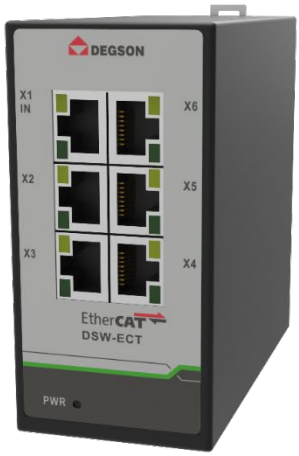
DSW series EtherCAT branch

EtherCAT®



EtherCAT (Ethernet Control Automation Technology) is an open architecture and an Ethernet-based fieldbus system. The DSW series of EtherCAT rail slave controllers can provide 4 or 6 RJ45 Ethernet ports for devices to connect to the network, one in and multiple outs, and flexibly relay the input Ethernet to multiple destination device ports. The transmission speed of 10/100Mbit/s and its industrial structure design can be widely used in automation and office networks. The EtherCAT rail slave controllers of the DSW series are flexible and can be networked in almost any topology, such as linear, tree or star. The IN port of the device is the input port of the network, and more EtherCAT slave modules can be connected to the OUTx port

The DSW series EtherCAT rail slave controllers feature 12/24/48 VDC and 24VAC single power inputs, rail mounting, and have passed EMI/EMC high level testing. It is widely used in automated assembly, robots, machine tools, packaging machinery, printing machines, stamping machines, semiconductor manufacturing, tunnel control and building control and other industries.

Performance characteristics:

- 10M/100M rate adaptive, avoid lag and delay, good adaptability;
- 4 or 6 EtherCAT ports, RJ45 interface, cascading function;
- Imported industrial-grade chips, antistatic 2KV;
- Iron shell, good heat dissipation performance, anti-electromagnetic interference;
- Support hot-swappable network cable, self-healing time 200ms;
- 18~28VDC wide voltage power supply, anti-reverse connection, anti-2500V surge voltage;
- Operating temperature range: -10° C~55° C;
- Working humidity: 5%~90% (no condensation);
- Volume：30*102*96mm；
- Support DN45 rail installation or screw fixed installation.

Technical Indicators

Basic Information		
Product model	DSW-ECT-A4K0004	DSW-ECT-A6K0006
port	4 RJ45 ports	6 RJ45 ports
Network protocols	EtherCAT	
RJ45 port	10/100BaseT(X) auto-detection	
LED indicator	Power Indicator: PWR; Interface Indicator: Network Port (Link/ACT)	
Power parameters		
Connect:	1 detachable 2-PIN terminal	
Input Voltage:	24 VAC	
Access Terminal:	It supports built-in overcurrent 4.0A protection, supports reverse polarity protection, and supports anti-2500V surge voltage	

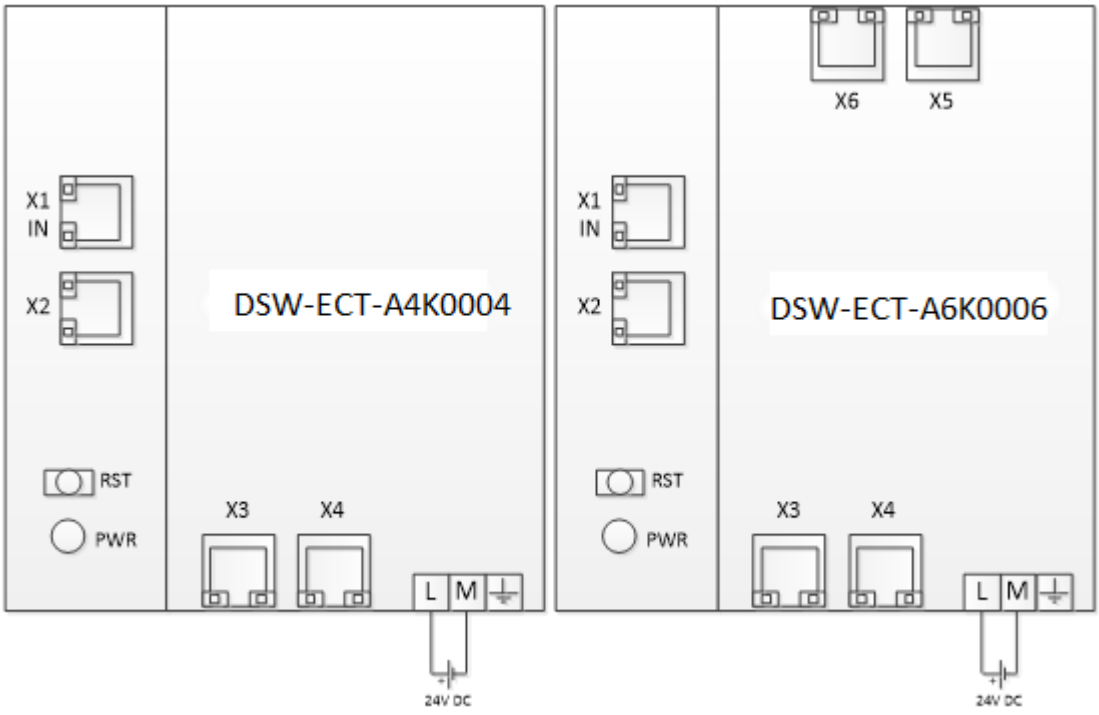
Physical properties	
Installation:	Rail-mounted mounting
Enclosure:	Metallic, electrostatic blackened
Weight:	0.15Kg (max)
Environmental characteristics	
Humidity:	5% ~ 90%（No condensation）
Operating Temperature:	- 10℃~ +55℃
Storage Temperature:	- 40℃~ +85℃
Ingress Protection:	IP40
Electromagnetic properties	
Electromagnetic radiation:	FCC Part 15 Subpart B Class A EN 55022 Class A EMS
Electromagnetic Compatibility:	IEC(EN)61000-4-2(ESD) IEC(EN)61000-4-3(RS) IEC(EN)61000-4-4(EFT)

Basic Information		
Product model	DSW-ECT-A4K0202-S-STA	DSW-ECT-A4K0202-S-STB
port	2 RJ45 ports (1 EtherCAT input, 1 EtherCAT output). 2 ST interfaces (2 EtherCAT outputs).	2 ST optical interfaces (1 EtherCAT input, 1 EtherCAT output) 2 RJ45 interfaces (2 EtherCAT outputs)
Network protocols	EtherCAT	
RJ45 port	10/100BaseT(X) auto-detection	
LED indicator	Power Indicator: PWR; Interface Indicator: Network Port (Link/ACT)	
Power parameters		
Connect:	1 detachable 2-PIN terminal	
Input Voltage:	24 VAC	
Access Terminal:	It supports built-in overcurrent 4.0A protection, supports reverse polarity protection, and supports anti-2500V surge voltage	
Physical properties		
Installation:	Rail-mounted mounting	
Enclosure:	Metallic, electrostatic blackened	
Weight:	0.15Kg (max)	
Environmental characteristics		
Humidity:	5% ~ 90%（No condensation）	
Operating	- 10℃~ +55℃	

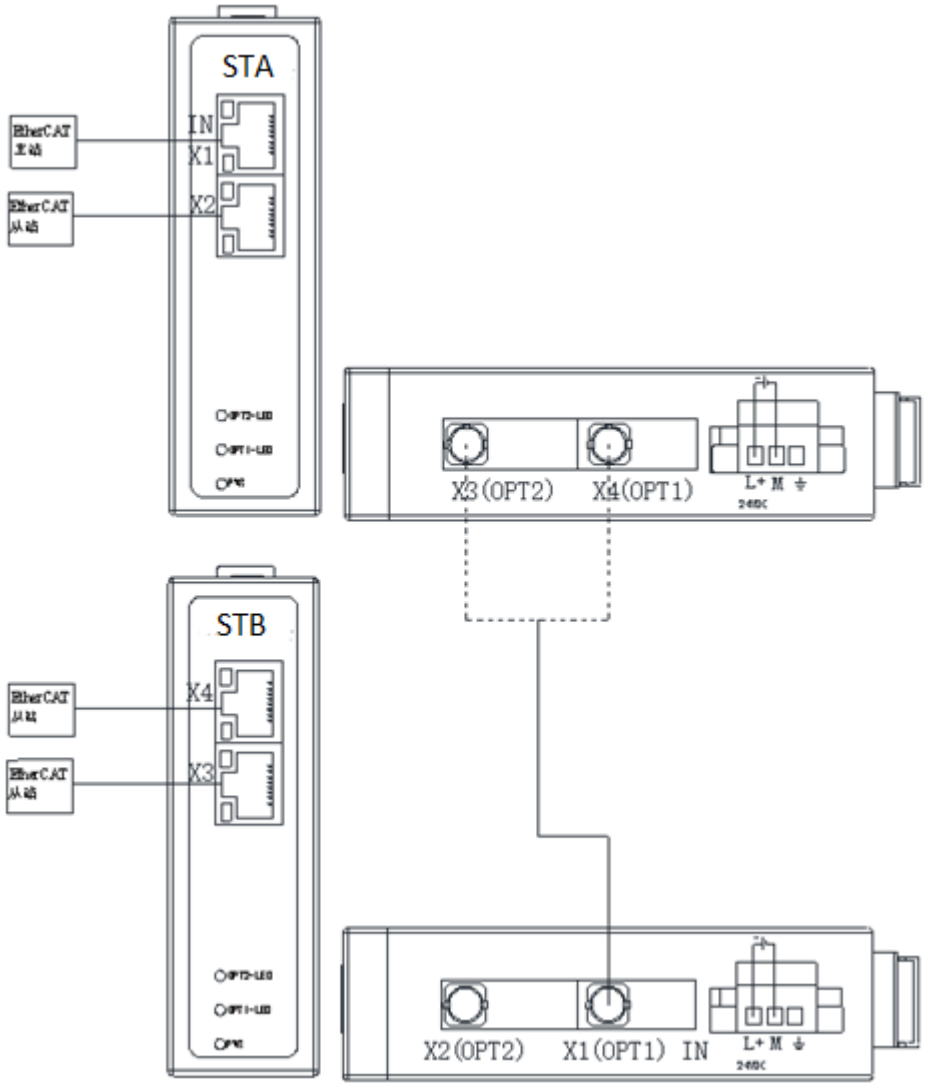
Temperature:	
Storage Temperature:	- 40℃~ +85℃
Ingress Protection:	IP40
Electromagnetic properties	
Electromagnetic radiation:	FCC Part 15 Subpart B Class A EN 55022 Class A EMS
Electromagnetic Compatibility:	IEC(EN)61000-4-2(ESD) IEC(EN)61000-4-3(RS) IEC(EN)61000-4-4(EFT)

Schematic diagram of the interface

DSW-ECT-A4K0004& DSW-ECT-A6K0006 Among them, the X1 network port is fixed to connect to the EtherCAT master station, and the rest of the network ports are connected to the EtherCAT slave station；



The X1 network port of DSW-ECT-A4K0202-S-STA is fixed for connecting to EtherCAT master station, and the other network ports are connected to EtherCAT slave station. The DSW-ECT-A4K0202-S-STB through optical port X3 or X4.



Example 1 of the newsletter

Note: This example uses the DSW-ECT-A4K0004 module as an example to describe the use of DSW-ECT-A4K0004 switches, and the DF58 series I/O module can be used by referring to this example.

1.1 Hardware Conditions

1 EtherCAT branch
2、 DF20-C-EC Coupler
3. Omron controller (NX1P2-9024DT is used in this example).
4. PC (equipped with network card driver) and network cable

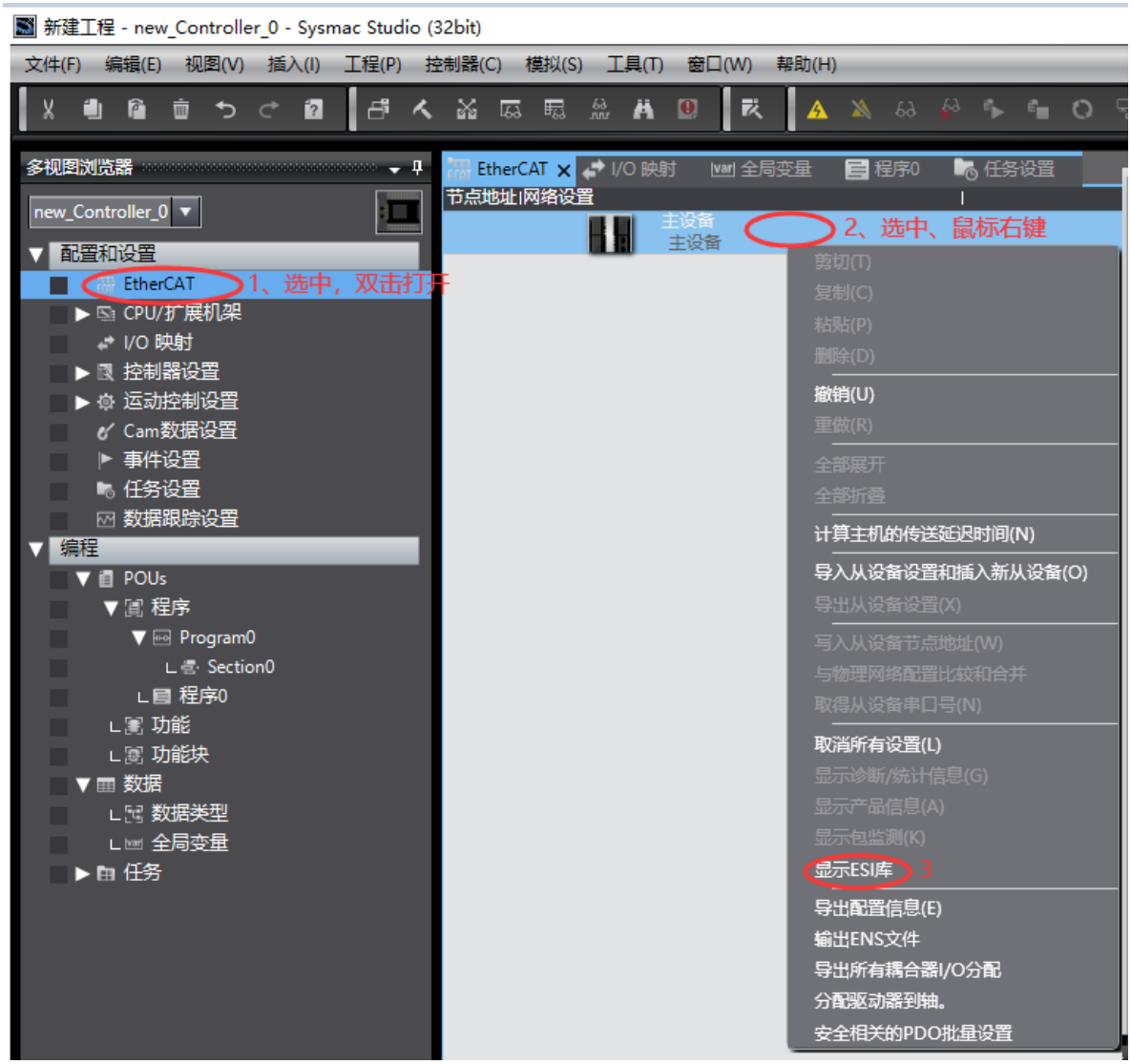
1.2 Software Requirements

Sysmac Studio (in this case using Sysmac Studio V1.30)

1.3 Procedure

1.3.1. Install XML files

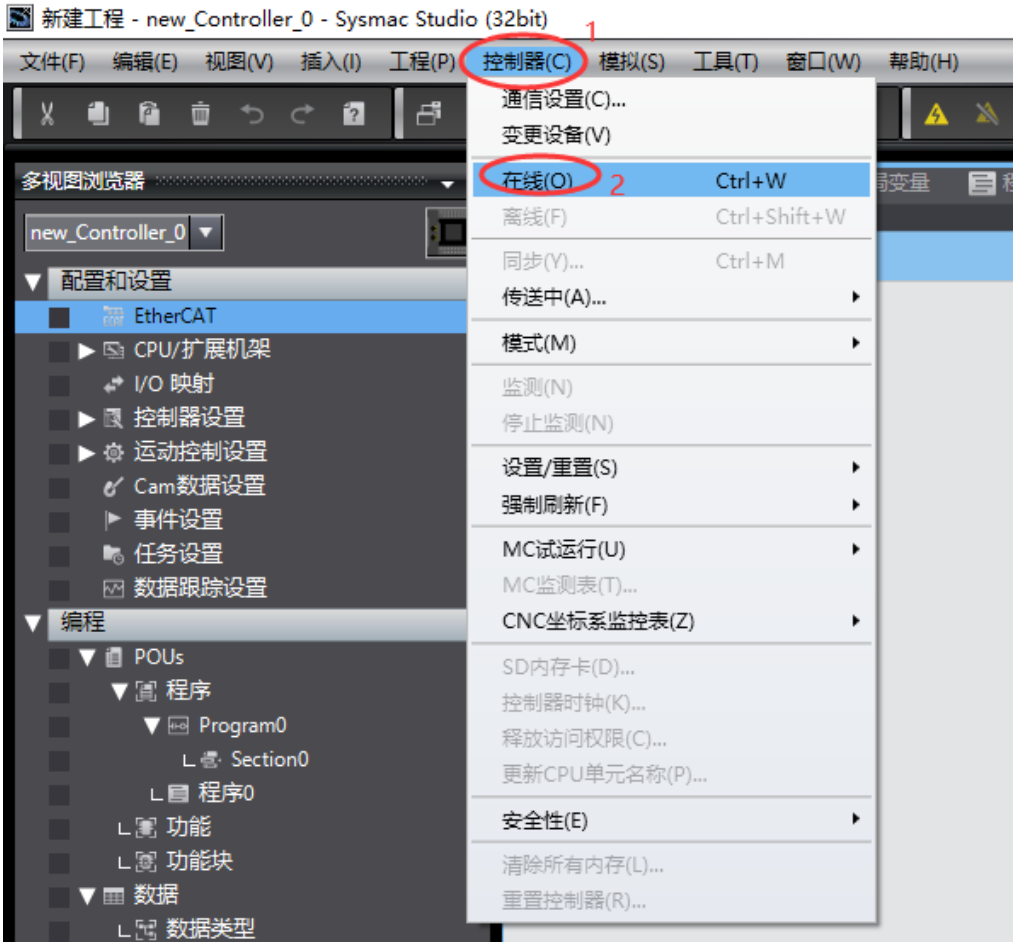
Open Sysmac Studio, create a new project, and add an XML file.

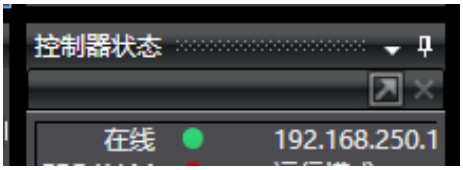


名称	修改日期	类型	大小
DSW-ECT-A4K0004-Hub-A-V1.0.xml	2024/6/14 10:31	XML 文档	5
DSW-ECT-A4K0004-Hub-V1.0.xml	2024/6/14 10:32	XML 文档	5

1.3.2、Add to DSW-ECT-A4K0004（Automatic scanning method）

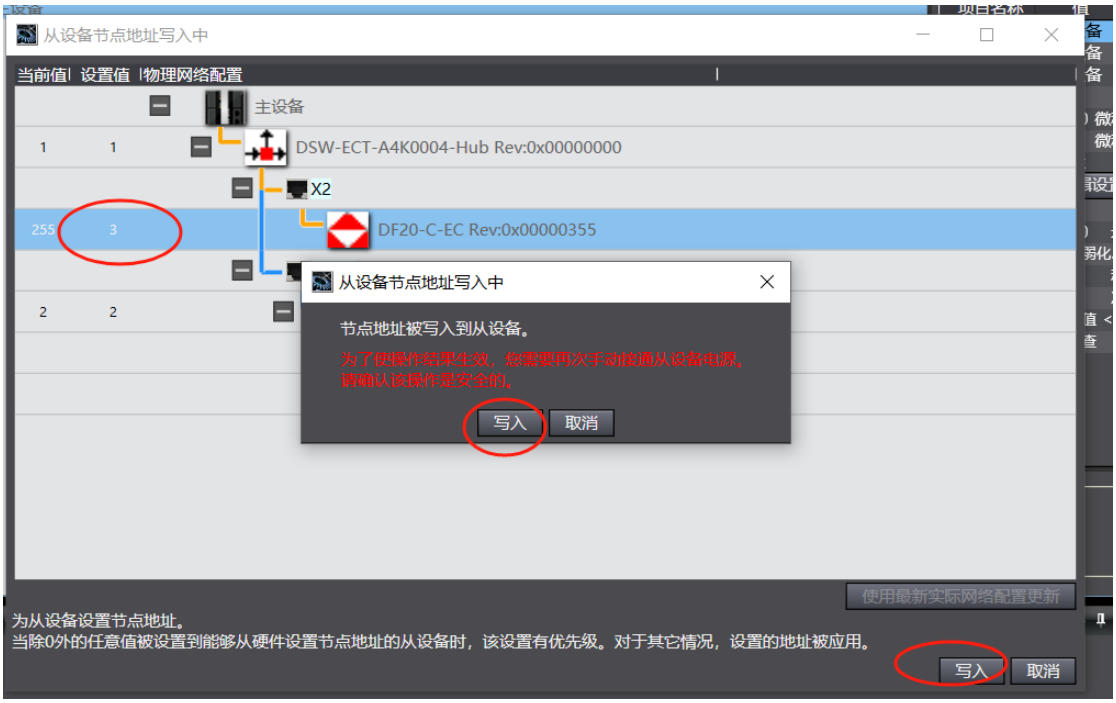
1、Connect network port X1 of DSW-ECT-A4K0004 to network port EtherCAT of Omron controller, network port X2 to network port (IN) of DF58-C-EC, network port X3 to network port (IN) of DF58-C-EC, and network port X4 to network port (IN) of DF58-C-EC. Connect the PC to the Omron controller EtherNET/IP network port and connect the controller online：



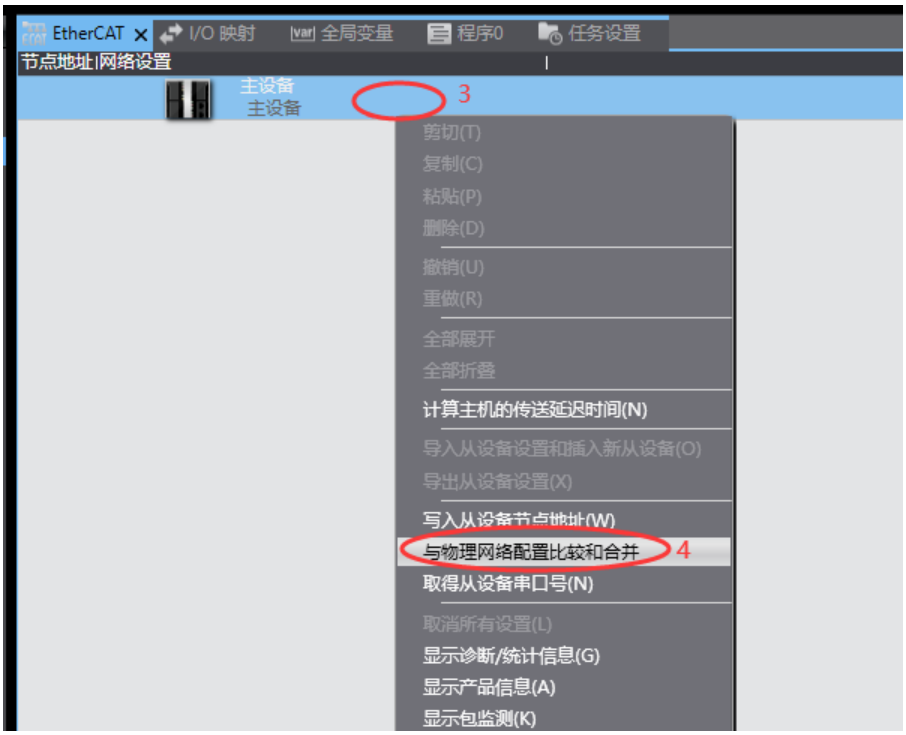


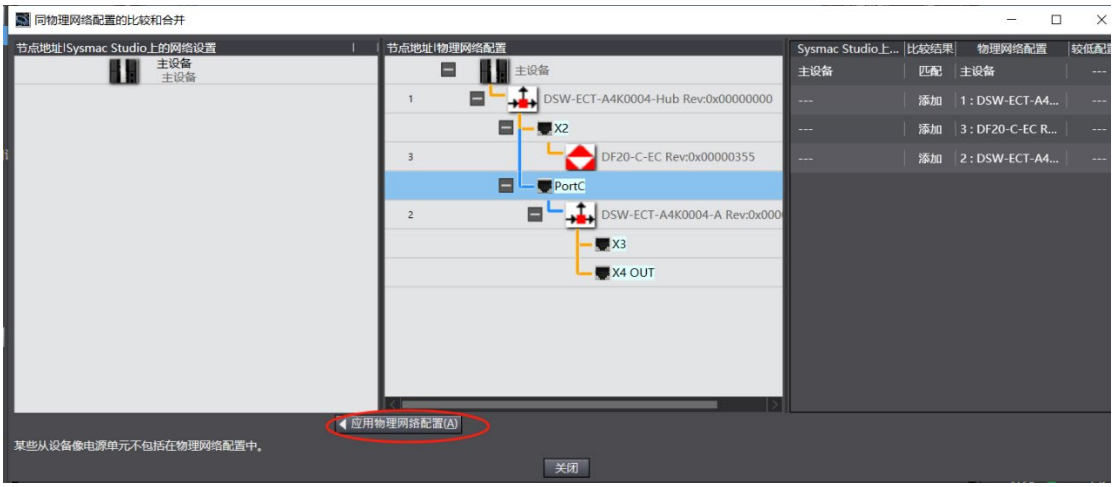
After the controller status becomes online, add the DSW-ECT-A4K0004 module by scanning:

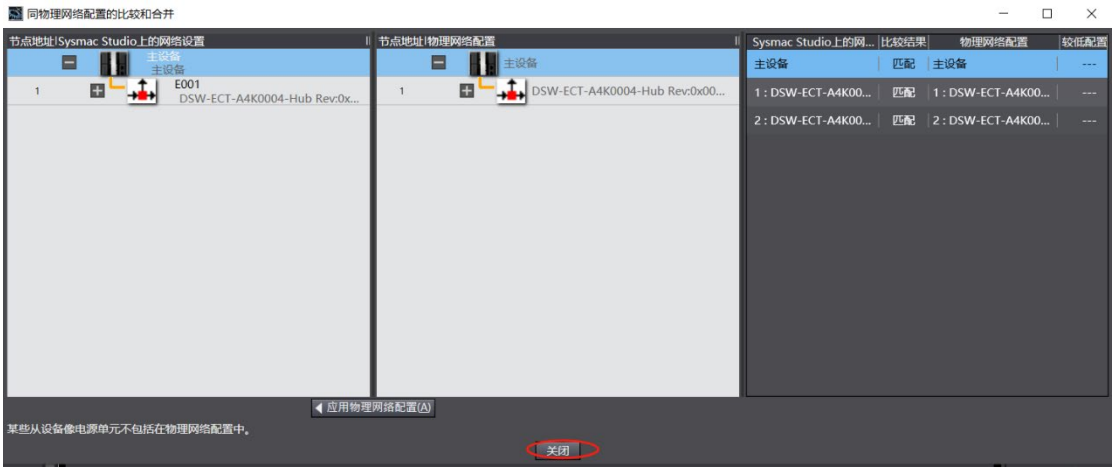

设置
主设备
主设备
E001
DSW-ECT-A4K000
X2
E002
DF20-C
PortC
E003
DSW-E
X3
X4 OUT
剪切(T)
复制(C)
粘贴(P)
删除(D)
撤销(U)
重做(R)
全部展开
全部折叠
计算主机的传送延迟时间(N)
导入从设备设置和插入新从设备(O)
导出从设备设置(X)
写入从设备节点地址(W)
与物理网络配置比较和合并
取得从设备串口号(N)
取消所有设置(L)
显示诊断/统计信息(G)
显示产品信息(A)
显示包监测(K)
显示ESI库
导出配置信息(E)
输出ENS文件
导出所有耦合器I/O分配
分配驱动器到轴。
安全相关的PDO批量设置

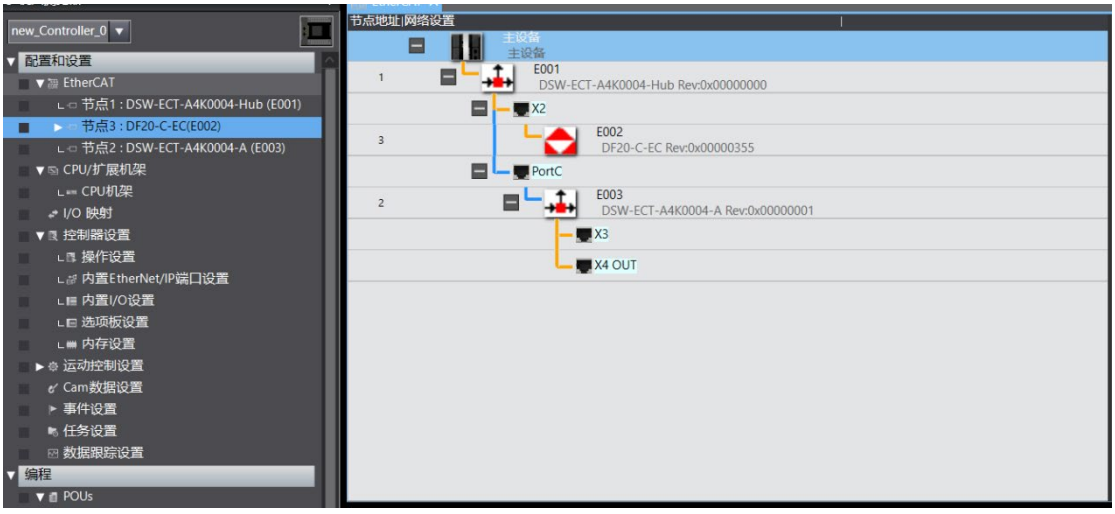


The device is powered back on







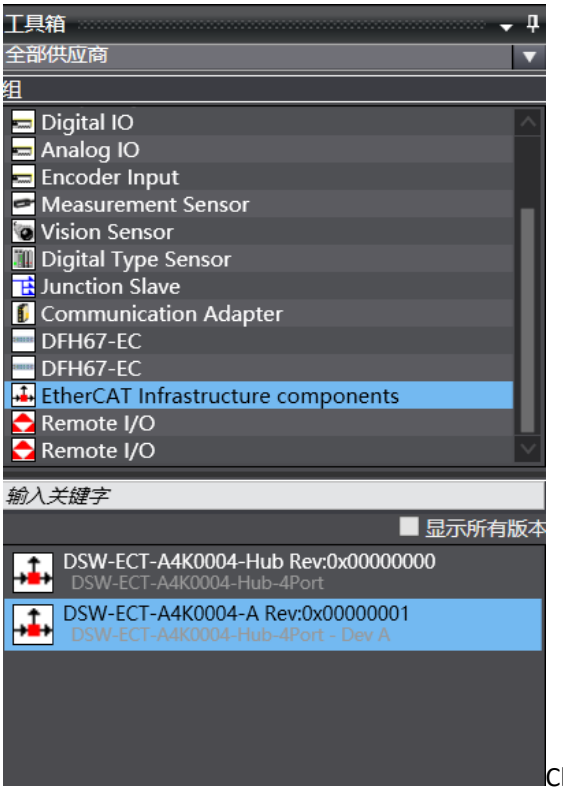


Sync to the controller to get started

1.3.3、Add to DSW-ECT-A4K0004（Manual addition mode）

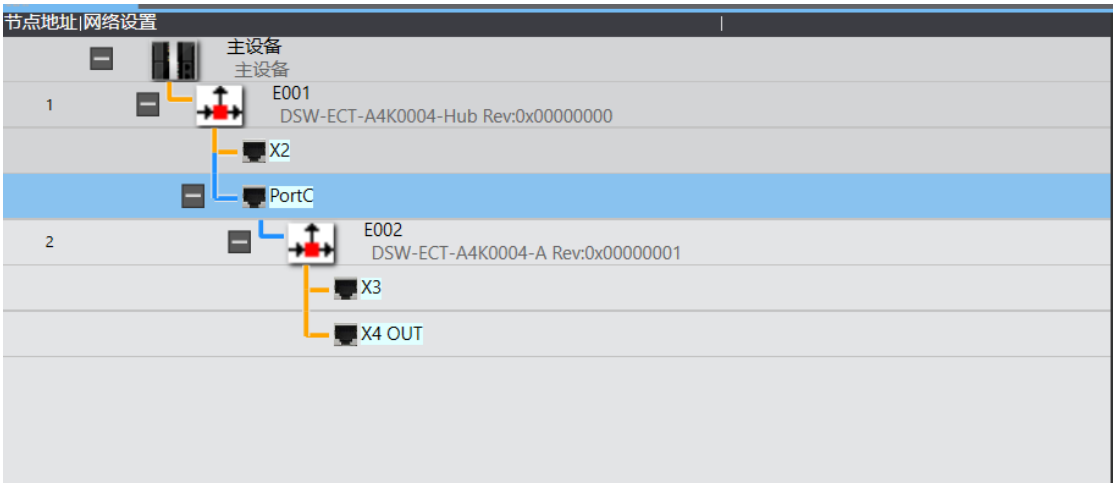
Once the XML file is installed, locate the following device in the Toolbox of the Sysmac Studio

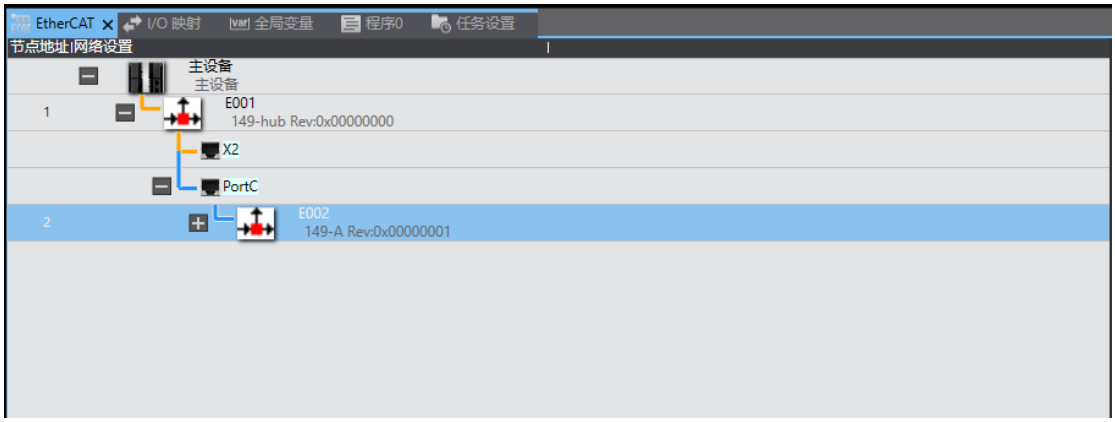
software



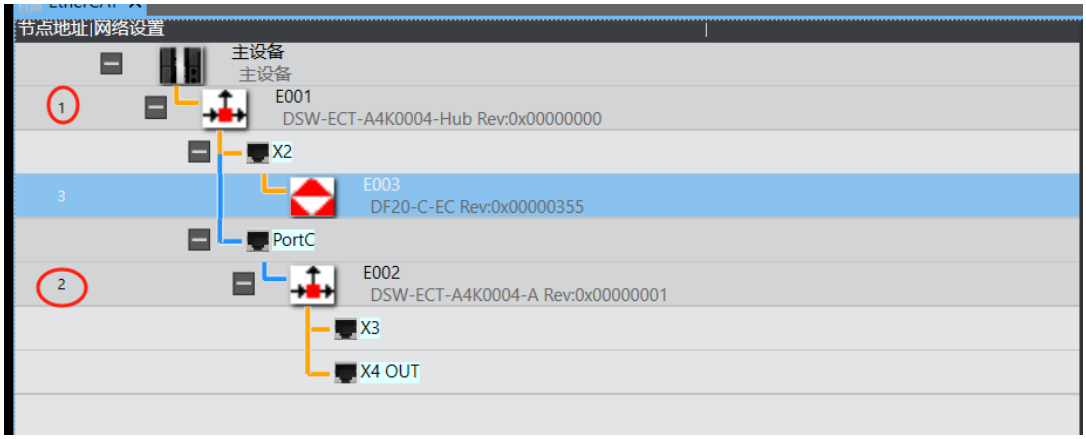
Change the picture

First add "DSW-ECT-A4K0004-hub Rev", then add "DSW-ECT-A4K0004-A Rev"：

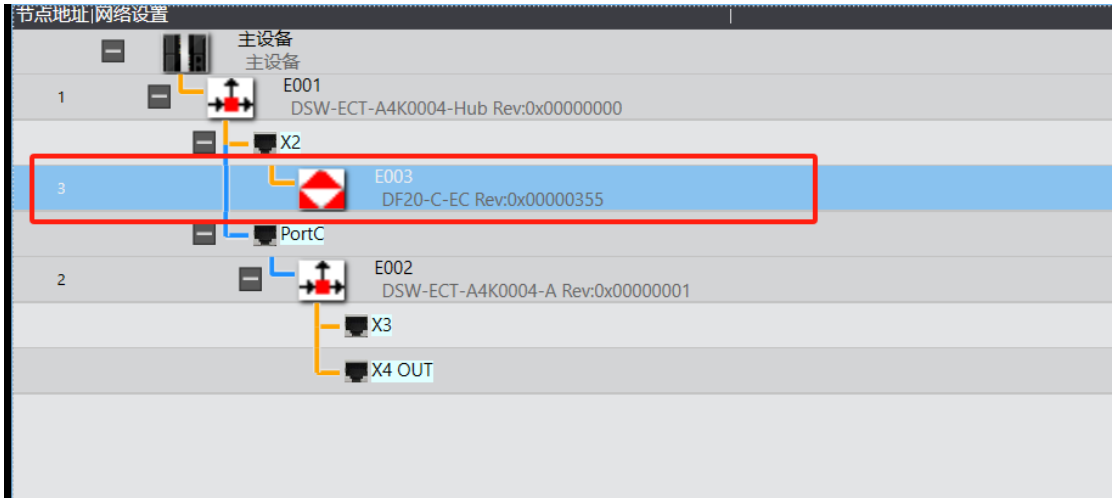




配置 DSW-ECT-A4K0004 的“节点地址”：



Add the module to the corresponding network interface, configure the "Node Address", and then download it to the controller:



Example 2 of the newsletter

Note: This example uses the DSW-ECT-A4K0004 module as an example to introduce the use of DSW EtherCAT switch. You can refer to this example to use the DSW-ECT-A6K0006 module。

2.1 Hardware Conditions

1 DSW EtherCAT branch
2、 DF20-C-EC Coupler
3. PC (equipped with network card driver) and network cable

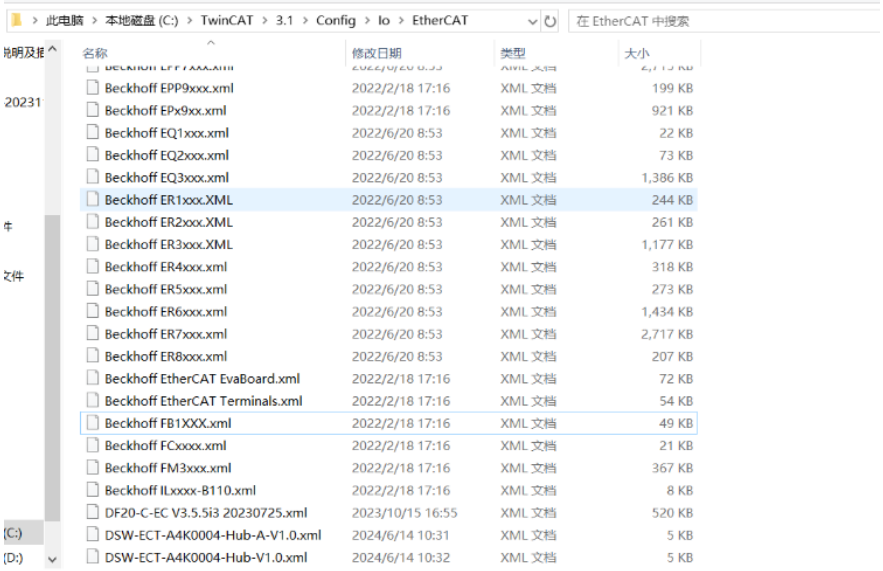
2.2 Software Requirements

1. TwinCAT software (in this case, TwinCAT3.1 is used)

2.3 Procedure

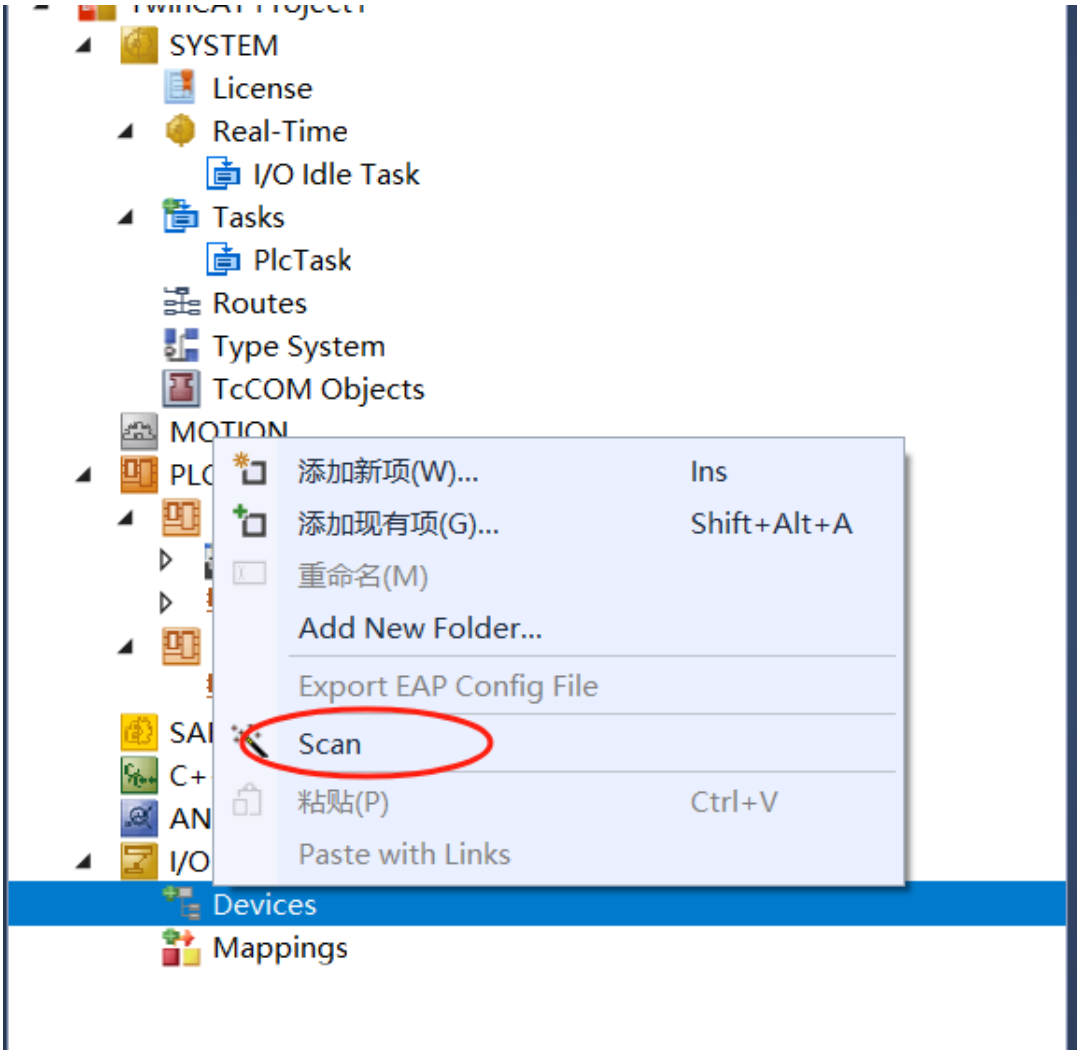
2.3.1. Install XML files

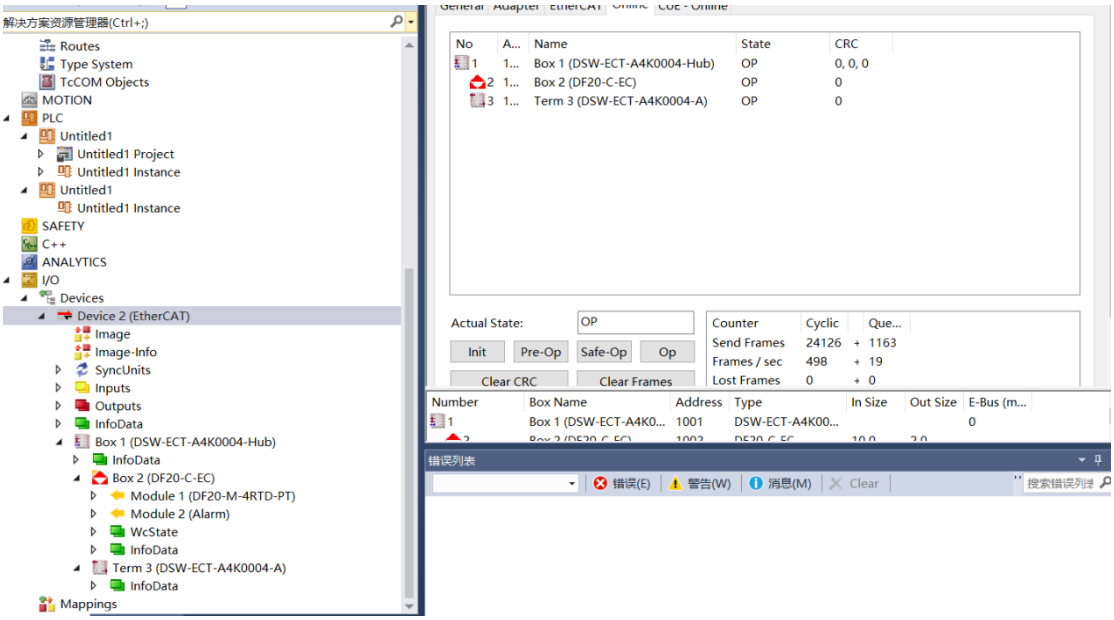
Put the two XML files of DSW-ECT-A4K0004 into the XML folder of TwinCAT：



2.3.2、Add to DSW-ECT-A4K0004

Open TwinCAT3, create a new project, and use TwinCAT3 software to scan out DSW-ECT-A4K0004：





Example 3 of the newsletter

Note: This example uses the DSW-ECT-A4K0202-S-STA& DSW-ECT-A4K0202-S-STB module as an example to describe the use of DSW EtherCAT switches.

3.1 Hardware Conditions

1 DSW EtherCAT branch
2、DF58-C-EC Coupler
3. PC (equipped with network card driver) and network cable

3.2 Software Requirements

1、CODESYS V3.5 Software

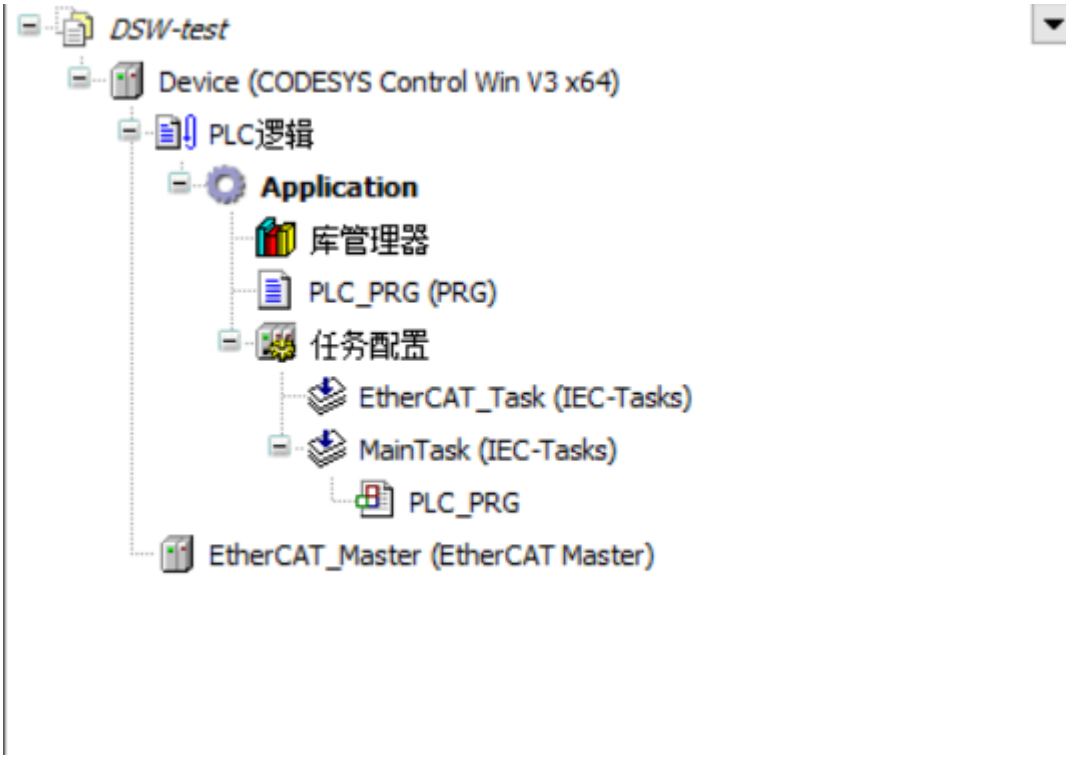
3.3 Steps

3.3.1. Install XML files

First, find the device description file DSW-ECT-A4K0202-S-STA-for-CoDeSys-V1.0 provided by the manufacturer, double-click the CoDeSys icon, Start the software. Tap Tools, select Device Reposity, and tap install to install the device.

3.3.2、Add to DSW-ECT-A4K0202-S-STA

Open CODESYS, create a new project, right-click "Device" in the device tree, select "Add Device", and select EtherCAT Master in the pop-up device



Log in to the downloader and  right-click on the EtherCAT Master to scan the device and copy all the devices to the project

After logging out, log in again , download the scanned device to the controller, and complete the configuration.