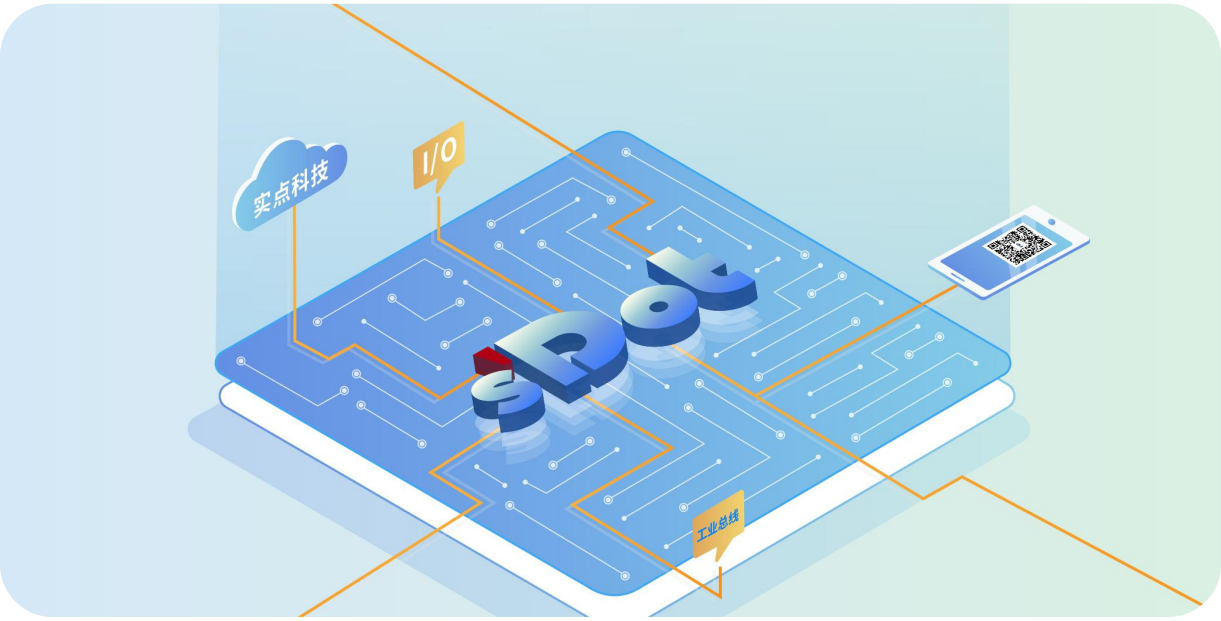


XBF7-SW08

Switch Module

User Manual

Nanjing Solidot Electronic Technology Co., Ltd.

Trademark Declaration

Notice

Your purchase of products, services, or features is subject to the terms and conditions of the Solidot Company's commercial contracts. All or part of the products, services, or features described in this document may not be included in your purchase or use. Unless otherwise agreed in the contract, Solidot Company makes no express or implied representations or warranties regarding the contents of this document.
This document will be updated periodically due to product version upgrades or other reasons. Unless otherwise agreed, this document is for guidance only, and all statements, information, and suggestions in this document do not constitute any express or implied warranty.

Nanjing Solidot Electronic Technology Co., Ltd.
Address: Building 40, No. 9-1, Yinlong Road, Jiangning District, Nanjing City, Jiangsu Province
Postal code: 211106
Telephone: 4007788929
Website:http://www.solidotech.com

Table of contents

1 Product Overview 1
1.1 Product Introduction 1
1.2 Product Features 1
2 Naming Rules 2
2.1 Naming Rules 2
3 Product Parameters 3
3.1 General parameters 3
4 Panel 4
4.1 Product Structure 4
4.2 Indicator light function 5
4.3 Interface definition 6
5 Wiring instructions 7
5.1 Outline dimension drawing 7
5.2 Wiring instructions 8
5.3 Switch topology diagram 8
6 Use 10
6.1 Cascaded expansion of discrete device functions 10
6.2 Configuration application 11
6.2.1 Application in the TwinCAT3 software environment 11
6.2.2 Application in the IO Config Tool software environment 16

1 Product Overview

1.1 Product Introduction

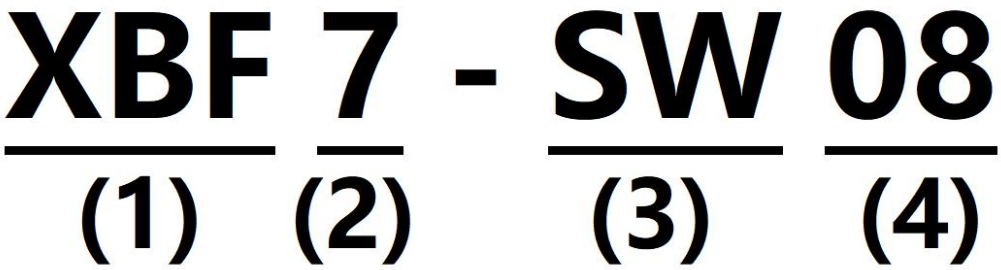
The XBF7-SW08 switch module can be connected in series on any expansion interface branch of discrete couplers, gateways, and discrete I/O modules, with a maximum of one switch module connected to each expansion interface. The switch supports cascading.The discrete slave function allows for the cascading of discrete I/O modules or sensors across all eight OUT interfaces, enabling flexible configuration into various topologies to meet diverse application needs.It is widely used in various industrial systems.

1.2 Product Features

- Eight OUT interfaces
  M12 interface, supports cascading discrete slave function.
- Supports cascaded sensors
  The sensor is connected to a separate OUT port of the switch.
- Up to IP67 protection rating
  Suitable for harsh industrial environments.
- LED status display
  Channel protection and diagnostics.
- Small size
  Suitable for applications with limited space.

2 Naming Rules

2.1 Naming Rules



Serial number	Meaning	Value description
(1)	Product Type	XBF: Discrete I/O
(2)	Protection level	7: IP67
(3)	Product Functions	SW: Switch
(4)	Number of ports	08:8 channel

3 Product Parameters

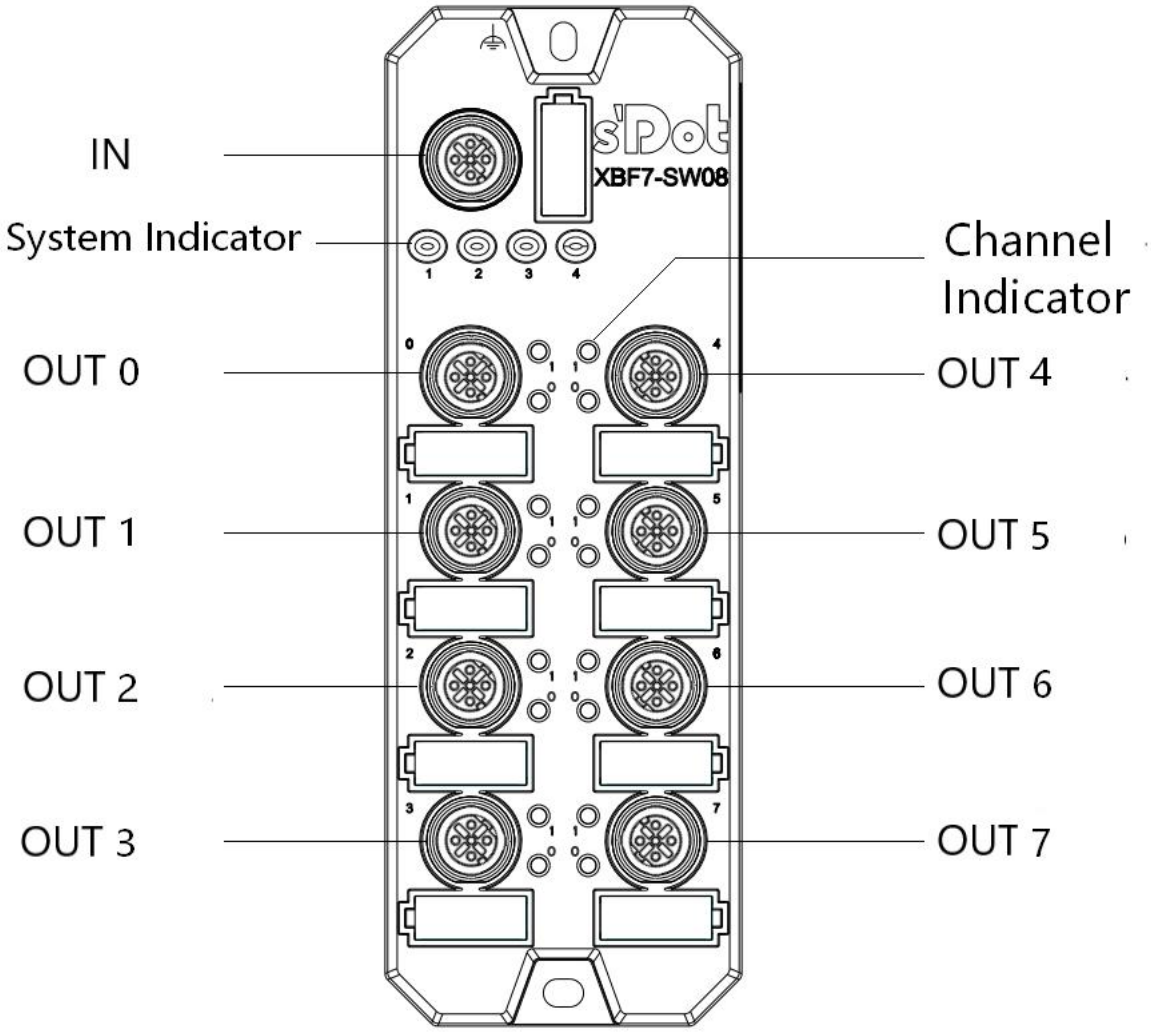
3.1 General parameters

Interface parameters	
Product Name	XBF7-SW08
switch interface	9×M12 hole end(1 in, 8 out)
Maximum number of discrete slave stations that can be cascaded by a switch	16
Maximum number of discrete slave stations that can be cascaded on a single interface of a switch	4
Electrical isolation	500 VAC
Transmission distance	It can be extended by an additional 50m (based on the 50m transmission distance of the coupler extension interface).
Transmission rate	Maximum 6 Mbps
Technical parameters	
size	164.7×57.7×25.6mm
weight	280g
Operating temperature	-25℃ to +70℃
Storage temperature	-40℃~+85℃
relative humidity	95%, no condensation
Protection level	IP67
Altitude	≤2000m
Vibration resistance	IEC 60068-2-6 Sinusoidal vibration 5Hz~8.4Hz, 3.5mm, 8.4Hz~150Hz, 1g X/Y/Z triaxial, 10 cycles/axis (100 min)
Impact resistance	IEC 60068-2-27 Mechanical shock 150m/s², 11ms, in six directions: ±X/Y/Z 3 times/direction, 18 times in total
Pollution level	Level 2
Firmware upgrade	support

4 Panel

4.1 Product Structure

Product Parts Names

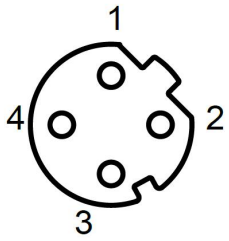


4.2 Indicator light function

Name	Logo	Color	State	Status Description
Power indicator light	1	Green	ON	The module's internal 3.3V power supply is powered on normally.
			OFF	The module's internal 3.3V power supply is malfunctioning.
Fault indicator light	2	Red	ON	Module communication error
			OFF	The module communicates normally with the main station or is not powered on.
Expansion interface operation indicator light	3	Green	3 flickering 10Hz	Switch firmware upgrade
			3 OFF 4 OFF	Switch connection expansion interface 0
			3 OFF, 4 ON	Switch connection expansion interface 1
	4	Green	3 ON, 4 OFF	Switch connection expansion interface 2
			3 ON 4 ON	Switch connection expansion interface 3
Operating status indicator lights 0~7	Channel indicator light 1	Green	ON	The interface and the extension module have business data interaction.
			flickering 1Hz	The interface establishes a connection with the extension module without exchanging business data.
			OFF	The interface and the expansion module failed to establish a connection or communication was abnormal.
Fault indicator lights 0~7	Channel indicator light 0	Red	ON	Interface communication initialization failed or communication anomalies occurred, such as module offline or station number conflict.
			OFF	Expansion module not connected, or communication is normal.

4.3 Interface definition

I/O interface connection view (M12, hole end)	Definitions

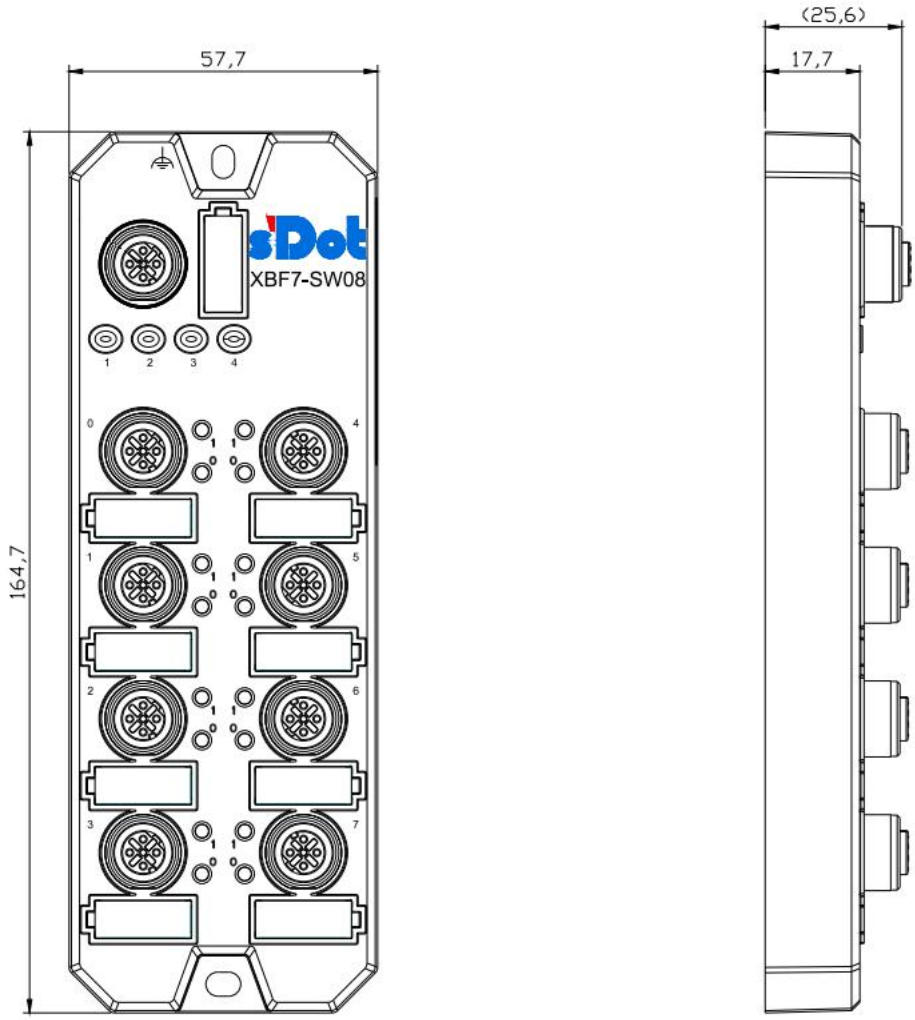


Pin	Function
1	RS485-B
2	0V
3	RS485-A
4	24V

5 Wiring instructions

5.1 Outline dimension drawing

External dimensions (unit: mm)



5.2 Wiring instructions

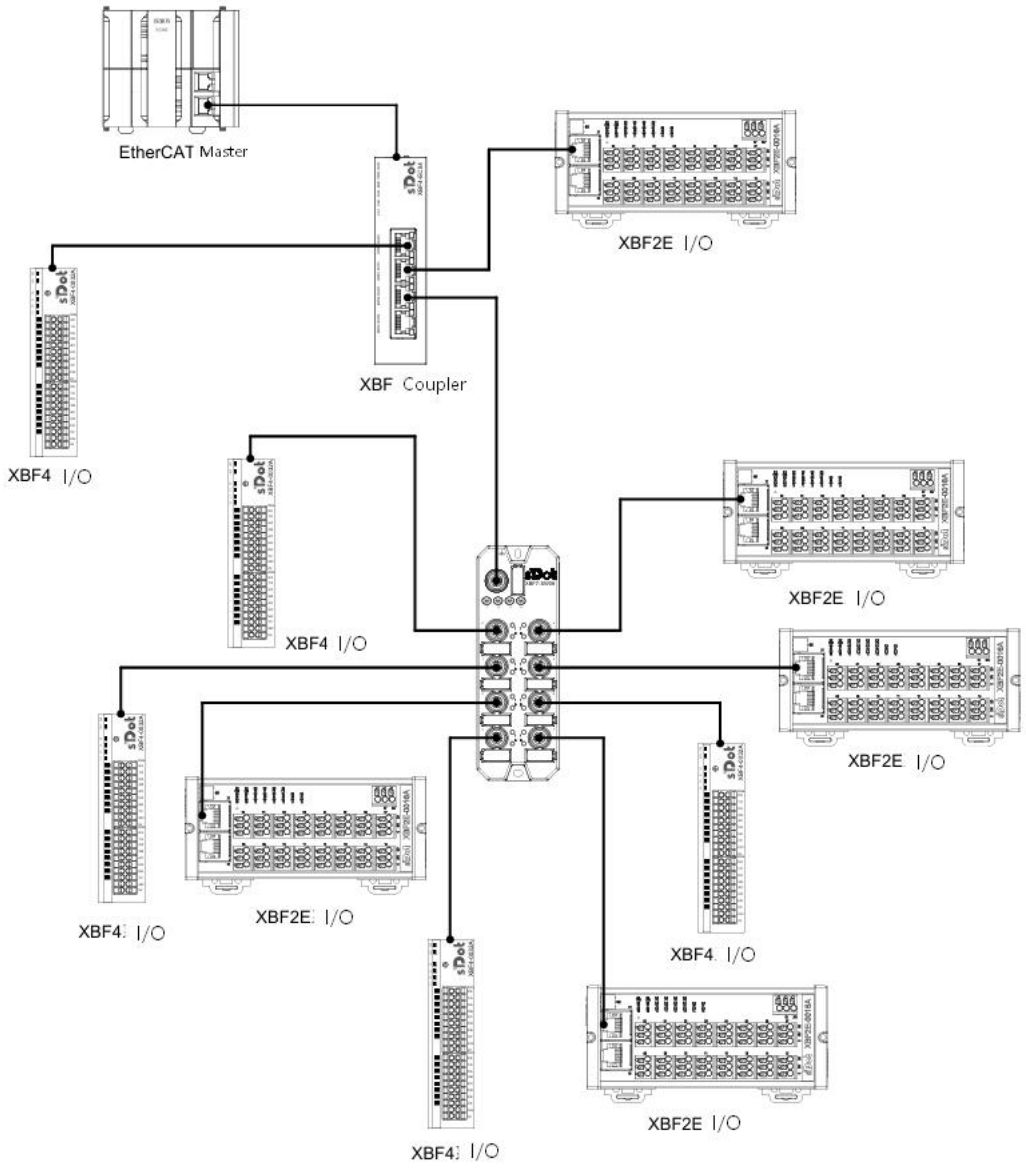
- For personal and equipment safety, it is recommended to disconnect the power supply before performing wiring operations.
- Switch interface: Connects the switch to other devices using a standardized four-core cable.

⚠ warn

- If the device is not used in accordance with the product user manual, the protection it provides may be compromised.

5.3 Switch topology diagram

Taking our discrete series products as an example, the topology of the switch connection module is shown in the figure below.



6 Use

6.1 Cascaded expansion of discrete device functions

- The XBF7-SW08 switch module can be connected in series on any expansion interface branch of discrete couplers, gateways, and discrete I/O modules, with a maximum of one switch module connected to each expansion interface.
- The switch supports cascading discrete slave devices, and each of its eight OUT ports can be cascaded with discrete I/O modules or sensors. The DIP switches for all discrete modules connected to different ports on each switch must be unique.
- Discrete scalable coupler each expansion interface can only connect to one of 16 slave stations (DIP switches 0 to F).

6.2 Configuration application

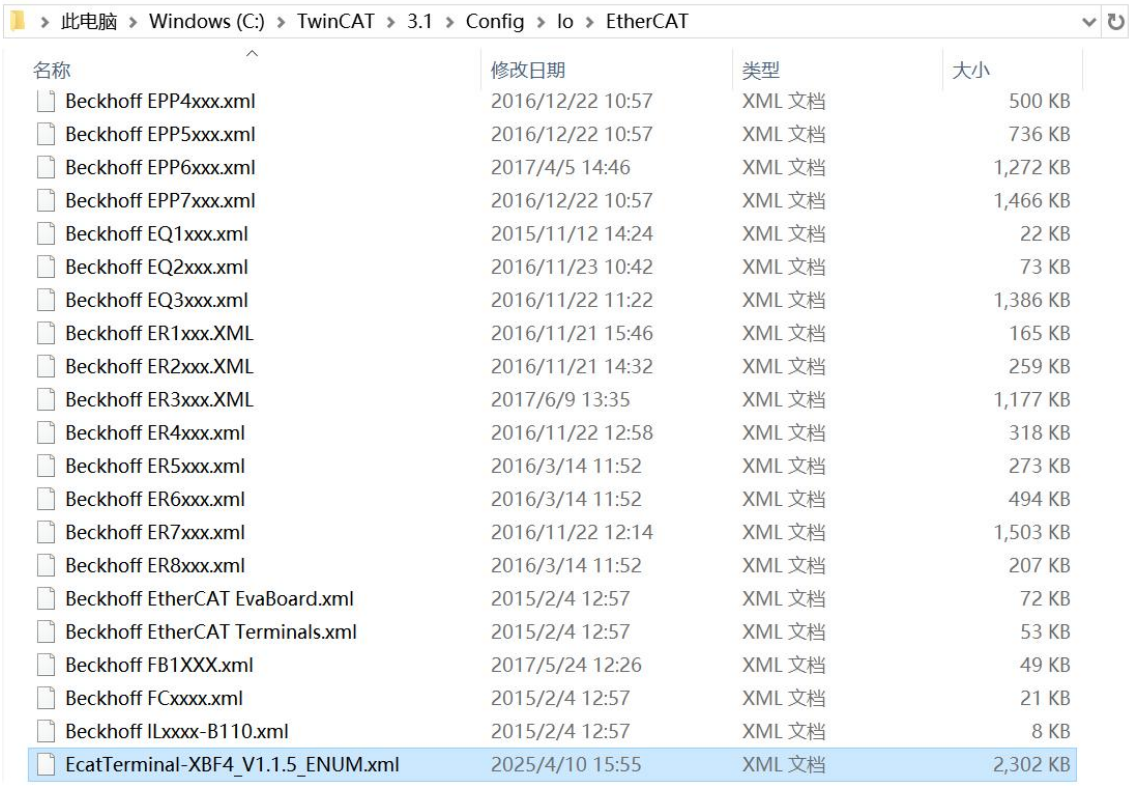
6.2.1 Application in the TwinCAT3 software environment

1、 Preparation

- **Hardware environment**
  - **Taking the XBF4-EC04 coupler + {Expansion Interface 0: 16 XBF4 series IO modules cascaded below the XBF7-SW08 switch module} topology as an example**
  - **One computer, pre-installed with TwinCAT3 software.**
  - **EtherCAT dedicated shielded cable**
  - **One switching power supply**
  - **Device configuration file**
    Configuration file retrieval address:
    https://www.solidotech.com/cn/resources/configuration-files
- **Hardware configuration and wiring**
  Please follow the instructions.5 Wiring Instructions"Required Operation"

2、 Pre-configured configuration files

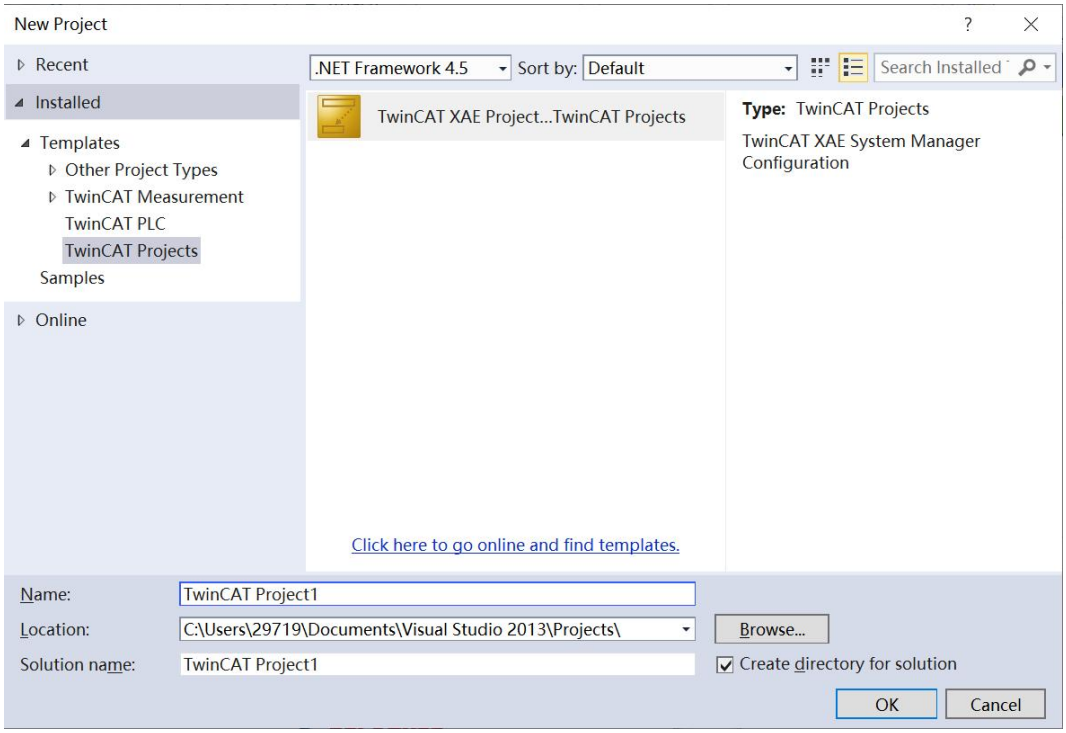
a. Place the ESI configuration file (EcatTerminal-XBF4_V1.1.5_ENUM.xml) in the TwinCAT installation directory "C:\TwinCAT\3.1\Config\Io\EtherCAT", as shown in the image below.



3、Create a project

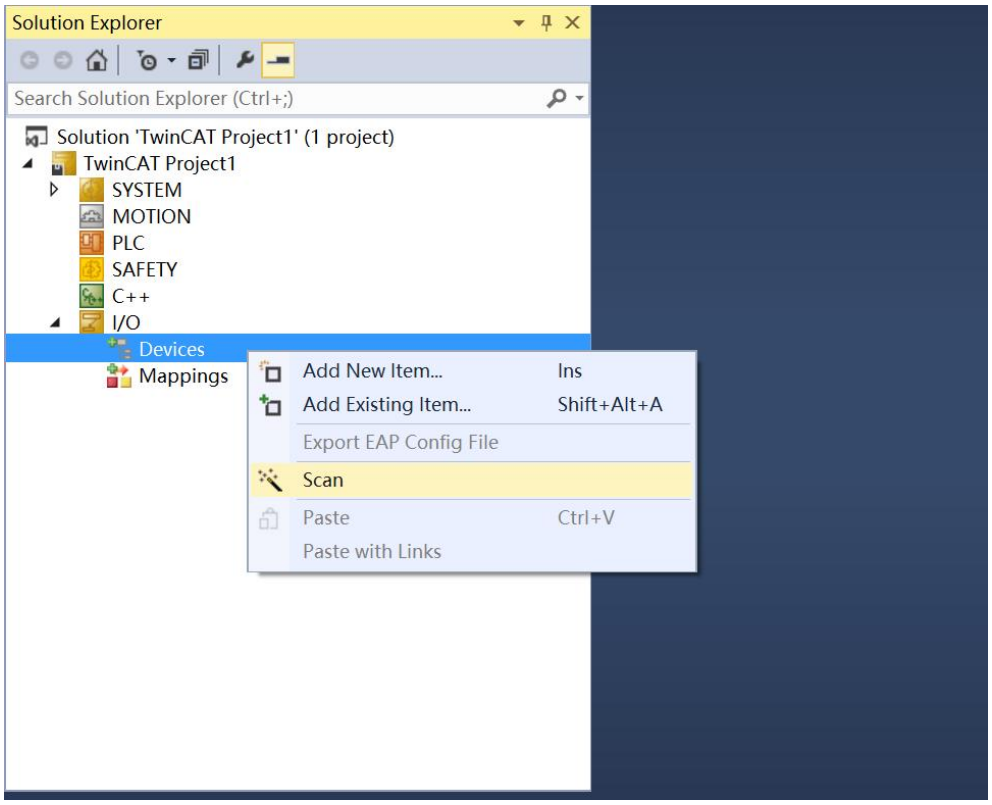
a. Click the TwinCAT icon in the lower right corner of the desktop, select "TwinCAT XAE (VS xxxx)" to open the TwinCAT software, as shown in the image below.

b. Click "New TwinCAT Project". In the pop-up window, "Name" and "Solution name" correspond to the project name and solution name, respectively, and "Location" corresponds to the project path. These three items can be left as default. Then click "OK". The project will be created successfully, as shown in the figure below.

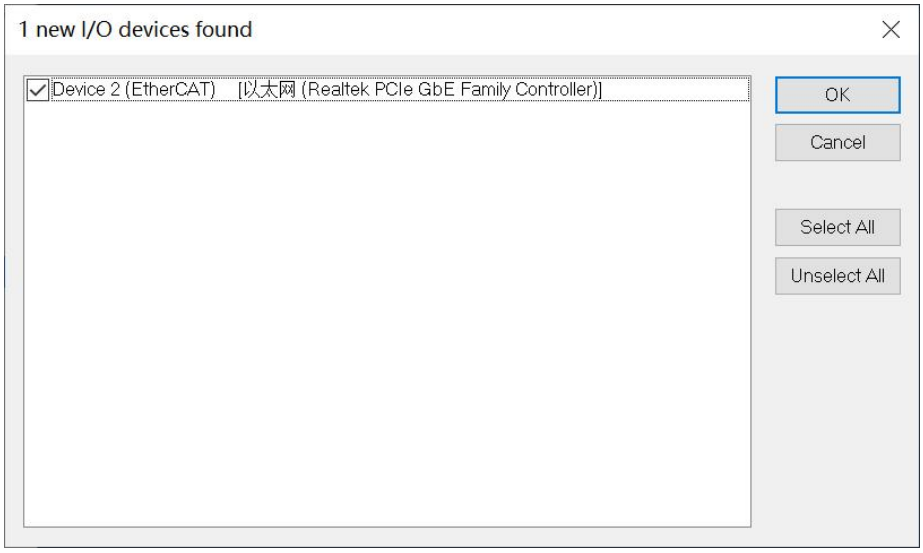


4、Scanning equipment

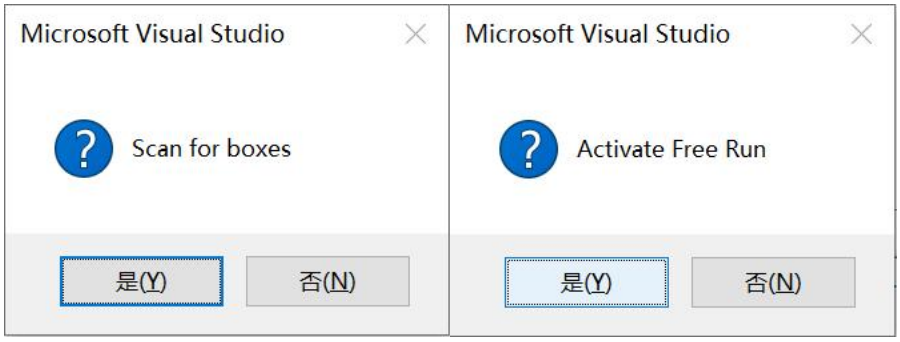
a. After creating the project, right-click the "Scan" option under "I/O -> Devices" to scan for slave devices, as shown in the figure below.



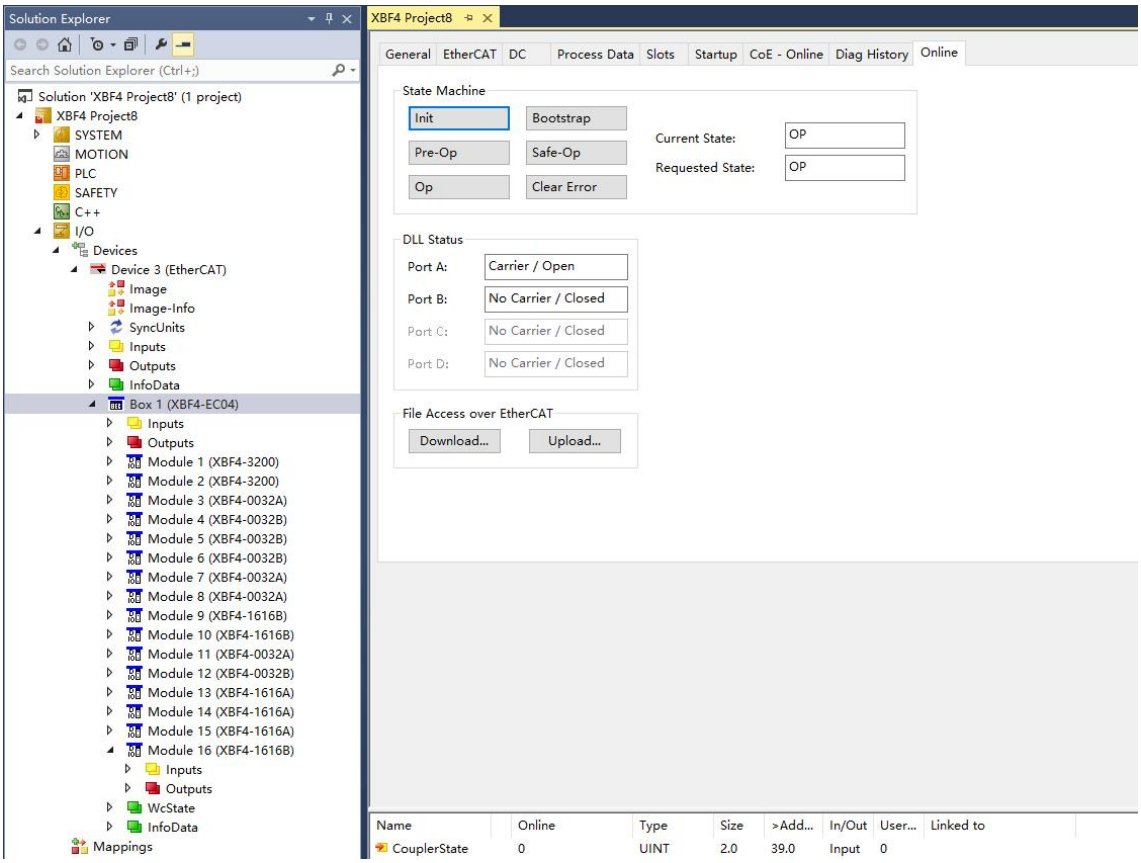
b. Select the "Local Area Connection" network adapter, as shown in the image below.



c. In the pop-up window "Scan for boxes", click "Yes"; in the pop-up window "Activate Free Run", click "Yes", as shown in the image below.

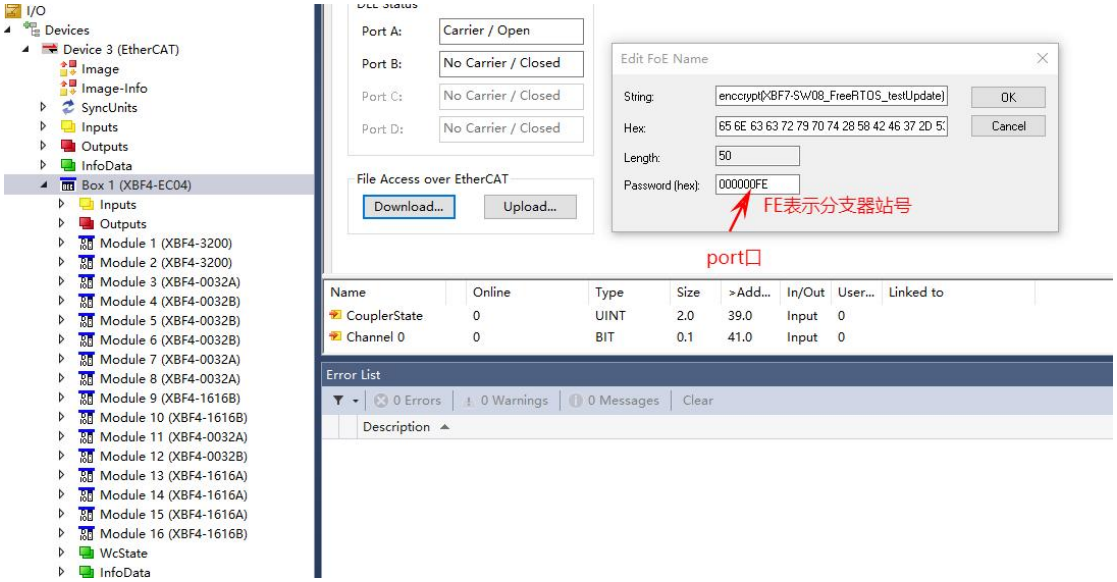


d. After scanning the device, Box 1 contains the XBF4-EC04 coupler, and Modules 1-16 contain the XBF4 series IO modules, consistent with the DIP switch station numbers. At the "Online" setting in Box 1, the coupler is in the "OP" state, and the RUN indicator light on the coupler is constantly lit, as shown in the image below.



e. After the device configuration scan is completed, the relevant modules can be operated according to the actual application needs.

f. The switch supports online upgrades. On the host computer page, click "Download". Enter the last two digits of the key, FE, to upgrade the switch module online. The third digit from the end represents the nth interface of the coupler. In the figure below, "000000FE" means upgrading the switch on the topology branch of the 0th interface of the coupler, as shown in the figure below.



6.2.2 Application in the IO Config Tool software environment

1、Preparation

- **Hardware environment**
  - **Module preparation: This instruction uses the topology XB6S-EI2002+XB6S-1616B+XB6S-XBF02+{Extended network port 1: XBF4-0032B+XBF2E-1600}+{Extended network port 2: XBF7-SW08+XBF7-SW08 interface 1: compatible node module (sensor)+XBF7-SW08 interface 2: XBF4-0032B} as an example.**
  - **One computer, pre-installed with IO Config Tool software.**
  - **Special shielded cable**
  - **One switching power supply**
- **Hardware configuration and wiring**

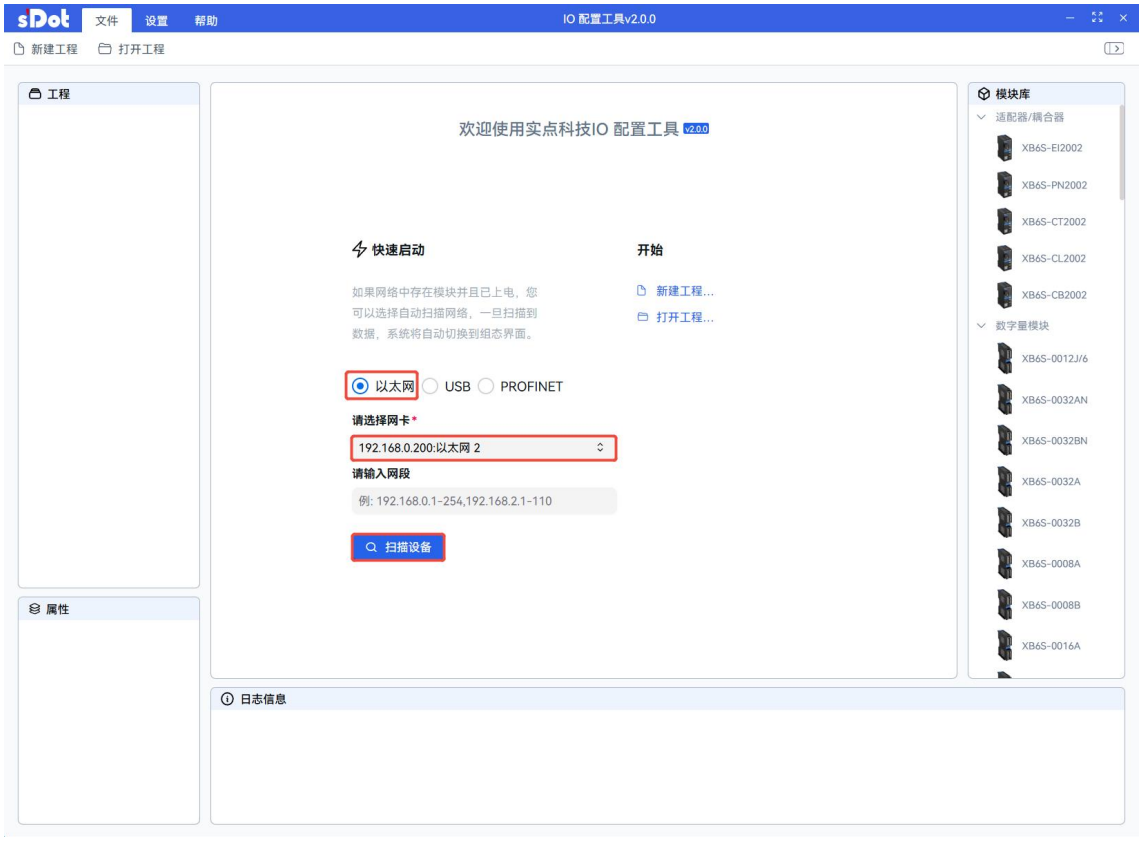
  Please follow the instructions.5 Wiring Instructions"Required operation."
- **Computer IP Requirements**

  Configure the IP address of your computer's Ethernet port to ensure it is on the same network segment as the coupler.
- **Module power-on**

  After verifying that the wiring is correct, power on the coupler module + I/O module device combination.

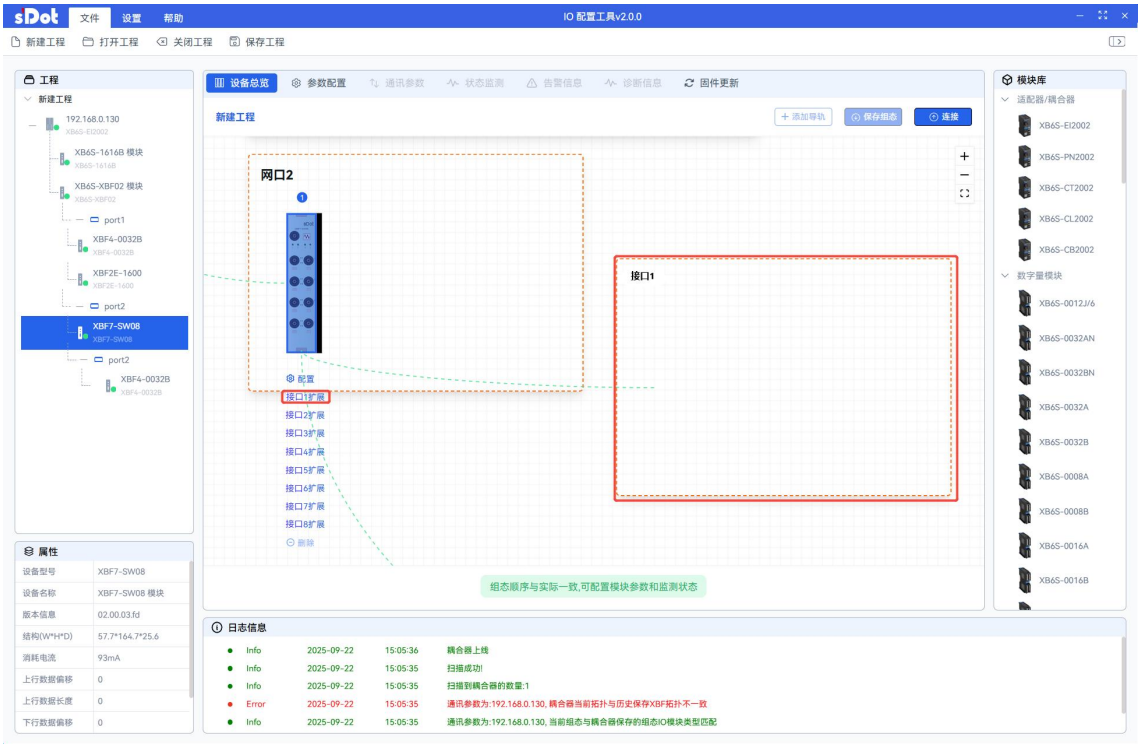
2、Scanning equipment

a. Open the IO Config Tool software, select the "Ethernet" mode, click the "Please select network card" drop-down box, and you can select the network card yourself. The selected address and the module IP address must be in the same network segment. After setting, click "Scan devices", as shown in the figure below.

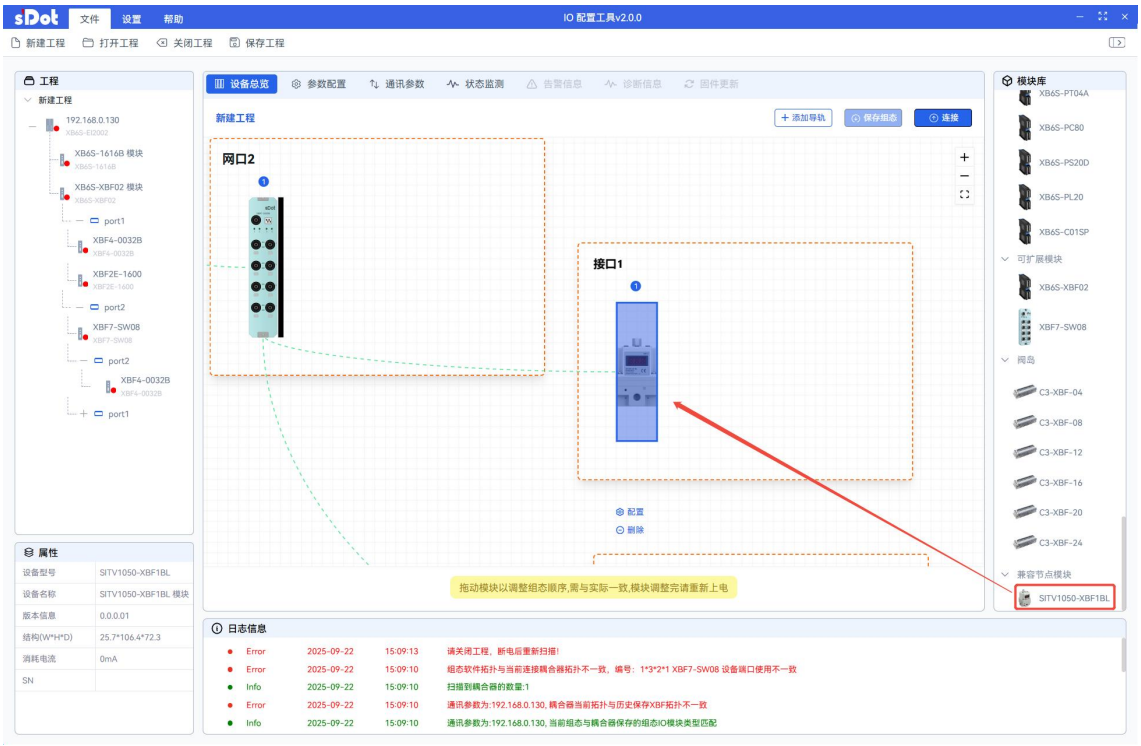


b. After the device scan is successful, you will be taken to the device overview page, as shown in the image below.

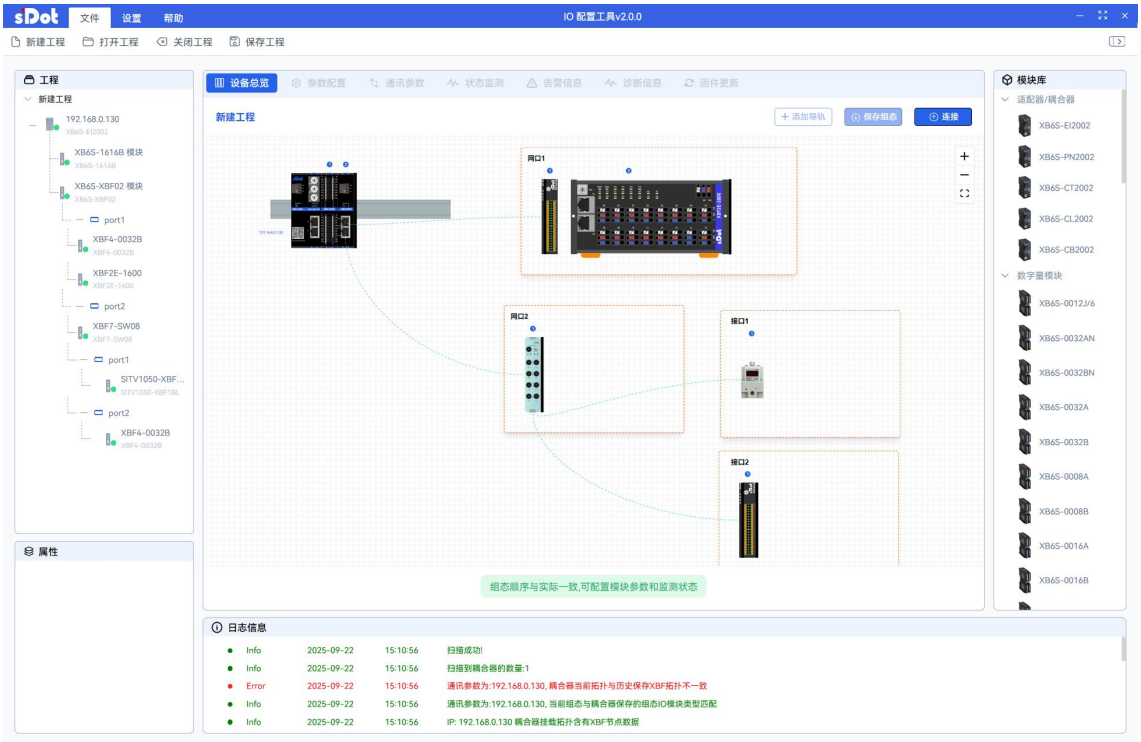
c. When a compatible node module is connected to any interface of the switch and scanned for the first time, it must be added manually first. Select the XBF7-SW08 module in the topology, click "Interface 1 Extension", and the interface 1 area of the switch will pop up, as shown in the figure below.



d. Select the compatible node module in the module library and drag it to the interface 1 area, as shown in the figure below.

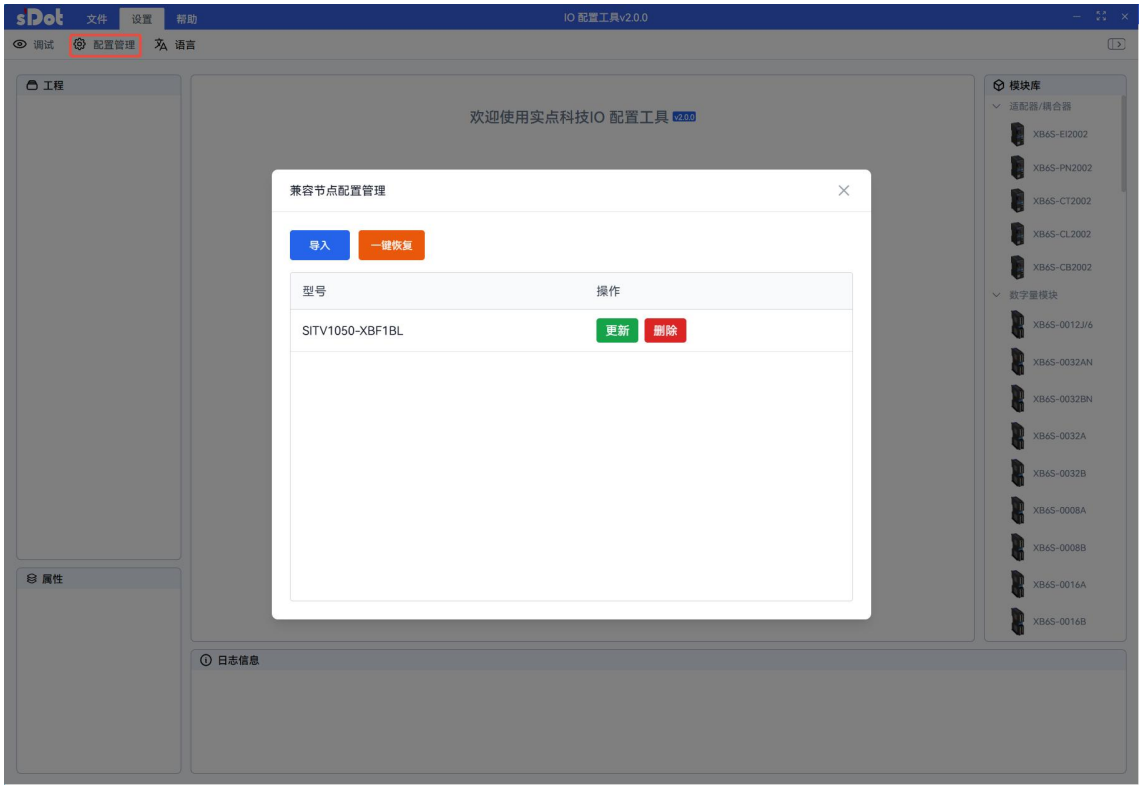


e. After closing the project and powering off the module, rescanning showed that the compatible node module was successfully connected, as shown in the figure below.

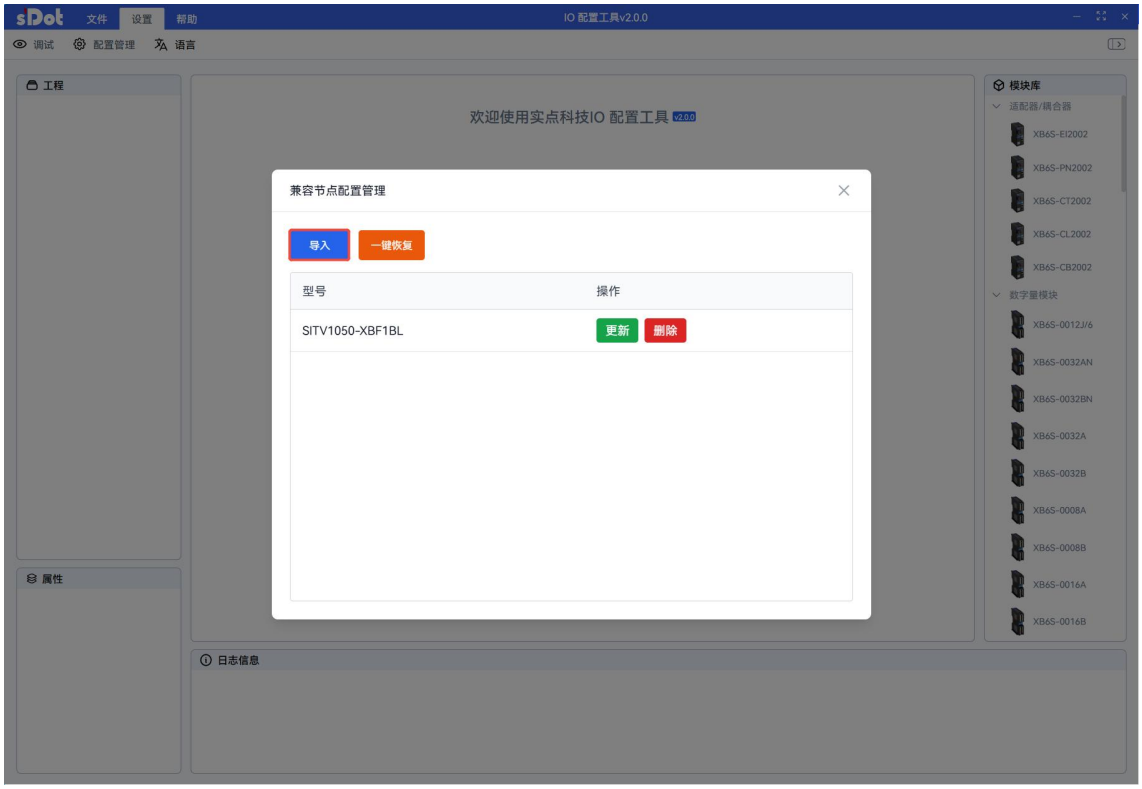


3、Configuration management function

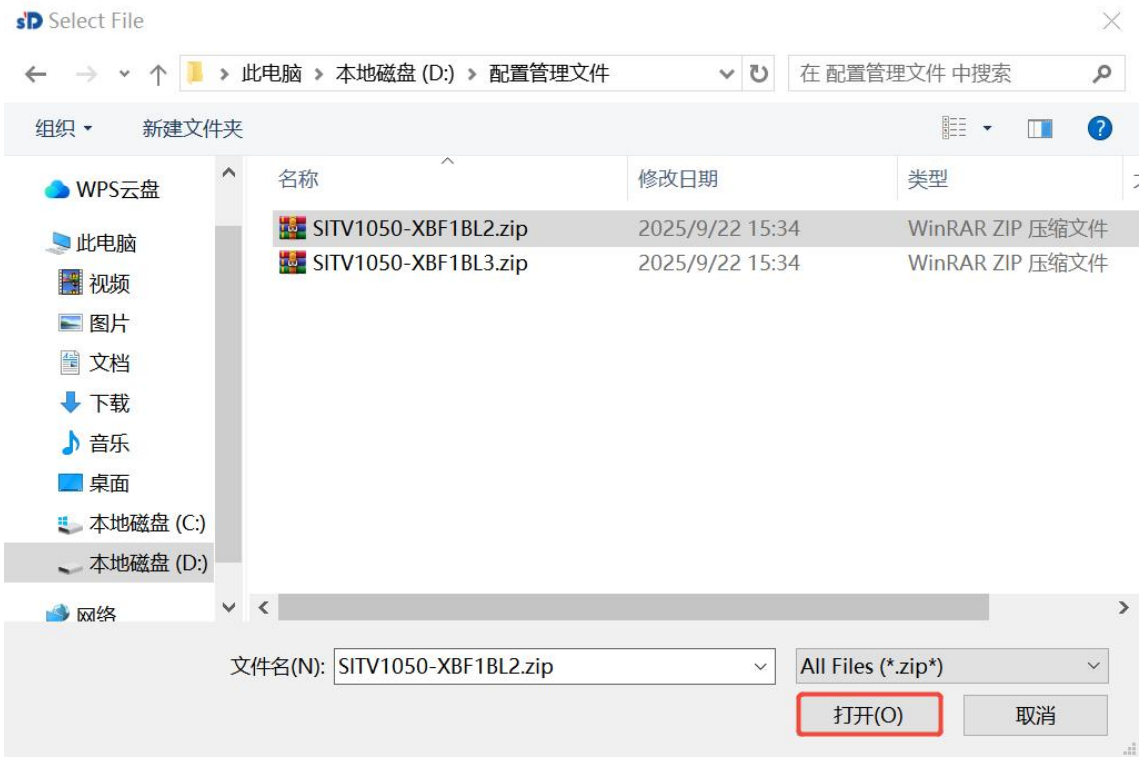
a. Click the "Settings -> Configuration Management" button in the menu bar to bring up the "Compatibility Node Configuration Management" prompt box, as shown in the figure below.



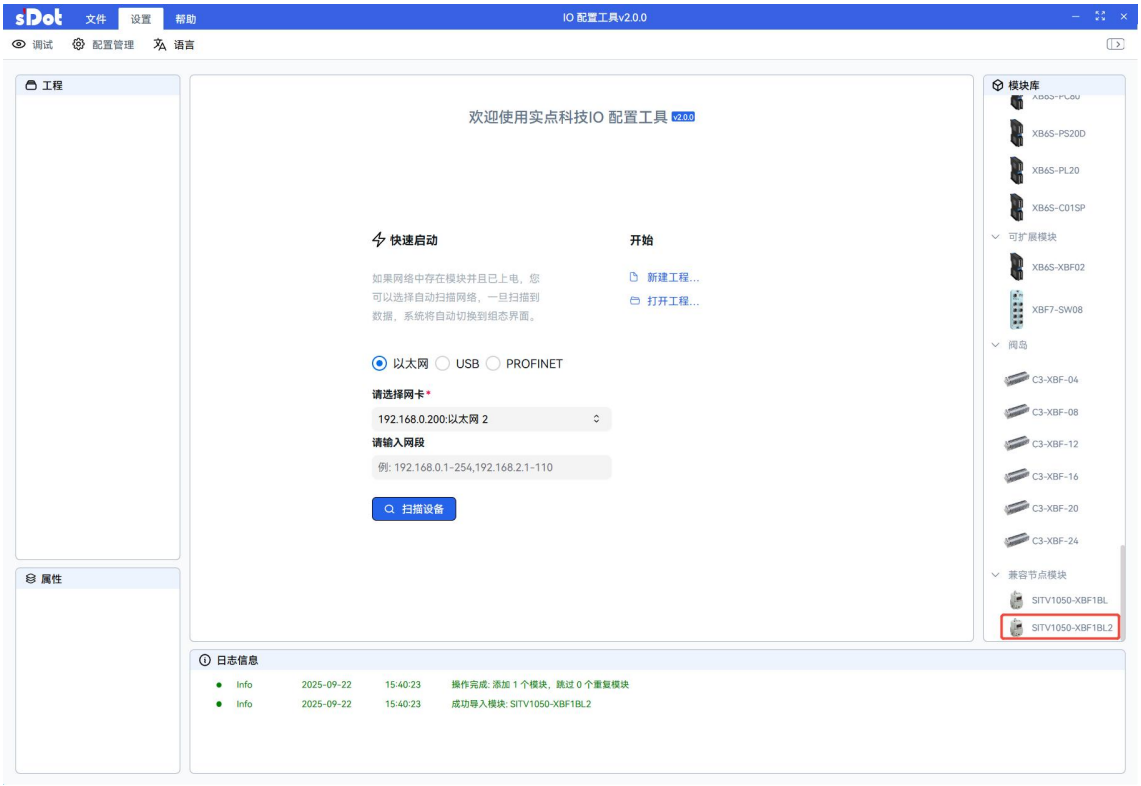
b. In the "Compatible Node Configuration Management" prompt box, you can import, update, delete, and restore compatible nodes with one click. Click the "Import" button, as shown in the figure below.



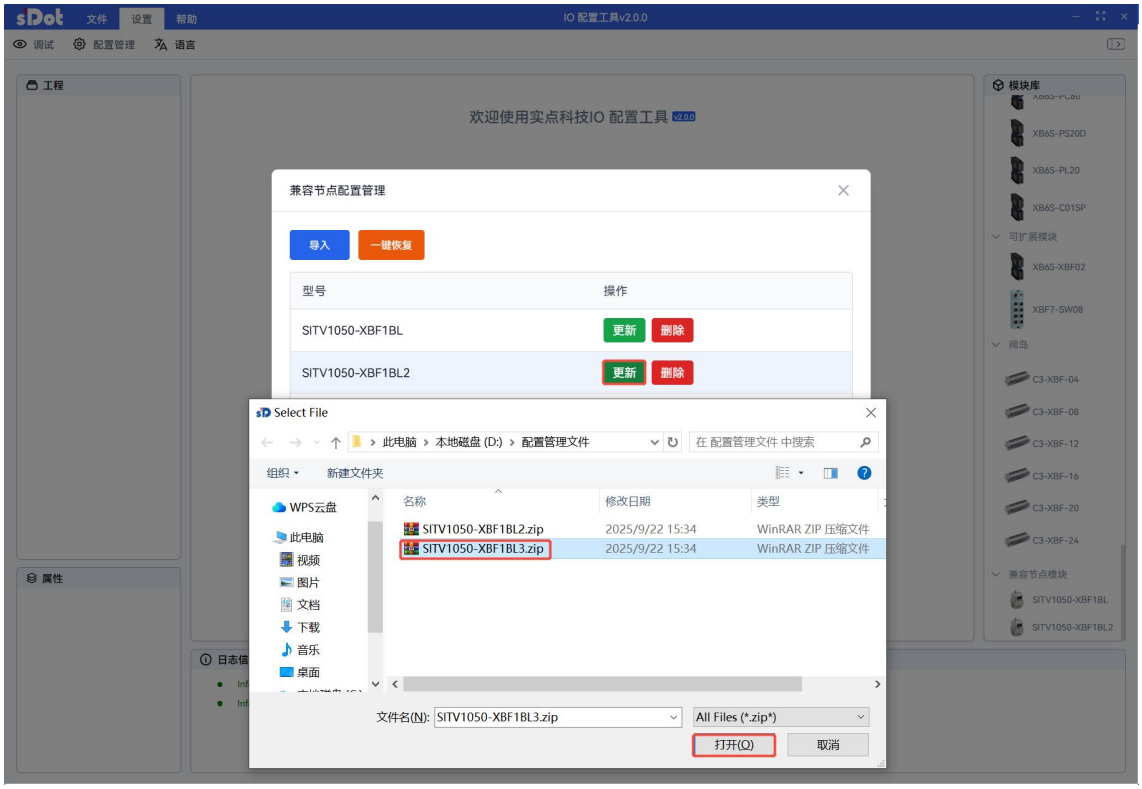
c. A file selection window will pop up. Select the configuration file corresponding to the node you want to add compatibility to, and click "Open", as shown in the figure below.



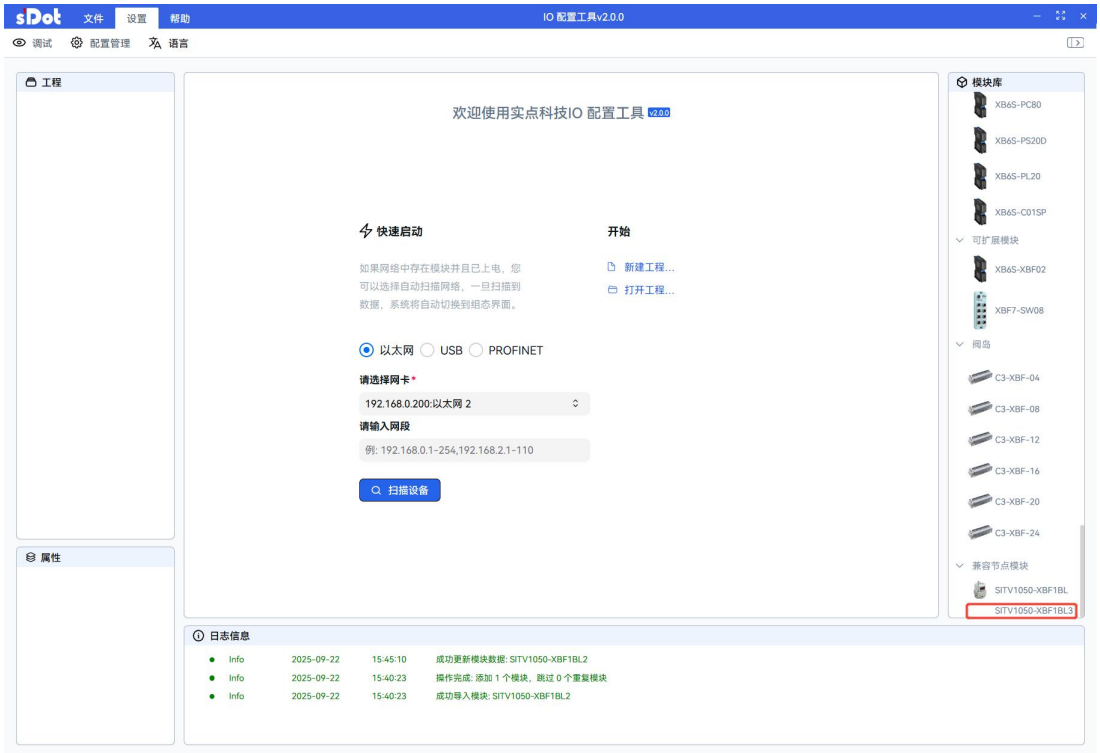
d. After the import is complete, close the compatibility node configuration management prompt box. You can then view the added compatibility node module in the module library, as shown in the following figure.



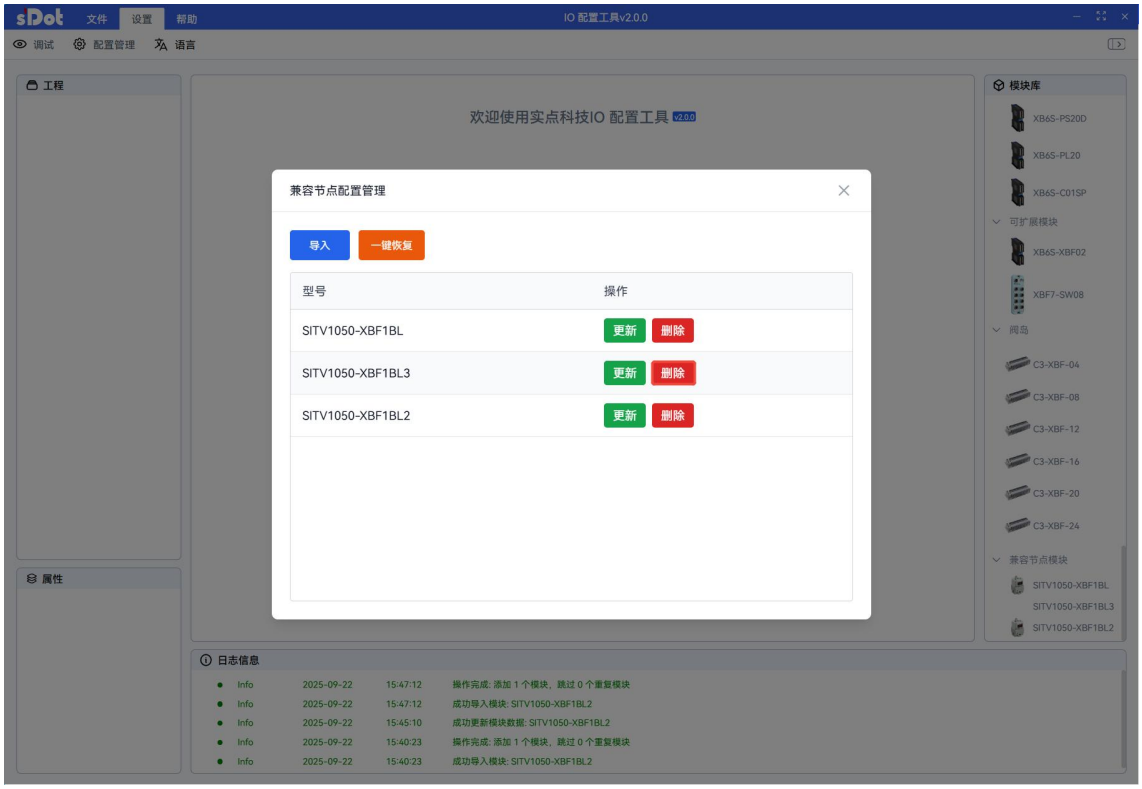
e. In the "Compatibility Node Configuration Management" prompt box, click "Update". A file selection window will pop up. Select the configuration file corresponding to the compatibility node that needs to be updated, and click "Open", as shown in the figure below.



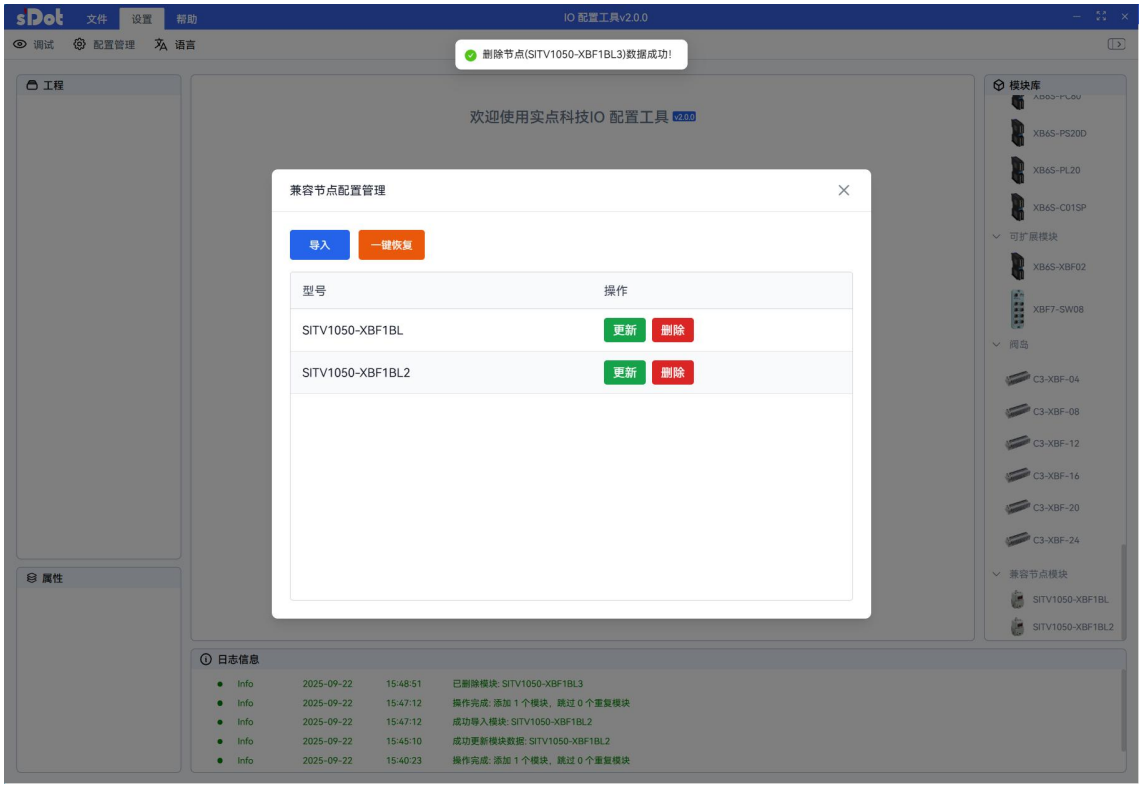
f. After the update is complete, close the compatibility node configuration management prompt box. You can then view the updated compatibility node module in the module library, as shown in the following figure.



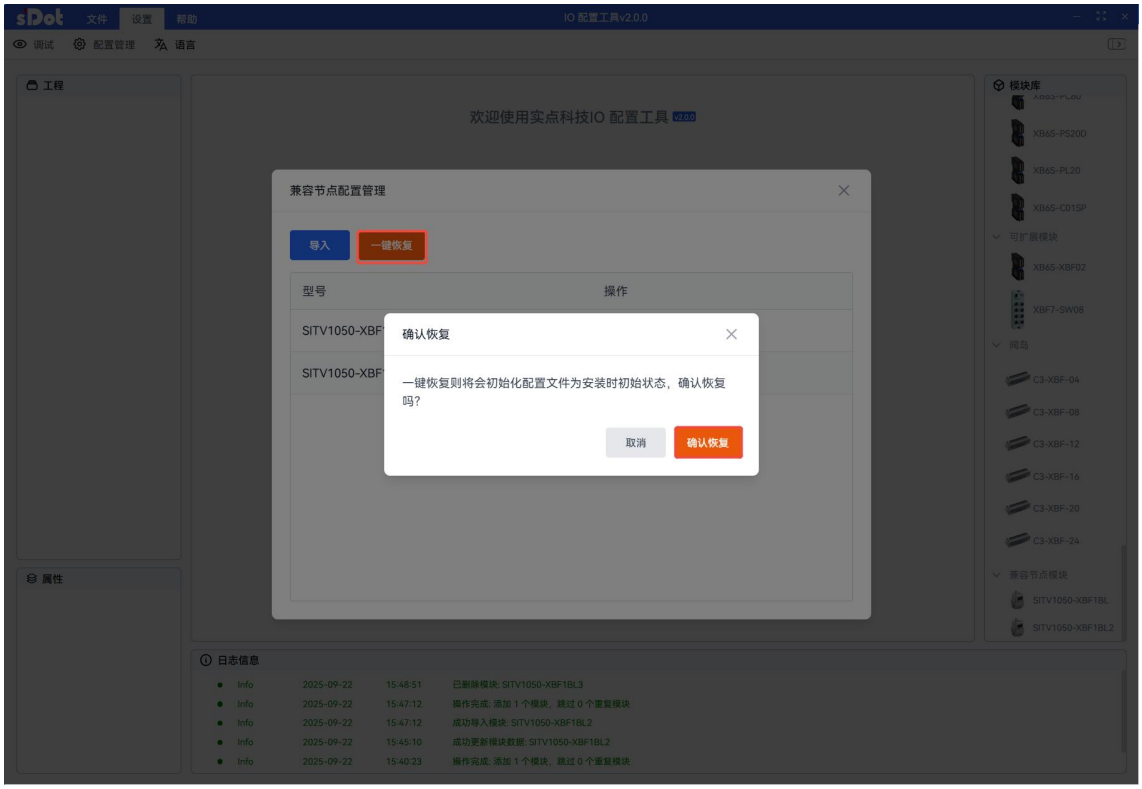
g. In the "Compatibility Node Configuration Management" prompt box, click "Delete". A pop-up prompt box will appear. Click "Confirm Delete", as shown in the figure below.



h. After deletion is complete, a "Successfully deleted node data" message box will pop up, as shown in the image below.



i. In the "Compatibility Node Configuration Management" prompt box, click "One-Click Recovery". A pop-up prompt box will appear. Click "Confirm Recovery", as shown in the figure below.



j. After the one-click recovery is complete, a "One-click recovery successful" prompt box will pop up, as shown in the figure below.