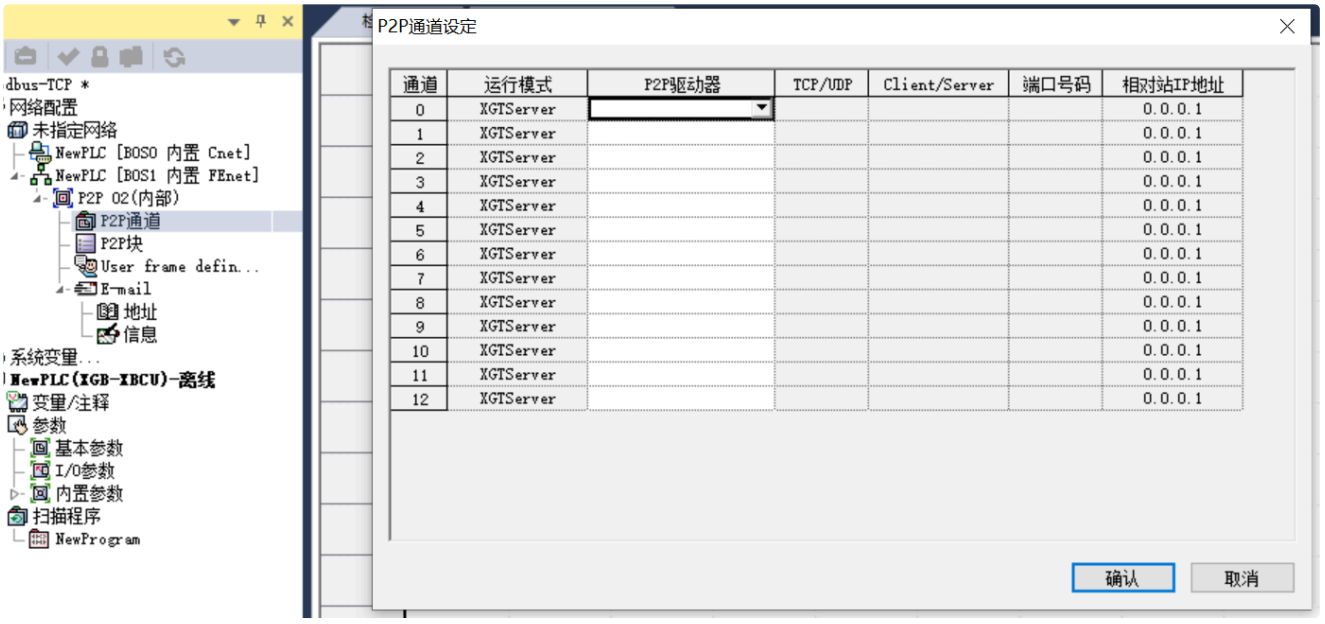
4. Add a P2P Communication Item

Right-click “FEnet” → “Add Item” → “P2P Communication” → click “Confirm.”



5. Open P2P Channel

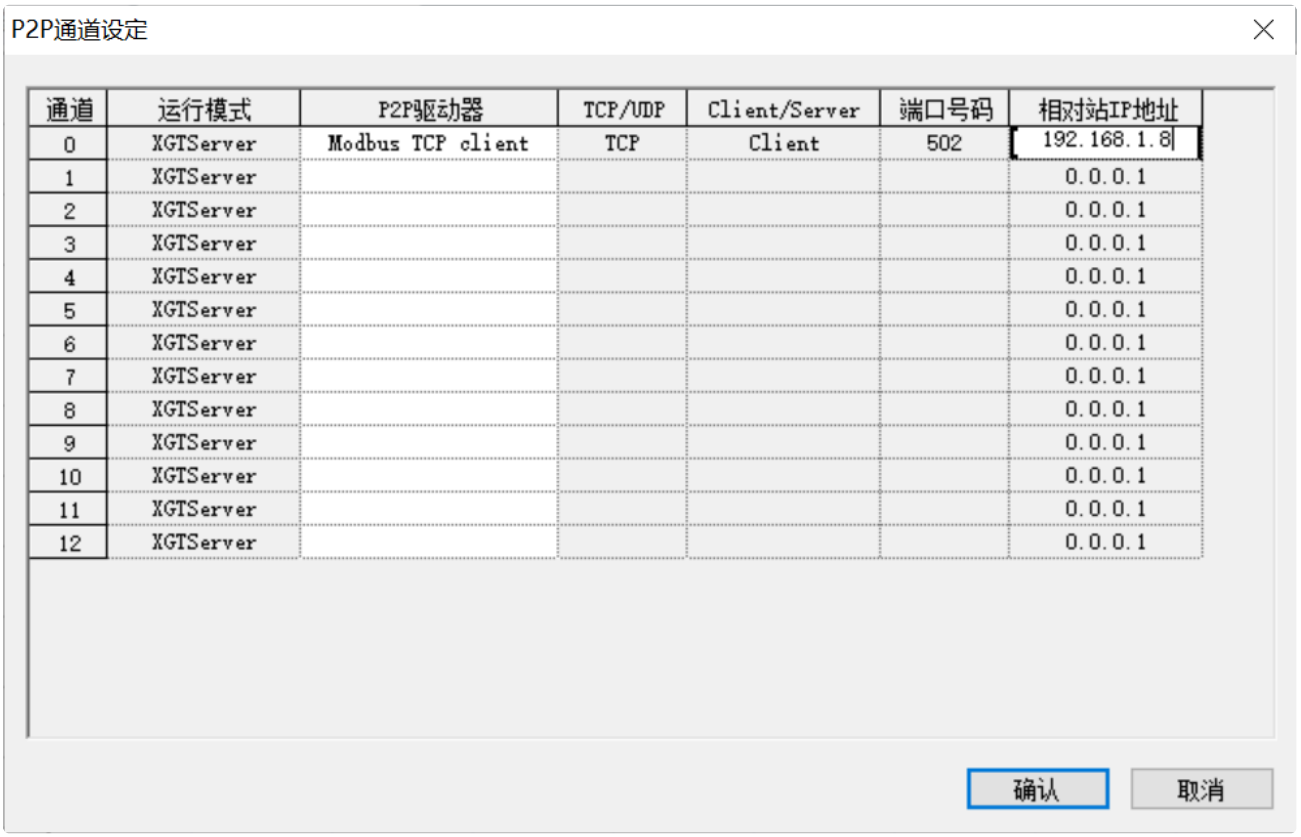
Double-click “P2P Channel” on the left.



6. Configure the P2P Driver

Set “P2P Driver” to “Modbus TCP Client.”
Set “Remote Station IP Address” to the IP address of the connected Sentinel IO-LINK master

module. Click “OK.”



7. Configure P2P Block for Reading IO-Link Input Data (Segment 1)

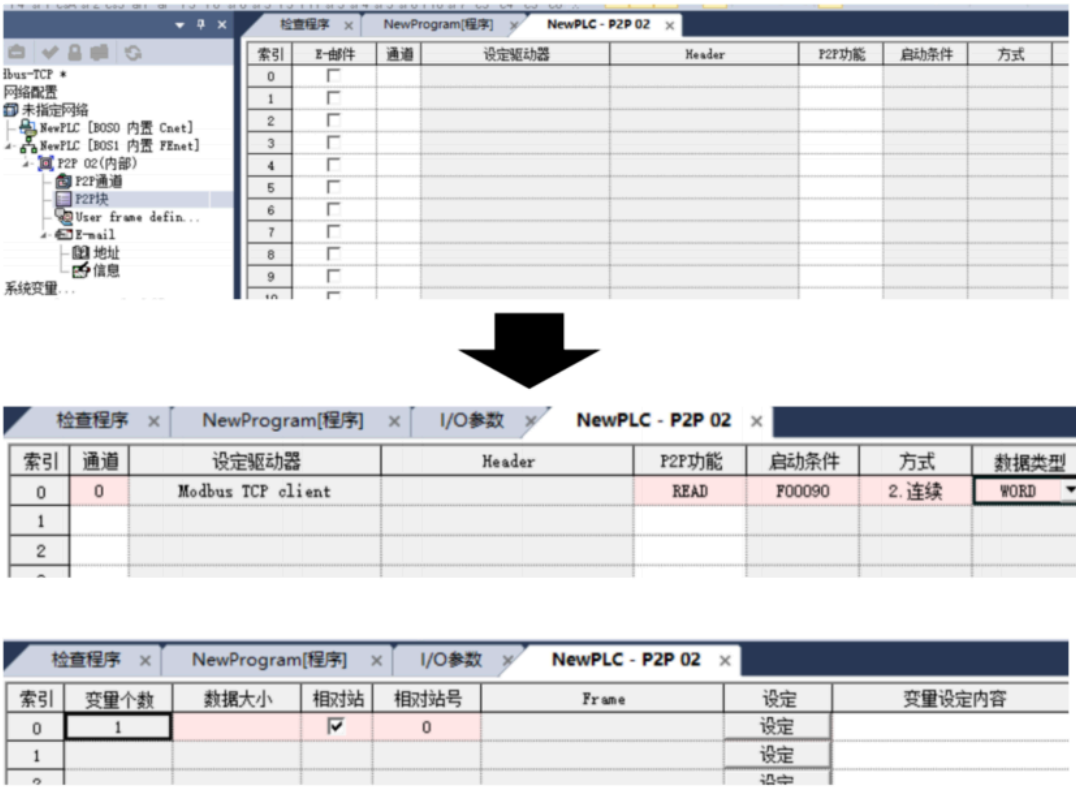
Double-click “P2P Block.” Select Channel 0, set the driver to “Modbus TCP client.”

To read IO-Link data:

- P2P Function: READ
- Start condition: F00090 (20 ms clock)
- Mode: 2. Continuous
- Data type: WORD
- Number of variables: 1
- Data Size: set to the amount of data to read (maximum 125)

Because Sentinel IO-Link master input data occupies Word[0]–Word[132] (a total of 133 words; see the appendix for mapping), it cannot be read in one transaction. Therefore, split into two reads. For the first segment, set Data Size = 85 words to read all input data up to and including

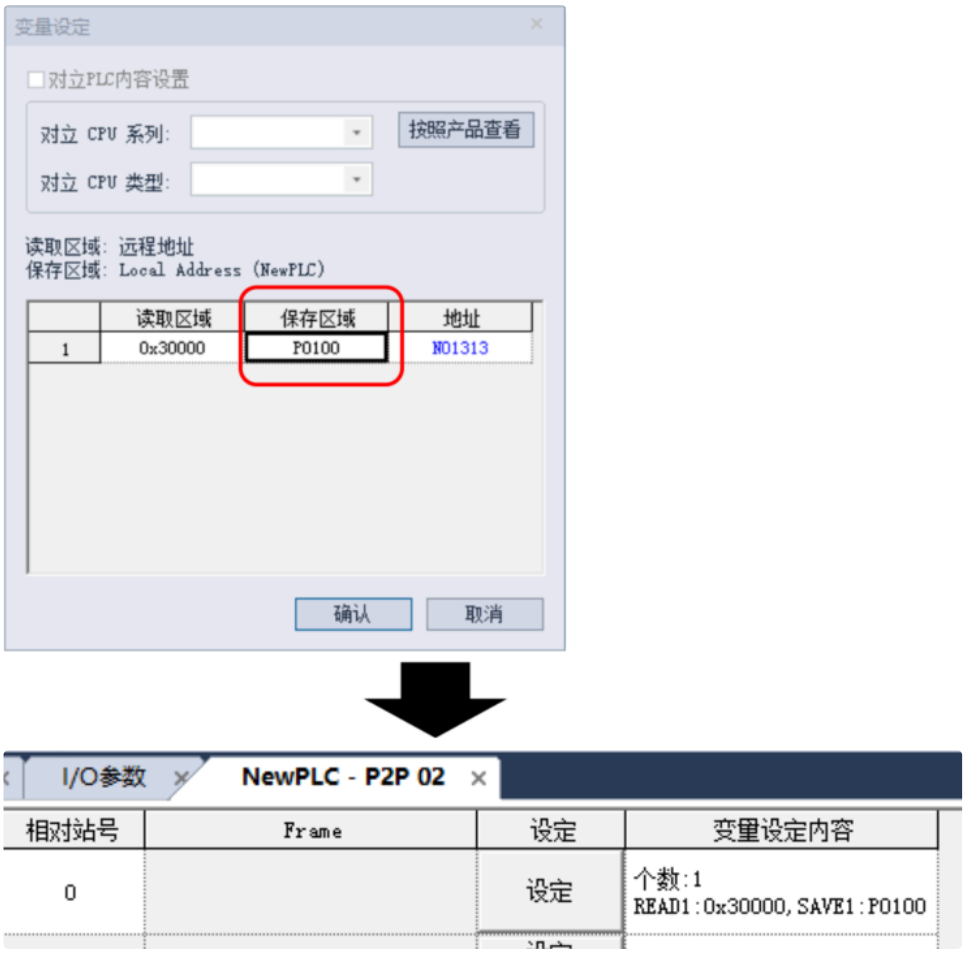
Port 5.



8. Set Read Parameters (Segment 1)

Click “Setting”. In the popup dialog:

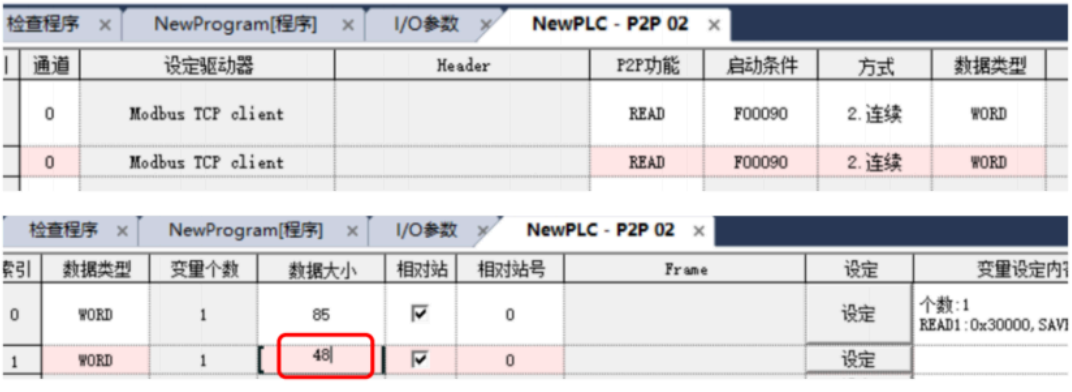
- Save Area: set to P0100 (store the first 85 input words starting from P0100)
- Read Area: 30000, hexadecimal 0x30000
  Click OK/Confirm.



9. Configure Reading IO-Link Input Data (Segment 2)

Add another Channel 0 with the same settings, but set:

- Data Size = 48 (read the remaining input words of the IO-Link master)

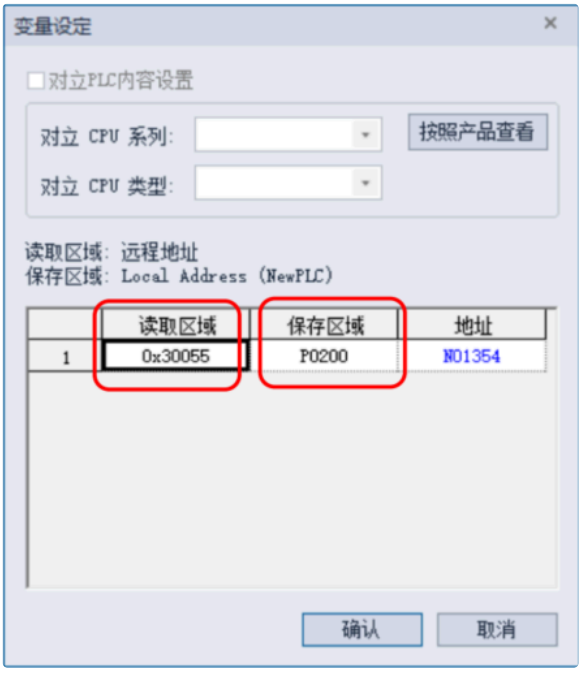


10. Set Read Parameters (Segment 2)

Click “Setting”. In the popup dialog:

- Save Area: P200 (store the latter 48 input words starting from P200)

- Read Area: 30085, converted to hex 0x30055
  Click OK/Confirm.



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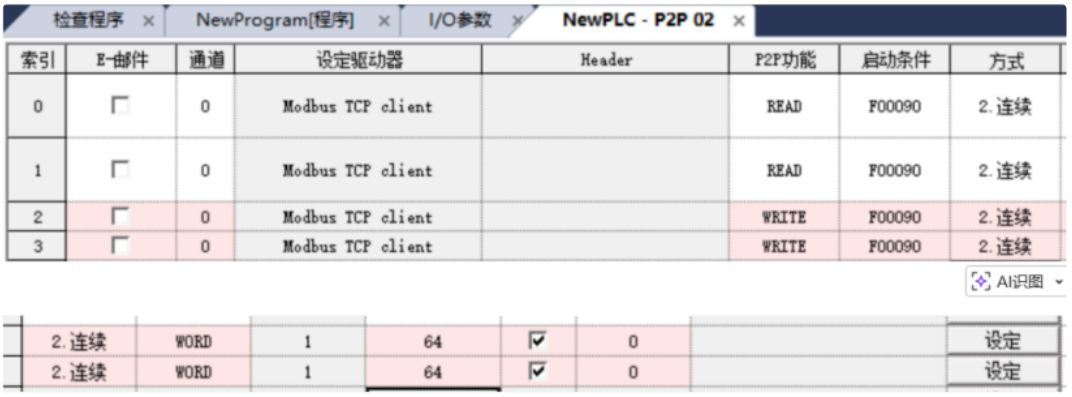
11. Configure Writing IO-Link Output Data (Split into Two Writes)

Similarly, for writing output data (see the appendix):
The output occupies Word[0]—Word[127] (a total of 128 words). Since the maximum data size is 120, it cannot be fully written in one transaction either, so you must write it in two operations.

Create two new channels as follows:

- Data size: 64 each time (write the first half of the IO-Link output data, then write the second half).



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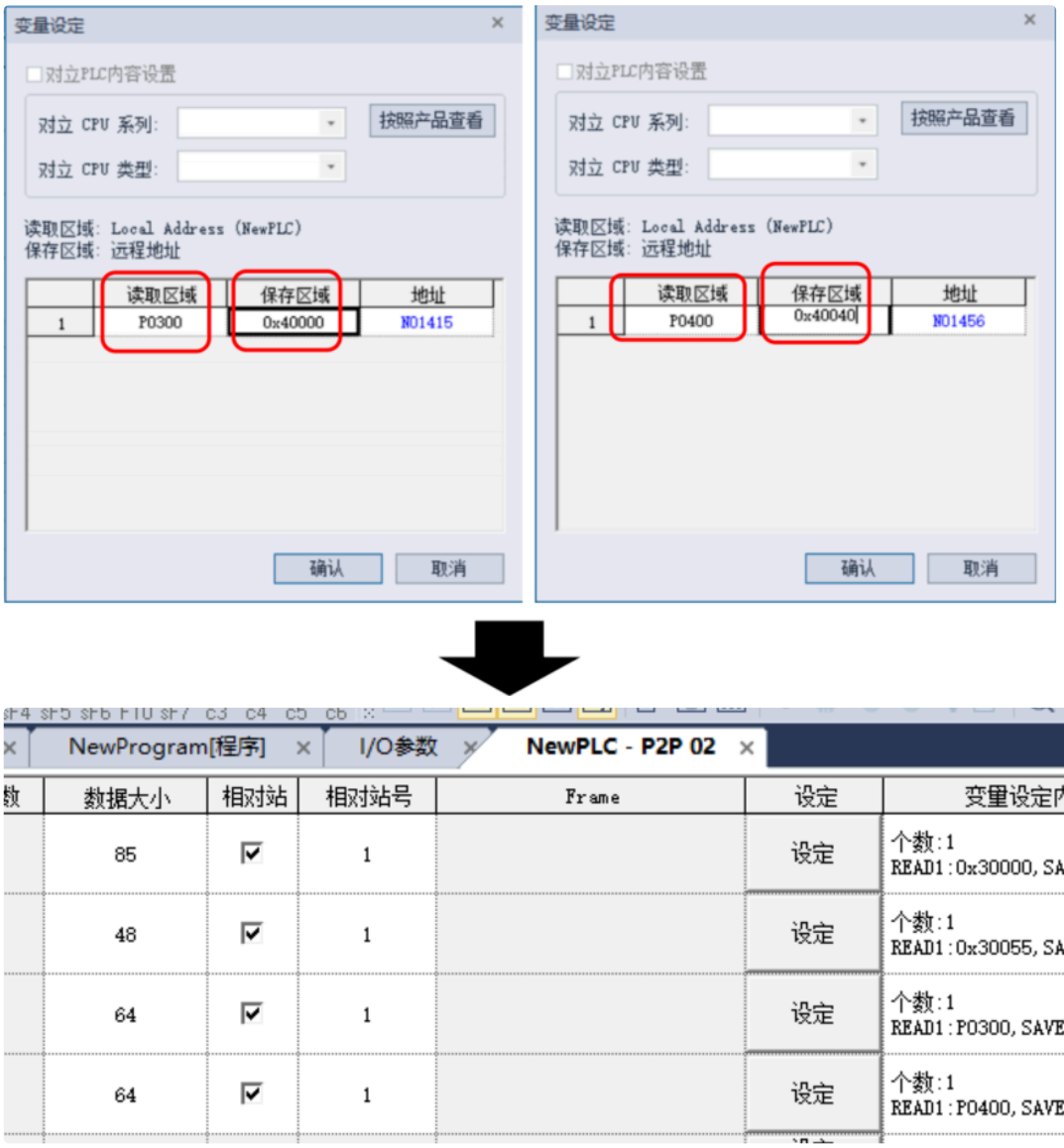
12. Set Write Parameters

Click “Setting” and set:

- Read area (PLC side data source) P300 and P400

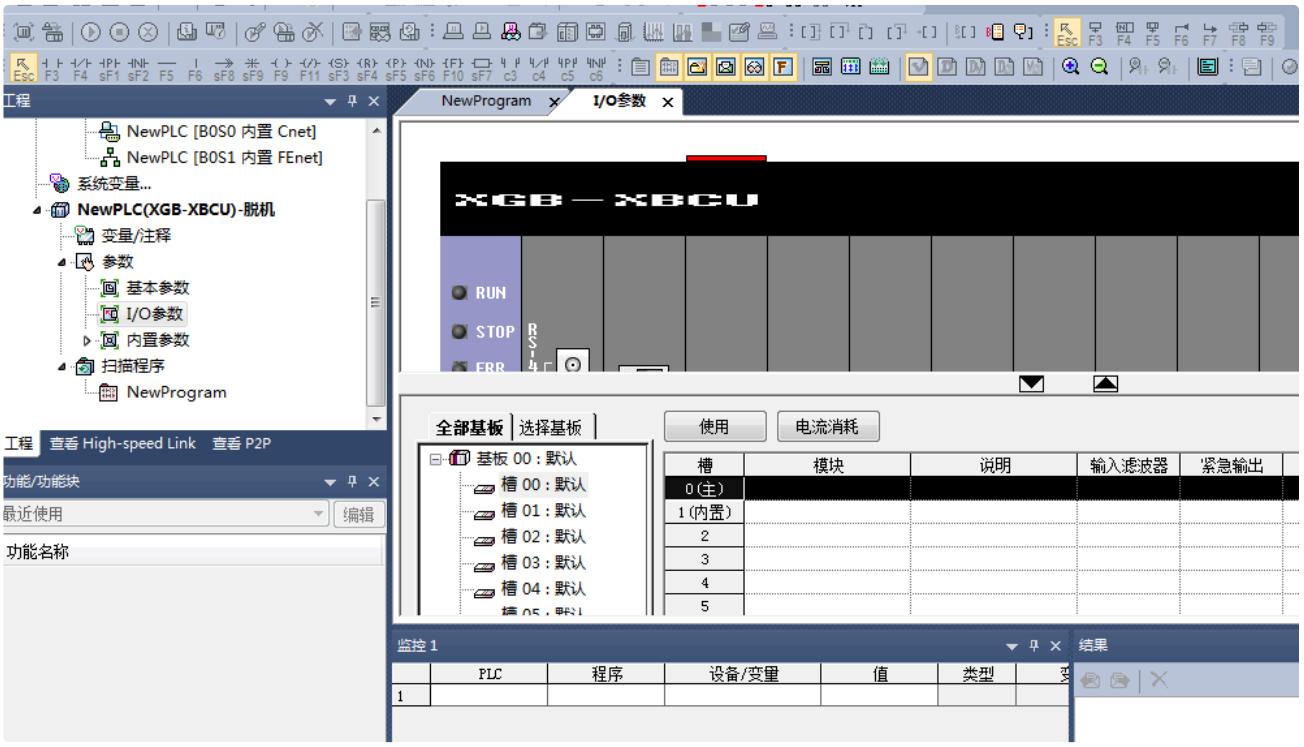
- From P300, store the first 48 output words; target area 40000, hex 0x40000
- From P400, store the latter 48 output words; target area 40064, hex 0x40040

Click OK/Confirm.



13. Open I/O Parameters

Double-click “I/O Parameters.”



14. Add Hardware Modules

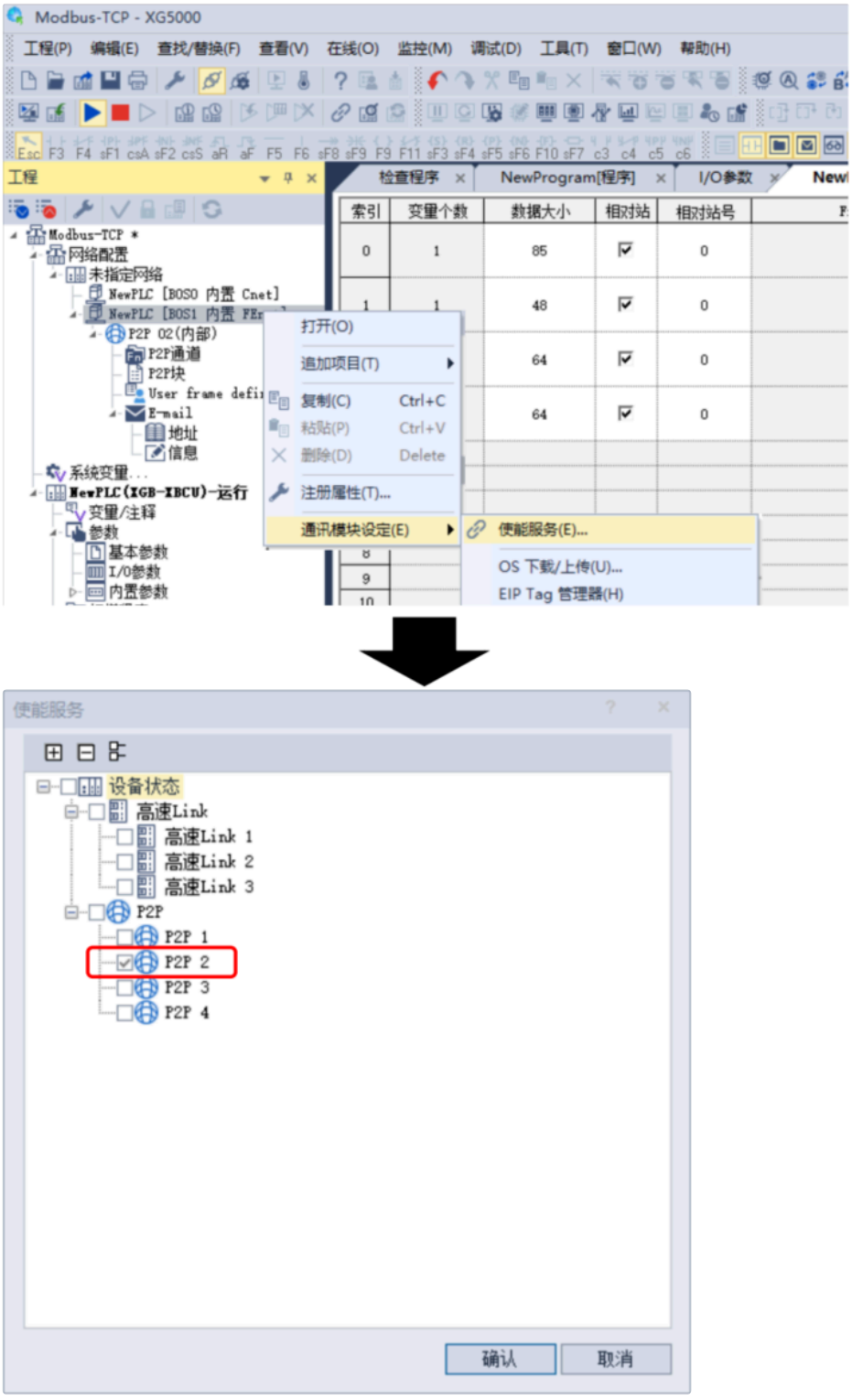
According to the PLC hardware configuration, add the hardware modules (in this example, there are digital modules).

15. Go Online (Connect)

Click Online → Connect.

16. Enable P2P Link in Communication Module Settings (Before First Download)

Before the first download:
Right-click FEnet → Communication Module Settings → Enable Link (HS Link, P2P) → check "P2P 2" → click "Confirm."



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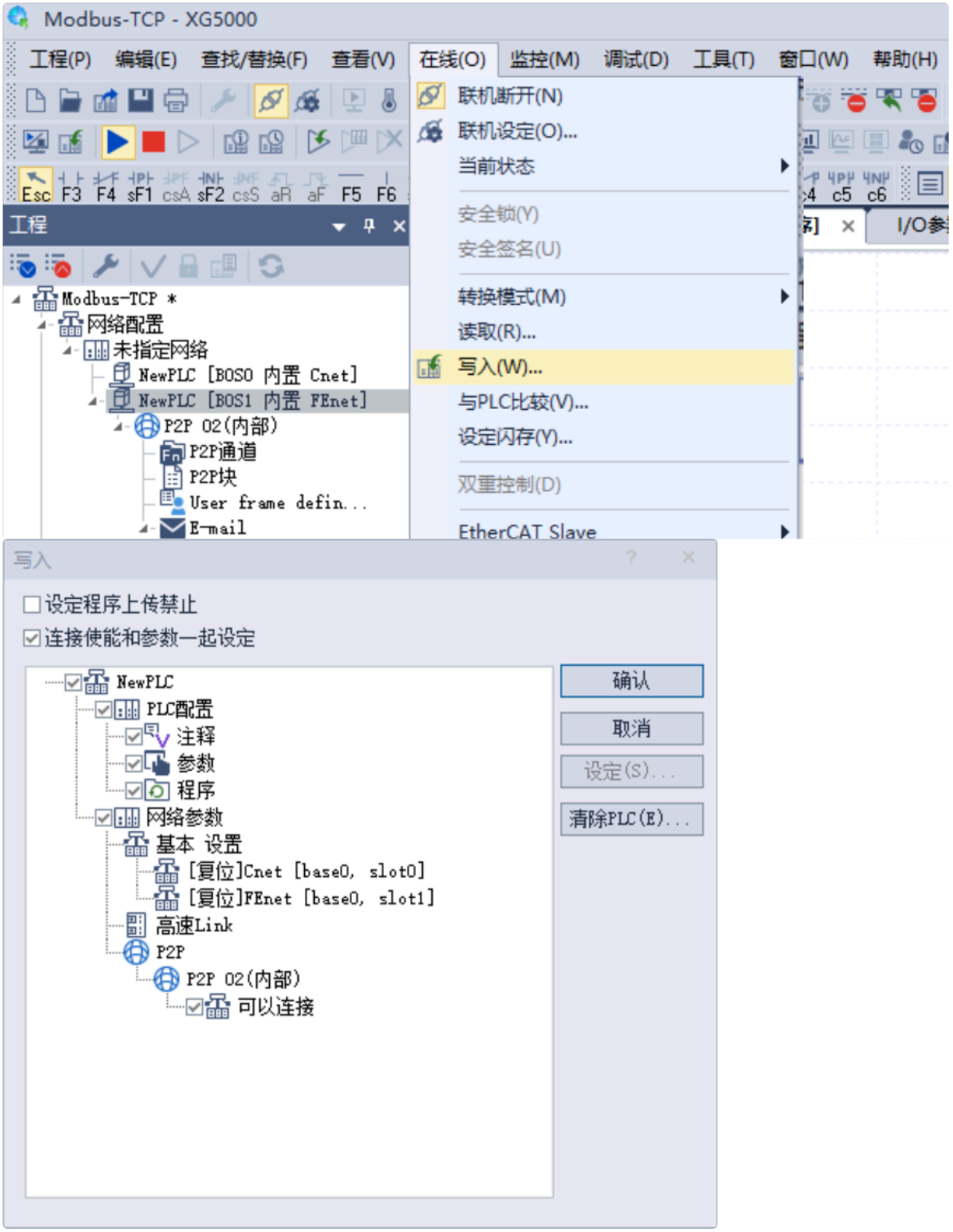
17. Download to PLC and Run

Before downloading, there must be program content in newprogram, otherwise downloading is not possible.

Before downloading:

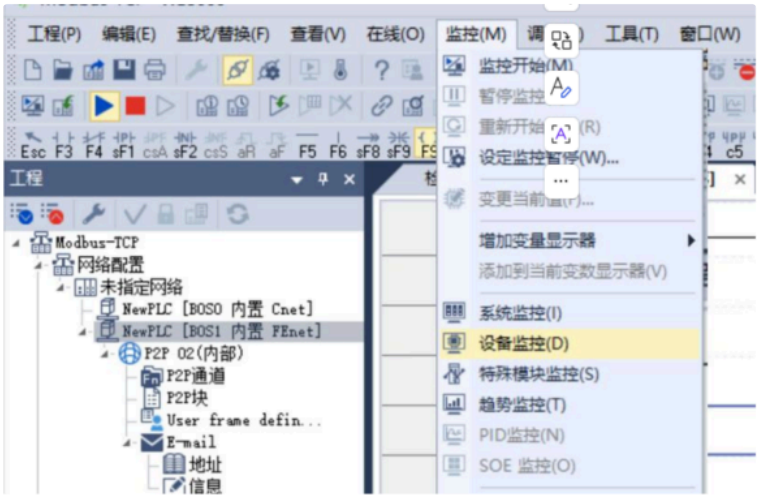
1. Switch the LS PLC to STOP mode
2. Click Online → Write

3. After writing is completed, switch the PLC to RUN

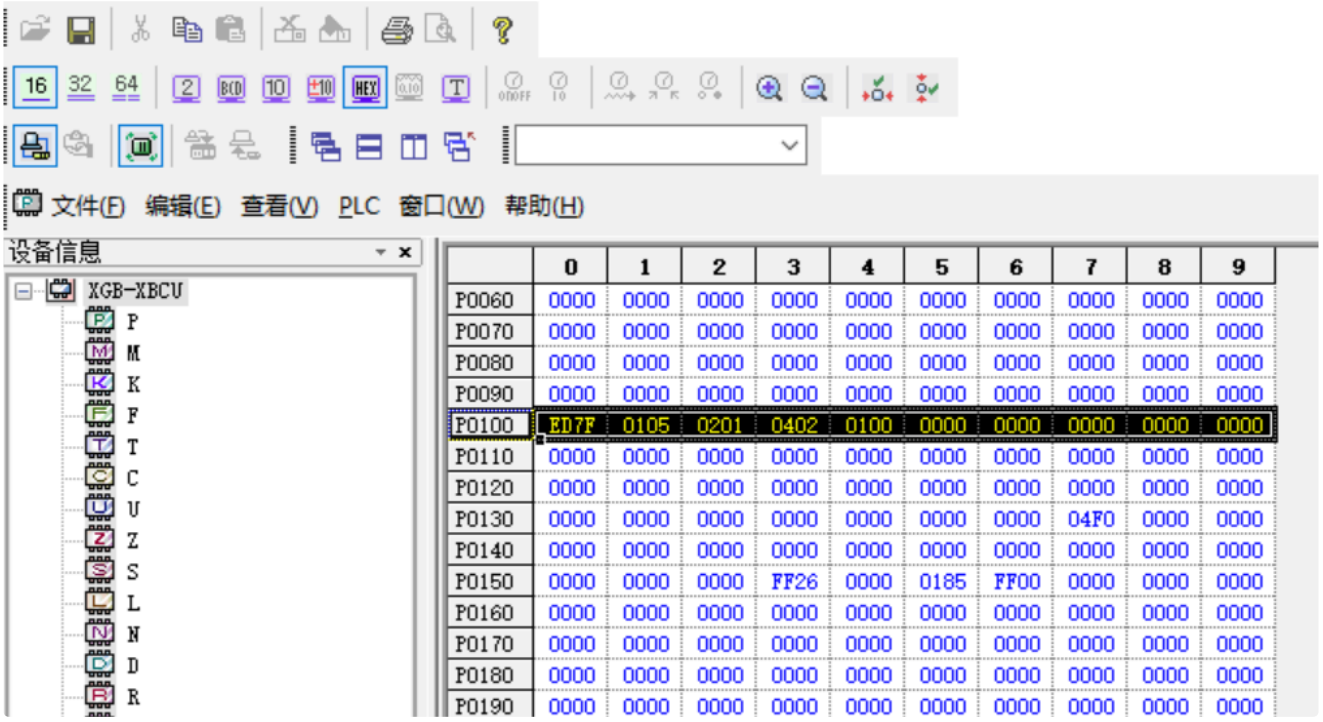


18. Monitor Device Data

Click Online → Connect, then click Monitor → Device Monitor.



NewPLC - 设备监控 - [P]



	0	1	2	3	4	5	6	7	8	9
P0060	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
P0070	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
P0080	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
P0090	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
P0100	ED7F	0105	0201	0402	0100	0000	0000	0000	0000	0000
P0110	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
P0120	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
P0130	0000	0000	0000	0000	0000	0000	0000	04F0	0000	0000
P0140	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
P0150	0000	0000	0000	FF26	0000	0185	FF00	0000	0000	0000
P0160	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
P0170	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
P0180	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000
P0190	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000

Appendix

A1. IO-LINK Process Data Input (Occupies 133 Words)

Supports function code F04 (Read Input Registers)

<table>
<tr><th>Modbus引用编号
WORD</th><th>Modbus数据地址
WORD</th><th>IO-LINK字节
BYTE</th><th>描述</th></tr>
<tr><td rowspan="2">30001</td><td rowspan="2">0</td><td>Byte0</td><td>8位代表8个端口当前IO-LINK状态：1正常通信，0未通信
<table><tr><td>位</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td></tr><tr><td>端口</td><td>C8</td><td>C7</td><td>C6</td><td>C5</td><td>C4</td><td>C3</td><td>C2</td><td>C1</td></tr></table></td></tr>
<tr><td>Byte1</td><td>8位代表8个端口IO-LINK断线记录：1有过断线，0未有过断线
<table><tr><td>位</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td></tr><tr><td>端口</td><td>C8</td><td>C7</td><td>C6</td><td>C5</td><td>C4</td><td>C3</td><td>C2</td><td>C1</td></tr></table></td></tr>
<tr><td rowspan="2">30002</td><td rowspan="2">1</td><td>Byte2</td><td>C1端口断线次数</td></tr>
<tr><td>Byte3</td><td>C2端口断线次数</td></tr>
<tr><td rowspan="2">30003</td><td rowspan="2">2</td><td>Byte4</td><td>C3端口断线次数</td></tr>
<tr><td>Byte5</td><td>C4端口断线次数</td></tr>
<tr><td rowspan="2">30004</td><td rowspan="2">3</td><td>Byte6</td><td>C5端口断线次数</td></tr>
<tr><td>Byte7</td><td>C6端口断线次数</td></tr>
<tr><td rowspan="2">30005</td><td rowspan="2">4</td><td>Byte8</td><td>C7端口断线次数</td></tr>
<tr><td>Byte9</td><td>C8端口断线次数</td></tr>
<tr><td>30006 - 30021</td><td>5 - 20</td><td>Byte10 - Byte41</td><td>C1端口过程输入数据（32Byte）</td></tr>
<tr><td>30022 - 30037</td><td>21 - 36</td><td>Byte42 - Byte73</td><td>C2端口过程输入数据（32Byte）</td></tr>
<tr><td>30038 - 30053</td><td>37 - 52</td><td>Byte74 - Byte105</td><td>C3端口过程输入数据（32Byte）</td></tr>
<tr><td>30054 - 30069</td><td>53 - 68</td><td>Byte106 - Byte137</td><td>C4端口过程输入数据（32Byte）</td></tr>
<tr><td>30070 - 30085</td><td>69 - 84</td><td>Byte138 - Byte169</td><td>C5端口过程输入数据（32Byte）</td></tr>
<tr><td>30086 - 30101</td><td>85 - 100</td><td>Byte170 - Byte201</td><td>C6端口过程输入数据（32Byte）</td></tr>
<tr><td>30102 - 30117</td><td>101 - 116</td><td>Byte202 - Byte233</td><td>C7端口过程输入数据（32Byte）</td></tr>
<tr><td>30118 - 30133</td><td>117 - 132</td><td>Byte234 - Byte265</td><td>C8端口过程输入数据（32Byte）</td></tr>
</table>

A2. IO-LINK Process Data Output (Occupies 128 Words)

Supports function codes:

- F03 (Read Holding Registers)
- F16 (Write Holding Registers)
- F23 (Read/Write Holding Registers)

Modbus引用编号 WORD	Modbus数据地址 WORD	IO-LINK字节 BYTE	描述
40001 - 40016	0 - 15	Byte0 - Byte31	C1端口过程输出数据（32Byte）
40017 - 40032	16 - 31	Byte32 - Byte63	C2端口过程输出数据（32Byte）
40033 - 40048	32 - 47	Byte64 - Byte95	C3端口过程输出数据（32Byte）
40049 - 40064	48 - 63	Byte96 - Byte127	C4端口过程输出数据（32Byte）
40065 - 40080	64 - 79	Byte128 - Byte159	C5端口过程输出数据（32Byte）
40081 - 40096	80 - 95	Byte160 - Byte191	C6端口过程输出数据（32Byte）
40097 - 40112	96 - 111	Byte192 - Byte223	C7端口过程输出数据（32Byte）
40113 - 40128	112 - 127	Byte224 - Byte255	C8端口过程输出数据（32Byte）