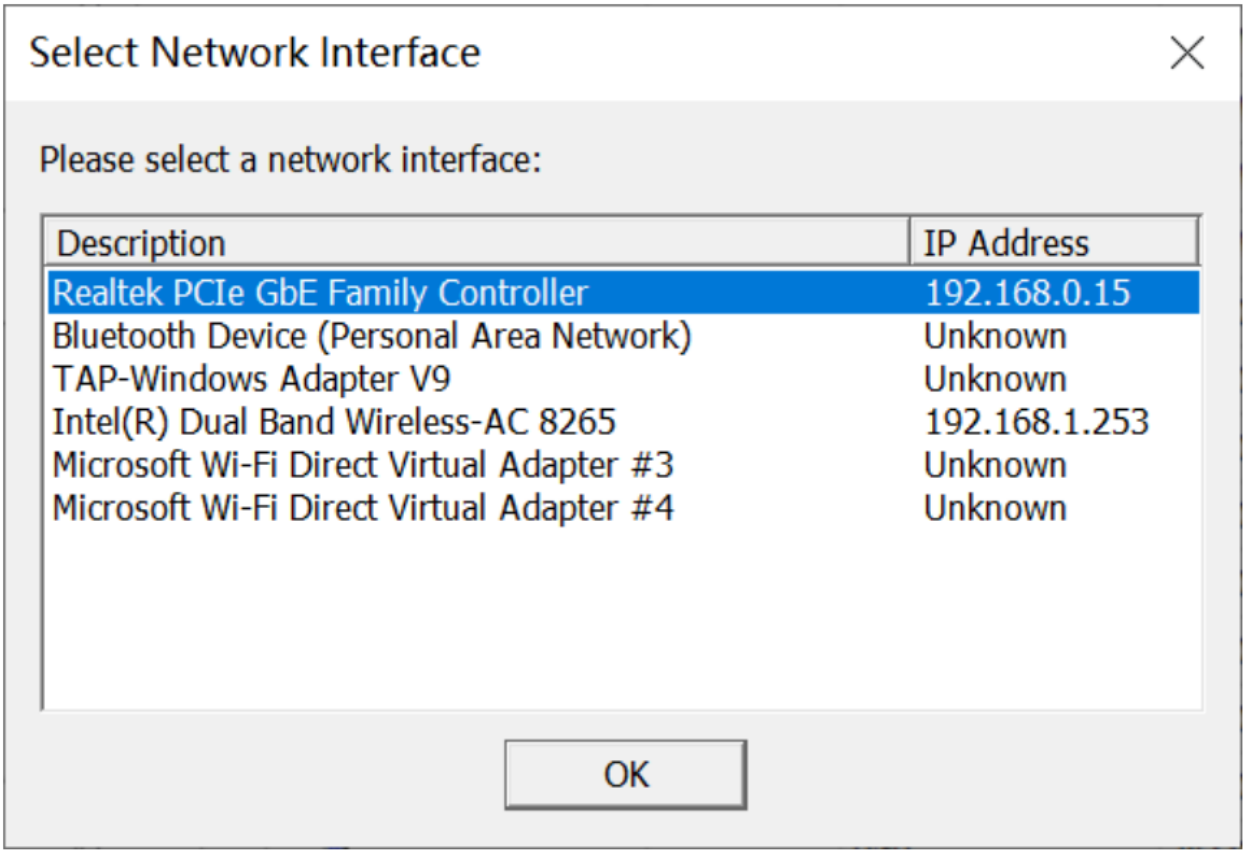
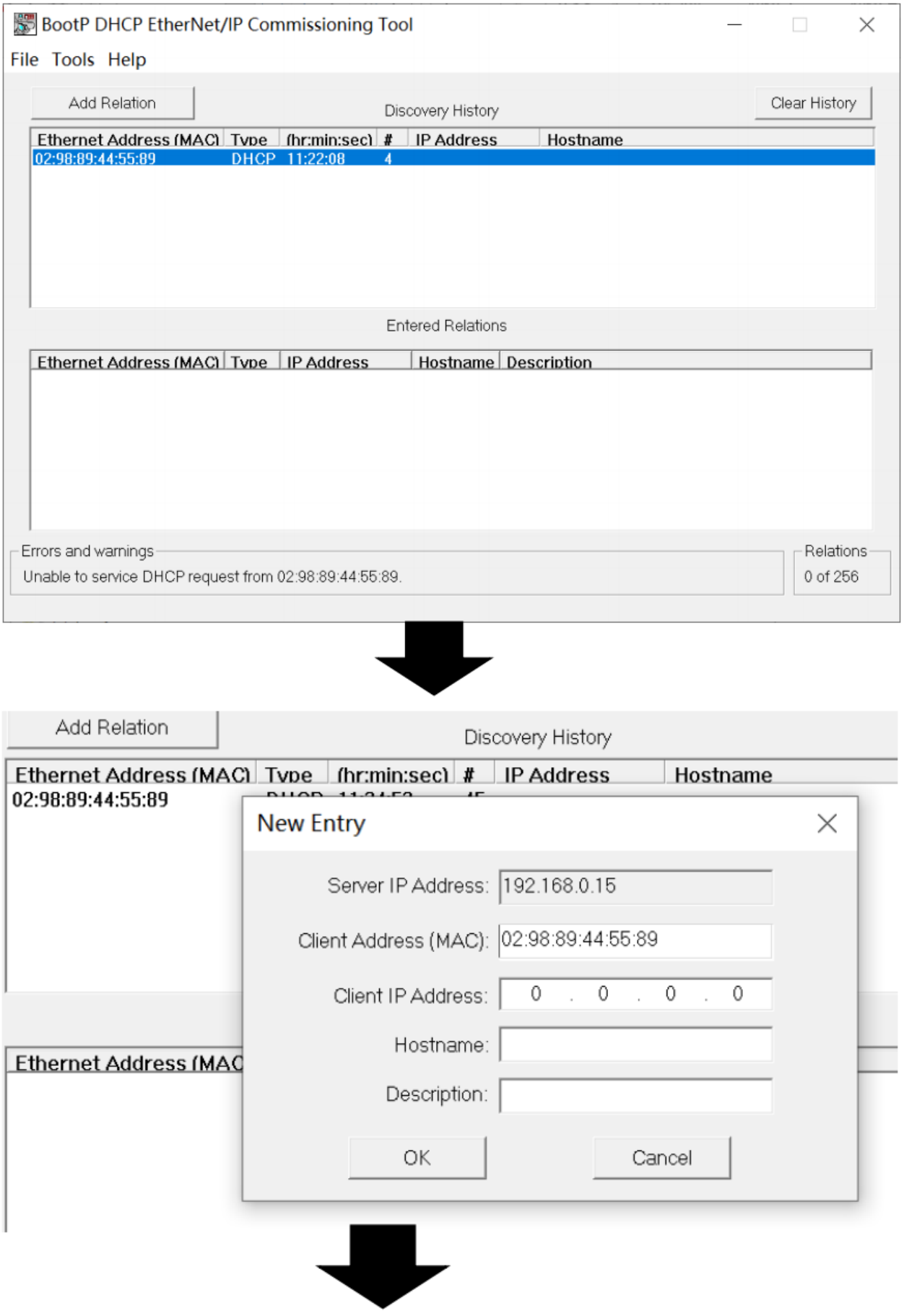
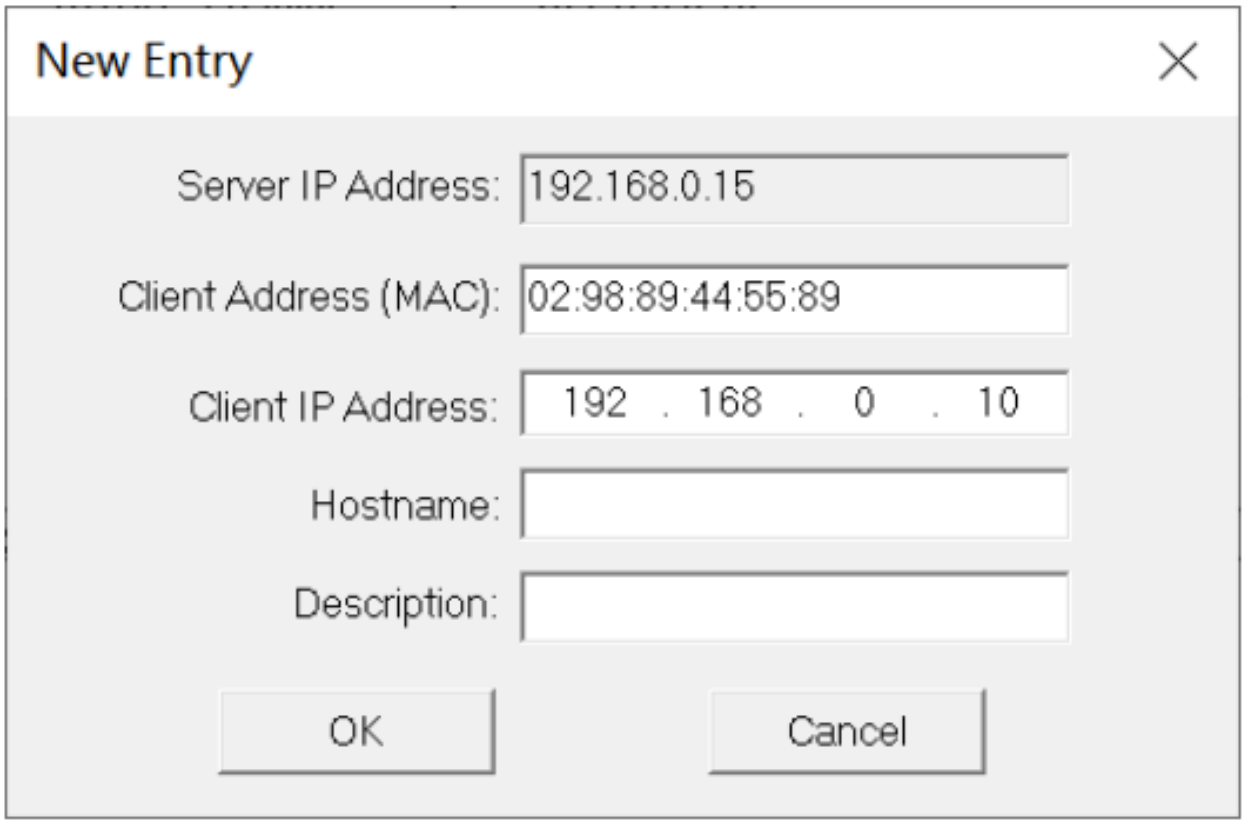
1. **Set the IP address of the Sentinel Ethernet/IP protocol IO-LINK master module using third-party software.**

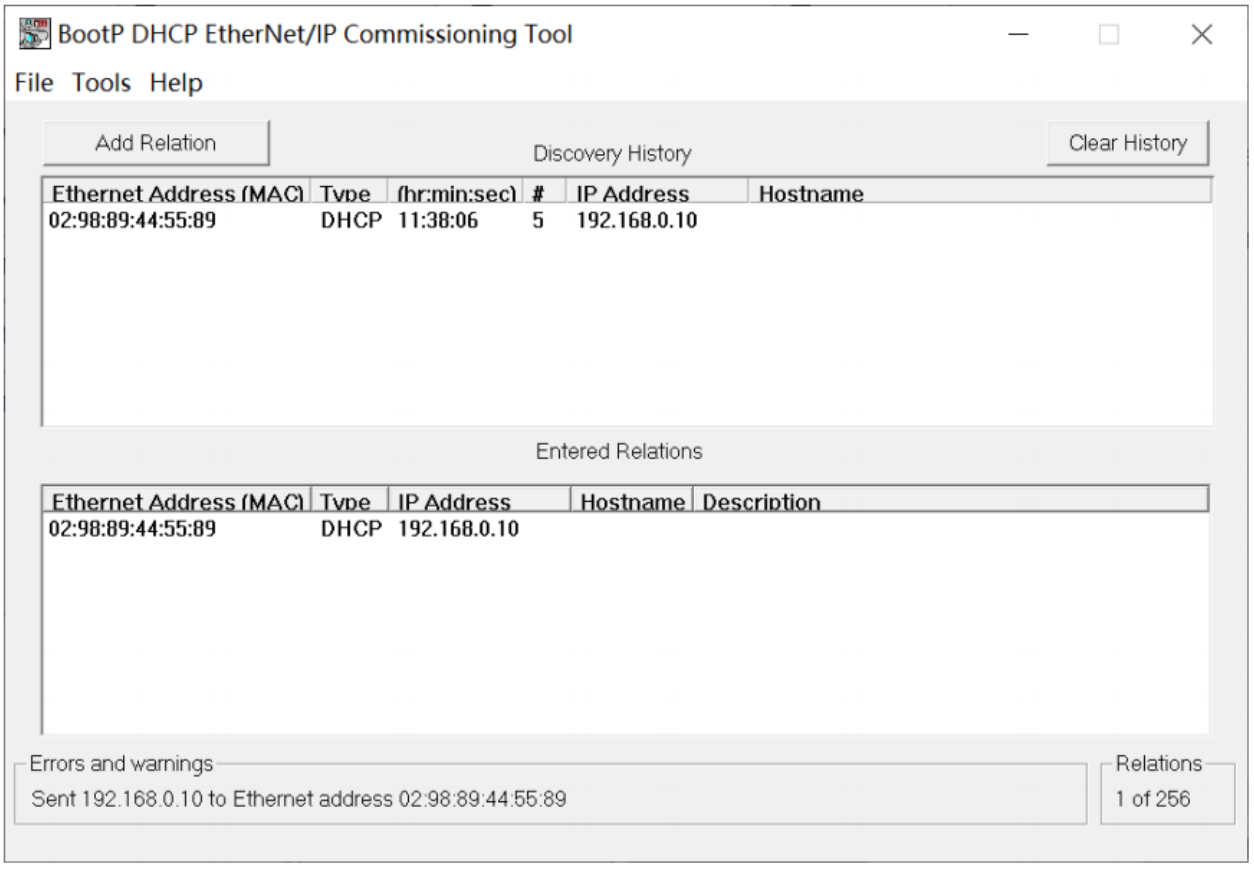
   In this example, AB's "Bootp-DHCP Tool" software is used. Before setting up, adjust the module's IP address dial to "0xFF" (DHCP mode). Power on, and the module will await IP assignment. Open the software, select the appropriate network card, and click "OK".



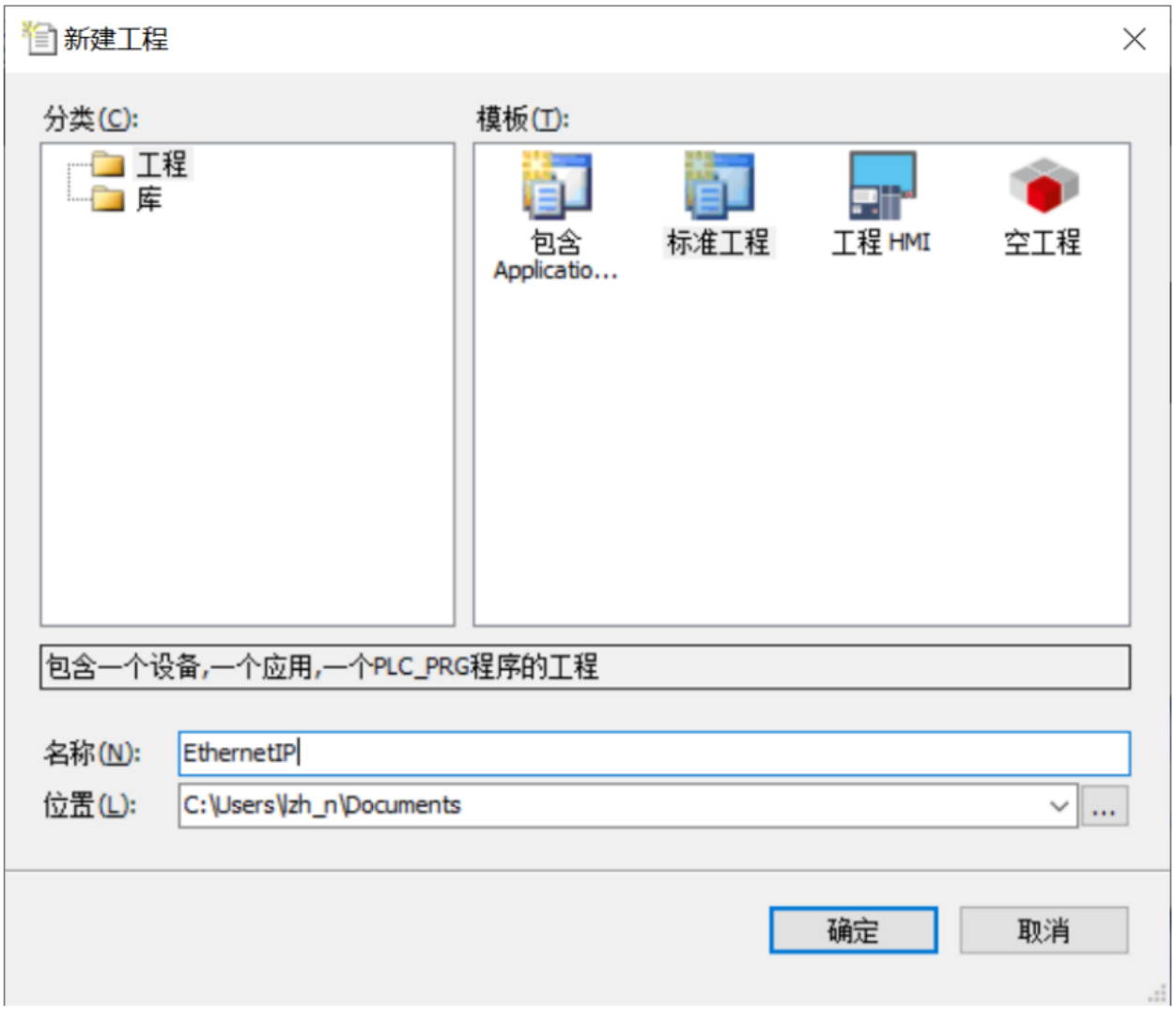
2. **Double-click the detected module, enter the IP address to set (the IP address must be in the same subnet as the local IP), and click "OK". Once setup is complete, set the module's IP address dial to "0x00" to use the DHCP-assigned IP address.**


BootP DHCP EtherNet/IP Commissioning Tool
File Tools Help
Add Relation
Discovery History
Clear History
Ethernet Address (MAC)
Type
(hr:min:sec)
#
IP Address
Hostname
02:98:89:44:55:89
DHCP
11:22:08
4
Entered Relations
Ethernet Address (MAC)
Type
IP Address
Hostname
Description
Errors and warnings
Unable to service DHCP request from 02:98:89:44:55:89.
Relations
0 of 256
Add Relation
Discovery History
Ethernet Address (MAC)
Type
(hr:min:sec)
#
IP Address
Hostname
02:98:89:44:55:89
New Entry
Server IP Address:
192.168.0.15
Client Address (MAC):
02:98:89:44:55:89
Client IP Address:
0 . 0 . 0 . 0
Hostname:
Description:
OK
Cancel

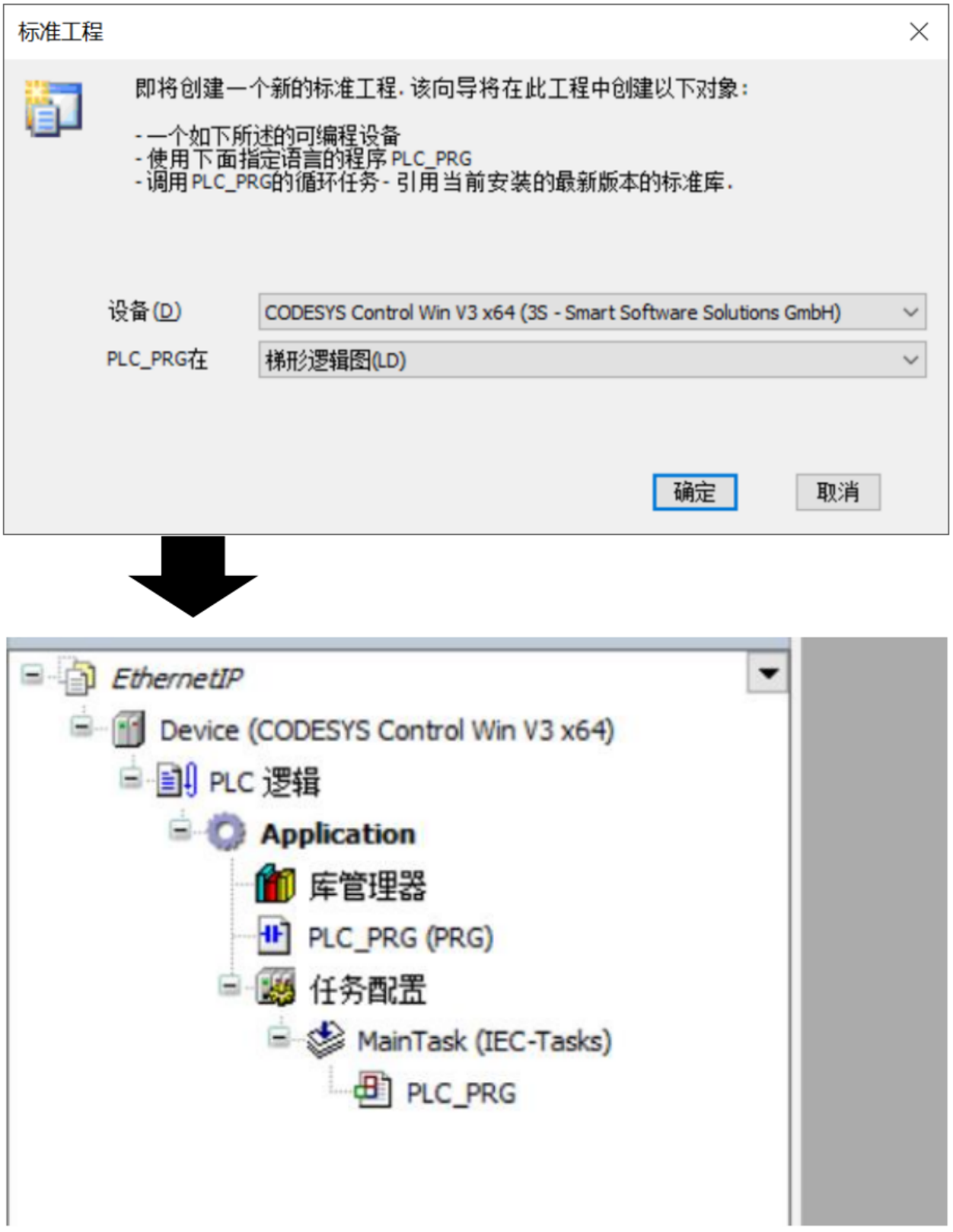




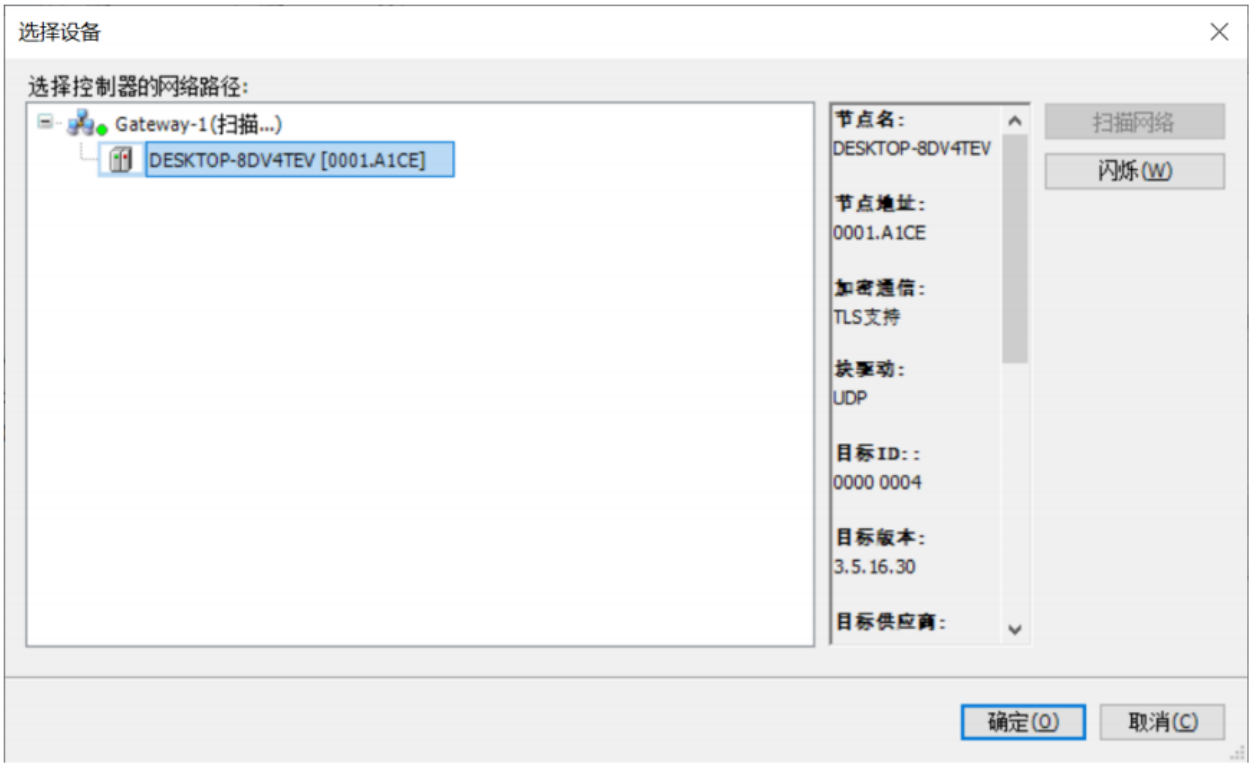
3. **Open CODESYS software, create a new standard project, assign a custom "Name," and click "Confirm".**



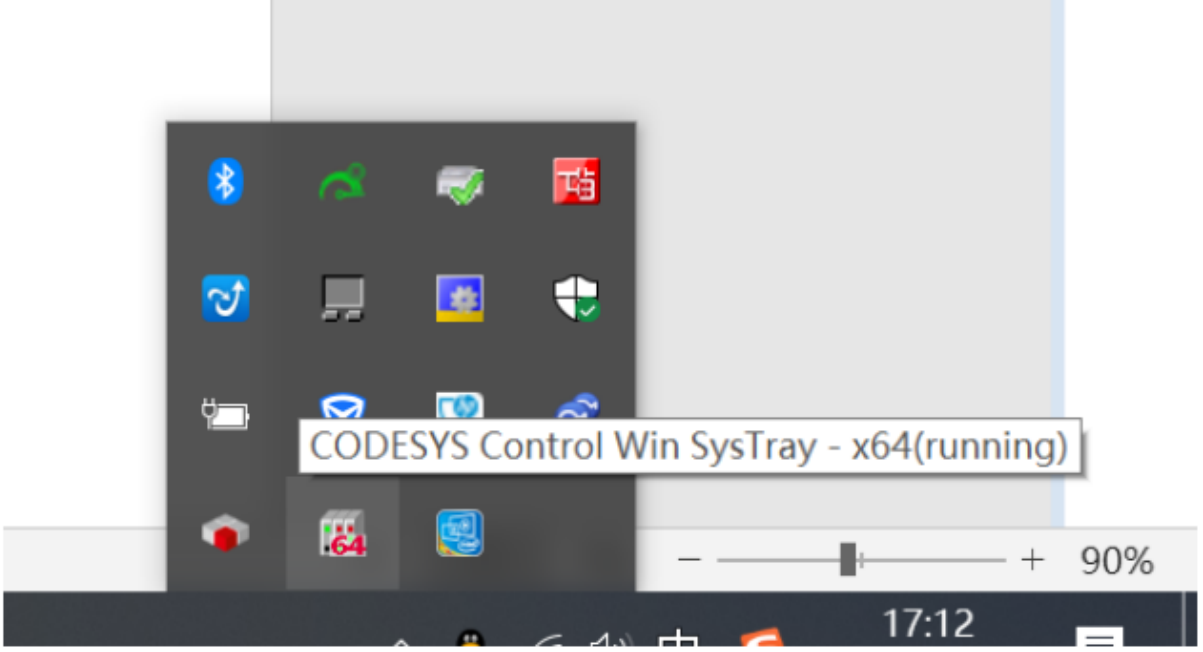
4. **Select the appropriate device, "CODESYS Control Win V3 x64" in this example, and click "Confirm".**



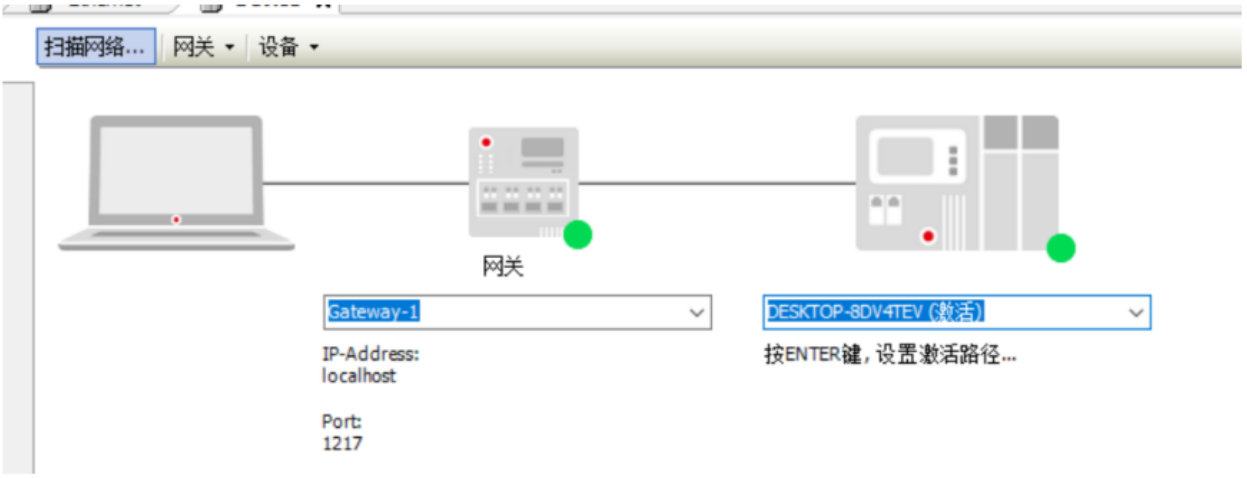
5. **Double-click "Device CODESYS Control Win V3 x64", click "Scan Network" on the right, select the correct network path, and click "Confirm".**



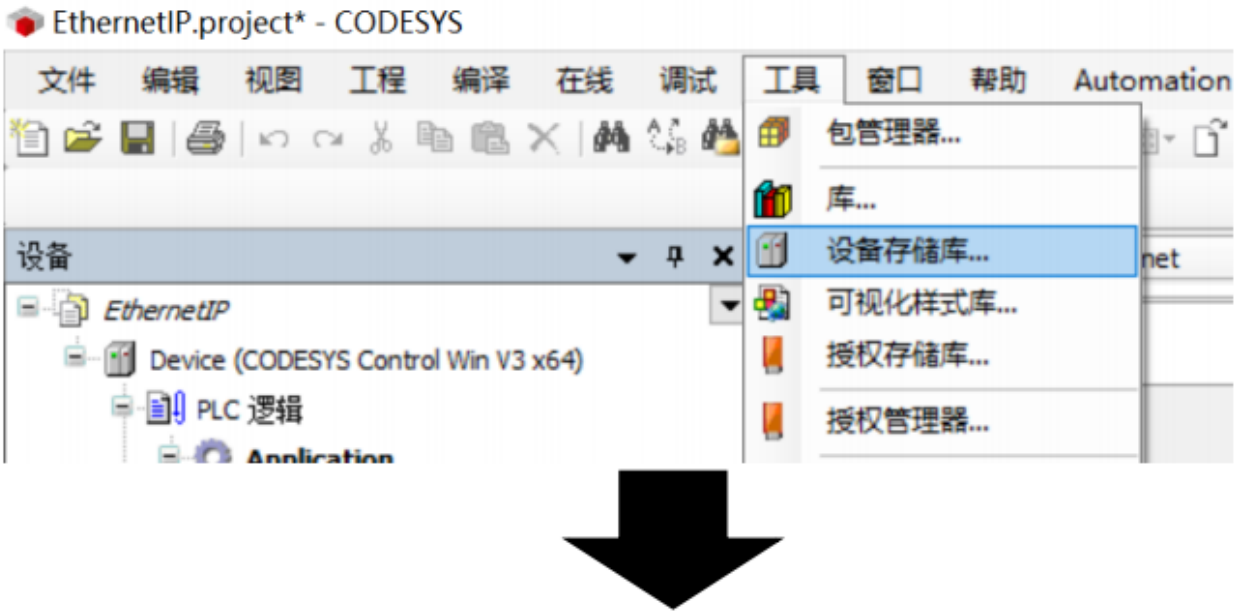
Note: If the network path is not found, check if the gateway and controller are active in the bottom-right menu. The gateway and controller should be active (red for active, gray for inactive).

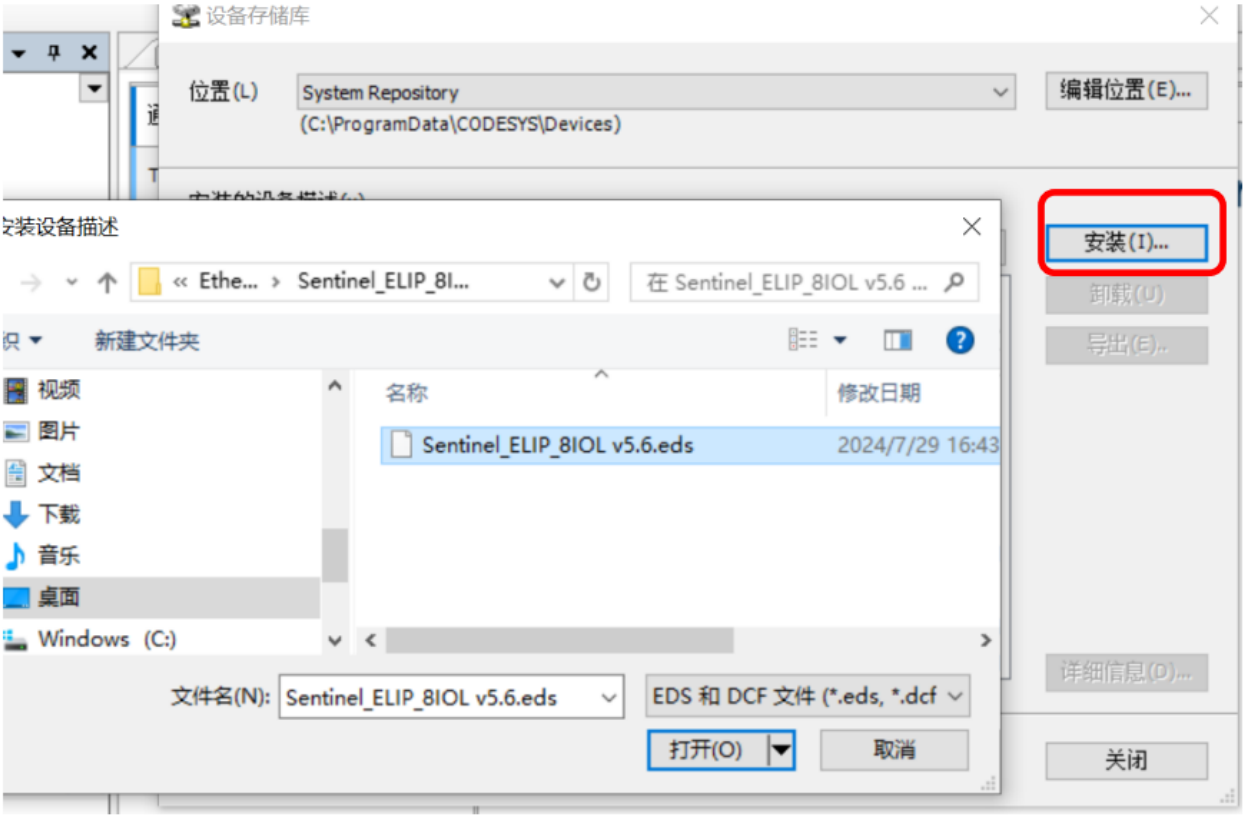


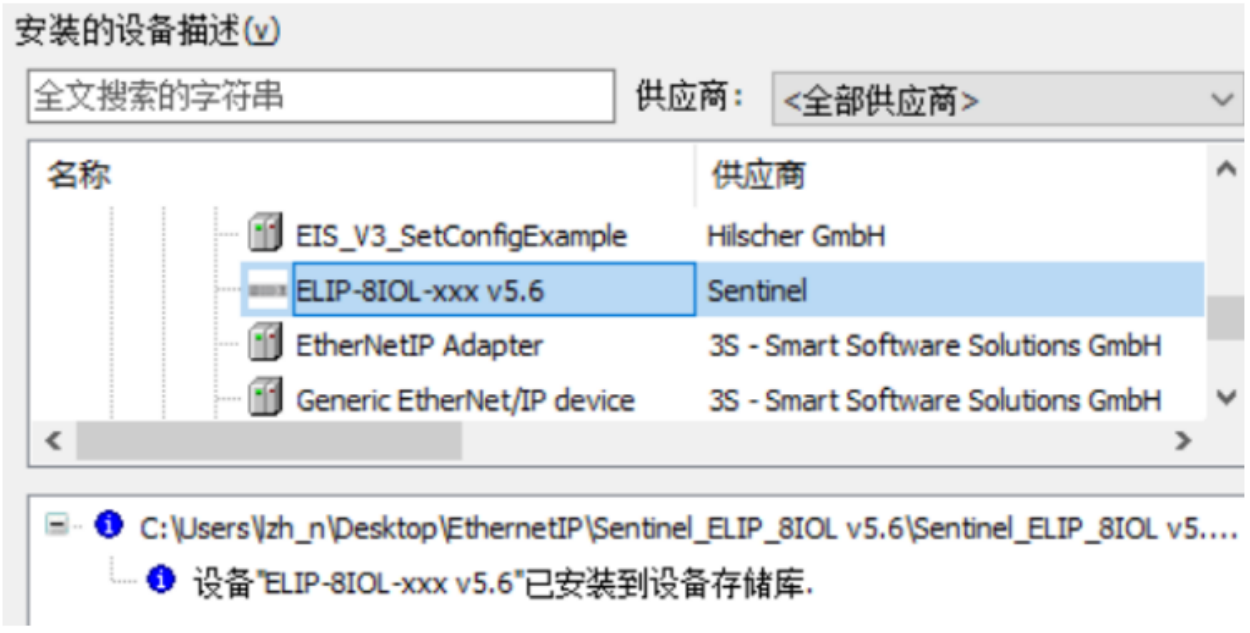
6. **The middle green dot indicates that the gateway is running normally, and the right green dot indicates that the controller has been scanned successfully and is connected.**



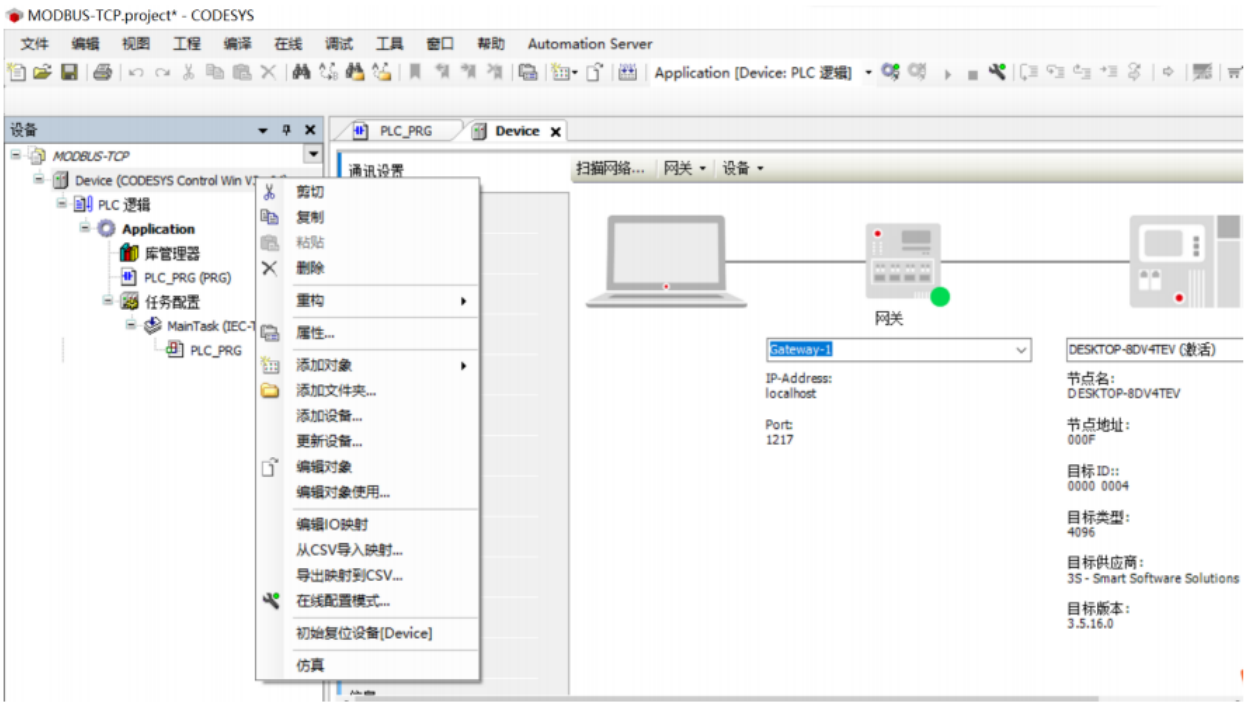
7. **Install the EDS file by clicking "Tools" -> "Device Repository...". In the dialog that appears, click "Install", select the EDS file path, and click "Open".**

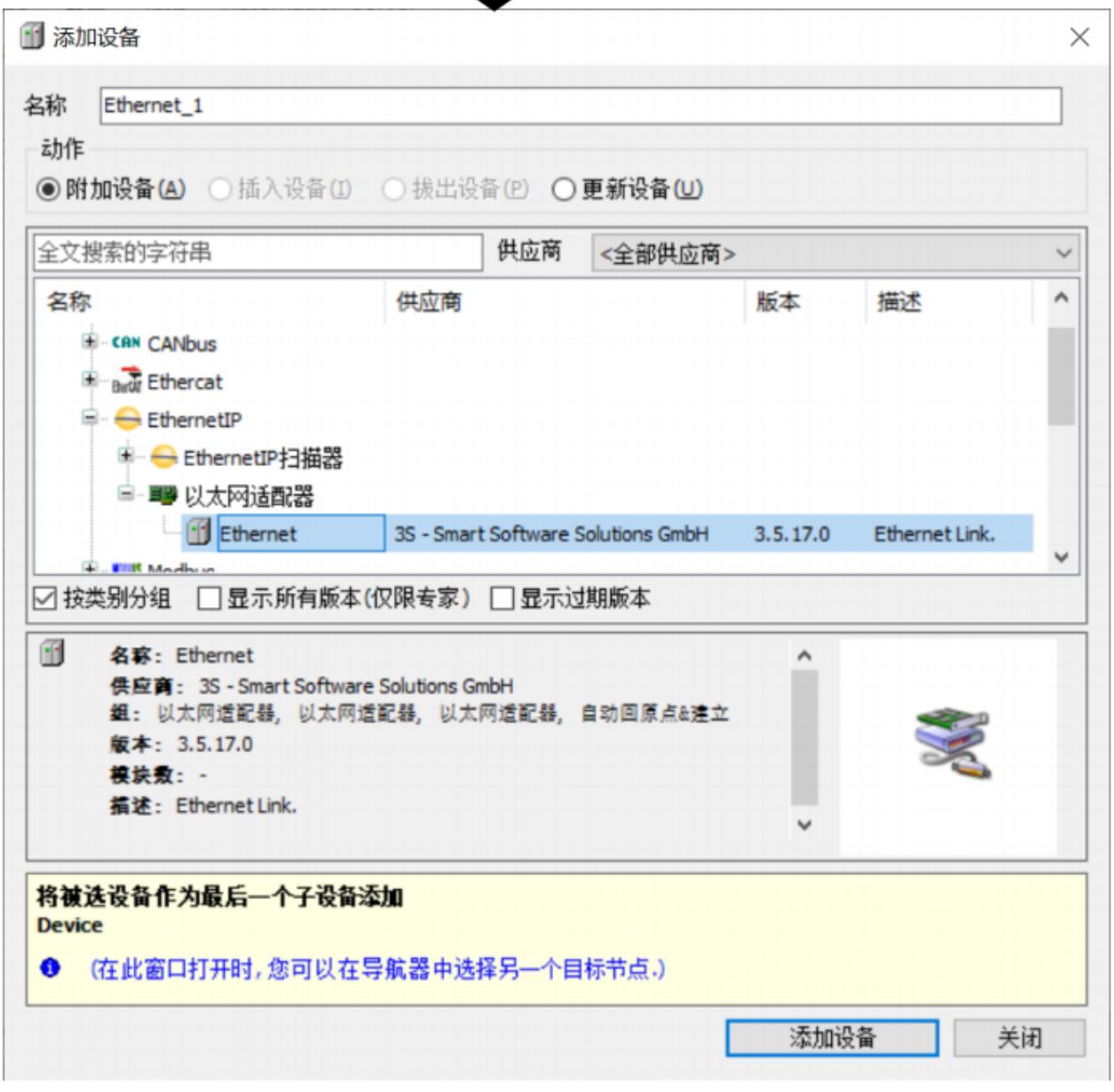




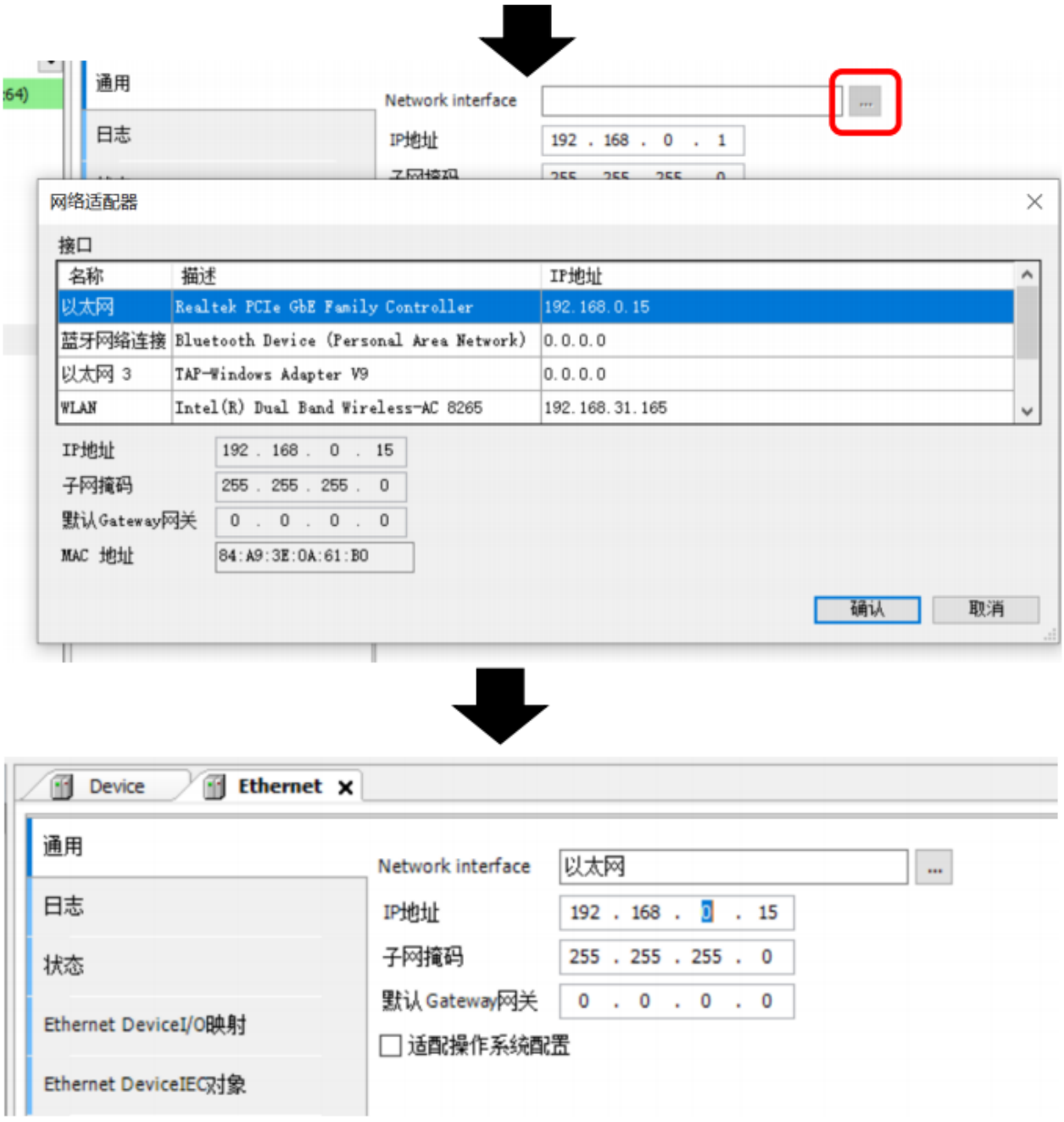


8. **To add the Ethernet master, right-click "Device CODESYS Control Win V3 x64", select "Add Device", choose the Ethernet adapter "Ethernet" under "Ethernet IP" in the dialog, and click "Add Device".**

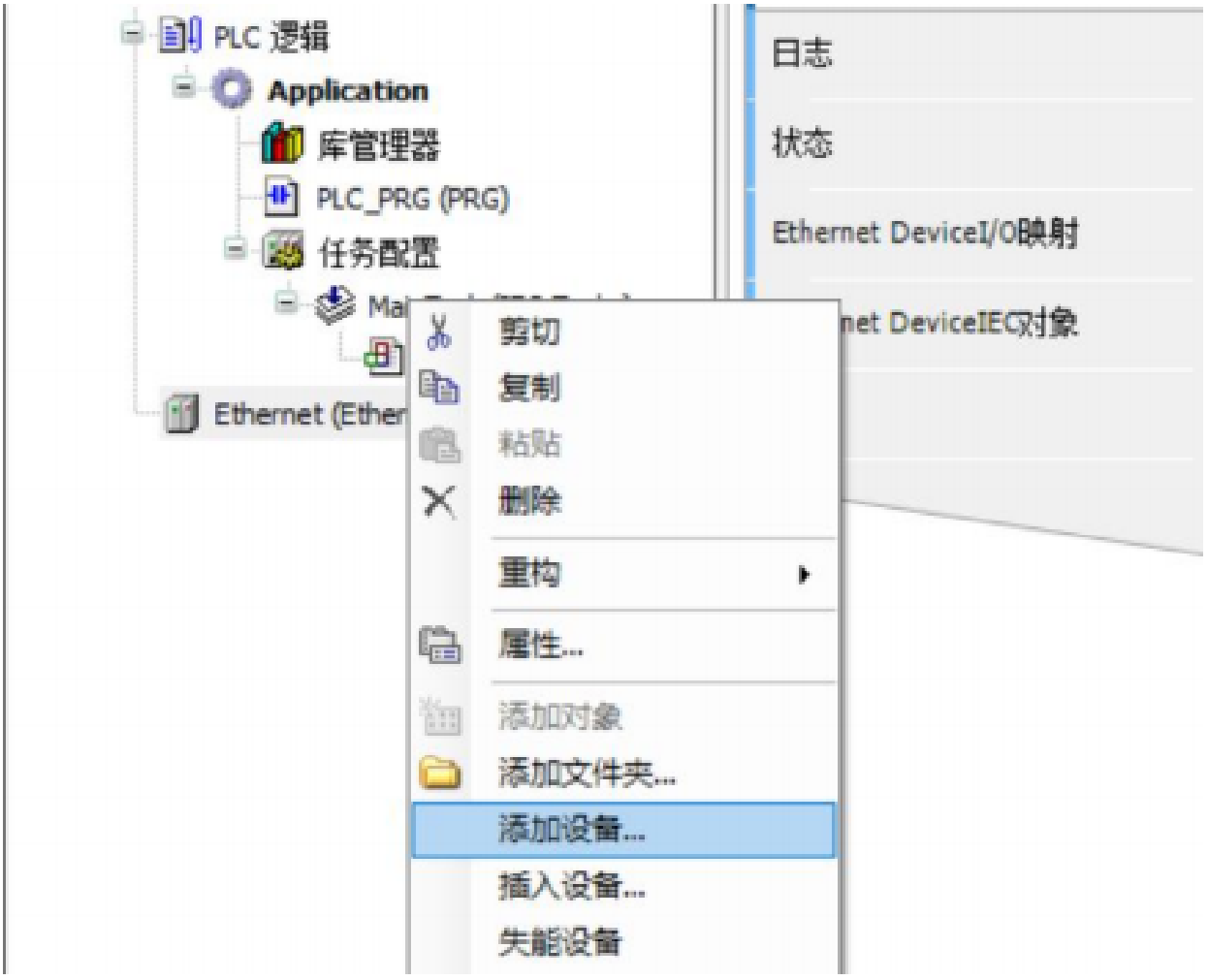

MODBUS-TCP.project* - CODESYS
文件 编辑 视图 工程 编译 在线 调试 工具 窗口 帮助 Automation Server
Application [Device: PLC 逻辑]
设备
MODBUS-TCP
Device (CODESYS Control Win V
PLC 逻辑
Application
库管理器
PLC_PRG (PRG)
任务配置
MainTask (IEC-
PLC_PRG
PLC_PRG
Device
通讯设置
扫描网络...
网关
设备
剪切
复制
粘贴
删除
重构
属性...
添加对象
添加文件夹...
添加设备...
更新设备...
编辑对象
编辑对象使用...
编辑IO映射
从CSV导入映射...
导出映射到CSV...
在线配置模式...
初始复位设备[Device]
仿真
网关
Gateway-1
IP-Address:
localhost
Port:
1217
DESKTOP-8DV4TEV (激活)
节点名:
DESKTOP-8DV4TEV
节点地址:
000F
目标ID::
0000 0004
目标类型:
4096
目标供应商:
3S - Smart Software Solutions
目标版本:
3.5.16.0

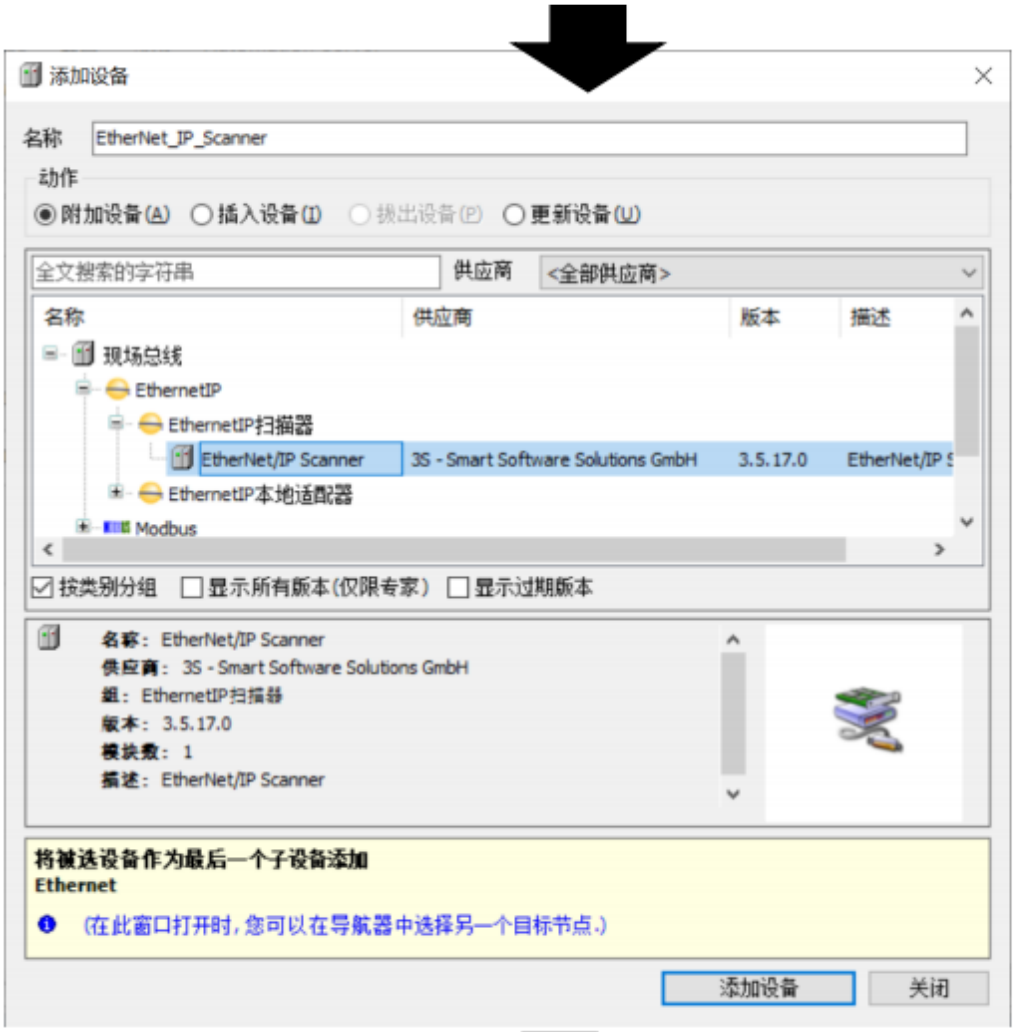

添加设备
名称
Ethernet_1
动作
附加设备(A)
插入设备(I)
拔出设备(P)
更新设备(U)
全文搜索的字符串
供应商
<全部供应商>
名称
供应商
版本
描述
CANbus
Ethercat
EthernetIP
EthernetIP扫描器
以太网适配器
Ethernet
3S - Smart Software Solutions GmbH
3.5.17.0
Ethernet Link.
按类别分组
显示所有版本(仅限专家)
显示过期版本
名称: Ethernet
供应商: 3S - Smart Software Solutions GmbH
组: 以太网适配器, 以太网适配器, 以太网适配器, 自动回原点&建立
版本: 3.5.17.0
模块数: -
描述: Ethernet Link.
将被选设备作为最后一个子设备添加
Device
(在此窗口打开时，您可以在导航器中选择另一个目标节点.)
添加设备
关闭

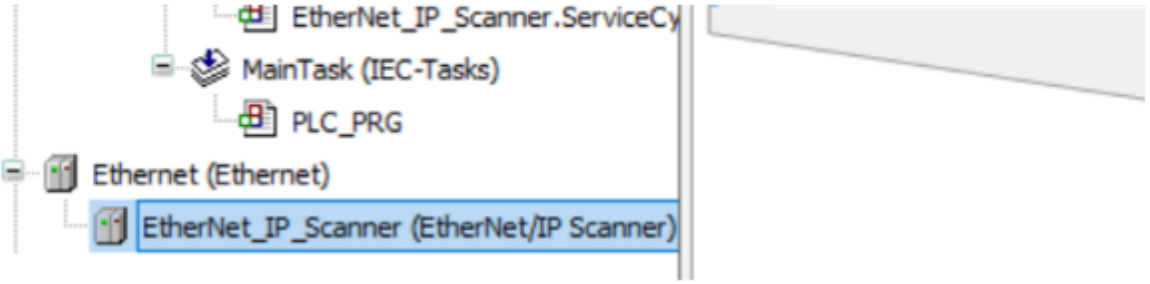
9. **Configure the Ethernet interface by double-clicking "Ethernet (Ethernet)", set the IP address, subnet mask, and gateway. The CODESYS master IP should be in the same subnet as the slave module IP. Click "..." next to "Network interface" and select the correct network card in the dialog.**



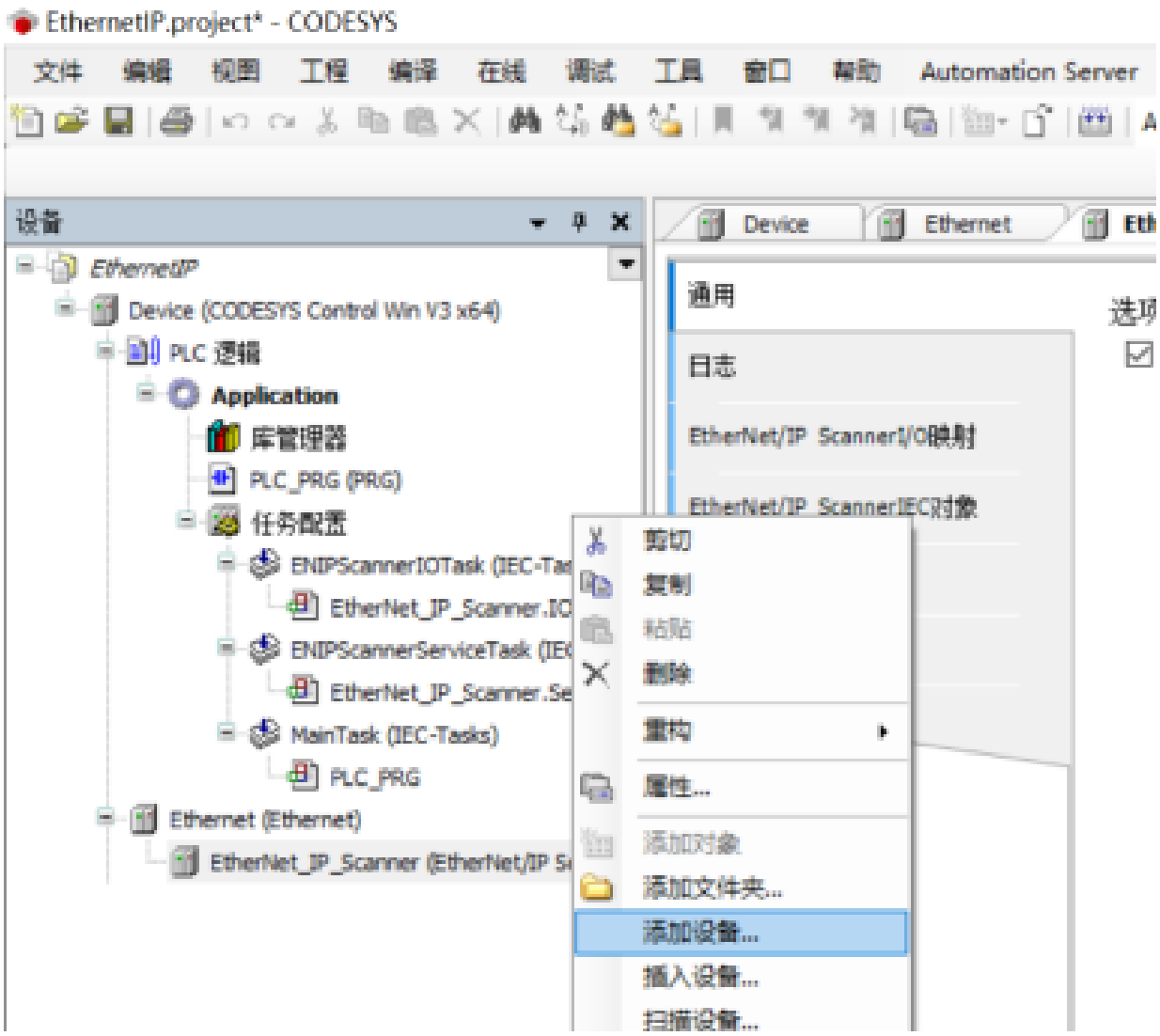
10. **Right-click "Ethernet (Ethernet)", select "Add Device", choose "Ethernet_IP_Scanner" under the Ethernet_IP Scanner, and click "Add Device".**

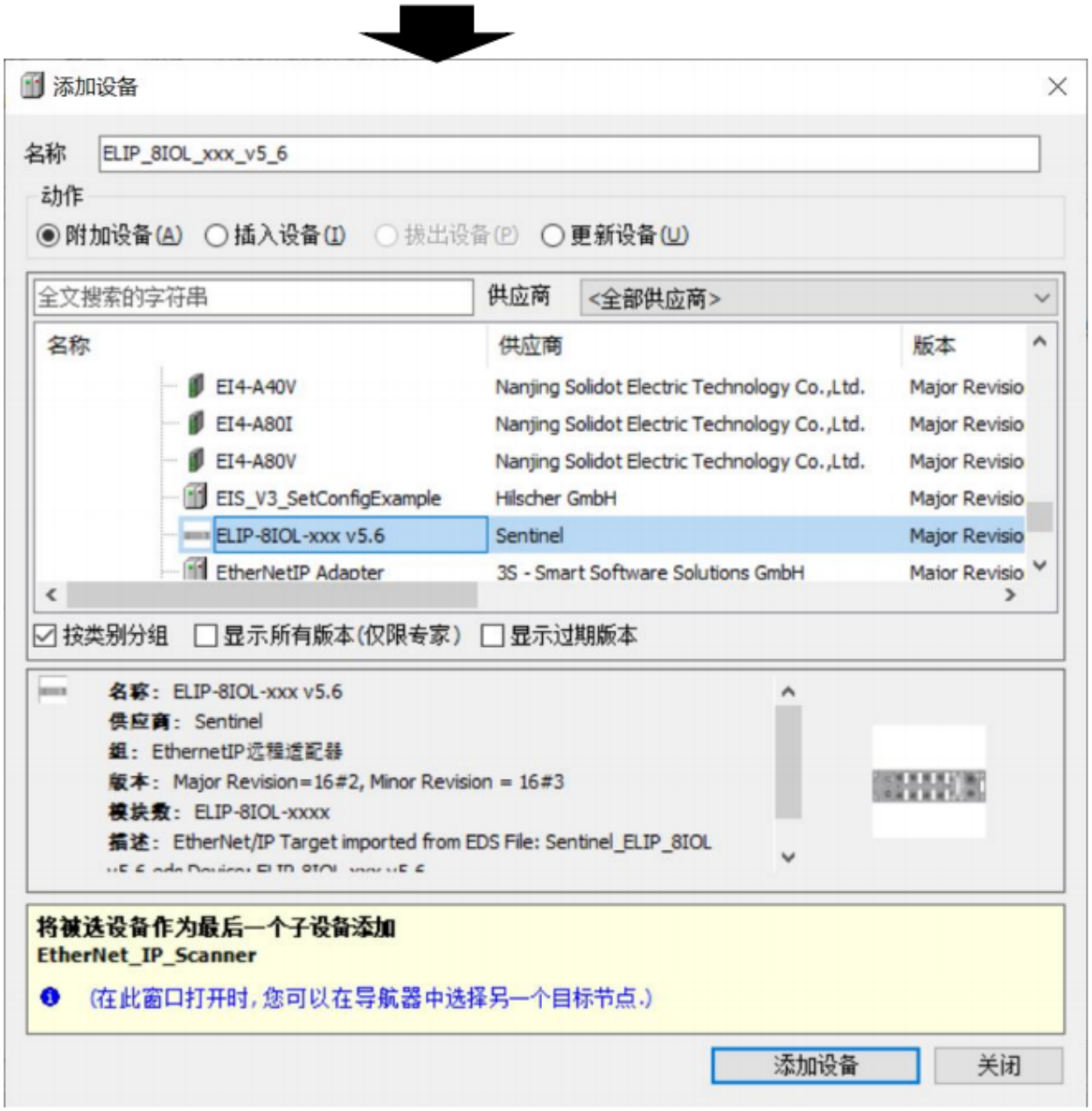

PLC 逻辑
Application
库管理器
PLC_PRG (PRG)
任务配置
Ethernet (Ether
日志
状态
Ethernet DeviceI/O映射
net DeviceIEC对象
剪切
复制
粘贴
删除
重构
属性...
添加对象
添加文件夹...
添加设备...
插入设备...
失能设备

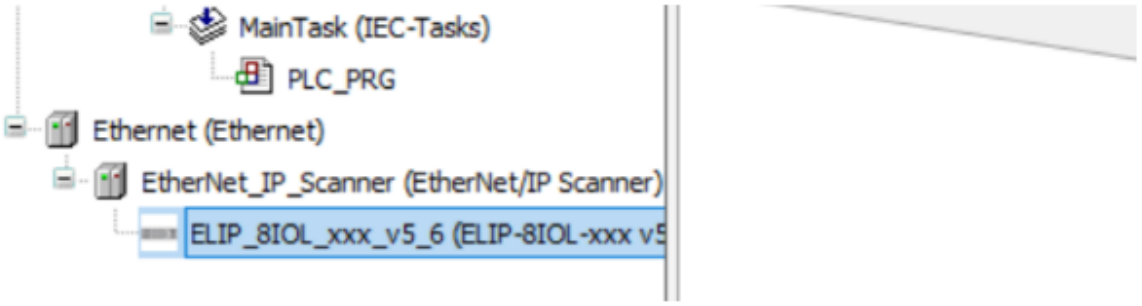




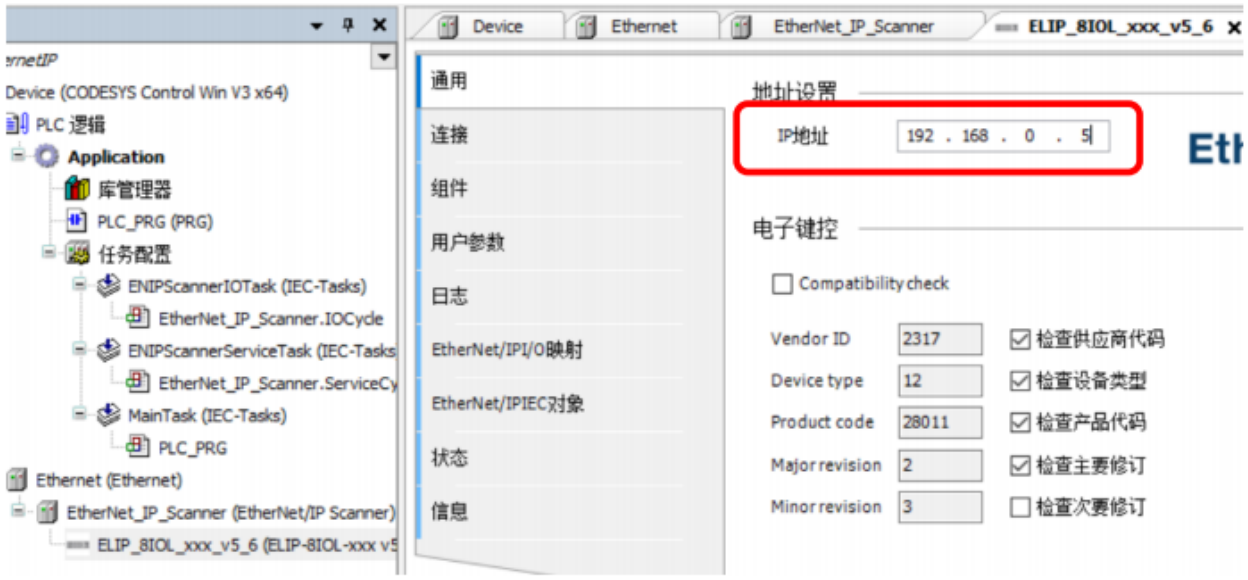
11. **In the left navigation tree, right-click "Ethernet_IP_Scanner", select "Add Device", find the Sentinel module "ELIP-8IOL-xxx", and click "Add Device".**


EthernetIP.project* - CODESYS
文件 编辑 视图 工程 编译 在线 调试 工具 窗口 帮助 Automation Server
设备
EthernetIP
Device (CODESYS Control Win V3 x64)
PLC 逻辑
Application
库管理器
PLC_PRG (PRG)
任务配置
ENIPScannerIOTask (IEC-Tas
EtherNet_IP_Scanner.IO
ENIPScannerServiceTask (IEC
EtherNet_IP_Scanner.Se
MainTask (IEC-Tasks)
PLC_PRG
Ethernet (Ethernet)
EtherNet_IP_Scanner (EtherNet/IP Sc
Device
Ethernet
通用
日志
EtherNet/IP Scanner I/O映射
EtherNet/IP ScannerIEC对象
剪切
复制
粘贴
删除
重构
属性...
添加对象
添加文件夹...
添加设备...
插入设备...
扫描设备...

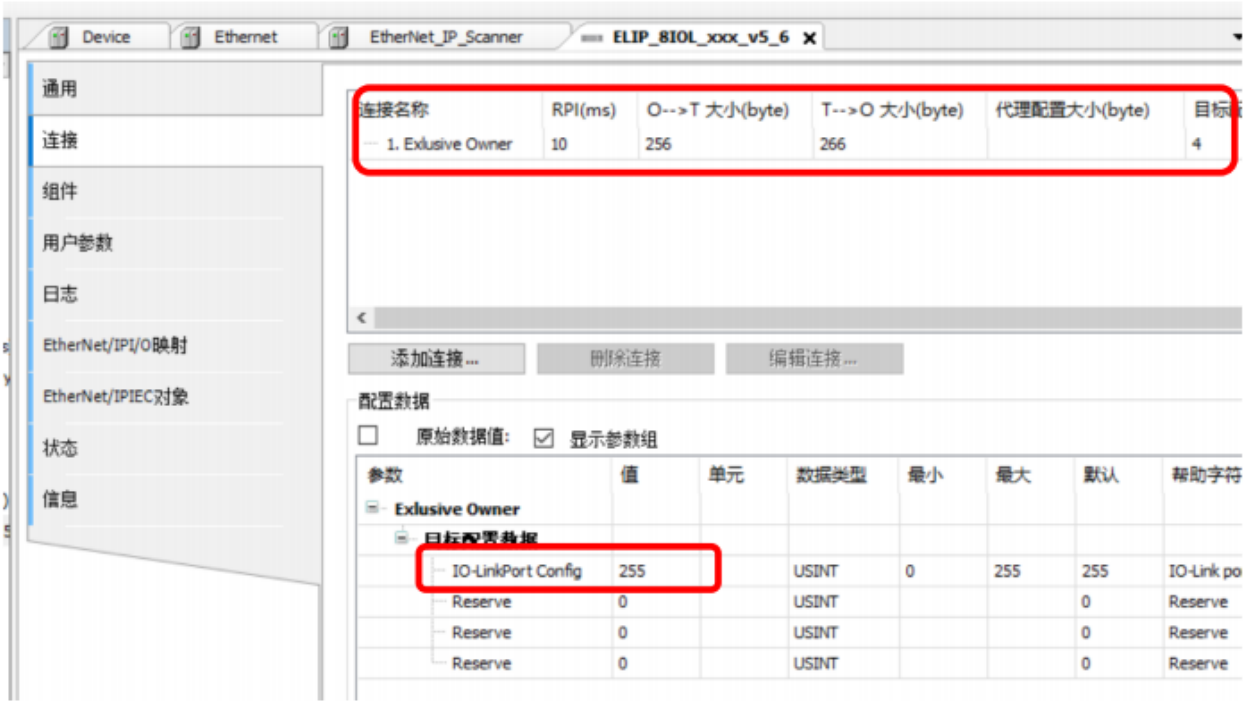




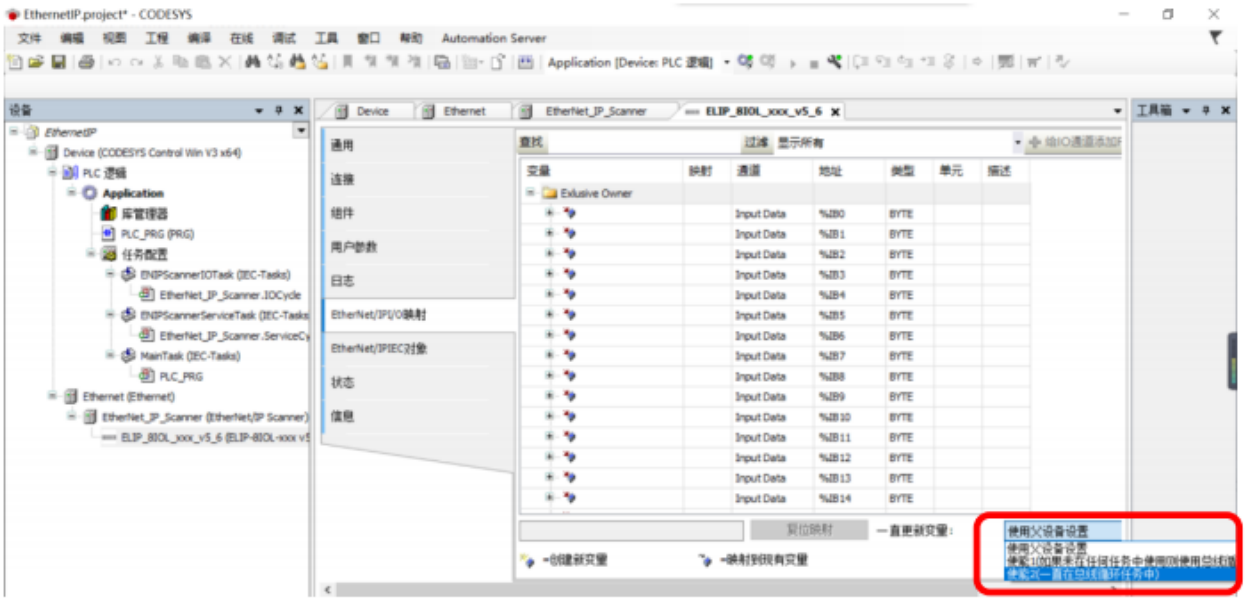
12. **Double-click the Sentinel module "ELIP-8IOL-xxx" in the navigation tree, click "General", and set the module's IP address.**



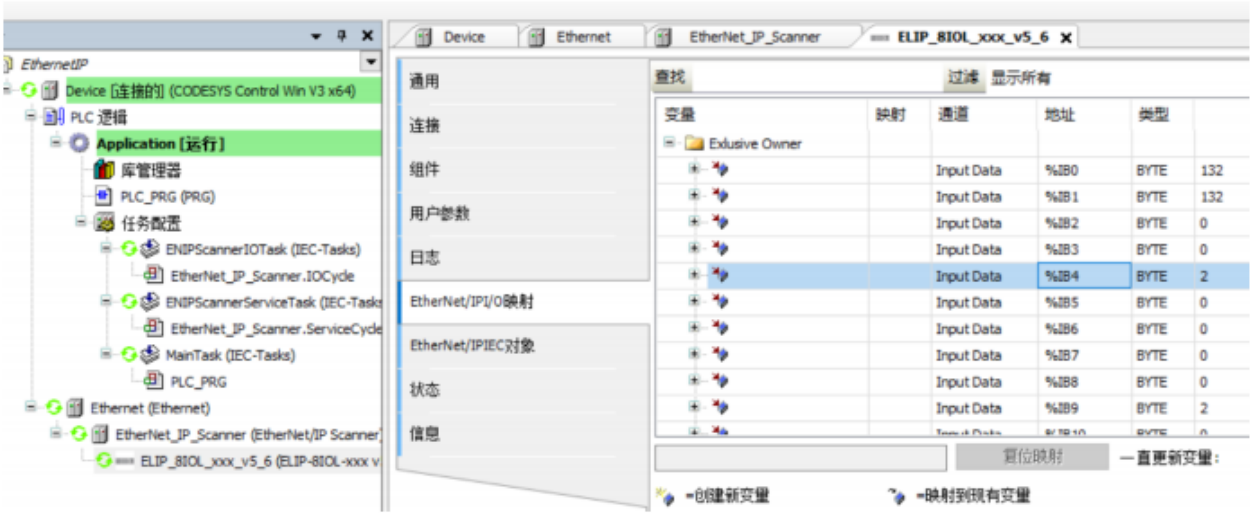
13. **Click "Connections". The right side displays the module's configuration data: 4 bytes for configuration, 266 bytes for input, and 256 bytes for output, as loaded from the EDS file, with no changes needed. In the "Configuration Data" section below, the "IO-LinkPort Config" value is set to 255 by default, enabling all IO-LINK ports (binary 11111111). Users can adjust this value based on actual sub-device connections.**



14. **In the "EtherNet/IP I/O Mapping" interface, set "Always Update Variables" to "Enable 2 (Always in Bus Cycle Task)".**



15. **Compile the project, select [Log in to] -> [Yes, Confirm Download] -> [Start] to monitor input and output data. For specific byte mappings, refer to the appendix.**



Appendix:

1. IO-LINK Configuration Data (4 Bytes)

Byte	Description
Byte0	8 bits represent the configuration of 8 ports IO-Link status: 0 off, 1 on Bit 7 6 5 4 3 2 1 0 Port C8 C7 C6 C5 C4 C3 C2 C1
Byte1	reserve
Byte2	reserve
Byte3	reserve

2. IO-LINK Process Data Input (266 Bytes)

<table>
<tr><th>Byte</th><th>Description</th></tr>
<tr><td>Byte0</td><td>8 bits represent the current IO-Link status of 8 ports: 1 is normal communication, 0 is no communication
<table>
<tr><td>Bit</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>Port</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 bits represent IO-Link disconnection records of 8 ports: 1 means disconnection, 0 means no disconnection
<table>
<tr><td>Bit</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>Port</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>Byte2</td><td>C1 Port disconnection times</td></tr>
<tr><td>Byte3</td><td>C2 Port disconnection times</td></tr>
<tr><td>Byte4</td><td>C3 Port disconnection times</td></tr>
<tr><td>Byte5</td><td>C4 Port disconnection times</td></tr>
<tr><td>Byte6</td><td>C5 Port disconnection times</td></tr>
<tr><td>Byte7</td><td>C6 Port disconnection times</td></tr>
<tr><td>Byte8</td><td>C7 Port disconnection times</td></tr>
<tr><td>Byte9</td><td>C8 Port disconnection times</td></tr>
<tr><td>Byte10-Byte41</td><td>C1 Port process input data (32Byte)</td></tr>
<tr><td>Byte42-Byte73</td><td>C2 Port process input data (32Byte)</td></tr>
<tr><td>Byte74-Byte105</td><td>C3 Port process input data (32Byte)</td></tr>
<tr><td>Byte106-Byte137</td><td>C4 Port process input data (32Byte)</td></tr>
<tr><td>Byte138-Byte169</td><td>C5 Port process input data (32Byte)</td></tr>
<tr><td>Byte170-Byte201</td><td>C6 Port process input data (32Byte)</td></tr>
<tr><td>Byte202-Byte233</td><td>C7 Port process input data (32Byte)</td></tr>
<tr><td>Byte234-Byte265</td><td>C8 Port process input data (32Byte)</td></tr>
</table>

3. IO-LINK Process Data Output (256 Bytes)

Byte	Description
Byte0-Byte31	C1 Port process output data (32Byte)
Byte32-Byte63	C2 Port process output data (32Byte)
Byte64-Byte95	C3 Port process output data (32Byte)
Byte96-Byte127	C4 Port process output data (32Byte)
Byte128-Byte159	C5 Port process output data (32Byte)
Byte160-Byte191	C6 Port process output data (32Byte)
Byte192-Byte223	C7 Port process output data (32Byte)
Byte224-Byte255	C8 Port process output data (32Byte)